

# Dragon Speed Guide

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*North Sails experts Ruairidh “Rory” Scott and Theis Palm answer your Dragon speed and boathandling questions.*

## Who sails a Dragon?

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Sailors in the International Dragon class are attracted to its classic looks and tweaky, idiosyncratic nature. They include a large group of amateur sailors who compete locally at clubs throughout Europe, especially in the UK, Germany, France, Italy, and Scandinavia. At the same time, there’s an extremely active international circuit that includes many pro sailors. The list of Corinthian-only crewed boats at most international events is usually as low as 20 percent of the entries. Some boats are professionally owned and driven, but most are owned and helmed by capable amateurs, supported by professional crew.



The International Dragon class attracts big fleets to race in picturesque venues throughout Europe. It also has many local fleet sailors who rarely travel to major events. Photo: North Sails Schweiz

## What’s involved in crewing?

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The weight limit for the crew is 285 kilograms (627 pounds), and it’s very important to sail

at, or close to, the limit. Most boats sail with three people – a 95 kilo average. Some sail with four, and recently there is a small trend in that direction because it's difficult to find large enough people with the right skills. Sailing with four brings other challenges, though, as the boats don't have a huge amount of room for the crew.

The boats are 8.9 metres long (29' 2") and weigh 1700 kilograms (3,700 pounds), and they are a physical challenge to sail. Upwind if you can hike harder for longer, you'll go faster. There are no hiking lines or hiking aids but you can hang off ropes and anything else that's already there for another purpose. When windy, the loads on these boats are substantial, and pumping the spinnaker or trimming the large genoa provides a workout.

### **What are three top Dragon speed tips?**

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1. Spend time with the same crew, learning how to sail the boat and adjust the mast controls for different conditions.
2. Work with your sailmaker to learn which sails work best with your mast in different conditions.
3. Straight-line boatspeed is vital. Beats are usually 2.5-miles; in the Gold Cup, races are 2.5 to 3 hours long.

### **What should buyers know when choosing a Dragon?**

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Strict rules in terms of hull measurement, stability and use of corrector weights if necessary help keep both new and used boats competitive. There are a massive number of good, used fiberglass boats available at roughly half the price of a new boat. Still, some two or three dozen new boats are built each year at Petticrows in the UK, or at PCT in Dubai (approximately £80,000-100,000). Cold-molded boats can also be very competitive and beautiful, but once you have refurbished them, they may cost you more than a new boat.

### **How do you launch a Dragon?**

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A Dragon weighs 1700 kg (about 3700 pounds) so a reasonably substantial tow vehicle is required. Launching is done with a single-point lifting crane. Launching from purpose-built trailers isn't hard; you pull rig forward, clip on the crane, and launch. The mast can be stepped with a tripod stand. Three people can rig and launch a boat in an hour or so. Most boats travel with a single piece cover, and the spars ride along in separate bags.

### **How many sails are required?**

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There are no limits on the number of sails a competitor may purchase, but sailors are only allowed to register ("card") eight sails per event. Most boats take four genoas, two mains, and two spinnakers. North offers a range of different Dragon sails, both crosscut and with radial clews and heads; the latter were developed once cloth manufacturers began building more balanced Dacron cloth. Genoa designs cover the following wind ranges: light, up to 10 knots; medium, 6 to 18 knots; and heavy, 14 to 30 knots. North also has different mainsail

designs for different class-legal masts, as well as varying spinnaker designs. On a race day (when no coach boat contact or spare sails on the water are allowed), it's common to carry one spare spinnaker aboard and often a second genoa.

## Dragon Tuning

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### What are the keys to rig set-up?

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When tuning the Dragon, our focus is on getting the forestay length set correctly. (Details are provided in the [North Tuning Guide](#).) Then we adjust the tension on the uppers and lowers to Loos tension gauge numbers, depending on which builder's mast is in the boat. After that, everything is relatively simple. Just under the deck, a mast ram powered by a lever system attaches to the aft face of the mast to move the mast fore and aft at the partners.



Tuning a Dragon starts with measuring forestay length and includes other complexities such as running backstays and adjustable shrouds that can be tensioned underway. Photo: North Sails Schweiz

### What are the most important control systems you have to learn?

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Competitive boats have some remarkable control systems. For example, shroud tension can be adjusted below decks. And jumper tension has both coarse and fine-tune controls that can be adjusted individually, so you can achieve a certain tip fall-off or even move the

mast tip to windward.

Unlike many one designs, Dragons have running backstays. Typically, boats have a 2:1 coarse adjustment under the stern deck, plus a fine tune that leads farther forward. Dragons used to have winches or highfield levers for the running backstays, but we recommend setting up cascade or other purchase systems, which is the way all new boats are rigged.

Another special system for genoa sheeting eliminates the need for a winch. The sheet is pulled through a barberhauler, turns below the side deck, and leads through a cleat mounted on a track. A fine-tune purchase pulls the cleat along the track to finish trimming the sail under full load. A recent refinement keeps the cleat open when the fine tune is off. As soon as you pull on the fine tune, the cleat grips the line, but when you release it to tack, it automatically releases the coarse-tune sheet as well.

## **Dragon Upwind Sailing**

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### **Upwind, where does the Dragon crew sit?**

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When it's light, the helmsman sits to leeward or to windward, depending on preference. The forward crew (the genoa trimmer) sits to leeward on a bench and handles the sheet controls as well as adjusting halyard, barberhauler, and sheet fine-tunes. As soon as the breeze comes up, the trimmer will be hiking.



The Dragon has a sleek, low-profile hull and its genoa has large windows for safety. Photo: North Sails Schweiz

For all conditions, the middle person sits to windward—in the boat or on the rail—so they can trim the mainsail. They control runner tension, mast ram, jumper position, traveler, mainsail tack, outhaul, and vang/kicker.

### **How do you trim the Dragon main upwind?**

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The main trimmer generally keeps the boom near centerline; as the mainsheet is trimmed, the traveler is eased slightly. The mainsheet helps bend the mast and flatten the main. Due to the size of the overlapping genoa, we do not vang-sheet.

Once the waves get bigger, the boats take time to accelerate so you want a twistier setup with softer sheet tension and a more open leech. The boats have keel-hung rudders, which will wobble around when sailing in chop. The rudder blade is big, so if you swing it around too much you'll slow down due to the extra drag. Getting the boat balanced is very important, especially when it's choppy.

### **How do you trim the Dragon genoa upwind?**

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The challenge when it's light is to keep the boat moving quickly while still pointing well. Any time the wind changes, you need to adjust the sail first, slowly make the helm adjustment, then match sail trim to the new course. When lifted, for example, ease the

genoa first; the helmsman comes up slowly, and genoa comes in to match. If the helmsman simply follows the genoa telltales instead, he'll always be behind the curve, swinging too much rudder and going slowly.

When the breeze comes on, change your jib lead by using the barberhauler, which adjusts vertically at the aft end of cuddy. By easing the barberhauler up, you effectively move your lead aft and are able to sheet harder to flatten the sail. Over 20 knots, the second barberhauler pulls the lead a couple hundred mm farther outboard.

### **What's the key to shifting gears when sailing upwind?**

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Runner tension is the most important control in shifting gears. In light winds, you sail with less tension on the runner to induce headstay sag and power up the genoa. As the breeze builds and you pull on more runner, tighten the mast ram to the maximum so the mast doesn't overbend. If it does, you over-flatten the mainsail and lose some headstay tension at the same time. As it gets windier still, add lots of runner tension and ease the ram to bend the mast, but don't overdo it or you will lose headstay tension when you really need it.



In a breeze, the three crew hike out and the boat begins to throw some spray. Photo: Fiona Brown

### **What do top Dragon crews say to each other upwind?**

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The forward crew has the best view and will usually call puffs. The main trimmer will often ease a little mainsheet or lower the traveler a touch, which allows the driver to bear off slightly. The forward crew may ease the genoa sheet as well. Once you've accelerated, the helmsman or main trimmer will call for trimming the sheets back on.

If a big gust is called, the middle crew pulls runner on or lets traveler down, and the helmsman may point up a little. Then main and genoa are both trimmed a little harder. It's important for all three crew to work together at all times.

The forward crew also must look through the genoa window, and the helm through the mainsail window; with the big genoa, the middle crew can't see boats that are even with you on the other tack. This is different than on boats with smaller jibs and is extremely important to communicate about regularly.

## **Dragon Downwind Sailing**

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### **Downwind, where are Dragon crew located?**

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In light to moderate wind, keeping the bow down and the stern up is pretty fast. It also stabilizes the boat directionally, making the boat as long as possible. Whoever is the tactician moves to the bow or by the mast downwind, watching the fleet, calling the wind, and holding the pole back at the shrouds. The spinnaker trimmer sits at the front of the cockpit on the windward side, and the helmsman sits aft on either side of the boat—typically to windward in 10-12 knots and above, and to leeward in light conditions for a flatter boat or leeward heel. When it's breezy, we bring the forward person back to cockpit.

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Dragons sail deep angles downwind with genoas roller-furled. Crews fly the wide spinnaker well away from the relatively short spinnaker pole (visible on yellow and gray spinnakers). Photo René Catino

### **What's unique about the Dragon when sailing downwind?**

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We ease the backstays and let the rig a long way forward; the more we can do that, the more directionally stable the boat will be. What's really unique is what we call "flying the spinnaker"—the pole is too short, so as soon as the breeze gets up to 8 knots we ease the spinnaker up and away from it, squaring the pole to the shrouds and keeping the clews as level as possible, and flying the guy/brace as much as six feet away from the pole. This pushes the guy as far outboard as possible, but makes the sail less stable, so more skill is required to keep the sail under control. Body weight placement can help keep the sail full, for example, placing weight to windward to heel the boat when sailing a low course.

### **What are your general rules for sail trim on the Dragon downwind?**

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After setting the spinnaker, furl the genoa and let the mast ram go completely so the mast can shift forward. Ease the runners to move the rig forward at deck level as much as class rules allow. The tip will move a long way forward and separate the spinnaker from the main. Boats with an adjustable mainsail tack will ease off the tack.

We always try to keep the spinnaker clews spread as wide as possible and, as mentioned, away from the boat. The mainsail is eased out in most conditions, but trimmed slightly in light air (when not sailing dead downwind) and in strong breeze (for stability). Keep the top batten parallel with the boom. If the boat is rolling around in bad seas, use the vang/kicker to tighten the leech; if you need to sail lower, loosen it.

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### **What do top Dragon crews say to each other downwind?**

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The trimmer and the driver talk about pressure on the spinnaker and how low the boat can be sailed. The bowman/tactician comments on the puffs and boats behind that might block your breeze. When surfing, there should be constant dialogue between trimmer and driver. The helmsman should pump the main if possible; otherwise, bring the bowman back to do it.

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Tacticians become foredeck crew downwind, moving forward to lift the stern while monitoring traffic and approaching puffs. Photo René Catino

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## **Dragon Boathandling**

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### **What are your top tips to starting a Dragon well?**

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1. Sail with the genoa furled and approach the line under main alone. When time and distance are right, unroll the genoa and accelerate. This takes practice but is far better than approaching the line with the big genoa luffing against the rig. In lighter winds, unroll the genoa sooner because it will take longer to get up to top speed.
2. Focus on keeping some flow over the rudder so you have control of the boat. You can easily sail a lot higher under main alone, but when you pull out genoa make sure the boat is aimed low enough so the genoa doesn't backwind and force you to tack.
3. When it's windy, it's hard to sail the boat slowly. Sail as high as possible, until it's time to put bow down and accelerate. Don't over-ease the mainsheet or the bow will get blown to leeward.



Top teams line up for the start, sailing as slowly as possible with genoas furled, until it's time to accelerate in the final seconds of the countdown. Photo René Catino

## What are the keys to tacking a Dragon well?

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The mistake that everybody makes in the Dragon is to release the genoa sheet too early. The sail has such a big overlap that the clew has to go a long way forward to get around the rig. The best technique is to ease the sheet a little but only release it once the sail backs against the rig. Then the wind will blow the sail around and out to leeward, and the trimmer will pull it back in on the new tack. In less than 6 knots, another option is to furl the genoa as you start to tack.

One crew does both the release and the trim, and it takes coordination and strength. Bring in as much as possible with the coarse-tune genoa sheet before switching to the fine-tune. When it's windy, there's so much pressure on the genoa sheet cleat, it's important to get the genoa trimmed and cleated quickly before switching to the fine tune. The helmsman should avoid coming out of the tack too low and making the trimmer's job that much harder.

When steering through a tack in flat water, you can steer more slowly at first to maximize VMG to windward. If you're sailing in waves, you have to turn quickly so the boat doesn't slow down too much. The trick that we find very useful is to center the tiller at the moment

the boat straightens up and the mainsail begins to tack. It takes the boat a while to stop turning, and the momentum of the genoa, pushing against the rig, will carry the boat through to your new close-hauled course. It's very easy to over-tack a Dragon, and yet it's better to steer too far than not enough. If the genoa doesn't blow outside of the leeward shroud, you'll lose speed quickly.

The middle crew has plenty to do on tacks as well—mainsheet, traveler, jumpers and runners—although some helms will assist. In a light-air tack, getting the traveler moved up to the new weather side is the top priority. Ease a bit of mainsheet. In heavy air, the runners are top priority.



As wind and waves build, the Dragon displaces more and more water. Photo: Fiona Brown

### **What are the keys to setting the spinnaker on the Dragon?**

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Until recently, Dragons were rigged to set the chute from a small hatch up on the bow, which made sets simple (but made takedowns tricky). The basic drill was to pull the chute up as the sheet and guy came back, and furl the genoa quickly so the chute didn't collapse. Now that we drop the spinnaker into the cockpit, it's very important before the set to sneak the guy/brace out as far as possible.

### **What are the keys to jibing a Dragon well?**

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Poor timing is the worst mistake Dragon crews make in jibes. The boats like to rock and roll downwind, so you need to time the turn so the boom crosses easily. If you try to turn the boat down when it naturally wants to turn up, you'll fight the helm, then oversteer while

the boat rocks and rolls, and in the process the boat slows down. Always initiate your jibe when surfing down a wave or naturally turning to leeward and rolling to windward.

The forward crew handles the spinnaker pole and the middle crew and helm manage the sheets and runners. When it's windy, the spinnaker trimmer will sometimes cleat the spinnaker and help the helmsman pull the main over. With inline spreaders, the masts are bendy enough that they need the support of the runners. Trim the main in a little before the jibe; as you pull the main across, haul in the new runner and ease the old runner as soon as possible. The topmast backstay holds the rig for a fraction of second, but we don't like to rely on it for long. Needless to say, sailing with four makes the jibes easier.

In light-air jibes, the topmast backstay supports the rig just fine, so you can let both runners off. The key is to rotate the spinnaker around so it stays flying. In 7 or 8 knots, the guy/brace will be at the pole. In 8 to 10 knots and above, you'll come out of the jibe with the tack of the spinnaker at the pole, then slowly ease it away from the boat again.

### **What are the keys to a good spinnaker takedown?**

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Taking the chute down into the cockpit is much safer. We always pull it down on the port side to be ready for the next set; let the starboard sheet go, pull the chute around the bow, let the halyard go, and pull the sail down quickly. Dousing the spinnaker through the front hatch with the retrieval-line system is fraught with danger if you still have that set-up; to avoid dropping the sail in the water, it's necessary to spread the spinnaker down one side of the boat or the other before pulling the sail into the hatch.

### **How easily does a Dragon broach?**

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All Dragons have automatic, battery-powered bilge pumps; on a windy day, the boats are wet enough that the pumps are always working. We also carry manual bilge pumps and two buckets. If you rock and roll too hard downwind you can broach to windward and swamp the boat. If the water-tight hatches are in place, the boat will stay afloat; in theory, there is sufficient reserve buoyancy to stay afloat while you and the pumps get rid of the water. As a practical matter, with the Dragon's low freeboard, that's difficult when waves can bring water aboard at the same rate that you get it out.

### **What's the coolest thing about the Dragon class?**

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Take your pick. You can sail Saturday at the club or compete for the Gold Cup in another country against the best sailors in the world.