



I-20 Racing and Rigging Manual



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Aspects of Sailing I-20s

Sailing with more than 3 people on board will dramatically increase loads on the boat and rigging and amplifies mistakes made with tuning and mainsail handling.

Rigging the Boat On Land

Be sure you have a throw-able and a paddle

Uncover boat and roll the cover, easier to put back on later

Tie bowlines for the spinnaker head, tack, and clew

The spinnaker halyard must be rigged outside of the shrouds/stays/diamonds/mast rigging

The spinnaker tack must come around outside of the port shrouds/stays

Be sure the tack sheet is on top of the spinnaker sheet (Tack on Top)

Be sure that the mainsheet is uncleated and boom is free

Be sure all bailers are closed

Put a life jacket around the jib to prevent unraveling

Adjust hiking straps and be sure they have a safety (Figure 8) knot in them

Casting Off

Have paddle available if needed/something doesn't go right

Pre-ease the main, uncleat vang and backstays

Be able to backwind the jib or main

Raise the main first, then the jib

Drop coil the halyard lines so they can be lowered in case of emergency

Drop both boards for safety (unless experienced, knowledgeable, and quick) until past moorings

Store the painter, coiled, in the bilge bag

Fiberglass is fragile! Do not let the boat hit the pier. Use the sidestays (shrouds) to help fend off

Capsizing

When in doubt, let it out

Steer upwind onto the verge of the no-go-zone if need

Use the sail diapers (zipper into the head of the sail) in ALL wind conditions

Everyone's lifejackets should be snug. (Should not be able to pull above ears)

Try not to fall in the rigging, drywalk if possible. Avoid falling hands first onto the sails.

Uncleat the vang, center and cleat the traveler

Uncleat and drop both bilge boards

Be sure the main sheet is not fouled and can run free when righted

Try to right the boat in the safety position (Jib and main uncleated, hull positioned on a reach)

If needed, drop the mainsail, blow the spinnaker lines, etc. and again try to right the boat

All else fails, signal to Harvey

Upwind

The angle of heel is very important (30 degrees or just before the leeward turnbuckle/outside shroud rigging is in the water). Upwind in 0-10 knots, go for maximum heel, but never let the water get up on the leeward deck. This will require crew to sit on the leeward side. In more wind, sail with the bilge board vertical in the water. If heavy enough, all crew will be in the hiking straps. When a big puff hits, the bow will blow to leeward, so the jib crew must be prepared to ease the jib sheet to prevent this. Ease, hike, trim. Trimming the jib will steer the boat downwind and easing

the jib will steer the boat upwind, it has much more surface area than the rudders. This is staying in the groove or scalloping going upwind. If the boat heel becomes too much to handle, use the go-fasts (vang, traveler, Cunningham, outhaul). If on the verge of capsizing uncleat the boom vang and drywalk. To drywalk (assuming the boat is past recoverable), stay on the rail and shimmy to the windward board and drop it in order to begin righting the boat more quickly.

Tacking

The crew must change the bilge board for each tack at the correct time. As the boat is turning through the tack, wait until the bow is head to wind to lower the board: if you do this too soon, it just creates extra drag and slows the boat down, too late and there is too much pressure to get it down all the way. The old backstay must be uncleated otherwise capsizing is highly likely. For the skipper, ease the main slightly and then trim it in to heel the boat when coming up into the wind, and then roll tack the boat together. (Lean out to windward until the sails come over and the boat is heeling, then quick and gracefully hike the boat down by moving to the new windward rail). In light to medium winds, keep the jib trimmed in until the boat is head to wind and let the wind break it across. When it starts to get windy it isn't necessary to roll the boat, but ease the jib sooner so the bow can come up into the wind easier.

Setting the Spinnaker

The crew member will put the pole out, open the bag for the hoist. Then, trim the halyard first, then the tack. Ensure the tack line stays on deck and spinnaker does not get wet. Be sure to head dead downwind which allows the kite to go all the way up with ease (Sailing too high puts pressure on the spinnaker making it extremely hard to raise). Also make sure the mainsail is not let out too far as the halyard and head of the kite can get hung up behind the spreader. Once the tack is made, head up immediately to allow the spinnaker to fill.

Downwind

Light Air: The mainsail needs to be trimmed at a tighter angle and not eased out very far during jibes (about 10' from the corner). Also, some vang can be put on since you are sailing at hotter angles with more load on the mainsail. Light wind: a higher angle is required so that the boat builds apparent wind. With this speed you can begin to sail low. As soon as the boat slows even slightly or the boat begins to flatten in angle of heel – you need to head back up onto the wind (scalloping). As your apparent wind moves forward you need to keep your mainsheet trimmed a lot more.

Medium wind: As a puff hits and the boat heels, begin to drive the boat down and sail deeper. Work your mainsheet, as you sail deeper the main will need to be eased slightly.

Heavy wind: The mainsail will need to be trimmed in – almost all the way at times – as your apparent wind is way forward. It will feel like you are sailing a higher angle due to the speed build up. Get the boat up and rolling – do not sail low or keep people in the boat – put them on the rail. The key is the mainsheet, keep the main trimmed, work the jib and the vang. Do not ease the main much through your jibe.

Jibing

Jibing in heavy air with the vang loose and the mainsail eased out too far can result in disaster. When you go into a jibe do not slow the boat down, go from high speed mode right into the jibe. Use the Mexican jibe: skipper turns right into the jibe, the crew member trims the spinnaker sheet tight (clew to the the shroud/backstay/essentially in the boat), let it back slightly onto the rig on the new windward side of the boat. As the main is coming across the crew member blows the

sheet off and trim the new sheet on quickly. Dropcoil all lines to avoid a rats nest and subsequent swimming. Float jibes during light wind by easing the tensioned spin sheet and then blowing it when the clew is forward of the forstay, then trim the new sheet quickly. These maneuvers take a high level of coordination between skipper and crew.

Spinnaker Takedowns (assuming a gate)

Windward (approaching the leeward buoy on port tack): Head dead downwind and trim the windward spinnaker sheet around, fast. Then, uncleat the tack and gather the foot of the sail, stuff it into the bag. Before the halyard begins to drop be sure to steer up slightly so that the sail blows onto the deck of the boat. If you are dead downwind or sailing by the lee the kite will blow out away from the boat and go into the water (which can then shrimp). Bring in the pole and cleat the tackline so it doesn't get caught under the deck and in the bilge board box.

Mexican (approaching the leeward buoy on starboard tack, then jibing): Drop the windward board before starting the jibe. Trim the spinnaker sheets hard so the clew is within reach. Then, gather the foot after the tack is uncleated and as the skipper turns into the jibe. As the boom comes over, release the halyard, which allows for some pressure on the spinnaker to keep it pressed into the main and from falling into the water. The boat needs to be at about 150 degrees to true wind as the jibe is completed which gives the ability to head up on port jibe slightly so that the asymmetrical stays on the deck. Then sail on port tack to the mark making sure the crew can sit on high side as the boat will rapidly power up. Then the pole is brought in and the tackline cleated.

Leeward (approaching a starboard gate buoy on starboard tack): Head downwind and trim the spinnaker sheet in hard to the block. Release the tack and gather the foot of the spinnaker quickly. The halyard is then slowly released with some pressure so the spinnaker doesn't get blown out or fouled in the rigging. Quick hands are needed to get the spinnaker in or else the risk of shrimping greatly increases. Stuff the spinnaker in the bag, round the buoy, bring in the pole, and cleat the tackline.

Docking

Do not trim in too much, this will inhibit steering ability. You WILL crash.

Scows move very fast and reactions need to be quick

Do not hesitate to backwind the jib or main.

Get a paddle out and be ready to either fend off some or paddle in the last few feet.

If shore bound, have the crew get out and fend off. Crews, take the orders of your skippers

Fine Tuning / Racing

Tuning the Rig

Attach a tape to your halyard and hoist to top of mast and latch your halyard ball. Hoist your jib and latch to the middle ball position. From this point, measure to the intersection of the deck and transom to get the correct reading for mast rake. The resulting distance you are trying to achieve is 28'3" for all conditions. This should be marked by black tape or marker on the mast rake line in the boat. The Loose gauge is one way to get a number reading on your shroud tension rather than using the hand tighten or wrench it down method. Reading the Loose gauge will let you know your exact tension for different wind conditions. 0-10 mph: Your shroud tension should be 200lbs on the Loose Gauge or just past hand tight. 10-25mph: Shroud tension of 300lbs will help keep the rig straight in the boat. This is past hand tight on your staymaster. Hoofers' I-20s shrouds have already been rigged and tensioned correctly, please DO NOT adjust them unless you are racing, and then return them to nominal.

Jib Luff Tension

The jib luff tension should generally be just tight enough to remove any small wrinkles coming diagonally off the luff for a rounded easy to steer the I-20. There are two exceptions, in medium air (6-12mph), use slight diagonal wrinkles or crow's foot. This flattens the luff, moves draft aft and allows you to point higher at top speed. Second, in heavy air (20+mph) over-tension the luff to move the maximum draft forward and straighten the leach but don't overdo it. The resulting jib shape keeps your boat flat and driving.

Jib Traveler (Jib Car)

For light and medium conditions, set the jib track 14" off of midline of the boat. In heavy conditions drop the jib car down 17" from midline. This will help open the jib and keep the boat driving. Hoofers boats should have these measurements marked with tape on the deck.

Jib Sheet Tension

Generally, you are sheeted correctly if the middle batten is parallel to the centerline. Trim slightly to point high or ease slightly to accelerate. Use the upper window in the main to be sure the leach ribbon on the jib is not stalling/flogging.

Mainsheet

Ease for power after tacking and when sailing in rough waves which slow the boat. Trimming hard is for accelerating in a puff or sailing on flat water, hard trim will help the boat to sail faster and higher. To become more sensitive, observe the relationship between the top batten, mainsheet tension and boom angle from inside the cockpit and halfway back under the boom. The use of the tell-tales on the leech of the sail as well as the angle of the top batten is guides to the skipper for mainsail trim. In light wind conditions, the mainsail should be trimmed to allow the top batten to be just to leeward of parallel with the boom. In medium breeze (5-12mph) the sheet tension need to be tighter and the top batten should be parallel with the boom. Exceptions to the parallel rule are in very light and very heavy air where the best speed is with the top batten angled outboard from 5-20 degrees. In medium air and choppy waves you will want to accelerate easily, so ease the mainsheet enough to twist the upper batten to leeward 5-10 degrees. The mast will straighten slight making main fuller and more powerful. Finally, in medium wind and flat water you can go fast and point high by trimming so the top batten is angled 5 degrees to weather of the boom until

the boat becomes overpowered. The tell-tale on the leech should be flowing about half of the time. As the wind increases, the skipper can pull the backstay to open the leech of the sail and de-power the sailplan.

Backstay

The backstay is a primary sail control. This control will help you keep the boat in balance and on its feet. The tension of the backstay will depend on the overall conditions you are racing in. The skipper will use the backstay to control the helm and angle of heel for the boat. In heavier wind, tighten the backstay more to move the mainsail aft. Generally in medium airs when you sheet the boom to the center of the boat, tighten the backstay until the upper batten is 12" to 18" off the backstay. Trimming harder tightens the leech as does easing the backstay. Never sail with the leech closer than 12" to the backstay at the top batten.

Vang

Up to 10 mph the vang should be loose. Between 10 and 15mph trim the mainsheet to the top batten parallel rule and take up the slack in the vang in case you have to ease quickly in a strong gust. The increased vang pressure will push against the lower mast and flatten the lower third of the sail while slightly increasing the twist at the top batten by about 5 degrees. As the gust passes trim the mainsheet again to quickly power back up. Too much vang pressure reduces twist, overflattens the main, causes neutral or even lee helm which in turn needlessly reduces pointing ability. However, used properly vanging in gusty wind and choppy waves will increase your acceleration and keep the boat in the groove at a constant angle of heel.

Traveler (Main Car)

The traveler in light winds should remain at center. An exception would be at the start of a race when the cars may be moved slightly to weather. As the wind builds the crew should hike hard to maintain a heel angle of 15-25 degrees and leave the traveler car at centerline as long as possible. In higher winds, the crew drops the traveler as much as necessary to maintain heel angle (Usually around 3"), but rarely beyond the rudder post. The I-20's balance and pointing deteriorate when the traveler is positioned consistently at the boat's leeward rail. When the wind drops be sure to pull the traveler up quickly to restore balance, power and pointing.

Cunningham

In 1-10 mph winds use no Cunningham tension even though there are wrinkles coming off the mast towards the center of the sail. These wrinkles show that the maximum draft is 50% aft for power and pointing. From 11-18 mph progressively tighten the Cunningham so that only slight wrinkles are present. Above 19 mph when the vang is on hard, bending the mast and making long overbend wrinkles from 5' above deck angling almost all the way back to the clew, you should pull the Cunningham down 3-4" below the no tension position on the mast. This will smooth the lower luff, bend the upper mast and put the maximum draft position at around 40% aft.

Outhaul

Outhaul tension should be tight enough to remove all wrinkles coming up from the boom when sailing upwind in light to medium wind and flat water. This tension opens up the lower leach, flattens the lower batten area and lets you trim harder without closing the upper leach. In light air and chop power up the main by easing the outhaul approximately 1" so that slight wrinkles

appear coming up off the boom. Use maximum outhaul in heavy air so the cloth along the boom is stretched parallel to the boom and even stands up slightly.

Bilgeboards and Balance

Upwind

The leeward board should be all the way down. It should not be necessary to bring the board up to reduce weather helm in strong air, since the degree of helm should be controlled by other means. The windward board should, of course, be up at all times.

Downwind

The leeward board should be 30-50% down. The windward board should, of course, be up.

Balance

Fore and Aft: It is important to avoid sailing with the transom buried or submarining. With a heavier skipper and a lighter crew it is easy to have the balance too far aft. As a result, attention must be paid to keeping your weight forward if at all possible. As the air increases or in larger waves, it can be beneficial to adjust your weight further aft. As the air decreases or in smaller waves, it is beneficial to adjust your weight further forward.

Laterally

Regardless of the point of sailing, the I-20 should normally be heeled such that the leeward board is vertical in the water. This occurs when the lower edge of the rubrail is at the water surface. Decrease heel in gusts or when attempting to initiate planing, and increase heel in lulls or when attempting to cross through a large wave or motorboat chop.

