

Rig Set Up and Tuning Guide for U.S. Spars Rig Hunter 31 B&R rigs

Hunter 31 B&R rig set up:

This guide will assist you in the preparation and installation of your Hunter 31 mast. On receiving your Hunter you should unpack and examine the mast and rigging, checking for damage or missing components.

The first step in the mast set up is dressing the mast with the spreaders and standing rigging. With the mast totally unpacked you will need to install the spreaders to the through bar system... There are two bolts on each side that connect the spreaders to the bar. Making sure the bar is evenly protruding on each side of the mast, slide the spreaders over the bar and secure with the 4 screws and nuts, making sure the bolts are tight and there is no movement on the bar.

The first piece of rigging to connect is the forestay. This has an eye at the top end which fits into the toggle in the mast fitting ... Check that all split pins are doubled over and the legs of the pins are not going to catch on halyards or sails, you can use a sealant around any split pin to ensure nothing will catch on them.

The D3 (top part of the cap shroud) is next. This has a stemball and backing shell at the top end. This is inserted into the hole in the mast and pulled back against the mast wall and secured with a 6mm screw. The bottom end of this wire has a toggle which goes into the 2nd spreader tip. When you fit this toggle onto the outer pin on the spreader tip you will need to fit the eye at the top of the V2 (mid part of the cap shroud) at the same time, the V2 eye fits inside the D3 toggle then the pin passes through both fittings. The bottom end of the V2 connects to the outer pin on the 1st spreader. The D2 (inter shrouds) has the same top fitting as the D3 and these are installed the same way with the bottom end going onto the inner pin of the 1st spreader. LEAVE THESE LOOSE until you have tuned the rig, then go up to the 1st spreader and tension.

The D1 has a stemball and backing shell at the top end which fits onto the mast just below the 1st spreader. The V1 eye connect to the outer pin of the 1st spreader inside the toggle of the V2. Both D1 and V1 then connect to the turnbuckles and boat chainplates.

The RD1 & RD2 (Wire running from the spreader tip back to the mast) have eyes at the top, that fit onto the inner pin on the spreader tips. The lower ends have turnbuckles and backing shell. You need to unthread the turnbuckle completely then install the backing shell with the threaded part into the hole in the mast, then re connect the turnbuckle. This wire may seam tight but as the rig is tensioned it will allow you to tighten the RD turnbuckles. As with any turnbuckle once you have enough thread showing in the body to install the split pins the turnbuckle is safe.

With all the rigging connected to the mast, you can crane the mast onto the mast step .Take care here not to damage the mast step when the mast is lowered in place. With the crane still holding the mast, connect the 5 turnbuckles to the chainplates. Adjust the turnbuckles so you have thread showing in all the turnbuckle body's before you disconnect the crane. Always check the mast is secure before disconnecting the crane. Failure to do this can result in the mast falling which can cause very serious injury, so always check with your crane operator that they feel satisfied to release the crane. Once the mast is up on the boat and the crane is disconnected, the next step is tuning the rig. You will need to check the mast is straight on the boat looking from the bow. You want no bend or lean to port or starboard.

Rig Set Up and Tuning Guide for U.S. Spars Rig Hunter 31 B&R rigs

The mast needs to be raked aft check your owner's manual or contact Hunter for rake. You check this using the boom lift halyard with a weight tied to the end and measure at the boom height from the back of the mast to the boom lift halyard. To increase rake you will need to loosen the forestay; to reduce rake you will need to tighten the forestay. If you find that adjusting the forestay is not affecting the rake then you may have the side shrouds too tight which will not allow the mast to move.

Once the rake is set, the mast's pre-bend is now induced. We recommend 2". Pre-bend, this is important to stabilize the center of the mast. The bend is induced by tensioning the V1 cap shrouds and the RD shrouds, as the mast bends you may need to loosen the D1 (lower shrouds) to allow the mast to bend. You use the boom lift in the same way as you did with rake but hold it against the mast at the gooseneck height and look up to the center of the mast and it is here that you are looking for the distance from the back of the mast to the halyard. Without going up the mast, you will have to use sight to establish the bend. Once you have the correct bend, you can take up some tension on the D1 to lock the bend in place. We have made up a simple guide using the Loos gauge that will assist you in tuning the rig.

Rigging tension using the Loos gauge these are guidelines only.:

Forestay 20 on gauge or 18%

D3 19 on gauge or 15%

V2 19 on gauge or 15%

V1 20 on gauge or 18%

D1 19 on gauge or 15%

RD1 & 2 = 12 on gauge or 6%

D2 12 on gauge or 6% (these are left loose until the rig is tuned)

These numbers are a guide to correct set up, but it is advisable to re-check all of your rigging regularly as tuning is not a one time deal. It is an ongoing procedure and great care must be taken to insure the rig is safely installed and tuned. It can be advantageous to have a qualified rigger inspect your rigging regularly to insure you have a safely tuned rig. This will also insure both your boat and rig are performing at their best.

Installing the boom:

Once you have unpacked the boom and checked it for shipping damage, you will remove the connecting clevis pin at the inboard end and slide the forks at this end over the gooseneck toggle on the mast. Push the connection clevis pin through both fittings and secure with the split pin.

You can now connect rigid vang to the eye under the boom, then run the inhaul line over the block which is just forward of the vang the outhaul line and mainsheet are already installed in the boom.

Rig Set Up and Tuning Guide for U.S. Spars Rig Hunter 31 B&R rigs

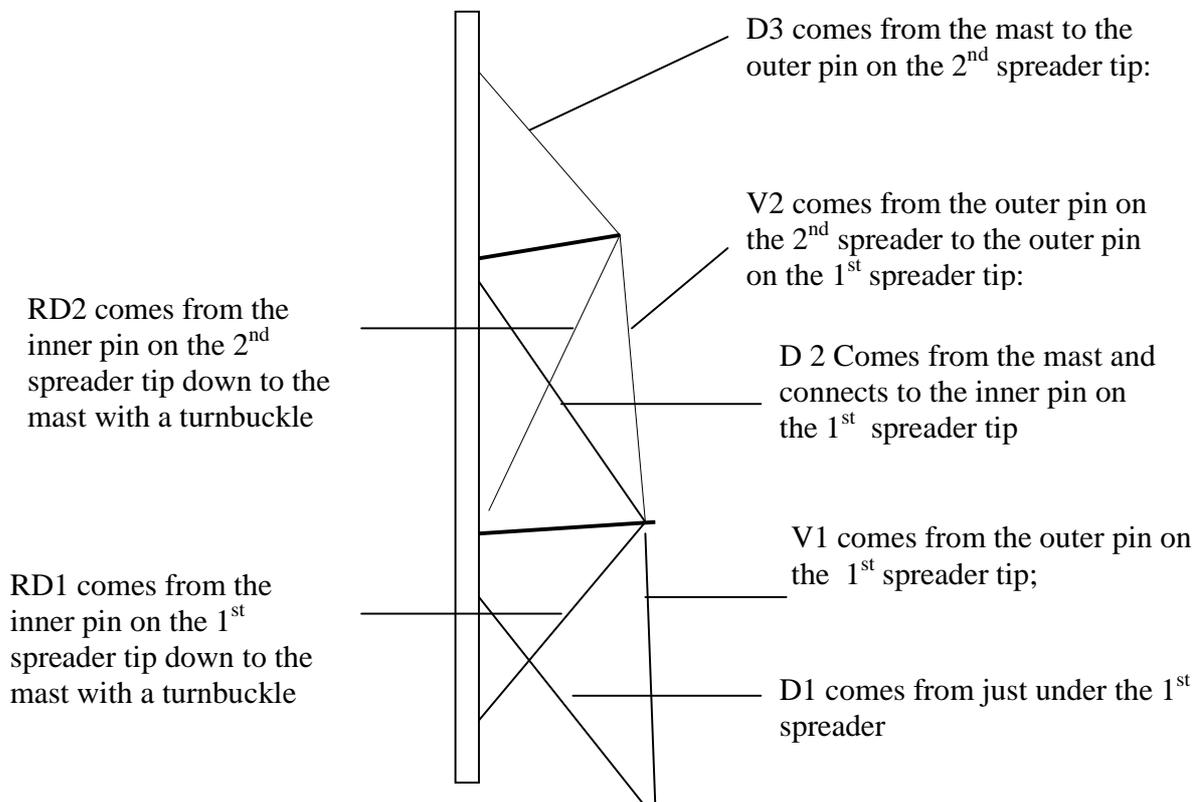
“Tips for rigging the Hunter B&R masts”

We have compiled a few tips on the rigging and set of your mast, we hope these help make your sailing experiences as enjoyable as possible.

The B&R rig on the any Hunter is made to a high tech specification and needs a little time to get set up correctly, once you have the rig up and tuned you can then relax and simply undertake a routine maintenance schedule.

Rigging:

The drawing below will help identify the components in your rigging package



There are NO link plates involved with the rigging on your Hunter 31 the rigging all connects directly to the spreader pins.

The headstay connects to a toggle in the combi unit.

Rig Set Up and Tuning Guide for U.S. Spars Rig Hunter 31 B&R rigs

You will find that the spreaders may need to be physically bent up to connect the D2; also the RD's may seem very tight and may need two people to connect the turnbuckle.

With the mast up and a small amount of pre-bend in the rig, you need to obtain the correct mast rake. This will induce a gap between the front of the mast and the step. Once the rake is established then you can take up the RD1 to bring in a little more pre-bend, this will push the front of the mast down to the mast step.

If you have any questions regarding this or any of our products you can contact our technical department for help and advice. We are always happy to talk you through any part of your rig to ensure you get the maximum enjoyment from your boat.

U.S.Spars Furling Mast

Installing The Outhaul Rope:

This rope attaches to the front of the boom traveler, it leads around the clew block in the mainsail, underneath the pulley on top of the boom traveler, around the sheave in the boom outhaul end casting, through the halyard exit under the boom (or over the sheave in the front end of the boom) through a pulley behind the kicker and forward to a swivel pulley at the base of the mast. This leads aft in the same way as the furling rope.

Installing The Furling Rope:

Inside the drum underneath the gooseneck it is possible to see the coils of rope wound on the furling drum. Make sure the rope is fully wound on the drum then unwind three turns. Lead the rope from this slot around the pulley situated under the boom just in front of the kicker/boom vang fitting, then through the swivel pulley attached to the mast base and back to a self-tailing winch on the coach roof via the halyard organizer.

Installing The Mainsail:

Open and remove all four inspection covers. At the top set of openings you will see the main furling foil and below it the foil connection rod that connects it to the furling drum. Feed the head of the sail through the mast slot and into the main foil. Lower the main halyard down to allow the shackle on the halyard swivel to be attached to the strap sewn into the head of the sail using an allen key.

Continue to feed the sail into the slot whilst the main halyard is being hoisted. Do not attempt this with the wind astern. (This task is best attempted in little or no wind). Once the sail is hoisted to a point where the tack web loop is almost level with the large tack shackle stop. You now have to back the remaining luff down the foil from the sail entry until you can connect it to the tack shackle. It is important to have the full length of the luff in the foil form shackle to shackle with no cut away below the sail entry. Connect the bottom web of the sail to the base of the furling extrusion with the shackle provided, by gaining access through the lower inspection holes. Please note that this tack shackle also connects the furling extrusion to the furling drum.

Rig Set Up and Tuning Guide for U.S. Spars Rig Hunter 31 B&R rigs

Refit inspection covers. Complete the installation by applying moderate tension to the main halyard.

Furling The Sail:

Release vang and mainsheet so that the leach has little or no tension.

Maintaining a slight tension on the outhaul line, furl the sail into the mast with the inhaul line try and keep the wind ahead. (A slight pressure from the wind will prevent creases in the sail).

Insure that the furling drum has two or three turns of rope left on it when the sail is fully furled.

The sail will only furl as far as the reinforcement patch.

Changing The Furling Rope:

Open the lower inspection covers and remove the tack shackle. This will disconnect the furling drum from the furling foil. Remove the machine screws holding the furling mechanism to the mast. These are located two at the top of the drum and two at the bottom of the drum. On some models there will be two additional screws or rivets on the side of the mast to be removed. Using a large screwdriver lever the furling drum away from the mast at the bottom end. The furling rope is retained by a simple knot inside the furling screw push the rope towards the drum and the knot will appear at the bottom of the furling screw. Undo the knot remove rope and replace. We recommend a 10mm braid on our larger gears (Beneteau 40 to 46) and an 8mm on our smaller gears (Beneteau 31-37) this braid must be of a good quality that will not flatten. This operation is made easier with the sail removed.

Maintenance:

U.S.Spars furling masts require minimum maintenance.

The boom traveler should be flushed with detergent and fresh water regularly.

The furling rope should be replaced every four years or as required. Clean and flush top and bottom of furling mechanism regularly and spry with WD 40 or Harken lube (the ball bearings in the furling mechanism and halyard swivel are all stainless steel so need minimum maintenance).

Remove mainsail every year for inspection and every 3-4 years it is recommended that you let your local sailmaker inspect and service the sail.

Trouble Shooting:

When unfurling the sail if there is resistance for the boom traveler to move, the most likely course will be excessive mainsheet or vang/kicker tension. Check also for friction with in the halyard organizers or at the mast base blocks, if these do not move freely it will cause slowing of the gear.

If the sail is not new there may be localized hardening of the head reinforcement, or fraying at the leach, which can cause friction. It is worth having the sail checked every year to avoid such problems.

Rig Set Up and Tuning Guide for U.S. Spars Rig Hunter 31 B&R rigs

When unfurling the sail if there are creases originating at the luff, and if these cannot be removed by increasing the main halyard tension, the most likely cause is that the sail maker has made the luff too long, (too much halyard tension will also cause friction at the halyard swivel).

Alternatively, the sail may have been furled with too much kicker tension.

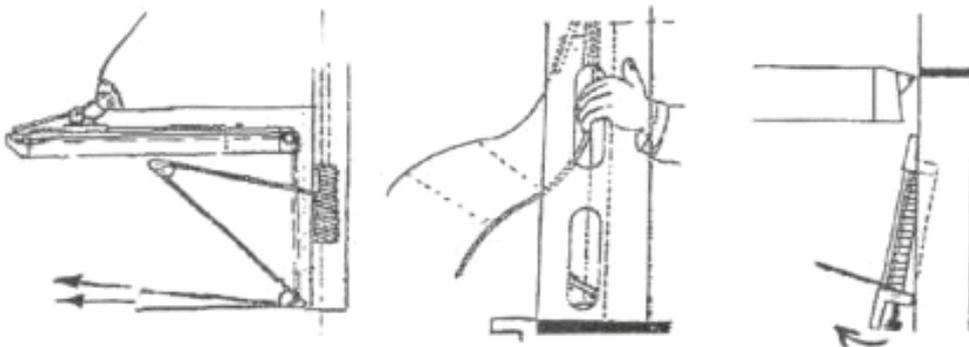
With any furling mast it is important that pre bend be kept to a minimum, although a small amount of bend can help stabilize the middle of the mast the straighter a furling mast is the better it will work, please refer to our tuning guide for help with mast set up.

If you are having ongoing problems with furling it is a good idea to remove the sail and then try turning the furling system to establish if your problem stems from the furling system or the sail. If you find the system works well without the sail it is advisable to have a sailmaker check the sail.

If you find the system is not turning as free as it should then removing the drum is advisable, with the drum removed you can clean and inspect it for damage. If you have time you can send the drum to our facility in Florida where we can service the system and replace any necessary parts. The base cost for this service is approximately \$120.00 plus return shipping.

It is necessary to change to furling inhaul line regularly; this line can harden and flatten after just a season or two. If this line is not inspected and replaced when required it can jump the grooves in the drum and damage the back plate. We recommend the use of a good quality line with high abrasion resistance, your system will come fitted with metric line but if you have to use imperial line then replace 8mm with 5/16" and 10mm with 3/8".

One thing to keep in mind when furling or unfurling is that you are trying to keep equal tension on the foot and leach of the main, if one has vastly different tension the sail will furl uneven. Releasing all leach line tension will help when furling.



Rig Set Up and Tuning Guide for U.S. Spars Rig Hunter 31 B&R rigs

U.S Spars Routine Maintenance for In-Mast Furling System

Although your U.S Spars mainsail furling system needs minimum maintenance there is a need to implement a schedule of preventative service. From the first sail of your boat you will need to start your routine maintenance schedule to keep your furling mast in top working order. These simple steps that follow will keep your system working in the best condition possible, giving you years of service.

1. Once your mast is exposed to the elements, air born particles will start collecting on the ball bearing races in your furling drum and boom car. These particles can compact around the bearing housing and significantly disrupt the smooth operation of your system. We recommend that you flush the bearings in the drum or drive unit located in the aft face of the mast just below the boom. You can see the ball bearings at the lower and upper end of the drum; it is these bearings that you must flush. You will get the best flushing results if you unfurl and furl the sail while you flush the bearings. It is best to carry this out with no or little breeze as possible. All you need to flush is fresh water if you happen to be in a marina then a hose can increase pressure which will help disperse any debris build up. Your ball bearing boom car should receive the same treatment. You should also clean the boom track as regularly as possible.

2. The halyard swivel, which is the unit that the head of your sail attaches to and is then raised with the sail, needs very little maintenance as it is well protected by the mast. As part of your maintenance schedule you should remove your mainsail every year and at this time the halyard swivel will be lowered, you can access this unit from one of the four inspection holes above the boom. You can see the lower bearing set in the swivel, this needs to be flushed as you did for the drum.

3. After flushing you will need to lubricate the bearings of the drum, halyard swivel and boom car. There are many different lubricants on the market, we have found that simply using WD40 on the drum and swivel works well, you should be careful of over spray with this product. For the boom car which has Torlon bearings we have found Mc Lube works well. You should avoid any heavy grease lubricant as this will attract more dirt and debris.

4. Changing the furling inhaul line that wraps around the drum is generally needed every couple of years, but this does depend on the condition of the line. If you notice a deterioration of the line then you should replace it. You will need to identify your system to establish the correct line size. Our small unit used on your Hunter 31 uses 8mm or 5/16" line you will need 60' of line. To replace the line you will need to remove the mainsail, the pull all the line off the drum, you will see a hole on the side of the mast in line with the end of the furling drum, through this hole you will see a knot that secures the line. Use a hook or long nose pliers and pull out the knot and undo it. To install the new line to the reverse of the removal.

5. To re-install a new furling line the procedure is the reverse of the line removal instructions. Push the new line in the drum and out of the hole in the side of the mast. Tie the knot, and pull the line back into the mast, at this point you will need to wind turns of line on the drum, this is

Rig Set Up and Tuning Guide for U.S. Spars Rig Hunter 31 B&R rigs

done by turning the foil through one of the side inspection holes above the boom. It is advantageous to completely fill the drum with line, if you discover after sailing that you don't need a full drum you can pull some turns off the drum.

6. After a few seasons of sailing you may decide a full service of your furling drum would be of interest. We offer a service whereby you can completely remove the drum and send it to our factory in Florida for a full strip down service. Your drum will be completely stripped down and re-built; the line will be replaced along with any worn parts. The service will take no more than a day, and with UPS air services we can have it back to you the very next day. To completely remove the drum follow the instruction to replace the line, but this time ensure the large tack shackle is removed as this shackle also connects the foil to the drum. As you start to pull the drum away from the mast, keep going, the bottom of the drum will clear the mast, at this point pull the drum towards the deck you will need to support the rod while the drum is being removed, this is best achieved by tying a small line around the foil at one of the inspection windows and then around the mast. Once the drum is all the way out you can lower the foil to the deck, with keel stepped masts it would be best to leave the foil tied. The procedure to replace the drum unit is the reverse of the removal.

7. Your mainsail will need regular inspection for damage. Generally, sail longevity is affected by location, U.V. degradation and use. Having your sail inspected by a qualified sailmaker every two years is a good practice. They can determine if any small items warrant repair and can offer sail cleaning as well.

If you keep your furling system in good order you will have hours of great sailing without effort. The advantage of a furling main comes into its own when you are out on the water, the wind is blowing and your boat wants to be let free and all you have to do is pull that line and hold on.