

## Buying a used 29er

by Oliver Scutt, US 29er Class Association President 2009-

As parent of a keen 29er sailor, and as the owner and maintainer of 5 boats from 3 builders, including a couple that have had very active service lives, I've done quite a few jobs on these boats. This is my attempt to summarize what I'd look for when evaluating a used 29er. I've not focused on the wear and tear items like halyards and sheets since you will probably replace these as a matter of course. Instead, I've concentrated on the expensive or time consuming stuff necessary to get the boat back into racing condition.

The content is based on a couple of responses that I made on Sailing Anarchy to answer the frequently asked question of "what do I look for when buying a used 29er?"

First off, these boats are fundamentally very strong. The boats have long racing lives and gear rarely breaks except through neglect by owners. One of the top US boats, owned by Max Fraser, probably has more travel and regattas on it than any other on the planet. It is numbered in the 200s and has had perhaps 70,000 miles on trailers but has been fastidiously maintained and is in top racing shape. You will find boats ranging from those that have hardly been sailed, through to club boats like Seattle Yacht Club's that have probably been sailed 4 times per week for 10 years with a multitude of novice crews and have the battle scars to show for it, including a collision with a very pointy rowing scull!

### **Hull**

The hull moldings themselves are very strong. I've never heard of any problems with the external skin apart from accident damage and severe groundings or reefs or rocks.

Nevertheless, hulls can go soft and no longer hold rig tension after several hours of sailing. This is most likely because of abuse like over-tensioning the rig, or possibly from some manufacturing defect. If you get a trial sail, tension the rig normally before going out, and test it again when you return to shore. It should be the same. If you can't sail the boat, you can tension up the rig and measure how much the hull bends under tension vs. when not. With a straight edge between the shroud attach points, a good hull will not lift more than ¼ inch vertically from the cockpit floor when put under 300lbs tension measured at the forestay. A bad boat could move an inch. To avoid this problem, boats post-1400 have reinforced mast partners, and boats pre-1400 can retrospectively add up to a 1" square box section reinforcement on the inside of the rear top edge which will do some way towards fixing softness. This is added with the boat upside-down on trestles, and not by removing the mast partner (which you should never do if you want a symmetrical boat).

The most common problem with the hull is leaks around joints or fittings which take on water, especially when capsized. The good news is that most leaks are relatively cheap and easy to fix with no ill-effects. The gunwale (hull-deck) joint is vulnerable to cracking almost anywhere along its length due to boat-boat contact or boat to dock. Also, the transom lip can crack if the boat has been left outside during the winter, nose up, whereby any internal water freezes and splits the joint. The scuppers and toe rail screws are also common leak points.

To find the leaks, use a sponge with concentrated soapy water (washing up liquid/detergent) to wet all the joints while an assistant blows air into the transom plug y mouth via a tube. The leaks are pretty easy to find and will be blowing bubbles. Prior to doing this, tape up the vent hole underneath the Cunningham/gnav turning blocks below the base of the mast. To see if there are leaks anywhere in the centerboard casing, tape up the centerboard slot with brown parcel tape, both top and bottom, and put a pin prick into the tape on one side to see any leaks.

When blowing, do not use an air compressor, just find an appropriately sized piece of vinyl tube, duct tape around it and have an assistant blow into it with their mouth or you'll do major damage. Do this with the boat right side up, as well as upside down. As you work your way around the boat, check every fitting and screw for any looseness. While you are at it, make sure the air hole is working. If not, when you put a hot hull into cold water something will start to leak even if it didn't before.

Finding really hard leaks involves performing the above procedure with the hull under tension, i.e. with the mast up.

To fix hull-deck joint leaks, grind out any dubious material with a Dremel, make a dam around the area with masking tape, syringe in West Systems' G-Flex epoxy with colloidal silica to thicken it, and hold the resin in place with the masking tape till it dries.

You should also go over the inside side tanks/cockpit skin looking and tapping for soft areas or bubbles where the glass fiber skin is no longer supported or stuck to the foam behind. Such areas often have small gel coat hairline cracks as giveaways. The most notorious areas are where the crew sits and where any trailer or roof rack supports have crushed the hull. All areas should be firm. Bubbles can be literally 6" in diameter. A heavy crew crashing around will accelerate any such problems. Unlike gunwale repairs, skin repairs are harder to fix cosmetically as they are so visible, have texture and need to be color matched too. Fixing such repairs involves drying out the areas and injecting micro-balloon laden filler through the skin to fill the void. From my perspective, I'd negotiate much harder for a discount if the boat requires such repairs than for simple leaks.

Other critical areas to check on include (especially when contemplating an XX):

- Rudder mounts (especially the top one). If the top plate or any of its screws are loose, you'll need to remove the scuppers so that you can get at the underside and through bolt it properly. This is tricky involving threading whipping twine, bolts and small hands. While you are in there, you should make sure that the main sheet bridle attach points are sound as this is where the 29erXX rudder gantry is attached. Tip: Only use 3M 4000 (not 5200) to re-caulk the scuppers or you'll have a devil of a job ever opening it up again.
- Mast step - Make sure the mast step is soundly attached, correctly positioned and aligned. There is a class tolerance on its position measured from the forestay position. Look for any stress lines radiating around the rear holes used for the mast bolt that will have weakened the fitting. This

happens if the mast was allowed to twist or fall sideways when being lowered. Many old boats have misaligned mast steps because screw heads protruded, and downward pressure from the mast heel caused fatigue and the heads broke off. For a quick repair, people leave the screw tips in position but are forced to re-position the mast step slightly to one side when remounting it. The proper repair involves drilling out, around and removing the old screws, careful filling with epoxy and reseating the mast step.

- Spinnaker pole attachment and touch points - These areas of the hull wear due to continual movement, abrasion and stress. Make sure the eyes that hold the spinnaker pole down near the bow are solid. If not, the repair is fiddly to through bolt and the only access is through the bow plug.
- Ratchet blocks for the spinnaker, less so for the mainsheet, have finite lives, as do the small blocks on the gnav car
- Centerboard gasket condition. The carpet around the slot has a service life of perhaps 2-3 years. The bottom typically comes unglued when the centerboard is forced in when misaligned, hence pushing the carpet out or folding the edges. If you catch problems early enough, you can clean up and re-glue the carpet with waterproof contact adhesive.

## **Foils**

The foils are aluminum extrusions and can get dinged. The rudder is vulnerable at the waterline to dents if it touches the transom lip, hence best practice is to use a 'tiller preventer' to stop the tiller moving too far to one side. Under the class rules, you can \*locally\* fill and fair the foils to fix the ding.

Foils can also leak due to hitting rocks, will absorb water and hence become much heavier than normal. While it might be possible to dry out the core, and refill with urethane foam, I'm not sure they'd be quite as good as new ones. I've also yet to find a solvent that I dare use to dissolve the urethane foam, since it is not very accessible to mechanically gouge out.

## **Mast**

Problems in a heavily used 29er mast will manifest themselves as loose mast joints or perhaps a bent mast if it has been stuck in the bottom. Other symptoms of heavy use include loose heel plugs, topmast sheaves and spreader roots.

Fortunately, the mast is in three sections which are replaceable individually. Hold the bottom section and try to wiggle the mid-section. There should be barely any play. Similarly, hold the middle section and wiggle the top section. Again, it should be tight. If the joints are loose, you can stave off buying a new mast by packing the joints with thin aluminum from cut up coke cans.

Examine the mast for straightness by looking down the track. Masts can go soft, whereby the bottom section bows around the gnav attach point. While masts can be straightened, they will bend again in short order. To stiffen the lower mast temporarily, you can put a soft metal wedge, or a penny coin,

under the forward edge of the mast heel to restore its shape somewhat when racing. Small broken sections in the top mast track are readily replaced with a new plastic section if required. Glue it in with Plexus MA425. If it is really bad, replace the entire track per the instructions on the US 29er class web site. <http://www.29ernorth...o/masttrack.pdf>

Look over the mast and boom carefully for corrosion due to inadequate washing down after sailing in salt water. Inspect all rivets looking for evidence of corrosion lifting or loosening the fitting. If you end up re-riveting the fittings, make sure you use bigger stainless rivets and re-seat in an anti-corrosion gel (Tef-Gel, Duralac, etc) to slow corrosion. Never use aluminium rivets in carbon fibre, only s/s. Another corrosion point is the hounds bolt that attaches the shrouds to the mast. The stainless bolt runs through an aluminum tube and the corrosion that results can enlarge the holes on the mast sides.

Pay particular attention to the spinnaker halyard block on the topmast. If it breaks, or has broken, the spinnaker halyard will slice a line down the top mast section just like a zipper. If it has been repaired, you will find an extra carbon sleeve over it as a patch but the bend characteristics will never be the same. The class has just voted to adopt an internal sheave to eliminate this problem going forward. We are awaiting the exact positioning and fastening details.

Booms are rarely a source of problems. Look for damage from hitting the shrouds due to the lack of a mainsheet knot. Also check the rivets that hold the mainsheet blocks on.

Check the spinnaker pole for lengthwise cracks – novice crews have a habit of crashing onto them when capsizing. The inboard end can take a beating if it has been allowed to retract and hit the spinnaker halyard turning block under the mast due to the lack of a wedge to deflect it, or a knot to stop it retracting so far. The internal aluminum reinforcement at the inboard end can galvanically corrode surprisingly fast and may need removal, cleaning and reseating in Tuf-Gel.

## **Sails**

Beyond any obvious rips, tears and delamination, the main problems with sails concern batten pockets and broken jib battens. Jib battens break because novice crews right the boat with a jib full of water, and the batten breaks 4" from the luff. The sharp end then makes a hole in the material. The mains suffer wear around the inboard end of the batten pocket. If sails appear milky rather than clear, this is because of degradation in UV light. Do not store sails in the boat without a good cover.

Even if a boat has mediocre sails, this can be a blessing in disguise as it is always nice to have race and practice sets of sails. If you are a beginner then such a practice set will get you through the 100 capsizes before you merit a new set! At time of writing, jibs are ~USD500, spinnakers are ~USD 1000 and mains are USD100. Spinnakers generally wear out the fastest by stretching, but should last at least a season at the highest level of competition. Jibs can last two years and mains (USD1000) three if you have a practice set for general use.

Boat price depends on local conditions. The price is really the sum of hull value (USD 2500-4500 depending on condition), plus mast (500 - 1000), plus sails (0 if trashed -2500 if new), plus trailer, plus

covers. In other words, a cosmetically challenged beater boat might be USD 2500 and a nearly new one about USD 8000, and anything in between. A boat in an obscure area might be \$500+ cheaper.