

Few craft are simpler to rig or more adaptable to sailing than a canoe. They are also excellent for learning to sail. And fortunately, a canoe sailing rig is cheaply made. You can build the one shown here for under \$50.

The rig is easily assembled to the canoe and easily disassembled for storage or paddling. The only part permanently attached to the canoe is the mast step, a block of wood with a hole drilled in it to hold the mast butt. It is epoxied to the bottom of the canoe and in no way interferes with normal paddling.

If your canoe has a beam of at least 30 in., you can convert it for safe sailing. Just keep the sail small so it doesn't overpower the canoe. Compute a safe sail size by multiplying the canoe's length by its width. This will give the approximate sail area. The rig here was designed for a canoe 16 ft. long and 27 ft. wide. It contains 40 sq. ft. of sailcloth and is equilateral, each side measuring 9 1/2 ft. It is a lateen rig.

For sailcloth, use sailmaker's nylon or Dacron. These are lightweight and rot-resistant. Dacron is sturdier but more expensive. To save money you can make the sail of cotton, but it won't last as long or hold its shape as well.

In addition to being the right size, the sail must be shaped so that it bellows in the wind to act as an airfoil.

This is achieved by cutting its three edges slightly convex. First sew the rectangular sailcloth panels as illustrated. Next, select two 10-ft. lengths of 1-in. aluminum tubing for the boom and gaff. Plug the ends of the tubing with wooden dowels. Insert screw eyes in the wood plugs. Connect one end of the boom to an end of the gaff with an S hook. Lay the boom gaff assembly on the sailcloth so that the S hook is at point B in the diagram and the ends of the boom and gaff are at points A and C.

Next, place a 12-ft. strip of supple material, such as sash molding or a lath, against the boom. Arch the strip 3 in. from the boom's center and mark along this line. Repeat for the other two edges.

Cut the sail along the lines. Sew a 1-in. hem on the edges with wedges of sailcloth in the three corners for added strength. With 2-in. sailmaker's tape, or other nonshrinking cloth tape, reinforce the two sail edges that will attach to the boom and the gaff. Use a zig-zag stitch for strength. Now crimp in grommets and lace the sail to the boom and gaff with 20-lb. monofilament fishing line.

Make the mast from an 8-ft. length of 1-in. or larger aluminum tubing as shown in the diagram. You may find that 8 ft. is too long, but you can shorten it later. All the dimensions and positions are indicated on the diagram.

Though you won't have to guy the mast, you must fasten it to the canoe as securely as possible. The wind's force is transferred to the canoe through it. Use a mast thwart and the step or block mentioned before, drilled to hold the mast butt. You can gain additional support by placing the mast next to the front seat and securing it with a U-strap, or drilling through the seat itself and adding a glued reinforcing block.

The method you choose to attach the thwart to the gunwale depends on the construction of your canoe. It will vary, but the method here is for a rolled gunwale of a fiberglass canoe. Short lengths of wooden dowel epoxied under the gunwale reinforce the attachment.

The boom is held against the mast with a loop of 1/2-in. braided nylon line tied between two small screw eyes. Attach the eyes 8 to 10 in. from the end of the boom, though this is variable too. This dimension governs the rake of the boom. You'll want more rake if you sit up on the seat, less if you sit on the bottom of the canoe. Make the halyard from a 6-ft. length of 1/2-in. braided nylon line and the sheet from 24 ft. There are two leeboards, one on each side, secured by a thwart. These cut sideways motion in the water. Ordinarily, the one on the lee side of the canoe is thrust into the water, while the other is up. The exception is sailing before the wind. Then both should be up to reduce drag. The leeboards pivot on the thwart by 1/2-in. bolts fastened with wing nuts.

In attaching the leeboard assembly to the gunwale, use J-bolts or similar hardware so the boards can be moved fore and aft along the gunwale. This is necessary because the distance between the leeboards and mast is critical for ease of handling. This distance varies with the location and amount of weight in the canoe, and must be redetermined each time these conditions vary significantly. Ability to adjust the leeboards to find this critical dimension will ensure that you get the best performance you can.

Modify the steering oar lock to make it hold the blade of the steering paddle or oar vertical at all times. Fit a wooden insert inside the oar lock and cut a slot in the insert for the paddle shank to fit snugly. Epoxy the insert in the oar lock. Slip a pin, strap or short length of nylon line across the top of the oar lock to keep the paddle shank from being lifted out by the buoyancy of the water.

For your first sail, pick a day when the breeze is steady but not too strong (5 to 12 knots is ideal). Attach the leeboards 2 or 3 ft. astern of the mast. Pull on the sheet till the sail is along the fore-and-aft center line of the canoe. Sail off on a heading about 90 degrees to the wind direction. Lower the lee-board. Sit where you find steering comfortable.

Now remove the steering paddle from the water. Note the direction the bow turns with respect to the wind. If the bow rounds into the wind, the leeboard is too close to the mast and must be moved back. If the bow falls off before the wind, the leeboard is too far from the mast and must be moved forward. Adjust the leeboard until the canoe holds its course. •

