We assume that the builder is familiar with the use of epoxy and fiberglass. If not, before you start, please read our on line tutorials. Most of the questions about building a boat or the paddle board with our methods and material are answered in those files. If, after reading the HowTo files, you still have an unanswered question, please post your question on our message board. We usually respond in a few hours.

Our technical support web site bateau2.com features a large number of tutorials and help files about the methods and materials used to build this paddle board. Together, those HowTo files constitute a complete boat building manual for our material. Please read the HowTo files before building your boat.

If this is your first boat building attempt, you MUST read our “Stitch and Glue 101”. That tutorial shows all the basic skills needed to build this paddle board. The tutorial shows a small boat but the techniques are the same than the ones used to build the paddle board. In our building notes, we will not cover details such as mixing resin or building a putty fillet.

**Materials and kit content:**

We will use metric values for plywood thickness.

- 6 mm = 1/4”
- 3 mm = 1/8”
- 4 mm = 3/16”

The kit includes all the plywood necessary to build the SUP14. It does not include some small battens and pieces of trim used as stiffeners. Those battens, especially the sheer clamp, must be in one piece and to ship 14’ long battens is prohibitively expensive. We expect the builder to buy those battens and pieces of trim locally. They are available everywhere and inexpensive.

In addition to the kit, you need:
- 4 pieces of trim for the sheer clamps and chine “logs”: 15’ long, section 3/4” by 1/4”
- 4 trim battens 12’ long, section 1/2” by 3/4”.

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Assembly overview:

- Assemble all long parts with the puzzle joint

- Epoxy glue the sheer clamps and chine battens to the side panels

- Stitch together the two halves of the bottom then add the sides and transom

Copyright 2012 E-Boat Inc.
- drop the framing in the hull shell

- Build inside fiberglass fillets

- Stitch deck to hull

- Flip hull

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- fiberglass bottom side with wide fabric

- flip hull

- fiberglass deck side with with wide fabric
Details, step by step:

Prepare the panels:
Identify the panels.
The hull skin is made from 3 mm plywood. The parts are on 3 sheets of plywood.

The framing is on half a sheet of 6mm plywood. The transom is also on the 6 mm sheet.

The framing parts are easy to identify. The stringers are the long parts with lightening holes. They can only be assembled one way.

The 3 frames have lightening holes and the two narrow pieces are deck beams. Note that the tips of the stringers are rounded. This will make assembly easier.

The frames have notches in the corners for the sheer clamp and chine batten and in the middle, top and bottom, for the longitudinal deck and bottom stiffeners. The notches are larger than the battens for two reasons: you may not find exactly the batten section we recommend and we want a hole between each compartment for drainage and pressure relief.

Assemble all the long panels with the puzzle joints.
The puzzle joints are asymmetrical: the panels can only go together one way.

Coat the edges of the joint with epoxy resin, press them together and let cure.

Epoxy glue the sheer clamp and chine batten to the edges of the sides. For those battens, we use pieces of trim available in home improvement stores.

The preferred size is 3/4" high by 1/4" thick.
The battens extend almost all the way to the ends of the panels: have them end at about 3/4” from the ends. Shorter they will produce a kink where they end, longer, they may interfere with each other during the assembly.

**Assemble the hull skin:**

All panels are pre-drilled for the stitches but the edge battens of the side panels will cover the holes. With a 1/4” drill bit, drill through the batten using our pre-drilled holes as pilot holes.

Stitch together the two halves of the bottom. Stitch the sides to the bottom then the transom.

As always with our building method, make certain that the panels are free to take their shape without pushing against each other. A small gap can be cut with a box knife wherever necessary.

All this is done with loose stitches: we will tighten them later, after the installation of the framing.
Drop the keel stiffener in the hull but do not glue it. The keel stiffener goes from the transom to the forward frame but not further.

**Framing:**

Install the framing in the shell.
(Some builder may prefer to install the framing before stitching the sides to the bottom: it does not matter). Start with the stringers. Drop the 3 frames in the stringer notches. The frames and stringers should be flush at the deck side, sand the notches if necessary.

Add the three deck beams, in their notches. The deck beams are cut to fit between the 1/4" thick sheer clamp (trim).

**IF** you use a wider sheer clamp than what we recommend, the deck beams must be cut to fit. For example, if you use 1/2" thick sheer clamp, you must shave a 1/4" off each side of the deck beams. This is only for the two deck beams. The frames have wide notches to clear even a large sheer clamp.
Glue/fillet together stringers and frames, use a carpenter's square.

The best method is to use the epoxy glue cartridges supplied with epoxy/glass kit.

Tighten the stitches evenly all around, pay attention to general fairness. Epoxy glue the "keel" batten.
Build the inside fillets:

Watch the vee shape of the bottom close to the bow. You will have to push the bow frame and stringers down to get the correct shape. Lift the tip of the bow (block it) and use weights to push the forward frame and the tip of the stringers down until the stringers are flush with the sides.

Build all the inside fillets between hull and framing and between all hull panels.

For a heavy duty board, build up a couple of glass layers in the tip of the bow.

Drainage and Venting:

The hull will be watertight but we want a way to drain it in case of condensation and also, we want to avoid damage that would result from the air in the hull contracting and expanding. The air inside of a board left in the sun will expand and if there is no escape path for that air, the board under pressure may split at the seams.

We will show, in the accessories section, how to install an expansion plug and a drain plug but for those to work, all compartments inside the board must communicate.

Before installing the deck, verify that the inside of the hull will properly vent and drain. We expect all compartments to drain in each other through the notches in the frames.

For drainage, look at the inside volume as made of three lengthwise compartments separated by the stringers.

Check that the gaps in the corners of the frames and in the middle, around the keel, are not blocked by an excess of epoxy glue.

The board will drain through one drain hole in the transom, in the middle.

Condensation water must drain from the two side compartments to the middle through limber holes in the stringers, at the transom.

Check that the transom limber holes are not clogged by epoxy glue.
In the transom, drill a drain hole to the size of your drain plug. Epoxy coat the edges of the hole.

**Deck:**

The deck will be epoxy welded to the sheer clamp and to cleats glued to the framing.

The deck panel is fitted with a longitudinal stiffener along the center line: epoxy glue one of the 1x2” by 3/4” battens there. The deck may also require some backing plates. See the options section at the end of this file for a list of suggested accessories.

Before welding the deck to the hull, decide if you want options like heavy duty handles or a small storage box under a deck plate. In that case, glue backing plates where necessary.
Bungee cord eyelets can be glued to the deck and do not require backing plates. Backing plates for handles can also be installed later on the outside face of the deck.

With the inside clean and clear, install the deck on the hull and framing. Apply epoxy glue to the cleats and all around the sheer and transom.

Drop the deck on the hull and stitch.

At the bow, the stitches will slightly pull the sides open. Wait for the epoxy to cure.
Outside fiberglass:

Flip the hull, round the edges, fill the small gaps and fiberglass the bottom. The bottom fiberglass should cover the bottom in one piece and go up the sides and transom a little bit higher than half way up.

If you are worried about crinkles in the material, you can fiberglass the bottom in tow pieces overlapping 2" at the keel.

Wait for cure. Flip the hull.

Fiberglass the deck the same way than the bottom with a small overlap, about 2".

Fairing and painting is done the same way than on our boats but keep the weight in mind. As designed, the SUP14 should weigh a little bit less than 40 lbs. Do not add excessive weight by using too much fairing putty.
Options and accessories:

Skeg:

The SUP14 can be fitted with any type of fin including removable fins. The pre-cut kit includes templates for a pair of fixed fins that are sturdy and simple to build.

Use the templates to cut 3 layers of 3 mm per fin, epoxy glued and profiled. We do not cut all the layers because many builders will have their own idea about the perfect fin. Feel free to draw any other shape.

The fins are epoxy glued to the board with a generous fillet, about 1/2" wide. We locate the trailing edge about 18" from the transom, spaced the same way than the stringers: 5" from the center line.

You can also install a fin box for a removable fin. That option must be decided upon before you deck the hull. Purchase your fin box, cut the bottom to fit and glue it to the bottom with our polyurethane sealant. We prefer not to epoxy the box to the hull. In case of a crash with the fin in place, we prefer the sealant to fail than to splinter the bottom.
Paddle:

The paddle length should be proportional to your height (H). A good rule of thumb is total paddle length = H + 8". A couple inches less for surf, a little more for racing but this is a touring SUP, let's stick to 8".

The drawing above shows a typical paddle. Feel free to adjust the dimensions. Standard diameter is 1.125" with a handle about 4" wide.

The blade dimensions and shape above are for a standard blade, feel free to shape it to your preference.
To fabricate the paddle, we recommend carbon fiber. You will become quickly tired of a heavy wooden paddle. See our tutorials: we use a foam mandrel: AC insulation around electrical conduit.
Final diameter 1.25”.
An alternative is Al tubing with a wood blade.

At our forum, there is a detailed thread about making a carbon fiber paddle. It was posted by Jim Wright:

Hatches and storage:

The SUP is small but can be fitted with some storage compartments. The most common one will be a deck plate with a bag.
Do a search online to see a picture, keywords “Beckson plate storage bag”. Those plates with bags are available in different diameters. They cost less than $ 20.00.
Buy them before installing the deck: you will need a backing plate to install them.
The ideal backing plate is a plywood ring about 2” wide.
A fishing crate can be lashed to the deck. There are many models available online (search for fishing crate) but they are easy to make from a milk crate fitted with some rod holders and maybe a seat.
Double the deck thickness where the crate will sit.

**Non-skid:**
We used with good success our KiwiGrip non-skid paint on the prototypes. Use a smooth cigar style roller to apply it. The KiwiGrip raised roller creates a surface that is too rough for a board but a foam cigar roller is just right.

An alternative is to apply a non-skid pad, epoxy glued to the deck. Kits are available online. Search for traction pad or grip pad.

**Handles:**
A single or a pair of handles can be epoxy glued to the deck (with a backing plate under the deck) but a carry sling is much nicer. No need for handles and the sling goes over your shoulder.

**Bungees cords and leash:**
Do a search on Amazon with the keywords “kayak deck accessories”. You will see kits with eyelets and bungee cords for less than $20.00. Most fittings can be epoxy glued to the deck.

**Drain and vent plug.**
Any small boat drain plug will work. They are sold at BoatBuilderCentral.com.
If you are careful and always remove the drain plug, you don't need a vent plug but it is much safer to have one.
A simple rubber plug in a small hole in the transom will work as a safety high pressure plug.
Small tapered plastic plugs are available in hardware stores or use a swim ear plug.
A better solution is a Gore Tex plug. Gore Tex keeps the water out but breathes. You can make your own but for $12.00, you can get the Greenlight vented leash plug. It doubles as a leash attachment. See Greenlightsurfsupply.com.

**Rod holders:**
Several manufacturers offer rod holders and other mounts for SUP’s. I recommend the Scotty accessories. They are bolted to a mounting pad.
This means that you will glue a mounting pad to the deck and bolt a removable rod holder to that pad. The pads are about 7” long but thin enough to be out of the way when not in use.
Those accessories are available on Amazon.com or at nrsweb.com.

If you are serious about gadgets, holders for cell phones and even for a GPS are available!

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