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March 30, 2020



## *Tools You Can Make.*

**For Building Your HomeGrown Surfboard Kit**

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## Appendix C > Tools

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This section has drawings and descriptions of tools you can make yourself, as well as some tips for caring for tools.

### MAKING TOOLS

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## MAKING TOOLS

Some of the tools described here are those we have made for use in the Grain shop. In this appendix, we have included versions that are less complicated and time-consuming to build. You can find some more suggestions for versions of these tools on [www.GrainSurfboards.com](http://www.GrainSurfboards.com).

We use recycled or re-purposed materials when making shop tools and furniture whenever possible. Many of our shaping stands use material copped from dumpsters or otherwise salvaged.

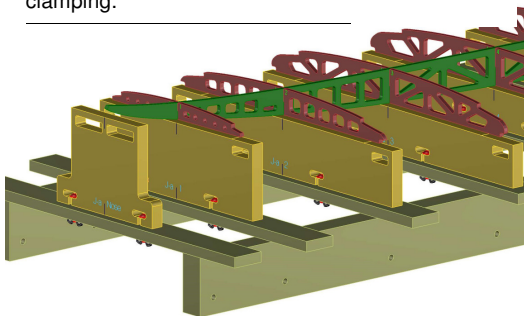
These tools are listed in the order that you'll need them. Rocker and Laminating Tables are designed to rest on sawhorses. You'll want to be able to get all the way around the tables.

### **TOOL 1: LAMINATING & ROCKER TABLE**

The rocker table is a base for a lot of the glue-up that will happen during the construction process - in particular, gluing the frame to the bottom plank panel, and gluing the top plank panel to the rest of the board. It is comprised of a form that matches the rocker of the board. Its design accommodates the use of many clamps that hold the board together while it is setting - these can be pipe clamps, straps, or makeshift struts (called "toms") that hold the parts being glued down by wedging against the ceiling. We have seen many creative methods developed.

The laminating table is used for plank layout and gluing the planks together into panels.

**FIGURE C-1.** Rocker Lift Kit with plywood stations that are mounted on the laminating table. Bottom contours are cut into the top and there are strategically placed cutouts for clamping.



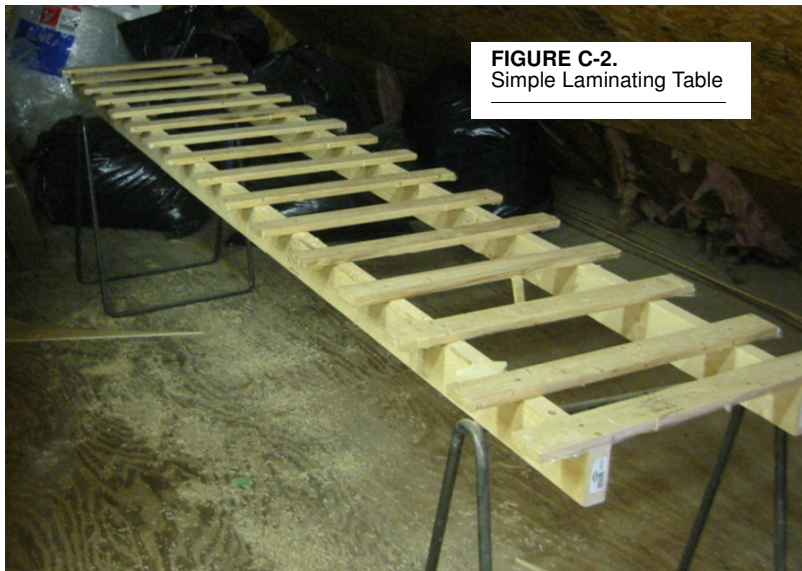
The rocker table is essentially a form that matches the rocker of the board. It allows you to clamp the whole setup to the table, eliminating stress on the frame while the glue sets up. You'll create the rocker table on the laminating table to save space, time and materials. The ladder-style Laminating Table outlined below can be paired with a Home Grown Rocker Lift Kit which you'll find for sale in the store at [GrainSurfboards.com](http://GrainSurfboards.com). Rocker Lift Kits are precision-cut plywood stations that mount to the Laminating Table. They have the exact contours of the board's bottom cut into them and they are screwed or bolted to the Laminating Table's "rungs". It is entirely unnecessary to use the Lift Kit, but it definitely saves time and avoids the guess-work of shimming the stations to match the bottom contours.

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### Tool-Tech 1.1: Simple Ladder-Style Laminating Table

**What:** This table is made from straight lumber that is stiff enough to span across a couple of sawhorses but not deflect with the weight of the clamps that you'll use on it. In most cases, you can use 2x4 lumber, but really, anything that's straight will do as long as it's well enough supported along its length so that it doesn't sag. You can dismantle this and use the lumber for other purposes when you are done with it.

**How:** It's as easy as it looks. The "rungs" should be 24" or 25" wide. Use two screws each side to hold them down (at least two on each end) and space them so that they land directly under the notches in the keel - that way they'll line up with the frames when they're being clamped. When you're spacing them, remember that you'll need some support under the nose and tail as well. It is good to have at least six inches (6") of room in forward of and behind the keel. If that's a problem, you can always prop up from the floor to get the last bend into the bottom planks at the ends.

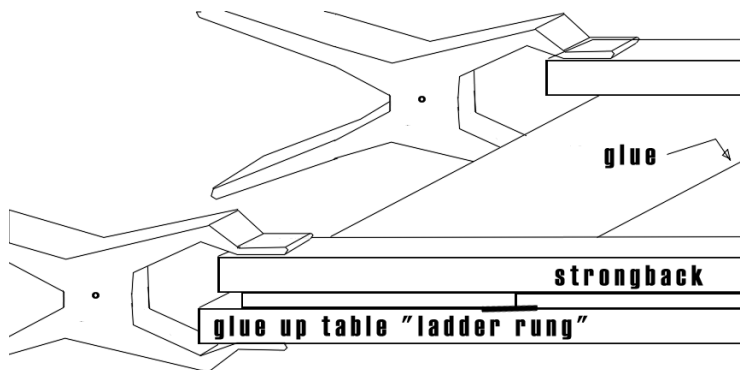


**FIGURE C-2.**  
Simple Laminating Table

Make it square so that the rungs and two-bys can help clue you in when you are eyeballing something straight. When it's together, put wide cellophane packing tape lengthwise over the tops of each rung to prevent glue drips from sticking.

You'll also need an equal number of strong-backs for clamping which are usually about the same width as the rungs, so you might as well cut them at the same time you are making the rungs. Tape one side of them too.

**Using It:** In this form, it is used for laminating planks. The rungs keep the planks straight, and allow glue to drip through, while the tape keeps glue from sticking to the rungs. With the planks squeezed together with pipe clamps or bar clamps (or any other inventive method you come up with), spring clamps can hold strong-backs down to the ladder rungs to keep the panel from buckling.



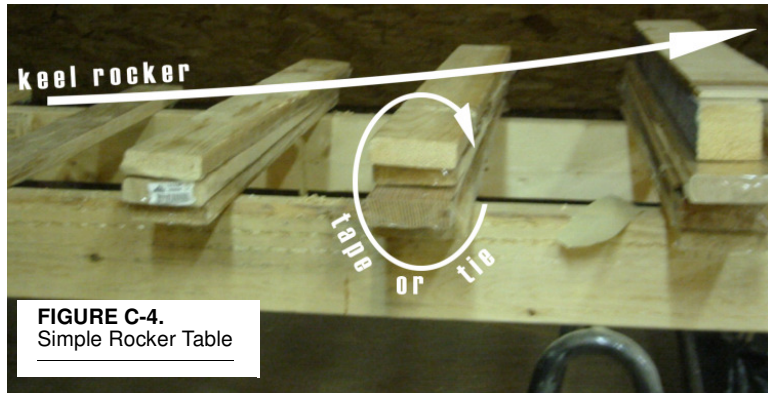
**FIGURE C-3.** See *Task 4: Making the Panels in Chapter 3* for details on using this tool.

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## Tool-Tech 1.2: Ladder-Style Rocker Table

**What:** This is a tool to support the keel and frame during gluing operations in “Task 5: Join Frame to Bottom” (page 19) and “Task 11: Install Top Planks” (page 102). If you choose to get a Home Grown Rocker Lift Kit, you can skip this Tool-Tech.

**How:** We’re going to use the simple laminating table we made in Tool-Tech 1.1 as a rocker table. Using the keel (assembled if it is in two pieces), shim under each notch with more strong-backs, plywood, scraps, old clapboards or shingles - anything that won’t compress appreciably - until you have the keel fully supported at each “station”. The tops don’t have to be bevelled - they just need to support the frames. The “keel blocks” (as they are called in shipbuilding) will be directly on top of each of the ladder rungs (or “stations”) and can be taped, tied or screwed to them in any way that’s convenient.



**FIGURE C-4.**  
Simple Rocker Table



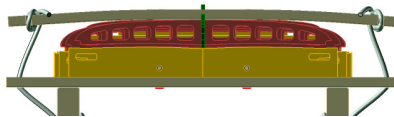
While you are sizing the keel blocks, you should not have any frames inserted in the keel, as the tight fit of the frames can increase the rocker of the board noticeably. Hang a couple of spring clamps from the lower edge of the keel down between ladder rungs somewhere near the middle of the keel to keep it upright while you are affixing the keel blocks.



**Using It:** The components that you’re clamping are held down in much the same way that you would do for holding down the panels when you glue them.

Use the strongbacks as before, but you’ll be clamping something with more height, so spring clamps don’t have the reach to do the job. Instead, use pipe, bar or strap clamps to flex strongbacks down across the keel and frames and, later, the top. You can even use two-foot lengths of nylon (or other stretchy) cord to bind the strongbacks to the ladder rungs

**FIGURE C-5.** Keel blocks support the frame, strongbacks are clamped any way that works.



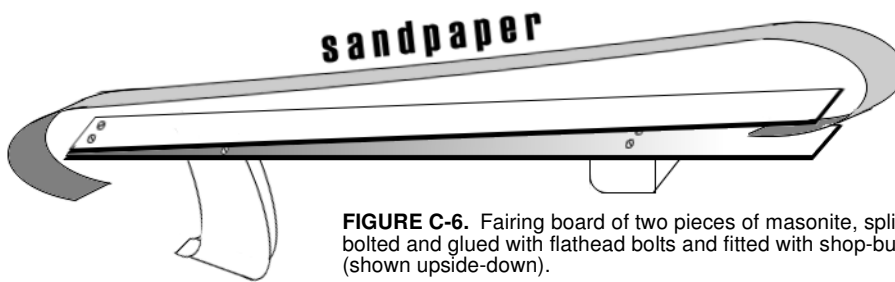
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**Tool-Tech 2.1: Fairing Board**

**What:** A flexible sanding pad that is stiff enough to ride over high spots, but flexible enough to sand curved surfaces.

**How:** All you need are some flexible panels - masonite (flexy) or 1/4" plywood (stiffer) that you can attach sandpaper to. Handles on the back help alot.

A quick but effective fairing board is shown in the diagram below.



**FIGURE C-6.** Fairing board of two pieces of masonite, split for flexibility, bolted and glued with flathead bolts and fitted with shop-built handles. (shown upside-down).

**Using It:** Use adhesive backed rolls of sandpaper, or create a smaller one that can use strips of standard sandpaper attached with spray adhesive. Attach the forward end of the paper between the two slabs of masonite, and the of the paper over the ends of both pieces.

You won't be able to bend a fairing board around the rails, but these work great parallel to the centerline and at an angle to the rail. These are especially great to have for Step 7.4: Fairing the Rails (page 60) and Step 13.1: The Upper Rail (page 112) as a fairing board helps guarantee that the rail is fair and true.

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### **TOOL 3: SHAPING STANDS**

Shaping stands can be complex or quite simple to make. The goal is to have something that the board can lay on top of, and slot into without risking damage to the board. They are always padded.

One important quality - especially when building wood boards - is that they be sturdy, and shake-free. Using something heavy at the bottom can help to make them more stable. This is the portable model we use for traveling classes, but our best shop stands are even sturdier.

Check around the web for other ideas, or be creative. There's no need to make elaborate stands with expensive lumber if you don't have to. We've made shaping stands from landscaping lumber, sections of masts from old boats, pipes, wheels off of old trucks and all sorts of stuff.

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#### **Tool-Tech 3.1: Shaping Stand**

**What:** Some larger lumber - found or scrap lumber is best - but from the lumber-yard if you need to, 3" screws, padding.

**How:** Use wide lumber (like 2"x12"s) to provide stability and a work shelf under the board as well as stable uprights. 2"x4"s act as legs for side-to-side stability.

**Using It:** This stand gets well padded. It is fairly sturdy, but can benefit from having additional weight added low-down.



**FIGURE C-7.** (above and left) Shaping stand of 2x12 lumber.