

The Mk 2 *Light Trow*

15ft 4in by 4ft 1/2in light 50-50 rowing and sailing skiff with storage and bouyancy and a snug reefable rig proposed for camp-cruising on sheltered waters.

This boat has been designed by an amateur with no qualifications in boat design or boatbuilding and should be regarded as experimental. The designer accepts no liability for any loss or accident that may result from following these instructions or their attendant plans or from any loss or accident that may follow from using this boat.

If you build the boat or even just the model, please send reports and photographs to Gavin Atkin at gmatkin@gmail.com

© Gavin Atkin, April 2010

- Design points

The Light Trow is a lightweight plywood skiff designed for cruising on sheltered waters such as rivers and lakes, and is intended as a 50-50 boat – that is, it is intended to be suitable for both rowing and sailing.

My objective has been to design an alternative style of light rowing skiff that would offering a narrow design waterline for good rowing characteristics, combined with a flaring hull able to support a small sailplan.

Drawings of the traditional Fleet trow seen in the classic text 'Working Boats of England' by Eric McKee provided the inspiration for the design, which is formed of flat panel materials and is almost double-ended, but for a small triangular-shaped transom, as seen in some trows.

This Light Trow, however, is a much lighter boat than the original trows and also has fore-and-aft rocker in line with modern flat-bottomed rowing skiff practice – it's cheeky, really to call this boat a trow at all, but the name has rather stuck by this time.

There is no provision for an outboard motor, and the only attempt to fit one to the Mk 1 Light Trow was a failure! (A very small outboard in a well would probably work but I haven't drawn one and don't intend to do so at present.)

Although it is designed for stitch and glue construction, it is of necessity a relatively complex boat, as it has two masts, several buoyancy and storage areas, and is partially decked. I would strongly recommend that anyone who plans to build this boat should first make the model, the plans for which are available from the website <http://intheboatshed.net>.

- Construction issues

Readers may wish to read my book *Ultrasimple Boatbuilding* published by International Marine and available from high street and online bookstores, or one of the alternative texts on stitch and glue boatbuilding currently available. There are also a number of websites that describe the technique in some detail, some of which are provided by epoxy materials suppliers.

Before going any further, it's important to check the size of the plywood available to you, as it comes in different sizes in different countries around the world. A sheet of ply in the UK and the USA is

likely to be 4ft (1220mm) wide, and 8ft (2440mm) or a little more in length, and this is the size these plans are made for. However, in the rest of the world including Australia, New Zealand and continental Europe ply sizes can vary considerably.

I'd like also to emphasise the importance of model-making. The download package for this boat includes drawings intended to be used to make a model, and I'd ask you to please make a model first as it will show how the boat will look but perhaps more importantly how each component part goes together and contributes it's pennyworth towards creating a usable boat with a rigid structure.

The system of coordinates I use to define the shapes of the panels on the 4 by 8ft plywood panels is the aspect of the plans most likely to cause concern in the minds of boatbuilders. This is because the approach seems unfamiliar, but in fact the technique is straightforward – and is the same as the one most of us used to draw graphs when we were at school - though I'd argue that building a boat is a darn sight more fun than maths lessons.

Each pair of coordinates describes a particular point on a plywood sheet. The first number (the X-coordinate) in each pair of coordinates is a measurement along the bottom of the sheet, while the second in the pair (the Y coordinate) is a measurement up from the bottom - that is along a line that is a right angle (or 90 degrees) from our point along the bottom.

Before plotting each of these coordinates one by one, I find it best to square off the material into twelve-inch squares, as it's so much easier to plot from your squaring off than it is to mark out each measurement from the panel edge, but also because it helps to show whether your material is really 8ft long.

Ply is frequently a little longer than it's supposed to be, and if you don't remove the extra before starting to build the boat, you could be in trouble, with some components longer than others.

For squaring off ply, I often like to use a drywall square, but a tape measure and the side and edge of another sheet of plywood will do the job perfectly well, if slightly less conveniently.

Once the lines have been drawn, you need to draw your cutting lines. I do this by first finding a flexible batten to help re-create the curves, and I've found that perhaps the best thing to use is an 8ft plastic moulding of the kind one can buy in any do-it-yourself store.

To make the curves, drive small nails into the material at each of the plotted points, lay the batten along the nails, using weights to hold it up to the nails. When the batten is in place and reasonably secure, draw along the length of the cutting line using a soft carpenter's pencil. After a few hours of plotting and drawing, you should be able to see that the lines on your ply correspond to those on my plans.

A final word of warning on marking out. There are a lot of coordinates to plot here, and that means there are a lot of opportunities to make mistakes, both for the builder and for the designer. If when you have plotted the points and drawn the lines there are any that don't look right, check them, and check them again. Remember the old carpenter's advice that one should measure two or three times before cutting once. If after all this checking you're in doubt that I may have made an error please contact me at gmatkin@gmatkin@gmail.com - I don't want you to risk wasting material unnecessarily because of a mistake I have made.

The next job is to cut the material out, and to build the boat using the stitch and glue boatbuilding method, otherwise known as tack and tape construction.

Anyone who has used this method before will see immediately how it will work with this design, but if any of you reading this haven't worked this way before I would recommend reading one of the textbooks or websites and following their instructions closely. One example is the UK Epoxy website: <http://www.epoxy-resins.co.uk/>.

I'd like to make several construction points.

Joining the fore and aft sections First, these drawings have been created with the intention that the fore and aft sections of the bottom and sides should be joined by epoxy tape on either side of the join, rather than using butt blocks or a scarf. I often prefer this method for several reasons: it's easy and unlike using butt blocks, I don't afterwards have to cut the thickness of the butt block from any frames they happen to coincide with. If you do build this boat using butt blocks, you'll no doubt have to cut some material from the central frames to make up.

Bows Builders working in stitch and glue are expected and advised to reinforce the inside of the bows with several thick layers of epoxy and tape. I'd suggest applying a single layer of tape, then two further layers laid each to either side, and finally a fourth and perhaps a fifth layer of tape over the joint on the centreline. Each layer of tape should be extended onto the bottom of the boat to make a smooth and strong joint, with each layer of tape extends little further aft. It's worth also lapping two lengths of tape on the sharp edge of the bows one sits to one side of the bows and the other to the opposite side with the long edge covered by two layers of cloth.

Of course, if you'd rather make a false stem to fit on the inside of the bows, that's fine with the designer, but please don't forget to include a knee against both the bottom and foredeck.

Gaps Once the sides are bent around the frames, you'll find that the sides become slightly curved where they meet the frames, and that there will be a small gap between the frame and the side-plank. That's only to be expected from the geometry of the side planks. All you have to do is to make sure this gap gets well filled with epoxy and covered over with tape in the usual way. The joint will be as strong or stronger than a similar joint with no small gap.

Closed areas it's clearly impossible to make stitch and glue fillets inside a closed box and so having taped the lower chine, bottom and frames together, I propose that the builder should then add a 'false gunwale' at the top of the lower chine in way of the thwarts and sub-deck areas. This should then be trimmed to make a good flat glueing surface capable of accepting the subdeck and thwart components. The seats and decking must of course be supported by cleats and so on as shown in the drawings. Hopefully you won't find anything important left over!

Standard epoxy fillets should be used where the seats meet the sides of the hull.

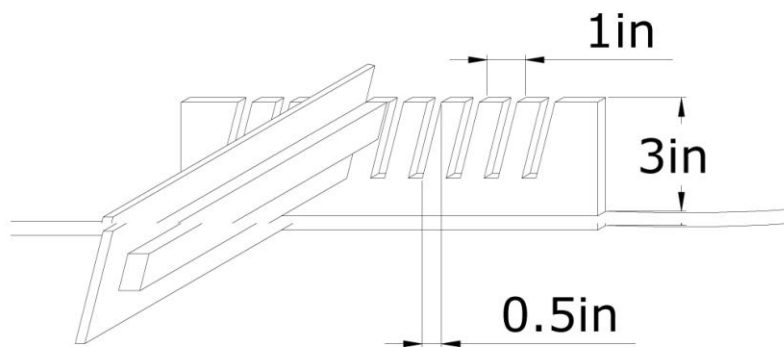
Doubled stern Sterns have to be strong and I'd prefer to double this part of the boat, particularly if there is any chance that it might be used with even a small outboard.

Positioning of oarlocks I haven't drawn a position for the oarlocks as this can be a matter of taste. The standard view is that they should be about 12in aft of the aft edge of the thwart, but some argue this distance should be the length of the rower's forearm, and this may be particularly important for taller rowers. Oarlocks should be mounted on solid blocks of 8-12in in length, 5in in depth and 2in thick or so. They will have to be shaped to match the curve of the boat, and if you are using gapped inwales they should be cut so that they fit into the inwale and can be glued to it (with the gapped inwale installed first, naturally).

Oar length There are a lot of conflicting views about oar length. Some say the length of an oar should be of half the beam (from lock to lock) times three, plus 6 inches (6ft 6in), others that the length of an oar from lock to grip should be half the beam times three plus 2 inches (6ft 2in), still others use much more complicated calculations based on the speed of the boat and how lightly it rows. However, I'd say about 7-8ft will be perfectly acceptable where this boat is concerned.

Thwart If there is anywhere on this boat where a piece of good quality timber with nicely chamfered or rounded edges, this may be it. Think of the hours you're looking forward to spending on it!

Foot brace If the boat is to be rowed I'd suggest knocking up a comb and using something like the drawing below.



Typical comb and footrest for flat-sided, flat-bottomed boats.