

Fitting a Plank

At this point the plank has been cut to size in profile, bottom edge beveled, and both inside and outside faces scrubbed to fit the curvature of the frames. The plank ends have undergone whatever treatment that's required and so the plank is ready for a trial fit. So we clamp the plank into position on the boat, using wedges, etc. to remove any edge set that has developed. In a perfect world, the bottom edge of our new plank will seat snugly against the plank below along its entire length. This "holy grail" of fit is seldom if ever achieved in practice. Instead, we hope that on the first trial fit any open seams between the two planks are limited to about 1/16" (0.063") or so, which we will attempt to eliminate or at least reduce to less than .020".

Before we describe the procedure, let's take a good look at the problem. Fig. a illustrates the cross-section of the two planks with a perfect seam.

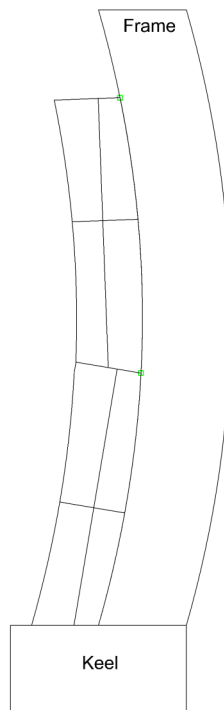


Fig. a

Fig. b illustrates a typical open seam.

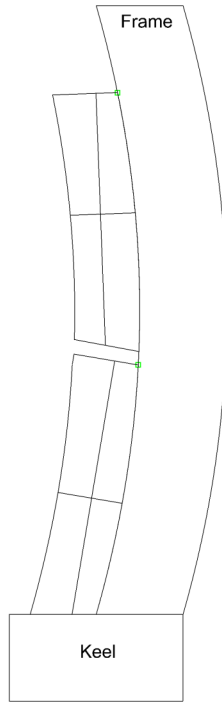


Fig. b

Of course the width of the seam will vary along the length of the plank. This is illustrated in Fig. c below.

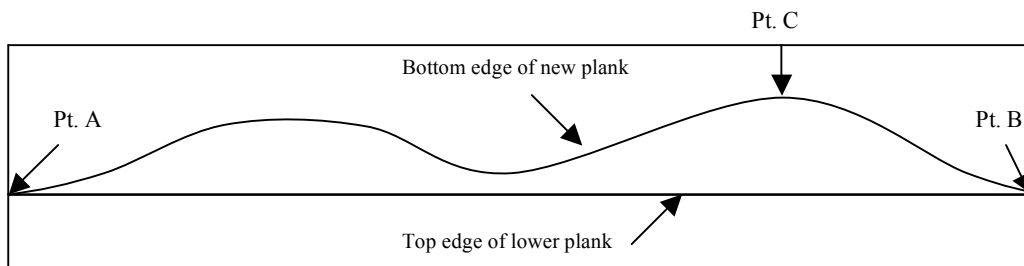


Fig. c

Fig. c represents a section of the plank bounded by tight seams at points A and B. A typical plank will have several such sections. Between points A and B the width of the seam is non-zero (Fig. b), with a maximum opening for this section near point C.

The goal is to remove wood in the neighborhood of Pts. A and B, thus reducing the width of the seams. Fig. d illustrates this concept.

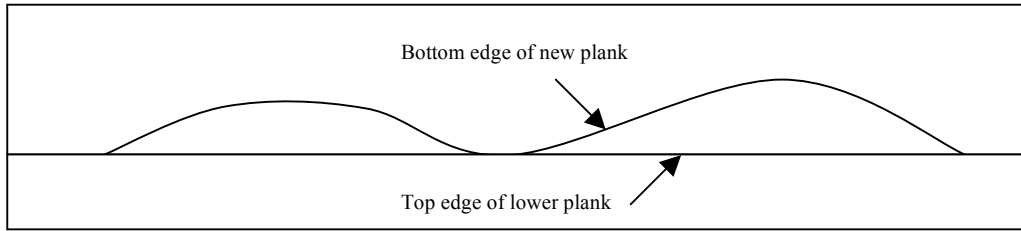


Fig. d

Note that one section now becomes two. So we repeat the process of removing wood where the seams are tight until we achieve the desired fit.

The key to this approach is to identify those areas where wood needs to be removed. I do this using a set of feeler gages ranging from 0.010" to 0.063" in steps of about 0.010". Fig. e shows these gages in operation (0.010" gage not shown).



Fig. e

Referring to Fig. c, the process proceeds as follows:

1. Locate a section of the plank having an open seam and select the thinnest gage (0.010").
2. Insert the gage into the seam.
3. Slide the gage left until it stops when it encounters Pt. A. Mark this location on the plank with the symbol <10, indicating that the seam to the left is less than 0.010" wide. Repeat step 3 moving to the right, and mark the location as 10>. You now have established the limits of this section.
4. Now insert the next thinnest gage (0.022") into the seam just to the right of the <10 mark you made near Pt. A. Slide it left until it stops and mark this location with the symbol <20.
5. Repeat step 5 just left of the mark at Pt. B (moving right). Mark it 20>.

6. To check for any low spots between Pts. A and B, slide the 0.022" gage left from Pt. B and then right from Pt. A marking any places where the gage stops. At this point the plank might be labeled as show in Fig. f.
7. We repeat this process for all gages that will fit into the seam.
8. After completing this section, we move to another seam defining a new section, until the entire plank has been marked.

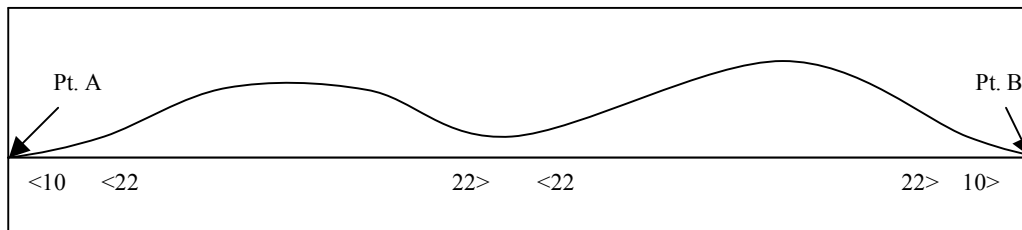


Fig. f

We then remove the plank from the boat and plane down those areas where the seam is 0.010" or less (between the marks "10> <10"). We set the plane to produce a very fine shaving (about .005"). We draw MagicMarker lines across the edge (where the seam is 0.010" or less) so we can monitor our progress, planning until all the lines have been removed. It's a good idea to check your bevels to be sure that you aren't removing more from one side or the other.

After removing all the lines repeat the process. After the second pass, we should have removed about 0.010" of wood from the high spots.

Again repeat the process, but now extend your planing to include those areas where the seam is 0.022" or less.

Repeat again for 0.030". At this point it's best to check the fit again. You should see a big improvement. After about three cycles of this, the fit should be acceptable.

At this point it's important to mention a few details that I've omitted for simplicity in conveying the basic concept. The open seam as shown in Fig. b is an idealization. This only happens if your bevels are precise. Instead the seams tend to look more like the illustrations in Figs. g & h below.

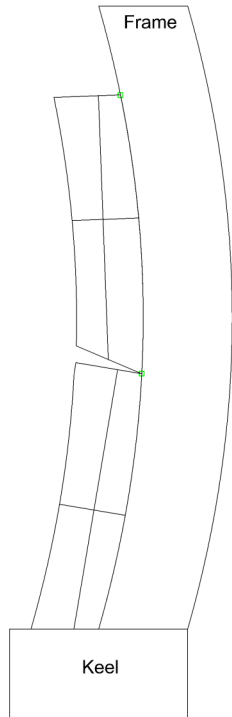


Fig. g

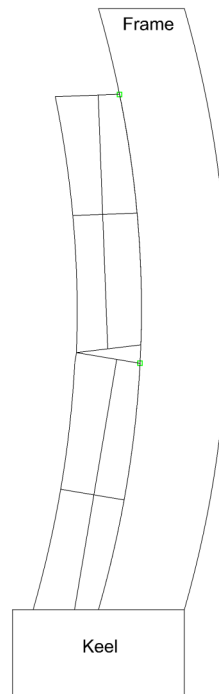


Fig. h

When encountering seams such as shown in Fig. g, it's important to note on the plank that wood should be preferentially taken from the inside edge.

For cases like Fig. h, it's not easy to distinguish this case from the ideal one in Fig. b (unless you can check seams on the inside of the boat), but it's not necessary. When in doubt simply preferentially remove wood from the outside edge. This policy will eventually transform the seam from Fig. h to the seam in Fig. g.

In fact it's a good idea to strive for a small opening at the outside edge, just to insure that Fig. h doesn't occur. Also, we will eventually be cutting a caulking bevel on these edges, which will intentionally create an open seam at the outside edge. The contact area between plank edges will then be just about $\frac{1}{4}$ to $\frac{1}{3}$ of the plank width at the inside edge.