

UPDATES:

Screw size on optional bulkhead reinforcement on page 196.

Gunwale reinforcement 2019

Page 203 as ref.
New pages follow.

Upper & lower ends of the DB trunk.

Prefinishing small parts.

Footbraces.

Additional sections updated.

Note that these updates do not cover all of the little clarifications and corrections the new manual contains. This is really a draft of sections so we can get this information out to builds in progress quickly.

POURING THE SOCKETS AND OPTIONAL REINFORCING

Once the two halves are separated, set them across the table (horizontally) with both bulkhead ends facing towards good light.

Remove most of the spacers and tape residue with a sharp chisel held flat to the surface. Block sanding happens after pouring the sockets (and filling areas chewed up by the saw).

If you are planning the optional reinforcement, explained on page 91, the fasteners should be installed at the same time that the sockets are poured. Remember, this is totally optional.

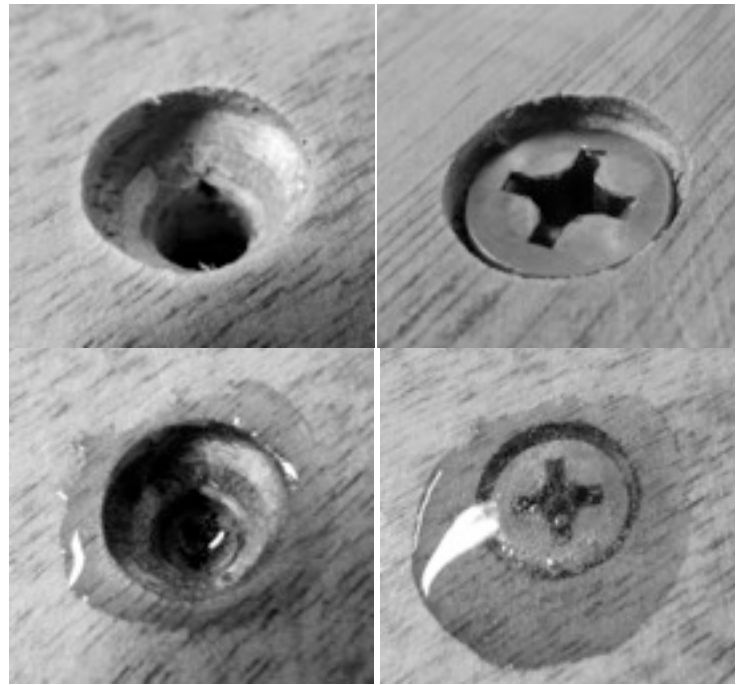
The fasteners needed are #14 x 1 1/4" long flat head sheet metal type screws. These screws have an outside diameter of 1/4".

The process for installing these screws is this: Block sand enough to see the pilot hole centers (that you drilled through the bulkheads on page 91). Using a 1/4" drill bit marked with tape as shown, drill a hole 1/2" deep at the planned locations. Next, mark a 7/32" drill bit and continue these holes to a depth of 1 1/4". Drill square to the bulkhead surface.

A 1/2" (OD) countersink (shown) is ideal. The fastener heads should be below the bulkhead surface up to 1/16" (shown). Blast the chips out of the holes with a syringe before trial fitting fasteners.

Install fasteners when injecting sockets (next page).

Install by syringing the hole full of un-thickened epoxy (shown), wait a bit for bubbles to escape before slowly driving the screws. The 7/32" hole should allow excess epoxy to spiral around the threads and escape out the top to cover the screw head (shown)



Vacuum the sawdust out from around the connective hardware.

Use a strand of wire to pull out anything stuck in there.

Place the low sawhorses at the ends of the table so that you can walk on it without tipping.

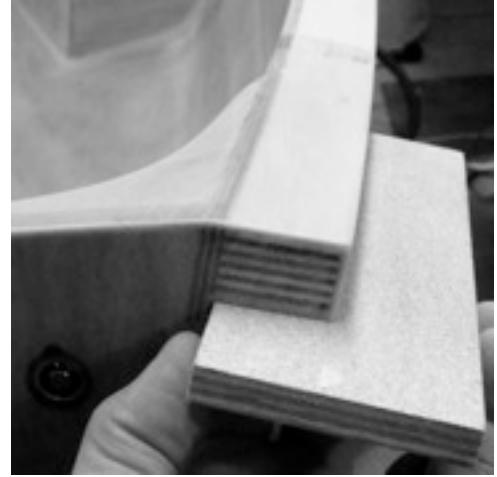
Stand the two halves on end against the table with the bulkheads facing up and level.

Block sand all three faces of the gunwales (at the cut) to their original shape to trim flush the filled chamfer.

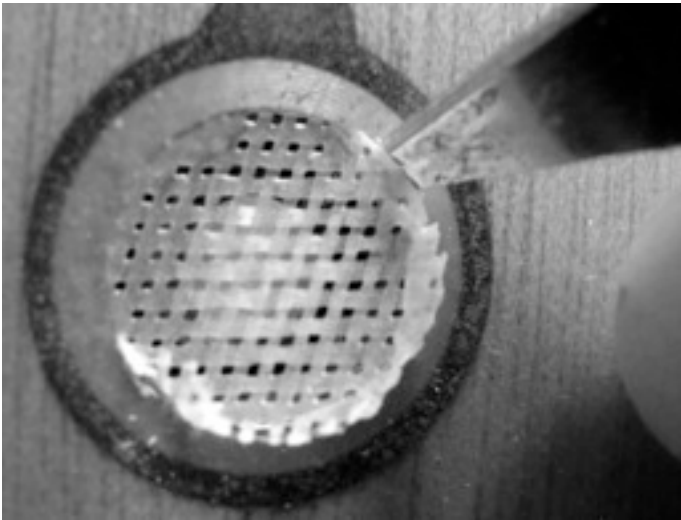
These edges will later be used to re-align the hull, so, trim carefully back to original shape.

Block sand (small block) the **inboard** bulkhead edges back to their original profile.

Cut away the glass covering the fastener holes with an X-Acto® knife. Warm the hole first and **push the blade in when cutting** (to avoid lifting the glass from the metal).



Cut the glass away at an angle all the way around the holes (disregard pin end).



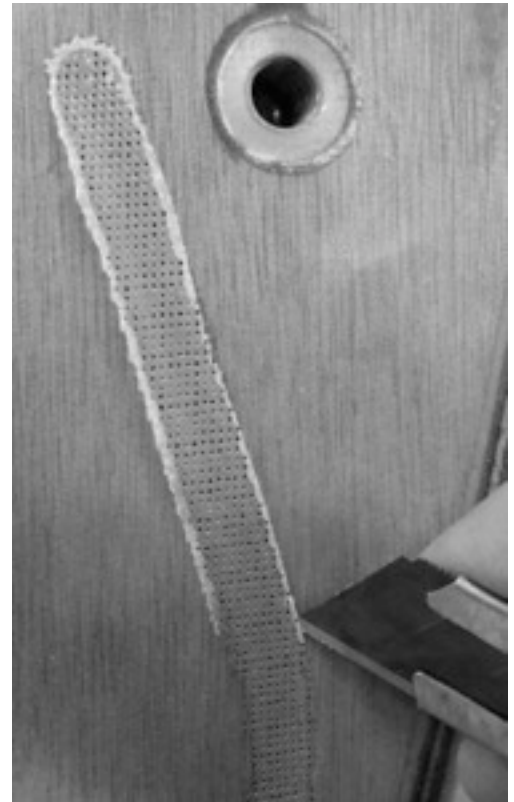
Bevel the edges of the holes with a **countersink** until you see metal all the way around.

Use a very sharp knife to carefully trim the glass that covers the gasket notch (photo on right).

It's a bit tricky to avoid nicking the edges of the notch.



Use a very short piece of 3/8" dowel with sandpaper wrapped around it to trim the edges of the gasket notch. If drips formed in the gasket notch, sand them out with sandpaper on an appropriate stick.



#10 screws, not #12 as aux instructions said.

Install fasteners in gunwale tips We have seen failures (small cracks) at the lower gunwale/hull intersections. Our blog has details about why, but it's a weak point that can be remedied with **bonded-in fasteners**. These **2 1/2" # 10** Self Tapping flat head machine screws are now included in the kit. Using the drill sizes shown below, the screws will pass through the gunwales without threading and then thread into the bulkhead and gusset. **When tightened, the screws will pre-load the failure area, making another failure very unlikely.**



While the holes and screws don't need to be perfectly aligned, lines should be drawn in pencil to provide a guide for drilling.

With both hull-halves sitting upright on the table, **set the combination square to make marks at 1/2" as shown**

Make a small mark at the middle of the rounded edge (far right of photo)

and **draw a line across the bulkhead face as shown.**

This will aim the holes and fasteners downward (relative to the gunwales) which will resist the failure mode (gunwale tips moving upward).



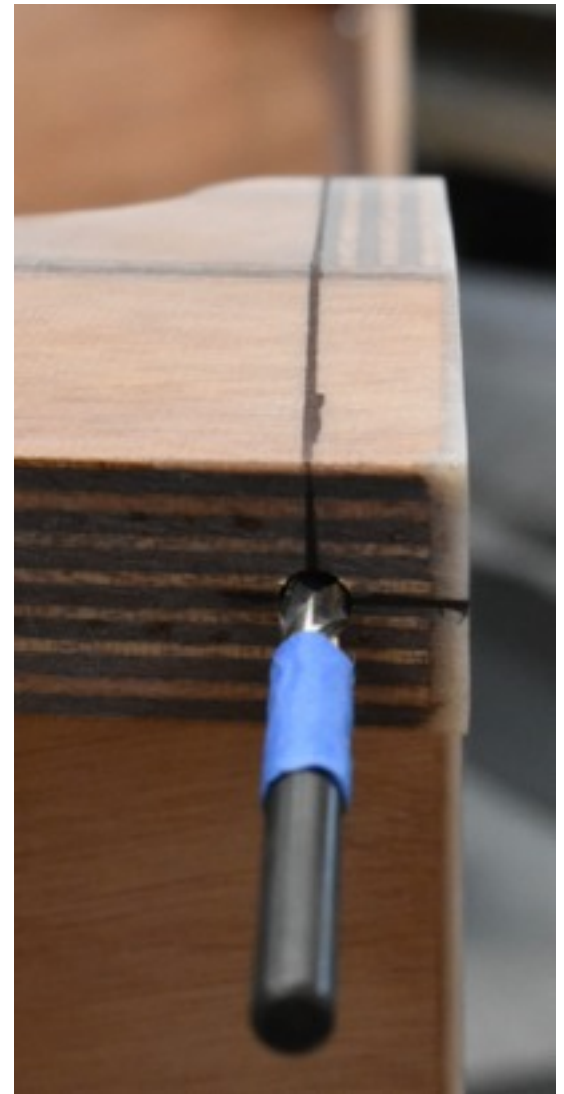
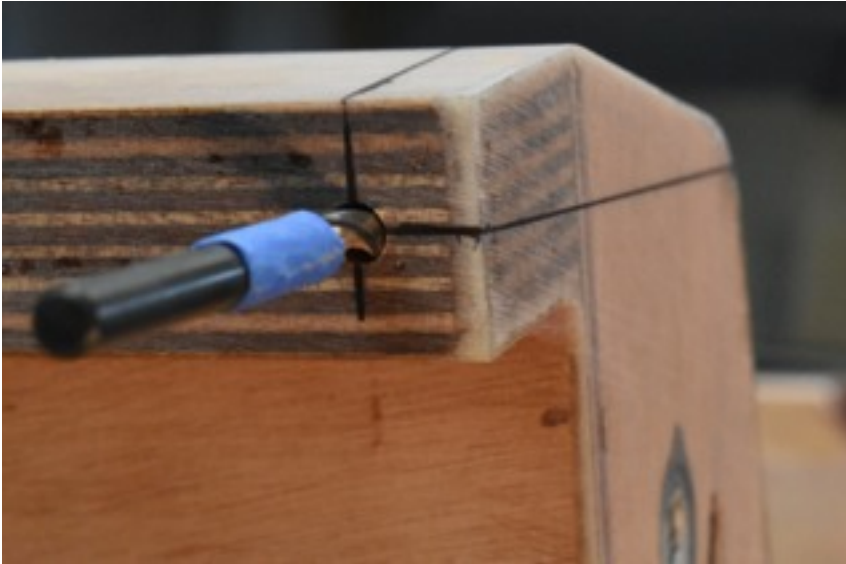
Mark a 3/16" drill bit to almost 1 3/4" as shown. This drill size will allow the screw to pass through the gunwale without threading.

Mark a 5/32" bit to the length of the screws as shown.

Stick to the bit sizes and hole depths shown. **A countersink 3/8" diameter or larger is needed.**



Using the 3/16" (larger) bit, drill holes to the depth marked on the bit. **Start drilling slowly and align the bit with the lines, sighting on both planes** (upper two photos).



Use the smaller 5/32" bit to drill to the depth marked on the bit as shown below.

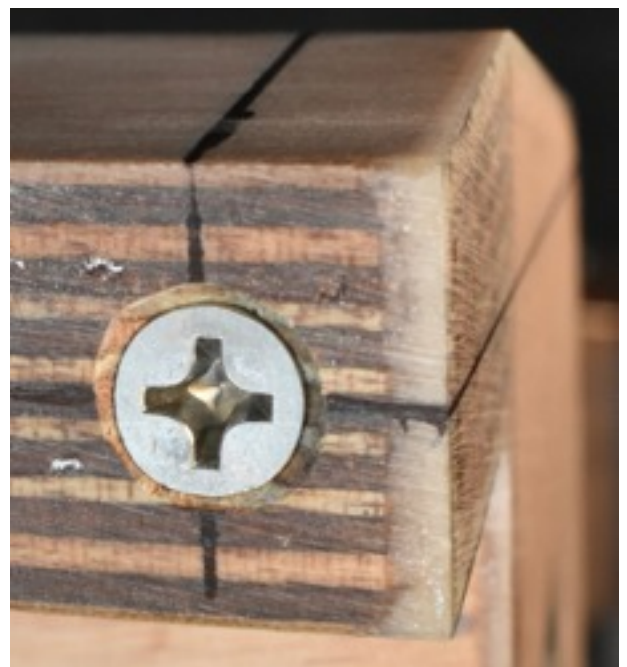


Use the pencil marks to align the drill when using the countersink. The recess should be deep enough for the head of the screw to be just below flush with the surface of the gunwale.



Trial fit all four screws and adjust the recess as needed

Be careful to avoid stripping the threads if using a power driver.



Set the hull-halves on edge leaning against the bench as shown to put gravity to work. Both sides can be done with one batch of un-thickened epoxy. **Pinch the cup and pour epoxy down one edge of the holes until they are full.** Use a piece of wire or skinny long nail to fish the bubbles out of the holes.



With the holes full of epoxy, drive the screws.

Drive slowly for the last bit to allow the epoxy to spiral around the threads.

Wipe up squeeze-out with bits of paper towel before tightening good and snug by hand.

Wipe up all epoxy before turning the hull-halves over and repeating the process.

Fill the recesses with thickened epoxy. Fill completely so the surface can be block sanded flat.

It's a good idea to pre-coat the upper surface of the breasthook (see page 213). Rounding the lower aft edge, coating both surfaces and fine sanding the whole thing is even better.

These two photos show a good way to assemble the hull before the alignment clips have been installed.

The first shows the joint centered over a sawhorse with a trash can holding the bow section to align the two halves while assembling.



The second shows horses placed near the center of balance of each part so that the alignment between the two parts can be adjusted slightly for fairing the outside hull.



UPPER AND LOWER ENDS OF TRUNK

Sealing and protecting the ends of a dagger board trunk has always been a challenge.

The hull and deck edges at the ends of the trunk must be protected from moisture intrusion. This is an area that takes a lot of wear and is also quite small to work in (a bit like dentistry). We glassed these edges in the past, but that was very difficult and resulted in drips of epoxy running into the trunk.

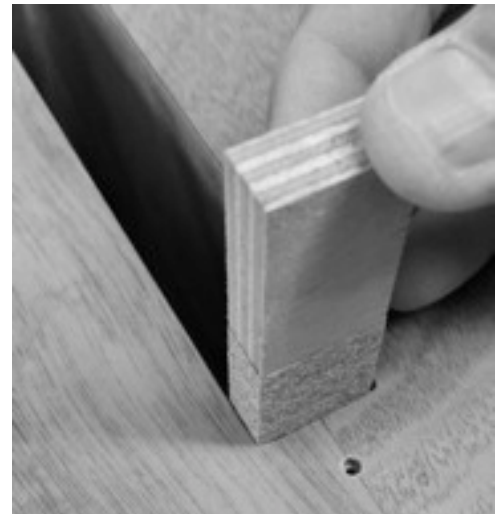
Our new method, (1/32" fiberglass strips bonded to the edges) seems bulletproof and, while still a process, is much easier. We call them "wear strips".

Start by cutting the openings with a router and the bottom-bearing flush-cutting bit.

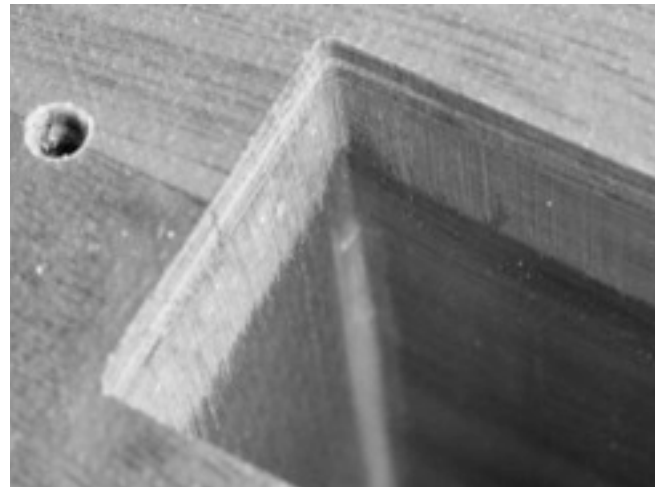
The hull bottom should have a hole to insert the router bit, but one will have to be drilled on the centerline of the foredeck. Open up the holes to make the bit fit easily and **hold the base down firmly** when starting the router and when cutting the openings. The bit will have to be set deep enough that the bearing touches the trunk walls and not the squeezed out glue.

Adhere sandpaper to a square-edged stick to carefully cut away the radius left by the router in the corners. The method we use requires **square inside corners** for the fiberglass strips. This will take patience. Refresh the sandpaper as needed.

Carefully block sand to bring the hull and foredeck edges flush with the trunk walls. Use a thumb as a guide to **sand 3/4" or less into the trunk.**



Use the sandpaper-on-a-stick to bring the trunk ends flush and square as shown.



Apply a healthy saturation coat to the end grain of the plywood (hull bottom and foredeck) and then wipe up the excess with paper towel. This can be done with a gloved fingertip or a glue brush, but **wipe up all the excess epoxy**. Sealing the edge grain will prevent bubbles from forming under the strips. Let the epoxy cure and then give the edges a light sanding and 3-M scrubbie, or you can glue in the strips later the same day if the parts are pre-cut and fit and the temperature is cooling.

Cut the 1/32" fiberglass strips into lengths with a hacksaw. Use a square to mark for cutting.

The side pieces should be cut to **8 3/16" long**, and the end pieces just over **1" long**.

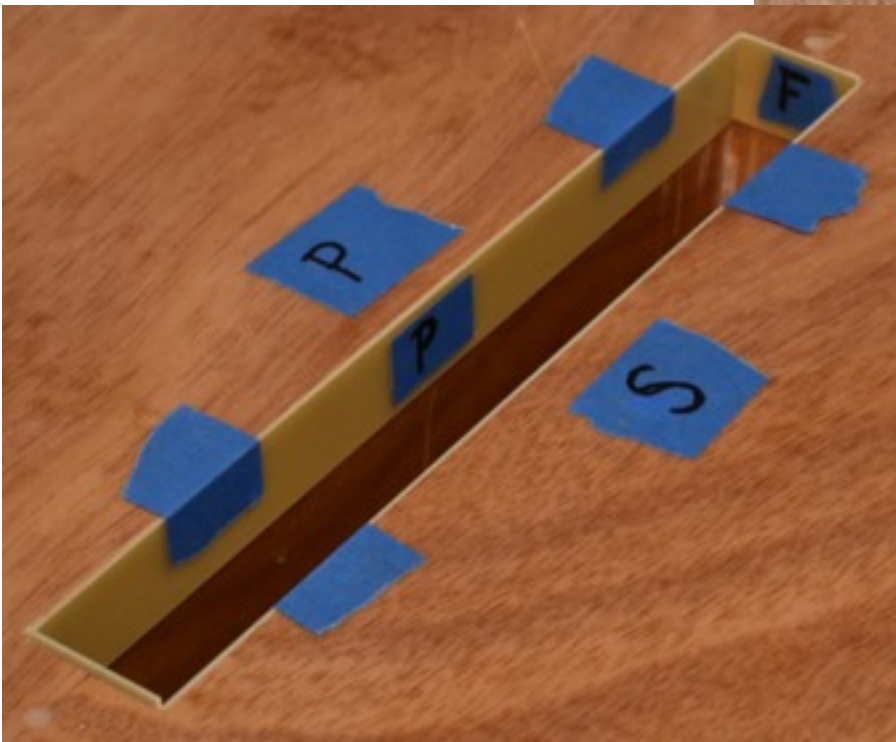
Once the lengths are cut, place pieces of tape on the glossy (not sanded) surface of each piece.

Use a sanding block to trim the ends of the long pieces to fit.

Once a piece is fit, mark as shown and tape it in place. Trim the end pieces to fit with a sanding block and mark **"F" & "A"**



The ends of the long strips can be rounded with the sanding block to fit the inside corners (arrows below). The strips should lay flat to the trunk walls without having to force them.



Lightly round the lower (inside) edges of the strips with a sanding block.

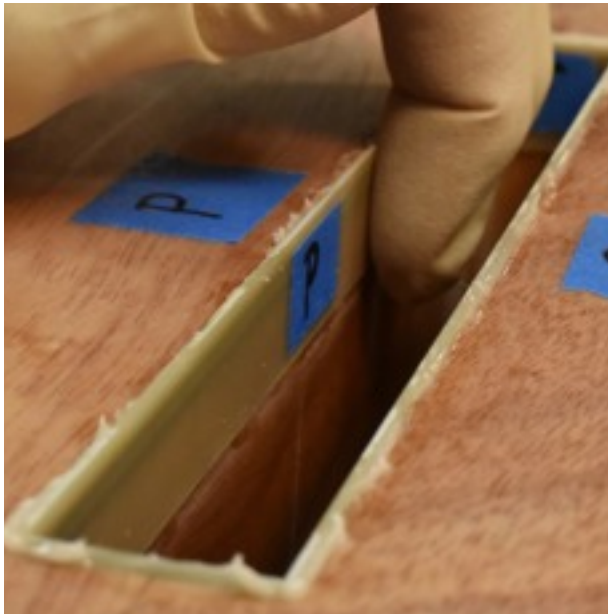
Fit the pieces for the opposite end of the trunk, but keep the parts separate.

Both ends can be glued at the same time, but **start with the upper (foredeck) end**.

Note: The lower aft end of the trunk can have two layers applied for resistance to grounding damage. Sand both sides of the first piece for bonding.

Wipe the dust from all surfaces. Mix a small batch of epoxy and thicken with **406 (silica)** to about **mayonnaise consistency**. The thickness of the glue will hold the strips in place, so **it must be thick enough, but not too thick**.

Use a glue brush to evenly apply epoxy around the inside edge of the trunk, but no deeper into the trunk than shown (less than the width of the strips). →



Because the strips are transparent, you will be able to see the glue squeezing out when the strips are pressed in place. **The goal is to avoid much squeeze-out at the bottom** (inside) edges, so start by pressing near the bottom edges to force the glue upward.

Press near the upper edges to force glue downwards where air is seen through the strips. **Press as much glue out as possible** (so that your daggerboard will fit) before placing the end pieces.

Leave a bit of the strips protruding above the surfaces as shown.

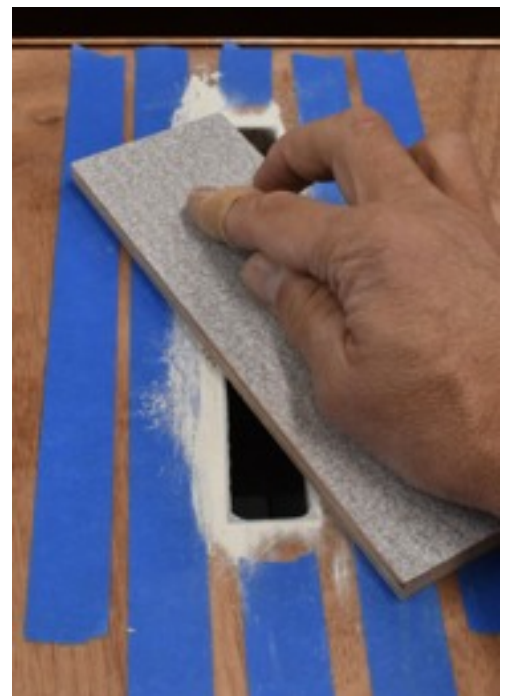
Squeeze-out inside the trunk can be gently cleaned up with a chisel stick and bits of paper towel pushed around on a stick. **Let cure.**

If you want the inside of your trunk to look good, sand the faces of the strips and apply small fillets (1/2" stick) in the corners before flushing the wear strips (see photos below left).

Place tape either side of the trunk to block sand the strips flush with the foredeck and hull bottom. Remove the tape to carefully sand the edges all the way flush. →

The edges of the openings can be lightly rounded with sandpaper, but wait until after glassing the hull to round the edges on the bottom end of the trunk.

A very thin coat of epoxy can be applied with a gloved fingertip to coat the strips and to make glossy any sanded areas below the strips. This coat should be **very thin** to avoid drips running into the trunk.



283 in the old manual

Pre- finishing all these bits at once saves quite a bit of time. It takes some set-up, but it's well worth it to be able to securely hold the parts while coating.



Pre-sand all the wood parts with fine paper (180 grit, or so) to remove router marks, etc. before mounting to the plywood strips.

See page ??? for daggerboard trunk cap details.

The foot braces and back seat cleats can be held to strips of plywood by driving the 4 penny nails into the undersides of the parts. Pre-drill holes for the nails (just 1/8" or so deep) with a 1/6 or 5/64" bit to make starting the nails easier. Drive the nails in enough that they don't wiggle out and attach the nail heads to the plywood strip with a large blob of hot-melt glue.

6 drywall type screws will insert into the holes in **the riser blocks**. Hold with small blobs of hot-melt underneath the riser blocks and large blobs attaching the heads to the plywood strips.



A small section of roller and a palette are by far the best way to coat the parts. The roller can apply an even film quickly. The tipping is done with a small 1" wide foam brush. Too much epoxy on these parts will cause drips (see next page).

Clamping these parts to the edge of the bench (upside down) while the epoxy is curing is a benefit in two ways:

It keeps an annoying bead of epoxy from forming around the lower (sharp) edges, instead any coating thickness buildup will form around the upper edges, where it's needed.

We applied 3 coats to the wood parts on our latest build. *See note below*

The first coat was applied thoroughly, but kept thin.

The second coat was applied the following day without sanding between coats. Both coats were tipped.

The parts were sanded between the second and final coat using a tiny sanding block to flatten the surfaces before sanding the rounded edges with finer paper (180 - 220 grit).

It's best not to sand too much (to maintain coating thickness) and finish prepping with small pieces of 3-M scrubbie.

Wipe parts and plywood strips with clean rags and gently tack-rag before final coating.



Apply epoxy evenly with the roller and gently tip with the foam brush, using very light pressure on the rounded edges.



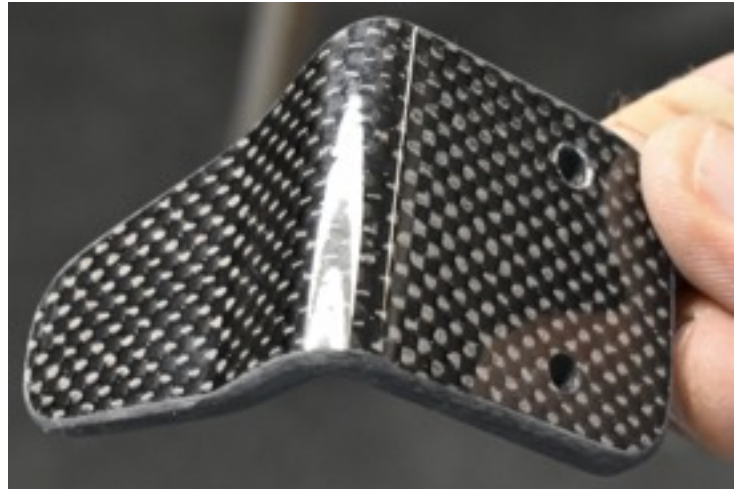
Note: there is some advantage to applying the final coat to the foot braces after installation. It's easier to tape the hull around the foot braces (for coating) than it is to tape the foot braces for gluing. [See page ???](#)

The alignment clips should have their edges rounded (all but the underside of the flat part) as shown. Wear gloves for sanding.

The clips can be mounted to custom sticks made with a hand saw or jig saw and mounted with hot-melt glue as shown below.

Mounting as shown will allow coating the underneath face of the tongue part (just up to the tight radius). This is not necessary, but will help avoid leaving black marks on the boat. **Sand** this area well to remove mold-release wax.

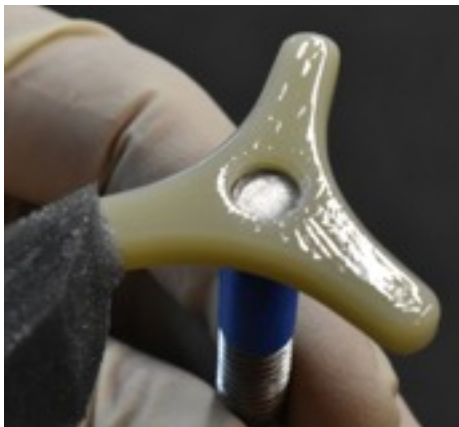
The raw edges should have a thin coat of epoxy applied with a gloved fingertip to fill pinholes, etc. before sanding all surfaces for coating.



Apply the coating on the clips thin (even if it takes two coats) to avoid drips and maintain the angles on the outboard edges (where the clips touch the bulkhead edges).



Sand the flat faces of the knobs by rubbing them on a sanding block and sand the edges by hand. The easy way to hold them for coating is to wrap tape near the end of 3/8-16 bolts and wind the knob on until it stops against the tape.



Keep the coating away from the threads.

Knobs can be painted. We painted ours black with rattle-can enamel after prepping with 3-M scurbbie.



FOOT BRACES, OARLOCKS, AND LEATHER PADS

Foot braces are essential for efficient rowing.

This boat has two rowing positions, one for rowing with one or three people and one for rowing with two. Having two rowing positions is also essential for efficient rowing.

Unfortunately, the placement of foot braces depends on the height of the rower.

With two rowing positions, it takes four foot braces for one person of a given height.

If you wish to accommodate rowers of very different heights, it takes 8 foot braces. Many other systems have been explored, but we still prefer the type shown for multiple reasons.



Our personal boats have been set up for a 6' rower and a 5' 2" rower. The template that we provide for placing foot braces is based on these heights. The 5'2" rower is using the aft oarlock sockets in the photo below.

Please note that the oarlock socket locations should not be changed. They are based on weight placement, efficient rowing, nesting, and seating.

Foot braces can be very small. The foot braces that we provide are $\frac{3}{4}$ " x $\frac{3}{4}$ " x $5\frac{1}{2}$ " with the ends beveled and the edges rounded. This is on the small side for barefoot rowing, but larger foot braces are uncomfortable to sit on when sailing.

We pre-finished our foot braces with epoxy before installing them, but it may be easier to apply the final coat after installation by taping the hull around the foot braces, coating, and pulling the tape while the epoxy is wet.

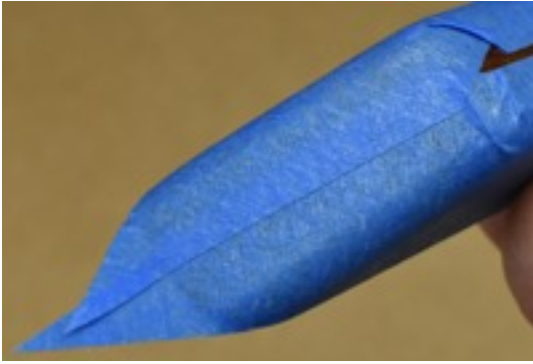


Sanding the flat faces of the braces is necessary. Because of the angle that the braces are placed on the curved hull panels it's a good idea to clamp the $\frac{1}{4}$ " thick sanding block over a strip or two of rag *as shown* to **sand a reverse curve on the undersides of the braces.** Use 80 or 100 grit and push firmly with short strokes (arrows).

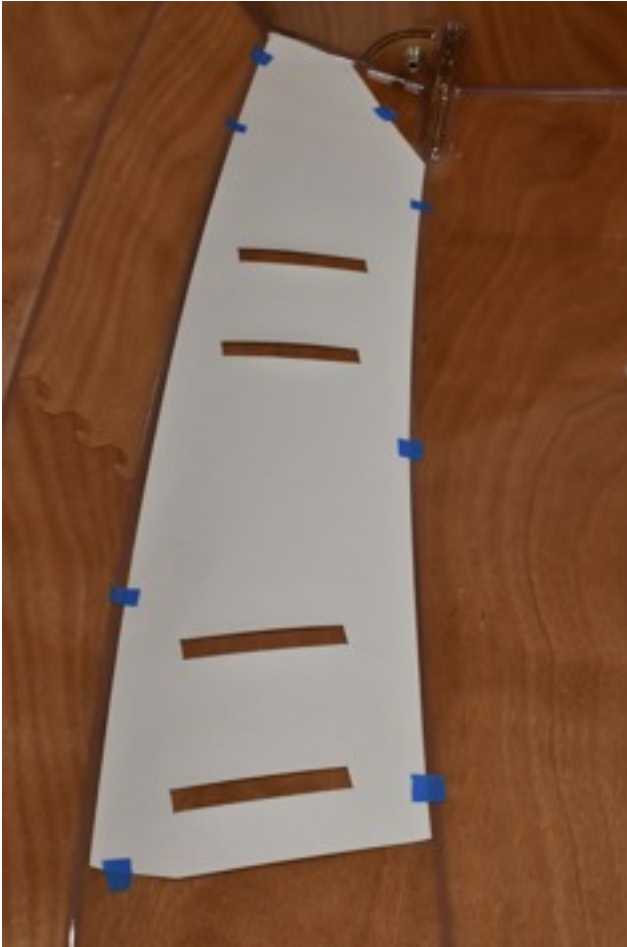


If you will apply the final coat after installation, sand for coating first.

If gluing in finished braces, tape the braces as shown, applying tape near the lower edge and trim the ends with scissors (see next page).

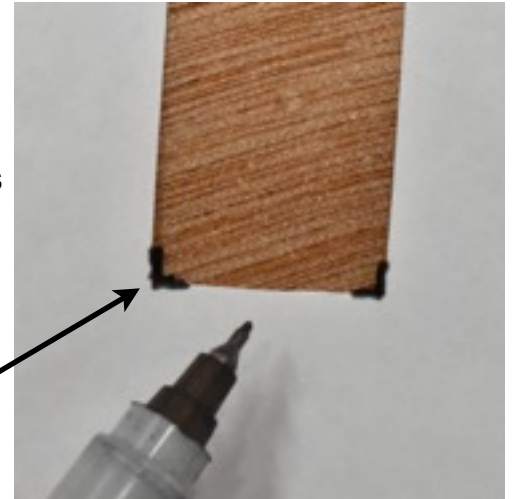


Press the tape over the curved end (firmly near the tip) and repeat on the opposite side. Trimming the tape at the ends is tricky. Use a new razor blade or Exacto knife at the angle shown and push the blade towards yourself while trimming. Avoid nicking the coating but leave no tape overhanging.



Tape the template in the hull as shown with the forward edge touching the bulkhead and centered between chine fillets.

Make small marks on the hull with a felt tip pen near the ends of the foot brace cut-outs. Marks can be removed later with alcohol or acetone.



The foot braces can be glued in the hull without clamping pressure. locating them when gluing is a process, but the method we show works well and comes out looking clean.

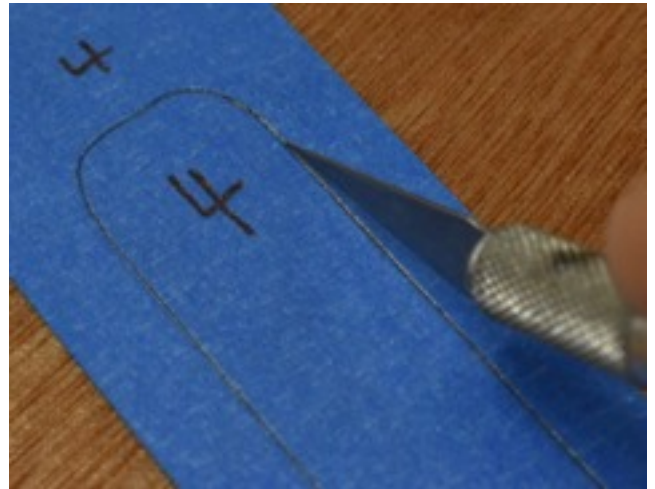
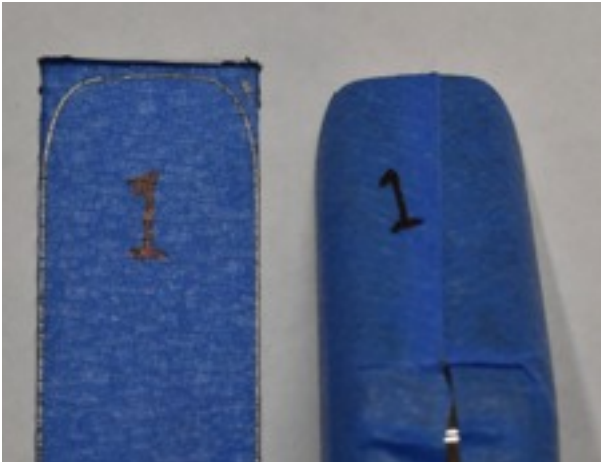
With the lower edge of the template taped firmly, un-tape the upper edge and fold back as shown on right.

Place two layers of 1 1/2" or 2" wide tape centered roughly over the marks in the hull. Pull back either end of the tape to make sure it is roughly centered before adding second layer of tape and rub tape down firmly.

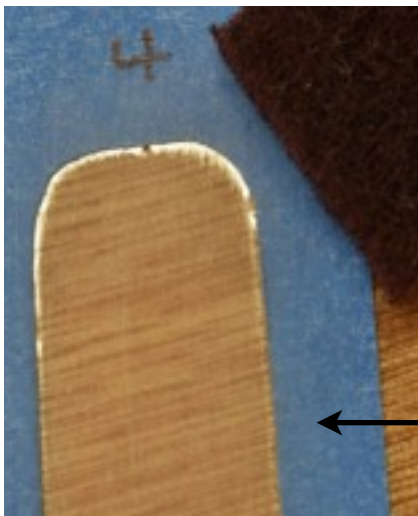
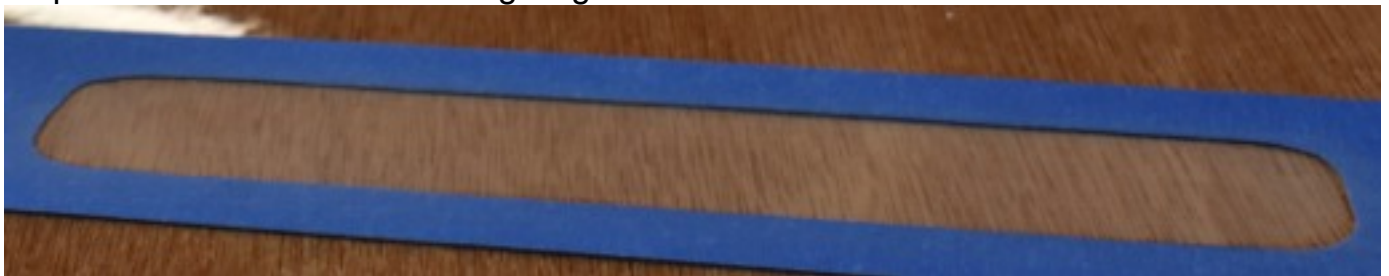
Replace the template and tape down.



Hold each foot brace down firmly, centered inside the template cut-outs and mark around the foot brace with a sharp pencil (photo on left). **Number as shown. Cut to the line** with a sharp X-Acto® knife, light pressure, and a steady hand. Keeping knuckles or a finger pressed to the hull can help in following the line



Remove the tape by lifting an edge with the tip of a knife. The thickness of the tape will help locate the foot brace when gluing

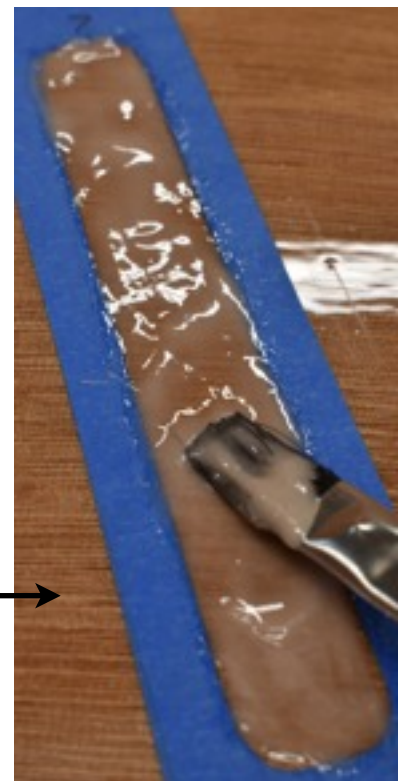


The areas inside the tape can be prepared for gluing with small pieces of fresh 3-M scrubbie, (it dulls quickly), working away from or parallel to the edges (don't bugger up the tape). Vacuum and wipe well with a clean rag.

Prime the undersides of the cleats with a short roller and wipe away excess epoxy.

Brush a thin layer of gluing mix (about mayonnaise thick) to the taped off areas in the hull. →

Locate all foot braces and press down until glue squeezes out. Remove some of the squeeze-out (next page) and shift the cleat to it's place inside the tape edges and then press down more firmly.





Clean-up is best done with a plastic straw with the tip snipped off at 45 degrees. **Clean up enough to see that the cleat is centered inside the tape, press down more firmly and clean again.** Pull the straw through a folded rag to remove goo.

If your cleats are not taped off, gently clean epoxy off of the cleats with a sharp chisel stick.

Pull the hull tape up as shown an hour or two later (when the epoxy is still soft). Wait until the glue is firm (or gently warm the next day) to remove tape from the cleats.

If you plan to do the final coat after installation, tape off the hull around the cleats, sand away goobers, 3-M scrub, and coat, but wait a bit and remove the tape after the coating has gone tacky.



OARLOCKS

Because the height of the foredeck and the gunwale are what they are (and don't want to be changed), riser blocks are needed for the oarlock sockets to keep the oars out of your lap. The riser blocks don't affect the height of the nested package.

We show the installation of riser blocks for the Gaco oarlock sockets, but the same method and placement should be used for any oarlock sockets.

The riser blocks can be glued to the gunwale without clamping. Locating when gluing can be done with thick tape cut with an X-Acto® knife, the same as the foot braces.

We pre-finished the riser blocks with three coats of epoxy before installing.

The centers for the socket holes are at 2" and 22" aft of the forward end of the aft half. Place two layers of 2 " wide tape in these areas (see next page).

Measure and make marks as shown in this photo looking at the gunwale from above.



Additional Updated Sections:

Taping Gussets before gluing; ref page 108

Filleting gussets, fillet sizes; ref page 121

Oarlock riser blocks section; ref page 288

Trial fit upper gussets.

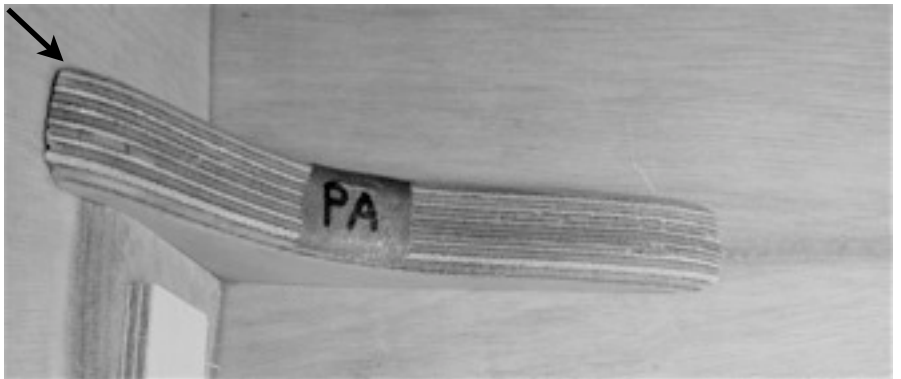


All the gussets should fit without much modification (unless they are hitting goobers).

Gaps (that get filled with epoxy) will be present on all gussets (unless you wish to shape to fit with a sanding block). On the lower gussets (photo below) there will be a gap where the gussets meets the bulkhead (arrow).

The lower gussets *center over the chines and fit against the doublers.*

Trial fit all the gussets. Round any corners or edges that could hit glue bumps.

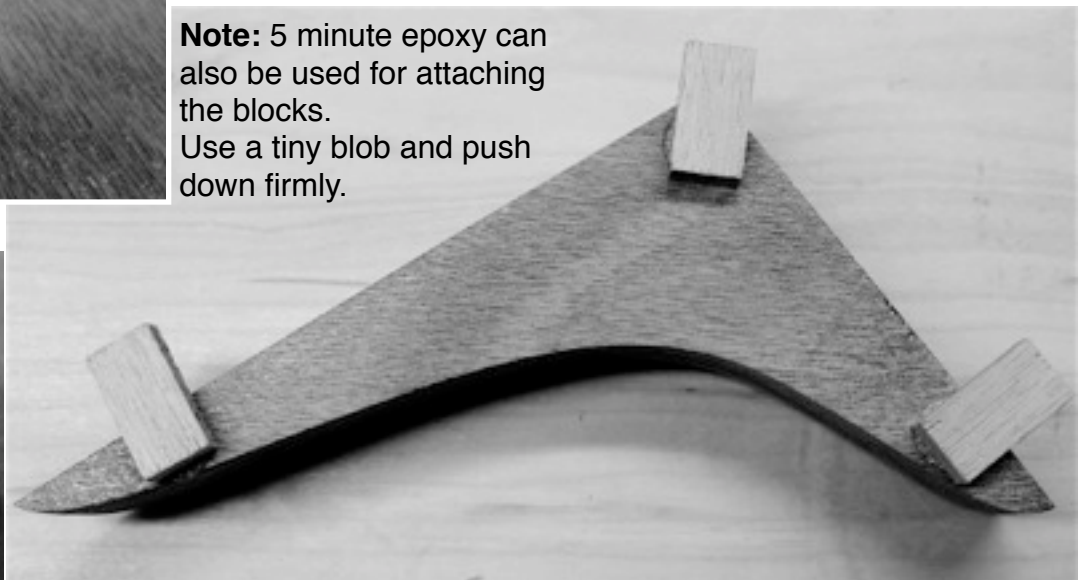


Cut and hot-glue on little plywood alignment blocks to the upper gussets. These 1/4" ply blocks should be about 1/2" x 1".

Use just a little blob of glue, press down hard with your thumb, and **knife out anything that squeezes out underneath.**

The hot-glue can be kept from squeezing out underneath the edge by setting the block down at an angle and pressing near the edge first to force the glue inboard onto the gusset.

Note: 5 minute epoxy can also be used for attaching the blocks. Use a tiny blob and push down firmly.



Do the alignment blocks hold the upper gussets flush with the bulkhead and hull edges?

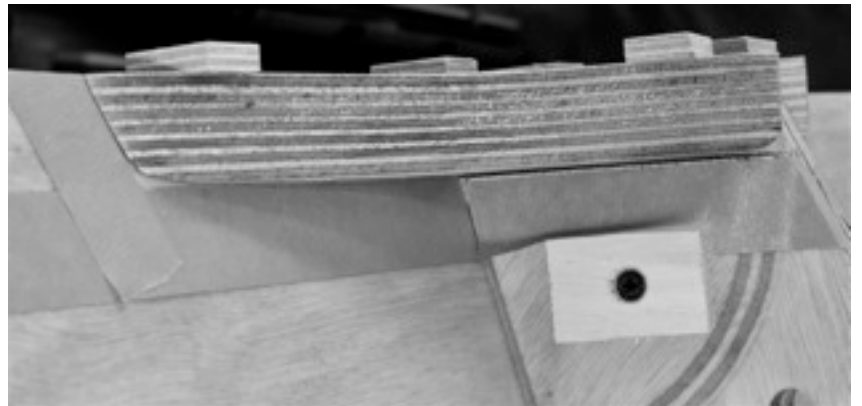
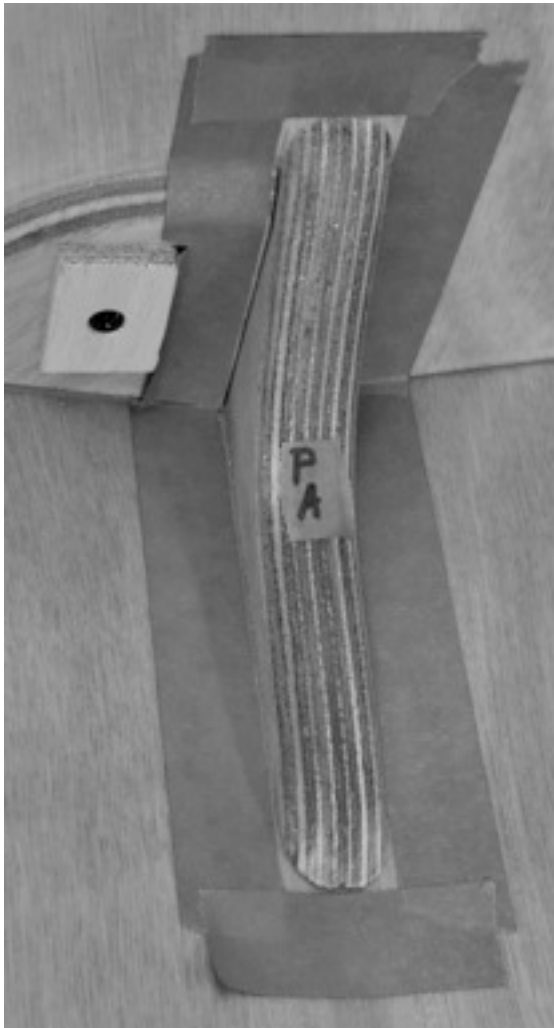
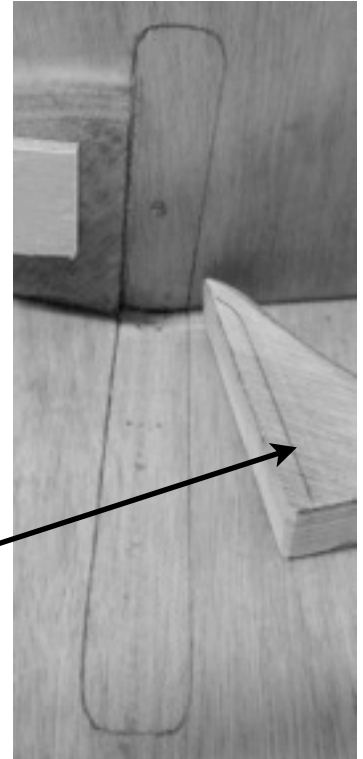
Feel with your fingers and adjust by filing down the underside of the alignment blocks or adding a bit of tape to the underside of the alignment blocks if needed.

Identify which upper gussets go where as shown (PA, PF, etc)

Make sure all areas where gussets glue are well sanded. Vacuum and wipe areas with a clean rag to remove dust.

Mark for gluing all 8 gussets as shown, including where the gusset glues to the doubler (arrow).

It helps very much to tape off the hull and bulkhead as shown (just outside the pencil lines) to aid in the epoxy clean-up.

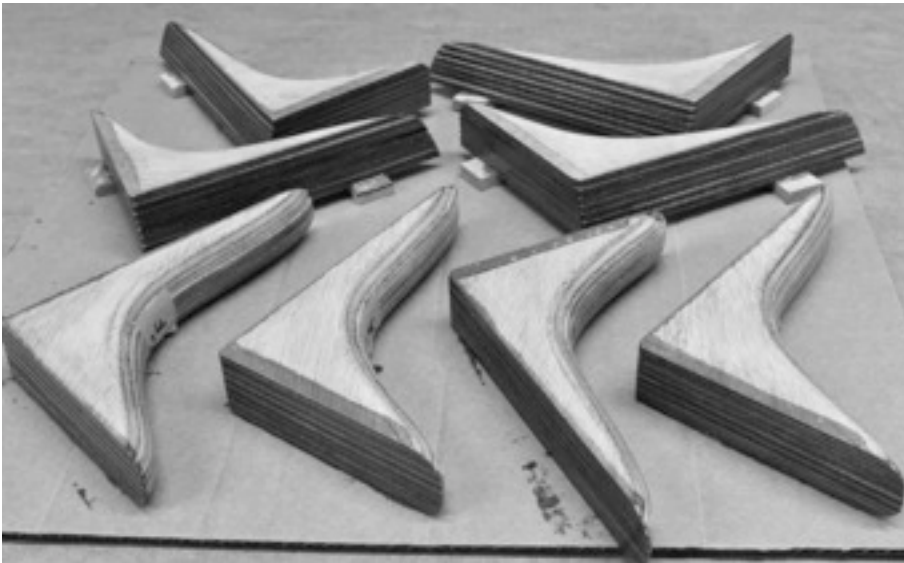


Loosen and slide the screws and plywood pads (visible in photos) away from the gussets and then snug them back up.

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All eight gussets can be glued in at the same time (starting with the lower gussets).

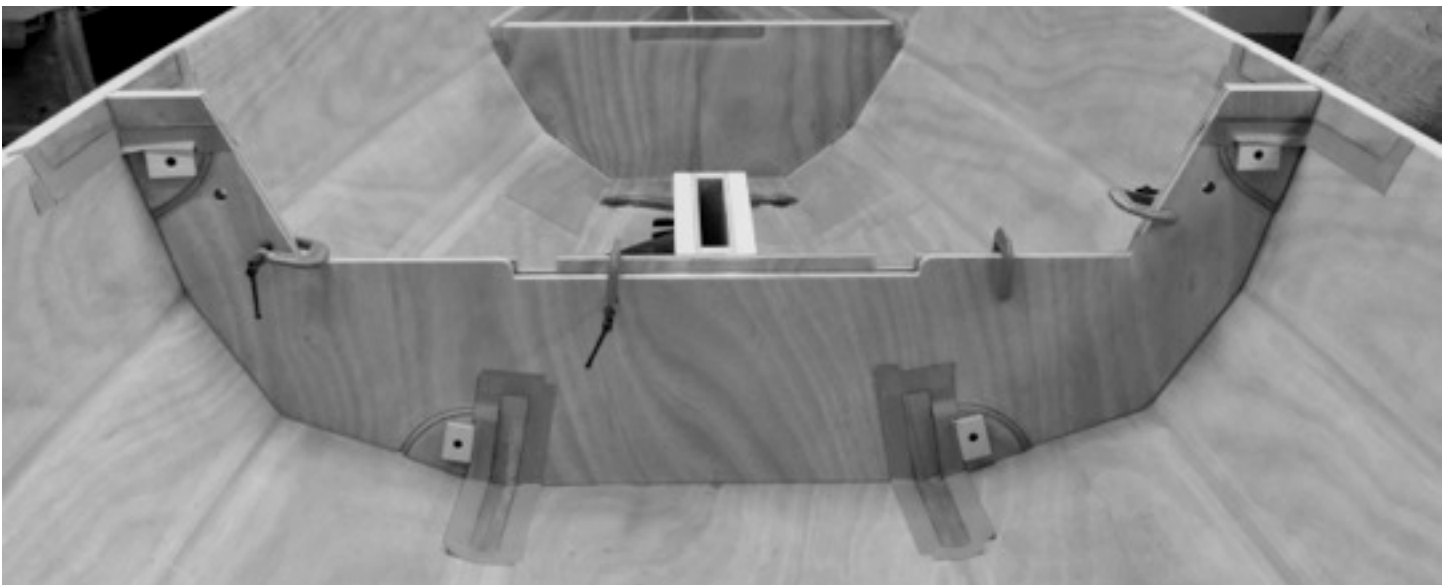
The gussets should be primed liberally on the thirsty edge grain and be primed where they glue to the doublers as shown.



Prime the areas of hull, bulkheads, and doublers where the gussets glue (below), but wait to prime for the upper gussets until after the lower gussets have been glued in (and clean-up done) to keep your shirt clean.

It helps to wipe up excess epoxy after priming with a clean rag or paper towel.

Clamps shown in photo below help insure that the bulkheads stay tight to the spacers. Gentle pressure is all that's needed.



The thickness of the glue is what holds these parts in place when gluing.

Using the gluing mix of fillers, thicken epoxy a bit thicker than mayonnaise consistency.

If a large blob will hang on the end of the stir stick, it's thick enough.

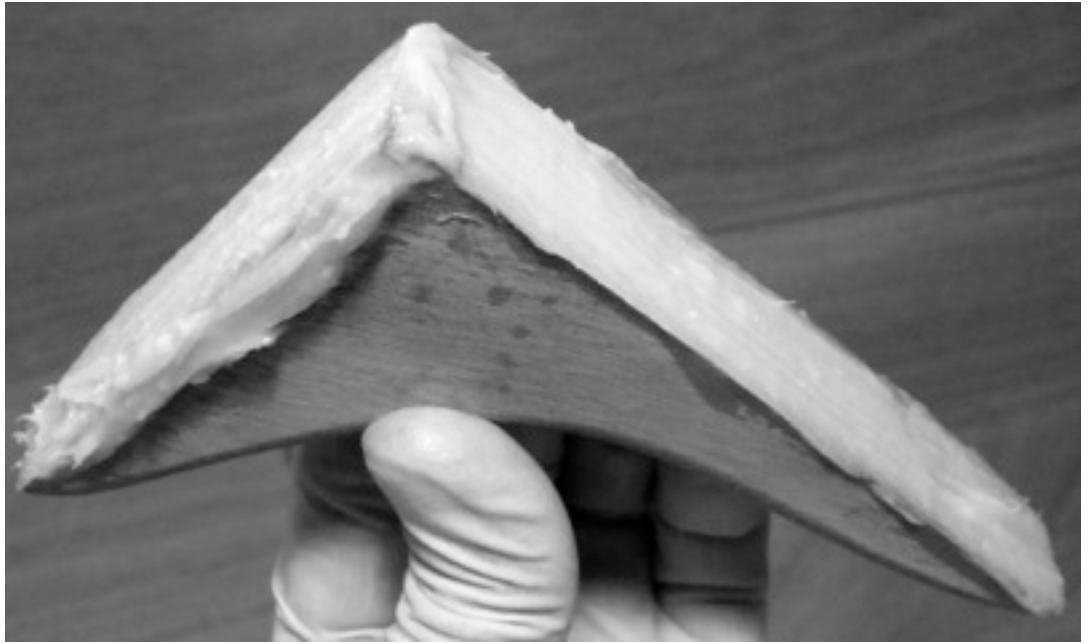


Apply more thickened epoxy than seems necessary to the lower gussets.

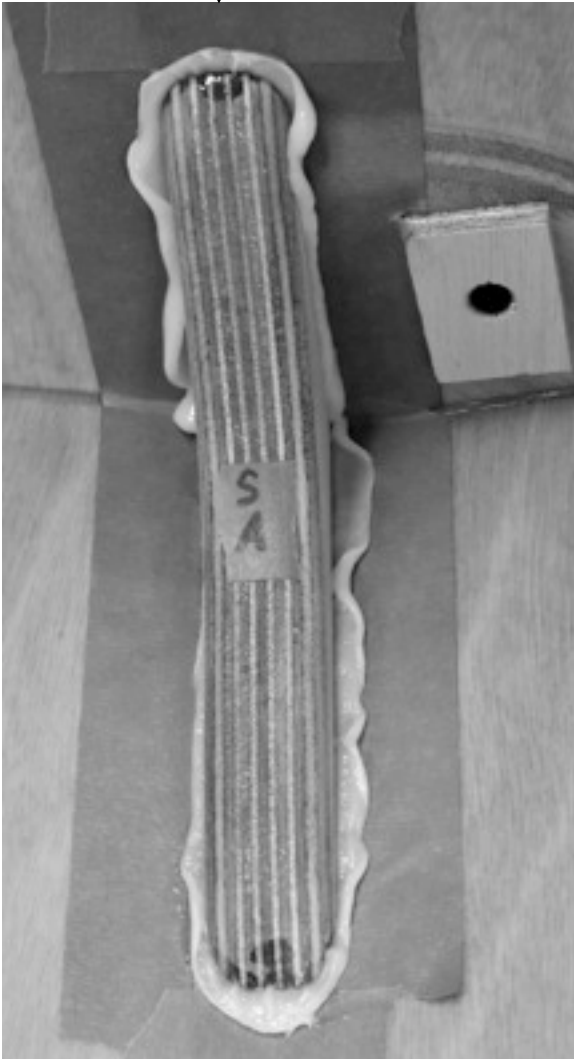
Press the gusset into the corner and up against the doubler while centering the tip over the chine.

They should center over the chines positively, but make sure that they are tight against the doublers.

There should be squeeze-out all around the gussets.



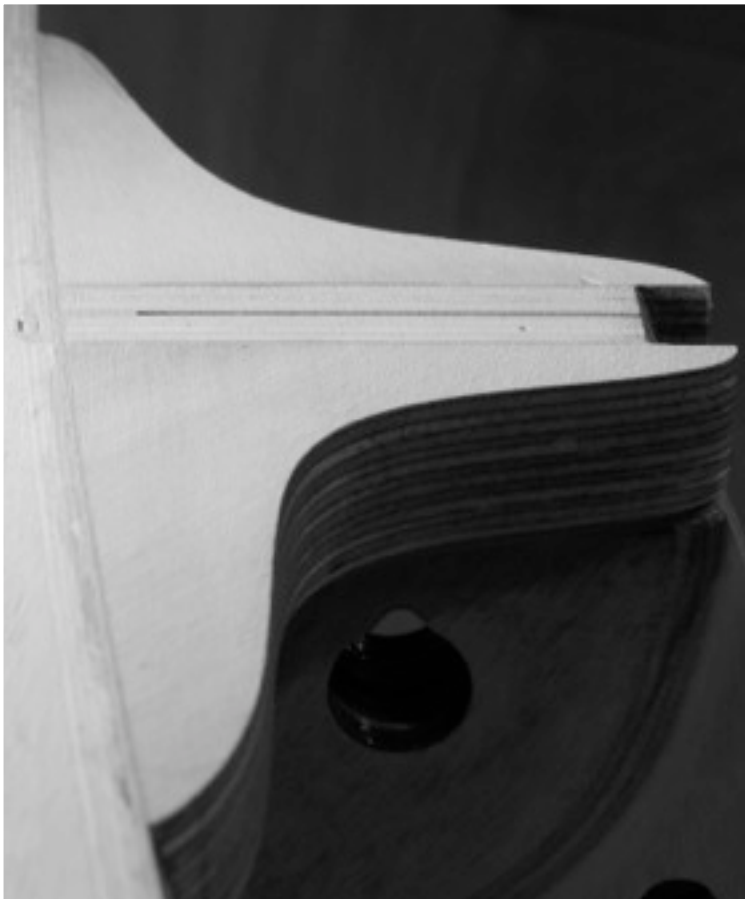
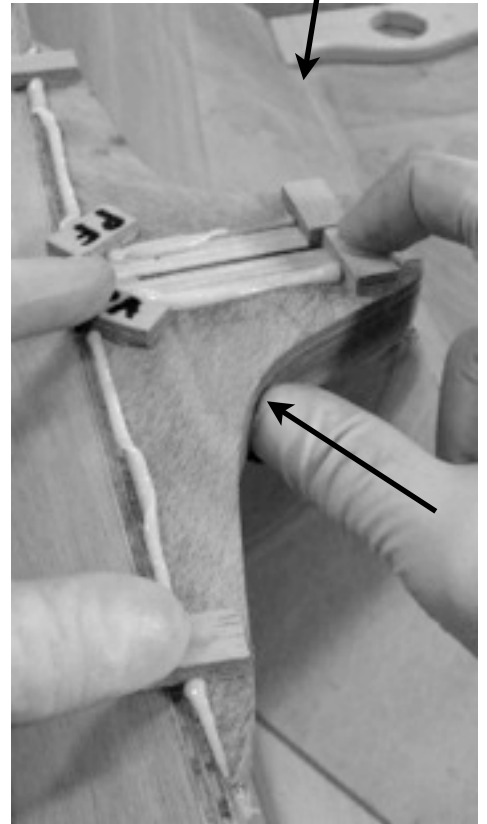
Use a sharp chisel stick gently (avoid shifting the gussets) to clean up around the gussets. The tip of the stick can be kept flat to the gusset to move the goo onto the tape. Gently wipe off the tips of the gussets with bits of paper towel before pulling up the tape.



The glue for the upper gussets shouldn't be quite so thick and they don't need as much glue, especially the edge that meets the hull.



To avoid breaking off the alignment blocks when gluing the upper gussets, press down on the tips of the blocks (not the gusset) with your fingers when pushing the gussets into the corner as shown.

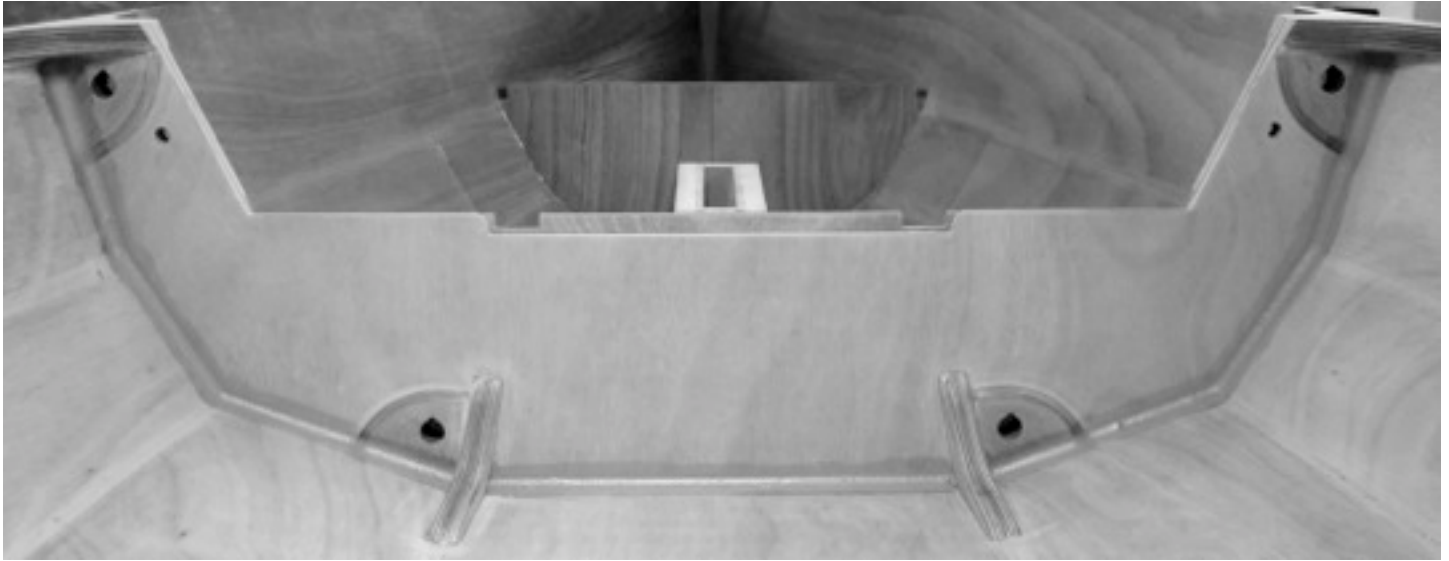


When the glue has cured, carefully (to avoid pulling out chunks of the gussets) slice off the alignment blocks with a sharp, wide chisel held flat to the surface and block sand the top faces of the upper gussets flat.

Avoid sanding through the surface layer of plywood.



Fillet the bulkheads to the hull between gussets on both sides first and allow these fillets to cure before filleting the gussets (see end of next page).



Fillet the forward side first as most of these fillets will be hidden by the foredeck.

Use the 1" fillet stick on the aft side of the bulkheads and the 3/4" stick on the forward side (except use the 1" stick between the lower gussets on forward side. These fillets will all be about the same volume because of the angle differences.

Hold the fillet stick at 80 or 90 degrees for the final pass.

Lightly prime a band a bit wider than the fillet with a glue brush (photo next page), but wipe up excess epoxy with bits of paper towel to make filleting easier.

Start at the trunk and fillet to the lower gussets.

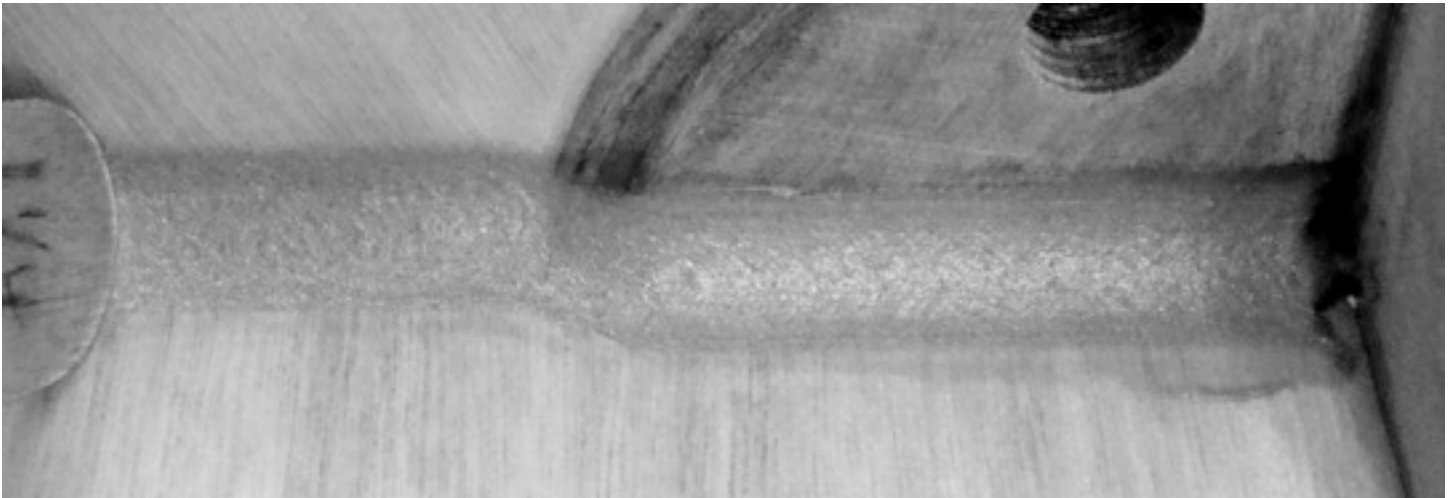
Continue from the lower gusset to the upper gusset.



The gap at the beginning of the fillet is fine, it gets filled when filleting the gussets. →



Hold the stick at 80 or 90 degrees to the surfaces. This will produce a fillet of the desired size and help the fillets wrap around complex areas.



Because these fillets start at both ends there will be a little peak left where they meet. These peaks are easily removed later with sandpaper wrapped around a dowel.

Clean up the edges of the fillets with a sharp chisel stick.

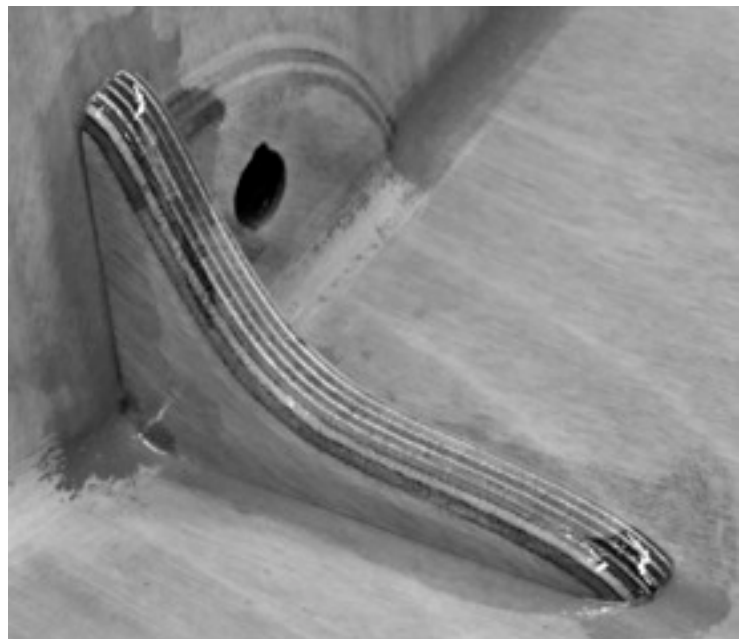


Having trouble? See fillet troubleshooting section on page E-12 These fillets are challenging.

The gusset fillets can be formed the same day, but only if the other fillets have cured to the rubbery stage and if there are no goobers left for the fillet stick to bump over.

If you choose to do the gusset fillets later, sand the ends of the hull/bulkhead fillets first (as shown).

Lightly prime around the gussets. Wipe up the excess.



Squeeze a nice bead around the gusset.

Apply extra in the inside corners.

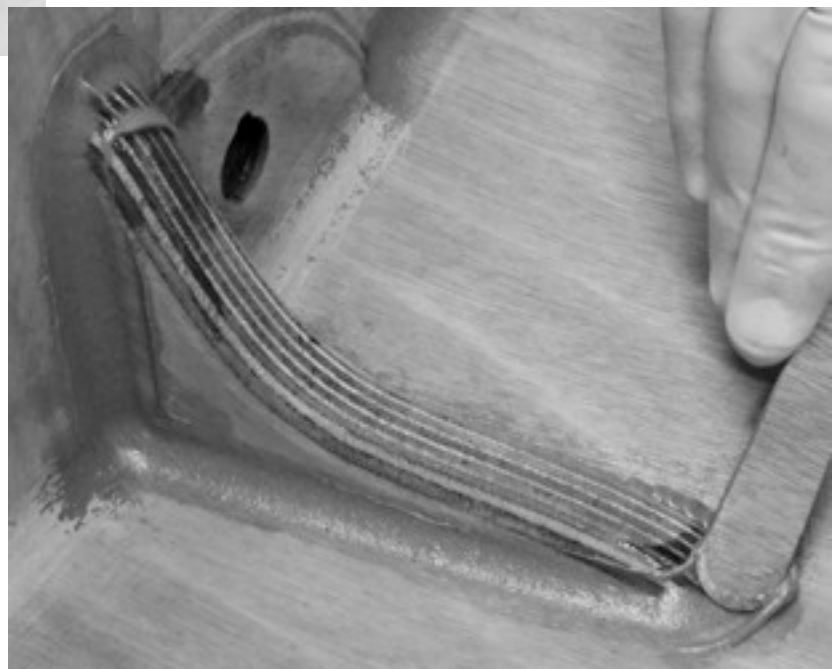
All the gussets are filleted with the 3/4" stick held at 80 or 90 degrees.



Start in the inside corner. When approaching the tip, lay the stick back at an angle to make the fillet bigger at the tips. Stop at roughly the middle of the tip and clean the stick.

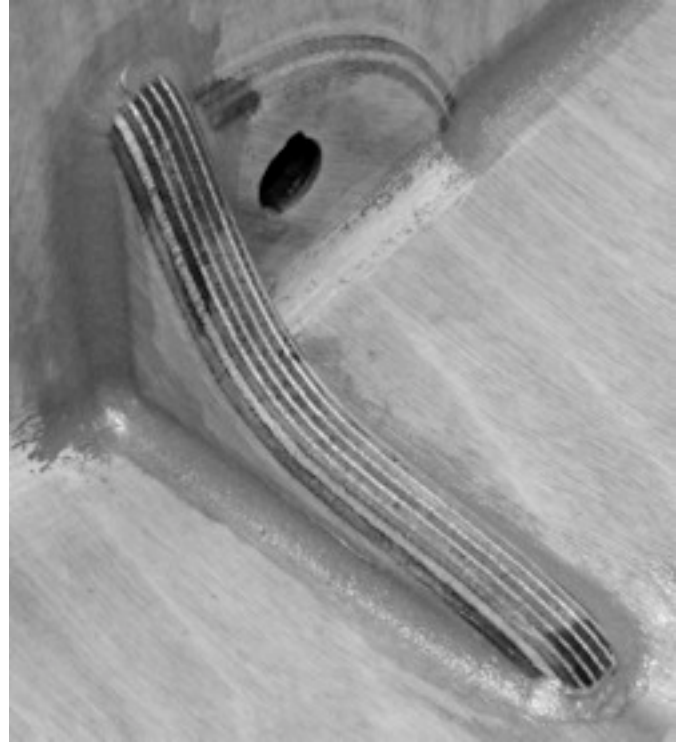


Like we said, these fillets are challenging. We used to prescribe 1" fillets around the gussets. The 3/4" fillets are easier to apply, but just as hard to sand, so do your best when applying them and when cleaning up with the chisel stick. If there's a void in an otherwise nice fillet, leave it to be filled later. If the tips look a bit manky, a bit more epoxy can be added later. The fillets don't have to be perfect. There will be a couple of coats of epoxy applied to the gussets that will fill voids



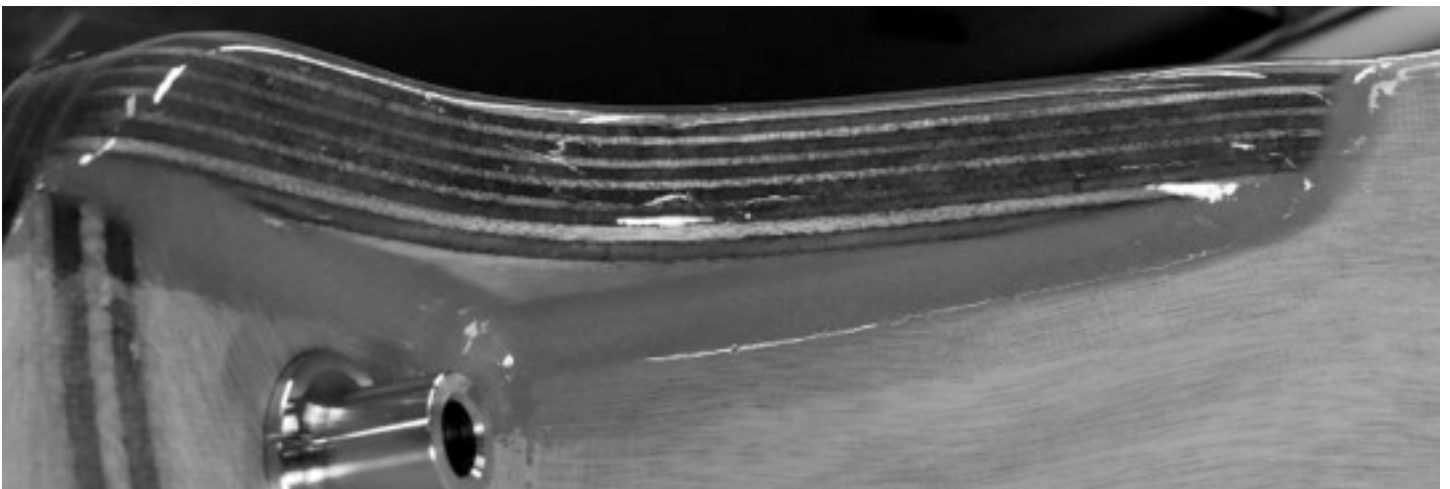
Clean up around the gussets is a challenge and must be done carefully, but it's much easier to do with the chisel stick than with sandpaper.

Clean up goobers from the tips and around the hardware holes.



The under sides of the upper gussets are easier to fillet. Tipping the boat on edge can be helpful. Lay the fillet stick flatter to the surfaces when wrapping around the tips of the upper gussets. This will increase the size of the fillets at the tips and make the ends easier to wrap glass around.

Use the 3/4" fillet stick but, if you want, switch to the 1" stick for the inboard (bulkhead) edge. Keep the fillet edge far enough away from the hardware hole to allow a flat surface for the hardware as shown in the "almost finished" photo below.



FILLETING TRUNK, MAST STEP, AND BACK SEAT BULKHEADS

Fillet the forward side of the mast step bulkhead with the 3/4" stick.

Fillet the aft side (stop at the mast partner) with the 1 1/4" stick.

Both photos at top of next page show mast step bulkhead.



288 in old manual, 293 in new



Clean-up is best done with a plastic straw with the tip snipped off at 45 degrees. **Clean up enough to see that the cleat is centered inside the tape, press down more firmly and clean again.** Pull the straw through a folded rag to remove goo.

If your cleats are not taped off, gently clean epoxy off of the cleats with a sharp chisel stick.

Pull the hull tape up as shown an hour or two later (when the epoxy is still soft). Wait until the glue is firm (or gently warm the next day) to remove tape from the cleats.

If you plan to do the final coat after installation, tape off the hull around the cleats, sand away goobers, 3-M scrub, and coat, but wait a bit and remove the tape after the coating has gone tacky.



OARLOCKS

Because the height of the foredeck and the gunwale are what they are (and don't want to be changed), riser blocks are needed for the oarlock sockets to keep the oars out of your lap.

The riser blocks don't affect the height of the nested package.

We show the installation of riser blocks for the Gaco oarlock sockets, but the same method and placement should be used for any oarlock sockets.

The riser blocks can be glued to the gunwale without clamping. Locating when gluing can be done with thick tape cut with an X-Acto® knife, the same as the foot braces.

We pre-finished the riser blocks with three coats of epoxy before installing.

The centers for the socket holes are at 2" and 22" aft of the forward end of the aft half. Place two layers of 2 " wide tape in these areas (see next page).

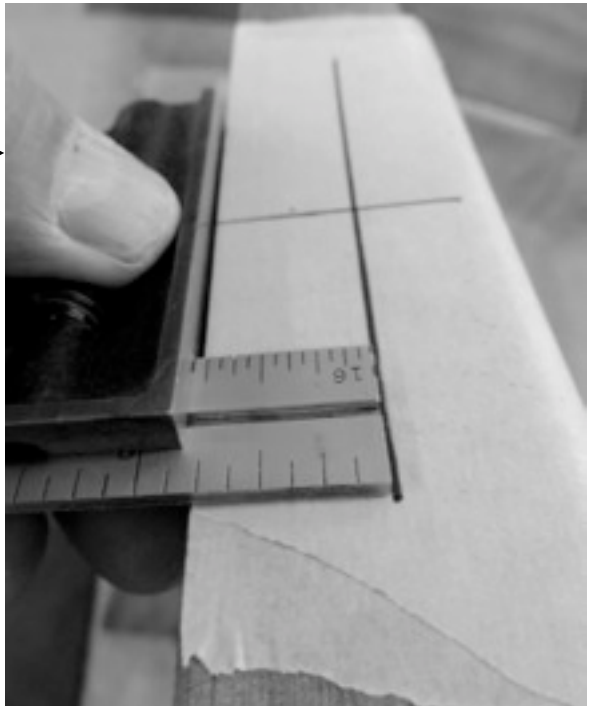
Measure and make marks as shown in this photo looking at the gunwale from above.



Set the combination square at to $13/16"$ ($3/4"$ plus $1/16"$) and make marks parallel the the outer edge.
Note: the tape doesn't wrap over the outboard edges.

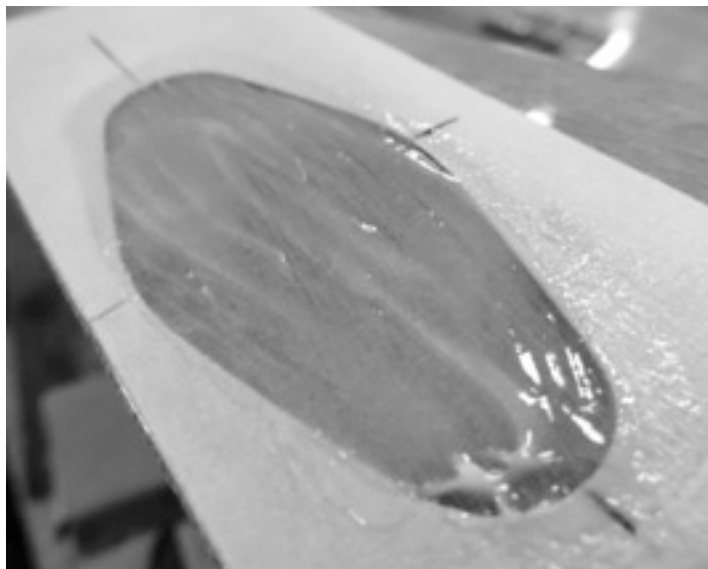
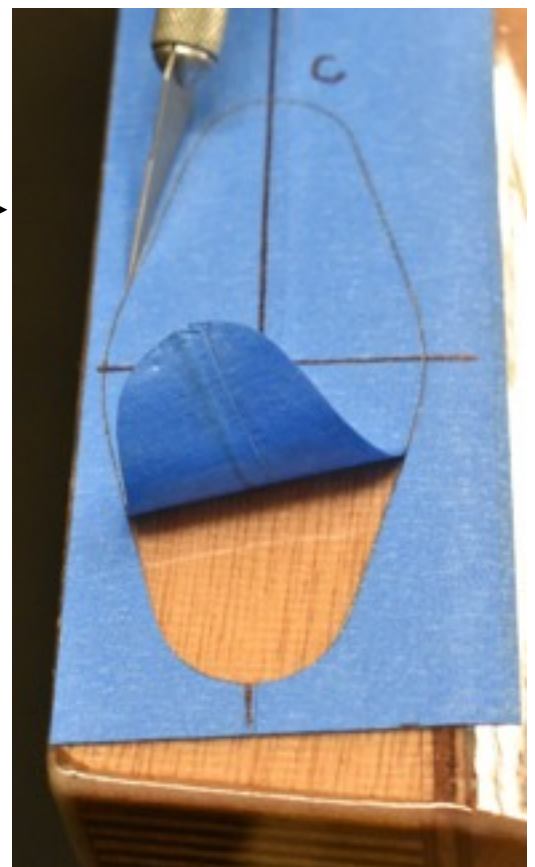
Clamp the riser blocks over the tape using the marks to align fore & aft and parallel to the outer edge of the gunwale as shown below.

Note: Both old and new style riser blocks shown in following photos.



While the block is clamped, **pencil mark around the block** and **identify as shown** on right and next page.
Carefully cut to pencil marks and remove tape.

Prep the taped off areas where the riser blocks will glue as well as possible with pieces of 3-M scruddie. Scrub parallel to straight edges and away from corners to keep the tape intact. **Wipe clean.**



Prime the bottoms of the riser blocks and apply thickened epoxy (gluing mix, mayo thick) to the taped off areas.
Place the blocks and push down lightly (next page)...



Clean around the riser blocks with a straw or chisel stick. Push down more firmly and clean again.

Don't bump until cured, but if you can, pull the tape on gunwales when the epoxy is rubbery (not gooey). The tape will come off cleaner if pulled before the epoxy is hard, but don't pull tape from the riser blocks until the glue is firm enough to avoid shifting the riser blocks.

The hole through the gunwale should be drilled with a 5/8" hole saw for the Gaco sockets.

The holes in the riser blocks that we sell are 5/8" diameter and square to the surface and can be a guide for drilling square through the gunwale.

Remove the pilot bit from the hole saw.

Push the hole saw tip through the riser block with drill stopped and then try to keep the hole saw barrel centered in the hole while drilling.

First, clamp a block of wood under the gunwale (just outside the fillet) to avoid a blowout from the hole saw as it comes out the bottom.

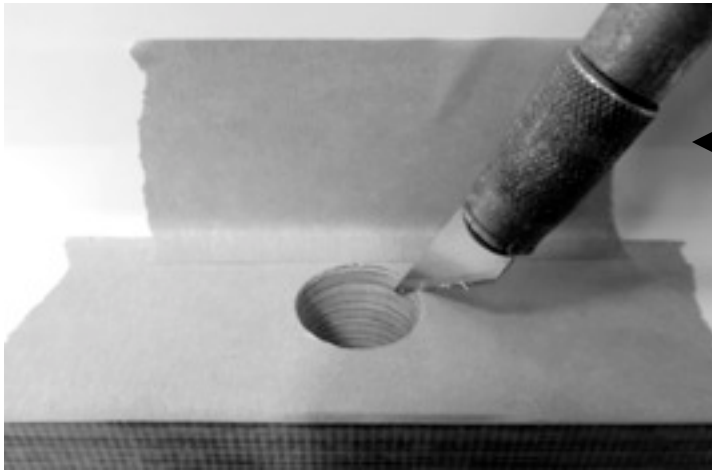


Cut a small square of 100 grit paper and adhere it to the barrel of the hole saw to open up the holes. Check that the flange of the socket can lay flat without the socket itself pushing sideways on the hole.

The holes can be opened up one way or another with the sandpaper-glued-to-the-hole-saw-trick.

With the flange held flat (or screwed in place) there should be a plenty of room all the way around the socket at the bottom end for syringing epoxy into the void.





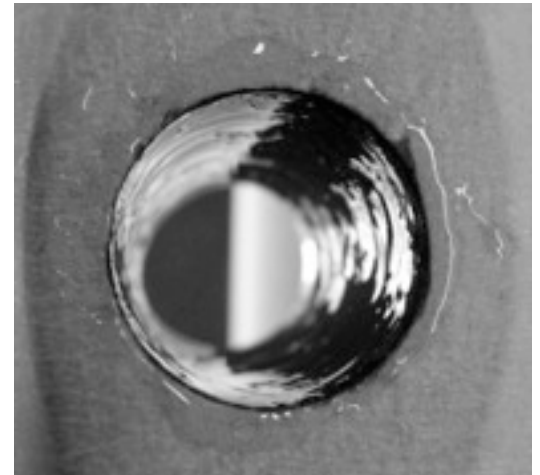
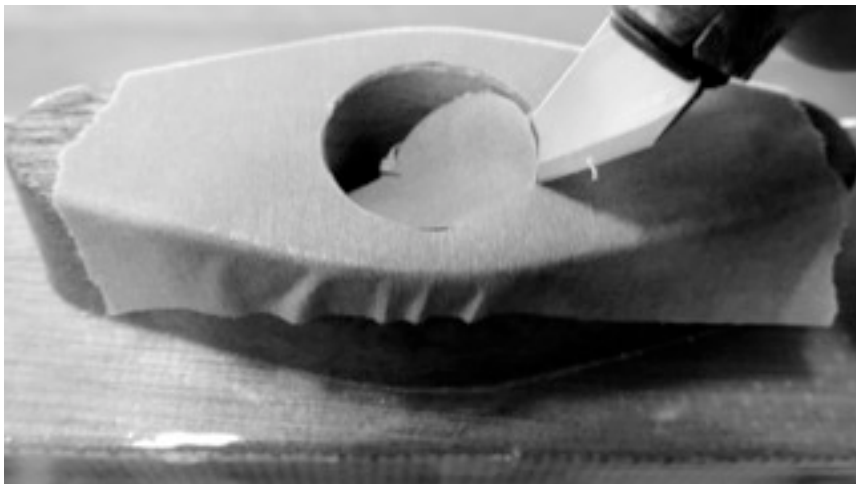
Tape over the bottom ends of the holes and knife out with an X-Acto® knife. Add tape to the hull for dripping epoxy.

The holes through the gunwales need to be very well sealed to avoid water intrusion into the plywood gunwale. There's no guarantee of a complete seal when syringing, so we coated these holes twice with epoxy before installing the sockets.

Tape off and knife out the top of the riser blocks (photo below).

Coat the insides of the holes very thoroughly and liberally with a glue brush. Let the excess epoxy drip out the bottom and **blot the drips from the underside of the gunwale with a folded paper towel** (do this multiple times).

If you don't get bubbles and have a nice glossy seal all the way to the bottom of the hole, then one coat is probably enough, but if you apply a second coat, remember to blot away the drips.



Mount the sockets dry with the 5/8" #10 screws. Remove and fill the screw holes with **un-thickened epoxy** with the tip of a small nail or something similar.

Spread thickened epoxy on the undersides of the socket flanges (especially near the socket) and install all oarlocks. Clean up squeeze-out with a chisel stick and multiple small bits of paper towel (rubbing hard) **Don't use thinners on the plastic sockets.**

Riser blocks, as of January 2017, have a slightly different look than what is pictured below.

