

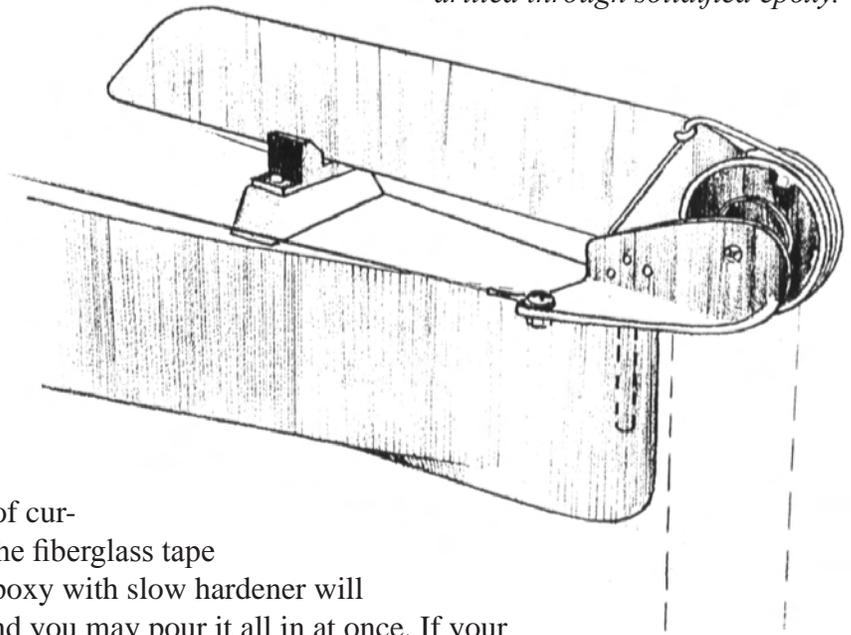
INSTALLING YOUR CLC RUDDER

These instructions are written to help you install the CLC rudder kit on your wooden kayak. The rudder can be fitted to your boat during construction or after completion. Please feel free to call us if you have any questions.

Mounting The Rudder

Prior to installing the rudder, you must make an end-pour; that is, fill the end of the hull with epoxy to prevent water from entering through the rudder pintle hole and to strengthen the mounting area (You may already have done this when you built the boat; if so, you can skip this step). If you have not made an end-pour, lean your kayak against a tree or building, stern down, and pour 6 to 10 ounces of epoxy into the stern of the boat. Pour the epoxy through the aft hatch a few ounces at a time. A large mass of curing resin can produce enough heat to melt the fiberglass tape off of the end of the hull! Note that MAS epoxy with slow hardener will not generate an excessive amount of heat and you may pour it all in at once. If your deck is not yet attached, simply stand the boat on end and place tape over the point where the sheer clamps join, and fill the cavity behind them with epoxy.

Figure 1: Rudder pintle installed in hole drilled through solidified epoxy.



When the end-pour has hardened, drill a 3/8-inch hole in the deck of your kayak to accept the rudder pintle as shown in Figure 1. Be sure

this hole is vertical when the kayak is level. If you now mount your rudder you may notice that the tip of the stern interferes with the swing of the rudder. On kayaks with overhanging sterns, such as the Cape Charles or Tred Avon models, you must trim 1 to 3 inches from the end of your hull with a handsaw to allow the rudder to swing (Figure 2).

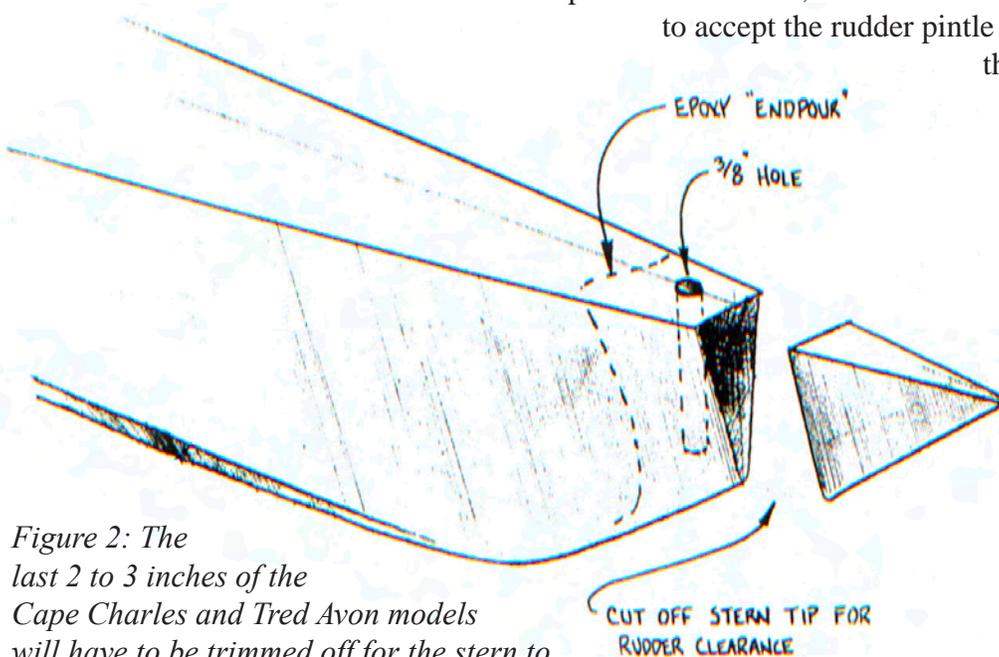


Figure 2: The last 2 to 3 inches of the Cape Charles and Tred Avon models will have to be trimmed off for the stern to accept the rudder.

Finally, fit a retaining screw just forward of the black plastic disk that protrudes from the front of the rudder head (Figure 3). This screw's head "holds down" the rudder and prevents it from falling off during eskimo rolls or other capsizes.

If you're building a Mill Creek kayak, you must replace the black plastic disk mentioned above with a white plastic spacer; this spacer was included in your rudder kit only if you mentioned when you ordered that the rudder was for a Mill Creek. Give us a call if you need it (Figure 4).

Mounting the rudder is only half the job; now you must run the steering cables, fit the rudder lifting line, and install sliding footbraces.

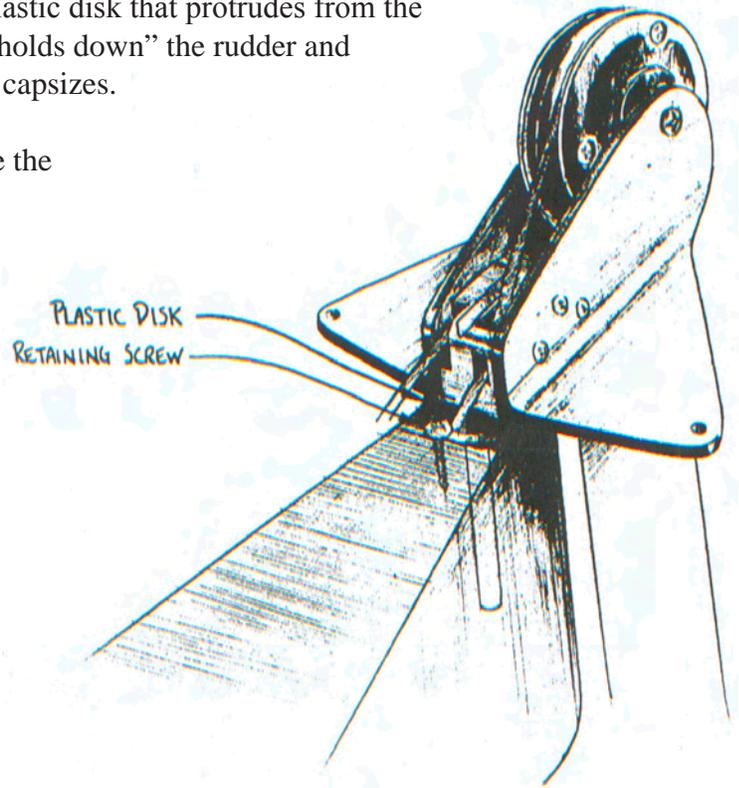


Figure 3: A retaining screw prevents the rudder from detaching from the deck in the event of a capsize.

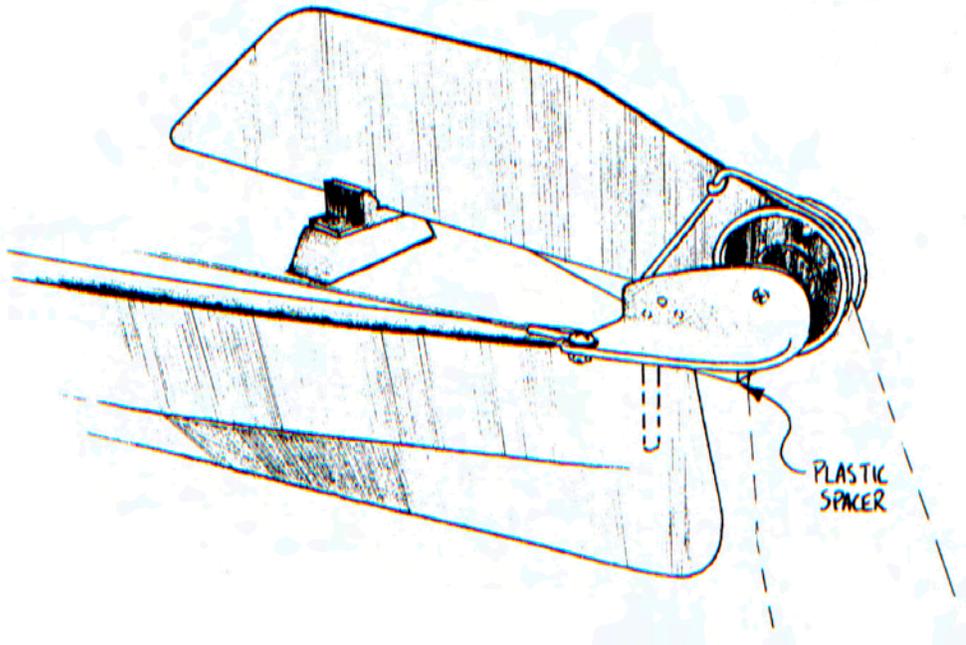


Figure 4: The Mill Creek stern won't allow the rudder blade to hang at the proper angle unless a spacer is installed in front of the blade.

Installing the Steering Cables

The steering cable housings will penetrate the deck about 2 feet forward of the rudder. The cables should bend as little as possible, so the point where the cables are attached to the rudder, the point where they penetrate the deck, and the point where they pass through the bulkhead should be in a nearly straight line. Drill the holes through the deck at less than a 45 degree angle so that the cables don't bend sharply where they exit. Seal the cable housing to the deck and to the bulkhead with a dab of 3M 5200 sealant or with clear silicon caulk. Use the plastic cable anchors to attach the cable housing to the deck just aft of the exit holes; this will prevent the caulked seal. Be sure that the screws for the cable anchors penetrate the sheer clamps and not just the deck. Also, attach the cable housing to the sheer clamp in several places inside the kayak (Figure 5).

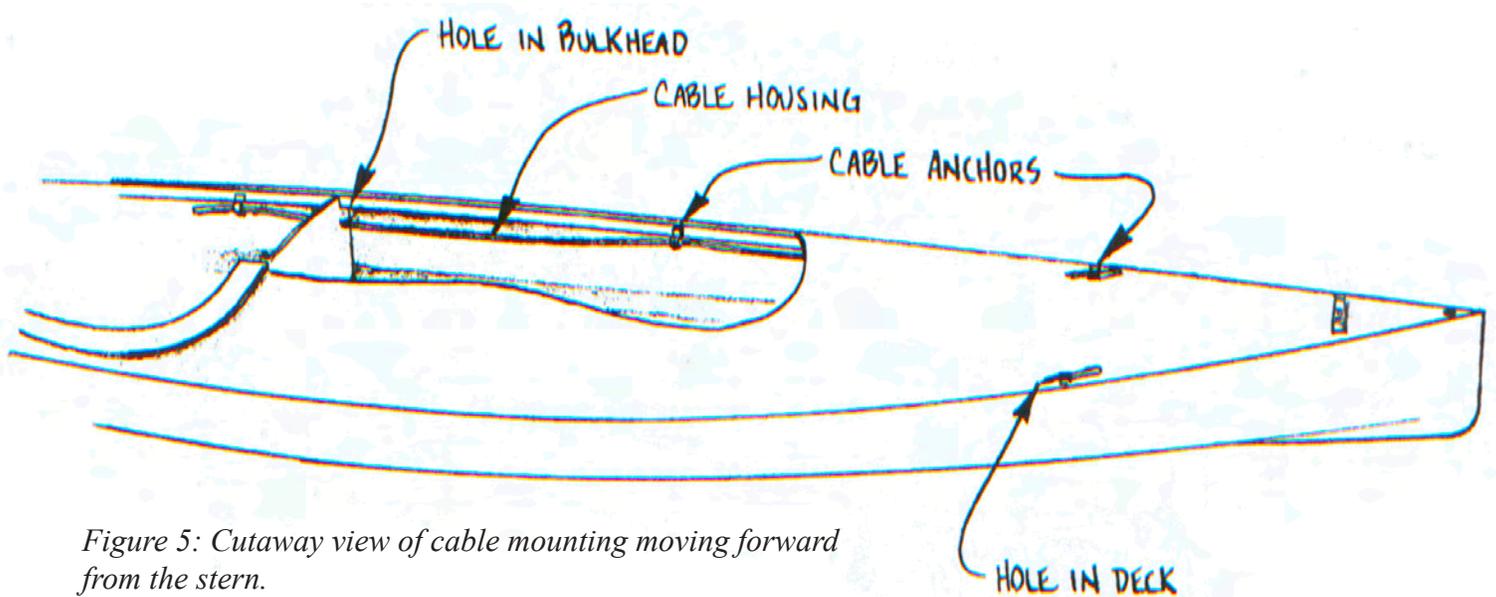
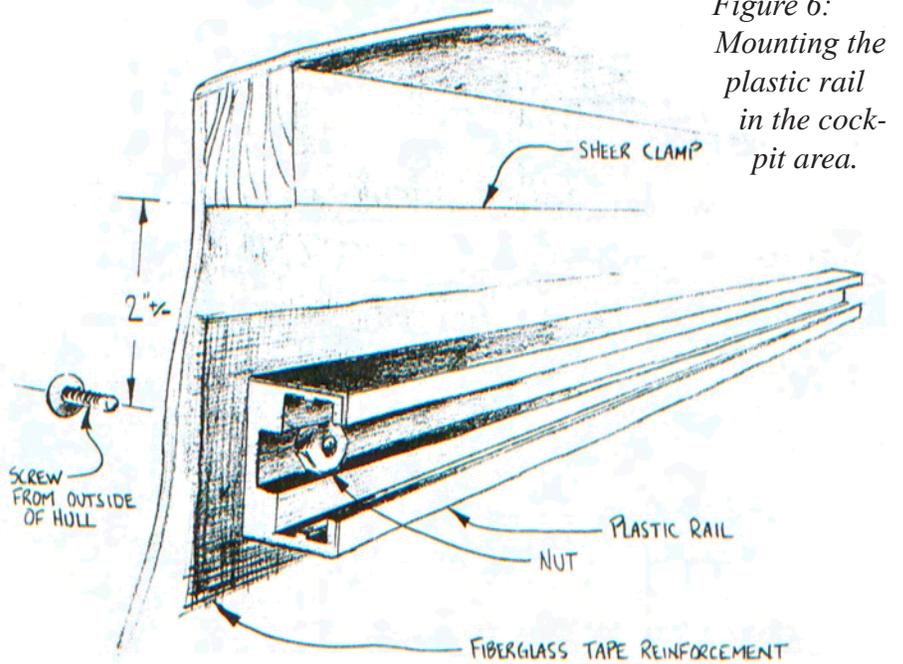


Figure 5: Cutaway view of cable mounting moving forward from the stern.

Thread the wire cables through the housing. Attach the wire cable to the triangular rudder “wings” with the machine screws and lock nuts. Loop the cables tightly over the screw and attach them with a swage. If you own or can borrow a swaging tool, use it to squeeze the swage shut; otherwise use a pair of Vise-Grips or a large pair of pliers to squeeze the swage shut in several spots. Squeeze tightly so the cables won't come loose at a critical moment. Don't over-tighten the screws; the cables should pivot freely.

Installing the Footbraces

The footbraces adjust with a trigger mechanism behind the footpad. The aluminum footbrace unit slides in the plastic rails that are screwed and glued to the hull (Figure 6). Start by finding a comfortable position for the footbraces in your kayak. The footbraces are usually positioned 2 or 3 inches below the sheer clamp and under the ball of your foot. Mark and drill the holes in the hull for the two machine screws that hold each aluminum rail in place. Laminate two layers of fiberglass tape or a 3mm plywood pad to the inside of the hull to reinforce the area under the footbraces. Coat the outside of the plastic rail with 3M 5200 or other flexible sealant. Dip the screw's threads into epoxy or sealant and screw the footbraces and slides into place. The nuts should be jammed into the recessed slot in the plastic rail. If the screws interfere with the footbrace's sliding action, remove them and file or grind them down a bit.



Check that both footbraces are parallel when the rudder is centered. Loop the cables through a screw (Figure 7) at the end of the aluminum rails; they will be attached to the footbraces with a swage. Check that the sand/mud clearing slots in the rails face down before attaching the cables.

For the Mill Creek 16.5, wooden riser blocks are included in the rudder kit to allow the footbrace track to clear the deck knees. These are glued and screwed to the hull, and the plastic rails are attached to them with the enclosed wood screws. Separate drawings associated with mounting the rudder/footbraces in the Mill Creek 16.5 appear at the end of these instructions.

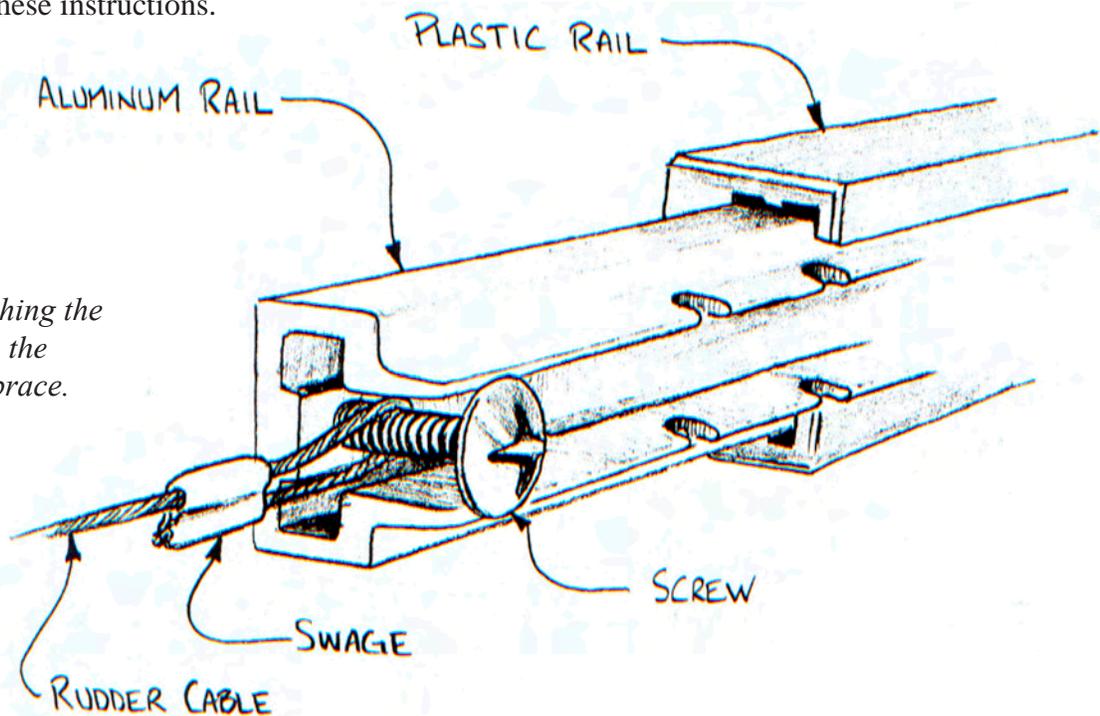


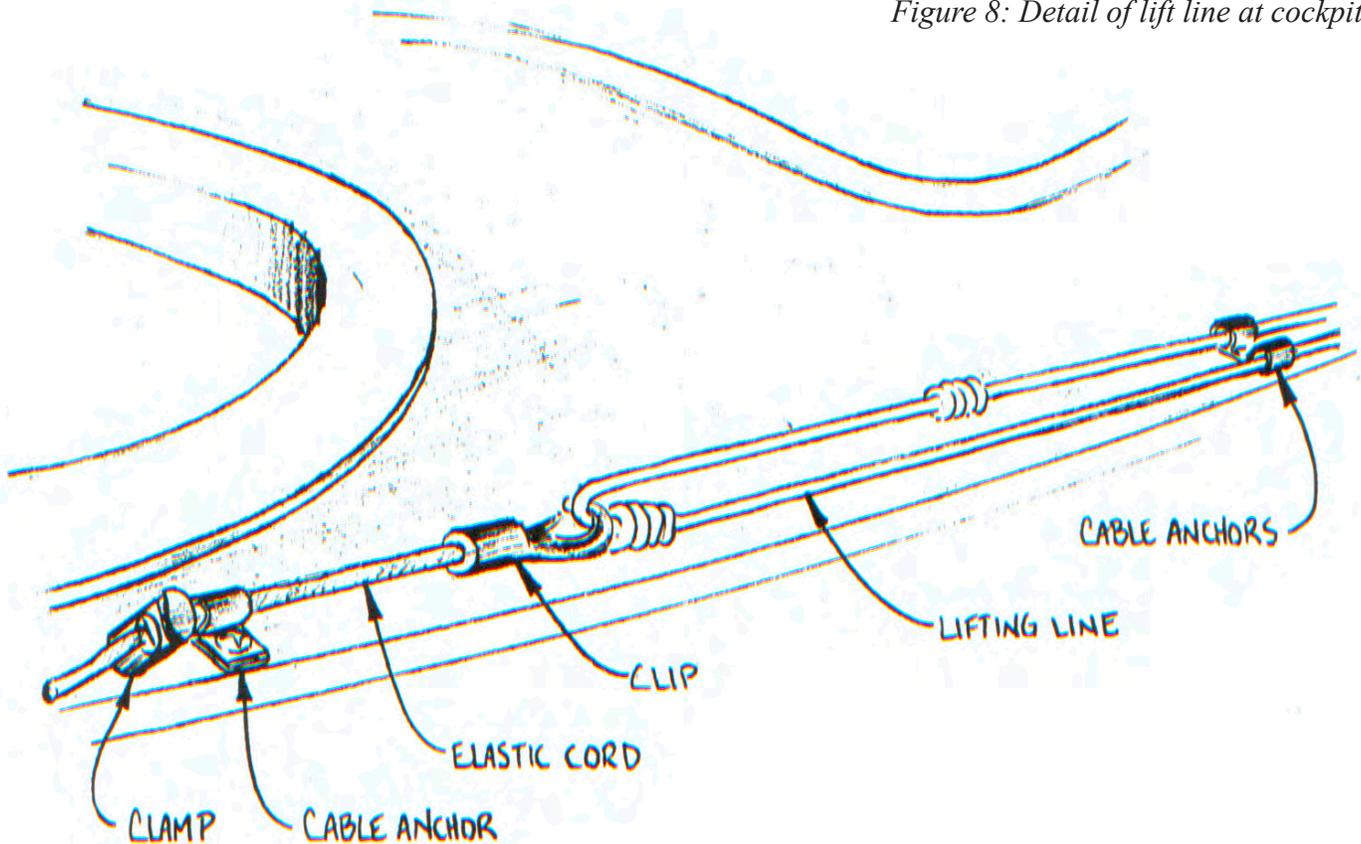
Figure 7: Attaching the rudder cable to the aluminum footbrace.

Rigging the Lifting Line

The rudder is designed to be lifted out of the water by using a loop of line led to within the paddlers' reach; pulling on one side of the loop raises the rudder, pulling on the other lowers it. The loop is led through a clip that's tensioned by a piece of elastic cord as shown in Figure 8. The elastic cord prevents the loop from loosening and tightening as the rudder moves; it's fastened through a cable clamp beside the cockpit. The lifting/lowering loop should pass through the elastic cord eye just behind the paddler. This line should also be led through two cable anchors along the kayak's gunwale. These could be attached using the same screws that hold the hatch cover straps and tie-downs. The lifting line installed on the rudder is long enough for most of our kayaks, but if you are installing the rudder on a very long single, you might want to substitute a longer lift line to bring the loop closer to the cockpit (Figure 8).

Finally, refer to Figure 4 to mount the V-block in the correct position. Glue the wooden V-block mount to the deck to raise the V-block up to the proper height for your kayak.

Figure 8: Detail of lift line at cockpit.



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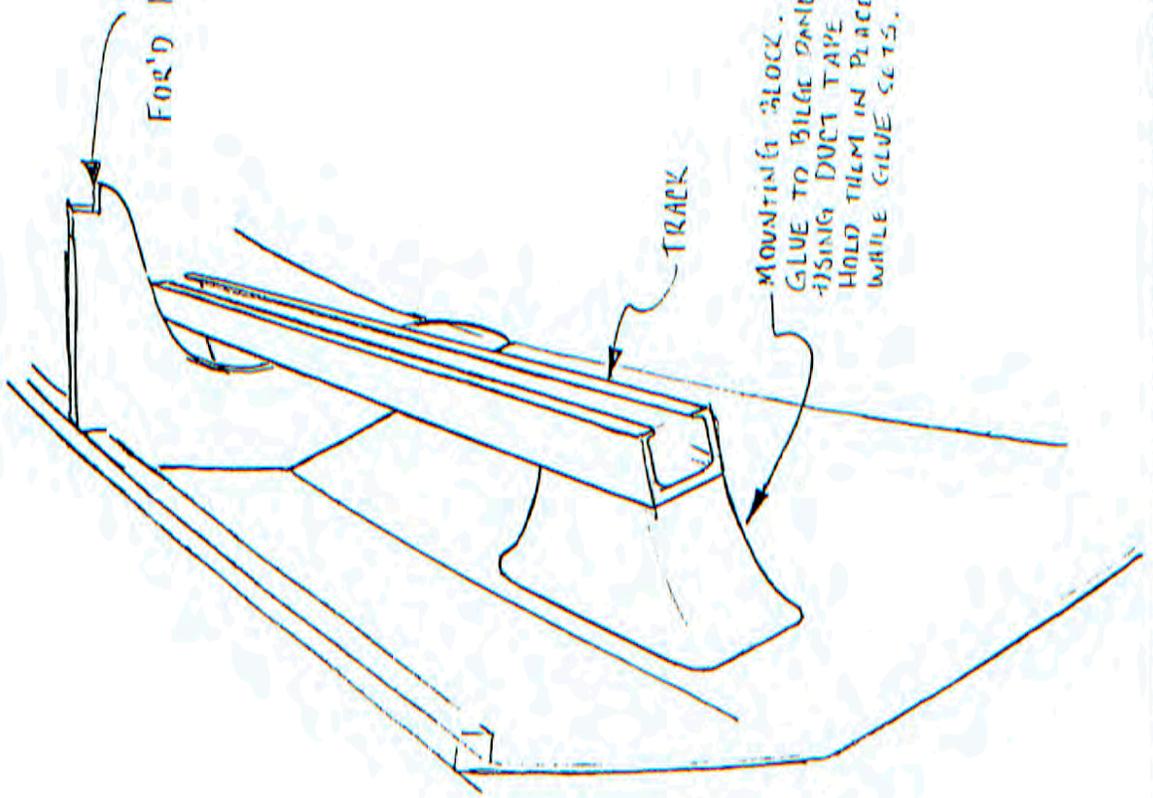
TOP VIEW - TRACK INSTALLATION

SREW TRACKS TO MOUNTING BLOCKS



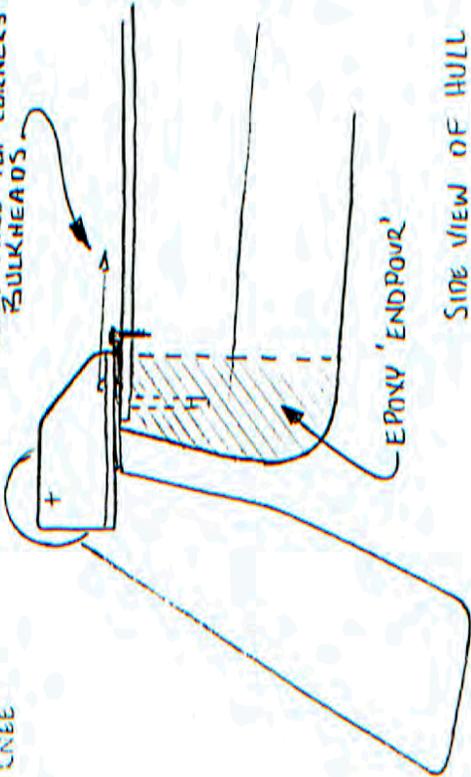
BILGE PANEL

CENTER TRACK ON FOR'D HANGING KNEE



MOUNTING BLOCK.
GLUE TO BILGE PANELS,
USING DUCT TAPE TO
HOLD THEM IN PLACE
WHILE GLUE SETS.

LEAD CABLES THRU
DECK AS SHOWN IN INSTRUCTIONS
AND THRU TOP CORNERS OF
BULKHEADS



EPoxy 'ENDPOUR'

SIDE VIEW OF HULL

MILL CREEK 16.5

RUDDER MOUNTING INSTRUCTIONS

NOT TO SCALE