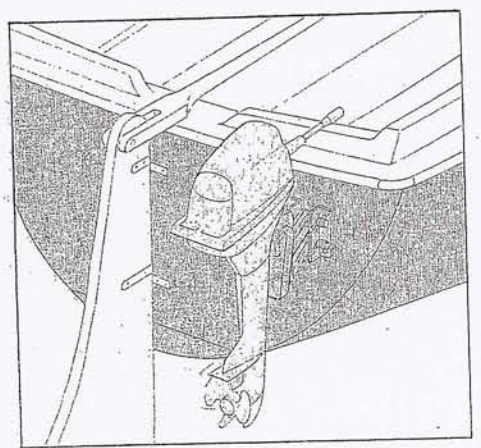
An Outboard Bracket

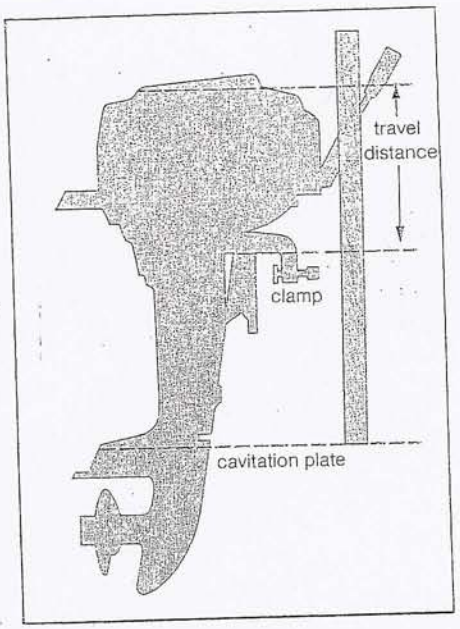
The handiest way to equip a small sailboat with auxiliary power—or a fishing craft with a low-powered trolling engine—is to mount an outboard motor on the transom by means of a retractable bracket like the one shown here. This kind of bracket allows the boatman to lift the motor out of the water when it is not in use without removing it from the bracket.

The bracket consists of a metal flange that is bolted to the transom, a wooden mounting board to which the motor is clamped (and from which it can be detached for storage), and an arm, or lever, that moves the board up and down with the aid of a heavy spring. In making the installation, the boatman must take all measurements with the bracket in the elevated position, since the spring holds it there until the motor has been attached. Once installed, however, the weight of the engine helps pull the spring down.

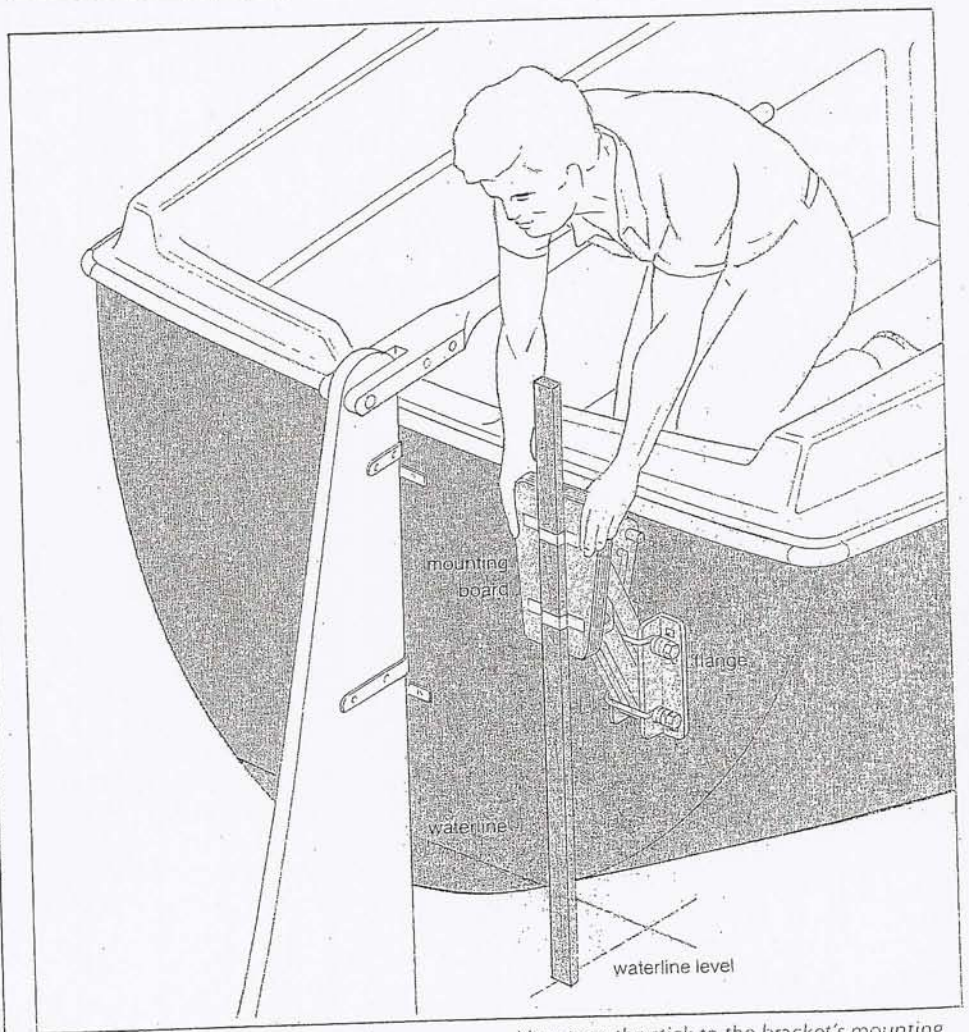
If the transom is perpendicular, the bracket can be mounted directly onto it. If the transom is canted more than 5°, a wedge must be inserted *(overleaf)* so the motor, when mounted, will be angled properly to the water. In either case the bracket must be positioned well out of the range of the rudder *(below and right)*. It is affixed to the transom by means of a bolt at each corner, which is then fastened with a lock washer in order to prevent the nut from working loose with the vibration of the motor. A doubler set onto the inboard side of the transom provides strengthening, so that the mounting will be properly secure when the bolts have been cinched tight.



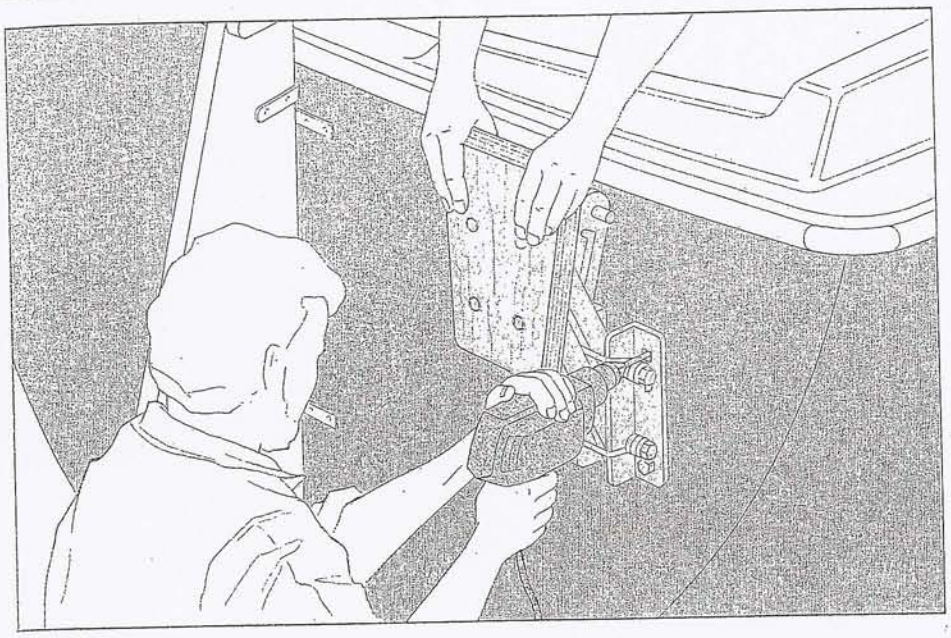
Mounted on a sailboat transom, the bracket is placed so that, when raised, the motor's skeg will be above the water; when lowered, the motor's cavitation plate will be about three inches below the waterline. Manufacturers' instructions give the travel distance of the bracket between its raised and lowered positions.



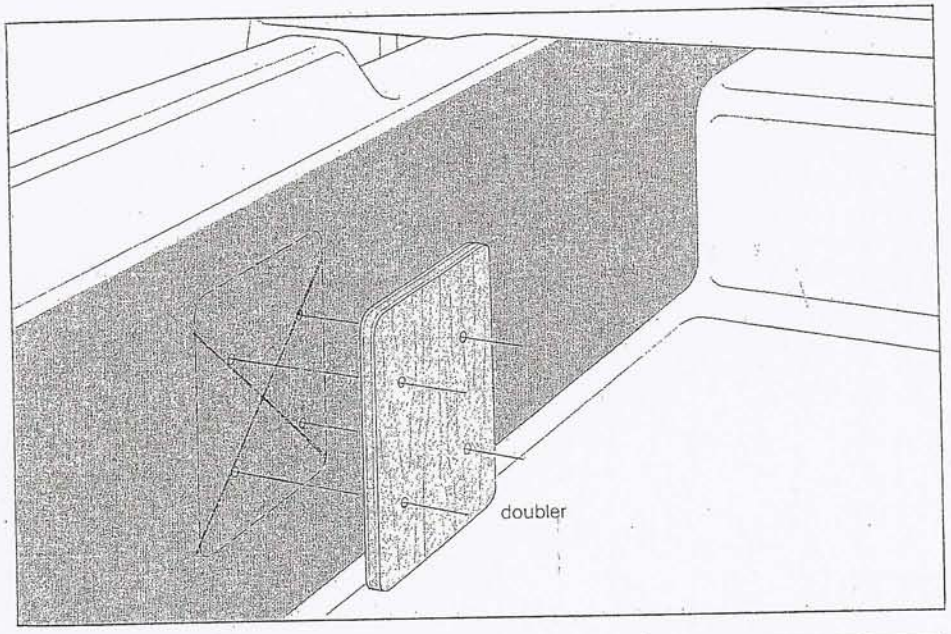
To position the bracket on a sailboat transom, the motor must be measured to find the distance between a point three inches above the cavitation plate and the upper edge of the mounting clamp. Take a plain stick and align one end three inches above the plate (lower dotted line). Mark the stick at the point opposite the clamp's upper edge (middle line). For a powerboat with a planing hull, mark the distance between the plate and the same point on the clamp. Then, above the clamp marking, add and mark off the travel distance of the bracket (upper line), as given by the manufacturer.



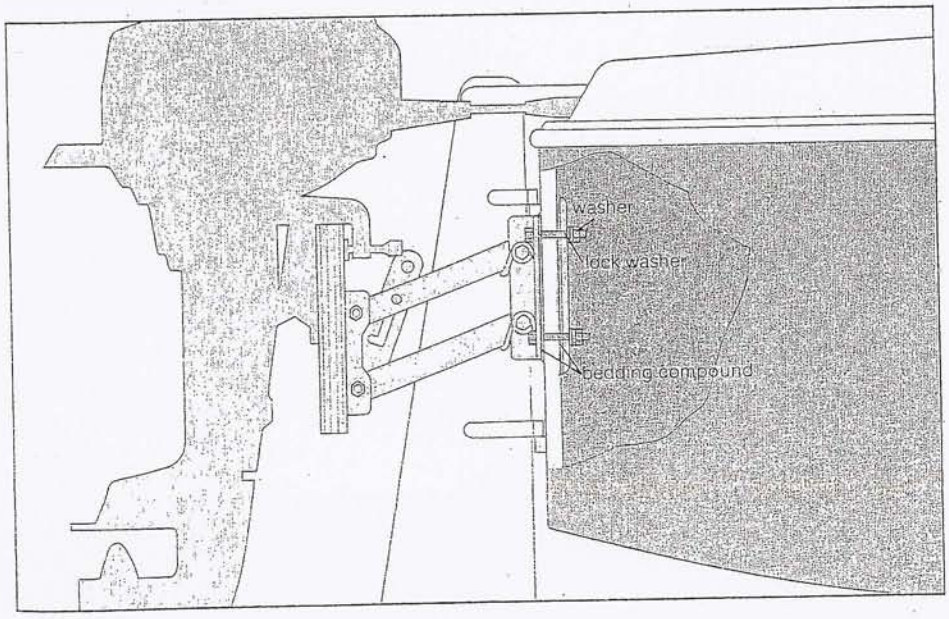
Now tape the stick to the bracket's mounting board, aligning the top pencil mark with the top of the board. Place the bracket's metal flange against the transom so the bottom of the stick sits even with the boat's waterline. For a powerboat place the bottom of the stick even with the bottom of the transom.



Still holding the flange against the transom, mark, with a pencil, two diagonally opposite corner bolt holes. If your boat has a perpendicular transom, you can now drill the two holes, holding the flange in place as a jig over the pencil marks, and making sure to hold the drill at right angles to the hull. Temporarily slip bolts through the holes, then drill the two remaining bolt holes. If your transom is more than 5° off the vertical, you will need to make a wooden wedge (overleaf) before drilling through the hull.

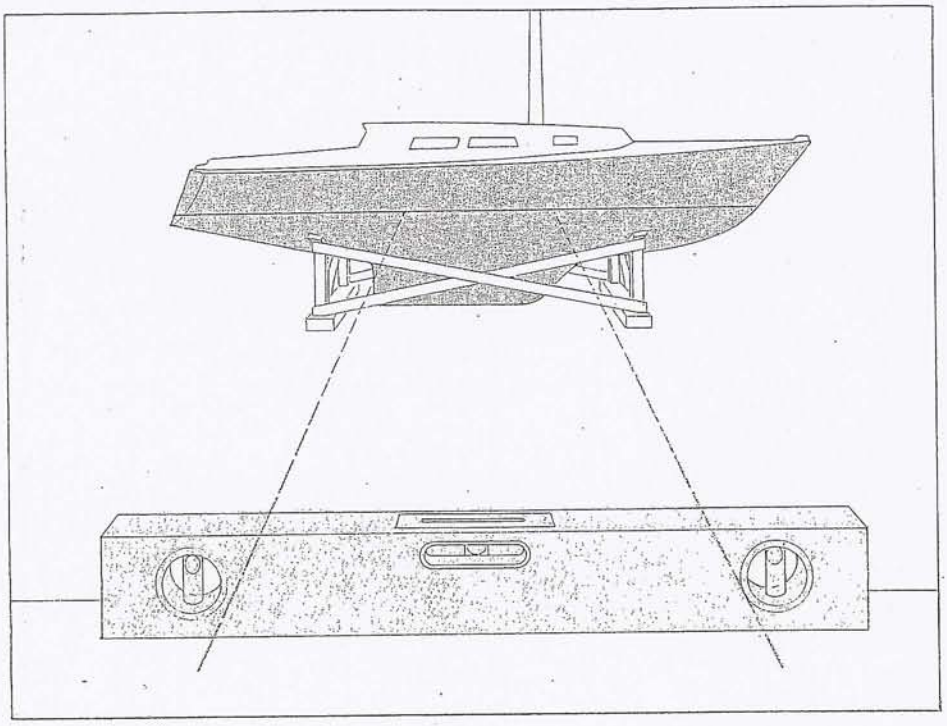


Make a doubler from ½-inch-thick plywood to reinforce the inside of the transom; for extra security and to ensure drilling space for the bolt holes, the doubler should be two inches higher and two inches wider than the bracket flange. Pencil an X through the bolt holes and center the doubler over the X. Have an assistant hold the doubler in place with blocks of wood to protect his hands. Using the holes in the transom as a jig, drill holes through the doubler from outside the hull.

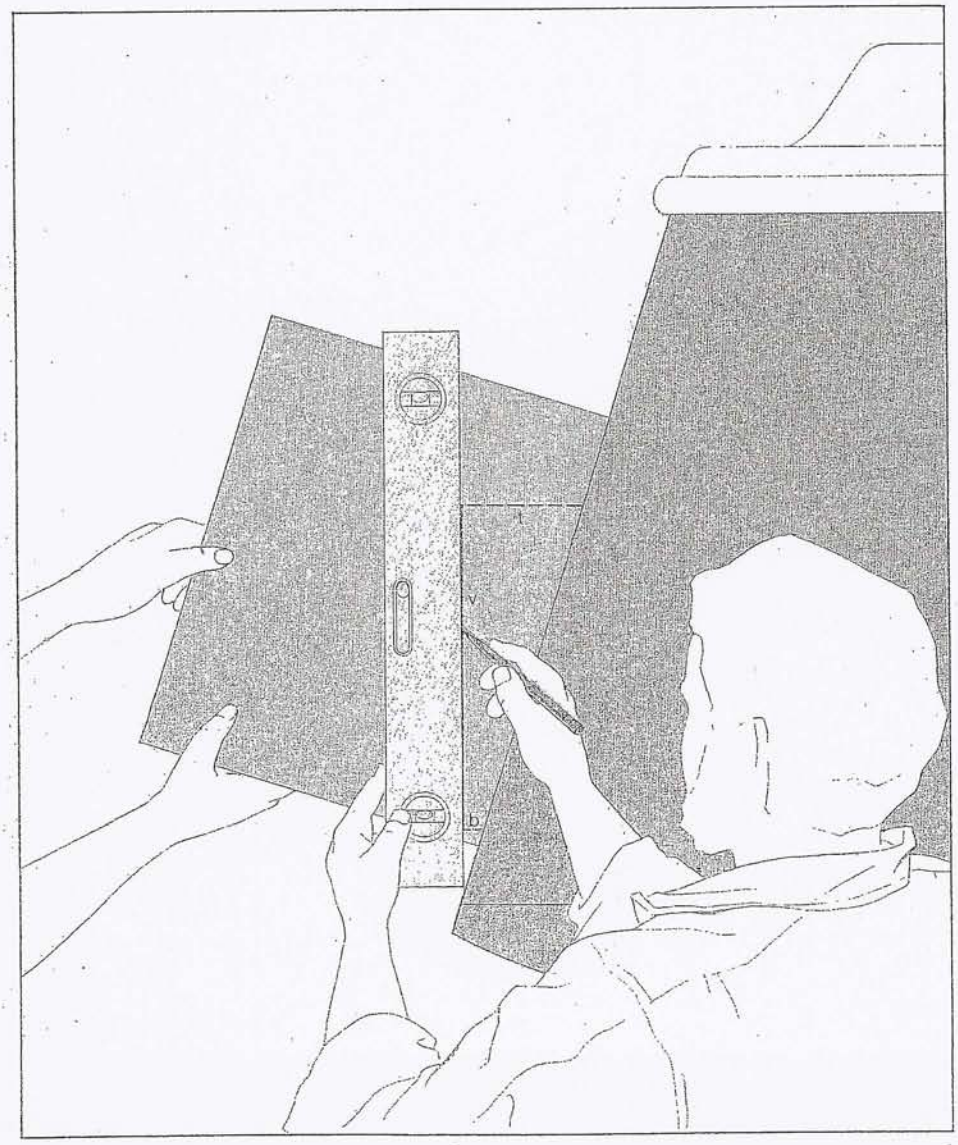


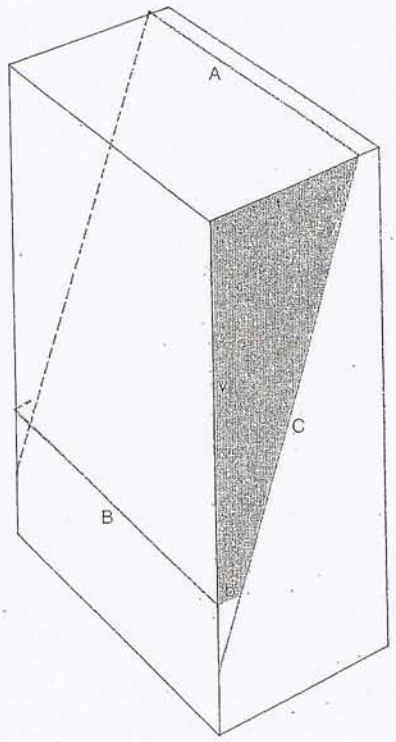
To make the final assembly, first coat the inside surfaces of the flange and doubler with bedding compound; squeeze a dollop of bedding compound into each bolt hole on both sides of the transom. Affix the bracket with bolts, washers and lock washers. Finally file or saw off any bolt ends that protrude.

To make a wedge for mounting a bracket, first determine the exact angle of the transom. While the boat is on a cradle or a trailer, sight along the top of a carpenter's level that is placed far enough from the boat so you can see half the waterline. Adjust the shoring blocks under the boat until the waterline corresponds with the top of the level. Make an exact determination of the transom's angle by the method below. This angle is critical in creating a precise cardboard template for designing the wedge.

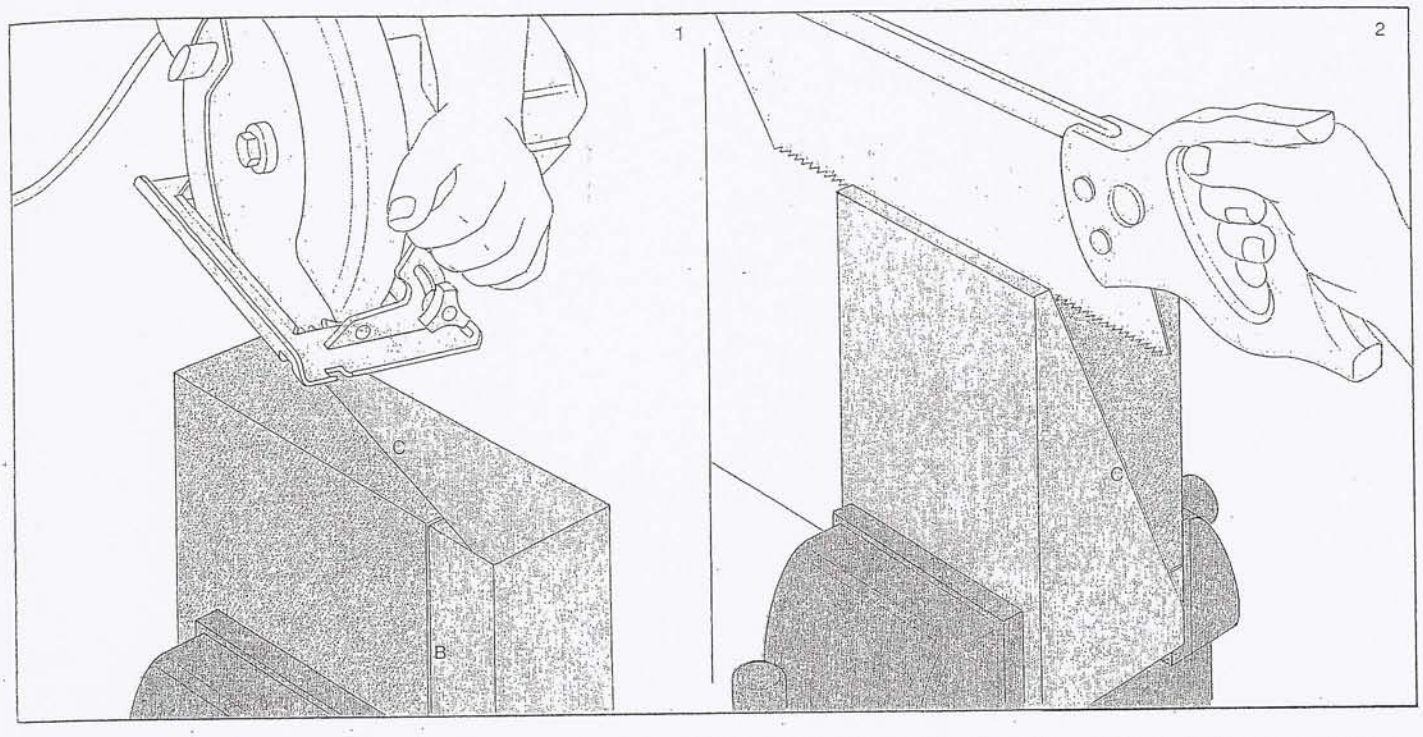


To create the template, take a cardboard a few inches wider and longer than the bracket's metal flange; place one edge against the transom. Hold a level dead upright so it meets the transom an inch below the cardboard. Draw and label a vertical line (v) on the cardboard, along the level's inboard edge. From the base of this line, measure up a distance equal to the bracket flange's height, plus two inches. From that point, draw a second line (t) perpendicular to the first. Make the short edge at the bottom (b) parallel to t. Cut out the template.

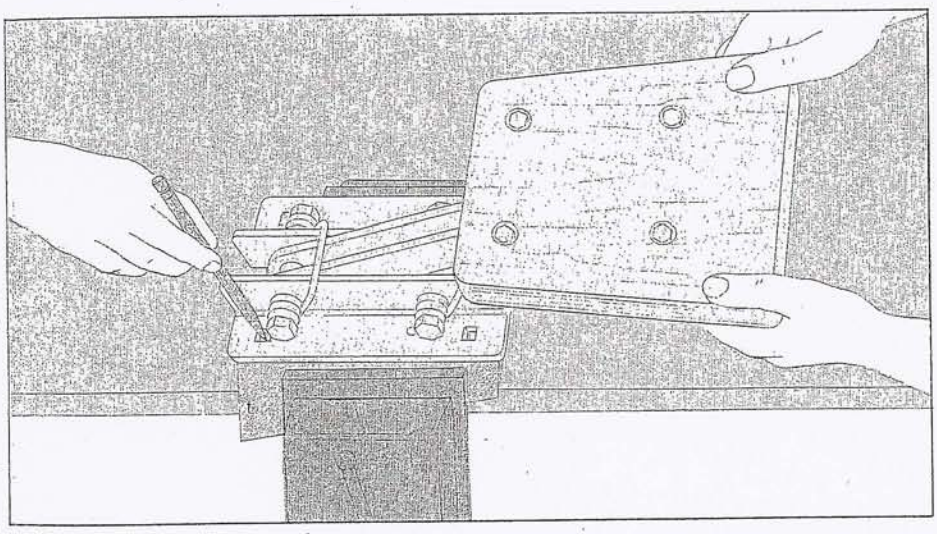




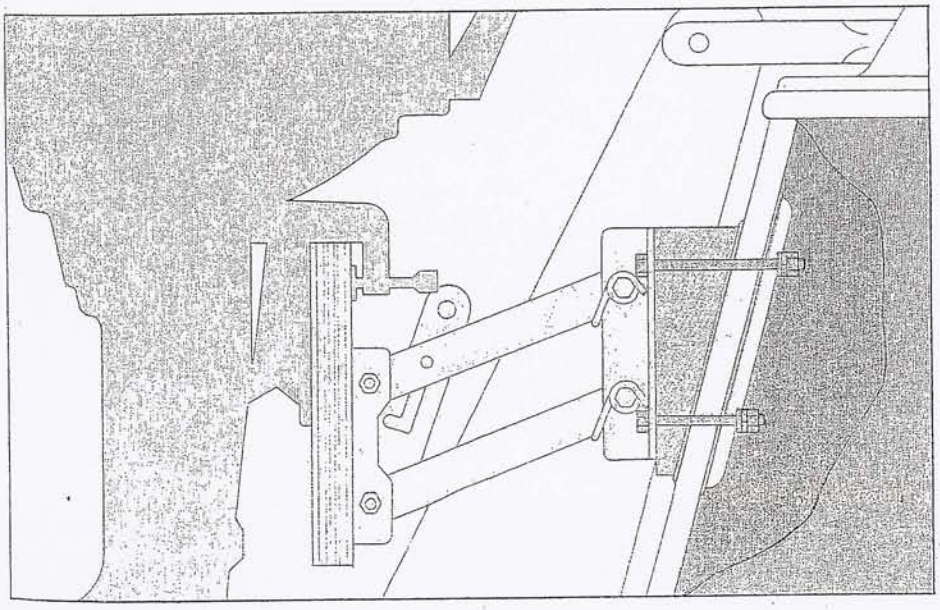
Take a teak block two inches wider than the bracket flange, and trace the template's outline on one side. Repeat on the opposite side of the block. Draw a line (A) across the top of the block from the upper end of the template's diagonal line (C) to its counterpart on the opposite face. Now draw another line (B) from the bottom (b) of the template tracing to the corresponding tracing on the opposite face.



To cut the wedge, secure the teak block in a vise (1). With a circular electric saw make a series of preliminary ½-inch-deep cuts along lines B and C. Replace the block in the vise with the top end up (2). With a crosscut saw, cut the wedge away from the block on line C. Label the wedge sides to correspond with the labels on the template. Plane and sand the cut side smooth; round the outside corners and edges and finish with sandpaper.



Place the wedge level in the vise with the newly cut, diagonal side facing down. Center the bracket flange on the wedge, making sure that the top of the flange corresponds with the top (t) of the wedge. Mark the four corner bolt holes through the flange. Drill each hole, being sure to keep the drill perpendicular to the wedge.



Align the freshly cut and drilled wedge with the holes already marked on the transom. Using the wedge as a jig, drill through the transom. Make a doubler, as shown on page 23. Apply bedding compound to each bolt hole, and to each faying surface—that is, each surface to be joined. Bolt the assembly together. The wedge will hold the motor away from the transom at just the proper angle.