OWNER'S GUIDE & INSTALLATION INSTRUCTIONS

***IMPORTANT**: Please read the instructions completely before proceeding with the installation. These instructions supersede any other instructions in your instrument manual if they differ.*

06/04

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WARNING

Installation of the anti-rotation bolt is mandatory!

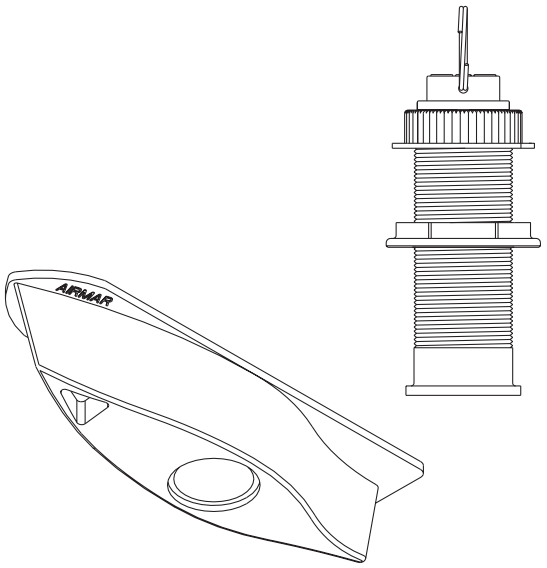
Failure to install the anti-rotation bolt may result in the fairing rotating while the boat is underway. The effect may be violent movement and loss of steering. This could result in serious injury or death to passengers and/or damage to the boat or other property.

Retractable Thru-Hull Transducer with High-Performance Fairing

Model: B122

Record the information found on the cable tag for future reference.

Part No._____Date_____Frequency_____kHz



Applications

- Bronze housing recommended for fiberglass or wood hulls only. ***Caution**: NEVER* install a bronze housing in a metal hull because electrolytic corrosion will occur.
- ***Caution**: NEVER* install a metal housing in a vessel with a positive ground system.
- Maximum hull thickness with fairing (measured perpendicular to the water surface): 47mm (1-7/8")
- Fairing can accommodate a deadrise angle of up to 35°

Pre-test

Connect the transducer insert to the instrument. Hold the transducer over the side of the boat with the active surface submerged in the water and aimed at the bottom. Check for a depth reading (and temperature if applicable). If there is no reading, check all the connections and repeat the test. If there is still no reading or it is inaccurate, return the product to your place of purchase.

Tools & Materials

Safety goggles
Dust mask
Electric drill with 10mm (3/8") or larger chuck capacity
Drill bits: pilot hole 3mm *or* 1/8"
anti-rotation bolt 10mm *or* 3/8"
Hole saw: 51mm *or* 2"
Digital level *or* bubble level & protractor
Band saw *or* hand saw
Rasp *or* power tool
Sandpaper
Mild household detergent *or* weak solvent (alcohol)
Marine sealant (suitable for below waterline)
Slip-joint pliers
Mallet
Zip-ties
Water based anti-fouling paint (**mandatory in salt water**)
Installation in a cored fiberglass hull
Transducer—hole saw for hull interior: min. 60mm *or* 2-3/8"
Anti-rotation bolt—drill bit for hull interior: min. 19mm *or* 3/4"
Cylinder, wax, tape, and casting epoxy

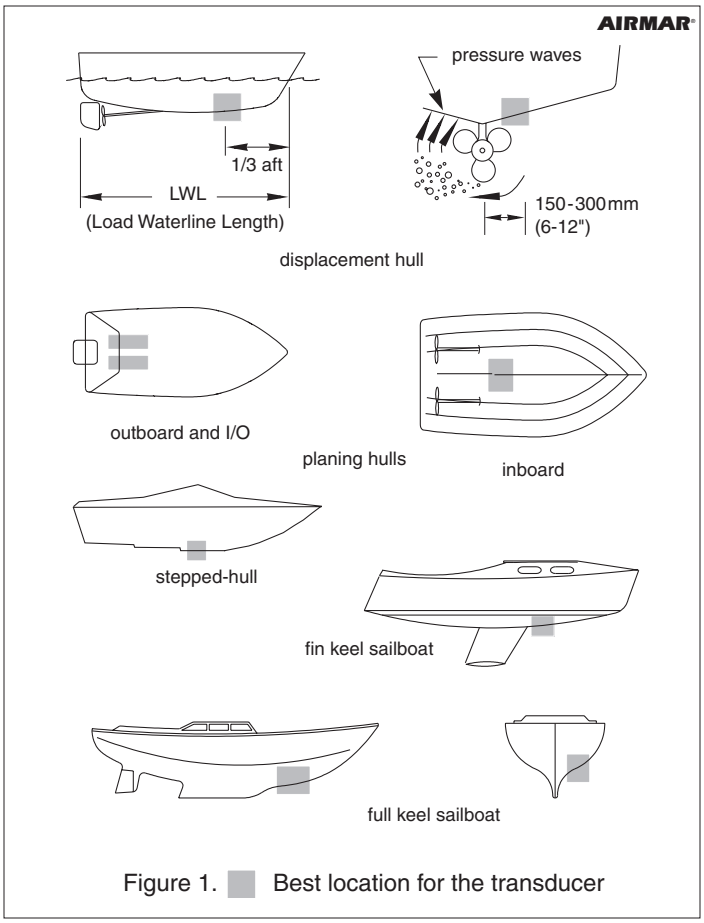


Figure 1. Best location for the transducer

Mounting Location

Placement

Choose a location:

- Away from the propeller(s) and shaft(s), other machinery, and other echosounders to minimize the effect of noise on the echosounder display. The lower the noise level, the higher the gain setting that can be used.
- Where the water flowing across the hull is smoothest with a minimum of bubbles and turbulence (especially at high speeds).
- Where the transducer will be continuously immersed in water.
- Where the transducer beam will be unobstructed by the keel or propeller shaft(s).
- Where there is a minimum deadrise angle.
- Where there is adequate headroom inside the vessel for the height of the housing, tightening the nuts, and removing the insert: 200mm (7-3/4") above the top of the housing.

***Caution**: Do not mount the transducer:*
Near water intake or discharge openings,
Behind strakes, fittings, or hull irregularities,
Behind eroding paint (an indication of turbulence).

Boat Types (see Figure 1)

- **Displacement hull powerboat**—Locate 1/3 aft LWL and 150–300mm (6–12") off the centerline on the side of the hull where the propeller blades are moving downward.
- **Planing hull powerboat**—Mount well aft, on or near the centerline, and *well inboard of the first set of lifting strakes* to insure that the transducer is in contact with the water at high speeds. Mount on the side of the hull where the propeller blades are moving downward.

  Outboard and I/O—Mount just forward of the engine(s).
  Inboard—Mount well ahead of the propeller(s) and shaft(s).
  Stepped-hull—Mount just ahead of the first step.
  Boat capable of speeds above 25kn (29MPH)—Review the installation location and operating results of similar boats before proceeding.
- **Fin keel sailboat**—Mount to the side of the centerline and forward of the fin keel 300–600mm (1–2').
- **Full keel sailboat**—Locate amidships and away from the keel at the point of minimum deadrise angle.

High-Performance Fairing

- Corrects for the deadrise angle of the hull, so the transducer beam shoots straight down.
- Mounts the transducer deeper in the water for clean flow over the transducer's active surface.
- Long streamlined shape directs the water around the transducer to minimize drag.

Installation

***Cored fiberglass hull**—Follow separate instructions on page 5.*

***Caution**: Never use products containing strong solvents such as acetone because solvents can greatly weaken plastic parts.*

***Caution**: Never pull, carry, or hold the transducer by its cable; this may sever internal connections.*

Hole Drilling—Transducer

***Warning**: Always wear safety goggles and a dust mask.*

1. Drill a 3mm or 1/8" pilot hole perpendicular to the waterline from inside the hull (see Figure 2). If there is a rib, strut, or other hull irregularity near the selected mounting location, drill from the outside.
2. Using the 51mm or 2" hole saw, cut a hole from outside the hull. *Be sure* to hold the drill plumb, so the hole will be perpendicular to the water surface.

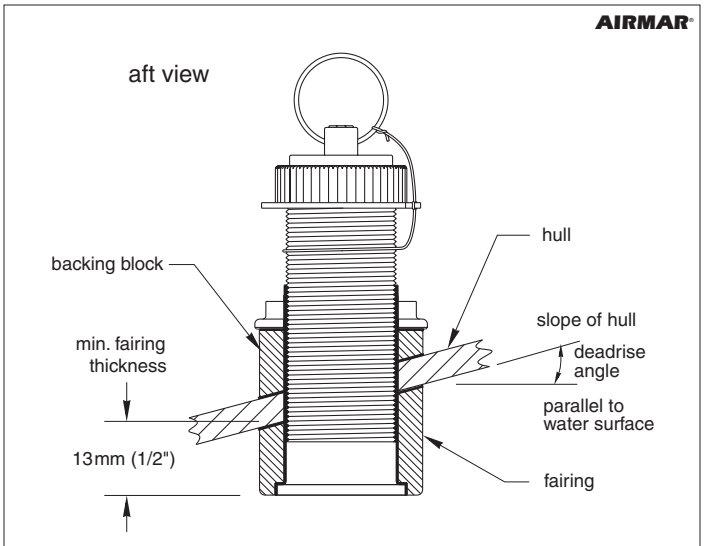


Figure 2. Measuring the deadrise angle and fairing thickness

WARNING

Installation of the anti-rotation bolt is mandatory!

Failure to install the anti-rotation bolt may result in the fairing rotating while the boat is underway. The effect may be violent movement and loss of steering. This could result in serious injury or death to passengers and/or damage to the boat or other property.

Cutting the Fairing

1. Measure the deadrise angle of the hull at the selected mounting location using a digital level, or bubble level and protractor (see Figure 2).
2. Tilt the band saw table to the measured angle and secure the cutting fence (see Figure 3).
3. Place the fairing on the table so the cutting guide rests against the fence (see Figures 3 and 4). The end with the triangular recess will be pointing toward you for installation on the port side of the boat or pointing away from you for installation on the starboard side.

   ***Note**: The end of the fairing with the triangular recess always points forward toward the bow when installed. Be sure to orient the fairing on the band saw so the angle cut matches the intended side of the hull and not the mirror image.*
4. Adjust the cutting fence. The fairing must be a minimum of 13mm (1/2") at its thinnest dimension (see Figure 2).

   ***Warning**: Always wear safety goggles and a dust mask.*
5. Recheck steps 1 through 4. Then cut the fairing.
6. Shape the fairing to the hull as precisely as possible with a rasp or power tool.
7. *Check to be sure* the transducer is flush with the fairing. If it is recessed more that 0.5mm (1/64") inside the fairing, carefully file/sand the fairing flush with the transducer housing.
8. Use the remaining section of the fairing as the backing block.

Hole Drilling—Anti-rotation Bolt

1. To locate the hole for the anti-rotation bolt, dry fit the transducer in the fairing. Seat the transducer housing firmly in the recess in the fairing (see Figure 2).

   WARNING: The fairing must be installed parallel to the keel to ensure proper boat handling.

   ***Warning**: Always wear safety goggles and a dust mask.*
2. Attach the 10mm (3/8") drill bit to your drill. Slide the transducer housing with the fairing in place into the mounting hole. *Hold the fairing parallel to the keel, being sure the triangular recess in the fairing is pointing forward toward the bow.* While holding the assembly in place and using the bolt hole in the fairing as your guide, drill a hole through the hull for the anti-rotation bolt (see Figure 5).
3. Remove the assembly from the mounting hole.
4. Sand and clean the area around both holes, inside and outside, to ensure that the sealant will adhere properly to the hull. If there is any petroleum residue inside the hull, remove it with either mild household detergent or a weak solvent, such as alcohol, before sanding.

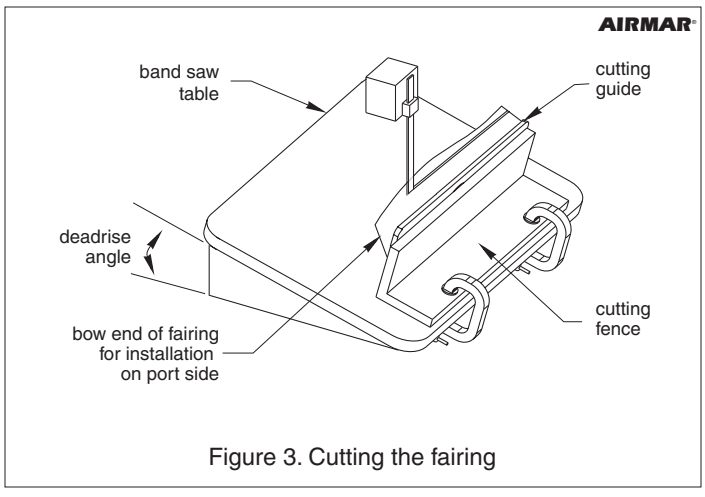


Figure 3. Cutting the fairing

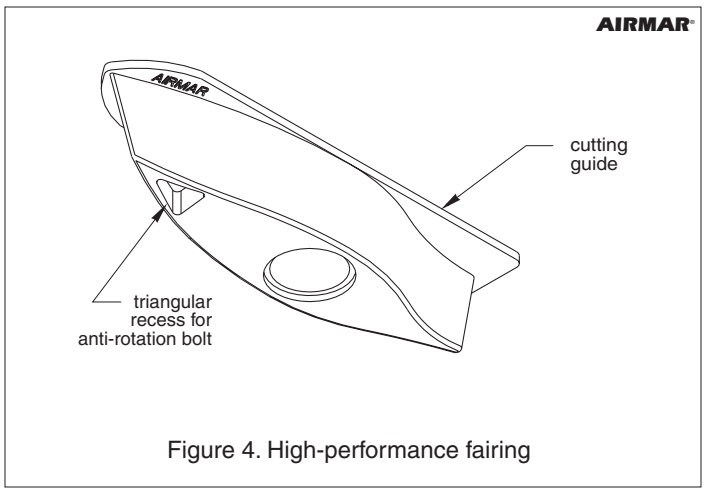


Figure 4. High-performance fairing

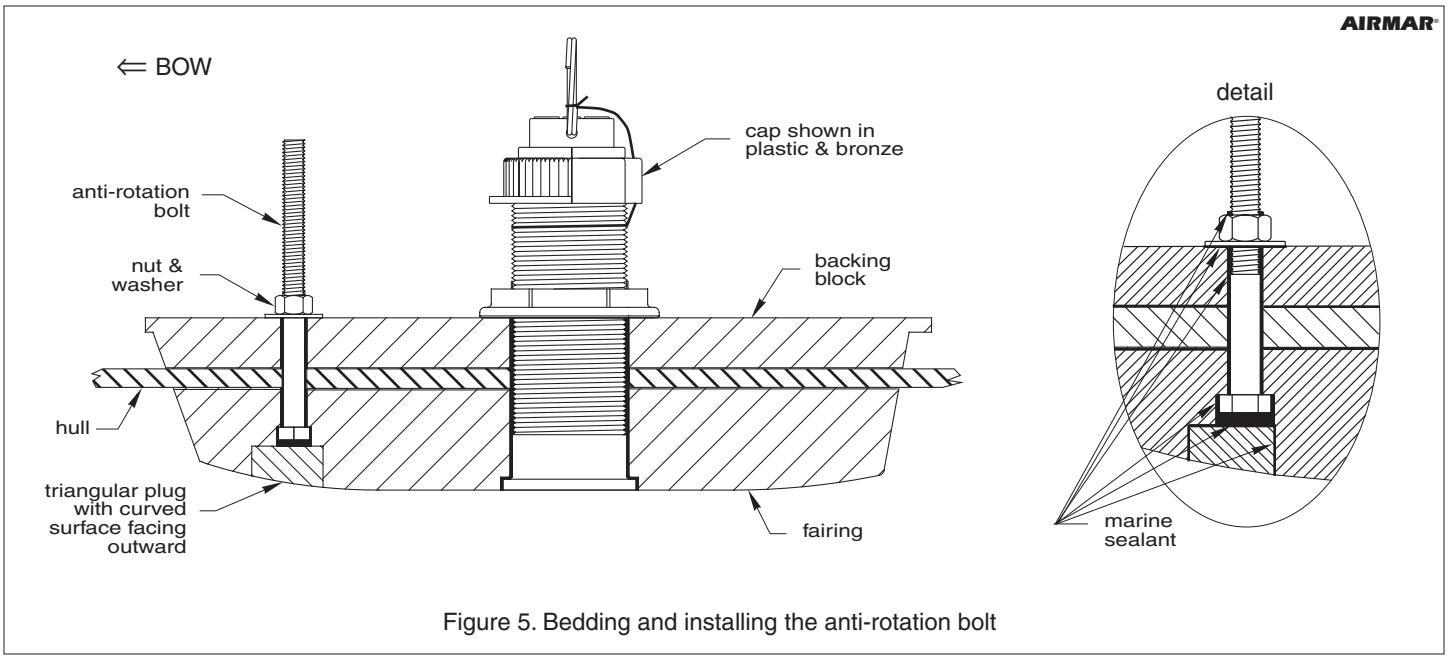


Figure 5. Bedding and installing the anti-rotation bolt

Bedding the Transducer Housing

1. Remove the transducer housing from the fairing.
2. Apply a 2mm (1/16") thick layer of marine sealant around the lip of the housing that will contact the fairing and up the sidewall of the housing, 6mm (1/4") higher than the combined thickness of the fairing, hull, backing block, and the hull nut (see Figure 6). This will ensure there is sealant in the threads to seal the hull and to hold the hull nut securely in place.
3. Seat the transducer housing firmly within the recess in the fairing.
4. Apply a 2mm (1/16") thick layer of marine sealant to the side of the fairing that will contact the hull.
5. Apply a 2mm (1/16") thick layer of marine sealant to the side of the backing block that will contact the hull.

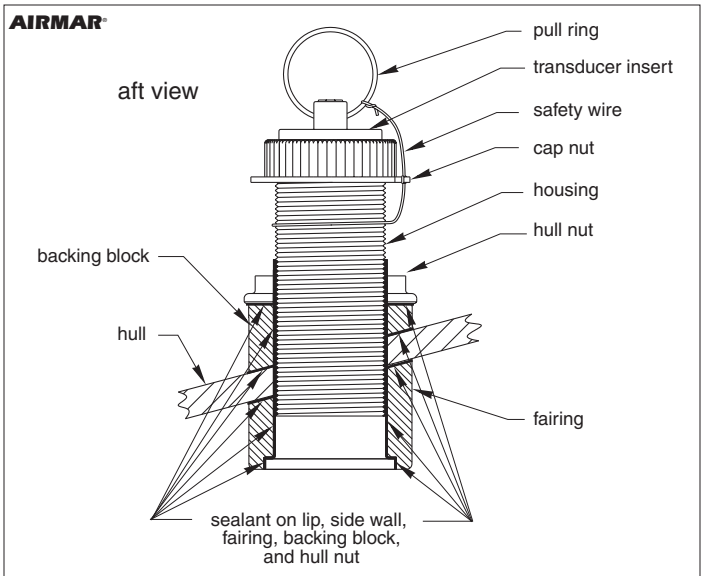


Figure 6. Bedding and installing the transducer

Installing the Transducer Housing

1. From outside the hull, push the transducer housing (with the fairing in place) into the mounting hole using a twisting motion to squeeze out excess sealant (see Figure 5).
2. From inside the hull, slide the backing block onto the transducer housing. Seat the backing block firmly against the hull. Screw the hull nut in place, but *do not* tighten at this time.

Bedding & Installing the Anti-rotation Bolt

1. Apply a 2mm (1/16") thick layer of marine sealant to the anti-rotation bolt, 6mm (1/4") higher than the combined thickness of the fairing, hull, backing block, washer, and nut (see Figure 5). This will ensure that there is marine sealant on the threads to seal the hull and hold the nut securely in place. Apply a 2mm (1/16") layer of marine sealant to the side of the washer that will contact the backing block.
2. Push the anti-rotation bolt through the fairing and into the hull.
3. From inside the hull, screw the washer (sealant side down) and nut onto the anti-rotation bolt. *Do not* tighten at this time.
4. Use slip-joint pliers to tighten the hull nut. Then tighten the anti-rotation bolt.
   Wood hull—Allow for the wood to swell.
   Cored fiberglass hull—*Do not* over-tighten and crush the hull.

   ***Caution**: For smooth water flow over the transducer, be sure the external surface of the triangular plug is FLUSH with the curved surface of the fairing.*
5. Apply a 6mm (1/4") thick layer of marine sealant to the *HOLLOW/FLAT* side of the yellow triangular plug. Push the yellow plug into the recess in the fairing. *The yellow triangular plug fits one way only. Be sure the curved side of the yellow plug is exposed, matching the curve on the outside of the fairing.* Tap it into place with a mallet.
6. Remove the excess sealant on the outside of the fairing and hull to ensure smooth water flow over the transducer.

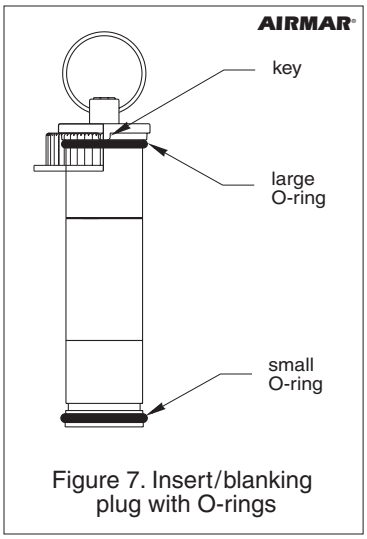


Figure 7. Insert/blanking plug with O-rings

Installing the Insert

1. Slide the cap nut along the cable until it rests on top of the insert. Attach the pull ring capturing the cap nut (see Figure 7). Attach the pull ring to the blanking plug in a similar fashion.

***WARNING**: THE O-RINGS MUST BE INTACT AND WELL LUBRICATED TO PROVIDE A WATERTIGHT SEAL.*

2. After the sealant cures, inspect the O-rings on the insert and lubricate them with the silicone lubricant supplied.
3. Slide the insert into the housing (see Figure 5). Seat the insert into place with a twisting motion until the key fits into the notch. *Be careful* not to rotate the outer housing and disturb the sealant. Screw the cap nut in place and *HAND-TIGHTEN* only. *Do not* over tighten.

   ***Warning**: Always attach the safety wire to prevent the insert from backing out in the unlikely event that the cap nut fails or is screwed on incorrectly.*
4. Attach the safety wire. Wrap one end of the safety wire tightly around the housing and twist it together with the long end. Lead the wire straight up and through the eye in the cap nut. Loop the wire through the pull ring and twist it securely to itself.

   ***Caution**: If your transducer came with a connector, do not remove it to ease cable routing. If the cable must be cut and spliced, use Airmar's splash-proof Junction Box 33-035 and follow the instructions provided. Cutting the cable or removing the connector, except when using Airmar's junction box, will void the transducer warranty.*
5. Route the cable to the instrument, *being careful* not to tear the cable jacket when passing it through the bulkhead(s) and other parts of the boat. To reduce electrical interference, separate the transducer cable from other electrical wiring and the engine. Coil any excess cable and secure it in place using zip-ties to prevent damage.
6. Refer to the echosounder owner's manual to connect the transducer to the instrument.

Checking for Leaks

***Warning**: Never install a thru-hull transducer and leave the boat in the water unchecked for several days.*

When the boat is placed in the water, *IMMEDIATELY* check the thru-hull transducer for leaks. Note that small leaks may not be readily observed. It is best not to leave the boat in the water for more than 3 hours before checking it again. If there is a small leak, there may be considerable bilge water accumulation after 24 hours. If a leak is observed, repeat the bedding and installing procedures *IMMEDIATELY.*

Installation in a Cored Fiberglass Hull

The core (wood or foam) *must* be cut and sealed carefully. The core *must* be protected from water seepage, and the hull *must* be reinforced to prevent it from crushing under the hull nut allowing the housing to become loose.

***Warning**: Always wear safety goggles and a dust mask.*

1. Drill a 3mm or 1/8" pilot hole perpendicular to the waterline from inside the hull (see Figure 8). If there is a rib, strut, or other hull irregularity near the selected mounting location, drill from the outside. If the hole is drilled in the wrong location, drill a second hole in a better location. Apply masking tape to the outside of the hull over the incorrect hole and fill it with epoxy.
2. Using the 51mm or 2" hole saw, cut a hole from outside the hull through the *outer* skin only. *Be sure* to hold the drill plumb, so the hole will be perpendicular to the water surface.
3. Using a min. 60mm or 2-3/8" hole saw, cut through the *inner* skin and most of the core from inside the hull keeping the drill perpendicular to the hull. The core material can be very soft. Apply only light pressure to the hole saw after cutting through the inner skin to avoid accidentally cutting the outer skin.

   ***Note**: The optimal interior hole diameter is affected by the hull's thickness and deadrise angle. It must be large enough in diameter to allow the core to be completely sealed.*
4. Remove the plug of core material, so the *inside* of the outer skin and the inner core of the hull is fully exposed. Sand and clean the inner skin, core, and the outer skin around the hole.
5. Coat a hollow or solid cylinder of the correct diameter with wax and tape it in place. Fill the gap between the cylinder and hull with casting epoxy. After the epoxy has set, remove the cylinder.

   ***Caution**: Completely seal the hull to prevent water seepage into the core.*
6. Sand and clean the area around the hole, inside and outside, to ensure that the sealant will adhere properly to the hull. If there is any petroleum residue inside the hull, remove it with either mild household detergent or a weak solvent, such as alcohol, before sanding.
7. Follow the same procedure to prepare the hull for the anti-rotation bolt ("Installation in a Cored Fiberglass Hull", steps 2 through 6). Use a 10mm *or* 3/8" drill bit to cut the *outer* skin and a 19mm or 3/4" drill bit for the hull's *inner* skin.
8. Proceed with the installation instructions beginning with "Bedding the Transducer Housing" on page 4.

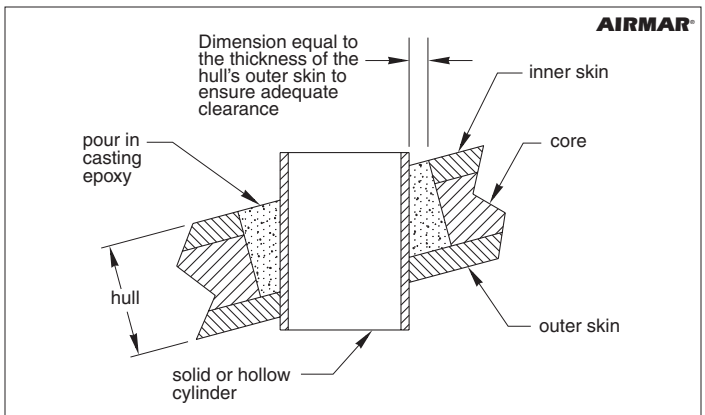


Figure 8. Preparing a cored fiberglass hull

Maintenance & Parts

Blanking Plug

***WARNING**: THE O-RINGS MUST BE INTACT AND WELL LUBRICATED TO PROVIDE A WATERTIGHT SEAL.*

1. Inspect the O-rings on the blanking plug and lubricate them with silicone lubricant or petroleum jelly (Vaseline®) (see Figure 7).
2. Remove the safety wire from the pull ring and cap nut. Then, unscrew the cap nut (see Figure 5).
3. With the blanking plug ready in one hand, pull the insert most of the way out. Remove the insert and rapidly replace it with the blanking plug. Seat it into place with a pushing twisting motion until the key fits into the notch in the housing. With practice, only about 250ml (10oz.) of water will enter the boat. Screw the cap nut in place and *HAND-TIGHTEN* only.

   ***Warning**: Always attach the safety wire to prevent the insert from backing out in the unlikely event that the cap nut fails or is screwed on incorrectly.*

4. Reattach the safety wire.

Anti-fouling Paint

Surfaces exposed to salt water *must* be coated with anti-fouling paint. Use **water based** anti-fouling paint only. *Never* use ketone based anti-fouling paint, since ketones can attack many plastics possibly damaging the transducer. Reapply anti-fouling paint every 6 months or at the beginning of each boating season.

Cleaning

Aquatic growth can accumulate rapidly on the transducer's surface, reducing its performance within weeks. Clean the surface with a soft cloth and mild household detergent. If the fouling is severe, use a stiff brush or putty knife to remove the growth taking care to avoid making scratches. Wet sanding is permissible with fine grade wet/dry paper.

Replacement Parts

Lost, broken, and worn parts should be replaced immediately and can be obtained through your marine dealer or instrument manufacturer.

Cap Nut	Hull Nut	Blanking Plug	Fairing
04-011 (plastic) 02-131-01 (bronze)	02-030	33-414	33-409-01

Transducer Replacement

The information needed to order a replacement transducer is printed on the cable tag. *Do not* remove this tag. When ordering, specify the part number, date, and frequency in kHz. For convenient reference, record this information on page one.

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