

INSTALLATION INSTRUCTIONS

Datamarine®

ADX-204, ADX-119, ADX-1190, & ADX-1191 Transducers

IMPORTANT: Please read the instructions completely before proceeding with the installation. These directions supersede instructions in your echosounder manual if they differ.

WARNING: NEVER USE SOLVENTS

Cleaners, gasoline, paint, sealants, and other products may contain strong solvents, such as acetone, which can attack many plastics dramatically reducing their strength.

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Application

Bronze housings are recommended for fiberglass or wood hulls only.

Note: Never mount a bronze housing in a metal hull because electrolytic corrosion will occur. Never install a metal housing on a vessel with a positive ground system.

Tools and Materials Needed

Safety goggles

Dust mask

Electric drill

Drill bits:

3mm or 1/8"

22mm or 7/8"

Mild household detergent or weak solvent (alcohol)

Sandpaper

Digital level or bubble level and protractor

Band saw or hand saw

Rasp or power tool

Marine sealant

Backing block (optional)

Slip-joint pliers

Zip-ties

For a cored fiberglass hull installation:

Hole saw for hull interior^a: 35mm or 1-3/8"

Cylinder, wax, tape, and casting epoxy (see page 4, #5)

Water-based antifouling paint (**mandatory in salt water**)

a. The size given is suggested. The optimal interior hole diameter is effected by the hull's thickness and deadrise angle. It must be large enough in diameter to allow the core to be completely sealed.

Mounting Location

Acoustic Noise

Acoustic noise is always present and these sound waves can interfere with the operation of the transducer. While background noise from sources such as: waves, fish, and other vessels cannot be controlled, carefully selecting the transducer mounting location can minimize the effect of vessel generated noise from the propeller(s) and shaft(s), other machinery, and other echosounders. The lower the noise level, the higher the echosounder gain that can be used.

Placement

Choose a location where:

- The water flowing across the hull is smoothest with a minimum of bubbles and turbulence (especially at high speeds).
- The transducer will be continuously immersed in water.
- The transducer beam is unobstructed by the keel or propeller shaft.
- There is a minimum deadrise angle.
- There is adequate headroom inside the vessel for the height of the housing and tightening the nut.

Caution: Do not mount the sensor:

Near water intake or discharge openings.

Behind strakes, fittings, or hull irregularities.

Behind eroding paint (an indication of turbulence).

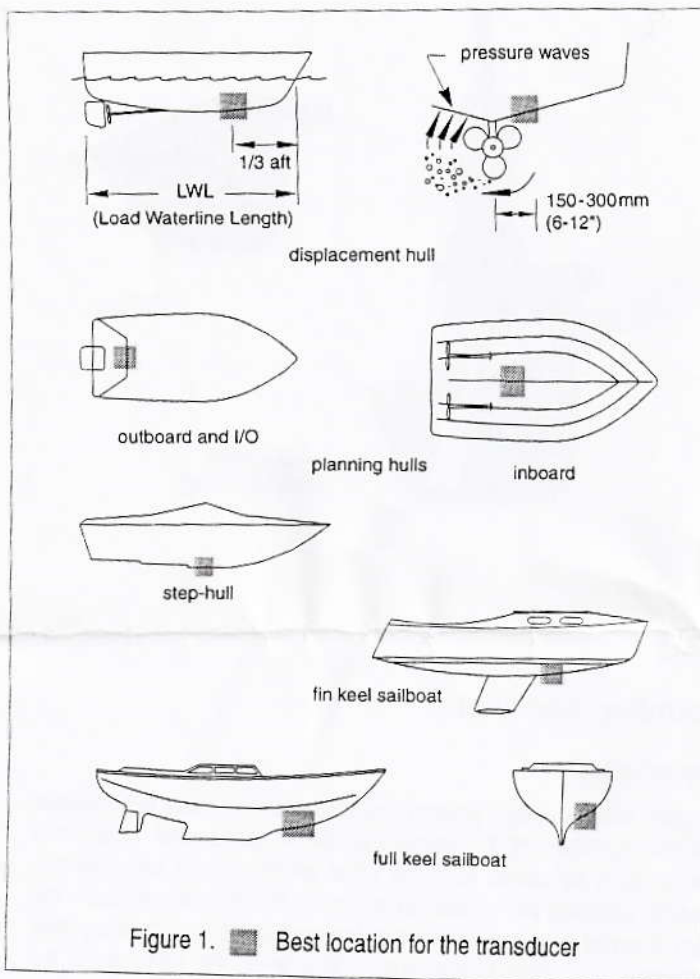


Figure 1. ■ Best location for the transducer

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 is 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 is moving downward.
 - Outboard and I/O**—Mount just forward of the engine(s).
 - Inboard**—Mount well ahead of the propeller(s) and shaft(s).
- **Step-hull**—Mount just ahead of the first step.
- **Boat capable of speeds above 25 kn (29 MPH)**—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.

Fairing

Nearly all vessels have some deadrise angle at the transducer's mounting location. If the transducer is mounted directly to the hull, the sound beam will be tilted off the vertical at the same angle as the deadrise. A fairing is strongly recommended if the deadrise angle at the mounting location exceeds 10° (see Figure 2).

- Vertically orient the sound beam by mounting the transducer parallel to the water.
- Minimize aerated water flowing over the transducer's face by mounting it deeper in the water.
- Reduce drag by directing the water around the transducer.

Datamarine Fairing

Made of a high impact urethane, the fairing is easy to cut with a band saw and shape with hand tools. It can be shaped to accommodate a deadrise angle of up to 25° and a wide range of hull thicknesses. (For part numbers, see "Replacement Parts" on page 4.)

Backing Block

A backing block is used inside the hull to provide a level surface for the hull nut to seat against (see Figure 2). It is fabricated matching the interior deadrise angle of the boat. After cutting the Datamarine fairing, use the remaining section as the backing block.

Installation

Note: Follow separate instructions on page 3 for installing a transducer in a cored fiberglass hull.

Hole Drilling

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. (If the pilot 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 a 22mm or 7/8" drill bit, cut a hole from outside the hull.
3. Clean and sand 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 (alcohol) before sanding.

Cutting the Fairing

1. Measure the deadrise angle of the hull at the selected 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).

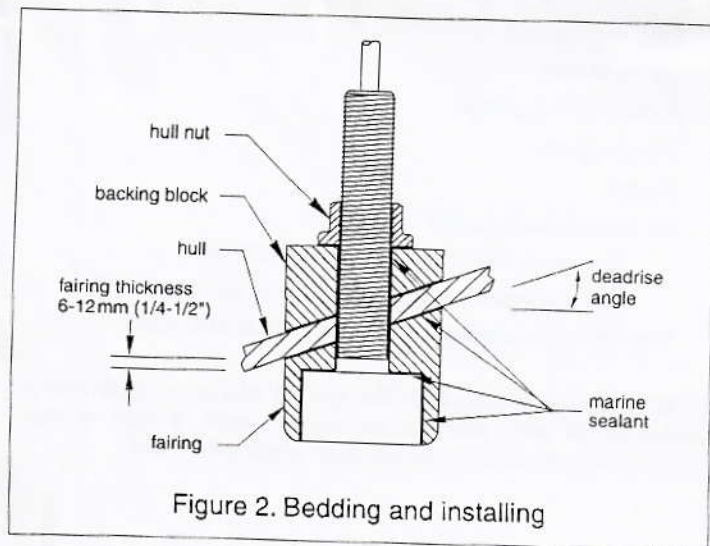


Figure 2. Bedding and installing

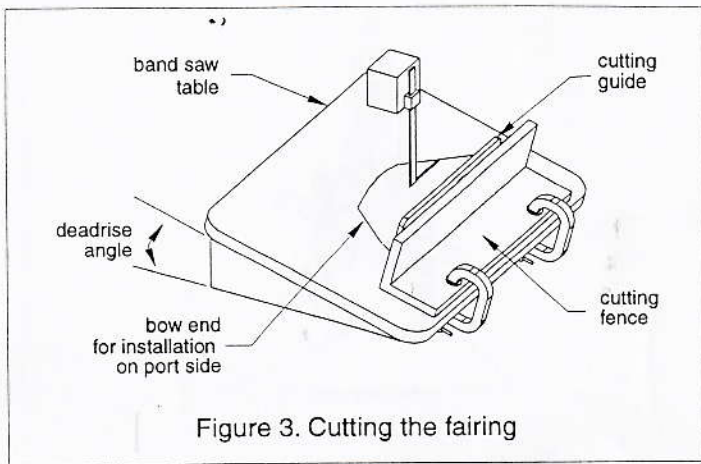


Figure 3. Cutting the fairing

Caution: 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.

- Place the fairing on the table so the cutting guide rests against the fence. The arrow/blunt end will be pointing toward you for installation on the port side and away from you for installation on the starboard side of the boat.

Note: The **BLUNT** end always points forward toward the bow.

- The fairing must be between 6–12mm (1/4–1/2") at the thinnest spot (see Figure 2).

Warning: Always wear safety goggles and a dust mask.

- Recheck steps 1 through 4; then cut the fairing.
- Shape the fairing to the hull as precisely as possible with a rasp or power tool.

Bedding

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

- Remove the hull nut (see Figure 2).
- Thread the transducer cable through the fairing.
- Apply a 2mm (1/16") thick layer of marine sealant around the sides of the housing that contact the fairing and the stem of the housing 6mm (1/4") higher than the combined thickness of the fairing, hull, backing block, and hull nut. (This will ensure that there is marine sealant in the threads to seal the hull and hold the hull nut securely in place.)
- Seat the transducer in the fairing with a pushing twisting motion.
- Apply a 2mm (1/16") thick layer of marine sealant to the side of the fairing that contacts the hull.

Installing

- From outside the boat, thread the cable through the hole in the hull.
- With the arrow(s) on the fairing pointing forward toward the bow, push the stem of the transducer with the fairing in place into the mounting hole. Squeeze out any excess marine sealant while taking care to align the assembly parallel to the boat's centerline.
- From inside the hull, slide the backing block and hull nut onto the cable. Seat the backing block against the hull (see Figure 2).
- Screw the hull nut in place and tighten it with slip-joint pliers.

Note: Allow for swelling in wood hulls.

- Remove excess marine sealant on the outside of the hull to ensure smooth water flow over the transducer.
- 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. Coil any excess cable and secure it in place with zip-ties to prevent damage.

Caution: If the transducer came with a connector, **do not** remove it to ease cable routing. If the cable must be cut and spliced, use Datamarine's waterproof Junction Box AIR-20-040 and follow the instructions provided. Cutting the cable or removing the connector, except when using Datamarine's junction box, will void the warranty.

- Refer to the echosounder owner's manual to connect the transducer to the instrument.

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.

- Drill a 3mm or 1/8" pilot hole perpendicular to the waterline from inside the hull (see Figure 4). 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.)
- Using a 22mm or 7/8" drill bit, cut a hole from outside the hull through the **outer** skin only. Be sure the hole is drilled perpendicular to the surface of the water.
- Using the interior hole saw, cut through the **inner** skin and most of the core from inside 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. (The optimal interior hole diameter is effected by the hull's thickness and deadrise angle. It must be large enough in diameter to allow the core to be completely sealed.)

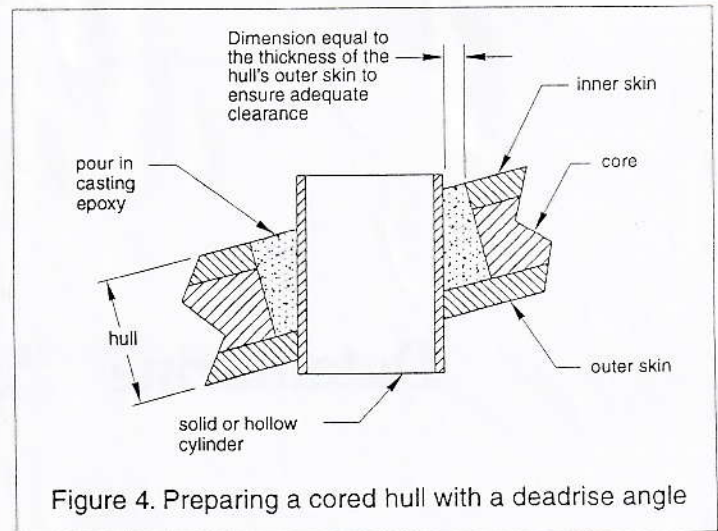


Figure 4. Preparing a cored hull with a deadrise angle

- Remove the plug of core material, so the *inside* of the outer skin and the inner core of the hull is fully exposed. Clean and/or sand the inner skin, core, and the outer skin around the hole.

Caution: Always completely seal the hull to prevent water seepage into the core.

- 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 (see Figure 4).
- 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 (alcohol) before sanding.
- Proceed with "Bedding" and "Installing" on page 3.

Checking for Leaks

Caution: 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 around the thru-hull transducer for leaks. Note that very 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 (probably not enough to cause water damage). If a leak is observed, repeat "Bedding" and "Installing" on page 3 *immediately*.

Maintenance, Repair, and Replacement

Aquatic growth can accumulate rapidly on the transducer's surface reducing its performance in weeks. Clean the surface with a soft cloth and mild household detergent. If 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.

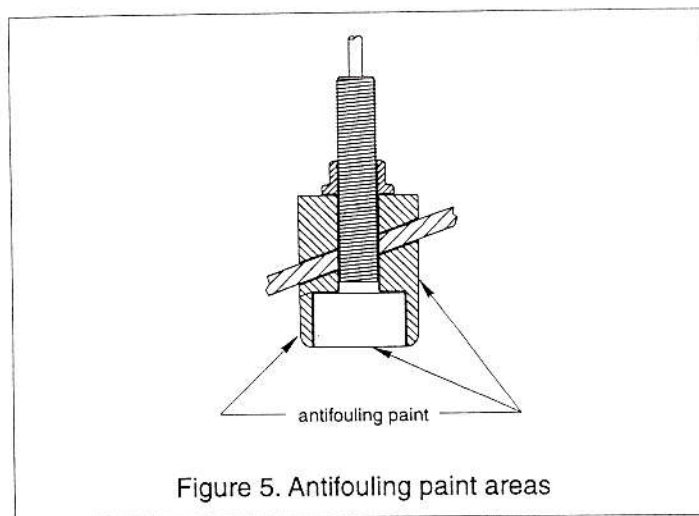


Figure 5. Antifouling paint areas

Antifouling Paint

Surfaces exposed to salt water must be coated with antifouling paint (see Figure 5). Use **water-based** antifouling paint only. Never use ketone based paint since ketones can attack many plastics damaging the transducer. Re-apply antifouling paint every 6 months or at the beginning of each boating season.

Replacement Parts

Model	Hull Nut	Fairing
ADX-204	AIR-02-031-1	AIR-33-013
ADX-119	AIR-02-104-1	FAB-29007
ADX-1190	AIR-02-104-1	AIR-33-036
ADX-1191	AIR-02-031-3	FAB-33-036-01

Transducer Replacement

The information needed to order a replacement transducer is printed on the **vinyl** tag affixed to the cable near the connector end. Do not abrade the marking or remove this tag. When ordering, specify the frequency, date code, and part number (see Figure 6).

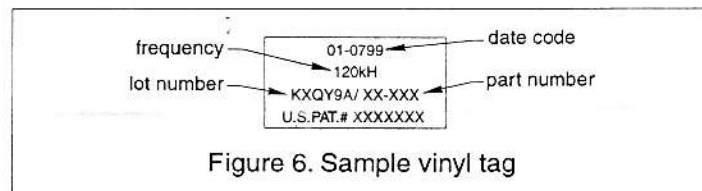


Figure 6. Sample vinyl tag

Datamarine

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