

OWNER'S GUIDE & INSTALLATION INSTRUCTIONS

Thru-hull, Metal Stem, Depth Transducer

Models: B45, B46, B240, B256,
B260, B261, SS505, SS560

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

CAUTION: NEVER USE SOLVENTS

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

Applications

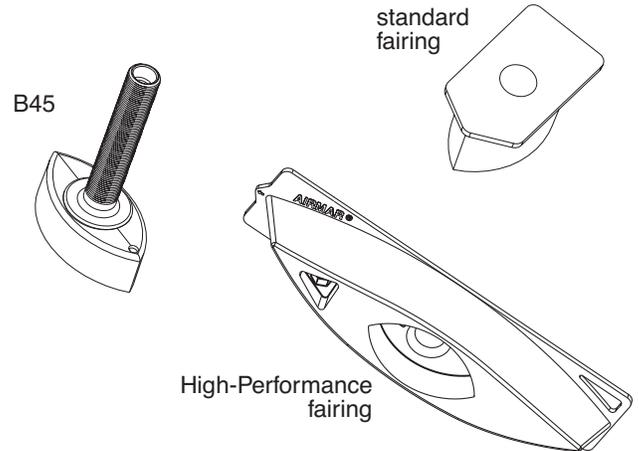
- **Bronze housing** recommended for fiberglass or wood hulls.
Caution: Never mount a bronze housing in a metal hull, because electrolytic corrosion will occur.
- **Stainless steel housing** compatible with all hull materials.
- **Aluminum or steel hull**—Use a stainless steel housing/stem to prevent electrolytic corrosion.
Caution: Installation requires using a fairing kit to isolate the stainless steel transducer from a metal hull.
- **Caution:** Never install a metal housing on a vessel with a positive ground system.

Tools & Materials

- Safety goggles
- Dust mask
- Electric drill
- Drill bits:
 - Pilot hole 3mm or 1/8"
 - B45, B46, SS505 22mm or 7/8"
 - B240, B260, B261, SS560 33mm or 1-5/16"
 - B256 30mm or 1-3/16"
- Sandpaper
- Mild household detergent or weak solvent (alcohol)
- File (installation in a metal hull)
- Fairing (**mandatory for SS505 and SS560**)
- Digital level or bubble level & protractor (installation w/ fairing)
- Band saw or hand saw (installation with a fairing)
- Rasp or power tool (installation with a fairing)
- Marine sealant
- Slip-joint pliers
- Zip-ties
- Water-based antifouling paint (**mandatory in salt water**)
- Installation in a cored fiberglass hull: (see page 4)
 - Drill bit for hull interior:
 - B45, B46, SS505 35mm or 1-3/8"
 - B240, B260, B261, SS560 42mm or 1-5/8"
 - B256 40mm, 41mm, or 1-5/8"
 - Cylinder, wax, tape, and casting epoxy

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

Part No. _____ Date _____ Frequency _____ kHz



Identify Your Model

The model name is printed on the cable tag.

About Fairings

Nearly all vessels have some deadrise angle at the 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 exceeds 10°.

- Orients the sound beam straight down by mounting the transducer parallel to the water surface
- Minimizes aerated water flowing over the transducer's face by mounting it deeper in the water

Airmar Polymer Fairing

Made of a high-impact polymer with an integrated cutting guide, an Airmar fairing is safer and easier to cut with a band saw and shape with hand tools than custom fairings. It can be shaped to accommodate a deadrise angle of up to about 25°. (For fairing part numbers, see "Replacement Parts" on page 4.)

A backing block is mounted 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 an Airmar fairing, use the remaining section with the cutting guide for the backing block.

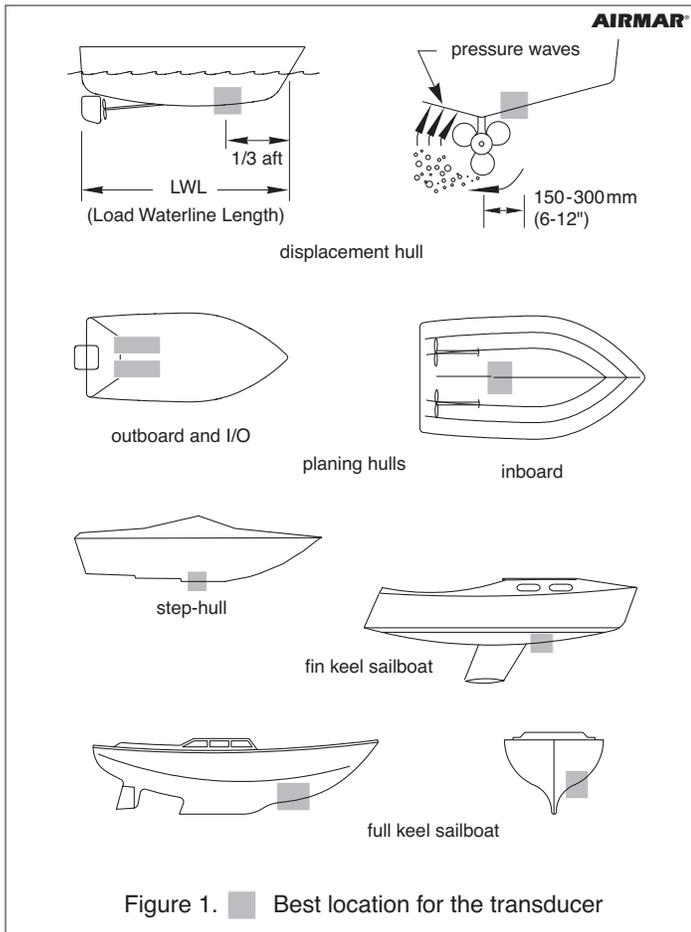
Airmar High-Performance Fairing

A high-performance fairing has a long streamlined shape for excellent performance above 15 kn (18MPH) (see "Parts" on page 4).

Mounting Location

Acoustic Noise

Acoustic noise is always present and these sound waves can interfere with the operation of the transducer. Background noise from sources such as: waves, fish, and other vessels cannot be controlled. However, 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 setting 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.
- There is a minimum deadrise angle.
- The transducer beam is unobstructed by keel or propeller shaft(s).
- There is adequate headroom inside the vessel for the height of the housing and tightening the nut.

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 is moving downward.
- **Planing hull powerboat**—Mount well aft, 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 and to the side 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 25kn (29MPH)**—Review transducer 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.

Installation—No fairing or standard fairing only

WARNING: High-performance fairing must be installed following the Installation Instruction Supplement that comes with the fairing. The high-performance fairing requires an anti-rotation bolt. 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.

Metal hull—The SS505 and SS560 must be isolated from a metal hull. For your safety you must follow the Installation Instruction Supplement provided with the fairing.

Cored fiberglass hull—Follow separate instructions on page 4.

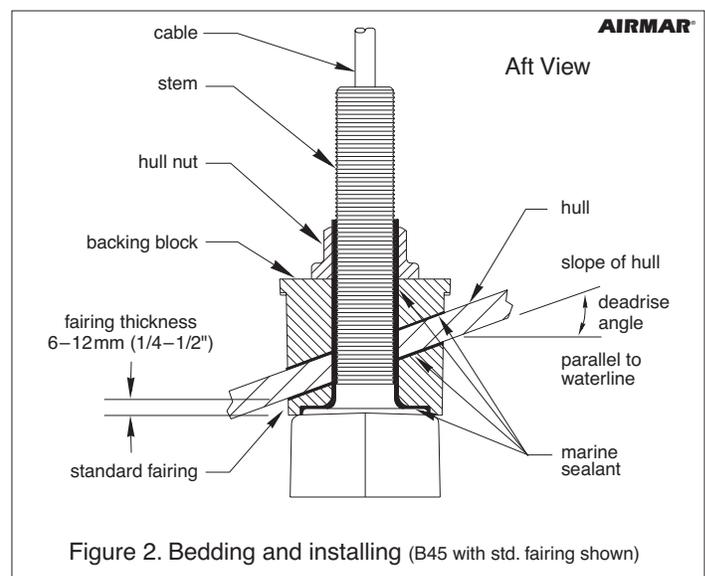
No fairing—If you are installing a transducer without a fairing, disregard all references to a fairing.

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.
2. Using the appropriate drill bit, cut a hole from outside the hull. Be sure to hold the drill plumb, so the hole will be perpendicular to the water surface.
3. Sand and clean the area around the hole, inside and outside, to ensure that the marine sealant will adhere properly to the hull. If there is any petroleum residue inside the hull, remove it with either a mild household detergent or a weak solvent (alcohol) before sanding.

Metal hull—Remove all burrs with a file and sandpaper.



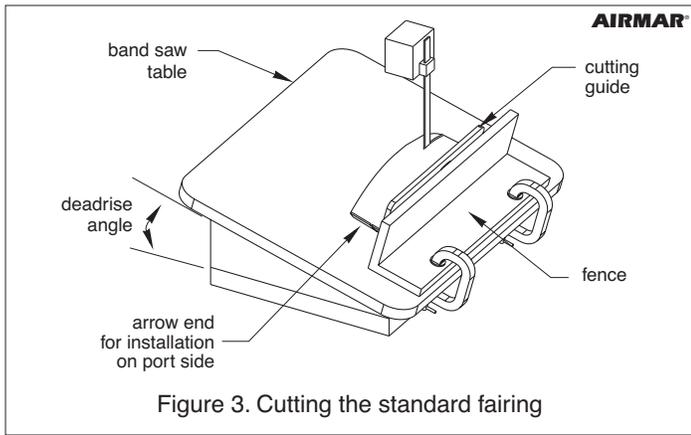


Figure 3. Cutting the standard fairing

Cutting the Fairing

High-performance fairing—For your safety it is mandatory to follow the Installation Instruction Supplement that comes with 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).
3. Place the fairing on the table so the cutting guide rests against the fence. The arrow will be pointing toward you for installation on the port side and away from you for installation on the starboard side of the boat (see Figures 3 and 4).

Caution: The ARROW always points forward toward the bow. (A symmetrical fairing can be oriented either way.) 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 between 6–12mm (1/4–1/2") 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. Use the remaining section of the fairing for the backing block.

Bedding

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

1. Remove the hull nut (see Figure 2 or 5).
2. Thread the transducer cable through the fairing (if used).
3. Apply a 2mm (1/16") thick layer of marine sealant around the sides of the housing that will contact the fairing (or hull if no fairing is used). Apply a 2mm (1/16") thick layer of marine sealant to the stem of the housing. The sealant *must* extend 6mm (1/4") higher than the combined thickness of the fairing, hull, backing block, and hull nut. This will ensure there is marine sealant in the threads to seal the hull and hold the hull nut securely in place.

4. If a fairing is used, seat the transducer firmly in/against the fairing with a pushing twisting motion.
5. Apply a 2mm (1/16") thick layer of marine sealant to the surface of the fairing that will contact the hull.
6. Apply a 2mm (1/16") thick layer of marine sealant to the surface of the backing block that will contact the hull

Installing

1. From outside the hull, thread the cable through the mounting hole.
2. With the fairing in place (if used) and the arrow pointing forward toward the bow, push the stem of the transducer through the mounting hole (see Figure 4). (A symmetrical fairing can be oriented either way.) **Take care to align the assembly parallel to the centerline of the boat.** Squeeze out any excess sealant.

3. From inside the hull, slide the backing block (if used) and hull nut onto the cable. Seat the backing block against the hull. Screw the hull nut in place and tighten it with slip-joint pliers (see Figure 2 or 5).

Wood hull—Allow for the wood to swell.

4. Remove any excess marine sealant on the outside of the hull and fairing to ensure smooth water flow over the transducer.

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 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 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 with zip-ties to prevent damage.
6. Refer to the instrument owner's manual to connect the transducer to the instrument.

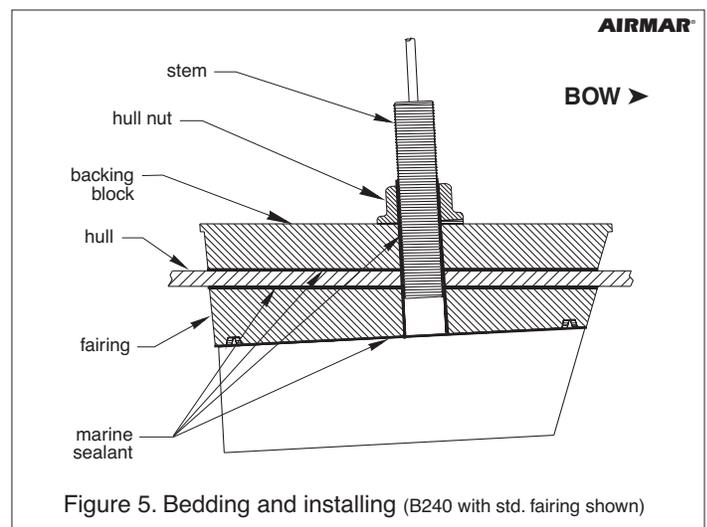


Figure 5. Bedding and installing (B240 with std. fairing shown)

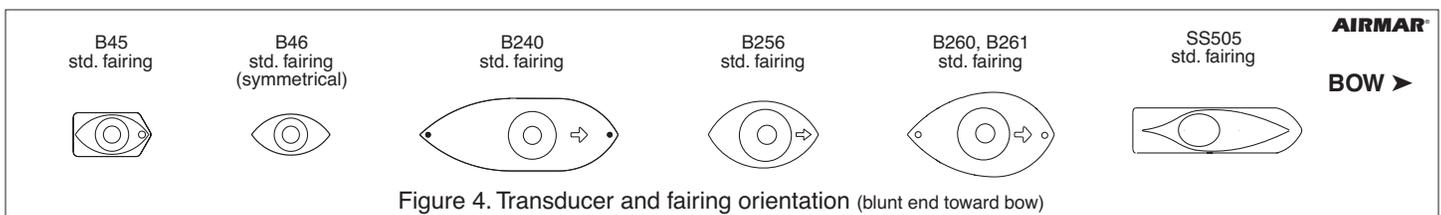


Figure 4. Transducer and fairing orientation (blunt end toward bow)

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 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. If a leak is observed, repeat "Bedding" and "Installing" on page 3 **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 6). 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 appropriate size drill bit, 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. 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.

Using the appropriate size drill bit for the hull interior, 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 drill bit after cutting through the *inner* skin to avoid accidentally cutting the *outer* skin.

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.

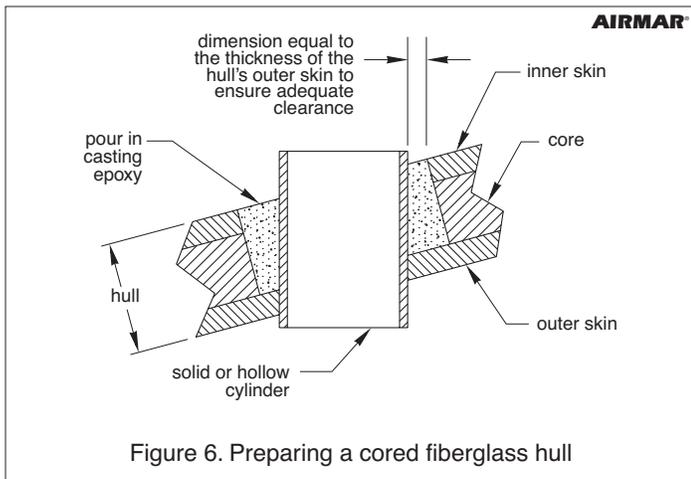


Figure 6. Preparing a cored fiberglass hull

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

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.
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 (alcohol) before sanding.
7. Proceed with "Bedding" and "Installing" on page 3.

Antifouling Paint

Surfaces exposed to salt water *must* be coated with antifouling paint (see Figure 7). Use **water-based** antifouling paint only. *Never* use ketone-based paint since ketones can attack many plastics possibly damaging the transducer. Reapply antifouling paint every 6 months or at the beginning of each boating season.

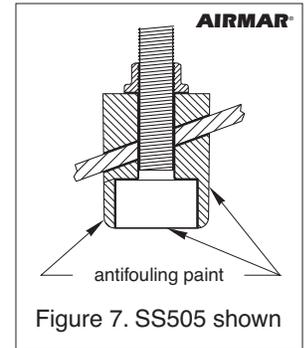


Figure 7. SS505 shown

Maintenance & Replacement

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.

Model	Hull Nut	Fairing	Type
B45	02-031-3	33-351-01	(standard)
		33-352-02	(high-performance)
B46	02-031-3	33-020	(standard)
		33-359-01	(high-performance)
		33-146	(standard)
B240	02-036-2	33-146	(standard)
B256	02-222-03	33-226-01	(standard)
		33-357-01	(high-performance)
B260	02-036-2	33-030	(standard)
		33-391-01	(high-performance)
B261	02-036-2	33-030	(standard)
		04-423-02	(high-performance)
SS505	02-111-01	33-355-01	(high-performance)
SS560	03-169	33-466-01	(high-performance)

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.