



Transducer/Triducer Installation

INSTALLATION GUIDELINES

Antifouling Paint

Surfaces exposed to salt water must be coated with antifouling paint. Use **water-based** antifouling paint only. Never use ketone-based paint since ketones can attack many plastics thus damaging the transducer.

All Airmar installation instructions indicate the surfaces which can be painted. Apply antifouling paint every 6 months or at the beginning of each boating season. Paint with a brush or roller since spraying paint produces microscopic air bubbles which will effect the transducer's performance.

Sensor Replacement

The information needed to order a replacement sensor 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 1).

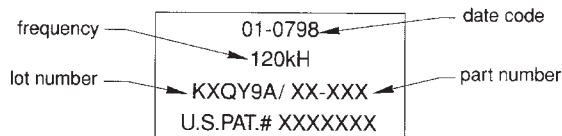


Figure 1. Sample vinyl tag

Thru-hull Transducers

Mounting Location

Do choose a location where:

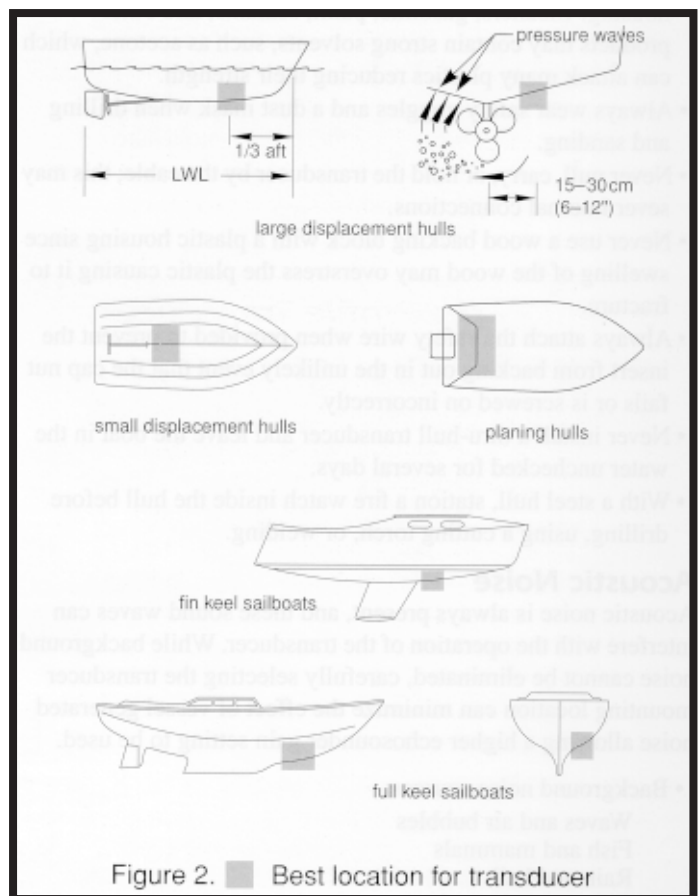
- The transducer is away from the propeller and other sources of vessel generated noise.
- The water is smoothest with a minimum of turbulence and bubbles—especially at high speeds.
- The transducer will be continuously immersed in water.
- The transducer beam is unobstructed by the keel or propeller shaft.
- There is adequate headroom inside the vessel for the height of the housing and installing the sensor.
- There is a minimum deadrise angle.

Do not mount the transducer:

- Near water intake or discharge openings.
- Behind strakes, fittings, or hull irregularities.
- Near the keel.
- Behind eroding paint—an indication of turbulence.

Boat Types (see Figure 2)

- **Large displacement hulls** — Locate the transducer 1/3 the length of the boat as measured along the waterline and 15–30cm (6–12") off the centerline of the boat on the side of the hull where the propeller is moving downward.
- **Small displacement hull and planing hull powerboats** — Mount the transducer well aft, near the centerline of the boat, and well inboard of the first set of lifting strakes to insure that the sensor is in contact with the water at high speeds. Mount on the side of the hull where the propeller is moving downward.
- **Inboards** — Mount well ahead of the propeller(s) and shaft(s).
- **I/Os and outboards** — Mount close to the engine(s).
- **Boats capable of speeds above 25 knots (29 MPH)** — Review the installation location and operating results of similar boats before proceeding.
- **Fin keel sailboats** — Mount to the side of the centerline and forward of the fin keel 30–60cm (1–2').
- **Full keel sailboats** — Locate amidships and away from the keel, but still in the water when the boat heels.



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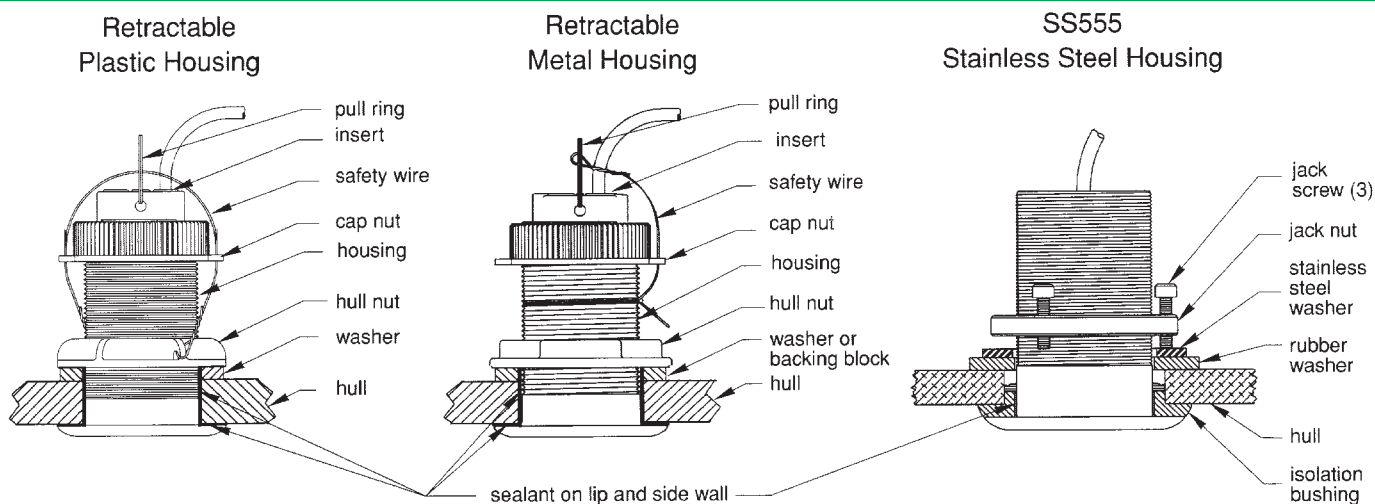


Figure 3. Flush and low profile transducer bedding and installation

Hole Drilling

1. Drill a 3 mm (1/8") pilot hole from inside the hull. If there is a rib, strut, or other hull irregularity near the selected mounting location, drill from the outside.
2. Using the appropriate size hole saw, cut a hole from outside the hull.
3. Clean and sand 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 mild household detergent or a weak solvent before sanding.

Flush and Low Profile Transducers Bedding

1. Remove the hull nut and any cap nut, washer, and/or transducer insert from the outer housing (see Figure 3).
2. Apply a 2mm (1/16") thick layer of marine sealant around the lip of the housing that contacts the hull.
3. Apply a 2mm (1/16") thick layer of marine sealant up the side walls of the housing 6mm (1/4") higher than the combined thickness of the hull, washer, and hull nut. This will ensure there is sealant in the threads to seal the hull and hold the hull nut securely in place.
4. **Stainless steel models only**—First slide the isolation bushing onto the housing, then apply sealant to the bushing surface that will contact the hull.

Installing

1. From outside the hull, push the cable and housing into the hole using a twisting motion to squeeze out excess sealant.
2. Align the arrow on the lip of the housing to point forward toward the bow and parallel to the centerline of the boat.

3. Slide on the washer or backing block used to distribute the force from the hull nut and create a flat surface to tighten against (see Figure 3). **Never** use a wood backing block with a plastic housing since swelling of the wood may overstress the plastic causing it to fracture.

Note: On aluminum hulls less than 6mm (1/4") thick, it is necessary to use a second washer. With a plastic sensor, use a fiberglass, plastic, or rubber washer.

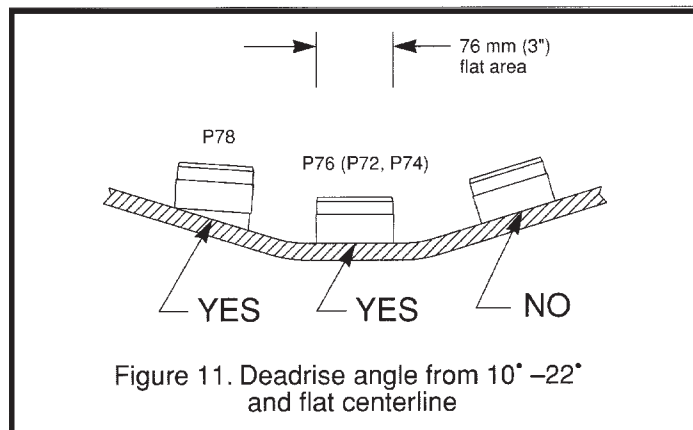
4. Screw on the hull nut. A plastic nut must be **hand-tightened** only; do not over-tighten. Tighten a bronze nut with slip-joint pliers.
5. Remove the excess marine sealant on the outside of the hull to ensure smooth water flow over the transducer.
6. **Retractable models**

Inspect and lubricate the O-rings with silicone grease or petroleum jelly. After the sealant cures, slide the transducer insert into the housing being sure to engage the key in the notch. (A pushing, twisting motion will locate the notch.) Be careful not to rotate the outer housing and disturb the sealant. **Hand-tighten** the cap nut; do not over-tighten.

Plastic housing—Attach the safety wire to one eye in the hull nut. Lead the wire in a counter clockwise direction and thread it through one eye in the cap nut, the pull ring, and the second eye in the cap nut. Twist the wire securely to itself.

Metal housing—Wrap one end of the wire tightly around the housing and twist it together with the long end. Lead the wire straight up and through one eye in the cap nut. Loop the wire through the pull ring and twist it securely to itself.

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In-hull Transducers

Mounting Location

Generally follow the guidelines for thru-hull transducers (see “Mounting Location” and “Boat Types”). However, there are additional considerations when choosing a site for an in-hull transducer. Since the hull absorbs acoustic energy, transmitting through the hull reduces the transducer’s performance. To achieve optimal performance, try to find a location where the hull laminate is solid, where there is no coring, flotation material, or dead air space between the inside and outside of the hull, and where there are no air bubbles in the resin.

Fiberglass hulls are often reinforced in places for added strength. These cored areas contain balsa wood, plywood, or structural foam which are poor sound conductors. If you cannot avoid locating the transducer over coring, see the installation instructions provided with the transducer for specific directions.

Also, choose a location where the transducer will not be tilted off the deadrise more than 10° (see Figure 11). Never locate the transducer where it is necessary to use adhesive to fill a gap between the sensor and the hull since this will greatly reduce the transducer’s performance.

Consult the boat manufacturer for the best in-hull transducer placement. If this information is unavailable, follow our guidelines (see Figure 2).

Testing

To determine the best location for the transducer, first establish a performance baseline by operating the echosounder with the transducer directly in the water. The result of this test is used as a basis of comparison.

While the boat is anchored, test the echosounder with the transducer at the selected location. The difference in the gain

setting needed to duplicate the baseline display is what is lost going through the hull. If the test readings differ markedly from the baseline, you will need to find another location. If the two gain readings are reasonably similar, mark the spot on the hull and proceed with the installation.

Installing

1. The hull surface to be bonded must be smooth and free of paint or any other finish. If the surface is rough, use a disk sander to smooth an area 102mm (4”) in diameter.
2. Clean and dry both the selected area and the face of the transducer with a weak solvent to remove any dust, grease, or oil to ensure a good bond.
3. Choose an adhesive that will not become brittle in cold climates, and avoid RTV types that adsorb too much sound energy. When the hull temperature is above 15°C (60°F), mix the epoxy until the color is uniform. Do not proceed if the hull temperature is below 15°C (60°F) because the cure time will be greatly extended.
4. Apply the epoxy to the center of the face of the transducer (side opposite from the cable).
5. Press the transducer face onto the hull with a twisting motion to **expel all air bubbles**. (If the hull is slanted, temporarily secure the transducer in place with duct tape.) The adhesive is cured in 24 hours at 21°C (70°F). The lower the temperature, the longer the cure time.

Transom Mount Transducers

Mounting Location

All Airmar transom mount transducers are wedge shaped to deflect aerated water to the sides of the housing. They provide good operation up to 40 knots (46MPH). On most instruments, obtaining operation at higher speeds may require considerably more experimentation because some instruments are better at rejecting water noise than others.

To ensure optimal performance, the transducer must be submerged in aeration-free and turbulence-free water. Mount the transducer on the transom near the centerline of the boat. On slower, heavier, displacement hulls, positioning it farther from the keel is acceptable.

- **Single drive boats** — Mount on the side of the boat where the propeller is rotating downward at least 75mm (3”) beyond the swing radius of the propeller (see Figure 1)
- **Twin drive boats** — Mount between the drives

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Because some brackets rotate the transducer upward when released, be sure to mount the transducer in a location where there is sufficient clearance.

Do not mount the transducer:

- Near water intake or discharge openings.
- Behind strakes, fittings, or hull irregularities.
- Near the keel.
- Behind eroding paint—an indication of turbulence.

Assembling and Positioning

1. If the transducer was purchased with a release bracket, set the bracket in the “down” (operating) position. On the stainless steel release bracket, run the cable through the bracket **between the cross bar and the transom**.
2. Place the bracket outside the mounting tabs of the model P37 or inside on the models P52 and P55. Attach the transducer to the bracket with the four #10-32 x 5/8" machine screws, washers, and lock nuts. Tighten the screws so the transducer remains in place, but can be adjusted.
3. Position the assembly at the selected location with the transducer face parallel to the water. Good results can be achieved on most boats when the bottom of the transducer is about 6 mm (1/4") below the bottom of the hull and parallel to the waterline as shown in Figure 12. [On aluminum hulls, position the transducer 10mm (3/8") below the hull bottom.] Do not position the transducer farther into the water than necessary to avoid increasing drag, spray, and water noise thus decreasing boat speed.
4. With a pencil, mark the outline of the bracket slots on the hull. Mark the screw location at the bottom of each slot to allow for adjusting the bracket.

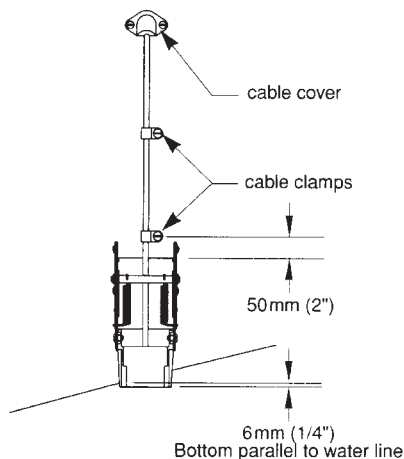


Figure 12. Transom mounting location

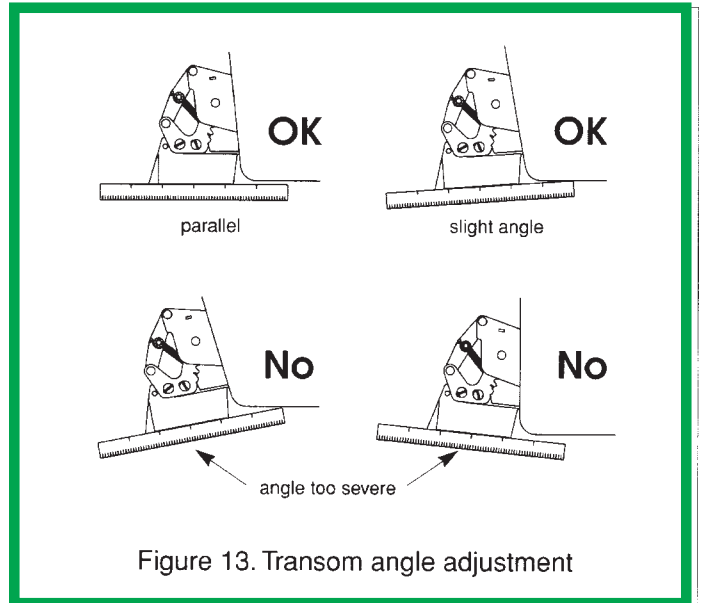


Figure 13. Transom angle adjustment

Mounting and Adjusting

1. Using a 4 mm, #23, or 9/64" bit, drill four holes 22 mm (7/8") deep at the location indicated. To prevent drilling too deeply, wrap masking tape around the bit 22 mm (7/8") from the point.
Note: To minimize surface cracking on fiberglass hulls, chamfer the gelcoat. If a chamfer bit or countersink bit is not available, start drilling with a 6 mm or 1/4" bit to a depth of 1 mm (1/16").
2. Apply marine sealant to the threads of the three #10 x 3/4" self-tapping screws to prevent water seepage into the transom. Screw the assembly to the hull.
3. Using a straight edge, adjust the angle of the transducer on the bracket. Sight the underside of the transducer relative to the underside of the hull (see Figure 13). Adjust the transducer on the bracket, so it is parallel to the bottom of the hull or at a slight angle. For best results set the stern of the transducer 1–3 mm (1/16–1/8") below the bow of the transducer and tighten the screws.

Cable Routing

Route the transducer cable over the transom, through a drain hole, or through a new hole drilled in the transom **above the waterline**.

1. If a hole must be drilled, choose a location well above the waterline. Check for obstructions such as trim tabs, pumps, or wiring inside the hull. Mark the location with a pencil. Drill a hole through the transom using a 19 mm (3/4") hole saw or spade bit (to accommodate the connector).



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2. Route the cable over or through the transom.
3. On the outside of the hull secure the cable against the transom using the cable clamps and cable cover (see Figure 12).

Note: The cable cover can accommodate two cables if there are separate cables for the depth and speed/temperature functions.

4. Position a cable clamp 50 mm (2") above the bracket and mark the screw hole with a pencil. Position the second cable clamp halfway between the first clamp and the cable hole; mark this screw hole.
5. Open the slot(s) in the cable cover. Position the cover over the cable where it enters the hull. Mark the two screw holes.
6. At each of the four marked locations, use a 3 mm or 7/64" bit to drill a 10mm (3/8") deep hole.
7. Apply marine sealant to the space around the cable and the threads of the four #6 x 1/2" (13mm) self-tapping screws to prevent water from seeping into the transom.
8. Push the cable cover over the cable and screw it in place.
9. Position the two cable clamps and screw them in place.