

OWNER'S GUIDE &

INSTALLATION INSTRUCTIONS

Shorty™ Thru-Hull Depth Transducer

Low Profile, Flush, and Retractable Models:
P6, P7, P8, P206, P207, and P208

12/04
17-273-01 rev. 03

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 can contain strong solvents, such as acetone, which attack many plastics greatly reducing their strength.

Applications

- Recommended for fiberglass or metal hulls only
- *Never* install a plastic thru-hull housing in a wood hull, since swelling of the wood can possibly fracture the plastic.
- Low profile housing recommended for cruising sailboats and planing hull powerboats
- Flush housing recommended for racing sailboats and high-speed powerboats
- Hull deadrise angle should not exceed 20°

Tools & Materials

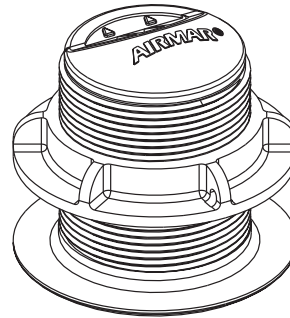
- Safety goggles
- Dust mask
- Electric drill with minimum 10mm (3/8") chuck capacity
- Drill bit 3mm or 1/8"
- Hole saw 51 mm or 2"
- Countersink tool (installing P206, P207, P208 flush housings)
- Sandpaper
- Mild household detergent or weak solvent (such as alcohol)
- File (installation in a metal hull)
- Marine sealant (suitable for below waterline)
- Additional washer [aluminum hull less than 6mm (1/4") thick]
- Zip-ties
- Water-based antifouling paint (**mandatory in salt water**)
- Installation in a cored fiberglass hull (see page 3):
 - Hole saw for hull interior 60mm or 2-3/8"
 - Fiberglass cloth and resin
 - or Cylinder, wax, tape, and casting epoxy

Identify Your Model

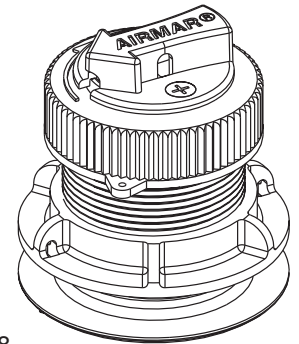
The model name is printed on the cable tag.

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

Part No. _____ Date _____ Frequency _____ kHz



P6, P7
Low profile



P8
Low profile, retractable

Hull Thickness

Model	Minimum	Maximum
P6, P7 (low profile)	6mm (1/4")	38mm (1 1/2")
P8 (low profile, retractable)	6mm (1/4")	25mm (1")
P206, P207 (flush)	11mm (7/16")	43mm (1 3/4")
P208 (flush, retractable)	11mm (7/16")	30mm (1 3/16")

Mounting Location

Placement

Choose a location:

- Where the transducer will be continuously immersed in water.
- Where the water flowing across the hull is smoothest with a minimum of bubbles and turbulence (especially at high speeds).
- Where the transducer beam will be unobstructed by the keel or propeller shaft(s).
- Away from interference caused by power and radiation sources such as: the propeller(s) and shaft(s), other machinery, other echosounders, and other cables. The lower the noise level, the higher the echosounder gain setting that can be used.
- Where there is a minimum deadrise angle, not exceeding 20°, so the transducer beam will be aimed toward the bottom.
- Where there is adequate headroom inside the vessel for the height of the housing, tightening the nuts, and removing any insert.

Model	Minimum Headroom
P6, P7, P206, P207	76mm (3")
Retractable P8, P208	153mm (6")

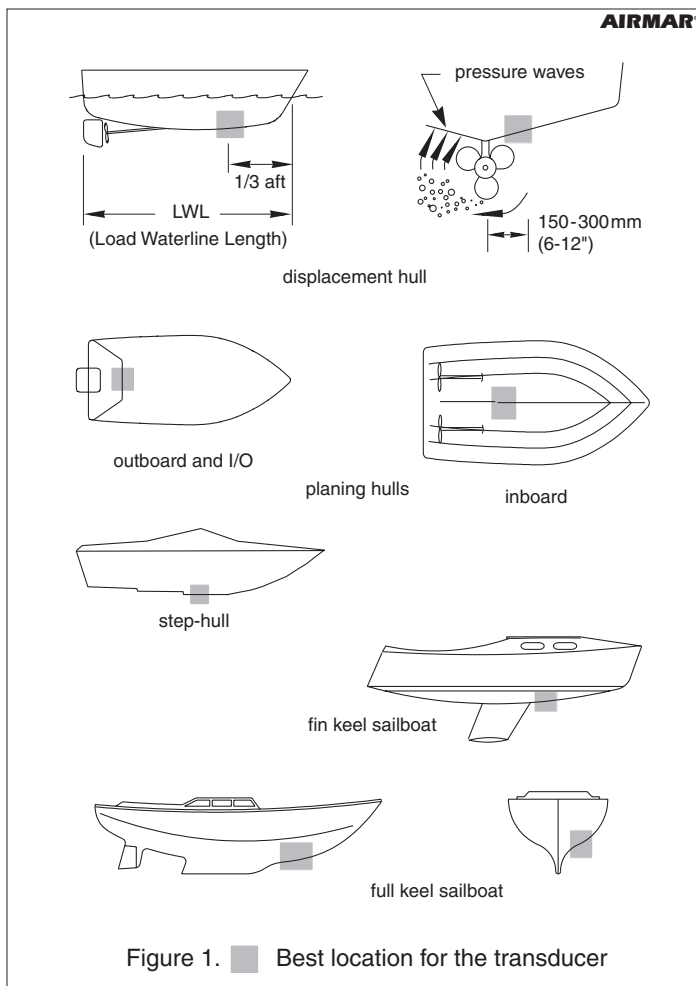
Caution: Do not mount in an area of turbulence or bubbles: near water intake or discharge openings; behind strakes, fittings, or hull irregularities.

Boat Types (see Figure 1)

- **Fin keel sailboat**—Mount to the side of the centerline and forward of the fin keel 300–600mm (1–2').
- **Full keel sailboat**—Mount amidships and away from the keel at the point of minimum deadrise angle.
- **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).
Step-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.

Fairing

Warning: Never use a fairing with a plastic housing; the protruding transducer would be vulnerable to damage from impact.



Installation

Cored fiberglass hull—Follow separate instructions on page 3.

Hole Drilling

Warning: Always wear safety goggles and a dust mask.

1. Drill a 3mm or 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. (If the pilot hole is drilled in the wrong location, drill a second hole in a better location. If the hull is fiberglass, apply masking tape to the outside of the hull over the incorrect hole and fill it with epoxy.)
2. Using a 51 mm or 2" hole saw, cut a hole from outside the hull.
P206, P207, P208—These models require countersinking the housing to create a "seat" in the hull.
3. 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.
Metal hull—Remove all burrs with a file and sandpaper.

Bedding

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

Apply a 2mm (1/16") thick layer of marine sealant around the lip of the housing that contacts the hull and up the sidewall of the housing. The sealant *must* extend 6mm (1/4") higher than the combined thickness of the hull, any washer(s), and the hull nut (see Figure 2). This will ensure there is sealant in the threads to seal the hull and hold the hull nut securely in place.

Installing

1. From outside the hull, push the housing (and cable if applicable) into the mounting hole using a twisting motion to squeeze out excess sealant. *Align the arrow on the lip of the housing to point forward toward the bow* (see Figure 2).
2. From inside the hull, slide any washer(s) onto the housing.
Note: Some installations do not have a washer.
Aluminum hull less than 6mm (1/4") thick—Use an additional rubber, plastic, or fiberglass washer. *Never* use wood, since it will swell, possibly fracturing the plastic housing. *Never* use bronze, since electrolytic corrosion will occur.
Caution: Do not clamp tightly on the wrenching flats, possibly causing the housing to fracture.
3. Screw the hull nut into place, *being sure* the notch on the upper rim of the housing is still positioned forward toward the bow.
Hand-tighten only. Do not over-tighten.
4. Remove the excess sealant on the outside of the hull to ensure smooth water flow over the transducer.
5. **Retractable models only:**

WARNING: The O-rings must be intact and well lubricated to make a watertight seal.

After the sealant cures, inspect the O-rings on the insert (replace if necessary) and lubricate them with the silicone lubricant supplied (see Figure 3).

Slide the insert into the housing with the *arrow on the top pointing forward toward the bow*. Seat it into place with a pushing twisting motion until the key fits into the notch (see Figure 2). The arrow on the top of the insert, the notch, and the arrow on the lip of the housing will all be aligned. *Be careful* not to rotate the housing and disturb the sealant.

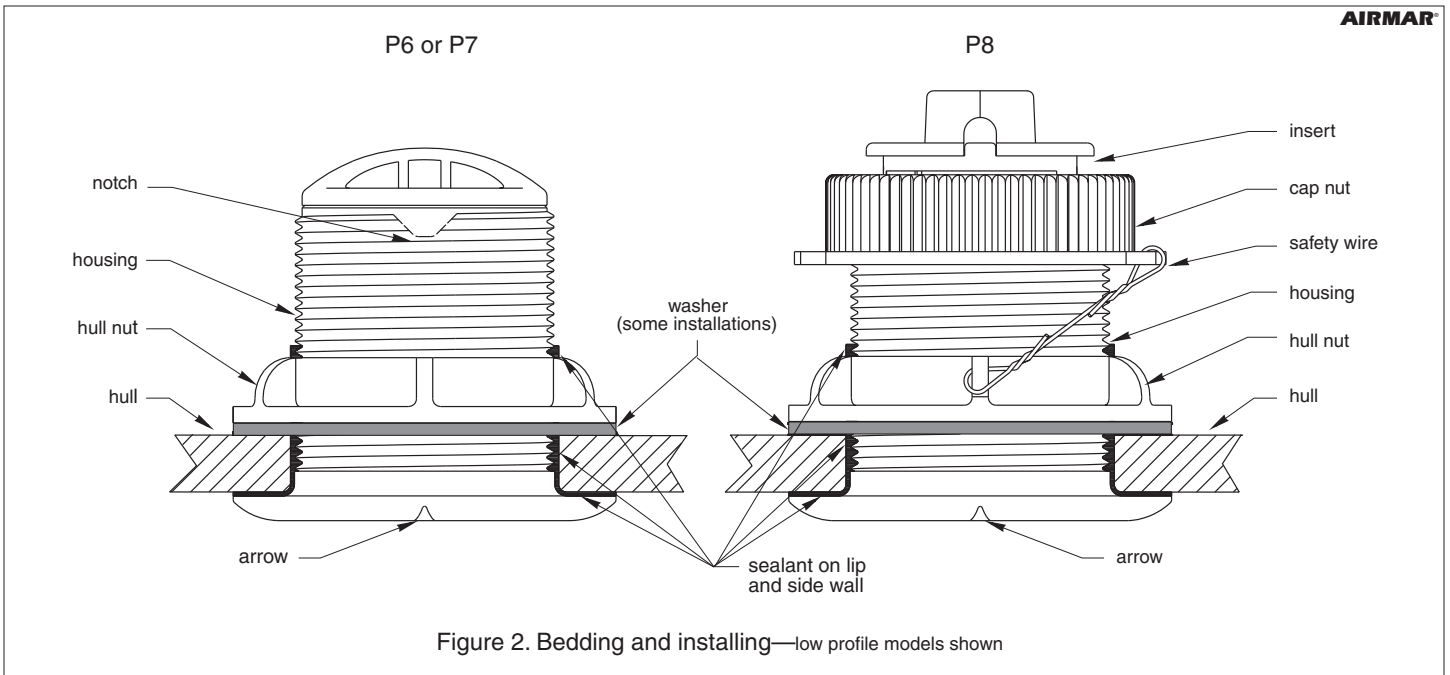


Figure 2. Bedding and installing—low profile models shown

Screw the cap nut several turns, then check that the insert's arrow is still facing forward toward the bow. Continue to tighten the cap nut. **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.

Attach the safety wire to one eye in the hull nut. Lead the wire in a counterclockwise direction and thread it through one eye in the cap nut. Twist the end securely to the wire (see Figure 2).

Cable Routing & Connecting

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.

1. 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.

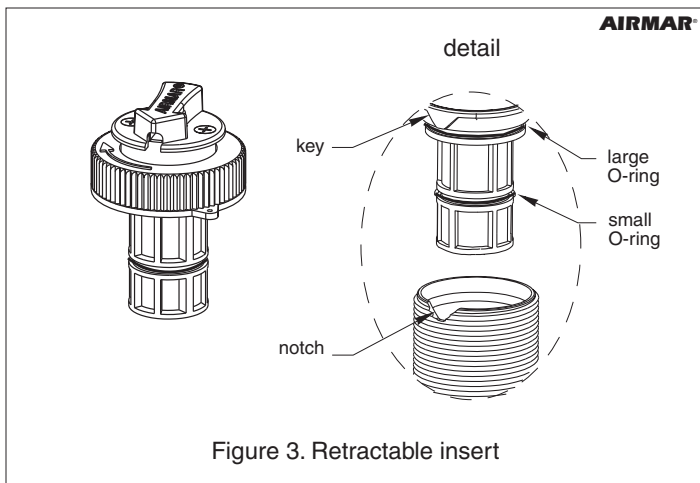


Figure 3. Retractable insert

Coil any excess cable and secure it in place with zip-ties to prevent damage.

2. Refer to the instrument 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 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" **immediately** (see page 2).

Antifouling Paint

Surfaces exposed to salt water **must** be coated with antifouling paint. Use **water-based** antifouling paint only. **Never** use ketone based antifouling 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.

Retractable models only—Also paint the outside wall of the insert and the blanking plug below the lower O-ring. Paint the bore of the housing up 30mm (1-1/4").

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 from inside the hull. 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.)

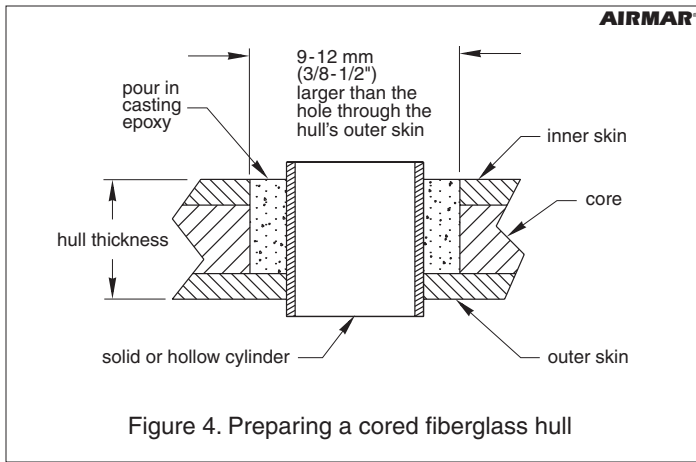


Figure 4. Preparing a cored fiberglass hull

- Using a 51 mm or 2" hole saw, cut a hole from outside the hull through the *outerskin* only (see Figure 4).
- From inside the hull, use a 60mm or 2-3/8" hole saw, to cut through the *inner*skin and most of the core. 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 *outerskin*.
- 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.
Caution: Completely seal the hull to prevent water seepage into the core.
- If you are skilled with fiberglass, saturate a layer of fiberglass cloth with a suitable resin and lay it inside the hole to seal and strengthen the core. Add layers until the hole is the correct diameter.
Alternatively, a hollow or solid cylinder of the correct diameter can be coated with wax and taped 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 2.

Servicing the Retractable Transducer

O-rings must be free of abrasions and cuts to ensure a watertight seal. Install a large O-ring under the cap nut of the insert. Install a small O-ring near the bottom (see Figure 3). Place the remaining two O-rings in similar positions on the blanking plug.

Blanking Plug

Retractable models are furnished with a blanking plug which should be used when the boat will be kept in salt water for more than a week, the boat will be removed from the water, or aquatic growth build-up on the transducer's face is suspected due to inaccurate readings from the instrument.

Caution: DO NOT remove the screws on the top of the transducer. To remove the insert, unscrew the cap nut. This will jack the insert up. Then remove the cap nut and insert as a single unit.

WARNING: The O-rings must be intact and well lubricated to make a watertight seal.

- Inspect the O-rings on the blanking plug (replace if necessary) and lubricate them with the silicone lubricant supplied or petroleum jelly (Vaseline®) (see Figure 3).
- Remove the safety wire from the cap nut (see Figure 2).

WARNING: Never leave the boat unattended without either the paddlewheel insert or blanking plug installed.

- To remove the insert from the housing, unscrew the cap nut. This will jack the insert out of the housing. Do not unscrew the screws. With the blanking plug ready in one hand, pull the insert out. 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 (see Figure 3). 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.

- Reattach the safety wire to the cap nut (see Figure 2).

Winterizing

After the boat has been hauled for winter storage, remove the blanking plug/insert to let the water drain away before re-inserting it. This will prevent any water from freezing around the blanking plug/insert and possibly cracking it.

Maintenance

Aquatic growth can accumulate rapidly on the transducer's face, reducing its performance within weeks. Clean it using a Scotch-Brite® scour pad and mild household detergent, *being careful* to avoid making scratches. In severe cases, lightly wet sand the surface 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	O-Rings	Blanking Plug	Rubber Washer	Cap Nut	Hull Nut	Housing & Nut
P6, P206, P7, P207	—	—	09-452	—	04-004	—
Retractable P8	33-519-01	20-291-01	09-452	04-011	04-004	33-360-01
Retractable P208	33-519-01	20-291-01	09-452	04-011	04-004	33-468-01

Transducer Replacement

The information needed to order a replacement Airmar 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 the top of page one.