OWNER'S GUIDE & INSTALLATION INSTRUCTIONS

Thru-Hull Mount: *Low-profile*
Shorty™ **Depth Transducer**

Models: **P7, P8**

Patent http://www.airmar.com/patent.html

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D-17-273-01-rev.7

Follow the precautions below for optimal product performance and to reduce the risk of property damage, personal injury, and/or death.

WARNING: Always wear safety glasses, a dust mask, and ear protection when installing.

WARNING: Immediately check for leaks when the boat is placed in the water. Do not leave the boat unchecked for more than three hours. Even a small leak may allow considerable water to accumulate.

WARNING: **Retractable models**—All the O-rings must be intact and well lubricated to make a watertight seal. Do not dry fit the insert in the housing. Attempting to install the insert without lubricating all the O-rings may damage them, possibly preventing full insertion and a watertight seal.

WARNING: **Retractable models**—Always attach the safety wire to prevent the sensor insert or blanking plug from backing out in the unlikely event that the cap nut fails or is screwed on incorrectly.

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

CAUTION: The arrow on the top of the transducer insert and the flange of the housing must point forward toward the bow.

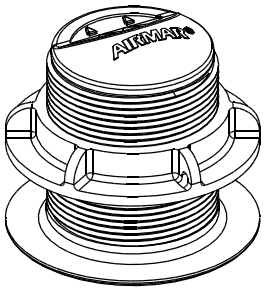
CAUTION: Never use solvents. Cleaner, fuel, sealant, paint, and other products may contain solvents that can damage plastic parts, especially the transducer's face.

CAUTION: Never power sand or pressure wash the sensor. It may weaken the structure or damage the internal components.

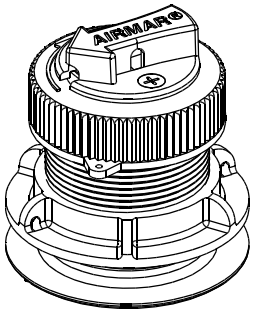
IMPORTANT*:* Please read the instructions completely before proceeding with the installation. These instructions supersede any other instructions in your instrument manual if they differ.

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

Part No._____Date_____Frequency_____kH



P7



P8
retractable

Applications

- Best performance on a hull deadrise angle through 7°. Can accommodate up to a 12° deadrise angle.
- Recommended for fiberglass or metal hull only
- Never install a plastic housing in a wood hull, since swelling of the wood may fracture the plastic.
- Low-profile housing recommended for cruising sailboats or planing hull powerboats
- Flush housing recommended for racing sailboats or high-speed powerboats

Tools & Materials

Safety glasses
Dust mask
Ear protection
Electric drill [Ø 10mm (3/8") or larger chuck capacity]
Drill bit Ø 3mm *or* 1/8"
Hole saw Ø 51mm or 2"
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]
Grommet(s) (some installations)
Cable ties
Water-based anti-fouling coating (**mandatory in saltwater**)
Installation in a cored fiberglass hull (page 3):
Hole saw for hull interior Ø 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.

Hull Thickness

Model	Minimum	Maximum
P7	6mm (1/4")	38mm (1 1/2")
P8 retractable	6mm (1/4")	25mm (1")

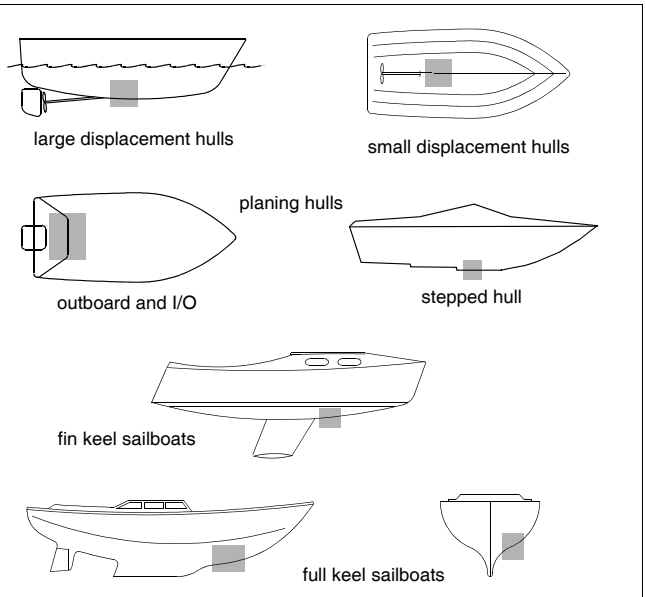


Figure 1. Best location for transducer

Mounting Location

Guidelines

CAUTION: Do not mount the transducer in line with or near water intake or discharge openings; or behind strakes, fittings or hull irregularities that may disturb the water flow.

CAUTION: Do not mount the transducer where the boat may be supported during trailering, launching, hauling, or storage to avoid damaging the transducer's face.

- The water flowing under the hull must be smooth with a minimum of bubbles and turbulence, especially at high speeds.
- The transducer must be continuously immersed in water at all speeds.
- The transducer beam must be unobstructed by the keel or propeller shaft(s).
- Choose a location 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.
- Choose a location with a minimal deadrise angle, so the transducer beam will be aimed toward the bottom.
- Choose an accessible spot inside the vessel with adequate space for the height of the housing, tightening the nuts, and removing any insert.

Model	Minimum Space Above Sensor
P7	76mm (3")
P8 retractable	153mm (6")

Boat Types (Figure 1)

- **Displacement hull powerboats**—Locate amidships near the centerline. The starboard side of the hull where the propeller blades are moving downward is preferred.
- **Planing hull powerboats**—Mount well aft, on or near the centerline, and *well inboard of the first set of lifting strakes* to ensure that the transducer will be in contact with the water at high speeds. The starboard side of the hull where the propeller blades are moving downward is preferred.
  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 sailboats**—Mount on or near the centerline and forward of the fin keel 300 to 600mm (1–2').
- **Full keel sailboats**—Locate amidships and away from the keel at the point of minimum deadrise.

Installation

Hole Drilling

***Cored fiberglass hull**—Follow separate instructions on page 3.*

1. Drill a Ø 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.
2. Using a Ø 51mm or 2" hole saw, cut a hole perpendicular to the hull from outside 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: Be sure the surfaces to be bedded are clean and dry.

Apply a 2mm (1/16") thick layer of marine sealant around the flange and up the sidewall of the housing that will contact the hull (Figure 2). The sealant must extend 6mm (1/4") higher than the combined thickness of the hull, any washer(s), and the hull nut. 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 marine sealant. *Align the arrow on the flange of the housing to point forward toward the bow* (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 rubbery, plastic, or fiberglass washer. Never use bronze because electrolytic corrosion will occur. Never use wood because it will swell, possibly fracturing the plastic housing.
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. Do not clamp tightly on the wrench flats possibly fracturing the housing. **Hand-tighten** only. Do not over-tighten.

   Cored Fiberglass Hull—Do not over tighten, crushing the hull.
4. Remove the excess sealant on the outside of the hull to ensure smooth water flow under the transducer.

P8 Retractable ONLY

1. *All the O-rings must be intact and well lubricated to make a watertight seal.* After the sealant cures, inspect the O-rings on the transducer insert (replace if necessary) and lubricate them with the silicone lubricant supplied (Figure 3).
2. *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 (Figure 2). The arrow on the top of the insert, the notch, and the arrow on the flange of the housing will all be aligned. Be careful not to rotate the housing and disturb the marine sealant.

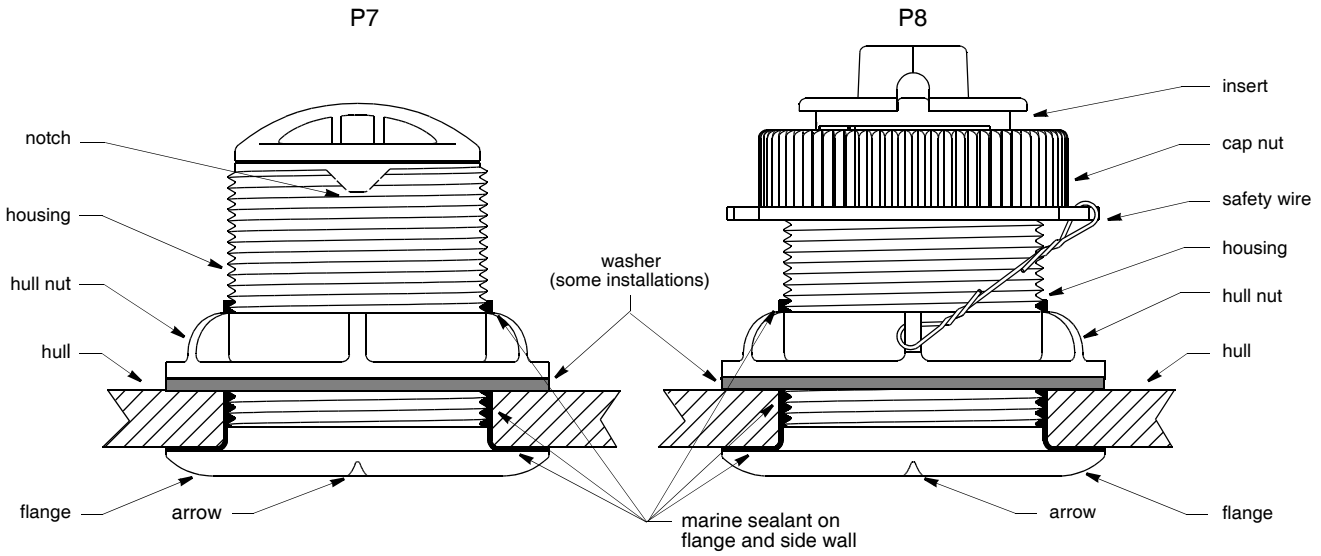


Figure 2. Bedding and installing (low-profile models shown)

3. Screw the cap nut several turns, then check that the arrow on the insert is still facing forward toward the bow. Continue to tighten the cap nut. **Hand-tighten** only. Do not over tighten.
4. 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. Keeping the wire taut throughout, lead the wire in a counterclockwise direction and thread it through one eye in the cap nut. Twist the end securely to the wire.

Cable Routing & Connecting

CAUTION: If your sensor 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 No. 33-035 and follow the instructions provided. Removing the waterproof connector or cutting the cable, except when using a watertight junction box, will void the sensor's 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. Use grommets to prevent chafing. 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 cable ties to prevent damage.
2. Refer to the instrument owner's manual to connect the transducer to the instrument.

Checking for Leaks

When the boat is placed in the water, **immediately** check around the transducer for leaks. Note that very small leaks may not be readily observed. Do 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** (page 2).

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.

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

1. Drill a Ø 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.
2. Using a Ø 51mm or 2" hole saw, cut a hole from outside the hull through the *outer* skin only (Figure 4).

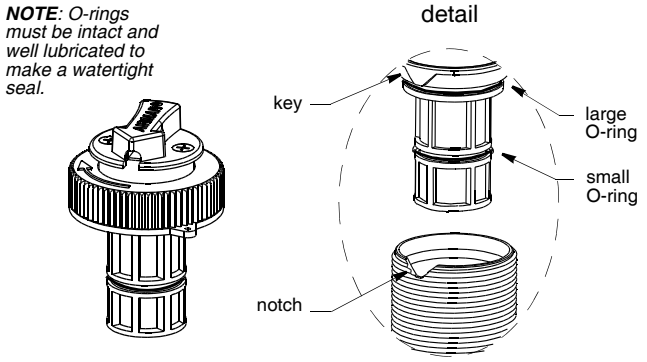


Figure 3. P8 retractable insert

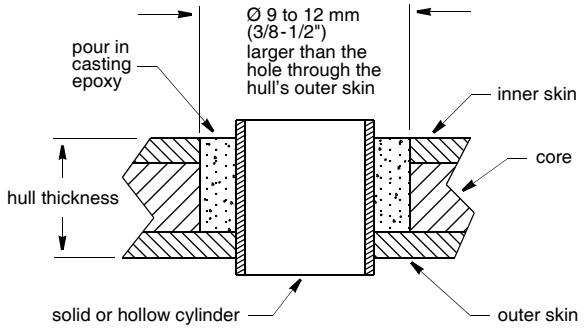


Figure 4. Preparing a cored fiberglass hull

3. From inside the hull, use a Ø 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 *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.
5. 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.
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” (page 2).

Anti-fouling Coating

Surfaces exposed to saltwater must be covered with antifouling coating. *Use water-based anti-fouling coating made for transducers only.* Never use ketone based anti-fouling paint, since ketones can attack many plastics possibly damaging the transducer. Brush on anti-fouling coating every 6 months or at the beginning of each boating season.

P8 Retractable ONLY—Coat the following surfaces:

- Outside wall of the insert below lower O-ring and exposed end
- Bore of the housing up 30mm (1-1/4”)
- Exterior flange of the housing
- Blanking plug below the lower O-ring including the exposed end

Operation, Maintenance & Repair

P8 Retractable ONLY: Using the Blanking Plug

CAUTION: Do not remove the screws on the top of the transducer.

To protect the insert, use the blanking plug:

- When the boat will be kept in saltwater for more than a week.
- When the boat will be removed from the water.
- When aquatic growth buildup on the insert is suspected due to inaccurate readings from the instrument.

1. *All the O-rings must be intact and well lubricated to make a watertight seal.* On the blanking plug, inspect the O-rings (replace if necessary) and lubricate them with the silicone lubricant supplied or petroleum jelly (Figure 3).
2. Remove the transducer insert from the housing by removing the safety wire from the cap nut (Figure 2). Unscrew the cap nut. This will jack the insert out of the housing, removing the cap nut and insert as a single unit.
3. With the blanking plug ready in one hand, pull the transducer 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 (Figure 3). With practice, only 250ml (10oz.) of water will enter the boat. Screw the cap nut in place and **hand-tighten** only. Do not over tighten.
4. Reattach the safety wire to prevent the blanking plug from backing out in the unlikely event that the cap nut fails or is screwed on incorrectly (Figure 2).

Cleaning

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. If the fouling is severe, lightly wet sand the surface with fine grade wet/dry paper.

Winterizing

After the boat has been hauled for winter storage, remove the blanking plug to let the water drain away before reinserting it. This will prevent any water from freezing around the blanking plug, possibly cracking the plastic.

Replacement Transducer & Parts

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.

Lost, broken, and worn parts should be replaced immediately. Obtain parts from your instrument manufacturer or marine dealer.

Gemeco	USA
	Tel: 803-693-0777
	Email: sales@gemeco.com
Airmar EMEA	Europe, Middle East, Africa
	Tel: +33.(0)2.23.52.06.48
	Email: sales@airmar-emea.com