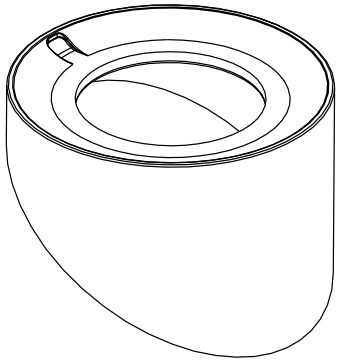
OWNER'S GUIDE & INSTALLATION INSTRUCTIONS

Thru-Hull to In-Hull Adaptor

Fits Models: P8 and P17 Retractable Depth Transducers



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***IMPORTANT**: Please read these instructions completely before proceeding with the installation. These instructions should be used in conjunction with the installation instructions that came with your transducer.*

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

- Fiberglass hulls only
- Accommodates a deadrise angle up to 30°

Identify Your Model

Check your model to be sure it will fit this adaptor. The model name is printed on the cable tag.

Tools and Materials

Detergent *or* weak solvent (such as alcohol)
Safety goggles (some installations)
Dust mask (some installations)
Disk sander (some installations)
Thin sealable plastic bag (optional)
Twist-tie
Water based lubricant (such as K-Y® jelly) (optional)
Carpenter's level
Pencil
Saw
Adhesive (such as Boatlife®'s Lifeseal® *or* 3M™ #4200)
Mineral oil (available at pharmacies)
Silicone lubricant *or* petroleum jelly (Vasoline®)
Zip-ties

Mounting Location

Fiberglass Hull

Since the hull absorbs acoustic energy, transmitting through the hull reduces the transducer's performance. Fiberglass hulls are often reinforced in places for added strength. These cored areas contain balsa wood or structural foam which are poor sound conductors. ***Do not locate the transducer over coring***.

***Caution**: Find an area of the boat where the fiberglass is solid:*

- There are no air bubbles trapped in the fiberglass resin.
- There is no coring, flotation material, or dead air space sandwiched between the inside skin and outer skin of the hull.

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 echo-sounders. 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 hull below the transducer will be in contact with the water.
- The transducer beam is unobstructed by the keel or propeller shaft(s).
- The deadrise angle does not exceed 30°.
- There is adequate space inside the vessel for the adaptor, transducer housing, and removing the transducer insert.

***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).

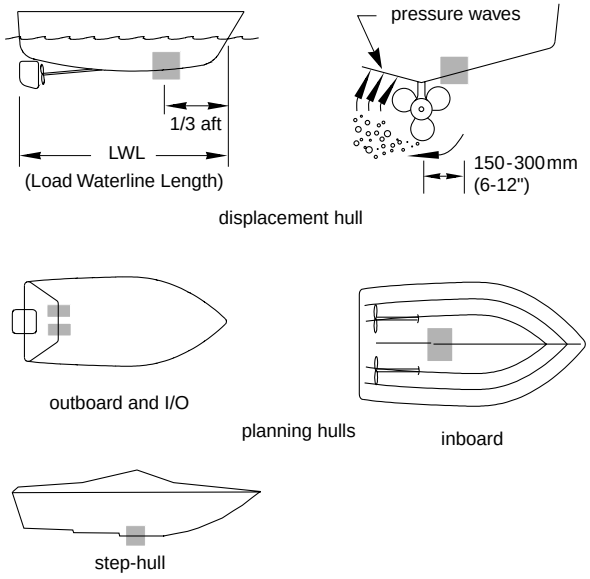

Figure 1. Best location for the transducer

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**—Locate 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 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.

Test the Selected Mounting Location

Establishing a Performance Baseline

The results of this test are used as a basis of comparison to determine the best in-hull location for the transducer.

1. Take the boat to the maximum depth for which your instrument is rated [up to 150m (500')] or the maximum depth in which you will be operating the echosounder.
2. Connect the transducer insert to the echosounder.
3. Hold the transducer insert over the side of the boat with the active face submerged in the water (see Figure 2). *Be sure* to keep the active face of the transducer *parallel* to the surface of the water.
4. Observe the echosounder's performance and the depth reading.

Testing the Location

While the boat is at the same site (depth of water), test the transducer insert inside the hull at the mounting location. Use one of the methods below:

A. This method is recommended if the transducer will be located near the stern and the boat has a minimum deadrise angle. Clean away any build-up of dirt and/or grease using detergent or a weak solvent such as alcohol. Place the active face of the transducer insert against the hull. Flood the area with bilge water to cover the area where they touch (see Figure 3-A).

B. ***Warning****: Always wear safety goggles and a dust mask.*

This method can be used at any location. If the hull surface is not smooth, grind it with a disc sander. Partially fill a thin plastic bag with water and place the transducer insert inside the bag. Close it tightly with a twist-tie. Wet the surface of the hull and press the active face of the transducer insert against it through the bag (see Figure 3-B).

C. ***Warning****: Always wear safety goggles and a dust mask.*

This method can be used at any location. If the hull surface is not smooth, grind it with a disc sander. Coat the active face of the transducer insert with a **water** based lubricant (such as K-Y® jelly). Press it against the hull with a twisting motion (see Figure 3-C).

Observe the echosounder's performance, and compare it to the baseline. Look for a stable depth reading that is similar to the baseline. If you are testing a fishfinder, compare the thickness and intensity of the bottom trace.

If the performance is close to the baseline, this is a good mounting location. Remember, energy is lost transmitting through the hull. If the test reading differs markedly from the baseline, you will need to find another location to install the transducer.

If there is no reading or it is erratic, the transducer may be positioned over coring which is absorbing the acoustic energy. Choose another location. If no other spot is available, check with the boat manufacturer to be certain coring is present.

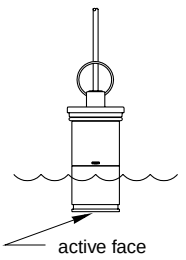

Figure 2. Establishing a performance baseline

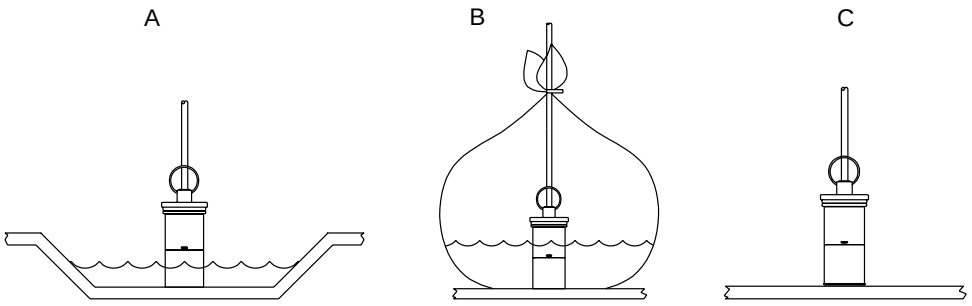

Figure 3. Testing the transducer at the selected location

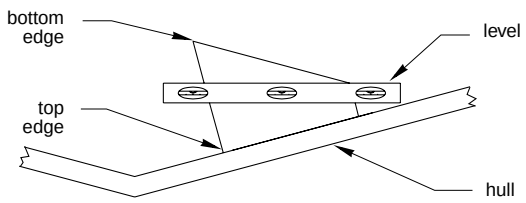

Figure 4. Marking the deadrise angle on the adaptor

Installation

Marking and Cutting

***Caution**: For optimal performance, the transducer must be installed parallel to the surface of the water.*

1. When you are satisfied that the location of the transducer is optimal, place the adaptor *up-side-down* on the hull at the selected mounting location. *Be sure the **tallest** side is nearest the centerline (keel) of the hull* (see Figure 4).
2. Holding a carpenter's level even with the lowest edge and perpendicular the centerline of the boat (keel), draw a level line across the adaptor using a pencil. This will be your cutting guideline.

   ***Warning**: Always wear safety goggles and a dust mask.*
3. Check again to be sure the ***tallest*** side of the adaptor will be closest to the centerline (keel) of the boat. Clamp the adaptor to a flat surface. Cut it along the guideline that you have drawn. It may be necessary to further shape the adaptor to the hull to ensure a liquid tight bond.

Bonding

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 100 mm (4") in diameter.
2. Remove any dust, grease, or oil with a weak solvent, such as alcohol, to ensure a good bond. Clean and dry both the selected area and the bottom of the adaptor.
3. When you are satisfied that the location of the transducer is optimal and the orientation of the adaptor corresponds to the deadrise angle of your boat, apply a bead of recommended adhesive such as Boatlife®'s Lifeseal® *or* 3M™ #4200 to the bottom edge of the adaptor. (Follow the adhesive manufacture's instructions for use.) Press the edge firmly in place to form a liquid-tight seal. Apply a second bead of adhesive around the outside of the adaptor (see Figure 5).

   ***Caution**: The adaptor must be liquid-tight.*
   DO NOT use silicone adhesive, because mineral oil will dissolve the bond.
   DO NOT use epoxy adhesive, because there will be leaks.
4. Attach the transducer to the adaptor by applying a bead of recommended adhesive such as Boatlife®'s Lifeseal® *or* 3M™ #4200 to the flange of the transducer housing. (Follow the adhesive manufacture's instructions for use.) Press the flange of the transducer housing firmly against the flange of the adaptor. *Be sure* the arrow of the transducer housing fits into the indent on the adaptor.
5. Allow the adhesive to cure. The seal *must* be liquid tight.

Installing the Transducer

1. After the adhesive has cured, pour mineral oil through the transducer housing into the adaptor until it reaches about 6 mm (1/4") up the bore of the housing.

   ***Caution**: Avoid overfilling the adaptor because it will pull away from the hull when the transducer insert is installed.*
2. On the transducer insert, remove all but the top O-ring near the cap nut. Inspect this O-ring and lubricate it with silicone lubricant or petroleum jelly (Vaseline®).

   ***Caution**: The bottom O-ring must be removed to allow the air to escape when the transducer insert in installed.*
3. Slide the transducer insert into the housing. (The arrow on the top will be facing the gunwale of the boat.) Seat it into place with a pushing twisting motion until the key fits into the notch. *Be careful* not to rotate the housing and disturb the adhesive. Tighten the cap nut. ***Hand-tighten** only. Do not* over tighten.

   ***Caution:** Do not remove the connector 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 this junction box, will void the warranty.*
4. Route the cable to the echosounder 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(s). Coil any excess cable and secure it near the transducer with zip-ties to prevent damage.
5. Refer to your echosounder owner's manual to connect the transducer to the instrument.

Troubleshooting

- Loosing oil—The bond is not liquid tight. Remove the adaptor from the hull and repeat "Bonding".
- Sporadic depth reading—There are air bubbles caught between the oil and the transducer insert. After several hours of boat operation, the bubbles will work their way out. If not, perform "Testing the Location".

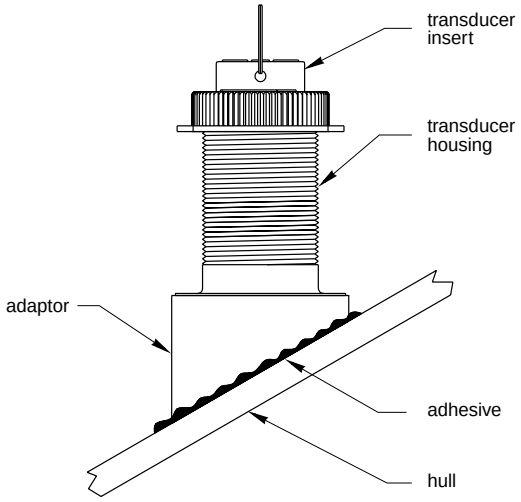

Figure 5. Bonding and installing