

# OWNER'S GUIDE & INSTALLATION INSTRUCTIONS

## In-hull, Removable, Depth Transducer Model M260

6107

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

17-446-01 r02

### 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.

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

Part No. \_\_\_\_\_ Date \_\_\_\_\_ Frequency \_\_\_\_\_ kHz

## Applications

- Fiberglass hulls only
- Recommended for high-speed boats
- Accommodates a deadrise angle up to 30°

## Tools & Materials

- Rope
- 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
- Scissors
- Sand paper: 80 grit

### Bonding material

- Fiberglass resin approved brands:
  - Bondo 401
  - West Marine boaters resin (Model—1937762)
- or Marine-Tex epoxy putty (14 oz. pack)
- or 3M™ Marine Adhesive/Sealant 5200

**Propylene glycol** (non-toxic anti-freeze/coolant)

Zip ties

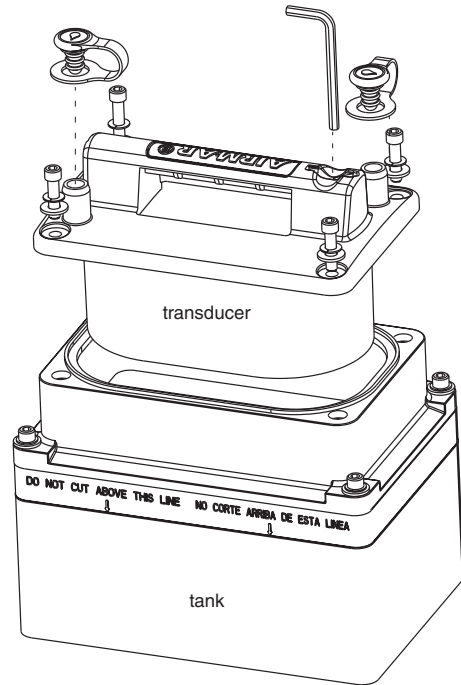


Figure 1. Exploded view

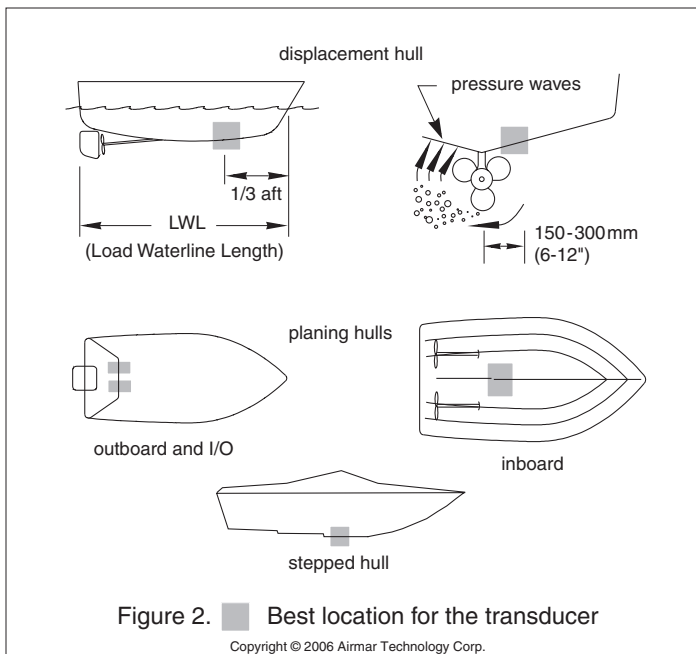
## Mounting Location

### About Fiberglass Hulls

**Caution:** The fiberglass hull below the transducer must be solid. Since the hull absorbs acoustic energy, transmitting through the hull reduces the transducer's performance. Fiberglass hulls are often cored in places for added strength or to reduce weight. These cored areas contain balsa wood or structural foam which are poor sound conductors. *Do not locate the transducer over coring.*

### Choose a location:

- Where the fiberglass is solid (no air bubbles are trapped in the fiberglass resin) and where no coring, flotation material, or dead air space is sandwiched between the inside skin and outer skin of the hull.
- Where the hull below the transducer will be in contact with the water at all times.
- Where the water flowing across the hull is smoothest with a minimum of bubbles and turbulence (especially at high speeds).  
**Caution:** Do not mount the transducer near water intake or discharge openings; or behind strakes, fittings, or hull irregularities.
- 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 the transducer beam will *not* be blocked by the keel or propeller shaft(s).
- Where the deadrise angle does *not* exceed 30°.
- Where there is space inside the vessel for the size of the tank and removing the transducer.



## Boat Types (see Figure 2)

- **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 insure 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.

## 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 in which you will be operating the echosounder. If deep water is not available, find a location with at least 30m (100').
2. Connect the transducer to the echosounder.

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

3. Tie a rope securely around the handle of the transducer (see Figure 3). Lower it over the side of the boat until the active face is submerged in the water.
4. *Be sure* to keep the active face of the transducer parallel to the surface of the water and fully submerged. 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 inside the hull at the mounting location. Use one of the test methods below:

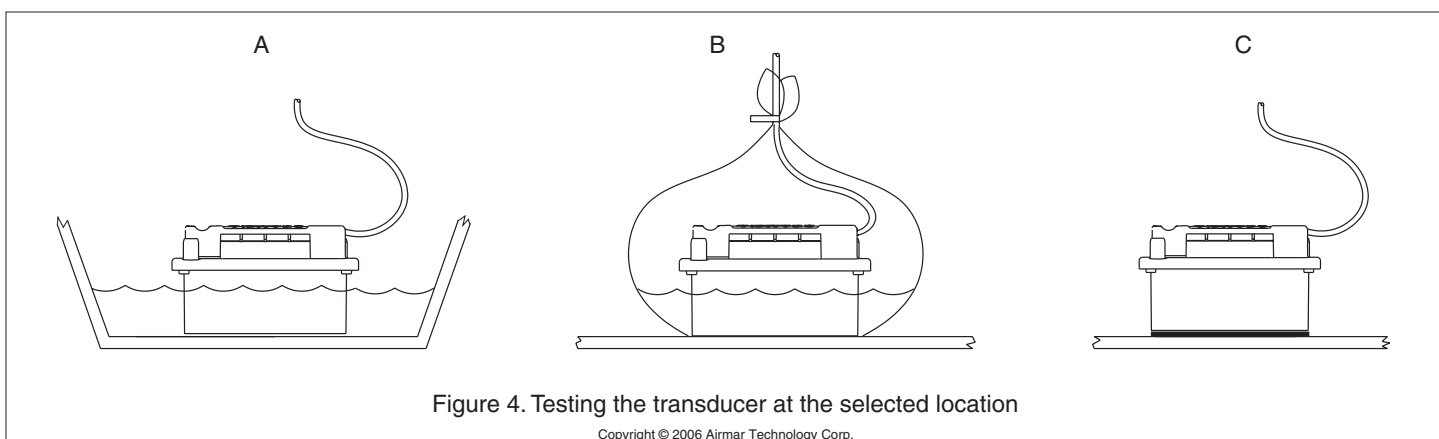
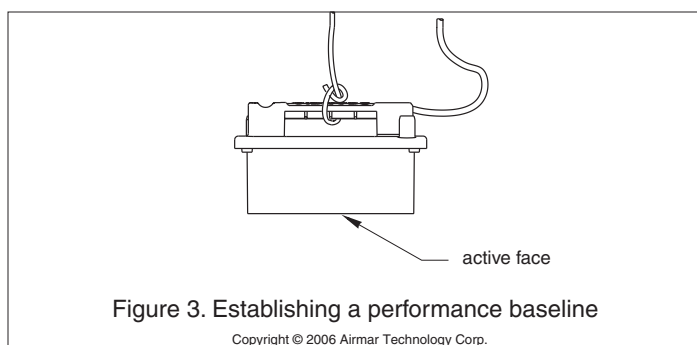
- A. This method is recommended if the transducer will be located near the stern and the boat has a minimum deadrise angle. Clean away any build-up of dirt and/or grease using detergent or a weak solvent such as alcohol. Place the transducer against the hull and flood the area with bilge water to cover the surface where they touch (see Figure 4-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. Place the transducer inside a thin plastic bag. Partially fill the bag with water and close it tightly with a twist-tie. Wet the surface of the hull and press the active face of the transducer against it through the bag (see Figure 4-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 with a water-based lubricant (such as K-Y® jelly). With a twisting motion, press the face firmly against the hull (see Figure 4-C). After testing, wipe away all traces of the lubricant from the transducer's face.



Observe the echosounder's performance and compare it to the baseline. Look for a stable depth reading that is similar to the baseline. Compare the thickness and intensity of the bottom trace.

If the performance is close to the baseline, this is a good mounting location. Remember, some 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.

**Note:** 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 location is available, check with the boat manufacturer to be certain coring is present.

## Installation

### Marking & Cutting

**Caution:** For optimal performance, the transducer must be installed so the beam will be aimed straight down. This is accomplished by cutting the tank to match the deadrise angle of the hull.

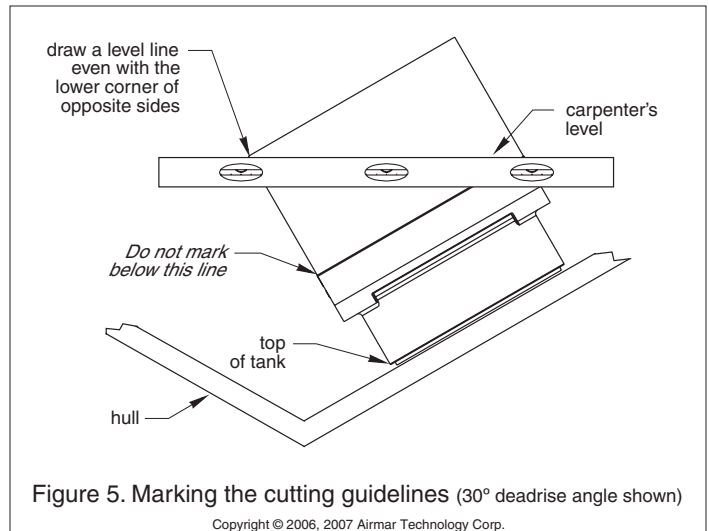
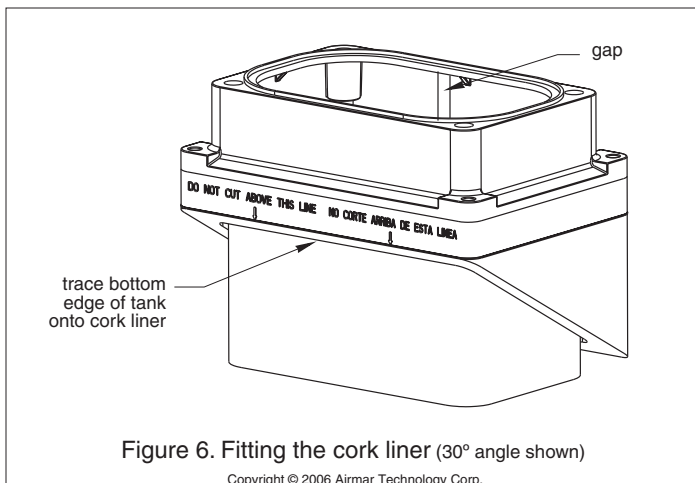
1. The tank can be disassembled for installation in tight places. *Do not disassemble the tank unless it is necessary.* If the tank will be installed as one unit, lightly tighten the socket-head cap screws that hold the two halves of the tank together using the Allen wrench supplied (see Figure 1). (Use a blade screwdriver to remove the Allen wrench from the handle of the transducer. After use, replace the Allen wrench in the recess.)
2. When you are satisfied that the selected mounting location is optimal, place the tank *up-side-down* on the hull (see Figure 5). The tank can be placed with either a short side or a long side parallel to the centerline of the boat.

**Caution:** Do not mark or cut the tank in the space labeled "Do not cut above this line."

3. Holding a carpenter's level even with the *lower* corner of one of the sides to be cut, draw a *level* line on the tank. Repeat this process on the opposite side of the tank. **Connect the two lines to form the SHORTEST side of the tank.** Be sure the lines are level. They will be the cutting guidelines.

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

4. Before cutting the tank, be sure the **TALLEST** side will be closest to the centerline (keel) of the boat after the tank is installed. And be sure to observe the "Do not cut above this line." Using a saw, cut the three sides of the tank along the guidelines drawn. It may be necessary to further shape the tank to the hull to ensure a liquid tight bond.
5. The tank is provided with a cork liner to reduce sound echoes. After the tank has been cut, wrap the cork liner around the



inside of the tank (see Figure 6). Butt the sides of the liner along the center of the tallest side. **Note:** There may be a gap between the edges which will not affect performance. Push the cork liner up against the step on the inside of the tank. Trace the bottom edge of the tank onto the liner.

6. Remove the cork liner from the tank. Use scissors to cut the liner along the line drawn.

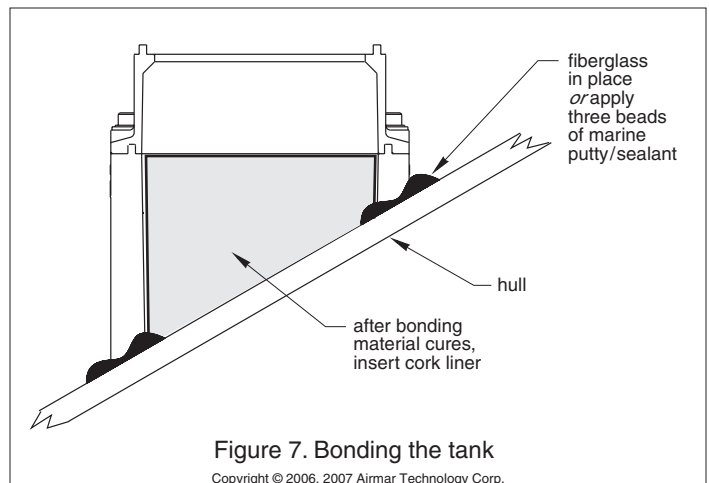
### Bonding the Tank

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

1. To ensure a tight bond, the hull under and around the tank **must be smooth and free of paint or any other finish.** If the surface is rough, use a disk sander to smooth an area slightly larger than the tank. Remove any dust, grease, or oil from the hull surface with a weak solvent, such as alcohol. Dry the effected area.
2. Use 80 grit sand paper to sand the outside and inside of the tank up 50mm (2") above the bottom edge. Remove the dust with a weak solvent, such as alcohol. Dry the effected area.

**Caution:** The tank must be liquid-tight.

3. Use an approved bonding material (see Tools & Materials on page 1). Glass the tank to the hull with fiberglass resin, using standard fiberglass technique. Alternatively, apply a generous bead of marine putty/sealant to the bottom edge of the tank following the manufacturer's instructions (see Figure 7). Press the tank firmly in place. Apply a second bead around the inside of the tank. And apply a third bead around the outside of the tank.
4. Allow the bonding material to cure. The seal **must** be liquid-tight.



- If the tank is being installed in two parts, reattach the two sections now (see Figure 8). *Be sure* the O-ring gasket is in place around the lip and lubricated. Screw the two halves together using the socket-head cap screws, lock washers, and washers supplied. *Do not* over tighten.

### Installing the Transducer

- After the bonding material has cured, insert the cork liner into the lower section of the tank (see Figure 7). Butt the edges along the center of the tallest side. Note, there may be a gap, but this will not affect performance.
- Following the manufacturer's directions for use, pour propylene glycol into the tank until it covers the exposed hull inside the tank.
- Before installing the transducer, wipe it clean of any lubricant that was used in testing the location. Check that the O-ring gasket is in the groove around the lip of the transducer.

**Caution:** *Do not use sealant or adhesive on the gasket. To do so may break the tank when the transducer is removed.*

- Grasp the transducer by the handle and lower it into the tank (see Figure 8). There is no fore or aft to the transducer; it fits either way.

**Caution:** *Do not over-tighten the bolts to avoid cracking the tank.*

- Attach the transducer to the tank. Use the four socket-head cap screws, four lock washers, and four washers supplied. Lightly tighten with the Allen wrench supplied. (Use a blade screwdriver to remove the Allen wrench from the handle of the transducer. Replace the Allen wrench in the recess in the handle.)
- Top-off the propylene glycol in the tank. However, allow a small air space to accommodate expansion with temperature changes. Using the funnel supplied, pour the fill-liquid through one of the fill/vent holes until the tank is full (see Figure 9). The second hole will act as a vent. Alternately, the tank can be filled using standard diameter tubing secured with a band clamp. Attach the stoppers supplied and plug both fill/vent holes (see Figure 8). To ease sliding, lubricate the stoppers with the fill liquid. Tie the funnel to the handle to keep it near-at-hand.

**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 No. 33-035 and follow the instructions provided. Removing the water-proof connector or cutting the cable, except when using Airmar's junction box, will void the transducer warranty.*

- 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 in place with zip-ties to prevent damage.
- Refer to your echosounder owner's manual to connect the transducer to the instrument.

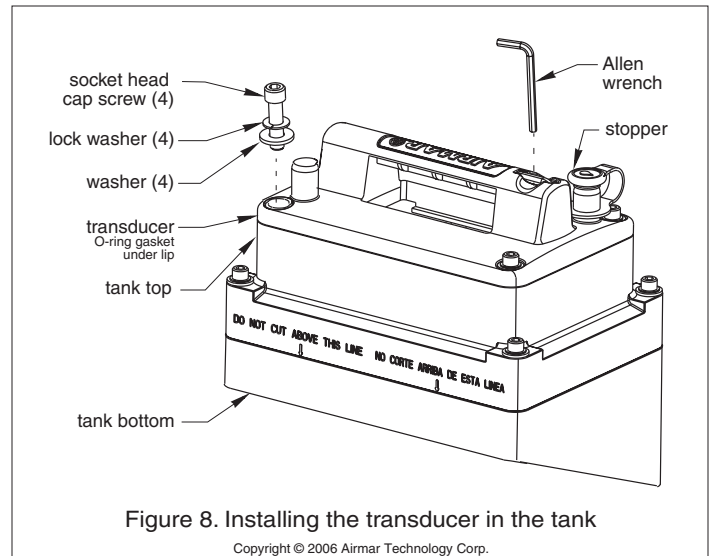


Figure 8. Installing the transducer in the tank

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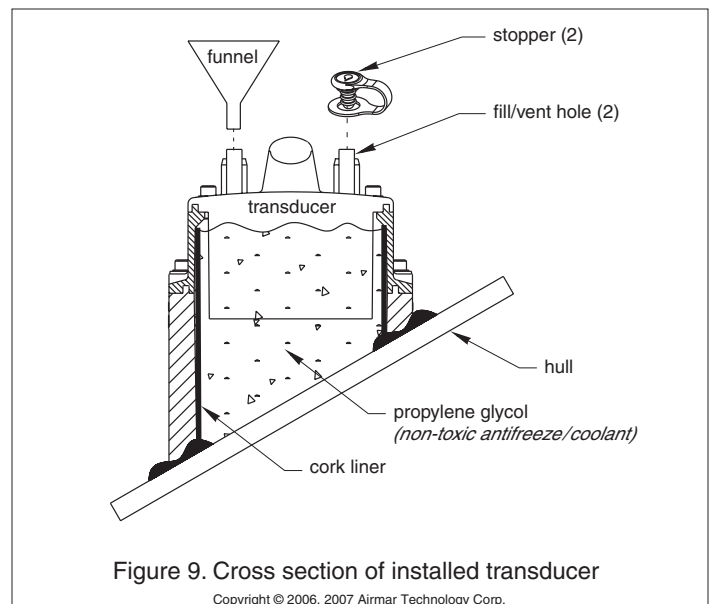


Figure 9. Cross section of installed transducer

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### 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 at the top of page one.

Lost, broken, or worn parts should be replaced immediately.

In-hull Mounting Kit 33-547-01

Obtain parts from your instrument manufacturer or marine dealer.

Gemeco (USA) Tel: 843.394.3565  
 Fax: 843.394.3736  
 email: sales@gemeco.com

Airmar Europe Tel: +45.45.81.04.18  
 Fax: +45.45.81.04.93  
 email: sales@airmareurope.com