

OWNER'S GUIDE &

Sealcast™ and Cast Resin Transducers

Models: M42, M155, M163, M172, M177, R155

10/05

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

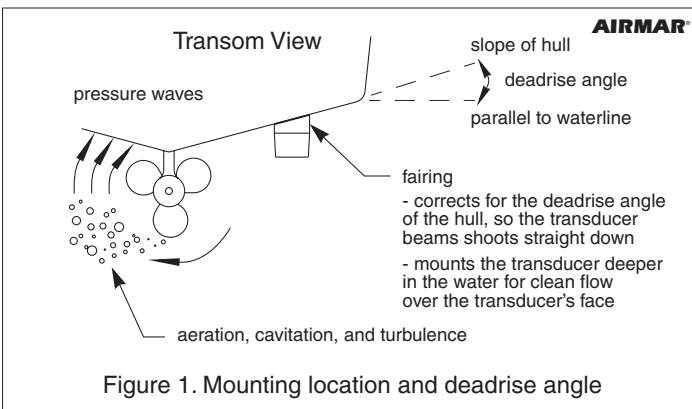
17-011 rev.05

Mounting Location

Carefully study the hull to determine the best mounting location.

- Away from the propeller(s) and shaft(s), other machinery, and other echosounders to minimize the effect of noise on the echosounder display. The lower the noise level, the higher the gain setting that can be used.
- On the side of the hull where the propeller(s) blades are moving downward. The upward motion of blades generates pressure waves and pushes bubbles up against the hull. By mounting on the downward side, the hull shades the transducer from this effect (see Figure 1).
- Where the transducer beam will be unobstructed by the keel or propeller shaft(s).
- Where there is a minimum deadrise angle.
- Where there is adequate headroom inside the vessel for the height of the stuffing tube and tightening the nuts.
- Locate the transducer about 1/3 aft LWL. Generally, this provides the best compromise between obtaining aeration-free water away from the bow and minimizing propeller noise (see Figure 2).

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



INSTALLATION INSTRUCTIONS

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

Part No. _____ Date _____ Frequency _____ kHz



M155

Stuffing Tube

Choosing the Stuffing Tube

Warning: A stuffing tube is required for all installations.

Caution: The stuffing tube must be compatible with the hull material

The stuffing tube seals the hull forming a water-tight conduit for the cable. Choose a stuffing tube based on the hull material and diameter of the transducer cable. Airmar stuffing tubes are available from your marine dealer (see table below).

Fiberglass hull—The stuffing tube *must* be installed in solid fiberglass, not in coring.

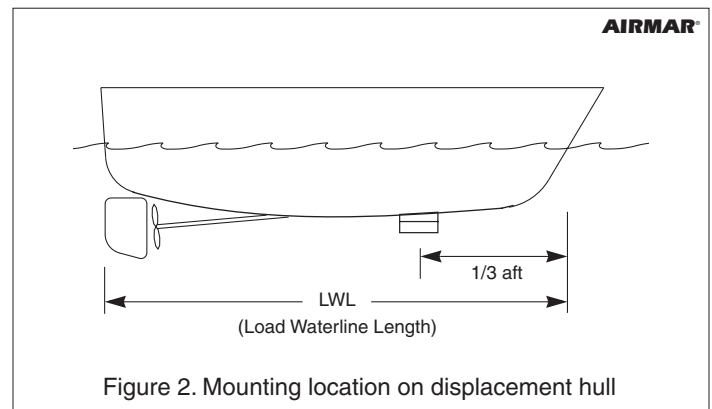
Aluminum hull—Use a stainless steel stuffing tube. *Never* use a bronze stuffing tube as electrolytic corrosion will occur.

Stuffing Tube Material	Hull Material	Cable Diameter	Hull Hole Diameter	Airmar Part No.
bronze	fiberglass wood	up to 0.47" D	44mm (1-3/4")	33-511-01
stainless steel	fiberglass, wood steel, aluminum ^a	up to 0.47" D	26mm (1")	33-819
steel	weld to steel hull	up to 0.5" D	38mm (1-1/2")	33-818

a. Requires the tube to be isolated from the hull with non-electrically conductive spacers.

Installing the Stuffing Tube

After determining the best mounting location, install the stuffing tube. Follow the installation instructions that came with the stuffing tube.



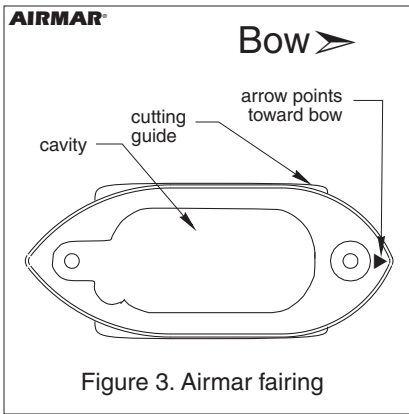


Figure 3. Airmar fairing

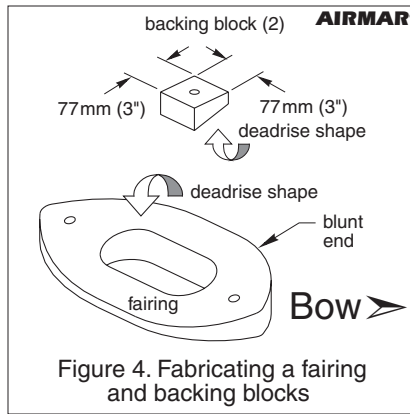


Figure 4. Fabricating a fairing and backing blocks

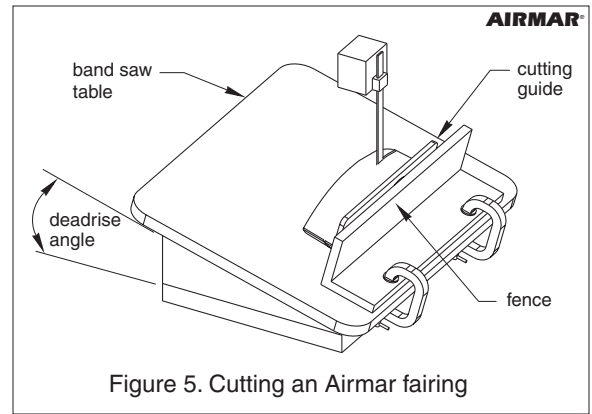


Figure 5. Cutting an Airmar fairing

Fairing

Nearly all vessels have some deadrise angle at the transducer's mounting location. If the transducer is mounted directly to the hull, the sound beam will be tilted off the vertical at the same angle as the deadrise. If the deadrise angle at the mounting location exceeds 10° a fairing is strongly recommended (see Figure 1).

- Orients the sound beam straight down by mounting the transducer parallel to the water surface.
- Mounts the transducer deeper in the water for clean flow over the transducer's face.

AIRMAR Polymer Fairing

Made of a high impact polymer with an integrated cutting guide, the Airmar fairing is easy to cut with a band saw and shape with hand tools (see Figure 3). The fairing also has a center cavity for the stuffing tube and cable service loop.

Model (see cable tag)	Airmar Fairing Part No.
M155, R155, M172	33-147
M177	33-145

Fabricating a Fairing & Backing Blocks

A fairing is usually constructed of an oily wood such as mahogany or teak. Shape the fairing to match the outline of the transducer (see Figure 4). Cut a 75 mm x 150 mm (3" x 6") hole in the center of the fairing for the stuffing tube and the cable service loop. Place the transducer over the fairing and using the transducer as a guide, drill two holes for the threaded rods. Backing blocks are mounted inside the hull to provide a level surface for tightening the nuts that hold the threaded rods. They are fabricated to match the interior deadrise angle. Drill a hole through the center of each backing block.

Model (see cable tag)

M42

M163

Hole Diameter

13mm or 1/2"

10mm or 3/8"

Cutting the Fairing

Warning: The fairing must be installed parallel to the keel to ensure proper boat handling and water flow over the transducer.

1. The stuffing tube will be centered in the cavity of the fairing (see Figures 3, 4 & 6). Measure the deadrise angle of the hull at the stuffing tube using an angle finder or a digital level (see Figure 1).
2. Tilt the band saw table to the measured angle and secure the cutting fence (see Figure 5).

Caution: The arrow will be pointing forward toward the bow after the fairing is installed (see Figure 3).

M177—This fairing is symmetrical.

3. Place the fairing on the table so the cutting guide rests against the fence. The arrow will be pointing toward you for installation on the port side and away from you for installation on the starboard side of the boat (see Figure 5). *Be sure* to orient the fairing on the band saw so the angle cut matches the intended side of the hull and not the mirror image.

Warning: Always wear safety goggles and a dust mask.

4. Recheck steps 1 through 3; then cut the fairing.
5. Center the stuffing tube in the cavity of the fairing. *Be sure* the fairing is parallel to the keel (centerline). Shape the fairing to the hull as precisely as possible with a rasp or power tool.
6. The remaining section of the fairing with the cutting guide will be used as the backing block inside the hull. It will provide a level surface for tightening the nuts on the threaded rods.

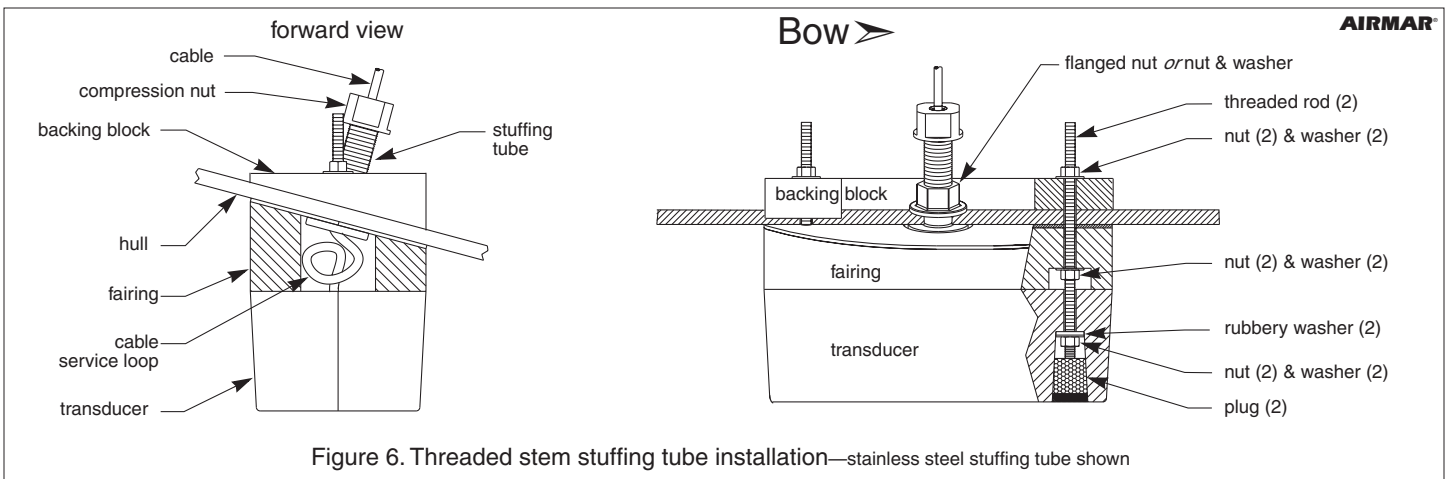


Figure 6. Threaded stem stuffing tube installation—stainless steel stuffing tube shown

Installing the Fairing & Transducer

M172—Follow separate installation instructions on page 3.

Warning: The fairing must be installed parallel to the keel to ensure proper boat handling and water flow over the transducer.

1. Locate the hole for the forward threaded rod (see Figures 3 & 6). Hold the fairing against the hull, *being sure the arrow/blunt end points forward toward the bow* and the stuffing tube is centered inside the cavity. **With the fairing parallel to the centerline of the boat (keel)**, use the *forward* hole in the fairing as a guide. Drill the 11 mm or 7/16" diameter hole through the hull for the threaded rod. *Do not drill the second hole at this time.*
2. Temporarily fasten the fairing to the hull with one of the threaded rods. **With the fairing parallel to the centerline of the boat (keel)**, use the *aft* hole in the fairing as a guide. Drill the 11 mm or 7/16" diameter hole through the hull for the remaining threaded rod.
3. Remove the temporary threaded rod. Clean and sand the area around the holes, inside and outside, to ensure that the marine sealant will adhere properly. Remove any petroleum residue with a mild household detergent or a weak solvent such as alcohol.

Metal hull—Remove all burrs with a file and sandpaper

Welded steel stuffing tube with conduit only—It is easier to seal the cable inside the stuffing tube before the transducer and fairing are attached to the hull. Follow the instructions that came with your stuffing tube.

4. Apply a 2mm (1/16") thick layer of marine sealant to the surface of the fairing that will contact the hull (see Figures 6 & 7).
5. Apply a 2mm (1/16") thick layer of marine sealant to each threaded rod. The marine sealant will seal the hull and hold the nuts securely in place. Screw a nut and slide a stainless steel washer onto each threaded rod. Position the nuts a distance from the rod ends equal to dimension "A". Slide the threaded rods through the fairing.

Note: The rods will extend above and below the fairing.

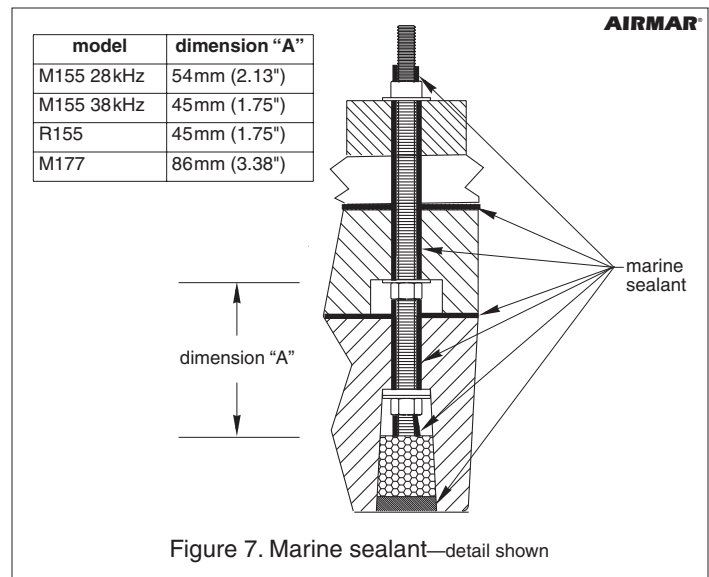
6. Place the fairing against the hull, pushing the threaded rods through the hull. With a person stationed inside the vessel, position the backing block on the rods. Secure each rod with a stainless steel washer and nut (see Figure 8). Tighten the nuts with a torque wrench using a force not exceeding 7 N-m (5 ft.-lb.).
- Aluminum hull**—Be sure the rods are isolated from the hull to prevent electrolytic corrosion.

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

7. Thread the transducer cable through the cavity in the fairing and the stuffing tube to the inside of the hull. Apply a 2mm (1/16") thick layer of marine sealant to the surface of the transducer that will contact the fairing. Push the transducer onto the threaded rods (see Figures 6 & 7).
8. Mount the transducer to the fairing by sliding a rubbery washer and stainless steel washer onto each threaded rod and securing them with a nut. Tighten the nuts with a torque wrench using a force not exceeding 12 N-m (10 ft.-lb.).

Note: The rods should extend a minimum of 3 threads beyond the nut after it is tightened. Be sure there is marine sealant on the exposed threads.

9. Plug the mounting holes to minimize turbulence on the surface of the transducer. Cut the foam plugs to length so that each plug will be recessed 5mm (3/16") below the surface of the housing. Push the foam plugs into the holes. Use marine sealant to fill each recess *FLUSH* with the transducer's surface.
10. Remove excess sealant on the outside of the hull and the fairing to ensure smooth water flow over the transducer.



Sealing & Routing the Cable

To form a watertight seal inside the stuffing tube, follow the installation instructions that came with your stuffing tube.

Route the cable to the echosounder *being careful* not to tear the cable jacket when passing it through the bulkhead and other parts of the boat. To reduce electrical interference separate the transducer cable from other electrical wiring and the engine. Refer to your echosounder owners manual to connect the cable to the instrument.

Checking for Leaks

Warning: Never install a transducer and leave the boat in the water unchecked for several days.

When the boat is placed in the water, **immediately** check around the stuffing tube and the rods that fasten the transducer to the hull for leaks. Note that very small leaks may not be readily observed. It is best not to leave the boat in the water unattended 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 around the stuffing tube, tighten the compression nut another quarter turn and see if the leakage stops. If there is a leak around the threaded rods or the outside of the stuffing tube, repeat the installation and sealing procedures **immediately**.

Maintenance & Replacement

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.

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. In severe cases, lightly wet sand the surface with fine grade wet/dry paper.

Replacement

Contact your marine dealer or echosounder manufacturer to obtain 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.

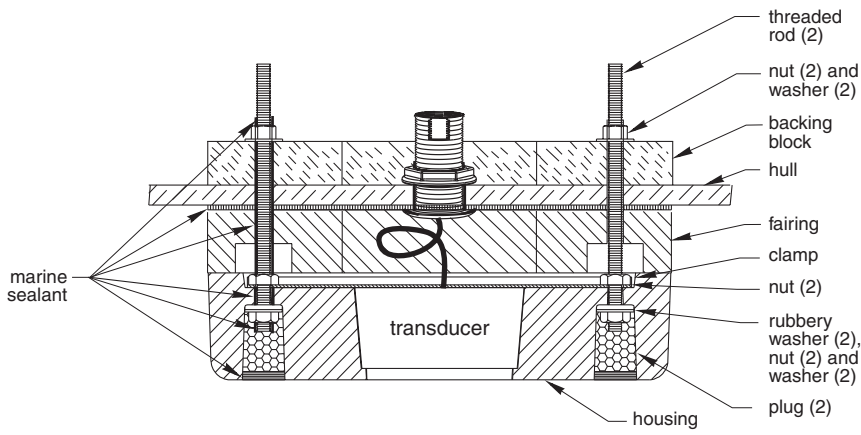


Figure 8. M172 installation in resin housing

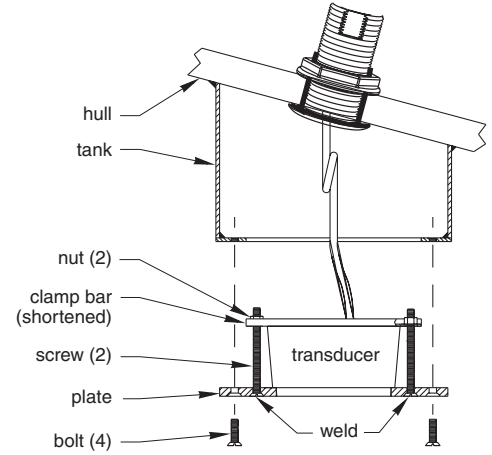


Figure 9. M172 tank mount

Installing the M172

M172 in Resin Housing with Fairing

1. After the stuffing tube is installed following the instructions that came with it, apply a 2mm (1/16") thick layer of marine sealant to each threaded rod. Secure each rod with a nut. The rods should extend a minimum of 3 threads beyond the nut. Slide a stainless steel washer and rubbery washer onto each rod (see Figure 8).
2. Insert the transducer into the housing and place the clamp bar on top. Slide the threaded rods up through the housing and clamp bar. Secure the assembly in place with a stainless steel washer and nut. Tighten the nuts with a torque wrench using a force not exceeding 12 N-m (10 ft.-lb.).
3. Slide the fairing onto the threaded rods. Position it against the transducer assembly.

Caution: Never pull, carry, or hold the transducer by its cable as this may sever internal connections.
4. Thread the transducer cable through the stuffing tube to the inside of the hull. Allow a service loop in the cavity of the fairing so there is no tension applied to the cable.
5. Apply a 2mm (1/16") thick layer of marine sealant to the surface of the fairing that will contact the hull.

6. Place the entire assembly against the hull, pushing the rods through the hull. With a person stationed inside the vessel, position the backing block on the rods. Secure each rod with a stainless steel washer and nut. Tighten the nuts with a torque wrench using a force not exceeding 7 N-m (5 ft.-lb.).
7. Plug the mounting holes to minimize turbulence on the surface of the transducer. Cut the foam plugs to length so that, each plug will be recessed 5mm (3/16") below the surface of the housing. Push the foam plugs into the holes. Use marine sealant to fill each recess flush with the transducer's surface.
8. Remove excess marine sealant on the outside of the hull and fairing to ensure smooth water flow over the transducer.
9. Follow the instructions that came with your stuffing tube to seal the cable.
10. Check for leaks (see "Checking for Leaks" on page 3).

M172 Tank Mount

11. It is recommended that the clamp bar be shortened and re-drilled to accommodate two bolts. They will secure the transducer to threaded stand-offs that are welded to the floor of the tank (see Figure 9). Check for leaks (see "Checking for Leaks" on page 3).