

# OWNER'S GUIDE & INSTALLATION INSTRUCTIONS

## External Mount

### Sealcast™ Depth Transducer

Models: **M42, M155, M163, M172, M177, M180**  
 Chirp Model **M188LH**  
 Legacy Model **R155 (Resin Housing)**

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

09/19/18  
D-17-011 rev.7 17-011

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

**WARNING:** A stuffing tube is required. The stuffing tube seals the hull forming a water-tight conduit for the cable.

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

**WARNING:** The transducer and any fairing must be installed parallel to the keel to ensure proper boat handling and water flow under the transducer.

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

**WARNING: Fiberglass hull**—The transducer and stuffing tube must be installed in solid fiberglass, not in coring

**CAUTION: Aluminum hull**—Stainless steel hardware must be isolated from an aluminum hull to prevent electrolytic corrosion.

**CAUTION: Steel hull**—Follow generally accepted installation practices.

**CAUTION:** Never install a metal fitting on a vessel with a positive ground system.

**CAUTION:** External mount only. The transducer may overheat if it is mounted in a hull pocket.

**CAUTION:** Never pull, carry, or hold the transducer by its cable. This may sever internal connections.

**CAUTION:** Never strike the transducer.

**CAUTION:** Do not over tighten the nuts. It may crack the transducer and/or crush any fairing.

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

**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 \_\_\_\_\_ kHz



M155



## Applications

- Recommended for all hull materials
- Not recommended for stepped hulls. Mount an in-hull transducer

## Tools & Materials

Safety glasses  
 Dust mask  
 Ear protection  
 Angle finder  
 Stuffing tube (purchased)

Stuffing Tube Material	Hull Material	Cable Diameter	Hull Hole Diameter	Airmar Part No.
bronze	fiberglass wood	up to 12mm (0.47")	44mm (1-3/4")	33-511-01
stainless steel	fiberglass, wood steel, aluminum	up to 12mm (0.47")	44mm (1-3/4")	33-541-01

Fairing material and tools (some installations)

Threaded rod (2 stainless steel, purchased)

Rubbery washer (2 rubbery, purchased)

Washer (4 stainless steel, purchased)

Nut (6 stainless steel, purchased)

Plug (2 foam, purchased)

M172 tank mounting hardware (purchased)

Rasp *or* power tool

Electric drill

Drill bits:

Pilot hole 3mm *or* 1/8"

Fairing 13mm *or* 1/2"

Fiberglass, wood, or steel hull 11mm *or* 7/16"

Aluminum hull 12mm *or* 7/16"

Mild household detergent *or* weak solvent (such as alcohol)

Sandpaper

File (installation in a metal hull)

Marine sealant (suitable for below waterline)

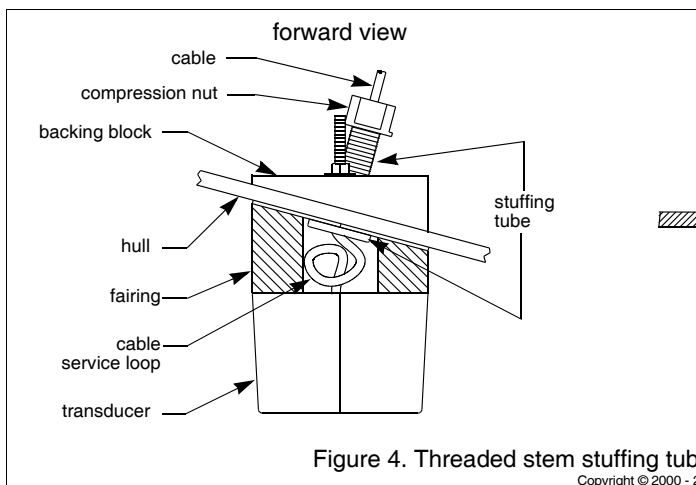
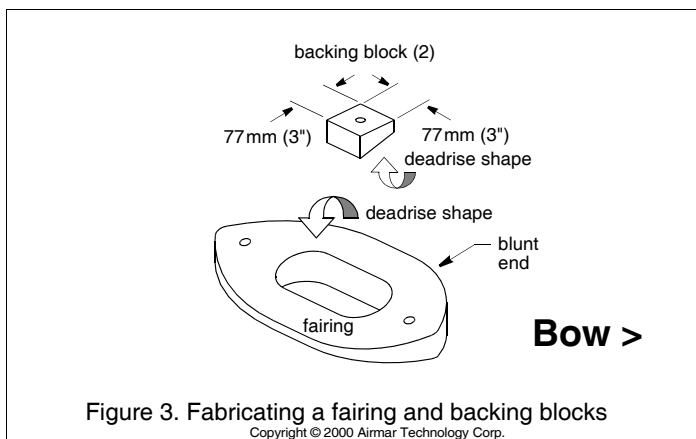
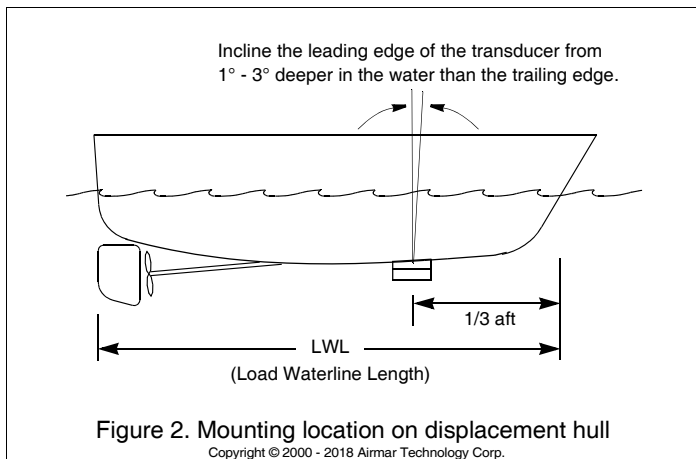
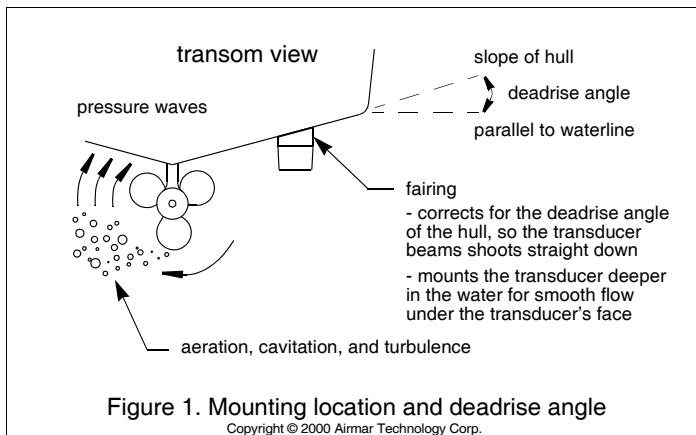
Wrenches

Torque wrench

Grommet(s) (some installations)

Cable ties

Water-based anti-fouling paint (**mandatory in salt water**)



## Mounting Location

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

Carefully study the hull to determine the best mounting location.

- 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.
- The transducer beam must be unobstructed by the keel or propeller shaft(s).
- Mounting on the side of the hull where the propeller(s) blades are moving downward is preferred (Figure 1). 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.
- 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 where there is a minimum deadrise angle.
- Choose an accessible spot inside the vessel with adequate space for the height of the stuffing tube and tightening the nuts.
- Locate the transducer about 1/3 aft LWL (Figure 2). Generally, this provides the best compromise between obtaining aeration-free water away from the bow and minimizing propeller noise.

## Stuffing Tube

### Choosing the Stuffing Tube

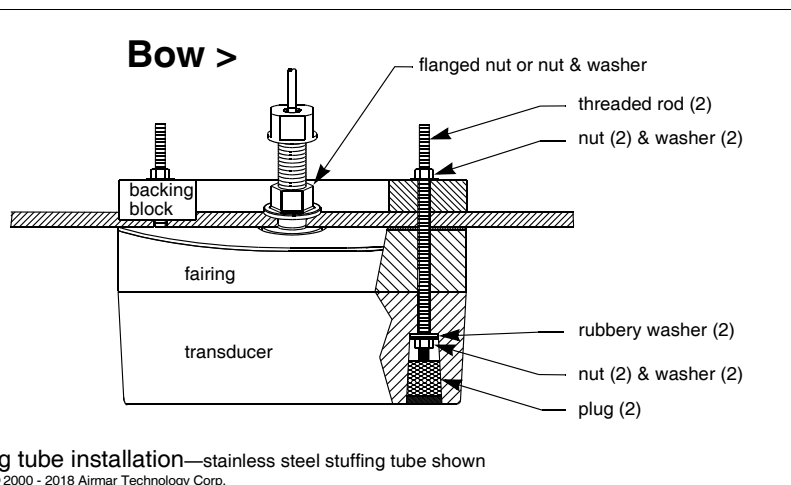
**A stuffing tube is required for all installations.** The stuffing tube seals the hull forming a water-tight conduit for the cable. Airmar stuffing tubes are available from your marine dealer.

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

**Aluminum hull**—Use a stainless steel stuffing tube. However, a stainless steel stuffing tube must be isolated from an aluminum hull to prevent electrolytic corrosion. Never use a bronze stuffing tube as electrolytic corrosion will occur.

### Installing the Stuffing Tube

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



## 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 (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 smooth flow under the transducer's face

### 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 (Figure 3).
- 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.
- The stuffing tube will be centered in the cavity of the fairing. Measure the deadrise angle of the hull at the stuffing tube using an angle finder (Figure 1).
- Cut the fairing to the measured angle.

**NOTE:** *Incline the leading edge of the transducer from 1° - 3° deeper in the water than the trailing edge (Figure 2).*

- Center the stuffing tube in the cavity of the fairing (Figure 4). *Be sure the fairing is parallel to the centerline (keel).* Hold the fairing on the ends and try to rock it back and forth. Shape the fairing to the hull as precisely as possible with a rasp or power tool.
- Place the transducer over the fairing and using the transducer as a guide, drill two holes in the fairing for 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. They will provide a level surface for tightening the nuts on the threaded rods.
- Drill a hole through the center of each backing block.

## Installing the Transducer

**M172**—Follow separate installation instructions on page 4.

### Hole Drilling

1. Locate the hole for the *forward* threaded rod (Figure 4). Hold the fairing/transducer against the hull, *being sure the blunt end points forward toward the bow* and the stuffing tube is centered inside the cavity. **With the fairing/transducer parallel to the centerline of the boat (keel)**, use the *forward* hole as a guide. Drill the hole through the hull for the threaded rod. *Do NOT drill the second hole at this time.*
2. Temporarily fasten the fairing/transducer to the hull with one of the threaded rods. **With the fairing/transducer parallel to the centerline of the boat (keel)**, use the *aft* hole as a guide. Drill the aft hole through the hull for the second 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

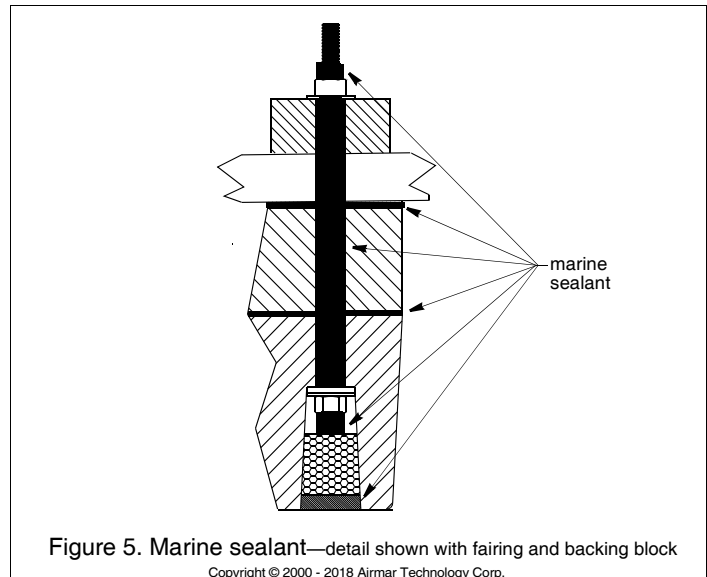


Figure 5. Marine sealant—detail shown with fairing and backing block

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

### Bedding & Installing

**CAUTION:** Be sure the surfaces to be bedded are clean and dry.

1. Marine sealant will seal the hull and hold the nuts securely in place. Apply a 2 mm (1/16") thick layer of marine sealant to the following (Figure 5):
  - Surface of the transducer that will contact the fairing/hull
  - Surface of any fairing that will contact the hull
  - Surface of any backing block that will contact the hull
  - Each threaded rod
  - Surfaces of the washers that will contact the transducer and hull/backing block
2. Screw a nut onto each threaded rod. Slide a stainless steel washer and a rubbery washer onto each rod. The rods should extend a minimum of 3 threads beyond the nut to be sure there is marine sealant on the exposed threads.
3. Thread the transducer cable through the cavity in any fairing and the stuffing tube to the inside of the hull.
4. Place the fairing/transducer against the hull, pushing the threaded rods through the transducer, any fairing, and 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 (Figure 4). *Be sure there is marine sealant on the exposed threads.* 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.

**Wood hull**—Allow the wood to swell before tightening the nuts.

**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.*

5. Plug the mounting holes to minimize turbulence on the surface of the transducer. Cut foam plugs to length so that each plug will be recessed 5 mm (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.*
6. Remove excess sealant on the outside of the hull and transducer/fairing to ensure smooth water flow under the transducer.

## M172 Tank Mount

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 (Figure 6).

## 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. Use grommet(s) to prevent chaffing. 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.

Refer to your echosounder owners manual to connect the cable to the instrument.

## Checking for Leaks

When the boat is placed in the water, **immediately** check around the threaded rods and the stuffing tube 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 rechecking. If there is a small leak, there may be considerable bilge water accumulation after 24 hours. If a leak is observed, repeat the bedding and installing procedures **immediately** (page 3).

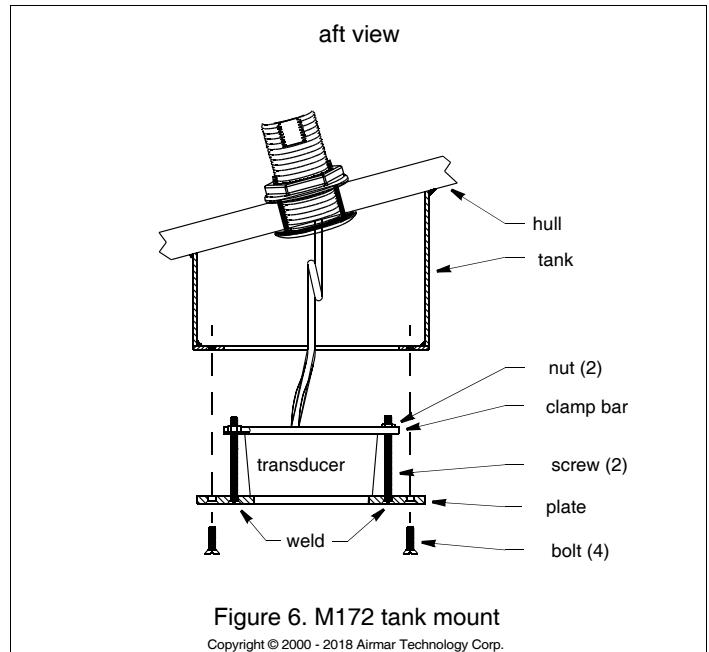
## Maintenance, Repair & Replacement

### 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. Reapply anti-fouling paint every 6 months or at the beginning of each boating season.

### 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

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 or worn parts should be replaced immediately. Obtain parts from your instrument manufacturer or marine dealer.

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