OWNER'S GUIDE & INSTALLATION INSTRUCTIONS

Transom Mount: *Side Scan Transducer*

Models: **TM903 & TM904**

Record the information found on the cable tag for future reference.
Part No:_____Date:_____
Serial No_____

3/4/24
102642-rev.2
D-20990-rev3.fm

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: When the boat is placed in the water, immediately check for leaks around the screws and any other holes drilled in the hull.

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

CAUTION: Never strike the transducer with anything except the palm of the hand. Never strike the paddle wheel.

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.

Applications

- Not recommended for boats with inboard engine(s).
- Not recommended for a stepped hull.
- Adjusts to *transom* angles from 0°–30°.
- Vertically orients sound beam on hull with *deadrise* angle up to 28°.
- Recommended for boats capable of speeds up to 30kn (35MPH). Optimal speed is 1.5 - 8.5 kn (2 - 10MPH).

Tools & Materials

Safety glasses
Dust mask
Ear protection
Pencil
Electric drill
Drill bits and hole saws:

Bracket holes	5mm, #4, *or* 7/32"
Transom hole (optional)	2mm *or* 1/16" larger than connector Ø
Cable clamp holes	3mm *or* 1/8"

Masking tape
Angle finder
Grommets (some installations)
Marine sealant (suitable for below waterline)
Socket wrench
Torque wrench
Screwdrivers
Straight edge
Cable ties
Water-based anti-fouling paint (**mandatory in salt water**)



Mounting Location

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

CAUTION: Do not mount the sensor in a location where the boat may be supported during trailering, launching, hauling, or storage.

- For the best performance, the sensor must be in contact with smooth water. To identify an area of "clean" water, observe the water flow off the transom while the boat is underway.
- Mounting the sensor on the side of the transom where the propeller blades are moving downward is preferred (Figure 1).
- Mount the sensor as close to the centerline (keel) of the boat as possible to ensure the transducer's face remains in the water when the boat is turning.

Boat Types

- **Single drive boat**—Mount a minimum of 15cm (6") beyond the swing radius of the propeller (Figure 1).
- **Twin drive boat**—Mount between the drives a minimum of 15cm (6") beyond the swing radius of the propeller.
- **Trim tabs**—Mount inside the trim tab, space permitting.
- **Stepped transom**—Mount the transducer on the lowest step.

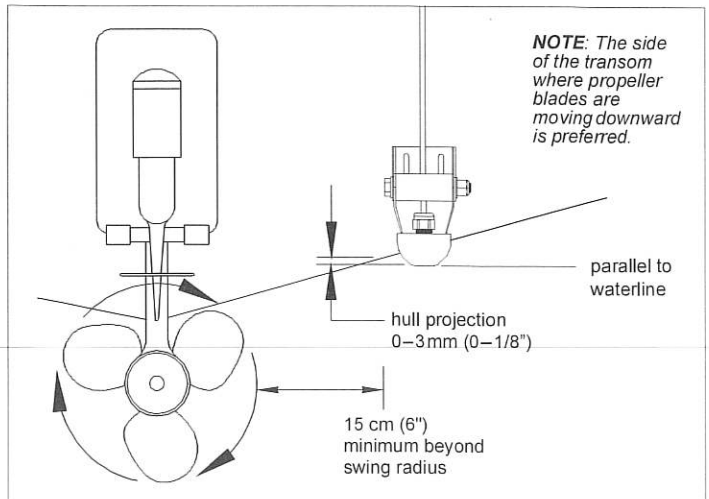


Figure 1. Mounting location on single drive boat

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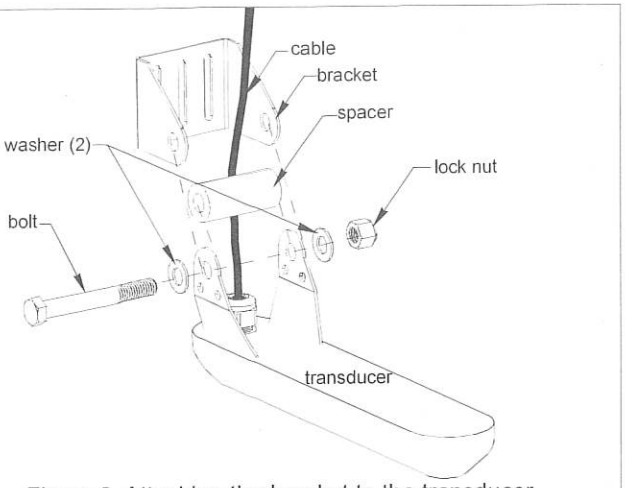


Figure 2. Attaching the bracket to the transducer

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Installation

Attaching the Bracket to the Transducer

1. Slide a washer onto the bolt (Figure 2).

2. Align the bracket to the transducer and insert the bolt through the upper hole in the transducer. Slide the spacer onto the bolt and push the bolt through the remaining hole in the transducer and the bracket. Ensure the cable passes between the bracket and the spacer.

3. Slide the remaining washer onto the bolt and hand tighten the lock nut onto the bolt.

Hole Drilling

CAUTION: To prevent drilling too deeply, wrap masking tape around the bit 22mm (7/8") from the point.

NOTE: Fiberglass hull—*Minimize surface cracking by running the drill in reverse until the gelcoat is penetrated.*

1. At the selected location position the transducer, so it projects 3mm (1/8") below the bottom edge of the transom (Figure 1).

2. *Be sure the bottom of the transducer is parallel to the waterline.*

3. Mark the screw holes with an "X" in the *center* of each slot in the bracket.

4. Using a 5mm, #4, or 7/32" drill bit, drill three holes 22mm (7/8") deep at the marked locations.

Mounting the Bracket

CAUTION: Metal hull—The stainless steel bracket must be isolated from a metal hull to prevent electrolytic corrosion. Place non-metal insulating washers between the bracket and the metal hull.

1. Remove the bracket from the transducer.
2. Apply marine sealant to the threads of the three hex-washer-head screws to prevent water seepage into the transom. Screw the bracket to the hull using a socket wrench. *Do not tighten the screws at this time.*
3. Reinstall the transducer to the bracket (Figure 2).

Checking the Sensor Angle & Projection

CAUTION: Do not position the leading edge of the sensor deeper in the water than the trailing edge because aeration will occur.

CAUTION: Do not position the sensor deeper into the water than necessary to avoid increasing drag, spray, and water noise and reducing boat speed.

1. Using the vertical adjustment space in the bracket slots, slide the assembly up or down until the bottom inside corner of the transducer projections 0–3mm (0–1/8") below the bottom of the hull (Figure 1). When you are satisfied with the position of the transducer, tighten the three bracket screws. For clear access to the screws, remove the transducer assembly from the bracket (Figure 2). *When reattaching, be sure to include the spacer.*

2. With the transducer in the operational position, use a straight edge to sight the underside of the transducer relative to the underside of the hull (Figure 3). The trailing edge of the transducer should be 1–6mm (1/16–1/4") below the leading edge. When you are satisfied with the position of the transducer, use a torque wrench to tighten the lock nut to 40ft lbs.

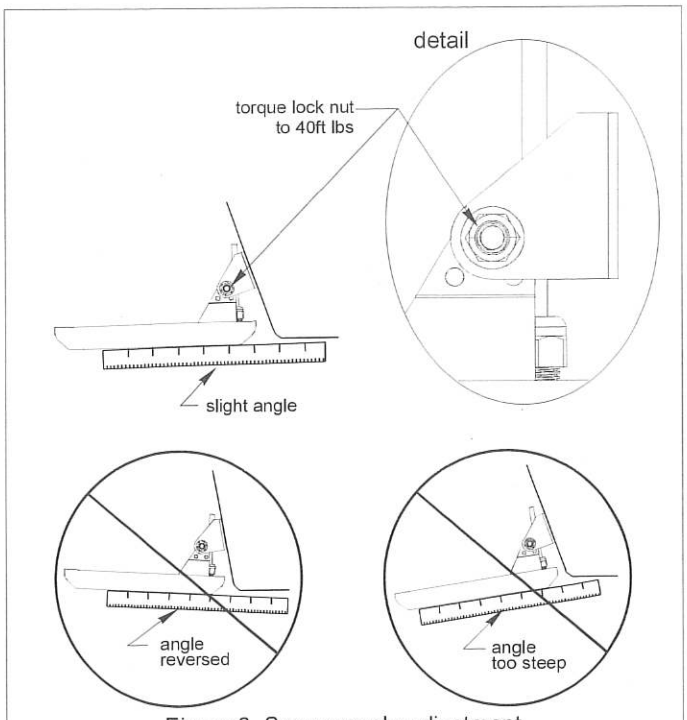


Figure 3. Sensor angle adjustment

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Testing on the Water

1. Become familiar with your echosounder's performance at a speed of 4kn (5MPH).
2. Gradually increase the boat speed and observe the gradual decline in performance due to turbulent water flowing under the transducer's face.
3. If the decline in performance is sudden (not gradual), identify the boat speed at which the onset occurred. Return the boat to this speed, then gradually increase speed while making moderate turns in both directions.
4. If the performance improves while turning to the side on which the sensor is installed, the transducer's position probably needs adjustment. The transducer is probably in turbulent or aerated water.

To improve performance, try the following one at a time in the order given, in small increments.

a. Increase the sensor's angle in the water. Review "Checking the Sensor Angle & Projection" and see Figure 3.

b. Move the sensor deeper into the water in increments of 3mm (1/8") (Figure 4).

c. Move the sensor closer to the centerline of the boat. Fill unused screw holes with marine sealant.

NOTE: *Optimal operating speed for a side scan transducer is 1.5 - 8.5 kn (2 - 10MPH).*

Cable Routing & Connecting

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 waterproof connector or cutting the cable, except when using a water-tight junction box, will void the sensor warranty.

Route the sensor cable over the transom, through a drain hole, or through a new hole drilled in the transom **above the waterline**.

1. If a hole must be drilled through the transom, choose a location **well above the waterline** (Figure 4). Check for obstructions such as trim tabs, pumps, or wiring inside the hull. Mark the location with a pencil. Drill a hole using the appropriate size bit to accommodate the connector.
2. Route the cable over or through the transom.
3. On the outside of the hull, secure the cable against the transom using the cable clamps. Position a cable clamp 15cm (6") above the bracket and mark the mounting hole with a pencil.
4. Position the second cable clamp halfway between the first clamp and the cable hole. Mark this mounting hole.
5. If a hole has been drilled in the transom, open the appropriate slot in the cable cover. Position the cover over the cable where it enters the hull. Mark the two mounting holes.
6. At each of the marked locations, use a 3mm or 1/8" bit to drill a hole 10mm (3/8") deep.
7. Apply marine sealant to the threads of the #6 x 1/2" self-tapping screws to prevent water from seeping into the transom. If you have drilled a hole through the transom, apply marine sealant to the space around the cable where it passes through the transom.
8. Position the two cable clamps and fasten them in place. If used, push the cable cover over the cable and screw it in place.
9. 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 chaffing. To reduce electrical interference, separate the sensor cable from other electrical wiring and the engine(s). Coil any excess cable and secure it in place with cable ties to prevent damage.
10. Refer to your echosounder owner's manual to connect the sensor to the instrument.

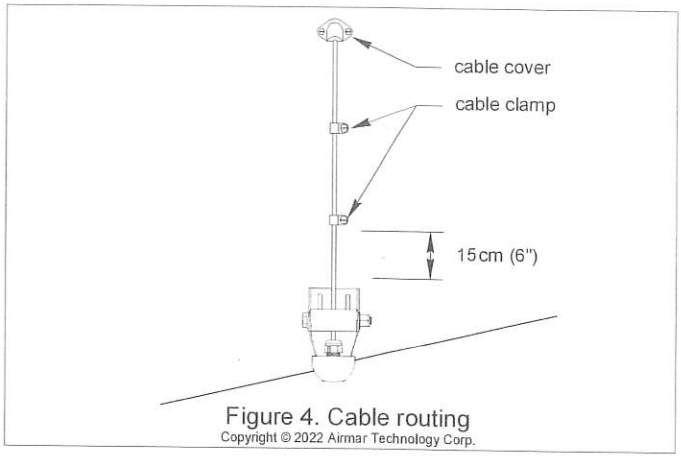


Figure 4. Cable routing
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Checking for Leaks

When the boat is placed in the water, **immediately** check for leaks around the screws and any other holes drilled in the hull. Note that very small leaks may not be readily observed. Do not leave the boat in the water unchecked for more than three hours.

Operation & Maintenance

Anti-fouling Paint

Surfaces exposed to salt water that *do not interlock*, must be coated with anti-fouling paint. Use **water-based** anti-fouling paint only. Never use ketone-based paint, since ketones can attack many types of plastic possibly causing damage to the transducer. Reapply paint every 6 months or at the beginning of each boating season.

Cleaning

Aquatic growth can accumulate rapidly on the sensor's surface reducing performance within weeks. Clean the transducer's face with a Scotch-Brite® scour pad and mild household detergent taking care to avoid making scratches. If the fouling is severe, lightly wet sand with fine grade wet/dry paper.

Sensor Replacement & Parts

The information needed to order a replacement sensor is printed on the cable tag. Do not remove this tag. When ordering, specify the part number, serial 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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