

# OWNER'S GUIDE &

# INSTALLATION INSTRUCTIONS

## Transom Mount

### Speed & Temperature Sensor

Models: **S61, S63, ST63**

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

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 sensor.

**CAUTION:** Never use solvents. Cleaners, fuel, paint, sealants, and other products may contain solvents that can damage plastic parts.

**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

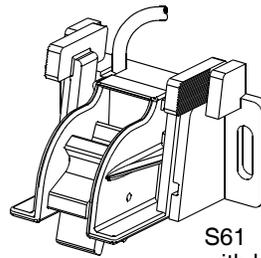
- Not recommended for boats with large inboard engine(s).
- Good operation from 1 - 50kn (1 - 58MPH).
- Fits transom angles from 12° - 20° (most powerboats and small fiberglass and aluminum boats).  
For all other transom angles (including 3° transoms on jet boats and vessels with stepped or undercut transoms) a tapered plastic, wood, or metal shim must be fabricated.

## Tools & Materials

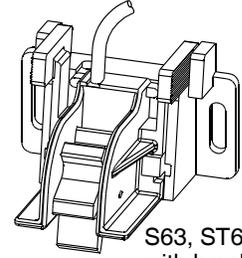
- Safety glasses
- Dust mask
- Ear protection
- Angle finder
- Scissors
- Masking tape
- Electric drill
- Drill bit, hole saw or spade bit for:
  - Bracket holes 4mm, #23 or 9/64"
  - Fiberglass hull only chamfer bit (preferred), 6mm or 1/4"
  - Transom hole (optional) 20mm or 13/16"
  - Cable clamp holes 3mm or 1/8"
- Marine sealant (suitable for below waterline)
- Screwdrivers
- Putty knife
- Pencil
- Grommet(s) (some installations)
- Cable ties
- Water-based antifouling paint (**mandatory in salt water**)

Record the information on the cable tag for future reference.

Part No. \_\_\_\_\_ Date \_\_\_\_\_



S61  
with bracket



S63, ST63  
with bracket

## Pretest

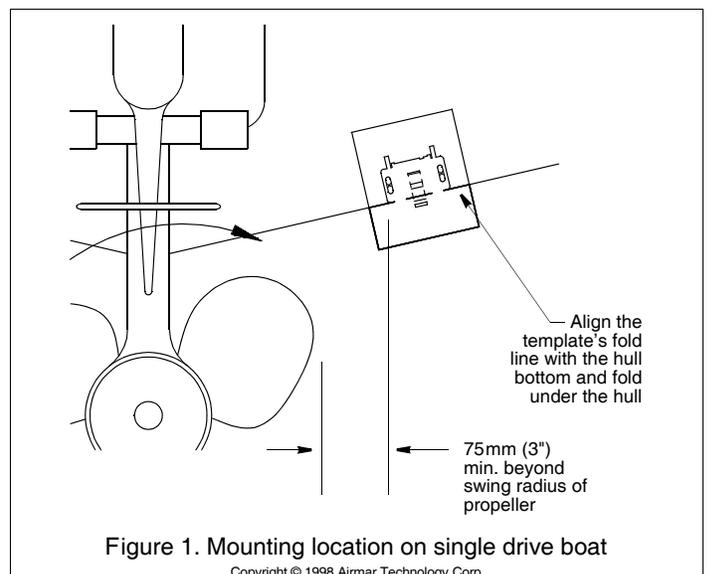
Connect the sensor to the instrument and spin the paddlewheel. Check for a speed reading and the approximate air temperature. If there is no reading(s) or it is inaccurate, check the connections and repeat the test. If there is still no reading(s) or it is inaccurate, return the product to your place of purchase.

## Mounting Location

**CAUTION:** Do not mount the sensor in line with or near water intake or discharge openings or behind strakes, fittings, or hull irregularities that may 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 on the side of the transom where the propeller blades are moving downward is preferred.
- Mount the sensor as close to the centerline (keel) of the boat as possible to ensure the sensor remains in the water when the boat is turning.
  - **Single drive boat**—Mount at least 75mm (3") beyond the swing radius of the propeller (Figure 1).
  - **Twin drive boat**—Mount the sensor between the drives.
  - **Stepped transom**—Mount the sensor on the step.



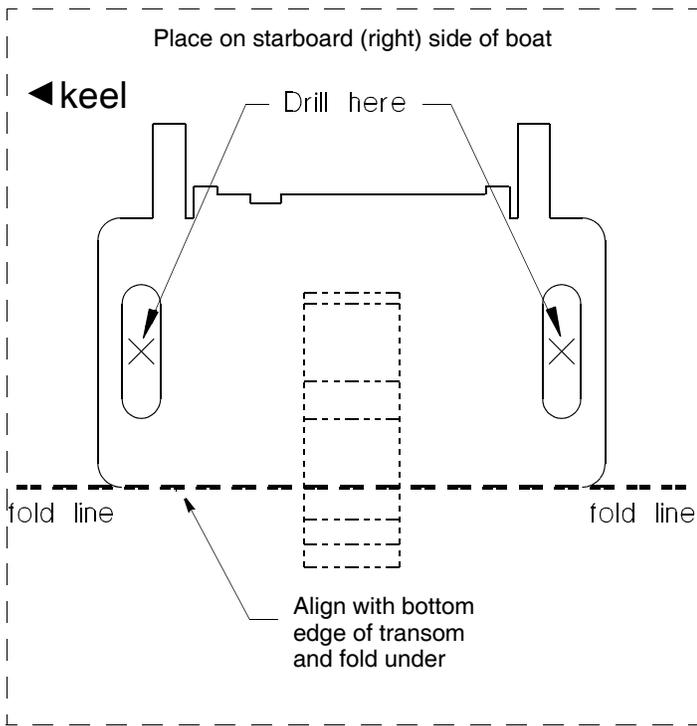


Figure 2. Template

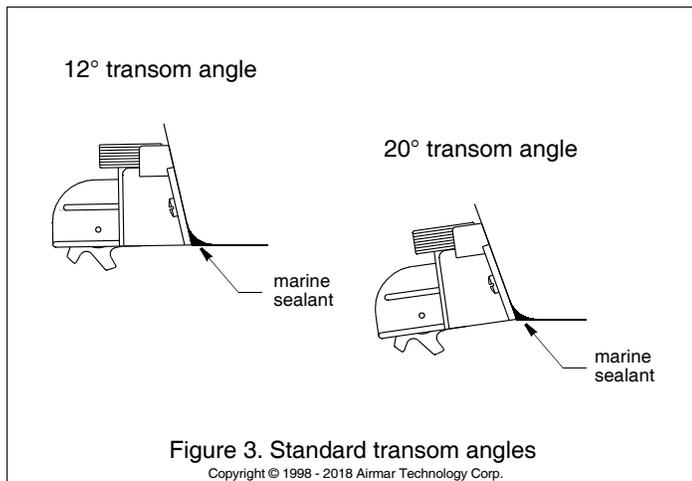


Figure 3. Standard transom angles

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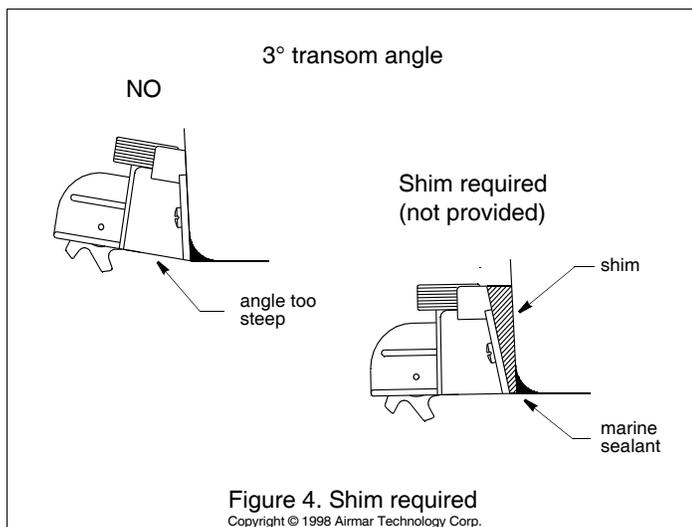


Figure 4. Shim required

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## Installation

### Mounting Directly to the Hull

**CAUTION:** Do not position the leading edge of the sensor lower than the trailing edge because aeration will occur.

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

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

1. Measure the transom angle of the hull at the selected mounting location using an angle finder.
2. Cut-out the template printed on this page. Fold the template along the fold-line (Figure 2).
3. At the selected location, position the template so that the dotted fold line is aligned with the bottom edge of the transom. Tape it in place (Figure 1).
4. Using a 4mm, #23 or 9/64" bit, drill two holes 22mm (7/8") deep at the location indicated. To prevent drilling too deeply, wrap masking tape around the bit 1mm (1/16") from the point.]
5. The bracket is designed for a transom angle from 12° – 20° (Figure 3). For other transom angles, fabricate a custom shim from plastic, an oily wood such as teak or metal (Figure 4). Then, mark and drill the shim.
6. Apply a marine sealant to the threads of the two #10 x 3/4" self-tapping screws to prevent water seepage into the transom. Slide a flat washer onto each screw and fasten the bracket (and any shim) to the hull.  
*Do not tighten the screws completely at this time.*
7. Using the vertical adjustment space on the bracket slots, slide the sensor up or down until the bottom of the bracket is flush with the underside of the hull. Tighten the screws.
8. Fill any gap between the sensor and the hull with marine sealant using a putty knife for smoothing. This will ensure smooth water flowing over the paddlewheel (Figures 3 and 4).

### Mounting to a Transducer

Install the transom mounted transducer following the instructions provided with it. Then, insert the S63 into the guide rails on the back of the transducer. Slide it down while squeezing the tabs inward until the shear pins reach the bottom (Figure 5). Release the tabs to snap the locking pins into place. *Be sure all the pins are secure.*

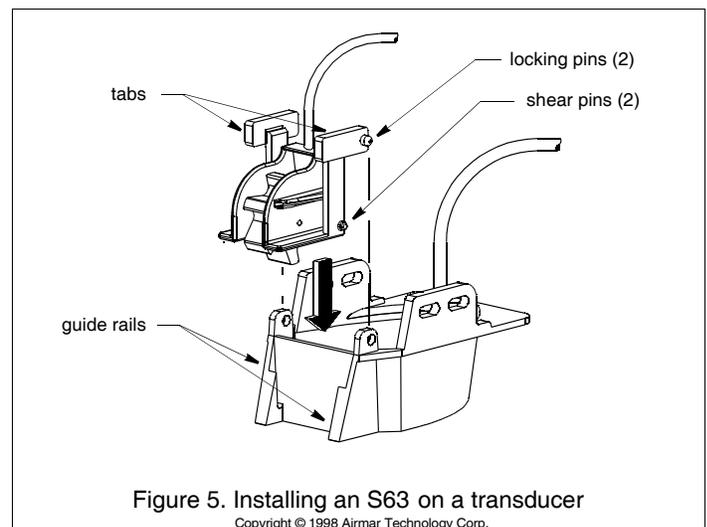


Figure 5. Installing an S63 on a transducer

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## Cable Routing

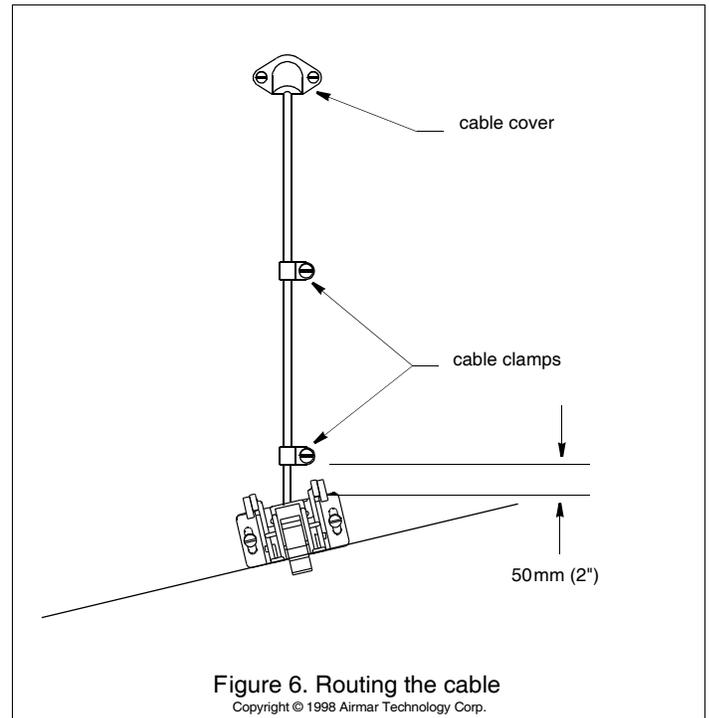
**CAUTION:** Do not remove the connector to ease cable routing. If the cable must be cut and spliced, use Airmar's splash-proof Junction Box No. 33-035 and follow the instructions provided. Removing the waterproof connector or cutting the cable, except when using a water-tight junction box, will void 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, choose a location well **above the waterline**. Check for obstructions such as trim tabs, pumps or wiring inside the hull. Mark the location with a pencil. Drill a hole through the transom using a 20mm or 13/16" hole saw or spade bit (to accommodate the connector).
2. Route the cable over or through the transom.
3. On the outside of the hull secure the cable to the transom using the cable clamps. Position a cable clamp 50mm (2") above the bracket and mark the mounting hole with a pencil (Figure 6).
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 through 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 four marked locations, use a 3mm or 1/8" bit to drill a hole 10mm (3/8") deep. [To avoid drilling too deeply, wrap masking tape around the bit 10mm (3/8") from the point.]
7. Apply marine sealant to the threads of the four #6 x 1/2" self-tapping screws to prevent water from seeping into the transom. If you have drilled a hole in the transom, apply marine sealant to the space around the cable leading through the transom.
8. Position the cable clamps and screw them in place. If used, push the cable cover over the cable and screw it in place.
9. Route the cable to the instrument through the interior of the boat. Be careful not to tear the cable jacket when passing it through the bulkhead(s) and other parts of the boat. Use grommet(s) to reduce chafing. To reduce electrical interference or "noise", separate the sensor cable from other electrical wiring. Coil any excess cable and secure it in place with zip-ties to prevent damage.
10. Refer to your instrument owner's manual to connect the sensor to the instrument.

## Checking for Leaks

When the boat is placed in the water, **immediately** check for leaks around the screws and any 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.



## 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 over the sensor.
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 sensor's position probably needs adjustment. It is probably in 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 with a shim.
- b. Move the sensor deeper in the water in increments of 3mm (1/8") if possible.
- c. Move the sensor closer to the centerline of the boat.  
Fill unused screw holes with marine sealant.

**NOTE: High-speed operation** [above 35kn (40MPH)] may require less projection in the water to improve performance and reduce the chance that water pressure will cause the bracket to release.

5. **Calibration**—To match the speed shown on the display to the actual speed of the boat, you may need to calibrate the instrument. Refer to your instrument owner's manual.

## Maintenance, Repair & Replacement

**CAUTION:** Remove the paddlewheel assembly before beaching, trailering or hauling the boat, since these are the main causes of speed sensor breakage.

### *Cleaning*

Clean the sensor with a soft cloth and mild household detergent. If the paddlewheel becomes fouled or inoperable, unsnap the paddlewheel assembly for cleaning. Severe cases may require removal of the paddlewheel. Using a small screwdriver, remove the paddlewheel shaft retainers (Figure 7). (If a retainer is lost, a dab of RTV caulk on the end of the shaft will secure it.)

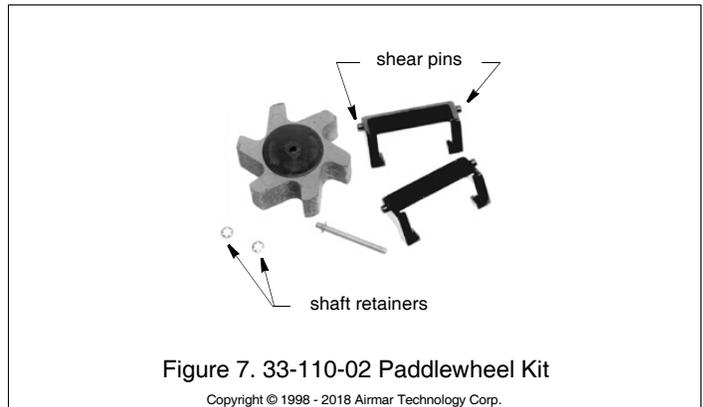
If necessary, use a stiff brush or putty knife to remove the growth. Wet sanding is permissible with fine grade wet/dry paper. (If there is a transducer, be careful to avoid scratching the face.)

### *Anti-fouling Paint*

Aquatic growth can accumulate rapidly on the sensor's surface reducing performance within weeks. Surfaces exposed to salt water that do not interlock, must be coated with antifouling paint. Use **water-based** antifouling paint only. Never use ketone based paint since ketones can attack many types of plastic. Reapply paint every 6 months or at the beginning of each boating season.

### *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 and date. For convenient reference, record this information on the top of page one.



Replace broken or worn parts immediately. The water-lubricated paddlewheel bearings have a life of up to 5 years on low-speed boats [less than 10kn (11 MPH)] and 2 years on high-speed vessels.

The shear pins on the paddlewheel assembly are designed to break if excessive force is applied to the speed sensor. Order part number 33-110-02 (Figure 7).

Obtain parts from your instrument manufacturer or marine dealer.

#### Gemeco

#### USA

Tel: 803-693-0777

email: sales@gemeco.com

#### Airmar EMEA

#### Europe, Middle East, Africa

Tel: +33.(0)2.23.52.06.48

email: sales@airmar-emea.com



35 Meadowbrook Drive, Milford, New Hampshire 03055-4613, USA

•www.airmar.com

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