

INSTALLATION INSTRUCTIONS

Transom Mount Sensor with Integral Release Bracket

Model P65

U.S. Patents: 4,555,938; 4,644,787; Des. 334,335. Canadian Patent: 1,233,341

6101

17-293-01 rev. 01

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

WARNING: 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.

Applications

- Powerboats with outboard, inboard/outboard, or jet drives.
Not recommended for use with large or twin screw inboard engines.
- Designed for high speed operation up to 55kn (63MPH)
- Vertically orients sound beam on hull with deadrise angle up to 30°
- Adjusts to transom angles from 3°–20°

Materials Supplied

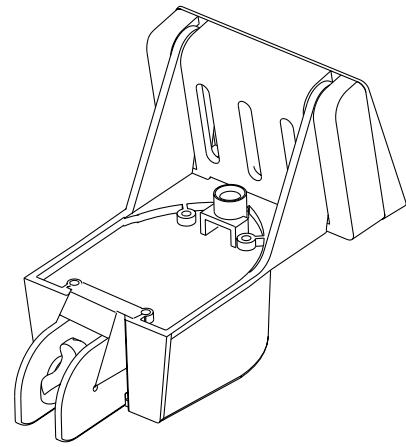
- Sensor
- Bracket
- Tapered plastic shim
- Cable cover
- Two cable clamps
- Three #10 x 1-1/4" self-tapping screws
- Four #6 x 1/2" self-tapping screws

Tools and Materials Needed

- Pencil
- Screwdrivers
- Safety goggles
- Dust mask
- Electric drill
- Drill bit, hole saw, or spade bit for:
 - Bracket holes 4 mm, #23, or 9/64"
 - Fiberglass hull chamfer bit (preferred), 6 mm, or 1/4"
 - Transom hole 19 mm or 3/4" (optional)
 - Cable clamp holes 3 mm or 1/8"
- Masking tape
- Straight edge
- Marine sealant
- Zip-ties
- Water-based antifouling paint (MANDATORY IN SALT WATER)

Pre-test Speed and Temperature Functions

Connect the sensor to the instrument and spin the paddlewheel. Check for speed reading (and the approximate air temperature if applicable). If there is no reading, return the sensor to your place of purchase.



Mounting Location

To ensure the best performance, the sensor *must* be submerged in aeration-free and turbulence-free water. Mount the sensor on the transom as close to the centerline (keel) of the boat as possible. On slower, heavier, displacement hulls, positioning it farther from the centerline is acceptable.

Headroom—Allow adequate space above the bracket for it to release and rotate the sensor upward.

Caution: Do not mount the sensor in an area of turbulence or bubbles:

- Near water intake or discharge openings;
- Behind strakes, struts, fittings or hull irregularities;
- Behind eroding paint (an indication of turbulence).

Caution: Avoid mounting the sensor where the boat may be supported during trailering, launching, hauling, or storage.

- **Single drive boat**—Mount on the side of the boat where the propeller is moving downward. Mount the sensor at least 75 mm (3") beyond the swing radius of the propeller (see Figure 1).
- **Twin drive boat**—Mount the sensor between the drives.

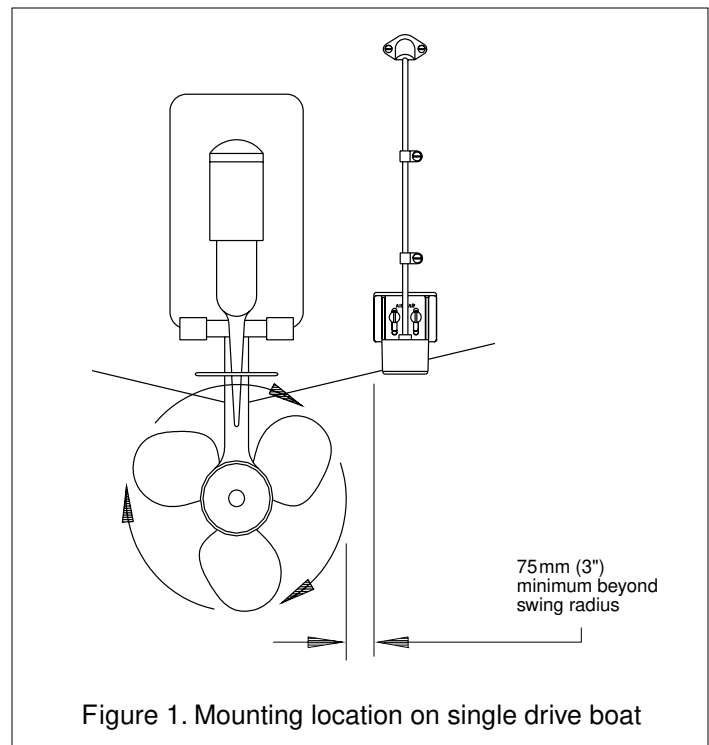


Figure 1. Mounting location on single drive boat

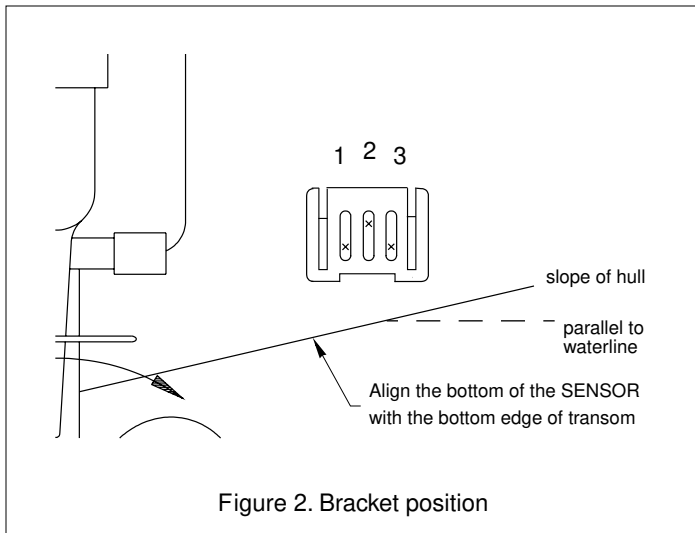


Figure 2. Bracket position

Installation

Assembling and Positioning

1. Insert the sensor's mounting posts into the slots on the back TOP of the bracket. Rotate the BRACKET down until the parts snap together.
2. At the selected location, position the bracket and sensor so the bottom of the sensor is even with the bottom edge of the transom (see Figure 1). *Being sure* the bottom of the sensor is parallel to the waterline, lightly trace the outline of the bracket on the boat transom with a pencil (see Figure 2).
3. Remove the sensor from the bracket by inserting the blade of a screwdriver between the bottom of the bracket and the sensor. Then pry upward.
4. Holding the bracket in place over the outline you have drawn, lightly trace the three slots. Draw an "X" in each slot to mark the screw hole 6mm (1/4") from the bottom in slots 1 and 3, and 6mm (1/4") from the top in slot 2 (see Figure 2). This will allow you to adjust the bracket up or down. *Do not* mark the screw holes at the extreme ends of the slots.

Hole Drilling

Warning: Always wear safety goggles and a dust mask.

Using a 4mm, #23, or 9/64" bit, drill a hole 22mm (7/8") deep at the locations marked for the screw holes (see Figure 2). To prevent drilling too deeply, wrap masking tape around the bit 22mm (7/8") from the point.

Fiberglass hull—Minimize surface cracking by chamfering the gelcoat. If a chamfer bit or countersink bit is not available, start drilling with a 6mm or 1/4" bit to a depth of 1mm (1/16").

Plastic Shim

- **If you know the transom angle of your boat** (see Figure 3):

Standard transom (13° transom angle)—The bracket is designed for a standard 13° transom angle, so the shim is *not* needed for this installation.

If your boat is capable of speeds above 30kn (35MPH), install the bracket with the shim, tapered end *down*. This ensures that the paddlewheel will be immersed at high speeds.

Stepped transom and jet boats (3° transom angle)—Use the shim with the tapered end *down*.

Small aluminum and fiberglass boats (20° transom angle)—Use the shim with the tapered end *up*.

- **If you do not know the transom angle of your boat:**

To determine if the shim is needed, position the sensor at the selected location. Using a straight edge, sight the underside of the sensor relative to the underside of the hull. The stern of the sensor should be 1–3mm (1/16–1/8") below the bow of the sensor or parallel to the bottom of the hull (see Figure 3).

Caution: Do not position the bow of the sensor lower than the stern because aeration will occur.

Attaching the Shim

Align the posts on the shim with the two holes in the bracket. Snap the shim into place.

Mounting and Adjusting

1. Apply a marine sealant to the threads of the three #10 x 1-1/4" self-tapping screws to prevent water seepage into the transom. With the sensor attached to the bracket in the "up" position, screw the bracket to the hull. *Do not* tighten the screws completely at this time.
 2. Lower the sensor until it snaps into place.
 3. Using the vertical adjustment space on the bracket slots, slide the sensor up or down to provide a projection of 3mm (1/8") (see Figure 4). Using the straight edge, sight the angle again to ensure that it is correct (see Figure 3). When you are sure the hull projection and sensor angle are correct, use a pencil to mark the hull with the bracket's *exact* location.
- Caution:** Do not position the sensor farther into the water than necessary to avoid increasing drag, spray, and water noise and reducing boat speed.
4. Release the sensor upward as before. Tighten the screws. Snap the sensor down into the operating position.

Cable Routing

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

Caution: Never cut the cable or remove the connector; this will void the warranty.

Warning: Always wear safety goggles and a dust mask.

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

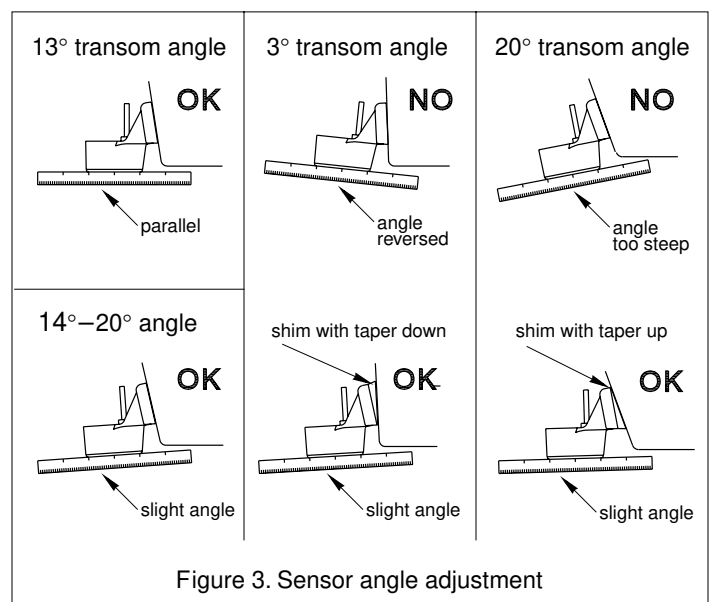


Figure 3. Sensor angle adjustment

through the transom using a 19 mm or 3/4" 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 against the transom using the cable clamps. Position a cable clamp 50 mm (2") above the bracket and mark the mounting hole with a pencil (see Figure 4).
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 screw holes.
6. At each of the marked locations, use a 3 mm or 1/8" bit to drill a hole 10 mm (3/8") deep. To prevent drilling too deeply, wrap masking tape around the bit 10 mm (3/8") from the point.
7. Apply marine sealant to the space around the cable and 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 through the transom, apply marine sealant to the space around the cable leading 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. To reduce electrical interference, separate the sensor cable from other electrical wiring and "noise" sources. Coil any excess cable and secure it in place using zip-ties to prevent damage.
10. Refer to your echosounder owner's manual to connect the sensor to the instrument.

Checking for Leaks

Warning: When the boat is placed in the water, IMMEDIATELY check for leaks around the screws and any holes drilled in the hull. NEVER install a sensor and leave the boat in the water unchecked for several days.

Antifouling Paint

Marine growth can accumulate rapidly on the sensor's surface reducing performance in 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 possibly causing damage to the transducer. Apply paint every 6 months or at the beginning of each boating season.

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 degradation of performance due to turbulent water flowing over the transducer's face.
3. If the degradation 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 when turning, the sensor's position probably needs adjustment because it is in aerated water. Move the sensor farther down into the water in increments of 3mm (1/8"). If the performance does not improve satisfactorily, move

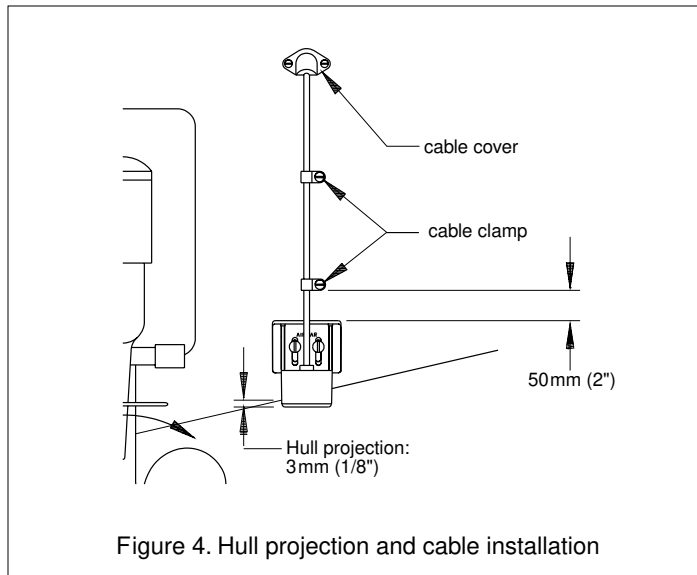


Figure 4. Hull projection and cable installation

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

High speed operation—May require less projection in the water.

Maintenance, Repair, and Replacement

Aquatic growth can accumulate rapidly reducing the sensor's performance within weeks. Clean the assembly with a soft cloth and mild household detergent. If fouling occurs, use a stiff brush or putty knife to remove the growth being careful to avoid making scratches on the transducer face. In severe cases, wet sand the surface with fine grade wet/dry paper.

If the paddlewheel becomes fouled or inoperable, it can be removed for cleaning. Gently push back one retaining arm and slide the shaft out. After cleaning, reinsert the shaft by pushing back on the retaining arm. *Be sure* the shaft ends are secure in the retaining arm notches.

Parts and Accessories

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. Parts can be obtained from your marine dealer or instrument manufacturer.

Part	Part Number
Paddlewheel Kit	33-007
Bracket & Wedge Kit	20-185-1

Sensor Replacement

The information needed to order a replacement sensor is printed on the vinyl tag affixed to the cable near the connector end. Do not abrade the marking or remove this tag. When ordering, specify the frequency, date code, and part number (see Figure 5).

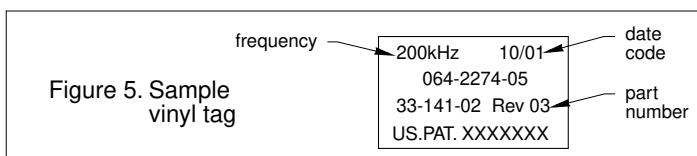


Figure 5. Sample vinyl tag

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