

Humminbird® HDR 610 Installation and Operations Manual

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WEEE compliance may not be required in your location for electrical & electronic equipment (EEE), nor may it be required for EEE designed and intended as fixed or temporary installation in transportation vehicles such as automobiles, aircraft, and boats. In some European Union member states, these vehicles are considered outside of the scope of the Directive, and EEE for those applications can be considered excluded from the WEEE Directive requirement.



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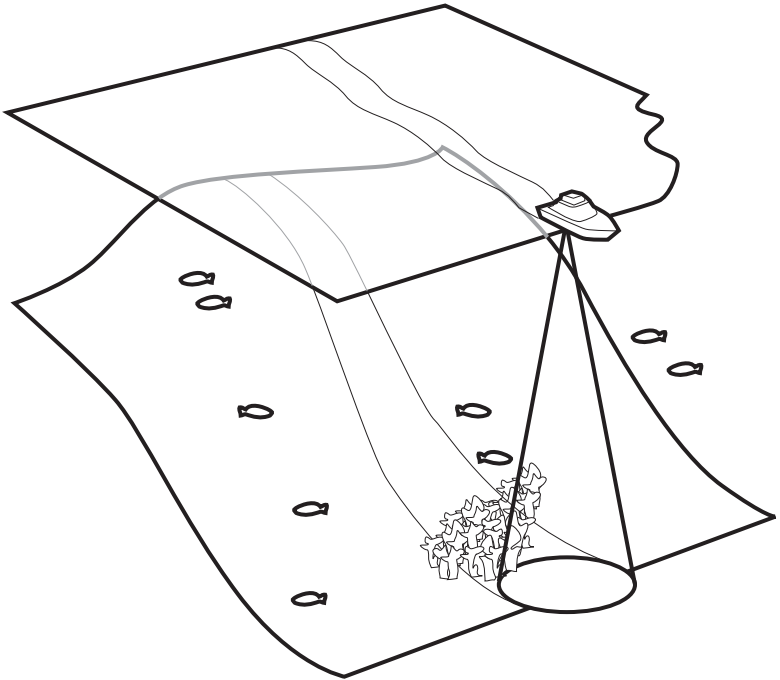
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HOW SONAR WORKS

Sonar technology is based on sound waves. The HDR 610 Digital Depth Gauge uses sonar to determine depth directly below the transducer. Your HDR 610 Digital Depth Gauge consists of two components: the HDR 610 sonar unit and the transducer. The sonar unit contains the transmitter and receiver, as well as the user controls and display. The transducer is mounted beneath the water surface and converts electrical energy from the transmitter into mechanical pulses or sound waves. The transducer also receives the reflected sound waves and converts them back into electrical signals for display on the sonar unit.



Sonar is very fast. A sound wave can travel from the surface to a depth of 240 ft (70 m) and back again in less than 1/4 of a second. It is unlikely that your boat can "outrun" this sonar signal.

INSTALLATION OVERVIEW

Before you start installation, we encourage you to read these instructions carefully in order to get the full benefit from your HDR 610 Digital Depth Gauge. You will install your HDR 610 depthsounder first, then your transducer. When you are done with both of these installation tasks, you should perform a final installation test before operating your HDR 610.

Please make sure that the following parts are included for your depthsounder:

- HDR 610 depthsounder
- "U" bracket and mounting hardware
- 2 cable ties.

Also, please make sure the following parts are included for your transducer:

- Transom mount or Puck transducer with 20' of cable
- Transducer mounting hardware kit.

In addition to the hardware supplied, you will need the following for installation and operation:

- Powered hand drill and various drill bits, including a 2 1/8" hole saw, if your boat does not have an existing gauge hole
- Phillips-head and flat-head screwdrivers
- Ruler or measuring tape
- Pen or pencil
- 12 Volt power source (your boat's battery)
- Marine-grade silicone sealant (for sealing drilled holes)
- Two-part, slow-cure epoxy (for inside-the-hull transducer installation only).

NOTE: *If you are wiring directly to the boat's battery, you will also need a 1 Amp fuse and a fuse holder.*

INSTALLING THE HDR 610

Before installing the HDR 610, make sure you have the following parts:

- HDR 610 depthsounder
- "U" bracket and mounting hardware
- 2 cable ties.

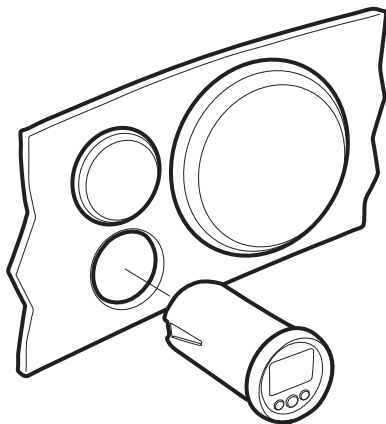
Perform the following high-level steps by following the instructions in each numbered section to install the HDR 610 depthsounder:

1. Locating the HDR 610 mounting position
2. Cutting the mounting hole
3. Customizing and assembling the HDR 610
4. Installing the HDR 610
5. Installing the buzzer
6. Connecting the transducer cable
7. Connecting to the power supply.

1. Locating the HDR 610 Mounting Position

You must select an appropriate mounting location for the HDR 610. Consider different positions on the console or deck of the boat. Remember that the cables for the transducer and power must reach the mounting location. Extension cables are available.

The mounting surface should be visible to the boat operator and adequately supported to protect the HDR 610 from excessive wave shock and vibration. Allow at least 2" clearance at the back, sides, and top of the unit for connection, air flow, and ease of installation and removal.



2. Cutting the Mounting Hole

Once you have selected your mounting location, perform the following steps:

1. Mark the desired mounting location, then drill a pilot hole.
2. Drill a 2 1/8" diameter hole using a hole saw and hand drill. This is a standard hole saw readily available for rental or purchase. If you prefer, any marine service shop can perform this task.

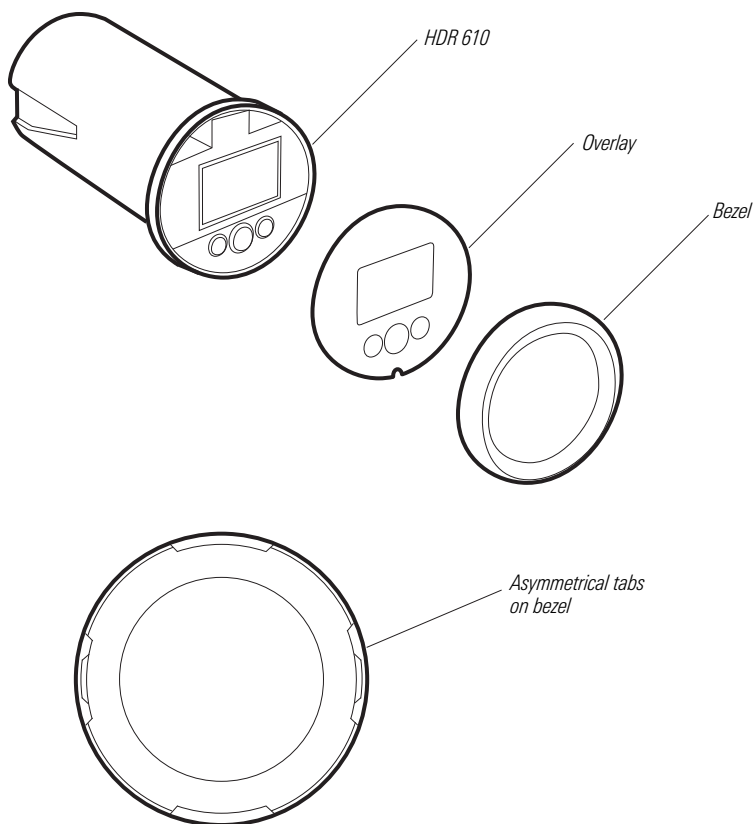
3. Customizing and Assembling the HDR 610

Your HDR 610 comes with both black and white bezels, and both black and white overlays. You must select one color for the bezel, and another color for the overlay, and perform the following assembly steps:

1. Peel off the protective backing from the overlay, being careful not to let the adhesive touch anything prematurely.

WARNING: In order to provide a lasting, waterproof bond, the overlay adhesive is extremely sticky, and therefore you will NOT be able to re-position it once you have stuck it onto the face of the HDR 610.

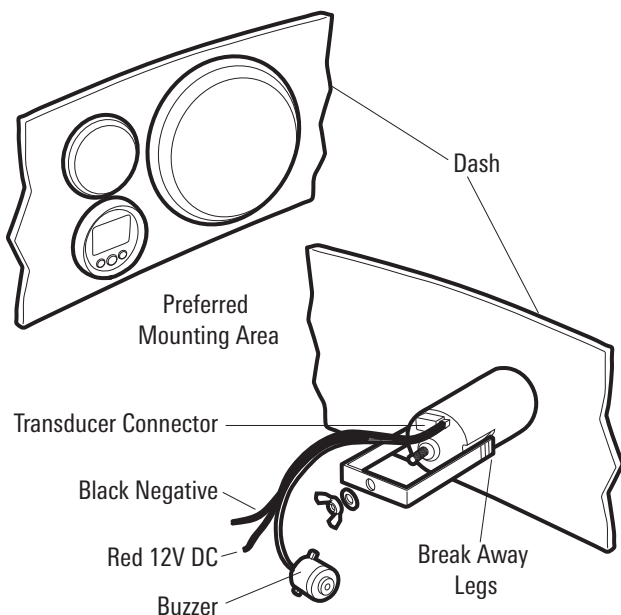
2. Carefully line up the notch on the bottom of the overlay with the tab at the bottom of the face of the HDR 610, then press the overlay into place so that all buttons and the display show through.
3. The bezel is keyed to fit only one way onto the front of the HDR 610. There are two opposing sets of tabs on the inside of the bezel: two wide tabs, and two tabs with slots in them. Find the tab that has the asymmetrical slots (refer to the illustration) and push the bezel onto the front of the HDR 610 according to the illustration.



4. Installing the HDR 610

Once you have your mounting hole cut, perform the following steps:

1. Insert the HDR 610 from the front of the panel.
2. Install the "U" bracket and wingnut from the rear of the panel, and make sure that the face of the HDR 610 is oriented correctly, so that the top of the unit is at the top of the hole.



NOTE: If the panel into which you are mounting the unit is greater than 1/4" thick, the "U" bracket may appear too long. You may modify the "U" bracket by using pliers to break the legs of the bracket at the score lines. Shorten the bracket in gradual stages to avoid making it too short.

3. Tighten the wingnut to secure the installation.

5. Installing the Buzzer

Once the unit is mounted in the dash, secure the buzzer either to the metal bracket or to a nearby wire bundle using the cable ties included.

6. Connecting the Transducer Cable

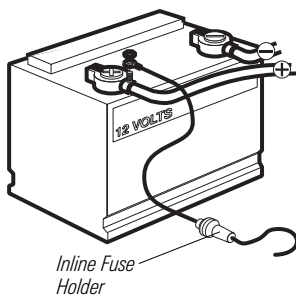
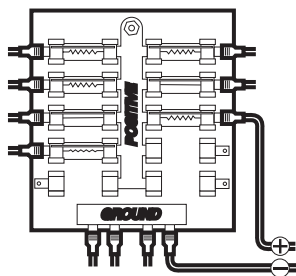
Connect the transducer cable to the transducer connector on the HDR 610.

NOTE: The connector is keyed to prevent reverse installation, so be careful not to force the plug into the connector the wrong way.

7. Connecting to the Power Supply

Use the following information to connect your HDR 610 to an appropriate power supply:

- If your boat has an electrical system, there is probably a fuse panel in the console area that can be used to attach the HDR 610 power cable.
- If a fuse terminal is available, use crimp-on type electrical connectors (not included) that match the terminal on the fuse panel, and attach the black wire to ground, and the red wire to 12 VDC power. You must use a 1-Amp fuse in the connection.
- 36" of power cable is included; you may shorten or lengthen this cable using 18-gauge, multi-strand copper wire.



CAUTION: Some boats have 24 or 36 Volt electrical systems. Make sure that your HDR 610 is connected to a 12 VDC power supply. Use a voltage conditioner for variable inputs.

NOTE: Humminbird® is not responsible for over-voltage or over-current failures. The control head must have adequate protection through the proper selection and installation of a 1 amp fuse.

1a. If a fuse terminal is available, use crimp-on type electrical connectors (not included) that match the terminal on the fuse panel. Attach the black wire to ground (-), and the red wire to positive (+) 12 VDC power. Install a 1 amp fuse (not included) for protection of the unit. Humminbird® is not responsible for over-voltage or over-current failures.

or...

1b. If you need to wire the HDR 610 directly to a battery, obtain and install an inline fuse holder and a 1 amp fuse (not included) for the protection of the unit. Humminbird® is not responsible for overvoltage or overcurrent failures.

TRANSDUCER INSTALLATION

If you have a transom mount transducer you can mount it on the transom (preferred), in the hull, or you can purchase the trolling motor adapter and mount it on your trolling motor. If you have a puck transducer then you can **ONLY** mount it in the hull; there is a separate inside the hull mounting section for puck transducers. Find the correct section for your transducer installation type.

The included transducer is designed for transom mounting on the boat (directly exposed to the water). On fiberglass hull boats, this same transducer can be bonded to the inside of the hull. When mounted inside the hull, the sonar signal actually passes through the hull of the boat. One of these two mounting techniques will produce acceptable results on most boats. There are, however, several situations that may demand a different type of transducer. Inboard boats, wood or metal hulls, and sailboats often have unique transducer mounting requirements.

TRANSON TRANSDUCER INSTALLATION

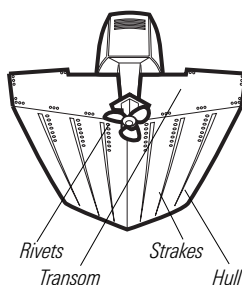
1. Locating the Transducer Mounting Position

NOTE: If transom mounting is not possible because of a stepped hull or cavitation noise, and you have a single layer fiberglass hull, In-hull installation is an option. See **Inside the Hull Transducer Installation** for more information.

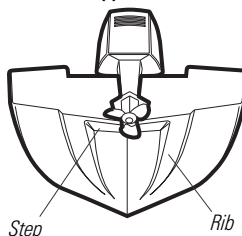
Turbulence: You must first determine the best location on the transom to install the transducer. It is very important to locate the transducer in an area that is relatively free of turbulent water. Consider the following to find the best location with the least amount of turbulence:

- As the boat moves through the water, turbulence is generated by the weight of the boat and the thrust of the propeller(s) - either clockwise or counter-clockwise. This turbulent water is normally confined to areas immediately aft of ribs, strakes or rows of rivets on the bottom of the boat, and in the immediate area of the propeller(s). Clockwise propellers create more turbulence on the port side. On outboard or inboard/outboard boats, it is best to locate the transducer at least 15" to the side of the propeller(s) (See the illustration *Turbulence-Free Location*).

Areas of Possible Turbulence

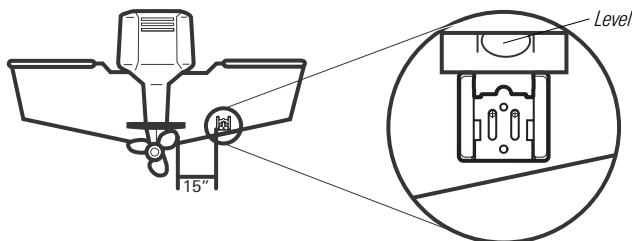


Stepped Hull



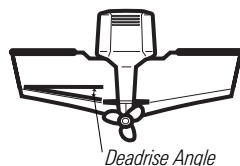
- The best way to locate turbulence-free water is to view the transom while the boat is moving. This method is recommended if maximum high-speed operation is a high priority. If this is not possible, select a location on the transom where the hull forward of this location is smooth, flat and free of protrusions or ribs (See the illustration *Areas of Possible Turbulence*).
- On boats with stepped hulls, it may be possible to mount the transducer on the step. Do not mount the transducer on the transom behind a step to avoid popping the transducer out of the water at higher speeds; the transducer must remain in the water for the control head to maintain the sonar signal (See the illustration *Stepped Hull*).
- If the transom is behind the propeller(s), it may be impossible to find an area clear from turbulence, and a different mounting technique or transducer type should be considered, such as an Inside the Hull Transducer.
- If you plan to trailer your boat, do not mount the transducer too close to trailer bunks or rollers to avoid moving or damaging the transducer during loading and unloading of the boat.
- If high speed operation is critical, you may want to consider using an In-Hull transducer instead of this Transom Mount transducer.

Turbulence-Free Location



Find a turbulence-free location at least 15" from the propeller(s) and not in line with trailer bunks or rollers.

NOTE: The hydrodynamic shape of your transducer allows it to point straight down without deadrise adjustment.



NOTE: If you cannot find a transom mount location that will work for your high-speed application, find an In-Hull Transducer by contacting our Customer Resource Center at either **1-800-633-1468** or by visiting our web site at **www.humminbird.com**.

2. Preparing the Mounting Location

In this procedure, you will determine the mounting location and drill two mounting holes, using the transducer mounting bracket as a guide.

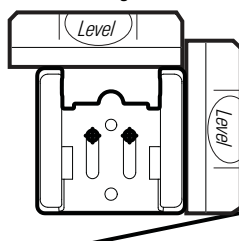
1. Make sure that the boat is level on the trailer, both from port to starboard and from bow to stern, by placing your level on the deck of the boat, first in one direction, then in the other.
2. Hold the mounting bracket against the transom of the boat in the location you have selected. Align the bracket horizontally, using the level; make sure that the lower corner of the bracket does not protrude past the bottom of the hull, and there is at least 1/4" clearance between the bottom of the bracket and the bottom of the transom for fiberglass boats, and 1/8" clearance for aluminum boats (see the illustration *Boat Hull Types Require Different Mounting Positions*).

NOTE: If you have a flat-bottomed aluminum boat, some additional adjustment may be needed to accommodate the rivets on the bottom of the boat (i.e. the gap may need to be a little smaller than 1/8"). This will help you to avoid excessive turbulence at high speeds.

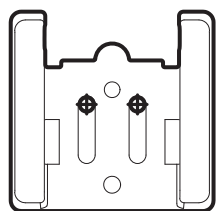
NOTE: If your propeller moves clockwise (in forward, as you're facing the stern of the boat from behind), mount the transducer on the starboard side, and align the bottom right corner of the mounting bracket with the bottom of the boat. If your propeller moves counter-clockwise (in forward, as you're facing the stern of the boat from behind), mount the transducer on the port side, and align the bottom left corner of the mounting bracket with the bottom of the boat.

3. Continue to hold the bracket on the transom of the boat, and use a pencil or marker to mark where to drill the two mounting holes. Mark the drill holes near the top of each slot, making sure that your mark is centered in the slot (see the illustration *Using the Mounting Bracket to Mark the Initial Drill Holes*).

Positioning the Mounting Bracket

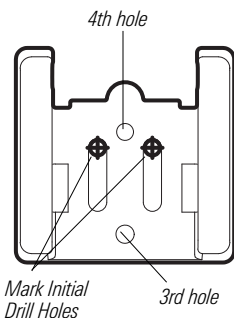


Boat Hull Types Require Different Mounting Positions



1/4" for fiberglass
1/8" for aluminum

Using the Mounting Bracket to Mark the Initial Drill Holes



NOTE: The third hole should not be drilled until the angle and height of the transducer is finalized, which you will not do until a later procedure.

- Make sure that the drill bit is perpendicular to the actual surface of the transom, NOT parallel to the ground, before you drill. Using a 5/32" bit, drill the two holes only to a depth of approximately 1".

NOTE: On fiberglass hulls, it is best to use progressively larger drill bits to reduce the chance of chipping or flaking the outer coating.

3. Assembling the Transducer and Initial Mounting

In this procedure, you will assemble the transducer using the hardware provided, then mount it and make adjustments to its position without locking it in place.

NOTE: You will initially assemble the transducer and the pivot arm by matching the two ratchets to a numbered position on the transducer knuckle. Further adjustments may be necessary.

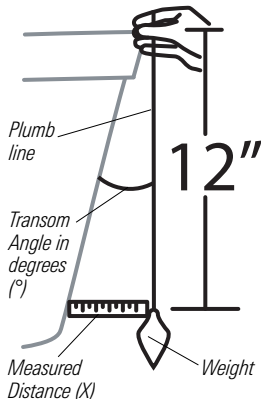
- If you already know your transom angle, refer to the chart below for the initial position to use to set the ratchets. If your transom is angled at 14 degrees (a common transom angle for many boats) use position 1 for the ratchets. In either case, go to step 2.

or...

Bead Alignment Number	1	4	2	5	3	1	4	2	5	3	1																								
Transom Angle (°)	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
Measured Distance (x)	0.0 cm	0"	1.1cm	1/2"	2.5 cm	1"	4.3 cm	1 5/8"	5.9 cm	2 3/8"	7.6 cm	3"	9.3cm	3 5/8"	11.1cm	4 3/8"	12.9cm	5"	14.9cm	5 7/8"	16.9cm	6 5/8"													

- If you do not know your transom angle, measure it using a plumb line (weighted nylon string or monofilament line) exactly 12 inches long. Hold the top of the plumb line against the top of the transom with your finger, and wait until the line hangs straight down. Using a ruler, measure the distance from the bottom of the plumb line to the back of the transom, then use the chart.

Measuring the Transom Angle



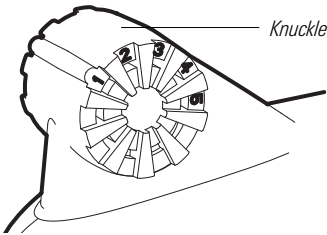
NOTE: It is important to take your measurement in the location shown in the illustration **Measuring the Transom Angle**, from exactly 12 inches down from the top of the transom.

- Place the two ratchets, one on either side of the transducer knuckle, so that the beads on each ratchet line up with the desired position number on the knuckle (see the illustration *Transducer Knuckle Positions*). If you are setting the ratchets at position 1, the beads on each ratchet will line up with the rib on the transducer knuckle to form one continuous line on the assembly (see the illustration *Ratchets Placed in Position 1*).

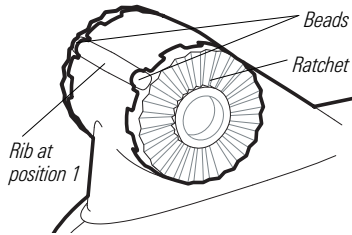
NOTE: The ratchets are keyed; make sure that the square teeth on each ratchet face the square teeth on the transducer knuckle, and the triangular teeth face outward.

Hold the ratchets on the transducer knuckle with one hand and fit the pivot arm over them until it snaps into place with the other hand. Refer to the illustration *Fitting the Mounting Bracket Over the Ratchet*.

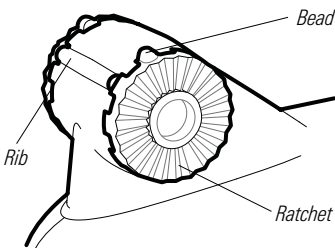
Transducer Knuckle Positions



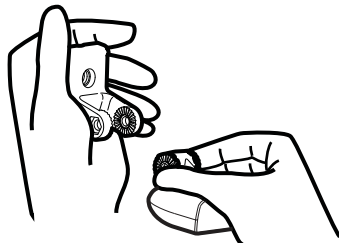
Ratchets Placed in Position 1



Ratchets Placed in Position 2

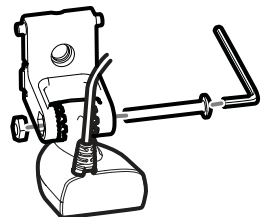


Fitting the Mounting Bracket over the Ratchet



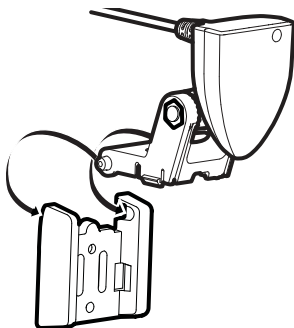
- Put the pivot bolt through the assembly to hold it in position and loosely install the nut, but do NOT tighten the nut at this time (see the illustration *Inserting the Pivot Bolt*). Insert the pivot arm assembly into the mounting bracket (see the illustration *Inserting the Pivot Arm Assembly Into the Mounting Bracket*). Do NOT snap the assembly closed, as you will need to access the mounting bracket in the next step.

Inserting the Pivot Bolt

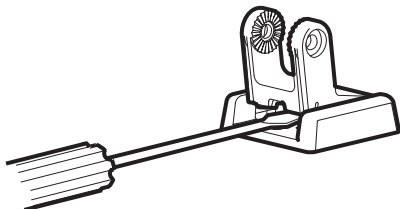


NOTE: If the pivot assembly is snapped closed over the mounting bracket, use a flat head screwdriver or similar tool to gently pry the assembly away from the mounting bracket (see the illustration *Prying the Assembly Away from the Mounting Bracket*).

Inserting the Pivot Arm Assembly Into the Mounting Bracket

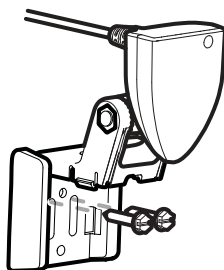


Prying the Assembly Away from the Mounting Bracket



4. Align the mounting bracket transducer assembly with the drilled holes in the transom. With a 5/16" socket driver, mount the assembly to the transom using the two #10 - 1" long screws provided (see the illustration *Mounting the Assembly to the Transom*).

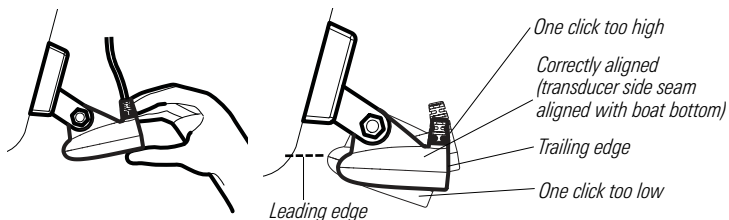
Mounting the Assembly to the Transom



NOTE: Make sure that the mounting screws are snug, but do not fully tighten the mounting screws at this time to allow the transducer assembly to slide for adjustment purposes.

5. Snap the pivot arm down into place.
6. Adjust the initial angle of the transducer from back to front by rotating the transducer until the side seam on the transducer is almost parallel with the bottom of the boat, one click at a time in either direction (see the illustration *Adjusting the Initial Transducer Angle*).

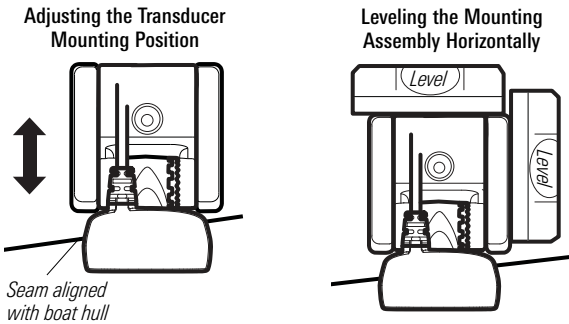
Adjusting the Initial Transducer Angle



- Adjust the transducer assembly vertically, until the seam on the leading edge of the transducer (the edge closest to the transom of the boat) is level and just slightly below the hull (see the illustration *Adjusting the Transducer Mounting Position*).

NOTE: The transducer has a natural downward slant of 4-5 degrees from leading edge (closest to the boat transom) to trailing edge (farthest away from the boat). Looking at the back of the transducer, the seam should be slightly below the bottom of the hull.

- Continue to adjust until the bracket is also level from port to starboard (horizontally level as you look at the transducer from behind the boat (see the illustration *Leveling the Mounting Assembly Horizontally*).



- Mark the correct position on the transom by tracing the silhouette of the transducer mounting bracket with a pencil or marker.
- Tighten the pivot bolt, using the pivot screw and nut to lock the assembly. **Hand tighten only!**
- Snap open the assembly and hand-tighten the two mounting screws, then snap the assembly closed.

NOTE: You will drill the third mounting hole and finalize the installation after you route the cable and test and finish the installation in the following procedures.

4. Routing the Cable

The transducer cable has a low profile connector, which must be routed to the point where the control head is mounted. There are several ways to route the transducer cable to the area where the control head is installed. The most common procedure routes the cable through the transom into the boat.

NOTE: Your boat may have a pre-existing wiring channel or conduit that you can use for the transducer cable.

1. Unplug the other end of the transducer cable from the control head. Make sure that the cable is long enough to accommodate the planned route by running the cable over the transom.

CAUTION! Do not cut or shorten the transducer cable, and try not to damage the cable insulation. Route the cable as far as possible from any VHF radio antenna cables or tachometer cables to reduce the possibility of interference. If the cable is too short, extension cables are available to extend the transducer cable up to a total of 50'. For assistance, contact the Customer Resource Center at www.humminbird.com or call 1-800-633-1468 for more information.

NOTE: The transducer can pivot up to 90 degrees in the bracket. Allow enough slack in the cable for this movement. It is best to route the cable to the side of the transducer so the transducer will not damage the cable during movement.

- 2a. If you are routing the cable over the transom of the boat, secure the cable by attaching the cable clamp to the transom, drilling 9/64" diameter holes for #8 x 5/8" wood screws, then skip directly to procedure 5, *Connecting the Cable*.

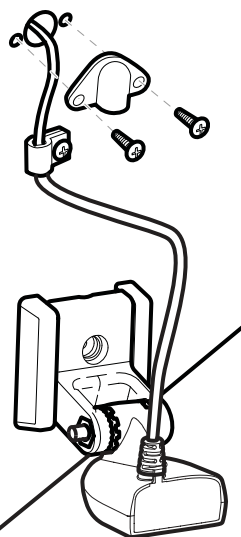
or...

- 2b. If you will be routing the cable through a hole in the transom, drill a 5/8" diameter hole above the waterline. Route the cable through this hole, then fill the hole with marine-grade silicone sealant and proceed to the next step immediately (see the illustration *Routing the Cable*).

3. Place the escutcheon plate over the cable hole and use it as a guide to mark the two escutcheon plate mounting holes. Remove the plate, drill two 9/64" diameter x 5/8" deep holes, and then fill both holes with marine-grade silicone sealant. Place the escutcheon plate over the cable hole and attach with two #8 x 5/8" wood screws.

4. Route and secure the cable by attaching the cable clamp to the transom; drill one 9/64" diameter x 5/8" deep hole, then fill hole with marine-grade silicone sealant, then attach the cable clamp using a #8 x 5/8" screw.

Routing the Cable



Storing Excess Cable



NOTE: If there is excess cable that needs to be gathered at one location (as shown in the illustration), dress the cable routed from both directions so that a single loop is left extending from the storage location. Doubling the cable up from this point, form the cable into a coil. Storing excess cable using this method can reduce electronic interference (see the illustration **Storing Excess Cable**).

5. Connecting the Cable

Insert the transducer cable into the appropriate terminal slot. The cable connectors are labeled, and there are corresponding labels on the cable holder on the rear of the control head. The slots are keyed to prevent reversed installation, so be careful not to force the connector into the holder. Refer to your manual and/or control head installation guide for the correct procedure for installing the cable connectors to the control head.

1. Plug the other end of the transducer cable back into the control head connection holder.

Your control head is now ready for operation.

6. Test and Finish the Installation

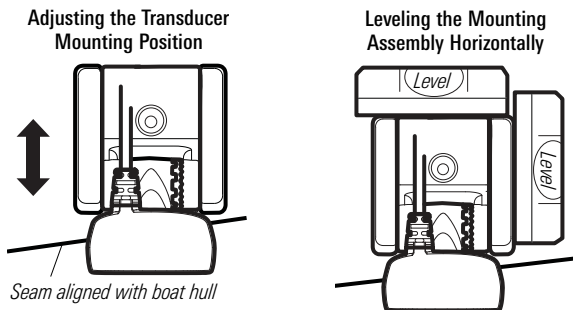
Once you have installed both the control head and the transom transducer, and have routed all the cables, you must perform a final test before locking the transducer in place. Testing should be performed with the boat in the water, although you can initially confirm basic operation with the boat out of the water.

1. Press POWER once to turn the control head on. If the unit does not power up, make sure that the connector holder is fully seated in the receptacle and that power is available.
2. If all connections are correct and power is available, the Humminbird® control head will enter Normal operation.
3. If the bottom is visible on-screen with a digital depth readout, the unit is working properly. Make sure that the boat is in water greater than 2' but less than the depth capability of the unit, and that the transducer is fully submerged, since the sonar signal cannot pass through air.

NOTE: The transducer must be submerged in water for reliable transducer detection.

4. If the unit is working properly, gradually increase the boat speed to test high-speed performance. If the unit functions well at low speeds, but begins to skip or miss the bottom at higher speeds, the transducer requires adjustment.

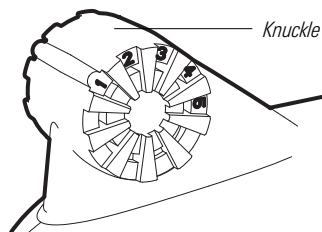
- If you have the correct angle set on the transducer, yet lose a bottom reading at high speed, adjust the height and the running angle in small increments to give you the ideal transducer position for your boat. First, adjust the height in small increments (see the illustration *Adjusting the Transducer Mounting Position*).



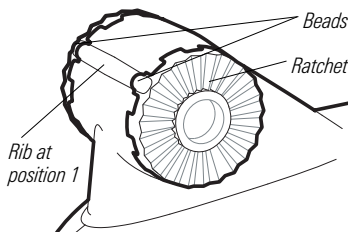
NOTE: The deeper the transducer is in the water, the more likely that a rooster tail of spray will be generated at high speeds, so make sure that the transducer is as high as it can be and still be submerged in the water.

If you are still not getting good high speed readings, you may need to disassemble the transducer mounting assembly and re-position the ratchets (see the illustrations *Transducer Knuckle Positions*, *Ratchets Placed in Position 1*, *Ratchets Placed in Position 2*, and *Fitting the Mounting Bracket Over the Ratchet*).

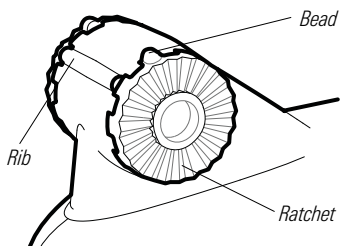
Transducer Knuckle Positions



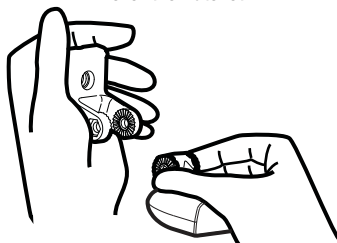
Ratchets Placed in Position 1



Ratchets Placed in Position 2



Fitting the Mounting Bracket over the Ratchet



If you do change the transducer position, re-trace the position of the mounting bracket before proceeding.

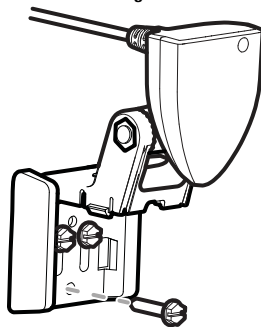
NOTE: *It is often necessary to make several incremental transducer adjustments before optimum high speed performance is achieved. Due to the wide variety of boat hulls, however, it is not always possible to obtain high speed depth readings.*

6. Once you have reached a consistently good sonar signal at the desired speeds, you are ready to lock down the transducer settings. Force the pivot to the Up position to gain access to the mounting screws, then re-align the mounting bracket against the transom of the boat to match the traced silhouette. Check the bracket position with the level again to make sure it is still level, then mark the third mounting hole using a pencil or marker. Unscrew and remove the mounting screws and the transducer assembly and set aside.
7. Drill the third mounting hole, using a 5/32" drill bit. Use a marine-grade silicone sealant to fill all three drilled mounting holes, especially if the holes penetrated the transom wall.

NOTE: *On fiberglass hulls, it is best to use progressively larger drill bits to reduce the chance of chipping or flaking the outer coating.*

8. Re-position the transducer assembly against the transom of the boat, then hand-install all three screws. Make sure that the transducer location and the pivot angle have not changed, then fully tighten all three mounting screws (see the illustration **Fully Tighten All Three Mounting Screws**). Snap the pivot back down. If you have performed the preceding procedures correctly, the transducer should be level and at the right height for optimal operation.

Fully Tighten All Three Mounting Screws

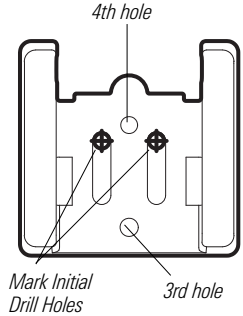


7. Locking Down the Transducer (Optional)

NOTE: You have the option to lock down the Two Piece Kick Up bracket if you do not want the transducer to kick up. Please be aware, however, that the transducer can be damaged if it is locked down and it strikes debris in the water.

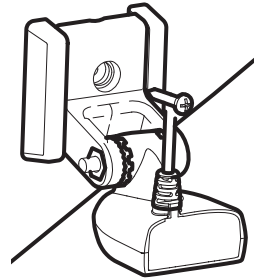
1. To lock down the transducer, trace the position of the mounting bracket. Force the pivot to the Up position to gain access to the mounting screws, then re-align the mounting bracket against the transom of the boat to match the traced silhouette. Check the bracket position with the level again to make sure it is still level, then mark the fourth mounting hole using a pencil or marker (see the illustration *Using the Mounting Bracket to Mark the Initial Drill Holes*). Unscrew and remove the mounting screws and the transducer assembly and set aside.

Using the Mounting Bracket to Mark the Initial Drill Holes



2. Drill the fourth mounting hole, using a 9/64" drill bit. Use a marine grade silicone sealant to fill all four drilled mounting holes, especially if the holes penetrate the transom wall.
3. Re-position the transducer assembly against the transom of the boat, then hand install the first three screws (two on the outside edges and one in the 3rd mounting hole). Make sure that the transducer location and the pivot angle have not changed, then fully tighten all three mounting screws (see the illustration *Fully Tighten All Three Mounting Screws*). **Hand-tighten only!** Snap the pivot back down. Install #8 x 1" wood screw into the 4th hole to lock down the pivot arm (see the illustration *Locking the Pivot Arm*). **Hand-tighten only!**

Locking the Pivot Arm



INSIDE THE HULL TRANSDUCER INSTALLATION

NOTE: *If you have a puck transducer, please use the procedure found in the **Inside the Hull Mounting, Puck Transducers Only** section instead.*

In-hull mounting generally produces good results in single-thickness fiberglass-hulled boats. Humminbird® cannot guarantee depth performance when transmitting and receiving through the hull of the boat, since some signal loss occurs. The amount of loss depends on hull construction and thickness, as well as the installation position and process.

This installation requires slow-cure two-part epoxy. Do not use silicone or any other soft adhesive to install the transducer, as this material reduces the sensitivity of the unit. Do not use five-minute epoxy, as it has a tendency to cure before all the air bubbles can be purged, thus reducing signal strength.

NOTE: *In-hull mounting requires an installed and operational depthsounder.*

1. Locating the Transducer Mounting Position

Decide where to install the transducer on the inside of the hull. Consider the following to find the best location:

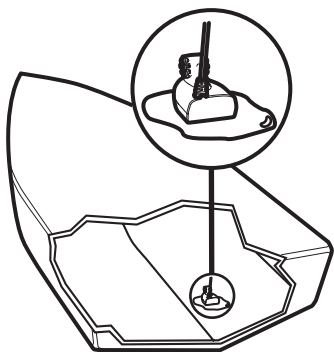
- Observe the outside of the boat hull to find the areas that are mostly free from turbulent water. Avoid ribs, strakes and other protrusions, as these create turbulence.
- As a general rule, the faster the boat can travel, the further aft and closer to the centerline of the hull the transducer has to be located in order to remain in contact with the water at high speeds.

2. Trial Installation

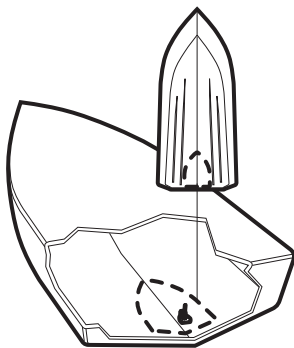
You will not be able to adjust the mounting after an inside the hull transducer is installed. It is best, therefore, to perform a trial installation first that includes running the boat at various speeds, in order to determine the best mounting area before permanently mounting the transducer.

1. Plug the transducer into the depthsounder, then power up the depthsounder. When the depthsounder detects a functioning transducer, it will automatically enter Normal operating mode.

Positioning the Transducer



Preferred Mounting Area



2. View the sonar signal at its best by holding the transducer over the side, immersed in the water, so that it is pointing straight down over a known flat bottom. Use the display to benchmark against the sonar signal that will be detected once the transducer is placed in the hull.
3. Place the transducer body face down at the identified mounting location inside the hull, with the pointed end towards the bow (see the illustrations *Positioning the Transducer* and *Preferred Mounting Area*).
4. Fill the hull with enough water to submerge the transducer body. Use a sand-filled bag or other heavy object to hold the transducer in position. The transducer cannot transmit through air, and the water purges any air from between the transducer and the hull, and fills any voids in the coarse fiberglass surface.
5. View the sonar signal on the display and compare against what was observed in Step 2, making sure that the boat is in the same location as it was during your observations in Step 2. If the results are comparable, move on to Step 6. Otherwise, locate a new position in the hull and repeat Steps 3 through 5.
6. Run the boat at various speeds and water depths while observing the screen on the depthsounder. If depth performance is required, test the transducer in water at the desired depth. If the performance is acceptable, move on to Step 7. If the performance is not acceptable, repeat Steps 3 through 6.
7. Once you have determined the best mounting location using the above steps, mark the position of the transducer.

3. Routing the Cable

1. Once the mounting location is determined and you havemarked the position of the transducer, route the cable from the transducer to the depthsounder.

CAUTION! Do not cut or shorten the transducer cable, and try not to damage the cable insulation. Route the cable as far as possible from any VHF radio antenna cables or tachometer cables to reduce the possibility of interference. If the cable is too short, extension cables are available to extend the transducer cable up to a total of 50' (15 m). For assistance, contact the Customer Resource Center at www.humminbird.com or call 1-800-633-1468 for more information.

4. Permanently Mounting the Transducer

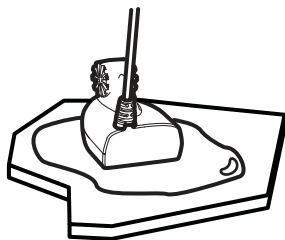
NOTE: Once permanently mounted, you will not be able to make further adjustments to the transducer.

1. Make sure the position of the transducer is marked.
2. Remove the water from inside the hull and thoroughly dry the mounting surface. If the surface is excessively rough, it may be necessary to sand the area to provide a smooth mounting surface.
3. Mix an ample quantity of two-part slow cure epoxy slowly and thoroughly. Avoid trapping air bubbles.
4. Coat the face of the transducer and the inside of the hull with epoxy (see the illustration *Coating the Transducer with Epoxy*).
5. Press the transducer into place with a slight twisting motion to purge any trapped air from underneath, keeping the pointed end of the transducer body pointed forward, towards the bow (see the illustration *Pressing the Transducer Into Place*).

Coating the Transducer with Epoxy



Pressing the Transducer Into Place



NOTE: Proper operation requires the pointed end of the transducer body to face towards the bow.

6. Weight the transducer so that it will not move while the epoxy is curing.

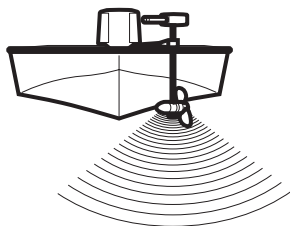
NOTE: *When the epoxy cures, no water is necessary inside the hull.*

7. If you unplugged the transducer cable at the beginning of this procedure, plug it back into the depthsounder.

NOTE: *Neither water, spilled gasoline, nor oil will affect the performance of the transducer.*

TROLLING MOTOR TRANSDUCER INSTALLATION

Several styles of the transducer are compatible with trolling motor mounting. If you have a trolling motor bracket, refer to the separate installation instructions that are included with the bracket.



Trolling Motor Transducer Options

If you don't have a trolling motor transducer, there are several options:

- You may purchase a Trolling Motor Adapter kit that will allow you to mount the transducer on the trolling motor.
- You may also exchange your NEW and UNASSEMBLED transducer (with mounting hardware included) for a trolling motor transducer.

There are also several transducer switches available that support the following configurations:

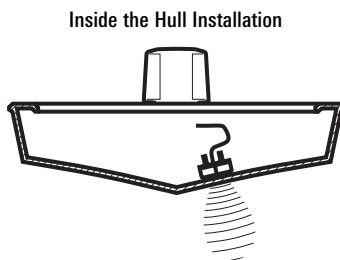
- Two depthsounders with one transducer or two transducers with one depthsounder.

NOTE: *Call the Humminbird® Customer Resource Center at 1-800-633-1468 for details and pricing, or visit www.humminbird.com for more information.*

INSIDE THE HULL MOUNTING, PUCK TRANSDUCERS ONLY

Perform these particular inside the hull instructions only if you have a puck transducer. Inside the hull mounting of the transducer generally produces good results in single thickness fiberglass hulled boats. Humminbird® cannot guarantee depth performance when transmitting and receiving through the hull of the boat, since some signal loss will occur. The amount of loss depends on hull construction and thickness, and the installation.

This type of installation requires the use of a slow-cure two-part epoxy (included with your transducer). Do not use silicone or any other soft adhesive material to install the transducer, as this material will reduce the sensitivity of the unit. Do not use five-minute epoxy, as it has a tendency to cure before all the air bubbles can be purged, thus reducing signal strength.



1. Locating the Transducer Mounting Position

Decide where to install the transducer on the inside of the hull. Consider the following to find the best location:

- Observe the outside of the boat hull to find the areas that are mostly free from turbulent water. Avoid ribs, strakes and other protrusions, as these create turbulence.
- As a general rule, the faster the boat can travel, the further aft and closer to the centerline of the hull the transducer has to be located in order to remain in contact with the water at high speeds.

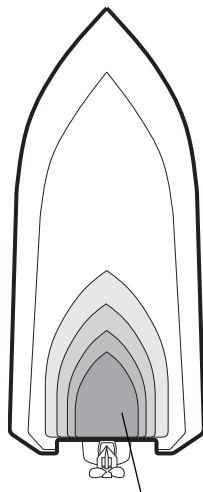
2. Trial Installation

You will not be able to adjust the mounting after an inside the hull transducer is installed. It is best, therefore, to perform a trial installation first that includes running the boat at various speeds, in order to determine the best mounting area before permanently mounting the transducer.

1. Plug the transducer into the depthsounder, then power up the depthsounder. When the depthsounder detects a functioning transducer, it will automatically enter Normal operating mode.

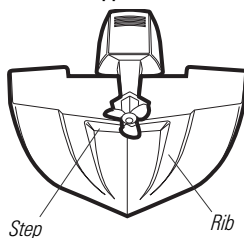
2. View the sonar signal at its best by holding the transducer over the side, immersed in the water, so that it is pointing straight down over a known flat bottom. Use the display to benchmark against the sonar signal that will be detected once the transducer is placed in the hull.
3. Place the transducer body face down on the inside of the hull in the area you have selected.
4. Fill the hull with enough water to submerge the transducer body. Use a sand-filled bag or other heavy object to hold the transducer in position. The transducer cannot transmit through air, and the water purges any air from between the transducer and the hull, and fills any voids in the coarse fiberglass surface.
5. View the sonar signal on the display and compare against what was observed in Step 2, making sure that the boat is in the same location as it was during your observations in Step 2. If the results are comparable, move on to Step 6. Otherwise, locate a new position in the hull and repeat Steps 3 through 5.
6. Run the boat at various speeds and water depths while observing the screen on the depthsounder. If depth performance is required, test the transducer in water at the desired depth. If the performance is acceptable, move on to Step 7. If the performance is not acceptable, repeat Steps 3 through 6.
7. Once you have determined the best mounting location using the above steps, mark the position of the transducer.

Preferred Mounting Area



Preferred Mounting Area

Stepped Hull



3. Routing the Cable

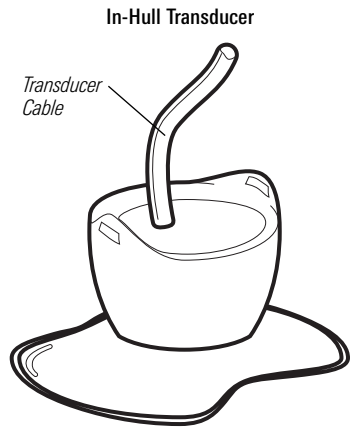
1. Once the mounting location is determined and you have marked the position of the transducer, route the cable from the transducer to the depthsounder.

CAUTION! Do not cut or shorten the transducer cable, and try not to damage the cable insulation. Route the cable as far as possible from any VHF radio antenna cables or tachometer cables to reduce the possibility of interference. If the cable is too short, extension cables are available to extend the transducer cable up to a total of 50' (15 m). For assistance, contact the Customer Resource Center at www.humminbird.com or call 1-800-633-1468 for more information.

4. Permanently Mounting the Transducer

NOTE: Once permanently mounted, you will not be able to make further adjustments to the transducer.

1. Make sure the position of the transducer is marked.
2. Remove the water from inside the hull and thoroughly dry the mounting surface. If the surface is excessively rough, it may be necessary to sand the area to provide a smooth mounting surface.
3. Mix an ample quantity of two-part slow cure epoxy slowly and thoroughly. Avoid trapping air bubbles.
4. Coat the face of the transducer and the inside of the hull with epoxy.
5. Press the transducer into place with a slight twisting motion to purge any trapped air from underneath.



NOTE: Puck or round, circular-bottomed transducers have no directional bias, and therefore orientation of these types of transducers is not as important.

6. Weight the transducer so that it will not move while the epoxy is curing.

NOTE: When the epoxy cures, no water is necessary inside the hull.

7. If you unplugged the transducer cable at the beginning of this procedure, plug it back into the depthsounder.

NOTE: Neither water, spilled gasoline, nor oil will affect the performance of the transducer.

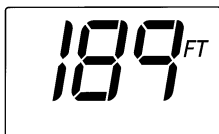
OPERATING THE HDR 610

Your HDR 610 Digital Depth Gauge sends a sound wave signal and determines distance by measuring the time between the transmission of the sound wave and when the sound wave is reflected off of an object. As your HDR 610 transducer receives sonar signals, it converts them to a digital depth that is shown on the HDR 610 display. The depth reading is continuously updated as you travel across the water. The liquid crystal display (LCD) offers sharp viewing, even in bright, direct sunlight, and is continuously lit for nighttime operation.

***NOTE:** Actual depth capability depends on such factors as bottom hardness, water conditions, and transducer installation. Units will typically read to deeper depths in fresh water than in salt water.*

WHAT'S ON THE DISPLAY

The HDR 610 uses a backlit 7-segment display, together with a 3-button keypad, to control all user functions. At initial power-up, the unit will begin normal operation and display the digital depth and the units of measure. The figure shows a typical view you might see on the display at initial power-up.



KEY FUNCTIONS

Your HDR 610 uses three bezel keys to control the Shallow Alarm, Deep Alarm, Keel Offset, and Units of Measure functions. These three keys are the SET, UP Arrow, and DOWN Arrow keys. While in normal operating mode, pressing the SET key selects a function and causes a corresponding indicator to blink on the display. Once you have selected a function, you may adjust its setting by pressing the UP and DOWN Arrow keys. Additional presses of the SET key will sequentially select the other functions for adjustment. All user settings are remembered by the HDR 610, even after it has been powered off and back on again.

When in an active function, a single press to an Arrow key will result in a single incremental adjustment. Pressing and holding an Arrow key will sequence through a range of adjustments. If no adjustment is made for 5 seconds, the unit will return to normal operation.

SHALLOW ALARM

The Shallow Alarm function can be set for depths ranging from 1 to 20 feet, and sounds an alarm when the depth measured is less than the setting.



1. While in normal operation mode, press the SET key once to display the Shallow Alarm setting and to cause the Shallow icon to blink.
2. Use the UP Arrow key to activate the Shallow Alarm and also to increase the selected value. Use the DOWN Arrow key to reduce the value. Press and hold the UP Arrow key until you reach the desired depth setting.

NOTE: *The maximum Shallow Alarm setting cannot meet or exceed the current Deep Alarm setting (see Deep Alarm section).*

3. After your selection is made, wait 5 seconds for the unit to return to normal operation. The Shallow icon should now be visible.



“SHALLOW” icon

4. If the depth of the water is less than the selected value, the alarm will sound and the Shallow icon will blink to indicate the alarm state. Pressing any key will mute the alarm; pressing the SET key will mute the alarm and activate the Shallow Alarm function for additional adjustment. To permanently turn the alarm off, use the DOWN Arrow key to return the display to Off.

DEEP ALARM

The Deep Alarm function can be set for depths up to 99 feet, and sounds an alarm when the depth measured is greater than the setting.



1. While in normal operation mode, press the SET key until the Deep Alarm setting is displayed and the Deep icon is blinking.
2. Use the UP Arrow key to activate the Deep Alarm and also to increase the selected value. Use the DOWN Arrow key to reduce the value. Press and hold the UP Arrow key until you reach the desired depth setting.

NOTE: The minimum Deep Alarm setting cannot meet or drop below the current Shallow Alarm setting (see Shallow Alarm section).

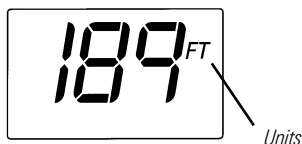
3. After your selection is made, wait 5 seconds for the unit to return to normal operation. The Deep icon should now be visible.



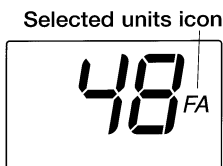
4. If the depth of the water is greater than the selected value, the alarm will sound and the Deep icon will blink to indicate the alarm state. Pressing any key will mute the alarm; pressing the SET key will mute the alarm and activate the Deep Alarm function for additional adjustment. To permanently turn the alarm off, use the DOWN Arrow key to return the display to Off.

UNITS

The Units control function selects the units of measure for depth readout and alarm functions. The three settings available are: Feet, Meters or Fathoms.

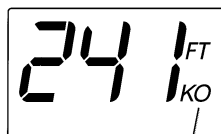


1. While in normal operation mode, press the SET key until Units is displayed and the Units icon is blinking.
2. Use either Arrow key to view the unit choices until you reach the desired unit: FT for feet, M for meters, FA for fathoms.
3. After your selection is made, wait 5 seconds for the unit to return to normal operation. The selected Units icon should now be visible.



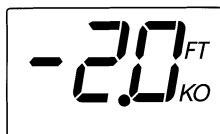
KEEL OFFSET

The Keel Offset function adjusts the digital depth readout to display depth readings from either the waterline or the keel (lowest point of the boat), instead of from the location of the transducer (which is usually somewhere in between). This function lets you display transducer location and depth readouts suited to your needs.



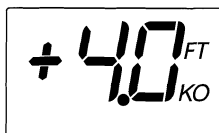
Keel Offset icon

1. To determine the value to enter into the Keel Offset setting, first decide whether depth from the waterline or depth from the keel is desired. Measurements will need to be made for the location desired.
- 2a. For depth from the keel of the boat, accurately measure the vertical distance between the face of the transducer and the keel of the boat. You will then need to enter this measurement into the Keel Offset function as a negative (-) number.



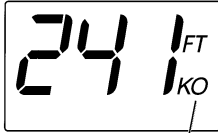
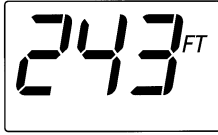
Or...

- 2b. For depth measurements from the waterline, accurately measure the vertical distance between the face of the transducer and the waterline of the boat. You will then need to enter this measurement into the Keel Offset function as a positive (+) number.



3. To enable Keel Offset, press the SET key until the KO icon is displayed on the screen.
4. The available settings are +10 to -10 units. The default setting of the unit is Off, which is displayed as zero (0.0). From the default setting of 0.0, use the DOWN Arrow key to enter a negative (-) number (for depth measurements from the keel of the boat); use the UP Arrow key to enter a positive (+) number (for depth measurements from the waterline).
5. After your selection is made, wait 5 seconds for the unit to return to normal operation. The KO icon should now be visible.

EXAMPLE: The following figures depict a scenario where the Keel Offset has been set to -2 feet. The third figure shows the return to normal operation with the updated depth readout.



Keel Offset icon

MAINTENANCE

To keep both your HDR 610 and your transducer working properly, perform the following maintenance tasks as needed.

HDR 610 MAINTENANCE

If your HDR 610 unit comes into contact with salt spray, simply wipe the affected surfaces with a cloth dampened in fresh water. Do not use a chemical glass cleaner on the lens, as chemicals in the solution may cause cracking in the lens. When cleaning the LCD protective lens, use a chamois and non-abrasive, mild cleaner. Do not wipe while dirt or grease is on the lens. Be careful to avoid scratching the lens.

***WARNING:** Never leave your HDR 610 in a closed car or trunk; the extremely high temperatures generated in hot weather can damage the electronics.*

TRANSDUCER MAINTENANCE

If your boat remains in the water for long periods of time, algae and other marine growth can reduce the effectiveness of the transducer. Periodically clean the face of the transducer with hot water. Pivoting the transducer up in the bracket may allow better access for inspection or cleaning.

If your boat remains out of the water for a long period of time, it may take some time to wet the transducer after it is returned to the water. Small air bubbles can cling to the surface of the transducer and interfere with proper operation. These bubbles will dissipate with time, or you may wipe the face of the transducer with your fingers after the transducer is in the water.

TROUBLESHOOTING

Before contacting the Humminbird® Customer Resource Center, please read the following section. Taking the time to review these troubleshooting guidelines may allow you to solve a performance problem yourself, and therefore avoid sending your unit back for repair.

***NOTE:** Do not attempt to repair the HDR 610 yourself, as there are no user serviceable parts inside, and special tools and techniques are required for reassembly in order to maintain the waterproof integrity of the housing. Repairs should be performed only by authorized Humminbird® technicians.*

HDR 610 Doesn't Power Up

If your HDR 610 doesn't power up, refer to the Installation section, and make sure that:

- the power cable is properly connected to the HDR 610;
- the power cable is wired correctly, with red to positive battery terminal and black to negative terminal or ground;
- the fuse is operational; a fuse can often appear to be good when in fact it is not; check the fuse with a tester or replace it with a known good fuse;
- if the unit is wired through a fuse panel, make sure that the panel is powered, as accessory fuse panels are often controlled by a separate switch, or even the ignition switch of the boat;
- the battery voltage of the power connector is between 10 and 16 VDC.

Correct any known problems, including removing corrosion from the battery terminals or wiring, or actually replacing the battery if necessary.

No Bottom Reading on the Display

If there is no bottom reading visible on the display, there are a number of possible causes for this condition, including:

- if the loss of bottom information occurs only at high boat speeds, then a transducer adjustment may be needed (refer to the Transducer Installation section);
- check the transducer cable connection on the back of the HDR 610 and make sure that the cable to the transducer has not been cut or pinched, as even a small abrasion in the cable can affect performance significantly.

Correct any known problems, including adjusting the transducer, or actually replacing the transducer cable if necessary.

No Continuous Depth Display in Very Shallow Water

Losing continuous depth when the boat is in very shallow water is normal, because the automatic range control cannot lock onto the bottom in depths of one foot or less.

Screen Fades, Images Are Not Sharp

If the screen begins to fade, and images are not as sharp as normal, check the input voltage. The HDR 610 will not operate on input voltages below 10 VDC.

Bottom Reading Disappears During a Hard Turn

Losing the bottom reading temporarily when the boat is executing a hard turn is normal, as the transducer emerges from the water during such a turn; this condition should correct itself once the turn is completed.

1-YEAR LIMITED WARRANTY

We warrant the original retail purchaser that products made by Humminbird® have been manufactured free from defects in materials and workmanship. This warranty is effective for one year from the date of original retail purchase. Humminbird® products found to be defective and covered by this warranty will be replaced or repaired free of charge at Humminbird® option and returned to the customer freight prepaid. Humminbird® sole responsibility under this warranty is limited to the repair or replacement of a product that has been deemed defective by Humminbird®. Humminbird® is not responsible for charges connected with the removal of such product or reinstallation of replaced or repaired parts.

This warranty does not apply to a product that has been:

- Improperly installed;
- Used in an installation other than that recommended in the product installation and operation instructions;
- Damaged or has failed because of an accident or abnormal operation;
- Repaired or modified by entities other than Humminbird®.

Please retain your original receipt as a proof of the purchase date. This will be required for in-warranty service.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, OBLIGATIONS OR LIABILITIES ON THE PART OF HUMMINBIRD® AND WILL BE THE CUSTOMER'S EXCLUSIVE REMEDY, EXCEPT FOR ANY APPLICABLE IMPLIED WARRANTIES UNDER STATE LAW WHICH ARE HEREBY LIMITED IN DURATION TO ONE YEAR FROM THE DATE OF ORIGINAL PURCHASE. IN NO EVENT WILL HUMMINBIRD® BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY RELATING TO THE PRODUCTS.

Some states do not allow limitations on an implied warranty, or the exclusion of incidental or consequential damages, so the above exclusions may not apply to you. You may also have other rights, which vary from state to state.

HUMMINBIRD® SERVICE POLICY

Even though you'll probably never need to take advantage of our incredible service policy, it's good to know that we back our products this confidently. We do it because you deserve the best. We will make every effort to repair your unit within three business days from the receipt of your unit at our factory. This does not include shipping time to and from our factory. Units received on Friday are typically shipped by the following Wednesday, units received Monday are typically shipped by Thursday, etc.

All repair work is performed by factory-trained technicians to meet exacting factory specifications. Factory-serviced units go through the same rigorous testing and quality control inspections as new production units.

After the original warranty period, a standard flat rate service charge will be assessed for each repair (physical damage and missing parts are not included). Any repairs made after the original warranty will be warranted for an additional 90 days after service has been performed by our factory technicians. You can contact our Customer Resource Center or visit our web site to verify the flat rate repair fee for your product (visit the Product Support section):

<http://www.humminbird.com>

We reserve the right to deem any product unserviceable when replacement parts are no longer available or impossible to obtain. This Service Policy is valid in the United States only. This applies only to Humminbird® products returned to our factory in Eufaula, Alabama. This Service Policy is subject to change without notice.

DOMESTIC (USA) CUSTOMERS:

PLEASE DO NOT RETURN THIS PRODUCT TO STORE FOR SERVICE

For all technical issues please call **1-800-633-1468**
or visit **www.humminbird.com**, click **SUPPORT**.

Please reference product serial number and
model number when contacting Humminbird®.

Returning Your Unit for Service

Before sending your unit in for repair, please contact the factory, either by phone or by email, to obtain a Repair Authorization Number for your unit.

NOTE: Please do not return your Humminbird® to the store for service.

Please have your product model name and serial number available before calling the factory. If you contact the factory by e-mail, please include your product model name and serial number in the e-mail, and use Request for Repair Authorization Number for your e-mail subject header. You should include your Repair Authorization Number in all subsequent communications about your unit.

For IN-WARRANTY service, complete the following steps:

- Obtain a Repair Authorization Number from the Humminbird® Customer Resource Center.
- Tag product with your name, street address, phone number and your assigned Repair Authorization Number.
- Include a brief written description of the problem.
- Include a copy of your receipt (to show proof and date of purchase).
- Return product freight prepaid to Humminbird®, using an insured carrier with delivery confirmation.

For OUT-OF-WARRANTY service, complete the following steps:

- Obtain a Repair Authorization Number from the Humminbird® Customer Resource Center.
- Include payment in the form of credit card number and expiration date, money order or personal check. Please do not send cash.
- Tag product with your name, street address, phone number and your assigned Repair Authorization Number.
- Include a brief written description of the problem.
- Return product freight prepaid to Humminbird®, using an insured carrier with delivery confirmation.

SPECIFICATIONS

Depth Capability	600 ft (180 m)
Power Cable Length	36" (91 cm)
Operating Frequency	200 kHz
Area of Coverage.....	16° @ -10 dB
Power Requirement	10-16 VDC
Display	Liquid Crystal Diode (LCD)
Mounting	In-Dash 2 1/8" hole
Unit Housing	High-Impact Plastic
Transducer.....	(transom mount) XNT 9 20 (puck) XP 9 20
Transducer Cable Length	20 ft (6 m)

NOTE: Humminbird® verifies maximum stated depth in saltwater conditions, but actual depth performance may vary due to transducer installation, water type, thermal layers, bottom composition and slope.

NOTE: Product specifications and features are subject to change without notice.

NOTES

CONTACT HUMMINBIRD®

Contact the Humminbird® Customer Resource Center
in any of the following ways:

By Telephone
(Monday - Friday 8:00 a.m. to 4:30 p.m. Central Standard Time):

1-800-633-1468

By e-mail
(typically we respond to your e-mail within three business days):

cservice@johnsonoutdoors.com

For direct shipping, our address is:

**Humminbird
Service Department
678 Humminbird Lane
Eufaula, AL 36027 USA**

WARNING! *This device should not be used as a navigational aid to prevent collision, grounding, boat damage, or personal injury. When the boat is moving, water depth may change too quickly to allow time for you to react. Always operate the boat at very slow speeds if you suspect shallow water or submerged objects.*

WARNING! *Disassembly and repair of this electronic unit should only be performed by authorized service personnel. Any modification of the serial number or attempt to repair the original equipment or accessories by unauthorized individuals will void the warranty.*

WARNING! *This product contains chemicals known to the State of California to cause cancer and/or reproductive harm.*