

PIRANHAMAX® INSTALLATION GUIDE

There are three basic installation tasks that you must perform for the PiranhaMax®:

- Installing the control head
- Installing the transducer
- Testing the complete installation and locking the transducer position.

The transducer can either be installed inside the hull, on the transom of the boat, or onto a trolling motor, depending on your transducer type.

NOTE: If the included transducer will not work for your application, you may exchange it, NEW and UNASSEMBLED, with mounting hardware included, for a transducer appropriate for your application - often at very little or no charge depending on the transducer.

NOTE: Due to the wide variety of hulls, only general instructions are presented in this installation guide. Each boat hull represents a unique set of requirements that should be evaluated prior to installation. In addition to the hardware supplied with your transducer, you will need a powered hand drill and various drill bits, various hand tools, including a ruler or straightedge, a level, a 1/2" plumb line (weighted string or monofilament line), marker or pencil, safety glasses and dust mask, and marine-grade silicone sealant.

NOTE: Please read all instructions carefully and completely before beginning the installation process.

NOTE: When drilling holes in fiberglass hulls, it is best to start with a smaller bit and use progressively larger drill bits to reduce the chance of chipping or flaking the outer coating.

CONTROL HEAD INSTALLATION

1. Determine Where to Mount

Begin the installation by determining where to mount the control head. Consider the following to determine the best location:

- To check the location planned for the control head, test run the cables for power and transducer. See the installation section for your transducer type in order to plan the location of the transducer.
- The mounting surface should be stable enough to protect the control head from excessive wave shock and vibration, and should provide visibility while in operation.
- Your PiranhaMax® may have one of two different types of mounting bases, either a tilting mounting base or a tilt and swivel mounting base. The mounting area should allow sufficient room for the unit to pivot freely, and to swivel if capable, and for easy removal and installation (Figures 1 and 2).



Figure 1



Figure 2

2. Connect the Power Cable to the Boat

A 6' long power cable is included to supply power to the control head. You may shorten or lengthen the cable using 18 gauge multi-stranded copper wire.

CAUTION: Some boats have 24 or 36 Volt electric systems, but the control head **MUST** be connected to a 12 VDC power supply.

The control head power cable can be connected to the electrical system of the boat at two places: a fuse panel usually located near the console, or directly to the battery.

NOTE: Make sure that the power cable is not connected to the control head at the beginning of this procedure.

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 (Figure 3). Install a 1 amp fuse (not included) for protection of the unit. Humminbird® is not responsible for over-voltage of over-current failures.

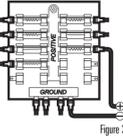


Figure 3

or...

- 1b. If you need to wire the control head directly to a battery, obtain and install an inline fuse holder and a 1 amp fuse (not included) for the protection of the unit (Figure 4). Humminbird® is not responsible for over-voltage or over-current failures.



Figure 4

NOTE: In order to minimize the potential for interference with other marine electronics, a separate power source (such as a second battery) may be necessary.

3. Assembling the Control Head Base

Your control head base will either have a tilt mount or a tilt and swivel mount. Refer to either procedures A or B below to perform initial assembly, and then use procedure C to complete the base assembly.

A. If you have a tilt mount, follow these steps:

1. Insert the mount arms through the base (Figure 5).
2. Secure the mount arms with the 4 #6 screws provided. **Hand tighten only!**

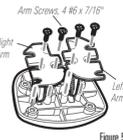


Figure 5

B. If you have a tilt and swivel mount, follow these steps:

1. Insert swivel ring in base, then insert the mount arms through the base (Figure 6).
2. Secure the mount arms with the 4 #6 screws provided (Figure 6). **Hand tighten only!**

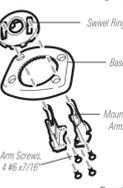


Figure 6

C. For both types of mount, once you have followed the procedure steps in either A. or B., follow these steps to complete assembly of the base:

1. Set the control head base in place on the mounting surface. Mark the four mounting screw locations with a pencil or punch.
2. Set the base aside, and drill the four mounting screw holes using a 9/64" bit.

4. Routing the Control Head Cables Under the Deck

NOTE: Under the deck cable routing is not always possible. If this is not an option, the cables should be routed and secured above deck.

Tilt Mounts:

- 1a. Mark and drill a 5/8" hole centered between the two rear mounting holes as shown in Figure 7A. Route the cables through the hole. The cables will exit through the notch on the base of the Tilt Mount.

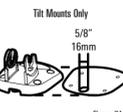


Figure 7A

- 1b. If the cables cannot be routed directly beneath the mounting bracket, mark and drill a 5/8" hole that will allow you to run the cables close to the bracket.

Tilt and Swivel Mounts:

- 1a. Mark and drill a 5/8" hole centered between the four mounting holes as shown in Figure 7B. Route the cables through the hole. The cables will exit through the center hole on the base of the Tilt and Swivel Mount.



Figure 7B

- 1b. If the cables cannot be routed directly beneath the mounting bracket, mark and drill a 5/8" hole that will allow you to run the cables close to the bracket.

5. Attaching the Control Head to the Base

Follow these steps to attach the control head to the already-assembled base:

NOTE: Transducer cable should be routed prior to securing the mounting bracket to the deck.

1. Apply marine grade silicone sealant to the drilled holes for the mounting bracket.
2. Place the mounting bracket on the mounting surface, aligning with the drilled holes.
3. Insert the four #8 Phillips countersink wood screws into the mounting holes and **hand tighten only!**
4. Insert the thumbknob bolt through the pivot knuckle on the control head (Figure 8).
5. Thread the gimbal knob onto the pivot bolt using only 2-3 turns.

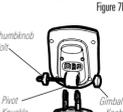


Figure 8

6. Align the pivot knuckle with the mount base arms and slide into place, twisting slightly if necessary, until the unit is firmly seated.
7. Rotate the control head to the desired angle and hand tighten the thumbknob bolt.

6. Attaching the Cables to the Control Head

Follow these steps to attach the power and transducer cables to the control head:

1. Matching the cable plugs to the shape and orientation of the sockets, insert the transducer and power cables into the correct sockets on the control head (Figure 9).
2. With the control head in place, tilt and/or swivel the unit through its full range to make sure there is enough cable slack for the unit to move freely. Hand tighten the thumbknob bolt when you achieve the desired position for the control head.

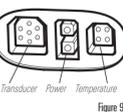


Figure 9

You are now ready to install the transducer. Find the section that refers to your transducer type.

TRANSOM TRANSDUCER INSTALLATION

1. Locating the Transducer Mounting Position

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) (Figure 10).
- 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 (Figure 10).
- 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 (Figure 11).
- 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.

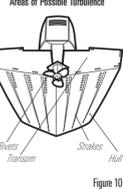


Figure 10

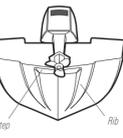
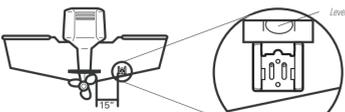


Figure 11



Find a turbulence-free location at least 15" from the propeller(s) and set in line with trailer bunks or rollers. (Figure 12).

NOTE: The hydrodynamic shape of your transducer allows it to point straight down without deadrise adjustment (Figure 13).

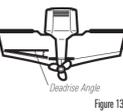


Figure 13

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 (Figure 14). 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 (Figure 15).

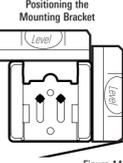


Figure 14

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 (Figure 16).



Figure 15

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.

4. 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".

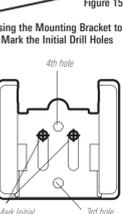


Figure 16

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.

- 1a. If you already know your transom angle, refer to the chart below for the initial position to use to set the ratchets (Figure 17). 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.

Bead Alignment Number	1	4	2	5	3	1	4	2	5	3	1																		
Transom Angle (°)	-2	1	3	4	5	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)	0.0cm	1.1cm	2.5cm	4.3cm	5.9cm	7.6cm	9.3cm	11.1cm	12.9cm	14.9cm	16.9cm	19.0cm	21.3cm	23.8cm	26.5cm	29.4cm	32.5cm	35.8cm	39.3cm	43.0cm	46.9cm	51.0cm	55.3cm	59.8cm	64.5cm	69.4cm	74.5cm	79.8cm	

Figure 17

or...

- 1b. 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 (Figure 18). Using a ruler, measure the distance from the bottom of the plumb line to the back of the transom, then use the chart (Figure 17).

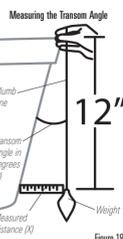


Figure 18

NOTE: It is important to take your measurement in the location shown in Figure 18, from exactly 12 inches down from the top of the transom.

2. 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 (Figure 19a). 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 (Figure 19b).

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 (Figure 19d).

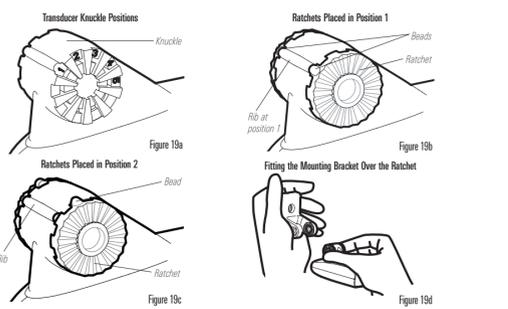


Figure 19d

3. 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 (Figure 20). Insert the pivot arm assembly into the mounting bracket (Figure 21). Do NOT snap the assembly closed, as you will need to access the mounting bracket in the next step.

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 (Figure 22).

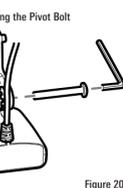


Figure 20

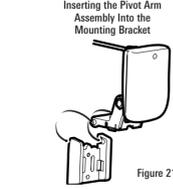


Figure 21

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 (Figure 23). **Hand tighten only!**

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.



Figure 24

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 (Figure 24).

7. 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 (Figure 25).

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.

8. 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 (Figure 26).
9. Mark the correct position on the transom by tracing the silhouette of the transducer mounting bracket with a pencil or marker.

10. Tighten the pivot bolt, using the pivot screw and nut to lock the assembly. **Hand tighten only!**
11. 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'.

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 (Figure 27).

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. **Hand tighten only!**

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. **Hand tighten only!**

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 (Figure 28).

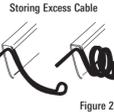


Figure 28

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.

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 (Figure 25).

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 (Figures 19a - 19d).

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.

Drill the third mounting hole, using a 5/3