



HUMMINBIRD[®]

BY TECHNISONIC 

The ultimate in fish-finding technology.

DIGITAL
HDR 400G
OR
HDR 400I
OPERATIONS MANUAL

GUARANTEED DEPTH PERFORMANCE

Your Humminbird Digital is guaranteed to operate to 400 feet when the unit and transducer are properly installed, following the instructions in this operations manual.

It cannot be emphasized enough how important it is to correctly install the unit and transducer. **Improper installation will void the depth guarantee** because it can degrade the unit's performance.

TRANSDUCER MOUNTING PROCEDURE

Humminbird's high-speed transducer is supplied with your LCR. This transducer has been designed to give good high speed readings on most all boat designs, including aluminum.

Please carefully consider the following before installing your transducer.

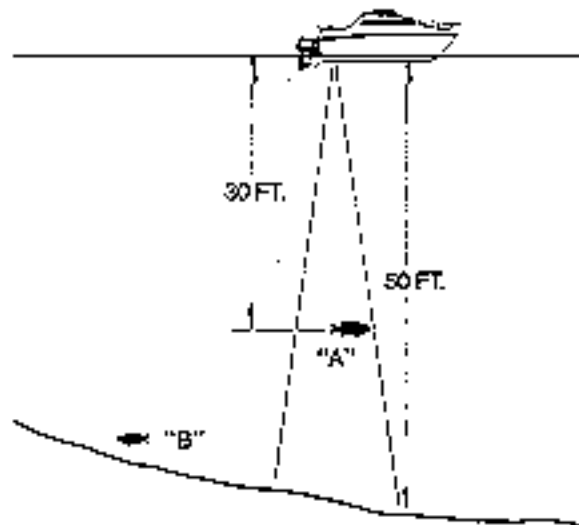
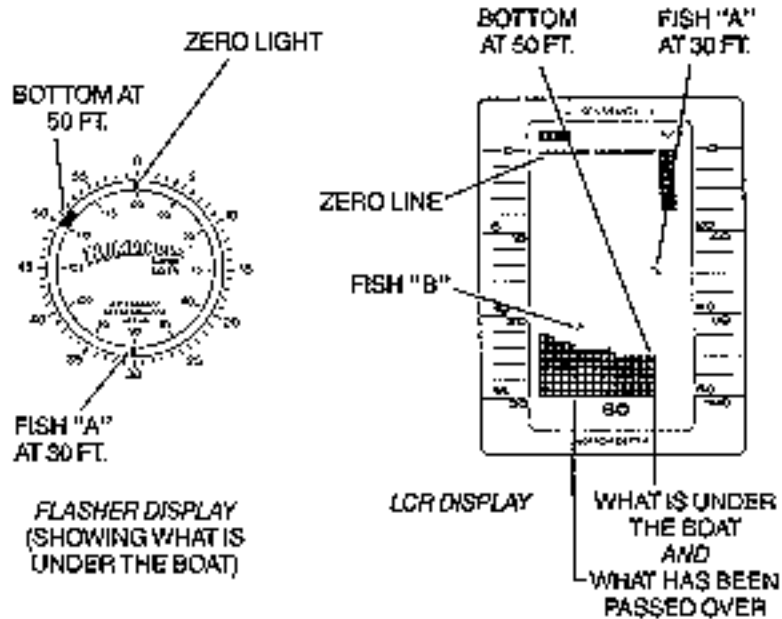


FIGURE 1

TRANSDUCER MOUNTING OPTIONS

- A. Transom Mount- The Humminbird high speed transducer allows the transducer element to be mounted below the bottom of the boat hull keeping the transducer out of turbulent water and insuring good high speed operation. The transducer will absorb the blow of any obstruction

by rotating up out of the metal spring bracket without harming the transducer, or your boat. The transducer can be re-engaged by simply rotating the transducer down and snapping it back in place. (See Figure A)

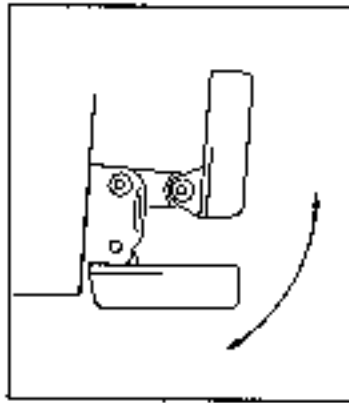


Figure A

- B. Inside Hull Mount- The high speed transducer can be mounted inside the hull (without pivot assembly) using the proper two-part epoxy, such as Humminbird's epoxy kit. Even though there is some loss of signal in shooting through the hull, your LCR will perform well with this type of installation. You cannot shoot through the hull of an aluminum boat.
- C. Trolling motor Mount- This type of transducer is not supplied with your LCR. It is designed to mount on the foot of a trolling motor. You may exchange your un-used high speed transducer for a trolling motor transducer. Call the Humminbird Customer Service Department.
- D. Bronz Thru-Hull Mount- This transducer is not supplied with your LCR but for an additional cost you may exchange your un-used high speed transducer for a bronz thru-hull. The bronz thru-hull transducer has a threaded stem which installs through a hole drilled in the boat hull, leaving the housing exposed under the boat. This type of installation must be used for many boats with in-board engines, because there is no suitable location on the transom away from the noise and turbulence created by the prop. A bronz thru-hull transducer should be installed by qualified personnel only.
The LCR will operate well at high speeds with a properly mounted transducer. Remember, a transducer will not work transmitting through air or through air bubbles.

1. TRANSOM MOUNTING PROCEDURE

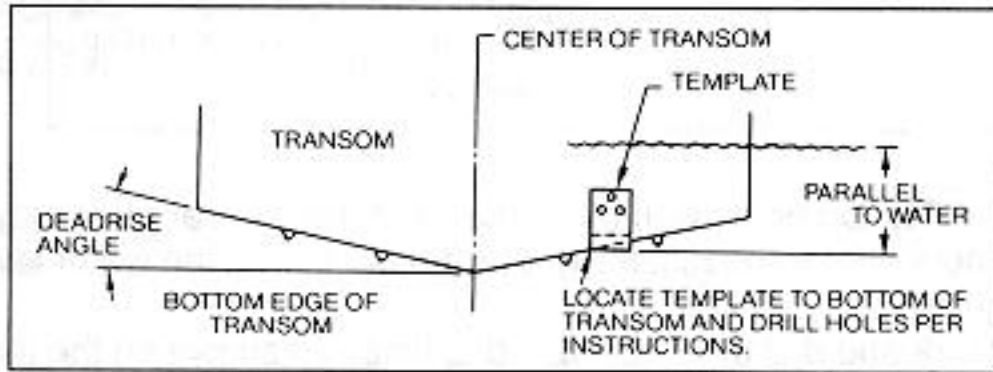
Step 1.

MOUNTING LOCATION- It is important that the transducer be mounted on the transom where water flow is in constant contact with the transducer. You may wish to observe the rear of the boat while it is moving through the water to determine the best mounting location.

Step 2.

BRACKET INSTALLATION (Aluminum Boats)- To install the metal bracket on an aluminum boat locate the template on the transom between rows of rivets, or ribs that are on the bottom of the boat. Align the template so that the bottom corner of the template nearest the center of the transom is on the bottom edge of the transom.

Figure B



Once the location is determined mark and drill three 7/64" dia.. holes noted on the template. Attach the metal bracket using three #10 self threading screws supplied. Be sure to align holes in the center of the Bracket slots. On some aluminum boats it may be necessary to use a wood back-up plate. It is important to use a silicone sealant between the screwhead and bracket in order to prevent leaking. (See Figure C)

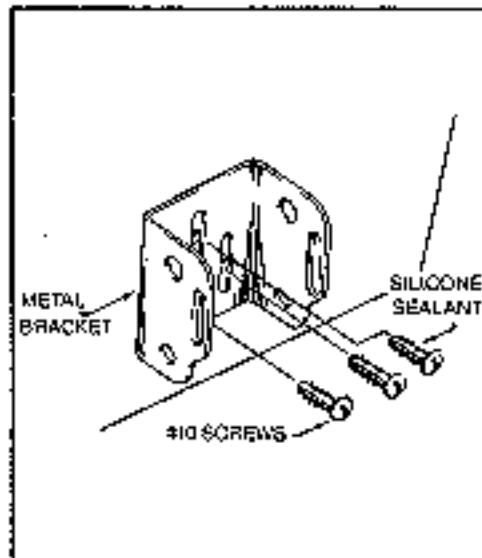
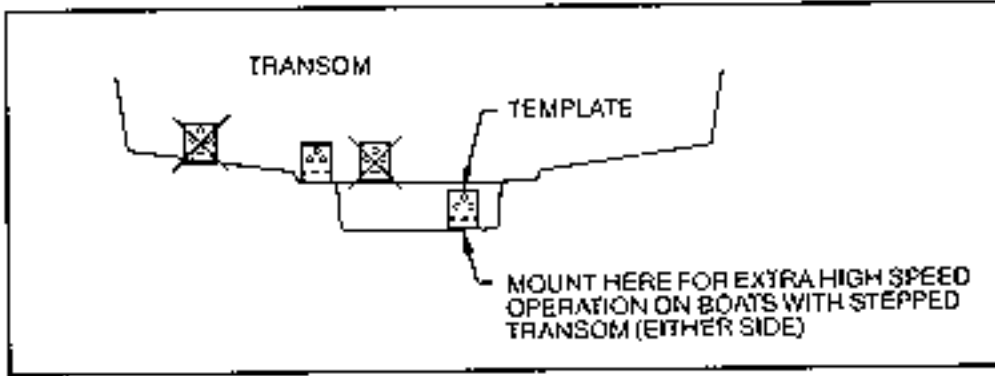


Figure C

Step 2.
BRACKET INSTALLATION (Fiberglass Boats)- If your boat has a stepped transom located below and under the main transom, the compact transducer design allows mounting in this area. This mounting location is recommended for good reading at very high speeds. (See Figure D)

To install the metal bracket on a fiberglass boat, locate the template on the transom in the same manner as for an aluminum boat. (See Figure C)

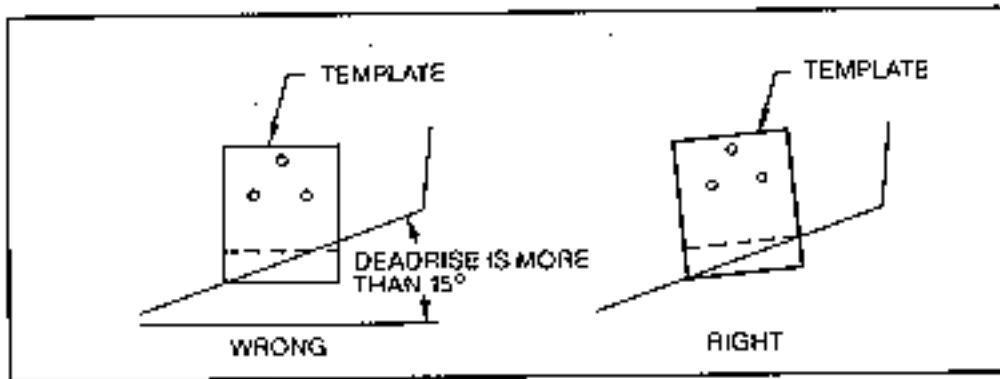
Figure D



NOTE: On boats with more than 15 degree deadrise angle it may be necessary to mount the transducer slightly off parallel with the water level. (See Figure E)

Mark and drill the three 9/64" dia. holes as shown on the template. Attach the metal bracket using the three #10 self threading screws supplied. Be sure to align the holes so that they are centered vertically in the three slots found in the bracket. It is important to use a silicone sealant between the screwhead and bracket in order to prevent leaking.

Figure E



Step 3.

TRANSDUCER PIVOT ASSEMBLY- Assemble the pivot to the transducer main body using the two 1/4"x5/8" allen head screws, two 3/8" tooth washers and two, 1/4" square nuts. Make sure the tooth washers are sandwiched between the transducer main body and the pivot. The square nuts are trapped inside the pivot and will not rotate as the allen head screws are tightened. HOWEVER, DO NOT TIGHTEN AT THIS POINT. (See Figure F)

CAUTION: DO NOT APPLY LOCTITE® OR SIMILAR LOCKING COMPOUNDS BECAUSE THEY WILL ATTACK THE PLASTIC.

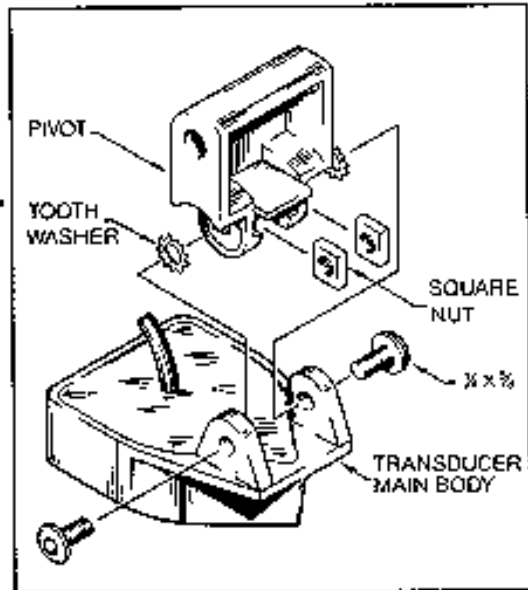


Figure F

Step 4

TRANSDUCER ASSEMBLY- Insert the transducer assembly into the metal bracket from the bottom. Push up until the holes in the plastic pivot align with the uppermost holes in the bracket. Slide the O-ring on to the headed pin and insert it through the two parts. Assemble by screwing the 1/4"x3/8" allen head screw into the end of the pin and tighten. (See Figure G)

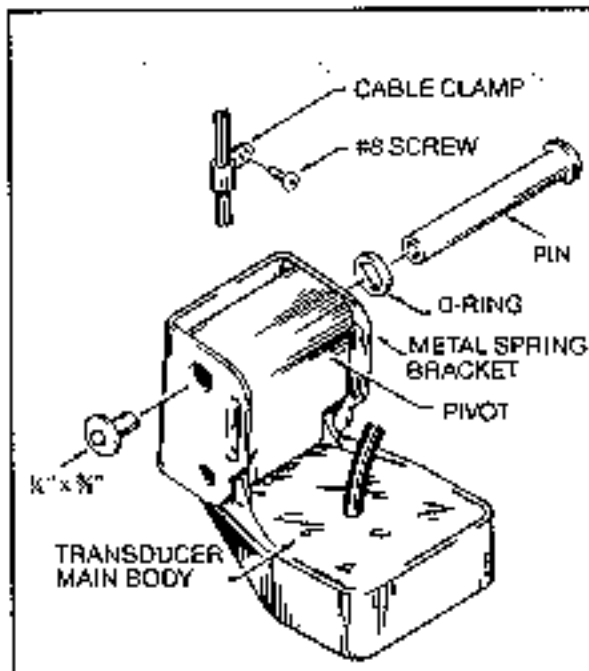


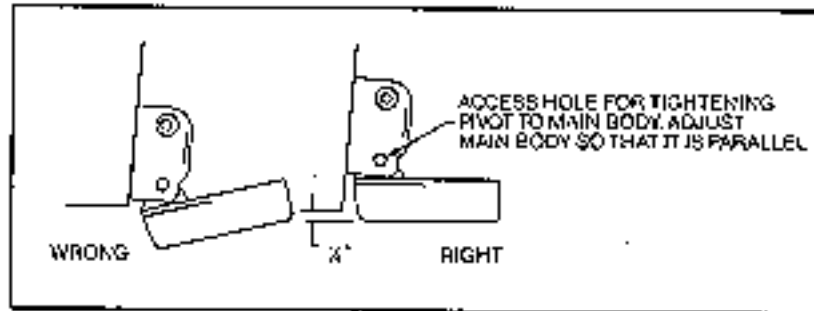
Figure G

Step 5

ANGLE ALLIGHMENT- Set the transducer angle so that it is parallel with the bottom of the boat hull. Once proper alignment is achieved, tighten the two allen head screws using the 5/32" allen

wrench provided. The screws are visible through the access holes on each side of the metal bracket. Check to make sure the transducer main body is rigidly fastened to the pivot. (See Figure H)

Figure H



Step 6

CHECK POSITION OF TRANSDUCER- At this point, check to see that the bottom of the transducer is a minimum of $\frac{1}{4}$ " below the bottom of the transom. (However, as noted in STEP 2, the top of the transducer cannot fall below the bottom of the transom). If it is not, remove the transducer assembly from the metal bracket by removing the pin installed during STEP 3. Loosen the metal bracket mounting screws, re-position the bracket utilizing its slotted holes, tighten and re-assemble. It may be necessary to replace the silicone sealant after this adjustment is made.

NOTE: It may be necessary to make several high speed runs to adjust transducer either UP/DOWN or to re-adjust the angle to achieve optimum results.

Step 7

CABLE CLAMPS- Install cable clamps as necessary by drilling a $\frac{1}{8}$ " dia. hole for the # 8 screw supplied.

2. INSIDE HULL MOUNTING PROCEDURE

Warning: In order to achieve proper results with this type installation, it is important that the transducer be mounted by someone familiar with the use of two part epoxy adhesives. For this reason, Techsonic Industries, Inc. will not be responsible for any damage due to the mounting of your transducer in this manner.

NOTE: An Epoxy Kit (Part N. EPK) is available from Humminbird. This Epoxy Kit has been formulated for Inside Hull Transducer Installation.

1. Select as flat an area as possible near the aft end and center of boat where the hull is thin and not double. If the bottom has a runner down the center of boat, select an area to one side of the runner, but as close to the runner as possible.
2. Clean the inside of the boat with lacquer thinner in the area transducer is to be mounted. Outside of boat in this area should also be cleaned. (Not with lacquer thinner).
3. Put approximately one inch of water in the bottom of the boat.
4. Put transducer in the water. The bottom of the transducer should be in a flat area and should be in good contact with the bottom of the boat.
5. Operate the LCR with the boat operating at high speed. The transducer may have to be moved in order to find an area where satisfactory operation is observed.
6. When an area is found that produces satisfactory operation, mark the location of the transducer.

7. Remove the water and transducer and clean the marked area and the bottom of the transducer thoroughly.
8. Using the Humminbird Epoxy Kit or equivalent, mix an ample amount of epoxy without causing it to bubble and pour it in the area the transducer is to be mounted. The puddle should be larger than the bottom of the transducer.
9. Coat the bottom of the transducer with epoxy, then put it in the center of the puddle and push down on the transducer while moving it around in a circular motion. This forces out any air bubbles that may be trapped between the bottom of the transducer and the hull of the boat.
10. Let epoxy cure then the transducer is ready to operate. No water is now required in the bottom of the boat and gas and oil that is spilled inside of the boat will not degrade performance as it will if the transducer is placed only in water.
CAUTION: Do not use the silicone seal or any soft adhesive to bond the transducer to the hull. This will reduce the sensitivity of the unit.

CAUTIONS

1. Occasionally the "eye" of your transducer may become dirty from storage or from contact with oils present in boats or marina environments. (Oil will cause the "eye" to lose the intimate contact with the water which is necessary for efficient operation.) The "eye" may be cleaned with liquid detergent.
2. Improper installation of the transducer can alter the efficiency and accuracy of the entire system.
3. If your boat or transducer is out of the water for a period of time, it may take a short period of time for the transducer to become thoroughly "wetted" when returned to the water. Also, re-entry may cause turbulence, which will create air bubbles in the "eye" of the transducer. The bubbles will disappear in a short time or can be removed by rubbing the transducer "eye" with your fingers while the transducer is in the water.
4. If your instrument should fail to function, be sure to check all the electrical connections before removing the transducer or calling a serviceman.
5. Inspect your transducer cable and make sure that it has not been cut or damaged to the point where it will affect the performance of the transducer. A slight nick or cut, exposing the outer cable, can be repaired by wrapping with electrical tape. A transducer can be damaged if the inner cable and outer cable are allowed to make contact. Such a problem can sometimes be corrected by properly splicing the coaxial cable. This should only be attempted by a qualified service technician.
6. If your LCR is not working properly and you suspect the problem might be in your transducer, we would recommend you borrow a unit from a friend and try it on your boat. If the symptoms are the same, you can almost be certain that the problem is in the transducer.

INSTALLING THE LCR

The LCR should be mounted on a flat, solid surface for maximum stability. The low profile swivel mount has four holes drilled in the base. It is recommended that all four holes be used.

Position the swivel base and drill four ¼" diameter holes. Note: The LCR hole pattern is the same as for all Humminbird flasher units. Use hardware provided to mount this base to the boat.

Next place the gimbal bracket on the swivel base and attach with four small machine screws, provided.

Place the LCR in the gimbal mount and make certain the rubber washers provided are placed between the unit and the gimbal bracket. Important: Note which side of the gimbal faces forward. (Slots on gimbal bracket go towards rear). Also, rubber washer must be located between the unit and the gimbal bracket.

Install the mounting knobs and tighten snugly. The unit can now be swiveled and tilted to any desired position.

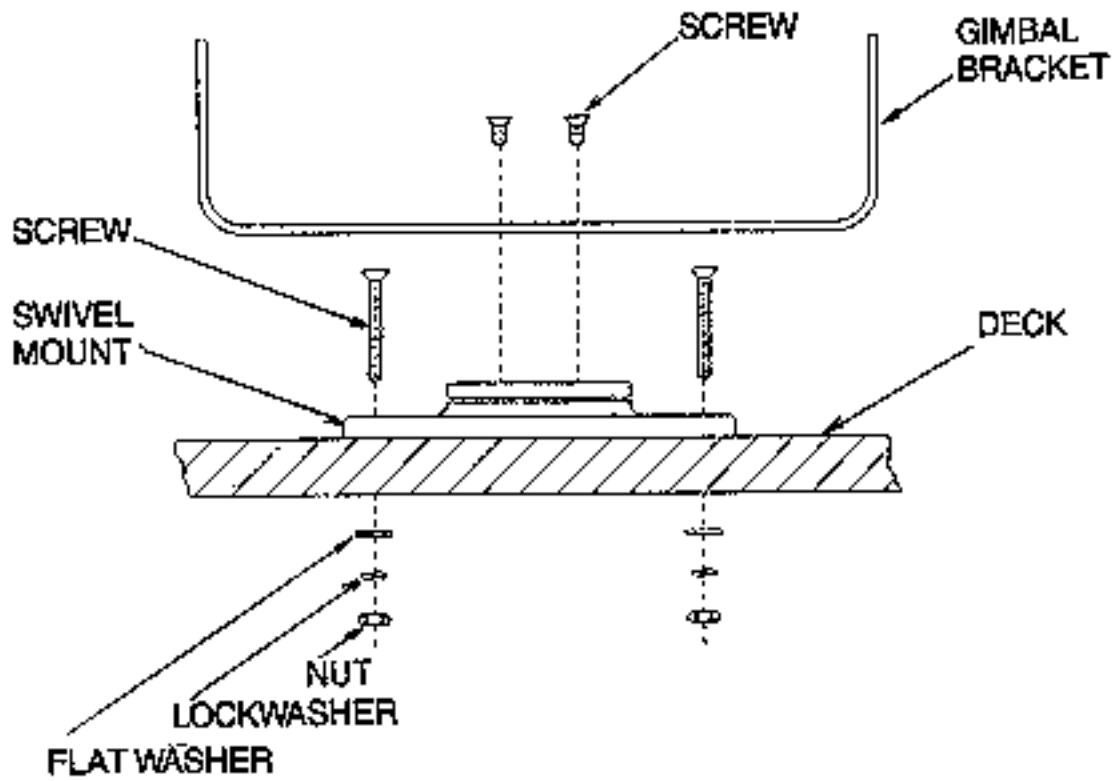


FIGURE 9

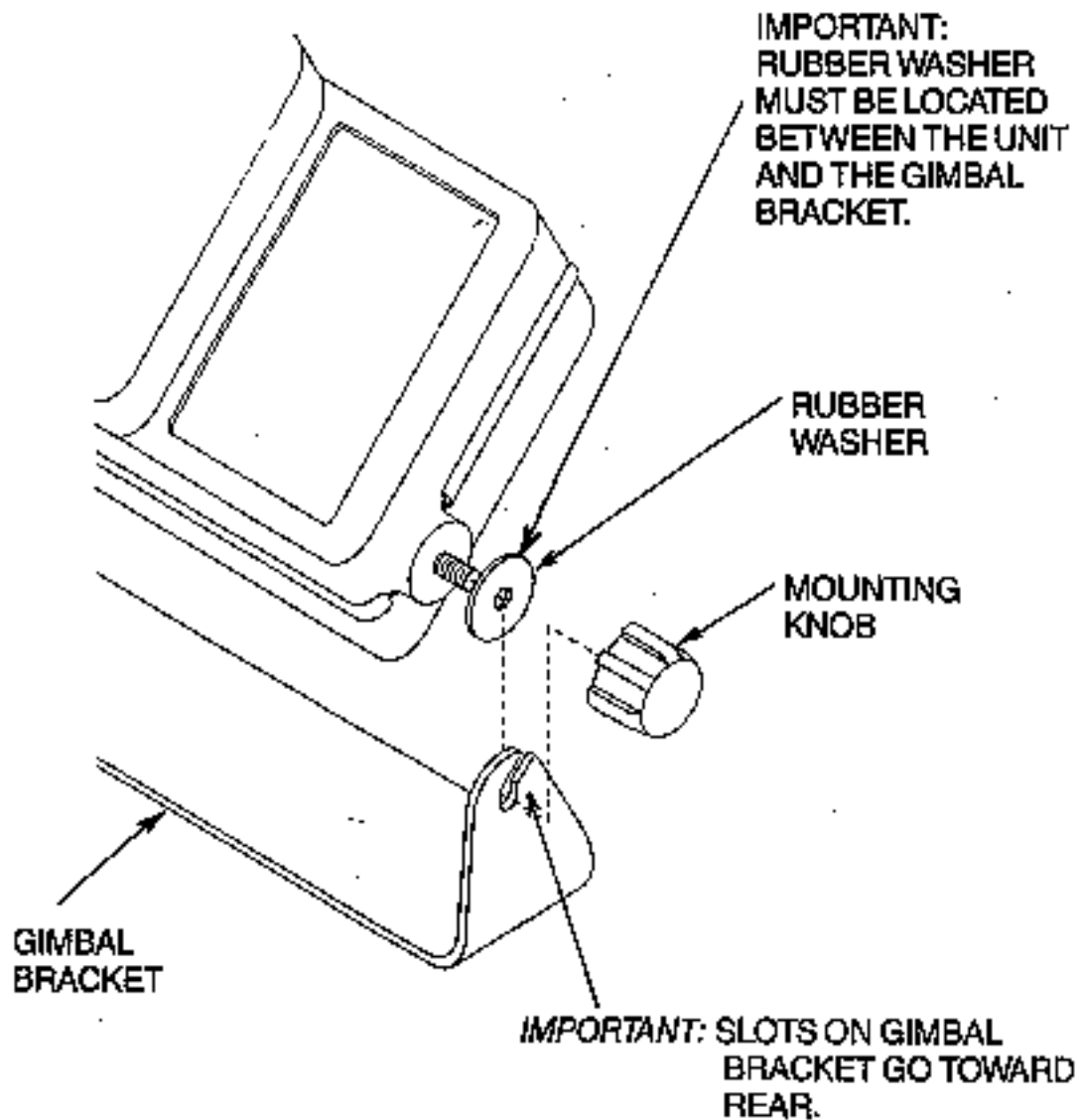


FIGURE 10

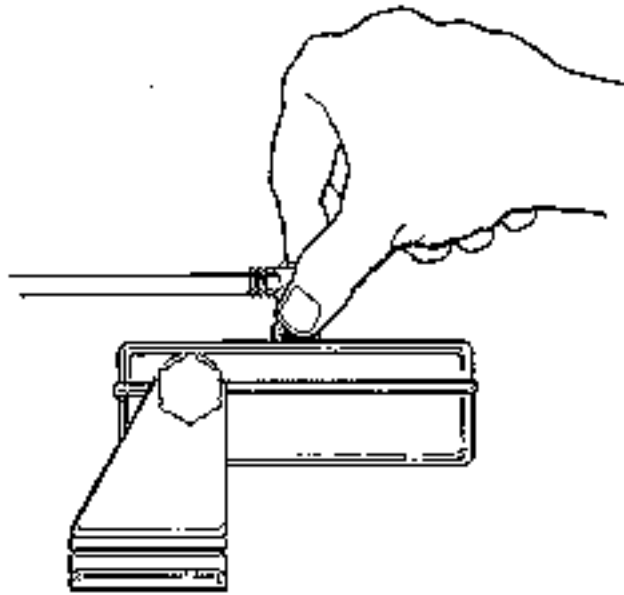
OTHER MOUNTING OPTIONS

1. The LCR gimbal bracket can also be mounted on the SM-4, quick disconnect swivel mount.
2. The LCR gimbal bracket can also be mounted directly to the dash without the swivel mount, however, this method is not recommended since the unit cannot be rotated.

INSTALLING THE CABLES

Your LCR comes equipped with Humminbird's new Angle-Lock power and transducer connectors. The power connector is identified with the letter P on the back of the plug.

It plugs into the outlet on the back of the unit marked "Power". The transducer connector is identified with the letter T and plugs into the outlet on the back of the unit marked "Transducer".
Note: An adapter (AD-4) is available to allow use of an old waterproof (BNC) transducer with the LCR, but be sure that the transducer is a 16-degree. A 32-degree transducer cannot be used. A 1 1/8" hole must be drilled to pull through the transducer connector. After drilling the hole, pull the transducer connector up through the hole. If you are installing two units, both transducer connectors can be pulled through this 1 1/8" inch hole. Next, push the power cable wires down through the hole. A hole cover has been provided which will dress and hold the wires. Install the hole cover after determining the necessary wire length from the hole.
The power cable has a red lead to the positive (+) post and the black lead to the negative (-) post. Install a 1 amp fuse between the red cable and positive post of your 12-volt battery.
If a fuse panel is available, we recommend wiring the power cable into the fuse panel. Note: The LCR must be fused separately from any other accessory.
Your Angle-Lock connectors can only be plugged in one way. Position the connector so the letter P or T can be read and the 90 degree bend is pointed downward. Push the connector in as far as it will go. Turn the positive locking ring as far as it will go clockwise until you feel it lock. Locking ring as far as it will go clockwise until you feel it lock. Your connector is now locked into place.
Note: For easy access to the connectors, simply loosen the mounting knobs and tilt your LCR forward. The connectors are now in full view and easy to plug or unplug.



CAUTIONS

1. Occasionally the "eye" of your transducer may become dirty from storage or from contact with oils present in boats or marina environments. (Oil will cause the "eye" to lose the intimate contact with the water which is necessary for efficient operation.) The "eye" may be cleaned with liquid detergent.
2. Improper installation of the transducer can alter the efficiency and accuracy of the entire system.
3. If your boat or transducer is out of the water for a period of time, it may take a short period of time for the transducer to become thoroughly "wetted" when returned to the water. Also, re-entry may cause the turbulence which will create air bubbles on the "eye" of the transducer. The bubbles will disappear in a short time or can be removed by rubbing the transducer "eye" with your fingers while the transducer is in the water.
4. If your unit should fail to function, be sure to check all the electrical connections before removing the transducer or calling a serviceman.
5. Inspect your transducer cable and make sure that it has not been cut or damaged to the point where it will affect the performance of the transducer. A slight nick or cut, exposing the outer cable, can be repaired by wrapping with electrical tape. A transducer can be damaged if the inner cable and outer cable are allowed to make contact. Such a problem can sometimes be corrected by properly splicing the coaxial cable. This should only be attempted by a qualified service technician.
6. If your unit is not working properly and you suspect the problem might be in your transducer, we would recommend you borrow a unit from a friend and try it on your boat. If the symptoms are the same, you can almost be assured that the problem is in the transducer or in its installation.

INSTALLING THE UNIT

Your Humminbird Digital has been designed for best viewing when mounted directly in front of or to the right of the operator. This is particularly important for best viewing at night or in low light conditions.

GIMBAL UNIT MOUNTING PROCEDURE

The unit may be mounted either on the deck or overhead, but it must be mounted on a flat, solid surface for maximum stability. Select an area directly in front of or to the right of the operator for best viewing, especially at night. If this is not possible, then angle the unit to ward the operator so that you will be viewing it straight on. Before drilling holes make sure that you have room behind the unit for the power and transducer connectors. With the slots on the gimbal bracket facing away from you, use the gimbal bracket to locate the two screw locations. If you are mounting the bracket to an aluminum or metal deck drill two 7/64" holes. If mounting to wood or fiberglass drill two 9/64" holes. Mount the gimbal bracket using the two supplied self-tapping screws.

Place the unit on the gimbal bracket, making sure the rubber washers are placed between the unit and the bracket (see Figure 11). Also, make certain that the correct side of the gimbal bracket is facing forward.

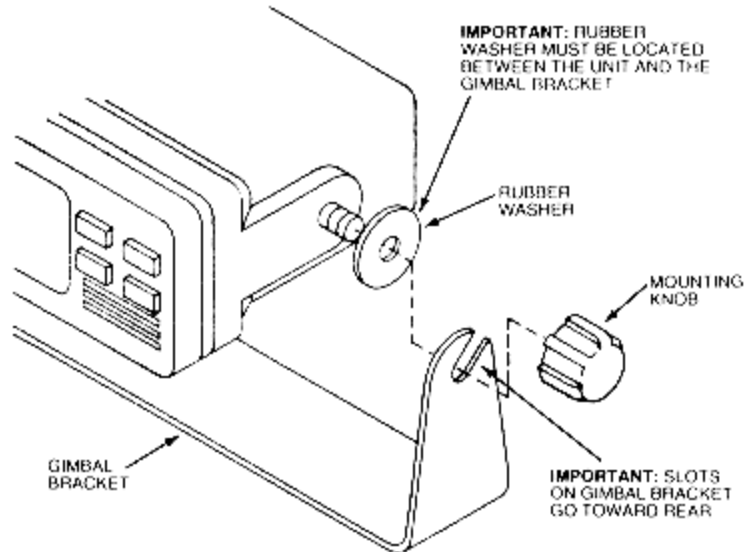


FIGURE 11

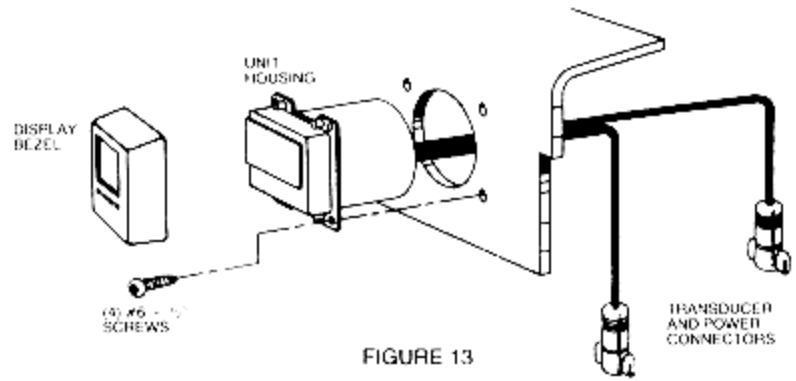
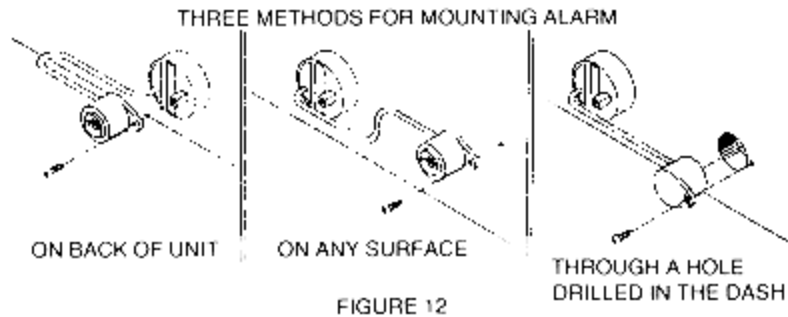
IN-DASH UNIT MOUNTING PROCEDURE

Select an area directly in front of or to the right of the operator for best viewing, especially at night.

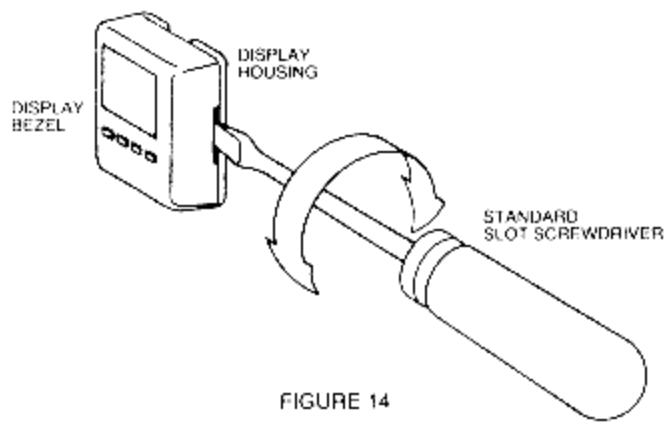
Before mounting the unit you must decide where to mount the alarm. It has been designed to mount either to the back of the unit or away from the unit where it can be heard easier. The alarm can be mounted on a surface near the dash or a hole can be drilled so that the alarm can be sounded directly through the dash (see Figure 12).

NOTE: If you want to mount the alarm farther away than the one-foot cable will allow, you may splice in a 2-conductor cable up to 20 feet from the unit.

The unit housing will mount in a $2\frac{1}{8}^{\circ}$ small gauge hole. Pass the cables through the hole. Hold the unit housing in place and mark the location of the mounting screw holes. Drill four $\frac{3}{32}^{\circ}$ pilot holes. Attach the housing with the four #6 x $\frac{1}{2}^{\circ}$ screws provided (see Figure 13).



You can now snap the display bezel over the housing, making sure that the control buttons are properly positioned through the bezel. The bezel may be removed from the housing by prying with a screwdriver in the slots on either side (see Figure 14).



INSTALLING THE CABLES

Your unit has two connectors, a transducer connector and a power connector. The transducer connector attaches to the transducer cable.

The power connector attaches to the power cable. The power cable has a red lead and a black lead. Connect this cable to a 12-volt DC Power Source (battery). Attach the red to the positive (+) post and the black lead to the negative (-) post. Install a 1 amp fuse between the red cable and positive post of your 12-volt battery. If a fuse panel is available, we recommend wiring the power cable into the fuse panel. 'Note: The Humminbird Digital must be fused separately from any other accessory.

If you are installing the gimbal mounted unit, a 9/16" hole should be drilled in the dash to pull the transducer connector up and to feed the power leads down. A hole cover has been provided which will dress and hold the wires. Install the hole cover after determining the necessary length from the hole.

TESTING YOUR UNIT AND TRANSDUCER INSTALLATION

After installing the unit, transducer, and cables, you are ready to test the installation. You should put your boat in the water to test the unit because the transducer cannot transmit and receive properly through air.

INITIAL UNIT TESTING

With your boat in the water at idle or at a very slow speed. Turn your unit on by pushing the "on" button. The unit's computer will automatically locate the bottom and show the depth on the display.

TROUBLE SHOOTING: If nothing happens when the "on" button is pushed, check your electrical connections and fuse. Also check that the red wire on the power cable is connected to the positive battery terminal and that the black wire is connected to the negative battery terminal. If these wires are reversed it will not damage the unit. It is normal if when reversing the boat, the bottom return is lost, since air from the prop is being forced under the transducer. Remember the transducer cannot transmit through air.

TROUBLE SHOOTING: If the display comes on when the "on" button is pushed but the bottom depth is not displayed, check that the transducer connector is securely locked to the rear of the unit. Also insure that the transducer is completely submerged. A transducer cannot work properly in air or through air bubbles in the water.

TROUBLE SHOOTING: In 1 or 2 feet of water the bottom depth may blank or go off. This is normal in very shallow water. This is also normal in deeper water under high clutter conditions.

TROUBLE SHOOTING: If the display is not showing a steady bottom reading (if it is blanking or going on and off), begin to systematically turn off other equipment on the boat. In this way you can isolate which piece of equipment is generating the interference. After isolating the problem, check that the equipment is properly grounded. Try re-routing the power and transducer cables away from the source of the interference. You may have to physically separate the two pieces of equipment.

TROUBLE SHOOTING: If the unit comes on without pressing the "on" button or if you cannot turn it off by pressing the "on" button, carefully inspect the transducer cable. This condition will be seen if the outer jacket of the cable has been cut and is touching any metal piece of the boat.

TRANSDUCER INSTALLATION TEST

After verifying that your unit is working properly, you are ready to increase boat speed to test the transducer installation. As you increase boat speed the unit should give a continuous bottom return. With a proper transducer installation your Humminbird Digital will perform at speeds up to 75 miles per hour.

TROUBLE SHOOTING: If at high speeds the bottom return is not continuous or it blanks out, then the transducer installation or location is such that air is going under the transducer face.

Refer back to the transducer mounting procedure for adjustments or for other mounting options.
NOTE: It is not unusual for the bottom reading to occasionally blank out. This is caused when the unit temporarily loses the bottom. Rather than display an incorrect bottom depth, the Humminbird Digital will blank out the display until the correct bottom is found again.

TROUBLE SHOOTING: If the bottom reading is lost while making a hard turn, the transducer is coming out of the water during the turn.

OPERATIONAL INSTRUCTIONS

With only four buttons your Humminbird Digital is very easy to use. The use of each button is explained below, as well as some special functions such as selecting feet, meters, or fathoms and the option of deleting the decimal point.

Power On-Off

Power to your Humminbird Digital is controlled by the button marked "on". Pressing this button once turns the unit on. Pressing it again turns the unit off.

Night Light

The night light automatically turns on when the unit power is turned on. Red light emitting diodes, (LED's), are used to backlight the display. These LED's require very little power and should never need replacement. You will see the red backlight as the surrounding light conditions become low or dark.

Feet, Meters, Fathoms

The unit of measure may be selected by using the "on" button. With the unit turned off, press in and hold down the "on" button. Watching the display, in about one second you will notice the unit of measure changing from feet to meters to fathoms to feet, etc. When the desired unit of measure is displayed release the "on" button. This unit is now set and will not change even when power is turned off or is disconnected.

Alarm On-Off

The bottom alarm is turned on and off by pressing the alarm button. The alarm symbol appearing in the upper right portion of the display indicates that the bottom alarm is on.

The alarm will sound when the bottom reading becomes equal to or less than the alarm setting.

Alarm Setting

The $_A$ (increase) and (decrease) buttons are used to display or change the alarm settings. Pressing either button once will cause the alarm setting to be displayed. Continuing to press either button will change the alarm setting. Holding the button down will cause the setting to change rapidly. The alarm setting will always flash on the display so you can always separate it from the bottom depth reading.

The alarm is set in whole increments (no decimal settings). Once a setting is entered, it will not change after the power has been turned off or if the power is disconnected.

DELETING THE DECIMAL POINT

If you would rather not have a decimal point in bottom depth reading, it can be deleted. To delete the decimal point, press both the $_A$ and buttons at the same time. Use the same procedure to add the decimal point. The decimal point setting will not change after the power has been turned off or is disconnected.