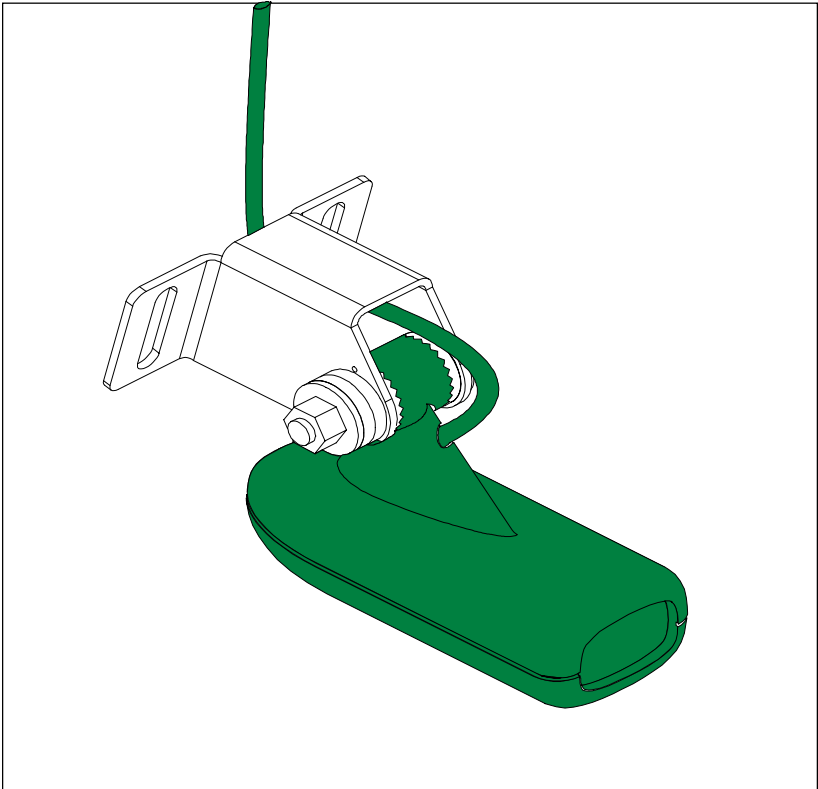


INSTALLATION INSTRUCTIONS MANUAL

MODELS

HS-WS, HS-WSPC, AND HS-WSBK

TRANSDUCERS



LEI
ACCESSORIES
FOR LOWRANCE, EAGLE, AND SEA ELECTRONICS PRODUCTS

TOOLS YOU WILL NEED:

TRANSOM MOUNT:

3/8" DRILL with a variety of small bits

Two (2) #12 stainless steel screws (to attach bracket to the transom.)

Marine grade caulking compound (to seal screws)

SHOOT-THRU-HULL MOUNT:

100 grit sandpaper

One package of the either of the following epoxies:

Power Poxy[®], 1 oz package. Made by: Power Poxy[®] Adhesives, Inc.

or

True Value[®] brand TRUE BOND epoxy or PLASTIC WELDER[™] epoxy
sold by True Value[®] stores.

or

Devcon[®] brand PLASTIC WELDER[™] epoxy.

The HS-WS is a transom mount transducer with a gray connector. It can be installed on any outboard or stern-drive (inboard\outboard) powered boat. It can also be permanently installed inside the boat to "shoot-through" the hull on some fiberglass boats. The HS-WSPC is the same as the HS-WS, however it has a power cable attached for sonar units that have only one connector for both the power and transducer. If you are installing a HS-WSPC transducer, install the transducer before wiring the power cable. See the power cable instructions in the back of this manual for more information. The HS-WSBK is the same as a HS-WS, but the connector is different.

The "kick-up" mounting bracket helps prevent damage if the transducer strikes an object while the boat is moving. If the transducer does "kick-up", the bracket can easily be pushed back in place without tools.

Read this manual carefully before attempting the installation. Determine which of the mounting positions is right for your boat. Use extreme care if mounting the transducer inside the hull, since once it is epoxied into position, the transducer usually cannot be removed. Remember, the transducer location is the most critical part of a sonar installation.

Location - General

1. The transducer must be placed in a location that has a smooth flow of water at all times. If the transducer is to be mounted inside the hull, then the chosen location must be in the water at all times. If the transducer is not placed in a smooth flow of water, interference will show on the sonar's display in the form of random lines or dots whenever the boat is moving.
2. The transducer should be installed with its face pointing straight down, if possible.
3. If the transducer is mounted on the transom, make certain it doesn't interfere with the trailer or hauling of the boat. Also, don't mount it closer than approximately one foot from the engine's lower unit. This will prevent cavitation interference with the propeller. Typically, the transducer should be mounted as deep in the water as possible. This increases the chance that it will be in the water in high speed and reduces the possibility of air bubble interference.
4. If possible, route the transducer cable away from other wiring on the boat. Electrical noise from engine wiring, bilge pumps, and areators can be displayed on the sonar's screen. Use caution when routing the transducer cable around these wires.

Shoot-thru-hull v.s. Transom Mounting

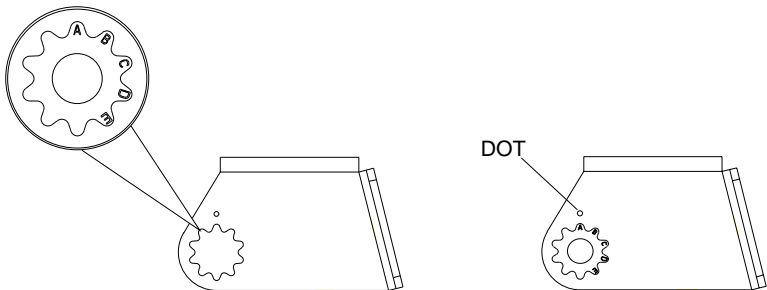
Typically, shoot-thru-hull installations give excellent high speed operation and good to excellent depth capability. There is no possibility of damage from floating objects. It can't be knocked off when docking or loading on the trailer.

However, the shoot-thru-hull installation does have its drawbacks. One, some loss of sensitivity does occur, even on the best hulls. This varies from hull to hull, even from different installations on the same hull. This is caused by differences in hull layup and construction. Two, the angle of the transducer cannot be adjusted for the best fish arches. This can be a problem on some hulls that sit with the bow high when at rest or at slow trolling speeds. Follow the procedure listed in the shoot-thru-hull installation section in this manual to determine if you can satisfactorily shoot through the hull.

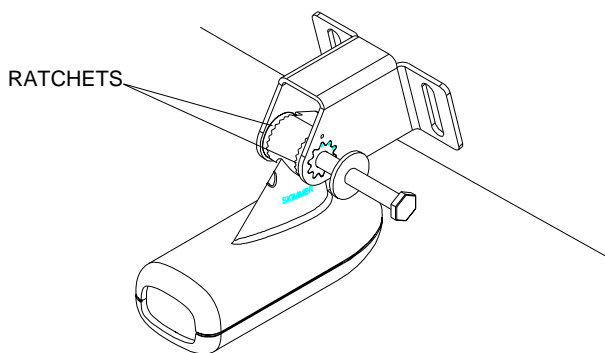
Transducer Assembly and Mounting

The best way to install this transducer is to loosely assemble all of the parts first, place the transducer's bracket against the transom and see if you can move the transducer so that it's parallel with the ground.

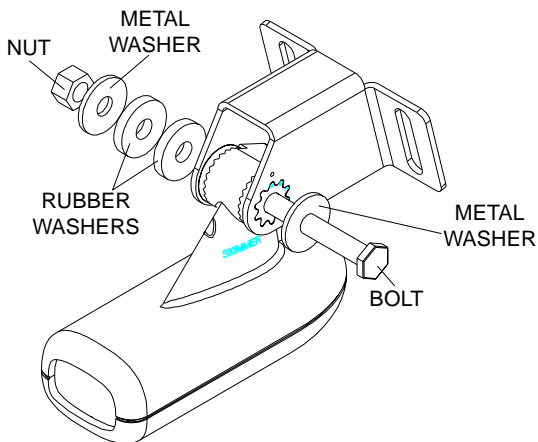
1. Press the two small plastic ratchets into the sides of the metal bracket as shown below. Notice there are letters molded into each ratchet. Place each ratchet into the bracket with the letter "A" aligned with the dot stamped into the metal bracket. This position sets the transducer's coarse angle adjustment for a fourteen (14) degree transom. Most outboard and stern-drive transoms have a fourteen degree angle.



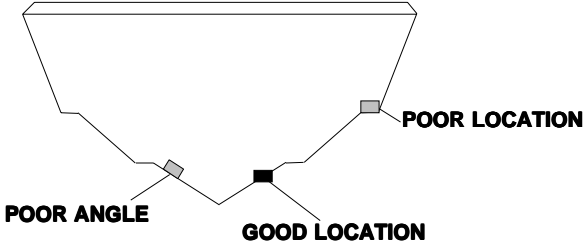
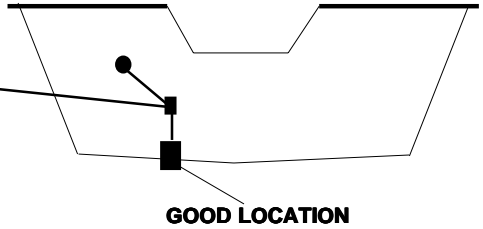
- Slide the transducer between the two ratchets. Temporarily slide the bolt through the transducer assembly and hold it against the transom. Looking at the transducer from the side, check to see if it will adjust so that its face is parallel to the ground. If it does, then the "A" position is correct for your hull. If the transducer's face isn't parallel with the ground, remove the transducer and ratchets from the bracket. Place the ratchets into the holes in the bracket with the letter "B" aligned with the dot stamped in the bracket. Reassemble the transducer and bracket and place them against the transom. Again, check to see if you can move the transducer so it's parallel with the ground. If it does, then go to step 3. If it doesn't, repeat step 2, but use a different letter until you can place the transducer on the transom correctly.



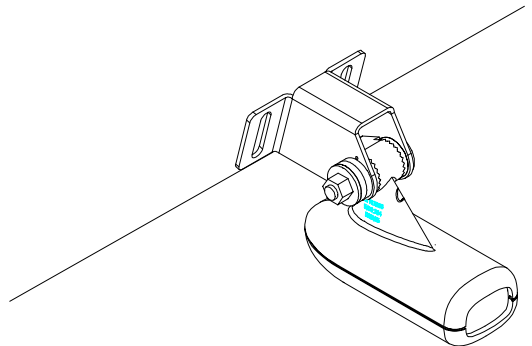
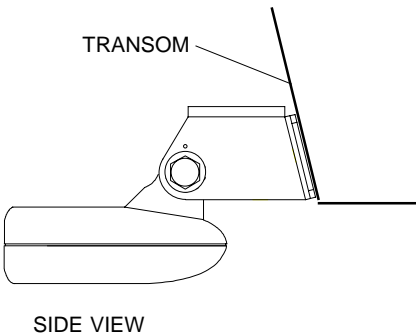
- Once you determine the correct position for the ratchets, assemble the transducer as shown at left. Don't tighten the lock nut at this time.

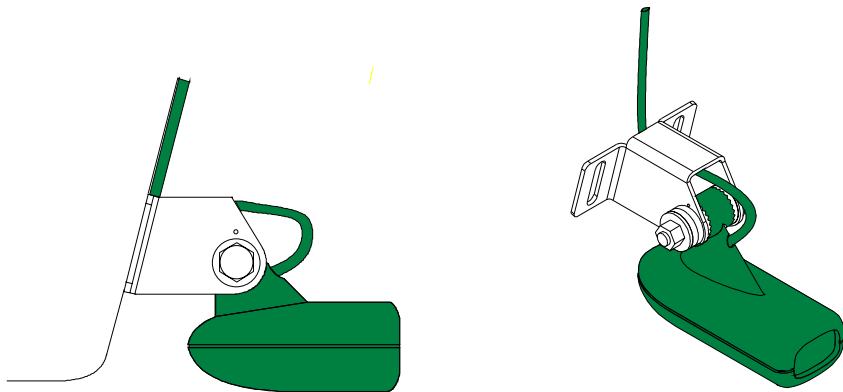


CAUTION!
CLAMP THE TRANSDUCER CABLE TO
TRANSOM NEAR THE TRANSDUCER. THIS
WILL HELP PREVENT THE TRANSDUCER
FROM ENTERING THE BOAT IF IT IS
KNOCKED OFF AT HIGH SPEED.



4. Hold the transducer and bracket assembly against the transom. The transducer should be roughly parallel to the ground. The bottom of the transducer bracket should be in line with the bottom of the hull. *Don't let the bracket extend below the hull!* Mark the center of the slots for the mounting holes. Drill two 5/32" holes in the marked locations for the #10 screws supplied with the transducer.





5. Remove the transducer from the bracket and re-assemble it with the cable passing through the bracket over the bolt as shown above. Attach the transducer to the transom. Slide the transducer up or down until it's aligned properly on the transom as shown above. Tighten the bracket's mounting screws. Adjust the transducer so that it's parallel to the ground and tighten the lock nut until it touches the flat washer, then add 1/4 turn. *Don't over tighten the lock nut!* If you do, the transducer won't "kick-up" if it strikes an object in the water.
6. Route the transducer cable to the sonar unit. Make certain to leave some slack in the cable at the transducer as shown above. If possible, route the transducer cable away from other wiring on the boat. Electrical noise from the engine's wiring, bilge pumps, VHF radio wires and cables, and aerators can be picked up by the sonar. Use caution when routing the transducer cable around these wires.

IMPORTANT!

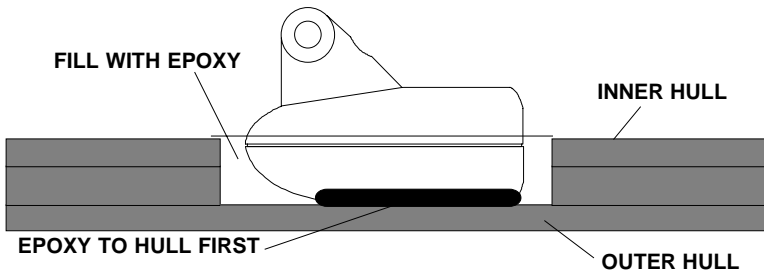
Clamp the transducer cable to the transom close to the transducer. This can prevent the transducer from entering the boat if it is knocked off at high speed.

7. Make a test run to determine the results. If the bottom is lost at high speed, or if noise appears on the display, try sliding the transducer bracket down. This puts the transducer deeper into the water, hopefully below the turbulence causing the noise. Don't allow the transducer bracket to go below the bottom of the hull!

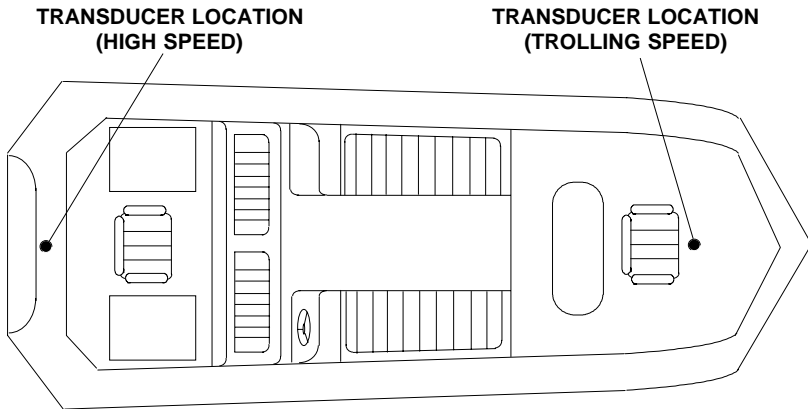
SHOOT-THRU-HULL

The transducer installation inside a fiberglass hull must be in an area that does not have air bubbles in the resin or separated fiberglass layers. The sonar signal must pass through solid fiberglass. A successful transducer installation can be made on hulls with flotation materials (such as plywood, balsa wood, or foam) between layers of fiberglass if the material is removed from the chosen area. For example, some manufacturers use a layer of fiberglass, then a core of balsa wood, finishing with an outer layer of fiberglass. Removing the inner layer of fiberglass and the balsa wood core exposes the outer layer of fiberglass. The transducer can then be epoxied directly to the outer layer of fiberglass. After the epoxy cures, the hull is watertight and structurally sound. Remember, the sonar signal must pass through solid fiberglass. Any air bubbles in the fiberglass or the epoxy will reduce or eliminate the sonar signals.

To choose the proper location for thru-hull mounting, anchor the boat in 60 feet of water. Add a little water to the sump of the boat. Plug the transducer into the sonar unit, turn it on, then hold the transducer over

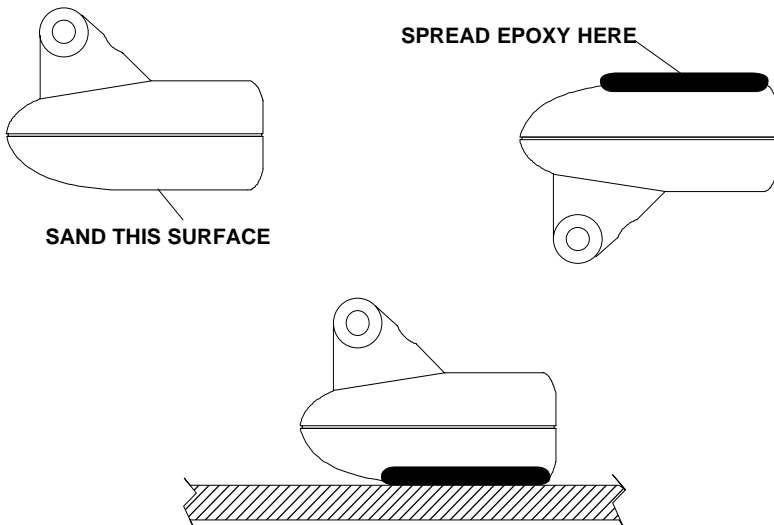


the side of the boat. Adjust the sensitivity and range controls until a second bottom echo is seen on the display. (you will need to turn the automatic function off on L.C.G. units.) Don't touch the controls once they've been set. Next, take the transducer out of the water and place it in the water in the sump of the boat. Observe the sonar signal to see if there is a noticeable decrease in sensitivity. The second bottom signal may disappear and the bottom signal may decrease in intensity. Move the transducer around to find the best location. If the sensitivity control has to be increased greatly to compensate, then the transducer should be mounted on the outside of the hull. If not, then mark the location that shot through the hull the best and follow the instructions on the next pages for a shoot-thru-hull mounting.



Shoot-thru-hull Installation

1. Make certain the area is clean, dry, and free of oil or grease, then sand both the inside surface of the hull and the face of the transducer with 100 grit sandpaper. The surface of the hull must be flat so the entire transducer face is in contact with the hull prior to bonding.

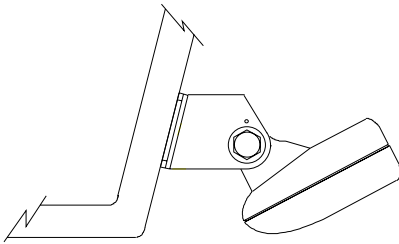


2. Follow the instructions on the epoxy package and mix it thoroughly. Do not mix it too fast, as it will cause bubbles to form in the epoxy. (NOTE! Use only the epoxies specified on the inside front cover of this manual! Failure to use one of these epoxies may result in poor sonar performance!) Apply a small amount on the face of the transducer as shown above, then spread a small amount onto the sanded area on the

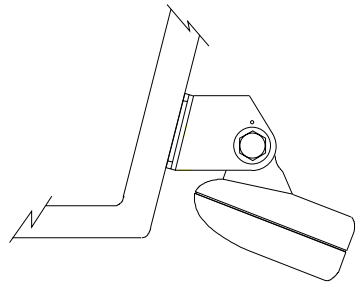
hull. Place the transducer into the epoxy, twisting and turning it to force any air bubbles out from under the transducer face. The face of the transducer should be parallel with the hull, with a minimum amount of epoxy between the hull and transducer. After the epoxy dries, route the cable to the sonar unit.

Fish Arches

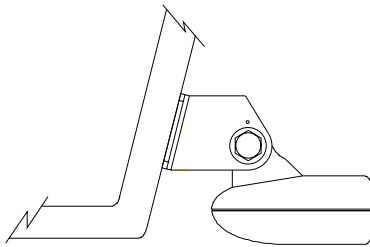
If you do not get good fish arches on your display, it could be the transducer is not parallel with the ground when the boat is at rest in the water, or at slow trolling speeds. If the arch slopes up, but not back down, then the front of the transducer is too high and needs to be lowered. If only the back half the the arch is printed, then the nose of the transducer is angled too far down and needs to be raised.



TRANSDUCER AIMED TOO FAR BACK



TRANSDUCER AIMED TOO FAR FORWARD



PROPER TRANSDUCER ANGLE

POWER CONNECTIONS - HS-WSPC ONLY

NOTE! INSTALL THE TRANSDUCER BEFORE MAKING THE POWER CONNECTIONS!

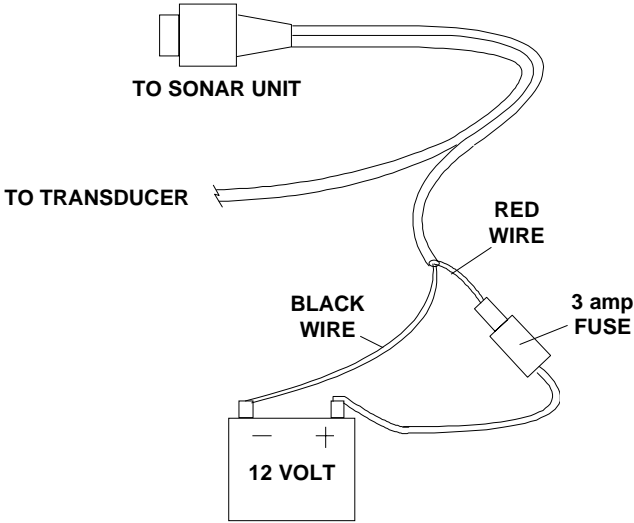
The sonar unit works from a 12 volt DC system only. For the best results, run the power cable directly to the boat's battery. Keep the power cable away from other boat wiring, especially the engine's wires. This will give the best isolation from electrical noise. If the supplied cable is not long enough to reach the battery, splice #18 gauge insulated wire to it. You can attach the power cable to an accessory or power buss, however, you may have problems with electrical interference. Make certain to attach the in-line fuse holder to the positive lead as close to the battery or terminal strip as possible. This will protect both the unit and the power cable in the event of a short.

WARNING!

Do not use this product without a 3-amp fuse wired into the power cable! Failure to use a 3-amp fuse will void your warranty!

This unit has reverse polarity protection. No damage will occur if the power wires are reversed. However, the unit will not work until the wires are attached correctly.

For more information, consult your sonar unit's owner's manual.



If you installed the transducer on the transom, periodically wash the transducer's face with soap and water to remove any oil film that may collect. Oil and dirt on the face will reduce the sensitivity or may even prevent operation.