ONWA®

# KTD-520

## INSTALLATION MANUAL

CE FC

# Thank You

Thank you for choosing ONWA KTD-520 dual frequency (50 & 200KHz) transom mount transducer for fishfinder. ONWA has built its reputation by designing and manufacturing high-quality, thoroughly reliable marine equipment. Genuine ONWA accessories offer the opportunity to upgrade and expand the capabilities of ONWA products.

***NOTE: Your transducer may not look exactly like the transducer shown in the illustrations, but it will mount in exactly the same way.***

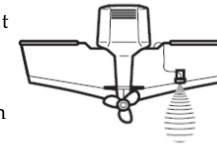
# Installation Overview

The Following are instructions for the installation of this accessory. Before you start the installation, we encourage you to read these instructions carefully in order to get the full benefit from your ONWA transducer.

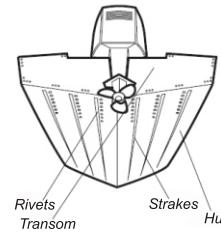
If you find that any items are missing from your installation kit, send an email to info@onwamarine.com or visit the ONWA website at www.onwamarine.com

In addition to the hardware supplied with your transducer, you will need the following: Powered hand drill with drill bits, ruler or straightedge, a level, a 12" plumb line (weighted string or monofilament line), marker or pencil, safety glasses, dust-mask, and marine-grade silicone sealant.

**Transom Mounted Transducer**



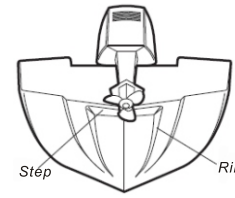
**Areas of Possible Turbulence**




## Installation

There are several ways to install a transducer on your boat. The transom mount installation provides the least loss of signal since the transducer is mounted outside the boat hull. This installation also allows adjustment of both running angle and depth after the transducer is mounted, which enables you to tune the installation for best results.

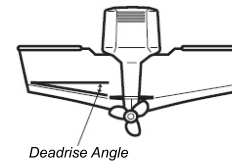
**Stepped Hull**




## 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:

**Deadrise**



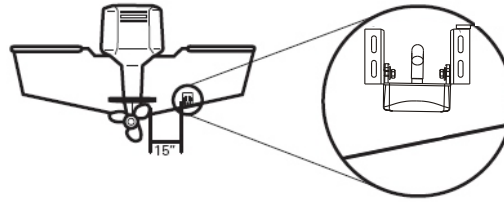

• As the boat moves through the water, turbulence is generated by the weight of the boat and the thrust of the propeller (s) - either clockwise or counter-clockwise. This turbulent water is normally confined to areas immediately aft of ribs, strakes or rows of rivets on the bottom of the boat, and in 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).

• 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.

• 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.

• 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.




**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 require a high-speed application (above 65 mph) and cannot find a transom mount location that will work for your boat hull, a different mounting technique or transducer type should be considered.***

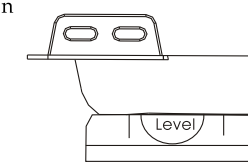
## 2. Preparing the Mounting Location

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 screw hole protrusion 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.

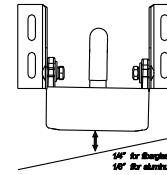
**Positioning the Mounting Bracket**




***NOTE: If you have a flat-bottomed aluminum boat, additional adjustments 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 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. 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.***

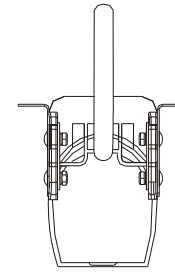
**Boat Hull Types Require Different Mounting Positions**



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, as shown in the illustration.

***NOTE: The third hole should not be drilled until the angle and height of the transducer is finalized. This will be done on a later procedure.***

**Use the Mounting Bracket to Mark the Initial Drill Holes**



*Mark Initial Drill Holes*

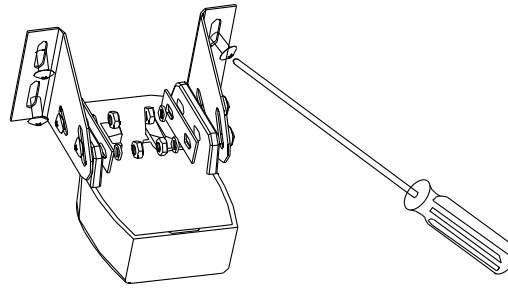
4. Make sure that the drill bit is perpendicular to the actual surface of the transom and NOT parallel to the ground before you drill. Using a 5/32″ bit, drill the two holes only to a depth of approximately 1″ .

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

1. Put the pivot bolt through the assembly to hold it in position and loosely install the nut, but do NOT tighten the nut yet.

***CAUTION! Do not use a high speed driver on this combination of fasteners. Hand tighten only.***

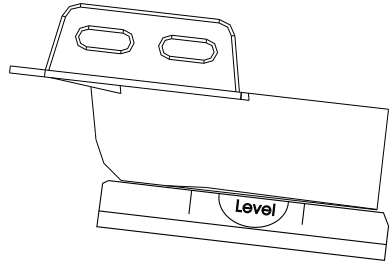
Inserting the Pivot Bolt



2. 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). Hand tighten only!

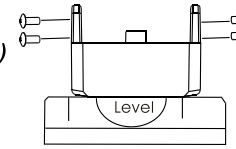
***NOTE: Make sure that the mounting screws are snug, but do not fully tighten the mounting screws at this time to allow the transducer assembly to slide for adjustment purposes.***

3. 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.



4. 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.

Mounting the Assembly to the Transom



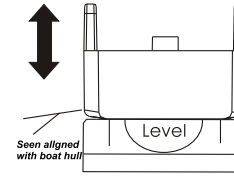

***NOTE: The transducer has a natural downward slant of 4-5 degrees from the leading edge (closest to the boat transom) to the trailing edge (farthest away from the boat). Looking at the back of the transducer, the seam should be slightly below the bottom of the hull.***

5. 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).

6. Mark the correct position on the transom by tracing the silhouette of the transducer mounting bracket with a pencil or marker.

7. Tighten the pivot bolt, using the pivot screw and nut to lock the assembly. Hand tighten only!

Adjusting the Transducer Mounting Position

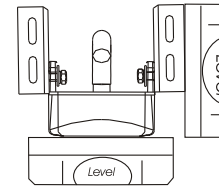



***CAUTION! Do not use a high speed driver on this combination of fasteners. Hand tighten only.***

8. Hand-tighten the two mounting screws.

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

Leveling the Mounting Assembly Horizontally



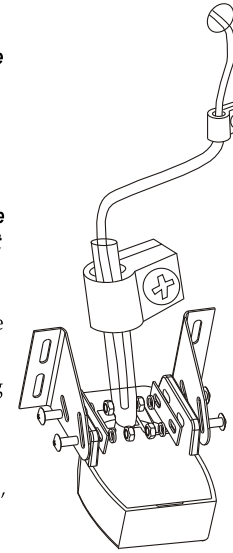

## 4.Routing the Cable

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 is to route the cable through the transom then 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.

Routing the cable



***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 a cable clamp to the transom, drilling 9/64" diameter holes for the #8 x 5/8" wood screws, then skip to procedure 5, Connecting the Cable.

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.

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 two #8 x 5/8" wood screws. Hand tighten only!

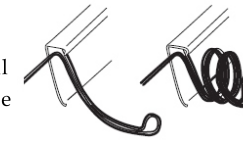
4. Route and secure the cable by attaching the cable clamp to the transom. Drill one 9/64" diameter x 5/8" deep hole, then fill hole with marine-grade silicone sealant, then attach the cable clamp using a #8 x 5/8" screw. Hand tighten only!

***NOTE: If there is an excess cable that needs to be gathered in 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.***

## 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.

Storing Excess Cable



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.

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 ONWA 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.***

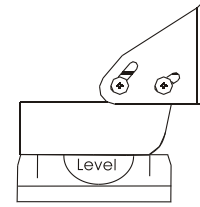
4. If the unit is working properly, gradually increase the boat speed to test high-speed performance. If the unit functions well at low speeds, but begins to skip or miss the bottom at higher speeds, the transducer requires adjustment.

5. 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 highspeeds, 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, using the illustrations showing the transducer knuckle positions in procedure 3, Assembling the Transducer and Initial Mounting. If you do change the transducer position, retrace the position of the mounting bracket before proceeding.

**Fully Tighten All Three Mounting Screws**




***NOTE: It is often necessary to make several incremental transducer adjustments befor optimum high speed performance is achieved. However, due to the wide variety of boat hulls, 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. Remove the transducer from the bracket (after noting where the ratchets are assembled), 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 bracket 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 bracket against the transom of the boat, then hand-install all three screws. Make sure that the transducer location has not changed, then fully tighten all three mounting screws. Hand tighten only! Re-install the transducer to the mounting bracket, and make sure to assemble the ratchets in the same location as they were before. (See illustrations showing the ratchet placement and adjusting the initial transducer angle). If you have performed the preceding procedures correctly, the transducer should be level and at the right height for optimal operation.