

Depth Finder Interference

Sonar Interference can be a result of a variety of issues and trouble-shooting the cause can be a time-consuming task. Minn Kota can assist by providing technical advice on trying to identify, reduce, or eliminate the source of interference. However, should a consumer enlist the help of a service technician during this process, any charges incurred are the sole responsibility of the consumer. (Possible exceptions include lower unit issues as shown below in **Step 4** or if the trolling motor is required to have a grounding wire installed within its warranty timeframe, for the original owner - as listed below in **Step 7C**.)

NOTE: for more information specific to Universal Sonar, Built-In MDI, or Built-in MSI – please see Built-In Sonar Repair Manual.

Here are a few steps to reduce or eliminate the interference problem:

If the motor interferes with the depth finder when both are being operated:

Step 1. Consumer should refer to the user's manual for the sonar display configuration options.

- A. Consumer should verify the sonar is running the most current software for their unit. (The sonar manufacturer website may have downloadable upgrades.)
- B. Many sonar displays have noise reduction options within their menus. (Humminbird has a "Noise Filter" under the Sonar tab menu.)
- C. Reduce gain of sonar display until an adequate display is visible.
- D. Humminbird has a power cable for their sonar units with a built-in ferrite choke. This comes standard on current Side-Imaging and Down-Imaging units. (p/n 490332-2)

Step 2. Check supply voltage and wiring:

- A. Determine if supply voltage for trolling motor and depth finder is provided by the same / common battery.
 - A-1. If yes, disconnect depth finder battery leads from the trolling motor battery and connect them to the engine cranking battery.
- B. If boat has a multi-channel on-board charger that is connected to both the crank battery and trolling motor battery(s), temporarily disconnect the on-board charger output leads to the crank battery and test for interference.
 - B-1. If the interference is reduced or eliminated use Choke Cable (p/n 490482-1) on charger output leads to the crank battery.
- C. Check the routing of the depth finder and trolling motor battery leads.
 - C-1. If they run parallel to each other for any length of distance, separate the leads as much as possible or run the leads to the trolling motor and depth finder on opposite sides of the boat.
 - C-2. Excess lengths of power or transducer cables should not be coiled!
- D. Verify the transducer shielding has not been damaged by inspecting the full length of the transducer cable for cuts, nicks, or sharp bends. A cable tie pulled tight enough to noticeably deform the transducer cable may have damaged the transducer's shielding.
 - D-1. Consider replacing the transducer with one that has additional shielding. For example, Humminbird's XTM (trolling motor specific) transducers have additional shielding as compared to the same models intended for the stern of the boat.
- E. **This step does not apply to US2 models!** Connect a light gauge wire (18 gauge is fine) from the negative post of the trolling motor battery to the negative post of the engine's cranking battery. We suggest installing a 1 or 2 amp inline fuse in this ground wire. (p/n 2880310 is a fused grounding wire that can be used in this step.)

Step 4. Check the lower unit:

- A. Inspect for water in the lower unit.
- B. The brush shunt wire may be inadvertently touching the inside of the motor case. This is more apt to happen on 4" & 4 ½" motor assemblies, after the lower unit has been opened for repairs.
- C. Check motor timing for potential excess brush arcing:

- C-1. On 4" and 4 ½" motor assemblies check to ensure the skeg on the rear endbell is in-line (parallel with) the composite shaft of the trolling motor. An offset skeg can cause additional brush arcing and interference.
- C-2. On smaller motors (skeg on front end bell), check to ensure the timing/witness mark on the magnet section is aligned with the skeg. An offset magnetic field can cause additional brush arcing and interference.

Step 5. On older PowerDrive and Terrova models thread Ferrite Bead (p/n 2887313) onto the motor leads as close as possible to the control board (inside the speed control cover). (All 2013 and later Terrova, PowerDrive, and Ulterra models will include a factory installed ferrite bead.)

- A. Disconnect the red and black (motor + and motor -) coil cord wires from the control board.
- B. Slide the ferrite bead over the red and black coil cord wires.
- C. Reconnect the red and black coil cord wires to their appropriate pins on the control board.

Step 6. If interference is still present then add Ferrite Ring (p/n 470085-1) to the transducer cable.

Step 7. This step does not apply to US2 models! If interference persists after completing the previous steps, proceed as follows:

- A. Check mounting location of the depth finder transducer. If the transducer is mounted externally on the trolling motor's lower unit, try temporarily moving it way from the lower unit while operating the motor and observing the depth finder display.
- B. If the interference is reduced or eliminated when the transducer is moved away from the motor's lower unit, the problem is due to the transducers proximity to the lower unit.
- C. To reduce / eliminate this type of RF interference, a ground/bonding wire can be connected to the trolling motor lower unit. This can be accomplished by means of either an external or internal connection. Grounding/bonding the motor case in this manner creates a "shield" between the motor brushes and the transducer, trapping / shunting the RFI to the ground.
 - C-1. *To ground/bond the motor case externally*, drill a small diameter hole (1/8"), in the motor skeg. Attach one end of the ground wire (18 gauge wire may be used for this purpose) at this point by using a self tapping stainless steel screw. (Another means to accomplish this is to bare a spot by scraping the paint away under the hose clamp that is used to hold the transducer to the motor case. Tin the end of your grounding/bonding wire and tighten it between the bare spot and the hose clamp to hold it in place.) Run the ground/bond wire up the motor shaft along with the transducer coax cable. Connect the other end of the ground/bond wire to the motor negative battery lead or post.
 - C-2. *To ground/bond the motor case internally* it will be necessary to disassemble, reseal, and reassemble the motor lower unit. (We recommend this be done only by a Minn Kota authorized repair center with Minn Kota p/n 2880310.) With the lower unit disassembled, connect one end of an 18-gauge wire to the motor brush plate mounting screw. Run the ground/bonding wire up the fiberglass motor shaft along with the red and black motor brush leads. Connect the other end of the ground/bonding wire to the motor negative battery lead or post. *(On Maxxum & Fortrex motors you can connect to the negative side of the directional indicator light. To determine which wire is the negative side: The indicator light is lit when power is applied to the lower unit. When the light is lit test for voltage across the light using a digital V.O.M. set to test voltage. When your meter is showing +12 volts, the wire where your negative V.O.M. probe is touching is the negative side. On PowerDrive motors this can go to the brown coil cord wire. On Terrova motors check for a brown ground/bonding wire coming from the coil cord in the control box. If present, connect the ground/bonding wire to this wire and connect the brown wire to the B- (battery negative) terminal on the main control board or the B- battery lead at the trolling motor plug or wire connector.)* Reassemble and reseal the motor lower unit.

By following these steps the problem of depth finder interference is usually resolved. Oftentimes, simply connecting the depth finder to a separate battery will address this issue. At other times, a separate battery and common negative ground is all that is required. For other installations, all of the steps outlined will be required. Keep in mind that the steps should be followed in the order they are written and that the final step should be attempted only after completing **Steps 1-6** and testing with the depth finder.