

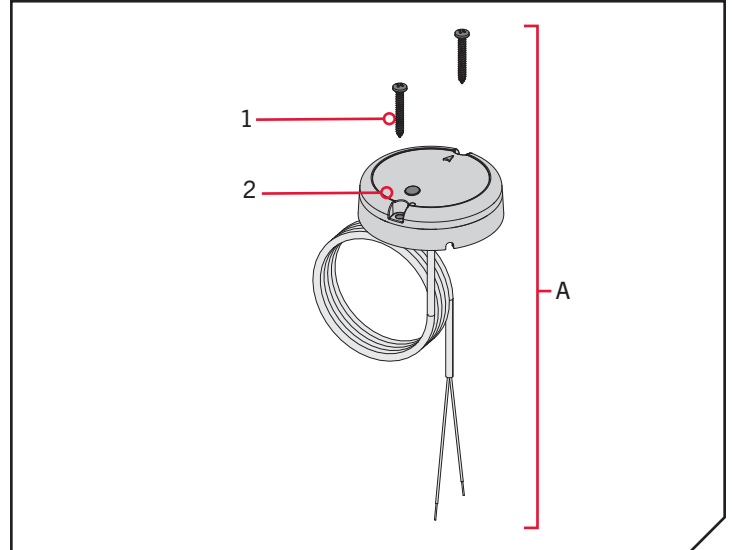
Compatible with all Bluetooth® enabled Minn Kota Advanced GPS Navigation systems.\*

Item / Assembly	Part #	Description	Qty.
A	2996400	HEADING SENSOR ASSEMBLY	1
1	2393400	SCREW-#8-18X1-1/2 PPH TY AB SS *STAINLESS STEEL*	2
2	*	HEADING SENSOR	1

\* This part is included in an assembly and cannot be ordered individually.

**NOTICE:** The Heading Sensor does not come standard with all models. It can be purchased as an accessory. To learn more about Minn Kota accessories, please visit [minnkota.johnsonoutdoors.com](http://minnkota.johnsonoutdoors.com).

\*Not applicable with QUEST™ series trolling motors which feature an internal heading sensor.



### THEORY OF OPERATION >

## > Heading Sensor Functions

The Minn Kota Heading Sensor provides boat heading information to Bluetooth compatible Minn Kota trolling motors with Advanced GPS Navigation. It contains a compass that senses the boat's heading. The boat heading is used by the system for navigation features such as Spot-Lock Jog. The Heading Sensor does not contain a GPS receiver and it does not change or control the orientation of the boat. The Minn Kota Heading Sensor can only communicate with other Bluetooth compatible Minn Kota products.

## ⚠ WARNING

The Heading Sensor should not be used as a navigational aid to prevent collision, grounding, boat damage, or personal injury. When the boat is moving, water depth may change too quickly to allow time for you to react. Always operate the boat at very slow speeds if you suspect shallow water or submerged objects.

Do not install the Heading Sensor near ferrous metals or near anything that may create a magnetic field or interference. The Heading Sensor must be installed at least 24" from magnetic or ferrous materials on the boat including the base of the motor. Installation near the motor lead wires must also be avoided due to magnetic fields being created during high current draw situations.

### MOUNTING CONSIDERATIONS >

Before mounting your Heading Sensor, give consideration to the following:

1. The Heading Sensor contains a compass that detects a magnetic field. Do not install the Heading Sensor near ferrous metals or wires that handle large currents, such as batteries or power cables.
2. Mount the Heading Sensor in an area that has a clear line of communication with the head of the motor that is installed with a Bluetooth compatible Minn Kota Advanced GPS Navigation for optimum performance.

## ⚠ CAUTION

The Heading Sensor can be adversely affected by magnets or large, ferrous metal objects. Do not install the Heading Sensor within 24" of these objects as they will cause interference.

3. Make sure the area under the mounting location is level and is clear to drill holes and installation hardware will not damage existing components below the mounting surface.
4. Test that the Power Cable that powers the Heading Sensor is long enough to reach the power source from the intended mounting location. If the cable does not reach the battery or intended power source, select a location closer to the source.
5. Mount the Heading Sensor horizontally. It should not be mounted upside down.

## TOOLS AND RESOURCES REQUIRED >

- Drill
- #2 Screwdriver
- Awl or similar marking tool
- 1/4" Drill Bit
- 9/64" Drill Bit
- Marine-grade Silicone

## INSTALLATION >

### MOUNTING OPTIONS

There are two options to install the Heading Sensor. Determine if the Power Cable for the Heading Sensor will pass below the mounting surface.

**1. Access under the Mounting Location** - When installing the Heading Sensor with this option, the Power Cables that come from the Heading Sensor will pass through the mounting surface. Only choose this option when the cables can be accessed after they are passed through the mounting surface. Follow the instructions in the Installation for Access Under the Mounting Location section of this instruction sheet.

**2. No Access under the Mounting Location** - The Power Cables for the Heading Sensor will be routed to the side because there is no room under the mounting location for the cables to pass, or the area below the mounting location is not accessible. Follow the instructions in the Installation for No Access Under the Mounting Location section of this instruction sheet.

It is important to review the mounting considerations and test run the Power Cable before installation.

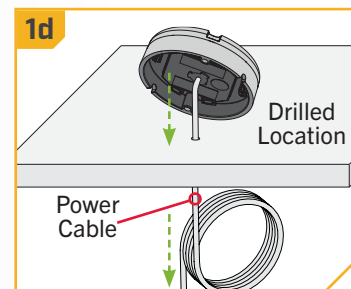
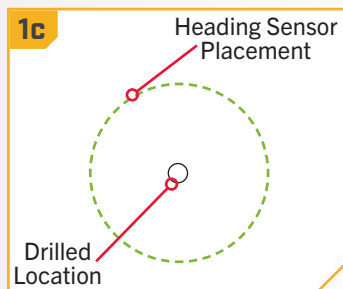
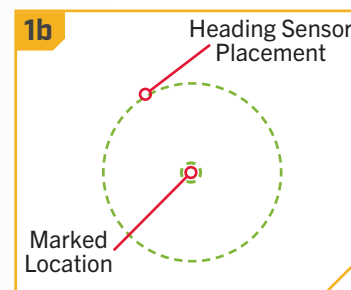
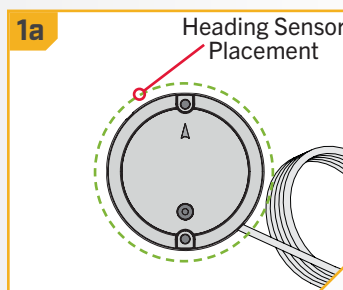
## > Installation for Access Under the Mounting Location

**1**

### ITEM(S) NEEDED



- a. Review the Mounting Considerations and then set the Heading Sensor (Item #2) flat on the selected mounting location and note the placement.
- b. Lift the Heading Sensor away and mark a point with an awl or similar marking tool beneath the mounting location for the power cable to pass through the surface.
- c. Using a drill with a 1/4" bit, drill a hole through the mounting location.
- d. Route the power cable through the drilled hole and feed the cable all the way through until the Heading Sensor sits flat on the mounting location and the cable is completely threaded through the drill hole.



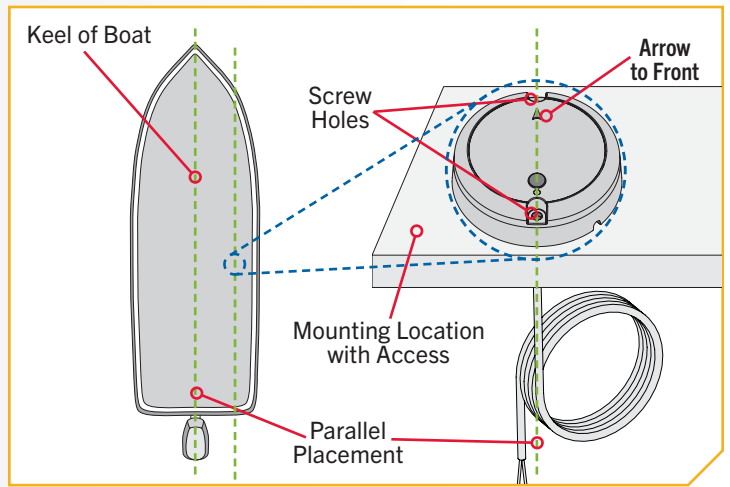
2

- e. Position the sensor so that the arrow on the cover is pointed toward the front of the boat in the direction of travel. **The arrow needs to be parallel with the keel of the boat.**

**CAUTION**

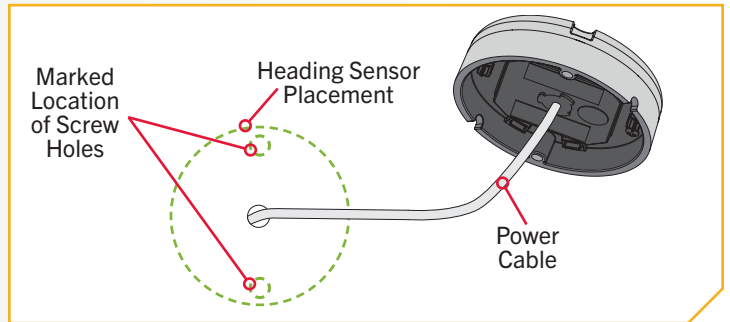
Failure to align the Heading Sensor correctly will result in incorrect compass readings.

- f. Mark the location of the two screw holes with an awl or similar marking tool.



3

- g. Move the Heading Sensor to the side and drill two holes using a 9/64" drill bit on the marked locations.

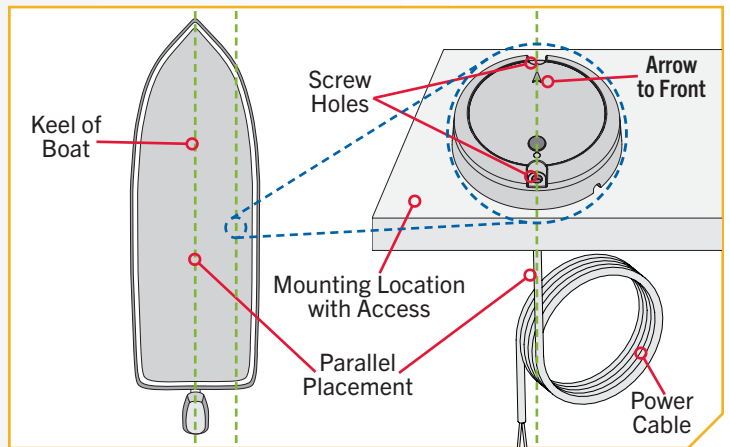


4

- h. Position the Heading Sensor back in place so that the holes drilled in the mounting location line up with the holes in the Heading Sensor and the Power Cable is completely threaded. **Be sure to mount the arrow towards the front of the boat and make the alignment parallel with the keel of the boat.**

**CAUTION**

Failure to align the Heading Sensor correctly will result in incorrect compass readings.



**CAUTION**

If the mounting surface is thin or made of a lightweight material, the mounting surface may need to be reinforced in order to support the Heading Sensor. Hand tighten the mounting screw to avoid over tightening and to prevent damage to the mounting location and Heading Sensor.

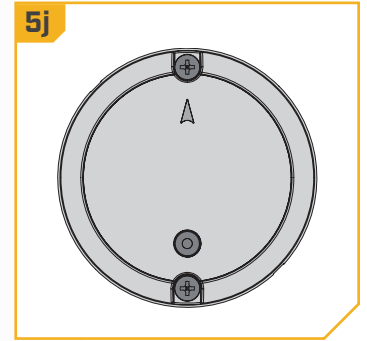
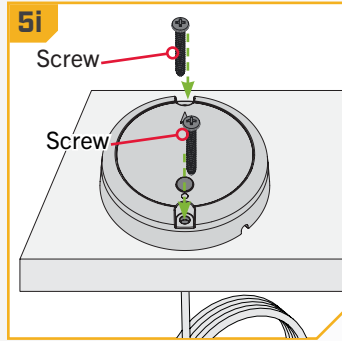
# 5

## ITEM(S) NEEDED



- i. Apply a marine-grade silicone caulk or sealant to both #8 - 18x1-1/2 screws (Item #1) as needed to protect your boat from water damage.
- j. Using a #2 Screwdriver, mount the Heading Sensor to the mounting location using the two screws. Hand tighten only.

**NOTICE:** If replacement screws must be used, ensure that they are high grade non-magnetic stainless steel.



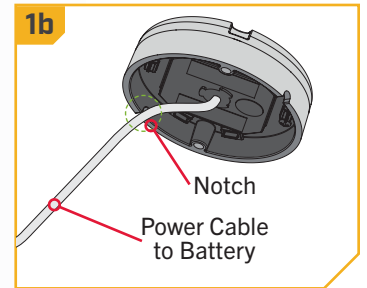
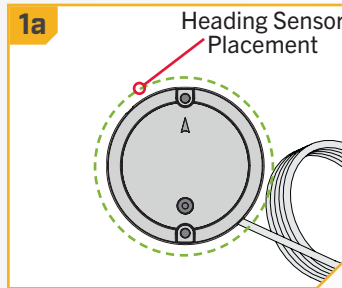
## Installation for No Access Under the Mounting Location

# 1

## ITEM(S) NEEDED



- a. Review the Mounting Considerations and then set the Heading Sensor (Item #2) flat on the mounting location and note its placement.
- b. Route the power cable through one of the two notches in the base of the Heading Sensor. When the arrow on the Heading Sensor is pointing towards the front of the boat, the cable should exit the Heading Sensor in the direction that is closest to its intended power source.

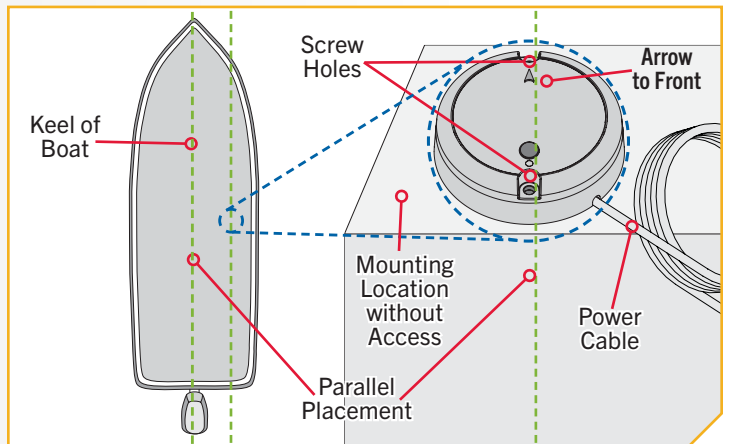


# 2

- c. Double check the position of the Heading Sensor so that the arrow on the cover is pointed toward the front of the boat in the direction of travel. **The arrow needs to be parallel with the keel of the boat.**

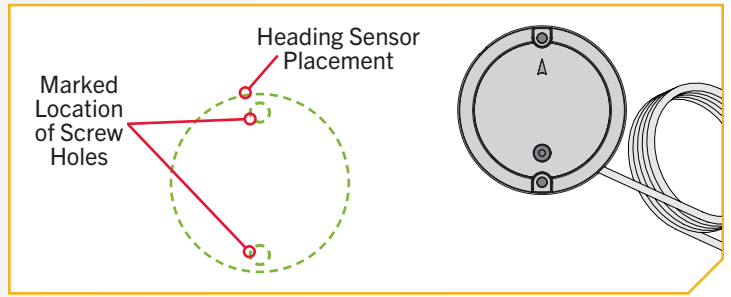
## CAUTION

Failure to align the Heading Sensor correctly will result in incorrect compass readings.



3

- d. Mark the location of the two screw holes with an awl or similar marking tool.
- e. Move the Heading Sensor to the side and drill two holes using a 9/64" drill bit on the marked locations.

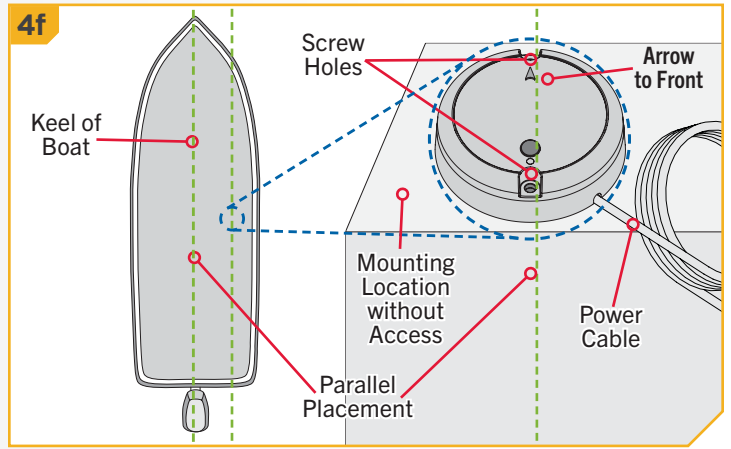


4

**ITEM(S) NEEDED**

**#1 x 2**

- f. Position the Heading Sensor back in place so that the holes drilled in the mounting location line up with the holes in the Heading Sensor. **Be sure to mount the arrow towards the front of the boat and make the alignment parallel with the keel of the boat.**
- g. Apply a marine-grade silicone caulk or sealant to both #8 - 18x1-1/2 screws (Item #1) as needed to protect your boat from water damage.



**CAUTION**

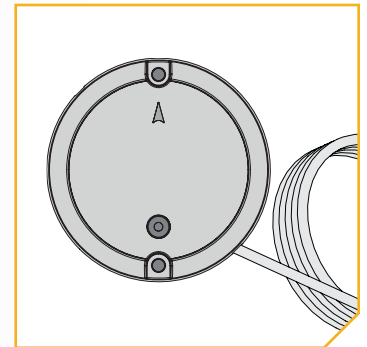
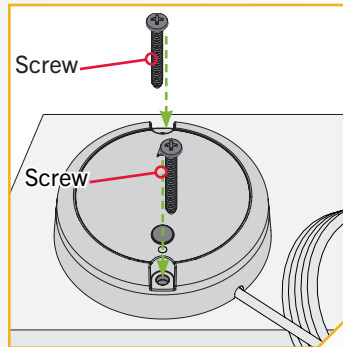
Failure to align the Heading Sensor correctly will result in incorrect compass readings.

5

- h. Using a #2 Screwdriver, mount the Heading Sensor to the mounting location using the two screws. Hand tighten only.

**CAUTION**

If the mounting surface is thin or made of a lightweight material, the mounting surface may need to be reinforced in order to support the Heading Sensor. Hand tighten the mounting screw to avoid over tightening and to prevent damage to the mounting location and Heading Sensor.

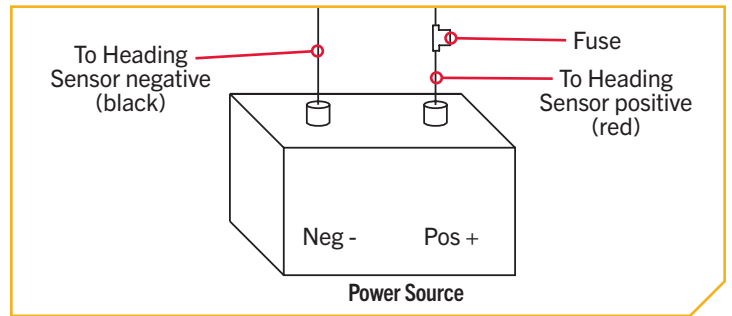


**NOTICE:** If replacement screws must be used, ensure that they are high grade, non-magnetic stainless steel.

## › Connecting the Heading Sensor to a Power Source

The Heading Sensor is powered by a 12-volt power source. The Heading Sensor must be set up with a one amp fuse, either in-line, or connected to a fuse panel. To connect the Heading Sensor, please follow the directions below.

1. Connect positive (+) red lead to positive (+) power source terminal.
2. Connect negative (–) black lead to negative (–) power source terminal.



## WARNING

Never connect the (+) and the (-) terminals of the same battery together. Take care that no metal object can fall onto the battery and short the terminals. This would immediately lead to a short and extreme fire danger.

## HEADING SENSOR COMMUNICATION ›

### LIGHT PATTERNS

The Heading Sensor displays modes of operation with an LED located on the Pair Button. There are three distinct patterns that the LED will display to communicate different modes of operation. Become familiar with the modes of operation to be sure that the Heading Sensor is powered up and communicating with the Minn Kota Advanced GPS Navigation system.

The three LED patterns displayed by the Heading Sensor are:

1. Power On - When the Heading Sensor is first connected to a power source, the LED will turn on for three seconds and then turn off.
2. Pairing - The Heading Sensor can be paired to any Bluetooth enabled Advanced GPS Navigation system. While the Heading Sensor is attempting to pair, the LED will flash on and off twice per second for up to 20 seconds. If the Heading Sensor is successfully paired, normal operation will begin. If the Heading Sensor is not paired, the LED will turn off.
3. Normal Operation - During normal operation when the Heading Sensor is connected to a power source and paired to and actively communicating an Advanced GPS Navigation, the LED on the Heading Sensor will flash on and off once every three seconds.

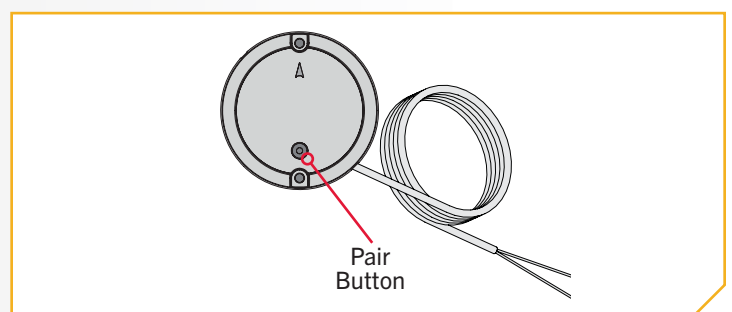
## HEADING SENSOR SET-UP ›

### PAIRING THE HEADING SENSOR

Before the Heading Sensor can be paired, make sure that it has been properly installed and connected to a power source. Review the LED patterns that the Heading Sensor communicates in order to understand what mode it is in and to be able to recognize that is has successfully paired once the process is complete. Be sure that the Heading Sensor is being paired to a Minn Kota trolling motor that is equipped with a Bluetooth compatible Advanced GPS Navigation system. To pair the Heading Sensor:

1

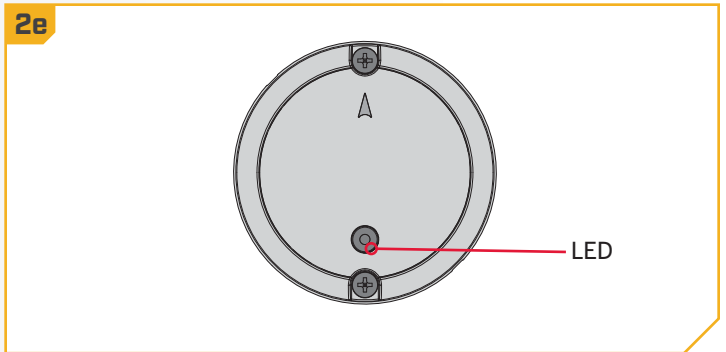
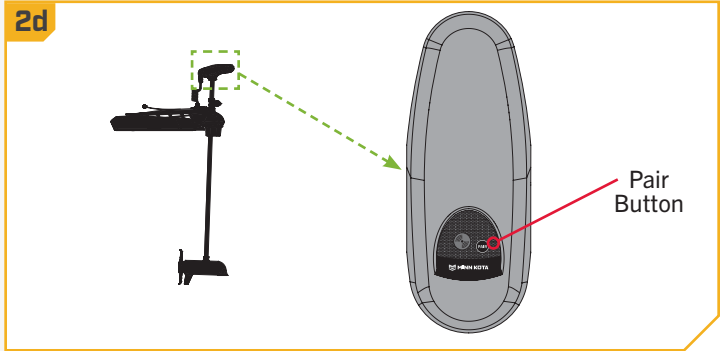
- a. Connect the Heading Sensor to a power source. Verify that the LED on the Heading Sensor turns on for 3 seconds and then turns off.
- b. Power on the trolling motor. Please see the trolling motor Owner's Manual for instructions on how to power up the trolling motor.
- c. Press the Pair button on the Heading Sensor. Verify that the LED indicates it is attempting to pair.



## 2

- d. As quickly as possible, begin to hold the Pair button on the trolling motor Control Head.
- e. The trolling motor Control Head will emit a beep pattern when the Heading Sensor is successfully paired. Release the Pair button on the Control Head. Watch the Heading Sensor to be sure that once it successfully pairs that it starts emitting the LED pattern for normal operation.
- f. After the Heading Sensor is paired with the trolling motor, proceed to Sensor Calibration and Sensor Offset.

**NOTICE:** If battery power is lost, the Heading Sensor will not lose its Pairing to the Advanced GPS Navigation System when it is powered down.



## HEADING SENSOR CALIBRATION

The Heading Sensor calibration is initiated using either the Advanced GPS Navigation full featured wireless remote or the One-Boat Network® app. Refer to the Owner's Manual for your motor if you are unsure of the remote that comes with your motor. The process of calibrating the Heading Sensor must occur while your boat is on the water. Heading Sensor Calibration should always be performed after the trolling motor and Heading Sensor have been mounted, but before the Heading Sensor Offset is performed. The Heading Sensor must be connected to power and paired with the Control Head of the trolling motor before beginning this process. The calibration process requires the boat to be driven in two complete circles, so plan accordingly when preparing for this process. To complete this process, read all safety warnings and follow the procedure below.

### **WARNING**

You are responsible for the safe and prudent operation of your vessel. We have designed your Minn Kota product to be an accurate and reliable tool that will enhance boat operation and improve your ability to catch fish. This product does not relieve you from the responsibility for safe operation of your boat. You must avoid hazards to navigation and always maintain a permanent watch so you can respond to situations as they develop. You must always be prepared to regain manual control of your boat. Learn to operate your Minn Kota product in an area free from hazards and obstacles.

### **WARNING**

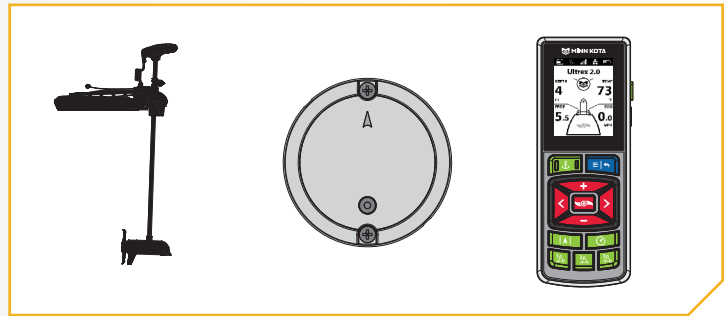
Take care that neither you nor other persons approach the turning propeller too closely, neither with body parts nor with objects. The motor is powerful and may endanger or injure you or others. While the motor is running watch out for persons swimming and for floating objects. Persons whose ability to run the motor or whose reactions are impaired by alcohol, drugs, medication, or other substances are not permitted to use this motor.













# Heading Sensor Calibration for Advanced GPS Navigation with the Wireless Remote

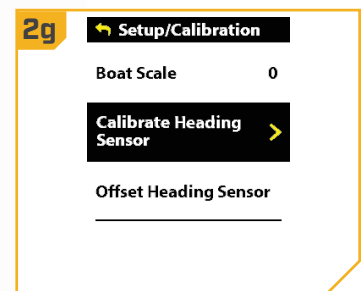
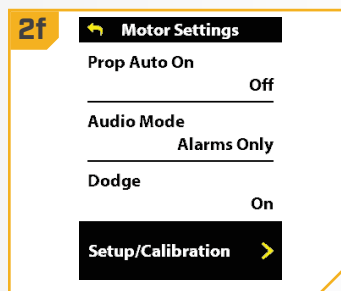
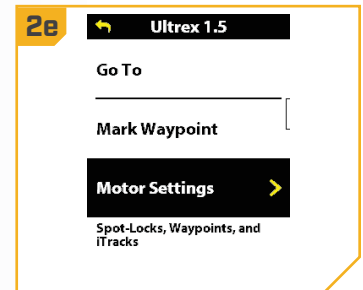
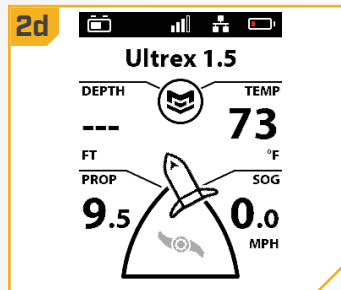
1

- Review all safety warnings. Navigate your boat to an area on the water free from obstructions.
- Power up the trolling motor according to the instructions provided in the Owner's Manual. Make sure the Heading Sensor is powered up and paired with the trolling motor.
- Turn on the wireless remote for your Advanced GPS Navigation system. Make sure the wireless remote is paired to the trolling motor.





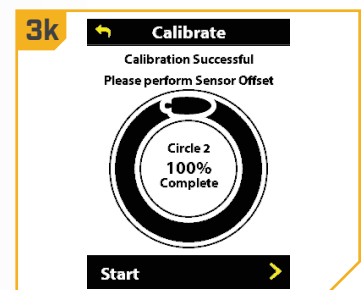
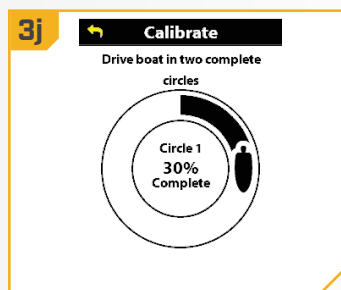
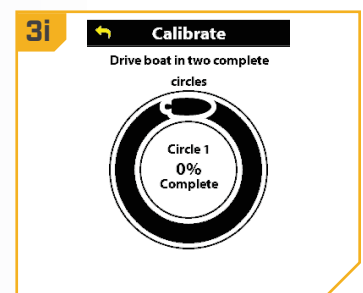
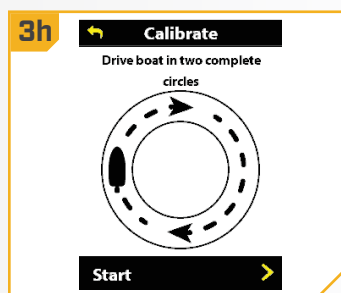
2

- On the wireless remote, press the Menu  button.
- Use the Speed Down  or Speed Up  button to find the Motor Settings menu. Use the Steer Right  button to select Motor Settings.
- In the Motor Settings menu, use the Speed Down  or Speed Up  button to find Setup/Calibration. Use the Steer Right  button to select Setup/Calibration.
- In the Setup/Calibration menu, use the Speed Down  or Speed Up  button to find Calibrate Heading Sensor. Use the Steer Right  button to select Calibrate Heading Sensor.



3

- Review all safety warnings. Follow the prompts on the wireless remote. Use the Steer Right  button to select Start and begin the process.
- Drive the boat in two complete circles. The center of the Dashboard contains a counter that displays the progress.
- The progress of the boat around the circular path will display as a percentage completed for each circle while the boat navigates.
- Once the two circles are complete, the Dashboard will briefly read "Calibration Successful. Please perform Sensor Offset."
- The Dashboard will then bring up Sensor Offset. Please perform Sensor Offset. Select Start to complete Sensor Offset, or press and hold the Menu  button to close and return to the home screen.

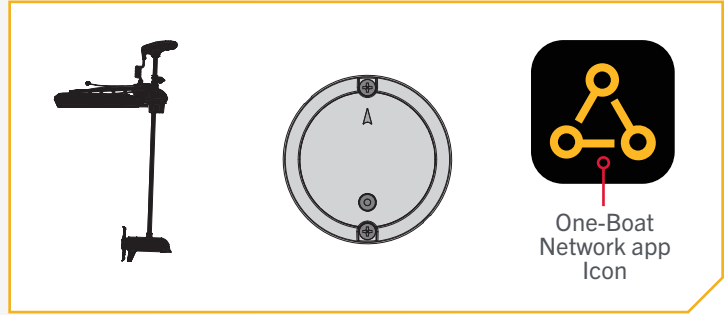




# ▶ Heading Sensor Calibration for Advanced GPS Navigation with the One-Boat Network App

1

- Review all safety warnings. Navigate your boat to an area on the water free from obstructions.
- Power up the trolling motor according to the instructions provided in the Owner's Manual. Make sure the Heading Sensor is powered up and paired with the trolling motor.
- Open the One-Boat Network (OBN) app on the mobile device. Make sure the mobile device is paired with the trolling motor.

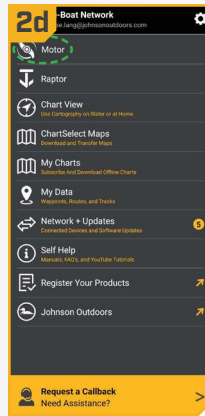


2

- From the OBN home screen, tap the Motor menu. The Motor menu opens the Motor app home screen.
- Before the Motor app home screen will open, tap Agree on the on-screen prompt.

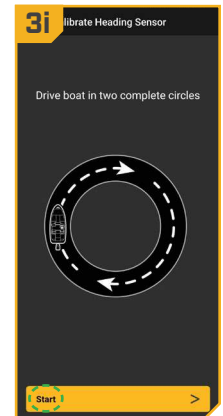
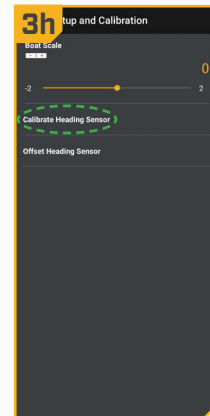
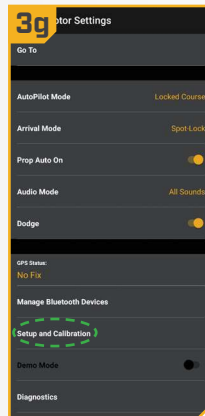
**NOTICE:** The on-screen prompt will only display once each time the app launches. If the prompt has displayed, the Motor app home screen appears.

- On the Motor app home screen, locate the Motor Settings button in the top-right corner and tap it.



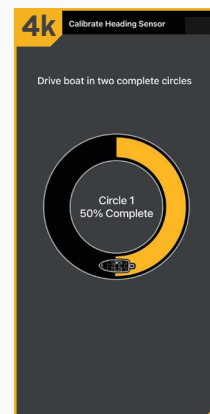
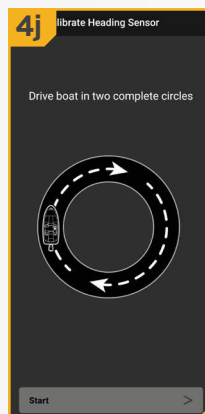
3

- In the Motor Settings menu, find and tap Setup and Calibration.
- In Setup and Calibration, find and tap Calibrate Heading Sensor.
- Review all safety warnings. Follow the prompts in the One-Boat Network app. Tap Start to begin the process.



4











- Drive the boat in two complete circles. The center of the app screen contains a counter that shows the progress.
- The progress of the boat around the circular path will show as a percentage completed for each circle while the boat navigates.
- Once the two circles are complete, the app screen will read "Calibration Successful. Please perform Sensor Offset."
- Please perform Heading Sensor Offset. Tap Start Sensor Offset to begin or tap to close the Sensor Calibration and return to the home screen.

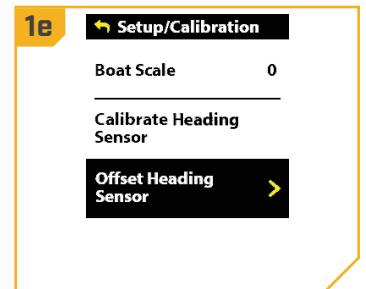
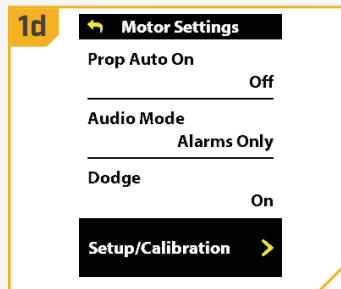
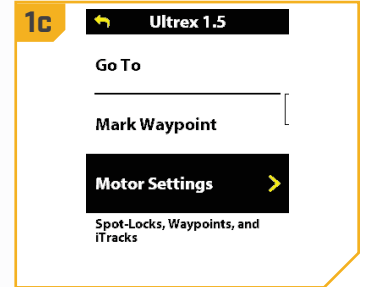
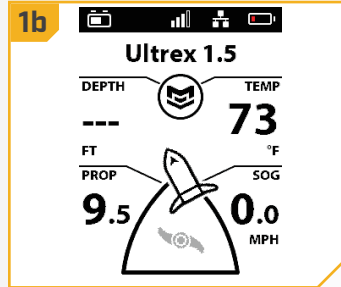









# HEADING OFFSET

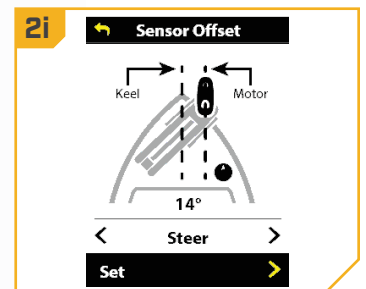
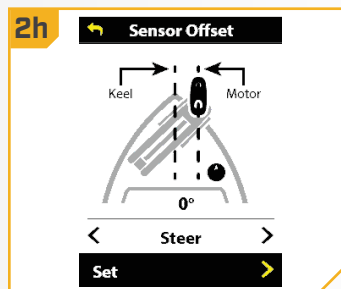
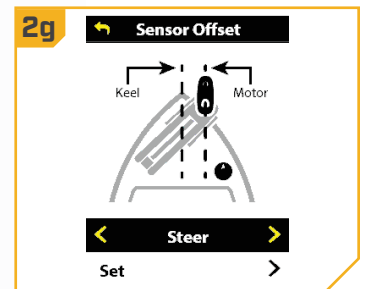
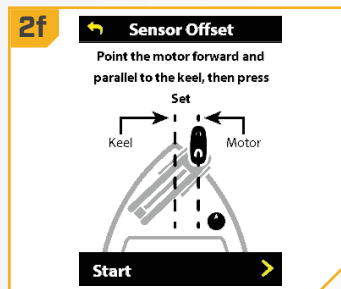
With the Heading Sensor calibrated, set the Heading Offset. Heading Offset is the difference between the angle of the Keel of the boat and the angle at which the Heading Sensor is mounted to the deck of the boat. During installation, the Heading Sensor was installed to be as parallel to the Keel of the boat as possible. If the boat and Heading Sensor are perfectly parallel and pointing in exactly the same direction, the Offset will be a perfect 0° degrees. Knowing that installations are never perfect, the Heading Offset can be set on the Advanced GPS Navigation or the One-Boat Network® app to compensate for the difference between the two.

## Heading Offset for Advanced GPS Navigation with the Wireless Remote

- 1
  - a. Turn on the wireless remote for your Advanced GPS Navigation system. Make sure the wireless remote is paired to the trolling motor.
  - b. On the wireless remote, press the Menu  button.
  - c. Use the Speed Down  or Speed Up  button to find the Motor Settings menu. Use the Steer Right  button to select Motor Settings.
  - d. In the Motor Settings menu, use the Speed Down  or Speed Up  button to find Setup/Calibration. Use the Steer Right  button to select Setup/Calibration.
  - e. In the Setup/Calibration menu, use the Speed Down  or Speed Up  button to find Offset Heading Sensor. Use the Steer Right  button to select Offset Heading Sensor.



- 2
  - f. Review all safety warnings. Follow the prompts on the wireless remote. Use the Steer Right  button to select Start and begin the process.
  - g. Use the Steer Right  or Steer Left  button to point the motor forward and parallel to the keel.
  - h. When satisfied with the placement of the trolling motor, use the Speed Down  or Speed Up  button to scroll to Set. Use the Steer Right  button to select Set. The degree of Sensor Offset is displayed at the bottom of the Dashboard.
  - i. Press and hold the Menu  button to close out Sensor Offset and return to the home screen.

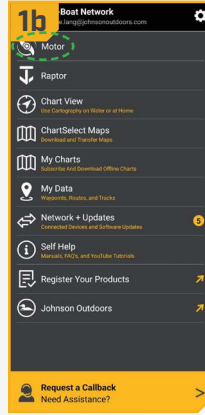


# Heading Offset for Advanced GPS Navigation with the One-Boat Network App

1

- Open the One-Boat Network (OBN) app on the mobile device. Make sure the mobile device is paired with the trolling motor.
- From the OBN home screen, tap the Motor menu. The Motor menu opens the Motor app home screen.
- Before the Motor app home screen will open, tap Agree on the on-screen prompt.

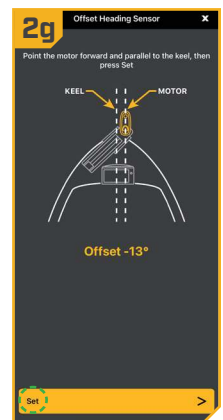
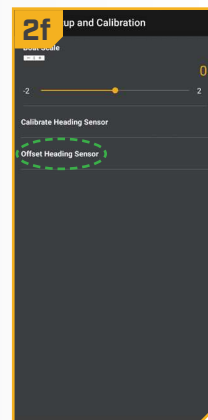
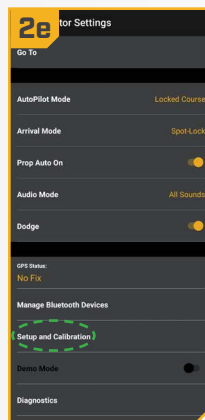
**NOTICE:** The on-screen prompt will only display once each time the app is launched. If the prompt has displayed, the Motor app home screen appears.



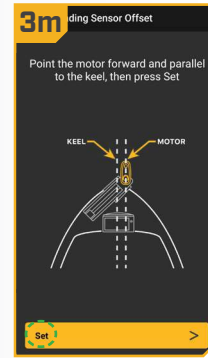
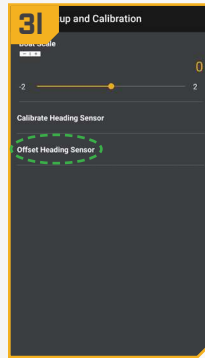
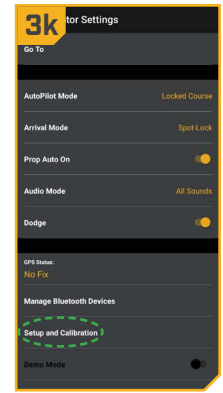
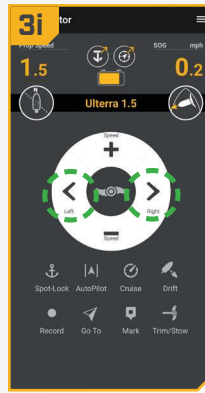
- On the Motor app home screen, locate the Motor Setting button in the upper right-hand corner and tap it.

2

- In the Motor Settings menu, find and tap Setup and Calibration.
- In Setup and Calibration, find and tap Offset Heading Sensor.
- Review all safety warnings. Follow the prompts in the One-Boat Network app. If the placement of the trolling motor is pointing forward and parallel to the keel, tap Set. The degree of Heading Sensor Offset shows at the bottom of the app Display.



- h. If the trolling motor needs to be adjusted, locate the Return button on the top-left corner of the app screen. Tap the Return button three times until the Motor app home screen displays.
- i. Use the Steer Right > and Steer Left < buttons to point the motor forward and parallel to the keel.
- j. When satisfied with the placement of the trolling motor, locate the Motor Setting button in the top-right corner and tap it.
- k. In the Motor Settings menu, find and tap Setup and Calibration.
- l. In Setup and Calibration, find and tap Offset Heading Sensor. If the placement of the trolling motor is pointing forward and parallel to the keel, tap Set.
- m. The degree of Heading Sensor Offset shows at the bottom of the app Display. Tap Return to close the Heading Sensor Offset and return to the home screen.



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