

Installation, Compensation and Maintenance Instructions for
RITCHIE® Compasses
Made In U.S.A



All Magnetic Compasses are vulnerable to magnetic interference, which will produce errors, called deviation. It is the Owner/Operator and/or Helmsman's responsibility to make sure the compass is properly installed and compensated. Compensation is the act of correcting for deviation. Magnets (speakers, microphones etc.), ferrous metals (steel, iron, etc.) and current carrying devices are common causes of deviation. It is important to understand that magnetic compasses point toward Magnetic North. There is a difference between Magnetic North and True North, and that difference is called variation. Variation differs depending on your geographical location and can be determined by referring to a local chart.

Please read the Instructions completely before beginning installation.

Installation Requirements

Visibility Guidelines: The compass should be close enough to the helmsman and positioned below the helmsman's line of sight so it is easily read during normal operation. Direct Read Dial or CombiDamp Dial models will allow the compass to be mounted higher, near or at eye level.

Surface Alignment Guidelines: Serious errors can develop and performance degraded when alignment guidelines are not met!

Deck, Surface, and Flush mount models: You will need a flat and level surface (when the boat is on a level keel). Many boats have a curved or slanted mounting surface and if this is the case, a fairing block must be used to bring the compass to a level position.

Bulkhead & Dash Mount models: If you are mounting to a bulkhead that is not perpendicular (90° angle) to the centerline of the boat and/or not vertical (90° angle) to the waterline of the boat (when the boat is on a level keel), a fairing block must be used to make the compass so.

Note: Some models are designed for slanted mounting surfaces (off vertical). Please reference your Mounting Template for specifics.

Bracket Mount models: If you are mounting to a bulkhead that is not perpendicular (90° angle) to the centerline of the boat or a horizontal surface that is not level "side to side" a fairing block must be used to make the compass so. Note: Bracket Mount models can be leveled "front to back" within the bracket.

Pedestal Mount models: The mounting surface is usually pre-determined by the pedestal manufacturer. Various adapters and mounting hardware may be required. Please contact your pedestal manufacturer for details.

Deviation Guidelines: Select a location that has no more than 15 degrees deviation on any of the four cardinal points (N S E and W) (see below, "Location Testing Guidelines"). Most compasses have a built-in compensation system that will correct for fixed deviation up to 15 degrees

It is important to realize that proper compensation is not possible when a compass is subjected to a magnetic field that is variable. Some shipboard devices can cause varying magnetic fields. Devices such as windshield wipers, high current carrying wire and even some steering wheels must be considered when selecting a location for your compass.

Location Testing Guidelines: Use your compass to test a location. Most models have two brass rods near the bottom of the compass which rotate 360 degrees; the slotted ends may be all that is visible.

These compensation rods are used to correct your compass for deviation. When testing a location, you do not want pre-set corrections in your compass, so neutralize the comp-rods by setting the slotted ends in a horizontal position.

Begin your test by holding the compass away from any possible interference and observing the compass reading. Then move the compass into position carefully, keeping it pointed in the same direction. If the compass reading is different without a change in direction you are observing deviation. You need to find a location that has less than 15 degrees of deviation on the 4 cardinal points if you intend to adjust your compass using the compensator rods.

After finding a location you should test for intermittent changes in the magnetic field. With the compass mounted temporarily in its intended position try moving the steering wheel, throttle controls or anything else that might cause deviation. It is also advised to turn electrical devices off and on. **Please be advised that a changing magnetic field can not be corrected with compensation and you will need to find another location for your compass.**

Important notes about Installation

- Great care must be taken to mount the compass so that there is no “A-alignment error”. “A-alignment error” is a constant error on all headings caused by the compass not being pointed in the same direction as the boat. One recommendation is to temporarily mount the compass using one fastener so if an alignment error is detected it is easily corrected. Masking tape can be used as a reference or to keep the compass steady during installation. The remaining fasteners can be installed when you are satisfied with the alignment.
- If your compass came with mounting screws and they do not meet your needs **SELECT MOUNTING HARDWARE THAT IS NON-MAGNETIC**. Most quality stainless steel and solid brass fasteners can be used. If you are unsure test them with a magnet.
- It is important that you use the mounting gasket included with each Flush and Bulkhead model. We do NOT recommend the use of bedding compound since some brands contain chemicals that could damage the compass.
- Most models have built-in lights which will require routing the wire or wires to your power source.

Night Light Wiring

- Most models are supplied with a 12-volt night lighting system. To connect lights to a 24 or 32-volt system, external dropping resistors are available.
- Some models are available with 24 volt lighting eliminating the need for an external dropping resistor.
- Lights should be wired to an appropriately fused circuit in the electrical system (i.e. running light circuit), allot 1 amp for the compass.
- Some models have two lights; connect both of them to the same circuit.

For Models with:

- **Black Zip-cord:** Wire the black wire with the white stripe to positive and the all black wire to ground.
- **Gray Zip-cord:** Wire the copper colored strands to positive and the silver colored strands to ground.
- **Jacketed wire:** Wire the red wire to positive and the black wire to ground.

Maintenance

- Ritchie compasses require very little care. To remove salt spray deposits or dirt, rinse the entire compass with clean, fresh water and wipe carefully with a damp cloth. Important Note: Never Use Chemical or Abrasive Cleaners.

- If service or replacement parts are ever necessary you can contact the Factory or an Authorized Service Station.

Specific Model Instructions

Flush & Bulkhead Mount models

1. Using the Template as a guide cut a hole in a location that meets the **Installation Requirements**.
2. Before making your cut, make sure that there are no wires or objects of any kind behind where you intend to drill or cut.
3. Route any light wires and connect them as specified. See **Night Light Wiring**.
4. Secure the Compass using non-magnetic fasteners. Make sure you follow the **Surface Alignment Guidelines**.

Note: If you cannot access the compensation rods from below, allow for easy removal of the compass during compensation.

Bracket, Deck and Surface Mount Models

1. Position the compass in a location that meets the **Installation Requirements**.
2. Route any light wires and connect them as specified. See **Night Light Wiring**.
3. Secure the Compass using non-magnetic fasteners or mounting pads. Make sure you follow the **Surface Alignment Guidelines**.

Notes

- When installing a Bracket Mount model you may find it easier to remove and install the bracket first.
- When installing a D-55 or a Surface Mount model using non-magnetic fastener you will need to remove the lower housing first. Please see the **Disassembly Drawing** that is included in your instruction packet.
- When installing a compass using Adhesive Mounting Pads (not available on all models), temporarily secure the base or bracket (masking tape works well) until after checking alignment (see **Compensation**). After alignment has been verified, carefully mark the position and alignment of the compass, lift it up, place the mounting pad (s) on the bottom and carefully place it back in the exact position. The surface must be clean, dry and warm (above 60 degrees F, 15 degrees C).

Binnacle Mount Models

1. Partly disassemble the compass to access the mounting base. Please see the **Disassembly Drawing** that is included in your instruction packet.
2. Position the mounting base in a location that meets the **Installation Requirements**
3. Route any light wires and connect them as specified. See **Night Light Wiring**.
4. Secure the Compass using non-magnetic fasteners & re-assemble the compass. Make sure you follow the **Surface Alignment Guidelines**.

Notes:

- Various adapters and mounting hardware may be required to mount your compass to a pedestal. Please contact the pedestal manufacturer for the proper mounting procedure.
- Do not loosen or remove the 8 or 10 screws nearest the dome. (**Fluid will escape and damage your compass.**)
- Binnacle Mount models have either slotted holes or a clamp built into the base to allow for easy A-Alignment adjustments. If there is a clamp make sure it is tight before re-installing the housing.

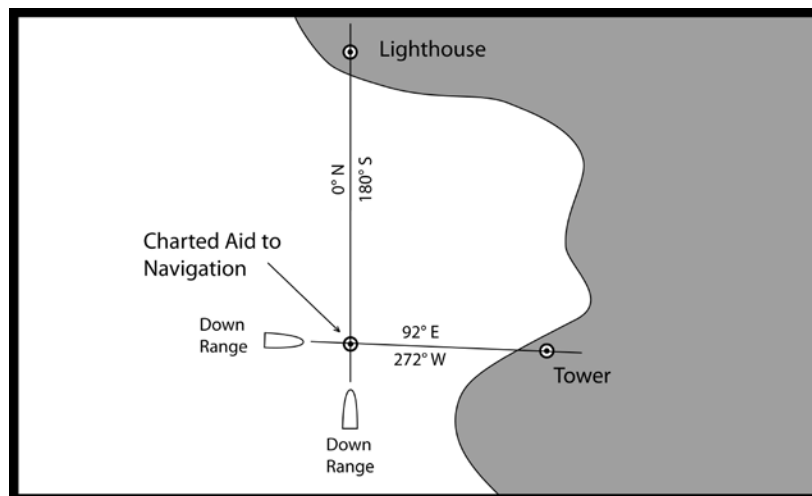
- **CAUTION! IMPORTANT NOTICE** When installing any binnacle model on a pedestal, make certain that the throttle and gear shift linkages are adjusted properly and do not make contact with the compensator rods on the compass. If contact is made with either control in full detent, the compensator rod will become bent and the compass thrown out of adjustment.

Commercial Models

- Steel Boat Compasses are designed to be mounted on STEEL HULL Vessels. Special compensation is required and you may need to hire a professional compass adjuster.
- **Shock Mounted Models C-453, C-463, B-453 & B-463** are designed to be mounted inside a pilot house. Do not mount them where they will be exposed to direct contact with salt water.

Compensation

- Most compasses have two built-in Compensators. A compensator is a brass rod with a slotted end and two magnets. The slots should be horizontal before starting the adjusting procedure. A small non-magnetic screwdriver is provided for this purpose.
- On some models the compensators are covered by two small plugs. Simply remove them to access the slots.
- Before starting compensation, make sure you have a suitable location (see **Location Testing Guidelines**).
- If you feel that the deviation on your boat is of an unusual nature, the services of a professional compass adjuster will be a wise investment.
- To assure accuracy on all headings, check for deviation every thirty degrees and record any deviation on a deviation card (available at ritchienavigation.com). We recommend checking at the start of each boating season for deviation and any time new equipment is added near the compass.



Method 1

1. With the compass in its intended position, but not finally secured, (see **Mounting the Compass**) select a course on your chart using two fixed aids that are within 10° of the North/South line. Try to select this course so that you can maneuver your boat “down range” of the marks selected (See example).

2. From a position down range of the North/South marks, and keeping the marks lined up, run the boat visually along the Northerly course selected. Turn the port/starboard compensator (slot is facing starboard) until the compass reads correctly.
3. Simply repeat steps 1 & 2, except this time, using an East/West course and the fore/aft compensator (slot is facing aft).
4. Check compass alignment by running the boat in a Southerly direction, again keeping the mark lined up. If the compass is not correct at this time, there is an alignment error. To correct, rotate the compass itself to remove one half of this error. Repeat steps 1, 2 & 4 until your North/South line is correct then repeat step 3.
5. Install fasteners, taking care not to disturb alignment.

Method 2 (In this method you will be using a GPS as your reference.)

1. While at sea, with the compass in its intended position, but not finally secured, (see “Mounting the Compass”), obtain the GPS bearing to a fixed aid or landmark that is within 10° of a North/South line.
2. Position your boat along that line and steer directly at that mark. Turn the port/starboard compensator (slot is facing starboard) until the compass heading matches the GPS bearing.
3. Simply repeat steps 1 & 2, except this time, using an East/West course and the fore/aft compensator (slot is facing aft).
4. Check compass alignment by running the boat 180° from the heading used in step 2. If the compass is not correct at this time, there is an alignment error. To correct, rotate the compass itself to remove one half of this error. Repeat steps 1, 2 & 4 until your North/South line is correct then repeat step 3.
5. Install fasteners, taking care not to disturb alignment.

Notes for Method 2:

- The GPS must be set to provide you with Magnetic, not True headings. Check your Manual.
- GPS provide headings based on COG (course over ground). Compasses provide heading based on the direction the boat is actually pointed. Because of tides, currents and winds, the boat may not always point in the same direction as COG. Pick a time and location that will minimize these effects.
- Because the GPS calculates COG based on current and past positions you will see greater heading accuracy while traveling at higher speeds. We recommend at least 10 knots.

Warranty

We warrant all Ritchie Magnetic Marine Compasses to be free of defects in workmanship or materials. If within five years of purchase date, a compass fails to give satisfactory service, it will be repaired or replaced without charge. This warranty does not cover breakage through accident or misuse.