

KEVO'S BOATING TIPS & MORE

BY
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Mariner's Compass

"What's that bubble thing?"

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"That one right in front of the steering wheel!"

"Do you mean the compass???"

"Yeah, that's it. What's that for?"

Believe it or not, I have heard this question from at least a half dozen clients at Pacific Powerboating. Now, to experienced mariners this may seem either hilarious, frightening or both. But it's true! To be honest, our boat, *Her Way*, has four compasses on her and I rarely refer to them. This is because we do inland cruising, try not to cruise at night and mainly use dead reckoning to navigate. If you are going to operate your boat at night on the Delta using a compass only for navigation, you may as well run her up on the levee and get it over with.

History of the Compass

The Chinese first introduced the mariner's compass as an aid to nautical navigation in the 12th century. Knowledge of the compass moved overland to Europe later in the 12th century. There are many theories as to how exactly the compass made its way from China to Europe. The most probable theory is that knowledge of its existence traveled via the "Silk Road" from Asia to Europe and then later to the Middle East. By 1358, the compass was in use by European mariners and began replacing celestial navigation as the primary navigational tool on the high seas.

Prior to the introduction of the compass, way finding at sea was primarily done via celestial navigation, supplemented in some places by the use of echo soundings. Difficulties arose where the sea was too deep for soundings and conditions were continually overcast or foggy. Thus the compass was not of the same utility everywhere. For example, the Arabs could generally rely on clear skies in navigating the Persian Gulf and the Indian Ocean (as well as the predictable nature of the monsoons). This may explain in part their relatively late adoption of the compass. Mariners in the relatively shallow Baltic Sea made extensive use of soundings.

In the Mediterranean, however, the practice from ancient times had been to curtail sea travel between October and April, due in part to the lack of dependable clear skies during the Mediterranean winter. In addition, much of the Mediterranean is too deep for sounding. With improvements in dead reckoning methods and the development of better charts, this changed during the second half of the 13th century. By around 1290 the sailing season could



The Ritchie Globemaster Binnacle Mount Compass.

start in late January or February and end in December. This additional few months of sea travel resulted in considerable increases in shipping commerce. For instance, it enabled Venetian convoys to make two round trips per year to the Eastern Mediterranean instead of just one.

Construction of a Simple Compass

First, you need a magnetic rod. Aligning an iron or steel rod with the Earth's magnetic field and then tempering it or striking it can create this. However, this method produces only a weak magnet so other methods are preferred. The magnetized rod or magnetic needle is then placed in a low friction surface to allow it to freely pivot to align itself with the magnetic field. It is then labeled so the user can distinguish the north-pointing from the south-pointing end.

Modern Navigational Compasses

Modern navigational compasses hold a magnetized needle inside a fluid-

filled capsule. The fluid causes the needle to stop quickly rather than oscillate back and forth around magnetic north. Other features common on modern hand-held compasses are a base plate with rulings for measuring distances on maps, a rotating bezel for measuring bearings of distant objects and a sighting mirror that lets the user see both the compass needles and a distant object at the same time.

Mariner's compasses have two or more magnetic needles permanently attached to the compass card. These move freely on a pivot.

True North and Magnetic North

True north is different than magnetic north. True north is the axis the Earth rotates around. Unfortunately, magnetic north is not the same physical location as true north. At the North Pole, true north is located apx. 600 miles from magnetic north. At the South Pole, true south is nearly 1,500 miles from magnetic south. Compasses point to magnetic north or south, not true north or south. Magnetic north or south is the result of the natural magnetic field produced by the magnetic properties of various ferrous metals found within the Earth.

Variations

Variation is the difference in compass readings between true north or south and magnetic north or south. At any given geographical position on the Earth, variation is essentially constant, meaning it will not change. However, variation will change with each geographic position on the Earth. The Bay Area has a variation of 15 degrees west of true north.

Deviations

Deviation is a compass error caused by magnetic fields aboard the vessel. The engine, helm, including its spokes, dashboard instruments, electronic equipment and bundles of wire may have magnetic fields. The radio speaker has an especially strong magnetic field. These local magnetic fields can cause the compass to deviate and not to point toward magnetic north.

Some vessels do not cause deviation in their compasses. Outboard motors usually do not influence a compass; they are too far from the compass and have less iron in them than inboards or stern drives. If your compass is far enough away from the electronic equipment and other magnetic fields aboard your vessel, it should have little deviation.

Deviation will change with heading of the vessel, but not noticeably in different geographical areas. This is because you are carrying the magnetic influences to the compass at all times on your vessel.

OK... I know what you're thinking... What a snoozer! Well, if you thought this was really boring to read, you should have seen the agony I had to endure to research the subject. Believe me, there is NOTHING more boring than reading the complexities of the mariner's compass. To be honest with you, I spared you the really boring stuff! So go ahead... write me a letter telling me how boring this column was... I dare you! HA!

As always, feedback is appreciated. I can be reached at 925/890-8428 or kevo@yachtsmanmagazine.com.

Be safe & happy boating! ☞