

Pilotage with a Hand Bearing Compass

Following the reasoning behind the previous articles this one is again on a subject that has in practice caused difficulty, which I have seen at sea and has been mentioned in trip reports. A hand bearing compass is a simple piece of kit so at first sight using it should be easy, though that often proves not to be the case.



Though many members choose to buy their own handheld GPS few buy a hand bearing compass so you will have to wait 'til you are aboard again to handle one. Inside the tough plastic case is a circular card with a magnet on a central bearing and floating in fluid. The fluid damps what would otherwise be very violent swinging. Note that when you raise for use it will probably take a few seconds to settle. If there is any sea running it will continue swinging from side to side so you will have to mentally average the swings. The edge of the card is numbered every ten degrees and marked at every degree with a larger mark at each five degree division. There is an inner scale that can be read directly by looking vertically down on the compass and that is sometimes useful for the navigator at the chart table (or galley) to check that the yacht is actually pointing in the desired direction, but that is not the purpose of this article.

It also has a prism which both turns the scale vertical and magnifies it. Having it vertical means that you are able to see the scale and the object you are looking at simultaneously and hence to take a bearing. A further feature is a line which you use to hang it around your neck. Dropping one into the sea would leave you without it for the rest of the trip and cost you £50 plus to replace so good to use that feature. The card is phosphorescent (glows in the dark) enabling night time use. This fades after a few hours so good to top it up from time to time. Holding close to, say, the chart table light whilst rotating it for a minute will do the trick. Keep your eyes closed or you will be useless back on deck for a while. You can also use a torch but make sure everyone's night vision is preserved. While the yacht's compass is corrected for deviation the hand bearing compass can't be as it is not in a fixed position. It is usually used fairly high so away from most machinery but watch out for metal

objects such as winches mounted on the coachroof. While the outside of these is non-magnetic the insides aren't. If in doubt try taking the same bearing from different positions.

Over the years numerous crew have told me that they can't use the compass because of their eyesight / glasses etc. This rarely proves to be so and after a little practice there is an 'aha' moment. Try for a few minutes holding it level and moving it around close to your eye and that will probably happen to you.



Use for pilotage

Imagine the following. You are leaving a natural harbour with a narrow entrance with submerged rocks on either side so need to follow a back bearing on a navigational mark. Say that bearing should be 356, magnetic variation is 2 degrees West and the bearing you are seeing on the compass is 003. Which way do you tell the helmsman to turn? "AAAAARRG!!!" as they say in comics. That is not the way to do it.

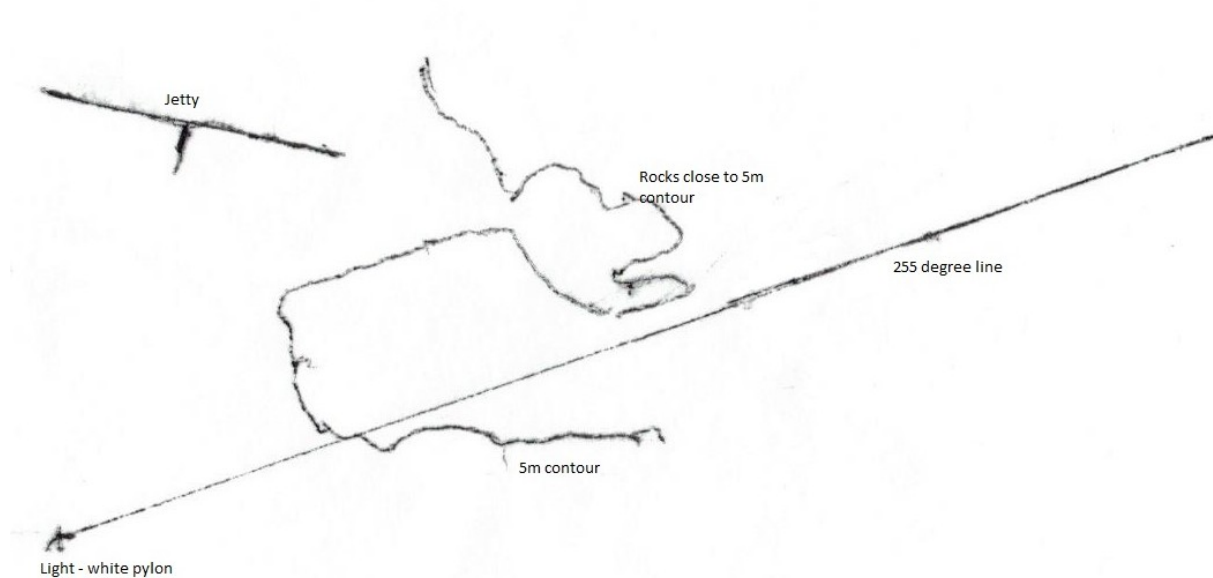
The photograph above shows a view through the prism. You can see the radio mast to the left of the 170 bearing. If your intended course to the mast was 170 you would need to turn left.

Let's look at a real example. Omonville la Rogue is a beautiful small harbour a few miles West of Cherbourg with huge visitors mooring buoys with big rings at deck height – yes do go there if you get the chance. The entrance is narrow with submerged rocks on either side. At a certain stage of the tide there is a strong current running across the entrance. The chart shows a transit at 255 degrees of the light (white pylon structure by day) and the church spire. A check shows variation to be negligible so no correction required. Unfortunately, when you are on the line the spire is invisible behind the trees so you need to approach using a bearing on the light.

This photo doesn't quite show the entrance but some of the reef extending from the jetty can be seen. The light is clearly visible - lower left at the back of the beach and the 255 bearing would pass near the bottom of the right hand side of the photo.



Here is my sketch map.



Navigate using whatever means you prefer until you are close to the bearing line. Keeping deeper than the 20m contour keeps you safe while you are getting into position. **LOOK ALONG THE 255 BEARING WITH THE HAND BEARING COMPASS.** Do not take a bearing on the light! If you are really lucky the light will be exactly on the bearing but more likely it will be a little to one side. If it is to the left of the 225 bearing you will need to tell the helmsman to turn left (you could say turn to port but the outcome is more important than the correct terminology) until the light is on the bearing. Conversely if it is to the right you need to tell the helmsman to turn right. When you are on the bearing straighten the helm a little to stop the turn. You will need to keep making corrections as you

progress especially if you encounter the cross tide. Note that in that case the yacht's heading (the direction it is pointing) will be nothing like the actual course you are following so ignore it.

An alternative way of communicating with the helmsman is to point the way you want them to turn the wheel. The value of this method will become clear in a moment.

There will come a time when you need to leave this lovely place and you must leave on the same bearing (now a back bearing) on the light. As you are looking along the bearing you will now be looking aft but you can still see whether the light is to the right or left of the bearing so it is absolutely obvious which way the yacht needs to go. As the yacht is going away from the light it is not quite so obvious which way to tell the helmsman to turn as it is opposite to that on the way in. If you're comfortable with that by all means do so but it is far easier simply to point the way you want the yacht to turn. This avoids all mental contortions.

The same idea of looking along a bearing applies to pilotage by buoy hopping. A good example would be getting back to QAB in the dark. Like most city harbours there is an abundance of light. The considerable number of navigation lights appear lost in a background of shore lights. These are of all colours, often much brighter and some of them flash or appear to flash (e.g.traffic going round a corner). The technique is to pick out the information you need amongst all of that. It might go as follows:

Coming in the Western entrance the lighthouse on the end of the breakwater and Maker light ashore are absolutely clear. Queens Ground flashing 2 red 5 seconds can be seen against a dark background between the two so you go to that (keep a good lookout as you are in the main channel). From there New Ground flashing red 3 seconds is clearly visible on 064. You probably won't need the hand bearing compass for that just alter course and it will be dead ahead. As you approach it look along 034 for Melampus Flashing red 4 seconds. This can take a bit of effort to see against the background but is eventually clear. From Melampus South Winter quick flashing 6 plus long flash 15 seconds is on 025. Take care and you are crossing Asia Passage used by Brittany Ferries amongst others. From there South Mallard very quick flashing 6 plus long flash 10 seconds is clear on 051 This crosses the main Smeaton Passage so care again. From South Mallard the entrance to QAB is on 030 but care needed as it follows Cobbler Channel used by tankers. In this example there is no need to make small course corrections in between the marks as there are no dangers either side of the courses - unlike Omonville.

Caution

Pilotage information in this article is for illustration purposes only and not to be used for actual pilotage. Always prepare a plan using up to date information.

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