

THE LOCKDOWN ARTICLES

GPS Article 1

The idea for this series is to cover points that seem to cause difficulty as seen at sea and commented on in various trip reports. The current circumstances offer an opportunity to overcome these difficulties before going back to sea.

This is the first of two articles on GPS. It may surprise you that I, of all people, should choose to write on this subject being famous (some would say notorious) for navigating without it. In general, that is true though I do resort to it on occasions.

Usually there is more than one GPS on a yacht: the yacht's own fitted one which runs on the domestic supply and your own handheld one running on its internal batteries.

The yacht GPS is often quite complicated to understand fully and will probably require lots of reading of a big manual (I think it loses something in the translation from the original Korean) to master all the features. If you are so minded that may provide you with useful employment when there is nothing else to do but generally its best to restrict yourself to the basics especially as you may be called to navigate a sea in less than ideal conditions. Display position and, if possible, course and speed over the ground – COG and SOG, When you take over the yacht it's a good idea to check the position given by the GPS against your position in the marina. Do this again whenever you are in a known position.

Your handheld GPS offers two noticeable advantages over the yacht GPS. One is that it can be used by someone in the cockpit. OK, sometimes the yacht GPS has a display in front of the helmsman though he or she may have their hands (and brains) occupied doing other things. The ability to have someone whose task is to concentrate on navigating by the GPS is useful.

The other advantage is your opportunity to get fully familiar with it before you need to use it at sea. This article and the next are written to assist you in developing that familiarity.

First a digression on what a GPS does; what it doesn't do and it's limitations. The system has a high degree of reliability and accuracy but it is not 100%. Either in the manual or on a front page when you turn it on you will find a disclaimer advising that it is an aide to navigation and should not be used as a sole source of information. Take that seriously – I have seen them considerably out on a few occasions including one where two identical units were showing positions a long way apart and neither was indicating an error condition. Try to confirm with other info to the extent you can. Most modern units seem to have an accuracy of about 3-4m most of the time though that can be more. Probably almost all fixes are within 15m.

What a GPS does is to determine instantaneous position. That's it. It doesn't know which way it is facing. So in addition to that all important role it uses that position, or a sequence of them, in order to display other information. Examples are a bearing and distance to a fixed point (known as a waypoint) which has been previously entered. When the yacht is moving it can also calculate COG and SOG. It does this by recording its position every few seconds and then calculating the speed and direction between each. This has its limitations. If the yacht is moving at slow speed the accuracy of each position becomes significant in relation to the distance travelled during the short time interval between the periodic fixes. In such circumstances the COG and SOG become erratic. They are often smoothed a bit by averaging within the unit itself. However, at slow speeds expect to do a bit of your own mental averaging rather than reacting to each displayed change.

Back to your own handheld GPS – time to dig it out and dust it off. Put in some batteries – hopefully you haven't left batteries in it for a long time – and turn it on somewhere it has a view of the sky. Note that when you are using it at sea make sure that you have sufficient battery power to see you through the task at hand – you really don't want to run out at a critical time. At the same time find the manual, which may be online. Start with Setup, which seems to be a common name though it might be different on yours. This is where you set various matters which are important (some trip reports have noted problems arising from failure to get this right).

Datum. It is essential that you set the datum to that of the chart you are using – the alternative of applying the correction noted on the chart to each fix is more than you want to be doing at sea on a yacht. Almost all charts we use these days are WGS84 but do check especially if sailing on a yacht chartered abroad.

Units. Nautical miles, knots and metres are what you want for marine navigation.

North ref: set to either true or magnetic at your choice but do remember which you have used. My preference is to use true as bearings are the same as on the chart without having to correct.

Position format set to degrees, minutes and decimals.

When you restart your GPS after it hasn't been used for a while it's a good idea to recheck the settings as it may have reverted to factory settings.

When practising the following remember that these simple tasks will take much longer at sea even in good conditions. In heavy weather they can be trying so get good at them. Have a practice or two each time before you go sailing to sharpen your skills.

Now consult your manual and practise marking and naming your current position so that it is stored in the waypoint list.

Next find out how to enter a waypoint for somewhere else and practise that. With some units you can transfer them from a computer and by all means learn that if you wish, but more importantly practise doing it just using the hand held GPS as you might need to do that at sea. Note that if you are entering a critical waypoint you are intending to use, it should be checked. Read it off the chart and write it down and then enter into the GPS. Then get someone else to read it off the chart and write it down without looking at yours. Check they are the same. Then read off the one you have entered from the GPS while the other person checks that it tallies with the one he has written. If you are using a chart which contains separate chartlets make sure that you are taking the lat long from the correct scales i.e. the chartlet scale if the position is on the chartlet. If you are using a published list of waypoints you will notice a warning advising you to check them before use – I suggest that you heed it.

Enough for now – the next article will be on using 'go to' routes.