

WHO NEEDS CHARTS?



The world of electronics is charging ahead and Raymarine is a company at the forefront of the very latest developments in marine navigation...

Yachties have it easy really, big chart tables, a nice slow passage and plenty of time to do the navigating bits; even for most motor cruisers it's a breeze with a warm dry cabin, a large table and hot drinks on tap. For those in RIBs though it's a different matter, a passage in a RIB often seems to mean reliance on a few waypoints cobbled into a route or perhaps a colourful Chartplotter to show us the way. A chart is old hat and impractical on a small boat - surely its past its 'sell by' date... or is it???

There are many RIB owners who cover significant distances and one of the challenges facing us all is how best to execute the passage we've planned and how will we know where we are at any given point in time - after all a safe approach to executing a passage means you should know where you are and record that position regularly. The reliability of electronic kit is such that we tend to assume it will work all of the time - and indeed generally speaking it does. However it's too easy to assume that it will always work, after all Murphy's Law states the one time you really need to know precisely where you are is the one time the GPS plays up.

Good practice dictates that you should regularly plot your position on a chart so that you always have a good idea where you were at certain times during your passage. But how practical is this in an open RIB and is there really a benefit in doing so? The Lat & Long displayed on either your Chartplotter or simpler GPS set can be 'lifted' and plotted straight on to the chart, in reality though, trying to plot a Lat & Long onto a chart in a fast moving open boat is nigh on impossible. So what's the answer?

Some clever but very simple techniques exist to help you to use paper charts alongside your electronic systems. A massive benefit of seeing where you are on a paper

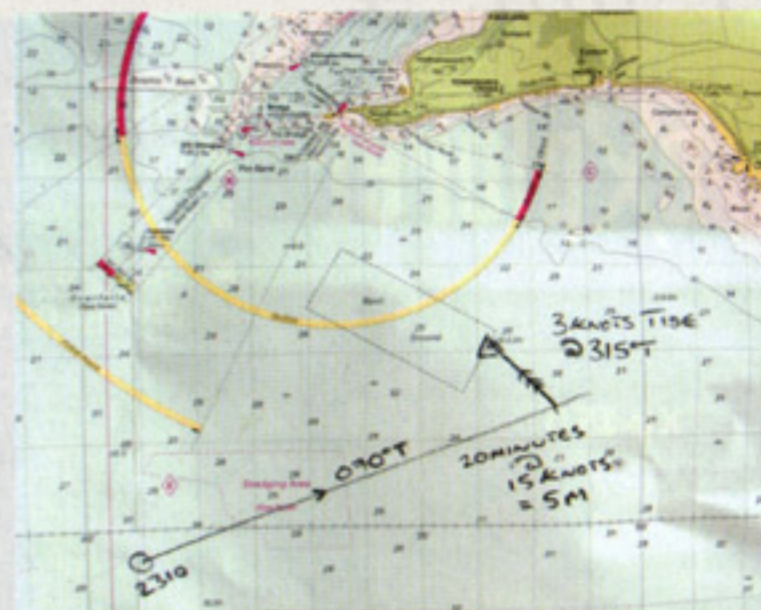
chart is that you get a far better sense of perspective on your position and the hazards around you. Your brain can assimilate the information the chart is giving you both about the hazards in your immediate area and at the same time assess your position on a far wider scale and you can get a folded section of a chart into a far easier position to read - even the largest plotters with split screens can be difficult to interpret at speed in a fast moving bouncy RIB. Equally if you do have a total electronics failure (rest assured it does happen) then the fact you can say precisely where you were a certain time ago and can say you been following a heading of 330° for 40 mins at 25 knots gives a pretty good idea of precisely where you now are. So what are these methods?

THE COMPASS ROSE

Enter a number of waypoints from the chart into the GPS unit - the centre of a compass rose is good for this. Select 'goto' that waypoint. The GPS will then tell you the bearing and distance to that waypoint. You can now plot your position easily and accurately onto the chart as the reciprocal (a reciprocal is the bearing +/- 180°) from the Rose. As most of us tend to have a couple of GPS units, use your older simpler one for this so that your main set can be dedicated to the route that you are following.

THE 'WAYPOINT WEB'

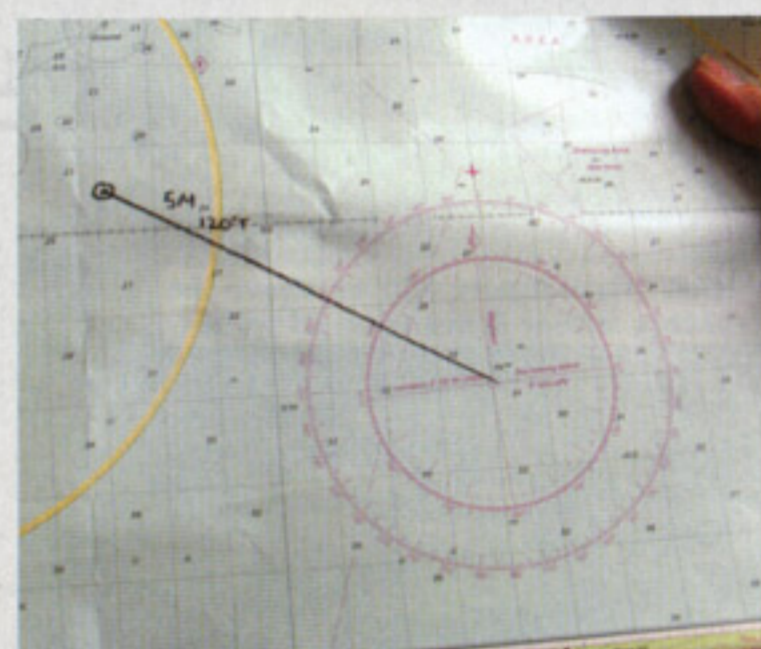
Plot a waypoint on the chart - 'C'. From the waypoint, draw a series of lines at different bearings and use a compass to draw arcs of distance from the waypoint. Then as you either head towards that waypoint, or, as in this case, head between waypoints A and B by 'telling' your GPS to 'goto' that waypoint,



The initial plot of the heading and speed gives a position by Dead Reckoning, adding the effect of tide gives an Estimated Position.



Draw the Waypoint Ladder between waypoints marking off 1m or 0.5m intervals, To each side mark lines at 1m, 2m etc - Distance to Go and XTE give a position.



Bearing and distance from a waypoint give a position easily - Compass Roses work well.

Tips

- Many boaters now have a newer GPS/Chartplotter and an older backup (and often, simpler) set. Use the 'old' set to 'goto' the various waypoints to plot a position whilst you use the main set to follow your route.
- Prepare your GPS sets with the various waypoints you need and your charts with Waypoint Ladders and Spiders Webs ahead of needing them and practice using them.
- The simplicity of many of the systems means it's easy to delegate the plotting to a crew member without navigation knowledge - it can also keep youngsters amused and out of trouble!



it is easy to read off the distance and bearing of the waypoint and to plot your position on the 'web'.

WAYPOINT LADDER

Draw a line between two waypoints and mark off 0.5 or 1m intervals from the destination waypoint. When running between the waypoints you can easily read off distance and Cross Track Error ('XTE'), and plot your position alongside the 'ladder'.

PROXIMITY WAYPOINTS

The example above, where a compass rose is used as a waypoint to plot a position, can be 'reversed' to avoid a hazard. Enter the waypoints for hazards then 'goto' to check the position of the hazard relative to your craft. Some sets allow you to do this as 'proximity' waypoints. Try to avoid navigating straight to that waypoint though!

It's also easy to overlook some of the traditional techniques. It's worth ensuring that you know how to use these so that if you do ever have to resort to them because your GPS have failed, you can remember how to do so.

DEAD RECKONING ('DR')

If you head from a known point on a heading of 270° at an average speed of 18 knots for 30 minutes then you will travel 9 miles (nautical miles). This can be simply transferred to a chart to give an approximate position. Okay, it ignores the effect of wind and tide but it's a more accurate position than no position. You can use a straight edge and the nearest compass rose - there's no need for fancy plotting instruments.

ESTIMATED POSITION ('EP')

This is Dead Reckoning with the effect of tide added in. You were heading 270°, the direction of the tide (from a tidal stream atlas or the tidal diamonds on a chart) is 000° so logically is pushing you to Starboard. You read the rate of the tide is 3 knots so in 30 minutes you will be pushed 1.5 miles 'off course'. The combined effect of these gives you your Estimated Position.

Our GPS shows we are 3.26m from the Waypoint which bears 312° from our position - a rough position is easy to plot.



THREE POINT FIX

Using a hand bearing compass you can plot bearings to items that appear on your charts. Remember its best to choose 'landmarks' that are roughly equally spaced to give the most accurate plot.

'MARK ONE' EYEBALL

Don't over complicate navigation though. If you can see a known landmark about a mile away then that's where you are - keep it simple!

But what is Passage Planning and Pilotage?

PASSAGE PLANNING

Is the preparation of a plan that helps you safely navigate between two points. Since the amendment to the SOLAS regulations, all pleasure craft leaving categorised waters need to have a passage plan. There is no legal requirement, though, to submit a passage plan to the Coastguard.

PILOTAGE

Is what you do at either end of your passage and is the use of buoyage, transits, clearing and leading lines to safely manoeuvre your craft into or out of a harbour or marina.

Where you are going will define what will be in your plan and how you 'record' it. A skipper undertaking a passage needs to consider a variety of factors (see list to the right).

There is no right way to record a passage plan, and a skipper must make a judgement call as to what approach best suits the passage being made. A short trip to a local bay is technically a passage but does not necessarily require a written plan if thought has gone into the passage. A 15 mile trip along the coast, though, would benefit from a fairly detailed (but simple) document addressing all of the above.

A sensible skipper ensures that someone (be it the Coastguard or a friend) knows where he intends going and when he should be there.

The Coastguard CG66 scheme invites a skipper to record detailed information about his boat and its equipment. (Forms are available at www.mcga.gov.uk/c4mca/mcga-hmcg_rescue/mcga-hmcg-cg66.htm) This information is then entered onto a database and will be available to all co-ordination centres. In the event of an emergency, the Coastguard will have to hand up to date details of your vessel.

So using a chart on a RIB isn't the preserve of the larger cabin RIBs. Your chart will certainly take on a scrunched up and well worn appearance but used with these techniques can be really useful alongside GPS to help you safely execute passages.

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Weather

- What is it doing now and how will it change over the duration of the passage?
- How will it affect your passage (e.g., wind against tide)?
- Regularly update weather information during the journey.

The Route

- Have charts of a suitable scale for the route and harbours that will (or may be) entered.
- Create the route and document headings, waypoints, distances, times, speeds, depths etc.
- Record dangerous, key or useful features on route.

Tidal Heights and Streams

- Is there enough water to enter and exit the harbour and undertake the passage?
- When should the passage commence to avoid unfavourable conditions (e.g., wind against tide) and to ensure safe entry to the destination port?

Pilotage

- Plan harbour entry or exits, note important features such as marks and lights.
- Repeat for ports of refuge.

Boat and Crew

- Are both suitably equipped for, and capable of, the passage?
- Are you aware of any relevant medical conditions of the crew?
- Have the crew been suitably briefed and prepared for the passage?
- Record useful phone numbers (e.g., Coastguard control rooms, marinas, Sea Start etc) and relevant VHF channels and call signs.