

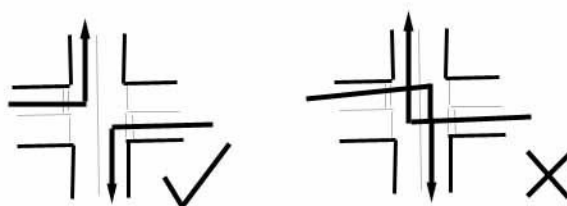
# BUMC CRUCIAL GUIDE TO NAVIGATION

This guide is here to teach you how to decode the navs on a BUMC 12 Car Rally. You are given a sheet of coded directions ('navs') and the clock starts ticking. You work out and plot the route on the map, then drive it, marking down symbols off 'PC boards' as you go. Trying to follow the right route as given by the navs is harder than it sounds (tiny junctions are easy to miss in the dark) and arrive at the finish as close to the target time as you can. All this may seem overly complicated, but don't let it put you off – you don't have to memorize it all, and it's actually quite simple when you get used to it.

The first thing to note – this is not WRC! Our rallying is done in our own cars on the public roads, which are not closed for the event. You definitely don't need a rally-prepped monster, and **navigation is more important than driving flat out!** It's cheap, legal (we have an MSA permit and police liaison) and accessible – you even get special insurance as part of the entry fee.

## Some General Points on BUMC Navs

- The route will be given unambiguously, but sometimes relying on the caveat that you always take the shortest route consistent with the information given.
- The route will never cross itself at all, nor will you be asked to travel down the same road, in opposite directions. Note a technicality with this rule, concerning crossroads:



As the diagram shows, turning left twice at the same crossroads from opposite sides is permissible, since although you are visiting the same junction twice, your route does not actually cross itself. However, turning right twice at the same crossroads is not allowed, since the route is crossed.

- Navigation is always 'as map' and not 'as road'. In other words, if you arrive at a junction and it doesn't correspond to what appears on the map, the navigation will fit the map and not the road. Be diligent as to whether a crossroads is in fact a crossroads or two T-junctions close together (a "staggered junction").
- **White roads, bridleways, tracks and paths are ignored** – the route will not use them and neither will the given navs (i.e. a junction with a white road does not count for the purposes of navigation and might as well not be there). Sometimes, however, they are shown for illustrative purposes only, (whites are shown as dotted lines on herringbones, grid squares, tulips etc.).
- Complicated junctions, particularly roundabouts and dual carriageway junctions, will be treated in the navs as several smaller junctions which go together to make the complete route. For example, "Take the 3rd exit from a roundabout" would be treated as: Turn left at a T-junction (onto roundabout) Miss a left side-road (first exit) Miss a left side-road (second exit) Take a left side-road (third exit)

## Types of Navs

There are quite a few ways in which the route can be described, although they share some inherent principles. Although the next few pages may look daunting, take time to read this through and you will see they are all fairly straightforward.

### 1. Vias and Avoids

These are the most elementary forms of navigation and basically just define a set of points to go via or to avoid. The shortest route consistent with the information is the correct route. The points defined could be grid references, spot heights on the road, grid lines crossing the road, a letter in a place name written across the road, in fact, just about any symbol, line etc. on (or very near) the road.

*Possible ways of making them trickier for expert level: different order/reversal, vias/avoids swapped round, simple encoding [alphanumeric (A=1, B=2 etc) / alphabetic shift (A->D, B->E etc) or reflection (A->Z, B->Y etc)]*

### 2. Tulips



Tulips are basically just an illustration of the junction as it appears on the map. There may be a dot indicating the direction of entry to the tulips, and/or an arrow indicating the direction of exit. More major roads are denoted by thicker lines. Sometimes a single tulip may describe a couple of junctions or more.

*Possible ways of making them trickier for expert level: rotation, different order/reversal, removal of dots/arrows.*

### 3. Grid Lines

You will receive a large collection of numbers, a lot of which are very similar in value. These numbers represent grid lines which the route crosses, in the order given.

*Possible ways of making them trickier for expert level: different order/reversal, removal of spaces, adding a constant throughout, etc.*

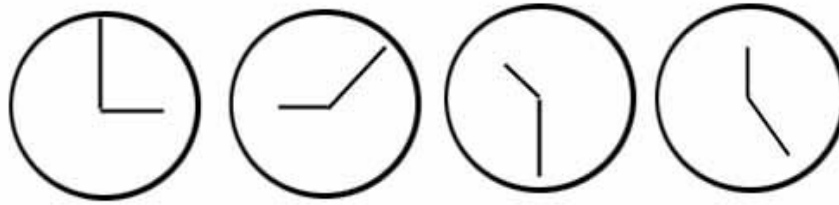
### 4. Directions

Here the navigator gets a long list of directions (N, S, E, W etc) and these will represent one of two things: (a) the side by which the route leaves the current grid square, in which case compound directions (NW, SE, SW etc) will be rare (you rarely leave a square via the corner); or (b) the direction in which the route leaves the next junction, in which case there are likely to be lots of compound directions.

*Possible ways of making them trickier for expert level: different order/reversal, removal of spaces, rotation by 90° or 180°, simple encoding etc.*

## 5. Clocks

Clocks are a pictorial form of navigation:



The hour hand indicates the direction of entry to the junction, and the minute hand the direction of exit. Remember "In on the hour hand, out on the minute." Note that the directions are taken at the exact point that the roads meet, so look closely at each junction. Expect clocks to be given in digital form as this is more versatile and easy (but the meaning is the same).

*Possible ways of making them trickier for expert level: **digitization (almost always)**, 24hr clock, different order/reversal, removal of spaces, adding a constant throughout, simple encoding etc.*

## 6. Yellows

'Yellows', as they are known, are groups of the letters 'Y', 'R', and 'B'. These letters stand for yellow, red and brown respectively. Green A-roads are considered to be the same as red A-roads so are likely to appear as 'R's if needed. Each group represents one junction on the map.

The first letter of each group indicates the colour of the road you enter the junction on, and the final letter indicates the colour of the road you exit the junction on. The letters in the middle indicate any other roads at the junction which are not part of the route.

For example: YBBY YYY YYY YYYY YYY YBYB BRR

'YBBY' usually means straight across a brown road at a crossroads from a yellow road to another yellow road. 'YYY' means turn left or right at a junction with three yellow roads. Clearly it is necessary here to look ahead to find out which way is correct! For instance, if the next junction features 4 letters on the nav, then you can look ahead for a nearby crossroads. 'YBYB' means turn left or right from a yellow road onto a brown road at a crossroads. The junctions may all be grouped together. For example, the above sequence would become: YBBYYYYYYYYYYYYYYYBYBBRR. In this case it is necessary to try to split the code up into the original junctions. The main problem comes when there is a large string of 'Y's in a row, which is quite a common occurrence since most of the roads used on rallies are yellows. The trick is to count up any long series of 'Y's and divide by three to find out how many junctions you must go through. From here you simply find a route which has the correct number of junctions along it.

*Possible ways of making them trickier for expert level: reversal, removal of spaces, switching Y/R/B, simple encoding etc.*

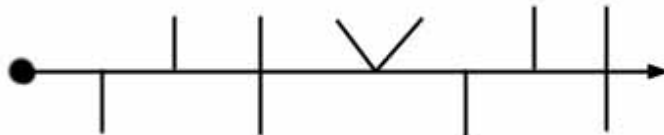
## 7. TLs & TRs

These are very straight forward and simply indicate the direction to take at each junction. TR means turn right, TL means turn left and SO means straight on. Any of the above may be followed by the letter 'X', indicating the junction is a crossroads, for example SOX means straight on at crossroads.

*Possible ways of making them trickier for expert level: reversal, removal of spaces, simple encoding etc.*

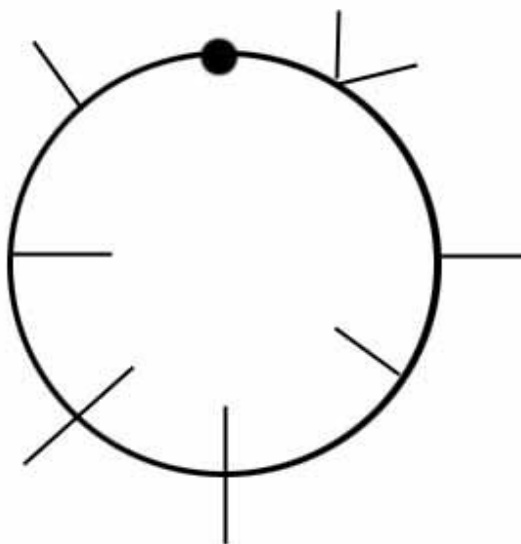
## 8. Herringbones

The best way of explaining a herringbone is to think of it as a piece of string laid out along the correct route, with all the junctions indicated as lines either side of the string in the appropriate positions. The string is then pulled taut into a straight line, showing all the roads missed on the section.



Studying the herringbone above, the first junction could be one of two things. It could mean 'carry straight on missing a road on your right' (which is how it appears at first sight), or it could also mean 'turn left either at a junction or into a side road'. Similarly the second junction means either 'miss a left' or 'turn right'. The third junction is obvious, and means 'straight on at crossroads'. The fourth junction means 'turn right at crossroads'.

*Possible ways of making them trickier for expert level: removal of dot & arrow, reversal, reflection left to right, and finally... circular herringbones (as seen below).*



*Circular herringbones can be further complicated by: extra false dots, no dots at all, reflection left to right, not knowing whether clockwise or anti-clockwise.*

## 9. Squares

Squares are an illustration of the grid squares along the route. Once you have located the appropriate squares on the map, the shortest route through the squares is always the correct one.

An alternative type of squares is to show just the entry and exit points of each square. As with tulips, thicker lines denote larger roads.

*Possible of making them trickier for expert level: different order/reversal, rotation by a multiple of 90°, dummy squares etc.*

## Some Reminders on Equipment & Protocol

- Map* - you will need a copy of OS Landranger Map #172, available from [www.ordnancesurvey.co.uk](http://www.ordnancesurvey.co.uk) or larger bookshops. Alternatively we have made up some “Rally Packs” which contain a map, some soft pencils, a rubber, etc. in a handy wallet to start you off.
- Map Board* - must be deformable in case of an accident – cross-layered cardboard is good.
- Mobile Phone* - please carry at least one per car and exchange numbers with the marshals.
- Other recommended equipment*
- soft pencils, rubbers, torch / maplight, compass.
- Scrutineering* - will take place upon arrival at the start. Please ensure that all lights, the horn, seatbelts/harnesses, wipers/washers and indicators/hazards are fully working, and the car is in a generally roadworthy condition (especially with regard to wheels – sufficient tyre tread and no wheeltrims please!)
- Timing* - synchronise your watch with the marshal at the scrutineering. You will be started on the minute, and arrival times are always rounded down upon arrival at a TC.
- Scoring & Penalties*
- one fail for every missed/wrong PC board, one mark for every minute (also one fail for every 10mins) late to a TC, 2 marks for every minute early. Wrong approach to a TC: one fail, arguing with a marshal: 3 fails, >30 mins late to a TC: exclusion. Result decided on fails, then marks.

## And they're off!

Well, that's it – there's nothing else you need to know. You may find it useful to take this guide with you to refer to, when you decode your first navs. Good luck...

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*Adapted by Simon Lytton from The BUMC Crucial Guide to Navigation*

*For more information and a calendar of events, see [www.bristolmotorclub.co.uk](http://www.bristolmotorclub.co.uk).*

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