

THE ALPINE CLASSIC

APPRENTICE NAVIGATOR'S PACK

This document is not part of the official documentation for the event. It is meant to help you understand how the event works and what you should expect. THE EVENT DOCUMENTATION AND INSTRUCTIONS TAKE PRIORITY.

A Classic Rally

A classic rally is a drive in the country where you find your way around a defined route by correctly interpreting a set of instructions. It is not a race, although it may be timed or untimed. There will be points through which you must pass ("Controls") and observations that you must record to show you are on the right route. There will usually be randomly placed boards ("Visual Route Checks" or "VRCs") that you need to observe and note down. Points are received for missing any of the above. The crew with the fewest points wins!

An event is divided into Divisions and/or Sections. The aim of the game is to correctly interpret and then follow the route described by the Route Instructions. You will be given these at the beginning of each Division or Section. On the route you pass through various controls. These are usually called Major Controls and Passage Controls, although some may be Timed Passage Controls.

Major Controls are at the beginning and end of Divisions and Sections. Passage Controls can be anywhere, they are usually on the correct route and if you've plotted correctly, you'll 'stumble' across them. Sometimes "dummy" Passage Controls can be positioned on an incorrect road to suck you in for a Wrong Direction (WD). Major Controls are named M1, M2, M3, et cetera. Passage Controls are numbered P1, P2, P3, et cetera.

How it works

Before the event you'll receive a set of Supplementary Regulations. These are the 'local rules' for the event. Read them (probably several times) and make sure you understand them. These vary a little from event to event, so you can't ignore them. It's a good idea to take them with you and read them carefully before the start.

In addition to the Supplementary Regulations, Motorsport Australia publish the National Touring Standing Regulations (NTSR). This document is available from the Motorsport Australia website ([Rally/Road Appendix - Motorsport Australia](#)). These documents are the framework under which the competition can be conducted and the Supplementary Regulations should really only add or amend these documents as applicable. You should also read these and bring them with you. Concentrate on the 'Navigation Assembly / Touring Road Event' sections of the NTSR because these are the basic regulations that cover the Alpine Classic.

On the day, get there a bit early, certainly in time for Competitors' Briefing. Don't miss breakfast! When it's time to start, you'll be given a set of Route Instructions for a Division or Section, usually 5 or 10 minutes before **your** start time. Make sure you get them on time and be at the start control on time. There are usually penalties if you are late. Typically there will be officials to help you know where to go, don't be afraid to ask.

Most events (but not all) have a list of questions that must be answered en route. These are generally at the back of the Instructions. Tear them off and give them to your driver to look out for, stick them to the dash or similar. After plotting for 5 or 10 minutes you will be given your Road Card at the start control (on which **you** enter your observations and **officials** enter times or stamps at various controls) and you're on your way. If you haven't plotted enough to know where you're going, safely pull to the side of the road (away from the control and out of the way or other traffic) and keep working on it.

Once you're under way, you will hopefully be answering questions, noting VRCs (these are a letter on a white board by the side of the road) and going through Passage and Major Controls till the end of the Division. You must stop at **all** manned Controls (that you think are on the correct route) to have your Road Card marked by officials. You are not obligated to go off the correct route to visit a control. You are only obligated to enter on sight into controls that are on the correct route.

What you need to know

The Route Instructions will usually show the distance for each Division or Section. On a timed event it will also show the time allowed for the Section, or the average speed that you must maintain. For example if it shows 56 km and 48 minutes, that means you need to enter the Major at the end of the section 48 minutes after leaving the beginning

control having travelled 56 km. You should work out what time you're due at the next Major (crucial for a timed event). Also work out an average speed for the section: this gives the driver idea of the speed you must travel.

$$\text{i.e. } \frac{56\text{km} \times 60}{48\text{min}} = \sim 70 \text{ kph}$$

Remember that the legend to the map is part of the map. Instructions will use words that are used in the legend. e.g. if the instructions say "Travel next to a mine", then look in the legend to see what a mine looks like.

Read through all the instructions very carefully e.g. areas that are out of bounds etc. Mark these on the map.

Read through the questions and check they're in distance order, and to see if there are any tricks within the question (perhaps they refer to an item at a different location, or the distances are out of sequence). Some drivers make the questions their responsibility but that's up to you.

Start plotting the VIA points, especially noting any directions of entry and exit. To do this, you need to understand map-speak!

TIMING - You will be provided with instructions that will detail the time allowance for each section and any included refuelling, plotting etc. Also details of how long you are allocated for lunch. In order not to be penalised for early or late arrival at control, you must arrive within the minute following your calculated arrival time. For example if you leave the previous control at 10:15 (which will be recorded on your Road Card) and the allowed time for the section is 70 minutes, then your book-in time at the next control will be 11:25 (10:15 + 70mins = 11:25) and therefore you can hand your Road Card in to the control officials any time between 11:25:00 and 11:25:59 without penalty. If you hand in your Road Card earlier than 11:25:00 you will be penalised, any later than 11:25:59 (even 11:26:00) you will be penalised.

GRID LINES are the blue lines that mark up the map into a grid. In the 1:250 000 maps, they are 4cm apart. Don't confuse them with the black longitude and latitude lines. Grid lines are identified by a number on the left of the map (for the horizontal grid lines) and on the bottom of the map (for the vertical lines). Use the last two digits. They are usually referred to, for example as GL67.

GRID SQUARES are defined as the square to the right and above the named grid lines. So GS6717 is the grid square with the intersection of GL67 and GL17 as its **bottom left** corner. On a 1:250 000 map, a grid square is 10km square.

GRID REFERENCES are the bread and butter of rallying – and they aren't difficult. Understanding how to do these is vital.

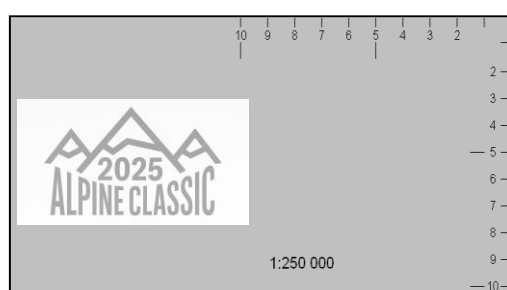
There are two generally accepted ways to define Grid References:

- 1) Method A) an eight digit reference e.g. "GR **6014 1761**" (this has been the most commonly used method), or
- 2) Method B) a six digit reference as described on the ALPINE CLASSIC maps e.g. "Forbes FC142617".

Either may be used throughout the event.

Both types use the blue grid lines on a 1:250,000 scale map. These blue grid lines divide the map into squares that measure 40mm on each side. Each of these squares represents a piece of land that is 10 km by 10 km. You will use a simple tool called a **romer** to subdivide the grid squares into a smaller imaginary 100 X 100 square grid which can pretty accurately pinpoint a location to an accuracy of 100m.

A romer looks like this:



Incidentally, you can use a romer to measure distances (remember 40mm on the map @ 1:250,000 scale = 10km on the ground). If you have the appropriate romer you should be able to reasonably accurately estimate the distance between features (like road junctions) on the map. This will be very useful when finding the correct roads to use.

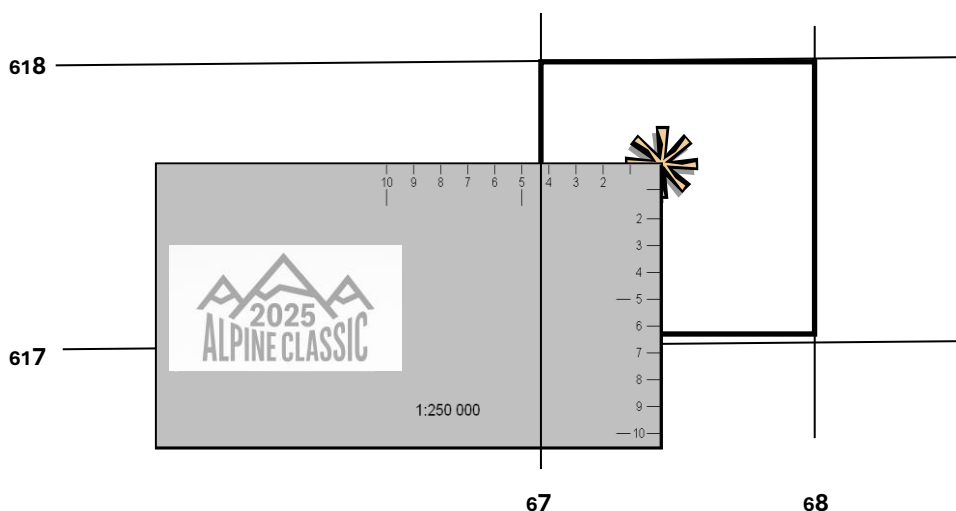
Grid references method A) - Eight digit grid references:

A grid reference location on the map is determined by first defining which grid square it is in and then using your romer to further divide each side

A grid reference looks like an 8 digit number. It's really 2 blocks of 4 digits. So the point you would be looking for at GR **6742 1763** is inside GS**6717**. i.e. the first two and fifth and sixth numbers put you in the correct grid square as we described above. The others pinpoint you within the grid square. You use a romer to locate the point that the 42 and 63 in the grid reference point you to.

The 0 – 10 scales on your romer should line up exactly with the distance between adjacent gridlines and so can be used to divide up a grid square into 10 smaller parts – or 100 parts with a bit of interpolation.

Now to find, GR **6742 1763**, first locate the grid square GS**6717**. Then use the romer by sliding it along the grid till 42 on the romer lines up with the 67 vertical line on the map as in the diagram below. Then move the romer up till the 63 on the romer lines up with the 17 horizontal line in the map. The right hand top corner of the romer is the grid reference you're after. i.e. where the asterisk is. Mark that point – circle it with a pencil or a pen is also good. Once you've done a few of these they are pretty easy. Practice makes perfect. One way of remembering which axis to move along first is to think "walk before you climb".



Grid references method B) - Six digit grid references:

This method of interpreting grid references is an adaption of the method provided on the NATMAP Topographical series of maps. As the method described on those maps only uses 4 digits it does not comply with the requirements of National Rally Code NRC RR Article 5.3(g) which requires one degree of greater precision. This is why we have added two extra digits.

A six digit grid reference might look like "Grenfell FC 742763" its equivalent 8 digit grid reference would be 67421763 (note that if you omit digits 1 and 5 from an 8 digit grid reference, it becomes a 6 digit grid reference without the preceding identifiers).

The first identifier for this reference - "Grenfell" describes the map on which the rest of the grid reference information will be found. In this case the Grenfell map (that will be provided to you).

The next identifier for this reference - "FC" are letters that identify a square on the map that is 100,000 metres square (Note: - **Not** 100,000m²). These identifying letters are blue and will be found where the large numbered "0" vertical and "0" horizontal grid lines intersect. This is because the 100,000 meter square is 10 grid squares x 10 grid squares (remember that one grid square is 10 km x 10 km, and that is 10,000 m x 10,000 m, so 10 grid squares = 100,000m).

These identifying letters will be found in each corner of the 100,000m square.

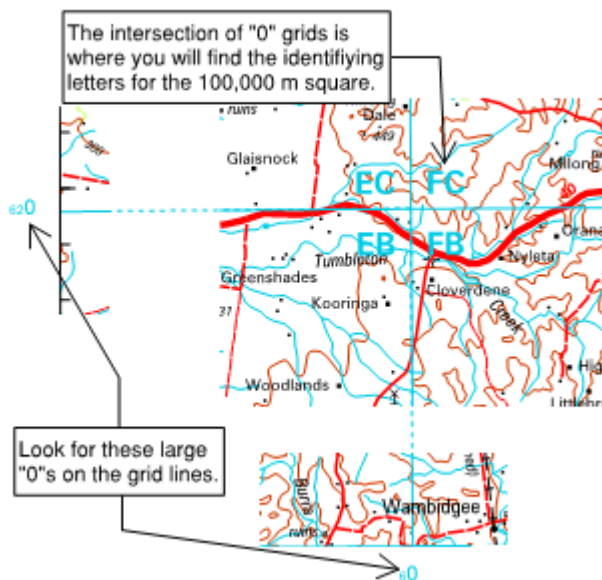
The progression of the first letter is from left to right (You will find FC to the right of EC and DC to the left of EC). Letter groups ending with the same letter will all line up across the map.

The progression of the second letter is from the bottom up the page (you will find EC above EB and EA below EB). Letter groups starting with the same letter will all line up and down the map.

The following diagram (without any confusing map stuff) should help to give you the idea of how the letters are arranged within adjoining squares. Keep in mind that these 100,000 m squares are quite large and you might not see many on the one map.

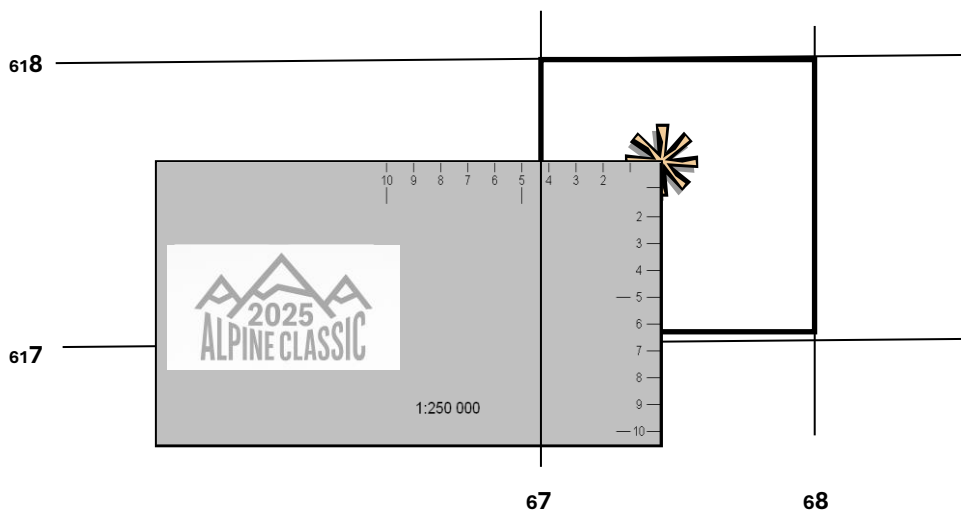
DD	ED	ED	FD	FD	GD
DC	EC	EC	FC	FC	GC
DC	EC	EC	FC	FC	GC
DB	EB	EB	FB	FB	GB
DB	EB	EB	FB	FB	GB
DA	EA	EA	FA	FA	GA

Remember, to find the “0” & “0” grid intersections to find the groups of identifier letters as follows:



Once you have found the 100,000m square, you can then use your romer to help you find the grid reference. The following procedure is similar to that used for 8 digit grid references.

You only need to deal with the larger numbers on the grid lines (the smaller preceding numbers can be ignored because you know which 100,000 m square to look in (in this case FC).



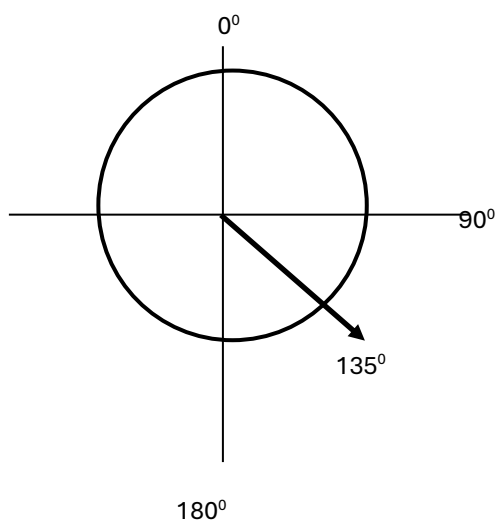
TULIPS are named after the Tulip Rally (Tulpenrallye) that first used them in Holland in the 1950s. These are easy. As the tulip flower grows from the bulb, so you start at the ball and follow the arrow. These can be ‘mapped’ or ‘unmapped’. If ‘mapped’, follow the route on the map. If ‘unmapped’, follow the instructions as you drive along the road. If the instructions say nothing, you must presume it is as mapped.



In both examples, when you come to the intersection (the ‘bulb’), turn to go in the direction of the arrow.

Make sure you are clear from the instructions or Supplementary Regulations what the definition of a “road” is (could be signed roads, sealed roads only etc) and always check tulips are in the correct order. Sometimes Tulips are numbered, and other times they will be provided with a distance, you should always check that they are in order ... Rally setters are sneaky!

COMPASS BEARINGS - Put the middle of the protractor at the starting point with 0 degrees directly North (check the Supp Regs as the vertical blue grid lines are usually defined to run north/south). Read the degrees needed and mark the direction eg 135 degrees



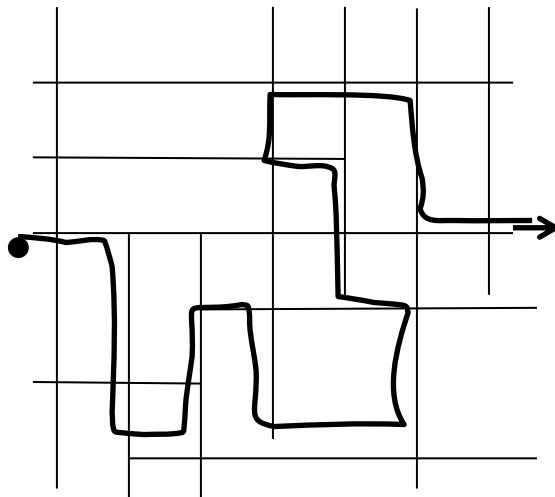
These instructions may be combined with
Speed/Distance/Time calculations

HERRINGBONES/STICKCHARTS are a bit fiddlier. In the instructions they will look like a straight line with little lines off it. The straight line represents the correct route and the little lines represent junctions in the road. It's as if the road you are taking is a piece of string and is pulled straight – all the other roads then poke off to the side. Again, start at the ball (except it's not always marked).

Here is an example.



Below is a **very** stylised map with the thin lines being roads and the route from the herringbone above is the freehand line.



Crossroads are a bit tricky. If you are turning at one, it will look like you are leaving two roads to one side (i.e. left or right). Don't forget to check the definition of a "road" in the Supp Regs.

MAP TRACES are pretty obvious. The instructions will have a picture that is a trace of the route to take. It usually looks like a wiggly line

e.g.



Find the same shape on the map and follow it. A clear sheet and a marker pen can come in handy here so that you can trace the line and hold it over the map to check they match. The nasty bit comes because traces may use a different scale to the map, may be rotated or be a mirror image.

DIRECTION OF ENTRY/EXIT - These will often be given in your route instructions and are straightforward but are incredibly easy to miss in the heat of the moment. Doing this will not only mean you've been on the wrong road and may have missed questions and VRCs and now have your distance wrong for future observation points plus you could also be penalised for a wrong direction of entry into a control! A very small mistake but a very expensive result.

MAPPED FEATURES - Fairly obvious. e.g. "Leave a railway on your left" (ie left of road in direction of travel), or "Keep three mines on your right".

Do what they say and you'll be right on the day!

CLOCK INSTRUCTIONS may be given in the form of a clock face (no good if you grew up with digital watches!). The centre of the clock face represents the intersection and the arms are the roads. You will be told to enter a point at (e.g.) 3:10. The instructions will have told you whether these instructions are “enter to the minute” or “enter to the hour”. If “enter to the hour”, then you enter the point at 3 (i.e. to the west) and exit at 10 i.e. to ENE. If “enter to the minute” then you enter to WSW etc.

ROAD RE-ALIGNMENTS the map is always right. That means if the road has been changed (re-aligned) since the map was produced, that the road you should use is the old road on which the map is based, not the new “unmapped” road. Remember there may be penalties for using unmapped roads. Look at the way the roads are presented on the maps and compare this to how the road looks; if there is a difference you may have found a re-alignment. Use the old mapped road where possible. See the following example:

The map shows a road crossing a railway in a relatively straight line.	In real life you can see where the road has been re-aligned and the old road is still there on both sides of the railway, but now impassable (blocked by the railway). Usually, a Z board would be used at this type of re-alignment to tell you what to do (if Z boards form part of the event structure).
	

AVERAGE SPEED SECTIONS - You will only ever encounter these on timed events i.e. Road Rallies. The instructions will tell you to travel at a certain speed for a certain distance or time or combination of the three. This will keep the navigator busy calculating at what time you should have reached what distance at regular intervals until you reach the end of the average speed section.

Handy formulae, especially for average speed sections:

$$\text{Speed} = \frac{\text{Distance} \times 60}{\text{Time (mins)}}$$

$$\text{Time (mins)} = \frac{\text{Distance} \times 60}{\text{Speed}}$$

$$\text{Distance} = \frac{\text{Speed} \times \text{Time (mins)}}{60}$$

The Timed Passage Control at the end of an Average Speed section is one where you may not stop or significantly vary your speed (except to slow down to a safe speed to enter control).

The Average Speed Tables (see example at the end) detail where you should be at what time.

You will have a 15 second penalty free window either side of the correct time. Outside of this 30 second window you will be penalised for being either too fast or too slow.

REGULARITY SECTIONS - You will only encounter these on times events i.e. Road Rallies. The instructions will require you to repeat some performance on a previous section (so you are regular). On this basis you can probably predict where a regularity section will occur sometime later in the event. Keep a track of where you are, and how long it took to get there; this will be valuable for when you need to repeat your performance.

When you start the regularity section, refer to your notes and try to repeat your times at each distance (even if they were wrong on your previous try).

You will have a 15 second penalty free window either side of the correct time. Outside of this 30 second window you will be penalised for being either too fast or too slow.

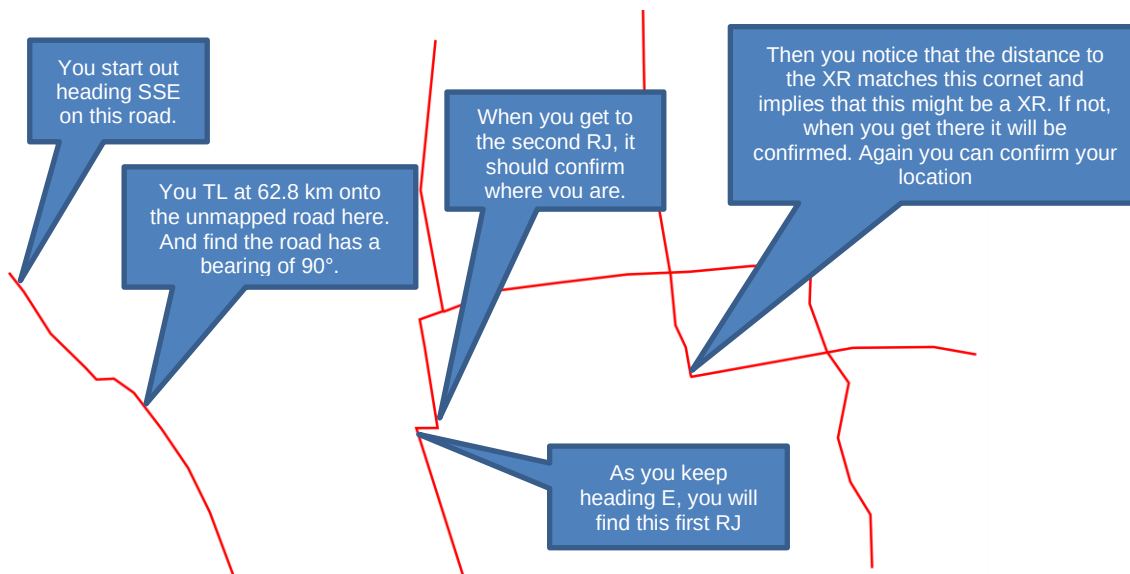
UNMAPPED ROUTE CHARTS - Unmapped route charts can be used to provide another form of navigational challenge. You may be instructed to use unmapped roads in a route chart. It would be a good idea to keep an eye on the compass bearing of the road on which you are travelling and then mark off the total distance of that bearing at each turn. Once the road turns or makes a bend, it will have a new bearing so take note of this and the distance travelled each time there is a turn. If you mark these lengths of connecting roads on the map then you will know where you are at any time, and where the route chart finishes (which might be quite important).

Sometimes the unmapped roads will intersect other mapped roads and this will help you confirm where you are. Other things to look for are surrounding roads and road junctions in the vicinity that might connect to the road that you are using (this might also help you to confirm where you are, or where you might be going).

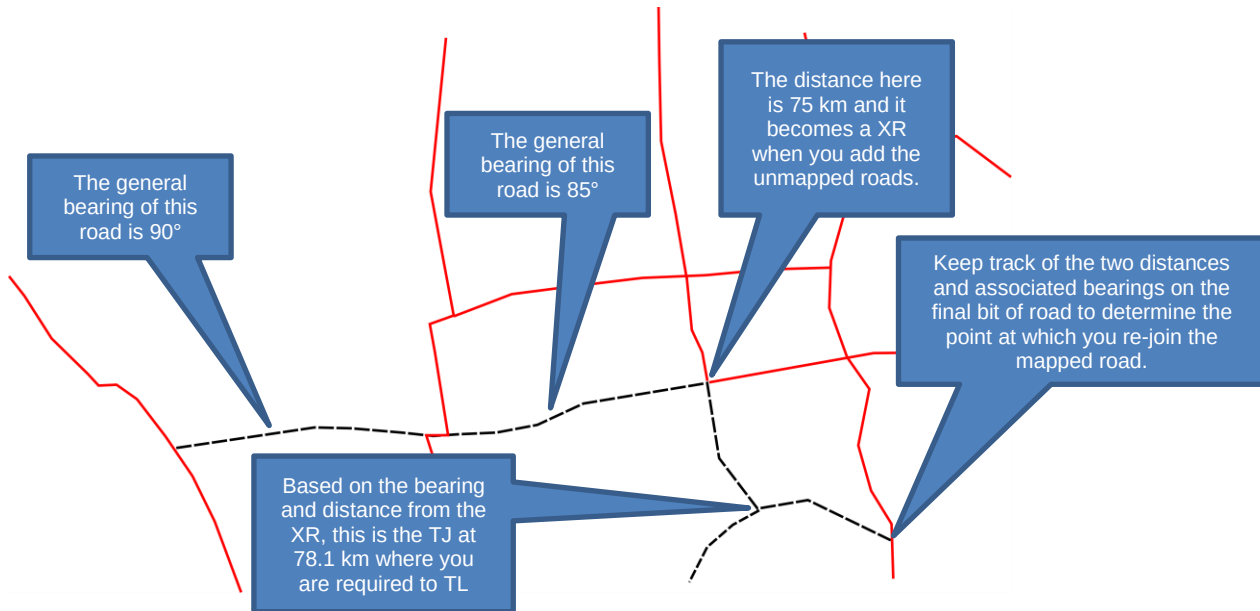
Also remember that in some events, unmapped roads used on a route chart become mapped roads for the remainder of the event and may be used again at another time without penalty. So a good idea to mark them on the map then...

- e.g. – 62.8 km TL onto an unmapped road.
75.0 km TR onto an unmapped road at an unmapped XR.
78.1 km TL at an unmapped TJ and continue until you join a mapped road.

The following is the map you are given which shows only the mapped roads in red.



The following is the marked up map with the unmapped roads in dashed black.



AT LAST: Join up your VIA points, usually in order and usually by the shortest mapped route but you **must** take into account all instructions e.g. using only sealed roads, making your plotted distance match the given distance etc etc. Shortest mapped route can be either 'VIA to VIA' i.e. through each VIA point **in order** or 'overall' i.e. through all VIA points but not necessarily in order. On 1:250 000 maps (which we use), 4 cm = 10 km = 1 grid square. Making an appropriate scale is handy. Don't forget your Romer measures 10 km on a 1:250,000 map.

Some hints

Everything you are told to do refers to the map unless you're told otherwise. So "Leave three roads on the left" means leave three MAPPED roads on the left.

The map is always right. If we say 'leave a mast on the left', we mean on the map. If when you get there, the mast is on the right, don't worry about it.

Read **all** the instructions – don't forget the top box of general instructions for each section.

If you don't know where you are, **STOP**.

Find out what "Rally Time" is.

Timing is "to the minute".

Shortest mapped route **VIA to VIA** means you use the shortest mapped route between **successive VIA points**. This is the most common form of instructions. (Check the numbering of VIAs, they might be out of order....)

Shortest mapped route **overall** means the shortest route from beginning to end of the section i.e. you don't need to go through the VIA points in the same order as they are in the instructions.

You must not oppose Rally Traffic (i.e. use the same road in opposite directions) unless the instructions specifically say you can.

Things to take

Ruler, 360 degree protractor, geometry compass, **A COMPASS**, dividers, rally romer, lead pencil (2B is good), sharpener, eraser, paper, pens, highlighters (two or three different colours), calculator, stopwatch or timer, a firm board with bulldog clips for the maps, travel sickness pills, sense of humour. A correction factor for your odometer as measured against the official distance will be useful. You may wish to consider one of the new Rally Odo apps that are available on mobile phones (many are free!).

HANDY HINTS: ie things most of us forget to do occasionally!!

- Zero your trip meter and timer at the M board (or where you're told to)
- Scribble out the miles/kilometres (whichever you don't use) on the route instructions
- If using more than one map, don't forget they overlap and may be different (check to map priority) The maps mentioned in the instructions are prioritised based on the order mentioned and their scale.
- Hang the roamer around your neck on a string – they're easy to drop and impossible to find
- Make sure you memorise the abbreviations in the Supplementary Regulations – or keep a copy handy
- Get used to the legend on the map to recognise railways, power lines etc
- Set your timer to 'Rally Time' which will displayed at the start
- The NSW Road Directory is recommended to help you through towns
- Any other maps can come in handy but are definitely not necessary. If you take other maps, remember that the instructions refer **only** to the official map.
- Last but not least, don't panic – it's meant to be fun!!! If you do panic or get lost, calm down, take a deep breath and start afresh. It can be guaranteed that you're not the only one having trouble. Even the so-called experts make mistakes. Don't be afraid to call the organisers and ask for a bit of a hand.

The set of trial instructions in the Excel file that we've supplied are in a similar format as you will have on the Alpine Classic. Other rallies will be similar. Use the following map and legend to plot your route.

Good luck and don't forget to read all the instructions carefully.

Alan Walker Mobile: 0432 511 709

Email: alpineclassic@hotmail.com

Below is a scan of a roamer – cut it out to use on your practice rally. The scale should measure the same distance as the distance between the blue grid lines on the map. It's pretty close!



AVERAGE SPEED TABLES

Speed	36.0 km/hr	40.0 km/hr	70.0 km/hr	73.0 km/hr	78.0 km/hr	79.0 km/hr	80.0 km/hr
Time m:s	Distance	Distance	Distance	Distance	Distance	Distance	Distance
00:00	0.00 kms	0.00 kms	0.00 kms	0.00 kms	0.00 kms	0.00 kms	0.00 kms
00:30	0.30 kms	0.33 kms	0.58 kms	0.61 kms	0.65 kms	0.66 kms	0.67 kms
01:00	0.60 kms	0.67 kms	1.17 kms	1.22 kms	1.30 kms	1.32 kms	1.33 kms
01:30	0.90 kms	1.00 kms	1.75 kms	1.83 kms	1.95 kms	1.98 kms	2.00 kms
02:00	1.20 kms	1.33 kms	2.33 kms	2.43 kms	2.60 kms	2.63 kms	2.67 kms
02:30	1.50 kms	1.67 kms	2.92 kms	3.04 kms	3.25 kms	3.29 kms	3.33 kms
03:00	1.80 kms	2.00 kms	3.50 kms	3.65 kms	3.90 kms	3.95 kms	4.00 kms
03:30	2.10 kms	2.33 kms	4.08 kms	4.26 kms	4.55 kms	4.61 kms	4.67 kms
04:00	2.40 kms	2.67 kms	4.67 kms	4.87 kms	5.20 kms	5.27 kms	5.33 kms
04:30	2.70 kms	3.00 kms	5.25 kms	5.48 kms	5.85 kms	5.93 kms	6.00 kms
05:00	3.00 kms	3.33 kms	5.83 kms	6.08 kms	6.50 kms	6.58 kms	6.67 kms
05:30	3.30 kms	3.67 kms	6.42 kms	6.69 kms	7.15 kms	7.24 kms	7.33 kms
06:00	3.60 kms	4.00 kms	7.00 kms	7.30 kms	7.80 kms	7.90 kms	8.00 kms
06:30	3.90 kms	4.33 kms	7.58 kms	7.91 kms	8.45 kms	8.56 kms	8.67 kms
07:00	4.20 kms	4.67 kms	8.17 kms	8.52 kms	9.10 kms	9.22 kms	9.33 kms
07:30	4.50 kms	5.00 kms	8.75 kms	9.13 kms	9.75 kms	9.88 kms	10.00 kms
08:00	4.80 kms	5.33 kms	9.33 kms	9.73 kms	10.40 kms	10.53 kms	10.67 kms
08:30	5.10 kms	5.67 kms	9.92 kms	10.34 kms	11.05 kms	11.19 kms	11.33 kms
09:00	5.40 kms	6.00 kms	10.50 kms	10.95 kms	11.70 kms	11.85 kms	12.00 kms
09:30	5.70 kms	6.33 kms	11.08 kms	11.56 kms	12.35 kms	12.51 kms	12.67 kms
10:00	6.00 kms	6.67 kms	11.67 kms	12.17 kms	13.00 kms	13.17 kms	13.33 kms
10:30	6.30 kms	7.00 kms	12.25 kms	12.78 kms	13.65 kms	13.83 kms	14.00 kms
11:00	6.60 kms	7.33 kms	12.83 kms	13.38 kms	14.30 kms	14.48 kms	14.67 kms
11:30	6.90 kms	7.67 kms	13.42 kms	13.99 kms	14.95 kms	15.14 kms	15.33 kms
12:00	7.20 kms	8.00 kms	14.00 kms	14.60 kms	15.60 kms	15.80 kms	16.00 kms
12:30	7.50 kms	8.33 kms	14.58 kms	15.21 kms	16.25 kms	16.46 kms	16.67 kms
13:00	7.80 kms	8.67 kms	15.17 kms	15.82 kms	16.90 kms	17.12 kms	17.33 kms
13:30	8.10 kms	9.00 kms	15.75 kms	16.43 kms	17.55 kms	17.78 kms	18.00 kms
14:00	8.40 kms	9.33 kms	16.33 kms	17.03 kms	18.20 kms	18.43 kms	18.67 kms
14:30	8.70 kms	9.67 kms	16.92 kms	17.64 kms	18.85 kms	19.09 kms	19.33 kms
15:00	9.00 kms	10.00 kms	17.50 kms	18.25 kms	19.50 kms	19.75 kms	20.00 kms
15:30	9.30 kms	10.33 kms	18.08 kms	18.86 kms	20.15 kms	20.41 kms	20.67 kms
16:00	9.60 kms	10.67 kms	18.67 kms	19.47 kms	20.80 kms	21.07 kms	21.33 kms
16:30	9.90 kms	11.00 kms	19.25 kms	20.08 kms	21.45 kms	21.73 kms	22.00 kms
17:00	10.20 kms	11.33 kms	19.83 kms	20.68 kms	22.10 kms	22.38 kms	22.67 kms
17:30	10.50 kms	11.67 kms	20.42 kms	21.29 kms	22.75 kms	23.04 kms	23.33 kms
18:00	10.80 kms	12.00 kms	21.00 kms	21.90 kms	23.40 kms	23.70 kms	24.00 kms
18:30	11.10 kms	12.33 kms	21.58 kms	22.51 kms	24.05 kms	24.36 kms	24.67 kms
19:00	11.40 kms	12.67 kms	22.17 kms	23.12 kms	24.70 kms	25.02 kms	25.33 kms
19:30	11.70 kms	13.00 kms	22.75 kms	23.73 kms	25.35 kms	25.68 kms	26.00 kms
20:00	12.00 kms	13.33 kms	23.33 kms	24.33 kms	26.00 kms	26.33 kms	26.67 kms
20:30	12.30 kms	13.67 kms	23.92 kms	24.94 kms	26.65 kms	26.99 kms	27.33 kms
21:00	12.60 kms	14.00 kms	24.50 kms	25.55 kms	27.30 kms	27.65 kms	28.00 kms
21:30	12.90 kms	14.33 kms	25.08 kms	26.16 kms	27.95 kms	28.31 kms	28.67 kms
22:00	13.20 kms	14.67 kms	25.67 kms	26.77 kms	28.60 kms	28.97 kms	29.33 kms
22:30	13.50 kms	15.00 kms	26.25 kms	27.38 kms	29.25 kms	29.63 kms	30.00 kms

23:00	13.80 kms	15.33 kms	26.83 kms	27.98 kms	29.90 kms	30.28 kms	30.67 kms
23:30	14.10 kms	15.67 kms	27.42 kms	28.59 kms	30.55 kms	30.94 kms	31.33 kms
24:00	14.40 kms	16.00 kms	28.00 kms	29.20 kms	31.20 kms	31.60 kms	32.00 kms
24:30	14.70 kms	16.33 kms	28.58 kms	29.81 kms	31.85 kms	32.26 kms	32.67 kms
25:00	15.00 kms	16.67 kms	29.17 kms	30.42 kms	32.50 kms	32.92 kms	33.33 kms
25:30	15.30 kms	17.00 kms	29.75 kms	31.03 kms	33.15 kms	33.58 kms	34.00 kms
26:00	15.60 kms	17.33 kms	30.33 kms	31.63 kms	33.80 kms	34.23 kms	34.67 kms
26:30	15.90 kms	17.67 kms	30.92 kms	32.24 kms	34.45 kms	34.89 kms	35.33 kms
27:00	16.20 kms	18.00 kms	31.50 kms	32.85 kms	35.10 kms	35.55 kms	36.00 kms
27:30	16.50 kms	18.33 kms	32.08 kms	33.46 kms	35.75 kms	36.21 kms	36.67 kms
28:00	16.80 kms	18.67 kms	32.67 kms	34.07 kms	36.40 kms	36.87 kms	37.33 kms
28:30	17.10 kms	19.00 kms	33.25 kms	34.68 kms	37.05 kms	37.53 kms	38.00 kms
29:00	17.40 kms	19.33 kms	33.83 kms	35.28 kms	37.70 kms	38.18 kms	38.67 kms
29:30	17.70 kms	19.67 kms	34.42 kms	35.89 kms	38.35 kms	38.84 kms	39.33 kms
30:00	18.00 kms	20.00 kms	35.00 kms	36.50 kms	39.00 kms	39.50 kms	40.00 kms
30:30	18.30 kms	20.33 kms	35.58 kms	37.11 kms	39.65 kms	40.16 kms	40.67 kms
31:00	18.60 kms	20.67 kms	36.17 kms	37.72 kms	40.30 kms	40.82 kms	41.33 kms
31:30	18.90 kms	21.00 kms	36.75 kms	38.33 kms	40.95 kms	41.48 kms	42.00 kms
32:00	19.20 kms	21.33 kms	37.33 kms	38.93 kms	41.60 kms	42.13 kms	42.67 kms
32:30	19.50 kms	21.67 kms	37.92 kms	39.54 kms	42.25 kms	42.79 kms	43.33 kms
33:00	19.80 kms	22.00 kms	38.50 kms	40.15 kms	42.90 kms	43.45 kms	44.00 kms
33:30	20.10 kms	22.33 kms	39.08 kms	40.76 kms	43.55 kms	44.11 kms	44.67 kms
34:00	20.40 kms	22.67 kms	39.67 kms	41.37 kms	44.20 kms	44.77 kms	45.33 kms
34:30	20.70 kms	23.00 kms	40.25 kms	41.98 kms	44.85 kms	45.43 kms	46.00 kms
35:00	21.00 kms	23.33 kms	40.83 kms	42.58 kms	45.50 kms	46.08 kms	46.67 kms
35:30	21.30 kms	23.67 kms	41.42 kms	43.19 kms	46.15 kms	46.74 kms	47.33 kms
36:00	21.60 kms	24.00 kms	42.00 kms	43.80 kms	46.80 kms	47.40 kms	48.00 kms
36:30	21.90 kms	24.33 kms	42.58 kms	44.41 kms	47.45 kms	48.06 kms	48.67 kms
37:00	22.20 kms	24.67 kms	43.17 kms	45.02 kms	48.10 kms	48.72 kms	49.33 kms
37:30	22.50 kms	25.00 kms	43.75 kms	45.63 kms	48.75 kms	49.38 kms	50.00 kms
38:00	22.80 kms	25.33 kms	44.33 kms	46.23 kms	49.40 kms	50.03 kms	50.67 kms
38:30	23.10 kms	25.67 kms	44.92 kms	46.84 kms	50.05 kms	50.69 kms	51.33 kms
39:00	23.40 kms	26.00 kms	45.50 kms	47.45 kms	50.70 kms	51.35 kms	52.00 kms
39:30	23.70 kms	26.33 kms	46.08 kms	48.06 kms	51.35 kms	52.01 kms	52.67 kms
40:00	24.00 kms	26.67 kms	46.67 kms	48.67 kms	52.00 kms	52.67 kms	53.33 kms

Legend

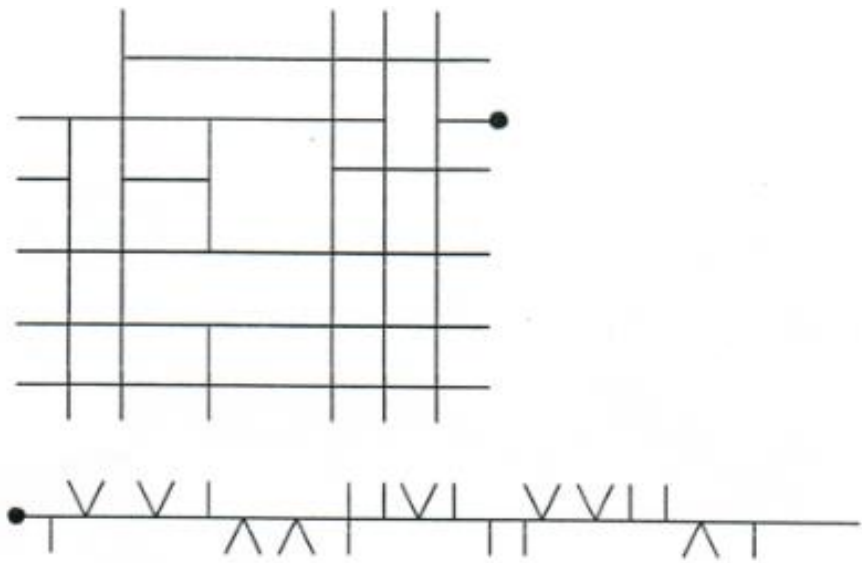
	sealed	unsealed
Principal road; Built-up area; Locality.....		
Secondary road; Bridge; Causeway.....		
Minor road; Embankment; Cutting.....		
Vehicle track; Gate; Stock grid.....		
Dual carriageway; Distance in kilometres.....		
Route marker: National, State.....		
Airport; Landing ground; Heliport.....		
Multiple track railway; Station or siding.....		
Single track railway; Bridge; Tunnel.....		
Power transmission line.....		
Homestead; Building/s; Ruin.....		
Fence; Levee; Open cut mine.....		
Mine; Windpump; Yard.....		
Contour with value; Depression contour.....		
Horizontal control point; Spot elevation.....		
Sand; Sand dunes.....		
Sand ridges; Pinnacle; Cliff.....		
Forest, wood or scrubland; Rainforest.....		
Pine plantation; Urban recreation parkland....		
Orchard, plantation or vineyard; Windbreak..		
Watercourse (presence of water not implied)		
Perennial lake; Non-perennial lake.....		
Bore or well; Spring; Tank or small dam.....		
Subject to inundation; Swamp.....		
Saline coastal flat; Wreck, bare or awash.....		
Foreshore flat; Lighthouse.....		
Mangrove; Tidal ledge or reef; Shoal.....		
Breakwater; Rock, bare or awash.....		
Wharf; Jetty or pier.....		
State or territory boundary.....		
Reserved area boundary.....		
Prohibited area boundary.....		

GRID REFERENCE EXERCISES – these should all define a location, intersection, bridge etc on the supplied map

GRID REFERENCE	LOCATION
GR 6542 2849	
GR 6711 2646	
GR 6679 3004	
GR 6783 2660	
GR 6586 2723	
GR 6825 2601	
GR 6505 2428	
GR 6447 2867	
GR 6859 2746	
GR 6543 2840	

HERRINGBONE EXERCISES – start at the ball on the schematic below and match the intersections to the ‘roads’

Exercise 1 – at the first junction, you’re ‘leaving a road on the right’ ie turning left. Next junction, you’re leaving two on the left ie turning right at the cross roads, etc etc



Exercise 2

