

**THE PETERBOROUGH  
MOTORSPORTS CLUB**

***RALLY NAVIGATOR'S HANDBOOK***

**AS PREPARED BY**

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## **WHAT YOU NEED TO COMPLETE A RALLY**

### **Required Equipment**

Calculator-battery powered, not solar  
Clipboard  
Pens or pencils  
Flashlight or night lite, if running a night rally  
Stop watch  
Scrap Paper  
Safety Triangle

### **Recommended**

Gravol (Personal preference)  
Money  
CAA card  
Blanket  
Choc-bars & drinks in plastic containers  
First Aid Kit  
Tow rope  
Additional headlights

## **HOW TO START**

Arrive at the start location at least 45 minutes before the start of the event.

Find the registrar of the event, inform them that you are a beginner and ask for their help in getting you started. They will likely ask one of the more experienced competitors to help you. Don't worry, the other competitor started just like you are.

**REGISTRATION** You and your driver will need:

1. Both driver's licences
2. The vehicle registration
3. Proof of insurance
4. License plate number
5. Make, model, colour and year of your vehicle.

Complete and sign the registration form and submit it with your entry fee to the registrar. Both driver and navigator must also sign the event waiver form which is usually located on the registration table. If the navigator is a minor, the driver must sign the waiver on their behalf.

Next, find the "**official time**". This will be a watch or stop watch displayed in a prominent place. The time displayed will be the time that the rally is based on. All of the checkpoint crews will have their watches set to exactly match this time. Set your own watch to match this time.

Check for any notices with possible route changes, corrections, cautions, road closures, washouts, etc. Note the time that the **drivers meeting** will be held. Be sure to attend this meeting, navigator's too, as the organizer will tell you of any last minute route changes, cautions and when your time out (starting time) will be. Your time out will be the same as your car number. (Eg. If your car number is 14 and the rally starts at 12:00 p.m., your time out will be 12:14) Take your clipboard so you can make notes. The organizer will also tell you which, if any, of the controls are timed to the minute or second. I will explain timing later.

BE AWARE THAT THE LOCAL POLICE FORCES IN CHARGE OF THE AREAS YOU WILL BE TRAVELING THROUGH HAVE BEEN NOTIFIED OF THE EVENT. EVERY PARTICIPANT, WHETHER A COMPETITOR, ORGANIZER, HELPER OR SPECTATOR, SHOULD CONSIDER THEMSELVES AN AMBASSADOR TO THE SPORT AND SHALL GOVERN THEIR BEHAVIOR ACCORDINGLY.

***Competitors receiving any sort of traffic violation will automatically be disqualified from the event.***

BEFORE YOU START THE RALLY CHECKLIST!!

1. Go to the bathroom!!
2. Make sure your car is topped up with all liquids: gas, windshield washer fluid, oil
3. Make sure that all loose articles in the car are secured well away from the driving area.

Many times people forget the basics of survival. There are not many bathrooms available on route. Besides, having to stop will make you late. Make sure you have some emergency food and water on hand in case you break down or get lost on some back road and, in wintertime, have extra clothing, dry footwear and emergency blanket on board.

REMEMBER THE THREE BASIC RULES OF SUCCESSFUL RALLYING:

1. Stay on the road
2. Stay on the course
3. Stay on time

**LET'S GO RALLY!!!**

## THE IN-CAR RALLY START

Navigators should go to their vehicle 5 - 10 minutes before their start time, to get themselves set up and organized for the start of their rally. The driver should pick up the instructions from the organizer at the pre-determined time (usually 2 - 5 minutes before departure) or, when the organizer calls your car number. The driver then **immediately takes the instructions to the navigator**. Your rally has just started. The driver should get settled, put his seatbelt on and listen for instructions from his navigator. **Drivers** - do not start immediately questioning your navigator for instructions. He/She will tell you where to go just as soon as he/she has figured it out or ask for your help if they need it. Remember, for the next 3 or 4 hours your navigator is a god/goddess and has it within their power to make you a hero or a toad before you go home. Be patient, check that your odometer is set to zero and wait.

NAVIGATOR - As soon as you receive the instructions from the driver:

1. Count the number of pages in your route book to be sure they are all there and in the correct order.
2. Make sure the recovery map is attached to the back of your instructions.
3. Read the first page (cover page) for any information.  
e.g.: Do sections in order 1,2,3,5,4,6,7,8.

SA - STRAIGHT AHEAD

RRX - RAILROAD CROSSING

T - TEE INTERSECTION

R - RIGHT TURN

L - LEFT TURN

CAS - CHANGE AVERAGE SPEED

4. Checkpoints timed to the minute or second.
5. Often times CAS instructions for all or some of the sections will be on a page separate from the directional instructions, usually at the end of your instruction booklet. Check for this at the beginning of the rally so you don't miss this very important information.

Never throw any pages of your instruction booklet into the back seat or out the window of the vehicle just because you think you're finished with them. Inevitably that is the one page you will need to refer back to in order to successfully complete the rally. As you complete each instruction, check it off if you are confident you completed it correctly (turned correct direction, odometer matched instructions) or put a question mark beside it if you think it's right but you're not absolutely sure. This will help you if you get lost and need to backtrack to your last *known* position. Instruct your driver to proceed to the start location, zero the odo (odometer) and tell them where to go. You will be telling them a lot.

The first 10 to 20 kilometres of the rally will normally consist of an "odo check" (odometer check) which will allow you to compare your odo with that of the organizers. There will be no speed limits given for you to travel at during this portion of the rally. You will be given an

amount of time that you can take to reach the odo check stop. There will be no checkpoints within the odo check. You can reach the odo check early and use the extra time to calculate the difference between your odo and the organizers, and to calculate the “factor” by which you can adjust the distances given in the instructions.

Calculate your factor by:

$$\frac{\text{Your odo reading at odo check}}{\text{Rally distance at odo check}}$$

Multiply the distances given in the rally by this factor to more accurately reflect what your odometer will read at each instruction point.

Calculate the time you should leave the odo check by adding the time you were supposed to leave the start of the rally to the time allowed to reach the odo check. This will be the time that you leave the odo check.

e.g..	Time out at start of rally	12:14
	Plus: time allowed to the odo check	<u>13:00</u> minutes
	Leave odo check at	12:27:00

When you leave the odo check you will begin using average speeds. The instruction CAS (change average speed ) will tell you what speed to go. Remember, that speed must include the **average of your speed** through straight roads, corners, intersections and stopping for stop signs and traffic signals. Therefore it will be necessary to travel at a speed approximately 10% above the speed given in the instructions. You should never have to exceed the legal speed limit.

**STAY ON THE ROAD**  
**STAY ON COURSE**  
**STAY ON TIME**

From this point on it will simply be a matter of telling your driver where to go and how fast to get there. You will have to repeat instructions over and over. This is not a unique gift of your particular driver, it is a brain fade shared by all.

**REMEMBER: ZERO YOUR ODO AT THE END OF EVERY SECTION.**

**THE LAST INSTRUCTION OF ONE SECTION IS THE SAME  
AS THE FIRST INSTRUCTION OF THE NEXT SECTION, SO  
DO NOT DO THIS INSTRUCTION TWICE.**

You can verify your location at the end of each section as you will be given a detailed

explanation of where you should be.

e.g.. STOPPED FACING SOUTH ON SMITH CENTER LINE AT  
PETERBOROUGH COUNTY ROAD 28 TURNING EAST (LEFT).

Should you get lost at any point during any part of the rally, you can try back tracking for a couple of instructions, but, only if they are not too far away and it doesn't take you more than a few moments. If you spend more than 5 minutes trying to figure out where you are and can't get back on track, start looking for the end of section as given at the back of the instructions. You can also use the Recovery Map attached to the back of your instruction booklet to help you find the end of section. It is better to take the chance of missing one checkpoint than to miss the rest of the rally.

Checkpoints open 10 to 15 minutes before car 0 is to go past and close when all the cars have gone through the checkpoint zone or 15 minutes after the last car is supposed to have passed through unless otherwise specified by the organizer at the beginning of the rally.

## **TYPES OF INSTRUCTIONS**

### ***DISTANCES - 2 TYPES***

**Accumulative:** Start at zero and accumulates ( adds up ) to the end of section.

e.g.. 0.00 TEE R  
1.34 R  
2.09 BL  
4.71 S R

**Non-Accumulative:** Start at zero and distances are given BETWEEN one instruction and the next instruction. You can zero your odo at every instruction to reduce odo error or the navigator can simply add up the non-accumulative distances. Your choice.

e.g.. 0.00 TEE R  
1.34 R  
.75 B L  
2.62 S R

### ***DIRECTIONS - MANY, MANY TYPES.***

Generally speaking, not all roads will be shown. If no instruction is given, when you come upon an intersection, then remain on the road on which you are traveling. Dead end and “no exit” roads do not exist for the purpose of most rallies, unless specified. *Remember that the instructions may be in the right order or they may be scrambled.*

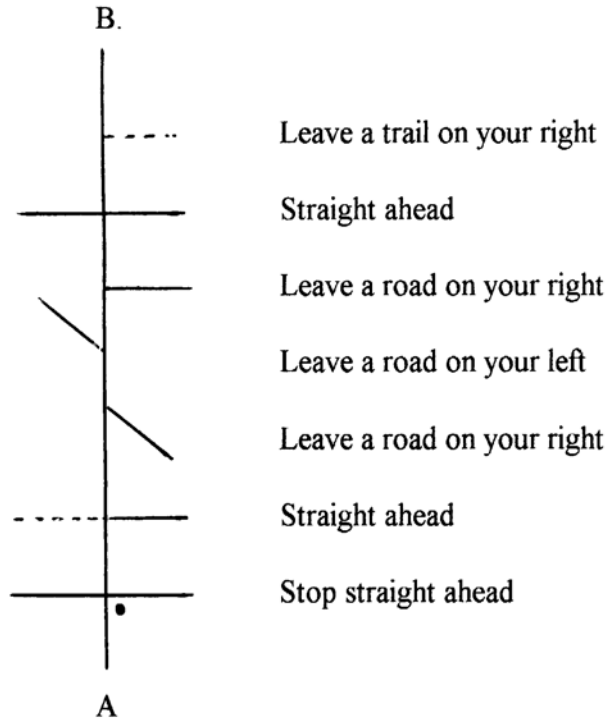
**Letter Instructions-** usually defined on the first page of instructions

CAS	Change Average Speed.
R	Right Turn
L	Left Turn
SA	Straight Ahead
RRX	Railroad Crossing
T or TEE	The road you are traveling on will <u>usually</u> come to a STOP or YIELD sign and you will have the option of turning right or left but not straight ahead. The intersection is in the shape of a “T” from an aerial view.
S	Stop
BR	Bear Right
BL	Bear Left
ACUTER	Acute Turn to the right. The road will turn back on an angle less than 90 degrees from the road you are on.
ACUTEL	As above only turning left.
TL or TS	Traffic Signal or Lights





**Straight Line** - Check whether the instructions tell you to go from A to B or, from B to A. If you are to go from B to A, turn the page upside down so that you are starting from the bottom of the line. The interpretation of a straight line map requires an open mind. In this example, the instruction closest to “B” could mean continue traveling straight ahead when you pass (leave) a



dead end road on your right, or it might mean you come to a Tee intersection with a dead end road to your right and you will turn left, “leaving” the dead end on your right. The instruction before that is a pretty straight forward straight ahead through a four way intersection, “leaving” a road on your right and a road on your left. There may or may not be a Stop or Yield Sign. The next closest instruction could be interpreted the same as the first one except that you are “leaving” a passable road on your right. Another possibility for this instruction is to come upon a left hand turn which means you will “leave” the road you are traveling on to your right as you make the left hand turn. This is probably the type of instruction that confuses most beginners, so if this doesn’t make sense, don’t worry, talk to one of the experienced ralliers who may be able to explain it more clearly in person.

**Words** - This is basically just one very long run on sentence. With this type of instruction a  
Page 9

highlighter comes in handy so that you can mark off what you have done without drawing a pen line through it. The pen line makes it even more difficult to re-read these instructions should you have to backtrack.

Start this section when you turn right onto main street from the west entrance of the gas stop turn left at the flashing traffic light and drive straight out of the town of Wardsville at 1.60 km turn right and pass 62 kph. This will steer you back onto the rally route and home towards London take the next right at 4.05 km and then stop straight ahead across Hwy #2 turn left at the next intersection ignoring the road closed sign and then stop to get right you get the idea

This is by no means a complete list of the types of instructions you will see. These are the types of instructions most likely to be used in Beginners' Instructions. Keep in mind that any of these instructions may use accumulative or non-accumulative distances or the order may be scrambled. Organizers are always trying to come up with different types of instructions to challenge competitors. Beginners' Instructions will often include a brief explanation of how to read each type of instruction and give you a few road names so you can verify you are on the correct route. There is no substitute for common sense. Be sure you **read all of the instructions** carefully to give you your best chance. If you are really confused, it may be better to ask your driver to pull off the road for a couple of minutes to allow you to sort things out, rather than to press on and risk getting terribly off route. This also allows you to consult with your driver and ask for his/her input. ABOVE ALL, REMAIN CALM, THIS IS SUPPOSED TO BE FUN.....REMEMBER!!

## **“GOTCHAS”**

Having said that this is supposed to be fun, some organizers like to have fun too. They often do this in the form of “Gotchas”. These are little discrepancies in the instructions that are up to you to notice and take into account in your navigation and timing.

One of the most common “Gotchas” is a run on section. Before starting any section, compare the distance of the last instruction given to the distance given in your End Of Section Description on this page or on the separate page containing this information. The distance given in the End of Section Description is the accurate information. If the distances in the instructions go beyond the EOS distance, ignore all instructions given after the End of Section distance. It is a trick by the organizer that will likely take you in an extra loop of road travel and ultimately keep you on route, but will cost you dearly in time. I like to check all of the End of Section distances as soon as possible after I receive the Route Book and make a note of any run-on sections just in case I might forget to do it later.

A second type of “Gotcha” is to rearrange the sections or pages of your route book. When you get your route book be sure that all the pages are in order and that all the sections appear in order.

Also double check that you are not told (usually on the first page of the instruction book) to “Do the sections in order 1,2,3,4,6,5 7,8,9,10” or “Do the instructions by page number 1,2,3,5,4,6,7.” If you are given this type of information, follow it.

Another “Gotcha” is to present time in decimal form rather than in minutes and seconds or to alternate between the two. Look carefully to see if time is referred to as 1.25 minutes or 1:25. The first one means 1 minute 15 seconds, the second 1 minute 25 seconds. It can mean a big difference at the end.

Finally, one of the simplest “Gotchas” is basic reading. Remember earlier when I talked about letter instructions and abbreviations being defined within the first couple of pages of instructions.

CAS	Change Average Speed.
R	Right Turn
L	Left Turn
SA	Straight Ahead
RRX	Railroad Crossing

Well, be careful to read what you see and not what you assume will be there:

CAS	Change Average Speed.
<b>R</b>	<b>Left Turn</b>
<b>L</b>	<b>Right Turn</b>
SA	Straight Ahead
RRX	Railroad Crossing

It is impossible to tell you about all the possible tricks because as soon as I try, someone will think up a new twist. Just be sure to read your instructions very carefully, be sure you understand them before continuing and never make any unwarranted assumptions.

## CHECKPOINTS

Checkpoints will be located at unknown positions throughout the rally. There will never be a checkpoint within a portion of the rally in which you are given an allotted time to complete that portion such as in the odo check. The checkpoint will be identified by a large white board with a red "X" across it. It will most often be resting against the back bumper of the checkpoint car, but occasionally may be supported on the shoulder of the road with the checkpoint car parked off of the road or the crew sitting out enjoying the sun. When you see a checkpoint, drive past the checkpoint and park safely off to one side of the road. Your time will be taken when your front bumper passes the checkpoint board. You can be penalized for improper or unsafe checkpoint procedure. The driver will go back to the checkpoint crew and be given a sticker indicating the time at which you passed by the checkpoint and the time at which you should leave the checkpoint (Time Out or TO). Attach this sticker to its corresponding number on the Route Card you were given at the start of the rally.

Once you have gone through a checkpoint, consider yourself as starting at zero as far as penalty points are concerned. Any penalty you received cannot be undone by speeding up or slowing down to the next checkpoint.

Leave the checkpoint about 10-15 seconds before your time out to allow yourself time to get up to speed.

## **SCORING**

Penalties are given for being early or late to a checkpoint. For checkpoints timed to the second you will be penalized 0.1 point for every 6 seconds early or late. This means you have a 6 second window in which you must drive past the control car. Sounds impossible doesn't it? Other types of checkpoints are those timed to the minute. For these you have a 1 minute window in which you must pass the checkpoint sign and you will be penalized 1.0 points for every minute or portion of a minute you are early or late. Your individual checkpoint penalties will be added up at the end of the rally to determine your total score.

At checkpoints timed to the minute your time out will be determined by taking your time in and rounding it up to the next minute. e.g.. TIME IN 12:24:32 TIME OUT 12:25 At these checkpoints the driver must hurry to return to his/her car since you have very little time to get belted in and on your way. In the example given, you would have 28 seconds.

At checkpoints timed to the second your time out will be determined by taking your time in, rounding it up to the next minute and adding 1 minute. e.g.. TIME IN 12:24:32  
TIME OUT 12:26

In both cases if two or more cars enter the control zone in the same minute, the second and consecutive vehicles will be spaced 1 minute apart from the first vehicle's time out to separate the competitors again. It is up to the competitors to present themselves to the control marshal in the order that they entered the checkpoint. Failure to do so will result in your receiving a fellow competitor's times and perhaps more penalty points for yourself.

If you need extra time at the control zone, ask the operator. Any reasonable request will be allowed.

## **FINISHING THE RALLY**

When you reach the end of the rally your instructions will indicate that you have a given amount of time to park your vehicle and check in at the finish control (final checkpoint). You can arrive early and ask for the time in you want, if you think you're early or you can ask them for the current time. If you want to calculate your time, you calculate the times from the last checkpoint you were at, plus the time allowed to park and check in. You cannot ask for a time that has already passed.

## TIMING

Only attempt to do the timing when you are comfortable with the STAYING ON COURSE aspect of rallying. This may take ½ a rally or it may take two rallies or it may take ten rallies..

The formula to determine time is:

$$\frac{\text{Distance x 60}}{\text{Speed}}$$

Realizing that the decimal points in the answer to this equation are in 100's of a minute you will have to convert these 100's to seconds.

Formula: Decimal number x 6 (eg. .34 x 6 = 20 seconds)

Initially calculate your time from one speed change to the next. When you get proficient at this you can start calculating times from one instruction to the next.

When you reach a checkpoint, you will be given information including, TI, TO, the distance at which the checkpoint is located in the section and car 0's expected time in. Don't be concerned with car 0's time. Just use the distance given to recalibrate your time to the next CAS and carry on.

**PAUSES** - You will find either with your directional instructions or on the page containing speed changes, pause instructions. They will appear as P 15 or Pause 15 seconds or Pause .25; all meaning the same thing. (NOTE: Pause .25 is time given in a decimal form rather than complete seconds, hence  $60 \times .25 = 15$  seconds. This is a "gotcha" to watch out for throughout the instructions as organizers may move back and forth between the two forms. Pause :15 is equal to 15 seconds. One little dot can make a big difference.)

In either case, these pauses are included to allow competitors extra time to cross major highways, to accommodate time which may be lost due to traffic lights or to balance the timing for the organizer. You must adjust your timing calculations to include these pauses or you will end up early at your next checkpoint.

There is much more involved in the extremely accurate timing used in rallying, but this is enough to get you started. When you feel ready, speak to one of the more experienced navigators many of who now use rally specific computers, laptops and programmable calculators.

# **DRIVERS**

As a driver you are responsible for the vehicle. It is your job to make sure the vehicle has all the necessary safety equipment and is full of fuel, oil and windshield washer fluid. All 5 tires are inflated and all lights are in working order.

You will receive the instructions from the organizer while your navigator is in the vehicle preparing to start the rally. You will take the instructions to your navigator then, listen for instructions from your navigator.

## **DURING THE RALLY YOUR JOB WILL BE AS FOLLOWS**

- you must watch for intersections, hidden roads and cautions,
  - you must maintain the average speed that your navigator tells you.
- Remember a traffic ticket will disqualify you from the event.
- you must watch for checkpoint signs and/or vehicles.

## **Checkpoint Procedure**

When you see a checkpoint sign you will proceed past the vehicle in a safe manner and park as far to the right off the road as safely possible. Then, on foot, you will return to the checkpoint vehicle and announce your vehicle number. If more than one car arrives at the checkpoint at the same time, it is the drivers' responsibility to present themselves to the checkpoint crew in the order in which they passed the checkpoint. You will receive a slip with the checkpoint information on it then go back to your vehicle. Proceed only when your navigator tells you to.

**STAY ON THE ROAD**

**STAY ON COURSE**

**STAY ON TIME**

**NEVER ASSUME  
THAT YOU KNOW WHERE THE ORGANIZER IS TAKING YOU  
ON THEIR RALLY.**

## TEAMWORK

Although this manual concentrates on the navigational side of rallying, there is no substitute for good teamwork. The best teams in rallying are those who support each other and help each other through the various demands that will be made on the individuals. It is important for the driver to listen carefully to the navigator's instructions and to try to retain the most recent information given so that the navigator can continue to work ahead in the instructions. The navigator may also ask the driver to watch for certain road signs or speed changes and to let him/her know when they are coming up.

The driver's contribution is not to be ignored. Often times the roads you will be driving will be challenging. There are times when it will be difficult to maintain the speeds that the organizer has set for you. During these times it is important for the driver to remain focused and for the navigator not to interfere. If the navigator can contribute important information with respect to cautions, change of road surface or stops that may be coming up, try to let your driver know before he/she is on top of them. You can often guess if the road surface will be changing if there are dramatic changes in the CAS. Remember you are traveling on public roads and you must expect the unexpected; oncoming traffic around the corner, people walking/bicycling on the road, dogs darting out at you, etc. Talk to experienced rally drivers, there are some valuable tips that will help you save time and control your car.

Safety is a primary concern. If you feel you are driving beyond your limits, back off. You will not be doing yourself and the sport of rally any favours by injuring yourself or others, damaging your car or others' property. Here again, is where teamwork comes into play. If the navigator is uncomfortable with the driver's style or speed, he/she should speak up; it is very easy to get caught up in the adrenaline rush of competition and not realize just how far you're pushing it.

Use special caution when traveling through populated areas; especially small sub-divisions on back roads. People have usually chosen to live here because of the peace and quiet it provides and often have small children. They are not accustomed to having cars charging down **their** roads and will resent your doing so. Remember, you are ambassadors of the sport and should conduct yourselves accordingly. Just imagine it is your family living on that road.

Over the 18 years I have been involved in rally I have traveled a lot of places, spent many hours on some beautiful roads (although I still don't know where I was) and met a lot of wonderful people. The rally community is a great group of people always ready to help each other. Never be afraid to approach a more experienced driver or navigator for fear of ridicule. Everyone remembers what it was like starting out and is more than willing to help. We all want to see the sport continue to grow and prosper and that can only happen with more people becoming involved. Remember, rally is a sport and sport is supposed to be fun. Go have some rally fun!