

JAGUAR CLUBS OF NORTH AMERICA, INC.

RALLY PROGRAM MANUAL

Chapter 9 – Rules And Guidelines For The Driver And Navigator

9.1. GENERAL INFORMATION - The following information is presented to clarify, interpret, and define certain conventions that will apply to this event. This information is presented to assist you in executing the instructions and to attempt to avoid misinterpretation.

9.2. Role of the Driver –

- 9.2.1. Obey all applicable traffic laws.
- 9.2.2. Keep in mind the instructions for the next turn.
- 9.2.3. Be prepared for the unexpected.
- 9.2.4. Monitor vehicle instrumentation and fuel gauge.
- 9.2.5. Keep calm, even if you feel like blowing your top.

9.3. Role of the Navigator

- 9.3.1. Read each new set of instructions with scrupulous care. Don't assume anything.
- 9.3.2. Determine the route to be followed from the information given.
- 9.3.3. Warn the driver of each turn to be taken.
- 9.3.4. Calculate ideal times for your Jaguar and average speeds necessary to stay on, or recover to schedule during the stage.
- 9.3.5. It is the navigator's job to keep tabs on where the team is in order to keep the team on course and on time. It boils down to careful reading of instructions, good timekeeping, calculating, and communications between the driver and navigator.
- 9.3.6. For time-speed-distance rallies, most importantly, check off each and every item on the instruction sheet, but only when that instruction is completed.
- 9.3.7. Keep calm, even if you feel like blowing your top.

9.4. COURSE INFORMATION

- 9.4.1. The course will have been measured at least to the nearest 0.10 (tenth) of a mile. Along the route the Team will be required to **STOP** for at least **THREE** (3) check points. Each checkpoint will be identified by a sign or other marker designated in the General or Route instructions. Passing the checkpoint timing line shall constitute passing the checkpoint, whether stopped or not.

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9.4.1.1. At each of the open checkpoints the driver may bring the vehicle to a complete stop to obtain any required further route instructions.

9.4.1.2. Do not stop at passage checkpoints.

9.4.2. Unless instructed otherwise, continue in the most straightforward direction or in the only direction possible, (forced turn). No instructions are written for forced turns.

9.4.3. In time-speed-distance rallies, each numbered instruction must be completed "in sequence", before execution of the next numbered instruction.

9.4.4. An Official Odometer Check (also known as an odometer checkpoint) will be provided to you along the first section of the rally. This will occur at a specified distance stated in the Route Instructions and gives the navigator a chance to determine how the Jaguar's odometer reading compares with the "official mileage" as measured by the Rally Master's odometer used to measure and prepare the Route Instructions (RI's).

9.5. SIGNS and/or LANDMARKS –

9.5.1. It will be specified in the instructions whether a sign or landmark (except STOP signs), will be located on the left side of the road.

9.5.2. Quotation marks (") are used to indicate the precise wording of a sign, or they may have a box drawn around them in the Route Instructions. Punctuation, arrows, names of erecting agencies, street block numbers, etc., are **NOT** classified as being part of the content of a sign.

9.5.3. Instructions will contain words and/or numbers in the sequence in which they appear on the sign or landmark.

9.5.4. The same sign or landmark will not be used for more than ONE (1) instruction, **UNLESS the rally route brings the entrants by the same sign again.**

9.5.5. Signs readable only AFTER PASSING are not used.

9.5.6. If more than ONE (1) sign is mounted on a support, each sign is considered a separate sign.

9.5.7. All referenced signs or landmarks are clearly visible and legible at rally speeds.

9.6. If This is Your First JCNA Rally

DON'T GET LOST!

9.6.1. Along the rally route there will be **CHECKPOINTS, which may be open or passage controls.** Scores, total error and penalties, will be recorded in hours, minutes and second or hundredths of minutes.

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- 9.6.2. Checkpoints may appear at any time or distance. Checkpoint personnel are equipped to time cars as they arrive and thus ensure that competitors actually traverse the designated route. All open and passage CHECKPOINTS shall be visible.
- 9.6.2.1. Open checkpoints require the rally teams to stop after crossing the timing line, with the team possibly taking some action specified in the General Instructions (GI's) or Route Instructions (RI's). Clubs may choose to provide or not provide timing results at these checkpoints. Do not stop within sight of any checkpoint unless instructed to do so. If you get lost and miss a checkpoint, you haven't lost the rally, just **a maximum of two stages** of the rally for which you will receive maximum penalty points.
- 9.6.2.2. Passage control, formerly termed 'hidden', checkpoints are passage checkpoints, where the entrant does not stop as the checkpoint is passed. A timing point sign or marker is required and shall be visible. Entrant times will not be provided by workers at these checkpoints. Your overall stage time to the next open checkpoint will not be reset by your arrival at any passage checkpoints.
- 9.6.3. **DO NOT DWELL AT THE IN MARKER at open checkpoints.** Once the Team has its IN time, the Team is free to proceed to the next Checkpoint or pull into a parking area for a break, as designated in the instructions.
- 9.6.4. If for any reason it appears that you are going to be more than five minutes late to a Checkpoint, skip that one if you have route instructions which go beyond it. Take the maximum error instead of risking an accident by driving at an unsafe speed. Lay out a new course from where you are to the next checkpoint and go for it. In the interest of safety a maximum of five (5) minutes or three hundred (300) seconds per leg has been established for the JCNA Rally Program.
- 9.6.5. The least amount of total accumulated error over all stages in the rally will determine the **Winner**.
- 9.7. **Rally Equipment** – Prior planning and preparation are the keys to success in any sporting endeavor. For annual events, it would be advisable to find the winning scores for the prior year, and thus know your target performances. You can even define your own test leg(s) near your home or use route instructions from previous nearby rallies, and practice with your navigator. By taking notes on where time was gained or lost, lessons can be learned and strategies developed to standardize your team techniques and continuously improve your overall team performance.

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9.7.1. In order for your team to succeed, your rally Jaguar should be serviced at regular intervals and be prepared prior to the event. In addition, thoroughly check out your Jaguar before the rally as follows:

- Make sure oil and water are topped off.
- Begin every rally with a full tank of gas.
- Check the condition of your spare tire and jack.
- Be certain that you have emergency road flares and any tools that you would normally carry.
- Take a fire extinguisher, replacement fuses, and spare fan belts and hoses are not a bad idea either, depending on the age of your vehicle.
- A pair of jumper cables might be useful.

9.7.2. In order for your team to run the rally successfully, you should bring or accomplish the following:

- Make any and all last minute comfort stops; as they may not be convenient or available to stop along the route.
- Plenty of pencils, scratch paper and a clipboard
- Timepiece(s) that you can trust and easily read (See later section on Timing and Clocks)
- For night rallies you will need a map light, and a hand held spotlight for reading signs or locating landmarks
- Have a tool to help you figure time, speed and distance.
- Carry an unbreakable thermos of coffee, tea, or the nonalcoholic beverage of your choice.
- A small first aid kit and motion sickness pills can be good insurance.

9.7.3. Circular rally indicators like the Stevens Model 25 or the Blackwell rally Indicators that have scales for time, speed and distance are most helpful. Using movable pointers, these indicators show graphically the time and distance combinations for an infinite number of average speeds. Some even have the added refinement of accommodating odometer error. Other methods utilize slide rules, pocket calculators or computers, onboard original equipment trip computers, and even the old mechanical Curta "pepper mill" calculator that works by turning a crank.

9.8. Timing and Clocks – With current technology available, accuracy of the clock or stopwatch(es) being used by the team must be known. It must also be an instrument that is easy and fast to read, including after dark if a night event. Synchronization with the rally master chronological time used during the

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event is a must. Timing errors do not average out, and you will not know how much to adjust until it is too late. Just because a watch has a quartz movement, that does not mean it will not drift several seconds over the course of a few hours, which can have significant effects on your results.

- 9.8.1. Radio controlled quartz movement clocks available from Oregon Scientific or Lacrosse Technology are generally used for timing to a one second accuracy and cost <US\$25. Technology already provides more advanced ways of collecting times. Equipment for radio frequency identification and timing is now or soon will be available at a reasonable cost to a club sponsoring a rally.
- 9.8.2. If you prefer stopwatches, LCD quartz stopwatches that show hours, minutes, seconds and 1/100th of seconds are so inexpensive that you should consider buying and using two of them, one to run continuously throughout the rally, and the second one just to measure the time in case you should go off course, or specific segments of stages to gauge actual average speed maintained. Accuracy of stop watches should be verified prior to use.
- 9.8.3. For checking out or zeroing your time pieces for exactly the correct time of day, coordinate with the rally master. They will have a radio controlled clock, or a master clock to calibrate to. Most often, accurate time of day is used. In that case, a radio controlled clock can be used, or you can hack in your timing equipment with the US Bureau of Standards time announcements on Short Wave Radio broadcast frequencies WWV, 2.5, 5.0, 10.0, 20.0, or 25.0 megahertz or the with telephone company time announcements. Rally Masters may provide a short wave radio tuned to WWV at the rally start point for the Rally Teams use. Do not depend on AM or FM radio time announcements as they are quite often not accurate to the second.

9.9. Average Speed and Calculations - Being in the right place at the right time on a rally means staying on course, never letting attention wander so that a route instruction is missed. To be in the winner's circle at a time-speed-distance rally, the Team must be on time, and stay as close as possible to being on schedule relative to the average speeds required in the Route Instructions. Distance equals TIME x SPEED, and all rally calculations derive from that relationship. If you have been traveling for 60 minutes at 60 MPH (that's a mile per minute) then you have traveled 60 miles! You will need to work mostly in miles per minutes and minutes per mile to monitor and adjust your progress.

USEFUL TIMING FORMULAS: (Both work in KPH or MPH)

TO FIND TIME IN HOURS:

Mileage = Elapsed Time in Hours

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Average Speed (KPH or MPH)

TO FIND TIME IN MINUTES:

$$\frac{\text{Mileage} \times 60}{\text{Average Speed (KPH or MPH)}} = \text{Elapsed Time in Minutes}$$

TO FIND TIME IN SECONDS:

$$\frac{\text{Mileage} \times 3600}{\text{Average Speed (KPH or MPH)}} = \text{Elapsed Time in Seconds}$$

TO FIND (MILES or KILOMETERS) PER MINUTE:

$$\frac{\text{Miles (or KM's) Per Hour}}{60} = \text{Miles (or kilometers) per Minute}$$

9.10. The Speedometer, Odometer and Tires – . All Jaguars have a separate section on the gauge called the "Trip Odometer", which can be returned to zero at any time. If you are operating in a class where the odometer is being used, and for your speedometer regardless of class, any change in tire size, transmission, or differential ratios from what the car was built with will affect the readings of both the speedometer and odometer. The odometer check at the start of the rally provides the opportunity to correlate the route instruction distances with what your vehicle is measuring. The odometer is typically set at ten (10) miles in order to simplify the math. Measured, or calculated, distance divided by the route instruction odometer check distance will provide the correction factor for any odometer check distance.

9.10.1. EXAMPLE 1: If your odometer, or speed X time calculated ten mile point, is 10.2 miles at the ten (10) mile odometer check milepost, you must multiply the route instruction distances by a factor of 1.02 in order to be in agreement with the route instructions for the remainder of the rally.

9.10.2. EXAMPLE 2: If your odometer, or speed X time calculated ten mile point, is 12.7 miles at a thirteen (13.0) mile odometer check milepost, you must multiply the route instruction distances by a factor of 0.977 (12.7/13.0) in order to be in agreement with the route instructions for the remainder of the rally.

9.10.3. (Note : The following information on instrument calibration does not apply newer Jaguars with electronic odometers.) Your humble tenths-reading odometer will tell you more than tenths of a mile! Observe the action of the tenths wheel: it usually doesn't go from one tenth of a mile to the next in one jump, but rather inches its way around in what is usually five steps for each tenth, or two one-hundredths (0.02) of a mile per "nudge". A Navigator can readily interpolate to within about .02 with

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a garden-variety odometer. You can increase the accuracy of Smiths odometers and speedometers on XK and E-Type Jaguars by having the instrument calibrated by a reputable instrument repair service. Tell them you will be using the instrument for rallying, and that you want it calibrated for absolute accuracy at 60 mph.

9.10.4. Recent Jaguars with factory provided on-board trip computers are generally more accurate and lend themselves to serious rallying. They are still subject to tire size change related effects. Realize that the information provided by your odometer may be less than totally accurate, and that the experienced navigator must learn how to compensate.

9.10.5. The solution to odometer error lies in a choice of three alternatives. First, you can forget it entirely and simply enjoy the rally route. As long as you don't get lost, you still have a good chance of winning! But if you're serious, you can either change the average speeds in the RI's by the factor of your odometer error, or determine the error between your odometer's reading and the official mileage. Although there are more calculations involved, beginners often find it more logical to apply "corrections" to the official mileages wherever they appear in the RI's by writing

9.11. Helpful Hints and Winning Techniques -

- **Don't get lost.** Concentrate on the route first, on time second. This is Rally Team's most important rule regardless if is the Team's first rally or hundredth and first. Time lost while off course may never be made up and can bring the Team it's greatest penalty.
- **Don't assume anything.** Be sure to really read the General Instructions and don't hesitate to ask questions, penalties can be avoided by asking questions.
- **Do not assume that the Rally Team's in front of you know where they are going and try to follow them.** Although they have the same RI's you do, they may be wrong. Also remember that wise Rally Masters may have the route double back upon itself just to fool followers!
- **Check off each time-speed-distance rally route instruction as it is completed, but only when it has been completed.** Checking off an item in advance is the surest way to miss that instruction altogether, since you then act on the next INSTRUCTION in line.
- **Don't give up if you get off course.** If you're lost, or think you are, pull off the road and look things over calmly. Plan a recovery by examining road maps or trying to recall significant landmarks. when you discover you're off course, STOP AT ONCE AND NOTE YOUR ODOMETER READING. Turn around and return to where you left the rally route using exactly the same route you just traveled. Read the odometer again and double the distance

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from the previous reading, where you turned around. Subtract this total distance off course from your present odometer reading and recalculate your timing to know what time you should have been at this point. You will not be able to turn back your odometer to compensate for being off course, but you **CAN** subtract the total distance off course from each subsequent odometer reading during the remainder of the rally.

- **Read each new set of time-speed-distance rally instructions with scrupulous care.** Rally Master's may issue a new set of instructions after a lunch break or scenic stop, or even at a special checkpoint.
- **Don't forget to make necessary changes to the odometer or timepiece.** If the rally is being timed leg-to-leg, and the next Route Instruction shows mileage starting from "zero", be sure to zero the odometer and zero the timepiece.
- **Do not take a short cut.** Even when the end is in sight, follow every instruction to the letter. A Checkpoint or a finish line may be placed just across that intersection where the instruction says "Turn Right". Follow the instruction and turn or the Team could miss the checkpoint or finish.
- **Carry more equipment than you need.** Add a set of rally tables to complement the calculator, slide rule or rally indicator. Carry a good spare watch, zero it with the Master timepiece. Several different maps of the same area can be of great help as not all roads appear on all maps.
- **Check your figures by working them out in different ways.** In the stress of the rally navigating, even simple calculations can go wrong. Make a habit of doing rough mental arithmetic to backstop the navigation. If you're on course and haven't had any great deviation in driving speed, beware of a calculation that shows that you're suddenly off time. Rally instruments can easily be read incorrectly, so try again.
- **Be ready for checkpoints anywhere and at any time.** In short do not assume anything. Simply because you've just left a checkpoint, don't assume there won't be another for some time. Definite checkpoint procedure is as essential as is the definite procedure you use at average rate of speed changes.
- **Divide the work.** Driver and Navigator should divide duties. Then practice them. Be sure you know who reads which watch, who reads the odometer, and logs results, and who leaves the car when necessary to collect timing slips at checkpoints, for example. Practice arriving at a simulated checkpoint, or making a speed change.
- **Keeping the average speed.** Several times each mile the Navigator should check the distance traveled against time elapsed since the start in order to determine whether or not the Team is early or late. The Driver can then adjust the speed accordingly. With experience, the Navigator will work out a system that tells him or her how the team stands every instant in relation to the required average speed. With the Driver, the Navigator works out a plan of always being a few seconds ahead of time. This provides a cushion of

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safety against traffic lights or similar delays, and yet it can be "lost" promptly if a checkpoints appears unexpectedly beyond a turn.

- **Know how to make the most of a map.** For TSD rallies, carry maps of the area you think you'll probably go through. Monte Carlo rallies only allow maps issued by the rally master. Along with all the other navigational skills, try to develop the knack of following your rally route roughly on a map you can keep handy. There will be many times when knowing where you are will pay substantial dividends in terms of saving time getting back on course.