

TIME-SPEED-DISTANCE (TSD) RALLYING – THE VERY BASICS

TSD rallies are run on public roads, in normal cars, at speeds that are at or below the legal limit for that road section of road. Most of the roads are dirt or gravel back roads, but are chosen carefully such that they will NOT break your car.

TSD rallying is NOT a race. Racing on public roads is ILLEGAL and not tolerated.

The rallying you may have seen on television (performance rallying) is on roads closed to the public, and they *are* racing against the clock in very fast, and very specialised cars, with experienced drivers.

All types of car rallies are based on an in-car team of two. One person is the driver; the other one is the navigator or co-driver.

In all types of rallies cars go off on their own at one-minute intervals. They don't do that in races but we do this in rallies.

STAYING ON TIME

If it's not a race, what is TSD rallying?

You will be told (in a route book) exactly where to go, and at what AVERAGE speed you should travel. **If you are able to go the AVERAGE speed between each pair of instructions you are ON TIME, and that is the object.** If you are not arriving at each instruction on time, you must be either early or late, and you receive a penalty score. The penalty is based on the difference between your actual travel time and the time it should have taken you. The team with the fewest total penalties wins (like golf, low score wins). A perfect rally means a score of ZERO (you were always exactly on time).

It's pretty easy to maintain an average speed of 80 kph or lower on a long straight highway, or most other paved roads. It's more difficult to do it on country back roads, which is where we usually like to hold these events. This is one complication to the simple task of staying on time.

Another complication is that the organisers must determine if you are on time or not. They do this by finding volunteers to sit at locations called checkpoints on the route that are NOT in your route book - they are hidden! When you find a check point they record your arrival time on paper (and give you a copy of that time). They also tell you when you will depart their checkpoint and continue on until you find the next checkpoint. So, you must always try to be on time since you never know where the checkpoints will be!

Important: You cannot make up time for being late at previous checkpoints. When you leave each checkpoint you are starting from scratch and previous “sins” cannot be corrected or counter-acted by being early on later sections. If you try to catch-up for being late, you will be early at the next checkpoint, so don’t do it; it only gets you penalties!

Finally, to make matters worse, you are timed to the nearest minute, or to the nearest 1/10th minute (6 seconds). This can be tricky, but you do have some grace (either 59 seconds or 5 seconds).

HOW DO I START TSD RALLYING?

The above is fairly simple, but, it can quickly get very complicated when doing it the first few rallies, in a moving car. Before you decide if TSD rallying is for you the best advice is:

- Relax, ignore the calculations. Forget doing ANY time calculations and compete “seat-of-the-pants” and see how you do. For the lack of effort you may be pleasantly surprised at the result you obtain. **BUT DO THE ODO CHECK!!**
- Enter a few rallies. The first one is usually the toughest.
- Any vehicle will do, but you must show proof of ownership and insurance, and the vehicle must be safe.
- *STAY ON THE ROAD*. Do not drive beyond your ability. After a few rallies as your driving improves, you will start being on time more often.
- Add about 10% to the requested speed. This helps you catch up from when you have to slow down for turns and stop at STOP signs and any unexpected delays you may encounter. *Behave: a ticket from a law enforcement official will get you disqualified.*
- Do NOT hog the road. Give way to fellow competitors and locals if they want to get by you. When you pass someone, or leave a checkpoint, do not spin gravel and dirt on their car. You wouldn’t like it, so why should they.
- *STAY ON COURSE*. Do not get off the route (i.e. don’t get lost). If you get lost, you’re already late, so try to not get lost! The stopwatch won’t help you here.
- Never follow another team (they may get you lost!)
- The navigator may want to consider taking ½ gravol or ginger capsules before the rally (!). The gravol makes you a bit sleepy, the ginger doesn’t.
- Listen to the navigator he or she is your guide.
- The last of your worries is to *STAY ON TIME*.
- Ask questions from more experienced rally people. Don’t be intimidated by people who have cars with big lights and fancy clipboards. We all had to start from scratch.
- Have fun!!! If it isn’t fun, why bother?

If you find you enjoyed your first few rallies, and want more, join a club that both hosts and attends many rallies, such as the Motorsport Club of Ottawa (www.mco.org).

The ODO Check (Lesson #1 in "How not to get lost")

One calculation you MUST do is the odometer factor, and then you must use it to help staying on course. Every car's odometer is a little different from the other ones, and this includes the odometer that was used to measure the rally route. The mileages measured by the "routemaster" are OFFICIAL, and they are the ones in your routebook. Your odometer might measure the same distance as being longer than what the routemaster measured. After a while of driving your odometer reading will be a lot different from the official mileage, and this will assist in getting you VERY lost. To avoid this, we apply a simple correction factor.

Step 1. Zero your trip meter at the beginning of the first section.

Step 2. Drive to the end of the odometer check or calibration ("odo check" or "odo cal.") in the allotted time. There are no checkpoints in this zone.

Step 3. When you get to the official mileage at that point, calculate the factor:

$$\text{Factor} = \frac{\text{Your car's mileage}}{\text{Official mileage}}$$

Step 4. Multiply all distances written in your routebook by the "Factor".

Example:

Your trip meter says 13.42 km (you have to estimate the hundredth place)

The routebook says it should be 12.26 km at that place.

$$\text{Factor} = 13.42 / 12.26 = 1.09461663947798$$

Try to keep 4 significant figures, so use 1.0946

Now, when an instruction says:

35.62 km, Turn Left

You should see a left turn when your trip-meter is reading: $35.62 * 1.0946 = 38.99$ km

TIMING CALCULATIONS (optional section)

For those that want them, here are the basics on TSD calculations.

TSD rallying is a motorsport based on one simple equation, showing the relationship between the time it takes to go a given distance at a given speed. The equation is,

$$\text{Number of minutes} = \frac{60 \cdot \text{kilometers to travel at Average Speed}}{\text{Average speed of car (kph)}}$$

ALL aspects of doing well in TSD rallying are based on this equation (the factor of sixty comes from 60 minutes in one hour). All other equations that people do come up with are based on this equation. For *basic* timing, let's see what we would do on a TSD rally:

Example. Part of the route book says:

km	Instruction
62.37	L onto Aylwin Rd., Surface Change, CAS 76
63.21	STOP, Tee L onto Stonecrest
65.08	STOP, R onto Torbolton Ridge Rd., CAS 72.4

CAS means “Commence Average Speed” and kilometers per hour are always assumed. The instructions say you are to travel a distance of 2.71 km (65.08 km subtract 62.37 km) at an average speed of 76 kph. How long will that take if you are staying on time? Use the equation above:

$$\begin{aligned}\text{Number of minutes} &= \frac{60 \cdot 2.71 \text{ km}}{76 \text{ km / hr}} = 2.1395 \text{ minutes} \\ &= 2 \text{ minutes} + (0.1395 \text{ minutes}) \times (60 \text{ seconds/minute}) \\ &= 2 \text{ minutes and } 8.37 \text{ seconds} \\ &\text{(it's a good idea to have a **stopwatch** and a **calculator** on rallies!)}\end{aligned}$$

When you reach 65.08 km, you have to change your average speed to 72.4 kph, and do this calculation all over again for the instructions at the next speed change, and so on.

Refine your rallying:

You can see how well you are doing before reaching the next speed change by seeing how long it should take you to reach the middle instruction at 63.21km. This is an *intermediate* time calculation:

$$\begin{aligned}\text{Number of minutes} &= \frac{60 \cdot 0.84 \text{ km}}{76 \text{ km / hr}} = 0.66315 \text{ minutes} \\ &= (0.66315 \text{ minutes}) \times (60 \text{ seconds/minute}) \\ &= 39.789 \text{ seconds, or just a shade under } 40 \text{ seconds.}\end{aligned}$$

I recommend you DO NOT do these calculations on your first several rallies.

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