

SOURCE: Floating operation method

Refer to the SOURCE Handbook for condition requirements, detailed rules, instructions for use of data input forms and limits of validity of results.

Summary

Merge into the traffic, following a first light vehicle (LV). At the first opportunity (as soon as another LV overtakes you – a hare – or the followed LV overtakes another LV – a tortoise –), change followed vehicle. And so on all along the trip path.

This operating method makes you a “floating vehicle”, which means that providing the traffic remains free-flowing over a sufficiently long trip path, your own travel time will be a direct statistical estimation of the mean LV travel time.

This mean travel time is the most meaningful indicator for users. The expert, on the other hand, will prefer to reason in terms of the corresponding speed (“common” speed).

Four further driving rules are added to this basic protocol, to improve the quality of the results:

- mandatory hare-tortoise alternation,
- compliance with the 90 km/h speed limit,
- limitation of basic sequences to 15 mn,
- degressive waiting times where there is no traffic.

At the same time you count the apparent light vehicle traffic coming in the opposite direction.

As your speed is adjusted to the common LV speed, the apparent LV traffic level is exactly twice the real traffic level (the level that would be perceived by a stationary observer).

1 The basic protocol

- Only work in the dry season, during business days and times, but not in bad weather.

- Your direction of travel is of no importance.

- Your speed results from the protocol itself.

- Only take “light vehicles” (LVs) into consideration. Disregard all other vehicles, such as lorries (trucks) or two-wheeled vehicles.

- And now, proceed as follows:

With your kilometric recorder set to zero, **start off behind the first LV** coming up in the right direction, while triggering the timer.

Then, **when you encounter a new LV travelling in the right direction**, change “partner” (i.e. followed LV) while noting the time and kilometrage.

Each “pursuit” is made while maintaining a reasonable distance (usually 50 metres). You must not worry the followed LV driver nor influence his behaviour, but neither must you lose him.



This is the basis of the floating operation method. But in fact, things are rather more complicated.

2 The 4 additional rules

2a. “Hare-tortoise” alternation rule

You must follow in turn a tortoise then a hare. Never two hares or two tortoises in succession.

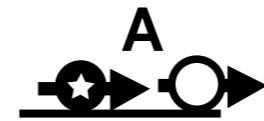
A tortoise is a LV being overtaken by the LV you are following. A hare is a LV coming up to overtake it.

The first followed LV is considered neutral (neither a hare nor a tortoise). The second followed LV will be either a hare or a tortoise, depending on whether this LV has overtaken the neutral vehicle or the neutral vehicle has overtaken the LV.

When you are following a tortoise, if the followed tortoise is overtaking a super-tortoise, disregard the super-tortoise because you are looking for a hare (likewise for super-hares if you are already following a hare).

3 The 8 types of sequence

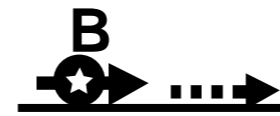
At all times along the trip path, a sequence is in progress. The sequences, whether the same or different in type (among the 8 types recapped here), succeed one another as far as the end of the trip path.



Pursuit

You are following a tortoise, a hare or a neutral LV.

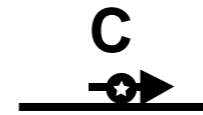
Max: 15 mn



Virtual pursuit

You had to let an excessively fast LV go. You are now only following a virtual LV travelling at 90 km/h.

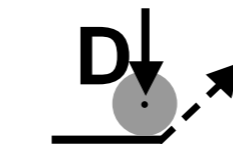
Max: 15 mn



Solo

For lack of traffic, you are travelling alone, without following anyone, at the most appropriate speed.

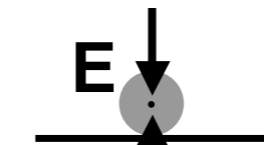
Max: 15 mn



LV Wait

Ready to start, you are waiting for the next LV to be followed.

Max: 15 / 10 / 5 / 5...



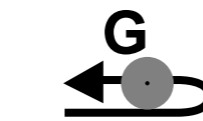
Standstill

You stop and pass the time until proper measurement conditions are back.



Skip

You suspend the measurement while continuing on your way until you meet proper measurement conditions again.



U-turn

After stopping the measurements, you return to a given point to restart measuring (immediately or after a standstill).



Break period

After stopping the measurements, you do as you like until you start measuring again at the stopping point.

4 Traffic counting

Traffic counting and speed measurements go together.

The speed measuring operation is only active during the first three types of sequence.

- As long as the speed measuring operation is active (type A, B or C sequence), the oncoming LV traffic is counted simultaneously.

- As long as the speed measuring operation is inactive (type D, E, F, G or H sequence), there is no counting of traffic.

5 Treatment of disturbances

It is the “free speed” of LVs that we want to measure, i.e. their spontaneous speed on this route as it is, in free-flowing traffic, without any extraneous disturbance, such as bad weather, traffic close to saturation or other incidents. We also want the traffic level to remain representative, i.e. also free of any disturbance.

Any disturbance encountered, that affects speed or traffic levels, or both together, makes the measurements suspect (liable to be invalidated). You could then perform a skip (to travel farther ahead so as to outstrip the phenomenon), or come to a standstill (to pass the time until the phenomenon disappears)

The different situations and the corresponding instructions are described in the SOURCE Handbook.



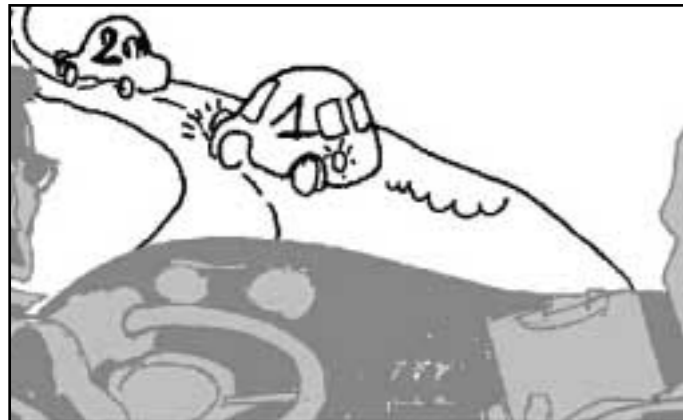
Hare, tortoise or neutral vehicle... how does a pursuit end?
Usually with the start of another pursuit.
TWO ORDINARY CASES at first:

? How does a pursuit end?
1st ordinary case:

You were following a hare (LV No.1). It catches up with a tortoise (LV No.2).
It is very simple: whether or not the hare overtakes the tortoise makes no difference. As soon as the hare gets close enough to the tortoise to overtake it, "forget the hare". It is the tortoise that you must now follow.

- Which logically means that:
- If the hare (No.1) actually overtakes the tortoise, immediately or after a while, do not overtake because it is the tortoise (No.2) that you must now follow.
 - If the hare follows the tortoise without overtaking, you must also follow. It is the tortoise that you are following, even though at a distance for the moment.
 - If the hare (No.1) finally lets itself be outdistanced, overtake the hare so as not to lose the tortoise (No.2), which is the vehicle you are following.

Idem if LV No.1 is a neutral vehicle instead of a hare.

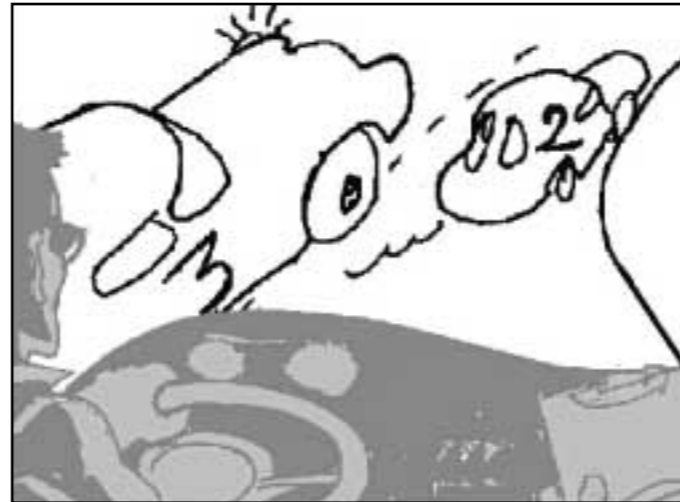


In other words: **A tortoise counts as soon as it is caught up, even before it is overtaken by a hare (or a neutral vehicle).**



? How does a pursuit end?
2nd ordinary case:

You were following a tortoise (LV No.2). A hare (LV No.3) catches you up.



- **If the hare overtakes both of you at once, it is very simple: overtake the tortoise (No.2) in turn** so as not to lose the hare (No.3), as it is the hare that you are now following. "Forget the tortoise".
- **But if the hare comes in** between you and the tortoise for a while, then:



- **As long as it has not also overtaken the tortoise,** do not change anything. Although you are now separated from the tortoise, it is still the tortoise you are following.
- **If in the end, it also overtakes the tortoise,** then "forget it". It is now the hare you are following. Therefore overtake the tortoise likewise.
- But if after coming in between, **the hare finally lets itself be outdistanced by the tortoise,** then overtake the hare to remain close behind the tortoise. This hare will never have counted for you. Now you must look out for the next hare.

Idem if LV No.2 is a neutral vehicle. Instead of a tortoise.

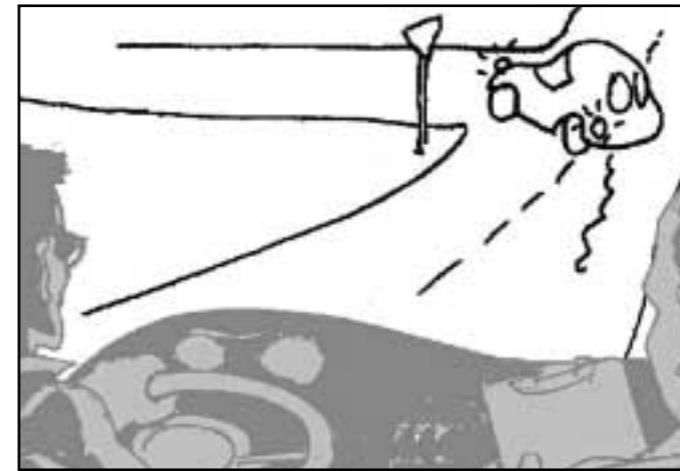
In other words: **A hare does not count until it has overtaken a tortoise (or a neutral vehicle).**

? How does a pursuit end?
A special case:

If the LV you were following parks or turns off the road.

Stop just afterwards, noting the time and kilometrage. Wait. As soon as the first LV passes in the measuring direction, move off after it. In fact, you are taking up the interrupted measurement again and the stopping time will not be taken into account in the end.

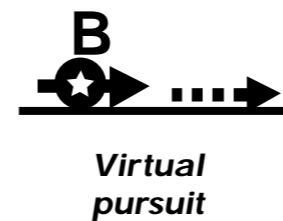
This first LV will then be considered as a neutral vehicle.



? How does a pursuit end?
Two more cases...

The following two rules cover other special end-of-pursuit cases.

2b. The "90 km/h" rule



Your own speed is limited to 90 km/h.

If you are supposed to be following a LV travelling continuously at more than 90 km/h, or if the followed LV accelerates and sustainably exceeds 90 km/h, you must let it get away and continue your route alone, limiting your own speed to 90 km/h. This has become a "virtual pursuit".

Then behave as if you were following a phantom LV travelling at a speed of 90 km/h. This "virtual LV" retains the status (neutral vehicle, hare, tortoise) of the LV that has got away.

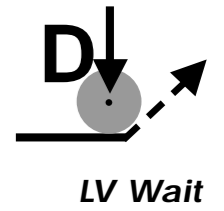
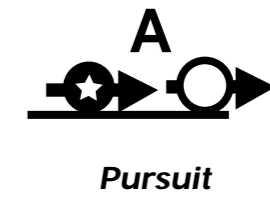
2c. The "15 mn" rule

Basic sequences (pursuit, virtual pursuit, solo, LV wait) are limited to 15 mn.

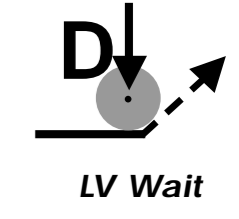
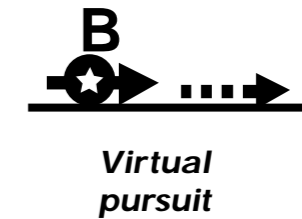
In the event of very light traffic or no traffic:

- If you have been following the same LV for 15 mn at a stretch, (because you have not encountered another LV to

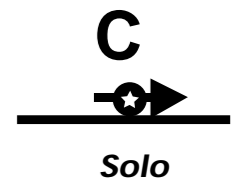
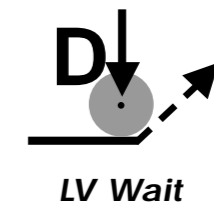
follow that meets the hare-tortoise criteria): **you must stop at the end of the 15 mn and let it go, to wait for the next LV. This is a sequence of "LV wait".**



- If it is a "virtual LV": in these 15 mn, count the pursuit time of the LV that got away just beforehand.



- When you have been waiting 15 mn at a stretch without any LV to follow: start off again "solo", namely alone, at the most natural speed for an ordinary LV taking into account the condition and characteristics of the road. When running "solo", you must never exceed 90 km/h (see 90 km/h rule). At the first LV encountered, this "solo" sequence gives way to a pursuit. Where no LV is encountered, the sequence must be interrupted after 15 mn to observe a new "LV wait".



2d. The rule of the "15 / 10 / 5 / 5..."

Your "LV wait" sequences (waiting for the 1st LV to be followed) are also subject to a degressive time limitation: 15 / 10 / 5 / 5 / 5 / etc.

When there is no traffic in the measuring direction, your travelling pattern is thus as follows: **15 mn waiting** – 15 mn solo – **10 mn waiting** – 15 mn solo – **5 mn waiting** – 15 mn solo – 5 mn waiting - etc. This succession of wait / solo / wait / solo is interrupted as soon as the first LV comes up in the right direction, which triggers a conventional pursuit sequence.

If this LV remains the only vehicle, let it go after 15 mn (see the 15 mn rule) and begin a new series: 15 / 10 / 5 / 5 / 5 / etc.

