

Stretching it?

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Driving in convoy: the "elastic band effect"

We first published this article back in 2009, but it's worth revisiting to explain why those at the rear of a convoy sometimes feel that those at the front "must be" speeding ...

There are many facets to our great Club, but social drives continue to be popular with a majority of members.

I still thrill at the prospect of being one of a group of MX-5s driving snake-like through our State's many scenic regions and love seeing our little cars stretching out into the distance, both in front and behind me.

However, driving with a group of vehicles can be daunting, particularly for new-comers, as they try to keep up with the leader. Over the 13 years I have been in the Club, I have participated in well over 100 such events and have often heard the comment that *because a car toward the back of the pack has had to exceed the speed limit to keep up, then the lead car must also be breaking the law.*

It would be naive to suggest that this doesn't occasionally happen but, in the main, group leaders adhere to the Club's strict set of convoy rules.

So, what is going on ... and why is there this perception that, because you need to speed to catch up, then the leader is driving too fast ... ?

It's a question that a number of us have pondered and for, obvious reasons, the situation has been dubbed *the "elastic band" effect.*



The "herd" instinct is very strong, so the tendency is for trailing drivers to catch up and rejoin the group ...

Let's consider a common scenario

of a group of cars travelling through the open country side at 100km/h.

If we allow the required two- to three-second gap suggested in the convoy rules, then a group of 20 cars will stretch out approximately 1.25 kilometres. If the group is as large as 30, then the convoy will cover around two kilometres.

Of course, in any group, not all cars maintain a constant 100km/h and this often allows slower traffic to enter the convoy.

When this happens, the result is that whilst the front group continues at 100km/h, those behind the slower vehicle can be travelling at a considerably reduced rate.

However, let's simplify the situation so that our convoy consists of only two vehicles, with both initially travelling at 100km/h (see scenario tables, below).

If the second car is forced to reduce its speed to 80km/h for three minutes, then the distance between the cars grows to approximately one kilometre.

If the lead car continues at 100km/h, then for the second car to catch up, again say in three minutes, it would need to travel at an average speed of slightly more than 120km/h.

Of course, if the second car decides to accelerate only to 100km/h, then it would not catch up until the first vehicle either slowed down or stopped.

The "herd" instinct is very strong, even amongst MX-5 drivers, so the tendency is for the driver of the second car to catch up and rejoin the group.

These figures have been simplified and rounded, and some assumptions made. However, the fact remains that, in order to catch up even short time delays, speeds above the posted limit would be required.

It isn't practical for safety reasons for the lead car to constantly vary its speed so that everyone stays in convoy and retains the two- to three-second gap. However, reasonably regular stops in appropriate areas do overcome the problem.

For those new to convoy driving, it is important that you drive to the conditions and at a speed you find comfortable. If you do get behind, be patient and wait till the convoy regroups.

The Club has an enviable safety record, and it's one that we want to maintain.

Our regular runs are meant to be fun and you should finish the day relaxed! ■

Lead car speed (km/h)	Trailing car speed during delay (km/h)	Delay (minute/s)	km apart	Distance lead car has travelled in next 3 minutes (km)	Distance trailing car has to travel in next 3 minutes (km)	Average speed required for trailing car to catch up (km/h)
Scenario 1:						
100	80	1	0.3	5.0	5.3	106
		2	0.7	5.0	5.7	114
		3	1.0	5.0	6.0	120
		4	1.3	5.0	6.3	126
		5	1.7	5.0	6.7	134
Scenario 2:						
100	90	1	0.2	5.0	5.2	104
		2	0.3	5.0	5.3	106
		3	0.5	5.0	5.5	110
		4	0.7	5.0	5.7	114
		5	0.8	5.0	5.8	116