

COOPER DISCOVERER

4WD DRIVER'S GUIDE



AMERICA'S MOST TRUSTED 4x4 TIRE

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WELCOME!

Thank you for your recent purchase of Cooper tyres and welcome to the Cooper Discoverer Club! This Cooper Discoverer 4WD Driver's Guide, as the title suggests, is a guide with tips and techniques to help you enjoy and get the most out of your Cooper tyres.



A comprehensive guide on 'Tyre Pressures' explains how important, yet simple, it is to prolong the life of your tyres by monitoring your tyre pressures. And the 'Tyre Pressure Guide' will help you on what pressures are suited to different types of terrain so you can enjoy the best performance from your tyres wherever you go.

The How, Why and When of rotating your tyres is explained, again, to help you prolong the life of your tyres, as well as when to ask your authorised Cooper Tyres dealer to check the balance and alignment on your vehicle.

Some tips and techniques on 'tyre-friendly' driving will make you aware of things to look out for when driving about town or off the beaten track.

Finally, an explanation of Load Index and Speed Rating of tyres will help you to understand the importance of monitoring the load you are carrying in your vehicle.

Once you have read the guide if you ever have any questions or would like further information about Cooper tyres please call our Cooper Tyres 4WD Tyre Specialists on 1300 COOPER (1300 266 737) or email info@exclusivetyres.com.au

Happy travelling!

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AMERICA'S MOST TRUSTED 4x4 TIRE

TYRE PRESSURE

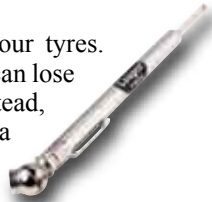
One of the simplest - and most important - things you can do to keep your tyres in good shape is to make sure that they are properly inflated. Failure to maintain correct tyre pressures may result in fast and uneven treadwear, improper vehicle handling, and excessive heat build-up which could result in tyre failure.

REGULAR TYRE PRESSURE CHECKS

You should check your tyres' pressures at least once a month, before each trip, and each morning you drive during a trip. Ideally, tyre pressure should be measured when tyres are cold - that is, before doing any driving on the tyres. Otherwise, your tyres may have heated up, increasing the air pressure inside them by several pounds. This is normal and as a rule never "bleed" or reduce the air pressure from a hot tyre, since this could result in under-inflation. Only "bleed" or reduce air pressure from a hot tyre when you need to lower pressures to drive on particular terrain (see "Tyre Pressure Guide page 3) but remember to re-inflate your tyres when you reach your destination or return to terrain that requires higher pressures.

MEASURING TYRE PRESSURE

It's important to be accurate in filling your tyres. Don't try to "eyeball" the pressure - a tyre can lose half its pressure without looking flat. Instead, use a reliable tyre pressure gauge. It's also a good idea to have your own gauge.



UNDER-INFLATION

If your vehicle's tyres are under-inflated by only 6 psi it could lead to tyre damage. Additionally, the tyre's tread life could be reduced significantly with tyres wearing more on the outside than the middle. Lower inflation pressure will allow the tyre to deflect more as it rolls. This will build up internal heat, increasing rolling resistance and cause a reduction in fuel economy. You would also find a significant loss of steering precision and cornering stability. While 6 psi doesn't seem excessively low, remember, it usually represents about 20% of the tyre's recommended pressure. You should also be aware that the load capacity of your tyres is reduced at lower pressures.

OVER-INFLATION

If your tyres are over-inflated by as little as 6 psi, they could be damaged more easily when driving over potholes or debris on the road. Over inflation also causes tyres to wear in the centre of the tyre's tread which will reduce the tread life. Higher inflated tyres will also give you a much harsher ride.

TYRE PRESSURE

WEAR PATTERNS OF AN UNDER-INFLATED, PROPERLY INFLATED AND OVER-INFLATED TYRE



Under Inflated

Under-inflation causes tyres to wear more on the outside than the inside.

Properly Inflated

A properly inflated tyre wears evenly over the entire tread and will prolong the life of your tyres.

Over Inflated

Over-inflation causes tyres to wear in the centre of the tyre's tread.

IMPORTANT FACTORS IN SELECTING TYRE PRESSURES

There is no universal “right” pressure for all tyres. The proper inflation level is dependant on many factors such as what tyres you have, type of vehicle, amount of load, how the vehicle is being driven and the condition of the road to name a few. The important thing to remember is, as load increases, you will need to increase pressure but never exceed the maximum pressure stamped on the sidewall of the tyre. For harsher road surfaces, a lower pressure with lower speed may be needed to avoid tyre damage.

THE “4 PSI” RULE - APPLIES TO BITUMEN ROAD USE ONLY

As a general rule, the following can be used - for road use only: As a starting point, inflate your tyres to the recommended tyre pressure on your vehicle’s tyre placard*. Then to determine if you have the correct pressure for a given load, check the cold pressure and note the reading. Drive several kilometres to ensure they are at operating temperature and then check again. Ideally, they should be about 4psi above the cold pressure. If the pressure is more than 4psi above the cold pressure, you should add more air. That is because there is too much friction, which builds up more heat than desirable. Conversely, if they are less than 4psi above cold pressure, the cold pressure is too high. Adjust your pressures accordingly. Of course, you should do this test before commencing your trip so you start with the right pressure beforehand.

* Beware of vehicle placards with recommendations below 30psi. Some older vehicles may still show lower pressures which were used to “enhance” ride but resulted in poor tyre life and in some circumstances are dangerous.

TYRE PRESSURE GUIDE



EFFECT OF ADJUSTING TYRE PRESSURES ON THE SIZE OF A TYRE'S 'FOOTPRINT'

This diagram illustrates the effect of reducing your tyre pressures on the size of the footprint of your tyres. Reducing pressures and increasing the size of your tyres' footprint spreads the weight of your vehicle over a larger area so when driving on sand, for example, your tyres will drive 'over the top' of the sand. If you maintain high pressures and a small footprint, your tyres are more likely to 'dig down' into the sand and even get you stuck! Reducing pressures and increasing the size of your tyres' footprint will also increase traction in offroad conditions. Remember, whenever you reduce your pressures, re-inflate to the proper levels as soon as you drive back on to the bitumen.

TYRE PRESSURE GUIDE FOR DIFFERENT TERRAIN

WARNING: *This is just a guide based on an average range of sizes not a specific size. Narrow commercial style tyres require higher pressures. You must consult your authorised Cooper Tyres dealer to get the right pressure for your specific vehicle's weight and tyre size.*

Lowering pressures may be necessary to get your vehicle through an extreme section of terrain or reduce tyre damage in offroad conditions. However, lowering tyre pressures below the manufacturer's recommended pressure for your vehicle is at your own risk and judgement and doing so could cause overheating and long term tyre damage. So, you must drive slowly over obstacles and re-inflate your tyres to proper levels once your vehicle is returned to normal road applications and conditions.

BITUMEN **32-38 psi**

For standard size tyres, use pressures specified on your vehicle's placard. Higher pressures will be required when carrying heavy loads.



TYRE PRESSURE GUIDE

SAND 18-26 psi

This depends on the depth and coarseness of the sand and also the grade. Lower pressure improves your longitudinal footprint and flotation. You want enough momentum to stay on top.



Higher pressures will be required when carrying heavy loads. Sudden or heavy movements of the steering can be dangerous and speed needs to be appropriately reduced depending on the depth of the sand. Sand can vary rapidly in patches. Sand can also build up a lot of heat in your tyres because you are running lower pressures for flotation, so you may need to rest your vehicle regularly. Sand creates the most constant resistance to tyres, gearboxes and motors out of all mediums and applications.

FAST/SMOOTH GRAVEL 32-36 psi

Too low on this surface and you lose good steering response and stability, especially if you are driving fast. Higher pressures will be required when carrying heavy loads. When driving over corrugated roads you should reduce your speed as heat builds up quickly on these roads.



SLOW/ROUGH GRAVEL 26-32 psi

However this depends on how slow, how rough and with what load. Keep in mind that the higher the speed, the more heat generated in the tyre according to your load and the terrain being covered. High temperature in the belts of the tyre is not



something you can always feel by hand either. Chipping of the tyres is minimised by lower speeds and lower pressures to improve the tyres resistance to objects and also heat build up. Higher pressures will be required when carrying heavy loads.

Disclaimer: All pressures stated are based on an average range of sizes not a specific size. Tyres must be re-inflated to proper levels once your vehicle is returned to normal road applications and conditions. All pressures stated are suggested for light truck construction tyres only, and should not be advised to any person driving on passenger construction tyres. Consult the manufacturer for recommended tyre pressures relevant to that brand.

TYRE PRESSURE GUIDE



ROCKY GRAVEL/ROCKS 22-28 psi

This is really assuming that the going is very slow, driving in low range, and not generating a lot of heat in the tyre. The low pressure allows the tyre to improve its traction and flexibility over the obstacles without impact fracturing. Higher pressures can be used but the trade off is more wheel spin and less grip. Very low pressures, around 20 psi and below, can create the risk of pushing the tyre off the bead of the rim and therefore 22 psi is generally an acceptable minimum low pressure limit for most sizes. Higher pressures will be required when carrying heavy loads.

Malleability or flexibility at low speed is what you want to achieve and improve traction without spinning your tyres and often shredding or chipping them up. Lowering tyre pressures will increase the size of your tyres' footprint which spreads longitudinally along the tyre, which is what you are trying to achieve for maximum traction. While lowering pressures does reduce the risk of overall damage, it could increase the risk of sidewall damage.

Ever noticed how easy a balloon pops at higher pressures when it hits something, but when the balloon has low pressures its harder to damage or pop? Same with tyres on rocks in most slow situations. If you go to any offroad competition event where slow rock-crawling is involved, ask the drivers what pressures they run. Sidewall damage can be reduced by careful wheel placement and again, slowing down. Obviously, there are tyres better suited to rock work than others by design.

Disclaimer: All pressures stated are based on an average range of sizes not a specific size. Tyres must be re-inflated to proper levels once your vehicle is returned to normal road applications and conditions. All pressures stated are suggested for light truck construction tyres only, and should not be advised to any person driving on passenger construction tyres. Consult the manufacturer for recommended tyre pressures relevant to that brand.

TYRE PRESSURE GUIDE



MUD 22-28psi

This depends very much on what sort of mud, the steepness of slope and what sort of base you have under the mud. You may not even need to lower your pressures.

If it's thick mud, with a loose, deep base, lower pressures and less wheel spin is best but maintain momentum. If the mud is watery and has a solid base, you can maintain higher pressures, again maintain momentum but never drive fast as you can lose control of the steering, damage engine components and the environment. Mud is the medium where you want enough momentum while maintaining traction, without losing steering control and causing minimal damage to the track for others behind you or in the future. Higher pressures will be required when carrying heavy loads.

Disclaimer: All pressures stated are based on an average range of sizes not a specific size. Tyres must be re-inflated to proper levels once your vehicle is returned to normal road applications and conditions. All pressures stated are suggested for light truck construction tyres only, and should not be advised to any person driving on passenger construction tyres. Consult the manufacturer for recommended tyre pressures relevant to that brand.

ROTATING YOUR TYRES

Tyre rotation can be beneficial in several ways. When done at the recommended times, it can preserve balanced handling and traction of the tyres and prolong the life of your tyres. It can even provide performance advantages.

WHEN SHOULD TYRES BE ROTATED?

Your owner's manual will tell you how often to rotate tyres but as a rule of thumb, it should be done every 10,000 kms.

WHY SHOULD YOU ROTATE YOUR TYRES?

Tyre rotation simply means moving tyres around so that they "trade places" on your vehicle in a systematic way to achieve more uniform wear for all tyres on your vehicle. Rotation is important because each tyre on a vehicle carries a different amount of weight, especially your rear tyres if you are carrying loads, making them wear at different rates. By rotating them, you basically even out those differences. Remember, tyre rotation cannot correct wear problems due to worn mechanical parts or incorrect inflation pressures.

While no one likes their tyres to wear out, it is actually an advantage when all of the tyres on a vehicle wear at the same rate throughout their life. Since tyre rotation will help all of the vehicle's tyres wear at the same rate, it will keep the tyres performing equally on all four corners. When your tyres wear out together, you can get a new set of tyres, without being forced to buy pairs. If you replace tyres in sets, you will maintain the original handling balance.

FITTING A PAIR (2) OF NEW TYRES

If you do need to fit a new pair of tyres, you should use the following rule of thumb. If you do most of your driving on the bitumen, you should fit your new pair of tyres to the front of your vehicle because during braking there is a weight transfer to the front tyres and their deeper treads will grip the best, especially on wet roads. If you do most of your driving offroad, you should fit the new pair of tyres to the rear of the vehicle because, in offroad conditions, the front tyres throw up rocks and stones that are deflected by the rear tyres. By fitting the new pair of tyres to the rear, their deeper treads give more cushioning to the impact from those rocks and stones. Fitting the new pair of tyres to the rear of your vehicle will also give you better grip when carrying heavy loads in slippery conditions.

FOUR (4) TYRE ROTATION

If your vehicle is a front wheel drive with non-directional Cooper tyres, rotate your tyres as shown in Diagram A. If you drive a rear wheel drive or all wheel drive vehicle, rotate your tyres as shown in Diagram C. If your vehicle has a directional tread pattern such as Cooper's Sport HP, rotate your tyres as shown in Diagram E. If your vehicle has different size tyres on front and back, rotate your tyres as shown in Diagram F.

ROTATING YOUR TYRES

FIVE (5) TYRE ROTATION

While many vehicles are equipped with temporary spares that cannot be included in a tyre rotation program, if the vehicle's four tyres and wheels on the ground and the spare tyre and wheel are the same size, type and Load Rating, they (if not branded "for temporary use") can be included in the tyre rotation process.

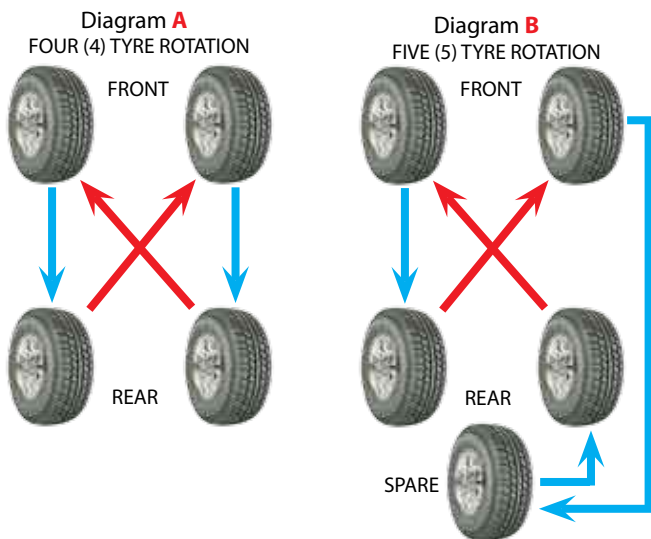
Five tyre rotation ensures that the spare tyre and wheel will be periodically inspected and properly inflated if required to be put into service. The vehicle can also be driven 20% more kilometres before replacing the original set of five tyres becomes necessary. This ensures that all five tyres wear out before they should be replaced due to old age.

Additionally, five tyre rotation results in equally distributed use that will help maintain equivalent tread depths on all five tyres at all times. When applied to many 4WD and AWD vehicles, this is required to prevent driveline damage if a flat tyre forces a new spare to be put into service with partially worn tyres on the other three wheel positions.

If you have a front wheel drive, rotate your five tyres as shown in Diagram B, or if you have a rear wheel drive, rotate your five tyres as shown in Diagram D.

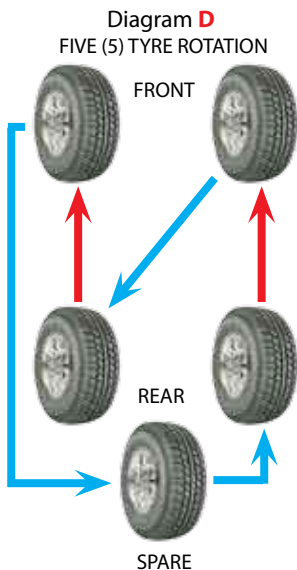
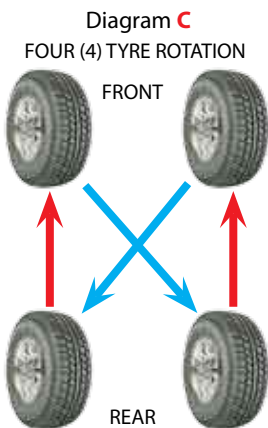
WARNING: Your spare tyre must be the same diameter, construction, and load index as all four tyres on your vehicle.

FOUR (4) & FIVE (5) TYRE ROTATION PATTERN FOR FRONT WHEEL DRIVE VEHICLES

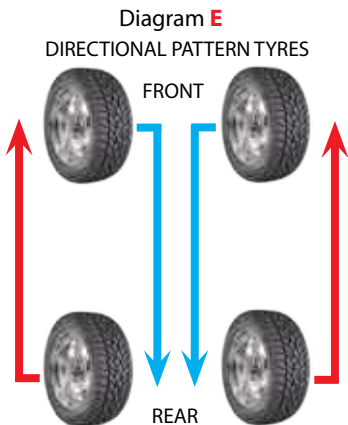


ROTATING YOUR TYRES

FOUR (4) & FIVE (5) TYRE ROTATION PATTERN FOR REAR WHEEL DRIVE & ALL WHEEL DRIVE VEHICLES



FOUR (4) & FIVE (5) TYRE ROTATION PATTERN FOR VEHICLES WITH DIFFERENT SIZES FOR FRONT & REAR AND DIRECTIONAL PATTERN TYRES



BALANCE & ALIGNMENT

The most important part of your tyre is the tread, which gives you the traction to stop and hold the road on curves. Tyre tread also squeezes water out from under the tyre, which helps to reduce “aquaplaning”, where a vehicle actually rides up on a layer of water and becomes difficult to steer or stop.

There are several things you can do to help the tread last longer on your tyres. For starters, make sure that your Cooper Tires dealer balances your tyres when installing them. Balancing involves placing small weights on the rim to counteract heavy spots, or slight variations in weight, in the wheel and tyre assembly. If a tyre is not balanced, it will shimmy as you drive, and your tread will wear unevenly.

You should also make sure that your vehicle’s suspension is properly aligned. Otherwise, your tyres will ride at an angle and wear unevenly, and you may experience handling problems. A vehicle can become misaligned gradually over time, or suddenly when you hit a bump or pothole.

Have your Cooper Tires dealer check your alignment periodically. Also, have it checked if you notice anything unusual, such as pulling to one side or vibrating.

“TYRE-FRIENDLY” DRIVING

You may not realize it, but the way you drive can have a lot to do with how long your tyres will last and how well they perform. As you head down the road, there are a number of things to keep in mind:

SAFE DRIVING

Take it easy. Avoid hard cornering, rapid accelerations and abrupt braking and stopping. They put a lot of stress on tyres. Smooth, safe driving is better for your tyres - and for you!

ROAD HAZARDS

Avoid potholes and other hazards. Obviously, it’s best not to hit potholes or objects in the road. But if you can’t avoid them, remember that the faster you are going when you hit something, the greater the impact on your tyres—so slow down as much as you can without endangering yourself or others.

If you can’t avoid a pothole, don’t apply the brakes when you hit it. Instead, apply them as you approach the hole, and release them just before striking it. This slows you down, but allows the tyre to roll as it hits, softening the impact. If you hit an extremely large object or hole, have your tyres checked by an authorised Cooper Tires dealer. Such collisions can cause internal tyre damage that you can’t see—but which can

“TYRE-FRIENDLY” DRIVING

cause problems later on. Sometimes, a tyre can be severely damaged and travel hundreds or even thousands of kilometres before failing. A vibration or rough ride may be a sign of such damage - and that it is time for a replacement.

GETTING STUCK - AND UNSTUCK

If you find yourself stuck in snow, ice, mud or wet grass, don't spin your tyres rapidly, and never spin them if a drive wheel is off the ground. Doing so can actually cause damage to a tyre because if one drive wheel is stuck, and the other is free to spin, all the engine's power goes to the free wheel. If you're in snow, turn off the vehicle, apply the brakes and shovel snow away from the tyres and vehicle. Try sand and gravel to get more traction. If that doesn't work, gently rock the vehicle back and forth using forward and reverse gears. Keep people away from your tyres and the vehicle as you rock.

OVERLOADING

Watch out for overloading. Driving on an overloaded tyre is hazardous. When your car is carrying too much, the weight can create excessive heat inside your tyres - and that can cause sudden tyre failure. Never exceed the maximum load rating of your tyres, which you can find on the sidewall of the tyre. When you replace a tyre, make sure the new one has a load-carrying capacity equal to or greater than what is specified on your vehicle's placard.

STORING TYRES

It's also important to treat your tyres right when you're not using them. If you store tyres, keep them in a cool, dry place, away from sunlight, heat and ozone. Allow air to circulate around all sides to avoid moisture damage. Keep tyres away from grease, fuel and other substances that can deteriorate the rubber.

PREVENTING TYRE TROUBLE

Regular inspections can help you prevent tyre trouble and keep you rolling safely down the road. If you detect any damage, get it checked out at your local authorised Cooper Tyres dealer as soon as practical.

WARNING: If you ever need to repair a puncture with a string plug make sure you have the tyre professionally repaired as soon as possible, as the tyre industry do not recognise string plugs a permanent repair.

'NEW' TYRES FOR OUTBACK TRIPS

For trips through the outback it's better to have new, or nearly new, tyres on your vehicle. The deeper treads of new tyres will give you much better grip and more protection from damage than tyres that are worn.

LOAD INDEX & SPEED RATING

Using a 265/75R16 119N tyre size as an example, the 119N at the end of the size represents the tyre's service description. A service description identifies the tyre's load index and speed rating. The first three digits - 119 - represent the tyre's load index and are followed by a single letter - N - identifying the tyre's speed rating.

LOAD INDEX

265/75R16 119N - The Load Index - 119 - is the tyre's assigned numerical value used to compare relative load carrying capabilities. In the case of this example the 119 identifies the tyre's ability to carry a maximum of 1360 kg (2998 lbs). The higher the tyre's Load Index number, the greater its load carrying capacity. The Load Index rating also represents the load carrying capacity of the tyres when they are inflated to maximum psi so the load carrying capacity reduces as tyre pressures are reduced.

Load Index	kg	lbs	Load Index	kg	lbs	Load Index	kg	lbs
90	600	1323	102	850	1874	114	1180	2601
91	615	1356	103	875	1929	115	1215	2679
92	630	1389	104	900	1984	116	1250	2756
93	650	1433	105	925	2039	117	1285	2833
94	670	1477	106	950	2094	118	1320	2910
95	690	1521	107	975	2149	119	1360	2998
96	710	1565	108	1000	2205	120	1400	3086
97	730	1609	109	1030	2271	121	1450	3197
98	750	1653	110	1060	2337	122	1500	3307
99	775	1709	111	1090	2403	123	1550	3417
100	800	1764	112	1120	2469	124	1600	3527
101	825	1819	113	1150	2535	125	1650	3638

SPEED RATING

Speed ratings are based on laboratory tests where the tyre is pressed against a large diameter metal drum to reflect its appropriate load, and run at ever increasing speeds until the tyre's required speed has been consistently exceeded.

Australian Vehicle Standards' rules state that a 4WD manufactured with offroad features must have a tyre speed rating of N (140 km/h) or greater. It is not a legal requirement to match the tyre placard's speed rating so long as it is not less than N (140 km/h). The speed rating must be stamped on the tyre.

It is important to note that speed ratings only apply to tyres that have not been damaged, altered, under-inflated or overloaded. A tyre that has been cut or punctured no longer retains the original speed rating, even after being repaired.

Disclaimer: While a speed symbol is an indication of the speed capability of the tyre, we do not endorse the operation of any vehicle in excess of legal speed limits.

Speed Category Symbol	Speed Km/h	Speed Category Symbol	Speed Km/h
E	70	R	170
F	80	S	180
G	90	T	190
J	100	U	200
K	110	H	210
L	120	V	240
M	130	W	270
N	140	Y	300
P	150	Z	Over 240
Q	160		



AMERICA'S MOST TRUSTED 4x4 TIRE

If you would like any further information about your Cooper tyres, please call your local authorised Cooper Tires dealer or talk to one of our Cooper Tires 4WD Tyre Specialists.

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IMPORTANT

The information contained herein has been sourced from the experiences of many tyre and 4WD industry experts, various 4WD magazine articles and tyre related publications.

Because of the extremely wide variations in conditions, vehicles, loads, weather and driver experience, reliance on any information or advice contained herein is entirely at the discretion of each driver and we encourage every driver to consider the safety of themselves, their passengers and other road users before relying on that advice. Responsibility for the safe operation of each vehicle remains entirely with the driver.