

THE LAND ROVER GUIDE TO OFF ROAD DRIVING



ABOVE & BEYOND



Adventuring off-road can
be so exhilarating, just make
sure you're always prepared
for your journey.

Ian Kitching
Global Lead Instructor, Land Rover Experience





THROUGH,
UNDER,
OVER
ABOVE AND BEYOND

Think rugged descents and deep wading are for experts? Think again.

With good preparation and a bit of practice, anyone can off road.

A Land Rover is capable of more than you could ever imagine. It can carry you through almost any environment: thick forest, fiery desert, rugged mountain or frozen river.

This guide is designed to help you make the most of your Land Rover's legendary capability. To tame the most vigorous topography, and get to places other vehicles simply can't.



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KNOW YOUR VEHICLE

The key to safe driving on any terrain is a robust knowledge of your vehicle and what it can do.

Before you venture off road, equip yourself with a clear mental picture of the underside of your 4x4.

Learn the location of the fuel tank, engine sump, differentials and gearbox. You'll be less likely to snag them on rocks and other obstacles if you can see them in your mind's eye.

Memorising some basic stats will help you deal confidently with off-road obstacles. Get to know your vehicle's height and width, its lowest point, its wading depth and angles.

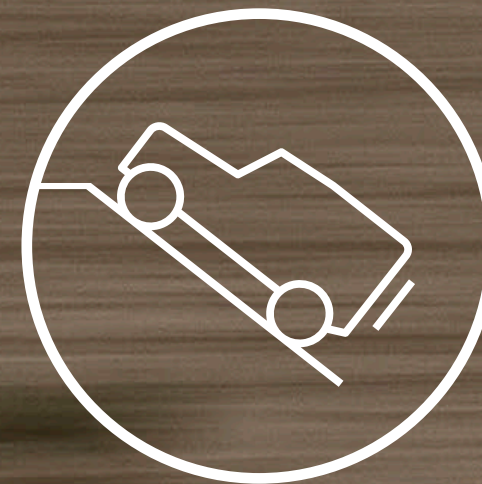
Get to grips with your vehicle's on-board technology features; you'll find everything you need to know in the manual. **Click here to download your manual.**



Approach angle

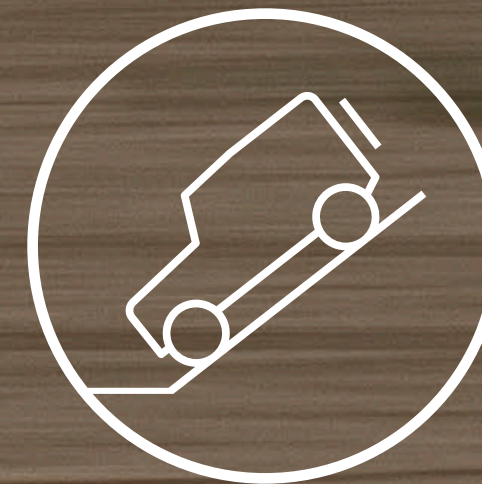
Is the wheel or nose going to hit the ground first?

Remember: if you have a winch on the front, your approach angle will be reduced.



Ramp angle

When you crest a hill, is the middle of your 4x4 going to ground?



Departure angle

Is the back of your vehicle going to hit the ground?

Remember: if you have a tow bar attached, your departure angle will be reduced.

You should also know the full gear range of your 4x4.



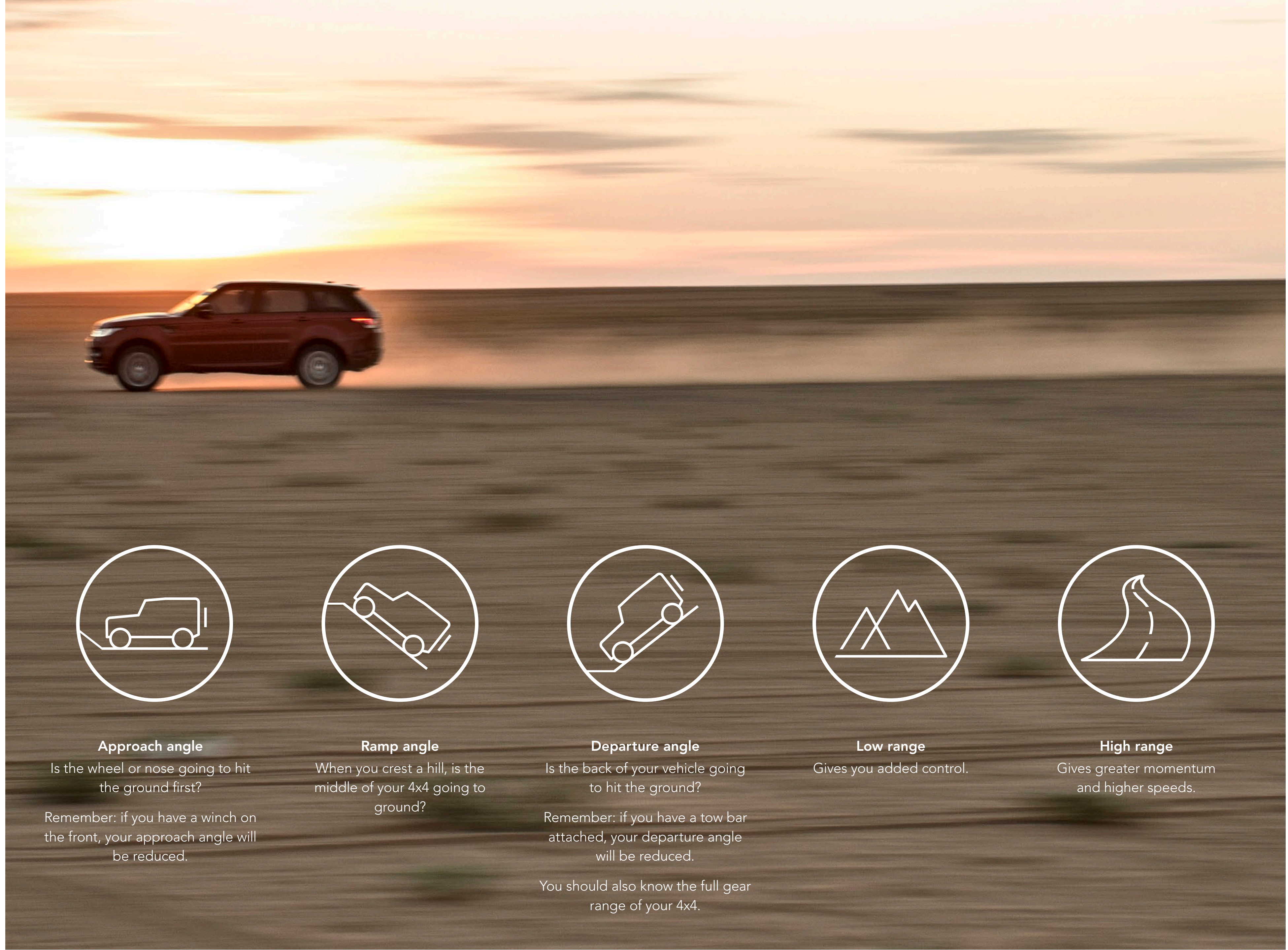
Low range

Gives you added control.



High range

Gives greater momentum and higher speeds.



OFF ROAD CHECKLIST



WHEN VENTURING OFF ROAD, ALWAYS CARRY:

- Suitable clothing and footwear
- Water
- Torch
- Mobile phone (and charger)
- Shovel
- Hot drinks/food, in snowy weather

If possible, plan your journey beforehand by checking the terrain and topography of the area you'll be visiting. You can do this with Ordnance Survey maps or Google Maps Earth mode.

Consider the current and recent weather, and how it might affect the land.

Before you set off, make sure your tyres are properly inflated. Secure anything in your 4x4 that could move or fall during a bumpy ride, and don't overload the roof rack.



1

Be aware of the Countryside Code and never damage the environment. Stay within the bounds of existing tracks and give way to wildlife.

2

If you don't have permission, don't drive there.

3

Know your limits and always plan ahead. Going off road can be perilous: think about what could go wrong, and how you'd deal with it.

4

Tell someone where you're going and when you're due to arrive. That way, people will know where to look for you if something goes wrong.

5

Make sure you have more than enough fuel for your journey. You definitely don't want to be stranded off road with an empty tank.


6

Always carry a mobile phone with fully charged battery. It's a good idea to have an in-car charger.

7

If in doubt, don't do it. It's only a drive after all, and you should always keep risk to a minimum.

OFF ROAD DRIVING: GOLDEN RULES

A photograph of three Land Rover SUVs driving on a dirt road in a savanna at sunset. The vehicles are kicking up dust, and the scene is bathed in a warm, golden light. The SUV in the foreground is a silver Land Rover Discovery Sport with license plate BY 72 BW GP. The background shows a large acacia tree and distant hills.

When venturing off road
it's important to drive as
slow as possible and as
fast as necessary, always
try and make sure you
operate the controls as
smooth as possible.

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OFF ROAD TECHNIQUE

Drive as slowly as possible, and as fast as necessary.

Always keep both hands on the wheel, even when reversing.

Don't hook your thumbs inside the steering wheel. Kickback from rough terrain could sprain them.

Use progressive throttle, gentle steering and progressive braking.

Never make harsh movements unless it's vital to do so. Keep steering precise and braking to a minimum.

Use the driver display to check your wheels are straight, and assess any potential risks ahead. Where necessary, get out of your vehicle and check the terrain.

Avoid gear changes while negotiating tricky terrain.



LAND ROVER OFF ROAD TECHNOLOGY



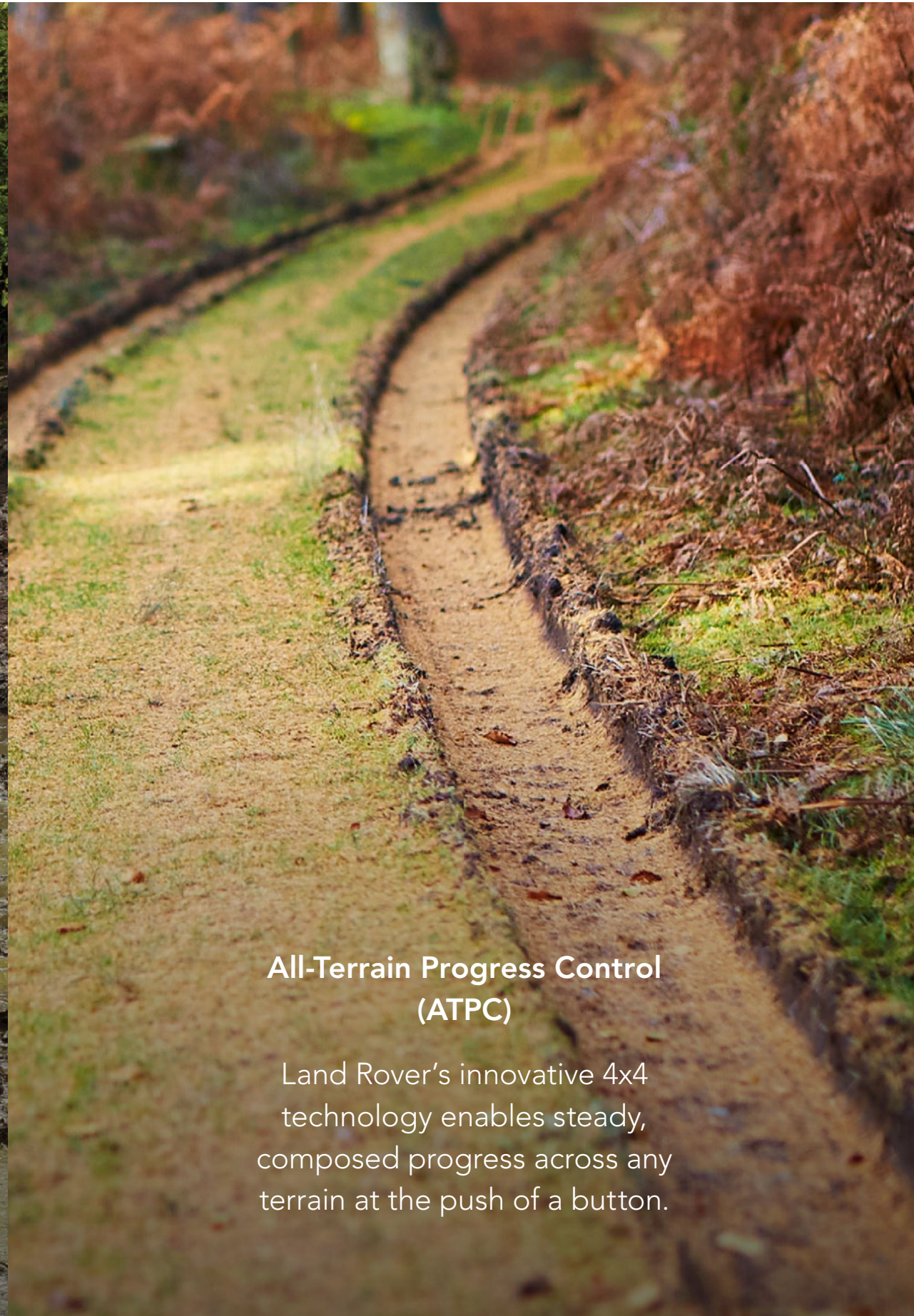
Terrain Response

Land Rover's pioneering technology optimises settings to give a combination of traction, agility and control which best suits the terrain.



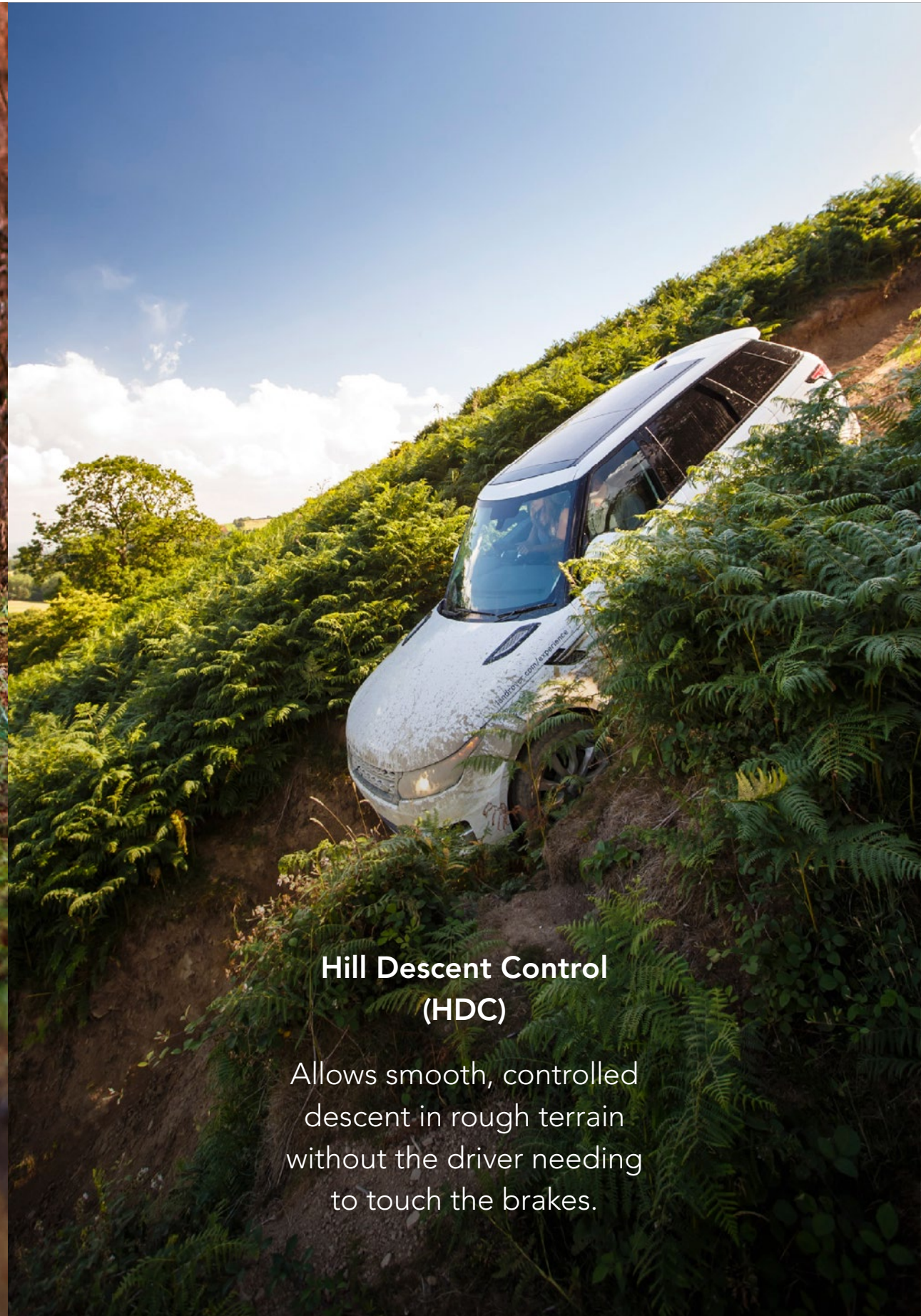
Terrain Reponse 2

Adds an automatic mode which uses sophisticated systems to analyse live driving conditions and select the most suitable program.



All-Terrain Progress Control (ATPC)

Land Rover's innovative 4x4 technology enables steady, composed progress across any terrain at the push of a button.



Hill Descent Control (HDC)

Allows smooth, controlled descent in rough terrain without the driver needing to touch the brakes.

TERRAIN RESPONSE

There are five programs in the Terrain Response system:



Choose the one that best suits the terrain you're tackling. If you have Terrain Response 2, this will happen automatically.

In the pages ahead, you'll find detailed advice on using Terrain Response with different surfaces.

Gear selection

To climb, always use the highest practical gear. To descend use the lowest, and/or engage Hill Descent Control if available.

If you have an automatic gearbox and Terrain Response, select [D] and the vehicle will cope with whatever conditions you throw at it.

If you want to be a bit more hands-on, try CommandShift.®

When driving on icy, slippery or muddy surfaces in an automatic 4x4, move off in second gear as it reduces the risk of wheel spin. If you're in a manual vehicle without low range, use first gear.

The key is to **find the right balance between traction and momentum**. If you have decent traction, use less momentum.



TERRAINS





DRIVING IN MUD

In deep mud, you need steady momentum to carry you through. Engage **Mud and Ruts** on Terrain Response, and use a low-range gear like 2nd or 3rd.

Your tyres will cut through mud to find traction on firmer ground below. All Land Rovers have built-in Traction Control, which drives power to the wheels with the most traction.

If your wheels do start to spin, ease off the throttle and slow the tyres to regain grip.

Ruts

A rut is a long, deep track created by the repeated passage of vehicles. Try to straddle deep ruts, as this keeps your environmental impact to a minimum.

If muddy conditions force you to drive in ruts, make sure you know where your front wheels are pointing. Check the Wheel Direction Indicator, if available.

Try to keep your lowest point clear of the ground at all times. Terrain Response will automatically raise the vehicle to an optimum height.

Muddy hills

When climbing muddy hills, remember that you'll need more momentum to balance the decrease in traction.

Always try to avoid wheel spin, as it results in loss of momentum and can cause environmental damage.

DRIVING ON SAND

The basics

To travel across sand*, you need a low gear and steady momentum. Consider lowering your tyre pressure (15psi minimum) to create a greater surface area.

Engage **Sand** on Terrain Response. If your wheels spin, ease off the throttle and slow the tyres to regain traction.

When driving on damp sand, your wheels may sink into the surface, so use the Mud and Ruts setting. Keep off wet sand. It can contain dangerous areas of 'floating' sand or quicksand.

If you need to park in sand, do so on a downward slope. This will help you when you pull away.

* When driving off-road on sand please respect local laws and road signs at all times.

Beach driving

Between the high-tide mark and four metres from the sea, sand is usually firm enough to take a 4x4. Always be aware of incoming tides when you're driving on the beach.

Desert driving

On stretches of firm sand in the desert, you can travel in relatively high-range gears.

Remember that the sand's surface crust will be stronger, and appear dryer, in the cool of the morning.

Driving in damp desert sand, after rainfall, can be easier. Flowers blooming overnight will also help bind the sand together.

If you encounter dunes, go around them not over them.

Should you get caught in a sandstorm: turn the rear of your vehicle to face the wind, turn the engine off and wait for the storm to pass.





DRIVING ON ROCKS

Before crossing rocks and scree in your 4x4, get out of the vehicle and assess the risks. If you feel it's safe to continue, select **Rock Crawl** on Terrain Response and proceed carefully. Low-range first gear is best for rocky ground.

If possible, ask someone outside the vehicle to guide you through the area, or use surround cameras if fitted.

Traversing

Before navigating uneven ground, secure anything inside the vehicle that could fall. If possible, remove any roof-rack items.

Use the lowest gear possible and approach at a crawl. Avoid the temptation to steer up the slope.

If you slide, steer downhill and gently apply the throttle. If you lose traction on your uphill wheels, stop immediately, reverse away and choose a more suitable route.

Keep an eye out for anything that could unbalance the vehicle, like rocks or potholes.

Approach logs, rocky steps or ditches diagonally: you want three wheels on the ground at all times.

DRIVING ON GRAVEL

Select **Grass/Gravel/Snow** on Terrain Response, and use the highest gear possible for the conditions.

Gravel is a constantly changing, low-grip surface, so drive at a slow speed. This reduces the risk of losing traction when you stop, accelerate or take a corner.

Always leave a generous gap between you and other vehicles, to minimise the risk of damage from flying gravel.

Avoid dust clouds as they reduce visibility.



DRIVING ON HILLS

Driving uphill

Wherever possible, investigate the area on foot. You should always know what's on the other side of the hill. Remember your approach angle: is the wheel or nose going to hit the ground first?

Approach the hill straight on, rather than diagonally, to avoid a roll. Use the highest gear in which the vehicle will 'pull' comfortably.

Never attempt to turn your 4x4 on a steep slope.

Be prepared for a failed climb, it happens to the best drivers. Work out an escape route and take note of where the obstacles are.



Driving downhill

Stop one vehicle-length before the descent, so you have time to make any corrections. Remember your departure angle. Is the back of your vehicle going to hit the ground?

Choose the lowest gear possible and select Hill Descent Control (HDC), if available.

If using HDC, try to keep your foot away from the pedal and avoid the temptation to brake. If you do need to brake, apply progressive rather than strong pressure. If you don't have HDC, just use your lowest gear.

Follow the natural fall line—the route water would take down the slope—and keep your wheels straight. If the vehicle starts to slide, increase throttle to match the ground speed and regain steering control.

If driving a manual, never roll or reverse downhill in neutral or with the clutch depressed. And never turn your 4x4 on a steep slope, as it could lead to sideways sliding.



DRIVING THROUGH WATER

Try to work out how deep the water is. In static shallower water, explore on foot and use a stick to gauge the depth—or watch another vehicle go through. It's a good idea to keep a pair of wellies or waders in the boot.

If there are other vehicles ahead, wait until they've left the water. Unsettled water can make a safe passage more challenging.

Drive through the water very slowly at first, then build up momentum. Do not slip/ride the clutch as this reduces control of the vehicle. Ease off the accelerator as you reach the other side.

A Land Rover 4x4 can manage submersion of between 50 and 90cm. Refer to your manual to find your maximum wading depth.

Never attempt to cross deep, fast-flowing streams and always prioritise safe driving. As a general rule, don't drive into water unless you really have to.

DRIVING IN SNOW AND ICE

When off-road driving on icy surfaces, select the **Grass/Gravel/Snow** setting and use the highest gear possible for the conditions.

Use steady momentum to carry you through: it's important to keep the wheels rolling.

All Land Rover 4x4s have built-in Traction Control, which drives power to the wheels with the most traction. If your wheels do start to spin or slide, ease off the accelerator until you feel the tyres regain grip.

Harsh braking may cause you to skid; so start gently, then progressively increase pedal pressure. Hill Descent Control (HDC) will take the guesswork out of steep, slippery slopes by automatically braking to maintain a steady speed.

On corners, brake before you approach, steer through the corner at a safe speed, then accelerate once you've straightened up. Don't steer while braking or accelerating, and vice versa.





RETURNING TO THE ROAD

Stop and check for damage. Look for debris and cuts in the tyres, including inside the walls, and debris lodged in the underside of the vehicle.

Clear any excess grass, mud or snow from your 4x4, paying particular attention to your lights and number plates. Make sure that any equipment is secure.

If you've lowered your tyre pressure to tackle a surface, remember to revert to the correct pressure as recommended by the manufacturer.

Set off slowly, as mud on the wheels could affect handling and braking. Always check for a firm brake pedal and ensure there is no resistance in the steering.

FIND OUT MORE

Keep up to date with Land Rover by following us on Twitter [@LandRover](#), Instagram [instagram.com/LandRover](#) and Facebook [facebook.com/LandRover](#).

For more driving tips, visit our Official Youtube Channel at [youtube.com/landrover](#)

Keen to master your off-road driving skills? Book Land Rover Half Day, Full Day or Advance Experience days on your nearest Land Rover Experience Centre. Find your nearest centre: [landrover.com/experiences/find-a-centre](#)

Some features shown are optional. Please consult LandRover.com, your owner's manual or your local authorised Land Rover retailer for more details.

