

## TOYOTA LAND CRUISER

### INTRODUCTION

With an off-road heritage spanning 70 years, Land Cruiser remains unique in its segment for its ability to combine outstanding quality, durability and reliability with unrivalled off-road performance and ever-greater levels of luxury, comfort and ownership prestige.

Land Cruiser is more widely available than any current Toyota model, being sold in more than 190 countries worldwide. Its unmatched off-road abilities have earned it a rock-solid reputation as one of the world's toughest and most reliable 4x4s and made it the segment sales leader in more than 10 European markets.

The current generation model was introduced in 2009 and has undergone a series of significant revisions during its time on sale. For 2018, it was further revised with more modern and robust exterior styling, a more sophisticated, comfortable and higher quality interior, and improvements to its dynamic performance and user-friendliness, both on and off-road.

Land Cruiser gained a significantly more powerful 2.8-litre engine in 2020, while the UK line-up was realigned with two grades: Active, with three and five-door body styles and five or seven seats, and the five-door, seven-seat Invincible.

Land Cruiser's success is built on three core product values: -

- **Quality, durability and reliability**, building on Land Cruiser's long and distinguished history and reputation for lasting performance.
- **Unrivalled balance of on and off-road driving performance**, supported by advanced suspension and driver aid technologies.
- **Refined and versatile interior**, offering a functional but luxurious and comfortable on-board environment.

Land Cruiser benefits from a higher level of advanced but user-friendly handling and guidance features that help the driver tackle the most challenging routes. Advanced suspension technology and on-board monitors make it more comfortable and easier to manoeuvre through everyday urban traffic, too. Clever interior packaging provides highly flexible seating and luggage space arrangements, with generous space for up to seven on board.

## **THE LAND CRUISER LEGEND**

The Toyota Land Cruiser has built a rock-solid reputation for reliability, durability and unrivalled off-road performance in a history that stretches back more than 65 years.

To ensure the latest model was worthy of the Land Cruiser name, not only meeting but exceeding customer expectations, it underwent rigorous development testing on and off-road.

In styling terms, it is easy to identify as the latest in a long line of rugged Toyota four-wheel drive models. Compared to its predecessor, increases in external dimensions were kept to a minimum to help preserve on and off-road agility, but the introduction of numerous aerodynamic enhancements reduced the coefficient of drag (Cd) from 0.37 to 0.35.

Land Cruiser is equipped with a comprehensive and technically advanced range of safety and handling features, designed to make driving in all conditions secure and enjoyable. Toyota Safety Sense active safety systems are standard the Invincible model, with additional functions added in a 2020 upgrade. (detailed below).

### **History**

It is almost 70 years since Toyota introduced the four-wheel drive model that was to inspire the world-conquering Land Cruiser, a vehicle that led the company's expansion into new markets through the 1950s and which has proved its mettle on every continent, including the frozen wastes of Antarctica.

Land Cruiser's ancestral line can be traced back to the Toyota BJ, a truck-derived model that was initially developed for military use. In 1955 the name BJ gave way to Land Cruiser and the pattern was set for a model range that has endured and prospered through to the present day.

As Toyota began its programme of worldwide exports and growth during the 1950s and '60s, it found many established markets were already well-penetrated by American and European car makers. This helped prompt it to focus instead on emerging markets in Middle and Far East and South America, where Land Cruiser's tough performance made it a strong proposition.

The Land Cruiser concept was refined in the mid-1960s, as Toyota responded to an American trend for more refined four-wheel drive vehicles. The introduction in 1966 of the first Land Cruiser Station Wagon series catered for this growing market, joining the range alongside its more rugged stablemate.

Further expansion of the Land Cruiser concept came in 1985, when Toyota recognised the potential for a model that could offer the manoeuvrability and uncompromised off-road strengths of the Heavy Duty series with the comfort and refinement of the Station Wagon. The result was the first Land Cruiser Light Duty series.

From this point the Light Duty series progressed through two further generations in 1996 (the Land Cruiser Colorado) and 2002 before reaching the launch of an all-new model in 2009, raising the bar even higher in terms of quality, toughness and refinement.

### **Development testing**

Land Cruiser underwent intensive development testing to ensure it met Toyota's ambitions for all-round improvements in quality, handling and performance.

Prototype models were subjected to more than 30,000km driving over the most severe terrain on the off-road test course at Toyota's Tahara factory, which is twice the distance covered in regular off-road vehicle testing and the equivalent of 100,000km of everyday use. Inspections were carried out after every 3,000km for engineers to seek out any faults and identify opportunities for improvements.

Disguised as current generation models, these prototypes were also tested over a further 30,000km of real-world off-road conditions and 70,000km of rough road driving.

The result has been to take Land Cruiser's hallmark standards of reliability and toughness to new heights, giving customers even greater confidence in their vehicle, whatever the working environment, wherever in the world.

## **DESIGN**

The exterior design of successive Land Cruiser generations has combined the stylish aesthetics of a vehicle entirely at home in any environment with the robust image of durability and power expected of a genuine all-wheel drive machine.

The current model builds on this proven, trusted formula with a design that is visually more agile and dynamic, yet which maintains three core strengths essential to the vehicle's go-anywhere credentials: Total Practicality, with headlights and cooling openings positioned to maximise protection and wading depth; Total Durability, with the powertrain and all functional parts well-protected; and Total Capability, with a tight turning circle and generous ground clearance, essential for the most demanding off-road driving conditions.

The overall length has been increased by 60mm to 4,840mm (4,395mm for the three-door model). A minimum turning circle of 5.8 metres (5.2 metres three-door) contributes to exceptional manoeuvrability.

The bonnet is shaped to improve downward visibility at the centre and is sandwiched by the sides of the bumper to help protect the engine bay. The corners of the lower part of the bumper have integral fog lights and kick upwards, while the centre section is shaped like a skid plate for easier manoeuvring off-road. The top section of the wings has been raised so that it's easier for the driver to pinpoint the vehicle's extremities.

The front grille and headlights have been organised into single, powerful graphic form and set higher for better off-road functionality. The grille's apertures have been made as large as possible for optimum engine cooling, while the headlight main beams are positioned inboard to avoid damage when driving off-road.

In keeping with Land Cruiser heritage, the grille itself features broad vertical bars with slit-shaped cooling openings, finished in chrome. The headlight clusters comprise high and low beams, front turn indicators and daytime running lights, contained in a distinctive housing. On Active grade models and higher, the headlights use LEDs; on all models the daytime running lights also use LED technology.

The sharply trimmed lower section of the body reinforces the Land Cruiser's broad stance and minimises the impact of the front overhang on the vehicle's off-road approach angle. Ground clearance is 215mm (205mm three-door), with 31-degree approach, 25-degree departure (26-degree for three-door models) and 22-degree ramp break-over angles.

In profile, the peak of the front bumper has been raised and the bonnet, wing line and front and rear bumpers have been aligned on the same horizontal axis, generating a more athletic and dynamic vehicle posture. The vehicle's profile is further enhanced by a choice of six-spoke 17-inch alloys with new low rolling resistance tyres (Active grade), or a 12-spoke 19-inch wheel with a machined finish (Invincible grade).

## **Aerodynamics**

Seamless bodywork with minimal panel gaps and a series of aerodynamic enhancements deliver a 0.35 coefficient of drag (Cd), which supports high-speed cruising fuel economy.

Aerodynamic efficiency is aided by front and rear spoilers to channel airflow under the body and direct it cleanly away from the trailing edge of the roof. Deflectors inside the engine compartment correct the flow of air through the radiator grille to reduce turbulence, and the

design of the front bumper makes for a smoother rearward airflow. Front and rear spats are fitted to manage airflow around the tyres and cut turbulence.

Fitting a fin-shaped aero wiper blade cover and concealing the screen washer nozzles reduces wind noise and further improves aerodynamic performance.

## **SAFETY**

Land Cruiser is equipped with a comprehensive and technically advanced range of active and passive on and off-road safety features. Advanced engineering and sophisticated electronic systems provide a high level of protection while at the same time making driving more rewarding, helping the driver explore and enjoy the limits of the vehicle's performance.

### **Body structure**

Collisions between tall vehicles, such as SUVs, and passenger cars can result in the larger vehicle riding up over the smaller one. To counter this risk, Toyota works to ensure the safety systems of both vehicles involved in a collision can be used to their maximum potential.

To this end, the front crumple zone is set at a height equivalent to that of an average passenger car. The frame and body are designed to effectively channel and absorb impact energies to help protect all parties involved, even those on the receiving of a collision in a smaller vehicle.

Numerous measures have been taken to control body deformation in a frontal collision, while preserving the structural integrity of the cabin. Reinforcements in the A-pillars have a multi-layer construction between the roof rail reinforcement and cowl to give increased buckling strength and improved energy sustainability when buckled, which helps limit body deformation. In addition, the lower front pillar reinforcements also have a multi-layer construction and high-strength outer rocker panel reinforcements have been introduced.

Using high-tensile sheet steel for the front pillar and roof rail reinforcement improves side collision performance. The roof header reinforcement has a closed top and bottom cross-section, giving added strength and floor cross-members are strategically placed to effectively distribute impact forces – measures which further help reduce the risk cabin deformation.

A highly effective multiple load-path cross-member structure channels impact energy from the B-pillars, and inner rocker-to-frame load path brackets carry energy from the outer rocker.

Occupant protection is further enhanced by the foam padded door panels and door trims, reducing the risk of pelvic injuries in a side collision, and crushable door armrests.

## **Pedestrian protection**

Land Cruiser's bonnet, cowl and front wings are all designed to absorb as much energy as possible in the event of a collision with a pedestrian.

The bonnet has a deep, energy-absorbing profile with longitudinal reinforcement ribs. Crush points and holes behind the bonnet striker reinforcement ensure there is an ample impact absorption zone.

The front wing mounting brackets have crush points for effective energy absorption, and the wings themselves incorporate energy-absorbing protectors, with a construction designed to slip down in a head impact, so reducing the reaction force sustained by the pedestrian.

## **Airbags and active headrests**

Land Cruiser is equipped as standard with up to seven airbags: driver's dual-stage front airbag, driver's knee airbag, passenger front airbag, front side airbags and full-length curtain airbags, giving head protection to outer seat occupants in all three rows.

The front seats are fitted with seatbelts with pretensioners and active headrests that help prevent whiplash injury. Extra protection is provided through a new seatback design, allied to a headrest shaped to sit as close as possible to the occupant's head in normal use. In a rear impact, the force of the body on the seatback causes the headrest to move up and forward to close the gap between the head and headrest, significantly reducing the risk of whiplash.

## **Braking and stability control systems**

Land Cruiser's servo-assisted braking system uses 388mm x 32mm ventilated front discs. Four-piston callipers with large pistons are used for improved stopping power and fade-free performance. At the rear there are 312mm-diameter ventilated discs with floating callipers.

The vehicle comes as standard with a full range of braking, traction control and stability systems: ABS with EBD and Brake Assist; Traction Control (TRC) and Vehicle Stability Control (VSC). During emergency braking, the stop lamps automatically flash to alert following drivers.

Further brake control systems are provided specifically to enhance off-road performance and ease of use in taxing conditions, including Multi-terrain ABS, Active Traction Control (A-TRC), Hill-start Assist Control (HAC) and Downhill Assist Control (DAC). Details of how these work can be found in the Off-Road Performance section.

## **Toyota Safety Sense**

The Land Cruiser Invincible is equipped with Toyota Safety Sense active technologies to help prevent accidents happening, or mitigating the consequences if an impact does occur.

The package was upgraded in 2020 to add pedestrian detection in day and night-time driving to the Pre-Collision System (PCS), intelligent Adaptive Cruise Control (ACC), Lane Departure Alert and Lane Trace Assist to help keep the vehicle from unintended departure from its traffic lane. The suite of systems also includes Road Sign Assist and Automatic High Beam (AHB).

The Pre-Collision System can detect vehicles in front at speed between approximately six and 112mph and alert the driver of a collision risk with audible and visual warnings. At the same time, it primes the brakes to deliver maximum stopping power the moment the driver presses the pedal. If the driver fails to react and an impact becomes inevitable, the system automatically applies the brakes, reducing vehicle speed and potentially bringing it to a halt. The latest upgrade to the system allows it to detect pedestrians during day and night-time driving, and bicycle riders during daylight hours.

The intelligent Adaptive Cruise Control helps the driver maintain a safe distance from the vehicle in front. It benefits from improved acceleration and deceleration control for smoother, more comfortable performance.

It provides low-speed following and a stop-start capability when travelling at speeds from standstill to around 19mph. In congested traffic, the Land Cruiser will be brought to a halt when the vehicle ahead stops, maintaining an appropriate distance; to restart and reactivate the ACC, the driver simply presses the accelerator pedal or the switch on the steering wheel.

When the car is travelling at speeds above 31mph, Lane Departure Alert can help prevent accidents and head-on collisions caused by the vehicle straying from its traffic lane. If the system detects the vehicle is deviating from its lane without the turn indicators being used, it will trigger audible and visual warnings and can provide steering input to help the driver bring the car back to its correct path.

The system can recognise the road margin on straight roads where there are no lane markings.

An additional Vehicle Sway Warning detects the kind of deviations that happen when a driver starts to lose concentration or becomes tired. Once again, audible and visual warnings are given, recommending the driver takes a break from the wheel.

Lane Trace Assist provides advanced driving support, reducing the burden on the driver. When the Adaptive Cruise Control and Lane Trace Assist are active, it will help the driver with gentle steering inputs to keep the vehicle centred in its traffic lane, even when travelling through gentle bends.

LTA will function from motorway speeds down to near-standstill, supporting the driver in congested traffic. If the system cannot detect lane markings on the road surface – if they are faded or obscured – it will follow the path of the vehicle ahead, recognised by the front camera and millimetre-wave radar.

Road Sign Assist has been enhanced to that it is able to recognise a wider range of road sign warnings and commands, presenting the information on the driver's multi-information display. If the driver exceeds a recognised speed limit, the system can provide an audible and visual warning.

Automatic High Beam helps gain excellent forward visibility in night-time driving. It detects both the headlights of oncoming vehicles and the tail lights of vehicles ahead, automatically switching between high and low beams to avoid dazzling other drivers. More frequent use of high beam increases the chances of detecting pedestrians and hazards earlier.

Further driver support is provided with a Blind Spot Monitor with Rear Cross Traffic Alert (Invincible grade) and a tyre pressure warning system.

The Blind Spot Monitor alerts the driver to another vehicle travelling in a blind spot alongside by lighting up an indicator on the surface of the door mirror on the appropriate side of the car. The system works using radar sensors fitted to each side of the rear of the vehicle. If a vehicle is detected when the turn indicator is operating, the warning light will flash at fixed intervals.

The Rear Cross Traffic Alert uses the same radar as the Blind Spot Monitor to warn the driver of any vehicles approaching from either side that may not be visible through the rear screen or door mirrors. If any vehicle is detected, the system flashes the warning lights in the door mirrors and sounds a warning buzzer.

### **Trailer Sway Control**

The Trailer Sway Control system (standard on all five-door models) uses yaw rate, steering and acceleration sensors to detect any sway developing in a trailer. To make the trailer stable, it initiates deceleration and yaw moment control.



## **ON-ROAD PERFORMANCE**

### **Body-on-frame construction**

Much of Land Cruiser's legendary off-road toughness can be attributed to its robust and durable body-on-frame construction. Toyota carried the concept forward into the current generation, at the same time increasing body rigidity by 11 per cent.

Another advantage over the monocoque design used by many rival SUVs is the ability of the ladder frame to absorb vibrations and noise from the engine, drivetrain and road surface, so limiting NVH disturbance in the cabin. To further absorb NVH and aid a comfortable ride, the frame-to-body mounts are packed with insulating rubber.

Using high tensile steel within the body saves weight as well as increasing bodysHELL rigidity.

### **Suspension**

Land Cruiser uses an extensively revised version of the front independent double wishbone and rear four-link rigid suspension system that was used in its predecessor model, retuned for greater ride comfort and better steering feel.

At the front a long wheel stroke has been retained and the shock absorbers and springs have been fine-tuned. The shocks themselves are larger than before. The lower arm and knuckle have been reinforced and all the bushings have been retuned. To achieve better handling stability, the roll steer ratio was modified from five to eight degrees.

At the rear the long wheel stroke has been enhanced with optimised springs and larger shock absorbers. Bushings have been retuned and the axle housing has been reinforced for added strength and durability.

### **Kinetic Dynamic Suspension System**

The electrically modulated Kinetic Dynamic Suspension System (KDSS), fitted to Invincible models, optimises the effect of the front and rear anti-roll bars for better on and off-road performance (see Off-Road Performance section below for further details).

On-road the system works to suppress body roll, improve steering response and absorb the effects of driving over poor road surfaces.

Individual hydraulic cylinders are fitted to the anti-roll bars, each with an upper and lower chamber. The front and rear upper chambers and front and rear lower chambers are connected to each other by separate hydraulic lines, each containing an accumulator.

As the vehicle begins to roll in a turn, equal wheel forces occur on the outer wheels. As a result, the fluid in the hydraulic lines remains still, holding the front and rear cylinder pistons in place, so the anti-roll bars suppress the suspension stroke and body roll is reduced.

On rough surfaces, a slightly uneven force is experienced between the front and rear wheels. In this case, the electrically controlled accumulator valves rapidly open and close to absorb the movement of fluid in the hydraulic lines. This dampens vibrations by absorbing bumps in the road surface, making for a more comfortable ride.

### **Adaptive Variable Suspension**

An Adaptive Variable Suspension system is fitted to Invincible models, allowing the driver to fine-tune the Land Cruiser's ride characteristics. Three settings are available, controlled by a switch on the centre console: Normal mode for everyday driving; Comfort mode for extra comfort when cruising; and Sport mode for better body control and precise steering response when cornering.

AVS automatically adjusts suspension performance at all four wheels independently, monitoring data from numerous sensors to continuously optimise the damping force of each shock absorber by activating the appropriate actuator.

Working in response to driver inputs, vehicle body motion and road surface quality, AVS activates adjustable damping to fulfil a range of specific control functions: -

- **Vehicle speed-sensitive control** gradually increases the damping force as speed rises, to achieve low-speed comfort with high-speed driveability and stability.
- **Anti-dive control** increases the front-end damping force under braking to reduce front-end dive.
- **Anti-squat control** increases rear-end damping force to minimise squat during acceleration.

Selecting Sport mode automatically increases the difference between inner and outer shock absorber damping through corners to further reduce vehicle roll.

The AVS also incorporates Roll Posture Control, to give a vehicle posture that matches the driver's intuitive feeling. By controlling the damping force, the phase difference between roll angle and pitch angle when cornering is minimised.

### **Electronically Modulated Rear Air Suspension**

An electronically modulated rear air suspension system (fitted to Land Cruiser Invincible) works in conjunction with the AVS to maintain optimum control of the rear suspension and give uncompromised stability and ride quality, regardless of how many people or the load on board. It also excels in absorbing high frequency vibrations to reduced road-generated NVH.

The system has five control modes: -

- **Auto Levelling**, which maintains a constant rear body height, regardless of number of occupants or size of load.
- **Switchable Height Control**, which lets the driver select a Normal, High or Low vehicle height setting.
- **Speed-Sensitive Control**, which ensures the best stability and ride comfort by automatically returning the vehicle from High or Low vehicle height to the Normal setting once a certain speed has been reached.
- **Ignition-off Linked Control**, which, activated for a certain length of time after the ignition is switched off, prevents the rear height from rising after passengers get out of the vehicle.
- **Height Control OFF switch**, which disables height control when lifting or towing the vehicle.

### **Variable Flow Control Power Steering**

Land Cruiser uses the same hard-wearing hydraulic power steering system as its predecessor, but with the benefit of revisions and the addition of Variable Flow Control. VFC combines direct response and feel when cruising with easy operation at parking speeds, plus a dedicated setting for off-road driving.

The steering gear ratio has been modified for a more agile response to steering inputs, and the steering rack support bushings have been returned to reduce steering shake and vibration under braking, giving a more comfortable ride.

VFC is an evolution of traditional speed-sensitive power steering that takes into account factors such as vehicle speed, steering angle and steering rate to deliver an ideal steering fluid flow in all driving conditions. Controlling the flow in this way adjusts how heavy or light the steering feels to the driver.

When the vehicle is travelling in a straight line, VFC is in stand-by mode, reducing the power draw on the engine and thus improving fuel economy. When cornering or manoeuvring, VFC gives instant response to steering inputs with the correct fluid flow rate. At low speeds the flow rate is increased to reduce steering effort, making the wheel easier to turn. As vehicle speed rises, the flow rate progressively decreases to give a more direct and responsive steering feel.

Because it is hard to judge terrain conditions if the steering feel is constantly changing, VFC incorporates a dedicated off-road setting that is automatically activated when the driver selects L4 mode. This setting recalibrates the system to give a constant fluid flow rate regardless of vehicle speed, steering angle or steering rate. This constant level of steering assistance helps the driver gain a better idea of how much grip the tyres have through the steering wheel.

### **Quietness**

In addition to the significant NVH benefits from its body-on-frame construction, new Land Cruiser also features a number of measures designed to cut wind and road noise, resulting in a very quiet cabin environment.

Air cavities have been introduced into the bonnet silencer, reducing engine noise. Sound insulation materials are placed in the A, B, C and D-pillars and the door sill and head sections to minimise the transmission of noise through the bodyshell. Sound dampening and insulating materials are used throughout the cabin, in the carpeting, door trims, roof headliners, luggage compartment side trim and dashboard silencer.

Measures to reduce wind noise include an acoustic windscreen which has an inner layer of film sandwiched between the glass. The step between the windscreen and the roof and side rain gutters has been kept to a minimum, and a front spoiler and undercover are fitted to smooth the airflow under the front of the car.

## **OFF-ROAD PERFORMANCE**

### **Underbody clearance and protection**

An SUV designed to tackle truly tough off-road terrain has to have a generous ground clearance. This is not just about the distance between the lowest point of the vehicle body and

the ground: there are three other measurements that dictate the quality of off-road ability: the approach angle, ramp breakover angle and departure angle.

The five-door Land Cruiser has a minimum ground clearance of 215mm. The approach angle, which determines the maximum gradient the vehicle can approach without the underside of the front bumper hitting the ground, is 31°. The ramp breakover angle (measured from the centre of the underbody to the contact points of the front and rear tyres), which determines the gradient the vehicle can crest without the ground contacting the underbody, is 22°. And the departure angle, which governs the maximum gradient the vehicle can negotiate without the underside of the rear bumper hitting the ground, is 25°.

Land Cruiser can also be driven at a maximum bank angle of 42° and at a maximum forward or reverse pitch angle of 42°. Its maximum wading depth is 700mm.

Even with its generous ground clearance, there is always a risk of the underside of the vehicle hitting the ground when driving over very rough terrain. For this reason, both the front and rear bumpers and the ladder frame cross-member have been designed to slide easily over any obstacles. Many other SUVs have box-shaped cross-members, which means they can easily become caught on obstacles, bringing the vehicle to a halt and potentially causing damage. Land Cruiser's slanted cross-member is shaped to slide up and over such hazards, reducing the risk of damage.

Off-road performance data for the three-door models can be found in the technical specification tables below.

## **Suspension**

As detailed in the on-road performance section, Land Cruiser has an independent front suspension design and a four-link rear system with a lateral rod, giving strength, reliability and durability with the degree of long wheel stroke that is required for outstanding off-road performance.

The left and right sides of the rear suspension are connected by a rigid axle, giving better ground clearance and body stability that could be achieved with an independent design.

Working in conjunction with the new Kinetic Dynamic Suspension System (see below), Land Cruiser's wheel articulation ensures all the tyres can gain the best possible ground contact, even over the most severe terrain.

### **Kinetic Dynamic Suspension System**

Full details of the Kinetic Dynamic Suspension System (KDSS) operation can be found in the On-road Performance section. In off-road driving, KDSS, fitted to the Invincible model, optimises the effect of the front and rear anti-roll bars to increase wheel articulation (the vertical distance an individual wheel can move while the others remain in contact with the ground).

Driving over rough ground generates unequal front and rear wheel forces, which causes the piston in each hydraulic cylinder to create an opposite stroke. This counteracts the resistance of the anti-roll bar and allows the suspension to move freely. With both front and rear anti-roll bars virtually disconnected, the available wheel stroke is maximised, ensuring all four tyres can remain in contact with the ground wherever possible.

### **Adaptive Variable Suspension and Electronically Modulated Rear Air Suspension**

Both the Adaptive Variable Suspension (AVS) and electronically modulated rear air suspension systems on the Land Cruiser Invincible have bespoke off-road settings to maximise the vehicle's all-terrain abilities.

The AVS has a Damper Optimisation Control feature that automatically adjusts shock absorber damping force to suit vehicle speed when L4 mode is selected. At slow speeds the dampers are optimised for crawling over the roughest terrain, while at moderate speeds they adjust to suit normal driving conditions. This degree of control allows for uncompromised off-road performance while keeping the bumps and jolts caused by rough terrain to a minimum.

In addition, when driving off-road, the valve on the hydraulic pipe connection between the left and right hand rear air suspension units remains open to ensure maximum wheel stroke and articulation.

## **OFF-ROAD TECHNOLOGY**

Land Cruiser is engineered to excel over sand, rocks or any other demanding conditions it might encounter; giving maximum traction at all times to deliver the level of off-road performance for which the model is world-renowned.

The grip, slip and torque requirements generated by different terrain will make different demands on the permanent four-wheel drive system. For instance, soft surfaces, such as sand, require as much power as possible to be transferred to the ground, allowing a large amount of slip to let the tyres dig in and achieve maximum grip. By contrast, the slow traverse of rocks or slippery surfaces requires precise regulation of power to the wheels to control wheelspin and ensure a constant, steady level of grip.

### **Full-time four-wheel drive with Torsen limited slip differential**

Land Cruiser's proven permanent four-wheel drive system uses a Torsen limited slip differential in the centre differential. The LSD uses low viscosity oil to reduce friction and support vehicle fuel efficiency.

The unit has a motorised transfer shift actuator for easier High-Low gear ratio shifting and the shift effort itself has been reduced by 30 per cent, giving better performance in cold weather.

In normal conditions, torque is split 40:60 front to rear, but the LSD can automatically vary the ratio from 50:50 to approximately 30:70 in order to achieve the optimum distribution in any given driving scenario.

The four-wheel drive system also has a new rear differential, designed for greater reliability and strength with a 34 per cent increase in torque capacity. An additional rear diff lock is fitted to Invincible models, increasing stability especially in extreme off-road conditions.

Instead of a conventional transfer shift lever, Land Cruiser has an easy-to-use dial switch, located along with the centre and rear differential locking switches on the centre console. Using these switches in combination lets the driver choose H4F, H4L, L4F and L4L modes – that is High or Low gear ratio with the centre differential Free or Locked.

### **Active Traction Control**

The Active Traction Control (A-TRC) system uses brake and engine control and the distribution of appropriate torque between all four wheels to maintain traction when pulling away or driving on low-grip surfaces.

The system receives constant speed signals from each wheel, so it can detect which might be spinning and which have traction. By braking the spinning wheels, controlling engine output and distributing torque to those with grip, it automatically provides maximum traction on rough terrain. It also helps avoid wheelspin when pulling away or accelerating, even on slick roads and muddy tracks.

## **Multi-terrain Select**

Multi-terrain Select is an evolution of the A-TRC system and a Toyota first.

MTS automatically modifies vehicle acceleration, braking and traction control to suit the off-road conditions, providing the driver with optimum traction and vehicle control.

The system is activated using the multi-information switch on the steering wheel and accessed via the multi-information display. It offers four terrain modes: Mud and Sand, Loose Rock, Mogul and Rock. The mode selected is shown in the display, with an additional prompt to the driver to engage the appropriate H4 or L4 four-wheel drive transfer range. The Multi-terrain Monitor (full details in the Driver Information section) automatically displays the view ahead of the vehicle.

- **Mud and Sand** mode gives high wheel slip level in L4 or H4 to allow the wheels to dig into the surface and secure traction. The MTS traction control minimises selective wheel braking to permit a necessary degree of wheelspin. These functions work in combination to prevent the vehicle from getting bogged down on soft ground.
- **Loose Rock** mode works in the L4 range, allowing a degree of wheel slip to maintain tyre momentum and to affect a greater degree of selective braking to control wheelspin. This is particularly useful for maintaining vehicle momentum when climbing gradients.
- **Mogul** mode, which operates in L4 range, makes grip the priority by only allowing a moderate amount of wheel slip, to maintain a slow, steady vehicle speed. At the same time, MTS traction control applies moderate selective braking to maintain grip. This mode is recommended for any conditions that do not specifically match the other MTS modes. It will maintain momentum over even the most severe, irregular, undulating terrain.



- **Rock** mode, also used with the L4 transfer range, minimises wheel slip to give maximum grip, while simultaneously applying strong selective braking. With the slip ratio of each wheel controlled independently, maximum grip and traction are obtained, even when traversing large obstacles.

Drivers should choose an MTS mode on the basis of the amount of wheelspin encountered. For example, when excessive wheelspin prevents the vehicle from gaining enough traction, a more aggressive mode, closer to the Rock setting, should be selected. Conversely, when there is too little wheelspin to achieve the necessary traction, a less aggressive setting, closer to Mud and Sand is recommended.

In any of the four modes, if the vehicle is stuck and the wheels are spinning freely, the centre differential can be locked for added traction. If the wheels continue to spin after locking the diff in L4 range, the rear differential may also be locked (on the Invincible model). A Crawl Control function may also be used to free the vehicle.

### **Crawl Control**

Crawl Control, another standard feature of the Land Cruiser Invincible can help the driver climb or descend slopes at walking pace, or free the vehicle when stuck, without having to touch the pedals.

The system works in L4 range and is activated by a dashboard switch. It gives a range of five speed settings, automatically controlling engine and brakes to maintain the desired speed. With no need for careful use of the throttle or brake pedals, the driver can concentrate on steering the vehicle.

Crawl Control has a number of other benefits. Its smooth control allows a slow and steady pace to be maintained, avoiding the risk of wheels spinning or locking. This reduces the amount of body movement on severe terrain, helping prevent the vehicle from bottoming out and causing damage. It also permits wading at a similarly slow and even speed, reducing the risk of the engine flooding, or submerged objects causing damage. Crawl Control operates in reverse gear, too, helping the driver when backing up over difficult surfaces.

### **Multi-terrain ABS**

The Multi-terrain ABS system fitted to Land Cruiser has been calibrated to give remarkable stopping power across a wide range of off-road surfaces. While the system prevents the wheels from locking under braking on Tarmac roads in the same way as a conventional ABS,

it deliberately allows for a certain degree of wheel-locking on loose surfaces, helping the tyres find purchase by digging in, so increasing stopping power.

### **Hill-start Assist Control and Downhill Assist Control**

Hill-start Assist Control and Downhill Assist Control are fitted to the Active grade models (the Invincible covers these functions with Crawl Control).

Hill-start Control detects any backward slip of the vehicle during an uphill start and temporarily applies the brakes to all four wheels for a maximum five seconds, allowing the driver to pull away without losing control.

Downhill Assist Control automatically governs vehicle speed to prevent the Land Cruiser from running downhill out of control. Operated by the driver, it can be switched on when L4 is selected in the transfer range. It works at speed less than 15mph, with no need for the driver to use the brake and accelerator pedals. Forward speed is controlled to between 3 and 4mph; reverse speed to between 1 and 3mph.

## **DRIVER INFORMATION**

### **Multi-terrain Monitor**

The Multi-terrain Monitor, fitted to Land Cruiser Invincible, works in conjunction with MTS to give the driver a better view of areas immediately around the vehicle that might be hard to see or obscured from the driver's eyeline. The system uses an array of four external cameras that feed live images to the multi-information screen on the dashboard, when moving forwards or in reverse.

The front camera uses a wide angle lens to give the widest possible forward view. Areas out of the driver's sight, such as immediately in front of the bonnet and to within 50cm of the bumper, can also be picked up by this camera.

As well as front and rear-facing cameras, there are cameras mounted on the door mirrors, which can project views from either the front or rear sides. The versatile display mode can show front and side views independently, or in a combined form. The driver can change the mode using the multi-information switch on the steering wheel and the display will indicate which cameras have been selected. When the shift lever is moved to the "R" position, the display automatically switches to the rear view.

The monitor also displays comprehensive information relating to the front view, including the camera range and location of any obstacles detected by the clearance sonar. Steering-linked guidelines are shown, mapping the predicted path of the front tyres to help the driver avoid any hazards ahead. The inner and outer edges of the front tyre paths are shown in red (within 0.5m) and yellow (within 1.0m) to indicate the distance from the front of the vehicle.

The side cameras let the driver view an image of the area around the left and right, front or rear tyres simultaneously, regardless of the vehicle's direction of travel.

Additional side camera information provided on the monitor includes the view range, the location of obstacles detected by the clearance sonar and the position of the contact areas of the front and rear tyres. Parallel lines indicating the vehicle's width are displayed 350mm from the side of the vehicle, and front and rear lines 100mm from the front and rear ends, helping the driver judge distances and accurately position the vehicle, even in the tightest surroundings.

### **Tyre Angle Display**

The Land Cruiser Invincible is also equipped with a Tyre Angle Display, which complements the Multi-terrain Monitor's predicted tyre path function. The system can be selected using the multi-information switch when MTS is operating. Guidelines linked to the vehicle's steering angle are projected in real time on to the display. Moving through seven steps, to keep the driver constantly informed about changes in tyre angle between zero and 45 degrees. The Tyre Angle Display is also handy when parking, giving driver's an instant reminder of steering angle and tyre direction.

### **Body Angle Monitoring and Off-Road Traction Monitoring**

Land Cruiser provides the driver with Body Angle and Off-Road Traction monitoring, displayed on the 4.2-inch colour TFT display in the centre of the instrument binnacle.

The former shows the vehicle's angle and direction, and shows an amber warning when a steep angle is being negotiated; the latter displays the performance of the traction control, steering angle and differential lock operation.

## **ENGINE AND TRANSMISSION**

## **2.8 D-4D engine**

Land Cruiser gained a new 2.8-litre turbodiesel engine in autumn 2020. As previously, it is a 2,755cc four-cylinder 16-valve DOHC unit, but it offers significantly more power and torque. It develops a maximum 201bhp/150kW at 3,000rpm and producing peak torque of 500Nm from 1,600rpm. This marks an increase of 27bhp and 50Nm on the previous engine, gains that are reflected in a 2.8-second reduction in the 0-62mph time to less than 10 seconds.

This additional strength brings no penalty in terms of fuel economy or CO<sub>2</sub> emissions. With the benefit of a stop-start system as standard, fuel consumption is in fact slightly improved.

The engine meets the UK's RDE2 (Real Driving Emissions) standard, so qualifies for a lower Vehicle Excise Duty charge – down by £325 in the first year compared to the current Land Cruiser.

Official WLTP combined cycle fuel consumption is from 27.72 to 31.04, according to model; emissions figures can be found in the technical specification table, below.

### **Advanced turbodiesel engine technologies**

The 2.8-litre D-4D benefits from advanced Toyota design and technology to achieve high fuel efficiency, lower emissions and quieter operation.

Key to its performance is the application of Thermo Swing Wall Insulation Technology, together with a SiRPA (a silica-reinforced porous, anodised aluminium coating) on the pistons – reducing the cooling loss during combustion by about 30 per cent. SiRPA's high insulation and dissipation qualities make it easy to heat and to cool.

As a result, it is one of the most thermally efficient engines on the market: its thermal efficiency rating is 44 per cent.

The air intake port is shaped to allow a significant increase in the amount of airflow into the cylinders; the piston combustion chamber shape has been revised; and the common rail fuel injection system allows for more advanced pressure control and injection optimisation. Air consumption is maximised, which enables high thermal efficiency and low emissions to be achieved.

Precise pilot injection, matching the state of the ambient air, takes place ahead of the main injection to shorten ignition delay. This means stable combustion is achieved, even in harsh environments, together with quiet running and high thermal efficiency.

### **Compact, high-efficiency variable geometry turbocharger**

The GD engines use a new turbocharger that is 30 per cent smaller than its predecessor. Produced in-house by Toyota, it has a new turbine that improves efficiency and a new impeller that gives instantaneous throttle response and allows maximum torque to be obtained over wide engine rev range.

### **Toyota-first urea selective catalyst reduction system**

Using Toyota's proprietary, compact, high-dispersion urea selective catalyst reduction system eliminates up to 99 per cent of NOx emissions, one of the principal causes of air pollution. This helps the engine conform to Euro 6 and other international emissions standards.

## **INTERIOR FEATURES**

While it remains a tough, go-anywhere off-roader, Land Cruiser is a first-class on-road vehicle with a high level of refinement, interior quality, comfort and convenience, and practical application of advanced technology.

### **Design**

Land Cruiser's instrument binnacle and dashboard are designed so that the controls for drivetrain, driving and comfort are separated into function-specific zones, with ergonomics optimised so that they are easy to use even in extreme conditions.

The top of the centre console tower is set lower for a sleeker appearance and better front-on visibility when driving off-road. It is fitted with an nine-inch, full-colour multimedia screen, a flush-fitting air conditioning control panel and the drivetrain-related instrument cluster.

The controls for driving and comfort functions are located in separate panels for ease of use, positioned behind a new, leather-trimmed gear lever. They include switches to operate integrated heating and ventilation for the front seats in the Invincible model.

The centre console has a silver hairline textured finish with a sculpted metal effect. Soft pads are provided on either side to cushion the driver and front passenger's knees.

The redesigned instrument binnacle has a four-gauge lay-out with precision Optitron meters (Invincible grade) with a metallic base panel and polished dials with raised scale markings. The meters flank a 4.2-inch TFT colour multi-information display which presents

comprehensive vehicle and infotainment data, controlled using switches on the steering wheel. The steering wheel itself is also new.

The luxury and sophistication of the interior are amplified by new white illumination for the instrument panel, centre console and door-mounted switches. The cabin lighting scheme uses LEDs for the front footwells, headlining, glove box and door panels. The Invincible also has illuminated side steps.

Toyota has made it easy for drivers to find their ideal position at the wheel, with reach and rake adjustment for the steering wheel. The driver's seat has six-way manual adjustment on Active models and electric eight-way adjustment with power lumbar control and heating on the Invincible; passenger seat adjustment is four-way manual or power, according to grade. The Invincible also provides a seat memory function.

## **Versatility**

Land Cruiser is available in the UK three and five-door formats. On three-door models, the second row seats are arranged as a 60:40 split-folding bench; on five-door models the division is 20:40:20. Where seven seats are fitted, the rear seats have slide and recline adjustment. Front and rear doors all have wider and lower openings for easier access and grab handles are provided to help access and exit all three rows of seats in the five-door version.

The second row seating layout gives more flexibility for arranging the interior to cope with different accommodation and load carrying requirements. The seat bases slide independently through a 135mm range, to gain extra legroom or load space as required. In Active models, which do not provide third row seats as standard, the second row seats can be double-folded to free up even more luggage room.

On the passenger side the second row seat has a walk-in function that is easier to use than the conventional seat-tumble system. A lever positioned on the side of the seat can be operated one-handed to simultaneously fold the seatback forwards and slide the seat base to its maximum forward position, to give generous access to the third row.

## **Third row seats**

Instead of the "occasional use" seats found in some SUVs, the five-door Land Cruiser provides two proper seats with integral headrests, which can be folded completely flat into the load space floor.

Thanks to the sliding second row seat function, legroom is up to more than double that of the previous generation Land Cruiser, ranging from 489 to 618mm.

The left and right-hand seats, complete with headrests, can be lowered or raised independently in a smooth and easy action. A power seat-stowing and raising function is provided on the Invincible model, using controls mounted inside the tailgate and behind the nearside second row seat. This feature also allows the third row seats to be reclined at the touch of a button.

Access to the third row seats is made easier by an increase in the folding angle of the second row seats to 46 degrees.

## **Storage**

Clever packaging of the rear seats helps give Land Cruiser extra load capacity, compared to the previous model, in which the third row seats were stowed vertically on each side of the load compartment. With all second row seats in place, there is room for four suitcases to be carried in the rear; when the third row seats are raised, there is still space for one large and one medium size suitcase. Minimum load space width is 1,110mm, while the length from the tailgate to the back of the second row seats is a maximum 1,075mm.

The load area is fitted with a luggage net, tie-down hooks, utility rails (Invincible), a storage tray and a 3.8-litre storage box. A toolbox is stowed in a purpose-designed compartment in the tailgate.

Storage points are provided all around the cabin. Front seat storage includes a capacious glovebox, overhead sunglasses holder (with built-in conversation mirror), cupholders in three different sizes, and large front door pockets with built-in bottle holders. There is also a large storage box under the centre console armrest, big enough to hold four half-litre bottles and fitted with an upper level tray. On Invincible models this storage has a handy coolbox function.

Second row passengers are served by seatback pockets, twin cupholders and door pockets with bottle holders. Cupholders are provided for third row occupants, too. Twelve-volt power outlets are provided in the front and second rows, with a 220V AC power outlet in the load space.

## **Convenience**

The interior makes good use of a range of high-technology, user-friendly systems designed to make life on board easier and more comfortable. Smart Entry and Start with sequenced lighting, automatic air conditioning (triple-zone on the Invincible) and high quality in-car

entertainment systems are among the features that add extra ownership rewards and help define the advances Toyota has achieved in quality and refinement.

### **Smart Entry and Start system**

Land Cruiser can be locked and unlocked without handling the key fob. The front external door handles feature touch sensors that automatically lock or unlock the door, when the presence of the key fob is detected. Once inside, the vehicle can be started using the starter button on the dashboard. The tailgate also has a lock/unlock button, located to one side of the number plate housing.

When the vehicle is opened, the interior roof lights and the starter button are automatically illuminated, together, where fitted, with side-step lights that light up both the top of the step and the ground immediately in front of the door.

Front footwell, map and vanity lights are also provided, along with independent second and third row reading lights. The shift lever and centre console are illuminated and the door trims, including the handles and storage pockets, have their own LED lighting.

### **Triple-zone automatic air conditioning**

All Land Cruiser models are equipped with air conditioning with automatic dual-zone climate control on Active grade. On the Invincible a triple-zone system is provided as standard. This allows separate temperatures to be selected for the front left and right sides and the rear of the cabin, with the temperature in the rear maintained by a separate air conditioning unit. On Active models the dual-zone system features air vents on the back of the centre console to feed warm or cool air through to the rear of the cabin.

### **Personalised multi-information display**

Data presented on the multi-information display in the instrument binnacle can be selected and customised by the driver using the multi-information switch on the steering wheel. This switch can be used to choose from four modes: Cruise Information, Electronic Features Control, Multi-terrain Select and User Customised.

- **Cruise Information** mode gives access to range of trip information, including average speed, fuel consumption, elapsed journey time and cruising range.
- **Electronic Features Control** mode allows the driver to activate Multi-terrain Select, second-gear start and the parking sensors.



- **Multi-terrain Select** mode, described in the Off-Road Technology section.
- **User Customised** mode gives the driver the freedom to tailor up to 16 different features to suit personal preferences, with functions displayed in order of most frequently used. They include the timing of the follow-me-home headlamp function, lights-off timing of the external lights, sensor adjustment for the dusk-sensing headlamps, automatic door locking adjustment, control of the Eco Indicator display and language selection.

### **Wide-view front and side monitor**

The cameras used for the Multi-terrain Monitor (described in the Off-Road Technology section) can also be used to help with parking manoeuvres in tight spots and at blind corners.

When the shift lever is in “D” or any other forward gear, the driver can use the Camera Mode button on the steering wheel to toggle between a wide 190° front view and a passenger side view, presented on the multi-information screen, or a combination of both, simultaneously. In Auto mode, the wide-view front and side monitors are automatically displayed at speed of less than 6mph, or when the vehicle is stopped with the shift lever in “D”.

Additional information can also be displayed on the screen, including parallel lines indicating vehicle width, a line showing the location of the front end of the vehicle, a predicted path line based on steering input and a predicted minimum turning path line.

### **Toyota Touch 2**

The Toyota Touch 2 touchscreen-controlled multimedia system is fitted to Active grade models, while the Invincible comes with Toyota Touch 2 with Go, giving access to additional functions and navigation. In 2020, the system was upgraded with faster software and quicker response, together with a customisable home screen.

The standard Toyota Touch 2 features include: -

- Bluetooth, for hands-free phone calls, audio streaming and SMS/email messages.
- Vehicle information, for monitoring trip data, displaying climate control information and managing vehicle settings such as door locking and lighting operation to suit personal preference.
- MP3 player and iPod connection, either by Bluetooth or USB port or Aux-in socket. The screen will display, where available, album cover, artist and track information.

- Multimedia management, control of the audio system.
- Automatic phone book download

Toyota Touch 2 with Go introduces the following functions: -

- Full map navigation, in 2D or 3D view, with clear display of major signposts, junctions and lane guidance.
- Intuitive detour, a function that uses real-time traffic information to provide congestion alerts, estimate delays and suggest a detour.
- Speed limit and speed camera warnings, with an option speed warning setting and display of fixed speed camera locations (in some countries this function will need to be disabled to comply with local laws).

Toyota Touch with Go also opens up a host of online features that can deliver richer information about any journey and destination, and enable connection to popular and useful applications.

Features include: -

- Toyota Real-Time Traffic powered by TomTom, giving alerts on congestion and offering the option to re-route a programmed journey to avoid the jams and save time.
- Google Street View™, giving on-screen images of your current or chosen location, to help better confirm or recognise a destination.
- Access to other applications, including Park&Go, on-line local search, fuel prices and local weather reports.

Vehicle owners need to register through Toyota's customer portal to gain 12 month's free access to the applications. Toyota Online services can be accessed using a Bluetooth-equipped mobile phone with an appropriate data plan and tethering.

### **JBL Synthesis Premium Surround Sound audio system**

The Land Cruiser Invincible is equipped as standard with a 14-speaker JBL Synthesis Premium Surround Sound audio system. Developed exclusively for the model, it delivers perfect 7.1 channel surround sound from selected CDs, giving excellent clarity, dynamic response and enhanced bass performance. It also provides clear DAB radio reception.

### **GRADE STRUCTURE AND EQUIPMENT SPECIFICATIONS**

A new grade structure was introduced for Land Cruiser in 2020, featuring two grade, Active and Invincible, tailored in line with customer preferences.

The Land Cruiser Active is available in three or five-door format, with five or seven seats. It features 17-inch alloy wheels, rear parking sensors, dual-zone automatic air conditioning, leather steering wheel trim and the Toyota Touch 2 infotainment system with nine-inch touchscreen and nine-speaker audio system. As part of the 2020 changes, smartphone integration via Apple Car Play and Android Auto was added to the specification and Toyota's latest multimedia system was added, with faster software and touchscreen command response.

At the top of the range, the Land Cruiser Invincible (five doors and seven seats) comes with a comprehensive, top-quality specification including systems to tackle the demands of different off-road conditions. Multi-terrain Select, Multi-terrain monitor with under-vehicle view, a rear differential lock, centre Torsen limited-slip differential and Crawl Control are all part of the technically advanced suite of control functions, plus Adaptive Variable Suspension with electronically modulated rear air suspension (Kinetic Dynamic Suspension System).

An optional Black Pack can be specified for the Land Cruiser Invincible. Customers who opt for black leather upholstery can also specify an all-black exterior, including the front grille, door mirror casings, rear light surrounds, side mouldings and rear garnish, plus clear lenses for the rear light clusters. The look is carried through to the cabin with black finish for the centre console and transmission tunnel. Black alloy wheels can also be specified, as an additional option.

While being able to deal with challenging conditions, the Land Cruiser Invincible also offers a wealth of comfort and convenience features, including triple-zone climate control, power steering column and front seat adjustment, heated and ventilated front seats, heated second row seats, leather upholstery, Panoramic View Monitor, Rear Cross Traffic Alert, Blind Spot Monitor, 14-speaker JBL Synthesis premium audio system, satellite navigation, LED headlights, 19-inch alloys, rear privacy glass and illuminated side steps.

### **Accessory options**

Land Cruiser's equipment specifications can be further extended with a choice of accessory option packs.

The Protection Pack features a boot liner, side mouldings and rear bumper protection plate and can be fitted to all five-door models

The Style Pack provides black 19-inch alloy wheels, chrome door mirror covers, rear chrome trim and a rear underrun. This pack is not compatible with models on which a towing hitch has been fitted. A number of different towing hitches are available, including fixed, detachable and flanged units.

## LAND CRUISER TIMELINE AND UK SALES

YEAR	MONTH	EVENT
1951		First generation Land Cruiser launched in Japan, originally known as the BJ.
1952		Land Cruiser becomes first Toyota passenger car to be exported from Japan.
1959		Land Cruiser becomes the first Toyota model to be manufactured outside Japan, in Brazil.
1975		First official Land Cruiser sales in the UK.
2003	January	11 <sup>th</sup> generation Land Cruiser launched, replacing the Land Cruiser Colorado, powered by a 3.0 D-4D engine.
	March	Land Cruiser gains a 4.0 VVT-I petrol engine.
2004	March	Integrated ICE system introduced.
	December	Land Cruiser range revisions, including new six-speed manual and five-speed automatic transmissions and an upgraded 3.0 D-4D engine. LC <sub>3</sub> becomes the entry point to the range.
2005	October	Specifications revised.
2006	Jun	Invincible limited edition introduced (500 examples), with power upgrade, based on the LC <sub>4</sub> grade.
	November	Engines revised to meet Euro IV emissions standards.
2007	May	Top-of-the-range Invincible focus model added.
	October	Invincible replaces LC <sub>5</sub> as mainstream flagship.
2008	March	4.0 V6 petrol engine is deleted from the range.
2009	January	The three-door Land Cruiser is deleted from the range
	May	CO <sub>2</sub> emissions on automatic models <a href="#">reduced to 224g/km</a> , thanks to new low viscosity oil for the differential.
	September	The <a href="#">all-new Land Cruiser</a> is unveiled at the Frankfurt motor show. UK customer order books open with first deliveries from December.
2011	January	Three-door Land Cruiser reintroduced. Euro 5 engine with DPF introduced. New 60 <sup>th</sup> Anniversary model introduced for 2011, replacing LC <sub>5</sub> .
	October	60 <sup>th</sup> Anniversary model makes way for the new LC <sub>5</sub> grade.
2014	January	<a href="#">2014 model introduced</a> with new exterior and internal design features and additional equipment specification.

2015	July	A new <a href="#">2.8-litre D-4D engine</a> is introduced, replacing the previous 3.0-litre unit and available with a new six-speed automatic transmission.
2017	February	The range grows to include <a href="#">Invincible X</a> grade.
2018	January	A revised Land Cruiser is launched with new exterior and interior styling and a new Utility entry grade. Subsequently a Land Cruiser Commercial Utility model is introduced, in short and long-wheelbase formats.
2019	September	Global Land Cruiser series <a href="#">sales pass 10 million</a> since first generation launch in 1951.
2020	September	New 201bhp 2.8-litre engine introduced. New grade structure: Active and Invincible.

Sales in UK markets in 2020: 361

Cumulative UK sales since launch (2003): 27,227

Cumulative UK sales of all Land Cruiser models since introduction (1975): 64,619

## TOYOTA LAND CRUISER TECHNICAL SPECIFICATIONS

ENGINE			
Engine type		Four cylinders in-line	
Displacement (cc)		2,755	
Valvetrain		16-valve DOHC	
Fuel injection type		Common rail	
Bore x stroke (mm)		92 x 103.6	
Compression ratio		15.6:1	
Max power (bhp/DIN hp/kW @ rpm)		201/204/150 @ 3,000	
Max torque (Nm/rpm)	6MT	420 @ 1,400	
	6AT	500 @ 1,600	
TRANSMISSION			
Type		6AT	
Ratios	1 <sup>st</sup>	3.600	
	2 <sup>nd</sup>	2.090	
	3 <sup>rd</sup>	1.488	
	4 <sup>th</sup>	1.000	
	5 <sup>th</sup>	0.687	
	6 <sup>th</sup>	0.580	
	Reverse	3.732	
PERFORMANCE			
Acceleration 0-62mph (sec)		9.9	
Max. speed (mph)		108	
FUEL CONSUMPTION (WLTP)		3DR	5DR
Combined – combined cycle (mpg)	Active	27.72-31.04	27.72-30.37
	Invincible	n/a	27.72-29.43
Fuel tank capacity (l)		87	
EMISSIONS (WLTP) & INSURANCE		3DR	5DR
CO <sub>2</sub> emissions (g/km)	Active	239	245 (5-seat) 246 (7-seat)
	Invincible	n/a	250
Insurance groups		TBA	
SUSPENSION			
Front		Double wishbone	
Rear		Four-link with lateral rod	
BRAKES			
Front		Ventilated discs	
Rear		Ventilated discs	
STEERING			
Type		Rack and pinion, electric power steering	
Turns lock-to-lock		3.0	

TYRES AND WHEELS		
Wheels		17 or 19in
Tyres		265/65R17 (Active) 265/55R19 (Invincible)
OFF-ROAD PERFORMANCE		
Approach angle (°)		31
Departure angle (°)	3-door	26
	5-door	25
Ramp angle (°)	3-door	22
	5-door	22
Side angle limit (°)		42
Climbing angle limit (°)		42
Minimum running ground clearance (mm)	3-door	205
	5-door	215
Wading depth (mm)		700
DIMENSIONS		
Overall length (mm)	3-door	4,395 (not including rear-mounted spare wheel) 4,565 (including rear-mounted spare wheel)
	5-door	4,840
Overall width (mm)		1,885
Overall height (mm)	3-door	1,830
	5-door	1,845 (without air suspension) 1,835 (with air suspension)
Wheelbase (mm)	3-door	2,450
	5-door	2,790
Front overhang (mm)		975
Rear overhang (mm)	3-door	970 (not including rear-mounted spare wheel) 1,140 (including rear-mounted spare wheel)
	5-door	1,075
Front track (mm)		1,585
Rear track (mm)		1,585
Turning radius – tyre (m)		5.2 (3dr) 5.8 (5dr)
Load area capacity, all seats up, loaded to tonneau cover (l)	3dr/5-seat	380
	5dr/5-seat	640
	5dr/7-seat	120
Load area capacity, all seats up, loaded to roof (l)	3dr/5-seat	720
	5dr/5-seat	1,270
	5dr/7-seat	190
WEIGHTS		
Kerb weight (kg)	3-door	2,020 – 2,185
	5-door	2,205 – 2,430
Gross vehicle weight (kg)	3-door	2,600
	5-door	2,993 – 2,990
Towing capacity – braked (kg)		3,000
Towing capacity – unbraked (kg)		750

## TOYOTA LAND CRUISER EQUIPMENT SPECIFICATIONS

SAFETY	ACTIVE	INVINCIBLE
Toyota Safety Sense: Pre-Collision System with pedestrian and cyclist detection, intelligent Adaptive Cruise Control, Road Sign Assist, Lane Departure Alert/Lane Trace Assist and Automatic High Beam	✗	✓
Two-stage driver and passenger airbags	✓	✓
Driver's knee airbag	✓	✓
Front side airbags	✓	✓
Full-length curtain airbags	✓ (7-seat)	✓
Multi-terrain ABS	✓	✓
Electronic Brakeforce Distribution (EBD) and Brake Assist (BA)	✓	✓
Active Traction Control (A-TRC)	✓	✗
Vehicle Stability Control (VSC)	✓	✓
Front seatbelt pretensioners with force limiters	✓	✓
Dual-stage front passenger seatbelt reminder system	✓	✓
Anti-whiplash active front headrests	✓	✓
Isofix child seat anchor points	✓	✓
Blind Spot Monitor	✗	✓
Rear Cross Traffic Alert	✗	✓
Trailer Sway Control	✓	✓
Tyre Pressure Warning System	✓	✓



OFF ROAD & HANDLING	ACTIVE	INVINCIBLE
Permanent 4WD	✓	✓
Drive Mode Select	✗	✓
Hill-start Assist Control (HAC) and Downhill Assist Control (DAC)	✓**	✗
Crawl Control	✗	✓*
Centre Torsen Limited Slip Differential (LSD)	✓	✓
High/Low gear range	✓	✓
Rear differential lock	✗	✓
Multi-Terrain Select (MTS)	✗	✓
Multi-terrain Monitor	✗	✓
Body Angle Monitoring System	✗	✓
Kinetic Dynamic Suspension System (KDSS)	✗	✓
Adaptive Variable Suspension (AVS) with Electronically Modulated Rear Air Suspension	✗	✓
COMFORT AND CONVENIENCE	ACTIVE	INVINCIBLE
Cruise control	✓	✗
Adaptive Cruise Control	✗	✓
Smart Entry and Start	✓	✓
Optitron instrumentation	✗	✓
4.2in colour TFT multi-information screen	✓	✓
Air conditioning	✗	✗
Dual-zone automatic air conditioning	✓	✗
Triple-zone climate control air conditioning	✗	✓
Manual steering column adjustment	✓	✗
Power steering column adjustment	✗	✓
Dusk-sensing headlights	✓	✓
Rain-sensing windscreen wipers	✗	✓

Auto-dimming rear view mirror	x	✓
Rear-view camera	✓	✓
Rear parking sensors	✓	x
Front and rear parking sensors	x	✓
Multi-view monitor system	x	✓
Utility rails in loadspace	x	✓
Tonneau cover for loadspace	✓	✓
Illuminated entry	✓	✓
Cooled centre console box	x	✓
<b>SEATING, UPHOLSTERY &amp; TRIM</b>	<b>ACTIVE</b>	<b>INVINCIBLE</b>
Manual driver/passenger seat adjustment	✓	x
Electric driver/passenger seat adjustment	x	✓
Electric driver/passenger seat adjustment with memory function	x	✓
Heated/ventilated front seats	x	✓
Front seat seatback pockets	✓	✓
Manual lumbar support	✓	x
Electric lumbar support	x	✓
60:40 split-folding second row seats	Opt	x
40:20:40 split-folding second row seats	x	✓
50:50 split-folding third row seats	Opt (7-seat)	✓
Reclining/sliding second and third row seats	Opt (7-seat)	✓
Heated second row seats	x	✓
Cloth upholstery	✓	x
Leather upholstery	x	✓

<b>AUDIO, NAVIGATION AND ENTERTAINMENT</b>	<b>ACTIVE</b>	<b>INVINCIBLE</b>
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Bluetooth	✓	✓
RDS radio / CD player with nine speakers	✗	✗
Steering wheel-mounted audio, information and Bluetooth controls	✓	✓
Toyota Touch 2, including high-resolution touchscreen, Bluetooth, rear-view camera, car information display and USB port	✓	✗
Toyota Touch 2 with Go, including features as above, plus full map navigation, SOS emergency call assistance, and access to connected services and downloadable applications	Opt	✗
Toyota Touch 2 with Go including features as above, plus full map navigation, voice activation, text-to-speech function and access to connected services and downloadable applications	✗	✓
Smartphone integration with Apple CarPlay/Android Auto	✓	✓
JBL Synthesis premium audio with 14 speakers, surround sound voice recognition and wi-fi connectivity	✗	✓
<b>SECURITY</b>	<b>ACTIVE</b>	<b>INVINCIBLE</b>
Remote central locking with double lock facility	✓	✓
Auto door locking	✓	✓
Transponder engine immobiliser	✓	✓
Remote alarm with perimeter and microwave interior protection	✓	✓
Glass break and tilt sensors	✓	✓
<b>EXTERIOR AND BODY</b>	<b>ACTIVE</b>	<b>INVINCIBLE</b>
Colour keyed door handles and mirrors	✓	✓
Black front grille	✗	✗
Black front grille with chrome accents	✓	✗
Silver-finished front grille	✗	✓
Metallic paint	Opt	Opt

Side steps - black	✓	✗
Side steps – aluminium, illuminated	✗	✓
Aluminium scuff plates	✓	✓
Mudguards	✓	✓
Colour keyed front and rear bumpers	✓	✓
Sunroof	✗	Opt
Rear privacy glass	✗	✓
Roof rails	✓	✓
17in steel wheels	✗	✗
17in alloy wheels	✓	✗
19in alloy wheels	✗	✓
Full size spare wheel	✓	✓
Tyre repair kit	✗	✗
Electrically adjustable, heated and retractable mirrors	✓	✓
Door mirrors with reverse tilting function	✗	✓
Puddle lamps	✗	✓
LED headlights	✗	✓
LED daytime running lights	✓	✓
Retractable headlight washers	✗	✓
LED front fog lights	✓	✓
Metallic/pearlescent paint	Opt	Opt

\* With Off-Road Pack

**ENDS**

Ref: 210802M