

## THE NEW TOYOTA HILUX: A NEW ERA FOR THE PICK-UP

- Hilux a dominant presence in the global pick-up market for nearly 50 years
- Cumulative global sales of more than 18 million
- Europe's best-selling pick-up
- Protected by five-year UK new vehicle warranty

The Toyota Hilux has dominated the global pick-up market for nearly 50 years, since its global launch in 1968 and its arrival in Europe a year later.

So far the world's favourite pick-up has amassed global sales of more than 18 million. Around 34,000 were sold in Europe in 2015, representing a 23.1 per cent segment share and confirming the model as the region's best-seller.

Hilux is famous for its quality, durability and reliability and continues to demonstrate an unstoppable character, conquering the North Pole, the slopes of live volcanoes and Antarctica, as well as claiming podium finishes in the gruelling Dakar rally-raid.

The new, eighth generation Hilux follows its predecessor in offering customers a choice of body styles: Single Cab, four-seat Extra Cab and the five-seat Double Cab. It builds on the model's established strengths, redefining toughness for business users with its new, stronger ladder chassis, a reinforced deck structure, improved all-wheel drive capabilities and a greater towing capacity.

At the same time, it responds to the growth in use of pick-ups for leisure in recent years, offering a contemporary design, higher comfort levels, advanced equipment features and improved safety, making it more stylish and stress-free to drive than ever before.

Conceived to be both a hard-wearing business workhorse and a comfortable leisure 4x4, new Hilux offers customers improvements in six key areas.

**Design:** workhorse toughness and rugged durability, combined with new levels of refinement and a look that can make business users proud of their vehicle.

**Comfort:** a more spacious and comfortable interior that combines the practicality and functionality of an SUV with car-like NVH levels.

**Safety:** new Hilux has a high-strength, impact-absorbing structure and is available with Toyota Safety Sense, equipping it with a Pre-Collision System with pedestrian detection function, Lane Departure Warning and Road Sign Assist. Its comprehensive braking and control systems include ABS, Electronic Brakeforce Distribution, Vehicle Stability Control and Trailer Sway Control.

**Quality, Durability and Reliability:** improvements include a new, tougher ladder chassis and a reinforced deck structure. Active Traction Control, Downhill Assist Control and Hill-start Assist Control raise 4x4 capabilities to Land Cruiser levels.

**Commercial vehicle capabilities:** Hilux has a larger, stronger and more practical cargo deck and an improved towing capacity of up to 3.5 tonnes.

**Cost of ownership:** the new 2.4-litre D-4D engine delivers improved fuel economy.

Toyota is targeting more than 40,000 European sales of new Hilux annually, supported by the model's ability to meet the diverse requirements of its broadest customer base yet.

For the first time, Hilux is being sold in the UK with the benefit of a new five-year/100,000-mile warranty, bringing it into line with the generous cover Toyota provides for its new passenger vehicles.

## **INTERVIEW: HIROKI NAKAJIMA, HILUX EXECUTIVE CHIEF ENGINEER**

### **How did the development of the new Hilux begin?**

My motto is "seeing is believing," so I made it a point to begin by visiting as many countries where Hilux is sold as possible. Of those 172 countries around the world, I visited more than 110, to hear first-hand from real users and witness for myself the conditions in which Hilux was being driven.

### **What did you learn during these trips?**

Discussions with Hilux users revealed many interesting insights, none more relevant than the opinion that Hilux had lost some of its toughness. As a Chief Engineer, I knew this had nothing to do with the vehicle's road-going capabilities. I then realised that, while we had related toughness with technical durability, the users' idea of toughness had far exceeded durability alone, and that they had come to expect similarly high levels of on-board comfort and safety to enhance the vehicle's day to day use.

What was the development team's goal for new Hilux?

Based on a thorough re-evaluation of the previous model, the entire development team became passionate about creating a pick-up that would greatly surpass it in every sense, but especially in terms of toughness, which stands out as the core benchmark for Hilux over the years.

### **What kind of challenges did you face in the development process?**

The market is continually evolving and we are seeing consumers place more importance on values such as comfort, drivability and compelling design. At the same time, regulators look to us for cleaner emissions, while rising energy costs create demand for greater fuel economy, without sacrificing performance.

Meanwhile the vehicle's use continues to grow from a traditional base in commercial fleets to include more recreational use, as well as popularity with families who want an SUV-style cabin, so that Hilux can serve their daily transport needs.

All these demands presented a massive challenge, because to me, Hilux felt like a commercial vehicle. It didn't give me a sense of passion. This is why I demanded that the next generation Hilux had to offer a strong emotional value as well.

Since we understood that our new Hilux had to incorporate all of these new market realities, we set out to create a unique value for the next generation model that would appeal to current users as well as a new and growing range of customers around the world. This change in approach provided us with new and valuable insights, because when we began to assess the previous Hilux not as a pick-up truck, but as a vehicle for daily use, we were able to identify many areas that could be improved.

Noise levels could be lower, acceleration could be smoother and the interior could be more luxurious. In the end we broke away from conventional thinking regarding commercial vehicles and created an entirely new standard for pick-ups.

### **How would you summarise the new Hilux?**

The new Hilux is designed to exceed expectations, ushering in a new era of how we think about the pick-up truck. While new Hilux has advanced in every respect, including the toughness for which it is renowned and its new emotional value, it's once you get behind the wheel and start driving that you will discover the new sense of refined toughness and feel the passion that has created it.

### **STYLING**

- Workhorse toughness and rugged reliability combined with new sophistication
- More spacious interior with SUV comfort
- Larger, stronger and more practical cargo deck

### **EXTERIOR DESIGN**

The workhorse toughness and rugged reliability that have been inherent in every Hilux generation are combined with new levels of sophistication to meet the demands of a growing leisure market, giving the new generation model a new dimension in appeal.

This special combination of toughness and refinement is captured perfectly in the sleek new frontal design which features a unified arrangement of the upper grille and headlamps and a deep, powerful bumper housing a large lower grille, capturing key elements in Toyota's contemporary design philosophy.

Hilux's trademark clamshell bonnet wraps over the front wheel arches to reinforce the vehicle's solid, road presence while the line of the second horizontal bar in the upper grille extends into the headlamp units to form a distinctive daytime running light arrangement, featuring 12 white LEDs. The headlamp clusters themselves bear the Hilux signature in the side of the casing and wrap around the front wings to further emphasise the pick-up's width. The headlights on Invincible and Invincible X models adopt powerful LED low-beam projectors.

The fog lamp housings are located at the outer extremities of the front bumper, reinforcing Hilux's solid and stable stance. The lower corners and bottom of the bumper flow smoothly into a new, stronger and wider undercover, and have been shaped to ensure the best possible ground clearance, even when driving in extreme off road conditions.

To the side, Hilux has abandoned its previous 'over fender' design to adopt a seamless transition from the bumper unit into the muscular front wheel arches, creating a more refined appearance.

A thick lower door cross-section neatly links the front and rear wheel arches, the latter now seamlessly integrated with the body, before curving upwards to anchor the wrap-around rear lamp clusters. New style details include a blacked-out centre pillar within the smooth, rear-slanted cabin silhouette of Extra Cab and Double Cab models, along with a choice of new 17 and 18-inch alloy wheels. The Extra Cab versions have rear-hinged doors for easier access; on Double Cab models, the linking of the cab and rear deck with a chrome beltline further unifies the overall design.

The cab roof has been carefully shaped to improve both its styling and practicality. It features an aerodynamic 'V' shape that helps channel airflow over the roof and away from the sides of the vehicle, rather than into the deck where it can generate drag against the tailgate. The attention to detail extends to moving the antenna further forward to keep it clear of bulky loads or deck attachments.

At the rear there are new lamp clusters which incorporate aero stabilising fins – small but effective elements that contribute to the vehicle's aerodynamic efficiency. These flank a new steel bumper which is set lower to the ground, allowing for a deeper step to be fitted, improving access to the deck when the tailgate is closed. The rear view camera has been integrated into the handle assembly for cleaner looks and better visibility.

The exterior paint colour choices for new Hilux include new White Pearl, Nebula Blue, Crimson Spark and Avantgarde Bronze shades.

## **INTERIOR DESIGN**

New Hilux's interior provides the durability and functionality required of a working vehicle together with SUV-like refinement, and equipment. The horizontal emphasis of the clean, uncluttered dashboard design captures the combination of premium quality with the strength of a working environment.

The dash features new, cross fin-type air vents with rotary dial adjustment, while the centre console is dominated (Icon grade and higher) by the Toyota Touch 2 integrated, seven-inch multimedia system, operated using touchscreen fingertip control. It has been located closer to the front seats for easier viewing and operation.

The new driver's instrument binnacle features large, analogue speedometer and tachometer dials either side of a 4.2-inch TFT multi-information display (Icon grade and higher, with colour graphics on Invincible and Invincible X models). The display is designed so that the most important information appears at the top, closest to the driver's line of sight. The display menu can be accessed using a control on the steering wheel. The wheel itself has a horizontal spoke design that harmonises with the lines of the dashboard. It is adjustable for reach and rake (electric adjustment on Invincible and Invincible X) and incorporates thumb rests. Its thicker rim makes for a more comfortable grip; on Icon grade models and higher, it is leather-trimmed.

Switches on the steering wheel provide quick and easy control of the audio and multi-information display, as well as co-ordinated operation of the multimedia touchscreen and multi-information display.

Hilux's new air conditioning system delivers noticeably better heating and cooling. It features dial controls for temperature and airflow adjustment and a clear LCD display. The compressor has been engineered so that the system can generate cooler air when the engine is idling.

In keeping with the more leisure-oriented interior design, the gear lever has been shortened to give a slicker, more passenger car-like shift action. Drive mode selection, including all-wheel drive, is now via easy-to-use switches adjacent to the gear lever.

The premium appearance of the cabin is reinforced by metallic-effect details on the dashboard, door trim, instrument binnacle, steering wheel and gear lever bezel. A consistent blue tone has been introduced for the instrument backlighting.

## **CABIN SPACE AND STORAGE**

The all-new Hilux has more interior space, more comfortable seats and a wealth of practical storage spaces to meet the needs of both business and leisure users.

The driver's seat hip point has been raised by 10mm, and 15mm have been added to the seat's height adjustment range. The steering wheel is now adjustable for reach as well as rake, making it possible for a wider range of people to find their ideal driving position.

The front seats provide 8mm more headroom and 19mm more shoulder room and have a new frame structure with a long, well-padded cushion designed to offer excellent support and comfort when travelling long distances. The seatback bolster dimensions have been increased to give better lateral holding.

In Extra Cab and Double Cab models, the rear seats also have an improved structure and cushioning, increasing the support for both legs and body. The front seatback has been made thinner, which frees up more foot space and 10mm extra knee room for rear seat passengers.

A 60:40-split tip-up rear seat is available for the Double Cab, increasing the flexibility of the interior. Its lightweight structure means less effort is needed to fold the seats. The centre armrest is wide enough for two people to use it at the same time.

The black seat upholstery is in three finishes, according to model grade. Active grade models have a hard-wearing fabric; Icon and Invincible versions come with a soft-textured but durable material; and Invincible X models are upholstered in leather.

The cabin storage includes a split-level glove box with a lockable lower compartment and an upper section that is cooled by the air conditioning system and can hold two half-litre bottles.

The capacious centre console box has a padded arm rest lid and can be fitted with an optional AC 220V power outlet. A fold-down storage point is handy for small items, such as sunglasses and there are dashboard-mounted cupholders for driver and front passenger.

A further large cupholder and a storage tray are incorporated in the transmission tunnel, together with two DC 12V accessory sockets and a USB port and Aux-in socket for connecting smartphones and digital devices. The front door pockets have room enough to hold a one-litre plastic bottle.

The rear cabin in the Double Cab provides large door pockets and twin armrest cupholders. Pockets and bag hooks are provided on the front seatbacks and there are ceiling hooks above the seats and under-seat storage compartments.

### **CABIN NVH REDUCED TO PASSENGER CAR LEVELS**

The intrusion of engine, wind and road noise into the new Hilux's cabin has been reduced to class-leading levels.

This has been achieved by introducing comprehensive sound absorption and insulation measures throughout the vehicle. Expansion foam is injected throughout the bodyshell and foam is used in all seal points to prevent the transmission of noise.

A fender separator and upper and lower protectors seal the junctions of the cowl louvre and front pillar with the front wing, helping to soundproof the engine bay and limit the transmission of sound from the engine and the air intake. Spot welding between the cover on top of the cowl panel and the flange creates a noise and vibration seal and further soundproofs the engine compartment. The dash outer silencer has been made 1.5 times larger, reducing idling noise.

In conjunction with the measures deployed in the engine bay, the new 2.4-litre D-4D engine itself has been engineered to suppress noise and vibration. Combustion noise has been reduced by optimising the shape of the intake and exhaust gas recirculation ports and the intake manifold, suppressing intake variations in each cylinder.

The front drive has been changed from a gear to a chain mechanism, reducing mechanical noise caused by speed fluctuations when idling. The form of the intake manifold has been optimised to reduce engine noise. The exhaust manifold maximises the retention capacity of the catalytic converter, lowering the noise characteristics of the turbo engine. To improve vibration management of the turbocharger itself, the rigidity of the unit's support has been improved. In addition, an oil pan insulation cover, a polyamide cylinder head cover and a resin engine cover have been adopted, all of which further help reduce noise from the engine.

To address wind and road noise, lips have been added to the side glass lining and seals have been added between the front and rear doors. The range of weather strip application has been extended to the rocker area and the door drainage plug holes have been made larger.

### **CARGO DECK – LARGER, STRONGER AND MORE PRACTICAL**

The cargo deck has been made larger, stronger and more practical, with maximum deck width increased from 1,544mm to a class-leading 1,645mm. The tailgate is fitted with stronger, link-type hinges, with support from heavy-duty steel plate brackets when in the open position.

The deck itself has been strengthened to reduce deformation and the risk of damage when loading or unloading cargo. The floor ribs have been redesigned and sill cross-members have been added to the floor panel. The header panel has been reinforced, and the shape of the wheel-house rib reinforcement and the service hole cover on the tailgate have been optimised.

A range of optional equipment features is available, including hardtop and lockable aluminium roller covers and hard tonneau covers, with or without high over bars.

### **NEW DIESEL ENGINE AND IMPROVED TRANSMISSIONS**

- All-new 2.4-litre D-4D turbodiesel engine with vastly improved torque delivery and better fuel economy

- Revised six-speed Super ECT automatic and improved six-speed manual transmissions
- Drivetrain upgraded to support higher engine torque output

### **NEW 2.4-LITRE GLOBAL DIESEL ENGINE**

Toyota's new 2.4-litre D-4D Global Diesel engine may be around 600cc smaller in capacity than the 3.0-litre unit previously featured in Hilux, but it delivers vastly improved torque and better fuel economy.

The 16-valve DOHC four-cylinder 2,393cc engine is equipped with a variable nozzle turbocharger and an intercooler. It generates 148bhp (110kW) at 3,400rpm and 400Nm maximum torque between 1,600 and 2,000rpm. All Hilux models are available with a six-speed manual gearbox; a six-speed Super ECT automatic can be specified for all versions apart from Active. Acceleration from rest to 62mph takes 12.8 seconds with auto transmission or 13.2 with the manual; top speed is 106mph for all versions.

New Hilux returns fuel economy from 40.4mpg (official combined cycle), with CO<sub>2</sub> emissions from 178g/km. This performance, together with reduced servicing times, provides customers with best-in-class total ownership costs.

The engine benefits from a range of measures to save weight, improve combustion efficiency and reduce friction. A resin head cover and a polyamide cylinder head cover have been adopted and the thickness of the entire cylinder head has been reduced. The consequent weight reduction makes a significant contribution to reducing energy consumption and, hence, improving fuel efficiency.

The efficiency of the intake and exhaust ports and the fuel injection system has been tuned to maximise torque. Two intake ports are used in unison, according to engine speed: a tangential port that produces a high swirl flow, agitating the air/fuel mixture to achieve better combustion efficiency, and a helical port that allows for a high flow volume.

The engine has an electronically controlled, common rail fuel injection system that achieves higher pressure and more advanced injection pressure control and new-shape pistons to suit the new combustion chamber design.

Precise pilot injection matching the state of the ambient air takes place ahead of the main injection to reduce ignition delay, combining stable combustion (even in harsh environments) with quiet operation and high thermal efficiency.

The turbocharger is 30 per cent smaller than its predecessor and has a new, more efficient turbine design and a new impeller that gives instant acceleration response and produces maximum torque across a wide rev range.

The engine has a water-cooled exhaust gas recirculation system with an EGR cooler bypass function.

The catalyst has been positioned adjacent to the engine, securing cleaner performance and allowing for a reduction in size of around 30 per cent. The number of exhaust components has been reduced from 18 to just three. Toyota's urea Selective Catalytic Reduction system removes up to 99 per cent of NOx emissions, ensuring the engine complies with Euro 6 regulations.

Mechanical friction in the engine has been minimised by the adoption of a high-efficiency vacuum pump, a roller rocker-type valvetrain and a low-friction timing chain, all of which supports more efficient combustion.

## **IMPROVED SIX-SPEED MANUAL TRANSMISSION**

The ratios in new Hilux's six-speed manual transmission have been adjusted to provide a 10 per cent lower first gear and a 23 per cent higher sixth gear ratio than in the previous five-speed gearbox. This improves low-speed torque delivery and high-speed fuel economy.

The shift system's supporting components use multiple bearings and bushings to produce a smooth shift change and satisfying user feedback. The gear combination has been tuned using a micrometer to achieve the smoothest possible torque transmission, and a clutch start switch has been added to prevent sudden acceleration if the transmission is engaged at engine start-up.

The noise and vibration generated by the gears engaging have been reduced, and the transmission case ribs have been made shorter and thinner to minimise the noise and vibration generated in and transmitted through the casing.

To achieve the durability and reliability required for an off-road vehicle, the gears' shape and number of teeth have been optimised for strength and the load tolerance of each gear has been increased. The bearing support structures on the front of the countershaft have been changed and the roller bearing used previously has been replaced by a combined roller and ball bearing to balance the axial and radial direction load.

## **SIX-SPEED SUPER INTELLIGENT ELECTRONICALLY CONTROLLED AUTOMATIC TRANSMISSION**

New Hilux's six-speed Super Intelligent Electronically Controlled – Super ECT – automatic transmission benefits from several new control systems to improve fuel economy and driving performance.

High-speed Gear Effective Utilisation Control determines the availability of high-speed gears in real time, according to driving conditions. For instance, taking into account the vehicle loading and throttle setting, the system will determine whether sixth gear is available, or if the vehicle should remain in fifth to gain the best balance of power and fuel efficiency.

Deceleration Downshift Control optimises downshifts when decelerating to gain better fuel efficiency. The fuel supply is automatically cut off during periods of engine braking, unless engine speed drops to the low rpm threshold, at which point fuel injection resumes to avoid the engine stalling. Accordingly, the transmission maximises engine braking by selecting a lower gear to prevent engine speed

dropping below the low rpm threshold, thus extending fuel cut-off time to gain a drastic improvement in fuel economy.

Artificial Intelligence (AI-SHIFT) Control incorporates Accelerator Immediate Close and Immediate Open Control. The former makes it easier to maintain the current gear when the accelerator is suddenly released, improving engine braking force and responsiveness when acceleration resumes. The latter performs immediate downshifts when the accelerator is pressed suddenly, improving throttle response.

### **UPGRADED, HIGH-TORQUE DRIVETRAIN**

Hilux's drivetrain has been upgraded to support high engine torque. The diameter of the output shaft in the transfer case has been increased and new differentials have been used to cope with the higher torque loads. The propeller shaft has also been revised to handle both higher torque and an increase in maximum vehicle speed. A torsional damper has been added to minimise noise and vibration.

### **DRIVE MODE SWITCH**

Hilux has gained a Drive Mode switch which lets the driver choose between Eco and Power settings. Eco mode reduces power consumption related to acceleration and heating and cooling to improve fuel economy; Power mode initiates a sharper response to throttle inputs for a more engaging driving experience.

### **DRIVING DYNAMICS AND OFF-ROAD ABILITY**

- New ladder-frame chassis with 20 per cent increase in torsional rigidity
- Revised suspension, allowing up to 20 per cent more wheel travel
- New brake control systems for improved off-road driving capabilities

### **TOUGHER, MORE DURABLE CHASSIS AND BODY**

Hilux has a new ladder-frame chassis that offers a 20 per cent increase in torsional rigidity. It has been engineered to combine better handling, ride comfort, low noise and vibration and collision safety with outstanding durability, even in the harshest driving environments.

The frame side rails and cross-members have been made around 30mm thicker and the cross-member cross-section has been optimised. As well as strengthening the frame bracket structure, this improves the cross-members' resistance to deformation and the fatigue strength of the suspension and front propshaft mountings. These measures contribute to better handling on rough roads and terrain.

The suspension installation components have been reshaped and made thicker, which further improves the fatigue strength of the suspension mountings and towing hitch. This gives new Hilux an increased axle capacity and greater towing capacity – up to 3.5 tonnes for UK models (to be introduced by the end of 2016).

Attention to the side rail cross-sections and a more rigid connection between them and the cross-members improve the frame's rigidity and resistance to twisting or bending. This gives better vehicle yaw response and ride comfort, as well reducing floor vibrations and the transmission of engine noise to the cabin.

The degree of chassis deformation in the event of a collision has been reduced, to secure best-in-class occupant protection.

The undercover has been made wider and stronger, with three times the deformation strength of the component used on the previous model, providing excellent protection for the drivetrain and other components beneath the vehicle. The cover area has been enlarged, reinforcement has been added and panel thickness has been increased, reducing the risk of damage to the power steering boot and camber bolt. The engine can be fully serviced without having to remove the undercover, which reduces service costs and hence overall ownership costs.

The connection points between the bodyshell and chassis have been rendered more rigid and shell itself has a higher content of 590MPa high-tensile steel, which has the benefits of being both lightweight and very strong.

The number of spot welding points in the bodyshell has been increased by 120 to 288. The consequent increase in body rigidity limits deformation, improving steering accuracy and responsiveness.

New Hilux also has superior anti-corrosion performance to ensure a long-lasting chassis and bodyshell, even when driven in harsh environments. A 30mm increase in the width of the side rails and chassis frame cross-members has secured 20-year corrosion resistance performance.

Galvanised steel with anti-corrosive properties is used for all exterior underbody parts and widely in the upper body, cabin and deck. The area of vehicle undercoating has been substantially increased, reducing water and dirt penetration between panel gaps. Anti-corrosive wax and a chip-resistant coating are applied to areas of the upper body prone to corrosion.

## **PITCH AND BOUNCE CONTROL**

Toyota's Pitch and Bounce Control system automatically adjusts engine torque in response to road surface conditions, reducing body pitching to give more comfortable ride and handling.

The system uses information from wheel speed sensors to determine when the vehicle's nose is lifting or dropping because of undulations in the road. When the nose lifts, the heads of people travelling in the vehicle are tilted backwards. Engine torque is momentarily reduced to compensate, reducing the degree of head movement. When the nose dips, heads are tilted forwards, so the system adds torque to compensate in a similar manner.

Although the torque adjustment is measured in extremely small quantities, it has a noticeable effect on ride and handling. Ride comfort is improved through the perception of a flatter ride caused by the reduction in body movement. Steering feel is improved around the centre line thanks to the tyres gaining better ground holding.

## **REVISED SUSPENSION, IMPROVED POWER STEERING AND NEW ALL-TERRAIN TYRES**

New Hilux's tough, hard-wearing leaf spring and twin shock absorber rear suspension has been extensively revised to provide both the off-road articulation capabilities required of a rugged, all-wheel drive workhorse with SUV-like comfort and handling stability.

Leaf spring length has been increased by 100mm to 1,400mm, suppressing road surface-generated vibration. The rear suspension attachment point has been moved forward 100mm to the front of the spring and lowered by 25mm, which supports better steering stability.

The springs have been mounted 50mm further apart on the chassis, which, combined with a thicker front anti-roll bar, contributes to greater stability when the vehicle is loaded and when cornering.

The rear shock absorbers have been moved forward to equalise the damping force between the two, improving the pick-up's straight-line stability. The shocks have larger cylinders, so damping force can be generated with a small stroke, better to combat small vibrations. The damping characteristics of all the shock absorbers have been adjusted to give a flat ride at low speed and reduce shock impacts in medium and high-speed driving.

These rear suspension modifications have also allowed for a substantial improvement in rear axle articulation, with wheel travel increasing by up to 20 per cent, giving better off-road capability over rocky or sharply undulating terrain.

The steering column has been redesigned to reduce the transfer of vibration from the road surface and the power steering system has been fine-tuned. The steering ratio has been revised and the assistance characteristics of the power steering gears have been adjusted to improve steering feel. Less effort is now required at low speeds, improving Hilux's tight turn performance; additional steering weight adds stability at higher speeds.

New 17-inch all-terrain tyres work with these suspension and steering enhancements to give greater on-road comfort and superior off-road grip. Models fitted with 18-inch

wheels (standard on Invincible X grade) are fitted with new highway terrain tyres designed to minimise noise for more comfortable on-road driving.

### **SWITCHABLE ALL-WHEEL DRIVE, HIGH AND LOW-RATIO DRIVETRAIN**

New Hilux gains outstanding capabilities from its switchable all-wheel drive system with high and low-ratio transfer case. It is also fitted with front and locking rear limited slip differentials.

The new, high-capacity rear limited slip differential caters for the increase in powertrain torque. It has been made lighter by a reduction in the number of pinion gears from four to two, and by miniaturisation of the side bearing.

It has been made more reliable with heat treatment of the front bearing, Kanigen plating of the pinion shaft and modifications to the oil seal. Better fuel economy is supported by the use of highly efficient, tapered roller bearings and low-viscosity differential oil. The electromagnetic differential lock now features a built-in solenoid actuator, which improves the unit's effectiveness and reliability.

New Hilux's Automatic Disconnecting Differential system is operated using a drive mode selection switch on the dashboard. This disengages the front differential when two-wheel drive is selected, improving refinement, fuel consumption and on-road driveability. For greater convenience, it is possible to shift from four to two-wheel drive while on the move, and from two to four-wheel drive at speeds below 31mph (50km/h).

The front differential has gained an oil temperature sensor to reduce the risk of overheating in all-wheel drive mode. If oil temperature becomes abnormally high, the system alerts the driver to switch to two-wheel drive; if this is not engaged within 30 seconds, vehicle speed is automatically restricted to below 75mph (120km/h).

### **NEW BRAKE CONTROL SYSTEMS**

The performance of Hilux's all-wheel drive powertrain is complemented by a range of new brake control systems that elevate its off-road capabilities to the level of a Land Cruiser.

An Active Traction Control system uses brake fluid pressure and engine control to distribute torque as appropriate to all four wheels, delivering traction better than that provided by a limited slip differential. When loss of traction is detected in one or more driven wheels, the system automatically brakes the relevant wheels and simultaneously redistributes drive torque to those which have grip. This significantly improves performance over slippery and rocky terrain.

Downhill Assist Control, working in forward and reverse gears, helps the driver to regulate vehicle speed on steep, slippery or uneven downhill gradients. In circumstances where engine braking alone is insufficient to reduce vehicle speed, the system automatically controls brake fluid pressure to maintain a constant, low descent speed, without the driver operating the brake and accelerator pedals.

The system operates at speeds below 16mpg (25km/h). It limits forward speed to between 3 and 4.5mph (5 and 7km/h) and reverse speed between 2 and 3mph (3 and 5km/h), allowing the descent of steep slopes without the wheels locking.

Hill-start Assist Control prevents the vehicle from moving backwards during an uphill start when the driver releases the brake pedal. The system temporarily maintains braking to all four wheels for up to a maximum two seconds, to hold the vehicle in place, preventing it from rolling back.

## **EXCEPTIONAL TOWING PERFORMANCE**

The improved torque delivery of the new 2.4-litre D-4D engine at low and medium speeds and the increased strength of the new ladder-frame chassis combine to afford the new Hilux an increased towing capacity of up to 3.5 tonnes (available in the UK from the end of 2016).

Several measures have been taken to improve engine and transmission cooling, to ensure reliable performance under the consistent high-load stress this substantial towing capability can create. All Hilux models have a new radiator design, with more tubes, an expanded heat dissipation area and revisions to the fin shapes and coolant flow rate. As a result, heat dissipation performance has been improved by 10.4 per cent.

The intercooler has been relocated in front of the radiator to improve its efficiency. All Hilux models equipped with automatic transmission further feature a lightweight, aluminium multi-plate transmission oil cooler which improves heat dissipation performance by 18.6 per cent.

## **SAFETY**

- New, stronger ladder-frame chassis improves safety performance and occupant protection
- Toyota Safety Sense with Pre-Collision System with pedestrian detection, Lane Departure Warning and Road Sign Assist
- Comprehensive brake control systems, including Trailer Sway Control

## **HIGH-STRENGTH, IMPACT-ABSORBING CHASSIS AND BODY**

Hilux's new, stronger ladder-frame chassis gives increased deformation resistance and energy absorption performance that is 15 per cent greater than its predecessor, improving its safety performance and occupant protection.

The chassis absorbs collision forces in three stages to reduce the effects of impacts on the body, engine and interior. First, the front side rail extension area crumples and buckles; second, the side rail collapses vertically near the suspension tower; and third, the side rail bends inwards in the 'kick' range.

Any residual front or side impact energy that isn't absorbed by the deformation of the frame structure is effectively distributed through the upper, lower and underside structural members in the bodyshell. The bodyshell itself has a high content of 590MPa high-tensile steel, which combines light weight with excellent strength to reduce the risk of occupant injuries.

The risk of pedestrian injury has been reduced by the use of impact-absorbing structures in the front bumper, bonnet, fender bracket structure and cowl, reducing the impact force to the head and legs of pedestrians in a collision.

## **TOYOTA SAFETY SENSE**

Toyota Safety Sense is available on new Hilux (standard on Invincible and Invincible X models and an option for Active and Icon grades), providing a Pre-Collision System with pedestrian detection function, Lane Departure Alert and Road Sign Assist (cruise control in place of RSA on Active grade). These functions are controlled by means of a camera and millimetre-wave radar.

At speeds between 6mph and Hilux's 106mph top speed, the Pre-Collision System detects cars on the road ahead and monitors the risk of a collision. When it determines a collision is likely, it triggers visual and audible alerts to the driver and prepares the brakes to deliver extra stopping force the moment the brake pedal is pressed. If the driver fails to react and a collision becomes unavoidable, the system automatically applies the brakes, reducing vehicle speed by around 25mph (40km/h), potentially bringing the vehicle to a stop.

The system can also detect potential collisions with pedestrians, with automated braking operating at relative speeds of between 6 and 50mph (10 and 80km/h) and reducing vehicle speed by approximately 18.5mph (30km/h).

Lane Departure Warning monitors the lane markings on the road surface and helps prevent accidents caused by the vehicle drifting out of lane. If the Hilux begins to deviate from its lane without the turn indicators being used, LDW warns the driver with a warning light and buzzer and provides appropriate steering input to help maintain the correct course.

Road Sign Assist (Icon grade and higher) recognises warning and command signs such as speed limits and no overtaking restrictions and repeats them in the multi-information display so there is less chance of them going unnoticed by the driver.

## **COMPREHENSIVE BRAKE CONTROL SYSTEMS**

New Hilux has a comprehensive array of brake control systems to help prevent accidents, maximise vehicle stability and even help the driver keep a trailer under control in difficult conditions.

The ABS prevents the wheels from locking under heavy braking, while the brake assist generates increased braking force to supplement the efforts of the driver under emergency braking, if they aren't able to apply or maintain appropriate pressure on the brake pedal. An emergency brake signal flashes the vehicle's hazard warning lights during emergency braking to alert following traffic.

Electronic Brakeforce Distribution automatically distributes brake force between the front and rear wheels, according to vehicle and road surface conditions. This optimises performance and also reduces the pedal force required for effective braking.

Vehicle Stability Control is activated when sensors detect the car is under or oversteering while cornering. It uses automatic control of engine output and individual wheel braking to counter the effect of under or oversteer, improving vehicle stability.

When crosswinds, variations in the road surface or driver steering inputs provoke trailer sway, Trailer Sway Control will apply braking and engine output control to suppress movement before it becomes uncontrollable.

New Hilux also benefits from Active Traction Control, Downhill Assist Control and Hill-start Assist Control, which are fully explained in the chapter on driving dynamics.

## **AIRBAGS AND SEATBELTS**

The new Hilux Double Cab is available with up to seven airbags: driver and front passenger front and side airbags, driver's knee airbag and curtain shield airbags that protect both front and rear seat occupants.

All seats have three-point seatbelts with emergency locking retractors, pretensioners and force limiters. All are linked to a seatbelt reminder system and the rear seats have Isofix child seat top tether anchor points.

## **UK MODEL RANGE, EQUIPMENT AND PRICING**

- Single Cab, Extra Cab and Double Cab body styles with Active, Icon, Invincible and Invincible X equipment grades
- CV on-the-road prices from £19,177
- New five-year/100,000-mile warranty
- New Hilux available to order now with customer deliveries from July

## **UK MODEL RANGE AND EQUIPMENT SPECIFICATIONS**

The new Hilux is available in the UK in three body styles: Single Cab, Extra Cab and Double Cab.

The entire range is offered in the UK with the benefit of a new five-year/100,000-mile vehicle warranty package. This provides cover for five years or 100,000 miles, whichever comes first, with no mileage limitation for the first year. It mirrors the warranty that is provided for Toyota's UK passenger vehicle range.

In keeping with their working vehicle profile, The Single and Extra Cab versions are offered only in the entry-level Active specification. Double Cab models are available in all grades.

New equipment features provided on the Active grade include auxiliary switches on the steering wheel, Bluetooth, a cooled front storage box, reach and rake steering wheel adjustment, driver and front passenger airbags, driver's knee and curtain shield airbags, Hill-start Assist Control, Downhill Assist Control, Isofix child seat anchors (Double Cab model), follow-me-home headlight function and turn indicators integrated in the electrically adjustable, heated door mirrors (no indicators for Single Cab).

Icon models further gain the 4.2-inch multi-information display, cruise control DAB digital radio reception and retracting door mirrors. These are in addition to established features including 17-inch alloy wheels, front fog lights, headlamp cleaners, side steps, chrome front grille, rear privacy glass, leather steering wheel, handbrake and gearshift trim and the Toyota Touch 2 multimedia system.

The Hilux Invincible is newly equipped with Toyota Safety Sense, a colour multi-information display, 18-inch alloy wheels, Smart Entry and Start, LED headlights, automatic headlamp levelling and electric steering wheel adjustment. As with the

previous Hilux Invincible, it comes as standard with automatic air conditioning, dusk-sensing headlights and chrome side bars with steps.

The new Hilux Invincible X moves on from the option-based specification of the previous model to offer customers an impressive combination of style, comfort and convenience features. The model rides on new 18-inch wheels with a design exclusive to the grade. A chrome pack provides fog lamp and headlight surrounds, bumper trims, scuff plates and rear light cluster trims. An unmissable Hilux decal extends across the width of the tailgate. In the cabin there is leather upholstery and the front seats are heated. The multimedia system is upgraded to Toyota Touch 2 with Go, adding satellite navigation and on-board connectivity functions, together with three years' inclusive map and connectivity updates. For easier manoeuvring in tight spaces, front and rear parking sensors are fitted.

#### **HILUX TIMELINE AND UK SALES**

<b>YEAR</b>	<b>MONTH</b>	<b>EVENT</b>
1972		Hilux is introduced to the UK market.
2004	February	ABS and driver's airbag made standard on all Hilux models.
	July	The Invincible model is added to the range.
2005	October	All-new sixth generation Hilux launched in the UK.
2006	November	The Extra Cab model is introduced, together with the 2.5 D-4D 120 engine.
2007	January	The 3.0 D-4D 170 is added to the range; all engines now meet Euro IV emissions standards.
	May	Hilux becomes the first car to be driven to the Magnetic North Pole, driven by Jeremy Clarkson and James May for the BBC Top Gear television programme.
2008	July	Toyota launches <a href="#">Hilux Invincible 200</a> , a limited edition model. A Toyota Motorsport diesel engine performance kit increases output to 195bhp, making the Invincible 200 Britain's most powerful production pick-up
2008	November	Introduction of first <a href="#">2009 model year Hilux</a> .
2009	January	3 Toyota Hilux <a href="#">driven to South Pole</a> as ski race support vehicles

	November	<a href="#">2010 model year Hilux</a> announced with increased power and torque from revised 2.5 D-4D engine.
2011	October	<a href="#">2012 Hilux launched</a> with Euro 5-compliant engines. New front-end styling and revised interior, plus introduction of Toyota Touch and Go with Bluetooth and rear-view camera.
2013	December	Introduction of 2014 Hilux with Toyota Touch 2 and new grade names – Active, Icon and Invincible.
2015	February	The Invincible X is introduced, adding extra styling/personalisation elements to the Invincible specification.
2016	March	An all-new Hilux is unveiled at the Geneva motor show. Powered by a new Global Diesel 2.4-litre engine, it taller and wider and offers tougher off-road performance.
	April	Hilux UK specifications and prices are released.
	July	First deliveries of Hilux to UK customers.
	December	Hilux wins best pick-up title in the Commercial Fleet Awards.

UK sales in 2017: 7,141

Cumulative UK sales since launch (1972): 147,348

## TOYOTA HILUX TECHNICAL SPECIFICATIONS

ENGINE		2.4-litre D-4D	
Engine code		2GD-FTV	
Type		4-cylinder in-line	
Valve mechanism		16-valve DOHC	
Displacement (cc)		2,393	
Bore x stroke (mm)		92.0 x 90.0	
Compression ratio		15.6:1	
Max. power (bhp/kW @ rpm)		148/110 @ 3,400	
Max. torque (Nm @ rpm)		400 @ 1,600 – 2,000	
TRANSMISSION		6MT	6AT
Gear ratios	1 <sup>st</sup>	4.784	3.600
	2 <sup>nd</sup>	2.423	2.090
	3 <sup>rd</sup>	1.443	1.488
	4 <sup>th</sup>	1.000	1.000
	5 <sup>th</sup>	0.777	0.687
	6 <sup>th</sup>	0.643	0.580
	Reverse	4.066	3.732

Differential gear ratio (final drive)	3.583	4.100			
<b>BRAKES</b>					
Front	Ventilated discs with fixed calliper, 4-cylinder				
Rear	Leading-trailing drums				
Additional features	ABS, BA, EBD, VSC, TSC, A-TRC, DAC, HAC				
<b>SUSPENSION</b>					
Front	Double wishbone				
Rear	Leaf springs, rigid axle				
<b>STEERING</b>					
Type	Rack and pinion				
Power steering	Hydraulic				
Min. turning radius (m)	Tyre	6.4			
	Body	6.7			
<b>TYRES AND WHEELS</b>					
Tyres	225/70R17 – Active S/Cab 265/65R17 – Active E/Cab, Active & Icon D/Cab 265/60R18 – Invincible & Invincible X				
Wheels	17 or 18in alloy				
<b>PERFORMANCE</b>		<b>S/CAB</b>	<b>E/CAB</b>	<b>D/CAB</b>	
Transmission	6MT	6MT	6MT	6AT	
Max. speed (mph)	106	106	106	106	
Acceleration 0-62mph (sec)	13.2	13.2	13.2	12.8	
<b>FUEL CONSUMPTION , EMISSIONS &amp; INSURANCE</b>		<b>S/CAB</b>	<b>E/CAB</b>	<b>D/CAB</b>	
Transmission	6MT	6MT	6MT	6AT	
Fuel consumption – combined (mpg)	39.8	40.4	40.4	36.2	
Fuel tank capacity (l)	80				
CO <sub>2</sub> emissions – combined (g/km)	187	185	185	204	
Insurance groups	41 - 50				
<b>WEIGHTS</b>		<b>S/CAB</b>	<b>E/CAB</b>	<b>D/CAB</b>	
Transmission	6MT	6MT	6MT	6AT	
Kerb weight (kg)	1,800 – 1,850	1,915 – 1,965	2,100 – 2,160	2,095 – 2,155	
Gross vehicle weight (kg)	n/a	3,150	3,210	3,210	
<b>TOWING CAPACITY</b>					
Braked (kg)	3,500	3,500	3,200	3,200	
Unbraked	750	750	750	750	
<b>EXTERIOR DIMENSIONS</b>		<b>S/CAB</b>	<b>E/CAB</b>	<b>D/CAB</b>	
Overall length (mm)	5,330	5,330	5,330		
Overall width (mm)	1,800	1,855	1,855		
Overall height (mm)	1,795	1,810	1,815		
Wheelbase (mm)	3,085	3,085	3,085		
Front track (mm)	1,495	1,535	1,535		
Rear track (mm)	1,510	1,550	1,550		
Front overhang (mm)	1,000	1,000	1,000		

Rear overhang (mm)	,250	1,250	1,250
Min. running ground clearance (mm)	277	289	293
Angle of approach (deg)	30	31	31
Angel of departure (deg)	25	26	26
Drag coefficient (Cd, dependant on vehicle specification)	0.394	0.394	0.394
<b>INTERIOR DIMENSIONS</b>	<b>S/CAB</b>	<b>E/CAB</b>	<b>D/CAB</b>
Interior length (mm)	932	1,404	1,697
Interior width (mm)	1,480	1,480	1,480 (front) 1,410 (rear)
Interior height (mm)	1,175	1,170	1,170
Couple distance (mm)	n/a	n/a	841
Headroom (mm)	997	997 (front) 969 (rear)	997 (front) 969 (rear)
<b>DECK DIMENSIONS</b>	<b>S/CAB</b>	<b>E/CAB</b>	<b>D/CAB</b>
Length (mm)	2,315	1,810	1,525
Max. width (mm)	1,645	1,645	1,645
Height (mm)	480	480	480

## TOYOTA HILUX EQUIPMENT SPECIFICATIONS

<b>SAFETY</b>	<b>ACTIVE (Single Cab)</b>	<b>ACTIVE</b>	<b>ICON</b>	<b>INVINCIBLE</b>	<b>INVINCIBLE X</b>
Toyota Safety Sense: Pre-Collision System with pedestrian detection, Lane Departure Warning, Road Sign Assist	Opt – with cruise control in place of RSA	Opt	Opt	✓	✓
Driver and front passenger airbags	✓	✓	✓	✓	✓
Front side airbags	✓	✓	✓	✓	✓
Curtain airbags	✓	✓	✓	✓	✓
Driver's knee airbag	✓	✓	✓	✓	✓
Front seatbelts with pretensioners and load limiters	✓	✓	✓	✓	✓
Outer rear seatbelts with pretensioners and load limiters	N/A	✓	✓	✓	✓
Isofix child seat anchors	N/A	✓ D/Cab only	✓	✓	✓
Headlamp levelling	✓ manual	✓ manual	✓ manual	✓ auto	✓ auto
ABS	✓	✓	✓	✓	✓
Emergency Brakeforce Distribution	✓	✓	✓	✓	✓
Brake Assist	✓	✓	✓	✓	✓
Vehicle Stability Control	✓	✓	✓	✓	✓

Trailer Sway Control	✓	✓	✓	✓	✓
Downhill Assist Control			✓	✓	✓
Active Traction Control	✓	✓	✓	✓	✓
Hill-start Assist Control	✓	✓	✓	✓	✓
Load sensing proportioning and bypass valve (LSP&BV)	✓	✓	✓	✓	✓
<b>TRANSMISSION</b>	<b>ACTIVE (Single Cab)</b>	<b>ACTIVE</b>	<b>ICON</b>	<b>INVINCIBLE</b>	<b>INVINCIBLE X</b>
4WD Auto Disconnecting Differential (ADD)	✓	✓	✓	✓	✓
Locking rear differential	✓	✓	✓	✓	✓
<b>INSTRUMENTS &amp; CONTROLS</b>	<b>ACTIVE (Single Cab)</b>	<b>ACTIVE</b>	<b>ICON</b>	<b>INVINCIBLE</b>	<b>INVINCIBLE X</b>
Headlamp warning buzzer	✓	✓	✓	✓	✓
Tachometer	✓	✓	✓	✓	✓
Fuel heater	✓	✓	✓	✓	✓
Clock	✓	✓	✓	✓	✓
4.2-inch multi-information display	x	x	✓	✓	✓
<b>COMFORT &amp; CONVENIENCE</b>	<b>ACTIVE (Single Cab)</b>	<b>ACTIVE</b>	<b>ICON</b>	<b>INVINCIBLE</b>	<b>INVINCIBLE X</b>
Power steering	✓	✓	✓	✓	✓
Cruise control	Opt with TSS	Opt with TSS	✓	✓	✓
Variable-rate windscreen wiper	✓	✓	✓	✓	✓
Heated rear window	✓	✓	✓	✓	✓
Electric front windows (one-touch down, driver's side)	✓	✓	✓	✓	✓
Tilt and reach-adjustable steering column	✓	✓	✓	✓	✓
Electrically adjustable, heated door mirrors with integrated turn indicators	✓ w/out indicators	✓	✓	✓	✓
Locking glove box	✓	✓	✓	✓	✓
Cooled glove box	✓	✓	✓	✓	✓
Centre console with storage and armrest lid	✓	✓	✓	✓	✓
12V accessory socket	✓ (1)	✓ (1)	✓(2)	✓(2)	✓(2)
220V plug socket	x	x	✓	✓	✓
<b>AUDIO, INFORMATION AND ENTERTAINMENT</b>	<b>ACTIVE (Single Cab)</b>	<b>ACTIVE</b>	<b>ICON</b>	<b>INVINCIBLE</b>	<b>INVINCIBLE X</b>
Audio system AM/FM, CD & Bluetooth – 2 speakers	✓	x	x	x	x
Audio system AM/FM, CD & Bluetooth – 4 speakers	x	✓	x	x	x

Toyota Touch 2 with touchscreen, DAB, USB port, Bluetooth, 6 speakers and rear-view camera	x	x	✓	✓	✓
Toyota Touch 2 with Go, with satellite navigation	x	x	Opt	Opt	✓
USB port and Aux-in socket	✓	✓	✓	✓	✓
<b>VENTILATION</b>	<b>ACTIVE (Single Cab)</b>	<b>ACTIV</b>	<b>ICON</b>	<b>INVINCIBLE</b>	<b>INVINCIBLE X</b>
Air conditioning - manual	✓	✓	✓	x	x
Air conditioning - automatic	x	x	x	✓	✓
<b>SECURITY</b>	<b>ACTIVE (Single Cab)</b>	<b>ACTIVE</b>	<b>ICON</b>	<b>INVINCIBLE</b>	<b>INVINCIBLE X</b>
Alarm – perimeter	✓	✓	✓	✓	✓
Remote central locking	✓	✓	✓	✓	✓
Locking tailgate	x	✓	✓	✓	✓
Engine immobiliser	✓	✓	✓	✓	✓
<b>SEATING, UPHOLSTERY &amp; TRIM</b>	<b>ACTIVE (Single Cab)</b>	<b>ACTIVE</b>	<b>ICON</b>	<b>INVINCIBLE</b>	<b>INVINCIBLE X</b>
Number of seats	2	4	5	5	5
Tip-up rear seat	x	✓ D/Cab only	✓	✓	✓
Durable cloth upholstery	✓	✓	x	x	x
Premium cloth upholstery	x	x	✓	✓	x
Leather upholstery	x	x	x	Opt	✓
Leather steering wheel with audio controls and leather gear shift trim	x	x	✓	✓	✓
Vinyl floor covering	✓	x	x	x	x
Carpet floor covering	x	✓	✓	✓	✓
<b>EXTERIOR &amp; BODY</b>	<b>ACTIVE (Single Cab)</b>	<b>ACTIVE</b>	<b>ICON</b>	<b>INVINCIBLE</b>	<b>INVINCIBLE X</b>
Colour-keyed front bumper	x	x	✓	✓	✓
Chrome grille	x	x	✓	✓	✓
Colour-keyed overfenders	x	x	✓	✓	✓
Front and rear mudflaps	✓	✓	✓	✓	✓
Chrome door handles	x	x	✓	✓	✓
Exterior deck lashing hooks	✓	x	x	x	x
Cab protector/ladder rack	✓	✓	x	x	x
Scuff plates	x	x	x	✓	✓
Front fog lamps	x	x	✓	✓	✓
Side steps	x	x	✓	x	x
Chrome side bars with steps	x	x	x	✓	✓
Rear privacy glass	x	x	✓	✓	✓
Headlamp cleaners	x	x	✓	✓	✓
17-inch steel wheels	✓	✓	x	x	x
17-inch alloy wheels	x	x	✓	x	x

18-inch alloy wheels	x	x	x	✓	✓
Metallic paint	Opt	Opt	Opt	Opt	Opt

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