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# THE TOYOTA CAMRY HYBRID

## INTRODUCTION

Camry Hybrid strengthens Toyota's presence in the mid-size saloon market where it stands out as a distinctive proposition, thanks to its powerful, self-charging hybrid electric powertrain. Its introduction increases Toyota's European hybrid electric line-up to eight models.

Increasing customer interest in and demand for hybrid vehicles have paved the way for Camry's return to the UK after an absence of 15 years.

Its 2.5-litre hybrid electric powertrain delivers fuel efficiency, low emissions and quiet running with power and responsiveness. Full system output is 215bhp/160kW and $CO_2$ emissions are from 120g/km; combined cycle fuel consumption is from 50.44 to 53.30mpg for the Design model and 50.44 to 51.36mpg for the Camry Excel.

The new Toyota Hybrid System (THS II) includes Sequential Shiftmatic technology that allows the driver to make 'shifts' using a console-mounted lever, mimicking the operation of a conventional, six-speed automatic transmission and creating a more engaging driving experience.

This is the eighth generation of a model that has won many awards since it first went on sale in 1982. Today it is sold in more than 100 countries and has amassed more than 19 million sales worldwide.

An all-new car, it is also a product of the Toyota New Global Architecture (TNGA) design and engineering philosophy. TNGA places driving rewards and alluring styling on an equal footing with excellent build quality, reliability and safety.

Camry's TNGA GA-K platform gave Toyota the opportunity to re-evaluate every aspect of mid-size saloon design, packaging and engineering, from the ground up. This has led to an unprecedented level of change for the model in a single generation; virtually no parts or components have been carried over from the seventh generation model (which was not sold in the UK) in the areas of HMI, cockpit design, powertrains, safety and ride and handling.

Since Camry's inception, its development has been based on two pillars: Performance (driving dynamics, NVH, quality-durability-reliability and packaging) and Intelligence (high-tech specifications, comfort and safety).

Camry has a wide, low and aerodynamically efficient exterior design with confident, distinctive styling that incorporates a further evolution of Toyota's design philosophies that place an emphasis on the visual impact of the lower section of the car and a keen-edged look.

The cabin floor and the seating hip points have been lowered, helping bring down the car's centre of gravity, while the interior displays an overall fusion of style, comfort and craftsmanship. The curves of the dashboard enclose an ergonomically ideal, driver-focused cockpit. The front seats provide both comfort and support, while the rear seats have a 60:40 split-folding configuration.

All-new switchgear has been designed to look and feel good, with optimum functionality. The Human-Machine Interface (HMI) concept provides two information displays: a seven-inch multi-information display in the driver's instrument binnacle; and a seven-inch centre console display incorporating the Toyota Touch 2 with Go multimedia and navigation system.

The model retains the core values that have underpinned Camry's success to date – segment-leading quality, durability and reliability, quietness and ride quality – while further offering head-turning design inside and out, innovative technology and safety features and higher driving rewards.

**FOREWORD: MASATO KATSUMATA, NEW CAMRY CHIEF ENGINEER**

Camry is a very important model for Toyota globally. Since the first generation went on sale in 1982, more than 19 million have been sold.

In addition to Toyota's strength of QDR (quality, durability and reliability, Camry has always been supported by its great fuel efficiency and good driving dynamics, not to mention also class-leading quietness and ride quality.

The market continues to evolve and, for Camry to maintain its global appeal, we cannot rely on past success. We must continue to challenge and create an attractive car for the next era. Therefore, unlike the model changes we have seen up to now, this eighth generation Camry has been developed from the ground up.

The development concept is 'Unprecedented Change' in which 'Performance' and 'Intelligence' have been optimised to produce a saloon that gives people more engagement and greater well-being.

'Performance' refers to the car's fundamentals, including driving dynamics, spaciousness and fuel economy. 'Intelligence' refers to the innovations and ingenuity that make the car convenient and satisfying to use.

New Camry's development has been enabled by the TNGA philosophy. This aims to make 'ever-better cars' while taking advantage of Toyota's strengths of *kaizen* (continuous improvement) and innovation.

The TNGA-based body and platform allowed for a new dimension of design freedom, including a long wheelbase and a wide stance for a stylish and sporty design. In addition, the floor and hip points have been lowered, making it possible to create an eye-catching vehicle silhouette and an optimal driving position.

The new 2.5-litre hybrid electric powertrain offers impressive fuel economy and driving dynamics that are faithful to the driver's intentions.

With the help of TNGA, we are setting a new standard for our cars. I am convinced that once you see, feel and drive the new Camry, you will surely understand the difference it makes and why I am convinced that it will bring smiles of satisfaction to all its future owners.

**DESIGN**

- New GA-K platform allows for more design freedom and efficient packaging
- Stylish exterior design with no compromise on interior space
- Front of the vehicle displays Toyota's 'catamaran' inspired design language
- Ergonomically enhanced seating

**Packaging**

Camry's new GA-K platform has facilitated a wide, low and aerodynamically efficient design. The markedly low roofline and bonnet height are complemented by a short front overhang that allows the wheels to be positioned as close to the corners of the vehicle as possible, creating a wide, purposeful stance.

Both the cabin floor and the front and rear passenger hip points have been set as low as possible, helping lower the car's centre of gravity. Within the long wheelbase, the front and rear seating hip points are positioned to optimise the driving position and front seat space, without detracting from the quality of rear seat accommodation.

**Exterior Design**

The styling has a powerful, distinctive appearance that seamlessly melds athletic accents and creases in the sheet metal with a sleek, sensuousl form that broadcasts confidence and refinement.

At the front, a narrow, wide and deep upper grille gives emphasis to the Toyota emblem and incorporates slim headlight units at its extremities. These units feature LED headlights and distinctive daytime running lights.

The large trapezoidal lower grille occupies almost the full width of the bumper; the bumper corners sandwich the grille to form a shape reminiscent of the twin hulls of a catamaran, emphasising the car's wide track and broad stance.

The horizontal surfacing of the lower edge of the bumper corners flows from the rocker panels to the front spoiler, reinforcing the vehicle's low, ground-hugging look.

The horizontal bars in the lower grille strengthen the visual power of the design, adding impact and prestige to the frontal styling.

In profile, the low bonnet and roofline combine with a low belt line to give the appearance of the cabin being pulled down into the body of the car, and the impression of an even lower centre of gravity.

The powerful belt line, prominent rocker panels and a rising diagonal line that flows from the centre of the front wheel through the top of the rear wheel arch together create a strong, dynamic axis through the body. Flared wheel arches maximise the vehicle's wide look and stable footprint.

An extended roof line ensures comfortable space inside the cabin, while the compact side glazing is all contained within the car's wheelbase to give a stylish and sporty look.

The rear half of the cabin tapers inwards, tucking between the broad, protruding shoulders of the rear wheel arches. Camry's wide stance is further emphasised by aero corners which envelop the rear bumper, flowing down from the LED combination lights.

Throughout, the interaction of sharp, accentuated lines, taut, solid panels and richly curved surfaces gives the new Camry a refined athleticism.

Customers can choose from five exterior paint colours, including new Platinum White Pearl and Graphite Shadow. Alloy wheel designs, introduced for 2021, are a 17-inch, 10-spoke for the Design and an 18-inch, multi-spoke with machined finished for the Excel model.

**Interior Design**

Camry's interior has been designed to offer a carefully considered fusion of function, style and craftsmanship.

The curves of the dashboard bring together an ergonomically ideal driver-focused cockpit with spacious and comfortable passenger accommodation. Seamlessly integrated components, finely crafted textures and consistency in the use of materials create a cabin of quality and prestige.

The dashboard has been made slimmer, which, in conjunction with the low bonnet cowl and belt line, narrow A-pillars and door-mounted external mirrors, gives the driver excellent forward and all-round visibility.

The extensive field of vision is further enhanced by a new windscreen wiper system which in ‘low’ mode automatically enlarges the cleared area around the A-pillars.

The leather-covered steering wheel features switches to operate the multi-information display and driving support controls. It has extensive reach and rake adjustment, with the Excel model providing power operation and integrated heating.

The audio system, air conditioning control panel and seven-inch touchscreen are fully integrated into the flush, piano black surface of the wide and tall centre console. For 2021, the display in the Excel model was replaced with a larger, nine-inch screen.

Camry’s Human-Machine Interface (fully described in the Technology and Innovation chapter) comprises two easy-to-read information co-ordinating displays: a seven-inch multi-information display in the driver’s instrument binnacle; and a seven or nine-inch centre console display incorporating the Toyota Touch 2 with Go multimedia and navigation system.

The controls have been designed to function perfectly and to look and feel good, with ergonomic shaping and location and a satin metallic finish for the switches. There is a seamless and consistent texture and finish throughout the instrument panel, epitomising the high level of precision applied to Camry’s cabin.

The cabin is spacious and features high-quality, soft-touch padding, supple leather, wood-like grain mouldings and a new, lustrous satin chrome trim. The Excel model has a new Tiger Eye trim that has a shine and sense of depth that changes with the viewing angle like a tiger’s eye gemstone.

There is indirect lighting for the front footwells, the glovebox and the front console storage area in front of the shift lever, illuminating the accessory socket and USB port.

### Seating and Loadspace

The design of Camry's seats reflects the level of handling agility that the car gains from its GA-K platform. The front seats provide support and lateral holding, and help reduce fatigue on long journeys.

The seatback has a wide, enveloping shoulder area that provides the kind of lateral support more commonly found in sports cars. Support from the seat base has been maximised by using a thicker urethane pad under the base of the occupant's spine, a thin pad behind the pelvis and a more forward position for the rear support rod.

To create a more comfortable driving posture, with less stress on the lower back and muscles – and hence less fatigue – the seatback springs have been moved rearwards. In addition, making the bottom of the seatback springs and the rear edge of the cushion springs more rigid helps prevent the occupant's posture from shifting.

The front seats have a 260mm slide adjustment, helping the driver find an optimum position at the wheel. They also have heaters and are power-adjustable (including lumbar support) as standard on both the Design and Excel models. For 2021, the Excel front seats gained ventilation and a memory setting.

The rear seats replicate the design of those in the front and have a 60:40 split-folding configuration. The rear centre armrest has a large surface area, adding to the all-round comfort.

The double wishbone rear suspension avoids any intrusion in the boot. Load space capacity is 524 litres.

## TECHNOLOGY AND INNOVATION

- New HMI concept with seven-inch multi-information display and seven-inch centre console touchscreen
- Air conditioning with nanoe™ technology

### Human-Machine Interface (HMI) with Interlinked Displays

Camry has a new HMI featuring a seven-inch multi-information display in the driver's instrument binnacle and a seven (Design grade) or nine-inch (Excel grade) centre console touchscreen for operation of the Toyota Touch 2 with Go multimedia and navigation system.

The HMI uses an expanded linking function with the addition of phone call and voice recognition displays. This allows more information to be shown on the multi-information display, such as caller information and audio track titles, while minimising the eye movement the driver needs to make to confirm operation or details.

**Seven-inch Multi-information Display**

The seven-inch TFT multi-information display is located in the instrument binnacle between the high-visibility Optitron tachometer and speedometer dials. The display graphics use perspective to create a sense of depth, so the system can depict actual road and vehicle conditions in an intuitive and easy-to-understand manner.

The driver can divide the display area, change its size and switch to a tabbed format to make the information easier to read. Tabs can be changed between numerous categories, including fuel efficiency, driving support and navigation, audio or vehicle information and vehicle settings, simply by using a switch on the steering wheel.

**Centre Console Display with Toyota Touch 2 with Go**

The full colour touchscreen display in the centre console allows control of the Toyota Touch 2 with Go multimedia and navigation system. For 2021, the system gained smartphone integration, via Apple CarPlay and Android Auto, standard on all Camry models..

Toyota Touch 2 with Go incorporates DAB reception, Bluetooth phone connection and audio streaming, an SMS on-screen send/receive function and contact person image display. A USB port is provided for connecting portable digital music players, and iPod album cover art can be displayed. A rear-view camera is fitted as standard to all Camry models.

Toyota Touch 2 with Go includes navigation with full mapping, 3D city models, landmark graphics and traffic visualisation, plus an eCall emergency assistance function, ‘text-to-speech’ message read-outs and access to the Toyota online customer portal. According to smartphone compatibility, the system can display email and calendars. Further access to online services, including fuel prices, weather and parking space information to help with efficient journey planning, will be rolled out.

The Advanced Voice Recognition function has been designed to allow the simplest possible operation when driving. Focusing on three key tasks, it lets the driver input a full destination, make a phone call or select a specific track from a connected iPod with a single spoken command.

The Toyota Touch 2 with Go package comes with three years of free map updating. It can easily be upgraded with the latest functions, apps and maps, as they become available.

### Air Conditioning with nanoe™ Technology

All versions of new Camry feature dual-zone air conditioning with nanoe™ technology, an air purifying system that operates automatically when the ventilation is switched on. This releases particles – negatively charged ions wrapped in water molecules – between five and 20nm in size into the cabin through the dashboard air vent on the driver's side.

The nanoe™ moisture content is approximately one thousand times that of conventional ions, and the particles have mildly acidic properties. As a result they have a gently moisturising effect on skin and hair, while creating a crisp and refreshing cabin atmosphere.

### Wireless Smartphone Charging

The Camry Excel is fitted as standard with a phone charging tray, located in front of the shift lever. This will charge devices compatible with the WPC (Wireless Power Consortium) Qi wireless charging standard.

## 2.5-LITRE HYBRID ELECTRIC POWERTRAIN

- New 2.5-litre hybrid engine with world-leading 41 per cent thermal efficiency
- New Sequential Shiftmatic quick-shifting six-speed transmission technology

New Camry's 2.5-litre full hybrid electric powertrain delivers all the qualities customers have come to expect from a Toyota self-charging hybrid, being quiet, intuitive, responsive and self-sufficient, with no need for plug-in recharging. It offers low ownership costs, excellent fuel economy and low $CO_2$ and is capable of covering up to 50 per cent of the average commuting journey with zero emissions.

The full hybrid system produces 215bhp/160kW and will accelerate the car from rest to 62mph in 8.3 seconds. Top speed is 112mph. $CO_2$ emissions are 120g/km for the Camry Design and 126g/km for the Camry Excel (with 18-inch wheels); combined cycle economy is from 50.44 to 53.30mpg for the Design and 50.44 to 51.36mpg for the Excel.

### New 2.5-litre Hybrid Engine

The new 2,487cc four-cylinder engine in Camry's hybrid powertrain is notable for its high power and refined operation. It has a maximum power output of 176bhp (131kW) at 5,700rpm and develops maximum torque of 221Nm between 3,600 and 5,200rpm.

It has a long, 103.4mm stroke and a high 14.0:1 compression ratio, supporting high fuel and thermal efficiency – the latter a world-best 41 per cent.

It incorporates an array of Toyota's most advanced engine technologies, including D-4S direct fuel injection, Dual VVT-i intelligent valve-timing with VVT-iE (valve-timing by electric motor) and laser-cladded valve seats. These provide a blend of improved output, fuel efficiency and emissions performance.

The high-efficiency intake ports have an enlarged valve nip angle and laser-cladded valve seats on the intake side, which boost efficiency, delivering both a high tumble ratio and high intake volume. This creates more stable combustion, contributing to better output and fuel efficiency.

The D-4S system has new multi-nozzle direct injectors, which help secure enhanced output and fuel economy with cleaner emissions. It uses both direct (DI) and port fuel injection (PFI), adopting the appropriate method in line with driving conditions to maximise power, fuel economy and environmental performance.

The engine uses Dual VVT-i with VVT-iE on the intake side and VVT-i on the exhaust side. VVT-iE controls the variable valve-timing using an electric motor instead of oil pressure, helping deliver high fuel efficiency and low emissions, even when running at low rpm or in cold temperatures. An increased range of variability for both the intake and exhaust valve-timing further supports fuel efficiency and power output.

A cooled exhaust gas recirculation system combines gas cooling in the cylinder head with a highly efficient EGR cooler to gain better fuel efficiency. Improved EGR cooling allows the gases to be introduced during high-rpm, high-load operation, further increasing fuel efficiency.

The engine also uses an electrically controlled variable-discharge oil pump. This reduces friction by optimising oil pressure and volume in response to engine oil temperature and rpm. When the engine is cold, there is no need to use oil jets to cool the pistons; the system adjusts the oil pressure and stops the jets, enabling the engine to warm up quicker, with lower emissions.

The engine also benefits from a variable cooling system which uses an electric water pump, an electronically controlled thermostat and a flow-shutting valve. Electronic control of the volume of coolant flowing to the engine, radiator and cabin heater core delivers the best combination of faster warm-up and cabin heating. The thermostat's open valve temperature is further lowered during high rpm and high-load operation to prevent engine knock and increase output.

**Enhanced Hybrid System**

The enhanced Toyota Hybrid System (THS II) has been designed to deliver both dynamic performance and fuel efficiency. Improvements to the conversion efficiency of the power control unit (PCU) and the transmission efficiency of the transaxle and motor combine to reduce system energy losses by 20 per cent.

The hybrid system has a smaller, lighter transaxle with a new dual-axis structure for the motor and generator. This creates a low-loss gear train with a narrower overall width. Adopting this parallel axis design both increases the motor's rotation speed and reduces its size.

The gear ratio has been optimised to promote maximum fuel efficiency and dynamic performance. Together with polishing of the gear tooth surfaces, the new gear structure further suppresses resonance and operating noise, making the hybrid system quieter than ever before.

Inside the PCU, reductions in power stack element loss and improvements in cooling system efficiency have reduced energy losses by around 10 per cent. The PCU has been made more compact by integrating microcontrollers and adopting a new power stack structure, allowing the unit to be installed directly above the transaxle. This has helped give the new Camry a lower bonnet height.

Optimising the design of the DC-DC converter output filter has yielded further space savings and reduced noise. The lower limit of the converter's output voltage has been extended and control output has been optimised, reducing vehicle power consumption. In addition, precise control of the AC conversion unit results in even greater system efficiency.

A new nickel-metal hydride (Ni-MH) battery has been adopted to secure high performance from a smaller, lighter package. This has allowed the battery to be relocated from the luggage compartment to beneath the rear seats, freeing up more load space and also helping lower the vehicle's centre of gravity.

The driver can select Eco, Normal and Sport driving modes using the Drive Mode Select switch. Each of the three modes can also be used when all-electric EV mode has been selected.

The hybrid system further features new Sequential Shiftmatic technology that allows the driver to make 'shifts' using the lever on the centre console, mimicking the operation of a quick-shifting six-speed automatic transmission and generating a more engaging driving experience.

A new Auto Glide Control (AGC) allows the vehicle to decelerate more slowly in normal driving, for example when coasting with the driver's foot off the accelerator pedal towards a stop light. AGC supports better fuel economy by reducing the need for re-acceleration.

AGC is automatically cancelled when driving on downhill slopes, or when the brake pedal is pressed; an AGC indicator light in the multi-information display shows when less deceleration torque than normal is being applied.

**DRIVING DYNAMICS**

- New bodyshell with 30 per cent increase in torsional rigidity
- Four-point engine mounting system reduces vibration and increases rigidity and stability
- New suspension design delivers better handling and ride quality

**High-rigidity Body**

Camry's new bodyshell, based on the all-new GA-K platform, is key to the car's enhanced dynamic abilities and superior ride quality. Its lightweight, highly rigid structure offers great torsional rigidity, further aided by the use of adhesives at key points to maximise joint strength.

Toyota has developed a new process to securely join the side member outer reinforcements at the points where the front and centre pillars meet the rail and rocker, the rear rail joint and the construction of the rear end of the rocker, creating an annular frame.

The front suspension tower brace and cowl body have a closed cross-section design that increases frame joint rigidity. At the front of the vehicle there is a V brace support for the radiator, outriggers and a suspension tower brace. Rigidity has been increased in the apron suspension tower and upper member.

In the cabin area, the height of the central tunnel has been optimised and the front seat rail has been fastened directly to the body. These measures and the use of a continuous flange across the seat cross-members and a rear bracket for the front seat all help maximise body rigidity. Spot welding optimises rigidity in the roof and rail joints.

The rear of the car benefits from the annular frame construction, with bracing to the rear suspension member installation points, an underfloor cross-member and strengthening of the rear cross-member joints, increasing the suspension's lateral stability.

**Engine Mount System**

A new four-point engine mount system dramatically reduces engine vibration and further increases Camry's rigidity and handling stability.

The front and rear mounts are fastened to a vibration-damping subframe, while the left and right-hand mounts are located on side members. This design reduces the vibration generated when the engine is started by effectively surrounding the engine and transmission.

Using side members for the engine mounts increases the lateral support rigidity, which contributes to better handling stability.

**Suspension Systems**

Camry uses a MacPherson strut suspension at the front and a new double wishbone layout at the rear. Both have been engineered for the kind of stability and flatter cornering that inspire driver confidence, and to deliver a premium ride quality that surpasses other vehicles in Camry's class.

New shock absorbers are used with saturation-type valves tuned for an ideal balance of damping force (for stability and dynamic handling) and ride comfort.

The front suspension is distinguished by large castor angles with short coil springs and a low-set upper support. This creates a compact system, which in turn allows for a reduced bonnet height. An increased castor trail improves straight-line stability and enhances steering response, while the adoption of a strut bearing mounted coaxially with the king pin axis creates a more comfortable steering feel.

Wide spacing between the left and right anti-roll bar bushes increases roll rigidity and steering response and offers better straight-line stability. The bound stopper's characteristics have been optimised to achieve class-leading stability when cornering and less jolting when driving over rough surfaces or speed humps.

The rear suspension arms, bushes and shock absorbers have been positioned to achieve significant reduction in the vibration generated by rough road surfaces. Moving the shocks towards the front of the vehicle increases space in the boot. Bushes have been placed on the suspension arm joints to reduce high-frequency vibrations.

The trailing arm has been installed higher so the pivot axis of the tyre motion is tilted rearwards when travelling on uneven surfaces, and its bushing has been softened to reduce

shock. As with the front suspension, the bound stopper has been optimised for stability when cornering and smoother upward suspension travel to reduce jolting.

**Steering**

New Camry's electric power steering system offers improved feel, more comfort and less driver fatigue thanks to better ergonomics. It adopts a steering rack with a parallel-mounted electric motor and adapts according to vehicle speed to give lighter steering effort at low speeds and a more precise feel and quicker responses at higher speeds.

The steering column has a wide range of reach and rake adjustment, with power operation provided on the Camry Excel model. This allows for comfortable accommodation and driving positions for people with different body shapes.

The attention to detail includes adjustment of the wheel's grip cross-section and firmness to achieve a sporty feel.

**Brakes**

Excellent braking power and stability is provided by 328 x 28mm ventilated front discs and 281 x 12mm solid rear discs, both with floating callipers.

Composure under braking has been enhanced by optimising the braking force, with rear lift suppressed by an increase in the rear suspension's anti-lift angle.

The brake pedal ratio has been increased for when the pedal is first pressed, so that effective stopping force is delivered with only a light touch and improving the feel and feedback experienced by the driver. The ratio reduces as the pedal is depressed further, with the pedal stroke becoming more rigid in feel.

The pedal itself has a rounded sidewall for easier use and switching between brake and accelerator.

**Noise and Vibration Measures**

Camry's hybrid powertrain has a fine reputation for smooth, quiet running, but nonetheless, numerous measures have been taken to combat noise and vibration.

These include a bonnet insulator and upper and lower separators in the front wings to absorb and insulate sound from the engine compartment. The cabin is insulated against engine and road noise by a thicker dash silencer mat across the entire firewall, a urethane upper back silencer and foam and vibration-damping materials applied in many locations around the frame.

A vibration-damping coating has been applied to a large area of the vehicle's underfloor and there is also a floor silencer, separate from the carpeting. Thinsulate noise-proofing material has been installed over much of the cabin ceiling.

Other measures include bulkheads to the inner part of the rear wheel housing and rear suspension member, and an enlarged rear suspension body-mounting bush.

Wind noise has been addressed with a narrow door frame design, a new windscreen rain gutter moulding design and a reduction in the size of the step at the foot of the windscreen.

**Aerodynamics**

Camry's distinctive styling achieves some of the most ambitious aerodynamic objectives set for any saloon car.

At the front, the bonnet, wings and spoiler are all shaped to optimise airflow above and beneath the vehicle. The cabin silhouette has also been designed to achieve the best flow of air from the roof to the rear. Even the trim on the leading edge of the side windows where the A-pillar and glass meet has been designed to minimise the gaps between them, smoothing airflow as it moves between the pillar and door mirror.

There is a full underfloor cover and spats in front of the front wheels. Aero-stabilising fins are positioned on the leading edges of the front window trim and the sides of the rear combination lamps, contributing to excellent handling stability.

**SAFETY**

- Toyota Safety Sense active safety technologies standard on all new Camry Hybrid models
- Pre-Collision System (PCS) with pedestrian detection, full-range Adaptive Cruise Control (ACC), Lane Departure Alert (LDA), Lane Trace Assist (LTA), Automatic High Beam (AHB) and Road Sign Assist (RSA)
- Blind Spot Monitor and Rear Cross Traffic Alert with Brake Assist
- Improved passive safety provisions to protect both occupants and pedestrians in an impact

**ACTIVE SAFETY**

All versions of the new Camry Hybrid are equipped with Toyota Safety Sense, a set of active safety technologies designed to help prevent or mitigate collisions in a wide range of traffic situations.

In addition, there is a range of systems that support the driver and enhance the level of safety provisions. These include a Blind Spot Monitor and Rear Cross Traffic Alert with Brake Assist (both on the Camry Excel model), Drive Start Control, Intelligent Clearance Sonars with automatic braking, a rear-view camera with parking guidelines and a full complement of braking and traction control systems.

**Toyota Safety Sense**

Toyota Safety Sense uses both a camera and a millimetre-wave radar to gain a high level of potential hazard detection. They are deployed in a Pre-Collision System with pedestrian detection, full-range Adaptive Cruise Control, Lane Departure Alert, Automatic High Beam and Road Sign Assist.

The Pre-Collision System operates at speeds between 6 and 112mph, detecting objects on the road ahead and reducing the risk of a collision. If it determines that a collision is likely, it prompts the driver to brake with audible and visual warnings. At the same time, it primes the brakes to deliver extra stopping force the moment the driver presses the brake pedal. Should the driver fail to react in time, it will automatically apply the brakes, slowing the car by up to 25mph, potentially bringing it to a halt before an impact happens, or mitigating the force of impact.

PCS can also detect potential collisions with pedestrians, in which circumstances automated braking operates at relative speeds of between 6 and 30mph, reducing vehicle speed by around 19mph.

Full-range Adaptive Cruise Control helps the driver keep a safe distance from the vehicle ahead. It detects the presence and speed of a preceding vehicle and adjusts the Camry's speed accordingly. Using the forward-facing camera and the millimetre-wave radar in combination, it also monitors vehicles merging into or out of the traffic lane, helping maintain smooth acceleration and deceleration.

The system is also capable of low-speed following, including stop-start driving, at speeds between zero and approximately 25mph.

Lane Departure Alert monitors lane markings on the road surface and helps prevent accidents caused by vehicles straying from their intended course. If the Camry starts to deviate from its lane without the turn indicators being engaged, LDA prompts the driver with audible and visual alerts and applies steering assistance to help the driver maintain the correct path. For 2021, the system further gained Lane Trace Assist, which automatically keeps the car centred in its traffic lane, monitoring the road markings, or, if necessary, the

road margin and the path of the vehicle ahead. Lane Trace Assist will operate through gentle motorway bends as well as on straight sections of road.

Automatic High Beam helps ensure excellent forward visibility in night-time driving. It detects the headlights of oncoming traffic and the tail-lights of vehicles ahead, automatically switching between high and low beam to avoid dazzling other drivers.

Road Sign Assist helps ensure drivers are kept informed, even if they fail to notice a road sign. The system recognises a wide range of command and warning signs, including speed limits, and repeats them as images on the multi-information display. If the driver exceeds the speed limit, the system can activate a warning light and buzzer.

The effectiveness of Toyota Safety Sense in helping prevent accidents, or lessen their consequences, can bring the added benefit of lower insurance costs.

**Blind Spot Monitor and Rear Cross Traffic Alert with Brake Assist**

The Blind Spot Monitor (Camry Excel) uses a rear-facing millimetre-wave radar to detect vehicles in the driver's blind spots and those approaching rapidly from behind in adjacent traffic lanes. It warns the driver in both situations by triggering a warning light in the corresponding door mirror. If the driver engages the turn indicator, the light will flash to emphasise the warning.

The Rear Cross Traffic Alert (Camry Excel) uses the same radar to warn the driver of vehicles approaching from either side when reversing out of a parking space or driveway. If a vehicle is detected, a buzzer sounds and the warning lights in the door mirrors are activated to indicate the direction from which it is approaching. If the sensors determine that a collision is possible, a brake control system is activated to help mitigate any potential damage.

**Intelligent Clearance Sonar**

The Intelligent Clearance Sonar (standard on the Camry Excel) makes navigating tight parking spaces simple and safe at low speeds. An array of eight front and rear sensors detects any objects close to the vehicle and warns the driver with an audible alert if they move too close. If the driver continues to approach the hazard, the system can automatically apply the brakes.

**Drive Start Control**

Drive Start Control (DSC) helps prevent unintended or abrupt vehicle starts when the driver is using the shift lever, suppressing drivetrain power output and issuing a warning to keep

vehicle speed and acceleration below a pre-determined level. For example, if the driver is pressing the accelerator when shifting from Park to Drive, the system will automatically limit power output to help avoid unintended acceleration.

**Brake Control System**

The Brake Control System combines advanced braking technologies and features to achieve a higher level of safety, performance and vehicle stability.

These include ABS with electronic brakeforce distribution, brake assist, traction control, vehicle stability control and Hill-start Assist Control.

**PASSIVE SAFETY**

**Impact-absorbing body shell**

New Camry's body structure is designed to absorb front, side and rear impact forces, dispersing collision energy to help prevent deformation of the high-strength cabin section.

At the front, energy is dispersed along multiple paths thanks to the addition of a second front member, below the side member. This increases load absorption from the initial impact and supports more efficient energy absorption and dispersal through the body structure.

The body is designed to absorb severe side collision impact forces. This is the result of material and design improvements, including the use of high-tensile steel in the front door belt line, larger diameter impact beams for the front and rear doors, and high-tensile sheet metal for the roof cross-reinforcements.

In the cabin, the construction of the upper part of the B-pillars mitigates the risk of impact to an occupant's head in a secondary impact against the vehicle interior. Similarly, the front and rear door panels are structured to mitigate an impact between an occupant's lower back and the side of the vehicle.

The rear structure incorporates strengthened bumper reinforcements, high-tensile sheet steel for the inner part of the rocker, rocker reinforcements and rear side members to enhance the car's rear collision performance.

**Pedestrian Impact Protection**

First class pedestrian impact protection is supported by a new 'floating island' inner structure for the bonnet which helps reduce the inertia G forces at the start of a collision. This combines with a cowl louvre impact-absorbing structure to mitigate potential head injuries.

**Occupant Restraint**

New Camry is fitted with driver and front passenger front and side airbags, a driver's knee airbag and full-length curtain shield airbags.

All five seats are fitted with three-point seatbelts with emergency locking retractors; on the front seats they also benefit from pre-tensioners and force limiters.

**UK MODEL RANGE**

- Camry Hybrid available in Design and Excel equipment grades

The new Camry is available in the UK in two equipment grades – Design and Excel.

The Design comes as standard with 17-inch 10-spoke alloy wheels, metallic paint, leather upholstery, LED headlights (low beam) and front fog lights, auto-dimming rear-view mirror, dual-zone automatic air conditioning, push-button start, front and rear parking sensors, reversing camera, heated and power-adjustable front seats with lumbar support, seven-inch TFT multi-information display and Toyota Touch 2 multimedia system with seven-inch touchscreen, navigation, Bluetooth and DAB.

Toyota Safety Sense active safety systems are also included in the package, comprising Pre-Collision System with pedestrian detection, Adaptive Cruise Control with full speed range following, Lane Departure Alert with steering assist, Lane Trace Assist, Road Sign Assist, Sway Warning and Automatic High Beam.

The Camry Excel builds on this specification with 18-inch multi-spoke alloys, LED front fog lights, LED dual-beam projector headlights, Blind Spot Monitor and Rear Cross Traffic Alert with braking assist, wireless charging tray, smart entry, rear privacy glass, heated steering wheel with memory setting, paddle shifts, ventilated front seats with memory setting, Intelligent Clearance Sonar and Panoramic View Monitor.

Sales in UK markets in 2020: 410

Cumulative UK sales since launch (1983): 37,765 (NB: Camry not on sale in the UK between 2004 and 2019)

**TOYOTA CAMRY HYBRID TECHNICAL SPECIFICATIONS**

| **HYBRID SYSTEM** | | |
|---|---|---|
| Type | Toyota Hybrid System II, self-charging full hybrid | |
| Full system power (bhp/kW) | 215/160 | |
| **ENGINE** | | |
| Engine code | A25A-FXS | |
| Type | 4 cylinders, in-line | |
| Valve mechanism | 4 valves per cylinder, DOHC with Dual VVT-iE (intake) and VVT-i (exhaust) | |
| Bore x stroke (mm) | 87.5 x 103.48 | |
| Displacement (cc) | 2,487 | |
| Compression ratio | 14.0:1 | |
| Fuel system | D-4S direct & indirect injection | |
| Max. engine power (bhp/kW @ rpm) | 176/131 @ 5,700 | |
| Max. engine torque (Nm @ rpm) | 221 @ 3,600 – 5,200 | |
| **ELECTRIC MOTOR/GENERATOR** | | |
| Type | AC synchronous, permanent magnet | |
| Max. power (bhp/kW) | 120/88 | |
| Max. torque (Nm) | 202 | |
| Max. voltage (V) | 650 | |
| **HYBRID BATTERY** | | |
| Type | Nickel-metal hydride (NiMH) | |
| Nominal voltage (DC V) | 244.8 | |
| Number of modules | 34 | |
| Capacity (Ah) | 6.5 | |
| **TRANSMISSION** | | |
| Type | Planetary gear system | |
| Motor reduction ratio | 3.389 | |
| Differential gear ratio | 3.389 | |
| Driven wheels | Front | |
| **PERFORMANCE** | | |
| 0-62mph (sec) | 8.3 | |
| Maximum speed (mph) | 112 | |
| **FUEL CONSUMPTION (WLTP)** | **Design** | **Excel** |
| Combined (mpg) | 50.44- 53.30 | 50.44-51.36 |
| Fuel tank capacity (l) | 50 | |
| **EMISSIONS (WLTP) & INSURANCE** | **17in wheel** | **18in wheel** |
| $CO_2$ emissions - combined (g/km) | 120 | 125 |
| Insurance groups | Design 31D, Excel 32D | |
| **SUSPENSION** | | |
| Front | MacPherson strut | |
| Rear | Double wishbone | |

| | | |
|---|---|---|
| **BRAKES** | | |
| Brake type | Front | Ventilated discs |
| | Rear | Solid discs |
| Brake size | Front (diameter x thickness, mm) | 328 x 28 |
| | Rear (diameter x thickness, mm) | 281 x 12 |
| Parking brake | | Electronic |
| **STEERING** | | |
| Steering gear type | | Rack and pinion |
| Ratio | | 13.7:1 (17in wheel)<br>13.8:1 (18in wheel) |
| Turns lock-to-lock | | 2.7 (17in wheel)<br>2.6 (18in wheel) |
| Minimum turning radius | Tyre (m) | 5.7 (17in wheel)<br>5.8 (18in wheel) |
| | Body (m) | 6.1 (17in wheel)<br>6.2 (18in wheel) |
| Power steering type | | Electric power steering (EPS) |
| **EXTERIOR DIMENSIONS** | | |
| Length (mm) | | 4,885 |
| Width (mm) | | 1,840 |
| Height (mm) | | 1,445 |
| Wheelbase (mm) | | 2,825 |
| Track | Front (mm) | 1,590 (17in wheel)<br>1,580 (18in wheel) |
| | Rear (mm) | 1,615 (17in wheel)<br>1,605 (18in wheel) |
| Overhang | Front (mm) | 975 |
| | Rear (mm) | 1,085 |
| Ground clearance (mm) | | 145 |
| **INTERIOR DIMENSIONS** | | |
| Length (mm) | | 2,030 |
| Width (mm) | | 1,535 |
| Height (mm) | | 1,185 |
| **LUGGAGE COMPARTMENT** | | |
| VDA capacity – rear seats up (l) | | 524 |
| **WHEELS AND TYRES** | | |
| Wheels | | 17 or 18in alloy |
| Tyres | | 215/55R17 94W<br>235/45R18 94Y |
| Spare | | Temporary spare wheel |
| **WEIGHTS** | | |
| Kerb weight (kg) | | 1,595 – 1,635 |
| Gross vehicle weight (kg) | | 2,100 |

## CAMRY HYBRID EQUIPMENT SPECIFICATIONS

| SAFETY & HANDLING | DESIGN | EXCEL |
|---|---|---|
| Toyota Safety Sense with Pre-Collision System with pedestrian detection, full-range Adaptive Cruise Control, Lane Departure Alert with Lane race Assist and Sway Warning, Automatic High Beam and Road Sign Assist | ✓ | ✓ |
| Driver and front passenger airbags | ✓ | ✓ |
| Driver and front passenger side airbags | ✓ | ✓ |
| Driver's knee airbags | ✓ | ✓ |
| Curtain Shield airbags | ✓ | ✓ |
| Front passenger airbag cut-off switch | ✓ | ✓ |
| ABS | ✓ | ✓ |
| Vehicle stability control | ✓ | ✓ |
| Traction control | ✓ | ✓ |
| Hill-start Assist Control | ✓ | ✓ |
| Drive Start Control | ✓ | ✓ |
| 2x Isofix child seat anchors on outer rear seats | ✓ | ✓ |
| Child safety door locks | ✓ | ✓ |
| Tyre pressure warning system with location function | ✓ | ✓ |
| Blind Spot Monitor and Rear Cross Traffic with brake assist | × | ✓ |
| 4 driving modes – EV, Normal, Eco, Sport | ✓ | ✓ |
| eCall emergency call system | ✓ | ✓ |
| **INSTRUMENTS & CONTROLS** | | |
| Front and rear parking sensors | ✓ | × |
| Intelligent Clearance Sonar with Rear Cross Traffic Braking | × | ✓ |
| Reversing camera with guidelines | ✓ | ✓ |
| Drive Mode Select control | ✓ | ✓ |
| Smart entry | × | ✓ |
| Push-button start | ✓ | ✓ |
| Speed-sensitive electric power steering (EPS) | ✓ | ✓ |
| Electronic parking brake | ✓ | ✓ |
| Automatic headlight levelling | ✓ | ✓ |
| Paddle shifts | × | ✓ |
| **AUDIO, NAVIGATION & INFORMATION** | | |
| Toyota Touch 2 with Go multimedia and navigation system with 7in centre touchscreen | ✓ | × |
| Toyota Touch 2 with Go multimedia and navigation system with 9in centre touchscreen | × | ✓ |
| 7in multi-information display | ✓ | ✓ |
| 6-speaker audio | ✓ | ✓ |
| DAB radio | ✓ | ✓ |
| Bluetooth | ✓ | ✓ |
| Voice recognition | ✓ | ✓ |
| USB port | ✓ | ✓ |
| Aux-in socket | ✓ | ✓ |
| Audio, phone and voice recognition controls on steering wheel | ✓ | ✓ |
| Smartphone integration – Apple CarPlay and Android Auto | ✓ | ✓ |
| **COMFORT & CONVENIENCE** | | |
| Dual-zone automatic air conditioning with nanoe technology | ✓ | ✓ |
| Illuminated entry system | ✓ | ✓ |
| LED centre cabin light | ✓ | ✓ |
| Front footwell lights | ✓ | ✓ |

| | | |
|---|---|---|
| Ambient interior door panel lighting | ✓ | ✓ |
| Light in load compartment | ✓ | ✓ |
| Front cupholders | ✓ | ✓ |
| Manual steering wheel reach and rake adjustment | ✓ | × |
| Power steering wheel reach and rake adjustment | × | ✓ |
| Heated steereing wheel | × | ✓ |
| Power windows with anti-jam protection | ✓ | ✓ |
| Locking glove box | ✓ | ✓ |
| Auto-dimming rear-view mirror | ✓ | ✓ |
| Automatic headlights | ✓ | ✓ |
| Wireless smartphone charging tray | × | ✓ |
| Power outlet in rear cabin | ✓ | ✓ |
| Panoramic View Monitor | × | ✓ |
| **SECURITY** | | |
| Anti-theft system with siren, intrusion and tilt sensors and immobiliser | ✓ | ✓ |
| Remote central double locking with deadlocks | ✓ | ✓ |
| Speed-sensitive auto door locking | ✓ | ✓ |
| Locking wheel nuts | ✓ | ✓ |
| Window etching with VIN | ✓ | ✓ |
| **SEATING, UPHOLSTERY & TRIM** | | |
| Power-adjustable front seats – slide, height, lumbar recline | ✓ | ✓ |
| Heated front seats | ✓ | ✓ |
| Ventilated front seats | × | ✓ |
| Front seat memory function | × | ✓ |
| Rear arm rest with cupholders | ✓ | ✓ |
| 60:40 split-folding rear seats | ✓ | ✓ |
| Leather upholstery | ✓ | ✓ |
| Leather steering wheel trim | ✓ | ✓ |
| Front seat seatback pockets | ✓ | ✓ |
| Satin chrome internal door handles | ✓ | ✓ |
| Black centre console | ✓ | ✓ |
| 3 rear head rests | ✓ | ✓ |
| Carpet mats | ✓ | ✓ |
| Aluminium scuff plates | × | ✓ |
| **EXTERIOR** | | |
| Power-adjustable, heated, auto-folding door mirrors | ✓ | ✓ |
| Door mirror reverse-tilt function | × | ✓ |
| Rain-repellent door mirror glass | × | ✓ |
| LED headlights | ✓ | ✓ |
| LED daytime running lights | ✓ | ✓ |
| LED front fog lights | ✓ | ✓ |
| LED turn indicators | × | ✓ |
| LED rear combination lights | ✓ | ✓ |
| LED brake lights | × | ✓ |
| Headlight cleaners | ✓ | ✓ |
| 17in alloy wheels | ✓ | × |
| 18in alloy wheels | × | ✓ |
| Temporary spare wheel | ✓ | ✓ |
| Rear privacy glass | × | ✓ |
| Pearlescent paint | Opt | Opt |

ENDS

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