

## THE TOYOTA RAV4 HYBRID

### All SUV – All Hybrid

In 1994, Toyota's launch of the original RAV4 introduced a new kind of car to the world, one that combined the go-anywhere performance and rugged stance of an SUV with compact dimensions and handling more akin to a hatchback.

The same pioneering spirit is witnessed in the fifth generation RAV4, launched in 2019, a model which opens a new era of improved performance, capability and safety. These advances are underpinned by the first use of Toyota's new GA-K platform in an SUV.

With its low centre of gravity and significantly increased body rigidity, RAV4's platform directly contributes to superior handling, ride comfort, a spacious interior, class-leading load space (580 litres VDA with rear seats in place) and the freedom to produce a strong, eye-catching design with lower roof and bonnet lines and higher ground clearance. As well as providing more space and comfort, the cabin displays exceptional quality and finish throughout.

RAV4 remains unique in its class in offering customers a self-charging, hybrid powertrain – the choice of an overwhelming majority of customers for the model in Western Europe (85 per cent in 2018). The new 2.5-litre petrol hybrid engine, offering 215bhp in front-wheel drive form and 219bhp with all-wheel drive, strengthens customer appeal, delivering step-changes in power, responsiveness and efficiency, with best-in-class fuel economy and emissions levels.

At the same time, the all-wheel drive system has been comprehensively improved to achieve a “drive on any road” capability. RAV4 Hybrid's electric AWD-i system has been re-engineered and enhanced to provide much stronger performance in challenging conditions and secure handling on slippery surfaces.

This was also the first Toyota model to benefit from additional Toyota Safety Sense features that extend the use of advanced technologies to help prevent accidents and provide greater driver assistance, including systems that introduce a degree of automated driving functionality.

## TOYOTA NEW GLOBAL ARCHITECTURE GA-K PLATFORM

The foundation of RAV4's dynamic qualities is its TNGA GA-K platform. This gives the car the core strengths of a low centre of gravity, light weight and a strong, rigid and balanced chassis that delivers exceptional handling, stability and driver rewards.

For the customer this makes the car more fun to drive, while at the same time enabling great design inside and out, enhanced safety performance that gives greater peace of mind, and more comfort for everyone on board.

The lowest possible centre of gravity has been achieved by making every component lighter and locating them lower down in the vehicle – everything from the engine to the seats in the cabin. The platform also allows for a 57 per cent increase in body rigidity, which contributes to a stable, flat ride with superior handling.

The GA-K platform underpins the “confident and natural” driving quality Toyota has sought for the model: “confident” in not reacting adversely to disturbances and communicating a sense of stability, and “natural” in its intuitive, natural response to the driver’s inputs. Beyond the benefits of the chassis itself, further detailed measures make important contributions to its overall quality, with Toyota’s top engineers leading the development of the vehicle’s dynamic performance, fine-tuning its handling and driveability.

For example, the design and location of the fuel tank have been changed to achieve better handling and stability. The tank is now located laterally in front of the rear axle so that its load is spread evenly between the wheels, supporting flat, stable performance. Optimum weight balance is not only achieved front-to-rear (59/41) but also left-to-right.

Response from the electric power steering has been improved by moving the assist motor from the column to the rack. The result is more linear increase in steering input torque and less strain on the steering shaft, which communicates a better, more direct feel to the driver as the steering loads up, and gives more faithful line tracing through corners. Summer-specification tyres are used in place of the all-weather type, further adding to the precise driving quality and helping achieve top-class braking distances.

The GA-K platform also distinguishes itself in its use of a double wishbone rear suspension system. Thanks to the low centre of gravity and high body rigidity, the suspension does not have to be rendered stiffer to meet dynamic targets. Nonetheless, precise adjustments have been made to the rear suspension to focus on better ride comfort, including a more upright setting for the shock absorbers and optimisation of the locating point for the trailing arms.

Handling is thus agile, faithful and neutral, giving the driver confidence with accurate responses to the use of the steering wheel and throttle pedal and optimised shift patterns.

## **CONCEPT AND DESIGN**

The GA-K platform was of great benefit to Toyota's designers in their mission to give RAV4 Hybrid a strong SUV character and styling that sets it apart from other models in its segment.

The fact that TNGA introduces so many standardised parts "under the skin" simplifies the development process, giving the designers more time and scope to create an all-new look, inside and out. The exterior lines and detailing in the cabin are influenced by regular, polygonal shapes, communicating strength and coherence.

The powerful design combines with a new self-charging hybrid powertrain to give RAV4 Hybrid the stand-out qualities required to attract customers in a highly competitive marketplace, in particular conquest sales to people new to the model and the Toyota brand.

Key elements in generating this impact include raising the ground clearance, using large diameter wheels (up to 19-inch) and making the car suitable for multiple types of use.

The exterior look is powerful and individual, with a solid form that extends from the front of the vehicle along the sides to the rear, giving the sense of a strong mass and authentic SUV capabilities. At the front the emphasis is on width and strength with extra volume added to the lower bumper section. There is a similar effect at the rear where the horizontal line created by the tail lights and the back window angles sharply downwards at each edge, drawing the eye towards the rear wheels and expressing the "polygon" influence on the design.

The cabin is characterised by high sensory quality throughout and precision execution. Soft-touch surfaces abound, including the dashboard and door panels. Consistent patterns, textures, colours and ambient lighting are applied, with symmetrical shapes and use of the polygon motif seen in the Toyota FT-AC (Future Toyota – Adventure Concept, premiered at the 2017 Los Angeles Auto Show) concept model. The switchgear features cleanly integrated buttons and pleasingly tactile controls, such as the button/dial to adjust the air conditioning.

The low-set instrument panel – a further benefit of the GA-K platform – has powerful horizontal lines that flow into the door panels, emphasising the cabin's generous width and giving the driver a clearer view of the road ahead. A larger, open centre console between the

front seats is in keeping with a welcoming, functional SUV interior. Special attention was paid to providing plenty of useful and easily accessible storage for the driver and front passenger.

The GA-K platform also helps secure impressive cabin space, best-in-class load space and all-round comfort. With all seats in place, the cargo area has a VDA capacity of 580 litres, 79 litres more than the previous generation RAV4. Reducing the front and rear overhangs by a combined 35mm (-5mm front, -30mm rear) means the vehicle is shorter overall by 5mm (4,600mm) and retains its agile manoeuvrability, yet the wheelbase has been increased by 30mm (2,690mm), securing a more spacious cabin.

To add to the purposeful, wide stance, overall width has grown by 10mm (1,855mm) and the front and rear tracks have been increased. At the same time, overall height has been brought down by 10mm.

### **On-board comfort and convenience**

Gaining better all-round visibility was a key consideration in the design process. The GA-K platform allows the bonnet to sit 15mm lower, adding two degrees to the driver's forward field of vision. The external mirrors have been moved to a lower position on the front doors, the front pillars have been made slimmer, the belt line has been lowered and the rearward view from the driver's seat has been improved by enlarging the rear side windows.

The driver's comfort and sense of control when at the wheel are also important considerations; the GA-K chassis allows for a more engaging driving position, without detracting from the commanding view of the road that's a defining quality of SUVs. The driver's hip point has been lowered by 15mm and the range of steering wheel adjustment has been increased by 50 per cent. This, together with a generous seat adjustment range and precise positioning of the pedals and arm rest, ensures more customers are able to find their ideal driving position.

Comfort for rear seat passengers has been improved with 40mm added to the left/right couple distance, more spacious rear footwells and the provision of two air vents. By increasing the opening angle of the rear doors and reducing the distance from the hip point to the rocker panel, getting into and out of the vehicle and access to child seats have been made easier.

The load space behind the rear seats has been made larger and more user-friendly, notably thanks to a fully flat floor and a length extended by 60mm to secure best-in-class capacity, 79 litres more than in the previous, fourth generation RAV4. Flexibility is designed-in so that the space can easily be adapted to gain more cargo room when required: with the rear seats

folded down, a 29-inch mountain bike can be carried without any wheels having to be removed.

There is a height-adjustable, two-level deck board that can be reversed when dirty items need to be carried. The rear seats have a 60:40 split-folding function and there are storage nets on each side of the boot. Clever details include a hand grip on the tailgate that can serve as a hanger and a power-operated tailgate with hands-free function (Design grade and above).

## **POWERTRAINS AND PERFORMANCE**

The new 2.5-litre hybrid engine combines fuel and emissions efficiency and quiet operation with more power and greater responsiveness.

The full system maximum output of 219bhp/163 kW in the all-wheel drive model (215bhp/160 kW with front-wheel drive) compares to 195bhp/145kW for the fourth generation model, signalling how Toyota's latest self-charging hybrid technology is not lacking in strength; acceleration from rest to 62mph takes just 8.1 seconds (FWD model).

Toyota's fourth generation self-charging hybrid system made its debut in the fifth generation RAV4, delivering multiple benefits. Key components, including the power control unit (PCU) and the nickel-metal hydride battery are more compact and lighter in weight, and the transaxle and transmission have been engineered to reduce electrical and mechanical losses. The new battery pack is 11 per cent lighter than before and transmission losses have been reduced by 25 per cent compared to the previous system.

The system makes use of Toyota's new 2.5-litre hybrid engine, a four-cylinder unit with direct and indirect injection. Combined cycle fuel economy is from 48.8-50.4mpg (Icon FWD model, WLTP data), with CO<sub>2</sub> emissions from 126-131g/km (Icon FWD model, WLTP data). Performance is also supported by a new transaxle structure with a pre-load differential. For the driver, the results are better acceleration from stationary, improved efficiency at higher speeds, overall smoother and more linear acceleration and better control when decelerating.

### **New 2.5-litre Hybrid Engine**

The 2.5-litre hybrid engine is a completely new unit that makes significant advances on its predecessor, delivering a better balance between fuel economy and power and achieving world-class thermal efficiency. The engine adopts the Atkinson cycle and features a longer

stroke than its predecessor – 87.5 x 103.4mm compared to 90.0 x 98.0mm. It also operates at a higher, 14.0:1 compression ratio (compared to 12.5:1 for the previous unit). It is equipped with D-4S direct and indirect fuel injection and intelligent variable valve-timing – electric VVT-iE for the intake and hydraulic VVT-i for the exhaust. The valve-timing range for both intake and exhaust has been increased.

A comprehensive range of engineering features designed to improve combustion and reduce friction losses has helped the new engine achieve high output, better fuel efficiency, low exhaust emissions and a high peak thermal efficiency of 41 per cent. The cylinder heads are designed to generate high tumble, with an enlarged valve included angle and laser-cladded valve seats. A variable cooling system with an electric water pump and electric thermostat is used to improve combustion by maintaining the required temperature. There is also a fully variable oil pump for efficient engine oil pressure management.

### **INTELLIGENT ALL-WHEEL DRIVE (AWD-i)**

Toyota introduced improvements to its intelligent all-wheel drive technology (AWD-i) in RAV4 to deliver enhanced performance, capabilities and control in all driving conditions, adding to the model's "go anywhere" spirit and driving pleasure. Its impressive all-wheel drive performance on-road and off will further distinguish the car among its competitors, with secure cornering performance and grip in all conditions.

#### **Significantly enhanced electric AWD-i system**

RAV4 Hybrid is equipped with a significantly enhanced and more capable electric AWD-i system that comes with no penalties: it returns better fuel economy in urban driving, quieter performance at high speeds and better traction in slippery conditions. It is also more compact and lighter in weight than mechanical AWD systems, so fuel consumption and vehicle packaging are not compromised

The system efficiently generates drive torque using power from the hybrid system and an additional motor on the rear axle. This design reduces energy losses, saves weight and optimises AWD operation in different driving conditions.

Compared to the previous model, the maximum torque to the rear wheels has been increased by 30 per cent, from 953 to 1,300Nm, matching or surpassing the torque achieved by mechanical systems and giving more sure-footed performance, for example when pulling away on loose, slippery surfaces. Also, the front/rear split can vary from 100:0 to up to 20:80, depending on driving conditions.

The electric AWD-i system automatically optimises the torque ratio according to driving conditions, providing improved handling, stability and off-road performance, particularly in faithful line tracing through bends in slippery conditions, giving the driver a strong, confidence-inspiring feeling of all four wheels being in good contact with the road.

### **AWD Integrated Management**

All-wheel drive performance is further improved with the introduction of AWD Integrated Management (AIM), a unique feature in its class. This automatically adjusts different vehicle systems – steering assist, brake and throttle control, shift pattern and drive torque distribution – according to the drive mode selected, Normal, Eco or Sport. In Sport mode, AIM modifies the steering assist, throttle control shift schedule and drive torque distribution to gain better on-road performance.

### **Greater “escape” capability with Trail Mode**

RAV4 gains a higher level of capability with a new automatic limited-slip differential control – Trail Mode – which ensures the best possible grip and control on low-grip surfaces. It can also provide valuable assistance when tackling challenging off-road conditions.

With the previous model, there was a risk of the vehicle becoming stranded if a driven wheel lost contact with the ground on very uneven terrain. On the current model, when Trail Mode is engaged (via a button on the centre console), the free rotating wheel can be braked and drive torque directed to the grounded wheel. Throttle control and the transmission shift pattern are also adapted to help the driver keep the vehicle moving.

## **EQUIPMENT AND NEW TOYOTA SAFETY SENSE SYSTEMS**

Equipment specifications demonstrate how Toyota continues to apply technologies to deliver useful innovations in safety, comfort and everyday practicality.

Features that are available as standard or as options, according to model grade, include a power-operated panoramic roof, smartphone integration with Apple CarPlay and Android Auto, heated seats and up to five USB ports around the cabin for the connection or charging of multiple devices.

All models are also fitted with the latest iteration of Toyota Safety Sense and an eCall emergency contact function.

### **Toyota Safety Sense**

Since its introduction of Toyota Safety Sense in 2015, Toyota has committed itself to the democratisation of advanced safety technologies in its cars. Its active safety systems provide effective means of avoiding collisions or mitigating the effects of an accident by warning the driver, preparing safety systems for optimum operation and, if necessary, triggering automatic braking or steering assistance.

In its commitment to building a safe mobility society and the ultimate goal of zero road accident fatalities and injuries, Toyota has continued to develop Toyota Safety Sense to refine and enhance the operation of its systems. The second generation Toyota Safety Sense made its debut on the fifth generation RAV4 where it is fitted as standard to all models in the range.

The improved system features a single-lens camera and millimetre-wave radar, both with enhanced performance to expand the scope of hazard detection and functionality. The unit has also been made smaller, so the driver gains an even wider field of vision.

The package includes upgraded versions of the Pre-Collision System with Pedestrian Detection, intelligent Adaptive Cruise Control, Lane Departure Alert with Steering Assist, Road Sign Assist and Automatic High Beam. It also introduces Lane Tracing Assist, which provides more advanced driving support.

The functionality of the **Pre-Collision System** has been extended so that as well as vehicles it can now detect pedestrians on the road ahead during low-light driving as well as in daylight. It also has the added capability of recognising bicycles in the vehicle's path, at relative speeds of between approximately 6 and 50mph, during daylight hours. Where vehicles are concerned, the system can determine collision risks at speeds from zero to 112mph. If it calculates an imminent risk of collision, it will alert the driver and prepare the brakes (Pre-Collision Brake Assist) for maximum stopping force. If the driver fails to act, it will trigger Autonomous Emergency Braking, which can reduce vehicle speed by up to 25mph, potentially bringing the car to a stop and avoiding an impact.

The new **intelligent Adaptive Cruise Control** is also able to work in conjunction with the car's Road Sign Assist system. When the car is travelling at a constant, pre-set speed, iACC can recognise new speed limits on major roads and let the driver adjust the speed to keep within the limit, simply by using switches on the steering wheel.

**Road Sign Assist** itself has been enhanced to that it is able to recognise a wider range of road sign warnings and commands, presenting the information on the driver's multi-information display.

RAV4 Hybrid's Toyota Safety Sense includes a new **Lane Tracing Assist** function, which provides a degree of automated driving support. LTA monitors the line markings on motorways and principal routes and applies steering assist to keep the car centred within its lane, when travelling at speeds above 31mph. This can reduce collision risks and the burden on the driver when making long motorway journeys.

The intelligent Adaptive Cruise Control and Lane Tracing Assist work together in slow, stop/go traffic, tracking the vehicle ahead within the traffic lane, maintaining a safe distance and speed, bringing the vehicle to a halt when necessary and moving off seamlessly when traffic flow resumes. This can relieve the driver of much of the stress of driving in slow traffic and significantly reduce the risk of common low-speed rear-end collisions.

**Lane Departure Alert with Steering Assist** has also been improved so that it is able to recognise road margins on straight roads where there are no clear lane markings. If it is difficult or impossible for the system to detect lane markings, for example when driving in heavy traffic, it will track the path of the vehicle ahead, using the front-mounted camera and radar. Also, in combination with LTA, it performs corrective steering operation when lane departure without the driver's intention is detected.

### **Dynamic grade**

The Dynamic grade stands out with its bi-tone paint finish, striking a contrast between the bodywork colour (a choice of four) and a gloss black roof, plus projector LED headlights and black 18-inch alloys. In the cabin, sports-style seats, a black headlining and blue trim accents further emphasise the car's distinctive quality. Options and accessories are available so owners can equip their RAV4 Hybrid to perfectly meet their lifestyle preferences.

### **Panoramic View Monitor plus JBL audio system, panoramic roof**

Further premium features available on RAV4 Hybrid include a Panoramic View Monitor, which provides the driver with a real-time 360-degree view of the area immediately around the vehicle, including a bird's eye aspect from above. This is of value both off-road, to better negotiate tricky terrain, and when manoeuvring in confined spaces where hazards can lurk outside the driver's line of sight.

This feature is offered in conjunction with a JBL premium audio system. Tailor-made for the new RAV4, this provides concert sound quality through its nine-speaker architecture. It features JBL-signature horn tweeters, a powerful new subwoofer and an amplifier with Clari-Fi music restoration technology.

The open and spacious cabin environment can be further enhanced with an optional, opening panoramic sunroof.

## UK MODEL RANGE

RAV4 Hybrid is available in four equipment grades, Icon, Design, Dynamic and Excel, offering a wealth of comfort, convenience and technology features that meet the requirements and preferences of today's SUV customers.

At the entry point to the range, the RAV4 Hybrid **Icon** is available exclusively with front-wheel drive. The standard features include: -

- 17-inch alloy wheels
- Front fog lights
- Rear parking sensors
- Rain-sensing wipers
- Dusk-sensing headlights
- Auto-dimming rear-view mirror
- Push-button start
- Roof rails
- Scuff plates
- Parabola LED headlights
- Rear privacy glass
- Electronic parking brake
- Power-adjustable heated door mirrors with auto-folding function
- Toyota Touch 2 with eight-inch multimedia touchscreen
- Smartphone integration with Apple CarPlay and Android Auto
- Seven-inch colour TFT driver's multi-information display
- DAB
- Toyota Safety Sense 2
- eCall
- Rear-view camera

The **Design** model can be specified with front or all-wheel drive and adds features including:-

- 18-inch five-spoke alloy wheels
- Smart Entry
- Power back door

- Front parking sensors

The **Excel** model extends the Design specification with: -

- 19-inch alloy wheels
- Projector LED headlights
- Blind Spot Monitor and Rear Cross Traffic Alert
- Power-adjustable heated door mirrors with auto-folding function and puddle lights
- Heated front seats
- Driver's seat with power slide adjustment and lumbar support and memory function
- Full leather seat upholstery
- Heated steering wheel
- Headlight cleaners
- Windscreen wiper de-icer (front)

The options for the RAV4 Hybrid Excel are a nine-speaker JBL premium sound system, packaged with a Panoramic View Monitor, and an opening panoramic roof (this choice replaces the spare wheel with a tyre repair kit).

Striking a more sporting appearance, the RAV4 Hybrid **Dynamic** adopts (further to the Design specification): -

- 19-inch alloy wheels
- Heated front sports seats
- Bi-tone metallic paint
- Black interior headlining
- Projector LED headlights
- Blind Spot Monitor and Rear Cross Traffic Alert
- Power door mirrors with auto-folding function and puddle lights
- Driver's seat with power slide adjustment and lumbar support

The same options are available as for the Excel grade.

Customers can choose from a range of nine exterior colours, including new Urban Khaki, Cyan Splash, Obsidian Blue and Galaxy Black. Metallic paint and a bi-tone finish are included in the standard specification of the Dynamic models, combining a black roof and pillars with White Pearl, Silver Blade, Decuma Grey or Obsidian Blue bodywork. On Excel models, the leather upholstery can be specified in black, grey or beige.

## **YOSHIKAZU SAEKI – CHIEF ENGINEER**

*Yoshikazu Saeki joined Toyota in 1987 and has taken key roles in the development of the Toyota Avalon and Camry and the Lexus brand. More recently he has been closely involved in Toyota's global expansion, bringing his experience to bear in the development of new technologies, platforms and models. As Chief Engineer of the new RAV4 he explains his ambitions for the car.*

"The RAV4 has held a strong market presence since its introduction 25 years ago. It has gained a loyal following the world over, continually evolving to respond to changing customer needs. For the new RAV4, we set out to create a product that appeals to the next generation of customers.

"The first thing we considered was how we could redefine RAV4's product value. We addressed the fundamental reason for its being and thought about how we could create an SUV that can withstand the test of time – one that can last for the next 25 years.

"It is never easy to create a new concept in such a strictly segmented and increasingly competitive market. We needed to deliver a 'wow' factor to customers, inspire them with a vehicle that has exceptional presence and highlight the benefits of owning it. These were the foundations on which we developed the fifth generation RAV4.

"Since the first generation model, there have been two over-arching views of the RAV4 – 'driving performance suited to any road' and a 'user-friendly interior suited to any situation'. It was my mission to evolve these views.

"This means the RAV4 should have a strong presence and reliable toughness on any road while offering a stress-free driving experience for driver and passengers.

"At the very beginning of the design process we thought about how best to evolve the original concept. This led us to the new concept of Adventure and Refinement. Adventure sends out a simple, strong message that drivers can drive anywhere they want, expressing *waku-doki* – the equivalent of 'heart-pumping excitement' in Japanese. Refinement is expressed in a sophisticated design that fits in with an urban setting.

"Combining these contrasting elements enhances the new RAV4's unique value. Furthermore, its wide stance, large tyres and raised ground clearance create a strong image which are further emphasised by the polygon design theme and the vehicle's multipurpose capabilities. Just looking at the new RAV4 triggers the urge to get in and go somewhere.

"Where vehicle performance, handling and stability are concerned, we defined the key concept as 'Confident and Natural' – with the driver's sensibilities at the heart of everything.

As a team we put great effort into improving the driving experience by focusing on enhancing tyre-to-ground contact, stable and natural cornering and smooth, responsive driving.

"We've improved the RAV4's performance to meet the demands of any road. Whereas a conventional SUV suspension makes for an uncomfortable, unresponsive ride in off-road conditions, the RAV4 provides saloon-like comfort and an enjoyable ride."

## TOYOTA RAV4 TIMELINE AND UK SALES

YEAR	MONTH	EVENT
1989		Original RAV4 concept is presented at the Tokyo Motor Show.
1994	June	First generation RAV4 launched in the UK, with a three-door body and 2.0-litre petrol engine.
1995	June	A five-door body style is introduced.
1997		An electric powered RAV4 is developed; a number are used for tourist transport on Jersey.
1998	January	The range is revised and a soft-top three-door version introduced.
2000	August	The second generation RAV4 is launched.
2001	July	A 2.0 D-4D diesel engine is made available.
2003	October	The range is revised and the XT grade structure adopted.
2004	July	Launch of the Granite special edition model.
	December	The flagship XT5 grade is launched.
2005	June	Launch of the XT-R feature model.
2006	February	The third generation RAV4 is launched in the UK, with 2.0 VVT-I and 2.2 D-4D 140 and 180 engines. The T180 becomes the new top-of-the range model. Three-door body style is discontinued.
2007	January	A new XT-R feature grade is launched.
	March	Integrated Active Drive is made available as an option on XT <sub>3</sub> models.
2008	July	SR180 model is introduced; T180 is deleted from the range.
	September	Grade structure revised to XT-R and SR180 trims.
2009	August	2009 RAV4 launched with Toyota Optimal Drive powertrains. Introduction of 2WD 2.0 Valvematic.
2010	January	2.0 Valvematic 2WD model is deleted from the range.
	June	New 2.2 D-4D 2WD becomes entry point to the range, and all models gain new frontal exterior styling.

	October	2.0 Valvematic and 2.2 D-4D engines revised to meet Euro 5 emissions standards.
	November	An electric-powered RAV4, developed with Tesla, is unveiled at the Los Angeles motor show.
2012	November	The fourth generation RAV4 makes its debut, at the <a href="#">Los Angeles motor show</a> .
2013	March	First deliveries to UK customers of the new RAV4. The range adopts <a href="#">a new grade structure</a> : Active, Icon and Invincible.
2014	January	Toyota <a href="#">extends the availability of its 2.0-litre D-4D engine</a> in the RAV4 range, adding an all-wheel drive version in addition to the 2WD model. At the same time Toyota Touch 2 is introduced in higher grade models and specifications and option choices are improved.
2015	January	The new <a href="#">RAV4 Business Edition</a> increases availability of the 2.0-litre D-4D engine with front-wheel drive.
	May	The 2.0-litre Valvematic engine becomes Euro 6-compliant, delivering improvements in fuel economy and CO <sub>2</sub> emissions.
	December	RAV4 re-styled for 2016 and equipped with more powerful and efficient 2.0-litre D-4D engine. 2.0-litre Valvematic petrol engine delivers better fuel economy. Revised equipment grades are introduced in a new line-up of Active/Business Edition/Business Edition Plus/Icon/Excel. Toyota Safety Sense is available on all versions apart from Active.
2016	January	The RAV4 Hybrid is added to the range.
	October	<a href="#">The 2017 RAV4</a> is introduced, with Toyota Safety Sense standard on all versions excepting Active.
2017	October	Introduction of the <a href="#">2018 RAV4</a> with new grade structure and extended availability of hybrid power across the full range.
2018	March	World premiere of the fifth generation RAV4 at the New York Auto Show.
	October	The fifth generation RAV4 makes its European debut at the Paris Motor Show.
2019	April	Start of UK sales of the fifth generation RAV4.
	November	RAV4 Plug-in Hybrid is <a href="#">revealed</a> at the Los Angeles Auto Show.
2020	April	Worldwide RAV4 <a href="#">sales pass 10 million</a> units.
	July	The RAV4 <a href="#">Black Edition</a> is launched in the UK.
2021	January	The <a href="#">RAV4 Plug-in</a> is launched.

Sales in UK markets in 2020: 12,618

Cumulative UK sales (since 1994): 228,933

## RAV4 TECHNICAL SPECIFICATIONS

<b>2.5-litre HYBRID ENGINE</b>			
Engine code			A25A-FXS
Engine type			4 cylinders in-line
Valve mechanism			16-valve DOHC, VVT-i (intake) and VVT-i (exhaust)
Fuel injection			D4S
Displacement (cc)			2,487
Bore x stroke (mm)			87.5 x 103.48
Compression ratio			14.0:1
<b>Total system output (bhp/kW)</b>			<b>215/160 FWD 219/163 AWD-i</b>
Max. engine power (bhp/kW @ rpm)			176/131 @ 5,700
Max. engine torque (Nm @ rpm)			221 @ 3,600 – 5,200
Emissions certification			Euro 6d
<b>HYBRID SYSTEM</b>			
<b>Electric motor (front)</b>			
Type			AC permanent magnet, synchronous motor
Max. power (kW)			88
Max. torque (Nm)			202
<b>Electric motor (rear)</b>			
Type			AC permanent magnet, synchronous motor
Max. power (kW)			40
Max. torque (Nm)			121
<b>Hybrid battery</b>			
Type			Nickel-metal hydride
Nominal voltage			244.8
Number of modules			34
System voltage			650
<b>TRANSMISSION</b>			
Type			CVT
Final drive ratio			3.605:1
<b>PERFORMANCE</b>			
Max. speed (mph)			112
0-62mph (sec)			8.4      8.1
<b>FUEL CONSUMPTION, EMISSIONS &amp; INSURANCE</b>			
Combined fuel consumption – WLTP data (mpg)	Icon	48.8-50.4	n/a
	Design	48.8-49.6	47.9-48.7
	Excel	47.9-48.7	47.9-47.9
	Dynamic	47.9-48.7	47.9-47.9
Fuel tank capacity (l)			55
CO <sub>2</sub> emissions – combined, WLTP data (g/km)	Icon	126-131	n/a
	Design	129-131	131-134
	Excel	131-133	133-136
	Dynamic	131-133	133-136
Insurance groups			25E-30A
New vehicle warranty			5 years/100,000 miles

<b>SUSPENSION</b>		
Front		MacPherson strut
Rear		Double wishbone
Anti-roll bar diameter (mm)	Front	25.4
	Rear	23.2
<b>BRAKES</b>		
Front (diameter, mm)		Ventilated discs, 328
Rear (diameter, mm)		Solid discs, 317
<b>STEERING</b>		
Type		Rack and pinion, electric power steering
Ratio		14.3:1
Turns lock to lock		2.76
Min. turning radius – tyre/body (m)		5.5/5.9
<b>TYRES AND WHEELS</b>		
Wheel size		17, 18 or 19-inch
Tyre size		225/65R17 225/60R18 235/55R19
<b>WEIGHTS</b>		
Kerb weight (min/max kg)	FWD	1,650 – 1,730
Towing capacity - unbraked (kg)		750
Towing capacity - braked (kg)	800	1,650
Gross Vehicle Weight (kg)	2,135	2,225
<b>DIMENSIONS – EXTERIOR</b>		
Overall length (mm)		4,600
Overall width (mm)		1,855
Overall height (mm)		1,685
Wheelbase (mm)		2,690
Front track (mm)		1,610
Rear track (mm)		1,640
Front overhang (mm)		910
Rear overhang (mm)		1,000
Ground clearance (mm)		195
Angle of approach (deg)		17.5
Angle of departure (deg)		20
Coefficient of drag (Cd)		0.32
<b>DIMENSIONS – INTERIOR</b>		
Interior length (mm)		1,890
Interior width (mm)		1,515
Interior height (mm)		1,230
<b>DIMENSIONS – LUGGAGE COMPARTMENT</b>		
Capacity – rear seats in place (l)		580
Capacity – rear seats folded, up to tonneau cover (l)		1,189
Capacity – rear seats folded, up to roof (l)		1,690
Load area height (mm)		1,015

## RAV4 EQUIPMENT SPECIFICATIONS

SAFETY	ICON	DESIGN	EXCEL	DYNAMIC
Toyota Safety Sense: Pre-Collision System with night/daytime pedestrian detection and daytime cyclist detection, Lane Departure Alert, Automatic High Beam, Road Sign Assist, Lane Trace Assist, intelligent Adaptive Cruise Control, eCall emergency system	✓	✓	✓	✓
Driver and front passenger front and side airbags	✓	✓	✓	✓
Driver's knee airbag	✓	✓	✓	✓
Curtain airbags	✓	✓	✓	✓
Front passenger airbag occupant detection	✓	✓	✓	✓
Front passenger airbag on/off switch	✓	✓	✓	✓
Seatbelts with pre-tensioners and force limiters	✓	✓	✓	✓
Front and rear seatbelt reminders	✓	✓	✓	✓
Adjustable driver and front passenger seatbelt extender	✓	✓	✓	✓
Driver and front passenger whiplash injury-lessening seats	✓	✓	✓	✓
ISOFIX child seat fixings on outer rear seats	✓	✓	✓	✓
ABS with Electronic Brakeforce Distribution	✓	✓	✓	✓
Brake Assist	✓	✓	✓	✓
Emergency brake light signal	✓	✓	✓	✓
Vehicle Stability Control	✓	✓	✓	✓
Traction Control	✓	✓	✓	✓
Hill-start Assist Control	✓	✓	✓	✓
Trailer Sway Control	✓	✓	✓	✓
Tyre pressure warning system	✓	✓	✓	✓
Speed limiter with memory	✓	✓	✓	✓
Automatic headlight levelling	✓	✓	✓	✓
Blind Spot Monitor and Rear Cross Traffic Alert	✗	✗	✓	✓
COMFORT AND CONVENIENCE	ICON	DESIGN	EXCEL	DYNAMIC
Dual-zone air conditioning	✓	✓	✓	✓
Rear cabin air vents	✓	✓	✓	✓
Heated steering wheel	✗	✗	✓	✗

Blue ambient lighting for front console and cup holders	✗	✗	✓	✓
Electric power steering	✓	✓	✓	✓
Rear parking sensors	✓	✓	✓	✓
Front parking sensors	✗	✓	✓	✓
Manual steering wheel tilt and telescopic adjustment	✓	✓	✓	✓
Power windows	✓	✓	✓	✓
Windscreen wiper de-icer	✗	✗	✓	✗
Front and rear centre arm rests	✓	✓	✓	✓
Front footwell lights	✓	✓	✓	✓
Floor mats	✓	✓	✓	✓
Auto-dimming rear-view mirror	✓	✓	✓	✓
Panoramic view monitor (with premium sound system)	✗	✗	Opt	Opt
INSTRUMENTS & CONTROLS	ICON	DESIGN	EXCEL	DYNAMIC
Drive Mode Select	✓	✓	✓	✓
Hybrid system indicator	✓	✓	✓	✓
Rear-view camera	✓	✓	✓	✓
Rain-sensing wipers	✓	✓	✓	✓
Dusk-sensing headlights	✓	✓	✓	✓
Smart entry and push-button start	✗	✓	✓	✓
Follow-me-home headlights	✓	✓	✓	✓
Remote tailgate release in cabin	✗	✓	✓	✓
Electronic parking brake	✓	✓	✓	✓
AUDIO, INFORMATION & ENTERTAINMENT	✓	✓	✓	✓
Toyota Touch 2: 8in touchscreen, 6-speaker audio system with DAB tuner, Bluetooth, rear-view camera, Aux-in and USB port.	✓	✗	✗	✗
Toyota Touch 2 with Go: 8in touchscreen, 6-speaker audio system with DAB tuner, satellite navigation, on-line connectivity, advanced Bluetooth, rear-view camera, Aux-in and USB port.	Opt	✓	✓	✓
Audio, telephone and multimedia switches on steering wheel	✓	✓	✓	✓
7in colour TFT multi-information display	✓	✓	✓	✓
JBL premium nine-speaker audio system (with panoramic view monitor)	✗	✗	Opt	Opt
Smartphone integration via Apple CarPlay and Android Auto	✓	✓	✓	✓

<b>SECURITY</b>	<b>ICON</b>	<b>DESIGN</b>	<b>EXCEL</b>	<b>DYNAMIC</b>
Remote central locking with double locking	✓	✓	✓	✓
Remote perimeter alarm and microwave interior protection	✓	✓	✓	✓
Speed-detecting automatic door locks	✓	✓	✓	✓
eCall emergency system	✓	✓	✓	✓
<b>STORAGE</b>	<b>ICON</b>	<b>DESIGN</b>	<b>EXCEL</b>	<b>DYNAMIC</b>
Locking glovebox	✓	✓	✓	✓
Double-sided load space deckboard	✓	✓	✓	✓
Light in load space	✓	✓	✓	✓
Underfloor storage in load space (with panoramic roof option)	✗	✗	Opt	Opt
Front and rear bottle holders	✓	✓	✓	✓
Pockets in front seat seatbacks	✗	✗	✓	✓
Front console box	✓	✓	✓	✓
Sunglasses holder (not available with premium JBL audio)	✓	✓	✓	✓
Underfloor storage in load space	✓	✓	✓	✓
Retractable tonneau cover	✓	✓	✓	✓
<b>SEATING, UPHOLSTERY &amp; TRIM</b>	<b>ICON</b>	<b>DESIGN</b>	<b>EXCEL</b>	<b>DYNAMIC</b>
Heated front seats	✗	✗	✓	✓
Reclining rear seats	✓	✓	✓	✓
Manual driver's seat height adjustment	✓	✓	✗	✗
Power-adjustable driver's seat with electric lumbar support	✗	✗	✓	✓
Memory setting for driver's seat	✗	✗	✓	✗
Black cloth upholstery	✓	✓	✗	✗
Black leather upholstery	✗	✗	✓	✗
Grey leather upholstery	✗	✗	Opt	✗
Beige leather upholstery	✗	✗	Opt	✗
Black synthetic leather upholstery	✗	✗	✗	✓
Saddle brown/black or grey/black leather upholstery	Opt	Opt	Opt	Opt
Black Alcantara/leather upholstery with saddle brown or grey contrast piping and stitching	Opt	Opt	Opt	Opt
Leather steering wheel trim	✓	✓	✓	✓
Alcantara door trim	✗	✗	✓	✗
Grey headlining	✓	✓	✓	✗
Black headlining	✗	✗	✗	✓
Soft-touch black upper dashboard with silver inserts	✓	✓	✓	✓
Leather shift lever trim with chrome surround	✓	✓	✓	✓
Leather steering wheel trim with chrome inserts	✓	✓	✓	✓

EXTERIOR AND BODYWORK	ICON	DESIGN	EXCEL	DYNAMIC
17in alloy wheels	✓	✗	✗	✗
18in alloy wheels	✗	✓	✗	✗
19in alloy wheels	✗	✗	✓	✓
Rear privacy glass	✓	✓	✓	✓
Black roof rails	✓	✓	✓	✓
Gloss black roof	✗	✗	✗	✓
Gloss black bumpers	✗	✗	✗	✓
Gloss black door mirror casings	✗	✗	✗	✓
Black rear spoiler and shark fin antenna	✗	✗	✗	✓
Body-colour rear spoiler	✓	✓	✓	✗
Body-colour door handles	✓	✓	✓	✓
Parabola LED headlights	✓	✓	✗	✗
Projector LED headlights	✗	✗	✓	✓
Headlight cleaners	✗	✗	✓	✗
Front fog lights	✓	✓	✓	✓
LED daytime running lights	✓	✓	✓	✓
Power-adjustable heated, auto-folding door mirrors	✓	✓	✓	✓
Power tailgate	✗	✓	✓	✓
Shark fin antenna	✓	✓	✓	✓
Silver front and rear under-runs	✓	✓	✓	✓
Spare wheel	✓	✗	✗	✗
Spare wheel - alloy	✗	✓	✓	✓
Tyre repair kit – standard with panoramic roof option	✗	✗	Opt	Opt
Metallic paint	Opt	Opt	Opt	✗
Bi-tone paint finish	✗	✗	✗	✓
Power opening panoramic roof (with JBL audio option)	✗	✗	Opt	Opt
Sunroof	✗	✗	Opt	Opt

**ENDS**

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