

PARIS 2016

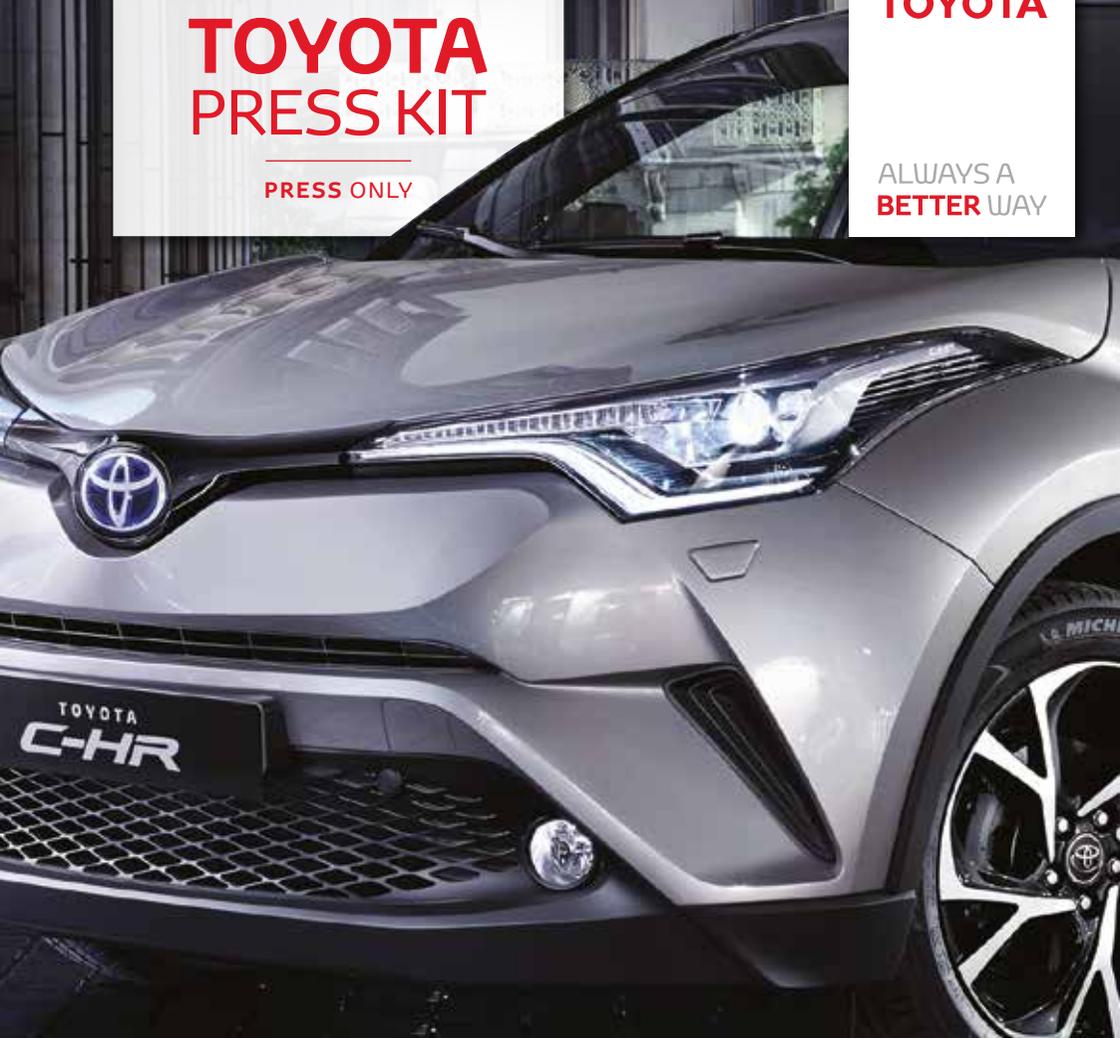
# TOYOTA PRESS KIT

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ALWAYS A  
**BETTER** WAY



## TOYOTA C-HR

A Fresh View on the Crossover Market

**PRIUS PLUG-IN HYBRID**

The New Benchmark in Fuel Efficiency

**TOYOTA GAZOO RACING**

Pushing the Limits for Better



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Fuel cell vehicles are often referred to as the ultimate in environment-friendly vehicles. But in a future in which fuel cell vehicles abound, cars will not only be energy users. Toyota’s aim is to add an all-new sense of purpose to the automobile by turning fuel cell vehicles from “energy users” into “energy makers”.

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# TOYOTA GAZOO RACING

## Pushing the Limits for Better

“TOYOTA GAZOO Racing” embodies Toyota’s commitment to overcome every limit to make ever-better cars through motorsport activities. “What we learn at the very limits of performance, we seek to transfer into benefits for every day driving.”

**OVER THE YEARS**, Toyota has been participating in many different forms of motorsport, including Formula One, the World Endurance Championship (WEC) and the Nürburgring 24 Hours endurance race. These activities were conducted by separate entities within the company, such as “Toyota Racing”, “Lexus Racing” and “GAZOO Racing”.

Of those, “GAZOO Racing” in particular first entered the Nürburgring 24 Hours race in 2007 with two used Altezzas, supported by a team of mechanics that comprised employees selected from various departments within Toyota, under the belief that “the roads build the people, and the people build the cars”.

This was very much in line with the thinking of Toyota’s founder, Kiichiro Toyoda, who said already in 1952: “Motorsport is more than just entertainment. It is vital to the development of the car industry. Just as athletes test their capabilities by competing with all their strength in the Olympics, automakers use racing as an opportunity to push a vehicle’s performance to the limits and compete for supremacy, enabling them to discover new ways of advancing automotive technology.”

With this in mind, in April 2015, Toyota went back to the basis and united Toyota’s motorsports activities into “TOYOTA GAZOO

Racing”, placing motorsports as a fundament in its commitment to make ever-better cars.

Toyota’s technology has been further improved through participation in races, and has translated into improving its road cars. Between its first FIA World Endurance Championship (WEC) race in 2012 and winning the championship in 2014, the experience with the highly performant powertrain featured in the TS030 and TS040 HYBRID LMP1 race cars significantly progressed the development of hybrid powertrain technology for its road-going models in areas such as downsizing and motor cooling.

By participating in motorsport activities Toyota has broadened its knowledge by stepping out of its comfort zone. Through these experiences it has been able to improve its skills, resulting in further development of human resources.

Last but not least, through motorsports, Toyota conveys the excitement of driving to its customers and fans, and shares its passion with them.

With Toyota’s return to the World Rally Championship in 2017, “TOYOTA GAZOO Racing” has singled out another highly demanding series where it will push its cars to the limit, in the pursuit of “Ever Better Cars”.





## TOYOTA GAZOO RACING ACTIVITIES IN EUROPE

### FIA World Endurance Championship (WEC)

The FIA World Endurance Championship includes endurance races of six hours or more in various locations throughout Europe, the US, and Asia. Most notable is the 24 Hours of Le Mans, one leg of the Triple Crown of Motorsport and the most prominent event in endurance racing.

TOYOTA has participated in Le Mans eighteen times since its first entry in 1985 and came extremely close to victory in the 2016 race. One of the TS050 HYBRID LMP1 race cars led convincingly until the final minutes of the 24-hour race before a heart-breaking retirement with victory in sight. The sister car finished in a consolatory second position.

Taking on Le Mans requires both exceptional speed and reliability, and TOYOTA GAZOO Racing continues to push ahead on this challenge by refining its hybrid system with ever-more sophisticated technologies. This hybrid system was developed in-house at Toyota, with members of the development team participating in the race as well. The team is made up of a diverse group of people - all of different ages and with different levels of experience - but everyone is on the same page when it comes to their common goal of "making ever-better cars".

### Nürburgring 24 Hours Race

Every year, factory-backed and privateer teams across the globe take on "the world's toughest race" at the Nürburgring. This year marked TOYOTA GAZOO Racing's tenth participation in the event as the team entered a Lexus RC F, a Lexus RC F and the Toyota C-HR Racing.

Among a total race field of 158 cars, the Toyota C-HR Racing took 84<sup>th</sup> place in the overall standings and finished third in its class. In addition, the Lexus RC retired due to drivetrain issues, while the Lexus RC F took 24<sup>th</sup> place overall and finished first in its class.

The Nürburgring 24 Hours race plays an important role in helping Toyota to train ever-better personnel through the active involvement of mechanics, engineers and test drivers from Toyota's road-car divisions.

The goal of Toyota's participation remains exactly the same as it was a decade ago: engage in demanding motorsports and incorporate the insights gained in its quest to "make ever-better cars".

### FIA World Rally Championship (WRC)

From smooth asphalt to rough, unpaved roads, the FIA World Rally Championship is a merciless and riveting high-speed chase through nearly every type of public road in the world. Drivers must instantly judge the road conditions in each country in this high-impact, full-throttle challenge.

But building world rally cars is about far more than just theory. It's about crafting a vehicle that can be driven to the limit on each and every type of road, based on thorough first-hand experience and knowledge. With this in mind, TOYOTA GAZOO Racing has decided to take on the WRC in 2017.

With Tommi Mäkinen spearheading the project, the Yaris WRC is nearing completion. The team is comprised of highly dedicated specialists who are passionate about rally racing. "The most important ingredient in creating a winning vehicle is to have a group of people with the same goal who all find joy in what they do," says Mäkinen. "We want to show the world a team coming together under Toyota's 'I love cars!' spirit as we work diligently towards our goals."

Interview with Chief Officer and Technical Director of TOYOTA GAZOO Racing, **Mr Koei Saga**, and Deputy Chief Officer and Marketing Director of TOYOTA GAZOO Racing, **Mr Shigeki Tomoyama**.

### *What is the purpose of TOYOTA GAZOO Racing?*

**Mr Saga:** The purpose of TOYOTA GAZOO Racing is quite straightforward, and goes back to the basic question of why we participate in motorsport.

Our founder, Kiichiro Toyoda, left us a written text saying that "motorsports are vital to the evolution of car making and the entire auto industry". Once you accept this principle, it is clear that motorsport is both very important, and always necessary. It is not something to pick up when times are good or drop when times are hard.

That is why, last year, we decided to get back to this founding ideal and united Toyota's motorsports activities under "TOYOTA GAZOO Racing", clarifying the role of Toyota's motor-



“WE ARE PLACING MOTORSPORTS ONCE AGAIN CENTRALLY, TO DEVELOP BETTER TECHNOLOGY, TO NURTURE OUR PEOPLE AND TO REACH OUT TO OUR MANY FANS AROUND THE WORLD”.

**Koei Saga, Chief Officer and Technical Director of TOYOTA GAZOO Racing**

sports to make ever-better cars. We also established the “TOYOTA GAZOO Racing Factory”, which includes motorsports-related marketing, vehicle development and technical support functions, previously all managed by individual divisions. By doing so, we are placing motorsports once again centrally, to develop better technology, to nurture our people and to reach out to our many fans around the world.

***What role has the Nürburgring 24 Hour race played in the evolution of TOYOTA GAZOO Racing?***

**Mr Tomoyama:** The Nürburgring 24 Hours race was the starting point for GAZOO Racing. In

2007, we had our first race at Nürburgring as GAZOO Racing. It was not easy because the team was not well known in Europe and we had a very low budget. We started with two used Altezza (the Japanese version of Lexus IS). People participated voluntarily and all the modifications to the car were done by our staff. Even half of the drivers were made up of our own staff, including our President Mr. Akio Toyoda himself, who still provides his full support.

Every year since then, we have taken promising young engineers and mechanics from our various R&D divisions and have placed them into our team for the Nürburgring 24 Hours. At the end of the year, they return to their original



**“WE ARE LOOKING AT HOW TECHNOLOGY CAN HELP  
MAKE CARS BOTH FUN TO DRIVE AS WELL AS SECURE  
AND USER-FRIENDLY”.**

**Shigeki Tomoyama, Deputy Chief Officer and Marketing Director  
of TOYOTA GAZOO Racing**



divisions with the new experience and knowledge that they gathered throughout the development of that year's race car and during the race itself, which they then share with their colleagues, ultimately aiming to build better production cars.

### ***Can you explain what you mean by ever-better cars?***

**Mr Saga:** Personally, I am confident that, at Toyota, we already make good cars. But our objective and purpose is to continually make our cars better. That means better technology, better functionality, and cars that are ultimately more user-friendly, more fun to drive and more secure. At the same time, we have many strict regulations worldwide when it comes to the environment, which we strive to meet.

For example, we're already on track with our hybrid systems, but they must also be capable of delivering a sporty driving experience. It's a kind of dream for me personally, to have everyday hybrid road cars that provide comfort but are equally engaging to drive on a track.

### ***You both also have other roles within Toyota Motor Corporation, with Mr Saga as Chairman of the Power Train Company and Mr Tomoyama as President of the Connected Company. How do they relate to your motor-sport roles?***

**Mr Saga:** I used to be an engine designer, and the last engine I designed was the Century V12. I am a firm believer that our activities in the WEC are beneficial for our company. WEC wants to have hybrid cars participating in its series, and we are the leader of hybrid cars in the market, so there is a natural fit. When we think of the future, we have to get even better in this field, so what better platform than the WEC to create ever-better hybrid cars.

**Mr Tomoyama:** Race cars are already connected through detailed telematics systems, but IT, IoT (Internet of Things) and connectivity are very important technologies that have to be implemented in our future cars.

Cars need to be secure and user-friendly, particularly with an ageing population; however, we don't want to produce boring cars with all this IT

## **THE MEANING OF GAZOO**

Today, "GAZOO" refers to the word "Garage", a very intimate place where people work together to improve the smallest details, with the aim of delivering ever-better cars and services for each customer, in each garage. As such, the name embodies the spirit that drives TOYOTA GAZOO Racing.

But the origin of the name goes back nearly twenty years to the creation of GAZOO.com, a website gathering images of the vehicles on stock at each of the dealerships.. Its name, "GAZOO", was derived from the Japanese word "gazō" which means image or photo. Although the use of imagery on website is commonplace today, it was revolutionary for the automotive industry in Japan in the mid-1990s when internet technology was at its infancy. GAZOO.com offered consumers a wide choice of products, allowing them to find the best deal available, and this is where the philosophy of providing ever-better cars to the Toyota customer originates.



stuff. "Fun to drive" is a key promise we want to deliver to all our customers. We are looking at how technology can help make cars both fun to drive as well as secure and user-friendly - and our learning from motorsport can help us in this regard.

### ***What does success look like for TOYOTA GAZOO Racing?***

**Mr Saga:** We have a number of short-term goals, such as winning the 24 Hours of Le Mans and becoming champions in the WRC once again. But just as importantly, we want to convey the GAZOO spirit in all that we do. We want to take things step by step and achieve small successes, but there is no ultimate goal because it's a never-ending challenge.



# TOYOTA C-HR

## A Fresh View on the Crossover Market

Designed to stand out both within the Toyota line-up and in its segment, the all-new C-HR – or Coupe High-Rider - represents Akio Toyoda's determination to allow greater stylistic freedom and promote engineering creativity in order to achieve eye-catching designs and enhanced driving pleasure.



**THE TOYOTA C-HR** remains remarkably true to the general features of the concept-cars that attracted so much public attention in Paris in 2014 and in Frankfurt in 2015. Its coupe-like lines are a testimony to the resolve of its designers to create a style that stands out in the Toyota range, and to establish a new direction amongst mid-sized crossovers.

With the C-HR, Toyota targets a clear and singular customer profile. Predominantly driven by emotional considerations, these customers want individuality, and to be the first to try new experiences and products. Style and quality are essential considerations in any purchase they make, and the car is an extension of their personality.

Inspired by what he learned from meeting with these customers, C-HR Chief Engineer Hiroyuki Koba focused persistently on their requirements throughout the development process, setting high demands for design and perceived quality.

The Toyota C-HR's unique character demonstrates the flexibility that the TNGA (Toyota New Global Architecture) gives to vehicle developers in the three key areas of design, powertrain and dynamics, enabling them to deliver a new and fresh take on the increasingly commoditized crossover segment.

### **A NEW DESIGN DIRECTION FOR THE CROSSOVER SEGMENT**

The all-new Toyota C-HR introduces a distinctive styling that brings newfound dynamism and sensuality to the crossover market, combining a coupe-like upper body with the powerful underpinnings of an SUV.

4,360 mm long, 1,795 mm wide, 1,555 mm high (Hybrid) and with a 2,640 mm wheelbase, the production vehicle remains remarkably true to the concept car's exterior which was first shown at the Paris Motorshow in 2014, and which registered extremely well with target customers.

Under the concept of "Sensual Speed-Cross", and featuring a diamond architectural theme with wheel arches projecting prominently at all four corners to emphasise the new crossover's strength and rigidity, the C-HR modulated structure combines a powerful lower body and raised ground clearance with the slim and sleek cabin profile of a coupe.

Viewed from any angle, the C-HR's combination of faceted gemstone-like shapes with fluid surfaces and elegantly integrated detailing create a delicate balance of precision and sensuality.

The front represents a further development of Toyota's Under Priority and Keen Look design identity. The slender upper grille flows from the Toyota badge into the sleek, aggressive wing extremities of the headlamp clusters and wraps fully around the front corners of the vehicle.

The movement of the blacked out rocker panel towards the front and rear wheels, along with the shoulder axis that runs through to the front and rear, emphasise the fast-looking, 'lift-up' feel of the thin body.

The C-HR's coupe-like styling is further enhanced by disguised rear door handles integrated within the C pillar and, essential to the representation of speed within the design, the powerful projection of the sweeping roofline into a large, highly aerodynamic, skeletal frame rear spoiler.

To the rear, the strongly tapered cabin integrates a top-hinged tailgate giving access to the loadspace that can accommodate luggage for 5 people. This contrasts with the pronounced flaring of the wheel arches, which give the new crossover a wide and extremely powerful stance.





“THE C-HR GIVES TOYOTA A POWERFUL NEW PRESENCE IN THE GROWING C CROSSOVER SEGMENT. IT IS INTENDED TO SPEARHEAD A NEW MOVEMENT WITHIN ITS SEGMENT - TO CREATE A NEW FRONTIER. THAT’S WHY WE DECIDED IT HAD TO BE UNIQUE: WITH ITS OWN PERSONALITY, FULL OF ORIGINALITY”.

**Kazuhiko Isawa, Chief Designer C-HR**

SPECIFICATIONS	1.2T			HYBRID
Displacement (cm <sup>3</sup> )	1,197			1,798
Max power (DIN hp/kW @ rpm)	116/85 @ 5,200 to 5,600			122/90 @ 5,200
Max torque (Nm @ rpm)	185 @ 1,500 to 4,000			142 @ 3,600
Transmission	Manual 6 FWD	CVT FWD	CVT AWD	CVT FWD
Fuel Consumption combined l/100 km)	5.5 to 5.9	5.8	6.2	3.6 to 3.9
CO <sub>2</sub> emissions (combined g/km)	125 to 136	134 to 135	143 to 144	82 to 90



1.2T      HYBRID

#### CHASSIS

##### Suspension

Front suspension	MacPherson Strut with stabilizer bar
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Rear suspension	Multilink axle coil spring and stabilizer
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##### Steering

	Rack & pignon, Electric Power Steering
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Overall ratio	13.6 : 1
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Lock to lock	2.76
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Min turning circle (m)	10.4
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##### Brakes

Front (mm)	Ventilated discs (298.5)
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Rear (mm)	Solid discs (281)
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Parking brake	Electric
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#### EXTERIOR DIMENSIONS (MM)

Overall length	4,360
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Overall width	1,795
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Overall height 1.2T/Hybrid	1,565/1,555
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Wheelbase	2,640
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Tread front (16"-17"/18")	1,550/1,540
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Tread rear	1,550/1,540
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##### Cargo (dm<sup>3</sup>)

Capacity (VDA)	377
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Standing proud of the tapering body work, prominent rear light clusters may also be equipped with LED lamp technology to give the rear view of the C-HR an equally expressive visual signature.

### **SOPHISTICATED INTERIOR DESIGN WITH OUTSTANDING SENSORY QUALITY**

A new departure for Toyota, the interior styling represents a new 'Sensual Tech' design concept combining high-tech functionality with a sensual and fashionable style. It embodies a driver focused area within an airy, expansive cabin space.

The warm, welcoming ambiance of an airy, expansive cabin space was created by the seamless layered architecture of the instrument panel that continues through to the door trim with a stylish ornamentation and a piano black panel. It offers a contrast between sensual surfacing and crisp lines to deliver a fresh, yet comfortable environment.



The driver oriented area incorporates innovative details and intuitive, approachable high technology. All operating switchgear, and an 8" display audio touch-screen featuring a re-designed and improved HMI (Human Machine Interface) with Toyota's Multi-Media '16 navigation platform and enhanced connected services are slightly oriented towards the driver.

In conjunction with the asymmetrical centre console design, this brings all controls within easy reach of the driver, whilst still allowing front passenger access to the relevant switchgear.

Because the touch-screen stands proud of the instrument panel rather than being enclosed by it, the upper dashboard is considerably lower in depth, further helping driver visibility.

A unique new two-tiered front seat design combines a slender, sporting upper section with a more strongly bolstered and supportive lower area, these differences emphasised through the use of differing tones, textures and patterns within the upholstery.



Targeting class-leading sensory quality (SQ), and knowing that C-HR customers will also have competitors from premium brands on their shopping list, the C-HR interior represents the earliest involvement yet of Toyota's European SQ team in the design process.

Working closely with the headquarters design team to maintain the original interior styling concept, the SQ team have focused painstakingly on component quality, and the consistency of grain, texture, shape, colour and illumination in every element, even the stitch groove radii of the seats.

Reinforcing the link between interior and exterior design, many switches use a similar shape, reflecting the diamond motif of the exterior body shell. The same diamond theme is also visible in the door trim pattern, the headliner, the JBL speaker grilles and tweeter shape, and even the needles of the driver's analogue instrument dials.

A carefully considered choice of finishes is essential to the harmonious, consistent, one-piece look of the new interior. There are three main surface finishes – leather-like for all background surfaces, a smooth Nappa grain for all touching surfaces and technical grain for all functional elements such as switchgear.

Decorative elements are finished in high quality piano black and satin silver trim, and the clear blue instrument and switchgear illumination has been carefully fine-tuned to ensure consistency of hue, even on adjacent reflective surfaces of differing colours.

This outstanding new interior design is available in a choice of three colour schemes: Dark Grey, Black/Blue and Black/Brown.

### **EQUIPMENT LEVELS TO SUIT THE MOST DEMANDING CUSTOMERS**

Reflecting the demands of its target customer, the Toyota C-HR can be equipped with a wide variety of features.

As part of Toyota's commitment to democratise advanced safety equipment, Toyota Safety Sense is standard across the range. The system includes a Pre-Collision System (including Pedestrian Recognition), Adaptive Cruise Control, Lane Departure Alert with steering control, Automatic High Beam and Road Sign Assist<sup>1</sup>.

Top-of-the-range customers will be able to specify heated seats, a smart entry system, privacy glass, bespoke upholstery including part-leather seats, Toyota's revolutionary S-IPA system (Simple Intelligent Park Assist), 18" alloy wheels and Bi-tone metallic paint-work.

<sup>1</sup>Road Sign Assist is not available on the entry grade.

# “I REFUSED TO COMPROMISE EITHER DESIGN OR DRIVING PERFORMANCE”.

Hiroyuki Koba, C-HR Chief Engineer



## CONCERT HALL SOUND

Providing the ultimate in sound reproduction in the C crossover segment, the new C-HR may be equipped with a tailor-made JBL premium audio system comprising an 8-channel, 576 Watt stereo amplifier and 9-speakers, including two newly patented acoustic JBL wave guides, known as horn tweeters.

Because various elements of the interior such as the windows, sunroof and upholstery, as well as the rigidity of the body structure surrounding each speaker, can have a significant impact on system sound quality, the system is the result of particularly close collaboration between JBL and Toyota's engineers from early in the design process.

An in-depth customer analysis was taken into account for the system design and resulted in the front cabin orientation of the speaker layout and the use of a precisely integrated, A pillar-mounted horn tweeter - a JBL system signature - to deliver crisp, clear sound.

As well the two 25 mm horn tweeters and acoustic wave guides, the system further features two 80 mm wide-dispersion units and two 17 cm sub-woofers in the front of the C-HR, and, in the rear, two 15 cm full-range speakers and a 19 cm sub-woofer in a dedicated, 10-litre, ported enclosure.

Available in combination with the navigation option, the JBL premium audio system also incorporates lossless audio encoding.

The partnership between Toyota and JBL started in 1996 and has been successfully expanded since that time. Trusted by music professionals, JBL audio systems are used in major concert halls, venues and stadiums throughout the world (80% of live concerts, 70% of all recording studios and 90% of all THX-certified movie theatres).

Quality is the common focus of both companies, which has resulted in the all-new, uncompromised premium audio system specifically tailored for the C-HR.



## STATE OF THE ART POWERTRAINS

The Toyota C-HR is equipped with an engine-range that is designed to deliver exactly the fluent, engaging driving behaviour that its customers are looking for. This is most powerfully expressed by the segment-unique, range-topping, full hybrid version, the intrinsic characteristics of which guarantee a smooth, jolt-free ride.

Fitted with the latest-generation hybrid power plant, the C-HR generates CO<sub>2</sub> emissions as low as 82 g/km – a figure unrivalled within its segment – and returns combined fuel consumption of only 3.6 l/100 km.

Delivering 90 kW/122 DIN hp, this new hybrid powertrain is not only more efficient and lighter than the previous system, but also offers sharper performance. Detailed design changes to the engine have resulted in a thermal efficiency of 40% – a world-beating performance for a petrol unit.

Other hybrid system components have been made lighter and smaller, and have been repositioned for optimum packaging, further contributing to the car's low centre of gravity.

This new hybrid powertrain offers the response and the fluidity of a dynamic driving style that particularly suits the C-HR's dynamic design philosophy.

The C-HR is also available with a new 1.2 litre turbo engine, which debuted in the Auris. Delivering 85 kW/116 DIN hp and 185 Nm of torque, this unit generates CO<sub>2</sub> emission from 125

g/km and returns combined fuel consumption from 5.5 l/100 km. It may be mated to either a 6-speed manual gearbox or a Continuously Variable Transmission. CVT equipped versions are available with either front- or all-wheel drive.

And finally, a 2-litre 144 DIN hp/107 kW, 188 Nm CVT-only model will be available for certain markets (Ukraine and Caucasus).

## DYNAMICS THAT BELIE A CROSSOVER

The design and development of the Toyota C-HR chassis has received the full attention of the Chief Engineer Hiroyuki Koba, himself a keen driver. From the very outset of the project, he travelled thousands of kilometres along European roads in order to understand not only the requirements of the road network, but also the way that Europeans drive.

"I have noticed, for example, that Europeans have a much more fluid driving style, based on a more acute observation of traffic" observes Hiroyuki Koba. "They avoid obstacles simply by adapting their trajectory and speed and will focus to carry on speed aiming for efficient progress, while elsewhere in the world the preferred approach is very often to stop. This has prompted us to work with our European team on driving precision in all aspects of the vehicle. We wanted to achieve performance on a par with a good C-segment hatchback."

With its low centre of gravity and multi-link rear suspension, the new TNGA-based platform has formed an ideal starting point from which to ensure that all of the features of the chassis could be designed to obtain an immediate and natural response to the driver's actions. Chief Engineer Hiroyuki Koba has been engaged in each key dynamic assessment and decision, assuring that his vision "Response, Linearity and Consistency" fully came to life.

In particular, steering has been designed to be perfectly linear which, together with the optimum limitation of rolling motion, gives the Toyota C-HR remarkable driving precision for a crossover. Limiting body movement, which generally affects tall cars in particular, also has a direct influence on comfort. Even on European often battered roads, the car remains remarkably composed and accurate, adding to the confidence and joy of driving.



# PRIUS PLUG-IN HYBRID

## The New Benchmark in Fuel Efficiency

Combining all the attributes of the new, full hybrid, TNGA (Toyota New Global Architecture)-platformed, fourth generation Prius with a class-leading all-electric EV driving mode range, and showcasing several highly innovative new technologies, the new Prius Plug-in Hybrid makes its European debut at the 2016 Paris Motor Show.

**TOYOTA WAS THE FIRST COMPANY** to offer the world PHV (Plug-in Hybrid Vehicle) technology. Today, with the launch of the second generation Prius Plug-in Hybrid, it is taking a further step towards its goal of reducing whole fleet CO<sub>2</sub> emissions by 90%\* by 2050 through the use of HV (Hybrid Vehicle) PHV, EV (Electric Vehicle) and FCV (Fuel Cell Vehicle) technologies.

A powerful response to customer feedback on the first generation Prius Plug-in Hybrid, Toyota's new PHV is not only a significant evolution of the latest generation Prius, but also a truly unique vehicle in its own right.

It features numerous sophisticated technological breakthroughs, including a Dual Motor EV drive system, a battery warming system and two world firsts - EV range-extending solar roof, and gas injection heat pump auto air-conditioning.

With an EV range doubled to over 50 km and maximum EV speed increased from 85 to 135 km/h, the new Prius Plug-in Hybrid represents a huge leap forwards in efficiency, driving performance, innovation and styling, whilst remaining true to Toyota's goal of creating the ultimate eco car.

### **STATE-OF-THE-ART PHV TECHNOLOGY, IMPRESSIVE EV DRIVING EXPERIENCE**

At the heart of the new Prius Plug-in Hybrid is the latest generation of Toyota's advanced PHV technology. It offers customers two cars in one; an even more sophisticated full hybrid powertrain and a real, all-electric EV driving experience with double the range of the previous generation model.

This significant increase in EV driving range is based on technological improvements in three key areas: optimum battery development, maximising EV driving performance and increasing recharging speed to enhance convenience.

Located under the rear loadspace, a large capacity lithium-ion battery is fundamental to the new Toyota PHV's significantly improved 50 km EV range. Battery volume has been increased from 87 to 145 litres, its energy capacity doubled from 4.4 to 8.8 kWh and yet, at 120 kg, it's just 50% heavier than its predecessor.

EV power has also been increased by some 83% thanks to the development of the Toyota's first hybrid powertrain to feature a Dual Motor Drive System. A new, highly-compact one-way clutch within the transaxle allows

\* From 2010 level



the hybrid system generator to act as a second electric motor. This boosts EV driving power to 68 kW for better acceleration and an even more engaging performance, whilst greatly reducing engine start up frequency.

The further minimising of engine usage whilst the Prius Plug-in Hybrid is operating in EV drive mode is assured through the enhanced efficiency of the new PHV system, which builds on the 4<sup>th</sup> generation full hybrid technology powering the new Prius with several sophisticated new technologies.

Another world first, the auto air-conditioning is now powered by a gas-injection heat pump which will heat the cabin in outside temperatures as low as -10 degrees C, without starting the engine, hence minimising the impact which heating the interior has on EV driving range.

Far more efficient than engine heating or high power electric water heaters, the heat pump can efficiently warm the interior using heat absorbed from the outside air. Mounted to the heat pump system, the gas-injection mechanism ensures heating performance even when outside temperatures are low.

Moreover, during charging, a new battery warming system will warm the cells to an efficient working temperature in outside conditions as cold as -20 degrees C. This ensures that both battery power and efficiency are maintained at a sufficient level to minimise the impact of cold weather on EV driving range, with full power available from start off in even very cold conditions.

Its maximum charging power increased from 2 to 3.3 kW, the battery itself can be fully charged up to 65% more quickly; in only 2 hours using the Type II Mode III Mennekes connector, and 3 hours and 10 minutes using a standard household plug socket. The charging process is now programmable weekly on a day-by-day basis, and includes the facility to simultaneously charge and pre-cool or pre-heat the cabin.

The full hybrid drive system's new transaxle is combined with a new, highly efficient PCU system control unit to give the Prius Plug-in Hybrid extraordinary overall operating efficiency. It combines improved EV and HV driving performance with a targeted average fuel

consumption of only 1.0\* l/100km and CO<sub>2</sub> emissions of just 22\* g/km.

### **STRIKING, STAND-ALONE, AERODYNAMIC STYLING**

Sharing the TNGA (Toyota New Global Architecture) platform of the latest Prius, the new Prius Plug-in Hybrid's striking, highly aerodynamic design builds on the iconic Prius profile with unique styling elements which hint at the advanced technology within.

At 4,645 mm long, 1,760 mm wide and 1,470 mm high, the new Toyota PHV is 165 mm longer, 15 mm wider and 20 mm lower than its predecessor, with front and rear overhangs lengthened by 25 mm and 80 mm respectively, over the 4th generation Prius. A reduction in cowl height and in rear spoiler height further emphasises the car's long, sleek side silhouette and low centre of gravity.

A powerful evolution of Toyota's Under Priority and Keen Look design themes, the front of the new Prius Plug-in Hybrid is instantly recognisable from the standard Prius through a highly three-dimensional acrylic grille treat-

\* Subject to final homologation



ment and thin, ultra-compact 4-LED headlamp units featuring new adaptive technology.

The strong forward projection of the grille is emphasised by the highly aerodynamic sculpting of the bumper sides, whilst the vertical location of the Daytime Running Lights (DRL) and LED turn indicators at the extreme edges of the front fenders reinforce the low, wide, ground-hugging stance of the vehicle.

In profile, the Prius Plug-in Hybrid may be identified not only by its longer rear overhang and lower cowl and rear spoiler heights, but also by PHV-specific, two-tone 15" alloy wheels designed to enhance brake cooling.

To the rear, the cross-sectional shape of the PHV-unique, aerodynamics-enhancing, 'double-bubble' rear screen is carried into the curve of the rear spoiler, at the extremities of which are integrated rear LED light clusters, again unique to the Toyota PHV.

A comprehensive aerodynamics package is key to achieving the fuel consumption reducing benefits of a remarkably low, class-leading drag coefficient of only Cd 0.25.

The new Toyota PHV builds on the already highly efficient aerodynamics of the latest Prius with a lower roof and rear spoiler height, an enlarged area of underbody covers, airflow rectifying front and rear bumper corners, the double-bubble rear screen and aero stabiliser fins built into the rear combination lamps.

In addition, the new Prius Plug-in Hybrid features a shutter built into the lower front grille, which is automatically opened or closed to optimise the flow of cooling air into the engine bay, reducing air resistance.

When the engine is cold, the grille shutter is closed to suppress engine cooling airflow and shorten the engine warm-up time, contributing to lower fuel consumption.

#### **'ICONIC HUMAN TECH' INTERIOR DESIGN**

The new Prius Plug-in Hybrid shares the dashboard design of the latest Prius; a clear, structural arrangement of layered information which places the driver's meters at distance and the displays close at hand.



## SPECIFICATIONS

## 1.8 L PLUG-IN HYBRID E-CVT

Displacement (cm <sup>3</sup> )	1,798
Max power (DIN hp/kW @ rpm)	99/73 @ 5,200
Max torque (Nm @ rpm)	142 @ 4,000
Total system Max power (DIN hp/kW @ rpm)	122/90 @ 5,200 rpm
Fuel Consumption (l/100 km)	1.0*
CO <sub>2</sub> emissions (g/km)	22*
Battery capacity	8.8 kWh
Battery volume	145 l
Battery weight	120 kg
Battery type	Lithium-ion (95 cells)
Max EV speed	135 km/h
Max EV range	over 50 km
Max EV power	68 kW
Max charging power	3.3 kW
Charging time	2.0 h
Climate system	Heat pump
Solar roof	yes
Cd	0,25

## DIMENSIONS

Exterior length (mm)	4,645
Exterior width (mm)	1,760
Exterior height (mm)	1,470

However, the new Toyota PHV benefits from a larger, 8" infotainment screen with updated, 2016 graphics. The dual 4.2" TFT driver's meters also feature PHV-specific graphics. The Prius Plug-in Hybrid instrument panel may be further identified through high-quality, satin chrome-plated ornamentation on the white base of the shift panel.

The new Toyota PHV shares the same new front seat design as the Prius, which offers improved seat cushion comfort to reduce driving fatigue. Maximising occupant space and the quality of the on-board environment, rear accommodation comprises two seats separated by a central console.

The luggage deck has been raised by 160 mm to accommodate the larger plug-in hybrid system battery, with maximum loadspace volume now 360 litres.

## ADVANCED TECHNOLOGY FOR GREATER EFFICIENCY

Every aspect of the advanced technology aboard the new Prius Plug-in Hybrid has been de-

signed to improve the efficiency of the vehicle's PHV powertrain, and to promote an environmentally-conscious lifestyle.

The successful development of technology first revealed on the Auris HSD concept in 2010, the roof of the new Toyota PHV can incorporate a large solar panel which generates electricity to charge the hybrid system battery.

When the vehicle is parked (but not plugged in to a charging socket), the solar roof charges a solar battery which, when fully charged, delivers a pumping charge to the main HV battery.

During driving, the solar charging system

\* Subject to final homologation



charges the 12 volt auxiliary battery, compensating for auxiliary load and thereby reducing the energy consumption of the main HV battery.

Solar charging can increase the EV driving range of the new Prius Plug-in Hybrid by up to maximum 5 km per day, equating to some 1,000 km of all-electric driving per annum.

The range of driving modes available now includes a Battery Charge Mode which uses the engine to generate electricity and charge the battery when the vehicle is operating in HV mode.

The new, dual-zone, gas injection heat pump air-conditioning system is equipped with

S-Flow control, which automatically controls the cabin air vents in relation to passenger seat occupancy, maintaining comfort whilst reducing power consumption.

Multi-LED headlamps also reduce power consumption, whilst a CFRP (Carbon Fibre Reinforced Plastic) tailgate - a world first for a mass production vehicle- reduces weight to further enhance the hybrid drive system's efficiency.

The new Prius Plug-in Hybrid further benefits from a wireless phone charging platform, a large, colour head-up display, a new, Simple Intelligent Parking Assist (S-IPA) system, and an enhanced Toyota Safety Sense system incorporating two features new to the Toyota PHV; Pre-Collision Safety with a pedestrian recognition function, and Full-speed Adaptive Cruise Control, which can slow the car to a standstill when necessary.

#### **TNGA PLATFORM FOR RESPONSIVE, ENGAGING HANDLING**

The Toyota New Global Architecture-based platform plays a defining role in the Plug-in Hybrid's rewarding driving experience, giving the car a lower centre of gravity compared to the current model, and securing a more engaging driving position and more precise and responsive handling, with less body roll.

These qualities are also enhanced by the Prius Plug-in Hybrid's new double wishbone rear suspension, which produces one-third the level of shock when driving on uneven roads compared to the current model. To achieve better handling with more direct response, the front MacPherson strut suspension has also been revised.

The significantly improved dynamic characteristics of the new chassis are matched by the more responsive character of the new plug-in full hybrid system. The 83% boost in EV power due to the hybrid transaxle's Dual Motor Drive System offers drivers highly responsive acceleration characteristics.

Finally - and complimenting the quietness that comes from the improved EV capabilities - a particular focus has been placed on minimising NVH (Noise, Vibration and Harshness).

The optimum placement of sound suppressing and absorbing materials at the source of noise offers occupants unique levels of cabin quietness.



# 2017 TOYOTA GT86

## A Genuine Driver's Car

The GT86 is the perfect expression of Toyota's intention to add passion and excitement to its brand by building cars that are genuinely fun and rewarding to drive. A light and agile, front engine/rear-wheel drive coupe directly inspired by Toyota's fine sportscar heritage, it has earned huge critical acclaim for its performance as a genuine driver's car.



**THE NEW 2017 MODEL** benefits from significant changes that serve to re-emphasise and enhance the performance qualities that define the GT86, while at the same time improving quality, sensory appeal and equipment in line with customer expectations.

### **IMPROVED DRIVING DYNAMICS – TUNED FOR IMPROVED HANDLING, STABILITY AND RIDE COMFORT**

Chief Engineer, Tetsuya Tada's mission has been to strengthen the qualities that define the GT86 as an exceptional driver's car. He declared "we overhauled everything," his team drawing directly on technical feedback gained from the GT86's performance in track racing, including the Nürburgring 24 Hours.

The focus is on achieving even better stability, responsiveness and road comfort through increased body rigidity, revised suspension components and improved aerodynamics. The rear body has been rendered more rigid with additional spot welding around the rear pillar

and the thickness of number of rear panel and bracket components has been increased.

A more stable and comfortable ride has been achieved by adopting new suspension springs and retuned Showa shock absorbers. Optional Sachs shock absorbers will be available for customers seeking a more performance-focused drive.

Detailed aerodynamic revisions include a new, lower nose, revised front and rear bumpers and the addition of strategic fins to the front and sides of the vehicle to secure a smoother airflow.

The coupe retains its unique combination of a compact, front-mounted, naturally aspirated 200 DIN hp horizontally opposed "boxer" engine with rear-wheel drive, with six-speed manual or ECT automatic transmission.

### **EXTERIOR STYLING – POWERFUL APPEARANCE WITH IMPROVED AERODYNAMICS**

The fine detail changes to the GT86's exterior styling improve its aerodynamic performance and add emphasis to its road presence, with no dilution of the coupe's taut, classic lines. These goals achieve perfect harmony in a subtle but effective reworking of the frontal elements, notably with a wider, low-set grille and a pronounced lower lip to the front bumper with integrated fins. The refreshed head-on-view amplifies the car's ground-hugging stance and agile performance.

Aerodynamic detailing extends to a subtle new nose fin and new fog lamp surrounds with a triple-strake design that is both aerodynamically efficient and striking in appearance. The headlight units have been restyled to create a stronger horizontal emphasis, with new bi-LED lamps for full and high beam. The turn indicators have been relocated within the headlamp clusters, arranged as a line of individual orange LEDs beneath an angled series of white daytime running light LEDs.

To the side, the garnishes high on the front wings also gain new aerodynamic fins. The range of wheels available for the 2017 model introduces a new 17-inch slim-spoke alloy design in a machined and dark grey finish.

New features at the rear of the GT86 follow the pattern of those at the front in generating a lower-stronger look, led by a wider and deep-



## SPECIFICATIONS

2.0 BOXER  
6M/T      2.0 BOXER  
6A/T

### ENGINE

Engine code	FA20
Nr. Of cylinders	4-cylinder
Cylinder arrangement	Boxer (horizontally opposed), Natural Aspiration
Fuel type	Petrol
Fuel system	D-4S
Valve mechanism	16-valve DOHC
Displacement (cm <sup>3</sup> )	1,998
Bore x stroke (mm)	86.0 x 86.0
Compression ratio (:1)	12.5:1
Max. Engine speed (rpm)	7,400
Max. power (DIN) KW /rpm	(200) 147/7,000
Max. torque (Nm/rpm)	205/6,400-6,600
Emissions level	EURO6

### SUSPENSIONS

Front	MacPherson Strut
Rear	Double wishbone

### PERFORMANCE

Max. Speed (km/h)	226	210
0-100 km/h	7.6	8.2

### FUEL CONSUMPTION

Urban (l/100km)	10.4	9.6
Extra-urban (l/100km)	6.4	5.7
Combined (l/100km)	7.8	7.1

Fuel tank capacity (l)	50
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### CO<sub>2</sub> EMISSIONS

Urban (g/km)	240	223
Extra-urban (g/km)	148	131
Combined (g/km)	180	164

### EXTERIOR DIMENSIONS

Overall length (mm)	4,240
Overall width (mm)	1,775
Overall height (mm) [with shark fin antenna]	1,285 [1,320]
Wheelbase (mm)	2,570
Tread (mm) front	1,520
Tread (mm) rear	1,540
Drag coefficient (Cd)	0.27

### WEIGHT

Curb weight (kg)	1,222-1,247	1,242-1,270
Min. (EC/ECE)		





er black moulding and diffuser unit that creates a strong trapezoidal shape and extends low enough to conceal the exhaust silencer. The rear spoiler has been redesigned for improved aerodynamics and the rear LED light clusters have been reworked, generating a stronger horizontal line and using lightguides to produce a distinctive lighting signature and featuring new LED turn indicators.

### INTERIOR STYLING

New features and finishes in the cabin reassert the GT86's fundamental character as an authentic driver's car, while also raising the overall visual and tactile quality, creating a greater sensual appeal.

A new three-spoke steering wheel has been fitted, its 362 mm diameter making it the smallest yet fitted to a production Toyota, with a cross-section precision-calculated to offer the best possible grip and feel. It features a prominent silvered 86 logo on the boss, shaved metal-effect trim on the spokes and additional switchgear to operate a new audio system and 4.2-inch colour TFT multi-information display.

The multi-information display has been introduced in the revised triple-dial driver's instrument binnacle, with an information menu that includes fuel economy, cruising distance and more performance-focused data such as a

G-force monitor, power and torque curves and a stopwatch. The tachometer has been adjusted so that 7,000 rpm – the speed for peak power delivery – sits at the top of the dial. The GT86's status as a driver's car is also acknowledged in a new, switchable TRACK mode that lets the driver select the degree of electronic stability and traction control intervention they prefer, including a "fully off" setting.

The instrument panel itself has a new one-piece textured black finish that reduces glare and reflection, and a new carbon fibre mesh pattern trim has been added to the door switch panels and the ventilation control panel on the centre console. Buckskin pattern upholstery is available for the instrument binnacle hood, matching a new upholstery choice that combines leather with perforated Alcantara seat facings, available in all-black, or black with red leather. The GT86's cloth upholstery has also been upgraded, providing better body-holding performance.

The centre console features a new 6.1 inch display for the audio system, which now offers DAB reception. An upgraded Toyota Touch 2 with Go navigation system comes complete with a more intuitive user interface and three years' map updates and access to connected services, including live road traffic information, Google Search and Twitter.



# TOYOTA FCV PLUS

## Preparing the Hydrogen Society

Fuel cell vehicles are often referred to as the ultimate in environment-friendly vehicles. But in a future in which fuel cell vehicles abound, cars will not only be energy users. Toyota's aim is to add an all-new sense of purpose to the automobile by turning fuel cell vehicles from "energy users" into "energy makers".

**NOT ONLY** will these zero emission vehicles reduce the burden on the environment, but they'll also be able to produce and provide energy. The TOYOTA FCV PLUS is a fuel cell vehicle that has accomplished this transition and can contribute to society by being part of the electric power-generating infrastructure.

### THE 3 ROLES OF TOYOTA FCV PLUS

Using the vehicle to convert clean hydrogen into electricity can help protect the environment and serve as an important way to address energy security issues:

- Generating electricity from hydrogen  
In addition to having hydrogen in its own hydrogen tank, TOYOTA FCV PLUS can also generate electricity directly from hydrogen stored outside the vehicle. The vehicle can thus be transformed into a stable source of electric power for use at home or away.
- Sharing generated electricity with others  
While parked, TOYOTA FCV PLUS can provide electricity stored on-board to other cars and to local power grids as part of the local infrastructure.
- Supporting electricity generation into the future



Beyond just being used in an automobile, the fuel cell stack of TOYOTA FCV PLUS can be removed and reused as an electricity generating device, transcending the traditional functions of cars. Put to versatile use around the world, these stacks could contribute significantly to local communities.

**A COMPACT CITY COMMUTER**

Miniaturizing the TOYOTA FCV PLUS' fuel cell stack and other components of the fuel cell system helped make possible a light and compact vehicle that's ideal for city use. Fuel efficiency is enhanced by advanced aerodynamics which have been applied to the vehicle's underside as well. Built-in wireless battery charging panels, covering the rear wheels and under the floor at the front, allow for intelligent external charging of other vehicles or infrastructure. Words and symbols can be displayed on

the windshield and rear window to help others recognize the vehicle's status.

The drive components have been downsized and positioned at the vehicle's four corners to achieve a layout that maximizes interior space. The small fuel cell stack fits between the front wheels, while the hydrogen tank rests behind the rear seats. Together with the adoption of independent in-wheel motor in all four wheels, this allows the TOYOTA FCV PLUS to have both the overall length of a compact car and the interior length of a large sedan. By concentrating functional parts at the front and the rear of the vehicle, this next-generation fuel cell vehicle package creates an optimal weight balance and excellent all-round visibility.

The interior trim and seats feature the same advanced 3D processing and other techniques that give the car its exceedingly dimensional, light and highly rigid skeletal structure.



Built-in wireless battery charging panels covering the rear wheels and under the floor at the front allow for intelligent external charging.

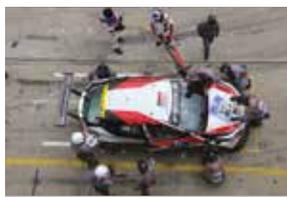
The interior trim and seats feature the same advanced 3D processing that gives the car its light highly rigid skeletal structure.

Length (mm)	3,800 mm
Width (mm)	1,750 mm
Height (mm)	1,540 mm
Wheelbase (mm)	3,000 mm

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