

## TOYOTA PRESENTS THE NEW GR86

- New coupe is the third global Toyota GR model, developed with technical expertise from TOYOTA GAZOO Racing
- Designed for pure driving pleasure, an “analogue car for the digital age”
- An evolution of the qualities that defined the acclaimed GT86 coupe, retaining a classic front engine/rear-wheel drive drivetrain
- New 2.4-litre “boxer” engine delivers significant increases in power and torque
- Transmissions tuned to secure smooth, powerful acceleration up to high engine rpm
- Focus on increased body rigidity, lighter weight and lower centre of gravity for more agile performance and responsiveness
- Design retains cues referencing Toyota’s sports car heritage while adopting motorsports-sourced aerodynamic features
- An exclusive opportunity for customers, with production limited to two years only for Europe

## INTRODUCTION

The new GR86 is Toyota’s third global GR model, creating a “power of three” range of pure-bred sports cars, alongside GR Supra and GR Yaris. Like them, it benefits directly from Toyota’s multi-championship-winning involvement in top-level international motorsport with Toyota Gazoo Racing.

The new coupe will provide a new entry point to Toyota’s GR range, bringing the rewards of sports-focused handling and performance to a wider audience. An evolution of the previous GT86, the model which signalled Toyota’s renewed commitment to sports car engineering, it retains the classic configuration of a front-mounted engine and rear wheel drive. The engine remains a high-revving, four-cylinder “boxer” unit, but with displacement increased to gain a significant increase in power and torque. Technical adjustments to the engine and transmissions ensure that this extra potential is realised with smooth, powerful acceleration across the rev band.

Chassis development has focused on reducing weight and a further lowering of the car’s centre gravity to secure even sharper handling and responsiveness. There is wider use of

aluminium and other light - but - strong materials and strategic strengthening of the car's frame to achieve greater rigidity all-round. The suspension systems also benefit from detailed adjustments to optimise handling performance, while the designers received support from their motorsport colleagues in developing new aerodynamic features for the bodywork.

First revealed in April 2021 the new GR86 makes its European debut today and will be introduced in Europe in the spring of 2022. Production for Europe will be limited to just two years, making this an exclusive proposition for customers – “when it's gone, it's gone.”

### **Fun-to-drive – the Waku Doki car**

The new GR86 is presented as “an analogue car for the digital age,” designed for enthusiasts, by enthusiasts with a focus on the pure pleasures of driving – a quality expressed in the Japanese phrase “waku doki.”

Importantly, GR86 is not a sports car simply for purists and those with high levels of experience: its rewards can be discovered day-to-day on the open road as well as on the track.

As the new entry ticket to the GR brand, it will carry forward the qualities that saw the GT86 generate new fans and enthusiasm for Toyota's car culture with its participation in grass-roots competition and inspiration for tuners and after-market specialists. For those who want to personalise their car, the new model will be accompanied by a range of authentic GR accessories.

GR86 Chief Engineer Yasunori Suezawa sums up Toyota's purpose: “The GR86's mission is to open up the world of GR, enabling it to be enjoyed by more and more people.”

## **POWER AND PERFORMANCE**

### **2.4-litre “boxer” engine**

Just as with the GT86, the horizontally opposed “boxer” engine is a defining element of the new GR86, the heart of its performance and a key contributor to its low centre of gravity.

The 16-valve DOHC four-cylinder unit uses the same cylinder block as before, but displacement has been increased from 1,998 to 2,38 cc. This has been achieved by increasing the bore diameter, from 86 to 94mm.

Retaining the same high, 12.5:1 compression ratio, the engine delivers more power: maximum output has risen by around 17 per cent from 197bhp/147kW to 231bhp/172kW at 7,000rpm. As a result, the 0-62mph acceleration time has been cut by more than a second, to 6.3 seconds (6.9 seconds automatic). GR86's maximum speed is 140mph with manual transmission, 134mph for the automatic.

Torque has also been increased, with performance tuned so that the peak 250Nm is delivered earlier – at 3,700rpm compared to 205Nm at 6,400 – 6,600rpm in the GT86. This helps deliver smooth, powerful acceleration up to high engine speeds, giving rewarding performance, particularly when accelerating out of a bend. Torque output is the same with both manual and automatic transmission.

Detailed changes have been made to reduce the engine's weight and ensure performance appropriate for the engine's higher output. These include thinner cylinder liners, optimisation of the water jacket and a switch from aluminium to a resin material for the rocker cover – which also reduces vibration. The connecting rods have been made stronger and the shape of the con-rod bearing and the combustion chamber have been optimised.

The D-4S fuel injection, which uses both direct and port injection, has been retuned for quicker response to the driver's throttle inputs. The direct injection has a cooling effect in the cylinders, which supports using a high compression ratio; port injection operates under light and medium engine loads, maximising efficiency.

The engine's breathing has also been improved with changes to the diameter and length of the intake manifold port, contributing to more linear torque delivery and acceleration. The air intake has been redesigned to optimise air flow. Further benefits are gained from a new fuel pump design, to ensure consistent flow when cornering, and a smaller high-speed water pump designed for performance at high speeds, with a better flow rate and reliability. A new water-cooled oil cooler has been added, while a thicker radiator structure has air guides to increase the amount of cooling air taken in.

In the exhaust system there is a new 5.6-litre centre pipe which generates a satisfying "growl" under acceleration, augmented by an Active Sound Control system that transmits the sound of the engine to the cabin.

To combat noise and vibration, GR86 has new aluminium, liquid-filled engine mounts and a revised, stiffer oil pan structure with a new cross-rib shape.

## **Transmissions**

The six-speed manual and automatic transmissions in GR86 have both been revised in line with the engine's increased power and torque and to play their part in the car's essential fun-to-drive quality.

The manual system benefits from a new carbon synchroniser that makes for easier shifting into fourth gear. Using a new low-viscosity oil and new bearings ensures shift smoothness is maintained with the higher engine output. To fully exploit the car's performance potential, the driver can switch to Track mode, or switch off the Vehicle Stability Control. The shift lever has been redesigned for a short stroke and snug fit in the driver's hand.

The automatic transmission features paddle controls for the driver to take manual control of gear shifts. In Sport mode, the transmission automatically selects the optimum gear in line with the driver's use of the brake and throttle and the vehicle's dynamic behaviour. To ensure smooth harnessing of the engine's higher power, additional clutch discs and a new high-capacity torque converter have been introduced.

## **CHASSIS AND HANDLING**

### **Lightweight, high-rigidity chassis**

Superb handling was a defining hallmark of the GT86. With GR86 Toyota wanted to deliver the thrill of a car that moves exactly how the driver wants it to.

To ensure the engine's extra power translates into rewarding handling and responsiveness, the chassis and body have been reworked with the use of light but high-strength materials to provide extra rigidity while reducing weight, and the addition of reinforcements in key areas.

At the front, diagonal cross-members have been added to the joints between the suspension and car's frame, improving load transmission from the front tyres and reducing lateral bending. High-strength fasteners have been introduced to connect the frame and the suspension mounts and the bonnet has a new internal diagonal frame, in place of the previous honeycomb design. With these measures, front body lateral rigidity has been increased by 60 per cent.

At the rear, a full ring structure connects the upper and lower chassis and, as at the front,

new fasteners linking the frame and suspension mounts give better handling under the G-forces generated when cornering. With the inner panel now connected to the platform, a continuous frame structure has been created. Overall body twisting rigidity has been increased by 50 per cent.

The focus on weight reduction and bringing down the car's centre of gravity is reflected in the use of strong and lightweight materials in key areas. These include high-strength and hot-stamped steels and aluminium, which help control roll and pitch behaviour. Applying structural adhesives throughout the underbody adds to the taut, connected quality of the car's frame.

Aluminium is now used for the roof panel and front wings as well as the bonnet, with further weight savings from new front seat, silencer and propshaft designs. These are key in giving GR86 a near-perfect 53:47 front/rear weight balance and making it one of the lightest four-seat sports cars on the market, with the lowest centre of gravity. In fact, GR86 is almost equal in weight to the GT86, despite the addition of extra features for safety and collision protection.

## **Suspension**

GR86 carries forward the suspension systems featured on the GT86 – front independent MacPherson struts and rear double wishbones - with performance tuned for an even higher level of response and stable handling. A Torsen limited-slip differential gives reassuring traction when cornering.

Shock absorber damping and coil spring characteristics have been optimised throughout to give the car planted, predictable handling. At the front, a rebound spring and an aluminium engine mount bracket have been added and the steering gearbox mount has been made more rigid.

With more torque being generated by the 2.4-litre engine, the rear suspension has been reinforced with the anti-roll bar now connected directly to the subframe to gain maximum stability.

## **Steering**

The new electric power steering system has a 13.5:1 ratio and requires just 2.5 turns of

GR86's three-spoke steering wheel to move from lock to lock., giving easy manoeuvrability. The system has a new column-mounted integrated motor that reduces weight and takes up less space. The gear box mount has been made more rigid (see above), with hard rubber bushing and a reshaped mounting washer.

## **Braking**

Ventilated disc brakes are fitted front and rear, with diameters of 294 and 290mm respectively. Braking control systems – ABS, Brake Assist, Traction Control, Vehicle Stability Control, Hill-start Assist – are provided as standard, together with an emergency brake signal system.

## **DESIGN**

### **Exterior and aerodynamics**

GR86's exterior design is an evolution of the taut, low-slung look of the GT86, expressing its classic front engine/rear-wheel drive set-up and adopting styling cues that reference some of Toyota's great sports cars of the past, such as the 2000GT and AE86 Corolla.

The overall dimensions are close to those of the GT86, but notably the height has been lowered by 10 mm (to 1,310mm) and 5mm have been added to the wheelbase (2,575 mm). The successful lowering of the centre of gravity is central to the car's handling and the driving experience – supported by a 5 mm lowering of the driver's hip-point.

The new LED headlights have an internal L-shaped arrangement like those on the GR Supra, while the new grille has a GR-exclusive G-motif mesh pattern. The front bumper moulding has a new textured finish that is functional as well as sporty, helping to reduce drag.

In side view, the powerful front wings and large rocker mouldings form side skirts, while the horizontally aligned underbody, running across the top of the wings and through the doorline, projects a strong front-to-rear posture. The rear wings are equally powerful in appearance, while the tapered rear cabin emphasises the car's wide stance and low centre of gravity. The rear light clusters have a strong three-dimensional design and blend into a moulding that runs across the width of the car.

A series of aerodynamic features has been introduced, including a front air dam and fully functioning air vents, created with Toyota Gazoo Racing's motorsport expertise. These are located behind the front wheel arches to manage airflow and reduce turbulence around the tyres. The new black-finished door mirrors have a curved design for aerodynamic efficiency, while fins added to the rear wheel arches and aero fins on the lower rear bumper help control the air flow over and away from the car's body, aiding stability. On high-grade models, a ducktail spoiler is added to the lower edge of the back door.

According to model grade, GR86 features 17-inch machined 10-spoke alloy wheels with Michelin Primacy HP tyres, or 18-inch black rims, shod with Michelin Pilot Sport 4 rubber.

### **Interior – cabin and load space**

GR86's interior design goal was to deliver the best possible layout for usability and operation of the car's systems, with a strong horizontally configured instrument panel that gives the driver a wide field of vision and helps them focus on the business of driving. Throughout, there is a sense of harmony in the design.

Around the driver, function controls are designed and located for intuitive recognition and operation, including an air conditioning panel in the centre console with large LED-illuminated dials and piano key switches, and door armrests with integrated release handles. The functionality of the centre armrest has been improved with cup/small bottle holders, two USB ports and an AUX socket.

The new front sports seats feature supportive pads that are independent of each other, ensuring a slim design and good body-holding. A walk-in release lever on the front seat shoulder makes for easy access to the rear.

The interior colour-ways also reflect the driving focus – all black, with silver accents, or black with deep red upholstery details, stitching, carpets and door cards.

The rear seats can be folded down using release catches in the cabin, or a release strap in the boot. When folded, there is load space big enough to take four wheels – ideal for those driving their GR86 to and from track days.

### **MULTIMEDIA AND INFORMATION**

GR86's special sports car status is acknowledged in details such as GR branding in the start-up animations for the eight-inch centre touchscreen and the driver's seven-inch multi-information display.

The multimedia system has increased CPU computing power, giving faster response. Standard features include DAB reception, Bluetooth and Apple CarPlay and Android Auto smartphone integration. USB ports and AUX socket are also provided for device connection and recharging. Equipped with a new Data Communications Module, the GR86 provides an eCall function in the event of an accident or emergency.

The driver's instrument binnacle features a multi-information display and to the left of the single-dial tachometer with central speed read-out. The display contents can be selected, reset and scrolled using switches on the steering wheel. In Sport mode, the meter gains red highlights.

When the driver switches to Track mode, a different display appears, designed with help from Toyota Gazoo Racing's professional drivers. The read-out shows a central bar display of the engine rpm, plus the selected gear, speed and oil and water temperatures, allowing the driver to instantly recognise the car's status and achieve better shift timing.

## **TOYOTA GAZOO RACING**

Toyota's development of its GR models – the GR Supra two-seat coupe, the rally-inspired GR Yaris and now GR86 – fulfils its mission to use experience and know-how gained from motorsport to make ever-better cars for the road and to give people opportunities to enjoy the pure joys of driving.

The success of Toyota Gazoo Racing in worldwide competition provides a strong platform on which to build enthusiasm for Toyota among fans worldwide and to develop new technologies and techniques that can be transferred from racing and rallying to everyday motoring.

Toyota Gazoo Racing has won four drivers' and manufacturers' titles in the FIA World Endurance Championship since entering the competition in 2012 and has recorded four successive Le Mans 24 Hours victories up to 2021. The Toyota Gazoo Racing World Rally Team brought Toyota back to the World Rally Championship in 2017, since when it has achieved three drivers' and two manufacturers' titles with the Yaris WRC – including both



honours in the 2021 season. Toyota Gazoo Racing also regularly competes at the top level in the Dakar Rally, the South Africa-based team claiming victory in 2019 with a specially prepared Hilux.

## Toyota GR86 technical specifications

*All data remains provisional/tentative prior to homologation.*

ENGINE	
Type	4-cylinder horizontally opposed (boxer)
Valve mechanism	16-valve DOHC
Fuel system	Toyota D-4S direct and port injection
Capacity (cc)	2,387
Bore x stroke (mm)	94 x 86
Compression ratio	12.5:1
Max. power (bhp/DIN hp/kW @ rpm)	231/234/172 @ 7,000
Max. torque (Nm @ rpm)	250 @ 3,700
TRANSMISSION	
Type	6-speed manual/6-speed automatic
PERFORMANCE	
Max. speed (mph)	140 manual/134 automatic
0-62mph acceleration (sec)	6.3 manual/6.9 automatic
SUSPENSION	
Front suspension	MacPherson strut
Rear suspension	Double wishbone
Anti-roll bar thickness (mm)	18.3 front/14 rear
STEERING	
Type	Electric power steering, rack and pinion
Turns lock-to-lock	2.5
Min. turning circle – body (m)	5.7
Min. turning circle – tyre (m)	5.4
BRAKES	
Front	Ventilated discs
Rear	Ventilated discs
TYRES	
Tyre size	215/45R17 215/40R18
DIMENSIONS – EXTERIOR	
Overall length (mm)	4,265
Overall width (mm)	1,775
Overall height (mm)	1,310

Wheelbase (mm)	2,757
Front track (mm)	1,520
Rear track (mm)	1,550
<b>DIMENSIONS – INTERIOR</b>	
Length (mm)	1,625
Width (mm)	1,480
Height (mm)	1,060
Load space – VDA (l)	226
<b>WEIGHTS</b>	
Kerb weight – max-min (kg)	1,275-1,314
Gross weight (kg)	1,670 manual/1,700 automatic

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