

## **TOYOTA GT86**

### **INTRODUCTION**

GT86, Toyota's compact 2+2 coupe, has been conceived as an entirely driver-focused machine, designed to deliver a classic sports car experience. That means precise, instant response to the smallest throttle and steering inputs and the kind of performance sought by those for whom driving is a passion, not a necessity.

GT86 is the world's most compact four-seat sports car, built on a new platform, with a highly aerodynamic bodysheet stretched tight over the car's mechanical elements.

Thousands of man hours were spent meeting hundreds of development challenges. Throughout, Chief Engineer Tetsuya Tada and his Subaru counterpart, Toshio Masuda, were determined to keep three key elements in the new vehicle: rear-wheel drive, no turbocharging and ordinary tyres.

Rather than fitting a heavy, large capacity powertrain, Toyota opted instead to go back to its sporting roots, installing a compact, front-mounted, free-revving, horizontally opposed 'boxer' petrol engine that drives the rear wheels.

The powertrain combines with the car's light weight, low inertia and a low centre of gravity to achieve the best possible power-to-weight ratio. For the driver that means lively, accessible performance and dynamic character with minimal intrusion from electronic systems.

The thinking behind GT86 was to recapture the purity of the classic sports car experience. This has been achieved by a team of engineers passionate about their task, honed through competition and fine-tuned to satisfy the most discerning driver.

The engineering design includes parts that can easily be adjusted or customised so that owners can tailor the car to personal preferences. Making the car simple, for example by minimising the number of electronic control devices, means GT86 is relatively easy to personalise. And to support the aim of making GT86 fun, high performance tyres were rejected in favour of standard rubber.

### **2017 GT86**

In October 2016 Toyota introduced the 2017 GT86, the first significant revision of the original model. In both design and engineering, the changes – overseen by Chief Engineer Tada – were not radical, but rather natural and effective development and enhancement of the coupe's established qualities.

In styling terms, a revised frontal treatment emphasises the car's horizontal lines, with a lower nose and new LED headlight units with integrated turn indicators and daytime running lights. New-design 10-spoke cast alloy wheels have also been introduced. Tellingly, every design detail serves to maintain or improve the car's aerodynamics, including the addition of two fins in the lower bumper beneath the grille aperture.

Changes to the cabin focus on improved quality with new trims and upholsteries and a new, smaller diameter steering wheel with switchgear to control the audio and new 4.2-inch colour TFT multi-information display. The new display features additional read-outs for performance-focused driving, including torque and power curves, lap time function and G-force monitor. Drivers can now also make use of a new "Track" driving mode, that deactivates the car's vehicle stability control and traction control electronic systems.

To raise levels of handling, stability and ride comfort, detailed changes have been made to the springs and dampers and strategic reinforcements have been introduced to the car's bodyshell.

### **GT86 Club Series**

Toyota's motorsport heritage, from grassroots enthusiasts to the highest levels of international pro-racing, is celebrated in Club Series, a stamp of quality for special, limited edition versions of GT86 offered to UK customers. Club Series has been created to capture all the qualities of performance, style and handling prowess that distinguish Toyota's coupe as an authentic driver's car.

The first GT86 Orange Edition is the first Club Series model to be introduced, launched in spring 2017. It stands apart from the mainstream range with a Solar Orange paint finish, a colour given exceptional depth thanks to a special three-coat application process. Details finished in metallic black strike a strong contrast, including the rear spoiler tips and door mirror housings. The effect is enhanced by a set of Anthracite 17-inch alloy wheels.

In the cabin the front sports seats are upholstered in black leather and Alcantara with contrast orange stitching, while the dashboard and door panel trims are covered in black suede, also with orange stitchwork. Key equipment features include the Toyota Touch 2 multimedia system with DAB and Bluetooth, heated front seats, aluminium sports pedals, a limited slip differential and performance brake discs and pads.

### **The name and the number**

The "eight six" in GT86 has played a significant part in the car's development, being more than just a reference to its celebrated ancestor, the AE86 Corolla GT.

The theme was set with the car having the in-house development code 086A. The boxer engine's 86mm x 86mm square bore and stroke are faithful to Toyota's sports engine history: the 3M engine of the 2000GT, and the 1G-G which powered the Supra were both straight six-cylinder units with a 75mm-square bore and stroke, and the in-line four-cylinder engine later used for Celica and MR2 followed the same pattern with an 86mm bore and stroke.

Even the diameter of GT86's chrome-tipped twin exhausts is 86mm.

### **Toyota's sports car heritage**

GT86 captures some of the best qualities of three models from Toyota's rich sporting heritage: the Sports 800, 2000GT and Corolla GT (AE86).

It may have been launched as the world's only current sports car to feature a front-mounted, horizontally opposed engine and rear-wheel drive, but it cannot claim to be the first. That honour is held by Toyota's two-cylinder boxer-engined Sports 800, which the company began developing in 1962. Since then, Toyota has produced a succession of driver-focused sports cars with a front-engine, rear-wheel drive format that have proved as popular with the public as they have been successful in competition.

The beautiful 2000GT, a coupe powered by a 2.0-litre straight-six engine, was first displayed at the 1965 Tokyo motor show and helped establish Toyota's global reputation as a sports car manufacturer, even though only 337 were built.

Even now its styling looks fresh. During the development of GT86, a 2000GT was parked next to the clay model of the new sports car and, without any specific instructions, the designers continued their work, looking occasionally at the classic Toyota. As a result, their work infused GT86 with the spirit of the 2000GT without imitating it.

GT86 shares the spirit of the Corolla GT, too, a model that was not an extreme sports car, but a moderately priced car with a mass-produced engine and a compact, front-engine/rear-wheel drive set-up.

### **Collaboration with Subaru**

Following Toyota's alliance with Subaru in 2005, the two companies began discussing joint development of a true entry-level sports car.

They agreed on using a front-engine/rear-wheel drive layout with a horizontally opposed engine, a concept that would give the new car tremendous impact.

The feasibility study for the GT86 project began in 2006, with Toyota taking the lead in both product planning and design phases. Working together as Team 86, Toyota and Subaru shared responsibility for the development programme.

Subaru took the leading role in engineering, with Toyota technologies and know-how employed in vehicle fundamentals, such as engine, transmission and suspension. At the evaluation stage, the two companies worked together to refine the vehicle's performance and dynamic abilities on roads and race tracks around the world.

Each company was independently responsible for the ultimate driving feel of their own derivative. Fine-tuning by Toyota test drivers has created the agile response, precise control, confidence-inspiring stability and sheer driving entertainment for which GT86 has already become renowned.

## **DESIGN**

- **Inspired by the spirit of the 2000GT**
- **The world's most compact four-seater sports car**
- **'Aero Sandwiching' air flow concept**
- **Exterior and cabin details revised for 2017**
- **Lowest hip-point of any Toyota production vehicle**

GT86's design is all about using modern sports car technologies to create a car that is both beautiful to look at and a pleasure to drive. Toyota calls the concept "Neo Functionalism," expressing how the car's driving quality and aesthetic beauty are part of its functionality.

Functional shapes and forms are the driving force behind the design, but at the same time GT86's appearance recalls Toyota's sports car heritage.

For instance, the exterior lines and surfaces are designed not only to look good, but also to help the driver to know just where each corner of the vehicle is at all times, so it is easy to place accurately on the road or track.

The view out from inside the car was integral to the design process, so the front wings are clearly visible from the wheel, as are (in the door mirrors) the car's rear quarters.

GT86 measures 4,240mm long, 1,320mm high and 1,775mm wide, with a 2,570mm wheelbase, dimensions which make it the most compact four-seater sports car available today.

It combines the technical constraints of the smallest possible packaging dimensions, a low centre of gravity and excellent dynamic performance with sweeping styling that evokes Toyota sports cars of the past.

A perfectly preserved 2000GT was placed in the design studio as the full-scale clay mock-up of the GT86 was being sculpted. As result, the spirit of the 1967 sports car was subtly infused in the styling. Hints of this can be seen in the absence of cut lines in the cockpit superstructure, the form of the side windows and the character line in the rear wings.

The 2000GT's cut lines also inspired the designers to place a similar emphasis on the door apertures, where the line segmentation evokes the traditional character of a two-door sports car.

GT86's powerful but simple styling incorporates the two principal elements of Toyota's current design language: a focus on the lower part of the car's front end, for example by enlarging the lower grille, to give a more distinctive and assertive appearance; and the adoption of a keener-edged styling that produces a clearer and more expressive look.

GT86's "face" has been sharpened for 2017 with new headlight units that create a stronger horizontal emphasis. LEDs are used for both low and high-beam and the turn indicators have been relocated from the front bumper to within the headlamp clusters, presented as a range of individual orange LEDs that harmonise with angled arrangement of the white daytime running lights. The rear lights have been reworked, too, again generating a stronger horizontal effect with new light guides for the LED tail lights.

The aerodynamic performance is supported by a concept called "aero-sandwiching", by which the car is pushed by air from the top, bottom and both sides to stabilise it vertically and horizontally. This helps settle the car on the road without unnecessary downforce and with no negative effect on its drag coefficient.

The 'dented' contour of the pagoda-style roof shows this system at work; a similar treatment of the car's underbody has the same effect. As a result GT86 has a drag coefficient of 0.27.

The sides of the roof were raised to allow extra headroom inside, which meant the overall roof height could be further reduced. The raised section on each side of the roof widens towards the rear, which gives the structure greater torsional stiffness. This has particular value in the GT86 where, to keep weight down, the steel used for the roof is just 0.65mm thick.

To the rear, the contrast between the compact cabin and the broad shouldered rear bodywork reinforces the car's wide rear track and firmly planted stance. The raised rear diffuser, with integrated twin chrome tailpipes, expresses the car's aerodynamics and lightweight agility.

The GT86 Pro is equipped with a wing-type rear spoiler, new for the 2017 model year, replacing the previous unit that was integrated into the boot lid. The new design provides better aerodynamic performance and downforce.

The design team's attention to detail even included scrutiny of the vehicle's unpainted resin surfaces. A new grain pattern inspired by the look and texture of carbon fibre was created for GT86, which to the front forms a V-shaped pattern that focuses on the vehicle's centre line. At the rear the pattern is inverted to express the car's ground-hugging stance.

Seven exterior colours are available: GT Pure Red, GT Ice Silver metallic, GT Black metallic, GT Starlight Blue, GT Grey metallic, GT Orange metallic and GT White Pearl.

The 2017 GT86 is fitted with lightweight 10-spoke 17-inch aluminium wheels, with a contrast bright and machined dark grey finish.

### **Driver-focused cockpit**

On board, the ergonomics and function of every element the driver interacts with have been fine-tuned to make driving the car as natural, instinctive and rewarding as possible.

The shape, layout and construction of all the driving controls have been designed with a focus on functionality and usability. This includes the position, display and organisation of the instrument dials; the grip and functional design of the steering wheel; the intuitive layout and operability of all the switchgear; and the ideal shape, build and material finish of the seats.

The horizontal dashboard design helps communicate the vehicle's roll posture to the driver, while its symmetrical construction makes it easy for the driver to pinpoint the car's centre line – particularly useful for competition driving. To help with this, a centre line mark has been made on the front upper edge of the dashboard, which is reflected in the windscreen.

The three-meter instrument cluster is arranged around a large tachometer, designed for the best possible visibility and readability. For the 2017 model, the tachometer has been

reoriented so that 7,000rpm – the point at which peak power is delivered – is at the 12 o'clock position. A new 4.2-inch colour TFT multi-information display is included in the instrument binnacle's triple-dial arrangement with a switchable menu that provides familiar journey distance and fuel economy information plus more performance-focused data, such as power and torque curves, stopwatch function with lap time read-out and a G-force monitor..

Also new for 2017, Toyota has reworked the three-spoke steering wheel, giving it a new grip profile and further reducing its diameter to 362mm, making it the smallest featured on any Toyota production model. As well as adding auxiliary switchgear, the wheel has gained sculpted metal-effect trims and a bright silvered 86 logo on the boss.

GT86 has the lowest driver hip-point of any Toyota production vehicle, at 400mm, giving a driving position 7mm lower than in a Porsche Cayman. The seat design has been honed using information gained during circuit testing at the Nürburgring to ensure the driver remains comfortable when spending long periods behind the wheel. The seatback and cushions are designed to give the best possible support under acceleration G-forces from the front, rear and sides.

Heated sports front seats with black cloth upholstery are standard on the GT86 model, with black leather and Alcantara featured in the GT86 Pro. Both cloth and leather finishes can be specified as an option with red highlights on the seatback and cushion bolsters and along the door armrests.

The one-piece rear seatback can be folded flat, giving extra loadspace when required.

Beyond the low centre of gravity inherent in its design, a further advantage of the boxer engine is its compact dimensions. This means the transmission intrudes less in the cabin, the pedal box does not have to be squeezed to one side and the pedals can be perfectly positioned for sports driving.

The driver gains extra support from soft knee pads built into the door trim and centre console, helping keep pedal control when the car is experiencing high levels of lateral movement.

A frameless rear-view mirror maximises the driver's view astern without overly impeding the view forward through the windscreen. For the 2017 model year, a new carbon-fibre effect trim has been introduced for the air conditioning control panel surrounds and power window switch units, and black suede-effect dashboard panel and door trims have been added to create a unified, all-black appearance.

The cockpit feel of the cabin is heightened by the black roof lining, the engine start button on the centre console, lightweight aluminium pedals and aviation-style rocker switchgear.

### **Equipment features**

For the 2017 model year the GT86 range was consolidated into two versions: GT86 and GT86 Pro.

The GT86 is fitted as standard with lightweight 17-inch alloys, front fog lamps, a limited-slip differential, twin chrome-finished exhaust tailpipes, dual-zone air conditioning, keyless entry with push-button start, cruise control, heated power-folding door mirrors, aluminium sports pedals, leather steering wheel, handbrake and gearshift trim, shark fin antenna and a tyre pressure monitoring system. It also comes with the Toyota Touch 2 multimedia system with touchscreen control, CD player, Bluetooth, USB port and Aux-in socket.

The GT86 Pro further benefits from a wing-type rear spoiler (which can be deleted at no cost), combination leather and Alcantara upholstery, suede-effect dashboard and door trims and a leather-trimmed driver's armrest.

As an option, the Toyota Touch system can be upgraded on all versions to Toyota Touch with Go, with satellite navigation and advanced functions such as speed and safety camera warnings, on-board connection to Google Local Search and (via subscription) connected services providing data such as live parking and fuel price information and local weather forecasts.

### **POWERTRAIN**

- **World's first horizontally opposed 'boxer' engine with Toyota D4-S direct injection**
- **Maximum output 197bhp (147kW)**
- **Short-throw six-speed manual transmission, or six-speed automatic**
- **'Sound generator' enhances engine note under full throttle**

During GT86's development, Chief Engineer Tetsuya Tada defined a unique combination of powertrain performance characteristics. These embraced a low centre of gravity and a naturally aspirated, high-revving sports engine capable of delivering 100 DIN hp per litre.

The key to achieving these potentially conflicting requirements lay in combining Subaru's newly developed boxer engine with Toyota's latest fuel injection system. The result is



the world's first horizontally opposed engine with D-4S (direct injection 4-stroke) technology.

Tada's reluctance to use turbocharging meant there was still a considerable engineering challenge: there had never been a naturally aspirated, direct fuel injection engine revving to 7,400rpm, until the GT86...

## **Engine**

Toyota's D-4S injection technology, add to Subaru's 1,998cc four-cylinder boxer engine for the first time, features separate twin injectors for both direct and port injection. This allows both high-pressure direct injection into the cylinder and conventional intake port injection, or direct cylinder injection only, according to engine speed. Thus, intake air and fuel are evenly mixed at all engine speeds, increasing throttle response, power and torque over a wide speed range without sacrificing fuel efficiency and environmental performance.

With a namesake 86mm x 86mm bore and stroke – a 'square' engine that combines fuel economy with balanced rotation – the engine block and 16-valve DOHC cylinder heads have been developed to achieve both high engine speeds and a high 12.5:1 compression ratio.

Piston mass has been minimised and length optimised in the interests of engine speed. The crest shape has also been designed to allow for direct injection and a high compression ratio, and the use of a 50mm-diameter crank pin increases rigidity at high engine speeds. Furthermore, the connecting rod shape has also been designed to help deliver the required high engine speeds.

With the aim of keeping the engine position and centre of gravity as low as possible, the air intake is front-mounted. To the same end, the exhaust system and oil pan designs were completely revised. By adjusting the layout of the exhaust's middle pipe section and keeping the system's vertical dimensions as compact as possible the designers contributed to keeping the overall height of the car as low as possible.

The exhaust has a dual-pipe and silencer arrangement to deliver the best efficiency, while the layout of the manifold and use of a large diameter pipe helps reduce exhaust pressure losses. There is also a front hexagonal cell catalyst and rear low pressure loss catalyst to improve emissions performance.

Toyota engineers have made the oil pan as compact as a dry sump, and its thin design made it possible to lower the engine's centre of gravity. A unique internal fin shape was developed to enable oil to be scooped up and promote thorough lubrication.

The engine revs freely to 7,400rpm, at which point a gear shift prompt light flashes on the driver's instrument panel. Over-revving the engine provokes a soft rev limiter rather than a sudden engine cut-out.

Equalising the intake and exhaust timing has given the car a pleasant, smooth-revving sound, but Toyota engineers were sensitive to the fact that strict noise regulations in some countries would make it difficult to provide the kind of exhaust note drivers like to hear from a sports car. They responded by bringing the sound directly into the car – the first time this approach has been taken in a Toyota vehicle. When intake pulses hit the sound creator, a damper resonates at specific frequencies to optimise the intake sound. This sound is then channelled directly into the cabin via a rubber hose. Under gentle acceleration there is a stress-free, soft intake sound, which changes to a true sports car note under full throttle.

### **Six-speed manual and automatic transmissions**

As the transmission is one of the elements of the car most directly connected to the driver, meticulous attention to its performance and quality was fundamental to the development of GT86. The flat-four engine can be mated to either a manual or (on GT86 Pro models) automatic six-speed gearbox.

An unprecedented number of engineers from Toyota, Subaru and Aisin AI worked with a researcher specialising in gear shift feel to achieve a significant upgrade of an existing Toyota six-speed manual transmission.

All parties agreed at the outset that, in a car created for manual transmission purists, the gearbox should have a short shift, flick-of-the-wrist, lever movement. Five separate prototypes were built before the final unit was delivered, and 85 per cent of components were newly designed.

The manual transmission offers quick, precise shifting through closely stacked ratios, using a tactile, short-throw lever. First to third gears use a triple-cone synchromesh, and the unit's highly rigid-feeling construction makes operation smooth but firm, with no unpleasant stiffness when the gears engage.

The Toyota-designed six-speed automatic transmission offers direct response and comes with steering wheel-mounted shift paddles. It achieves the world's fastest torque converter auto shift speed of just two tenths of a second. It incorporates high response gear change control, which supports sporty driving in both M (manual) and Sport modes by prioritising responsiveness during upshifts to achieve extremely fast gear changes. The unit is also designed for a dash of extra sporty character, with a blipping downshift

control automatically revving the engine when shifting down the gears, matching engine speed to the mesh speed of the next gear for very smooth and rapid shifts.

Even when driving in D (Drive) range, the transmission lets the driver temporarily override the gearbox using the paddle shift control. Sport mode introduces faster shift response times and activates lock-up control from low speeds, giving a more direct gear shift feel. Snow mode automatically adjusts throttle response to control torque delivery on snow and other slippery surfaces to maximise vehicle grip and traction.

Power is distributed to the rear wheels via a Torsen limited slip differential with a 4.1 final drive ratio to give the best possible traction and grip in all conditions.

### **POWER-TO-WEIGHT RATIO AND CHASSIS BALANCE**

- **Weight-saving measures keep total vehicle weight down to 1,240kg**
- **Ultra-low centre of gravity – 460mm**
- **Ideal 53:47 front/rear weight distribution**
- **Fine-tuned front MacPherson strut and rear double wishbone suspension**
- **Vehicle Stability Control with Sport and Track modes**
- **17-inch alloy wheels as standard**

GT86 achieves the best possible power-to-weight ratio thanks to its special powertrain format, its compact design, light weight, low inertia and low centre of gravity.

Drivers can fully exploit the car's nimble handling and cornering poise, thanks to the fine tuning of the brakes and steering, a supercar-rivalling lack of vehicle inertia and the fundamental benefit of the very low centre of gravity.

The Nürburgring played an important role in work done by chief test driver Akihiro Osaka and his team in tweaking performance. Osaka's approach was to alternate testing between the track and the surrounding country roads to ensure GT86 could deliver both the durability demanded by endurance racing and the handling quality to fully engage drivers in everyday use.

### **Comprehensive weight-saving measures**

Weight-saving was central to the development of GT86, an approach that also dovetailed with the Japanese concept of *honmono kan* – making it authentic. The view was that only a genuinely lightweight car could give the kind of intimacy and involvement that would make the act of driving feel like an extension of the driver's body.

A car with a 2.0-litre engine in this vehicle class usually weighs about 1,300kg, but Toyota was determined GT86 should be about 1,200kg to guarantee an excellent power-to-weight ratio.

It was agreed the key to minimising weight was to maximise use of specialised, exclusive parts through a Common Parts Reduction Campaign. For example, the common fuel tank used initially was replaced with a model-specific design which has an unusual shape in order to fit into the space available. Ultimately this policy reduced common part usage in GT86 to just nine per cent.

Establishing the correct degree of body rigidity calls for a delicate balance to be struck between performance and weight gain, for example by increasing strength in some areas, but decreasing it in others. The body engineers made wide use of high tensile sheet steel throughout the bodyshell to achieve light weight with efficient impact absorption and torsional stiffness.

Areas such as the roof side rails, front header and centre pillar reinforcement use 908MPa high tensile steel, with 1,500Mpa grade hot-pressed steel for the roof centre reinforcement. The pagoda roof shape gives the structure extra torsional stiffness, while fabricating it in steel just 0.65mm thick helps minimise weight.

The bonnet is made of sheet aluminium, while an innovative front wing design allows thinner sheet steel to be used in its construction. Together these weight-saving measures have resulted in GT86 tipping the scales from only 1,239kg.

### **Ideal weight distribution**

The flat-four engine format and the driver's hip point – at 400mm the lowest of any current Toyota production model – together give GT86 an ultra-low centre of gravity, at just 460mm. Both the powertrain and the driving position have been set as low and as far back as possible to achieve the best balance: the car has a near-perfect 53:47 front-to-rear weight distribution.

Toyota engineers found that in spirited driving, GT86's 53:47 front bias produced the ideal response to even subtle steering, throttle and brake inputs, allowing drivers to readily control dynamic weight distribution for the best possible vehicle behaviour.

### **Suspension fine-tuning**

The suspension – front MacPherson struts, incorporating a performance rod, double wishbone rear suspension and front and rear anti-roll bars – is tuned for instant response to driver input, with a direct handling feel, sharp response and superb controllability.

A new front suspension layout was adopted to maximise the benefits of the powertrain's low centre of gravity and low inertia. Using stiffer mounting points, the system has a new-design upper support, shock absorber, coil spring, stabiliser, knuckle, lower arm and cross member.

The position of the L-shaped lower arm has been reversed so that the engine can be mounted as low and as close to the centre of the vehicle as possible. The steering rack has been located behind the cross member, while the cross member itself has been specially designed to fit within the space between the oil pan and the exhaust pipe. To further lower the car's centre of gravity, the coil springs and strut mounts have been positioned as low as possible.

The 23N/mm front spring rates allow for slight body roll on initial turn-in, creating the kind of perfect relationship between steering feel and vehicle behaviour shown by classic front-engine/rear-drive platforms.

The rear double wishbone suspension delivers an ideal combination of stability, grip and driver feedback. It, too, has stiffer mounting points, as well as a newly designed subframe, shock absorbers, coil spring, lower arm, stabiliser and trailing link.

The subframe's differential opening has been made larger, reducing the weight of the system. The cross-sections of the opening have also been enlarged to maximise rigidity, and the rigidity of the body and subframe attachment points has been enhanced to reduce weight gain while at the same time achieving the best possible grip and stability. Furthermore, the roll axis has been tuned to compliment the front suspension, while maintaining the high roll rigidity expected of a sports car.

For the 2017 model, detailed adjustments were made to the front and rear Showa shock absorbers and coil springs to achieve even better handling and stability. Further handling benefits have been gained from reinforcements added to the bodysell in key areas including the front suspension towers and rear wheelarches.

### **Electric power steering**

GT86 is fitted with a column-coaxial electric power steering system, giving quick, direct and accurate steering feel. The steering wheel can be adjusted for rake through 15mm and reach through 20mm. The particularly low, 16-degree column tilt angle is essential for compatibility with GT86's very low driver hip point.

The steering system was developed for high rigidity from column to rack and it has a particularly quick 13:1 gear ratio.

## Braking and stability control systems

The ventilated disc brakes front (294mm diameter) and rear (290mm) give a brake pedal feel that's different to any other Toyota. Response to pedal input has been tuned to give precise modulation, helping the driver's car control finesse by allowing for the smoothest possible dynamic weight transfer under braking.

GT86 is equipped as standard with ABS, Electronic Brakeforce Distribution, traction control and an advanced, three-mode Vehicle Stability Control. The ABS and switchable VSC have been tuned to combine dynamic stability at the limit of the car's performance envelope with minimal electronic intrusion on the driving experience.

The VSC system has a VSC Sport mode. When selected using a switch on the transmission tunnel, VSC Sport expands the permissible range of lateral acceleration and movement before the system intervenes, allowing the driver to explore the limits of the car's dynamics without sacrificing stability.

## New "Track" mode

The honing of the 2017 GT86's handling included tuning the electronic control systems, resulting in a new selectable "track" mode that lets the driver tap into the car's full potential by adjusting the level of stability and traction control, including a "fully off" option.

The word "track" is used with justification, the logic system having been fine-tuned with the benefit of data gathered from the GT86's racing performance in the full-on challenge of the 24 Hours of Nürburgring.

## Wheels and tyres

Both the 2017 GT86 and GT86 Pro are fitted as standard with 17-inch cast multi-spoke alloy wheels with a contrast bright and grey machined finish. Tyre dimensions are 215/45R17 front and rear.

## TIMELINE AND UK SALES

2011	November	GT86 makes its world debut at the Tokyo motor show.
2012	February	Toyota announces GT86 will <a href="#">go on sale in the UK</a> in July, priced from £24,995.
	March	The production-ready GT86 appears for the first time in Europe at the <a href="#">Geneva motor show</a> .
	April	Gazoo Racing give the GT86 its <a href="#">competition debut</a> , entering two cars in the Nürburgring 24 Hours.

	July	The official start of UK sales is celebrated with a major presentation of the new GT86 at the <a href="#">Goodwood Festival of Speed</a> .
	December	Top Gear magazine names the GT86 as its <a href="#">car of the year</a> .
2013	February	The <a href="#">GT86 TRD</a> is introduced in the UK, featuring genuine TRD parts and accessories.
2014	October	Toyota <a href="#">revises the GT86 model line-up</a> with new Primo and Aero grades. Minor changes are made to equipment features and interior styling.
2015	May	<a href="#">The range is revised</a> with new wheels and upholstery options.
	July	The new <a href="#">Blanco special edition</a> model is introduced.
2016	October	<a href="#">2017 GT86 is released</a> with revised handling and equipment specifications. Range is revised to two grades – GT86 and GT86 Pro.
2017	May	Toyota introduces new Club Series limited edition versions of GT86 with the <a href="#">GT86 Orange Edition</a> . Sales are limited to 350 units.

UK sales in 2017: 664

Cumulative UK sales since launch (2012): 6,369

## TOYOTA GT86 TECHNICAL SPECIFICATIONS

ENGINE			
Engine code		FA20	
Number of cylinders		4	
Type		Horizontally opposed (boxer), normally aspirated	
Fuel type		Petrol	
Fuel system		D-4S injection	
Valve mechanism		16-valve DOHC	
Displacement (cc)		1,998	
Bore x stroke (mm)		86 x 86	
Compression ratio		12.5:1	
Max. power (bhp/kW @ rpm)		197/147 @ 7,000	
Max. torque (Nm @ rpm)		205 @ 6,400 – 6,600	
TRANSMISSION			
Type		6MT	6AT
Gear ratios	1 <sup>st</sup>	3.626	3.538
	2 <sup>nd</sup>	2.188	2.060
	3 <sup>rd</sup>	1.541	1.404
	4 <sup>th</sup>	1.213	1.000
	5 <sup>th</sup>	1.000	0.713

	6 <sup>th</sup>	0.760	0.582
	Reverse	3.437	3.168
<b>BRAKES</b>			
Type	Ventilated discs		
Diameter – front (mm)	294		
Diameter – rear (mm)	290		
Additional features	ABS, EBD, brake assist, VSC+, traction control		
<b>SUSPENSION</b>			
Front	MacPherson strut		
Rear	Double wishbone		
<b>STEERING</b>			
Type	Electric power steering, rack and pinion		
Steering gear ratio	13.1:1		
Min. turning radius – tyre (m)	5.4		
<b>PERFORMANCE</b>			
Max. speed (mph)	140 (manual) 130 (automatic)		
0-62mph acceleration (sec)	7.7 (manual) 8.4 (automatic)		
<b>FUEL CONSUMPTION</b>		<b>Manual</b>	<b>Automatic</b>
Combined (mpg)	36.2	39.8	
Urban (mpg)	27.2	29.4	
Extra urban (mpg)	44.1	49.6	
<b>CO<sub>2</sub> EMISSIONS &amp; INSURANCE</b>		<b>Manual</b>	<b>Automatic</b>
Combined (g/km)	180	164	
Insurance groups	34A		
<b>EXTERIOR DIMENSIONS</b>			
Overall length (mm)	4,240		
Overall width (mm)	1,775		
Overall height (mm)	1,320		
Wheelbase (mm)	2,570		
Track – front (mm)	1,520		
Track – rear (mm)	1,540		
Front overhang (mm)	845		
Rear overhang (mm)	825		
Drag coefficient (Cd)	0.27		
<b>INTERIOR DIMENSIONS</b>			
Interior length (mm)	1,615		
Interior width (mm)	1,490		
Interior height (mm)	1,060		
Luggage capacity (l)	391		
<b>WHEELS &amp; TYRES</b>			
Wheel size/tyre size	17in alloy/215/45R17		
<b>WEIGHT</b>			
Kerb weight (kg)	1,239 – 1,273		

## TOYOTA GT86 EQUIPMENT SPECIFICATIONS

<b>SAFETY &amp; HANDLING</b>	<b>GT86</b>	<b>GT86 Pro</b>
ABS with EBD and brake assist	✓	✓



VSC+ with traction control	✓	✓
Hill Start Assist	✓	✓
Driver and front passenger airbags	✓	✓
Driver's knee airbag	✓	✓
Front side airbags	✓	✓
Curtain airbags	✓	✓
Passenger airbag on/off switch	✓	✓
Emergency brake-light signal	✓	✓
Whiplash Injury-Lessening seats with active front headrests	✓	✓
Seatbelt warning – front seats	✓	✓
ISOFIX child seat anchor points	✓	✓
Tyre pressure warning system	✓	✓
Limited-slip differential	✓	✓
<b>SECURITY</b>	<b>GT86</b>	<b>GT86 Pro</b>
Alarm and Immobiliser	✓	✓
Remote central locking	✓	✓
Electric boot release	✓	✓
<b>COMFORT &amp; CONVENIENCE</b>	<b>GT86</b>	<b>GT86 Pro</b>
Cruise control	✓	✓
Electric power steering	✓	✓
Dual-zone climate control	✓	✓
Reach & rake steering wheel adjustment	✓	✓
Leather steering wheel, handbrake and gear knob trim	✓	✓
Steering wheel audio and multi-information display controls	✓	✓
Keyless entry and push-button start	✓	✓
Illuminated entry system	✓	✓
Dusk-sensing headlights	✓	✓
Power front windows	✓	✓
Driver and passenger seatback pockets	✓	✓
Centre console with 2 cupholders	✓	✓
12V power outlet	✓	✓
<b>AUDIO, INFORMATION &amp; CONNECTIVITY</b>	<b>GT86</b>	<b>GT86 Pro</b>
4.2-inch colour TFT multi-information display	✓	✓
Toyota Touch 2: touchscreen control for audio and information with DAB, Bluetooth and Bluetooth music streaming, USB port and Aux-in socket	✓	✓
Toyota Touch 2 with Go: touchscreen control for audio and information with satellite navigation, DAB, advanced Bluetooth, access to Google Local Search, USB port, Aux-in socket.	Opt	Opt
<b>SEATING, UPHOLSTERY &amp; TRIM</b>	<b>GT86</b>	<b>GT86 Pro</b>
Black cloth upholstery	✓	✗
Black cloth upholstery with red detailing	Opt	✗

Combination black leather and Alcantara upholstery	x	✓
Combination black leather and Alcantara upholstery with red detailing	x	Opt
Leather trimmed driver's armrest	x	✓
Heated front seats	x	✓
One-piece folding rear seats	✓	✓
Aluminium sports pedals	✓	✓
Buckskin-pattern dashboard and door trims	x	✓
Front floor mats with GT86 logo	✓	✓
Scuff plates	✓	✓
<b>EXTERIOR</b>	<b>GT86</b>	<b>GT86 Pro</b>
17in alloy wheels	✓	✓
Space saver temporary spare wheel	✓	✓
Retractable, heated door mirrors	✓	✓
LED daytime running lights	✓	✓
Front fog lamps	✓	✓
LED headlights with follow-me-home function	✓	✓
LED rear combination lights	✓	✓
Body-coloured doorhandles	✓	✓
Wing-type rear spoiler	x	✓
Dual exhaust with chrome finish	✓	✓
Front and rear mudflaps	✓	✓
Shark fin antenna	✓	✓
Metallic/pearlescent paint	Opt	Opt

The mpg figures quoted in this document are sourced from official EU-regulated test results. These are provided for comparison purposes and may not reflect an individual's actual driving experience.

ENDS

Ref: 180122M