

This press pack accompanied the UK launch of the first generation Toyota Auris Hybrid in July 2010. Some changes were made to the model range during its time on sale, which can be tracked using the Timeline feature available on the Toyota Auris Hybrid archive web page. Additional assets and information relating to the first generation Auris Hybrid range may be obtained from the Toyota press office if required.

TOYOTA AURIS HYBRID

Introduction

- The only full hybrid powertrain in the C-segment
- Toyota's first step in deploying Hybrid Synergy Drive across its full model range by the 2020s
- Built exclusively at TMUK's Burnaston factory in the UK
- 1.8 VVT-i engine supplied by TMUK at Deeside in North Wales
- Smooth, refined driving experience with superior NVH performance
- Maximum system output of 134 bhp, giving performance to match any conventional 2.0-litre diesel or petrol hatchback
- Class-leading fuel economy and CO₂ emissions – 74.3mpg and 89g/km
- Four driving modes, including on-demand EV, ECO, and POWER
- Hybrid-specific exterior styling to improve aerodynamic performance
- Lowest cost of ownership and CO₂-linked taxation in the C-segment
- Available to order now, deliveries from 1 July
- Prices from £18,950

The launch of Auris Hybrid marks the introduction of Toyota's Hybrid Synergy Drive® (HSD) technology to one of its mainstream models for the first time. Furthermore, this five-door hatchback has the distinction of offering the only full hybrid powertrain in the C-segment.

Hybrid Synergy Drive®, a standard bearer for Toyota's environmental leadership in the drive towards sustainable mobility, will be the core technology for all future Toyota models. Auris Hybrid is just the first step in the technology being deployed across the company's full European model range.

Globally, Toyota will launch around 10 new hybrid models by the early 2010s and by the early part of the next decade, it aims to offer all its models with Hybrid Synergy Drive®, a system that has been designed to be future-proof and easily adaptable for use in full-electric and hydrogen fuel cell vehicles.

The arrival of the hybrid model makes the Auris range a unique proposition in the C-segment by offering a choice of petrol, diesel or full hybrid powertrains.

Auris Hybrid has been designed specifically for the European market is built exclusively by Toyota Motor

Manufacturing UK at its Burnaston factory. The 1.8-litre VVT-i petrol engine that forms part of the powertrain is sourced from TMUK's plant at Deeside in North Wales.

The benefits of Hybrid Synergy Drive® go beyond exceptional fuel economy and low CO₂ emissions: it is user-friendly and delivers a quiet, comfortable and stress-free drive unlike anything else in the C-segment.

The system's 1.8-litre VVT-i petrol engine and electric motor generate a maximum 134 bhp, giving nought to 62 mph acceleration in 11.4 seconds and a top speed of 112 mph, performance that matches any conventional 2.0-litre petrol or diesel hatchback.

At the same time, Auris Hybrid returns a class-leading official fuel consumption figure of 74.3mpg (giving a possible range of up to 735 miles on a single tank of fuel) and tax-efficient CO₂ emissions from just 89g/km, a level unmatched by any other car in its segment. In addition, NO_x emissions are significantly lower than those of diesel cars of comparable performance.

When taking advantage of the full hybrid system's switchable EV (electric vehicle) mode, CO₂ and NO_x emissions are cut to zero over distances of up to 1.2 miles at speed of up to 30 mph, according to the level of battery charge and driving conditions.

The exterior of Auris Hybrid differs from the rest of the range in that several new styling details have been added to improve the car's aerodynamic performance and hence its fuel efficiency. In the cabin there are several hybrid-specific instruments and controls.

In cost of ownership terms, Auris Hybrid's total economy is underpinned by its best-in-class CO₂ emissions and outstanding fuel economy, delivering tax breaks, low running costs and congestion charge exemption.

The new Toyota Auris Hybrid is available to order in the UK now, with on-the-road prices from £18,950. Deliveries will commence from 1 July 2010.

Built in Britain

- Auris Hybrid built at TMUK Burnaston, the first factory in Europe to mass produce a hybrid vehicle
- 25 per cent of build components specific to the hybrid model
- Production required changes to 149 build processes, seven of these being entirely new
- 1.8-litre VVT-i petrol engine supplied by TMUK Deeside in North Wales
- Focus on high environmental standards and elimination of waste at both facilities

The new Auris Hybrid is built at Toyota Motor Manufacturing UK's (TMUK) Burnaston plant in Derbyshire, with the petrol engine for its Hybrid Synergy Drive® powertrain supplied by TMUK Deeside in North Wales. It is another significant "first" for TMUK, which in 1992 opened as Toyota's first European production centre.

With the benefit of almost 20 years of manufacturing experience, Burnaston has become Toyota's first European plant to build a hybrid vehicle, giving leadership not only within the company, but for the European automotive industry as a whole.

Production requirements

There are 1753 individual components in an Auris Hybrid, of which 395 – about one quarter – are specific to the model. This has increased the complexity of the production process, requiring changes to 149 (69 per cent) of the build processes established for the conventional diesel and petrol-powered Auris hatchbacks.

Seven completely new processes have had to be designed and implemented, such as the installation of the sub-battery in the luggage compartment and the main battery behind the rear seats, connection of the high-voltage cable and installation of the 1.8 VVT-i engine.

With quality the absolute priority, TMUK re-evaluated all its production techniques to ensure Auris Hybrid meets the Toyota's highest standards of build quality, durability and reliability. To help prepare for the start of production, team members from Deeside travelled to Japan to learn first-hand from their Toyota colleagues about production of the Hybrid Synergy Drive® Powertrain. Workers from Burnaston also spent time at the Tsutsumi plant in Japan, home of Prius production, and at Toyota Motor Manufacturing Kentucky in the USA, where the hybrid Camry is built.

Thanks to the shared fundamental principles of the Toyota Production System and the Toyota Way, TMUK has been able to adopt and adapt the best practice of other manufacturing operations within Toyota to help ensure everyone involved in Auris Hybrid production has the right training and the right skills to ensure a smooth start to production.

This has extended to the setting up of a new National Vocational Qualification (NVQ) in hybrid for all members on the assembly line, providing formal recognition of the requirements for hybrid vehicle assembly, in particular the handling of high-voltage components. Toyota has set up a new TVECS system for rigorous checking of all electrical hybrid components, together with a new vision system in the welding process that ensures complete integrity of the high-voltage cable.

Introducing Auris Hybrid on the same production line as Avensis and other, conventionally powered five-door Auris models, has called for a redesign of the of the offline inspection area. Due to the new car's silent running in EV mode, new safety measures have been introduced, including a new "highway code" for TMUK members as they move around the plant.

The Burnaston test track has been revised so that Auris Hybrid can be put through its paces in its different driving modes. One of the benefits of this has been the ability to detect any unusual interior noise when the car is running in EV mode; the silent operation allows noise issues to be detected that are screened by engine noise in conventional Auris models. Changes to the test track also enable Auris Hybrid's regenerative braking system to be checked.

Changes have been necessary in the Burnaston paintshop, where the White Pearl pearlescent finish has been introduced for the first time.

TMUK environmental performance

The introduction of Auris Hybrid production at TMUK reinforces the strong environmental profile that has been developed at both Burnaston and Deeside.

Based on the five Rs –Refine, Reduce, Re-use, Recycle and Retrieve energy- TMUK’s commitment to sustainable manufacturing already has a long history, the Burnaston plant achieving its goal of sending zero waste to landfill back in 2003 and now moving towards zero incineration of waste, too.

Burnaston was the first car manufacturing plant in the UK to qualify for Environmental Management System ISO 14001 certification, and it has received several awards for its excellent environmental performance, and is a carbon positive pioneer.

TMUK key facts

COMPANY INFORMATION AND BACKGROUND		www.toyotauk.com
Location	Burnaston, Derby, Derbyshire	Deeside Industrial Park, Flintshire, North Wales
Site Detail	580 acres/2.35 million m ²	115 acres/0.48 million m ²
Investment	£1.15 billion	£700 million
Production Start	16 December 1992	8 September 1992
Products	Avensis 4-door & tourer Auris 5-door hatchback	1.6 and 1.8-litre VVT-i petrol engines
Manufacturing Processes	Pressing of body panels Welding Painting Plastic moulding Assembly	Aluminium casting Machining Assembly Testing
2009 Production Volumes	Avensis: 77174 Auris: 50216 Total: 127390	Total: 130247 fully assembled engines
Employees:	3486	529

Manufacturing principles

Philosophy

From a global viewpoint, Toyota’s philosophy is to localise production so as to provide customers with the products they need where they need them. TMUK’s role is to support that philosophy and to manufacture vehicles for the European market. To ensure that vehicles manufactured in the UK maintain Toyota’s worldwide reputation for quality, the renowned ‘Toyota Production System’ (TPS) is employed. Based on the key principles of Standardisation, Just-in-Time and Kaizen, the system allows for production to be achieved in a continuous flow to meet customer demand whenever and wherever that may be. TPS incorporates the ability, through process design, to build in quality at every stage.

Awards: ISO 9002

People and employees

Philosophy

As a company, TMUK believes in mutual trust and respect across all levels of the organisation. It strives to be an organisation in which all employees (Members) can develop to their full potential. Teamwork is an essential element of TMUK's operating philosophy, based on the belief that a well coordinated group of motivated people, operating in a safe environment, can accomplish far more than the simple sum of individual efforts.

Awards: Investor in People, National Training Award, Sir George Earle Trophy (RoSPA's premier safety award), year on year recognition from RoSPA for manufacturing safety performance.

Environment

Philosophy

To minimise the environmental impact of vehicles and their manufacture. To achieve this TMUK's environmental policy focuses on the elimination of any pollution at source. Its process to continually strive to achieve this objective is based on 'The 5 R's: Refine (eg. No CFCs, use water-based paints where possible); Reduce (eg. reduce use of natural resources – water, gas, electricity etc.); Reuse (eg. 99.9% of our European packaging is reused) ; Recycle (eg. Recycle as much material as possible – steel, water, plastics, paper, rubber etc.); Retrieve energy (eg. exhaust gases reheat other production processes). TMUK is a model sustainable plant for Toyota in Europe.

Awards: ISO 14001 (First car manufacturer in UK). Business in the Community Big Tick Awards Environmental Leadership & Climate Change, Business Commitment to the Environment Process Premier Award.

Community relations

Philosophy

On a global basis, Toyota wishes to be a good corporate citizen in every respect and TMUK follows this philosophy. It is closely involved with the community on a local, regional and national level. More than £4million has been donated to charities and foundations. Its focus of support is in four main areas: Environment, Children, Education and Health.

Purchasing activities

Philosophy

TMUK's main objective is to ensure quality in its products and to do this it develops long term partnerships with suppliers based on mutual trust. It has established technical support teams, whose role it is to work with suppliers offering advice and assistance on improving quality and efficiency for mutual benefit.

Awards: April 2005 – Queen's Award for International Trade.

Hybrid Synergy Drive®

- Full hybrid, series-parallel system architecture
- 1.8-litre VVT-i Atkinson cycle petrol engine and 60 kW electric motor, giving maximum system power of 134 bhp
- Performance to equal any conventional 2.0-litre hatchback with fuel consumption like that of a small city car
- CO₂ emissions from just 89 g/km

Auris Hybrid drives like no other car in its class. Being the only car in the C-segment to be equipped with a full hybrid powertrain, it will create an important shift in customer perceptions of hybrid technology.

The obvious advantages are exceptional fuel efficiency and low CO₂ emissions, but owners will also appreciate the smooth, stress-free driving experience thanks to the everyday usability, comfort and remarkable quietness of Toyota's multi-award winning Hybrid Synergy Drive®. Named International Engine of the Year in 2004 and Green engine of the Year and Best Fuel Economy Engine of the Year for five consecutive years, it represents the ultimate synergy of high technology and environmentally conscious powertrain design.

Unrivalled efficiency

Unlike rival, mild hybrid vehicles, Auris Hybrid is a full hybrid that can run in petrol and electric modes alone, as well as a combination of both. Hybrid Synergy Drive® thus delivers the energy-saving benefits of a series hybrid, and the high performance benefits of a parallel system. It provides instant power, strong and seamless acceleration and remarkably quiet operation, while at the same time returning class-leading fuel efficiency and emissions.

In combination, the 1.8-litre VVT-i petrol engine and the electric motor produce a maximum 134 bhp, enabling nought to 62 mph acceleration in 11.4 seconds and a 112 mph top speed.

When fitted with 15-inch wheels, combined cycle fuel economy is 74.3 mpg and CO₂ emissions are 89 g/km; with the 17-inch wheel option the figures remain exceptional at 70.6 mpg and 93 g/km – a figure that still exempts Auris Hybrid from road tax (Vehicle Excise Duty).

Moreover, when the driver switches to EV (Electric Vehicle) mode, the car can run emissions-free on its electric power alone for up to 1.2 miles at speed up to 30 mph, according to the level of battery charge and driving conditions.

System architecture

Toyota's latest generation Hybrid Synergy Drive® full hybrid system comprises a 1.8-litre VVT-i petrol engine, a powerful electric motor, generator, high-performance battery, a power control unit and a power split device. The power split device uses a planetary gear set to combine and reallocate power from the engine, electric motor and generator, according to operational needs.

A key factor in the successful installation of the system in Auris Hybrid's front-engine hatchback platform is the way in which the electric motor, generator and power split device are all housed in a single lightweight, highly compact transmission casing that is much the same size as a conventional gearbox.

The full hybrid system uses seamless E-CVT (electric continuously variable transmission) controlled by shift-by-wire.

The electric motor is powered by the hybrid battery and works in tandem with the petrol engine to boost acceleration during normal driving, but in EV mode it alone powers the driven wheels – a unique feature of Toyota's full hybrid system.

During deceleration and under braking, the electric motor works as a high-output generator to effect regenerative braking. This recovers kinetic energy, that would usually be lost as heat, as electrical energy for storage in the high-performance battery.

1.8-litre Atkinson cycle engine

The British-built, lightweight, highly compact four-cylinder 1798 cc Atkinson cycle petrol engine has a maximum output of 98 bhp at 5200 rpm and develops maximum torque of 142 Nm at 4000 rpm.

By adopting the Atkinson cycle and by using a cooling Exhaust Gas Recirculation (EGR) system, Toyota has achieved significant gains in fuel efficiency and reduced emissions. Because the intake valves close later in the Atkinson cycle, compression is delayed, creating a high expansion ratio for less compression. This reduces intake and exhaust energy losses and converts combustion energy into engine power more effectively. The EGR system reduces cooling loss and pumping losses and so supports improved fuel efficiency.

VVT-i (Variable Valve timing – intelligent) helps boost response across the entire rev range by varying the intake valve timing to suit conditions at any given time. As well as improving torque at low and medium engine speeds, it also reduces emissions and improves fuel efficiency. The engine also features roller rocker arm valvetrain control, a resin intake manifold with an optimised port configuration, and 12-hole atomising long-nozzle injectors. Thin, long-reach spark plugs contribute to better anti-knocking performance. Low-tension piston rings, reduced piston friction, a standing oil jet for piston cooling and an SUS pipe exhaust manifold all play a part in supporting efficient engine performance. Together these advanced technologies contribute to improved power and reductions in fuel consumption and emissions.

Ultra-low noise, vibration and harshness (NVH) levels are a key characteristic of Hybrid Synergy Drive® and Toyota has paid particular attention to minimising noise and vibration from the engine. Detailed computer-aided engineering analysis has optimised the rigidity of parts, including the cylinder block and crank case. The highly rigid, ribbed aluminium cylinder head cover combines light weight with reduced noise and vibration.

Hybrid transaxle with E-CVT

The transaxle, contained within a single, compact transmission casing, is at the heart of the Hybrid Synergy Drive® system.

The seamless, shift-by-wire E-CVT is controlled by an electric shift lever that is designed to always return to its “home” position when released. The shift position can also be checked on an indicator display in the driver's instrument cluster.

A parking switch with an integrated indicator light, located next to the shift lever, allows a parking lock mechanism in the transmission gearing to be engaged or released. The lock is automatically deactivated when pulling away and engaged when the car is switched off.

Use of a multi-function geartrain helps keep the transaxle light and compact, and numerous measures have been taken to reduce component noise and driveshaft energy losses, helping to keep fuel consumption down. Toyota has used the world's first internal tooth shaving process to achieve greater precision in the planetary gear ring and the lubrication system has been designed to reduce oil stir, with ball bearings used to minimise component friction.

Electric motor/generator

The high-performance, permanent magnet, synchronous electric motor/generator produces a maximum 60 kW. It works in tandem with the petrol engine to boost acceleration and, when the vehicle is switched to EV mode, works alone to power the driven wheels.

Generating instant power and a maximum 207Nm of torque, the motor is six times more powerful than those found in rival, mild hybrid systems. It is air cooled and has a maximum drive voltage amplification of 650 Vdc. Under ordinary conditions, however, unless maximum output is required, the motor is driven at unamplified voltage whenever necessary, to help support fuel efficiency.

High output battery

Auris Hybrid's battery pack uses proven and reliable nickel-metal hydride technology. It sits beneath the floor of the boot, minimising impact on cabin space.

Power control unit (PCU)

The Hybrid Synergy Drive® PCU is similar in size to a 12-volt battery. It comprises a voltage boost converter, inverter and a DC/DC converter, governed by a motor ECU which receives commands from the hybrid vehicle ECU.

The inverter converts the battery's direct current into a 650-volt alternating current to drive the electric motor and, when required, the generator, giving significantly improved PCU performance.

Conventional, non-hybrid vehicles use an alternator to charge the auxiliary battery, but because an alternator cannot operate during engine cut-off, a full hybrid vehicle needs a different solution. Hybrid Synergy Drive® incorporates a DC/DC converter to reduce the high voltage of the 202 V system battery pack to 14 V, supplying power to the accessory systems and charging the auxiliary battery.

Hybrid Synergy Drive® in operation

Over the course of any journey, Toyota's Hybrid Synergy Drive® operates in different modes to maximise overall vehicle efficiency.

When the car comes to rest, the engine stops automatically to conserve fuel. In low-efficiency conditions, such as at start-up and low to mid-range engine speeds, the vehicle automatically runs in EV mode, using just its electric motor and this eliminating CO₂ and NO_x exhaust emissions.

Under normal driving conditions, the source and allocation of power is constantly adjusted between the engine and electric motor to achieve the best performance with maximum fuel efficiency.

By means of Auris Hybrid's Electronically Controlled Braking System, the electric motor acts as a high-output generator during deceleration and under braking, recovering kinetic energy that would otherwise be lost as heat, as electric energy to be stored in the high-performance battery.

The level of battery power is constantly managed via an engine-driven generator, which means there is no need for the battery to be recharged from an external source.

Three on-demand driving modes

In addition to Auris Hybrid's NORMAL drive mode, the driver can select three further "on-demand" modes – EV, ECO and POWER – to increase driving efficiency, performance and fuel economy.

From start-up and at speeds of less than 31 mph in NORMAL mode, Auris Hybrid will automatically adopt EV mode to run on its electric motor alone (dependent on the level of battery charge and the prevailing driving conditions). A feature of the full hybrid technology in Hybrid Synergy Drive®, this function is not available to drivers of mild hybrids.

EV mode can also be selected manually. The petrol motor will cut in automatically if the system determines that its output is needed, but EV mode allows for significantly greater throttle inputs without the engine starting up.

In ECO mode, throttle response to aggressive inputs from the accelerator pedal is reduced and performance of the air conditioning system is optimised to support fuel economy.

The POWER mode modifies response to throttle inputs – 25 per cent higher response to accelerator pedal application than in NORMAL mode – boosting power to improve acceleration.

The three on-demand driving modes are complimented by an Eco Drive Monitor which helps motorists adapt their driving style to achieve the best possible fuel efficiency. The multi-information display in the driver's instrument cluster monitors the flow of energy through the Hybrid Synergy Drive® system for each driving mode, helping the driver adopt a relaxed, fuel-efficient driving technique.

There is also a simple and clear power consumption gauge in the combination meter, showing how much power is being used or generated at any time.

Ultra-quiet driving with low NVH

Auris Hybrid brings the exceptionally refined, smooth and silent Hybrid Synergy Drive® experience to European C-segment customers for the first time. To maximise the benefits of the system numerous modifications have been made to the body, chassis, suspension and steering.

Bodyshell

The centre floor body has been redesigned to accommodate the Hybrid Synergy Drive® battery pack, which is located beneath the boot floor. This avoids compromising cabin space and gives Auris Hybrid a boot luggage capacity of 279 litres.

Tuned suspension

Auris Hybrid's ride and handling has been fine-tuned specifically to suit European roads and customer preferences, through collaboration between the suspension R&D team in Japan and the Toyota's European R&D conformity testing team. The result is stable high speed driving performance with secure handling and superior ride comfort.

The front suspension uses L-arm MacPherson struts, a compact and highly rigid design that brings the strut in-board from the wheel hub. This allows for a wider track, with improved stability and noise and vibration suppression.

At the rear there is a highly efficient torsion beam system with a separate spring and damper layout to create a very compact design that does not intrude into the vehicle's loadspace.

To compensate for the change in weight distribution brought about by the installation of the hybrid battery pack to the rear, the front and rear dampers have been tuned to maintain ride quality.

Lowered chassis with bespoke wheels and tyres

Together with a series of detailed aerodynamic changes to the bodywork to support maximum fuel efficiency and reduce wind noise, Auris Hybrid's ride has been lowered by 5 mm compared to its petrol and diesel-powered sister models. This further improves aerodynamic efficiency and stability at high speed.

The car rides on bespoke 15 or 17-inch aero alloy wheels, like those used on Prius, featuring enlarged gaps to improve the cooling airflow to the Electronically Controlled Braking System. The rims are shown with 195/65R15 or 215/45R17 low rolling resistance tyres.

Electronically Controlled Braking System

The Electronically Controlled Braking System co-ordinates control of both the hydraulic and regenerative braking. It is 18 per cent lighter and 31 per cent more compact than conventional systems.

Ventilated discs are fitted at the front – 273 mm diameter for 15-inch wheels and 296 mm for 17-inch wheels. At the rear there are 259 mm diameter solid discs.

Revised Electric Power Steering (EPS)

Thanks to a quick 14.5:1 ratio and with just 2.9 turns lock-to-lock, Auris Hybrid's speed-sensitive EPS helps reduce hybrid system energy consumption and thus supports fuel economy.

The system's compact, high-output motor and torque sensor are built into the steering system, optimising assistance for more precise vehicle control. Power is only consumed when steering force is needed, so fuel efficiency is optimised.

In a further measure to compensate for the car's change in front-rear weight distribution, the EPS has been revised to maintain optimum feedback and vehicle agility.

Superior NVH performance

To reinforce Auris Hybrid's excellent NVH performance, particular attention has been paid to reducing noise and vibration within its body structure.

The engine rests on a four-point mounting system, with the characteristics of the rubber in the mounts optimised for the suppression of noise and vibration. A dynamic damper is integrated in the engine mount to further cut noise and vibration and to reduce engine stop-start shock.

Comprehensive use of high-performance soundproofing materials throughout the engine and passenger

compartments rigorously suppresses engine and road noise, and an acoustic windscreen helps to cut wind noise generated at cruising speeds.

Total economy

- Lowest CO₂ taxation and fuel costs in the C-segment
- Long-lasting Hybrid Synergy Drive® components reduce servicing costs
- Strong predicted residual values

The new Auris Hybrid represents exceptional value for money, thanks to its segment-first full hybrid technology with low maintenance, insurance and running costs. High reliability, strong residual values and lower CO₂-based tax rates add to a compelling total economy profile.

In the UK, both versions of the car (with 15 or 17-inch wheels) deliver sub-100g/km CO₂ emissions, earning them a zero rating for Vehicle Excise Duty (VED). Company car users enjoy a Benefit-In-Kind tax calculation of just 10 per cent, and the model qualifies for a 100 per cent Corporation Tax first-year write-down. The low emissions also gain Auris Hybrid exemption from the inner London congestion charge.

The table below maps out Auris Hybrid's cost of ownership performance compared to rival top-selling diesel models.

	Toyota Auris Hybrid T₄	Volkswagen Golf SE 2.0 TDI	Ford Focus Zetec 2.0 TDCI	Vauxhall Astra SRi 1.7 CDTi
OTR price	£18950	£20080	£20945	£20010
Power (hp/PS)	136	140	136	125
CO ₂ (g/km)	89	126	144	124
Combined fuel consumption (mpg)	74.3	58.9	51.3	60.1
3-year VED and fuel saving vs competitor	-	£880	£1,543	£816
Company car tax BiK band	10%	18%	20%	18%
Annual company car tax BiKi (20%/40%)	£378/£756	£721/1442	£831/£1661	£754/£1508
3yr tax variance (40%)	-	£2059	£2712	£2256
TFS/CAP Monitor residual value (3yr / 60000 miles)	38%	40%	30%	25%

Maintenance and durability

Auris Hybrid's full hybrid drive system is designed for low maintenance and durability. Maintenance costs over 60000 miles are kept down thanks to low parts pricing and short service times, which mean reduced labour costs.

The outstanding reliability of Hybrid Synergy Drive® has been proven by its successful installation in Prius, which has achieved the lowest warranty cost per unit of any Toyota model. The new Auris Hybrid is sold with

Toyota's pan-European three-year/60000-mile warranty, extended to five years/60000 miles for the hybrid system components.

UK insurance ratings are still to be set, but these are expected to be highly competitive. Residual values are also expected to compare well with the best in the C-segment, in a range between 37 and 40 per cent after three years/60000 miles.

Longer-lasting components and lower servicing costs

Auris Hybrid's 10000-mile service intervals maximise the benefit of the car's component lifetime efficiency. The Hybrid Synergy Drive® system itself has been designed for low maintenance requirements and durability, and has no need for a conventional starter motor or alternator. The 1.8-litre VVT-i petrol engine has a maintenance-free timing chain, an element-type oil filter, miniaturised spark plugs and no drive belts, features which deliver worthwhile cost savings.

Thanks to the efficiency of the Electronically Controlled Braking System, the front and rear brake pads are good for 40000 and 70,000 miles respectively, compared to 30,000 and 50000 miles for those on the Auris 2.0 D-4D model. High tyre pressures (2.4 or 2.3 bar) reduce wear significantly, with typical durability of more than 30000 miles. The standard 15 and 17-inch tyres also cost less than purpose-made alternatives.

Toyota's experience with Prius has proven the reliability of the Hybrid Synergy Drive battery pack over more than 37 billion miles of driving worldwide. The pack is designed to last the lifetime of the car and, as one of the central hybrid power elements of the vehicle, it is covered by the extended, five-year/60000-mile warranty.

The exhaust system is expected to last for more than five years, thanks to its high stainless steel content and the LED lamp bulbs have a 20-year lifespan.

Insurance

UK insurance ratings are still to be set, but these are expected to be highly competitive. Residual values are also expected to compare well with the best in the C-segment, in a range between 37 and 40 per cent after three years/60000 miles.

DESIGN

- Hybrid-specific exterior design for improved aerodynamics and a smooth, quiet and comfortable driving experience
- Improved interior quality and ergonomics with hybrid-specific finishes, instrumentation, switchgear and upholstery

Auris Hybrid builds further on the fresh design features and extensive improvements in interior quality, materials, ergonomics and comfort that Toyota introduced earlier this year in the Auris 2010 model range.

On the outside there are several styling details designed to improve aerodynamic performance and fuel efficiency; inside the hybrid-specific features range from instrumentation and switchgear to the upholstery design.

Exterior design

Auris Hybrid shares the same 2600 mm wheelbase and 4245 mm overall length of its sister models in the 2010 range, but the ride height has been lowered by 5 mm to improve aerodynamic efficiency.

The front bumper and spoiler have been revised and the lower grille enlarged to reduce airflow resistance and improve engine cooling. The upper grille has single chrome blade design that is specific to the model.

The redesigned corners of the front bumper house a new foglamp configuration, incorporating LED running lights – unique to Auris Hybrid. The flat, vertical shape of the corner reinforces the car's broad stance and driving stability and also corrects the airflow as it passes over the front wheels, minimising turbulence in the wheelarches.

In profile, Auris Hybrid is distinguished by the hybrid badging on the front wing and the bespoke aero-style 15 and 17-inch wheels with enlarged air gaps to improve cooling airflow to the brakes. Both are alloy, with the 15-inch versions using full covers. The wheel designs support the car's overall aerodynamic efficiency, as does the large, roof-mounted rear spoiler.

At the rear, Auris Hybrid shares the stronger design introduced on the Auris 2010 range, including the "catamaran" style bumper profile, which accentuates the car's muscular proportions and wide track. There is further hybrid badging and a hybrid blue Toyota emblem on the rear door.

The aerodynamic modifications have reduced the car's coefficient of drag from Cd 0.293 to 0.283, with a positive impact on fuel consumption and CO₂ emissions.

Auris Hybrid is available in six exterior colours: Pure White; Ixion Blue, Tyrol Silver, Eclipse Black and Dark Blue metallic; and the hybrid-exclusive Pearl White pearlescent.

Interior design

Auris Hybrid's interior benefits from the same improvements that were introduced in Auris 2010. Soft-touch materials cover the top of the instrument cluster and upper glovebox, and the centre console storage box is now shaped so that it also functions as an armrest. Audio and Bluetooth (optional) controls are incorporated in the reprofiled steering wheel.

The bridged centre console brings the shift lever, handbrake and instrumentation within the closest possible reach of the driver and has a bright metallic finish that matches that of the doorhandles. Changes to the colour and finish of the control panel have made the switch controls easier to distinguish and there is a new handbrake design with a lever-style release and lower seating in the release position.

The presence of Hybrid Synergy Drive® means there are some specific modifications and new features in the cabin. The driver's instrument binnacle has been revised with the tachometer replaced by the ECO Drive Assist Monitor. The centre-dial information panel includes additional HSD-specific information, such as the energy flow and ECO drive result monitors.

A hybrid blue push-button start control has been added to the side of the instrument cluster. The centre console incorporates the Parking Control switch; switches to select the EV, ECO and Power drive modes; and a hybrid blue and silver-finish transmission lever.

The Optitron instrumentation adopts white numbers on a hybrid blue background, with greenish-white night-time illumination for selected switches and controls.

The interior is finished in dark grey with a cloth upholstery that is specific to Auris Hybrid. Leather and Alcantara seat upholstery is standard on T Spirit grade.

EQUIPMENT SPECIFICATIONS AND THE UK MARKET

- Auris Hybrid offered in two equipment grades, T₄ and T Spirit
- T Spirit premium features include 17-inch alloy wheels, leather/Alcantara upholstery, automatic headlights and wipers, cruise control, rear parking monitor, Bluetooth, and Smart Entry and Start
- Available to order now, deliveries from 1 July
- On-the-road prices from £18,950

Auris Hybrid is offered in the UK in two specification grades, T₄ and T Spirit. T₄ models can be specified with 15 or optional 17-inch wheels, with the larger rims standard on the T Spirit version. The choice of wheel size has a slight effect on CO₂ emissions and fuel consumption.

Key features of the standard T₄ include: -

- Climate control air conditioning
- Six-speaker audio with CD, radio, MP3 file player
- USB and Aux-in connection
- Front and rear electric windows
- Electric, heated door mirrors
- Front fog lights
- LED running lights
- Colour-matched door handles and mirrors
- Push-button start
- Seven airbags, including driver's knee airbag
- Vehicle Stability Control (VSC) and Traction Control (TRC)
- Hill-start Assist Control (HAC)

T Spirit grade adds the following items: -

- Leather and Alcantara upholstery
- Cruise control
- Bluetooth
- Dusk-sensing headlamps
- Rain-sensing windscreen wipers
- Smart Entry and Start
- Auto-dimming electrochromatic rear view mirror
- Rear view camera display in rear view mirror

A Navigation Pack is available, providing satellite navigation, rear camera and rear parking sensors. Bluetooth, with steering wheel controls, is also offered as an option for the T₄.

Pricing, VED and insurance

MODEL	OTR PRICE	VED BAND	INSURANCE GROUP
Auris Hybrid T ₄	£18,950	A	TBC
Auris Hybrid T Spirit	£20,700	A	TBC

OPTIONS	
Navigation Pack	£1,200
Bluetooth	£285
Metallic paint	£410
Pearlescent paint	£610

TOYOTA AURIS HYBRID TECHNICAL SPECIFICATIONS

HYBRID SYNERGY DRIVE		
Type	Series/parallel, full hybrid	
System output (bhp)	134	
ENGINE		
Engine type	2ZR-FXE (Atkinson cycle)	
No. of cylinders	Four in-line	
Valve mechanism	16-valve DOHC with VVT-i	
Bore x stroke (mm)	80.5 x 88.3	
Displacement (cc)	1798	
Compression ratio	13.0:1	
Fuel system	EFI	
Octane No.	95 or greater	
Max. power (bhp @ rpm)	98 @ 5200	
Max. torque (Nm @ rpm)	142 @ 4000	
Emissions level	Euro 5	
ELECTRIC MOTOR		
Motor type	Permanent magnet, synchronous	
Max. voltage (CD V)	650	
Max. power (bhp)	80	
Max. torque (Nm)	207	
HIGH-VOLTAGE BATTERY		
Battery type	Nickel-metal hydride	
Nominal voltage (SC V)	201.6 (168 x 1.2V cells)	
No. of battery modules	28	
Battery capacity (Ah)	6.5	
System voltage (V)	650	
Max. output (bhp)	36	
TRANSMISSION		
Transmission type	Electric CVT (e-CVT)	
Gear ratios	Forward	2.683
	Reverse	2.683
Differential gear ratio	3.267	

PERFORMANCE			
Max. speed (mph)		112	
0-62 mph acceleration (sec)		11.4	
FUEL CONSUMPTION		15in wheel	17in wheel
Combined		74.3	70.6
Extra urban (mpg)		TBC	TBC
Urban (mpg)		TBC	TBC
Fuel tank capacity (l)		45	
EMISSIONS		15in wheel	17in wheel
CO ₂ (g/km)	Combined	89	93
	Extra urban	87	91
	Urban	89	93
CO (mg/km)		171.2	
Total hydrocarbons (THC, mg/km)		34.4	
NOX (mg/km)		6.7	
PM (mg/km)		0	
SUSPENSION			
Front		MacPherson strut with anti-roll bar, coil springs and dampers	
Rear		Torsion beam with coil springs and dampers	
BRAKES			
Front		Ventilated discs	
Rear		Solid discs	
Disc size (diameter mm)	Front	273 (15in wheel) 296 (17in wheel)	
	Rear	259	
STEERING		15in wheel	17in wheel
Steering type		Electric power-assisted rack and pinion	
Steering ratio		14.5:1	
Turns lock-to-lock		2.9	2.8
Turning radius (tyre, m)		5.2	5.5
TYRES		15in wheel	17in wheel
Tyre size		195/65R15	215/45R17
EXTERIOR DIMENSIONS		15in wheel	17in wheel
Overall length (mm)		4,245	
Overall width (mm)		1,760	
Overall height (mm)		1,510	
Wheelbase (mm)		2,600	
Front track		1,515	1,535
Rear track		1,515	1,535
Front overhang (mm)		905	
Rear overhang (mm)		740	
Drag coefficient (Cd)		0.25	0.283
INTERIOR DIMENSIONS			
Length (mm)		1985	
Width (mm)		1460	
Height (mm)		1245	
Front hip-point height (mm)		460	
Front-rear couple distance (mm)		930	
LUGGAGE COMPARTMENT			
VDA capacity, rear seats up (l)		279	
Length (rear seats down, mm)		1340	
Max. width (mm)		915	
Height		400	

WEIGHTS	
Kerb weight (kg)	1380 – 1420
Gross vehicle weight (kg)	1805

TOYOTA AURIS HYBRID TECHNICAL SPECIFICATIONS

SAFETY	T₄	T Spirit
Driver and passenger front airbags	✓	✓
Driver and passenger front side airbags	✓	✓
Curtain shield airbags front and rear	✓	✓
Driver's knee airbag	✓	✓
Driver and front passenger seatbelt warning (light and buzzer)	✓	✓
Passenger front airbag cut-off switch	✓	✓
Isofix child seat mounts	✓	✓
Height adjustable front and rear head restraints	✓	✓
Three-point front seatbelts with pretensioners, load limiters and emergency locking retractors	✓	✓
Three-point rear seatbelts with load limiters and emergency locking retractors	✓	✓
Whiplash Injury Lessening (WIL) front seats	✓	✓
Crash-resistant body structure	✓	✓
Side impact beams on all side doors	✓	✓
Head impact protection structure roof side and pillar	✓	✓
Child proof locks on rear doors	✓	✓
ABS	✓	✓
Electronic Brakeforce Distribution (EBD)	✓	✓
Brake Assist (BA)	✓	✓
Vehicle Stability Control (VSC) and Traction Control (TRC)	✓	✓
Hill-start Assist Control (HAC)	✓	✓
INSTRUMENTS & CONTROLS		
Multi-information display	✓	✓
Hybrid system indicator	✓	✓
Eco Drive Monitor	✓	✓
Trip computer	✓	✓
Push-button start (blue-lit)	✓	✓
Cruise control	x	✓
Smart Entry and Start	Opt	✓
optitron instruments – blue illumination	✓	✓
Headlamp levelling	✓	✓
COMFORT & CONVENIENCE	✓	✓
Electric Power Steering (EPS)	✓	✓
Tilt and telescopic reach adjustable steering column	✓	✓
Electric front windows with one-touch down function	✓	✓
Electric rear windows	✓	✓
Electrically adjustable, retracting, heated door mirrors	✓	✓
Remote fuel lock release	✓	✓
Double glovebox, lockable with light	✓	✓
Electrochromatic auto-dimming rear view mirror	x	✓
Rear camera (Navigation Pack)	Opt	Opt
Rear camera display in rear view mirror	x	✓

Rear parking sensors (Navigation Pack)	Opt	Opt
Bluetooth with steering wheel controls	Opt	✓
Dusk-sensing headlamps	x	✓
Rain-sensing wipers	x	✓
AUDIO & NAVIGATION		
Radio/CD player with six speakers, MP3 compatible	✓	✓
USB port and Aux-in connection	✓	✓
Steering wheel mounted audio controls	✓	✓
Satellite navigation (Navigation Pack)	Opt	Opt
VENTILATION		
Climate control air conditioning	✓	✓
Pollen filter/clean air filter	✓	✓
SECURITY		
Remote central double locking	✓	✓
Transponder key engine immobiliser	✓	✓
Vehicle parts marking with major parts traceable to VIN	✓	✓
SEATING, UPHOLSTERY & TRIM		
Cloth upholstery	✓	✓
Leather/Alcantara upholstery (Luxury Pack)	x	✓
Driver's seat height adjustment	✓	✓
60:40 folding rear seat	✓	✓
Rear seat recline function	✓	✓
Front armrest	✓	✓
Leather-trimmed flat-bottom steering wheel	✓	✓
EXTERIOR		
15 in alloy wheels with full wheel covers	✓	x
17 in alloy wheels	Opt	✓
Temporary spare wheel	✓	✓
Lowered suspension	✓	✓
Body-coloured door handles and mirrors	✓	✓
Body-coloured front and rear bumpers	✓	✓
Model-specific chrome single-blade front grille	✓	✓
Blue Toyota emblem	✓	✓
Front fog lamps	✓	✓
LED rear lights	✓	✓
LED running lights	✓	✓
Rear spoiler	x	✓
Metallic paint	Opt	Opt
Pearlescent paint	Opt	Opt