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Toyota at Geneva Motor Show

New models bring added driving pleasure and innovation

- Newly improved version of Prius
- Bold concept for mini SUV
- Latest mobility concepts
- All new RAV4 and Yaris ranges

The Toyota stand at this year's Geneva Motor Show demonstrates a wide range of new models that will bring increased driving pleasure and innovation to European customers. The display shows Toyota is at the forefront of tackling the transport challenges of the future while reducing environmental impact and meeting customer needs.

Key new models for Toyota in Europe in 2006 include the all-new Toyota RAV4 and the second generation Toyota Yaris.

Newly improved Prius

The world's best selling hybrid car gets a makeover for the 2006 model year with a fresh exterior look, improved driving dynamics and premium quality interior trim. The latest Prius is also a showcase for advanced technologies such as Intelligent Park Assist.

Bold concept for mini SUV

The Urban Cruiser is a bold new concept that showcases a possible approach by Toyota to the mini SUV segment. The Urban Cruiser draws heavily on Toyota's heritage in Sports Utility Vehicles but also adds its own dynamic flair and rugged originality. The Urban Cruiser features a fresh interior style based on modern furniture design.

Advanced concepts

Glimpses of the future which reveal how Toyota can minimise environmental impact while providing transport solutions:

- **Fine-T:** The next step in fuel-cell hybrid vehicles offers the cabin space of an Avensis within the approximate exterior dimensions of a Yaris
- **i-swing:** A new evolution in personal mobility, building on p.o.d and i-unit. i-swing offers a more direct form of human-machine interaction by adopting the latest technologies in robotics.

New model ranges

Fresh from their world debut, the all-new Toyota RAV4 and Yaris model ranges will be on show. Also displayed are the latest versions of AYGO by Toyota with the 1.0-litre petrol and the new 1.4-litre diesel engines.

Advanced diesel engines

The Toyota D-4D 180 is among the most advanced diesel engines in the world; delivering sparkling performance and outstanding fuel economy. The D-4D 180 is not only powerful, but clean - thanks to Toyota's advanced and unique Toyota D-CAT emissions control technology.

The Toyota D-4D 180 is demonstrated at the Geneva Motor Show in the Toyota RAV4, Toyota Avensis Station Wagon and the Corolla Verso.

Other displays

Visitors to the Toyota stand can also share the excitement of the Toyota F1 programme and enjoy a special display area with the following exhibits:

- demonstration of the Prius Intelligent Park Assist
- cut-away of the latest innovative Prius hybrid car
- the new RAV4's Active Torque Control 4WD system
- cut-away of the new Toyota Yaris
- D-4D 180 diesel engine, equipped with Toyota D-CAT

New Toyota Prius



New Toyota Prius

Newly improved version of world's best selling hybrid

- Fresh exterior look
- More refined interior surfaces with leather availability
- Improved driving dynamics, featuring chassis reinforcements and more precise steering
- Showcase of hi-tech equipment: Intelligent Park Assist, new audio and navigation systems
- Arriving at Toyota showrooms at the end of January
- 2006 European sales forecast of 25,000 units
- Approximately 450,000 units of Prius have been sold worldwide up to date

The Toyota Prius is now clearly established as the world's best selling hybrid car and it has been a sales success since its launch in Japan in 1997. Approximately 450,000 cars have been sold worldwide since that date and production capacity has recently been expanded further to cope with worldwide demand. Moreover, in order to satisfy demand in China, the production of Prius in this country has started at the end of last year, in Changchun City.

The newly improved Toyota Prius will be instantly recognisable by the fresh exterior design which creates a more refined appearance.

The front grille has been redesigned, featuring now a chrome insert, and a new front spoiler both improves the aerodynamics at high speed and helps create a more distinctive look.

The headlamps have been subtly restyled to create a more flowing look. Smoked clear coating has been applied to the headlamp extension while an inner lens has been added below the turn indicator lamp.

At the rear, chrome-plate mouldings have been utilised in the lamp structure and a white background to the stop lamp replaces the current black to add to the appeal.

This latest Prius will be available with a choice of eight exterior body colours with four new tones added (Ultra Silver, Barcelona Red, Opal Green and Ash Grey).

Qualitative improvements inside

- New surfaces and textures add to perceived quality
- Leather trim now available
- Improved rear passenger comfort

Throughout the interior of the newly improved Toyota Prius there have been significant enhancements to trim and finish to create a more refined environment.

The main surfaces of the instrument panel reveal a new, softer texture and a darker colour. This finish is extended to the upper door trims, front and rear. The seats' fabric colour is new and its stitching patterns have been simplified.

For the ultimate comfort, genuine leather seats and a leather trimmed steering wheel become available. As an integrated part of the package, the centre console box is also leather (synthetic) trimmed.

Rear seat passengers will find additional comfort in the improved Prius. The seat width and main portion of the seat back have been increased in width by 50 mm and a redesigned rear seat cushion has lowered the hip-point by 6 mm.

These design changes will increase hip space for rear seat passengers while also increasing headroom.

Sharper driving dynamics

- Chassis stiffness increased for better handling
- Shock absorbers retuned for more comfort
- Steering modified for more response and feel

In comparison with the model introduced in 2004, the newly improved Prius benefits from modifications focused on specific areas like chassis stiffness, to improve stability, suspension tuning to improve ride comfort and steering control to enhance response and feel. There have also been some aerodynamic changes to increase high-speed stability.

Chassis stiffness has been increased by the addition of reinforcement plates, notably around the rear cross member mounting, and by modifying parts such as the rear side and cross members.

In the rear suspension, the toe-correction bushings have been retuned for better compliance and the shock absorbers changed to give better ride comfort.

The electric power steering ECU settings have been modified in order to provide better steering feel and a number of changes made to stiffen the steering mounts to create more precise reaction. These changes include fitting stiffer alloy wheels which will react more precisely to directional changes.

The underbody aerodynamics have been improved by the fitment of a different engine undercover, the new front lip spoiler and new rear tyre spats to aid airflow around the rear wheels and tyres.

Advanced technology showcase

- **Unique Intelligent Park Assist**
- **Sophisticated DVD-based satellite navigation**
- **Premium quality audio with Live Acoustic System**

As one of the most sophisticated passenger cars available today, the Toyota Prius is also a showcase for advanced technologies. This newly improved version offers new state-of-the-art features, which not only demonstrate this principle but also enhance the driving experience.

The highlight is the Intelligent Park Assist (IPA) system, another world-first available in Prius – is unique and simple to operate, allowing the driver to select the target parking spot and then control the speed, while the car steers itself.

The system is designed to assist the driver in both parallel and 'rear-on' parking situations and is activated by the IPA button on the dashboard. The driver then selects the target parking spot on the touch-sensitive viewing screen and the IPA sets the vehicle in motion, selecting the correct steering angle for each step of the process. The driver retains control of the speed of the vehicle through the brake pedal, deciding when to stop.

IPA is a simple system which takes signals from the electric power steering, yaw rate, acceleration and wheel angle sensors, the skid control ECU and the hybrid system's ECU.

If the driver prefers not to use IPA, there is also the more conventional Toyota Park Assist system which relies on a new, more compact rear camera to show images in the viewing screen. Superimposed on these images are colour-coded guidelines which show the predicted path of the Prius as it is reversed into the available space.

Also available with the newly improved Prius is the most sophisticated DVD-based satellite navigation system in the segment.

The navigation system is voice activated in three languages (English, French and German) for functions including phone control, audio, navigation and air conditioning. Route guidance is provided in 10 languages including, for the first time, Norwegian and Portuguese.

Improved map graphics now feature three-dimensional icons for points of interest and major landmarks.

For the first time in Prius, this system features RDS-TMC (Radio Data System – Traffic Message Channel) for countries with the appropriate infrastructure. This is a dynamic, real time route guidance feature that monitors traffic congestion on route and suggests alternatives if bad traffic conditions build up.

Furthermore, the new navigation system features a completely new ECU, delivering 65% faster calculation speed.

The newly improved Prius is fitted with a totally new audio head unit with a digital filter on the radio tuner to improve reception and the capability to play CDs with MP3 and WMA files.

Its DSP amplifier features Live Acoustic System, which utilises digital acoustic effects to improve sound quality. These include TruBass (which extends bass sounds in the frequency range between 100 Hz and 200 Hz to produce an effect similar to a sub-woofer) and Focus (which emphasises sound around the 8 kHz frequency and makes passengers think the sound is coming from the front of the car, rather than speakers in the doors).

There is an auxiliary socket in the centre console for connecting portable devices, such as an iPod or other MP3 player, to the audio system.

The audio unit also features Automatic Sound Leveliser, which adjusts volume and equaliser settings, to compensate for an increase in cabin noise due to speed.



Toyota Urban Cruiser



Toyota Urban Cruiser

A new challenger for the urban jungle

- A new generation of mini SUV to respond to customers who search for individualism
- A concept by ED², Toyota's European design studio
- Elvio D'Aprile, is the chief designer of Urban Cruiser
- Designed within "Vibrant Clarity" design philosophy
- Interior design, from Yi Yeong Jae, brings inspiration from fashion and modern furniture

Toyota is using the Geneva Motor Show to showcase its concept for a compact, rugged mini SUV that could bring a fresh approach to the segment.

The Urban Cruiser draws heavily on Toyota's heritage in Sports Utility Vehicles through the legendary Land Cruiser range, the best-selling RAV4 and the tough Hilux. It has styling cues typical of Toyota SUVs but also adds its own dynamic flair to bring a more rugged originality to the mini SUV segment.

The Urban Cruiser is a product of ED², Toyota's European styling studio in the south of France and is the work of chief designer Elvio d'Aprile. He worked with Porsche and Pininfarina before joining Toyota in Japan in 1994 and then moved to ED² when it opened in 2000. Elvio was also the chief designer of the Corolla Verso, a vehicle frequently praised by its dynamic and robust design.

"Typical customers in the mini SUV segment are urban individualists", says Elvio d'Aprile. "They are seeking a rugged look within a compact body and want to stand out, and above, the crowd. The Urban Cruiser concept is the car that will allow them to freely express their personality."

"The Urban Cruiser breaks with conventionality by bringing something different to the mini SUV segment. It is more dynamic, but also rugged and brings the special Toyota SUV flair."

The Urban Cruiser is the latest Toyota to be created under the Vibrant Clarity design philosophy which now underpins all the latest Toyota creations. By working to the Vibrant Clarity discipline, Toyota aims to bring the two elements of successful design, form and function, together under one package.

Therefore, Vibrant Clarity combines two elements: Vibrant form, which stands for dynamism and energy, plus Clarity of function which calls for more rational values such as simplicity and logic.

Fresh, robust exterior

- Evoking the Toyota SUV heritage
- Trapezoidal design elements create ruggedness
- Latest display of Toyota's "Vibrant Clarity"

The Urban Cruiser concept clearly demonstrates design similarities with other models in the Toyota range and draws on the company's long established heritage in SUVs. It shows the quality inherent in all Toyota design while adding the fresh and robust look that this segment demands.

The Toyota SUV heritage is most evident in the extensive use of a trapezoidal design element that is now in the front bumper, the grille and lower door panels. This creates a dynamic feeling but also suggests protection.

Furthermore, the trapezoidal form can also be found on the side window, evoking a Toyota design cue reminiscent of several other models, like AYGO, Corolla Hatchback, Corolla Verso, the new RAV4 and others.

The massive wheel arches are also intended to emphasise the SUV character. They converge towards the car's geometric centre in order to provide a compact and agile shape while disguising the relatively long wheelbase – itself designed to create maximum interior space.

You can see all the elements of the Vibrant Clarity design philosophy in Urban Cruiser. These are defined within the four principles of P.A.S.S. (Proportion, Architecture, Surface, Special touch).

- **Proportion:** the long cabin – offering excellent interior space – combines with short, powerful overhangs to create an effect of perfect imbalance. This results in a massive, but dynamic body proportion.
- **Architecture:** when viewed from above, there is a pronounced V-shape to the front – created by the dominant front and rear wheel arches which stand out from the bodyshell.
- **Surface:** the extensive use of trapezoidal design is distinctive in the front bumper shape and the freeform surface of the lower door panels.
- **Special touch:** The crispness of the overall exterior design is completed by sharply sliced surfaces that can be found in the front and rear bumpers.

In addition to these distinguishing elements, the Urban Cruiser makes a significant break from the conventional with the use of satin finish exterior body paint rather than the common gloss.

Fashion-led interior

- Created by Yi Yeong Jae
- Inspiration from modern furniture

Just as the exterior design of Urban Cruiser breaks from the conventional, the interior adopts a new approach too. Here the designer wanted to move away from the traditional car interior design and focus on examples outside the car industry, such as modern furniture.

It is the work of Yi Yeong Jae, the Korean designer who also created the Toyota Motor Triathlon Race Car, shown one year ago, at this same motor show.

"I was inspired by the designs of modern, fashionable furniture," says Yi Yeong Jae. "The interior design consists of several different surfaces which are treated as different, independent layers. This is the case with the seats, the door panels and the dashboard."

There is a feeling of spaciousness inside Urban Cruiser which is in keeping with its roomy but compact concept. The seats adopt a thin, elegant design that is both space saving and comfortable. The materials are modern with a premium quality and show some of the characteristics of nylon.

Special features of the interior design include the door handles – created to facilitate use – and the navigation screen which is viewed through a transparent curved panel integrated into the centre console.



Toyota Fine-T



Toyota Fine-T

The next step in FCHVs

- Born from Toyota's desire to minimise environmental impact, while maximising passenger expectations
- Exterior design combines aesthetics with advanced technology
- Highly-efficient package: the interior space of an Avensis with the approximate exterior size of a Yaris
- Interior combines high technology with a welcoming environment
- Effortless ingress and egress thanks to movable seat and gull-wing doors
- Adopting Toyota's latest FC stack and new 70 MPa hydrogen storage tank
- Four-wheel large-angle steering and drive system through in-wheel electric motor assembly
- Low center of gravity and moment of inertia through innovative powertrain components layout
- 360-degree camera coverage provides a new level of active safety
- Adoption of "carbon-free" materials offsets CO₂ increase

Toyota's vision of automobile manufacturing aims to minimise environmental impact while maximising what people expect from a vehicle, together with high levels of safety. The Fine-T was developed based on this vision. In addition to an advanced fuel cell system that assures excellent environmental performance, the Fine-T offers unprecedented maneuverability by utilizing a four-wheel independent, large-angle steering system with an in-wheel electric motor in each wheel, while creating an environment that extends hospitality to all aboard. Toyota's FCHVs have now attained another stage in their ongoing evolution.

Exterior design

- Inspired on "Vibrant Clarity"
- Combination of aesthetics with advanced technology
- Highly-efficient package

Based on the design philosophy of "Vibrant Clarity", designers created an exterior around a theme of beauty combined with advanced technology that cares for people. This is expressed in a compact, new "one-form silhouette" design that changes its appearance depending on the viewing angle. To achieve this revolutionary, highly efficient package, the compact fuel-cell unit has been installed under the floor and there is in-wheel motor drive for all four wheels. This gives the Fine-T the cabin space of an Avensis within the approximate exterior dimensions of a Yaris. The vehicle is designed for the next-generation active family user who appreciates high-tech as part of a smart lifestyle.

Interior design

- Passenger-friendly high-tech
- Variable lighting intensity
- Effortless ingress and egress

The interior seeks to create a sense of spaciousness and envelopment at the same time, based on the key idea of making high-tech warm and friendly to people. This is reflected in the driver's seat area, too, which features a low instrument panel incorporating a large multi-information display, assuring a good, broad view. To further enhance the calm and relaxed atmosphere of the interior, we employed variable lighting intensity to produce a calming effect over the instrument panel and door trim. The Fine-T demonstrates the awesome space-efficiency and hospitality that are possible in an FCHV.

The Fine-T extends warm hospitality to users by alleviating the effort of getting in and out. As the gull-wing doors open, the driver's seat rotates outward to assist in boarding.

Once the user is seated, the seat glides back automatically to the driving position. When ready to leave the vehicle, pressing a button sets the seat to the exiting position, and the user can simply stand up to get out. The drive-by-wire steering system stows away automatically when preparing to exit the vehicle.

Advanced fuel cell hybrid system

- **Toyota-built 70 MPa hydrogen storage tank**
- **Newly-improved Toyota FC Stack**

Toyota's state-of-the-art fuel cell hybrid system demonstrates how close we can come to having zero effect on the environment. Hydrogen supplied from Toyota-built, 70 MPa (approx. 700 atmospheres) storage tanks reacts chemically with oxygen (from the air) to produce electricity in the company's proprietary fuel cell stack (the Toyota FC Stack), which, like the vehicle's storage battery (when needed), drives the electric motors that power the vehicle. A power control unit efficiently manages the power sources (the fuel cell stack and storage battery).

To fit its compact dimensions, the Fine-T employs a downsized, higher-performance new Toyota FC Stack configuration. This fuel cell stack adopts a new alloy catalyst, which allows a dramatic reduction in the amount of precious metals used. These units are mounted beneath the vehicle floor, thereby creating more cabin space, while yielding a radically low center-of-gravity and low inertia moment, which contribute to an exhilarating driving experience and help enable large steering angles.

Unparalleled manoeuvrability

- **Four-wheel large-angle steering system**
- **Independent four-wheel drive**
- **Low center of gravity and moment of inertia**

The Fine-T enhances the fun of mobility while offering a major advance in handling convenience when driving on narrow roads and during parking. Supporting this maneuverability are an independent four-wheel large-angle steering system and independent four-wheel drive using in-wheel motors with integrated drive power and wheel turning-angle control.

These drive systems contribute to a distinctively low center of gravity and low moment of inertia, yielding an extremely stable feel, achieving an excellent balance of driving pleasure and stability. The result is exhilarating driving performance that exceeds expectations for a passenger car.

In addition, a drive-by-wire system connects the driver's controls to actuators that operate vehicle functions, providing an unprecedented degree of freedom in vehicle navigation. In front-axle/rear-axle turning mode, the vehicle can be turned around from the front or rear. This maneuvering capability is particularly handy for parallel parking, both when entering and exiting inline parking spots. In directional change mode, continuously variable steering of the front and rear wheels allows a change of direction of almost the entire length of the vehicle in four directions. This enables U-turns on dead-end streets and when coming out of inline parking spots. On-the-spot turning mode, as the name suggests, allows 360-degree turning on the vertical axis.

Preventing accidents

- **360-degree camera coverage**
- **Object recognition screen**

The Fine-T employs peripheral monitoring video cameras and a large display to support freedom of vehicle movement and reinforce active safety functions. A front-view camera is installed above the license plate and a rear-view camera below the Toyota badge at the back of the vehicle. Side cameras are located at the door handle position on the left and right doors. Combined, these video cameras monitor the entire periphery of the vehicle for obstacles. A large display on the instrument panel shows views of both sides of the vehicle. The central area of the display contains an obstacle recognition screen.

The display helps extend visibility to areas around the vehicle the driver cannot normally see.

Adopting "carbon-neutral" materials

- **Offsetting CO₂ increase**

With the aim of controlling the increase of atmospheric CO₂ (the cause of global warming), the Fine-T's interior employs a substantial volume of plant-sourced materials.

Plants are considered "carbon-neutral" because they absorb CO₂ in photosynthesis, so even if they are burned, the net amount of CO₂ stays the same over the entire life cycle.

With the Fine-T, Toyota pursued the possibilities of using carbon-neutral materials over a wide range of interior fittings, processing polylactic acid (PLA*), obtained from sugar cane, as well as Kenaf and other plant fiber into a variety of textures for door trim, suede-like ceiling material, seat nets and floor mats.

*PLA: polylactic acid, a polymer (plastic) made from plant starches or sugars



Toyota i-swing

An evolution in personal mobility

- The fourth iteration of personal mobility concepts by Toyota, after p.o.d, PM and i-unit
- A more direct form of human-vehicle interaction, adopting the latest technologies in robotics
- Exterior design portrays a minimalist shape inspired on a living form
- Offering customization options through a detachable exterior surface and a triangular back panel
- An artificial intelligence system learns driver's behaviour, selecting adequate communication contents
- Driver and vehicle can be in permanent contact through a mobile phone or a personal computer

While striving for technological advances and innovations, Toyota seeks to expand dreams of mobility and future possibilities based on research into people's changing lifestyles and values.

The "p.o.d", exhibited in 2001, was a vehicle that could express emotional states, almost like a family member or friend.

This demonstrated how, thanks to state-of-the-art information technology, personal mobility vehicles could take on human-like emotional and learning behaviors. Following the "PM" of 2003, the "i-unit" Toyota exhibited at EXPO 2005 AICHI (Exposition of Global Harmony) was a personal mobility vehicle that used the smallest amount of energy required to transport one person. It also offered freedom of movement for the individual, and greater possibilities for humankind, thereby making it truly environmentally compatible.

Our latest in this series of personal mobility vehicles is the i-swing. With its small, flexible body, the i-swing fits right into a person's living space. The i-swing also exhibits human-like freedom of movement and can be customized almost like choosing an outfit. Through two-way communication employing a range of advanced devices, this new form of mobility allows more individual expression and deeper social interaction, going far beyond the capabilities of conventional vehicles.



Product concept

- **A new form of mobility**
- **A more direct human-vehicle interaction**
- **Technology cultivated in robotics R&D**

The i-swing is Toyota's proposal for a new form of mobility based on a more direct human-vehicle interaction.

Employing technology cultivated in robotics research and development, the i-swing goes beyond our view of the car as a means of transport to open up a whole range of possibilities for self-expression. Never before has the vehicle evolved so close to the individual.

Through personal mobility, the i-swing will enhance the enjoyment of individual interactions in our everyday lives. No longer is the future far away - it's already here.

Exterior design

- **Design to the image of a new living form**
- **Minimalist body shape**
- **Body constructed of shock-absorbing polyurethane**

The vehicle body — which feels more like you are wearing it than riding in it — is styled less as a “car” than as a new living form. When seated in the “minimum-size open-face body” of the i-swing, eye-level is about the same as when standing, allowing unhindered conversation with people met along the way. The body is constructed of shock-absorbing, low-rebound polyurethane and the exterior surface is partly covered with fabric as a measure against making people feel oppressed in crowded situations.

Customisation

- **Detachable exterior surface**
- **Personalised triangular back panel**

The fabric on the i-swing's exterior surface can be detached and changed. This allows for customization of the vehicle according to, say, the seasons of the year. In addition, the frontal door, which opens and closes in sections, and triangular back panel have an embedded full color LED display matrix. The user can personalize the display by installing self-crafted video and still picture images or those downloaded from the Internet. Like wearing a favorite outfit, this enables coordination to suit the user's mood or to match the time, place and occasion.

Driving dynamics

- **Two driving modes: two-wheel and three-wheel**
- **High maneuverability with three wheels**
- **Low-speed or standing in two-wheel mode**

The i-swing offers two driving modes: two-wheel and three-wheel. The two-wheel mode allows for confident and safe driving while moving among people in the city. The three-wheel mode provides highly maneuverable performance on the same roads as regular traffic. Vehicle control changes according to the mode, assuring high levels of both ride comfort and dynamic performance.

The three-wheeler runs on two rear-drive wheels and one steerable front wheel, with the left and right rear wheels moving up and down independently. During acceleration and deceleration, the entire vehicle body tilts forward and backward shifting the center of gravity.

When turning left and right, the vehicle body tilts inwards so that the pressure on the driver is always applied downward along the body axis.

Although a high center of gravity and extremely short tread and wheelbase would normally make stable movement difficult in a machine like the i-swing, the position of the center of gravity and the balance of weight on each wheel, as well as motive power, are controlled automatically, much like the movement of a human body when running, turning and stopping.

The result is excellent dynamic performance and a natural ride feel.

During three-wheel driving, the i-swing operating system offers two modes to match the driver's operational skill and purpose.

In “Comfort Mode”, two linked joysticks alone are used. Vehicle attitude (center-of-gravity position) and front-wheel steering, as well as rear wheel left/right drive power, are optimally controlled simply by pushing a joystick in the intended direction of travel. This makes driving easy and pleasant for anyone. Lifting the joystick diagonally forward switches the i-swing to “Active Mode”. At the same time, the driver assumes a forward-inclined attitude to facilitate agile movements. The joystick sensitivity increases and at the same time, foot pedals can control the vehicle attitude. The driver keeps assuming the optimal posture for the next movement, skilfully accelerating, braking and turning in a series of driving actions that feels much like skiing.

With suitable training, drivers can even put in a performance that resembles dancing.

With the front wheel stowed away between the two rear wheels, the i-swing goes into two-wheel driving mode, using a gyrosensor for inverted control. One can switch to this driving mode when the i-swing is standing still or moving at low speed. As in three-wheel driving mode, operating the joystick moves the i-swing forward/backward as the center of gravity shifts forward and backward under optimal control, while turning is accomplished by rotational speed difference between the left and right wheels.

The driver's head is located centrally with respect to the vehicle axle. So when turning on the spot, the movement feels natural, just like turning your own body around. When stationary, the controller maintains the center of gravity above the center of the vehicle axle, so even if the driver significantly shifts position, the vehicle remains more or less stationary as long as there is no joystick operation. The driver's posture also remains constant, even when the vehicle is traveling up and down gradients.

When two i-swings are brought together, they can travel side by side with one i-swing becoming the master vehicle. Joystick inputs on the master vehicle are transmitted through short-range communications to the second vehicle, which mimics the master's movements. Since the two vehicles travel by operating the master vehicle alone, the driver of the second vehicle enjoys the same relationship to the actual driver as someone in the passenger seat of a conventional car.

Artificial Intelligence communication

- **A.I. learns driver's behaviour, selecting communication contents**
- **Driver and vehicle can be linked via mobile or personal computer**

The i-swing uses A.I. (artificial intelligence) technology to communicate with the driver. This takes the form of a virtual character, which appears in pop-up displays at left and right shoulder level, and changes depending on the driver's personality. Even after leaving the vehicle, driver and vehicle remain linked by mobile phone or personal computer.

A.I. allows the vehicle to learn the driver's behavior patterns, and to select pertinent information based on this learning, either from memory or the Internet, for communication with the driver at a particular time and place.

Thanks to A.I., the i-swing has the potential to make our lives in the real world more enjoyable and fulfilling.



The third-generation Toyota RAV4



The third-generation Toyota RAV4

Redefining the standard in compact SUVs

The all-new Toyota RAV4 is setting fresh benchmarks in the compact Sports Utility Vehicle segment with the introduction of premium levels of driving performance, quality, passenger comfort and equipment.

The new RAV4 is the third generation of a model that is a best seller in Europe and a worldwide success for Toyota. At launch, in 1994, the Toyota RAV4 established the popularity of compact sports utility vehicles and more than 2 million RAV4s have been sold since then. More than 655,000 RAV4s have been sold in Europe alone (by end-year '05).

The RAV4 has been completely redesigned for 2006, taking into account modern customer expectations. Its primary role will be to confirm Toyota as the leading carmaker in the SUV-compact segment.

Designed for modern life

- **Rugged and modern design theme**
- **Superior perceived quality throughout**
- **Compact outside, big inside**

Each generation of RAV4 has followed the same ground-breaking design cues that created the compact SUV market – combining versatility, design and outstanding driving dynamics. The all-new third generation Toyota RAV4 continues this pioneering spirit but, in response to modern customer demands, adds significantly more premium quality, increased interior space and an intelligent, flexible interior package.

The new Toyota RAV4 is 145 mm longer (4,395mm – 4315mm without backdoor spare wheel) than the current generation, with a significantly increased wheelbase (+70 mm) and rear overhang. This allows greatly improved passenger comfort; the cabin length (1,820mm) has been increased by 85mm with the couple distance between front and rear seats increased by 55 mm.

The width is also increased (by 80mm) and increased shoulder space allows the front seats to be set further apart, again improving comfort. Height remains below that of many competitors, emphasising the sleek, squat styling and premium passenger car driving performance of the RAV4. But the rear seat headroom has been improved, allowing the new RAV4 to seat five adults in comfort.

And, despite the lengthened wheelbase, a lower turning circle of 5.1 meters has been achieved – well below many rival vehicles.

The precision of the interior structure underlines the premium quality of the new RAV4. The elimination of any break lines, the tight panel gaps and the matching of surface levels all contribute to the perceived quality of the vehicle and are a tribute to its engineering excellence.

The interior volume has been increased to 3,822 litres, an increase of 13% on the outgoing model. This is most noticeable in the luggage compartment, the rear passenger headroom and the shoulder room.

The newly developed rear suspension with the shock absorbers positioned diagonally under the floor results in a 230mm increase in the luggage room width.

Practical, flexible interior

- **Unique Toyota Easy Flat seating**
- **Flexible luggage and storage space**
- **Premium equipment and option features**

Customers for the Toyota RAV4 enjoy an active lifestyle, often needing to adapt their vehicle to the demands of a growing family. Here the new RAV4 will offer a unique feature that most clearly expresses its practicality and modularity: the Toyota Easy Flat seating system.

Using one of two one-touch levers, easily accessible from the rear tailgate, the rear seats can be folded down into the rear floor space to leave an 'easy-flat' luggage space without the need to remove any seat cushions or headrests.

The rear seats can also split (60:40) for maximum flexibility and can recline on an individual basis. They can slide backwards and forwards over 165mm to greatly enhance passenger comfort or increase luggage capacity. The flat boot floor also offers additional, underfloor storage space for increased security – and the rear luggage cover can be stowed here when not in use.

The three, hi-tech analogue Optitron meters dominate the instrument panel and give a premium, sporty image. The multi-information display offers a wide range of customisable function setting options including six languages¹ and metric or imperial units.

Standard equipment on all models includes air-conditioning (manual or dual automatic on high grade) and a six-speaker radio/CD unit (with 6 CD-changer on high grade) which has been adapted for MP3 file playback.

A dual-zone, fully automatic climate control system, with adjustable pollen removal, is available; while many owners will want to upgrade to the full map DVD navigation system with Bluetooth compatibility and touch screen.

¹ English, French, German, Italian, Russian

A wide choice of powertrain

- D-4D Clean Power diesel technology
- Six speed manual transmission (with D-4D engines)
- Latest development of 2.0-litre VVT-i

The all-new RAV4 offers a choice of three engines and two drive-trains – allowing customers to balance outright performance with excellent fuel consumption and low emissions.

Headlining this engine line-up is the remarkable D-4D 180 engine which is the most powerful diesel in the compact SUV sector. Available in the premium RAV4 X, it enables customers to enjoy a top speed of 200km/h and acceleration to 100 km/h in 9.3 seconds while achieving combined fuel consumption of 7.0 litres/100km.

The D-4D 180 is not only powerful, but clean - thanks to Toyota's advanced and unique Toyota D-CAT (Diesel Clean Advanced Technology), an emissions control technology which reduces NOx and particulate emissions at the same time.

Equally impressive are the other two engines available across the RAV4 range: the D-4D 135 diesel and the latest development of the 2.0 VVT-i petrol.

Like the D-4D 180, the D-4D 135 uses 32-bit processor technology for accurate and optimum control of main engine functions, leading to enhanced engine efficiency. With maximum power output of 100kW (136 DIN hp) this engine allows the new RAV4 to reach a top speed of 180 km/h and accelerate from 0 to 100 km/h in 10.5 seconds.

Maximum torque of 310 Nm over the engine range of 2,000 rpm to 2,800 rpm gives excellent mid-gear acceleration and flexible driving performance while preserving remarkable fuel economy. The Toyota RAV4 D-4D 135 combined fuel consumption is 6.6 litres/100km.

The new Toyota RAV4 with 2.2-litre D-4D engines will come as standard with the latest Toyota six-speed manual transmission which boasts smooth, quick and precise gear-change.

For customers who prefer the smooth power delivery of a petrol engine, the new RAV4 is available with the latest development of the 2.0-litre VVT-i. In the new RAV4, the engine develops 112 kW (152 DIN hp) at 6,000 rpm and has maximum torque available of 194 Nm at 4,000rpm.

Equipped with this engine, the RAV4 (with five speed manual transmission) is capable of a maximum speed of 185 km/h and will accelerate from 0 to 100 km/h in 10.6 seconds. Fuel consumption is 8.6 litres/100km.

The new RAV4 2.0-litre VVT-i is available with the option of an advanced four-speed automatic gearbox.

Total driving control

- Integrated Active Drive System
- All new chassis and suspension design
- Precise, responsive power steering

The Integrated Active Drive System is unique to the new Toyota RAV4 and another world first for this segment. It takes a set of individual technologies and combines them into a complete package via high-speed CAN communications.

The three elements of Integrated Active Drive System are the Active Torque Control 4WD system, the Vehicle Stability Control (VSC) and the Electric Power Steering (EPS). The interaction of all these systems allows for real-time control that responds to driver operation and vehicle behaviour resulting in enhanced running, turning and stopping performance.

The elements of Integrated Active Drive come together to provide remarkable stability and vehicle control under all conditions. These could include:

- adjustment of the engine output to reduce wheel spin
- braking of individual wheels to reduce wheel spin
- steering torque assist to help driver input correct steering angle
- torque transfer between front and rear wheels to improve stability

The new Toyota RAV4 sets out to deliver excellent driving pleasure – not just through its active performance but also through its chassis and suspension design.



A key factor in this driving pleasure is the all-new front and rear suspension, designed to optimise handling and enhance stability while, at the same time, offering excellent standards of passenger comfort and ride.

The front suspension utilises an enhanced McPherson strut design that has been engineered for significant weight reduction and improved passenger comfort. This has resulted in a complete redesign from the lower arm to the coils springs and shock absorbers.

The rear suspension is unique to RAV4 and utilises a newly-developed independent double wishbone and trailing arm. This gives excellent vehicle stability in straight line with roll-stiffness optimised for good performance under cornering.

The new RAV4 uses a high response, mechanical rack and pinion with a newly-developed electric power steering (EPS) system resulting in easy but precise steering effort and excellent steering response.

Safe and durable

- **Maximum focus on safety systems**
- **Designed to reduce pedestrian injury**
- **Nine airbags, including driver's knee**

Active and passive safety is a key feature of the all-new Toyota RAV4 and special emphasis has been placed on creating a safe environment for both vehicle occupants and other road users.

Specific measures include the development of a new impact-absorbing chassis with minimal cabin deformation in the event of an accident and a comprehensive SRS airbag package including, for the first time in this segment, driver's knee airbag.

There has also been a particular emphasis on management of pedestrian safety to minimise injuries in the event of a collision with a pedestrian. The bonnet itself has been redesigned to be a deformable structure and the area around the bonnet lock features crash-absorbing reinforcements and a crumple zone. The lock itself has been moved further back, away from the likely area of pedestrian impact. Energy absorbing zones have been incorporated into the front section of the new RAV4 and, at the rear edge of the bonnet, the cowl has an open cross-section structure that allows its underside to crumple.

RAV4 X – the premium challenger

- **High performance D-4D 180 engine**
- **Distinctive exterior styling**
- **Premium equipment levels**

The launch of the RAV4 X will challenge premium contenders in the compact SUV market and open up this emerging segment to Toyota – sales in the European premium compact SUV segment are forecast to increase from 46,000 units in 2004 to up to 75,000 units by 2007.

The RAV4 X will offer exclusive equipment in combination with the high performance D-4D 180 diesel engine, the most powerful diesel engine in the segment, and a six-speed manual gearbox. Top speed is 200 km/h and the RAV4 X will accelerate from 0 to 100km/h in 9.3 seconds.

The RAV4 X will be instantly recognisable thanks to its unique and striking exterior styling to create a premium look. The RAV4 X will be the only model in the range not to carry the spare wheel on the back door – it will be equipped with run-flat tyres and an advanced tyre pressure monitoring system.

The RAV4 X has an extensive range of premium equipment. This includes leather seats which are heated and power controlled; a smart entry and start system; cruise control; rain sensing wipers and a dusk sensing headlamp control.

Technical specifications

Engine	2.0-litre VVT-i	D-4D 135	D-4D 180
Type	4 cylinders in-line	4 cylinders in-line	4 cylinders in-line
Fuel type	95 Octane petrol	48 Cetane diesel	48 Cetane diesel
Valve mechanism	DOHC 16-valve Chain drive with VVT-i	DOHC 16-valve Chain drive	DOHC 16-valve Chain drive
Displacement (cm ³)	1,998	2,231	2,231
Bore x stroke (mm)	86.0 x 86.0	86.0 x 96.0	86.0 x 96.0
Compression ratio (:1)	9.8	16.8	15.8
Fuel System	Electronic Fuel Injection	Common-rail system with solenoid injector	Common-rail system with piezoelectric injector
Injection pressure (bar)	-	1,700	1,800
Max. power (kW)	(112) 152@6,000	(100) 136@3,600	(130) 177@3,600
DIN hp @ rpm			
Max. torque (Nm @ rpm)	194@4,000	310@2,000-2,800	400@2,000-2,600

Transmission

Type	Electronically-controlled 4WD			
Clutch type	Dry, single plate			
Engine	2.0-litre VVT-i	D-4D 135	D-4D 180	
Gearbox type	5 M/T	4 A/T	6 M/T	6 M/T
Gear ratios	1 st	3.833	3.938	3.818
	2 nd	2.045	2.194	1.913
	3 rd	1.333	1.411	1.218
	4 th	1.028	1.019	0.880
	5 th	0.820	-	0.809
	6 th	-	-	0.711
	Reverse	3.583	3.141	4.139
Final gear ratio (Fr/Rr)	4.562/2.277	3.291/2.277	4.312 (1 st -4 th) 3.631 (5 th -6 th)/ 2.277	4.312 (1 st -4 th) 3.631 (5 th -6 th)/ 2.277

Brakes *

Front	Ventilated discs (Ø296 x 28 mm)
Rear	Solid discs (Ø281 x 12 mm)
Additional features	ABS EBD (Electronic Brake-force Distribution) BA (Brake Assist) TRC (Traction Control) Integrated Active Drive System Hill-start Assist Control (HAC) Downhill Assist Control (DAC) on A/T model only

Steering	2.0-litre VVT-i	D-4D 135	D-4D 180
Type	Rack and pinion	Rack and pinion	Rack and pinion
Ratio (:1)	14.4	14.4	14.6
Turns (lock to lock)	2.8	2.8	2.7
Min. turning radius – tyre (m)	5.1	5.1	5.4
Additional features	Electric Power Steering (EPS)		

Suspensions

Front	MacPherson Strut
Rear	Double wishbone

Exterior dimensions

Overall length (mm)	4,395 (4,315*)
Overall width (mm)	1,815
Overall height (mm)	1,685 (1,720 w/ roof rail)
Wheelbase (mm)	2,560
Tread front (mm)	1,560
Tread rear (mm)	1,560
Front overhang (mm)	860
Rear overhang (mm)	975 (895*)
Drag coefficient (Cd)	0.31

*Without exterior-mounted spare wheel

Offroad	
Approach angle	28°
Breakover angle	20°
Departure angle	24°
Running clearance (mm)	190
Front axle clearance (mm)	180
Rear axle clearance (mm)	180

Interior dimensions	
Interior length (mm)	1,820
Interior width (mm)	1,495
Interior height (mm)	1,240 (1,165 w/ sunroof)

Luggage compartment	
Luggage compartment capacity (L)	586
Loading area length (mm)	800 (1,500 rr seat fold)
Deck width (mm)	1,335
Deck height (mm)	995

	2.0-litre VVT-i		D-4D 135	D-4D 180
	5 M/T	4 A/T	6 M/T	6 M/T
Kerb weight (kg)	1,465	1,505	1,585	1,595
Gross vehicle weight (kg)	2,070	2,110	2,190	2,190
Towing capacity, w/ brakes 12% (kg)	1,500	1,500	2,000	2,000
	(opt: 2000)			
Towing capacity, w/o brakes (kg)	750	750	750	750

	2.0-litre VVT-i		D-4D 135	D-4D 180
	5 M/T	4 A/T	6 M/T	6 M/T
Max. speed (km/h)	185	175	180	200
0-100 km/h (sec.)	10.6	12.0	10.5	9.3
0-400 m (sec.)	17.2	18.3	17.2	16.6

	2.0-litre VVT-i		D-4D 135	D-4D 180
	5 M/T	4 A/T	6 M/T	6 M/T
Extra-urban (l/100km)	7.2	7.4	5.6	6.1
Combined (l/100km)	8.6	9.0	6.6	7.0
Urban (l/100km)	11.0	11.6	8.1	8.4
Fuel tank capacity (l)	60	60	60	60

	2.0-litre VVT-i		D-4D 135	D-4D 180
	5 M/T	4 A/T	6 M/T	6 M/T
Extra-urban (g/km)	170	175	149	163
Combined (g/km)	202	212	173	185
Urban (g/km)	257	273	215	223

* According to Base directive 80/1268/EEC, latest amendment 2004/3/EC

	2.0-litre VVT-i		D-4D 135	D-4D 180
	5 M/T	4 A/T	6 M/T	6 M/T
Emission level	EURO IV	EURO IV	EURO IV	EURO IV
CO	0.39	0.27	0.16	0.12
HC	0.04	0.04	-	-
NOx	0.02	0.04	0.22	0.13
HC + NOx	-	-	0.23	0.14
PM	-	-	0.016	0.003

* According to Base directive 70/220/EEC, latest amendment 2003/76B/EC

The details of specifications and equipment provided in this press information are subject to local conditions and requirements and may, therefore, vary from country to country. Toyota Motor Europe reserves the right to alter any details of equipment and specifications without prior notice.

New Toyota Yaris



New Toyota Yaris

Powerful design and advanced package for top selling Toyota

- Exterior design developed by ED², Toyota's European design studio
- Extensive improvements in terms of perceived quality
- Increased exterior dimensions (+110 mm length, +35 mm width, +30 mm height)
- Roomier interior, with an increase of 45 mm in couple distance (on par with C-segment cars)
- Bigger boot – from 272 l to 1086 l (loaded up to the roof)
- A reduced 4.7 m turning radius, an improvement over the previous generation
- Rear seats have fully independent 60/40 split for sliding and reclining
- Unique Toyota Easy Flat allows easy seat folding operation, with a fully flat cargo floor
- Flatter rear floor provides improved comfort for mid-seat passenger
- Adopts a 3rd generation Smart Entry & Start system, featuring a more compact key
- New audio system, with MP3 and WMA CD player, DSP amplifier, digital radio filter and Live-ACS
- ABS, EBD and Brake Assist are standard across the range
- Featuring the segment's first knee airbag
- Euro NCAP's highest adult occupant rating among direct competitors: 35 points (5 stars)
- First car to be developed according to more stringent internal car-to-car compatibility standards
- A 3-engine line-up: 1.0 VVT-i (69 DIN hp), 1.3 VVT-i (87 DIN hp) and D-4D 90 diesel (90 DIN hp)
- MultiMode transmission available on all engines for the first time
- Available in three equipment grades: Yaris, Yaris Luna and Yaris Sol

The new Yaris is the latest creation from ED², Toyota's European design studio. Purposefully, it builds on many of the characteristics and styling cues of the current model which have proved so popular with customers. They like its "Yarisness" – so the new model retains many of the body proportions while offering a more powerful stance.

Despite being a B-segment car, the new Yaris does not shy away from making a statement and has a strong road presence, created around the concept of 'powerful simplicity'. The strong shapes and attention to detail add sophistication and quality that suggests a car from a superior class while the sporting lines create a driving-orientated hatchback that will appeal to drivers of all ages and gender.

Notable design elements are the strong, mono-form shape with a stable and low centre of gravity. The integrated bumpers are a typical Yaris characteristic while the arched line under the side windows adds sporting appeal by suggesting forward motion.

The exterior design is not only modern, but also effective. The Yaris has spent over **1,000 hours** in the wind tunnel, being tested at wind speeds up to **180 km/h** – even higher than the vehicle's top speed. The result is one of the lowest drag coefficients in the class – **0.30**.

Throughout the design and engineering of the new Yaris, quality has been a critical factor. Customers will discover this, not just through the robustness of the car itself, but also through the perceived quality aspects of touch, feel and sound. A modern geometric graining for the dashboard conveys a more refined look while the gaps between dashboard components have been reduced by up to **30%**. The passenger airbag cover is seamless and the colour and illumination of the centre console is consistent.

Fabric covers a larger area of the door trim and the door structure and locks have been redesigned to create a more satisfying sound when closing. Assist grips and upper glovebox covers are **damped**. In addition, centre air registers use **fin-type shutters** and all side doors adopt **double sealing**.

Advanced package

- Interior space further maximised
- From 272 to 1086 litres of luggage space
- Unique Toyota Easy Flat

The overall body length of the Yaris has increased by 110 mm and the wheelbase has grown by 90 mm, contributing to the squat stance. However, the body's '**cab-forward**' concept was further improved by moving the windscreen base 120 mm forward, allowing the passenger cabin to grow even more than the exterior dimensions. In addition, the new model is also 35 mm wider and 30 mm taller. In spite of that, the turning radius is actually tighter than the model it replaces – **4.7 metres (4.4 metres with 14-inch tyres)** – also beating all its direct competitors.

There is more leg room, with the front-rear couple distance up by 45 mm, now **on par with C-segment cars** (880 mm). Head room has also increased, both back and front. Both front and rear hip-points have been raised to make the car more comfortable to get in and out of. The pedals have been moved forward to make for a more comfortable driving position, particularly for taller drivers. Furthermore, the space between the front seat rails increased 38 mm, providing extra room for the feet of rear passengers.

Rear centre passenger comfort has been improved with a flatter floor configuration, achieved through a redesign of the floorpan and rerouting of the exhaust pipe.



Most notable is the greatly increased luggage space, up by 33% from 205 litres to 272 litres (seats up) in the new model. This can grow up to **363 litres** by sliding the rear seat to its front-most position. After folding down the rear seats, a maximum volume of **1086 litres** can be achieved (loaded up to the roof).

This has been achieved by a much longer boot (up by 130 mm) and by a revised rear suspension design which reduces intrusion of the suspension towers. Boot width is up too (by 30 mm) and, in response to customer expectations, the new Yaris will now take a baby buggy without folding down the rear seats. A removable deckboard has also been incorporated into the boot, covering a 50-litre underfloor compartment. By removing it, it is possible to expand the usable boot height.

A unique feature in the segment is the **Yaris modular seating**, which allows enormous versatility in passenger and luggage carrying. The rear seat is fully adjustable and the 60/40 split seats can slide backwards or forwards over 150 mm on an independent basis. Seats can also recline independently over a 10-degree angle.

Developed from the lessons of the Corolla Verso project, the **Toyota Easy Flat** seat folding mechanism allows quick, one-motion folding of the rear seat to a flat floor without removing seat cushions or headrests (you can even do it with the front seats in their rear-most position). The one-touch lever is located at the top of the seat back, easily accessible from the boot or cabin and making the seat folding operation **65%** quicker than on the current model.

Smart and sophisticated

- **Hi-tech equipment**
- **30% more storage space than current model**
- **Improved safety specifications**

Yaris customers enjoy innovation and the new model offers a number of hi-tech features usually only found on upper-segment cars.

The **Smart Entry & Start system** is the third generation with more compact dimensions and no 'card slot', allowing more flexibility in dashboard design. The Yaris Smart Key is **16%** more compact than in the previous system and the key slot has been eliminated from the dashboard. If the Smart Key's battery is low, the driver can now hold it close to the start switch and press the button to start the engine.

The new Yaris adopts a **new audio head unit**, which can feature the ability to play **MP3** and **WMA files** through the CD player (Yaris Luna and Yaris Sol grades). Its 40-Watt, 4-channel DSP amplifier features a digital filter that reduces AM/FM reception noise.

Furthermore, the DSP is also equipped with the **Live Acoustic System** (Live-ACS), a feature that utilises digital acoustic effects to improve sound quality. These include **TruBass** (which extends bass sounds in the frequency range between 100 Hz and 200 Hz to produce an effect similar to a sub-woofer) and **Focus** (which emphasises sound around the 8 kHz frequency and makes passengers think the sound is coming from the front of the car, rather than speakers in the doors).

Luna and Sol grades will be equipped with 6 speakers and are prepared to receive Toyota's Turn-by-Turn (TbT) navigation system, now featuring also dynamic route guidance.

The new Yaris has evolved the current model's already excellent storage capacity. Adding to the existing compartments, there is a new driver's glovebox, a centre console space to put small objects like a mobile phone, and another compartment in the driver's side that can be used to store documents. In total, the new Yaris offers **30%** more storage space than the outgoing model.

Raising safety standards

- **Brake Assist is standard across the range**
- **Wider 185/60 R 15 tyres on all models**
- **Highest Euro NCAP score among direct competitors**

Safety is a priority. Anti-lock brakes (ABS), Electronic Brake-force Distribution (EBD) and **Brake Assist** (BA) are standard equipment fitted across all models. The brake pedal feel has been improved and disc diameter increased, to among the largest in the sector – 258 mm at the front (ventilated) and 278 mm at the rear (for vehicles produced in Europe).

Furthermore, **185/60 R 15 tyres** are now standardised for the entire range (not available on Yaris 1.0 VVT-i, entry grade, in some countries).

The original Yaris was the safest supermini available at the time of its launch. In order to live up to its predecessor's image, the new Yaris also counts with a strong Euro NCAP performance. In spite of a very short front overhang – 725 mm, the shortest in the segment - the new Yaris has achieved a better result than all its direct competitors at the Euro NCAP Adult Occupant Rating – 35 points.

Four airbags (dual front and side) are standard with curtain shield airbags and a segment-first driver's **knee airbag** also available. There is a seatbelt warning system (with variable-intensity buzzer) for both front seat passengers. Front seatbelt pretensioners with force limiters are also standard.



The new Yaris body structure has been developed using Toyota's **Minimal Intrusion Cabin System (MICS)** technology which effectively disperses the energy of frontal or side impacts through the body in order to divert it away from the passenger cell and minimise cabin deformation. Special 590 MPa high tensile steel has been used in the B pillar in order to better protect passengers from side impacts.

The new Yaris is the first Toyota equipped with the second-generation **WIL (Whiplash Injury Lessening) concept seats**. This is an important development over the first generation, adopting a new seat back structure and headrest design. In the event of a rear impact, the head movement can be restrained much earlier.

In addition, Yaris is equipped with other important safety features such as a **collapsible steering column** and **retractable brake pedal**, systems that move these components away from the driver in case of a frontal impact. Furthermore, the driver can deactivate the passenger's front airbag through a **cut-off switch**.

Reflecting the importance of the Yaris for Toyota, this is the first car to be developed by the company according to **more stringent internal car-to-car crash test standards**. These simulate a 55 km/h (both vehicles travelling at 55 km/h) impact with a two-ton vehicle in frontal 50% overlap, side and rear 50% overlap collisions.

Previous tests took place at 50 km/h but both sets of tests have great relevance to real world conditions because the majority of accidents involve impacts with other vehicles, not static objects.

A model for all customers

- **Powerful but economical engines**
- **Full-range availability of MultiMode transmission**
- **Three equipment grades**

The new Yaris will offer a full model line-up from launch designed to appeal to a wide customer base but all with the same class-leading levels of performance and environmental friendliness.

The successful and highly regarded **1.3-litre, four cylinder VVT-i** petrol engine from the current Yaris range is carried over into the new model with 64 kW (87 DIN hp) at 6000 rpm and 121 Nm of torque at 4,200 rpm. Also carried over from the current range is the latest generation, highly efficient and economical **D-4D 90** diesel that now develops 66 kW (90 DIN hp) at 3,600 rpm and 190 Nm of torque across a wide range - from 1,800 to 3,600 rpm. It takes only **10.7 seconds** for the Yaris D-4D 90 to reach 100 km/h from a standstill, making it the fastest car in the segment amongst those equipped with 1.3-1.5 litre diesel engines.

New to the Yaris range is the advanced **1.0-litre, three cylinder VVT-i** petrol engine which was debuted in the Toyota AYGO. This engine has already received excellent reviews thanks to its flexible power output, low fuel consumption and enjoyable driving characteristics. Weighing just **67 kg**, this is the lightest engine in the car market today and is an ideal entry level choice for the Yaris range.

All engines will come as standard with five speed manual transmission. For the first time ever, all engines, including the D-4D 90 diesel, will be available with the Toyota **MultiMode** transmission, with automatic clutch control and a choice of manual or automatic modes to suit the driver's needs.

To reflect customer choice, Yaris is available in three grades with high levels of standard equipment from the outset. Notably this includes power door locks, electric rear view mirrors, a CD player audio system with four speakers, Multi-Information Display trip computer and 185/60 R 15 tyres.

Higher grade models (Yaris Luna) gain telescopic steering wheel adjustment, leather steering wheel, a six speaker audio system with capability to play MP3 and WMA CDs and, at the top grade (Yaris Sol), 15-inch alloy wheels, full automatic air conditioning and, as an option, the Smart Entry & Start system.

Technical specifications

Engine	1.0-litre VVT-i	1.3-litre VVT-i	D-4D 90
Engine code	1KR-FE	2SZ-FE	1ND-TV
Type	3 in-line cylinders	4 in-line cylinders	4 in-line cylinders
Fuel type	95 Octane petrol (or higher)	95 Octane petrol (or higher)	48 Cetane diesel
Valve mechanism	DOHC 12-valve	DOHC 16-valve	OHC 8-valve
Displacement (cm ³)	998	1,296	1,364
Bore x stroke (mm)	71.0 x 84.0	72.0x79.6	73.0 x 81.5
Compression ratio (:1)	10.5	11.0	17.9
Max. power (kW) DIN hp/rpm	(51) 69@6,000	(64) 87@6,000	(66) 90@3,800
Max. torque (Nm/rpm)	93@3,600	121@4,200	190@1,800-3,000

Transmission

Type	Front-wheel drive				
Clutch type	Dry, single plate				
Engine	1.0-litre VVT-i		1.3-litre VVT-i		D-4D 90
Gearbox type	5 M/T	5 M/M	5 M/T	5 M/M	5 M/T 5 M/M
Gear ratios	1 st	3.545	3.545	3.545	
	2 nd	1.913	1.913	1.904	
	3 rd	1.310	1.310	1.310	
	4 th	1.027	1.027	0.969	
	5 th	0.850	0.850	0.725	
	Reverse	3.214	3.214	3.250	
Differential gear ratio	4.411		4.055		3.526

Suspension

Front	McPherson strut, stabiliser bar; gas-filled shock absorbers
Rear	Inverted-V torsion beam with stabiliser function included; gas-filled shock absorbers

Brakes *

	Standard	Optional
Front	Ventilated discs (Ø258 mm)	Ventilated discs (Ø258 mm)
Rear	Drums (Ø203 mm)	Solid discs (Ø278 mm)
Additional features	ABS with EBD and BA (Brake Assist)	
	VSC standard on vehicles with rear disc brakes	

* Vehicles produced in Europe

Steering

Type	Rack and pinion
Ratio (:1)	14.2 (13.9 with 165/70 R 14 tyres)
Turns (lock to lock)	3.0
Min. turning radius – tyre (m)	4.7 (4.4 with 165/70 R 14 tyres)
Additional features	Electric Motor Power Steering (EMPS)

Tyres

	1-litre, entry grade *	Standard
Tyre size	165/70 R 14	185/60 R 15

* only in selected countries

Exterior dimensions

Overall length (mm)	3,750
Overall width (mm)	1,695
Overall height (mm)	1,530
Wheelbase (mm)	2,460
Tread (mm) front	1,475 (1,485 with 165/70R14 tyres)
Tread (mm) rear	1,460 (1470 with 165/70R14 tyres)
Overhang (mm) front	725
Overhang (mm) rear	565

Interior dimensions

Interior length (mm)	1,865
Interior width (mm)	1,390
Interior height (mm)	1,270
Head room (mm)	Front 1,000 Rear 963
Shoulder room (mm)	Front 1,300 Rear 1,269
Leg room (mm)	Front 1,048 Rear 865
Couple distance (mm)	880

Luggage compartment

VDA luggage capacity, rear seat up (m ³)	0.272-0.363
VDA luggage capacity, rear seat down ¹ (m ³)	0.737/1.086
Length ² (mm)	477
Max. width (mm)	510
Height ³ (mm)	767

¹ loaded up to the top edge of front seats / loaded up to the roof, deckboard removed

² With rear seat folded

³ With deck board removed

Weights	1.0-litre VVT-i	1.3-litre VVT-i	D-4D 90
Kerb weight (kg)	980-1,030	1,010-1,055	1,055-1,115
Gross vehicle weight (kg)	1,440	1,480	1,525

Performance	1.0-litre VVT-i		1.3-litre VVT-i		D-4D 90	
Transmission	5 M/T	5 M/M	5 M/T	5 M/M	5 M/T	5 M/M
Max. speed (km/h)	155	155	170	170	175	175
0-100 km/h (sec.)	15.7	16.9	11.5	13.1	10.7	11.8
0-400 m (sec.)	19.6	20.5	18.2	18.5	17.8	18.2

Fuel consumption ⁴	1.0-litre VVT-i		1.3-litre VVT-i		D-4D 90	
Transmission	5 M/T	5 M/M	5 M/T	5 M/M	5 M/T	5 M/M
Combined (l/100km)	5.4	5.3	6.0	5.8	4.5	4.5
Extra urban (l/100km)	4.9	4.9	5.3	5.3	4.0	4.0
Urban (l/100km)	6.4	6.0	7.2	6.7	5.4	5.4
Fuel tank capacity (l)	42		42		42	

CO₂ emissions ⁴	1.0-litre VVT-i		1.3-litre VVT-i		D-4D 90	
Transmission	5 M/T	5 M/M	5 M/T	5 M/M	5 M/T	5 M/M
Combined (g/km)	127	125	141	136	119	119
Extra urban (g/km)	115	115	124	124	106	106
Urban (g/km)	148	141	170	157	141	141

Other emissions ⁵	1.0-litre VVT-i		1.3-litre VVT-i		D-4D 90	
Transmission	5 M/T	5 M/M	5 M/T	5 M/M	5 M/T	5 M/M
CO (g/km)	0.58	0.53	0.39	0.49	0.15	0.07
HC (g/km)	0.07	0.06	0.04	0.05	-	-
NOx (g/km)	0.01	0.01	0.01	0.01	0.17	0.17
HC+NOx (g/km)	-	-	-	-	0.18	0.18
PM (g/km)	-	-	-	-	0.021	0.018

Noise levels ⁶	1.0-litre VVT-i		1.3-litre VVT-i		D-4D 90	
Transmission	5 M/T	5 M/M	5 M/T	5 M/M	5 M/T	5 M/M
Stationary (dB(A))	80.0	80.0	68.0	70.0	76.0	76.0
Drive-by (dB(A))	70.0	70.0	82.0	82.0	67.0	70.0

⁴ According to Directive 80/1268-2004/3/EC

⁵ According to Directive 70/220-2003/76/EC

⁶ According to Directive 70/157-1999/101/EC

The details of specifications and equipment provided in this press information are subject to local conditions and requirements and may, therefore, vary from country to country. Toyota Motor Europe reserves the right to alter any details of equipment and specifications without prior notice.



Panasonic Toyota Racing



Panasonic Toyota Racing

New TF106 is ready to go

- **Panasonic Toyota Racing was the first team to introduce its 2006 race car**
- **The Toyota TF106 is the result of one year of work**
- **The new chassis marries a brand new rear end with the monocoque and front suspension of the TF105B**
- **Toyota is still one of the few teams to have engine and chassis operations under the same roof**
- **The brand new RVX-06 V8 engine is ready for the new season after a full year of testing**
- **Bridgestone is Panasonic Toyota Racing's newest partner**
- **Ralf Schumacher, Jarno Trulli and Ricardo Zonta make the driver line-up for this season**

Renowned for its early car launches, Toyota has raised the standards yet again by unleashing its 2006 race car over three months before the season-opening Bahrain Grand Prix, which is scheduled for 12 March. Technical Director Chassis Mike Gascoyne believes such a head start could offer the Cologne-based team a significant time advantage over its rivals ahead of the winter holiday period.

"We have been working on the TF106 since the end of 2004," Gascoyne reveals, "and the introduction of this car at such an early stage is a true testament to the work of the team and shows that we are able to react and push forward at a rate that is necessary to be at the forefront of Formula 1."

The TF106 marries a brand new rear end, designed to accommodate Toyota's latest specification V8 engine, with a development of the monocoque and front suspension of its pole-setting, podium-scoring TF105B interim car that was brought in for the final two races of the 2005 season.

"The TF106 that has run in Barcelona end of November marked the first stage of development for this car with continuous improvements planned in the run-up to the first race. We adopted a similar schedule to last season by testing the car early. This allows us to develop the mechanical side of car thoroughly before we introduce a new aero package in time for the first race. This strategy helped us to be extremely competitive at the start of 2005 and we are confident the same will happen in 2006."

"The front end of the TF106 is an evolution of our TF105B that raced in Japan and China, but the major design change for 2006 has been the implementation of the V8 engine in line with the new technical regulations, which has resulted in the redesign of the rear end," added Gascoyne.

A tale of two cylinders

Panasonic Toyota Racing experienced just one engine retirement over 19 race weekends in 2005, an impressive statistic given the increase to two-race reliability demands for last season. Such an enviable record, coupled with the strong performance of Toyota's V10 in its comparatively short F1 history, have provided invaluable foundations for development of the V8 power unit according to Technical Director Engine Luca Marmorini.

"With such strenuous reliability rules, we cannot afford to make jumps in the dark," explains Marmorini. "We cannot compromise the performance of the engine, so we have concentrated on reducing the performance loss. We have a strong core team of engine engineers here at Toyota, built up from six years of F1 engine development. This impassioned teamwork is our advantage and our strongest asset."

Mike Gascoyne is quick to back up his engine counterpart: *"Luca and his team have done an exceptional job, which has had a positive knock-on effect for the chassis department, a benefit enhanced by being based at the same factory, under the same roof. Having a pair of TF106s at our disposal for winter testing means that the development of our mechanical package will be significantly advanced."*

The new Toyota RVX-06 V8 engine was testbenched for the first time on 21st March 2005, one day after the team scored its debut podium finish at the Malaysian Grand Prix. Since its first track run at the end of July, the V8 has completed 291 laps over eight separate days, a distance of 2,143 km.

"A lot of teething problems have been solved through our ability to get the V8 testing at an early stage," adds Marmorini. "We have gathered a lot of data both on the track and in the factory. On the 3rd of November we completed the required two race weekend mileage in the dyno for the first time and that has permitted us to start our winter testing programme with a fully "raceable" RVX-06 unit. Now our job is to redefine the limits of our engine and to push back the boundaries as much as we can before the new season."

Rubber soul

The initial four-day Barcelona test in November and December also marked Toyota's debut with Bridgestone tyres following the recently announced contract for the 2006 season.

Toyota Motorsport President John Howett commented: *"The Bridgestone agreement was only concluded recently and it is important to get the partnership working as quickly as possible, to build up a strong technical relationship and to develop the chassis and the Potenza tyres together in preparation for 2006. The fact that we can test the new mechanical package and suspension together with V8 engine and Bridgestone rubber will surely give us a valuable head start. It is too early to have any clear indication of our relative competitiveness, but development of the TF106 will be relentless to extract all the benefits of our continuous improvement maxim."*

Driver line-up for 2006

In the driving seat for this week's TF106 debut will be 2006 race drivers Ralf Schumacher and Jarno Trulli, who finished 6th and 7th respectively in the drivers' championship in 2005 and helped Panasonic Toyota Racing secure fourth in the constructors' championship. Joining them will be Brazilian driver Ricardo Zonta, who has recently signed a one-year contract extension to be the team's third and reserve driver for 2006. Frenchman Olivier Panis will also continue in an important test drive role in 2006, his fourth consecutive season as a Panasonic Toyota Racing driver.

"I am very pleased to have signed again with Panasonic Toyota Racing for the coming season," said Zonta. *"We enjoyed such a successful year in 2005 and I am sure this trend will continue. I feel part of the family at Toyota and I would rather continue to offer them my services as third driver than become race driver in another series which I may not enjoy as much as Formula 1. I feel that I have contributed significantly to Toyota's success and I look forward to extensive testing of the TF106 to help propel us into the top flight of Formula 1."*