



GLOSSARY

B/A = Brake Assist

Toyota's Brake Assist (B/A) is there when you need it: In an emergency, its computer cleverly recognises sudden brake movement as being emergency Braking, and where necessary, supplements the driver's braking force to automatically slow the car down in a controlled fashion.

Air Conditioning

Toyota Air Conditioning systems makes motoring a pleasure wherever you Venture. On the air conditioning system air passes through a filter and is then automatically recirculated, free of dust, pollen and odours. A clean cabin for you and your passengers all of the time. And at the exact comfort level you desire as the thermostat controls temperature levels, ventilation and air conditioning. The unit is ergonomically designed and can be used to control cool, humidify and defog the windows.

Aerodynamic drag coefficient

Every Toyota prototype spends thousands of hours in the wind tunnel to make sure the production model has class-leading aerodynamics. A low drag coefficient boosts top speed whilst reducing fuel consumption and wind noise.

The standard measure of aerodynamic efficiency is the drag coefficient (or Cd value). It compares the drag force with the force it would take to stop the airflow in front of the car. The higher the drag coefficient, the greater the aerodynamic drag force a car's engine must overcome.

Anti-glare rear view mirror

The Toyota electro-chromatic interior rear view mirror takes the strain out of driving at night. It adjusts its reflectivity to account for the difference in rear light levels and ambient light levels. At night, glare-proof rear view mirrors automatically cut down the reflection of bright lights from behind and reduce eyestrain.



Anti-Lock Braking System (ABS)

In a brake system without ABS, if the brakes are suddenly applied on a slippery road, the vehicle may skid and spin. This loss of control occurs if the wheels lock up, causing a lack of steering control. To avoid losing control, the driver must pump the brakes, dividing the braking into several short bursts.

This is called "cadence braking". However, in an emergency there may not be time to pump the brakes. With ABS, the computer determines how each of the four wheels is rotating when the brakes are applied, and automatically performs repeated "brake and release" operations. This prevents the wheels from locking up and allows the steering wheel to remain responsive, thereby keeping the vehicle from weaving and enabling a safe stop.

Body Crumple Zone

Toyota vehicles have advanced front and rear crumple zones to absorb as much collision force as possible. After impact, any remaining energy is dissipated throughout the body framework. This kind of intelligent energy absorbing structure goes a long way toward preserving cabin integrity.

D-4D = Direct-injection "common rail" diesel engine

Toyota's D-4D direct-injection "common rail" engine heralds a new and exciting generation of clean, intelligent diesels. D-4D makes use of a high-pressure pump and a common rail (pipe) for supplying all cylinders with high-pressure diesel.

The high-pressure injection creates better fuel atomisation for complete burning and increased power output, but also improves fuel economy. In addition the computer control unit injects a small amount of fuel into the cylinder just before the main fuel load ignites. This "pilot burn" lowers the explosive force of the main combustion process and goes a long way to reduce the noise and vibration formerly associated with diesel engines.

EBD = Electronic Brake-Force Distribution

To maximise stopping power, Toyota's EBD system automatically adjusts the brake force applied to the front and rear wheels, as well as to the left and right wheels. It reduces the braking distance dramatically, and maintains stability, even during heavy braking and cornering maneuvers.



ELR = Electronic Linear Retractable (Seatbelts)

Three Point Electronic Linear Retractable (ELR) seatbelts are designed to tighten during the initial impact of a crash. ELR seatbelts with pretensioners, backed up by force limiting mechanisms, are standard equipment for driver and front seat passengers.

Euro-NCAP

Euro-NCAP stands for 'European New Car Assessment Programme'. Established in 1997, this organisation provides motoring consumers with a realistic and independent assessment of the safety performance of some of the most popular cars sold in Europe. It is backed by five European governments, the European Commission and motoring and consumer organisations in every EU country. By law, all new cars must pass certain safety tests, but this is a minimum statutory standard. Euro-NCAP encourages manufacturers to exceed these minimum requirements. Toyota's commitment to safety ensures that all its models score high in the Euro-NCAP ratings, with some scoring the maximum five stars.

<http://www.euroncap.com/>

European emission regulations

In Europe, all new car models are subject to a series of legally enforced technical tests, to ensure they contribute to a cleaner environment by reducing pollution levels. These tests include standards for exhaust emissions that have been getting progressively more stringent since the early 1990s. Emissions standards are known as Euro I (1992 on), Euro II (1996 on), Euro III (2000 on) or Euro IV (2005 on). New cars currently have to meet the Euro III standard though there are some cars (including Toyota) that already meet the more exacting Euro IV standard.

The table below shows the permitted pollutant levels:

EU Emission Standards for Passenger Cars, g/km						
	Year	CO	HC	HC+NOx	NOx	PM
Diesel						
Euro 3	2000.01	0.64	-	0.56	0.50	0.05
Euro 4	2005.01	0.50	-	0.30	0.25	0.0025
Petrol						
Euro 3	2000.01	2.30	0.20	-	0.15	-
Euro 4	2005.01	1.0	0.10	-	0.08	-



Flush underbody panels

Toyota copied the flush underbody panels from its Formula 1 racing cars to give you better driving performance on your Toyota road car. Toyota flush underbody panels, protecting the chassis and car body, help produce a low aerodynamic drag and thus improve overall aerodynamic efficiency. Air turbulence under the car is kept to a minimum. The panels are computer designed and developed to add stability at high speeds.

Hill-start Assist Control (HAC)

Land Cruiser is the first vehicle in the world to be fitted with Haste HAC system allows for safe and confident hill starts on steep and slippery slopes, as well as detecting if the vehicle is starting to slip backwards down the slope.

With HAC, the system detects the wheel or wheels that don't have grip and applies traction control until grip is found. Crucially, the wheels with available grip are momentarily braked until sufficient grip is found for the slipping slopes, as well as detecting if the vehicle is starting to slip backwards wheels, allowing the driver to pull away without losing control.

ISOfix child restraint mounting points

In 1990, a standard system for attaching child restraints into cars was first proposed to help reduce the risk of injuries to children in cars. Known as ISOfix (International Standards Organisation FIX) its goals were to:

- Minimize poor fitting on current child seat designs
- Provide a standard, universal means of attaching child restraints
- Improve dynamic performance of child restraints

Now, all Toyota cars designed for carrying children have ISOfix mounting points as standard. In addition, Toyota's Child Restraint System (CRS) is equipped with a top tether to help prevent the child seat from tipping forward in the event of an impact.

Load Sensing Proportioning Valve (LSPV)

Automatically regulates rear brake effectiveness in response to the changes in load, optimizing brake force distribution between the front and rear brakes.

This system detects changes in weight of payload and automatically regulates the effectiveness of the rear brakes in response to the weight the vehicle is carrying. When the vehicle is loaded, LSVP increases brake pressure to the rear brakes. This optimises brake force distribution between the front and the rear and ensures the best braking performance in all local conditions.



McPherson strut suspension

The combination of a McPherson (named after its designer, Earle S. McPherson) strut with assist link suspension at the front, and a dual link McPherson strut suspension at the rear, contributes to your safety. This form of "independent suspension" offers outstanding stability and handling for added control and confidence in all driving situations. At the same time it minimizes bumps and shock for better steering and a more pleasurable ride.

Multi-information display screen

Toyota's multi-information display screen supplies you with essential engine and motoring data, as well as putting audio functions at your fingertips. Its ergonomic design and positioning in the central console allows you to focus on the road ahead. You are constantly informed about:

- Average vehicle speed
- The current time
- Journey and trip length
- Average and instantaneous fuel consumption
- Outside temperatures
- Audio functions (radio, cassette and CD operation)

MultiMode

MultiMode with automatic clutch control allows you to change between manual and automatic. It operates in three modes: M, which allows sequential gear shift; E, for automatic gear change; and Es, for quicker automatic gear change.

Navigation System - Full Map

Utilizing GPS satellites, the Toyota Full Map Navigation System offers a full colour Pan-European road map stored on a single DVD disc. You can choose to have instructions displayed on a 7-inch LCD touch screen, or in dictated form. For added journey comfort, in many countries the system's RDS-TMC function receives FM traffic news, optimising your route to avoid hold-ups. The system also has an eight-language facility for voice navigation: English, German, French, Dutch, Italian, Danish, Swedish and Spanish.

Navigation System - Turn-by-Turn

Using Global Positioning System (GPS) satellites to determine your position, Toyota's advanced turn-by-turn navigation system provides both voice instructions



TOYOTA

GLOSSARY

and turn-by-turn routes directions. The system displays schematics showing intersections, and is supported by clear audio directions.

Optitron instruments

Optitron driving instruments are designed for greater clarity and reduced eye fatigue. Ergonomically* optimized, they use individual LEDs (Light Emitting Diodes) on every figure and indicator needle, doing away with traditional instrument illumination. Optitron provides outstandingly clear readability - leading to less eyestrain - and enhanced driving concentration, whatever the ambient light conditions. The instrument panel lights up when you turn the ignition key.

*Instrumentation ergonomics were first investigated in an attempt to reduce eye stress and fatigue amongst long-haul airline pilots. By reducing the number of dials, improving layout and lighting, pilot reaction times and safety were improved dramatically.

Park Assist

Park Assist is available on selected models fitted with Full Map Navigation systems. This advanced technology virtually eliminates the frustration of manoeuvring at close quarters. When reverse gear is selected, a small camera installed in the tailgate displays the view from behind the vehicle on the 7-inch colour navigation screen, to help driver orientation. Park Assist operates in three modes:

- Guidelines Off Mode: Shows the rear view through the camera without guidelines.
- Manual Assist Mode: Guidelines on the monitor assist the driver for normal reversing.
- Parallel Parking Assist Mode: Guidelines assist the driver doing parallel parking.

Passenger Safety Cell

Toyota vehicles provide optimal energy absorption, so that even large impacts lose their force. Computer modelling and test-rig experiments are performed throughout the development process in order to strengthen the body structure of every new design. The result is a strong and rigid body, which is able to absorb impacts - irrespective of whether they occur at the front, the rear or the side.

A strong safety cell features the following:

- Reinforcement sections
- A straight frame layout
- Stabilizing dash cross members
- Optimum centre pillar strength using composites
- Optimum door impact beam layout



- Energy absorbing trim sections to reduce the possibility of head injuries.

SMT = Sequential Manual Transmission

Sequential Manual Transmission let you change gear without having to declutch. This advanced technology, developed in Formula One cars, leaves the driver free to concentrate on acceleration, braking and achieving the optimum driving line, whilst cornering or overtaking.

SMT applies the clutch automatically using a hydraulic actuator and an electronic throttle selects the correct engine speed for the change, whilst sensors and a computer manage the gearbox. The driver just has a functional "backwards-forwards" chrome gear-stick, or the optional shift buttons mounted on the steering wheel.

Short overhangs

Toyota engineers reduce overhangs to a minimum to give you better driving dynamics. Toyota uses racing car design practice to keep overhangs short as too much weight outside the axles is detrimental to handling characteristics. The overhangs are the ends of the vehicle outside the two axles. The forward overhang runs from the middle of the front axle to the car's front end. Its rear counterpart runs the length from the centre of the rear axle to the back end of the vehicle.

SRS = Supplement Restraint System (Airbags)

In the event of a collision, the Supplemental Restraint System causes the airbag to inflate instantaneously to supplement the seatbelt in reducing driver impact against the steering wheel, or the passenger against the front dashboard. The system uses a computer-generated signal to inflate the airbags when sensors detect impact due to a collision.

SuperECT

Toyota's SuperECT (Electronically Controlled Transmission) transmission system automatically shifts gear in response to vehicle speed and acceleration. With SuperECT you no longer need to shift gears constantly, easing the stress of stop-start traffic in the city and on winding country roads.

On SuperECT the gears are controlled by a torque converter that replaces the clutch. It simultaneously connects and disconnects the engine from the drive wheels whilst selecting the appropriate gears to match the speed of the car. This reduces the shift time and any sense of "lag" associated with automatic transmission systems in the past.



THS = Toyota Hybrid System

The Toyota Hybrid System (THS) is an innovative and environmentally friendly power unit that combines a VVT-i petrol engine with a zero emissions electric motor, both controlled by an intelligent engine management system. The award-winning THS reduces harmful emissions of HC, CO and NOx by as much as 70%, and cuts the CO2 emissions linked with 'global warming' by nearly half.

TRC = Traction Control System

When TRC detects wheel spin in the driving wheels during acceleration it automatically reduces engine power to suppress the spin and restore traction.

This ensures better power transfer to the road (saving fuel), gives your tyres a longer life, and adds to overall safety. At the same time, TRC also controls the brake system to reduce the torque transmitted to the road, should it be higher than the road/tyre friction available.

VSC = Vehicle Stability Control

VSC automatically controls brake force and engine output to help prevent skidding when cornering on slippery roads or during abrupt steering. It counteracts under steer or over steer by selectively applying the brakes to the individual wheels, as and when appropriate. So with VSC you quickly return to stable driving conditions, avoiding the danger of an accident.

VVT-i = Variable Valve Timing with Intelligence

Toyota's Variable Valve Timing with Intelligence engines use advanced computer technology to vary air intake according to driving conditions and engine load. By adjusting the overlap time between the exhaust valve closing and intake valve opening the engine can be tuned to provide instant engine torque across the entire rev range.

VVT-i brings substantial advantages in 3 main areas: It allows sporty performance, reduces your petrol costs, and in addition, more complete fuel burn at higher temperatures leads to fewer harmful emissions.



VVT-i D4 = Variable Valve Timing with Intelligence D4

Toyota's new VVT-i D4 (D4 is short for "direct injection 4-stroke") engine has been improved by a small, but very effective new idea, that makes it 8% more efficient than the award-winning VVT-i engine. Petrol is now directly injected into each cylinder through a slit-like nozzle giving VVT-i D4 the following benefits:

- Increased fuel atomisation for better combustion
- Petrol no longer sticks to the injection port when starting cold VVT-i D4
- Engines deliver: Fewer harmful emissions.
- Lower fuel consumption
- Higher power output

VVTL-i = Variable Valve Timing and Lift- intelligent

Toyota's Variable Valve Timing and Lift-intelligent engine goes one step further than VVT-i engines: It automatically adjusts the amount of "lift" on the cylinder's intake and exhaust valves. In fact, VVTL-i technology has a lot in common with the human body: Athletes train to increase the air volume entering and leaving their lungs.

At high engine speeds Toyota's Electronic Control Unit (ECU) "lifts" the four valves located over each cylinder to increase the fresh air entering and exhaust leaving the cylinder. Increased air intake at high engine speeds (above 6000 rpm) means more power, better combustion and fewer harmful emissions.

Whiplash Injury Lessening (WIL)

Toyota front seats now incorporate a "Whiplash Injury Lessening" design to help minimise the risk of neck whiplash injuries in low-speed rear end collisions. WIL seatback frames are carefully designed to yield in a controlled fashion in rear-end crashes to reduce the forward acceleration of occupants' torsos. This helps reduce the differential motion of head and torso, which is the cause of whiplash. And as with all Toyota safety technology, WIL seats were first developed using computer aided design, and then tested in real life crash situations.