



- The all-new Freelander 2 sets new standards for compact premium 4x4s
- Class-leading breadth of capability
  - Agile, responsive and comfortable on-road
  - Outstanding off-road
- Two new engines that deliver strong combinations of performance, refinement and fuel economy
  - 3.2-litre i6 petrol (233 PS / 171 kW) – 30 per cent more powerful than the outgoing V6 with 10 per cent improvement in fuel economy
  - 2.2-litre TD4 diesel (160 PS / 118 kW) – better fuel economy than its predecessor (37.7 mpg : 7.5 l/100 km) and 43 per cent more power
- Full-time intelligent 4x4 that helps optimise traction and fuel economy
- Land Rover's unique Terrain Response™ – for easier off-road driving – heads a long list of advanced technologies, many new to the class
- Fresh and dynamic exterior design – chiselled, geometric and simple
- Versatile, comfortable, well-equipped and spacious cabin
- 38 per cent more boot space than the outgoing Freelander

## OVERVIEW

The all-new Land Rover Freelander 2 redefines the compact premium 4x4 class. New from the ground up, Freelander 2 delivers outstanding on-road performance as well as the class-leading off-road ability of a true Land Rover. A dynamic design, purposeful stance, smart and spacious interior, and an abundance of advanced technologies complete the package.

“No other compact 4x4 has anything like its total breadth of capability,” says Phil Popham, Land Rover’s managing director. “The Freelander 2 sets new standards in the sector, combining the advantages of a premium car – such as polished ride, accomplished performance, attractive cabin and ease-of-use – with the attributes of a robust 4x4, including go-anywhere ability, toughness, panoramic seating, cabin versatility and spaciousness. We believe that no other compact 4x4 gets closer to blending these best-of-both-worlds abilities.”

The original Freelander (launched in 1997) is seen by many as having created a whole new class of vehicle: the compact premium 4x4. It was the top-selling 4x4 in Europe for five years and remained the UK’s best-selling 4x4 from launch until the end of 2005. The all-new Freelander 2 is improved in every way: better performance, more economical, more refined, higher quality and substantially roomier. It is more capable both off-road and on-road, with transformed handling, ride and comfort.

Freelander 2 is Land Rover’s fourth all-new vehicle in just over four years, and follows the new Range Rover (2002), Discovery 3 (2004) and Range Rover Sport (2005). Their highly successful introductions contributed to record Land Rover sales worldwide in 2005. Technical highlights of the Freelander 2 include two brand-new engines: a 3.2-litre straight-six petrol and a 2.2-litre four-cylinder turbocharged diesel. Both feature advanced technologies to deliver outstanding combinations of performance and economy.

The 233 PS (171 kW) i6 petrol engine provides a top speed of 124 mph (200 km/h) and 0-60 mph acceleration in 8.4 seconds (0-100 km/h in 8.9 seconds). Combined fuel economy is 25.2 mpg (11.2 litres/100 km). The engine is matched to a new six-speed automatic transmission, with Land Rover’s CommandShift™ offering manual sequential gear changes when required. There is also a driver-selectable sport mode, for livelier performance.

Straight-six engine configurations are ideal for delivering engine smoothness, and the very compact new



unit in Freelander 2 is small enough to mount transversely, a first in the compact 4x4 sector and one of the vehicle's many innovations. The benefits of transverse fitment include improved interior package and safety performance.

The diesel engine chosen for Freelander 2 is an all-new 2.2-litre four-cylinder. The 160 PS (118 kW) unit delivers peak torque of 400 Nm (295 lb ft), with over 200 Nm (148 lb ft) of torque from 1000 rpm all the way to 4500 rpm. The engine is easy and responsive to drive, as well as highly refined and economical, with a combined average fuel consumption of 37.7 mpg (7.5 l/100 km). An optional catalysed Diesel Particulate Filter (cDPF) is also available for even cleaner performance. Two transmissions are offered: a new six-speed manual gearbox and the same six-speed automatic used on the petrol engine (diesel auto available from Spring 2007).

The interior package of Freelander 2 is a major improvement over the outgoing vehicle. Although only 50 mm longer, the Freelander 2 has more generous head, shoulder and legroom, in both the front and rear. Large glass areas emphasise the spacious feel and complement the elevated 'command driving' position – a Land Rover hallmark – and 'stadium seating', where rear passengers sit slightly higher than front occupants, for a clearer view of the world outside. Boot space is also among the best in class and 38 per cent larger than that of the outgoing Freelander (with rear seats up – 755 litres vs 546 litres).

The exterior and interior design of Freelander 2 is completely fresh, integrating the company's unique design language with a form that is instantly recognisable as the latest Land Rover.

"We purposely kept strong cues from the original Freelander, such as the clamshell bonnet, stepped roof and the basic form," says Land Rover design director Geoff Upex. "But the overall look is new and much more contemporary. The design is chiselled, geometric and simple – it looks like it's hewn from the solid. We have kept a close design relationship with the new Discovery 3 and Range Rover Sport, but interpreted the design language to suit the requirements of customers for a more compact 4x4."

The body is a five-door monocoque structure, with a high level of torsional rigidity which benefits refinement, comfort and handling on-road as well as ensuring the vehicle is fit for serious off-roading. The suspension is fully independent and uses the most modern stability control systems, including Roll Stability Control (RSC), a new and sophisticated technology that helps mitigate the risk of roll-over.

Freelander 2 is packed with new technologies to improve both on-road and off-road performance, many new to the class. Land Rover's unique Terrain Response™ is standard on all but the entry-level model, to make off-roading easier. Other interesting technologies include a new full-time intelligent 4x4 system for superior traction and better on-road fuel economy, and the patented Gradient Release Control, which improves driver confidence and control when releasing the brakes on steep and slippery slopes.

Other features and options rare in this class include: keyless starter button, bi-xenon headlamps, adaptive front lighting, rain-sensing wipers and park distance control (front and rear). A two-part panoramic sunroof increases the cabin's airiness: air-conditioning is standard on all models and a full colour touch-screen DVD satellite navigation system is also available. The choice of top-level audio systems includes DAB digital radio and 12-speaker Dolby™ Prologic IIx Surround Sound with fibre-optic interconnects. An auxiliary audio connection (for iPods and MP3 players) is standard on all vehicles.

Designed and engineered by Land Rover at Gaydon, near Warwick, Freelander 2 is built at the Halewood plant in Liverpool, where outstanding build quality has been acknowledged with a JD Power European Plant Quality Gold Award in 2005.



## ALL-NEW FREELANDER 2 IN BRIEF

### Exterior Design

- Fresh and more premium exterior, designed to reflect both on-road and off-road capabilities
- Long wheelbase and short overhangs help deliver purposeful 4x4 proportions
- Dynamic stance, chiselled lines and smooth, simple surfaces
- Distinctive Land Rover genes, including clamshell bonnet and stepped roof
- Watch-like detailing in the wrap-around headlamps and tail-lamps

### Powertrain

- Two new engines, delivering excellent combinations of performance, refinement and fuel economy
  - More powerful and more economical than the previous Freelander engines
  - Extensively developed to meet Land Rover's tough off-roading requirements
- Smooth, powerful and compact new 3.2-litre i6 petrol engine
  - Maximum power 233 PS (171 kW); maximum torque 317 Nm
  - 0-60 mph in 8.4 sec; 0-100 km/h in 8.9 sec
  - Combined average fuel consumption 25.2 mpg (11.2 l/100 km) – 10% better than previous Freelander petrol engine
  - Exceptionally compact straight six-cylinder configuration
  - Transverse engine mounting improves cabin space and helps efficiency of safety systems
  - Advanced technologies include Cam Profile Switching and Variable Valve Timing
- Responsive, refined and torquey 2.2-litre TD4 turbodiesel
  - Maximum power 160 PS (118 kW); maximum torque 400 Nm
  - 0-60 mph in 10.9 sec; 0-100 km/h in 11.7 sec – reduced by 2.3/2.7 sec compared with outgoing Freelander diesel
  - Combined average fuel consumption 37.7 mpg (7.5 l/100 km)
  - New, variable-nozzle turbocharger helps deliver excellent response, huge mid-range torque and flat power curve
  - Latest common-rail injection system aids economy and refinement
- Both engines available with new six-speed automatic transmission
  - Six-speed manual also available with the TD4 diesel
- CommandShift™ manual sequential gear changes and sport mode available on both petrol and diesel auto models

### Driving Dynamics

- Class-leading breadth of capability – combining agile, predictable and refined on-road behaviour with outstanding off-road ability
- New, fully independent suspension system, with front and rear coil-sprung struts
- Responsive rack-and-pinion steering, reach- and rake-adjustable
- Supple suspension and torsional body stiffness contribute to the excellent on-road comfort
- Full-time intelligent 4x4 transmission optimises traction and economy, featuring new electronically-controlled centre coupling
- Land Rover's unique Terrain Response™ system aids off-road driving – standard on all but entry models
- 210 mm ground clearance and wading depth of 500 mm
- Advanced stability and traction aids, including Electronic
- Traction Control, Dynamic Stability Control and Hill Descent Control



- New Gradient Release Control system improves driver control on steep hills
- Large vented disc brakes with latest-generation four-channel anti-lock brakes
- Electronic Brakeforce Distribution, Emergency Brake
- Assist and Corner Brake Control
- Roll Stability Control system – the most sophisticated roll-over prevention technology ever fitted to a Land Rover

## Body

- Five-door monocoque body – almost twice as stiff as some competitors
  - Great strength and torsional rigidity for excellent vehicle refinement and safety
- Seven airbags
- Large areas of glass for excellent visibility, with optional panoramic sunroof
- Choice of headlamp technologies, including optional Adaptive Front Lighting (AFS) that swivels with the direction of travel

## Interior Design and Features

- Premium cabin, designed to be comfortable, well equipped and spacious
- Elegant interior design, executed with high-quality materials
- Generous interior space with good head, shoulder and leg room
- Elevated ‘command view’ driving position, plus easy-to-reach main controls
- Rear ‘stadium seating’ allows passengers a better view
- Multi-way adjust front seats – electric power adjust and seat heating also available
- Asymmetric-split rear seat folds to provide a completely flat load area
- Large luggage capacity – 38 per cent more than previous Freelander (with rear seat raised)
- Wide choice of audio systems and premium equipment

## EXTERIOR DESIGN

“Freelander 2 is a fresh and contemporary design, with its chiselled lines, chunky good looks and sporty energy. Though the genes of the highly successful original Freelander are still clearly recognisable, the new model looks more premium and more grown-up, without losing its sense of fun.” Geoff Upex, design director.

Chiselled lines, smooth and simple surfaces and interlocking elements were three of the key principles that guided the Land Rover design team as they crafted the all-new Freelander 2. These combined well with the vehicle’s near-ideal proportions – especially the height, long wheelbase, and short front and rear overhangs – to create the purposeful, sporty stance that the designers wanted.

Upex and his team, including Earl Beckles (lead exterior designer) and Martin Buffery (lead interior designer), were also determined to develop a vehicle with clear family links to Land Rover’s successful new Discovery 3 and best-selling Range Rover Sport. From the Discovery, according to Geoff Upex, “we took the simplicity of the surfacing, the strong shapes, the bold and consistent graphics, and the strong rear D-post styling. Range Rover Sport inspired the flow of the wheel arches, a lot of the stance, and the dynamics of the waistline.

“But there are also clear visual references to the original Freelander. Its distinctive shape is widely recognised and popular, especially in Europe,” says Upex. “So we took the best bits, the real signatures from that car, and enhanced them. These include the clamshell bonnet and the stepped roof.”



However, these inspirations were subordinate to a clear vision of how a vehicle such as Freelander should look. While still definitively a Land Rover, it has always had – and needed to retain – a strong appeal to customers more used to conventional saloon cars.

“The design of Freelander 2 had to reflect its balance of capabilities – as a great road car and a great 4x4,” says Geoff Upex. “This was absolutely at the top of our minds. It could not be too overt a 4x4, in the way that a Discovery is. It had to be tough – but not too tough. It had to reassure people trading up from premium cars. So this balance – tough 4x4 versus premium car – was crucial in the design language.”

According to Upex, 4x4s typically look more geometric, more aggressive and harder-edged. Cars tend to be more organic – and friendlier – in form. So the Freelander 2 mixes strong geometric shapes and flowing, car-like softness.

The fast-angled windscreen, the raised roof and the tapering rear pillar all reflect the car’s dynamic, sporty on-road abilities, as does the smooth shoulder line. Also contributing significantly to the flow of the design are the body-coloured A- and D-pillars, while the black E-pillars at the rear give a graphic which resembles the ‘floating roof’ of Range Rover.

The body sides on Freelander 2 are sharp and chiselled. But in the plan view, the surfaces are smooth, sheer and one-directional. The surfacing is also taut and very defined, to give the vehicle a lean, muscled look.

The grille is a strong and confident design statement (with different versions for petrol and diesel models). The rear is also cleaner, significantly helped by relocating the external spare wheel of the original Freelander underneath the cargo area floor, and by the new one-piece tail-lamps.

“The whole design is simple, much less cluttered than before, more premium and more desirable. We wanted a minimal number of components that interlock to form a meaningful and attractive whole,” says Geoff Upex. “The headlamps and tail-lamps, for instance, are watch-like in their detailing. The metallic side-vents help engine breathing, but also provide a strong family link with both Discovery 3 and Range Rover Sport.”

As always with a Land Rover, functionality is a fundamental driver of the design. The narrow front A-posts help achieve excellent all-round visibility. The bonnet castellations help the driver place the vehicle more accurately on the road or track. The wheel-out stance and wide track help deliver agile handling and great grip. The short front and rear overhangs and high underbody are essential for go-anywhere off-road performance. The body-side protection guards against stone chips and helps keep the sills clean.

“We believe the end result is a design that is sculptured and sophisticated, dynamic yet refined, premium and tough,” says Geoff Upex.

All photographs and engineering data in this press pack are from pre-production prototype work.

FEATURE		i6 Auto	TD4 Manual	TD4 Auto
<b>DIMENSIONS</b>				
Number of seats		5	5	5
Length	mm	4500	4500	4500



Width excluding mirrors	mm	1910	1910	1910
Width including mirrors	mm	2180	2180	2180
Width with mirrors folded	mm	2005	2005	2005
Height	mm	1740	1740	1740
Height sunroof open	mm	1775	1775	1775
Height with roof rails	mm	1820	1820	1820
Height over pod	mm	1765	1765	1765
Wheelbase	mm	2660	2660	2660
Front overhang	mm	920	920	920
(inc. number plate plinth)				
Rear overhang	mm	935	935	935
Ground clearance	mm	220	220	220
Track - front	mm	1611	1611	1611
Track - rear	mm	1624	1624	1624
Turning circle: kerb to kerb	m	11.4	11.4	11.4
Turning circle: lock to lock		2.6	2.6	2.6
Wading depth	mm	500	500	500
Drag coefficient	Cd	0.39	0.39	0.39
Approach angle	deg	31	31	31
Departure angle	deg	34	34	34
Departure angle with tow bar	deg	19	19	19
Ramp break over angle	deg	23	23	23
Weight from	kg	1770	1770	1770
Max payload	kg	550	550	550
Max laden weight	kg	2505	2505	2505
Max towing weight (braked trailer)	kg	2000	2000	1750
Max towing weight (unbraked)	kg	750	750	750
Max load space behind row 1	litre	1670	1670	1670
Max load space behind row 2	litre	755	755	755

**ENGINE**

Layout / No. cylinders / Valves		Transverse / In-line 6 / 24	Transverse / In-line 4 / 16	Transverse / In-line 4 / 16
Effective displacement	cc	3192	2179	2179
Bore/stroke	mm	84 / 96	85 / 96	85 / 96
Compression ratio		10.8	16.5	16.5
Max power output (EEC)	kW	171 @ 6300rpm	118* @ 4000 rpm	TBC
Max power output	PS	233 @ 6300 rpm	160* @ 4000 rpm	TBC
Max torque	Nm	317 @ 3200 rpm	400 @ 2000 rpm	TBC

**FUEL**

Fuel tank capacity (usable)	litre	70	68	68
Fuel consumption (EU):				
Combined	l/100 km (mpg)	11.2 (25.2)	7.5 (37.7)	TBC
Urban	l/100 km (mpg)	15.8 (17.9)	9.2 (30.6)	TBC
Extra Urban	l/100 km (mpg)	8.6 (33.0)	6.2 (45.5)	TBC
CO2 emissions	g/km	265	194	TBC

**POWERTRAIN**

Transmission type		AWF 21 (6 Spd Auto)	M66 EH50 (6 Spd Man)	AWF 21 (6 Spd Auto)
Four-wheel drive system		Full-time four-wheel drive with Haldex rear axle differential	Full-time four-wheel drive with Haldex rear axle differential	Full-time four-wheel drive with Haldex rear axle differential
1 st	:1	4.148	3.750	4.148
2 nd	:1	2.370	1.905	2.370
3 rd	:1	1.556	1.182	1.556
4 th	:1	1.155	0.838	1.155
5 th	:1	0.859	0.652	0.859
6 th	:1	0.686	0.540	0.686
Reverse	:1	3.394	3.436	3.394
Final drive ratio	:1	3.750	4.533	3.329
PTU	:1	2.583	2.583	2.583
Rear differential ratio	:1	2.583	2.583	2.583



AUTO SPIES

**PERFORMANCE**

Max speed	km/h (mph)	200 (124)	181 (112)
0-60 mph	sec	8.4	10.9
0-100 km/h	sec	8.9	11.7

TBC  
TBC  
TBC

\* 110 kW / 150 PS for Belgium only.

All diesel engine data quoted is without the optional cDPF fitted.

**BODY**

“Freelander 2’s body is almost twice as stiff as some competitors’. This helps its on-road handling and refinement, its off-road toughness, and its all-round safety.” Andrew Foster, chief programme engineer.

With over 28,000 Nm/degree of static stiffness, the Freelander 2 has one of the stiffest bodies of any car; it is almost twice as stiff as some competitors. Excellent stiffness provides the necessary basis for great ride and handling, because there is minimal flex during hard cornering or on rough roads. It also helps deliver excellent vehicle refinement and safety.

Freelander 2 uses a monocoque construction. Ultra-high-strength steel is used more extensively than in any previous Land Rover, in the door beams and for various strengthening reinforcements. DP600 dual-phase steel – which requires special pressing because of its strength – is used for the A-posts, lower sills, cantrails, front side members and dash to help provide a first-class, weight-efficient safety cell.

Many of the bolt-on components fitted during final assembly also help improve structural integrity. A fully integrated front-end structure not only carries the cooling pack and front bumper, but also substantially boosts the overall body stiffness. Even the bonnet-locking platform has been designed to help boost structural integrity, ensuring good load transfer from one front crash rail to the other.

A double bulkhead in the engine bay improves powertrain isolation and provides a clean area for components such as the ABS modulator, brake servo and wiper system.

Freelander 2 is marginally longer – by 50 mm – than the outgoing Freelander. Width is increased by 109 mm, and height is increased by 32 mm.

**Safety**

The Freelander 2’s long list of primary safety features – not least its responsive handling, strong brakes and 4x4 system – helps the driver avoid hazards. The high ‘command view’ seating position provides visibility over traffic and a clearer view on rain-lashed roads.

Secondary safety starts with the strong monocoque body and its inner ‘safety cell’. Front and rear crumple zones are designed to help absorb as much energy as possible during an impact. Side-impact protection is further assisted by the ultra-high-strength steel door beams, the strong and deep door sills (bigger on a 4x4 than on a conventional car) and the raised seat position. Other key features include strong facia cross-rails, which help minimise the risk of the A-pillars spreading during an impact, and the new Roll Stability Control system.

Front seat belts have pre-tensioners, and all Freelander 2 models feature seven airbags. The driver and



passenger front airbags are designed to help provide head and chest protection and the front side airbags to protect against side impacts. Full-length curtain airbags in the roof side structure are designed to help protect against head injury and roll-over ejection for front and rear occupants. An inflatable knee bolster helps protect the driver against leg injury from the steering column.

### **Exterior Protection**

Freelander 2 uses 100 per cent double-sided zinc-coated steel panels, as part of the most sophisticated anti-corrosion and paint treatment ever used on a Land Rover. An unlimited-mileage, three-year paint-surface warranty and six-year anti-corrosion warranty are provided with the vehicle.

As a true 4x4, Freelander 2 is designed to be able to brush off knocks and scuffs. Vulnerable areas of the car, including the sills and lower doors, are coated in a tough thermoplastic cladding. The cooling pack is protected by a strong thermoplastic undertray, while a structural steel undertray protects the engine. Bumpers are made from high-pressure injection-moulded mineral-reinforced polypropylene. They have excellent stability in very hot or cold conditions, and good scratch and impact resistance.

### **Jewel-Like and Effective Lamps**

The wrap-around headlamps of Freelander 2 are handsome and rugged, and offer a choice of different technologies.

The standard halogen lamps have impact-resistant polycarbonate lenses, and offer a lifetime resistance to scratching (invaluable when off-roading). The lens is bonded to the lamp body to guarantee a watertight seal. The headlamp units have a Gore-Tex™ membrane, which allows ventilation without letting in water, to help avoid condensation when wading. H7 halogen bulbs are also available, giving a light output closer to natural daylight.

Freelander 2 is also available with High Intensity Discharge (HID) projector lamps, creating crisp blue-white spectrum light. The bulbs are filled with a mixture of noble gases (including xenon). HID lights produce 200 per cent more light than a halogen unit while consuming only half as much electrical power. They also last up to 10 times longer. The HID system includes headlamp powerwash and automatic headlamp levelling, to ensure the optimum light pattern irrespective of vehicle load.

Optional Adaptive Front Lighting (AFS) is designed around the xenon units. The lamps swivel with the direction of travel, to help improve the driver's view of the road ahead.

Rear lamp units are chunky one-piece clusters, incorporating tail-lamps, brake lights, indicators and reversing lights. As with the headlamps, the design is jewel-like, an impression heightened by the high-gloss polymethyl methacrylate lenses, which also offer excellent scratch resistance.

### **Large Glass Areas**

The generous areas of glass on Freelander 2 offer excellent all-round visibility. Front and side windows are wide and deep. An optional two-part panoramic sunroof increases the bright and airy feel of Freelander 2's cabin. The front section lifts and slides back over the second-row glass roof panel.

Large door mirrors (powerfold available) further improve the field of view. The front screen is available electrically heated, with rain-sensing wipers that work via infra-red technology, and heated washer jets.





All photographs and engineering data in this press pack are from pre-production prototype work.

“The all-new Freelander 2, appropriately, gets two exceptional new engines. The petrol i6 is one of the smoothest and most refined 4x4 engines in the world. Very compact and packed with technology, it delivers bags of torque across the rev range. For such a powerful engine, its fuel consumption and CO2 figures are also excellent. The new TD4 is one of the world’s most advanced and efficient diesel engines – easily the best small diesel we’ve ever installed in a Land Rover, with great response and outstanding refinement.” Andrew Foster, chief programme engineer.

### **Refined New I6 Petrol Engine**

The powerful and torquey 3.2-litre i6 petrol engine is brand new for 2006, and gives Freelander 2 on-road performance comparable to that of many compact saloons. The vehicle accelerates from 0-60 mph in 8.4 sec (0-100 km/h in 8.9 sec) and has a top speed of 124 mph (200 km/h). More relevant for everyday motoring, it also has impressive kick-down acceleration.

Maximum power is 233 PS (171 kW) at 6300 rpm, and maximum torque is 317 Nm (234 lb ft) at 3200 rpm. These figures are substantially higher than those offered by the outgoing Freelander’s V6 engine (177 PS/130 kW, 240 Nm). Performance is also much better than the outgoing vehicle’s, as is fuel economy – which is improved by 10 per cent on the combined average cycle.

The six-cylinder i6 engine is ingeniously designed to combine a straight configuration – intrinsically, the most refined and smoothest engine arrangement – with an exceptionally compact size. This allows the engine to be transversely mounted, which improves cabin packaging and gives extra space, in front of and behind the engine, designed to help optimise the efficiency of the vehicle’s safety systems.

The key to this compact new design is the unique and innovative Rear End Ancillary Drive (READ) system. Conventional engines drive camshafts and other engine ancillaries (including alternator, water pump and air conditioning compressor) from a series of chains and belts overhanging the front of the engine. The i6’s READ system takes drive to these items up the rear face of the engine – the side attached to the gearbox – with much less overhang. The result is an extremely short engine, just 600.5 mm long. This substantially increases engine bay space, allowing the i6 to be fitted crossways and the vehicle’s advanced crash structure to be configured around it.

The i6 engine has an aluminium block, head and bedplate and all are structurally optimised to balance low weight and stiffness. Even the camshaft cover is structural, allowing it to incorporate the camshaft bearing caps for further weight reduction.

There are twin overhead camshafts and 24 valves (four per cylinder) to provide optimal engine breathing. This is further improved by a patented Cam Profile Switching (CPS) system that features two completely different intake cam profiles machined onto the same camshaft. The engine management system decides which cam profile to use, depending on the engine’s running conditions and driver’s torque demands. One profile is ideal for low-speed/low-load driving; the other, which gives longer valve lift, is better for higher speeds and loads. An ingenious two-piece hydraulic valve tappet arrangement alters the cam profiles.

The i6 engine also features a continuously Variable Valve Timing (VVT) system, which constantly alters valve overlap to achieve optimum power, efficiency and emissions. The combination of CPS and



VVT gives the new engine impressively broad power and torque bands, and improves both outright performance and general driveability.

In addition, the Variable Intake System – which alters both intake tract length and, more unusually, plenum volume – boosts low-end torque and high-end power, further enhancing the engine’s breathing capability. Eighty per cent of the vehicle’s maximum torque is available across the entire rev range, and 256 Nm (189 lb ft) is on tap all the way from 1400 rpm to 6400 rpm.

Aluminium pistons and forged steel con-rods operate a 7-bearing forged steel crankshaft with induction hardened bearing surfaces. The crankshaft timing ring and starter ring are incorporated into the flexplate that sits between the engine and automatic transmission for more compact packaging.

Power from the READ system is taken from a gear on the rear crankshaft web, which also drives the oil pump. This drives a mid-shaft gear that powers an idler-shaft carrying two different-sized gearwheels. The front gearwheel drives the alternator: the rear gear takes drive to the overhead camshafts through an inverted tooth chain, and also drives the power-steering pump, engine coolant pump and air-conditioning compressor via a polyvee belt.

The highly accurate fuel-injection system features four micro-nozzles per cylinder, each with a diameter of 0.29 mm. Capable of injecting a large volume of fuel when high performance is demanded – up to 250 cm<sup>3</sup>/min – they are also able to provide total precision when minimal performance is required, helping the i6 Freelander 2 achieve its combined fuel consumption of 25.2 mpg (11.2 l/100 km).

The base engine has been developed primarily by Land Rover’s Premier Automotive Group partner Volvo. Built at Bridgend, Wales – alongside the Land Rover / Range Rover V8 engine family – the i6 engine has been extensively developed for Land Rover’s demanding off-road requirements, including improved dust, mud and water protection and the tolerance of operation at more acute angles of tilt.

### **New TD4 Turbodiesel**

The second engine for the Freelander 2 is an all-new 2.2-litre TD4 turbodiesel, which combines great torque and impressive refinement.

Maximum power for the new diesel engine is 160 PS (118 kW) up from 112 PS (82 kW) on the outgoing Freelander’s 2.0-litre diesel. Maximum torque is 400 Nm (295 lb ft) – up from 260 Nm (191 lb ft). Naturally, performance is improved substantially. Acceleration from 0-60 mph takes 10.9 sec in manual guise, substantially reduced from 13.2 sec for the previous Freelander diesel (0-100 km/h now 11.7 sec, from 14.4 sec). The combined average fuel consumption is 37.7 mpg (7.5 l/100 km), better than the outgoing Freelander diesel despite a 43 per cent increase in power.

The TD4’s advanced technologies include variable in-cylinder swirl, the latest ‘generation 3’ common-rail fuel injection, a new Garrett variable-nozzle turbocharger, a double-walled cylinder block and sump-mounted balance shafts. The result is impressive torque spread, fuel economy, performance and refinement. The engine exceeds the demanding EU4 emissions requirements, and a maintenance-free catalysed Diesel Particulate Filter (cDPF) is also available for even cleaner performance (all diesel engine data quoted is without the optional cDPF fitted).

The peak torque of 400 Nm (295 lb ft) occurs at a very usable 2000 rpm. The power curve is flat, delivering 80 per cent of peak power across more than half the rev range. A hefty 200 Nm (148 lb ft) of torque is available from 1000 rpm to 4500 rpm. As a result, the Freelander 2 TD4 is responsive,



rewarding and easy to drive.

In automatic versions of the Freelander 2 TD4, hard acceleration delivers extra performance for short periods thanks to Transient Overboosting, where turbo pressure is increased. The new GT17B Honeywell Garrett Variable Nozzle Turbine (VNT) turbo gives great low-speed response, huge mid-range torque and plentiful upper-end power. Its small turbine wheel is light, further reducing turbo lag, which is virtually unnoticeable.

The engine combustion is very efficient, with piezoelectric injectors, high fuel pressures and variable swirl technology all reducing combustion noise and in-cylinder pressure. Piezoelectric injectors provide exact control of the fuel delivery, while the 'generation 3' common-rail injection system is capable of injection pressures of 1800 bar (over 26,000 psi), about 30 per cent higher than 'generation 2' systems. Common-rail systems can supply a high volume of fuel at peak load conditions, one reason why common-rail engines offer much better performance – as well as better economy – than older diesel engines.

The new cylinder head design optimises swirl across the entire engine range. In many diesel engines, this is a compromise between achieving acceptable swirl at low speed and avoiding excessive swirl at high gas flow rates. On the TD4, an innovative intake port deactivation system solves this problem, improving diesel swirl – and combustion efficiency – at both low and high revs.

Each cylinder has two intake ports. The low-speed tract applies air at an acute angle to create swirl at low engine loads. Once higher gas flows are demanded, a second tract opens, providing extra air – but without increasing swirl.

The cylinder block is manufactured from cast iron, and is double walled. This not only strengthens the block but significantly reduces radiating noise, a little like double glazing. The head is aluminium alloy while the engine cover is made from lightweight polypropylene, housing foam to absorb specific noise frequencies. It is simple but highly effective, reducing engine noise by up to a half.

The crankshaft is made from fillet rolled cast steel and is supported on five main bearings. A dual-mass flywheel absorbs engine vibrations. At the other end of the crankshaft, a torsional vibration damper isolates the crank from the valve-train and ancillary drives. To aid engine refinement further, the TD4 uses two counter-rotating balancing shafts, housed in the sump. These shafts, rotating at twice crank-speed, counter the natural four-cylinder engine vibrations. They help deliver a remarkably smooth and refined diesel engine.

The engine – which makes its world debut in 2006 – is a result of the co-operative agreement between the Ford Motor Company and PSA Peugeot Citroën which also produced the acclaimed TDV6 fitted to Discovery 3 and Range Rover Sport. As with the i6 petrol engine, the TD4 engine has been specially developed to meet Land Rover's unique requirements for wading and extreme off-road angles, as well as for class-leading dust and mud protection.

### **New Six-Speed Automatic and Manual Transmissions**

Both Freelander 2 engines are available with a sophisticated six-speed automatic transmission, while a six-speed manual is also available for the TD4 (diesel auto models become available from Spring 2007).

They are both new transmissions specially developed for Land Rover's challenging blend of on-road and off-road driving, and deliver power to Freelander 2's unique full-time intelligent 4x4 driveline.



The Aisin Warner AWF21 six-speed automatic transmission is a light, compact unit that features a unique remote breather, deliberately routed above Land Rover's wade line (500 mm water depth). Seamless shift quality is ensured by a new fully integrated electronic Transmission Control Module. The module uses different gearchange maps, depending on whether the transmission is in full auto, sport or manual CommandShift mode, and when the vehicle is using one of the special Terrain Response programmes.

- In sport mode, the auto transmission is programmed to hold low gears longer and to shift down more readily, to assist acceleration.
- CommandShift allows manual sequential gearchanging.
- When Terrain Response special programmes are engaged, different mappings are applicable, depending on the mode chosen. The Transmission Control Module also manages torque converter lock-up, which has different requirements depending on the selected Terrain Response mode.

The six-speed manual gearbox, available only with the TD4 diesel, is a Getrag M66 unit, specially adapted for Land Rover use. It has a four-shaft design, and gear selection by twin cables, to ensure short, positive changes. The dual-mass flywheel carries a single-plate 250 mm (9.84 inch) hydraulically actuated clutch. The system is fully self-adjusting, to maintain constant pedal loads through the vehicle's life.

All photographs and engineering data in this press pack are from pre-production prototype work.

## **INTERIOR DESIGN AND FEATURES**

"The Freelander 2's cabin feels like that of a premium saloon car – it's comfortable, attractive, well equipped and spacious." Geoff Upex, design director.

The interior of Freelander 2 is designed to be more elegant and simply structured than that of the outgoing Freelander, a decision made early on by Geoff Upex and lead interior designer Martin Buffery, who describe it as "strong but not intimidating". Yet the facia still incorporates clear elements of the iconic architectural vertical and horizontal lines that characterise the Range Rover, Range Rover Sport and Discovery 3.

"The whole interior has moved significantly upmarket," comments Geoff Upex. "Quality and craftsmanship are improved, with higher specification materials used throughout the cabin."

The upper part of the facia has a soft-touch finish to give a premium appearance and pleasant feel. Switch gear is purposeful and moves with precision. Regularly used controls, such as facia vents and major switchgear, are within easy reach and have a tactile finish. Upholstery and tufted carpets are high quality, while metallic and wood-effect finishes add further premium touches.

The instrumentation is clear and well displayed. The circular analogue gauges are framed with metallic bezels and are neatly grouped directly in front of the driver.

### **Spacious Interior**

The elevated driving position in Freelander 2 – called 'command view' by Land Rover – improves visibility and helps the driver feel in control. It gives a much better vantage point than conventional



saloon cars and even many other compact 4x4s (68 mm higher than one major competitor, for example).

‘Stadium seating’ places the rear seat passengers slightly higher than their front seat counterparts, so they too can enjoy the view. Visibility for all occupants is helped by the narrow front A-pillars, deep front and rear screens, and large side windows.

Although only 50 mm longer than the outgoing model, the all-new Freelander 2 effectively moves up a class in interior packaging compared with its predecessor.

“There is a real sense of space in Freelander 2,” says Geoff Upex. “You can stretch out, relax, and it makes the whole ambience so much more enjoyable.”

The vehicle’s height and tall doors improve entry and egress compared with normal cars. The ‘clean sill’ system also helps keep mud and general road grime off occupants’ clothes.

### **Comfortable Seats**

Freelander 2’s seats offer good under-thigh and back support, plus strong side bolsters to give excellent lateral support. The front seat frames are similar to those of Range Rover Sport – big car seats for a cabin that looks as though it belongs in a big car. The upright seating provides a comfortable driving position and increases usable legroom.

A variety of seat fabrics and colourways are available, including leather on the top-of-the-range models.

Six-way adjustment is standard on all driver seats, including height adjustment to take advantage of the generous roofspace. The front passenger seat has four-way adjust. Electric power adjustment and armrests are also available on driver and front passenger leather seats, with the option of a three-position memory on the driver’s seat. Two-stage seat heating is available on certain models to provide reliable and rapid seat warming in cold environments.

The rear seat is wide enough to accommodate three standard adults, and includes a central armrest on leather versions. An asymmetrically split design, it folds forward to offer a completely flat floor area.

### **Lots of Luggage and Stowage Space**

The capacious boot provides plenty of space for luggage or sports equipment, from bicycles to golf clubs. A neat touch is the reversible load floor cover with carpet on one side and a water-resistant surface on the other.

Total luggage volume is 1670 litres with the rear seats folded forward and 755 litres when raised (27 and 38 per cent respectively better than the outgoing Freelander). The space was designed from the outset to be as versatile as possible. For example, Land Rover even checked that Roly (one of the team’s fully grown Labradors, digitised for just this purpose) could travel in comfort. The high load-space floor avoids the need to bend down to lower items into the boot.

Within the cabin, the centre console includes cup-holders that can secure a wide variety of drink cans and cups. There is stowage space galore, including a large hopper-style glove-box and generous front and rear door bins with 1-litre bottle-holders. On selected models, the front seats have handy ‘kangaroo pockets’ on the front in addition to map pockets on the back.





## Sound Systems

The sound systems offered for Freelander 2 are headed by a top-level version that features Dolby™ Prologic IIx surround sound, incorporating a 12x40 W amplifier. It is delivered through 12 speakers, including a sub-woofer, and the system incorporates a six-disc in-dash CD changer. It is also MP3 format compatible.

One rung down – but still highly impressive – is a system that includes an 8x40 W power output and eight speakers plus sub-woofer. Volume control is automatic, and changes with the car's speed.

Rear seat headphone sockets are available, allowing rear seat passengers to listen to a different audio source from that of the front seat occupants.

An auxiliary audio input socket for the connection of an MP3 player, iPod, or other source is fitted as standard in the centre console. DAB digital radio is available as an option in selected markets.

## Premium Equipment

Freelander 2 is available with a wide array of premium-car equipment, as standard or as options. This includes:

- Keyless starter button – standard throughout the range
- High-definition colour touch-screen DVD satellite navigation
- Bi-xenon Adaptive Front Lighting
- Auto headlights and rain-sensing wipers
- Cruise control
- Park Distance Control at the front and rear
- Bluetooth hands-free telephone system to integrate phone control and display with the car
- 12-speaker Alpine/Dolby™ Prologic IIx sound system
- DAB digital radio
- Dual-zone ATC air-conditioning, with pollen filter and humidity sensor
- Panoramic top-sliding sunroof
- Lazy-open and Lazy-locking functionality
- One-shot windows and sunroof
- 'Approach lighting' operated by the key fob

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## DRIVING DYNAMICS

“The all-new Freelander 2 has been engineered to inspire driver confidence and passenger comfort over a wide variety of conditions and surfaces, from sporty on-road driving to off-road mud-plugging. Our goal was to create a driving experience that felt just as good to someone trading up from a conventional saloon as it did to an experienced 4x4 specialist.” Mike Cross, chief engineer, vehicle integrity.

The Land Rover engineers' objectives for the driving dynamics of Freelander 2 were to combine on-road behaviour that is agile, predictable and refined, with class-leading off-road ability. Their comprehensive approach started with the design of the base suspension system, and was supplemented





by innovative technologies such as an intelligent 4x4 system, Land Rover's patented Terrain Response, and sophisticated traction and stability systems. Key contributors to achieving excellent on-road performance were the new, fully independent suspension system – coil-sprung struts front and rear – and an exceptionally stiff body using front and rear sub-frames. Front and rear anti-roll bars provide excellent anti-roll control.

The responsive rack-and-pinion steering is direct and fluid, with just 2.6 turns lock-to-lock. Rigidly mounted to the front sub-frame to improve lateral stiffness, the steering is adjustable for reach and rake.

“The Freelander 2 is a revelation on-road,” says Land Rover's chief engineer, vehicle integrity, Mike Cross. “Some sporty 4x4s are more firmly sprung, but where Freelander 2 really scores is in its mix of agility, responsiveness and ride comfort. It is never harsh, but is always a rewarding and predictable vehicle to drive hard.”

On-road ride comfort has been a key consideration, and Freelander 2 surpasses many compact premium saloons – let alone rival 4x4s – due to its supple long-travel suspension, its excellent torsional body stiffness, its isolated (rubber-mounted) front and rear sub-frames, and its large-diameter gas damper struts.

Off-road it is a class-leader. Its capability starts with 210 mm (minimum) of ground clearance to overcome rocky, sandy, rutted or muddy terrain. This also helps Freelander 2 to wade through water up to 500 mm deep – better than most rivals. Approach and departure angles are also excellent.

### **Full-Time Intelligent 4x4 System**

An innovative full-time intelligent 4x4 transmission is fundamental to delivering Freelander 2's class-leading breadth of capability. Its front-rear torque split varies continuously to suit dynamic conditions. Only a small amount of torque is fed to the rear wheels under normal conditions, such as on a straight tarmac road, but in tough off-road situations, almost all the engine torque can be fed to the rear wheels, if required. This is an ideal arrangement that always offers maximum grip in difficult conditions, yet minimises rear drive – and therefore rotational losses and, in turn, fuel consumption – when not required.

“The torque balance adapts continuously,” says chief programme engineer Andrew Foster. “So, for example, if you encounter mud or snow on the road, torque distribution between front and rear can be adjusted, to give you optimal traction and primary safety at all times.”

The intelligent 4x4 system has been developed in conjunction with Haldex, whose acclaimed centre-coupling technology continuously alters the front-rear torque split, normally through a hydraulically operated multi-plate wet clutch. However, Land Rover wanted an electronically controlled centre coupling – linking the propshaft to the rear differential – that could pre-engage at rest to reduce wheelspin from standing starts, engage quickly when traction loss was detected and disengage quickly without compromising stability control systems. The system also had to transmit the necessary torque to achieve Freelander 2's off-road traction demands.

The result is used exclusively on Freelander 2, and proactively engages full-time 4x4 rapidly and completely. A new high-pressure pre-charge pump charges the hydraulic system as soon as the engine is started, allowing for full-time 4x4 from rest. It also reduces the time taken to achieve full torque once wheel-slip has been detected – within 15 degrees of wheel-slip rotation (compared with over 60 degrees of wheel-slip rotation with more conventional units).



The Freelander 2's Haldex unit is designed to allow up to 1500 Nm of torque transmission. An accumulator also speeds up the unit's response. Full torque transmission can be achieved in just 150 milliseconds. In effect, the new Haldex coupling gives the proactive engagement benefits of full-time 4x4 and the efficiency and fuel economy of an on-demand system. Representing the best of both worlds, it is ideal for a compact 4x4 such as Freelander 2.

### **Terrain Response Enhances Go-Anywhere Ability**

Terrain Response is one of the core Land Rover technologies that gives the Freelander 2 its outstanding breadth of capability. Standard on all but the entry model, it adapts the responses of the vehicle's engine, gearbox, centre coupling and chassis systems to match the demands of the terrain. It optimises driveability and comfort, as well as maximising traction.

On the Freelander 2, there are four Terrain Response settings which the driver can choose via a rotary control:

- General Driving – provides a broad span of ability suitable for most on-road driving and easier off-road conditions
- Grass/Gravel/Snow – for slippery conditions, on-road or off-road
- Mud and Ruts
- Sand

“Each of the settings optimises Freelander 2's suite of electronic and mechanical controls to suit the chosen terrain,” says Andrew Foster. “It's like having an off-road expert to assist.”

Terrain Response also controls the following range of stability and traction aids:

- Dynamic Stability Control (DSC): is designed to help stop torque to a wheel after loss of traction, but in some off-road situations torque feed is still desirable, even when traction is being lost. Terrain Response automatically adjusts the DSC so that appropriate torque is maintained.
- Electronic Traction Control and Anti-lock Brakes: these slip and braking control systems are all adjusted and tuned by Terrain Response to offer optimum grip, braking power and safety on the chosen terrain.
- Hill Descent Control (HDC): the latest generation of the award-winning Land Rover technology that automatically restricts speed downhill, using the anti-lock brakes, and improves driver control on slippery descents. HDC is automatically engaged on appropriate Terrain Response programmes. Downhill speed rates vary according to which surface is selected.

Terrain Response also changes the setting of the electronic centre coupling, to optimise 4x4 drive in tough conditions. It works continuously, and made its production debut in the Land Rover Discovery 3 in 2004.

### **Large and Powerful Brakes**

The Freelander 2 has large vented discs front and rear, providing stopping power comparable to that of a good compact sports saloon. The large front discs – 316 mm on the petrol model, 300 mm on the diesel – are ‘reverse vented’, so they draw cool air into the disc over the central bell, which is then vented out from the rim of the disc. This approach improves thermal stability under severe braking. Rear brake discs are also substantial – 302 mm in diameter, for both diesel and petrol. The handbrake is a drum-in-disc device featuring two shoes per wheel. This achieves superior hill-hold performance compared with



conventional disc-only systems.

The electronic modulator at the heart of the stability control systems on Freelander 2 constantly monitors and, if necessary, adjusts both braking and engine traction to ensure the driver maintains control of each wheel. As well as reducing brake pressure, as in a conventional anti-lock (ABS) braking system, the modulator is designed to help generate positive hydraulic pressure to increase braking force in an emergency.

In addition to the latest-generation four-channel anti-lock brakes, the modulator also controls Electronic Brakeforce Distribution (EBD), which balances the distribution of braking force between front and rear, Emergency Brake Assist (EBA), which boosts pedal pressure when full braking is required, and Corner Brake Control (CBC), which enhances rear-end stability when braking in corners. It also helps to control the Hill Descent Control, Electronic Traction Control and Dynamic Stability Control systems.

### **Roll Stability Control**

Roll Stability Control is the most sophisticated roll-over prevention technology ever fitted to a Land Rover. Gyroscopic sensing allows this system – linked to the electronic modulator – to compare the rate of change of body roll angle with the steered course. If necessary, incremental brake force is applied at the outer wheels, widening the turn radius to help prevent the roll.

### **Gradient Release Control**

Another innovation which makes its debut on Freelander 2 is Land Rover's patented Gradient Release Control system. Linked to the Hill Descent Control, this system ensures that, when releasing the brakes on extremely steep hills, brake-line pressure is released progressively, helping to maintain full driver control.

### **Wheels and Tyres**

Freelander 2 is available with a wide variety of wheels and tyres, ranging from 16-inch to 19-inch diameter. All are specifically tuned to help deliver Land Rover's class-leading breadth of capability.

The wheels are all low-pressure die-cast aluminium, and rim width is wider than normal. All tyres are all-terrain rated, so they perform well both on-road and off. All run at 32 psi (2.2 bar), irrespective of size, load or speed, which simplifies life for the customer. The smallest tyre offered – on the diesel only – is a chunky 215/75R16 tyre, while the biggest – aimed at those who want sports saloon levels of responsiveness on-road – is a 235/55R19 (accessory fit only).

### **Towing Capability**

Freelander 2's powerful engines, strong body and 4x4 transmission make it an ideal tow vehicle. The petrol automatic and diesel manual models are able to tow a 2000 kg braked trailer – which is more than the vehicle's kerb weight – making them suitable for most single horseboxes, medium-sized caravans and many boats. The diesel automatic can tow up to 1750 kg.

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