

# Press Information

## up!

July 2016



Volkswagen

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### THE VOLKSWAGEN up!

The up! is a compact city car from Volkswagen. With its pure design, maximum space on a minimal footprint, quality and attention to detail as well as affordable innovations it embodies the core values of the Volkswagen brand.

Unveiled as a concept at the Frankfurt Motor Show in 2007, it was then substantially evolved ahead of its public debut at the 2011 show in the same city. The up! went on sale in mainland Europe in December 2011; UK Retailers began taking orders for the car on 6 October and the first deliveries of the three-door model took place in March 2012. A five-door version joined the range in July 2012. Just a year later, in 2013, an all-electric version was added to the line-up.

In July 2016, the new-look up! was unveiled. Featuring a redesigned exterior, fresh colours and a revised infotainment system, the new up! is refreshed and full of character. The new up! also has a new engine option, the 1.0-litre 90 PS TSI unit. The car continues to be built at the Volkswagen plant in Bratislava, Slovakia.

The first generation up! came to market at just the right time because the small city car sector was growing, and not just in Europe. The car was a success in growth markets like South America too.

The up!'s dimensions are key to its city car status. At 3,600 mm in length, 1,641 mm in width and 1,463 mm in height, the up! is one of the smallest four-seater cars available. Its overall length consists of short body overhangs and a long wheelbase of 2,407 mm. Thanks to these dimensions the turning circle of the up! is an unusually compact 9.8 metres.

Use of space inside the car is exceptionally good, with room for four adults. This is due to the wheelbase, which is one of the longest in the segment, combined with an engine that is mounted well forward. The 251-litre boot is also significantly larger than is typical in this class. When the rear seat is fully folded, cargo space increases to 959 litres.

Powering the up! is a range of three-cylinder petrol engines, with outputs of 60 PS, 75 PS and 90 PS. Fuel consumption for the 60 PS BlueMotion Technology model is 68.8 mpg on the combined cycle with CO<sub>2</sub> emissions of 96 g/km; even the more powerful 75 PS unit stays under the 100 g barrier with a figure of just 96 g/km. Customers opting for the Move up! And High up! models can specify BlueMotion Technology (BMT), which includes additional equipment designed to optimise fuel efficiency and emissions.

There are four specification levels: Take up!, Move up!, High up! and up! beats. All models have a raft of safety features including ABS and four airbags, and all have Electronic Stability Control as standard. An important new safety technology in the original up! was the optional award-winning City Emergency Braking system, which at speeds of under 19 mph detects the risk of an impending collision and can reduce accident severity by initiating automatic brake interventions that can even avoid a crash. This function is standard on the e-up! and is optional on the other trim levels.

The infotainment system has been completely redesigned on the latest up!. The owners smartphone can now be docked and after downloading the 'Maps + More' app, the smartphone's functionality is accessible from inside the car. The phone screen is used as the display, with features such as navigation, telephone, car-specific information and Volkswagen's Think Blue. Trainer driver training system all displayed on the phone screen.

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### SUMMARY

- Design styled by Walter de Silva (Group) and Klaus Bischoff (Brand), and based on new platform.
- Built in Bratislava, Slovakia
- Dimensions: 3,600 mm long, 1,641 mm wide without door mirrors, 1,910 mm wide with door mirrors, 1,463 mm tall, 2,407 mm wheelbase. Boot is 251 litres, 959 litres with the rear seats folded
- There are four base specifications: Take up!, Move up!, High up! and up! beats
- Up! beats is designed with Beats Audio, and the car features a 300-watt sound system as well as unique Beats styling, badges and decals. All three engines are available in Beats trim
- The revised up! continues to use the new generation of 999 cc three-cylinder petrol engines, with outputs of 60 PS, 75 PS and a turbo charged 90 PS. The 60 PS and 75 PS versions are offered optionally as BlueMotion Technology variants with modifications that enhance economy and reduce emissions. A full electric version, the e-up! was launched in 2013
- First in class is a City Emergency Braking system which is active at speeds of less than 19 mph. Uses a laser to detect the risk of impending collision, and can apply braking automatically
- Originally available as a three-door only, a five-door model joined the range in July 2012. A five-speed automated manual gearbox was added in October 2012
- 'Maps + More' organises navigation, telephone, information and entertainment functions, as well as providing vehicle instrumentation and operating instructions.
- A full-size spare wheel is available as a low cost option
- Cd: 0.32; Cd x A = 0.67. Fuel tank: 35 litres. Torsional rigidity: 19,800 Nm/degree
- Torque of 95 Nm (70 lbs ft) from 3,000-4,300 rpm on both 60 PS and 75 PS. Torque figure is 160 Nm on the 1.0 TSI 90 PS engine
- The weight of up!s varies from 926 kg for models equipped with the entry-level 60 PS engine to 1002 kg for High up! and up! beats models with the 90 PS motor
- up! is front-engined and front-wheel drive
- Front suspension: strut-type with wishbones. Rear: semi-independent.
- Options are kept simple and divided into packs:
  - City emergency braking pack: City emergency braking with front passenger's airbag deactivation switch, automatic headlights on with coming/leaving home lighting function and rain sensor
  - Winter pack: Heated front seats, electrically heated and adjustable door mirrors and front fog lights
  - Cruise and park pack: Rear parking sensors, cruise control and multifunction computer

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### Market information

The up! competes in the city car (or A00) class, a rival to such vehicles as the Toyota Aygo, Citroën C1, Peugeot 107, Fiat 500 and Hyundai i10.

In 2015 Volkswagen sold 16,904 examples of the up! in the United Kingdom, which compares to 78,136 Golfs, 54,900 Polos, 21,889 Tiguan and 20,208 Passats.

During the previous year, 2014, Volkswagen sold 22,461 up!s and in 2013 the figure was 21,143.

### Production

The up! is built at Volkswagen's Bratislava plant in Slovakia. Volkswagen Slovakia produces cars, gearboxes and components at its two plants in Bratislava and Martin. At the plant in Košice, Volkswagen, Audi, SEAT and ŠKODA vehicles are prepared for sale in Russia and Ukraine. The main plant in Bratislava covers an area of 2,100,000 square metres.

Vehicles and gearboxes are produced at Bratislava. In addition to the up! and other small Group city cars, the production portfolio includes the Volkswagen Touareg and Audi Q7, as well as the car bodies for the Porsche Cayenne and Bentley Bentayga. In 2015 the plant produced 397,500 vehicles and 262,350 gearboxes. Martin is a component plant.

Volkswagen Slovakia is one of the country's major exporters, with vehicles made there shipped mainly to other EU countries and China. It is also one of the country's largest employers: in 2015, some 10,800 people were employed by Volkswagen Slovakia.

### History

Volkswagen Bratislava was founded in 1991 as a joint venture between Bratislavské Automobilové Závody, a.s. and Volkswagen Aktiengesellschaft. In the same year the production of the Passat Estate was launched there. Golf production and gearbox assembly started in 1994 and Volkswagen Slovakia became a wholly owned subsidiary of the Volkswagen Group.

After the legal status of the company changed on January 1, 1999, the Company changed its name to Volkswagen Slovakia and production grew steadily. In 1998, the company celebrated its 100,000<sup>th</sup> vehicle; in 2000 the number grew to 500,000. In the same year, the component production plant for the Volkswagen, Audi and Škoda models was opened in Martin. Operation of the Košice plant started in 2004. In October 2005 the production of the new Audi Q7 started and in November 2005 mass production of this vehicle was launched. In 2007 the two millionth vehicle, a Touareg 3.0-litre V6 TDI, was celebrated.

In 2008 Volkswagen Slovakia was awarded a special prize by the Minister of the Environment, underlining the company's contribution to environmental protection and the striving for continuous innovation in Slovakia.

In 2013 the plant in Bratislava launched the first all-electric vehicle of the Volkswagen Group – the Volkswagen e-up! In 2014, Volkswagen Slovakia celebrated the production of 4 million vehicles and in 2016 the plant celebrated its 25<sup>th</sup> anniversary.

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### DESIGN

At 3,600 mm in length and 1,641 in width, the up! is one of the smallest four-seater cars available. Its overall length consists of remarkably short body overhangs and a very long wheelbase (2,407 mm) – a body layout that fully utilises the available space. It has a turning circle of 9.82 metres.

#### Dimensions of the up!

	up!	Polo
length, mm	3600	3972
width, w/out door mirrors, mm	1641	1682
height, mm	1463	1438
wheelbase, mm	2407	2456
front track, mm	1428	1465
rear track, mm	1424	1456
Luggage capacity, litres, seats up	251	280
seats down	959	952

The up! was designed by a team led by former Volkswagen Group Head of Design, Walter de Silva, and Volkswagen Brand Design Chief, Klaus Bischoff. In commenting on the concept for the up!'s design, Bischoff says: 'The perfect layout of a small compact car is based on a box with a wheel at each corner. The up! is one of the very few which comes close to doing this. It is not just the relationship between the wheelbase and the overhangs which is important, but also that of the vehicle's width and track. From any angle the wheels must be positioned as far to the outside of the vehicle as possible, so as to make the compact body stable and reliable on the road. It is therefore the objective, without further design and detailing, to lend a unique and solid appearance to the car. The shape must be right, even before important elements like the front design or the side window graphics establish the character of the model.'

#### Exterior design

Viewed from the front, the up! appears to smile, due to the prominent lines of the bumper. And it is intentionally smiling, according to de Silva, having been designed to incorporate the elements of both 'simplicity and sympathy'. He explained: '*Sympathy* is part of the up! concept. It combines the friendliness of the Beetle with the rational perfection of the Golf.'

Integrated in its friendly face is the Volkswagen logo, the only chrome element at the front end. The up! can make do without large air cooling intakes due to its small petrol engines, and the electric version also doesn't require large amounts of cooling. The headlights are significantly smaller than those of other Volkswagens, yet they are visually very prominent. Bischoff comments: 'The front-end designs – from the up! to the Passat – all follow the same styling guidelines. The models are unified by such style elements as a strict emphasis of horizontal lines, joining of the grille and headlights and the conciseness of short angles. And yet, despite their clear brand affinities all Volkswagens are differentiated from one another. Crucial here are the differences in the proportions of the individual components. This leads to highly individual vehicles that span the model range from the congenial up! to the sophisticated Passat.'

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In side profile, the significant flares of surfaces and alternation of convex and concave forms define the car's styling. A slight concave groove above the side sill creates an accent in the continuous surface, but the side profile does not show any seams or edges except for the wheel housings and the look of the side windows. The wheel housings are prominent and their lateral surfaces – the so-called 'wheel mirrors' – are very large, making the diameters of the small wheels (14 to 16 inch) appear even larger.

The design of the windows gives the up! an unmistakable look as well. A short angle in front creates a formal connection between the lower-lying window edge and the bonnet. A long ascending line in the rear third of the vehicle matches that formed by the rear wheel and the C-pillar. This interplay of lines reinforces the image of the C-pillar being supported by the rear wheel, a characteristic which – in interaction with the long wheelbase and short overhangs – underscores the crisp proportions of the up!. Over the short, steeply-rising bonnet, there is another line that leads over the windscreen and roof to the rear. There, the car's silhouette first follows the side windows then finishes in a near vertical curve down to the bumper.

The up! has a large bootlid, which extends right down to the bumper. This so-called hybrid bootlid consists of three basic layers. Its outer skin consists of a transparent glass element. The bootlid forms an integral unit with the vertically oriented rear lights. In detail, the bootlid is constructed of a load-bearing framework upon which a second sheet-metal layer is laser-welded in place with the integrated trailing edge of the roof. The outer third layer of the bootlid is the glass element that is joined by adhesive. It extends down from the trailing edge of the roof over the entire bootlid and incorporates the rear window as well as the lower area of the lid. The border around the rear window and the lower section are coated in black from the inside. Forming a contrast to the black are the chrome surfaces of the Volkswagen logo and the up! badge. The bootlid is opened by pressing a button in the handle beneath the Volkswagen logo.

Although they look like a part of the bootlid, the large tail-lights of the up! are actually joined to the body. Their red surfaces are very distinctive, especially in their interplay with the white C-shaped elements. The lower third of the rear section is dominated by the bumper with its wide licence-plate panel and surrounding seam. The front and rear bumpers are painted in body colour as standard.

The latest up! has a choice of 13 different colours, which are available as non-metallic, non-metallic Signature, Metallic and Pearl Effect and Premium Signature. A wide choice of vibrant colours are offered, which provides the first opportunity to the customer to style the up! to suit their own preferences.

The Move up! and High up! are available with the option to colour the roof black, grey or white. In addition, four of the alloy wheel designs contain flashes of colour that complement the body-colour of the up!. Specifically, these are 'Hot Orange', 'Golden Beige', 'Fortana Red' or 'Sandstorm Yellow'. Available as Style Packs, these coloured wheels come with door mirrors and side decals in the same colour.

### **Aerodynamics**

With a Cd value of 0.32, the up! achieves exemplary aerodynamic performance for its class, and this results in improved refinement thanks to reduced wind noise as well as lower fuel consumption.

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At Volkswagen, the first steps in refining a car's aerodynamics are made in a very early phase of the project using a simulation process known as CFD (Computational Fluid Dynamics). Because of its cost and time advantages, this process has since replaced evaluation and optimisation with real 1:4 scale models.

An important aspect of the CFD process is its ability to represent very realistically the vehicle's details digitally. Step by step, this method optimises a car's aerodynamics on the computer. Not until this process has been fully exploited are wind tunnel measurements conducted on a real full-scale aerodynamic model at a suitably mature development level. At this stage, the aerodynamic model is covered with an exterior skin of clay, enabling quick changes to be made to the vehicle's shape. In addition, the 1:1 model already has realistic shapes of engine compartment and underbody structures and in turn, this enables quick optimisation of parts that are very important to aerodynamics such as the front and rear spoilers and underbody panels. The designs of aerodynamically relevant add-on parts are then finalised based on measurements from the first prototypes.

In establishing the up!'s aerodynamics, special attention was given to attaining a minimal front overhang. With this goal in mind, the sides of the front section of the up! were shaped so that the air would flow around the wheel housings with minimal turbulence. In attempting to reduce every possible gram of CO<sub>2</sub> emissions, the position and size of the front spoiler was also optimised progressively; in the final design, another 1.1 g/km CO<sub>2</sub> was saved which may seem insignificant but all adds to the final figures. At the same time, the final front spoiler design reduces front and rear aerodynamic lift coefficients of the up!, resulting in even safer driving characteristics.

The design of the rear section also has a crucial effect on the car's aerodynamic performance. Intensive fine tuning of the aerodynamics of the up! has resulted in contours that both preserve styling targets and achieve defined flow separation, including in the side panels at the rear. In the process, the rear spoiler contour was tuned to the design of the lateral trailing edges. The sum of all of these measures yields the Cd value of 0.32 mentioned previously. In conjunction with the vehicle's frontal area of  $A = 2.07 \text{ m}^2$  the total aerodynamic drag of the up! is a very good  $0.67 \text{ m}^2$ .

### Structural design

In order to design a car which is structurally safe and yet achieves a low overall weight, it is imperative to use the most innovative manufacturing technologies. For this reason, the body materials of the up! consist of 8.1 per cent 'hot-formed' steel content, meaning the parts exhibit extreme toughness (including the floor and B-pillars); the car's body weight was reduced by 13 kg just due to the use of hot-formed steel. Moreover, by consistently downsizing engine technology, using high-strength steel and relentlessly removing every superfluous gram, the latest generation up! weighs just 927 kg. By comparison, the Volkswagen Lupo, which the original up! replaced, weighed 1,069 kg.

In the area of the front side members, sills and side roof frame, so-called dual-phase steels are used which, together with hot-formed steel panels, create the basic structure for the safety occupant cell. The up! also sets top values in the segment with its 39.3 per cent share of ultra-high-strength steels and 17.2 per cent share of high-strength steels. Only 24.9 per cent of the weight of the body structure consists of conventional deep-drawing steels, which are used for visual parts that are very challenging to manufacture, such as exterior parts of the side body or rear wheel housings.

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The up! has a high static torsional rigidity of 19,800 Nm/degree, which is important as high torsional rigidity has a definite positive effect on comfort and handling properties. In parallel, the dynamic rigidity of the up! is also excellent at 49 Hz – and this benefits acoustics, vibration and driving comfort.

### Interior design

One only has to sit inside the up! for a short time to realise that use of space is exceptionally good, and this is because of its wheelbase – one of the longest in the segment – together with a compact engine mounted well forward and a new running gear design. Although the up! is a small car, for its driver and three passengers it is by no means cramped.

The modular seats – which serve as the basis for a wide range of seat variants for specific up! versions – offer very good driving comfort. The front seats of the up! are 15 per cent lighter than those of comparable concepts. The head restraints for the driver and front passenger are firmly attached to the seats, meaning that, regardless of a person's stature, they always fit properly. In the rear, fixed head restraints are less desirable, because they could restrict rear visibility.

Headroom in front is an impressive 993 mm, and 947 mm in the rear. The seats are positioned at a good height both front and back; for the driver and front passenger, the so-called H-point – the vertex where the seat and seatback meet – is at a height of 306 mm; in the rear the H-point is at 378 mm. This somewhat higher seating position for rear passengers affords them a better view over the shoulders of the driver and front passenger.

The up! is also practical, with numerous storage compartments and a high level of attention to detail in its interior design. Along with a large storage bin in the centre console and the glovebox, there are storage surfaces and bottle holders (up to 1.0 litre bottles) in the two doors, three cupholders in the rear (three-door model) and two bag hooks plus a variable cargo floor in the boot (from Move up!). The glove compartment is equipped with a holder for pens and pencils, a notepad and coins; there is also a compartment for glasses; and the coat hook was integrated in the B-pillar in such a way that it is visible through the window from outside, and so it can be easily found.

There are three central elements to the instruments and user interfaces: the instrument cluster in front of the driver; the switch module in the middle of the vehicle with radio-CD and heater / air conditioning controls; and the smartphone mount for the infotainment and navigation system.

Controls for the ventilation or air conditioning system, radio-CD system, hazard indicator lights, seat heating and rear window defrost, as well as the switch for deactivating the Stop/Start system, are all located in the central dashboard module between the driver and front passenger. The entire unit is located up high – so that it is easy to see and use – and it is painted in gloss black. It's interesting to note that every up! is fitted with its 'own' individual wiring harness with its electrical system pre-configured for the features fitted, thereby reducing the cost and weight of installing unnecessary cables.

The interior of the up! is not only designed to be functional, stylish and simple, it is also intended to offer a high level of quality. A variety of Design Packs offer customisable dash colours, with contrasting decals on the door panels and door mirrors. For example, the Cube White 3D style pack offers a 'Cube White 3D' dash design, a choice of black or white decals on the door panels, plus black, white or grey door mirrors (depending on the exterior paint colour).

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At 251 litres, the boot boasts plenty of cargo capacity; and when the seatback of the rear bench is completely folded down, the up! can handle 959 litres of cargo and on a nearly flat cargo surface. The boot itself is upholstered with carpet, and so is the cargo area cover, which opens wide and can be quickly removed if necessary. A variable cargo floor that can be adjusted to two different levels is standard from the Move up!. When the rear bench seat is folded down, the upper cargo floor position creates a nearly level cargo surface, and small objects can also be stowed beneath the cargo floor in this position. The lower cargo floor position is used if especially large and bulky objects need to be stowed in the boot.

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### ENGINES

Making its debut in the original up! was a new generation of one-litre three-cylinder, 12-valve petrol engines, known internally as EA211. Although the 82 mm cylinder spacing is shared with Volkswagen's popular EA111 engine series, these were completely new engine designs.

These 999 cm<sup>3</sup> engines are now available with power outputs of 60 PS, 75 PS and 90 PS. They fulfil the Euro 6 emissions standard. BlueMotion Technology versions of the 60 PS and 75 PS engines are available, with features such as a Start/Stop system, battery regeneration, low-friction ancillary engine component drives and tyres optimised for low rolling resistance. These features produce lower fuel consumption and emissions values. All engines are available with a standard five-speed manual gearbox. A five-speed automated manual transmission (ASG) is available too. (An EcoFuel version of the engine which is powered by compact natural gas is on sale in mainland Europe but is not available in the UK.)

The petrol engines that power the up! are all produced from aluminium, are as compact as they are lightweight, and were systematically designed to minimise internal friction. The two overhead camshafts are driven by toothed belts; the intake camshaft is variable which further reduces emissions and fuel consumption and improves the power curve in the lower rev range. The valves are activated by cam followers, again with very low friction. The engine's dual-circuit cooling system and integrated water-cooled exhaust manifold ensure short engine warm-up times, resulting in optimal engine temperatures for quick starts. Each cylinder is equipped with a separate ignition coil.

All of the internal combustion engines in the up! have bore / stroke dimensions of 74.5 / 76.4 mm. The compression ratio of the petrol engines is 10.5:1, and engine control is performed by a Bosch Motronic unit.

In laying out the crankshaft drive, engineers were able to reduce further moving mass compared to the company's other three-cylinder engines, thereby minimising friction in the system. The downward-guided connecting rods and the pistons are weight-optimised to such an extent that the balancer shafts that are otherwise usual in three-cylinder engines could be eliminated – while maintaining the same comfort levels. Engine weight and drive friction – and therefore fuel consumption – were further reduced by the small main and connecting rod bearings. Six crankshaft counterweights are used to reduce internal forces and therefore the load on the main bearing. This also enhances the durability of the engine.

The cylinder head of the up! with four valves per cylinder is cast from an aluminium alloy. The valves suspended at the tops of the combustion chambers are laid out at angles of 21 degrees (intake) and 22.4 degrees (exhaust), and as noted they are activated by cam followers. The valve stems have a diameter of 5 mm. The cylinder head has an integrated exhaust manifold, because, as mentioned previously, the engines reach their optimal operating temperature faster with this technical layout. The engine coolant is heated faster during the cold start phase, because the exhaust channels within the head merge at a central flange. In normal operation, on the other hand, the exhaust gas stream is cooled more intensively, and the engines can be operated at an optimal fuel-to-air ratio of  $\lambda=1$ . Once again, the benefits are reduced emission and fuel consumption values.

The topic of weight reduction runs like a common thread throughout the engine area, all the way to the engine's swivel mounts: the solution implemented in the up! with its rubber-metal elements not only provides for very good isolation of the body from vibrations of the three-cylinder engine; it is also the lightest in the competitive field.

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### **1.0-litre, 999 cc, 12-valve 3-cyl, 60 PS**

From its small 999 cc capacity, the entry-level up! develops peak power of 60 PS at 5,000 rpm, and maximum torque of 95 Nm (70 lbs ft) from 3,000 to 4,300 rpm. Ninety per cent of maximum torque is reached between 2,000 and 6,000 rpm, ensuring agile performance. Standstill to 62 mph takes 14.4 seconds and top speed is 100 mph. This engine returns a combined 64.2 while emitting 101 g/km of carbon dioxide.

The 60 PS version is also available in Move up!, High up! and up! beats trims with BlueMotion Technology (BMT) modifications. The addition of features including Start/Stop and battery regeneration systems as well as low rolling resistance tyres and low-friction ancillary engine component drives means an improvement in fuel economy of nearly five per cent. This engine has an official combined fuel consumption value of 68.9 mpg and CO<sub>2</sub> emissions of 96 g/km. Top speed remains at 100 mph.

With a 35-litre fuel tank, this means the BlueMotion Technology version of the up! has a theoretical range of 530 miles.

Engine	PS	CO <sub>2</sub>	Combined mpg
1.0-litre	60	101	64.2
1.0-litre ASG	60	100	65.7
1.0-litre BMT	60	96	68.9

### **1.0-litre, 999 cc, 12-valve 3-cyl, 75 PS**

The engine that sits in the middle of the up! range develops 75 PS at 6,200 rpm and, like the 60 PS version, 95 Nm (70 lbs ft) of torque from 3,000 to 4,300 rpm. The sprint from zero to 62 mph takes just under a second less at 13.5 seconds, with a top speed of 106 mph.

Fuel economy is still frugal with a combined cycle figure of 64.2 mpg, and CO<sub>2</sub> emissions also stay the same as the 60 PS unit at 101 g/km.

A BlueMotion Technology version of this higher powered unit is also available. In this case, combined economy is 68.9 mpg and CO<sub>2</sub> emissions fall to 96 g/km.

Engine	PS	CO <sub>2</sub>	Combined mpg
1.0-litre	75	101	64.2
1.0-litre BMT	75	96	68.9
1.0-litre ASG	75	103	64.2
1.0-litre ASG BMT	75	97	67.3

### **1.0-litre, 999 cc, 12-valve 3-cyl, 90 PS**

The newest engine in the up! is the turbo charged 1.0-litre TSI. It develops 90 PS at 5,000-5,500 rpm and maximum torque is increased to 160 Nm (118 lbs ft) of torque from 1,500 to 3,500 rpm.

The engine is available with a five-speed manual gearbox and has a top speed of 115 mph. It reaches 62 mph from a standstill in 9.9 seconds but the CO<sub>2</sub> figure is just 108 g/km. Combined cycle fuel efficiency is 60.1 mpg.

### **e-up!**

The e-up! has a compact AC electric motor which produces 60 kW / 82 PS and 210 Nm of torque; this is linked to the front wheels via a single-speed gearbox. Power comes from a lithium-ion battery pack which consists of 204 cells, together rated at 374 volts and 18.7 kWh. This weighs 230 kg and contributes to the e-up!'s overall weight of 1,139 kg (compared to 927-1,026 kg for the standard car).  
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### **BlueMotion Technology**

BlueMotion Technology models are a range of vehicles developed by Volkswagen that strike a balance between the highly focussed BlueMotion vehicles (in Polo and Passat ranges) and the conventional products on which they are based. The range, carrying 'BlueMotion Technology' badging, combines efficiency with comfort and equipment to create vehicles that deliver greater economy and produce fewer emissions yet remain practical and stylish as well as conventional to drive, service and maintain.

The breadth of BlueMotion Technology modifications varies from range to range. In the up! it incorporates low rolling resistance tyres and low-friction ancillary engine component drives, as well as Start/Stop and battery regeneration systems.

The battery regeneration system is designed to help utilise energy that would otherwise be lost during braking. In deceleration and braking phases, the alternator's voltage is boosted and used for bulk recharging of the car's battery. Thanks to alternator control, it is possible to lower alternator voltage, for example during deceleration or driving at constant speed. It is even possible to switch off the alternator entirely which reduces engine load and improves fuel consumption.

In addition, BlueMotion Technology models have an additional battery data module (to acquire momentary charge status), a heavy-duty starter, a DC/DC converter (guarantees voltage stability of the onboard electrical system) and a battery with excellent deep cycle performance.

The automatic Start/Stop system in the up! is operated through the clutch pedal. When coming to a halt at traffic lights, for example, the driver depresses the clutch and selects neutral. When the clutch is released, the engine shuts down and a 'Start/Stop' symbol illuminates on the multifunction display. In order to move away, the driver simply depresses the clutch once again to select first gear and the engine restarts automatically. The system can be deactivated through a switch, if necessary. The Start/Stop system reduces fuel consumption by up to six per cent in city driving.

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### **Gearboxes**

#### **Five-speed manual**

The aluminium five-speed gearbox in the up! was specially tuned for the car's three-cylinder petrol engines. The conventional manual gearbox, referred to as the MQ100, weighs just 25 kg including transmission fluid. The gearbox also comes with indicators for the recommended gear and the engaged gear in the instrument cluster. The gearbox is also very compact measuring 341 mm long by 462 mm wide.

#### **Five-speed automated shift gearbox (ASG)**

An automatic version of the gearbox is also available. Weighing less than 30 kg, the SQ100 is one of the lightest automatic gearboxes ever built. The automatic transmission offers 'D', 'N' and 'R' selections, or the driver can switch to a manual mode at any time. In the automatic 'D' mode, the gearbox selects the optimal fuel economy shift point and forward gear, which reduces fuel consumption in comparison to the manual version. Unlike most automatic gearboxes, this unit has no 'P' park stage, meaning the up! is parked and restarted in neutral or 'N'.

The ASG is more efficient and lighter than a torque convertor automatic, making it ideal for a small and comparatively low-powered vehicle such as the up!. While it is not as sophisticated as Volkswagen's DSG dual-clutch gearbox, it is more cost-effective, making for a larger potential customer base. It is available in combination with the 60 PS engine in Move up! and up! beats trim and with the 75 PS unit in High up! and up! beats.

Both automatic and manual gearboxes are designed for a maximum input torque of 120 Nm. The manual and automatic versions also both have a fifth gear with a long gear ratio which reduces revs at higher vehicle speeds, lowering acoustic and exhaust emissions and of course reducing fuel consumption.

### **Servicing**

Service intervals for the up! are based on the Volkswagen's Fixed regime and require the following routine maintenance:

- Oil change service: Every 10,000 miles/1 year (whichever is soonest)
- Inspection service: Every 20,000 miles/2 years (whichever is soonest) for the first inspection service and then every 20,000 miles or one year thereafter (whichever is soonest)

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### **RUNNING GEAR**

The up! is front engined and front-wheel drive, and uses a running gear which was designed from scratch for the car. Its very short overhangs on the front and rear axles as well as a long wheelbase and stiff body structure form the basis for good vehicle dynamics and chassis set-up.

At the front is a strut-type suspension with wishbones. A key component here is the subframe to which the single-shell transverse link is joined and which absorbs forces of the stabiliser that is joined directly to the strut tower, as well as the steering unit and the swivel mount of the engine bearing. The lightweight but very rigid subframe is produced from a high-strength steel that is only 1.8 mm thick.

The concept of a torsion beam chassis was chosen for the rear axle, where the semi-independent suspension also exhibits low weight and compact construction.

### **Electro-mechanical power steering**

Like a number of other Volkswagen models, all versions of the up! are equipped with electro-mechanical power assisted steering which is able to vary the feel of the steering wheel to suit the speed and driving situation: firm and direct when driving hard, effortless at parking speeds.

In the case of the up!, the parameters are the selected degree of active self-centering to the middle position and steering comfort as well as a feeling of safety. The important self-centering characteristic, even over the slightest of steering angles, and speed-dependent build-up of steering torque convey a sense of very high precision to the driver. From lock to lock, there are exactly 2.9 steering wheel turns in the up!.

### **Braking system**

At the front, the up! is equipped with ventilated 14-inch disc brakes. Compared to the brake discs of this size used by the company to date, Volkswagen was able to reduce their weight (per vehicle) by 1.5 kg, thus saving additional fuel. The reduction in unsprung mass has a positive effect on driving comfort as well.

At the rear, Volkswagen is implementing a drum brake, which ideally fits the power range and weight of the up!. A nine-inch brake servo unit optimises braking power. One innovative aspect of the system is that the power range of the brakes is subdivided into two 'maps'. In the comfort braking range, the focus is on good force metering ability. But if more powerful braking is required, the second map is activated with a higher servo boost factor which significantly reduces the pedal force required during hard braking.

All up! models are equipped with an Anti-lock Braking System and Volkswagen's ESC electronic stabilisation programme.

### **City Emergency Braking**

A technical highlight on the up! – as well as a first in this sector with the original up! – is the option of City Emergency Braking. Automatically active at speeds below 19 mph, it uses a laser sensor (integrated in the upper area of the windscreen) to scan a space 10 metres in front of the up! and detect the risk of an imminent collision. If such a collision is imminent without any reaction by the driver, then the brake system is pre-conditioned, and in a second stage the hydraulic brake assistant is switched to a more sensitive mode.

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Depending on the situation, City Emergency Braking might then initiate, as a third stage, automatic hard braking to a stop, or alternatively support the driver with full braking power if current braking force is insufficient. When maximum risk of collision exists, the up! is braked with a deceleration of  $10 \text{ m/s}^2$ . Depending on the vehicle's speed and the driving situation, City Emergency Braking can reduce accident severity by automatic brake interventions – and possibly even avoid a crash. Nonetheless, the driver still assumes responsibility for the braking process.

If it is deemed necessary, the driver can deactivate the intervention by City Emergency Braking at any time by pressing the accelerator pedal, steering or activating the clutch pedal. In addition, City Emergency Braking can be shut off entirely by pressing a button in the lower part of the centre console (e.g. for towing). In this case, a related symbol appears in the instrument cluster with the word 'OFF' for five seconds to indicate the deactivation; in addition, the indication appears whenever the relevant vehicle speed range of three to 19 mph is reached.

If City Emergency Braking is defective, the symbol flashes slowly and continually. When City Emergency Braking is triggered, the symbol intermittently flashes briefly and at a quick interval.

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### EQUIPMENT AND TRIM

The up! is available in four trim levels: Take up!, Move up!, High up! and up! beats. Specification highlights for these models are listed below; for full details please see the price list.

#### Take up!

This model has the following standard features:

- Anti-lock Braking System (ABS) with Hydraulic Brake Assist (HBA)
- driver and front passenger airbags, plus side head/thorax airbags for front passengers
- electronic engine immobiliser
- Electronic Stability Control (ESC) including hill hold and Electronic Differential Lock (EDL)
- traction control
- front integrated head restraints
- two rear three-point seatbelts and height-adjustable rear head restraints
- warning buzzer for front and rear seats if belt unfastened
- height adjustable steering wheel
- internally adjustable door mirrors
- speed-sensitive power-assisted steering
- Composition Radio infotainment system: DAB digital radio receiver, 3.5-inch monochrome screen, AUX-in socket for external source, eg. iPod or MP3 player, SD card reader and CD player
- two rear seats with one-piece folding backrest
- tyre mobility set and tool kit
- 12V socket in centre console
- 5J x 14-inch steel wheels with 165/70 R14 tyres
- Isofix child seat preparation
- remote central locking with two remote folding keys
- tyre pressure loss indicator
- electric front windows
- heated rear window
- heating and ventilation with four-speed fan
- rev counter, odometer, trip counter, speedo and fuel gauge
- rear fog light
- LED daytime running lights
- halogen clear headlights with integrated indicators
- one-touch indicators
- glovebox
- interior light delay and luggage compartment light
- centre console cup holder, front x1 and rear x1

#### Move up!

In addition to the features on the Take up! model, the Move up! gains the following:

- 15-inch 'Fortaleza' alloy wheels
- steel spare wheel
- body-coloured door handles and door mirrors
- Composition Colour infotainment system: five-inch colour touch-screen, Bluetooth telephone and audio connection, USB connectivity, six speakers
- manual air conditioning
- warning 'lights on' buzzer
- easy entry sliding seats for easy access to rear seats (three-door model only)
- variable boot floor

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- chrome-trimmed interior door handles
- 'Fusion' cloth upholstery
- 'Black Cube' dashpad

### High up!

In addition to the features on the Move up! model, the High up! gains the following:

- 15-inch 'Radial' alloy wheels with 185/55 R15 tyres and anti-theft wheel bolts
- front fog lights
- chrome trim on air conditioning panel and light switch surround
- 'Pixel' upper dashpad – choice of Red, Yellow or Neutral 'Pixel' upper dashboard
- 'Beam' cloth upholstery
- leather-trimmed three-spoke multifunction steering wheel
- hands-free navigation and music over the car speaker system. Volkswagen app for iOS and Android systems
- smartphone navigation interface for smartphones with a screen size up to 5.5-inches with USB connection for charging and data transfer
- ambient lighting
- electrically heated and adjustable door mirrors
- multifunction computer

### up! beats

In addition to the features on the Move up! model, the up! beats gains the following:

- 15-inch 'Radial' alloy wheels with 185/55 R15 tyres and anti-theft wheel bolts
- Red or Black alloy wheel centre caps depending on exterior paint colour
- Tyre mobility set
- beats audio 8 channel amplifier, Digital Sound Processor (DSP), 2 x tweeters in A pillars, 2 x woofers in front doors, 2 x broadband speakers in rear, 1 x subwoofer in spare wheel well, 300 watt output
- chrome-plated decorative strip on tailgate
- 'Flash Red' or 'Black' door mirrors 1 with integrated indicators
- rear tinted glass from B pillar backwards, approx. 65% tinted
- 'beats' decal silver foil stripe with additional colour stripe matching the exterior door mirrors, on lower edge of door panel
- unique 'beats' logo on B pillar
- carpet mats, front and rear with red stitching
- chrome trim on air conditioning panel and light switch surround
- door sill protectors with 'beats' design
- 'beats' cloth upholstery seat centre section with 'beats' logo and 'Microfleece' side bolsters
- leather trimmed three-spoke steering wheel
- 3D effect upper dashpad with 'beats' logo
- Smartphone navigation interface for smartphones up to 5.5-inch with USB connection for charging and data transfer
- seatbelts with red stripe
- ambient lighting

### BlueMotion Technology models

Each up! trim has the option of BlueMotion Technology models. These add the following:

- battery regeneration (recuperation – energy recovery during braking)
- stop/start function

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### e-up!

In addition to the features on the High up! model, the e-up! gains the following:

- Car-Net e-remote mobile services app: 3-year subscription, remote battery charging management, remote pre-trip interior climatization, remote departure time programming, vehicle status, vehicle trip statistics
- 5J x 15-inch 'Tezzle' alloy wheels with 165/65 R15 low rolling resistance tyres and anti-theft wheel bolts
- partially galvanised body
- rear tinted glass from B pillar backwards, approx. 65% tinted
- unique 'e-up' logo on side
- unique front 'C' signature LED daytime running lights (in lieu of front fog lights)
- 5-door only
- carpet mats, front and rear
- chrome trimmed interior door handles, air vent surrounds, speedo surrounds and light and heating switches
- 'Shark Skin' upper dashpad
- leather trimmed three-spoke steering wheel, gear knob gaiter and handbrake grip
- Automatic coming/leaving home lighting function
- City emergency braking
- Electronic brake booster (recuperation – energy recovery during braking)
- Front passenger's airbag deactivation
- climate control, electric air conditioning
- heated front windscreen
- rain sensor
- cruise control
- dusk sensor, automatic driving lights
- e-vehicle information displayed via 'Maps + More' portable infotainment device
- parking sensors, rear
- sound generator
- two charging cables – 16amp AC cable for wallbox/chargepoints (mode 3) and 10amp mains charge cable (mode 2)
- rocker switch for drive mode selection
- socket AC type 2 (DC charge)

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### TECHNICAL HIGHLIGHTS AND FACTORY-FIT OPTIONS

A number of factory- and retailer-fit options are available for the up! which are largely grouped together in packs to simplify the purchase process. Another important option – which is standard on High up!, up! beats and e-up! is 'Maps + More'. For full details of availability, please see the latest price list.

- City emergency braking pack: City emergency braking with front passenger's airbag deactivation switch, automatic headlights on with coming/leaving home lighting function and rain sensor
- Winter pack: Heated front seats, electrically heated and adjustable door mirrors and front fog lights
- Cruise and park pack: Rear parking sensors, cruise control and multifunction computer
- Plus the Style Packs:
  - Alloy Packs: colour the wheels, door mirrors and side decals
  - Design Packs: colour the dashpad, decals and door mirrors
  - Dash Packs: alter the upper dashpad design and upholstery cloth

#### Maps + More

Introduced in the first generation up!, Maps + More has evolved and is now downloadable to smartphones that operate on iOS or Android as an app. It is available from the app store and from Google Play.

Assuming the phone has a screen size of up to 5.5-inches, it can be clicked into the cradle above the centre console of the up! and connected via Bluetooth. The Maps + More app enables the driver to operate the navigation system (offline navigation, 2D or 3D map view). Also accessible is a multifunction display that shows the vehicle and trip data on the phone's hands-free kit. Handwriting recognition means the driver only needs to draw the first few letters of the search term on the screen of the smartphone for an automatic preselection to make suggestions.

#### ThinkBlue. Trainer

Maps + More also includes Volkswagen's ThinkBlue. Trainer programme: An adapted version of the trainer app that analyses your driving style and gives tips based on playful tasks or complete training for efficient driving. This trainer is designed to help save fuel and makes it easier for the driver to achieve an eco-friendly and anticipatory style of driving. It monitors and analyses the use of the accelerator pedal, brakes and gear shifting, and it gives tips to drivers on how they might modify their style of driving to reduce fuel consumption.

In the start menu of the 'Think Blue. Trainer', the three functions 'Driving', 'Fuel consumption' and 'Shifting' are displayed as circular symbols. These three symbols let the driver know, very quickly, just how eco-friendly the trip is. The 'Driving' symbol, for example, with its integrated silhouette of the up! inside a circle, indicates by the size of the circle how fuel-efficient the driving style has been – the larger the circle, the less fuel-efficient the driving style over the driven time period.

The 'Fuel consumption' symbol shows the average fuel consumption value since the beginning of the current trip. When the driver touches one of the three symbols on the screen, the related submenu is opened which shows further specific information. Under the 'Driving' menu, tips on driving behaviour are shown; this information can be used straight away to drive in a more eco-friendly way.

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The submenu under 'Shifting' provides detailed information on the ideal shift point and how well shift recommendations were implemented over recent minutes. When the 'Fuel consumption' submenu is called, a graphic display shows fuel consumption values over the past 30 minutes.

Another useful function is the ability for Maps + More to seek out, in conjunction with the active navigation mode, the next fuel filling station when the tank is low.

### Radio

The feel-good atmosphere in the new up! is created in part by the powerful infotainment system. The new up! has one of two new radios on board. In the entry-level 'Composition', the monochrome display measures 3.1 inches. The 'Composition Phone' version has a five-inch colour display to match the phone size. Both devices are DAB-compatible and come with AUX-in and SD card port. While 'Composition' is still available with CD player, 'Composition Phone' is entirely based on Bluetooth connectivity.

The new up! has a number of features available that you would usually only expect to find in higher classes of cars. They include the new multifunction steering wheel which lets you select radio stations and songs and also control the volume. An optional reversing camera is available with the 'Composition Phone' infotainment system. Other high spec features and options include: Climatronic automatic climate control for premium air quality, with allergen filter which even prevents fungal spores getting in.

And so that the driver doesn't get left in the dark on the way home or to the car, the up! now has the 'coming home' and 'leaving home' lighting features on board. When the 'leaving home' function is activated, dipped headlights, rear lights and number plate lights are turned on as soon as the driver uses the remote control to unlock the up!'s doors. With the 'coming home' function, the light has a shut-off delay when leaving the up!, so that your path to the door or to the boot is lit.

### Relaxed driving

The assistance systems of the new up! raise safety and comfort in its segment to a new level. The range extends from Park Assist to emergency braking:

- City Emergency Braking: Using a laser sensor, the system detects the distance to the vehicle in front or stationary vehicles at speeds up to 30 km/h (19 mph). If the distance is too short and there is a threat of collision, the City Emergency Braking automatically applies the up!'s brakes.
- Cruise control: It supports the driver, particularly on long journeys, and also helps to comply with speed limits, for example in roadworks. Activated using buttons on the turn signal lever, it stores and maintains the set speed. A rocker switch allows the driver to change the settings manually at any time. The memory function allows it to return to the last set speed, e.g. after braking or accelerating.
- ParkPilot: Ultrasonic sensors in the rear bumper locate obstacles at a distance of up to 1.5 metres. The ParkPilot is automatically activated when reverse gear is engaged.
- 'Rear View' reversing camera: This is available in conjunction with the 'Composition Phone' radio. The camera with a wide-angle lens that is integrated into the rear of the up! displays real-time images on the radio display.

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### **Telephone**

When used with suitable Bluetooth enabled telephones, Maps + More offers a range of functions equivalent to those of a hands-free unit. After interfacing with the telephone, the touchscreen displays a keyboard, the entire contacts book of the interfaced device and a directory of recent calls. The telephone can also be operated by voice control.

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### SAFETY AND SECURITY

Earlier sections of this press pack have already explained how safety is engineered into the up!. Its class-leading torsional rigidity and extremely strong body structure ensure it is a safe place to be, while active safety features including ABS, ESP, City Emergency Braking and integrated head restraints complete the package.

In the event of a frontal collision an Early Crash Sensor – integrated directly behind the front bumper – pre-activates restraint systems in advance of the actual impact. What happens then is a case for high-speed cameras: within just a few milliseconds, the belt tensioners tighten the fastened seatbelts to involve the driver and front passenger in the vehicle's deceleration as early as possible. Belt force limiters reduce chest loads while front airbags restrain movement of the upper body. The crash-active steering column makes an additional contribution towards safety, further reducing the risk of injury to the driver. In case of a side impact, the standard head-thorax airbags contribute to protecting the head and upper body of the driver and front passenger.

Child seats in the up! are a safe place for children in the rear seating area thanks to Isofix fixtures and top-tether fittings; this system securely fastens the child seats to the car. With older children, the standard seatbelt status indicator in the multifunction display informs the driver whether rear passengers are correctly strapped in, and there is an acoustic 'fasten seatbelts' reminder for the front seats.

It's important to note, though, that in this Volkswagen, not only are the passengers themselves optimally protected, but so too are other traffic participants, with a high emphasis placed on pedestrian protection. The up! scores well here with such features as its compact three-cylinder engines, directly screw-mounted ancillary engine components and very compact gearboxes. Thanks to the suspended layout of the gearbox mounts next to the side members, it was possible to mount the battery in a very low location – and this low mounting point is essential for good pedestrian protection. Overall, the deformation space between the bonnet and engine block helps to minimise the risk of injury to pedestrians. The hinges of the bonnet were also further optimised for this purpose.

### Euro NCAP test results

Under evaluation by Euro NCAP (European New Car Assessment Programme) the overall packages of occupant, child and pedestrian protection and the safety assistance systems installed in the up! earned the car a top five star rating. In addition, the up! received Euro NCAP's Advanced Award for the car's innovative City emergency braking function, positioning the Volkswagen ahead of its direct competitors, because no vehicle in its class had earned five stars and the Advanced Award before.

In occupant protection, the up! attained top results in all seat positions and regardless of the sizes of the driver and front passenger. Factored into the rating were results of frontal and side impact tests, a pole side impact test and what is known as a whiplash test – which determines loads to the cervical spine of the neck. The up! also achieved excellent child protection results with dummies representing 18 month and three-year old children. The up! also attained impressive results in the area of safety equipment. Here, Euro NCAP rated the seatbelt reminders for all seats and use of a vehicle dynamic control system (ESP) as especially positive.

After the Golf, Golf Cabriolet, Jetta, Passat, Polo, Scirocco, Sharan and Tiguan, the up! and Beetle were the ninth and tenth vehicles from Volkswagen to earn a top 'Five Star' rating from Euro NCAP.

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### Line-up with insurance groups

Thanks to its extensive security and safety features, the up! has secured the following insurance group ratings from the ABI (Association of British Insurers). Group 1 is the lowest (best) possible rating, while the 'E' denotes that the vehicle exceeded the Thatcham (ABI) requirements.

Take up! 1.0-litre 60 PS	2E
Take up! 1.0-litre 60 PS BMT*	1E
Move up! 1.0-litre 60 PS	3E
Move up! 1.0-litre 60 PS BMT*	1E
High up! 1.0-litre 75 PS	5E
High up! 1.0-litre 75 PS BMT*	5E
High up! 1.0-litre 90 PS	10E
up! Beats 1.0-litre 60 PS	3E
up! Beats 1.0-litre 60 PS BMT*	2E
up! Beats 1.0-litre 75 PS	5E
up! Beats 1.0-litre 75 PS BMT*	4E
up! Beats 1.0-litre 90 PS	10E

(\*BlueMotion Technology)

### WARRANTIES

The up! has a three-year, 60,000 mile warranty (first and second year with unlimited mileage manufacturer operated, third year retailer operated) mechanical warranty. Should the mileage exceed 60,000 miles within the first two years, the manufacturer's two-year warranty will still be valid. In addition, the up! comes with a class-leading 12-year body protection guarantee, three-year paintwork warranty and a year's membership of Volkswagen Roadside Assistance which provides vehicle home and roadside recovery in the unlikely event of a breakdown in the UK or Europe. Further and extended warranty and assistance cover can also be purchased if required.

(ends)

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