



ON A CHARGE!

Electric bikes have really come of age with advances in battery technology and the latest generation are lighter and cleverer than ever. Peter Rosenthal spends two weeks testing a Raleigh Dover Deluxe

Remember the Six Million Dollar Man? Lantern-jawed and able to leap over tall buildings in a single bound – ‘Boinnnnnggg!’ He could run forever, stop speeding cars and duff up endless bad guys. This glimpse into a future of clever mechanical aids all looked very exciting to me when I watched it as a small boy.

Well, although I’m still waiting for my rocket car and personal jet pack, part of the dream has now come true as electric bikes have finally come of age. If you wish you had bionic legs, read on...

Living in Nottingham – home of Raleigh – it was great to be able to test a ‘local’ electric bike and this model is the company’s latest Dover Deluxe. It’s actually made in Germany (and carries lots of ‘Best of Britain’ logos and Union Jacks...), with the electronics being supplied by Panasonic and made in Japan. This is vastly preferable to the lower end of the electric bike market where parts are made down to a price in China.

Two unisex frame sizes are offered with the Dover – the charcoal grey crossbar model tested – and a low crossbar version in red and black. Both weigh 23kg, with the battery being the size of a brick, but only weighing 2.4kg.

THE BIKE

Although it is an electric bike, it doesn’t look like one, being styled like a traditional touring bike. The angled back handlebars look very Continental and the bike has been on sale in mainland Europe for a couple of years – an incredible 40,000 of these models are sold there each year! So the technology is tried and tested.

Judged purely as a bicycle it’s a well-made and sturdy bit of kit. The frame is aluminium alloy and has beautifully neat TIG-welded joints (a very skilled and difficult job), while the grey paint finish has an upmarket textured feel to it. It’s well detailed, too, with side-pull brakes



Seat is well padded and comfy, while the stem has a built-in shock absorber



Yes, I lost the toss for the ride home...

and even machined grooves in the wheel rims for the brake blocks to gain more purchase due to the larger surface area. The wheels themselves have over-sized Shimano hubs (the rear one houses internal gears) and relatively narrow rims with low rolling-resistance tyres.

The fit and finish is first-rate and it has clearly been built to last with high-quality components used throughout (eg lots of stainless steel Allen head bolts).

With an upright riding position and a well-

padded saddle mounted on a shock-absorbing seat post, it has a very comfortable and natural riding position. Different frame sizes are offered to suit different inside leg measurements.

THE ELECTRIC BIT

I had expected the electric assistance to take the form of a throttle that you press and then whizz along without pedalling as the motor kicks in. The reality is different and more subtle.

New EU legislation means that the total bike weight must be under 40kg and that the motor can only activate when you pedal and not be more powerful than 250W. Go over these limits and you enter the taxable / insured world of the scooter.

This Raleigh has the most powerful motor available to keep it legally in the pushbike category and differs from many electric bikes in that the motor, battery and torque sensor are all neatly mounted in one place by the crank. This keeps the weight low, means no trailing wires to a hub drive and makes it easier and more effective to seal the unit against water ingress.

Using Lithium Ion batteries is another important feature of the bike – these can be recharged easily, are safe to use and give decent power. Any electric bike still using Nickel Metal Hydride batteries (NiMH) or Nickel Cadmium (NiCd or nicad) cells should be avoided – the batteries are not as good at holding charge and don’t last long when being constantly recharged when partially drained.

The other really clever bit about the Raleigh is the torque sensor. This works out how much effort you’re putting into pedalling and varies the assistance to keep the level of effort that you feel constant. Bionic legs!

Riding the bike with the motor switched off, I



Proven Panasonic crank drive system is incredibly compact



The fit and finish of every detail on the Raleigh can't be faulted

TECH SPEC - RALEIGH DOVER DELUXE

- **Motor:** Panasonic 250W brushless (3.8kg)
- **Drive:** Integrated waterproof torque sensor on crank. Linked to control on handlebars
- **Electronic controller:** Three settings, High – assistance ratio 1:1.5; Medium – 1:1.1; Economy – 1:0.5
- **Range:** High – 25 miles, Medium – 35 miles, Economy – 50 miles



- **Battery:** Panasonic Lithium Ion 26V 10Ah (2.4kg)
- **Charge time:** about 5 hours
- **Charge rate:** 2A
- **Equipment:** Front and rear LED lights (automatic switch-on mode), pannier, battery management and hibernation modes (battery can be stored for six months plus without losing charge), all motor wiring waterproofed with silicone.
- **Frame options:** Low-step frame 45cm (17.5-inch), crossbar frame 53cm (20.5-inch)
- **Gears:** 8-speed Nexus hub
- **Wheels:** 700c
- **Warranty:** 2 years on all Panasonic electronics (inc battery)
- **Weight:** 23kg (inc battery)
- **Made in:** Bike - Germany, electronics - Japan
- **Price:** £1799 (RRP)
- **Contact:** Raleigh UK Ltd, Church St, Eastwood, Nottingham NG16 3HT (tel: 01773 532680; www.raleighbike.co.uk)

had expected to feel some drag from the electric mechanism, but there isn't any. It feels like you're just riding a sturdy touring bike. The extra few kilos of the electric gubbins can't be felt at all.

The controls for the motor are mounted on the left-hand side of the bars and have two buttons: power on/off and a mode button. The mode button toggles between the three different levels of assistance. In High mode there's an assistance ratio of 1:1.5.

On the flat the assistance (and level of battery consumption) is minimal and unobtrusive. Pedal up a hill, though, and the level of effort on the pedals stays the same. At first you're almost unaware of this help as the assistance is so seamless in application. You just feel it's a lot easier than usual to pedal uphill.

This gives you quite a deceptive impression of your own abilities and it's a bit of a shock to the system if your switch the motor off uphill and realise how much work the bike has actually been doing! It most definitely does the business.

With a range of 50 miles on economy mode (or 25 miles on full power), this bike could greatly extend your pedalling range from a campsite.

THE RIDE

To really put the bike through its paces, we travelled up to York to meet up with our cycling-obsessed Polish friends Marek and his wife Domba. To put their two-wheeled credentials into perspective, bikes are their main form of transport and they have every bike-related accessory known to man (including a trailer for their two kids). Marek has even commuted over 40 miles by bike. They live, eat and breathe bikes, so were ideal pedalling partners for this test.

Naturally they live near a cycle route and before long we were heading out of York along the Sustrans Solar System cycle route. This 6.4-mile route has been built on the old East Coast mainline railway and has scale models of the planets to admire on the way. Although it's mainly flat, there are the odd gradients and raised bits over bridges to test the legs.

Marek was first to pedal the Dover and was soon marvelling in the lack of effort compared to his regular touring bike. 'How much is it?' - was soon asked. His wife Domba was far more sceptical and couldn't see the point of electrical assistance - 'my bike isn't hard to ride except



It's a highly skilled fabrication task to get the TIG-welding of the joints this neat



Battery can be locked in place and is about the size of a house brick. It has LED charge indicators on the side



This is a pre-production charging unit and takes about five hours to charge a fully-discharged battery. After our long cycle, it only took an hour to fully recharge our battery



Front suspension soaks up the bumps and is fully adjustable



Battery level is indicated at the top of the display, while three graduated LEDs show the amount of assistance being applied

on the hills, so I don't see why I need one...'

Halfway along the route, after all the adults had ridden the Dover, we stopped at a convenient pub for Sunday lunch and to compare notes.

Everyone had warmed to the Dover and we all agreed that after relaxing with a beer at the pub it was great to be able to have the electric assistance to make light work of the return journey. Many people might use the system switched off on the way to an attraction and then only use it for the way back at the end of the day when they're feeling a bit more tired. It's comforting to have this thought in the back of your mind after a second pint...

With this in mind, come the return pedal, there was a bit of a fist-fight for the Dover. Domba won and 'pedalled' it all the way back home. Something happened to this hardcore biker on the way back and a dramatic change from sceptic to fan occurred: 'maybe you can say to Raleigh it got stolen in York...?' she grinned hopefully.

Despite having covered about three miles in Nottingham, followed by about 14 miles in York, the battery indicated that it still had a full charge. The range quoted by Raleigh would

Buying experiences

therefore seem to be very conservative on level ground (Raleigh comments that it's measured on a range of gradients).

VERDICT

This is a very well made high quality bike in its own right, that you'd probably pay about £1000 for without the motor. It comes fully built-up and Raleigh have gone to great lengths to set up a dealer network in the UK to demonstrate, sell and provide servicing back-up to these bikes.

As a commuter bike it makes a very convincing case for itself and the comfortable riding position and quality make it a good long-term bet for any regular rides. Several of the people testing it noticed details like the extended grip ends to rest your arms on and there are many of these small touches that would make the bike easy to live with.

The cherry on the cake, though, is the electric system. This works seamlessly to give you bionic legs uphill and really couldn't be faulted.

You get used to the power very quickly and it feels entirely natural. Even my 70-year-old neighbour Colin was soon pedalling around my local housing estate on it with great gusto!

The battery can easily be removed (and locks in place with a key for security) and the battery charger can plug in to any handy socket. It doesn't take much current and can be plugged into your 'vans mains system when you're on a hook-up. At 2.4kg you could also buy an additional battery and carry it with you. This could potentially give you a round-trip range of 100 miles, which should be sufficient for even the most fanatical cyclist.



The real benefit of an electric bike: being able to enjoy your favourite tipple without worrying about the pedal back...

At just over 20kg with the battery removed, the bike can easily be stored on most motorhome cycle racks too (we carried it with two other bikes on a towbar-mounted Thule rack without any issues) and is no problem to lift up.

It's also worth noting that the Dover has a two-year warranty on all the electrical components, which is a clear sign of Raleigh's confidence in the quality.

If you're in the market for a well-made electric bike and you're a keen cyclist, then this could be just the thing you're looking for. The fact that it's from such a well-known brand, is tried and tested in Europe, and is backed up by a network of British dealers, makes it a very safe foray into the electric bike market. Just be warned, though, once you've got bionic legs you'll not want to go back to an unassisted bike! ■

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