



inside after use in heavy rain, the pawls may seize and refuse to engage, the springs may break and the bearings wear prematurely. There have, no doubt, been plenty of imaginative get-you-homes, such as using wire to tie the largest sprocket to the spokes, although this loses the freewheel function...

If you dread a stripped freewheel you might consider upgrading to the more reliable freehub-type rear wheel, which won't fail in this way. (Although freehub pawls can still freeze or jam.)

Richard Hallett

Legal

Illegal e-bikes

Q I see lots of delivery riders on e-bikes that seem to me to be illegal. Many of the riders: have a bicycle modified with a hub motor and a sizable battery, sometimes crudely attached with gaffer tape; reach speeds above 15mph without pedalling; have no lights; don't wear helmets. Presumably there's also a higher fire risk when charging these e-bikes? Are these things legal? The police seem to turn a blind eye to them.

David Edwards

A I will deal with these issues in turn but first we need to remember that there are clear health, wellbeing and environmental benefits of cycling,



E-bike deliveries have proliferated

Left: Getty Images

and that legal e-bikes make cycling possible for many, many more people.

Power and speed: 15.5mph (25kph) is the legal limit for electric assistance, and if the vehicle is electrically assisted while going faster than that, it is no longer a legal e-bike. The motor used must be no more than 250 Watts, and if it is greater than that, it is no longer a legal e-bike.

Pedalling: the pedals must be in motion for riding assistance to be provided. If this is not the case, it is not a legal e-bike.

Lights: if this is a legal e-bike then the lighting regulations for pedal cycles apply. If it is legally a motor vehicle, motor vehicle legislation applies.

Helmets are not mandatory for e-bikes. It is therefore legal not to wear one – unless the rider is actually riding a motor vehicle, in which case motor vehicle legislation applies regarding a helmet, licence and insurance.

Battery safety and fire risk: the real issue flows from the purchase of non-reputable brands and the unauthorised retro-fitting of bikes without following published guidance, such as purchasing batteries and/or chargers and fitting them incompatibly. The reference to the gaffer tape installation is suggestive of unauthorised retro-fit work.

Enforcement: the City of London's cycle team was set up in 2023 and is one example of a police force that is seizing illegal and uninsured e-bikes and e-scooters. Indeed, 382 have been seized since July 2023. The team has also issued 4,155 traffic offence reports since then.

The issue of the fire risk of e-bike batteries and chargers is a serious one, and it should come as a comfort to know about the Electric Bike Alliance which is a collection of organisations, charities (including Cycling UK) and businesses working together to counteract misinformation and promote the safe use of e-bikes, batteries and chargers in the UK. The Alliance has launched the e-bike positive campaign: ebikepositive.co.uk.

Nadia Kerr

Technical

Titanium forks

Q Is titanium a suitable material for the forces of a racing bike fork? Yesterday I tried an old Speedwell Titalite with a titanium fork, and it had

little torsional rigidity. This leads me to think that there must be more than one reason why almost no one has since used titanium forks for racing bikes: they are expensive and offer few advantages. Or am I wrong?

DiTBho, on the Cycling UK Forum

Titanium may be roughly half the weight of steel, but it is also about half as stiff, which means a part made in titanium will flex twice as much as if made in steel with the same dimensions. This can be surmounted in a cycle frame's main triangle by oversizing the tubes. This is difficult with a fork as the size of the steerer, in particular, is limited by conventional headset dimensions. There are ways of doing it, however, as the Jones truss fork (right) illustrates.

Richard Hallett

Technical

Drum brake squeal

Q I volunteer with Cycling Without Age in Sheffield. We run an older Triobike Taxi (triobike.com) with a rear drum brake. This brake is prone to squealing loudly. In the medium term we are looking to replace it. In the short term, what are the most likely causes and fixes for this?

Heike Becker

Brake squeal is caused by high-frequency vibration, which can often be cured in a drum brake by snugging but not fully tightening the axle nuts and torque arm fixing, then applying the brake while pushing the cycle forward to take up any clearances between the parts before fully tightening the fixings. De-glazing the shoes by sanding with abrasive cloth may also help. Make sure you don't breathe in any dust this creates.

Richard Hallett

Get in touch

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