

Cycling answers

Your technical, legal and health questions answered by CTC's experts

NO WIND-UP

WHEELS

Q Having read your article in the last issue of *Cycle*, and similar articles before, I feel that further clarification may be needed. The general arguments put forward about crossed spokes being necessary to transmit torque must be oversimplified. I can understand that in normal use, e.g. on a rear wheel, the wheel is subject to a torque most of the time (albeit varying). But to say that radial spokes cannot transmit torque is questionable.

One of my bikes has a radial-spoked front wheel, and hence this wheel has to deal with the most of the braking loads. The wheel (Kysrium SL with alloy spokes) is seven years old and still perfect as is the semi-radial rear wheel of the same set. I'm pretty sure that the deceleration rate achievable is much higher than the acceleration rate. Therefore to say that radial spokes cannot transmit torque is misleading. They may just do it by a different mechanism, presumably 'wind up', which would not suit the general duties of a rear wheel.

Bob Hazell, Bexleyheath, Kent



A Unfortunately the constraints of space and risk of boring our readers oblige me to accept without comment – and even myself to make – the occasional somewhat sweeping statement. So I welcome this opportunity to elaborate and comment upon the subject of radial spokes and braking torque.

In truth, radial spokes can transmit torque, by winding up as you say, until they aren't exactly radial any more. That method of transmitting torque is not a good one though, as it results in either a

large additional spoke tension for a relatively small applied torque and/or considerable movement between hub and spokes at their point of attachment. Very small torques can be carried well enough by this means, but torque of a magnitude sufficient to propel or brake a bicycle causes untold problems in a radially wire-spoked wheels – problems to which the invention of tangential spoking provided an instant solution.

You rightly point out that your radial front wheel is equipped with a brake. But it is a rim brake and the braking force in that case transfers directly from rim to tyre without calling upon the spokes to do anything other than keep the hub central within the rim. When you brake at the rim there is a slight reduction in tension of the spokes as they pass through an arc towards the front and bottom of the wheel, and an increase as they rotate backwards and upwards, but these tension changes are small. Most importantly: rim brakes produce no hub torque and no wind-up.

Disc brakes and drum brakes, being attached to the hub, are a totally different kettle of fish: they impose even greater torque loads than the act of pedalling and such wheels must also have tangential spokes. But the only torque experienced by the spoking of a rim-braked front wheel is that due to bearing friction in the front hub. This tiny torque is well within the range of those very small torques that I suggested above could be carried without causing any problems in a radially-spoked wheel.

Chris Juden

IN DARK ON REFLECTORS

LEGAL

Q Having ventured recently into the dark zone by getting and enjoying a recumbent trike, a question has been bugging me. How on a recumbent can the pedal reflector regulations be complied with, what with the pedal being nearly vertical? Even if I were able to get reflectors for my pedals, they would face towards the sky and the ground!

Chris Juden

CYCLING ON A BYPASS

HEALTH

Q I am a returning cyclist but have had a gastric bypass recently to help with my diabetes (no longer taking any insulin or tabs). I am

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I did ask the same question with an email to road.safety@dft.gsi.gov.uk. This was three months ago and even with a reminder I have still not had any response. I would be interested in any views or opinions that the CTC may have.

Chris Wearing, Corby, Northants



A The answers to your questions are: they can't, the regulations suck, and that's the official CTC line!

We think that an additional normal reflector (i.e. white in front, red to the rear), or extra lamp, should be allowed to substitute for front and/or rear pedal reflectors, and not just in the case of a recumbent. There's all those clipless pedals for which reflector sets are either not sold or get smashed the first time you put your foot on the wrong side of the pedal!

I suggest that instead of DfT you write to your MP about this. Heck, I suggest everyone writes to their MP about this! Do it now, whilst the darkness is still with us!

concerned that if I undertake my goal of commuting to work every day (a round trip of 20 miles), then I might run out of gas. Any advice you might be able to give me regarding getting the right kind of fuel into my system would be welcome. My stomach only holds 3-4 ounces now so I appreciate I might have to eat more regularly whilst cycling. An opinion of more experienced cyclists would help.

Bob Melia, Manchester

A Even without the complication of gastric bypass surgery to consider, a ten-mile commute each way is a fairly ambitious goal, and anyone new to cycling might expect it to be hard for the first couple of months. It might be worth looking at getting a folding bicycle and using public transport to reduce the distance initially, building up to your 20-miles-a-day goal over six to eight weeks. At any rate, leave yourself plenty of time so you don't have to rush it.

That said, a ten-mile ride is probably not enough to cause you to 'run out of gas'. This sensation, also known as 'bonking' or hitting 'the wall' kicks in when the body's glycogen stores are exhausted, forcing the muscles to fall back on fat metabolism. Fat requires almost twice as much oxygen as glycogen for its metabolism. The oxygen is delivered to the muscles by the cardiorespiratory system, whose capacity limits your overall performance.

With regular exercise the capacity of the heart and lungs to deliver oxygen will improve, and the amount of fat the muscle burns initially will be increased. This means your glycogen stores will be conserved for longer. If you do 'bonk', say on a longer ride at the weekend, the amount of carbohydrate you need to begin to restore your blood glucose is not great, and your new smaller stomach shouldn't be too much of a problem. It's better to eat little and often if you're diabetic in any case. Take energy dense foods along with you: flapjack, for example, or a piece of fruitcake, made to diabetic standards (dlife.com seems to have a good selection of recipes) and enjoy the restorative surge of energy it will bring.

Dr Douglas Carnall

UNDERSIZED RIMS

WHEELS

Q I have a (cheap import) folding bike with 16-inch wheels. That is,

the tyres are marked 16x1.75 with no ISO marking and no indication on the rim. For a replacement tyre I bought a Schwalbe marked as 54-305 (16x1.95). However, this is too loose on the rim – not by much, but loose enough for the tube to push the tyre off the rim.

I can also buy tyres sized 16x1.75 (47-305) and 16x2.00 (50-305) but I understand that these are all designed for the same sized rim and so not right for mine. Can you offer any advice as to what size tyre I should be buying?

Richard Foxley, Horsell, Surrey

A Your understanding of tyre sizing is correct. And since (to my knowledge) there is no other slightly-smaller standard size with which 16 x something-with-a-decimal might possibly be confused, it would appear that this cheap bike has cheap and nasty undersized rims with bead seats a shade smaller diameter than the standardised 305mm. It doesn't take much to let a tyre bead lift clear of the rim flange when all the slack accumulates in one place. The rims may also have a sub-standard flange height.

Alternatively it's possible you were unlucky with your purchase and got an oversized tyre, but not very likely with a good brand like Schwalbe.

The cure for undersized rims (short of new ones) is to increase their bead seat diameter by wrapping a few layers of PVC tape all around inside them. The 'bead seats' are like benches lining each side of the rim, on which the tyre 'beads' (edges) sit. Lay the edge of the tape right into the corner with the 'rim flange', i.e. the back of the 'seat'. But you don't want to add any more thickness to the tape that already lines the central 'well' of the rim, as a shallow well hinders tyre fitting. To avoid that, I slit the middle of the tape roll with a craft knife, so as to get two narrow strips that'll wrap each bead-seat separately and only partly overlap the edges of the original rim tape. Add successive layers until tyres seat snugly.

Chris Juden

NORMAL LONGS

CLOTHING

Q Being the 76-year-old owner of a pair of equally old skinny legs, I am not a fan of Lycra and have trouble buying suitable, full-length, cycling trousers. I own an excellent pair of Hebden Cords for winter use, but would prefer something lighter for the rest of the year.

Quite simply, I require trousers that

taper to the ankles, obviating cycle clips, that are quick drying and wind-proof to some extent, lightweight and have some reinforcement in the saddle area.

K M Carr, Cubert, Cornwall

A Thanks to the current trend for mountain bikers to avoid the roadie's skin-tight Lycra look and to prefer something 'baggy', it is possible at this moment (like any fashion, you can't expect it to last!) to buy cycling-specific leg-wear that looks reasonably normal and also appeals to traditional tourists – but don't tell the mountain bikers that or they'll drop it like a hot potato! Mostly it's just shorts, but there are also a few longs in this style.

Endura have a particularly good range of 'baggy' longs – see www.endura.co.uk.

Like the shorts, these have their Clickfast system, by which a Lycra short liner can be fitted. Unlike the shorts though, Endura longs are not sold complete with a liner and (as I've found with the pair of their Hummvee baggy shorts that I own) it works perfectly well to wear them over any Lycra short (i.e. not 'clicked fast'), or even with normal underpants – although I prefer the extra comfort of padded lycra for longer rides.

Chris Juden



WHEN IS CYCLING NOT CYCLING?

LEGAL

Q In response to recent action taken against cycling midemeanors, such as jumping red lights and riding on the pavement, I would be interested if there is a legal distinction as to 'riding a bike'?

Clearly wheeling a bike is not riding, just as being sat astride it with both feet turning the pedals quite obviously is. But what about: standing astride with feet on ground; scooting with one foot on the pedal; freewheeling with feet off the pedals; pushing with the feet hobby-horse style; balancing stationary with feet on the pedals?

I suspect that this hasn't been definitively defined, and so as such would someone fined for 'riding' through a red light have a case if he had stopped pedalling and was merely freewheeling at the time?

Patrick Kershaw, Oxford

A As far as I am aware, there is no definition of cycling. I would agree that wheeling a bicycle would not be regarded as cycling. I would also take the view that standing astride a cycle with feet on the ground would also not constitute cycling. However, where the rider is using the bike in 'hobby horse' fashion then this probably would be regarded as cycling. Equally, I would have thought that having one foot on the pedal and using the bike as a scooter could also be regarded as cycling.

Hopefully this will provide guidance to cyclists who are tempted to 'ride through a red light'. The safest and best solution is to comply with the traffic laws.

Paul Kitson

CYCLE TO WORK SCHEME

LEGAL

Q After two years of deliberation my employer has chosen not to implement the Cycle to Work scheme (which was described in the Feb-Mar 07 issue of Cycle), mainly on two grounds.

First, since the employer is technically the owner of the cycle for the first year, the company has a duty of care to keep it maintained and would be liable for any accident caused by poor maintenance.

Second, if the employer cannot prove that the employee is continuing to use the bike mainly for 'qualifying journeys' (i.e. commuting) then HM Revenue and Customs can reclaim saved tax from both parties, and impose penalties. My employer claims there have been instances of companies falling foul of both these risks.

What is your view on these two points, and are you aware of any cases such as those claimed?

Steve Harrison, by email

A In terms of the first ground for objection, I cannot see that any employee would have any realistic chance of pursuing a claim against an employer in such circumstances. Whilst technically the employer is the owner of the bike, the reality is that the employee has custody and position of the bicycle and will be responsible for any maintenance issues. I do not see this as a valid objection.

With regards to the second objection, Mr Harrison's employers should be aware that many organisations are now providing assistance to their employees through the Cycle to Work schemes. I am unaware of any HM Revenue & Customs investigations into any alleged abuse of the schemes. The Government is committed to increasing the number of journeys made by bicycle in the UK. In practical terms there would be enormous difficulties proving that the employee had not been using the bike for qualifying journeys.

Unfortunately, the Cycle to Work scheme cannot be imposed upon employers. However, in my experience the majority of businesses are willing to participate in Cycle to Work schemes. This is an easy way to provide an additional fringe benefit to their workforce.

Paul Kitson



CONTACTING THE EXPERTS

Each issue, Cycling Answers addresses a selection of questions that we receive. We regret that Cycle magazine cannot answer all unpublished queries – in particular, medical ones. Please note, however, that general and technical enquiries can also be made via the CTC Information Office, tel: 0870 873 0060, cycling@ctc.org.uk. And don't forget that CTC operates a free-to-members advice line for personal injury claims, tel: 0870 873 0062.

Medical and legal enquiries for possible publication should be sent to the Editor (see p80). Technical enquiries can be sent to the Editor but will get there quicker if they go direct to Technical Officer Chris Juden (same address as the Information Office).