Cycling answers

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

THE EXPERTS

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■ TECHNICAL

QUICK-LINKS MADE EASY

Here's a much quicker and easier, tools-free way of opening a Sram Powerlink or KMC Missing-Link (than I described in the last issue) from CTC member and Chartered Mechanical Engineer Ian Sheppard.

'Have the chain on your largest chainwheel, with the quick-link to the front of it. Hold the crank and pull the lower length of chain forward one tooth on the chainwheel. Move the one tooth's-worth of slack up and around the teeth, so that the quick-link and one other link form a sticking-out V. Tap the point of the V sharply with a something hard and heavy (a hammer is ideal but a rock will do) and the quick-link will slide open – just like that!'

I tried this method on several chains. Some quicklinks needed little pinch first (or a sharper tap) and it helps to aim at the side of the link without a slot at that end, but if you do that it always works a treat! Ian assures us that there is no danger of damage to the teeth, because the chain is forced into their roots where they are strongest.

Chris Juden

■ HEALTH

DEEP VEIN THROMBOSIS

Q Last October I fell victim to severe DVT. Despite cycling 10 miles each morning over the Lancashire fells and more at the weekends, it turns out that I'm a Factor V Leiden, and so prone to thrombus.

However, earlier last year I changed my saddle from a 30-year-old Brooks Professional to a Prologo Choice TI, and while the latter is noticeably narrower, they're both comfortable.

A number of people have said it's the saddle at fault, the smaller surface area increasing the pressure on the veins in the groin area. The local hospital said they saw a number of cyclists for DVT, but didn't know why. Will a narrow saddle tip the balance if one is at risk from DVT?

William Fuller

A DVT (deep vein thrombosis) refers to a blood clot in one of the deep veins of the leg (you cannot see these veins beneath the skin). Pain and swelling of the calf are the most common symptoms. DVTs are of particular concern because part of the clot can sometimes break off and travel to the lung (pulmonary embolism), which is a serious condition. For this reason they are usually treated with anticoagulants (blood thinners) such as warfarin.

Risk factors are numerous but include immobility and an increased tendency to clot (thrombophilia), which can be acquired or inherited (e.g. Factor V Leiden).

I am not aware of any evidence to suggest that one particular design of bike saddle is any more likely to give rise to DVT than another. Anatomically, the veins involved are not near the saddle pressure area and so I cannot imagine that any saddle would obstruct the blood flow in these deep veins.

Hence my advice would be that your choice of saddle should not be influenced by your DVT. Since immobility is one significant risk factor, cyclists ought to be at lower overall risk than the population in general. It is possible that, for cyclists, dehydration could be a factor. That could contribute to the onset of DVT, but this ought to be outweighed by any cyclist's higher activity levels.

Dr Matt Brooks

■ TECHNICAL AND LEGAL

CYCLING WITH A PASSENGER

Q I regularly carry my nine-year-old son around on the rear rack of my Dawes Galaxy. At about 25kg he's a similar weight to my annual touring load. My question is: where do I stand in this matter with regards to the law? Does this differ in any way to the way I used to carry him when he was younger on a purpose-built child's cycle seat?

Andy Bubble

A It is straightforwardly illegal (under the Road Traffic Acts) for two people to ride a pedal cycle 'unless it is specially constructed or adapted for the

carriage of more than one person'.

I cannot rule out the possibility that you may have constructed a seating arrangement for your son of proportionate strength and safety (bearing in mind your son's greater weight) to any proprietary childseat. But it sounds like you're carrying your son around on the rear rack. That may be common practice in the Netherlands, as the picture opposite shows, but it's illegal in Britain.

We know that some luggage carriers are rated far in excess of 25kg, so weight is probably not an issue here. What matters is the safety and security of whatever further adaptations may be deemed necessary under British law for a bicycle to carry a passenger, over, above and in addition to a highly-rated rear carrier.

Having acted for the UK in the production of the European Standards for luggage carriers and also bicycle childseats, I can tell you that the reason 25kg is a standard rating for the former is that childseats may be mounted on these carriers and children up to 22kg may be carried in such seats, which commonly weigh about 3kg themselves.

Through this work I have also learned quite enough about what can go wrong with less than adequate child-carrying arrangements on bicycles to be pretty sure we have the right policy on this in the UK.

Without inspecting the adaptation in question, I wouldn't like to say more.

Chris Juden

Paul Kitson adds: I would not recommend the rear rack as a method of transporting passengers, even if they are relatively lightweight nine-year-olds.

Whilst a touring bike can carry quite heavy loads, this does not mean that it is a safe method of transporting passengers, even if the overall weight is similar.

If the rack or any bolt snapped, I am of the view that this raises the possibility of the child having a potential civil claim against the parent or guardian for choosing what would very likely be regarded as an unsafe system of transporting them. It is an entirely different matter to transporting a child on a properly designed and tested cycle childseat.

A further issue is that there might be insurance indemnity problems if the child was injured as a result of the rack giving way. I could imagine that the insurers may well argue that the parent or guardian was in breach of express or implied policy terms.

(Opposite) Unless you're in the Netherlands, carrying a passenger like this is illegal

■ TECHNICAL

BIKE & KAYAK

Q My daughter drew me this card. Being a keen cyclist and sea kayaker, and considering rising fuel prices, transporting a kayak by bicycle seems an attractive option! Are there any legal requirements or restrictions regarding cycle trailers, e.g. length, width, height, lighting, brakes?

Bjoern Backe, Morpeth

A In Britain, there are no legal restrictions on what can be towed by a pedal cycle. Cycle trailers are mentioned in the Road Vehicle Lighting Regulations, which demand a cycle-type rear lamp and a triangular reflector (ECE type III or IIIA). Apart from that: under Construction and Use regulations you may be required to stop and satisfy the police that your brakes are efficient. Efficiency is not defined, but British Standards expect a new bicycle to stop in 5.5m from 24km/h, and it would be wise to consider the effect that a large trailer is likely to have upon stopping distance.

Be particularly wary of a trailer that couples higher than its centre of gravity as that will tend to lift the back of the bike when decelerated, at best reducing the effect of the rear brake and at worst tipping the rider over the handlebars! That's not likely to be a problem with the vertical stacking illustrated. I'd worry more about it tipping sideways and suggest two on the bottom with one on top.

Towing a canoe or windsurfer behind a bike is quite a normal thing in the Netherlands, and there you can buy ready made trailers – for one board or kayak only (see www.surfcarry.com). Three is something else, but might not be too much for a three-person tandem (i.e. triplet) to pull, provided it has really good brakes.

Chris Juden

Q&A

Technical • Legal • Health

It's not rare for chains to break, but seldom like this

■ TECHNICAL

SHIMANO CHAINS CRACKING UP

A Mark Hitchenor of Worksop sent this picture of his Ultegra 10-speed chain after it failed. About one in ten of the outer plates are cracked at the rivet hole. Chains don't usually fail like that. Normally a plate pulls off one end of a rivet, which then either tears out of the adjacent plate, or bends and snaps that plate in the middle. This is completely different.

Cracks radiating from the rivet holes are evidence that these plates were too brittle to withstand the stress of riveting. Mark suspects faulty heat-treatment, which looks likely. In that case you would hope it's only one batch, but going by the number and geographical spread of similar reports on the internet it must be a big batch.

The problem appeared confined to Ultegra chains until we also heard from Paul Walters in Swansea, who found identical cracks in a Shimano 8-speed chain (CN-HG53) after it had broken on his girlfriend's nearly new bike.

Shimano's agents are aware of these problems, but we have not heard of a recall. Anyone finding cracks that look like those in the picture should nevertheless return the chain where they bought it and request a replacement, as an unexpected failure can be dangerous.

Chris Juden

■ TECHNICAL

WHICH SIDE TANGENTIAL?

Q I have a modern bike (Specialized Roubaix) where the rear wheel is built with radial spokes on the gear side and tangential spokes on the other. A friend has a bike with the opposite, i.e. tangential spokes on the gear side and radial on the non-gear side. Is there a sound technical reason for the different lacing?

David Fox, Worthing

A A rear wheel needs some tangential spokes, somewhere, to convey drive torque (twisting) from the sprockets to the rim. The obvious place to attach these spokes is right by those sprockets. Torque can't reach spokes on the left side of the hub except via the hub barrel, which to save weight may be too slim and thin-walled to stand much twisting. In that case the left spokes might as well be radial, which explains your friend's bike.

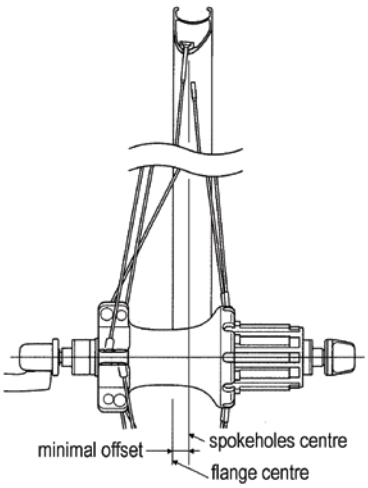
Derailleur sprockets have another effect upon a rear wheel. To make space for that many of them, the hub flanges are 'dished' to the left relative to the centreline of the rim. So the left spokes lean over more than the right spokes, which accordingly must be tighter to balance the sideways forces. The closer those right-side spokes become to the centre of the wheel, the greater their tension compared to the left. But as any wheelbuilder will tell you, the secret of a durable wheel is uniform tension.

Another thing you'll hear about is rotating weight and how it hinders acceleration. Spoke nipples are heavy, so it seems a good idea to reverse the usual attachments. However, it gets a bit congested with all those nipples attached to the hub, especially when they face opposite directions. Nipples at the hub make tangent spokes somewhat staggered. On the right-hand side of the wheel this would put some spokes even further from the sprockets, causing even greater differences in tension. So Shimano, in some of their road wheels, opted for a stiffer hub barrel and put the tangential spokes on the left where their stagger won't make as much difference; whilst snugging a set of radial spokes close-up to the sprockets. Shimano achieve a further reduction in dish with an offset rear rim (shown below).

Maybe your friend's bike has a Campagnolo rear wheel? This manufacturer deals with the dish problem in a totally different way, with 'G3' spoking in which every radial left spoke is opposed by two on the right at about the same tension, instead one that's twice as tight. American Classic also make wheels like this. They call it 'Aero 3'.

So there you have two ways of ironing out rear spoke tension differences. Which is best? Since Shimano reverted to rim nipples and tangential both sides in 2010 (but kept the offset rim), I guess it isn't what they did before!

Chris Juden



CONTACTING THE EXPERTS

Send health and legal questions to the Editor (details on p80). We regret that Cycle magazine cannot answer unpublished health and legal queries. Technical and general enquiries, however, are a CTC membership service. Contact the CTC Information Office, tel: **0844 736 8450**, **cycling@ctc.org.uk** (general enquiries) or Chris Juden, **technical@ctc.org.uk** (technical enquiries). You can also write to: **CTC, Parklands, Railton Road, Guildford, GU2 9JX**. And don't forget that CTC operates a free-to-members advice line for personal injury claims, tel: **0844 736 8452**.