

Q & A

Your technical, legal and health questions answered.

This issue: chain wear, startled horses, hub-gear oil, shoulder pain, alternatives to Shimano shifters, and more



TECHNICAL

DRIVETRAIN LONGEVITY

Q What's the best replacement strategy to maximise the economic life of the chain and the front chainrings and rear cogs? How many miles should a reasonable quality chain last on a bike with derailleur gears, if cleaned and lubricated regularly? If I replace the chain but not the rear cogs, the new chain starts jumping off the most worn gears for a few weeks until it 'wears in'. I am tempted to leave well alone, but I don't want to risk a chain breaking! Should the rear cogs always be replaced at the same time as the chain? What about the front chainrings?

PETER HALL

A Chain and sprocket service life will depend on factors such as environmental conditions, frequency of cleaning and lubrication and, as suggested by the question, replacement

strategy. Expect between 1,500 and 3,000 miles from a 10-speed chain.

It helps to establish what counts as 'worn out'. A chain is worn enough to affect transmission efficiency when it lengthens by 0.75% but has some life left if extended mileage is the aim, in which case it should ideally be replaced when it lengthens by 1%. There are several chain-checking devices available that make a fast, accurate assessment of chain wear. Or you can check with a ruler by measuring across 24 rivets: unworn, they will cover 12 inches; worn by one percent, 12.12in (12 and one-eighth inches).

At less than 1% wear, the chain, if clean, will still run smoothly on the sprocket teeth. Sprocket wear will have been low and a new chain will ride the barely-worn sprocket teeth without jumping. If the chain is allowed to lengthen further, it will quickly wear the sprocket teeth into a hooked shape and a new chain will jump on them until it wears to match, which it will do rapidly. Should a new chain jump, the sprocket may be considered worn out.

Some cyclists go to great lengths to extract maximum service life by operating chains and cassettes in rotation in the

hope that components will wear out slowly but simultaneously. A typical scheme might be to use, from new, a cassette with three or more new chains consecutively, each replaced when worn as noted above but retained for later. The three used chains are then re-used and replaced in sequence after wearing to some further measurable degree. All sprockets and chains get replaced when the last of the three (or more) chains reaches the chosen wear limit.

As a way to extract maximum mileage, the system has some merit but it does mean riding around on well-worn, inefficient parts for a long time. It is simpler to replace the chain when worn by 1% or 0.75%. Early replacement extends sprocket life to four or five chains. When, eventually, a new chain jumps on any of a well-used cassette's sprockets, the cassette needs replacing immediately. Chainrings should be replaced when their teeth become noticeably 'hooked'.

RICHARD HALLETT

MEET THE EXPERTS



RICHARD HALLETT
Cycle's Technical Editor



DR MATT BROOKS
Cycling GP



PAUL KITSON
Partner from Slater & Gordon (UK) LLP

Photo: © Andrzej Ttkarski / Alamy





● Let the horse rider know you are there by calling out rather than ringing a bell

LEGAL HORSE SENSE

Q Could you give me guidance on the following: a cyclist is cycling along a country lane. He/she approaches a horserider from behind, going in the same direction. The cyclist gives no audible warning of his/her approach; the horse shies; and the rider falls and is injured. What is the legal responsibility, if any, of the cyclist?
ALAN MCDUGALL

A According to the police, there were 133 recorded horse rider casualties in 2011, including four fatalities. There are, of course, likely to have been many incidents that were not recorded. The British Horse Society estimates (horseaccidents.org.uk) that there are about 3,000 incidents per annum. The Highway Code, rules 49 to 55, provides advice for using horses on the road.

All road users owe a duty to take reasonable care to avoid causing damage to others on the highway. Road users should understand the particular vulnerability of riders and horses and behave courteously towards them at all times. Horses have the potential to be easily spooked by other road users and can potentially pose a risk to other road users, as well as to the horse and rider. Horses are easily frightened by cycles. A frightened horse can be a serious hazard on the highway.

Give an appropriate greeting before you attempt to overtake, particularly if the road is narrow. Listen out for any instruction from the rider and follow what they say. When overtaking, give the horse plenty of room and proceed slowly. It is better to wait for oncoming traffic to pass than to be forced too close to a horse. Do not do anything that is likely to startle the horse, such as shouting loudly or using a bell or horn. In rural areas, there is a risk

of colliding with horses, particularly on winding country roads when negotiating blind corners.

If a horse is spooked by the actions of a cyclist and causes injury or damage, or if a cyclist collides with a horse, then there is the potential that the cyclist could be subject to a civil claim for any injury or loss caused (or even the sanctions of the criminal law). It is important that all cyclists have third-party liability insurance. Membership of the CTC provides the valuable benefit of £10m of third-party indemnity cover.

PAUL KITSON

TECHNICAL ALFINE OIL

Q I have just bought a Shimano Alfine SG S700 hub gear. The cost of the lubrication oil for routine maintenance is very high. Can you recommend a suitable alternative at a reasonable price?
HAROLD BROWN

A Good results may be obtained using Automatic Transmission Fluid (or ATF), which is available from any auto parts store.

RICHARD HALLETT



● Automatic Transmission Fluid can be used in place of Alfine oil



Mens Evolve Short Sleeve Jerseys



Ladies Layla Short Sleeve Jerseys



Mens Aero 50 Bibshorts



Lusso
 www.lusso.bike
 info@lusso.bike
 t. 0161 724 5222
 f. 0161 724 9393
 Unit 1, Withins Street, Radcliffe, Manchester, M26 2RX



● Grease can deteriorate over time, but usually far exceeds its nominal shelf life

» **TECHNICAL GREASE IS THE WORD**

Q Does unused grease and oil deteriorate or degrade over the years, and is it advisable to renew ball bearings when servicing a wheel?
TONY BROADBERRY

A Unused oil and grease can degrade over time – the former usually through contamination with moisture, and the latter by hardening and separation of the base fluid and thickener. Storage life as stated by the manufacturer might be five years for motor oil and two years for specialist greases. In practice, either oil or grease kept under suitable conditions will remain usable for decades provided it is not to be subjected to extreme service conditions.

If there's no sign of wear or damage in bearings, there's no point in replacing them. Cartridge bearings should be checked for roughness, free play and any visual sign of damage such as rusty seepage past the seals or shields. Any of these means they should be replaced with new bearings having the same numerical code, e.g. 6805. The balls in cup-and-cone bearings should be visually inspected for pitting and rust. If either is found, the races and cones may need replacing at the same time (if available).
RICHARD HALLETT

HEALTH SHOULDERING THE PAIN

Q I fell off my bicycle a couple of months ago and injured my shoulder; apparently the acromioclavicular ligaments got stretched. I am now able to cycle again

but notice that my shoulder is very uncomfortable afterwards. I wondered if I am delaying the healing process by continuing to cycle, and I also wondered if there were any exercises that might assist with the healing process?
MRS C PROSSER

A The acromioclavicular joint (ACJ) is the articulation on top of the shoulder between the acromion part of the scapula (shoulder blade) and the clavicle (collar bone). It is stabilised by ligaments. When moving the arm above the head, the ACJ undergoes movement.

ACJ injuries may result from a direct fall on to the shoulder. They can range from minor ligament sprains which usually heal with conservative treatment (sometimes with a sling, initially followed by physiotherapy) through to more severe tears causing disruption and separation of the joint and occasionally requiring surgical repair. This injury is sometimes called AC separation. Symptoms include pain over the ACJ and, in more severe cases, a visible or palpable deformity.

A physical examination and sometimes x-rays are required to make the diagnosis and rule out more serious injuries such as a fracture. In minor injuries, a combination of rest, ice, anti-inflammatories and physiotherapy may be all that is necessary.

If your shoulder is still very uncomfortable after a ride, it may be advisable to hold off cycling for the time being. Although exercises can be helpful to strengthen the joint, I would recommend seeking professional advice from a physiotherapist first, especially in view of your ongoing discomfort. ACJ exercises should usually begin when the ligament has healed and there is no pain.
DR MATT BROOKS



● Rest, ice, anti-inflammatories and physiotherapy can treat minor ACJ injuries

Photo: © iStockphoto.com



● Shimano-compatible shifters are available from Microshift

TECHNICAL QUALITY 8 OR 9-SPEED

Q I'm building up a Genesis Croix de Fer frameset. Is it still possible to buy decent quality transmission components that are 7/8 or 9-speed compatible, or is only the cheapest Shimano stuff available? I need straight bar pod-shifters, front and rear mechs and a triple chainset. Any ideas?
BGNUKEM via CTC Forum

A Take a look at MicroSHIFT's R8 or R9 eight- or nine-speed components, which cover the mechs and shifters. They are available for both flat and drop bars. See microshift.com.tw. Suitable Shimano-pattern cassettes are still available and will even fit an 11-speed Shimano freehub with a suitable spacer. One chainset option is Shimano's FC-R453 Octalink for 3x9 speed use.
RICHARD HALLETT

TECHNICAL TOP TUBE RUST

Q My 15-year-old Dawes Galaxy has developed tiny blisters along the top of the top tube. When scraped away, and viewed with a hand lens, pinpoint spots of rust appear to be pushing up the lacquer. Is this terminal or dangerous? Can anything be done to arrest the process – Waxoil/WD40 etc?
DHOWES via CTC Forum

A If the rust has come through the tube from the inside, you will be able to poke an object such as a small screwdriver through it and make a hole, in which case you need a new top tube at the very least. More likely is that perspiration has dripped onto the tube and has penetrated thin paint, starting rust pockets where it has done so. Coating with WD40, as noted, may protect temporarily, but a re-spray will do the job properly although you may be content simply to remove the existing paint and re-paint by hand.
RICHARD HALLETT

Contact the experts Email your technical, health and legal questions to editor@ctc.org.uk or write to CTC Q&A, PO Box 313, Scarborough, YO12 6WZ.

We regret that Cycle magazine cannot answer unpublished queries. But don't forget that CTC operates a free-to-members advice line for personal injury claims, tel: 0844 736 8452.