

This tip sheet covers some of the longer-term issues of bike ownership, addressing problems typically seen after several years of use. It is more complex than the Basic Maintenance sheet, and some knowledge of the names of bike components is assumed. If you hope to keep your bike going for years to come, read on...

## ***DON'T LOSE YOUR BEARINGS***

Any turning or spinning part of a bike normally requires ball bearings for it to run smoothly. They are used in the wheels, the pedals and bottom bracket, the headset, and the freewheel. After a while, most need a bit of new grease and adjustment. With maintenance of this type every 6 or 12 months, good bearings will last for years. However, if a bearing is used without grease it will wear quickly and may rust. And if a bearing is a bit loose but continues to be used, all the weight and forces are placed on only one or two balls instead of being shared equally among all. At best this causes rapid wear and at worst can cause almost instant damage.

It is almost always cheaper to fix a bearing problem early than to leave it. If spotted in time, a wheel bearing rebuild could cost £20, or if all it needs is a little adjustment it could be even cheaper. But if the bearing surfaces are damaged from continued use, often the only option is to replace the whole wheel for anything between £50 and £150. The same is often true for headsets, bottom brackets, etc. Now is the time to check!

Stand beside your bike, grab one of the wheels at a point where it passes through the frame or fork and pull it a little towards you, as if you were trying to pull the bike sideways. Then push the wheel in the opposite direction. Repeat this back-and-forth motion a few times in quick succession. Is there a little click or rattle? Does either wheel feel a little loose? If so, you probably have loose wheel bearings. Now take one of the cranks (the arm that connects the pedal to the rest of the bike) and pull it towards you as though you were trying to pull the bike sideways, and then push it away in the opposite direction. Repeat several times in quick succession. Does it rattle or feel loose? If so, you may have loose bottom bracket bearings. Finally, stand over the bike, apply the front (right-hand) brake, and push the handlebars back and forth several times. Can you feel a rattle or looseness? If so, you probably have loose headset bearings.

If you have discovered any loose bearings, or if in any doubt, please consult a mechanic soon. Although loose bearings do not normally make the bike unsafe to ride, in terms of cost: a stitch in time saves nine!

## ***CHAIN WEAR***

Cycle chains wear out with use. In turn, a worn chain quickly wears the teeth on your cassette and chainrings. Once the teeth are significantly worn they will not work with a new chain, and the whole drivetrain (the chain and all the cogs) must be replaced. There are essentially two choices: replace the chain regularly, e.g. every 6 months, in order to preserve the cassette and chainset; or run the whole lot into the ground and then replace it all, e.g. every three years. Neither approach is right or wrong, it's a matter of weighing up the pros and cons. On a new and expensive bike, spending around £15 on a chain every 6 months might be a price worth paying to save £200 of drivetrain. On a cheaper bike, the whole lot may only be worth £50 so it is cheaper to replace it all every 3 or 4 years instead of spending around £80 on new chains in the same period.

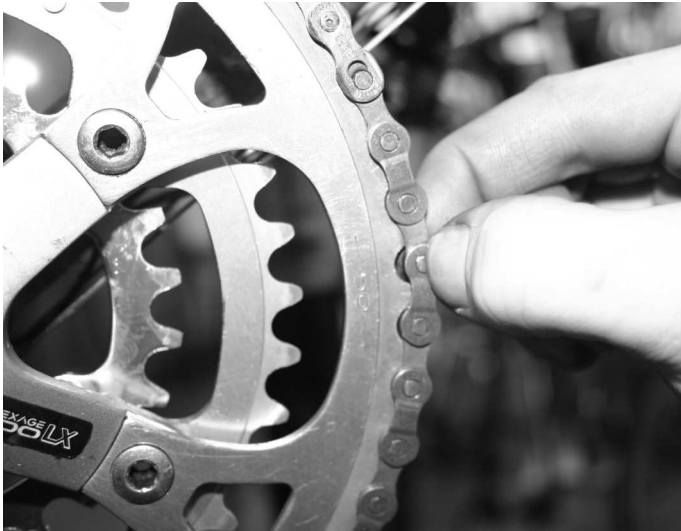
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*Brand new chain and chainring: no discernible wear*



*Part-worn, but probably still OK to replace the chain*



*Worn beyond chain replacement, but still usable*



*Worn out: drivetrain is slipping and must be replaced*

To confirm whether your chain is worn, change gear into the largest chainring and with your fingers pull the frontmost chain link forwards, away from the chainring. If it lifts away from the chainring, then the chain is worn (see photos). Check with a mechanic whether it needs replacement before the rest of your drivetrain also becomes excessively worn, if you decide this is a worthwhile option for your bike. Even if your drivetrain is too worn to replace the chain, this does not necessarily make it unusable. It will be slightly less efficient, and may be more likely to snap under pressure (although this is probably only true of very worn chains or clumsy gear changes), but there is an argument for getting another year or two of use before replacement.

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The real problem with a severely worn drivetrain is that the chain will slip when pressure is applied to the pedals, causing them to jump forward alarmingly. At this point the only option is to replace the whole drivetrain: chain, cassette and chainrings.

A chain can take anything from 500 to 5,000 miles to wear, depending on how clean it is kept, whether it is properly lubricated, and whether the bike is used in dry weather or all conditions. And how you pedal is very important: changing into a lower gear and spinning fast is certainly better for the chain – and also kinder to your knees! Standing up and stomping hard in a big gear will wear everything out more quickly. The design and quality of the chain also effect its longevity: a narrower chain will wear out quicker than a wider one assuming all else is equal, so 9-speed chains wear out long before 5-speed ones, for example. Wider old-style single-speed chains last longest of all, and even when very worn will continue to work acceptably well. On bikes where the chain is kept clean by a full chaincase, the chain can last for decades. Modern 9 and 10-speed chains have their advantages, but they do wear out quickly, especially if not kept clean and lubricated.

## **CHAIN CARE**

The best way to damage a chain is to run it dirty or dry: it must be clean and well lubricated to work properly. Oiling the chain regularly is half the story, but keeping it clean is just as important. Grit and mud from the road will stick to the chain oil to form a very effective grinding paste which quickly wears away at the metal. The black sticky mess that covers a neglected chain is a mixture of oil, grit and even powdered steel from the chain itself. If it's not removed, this gets carried back into the chain next time oil is applied, accelerating wear still further. For this reason, oiling a dirty chain can sometimes be more damaging than not oiling it at all.

For a chain which is too dirty to simply be wiped clean, the only option is a full degreasing with a solvent or detergent. The easiest option is to use a chain cleaning tool. This is a small plastic device with a reservoir for cleaning fluid and a series of brushes through which the chain passes, a bit like a miniature car wash. There is no need to remove the chain from the bike, it takes 5 or 10 minutes, and the results are impressive!

An alternative method is to remove the chain, immerse it in a 3-litre soft-drink bottle half-filled with chain degreaser, and shake the bottle vigorously. You may also need to scrub the chain with a stiff brush to remove any caked dirt. Pour the dirty degreaser into a suitable container and rinse the chain in running water. Leave it overnight to dry fully before re-fitting to the bike and lightly lubricating. (Remember, the rivets on 9 and 10 speed chains aren't reusable and must be replaced with a special connecting pin or "missing link", "powerlink" or similar). It is possible to use other detergents such as slightly diluted washing up liquid, but they are rarely as effective, and the alkali and sodium can cause corrosion and damage to some metals, so make sure you rinse immediately and thoroughly. Alternatively, you could use a solvent such as petrol, Diesel, or white spirit. The method is the same, but use fresh solvent instead of water to flush out and rinse the chain (in a well ventilated area; take care not to get any on your skin; and dispose of it responsibly afterwards).

Once it's clean, the best option is to prevent the chain from getting into such a mess again, so every time you oil the chain in the future, first wipe off any dirt by holding a rag around the lower length of chain and turning

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the pedals backwards. Push the rag upwards to clean the lower side of the chain, and pull it downwards to clean the upper surface. Then apply oil sparingly: backpedal again whilst continuously applying a small amount of oil to the chain, avoiding the wheel rims and brakes. There is no need to oil the cassette or chainrings. The aim is to lubricate the entire chain with a minimum of oil. Then take a clean rag and lightly wipe the chain to remove surface oil: lubrication is only required *inside* the chain links; excess oil is counter-productive as it will attract dirt. Cleaning and oiling little and often is the key. If you can keep the chain clean and lightly lubricated in this way, it will be more efficient, wear less quickly, and rarely need a full degreasing.

Several types of oil are available. Normal chain oil is a good winter choice but attracts dirt if too much is used. 'Dry' oil is thinner and evaporates to leave a low-friction coating (e.g. Teflon) which stays clean, but it is easily washed off so must be reapplied often and is only suitable for dry weather. 'Green Oil' is an eco-friendly option which lubricates the chain well and seems to be pretty clean, but must be reapplied fairly frequently.

## **FRAME AND FORK**

A collision can cause instant damage, but even just normal use can eventually result in fatigue cracks and then breakage. Keep an eye out for hairline cracks in the paintwork, especially in high stress areas such as around the top of the fork, underneath the downtube, around the bottom bracket, and around where the rear wheel attaches. Other structural components such as the stem, seatpost and handlebars can also crack, so inspect these too. If all else is equal, an aluminium frame will be more susceptible to cracking than steel in the long term, but in reality either can. It's well worth checking from time to time!

## **SEIZED SEATPOST OR STEM**

Aluminium seatposts can corrode and become stuck in the frame if left untouched for a period of time. This is also true of handlebar stems, and is a particular problem with a steel framed bike. A fully seized seatpost cannot be removed by force and must be heated out, damaging the frame's paintwork. Even in an aluminium frame the seatpost can become seized because corrosion means it becomes a tighter fit. To alleviate the problem, remove your seatpost and stem every 6 to 12 months, clean off any corrosion, and lubricate with grease. Most other steel to aluminium interfaces such as pedal threads and bottom bracket cups should be greased prior to fitting for exactly the same reason.

## **WHEEL RIMS WEAR OUT TOO**

Most people know that brake blocks wear down and need replacing periodically; it is less commonly known that wheel rims also wear out in the same way. Modern aluminium wheel rims are fairly soft and over time the brakes will wear the rim down until it is too thin to hold the pressure of the tyre. Newer rims have a built-in wear indicator in the form of a groove in the centre of the rim's braking surface to indicate the thickness of metal remaining. On an unused rim the groove is 0.5 to 1 mm deep; once it's worn away almost entirely it's time to change the rim. If this groove is no longer present on a wheel where it used to be, or if the braking surface is at all concave, damaged or worn looking, get it checked immediately by a professional mechanic.

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