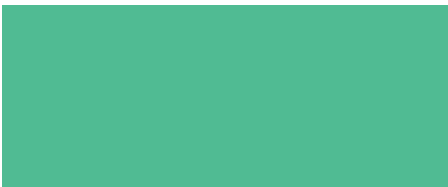


Cycle Maintenance




London Cyclists' Trust



**London
Cycling
Campaign**

CYCLING - GOOD FOR LONDON ... GOOD FOR YOU!



Riding a brand new bike around town is a great experience, everything works efficiently and you don't get strange clunks or whirrs as you go. You may find you have a similar feeling when you get your bike back from a full service at your bike shop.

The great thing is, if you take a little bit of time to regularly look after your bike you will retain it in this condition, making your ride faster and more enjoyable and extending the life of the bike. By keeping your bike in good condition it will be more reliable and you will need fewer replacement parts, so saving money.

This booklet will guide you through basic bike maintenance, detailing parts of the bike, how and why to keep your bike clean and safe and how to fix a puncture.

You may decide to go to a bike shop for everything or just for the more technical things. However much you decide to take on yourself, it is important to find a good bike shop - for servicing, for parts and tools, and for advice.

If you are interested in learning how to do things yourself, you could attend a maintenance workshop (these are run through London Cycling Campaign(LCC) local groups -- see the LCC website (www.lcc.org.uk) or look in London Cyclist magazine (free to members of the LCC)for further details. Otherwise, you can get a good book and teach yourself. If you are going to attempt your own repairs it is a good idea to start simply and only tackle one part at a time, or you could end up with your whole bike spread out in front of you, with no idea what goes where - or missing a vital part. If you attempt something for the first time on your own, draw a sketch or note down the order in which parts come off the bike - it will help you reassemble them correctly.

All images: LCC

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Maintenance table

What maintenance you do and how often depends on how much you are riding. The following table assumes daily riding; if you ride less then adjust accordingly. Check the following:

Daily	
Brakes Lights	Check working, tighten if need be. Check working and still bright.
Weekly	
Chain Tyres	Clean, oil and wipe down. Pump up.
Monthly	
Brakes, gears, wheels and tyres	See section in this booklet
Six monthly	
Bolt on parts The stem and headset/ aheadset (many new bikes have these instead)	Tighten everything and check things are in good repair. Stand over the front wheel holding the brakes on and push backwards and forwards (hold the top of the forks as well if you have front fork suspension). If there is any movement visit a bike shop.
Yearly or before a big trip	Check your whole bike yourself and get a service.

If you pay attention as you ride you will be able to notice any changes in your bike, for instance if the gears no longer change smoothly or the handling feels a little odd. Bike maintenance is best done 'a little and often'. As you learn how to spot problems, you will know what to fix and when.

Toolkit

You don't need much to maintain the basics on your bike; a few tools, some time, good light and patience to carry through your maintenance methodically. You may be slow to start with, but as with anything, once you know how it gets quicker and easier.

You should start by getting the following tools and equipment:

Bicycle pump

Spare inner tube

Puncture repair kit

A set of tyre levers (plastic is better)

Light oil and grease, lube (see Oiling and greasing below)

Cleaning rags

A set of Allen keys

A flat head and a Philips head screwdriver

Set of spanners - commonest sizes: 8, 9, 10, 11, 12, 15 mm. Also 13, 14, 17, 19 mm. A small adjustable spanner is useful too.

Plastic gloves (you can get them free from many garages) to keep your hands clean or a good hand cleaner.



If you decide to do more advanced servicing yourself then you will need specialist tools. Ask your favourite bike shop: you will need to consider the cost of the tools, how often you will use them, and how sure you are of your skills or how willing you are to develop them.

Oiling and greasing

Whenever you come to put a bolt or a cable back on your bike, you should lubricate it with a touch of grease. This will help prevent it from getting seized or rusted in place. The same goes for seat posts and handle-bar stems - don't fit them 'dry'. Oil or specialist lubrication should be used for the chain and can be used on cables. It is best to use a light oil like 3-in-One® or you can get specialist lubes, designed for the different conditions you may ride in, from bike shops.

Using tools

Wherever possible, use the correct tool for the job. It's easier and safer. Make sure the tool is fully engaged before you apply force to it. A damaged tool may slip off, causing you to hurt yourself.

Brakes

Testing your brakes

It is vital that your brakes work well. To test them, stand over your bike, put the front brakes on and try pushing forward. The bike shouldn't move at all. Then do the same for the back brakes. You should be able to put the brakes on without squeezing the levers too hard. The levers should not touch the handlebars. If the bike moves forward at all, or you have to pull hard on the levers then you will need to make adjustments.

There are a number of different brake systems, including cantilever, V-brakes, and side-pull (all of which use the friction of brake blocks against the wheel rim in order to stop the bike), hub or disc brakes (both of which use friction at the hub of the wheel) and hydraulic disc brakes (which works in the same way as motor vehicle brakes). The following is a general guide to simple adjustments for the commonest types: cantilever, V-brakes, and side-pull brakes. If you have hub, disc or hydraulic brakes, or if you don't feel confident doing these adjustments but are at all concerned then do take your bike for a check up at your bike shop.



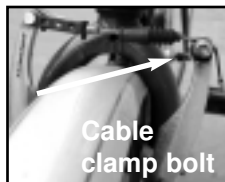
Adjusting Screws



Tightening the brakes

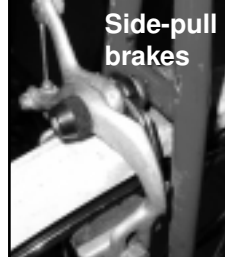
You can make small adjustments with the adjusting screw, which will either be where the cable comes out of your brake lever or at a cable-stop. On side-pull brakes it may be where the cable meets the brakes. You will need to loosen the locking nut on the inside of the adjuster, and screw the adjuster out to take up slack in the cable. Once you are satisfied with your adjustments make sure you re-tighten the locking nut.

You can also tighten the cable manually. Loosen the cable clamp bolt (see image) enough to allow the cable to be pulled through with pliers (or fingers). Pull the cable through a small amount, tighten the bolt, test the brakes and if satisfied fully tighten the bolt.

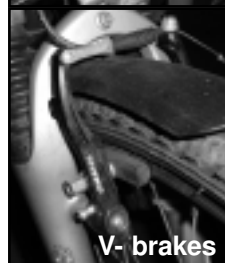


Cable clamp bolt

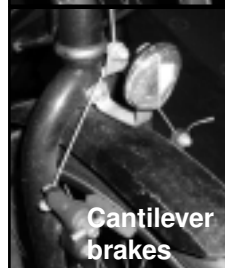
You should try to get the blocks as close to the rim as possible; however, if your wheel is not true (if there is a wobble as you look at it going round) then you may need to allow more space to prevent the brakes rubbing, at least until you have trued the wheel. By adjusting the tension of the spokes you can pull the rim in one direction or the other and this will true the wheel. To get your wheels trued take your bike to a bike shop, attend a bike maintenance workshop or get a good book on bike maintenance and learn how to do this yourself.



Side-pull brakes



V- brakes



Cantilever brakes

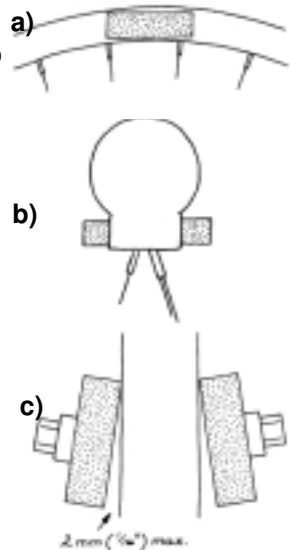
Replacing your brake blocks

If your brake pads have worn down then you will need to adjust or replace them. NEVER let your brake pads wear down so that the metal scrapes the rims! Note: Some brake pads also have a feature that lets you know when they need replacing. If replacing the brake pads, pay attention to how they fit and the order of any spacers or washers for fitting the new set.

a) Whether you are adjusting or changing your brake pads you need to make sure they are aligned correctly, so that when in use they are fully touching the rim and do not touch the tyre.

b) They should be square so that the entire brake pad will touch the rim. Place them so that they are no more than 3mm from the rim when not in use (though if they rub in places you may need the wheel trued).

c) If your brakes squeal, 'toe in' the brake blocks - the front of the block should hit the rim fractionally before the back.



Illustrations:
Peter Cartwright

Replacing the cable

Over time cables will stretch and need replacing. If your cables are damaged, frayed or sticking you should replace them. You can remove the cable by undoing the cable bolt (see tightening brakes), cutting off the cable cap end and sliding the cable through the casing and out of the levers. Pay attention to how the cable is threaded and fits through the lever for when you put in the new cable; there should be slots in the lever to allow the cable to fit in and out easily. This is a good time to lubricate the cable casing with some light oil.

You fit a new cable from the lever, back through the outer and down to the brake. There are two types of cable end: pear shaped for drop handlebars and barrel shaped for flat handlebars. Make sure you tighten the cable clamp fully once you have set up the correct tension (see 'Tightening the brakes', above). If your brake levers have a slot for easy cable installation, make sure the corresponding slot in the adjusting nut is positioned so that the cable won't come out by accident.

Wheels and tyres

The most important maintenance for the tyres is to keep them pumped up hard; this makes them less vulnerable to punctures, protects the rim when you go over bumps and helps you to cycle more efficiently. Pump them up as hard as you can with a hand pump, or if using a track pump or car foot pump, pump up to the recommended tyre pressure listed on the tyre wall (units: psi = pounds per square inch, Bar/ATM = atmospheres).

Tyres will usually have one of two valves: Presta or Schrader. Presta valves are skinnier and often seen on road bikes. Before you pump up a tyre with a Presta valve you will need to unscrew the end, and re-tighten afterwards. Handle Presta valves with care, as they are fragile. Schrader valves are the same as car tyre valves and commonly seen on mountain bikes and bikes with wider tyres. Older bikes may have other types of valves. Ask your bike shop and consider buying a more modern inner tube.

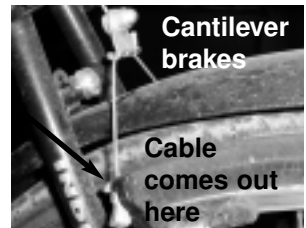
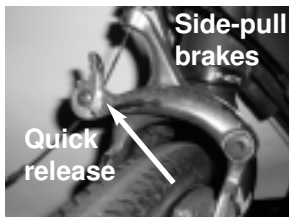
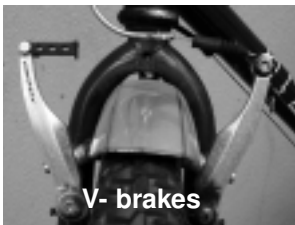


Regularly check tyres for glass shards or other sharp things that have stuck in the surface, and remove these before they are able to work through to puncture the inner tube. Clean the rims and spokes, especially if you have ridden on roads that have been gritted for snow, as the salt will damage the rims. Keeping the rims clean will help you to brake efficiently and lengthen the life of your brake pads.

Wheels can become un-true with time, either as a result of going over a large bump or spokes loosening. In order to re-true a wheel, the spokes need to be equally tensioned. You can take your bike to a bike shop for this, or you can learn how to do this by attending a bike maintenance class or by following the instructions given in a good bike book.

Disengaging the brake to remove the wheel

For V-brakes, pull the brakes together so that the cable can be lifted free of the moveable arm attached to one brake lever. On side-pull brakes there may be a button on the side of the brake lever, or a quick release lever on the brake used to disengage the brakes. If not, you may have to deflate the tyre or remove one brake block in order to get the wheel off. On cantilever brakes pull the cable out of one arm of the brake through the slot. Whatever you do don't forget to re-engage your brakes before you ride your bike again!



Removing the wheel

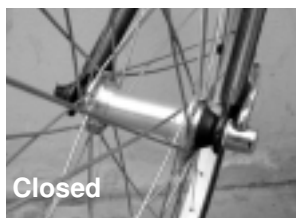
To take out the wheel, disengage the brake. Your wheel may be held in place with a wheel nut or a quick release nut (see below on how to undo the quick release); you will need a spanner to undo a traditional wheel nut. The front wheel will drop out easily, while the rear wheel will need to be lifted out of the chain. Fitting the wheel is the reverse of this: make sure you have the wheel firmly back in place and it is properly aligned. Make sure you re-engage the brake.

Older bikes have horizontal rear drop-outs , which allow you to adjust the position of the wheel in the frame. Make sure the wheel is dead centre between the chain stays before you tighten the wheel nuts/quick release lever.



Quick release mechanism

Pull the lever open and undo the opposite nut enough so you can drop the wheel out. To replace the wheel fit between the brakes and into the drop out, either re-tighten the nut so that you have to push hard with one hand to close the lever. The lever must be closed tightly before riding, and should read 'close' not 'open'.



Fixing a Puncture and replacing an inner tube

Having a puncture can be extremely annoying. However it should be easy to fix. If you are not used to fixing punctures it can take some time, but does get quicker with practice.

If you get a puncture, first check the tyre to see if you can find anything that may have caused the puncture. If there is something obvious you may be able to pull out that section of the tube and patch the spot without removing the wheel and then the tube. Otherwise you may have to remove the tube and find the hole. In some situations you may decide it is easiest to replace the inner tube and fix the puncture at your leisure.

Many people choose to use puncture resistant tyres, which have protective strips of materials such as kevlar inside them.

Removing the inner-tube

Remove the wheel (see pg 8), undo the valve cap, remove the threaded metal collar (if there is one), empty any air out of the tube and push the valve back into the rim.



1

Fit 2 or 3 tyre levers into the rim about 2cm apart and pull them back, levering one side of the tyre out and over the side of the rim. Take care you are not pinching the tube while you lever the tyre out.



3

Remove the middle of the 3 levers, and hook it under the tyre about 2 cm past one of the other two. You then have 3 levers in place again, but a longer section of the tyre is hooked over the rim.



5

Take the middle lever out and repeat the process a few times. Once about a third of the tyre is hooked over the rim, the remainder will come off more easily.



2



4



6

The tyre should remain sitting on one side of the rim. Grab the inner tube at the valve hole, push the valve up through the rim and pull the valve out from the tyre. Pull the rest of the inner tube out.

Mending a puncture

To find the hole you can either pump the tube up and feel/listen for the air coming out or hold the tube under water and see where bubbles appear.

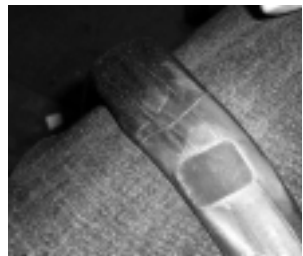
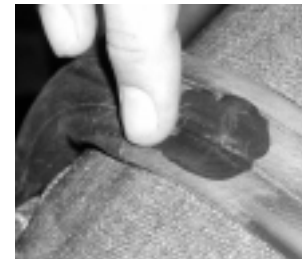
Clean the area around the hole and make sure it is dry.

Lightly sand the spot round the hole, and mark the hole with chalk or a dab of rubber solution.

Apply more rubber solution until you have an area slightly larger than the patch, keeping the hole in the middle all the time. Let the rubber solution dry but don't let any dirt stick to it. While you're waiting for it to dry, inspect the tyre for bits of broken glass that may have caused the puncture. Remove anything sharp sticking in the tyre.

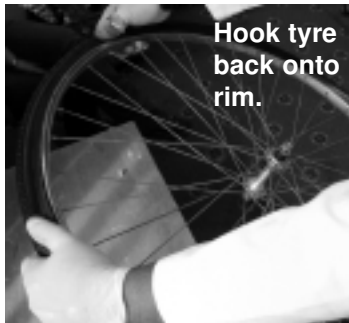
Peel off the backing paper/foil/plastic on one side of the patch and be careful not to get dirt or fingerprints on the patch itself. Place it on the inner tube so that the middle of the patch covers the hole, and make sure that the patch is in good contact with rubber solution all around the edge. Squeeze the patch hard into the rubber solution for about a minute. Then fold the inner tube in half so that the backing paper/plastic on the patch splits down the middle. Carefully peel the backing off from the middle towards the edge to avoid lifting the edge of the patch. Dust the top of the patch and any exposed areas of rubber solution with chalk/talc to stop it sticking inside the tyre.

Finally, give the inner tube 2 or 3 strokes of the pump before putting it back on the wheel. This prevents the tube getting pinched when you put the tyre back on.



Replacing the inner tube

Starting at the valve hole, put the inner tube onto the rim under the tyre. Then hook the tyre back onto the rim with your hands, making sure that the inner tube does not get pinched, and that the tyre is seated properly on the rim. You may need to use a tyre lever to get the last section of tyre back on the rim. Replace the threaded collar, pump up the tyre and replace the dust cap.



Gears

Most gear systems on bikes are derailleur. Some bikes have hub gears; however as these are comparably uncommon in the UK and need less maintenance than derailleur systems they are not covered in this booklet. Derailleur gears use a combination of different sized front and rear chain rings with a chain that can be moved between them so that different pedalling force is required to drive the back wheel.

Most modern gear systems will be indexed; this means that you will move the gear lever one click and the chain will shift exactly onto the next chain ring. On some older systems, there is no click: you have to teach yourself how far to move the lever to get an accurate gear change.



By maintaining your gears you will have an easier ride and save yourself money (parts will last longer and not need replacing so often). To get the most out of your chain you should clean and oil it regularly, especially after riding in wet and muddy conditions.

You may notice that over time your gears go out of alignment, so that as you cycle you are unable to change gears smoothly, the gears jump or the chain falls off. These problems can occur as your gear cables stretch with time, the chain, cogs and sprockets wear or if the gear mechanism gets bumped.

Adjusting your gears

If the gears are not changing smoothly you may only need to make a small adjustment. If you have indexed gears you will be able to make this by turning the barrel adjuster by the gear levers or at the derailleur.



Cleaning and oiling your chain

You should clean your chain before you lubricate it; you can use a detergent, degreaser or special cleaning product from your bike shop. There are special chain cleaners on the market, which fit over your chain, or you can run your chain through a rag coated in cleaning material, until no more dirt comes off. To get your chain really clean you should clean every link individually. You should then clean the chain rings at the front, the sprockets at the back, jockey wheels and all other related parts.

Once these are all clean you will need to oil the chain and exposed metal parts. Oil the inside of the chain, running it around the chain wheel and sprockets a couple of times as you go, then wipe off the excess. Excess oil or grease on the outside will attract dirt; this will wear out the chain. It is best to use a light oil like 3-in-One® or you can also get specialist lubes from bike shops designed for the different conditions you may ride in.

Cranks

If a crank starts to come loose, it will quickly get damaged if the bike is ridden. Tighten the crank bolt as soon as you notice any play. Most modern bikes have cranks held on with bolts that take a 14mm socket spanner or an 8mm allen key. You may have to remove a plastic dust cap first - unscrew it with a coin/screwdriver or - if there's no slot - flip it out with a narrow screwdriver blade. Replace the dust-caps afterwards.

Pedals

If you decide to replace your pedals, be careful! Left-hand pedals have a left-hand (reverse) thread, while right-hand pedals have a right-hand (normal) thread. Careful inspection of the pedals will reveal which is which - one is marked L and the other is marked R. If you force them in to the wrong crank, you will damage the thread, and probably end up buying a new pair of cranks.

Maintaining bearings

Wheel hubs, pedals, bottom bracket and handlebars all contain greased bearings. They need to work properly for the bike to work efficiently and to reduce wear on moving parts. Maintaining or replacing bearings is beyond the scope of this booklet, but you can learn how by attending one of the LCC's maintenance workshops, or by buying one of the many maintenance books on the market. Bike shops sell the specialist tools needed for working on bearings.

Cleaning

Most parts of the bike that require cleaning have been covered above; however, it is worth keeping your bike frame clean and checking for rust. You can cover any chips in the paint with nail varnish or enamel paint to protect the frame from rusting. Wipe down your reflectors and lights so they are visible.

You should oil all exposed metal parts and grease parts where metal meets metal. Don't oil the rims or brake blocks.



Handlebars

Brake levers

Gear Shifters

Gear cables

Brake cables

Head tube

Brake blocks

Front Brake

Front forks

Valve

Quick release/
wheel nut

Spokes

Tyre

Rim

Front Drop outs

Front Hub

Saddle

Pannier Rack

Seat Pillar/post

Seat clamp

Top tube

Seat Tube

Seat Stays

Lock

Freewheel/rear block

Rear hub

Barrel adjuster

Rear Derailleur (gear
changer)

Chain Stays

Chain

Jockey wheels

Front Derailleur

Bottom bracket

Crank

Chainwheel

Pedal

Sprocket Cluster
(cassette)

There are 12 information booklets in this series. The other topics are:

Bicycle Security - lock it or lose it!

Transporting Your Bicycle

Cycling with Children

Cycling - what to do if you are in a collision

Buying a Bike

Cycling to Work

Cycle Sense

Cycle Maintenance

Getting started on a Bicycle

Leisure Cycling

Cycling and the Workplace

These can be ordered by calling the LCC or downloaded from

www.lcc.org.uk. Published June 2004.

Many thanks also to the London Cycling Campaign staff and volunteers for sharing their expertise for these information sheets.

London Cyclists' Trust in partnership with London Cycling Campaign (LCC) works to improve conditions for cycling in London. For further information on the LCC and membership benefits such as insurance, bike shop discounts, legal advice and social rides call 020 7928 7220, email office@lcc.org.uk, or go to the website: www.lcc.org.uk.

London Cyclists' Trust reserves the right not to be responsible for the topicality, correctness, completeness or quality of the information provided. Liability claims regarding damage caused by the use of any information provided, including any kind of information which is incomplete or incorrect, will therefore be rejected.

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