



sweltrac
uniting London's transport

Teddington
Travel to work network

Bike Maintenance Course



Document Content

Course Content

Introduction

Bike Diagram

Bike Fitting

Pre ride Bike Check

Cleaning the Chain

Lubricating the Bike

Adjusting the Gears

Adjusting the Brakes

Puncture Repair



Course Content

- **Introduction**
-
- **Bike Fitting**
-
- **Pre ride Bike Check**
-
- **Cleaning the Chain**
-
- **Lubricating the Bike**
-
- **Adjusting the Gears**
-
- **Adjusting the Brakes**
-
- **Puncture Repair**
-
- **Question & Answer session**
-
- **Feedback Forms**

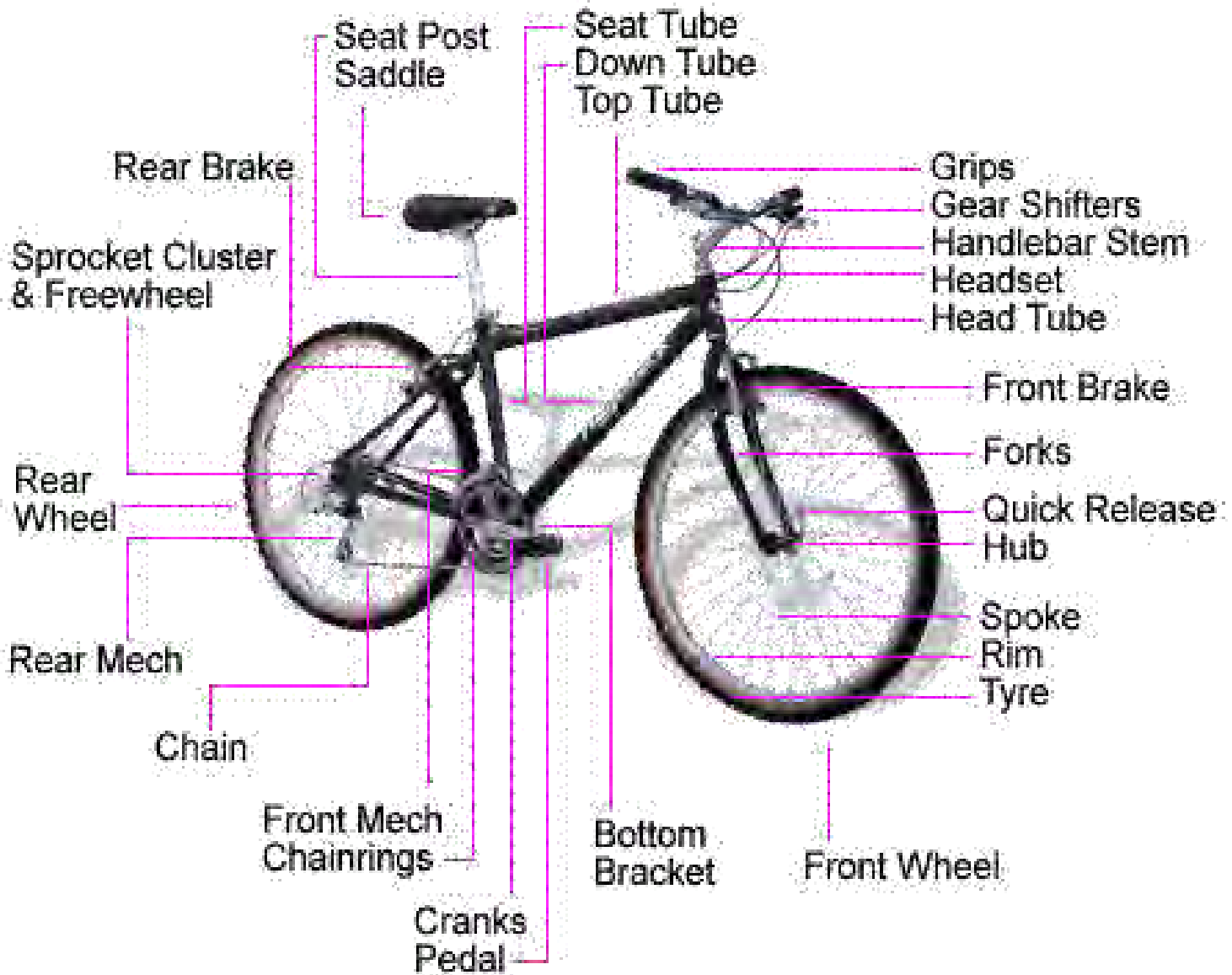


Introduction

This course is supported by the Teddington Travel to Work Network, a joint initiative developed by SWELTRAC and the London Borough of Richmond upon Thames. The network aims to improve workplace travel options for staff and reduce the number of single occupancy car trips to and from work in the Teddington area through promoting and facilitating alternative modes of travel such as cycling, walking, public transport and car-sharing.

<http://teddington.sweltrac.org.uk>

Bike Diagram





Bike Fitting

Frame size

- Frame size is the most important component for comfort; it cannot be changed
- You should have 1" to 2" of standover on road bikes; 3" to 4" on mountain/hybrid
- Your local bike shop will be able to help with frame fit determination

Saddle Height

- While seated, you should have a straight leg when your heel is on the pedal and the pedal is at its lowest point
- Wear your cycling shoes to ensure proper seat height
- Beginners may want their seat a bit lower for comfort and security

Seat Angle

- From the side of the saddle, the nose and back of the saddle should be horizontal/level
- The middle of the saddle should create a dip from front to back
- The saddle can be tilted no more than five degrees up or down from level for personal comfort

Handlebars

- Handlebar setup is a personal preference; higher for comfort, lower for performance
- Drop bars: lowest flat part of bars should be horizontal/level
- Mountain: bars should sweep down slightly to allow your elbow to bend outward to absorb bumps

Brake & Gear control

- Flat bar brake levers should be inline with your arms so that you do not have to bend your wrist i.e. 45°
- Gear levers should be adjusted for comfort, so that your thumb can rest on them



Pre ride Bike Check

(ABC Quick Check)

A is for air

- Inflate tyres to pressure listed on the sidewall of the tyre
- Use a pressure gauge to ensure proper pressure
- Check for damage to tyre tread and sidewall; replace if damaged or worn

B is for brakes

- Listening check – spin wheels and listen for any rubbing sounds & investigate
- Inspect pads for wear; replace if there is less than 1mm of pad left
- Check pad alignment; make sure they do not rub tyre or go below wheel rim
- Check brake lever travel; at least 25mm between bar and lever when applied

C is Cables & Chain

- Make sure the cables & housings are not fraying or split
- Inspect the chain to ensure it is oiled

Quick is for quick releases

- Hubs need to be tight in the frame; your quick release should engage at 90°
- Your hub quick release should point back to ensure that nothing catches on it
- Inspect brake quick releases to ensure that they have been re-engaged

Check is for check it over

- Take a quick ride to check if gears and brakes are working properly
- Inspect the bike for loose or broken parts; tighten, replace or fix them
- Pay extra attention to your bike during the first few miles of the ride



Clean the chain

There are many ways to clean a chain, the simplest and therefore an action you are more likely to take is to simply clean it with an old rag. Pull the rag a long the length of the chain, then rotate the chain around to get to the next unclean section and repeat the action.

Lubricating the Bike

How often you oil your bike depends on how you use it. Ideally, the moving parts will always be lightly oiled. A dry, squeaking bike needs oil. A bike covered with grime means you're using too much oil (or the wrong oil).

Use an oil specifically designed for a bike. One for the chain (a wet one for commuting & a dry one for your Sunday best bike) & a light spray oil with a tube for the rest of the bike.

Applying oil is just a matter of dripping or spraying some on, operating the part to get the oil down inside, letting it sit for a while for the oil to fully penetrate and then wiping off the excess.

Chain: Oil the top run of links (one drop of oil on each roller) then rotate the chain round for the next un-oiled part of the chain, repeat until you've lightly coated the entire chain. Wipe off any excess after 10 minutes.

Brakes: Oil the pivot points where the brake parts move against each other. If there's a quick-release mechanism and/or adjustment barrel (sometimes on the brake lever;), lightly oil these, too (on the threads for the adjustment barrel). **Do NOT get oil on the brake pads or rims!**

Derailleurs: Oil the pivot points on the derailleur bodies. And, for the rear, apply a little to the centre of the derailleur pulleys. Oil the adjustment barrel, too.

Cables: Most brake and shift cables only require a small amount of oil because the outer cable is nylon-lined. If your bike has split housing stops, these allow accessing the cables and oiling. It's done by opening the brake quick release to create slack and then pulling slightly to free the housing from the frame stops. You can then slide the housing to get at the cable inside. For derailleurs, shift onto the largest cog or ring and then move the levers back without pedalling. This creates enough slack to get the housing out of the stops and oil the shift cables (if necessary, don't forget to oil where the cables pass beneath the bottom bracket, too).

Suspension Fork: Double-check that your oil won't harm nylon or rubber seals. If it's safe, you can apply a few drops to the upper fork legs and push down on your handlebars a few times to compress the fork and work the oil past the seals. This will keep the fork's action smooth.



Adjusting the Gears (Rear Derailleur Adjustment)

Set screws

- Set screws set the limits of how far the derailleur travels across the cassette; turn clockwise to decrease the range and vice-versa
- 'H' (High gear) screw sets how far the derailleur travels away from wheel; this is for the small cog
- 'L' (Low gear) screw sets how far the derailleur travels towards wheel; this is for the big cog
- Once set these screws should not need adjusting again

Barrel adjuster

- Where the housing and cable enter derailleur, plastic piece is threaded for adjustment
- Can be screwed by hand for quick adjustments; affects cable tension for shifting
- If installing new cable, start with barrel adjuster all the way clockwise

Derailleur black plastic outer cable

- Black plastic outer cable protects inner gear cable and allows it to turn corners
- Too short will affect shifting adversely; leave enough for a gradual sweeping bend
- Inspect regularly and replace if any cracks or damage found

Derailleur hanger

- Part of frame that derailleur threads into; replaceable derailleur hangers are common
- Hanger must be vertical and parallel to frame to allow proper derailleur alignment
- Bike shops have a tool that can straighten derailleur hangers unless it's replaceable

Time for a new derailleur

- Grab lower cage and gently move side to side; replace if there is excessive play
- Main cause of worn derailleur is main pivot that bolts to frame
- Derailleur Linkage may also weaken or loosen adversely affecting shifting accuracy

Throwing a chain

- If chain shifts into spokes, turn 'L' set screw in (clockwise) half turn increments until fixed
- If chain shifts onto frame, turn 'H' set screw in (clockwise) half turn increments until fixed
- A thrown chain can tear the derailleur off the bike and destroy wheel or frame



Will not change gear in one direction

- Can't shift to easier gears: screw barrel adjuster anti-clockwise (increase tension)
- Can't shift to harder gears: screw barrel adjuster clockwise (decrease tension)
- Only adjust barrel a half-turn at a time, checking adjustment the bike after each

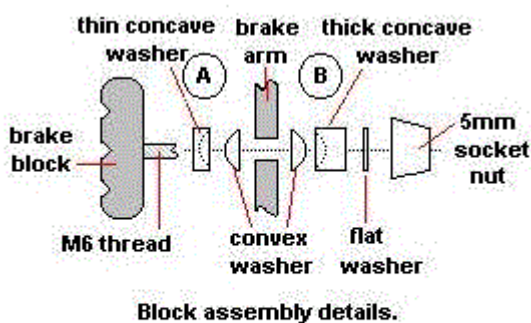
Gear change will not work even after adjusting

- Check derailleur pivots and jockey wheels for wear
- Check inner gear cables are not sticking in the outer gear cable

Adjusting the Brakes (V Brake Adjustment)

Remove & Inspect Brake Pads

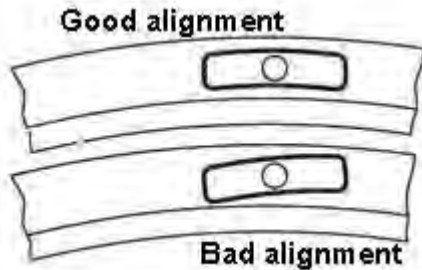
- Start by giving the cable some slack. Turn the lever's barrel adjuster in all the way. Then pull the protective rubber back and disconnect the brake cable's quick release mechanism.
- Then remove the pads. V-brake pads have two sets of positioning washers on each side of the brake arm. Be careful to watch how the washers are positioned so that you can re-install them correctly.
- Inspect your pads. If they are worn past the indicator line, or have metal poking through the surface, you'll need to replace them. If they look ok, use sandpaper/file to re-surface both pads.



N.B. It is most usual to have thick concave washer on the brake block side and the thin one the other side.

Install & Align Brake Pads

- Now re-install the brake pads, with the washers in the same order as they were before.
- Tangent alignment is the setting of the pad tilt. Viewed pad from the side, the front and back of the pad should be level to the rim. One side should not be higher or lower than the other side. Use care when tightening the pad fixing bolt and hold the brake pad to keep it from twisting.



- Vertical face alignment is the setting of the pad vertical surface relative to the rim vertical surface. The vertical face of the pad should be set parallel to the face of the braking surface.



so the pad face is flat against the rim.

Note: V-brake pads are different from traditional pads in that they don't require any toe-in. Both the front and rear of the pad should contact the rim at the same time. Because of this, v-brakes will sometimes squeak when applied. If you've re-surfaced the pads and they are still noisy, try cleaning the rims with soapy water.

Align Brake Arms

- With the pads installed, check the brake arm position. Both arms should be facing straight up and down when the pads are contacting the rim. If they are too wide apart, or too close together, you may have to re-arrange the pad washers.
- One set of washers is usually thicker than the other. To correct brakes arms that are too far apart, make sure the smallest set of washers are closest to the pads. To correct brakes arms that are too close together, make sure the largest set of washers are closest to the pads.

Adjust Cable Tension

- Now re-connect the cable and adjust the cable tension on the brake arm by pulling the cable through the pinch bolt and tightening. You'll have to play with this adjustment until your brakes feel good.



Brake Arm Centring

- Make sure both pads now have equal clearance, and are not rubbing against the rim. Both pads should contact the rim at the same time. If not, you can adjust the centring by tightening or loosening the side adjustment screw with your screwdriver.



Puncture Repair

Remove wheel

- Set bike upside down on handlebars and seat before removing wheel
- Front: undo brake then wheel quick release (or axle nuts) and remove
- Rear: shift into smallest cog on rear, undo brake then wheel quick release (or axle nuts) and remove

Deflate tyre

- Remove remaining air by depressing valve
- Schrader (car style valve) is a spring loaded valve and must be depressed
- Presta is an air sprung narrow valve and must be unscrewed then pressed
- Mark position of valve on the tyre wall to aid in finding the puncture

Remove one side of tyre from rim

- Using tyre levers, unseat one side of tyre; start an inch away from the valve stem
- For tight rim/tyre combinations, multiple tyre levers are needed
- Many mountain and hybrid bikes tyres will come off by hand

Remove tube

- Remove tube from tyre; avoid valve damage by starting away from valve
- Keep tube and tyre in same relative position to each other to aid in finding the puncture
- Inspect tube for hole; mark for patching or use your spare tube for replacement

Inspect inside of tyre

- Align the valve with mark on tyre to locate the position of the puncture
- Feel inside of tyre for cause of flat; be careful not to cut your finger
- Remove thorn, glass, staple, nail or whatever caused your flat
- Inspect tyre for damage

Install new or patched tube

- After repairing damaged tube or retrieving spare, inflate tube slightly to give it round shape
- Fold back tyre to allow access to valve hole; insert valve first then tube into tyre



Reseat tyre bead

- Start reseating the tyre on to the rim by hand starting opposite valve hole; work in both directions
- To get the last part of the tyre on the rim ensure the tyre is sitting in the rim well
- Push valve partially back up through rim to ensure tube is not caught under the tyre bead
- Visually inspect tyre bead to ensure tyre is properly seated on rim

Inflate tyre

- Inflate tyre slowly, checking for bulges which might indicate improper bead seating on rim
- Deflate if bulge occurs; carefully re-inspect and reseat bead on rim
- Inflate to desired pressure

Install on bike

- Front: install wheel; tighten hub quick release and attach brakes
- Rear: install wheel by placing chain on top and bottom of small cog
- Rear: push the rear derailleur to the back of the bike; drop wheel down into frame and tighten

Ride away

- Check brake and hub quick releases; make sure that tyre does not rub brakes or frame
- Check rear derailleur to make sure that gear shifting is still smooth
- If anything is wrong, the wheel is probably crooked; make sure wheels are in straight

Patching Tubes

Find the hole

- Pump tube with air; listen and feel around the tube for the leak
- Mark hole with ball point pen
- Use the sandpaper or another abrasive to rough up tube around hole

Apply glue

- Apply glue to the size of the patch, centred around the hole
- Allow two to three minutes for glue to set; glue will turn cloudy
- Make sure that the glue area is slightly larger than the patch

Apply patch

- Remove silver foil from the patch leaving the plastic backing on
- Place sticky, non-plastic side down, centred over hole



Pedal Medic delivering Cycle Maintenance Training

Wait and hold

- Hold patch firmly between thumb and forefinger for about three minutes
- Time taken now will ensure that your patch is bonded to the tube
- If at home, place tube flat between two books and place heavy object on top

Check it

- Inspect to make sure that the patch bonded to tube all the way around
- Remove plastic backing to patch, by folding in half to break it in two & peel off from the centre of the patch
- Apply small amount of chalk to dry of any excess glue
- Patches can last forever if properly applied

The information contained in this document is not intended to be used in isolation; it is designed solely for the support of the Teddington Travel to Work Network Bike Maintenance Course.