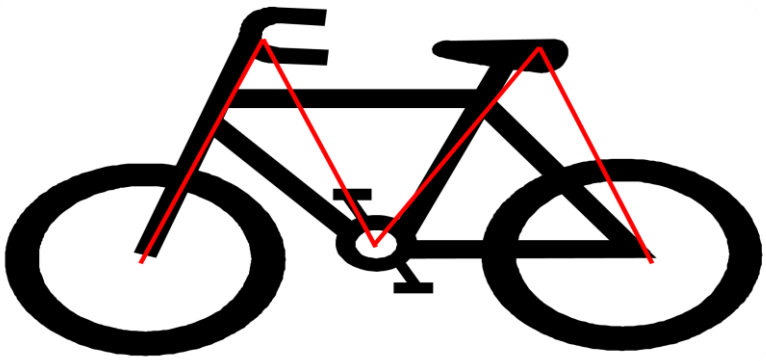
BASIC BIKE “M” MAINTENANCE



It is important that your bike is always in good working order.
If you start at the front wheel, following a letter ‘M’ shape, move up to the handlebars, down to the chainset, back up to the saddle, and down to the rear wheel and gears, you’ll not miss anything. This sort of check is recommended by National Standards for Cycle Training: it’s a quick but thorough assessment of the whole bike for damage, wear and security. Even a new bicycle should be checked.

Front wheel & brake

Check the tyre: it should feel hard. Then look for damage or wear as you slowly turn then spin the wheel, to check it runs true. While you have it off the ground, thump down hard on the top of the wheel to check it doesn’t fall out of the forks.
Make sure the axle nuts or quick release are tight, then pull the rim side to side to test for loose hub bearings. While you’re looking at the rim, check the brake blocks and that the cable is not frayed either here or where it enters the lever.

Handlebars

Squeeze the front brake lever hard and look inside to check the brake cable. Push the bike forward; the back wheel should lift off the ground. Rock the bike back and forth.
Any free movement probably means a loose headset. Now do the same with the rear brake lever: squeeze, cable-check and push: the back wheel should lock and slide. Neither brake lever should touch the bars. Ensure that both levers are secure and that the handlebar ends are covered by grips or plugs.
Then face the bike, grip the front wheel between your knees and check the handlebars don’t twist sideways or rotate in the stem. Check that the stem has not been raised above its height limit mark.

Frame

Inspect your frame, particularly just behind head tube. Wrinkled paint or bent tubes indicate the bike has been in an accident and the frame should be replaced.

Transmission

Grab the cranks and check for any sideways looseness. Make sure your pedals are secure in the cranks and they are not bent or damaged. You'll want something (or someone) to lift the back wheel off the ground so you can turn the pedals.

Gears

Shifting all the way up and down a couple of times, front and rear. Check that every click delivers the next gear and the chain doesn't overshoot at either end. Be sure the chain runs smoothly with no stiff links. With internal hub gears, also check that the pedals cannot slip forwards in any gear and that the chain is not too loose. Play should not exceed 2cm at its midpoint – this also applies for single-speed bikes.

Saddle

Ensure the saddle isn't loose by twisting and rocking it. The saddle top should be near horizontal and the seatpost must never be raised above the limit mark.

Rear wheel & brake

Lift the bike by the saddle to check the rear wheel just like the front. Put it down and check the rim, hub and brake the same way too.

Accessories

As you check the bike, ensure that any accessories such as mudguards, locks, bottles, pumps, carriers and luggage etc. are all securely fitted and in the case of lights and reflectors: working and clean.

Other Bike Maintenance

Cleaning your bike

Apart from looking better, a clean bike is more reliable. Go through this routine at least once a month, or after any dirty ride, and it'll be a lot easier to spot and remedy any faults before they become expensive problems.

Collect in a bucket some old sponges and brushes (tooth-,bottle-, scrubbing- …) or buy a set designed for the job. A workstand to lift the back wheel is convenient. Or just lean the bike against a wall. Don't turn it upside down, however, or water may enter the headset and other bearings.

A car jet wash will blast water into bike bearings – even 'sealed' ones. A bucket of warm water plus washing-up liquid or car shampoo works pretty well, but the following method is better still.
Spray the cycle with a biodegradable cleaner, loosening hardened mud with your brushes.
Use a water soluble degreaser on stubborn oily grime, including the chain.
Special brushes and scrapers are available to get between sprockets, and there are devices to contain the mess whilst cleaning the chain, but screwdrivers and strips of cloth will do.
Finally rinse down with cold water. A garden hose can be used with care, e.g. with a brush attachment.
Let the bike dry. Bike polishes help dispel water and give your bike a bright finish that's easier to clean next time.

Lubing

Spray the chain with a water dispersant (e.g. WD40) then relubricate when dry. Clean PTFE (Teflon) lubricants are good for fair-weather cycling, but only a ‘clingy’ oil will stand the wet or mountain biking.
Turn the pedals backwards whilst spraying or dribbling lubricant onto the middle (rollers) of the chain as it leaves the rear mech.
Lubricate gear and brake pivot points, and where cables enter housings. Keep lubricants away from tyres, rims and discs.

Bike Wheels

Removing and fitting your bike’s wheels is one of the most essential skills you’ll learn. It’s needed to repair punctures in a sensible fashion (you can’t get the whole innertube past the fork otherwise), to replace worn tyres, to pack the bike for carriage, and so on. Removing a derailleur geared wheel is straightforward. A hub gear might not be. If you have nutted wheels, use a correctly fitting spanner that’s at least 18cm (7in) – longer if you are not very strong – to obtain sufficient leverage. Before you start it will help to first open up the brake’s quick release to avoid the tyre snagging against the brake blocks.

Rear Wheel Removal

Shift the chain to the smallest front and rear sprockets. Pull the hub’s quick-release lever back 180 degrees to open fully. Lift the bike, pull the chain and rear derailleur back, and let the wheel drop out. A small thump on the tyre may be necessary to make the wheel fall.

Front Wheel Removal

Remove the front wheel in a similar manner to the rear. If your frame has ‘safety’ lips on the dropouts, the wheel will not simply drop out. First, you’ll need to open the quick-release fully. Then loosen off the knurled nut on the opposite side a few turns to clear the lips.

Wheel Fitting

To fit a wheel, first fully open the quick-release. If you are not sure of this, operate the lever back and forth and watch its base move in and out. The lever may indicate its open and closed states. Usually both front and rear levers are on the left side of the bike.

Rear Wheel Fitting

Pull back the rear derailleur fully so that you can lift the top part of the chain over the smallest cog and let the bottom part hang below. With the derailleur pulled back, pull the wheel fully into the dropouts. If the wheel does not centre automatically in the frame, seek further advice. Keeping it there, close the quick-release fully – where its closure isn’t limited by another part of the bike. This should feel firm but not require excessive force. If you need to adjust the amount of force, open the lever, then tighten or loosen the knurled nut on the opposite side to increase or decrease it.

Front Wheel Fitting

The front wheel is the same, without the complication of the chain or the gears. If you had to unscrew the knurled nut so that the wheel could drop out past ‘safety’ lips, then once the wheel is in place you will need to tighten this again before closing the lever.

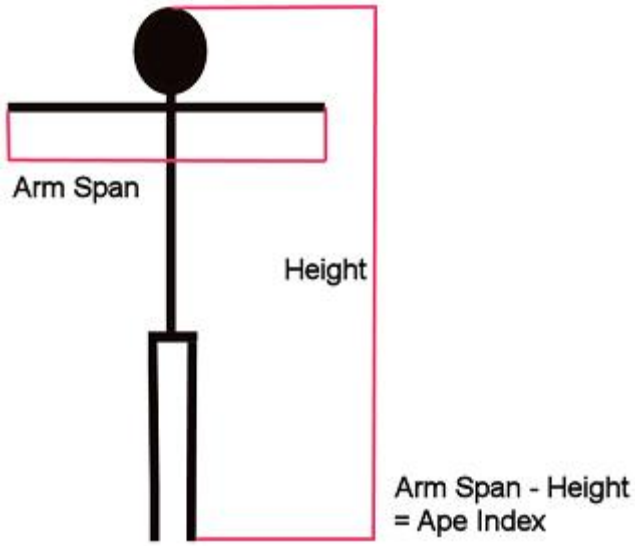
Being a good bike mechanic is not about the skill to rebuild your bike at the road side. It's about maintaining your bike so you don't have to! Maintenance is best applied little and often. Act as soon as you hear an odd noise, feel a slight knocking, or notice your brake feeling spongy. As you become more experienced you'll recognise potential problems sooner. In addition, the cycle should have an annual overhaul – more often if used heavily off-road – when everything is cleaned and checked, worn parts are replaced, and all bearings lubricated as appropriate. The single most important thing you can do is to keep your tyres fully inflated. Underinflation causes poor handling, tyre wear, and increases the chance of rim damage and punctures. Cycling also requires much more effort! Punctures are the most common breakdown, and difficult to avoid completely. If you really hate punctures, use tyres with puncture-prevention features. Lastly, after a day in the rain and especially in winter, wipe the chain dry and spray with WD40 or a PTFE spray. Otherwise you'll get rust and stiff links.

Bike Sizing

How do you choose the correct size bike?

A good starting point is to measure your inside leg which will determine your stand over height. The stand over height is the clearance between your crotch and the top tube of the bike when stood just in front of the saddle and comes into play when you need to dismount quickly; this is more likely on an MTB so we would suggest at least 1", but recommend 2". As well as your inside leg length you should also measure your height, this gives you two points of reference to help choose the size of bike from the bike size charts, which are located near the bottom of this page. Bike frame sizes usually increase in 2cm increments for road bikes and 2" increments for mountain bikes, so get someone else to measure you carefully as accurate measurements are essential.

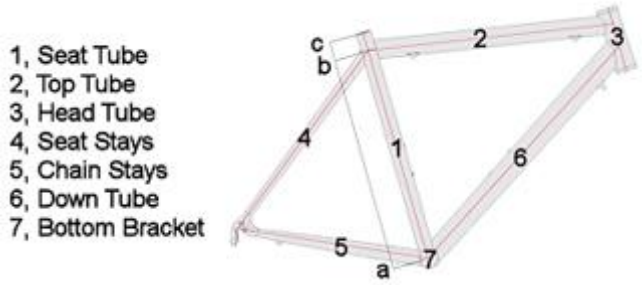
How do you determine your reach?



As a bike seat tube length, or frame size increases so does the top tube and head tube length to keep the bike in proportion. So, if you find yourself in between sizes based on your height and inside leg length the upper body should be the deciding factor, because your reach to the bars will be affected. To help work out if you have a long or short reach you need to determine your 'Ape Index' this is your arm span (finger tip to finger tip) minus your height. If you have a positive 'Ape Index' (your arm span is greater than your height) then go for the larger of the two sizes. If you

have a negative 'Ape Index' (your height is greater than your arm span) then go for the smaller of the two sizes.

Correct frame size



If you already have a bike that you are comfortable on you can measure the frame size. The two most commonly stated frame measurements are centre to top (a to c on the diagram to the right) or centre to centre (a to b). These measurements refer to the centre of the bottom bracket axle to either the top of the seat tube or middle of top tube in line with the seat tube. Other dimensions to take into account are the top tube and head tube, these determine your reach and your handlebar height. All dimensions have a certain amount of adjustment, saddle height and set back is adjusted via the seat post, handlebar reach is adjusted with stem lengths and saddle fore/aft adjustment, whilst handlebar height can be adjusted via spacers or different angle stems. But, it is essential you get the most appropriate frame size so that all these dimensions can be achieved. Manufacturers can state either measurement on your frame, so always check which they have used when viewing their range. When comparing frame sizes you should also take into account the style of frame, especially road bikes which come in traditional, semi compact or compact geometries.

Seat tube: The frame tube that the seat post fits into and runs from the bottom bracket to the top tube and seat stays. Will often feature bottle cage bosses and have the front derailleur mechanism attached.

Top tube: The frame tube that runs from the head tube to the seat tube.

Head tube: The shortest frame tube on the bike which the forks steerer tube fit through

Seat stays: The two frame tubes which run from the top of the seat tube to the rear drop outs and chain stays.

Chain stays: The two frame tubes which run from the bottom bracket to the rear drop outs and seat stays.

Down tube: Usually the largest of all the frame tubes and runs from the bottom of the head tube to the bottom bracket. Will often feature gear cables and bottle cage bosses for fitting a bottle cage.

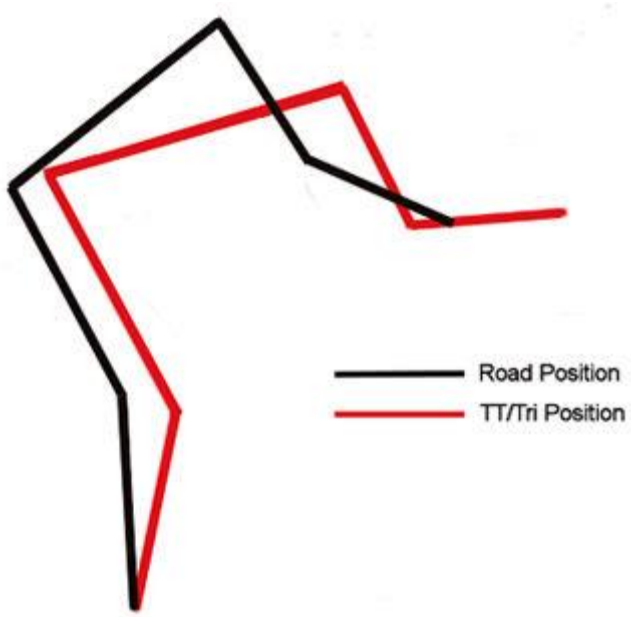
Forks: The two tubes that run through the head tube and attach to the front wheel.

Kids sizing

Choosing the correct size of bike is classed by age as opposed to height. Kids are still learning to ride, so it's important the bike you buy them fits correctly and is not too big! This is a common mistake in parents wanting to stretch out the life of a bike. The fact remains that when a child is learning, they often need to step forward off the saddle, so they straddle the top tube. It's important the frame isn't so big they risk hurting themselves when this happens.

The table below suggests which wheel sizes are most suitable for which age range. You know your child best. If he/she is tallest in the class and is at the top of a size range, then go for the next wheel size up. If your child's age is in the middle of the range, try and resist the urge to 'upsize' them to get extra life out of the bike. This will be counter-productive to the childs enjoyment of learning to handle a bicycle.

Time Trial (TT)/Triathlon bike positioning



Time Trial and Triathlon bikes are slightly different with regards to sizing, the aim of a TT/Tri frame is to get a flat back and reduce your aerodynamic drag. A TT or Tri bike will have a slightly steeper seat tube angle; this moves your saddle position forward so the angle between your torso and thighs is not reduced excessively. The reason for this is because if your thighs come up too high you will lose power, so by moving the saddle position forward and your bars being lower you do not lose any power, but gain an aerodynamic benefit. The diagram (right) shows the two positions, notice how the TT/Tri position results in lower front end whilst retaining the angle between thigh and torso, you will also see how the point of contact with the saddle is further forward while the reach to the handlebars is more or less the same.

Road - Standard		
Height	**Inside Leg**	**Frame Size**
5'1" - 5'3"	27" - 29"	48cm
5'3" - 5'5"	28" - 30"	50cm
5'5" - 5'7"	29" - 31"	52cm
5'7" - 5'9"	30" - 32"	54cm
5'9" - 5'11"	31" - 33"	56cm
5'11 - 6'2"	32" - 34"	58cm
6'1" - 6'3"	33" - 35"	60cm
6'3" - 6'5"	34" - 36"	62cm

Road - Compact			Road - Compact - Ladies		
Height	**Inside Leg**	**Compact Frame Size**	**Height**	**Inside Leg**	**Compact Frame Size**
5'2" - 5'4"	27" - 29"	XS	5'0" - 5'2"	26" - 28"	2XS
5'4" - 5'7"	29" - 31"	S	5'2" - 5'4"	27" - 29"	XS
5'7" - 5'10"	31" - 32"	M	5'4" - 5'6"	28" - 30"	S
5'10" - 6'0"	32" - 33"	M/L	5'6" - 5'8"	29" - 31"	M
6'0" - 6'3"	33" - 34"	L	5'7" - 5'10"	30" - 32"	L
6'3" - 6'6"	34" - 36"	XL	.		

Kids		
Age	**Inside Leg**	**Wheel Size**
2-4 yrs	30cm	12" or Beginner Bikes
2-5 yrs	30cm	12"
3-5 yrs	36cm	16"
5-7 yrs	41cm	16"
7-9 yrs	51cm	20"
9-11 yrs	61cm	24"
11 and up	66cm	26"

Bike Fit Tips

An improper bike fit can cause serious discomfort including things such as a numb bum, burning feet, stabbing knee or back pain, sore hands, achy shoulders and a stiff neck. While the information below can be very useful to make minor adjustments to your bike fit, we highly recommend that you take the time and money to have your bike professionally fit. In the long run, the extra expense may possibly save you from excruciating pain and permanent injury. You can have your bike fit at a reputable bike shop however, not all bike shops offer the same degree of expertise when it comes to bike fit. Always wear your bike shorts and bike shoes for a proper fit.

1) Seat Angle
Adjustment: Start with the seat level with the ground. If you experience discomfort, angle the seat up or down a few degrees (maximum of about 3 degrees).
How to do it: On most bikes, there is a bolt near the top of the seat post that loosens, allowing you to adjust the seat.

2) Seat Height
Adjustment: Dress in your biking duds and put the bike on an indoor trainer or position yourself and your bike in a doorway, so you can hold yourself up while pedaling. Have a buddy sit behind you and watch. Then raise the seat until, as you pedal backwards with your heels on the pedals, your legs are completely extended at the bottom of the stroke. If you have to rock your hips to reach the pedals the seat is too high.
How to do it: The Allen bolt that holds the seat post in place is on the side of the frame by the base of the seat post. Pedal backward until one pedal is completely at the bottom. Your heel should just be able to touch the lower pedal with your leg straight so when you place the ball of the foot on the pedal (ball over the center of the pedal) your knee will bend. This is a great starting place for seat height.

3) Pedal/Shoe Adjustments
Adjustment: Pedaling is most efficient when you ride with the balls of your feet on the pedals. Trouble is, it's possible to end up pedaling on your arches or tiptoes unless you use something to hold your feet in place.
How to do it: Toe clips, which are comprised of cages and straps, can be attached to pedals to hold feet in the correct position. When you're ready for an upgrade, purchase a clipless pedal system. Mount the cleats to the shoe bottoms so that when you click into the clipless pedals, the balls of your feet are centered over the pedals. It is probably best to have your clipless shoes fitted by a bike fitter to assure proper cleat placement.

4) Seat Fore/Aft Position
Adjustment: Make sure the bike is level on the trainer. Then hop on and pedal a bit to warm up the muscles. Stop pedaling with one foot at three o'clock. Have your assistant level the crank arm and the pedal. Maintain that position while your helper holds a plumb line (a thread with a nut on the end works fine) against the indentation just beneath the bone that's below your kneecap. Adjust the seat fore and aft on the rails until the plumb line bisects the pedal axle. Make sure your knee is not in front of the center of the pedal when the forward leg is at 3 o'clock.
How to do it: Loosen the same bolt used to angle the seat (see Seat Angle section).

5) Reach to the Handlebars
Adjustment: Comfort is the deciding factor. Ideally, you'll be able to comfortably reach the various handlebar positions on your bike without locking your elbows, straining your back and/or neck, or having to scoot forward or back on the seat. Sit and spin on the trainer and see how it feels. Or videotape yourself and see how you look.
Another test: Look down and see where the handlebar is in relation to the front hub (the part at the center of the wheel). On road bikes with dropped bars (the curly ones), the reach is usually right when the bar hides the hub. On mountain bikes, the right reach usually places the bars an inch ahead of the hub.
How to do it: Changing the reach requires installing a longer or shorter stem (the piece that holds the handlebars).

6) Handlebar Height
Adjustment: Comfort is key. If your lower back, neck, hands, and/or arms hurt, you're probably leaning too far forward. If all your weight is on the seat and every bump feels like a kick in the pants, you're sitting too upright. Measure bar height by holding a yardstick on the seat so that the yardstick extends over the bars. On road bikes, handlebar height varies from matching seat height to 4 inches lower (extreme racing position). On mountain bikes, height begins at seat level to about 3 inches lower than the seat. Handle bar height may be higher as well
How to do it: If there are bolts on the side or back of your stem, it's probably a model that is raised or lowered by removing it and adding/removing or moving shims. No shims? Purchase a taller stem—or on a mountain bike, taller bars may do the trick. If your stem has one bolt on its top, loosen the stem by turning this bolt counter clockwise several turns and then striking the bolt with a block of wood. You'll then be able to raise or lower the stem (don't exceed the safety height marked on the stem) and refasten it.

Troubleshooting Common Bike-Fit Problems

Symptom	Likely Cause	Solution
You're always scooting forward on the seat	Stem may be too long so you pull yourself forward as you ride; saddle nose may be tipped down too much	Install a shorter stem; level saddle Also check page on saddles
You're always scooting back on the seat	Stem may be too short so you feel cramped and push yourself back; saddle nose may be tipped back; saddle may be too far forward on the rails	Install a longer stem; level the seat and center it on the rails; move your seat back Also check page on saddles
Lower back hurts	Stem too low or too long; must strain back to reach bars; or seat may be too high, causing rocking when pedaling	Try raising the stem/handlebars; still hurts? try shorter stem; check and adjust seat height Also check page on back pain
Neck hurts	Stem too low; must crane neck to see	Raise the stem/bars
Hands hurt	Stem too low; too much weight on hands; saddle may be pointed down	Raise the stem/bars; level saddle Also check page on sore wrists
Front of knee hurts	Seat too low and/or too far forward, straining knees	Raise seat; may need to move seat further back as well
Back of knee hurts	Seat too high, over-extending leg	Lower seat

Numb bum all the time	Too much weight on the seat; may need to slide back a little on the seat. Try to sit such that you feel the weight on your sit bones rather than the front or center of your crotch	Lower handlebar position; check seat height as it may be too high; May need to try another brand of shorts and or seat; lose weight
Achilles tendon hurts	Pedaling too much on your toes; cleats too far forward on your shoes; feet may not be forward enough over the pedal	Keep the balls of your feet over the pedals when you're pedaling; move cleats back. Also check page on Achilles injury
Bad gas	Eating too many energy bars	Ride at the back of the pack

Extra Bike-Fit Tips

How you ride has a lot to do with comfort, too. The number one problem for many cyclists is what I call the vulture riding position, because it resembles that animal's posture. It's what a cyclist looks like when he locks his elbows and raises his shoulders, a position even hard-core pedalers often develop. You'll feel a lot better if you RELAX. Every few miles, shrug your shoulders and let them drop and keep those elbows bent.

Never raise any bike part too high because it can lead to failure and a crash. Parts are usually marked with limit lines that, when exposed, indicate that the part is too high. Heed these markings.

Once you've found the correct seat height, mark the seat post. Please do this before you travel. This way—if the post slips, or when you pack the bike for shipping—you'll quickly be able to get it back in the right spot.

Likewise, measure from the top of the saddle to the center of the pedal axle (put the pedal at the bottom of its stroke, down around six o'clock) and memorize and jot down the number where you can find it. It'll come in handy if you have to set up another bike, say a rental or borrowed one.

Early in the season you're not as flexible and you'll probably enjoy a higher handlebar position. As you ride more regularly, you'll gain flexibility and may want to lower the bars to stretch out a bit more.

Women often require additional changes such as narrower handlebars, shorter stems and easier to operate brake levers.