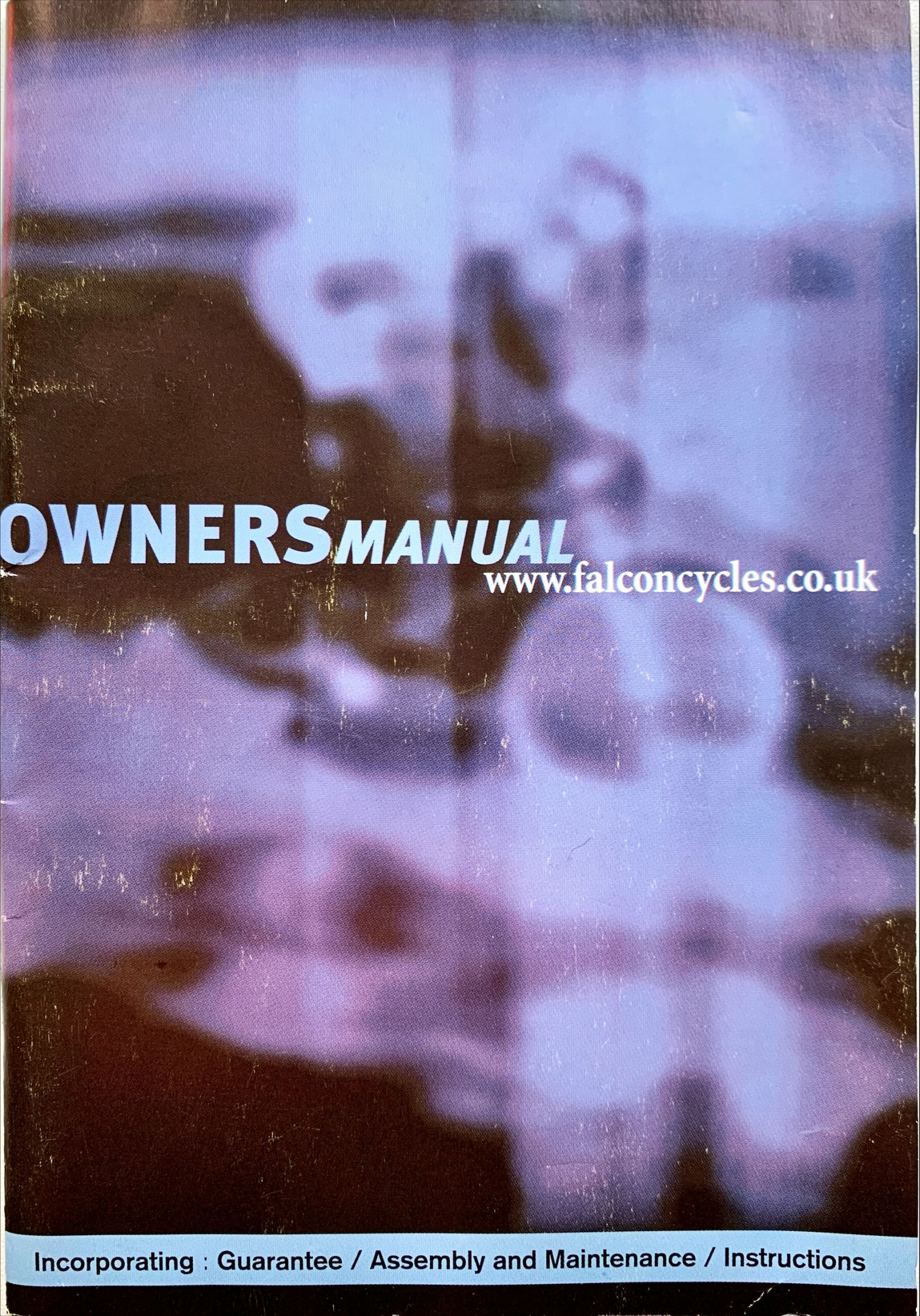

OWNERS MANUAL

www.falconcycles.co.uk

Incorporating : Guarantee / Assembly and Maintenance / Instructions

THE FALCON CYCLES GUARANTEE

LIFETIME

Falcon Cycles bicycles are guaranteed against material defects or faults in manufacturing from the date of the original purchase as follows:

FRAME AND FORKS – LIFETIME

All Falcon Cycles frames and forks (with the exception of suspension forks, frames and rear shocks) are warranted against failure or defects for the Lifetime of the original owner only. Faulty goods will be replaced free of charge, if such a defect is not caused by abuse, misuse, neglect, improper maintenance or normal wear and tear.

COMPONENT PARTS – 1 YEAR

All other Falcon Cycles components (including suspension forks, frames and rear shocks) are warranted against failure or defects for a period of up to 1 year. Again, this is applicable from the date of purchase for the original owner only and does not cover accidents, misuse, neglect, abuse or normal wear and tear.

NOTICE

In offering this guarantee, Falcon Cycles in no way seeks to diminish the statutory rights of the consumer.

Claims under this Warranty must be accompanied with dated proof of purchase and be made through the retailer or mail order company who supplied the bicycle.

FALCON CYCLES LTD,
PO Box 3, Brigg,
North Lincolnshire, DN20 8PB.

CONGRATULATIONS!

You are now the proud owner of a British hand-built bicycle. Included in this manual are details on how to prepare your bicycle for riding, how to maintain your bicycle to keep it roadworthy, information on accessories and recommendations and tips for safe and correct riding position.

It is a measure of our faith and confidence in the quality of the skills of the craftsmen who handbuilt this bicycle and of the materials used that we guarantee the frame and standard forks against defects during the lifetime of the original owner from the date of purchase. Suspension frames and forks and rear shock absorbers are covered by a separate guarantee.

Please ensure that the Bicycle Log Sheet is completed at the time of purchase. The details will be of value to the police in the unfortunate event of your bicycle ever being lost or stolen. They also act as a record of your guarantee.

Look after your bicycle, maintain it regularly, treat it with respect and it will reward you with many years of trouble free use. Materials, Craftsmanship and Attention to detail are of the Highest Order . . . now it's up to you.

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Recommended Torque Values	**IBC**

Complete this **BICYCLE BOOK** and keep it in a safe place. In the event of your machine being lost or stolen this information should be passed on to the police.

Name .....

Address .....

.....

Model Name & Type .....

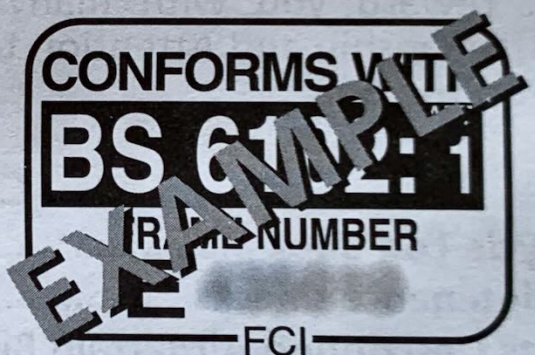
Serial No .....Frame Size & Colour .....

Extras and Identifying Marks .....

.....

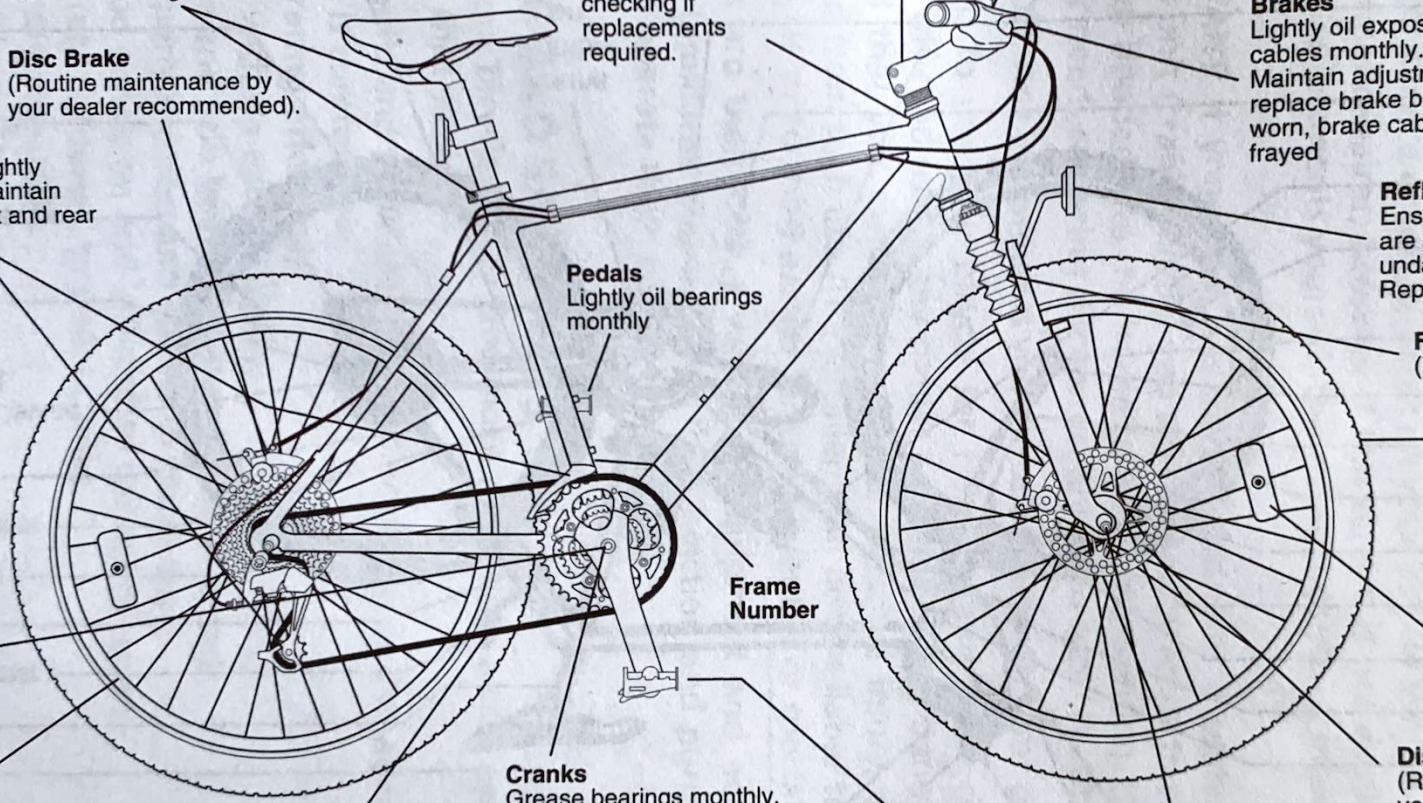
FRAME NUMBER

The frame number is located on the BS6102 label at the bottom of the seat tube as per the diagrams on pages 3 and 4. We strongly recommend that you have either the frame number or your post code stamped on to your bicycle.



Dealers Address or Stamp	Date of Purchase

ROUTINE MAINTENANCE CHECKS AND LUBRICATION



Handlebars
Check handlebar bolt is tight. Check brake levers securely mounted to bars and brakes stop smoothly and efficiently

Stem Nuts
Ensure stem nuts and bolts are tight

Headset
Remove, clean and regrease bearings yearly, checking if replacements required.

Seat and Stem Nuts
Be sure seat and stem nuts are tight

Disc Brake
(Routine maintenance by your dealer recommended).

Brakes
Lightly oil exposed cables monthly.
Maintain adjustment and replace brake blocks when worn, brake cables when frayed

Gears
Front and Rear - Lightly oil moving parts. Maintain adjustments of front and rear derailleurs.

Reflectors (front & rear)
Ensure reflectors are secure and undamaged.
Replace if necessary.

Pedals
Lightly oil bearings monthly

Front suspension unit
(Dealer adjustment only)

Half Yearly
Remove and clean, lubricate chain, derailleur gears and all cables. Check and replace as required.

Tyres
Check for cuts and wear. Maintain pressure indicated on tyre wall for maximum efficiency.

Frame Number

Bottom Bracket
Clean, regrease yearly, checking for wear.

Reflectors
Check monthly.
Securely fixed.

Disc Brake
(Routine maintenance by your dealer recommended).

Wheels
Check that axles are sealed and secured properly. Rims should be kept free from wax, oil, grease and glue.
Check for loose or missing spokes.

Chain
Keep lightly oiled weekly, clean and lubricate half yearly.

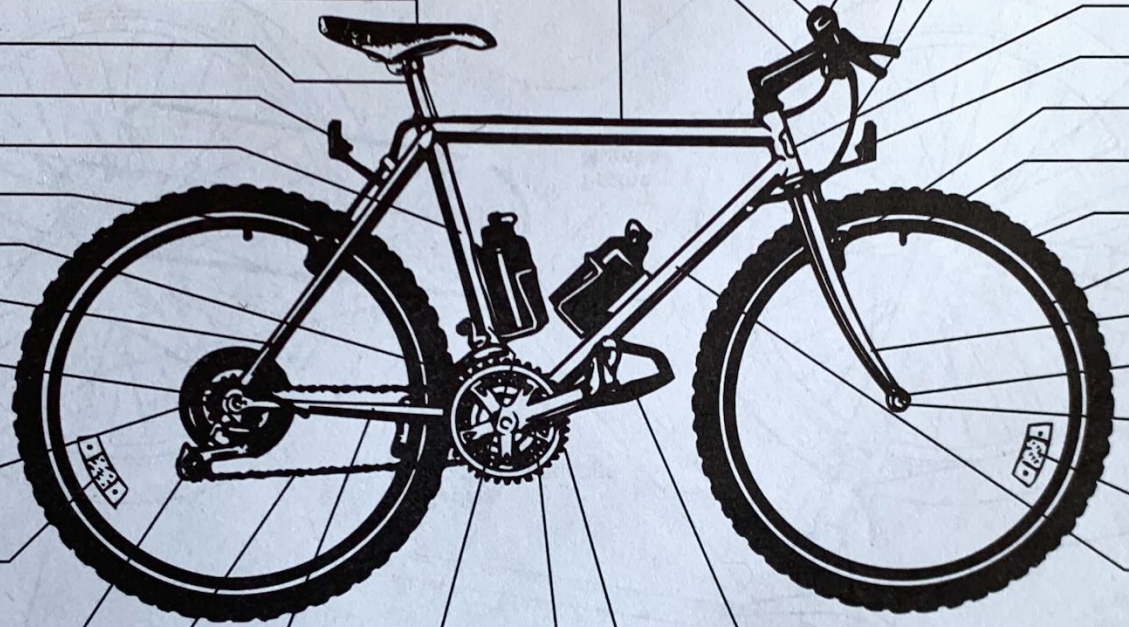
Cranks
Grease bearings monthly.
Check that axle bolts or cotterpin bolts are tight.
Check for free play in bottom bracket.
Yearly, remove, clean and regrease hub axles, bottom bracket set and headset.

Reflectors (pedal)
Check all fittings are secure.

Wheel Hubs
Grease bearings monthly.
Adjust cones to avoid free play from side to side.

N.B.
Wash cycle weekly with warm soapy water and polish dry with a soft cloth.

PARTS DESCRIPTION OF AN ALL-TERRAIN BICYCLE



Gear Lever
Handlebar Stem
Top Tube
Saddle
Seat Post
Rear Reflector
Seat Tube
Rear Brake
Front Derailler
Seat Stay
Retention Device Nuts or QR
Freewheel
Spoke Reflector
Rear Derailleur
Chain
Chain Stay
Frame Number on Seat Tube
Handlebar
Brake Lever
Brake Cable
Head Tube
Front Reflector
Front Brake
Valve
Tyre
Rim
Front Fork
Front Hub
Retention device Nuts or QR
Spoke Reflector
Down Tube
Front Chainwheel
Crank Arm
Pedal

IMPORTANT: Please carefully note the names of all parts of your bicycle for ease of assembly. The items shown may not all appear on your bicycle Your bicycle may also be fitted with suspension units and disk brakes. If these need any adjustment, it should be carried out by a certified cycle dealer.

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YOUR BICYCLE – OWNERS RESPONSIBILITY

In this handbook we describe and illustrate how to ride safely and keep your bicycle in a safe trouble-free operating condition.

Owner's Responsibility and Important Points

Point 1 Carefully and thoroughly read this manual and follow the instructions.

Point 2 Any major service or adjustments on your bicycle should be carried out by a professional repairer; however if this service is not available and you wish to make adjustments yourself, this manual contains important tips on how to do it.

IMPORTANT: If your cycle has been fitted with a sealed cassette bottom bracket unit (crank spindle) you should not attempt to remove it. The unit has been bonded into the frame to prevent loosening. If the unit becomes worn or needs replacing the correct Shimano tool (TL- UN52) must be used.

CAUTION: Any adjustments you make are entirely your own risk.

Point 3 Caution: To use your bicycle for freestyle and stunt riding, competitive events, off-road use or any similar activities can be dangerous and you are warned that you assume the risk for personal injury, damages or losses incurred from such use. The Retailer shall not be liable to the purchaser of the bicycle or to third parties for consequential or special damages.

Point 4 Bicycles are built with a variety of equipment and accessories, and you should familiarise yourself with their function and purpose, to make sure you can operate them correctly.

SAFE CYCLING AND SAFETY TIPS

Before you ride your bicycle at any time make sure it is in a safe operating condition. Particularly check that your:-

- Bicycle's nuts, bolts and parts are tight and not worn or damaged.
- Riding position is comfortable.
- Brakes are operating effectively.
- Steering is free with no excessive play.
- Wheels run true and hub bearings are correctly adjusted.
- Wheels are properly secured and locked to frame/fork.
- Tyres are in good condition and inflated to correct pressure.
- Pedals are securely tightened to pedal cranks.
- Gears are correctly adjusted.
- All reflectors are in position.

Front and rear reflectors must not be removed as they act as a secondary safety device for the braking system.

After you have made any adjustments to your bicycle, check that all nuts, bolts are securely tightened and cables are free from kinks and fixed securely to the bicycle frame.

Every six months your bicycle should be professionally checked to ensure that it is in correct and safe working order.

But remember, it is the responsibility of the rider to ensure all parts are in working order, prior to riding the bike.

When Riding:

- Always obey all traffic regulations.
- Know and observe all local laws and rules for bicycles.
- Give clear hand signals in good time to warn other road users of your intentions.
- Be aware of vehicles pulling in or out of traffic and for doors being opened on parked cars.
- Always keep both your hands on the handlebars and your feet on the pedals and also sit correctly on the seat at all times.
- Wear a protective cycling helmet and make sure no loose clothes can catch in your wheels or chain.
- Take care to ride at a speed to suit the conditions and extra care should be taken when riding on uneven surfaces, loose sand or gravel. Be alert and avoid potholes, drain covers and grates or other road hazards.

Always loosen toe clips when riding in traffic or built up areas.

Do Not's

- Do not ride on same side of road as oncoming traffic.
- Do not ride two abreast.
- Do not carry a passenger unless cycle is equipped to do so.
- Do not swerve in and out of traffic.
- Do not hang items over the handlebars to impede steering or catch in the front wheel.
- Do not hold on to another vehicle.
- Do not ride too close behind another vehicle.

Caution: Wet Weather Riding

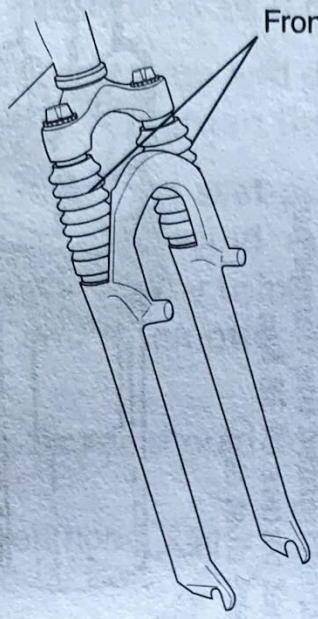
No brakes work as well under wet or icy conditions as they do under dry conditions. In wet weather special precautions must be taken to assure safe stopping. Ride slower than normal and apply your brakes well in advance of anticipated stops.

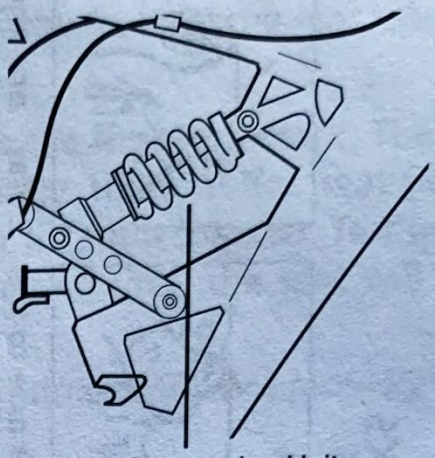
Caution: Night Riding

We recommend you minimise the time you ride after dark. If you should have to be out on your bicycle at night you must to comply with the law, use a headlight (white) and a taillight (red) on your bicycle in addition to the all-around reflectors that are fitted. For added safety wear light coloured clothing with reflective stripes.
Check that the reflectors are firmly secured in their correct position and clean and not obscured. Damaged reflectors must be replaced immediately.

Caution: Suspension Units

Your cycle may be fitted with suspension units built into parts of the frame and forks. We recommend these are serviced by your dealer as required. More details may be found in the suspension manufacturers handbook.





Riding Position

It is important that you and your bicycle are fitted to each other, not only for comfort and riding ease but for control and safety. Normally your Dealer will custom fit your bicycle to you but the following few pages should help you to find your most comfortable, safe and efficient position.

COTTERLESS CRANKS ADJUSTMENT

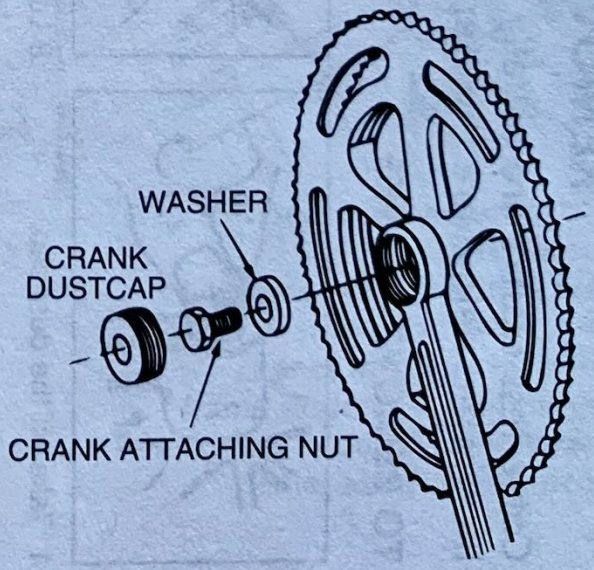
IMPORTANT

Please check if the chainwheel and cranks of your new bicycle are of the cotterless type as illustrated.

If so, to ensure trouble free operation it is important that the nuts securing these items to the bottom bracket axle are tightened as securely as possible.

It is strongly recommended that the tightness of the nuts be **checked after the first two weeks of use** and a maximum of three monthly intervals thereafter. Failure to do so may cause permanent damage to the precision made components.

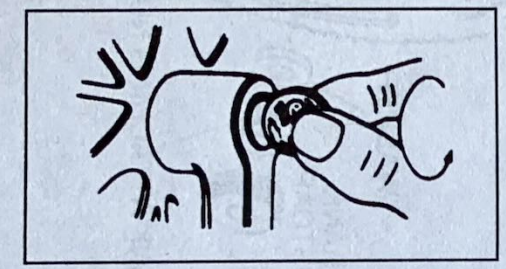
The adjustment should be made using a torque wrench fitted with a suitably sized spanner having first removed the dust cap. Torque setting 36Nm (320 lbs./ins.) (30lbs./ft.).



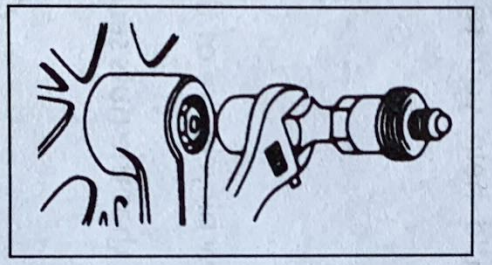
REMOVAL AND FITTING OF COTTERLESS CRANKS

Cotterless cranks are usually made of alloy which damages easily. If in doubt consult your cycle dealer. Illustrated below are the steps required to remove, or adjust and refit the cotterless gear and crank.

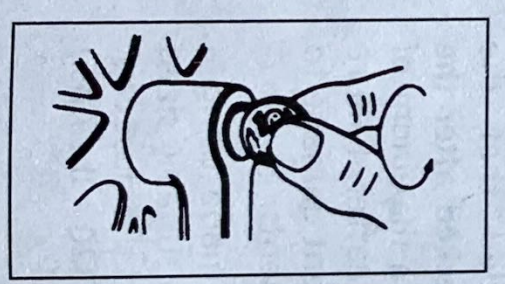
TO REMOVE CRANKS



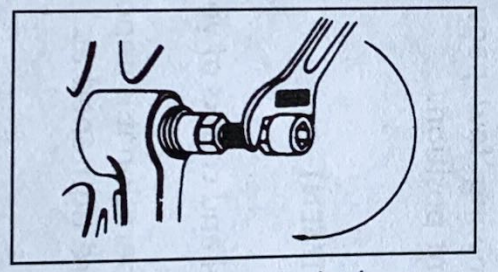
1 Take off the dust cap.



2 Loosen flange nut or bolt and take off

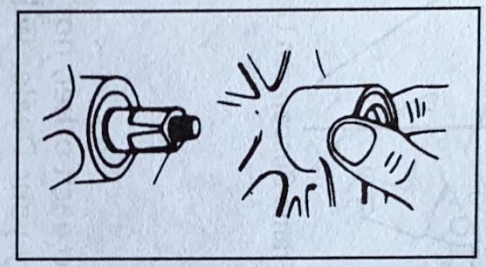


3 Remove washer. Screw in the removing tool fully.

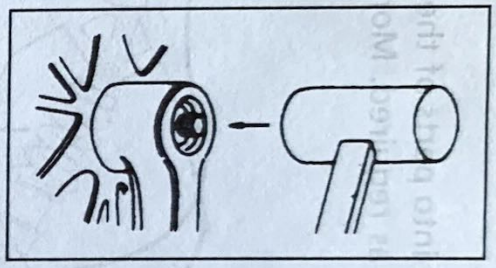


4 Turn the screw bolt down.

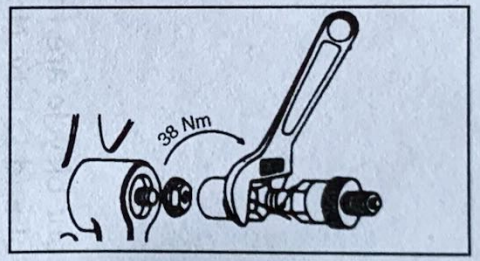
TO FIT CRANKS



1 Insert the bracket axle to the crank.



2 Tap on the crank lightly using a rubber mallet or drift

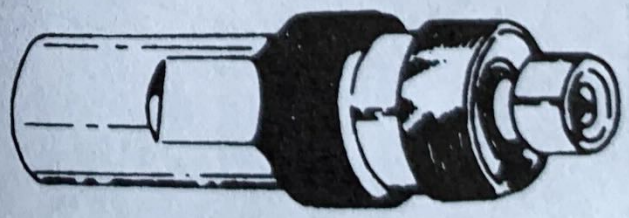


3 Put in washer. Tighten the flange nut with proper torque of 38 Nm
4 Screw in the dust cap.

DUE TO THE COMPLEXITY OF THE REPAIR AND ADJUSTMENT, IT IS RECOMMENDED THAT THIS WORK BE DONE BY A QUALIFIED BICYCLE MECHANIC.

COTTERLESS CHAINWHEEL AND CRANKS

Cotterless means that no crank pin is used, also the crank axle has a square taper and the gear crank taper is fitted onto this taper and the two are fastened together. In order to remove the cotterless gear and cranks the special tool shown here must be used.



The crank will come away from the bottom bracket axle. Both the crank and axle should be cleaned before re-fitting.

SEAT

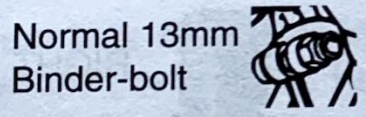
Seat Adjustment

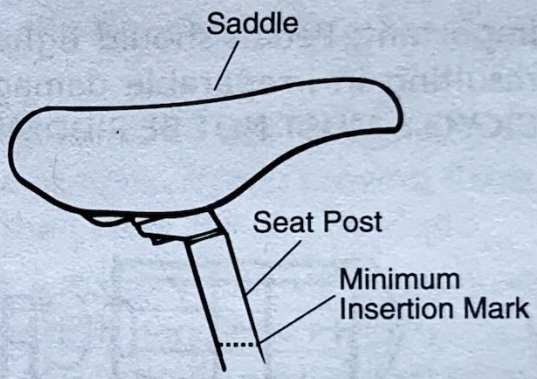
Loosen the nut on the seat-post clamp enough to allow the saddle to move forward and back. The seat can then be aligned forward and back and the angle can also be adjusted (it is recommended that the seat be parallel to the ground).

To adjust the seat up and down, loosen the binder-bolt on the seat tube, position the seat and re-tighten the binder-bolt.

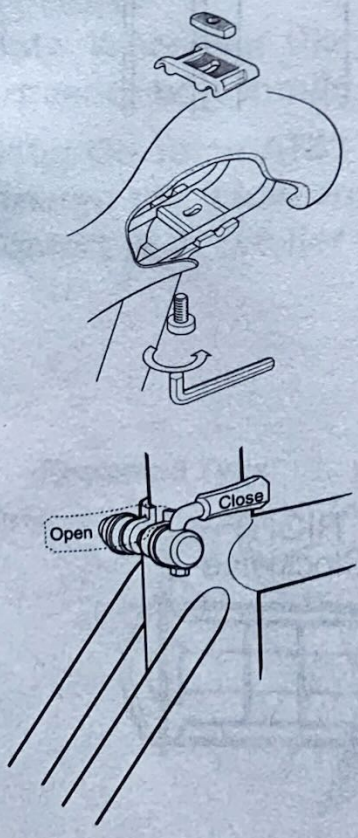
Caution: Insert the seat-post to a point above the insertion mark. The minimum insertion mark should not be visible. Securely tighten the seat-post binder bolt/nut to 8 Nm by using a 6mm Allen key or a 13mm spanner. Test by grasping the seat and attempting to turn. Keep tightening until the seat will no longer turn.

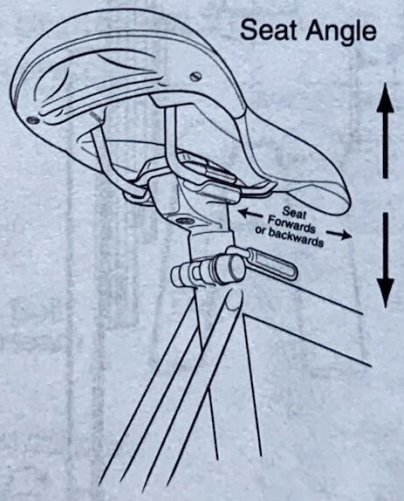
Warning: Bicycle should not be ridden if seat adjustments are not properly tightened

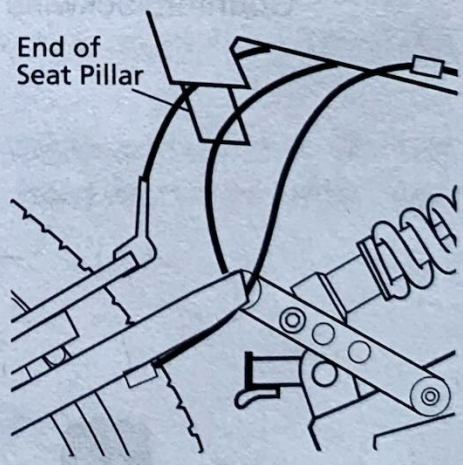




Seat posts differ according to saddle types and accordingly the procedure for fitting varies. If in doubt consult your dealer.







Seat Pillar adjustment – Suspension frames. Take care when inserting seat pillar that the protruding end cannot interfere with the frame suspension unit during use. If in doubt consult your dealer about adjustment.

PEDALS

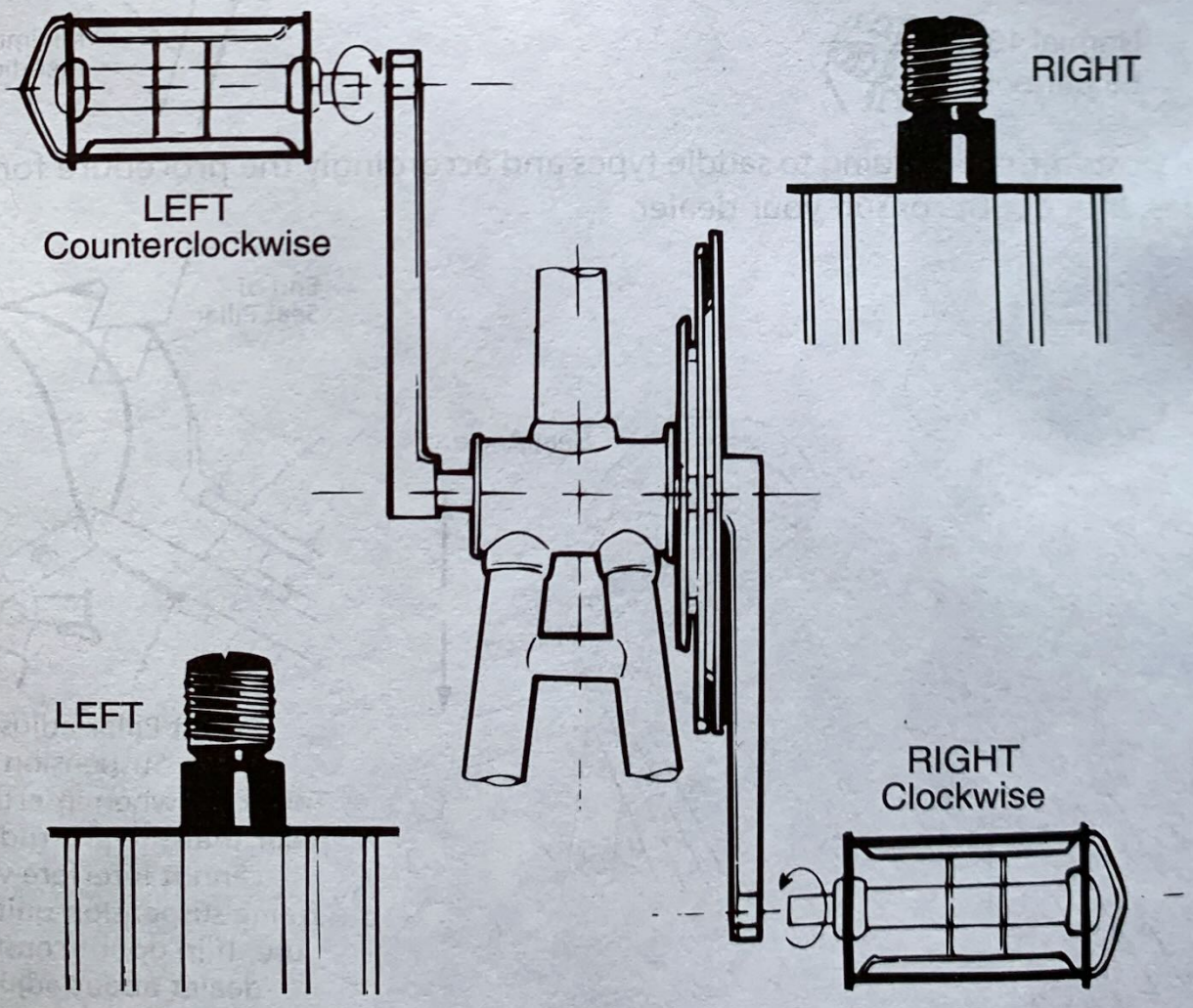
PEDAL INSTALLATION

Note: Left and right are determined from riding position on the bicycle.

Most pedals have left and right hand threads to prevent them from loosening while riding. Left-hand pedals have left-hand threads and are marked with an "L" on the spindle. Right-hand pedals have right-hand threads and are marked with an "R".

Should the markings be absent, thread direction can be determined by examination. Left-hand threads run up to the left and right-hand threads run up to the right. Grease threads before installation. The left-hand pedal is tightened by turning counter clockwise and the right-hand pedal is tightened by turning it clockwise. We recommend a torque of 40 Nm

Important: Pedals should tighten securely. A loose pedal will strip the threads, resulting in irreparable damage to the crank and possible injury to the rider. **BICYCLE MUST NOT BE RIDDEN WHEN PEDALS ARE LOOSE.**



HANDLEBARS AND STEMS

As your cycle may be fitted with a standard stem or an A-Head stem, you must always check that all the bolts are tight before cycling.

Loosen expander bolt so that expander wedge is not tight in bottom of handlebar stem. Gently tap the top of the expander bolt to further loosen the wedge if necessary. When the expander wedge is loose, move the handlebars up or down until you find the optimum height at which you can easily reach the brake levers and comfortably grasp the handlebars. Usually this height is level with, or slightly lower than, the top of the saddle. Be sure the stem is in line with the front wheel.

Caution: A minimum insertion ring is marked on the handlebar stem and this marking should remain in the head tube.

Under no circumstances should the minimum height insertion mark be visible on the handlebar stem. It must be down in the head tube.

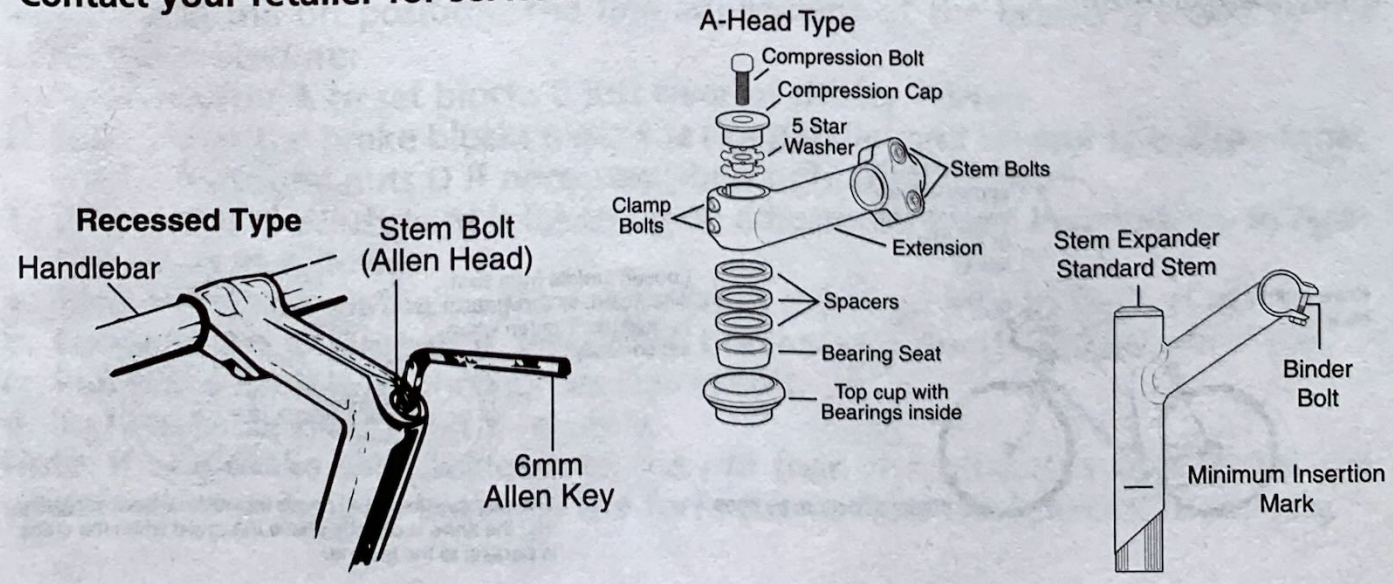
When desirable height has been achieved, align the handlebar with the front wheel and securely tighten expander bolt.

Note: On models equipped with stem mounted gear levers the levers may be moved up or down to the rider's most comfortable position. When moving them, be certain that the levers face upwards and that the cables are not twisted.

Caution: It is extremely important to tighten the expander bolt sufficiently, so that when the wheel is held between your legs and the handlebars are twisted, the handlebars do not move. Do not over tighten, as it may increase risk of injury to the rider. Position grip portion of handlebars horizontally and securely tighten the binder bolt.

Note: Whenever the handlebar stem is removed from the head tube then the expander bolt should be lightly greased.

Note: On some ATB's raising the stem requires brake cable adjustment. Do not attempt this if low profile brakes are fitted with a stem hold mounted cable stop. **Contact your retailer for service.**



Handlebar Position

The position of the handlebar should be set to allow a comfortable and easy reach of gear control and brake levers.

When riding, your weight should be so balanced that your hands rest lightly on the handlebars. This prevents strain on wrists and forearms when pedalling. If you alter the riding position, remember to tighten all nuts and bolts securely.

NOTE:
NEVER EXTEND THE HANDLEBAR STEM OR SEAT POST ABOVE THE MINIMUM INSERTION MARK AS THIS IS POTENTIALLY DANGEROUS.

CYCLING POSITION — Seat

Saddle Angle

The seat should be horizontal or parallel with the ground. Slight variation around the horizontal may suit individual comfort but if excessive angles are felt necessary check other aspects of your position.

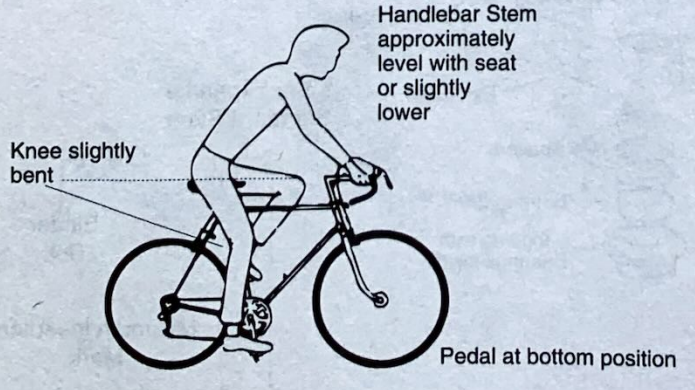
Saddle Height

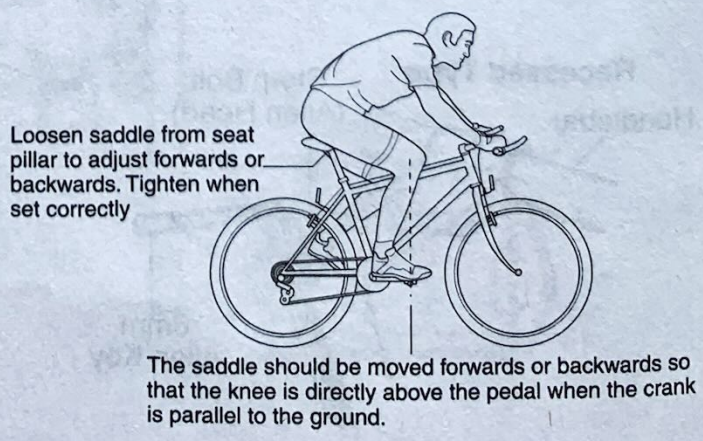
The correct seat height is determined by sitting on the seat with your leg fully extended. Your heel (in flat shoes) should just touch the pedal when it is positioned at its lowest point. When riding normally with the ball of your foot on the pedal your knee should be slightly flexed at the bottom of the pedal stroke (see diagram).

Saddle Forwards/Backwards Position

With the ball of one foot on the pedal and the cranks parallel to the ground the saddle should be adjusted backwards or forwards to a position whereby the pedal centre is directly below the knee joint.

Very small changes in saddle position can have a substantial effect on performance and comfort. Consequently, whenever you make a change to your saddle position, make only one directional change at a time; and make the changes in small increments, until you have found the point at which you are most comfortable.





BRAKES

⚠ WARNING

For safe riding it is important to completely understand the operation of your bicycle's brake system. Improper use of your bicycle's brake system may result in a loss of control or an accident, which could lead to severe injury. Because each bicycle may handle differently, be sure to learn the proper braking technique (including brake lever pressure and bicycle control characteristics) and operation of your bicycle. This can be done by consulting your professional bicycle dealer and this owner's manual, and by practicing your riding and braking technique.

There are two brake mechanisms working independently-one on the front wheel and the other on the rear wheel. The brakes are operated by hand levers fastened to the handlebars. The right lever controls the front brake and the left lever controls the rear brake. To stop with safety:

1. Operate the rear brake (left lever) slightly before the front brake (right lever).
2. Apply firm pressure to both front and rear brake levers.
   Caution: If the front brake is applied with too much pressure, the rider may be thrown off the bicycle.
3 Never apply the front brake on a turn. This is especially dangerous when cornering or riding on slippery or loose surface roads.

Caution: Brakes are less effective in wet weather. Ride slower and allow more distance for stopping.

Note: Do not ride your bicycle if the braking system is not working correctly. If you are in doubt, take your bicycle to your dealer.

BRAKE ADJUSTMENT PROCEDURE – Caliper brakes

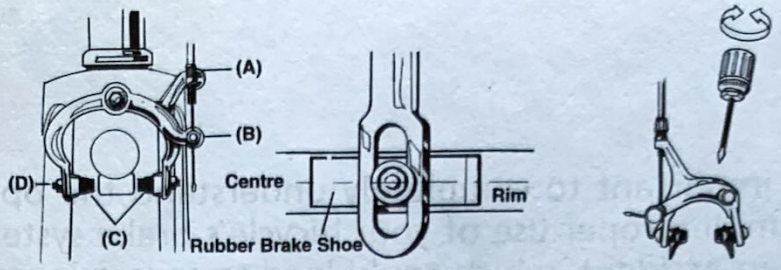
The brakes on your bicycle should have been adjusted correctly by your dealer; however, as cables do stretch, it is important to check the adjustment of your brakes after your first ride. Most brakes will need some adjustments after being used the first few times. Your brakes are correctly adjusted when there is a 1.5mm gap between the brake blocks and the brake track of the wheel rim.

Do not adjust brakes to allow brake blocks to contact wheel rim when brake levers are in the off position. The fine adjustment of the brakes is made by the following procedure:

1. Turn adjustor A to set blocks C just clear of rim by 1.5mm.
2. Ensure that the brake blocks meet the rim parallel and central to the rim brake tracks. Adjust by nuts D if necessary, then tighten securely.
3. When all fine adjustment is taken up on adjustor A, it will be necessary to reset the cables as follows:

a. Turn adjustor A all the way down as far as it will go into its mounting.
b. Loosen cable clamp bolt B. Press both brake shoes firmly against wheel rim.
c. Pull brake cable wire through its clamp bolt.
d. Tighten cable clamp bolt B securely.

Note: If one brake shoe is closer to the rim than the other first check that the wheel has been centred between the forks then adjust the brakes as necessary.



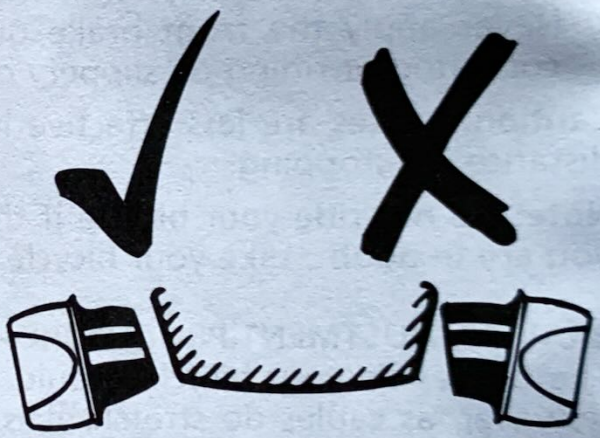
To adjust brakes that have central calliper adjuster simply turn screw as shown until brakes centralise.

BRAKES

BRAKE MAINTENANCE – Caliper brakes

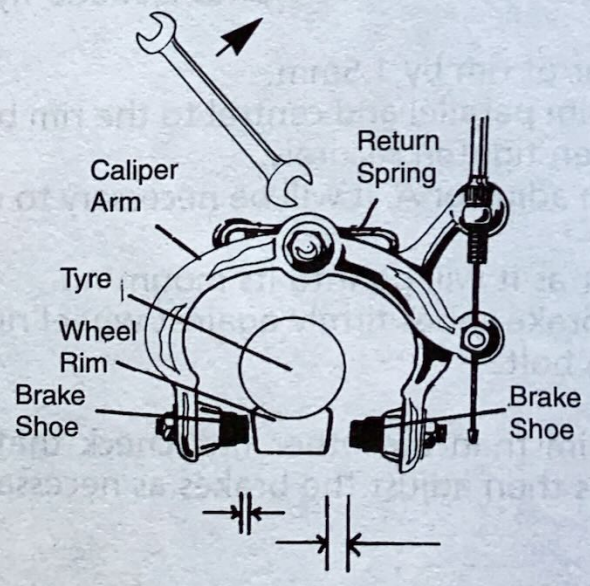
To maintain cable brakes in efficient working order, regularly check the brake adjustment and lightly lubricate brake pivots and springs. Oil the exposed parts of the cable to prevent corrosion. Slow or inefficient braking often indicates that the brake cables themselves require lubrication. As this job requires the removal of the complete brake cable, we recommend strongly that this service is done professionally.

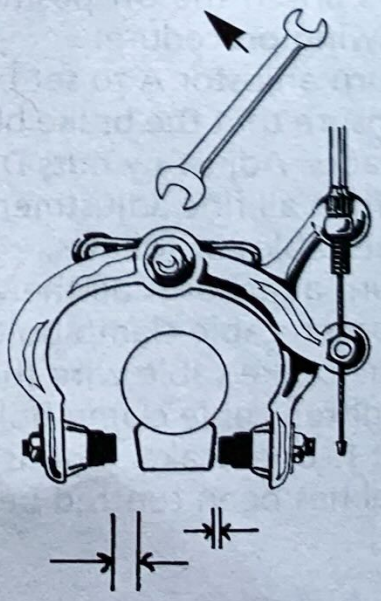
Note: To assure smooth braking, wheels must run true and be correctly adjusted, with the rim brake tracks free from dents and kinks. The brake blocks should be in correct alignment with the rim brake track. See your dealer if you are in any doubt regarding wheel and brake adjustment.



Protect your self from frayed cable ends by maintaining the end pieces fitted over the cable ends.

Important: Brakes should function freely and release fully. If brakes bind, first check for cleanliness and proper lubrication. If brakes still bind, return your bicycle to your dealer for adjustment.



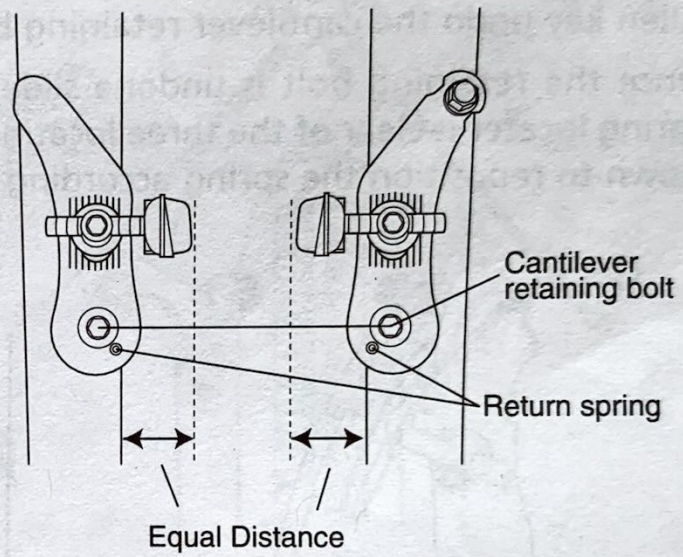


To centre side pull brakes first slacken the retaining nut and then centre the brake using a spanner on the front retaining nut.
Caution: Before riding, test your brakes. Make sure that the quick release mechanism is returned to its normal correct position, otherwise your brakes will not operate effectively.

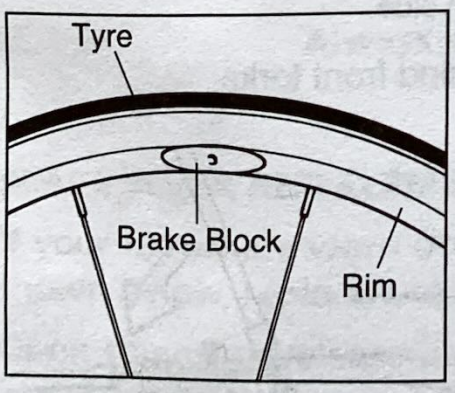
BRAKE ADJUSTMENT PROCEDURE – Cantilever brakes

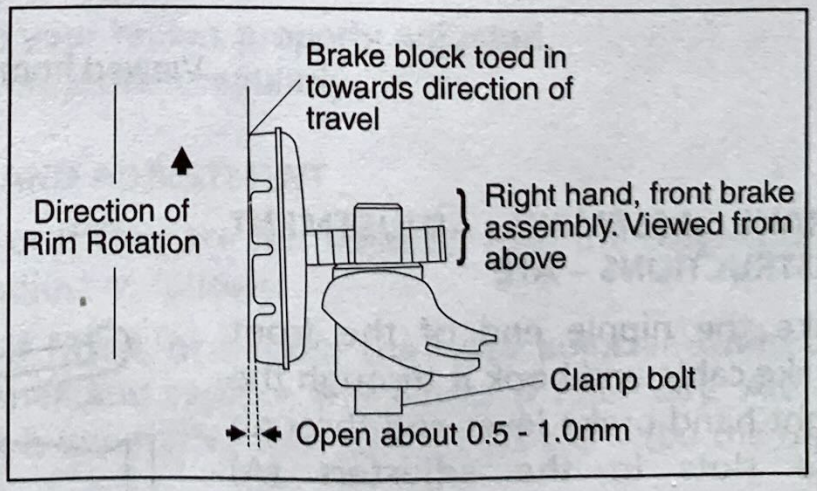
Your cycle may be fitted with the latest design 'V' brakes and/or disc brakes. These are more powerful than the old style calliper or cantilever brakes and so care must be taken whilst braking to avoid being thrown from the cycle.

Cantilever brakes operate as opposing pairs, it is not possible to brake using one cantilever lever alone. To ensure efficient braking the cantilevers must be set evenly. Each cantilever has its own independent return spring. This must be balanced with its counterpart on the other side of the rim. Balancing *cannot* be achieved by adjusting the cable position. To correctly adjust the brakes follow the procedure in the next section.



First adjust the brake blocks so that they protrude an equal distance on each side. This can be done using a 10mm ring spanner and a 5mm Allen key. At the same time make sure that the brake blocks lie parallel to the rim or are toed in as shown below. This diagram shows the view from above the right hand front brake.





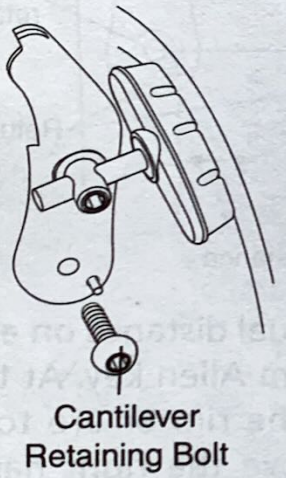
Once the brake blocks are positioned correctly re-tighten clamp bolt ensuring that the blocks do not move.

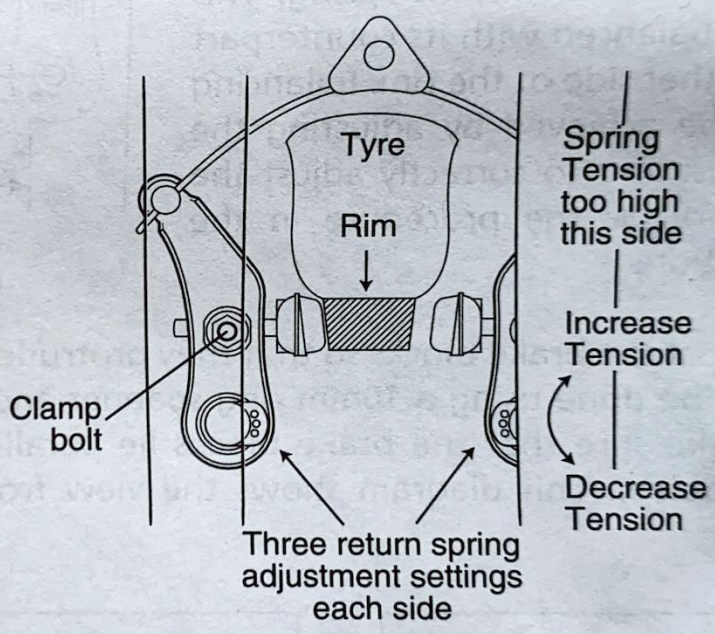
BRAKES ADJUSTMENT PROCEDURE - *cont.*

It will now be necessary to adjust the cable so that the blocks lie 1.5mm from the rim. To do this use a 10mm ring spanner and release the cable clamp bolt on the cantilever. Adjustment of the cable can now be made by either pulling it tighter or releasing it as necessary. Remember to tighten the clamp bolt fully once satisfied with the positioning of the brake blocks.

If the blocks do not clear the rim evenly then the return springs in the cantilevers need adjusting. There are three adjustment settings for each cantilever. To make the adjustment the cantilever must be partially removed from the frame. This can be done by unclipping the brake cable from the cantilever and using a 5mm Allen key undo the cantilever retaining bolt.

Once the retaining bolt is undone slide the cantilever off the frame until the spring locater is clear of the three locating holes. Now rotate the cantilever up or down to reposition the spring according to the diagram below:-

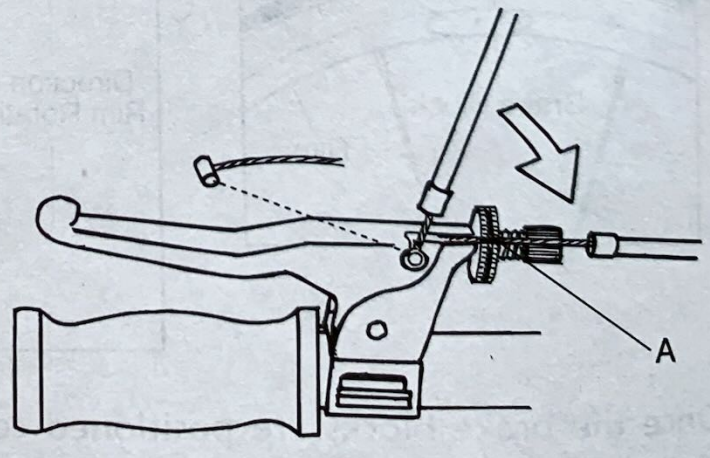




Viewed from behind front forks

BRAKE ASSEMBLY ADJUSTMENT INSTRUCTIONS – ATB

Take the nipple end of the front brake cable and hook it through the right hand brake lever and through the slots in the adjusters (A) ensuring that the adjusters are fully retracted.

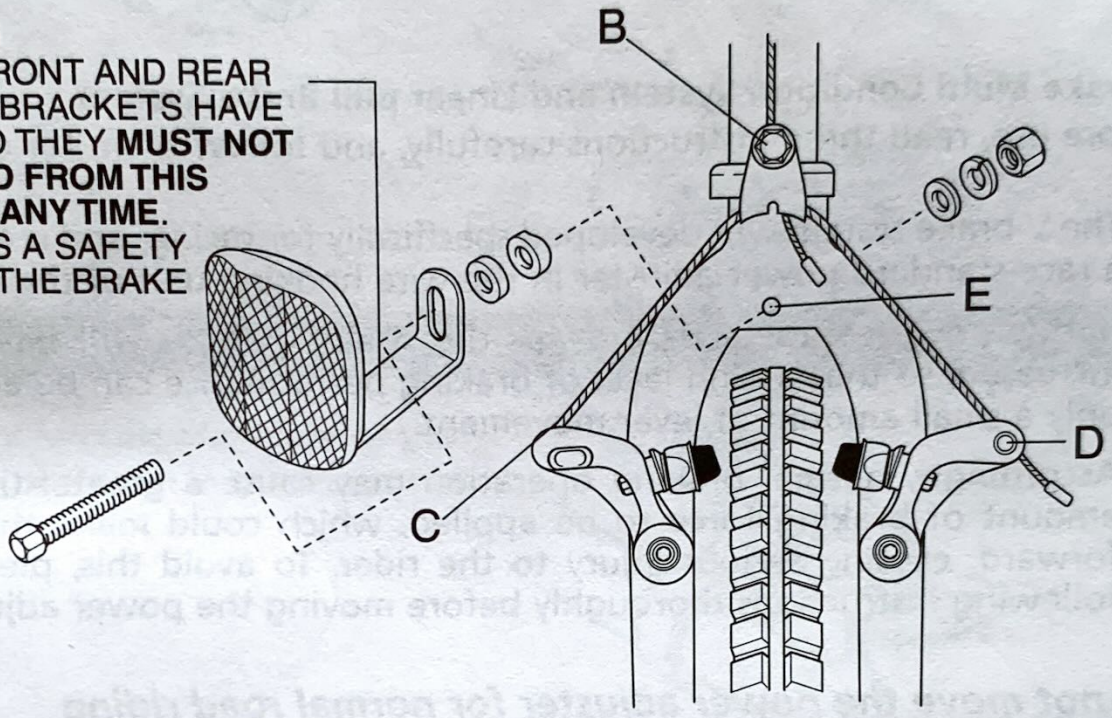


Right hand lever viewed from below

BRAKE ASSEMBLY ADJUSTMENT INSTRUCTIONS – ATB – *cont*

Pass the cable through the pinch bolt on the brake stirrup (B) and tighten. The cross cable is passed through the retaining pin cramped in position on the left hand brake block assembly (C) through the brake stirrup (B) and through the cable hook on the right hand brake block (D) assembly.

WARNING
ONCE THE FRONT AND REAR REFLECTOR BRACKETS HAVE BEEN FITTED THEY **MUST NOT BE REMOVED FROM THIS BICYCLE AT ANY TIME.** THEY ACT AS A SAFETY CATCH FOR THE BRAKE SYSTEM.



FRONT AND REAR REFLECTOR ASSEMBLY INSTRUCTIONS

Fit front reflector bracket to location (E) with nut, bolt and washer provided. We fit the front reflector bracket in this position for safety reasons to prevent an accident if the brake cable fails.

WARNING:
Always keep your brakes properly adjusted.
Check them regularly.

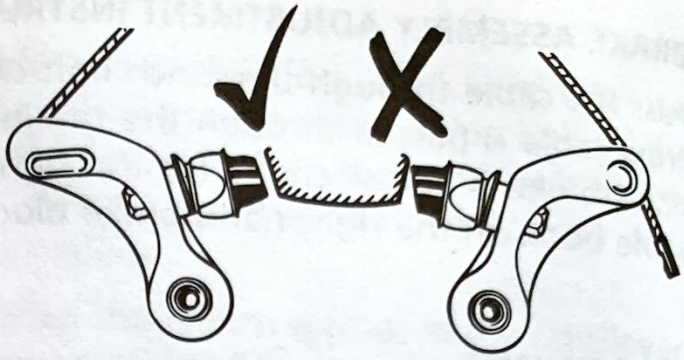
BRAKE BLOCK REPLACEMENT AND ADJUSTMENT

If your blocks are worn down or if they are not lined up with the wheel rim as shown below, replace and/or adjust as follows:

Open the quick release lever, if fitted, or slacken the cable adjuster. Undo the brake block nut using a spanner and replace the blocks if necessary. Always replace brake blocks in pairs. It is imperative that new blocks are fitted the right way round, as shown below.

WARNING:
Remember to close the quick release mechanism or reset the cable adjuster.

Apply the brakes and position the blocks so that they hit the rim squarely as shown below. With the brakes still applied to hold the blocks in place, tighten the nuts securely with a spanner.



V Brake Multi Condition System and Linear pull Brake System

Before use, read these instructions carefully, and follow them for correct use.

- The V brake system was developed specifically for racing, and is equipped with a race-standard power adjuster in the wire hooking unit of the V brake lever.

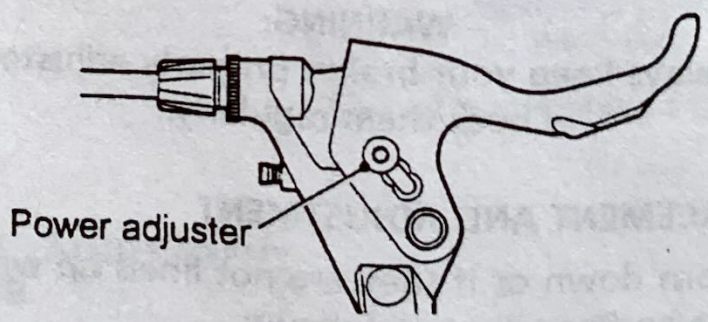
  If this power adjuster is moved, the braking force will be dramatically increased, so that a high level of braking performance can be achieved from only a small amount of lever movement.

  Accordingly, normal braking operation may cause a greater-than-expected amount of braking force to be applied, which could make the bicycle fall forward, causing serious injury to the rider. To avoid this, please read the following instructions thoroughly before moving the power adjuster.

Do not move the power adjuster for normal road riding

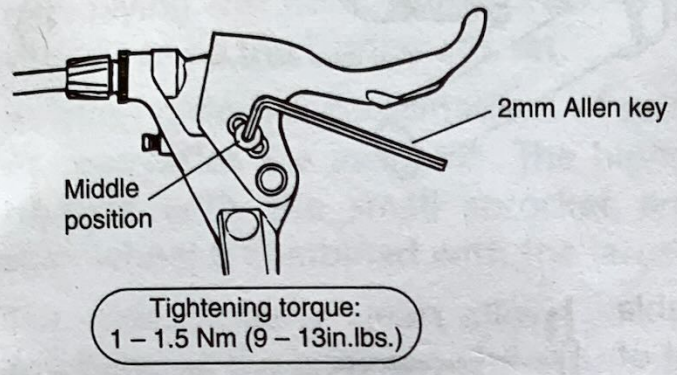
The bicycle might fall forward if you have to apply the brakes suddenly, such as when a vehicle appears.

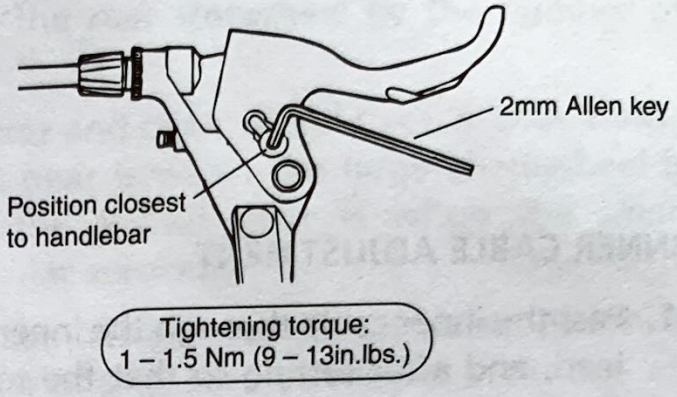
1) **Without power adjuster being moved (standard specification for shipment)**
   This is the standard configuration for mountain bike racing.



2) **With the power adjuster moved to the position shown in the figure overleaf**
   An ample degree of braking force can be obtained from a small amount of brake lever input, to provide a high level of racing brake performance. However, if the brakes are operated suddenly with a normal amount of brake lever input, there is the danger that the bicycle may fall forward. After moving the power adjuster, first ride the bicycle at a speed of less than 6 mph (10 km/h) while applying the brakes repeatedly in order to get a feel for the difference in braking characteristics before riding at higher speeds. Beginners

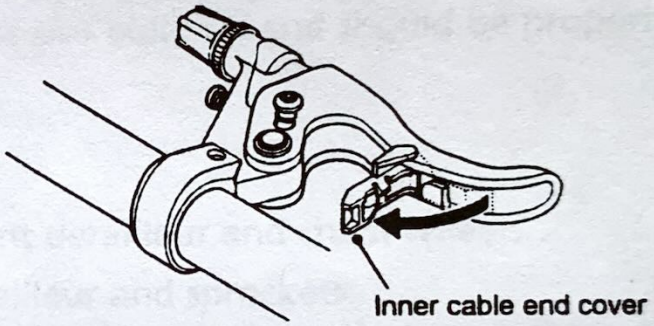
should be particularly careful. When the power adjuster is moved from the middle position to the position closest to the handlebar, the braking force will be even more sensitive to the amount of lever input. Beginners or those who are not fully confident should not use the brakes in this configuration.



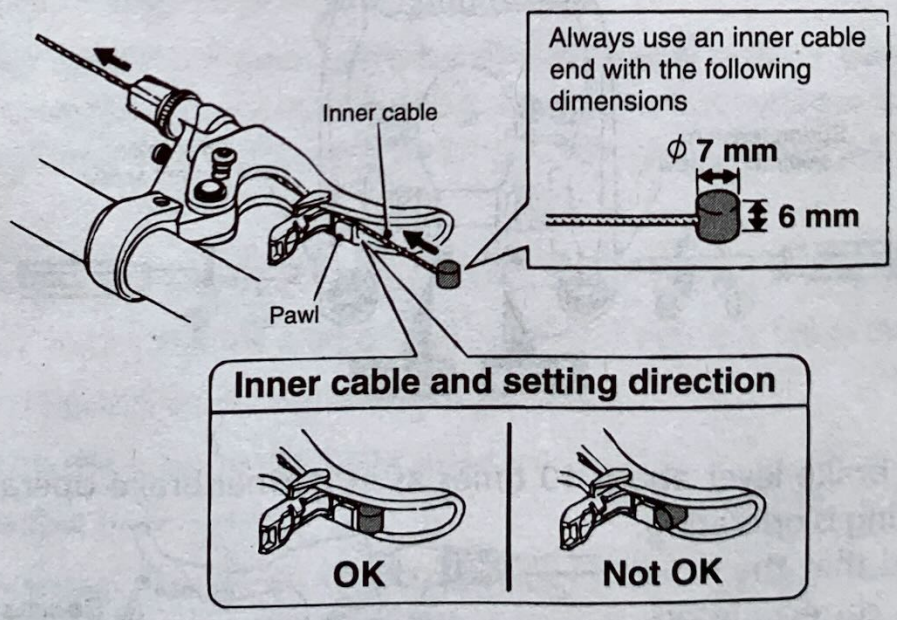


Installing the inner cable

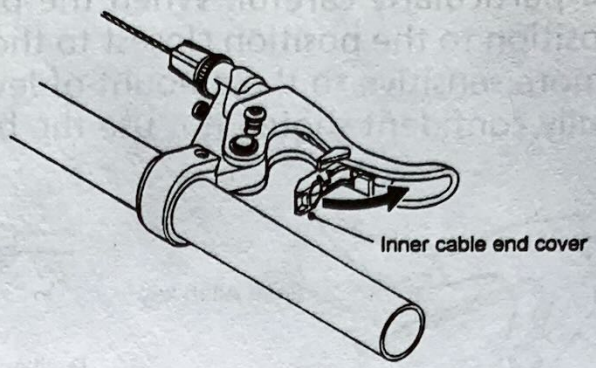
1. Slide the inner cable end cover of the brake lever as shown in the illustration.



2. Pass the inner cable through the inside of the brake lever, and place the inner cable end against the pawl of the brake lever body.

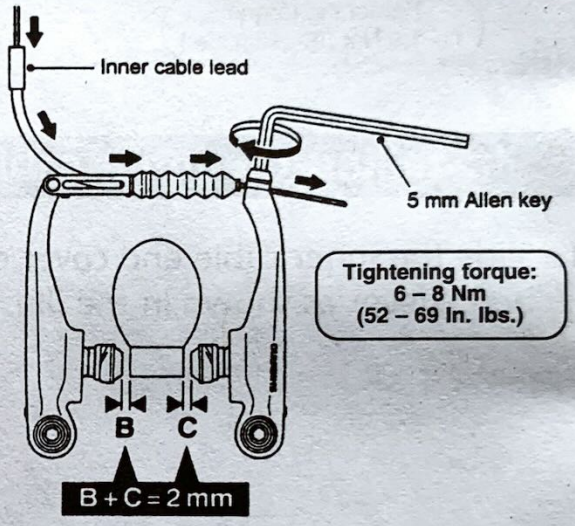


3. Return the inner cable end cover to its original position.

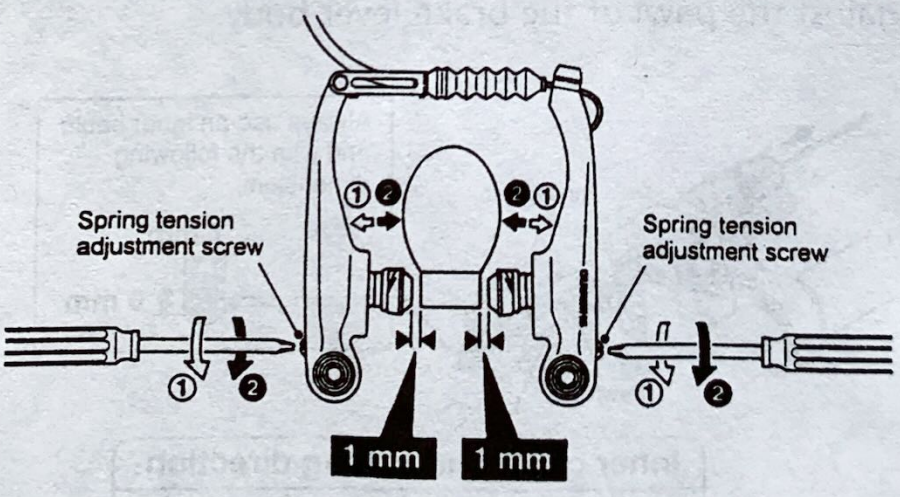


INNER CABLE ADJUSTMENT

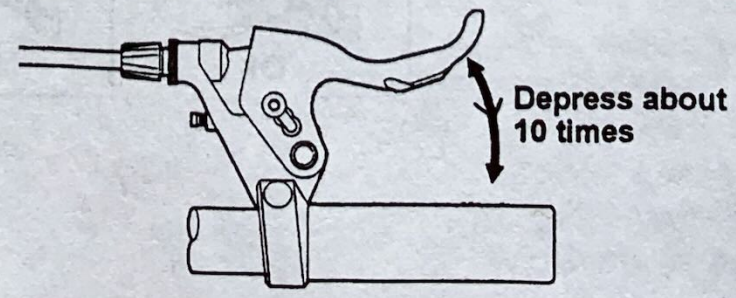
1. Pass the inner cable through the inner cable lead, and after setting so that the total of the clearances between the left and right shoes and the rim is 2mm, tighten the cable fixing bolt.



2. Adjust the balance with the spring tension adjustment screws.



3. Depress the brake lever about 10 times as in normal brake operation and check that everything is operating correctly and that the shoe clearance is correct before using the brakes.



DERAILLEUR GEARS INTRODUCTION

The derailleur gear is so named because it works on the derailing principle to move the chain from one sprocket to another. The number of gears is determined by multiplying the number of sprockets on the rear freewheel by the number of chainrings on the front crank set.

By using different combinations of sprocket and chainwheel sizes, a wide range of gear ratios are available. The highest gear is when the large chainwheel is coupled with the small sprocket and the lowest gear is when the small chainwheel is combined with the largest rear sprocket.

The wide range of gears allows you to combat all prevailing conditions while pedalling at the constant and efficient rate of sixty revolutions per minute.

DERAILLEUR GEAR MAINTENANCE

To help ensure that your derailleur gear works efficiently and to prolong its life, it must be kept clean and free from excess dirt build up and should be properly lubricated.

GEAR CHANGING

The rider's left gear lever controls the front derailleur and chain wheels.

The right gear lever controls the rear derailleur and sprockets.

The large rear sprockets generate low gears for hill climbing. The small rear sprockets develop high gear ratios for speed work and downhill riding.

The small front chainring produces low gear ratios while the larger front chainrings produce higher gear ratios.

To operate your derailleur gear system efficiently and reduce damage, wear and reduce noise to a minimum, avoid using the maximum crossover gear ratios of large chainring/large rear sprocket, small chainring/small rear sprocket.

Caution: For positive gear selection, observe these four precautions:

1. Change only when pedals and wheels are moving in a forward motion.
2. Reduce pedal pressure while changing gears.
3. Never back pedal when changing gear.
4. Never force the gear levers.

Gear selection should be made in anticipation of need since forward motion of the bicycle is required when changing gear. It is advisable to change to a low gear before stopping in order to be in the proper gear when you start up. On hills, change gear early while still maintaining forward pedalling speed.

SIS ADJUSTMENT

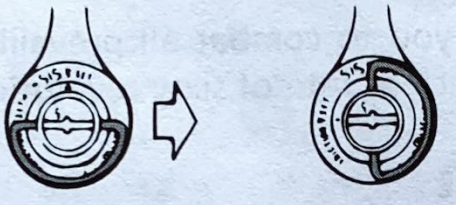
If your bicycle is equipped with the Shimano Index System (SIS) you can pre-set the gear shifter to change gear simply by clicking the shifter up or down to the required gear.

The next few pages and diagrams show how to set this up (if your dealer has not already done it). If you have any problems you should get your dealer to set the SIS up.

Gear Stop Adjustment

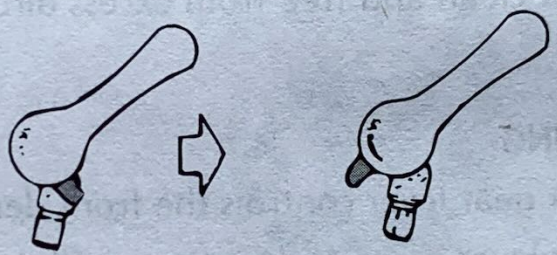
Adjust with the lever at the friction position.

Downtube shifter



SIS Friction position

Gear stop adjustment should only be carried out if the chain is coming off the lowest or highest gear. The stop screws will not adjust the SIS shifts. See later to adjust the indexing.

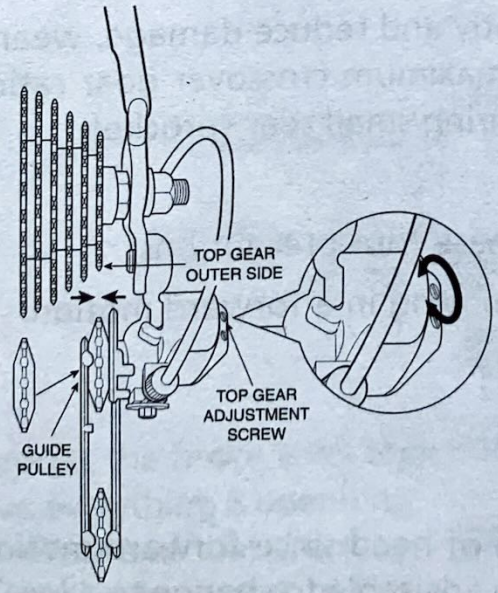


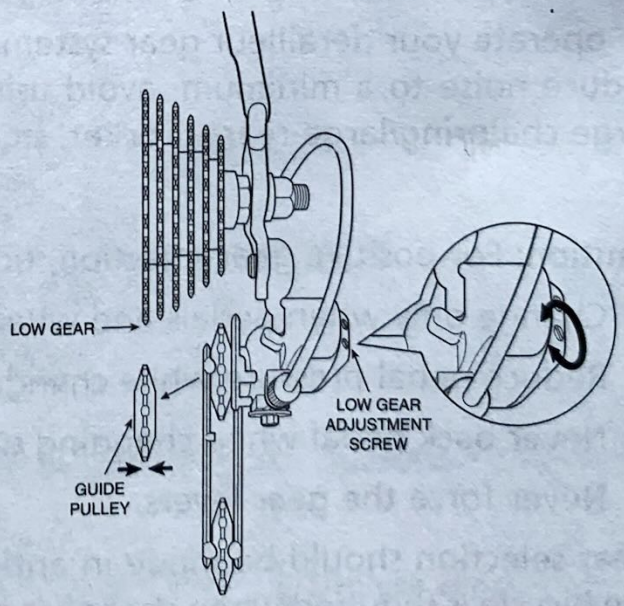
SIS Friction position

Thumb shifter

Top adjustment

Turn the top rear adjustment screw on the gear mechanism so that, looking from the rear, the guide pulley is below the outer line of the top gear.



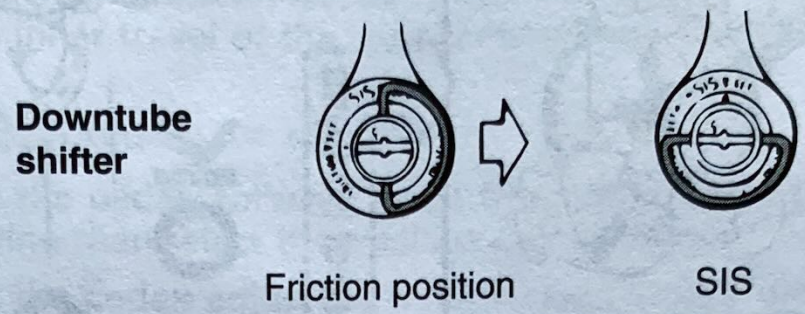


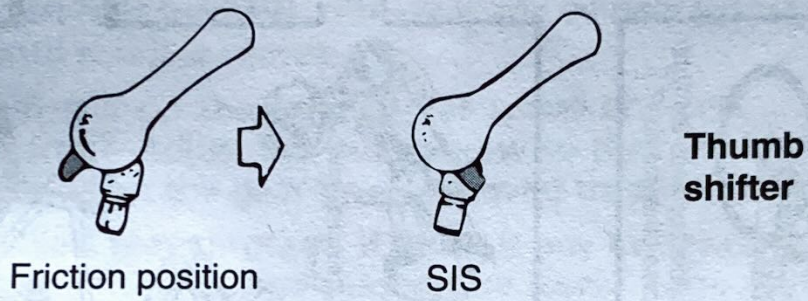
Low adjustment

Turn the low gear adjustment screw so that the guide pulley moves to a position directly below the low gear.

SIS ADJUSTMENT

1. On some models there is an optional motion or SIS mode. If so, move the shifting lever from friction to SIS and make the SIS adjustment

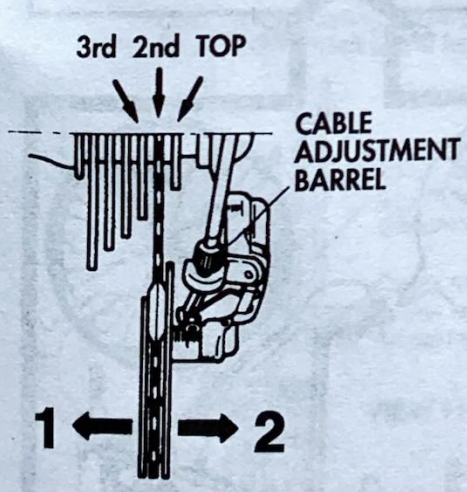




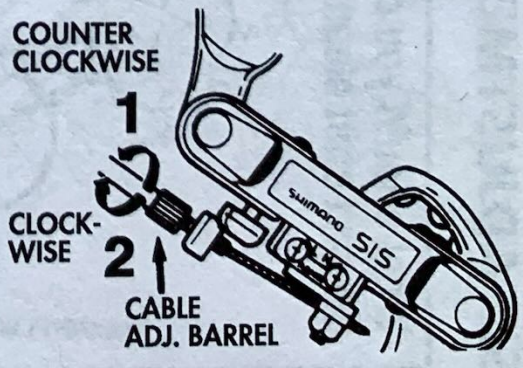
2. Operate the shifting lever to shift the chain from the top gear to 2nd gear.

   *If the chain will **not move to the 2nd gear**, turn the cable adjusting barrel to increase the tension **1 (counter clockwise)**

   *If the chain **moves past the 2nd gear**, decrease the tension **2 (clockwise)**



3. Next, with the chain on the 2nd gear, increase the inner cable tension while turning the crank forward. Stop turning the cable adjusting barrel **just before the chain makes noise against the 3rd gear**. This completes the adjustment.



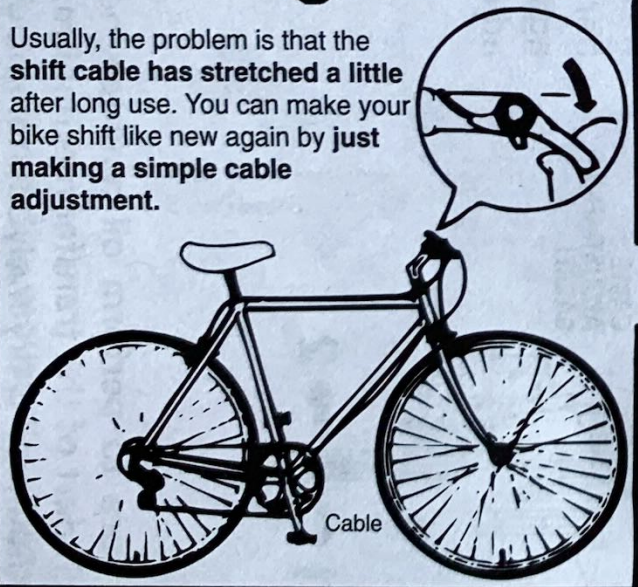
Be sure to perform oil maintenance at each part of the transfer mechanism. The optimum oil is dry molybdenum oil or the equivalent.

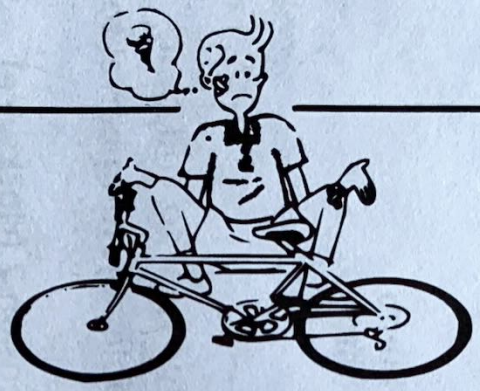
SIS ADJUSTMENT

TROUBLE SHOOTING

What should you do if your bike doesn't shift cleanly and quickly?

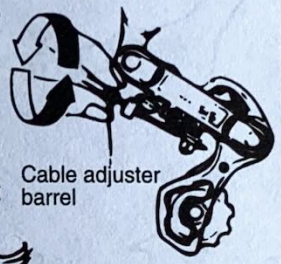
Usually, the problem is that the **shift cable has stretched a little** after long use. You can make your bike shift like new again by **just making a simple cable adjustment.**

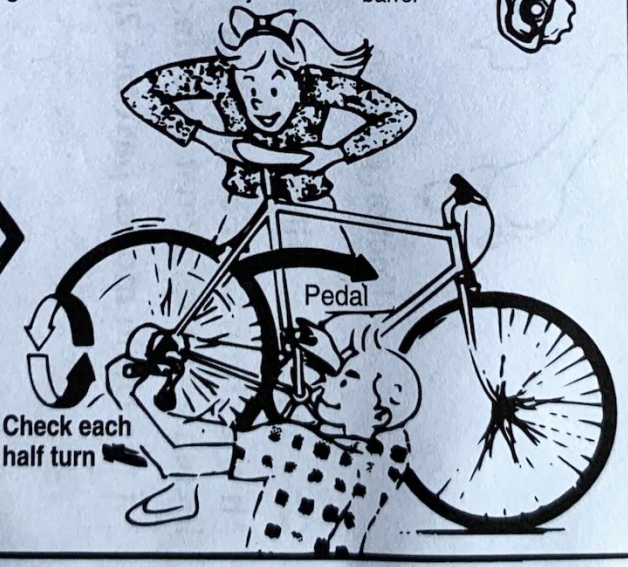




What should you do if the shift cable becomes too tight due to dropping the bicycle or some other mishap?

Turn the adjuster barrel on the derailleur end of the cable 1/2 turn in the counterclockwise direction/ Have a friend lift the back wheel off the ground; then turn the pedals and shift gears to check the adjustment





In this case, the best thing to do is take your bike to the nearest bicycle shop.

In case of No Good

OK

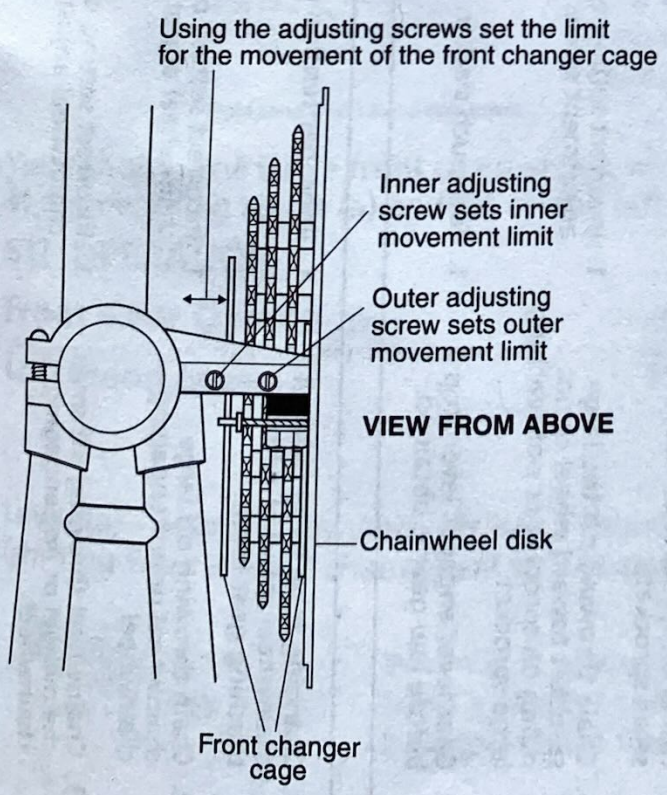
DERAILLEUR GEARS

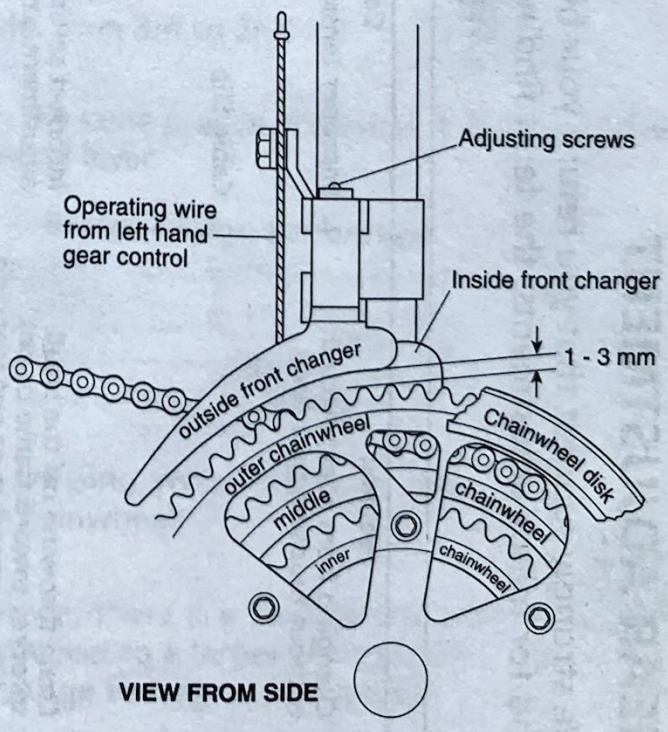
Front Derailleur

The adjustment of the sideways movement of the front changer is by means of two gear stop screws situated on the body of the changer mechanism. The inner screw limited the inner travel of the changer cage, the outer limits the outward movement

Use the following procedure for adjustment:

1. While turning the pedals forward select the middle (on a triple chainset) or the top chainring then select the smallest rear sprocket.
2. While turning the pedals adjust the inner screw on the front changer so that the chain will just drop into the lower ring with the gear lever fully forward.
3. Select the largest rear sprocket. If there is any evidence of chain rub adjust the inner screw until this just ceases.
4. With the chain still on the largest rear sprocket select the ring below the largest at the front. Adjust the outer screw so that the chain just selects the outer chainring when the gear lever is moved through its full arc range.
5. Select the smallest rear sprocket, if there is any evidence of chain rub adjust the outer screw until this just ceases. The lower edge of the outside plate should be positioned approximately 1-3mm above the largest outside chainring. If a biopace chain set is fitted as indicated on the chainring the clearance should be measured above the highest point of the ring.
6. If a chainwheel disk is fitted, make sure there is sufficient clearance between changer cage and chainwheel disk.
7. If problems continue to arise, the bicycle should be checked by a professional repairer.





GEAR ADJUSTMENT

We strongly suggest that you return your bicycle to your dealer for gear adjustments. However, in case of emergency and for minor adjustments, the fault finding chart should help you.

Finding and Correcting Problems

REAR

Problem	Cause	Cure	Warning
1. Changing from gear selected without touching gear lever.	1. Improper tension on gear levers	Tighten gear tension lever screws. See Page 23	Do not tighten so tight you are unable to change gear. Do not lubricate as levers work on friction.
	2. Cable Slip	Tighten cable pinch bolt See Page 23	Ensure cable adjustment is correct before tightening. Ensure tension in gear cable is not acting as a stop.
2. Chain throwing off the small sprocket toward frame or not riding on sprocket or not reaching small sprocket.	1. Incorrect setting of high gear adjustment screw.	Readjust.	Ensure tension in gear cable is not acting as a stop.
3. Chain throwing off the large sprocket toward wheel or not riding on sprocket or not reaching large sprocket.	1. Incorrect setting of low gear adjustment screw.	Readjust	Ensure that the chain never derails towards the wheel as extensive damage can be incurred.
4. Gear lever engages lever stop before low gear is obtained.	1. Too much slack in cable.	Readjust cable.	Ensure cable is not used as a stop.

FRONT

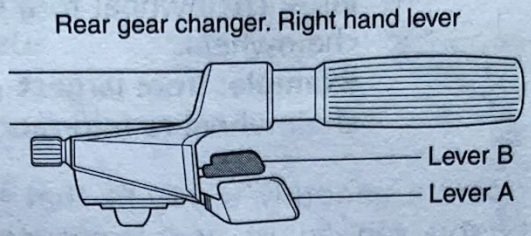
1. Changing from large to small chainwheel sprocket without touching gear lever.	1. Improper tension on levers.	Tighten gear tension lever screws. See Page 26	Do not tighten so tight you are unable to change gear. Do not lubricate as levers work on friction.
2. Chain throwing off large chainwheel or not engaging chainwheel	1. Incorrect setting of outer chainwheel adjust screw.	Readjust. See Paage 26	
3. Chainwheel throwing off small chainwheel or not engaging chainwheel	1. Incorrect setting of inner chainwheel adjust screw.	Readjust. See Page 26	

STI RAPIDFIRE

STI Rapidfire lever uses two push levers mounted conveniently under the bar in front of the thumb. Using lever (A) you can shift one gear at a time, or shift down the entire block with a full stroke push. Using lever (B) you can shift up the sprocket with the same capability.

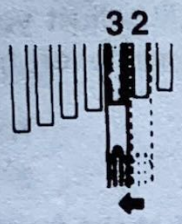
STI OPERATION

Rear Gear Operation - Right Hand Lever.

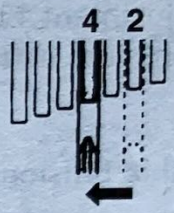


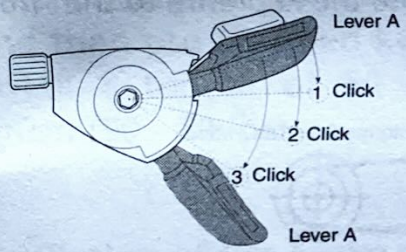
Lever (A) - operated by your right hand thumb pressing away from your body. (shifting from a small sprocket to a larger sprocket)

1) To shift one gear at a time from a small sprocket to a larger sprocket press lever A once
Example: from 2nd to 3rd



2) To shift two gears at a time from a small sprocket to a larger sprocket press lever A twice
Example: from 2nd to 4th

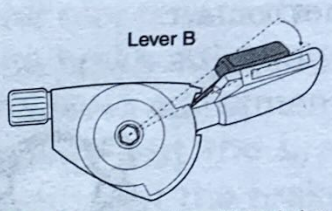




Right hand lever viewed from below

3) To shift three gears at a time from a small sprocket to a larger sprocket press lever A three times
Example: from 2nd to 5th

Lever (B) - operated by pulling with your your right hand forefinger or pushing with your thumb depending on model of shifter. (shifting from a large sprocket to a small sprocket)



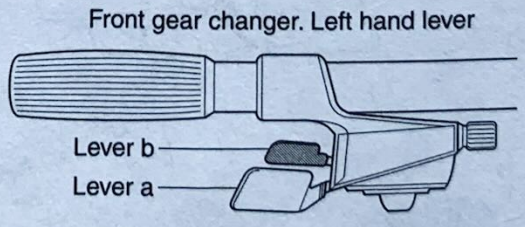
Right hand lever viewed from below

When lever (B) is pulled once, there is a one-step shift from a larger gear to a smaller gear.
Example: from 3rd to 2nd

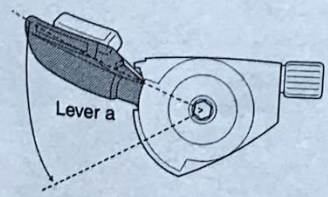
You can shift the triple front chainwheels with the same precise STI action, 1 or 2 chainwheels at a time, using levers (a) and (b) on the left hand lever.

STI OPERATION

Front Gear Operation - Left Hand Lever.

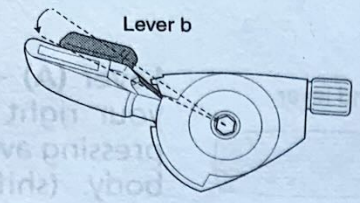


Lever (a) - operated by your left hand thumb pressing away from your body. (shifting from a small chainwheel to a larger chainwheel)



When it is pressed once, there is a shift of one gear from a smaller chainwheel to a larger chainwheel.
Example: from mid-range to largest chainwheel

Lever (b) - operated by pulling with your left hand forefinger or pushing with your thumb depending on model of shifter.
(shifting from a large chainwheel to a smaller chainwheel)

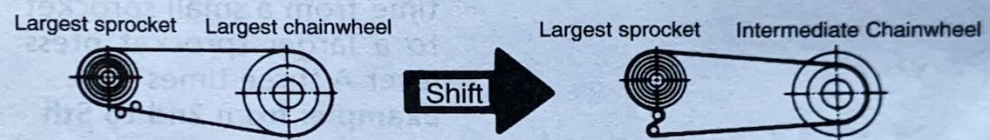


When it is pulled once, there is a shift of one gear from a large chainwheel to a smaller chainwheel.
Example: from largest chainwheel to mid-range.

If your front gears do not operate smoothly, it may be that your front gear cable and front changer need adjustment. You can adjust your front gear cable by using the outer adjustment bolt on the left hand lever. This will adjust your front changer so that it has minimum clearance between the chain and the inside left hand side of the chain guide.

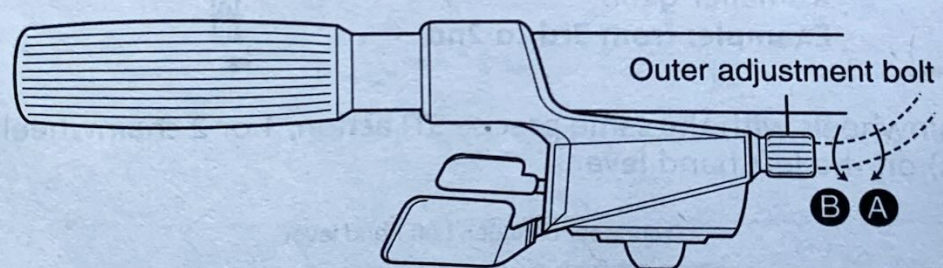
Cable tension adjustment

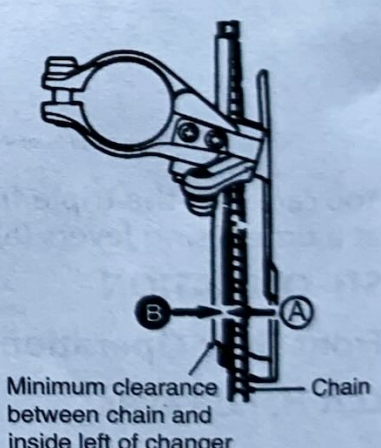
1. Set the chain to the **largest rear sprocket**, and, at the front, use the Rapidfire to shift **from the largest chainwheel to the intermediate chainwheel**.



2. Adjust, by using the outer-adjustment bolt, so that there is the minimum clearance, but so that the chain and the plate (inside the chain guide) do not contact.

Front gear changer. Left hand lever

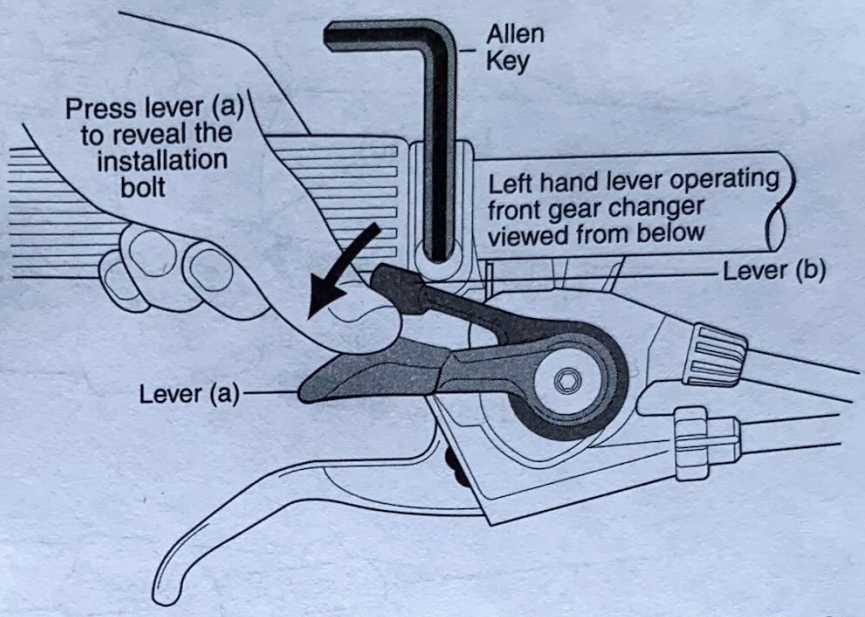




STI ADJUSTMENT – Installation

Noise-prevention mechanism (trimming)

If chain noise occurs, due to overshifting, when a shift is made from the smallest chainwheel to the intermediate chainwheel, the overshifting can be adjusted by gently pressing lever (b) to move the front derailleur slightly toward the small chainwheel, thus activating the noise-prevention mechanism.



Installation torque 60 - 80 kgfcm (50-70 in.lbs.)

Installation to the Handlebar

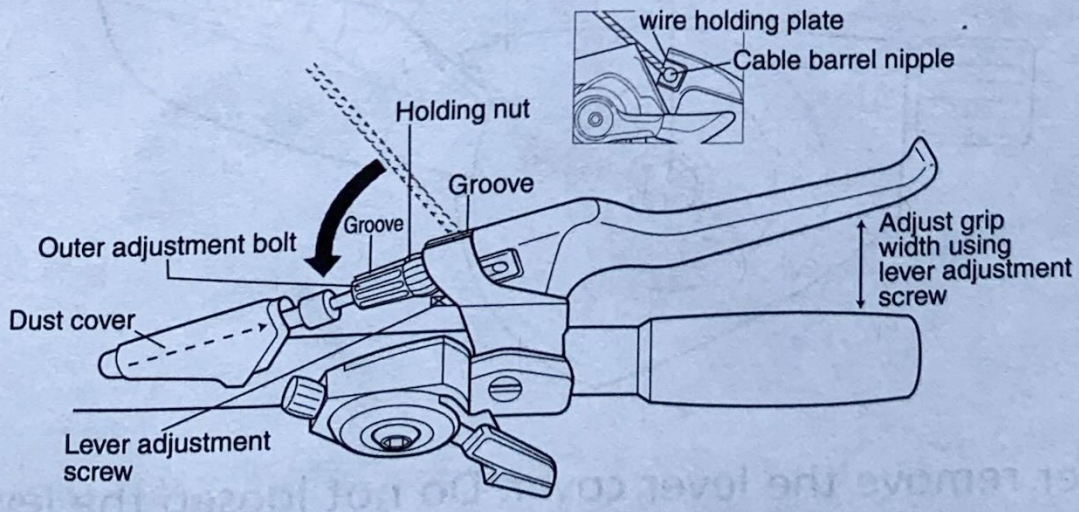
Move lever (a) and lever (A) (when installing the right hand lever) so that the installation bolt can be seen, and then use an Allen key to install a torque of 60 - 80 *kgfcm (50 - 70 lbs).*

Installation of the brake cables

Use the 1.6mm diameter inner cable and the 5mm diameter outer casing.

1. Insert the cable barrel nipple through the brake lever body.
2. Mount the nipple into the retaining hole in the lever.
3. Ensure the brake adjusting bolt and nut are seated correctly in the lever.
4. Adjust the lever adjustment screw to obtain the desired grip width.
5. Before riding, test the brakes several times to ensure everything is seated correctly and that the brakes are functioning properly. Readjust as necessary.

IF IN DOUBT ABOUT BRAKE FUNCTIONING - CONSULT YOUR LOCAL DEALER.

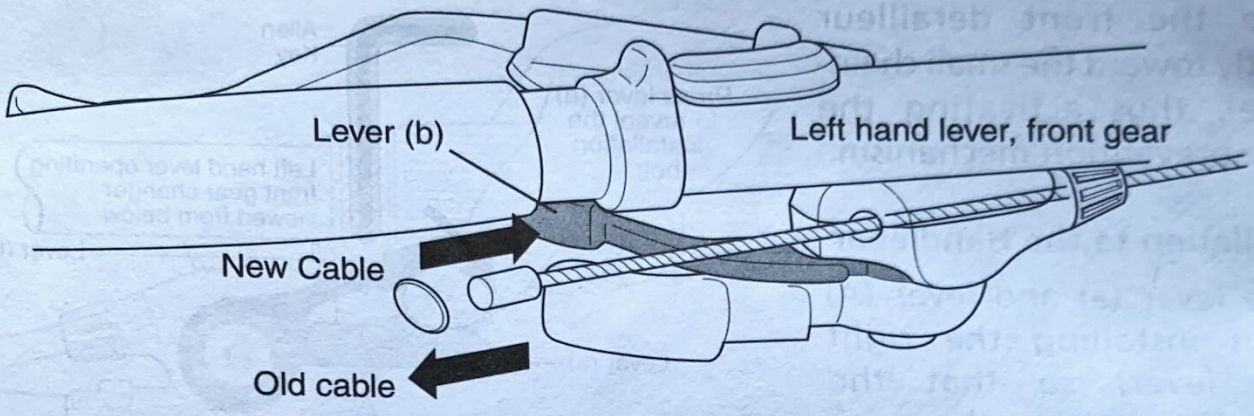


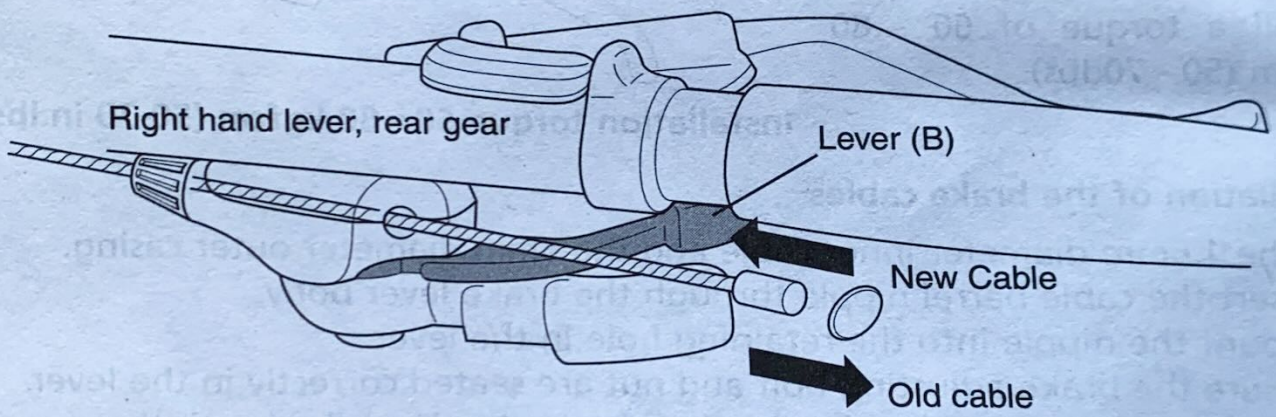
Left hand lever viewed from below

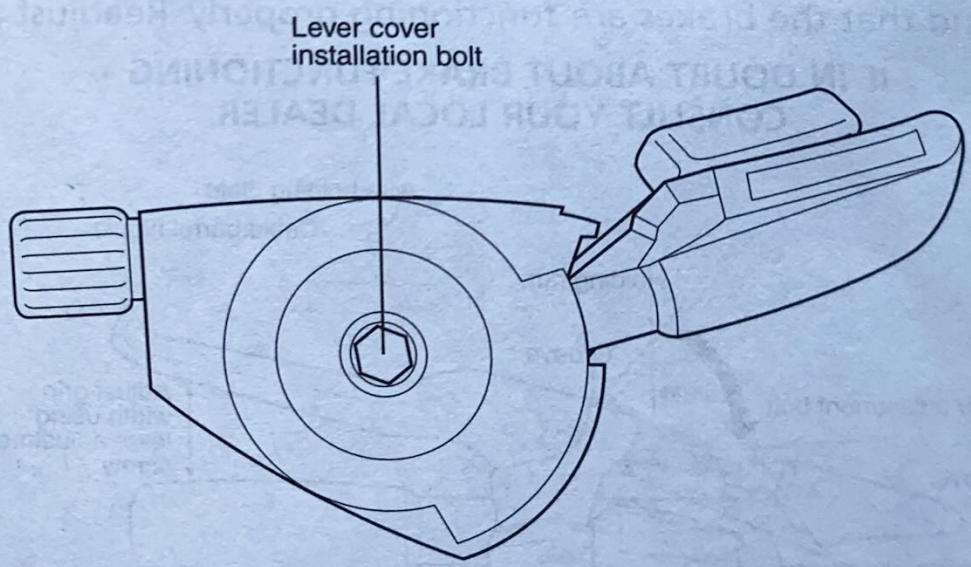
Connection of the Shifting Cable

First, for the rear, press lever (B) six times or more, and then, for the front, press lever (b) three or four times.

Push out the old cable through the lever cover and replace with the new cable.







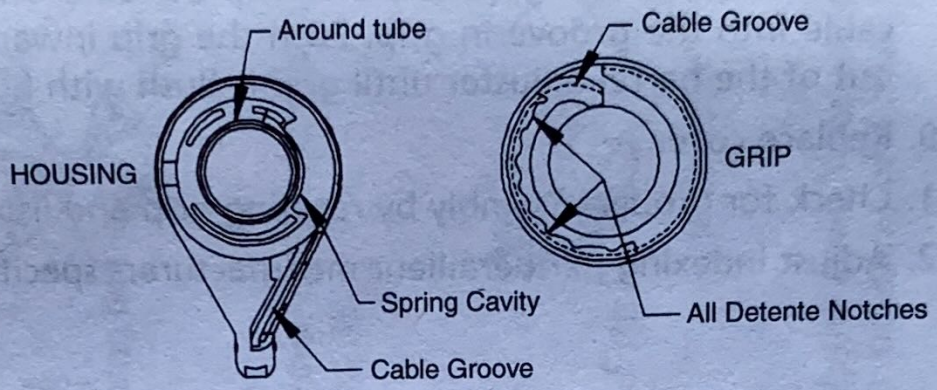
Never remove the lever cover. Do not loosen the lever cover installation bolt.

GRIP SHIFT – Service Instructions

Lubrication

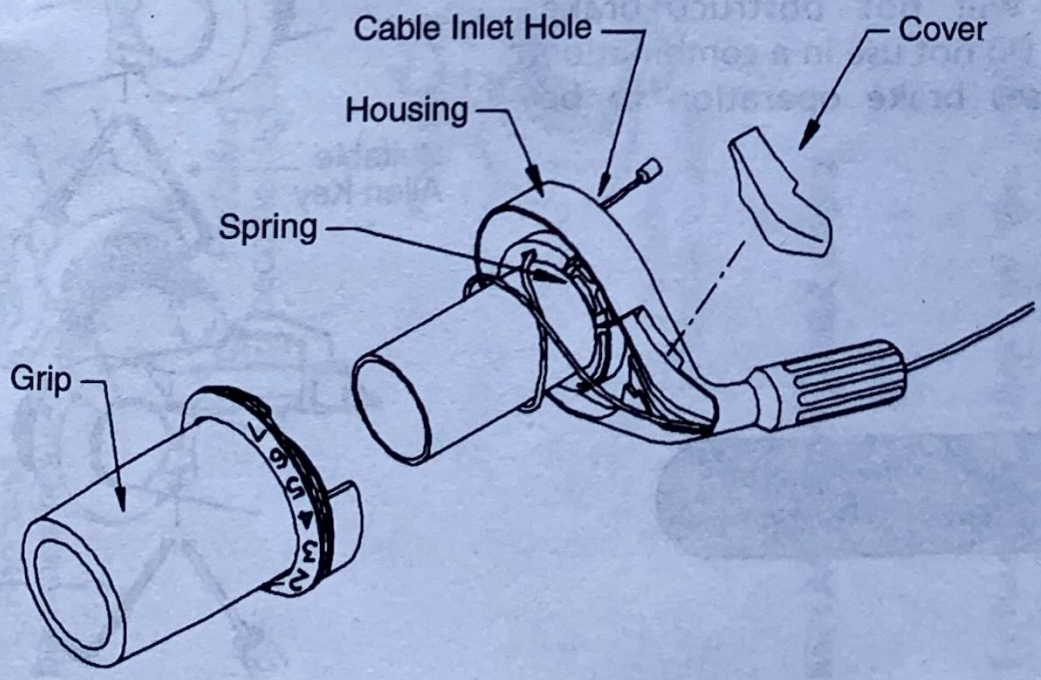
If regreasing should become necessary due to excessive exposure to water and grit:

1. Disassemble and wash parts in kerosene or degreaser. Blow parts clean with compressed air before lubricating.
2. Using a silicone based teflon grease, apply to areas shown. Phil Wood waterproof grease may be substituted. Do not use lithium grease.



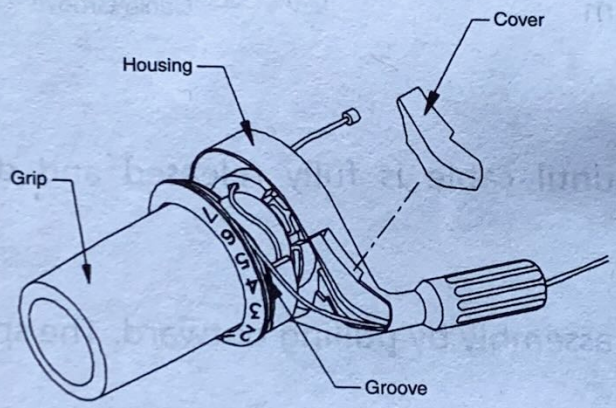
Cable Changes

1. *Rotate Grip Shift until cable is fully released and disconnect cable from derailleur.*
2. Remove cover.
3. Separate Grip Shift assembly by pulling outward. The spring may unseat from the spring cavity.
4. Remove and discard old cable.
5. Lubricate shifter before reassembling. See 'Lubrication' above
6. Replace with Grip Shift approved cable only. Thread new cable through housing cable inlet hole.



GRIP SHIFT – continued

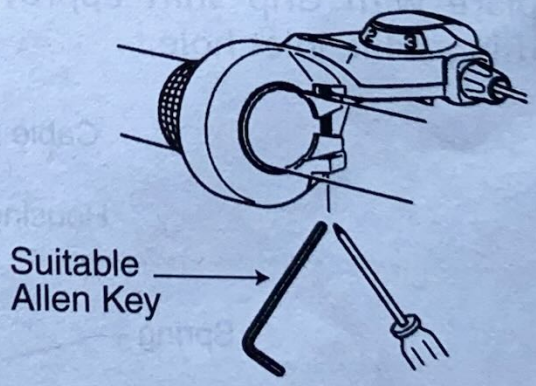
7. Loop the cable around housing. Exit cable through barrel adjuster.
8. Put the spring in spring cavity. If necessary apply a small amount of grease to hold spring in place.
9. Slide grip over housing. Rotate grip to align gear indicator mark with the largest number on grip. Lift the loop of cable off the housing and lay the cable into the groove in grip. Push the grip inward while pulling the cable out of the barrel adjuster until grip is flush with housing.
10. Replace cover.
11. Check for proper assembly by rotating grip and listening for indexing clicks.
12. Adjust indexing per derailleur manufacturers specifications.



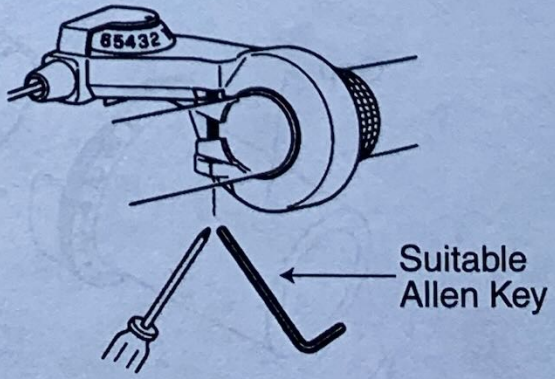
REVOSHIFT

MOUNTING THE SHIFTING LEVER

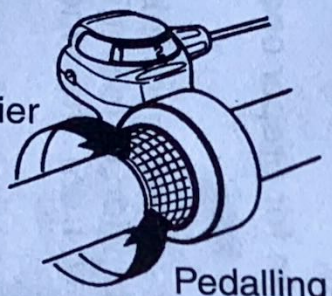
Install the brake lever in a position where it will not obstruct brake operation. Do not use in a combination which causes brake operation to be obstructed.



Tightening torque:
2Nm (18 in. lbs.)

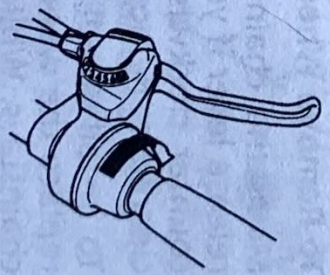


GEAR SHIFTING OPERATION



REPLACING THE INNER CABLE

1. Turn the lever to the initial position (low position for front lever; top position for rear lever).



2. Loosen the lever fixing bolt, and then rotate the lever until the cover fixing bolt can be turned (Fig. 1)

   After this, remove the cover fixing bolt and then remove the cover (Fig. 2).

Fig. 1

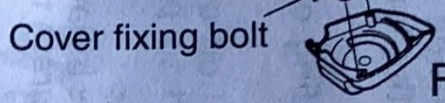


Fig. 2

3. Pull out the inner cable and replace it with the new inner cable (Fig. 3).

Fig. 3

4. After installing the cover, rotate the lever to return it to its original position, and then tighten the lever fixing bolt.

TYRE CARE AND WHEEL ADJUSTMENTS

To obtain maximum life and full benefit from your tyres, it is essential to maintain the recommended pressure indicated on the tyre sidewall.

Unnecessary hard braking and skidding greatly reduces tyre life. Make sure your tyres do not come into contact with oil, petrol, paraffin or other rubber solvents.

Make sure that your wheels run true and are in correct alignment to avoid chafing the tyre sidewall against the bicycle frame or fork tubes.

Tyres should regularly be inspected for wear and cuts. Check that the tyre tread pattern is clearly showing all around the outside edge of the tyre. Check there are not any breaks, cuts or uneven wear in the tyre. Tyres should be replaced if damaged.

Tyre punctures can be caused by careless riding over sharp stones, holes in the road, or by hitting curbstones

If you are storing your bicycle for a long period of time, it is advisable to store the machine with the tyres off the ground to prevent them from becoming distorted.

To inflate tyres, a foot pump or normal bicycle inflator fitted with a suitable valve connector should be used along with an accurate tyre pressure gauge.

Wheels should be checked regularly for spoke tension. Perform this check more frequently if the bicycle is used on rough roads.

STANDARD REAR WHEEL

To Remove Wheel

Move the chain onto the smallest rear sprocket. Disengage the brake quick release lever if your bicycle is so equipped. Loosen both axle nuts by turning in a counter clockwise direction. Pull the derailleur mechanism gear for additional clearance. Remove the rear wheel by sliding forward and out of the frame.

To install wheel, locate the top section of the chain on the small sprocket and replace the wheel into the frame by pushing back and centralising between the chainstays. While holding the wheel in this position, tighten the axle nuts in a clockwise direction.

The wheel should turn freely and have very little side play.

Reset rear brake quick release mechanism and check brake for proper operation.

Quick Release Rear Wheel

Removal and installation of rear wheel fitted with quick release mechanism. Use same procedure as for standard rear wheel, with the exception of loosening axle nuts. Operate the quick release lever by pulling away from the wheel and turning release lever 180° to release the wheel.

When installing the rear wheel, use the same closing and adjusting procedure as outlined for quick release front wheel.

Check quick release lever is in the correct and fully locked position before each ride.

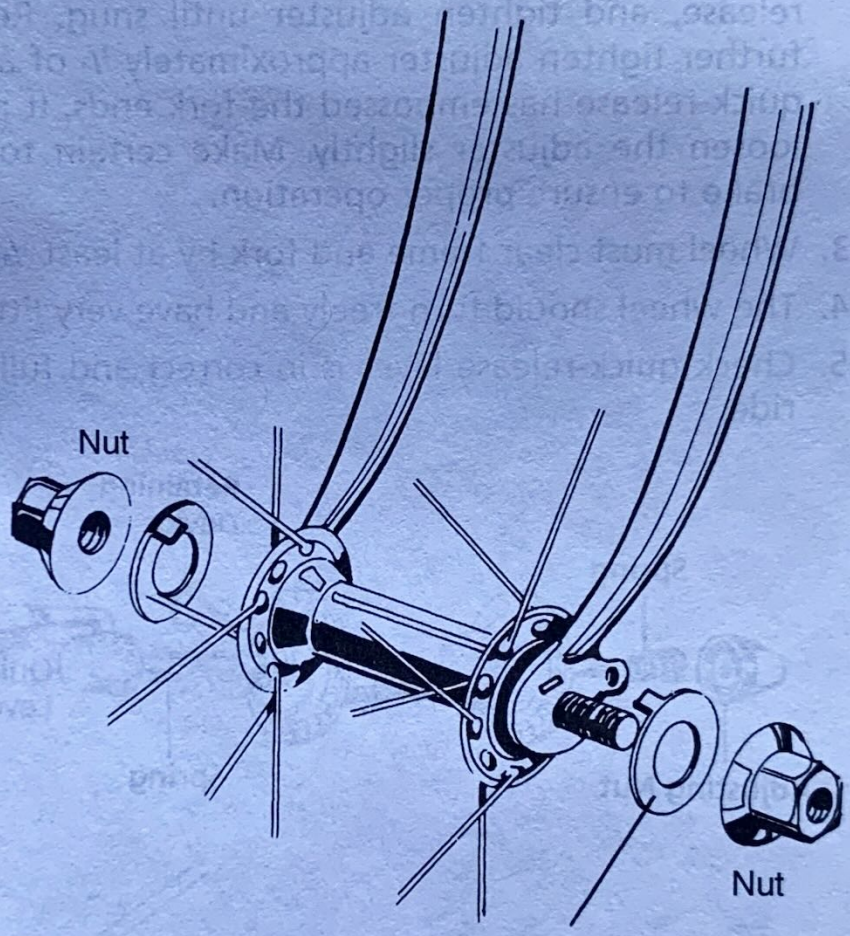
Reset rear brake quick release mechanism and check brake for proper operation.

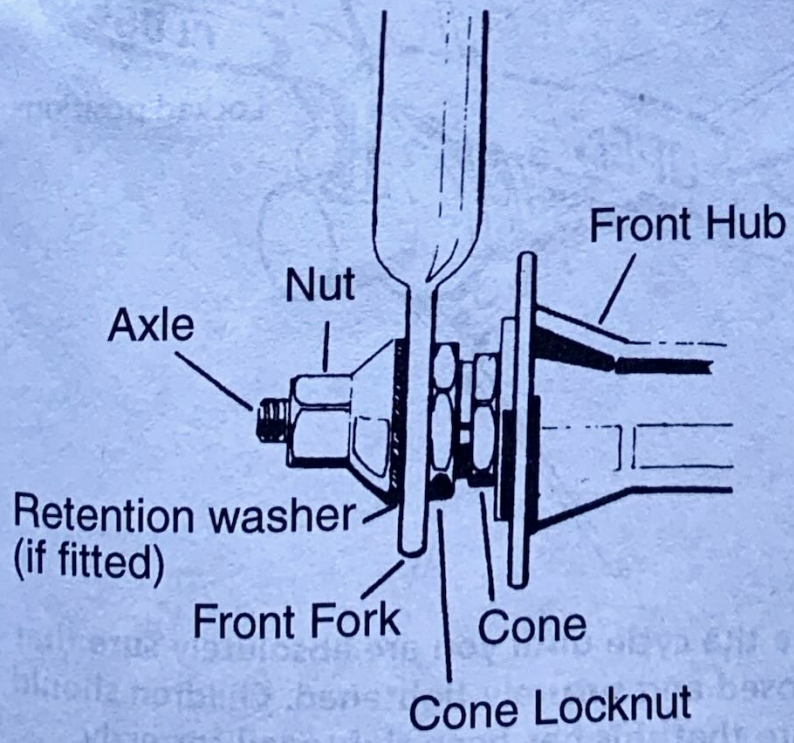
TYRE CARE AND WHEEL ADJUSTMENTS

STANDARD FRONT WHEEL

Remove axle nuts, washers, and axle retention device if fitted. The axle cone bearing adjustment should permit smooth rotation of wheel. Cone locknut should be securely fastened against axle cone to prevent loosening. Place the front wheel between the fork blades with axle retention device and the projecting prongs of the retention device securely fitting the slot in the fork or with standard washers securely placed in position on to the wheel axle in the place of the retention washer. Replace locking washers and nuts on axle. Tighten axle nuts at both ends gradually and alternately in order to keep the wheel centered.

Caution: Front wheel must be installed with retention devices securely placed into slots of fork blades or washers if fitted. This will ensure positive locking of front wheel to front fork.

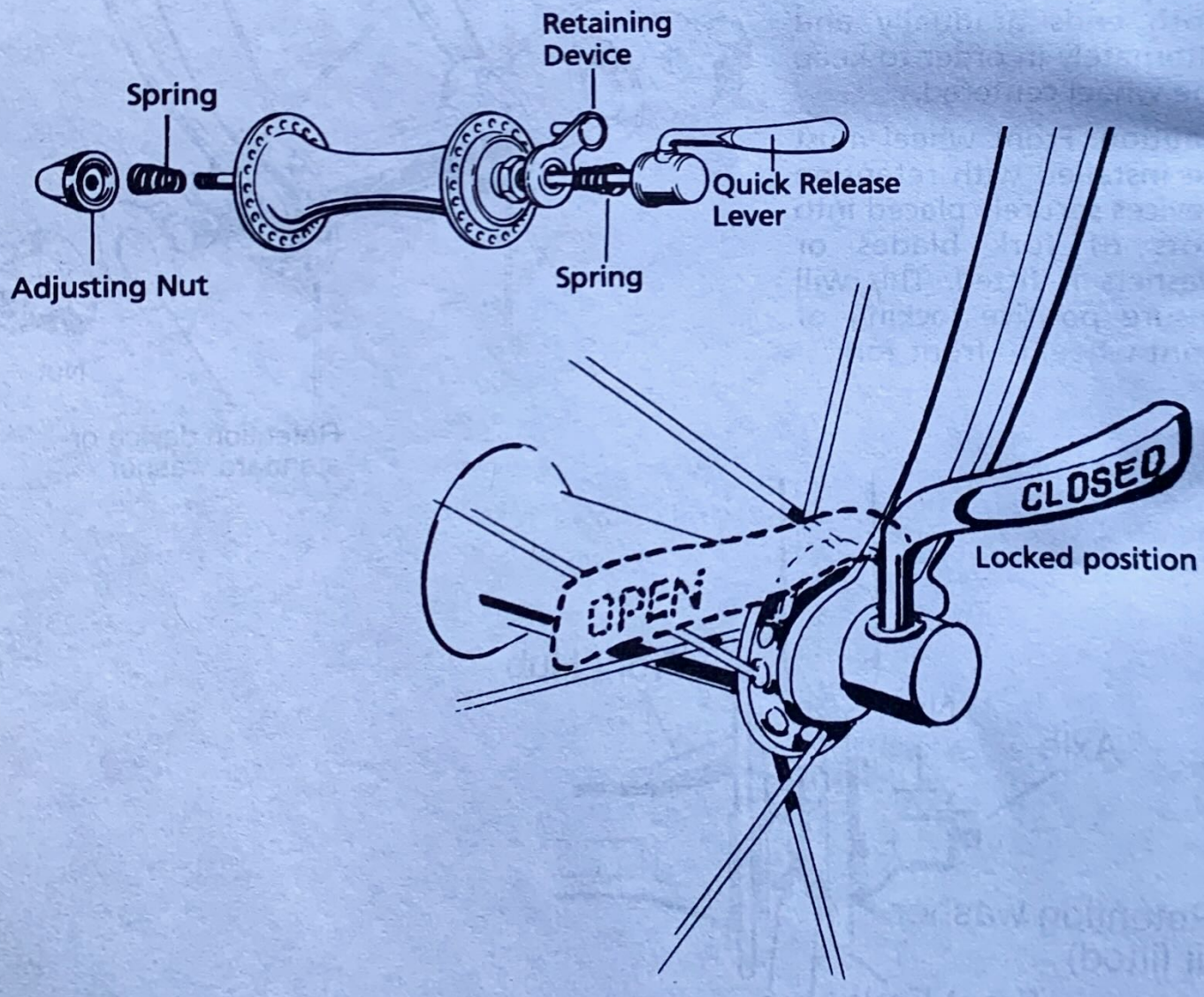




TYRE CARE AND WHEEL ADJUSTMENTS

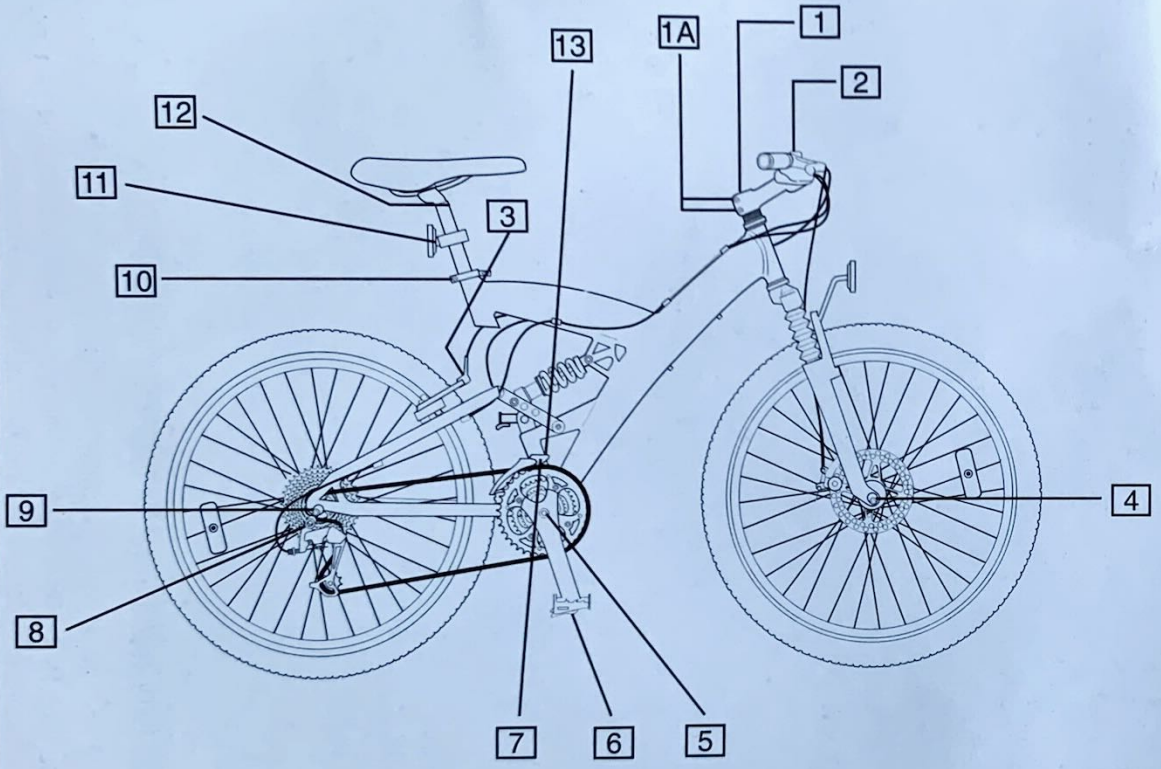
QUICK-RELEASE FRONT WHEEL

1. To remove the front wheel, first release the front wheel brake. Then release the quick-release lever on the axle and pull the wheel from the forks.
2. To install, fit wheel into forks with quick release lever on left side. Close quick-release, and tighten adjuster until snug. Release quick-release lever and further tighten adjuster approximately ¾ of a turn. Lock and check that the quick-release has embossed the fork ends. It may be necessary to tighten or loosen the adjuster slightly. Make certain to reset the quick-release front brake to ensure proper operation.
3. Wheel must clear frame and fork by at least 1/16".
4. The wheel should turn freely and have very little side-play.
5. Check quick-release lever is in correct and fully locked position before each ride.



***Warning, do not attempt to ride the cycle until you are absolutely sure that the quick release lever is fully closed and securely tightened. Children should check with their parents to ensure that this has been tightened correctly.**

TABLE OF RECOMMENDED TORQUE VALUES



	DESCRIPTION	TORQUE
1	Stem Expander Bolt (where fitted)	20Nm
1A	A-Head Stem Bolts (where fitted)	20Nm
2	Stem Binder Bolt (all types)	15Nm
3	Brake Fixing Bolt (non disc) Applies to both front and rear brake	5Nm
4	Front Axle Nut Front QR Axle	30Nm 5Nm
5	Chain Wheel Securing Bolt	38Nm
6	Pedal	40Nm
7	F/Derailleur Cable Fixing Bolt	4Nm
8	R/Derailleur Cable Fixing Bolt	4Nm
9	Rear Axle Nut Rear QR Axle	30Nm 5Nm
10	Seat Pin (Hexagonal Head) Seat Pin (Allen Head)	8Nm 8Nm
11	Front and Rear Reflector Mounting Nut	3Nm
12	Saddle Clamp Bolt	20Nm
13	F/Derailleur Clamp Bolt	5.5Nm

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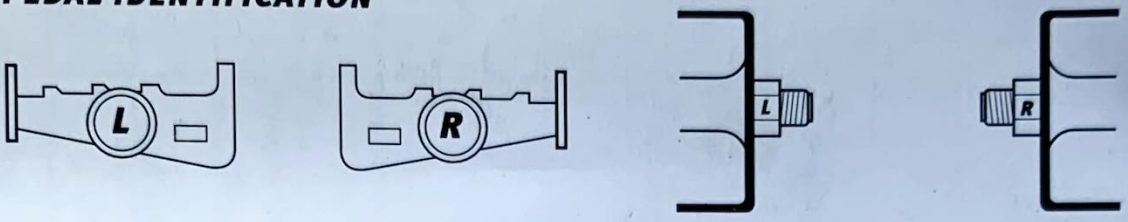
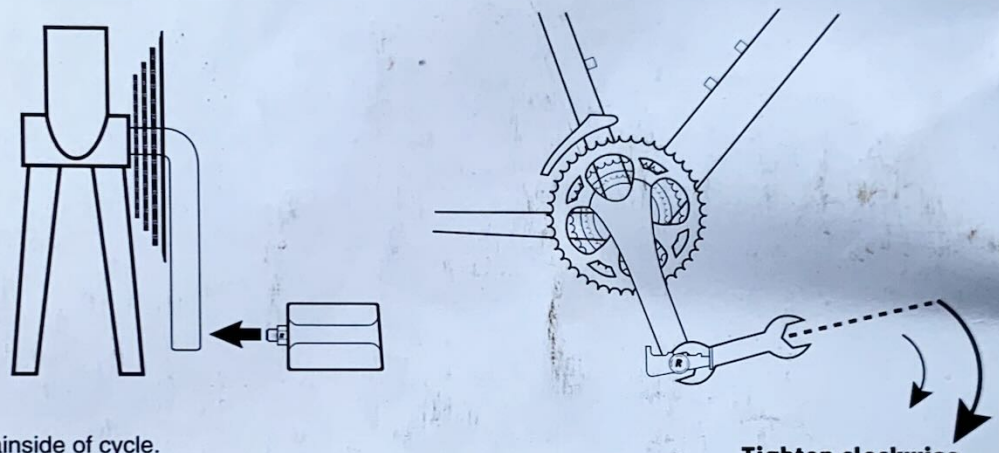
IMPORTANT NOTICE

PEDAL IDENTIFICATION



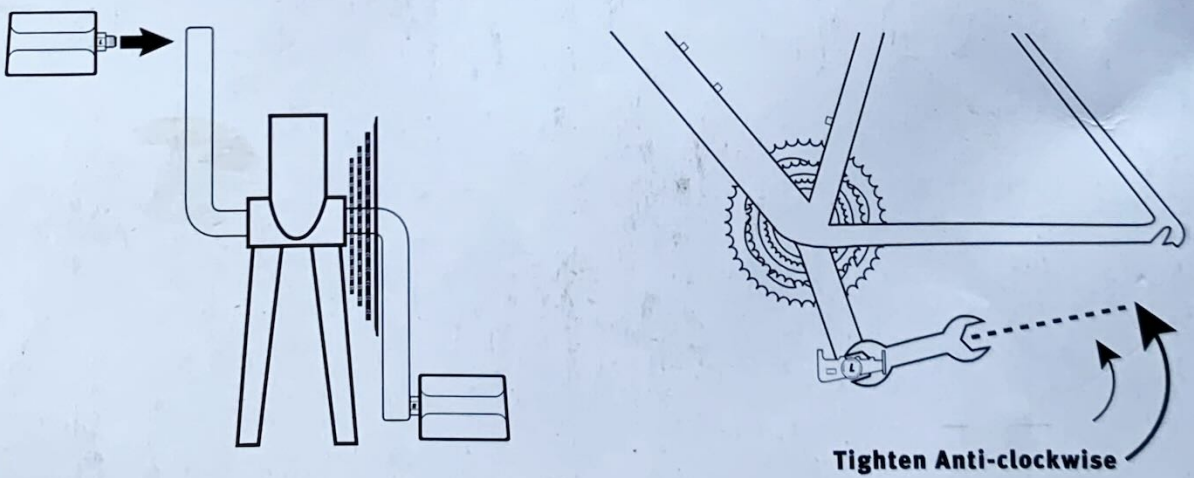
Check for the letters "R" or "L" on the ends of the pedals to show which side the pedal needs to be fitted to.

TO FIT RIGHTHAND PEDAL



1. Fit to chainside of cycle.
2. The pedal has a special thread to tighten in a **clockwise** direction.
3. Locate the thread by hand fit and tighten.
4. Use spanner to finish tightening (be careful).

TO FIT LEFTHAND PEDAL



1. Fit to non chainside of cycle.
2. The pedal has a special thread to tighten in an **anti-clockwise** direction.
3. Locate the thread by hand fit and tighten.
4. Use spanner to finish tightening (be careful).

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