

claudbutler



owners manual

WARRANTY:

RIGID FRAME AND FORKS – LIFETIME

All rigid frames and forks (with the exception of suspension forks, suspension frames, rear shocks and carbon fibre frame and forks) - lifetime warranty.

COMPONENT PARTS – 1 YEAR

All other components (including suspension forks, suspension frames, rear shocks and carbon fibre frames and forks) - 1 year warranty.

All the above warranties apply, provided the bicycle has been properly cared for, maintained and used, and are warranted against manufacturing or material defects for the warranty period stated. This warranty is applicable from the date of purchase for the original owner only, who must produce proof of purchase in order to validate any claim. Claims must be submitted through your retailer. This warranty does not include labour and transportation charge. The company can accept no responsibility for consequential or special damage. This warranty applies only in the case of defective components and does not cover the effects of normal wear and tear or damage caused by accident, abuse, excessive loads, neglect, improper assembly, alteration of original specification, improper maintenance or the addition of any item inconsistent with the original intended use of the cycle.

No bicycle is indestructible and no claims will be accepted for damage caused by improper use, competition use, stunt riding, ramp jumping, leaping or similar activities. Our bicycles conform to BS 6102/1: Part 1 1992 as set by the British Institute Testing Services. We reserve the right to change or amend any specifications within this brochure without notice. All information and specifications within this brochure are correct at the time of going to press.

NOTICE

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

Falcon Cycles Ltd, P.O. Box 3, Bridge Street, Brigg,
North Lincolnshire, England DN20 8PB.

Telephone: (01652) 656000. Fax: (01652) 650040

Web address: <http://www.falconcycles.co.uk>

CONGRATULATIONS!

You are now the proud owner of a 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 a safe and correct riding position.

Please ensure that the Bicycle Log Sheet (page 2) 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 warranty.

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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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 or stamped on the bottom bracket shell or seat tube. We strongly recommend that you have either the frame number or your post code stamped on to your bicycle.



Dealers Address or Stamp

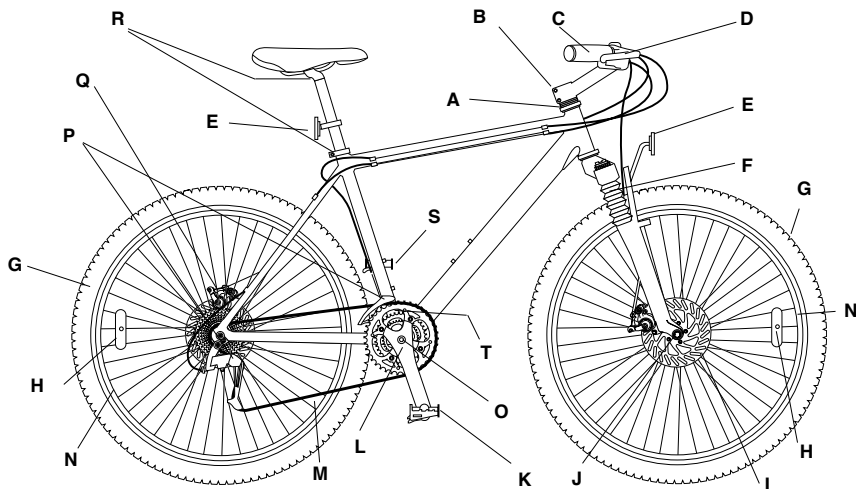
Date of purchase

Service Record: Highly Recommended for safety & support of warranty claims. At 6-monthly intervals or more frequently if high mileage or subject to heavy use.

Dealer Stamp:	Dealer Stamp:	Dealer Stamp:	Dealer Stamp:
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Date:	Date:	Date:	Date:
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LOCATION OF PARTS WITH ROUTINE MAINTENANCE CHECKS AND LUBRICATION



A - Headset

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

B - Stem Nuts

Ensure stem nuts and bolts are tight. See page 29.

C - Handlebars

Check handlebar bolt is tight. Check brake levers securely mounted to bars and brakes stop smoothly and efficiently. See page 29.

D - Brakes

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

E - Reflectors (front & rear)

Ensure reflectors are secure and undamaged. Replace if necessary.

F - Front Suspension unit

(Dealer adjustment only)

G - Tyres

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

H - Wheel Reflectors

Check monthly. Securely fixed.

I - Disc Brakes - Front

(Routine maintenance by your dealer recommended.)

J - Wheel Hubs

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

K - Pedals with Reflectors

Check all fittings are secure.

L - 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.

M - Chain

Keep lightly oiled weekly, clean and lubricate half yearly.

N - 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.

O - Bottom Bracket

Clean, regrease yearly checking for wear.

P - Gears

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

Q - Disc Brake - Rear

(Routine maintenance by your dealer recommended).

R - Seat and Stem Nuts

Be sure seat and stem nuts are tight. See page 29.

S - Pedals

Lightly oil bearings monthly.

T - Frame Number

Refer to table of Recommended torque values - page 29.

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

NB — Wash cycle weekly with warm soapy water and polish dry with a soft cloth

YOUR BICYCLE — OWNER'S 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 is fitted 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 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.

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 (more frequently if high mileage or subject to heavy use) your bicycle should be professionally checked to ensure that it is in correct and safe working order. A 'Service Record' is provided for your use.

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 Nots

- 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.

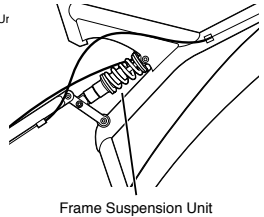
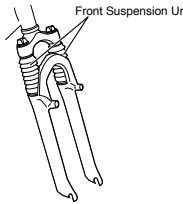
CAUTION: Night Riding

We recommend you minimise the time you ride after dark. If you should have to be out on your bicycle at night you must 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.



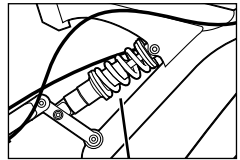
Riding Position

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.

Pre Load Adjustment

We recommend that Pre-Load load for optimum safe riding should be set as follows.

- 1 Pre-Load alters the amount of sag you experience when you transfer body weight to the saddle. We strongly recommend you set Pre-Load so as to experience no more than 1" (25mm) of sag. Measured as a decrease in bottom bracket height.



To adjust Pre-Load, grasp knurled adjuster and spring, and either:-

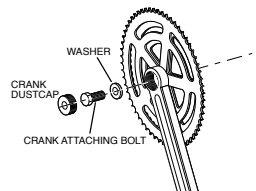
- 2 Increase Pre-Load by turning to compress the spring
- 3 Decrease Pre-Load by turning to allow spring extension
- 4 Ideal recommended preload would be 10-15% of the overall travel. (i.e. for a 80mm fork 8-12mm preload). More information may be found in the suspension manufacturers hand book.

* Note. Some cycles may be fitted with Air suspension shocks. Preload on these is adjusted by changing the air pressure. Please refer to the suspension manufacturing

COTTERLESS CRANKS ADJUSTMENT IMPORTANT

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.

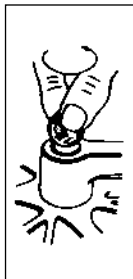
The adjustment should be made using a torque wrench fitted with a suitably sized spanner having first removed the dust cap. Torque setting 38Nm (320 lbs./ ins.) (30 lbs./ ft.)



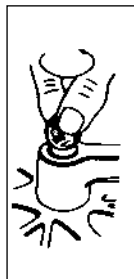
REMOVAL AND FITTING OF COTTERLESS CRANKS

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



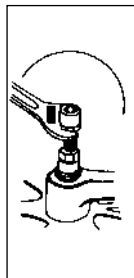
1. Take off the dustcap.



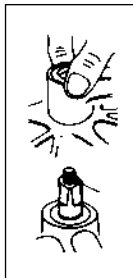
3. Remove washer. Screw in the 4. Turn the screw bolt down, removing tool fully.



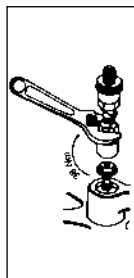
2. Loosen flange nut or bolt and take off.



TO FIT CRANKS



1. Insert the bracket axle to the 2. Tap on the crank lightly using a rubber mallet or drift.



3. Put in washer. Tighten the flange nut or bolt with proper torque of 38 Nm.

4. Screw in the



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

COTTERLESS CHAINWHEEL AND CRANKS

Cotterless means that no crank pin is used, also the crank 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

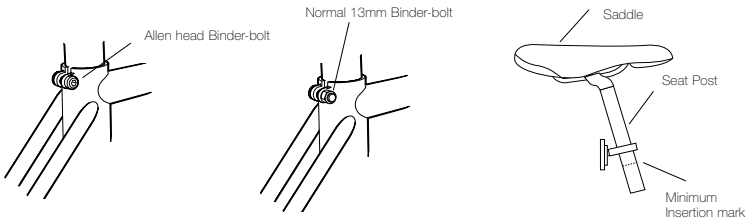
Seat Adjustment

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).

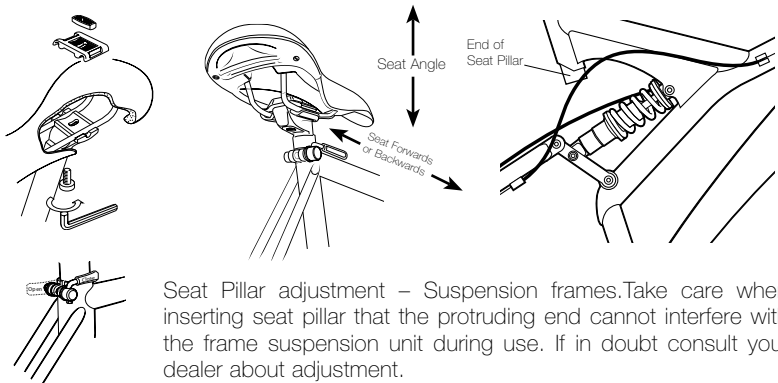
To adjust the seat up and down, loosen the binder-bolt on the seat tube, position the seat and re-tighten the binder-bolt.

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 by using a 6 mm Allen key or a 13 mm spanner. Test by grasping the seat and attempting to turn. Keep tightening until the seat will no longer turn. Refer to table of torque values page 29.

! 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.

HANDLEBARS AND STEMS

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

Standard Stem: 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. Refer to table of Recommended torque values on page 29.

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

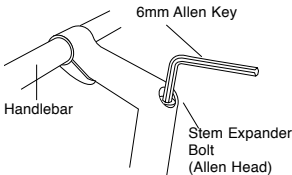
Note: On some ATB's raising the stem requires brake cable adjustment. Do not attempt this if low profile brakes are fitted with a stem hold mounted cable stop.

A-Head stem: Which has 2 steerer clamp bolts on the back of the stem, which clamp around the steerer tube. Loosen these bolts to align the stem with the front wheel. Re-tighten the steerer clamp bolts.

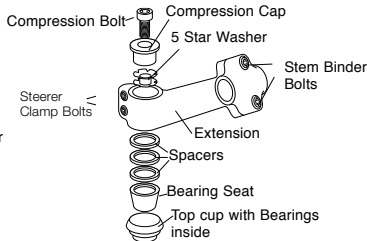
Caution: Do not adjust the top compression bolt, this should be pre-set to eliminate bearing play, overtightening will cause premature wear.

Contact your retailer for service.

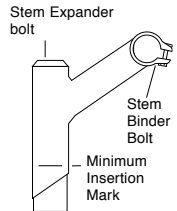
Recessed Type



A-Head Type



Standard Stem



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. Refer to table of Recommended torque values on page 29.

CAUTION:
**NEVER EXTEND THE HANDLEBAR STEM OR SEAT POST ABOVE THE
MINIMUM INSERTION MARK AS THIS IS 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

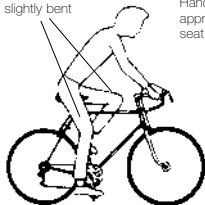
The correct seat height is determined by sitting on the seat with your leg fully extended. Your heel (in flat shoes) should just touch the pedal when it is positioned at its lowest point. When riding normally with the ball of your foot on the pedal your knee should be slightly flexed at the bottom of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

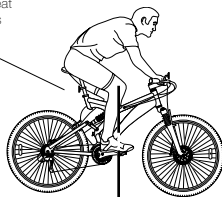
Knee slightly bent



Pedal at bottom position

Handlebar Stem
approximately level with
seat or slightly lower

Loosen saddle from seat
pillar to adjust forwards
or backwards. Tighten
when set correctly



The saddle should be moved forwards or backwards so that the knee is directly above the pedal when the crank is parallel to the ground.

BRAKES

(There are 4 main types of brakes — Caliper, Cantilever, 'V' and Disc.)

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. 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

BRAKE ADJUSTMENT PROCEDURE — Caliper brakes

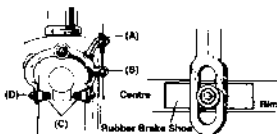
The brakes on your bicycle should have been adjusted correctly by your dealer; however, as cables do stretch, it is important to check the adjustment of your brakes after your first ride. Most brakes will need some adjustments after being used the first few times. Your brakes are correctly adjusted when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

your bicycle to your



dealer.

BRAKE ADJUSTMENT PROCEDURE — Caliper brakes

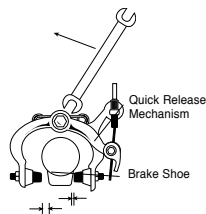
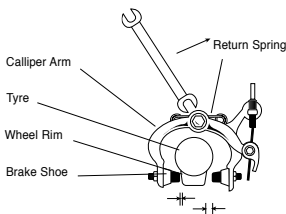
To maintain cable brakes in efficient working order, regularly check the brake adjustment and lightly lubricate brake pivots and springs. Oil the exposed parts of the cable to prevent corrosion. Slow or inefficient braking often indicates that the brake cables themselves require lubrication. As this 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.

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.

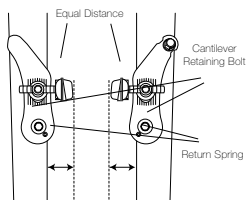


To centre side pull brakes first slacken the retaining nut and then centre the brake using a spanner on the front retaining nut.

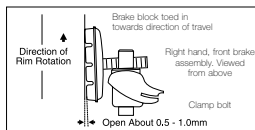
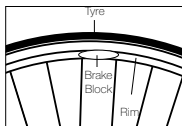
CAUTION: Before riding, test your brakes. Make sure that the quick release mechanism is returned to its normal correct position, otherwise your brakes will not operate effectively.

BRAKE ADJUSTMENT PROCEDURE — Cantilever brakes

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 10 mm ring spanner and a 5 mm 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.

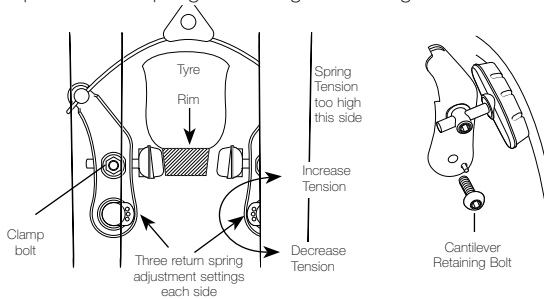


Once the brake blocks are positioned correctly re-tighten clamp bolt ensuring that the blocks do not move.

It will now be necessary to adjust the cable so that the blocks lie 1.5 mm from the rim. To do this use a 10 mm 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 5 mm Allen key undo the cantilever retaining bolt.

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



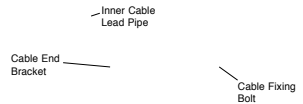
WARNING:
Always keep your
brakes properly
adjusted.
Check them
regularly.

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

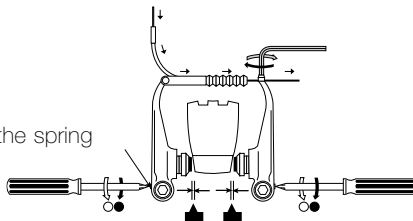
BRAKE ADJUSTMENT PROCEDURE - 'V'

INNER CABLE ADJUSTMENT

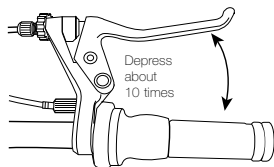
1. Pass the inner cable through the inner cable lead pipe, and after setting so that the total of the clearances between the left and right shoes and the rim is 2 mm, tighten the cable fixing bolt.



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

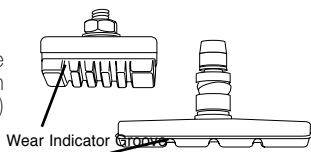


3. Depress the brake lever about 10 times as in normal brake operation and check that everything is operating correctly and that the shoe clearance is correct before using the brakes.



BRAKE BLOCK REPLACEMENT - Caliper and V Brakes

All brake blocks are provided with grooves that indicate the wear on each block. When the grooves are worn down to a flat surface, replace the blocks (in pairs) immediately.



BRAKE MAINTENANCE — Disc Brakes

You cycle may arrive with factory fitted disc brakes, the very latest in braking technology.

There are two types as referred to below,

Mechanical disc brakes

These are operated by a standard cable and brake levers to actuate the brake pads against the disc. These brakes will require periodical adjustment as the brake pads wear, for detailed instructions on this adjustment please consult the brake specific leaflet included with the cycle. If in any doubt please consult you dealer for further advice.

In addition you should always check brake function and adjustment regularly and ensure the brake lever and brake cable are in perfect condition before riding. Do not touch the disc brake rotor or caliper immediately after riding, as these may become hot!

Hydraulic disc brakes

These use dedicated brake levers, and brake fluid to actuate the brake pads against the disc. Some types of disc brakes are self adjusting for wear, but some however require periodical adjustment to compensate for pad wear. Please consult the brake specific leaflet included with the cycle for more information. If in any doubt please consult your dealer for further advice.

We recommend all maintenance is carried out by a competent mechanic at your local dealer

Please also note there are two types of fluid, Mineral oil fluid and Std brake fluid (usually DOT3 or 4) . Do not use the wrong fluid in the wrong system as serious damage may occur, possibly causing loss of braking control. Refer to the brake specific leaflet for information on the type of fluid used on your system. In addition

you should always check brake function and adjustment regularly and ensure all items of the braking system are in perfect condition before riding. Do not touch the disc brake rotor or caliper immediately after riding, as these may become hot!.

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.

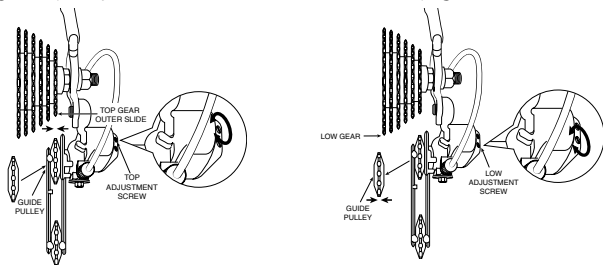
Gear selection should be made in anticipation of need since forward motion of the bicycle is required when changing gear. It is advisable to change to a low gear before stopping in order to be in the proper gear when you start up. On hills, change gear early while still maintaining forward pedalling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

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.



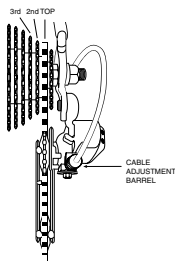
Low adjustment

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

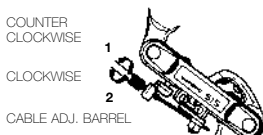
1. Operate the shifting lever to shift the chain from the top gear to 2nd gear.

*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)**



2. 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.

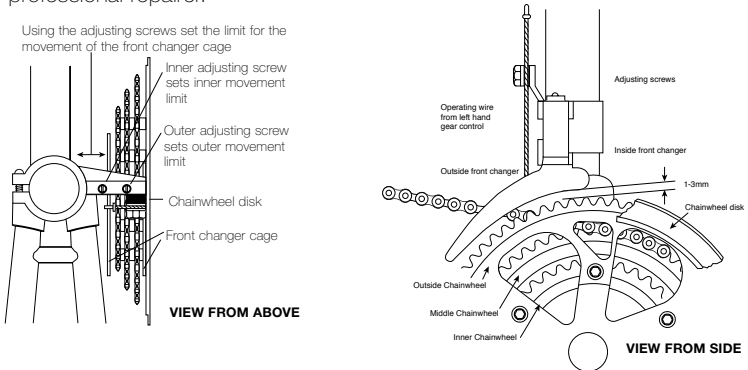
DERAILLEUR GEARS — Continued.

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 1-3 mm 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.	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.	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 large 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			
Problem	Cause	Cure	WARNING
1. Changing from large to small chainwheel sprocket without touching gear lever	1. Improper tension on gear levers	Tighten gear tension lever screws.	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.	
3. Chainwheel throwing off small chainwheel or not engaging chainwheel	1. Incorrect setting of inner chainwheel adjust screw	Readjust.	

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

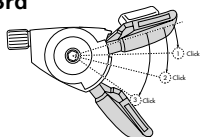
Rear Gear Operation

Right Hand Lever.

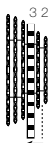
Lever (A) — operated by your right hand thumb pressing away from your body (shifting from a small sprocket to a larger sprocket)

1) To shift one gear at a time from a small sprocket press lever A once

Example: from 2nd to 3rd



Right hand lever viewed from below



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

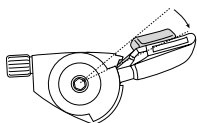


3) To shift three gears at a time from a small sprocket to a larger sprocket press lever A three times

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

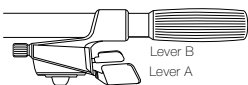


STI OPERATION

Front Gear Operation

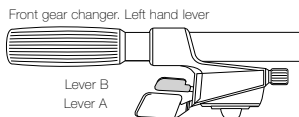
You can shift the triple front chainwheels with the same precise STI action, 1 or 2 chainwheels at a time, using levers (a) and (b) on the left hand lever

Rear gear changer. Right hand lever

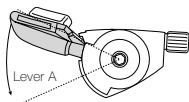


Lever B
Lever A

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)



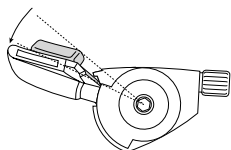
When it is pressed once, there is a shift of one gear from a smaller chainwheel to a larger chainwheel.

Example: from mid-range to largest chainwheel



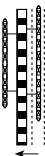
Lever(B) - operated by pulling with your left hand forefinger or pushing with your thumb depending on model of shifter.

(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.

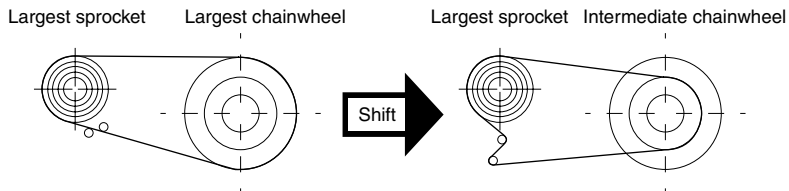
Example: from largest chainwheel to mid-range



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.

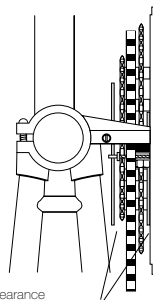
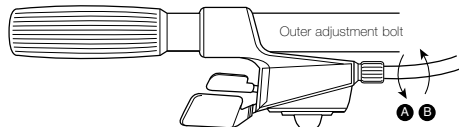
Cable tension adjustment

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



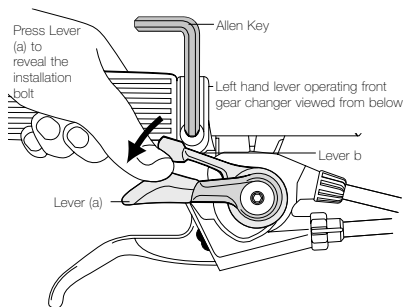
Minimum clearance
between chain and inside
left of changer

STI Adjustment Noise prevention mechanism

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 chain wheel, thus activating the noise prevention mechanism.

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 6 - 8 Nm (4.5 - 6lb-ft).

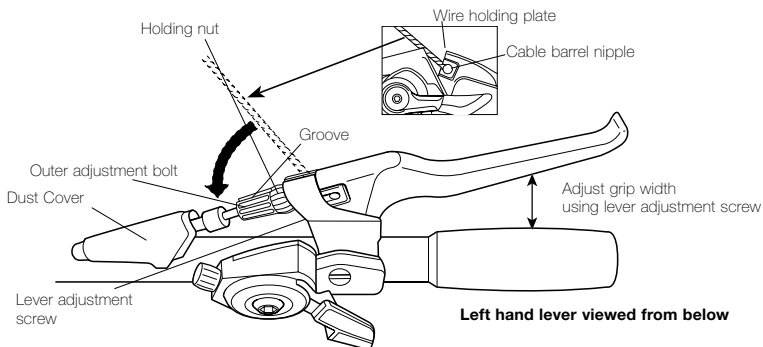


Installation torque 6 - 8 Nm (4.5 - 6lb-ft)

Inner wire Replacement

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.

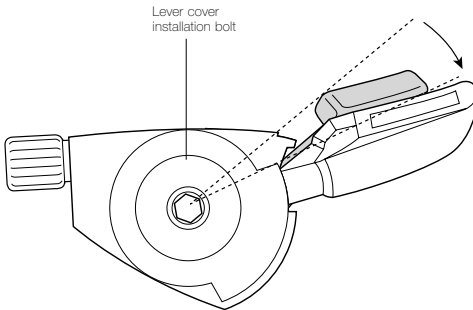
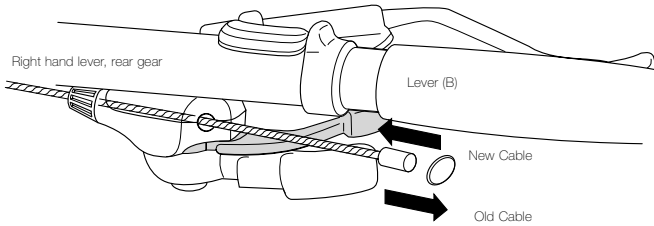
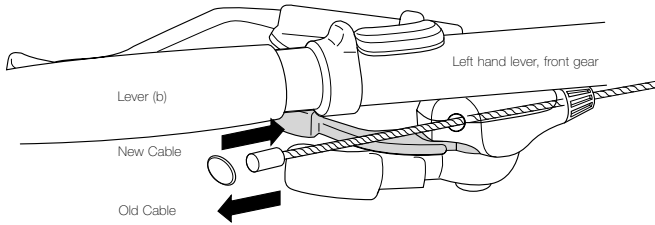


Installation of the brake cables

Use the 1.6 mm diameter inner cable and the 5 mm 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.**



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

GRIP SHIFT

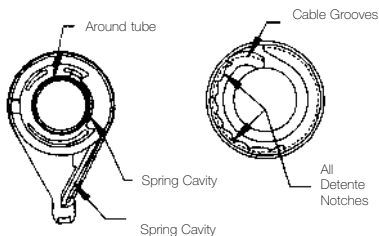
Service Instructions

Lubrication

If re-greasing 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.

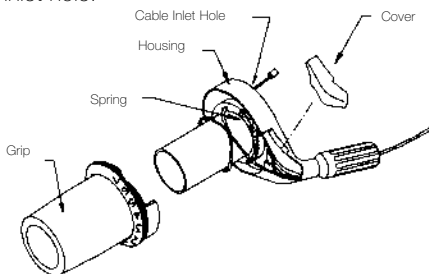
2. Using a silicone based teflon grease, apply to areas shown. Phil Wood waterproof grease may be substituted.



! WARNING: Do not use lithium grease

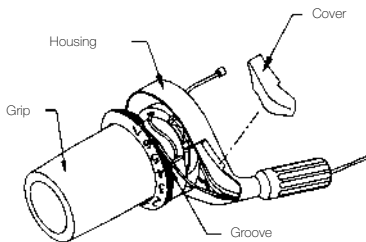
Cable Changes

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.

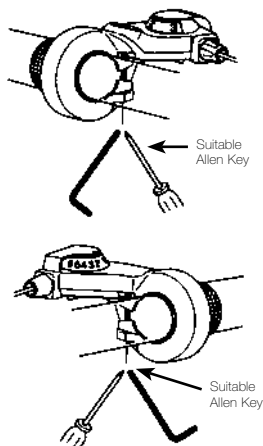


REVOSHIFT

MOUNTING THE SHIFTING LEVER

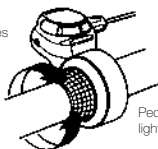
Install the brake lever in a position where it will not obstruct brake operation. Do not use in a combination which causes brake operation to be obstructed.

Tightening torque:
2 Nm (1.5lb-ft)



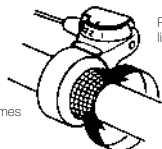
GEAR SHIFTING OPERATION

Pedalling becomes heavier



Pedalling becomes lighter

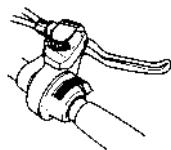
Pedalling becomes heavier



Pedalling becomes lighter

REPLACING THE INNER CABLE

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

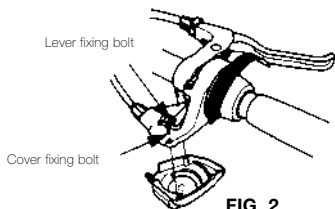


FIG. 1

FIG. 2

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

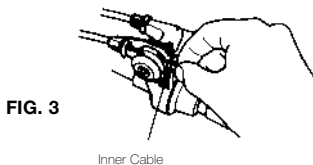


FIG. 3

Inner Cable

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

TYRE CARE

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 WHEEL ADJUSTMENT & REMOVAL

To Remove Rear 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.

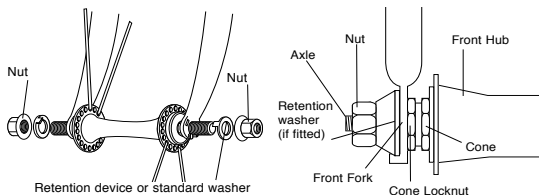
Reset rear brake quick release mechanism and check brake for proper operation.

To Remove 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 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.



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.

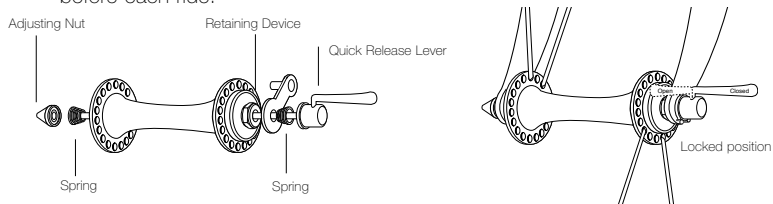
When installing the rear wheel, use the same closing and adjusting procedure as outlined for quick release front wheel.

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.

Quick Release Front Wheel

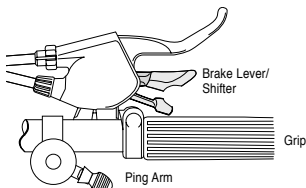
1. To remove the front wheel, first release the front wheel brake. Then open the quick-release lever on the axle and pull the wheel from the forks.
2. To install, fit wheel into forks with quick release lever on the left side. Close quick-release, and tighten adjuster until snug. Release quick-release lever and further tighten adjuster approximately $\frac{3}{4}$ 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 be clear frame and fork by at least $\frac{1}{16}$ ".
4. The wheel should turn freely and have very little side-play.
5. Check quick-release lever is correct and fully closed and securely tightened 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.

FITMENT OF BELL

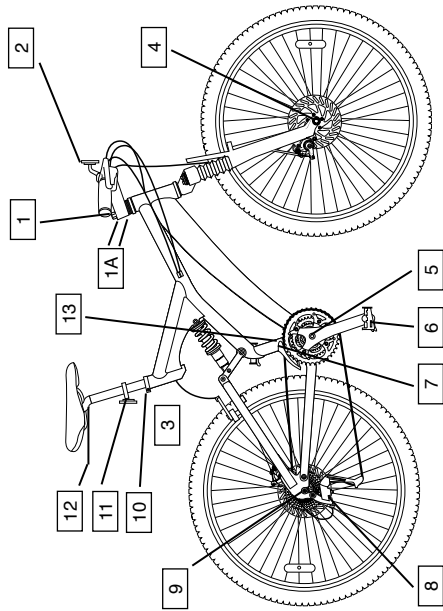
1. Remove screw from bell clamp.
2. Position in a convenient spot near the left hand or right hand handlebar grip.
3. Replace screw & tighten securely.
4. Rotate the "Ping Arm" to a comfortable position.
5. Check quick-release lever is correct and fully locked position before each ride.



Position Bell on left hand or right hand side of the handlebar as required.

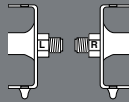
TABLE OF RECOMMENDED TORQUE VALUES

DESCRIPTION	TORQUE
1 Stem Expander Bolt (where fitted)	20Nm 15lb-ft
1A A-Head Steerer Clamp Bolts (where fitted)	10Nm 8lb-ft
2 Stem Binder Bolt	10Nm 8lb-ft
3 Brake Fixing Bolt (non disc) Applies to both front and rear brake	5Nm 4lb-ft
4 Front Axle Nut	30Nm 22lb-ft
5 Chain Wheel Securing Bolt	38Nm 28lb-ft
6 Pedal	40Nm 30lb-ft
7 F/Derailleur Cable Fixing Bolt	4Nm 3lb-ft
8 R/Derailleur Cable Fixing Bolt	4Nm 3lb-ft
9 Rear Axle Nut	30Nm 22lb-ft
10 Seat Pin (Hexagonal Head)	10Nm 8lb-ft
11 Front and Rear Reflector Mounting Nut	10Nm 8lb-ft
12 Saddle Clamp Bolt (Hexagonal Head)	3Nm 2.5lb-ft
13 Saddle Clamp Bolt (Allen Head)	15Nm 11lb-ft
14 F/Derailleur Clamp Bolt (Hexagonal Head)	10Nm 8lb-ft
15 F/Derailleur Clamp Bolt (Allen Head)	5.5Nm 4lb-ft



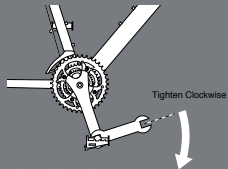
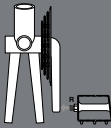
IMPORTANT NOTICE

PEDAL IDENTIFICATION



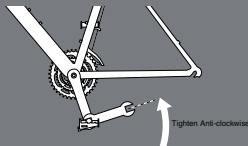
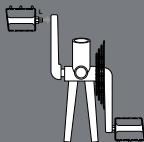
Check for the letters "L" or "R" on the ends of the pedals to show which side the pedal needs to be fitted to.

TO FIT RIGHTHAND PEDAL



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

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