

Dear customer.

We are pleased that you have decided to purchase a new bicycle from KS-CYCLING.

However, before you are able to pedal away you must assemble your bicycle with care. This is important for both its reliability and its durability.

This manual provides a large number of assembly and individual descriptions for the various bicycle components and assembly groups. It also provides an overview of the assembly procedure depending on the type of bicycle.

Some components have a selection of varying designs; in general the exact type can be taken from the offer belonging to your bicycle.

If you are still uncertain about something please contact our technician per email under: technik@schalow-kroh.de

If you are uncertain about your technical abilities or whether you have the necessary tools at your disposal, we would recommend that you take the bicycle to a specialist for final assembly, for example bicycle repairs shop in your area.

Please note that your bicycle has to be “run in”. This means that some settings carried out on the unused bicycle during assembly may have to be repeated subsequent to the first 100 – 200 kilometres of use.

Some components such as wheels and pedal bearings first settle into position when under load. Final adjustments can be carried out once such components have settled properly.

Until then it is recommended that one rides the bicycle carefully and observes whether a component has settled into position or not.

Please take note of the general bicycle handling instructions on the next few pages.

We wish you pleasure with your new bicycle.

Your KS-CYCLING team.

General instructions for handling bikes

Safety

Your bicycle is only safe when properly adjusted and regularly serviced.

The bicycle has been constructed for normal cycling tours and not for competitions, stunts, tricks and riding off-road.

The guarantee will lose its validity if the bicycle is damaged due to being put to use for competitions, stunts, tricks and off-road use.

Safety hints for bicycles

The following points should be checked at regular intervals:

1. The wheels should be fixed firmly to the frame and forks.
2. The hub bearings must be adjusted correctly to avoid lateral play and premature wear.
3. The brakes must be 100% functional.
4. The head parts must not have any play. Simply pull the front brake lever and move the bicycle backwards and forwards, you will be able to feel any play in the handlebars.
5. The tyres are to be free of any damage and must have the correct tyre pressure. Indications can be found on the side wall of the tyre.
6. The gears must be adjusted correctly.
7. The pedals and cranks must be tightened correctly.
8. All nuts and bolts must be tightened correctly.
9. You must be able to sit on and ride the bicycle comfortably.

It is your responsibility to make sure that the bicycle has been assembled in such a manner that it is safe and ready to ride.

Information concerning safety whilst riding

1. For your own safety you should always use a cycling helmet.
2. Select a gear that enables you to pedal at a rate of no more than 70 pedal revolutions per minute (when doing so observe your pulse rate).
3. Wear clothing, which cannot get caught in the wheels and sprockets.
4. For your own safety always look ahead when riding.
5. Always comply with traffic regulations.
6. Always use a cycle path if available.
7. Before turning off always glance back over your shoulder to watch following traffic and always use hand signals.
8. Always give a clear and definite hand signal to inform other road users of your intentions.
9. Always watch out for doors of parked cars being opened and for cars pulling out in front of you.
10. Always watch out for potholes, gutters and tramlines.
11. Never take a pillion passenger with you.
12. Never hold on to a stationary or moving vehicle with the intention of being pulled along.
13. Never ride next to another person, always ride one behind the other.
14. Never ride too close behind another vehicle (this includes behind other bicycles).
15. Never hang bags or similar on the handlebars, this will have a negative effect on your safety.

Advice when riding

One should be very careful when riding when it is raining or snowing.

If the wheel rim becomes wet a lubricant film will be produced when braking, this can double the braking distance and the braking force required; grip on the road will also reduce.

When riding in the dark make sure that your bicycle is equipped with a white front reflector, a red rear reflector, yellow pedal reflectors and lighting (headlight, rear light, dynamo).

Cleaning

To ensure that your bicycle works perfectly it is important that all moving parts are kept clean.

To clean aluminium, chrome, and paint-sprayed parts it is recommended that you use special cleaner available at bicycle shops. Chrome parts must be sealed subsequent to cleaning. This can be carried out by using a wax spray and a soft cloth, which will protect the chrome from rusting and also enable it to be cleaned more easily the next time.

Use an old toothbrush to clean the sprocket, derailleur, rear gear cluster and rear derailleur.

Greasing and oiling

Make sure that the bicycle is always well oiled and greased.

To grease ball bearings one requires special tools and specialist knowledge. For this reason it is recommendable to have these serviced at a specialist dealer. Ball bearings should be greased annually.

Caution: Only use a grease and oil that does not resinify and does not retain particles, sand or dust. For example, use a silicone grease and silicone oil.

Warning: Oil and grease must by no means come into contact with the wheel rims, brake-shoes and tyres.

Chain care

Your bicycle chain must always be oiled.

If the chain is not running smoothly it may have a stiff link. Hold the chain so that the stiff link is between your hands and bend the chain backwards and forwards until the stiff link is loosened.

Protecting your bicycle and safety

Caution: Do not leave your bicycle unlocked when unattended. Each year thousands of bicycles are stolen, most of them are never found again.

Use a sturdy lock, e.g. a heavy steel chain or shackle lock and always fasten the bicycle to a fixed object (tree, post, bicycle rack, etc.). Remove all small parts (saddle including pillar, speedometer, etc.) from the bicycle, pull your means of locking through the frame and front and rear wheels.

Most bicycles have an individual frame number. This can be found on the frame at the following places: Under the pedal bearing, on the head tube, on the seat tube or on the rear brace.

For future reference it is best to note the frame number on the bill.

It is also possible to register a bicycle with the police or have it marked with personal identification.

Step by step - The best way to assemble your bicycle

Here a description of the order in which you should carry out the assembly (depending on the type of bicycle). Some models may require additional assembly work due to their varying equipment. Detailed information can be found in the following operating and assembly manual. You will find an exact description of how to set up the individual components and what you should observe when doing so.

BMX Bike

1. Mount the handlebars.
2. Mount the saddle and seat pillar.
3. Turn the BMX bike upside down and stand it on its saddle and handlebars. Mount the front wheel and front pegs. Before doing so check the setting of the hub-bearing on the front wheel.
4. Screw on the pedals and make sure that they are on the correct sides; there is a left and right pedal.
5. Mount the rear pegs to the rear wheel and adjust the chain tension, whilst doing so check the setting of the rear hub-bearing.
6. Now check to make sure that all of the bicycle's nuts and bolts have been tightened properly.
7. Attach the brake cables, or as the case may be, the rotor cables and adjust the brakes.
8. Check the fork and pedal bearings for play and ease of movement and adjust if necessary.
9. Check the wheels for concentricity and spoke-tension, adjust the spokes if necessary and true the wheels.
10. Finally, pump the tyres up to the correct pressure, in general this is indicated on the side wall of the tyre.

Collapsible Bicycle

1. First of all unfold the frame and stem and fasten them with use of the quick release levers.
2. Mount the saddle and seat pillar.
3. Screw on the pedals and make sure that they are on the correct sides; there is a left and right pedal.
4. Now check to make sure that all of the bicycle's nuts and bolts have been tightened properly.
5. If the bicycle has gears then check and adjust if necessary. This is very important because damage caused due to the gears either not being adjusted or being wrongly adjusted is not covered by the warranty.
6. Carry out the brake adjustment.
7. Check the fork, wheel and pedal bearings for play and ease of movement and adjust if necessary.
8. Check the wheels for concentricity and spoke-tension, adjust the spokes if necessary and true the wheels.
9. Pump the tyres up to the correct pressure, in general it is indicated on the side wall of the tyre.
10. Finally, fit any accessories included in the delivery to the bicycle.

Children's Bicycle

1. Mount the handlebars.
2. Mount the saddle and seat pillar.
3. If the bicycle has a headlight and mudguard then screw them on to the fork.
4. Turn the bicycle upside down and stand it on its saddle and handlebars, mount the front wheel. Before doing so check the hub-bearing's setting on the front wheel. Please pay attention to any special instructions that may have to be taken into consideration for attachments such as quick release levers, hub dynamos or disc brakes.
5. Screw on the pedals and make sure that they are on the correct sides; there is a left and right pedal.
6. Now check to make sure that all of the bicycle's nuts and bolts have been tightened correctly.
7. If the bicycle has gears then check and adjust if necessary. This is very important because damage caused due to the gears either not being adjusted or being wrongly adjusted is not covered by the warranty.
If your bicycle is equipped with hub gears or does not have gears then adjust the chain tension, whilst doing so check the hub bearing. If the children's bicycle is equipped with training wheels then these should now be fitted.
8. Carry out the brake adjustment.
9. Check the fork, wheel and pedal bearings for play and ease of movement and adjust if necessary.
10. Check the wheels for concentricity and spoke-tension, adjust the spokes if necessary and true the wheels.
11. Pump the tyres up to the correct pressure, in general this is indicated on the side wall of the tyre.

12. Finally, fit any accessories included in the delivery to the bicycle.

Mountain Bike

1. Mount the handlebars.
2. Mount the saddle and seat pillar.
3. Turn the mountain bike upside down, stand it on its saddle and handlebars and mount the front wheel. Before doing so check the hub-bearing's setting on the front wheel. If the bicycle is equipped with disc brakes and/or a quick release lever then check that these are fitted correctly.
4. Screw on the pedals and make sure that they are on the correct sides; there is a left and right pedal.
5. Now check to make sure that all of the bicycle's nuts and bolts have been tightened correctly.
6. Check the bikes gears and adjust if necessary. This is very important because damage caused due to the gears either not being adjusted or being wrongly adjusted is not covered by the warranty.
7. Attach the brake cables and adjust the brake settings, please observe the specific features of the individual brake systems.
8. Check the fork, wheel and pedal bearings for play and ease of movement and adjust if necessary.
9. Check the wheels for concentricity and spoke-tension, adjust the spokes if necessary and true the wheels.
10. Pump the tyres up to the correct pressure, in general this is indicated on the side wall of the tyre.
11. Finally, fit any accessories included in the delivery to the bicycle.

Racing Cycle

1. Mount the handlebars.
2. Mount the saddle and seat pillar.
3. Turn the bicycle upside down, stand it on its saddle and handlebars and mount the front wheel. Before doing so check the hub-bearing's setting on the front wheel. If the bicycle is equipped with a quick release lever then check that it is fitted correctly.
4. Screw on the pedals and make sure that they are on the correct sides; there is a left and right pedal.
5. Now check to make sure that all of the bicycle's nuts and bolts have been tightened properly.
6. Check the bikes gears and adjust if necessary. This is very important because damage caused due to the gears either not being adjusted or being wrongly adjusted is not covered by the warranty.
7. Carry out the brake adjustment.
8. Check the fork, wheel and pedal bearings for play and ease of movement and adjust if necessary.
9. Check the wheels for concentricity and spoke-tension, adjust the spokes if necessary and true the wheels.
10. Pump the tyres up to the correct pressure, in general this is indicated on the side wall of the tyre.
11. Finally, fit any accessories included in the delivery to the bicycle.

Trekking-Bike / City-Bicycle

1. Mount the handlebars.
2. Mount the saddle and seat pillar.
3. Screw the headlight and mudguard on to the fork.
4. Turn the bicycle upside down, stand it on its saddle and handlebars and mount the front wheel. Before doing so check the hub-bearing's setting on the front wheel. Please pay attention to any special instructions that may have to be taken into consideration for attachments such as quick release levers, hub dynamos or disc brakes.
5. Screw on the pedals and make sure that they are on the correct sides; there is a left and right pedal.
6. Now check to make sure that all of the bicycle's nuts and bolts have been tightened properly.
7. If the bicycle has gears then check and adjust if necessary. This is very important because damage caused due to the gears either not being adjusted or being wrongly adjusted is not covered by the warranty.
8. Carry out the brake adjustment.
9. Check the fork, wheel and pedal bearings for play and ease of movement and adjust if necessary.
10. If necessary connect the cable for the lighting, adjust and align the dynamo and check that the lighting equipment functions correctly.
11. Check the wheels for concentricity and spoke-tension, adjust the spokes if necessary and true the wheels.
12. Pump the tyres up to the correct pressure, in general it is indicated on the side wall of the tyre.
13. Finally, fit any accessories included in the delivery to the bicycle.

Assembly instructions Table of Contents

Introduction	1
General instructions for handling bikes	2
Step by step - The best way to assemble your bicycle	4
BMX Bike	4
Collapsible Bicycle	4
Children's Bicycle	4
Mountain Bike.....	5
Racing Cycle	5
Trekking-Bike / City Bicycle	5
Assembly instructions Table of Contents	6
1. Stem / Handlebars / Head Parts	9
Handlebars	9
Standard Stem or Conical Stem.....	9
Adjustable Stem	9
A-Head Stem.....	9
Standard or Threaded Head Parts.....	9
A-Head Head Parts.....	9
2. Saddle / Seat Pillar	10
Saddle Position.....	10
Patent Seat Pillar	10
Seat Pillar Candle Form	10
Suspension Seat Pillar	10
3. Pedals.....	11
4. Cranks / Inner Bearing	12
Cranks	12
Conical Bearing (Inner Bearing)	12
Cartridge Bearing (Inner Bearing)	12
One Piece Crank-Set Bearing (Inner Bearing)	12
ISIS Bearing / Octalink Bearing (Inner Bearing)	13
BMX-Cranks, 3-Part	13
5. Gears.....	14
5.1 Derailleur.....	14
Clamp Type (Standard)	14
Direct Mounting Version (Racing Cycle)	15
5.2 Rear Derailleur	15
Derailleur Gears	15
Hub Gears	16

5.3 Gear Lever.....	17
Grip Shifter.....	17
Easyfire / Rapidfire	17
Dual Control Lever (Racing Cycle)	18
6. Brakes.....	19
6.1 Disc Brake.....	19
General Notes on Disc Brakes.....	19
PROMAX Mechanical Disc Brake	19
ASSESS (Type III) Mechanical Disc Brake	20
ZOOM Mechanical Disc Brake.....	20
6.2 V-Brake	21
6.3 Backpedal Brake.....	22
6.4 Side-Pull Brake / Racing Brake.....	22
6.5 U-Brake	23
Front U-Brake	23
Rear U-Brake	24
6.6 Drum Brake	24
7. Hubs / Wheels / Spokes	25
Mounting the Front Wheel	25
Hub Bearing Play	25
Truing.....	25
Quick Release Lever	25
Hub Dynamo	26
8. Chain	27
Chain Care.....	27
Chain Tension	27
Chain Wear.....	27
9. Lighting	28
9.1 Dynamo	28
Standard	28
Hub Dynamo	28
9.2 Rear Light.....	29
Standard	29
Battery.....	29
9.3 Headlight	29
Standard	29
For Hub Dynamo.....	30
10. Special Accessories for BMX and Dirt Bikes.....	31

10.1 Rotor Systems.....	31
F-Set Rotor System	31
Standard Rotor System.....	31
10.2 Pegs (Axle Pegs).....	32
10.3 Chain Guide.....	32
11. Special Accessories for Children's Bicycles	33
Training Wheels	33

1. Stem / Handlebars / Head Parts

Handlebars

When facing the bicycle from the front the handlebars should be mounted horizontally.

To adjust the handlebars loosen the clamping bolt on the stem and turn the handlebars until they are in the right position. Retighten the clamping bolt (torque 10-20Nm).

The brake levers should be in line with ones arms and hands meaning that when sitting on the bicycle the wrists should not be bent but straight when holding the handle grips.

Standard Stem or Conical Stem

The conical stem is clamped in the fork column by means of a screw (torque 20Nm); one normally requires a 6mm Allen key. Some models such as town bikes may require a 10, 11 or 12 millimetre open-end spanner.

The clamping bolt is situated either on top of the stem or inside of it.

There is a mark on the stem shaft, which indicates how far it can be pulled out of the fork. If the shaft is pulled out further than this mark then it can lead to the stem or fork breaking, which may lead to injury.

Adjustable Stem

Many trekking and city bikes have an adjustable conical stem.

These are mounted such as normal conical stems but in addition it is possible to adjust the stem's angle.

This can be carried out by loosening the bolt below the arm holding the handlebars with a 6mm Allen key. Once the locking device has been loosened it is possible to adjust the angle before retightening the bolt (torque 20Nm).

The two bolts at the sides of the stem should be secured and should not be loosened.

If the stem or handlebars are loose and have slight lateral movement then retighten the screw for the angular adjustment. If this does not solve the problem then it may be that the stem is worn out.

Due to the extra joint, adjustable stems are not to be strained as much as one piece stems. For this reason such comfortable components are not fitted to sporting bicycles.

A-Head Stems

The A-Head stem is clamped to the fork column by means of one or two bolts at the side. The height of A-Head stems cannot be adjusted. However, they can be swapped for stems that are steeper, longer or shorter.

Beforehand the head parts are to be adjusted by means of the bolt in the middle of the A-Head.

Adjust the stem in line with the front wheel. Tighten the side bolts (torque approx. 10Nm).

See also section "A-Head Head Parts".

Standard or Threaded Head Parts

To adjust the stem one requires two 32mm open-end spanners (1 inch fork or stem column) or 36mm (1 1/8 inch fork or stem column); one to loosen the lock-nut and the other for the bushing.

On some models the bushing is a corrugation, for such bushings one requires a pair of pliers or slip joint pliers.

Fit the spanners to the lock-nut and bushing, these parts are locked against each other. Loosen the lock-nut and turn it two or three times anti-clockwise.

Now pull the front brake lever and move the bike backwards and forwards. As soon as the fork makes a cracking noise turn the bushing clockwise until the noise reduces. Hold the bushing with the spanner and tighten the lock-nut. Now pull the front brake lever once again and check to make sure that the noise has disappeared. Lift the front of the bike and turn the handlebars to the left and right. When doing so the bearing must not crack, scratch or catch.

A-Head Head Parts

To adjust the head parts one must first of all loosen the stem. To do so you must loosen the one or two bolts at the side of the stem.

Now you must pull the front brake lever and move the bike backwards and forwards, thereby turning the Allen screw or bolt on top of the cap in a clockwise direction with an Allen key or spanner. Continue until the cracking noise can no longer be heard and the play in the bearing has disappeared. On completing this you must align the stem with the front wheel and subsequently tighten the one or two screws at its side (torque 10Nm). Lift the front of the bike and turn the handlebars to the left and right. When doing so the bearing must not crack, scratch or catch.

2. Saddle / Seat Pillar

Saddle Position

The saddle should be mounted securely and so that it is comfortable to sit on. The correct height for the saddle is so that when you have your heels on the pedal your leg is only slightly bent when the pedal is at its lowest point. The leg should not be stretched.

The saddle can also be pushed towards the front or the back – one should select a position so that when the crank is horizontal, the knee is directly above the pedal axel.

The saddle should not put pressure on the crotch; adjust the saddle so that you are not in any pain.

One should always make sure that when sitting on the bike, children are able to put both feet on the ground.

Patent Seat Pillar

Here the saddle is fitted to a seat pillar with an integrated seat pillar clamp. The saddle is normally secured with the use of an M8 Allen screw (20Nm), which is tightened with a 6mm Allen key.

Adjust the saddle to the required position and tighten the clamping screw.

There is a mark on the seat pillar, which indicates the maximum one is allowed to pull the pillar out of the frame. Never pull the pillar out any further because this may lead to it bending or even breaking and causing injury.

Seat Pillar Candle Form

Here the saddle is secured to the seat pillar by means of a saddle clamp.

Please observe that the seat pillar must protrude out of the saddle clamp, only then is it possible to tighten the clamp properly.

Adjust the saddle to the required position and tighten the nut (20Nm) to fix the saddle to this position. To do this you require a 12, 13 or 14 millimetre open end spanner.

There is a mark on the seat pillar, which indicates the maximum one is allowed to pull the pillar out of the frame. Never pull the pillar out any further because this may lead to it bending or even breaking and causing injury.

Suspension Seat Pillar

Suspension seat pillars are available as candle form seat pillar or as patent seat pillars, see above to adjust the saddle.

In general it is possible to adjust the spring stiffness of suspension seat pillars. Normally adjustments can be carried out with a 6mm Allen key at the lower side of the pillar.

There are also models where one requires a plain slot screwdriver.

On delivery the pillar will be set to very soft. If the pillar happens to bottom out whilst riding you will have to tension the spring by turning the adjustment screw (at the lower part of the pillar) clockwise.

The pillar end should be greased from time to time to ensure that the pillar responds with ease. To do this the corrugated sleeve can be pulled up and the square end greased. Subsequent to this the sleeve must be fitted back into the groove correctly.

Depending on the bicycle model it is possible to slightly move the point of the saddle from left to right. This is due to the square end not quite being free of play; otherwise the response behavior would be too poor.

With some models this play can be adjusted by means of an adjustment wheel found below the corrugated sleeve.

3. Pedals

Please note that there is a left and a right pedal – the pedal axels are always marked "L" for "left" and "R" for "right".

Left and right are always to be seen from the position when sitting on the bicycle.

The right pedal is screwed on in a clockwise direction (to the right) such as one is used to with normal screws. However, the left pedal is screwed on in an anti-clockwise direction (to the left), for this reason it is known as a left-hand thread.

Never swap the pedals around, this will only lead to damage being caused to the threads.

Never try to screw the pedals on with force, if a pedal cannot be fitted with ease then the pedal is normal canted in the crank thread; so try again.

The first few turns of the thread should be carried out with the hand; subsequent to this the pedal should be tightened to 30Nm. The pedals should be retightened after a few kilometres use.

It is recommended that the pedal threads are greased before mounting to enable them to be removed easily if necessary.

4. Cranks / Inner Bearing

Cranks

With normal square or other inner bearings the cranks are fitted to the inner bearing shaft by means of a crank bolt.

The crank bolt (torque 40Nm) is tightened with either a 14mm socket or 8mm Allen key. Especially with new cranks it is important that they are checked after a few kilometres.

If the bicycle is ridden with a loose crank this will lead to the square end or tooting becoming worn out. The crank can no longer be secured permanently and will have to be replaced.

Conical Bearing (Inner Bearing)

The conical bearing is an inner bearing construction.

Unlike the cartridge bearing this bearing is adjustable.

Such as all adjustable bearings this bearing should be checked to make sure it is adjusted properly, especially if the bicycle is new. Adjustments are made on the left side of the bearing.

To carry this out one must loosen the lock ring with a C-spanner or open-end spanner, which will enable the inside part of the bearing bushing to be turned with use of an open-end spanner. The bearing will be loosened if turned anti-clockwise and tightened if turned clockwise.

The bearing should be adjusted so that it is neither too tight and jerky nor too loose so that the cranks have lateral movement. The best thing to do is remove the chain; this will enable you to feel the bearing adjustment better.

Once you have adjusted the bearing you must retighten the lock ring (torque 20Nm).

A conical bearing should be controlled and serviced at regular intervals.

If you notice that the bearing has play then it must be re-adjusted, further use could cause damage or increase wear and tear.

If the bearing starts to make a cracking noise then it has to be removed and cleaned and subsequently refitted using a generous amount of grease.

If you can see holes on the surface of the axle or bearing bushings, this means that the bearing is worn out and should be replaced.

Cartridge Bearing (Inner Bearing)

The cartridge bearing is also an inner bearing construction.

However, this type of bearing is not adjustable and requires no special care.

It consists of an enclosed bearing unit, which is screwed into the frame from the right and a bearing bushing on the left side. To carry this out one requires a special triple square spanner.

If this bearing starts to make a cracking noise it should be removed and checked.

Turn the axle with your fingers, if you can feel it catching or there is a jerky stick-slip feeling then it is worn out and must be replaced.

If the bearing feels good meaning that it runs in a constant steady manner then you can re-fit it (torque 50Nm) using a generous amount of grease.

The cracking noise was probably due to the bearing being too dry or not tight enough.

One Piece Crank-Set Bearing (Inner Bearing)

The one piece crank-set bearing is mainly found on bikes with one piece cranks such as BMX bikes, beach cruisers or children's bikes.

The one piece crank-sets are adjusted on the left side of the bike, to do this one must loosen the lock-nut with the appropriate open-end spanner or pipe wrench.

Do not forget that this is a left-hand thread, which means that to loosen it must be turned clockwise (to the right).

Following this it is possible to adjust the bearing cone behind it with either one's fingers or a screwdriver by rotating it.

The bearing should be adjusted so that it is neither too tight and jerky nor too loose so that the cranks have lateral movement.

The best thing to do is remove the chain; this will enable you to feel the bearing adjustment better. Once you have adjusted the bearing you must retighten the lock-nut (torque 20Nm).

One piece crank-set bearings should be controlled and serviced at regular intervals.

If you notice that the bearing has play then it must be re-adjusted, further use could cause damage or increase wear and tear.

If the bearing starts to make a cracking noise then it has to be removed and cleaned and subsequently refitted using a generous amount of grease.

If you can see holes on the surface of the axle or bearing bushings, this means that the bearing is worn out and should be replaced.

ISIS Bearing / Octalink Bearing (Inner Bearing)

ISIS and Octalink inner bearings are also cartridge bearings, however, they do not have a square axle.

The axles belonging to these bearings have a larger diameter and a multi-tooth crank seating. This makes the bearing more durable, otherwise everything else is the same as with a normal cartridge bearing.

Adjustment and servicing is explained under "Cartridge Bearing".

BMX-Cranks, 3-Part

The 3-part BMX crank includes an inner bearing with hexagonal shaft, which belongs to the cranks.

The inner bearing itself is a one piece crank-set bearing but before adjusting the left crank must be removed.

Adjustments are carried out exactly as with the one piece crank-set bearing; see "One Piece Crank-Set Bearing" for details.

The special thing about the 3-piece crank is the double bolted very stiff crank arm.

To fix the crank arm securely to the shaft one must first of all tighten (torque 20Nm) the crank-bolts on the side.

Following this one must tighten the cranks clamping bolts, these pass through the crank from the bottom end.

The crank is fitted to the shaft by means of the clamping bolt and is free of play. Due to the crank's extreme stiffness the clamping bolts must be screwed on very tightly (torque 40Nm).

If the crank bolt loosens whilst riding it must be retightened.

On 3-part cranks the driving pin for the front sprocket on the right crank is adjustable and replaceable. Before first use one should check to make sure that the driving pin protrudes enough on the inside of the front sprocket.

If this not be the case it must be screwed out of the crank a little further or a M8 washer should be used.

To do this the right crank can be removed from the shaft.

5. Gears

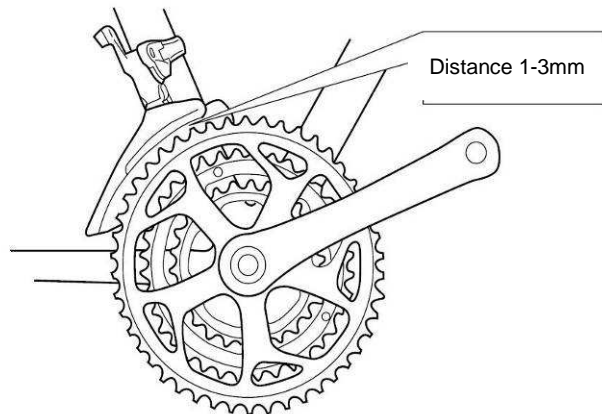
5.1 Derailleur

Clamp Type (Standard)

First of all the derailleur should be aligned correctly.

The derailleur can be adjusted in both height and parallel to the front sprocket (swivel). To do this one must slightly loosen the clamp.

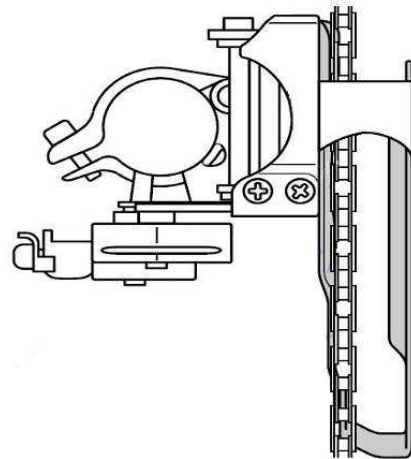
The derailleur is to be adjusted so that the outer chain guide has 1 – 3 mm clearance to the large front sprocket.



The angle must be set once the height has been adjusted correctly.

The outer chain guide must be adjusted so that it is parallel to the chain when the chain is on the large front sprocket and smallest rear sprocket.

The clamping screw must then be retightened (torque 5-7Nm).



Now that the derailleur has been aligned the next stage is to set pivoting range. By means of the check screws it is possible to limit the derailleur movement to the inside and outside.

It is recommended that one commences with the inner limitation. To

do this one must put the bike into the lowest gear (smallest front, largest rear sprocket) and then adjust the inner part of the chain guide so that there is approx. 0.5 – 1.0mm clearance to the chain.

If necessary one can carry out rough adjustments to the gear shift cable, the cable should not be under tension but also not too slack.

If one or the other be the case the gear shift cable clamping screw (torque 5 – 7Nm) must be loosened and the cable re-fitted accordingly.

If the cable had been under tension then the derailleur inner limit is to be re-checked and if necessary re-adjusted.

Now one is able to set the derailleur outer pivoting limit. To carry this out one must select the highest gear (largest front, smallest rear sprocket). The clearance between the outer part of the chain guide and chain should be 0.5 to 1mm.

If the outer part of the chain guide cannot be adjusted this far to the outside, either the check screw is screwed in too far or the gear shift cable has too little tension. In such cases they must be adjusted accordingly.

Fine adjustments can be carried out once these stages have all been completed.

To do this one must engage all gears whilst the bike is standing still – it is helpful if a second person lifts the bike while you rotate the crank thereby engaging all gears.

One must make sure that the derailleur does not touch any of the sprockets whilst in any of the gears, this could cause serious damage.

When shifting to a lower gear the chain should move swiftly to the next sprocket. If this not be the case then the gear shift cable is still under too much tension. The tension must be reduced by means of the adjustment screw/barrel on the gear lever.

If the only problem is that a swift change of gear to the smallest sprocket is not possible then there is too much limitation to the pivoting range and must be adjusted.

When shifting gear to the smallest sprocket the chain should by no means ride over and fall off completely.

If this happens then the pivoting range has not been limited enough and must be re-adjusted.

The same applies to the largest sprocket; the chain should not ride over and fall off. If so the limitation must also be adjusted.

The centre sprocket has no limitation screw; all adjustments here are carried out by means of the gear shifting tension.

If shifting from the smaller to the centre sprocket is not swift enough then there is not enough cable tension.

If shifting from the largest to the centre sprocket is not swift enough then there is too much cable tension.

Once everything is functioning properly and the rear gears and the rest of the bicycle have been adjusted correctly, you may carefully take the bike on a trial run. Whilst testing the bike you should carefully change through all of the gears to test them. Once under load the gears may react differently to when not under load, meaning that they may have to be readjusted accordingly.

Please note that after a time new gear shift cables may stretch slightly, which also means that the gears may have to be readjusted. This can be carried out by means of the tension adjustment screw/barrel on the gear lever.

Even when a bicycle has 18, 24, 24, or 27 gears one should not use all of them.

A general rule is that the gears should never be crossed over completely meaning that one should, for example, not have the chain running on the large front sprocket and large rear sprocket. Due to the chain's diagonal position it means that it may rub on the derailleur, which will result in increased wear and tear.

On bicycles with either 24 or 27 gears use of the two large or two small sprockets at the same time should be avoided. It is possible that the chain will rub on the left or the right of the chain guide.

Direct Mounting Version (Racing Cycle)

Here the derailleur is not fastened to the frame by means of a clamp but with a tab on the frame.

However, this makes no difference to the means of adjustment; one is able to carry out adjustments such as described in the instructions for "Derailleur – Clamp Type".

Here one must also loosen the mounting screw (torque 5 – 7Nm) to be able to adjust the derailleur position. The screw must be retightened subsequent to adjustment.

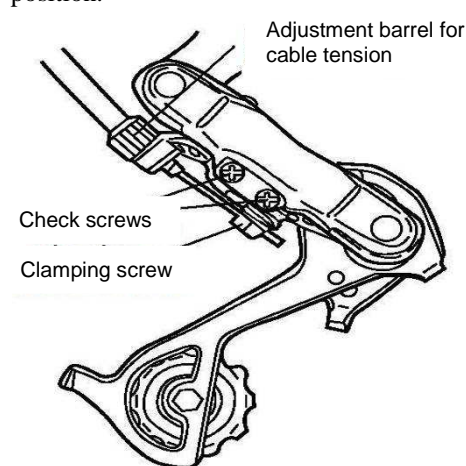
With this derailleur mainly being put to use on racing cycles one must pay attention to the special features of the dual control levers, also known as brake/shift levers.

Detailed information can be found under "Dual Control (racing cycle)".

5.2 Rear Derailleur

Derailleur Gears

Unlike the front derailleur the rear derailleur does not have to be adjusted. Due to its position on the bicycle it is in danger of becoming damaged during transportation and should be checked to make sure that it is in the correct position.

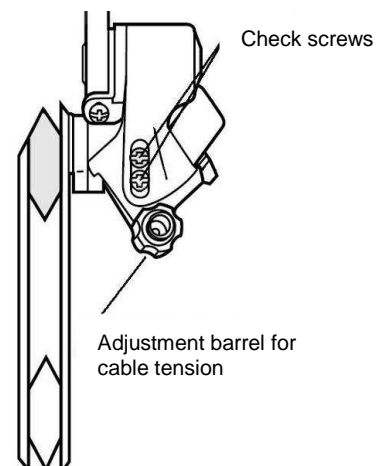


The rear derailleur should be in an upright position and parallel to the bicycle's vertical axel.

If this is not the case you should not attempt to make adjustments. To solve this problem please contact the manufacturer or dealer.

With some models it is possible to replace the derailleur hanger on the frame, which is used to mount the rear derailleur.

For bicycles without a replaceable derailleur hanger it may be possible that a specialist is able to straighten it. The dealer or manufacturer will be able to provide information.



If the rear derailleur is ok one can continue by adjusting the pivoting range. Depending on the type of rear derailleur the adjustment screw/barrel can be found on either the side of the derailleur or at the back.

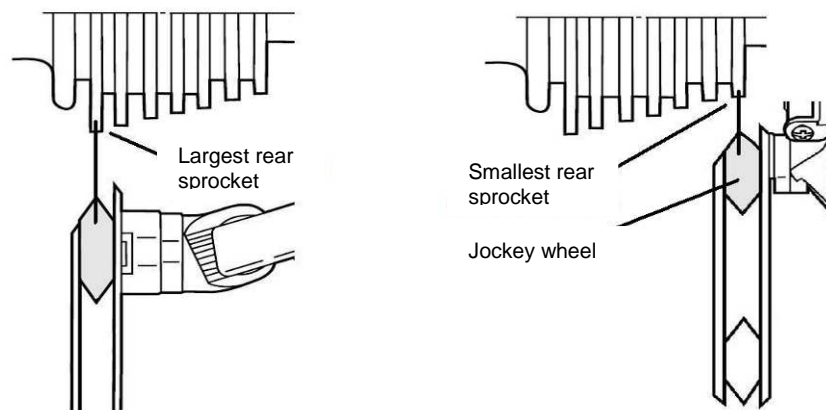
There is a screw to limit the pivoting range downwards towards the frame and one for upwards towards the spokes.

Especially the range towards the spokes should be carried out with great care and controlled on a regular basis, because if the chain runs over into the spokes a great deal of damage can be caused to the gears.

If the rear derailleur will not move far enough in either direction to become centered over the outside sprockets, then this will be due to either the check screws being screwed in too far or there may be too much gear shifting tension. To reduce this tension one must loosen the clamping screw for the gear shift cable.

Once the gear shifting cable has slackened off the screw must be retightened (torque 5 – 7Nm) and the pivoting range re-checked.

When the pivoting range has been adjusted correctly the jockey wheel will be exactly in the centre below both the largest and smallest sprocket.



The adjustment of the other gears is carried out with the help of the tension; it is helpful to have a second person to hold the bike up whilst gears are selected.

If the next larger sprocket cannot be selected correctly then the rear derailleur tension has to be increased by means of the adjustment screw/barrel. If this is the case for the next smaller sprocket then tension has to be slackened.

There are also so called "Reverse" derailleurs where adjustments are exactly the opposite to normal derailleurs when selecting the next larger sprocket by means of cable tension.

Once everything is functioning properly and the rear gears and the rest of the bicycle have been adjusted correctly, you may carefully take the bike on a trial run.

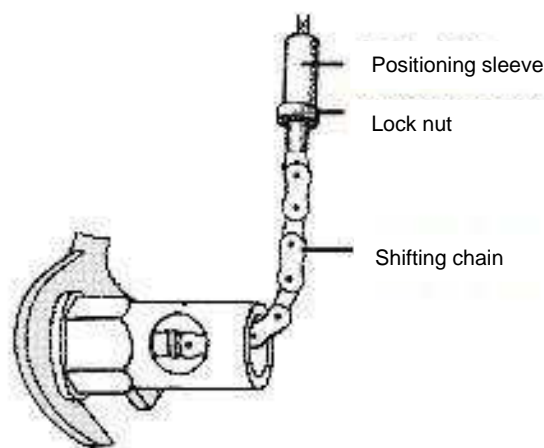
Please observe the notes at the end of the "derailleur" section.

Hub Gears

Sturmey Archer 3-Gear Shifting Hub

The Sturmey Archer 3-Gear Shifting Hub is adjusted by means of a shifting chain on the right of the hub. This should first be carried out subsequent to the rear wheel having been mounted properly and the chain tension having been adjusted. To do this please see section "Chain / Chain Tension".

Adjustments are made when the first gear is engaged meaning that the shifting cable is at its maximum length.



Now the shifting chain lock-nut must be loosened and the positioning sleeve loosened slightly. The crank should be turned in a forward direction a few times to ensure that the first gear is engaged.

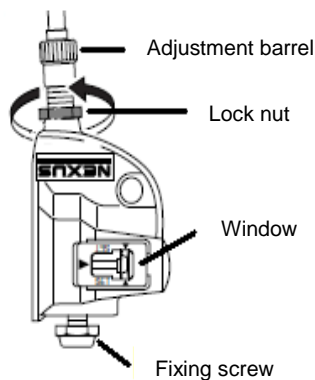
The gear shifting tension is adjusted with a positioning sleeve so that the cable is not slack and when the gear shifting handle is moved, the shifting chain responds but is not pulled.

Now fix the positioning sleeve in position by means of the lock-nut; the shifting hub is now properly adjusted.

Shimano Nexus 3-Gear Shifting Hub

The Shimano Nexus shifting hub is connected to the gear lever by means of a gearbox. This is to be carried out subsequent to the rear wheel having been fitted and the chain tension adjustment having been carried out. For this please refer to the "Chain /Chain Tension" section.

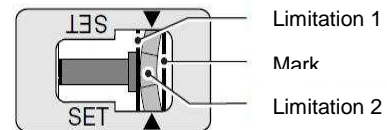
Before fixing the gear box the shifting pin must be pushed into the hub's axel. Following this the gearbox can be fitted to the wheel nut and the fixing screw can be tightened (torque 5 – 6Nm). To carry this out you require either a 10mm open end spanner or a 5mm Allen key.



Once the gearbox has been fitted correctly one must adjust the gears – to do this it is very important that one shifts from the 1st to the 2nd gear.

One can find out which gear is engaged by taking a look at the gear lever.

Whether the gear has engaged properly can be seen in the gearbox window.

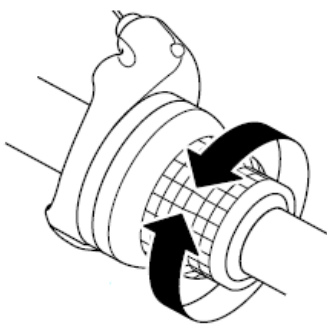


The yellow mark should lie exactly in the middle between the limitations 1 and 2. If this not be the case one can make adjustments by means of the adjustment screw/barrel. To carry this out loosen the lock-nut with a 10mm open end spanner and adjust the tension accordingly by means of the adjustment screw/barrel.

Once the tension has been adjusted the lock-nut can be retightened (torque 5 – 6Nm). To check the gears you should shift them up and down a few times and then back up into the second gear. Now turn the cranks forwards a few times to ensure that the gear has engaged properly and check the gearbox adjustments.

5.3 Gear Lever

Grip Shifter

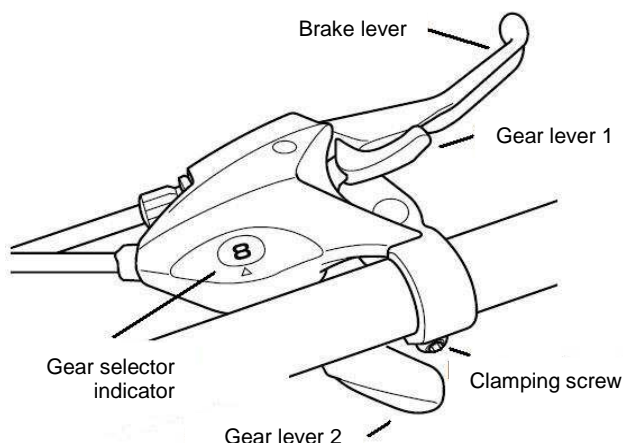


Such as the name suggests the grip shifter is used to shift the gears, it shifts the gears when twisted. This is carried out by turning the inner part with 1-2 fingers.

The right hand grip shifter for the rear derailleur is mainly divided into fixed gears; this is not necessarily the case with the left hand shifter for the front derailleur.

How the gears react when twisting the grip shifter can vary depending on the grip shifter, front derailleur or rear derailleur, you will have to try this out for yourself.

Easyfire / Rapidfire



The easy or rapid fire gear lever is operated by means of two gear levers, lever one is operated with the index finger, lever two with the thumb.

In general the thumb shifts the chain to a larger sprocket the index finger to a smaller.

Depending on the type of easy or rapid fire lever and front or rear derailleur, it may be that the movement is the opposite way around; just try it out.

As displayed in the image it is quite often that the easy or rapid fire gear levers are combined with the brake lever, this is known as a brake/shift lever. The shift lever is also available as a construction without a brake. To position the easy or rapid fire lever correctly one must loosen the clamping screw. Once in the correct position the screw must be retightened (torque 5 – 6Nm). Information concerning the correct position is provided in "Stem / Handlebars / Head Parts" section 1 under handlebars.

Dual Control Lever (Racing Cycle)

The dual control lever, here the Shimano Sora model, is a combination of gear lever and brake lever. The brake lever itself has a double function: If it is pulled towards the handlebars the bike will brake, if it is pushed sideways towards the inside then it shifts the gear to the next largest front or rear sprocket. It is possible to shift over two gears with the right brake lever if it is pushed over to its limit.

To shift to a smaller sprocket there is a smaller lever at the inside of the brake lever casing. If this is pressed the chain will shift to the next smaller sprocket.

The left brake lever has intermediate stages for the derailleur. If one pushes the brake or shifting lever only slightly it will not change gear; however, the derailleur will slightly alter its position.

This function is to adjust the position of the chain if running too diagonally, for example, front large sprocket and rear large sprocket.

When using this combination the chain normally rubs on the side of the derailleur. If the lever is pressed slightly downwards the derailleur will move slightly towards the inside. If adjustments are correct this will be enough to stop the chain rubbing.

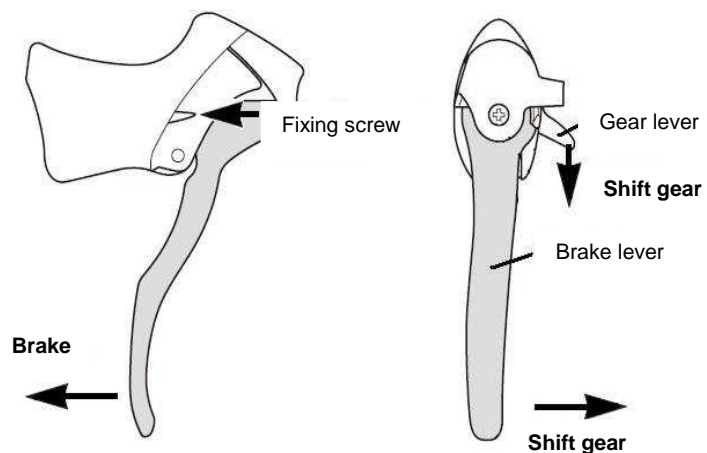
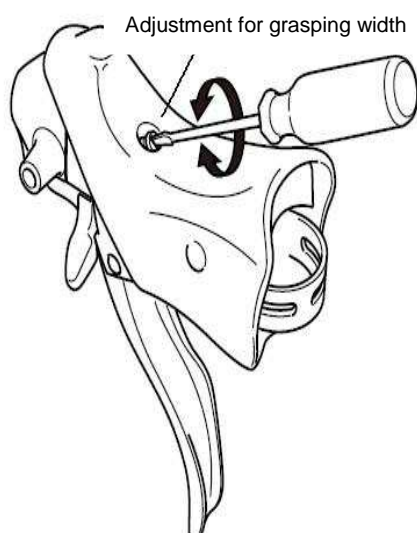
The same applies when using the smallest front sprocket and smallest rear sprocket. Press the brake lever slightly towards the inside, the derailleur will move slightly towards the outside; the chain should cease to rub.

The brake lever is fixed to the handlebars by means of a clamp with a screw. The screw can be found beneath the rubber cover of the brake lever gripping surface (see image above).

If the position of the brake lever is to be adjusted then this screw must be loosened. Adjustments are limited due to the taped handlebars.

The fixing screw must be retightened subsequent to making adjustments (torque 6 – 8Nm).

If you are not able to reach the brake levers properly with your fingers then there is the possibility of moving them closer to the handlebars. Screw the screw shown on the image further in with use of a Phillips screwdriver.



Please observe that when doing this the brakes will be pulled, which may cause them to rub on the wheel rim. If this be the case then the brake cable tension must be reduced. Detailed information is provided in the "Brakes" section under "Side-Pull Brake / Racing Brake".

6. Brakes

6.1 Disc Brakes

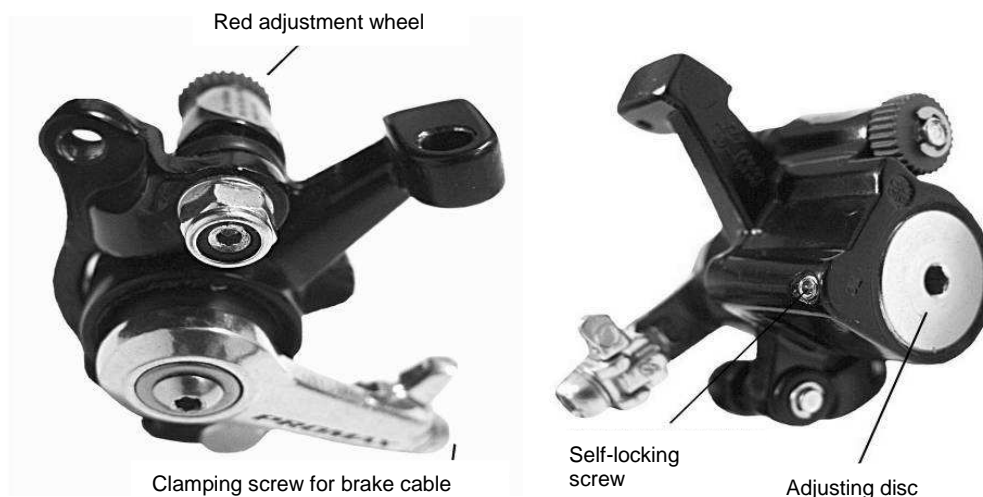
General Notes on Disc Brakes

There are a number of points to observe with disc brakes, this applies to both hydraulically and mechanically operated brakes and to those of all manufacturers.

- When new, brakes do not have their full braking force, which means that one should be very careful when riding a new bike or if the pads have been replaced. The so called "bedding in" can vary due to the different styles of riding. It is helpful to brake often for a while when riding fast.
- The screws (torque 6 – 8Nm) of the discs and brake caliper mountings should be checked regularly. Loose screws can damage the frame, forks and hubs, apart from that it is possible that the brakes may completely fail.
- The brake discs and pads must by no means come into contact with lubricants or cleaning agents. If these do happen to come into contact with the discs then they must be cleaned with brake cleaning fluid or cleaning alcohol. If the pads come into contact with lubricants then they must be replaced immediately.
- Do not touch the brake discs immediately after use, they can become very hot subsequent to braking and may cause burns.
- One should generally avoid touching the brake discs with one's bare fingers because the grease from skin will reduce the brake's braking force.
- The lining thickness of the brake pads should be controlled at regular intervals; if the thickness is below 0.5mm then they should be replaced. Even if only one of the pads is below the minimum both pads should be replaced immediately.
- The brake discs should be at least 1.6mm thick.
- One must always make sure that the brake discs do not rub on the brake caliper casing. With certain models this may occur if the brakes are either worn out, the pads are not adjusted correctly or the calipers have not been adjusted correctly.

PROMAX Mechanical Disc Brake

The mechanical Promax disc brake must first of all be adjusted so that the brake disc is situated centrally in the caliper slot. To achieve this there is a red adjustment wheel situated on the inside of the brake caliper with which the gauge can be moved from the left to the right.



Following this one is able to adjust the inner brake pad; first of all the self-locking screw at the back of the caliper must be loosened with use of a 2mm Allen key. Once this has been loosened it is possible to carry out adjustments to the adjusting disc with use of a 5mm Allen key.

The distance between the inner pads and the disc should be kept to a minimum and the disc should not rub.

The adjustment is secured by tightening the self-locking screw (torque 4Nm).

Now one must adjust the outer brake pad, which with the Promax brake is only possible by adjusting the tension of the brake cable.

To carry this out the cable must be loosened with use of a 5mm Allen key and the cable tension altered accordingly. Subsequently, the clamping screw must be retightened (torque 6 – 8Nm).

Here the distance between should also be kept to a minimum.

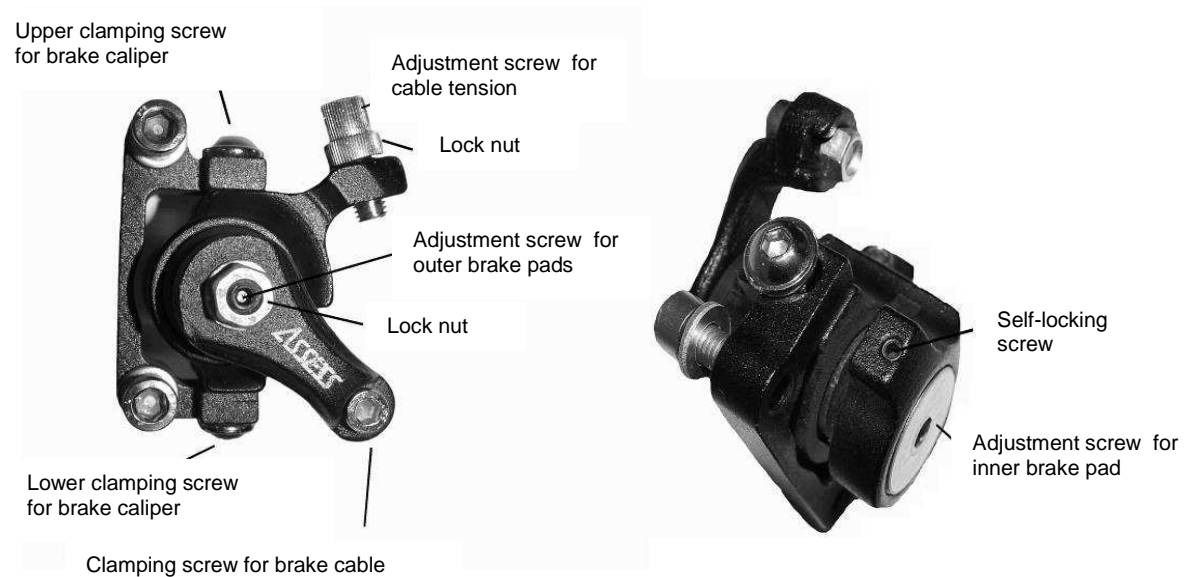
Slighter adjustments can be carried out by means of the tension adjustment screw/barrel on the lever.
Before riding the bicycle please read the general notes concerning disc brakes and check all screws for fixing the brake calipers and discs.

ASSESS (Type III) Mechanical Disc Brake

The mechanical Assess disc brake must first of all be adjusted so that the brake disc is situated centrally in the caliper slot. To achieve this the caliper clamping screws on the top and underside of the caliper are to be loosened with use of a 4mm Allen key. This enables the caliper to be pushed laterally.
Once the correct position has been found the clamping screw must be retightened (torque 8Nm).

Following this the inner brake pad can be adjusted, the self-locking screw underneath must be loosened with use of a 2mm Allen key. Once this has been loosened the adjusting disc can be adjusted with use of a 5mm Allen key.

The distance between the inner pads and the disc should be kept to a minimum and the disc should not rub. The adjustment is secured by tightening the self-locking screw (torque 4Nm).



The next step is the adjustment of the outer brake pads. First of all remove the adjustment screws plastic protection cap and loosen the lock-nut with a 10mm open end spanner. Once this has been carried out the outer brake pads can be adjusted by means of the adjustment screw, this with use of a 2.5mm Allen key.

Such as with the inner pads the distance of the outer pads to the disc should be kept to a minimum, the adjustment is then to be secured by retightening the lock-nut (torque 5Nm).

The final adjustment is that of the brake cable. If it is too loose the clamping screw should be loosened with use of a 4mm Allen key and the cable tension increased. The clamping screw should then be retightened (torque 6Nm).

Slighter adjustments can be carried out by means of the tension adjustment screw/barrel.

Before riding the bicycle please read the general notes concerning disc brakes and check all screws for fixing the brake calipers and discs.

ZOOM Mechanical Disc Brake

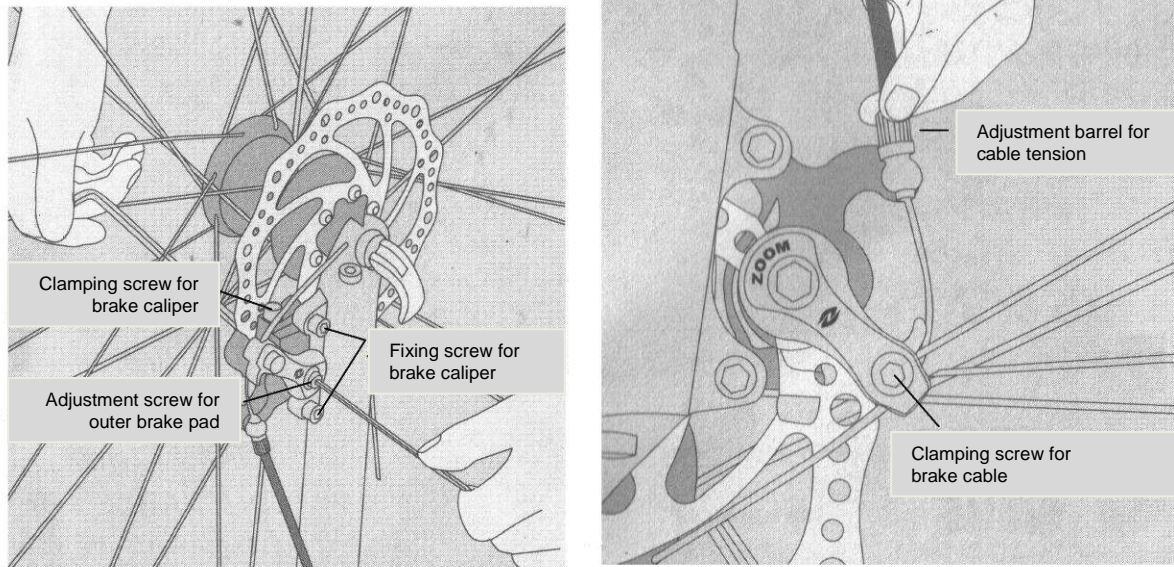
The mechanical Zoom disc brake must first of all be adjusted so that the brake disc is situated centrally in the caliper slot. To achieve this the caliper clamping screws on the underside of the caliper are to be loosened with use of a 5mm Allen key.

This enables the caliper to be pushed laterally.

Once the correct position has been found the clamping screw must be retightened (torque 8Nm).

Following this the inner brake pad can be adjusted, the self-locking screw underneath must be loosened with use of a 2.5mm Allen key (this screw cannot be seen on the images below!).

Once this has been loosened the adjusting disc can be adjusted with use of a 5mm Allen key. The distance between the inner pads and the disc should be kept to a minimum and the disc should not rub. The adjustment is secured by tightening the self-locking screw (torque 4Nm).



The next step is the adjustment of the outer brake pads. First of all loosen the lock-nut with an 8mm open end spanner. Once this has been carried out the outer brake pads can be adjusted by means of the adjustment screw, this with use of a 2.5mm Allen key.

Such as with the inner pads the distance of the outer pads to the disc should be kept to a minimum, the adjustment is then to be secured by retightening the lock-nut (torque 5Nm).

The final adjustment is that of the brake cable. If it is too loose the clamping screw should be loosened with use of a 5mm Allen key and the cable tension increased. The clamping screw should then be retightened (torque 6Nm).

Slighter adjustments can be carried out by means of the tension adjustment screw/barrel.

Before riding the bicycle please take read the general notes concerning disc brakes and check all screws for fixing the brake calipers and discs.

6.2 V-Brake

The V-brake cable is attached or detached on the left. To carry this out one must press the brakes together and hang the aluminium pipe in the V-brake cable hanger.

The brake cable is secured by means of a clamping screw on the right hand side. With use of this clamping system it is possible to carry out rough adjustments to the tension.

One should work with care because adjusting too often will damage the clamp.

The brake shoes should be adjusted so that they lie flat on the rim when braking.

Adjust the brakes so that they lie in the middle of the rim and parallel to the rim edge. The shoes should by no means be adjusted so that they are too high.

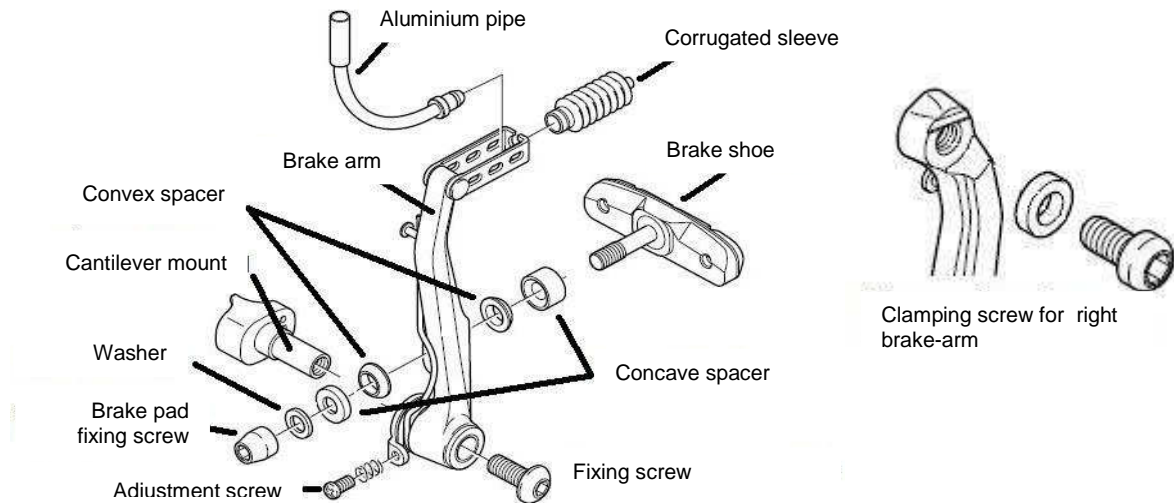
If they rub on the tyres then these will be damaged and may burst.

To carry this out first loosen the screws and align the shoes with the rims so that the rear of the shoe is 1mm away from the rim whilst the front of the shoe actually touches the rim. The rear of the shoes should be kept at a distance of 1mm from the rim otherwise they may squeal. To loosen the brake shoe screw one requires either a 5mm or 6mm Allen key.

Once the correct position has been found the shoes can be retightened (torque 8Nm).

Once the brake shoes have been adjusted one can adjust the inner brake cable tension.

Simply loosen the clamping screw 1 – 2 turns and readjust the cable. Pull it and adjust so that the brake shoes are 1 – 2mm away from the rim and retighten the clamping screw (torque 6 – 8Nm).



The final step is to adjust the shoes so that they are of equal distance from the rim by means of an adjustment screw, which determines the spring force on the arms. Please tension the spring of the arm where the shoe is either touching the rim or is too close to it.

If the spring force is already very high then one can also adjust the opposite way around by slackening the tension.

For optimal V-Brake performance the arms should be parallel to each other when the brake lever is pulled. If this not be the case then one has the possibility of swapping the brake shoe concave spacers with each other.

With the concave spacers having different thicknesses it is possible to use them to adapt the V-Brake to the rim width.

Please observe the correct order and direction of the spacers, they will only provide a type of spherical head, through which the shoes can be properly adjusted, if they are positioned correctly (see image).

If the brakes are too far apart at the top (similar to a V) you should check to make sure that the thicker concave spacers are on the inside of the brake arms.

Please note that with some brakes it is not possible to adjust the arms so that they are parallel.

6.3 Backpedal Brake

The backpedal brake is only found on bicycles either without gears or with hub gears. The brake is integrated in the rear hub and is operated by back pedaling.

The back pedal brake requires no special servicing; however, it should be serviced when the hub gears or bearings are serviced.

The only brake component visible is the torque-support on the left.

Please make sure that the screw (torque 6 – 8Nm) that connects the support to the brake bracket or part brazed on the frame is always tight.

If the screw is lost then the brakes will be without function.

6.4 Side-Pull Brake / Racing Brake

The side-pull or racing brake is connected to the frame or fork by means of a bolt. This is part of the brake caliper and is connected to a sleeve nut (with simpler brakes also with a normal nut). For this type one requires a 5mm Allen key or for normal nuts a 10mm open end spanner.

When tightening the sleeve nut (torque 6 – 8Nm) one should make sure that the lateral adjustment of the brake is correct because the return spring for the lever is also mounted on the bolt.

If the bolt turns it has to be held tight between the frame / fork and brakes.

Adjust the brakes so that they lie in the middle of the rim and parallel to the rim edge when the caliper is closed.

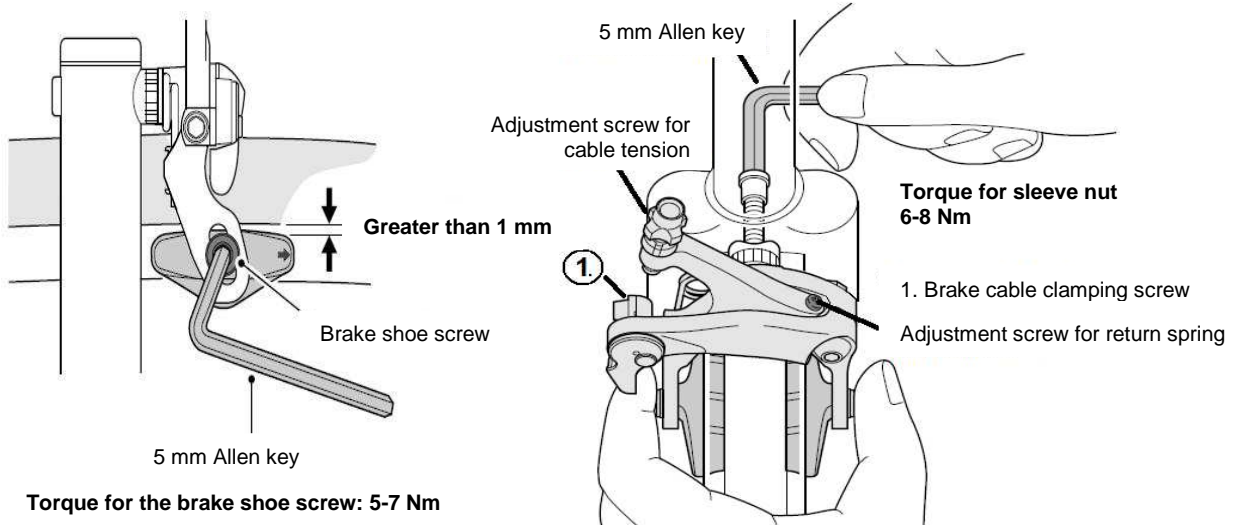
The shoes should by no means be adjusted so that they are too high. If they rub on the tyres then these will be damaged and may burst.

To adjust the shoes loosen the brake shoe fixing screw with a 4mm or 5mm Allen key. Once the correct position has been found retighten the screw (torque 5 – 7Nm).

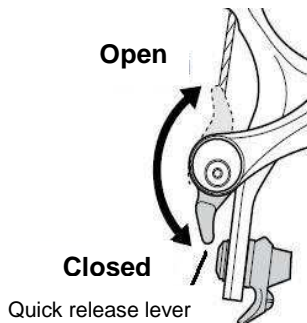
The brake cable tension should be set so that the brake shoes are at a distance of 1 – 2mm from the rim when the calipers are open and both sides must be of equal distance to the rim. To carry this out loosen the cable clamping screw with a 5mm Allen key. Retighten the clamping screw once the tension has been adjusted (torque 5 –

6Nm). If this is not possible and the brake shoes still touch the rim then the brake return spring has not been adjusted properly.

Many brake systems have an adjustment screw/barrel, if not then one must adjust by means of the mounting bolt.



Torque for the brake shoe screw: 5-7 Nm



Some racing brakes such as shown here in the images have a mechanism, which can be slightly opened if the wheel has to be removed. This should be closed when adjusting the brakes, the lever alongside the clamping screw for the brake cable is positioned as displayed in the image below (left).

Please make sure that this lever is always closed when riding. If it is open then there may be no braking effect.

6.5 U-Brake

Front U-Brake

The installation of the front brake cable is carried out from the left through the banjo screw, which is also used for the cable pre-tensioning. The cable is then clamped in the banjo screw on the right hand side. With use of this clamping method it is possible to make rough tension adjustments to the cable. However, one should be careful – clamping the cable too often may lead to damage. The complete surface of the brake shoes must lie on the rim when braking.

To carry this out first loosen the screws and align the shoes with the rims so that the rear of the shoe is 1mm away from the rim whilst the front of the shoe actually touches the rim. To loosen the brake shoe screw one requires either a 5mm or 6mm Allen key.

Retighten the screw (torque 8Nm).

The rear of the shoes should be kept at a distance of 1mm from the rim otherwise they may squeal.

Once the brake shoes have been adjusted one can adjust the inner brake cable tension.

Simply loosen the clamping screw 1 – 2 turns and readjust the cable. Pull it and adjust so that the brake shoes are 1 – 2mm away from the rim and retighten the clamping /banjo screw (torque 6 – 8Nm).

Clamping screw /
Banjo screw

Image shows brake for
rear wheel



Fixing screw

Spring cover

To complete the adjustment so that the shoes have equal distance to the rim one can turn the spring cover at the fastening point with use of a 12 or 13mm open end spanner. Please adjust the spring belonging to the arm where the shoe is touching the rim or as the case may be, is too close to the rim.

To carry this out loosen the brake-arm fixing screw with use of a 5mm Allen key.

To adjust the spring turn the spring cover on the left in a clockwise direction and the cover on the right in an anti-clockwise direction. The spring adjustment (put under tension) will move the brake shoe away from the rim. Secure the spring cover by tightening the fixing screw (torque 6 – 8Nm) when the shoes are at the required distance from the wheel rim.

If the springs are under very high tension one is able to do the opposite and adjust them by slackening the tension.

Rear U-Brake

Different to the front brake to install the rear U-Brake cable one requires an additional transverse (straddle) cable between the right and left brake arm. The cable on the left is clamped with a banjo screw, the cable on the right is attached to the brake arm by means of a barrel nipple. Depending on the BMX frame the cables must be of different lengths.

Cables belonging to frames where the rotor cable is fed through the seat tube are very short. With cables where the rotor cable ends in front of the seat tube, the transverse cable must be very long and is curved and fitted in front of the seat tube.

The connection of the lower rotor cable and transverse cable is carried out by means of a yoke (straddle bridge). Depending on the type of frame the yoke is fitted to the lower rotor cable by means of a banjo screw either behind or in front of the seat tube.

Attach the transverse cable on the right to the brake arm then pull it through the yoke and clamp it by means of the banjo screw on the left brake arm.

Now the brake can be adjusted in exactly the same manner as the front brake, to carry this out see description above.

Please remember, the brakes must function 100% correctly before riding the bike!!!

The assembly of the bicycle is your responsibility. If you find the assembly process too difficult to carry out, then please take the bike to a bicycle shop in your areas to make sure that it is assembled correctly for use.

6.6 Drum Brake

The drum brake is integrated in the rear hub similar to the back pedal brake, but can also be integrated in the front wheel hub or hub dynamo.

The drum brake does not require any special servicing; however, it is operated by means of a brake cable, which must be adjusted now and again depending on wear and tear. This can normally be carried out by means of an adjustment screw/barrel on the drum brake cable mounting or by means of an adjustment screw/barrel on the brake lever.

If at some time the lever's leverage distance is no longer adequate to use the brakes properly, then the lining is worn out and should be replaced.

When removing and replacing the wheel it is important that one makes sure that the torque-support is fitted properly to the boss brazed on the frame or as the case may be, to the forks, or that the appropriate bracket is refitted correctly. The bracket screw (torque 6 – 8Nm) should be checked at regular intervals.

If the torque-support is not fitted correctly then the drum brake will remain without function and damage can be caused to the frame and forks if the bicycle is used.

7. Hubs / Wheels / Spokes

Mounting the Front Wheel

Unscrew the axel nuts as far as possible. Open the brakes so that the tyre will pass the brake shoes. If the tyre has a certain rotation direction then please observe this when mounting the wheel.

(If the front wheel has a quick release lever, hub dynamo or disc brake then please observe the special instructions for these components).

Once the wheel has been mounted please make sure that the axel is sitting in the dropouts properly before tightening the axel nuts (torque 30Nm) with a 15mm open end or ring spanner.

Now you can reattach the brakes and carry on with the assembly.

Hub Bearing Play

Most bicycles are equipped with conical (cone) hubs. These are adjustable and require regular servicing and care. To adjust any play you require a so called "Cone Wrench", these are special thin open end spanners in the sizes 13, 14, 15 and 16 millimetres, in general a 17mm spanner for the lock-nut.

The hubs can be adjusted from both sides but it is simpler to adjust the rear hubs from the left because the gear cluster on the right would have to be removed.

To carry this out one must loosen the lock-nut with a spanner whilst holding with a cone wrench.

Now one is able to turn the inner side of the cone with the cone wrench.

Turn to the left (anti-clockwise) to loosen it, to the right (clockwise) to tighten it.

One should adjust the bearing so that it is neither too tight nor jerky nor too loose so that the axel has lateral play.

The hub bearing should be controlled and serviced at regular intervals.

If you notice that the bearing has play then it should be readjusted. Further use without adjustment can cause damage to the bearing or increase wear and tear. If the bearing makes a cracking noise then it should be dismantled, cleaned and subsequently put together again using a generous portion of grease.

If you can see holes on the surface of the cones or bearing bushings, this means that the bearing is worn out and the hub, or as the case may be, the wheel should be replaced.

Truing

Truing is when one readjusts the tension of certain spokes on the wheel to achieve concentricity (true running). This also adjusts the spoke tension, which is important for the durability of both the wheel and spokes.

To true a wheel one requires a spoke wrench and a truing stand. Apart from this equipment one also requires a little experience and the right feel for this type of work. For this reason it is recommendable to have a wheel trued by a professional bicycle dealer.

It is important that the spokes are trued if the bike is new and then controlled after 150 – 200 kilometres; if necessary they should be readjusted.

Even after doing this it is important that the spokes are controlled on a regular basis because loose spokes are in danger of breaking.

Quick Release Lever

Quick release levers can be fitted to the front wheel hub, rear wheel hub and seat tube; with collapsible bicycles also to the stem and frame folding mechanism.

Quick release levers must be checked before each use of the bike – If they are too loose then this may lead to serious accidents.



Quick release levers should not be closed with the use of tools but one should use quite an amount of hand force to open or close them.

The quick release system is opened and closed by throwing the lever. If too little force is required or the lever will not close at all, then it can be tensioned by means of the knurled nut at the end of the release lever.

On some frames or saddle clamps the quick release lever is fixed directly to the component. In this case the quick release lever must be turned in the frame or saddle clamp to adjust.

If possible, on bicycles with brake discs the quick release lever should be fitted so that the lever is opposite the disc brake. One may suffer burns when removing the wheel or the plastic components could soften with the disc brakes sometimes heating up.

Hub Dynamo

The hub dynamo is to be treated in exactly the same manner as a front hub with quick release lever or normal fixing. One must only pay attention to the rotation direction and the position of the electrical connection. Detailed information can be found under the "Hub Dynamo" "Lighting" section.

8. Chain

Chain Care

Your chain should always be oiled. The chain should be cleaned before oiling. The chain should be dried and oiled subsequent to riding in the rain.

Normally it is sufficient just to pull the chain through a cloth that does not fluff. Excess oil should be removed from the chain in the same manner.

Never put too much oil on the chain otherwise it could splash onto the wheel rims when riding. This will reduce the braking effect immensely.

If the chain is not running smoothly it may have a stiff link. Hold the chain so that the stiff link is between your hands and bend the chain backwards and forwards until the stiff link is loosened.

It is also possible that with new chains the link that closes the chain may be stiff, if this be the case then loosen it as described above.

Chain Tension

In general it is only possible to adjust chain tension on bicycles without gears or with hub gears. The rear derailleur tensions the chain on bikes with derailleur gears.

Chain tension can be adjusted by moving the wheel in the rear dropouts.

Before adjustments are carried out one should find the position where the tension is at its highest. Due to manufacturing tolerances in the drive parts chain tension will vary a little when new.

The more wear and tear the greater the difference in chain tension.

If this difference is so great that even if correctly adjusted the chain still jumps from the sprocket then the chain should be replaced.

Turn the cranks gradually and note how the tension changes. Once you have found the position where the tension is at its highest adjustments should be made so that the chain can be moved 5mm upwards and downwards.

The chain is tensioned by loosening the nuts on the rear wheel, with bikes with back pedal brakes also the brake bracket or the connection to the frame.

On bikes with hub gears one may have to remove the gearbox.

Once you have pulled the wheel back and adjusted the chain tension you can retighten the axle nuts (torque 30Nm).

Chain Wear

Bicycle chains with derailleur gears should be replaced every 1500 – 2000 kilometres. By this time the chain has lengthened so much that the chain and sprocket teeth gauges no longer match. The chain should still be replaced even if this is not obvious when riding.

Further use will cause premature wear and tear to the sprockets.

With bicycles either without gears or with hub gears one will notice increasing wear and tear by the difference in the chain tension because the difference increases. If this difference is so great that even if correctly adjusted the chain still jumps from the sprocket then the chain should be replaced.

9. Lighting

9.1 Dynamo

Standard

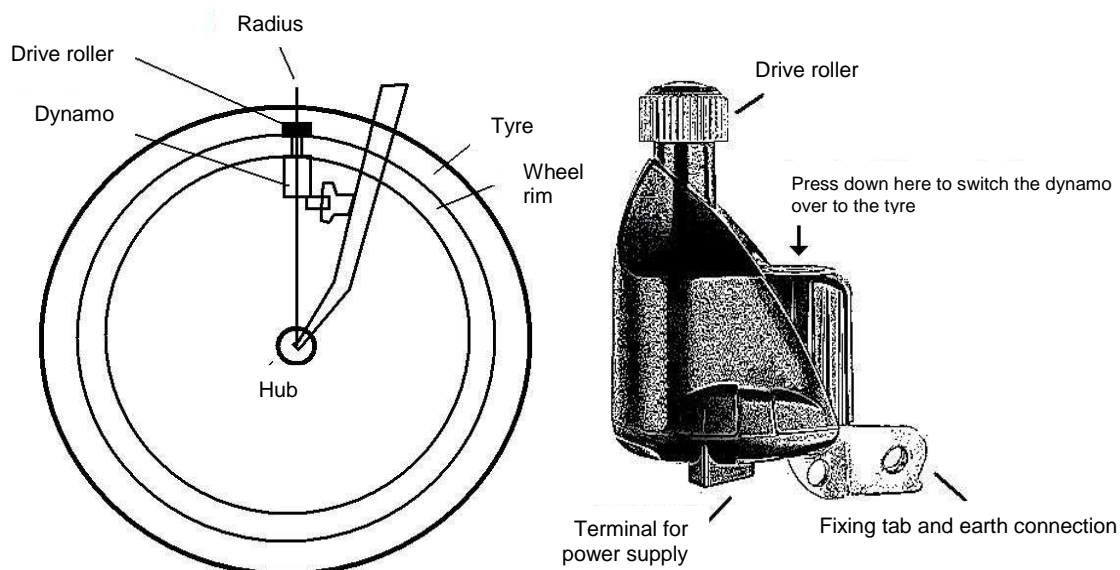
The standard dynamo runs at the side of the tyre. To switch the light on and off the dynamo is switched so that it runs on the tyre or as the case may be, pulled away from the tyre to turn it off. Some dynamos have a button or lever, on many bicycles one must press the dynamo down to activate the switching mechanism.

The dynamo is removed from the tyre wall by pulling it away.

Important for quiet and easy running is the correct adjustment.

The dynamo should be adjusted so that the drive roller lies nicely on the tyre. If the tyre has a special running surface for the dynamo then adjustments should be made so that the driver roller runs on this surface. The dynamo's longitudinal axis seen from the middle of the driver roller should also lie along the radius of the wheel. To adjust this one is able to move the dynamo fastening device up and down the frame or fork.

Sometimes it is necessary to slightly bend the dynamos fastening tab to provide an optimal result. This should always be seen as a final possibility and also be carried out with great care.



Once the dynamo has been adjusted correctly it can be tested to make sure that it works. To do this switch the dynamo on by switching it over to run on the tyre. Lift the wheel and revolve the wheel.

If one of the two lights does not function then check the terminal to this light and the terminal under the dynamo.

If both lights are without function then disconnect the wire from one of the lights and check again. If the other light functions then the fault lies with the light where you have disconnected the wire. Now swap the wires around, if the lights function then the wiring has been mixed up.

If the lights still don't function then connect the wires as originally connected and start again but disconnect the other light.

This fault can only occur with lighting systems with double wiring.

With single wiring the lights are earthed by means of the frame. If there is a fault here then please check the screws. Either they are too loose or the paint on the frame or fork is too thick; this can interrupt the current. In this case the paint is to be removed from the fixings to enable the current to flow.

If none of this is of any help then please contact the manufacturer or supplier.

Hub Dynamo

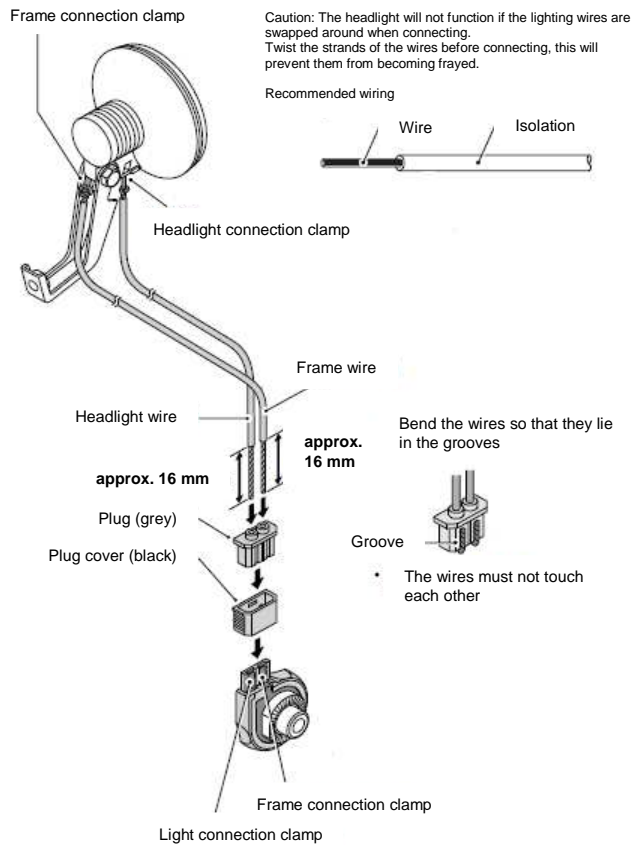
Mount the front wheel so that the hub dynamo terminal is on the right as seen when riding the bike.

The terminal must be aligned along the front fork or the rack support.

Installation is carried out as displayed in the image below; the terminal must be pointing upwards.

Do not try to turn the terminal by force after the axle nuts (torque 20Nm) have been tightened.

If it is forced it may be damaged or the wiring inside may break.



Fasten the wire to the front fork or rack support so that it does not get caught up in the spokes or other parts when riding.

If the position of the hub dynamo alters such as with a fork with springs, one must make sure that the cable is neither too tight nor too slack for the complete range of motion.

Connect so that the power from the hub dynamo passes along the light terminal wire to the frame terminal.

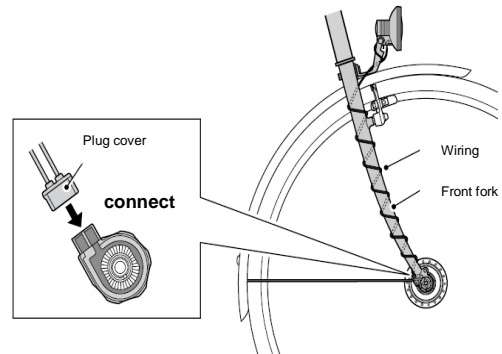
Remove the plug cover to disconnect the light from the dynamo.

Do not ride the bicycle with a disconnected plug cover because this will result in the wires getting caught up in the wheel.

Remove the plug cover before you take the wheel off.

If the wires are pulled strongly they may break resulting in poor contact.

When mounting the wheel it must be secured to the fork before fitting the plug cover.



9.2 Rear Light

Standard

There are many different types of rear lights. However, the main difference is whether the light has one or two connections.

Rear lights with one wire are earthed by means of the mudguard or rack and power is supplied by the dynamo. With these lights one must first of all check the fixing screw (or screws). If the light does not shine then either it is too loose or the paint on the mudguard or rack is too thick; this can interrupt the current.

With a rear light with two wires it may be that the wires have been swapped around, this will cause a short-circuit and the lights will not shine.

For this reason swap the wires if the rear light is without function.

Battery

The battery powered rear light is independent of the dynamo, for this reason it has to be switched on separately. Before first use one may have to remove a tab, which separates the battery from the light to avoid that the light is switched on accidentally. Once the tab has been removed the circuit is closed and the light is able to be switched on and off.

The batteries in this type of light normally last for well over 100 hours.

9.3 Headlight

Standard

The standard headlight is mainly connected to the dynamo by means of a wire; the earthing by means of the headlight fixing device. If the headlight is without function one should check the wire and the fixing screws.

The same again here, if the fork paint is too thick or screws are too loose then the lighting may fail.

For Hub Dynamo

Headlights for hub dynamos normally have a switch to turn them on and off and two permanently attached wires. The functional principle is no different to that of the standard headlight.

If the light is without function then check the switch first. Turn it on and off a few times to make sure that it engages properly. If it is still without function then check the wiring.

First of all (if the bike is equipped with one) the wiring for the rear lighting has to be disconnected.

If the headlight remains without function then the fault lies either with the connection or the rear light itself.

If this is not the fault then check the hub dynamo and if necessary swap the plug wiring around.

Once the headlight functions the wiring for the rear light can be reconnected.

10. Special Accessories for BMX and Dirt Bikes

10.1 Rotor Systems

F-Set Rotor System

The F-Set rotor system is a combination made up of the rotor and head parts.

The head parts have been built up such as with an A-Head, adjustments are carried out in the same manner and are dependent on the brake adjustment. To adjust the head parts please refer to the "Stem / Handlebars / Head Parts – A-Head Head Parts" section.

The rotor itself is inside the frame. There is a side opening on the frame to enable the cables to be replaced; this is closed by means of a rubber plug.

When adjusting the rear brake one should make sure that the upper F-Set cable is not pre-tensioned too much, for further information please refer to the "Brakes" section.

If the rear brakes are difficult to operate check the cables and oil them with silicon or Teflon oil. If the cables are easy of movement but the brakes are still difficult to operate then the fork column should be checked.

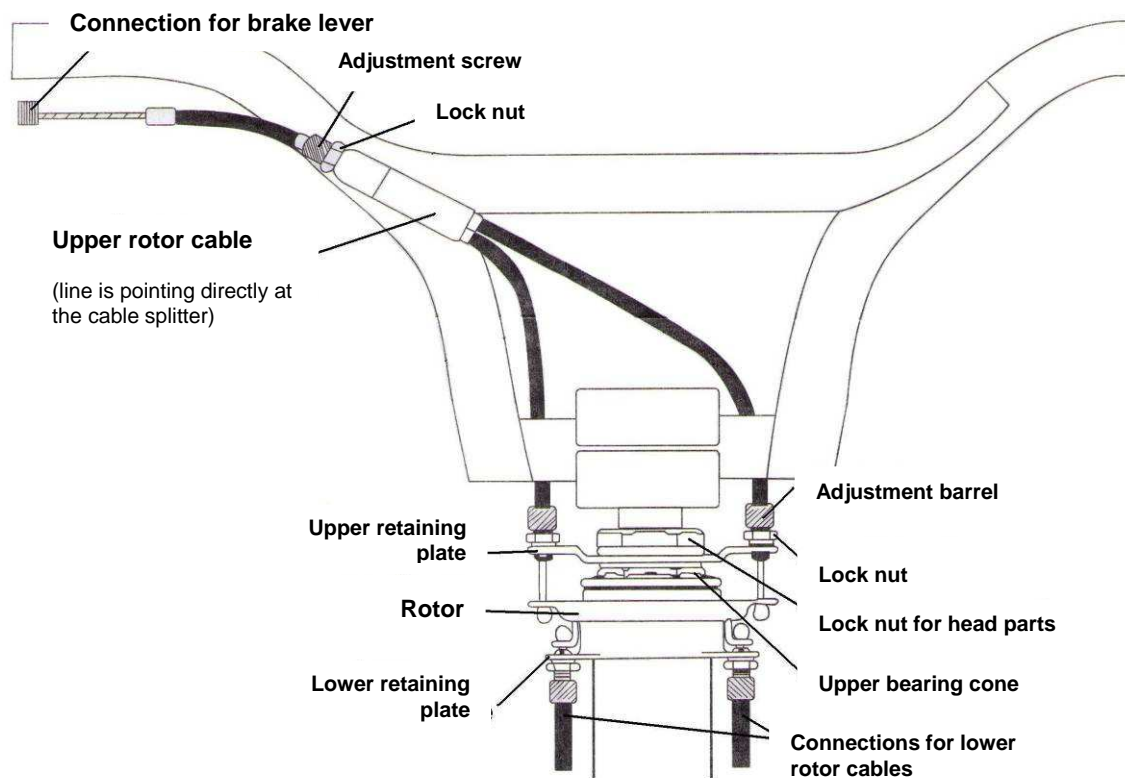
If the fork column is dry or heavily contaminated then the rotor will be unable to glide properly. In this case the fork column must be cleaned and greased. Subsequent to this the brakes should be easy to operate again.

Standard Rotor System

The standard rotor system consists of five parts, the upper and lower brake cable, an upper and lower retaining plate and the rotor.

Commence assembly with the fitting of the upper rotor cable.

The side of the rotor cable, which has one connecting nipple, is inserted into the brake lever. The shorter of the two lower connections is screwed into the thread on the upper retaining plate, which is closer to the brake lever. (It is up to you how you connect the brakes, e.g. rear brake on the left or right lever). Connect the longer one to the other thread on the upper retaining plate. Subsequent to this insert the two spherical heads at the end of the rotor cables into the rotor.



Once the upper rotor cable has been installed you should get rid of any brake-cable play. To carry this out unscrew the adjustment screw/barrel on the cable splitter and those at the bottom end of the rotor cable as far as possible or necessary.

Please make sure that enough thread remains in the cable splitter, or as the case may be, the retaining plate and then tighten the lock-nut (torque 6Nm).

The two adjustment screws/barrels in the retaining plate should be adjusted as equally as possible.

Normally the lower rotor cable is already attached, if not screw the end with the two cables into the retaining plate and tighten the lock-nut (torque 6Nm). Lead the other end to the rear brakes, depending on the type of frame and brakes it has to be fed through an adjustment screw on the frame before connecting to the brakes.

Fine adjustments to the cable tension should be made subsequent to the brake adjustment by means of the cable splitter adjustment screw/barrel on the lower rotor cable or if equipped with, on the frame. Once again, the lock-nut should be tightened (torque 6Nm) when finished.

If the rotor system is difficult to operate one should check the rotor cables. If they are bent in the outer sheath then they should be straightened.

In general it helps if the brake cables are oiled, this will reduce resistance. Thin light Teflon or silicon oil will do the job.

10.2 Pegs (Axle Pegs)

Please remove the axel nuts before fitting the pegs. The pegs must lie directly on the frame otherwise the axel may bend. Subsequently the axel nut should be screwed in the peg to the axel to lock it and stop it from loosening when carrying out tricks and grinds.

PLEASE NOTE: Damage caused due to carrying out tricks and grinds is not covered by the guarantee.

10.3 Chain Guide

To adjust the chain guide you must first of all shift the gear to the largest rear sprocket.

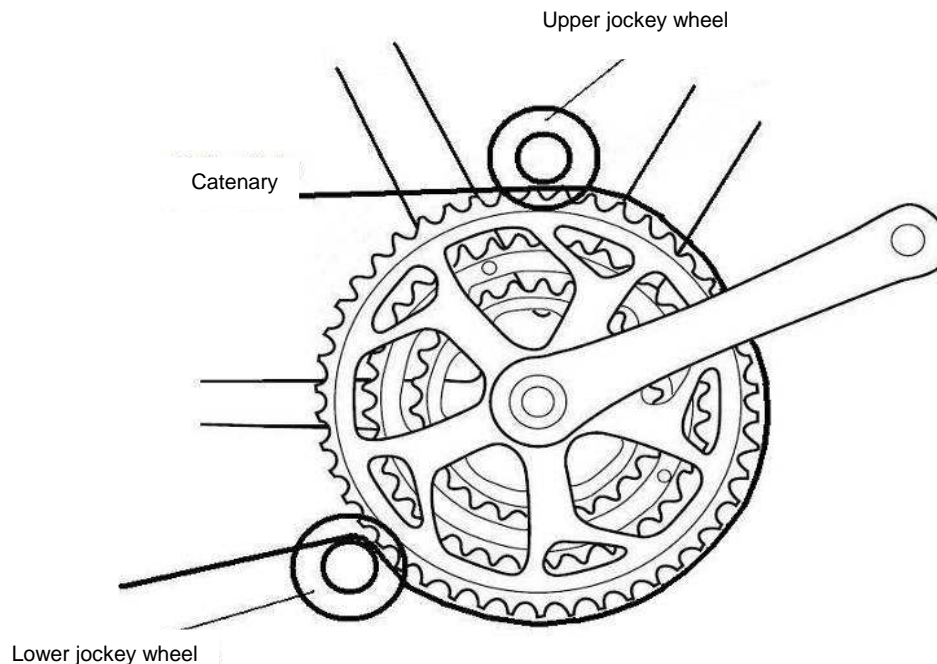
The guide should then be adjusted so that the upper jockey wheel is situated where the chain meets the front sprocket. To do this it is possible to turn the mounting plate on the pedal bearing. To turn the mounting plate loosen all grub screws used to secure it.

Once the correct angle has been found adjust the height of the jockey wheel. To do this one must loosen the bolt on the jockey wheel.

The jockey wheel should run as close as possible to the chain, but should not push it down.

Once the correct position has been found you can retighten the grub screws to secure the mounting plate.

Finally, the lower jockey wheel should be adjusted so that it is situated as close as possible to the sprocket. Once again you must loosen the bolt to carry this out.



11. Special Accessories for Children's Bicycles

Training Wheels

The training wheels should only be mounted and used when first learning to balance.

To mount them one must first of all remove the nuts and washers from the rear axle. Fit the tab on the training wheel arm to the rear axle. Now screw the nut and washer on with your fingers without the help of tools.

To fit the training wheels correctly the bracket of the structural part which surrounds the arm must be situated directly beneath the frame bracing strut (at the cut out of the dropouts).

Subsequent to this the axel nuts must be tightened with the appropriate spanner (when doing so please take the chain tension into consideration).