

5. Gears

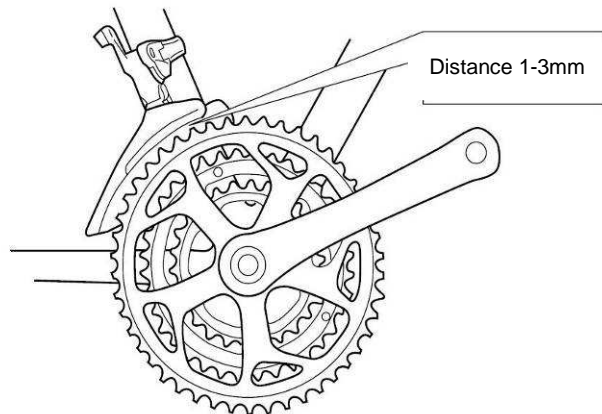
5.1 Derailleur

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.

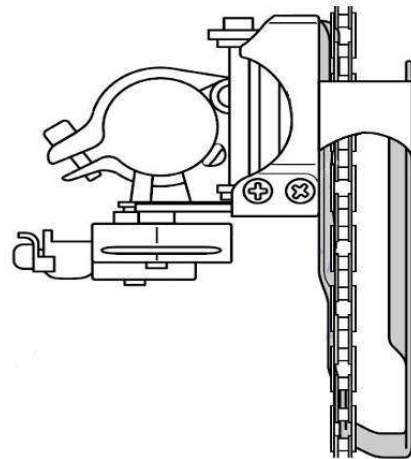
The derailleur is to be adjusted so that the outer chain guide has 1 – 3 mm clearance to the large front sprocket.



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.

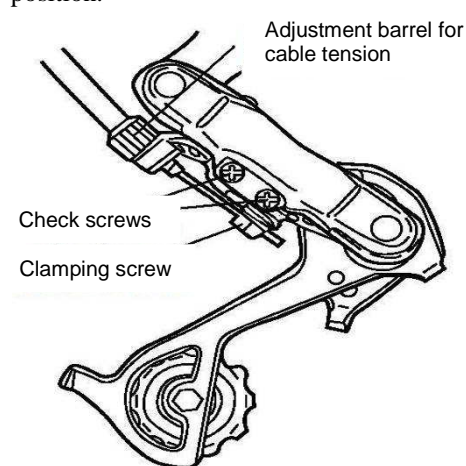
With this derailleur mainly being put to use on racing cycles one must pay attention to the special features of the dual control levers, also known as brake/shift levers.

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.

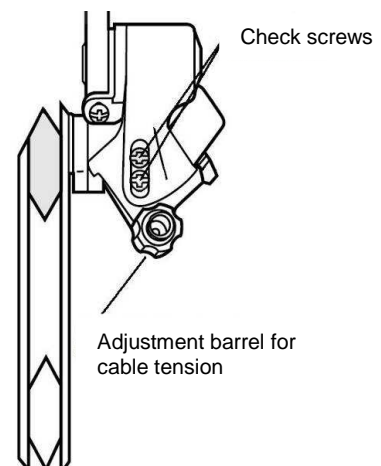
If this is not the case you should not attempt to make adjustments. To solve this problem please contact the manufacturer or dealer.

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.

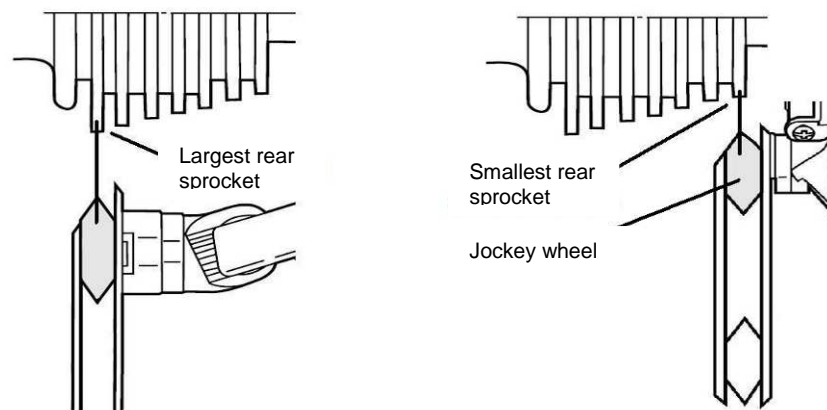


Especially the range towards the spokes should be carried out with great care and controlled on a regular basis, because if the chain runs over into the spokes a great deal of damage can be caused to the gears.

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.

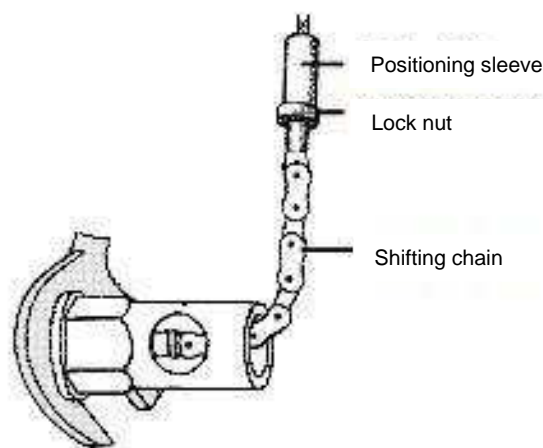
Please observe the notes at the end of the "derailleur" section.

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.

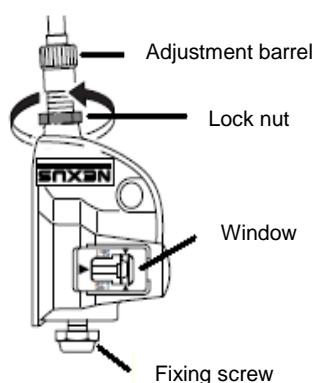
The gear shifting tension is adjusted with a positioning sleeve so that the cable is not slack and when the gear shifting handle is moved, the shifting chain responds but is not pulled.

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.

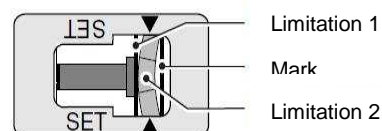
Before fixing the gear box the shifting pin must be pushed into the hub's axel. Following this the gearbox can be fitted to the wheel nut and the fixing screw can be tightened (torque 5 – 6Nm). To carry this out you require either a 10mm open end spanner or a 5mm Allen key.



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.

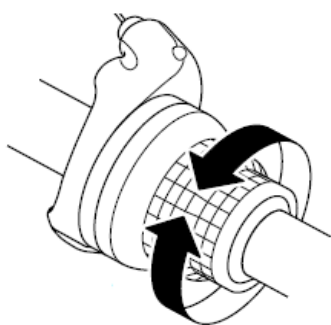


The yellow mark should lie exactly in the middle between the limitations 1 and 2. If this not be the case one can make adjustments by means of the adjustment screw/barrel. To carry this out loosen the lock-nut with a 10mm open end spanner and adjust the tension accordingly by means of the adjustment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

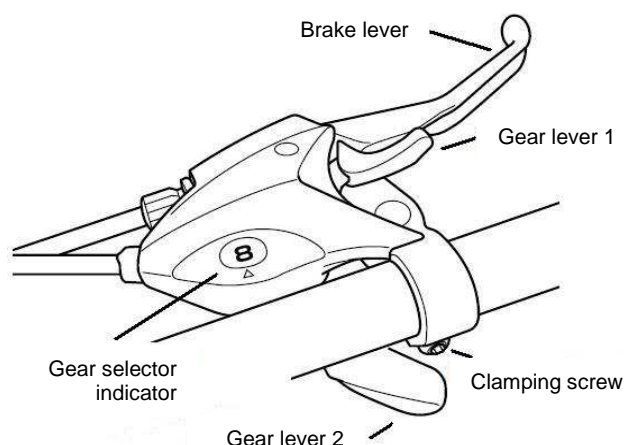


Such as the name suggests the grip shifter is used to shift the gears, it shifts the gears when twisted. This is carried out by turning the inner part with 1-2 fingers.

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.

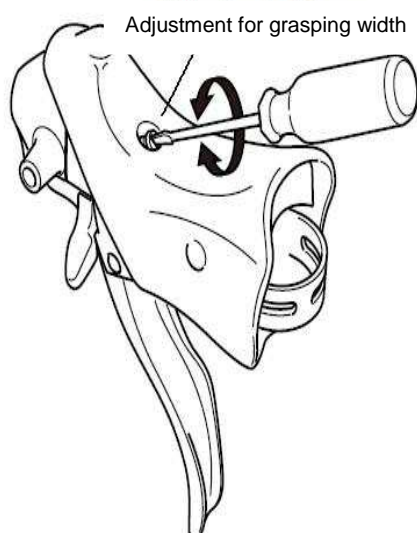
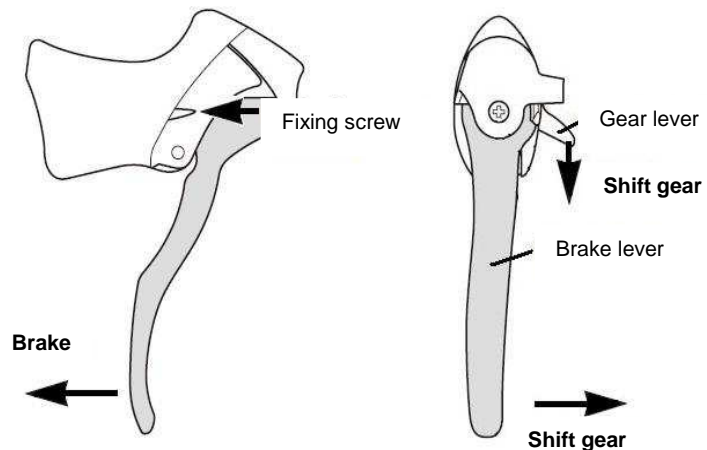
The same applies when using the smallest front sprocket and smallest rear sprocket. Press the brake lever slightly towards the inside, the derailleur will move slightly towards the outside; the chain should cease to rub.

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".