

# Bike Maintenance 101

A few bits of knowledge can help increase your safety and save some money, Too!

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## Basic Bike Tools for Home

- Floor pump
- American vs. European inner tubes
- Cleaners and lubricants

## Basic Bike Tools to Carry on Your Bike

- Tire irons
- Spare tube
- Patch kit
- Pump or CO<sub>2</sub> Cartridge
- Multi-tool
- Spoke wrench
- Dollar bill + spare change
- Wrench, if needed, for wheels
- Any special tools for non-standard items (adjusting new cleats, pedals, etc...)

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## Removing Your Bicycle's Wheels

### Quick release vs. wrench

Nicer bikes will have Quick-release skewers. Less expensive bikes may have 1 or both wheels bolt on. If you have bolt-on wheels, make sure that you have the correct wrench in your bike bag. Also be aware that front and rear wheels may not have the same size bolts.

### Removing a front wheel

- Standing in front of bike, open the quick release on the brake.
- Use wrench or quick release to loosen wheel from fork.  
(Fork may have CPSC device, so extra loosening may be required)
- With handlebars/stem in 1 hand and wheel in the other, raise front of bike 1 inch, allowing the wheel to fall out of dropouts.
- Move wheel away from bike, and put bike down in a manner such that it will not fall over.

### Removing a rear wheel

- Open the quick release on the rear brake
- Shift the bike into the smallest cog (closest to the dropout)
- Standing behind the bike, use wrench or quick release to loosen wheel from dropout.
- With left hand on left seat-stay, near brakes, and right hand on rear derailleur body,
- Raise rear of bike about 4 - 6 inches, while rotating derailleur body clockwise,  
This should allow the wheel to fall out of dropouts, unencumbered by the chain.
- Move wheel away from bike, and put bike down in a manner such that it will not fall over (jelly side up).

# Re-installing Your Bicycle's Wheels

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To put the wheels back onto the bike is basically the reverse of the removal process.

## Re-installing a front wheel

- a) Standing in front of bike, open the quick release on the brake.
- b) With handlebars/stem in 1 hand and wheel in the other, raise front of bike 1 inch,
- c) Put the wheel below the fork, then lower the fork 1 inch onto the axle.
- d) Use wrench or quick release to tighten wheel in fork.
- e) Close quick release on brake.
- f) Tap brake lever to ensure that brake is still centered. Adjust if needed.

## Re-installing a rear wheel

- a) Open the quick release on the rear brake
- b) Shift the derailleur into the position closest to the dropout.
- c) Standing behind the bike, put the left hand on left seat-stay, near brakes, and right hand on rear derailleur body,
- d) Raise rear of bike about 2 - 3 inches, while rotating derailleur body clockwise, and tightening the chain.
- e) With left hand on wheel, and right hand on stretched derailleur, move the wheel below the dropout and chain.
- f) Slowly lower the rear of the bike, placing the chain onto the smallest cog, and then the dropouts over the axle.
- g) Use wrench or quick release to tighten wheel in dropouts.
- h) Close quick release on brake.
- i) Tap brake lever to ensure that brake is still centered. Adjust if needed.

# Changing a Flat Tire

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## Stop and remove tire & tube

- a) Stop the bike as soon as safely possible. Consider shifting your body weight forward / backwards to unload weight on affected wheel.
- b) Remove wheel, put bike down, "jelly side up".
- c) If puncture was severe, inspect tire.
- d) Making note of relationship of tire to valve hole (logo trick), use tire irons to remove tire with tube inside.

## Inspect and fix

- e) Inspect tube for hole, looking for:
  - 1) puncture on top, through tread, caused by small road hazard. (glass, nail, etc..)
  - 2) puncture on side, through sidewalls, caused by:
    - Pinch, or snakebite (low air pressure)
    - Stone cut (stones, small debris on road)
    - Casing tear (large debris on road)
  - 3) Puncture on bottom (problem with rim tape)
- f) Resolve the problem from above, by removing glass, fixing casing, adjusting rim-strip, etc...
- g) For convenience sake, it is faster, and more reliable to use new tube to fix problem.  
Keep the bad tube, until you get home, just in case you have a second flat, you can choose the better tube to fix.

## Re-install tire & tube

- h) Put 1 side of the tire back onto the rim.
- i) Put a little bit of air into the tube to make it round.
- j) Put the tube through the valve hole, and work it around the rim, into the tire, and the tire farther onto the rim.
- k) Start working around the rim, placing the tire back into place, making sure that valve, tire label, and stem are straight and seated correctly.
- l) Eventually, 1 tight spot will remain. Use tire irons to seat last part of tire bead.  
Pay extra attention so that you do not pinch the tube. (between rim and bead, or rim and tire iron)
- m) Inflate tire to 30 – 40 psi. Look to ensure tire is round and seated. Fix any spots that are not seated properly.
- n) Inflate to correct pressure, 90 – 100 psi.
- o) Re-install wheel

# Pedal Tension Adjustment

Shimano Tech Document:

[http://techdocs.shimano.com/media/techdocs/content/cycle/SI/Pedals/PD7800\\_6610\\_R540/SI-42V0E\\_En\\_v1\\_m56577569830611152.pdf](http://techdocs.shimano.com/media/techdocs/content/cycle/SI/Pedals/PD7800_6610_R540/SI-42V0E_En_v1_m56577569830611152.pdf)

Nowadays, it is rare to see to straps and clips on a road bike. Pretty much everyone has made the transition to clipless pedals. These pedals can be adjusted so that you do not have to worry about being stuck and falling over at a traffic light (tension too tight) or whether your feet are going to fly off the pedals while climbing a hill (tension too loose) causing you to fall.

Typically the tension adjustment screw requires a small Allen-wrench to be used, normally 2.5 – 4 mm in size. The adjusting screw has a range of about 10 – 15 positions (clicks). Going beyond this may unscrew the mechanism. See diagram below.

# Adjusting Caliper Brakes

Shimano Tech Document:

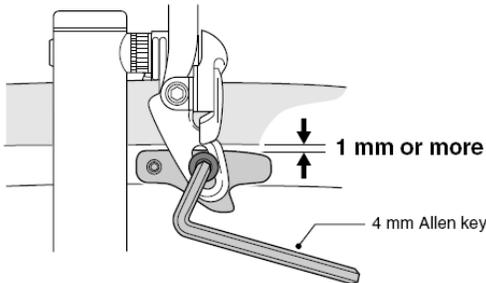
[http://techdocs.shimano.com/media/techdocs/content/cycle/SI/Dura-Ace/BrakeSystem/SI-8FA0H-En\\_v1\\_m56577569830605105.pdf](http://techdocs.shimano.com/media/techdocs/content/cycle/SI/Dura-Ace/BrakeSystem/SI-8FA0H-En_v1_m56577569830605105.pdf)

## Cable tension

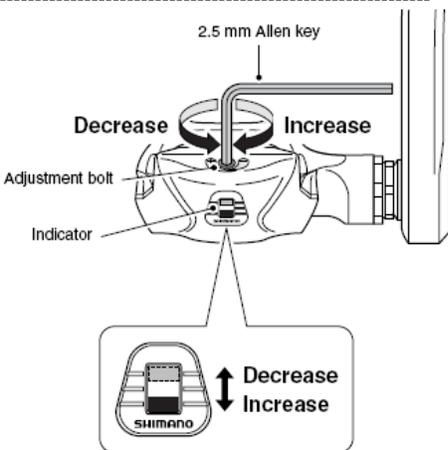
### Centering

### Brake shoe alignment and Toe – In

### Brake shoe setting position

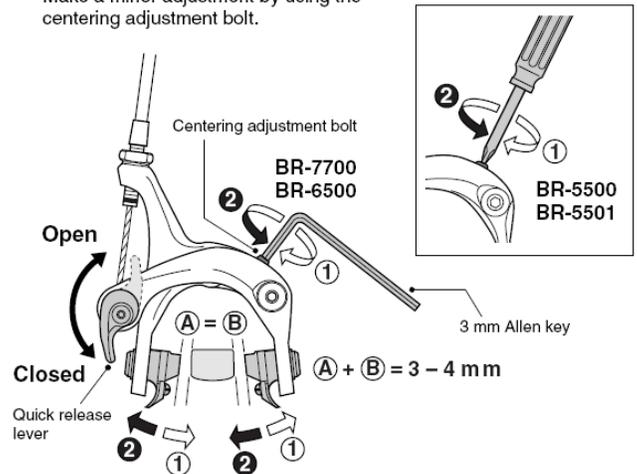


**Tightening torque:**  
5 – 7 Nm {43 – 61 in. lbs.}



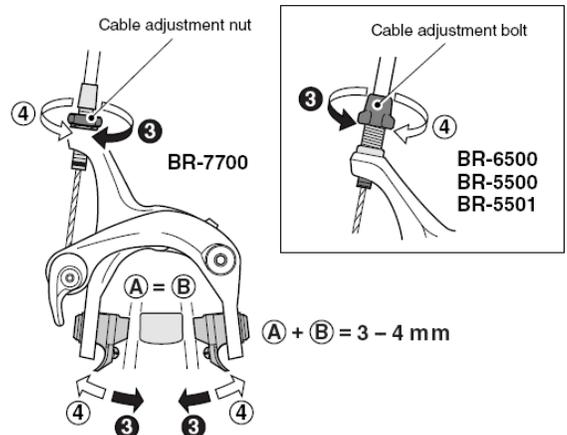
### Centering of the brake shoe

Make a minor adjustment by using the centering adjustment bolt.



### Readjustment of the shoe clearance

Turn the cable adjustment nut (or bolt) to readjust the shoe clearance.



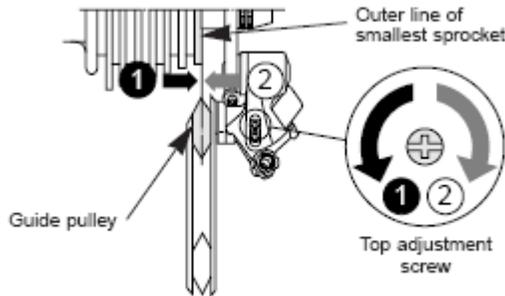
# Adjusting the Rear Derailleur

Shimano Tech Document:

[http://techdocs.shimano.com/media/techdocs/content/cycle/SI/105/RD-5500-5501/SI-5TK0D-En\\_v1\\_m56577569830603908.pdf](http://techdocs.shimano.com/media/techdocs/content/cycle/SI/105/RD-5500-5501/SI-5TK0D-En_v1_m56577569830603908.pdf)

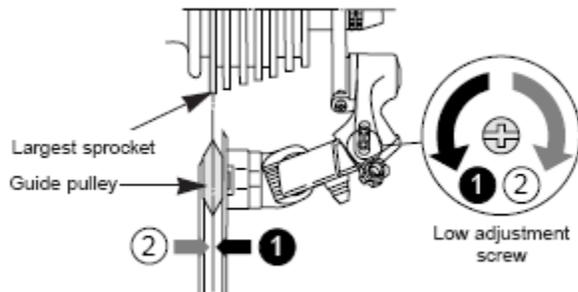
## 1. Top adjustment

Turn the top adjustment screw to adjust so that the guide pulley is below the outer line of the smallest sprocket when looking from the rear.



## 2. Low adjustment

Turn the low adjustment screw so that the guide pulley moves to a position directly in line with the largest sprocket.



## 3. How to use the B-tension adjustment screw

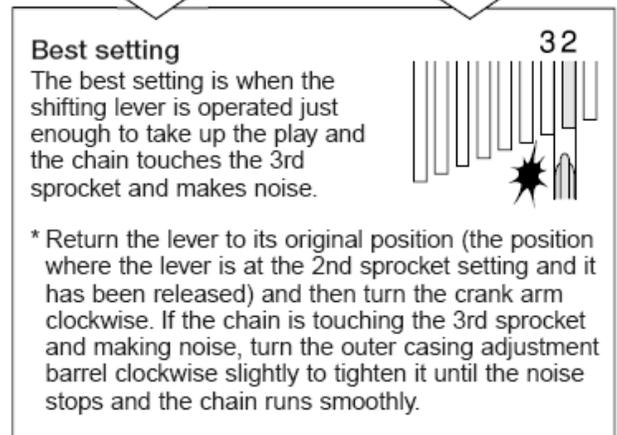
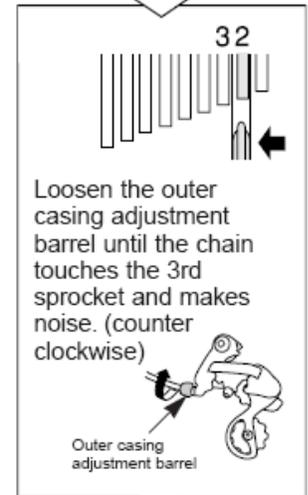
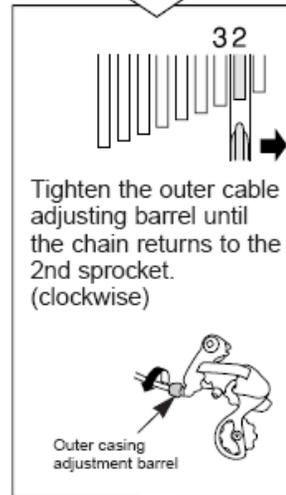
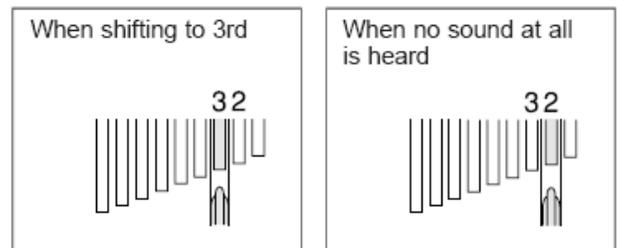
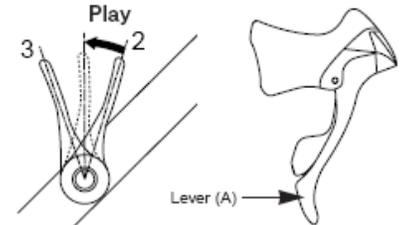
Mount the chain on the smallest chainring and the largest sprocket, and turn the crank arm backward. Then turn the B-tension adjustment screw to adjust the guide pulley as close to the sprocket as possible but not so close that it touches. Next, set the chain to the smallest sprocket and repeat the above to make sure that the pulley does not touch the sprocket.

## 4. Adjustment of the cable tension

- Shift derailleur to top position (smallest cog)
- Pull shifter back 1 click
- Derailleur should move 1 cog, and be silent.
- Repeat process, climbing the freewheel / cassette

## SIS Adjustment

Operate the shifting lever several times to move the chain to the 2nd sprocket. Then, while pressing the lever just enough to take up the play in the lever, turn the crank arm.



For the best SIS performance, periodically lubricate all power-transmission parts.

## Adjusting the Front Derailleur

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Shimano Tech Document:

[http://techdocs.shimano.com/media/techdocs/content/cycle/SI/105/FD-5500-5501/SI-59G0C-En\\_v1\\_m56577569830612176.pdf](http://techdocs.shimano.com/media/techdocs/content/cycle/SI/105/FD-5500-5501/SI-59G0C-En_v1_m56577569830612176.pdf)

### 1. Low adjustment

Set so that the clearance between the chain guide inner plate and the chain is 0 - 0.5 mm.

### 2. Top adjustment

Set so that the clearance between the chain guide outer plate and the chain is 0 - 0.5 mm.

### 4. Adjustment of the cable tension

- (a) Set the chain to the largest rear sprocket, and shift the front to top gear.
- (b) Trim the derailleur by clicking the “down” lever once.
- (c) After trimming, adjust the clearance (by using the cable-adjustment bolt) of the chain and chain guide to the minimum (0 - 0.5 mm).

## Cleaning the Chain / Drive-train

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Cleaners vs. lubricants

Tri-Flow Citrus Foaming cleaner [http://www.triflowlubricants.com/Citrus\\_Degreaser/citrus.html](http://www.triflowlubricants.com/Citrus_Degreaser/citrus.html)

Lubricants

Oils, synthetics, Teflon, graphite, wax

Clean / lube the chain as well as derailleur pulleys.

Chain stretch / wear

## Introduction to Truing Wheels

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Correct version of spoke wrench

## References

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All Shimano technical articles are located at:

<http://techdocs.shimano.com/techdocs/index.jsp>

All Campagnolo technical articles are located at:

[http://www.campagnolo.com/jsp/en/doc/doccatid\\_4.jsp](http://www.campagnolo.com/jsp/en/doc/doccatid_4.jsp)

All SRAM technical articles are located at:

<http://www.sram.com/en/service/>