



## Drivetrain health check: How to ensure smooth and quiet gear changes

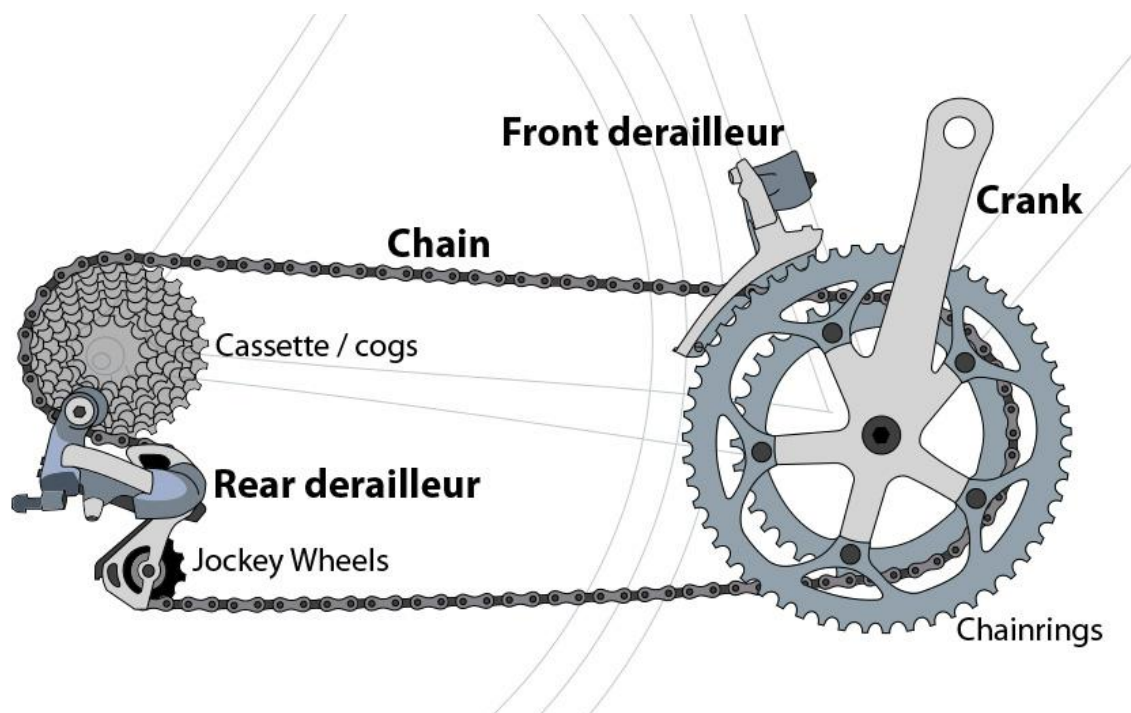


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### Things you'll need

#### Essential

- Rags
- Lubricant
- Degreaser
- Allen keys
- A small flat head screwdriver (for adjusting and 'poking')

#### Desirable but not essential

- Bucket, hot soapy water, brushes, sponges and a hosepipe
- An old toothbrush
- Gloves (to keep your hands clean and protect them from chemicals)
- A chain wear checker
- A work stand

# Cleaning

The easiest way to clean and adjust your drivetrain is by having your back wheel lifted from the ground. A work stand is really useful for this task but you can improvise using a hook, doorframe or a tree branch or just do it on the ground. **With both methods be careful not to get oil on braking surfaces!**

## The quick method:

1. Use an old toothbrush and suitable 'poker' to dislodge any large chunks of 'crud', in particular around the jockey wheels and chain rings
2. Put some degreaser on a rag and hold the chain with the cloth like a glove. Turn the pedals backwards to clean the dirt from the chain.
3. Use a rag to clean everything up

## The 'Proper' method

1. Use an old toothbrush and suitable 'poker' to dislodge any large chunks of 'crud', in particular around the jockey wheels and chain rings
2. Use degreaser liberally on the chain, cassette, derailleurs and chain wheels.
3. Use an old toothbrush to scrub everything thoroughly
4. Remove the back wheel and clean separately paying attention to the spaces between the cassette cogs
5. Replace the Wheel and then use hot soapy water and then clean water to clean and rinse away the degreaser and dirt
6. Dry everything with a clean cloth and use a spray lubricant like GT85 or WD40 to drive out any remaining water

# Inspecting

Gear shifting problems are often a result of worn parts. Once you have your drivetrain clean, you can use the following steps to keep everything working well:

1. **Check your chain for wear.** The easiest way to do this is using a chain checker. Between 0 and 0.5% wear is fine. Between 0.5% and 0.75% worn you should be thinking about fitting a new chain. Anywhere beyond 0.75% replace the chain as soon as possible. Other parts (like cassettes) may also need to be replaced. Beyond 1% you will definitely need at least a new cassette/freewheel too.
2. **Inspect cables.** Gear shifting problems are often caused by kinked, damaged or sticky cables and housings. Look for damaged housing, rust on exposed sections of inner cable and frayed ends.
3. **Check other components for wear.** Chainrings, cassettes and jockey wheels are all subject to wear and will cause poor shifting beyond a certain point of wear. Damaged, loose or worn derailleurs will all cause problems.
4. **Check your hanger!** Poor shifting on rear derailleurs is often caused by bent gear hangers caused by crashes, dropping the bike or even just leaning it against a wall.

# Lubricating

Correctly lubricating your drivetrain is very important. Too much lube will attract dirt and increase wear. Not enough lube and your chain will be noisy, wear quickly and develop stiff-links and other components will work poorly. This all affects gear shifting quality.

1. Ensure your chain is clean. (See **Cleaning** above)
2. Apply a drop of your chosen chain lube to each roller of the chain. **Tip:** Start applying lube at the joining pin or link so you know where you began.
3. When you have coated each roller, rotate the chain set backwards for a few seconds to allow the lube to penetrate the internals of the chain rollers.
4. Using a clean cloth wipe any excess lube from the chain, chain rings and jockey wheels.
5. Carefully apply a couple of drops of chain lube onto the springs and pivots of the derailleurs.
6. Use a couple of drops of chain lube or spray lubricant (NOT WD40) to lubricate gear shifters and any exposed cables.

# Adjusting

Finally, once you have your drivetrain clean, inspected for wear and lubricated you can make some basic adjustments to make sure your gears shift smoothly and quietly.

## Limit Screws

Limit screws dictate how far your chain can travel at the upper and lower end of the range. You'll find screws marked **H** (high gear, small cog/ring) and **L** (Low gear, big cog/ring) on front and rear derailleurs. If your gears were shifting well and nothing has been changed (like a new cassette) then there should be no need to touch these screws. If they are not set correctly then you won't be able to get the gears to index (move one cog for every click of the gear shifter). If your chain falls off the top or bottom at the front or rear then the limit screws need to be set. Setting the **H** screw on the rear derailleur also sets the starting point for your gear indexing but don't adjust it unless you are sure the hanger is straight.

## Rear derailleur and indexing

(Photo By C. Corleis CC-BY-SA-3.0 from Wikimedia Commons)

**The rear derailleur pushes the chain up and down the cassette or sprockets in the rear wheel. Rear indexing is controlled by cable tension set by the barrel adjuster at the back of the derailleur. Over time cables lose tension and gears stop shifting well.**



## You can adjust the tension using the following steps:

1. To begin if there are two front chain rings, stay on the largest chainring. If your bike uses three front chain rings, shift to the middle.
2. On the rear, start on the smallest cog. Turn the pedals and shift the shifter one click (and only **one** click).
3. If the chain did not make it to the next gear, turn the barrel adjuster **anti-clockwise** until it makes the shift. If you shift the shifter one click and the derailleur moves two sprockets, shift back to the first cog, turn the barrel adjuster **clockwise** about one turn and try the shift again.
4. Once the first cog shift is set nicely try shifting up and down the gears. Listen for noisy shifts or the chain running badly. Turn the barrel adjuster 1/4 turn at a time to get rid of the noise.

## Front derailleur

(Photo by Markus Spiske  
freeforcommercialuse.net from  
Pexels)

**The front derailleur is much more rudimentary – it pushes the chain between the 2 or 3 front chainrings.**

**Use the following steps to adjust it:**



1. The front derailleur should run parallel to the chain rings. If it doesn't, loosen the bolt attaching it to the frame and rotate it into the correct position.
2. When directly above the large chain ring, the outer edge of the derailleur should sit 2-3mm above the teeth of the chain ring. If it does not, release the cable tension, loosen the bolt attaching it to the frame and move it up or down. **Tip:** A 2 pence coin is exactly the right size to measure this gap.
3. If it does not shift into the big ring a little more cable tension and/or adjusting the **H** limit screw might be required
4. If it falls off the bottom chain ring you can adjust the **L** limit screw

## Some useful resources:

<https://www.parktool.com/blog/repair-help/rear-derailleur-adjustment>

<https://www.parktool.com/blog/repair-help/front-derailleur-adjustment>