



Derailleur Adjustment Derailleur Trim

Just as with the rear derailleur the front derailleur is a simple device with a complicated job to do. Usually when you drop a chain it will originate from the front derailleur. That's because of the large difference in the number of teeth between the Big Chainring and the Small Chainring. Most often the chain is being dropped (quite literally) onto the small chainring from the big chainring. The cage of the front derailleur is wide enough that the chain sometimes misses the small chainring. This can be made worse if the derailleur is not adjusted correctly.

Most modern derailleurs have what is called **derailleur trim** that is intended to reduce or eliminate chain rub at excessive chainline angles. Now, you have likely been told not to use the big-big and small-small chain combinations because it stresses the chain when it must bend sideways more than it is intended to operate. However, with the ever-increasing number of cassette cogs (11,12 and 13) and One-by drivetrains, chainlines are being pushed near the limit - even if you're not on the big-big or small-small combinations. So, derailleur trim allows for the greater chainline angles and it helps to prevent chain rub and dropped chains.

In the diagram (right) you will see the way in which trim is used. Note the dashed line and its position in relation to the range of gears being used (blue) on the cassette. The black dashed line represents the derailleur cage.

How does this feel when the front derailleur is adjusted properly? Well, it feels like there are **two full shifts** with both a **high and low half-shifts** in between. Used properly, the chainline is always optimized and chain rub is minimized or eliminated altogether.

Where do things go wrong?

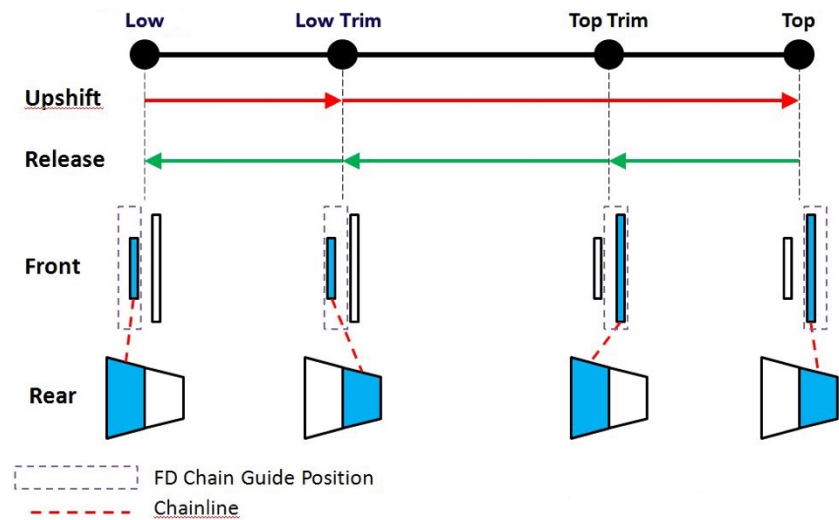
When the high and low limits of the derailleur are set, cable tension must be released completely and the brifter (brake/shifter) must be in the lowest position. This is where things can go wrong. If the brifter is not completely released to full-low (left in the diagram above), all of the other detents will be out of position and there will not be any low trim.

Adjusting the Front Derailleur

Unlike the Rear Derailleur, mis-adjustment of the Front Derailleur will not result in any destructive consequences. Instead, the Front Derailleur will just be annoying with dropped chains, chain rub or a refusal to shift from the Small Chainring to the Large Chainring. *If you are not familiar with the tools and methods of adjusting the Front Derailleur it may be best to leave adjustment to a professional bike mechanic.* We will look at the general checks that you can determine whether or not your derailleur is positioned and adjusted properly. Check the specifications for your particular derailleur to see what clearances are recommended as they may vary from what is shown here.

Shimano Road Shifter and Front Derailleur Gear Positions (Applicable to ST/FD 9000/6800/5800/4700 and SL-RS700/4700)

Recommended Front Shifter Gear Setting at Different Gear Combinations

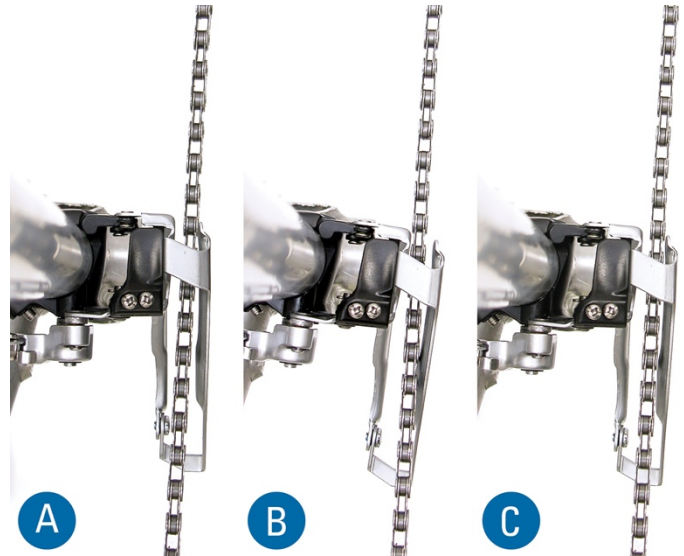
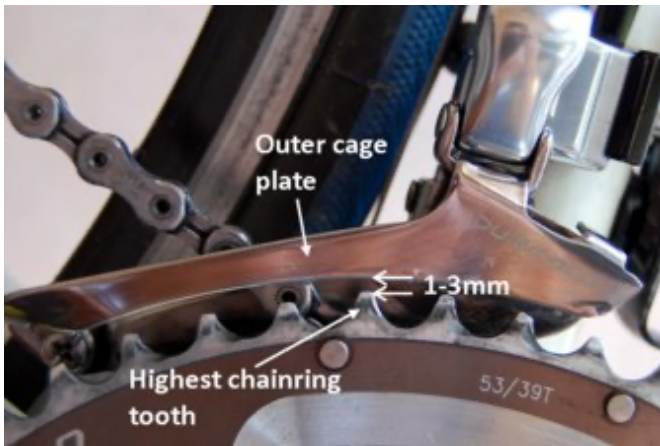


First of all, it is assumed that the cable is in good condition and runs through the cable housing easily. If there is drag, the cable is frayed or kinked it must be serviced or replaced.

Set all the barrel adjusters for the front derailleur to 2 full turns out (counter-clockwise from full bottom of the barrel adjusters). For the low limit adjustment the rear derailleur must be set to the low (large cog) of the cassette.

1. With the cable released from the pinch bolt – the complete derailleur must be aligned to the Chainrings. The outer cage must run parallel to the chain (see right). **C** shows a properly aligned derailleur. Don't tighten the pinch bolt on the clamp completely just yet.

2. Next the derailleur assembly must be set so that there is clearance for the cage to move laterally without catching on the chainrings. Re-check that your alignment is still correct and then torque the clamp bolt to recommended torque (usually 5 to 7 newton metres).



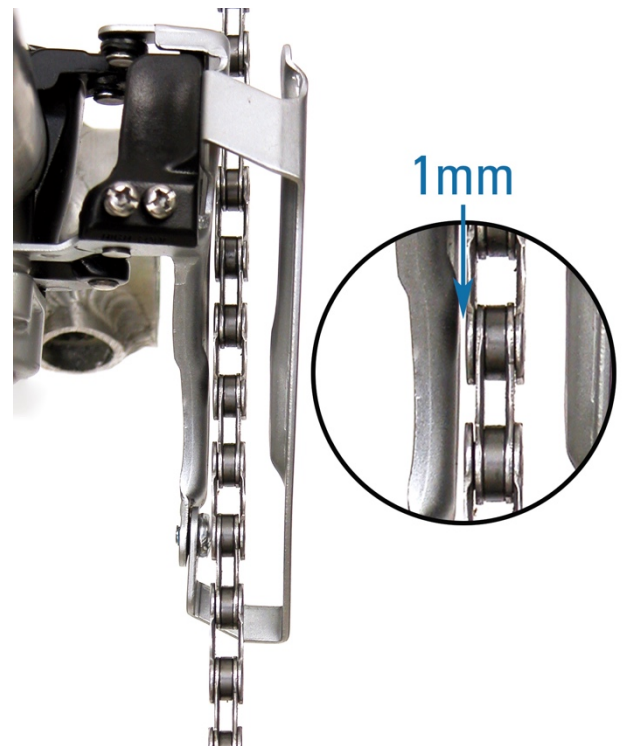
3. The low limit is set first by adjusting the screw marked "L" until there is minimal clearance (1 mm) between the chain and the inner derailleur cage (below). Not all chainrings are true, so be sure to rotate the crankset to ensure that all areas of the chainring rotate without rubbing.

4. Run the cable under the cable pinch bolt. Be sure that the cable is routed properly – this ensures that the leverage is correct. Using pliers or a 3rd hand tool to pull the cable tight and torque the pinch bolt to 5 newton metres.

5. If you have installed a new cable there will be some stretching of the cable once it's under tension. To hasten this stretch, run through the gears (2 or 3) about twenty times to work the cable. Shift to the lowest position and retighten the cable (as above).

6. Now, if you have done things correctly you should have 4 detent positions (on a group that has trim) and 2 detent positions (for groups that don't have trim). The trim positions are not adjustable – they are built into the brifter design.

7. The high limit must now be checked and adjusted. Be sure to shift to the high (small cog of the cassette). Can you shift to the large chainring and have the derailleur latch in the high position? Be absolutely sure that you are in the **high position and not the high trim position.**



If you cannot get the derailleur to latch and the shifter requires a lot of effort, it likely means that the high limit screw is set too tight and the brifter is unable to reach the high latch point. Back off the “H” screw a quarter turn and recheck if the derailleur will latch in the high position. Keep backing off the screw until you can get the derailleur to latch in the high position. Cable tension may need to be increased as well.

If when you make your shift to high the chain drops off the outside of the crankset, the high limit screw is turned out too far. While the chain is off the crankset, downshift the derailleur all the way to low. Now by manually manipulating the derailleur directly with your hand check to see how far the derailleur is travelling. Just as with our low position we want to have about 1 millimetre of clearance between the chain and derailleur cage. Adjust the “H” screw in (clockwise) until the cage would allow for the chain just go onto the big chainring – this you have to envision to start with.



Remount the chain onto the small chainring and again upshift all the way to your high position. Is the chain rubbing on the outside of the derailleur cage? If so, you need to turn the “H” screw out and perhaps add some cable tension to get the derailleur to a point where rubbing stops. Now to check if you have 4 distinct detent points (with trim).

You should be able to shift down to the high trim position (from the high position) by gently moving downshift lever until the derailleur just does this “half shift.” A second stab (or further movement of the downshift lever) should drop the chain down onto the next lower chainring. Continue downshifting until the derailleur is in the low position. Now can you do a **half upshift** to the low trim position? If you can that means cable tension is very close to being spot on. Properly adjusted, the chain will move to the extreme limits of travel without overshifting (dropping the chain) and without chain rub.

At this point fine tuning the derailleur can be done using cable tension. Just as with the rear derailleur the barrel adjuster(s) can often be adjusted while you are riding. A slow upshift means more cable tension is needed. If the downshift is slow less cable is needed.

With everything working well you should be able to ride:

And use about ½ of the cassette’s largest cogs with the front derailleur in the full low position.

And use about ½ of the cassette’s smallest cogs with the front derailleur in the low trim position.

And use about ½ of the cassette’s smallest cogs with the front derailleur in the full high position.

And use about ½ of the cassette’s largest cogs with the front derailleur in the high trim position.

Again, it is recommended that you avoid cross-chain (big/big and small/small) as much as possible to avoid stressing the chain.

