

Even though front derailleurs are no longer as common as they once were, front derailleur selection is still subject to a surprisingly large number of compatibility concerns. Mismatches in any of these areas can result in a front derailleur that performs poorly or does not shift at all. This guide will help you to understand the different specifications associated with choosing the right front derailleur for the job.

Front Speeds

The most obvious concern is whether the derailleur is made for a triple or a double crankset. Derailleurs made for doubles tend to have inner and outer cages with a relatively small difference in bottom edge height, while derailleurs made for triples tend to have an inner cage that extends significantly further downward than the outer cage.

Top Gear Teeth

This refers to the sizes of large chainring (or "big ring") that the derailleur can accommodate. This is because the arc of the outer cage must be directly related to the arc of the chainring in order to ensure optimal shifting.



From left to right: A derailleur for a large triple chainring, one for a large double chainring, and one for a small double chainring. Note the different curves of the outer cage and the height difference between inner and outer cages.

Rear Speeds (or Rear Gears, Drivetrain Speeds)

This describes the number of rear cogs the front derailleur is meant to work with. This may not seem important, but different numbers of rear cogs require different chains. The front derailleur cage is designed to match a specific chain, taking into account both width and profile.

Shift family

Similar to the rear derailleur, the front derailleur must be paired with a shifter that pulls the appropriate amount of cable for the derailleur to move the appropriate distance from one index to the next. The best way to ensure this compatibility is by consulting the compatibility charts available at si.shimano.com.

Total Capacity

This number is the largest difference, in Teeth (T), that the derailleur can accommodate between the largest and smallest chainrings. When assessing whether or not this total capacity is exceeded, subtract the number of teeth on the smallest chainring from the number of teeth on the largest chainring. Cassette cogs are not considered in this equation, making it much simpler to calculate than the total capacity of rear derailleurs.

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Top-Mid Tooth Difference

This is a specification for front derailleurs designed to shift triple cranks. It is the difference in tooth size between the largest and middle chainrings for which the derailleur was designed.

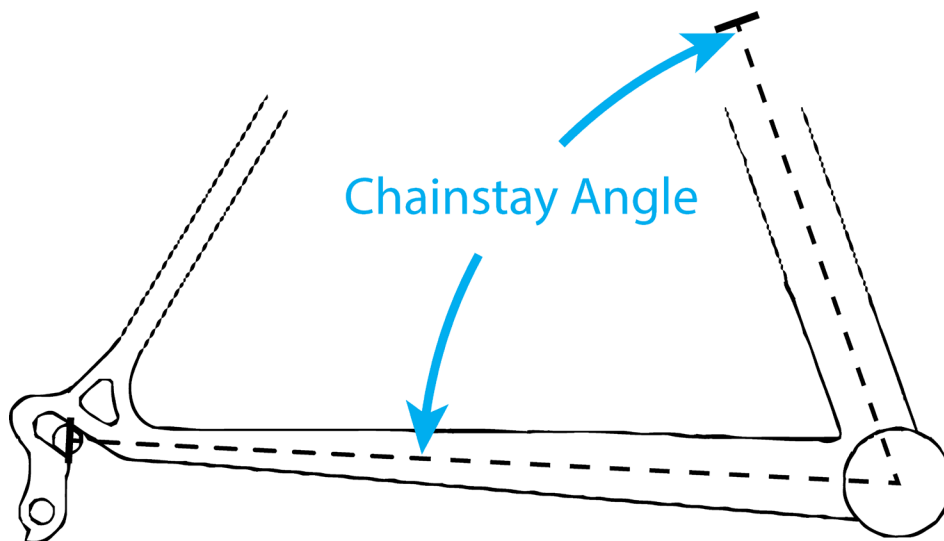
Chainline

This is the chainline for which the derailleur was designed. On a triple, it is the distance from the center of the frame to the center of the middle chainring. On a double chainring crank, it is the distance from the center of the frame to the midpoint between the two rings. This can be found by measuring the distance between the centerline of the frame and the center of each chainring, and then averaging the two. The formula would look like this:

$$\frac{(\text{Distance to Chainring 1} + \text{Distance to Chainring 2})}{2} = \text{Chainline}$$

Chain Stay Angle (or Front Derailleur Mount Angle)

This refers to the angle created at the bottom bracket between the mounting point of the front derailleur and the rear dropout. Fortunately, it is only of concern when selecting a clamp-band style derailleur, as direct mount and braze-on type frames are generally designed around this dimension. Further simplifying things is the fact that there is a much narrower range of dimensions for road derailleurs, meaning that, in most cases, the only time this specification will be referenced by the mechanic is when replacing a band-clamp style derailleur on a bike using a mountain bike type front derailleur. The best results will be obtained by directly measuring the angle with a goniometer or similar tool, or by referring to the spec of the original derailleur, if it was correct for the frame. If a "guess" must be made, a slack seat tube angle and large bottom bracket drop will lead to a lower angle, while steep seat tubes and smaller bottom bracket drops will lead to a higher angle.



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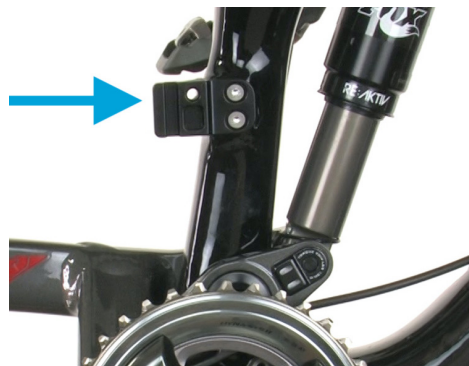
Mount Type

This is how the derailleur is attached to the frame.

- **Clamp Band (or Band Clamp)** The derailleur has a clamp band that wraps around the seat tube. Clamp bands come in 28.6mm, 31.8mm, and 34.9mm internal diameters. When choosing a clamp band, always measure the seat tube diameter at the derailleur mounting point, and be sure that there is no interference from welds, water bottle bosses, or other obstructions. In some cases, it is possible to use adapters to install a derailleur with a larger clamp band onto a seat tube smaller diameter. Always follow manufacturer's guidelines when choosing adapters.
- **Braze-on** This is a mount seen almost exclusively on road/CX/gravel bikes, and it consists of a slotted tab on which the derailleur is hung. On steel frames, these types of mounts were often brazed in place, but the term has carried over to cover that type of mount regardless of the actual process used to attach it. Braze-on mounted derailleurs can also often be used with clamp band adapters, allowing them to be used on frames without braze-ons.



- **Direct Mount** The front derailleur bolts directly into threaded holes in the frame.
 - Direct Mount (or High Direct, or DM)



- E-TYPE (or Low Direct)



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Mount Type Continued

- **E-TYPE Adapter (or E-TYPE with Bottom Bracket Plate)** An earlier style of E-TYPE derailleur mount utilized a plate held in place by the bottom bracket cup as a mounting surface for the derailleur. Derailleurs for this type of mount are usually sold with the plate attached and offer limited or no adjustment of position. These should only be used with bottom brackets designated for use with E-TYPE derailleurs.



Action (or Swing)

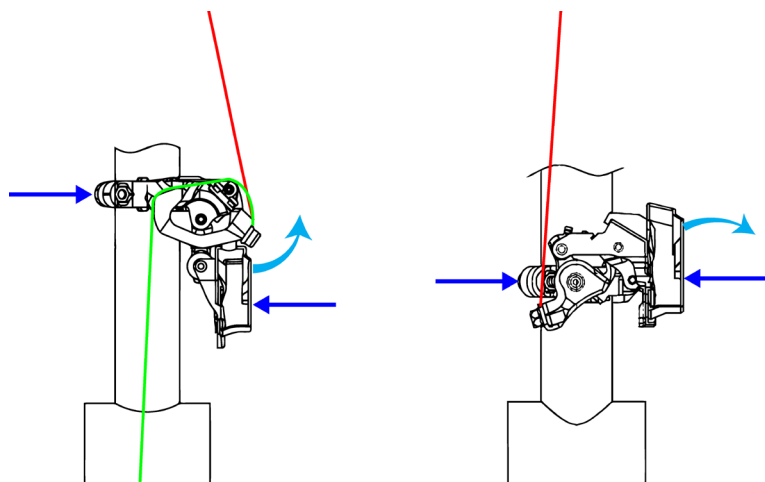
This refers to the pivot location relative to the body of the derailleur. This often coincides with placement of the band on clamp band derailleurs.

- **TOP SWING (or Low Clamp)** The derailleur swings from above the main pivot. This generally places the band in a lower position. This can be especially helpful when attempting to mount a derailleur on a bike with a non-traditional seat tube.
- **DOWN SWING (or Bottom Swing, High Clamp)** The derailleur swings below the main pivot. This generally places the band in a higher position. This is the more “traditional” swing type.
- **SIDE SWING (or Mid Clamp)** The derailleur pivots in a plane parallel to the ground. Though sometimes referred to as Mid Clamp, side swing derailleurs may be available in high, low, or mid clamp band mounts as well as direct mount configurations.

Pull

This is the direction from which the cable from the shifter enters the derailleur.

- **Top** The cable enters from the top of the derailleur, usually meaning that it has run along or through the top tube to the seat tube and then down.
- **Down (or Bottom)** The cable enters from the bottom of the derailleur, usually meaning that it has run along or through the down tube. Oftentimes, there is an external cable guide underneath the bottom bracket shell – this must be kept clean, lubricated, and replaced when worn.
- **Dual** The derailleur has accommodations for a cable running from either side.
- **Front SIDE SWING** derailleurs require a cable entering from the front of the bike. Usually this cable runs either along or through part of the downtube and is fully housed.



Left: *Bottom Swing, High Clamp* derailleur. Note that the clamp is well above the top of the large chainring (blue arrows), and the cage moves out and up in a counter-clockwise motion (light blue arc). This derailleur has options for both Bottom Pull (green line) and Top Pull (red line) cable routing.

Right: *Top Swing, Low Clamp* derailleur. Note that the clamp is slightly below the top of the large chainring (blue arrows) and the cage moves out and slightly up in a clockwise motion (light blue arc). This derailleur accommodates Top Pull (red line) cable routing only.