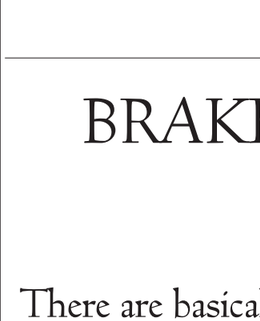
BRAKES *for the* TOURING CYCLIST

Touring is a lot less fun without them

by Sheldon Brown

There are basically three brake options for drop-bar touring bikes at the moment: Cantilever rim brakes, caliper rim brakes, and cable-operated disc brakes. (This article presupposes that you're riding with drop handlebars, and only deals with brakes compatible with drop bars.) Cantilever brakes are the traditional choice for touring bikes. They require special fittings on either side of the frame and fork to attach the cantilever units to. There is a perception that they are more powerful than other rim brakes, thought this is not necessarily true. The real benefit of cantilever brakes versus calipers is improved clearance for wider tires and/or fenders.

Traditional cantilevers use center-pull cable routing, requiring a housing stop on the frame and fork. Usually the front housing stop is attached to the headset. The rear housing stop ideally will have a special brazed-on bridge, but often you must make do with a stop that attaches to the seatpost bolt.



Side-pull Caliper

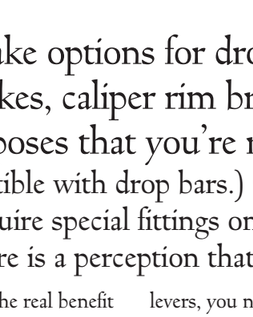
Traditional center-pull cantilevers are something of an endangered species these days since the primary market for cantilever brakes is mountain bikes and they usually use the newer side-pull style, also known as "direct pull" or "V type." ("V Brake" is Shimano's trademark for this style of brake.) Side-pull cantilevers are an excellent choice for bikes with upright (i.e. non-drop) handlebars, but they require special levers that pull twice as much cable as traditional brake levers. The only drop-bar levers compatible with side-pull cantilevers are the DiaCompe 287V model.

If you want to use side-pull cantilevers with STI/Ergo brifters (combination shifters and brakes) or other drop-bar levers, you need a pulley device such as the QBP Travel Agent to convert the cable pull appropriately.

Calipers

Side-pull calipers are used on virtually all "road" bikes, and modern ones are as powerful as anyone could ask, but the most common models do not generally provide sufficient clearance for touring type tires and fenders. Earlier in this decade these were only available in super-short reach models for racing type frames, but longer reach, more versatile models have become more available in recent years.

Note that the clearance with calipers is largely related to frame design, so if you have a bike that has poor clearance, replacing the calipers won't help you. However the recent availability of longer reach calipers has caused several manufacturers to again offer frames designed for them, which are often suitable for light touring.



Cantilever

I speak of "long reach" and "short reach" calipers, but in specific installations, you really need to look at the numerical dimensions, and not rely on adjectives. Typical "racing" calipers have a reach range of 39–49 milimeters, depending on where you mount the shoe in the slot. Lately 47–57 milimeter models have become readily available and longer ones can also be found. These reach dimensions are the center-to-center distance from the brake mounting bolt to the middle of the rim's braking surface.

PHOTOS BY AARON TEASDALE

Disc Brakes

Disc brakes have become "mainstream" in the mountain-bike realm and are increasingly showing up on touring bikes. What is a disc brake? One way of looking at it: all rim brakes are "disc" brakes because the rim's braking surface is in effect a disc. However as the term is normally used it refers to a hub brake which has a steel disc, usually 6–8 inches in diameter, bolted to the left side of the hub shell. This disc is also commonly called a "rotor."

A caliper mounts on the back of the fork blade or seat stay and two brake pads squeeze on the disc when you apply the brake. Most cable-operated disc brakes require a long-travel lever, as with side-pull (V type) cantilevers. So DiaCompe 287V levers are necessary to use them with drop bars.

So-called "road" disc calipers (Avid is the most widely available brand) do work with traditional levers, including STI/Ergo brifters.

Generally, disc brakes can't be readily retrofitted to older frames because special braze-on mounts are required.

Side-Pull Cantilever

Disc brake pros:

• They work even in the wet. The brake discs don't tend to get as wet as your rims do, and even when they do they dry quicker.

• They don't wear out your rims. This can be an issue for riders who ride a lot in muddy, dirty conditions and who use their rear brakes a lot.

• Disc brakes don't care if your wheels are true or not. You can break a spoke or ding a rim and your disc brake will work as smoothly as ever.

• They don't overheat your tires. Rim/tire overheating is occasionally a problem for riders with heavy loads in mountainous terrain.

Disc

Disc brake cons:

• Disc brake front wheels are dished to allow clearance for the disc rotor. This means that a disc brake front wheel will never be as strong as a normal front wheel. However most front wheels are stronger than they need to be, so this may not be a big deal in practice.

• Fork issues. The classic steel forks we know and love are designed to flex over bumps, providing a sort of built-in "suspension" that is a major contributor to the comfortable ride of classic steel bikes.

Disc brake calipers mount low on the left fork blade and apply very significant stresses to that region, requiring the fork blade to be very stiff. If you mounted a disc brake on a tapered fork, braking forces would twist the fork sideways, leading to unpleasant results.

As a result, disc brake forks have super rigid blades. In a rigid fork this can result in a harsher ride. (That's not an issue for mountain bikes, since most of them have suspension forks these days.)

• Wheel ejection. There is growing recognition in the bike industry of the problem with disc-brake front-wheel ejection. When a disc brake is mounted on a fork with normal slotted fork ends, braking creates a downward stress on the axle/dropout connection. Normally, stresses on this connection are always upward/backward, but the disc-braking reaction force actually tries to push the axle down and out of the left dropout. Normally a decent quality quick release will hold the wheel securely, but under the reversing stresses, especially if the quick release has been poorly tightened, it can gradually loosen over time. Manufacturers are beginning to address this by angling their fork dropouts forward, which may solve the problem.

See http://tinyurl.com/ypdgk for details on this issue.

• Rack/fender mounting is complicated by disc brakes. The caliper gets in the way of typical fender/rack stays. Some manufacturers have solved this, but many have ignored it.

Any of these brake types can give good service for the touring cyclist, so I would not make this a make-or-brake issue in selecting a new touring steed. AC

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