



# Brakes

*You might love to go fast, but you need to be able to stop too. We test 16 brake sets*

**B**rakes seem like relatively simple things: a mechanism that pushes a pad against either side of the wheel rim when you pull a lever. They come in fairly similar designs, a few colours and an assortment of weights, but do they all just work the same? Can the function of a brake – to change kinetic energy into heat energy – really be that different when they're all so similar? The simple answer is yes. Slight

differences in leverage ratio, brake assembly stiffness and smoothness of operation under load make all callipers different. The ideal brake is one that gives a good amount of feel, allowing you to control your stopping using lever movement (commonly termed modulation). But it has to be stiff enough to give plenty of power when needed and also keep the brake pads running true on the wheel rim. Read on to find out how our trial sets stood up to our testing. →

## ARMS

**1** The brake arms have to be stiff enough to resist bending under both the force coming from the cable pull and the force of the brake pads being pulled by the rotating wheel rim.

## PIVOTS

**2** Smooth pivots are essential for a controllable stopping action, and need to remain smooth when the brake is loaded up by the forces from the pads when you're braking hard.

## PADS

**3** Getting the correct pad material for your rim type is the first step to getting a brake to work properly. Don't just keep the standard pad – fit what works for your bike and gives you the best feel.

## QUICK RELEASE

**4** A QR on the calliper allows the arms to be opened to aid wheel removal. Campagnolo builds this into its brake levers, but there's no reason why they can't then be used with a QR calliper.

CYCLING<sup>PLUS</sup>

# ROAD TESTED

RIDDEN & RATED



**WE SAY...**  
Manages to achieve light weight without having to scrimp on functionality

# REVL

**£349.99** > Performance and light weight at a cost

Lightweight brakes that really work well are rare, but these are a fine example. They're a single pivot design with a rocker system available in interchangeable 1:3 or 1:4 ratios for standard or Shimano Ultegra/Dura-Ace levers. They're stiff, powerful and, without question, hugely expensive, but they lack a refined feel to the modulation, something that shows up more with carbon rim/pad combos in the rain. The simple quick release system of a lever under the cable adjuster works better than expected, but the C-clip securing the rocker rusts.

Weight 233g pair  
[www.silverfish-uk.com](http://www.silverfish-uk.com)

**HIGHS** Light, powerful  
**LOWS** Modulation, price

**CYCLING RATING** ★★★★★



**SHIMANO 105 5600**  
£99.98

Having the best standard pads of any of the brakes on test initially makes these feel like a really great set of brakes. But after a little switching of rims and pads the overall feel is just a little on the soft side. They deliver plenty of stopping power, but the feel at the lever is a little vague at times, and when you're braking hard in the wet this vagueness doesn't inspire confidence. That aside though, the build quality and smoothness are excellent at this price point.

Weight 359g pair  
[www.madison.co.uk](http://www.madison.co.uk)

★★★★★



**CAMPAGNOLO CHORUS**  
£149.99

Available with dual pivot front and rear (tested) or dual pivot front and single pivot rear, these brakes give plenty of stopping power and a wonderfully fine level of control that comes into its own in the rain. Quality is typically high, but Campag has seen fit to invent another standard of pad retention in the form of small spring clips, which makes them quick to change but no easier, and limits pad choice. Performance is good, but the price is steep for the hefty weight.

Weight 322g pair  
[www.chickencycles.co.uk](http://www.chickencycles.co.uk)

★★★★★



**DIA-COMPE BRS101**  
£49.98

With a slightly longer drop (43-57mm) than normal (39-50mm), the Dia-Compes lend themselves well to fitting just about any bike. Performance is good, and the quality and smoothness is great, with a controllable and progressive feel through the full range. What lets them down are the standard pads. Good pads cost money though, and faced with the Miche Primatos in the value stakes, the Dia-Compes have to lose out, but only just.

Weight 386g pair  
[www.ison-distribution.com](http://www.ison-distribution.com)

★★★★★

# MICHE PRIMATO

£54.99 > Budget brakes that don't compromise

**C**old forged arms and good quality pivots are backed up by the fact that the Primatos have performance to match some of the best brakes on test. The standard pads are pretty good on aluminium alloy rims, and the quick release has a nice secure operation. They have a slightly firmer feel than most brakes, but once you get used to them they give predictable and precise control when you need to stop. They also have a very attractive price tag.

Weight 322g pair

[www.chickencycles.co.uk](http://www.chickencycles.co.uk)

**HIGHS** Quality brakes, budget money  
**LOWS** Heavy, a little firm

**CYCLING RATING** ★★★★★



**WE SAY...**  
Well built, very powerful performers at a great price

## INSIDE INFORMATION

### Pick a pivot point

Most modern road bikes have sidepull dual pivot calliper brakes, with one central pivot and one side pivot. An exception is with Campagnolo kit, where the top groupsets have single pivot rear brakes to reduce weight and lessen

the chances of the rear wheel locking up. Dual pivots are generally slightly heavier, provide more powerful, more controlled braking than single pivot callipers – because of dual pivots' higher mechanical advantage – and are easier to

centre. They can also be run closer to the rims, though may cope less well than single pivots with buckled rims. With single pivot brakes, friction increases unevenly on the return springs, resulting in one of the arms getting closer to the rim.



**SHIMANO DURA-ACE 7900** £259.99

**W**ith Dura-Ace or Ultegra brake levers these work wonderfully. The same goes for levers from any other brand, even SRAM and Campagnolo – they're a little softer, but not too soft. The standard pads are very good too, especially in the wet. The only drawback with these – aside from price – is the slightly open thrust bearing on the second pivot, which over long periods, and especially after winter, will need to be stripped and cleaned.

Weight 294g pair  
[www.madison.co.uk](http://www.madison.co.uk)

★★★★★



**FSA SL-K** £209.95

**L**ike a slightly firmer feeling brake but don't want to lose much in the way of modulation? Then these are going to be right up your street. The initial brake bite is smooth and controllable – perfect for scrubbing speed in the wet. But when you need handfuls of stopping power they can deliver with a firm yet manageable feel. The only real problem is that there are brakes for less money, at comparable weights, that do just the same.

Weight 318g pair  
[www.windwave.co.uk](http://www.windwave.co.uk)

★★★★★



**KCNC C7** £251.99

**T**hese are the most flexible brakes in this test. Under heavy braking they flexed enough to allow the brake pad to drive up onto the sidewall of the tyre. The flex also causes the brake to bind up, making modulation under high braking loads feel almost indexed. They're undoubtedly light, but are only really an option if you pootle around scrubbing your brakes lightly and know you'll never need to use them to stop quickly above 15mph.

Weight 163g pair  
[www.clee-b2b.co.uk](http://www.clee-b2b.co.uk)

★★★★★



**WE SAY...**  
There's nothing to criticise, apart from the rather ridiculous price tag

## TRP R970SL

**£399.99** > No niggles, but the price is extreme

**T**hese magnesium armed dual pivot brakes tip in at just over 200g for the pair and are silky smooth and precise even under hard use. TRP has stepped away from the traditional quick release mechanism too, and gone with a slotted arm that allows you to slide the cable adjuster inwards to act as a release system, which works and is easy and quick to use. The standard pads are good, and performance is good too. But £400 is on the silly side of daft.

Weight 218g pair  
[www.upgradebikes.co.uk](http://www.upgradebikes.co.uk)

**HIGHS** Feel  
**LOWS** Price

**CYCLING RATING** ★★★★★



**QUEST DP**  
**£99.99**

**A** set of machined dual pivot brakes for under £100 is attractive, but what's better is that these really do deliver on performance. The standard pads are a bit soft, which can give them a slightly grabby feel, but replacing them reveals a quality set of brakes – smooth, controllable and with great modulation under hard braking. The springs are a bit stiff, making them a little harder to pull than some, but this matches up well with the overall feel.

Weight 301g pair  
[www.questbikes.co.uk](http://www.questbikes.co.uk)

★★★★★



**SRAM RED**  
**£289.98**

**S**RAM has hit on what's probably the best balance of weight, feel and all-out braking performance with the Reds. They deliver smooth and easy to control stopping power, with a progressive initial braking bite followed up by an easy to control and linear-feeling increase in power the more you pull the lever. As regards all-round performance, they can't be beaten. The weight is low for such a good set of brakes, and the only real downside is the price.

Weight 282g pair  
[www.fisheroutdoor.co.uk](http://www.fisheroutdoor.co.uk)

★★★★★



**MICHE SUPERTYPE**  
**£189.99**

**T**hese carbon-wrapped callipers come with pads for alloy and carbon rims, but cost more than three times as much as Miche's Primato brakes, and only tip the scales at 2g less. They just don't feel as good as the Primatos either, with a slightly stiff initial movement followed by a hard, overly stiff feeling when you're hauling on the brakes. In the wet this makes them a little bit fussy in terms of lever modulation, and for nearly £200 we expect more.

Weight 320g pair  
[www.chickencycles.co.uk](http://www.chickencycles.co.uk)

★★★☆☆

# M5 LIGFIETSEN BRAMS

£286 ▶ Reasonable control and odd looks

Looking slightly bonkers, to say the least, these single pivot beasts certainly are powerful. But the downside to all that power is a lack of fine control. No matter what pad and rim combination we ran, the brakes always had a slight on/off feeling about them. The fine level of modulation that other brakes offer just isn't there. They're by no means bad, just not as refined as the rest in terms of control. That said, they're light, hugely stiff and, all things considered, not too silly when it comes to the price.

Weight 204g pair  
www.poshbikes.com

**HIGHS** Powerful, stiff, well made  
**LOWS** No QR, no fine modulation

**CYCLING RATING** ★★☆☆

## WE SAY...

Some definite plus points if you can get past the looks and lack of modulation



**SYSTEM EX**  
£39.98

These are almost identical to the Dia-Compe BRS101 brakes, aside from the fact that System EX's set has a 39-49mm pad drop (43-57mm also available). The cable adjuster is better quality, and easier to use thanks to a larger diameter, and the quick release lever has a more positive feel. Best of all are the cartridge style pads that are fitted as standard and are excellent come rain or shine. Overall, a nice feeling, bargain price brake giving plenty of power and control.

Weight 370g pair  
www.extrauk.co.uk

★★★★★



**TOKEN ACCURA**  
£255.99

Machined from a forged billet, these are surprisingly stiff for their weight. Modulation is lacking though, and the tiny 2mm cable pinch bolt system is silly. The standard pads are soft, making the brakes sticky and exaggerating their feel, but while better quality pads showed a drop in power, it did make the brakes controllable and smooth. If you want to save weight, these are fine, but if you want control and feel over power shop elsewhere.

Weight 218g pair  
www.i-ride.co.uk

★★★★★



**TRP R920**  
£129.99

With full titanium hardware and forged aluminium alloy arms that strike a sensible balance between weight and stiffness, the R920s also come with quality SwissStop Black Flash pads. They offer a light, smooth feel yet deliver enough power with relative ease. There was some flex under our hard braking test, but not enough to let the pad wander. It's also nice to see a quick release that isn't indexed and is actually quick to release.

Weight 269g pair  
www.upgradebikes.co.uk

★★★★★





# THE VERDICT

**WINNER** > **SRAM RED** Light yet powerful and offering great control

All the brakes were tested with Campagnolo, Shimano and SRAM brake lever units, on standard alloy rims as well as carbon ones. Initial testing was done with the standard pads on alloy rims, and then we tested again using pad and rim setups we know and trust. We measured the stopping distance from 30mph for each setup, and used several riders – who all like different brake setups and feels. We also measured the force between the pads for a given force at the brake lever, through a full-pull range at the lever with the same starting distance between the pads.

Considering all the possible combinations of levers, pads, rim surfaces, cables and so on, this wasn't the easiest test to conduct. The **MICHE PRIMATO** brakes were a pleasant surprise. They have a slightly stiffer feel than Shimano 105 and SRAM Red but offer great

control and a lot of stopping power when you need it. Considering they come with cartridge style pad holders and good standard pads and are a quality bit of kit, they're the obvious choice in the value for money stakes. They really are one of those affordable little gems that crop up all too rarely nowadays. The System EX brakes come a very close second though.

At the lightweight end of things, the **M5 LIGFIETSEN BRAMS** are true hardcore racer's brakes. Quick and responsive, they offer sharp braking performance, though it's at the expense of some control. But if you want a more traditional feel, you'll have to use a cheap brake cable to soften them up a little. Another brake set worthy of mention is the reasonably lightweight TRP

R920. It manages to be lighter than SRAM Red and Shimano Dura-Ace, and yet performs nearly as well. We'd like the main pivot to be a little more robust, but considering the price and the performance, along with the weight, this set offers a good balance and plenty of controllable stopping power.

Our overwhelming conclusion is that SRAM has got something very right with these callipers

Overall, though, the best performing brake set on test is **SRAM RED**. Our overwhelming conclusion is that SRAM has got something very right with these callipers. No matter what brake levers we ran, or what assortment of pad/rim combinations, they always delivered on control and power. They're easy to set up, and we know that they're reliable, even through the harsh winter months. **PLUS**