



Why Go 1x9?

While the triple chainring drivechain has long been the standard set-up on mountain bikes, it has always had its own set of problems. Chains run efficiently and reliably in a straight line. Forcing them to run on an angle can work to a degree, but push it too far and all manner of issues arise. With three separate cogs mounted up front and around nine cogs on the back, the chain on a standard MTB rarely gets to run in a straight line. This leads to dropped chains, high wear levels and inefficient running in—especially in the ‘cross-over gears’ (the big chainring with the big cog at the back).

A good 2x9 set-up lessens the chain angles and related problems while providing a gear range that can be very close to that of a triple. A 1x9 drivechain goes further again, leaving just a single chainring—say goodbye to chain suck and never get stuck in the big ring half way up a hill again!

▶▶ RATIO RANGE

Initially you may think this will leave you very short on gears, but 1x9 systems can provide a surprisingly effective range. Take a look at the gear ratio chart for the 30 tooth Widgit that we reviewed; notice that you really only lose the two lowest gears from the granny and the three highest from the big ring. That's not a huge compromise and, depending on where you ride, you may never miss these gear ratios.

With only one cog to worry about, the chain line can be optimised and a well set-up 1x9 should allow you to use every gear within the rear cassette without grinding, grating chain line issues. It also allows you

to use a front chainring with full-sized teeth and no shifting ramps for better chain retention and improved durability. You can even opt for stainless steel chainrings that will just about double the lifespan of your average alloy ring.

Besides, 1x9 is as much about what you remove from your bike. Mechanically, a 1x9 is far simpler than a triple with less to go wrong and you'll also save 300-400g in most cases.

▶▶ GEARING LIMITATIONS

Obviously there are going to be limitations, otherwise everyone would have already swapped to a 1x9 system. To start with, you can't just pull a bunch of gear off your bike and expect it to work.

With no derailleur, the chain will probably jump off on the first bumpy section of trail. Having your chain come off at the wrong

moment can be really dangerous, causing nasty falls, mangled spokes and impotence in men if you collect the handlebar stem on the follow-through! Luckily lightweight purpose built XC chain guides are becoming far more common.

While the gear range provided by the rear cassette alone is surprisingly good, it can still be a limiting factor. For this reason it becomes quite important to select an appropriately sized front chainring. World Cup XC racers like Julien Absalon, Jeff Kabush and Adam Craig frequently utilise 1x9 or 1x10 set-ups. With legs of steel and lungs the size of houseboats, these guys pedal around with a 34 or 36-tooth cog up front, matched to an 11/34 or 11/36 range on the back. This should offer some insight into the gearing that mere mortals should be looking at. Obviously your typical terrain needs to be factored in, and you may find Absalon's 36 tooth front chainring just fine if your trails are rolling and fast. Toss in a few hills and a standard 32 cog is looking like a better choice. The hillier it gets, the lower the gearing needs to be. Sure you'll limit the top gear in the process but it's easy enough to coast downhill, while walking uphill sucks.

In the end, the limited gear range is the main downfall of a 1x9 drivechain. You may have the gear spread dialled for your local trails and any hills that you are likely to encounter in a typical 'bike park' style trail network, but what happens if you head off into the unknown?

There are some places where a triple still rules; sure a 1x9 may only lose two or three of lowest gears from the granny cog, but you may be begging for them come the next five hour epic in the mountains.

Widgit 1x9	30	Standard Triple		
		22	32	44
11	70.9	11	52	104
13	60	13	44	88
15	52	15	38.1	76.3
17	45.9	17	33.6	67.3
20	39	20	28.6	57.2
23	33.9	23	24.9	49.7
26	30	26	22	44
30	26	30	19.1	38.1
34	22.9	34	16.8	33.6

* Gear ratios in red are lost in the illustrated 1x9 setup.

Additionally, it's no five minute job to convert back to a triple. Leave the standard triple on and you'll find a good spread of gears for road commuting in the big ring, trail friendly gears in the middle and a knee friendly bail-out in the granny.

In the end the options are out there and the choice is yours. One thing's for sure, the popularity of more simplistic drivechains is on the rise and they do solve many of the issues that we put up with on a standard MTB drivechain.

On Test-The Widget

The Widget is an Aussie made product that aims to simplify the 1x9 conversion. Being made for general XC trail riding, the Widget is offered in three sizes; 28, 30 and 32 teeth. All you World Cup racers will have to pass, as there's no 36 tooth option!

The Widget is an all-in-one conversion with no need for additional bolt-on guides. Instead, the cog comes with an alloy guide ring on either side—these guides may look like bash rings but they are relatively thin and not designed to protect the teeth. This keeps the weight down and means that any dings can be bent out whilst you are on the trail—not that you are likely to bash it with the added ground clearance that it provides.

The chainring part is made from stainless steel, so it shouldn't bend in a hurry and will last much longer than an alloy cog. It also has deep-cut teeth for durability and better chain retention. The alloy guides are riveted onto the stainless chainring and can be replaced if they are ever damaged beyond repair, or if you want a different colour. You can choose between red, blue, orange or black.

The 28 and 30 tooth rings mount onto the granny gear position. From there the cog bends outwards to place the teeth somewhere between the middle and granny gear positions. At first I thought this would be too far inboard but the 44mm chainline turned out to be perfect on my bike. I just bolted it in place and was able to use the full spread of the rear cassette with next to no chain rubbing on the guides. The Widget comes supplied with a couple of bottom bracket spacers and some that can be placed under the chainring tabs (for mounting it to XTR cranks), all of these bits can be used for fine tuning the chain line if required. The 32 tooth Widget mounts to the middle chainring position, just like a standard chainring. Once again it is supplied with spacers for chainline adjustment.

While it worked on my bike, there's bound to be frame and crank combinations that throw up compatibility issues. Everything cleared just fine for me but the inner guide will probably come quite close to the frame on some bikes.

I had no problems whatsoever with the Widget. Despite pushing the bike hard over some of our local descents, I never dropped the chain. Thanks to a very wet month, I also got to test it in some muddy conditions with no complaints. Although I didn't lose the chain, I can see that it is not impossible to do so. If you did manage to derail the



1X9 ALTERNATIVES



▶▶ XC CHAIN GUIDES

Both E-Thirteen and MRP now make XC specific guides that sit above the front chainring. As you pedal, they direct the chain onto the cog and prevent derailment. There is nothing at the bottom of the chainring, so back-peddalling a quarter turn entering a bumpy corner could see the chain derail (just like it can with a standard triple set-up). However, the chain will be directed back on as soon as you pedal forwards again. At around 50-70g, these XC guides come in a touch lighter than a Widgit when running an alloy chainring. Fit a stainless steel ring and they'll probably be a bit heavier.

The main advantage over a Widgit comes if you want to have a range of chainring sizes at your disposal and swap them as needed. Most cover a range from 32 up to 36 or 40 teeth with the one device. However, they won't be much use if you want a trail friendly 28 or 30 tooth cog option.

system, there is nothing to guide the chain back onto the teeth—you would just have to stop and put the chain back on manually. Keeping the chain nice and short will increase the chain tension and further reduce the risk. In all, I was completely happy with the Widget's chain retention abilities.

In terms of weight, the swap to 1x9 took 350g off my bike. The savings were as follows; left hand gear lever and cable - 145g, front derailleur - 165g, three chainrings - 140g, five alloy bolts - 10g and a few chain links - 5g. That's 465g removed before fitting the 115g Widget chainring with its built in guides. Not a bad weight saving all up.

Gearing wise, I thought the 30 tooth size worked well for a wide range of reasonably hilly trails. I used it with an 11/34 cassette and the low gear was pretty effective as long as the climbs weren't too long or steep. Open fire road descents saw me run out of top end, but only once I'd hit around 35 or 40kph. An 11/36 ten-speed cassette would make it even more versatile in the hills without compromising the top gear.

At \$110 it is more expensive than the current XC chain guides, but the Widget comes part and parcel with a long-lasting stainless steel cog. Aesthetically, the cranks look a little odd with the middle and big ring tabs completely vacant, but overall the set-up looks very clean as you don't need chunky nylon guides sitting above the cog. If you like the 1x9 concept, the Widget is certainly a good choice—especially if you are looking for more uphill friendly gearing options. Plus, it's great to see a well designed Aussie product on the market.

The Chain Gang 0437 723 172
www.widget.com.au

Article & photography by John Hardwick



▶▶ HOMEBREW 1X9

There are plenty of ways to build your own 1x9 set-up. Some involve machining up inner and outer guides to mimic the Widget system but the most common is as follows... Mount a bashguard into the big ring position; this should prevent the chain dropping off the outside. On the inside you need to mount something to your seat-tube that will sit immediately next to the chain when you are in the lowest gear on the back. For a few dollars you can buy specially made 'chain watchers' or you could modify something else to perform the same task—a reflector bracket or something similar may do the trick. For added security, it's good if the inner guide also covers above the chainring to stop the chain bouncing off. A DIY system can do the same job as a bought one but it's up to you to make it work, so a little ingenuity doesn't go astray. Also, make sure you price everything you need to make it work beforehand, as cost of the bashguard may be close to buying a ready made XC guide or Widgit.