

You can bolt on as many go-faster goodies as you like to your bike, but the most effective way of making it go faster is simply sorting your set-up. When your bike leaves the factory gates the manufacturer has no idea who will be throwing their leg over it. So a bike's suspension has to be set to a middle ground that can accommodate any weight of rider.

But fear not, the array of anodised adjusters that festoon your fork and shock are there to help you tailor your bike to your individual weight and riding style. That's the good news. The bad news is that as well as

Maxton, says as he explains what's happening inside your suspension – and why – to give you a greater understanding of how your bike's bouncy bits work.

Altering suspension can have a detrimental effect on your bike's handling. Unless you ride a Harley, you'll find that tweaking your suspension will affect the handling, so don't rush the job. The best advice is to find a stretch of road you are familiar with (not the M25) and experiment. Ride the road with your bike's suspension set as stock and concentrate on what the bike feels like, how it's handling and what

⚡ FEAR NOT, THE ARRAY OF ANODISED ADJUSTERS ARE THERE TO HELP YOU ⚡

improving your bike, fiddling with these adjusters can also bugger up the handling.

But with the assistance of this guide, you should be armed with the basics to give you the confidence to approach your suspension and start fiddling as we describe what each adjuster does and what its effect feels like on a bike. When riding your bike, see if it has any of the symptoms we diagnose, this may point you in the right direction when it comes to adjustment. Read what our suspension expert, Richard Adams from

feedback the chassis and suspension is giving you. Now adjust one particular part (don't do it all at once – this can only cause confusion) then go for another ride and see what effect the changes have had. Little by little is the best advice.

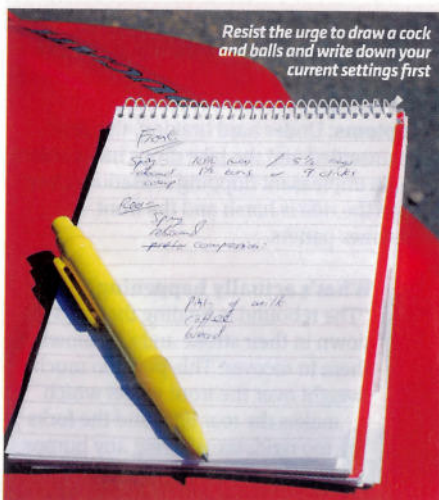
Setting a bike up is like making a good cocktail; it's trial and error and you need lots of sampling to make the perfect mix. Like a cocktail, a bad mix may give you a stinking headache, but a good one should leave you euphoric and craving for more...

IT'S A SET-UP

Does your bike handle like a pissed-up pogo stick? If your front end vaguer than an MP's answer and your rear looser than Kim Jong's grip on reality? Well suffer no more as we guide you through the basics of bike set-up

WORDS: JON URRY

PICS: JON URRY, MAXTON & FUTURE



Resist the urge to draw a cock and balls and write down your current settings first

BEFORE YOU START

The sun is out and armed with your screwdriver and spanner you're ready to start. Stop. Before you even consider adjusting your suspension there are a few basics to sort out first. Check your tyre pressures are correct; an under or over inflated tyre does more damage to a bike's handling than any suspension adjustment could ever do. Get online or call your local dealer and ensure your PSI is cock-on. Next, find a notebook and pen. Hopefully your bike's suspension is set as the

manufacturer intended, but anyway write down the current settings so that you have a safety net should it all go wrong. Suspension is generally set as turns from fully in, which means how many times the adjuster needs to be turned to reach the point it is at from being fully wound in (generally clockwise). The little dot stamped on the adjuster is your guide to turns (unless you have a BMW S 1000 RR) so carefully screw the adjusters in, counting the turns. Write this figure down then return them to their original position. Spring preload on the fork may be rings, which is the number of scored rings you can see protruding from the adjuster, turns or even length in millimetres the adjuster is extended. Check your owner's manual (or the internet) to see how your bike's are measured, again they will generally be set from fully in. An older shock often has a 'stepper' spring preload, which is a series of steps on the collar that compress the spring, or will be measured in distance and adjusted via a C-spanner and two collars, again check your manual. OK? all sorted? Pack you pen and paper in a rucksack, as well as the various tools you need, to adjust your suspension. Now it's time to go.

THE FRONT END

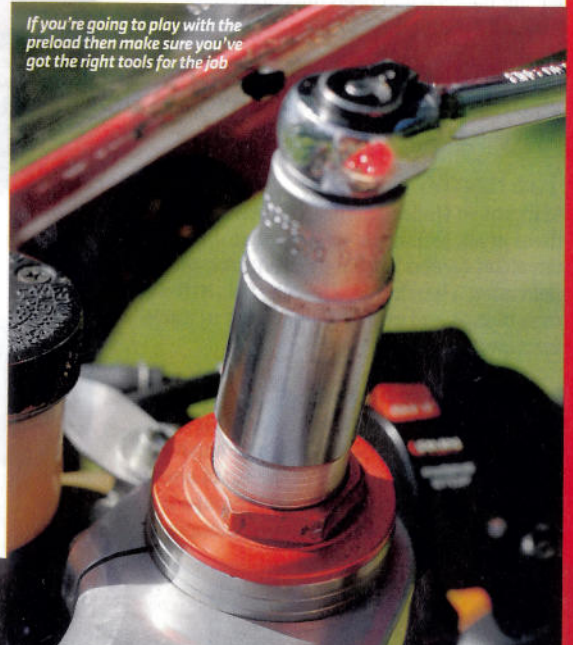
FORK SPRING PRELOAD

Where? The large nut adjustor on the top of the fork (not Big Piston Forks or bikes that split the damping between fork legs).

Too hard?

Symptoms: The bike turns into corners slowly and doesn't feel settled. Once on the power the bike runs wide. ▶

If you're going to play with the preload then make sure you've got the right tools for the job



SET-UP SKILLS

Compression adjustment is as simple as turning this screw

The right rebound settings should get you holding a lovely line

► What's actually happening?

"Spring preload adjusts a bike's static sag. Ideally this should be set at 25-30mm and so increasing the spring preload reduces this sag by raising the front of the bike. This puts more weight on the rear end which slows down the steering. People think that spring preload makes the front stiffer, this isn't true, it just alters the height of the bike's static sag. Most bikes run linear rate springs which means increasing or decreasing the preload can't alter the spring's stiffness." Richard Adams

Too soft?

Symptoms: The bike turns almost too quickly into turns, giving an unsettling feeling and causing you to sit up and re-adjust your line.

What's actually happening?

"By reducing the preload the static sag has been increased, which sharpens the bike's handling and puts more weight over the front end. This can lead to a nervous feeling from the front in corners as the bike's geometry and weight balance had been tilted too far forward." Richard Adams

FORK COMPRESSION DAMPING

Where? The screw adjuster at the bottom of the fork leg (not BPF).

Too hard?

Symptoms: Under braking the bike hardly dives at all, feeling completely dead and devoid of feedback from the front tyre while delivering a harsh ride. The bike fails to track over bumps and even the smoothest of roads feels like a ploughed field.

What's actually happening?

"With too much compression damping the fork's movement becomes stiff and harsh and it doesn't ride bumps well as the small amount of initial damping that deals with bumps is taken out. Too much compression damping



WHO IS

-RICHARD ADAMS?

Richard is in charge of the research and development side of British suspension experts Maxton Engineering. He has been working at Maxton for 16 years but has been adjusting suspension since he was eight. Maxton's suspension can be found on BSB bikes, TT winners, club racers and countless road bikes and riders who have been helped by the firm include Foggy, Hizzy, DJ and Joey Dunlop to name just a few. Contact www.maxtonuspension.co.uk

What could possibly go wrong? Nothing, so long as you write your settings down first

also reduces the weight over the front wheel which makes the bike kick off small bumps and feel twitchy and nervous under acceleration." Richard Adams

Too soft?

Symptoms: When hard on the brakes the forks dive too much and feel like they will bottom out.

What's actually happening?

"Generally, having too little compression damping isn't a huge issue but if your bike's fork springs are too soft the fork can bottom out if there isn't enough damping. Use a cable tie on a fork leg to see if you are bottoming them out. If so, increase the damping or look at fitting stiffer springs." Richard Adams

FORK REBOUND DAMPING

Where? Screw adjuster at the top of the fork.

Too hard?

Symptoms: Under hard braking, the rear feels unsettled and the bike drops into corners with an unpleasant flopping sensation. Over bumps the ride is harsh and the front sometimes patters.

What's actually happening?

"The rebound is holding the forks down in their stroke and not allowing them to recover. This puts too much weight over the front wheel which makes the rear light and the forks too rigid, transferring any bumps



should have about 10mm of static sag at the rear, but most come with between 3-5mm as they have too much preload. Because of this, should you hit a bump in the road the force of the jolt causes the shock to fully extend or 'top out' which creates a harsh ride. Should these bumps occur when you are approaching a corner you have to wait for the suspension to settle down before turning in, often forcing riders to miss apexes." Richard Adams

MYTHS AND GENERAL BOLLOCKS

The cable tie - while most sneer at a cable tie attached to the fork leg, Richard reckons it is actually a good idea - as long as you know what to look for. "A tie will show if your forks are bottoming out," he says, "but be aware that most forks don't bottom out at the end of the visible fork leg, it usually happens 15mm or so before that point! The best guide is to fully extend the fork by getting the front off the ground and measure 115-120mm of travel, that should give you the bottoming out point. If your suspension is working well and the fork occasionally bottoms out I wouldn't worry, it's not that big a deal."

Spring preload - Hard and soft spring preload is a very misleading term. Modern bikes come with linear springs which compresses in a constant fashion. Adding or reducing the tension on the spring with the preload adjuster doesn't make it harder or softer, it just compresses the spring.

Track settings - Some will tell you to wind everything up for track use, Richard disagrees and he has set up quite a few track bikes. "If you have a good road set-up then adding a bit of compression is best for track use, but be very careful about adjusting the rebound or preload. I'd up the compression then only add very small amounts of the other adjusters if the bike feels like it needs it."

A new shock or a rebuild? - "The best longterm solution is to buy a new shock," reckons Richard. "A manufacturer's shock can be re-shimmed, but many of its component parts are unavailable to buy. If a seal goes you're stuck. An aftermarket shock can be rebuilt and refreshed and all of its components are available so it won't become obsolete. Also many shocks can be altered to suit different bikes, so you won't have to buy a new one should you change bikes."

Pop your collar - or not. You may not need to



directly from the tyre to the rider. In addition, should you hit a series of bumps while the forks are compressed they will have no more movement left, which creates a pattering sensation as the front hops over the bumps rather than damps them." Richard Adams

Too soft?

Symptoms: Once off the brakes the bike pings back up on its suspension, unsettling it at corner entry and making the bike feel high at the front. Once on the throttle mid-corner the bike starts to run wide, forcing you to adjust your exit line and making cornering a case of constant readjustments rather than a smooth, single process.

What's actually happening?

"The lack of preload makes the bike sit low at the back which reduces its turning capability. Once on the power, the weight transfer is too great to the rear which makes the shock squat and sometimes bottom out causing the bike to run wide. The best way to use the preload is a fine tuner for the spring. If your bike is unsettled in a corner the best thing to do is swap the spring for one that matches your weight then use the preload to perfect your set up." Richard Adams

SHOCK REBOUND DAMPING

Where: Usually a screw or a wheel adjuster at the bottom of the shock.

RIDERS CONFUSE TOO LITTLE PRELOAD WITH TOO SOFT REBOUND DAMPING

What's actually happening?

"This is a very common complaint and riders often confuse too little spring preload with too soft rebound damping as they have similar effects. Once the weight is reduced on the front, by the throttle being opened, the forks extend too quickly, which makes the bike run wide. I also find that many riders complain the bike doesn't flick from left to right if the rebound damping is too soft." Richard Adams

Too hard?

Symptoms: The bike feels low at the back and high at the front when the throttle is open. Exiting corners under power, the rear digs in but the front becomes light and vague causing you to run wide and the bike's stability is poor with it having a tendency to shake it head under power.

You'll have to look harder to see the shock's compression adjuster, but it's worth finding

THE REAR END

SHOCK SPRING PRELOAD

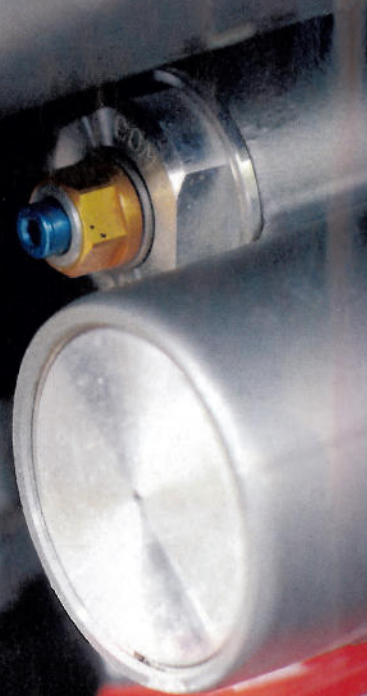
Where? Two collars compressing the shock.

Too hard?

Symptoms: Under braking the rear feels wayward, swaying back and forth and losing contact with the ground. Bumps in the road kick you out of your seat and the ride is harsh and choppy.

What's actually happening?

"This is a very common complaint. A bike



► **What's actually happening?**

"Most riders don't think they have a problem, but when they reduce the rebound on a shock they find the bike holds a line more accurately and steers better with a far more positive feel. With too much rebound the shock, like the fork, sits low and upsets the bike's handling." Richard Adams

Too soft?

Symptoms: Through faster corners the rear has a tendency to weave which can lead to a feeling of imbalance and lack of confidence in the grip. The handling is relatively unaffected when it comes to slow speed corners, but in bumpy faster bends the bike is unsettled.

What's actually happening?

"Oddly the one adjuster that works the best on modern bikes is the shock's rebound, often the compression does very little. Too little rebound causes the shock to spring back up too quickly which can make the back end go light and start fishtailing under braking. Also, after hitting a bump the shock can return too quickly, which can make it fully extend and top out." Richard Adams

SHOCK COMPRESSION DAMPING

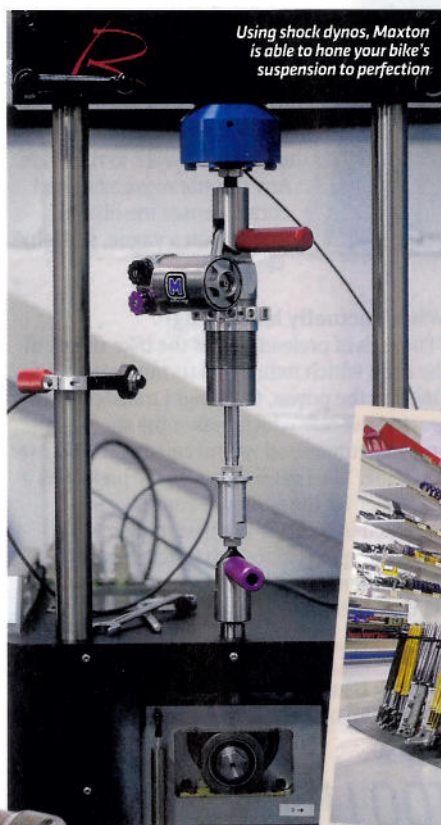
Where? Screw adjusters at the top of the shock

Too hard?

Symptoms: The rear becomes harsh and choppy with any bumps being transferred directly to the rider. Under acceleration the bike feels like it is going to lose rear grip.

What's actually happening?

"Too much compression damping prevents the shock from



Using shock dynos, Maxton is able to hone your bike's suspension to perfection



And if your bike is beyond setting up, you can always fall back on some of this kit

SETTING UP YOUR SUSPENSION IS TRIAL AND ERROR

absorbing the forces adequately. Under acceleration riders complain that they can't feel the tyre gripping the tarmac. When you get on the power the bike should transfer the weight back through the shock, with too much compression damping the shock doesn't push down and grip, making it feel like the tyre isn't digging in. Compression is the key to getting feeling from the back end." Richard Adams

Too soft?

Symptoms: The bike requires more effort to turn it into corners and once lent over it needs to be forced down to hold its line as it has a tendency to run wide, especially in slower speed corners. Through faster bends the rear is loose and the bike wobbles and pitches from the rear.

What's actually happening?

"With too little compression damping the rear

squats down very easily under power. While this gives a feeling of the tyre gripping it also takes too much weight off the front end that makes the bike run wide and can also create instability. Riders will find themselves rolling off the power and having to readjust their line when they have too little compression damping and complain of a vague feeling when under power." Richard Adams

CONCLUSION

As with many things, setting up your suspension is a case of trial and error. Hopefully, with the help of this guide, you should at least be able to approach it with confidence. The difference to your bike that well set up suspension makes is far more beneficial than a loud pipe - and is less irritating to your neighbours. But as we have said before, it's a double edged sword so don't rush the job, write down the changes and adjust one thing at a time. Happy fiddling. ☑