

Teach Me Suspension (Part 8): How to Make Compression Damping Adjustments

While making changes to, and the testing of, rebound adjustment can be done in the warmth of your garage, doing this for compression damping is a little more difficult.

You can try similar techniques (some do), but for a novice the changes you're likely to make and how this make the bike feel are too subtle when simply pushing down on the suspension and feeling what's happening.

Also, how you compress your suspension in that brief moment will not be the same way that a bump, series of bumps or cornering forces will.

And being that compression damping relies largely on things like the type of road you're riding, tyre characteristics and unsprung weight, you won't be bringing those factors into play as standing in a garage somewhere pressing down on your machine.

Unsprung weight has a big effect on how the suspension compresses when it hits a bump, for example.

If you were to throw out your old wheels and replace them with some new, lighter ones, the wheel would deflect more over the bump meaning your compression damping would need to be wound on (increased) in order to keep the same compression feeling you had before.

But being that the unsprung weight never comes into play when you press down on the bars in a garage, for example, you couldn't possibly expect to find the correct setting this way as an inexperienced tuner.

However, if you watch people like Dave Moss at the track in his videos you'll notice that he DOES in fact use such methods to test compression damping.

The difference is, people like Dave and other experienced tuners/racers like him will be able to relate the feeling he gets in the paddock to what they would get on the track as a result.

But that comes from a vast amount of experience, something you simply will not have if this is your first foray into the suspension tuning world.

You may now be thinking, "well why can you adjust rebound in the garage?"

The difference is rebound is controlling the spring extension. The spring is a known quantity (its rate) and doesn't change, therefore the settings can be more easily felt and adjusted.

Compression on the other hand relies on more factors that can only really be brought into the equation while riding.

There's no rule of thumb for compression damping like you have with rebound.

Where Are Compression Adjusters?

In terms of the forks, most sportbikes of today will feature compression adjusters toward the bottom. They can be found either on the front or rear face of the suspension leg.

The bottom picture there is of a compression adjuster that features both high and low speed adjustment, hence the larger module compared to the picture above, which only features low speed (typical) adjustment.

As I said in the last part, there are some bikes that feature a single rebound and compression adjuster split between both forks, where each adjuster controls the separate damping for both fork legs.

Another setup is to have both rebound and compression adjusters on the top of both legs i.e. two adjusters at the top of each leg, with preload being located elsewhere.



Moving onto the shock, on stock machinery the compression adjusters will typically be located at the top of the shock, either on the body of the shock or on the reservoir.

With a lot of aftermarket shocks you may find a separate adjuster that is located somewhere under the seat for easier reach, which is then connected back to the shock via a hose.

If your suspension does feature high speed adjustment, it's best to set that to the recommended setting as per the manual.

Once that's done, turn your attention to the low speed settings.

Performing Compression Damping Adjustment

To find your current setting and to get a feel for the full range, follow the exact same steps outlined in the last part. Starting with the forks.

- 1) Wind your compression adjuster all the way in, counting the clicks/turns as you go. Write down that number as your current settings.
- 2) Grab the bars and a little bit of front brake and push down on the front. Because the compression damping is set to fully-stiff, the front should feel very hard and should barely compress.
- 3) Now go back all the way to the softest settings, counting the clicks/turns. This number is your full range.

- 4) Test again on the bars. This time it should feel noticeably easier to push down.
- 5) Repeat all the steps on the rear, pushing down on the seat as you did for rebound. While this hasn't helped you find a good setting for your track riding, it has given you a good indication of what too much or too little compression damping feels like.

Now you can return your settings to their original position. If you feel your original setting is way off, you can set it in the middle of the range, or consult your manual for the ideal setting.

Testing Compression Damping Balance

One last thing you can do to add to your baseline setting is test compression balance.

When pushing down on the middle of the bike, both the forks and shock should compress at a similar rate and it should feel like the whole bike moves down evenly.

To do this, while standing on one side of the bike, place one hand on the seat and the other in the middle of the tank around the fuel cap and press down.

The bike should feel like each end compresses evenly. If it's way out, make some changes so that each end feels similar.

Time to Ride!

Like with preload and rebound testing, if you can, ride the same track or location, giving yourself room to concentrate on what you're feeling by riding about 10-20% off maximum.

Get out there for a session and note how the bike feels over bumps at baseline settings.

As a general rule, too much compression damping will make the ride feel stiff and hard, ultimately meaning poor traction as the suspension reacts badly over bumps.

Too little compression damping will make the front wallow over a series of bumps and possibly even feel a bit 'divy' when getting on the brakes or steering quickly into turns.

Another downside of too little compression damping is the potential to bottom out the suspension.

If your bike has high speed adjustment, leave that at its base setting until you've had a go at changing and got your head around low speed compression changes.

Remember that high speed refers to very quick compression scenarios like going over a very harsh bump. As such it won't have as big an effect on how your bike handles or how it feels on the brakes compared to low speed adjustment.

As you did with rebound, if you think your setting is wrong, move about 30% in the direction you think you need to go. You can always move back in smaller increments after that.

Feeling Compression Changes

Of course your compression dampers dealing with bumps is only half of their job. The other half is how they deal with the forces placed on the suspension through the entry and exit of turns, as well as in the braking zone.

The biggest job being in the braking zone. Too little compression damping and the suspension could bottom out, reducing traction.

Too much and the front will feel like it's riding high and not wanting to compress. This translates to less feedback and poor traction because the suspension isn't working in its most compliant range.

Once again you can refer back to your zip tie to see if you are using the correct amount of travel. 5mm-15mm of travel left is about right.

Compression comes into play at corner exits too, albeit at the other end of the bike. Compression damping at the shock can be adjusted to change the amount of squat your bike experiences when getting on the power.

This is necessary because having too much or too little can cause the bike to drift wide or feel a bit loose. We'll cover that a lot more in the next part though.

Compression damping can have even the best riders going round in circles trying to find the perfect setting.

However, being that it isn't as important for less experienced riders, your main goal should just be to ask if the bike feels ok to you.

That is; ok during braking, turning, getting on the power and over of bumps.

After testing to see how things feel with different changes, just stick with what feels good for you right now until you suspect things may be hindering you.