

Suspension Setup Guidelines - By Brad Hepler

I'm not an expert on this stuff, but I've compiled some tips over the years.

There are three (3) possible adjustments on the front and rear suspension of a motorcycle: spring preload, compression damping, rebound damping.

The spring preload sets the ride height of the bike and determines how much of the total travel will be available for compression and how much will be available for extension. Damping keeps the bike from behaving like an old Cadillac - i.e., still bouncing 10 seconds after hitting a bump.

Compression damping slows the shock when it is being compressed.

Rebound damping slows the shock when it is rebounding.

Set the preload on each end so that the bike settles 1/3 of its total travel -- look in your owner's manual for total suspension travel. This ("sag") is measured between (a) the wheel suspended off the ground, and (b) you on the bike with all applicable gear, luggage, passenger, etc.

Use less sag for smooth roads and fast riding, say 25%. On shock absorbers: get the sag/preload right before messing with the damping. Start at the shock manufacturer's recommendations. Only change one setting at a time, and don't change damping more than 2 clicks at a time.

For compression damping, increase until expansion joints or sharp bumps are jarring, then back off one click. Don't forget that when you increase preload, you have to increase rebound damping and vice versa for decreasing preload.

>>>> Front Suspension Symptoms, Likely Causes & Possible Solutions

Symptoms: Not using full travel, feels harsh, poor traction in bumpy corners

Causes: Overly stiff springing or compression damping

Solutions: Lower air pressure; reduce compression damping; softer coil springs

Symptoms: Bottoms, soft throughout travel

Causes: Spring rate too low throughout travel, or too little compression damping

Solutions: More air pressure; increase compression damping; stiffer coil springs

Symptoms: Bottoms, but compliant over small bumps

Causes: Spring rate not progressive enough

Solutions: Raise oil level

Symptoms: Harsh over large bumps, but good over small ones

Causes: Spring rate too progressive

Solutions: Lower oil level

Symptoms: Excessive sack, feels soft initially but doesn't bottom

Causes: Initial spring rate or preload too low; springing too progressive

Solutions: Add air pressure *and* lower oil level; increase spring preload

Symptoms: Harsh over small bumps but uses full travel

Causes: Initial spring rate or preload too high, springing not progressive enough, or too much compression damping

Solutions: Raise oil level *and* lower air pressure or install softer springs; reduce compression damping; reduce spring preload

Symptoms: Takes first bump in a series well but harsh over later bumps, poor traction in washboard corners

Causes: Too much rebound damping

Solutions: Use thinner fork oil (or decrease rebound damping if adjustable)

Symptoms: Front end springs back too quickly after bumps, poor traction in bumpy corners

Causes: Not enough rebound damping

Solutions: Use thicker fork oil (or increase rebound damping if adjustable)

>>>> Rear Suspension Symptoms & Causes

Symptom: Not using full travel, feels harsh, poor traction accelerating out of bumpy corners

Cause: Overly stiff springing or compression damping, possibly too much preload

Symptom: Bottoms, feels soft throughout travel

Cause: Spring rate or compression damping too low

Symptom: Bottoms, feels harsh, sinks far into travel with rider board

Cause: Too little preload, perhaps combined with too soft spring

Symptom: Wheel chatters over small bumps during braking or downhills, doesn't hook up accelerating out of washboard turns

Cause: Too much preload (perhaps because of soft springs) causing suspension to top out; possibly too much compression damping

Symptom: Kicks over large square edge bumps, but not over large rolling bumps

Cause: Too much compression damping

Symptom: Kicks over rolling bumps and square edge bumps

Cause: Too little rebound damping.

Symptom: Rear end takes first bump in a series but is harsh on later bumps. Poor traction out of bumpy turns or braking on washboard

Cause: Too much rebound damping.

Symptom: Back end extremely springy and shock doesn't respond to adjustments

Cause: Damping is gone because of low nitrogen pressure, tired oil, or damaged internal components.

Some of this material came from either Cycle or Dirt Rider magazine & was originally intended for dirtbikes but is also applicable to street."