

Suspension Set-up – By Ohlins

Introduction

Unfortunately there is no literature that can give you the perfect machine setup. Also suspension setup is individually dependent on the rider (style, preference) and track conditions, which vary from race to race. We can therefore only try to give you guidelines and ground rules for the chassis setup of your machine.

General guideline

The general guideline in road racing is that the suspension has to support the tyres to create the best possible grip. For this reason suspension plays its most important role in corners, chicanes, acceleration and braking. In the straight line the suspension works satisfactory if it can absorb the bumps without causing instability.

Suspension stroke

A road race bike should normally not use its full suspension stroke, although on some circuit one or two big bumps or hollows can cause the suspension to bottom. Also landing of front wheel after wheelies can cause excessive use of the front fork stroke. If suspension bottoms in big bump or hollow, it should not automatically mean that the suspension should be set more hard.

However, if suspension bottoms at the place where the maximum grip is essential the tyre cannot create the best traction, because it also has to perform as spring. Adjusting the setting is necessary.

During every riding session the suspension stroke should be carefully checked. When tyre grip and lap times improve, the suspension has a harder job. So, setting must be set harder. On the opposite, when it starts raining tyre grip and lap times go down, in that case a softer setting should be applied.

Suspension setup

Before starting suspension setup, read the owners manual! A tip, do your changes in suspension setup one by one, try to learn what effect each individual adjustment has on your bike and take notes!

Static sag without rider

Hold the bike upright on a flat surface. Independently lift front and rear until the suspension is fully extended, the value should be approximately:

Type	Front sag	Rear sag
Super Bike	20-30 mm	5-10 mm
Super Sport	20-30 mm	5-10 mm
RR 250	15-25 mm	0-5 mm
RR125	15-25 mm	Just top out 0 mm

Note: An RR 125 cannot afford to lose the momentum that the sag would give in a straight line (loss of top speed). The static sag is adjusted by the spring preload. The procedure is the same for the front fork and rear shock.

Static sag with rider

The accepted manner to adjust the spring ratio is to measure how much stroke is used with the rider sitting on the bike in straight line position (behind fairing) after you have set the correct static sag without rider. Normally 1/3 of the full stroke is a good starting point for all machines. This is only a guide line for the right spring ratio. The final check must be done on the circuit.

Note: Ohlins racing shocks features a "top-out" spring to prevent the shock from extending too quickly, causing the rear wheel to jump under braking. The top-out spring also affects the negative sag, making it difficult to adjust the sag with the shock on the bike.

Your Ohlins shock is delivered with the correct spring preload set and we recommend you to use this value for the basic setup. Ride height should be adjusted with the ride height adjuster on the bike or on the shock.

Rebound damping

****Rear suspension***

Too much rebound damping can cause:

- The rear "jumps" on the bumps instead of following the surface.
- The rear "jutters" under braking.
- It holds the rear down with the result that the bike will understeer!
- It can cause overheating in the hydraulic system of the shock absorber and make it fade, in other words, it will lose damping when hot.

Too little rebound damping can cause:

- The rear "tops out" too fast under braking, causing the rear wheel to jump
- The bike feels unstable.

****Front suspension***

Too much rebound damping can cause:

- Oversteering!
- It will give poor grip of the front tyre.
- It feels like the front wheels will tuck under in corners.

Too little rebound damping can cause:

- Understeer!
- The front can feel unstable.

Compression damping

****Rear suspension***

Too much compression damping can cause:

- The rear wheel to slide under acceleration .
- It can give a harsh ride over bumps.

Too little compression damping can cause:

- The rear wheel start to bump sideways under acceleration out of the corner.
- The bike will squat too much (rear is too low), that will cause the front to loose grip.

****Front suspension***

Too much compression damping can cause:

- Good result during braking.
- Feels harsh over the bumps.

Too little compression damping can cause:

- Strong diving of the front.

Adjustment advice:

Compression damping should be adjusted together with front fork oil level.

Spring ratio

****Rear***

Too hard spring ratio:

- Gives easy turning into corners.
- Makes the rear feel harsh.
- Create poor rear wheel traction.

Too soft spring ratio:

- Gives good traction in acceleration.
- Creates understeer in entry of corner.
- Makes too much suspension travel which will make it difficult to "flick" the bike from one side to the other in a chicane.
- Will give a light feeling in the front.

Front*Too hard spring ratio:**

- Good under braking.
- Creates understeer.
- It feels harsh in the corners.

Too soft spring ratio:

- Gives easy turning into corners.
- Creates oversteer.
- Can cause front to tuck under.
- Bad under braking (diving).

Front fork oil level

First see manual. The modern front fork of cartridge type is very sensitive for oil level changes, because of the small air volume Air inside the front fork works as a spring. The different level of oil effects the spring ratio from the middle of the stroke and has a very strong effect at the end of the stroke.

When the oil level is raised:

The air spring in the later half stage of travel is stronger, and thus the front forks harder.

When the oil level is lowered:

The air spring in the later half stage of travel is lessened, and thus the front forks are softer. The oil level works most effectively at the end of the fork travel.

Note: Adjust the oil level according to your manual.