

## **BASIC MOTORCYCLE SUSPENSION SETUP AND TUNING**

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# Ride Height

## **How do you set your ride height?**

The ride height (sag) of your motorcycle is taken with the bike on a center stand so that the rear wheel is off the ground. Measure from the rear wheel axel to the rear fender (Photo 1). Make sure to **ALWAYS** measure from the same place. Next the rider, wearing full riding gear, should sit in the center of the motorcycle with the bike on the ground. Measure from the rear axel to the rear fender as before. The difference between these two measurements is the motorcycles ride height (Photo 2). The motorcycle ride height is set by adjusting the amount of spring preload.

## **What does the ride height do?**

It sets the linkage at the right stating point of its curve. It also sets your starting head angle. The standard setting is 100mm or 3 7/8". If you ride or race on a wide-open, fast track you should set your ride height from 100-105mm, this will relax the steering head angle and give you a stable ride. If you ride or race on a tight track you should try 95-100mm, this will steepen your head angle and help you with tight turns. 100mm is the best starting point, but when you test remember that 2mm will make a difference.



Check out the "Ride Height Tool" created and sold by

The ride height tool is uniquely designed to collapse and fit into your standard toolbox. This tool has been anodized red and its measuring scale is laser etched into the tool. The etched scale cannot be scratched or removed. The measurement ranges from 0 to 130mm. Also there is no math involved when using the ride height tool. All you do is put the tool into the axel with the bike on the stand then put the rider on the bike and the measurement on the scale is the ride height.

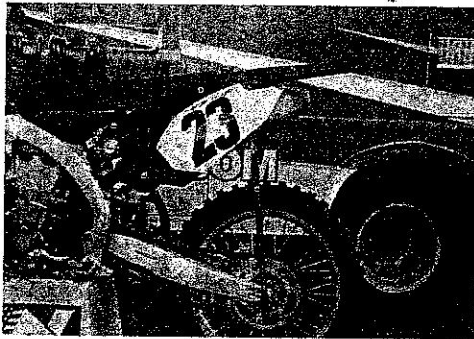
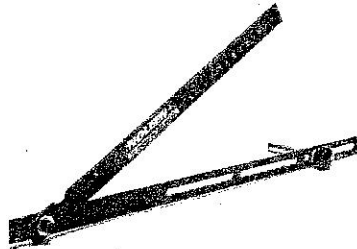


Photo 1

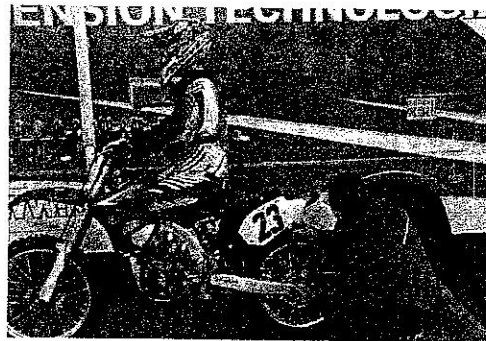


Photo 2

## Shock Compression

**Shock compression** is when the shock compresses through the stroke when hitting a bump or a jump.

**Low Speed Compression** adjuster is the screw at the top of your shock. If you tighten or turn clockwise it will stiffen your ride. If you loosen or turn counterclockwise it will soften your ride. The low speed works on the small, square edge and quick hit bumps.

If your bike is deflecting or pushing side-to-side, skating around when hitting small to medium bumps and not tracking well. Loosen (counterclockwise) the low speed adjuster 1 to 2 clicks at a time until you achieve the ride that you are looking for.

**High Speed Compression** is when you land off jumps or hitting g-outs. The high speed controls the big hits. To adjust the high-speed compression you turn the hex nut that houses the low speed compression adjuster. You turn the nut clockwise to make a stiffer ride. And counter clockwise to make it softer. The high-speed compression does NOT click like all of the other adjusters, so you should adjust the high-speed in ¼ turn increments.

If your shock bottoms out, wallows when you hit medium to big bumps and when you land off of a jump. Turn the high-speed adjuster clockwise ¼ turn at a time until you achieve the ride that you are looking for.

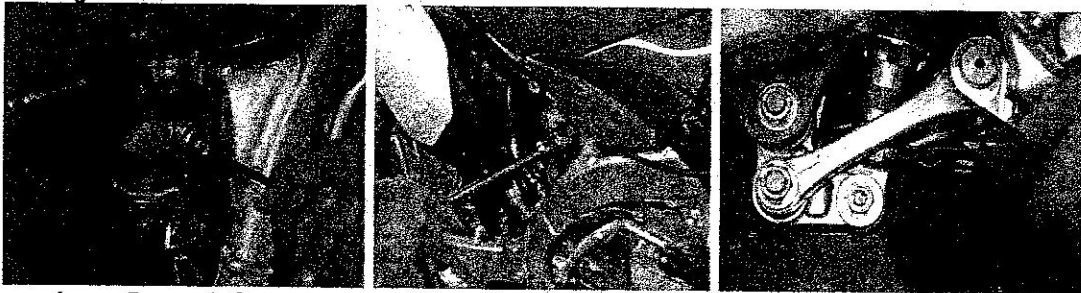
If your bike deflects or pushes side to side in the whoops then your shock is too stiff. Loosen (counterclockwise) the high-speed adjuster ¼ turn at a time until you achieve the ride that you are looking for.

## Shock Rebound

**Shock Rebound** is when the shock is returning after being compressed from hitting a bump or a jump. The rebound is located at the bottom of the shock, near the linkage. If you turn this screw clockwise it will give you more dampening or slower rebound. If you loosen or turn counterclockwise it will give you less dampening or make it faster.

If your bike kicks straight up when hitting bumps or jumps your rebound is too fast. Tighten (clockwise) the rebound adjuster 1 to 2 clicks at a time until you achieve the ride that you are looking for.

If your bike is losing traction or packing you need to speed up the rebound. Loosen (counterclockwise) the rebound adjuster 1 to 2 clicks at a time until you achieve the ride that you are looking for.



Low Speed Comp.

High Speed Comp.

Rebound

## **Fork Compression**

**Fork Compression** is when the fork compresses through the stroke while hitting a bump or landing off a jump.

### **How do you set your compression?**

To adjust your compression on the newer twin chamber forks the adjuster screw is on the top, on the older non-twin chamber forks the adjuster screw is on the bottom.

If your front end is deflecting off of the bumps and pushing the bike side to side and does not track well. Then your forks are too stiff. Loosen (counter-clockwise) the compression adjuster 1 to 2 clicks at a time until you achieve the ride that you are looking for.

## **Fork Rebound**

**Fork Rebound** is when the fork is returning after being compressed from hitting a bump or a jump.

### **How do you set your rebound?**

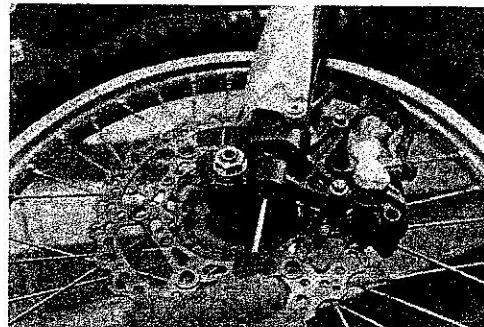
To adjust the rebound there is a screw at the top of non-twin chamber forks and the bottom of twin chamber forks. If you turn this screw clockwise it will give you more dampening or slower rebound. If you loosen or turn counter-clockwise it will give you less dampening or make it faster.

If your front end packs or stays down and has low traction in the turns, you have too much rebound. Loosen (counter-clockwise) the rebound adjuster 1 to 2 clicks at a time until you achieve the ride that you are looking for.

If your front is pushing straight back and does not follow the ground, tighten (clock-wise) the rebound adjuster 1 to 2 clicks at a time until you achieve the ride that you are looking for.



Compression



Rebound

## Fork Tube Height

**Fork Tube Height** is where the fork tubes are set in the triple clamps. This is measured from the top of the fork tube to the triple clamp.

If your bike is under steering, which is when the bike wants to ride out of turns and is difficult to stay in the grooved turns. Then you need to slide the fork tubes up into the triple clamps 2 or 3mm at a time. This will put more weight on the front wheel and it also makes the steering head angle steeper. Which will make the bike turn sharper and stay in the burm or grooved turns.

If your bike is over steering, this is when the bike wants to ride the inside of the turn and not follow the burm or groove. If the fork tube height is too high it can also cause head shake.

If your fork tubes are lower in the clamps the bike will be stable on the high-speed tracks and hard to turn. If your fork tubes are pulled up in clamps the bike will turn sharp, but will lose stability on the straights. Remember to only adjust the fork tube height 2-3mm at a time.

## Fork Oil Level

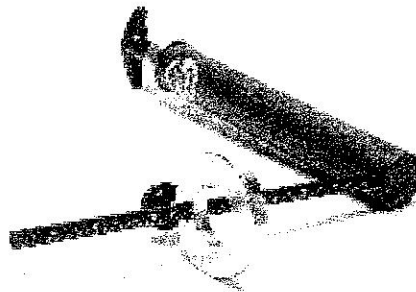
On cartridge and non-cartridge forks the fork oil level is measured from the top of the fork tube down to the oil with the fork bottomed out, this is normally measured in millimeters. On twin chamber forks you measure the volume of the outer tube; this oil is measured in cc;s.

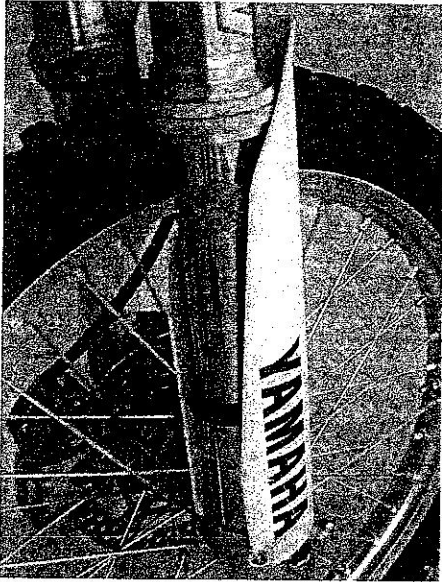
When you add oil to your forks you are creating a smaller air space and a stiffer ride. When you remove oil it creates more air space and a softer ride.

If you are happy with your ride but want the fork to be a little stiffer you should add 5cc. at a time, this will stiffen it up a little all the way through the stroke. If you want it a little softer then remove 5cc, this will make it softer through the stroke.

Check out the "Fork Oil Level Gauge and Fork Oil Syringe" Created and sold by

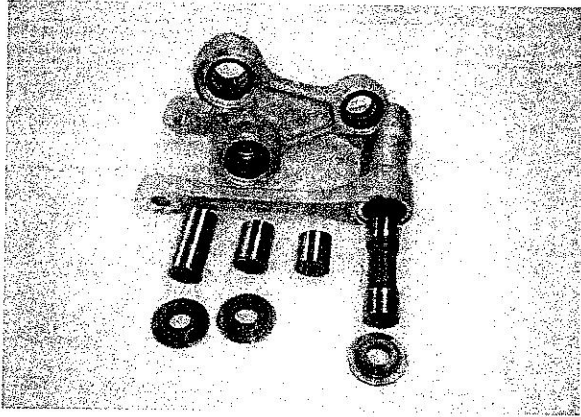
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*Racing*





### **Basic Front Fork Maintenance**

There are a few things that you need and can do to keep your forks working properly between services. Air pressure builds up in your forks and you need to release it. You do this by the pressure release screw on the top of your forks. With the bike on the stand, unscrew and release the pressure out of each fork after every ride or every race day, this will give you a smoother ride. If it is hot you should do this between motos. There are pressure release valves you can buy, look for the ones that are made out of stainless steel. The aluminum ones seem to have problems. Next you want to make sure that there is not any dirt or dried mud on the fork tubes because it will shove through the seal and cause a leak and prematurely wear the bushings out. When you are maintaining your bike during the week it is recommended that you grease your fork seals and bushings, this is done by removing the dust seals and sliding them down the tube wipe out any dirt from the seals and rub SF3 grease around the tube close to the fork seals and then push the forks up and down and the grease will spread to the seals and bushings. Replace the scraper seal and wipe any excess grease from the tubes. Inspect your inner tubes for little nicks if you find one you need to remove it or it will cut your fork seal and cause a leak. You remove it with 600 wet and dry sand paper. When sanding the nick out sand around the tube not up and down. These tips will help the life of your forks.



### Linkage and Steering Stem

Your ride quality is not just in your shock and forks its in your Linkage, Shock eyes, Swing arm pivot and steering head set, all of these pivots need to be maintained to keep a smooth ride. When your bike comes from the factory no matter what brand it is it has a light film of grease on the linkage, pivots, swing arm pivot, and steering head. It seems that they just put enough grease on these pivots so they wont rust. You need to keep these points well greased this will keep your suspension and steering smooth. Most riders wait until there is a problem before taking it a part and at that time you have to replace the bearings. It is best to prevent having any problems we all know that a problem will happen at the wrong time. Please refer to your owners manual when working on your motorcycle. You need to re-grease all pivots after every 40 hours of riding. There are a lot of greases out there to choose from make sure you get a water proof and impact resistant grease. Our pivot grease is specially make for all pivot points and steering heads, it is impact resistant and water proof. It needs to be water proof because we all use a pressure washer to clean our bikes and this can get through the seals and bearings. Impact resistant because there is a lot of force on these points and you don't want the grease to push off of the bearings.

### Reminder

- When you start tuning your suspension keep notes on all of your click settings , oil volume or oil height, ride height, fork tube height and spring rates. After every test session make a note of your new settings. This is very important because it is very easy to get confused with all of the different adjustments.
- Always have someone watch your bike when you're testing. This helps to confirm what you are feeling. If possible have them video you. This is a valuable tool.
- Also have them watch other riders and have them compare their bikes to yours.

#### Fork Suspension Setting

Springs	Spring Preload	Oil Viscosity	Oil Level	Comp	Rebound	Fork Tube Ht.

#### Shock Settings

Spring	Ride Height	High Speed Comp.	Low Speed Comp.	Rebound