



FOR THE DO-IT-YOURSELF DUCATI OWNER

HOME

MAINTENANCE:

BASIC

ADVANCED

TOOLS

MODIFICATIONS:

PERFORMANCE

MISCELLANEOUS

MY DUCATI

GALLERY

READERS' BIKES

NEED TO KNOW

DUCATI LINKS

WHAT'S NEW

SEARCH

E-MAIL ME

REAR SUSPENSION ADJUSTMENT

DIFFICULTY 

COST \$10+ (Tools)

HOURS TAKEN 

TOOLS Preload Spanner Wrench, Ruler, Some Way to Balance the Front (Straps and Anchors or Several Buddies)

The good ol' Monster rear suspension: single adjustable Boge-Sachs rear shock. It's gotten a bad rap as an underperformer, but it is still a quality piece with much better adjustment than many other sportbike shocks allow. Then again, why wouldn't it? It's a Ducati.

Perhaps the most important part of getting any kind of accurate readings is to have the front end balanced. You can have somebody hold the bike every time you need to measure, but it's better to save them for the loaded sag measurements. To balance the front, I used two tie down straps from the bars to the anchors in my garage floor. Before tightening them down, I took a zip tie and wrapped it around the grip and brake lever to keep it from rolling. Then I tightened the straps and ta-da! It was held there like magic.



There are three measurements from which we will base all of our adjustments off of:

Ride Height (A)

Unloaded Height (B)

Loaded Dip (D)
(This measurement is not the "loaded sag", see below)



This is the distance from the center of the rear axle to a fixed point on the frame directly above it with the bikes weight ON the suspension. I made a pencil tickmark and measured to that each time.



This is the distance from the center of the rear axle to a fixed point on the frame directly above it with the bikes weight OFF the suspension. Have a buddy lift the rear of the bike as high as he or she can, or use the method outlined below for suspending the rear.



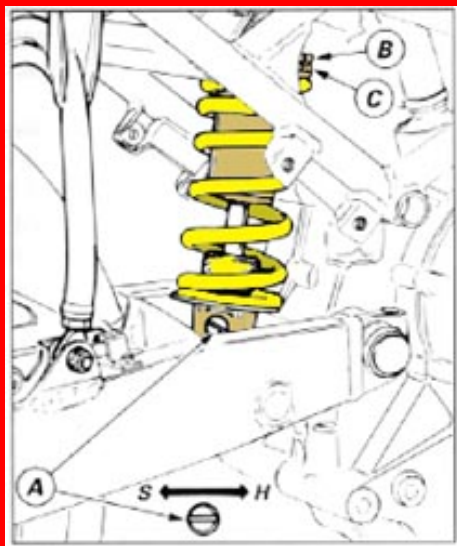
This is the distance from the center of the rear axle to a fixed point on the frame directly above it with the rider's full weight (gear included) ON the suspension. Loaded dip is not an official term, but I didn't know what else to call it :)

This is where it gets tricky: The first thing you need to do is figure out the "static sag" using the ride height measurement and the unloaded height measurement. Subtract the ride height measurement (A) from the unloaded height measurement (B) to get your static sag (C). So, $B-A=C$. A recommended optimum setting for this measurement (static sag) is 10mm. In other words, you should only have ten millimeters (or less) of sag from the bike's weight alone.

The next measurement is easier. Take the ride height (A) and subtract the loaded dip (D) to get the loaded sag (E). So, $A-D=E$. A recommended setting for this measurement is 20-30mm.

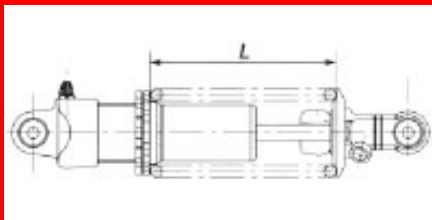
You will undoubtedly find (especially if you are a heavier rider) that the stock setting is too soft, allowing too much sag. So, how do you fix it? Well, the first step involves suspending the rear of the bike. It's very easy to install eyebolt anchors in the studs of the ceiling, or figure out something else to suspend it from. Here, I used the same strap method as the front, only I hung them from eye bolts in the ceiling attached to the grab rails of the frame, and lifted it a little at a time on each side using the ratchets on the straps. Note that the rear tire is completely off the ground, and therefore the suspension is completely unloaded.





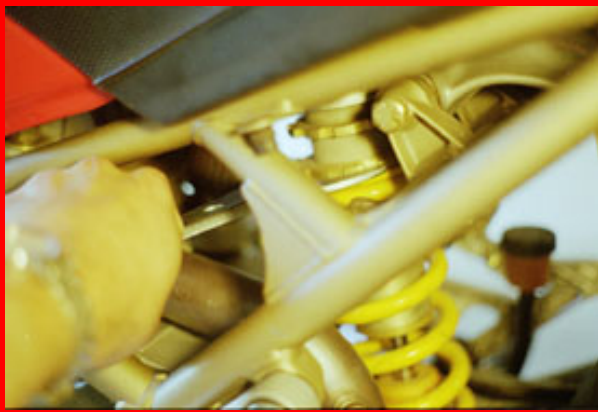
Before undertaking any adjustments, become familiar with the components of the suspension. The piece labeled "B" is the lock ring (nut), the piece labeled "C" is the adjuster ring (nut), and "A" is the rebound damper adjuster. It's also good to know exactly what you're adjusting. "Preload" is just that- a preset tension on the spring, as if there was weight compressing it. If there were no preload, the spring would be way to "springy" and would bounce your suspension to pieces. The suspension needs to be somewhat tight in order to handle well.

It's a good idea to go from the stock measurement when adjusting the suspension. My manual gives a baseline of 6.49 inches for the preloaded spring height. This is the height of the spring with the suspension unloaded, and the adjuster rings in their normal position. So, get the suspension unloaded (by removing the shock or suspending the rear tire off the ground) and adjust the rings up or down so that there is 6.49 inches of overall spring height, measured from the top of the spring to the bottom.



To actually adjust the spring preload, the first step is to loosen the lock ring on top. Use a preload spanner wrench (available at any bike store) and wrench it free. It will be a bitch, so be prepared.





With that free, you can then use the bottom ring to adjust preload. Moving it up reduces preload, and makes the spring rate softer. Moving it down increases preload and makes the spring rate harder. It makes it a lot easier to adjust if the suspension is unloaded (hence lifting the rear). If it's loaded, the spring has some amount of preload and it is very hard to turn. Be prepared for a LONG battle with adjusting this, as it turns very slowly. I think I spent 30 minutes or more just unloading the spring.

A good way to measure the preload that you've given the spring is to (with the suspension unloaded) measure from the top ring to the bottom ring. So, once the suspension is unloaded (when the bottom ring turns freely and the spring is free), move the lock ring down. Then start feeding it preload without moving the top ring. The difference between the two rings will be the amount of preload. For example, the stock setting is 20mm of preload (don't confuse this with the preloaded spring height of 6.49 inches). With the suspension unloaded, loosen the two rings until the spring is free from pressure. Then tighten the two rings up on top of it snugly, but don't actually compress the spring yet. Once they're in place, tighten the bottom ring ONLY until there is 20mm difference between the two as shown. That's 20mm of preload.



As a general rule, more preload=less sag. You don't want more than a combined total of 40mm sag (static sag+loaded sag), or the suspension will be too gushy. I ended up using almost all of the available preload to get a total of 33mm (5mm static sag + 28mm loaded sag). A different spring tailored to a heavier rider would be a better choice, but I work with what I'm given. In fact, I will probably back off my preload as it is very jarring over rough roads. Also note that you only want enough preload to get the correct sag. Too tight and the ride will be very rough and spring life will also be cut. A spring that has too much preload can't act as a spring anymore and the whole suspension will malfunction. Visit [this site](#) for a better explanation of suspensions and troubleshooting.



The rebound damping is set by using the screw located on the bottom right hand side of the shock. To get a baseline, screw it all the way in, then out (counterclockwise) 8 turns for stock. The stock setting seems just fine for me. Screwing it out makes it softer, in makes it harder. However, don't get confused- rebound damping won't firm your suspension up in the sense of "preload". It only controls how fast the spring moves up or down. Shocks are there to control how fast the suspension cycles, not how hard or soft the suspension feels. Use the shock setting only to control the bounce factor. If your suspension wallows up or down over bumps, increase the rebound damping.

Some suspension links:

<http://gastric.com/toys/ducati>

<http://www.mad-ducati.com/Technical/916Suspension.html>

<http://www.racetech.com/EducationDetail.asp?pid=9>

<http://www.roadracers.co.uk/suspension.htm>

Web Bike World

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