PRO CIRCUIT TECH TIP

SUSPENSION: SETTING THE SAG

>> The race sag is set to insure that the suspension works in its most effective rage and to keep a good chassis weight balance, front to rear. Setting your race sag is also the most important set up in affecting your bike's overall handling traits.

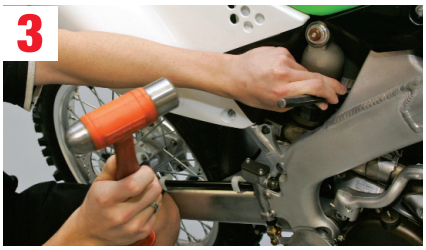
The first step toward determining proper suspension adjustment is to set the rear spring preload, so that the proper ride height, or race sag dimension, is achieved. You should check this crucial adjustment before each ride to insure it remains at your determined setting. For this adjustment procedure, the bike should be brought to normal racing weight – correct fuel, transmission oil and coolant levels. The shock should be cool to the touch, as heat build up will directly affect your sag.

RACE SAG (WITH RIDER)

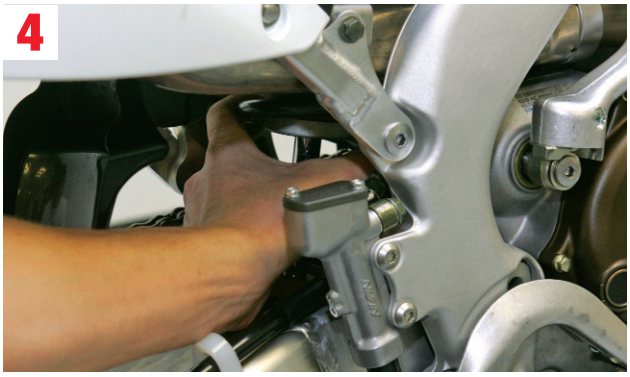
1. Using the tape measure provided, measure the unloaded dimension when your bike is supported by a bike stand and the rear wheel is off the ground. Measure the distance from the rear axle up to a fixed point, like the fender and side panel junction, in line with the arc of the axle. You can also put a mark on the fender, which lines up with an even number to make it a little easier to calculate. Write down as Dimension A (Unloaded Example: 605 mm).

2. Now, place the motorcycle on level ground. Next, measure the loaded dimension with the rider aboard, wearing all normal riding gear, sitting forward on the seat, straight up from the pegs. Bounce your weight on the seat a couple of times to help the suspension overcome any stiction. Make sure you keep your hands on the bars, with your feet in front of the pegs, and settle all of your weight on the seat with your feet barely touching the ground, just enough to keep your balance. Using a helper, measure the distance between the same two points determining Dimension B (Loaded Example: 502 mm).

Note: *The race sag dimension is the difference between the unloaded (Dimension A) and the loaded (Dimension B) measurements. Adjust spring preload as necessary to obtain the correct handling results.*



3. To change the sag, use a long punch and a large hammer to loosen the spring locking nut on the shock.



4. Then, turn the spring with your hand to adjust the rear spring preload. Make sure that when you're turning the spring, the preload nut is also turning. There may be times where you will need to push on the preload nut with the punch while you're turning the spring.

Note: *Increasing spring preload will decrease race sag and visa versa.*

5. Once the race sag is set, retighten the lock ring onto the adjuster ring with the punch and hammer.

RACE SAG EXAMPLE

Dimension A Unloaded	= 605 mm
Dimension B Loaded	= 502 mm
Race Sag	**= 103 mm**

>> Static sag can be used to help determine the proper spring rate. Now, you must compare the rear suspension sag under the weight of the sprung portion of the bike alone (without rider's weight) to the unloaded dimension. Having the proper spring rates in the front and rear is critical for proper handling. The spring rates must be selected to match the size of the bike and weight of the rider. A good approximation of your rear spring requirements can be found by measuring the rear suspension's static sag. This measurement will quickly determine if your rear spring is approximately correct for your weight. Static sag is a measurement of how much the bike sags under its own weight.

Important Note: *You must first set the race sag to determine this measurement.*

STATIC SAG (WITHOUT RIDER)

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1. The first measurement is taken, as earlier, with the bike on a stand, and the rear wheel hanging freely. Measure the distance between the rear axle and the same point used to measure the race sag. This will determine Dimension A (Static Sag Example: 605 mm).

2a

2a. The second measurement is taken with the bike on the ground. But first, push down on the seat and slowly let it rise up to its final resting position.

2b. Again, measure the distance between the same two points used above. This determines Dimension B (Static Sag Example: 568 mm).

Note: *The static sag is the difference between Dimension A & B.*

2b

CONCLUSION

Both the race sag and static sag must stay within their specified range to ensure optimum bike performance. See the Recommended Sag Specifications listed bellow. Also, refer to the Pro Circuit shock specification tag attached to your shock.

Many times there is much confusion about the specifications above. Remember it this way, before checking your static sag, you must first set your race sag. If after setting the race sag the static sag is more than your range in the rear, the spring may be too stiff for your weight. In this case, the spring is not compressed enough to allow the suspension to extend far enough on its own. A spring that's too firm does not allow the rear tire to hook up under acceleration and passes more of the bumps on to the rider. If the static sag is less than your range in the rear, the spring maybe too soft for your weight. In this case, the spring required so much preload to achieve the proper race sag that it makes the rear end too high or even top-out when the rider dismounts. As a result, the weight transfer is incorrect and the rear end tops-out under even light braking and on downhill's.

Also, remember you may adjust your race sag within your specified range depending on track conditions and riding style. Less sag can improve turning ability at the cost of slightly reduced overall stability. More sag can improve overall stability but may reduce turning performance slightly. After adjusting the spring preload to obtain the proper race sag, the suspension should sag, within the specified range, from the weight of the bike alone. If you have any further questions, you can contact Pro Circuit at 951.738.8050.

STATIC SAG EXAMPLE

Dimension A Unloaded	= 605 mm
Dimension B Loaded	= 568 mm
Static Sag	**= 37 mm**

RECOMMENDED SAG SPECIFICATIONS

	50cc - 65cc	85cc - 100cc	125cc - 450cc
Race Sag	70mm	80mm - 90mm	102mm - 105mm
Static Sag	25mm - 35mm	25mm - 35mm	30mm - 40mm

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