

## Suspension Adjustments

### Part 5—Shocks

by Dave Moss

**Editor's note**—This month's article is aimed at riders who frequently work on their own motorcycles. If you have any doubts about your ability to perform the procedures described here, please take your motorcycle to a qualified mechanic.

**T**HERE ARE THREE SETTINGS that can be adjusted on shocks—spring preload, rebound damping, and compression damping. Spring preload is the amount of applied load on the shock spring via the adjuster; rebound damping determines the speed at which the shock returns on its upstroke; and compression damping determines the amount of shock travel during the downstroke.

Not all shocks share the same adjustable features, and even if they do they can be configured differently. For example, some shocks have a piggyback oil/nitrogen reservoir for compression damping built into the shock body while some have a remote reservoir that is connected to the main shock via a braided steel cable. Consult your owner's manual to see what settings and configuration your bike's shocks have.

#### Spring Preload

Preload is the amount of load placed on the spring. In short, more preload reduces the spring's springiness (by compressing it) whereas less preload increases its springiness. Preload is initially used when setting sag (see *Motorcycles 101*, March 2004), but may need to be added for two reasons:

1. The front forks become light or "headshake" occurs during hard acceleration. Insufficient rear shock preload causes the bike to squat on the rear wheel and alters the bike's weight distribution.
2. When riding with a passenger preload must be added to compensate for the additional weight on the rear of the bike, otherwise squatting will occur.

On the Suzuki SV650 and Yamaha R6 for example, the preload adjuster is a simple ramp adjuster (Figure 1) that can be moved using the tools in the OEM-provided tool kit. Turning the ramp adjuster clockwise increases preload, counterclockwise decreases it.

Other shocks may have two individual rings, with the upper serving as a lock ring (Figure 2). The lock ring can be moved using the OEM tool and the second ring can be moved clockwise or counterclockwise to adjust preload accordingly.

Should the OEM tool be missing, a mallet and flat-blade screwdriver will work to loosen the lock ring and adjust the second ring. Spray some lubricant (white lithium grease or WD 40) onto the threads of the shock body to ease movement. Once you have added the required amount of preload you can then put the upper lock ring back in place and make sure it is firmly located against the lower ring.

#### Rebound Damping

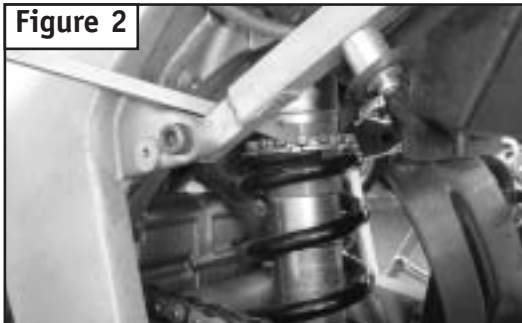
Rebound refers to the shock returning (its upstroke) after being compressed. The rebound damping adjustment controls the speed of this upward motion. The rebound damping adjuster is usually found in the center of the hasp or shaft (Figure 3) that attaches the shock to the rear suspension linkage. A flat-blade screwdriver can be used to make adjustments. The adjustments are measured in "clicks" or degrees of turn. Clockwise will slow down the rebound, and counterclockwise will speed it up. Usually OEM settings are in the middle of adjustment. Other rebound adjusters are rubber/plastic rings at the bottom of the shock shaft that turn clockwise and counterclockwise. Check

Figure 1



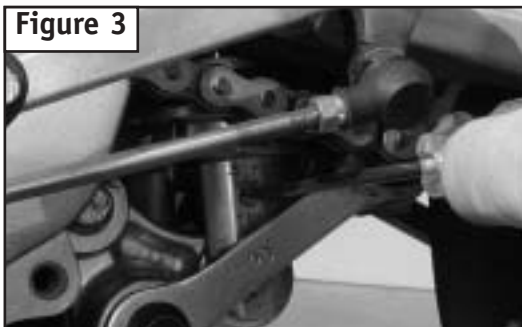
This ramp preload adjuster requires a special tool to change the amount of spring preload.

Figure 2



This preload adjuster consists of a pair of rings. The upper ring, which the screwdriver is touching, locks the lower ring in place.

Figure 3



This rebound damping adjuster is located beneath the main shock body and is adjusted with a screwdriver.

Figure 4



This shock's low-speed compression damping is set with a screwdriver.

to see what adjustment mechanism your bike has.

Turn the rebound damping adjusters counterclockwise and write down how many turns/clicks there are. Then turn the rebound damping adjustment all the way clockwise so that you know how much total adjustment there is. With the adjustment set at maximum (turned all the way clockwise) and the bike comfortably balanced between your legs, compress the shock vigorously by bouncing on the seat. (An alternative method is to have someone hold the bike from the front by the handlebars or triple clamp while you press down on the passenger seat.) Be sure to keep the bike balanced while doing this. As the shock begins the upstroke, let it move naturally and observe the action. The rebound stroke at this setting will come back very slowly.

Adjust the rebound all the way counterclockwise, repeat the same action with the bike comfortably balanced between your legs, and observe the difference in the range of motion—the shock will rise back up very quickly and may even go back down. The goal is to get the shock to rise back to the top of the first rebound stroke naturally but not too quickly. If it returns too slowly the rear end will "pack" in and feel very stiff in mid-stroke. Work the adjuster until you have the rebound action set correctly.

#### Compression Damping

Compression damping manages shock travel during its downward (compression) motion. There can be two different compression adjusters: high-speed (the adjuster may be anodized and is adjusted with a wrench) and low-speed (adjusted with a flat-blade screwdriver or a circular knob with engraved numbers). Compression damping adjusters are found on the upper section of the shock body or on the remote reservoir (Figure 4). It is important to adjust one setting at a time. It is worthy to note that trying to tune high- and low-speed compression damping on expensive after-market shocks requires great patience.

High-speed compression damping deals with abrupt changes in the road surface and attempts to negate the sudden impact from sharp ridges that cause a shock wave to travel through the shock. Turning the adjuster clockwise makes the damping firmer. The stiffer the high-speed compression is set, the harsher the reaction will be by the shock. It is important to try and get this adjustment as soft as possible since sharp road surfaces are not that common.

Low-speed compression damping deals with the far more common rolling undulations and changes in road surface. Sometimes these adjustments are measured in clicks, other times in degrees of turn. Usually OEM settings are in the middle of adjustment.

Clockwise adjustment makes for a softer setting, and counterclockwise for a firmer setting. Compression adjustment is very subjective compared to the rebound adjustment which is very easy to see.

To adjust the low-speed compression damping, turn the adjuster all the way clockwise and write down how many turns/clicks there are. Turn the compression adjustment all the way counterclockwise so that you know how much total adjustment there is. With the adjustment all the way out on the softest setting, sit on the bike and balance it between your legs, then push down vigorously to compress the shock. You will be able to feel that the shock moves fairly easily through the downward compression stroke.

Adjust the compression all the way in, then repeat the compressing action with the bike balanced between your legs and feel the difference in the range of motion—the shock will compress more quickly and will not travel as far on the compression stroke. The goal is to have the shock move without restricting the amount of travel of the shock shaft, which causes the sensation of "pack-

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ing.” Work the adjusters until you have the rebound action set correctly.

Assuming that your riding skills are good, if the bike runs wide while accelerating out of corners, then the shock is too soft. In this case a combination of preload and compression damping may be used to put weight back on the front wheel and allow the front tire to have maximum traction. Similarly, if you experience headshake while accelerating out of a corner, more compression or preload may need to be added. With modern high-powered sportbikes there is a difference between tuning geometry and components and power wheelies due to throttle application, so a keen sense of reality is required when trying to diagnose the problem. Those who steer with the rear wheel at the track need a much more rigid shock. Other riders prefer to use the front wheel and feel the bike under much higher cornering speeds, so tuning the shock is far more critical. Track and riding style along with conditions do change as does a rider's confidence and cornering speed. **FZ**

*Dave Moss started riding in 1974. He currently works with Bay Area Yamaha (formerly Redwood City Yamaha) helping new bike owners set up their bikes as well as providing chassis geometry/suspension classes for customers at the dealership and at track day events with local groups.*

## San Francisco County

- Bikers for Christ San Francisco Chapter:** Vince—415.584.3103. 6/04
- Club Desmo San Francisco Chapter:** 1st Tuesday—7PM, Connecticut Yankee, 100 Connecticut St., 415.552.4440. 6/04
- Concours Owners Group:** olsoncm@worldnet.att.net. 6/04
- Montgomery Street Motorcycle Club:** 2nd Thursday—lunch @ SF Brewing Co., 155 Columbus Avenue, San Francisco or dinner in the Bay area. Get details at [www.montgomerybikers.com](http://www.montgomerybikers.com), 415.269.9414. 2/05
- San Francisco Motorcycle Club:** Thursdays, 650.588.0280. 6/04
- San Francisco Northstars:** Last Wednesday, San Francisco Brewing Co., 155 Columbus Ave., San Francisco, [sfnorthstars.tripod.com/ns.html](http://sfnorthstars.tripod.com/ns.html), all motorcyclists welcome. 6/04
- Virago Owners Club NORCAL Cruisers:** 831.758.9632, [dwise@gwdi.com](mailto:dwise@gwdi.com). 6/04

## San Luis Obispo County

- Airhead Beemer Club:** 3rd Sunday—10AM, Bridge State Park, Grand Ave., Arroyo Grande, Barry—805.489.1028. 6/04
- Airhead Beemer Club:** Every Wednesday, Gus' Grocery, San Luis Obispo, Paul—805.489.0845. 6/04
- Coast Riders:** Last Wednesday—6:30PM, San Luis Motor Sports, 6 Higuera Street, San Luis Obispo, [www.coast-riders.org](http://www.coast-riders.org). 6/04
- Gold Wing Road Riders Association CA11:** 4th Sunday—8:00AM, Corcoran's Restaurant, 611 E. Grand Avenue, Arroyo Grande, Bob—805.462.1140. 4/05
- Gold Wing Touring Association SLO Wings:** 3rd Saturday—8:30AM, Jo's Round-up Cafe, 2460 El Camino Real, Santa Margarita, Dale or Jenell—850.461.9279. 4/05
- Honda Sport Touring Association:** Clarke—805.544.3503, [stanley5@charter.net](mailto:stanley5@charter.net). 9/04
- Soldiers of the Cross MM:** Last Monday—6:30PM, Carrows Restaurant, 7300 El Camino Real, Atascadero, John—805.239.2689. 6/04
- Women In The Wind Lady Hawks:** Karen, [kbrooks@slonet.org](mailto:kbrooks@slonet.org). 9/04

## San Mateo County

- IronHorsemen Motorcycle Club:** 1st Wednesday—7PM, Redwood City, [www.ironhorsemen.org](http://www.ironhorsemen.org). 9/04
- Modified Motorcycle Association:** 1st Thursday—8PM, Rainbow Pizzeria, 112 Crystal Springs Village, San Mateo, Clint—650.678.8114, [clintmima@aol.com](mailto:clintmima@aol.com). 7/04
- No. California Norton Owners Club:** 2nd Thursday, Alan—650.591.5444, [norton2@earthlink.net](mailto:norton2@earthlink.net). 7/04
- No. California Voyagers Club:** [www.norcalvoyagers.org](http://www.norcalvoyagers.org). 9/04
- Pathfinders MC:** 1st Sunday—12PM, Sunnyvale Alano Club, [www.geocities.com/pathfinders\\_mc](http://www.geocities.com/pathfinders_mc), No booze, no drugs. 9/04
- Star Touring & Riding Association Chapter #167:** Steve—650.359.7694. 9/04

## Santa Barbara County

- Gold Wing Road Riders Association CA1-Y:** 1st Sunday—8:30AM, Elks Lodge, 905 E. Ocean Ave., Lompoc, Mike—805.773.1141. 7/04
- Military Veterans MC:** P.O. Box 60831, Santa Barbara, 93160; [www.valleytraffic.com/MVMC-CA-NOMADS](http://www.valleytraffic.com/MVMC-CA-NOMADS). 7/04
- Santa Barbara BMW Riders:** 3rd Monday—6PM, Sizzler, 555 Hollister Ave., Goleta, Douglas—805.687.8997. 7/04
- Santa Barbara Ducati Riders Club:** [www.sbdrc.com](http://www.sbdrc.com). 7/04
- Santa Barbara Motorcycle Club:** 1st Wednesday—6PM, Elephant Bar, 521 Firestone Road, Goleta, All motorcyclists welcome. John—805.588.1845. 7/04

## Santa Clara County

- Cali Cruisers:** A safety-minded club open to all riders of all abilities. Ride every other weekend. [www.calicruisers.com](http://www.calicruisers.com). 9/04
- Christian Sportbike Association Nor-Cal Chapter:** 2nd Saturday—8:00AM breakfast meeting and ride in San Jose. Paul—408.578.3720, [sbikeguy@juno.com](mailto:sbikeguy@juno.com). 2/05
- Classic Japanese Motorcycle Club:** San Jose, 408.294.3944, [CJMCNews@aol.com](mailto:CJMCNews@aol.com), [www.CJMC.org](http://www.CJMC.org). 9/04
- Club Desmo Los Gatos Chapter:** 1st Wednesday—7PM, Baker's Square, 165 Los Gatos Saratoga Rd. 408.354.4733. 7/04
- Flaming Knights:** 1st Saturday—6PM, The Patio, 948 E. El Camino Real, Sunnyvale, 408.245.1250, [svfkmchypermart.net](mailto:svfkmchypermart.net). 7/04
- Gold Wing Road Riders Association CA2S:** 2nd Saturday—9AM, Carrow's Restaurant, 3180 El Camino Real, Santa Clara, Jim—408.923.0740. 4/05
- Honda Riders Club of America Peninsula Red Riders:** 3rd Saturday—9AM, Honda Peninsula, 1289 W. El Camino Real, Sunnyvale, Jeff—408.871.2582. 7/04
- Motorcycle Amateur Radio Club:** Roger—408.448.4346, [www.bo-marc.org](http://www.bo-marc.org). 9/04
- Norton Owner's Club:** Monthly meetings, great rides, fun people, tech info, Alan—650.591.5444. 7/04
- San Jose Dons:** 1st & 3rd Wednesday—7:30PM, 408.294.5434, AMA chartered club, all bikes welcome. 7/04
- San Jose Harley Owners Group:** 3rd Wednesday—7:30PM (doors open at 7PM) at Santa Teresa Golf Course Banquet Facility, 260 Bernal Road, San Jose. 408.795.3220. 3/05

## Star Touring & Riding Association Chapter #209:

- Rudy—408.846.6378. 9/04
- Vmoto:** Period-correct vintage racing to at California's major tracks. 408.867.0756, [vintagemoto.com](http://vintagemoto.com). 7/04
- Vintage Triumph Riders Group:** A Yahoo group open to owners of pre-1989 Triumphs that share info and have monthly rides, [vintagetriumphridersgroup](http://vintagetriumphridersgroup). 7/04
- Women In The Wind Faultline Riders:** San Jose, 408.483.2669, [lvschaps@aol.com](mailto:lvschaps@aol.com). 9/04
- Women on Wheels Wind Dancers:** San Jose, [www.geocities.com/cawinddancers](http://www.geocities.com/cawinddancers). 7/04

## Shasta County

- Christian Motorcyclists Association Freedom Riders:** 3rd Saturday—8AM, Marie Calenders, Hilltop Drive, Redding, Luke, 530.865.8553. 9/04
- Motor Maids:** 1st Sunday—11AM, 2300 Athens Ave., 530.243.0878. 7/04

## Sierra Nevada County

- Bikers for Christ Lone Chapter:** Dino—P.O. Box 43, Lone, CA 95640. 7/04

## Solano County

- Bikers for Christ Vallejo Chapter:** 2nd Wednesday—7PM, The Dream Center, 420 Virginia St., 707.648.3256. 7/04
- Breakfast Riders:** All brands and makes of bikes welcome. All genders, all ages, and all levels of rider welcome. Les, 707.207.0844, [www.breakfastriders.com](http://www.breakfastriders.com). 2/05
- Christian Motorcyclists Association Lord's Knights:** 3rd Saturday—8AM, Country Waffles, 2390 N. Texas Street, Fairfield, 707.693.8648. 9/04
- Christian Motorcyclists Association Lord's Knights:** 3rd Saturday—8AM, Country Waffles, 2390 N. Texas Street, Fairfield, 707.693.8648. 9/04
- Freedom Cruisers, Chapter 22 (Vacaville/Dixon):** [www.freedomcruisers22.com](http://www.freedomcruisers22.com), Zero—707.689.7419, [zerocruiser@sbcglobal.net](mailto:zerocruiser@sbcglobal.net). 7/04
- Gold Wing Road Riders Assoc. CA2K:** 4th Sunday—9AM, Country Waffles, 2390 N. Texas Street, Fairfield, Bill—707.429.2920. 10/04
- Harley Owners Group:** 2nd Tuesday, Vallejo, Jeffrey—707.265.0362, [www.vallejohog.com](http://www.vallejohog.com). 12/04
- Rattler's Rock Racing:** Suisun City, [www.rattlersrock.com](http://www.rattlersrock.com), [dseyi@rattlersrock.com](mailto:dseyi@rattlersrock.com). 2/05
- Star Touring & Riding Assoc. Chapter 315:** Last Friday—7PM, Country Waffles, 2390 N. Texas Street, Fairfield, Len—707.631.8252, [vaccastar315@yahoo.com](mailto:vaccastar315@yahoo.com). 2/05

## Sonoma County

- Christian Motorcyclists Association Cross Country Riders:** 2nd Saturday—9AM, Sam's For Play Cafe, 2630 Cleveland Ave., Santa Rosa, Tim—707.577.8307. 1/05
- Old Coats on Scoots:** Santa Rosa Chapter, 707.584.8857, [OldCoatsMC@aol.com](mailto:OldCoatsMC@aol.com). 7/04
- Redwood Riders Motorcycle Club:** 1st and 3rd Sundays, Starbucks, 2200 Santa Rosa Ave., Santa Rosa, 707.568.7745, [www.redwoodriders.tripod.com](http://www.redwoodriders.tripod.com), open to all brands of motorcycles. 8/04

## Ventura County

- ABATE Local #13:** Last Thursday—7:30PM, VFW Post #1679, 3801 Market St., Ventura, Scott—805.653.6084. 8/04
- Bikers for Christ:** Kevin—805.526.2859. 8/04
- Cal Coast Riders:** 2nd Sunday ride, Ventura area. Roy—805.646.2905, [CalCoastRiders.com](http://CalCoastRiders.com). 2/05
- Gold Wing Road Riders Association CA1S:** 3rd Saturday—8:30AM, Mike's Fiesta Restaurant, 2350 S. Victoria, Ventura, David—805.985.8810. 10/04
- Gold Wing Touring Association Channel Islands Wings:** 3rd Sunday—8AM, IHOP, 1051 East Channel Islands Blvd, Oxnard, Chuck—805.647.7382. 8/04
- Harley Owners Group:** 2nd Thursday, Ventura, Rick—805.985.9594. 8/04
- Live Riders:** Saturday—7PM, 2513 Tapo St., Unit 6, Simi Valley, 805.306.0042, [www.liveride.org](http://www.liveride.org). 9/04
- Thousand Oaks Riders Club:** 1st Thursday—7PM, T.O. Honda, 2594 E. Thousand Oaks Blvd, Thousand Oaks, 805.371.3000, [www.torc.org](http://www.torc.org). 8/04
- Star Touring & Riding Chapter 258:** 2nd Saturday, Don—805.388.7074. 2/05
- Ventura County Motorcycle Club:** 2nd Wednesday—7:30PM, Round Table Pizzeria, 880 Arneil Rd., Camarillo, Mel—805.379.3779, [Mel@mtmlabs.com](mailto:Mel@mtmlabs.com). 8/04
- Virago Star Cruisers Motorcycle Club:** Joe—805.526.3995, [www.loop.com/~ridevirago](http://www.loop.com/~ridevirago). 8/04

## Yolo County

- MMMA:** 1st Friday—7:00PM, VFW Hall, 345 West Kentucky Avenue, Woodland, Steve—530.666.0679. 10/04

## Yuba County

- Bikers for Christ Marysville Chapter:** Wayne—530.692.2515. 8/04
- Brothers of the Third Wheel:** Marysville, Peggy—530.743.8725, [teggry@hotmail.com](mailto:teggry@hotmail.com). 8/04

## Gold Wing Road Riders Association CA2G:

- 4th Saturday—9AM, Ruthy's Restaurant, 229 Clark Avenue, Yuba City, Larry—530.671.7400. 10/04
- Sisters of Scota WMC:** 3rd Sunday meeting plus a ride every week-end. Open to experienced female riders of 750cc or more. 916.725.9467, [soswmc@hotmail.com](mailto:soswmc@hotmail.com). 8/04

## Nevada State

- Bikers for Christ Carson City Chapter:** Don—775.265.7131. 8/04
- Bikers for Christ Las Vegas Chapter:** Kim—702.437.5174, email [kmbfc@earthlink.net](mailto:kmbfc@earthlink.net). 8/04
- Blue Knights Nevada II:** Reno, Jim, 775.851.3572. 2/05
- Gold Wing Road Riders Association NV-A:** 2nd Sunday and 4th Saturday—8AM, The Omelet House, 2160 W. Charleston, Las Vegas, Steve—702.368.7662, [www.vegas-wings.com](http://www.vegas-wings.com). 2/05
- Gold Wing Road Riders Association NV-E:** 2nd Saturday breakfast/ride—8:30AM, Denny's, 205 E. Nugget Avenue, Sparks. Chris—775.626.3532. 11/04FZ

## Keep Our MotoClub Listings Accurate!

Please update your club's listing by the date shown at the end of the listing. If we don't hear from you by that date, the listing will be removed.

Even if the listing is accurate, you must confirm it by the due date or the listing will be cancelled. You can submit updates and new listings at any time.

All listings will be maintained for one year from the date the listing (or update to the listing) is received.

Email changes to  
[events@friction-zone.com](mailto:events@friction-zone.com)  
or mail to  
P.O. Box 368  
Idyllwild, CA 92549

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## Race Relations

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both crashing heavily in qualifying—Corser finished 13th and 5th, and Walker finished 10th and 8th.

### Phillip Island Race 1 Top Ten Final Results

- |                         |                            |
|-------------------------|----------------------------|
| 1 Regis Laconi (Duc)    | 6 Mauro Sanchini (Kaw)     |
| 2 Chris Vermuelen (Hon) | 7 Marco Borciani (Duc)     |
| 3 James Toseland (Duc)  | 8 Noriyuki Haga (Duc)      |
| 4 Steve Martin (Duc)    | 9 Frankie Chili (Duc)      |
| 5 Garry McCoy (Duc)     | 10 Chris Walker (Petronas) |

### Phillip Island Race 2 Top Ten Final Results

- |                          |                           |
|--------------------------|---------------------------|
| 1 Garry McCoy (Duc)      | 6 Noriyuki Haga (Duc)     |
| 2 Chris Vermuelen (Hon)  | 7 Mauro Sanchini (Kaw)    |
| 3 Frankie Chili (Duc)    | 8 Chris Walker (Petronas) |
| 4 Marco Borciani (Duc)   | 9 Ivan Clementi (Kaw)     |
| 5 Troy Corser (Petronas) | 10 Leon Haslam (Duc)      |

### World Superbike Top Ten Current Standings

- |                         |        |                           |        |
|-------------------------|--------|---------------------------|--------|
| 1 James Toseland (Duc)  | 61 pts | 6 Marco Borciani (Duc)    | 43 pts |
| 2 Frankie Chili (Duc)   | 56 pts | 7 Chris Walker (Petronas) | 39 pts |
| 3 Gary McCoy (Duc)      | 55 pts | 8 Steve Martin (Duc)      | 29 pts |
| 4 Chris Vermuelen (Hon) | 55 pts | 9 Mauro Sanchini (Kaw)    | 27 pts |
| 5 Noriyuki Haga (Duc)   | 43 pts | 10 Regis Laconi (Duc)     | 25 pts |
- (Next Rounds: Misano, Italy—April 18; Monza, Italy—May 16; Oschersleben, Germany—May 30.) **FZ**