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PRO RACER SHOCK SET-UP AND ADJUSTMENTS

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NOTE: Before making any damping adjustments to the shock, measure the ride height and adjust the pre-load if necessary. Always set the ride height before doing any damping adjustments. The amount of pre-load on the springs will have a direct effect on the damping adjustments.

Thank you for choosing Works Performance shock absorbers. These helpful installation tips will enable you to enjoy maximum performance for years to come.

RIDE HEIGHT MEASUREMENT

Correct ride height is important. If the ride height is too high, the vehicle will "top out" too easily and fail to allow enough travel for appropriate rebound from bumps. If the ride height is too low, the shock can bottom too easily, resulting in a harsh ride. The spring rates are set up for the full amount of travel. If there is not enough pre-load, the total spring rate would not be enough to resist bottoming.

Generally speaking, the vehicle should settle 1/3 of its wheel travel with the rider on board for motocross, desert, trail and enduro use, and 1/4 to 1/3 for road racing, flat track and street use.

The proper way to measure the ride height:

1. Support the vehicle on a frame stand or on its center stand with the rear wheel clear of the ground. If it only has a side stand, pull the bike over far enough to "top-out" the suspension.

2. Have an assistant measure and record the vertical distance between the rear axle and a point directly above it. This could be the seat, fender, frame, body panels, muffler, etc. On shaft drive models, measure from the center of the gear case up to the upper point.

3. Take the motorcycle off the stand and sit on it in a normal riding posture, with one foot on the peg and the motorcycle balanced so as to have minimal weight on your other foot.

4. Have the assistant carefully measure from the same two points. Subtract the second measurement from the first. The difference is the amount of settling or "sag," in the suspension.



Fig. 1: Pro Racer rebound and compression damping adjustable shock also features threaded spring pre-load and-- in some applications-- ride height adjustment with adjustable length eye (shown).

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PRE-LOAD ADJUSTMENT

CAUTION: Before attempting any pre-load changes, make sure that the area around the pre-load nut and the threaded portion of the shock body are clean, free from grit and road grime, and lightly lubricated with a spray lubricant.

Once you have determined the amount of change required at the wheel you will want to adjust the pre-load accordingly. Keep in mind that the change at the shock is much less, and varies from vehicle to vehicle based on the frame geometry, spring rates, etc. On Works shocks, two (2) full turns will change the pre-load by 10 percent of the spring rate. So adjust it a turn and then check the measurements again.

IF THE RIDE HEIGHT IS TOO LOW.....

To raise the vehicle and reduce the amount of ride sag, screw the adjuster nut towards the spring to increase the pre-load. This makes the installed length of the spring shorter. If this is for competition, record this installed length so that you can set the bike up the same after having the shock disassembled for service.

IF THE RIDE HEIGHT IS TOO HIGH.....

To lower the vehicle and increase the amount of ride sag, screw the adjuster nut away from the spring to decrease the pre-load. This makes the installed length of the spring longer. For a competition vehicle, record this installed length.

DAMPING ADJUSTMENTS

The damping adjustments on the Works Performance Products' Pro Racer shocks are located on the reservoir (See figure 3). Both compression and rebound damping can be changed with this adjuster assembly. Compression adjustments are made with the large, fluted, aluminum knob. The slotted screw in the center of the compression knob controls the rebound.

COMPRESSION

Compression damping is the action of the shock as it compresses or closes when the wheel moves up from hitting a bump or coming off of a jump (off-road). Increasing, or stiffening, the compression slows the shock's movement and makes the suspension less compliant. Decreasing, or softening, the compression allows the shock to compress more easily and allows the wheel to move further (than a stiffer setting at the same spring pre-load and bump configuration).

COMPRESSION ADJUSTMENTS

The compression adjuster knob has a practical range of two revolutions. This practical range is measured from the furthest counter-clockwise position (lightest damping). The starting point for adjustments is from this full "OUT" position. Initial settings for Pro Racers on twin-shock motorcycles is fully OUT--full soft. Initial settings for Pro Racer single shocks is from 3/4 to one full turn IN. These compression adjustments affect the stroke of the shock on the bump, or compressing stroke of the shock movement.

REBOUND

Rebound is the damping of the shock as it recovers, or extends from a bump. Increasing, or stiffening, the rebound damping makes the shock recover slower. Decreasing, or softening, the rebound damping allows the

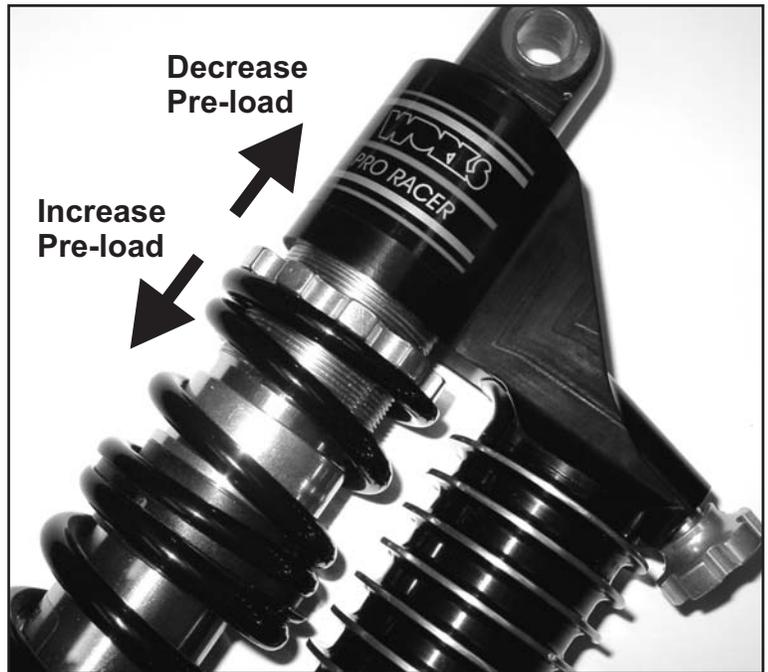


Fig. 2: Adjustments for ride height are made at the pre-load adjuster nut. Turning the nut towards the springs increases the spring pre-load and raises the ride height. Turning the nut away from the spring decreases the spring pre-load and lowers the ride height.

shock to recover faster.

REBOUND EFFECTS

If a shock exhibits too much rebound damping, it will have a tendency to “pack.” This is seen over multiple bumps, such as stutter bumps, pavement seams, or off-road whoop-de-dos. The suspension will react well over the first bump, but seems to get stiffer on each successive bump. On pavement, this can deliver a jolt, or harsh whack on the riders seat. On off-road situations, the back end of the vehicle will want to pass you either to the left, or to the right, or over your head (endo)! In off-road this is often described by the rider as “swapping” or “kicking up.” The fix for this condition is to decrease (soften) the rebound. Turn the screw counter-clockwise to make the rebound faster.

When a shock exhibits too little rebound damping, the suspension may feel too mushy, or “pogo.” On pavement, this is seen most in fast sweepers. The bike will alternately set, then unload; set, unload. This translates into “sawing” at the handlebars, which is caused by the changes in trail at the front suspension. On dirt, the action is similar, but in many cases not as noticeable. As a general rule, having too little rebound at the rear of a dirt machine is much better than having too much (see “swapping”, “kicking up”, and “endo”, above.) On the pavement, too little rebound can be much more unsettling than the loss of comfort from too much rebound. To slow the rebound, turn the screw in (clockwise).

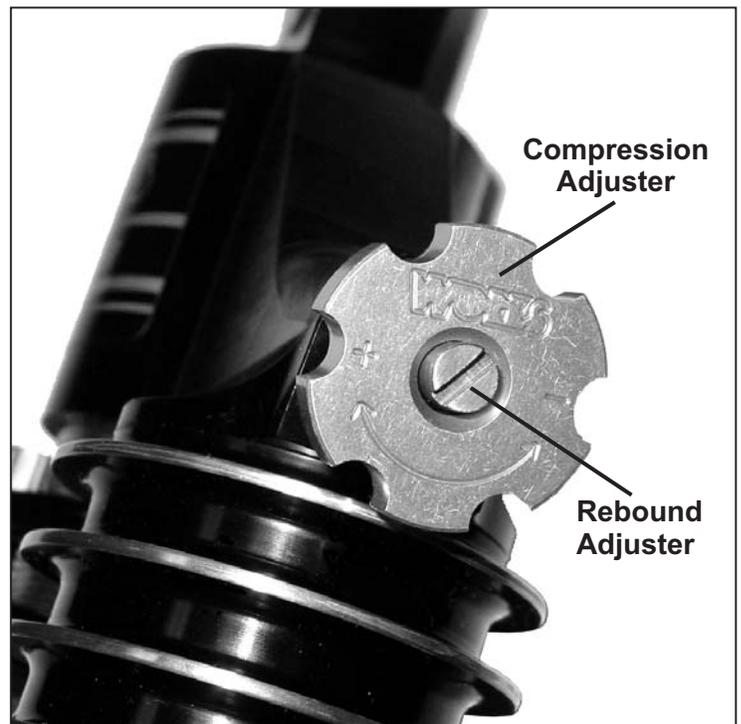


Fig. 3: Adjuster location on the reservoir. Adjustment is clockwise for stiffer, and counter-clockwise for softer. The fluted knob is for compression and the slotted adjuster is for rebound.

.CAUTION: The rebound adjuster mechanism includes a tapered valve and seat. Do not over-tighten the adjuster screw. The valve or seat can be damaged and can result in poor performance. Use a light touch on the screwdriver.

REBOUND ADJUSTMENTS

The Rebound damping screw has a practical range of one revolution measured from the fully clockwise position (maximum damping). The starting point for adjustments are made from this fully “IN” setting. Initial settings for twin shock motorcycle are 3/4 turn OUT. Settings for single shock Pro Racers are one-half (1/2) turn OUT from fully IN. Rebound adjustments control the opening-- or recovery stroke--of the shock movement.

NOTE: When making the rebound adjustments, you must hold the compression knob in place while turning the rebound screw with a coin or screwdriver. However do not hold the screw when making compression adjustments with the knob.

ADJUSTING PROCEDURES

The rebound adjustment controls all of the rebound functions--low, medium and high speed-- in a proportional manner. Therefore, the adjustment is very sensitive. Make small changes, maybe one-eighth (1/8) turn at a time or less. There are no detents so that you can set the damping as precisely as you like it. Set left and right shocks the same.

NOTE: The screw slots may not necessarily line up from shock to shock, so the rebound screw position should be relative to the fully IN position. The compression knob, however, has a small Works logo that is set at the 12

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o'clock position with the adjuster at the fully out position. Use this logo position as a guide to matching compression damping settings from left side to right side shocks.

COMPRESSION AND REBOUND INTERACTION

Compression adjustments are often “tied” to the rebound adjustments and visa-versa. For instance, if you have increased the compression damping to slow the shock thereby using less of the wheel travel (for a given bump), you may end up slowing the rebound to compensate for the shorter recovery distance. Conversely, if you lighten the compression, you will probably end up reducing the rebound damping to enable the wheel to recover faster.

NITROGEN PRESSURES

RESERVOIR SHOCKS

On the shocks equipped with reservoirs, the permissible range of pressure is 150 to 300 p.s.i. of dry nitrogen. The pressure setting is not intended as an adjustment, but will affect the compression damping to some small degree. Works has determined that 250 p.s.i. is most suitable for 99 percent of the applications. Please note that in order to check the pressure, some of the gas must escape and fill the gauge assembly. The volume of the bladder is about the size of your thumb, so a very small volume change results in a large pressure drop. Because the gauges' volumes vary, it is not possible to deduce the actual pressure in the shock prior to attaching the gauge. Therefore it is imperative that any attempt to check pressure be accompanied by the capability of refilling the reservoir. In other words: If you don't have a nitrogen source handy, don't check the pressure!

The best gauges for this purpose screw on to the valve and incorporate a T-handled core depressor to isolate the shock from the gauge. This allows a leak-free separation once the desired pressure is reached. For simplified operation, an extra valve is provided for the filling apparatus, allowing pressure adjustment with the gauge in place. Works offers a suitable gauge for filling the shocks. Most motorcycle shops that sell and service dirt bikes can pressurize the shock.