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#TRX450 - 5/28/99

HONDA 450E/S MOUNTING & ARS ADJUSTMENT INSTRUCTIONS

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

CAUTION: These shocks are pressurized to 250 psi nitrogen. This pressure is not an adjustable feature of the shock. Unless there is a leak, the shock should not normally lose pressure. If the shock damping becomes soft or mushy (after an extended period of time or number of miles) the shock may need to be serviced, which includes shock oil and a nitrogen charge. In this situation, re-pressurizing the shock alone may not improve the action of the shock. The shock should be returned to Works Performance Products, Inc., or to a qualified shop that has the appropriate tools, training and nitrogen handling equipment.

MOUNTING

Works shocks will bolt right on without requiring any modifications. However, the mounting orientation differs from the front shocks to the rear shocks. Normally, Works shocks are designed to be mounted with the body of the shock at the top and the shaft coming out toward the bottom. This is how the front shocks are mounted. On the rear, to make clearance for and easy access to the ARS system, the shock is designed to be run with the shaft pointing up, body down. Note the following illustrations for shock mounting.

NOTE: The shock bushings are designed to have a certain side-to-side "float" to keep them from binding. As a result, do not grind or file the inner or outer edges of the bushings to make them narrower. The amount of "float" in the bushing set is necessary to ensure smooth operation of the damper assembly. The lower eyes on the rear shocks do not have a steel sleeve inside the urethane bushing. The urethane bushing is designed to fit directly to the stud on the gear case and on the swingarm.



Fig. 1. Front shock installation. Note that the shock body is at the top with the shaft pointing down. ARS shown is in the unloaded position.

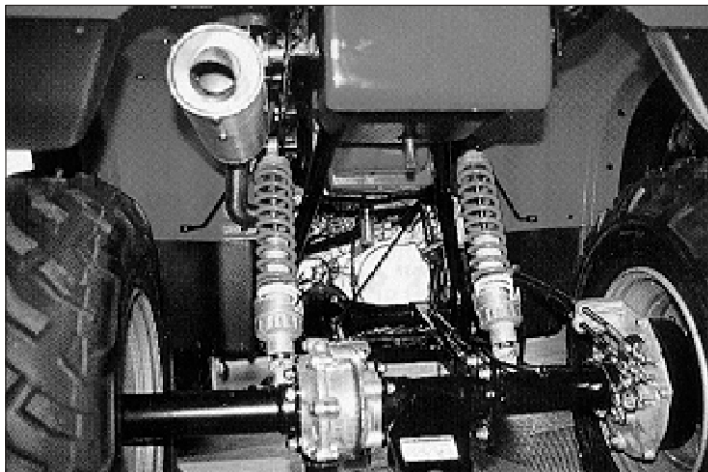


Fig. 2. Rear shock mounting with ARS. Position the lever so that it will not come in contact with any vehicle parts around it. The cup can be rotated to reposition the lever if necessary.

MULTI-RATE SPRINGS AND THE ARS SYSTEM

Depending on the application dual-rate springs are fitted on the shocks. Dual-rate springs are just that-- a spring set with two separate rates. This is done with a short spring stacked on a longer spring. As both springs collapse they produce a soft, or initial, rate. The spring set will maintain this initial rate until the short spring stops compressing. At that point, the spring rate "crosses over" to the stiffer, or final, rate. This multi-rate system allows a soft initial rate for comfort on small bumps, but has the capability of soaking up the big pot-holes and other off road hazards.

ARS stands for Adjustable Rate Suspension. ARS is available on some dual-rate spring 4-wheel ATV shocks. ARS differs from spring preload. The ARS system allows the rider to increase or decrease the load-carrying capacity of the shocks by turning a lever. Depending on the application and spring set, the rider can increase the load capacity of the shocks up to 50 percent. The average preloader that makes a half-inch increase in preload will

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increase the capacity of the shocks to only about 5 to 10 percent. ARS allows the shocks to be correct for solo riding, but still handle the increased weight of an added load. ARS can also be employed to stiffen the rates for aggressive riding.

The ARS system consists of an indexing lever and a stepped cup that contains the short spring of the dual-rate. The position of the lever in relation to the steps in the cup determines how long the spring set remains on the soft, or initial, spring rate. On most ARS applications, four positions can be selected from full stiff to full soft. Indexing is done in a matter of seconds by rotating the lever or the cup by hand. Indexing the cup to the lever is usually preferable to avoid interference. Adjustment of the ARS system should only be made while the vehicle is unloaded to reduce the load on the springs.

NOTE: It is important to make sure that a step in the cup is positioned directly over the tang on the lever. This will prevent damage to the cup and/or lever that can be caused by making partial contact between the tang and a step. In addition, make sure that the lever will not contact any vehicle parts around it, as the suspension moves up.

TUNING TIPS—The “softest” setting on the ARS does not mean that the ride will be the most comfortable at that setting. It means that this is the softest spring setting which would be employed on smooth trails or without a load. Excessive suspension bottoming caused by rough conditions or by the addition of a large load will cause a harsh ride when the shock is adjusted to this setting. To eliminate this bottoming, adjust the ARS to the stiffer positions for a more comfortable ride. Hence, sometimes “stiffer is softer.”

NITROGEN PRESSURES IN EMULSION SHOCKS

CAUTION: The pressure in these shocks cannot successfully be checked. Concerns with the gauge volume and the gas volume in the shock body create a situation where you cannot accurately determine what pressure was in the shock. In addition when the pressure is lowered (i.e. checking the pressure) the gas and some of the shock oil escapes into the gauge. It is possible to lose a large percentage of the shock oil by depressing the core of a charged shock to the atmosphere.

Please note that in order to check the pressure, some of the gas must escape and fill the gauge assembly. The volume of the gas pocket is about half 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 shock. In other words: If you don't have a nitrogen source handy, don't check the pressure!

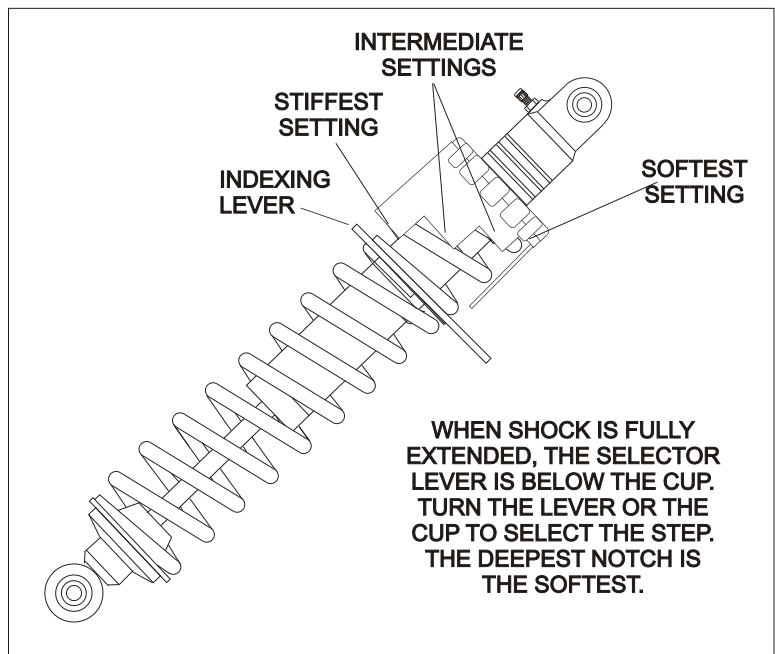


Fig. 3. Typical ARS assembly shown in the unloaded position. Make adjustments when the shock is fully extended so that the spring pressure on the lever is the least, and full access to the steps on the cup is available.

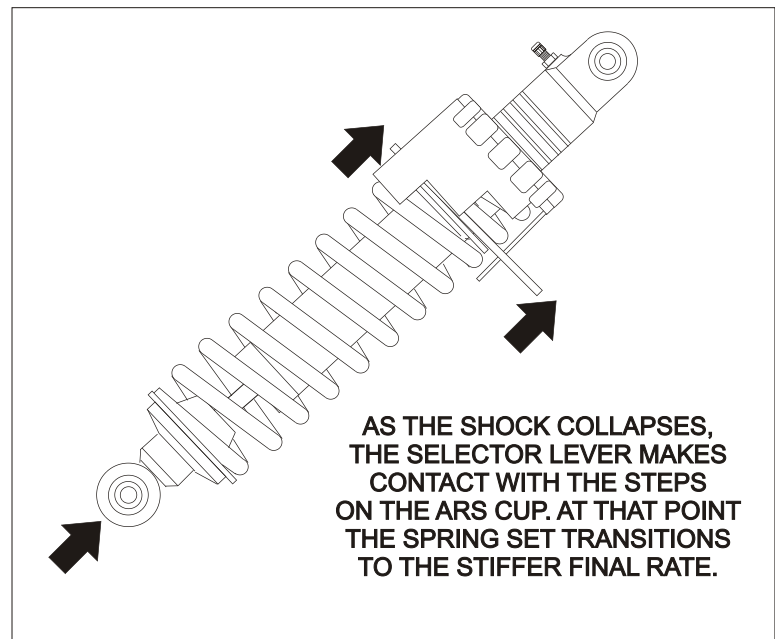


Fig. 4. ARS assembly shown in the loaded position. As the shock collapses, the selector lever moves towards the cup. The alignment of the lever and the cup determines the point at which the spring set goes from the soft initial rate to the stiffer final rate.

PRESSURIZING EMULSION SHOCKS

The pressure setting for Works gas shocks is 250 p.s.i. of dry nitrogen. To pressurize a shock with some residual pressure in it, bring the gauge manifold up to 250 p.s.i. and depress the core with the T-handle. This will either equalize the pressure or refill the shock without transferring oil from the shock into the gauge assembly.

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 \$89.00. Most motorcycle shops that deal with dirt bikes can pressurize the shock.