PROGRESSIVE suspension

Installation Instructions 422 Series shocks with RAP for 89-99 Harley Davidson Softails

ATTENTION

Statements in these instructions that are preceded by the following words are of special significance:

Warning

This means there is the possibility of injury to yourself or others.

Caution

This means there is the possibility of damage to the vehicle.

Note

Information of particular importance has been placed in italics.

Warranty

Progressive Suspension warrants to the original purchaser of this Part to be free of manufacturing defects in materials and workmanship with a one year limited warranty (lifetime limited warranty for the spring(s) only). In the event warranty service is required, you must call Progressive Suspension immediately with a description of the problem.

If it is deemed necessary for Progressive Suspension to make an evaluation to determine whether the part is defective, a return authorization number will be given by Progressive Suspension. The parts must be packaged properly so as to not cause further damage and returned prepaid to Progressive Suspension with a copy of the original invoice of purchase and a detailed letter outlining the nature of the problem. If after the evaluation by Progressive Suspension the part was found to be defective it will be repaired or replaced at no cost to you. If we replace it, we may replace it with a reconditioned one of the same design.

Progressive Suspension shall not be held liable for any consequential or incidental damages resulting from the failure of a Progressive Suspension part. Progressive Suspension shall have no obligation if a part becomes defective as a result of improper installation or abuse.

Warning

Changing the chassis and/or suspension on any vehicle will change the handling characteristics of that vehicle. Care should be taken when operating the vehicle with such modifications while getting accustomed to the new handling characteristics.

IMPORTANT NOTICE

Caution: Please read the following instructions completely before starting installation! Removing and reinstalling the shock absorbers must be performed by a qualified mechanic according to steps outlined in an authorized shop manual that relates to your particular make, model and year motorcycle. Process may require special tools, fixtures, and/or a press.

The vehicle must be securely blocked to prevent it from dropping or tipping when the shock absorbers are removed. Failure to do so can cause serious damage and/or injury!

Progressive Suspension Softail shocks are designed to work with the OEM (Original Equipment) chassis components. Use of this product on any chassis components other than OEM may produce an unsatisfactory ride and void the warranty.

Transmission bolts must be installed in the OEM position to insure proper clearances for the shocks. Consult your factory shop manual for proper installation.

Make sure that proper bushings/sleeves are installed in the shocks. Improper bushings/sleeves can cause unsatisfactory and/or unsafe operation.

Installation

Progressive Suspension shocks for your Softail are designed as a direct bolt on replacement for your stock shocks. Although they are very similar in appearance, they have vastly improved damping and spring rates.

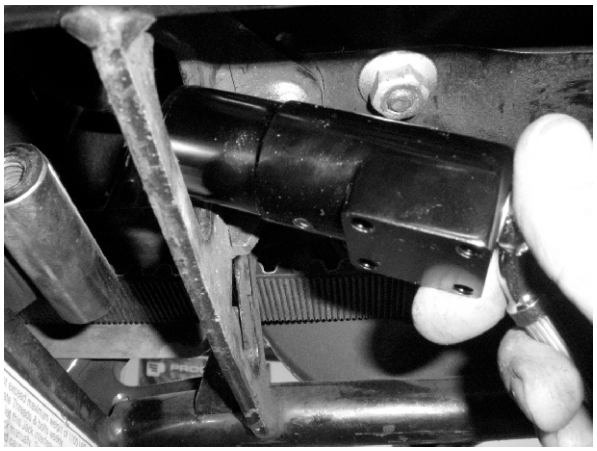
- Place motorcycle securely on stand or blocks so the rear wheel is slightly off the ground.
- Per instructions in a authorized shop manual, remove your old shocks. Note location of the mounting hardware.
- **While the shocks are off the bike either lower the bike or raise the rear wheel until the swingarm bottoms into the bumper on the frame. Take a measurement from the axle to a point on the fender or frame directly above it, and write that measurement here _____, as well as in the "Comp." (compressed) space on the "Rider Sag Worksheet" on page three. You will need this later to properly adjust your rider sag / preload.**
- Before installing your 422 RAP shocks, check the shock-eye length, this determines the mechanical ride height (see Ride Height Adjustment on page three)

- Install the Progressive Suspension 422 shock without the RAP on the left side using the stock mounting bolts and washers.

- Tighten all shock mounting bolts to the proper torque specifications (see shop manual for specs).

- Before mounting the 422 shock with RAP on the right hand side, remove the knob from the RAP adjuster to allow it to be routed through the frame and back to it's final mounting point. To do this simply remove the screw in the center of the knob and pull it straight off.

- As you mount the RAP equipped shock, feed the RAP adjuster through the shock-eye frame window then up and to the left side of the bike as shown.



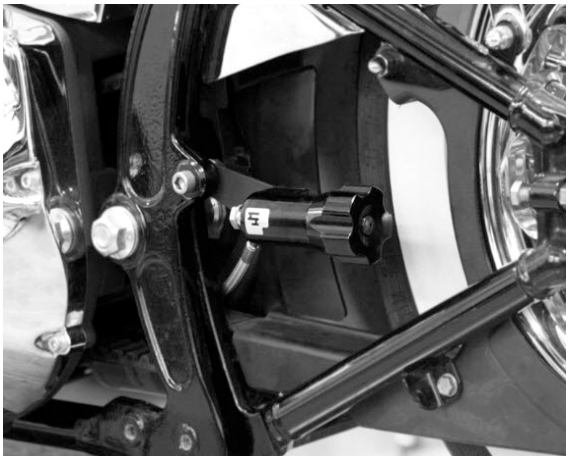
- When mounting the RAP shock make sure the adjuster line is lined up towards the center of the bike and slightly up so it has as much clearance as possible going through the aforementioned frame window. Then mount the shock using the stock mounting bolts and washers, and tighten all shock mounting bolts to the proper torque specifications (see shop manual for specs).

- Route the line up and then to the left side of the bike. As you do so, you should tie off the line to the swingarm pivot as illustrated.

- Route the line out the left side in front of the fender and above the lower belt-guard as illustrated.

- Mount the RAP adjuster to the bracket using the supplied M6-1.0X8mm SHCS fasteners and torque them to 80-90 in/lbs (9-10 N-m). Also reinstall the adjuster knob, apply a drop of thread-locking agent to the center screw, and torque it to 50 in/lbs (5.65 N-m).

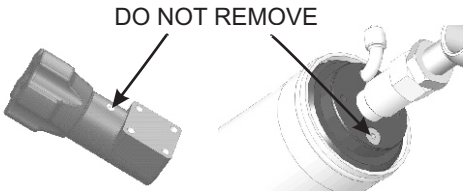
- The RAP adjuster bracket is designed to mount to the tab on the frame for the left passenger peg by sandwiching it between the bolt head and the inside of the frame.



- Proceed to Ride height and Preload adjustment.

Caution

NOTE: The internal fluid levels of your 422 with RAP shocks are set from the factory and NOT to be adjusted by the customer. Do NOT attempt to add/remove any fluid from any fill/bleed ports on the shocks (see below) as damage and/or injury will result and the warranty will be voided.



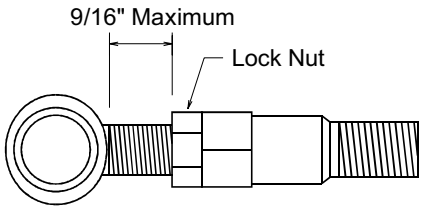
Ride Height Adjustment

Your new 422 Series shocks with RAP have adjustable ride height and are capable of Stock to 2" lower ride height. The shocks come pre-assembled set at approximately 1.0" lower than stock height. The shock with the hydraulic line cannot be rotated once installed, thus the ride height adjustment must be done with the shocks off the bike.

- To adjust the ride height simply loosen the lock nut on the eye, and holding the hex on the shaft rotate the eye to the desired height.
- Measuring from the locknut to the end of the threads on the eye (see below) the ratio of adjustment is about 3.5 to 1, the more threads that are exposed the lower the ride height – no threads showing is stock height and 9/16" of the threads showing is 2" inches lower which is the maximum lowered setting. Adjust both shocks to the same length.
- When you reach the desired height, tighten the locknut on the eye down securely (14ft/lb.) on both shocks.

Warning

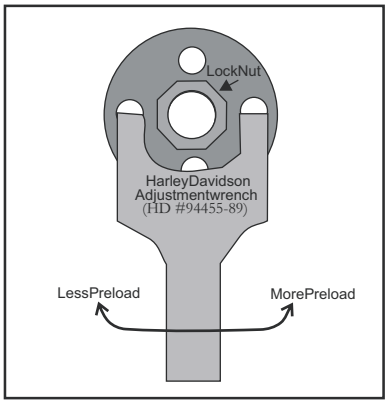
Do not go further than this - damage or injury may result.



Preload Adjustment

Preload adjustment greatly affects ride quality. When the preload is adjusted properly, the suspension should "sag" or compress about one third of the total available travel with rider(s) & gear on the bike ready to ride – this is referred to as "rider sag". To accurately know your total available wheel travel you'll need to extend the suspension until it's completely topped out then measure from the axle to a point on the chassis directly above it, the same two measuring points used in the third step on page one of this instruction - this is "Ext." (or extended) in rider sag worksheet. Subtract the compressed measurement you wrote down on the third step on page one from the extended measurement you just took, and that is your true wheel travel. Your target rider sag should be about one third of that measurement (see "Rider Sag Worksheet" at right).

- Your new 422 series with RAP Softail suspension system actually has two methods of adjusting your preload. The most convenient is by simply turning the RAP adjuster knob – clockwise to increase preload (reducing sag) and counterclockwise to reduce preload (increase sag).
- If you reach either end of the RAP hydraulic adjustment, then you can shift the "range" of adjustment by adjusting the preload on the shock that does not have the hydraulic adjuster. This is done by using the supplied SW-784 wrench to first loosen the lock nut and back it off a few turns, then flip the wrench over and rotate the round spring-plate either counterclockwise to increase preload or clockwise to reduce preload – it may seem backward but the less threads showing the higher the preload, and the more threads that are showing the lower the preload. Once you've set the preload range, retighten the locknut.



- Use your RAP hydraulic adjuster to fine tune your rider sag. Often a small adjustment can make a big difference in ride quality. If it feels a little too stiff, reduce the preload a bit – if it bottoms, increase it.
- Test ride the bike and make further adjustments if necessary. Note: Adjusting the preload does not change the shock length.
- For a balanced suspension, we highly recommend installing a pair of Progressive Suspension fork springs or Monotube Fork Kit.
- Ride and enjoy.

Rider Sag Worksheet

Ext. _____
Comp. - _____
Travel = _____ X.33 = **Target Sag** _____

Ext. _____
With Rider(s) & gear - _____
Actual Sag = _____

Adjust preload until **Actual Sag** matches **Target Sag**.