



INSTALLATION INSTRUCTIONS

422 SERIES SHOCK WITH RAP
2000-LATER* HARLEY-DAVIDSON™ SOFTAIL®

ATTENTION!

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



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



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

NOTE:

Information of particular importance has been placed in italics.

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 absorber, and the spring on said shock absorber, must be performed by a qualified mechanic or 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 absorber is removed. Failure to do so can cause serious damage and/or injury!

Progressive Suspension Softtail 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.

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.



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422 SERIES SHOCKS WITH RAP 2000-LATER* HARLEY-DAVIDSON™ SOFTAIL®



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.

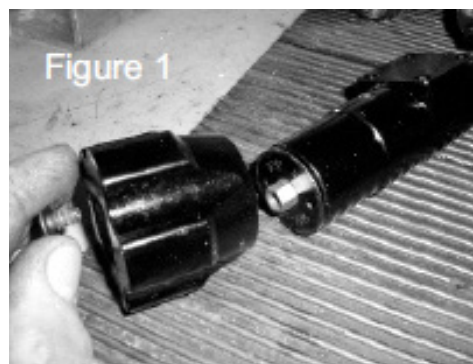
INSTALLATION

Read all the instructions carefully before installing this kit on your motorcycle. Use your factory authorized service manual as a reference while installing this kit. 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 the 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 six. You will need this later to properly adjust your rider sag / preload.

NOTE: Apply a small amount of anti-seize to the 12mm threaded portion of the mounting stud before installation

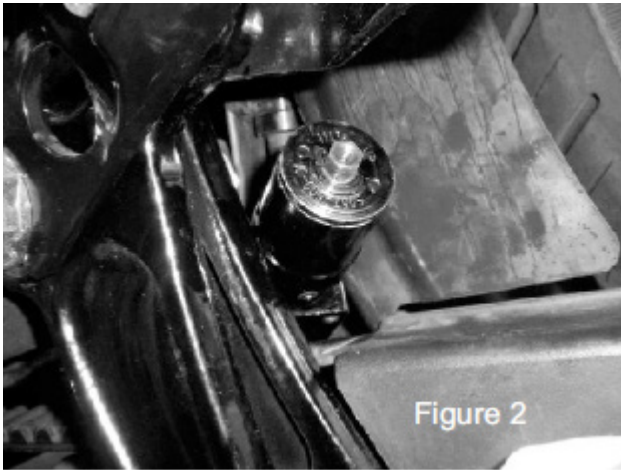
- Before mounting the 422 shock with RAP on the left hand side, remove the knob from the RAP adjuster to allow it to be routed through the frame and back to it's final mounting point. To do this simply remove the screw in the center of the knob and pull it straight off (fig 1).





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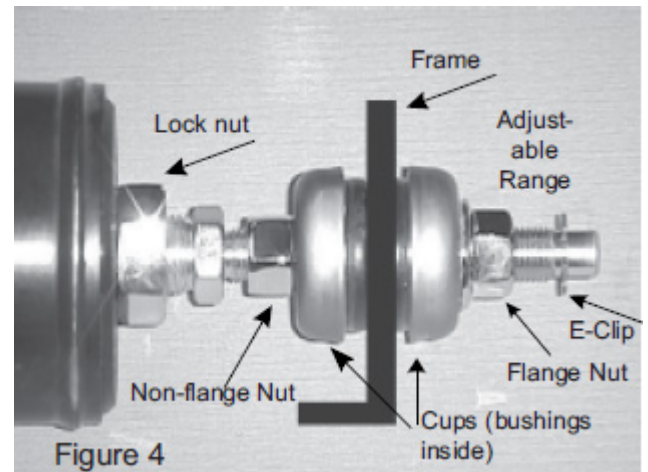
- Prepare both shocks for mounting by threading the supplied non-flanged nuts all the way onto the stud mounts, followed by a supplied bushing-cup, bushing, and sleeve (fig.4).
- As you mount the RAP equipped shock, feed the RAP adjuster up and out the left side of the bike through the space between the swing-arm and fender as shown (fig.2).



- When mounting the RAP shock make sure the adjuster line is pointing to the right and slightly up as illustrated (fig.3).



- Then install shocks as you would a stock unit, following an authorized shop manual - noting to route the adjuster line in a sweeping arc above the right non-RAP shock and towards the rear of the bike. With the non-flanged nut spun all the way onto the stud, the stock ride height is achieved (ride height adjustment will be addressed later).
- Once you have installed the other bushing, bushing-cup, and flanged nut you can now install the safety E-clip. This E-clip is snapped into the groove near the end of the stud mount where the threads stop. This is to serve as a reference point ONLY – when the flanged-nut reaches it you have lowered your ride height the maximum 2 inches. Do NOT torque the flange-nut against the E-clip (fig.4).





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- Mount the rear eyes of the shocks using the stock bolts and washers and tighten all shock mounting hardware to the proper torque specifications (see shop manual for specs). Route the adjuster line in a sweeping arc above the right shock and toward the rear (fig. 5).



Figure 5

- Route the line up and then to the left side of the bike. As you do so, make sure the line will not be pinched, kinked, or exposed to excessive heat and use the included zip-ties to secure it in place. Route the line out the left side of the bike in front of the fender and above the lower belt-guard.



Figure 6

- Mount the RAP adjuster to the bracket using the supplied M6-1.0 x 8mm 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 on the backside of the tab on the frame for the left passenger peg. This is done by sandwiching it between the frame and the supplied 3/8-16 nylock nut. To do this you'll first have to replace your stock left passenger peg bolt with one of the supplied 3/8-16 bolts that is approximately 1/2" longer than stock - so that it sticks out the back of the frame far enough to mount the bracket and fully engage the supplied nylock-nut.
- Rotate the adjuster bracket assembly down until the indexing tab engages the frame and torque the supplied 3/8-nylock-nut to 25 ft/lbs. When mounted, it should look as illustrated in figure 7 (note foot-peg assembly not shown for clarity).

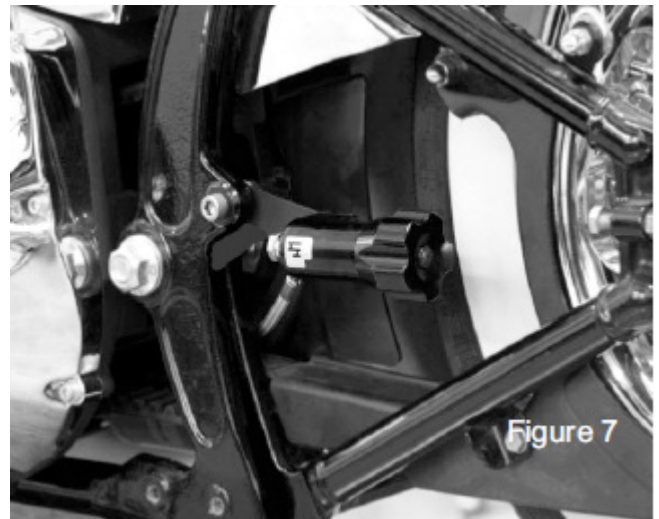


Figure 7

Proceed to Ride Height and Preload Adjustment.

TECHNICAL INFO

Our technical staff will assist you if you have any problems or questions. Call (714) 523-8700 from 8am to 4pm PST.

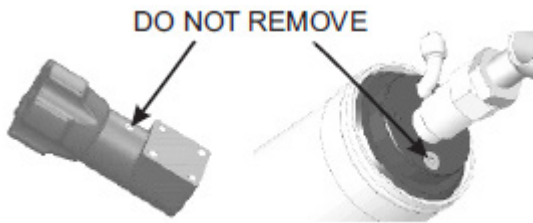




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Note: The internal fluid levels of your 422 with RAP shocks are set from the factory and NOT to be adjusted by the customer. Do NOT attempt to add/remove any fluid from any fill/bleed ports on the shocks (see below) as damage and/or injury will result and 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. Per the installation instructions, your shocks should be at stock ride height initially. The ride height adjustment can be done with the shocks on the bike, and removal is not necessary. It is important that the locknut on the preload adjusting plate is securely tightened (refer back to pg 3, fig.4).

- To lower your ride height, simply loosen the flange-nuts in equal amounts and when the desired height is reached tighten the non-flanged nuts back against the bushings (torque to factory-recommended specifications).



Do not tighten the flange nut against the E-Clip; it is for reference only

- To raise the ride height, reverse the process. Start by loosening the non-flanged nuts away from the bushings, then start tightening the flanged nuts against the bushings (towards the rear of the bike). When the desired ride height is achieved, make sure the non-flanged nuts are re-tightened against the bushings.
- It will help to hold the stud with a 3/4" wrench on the hex portion of the stud to prevent it from turning while adjusting.

Note: The amount the nuts move on the stud may not seem like much, but every 5/16" of an inch of adjustment equals approximately 1" of ride height.

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 two of this instruction - this is "Ext." (or extended) in the Rider Sag Worksheet (page 6). Subtract the compressed measurement you wrote down on the third step on page two 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" on the next page).





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Rider Sag Worksheet

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

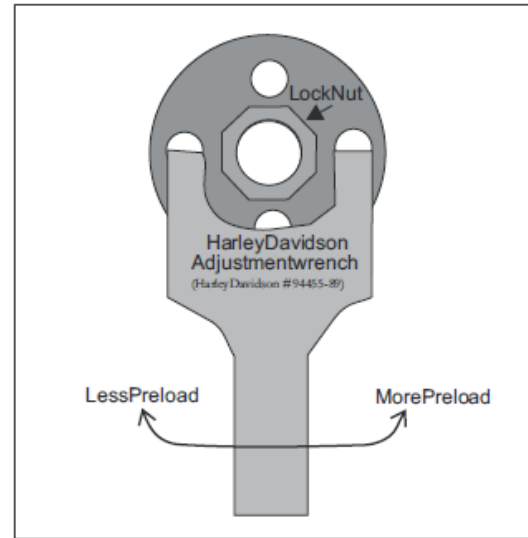
Ext. _____
 With Rider(s) & gear - _____
Actual Sag = _____

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

- Note that by adjusting your Ride Height as described in the previous section, Ride Height Adjustment, you change your "Ext" (extended) measurement on the Rider Sag Worksheet. Thus you must set your ride height first to accurately be able to calculate a target sag measurement.

Preload Adjustment (continued)

- 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 hydraulic 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 (on the right). 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, re-tighten 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.
- It's best to target having the RAP adjuster at or near the minimum preload setting for your lightest riding load - such as rider only with no baggage. That way as you add weight such as a passenger and/or baggage you'll have plenty of range to adjust for it using only the RAP adjuster.
- 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 set of Progressive Suspension fork springs or a Monotube Fork Kit.
- Ride and enjoy.

TECHNICAL INFO

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