



Shock manual & installation guide for:

**JRi Shocks Harley-Davidson 12" and 13"
Non-adjustable and single adjustable shocks**

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JRi Single Adjustable Shocks



JRi Non Adjustable shocks

Your Product:

Congratulations, you have purchased one of the best performing suspension components for your Harley-Davidson. JRi Shocks 12" and 13" model shocks will provide exceptional performance and compliance for your motorcycle. Your shocks include the following features and functionality:

- **Custom spring rates to match your weight and riding style** – All models
- **Adjustable spring preload for fine tuning** – All models
- **External damping adjustment** – Single adjustment model only

Non-Adjustable shocks (N/A): These shocks only have adjustment for preload. The preload adjuster can be moved by loosening the locking collar on the body and spin the preload collar clockwise to stiffen, or counter clockwise to soften the spring. The rates are soft enough that in most cases you can turn the preload adjuster with your hands.

Single Adjustable Shocks (S/A):

These shocks offer a sweep valve that dynamically adjusts the compression and rebound, and a preload adjuster. The adjuster should be at the bottom of the shock when mounted on the bike.

- The preload adjuster can be moved by loosening the set screw for the collar OR locking collar (on models previous to February 2014) on the body and spin the preload collar clockwise to stiffen, or counter clockwise to soften the spring. The rates are soft enough that in most cases you can turn the preload adjuster with your hands.

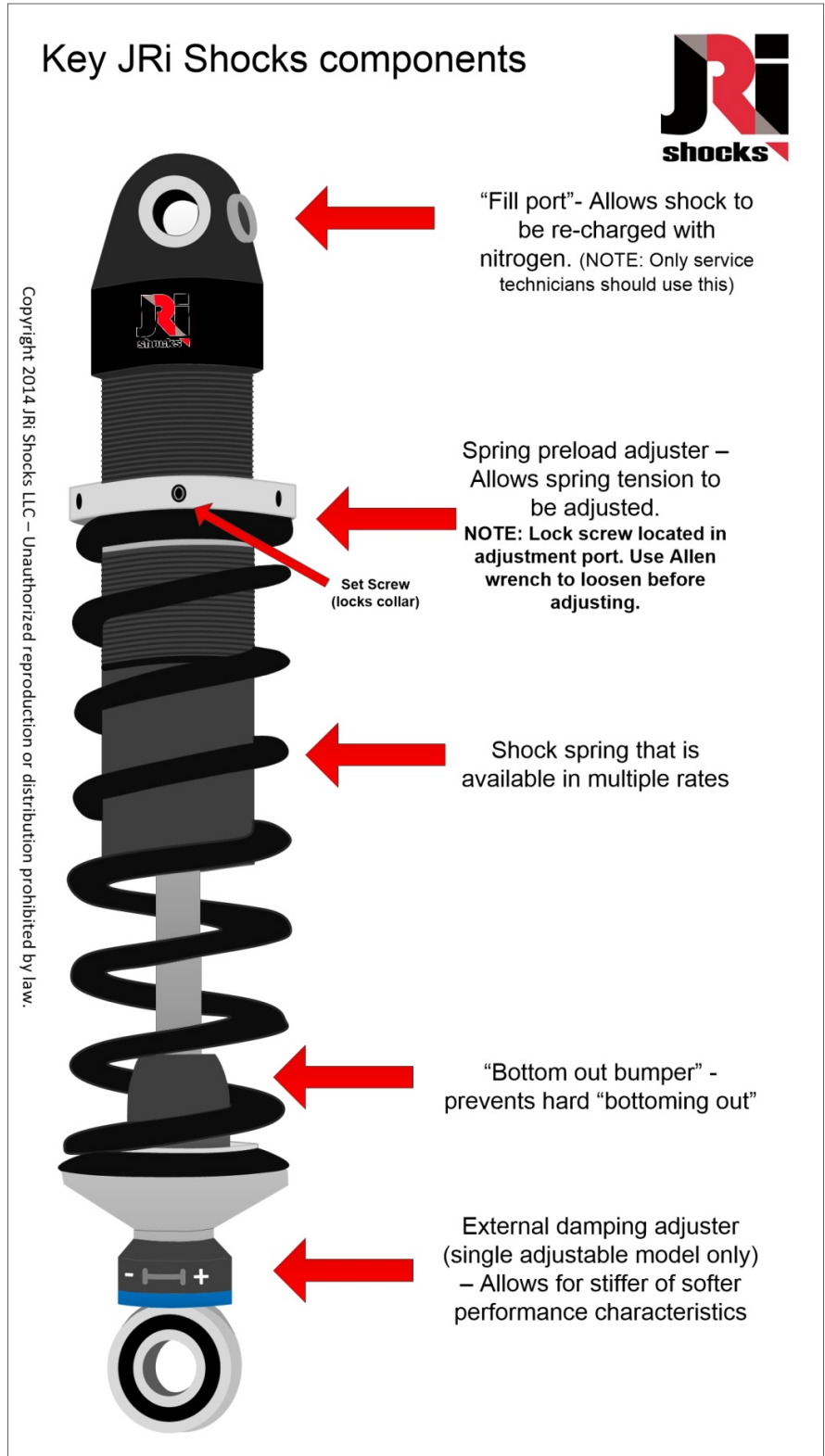


Figure 1 - Overview of shock components

- The sweep valve is located at the bottom of the shock, and offers adjustment on both compression and rebound. To stiffen compression and rebound turn the adjuster knob clockwise. To soften compression and rebound turn the adjuster counter clockwise.

Mounting your shocks

When mounting your JRi Shocks check and ensure that the shocks are parallel to the chassis. In many cases it is necessary to shim either the top mounting of the shock or the bottom of the shock to ensure a parallel chassis installation.

Failure to provide for a parallel chassis installation will cause immediate damage to the shocks resulting in unsafe operation.

Installation guidelines

JRi Shocks for Harley-Davidsons can be installed by any experienced technician. Customers that wish to install the product should do so only if they are an experienced technician that understands the dangers and possible damage to the

motorcycle that may occur from improper installation.

Once the motorcycle has been lifted and the rear wheel un-weighted, remove the shocks from your Harley-Davidson. Check to see if the top frame mounting boss and swing arm boss are “even” (see **figure 3**).

JRi Shocks are designed to be installed on any Harley-Davidson without interference to the operation of the motorcycle OR impeded use of your accessories. In some cases though, it may be necessary that the technician install spacing washers for a secure and proper fitment of your new JRi Shocks. In other cases, it is necessary to move, modify, or re-arrange accessory mounting hardware to ensure proper operation.

The correct fitment

In some cases, the technician will not need to do any work to ensure proper fitment of the JRi Shocks for your Harley-Davidson (see **Figure 2**). If the shock mount bosses line up parallel to the chassis, the technician simply needs to properly tighten the bolts to the chassis to complete installation.

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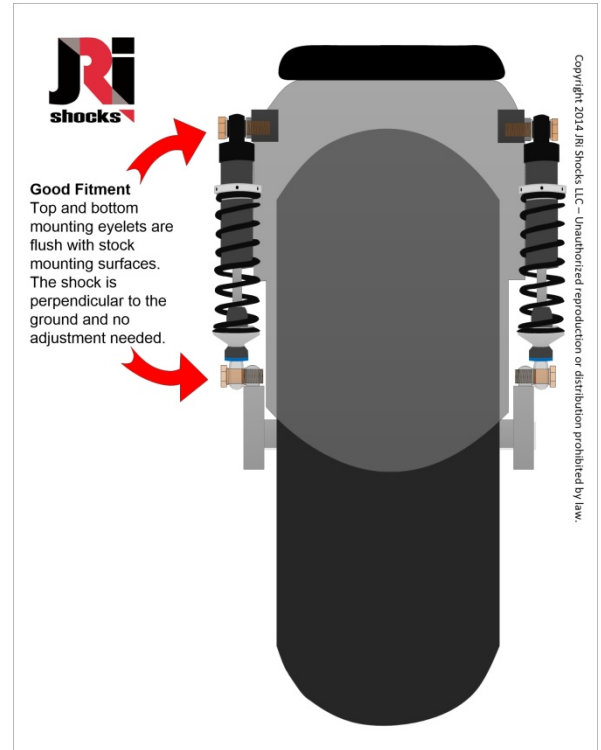


Figure 2 - Proper fitment

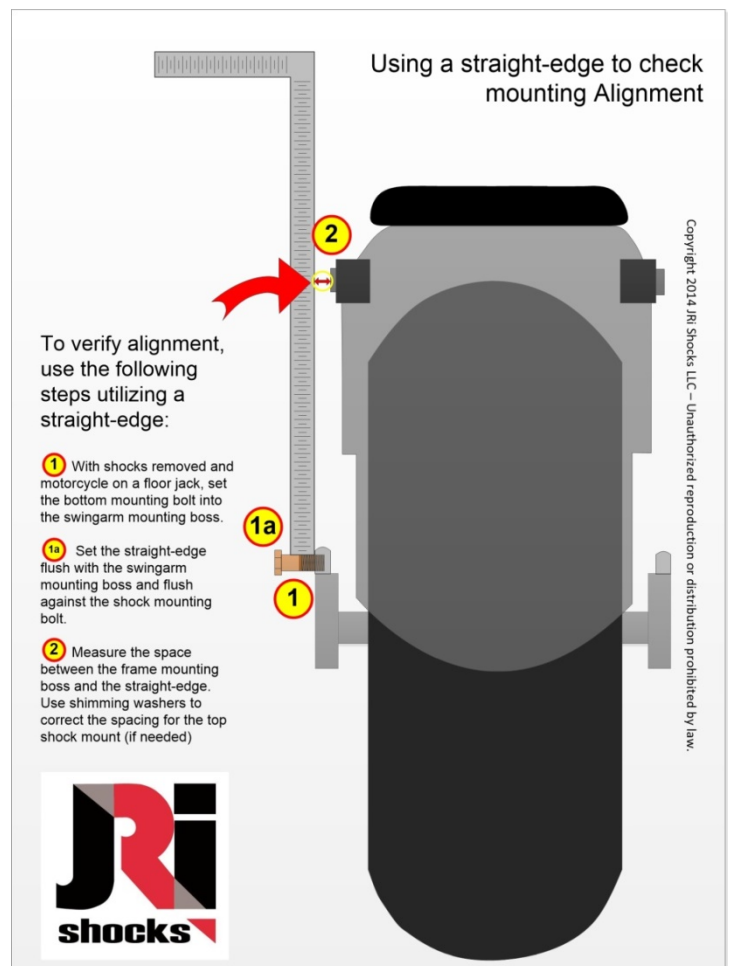


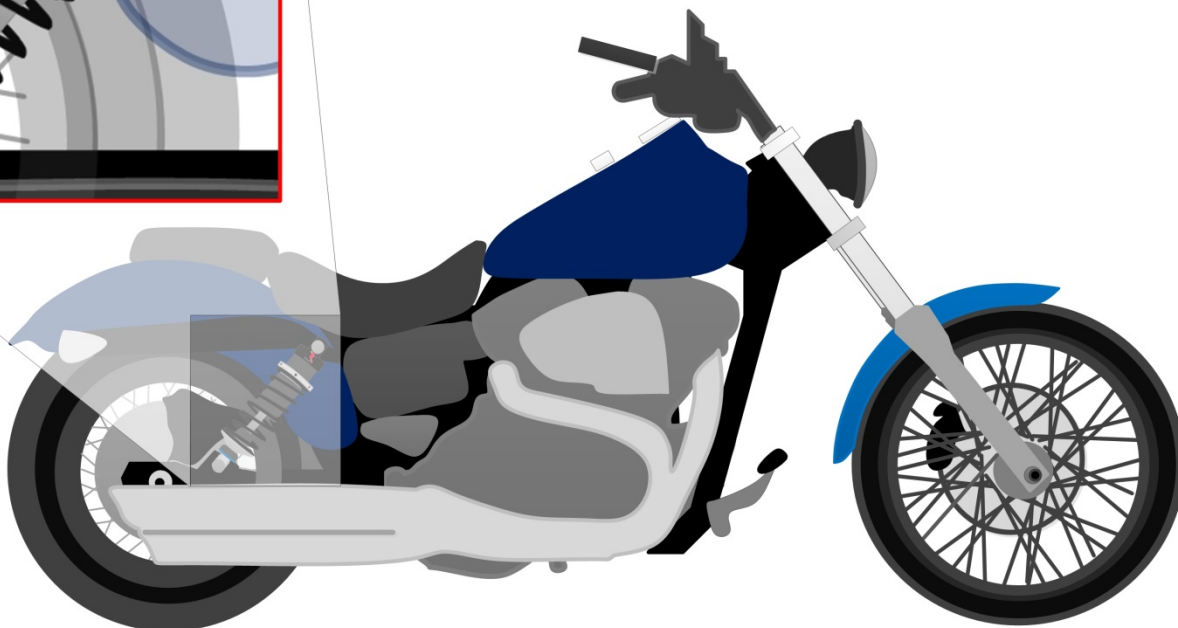
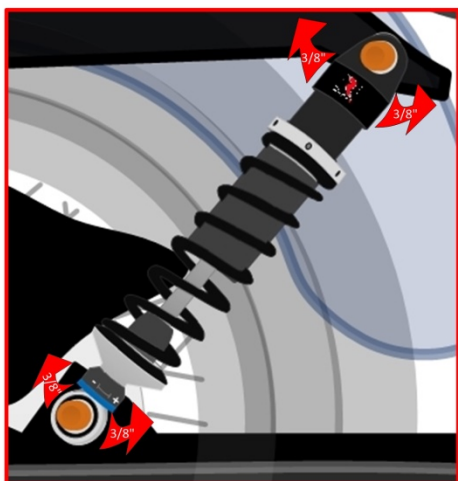
Figure 3 - Measuring for proper alignment



Ensure your shocks can travel freely

As your JRI Shocks absorb bumps, they will swivel up to 3/8" inch in either direction from compressing and extending. Make sure your shocks are not obstructed in this movement by luggage brackets, rails, or other accessories.

Your shocks should not "hit", "bump", or otherwise be prevented from moving freely after installation. ENSURE YOU ALLOW 3/8" of movement in either direction after installation. You may use spacing washers with longer bolts to ensure your shocks are not obstructed from critical movement.



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Figure 4 - Ensure free movement of the shock

In some cases, the technician will find that frame mount boss and swingarm mount boss do not line up (See figure 3). Should the technician find that there is a gap/space (See figure 5) between the eyelet of the shock and the mounting point on the sub-frame or swing arm, then it will be necessary to install spacing washers (see figure 5 & 6) so that parallel chassis installation can be achieved for your JRI Shock.

Use spacing washers to provide a proper fitment. It may take a several washers (see figure 6) to achieve proper fitment. Please ensure that you do not allow the shocks to "angle in" (see figure 8), which will cause immediate damage to your shocks and cause unsafe operation of your motorcycle.

After installing the spacing washers, you will now be able to tighten the shock absorbers to chassis and begin use of your Harley-Davidson now equipped with JRI Shocks 12" or 13" shock.

Lastly, ensure the shocks can move freely at least 3/8" in either direction when they are installed (see figure 4). It may be necessary to move, relocated, or modify accessory areas if the shocks do not have 3/8" in either direction for free movement of the installed shock(s).

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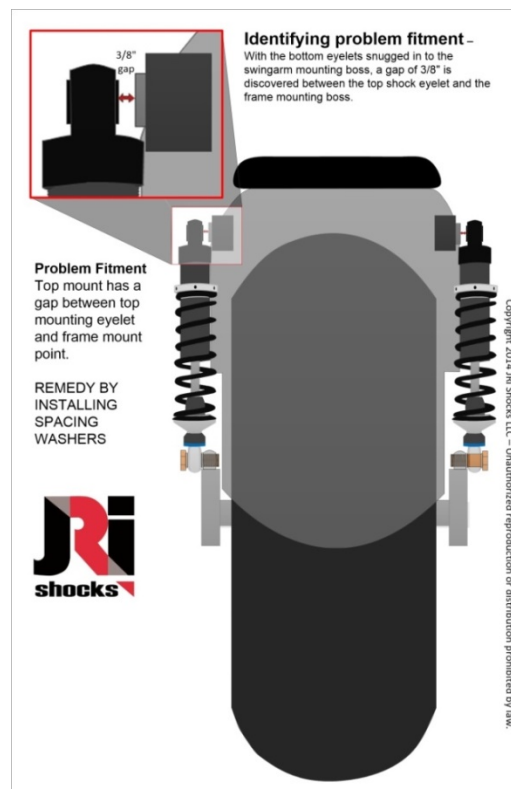


Figure 5 - Identifying problem fitment

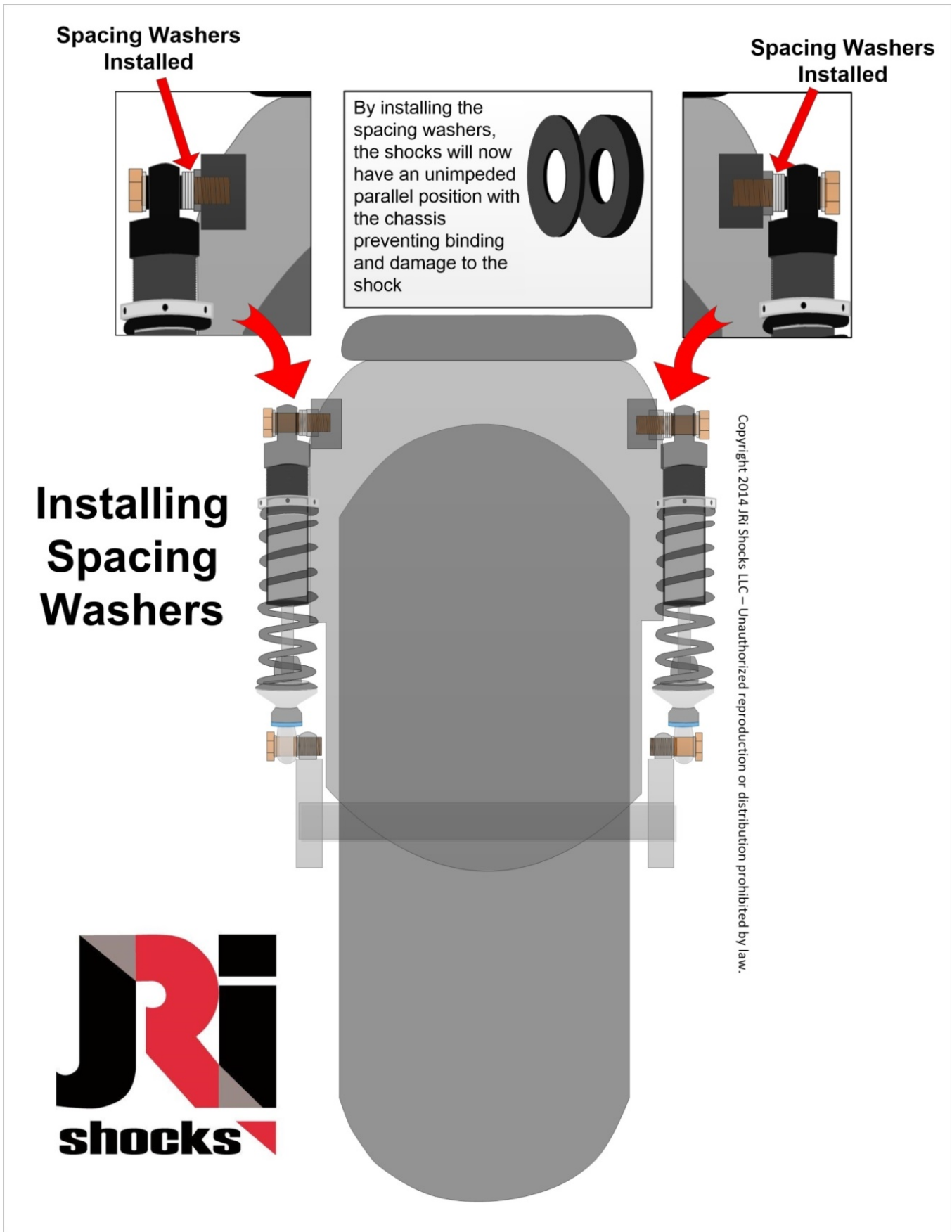


Figure 6 - Installing spacing washers

NEVER install your shocks in a manner that “angles the shock”.

Your SHOCKS MUST BE **PARALLEL TO THE CHASSIS** (STRAIGHT UP AND DOWN). Mounting your shocks “at an angle” will cause immediate damage and result in unsafe operation.



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Figure 7 - DON'T INSTALL SHOCKS AT AN ANGLE

Completing Installation

Setting the Sag

STEP 1

- 1) With your shocks installed on the motorcycle, extend the rear wheel until it is off the ground or the rear suspension is topped out. Measure from the center of the top shock bolt to the center of the lower shock bolt
- 2) Record this measurement as "A".

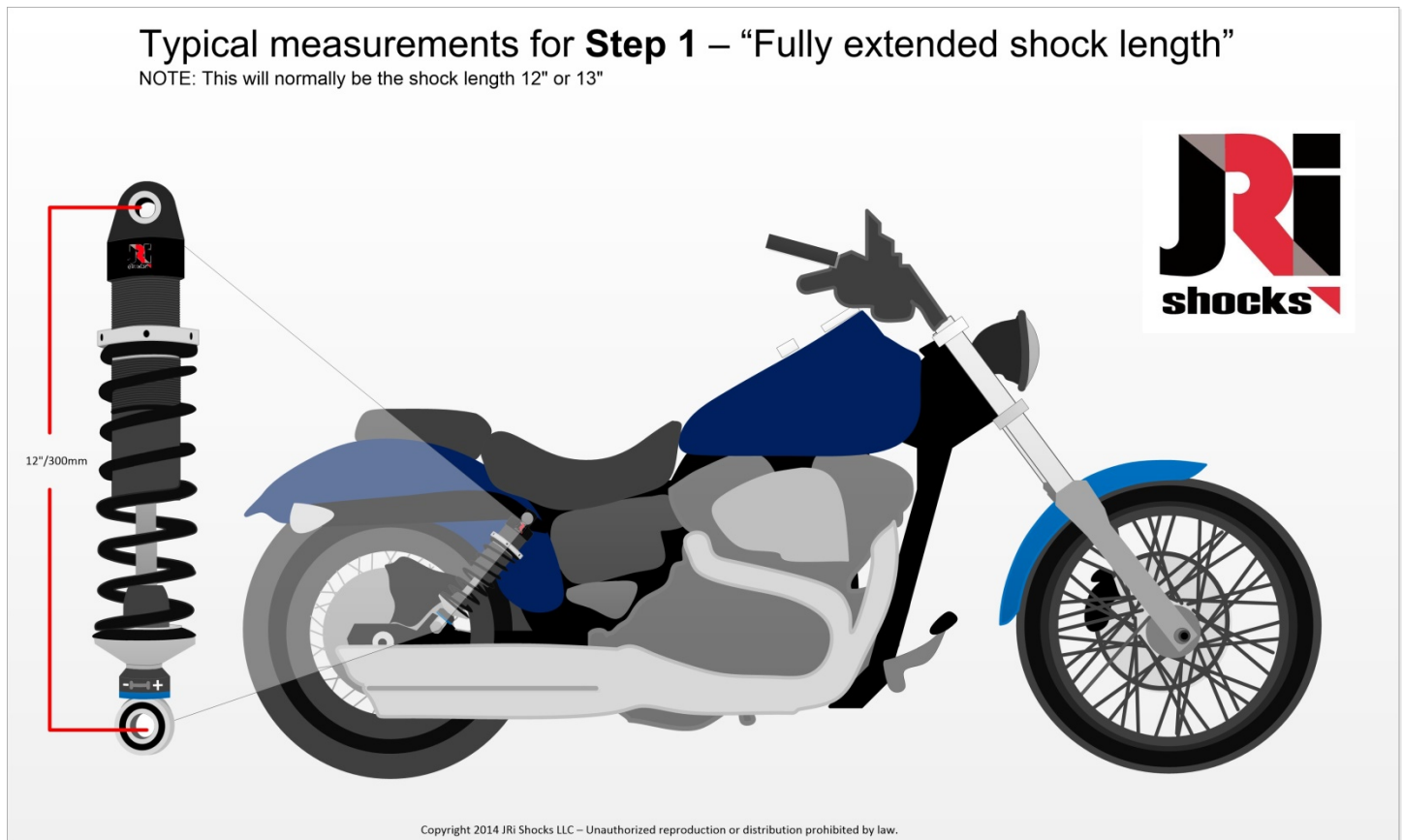


Figure 8 - 1st measurement for setting sag

STEP 2

- 1) Let the motorcycle sit under its own weight with you on it and measure from the center of the top shock bolt to the center of the lower shock bolt. (SEE Figure 8)
- 2) Record this measurement as “B” (SEE Figure 9)

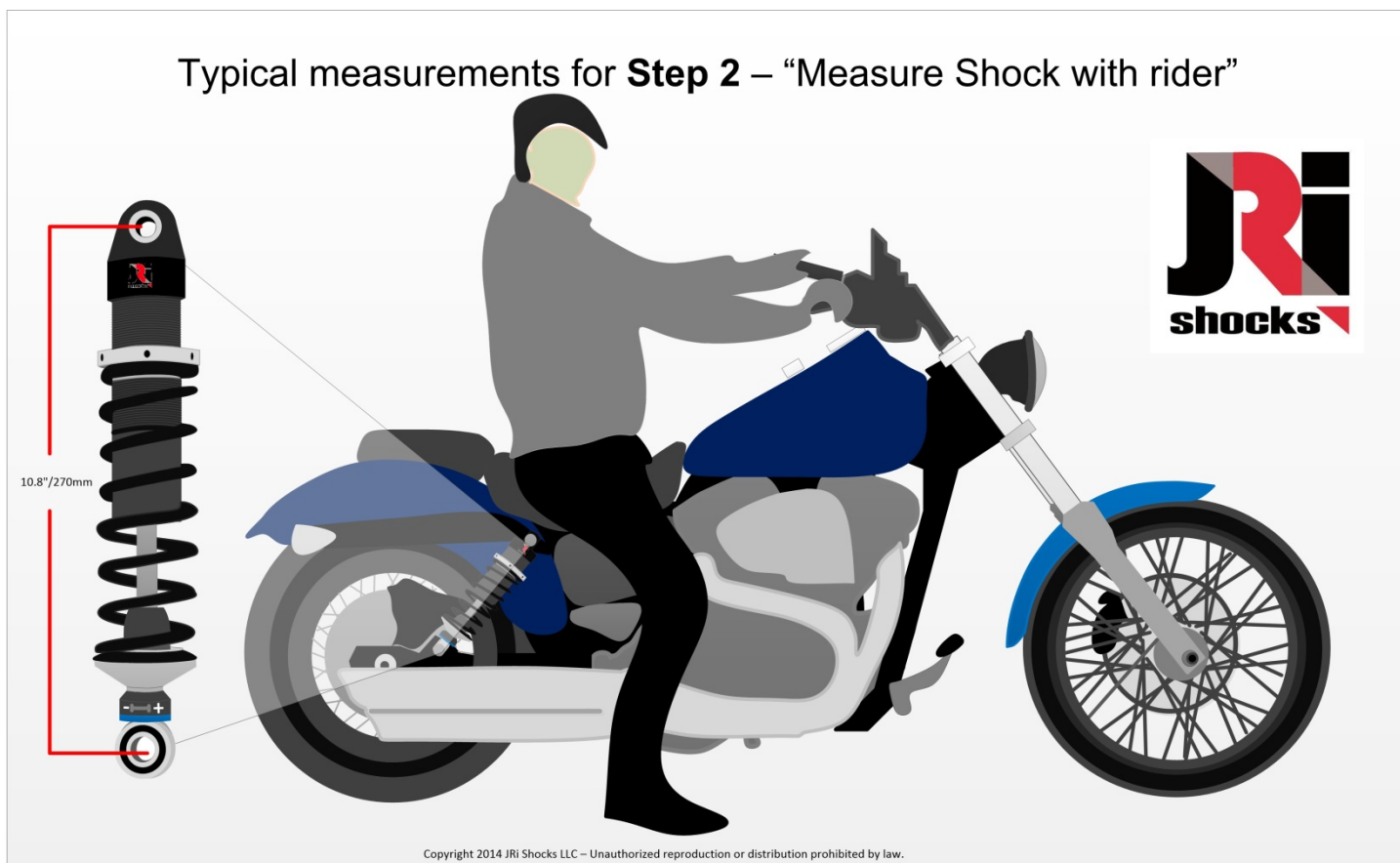


Figure 9 - Second measurement for setting sag

STEP 3

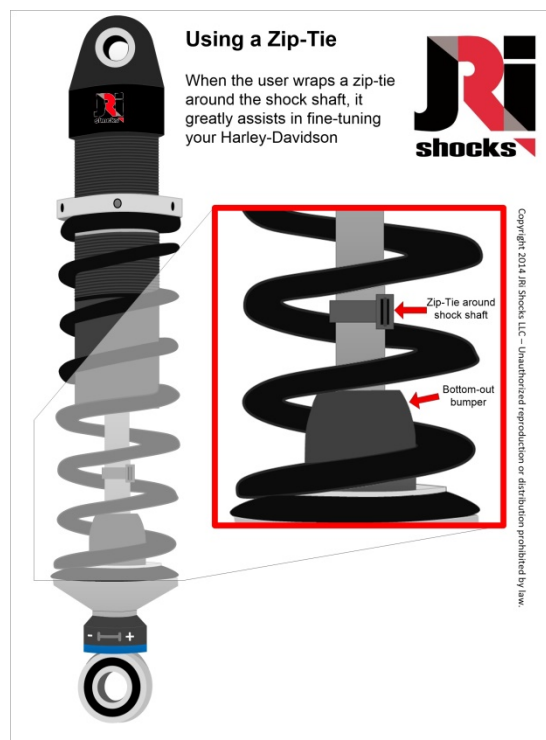
1) Subtract measurement "B" from measurement "A". This number is your total sag.

1a) typical total sag numbers are 28mm-32.

If the sag is greater than 32mm, preload the spring by turning the adjustable spring collar clockwise.

If the sag is less than 28mm, remove preload by turning the adjustable spring collar counter clockwise.

SETUP TIP: The user can run a Zip-Tie around the shock shaft to help with measurement of the Preload if no assistance is available to the rider. It will also greatly assist the rider in tuning their JRI Shocks for Harley-Davidsons



Placing a Zip-Tie on the shock shaft makes tuning easier.

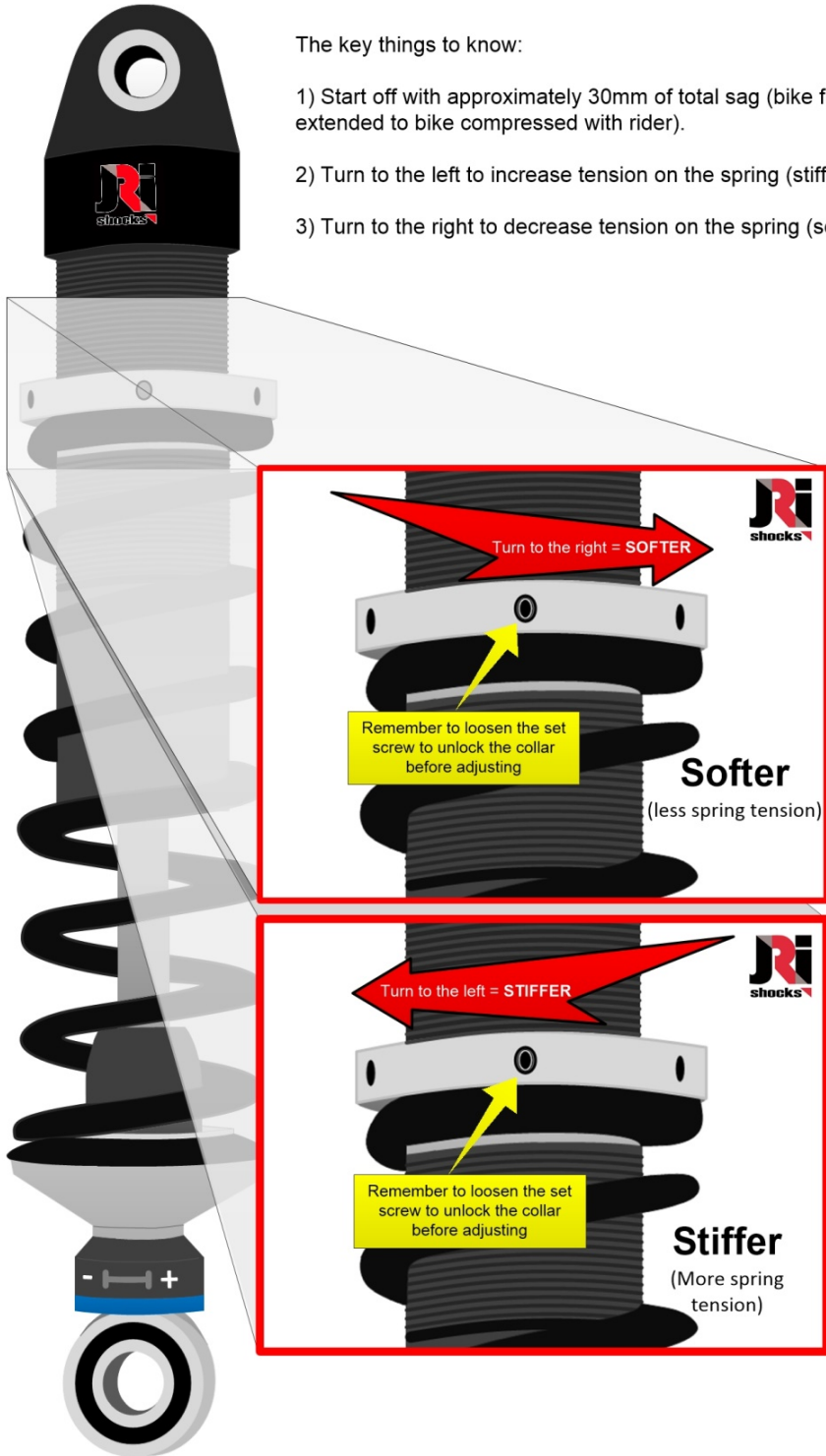


Adjusting Pre-load/Spring Tension

Adjusting your spring preload (tension) is critical in achieving optimal performance of your JRi Harley Davidson Shock.

The key things to know:

- 1) Start off with approximately 30mm of total sag (bike full extended to bike compressed with rider).
- 2) Turn to the left to increase tension on the spring (stiffer).
- 3) Turn to the right to decrease tension on the spring (softer).



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Figure 10 - Adjusting preload tension

Tuning:

- A. **Change one adjustment at a time**, write that change down, and evaluate the change with notes for each change.
- B. Your Jri Shocks come preset with preload and damping settings optimized. You may need to make changes for optimum performance. Changes and performance adjustments should emphasize the following in order:
1. Stability – Ensure stability of the bike in a straight line at speed is achieved.
 2. Compliance – Once the motorcycle is verified as “stable”, then focus on fine tuning the performance of the shock.
- C. If you find that you have changed your settings too much and are “lost”, reset the preload and sweep valve (external adjuster on the bottom of the S/A shocks) to the following:

1. Preload 10mm (Spring length 7 & 5/8”)
2. Sweep Valve: 30 clicks out “from all the way in”. **NOTE: DO NOT TURN IN THE SWEEP VALVE ADJUSTER** with excessive force or you may damage the damper needle. Use only mild force (less than 3lbs of force) when “turning in” to re-set or verify the sweep valve adjuster position.

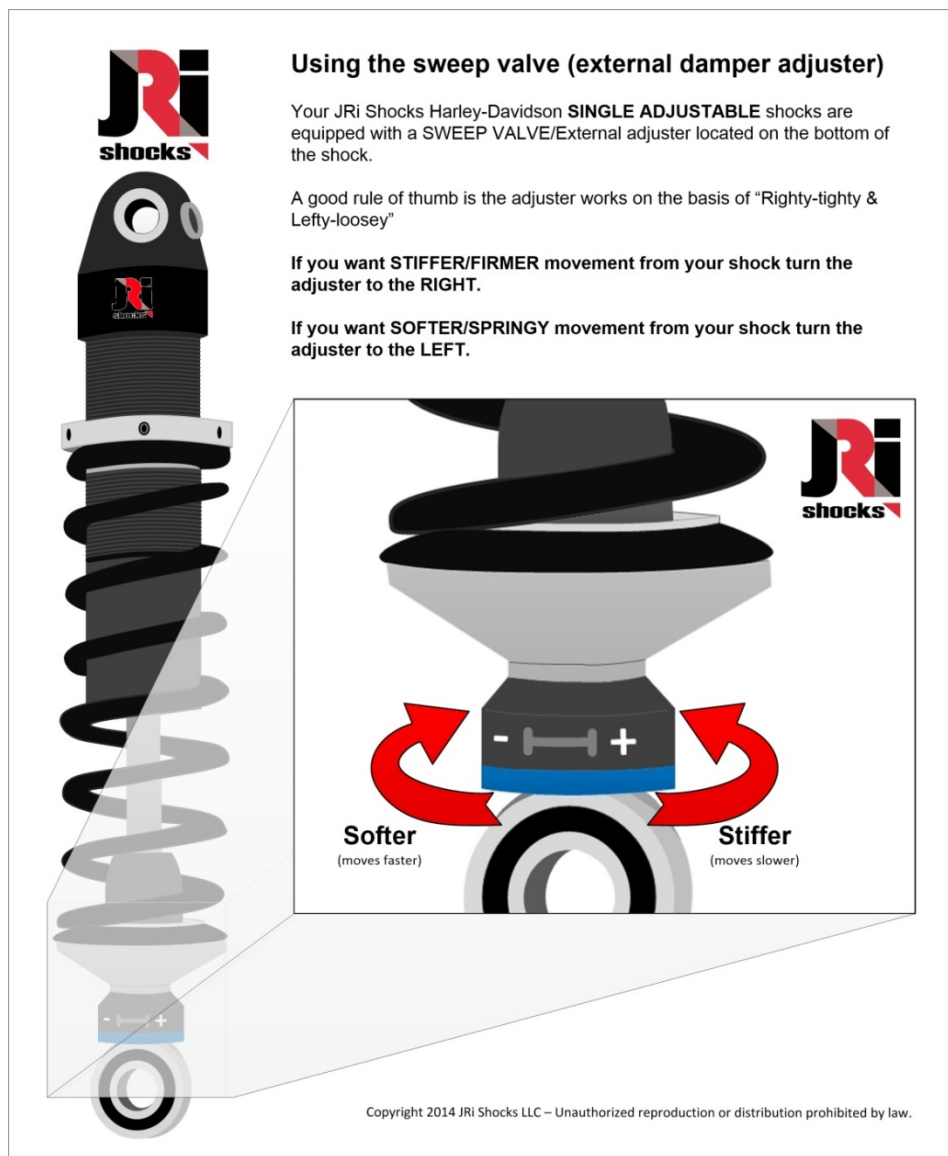


Figure 11 - Using the Sweep Valve

What to expect:

Once installed, the JRI 12” and 13” shocks will provide a more compliant ride than any comparable shock in the marketplace. The rider will notice immediately when they sit on their bike for the first time that their Harley-Davidson will smoothly move approximately ½” with no abruptness when you transfer your weight onto your bike. IF YOU DO NOT FEEL THIS, please immediately check for installation issues (See Troubleshooting and refer to the installation section of this manual to ensure safe installation).

As you begin to ride on your new JRi Shocks, you will notice that the rear of your Harley-Davidson will move approximately 2"-3" with minimal abruptness when ride over bumps and undergo normal weight-transfer of acceleration and braking.

Tuning List:

Rear Suspension "Harsh"

1. Check your zip-tie if you have placed one on the shock shaft.
2. IF the zip tie is at the top of the bottom out bumper, add preload (**see figure 10**) so that the Zip-Tie is at least $\frac{1}{4}$ " above the bottom out bumper over normal bumps (If the Zip-Tie is more than $\frac{1}{2}$ " above the bottom out bumper, go to STEP 3).
 - a. IF the harshness continues, then soften sweep valve (adjuster on the bottom of shock) – **Turn counter clockwise**
 - b. Adjust 3-5 clicks at a time to get a noticeable change.
3. Soften the spring preload 3-4 turns at time until the Zip-tie is $\frac{1}{4}$ " above the bottom out bumper after riding over "normal bumps".
 - a. IF the harshness continues, then soften sweep valve (adjuster on the bottom of shock) – **Turn counter clockwise**
 - b. Adjust 3-5 clicks at a time to get a noticeable change.

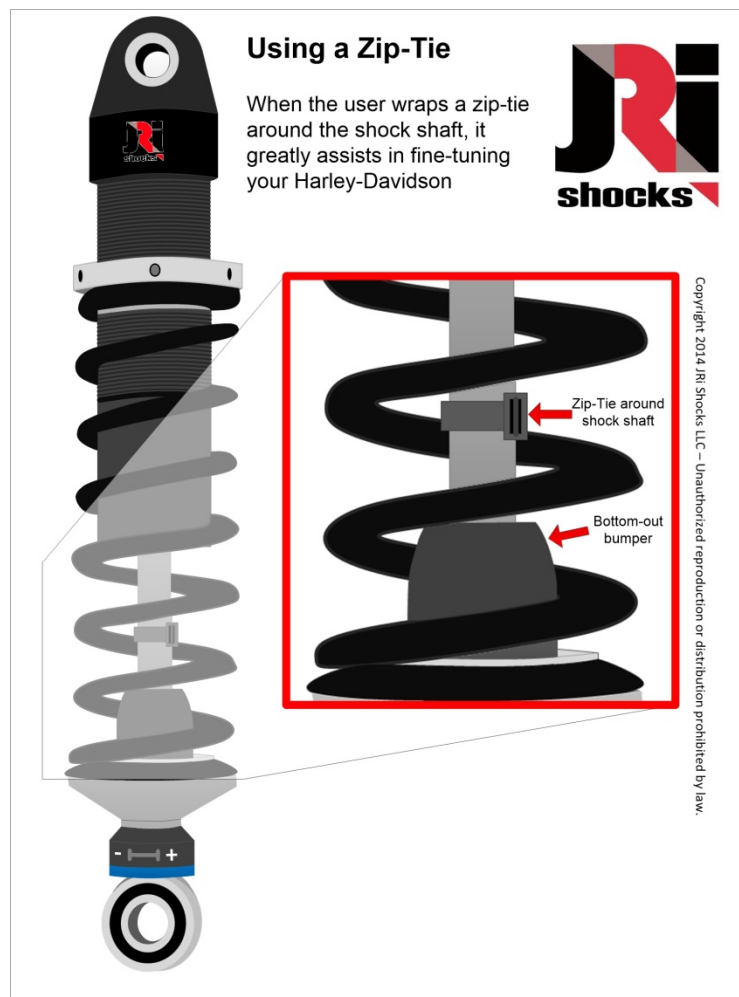


Figure 12 - Using a Zip-Tie to assist in setup

Rear Suspension is "Soft"

1. Should the rider experience excessive movement in the rear shocks where the back of the motorcycle "wallows" (rear suspension never settles in, but rather slowly "moves up and down"), the following steps are recommended:
 - a. Stiffen the rear suspension via the external damping adjuster 3 to 5 clicks at a time until the rear suspension stabilizes (Sweep Valve – **see figure 11**).
 - b. If the problem persists after making more than 10 clicks of change, look at your Zip-Tie to ensure you are not more or less than $\frac{1}{4}$ " – $\frac{1}{2}$ " away from the bottom out bumper after riding over normal road bumps.
 - i. Adjust the preload to achieve the desired results.

Damper Tuning

The main purpose of a shock is to control the spring to keep maximum traction between the tire and the road. When a shock is in compression it is used to help control the movements of the wheel. When the shock is in rebound it is controlling the stored energy of the spring as it reaches out to the racetrack.

Conditions of the road can require very different damping characteristics. A dry road with a high level of available grip will allow you to tune in more damping loading the tire sooner. With that being said, a motorcycle with too much damping will have a harsh ride OR wheel spin and a overall lack of traction in exiting slow corners, and on heavy braking and initial turn in. It may also show a lack of grip on quick transitions back and forth. In a low grip situation like a wet road you would want to tune out damping and allow more chassis movement, (weight transfer) delays the loading of the tire. This can be done by decreasing the amount of damping via the external damping adjuster (sweep valve – **see figure 11**).

Damping can also effect weight transfer, cornering, and feel of the motorcycle. The lighter the amount of damping front or rear will greatly affect your weight transfer of the motorcycle. If you lessen the rebound damping in the front forks of the motorcycle it will transfer weight quicker to the rear of the motorcycle as the brakes are released or under acceleration. The same goes for the rear shock; if you lessen the rebound damping in the rear it will quicken the weight transfer to the front of the motorcycle especially as you apply the front brakes, and on turn in.

When there is a lack of rebound damping the bike can feel like it wants to over extend on hard acceleration on corner exit. It can also make the bike feel harsh over bumps, especially if the bike is leaned over. When a motorcycle is over damped it can cause the bike to “pack” down in a series of bumps and a rider can recognize this as being too stiff . Too much damping can cause lack of grip on cornering, and not allow the bike to finish the corner or compress resulting in a harsh ride and less stable performance coming out of corners.

Trouble Shooting

SHOCK IS EXCESSIVELY STIFF

Should your shocks seems excessively stiff, conduct the following steps:

1. When you sit on the bike, does the motorcycle move smoothly after you place your weight on the seat? The bike should squat ½” to 1” depending on tuning/setup.
2. If the bike does move when you weight the seat (as described in step 1.), go to the Tuning section of this manual (**Page 12**) and follow the steps listed.
3. If the bike does not move (or minimally/harshly) when you place your weight on the seat, follow the tuning steps (**Page 12**). If the problem still persists, check the following:
 - a. Double check the shock alignment (**Page 3**).
 - b. If alignment is good, then loosen the shock mounting bolts leaving an 1/8” inch gap to allow the shock to move freely. Sit on the motorcycle again, it should move freely.
 - i. **DO NOT OPERATE YOUR MOTORCYCLE WITH THE SHOCK BOLTS LOOSE.**
 - c. If the suspension feels harsh after step b, then verify the axle nut is BELOW the plane of the swingarm pivot (**see figure 13/Page 15**)
 - d. If the shock does not move freely after step B & C, please contact your reseller or JRi Shocks via the information listed below.

OIL LEAK AROUND SHAFT

Minimal oil seepage is normal (less than 2 ounces) as the shocks break in. If this condition persists, please contact your reseller or JRi Shocks for warranty service.

JRi Shocks is dedicated to providing a product that outperforms your expectations

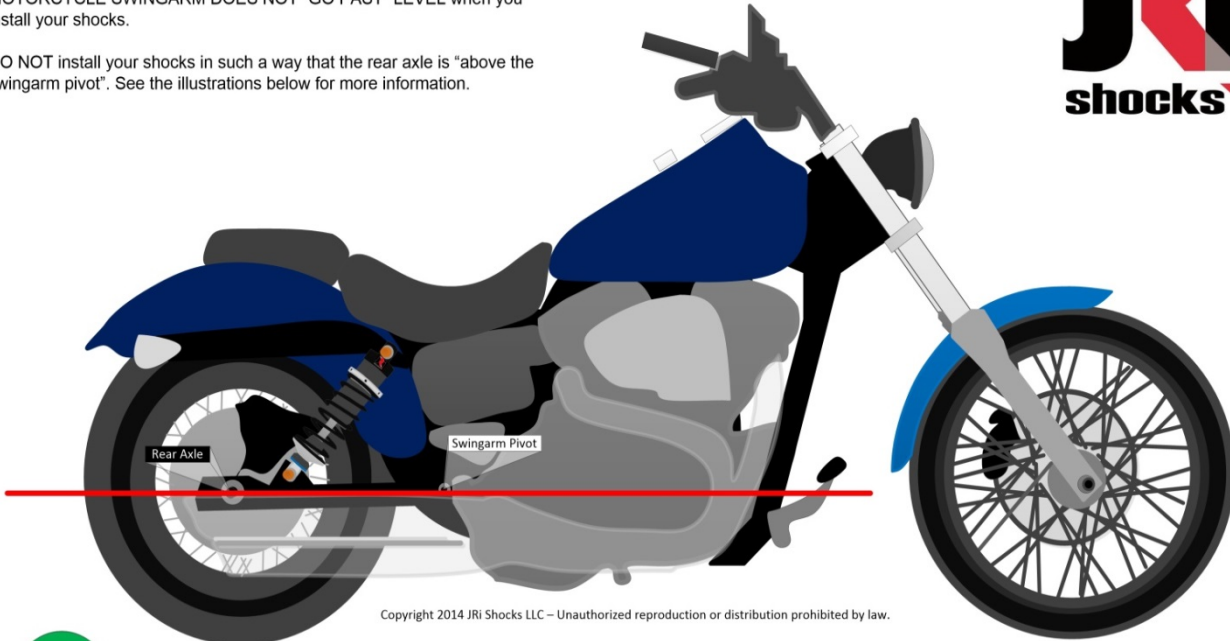
Should you have issues with our 12” or 13” Harley-Davidson shocks, please contact your re-seller immediately. If you cannot re-solve your question through the re-seller, please contact the JRi Shocks facility directly using the contact information available through our website via www.JRiShocks.com and selecting your motorcycle product. Contact information for our motorcycle support team is located on our website.



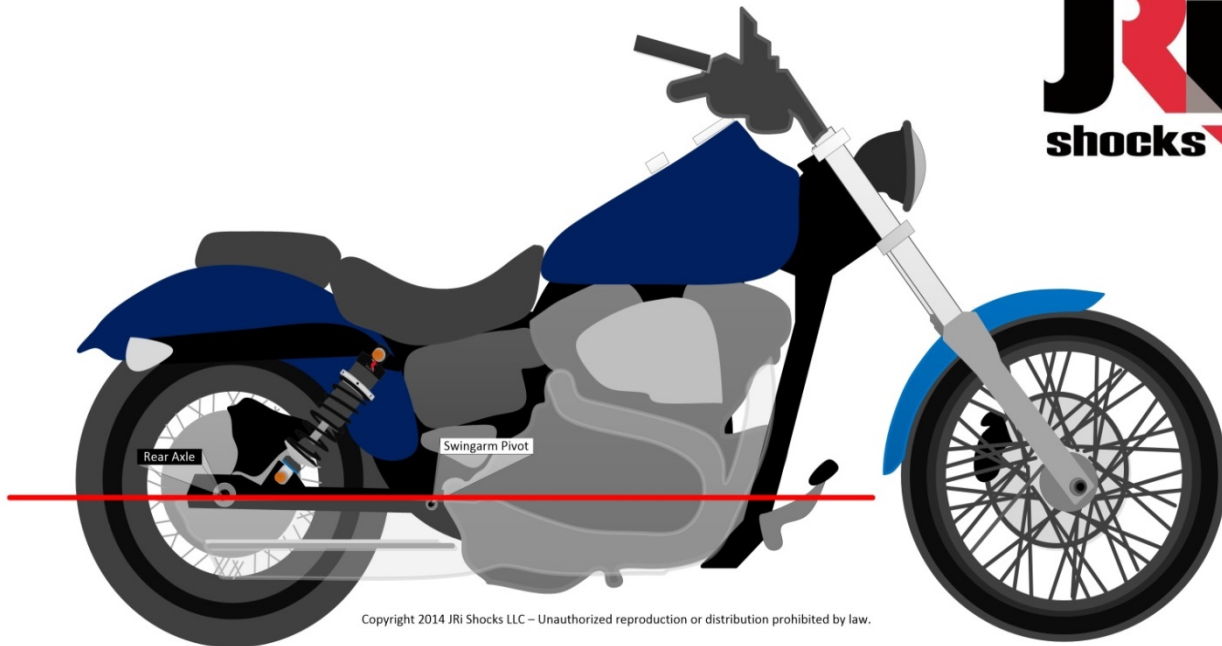
Ensure your swingarm does not go “below level”

Many riders desire to “lower their bike”. PLEASE ENSURE THAT YOUR MOTORCYCLE SWINGARM DOES NOT “GO PAST” LEVEL when you install your shocks.

DO NOT install your shocks in such a way that the rear axle is “above the swingarm pivot”. See the illustrations below for more information.



Rear axle is BELOW than swingarm pivot



Rear axle is ABOVE than swingarm pivot

Figure 13 - Ensure rear axle nut is below swingarm pivot

Harley-Davidson/Emulsion Shock Warranty

JRi Shocks provides our customers a product that is guaranteed to work and provide the expectation of performance that is the trademark of our name. From the high banks of Daytona to the streets of Sturgis, JRi Motorcycle Shocks provide products that meet the demands of all motorcyclists.



At JRi Shocks every team member that is involved with the manufacture, distribution, and delivery of our product takes special care to provide the quality you expect. Should you experience a problem however, we are here to help and ensure you get the performance from your motorcycle shocks that you have anticipated. Please find enclosed our complete warranty policy and terms:

Our shocks come with a 90-day “eyelet to eyelet” warranty. If there is any problem of any type, please contact your reseller or JRi Shocks at:

JRi Shocks
 136 Knob Hill Road
 Mooresville, NC 28117
 (p) 704-660-8346
 (f) 704-660-8349
 info@jrishocks.com
 www.jrishocks.com

The following terms and conditions apply to your shock:

90-Day “eyelet to eyelet” warranty – Any customer with deficiencies that warrant depot level bench service (such as parts, oil seeping, or significant poor performance) will be provided pre-paid UPS ground shipping with parts & service(s) covered by JRi Shocks for 90 days.

JRi Shocks Harley-Davidson Shock Warranty		
Warranty term	90 Days	365 days
Parts	X	X
Labor	X	X
Shipping	X	N/A

Spring(s) – For safety reasons, customers should measure the sag on a shock BEFORE they operate their motorcycle. If the customer discovers that the spring is not providing the sag that their owner manual recommends, they may elect to return the springs to the re-seller of the shock to receive an appropriately rated spring. Should the customer use the motorcycle and consequently “use the spring”, JRi shocks will charge a \$50.00 restock fee to exchange for “new springs”.

What the warranty does not cover – The JRi Shocks warranty does not cover damage, wear, or other issues caused by any of the following:

- 1) Damage from improper installation. This includes cosmetic damage, marring from items making contact with the shock during normal riding, and/or damage from misalignment.
- 2) Damage from chemicals or environmental agents such as battery acid, corrosion caused by road salt, and/or fluids/chemicals leaked onto the shocks.

Customers with approved warranty issues will be provided pre-paid UPS ground shipping and required service(s) by JRi Shocks with limitations. **PLEASE NOTE: IF YOU PURCHASED YOUR JRi 12” or 13” HARLEY-DAVIDSON SHOCK THOROUGH A STOREFRONT, YOU MUST USE THAT DEALERSHIP FOR WARRANTY SERVICE/RETURNS.**

JRi Shocks Warranty Return Worksheet

Please fill out the following information when returning your JRi Shock for warranty service. This will ensure prompt attention and expedite your service.

NAME: _____

ADDRESS: _____

ADDRESS: _____

CITY/STATE/ZIP: _____

PHONE: _____

EMAIL: _____

SHOCK SERIAL #1 _____

SHOCK SERIAL #2 _____

DESCRIPTION OF ISSUE: _____

You will receive a UPS Shipping label from JRi Shocks via your email. Please enclose a copy of your invoice and SHIP/SAVE YOUR ORIGINAL BOX FOR YOUR SHOCKS TO ENSURE QUICKEST SERVICE.