

INSTALLATION MANUAL

FOR

PURE PERFORMANCE SUSPENSION

2003 - 2013 Ram 2500 4X4 / 2003 - 2012 3500 4x4

3" SHORT ARM DIRECTIONS

THIRD EDITION

03/18/17

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Dear customer:

Thank you for purchasing the best short arm systems on the market for your Dodge Ram 4x4 Truck. We are sure you will be happy with this system when your installation is complete. Please take your time during the installation and be sure to do it correctly. Completely read the directions before starting your installation so you know what to expect. Remember, your personal safety depends on it. Should you have any questions during this installation feel free to give our tech line a call (518-270-9822) and we will be happy to help you.

Note: BE SURE TO CHECK ALL FASTENERS FOR PROPER TORQUE BEFORE TEST DRIVING. RECHECK AFTER 500 MILES AND BE SURE TO CHECK PERIODICALLY.

Warning

Read and understand all instructions, warnings and safety precautions in these instructions and your owner's manual before attempting to install these components.

Caution

Proper installation of Pure Performance Group, Inc. products requires knowledge of recommended procedures for disassembly/assembly of OE vehicles and components. Access to OE shop manuals and special tools are required. Attempting to install this kit without knowledge of these procedures may affect the safety of your vehicle and/or the performance of these components. Pure Performance strongly recommends that a certified mechanic with off road experience install this system.

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Warning

Pure Performance Group, Inc. does not recommend combined use of suspension lifts, body lifts or other lift devices. Combined use of lifts may result in unsafe and unexpected handling characteristics. Also, many states now have laws restricting Vehicle lifts, bumper heights and other alterations. Consult local laws to determine if your proposed alterations (including installation of this system) comply with your state laws.

Caution

Pure Performance Group, Inc. recommends the use of loctite on all hardware, unless noted otherwise.

Warning

Properly block and secure vehicle prior to installation.

Warning

Always wear safety glasses when using power tools.

Warning

The use of limiting straps is recommended to avoid possible damage from over extending the suspension of your vehicle.

Tools required:

Drill, Drill Bits , Standard and Metric Hand Tools, Jack Stands, Bottle Jacks or Floor Jacks, Lift if possible.

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Helpful hint:

Do not tighten connections until assemblies are installed in their entirety.

It is time to do the front suspension!

1. Block the rear wheels and make sure the parking brake is applied.
2. Jack up the front end at least eight inches, place jack stands under the front of the frame as far forward as possible.
3. Remove the front rims and tires.
4. Remove the following items;
 - a) Front shocks. Please discard them since they will not be reused. Save the lower shock mounting hardware for it will be reused.
 - b) Remove the front sway bar end links and discard them for they will not be reused.
 - c) Remove the OEM front track bar and discard it for they will not be reused. **(KEEP AXLE SIDE HARDWARE AS THIS WILL BE RE-USED)**
 - d) Remove the front springs and discard them for they will not be reused.
 - e) **For the 3" X-Factor, please skip this step unless you purchased optional lower control arms.** For all other systems, please proceed.

Remove the OEM lower control arms and discard them for they will not be reused. Retain the OEM Hardware for it will be reused!
 - f) **For the 3" X-Factor, please skip this step unless you purchased optional lower control arms.** For all other systems, please proceed.

Remove the upper control arms. Discard them, but save the axle end hardware for it will be reused. It is ok if you have to cut the passenger side front upper control arm mounting bolt at the frame and destroy it. We have provided you with new hardware for the front upper control arm mounting positions at the frame.

g) **For the 3" X-Factor Only, all others skip this step,** loosen your stock control arm mounting hardware so the bushings will pivot freely. If this is not done, you will have a harsher ride than expected and shorten the expected life of your OEM control arm bushings. You will retighten the hardware after all the weight of the vehicle is on the suspension.

5. For the Pure Performance Track Bar installation complete the following.

a) Drill out the OEM track bar mounting hole at the frame to 5/8" if not already to size. This may not be required for most 2007 1/2 and newer model Ram HD's! This will allow for a hardware upgrade that was performed at the factory for trucks that are still using 14mm (9/16) hardware to mount the track bar at the frame connection.

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Drill Out the OEM Track Bar Mount to 5/8 or Make Sure the Hole Passes a 5/8 Bolt

b) Install the correct misalignment spacers for axle connection into heim joint. We supply you with 2 sets – 14mm and 16mm. Make sure the spacers fit snugly on the OEM bolt at the axle connection.

c) Set the track bar length to 39 3/16” center to center.

d) Install the new track bar with the OEM hardware at the axle and 5/8 supplied bolt frame connection. The adjustable heim joint connection goes at the axle and the anti wobble joint goes to the frame connection.

Please note: Triple 0 Grade Grease is the only grease allowed for use on all Pure Performance Joints including the Anti-Wobble Joint on the Track Bar.

e) Lock the Jam Nut and make sure the heim joint is free to move equally in both directions when installed. *The Torque on the jam nut should be 200 -240 ft- lbs. **Red loktite must be used on jam nut.**

6. For the 3” Triple Threat and Chase Systems or anyone Installing the Pure Performance Ram HD Pro Flex Adjustable Control Arms. (X Factor Skip This Step)

a) For the adjustable upper control arms, please set the assembled length to the following: **17”** center to center for most 3” systems. The Pro Flex Joint (fixed joint end) gets secured at the frame with the supplied 14mm x 150mm bolts, (6) 14mm washers and (1) 14mm nylok nuts for each side. We know for most diesel truck owners you will have to cut out the bolt on the passenger side front upper control arm in order to get it out so we have addressed this with all new hardware for both sides. The reason we supplied so many washer is so you can flip your hardware around and put it from the outside in. Use (5) washers on each bolt on the inside of the frame as shown below. The washers will ensure the nut does not get sucked inside the frame so you cannot get a wrench on it as shown below. Use the OEM hardware at the axle end where the spherical/adjustable joint goes.

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Extra Front Upper Washers inside the Frame

- b) Install the newly supplied lower control arms using the OEM Hardware. Please set the assembled length to **19"** center to center for most standard 3" systems. Just like the upper control arms, the Pro Flex Joint (welded end) go to the frame connection and the adjustable/spherical end goes to the axle connection.

Make sure the threads showing past the jam nuts do not exceed $\frac{3}{4}$ " for your final desired adjustment. The Pro Flex Joint (Welded End) end of the control arm goes to the frame for vibration isolation and the adjustable spherical joint goes to the axle for unrestricted movement off-road. Apply red loctite the spherical joint's jam nut that goes to the axle once the final length is determined. Be sure to crank on the jam nuts. Jam nuts not only hold the orientation of the joints, but they also preload the threads in the arm and on the joint itself. The preloading on the threaded sections will ensure a long component life and proper structure. 250 - 275 ft-lbs of torque is recommended for the 1" jam nuts on these connections. This is critical for the overall longevity of the control arm assembly. If you do not apply a large enough pre-load you could also be compromising the structural integrity of the assembly which could lead to problems for your vehicle down the road.

Please note: Triple 0 Grade Grease is the only grease allowed for use on all Pure Performance Joints including the Pro Flex Joints and Prodigy Joints in your Lower Control Arms.

7. Install the supplied front coil springs in the OEM location.
8. Install the newly supplied poly extended bump stops.
 - a) Remove the OEM bump stop by simply tugging on it.
 - b) Spray the new bump stop with some WD40 or light lubricant and push it in place.

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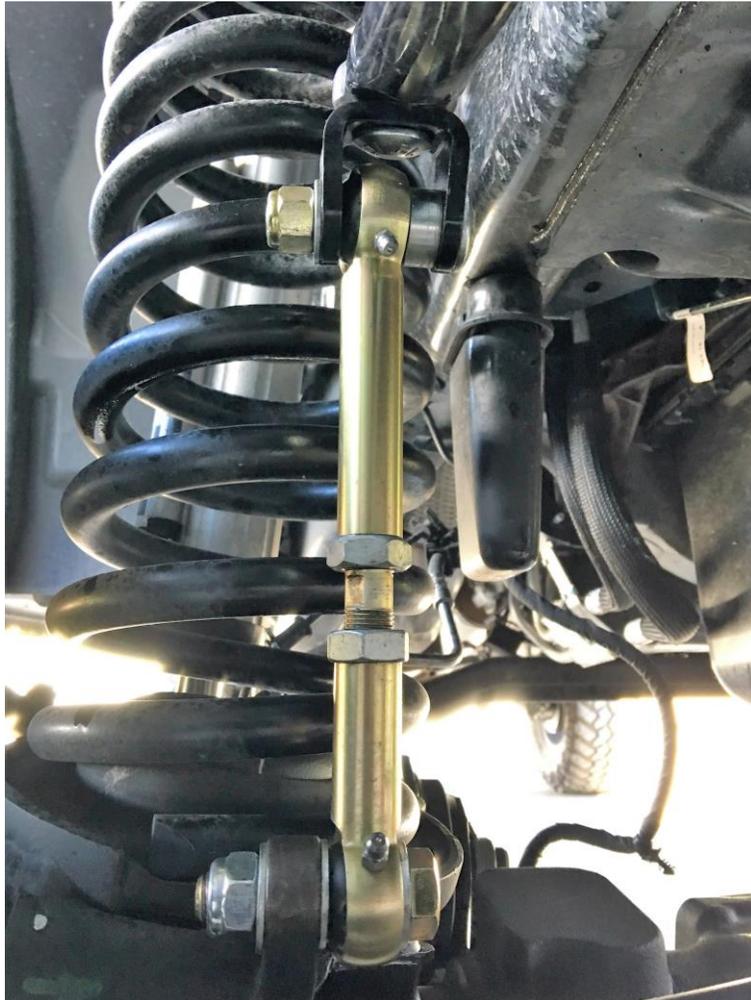
9. Install the front **Pro Sway Bar End Links** supplied with the system. The clevis bracket end attaches to the sway bar and has a billet stainless steel machined washer with a step in it that goes on top of the sway bar and underneath the nut. The step in the billet stainless steel machined washer helps keep the clevis bracket centered properly with the ½” upgraded hardware. At the bottom, if your OEM mount will not pass the supplied 14mm hardware you will need to drill it out to 14mm or 9/16. This is only required on very few Ram HD’s! The bottom end attaches with the supplied 14mm bolt, (1) washer on the outside of the OEM mounting bracket and (1) washer on each side of the ball as shown.

Please note: Inside the clevis bracket there is an offset spacer. The new Pro Link must be offset to the outside of the vehicle as shown in the image below. Apply red loctite the rod end jam nuts once the final length of the sway bar links is set. Be sure to tighten the jam nuts. Jam nuts not only hold the orientation of the joints, but they also preload the threads. The preloading on the threaded sections will ensure a long component life and proper structure. 40-50 ft-lbs of torque is recommended for the 5/8” jam nuts on these connections. This is critical for the overall longevity of the sway bar end link assembly. If you do not apply a large enough pre-load you could also be compromising the structural integrity of the assembly which could lead to problems for your vehicle down the road.



Billet Stainless Steel Washer Installed

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Pro Sway Bar Link Installed (Note Offset)

Please note: Triple 0 Grade Grease is the only grease allowed for use on all Pure Performance Joints including the Pro Sway Bar Link Joints.

10. Install the front shocks. If you are installing our 2 5/8 Remote Reservoir Shocks perform the following; remove the OEM shock mount and replace it with the Pure Performance raised shock mount. The reservoir will secure to the new mount using the supplied hose clamps as shown below.

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New Top Mount and Rassy Installed

11. Reinstall the wheels and tires.

12. Lower the vehicle to the ground. Good Job, the front is now complete, now is a good time to go over every connection and ensure nothing was missed in tightening any component or jam nut.

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Time To Start The Rear End (Choose The Steps that Apply to You)

1. Block the front wheels and make sure the parking brake is applied.
2. Jack up the rear end at least eight inches, place jack stands under the rear of the frame as far rearward as possible.
3. Remove the rear rims and tires.
4. Remove the OEM rear shocks and discard them for they will not be reused. Please save the hardware for reuse.
5. Lower the axle to remove the load off the rear leaf springs.
6. Remove the OEM u-bolts securing the rear axle to the rear leaf springs.
7. **For systems with blocks (all others omit this step)**, perform the following;

Install the supplied lift block between the axle and the leaf springs as shown below. Be sure to align the alignment pins in leaf springs to the lift blocks, to the axle and secure with the supplied U-bolts. Tighten the U-bolts in an X pattern and torque to the specified value at the end of the directions.



Fabricated Lift Blocks Installed and Secured

8. **For systems with mini packs (all others omit this step) perform the following;** install the supplied custom Pure Performance Mini Spring Pack! The proper way to do this is simple, but please be careful to control the OEM spring pack so it does not spring apart on you. Secure the spring pack with some u shaped clamps. Remove the OEM pins that hold the pack together. Remove all the flat spring mounting pad from the very bottom of the spring and set the bottom most one aside for reuse. Take the lowest pad (has one central centering pin) and bolt to the bottom of the Mini Pack using the 2 included through bolts. With the newly supplied through pins, secure the Mini Pack to the bottom of the OEM spring pack and tighten the centering pins collapsing the spring pack. For a more factory like rake, you can install all the factory shims under the mini pack instead of just the bottom one. Then secure the newly modified spring pack back to the axle with the supplied U-bolts. Tighten the U-bolts in an X pattern and torque to the specified value at the end of the directions. Please note; most Ram 2500's will have a heavy over load spring under the OEM spring pack. This is to be removed when installing the supplied custom Pure Performance Mini Spring Packs! Only if you really think you are going to need the extra carrying capacity should you retain the factory over load spring! This will also make your Ram HD ride a little rougher!

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9. **For systems with full leaf packs (all others omit this step) perform the following;** Remove the OEM leaf springs and install the newly supplied leaf springs. They use only one centering pin. You may have to slightly ream out the existing centering pin hole on the axle for them to sit properly. Then secure the newly modified spring pack back to the axle with the supplied U-bolts. Tighten the U-bolts in an X pattern and torque to the specified value at the end of the directions.

10. Now is the time to install the rear shocks. Please note: If you are installing our 2.625 Remote Reservoir Prodigy Shocks; the body of the shock goes toward the ground, the reservoir attaches with supplied hose clamps and isolators to the shock body and goes away from the axle tube.

11. Put the rear tires back on the vehicle and lower it to the ground. The rear end is now completely assembled.

The required Torque for all 3/8"/10mm bolts (10.9) is 28 to 32 ft-lbs.

The required Torque for all 1/2"/12mm bolts (10.9) is 60 to 70 ft-lbs.

The required Torque for all 9/16"/14mm (10.9) is 70 to 85 ft-lbs.

The required Torque for all 5/8"/16mm bolts (GR 8) is 120 to 140 ft-lbs.

Good Job. Your installation is complete. Now go out and enjoy your vehicle. But before you hit the pavement take the vehicle to a professional alignment shop and have the front end aligned! If you have a 2009 or newer Ram HD then be sure to take it to your local Dodge Dealer for alignment so they can properly hook up a Star Scan unit to your truck while performing the alignment to ensure your steering wheel position sensor is at zero when your tires and steering wheel are at zero! This will ensure you do not have improper ESP/ESC activation from a poor alignment.