



INSTALLATION MANUAL

FOR

ROCK KRAWLER SUSPENSION, INC.

**2013/14-2018 Ram 2500/3500 HD 4x4
& 2019+ Ram 2500/3500**

Gas 2500 and 3500-3.5"

Diesel 2500 and 3500-4"

X Factor System

2022 1st EDITION

August 2022

ROCK KRAWLER S U S P E N S I O N

Dear customer: Thank you for purchasing the best 3.5"-4" lift system on the market for your Ram Vehicle. We are sure you will be happy with this system after 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.

Welcome to TEAM RK

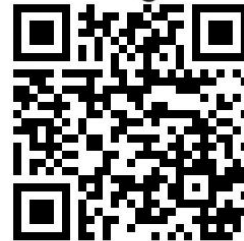
Share your before & after pictures, install photos & wheeling images.

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@RKSuspension

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@rock_krawler

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

WARNING

- Properly block and secure vehicle prior to installation.
- Always wear safety glasses when using power tools.
- Rock Krawler Suspension recommends the use of Loctite on all hardware, unless noted otherwise.
- The use of limiting straps is recommended to avoid damage from overextending the suspension of your vehicle.
- Read and understand all instructions, warnings and safety precautions in these instructions and your owner's manual before attempting to install these components.
- Proper installation of Rock Krawler Suspension 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. Rock Krawler Suspension, Inc. strongly recommends that this system be installed by a certified mechanic with off road experience.
- Rock Krawler Suspension 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 lift, bumper heights, and other alterations. Consult local laws to determine if your proposed alterations (including installation of this system) comply with your state laws.
- Rock Krawler Suspension does not condone or authorize the use of any other suspension components with its products. Should Rock Krawler Systems or components be installed in junction with other products or not per the provided instructions Rock Krawler Suspension warranty is void and is not to be held accountable for any resulting actions.



Driving and Handling Tips

- For Highway driving it is best to have the front sway bar connected. This will give you the on-highway ride and handling characteristics you expect. **If you choose otherwise, you do so at your own risk.**
- The ride quality and handling that Rock Krawler is known for is based on using OEM sway bars front and rear with approved shocks. Using any components other than directed can result in adverse handling characteristics and poor ride quality.
- For Off-Road use it is best to have the front sway bar disconnected and the rear sway bar connected. This will allow your suspension to do its intended function. Our suspension will give your vehicle unmatched articulation which will provide traction and feedback to keep your vehicle moving in almost all conditions. Let the suspension do the work!

IMPORTANCE OF JAM NUTS

This is a note about jam nuts and the consumer's responsibility. The installer is the person or persons initially responsible for the proper setup of the suspension system and/or components and the initial tightening of the jam nuts. The jam nuts not only hold the orientation of the joint it is on, but it is the single component that puts the necessary pre-load on the joint's threads. The consumer or vehicle owner is the person or persons responsible for maintaining the jam nuts tightness. Failure to do so will result in the rapid deterioration of the threads in the control arm and will impose a "cause for concern" for the occupants of the vehicle. Failure to comply with the warnings heeded in the directions regarding the number of threads showing past the jam nut will also result in the same "cause for concern" for the occupants of the vehicle. All the above items are the responsibility of the vehicle owner and or installer. If a threaded section of a component is bad it will show itself defective immediately. Threads that fail over time are due to improper maintenance of jam nuts and can be proven very easily. Thread sections and jam nuts not properly maintained or setup, are not covered under warranty. This is the end user and installer's responsibility.

MAINTAINING JOINTS

Krawler Joints/Pro Flex Joints, Anti-Wobble Joints and Pro Disconnect Joints

The Pro Series Krawler Joints, Pro Flex Joints, Anti-Wobble Joints and Pro Disconnect Joints are greaseable. They come pre-lubed from the factory. The grease valley is machined into the housings. Grade 1 grease can be used in all joints. We recommend Mobilux EP 1. They will not take a lot of grease, nor do they need a lot of grease. Approximately every 4 to 6 months under normal operating conditions they should be greased. This is condition and use dependent so please use common sense. Over lubrication or using the incorrect grade of grease can do damage to the joints and hydraulically displace the race way material causing a sloppy joint condition. Never ever use red and tacky.

If the joint is not loose, it is not bad. Only if the ball is sloppy in the joint housing is it a bad joint and should be rebuilt. Krawler Joint Raceways, Pro Flex Joint Raceway, or Anti-Wobble Joint Raceways are available through Rock Krawler Suspension or an authorized dealer.

Please note: If you are not using the full range of motion of the Krawler Joint, Pro Flex Joint, or Anti-Wobble Joint very often, the lubrication will not be moving inside the joint. In such cases we recommend spraying down the outside of the Joint with WD-40 or Liquid Fluid Film to ensure the race ways do not dry up. In highly corrosive environments it is also recommended to spray down the suspension components with WD-40 or Liquid Fluid Film. This will minimize corrosion of the components due to exposure to the elements.

HEIM JOINTS (Non- rebuildable spherical joints)

All Rock Krawler Heim Joints use Teflon Liners and thus are self-lubricating. They too can also benefit from spraying down the outside of them liberally with WD-40 or Liquid Fluid Film. Grease should never be applied to them! Take caution when using cleaners and detergents on your vehicle as it can ruin the adhesives used on the Teflon liners yielding a bad heim joint.

TORQUE VALUES FOR HARDWARE AND JAM NUTS

- All 14mm and 9/16” are torqued to 90 to 100 ft-lbs.
- All 16mm and 5/8” bolts are torqued to 130-150 ft-lbs.
- All 20mm bolts are torqued to 200-220 ft-lbs.
- All 1” Jam Nuts are to be torqued 250-300 ft-lbs. Up to 3/4” of threads showing past the jam nut is safe for final adjustment. These specifications are critical for the overall longevity of the threaded section.
- All 1 1/4” Jam Nuts are to be torqued to 275-325 ft-lbs. Up to 7/8” of threads showing past the jam nut is safe for final adjustment. These specifications are critical for the overall longevity of the threaded section.
- The front track bar bolts should be torqued to 190-225 ft-lbs.
- The front radius arm bolts should be torqued to 325-350 ft-lbs.
- The rear track bar bolts should be torqued to 110-125 ft-lbs.

SUGGESTED STARTING LENGTHS

Optional Front Track Bar 2013-2019 (RK4532HD)

3.5” lift – 39 3/16”

Front Lower Arm (RK08021)

3.5” lift – 37 13/16”

Rear Lower Arm (RK05982)

3.5” lift – 23 1/4”

Optional Rear Track Bar (RK04507)

3.5”/4.0” lift – 36”

Front Upper Arm (RK07918)

3.5” lift – 35 5/16”

Rear Upper Arm (RK05980)

3.5” lift – 21 1/8”

****Please Note:*** All Control Arms, Track Bars, and Sway Bar Links come preassembled, but require adjustment to the above recommended starting dimensions. These measurements are taken from the center of one bolt hole to center of the other bolt hole. **Please check out our Rock Krawler YouTube Channel for lots of great informational videos.**



FRONT SUSPENSION INSTRUCTIONS

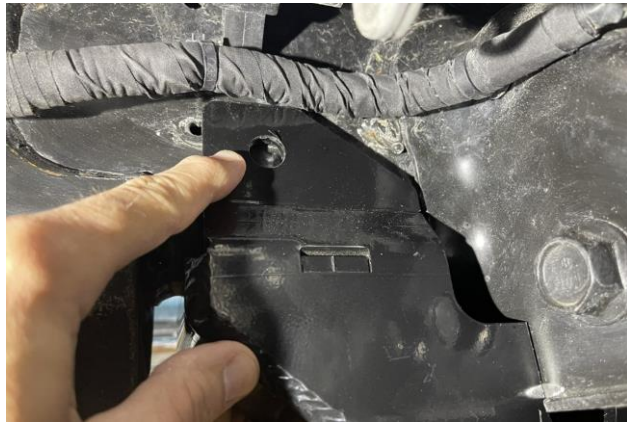
- 1) Make sure vehicle is on a level, hard, working surface if you are using a floor jack and jack stands.
- 2) Block the rear wheels so the vehicle cannot move and make sure the emergency brake is applied.
- 3) Raise and support the front of vehicle with safety jack stands. Locate jack stands on the frame in front of the axle.
 - a. If you are using a vehicle lift, place the lift arms according to the specific vehicles lifting procedures. Ensure that the lift arms will not interfere with the components that are being replaced.
- 4) Remove the front wheels and tires while a floor jack supports the axle.
- 5) Remove the OEM shocks and discard. Save the bottom mounting hardware for reuse. (Rock Krawler offers this kit with Bilstein 5100 or 2 5/8 Remote Reservoir RRD Shocks.)
- 6) Remove the OEM radius arms and save hardware for reuse.
- 7) Make sure the frame and axle are stabilized. Unbolt the front track bar from the frame and loosen the axle bolt, retain hardware. If optional front track bar was purchased, you can remove and discard OEM bar, but save the hardware for re-use.
- 8) Remove the OEM sway bar link assemblies, and discard.
- 9) Remove the OEM coil springs and discard. Retain the OEM spring isolators on the top and bottom for reuse.
- 10) Trim off the rolled edges on both sides of the truck behind the rear cross member as shown below to clear the new mounts. Apply a durable finish of your choice.



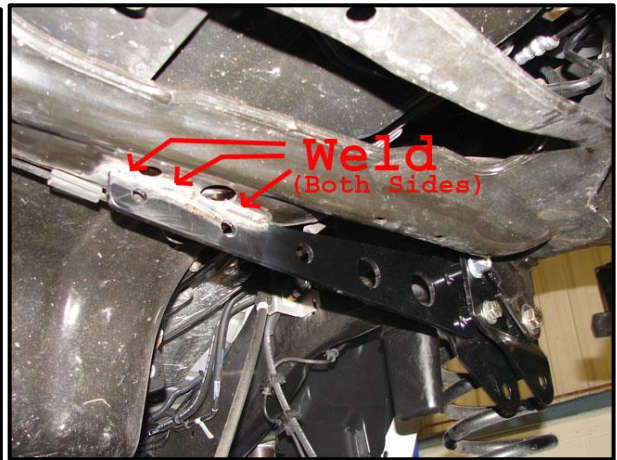
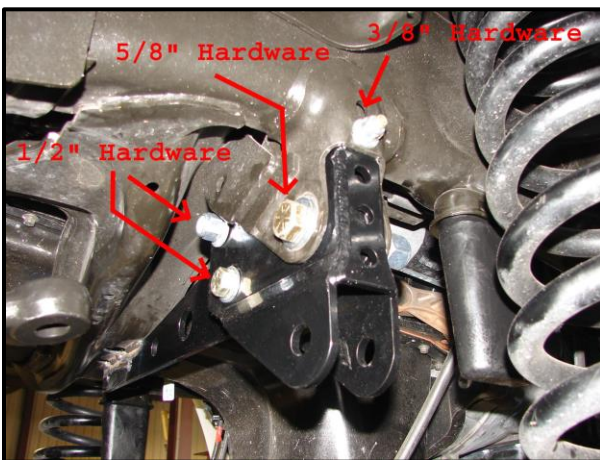
- 11) Prepare to install the radius arm/ 4 link mount drop brackets. Take your time putting them up in place. They can be a pretty tight fit. Reference pics on next page.
 - a. Using the supplied 18mm x 130mm bolt, slide the bolt into the OEM Radius arm hole and Rock Krawler radius arm/ four link bracket.
 - b. Swing bracket into place and mark the other hole on frame.
 - c. Drill the inside of the frame to 9/16" outside and 7/8th on the inside.
 - d. Install the supplied .975" O.D. x 3/4" ID by 3.125" long crush sleeve into the drilled hole in frame.

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- 12) Install the front upper arms using the supplied 18mm x 130mm in the 4-link mount and OEM bolt at the axle.
- 13) Install the front lower arm using the supplied 18mm x 130mm at the frame and the OEM bolt at the axle.
- 14) Remove OEM pitman arm and discard and install new drop pitman arm.
- 15) Install the newly supplied extended poly bump stops. Helpful hint: spraying them with WD-40 for lubrication will help when trying to push them into the OEM mounting cup.
- 16) **FOR 2013-2019 ONLY:** Install the front track bar bracket. Follow the images below for installation.



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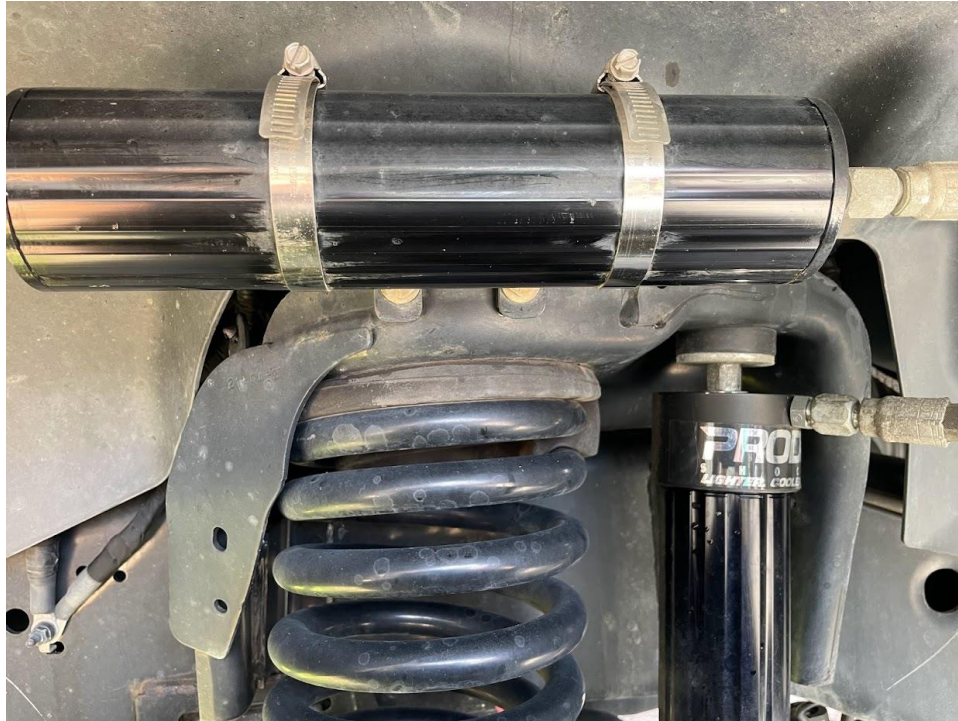
- 17) **FOR 2019 OR NEWER ONLY:** Install the front track bar bracket. Follow the images below for installation.
- 18) Remove the OEM front track bar bracket by removing all five bolts. Save the three that come out of the topside (not horizontal) connection.



- 19) While the axle is drooped down, install your new Rock Krawler springs into the vehicle with the OEM spring isolators. Make sure the springs are seated correctly in the top isolator as you raise the axle until the springs are under a slight tension. For the 2500 models; the front coils are the longer and narrower diameter coils. Helpful Hint: the larger coil winding gap goes to the bottom and the Rock Krawler Logo on the coil should go up.
- 20) Slowly raise the front end of the vehicle so you can attach the track bar to the frame connection with the OEM hardware. Leave the hardware loose. Helpful Hit: Make sure the steering column is unlocked or the drag link will make it very difficult to reconnect the track bar at the frame connection. It might even be helpful to turn the wheel a bit to assist in sliding in the hardware.
- 21) Raise the front axle assembly to a point where you can install the front shocks completely. Again, we recommend aftermarket shocks.
 - a. If you purchased the Rock Krawler 2 5/8 shocks (Either Smooth Body or Remote Reservoir) the bottom is offset, and the offset should be installed to the outside of the vehicle as shown below.
 - b. If you purchased the Remote Reservoir shocks, install the reservoir bracket. Use the supplied self-tapping to mount to top of coil bucket. Picture on next page.

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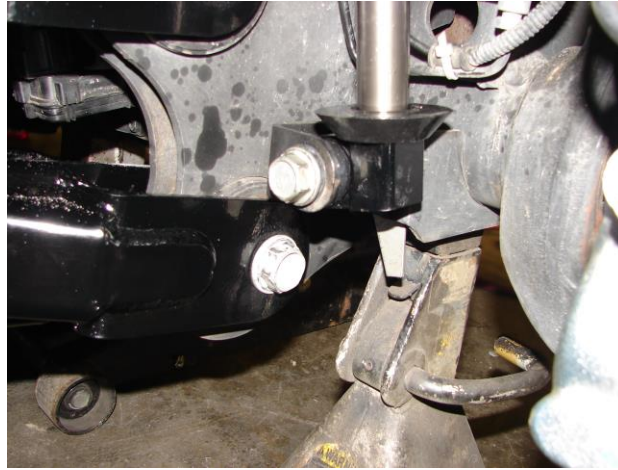
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- c. Torque the lower shock bolts to OEM specifications.
- d. Use the OEM hardware at the axle mounting position. To determine the proper tightness of the stud in the Rock Krawler Shocks, you tighten the stud until the stem cushion bushings O.D. gets slightly larger than the stem cushion washers.
- e. Attach the shock reservoir to the reservoir mount using the supplied hose clamps.

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- 22) 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 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.
- a. Apply red Loctite to the jam nuts once the final length of the sway bar links is set. Torque to 50-70 ft-lbs. of torque is recommended for the 5/8" jam nuts on these connections.



Pro Sway Bar Link Installed (Note Offset)

- 23) Reinstall wheels and tires and place vehicle on the ground.



Time To Start the Rear End (Choose the Steps that Apply to Your Application)

3500-Rear End Instructions

1. Block the front wheels in place 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. Lower the axle on jack stands to remove the load off the rear leaf springs.
4. Remove the rear wheels and tires.
5. Remove the rear shocks. Save the OEM hardware for reuse.
6. Remove the OEM U-bolts securing the rear axle to the rear leaf springs.
7. Separate the leaf springs from the axle, lift and install the newly supplied minipack. Secure the spring pack back to the axle with the supplied longer U-bolts. Tighten the U-bolts in an X pattern and torque to the specified value at the end of the directions. Note: For an even softer rear ride you do not have to install all the leaves in the mini pack. Remove one spring at a time from the bottom up.
8. Install the new longer shock. If you purchased Rock Krawler 2 5/8 Remote Reservoir shocks, please note: the reservoir goes away from the axle (Removal of the OEM spare tire may be required for fitment) and secures to the shock body with the supplied hose clamps. If you opted for Remote Reservoirs, make sure the reservoir goes away from the axle housing and is secured using the supplied hose clamps and isolators.
9. Reinstall the wheels and tires.
10. Set vehicle down on the ground.
11. Tighten all hardware to proper Torque Spec.
12. Drive the vehicle forwards and backwards to "roll it out" to ride height. Then adjust the drag link to center the wheel by loosening the collar and extending the drag link until the steering wheel is straight. The vehicle can be aligned professionally by adjusting the radius arm cam bolts.
13. Head to an alignment shop and have vehicle professionally aligned.

2500-Coil Spring Rear End Instructions

1. Block the front wheels in place 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. Lower the axle to remove the load off the rear springs.
4. Remove the rear wheels and tires.
5. Remove rear sway bar links and discard.
6. Remove the rear shocks. Save the OEM hardware for reuse.
7. Remove the rear coil springs and save the OEM isolators. Install new coil springs and OEM springs isolator.
8. Optional: If you purchased the rear upper control arms (RK05980), remove the OEM rear upper control arms, and replace them with the supplied rear upper control arms. Set the operating length to 21 1/8". Torque the mounting bolts to 250 – 275 ft-lbs.
9. Optional: If you purchased the rear lower control arms (RK05982), remove the OEM rear lower control arms and replace them with the supplied rear lower control arms. Set the operating length to 23 1/4". Torque the mounting bolts to 250 – 275 ft-lbs.
10. Remove the OEM track bar and save hardware. Set new track bar to 36" inches. Install new track bar into vehicle. The anti-wobble side goes on the frame and the Krawler joint goes to axle.
11. Set the new rear sway bar links to 11". Install new bar links. Place a washer on each side of the ball on the upper mount and use the supplied 12mm x 50mm bolt and nylok nut. Attach the bottom of the sway bar with the spacer against the sway bar as shown below and a washer on the outside of the ball. Secure with the supplied 12mm x 70 mm bolt and nylok nut.



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12. Install the newly supplied shocks using the OEM hardware Shock mounting bolts (stem cushions not included) should be torqued to 110-125 ft-lbs.
13. If you purchased Rock Krawler Remote Reservoir shocks, the reservoir attaches to the shock body with the supplied hose clamps.
14. Reinstall wheels. Tighten all hardware to proper Torque Spec.
15. Drive the vehicle forwards and backwards to “roll it out” to ride height. Then adjust the drag link to center the wheel by loosening the collar and extending the drag link until the steering wheel is straight. The vehicle can be aligned professionally by adjusting the radius arm cam bolts.
16. Head to an alignment shop and have vehicle professionally aligned.

2500-Air Bag Rear End Instructions

1. Block the front wheels in place 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 wheels and tires.
4. Remove rear sway bar links and discard.
5. Remove the rear air bags.
6. Install new air bag spacer by bolting it to the axle mount with the supplied hardware. Then secure the bottom of the air bag to the spacer.
7. Attach the metering rod bracket to the stock metering rod hole and supplied 6mm hardware.



Airbag spacer (top view)



Rock Krawler Metering rod extension

8. Optional: If you purchased the rear upper control arms (RK05980), remove the OEM rear upper control arms, and replace them with the supplied rear upper control arms. Set the operating length to 24 1/8". Torque the mounting bolts to 250 – 275 ft-lbs.
9. Optional: If you purchased the rear lower control arms (RK05982), remove the OEM rear lower control arms and replace them with the supplied rear lower control arms. Set the operating length to 23 1/4". Torque the mounting bolts to 250 – 275 ft-lbs.
10. Remove the OEM track bar and save hardware. Set new track bar to 36" inches. Install new track bar into vehicle. The anti-wobble side goes on the frame and the Krawler joint goes to axle.
11. Set the new rear sway bar links to 11". Install new bar links. Place a washer on each side of the ball on the upper mount and use the supplied 12mm x 50mm bolt and nylok nut. Attach the bottom of the sway bar with the spacer against the sway bar as shown below and a washer on the outside of the ball. Secure with the supplied 12mm x 70 mm bolt and nylok nut.
12. Reinstall wheels. Tighten all hardware to proper Torque Spec.
13. Drive the vehicle forwards and backwards to "roll it out" to ride height. Then adjust the drag link to center the wheel by loosening the collar and extending the drag link until the steering wheel is straight. The vehicle can be aligned professionally by adjusting the radius arm cam bolts.
14. Head to an alignment shop and have vehicle professionally aligned.



Center the Steering Wheel (This is critical for ESP/ESC equipped Ram HD's and must be done with the steering wheel position sensors at Zero as well.)

Typical alignment specs for the Rock Krawler 3.5"- 4.0" X Factor System Kit

Tow – factory specification – zero preferred

Camber – You have no adjustment

Caster: Rotate the Cam Bolts for maximum caster. 4.0 to 5.0 degrees with .2 degrees caster on the passenger side than the driver's side to account for road crown. Please note: Some tire treads and steering stabilizers may cause a pull or push that needs to be accounting for.

Suspension tuning, ride quality and handling were developed on 35 and 37-inch-tall tires on 17- or 18-inch diameter wheels. Here are some recommended no load tire pressures for heavy walled aftermarket tires based on zero payload or tongue weight. 50 psi front and 40 psi rear. Tuning tire pressure to achieve what is optimum to you is up to you and your discretion.

Remember to retorque all hardware after 500 miles and check for proper alignments to ensure everything has settled in properly and is functioning correctly!

***Please Note:** If you do not have adjustable components, you will not be able to dial in the alignment or pinion angle settings so what you get is what you get.

A note about tires, wheels, tire pressure and how it effects ride quality:

Tire and Wheel combinations at a given tire pressure have their own spring and dampening rates associated with them. This plays a major part in ride quality and off-road performance. The stock tire pressure settings on your Wrangler are based on stock C rated light duty tires on 17" wheels. Larger aftermarket tires typically have a much firmer side wall than the stock ones, thus increasing the spring rate and decreasing the dampening rate associated with the tires themselves. Going from a C to a D or E rated tire also amplifies this effect. Increasing wheel diameters cuts down on the sidewall size of the tire; for example, going from a 17" wheel to a 20" to 22" wheels will increase the spring rate and decrease the dampening rate of the tire and wheel combination. As you increase tire strength and wheel size it is common to have to reduce the tire pressures in order to make your aftermarket tire and wheel combination feel like stock wheel combination. **Choose pressures wisely and safely! This is one part of your suspension tuning you can do on your own.**

Before hitting the pavement or the trails be sure to make sure the control arms are oriented properly, all spherical joints (heim joints and Krawler Joints) are oriented correctly to allow for maximum movement without bind, and all jam nuts have Loctite on them and are tight. Make sure the axles are properly centered, pinion angles are correct, there is proper slack in ABS lines, and all lines are properly routed. Go back over all your hardware and make sure each connection is tightened to its proper torque spec. Check your vehicles articulation and ensure that no moving parts contact or interfere with any other components throughout the travel (brake lines, shocks, coils, sway bar links). Also check to see if at full flex your coil spring losses tension, if so, you may want to look into a limit strap. You may need to look at bump stops depending on what shocks you choose to run.



Congratulations, you have just finished installing your Rock Krawler Suspension System! Your Ram is now free to roam about the country.

Common Service Parts Listings:

Grade 1 Grease such as Mobil Grease – Mobilux EP1 [NLGI 1] or equivalent can be used for Systems After Jan 1, 2020.

Front Track Bars (RK04532HD)

Anti-Wobble Joint Bushings (Frame End of Front Track Bar) – RK07836K – Requires Small Joint Tool – RK04487

Front Track Bar Replacement Heim Joint (Axle End) – RK07535 (1" Shank) – Optional New Misalignment Spacers – RK04531

Rear Track Bars (RK04507)

Krawler Joint (Axle End) 1.0" Shank 2 3/8 x 14mm – RK04153

Adventure Series Rear Upper Joint (Frame End) 1.0" Shank 2.375 x 9/16 – RK07417

Front Lower Arm (RK8021)

Krawler Joint (Frame End)- 1.25" Shank 3.386 x 20MM (Ram HD 4 Link) – RK08020

Front Upper Arm (RK7918)

Krawler Joint (Frame End)- 1.25" Shank 3.386 x 20MM (Ram HD 4 Link) – RK08020

Rear Upper Arm (RK05980)

Krawler Joint – 1.25" Shank 3.25 x 20MM – RK05977 R/L

Rear Upper Arm (RK05982)

Krawler Joint - 1.25" Shank 3.625 x 20MM – RK05978 R/L

List of systems these instructions are good for:

R3XF3505, R3XF4005, R2XF3505, R2XF4005, R2XF3505AR, R2XF4005AR