



Pioneer 1000 0" & 3" Lift Installation Instructions

We have tried to cover every detail of this installation as thoroughly as possible, but in the event that we missed something, please let us know. We really appreciate your business, and we hold customer satisfaction with high regard. Do not hesitate to give me a call if you need clarification or assistance with anything at all throughout your installation process.

-Jared Doster
936-581-2948

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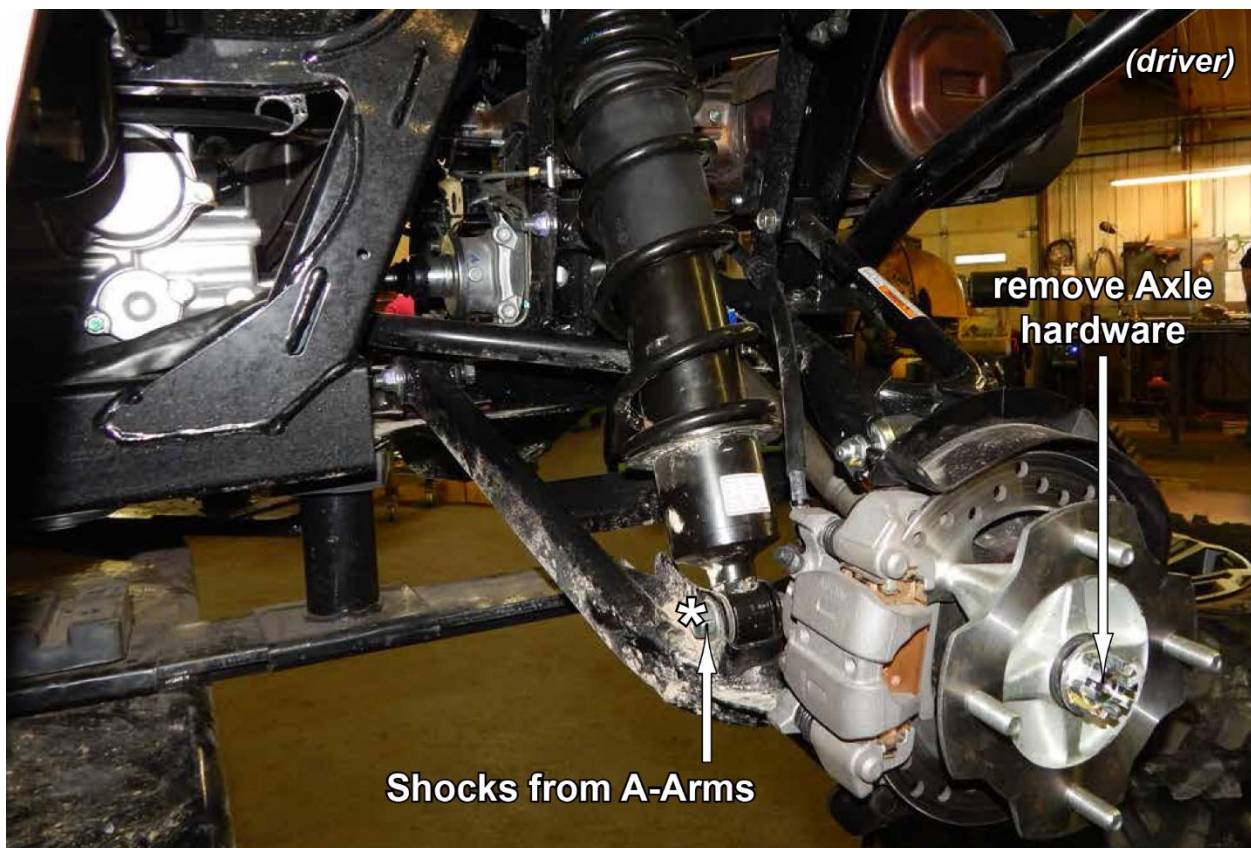
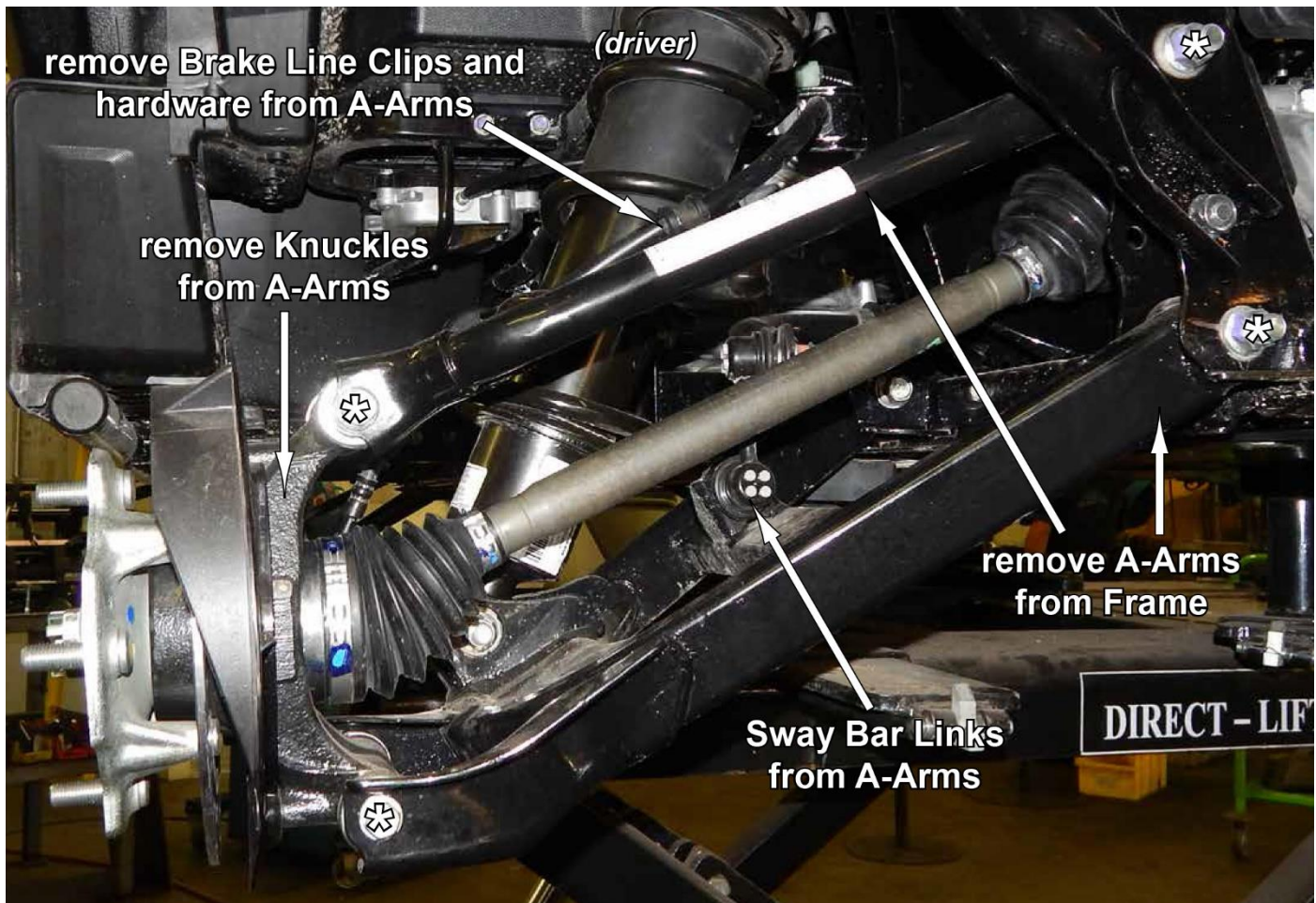
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Stock Rear Control Arms Disassembly:



Step 1. Securely jack up your machine and remove the rear wheels.

Step 2. (Remove Brake Line Bolts) Remove the bolts securing the brake lines to the upper control arm.

Step 3. (Remove Upper Control Arm) Loosen the two 12mm frame bolts and nuts that secure the upper control arm to the frame (Leave bolts in).

Next, loosen the upper, outer 10mm x 120mm bolt holding the hub assembly to the upper control arm and remove the bolt (*You will not re-use this nut and bolt.*)

Next, remove the two inner 12mm frame bolts, and remove the stock upper control arm.

Step 4. (Remove Lower Control Arm) Loosen the two 12mm frame bolts and nuts that secure the lower control arm to the frame (Leave bolts in).

Next, loosen the lower, outer 10mm x 153 bolt holding the hub assembly to the lower control arm and remove the bolt (*You will re-use both the nut and the bolt.*)

Next, remove the lower shock mount bolt and secure shock up and out of the way with a tie strap or bungee cord.

Next, remove the sway bar from the lower control arm and then from the machine itself.

Next, remove the lower control arm from the hub assembly and remove lower control arm from the machine.

TTC Rear Control Arms Installation:

Step 1. (Install Rear Lower TTC Control Arm) Locate the lower control arm for the side that you are working on and make sure that the shock tabs are closer to the front of the machine to ensure you have the arm for the correct side. Install the lower control arm into the lower frame mount using the two factory 12mm bolts and nuts. Snug up the nut but do not tighten.

Next, install the rear hub assembly into the lower control arm using the factory lower 10mm bolt.

Step 2. (Install Shock) Install the shock into the lower control arm securing it with the stock 12mm bolt and nut.

Step 3. (Install Rear Upper TTC Control Arm) Locate the Rear upper control arms. They are both exactly the same and can be used on either side. Install the TTC upper control arm into the upper frame mounts using the factory 12mm bolts and nuts. Snug up the nut but do not tighten.

Next, remove the pre-installed 10mm bolt supplied with the TTC rear upper arms (Be careful not to lose the aluminum spacers resting in the heim joints). Line up the heim joints with the top of the hub assembly and use a mallet to help them slide into place so that the supplied upper hub bolt can be installed.

Step 4. (Tighten Frame Bolts) Once everything is assembled hand tight, go ahead and fully tighten both the upper and lower frame bolts that mount the control arms to the frame.

Step 5. (Route and Secure Brake Line) Rout and secure the brake line as desired and secure with zip ties.

Repeat everything on other side....

Rear Camber Adjustment:

If the **top** of the wheel is sticking out farther than the bottom of the wheel, then you need to adjust the upper heim joints in a few turns.

If the **bottom** of the wheel is sticking out farther than the top of the wheel, then you need to adjust the upper heim joints out.

Step 1. (Remove Wheels) To adjust for camber correction, jack up the rear of the machine and remove the wheels.

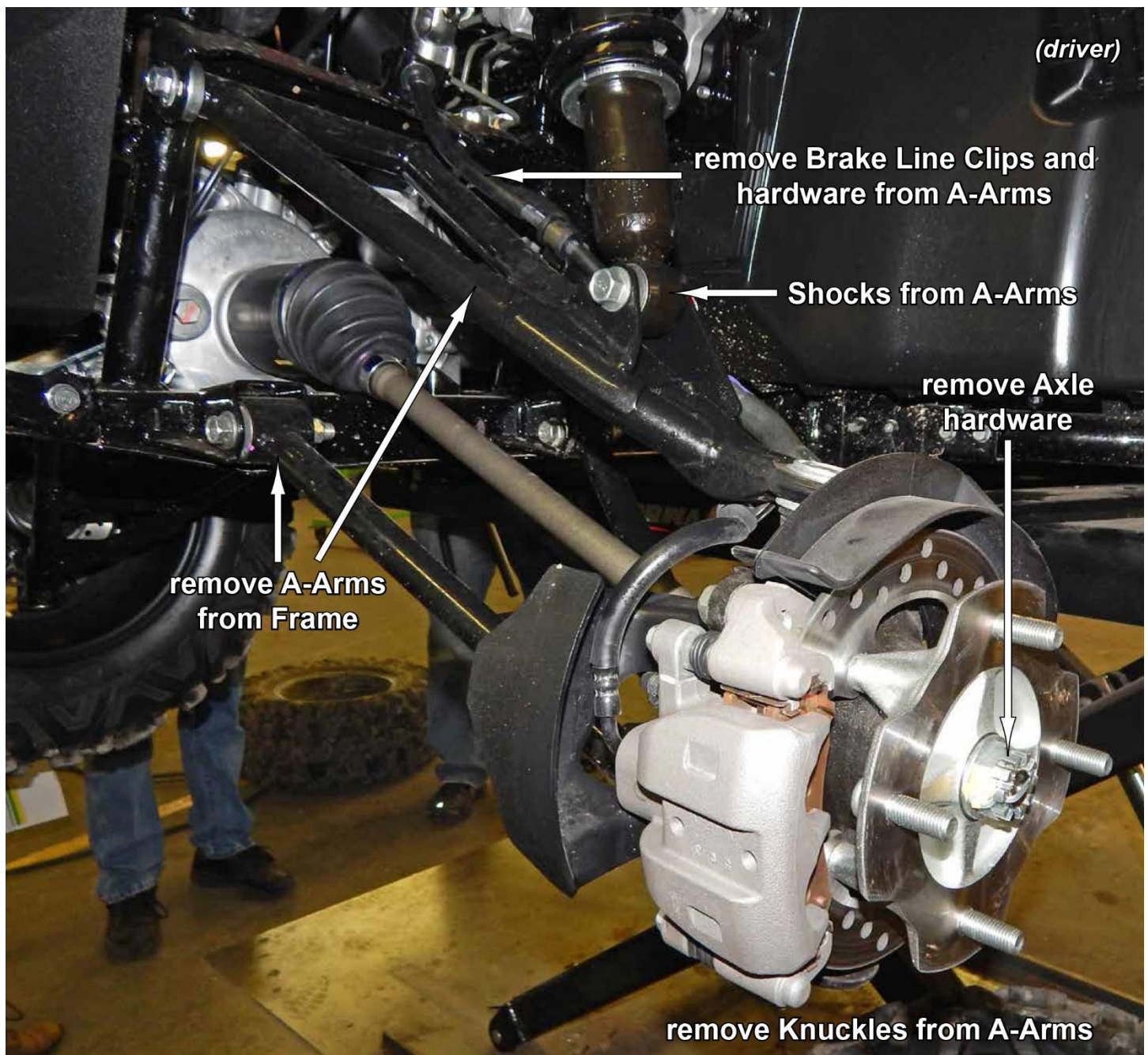
Step 2. (Remove Upper Arm From Hub Assembly) Remove the upper hub bolt and remove upper arm from hub assembly. Once removed, adjust the upper heim joints either in or out to achieve desired camber.

Step 3. (Re-Assemble) Put the upper arm back into the hub assembly and secure retaining nut hand tight.

Step 4. (Install wheels and Re-check Camber) Re-install wheels and start up the machine. Pull it forward and back while turning the wheels back and forth to allow the shocks to settle to true ride height. Once the suspension has settled back down to normal, check to see if you have achieved the desired camber. Repeat steps until desired camber is achieved.

Step 5. (Tighten and Finalize) Once desired camber is achieved, tighten all nuts.

Stock Front Control Arms and Tie Rod Disassembly:



Step 1. Securely jack up your machine and remove the front wheels.

Step 2. (Remove Brake Line Bolts) Remove the bolts securing the brake lines to the upper control arm.

Step 3. (Remove Outer Tie Rod) Remove cotter pin and loosen the nut on the factory outer tie rod. Free the outer tie rod from the hub assembly.

Step 4. (Remove Lower Control Arm) Remove Lower ball joint cotter pin, and castle nut, and remove the ball joint from the hub assembly. Once the lower control arm is free from the Hub assembly, loosen and remove the 2 - 12mm bolts holding the lower control arm to the frame. Remove the lower control arm and put to the side.

Step 5. (Remove Upper Control Arm) Remove upper ball joint cotter pin and loosen castle nut. Free the ball joint from the hub assembly. Once free, remove the castle nut and carefully secure the hub assembly with a tie strap or bungee cord out of the way.

Step 6. (Remove Shock From Control Arm) Loosen and remove lower shock mount bolt. Using a tie strap, bungee cord, or rope, secure the shock up and out of the way.

Step 7. (Remove Upper Control Arm) Loosen and remove the long 10mm bolt and nut that secures the upper control arm to the frame and remove upper control arm.

Step 8. (Remove Stock Tie Rod from Rack and Pinion) Using a flat head screw driver or pry bar and a pair of wire clippers, cut off the metal band holding the stock inner tie rod boot on to the rack and pinion. (*Be careful not to damage the boot because you will reuse it with your new set of tie rods*). Remove band and pull boot out of the way to access the inner tie rod ball socket. Using a large crescent wrench or channel locks, unscrew the inner tie rod from the rack and pinion. Sometimes the retaining clip gets stuck in the rack, make sure to remove this clip and discard. Unscrew the outer tie rod from the inner tie rod and carefully remove the boot for reuse.

If you do damage the boots or need to replace them, you can either order new OEM replacement boots from your dealership or online parts store, or go to your local parts store and see if they have a Dorman universal rack and pinion boot kit (Part # 03670).

TTC Front Control Arms and Tie Rod Installation:

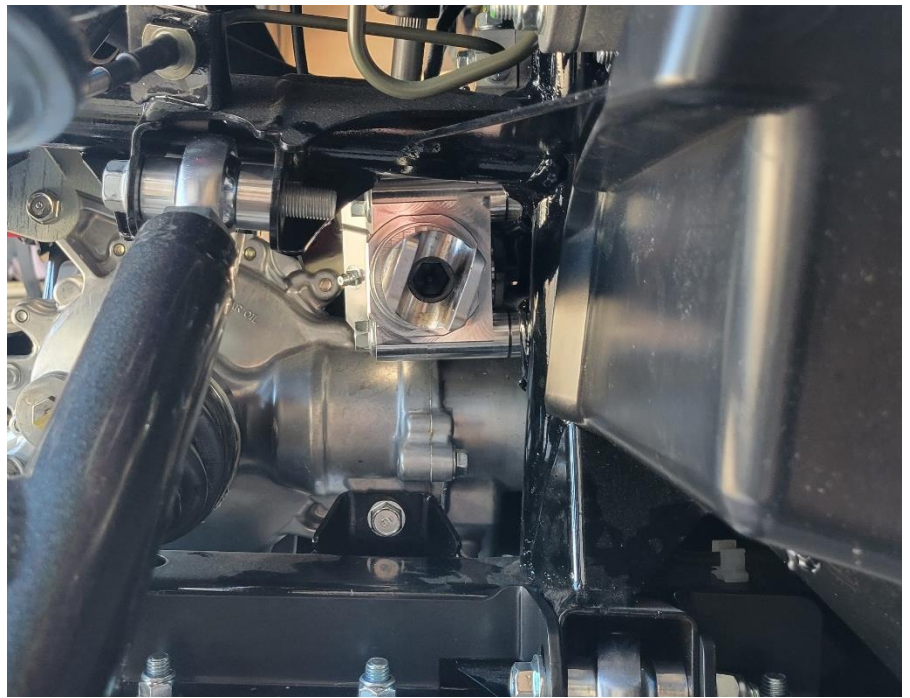
Step 1. (Assemble and Install TTC HD Tie Rods) Your new heavy-duty tie rods come in 3 pieces. The inner tie rod end (SATV Part # T4571, or T2522 for the 14mm version), outer tie rod end (5/8"-18 Heim Joint), and the heavy-duty tie rod itself. **Make sure to use Red Loctite on the threads that go into the steering rack.** Screw the inner tie rod into the rack and pinion and make sure it is very tight.

(2022+ models may need to drill out the hub assembly with a 1/2" bit in order to install the 1/2" bolt and Heim into the hub assembly)

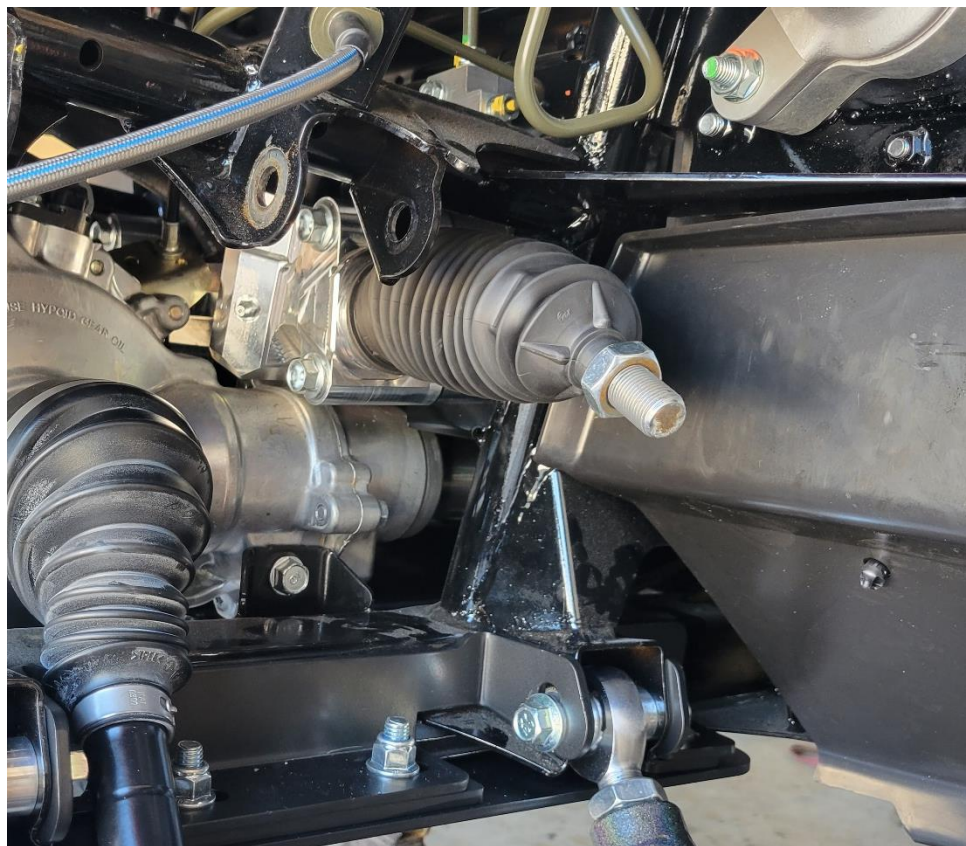
If you are installing our heim style tie rods, make sure to "clock" the inner heim clevis slightly towards the back of the machine (@ 1 o'clock on the driver's side, and @ 11 o'clock on the passenger's side). We do this so that the heim maintains full range of movement throughout the full stroke of the rack and doesn't bind up in the clevis. See the picture below or watch the video link below.

(Torque steering rack bolt to 60ftlb)

https://youtu.be/_fl-srRFd_M



Next, make sure the jam nut is not installed on the inner tie rod (or heim joint), and push your stock tie rod boot on to the 14 mm shaft of the inner tie rod end. Make sure the boot is properly installed and seated in the groove on the rack and pinion, then secure it tightly with a zip tie.



Next, screw the jam nut on to the heim so that there is 3/4" of threads left on the end of the heim, then screw the HD tie rod all the way up to the jam nut. Secure the tie rod assembly out of the way until a later step.

Step 2. (Install Lower TTC Control Arm) Locate the lower control arm for the side that you are working on and make sure that the ball joint is closer to the front of the machine to ensure you have the arm for the correct side. Install the lower control arm into the lower frame mount using the two factory 12mm bolts and nuts. Snug up the nut but do not tighten.

Your front lower control arms use **Moog part number (ES437L)** as the lower ball joints. *(Remember, both upper and lower ball joints are LEFT HAND THREAD).* To adjust for proper camber, make sure this lower ball joint is screwed all the way in and 3 turns out.

Step 3. (Install the Hub Assembly to the Lower Ball Joint) Remove the cotter pin and castle nut from the Moog lower ball joint and install it into the hub assembly. *(If you are running portals, make sure to assemble the supplied washers between the castle nut and the portal bracket assembly. See Picture Below)* Make sure to only tighten the castle nut hand tight until front installation is complete and desired camber is achieved. Do not install cotter pin at this time.

Step 4. (Install Upper TTC Control Arm) Locate the upper control arm for the side that you are working on and make sure that the ball joint is closer to the front of the machine and the shock mount is closer to the rear of the machine. Install the TTC upper control arm into the upper frame mount using the factory 10mm x 213 bolt and nut. Snug up the nut but do not tighten. **(If you are installing our 2 bolt design scroll down to our “2 Bolt Design” installation instructions)**

Your front upper control arms use **Moog part number (ES2848LT) or (ES437L for '22 models)** as the upper ball joints. *(Remember, both upper and lower ball joints are LEFT HAND THREAD).* To adjust for proper camber, **start with screwing the upper ball joint all the way in, then 3 turns out**. Once you finish installation, you may need to adjust this upper ball joint either out or in to obtain desired camber depending on your shocks and other components.

Step 5. (Install Upper Control Arm Into the Hub Assembly) Remove the cotter pin and castle nut from the Moog upper ball joint and install it into the hub assembly. Make sure to only tighten the castle nut hand tight until front installation is complete and desired camber is achieved. Do not install cotter pin at this time.

(2022 models may need to shave off the tip of the ball joint just before the cotter pin hole to avoid clearance issues with the axle boot)

If you are running portals, make sure to install the supplied thick washer between the castle nut and the portal hub assembly. The upper washer has a flat spot cut in it and should be installed like the next picture.



Step 6. (Install Shock) Install the shock into the upper control arm securing it with the stock 12mm bolt and nut.

Step 7. (Install Tie Rod to Hub Assembly) Install the outer tie rod and tie rod assembly into the hub assemble where the stock tie rod was previously. Do not tighten the locking nut at this time in case you need to disassemble to adjust camber.



Step 8. (Tighten Frame Bolts) Once everything is assembled hand tight, go ahead and fully tighten both the upper and lower frame bolts that mount the control arms to the frame.

Step 9. (Route and Secure Brake Line) Rout and secure the brake line as desired and secure with zip ties.

Repeat everything on other side....

Once both sides are complete, re-install the tires and lower the machine to the ground. Start it up and pull it forward and back while turning the wheels back and forth to allow the shocks to settle to true ride height. Once the suspension has settled back down to normal, check to see if you have achieved the desired camber (wheels are straight up and down).

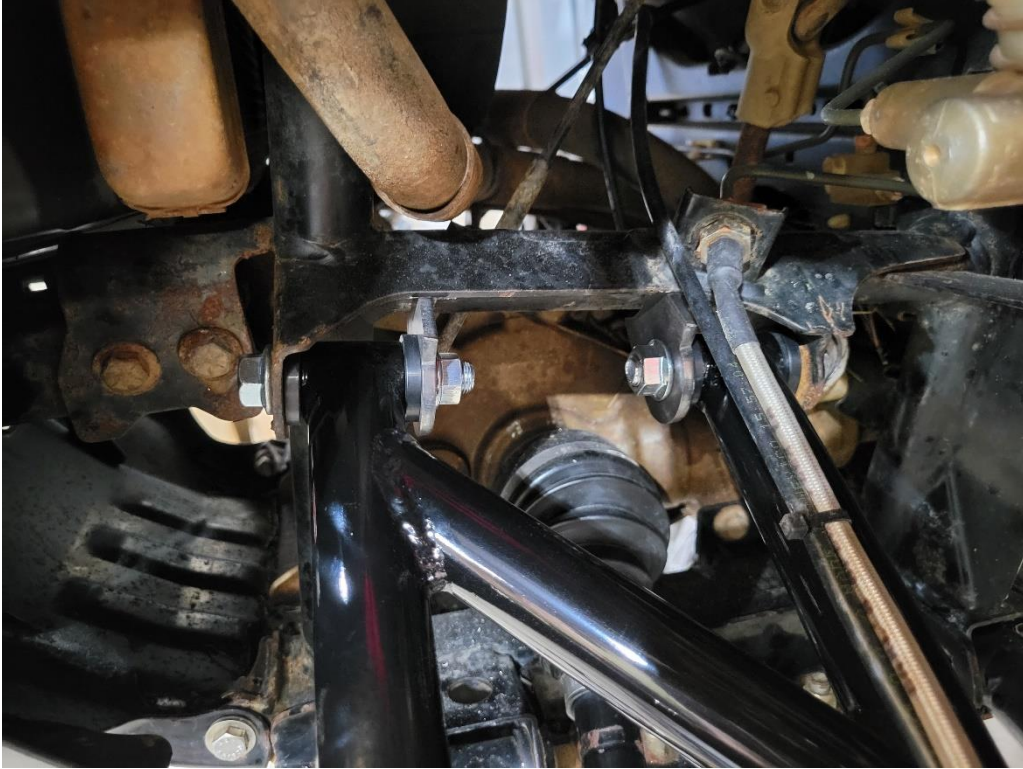
If camber is correct, tighten everything down and install cotter pins into castle nuts.

2 Bolt Design Installation Instructions:

Step 1. (Drill Out Old Tabs) Using a right-angle adapter, a step bit, and a drill, drill out the stock upper frame tabs to 1/2". After drilling out the tabs make sure to prepare the frame where the new tabs will be welded.



Step 2. (Tack in New Tabs) Using the new TTC 2 Bolt Design arm and provided 12mm nuts & bolts, install arm into existing space like the picture below. Install the new weld in frame tabs at this time and secure everything hand tight with the provided hardware. Once everything is fitted evenly and where you want it, tack it in. **(Make sure to remove the arm quickly so you don't melt the UMHW bushings)**



Step 3. (Weld It Up) After you remove the Arm, weld everything up. Once everything is cool, hit it with a coat of black paint and let dry, then install your new upper arms.



Front Camber Adjustment:

If the **top** of the wheel is sticking out farther than the bottom of the wheel, then you need to adjust the upper ball joint in. *(If the upper ball joint is all the way in, unscrew the lower ball joint to accomplish desired camber)*

If the **bottom** of the wheel is sticking out farther than the top of the wheel, then you need to adjust the upper ball joint out.

Step 1. (Remove Wheels) To adjust for camber correction, jack up the front of the machine and remove the wheels.

Step 2. (Remove Upper Ball Joint From Hub Assembly) Remove castle nut from upper ball joint and remove upper ball joint from hub assembly. Once removed, adjust the upper ball joint either in or out to achieve desired camber. *(Remember, the ball joints are **LEFT HAND THREAD**)*

Step 3. (Re-Assemble) Put the upper ball joint back into the hub assembly and secure castle nut hand tight.

Step 4. (Install wheels and Re-check Camber) Re-install wheels and start up the machine. Pull it forward and back while turning the wheels back and forth to allow the shocks to settle to true ride height. Once the suspension has settled back down to normal, check to see if you have achieved the desired camber. Repeat steps until desired camber is achieved.

Step 5. (Tighten and Finalize) Once desired camber is achieved, tighten all ball joint castle nuts and install all cotter pins.

Toe Adjustment:

If your wheels are pointing **outward**, you need to **loosen** the tie rods to bring the wheels straight.

If you wheel are pointing **inward**, you need to **tighten** the tie rods to bring the wheels straight.

Step 1. (Adjust Toe) Make sure all tie rods are screwed all the way in and the jam nuts are loose. Since both ends of the tie rod are right hand thread, you must remove the outer tie rod end from the hub assembly, make your adjustment in or out, then reinstall back in to hub assembly and check tow again. Do not install the nylon lock nut until desired toe is reached and you are finished making adjustments. Check toe by measuring the distance between the wheels in front of the ball joint and comparing it to the distance between the wheels behind the ball joint.

Step 2. (Tighten) Once desired toe is reached, tighten the jam nuts and make sure to check them frequently. (Desired toe is about 1/8" toe in)