



Pioneer 1000 6" Long Travel 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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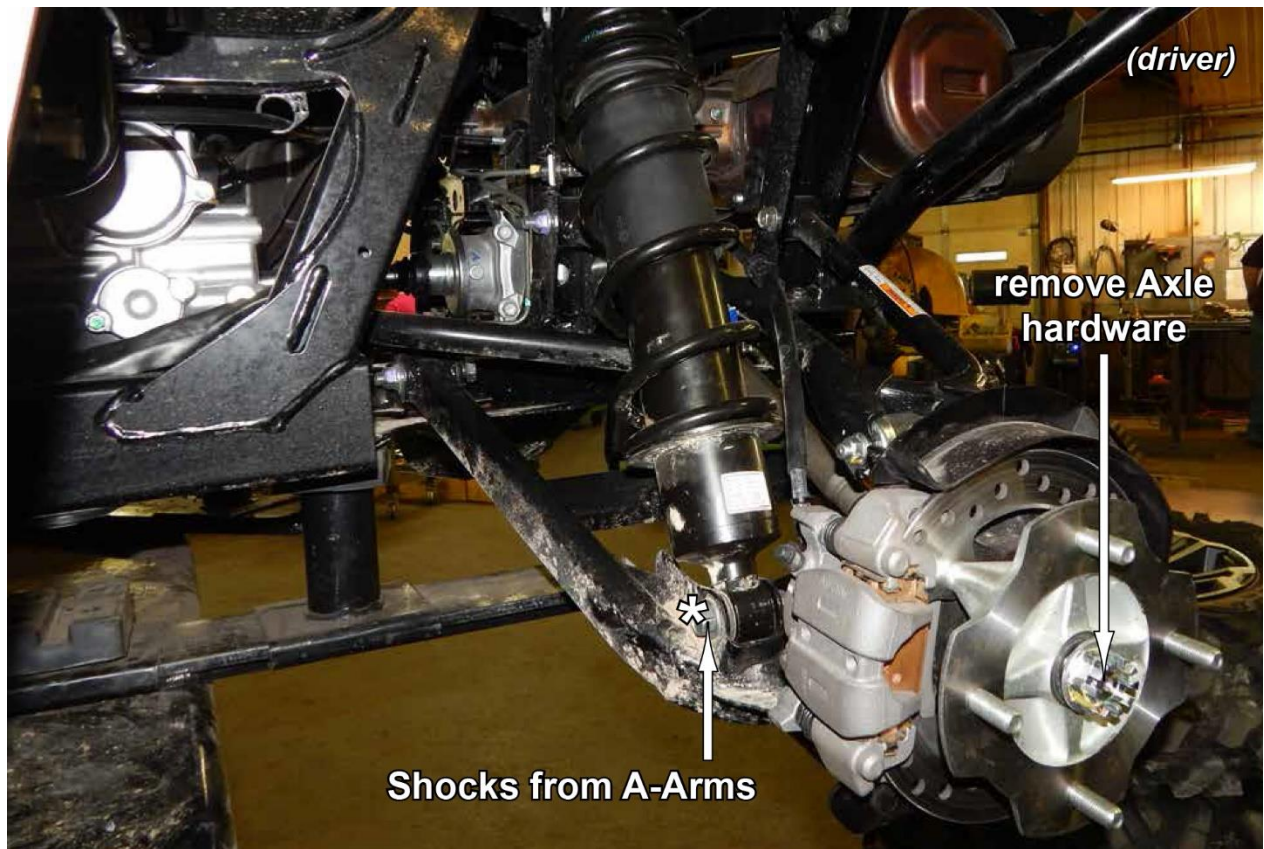
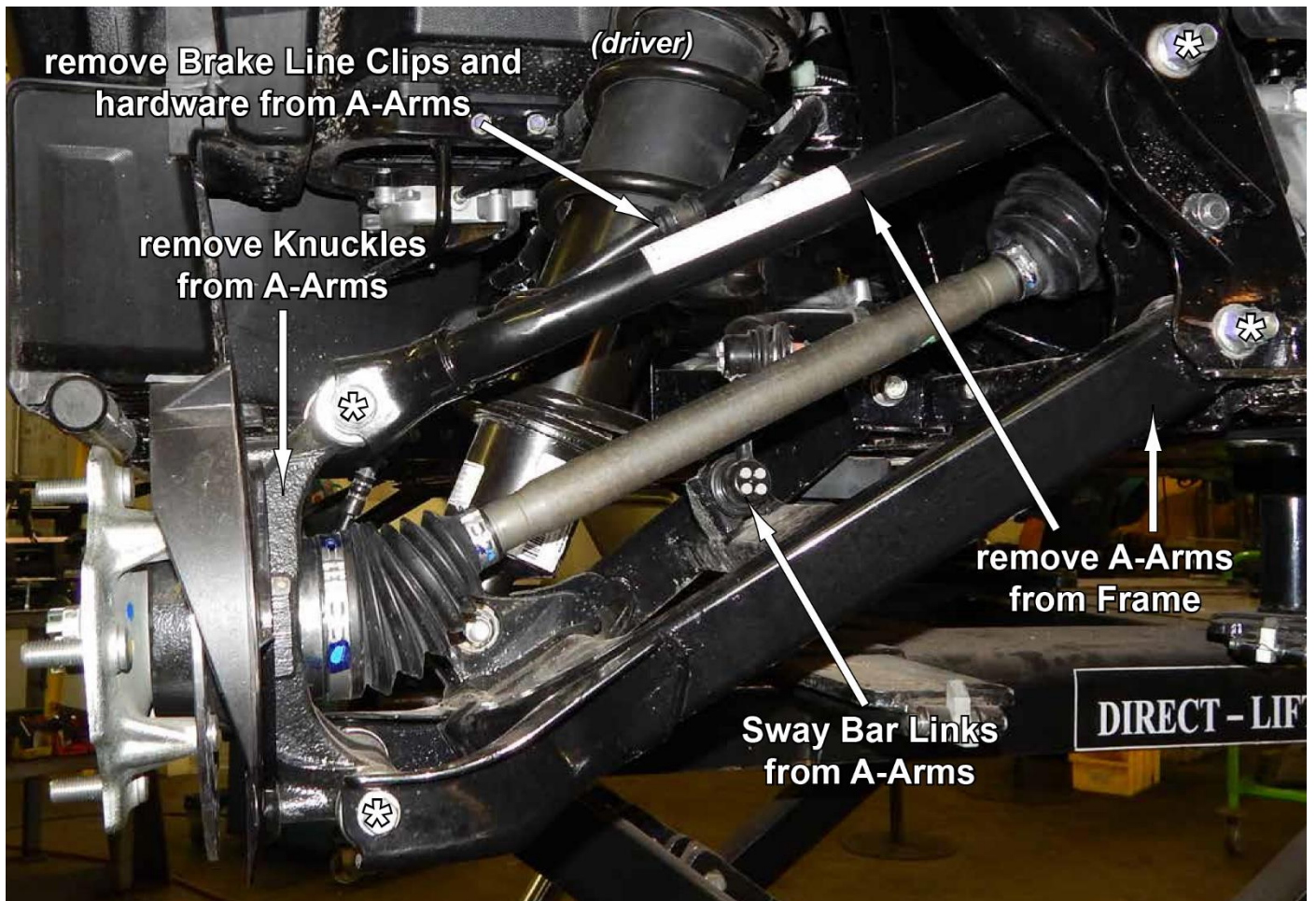
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Stock Rear Control Arms Disassembly:



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 Axle Nut) Remove cotter pin or flatten out the factory retaining indentation in the axle nut and remove the axle nut from the axle.

Step 4. (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 5. (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 both the lower and upper shock mount bolt and remove rear shock from vehicle.

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.

Next, remove the hub assembly from the CV axle.

Next, remove lower control arm from the machine.

Step 6. (Remove The CV Axle) Remove the CV Axle from the rear differential.

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.

Step 2. (Install New Extended CV Axle & Hub Assembly) Locate the correct rear axle for the side you are working on (The Pioneer 1000 rear axles are side specific) and install it into the rear differential.

Next install the rear hub assembly onto the CV axle splines and secure with the axle nut.

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

Step 3. (Install Rear Shock) Before installing the rear shock you must first install the supplied rear coil spring spacer to insure that your stock shocks do not bottom out during operation (unless you are running aftermarket adjustable shocks). To do so compress your factory springs until you can remove the top factory retaining clip on the top of the spring.

Next, compress the spring down even more until you are able to install the rear coil spring spacer on to the top of the factory spring and insert the retaining clip back in.

Next, install the shock into the lower control arm securing it with the stock 12mm bolt and nut.

(If you are running after market adjustable shocks, We recommend that you increase the preload by about .75" or more, or as needed to achieve desired ride height and quality) If you don't add enough preload, your spring rate will be too soft. This will cause your suspension to bottom out when hitting bumps and could damage the arms.

IMPROPER SPRING ADJUSTMENT COULD VOID REPLACEMENT WARRANTY.

Step 4. (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. (Install, Route and Secure Brake Line) Install the new braided brake lines that come with the kit. For 2016 models BL095 are the fronts, and BL096 are the rears. For 2017+ models BL097 are the fronts, and BL 098 are the rear. 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.

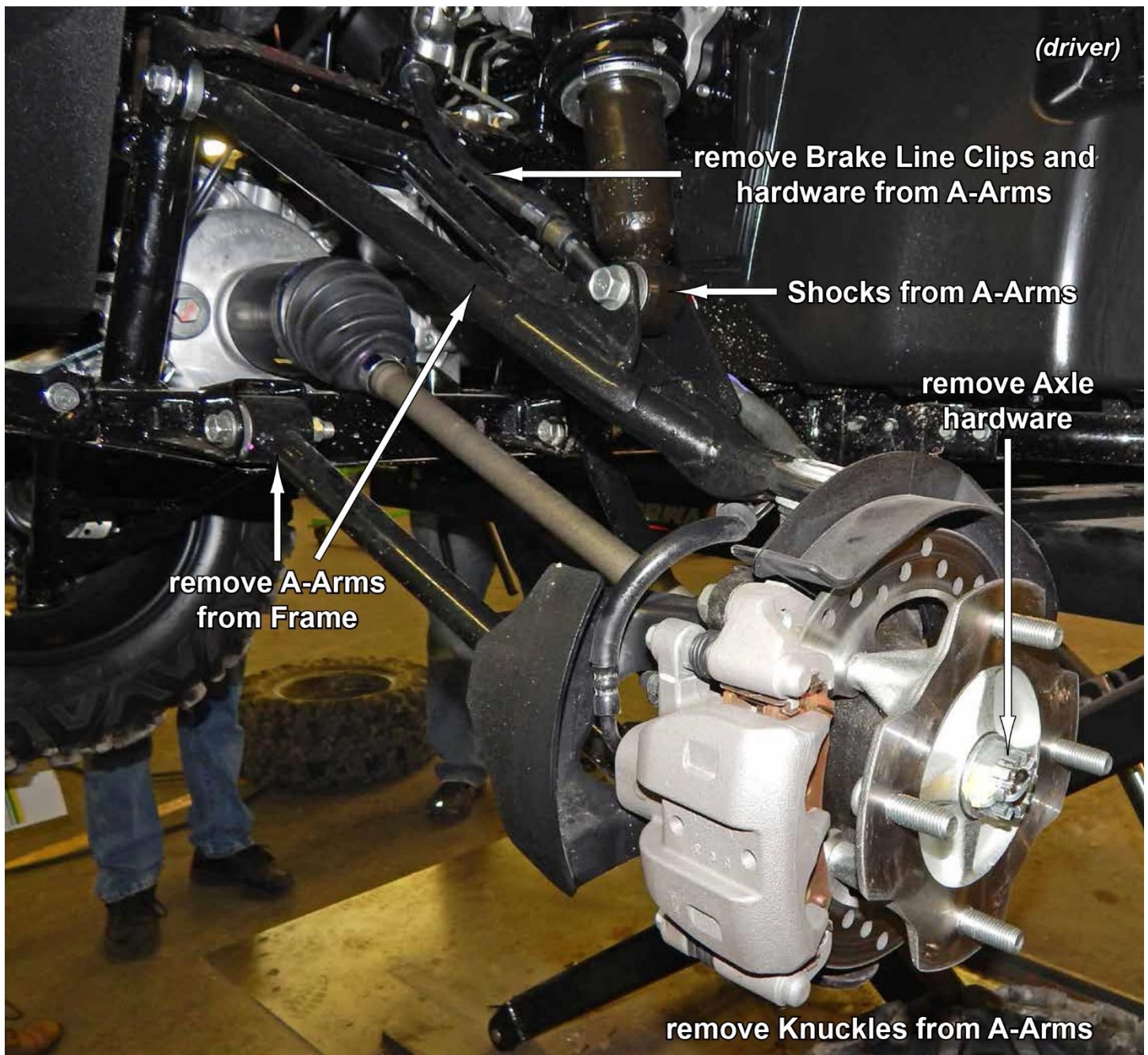
Step 2. (Remove Upper Arm From Hub Assembly) Remove the upper hub bolt and remove upper arm from hub assembly. Once removed, adjust the upper heim joints either in or out to achieve desired camber.

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 Axle Nut) Remove cotter pin or flatten out the factory retaining indentation in the axle nut and remove the axle nut from the axle.

Step 5. (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 6. (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 remove the hub assembly from the CV Axle and secure to the side.

Step 7. (Remove Shock From Control Arm) Loosen and remove both the upper and lower shock mount bolts and remove the shock from the vehicle.

Step 8. (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 9. (Remove Stock Front CV Axle) Remove the CV Axle from the front differential.

Step 10. (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).

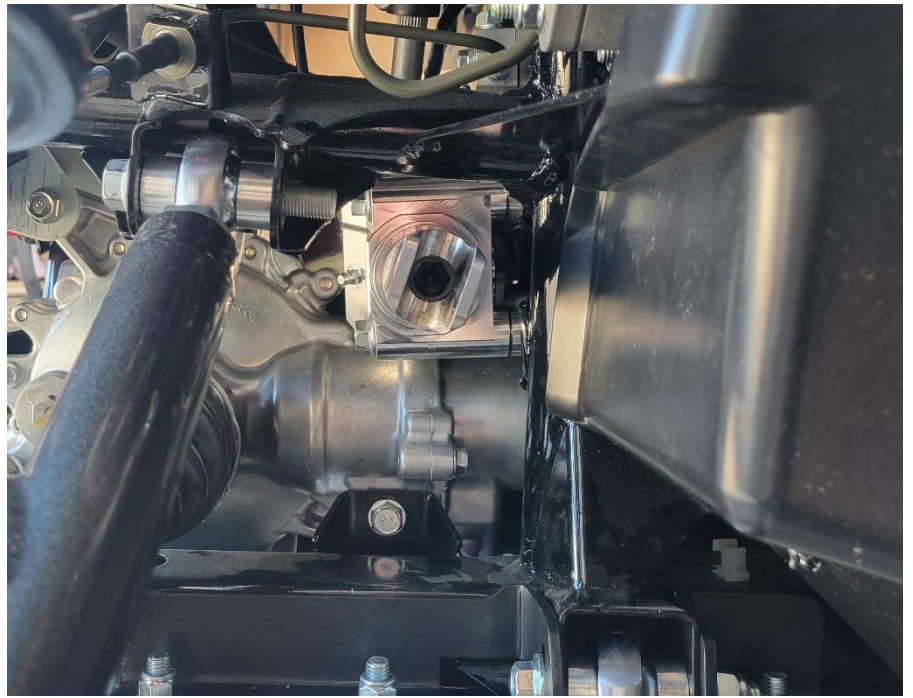
TTC Front Control Arms and Tie Rod Installation:

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 (Moog ES80558, or 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 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.

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, then screw on the jam nut.



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 on the jam nut, then screw the HD tie rod all the way on to the inner tie rod that was previously installed into the rack and pinion. 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 then 3 turns out.

Step 3. (Install the New Front Extended Axle) Locate one of the front axles (The Pioneer 1000 Front axles are the same) and install it into the front differential.

Next install the front hub assembly onto the CV axle splines and secure with the axle nut.

Step 4. (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 pics 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.

If you are running **Keller Ball Joints**, reference this video for proper calibration and tightening.

<https://www.youtube.com/watch?v=XAN5UVcmXAE&t=246s>

Step 5. (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**) 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 6. (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.

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 with the flat spot facing the portal. See picture below.



Step 7. (Install Shock) Before installing the front shock you must first install the supplied front coil spring spacer to insure that your stock shocks do not bottom out during operation (unless you are running aftermarket adjustable shocks). To do so compress your factory springs until you can remove the top factory retaining clip on the top of the spring.

Next, compress the spring down even more until you are able to install the rear coil spring spacer on to the top of the factory spring and insert the retaining clip back in.

Next, install the shock into the upper control arm securing it with the stock 12mm bolt and nut.

(If you are running after market adjustable shocks, We recommend that you increase the preload by about .75" or more, or as needed to achieve desired ride height and quality) If you don't add enough preload, your spring rate will be too soft. This will cause your suspension to bottom out when hitting bumps and could damage the arms.

IMPROPER SPRING ADJUSTMENT COULD VOID REPLACEMENT WARRANTY.

Step 8. (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 9. (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 10. (Install, Route and Secure Brake Line) Install the new braided break lines that come with the kit. For 2016 models BL095 are the fronts, and BL096 are the rears. For 2017+ models BL097 are the fronts, and BL 098 are the rear. 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).

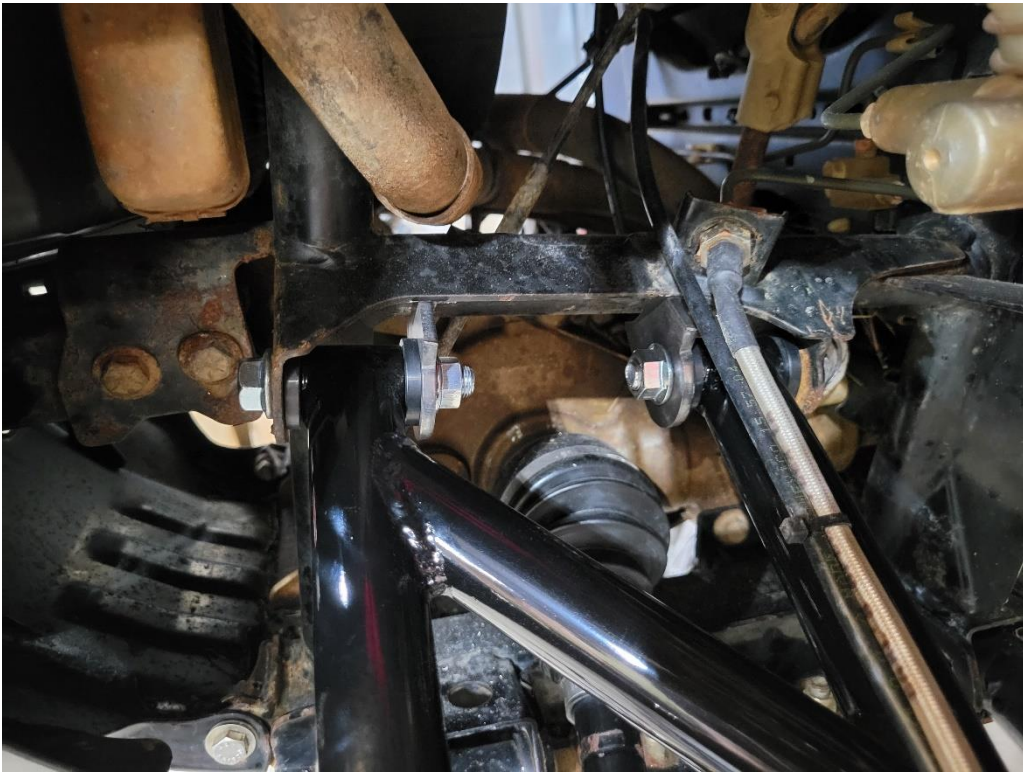
If camber is correct, tighten everything down and install cotter pins into castle nuts.

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 one end of your tie rods are right hand thread and the other is left hand thread, this allows you to grab the HD tie rod itself and either tighten or loosen it to obtain desired toe adjustment. 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.

Don't hesitate to give us a call if you have any question during your installation. 936-581-2948