



Polaris 2018-2019 RZR XP Turbo S & 2019 RZR XP 4 Turbo S Stock Replacement Front Lower Control Arm Kit *Installation Instructions*

SKU# 360-90609

Introduction

- Installation requires a qualified mechanic.
- Read instructions carefully and study the pictures (if included) before attempting installation.
- Check the parts and hardware packages against the parts list to assure that your kit is complete.
- Always wear safety glasses when using power tools.
- The OEM Polaris control arms are lightweight and will suffice for light to moderate operating use. Under aggressive use and racing, there are a few areas that become problematic such as bushings getting loose, upper arms bending, and broken ball joints or ball joints pulling thru the arm. The Cognito control arm kit uses larger bushings, spherical bearings (uni-balls) and hardened stainless steel spindle pins rather than the stock ball joint. The construction is of stronger material, slightly thicker, and a stronger design to handle abuse.
- The spindle needs a modification in order to provide clearance for a heavy-duty control arm with uni-balls like the Cognito control arms. The instructions will take you through this modification as well as installation. We will modify the upper and lower end of the spindle in case you are also going to install the Cognito upper control arm kit at some time.
- This lower control arm kit has an adjustable camber feature. The 2019 RZR XP 4 Turbo S notoriously has mismatched camber on the front end left vs right side. This lower arm kit will allow camber shimming to match camber setting from side to side.

Parts List – 360-90609

- 8606 Driver lower arm
- 8607 Passenger lower arm
- (2x) 90610 spherical bearing assembly
 - 6297 rod end housing
 - 7/8" spherical bearing (uni-ball), pre-installed in rod end housing
 - Internal retaining ring
 - ½-20x1.1/4" 12 point flange bolt
 - ½" lock washer
 - .012" thick camber shim
 - .025" thick camber shim
- (2X) HP9224 Bushing and Crush Sleeve kit
- (2x) HP9223 Spindle pin kit
 - 6299 spindle pin
 - 6300 spherical washer
 - 3/8-24x3/4" 12 point flange bolt

- 3/8" lock washer

Installation Instructions

1. Raise the front of the vehicle up by the frame so that the suspension droops out and tires are off the ground. Remove front wheels.
2. The front spindles must be modified slightly to provide clearance for the upper and lower control arms.
 - a. Unbolt the brake caliper from the spindle, the axle nut from the spindle, and the upper and lower control arms from the spindle. Then remove the spindle and let the lower arm, caliper, and axle hang.
 - b. The spindle needs a modification in order to provide clearance for a heavy-duty control arm with uni-balls like the Cognito control arms. Stock spindles have a little extra meat that needs to be removed. This trimming has no effect on structural integrity, this is an outside corner that has nothing to do with the strength of the spindle. See Figure 1 which shows a stock spindle and notes on the corners that will be trimmed. Then see Figure 2 which shows the trimmed spindle. Note the extra meat that will need to be sanded off.
 - c. Use an air sander and remove the corner material as shown in Figure 4, take it down to where the edge of the flange bolt and nut would be.
 - d. Figure 5 shows what the finished edge should look like with the flange bolt there.

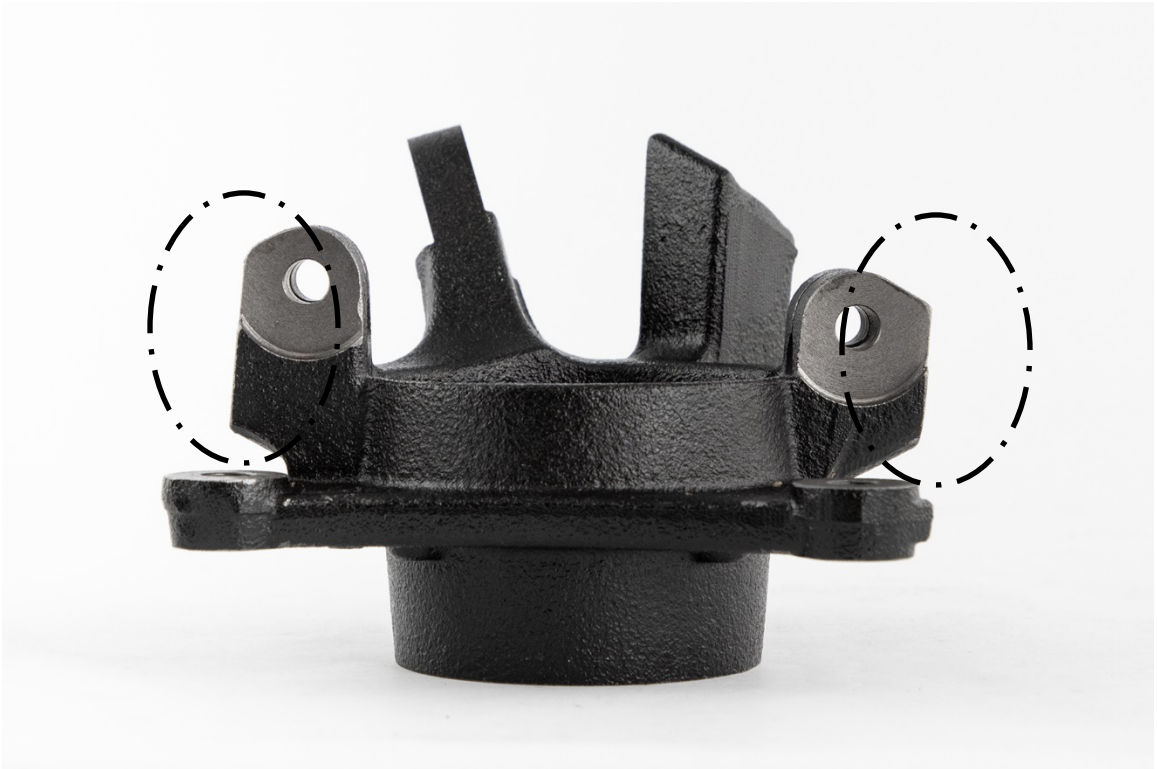


Figure 1 (above): Unmodified spindle



Figure 2 (above): Modified Spindle

Instruction Set #7165



Figure 3: more detail shown of the area that needs to be removed, which must be done in both locations shown in Figure 1.



Figure 4: Sanding the corners off



Figure 5: Grinding done on inboard side of top, material removed right up to the flange of the bolt and nut.

3. Pick a side to start on. Unbolt the lower arm from the car and remove. Locate the Cognito lower control arms and the rod end assemblies. The rod end assemblies should already have the spherical bearing and retaining clip installed, please verify at this time. Verify the retaining clip is set all the way in the retaining clip groove.
4. Do not use any grease in this step as the bushing are supposed to stay fixed with the arm. Press a poly/plastic bushing into each end of the long (rear) frame pivot tube. Press a poly/plastic bushing into each end of the short (front) frame pivot tube.
5. Now lubricate the inside of the bushings with grease, filling the cavity in between the bushings and also the grease flutes on the inside diameter of the bushings. Now push the appropriate crush sleeves into the greased holes of the bushings.
6. Mount the Cognito lower control arms in place with the factory pivot bolts, See the parts list above and the part # stamped on each arm to determine proper placement. Torque the pivot bolts to 70 ft-lb.
7. Bolt the uni-ball rod end assembly to the control arm with the included $\frac{1}{2}$ " 12 point bolt with a lock washer, and no camber shims, tighten to 80 ft.lbs. You will notice the rod end will only go into the control arm one way which is designated by the pin and slot. This is there simply to keep the rod end aligned for assembly, once the bolt is tight there is no load on the pin. After we check ride height, we will check camber and shim as needed. The 2019 XP 4 Turbo S is notorious for having the camber off from the Polaris factory from side to side, which is why we designed an adjustable camber lower control arm with fine adjustment as a threaded rod end has too course of adjustment. If you have this vehicle we recommend no shims on the right side and place all the shims included on the left side, this will be

pretty close. If you have a 2 seat XP Turbo S, usually no shims gets you in the right spot and if you want a little more negative camber you can shim from there.

8. Repeat for the process for the opposite side.
9. Locate the included spindle studs, spherical washers, lock washers, and 12 point bolts. Install the studs in the spherical bearings of the arms now, the lower arms have the stud pointing up. Fasten the stud to the spherical bearings with a stainless spherical washer, then a lock washer, then the 12 point bolt and torque to 35 ft-lb. Use a drop of red threadlocker on the threads at the end of the bolt (farthest from the bolt head) to ensure the threadlocker covers the threads which engage with the spindle pin.
10. With the axle in place, install the control arms to the spindles just like stock, torque pinch bolts to 40 ft-lb. Then mount the caliper to the spindle and torque to 40 ft-lb. Tighten axle nut and install cotter pin. Polaris service manual calls for 180 ft-lbs on the axle nut.
11. Install wheels, make sure everything is tightened appropriately, cycle the steering at ride height and full droop to be sure there are no issues with brake lines.
12. Set ride height, with no passengers and stock height (32") tires, it should be 16". Measure from the ground to the frame gusset underneath the lower control arm rear frame pivot. For larger diameter tires, ride height goes up by the radius change. Must roll the car forward and backward to get it to settle before measuring. This is stock setting, if you are groomed track racing and setting ride height low, set at your discretion.
13. Now that the ride height is set, it is time to look at camber. Start with the left side, get the left front tire heading straight, then look at camber, then get the right front tire heading straight and look at its camber. Whichever side has the most negative camber will be the side that needs no shims. If the other side of the car is leaned over less or has positive camber, you can remove the bolt holding the lower rod end in place and install a shim then fasten back together. 1 thin shim is about .15degrees, 1 thick shim is about .35 degrees. Stack the shims as needed to refine your camber setting.
14. At proper ride height, check front wheel toe measurement, should be 1/8" toe in, when occupants get in and car settles down the toe will end up about 0".



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Product Consumer Safety and Warning

The installation of this kit will modify the suspension of your vehicle and may cause it to handle significantly different than a factory equipped vehicle. Installing larger tires with modified suspension and increased ground clearance will significantly alter the handling characteristics of the vehicle, and may result in increased braking distances as well as changes in vehicle maneuverability and handling compared to the factory equipped vehicle. As with any vehicle, extreme caution and care must be used to prevent loss of control or roll-over during sharp turns or abrupt maneuvers. Always wear seat belts and drive safely, recognizing the reduced speeds and specialized driving techniques is required.

This suspension system will not strengthen nor reinforce the stock frame of the vehicle, nor will it increase rollover protection. It is necessary to periodically inspect all suspension and drive train components for tightness of fit or any damage. Installation of these parts will modify the height of the vehicle and will raise the center of gravity. Altered height modifications and off-road operation may increase your vehicle's susceptibility to roll over conditions and may cause serious injury or death. Many states regulate the height modification to each vehicle. Check the laws in your state for exact specifications. Height modifications may affect the reaction, ride, handling, and wear factor of your vehicle's components.

Failure to drive this vehicle safely may result in injury or death! Do not drive this vehicle unless you are familiar with its unique handling characteristics and are confident of your ability to maintain control under all driving conditions. Some modifications and combinations of modifications are not recommended, unsafe, and may not be permitted in your state. Consult your vehicle owner's manual, the instructions accompanying this product, and your state laws before undertaking these modifications. The owner of the modified vehicle and the qualified mechanic required to install this product are responsible for the legality and safety of the vehicle being modified.