HydroDynamics USA, Inc.
9303 Bond Ave.
El Cajon, CA 92021
1-866-GO-iShock

Yamaha Rhino® Long Travel Installation Instructions

Congratulations on the purchase of you new iShock Rhino Long Travel Suspension System. We believe you will find the product to your satisfaction...Actually, your complete enjoyment and that is an iShock guarantee! We are also confident you will find the installation process both fun and rewarding. However, if you feel at all intimidated by the process or lack the experience to complete an intermediate to advanced level mechanical project, please consult the HDUSA trained technicians and furthermore consider employing the services of a certified technitian to assist with the install. Failure to instal this product correctly may result in serious damage to you vehicle and possible bodily harm.

Step 1:

As with all mechanical procedures, step 1 is safety! Please be sure to wear your safety glasses at all times, make sure your tools are well maintained and in good working order, and keep you work area completely clean and well organized thought out the entire procedure.

Step 2:

Although you will not be working with the vehicles electrical system, it is always highly recommended to disconnect the negative terminal on the battery when working on the drive train of any vehicle. Since we are going to begin with the front end, block the rear tires and set the emergency brake. Jack up the front end of the vehicle and support with jack stands under the frame. Remove the front tires. **Never work under any vehicle that is not safely supported!**

Step 3:

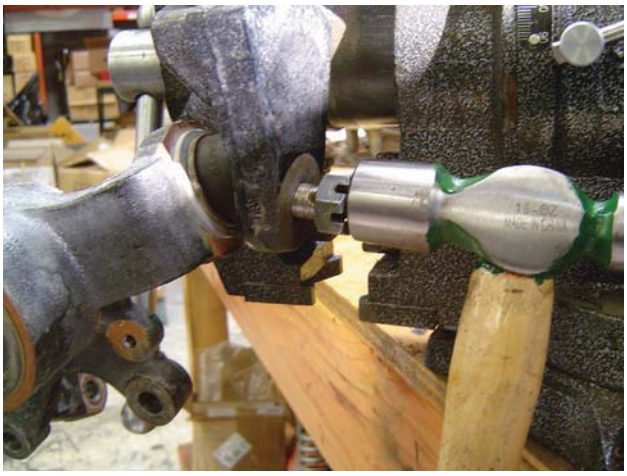
Next, remove the hub and spindle. Since the center nut is “crimped” into place by the factory it is necessary to straighten the crimp using a small drift or center punch and hammer. It is now safe to remove the axle nut. Now, remove the two 10mm bolts that retain the OEM brake line. You will now be able to gently remove the caliper and support the unit by hanging it from the frame (not hanging it from the hose!). Slide off the hub, rotor, and rotor guard and save along with all hardware.

Step 4:

Remove the tie rod ends from the spindle by removing the cotter pin (Discard the used pins...It is never a good idea to reuse cotter pins) and nut then slightly “shocking” the rod end if necessary with a hammer which will allow for easy removal from the spindle. Remove the cotter pin and nut from the upper ball joint. Feel free to smack this ball joint from the bottom to break it loose from the spindle...Don’t worry about damage to this ball joint as your new upper a-arms come with new ball joints pre-installed.

Step 5:

Now remove the upper a-arms and discard; saving the hardware. Remove the brake lines (all three) and discard. Remove the lower a-arm with spindle attached and place lower stock arm in a vise as shown. Shock the ball joint loose as shown using the nut as protection for the threads. Be sure to support the spindle to keep it from crashing to the ground as it releases. This is the safest way to remove the ball joint without damaging the component; the lower ball joint **WILL** be re-used.



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Step 6:

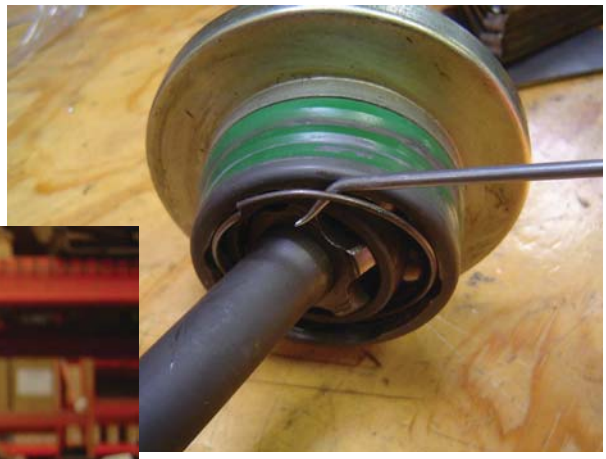
Remove front axles and CV's using a gentle slide hammer action. Simply grab the axle at the outer CV and push and pull until the inner clip releases. Be sure to accurately mark the location of each CV, a permanent marker works well for this. This must be done accurately as each CV is specific to its location both front and rear and inner and outer.

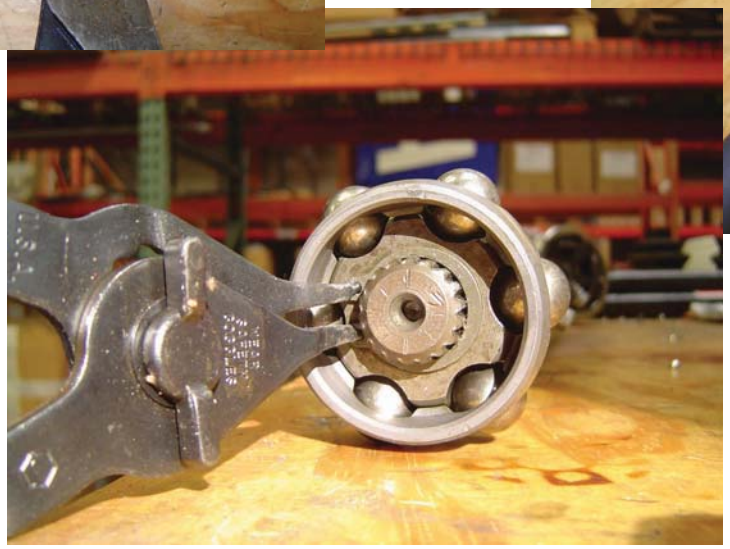
Step 7:

If you have purchased the optional HDUSA "bolt on" gusset kit, now is the time to install this item. If you have not purchased this item, it is very strongly recommended by most long travel manufactures to help support the frame at its most vulnerable location from the additional leverage or load from the extended arms. This is cheap insurance for a potentially costly repair down the road. Since this is simple bolt on application as opposed to most weld on kits, the installation is quick and simple and the minutes spent now may vary well prevent a time consuming failure on the trail later. Please contact an iShock associate for details or visit the product on the web at www.iShock.com.

Step 8:

Simple so far right? Well, now its time to roll up the sleeves and get dirty! Cut the stock CV bands from the CV boots carefully so that you *do not damage the rubber boot*. Discard the bands. Slide the boots away from the CV to access the guts of the joint. Remove the large snap ring from the base of the CV and pull the housing away from the CV assembly. Next, remove the small snap ring using snap ring pliers and gently remove the CV cage and bearings from the axle shaft...Do not loose the bearings! Remove both boots and keep all parts except for the CV bands which you previously cut.





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Step 9:

Place the axle into a vise and using a “soft” hammer such as a brass or rubber mallet smack the CV as shown to release the inner snap ring. DO NOT DAMAGE THE CV BY BEING A TOUGH GUY...A gentle hit with a soft hammer will suffice. Save all components including the snap rings. There should be no reason to ever replace these rings if disassembled correctly.

Step 10:

Its time to build some axles. The two front axles are the longest of the bunch and are exactly the same length. Slide the stock CV boots over the new axle and install the small snap ring (the wire style ring) onto the “large” end of the new axle. Place your outer CV into the vice gently, it does not need to be too tight. Insert your new axle with the boot and clip installed into the CV and lightly tap with a hammer to seat the inner ring.

Step 11:

On to the inner CV; install the boot first as done with the outer, then install the CV cage, tapered end first. Using your snap ring pliers, install the snap ring into the end of the shaft.

Step 12:

Install the housing onto the axle over the CV cage and install the larger snap ring and move CV boot into place.

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Step 13:

Using the provided stainless steel CV boot straps in you parts box, clamp the CV boots into place using the smaller 6" straps for the inner and the larger 12" straps for the outer locations. The clamps secure with a simple "crimp" method. First tighten only the smaller inner clamp. Using a good quality "water proof" grease, pack the boot from the large end. Now, install the outer strap.

Step 14:

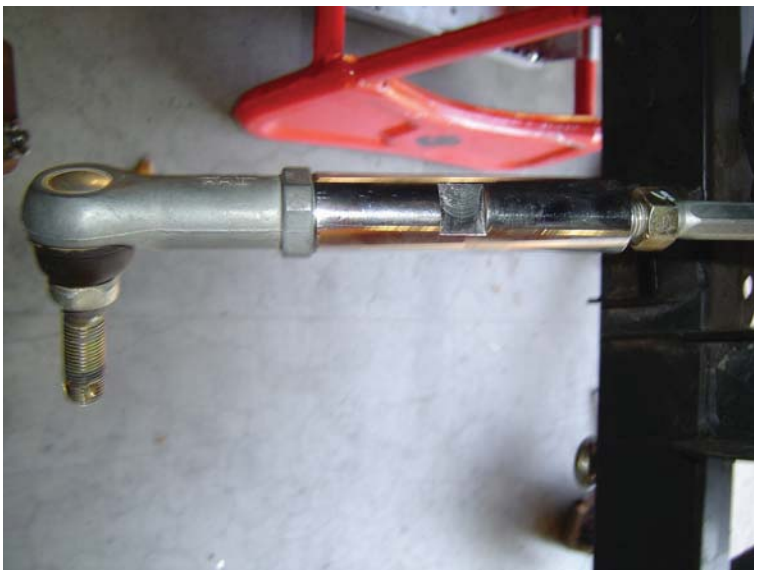
Now its time to install the completed axle assemblies into the front differential. This may take a slight smack from the mallet as shown below:

Step 15:

Your upper and lower a-arms come complete with self lubricating Delrin busings pre-installed as well as double hard chrome plated chromoly pivot sleeves. There is no need to lube these items. Install the lower and upper front a-arms using the stock mounting hardware and thread lock. As with all chassis hardware, torque to factory specifications.

Step 16:

Install the tie rod extenders utilizing the stock components as shown. Leave these item loose for later adjustments.



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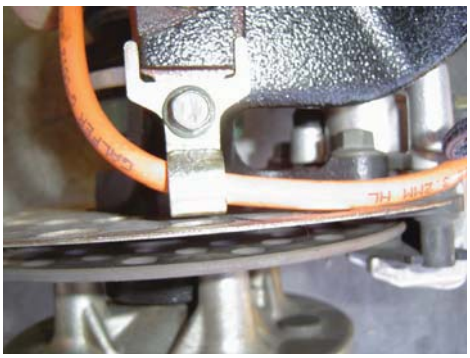
Step 17:

Install the front spindles utilizing the supplied hardware for your new upper ball joint and the OEM hardware for the existing lower. Tighten castle nuts and install cotter pins.

Step 18:

Using stock 10mm bolts install the brake calipers again, using a thread lock. Install your new HDUSA Steel Braided “Spyder Lines” being careful position the lines as marked and using the included crush washers and new banjo bolts. Use supplied brake line clamps to route the lines as shown:



Step 19:

Install your new front iShock's using the stock mounting hardware. If using shocks other that the iShock brand, it is recommended that you contact an iShock technitian for exact shock specifications to insure optimal performance and safety. Again, thread lock is never a bad idea and recommended on the shock mounting bolts as well.

Step 20:

Re-install front wheel and tires to factory specifications.

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Step 21:

On to the rear of the vehicle. With the front end back on the ground, block the front wheels and jack up the rear. Again, support with jack stands in good operating condition under the frame rails. **Never work under any vehicle that is not safely supported!** Remove the rear tires, unbolt the sway bar from the stock a-arms, and if working on a 2008 model, remove and discard the stock rear brake lines.

Step 22:

As with the front, un-crimp the factory crimped section of the axle shaft nut and remove the nut and hub assembly.

Step 23:

Remove upper and lower A-arms and save all hardware.

Step 24:

Following the same procedure as the front, slide hammer out the rear axles after carefully labeling each one with a marker.

Step 25:

The procedure for swapping the OEM axles with your new long travel axles is the same front to rear. Please note the shorter of the two rear axles is the left, or drivers side axle. Once axles are completely assembled, reinstall as done previously in the front.

Step 26:

Install your new upper and lower a-arms, stock spindles and axle nuts; again using a liberal amount of thread lock.

Step 27:

Install your shocks utilizing the two supplied 12mm washers on the out side of the lower mount as shown. Again, fasten securely using thread lock.

Step 28:

Reinstall the sway bar using the stock mounting hardware and reinstall the wheels and tires. Put the vehicle back on all four wheels.

Step 28:

Check both front and rear differential oil. Chances are, you will need to replace oil loss during the installation process. Use only factory recommended oil and fill to factory specifications.

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Step 29:

If installing the system on a 2008 or newer model Rhino, you have also been provided with rear stainless steel braided "Spyder Line" brake lines. Install them at this time using all new supplied hardware.

Step 30:

Bleeding the brake system: If you have a "power bleeder" or a "vacuum bleeder" you have half the battle won and most likely need no further instruction. If not, find a piece of 3/16 inch hose similar to what you would use as fish tank air line, a bottle of DOT 4 brake fluid, and a small plastic cup. Install the plastic hose on the brake bleeder as shown bellow and loop into the plastic cup. Fill the brake fluid reservoir with fluid to the full line. Pump the pedal repeatedly until pressure is felt; while holding the brake peddle to the floor, have your partner crack loose the brake bleeder to release the pressure; and air. Continue this process until you no longer see air bubbles escaping the caliper while constantly keeping the reservoir full (do not allow the level in the reservoir to get too low or you will suck air into the system and need to start all over. Repeat this process at each wheel until the brake peddle feels firm

Step 31:

Aligning the vehicle is much easier than you may think. After centering the steering wheel, simply adjust the tie-rods until the front wheels are in line with the rear. Measuring this distance is easily accomplished with a piece of string used as a straight line of a straight piece of metal bar. Once the front end is aligned with the rear and the steering wheel is straight, we recommend setting the "toe" of the vehicle at -1/4". To do this, simply adjust each side of the vehicle equally until the front of the tires are 1/4" closer together than the rear of the front tires. Once alignment is complete, tighten tie rods.

Step 32:

Check and re-check. Now that the installation is complete, check for left over hardware...Typically a bad sign! Go over the entire vehicle to make sure every nut and bolt is tight and all cotter pins are in place.

As always we encourage you to call an HDUSA certified technician if at any time you have any questions regarding installation or set up of your new suspension system. Additionally, we appreciate any comments, good or bad, that either pump up our ego or beat us into developing a better product...All of the calls are welcome. From all of us at HDUSA, we thank you for your purchase. Enjoy the ride!

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Hydrodynamics USA , Inc. Guaranteed Satisfaction

HydroDynamics USA, Inc. prides itself on offering the most generous warranty program of any suspension manufacture in the industry. It is our confidence in the quality of our products that allows us to extend this service to you. It is our guarantee that you will always find dealing with any service or warranty issue with HDUSA to be a pleasant experience.

All of HDUSA's line of products comes with a 100% satisfaction guarantee. Also, all HDUSA products are warranted against failure due to defects in material and/or craftsmanship to the original purchaser. Customer must have original proof of purchase when sending in product for any and all warranty evaluation.

Shocks will be serviced by licensed and trained technicians from our in-house S2 Suspension Center, using only OEM replacement parts and oil specifically formulated to create the damping curve for which the shock was designed and that you have requested, and better yet we GUARENTEE your shock will be shipped to you within 1 week of receipt.

For warranty evaluation, please have your proof of purchase readily available and call 866-Go-iShock for a return authorization number. Product that is received without a return authorization number will not be guaranteed the 1 week turn around.

Notes:

* Rhino is a registered trademark of Yamaha Motor Corporation
* iShock is a registered trademark of HydroDynamics USA, Inc.