NOTE: These instructions are a universal explanation of how to install our HD Tie Rods. All kits are identical for all inner joints and nearly identical for the outers except for some models using slightly different bolt sizes or inner hi misalignment spacers. For specific pictures on your model installation see the applicable product page on www.racertech.com.

Supplied Hardware:

(2) – Tie Rod Tubes  
(2) – 1/2” mono ball w/ stud & jam nut (inner)  
(2) – Cup (inner)  
(2) – Snap Ring (inner)  
(2) – 5/8” heims & jam nuts (outer)  
(2) – Long bolt w/ 2 nuts and washer (outer)  
(2) – Short hi-misalignment spacers (outer)  
(2) – Long hi-misalignment spacers (outer)

- You must remove the complete OEM tie rod assembly from the steering rack. The inner ball joint WILL thread out. The threads are regular Right Hand threads. A large Crescent wrench should do the job.
- When disassembling the outer parts MAKE SURE to note how the OEM tie rods mount to the spindle. You need to reassemble the new parts the SAME way.

We recommend assembling the inner joints on a bench before installing on machine.

- The very first thing to do is assemble the monoball stud. You MUST use red Loctite or equivalent very liberally when assembling the stud and the screw. Put the stud in a vise and clamp down on wrench flats. Tighten the screw as tight as you dare tighten it.
- Next, you’ll need a snap ring pliers and possibly a brass hammer or rubber mallet.
- NOTE: The monoball is an extremely tight precision fit to the cup. DO NOT force the mono ball in to the cup. MAKE SURE the monoball is going in to the cup perfectly straight before you force it.
- You can use a light hammer to tap the mono ball straight before forcing it in.
- The fit is so tight the mono ball usually tries to vapor-lock as it goes in to the cup. If you have the monoball lined up straight you should be able to slowly push it in by hand but if you get it started past about half way you can very lightly tap the stud to fully seat the monoball if needed.

![Images of tools and components]

- Make sure the monoball is fully seated and you can see the full ring groove.
- Begin to set the snap ring by starting with the opposite side of the ring from the gap. Get the ring started in to the groove then begin to set in the rest of the groove until the pliers can be released.
- NOTE: To fully seat the ring, you MUST tilt the monoball stud all the way over in the direction of the ring gap shown below in the bottom right picture. This allows the ring to have enough clearance to set in to the groove fully. One the ring is set the stud will clear.
- Once the ring looks fully seated, use a hammer and punch or screw driver to tap around the snap ring to make sure it’s fully seated. It helps to hold the punch on a slight angle outwards when you hit it so the force helps the ring go in to the groove the most it can.

![Images of tools and components]
Once the inner joint is assembled and the snap ring is fully seated it should look like this:

*NOTE: If there is any free play in monoball after complete assembly, disassemble and use supplied shims to take up the space. You can use more than one shim if needed.

Next install the inner cup assembly to the steering rack

- When installing the Racer Tech monoball cup it is CRITICAL to use RED Loc-Tite liberally on the threads.
- Tighten the cup to the steering rack using the wrench flats and an adjustable wrench. NOTE: These should be tight, but you do not need to overtighten them. It’s possible to overtighten and break off the threaded stud in an extreme case.
- NOTE: Using your snap ring pliers, adjust the orientation of the snap rings so the gap is facing the rear of the machine. It is critical for full articulation and monoball lifespan to make sure this is set properly. If the gap is improperly located it may cause issues with the articulation of the joint. (For reference, the gap on passenger side should be at 9 o’clock and the driver side at 3 o’clock.)
Re-using the OEM steering rack boots

- Utilize your OEM tie rod boots. They will require some careful trimming around the small end of the boot. The boots must be used to prevent damage to the steering rack! Simply cut off the small ring around the end of the boot so as to more easily slide the boot over the new tie rod assembly.
- We’ve found it is easiest to install the boot to the new tie rod by sliding it on to the new tie rod shaft from the outer end towards the inner in the direction which it will be installed on the machine. (Use some WD-40 to help it slide.)

Outer assembly

- The tie rod heim joint must attach the same way as the OEM setup. The supplied washer goes between the nyloc nut and the spindle casting. The bolt should go in from the outside. The tapered spacer of the heim tightens against the spindle casting. Be SURE to use BOTH supplied nyloc nuts and lots of red Loctite to ensure this part of the assembly does not come loose.
Alignment

- Before driving, the alignment of the steering MUST be centered and we recommend the toe-in should be set at 1/8” inwards overall. You may also set it at 1/8” toe out but we’ve found toe-in to be the most effective for steering and handling.
- We recommend using toe plates for the best results but the alignment can be done by measuring from the inner lip of the wheel to the lower tube of the chassis on which the lower A-arms mount. Center the steering first then adjust and measure until the desired toe setting is reached.
- Once the alignment is set be sure to tighten the jam nuts on the tie rods.
- To tighten the inner joint jam nut simply use two wrenches. One holds the stud and one tightens the jam nut.

THANK YOU FOR YOUR BUSINESS!

For questions or additional information feel free to call and ask for tech support or email us through our website at: racertech.com/contact

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