

## EMF Tie Rod End Rebuild and Maintenance Instructions TO TIGHTEN YOUR EMF JOINT:

### Tools Needed:

- Spanner Wrench or Pipe Wrench for the Cap Tightening
- Allen Key for Set Screw
- #21 Drill Bit (OR THE CORRECT SIZE FOR THE SET SCREW HOLE)
- Purple or Blue Loctite
- Grease Gun

Step 1: You can tighten a joint right on the vehicle if you like... or Remove it and put it in a vise. Remove the Set Screw from the side of the joint body using the appropriate allen key



Step 3: Using a spanner wrench or a Pipe Wrench if you do not have a spanner, tighten the cap on the back as tight as you can go by hand – Do not go to the point where you risk breaking the spanner wrench, it doesn't need to be that tight... just enough to snug the pin up.



Step 4: Once you have it tightened, take a drill bit that fits inside the set screw hole (in most cases it is a #21 bit) and put it into your drill. Next you want to drill a small indent into the cap threads so the set screw can seat in place. Don't drill too deep – just enough to see an indent. \*\* This can be done over and over without any negative affect to the cap or threads \*\*



Step 5: Put the set screw back in and put a dab of purple or blue loctite on the screw to ensure it stays in place longer. Screw it in nice and tight using an allen key. This set screw is what holds the cap in place so it's important, even though it's small.



Step 16: Grease it up! Tie Rod Ends should take a couple pumps from a grease gun. You can then lap the pin again if you want to ensure grease is evenly distributed around the pin.

## REBUILDING YOUR EMF TIE ROD END

### Tools Needed:

- Spanner Wrench or Pipe Wrench for the Cap removal and installation
- Allen Key for removal and re-install of the Set Screw
- Pointy Pick or something to take the Spiral Lock out and put back in (sometimes the allen key works)
- #21 Drill Bit
- Purple or Blue Loctite
- Grease Gun

Step 1 : Remove the Joint from the Vehicle

Step 2: Remove the Set Screw from the side of the joint body using the appropriate allen key



Step 3: Using a spanner wrench or a Pipe Wrench if you do not have a spanner, remove the back cap by unthreading it.



Step 4: Once the cap is off, you will see a spiral lock holding the inner races and pin inside. Take a pointy pick of some sort and find the end of the spiral lock. Then proceed to run the pick underneath and take the spiral lock out.



Step 5: Push up on the pin from the bottom to pop the top race and pin out of the body. If it is difficult to remove, take the joint out of the vise, turn the joint over and gently tap the body flat on a table until the top race comes out.



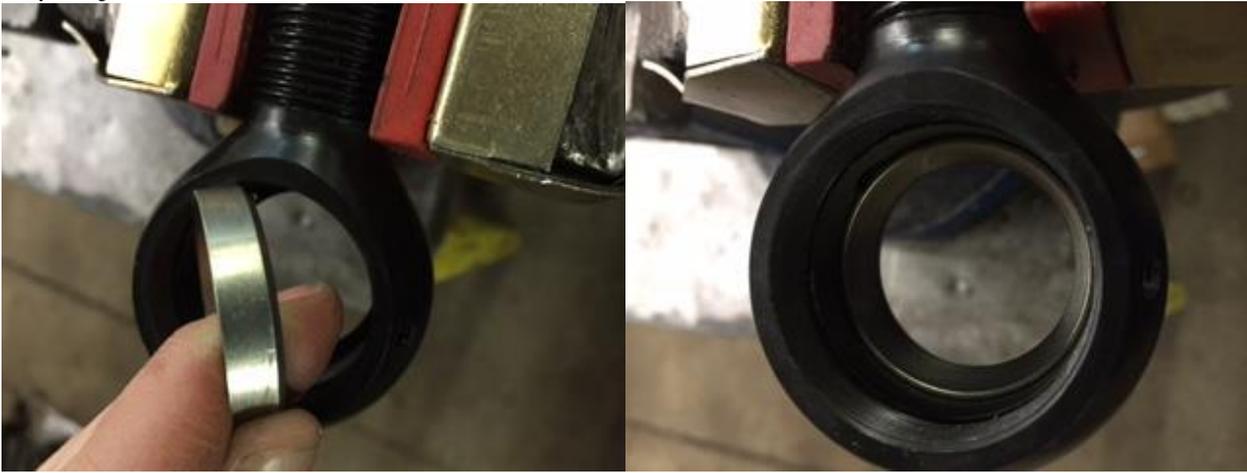
Step 6: The bottom race will still be inside. Use your fingers to wiggle it up and out of the body. If the races don't need to be replaced, you can leave it in there or take it out, clean it and put it back in.



Step 7: You will notice there are 2 types of races. One with a Chamfered Edge and the other with a Square Edge. The Chamfered Edge race goes in first (bottom) and the square goes in on top after the pin.



Step 8: Clean the inside of the body out with a rag to ensure no grease or grit is inside before you rebuild. Put the Chamfered Race into the body and press all the way down to the bottom with your fingers.



Step 9: Put the pin in next through the hole followed by the top square race.



Step 10: Push the top race down as far as it can go. You should see a spiral lock groove on the inside of the body.



Step 11: Using your fingers, spread the spiral lock apart and insert the end of it into the groove in the body. Hold it there while you get the pick and press down on the end and slide the pick around the spiral lock so it will set into place. It should sit nicely inside the groove in the body.



Step 12: Thread the top cap back in by hand and then using a spanner wrench or pipe wrench, tighten the cap just tight enough by hand to get some resistance.



Step 13: Check the pin by placing a tube or something over the pin to lap it back and forth. It should feel firm – not too loose that it can be moved easily by hand, but not too tight that you can't move it at all with the lapping rod.



Step 14: Once you have it tightened, take a drill bit that fits inside the set screw hole (in most cases it is a #21 bit) and put it into your drill. Next you want to drill a small indent into the cap threads so the set screw can seat in place. Don't drill too deep – just enough to see an indent. \*\* This can be done over and over without any negative affect to the cap or threads \*\*



Step 15: Put the set screw back in and put a dab of purple or blue loctite on the screw to ensure it stays in place longer. Screw it in nice and tight using an allen key. This set screw is what holds the cap in place so it's important, even though it's small.



Step 16: Grease it up! Tie Rod Ends should take a couple pumps from a grease gun. You can then lap the pin again if you want to ensure grease is evenly distributed around the pin.



## GRADE 5 TORQUE SPECS

COARSE THREAD			FINE THREAD		
Bolt Diameter	Thread Pitch	Torque Spec	Bolt Diameter	Thread Pitch	Torque Spec
1/4	20	86 in-lbs	1/4	28	99 in-lbs
5/16	18	178	5/16	24	197
3/8	16	26 ft-lbs	3/8	24	30 ft-lbs
7/16	14	42	7/16	20	47
1/2	13	64	1/2	20	72
9/16	12	92	9/16	18	103
5/8	11	128	5/8	18	144
3/4	10	227	3/4	16	253
7/8	9	365	7/8	14	403
1	8	547	1	14	614
1 1/4	7	952	1 1/4	12	1055
1 1/2	6	1657	1 1/2	12	1865

Step 17: Re-install on the vehicle and torque the bolts to the proper specifications using the cheat sheet below. Torque specs vary depending on what size of tie rod pin you have, we generally use the Grade 5 Torque Specs for our pins.