

# Spohn Performance, Inc.

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## Part #M4-605 – Adjustable Rear Upper Control Arms – Del-Sphere 1979-2004 Ford Mustang & Fox Body Cars

### **USE OF THIS PRODUCT IS ACCEPTANCE OF SELLER'S DISCLAIMER OF WARRANTY!**

By their very nature, competition components are constantly pushed to their limits. While our components are designed to withstand intense race conditions, it is impossible to control the quality of installation or the varying conditions in which they are used. It is for this reason that absolutely no warranty or guarantee is either written or implied. Neither the seller nor the manufacturer will be liable for any loss, damage, or injury - direct or indirect - arising from the use of or inability to determine the use of any product. Before using, the user should determine the suitability of the product for its intended use, and the user shall assume all responsibility in connection therewith. Spohn Performance, Inc. makes no guarantee as to the legality for any specific class. Spohn Performance, Inc. makes no claims, nor does it intend its products to be used in street driven vehicles. Spohn Performance, Inc. reserves the right to make changes in design or add to or improve on their product without incurring any obligation to install the same on product previously manufactured. The Buyer agrees to indemnify and hold Spohn Performance, Inc. harmless from any claim, action or demand arising out of or incident to the Buyer's installation or use of products purchased from Spohn Performance, Inc.

### **INSTRUCTIONS**

1. Lift rear of vehicle and support by frame rails. DO NOT SUPPORT BY REAREND!
2. Use a floor jack and place under rear axle to support the rear.
3. Remove the rear upper control arm bolts and nuts and remove control arm. The axle may shift slightly rearward. Replace one control arm at a time.
4. Install the Spohn upper control arm using the jack to help position the rear axle properly. The del-sphere end has two spacers on each side. This comes assembled and wire tied in place so you can see how the assembly is to be installed. **Note:** The del-sphere end is right hand threaded. Make the bolts hand tight only at this time. Do one side then do the other side.
5. Lower vehicle to ride height (suspension loaded) and tighten all bolts to 72 ft./lbs.
6. One end of the adjuster is left hand threaded and the other end is right hand threaded. To adjust the length of your control arm loosen both jam nuts and put a wrench on the adjuster and turn it clockwise or counter-clockwise to lengthen or shorten the control arm. Once set, tighten the jam nuts. **Note:** UCAs are shipped jig set at stock length.
7. Jam nuts are known to work loose over time. To prevent this we recommend that after you have the UCAs set to your desired length you apply some REMOVABLE strength (blue) Loctite to the adjuster threads and then tighten up the jam nuts on each end of the adjuster.

## **Setting Pinion Angle**

There are two angles to deal with:

- 1) Driveshaft angle
- 2) Pinion angle

You subtract pinion angle from driveshaft angle to get TRUE pinion angle

Here's how you do it:

First, had you measured your stock drive shaft angle and pinion angle before you removed your stock torque arm, you would have calculated a 0 deg. TRUE pinion angle. This is how all cars come from the factory.

Using an angle finder place it on the underside of the driveshaft and record the angle indicated.

Next, place the angle finder under the pinion yoke and record the angle indicated.

Record both angles from the driver's side of the car. On the driveshaft anything to the left of 0 is positive, on the rear end anything to the right of 0 is negative.

**Subtract the pinion angle from the driveshaft angle. The result is "TRUE Pinion Angle".**

In order to apply preload you need negative TRUE pinion angle. Adjust the upper control arms so that the front of the pinion goes down; continue to check each angle until the pinion angle is more degrees down than the driveshaft angle.

We recommend -1 degrees on a mildly modified daily driven car. For high horsepower applications we have gotten the best results with -2 to -3 degrees. There is no reason to run more negative than that, it will actually hurt your performance because it will induce driveline bind.

You don't want to drive around with your suspension preloaded all the time, it's a lot of unnecessary binding on the u-joints and suspension. It should only be used when racing.

Here's a tip. When adjusting for your TRUE pinion angle, count the number of flats (or the 1/6 of a turn) as you turn the adjuster, to know how many it takes to adjust 1 degree of negative TRUE pinion angle and in what direction (clockwise, or counter-clockwise). Once you know that, then adjusting the arms at the track or before a race will take almost no time, and no angle finder will be needed.

You will quickly learn that it does not take many turns to adjust the angle by several degrees, so go slowly and check your angles often.

## **Del-Sphere Pivot Joint Instructions & Notes**

The Del-Sphere pivot joints are slightly greased for assembly purposes. The bushings inside of the del-sphere pivot joints are made of Delrin, which is self-lubricating. We do not recommend greasing the pivot joint any further than as it is supplied as further grease will only attract and retain dirt and grit. The pivot joints are equipped with grease fittings simply because we know certain customers would want/request them no matter what we say. You'll also note we have a second tapped grease fitting hole with a threaded plug installed so you can change the position of the grease fitting on the pivot end for better access if need be depending on your mounting set-up on the vehicle.

Our Del-Sphere pivot joints are 100% rebuildable. We doubt you will ever need to rebuild them, but they certainly can be. The delrin bushings should last the life of your vehicle. What you may find is after you have a lot of miles on the pivot joints the tolerances may slightly open. It is for this reason that we made the pivot joints adjustable. By tightening the threaded end retainer you can take up any slack and make the joint as tight as it was when new, it's that simple. This also allows you to vary the torque load applied to the pivot ball. If you want a very low friction joint you can loosen the threaded end retainer, etc. When making adjustments to the threaded end retainer you will need to loosen the set screw with an allen wrench. When making your adjustment align one of the threaded retainer end's slots with the set screw and re-tighten the set screw, this locks the threaded end retainer's position in to place and keeps it locked to your setting. Use our Part# **DS34-W** adjusting tool for easy adjustments.

**What is a Del-Sphere pivot joint?** Think of the Del-Sphere pivot joint as a Delrin bushed spherical rod end. Designed and manufactured exclusively by Spohn Performance, we have taken street suspension performance to the next level. Our Del-Sphere pivot joint features a one piece forged and heat treated chrome moly housing, a heat treated and chrome plated chrome moly spherical ball, Delrin bushing races, heat treated retainer washer and snap ring, heat treated and chrome plated chrome moly threaded adjuster ring, an external grease fitting and a beautiful silver zinc plated housing finish. The delrin bushing races absorb shock and road noise so you get the quiet and smooth ride of a bushing as well as **28 degrees of rotation!**

**What is Delrin, and why did you choose to use it?** Delrin is an acetal homopolymer made by DuPont. It is characterized as having an excellent combination of physical properties that make it suitable for numerous applications. With extremely low moisture absorption and a low coefficient of friction (self-lubricating), Delrin is uniquely tailored for wear applications in high humidity or moisture environments. Delrin will maintain constant physical properties under high moisture conditions and out-perform nylon or polyurethane under these conditions. Delrin has a 10,000 psi tensile strength and a 120 Rockwell Hardness rating making it ideal for our Del-Sphere pivot joint application.

### **Replacement Parts:**

<b>Part #</b>	<b>Description</b>
DS34RH	Del-Sphere Assembly - 3/4"-16 RH x 3/4" Bore
DS34LH	Del-Sphere Assembly - 3/4"-16 LH x 3/4" Bore
DS34-Wash	Del-Sphere End Washer
DS34-W	Del-Sphere Adjustment Tool
DS34-TE	Del-Sphere Threaded Adjuster End
DS34-SR	Del-Sphere Snap Ring
DS34-Bush	Del-Sphere Delrin Bushing (2 per assembly)
DS34-Ball	Del-Sphere Spherical Ball