



Refinishing Natural Suspension - Tie Rods

Approx Time Needed For Completion:

Approx 4-5 hrs

Supplies/Equipment Needed:

- Method to clean the part of rust and grime
- Wire wheel or brush
- Steel wool
- 200 & 400 grit sandpaper
- Liquid or paste gun bluing repair fluid
- Your choice of final protective coating. This can be clear paint, wax spray or oil.
- New tie rod boots
- Eye and hand protection. Though the chemicals are not harsh caution should be taken.

One of the more common mistakes we often see on restored cars is the incorrect finishes found on suspension parts. In total the complete suspension and steering is a combination of many different finishes due to the way the parts were made, formed and processed. Unfortunately many restorers treat all of these the same way and since this does not truly reproduce the original look they lose points. Basically the vast majority of non-painted parts fall into the following major categories:

- Heat treated cast parts - Tie rods, pitman and idler arms, strut rods, spindles, springs



- Formed/stamped steel - Upper and lower A arms, steering stops, rear spring plates, front spring saddles

- Hardware - Nuts, washers, cotter keys....

(Pictures above and to the left so the wide range of tones that can be produced)

Many of the items listed previously are really subassemblies made up of different materials that require different finishing. One example would be upper A-arms. The main body would have been bare stamped steel formed through a process using very large stamping machines which produced areas of metal where the metal was stretched, marked and pressed during the process. At the same time you have the ball joint that was attached to the A-arm which included a plated boot retainer and a heat treated ball joint body and rivets.

Most long time restorers have developed techniques to reproduce the original finishes found on these parts. They may include tumbler or vibrator polishers, phosphating, chemical baths or other processes. The process covered in this article shows using simple gun bluing repair fluid that is available in most US regions but this is only one of many process hobbyist and professional use to accomplish the desired finish.



This article focuses on the refinishing of tie rods but the process and techniques can be applied to many of the suspension parts used on classic Mustangs and Shelby's. Though the article uses gun bluing repair fluid and/or paste, an alternative to this is using a quick manganese phosphate dip of about 30 seconds.

As always, read the instructions on the chemicals and follow directions.



NOTE: This article only addresses the visual aspects of refinishing these parts and makes no guarantees as to serviceability or safety of reusing old suspension items. Often a good indicator of the condition of the internals is the condition of the boot. If the boot has been damaged its likely let in water and dirt, resulting in damage that can go undetected to the eye. All aspects should be considered and weighed, the final choice is yours alone.

Step #1 - Inspecting

Your first step is to collect a set of reusable original tie rods and idler arm. The boot condition, even though they will be replaced, is important as an indicator of contamination and possible internal damage. If bushings or other removable parts are worn they will need to be replaced during the process. Items such as idler arm bushings, ball joints, A arm shafts all come to mind.



Step #2 - Cleaning



First task is to clean the parts of all the old oil, grime and any surface rust. If the metal is damaged from pitting you will need to find a replacement in better condition. Also inspect for any heavy damage from parking curbs or from their removal. Light damage can sometimes be removed by dressing the area with a file but you will have to evaluate each piece for its acceptability.

These can be cleaned chemically, with a wire brush and cleaner or by blasting. Remember than heat can not be used nor any aggressive cleaners as they may damage the nylon inserts inside the tie rod.

With any of these methods I flush out the old grease, as best I can, around the tie rod, working the joint around during the process. The next step is a good wire brushing to even out the finish and bring back an original steel look if you choose to blast the parts. If needed a little more attention is given with some steel wool



Step #3 - Bluing

Depending on what brand of gun repair fluid is available in your area you may have the choice of liquid or paste. Each brand works slightly different as to the final tone it takes on, so follow the instructions, practice a little before hand and if you don't like the look simply strip the part and start again.

I've found that the tone is different depending on if the product is applied with a wad of steel wool or with a rag. Again, practice and ex-

periment with the product. At this point apply the product, working it into the corners and groves of the metal leaving no excess on the surface of your prepared item.

Burnish the surface with a clean rag only to the point where the finish is even. If you need to lighten up the finish use some steel wool taking care to assure that the final look has a consistent finish across the part. Don't forget the threads and the stud.



Step #4 - Machined Surfaces

On the early cars the cap was a stamped steel part while the later cars used a machined cap. In either case these were a lighter, in tone, item added after the main body was formed. Because of this, they must be treated differently to reproduce this visible difference.

I've tried a couple of different ways in the past but the following is what I'm currently using. First you can mask off these surfaces before you apply the gun bluing or wait till after and strip the finish from those areas.

In this example I did not mask off this area so the first step is to remove the dark color by sanding the surface lightly with first 200 then 400 (or higher) grit sand paper. The embossed area inside the cup can be difficult to reach so I used a Drimmel tool and a small wire brush to do the job.

Once accomplished you can again (lighter this time) tint this area with some bluing liquid applied with steel wool (produces a lighter more natural steel look) or leave it. You're not looking for a polished look but a fairly fresh machined look in the final product.



Step #5 - Coating

Final step for the metal is to protect it with one of the many micro-film oils available on the market. Popular brands are Boeshield and Corrosion X. Metal can be warmed slightly (remember the somewhat delicate nylon parts inside of the tie rods) and covered with oil. The warming should remove most if not all of any trapped moisture that might get in the way of the oil's penetration. Some will coat the pieces over night or only a few hours.



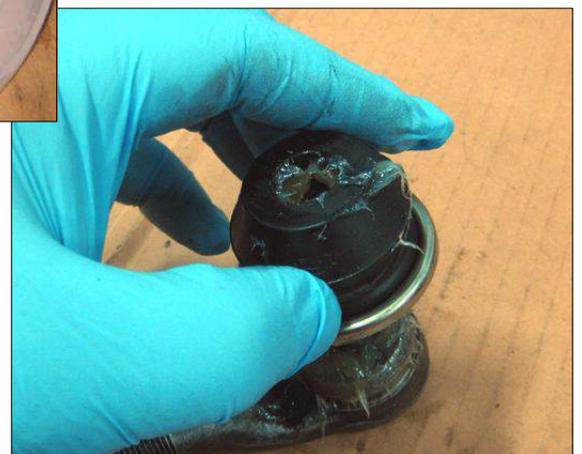
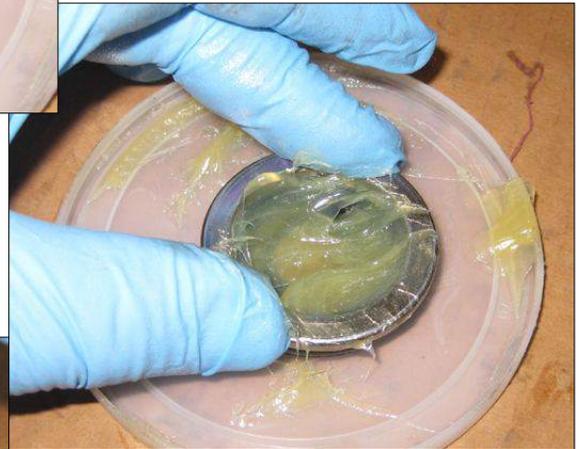
Step #6 - Greasing

Finally some new grease should be worked into the joint. This can be done with the cup method working the joint while pushing grease into the gap on one side of the joint. Working the stud back and forth while you continue to apply a little grease to the surface of the ball stud and tie rod housing. Wipe any old grease that works way out from behind the joint (if any) as you proceed.



Step #6 - Greasing (cont)

Additional grease can be placed into the rubber boot but take care as too much grease can damage the boot as its compressed during installation. I do this by placing the boot upside down and compressing it as I fill the cup it creates. Once done I move the grease to the side where the ball stud end will pass through.



Step #7- Installing The Dust Boot

Number of different ways to install the boots. Which ever you choose make sure the method can not cut the dust boot, bend or deform the retaining ring and that the boot is fully seated on the tie rod den once finished.



Wipe it off, Put it in a sandwich or freezer bag and get on with the next one.

I found if you carefully "burp" the boot to allow trapped air and to assure its doesn't have too much grease there will be less pressure on it during installation.



Additional

The same steps and processes can be applied to other parts of the suspension that were original made, wholly or partially of heat treated cast steel such as the strut rods, idler arm, springs or pitman arm. As shown in the pictures.

