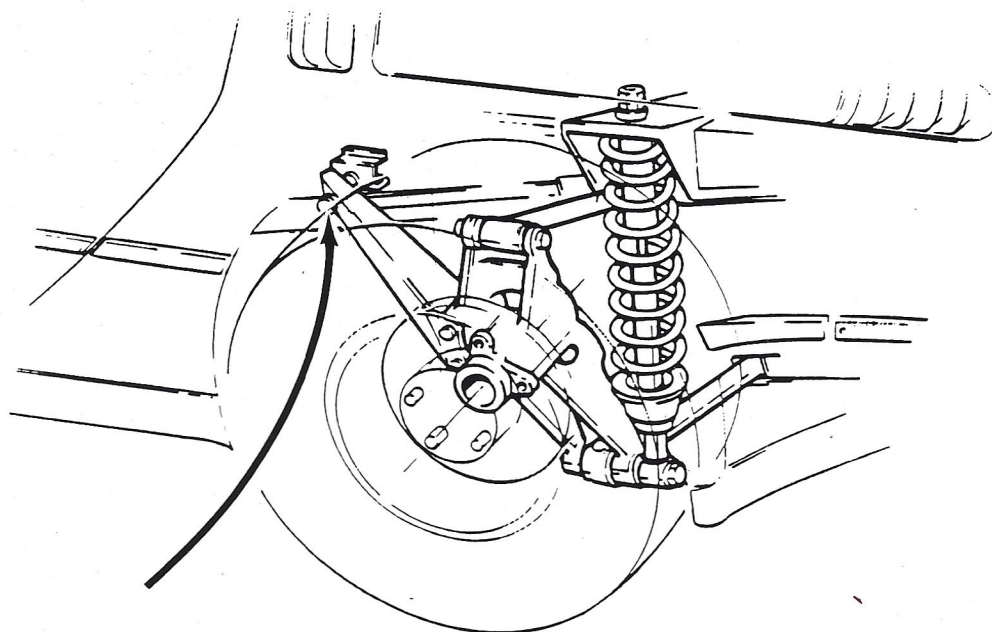


TORQUING TRAILING ARMS

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REAR SUSPENSION GENERAL DESCRIPTION

The rear suspension is a fully independent type with a radius arm (trailing), upper and lower links and a rear hub carrier. Telescopic shock absorbers, secured to the chassis frame at the absorbers upper end and to the rear hub carrier and the absorbers lower end, are positioned through the coil springs.

The rear hub carrier is attached to the chassis frame with upper and lower links as well as the radius arm.

Rear suspension toe-in is achieved by shimming the radius arm at its frame attaching location.

It's the end of a tough week and you've unwound on this sunny Saturday morning by polishing that seductive DeLorean parked in your garage. While the polishing went on you reviewed all of the errands (a.k.a. excuses) that require driving your DeLorean. It's amazing that it is always the store on the most interesting section of road that carries your needs.

Your ego swells as heads turn to admire this

freshly polished work of art twisting through the turns. The feel of the thick leather steering wheel and tight suspension re-enforce the confidence you have in this car.

This scenario is a common feeling many of us have about our DeLoreans. But is our confidence based on the knowledge that all is right with the suspension or is it a false security enhanced by the fresh polish job? You can rest assured that

the gang at Lotus did their homework and if all is as they designed, you can be confident. If you or your mechanic did not do any homework, there could be some concerns that bear following up.

When referring to chassis fasteners, as in the DeLorean chassis, the primary areas of concern are the rear trailing arm bolts. Failure of these

TRAILING ARMS (FROM PAGE 30)

bolts pose the most serious safety related item on your car. If you've been a reader of DELOREAN WORLD for the last few years you'll remember Bill Johnson's account of his trailing arm dropping to the pavement at high speed and almost catapulting his car into the next lane. What caused that accident could have been prevented by a simple regular inspection keeping in mind a few basic rules.

A fastener (a bolt in this case) has what's known as a yield point. This is the point of distortion (twisting and stretching) that is its elastic limit. Distortion at, or below, that point won't be permanent. When the bolt is loosened, it will cause permanent distortion, weakness and ultimate failure. Most automotive companies set their torque specs considerably below this yield point, say 40% to 50% of yield, because they know there are backyard mechanics out there who do not own a torque wrench and never consider torque specifications.

Many times extra fasteners are used in order to loosen up torque specifications. Where adherence to tight tolerances can be held, specs may be closer to yield, such as in the aircraft industry. Automobiles are subject to all types of service, including backyard mechanics, and liability factors must be considered. An aircraft mechanic or technician diligently adheres to specifications while the young fellow at the tire shop will, more times than not, use an impact wrench instead of a torque wrench to tighten lug nuts. As a result most cars use 4, 5 and even 6 lugs tightened to 40% of yield rather than 3 tightened to within 5 or 10% of yield.

The DeLorean is no different than other cars in regards to the fasteners that hold it together, with the exception of the trailing arm bolts (a.k.a.

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radius arm bolts). It just was not physically possible to use more fasteners on this unusual suspension design because the trailing arm must rotate around the bolt (just a few degrees) as the suspension moves through its range of travel. Therefore, all rules in chassis assembly are very critical in this case, including length, and tensile strength of the bolt along with the torque specification itself.

The bolt is an m12 x 19 that is coated with zinc plus iridescent chromate. This means it has significantly better resistance to white corrosion than bare zinc and it will resist a 72 hour salt spray. Its tensile strength is about 27 on the Rockwell scale.

All this data means if torqued to the specified 75 ft. lbs (55mm), it will be flexible enough to absorb normal loads and will bend instead of break with abnormal shock. If you feel another bolt with different strength qualities is better, you should have the above specifications in mind when choosing that bolt. In my opinion the factory bolt is adequate.

Look at the trailing arm pivot point and compare it with the opposite end of the arm at the rear suspension carrier. You will notice the upper and lower links (from the carrier to the frame) are designed to move in a perpendicular manner while the other end of the arm must pivot around the trailing arm bolt. There is an obvious conflict

between the two ends of the trailing arm, and it's up to the rubber bushing at the various mounting points to absorb these conflicting movements. Any form of re-enforcement added to the trailing arm bolt had better allow for the bushings to remain flexible enough to absorb the conflicting movements, or you'll be shortening the life of the rubber bushings and possibly distorting various suspension parts.

There certainly are better suspension designs, but with Colin Chapman's fixation on this particular type of frame, the choices are limited and the Chapman strut type using the single trailing arm, with proper maintenance, is really quite good for overcoming the pendulum effect of the rear engine.

I recommend getting under your car every 10,000 miles and loosening the trailing arm bolts enough to turn them one revolution. While you are turning them, watch very closely for any sign of them being bent. If they are, replace them. If not, re-torque them to 75 ft. lbs. Also check the small bolts that hold the trailing arm bushing to the frame. They should be torqued to 22 ft. lbs (16mm). When you are looking at the trailing arm bolts you'll notice several spacer shims between the frame and the arm. This is the manner in which the rear suspension is aligned, and if you make note of how many are used on either side of your car, it may save you some time and a few dollars down the road. If you ever notice any missing and you are not replacing any suspension components, you can restore the rear alignment by replacing the original number of shims.

If you follow these simple precautions, your trailing arm concerns can be filed away for the next 10,000 miles.

30,000 MILE (FROM PAGE 31)

- 4) Check windshield washer fluid level.
- 5) Check hood latch and cable end for fraying.
- 6) Check spare tire condition and pressure.
- 7) Remove fuel pump access cover and inspect fuel pump cover seal, sealing ring and check for updated fuel pump.
- 8) Check operation of trunk compartment light.
- 9) Operation of hood struts.
- 10) Check hood seal.

ENGINE COMPARTMENT

- 1) Check louvre for cracks, operation of struts and latch.
- 2) Check engine cover for cracks, operation of support and latch.
- 3) Check engine cover grills, retainers and body bolts.

- 4) Check muffler and catalytic converter heat shields.
- 5) Check right hand upper muffler mount.
- 6) Check condition of header bottle.

EXTERIOR OF CAR

- 1) Condition of rubber around doors including roof seals.
- 2) Operation of door struts.
- 3) Check condition of all body moldings.
- 4) Check condition of paint on front and rear facias.
- 5) Inspect stainless steel for any dents.
- 6) Check condition of glass.
- 7) Inspect windshield wipers
- 8) Check for seat belt anchor covers

ABOUT THE AUTHOR**Stephen Wynne**

Stephen, co-owner of DeLorean One, hails from Liverpool, England where he was trained in automobile technology.

His first venture in this country was the highly successful Cars of Distinction which specializes in servicing European cars. At the time, it also serviced a few DeLoreans.

Stephen met Ed Bernstein while participating in an Association event and shortly thereafter sold Cars of Distinction to form DeLorean One.

He lives with his wife Elaine and two children in Houston where he manages the Texas branch of the company.