

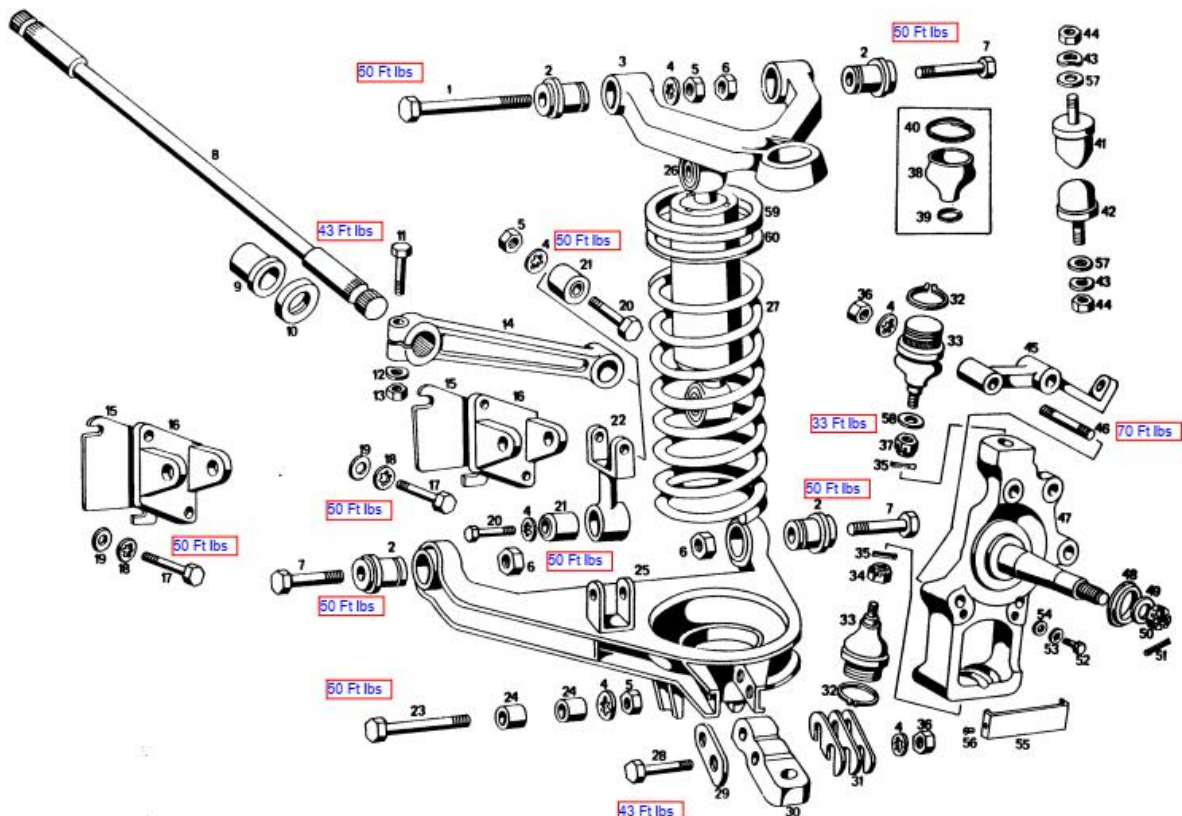
# Replace ball joint (Ver March 2019)

Any comments for clarification, corrections and improvements are quite welcome which I will incorporate in a new version.

Charles Demetriou  
[merak81ss@yahoo.co.uk](mailto:merak81ss@yahoo.co.uk)

Here I will describe how I have replaced the front suspension upper and lower ball joints.

- Raise the car and remove the tires.
- You need to get access to the castle nut (parts book Table 16 part 34) on top of the lower ball joint.
  - Undo the two nuts (parts book Table 16 part 36) and remove the steering arm (parts book Table 16 part 45)
  - Unbolt the brake caliper and tie it with a steel wire somewhere so that it does not hang down.
  - Remove the safety pin from the castle nut and then undo the castle nut (parts book Table 16 part 34).
- Place a floor jack under the lower A arm (parts book Table 16 part 25) as close as possible to the ball joint (ie close to (parts book Table 16 part 30)). The objective is



to use the jack to lift the A arm up and separate the joint.

- Use a ball joint separator and by hitting with the hammer on the bracket (parts book Table 16 part 30) separate the ball joint. You have to utilize together the jack, the ball joint separator and the hammer for the separation of the joint. This will be

achieved with a loud bang.



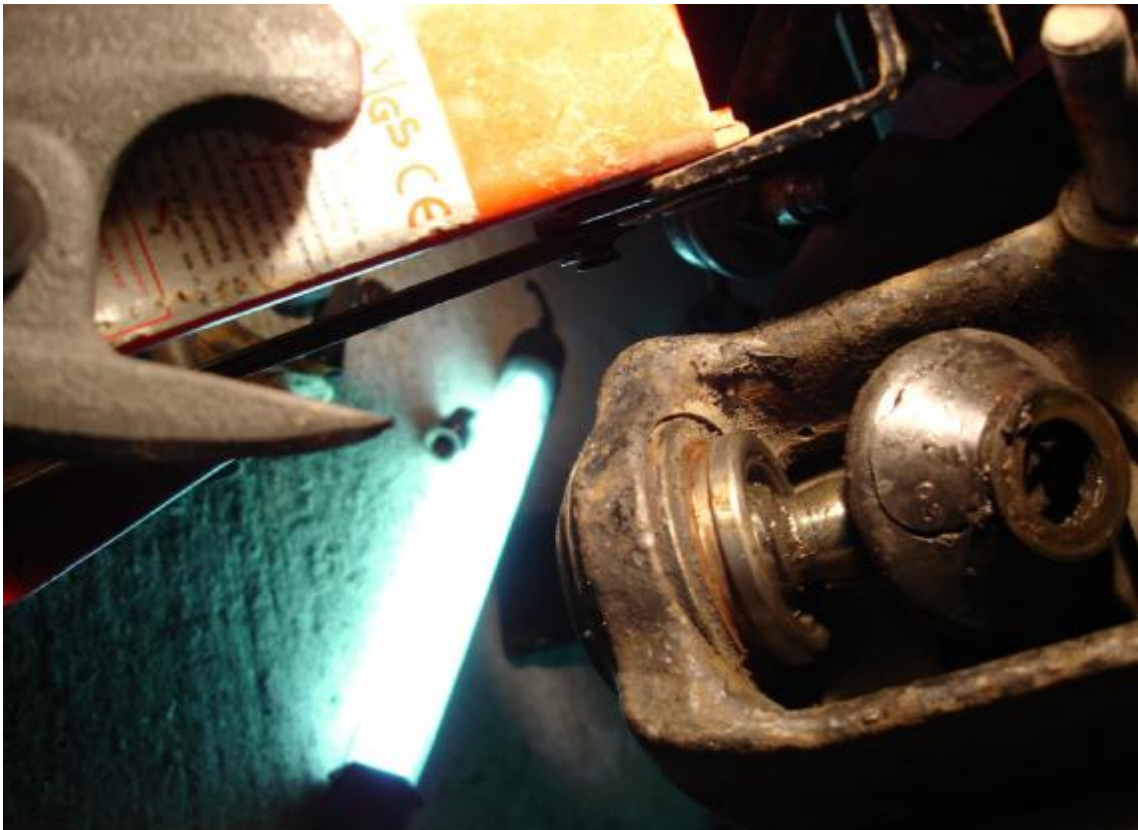
Pic 1. Showing from above the two bolts connecting the steering arm to the hub assembly



Pic 2. The steering arm removed from the hub assembly



Pic 3. Utilize the floor jack to separate the ball joint



Pic 4. The lower ball joint separated

In order to remove the ball joints you have to remove the upper A arm and the hub assembly from the car:

- Position the jack under the lower A arm (eg under the bolt connecting the shock absorber).
- Undo and remove bolts part 1 and part 7. The top A arm is free now.
- Undo and remove the 2 bolts part 28. Note the order and position of the shims (part 31 and 29).



Pic 5. Upper A arm and hub assembly free on the bench. *The lower ball joint castle nut and the connection block (part 35) are back loose for illustration.*

*I have found it very hard to unbolt the upper ball joint castle nut (part 37). After applying:*

1. lots of WD40 overnight
2. 50% Automatic Transmission Fluid/ 50% Acetone mixture overnight for loosening the bolt with long lever, and then
3. heat on the nut with long levers, **but no success.**

*The access to a socket is very restricted. I have tried also the air hammer but again without success. On the bench as last resort I drilled a hole on the nut below the castle groove, deep enough to be able to use a chisel with a hammer hitting sideways anticlockwise and at last success !!*

As George Cytulski says: "The WD40 is based in part or wholly in fish oil as I recall. It is fantastic in terms of displacing moisture. Also I have read the 101 ways to use WD40. Sad to say none of those 101 ways applied to me other than using it as a lubricant. As an oil to penetrate rusted and stuck fasteners I must say that John Titus' 50% Automatic Transmission Fluid/ 50% Acetone mixture is very aggressive on loosening rusted bolts,

nuts, and such. Far more effective than the typical over the counter products like Liquid Wrench, PB Blaster and the sort.”

- Utilize the ball joint separator and the hammer for the separation of the joint.
- Remove the circlips (part 32) and after spraying some WD40 hit the ball joint from the back and will come out loose.

The part numbers are referring to parts book Table 16

To press the new ball joints you need a special Ball joint installer kit. The kit consists of a HEAVY duty C clamp, different diameter sockets and centering attachments.



Pic 6. The upper A arm and some attachments from the ball joint installer kit.

Pic 7. New ball joint ready to be pressed in. Make sure to use the right diameter sockets VERY IMPORTANT



The kit ensures that everything is lined up. VERY IMPORTANT



Pic 8. The lower ball joint ready to be pressed in.

Pic 9. The socket supplied in the kit though is the right diameter, is too long for the Merak arrangement and does not fit.

I had to make my own socket (shown in the photo) which has 46.5 mm internal diameter (54 mm external) and 32.5 mm height. The centering washer welded on the top has 32.5 mm outside diameter and 20 mm hole in the center.





Pic 10. For pressing everything has to be inline. If not, you might end up with a new ball joint like this. The shoulder ring is deformed as well as the splines. This happened to me because initially I did not use the centering washer on the shortened socket I made.

**Place everything back and torque the nuts to the given torques.**

**VERY IMPORTANT to torque the bolts when the suspension sits at the right height. If you don't do this you will stress the bushings.**

**So ... loosen all the bolts (parts 1, 7, 20, 23) which are pressing the bushings so as the bushings are free to rotate. Apply the weight you expect to have in the vehicle when driven, (in my case I placed 75kg on the driver's seat and 75kg on the passenger's seat) and then torque the bolts.**

I achieved this as follows:

- The front of the vehicle is supported on car stands at the same height (the whole vehicle is preferably horizontal) with the wheels off for easy access.
- Place a jack on each side as close as possible to the wheel hub. Rise the car using the jack (compresses the suspension). As soon as the car separates from the stands, that is the right height.
- Torque the bolts.

**This way the bushings are not stressed and also work uniformly.**