Rear shock replacement on X300 and X308 - 8/9/2004

With 110,000 miles on our 1998 XJ8 and a persistent clunking noise coming from the rear it was time to replace the shocks. The first task was to find a reasonable priced shock as my usual supplier wanted $219 each for the rear shocks. After some research and asking some questions on The Jag-Lovers.org X300 list I found that rear shocks from an earlier model will most likely fit. I ordered a set of Bilstein BE5-6725-M0 shocks for a 1997 XJR. They were $115.70 each. They are built to Jaguar specs and fit perfectly.

Parts:

-Two shocks

-Two spring seat bushings

Tools required:

-Floor jack

-Two jack stands

-Sockets: 8mm, 14mm, 17mm, 19mm, and 22mm. A 15mm will be needed for the sway bar if so equipped.

-19mm wrench

-Impact gun or a breaker bar.

-C-Clamp to retract the brake caliper piston

-Blue (medium strength) Loctite

-Pair of lock pliers

-Large pry bar

-Long lasting lubricant (I used anti-seize)

-22mm wrench or an adjustable wrench

-Drift and a mallet

-Flat head screw driver (for brake caliper anti-rattle clip)

-Grease (for axle half shaft u-joints)

Once I received The shocks The following steps were taken to replace The shocks. Air tools are a major help if you have access to them.

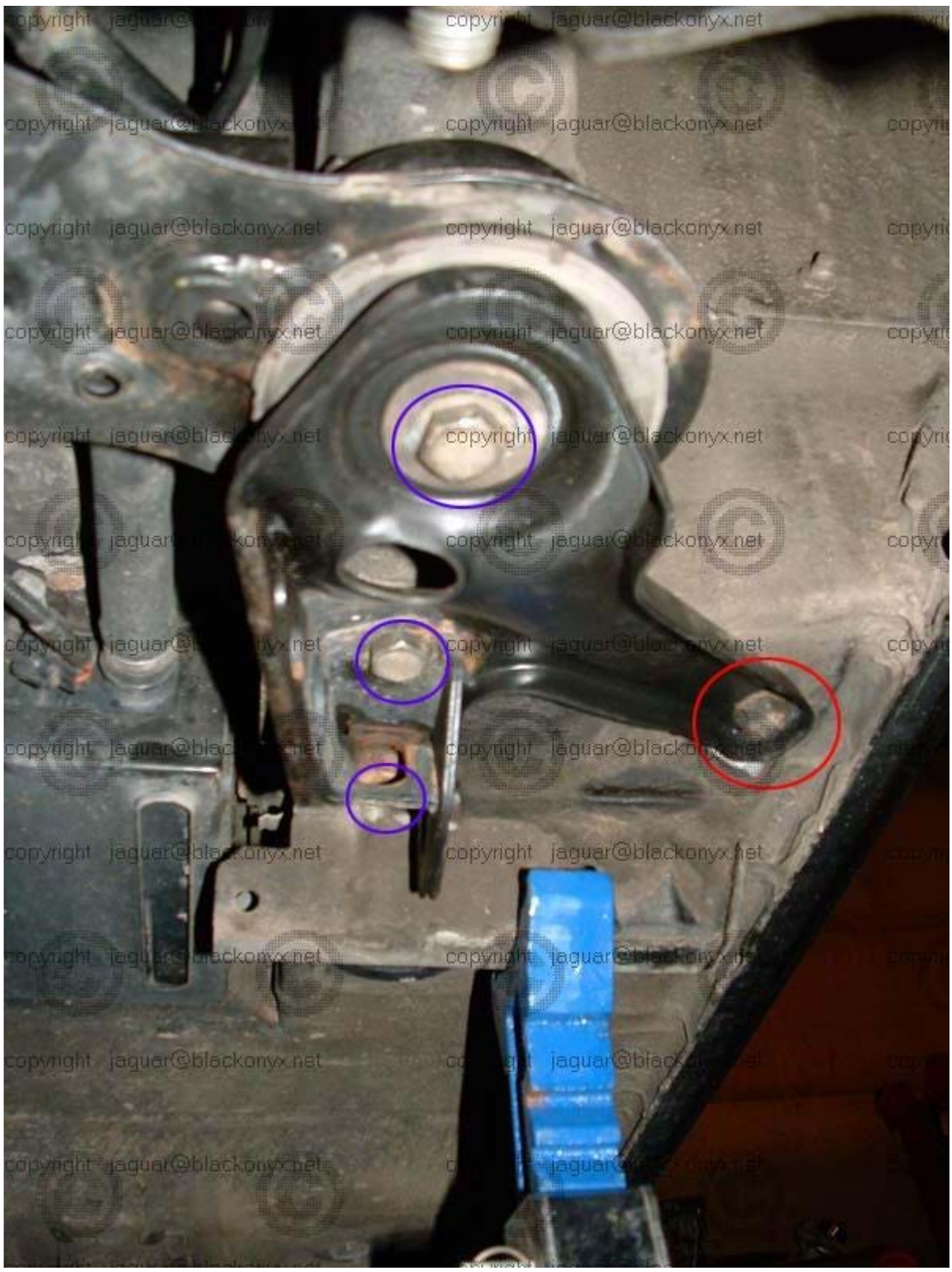
Removing the shock /spring assembly:

1) Block the front tires and lift the rear of car to a workable level. I positioned the jack stands under the jacking points located below the rear doors. Make sure the parking brake is disengaged.

2) Remove rear tires.

3) Soak all the threads with some penetrating oil. I found the PB Blaster works well.

4) Remove the main A-frame mounts. The outer most bolt (circled in red) is 17mm, The three remaining bolts (circled in blue) are 19mm.



The A-frame should now drop slightly

5) Remove the two 8mm small bolts securing hose to front of A-frame (Circled in green)

6) Remove the four 19mm bolts along the forward edge of the A-frame (circles in red, closes to the mufflers). They have nuts above them so use the 19mm wrench.

8) Remove the two 19mm bolts at the rear of the A-frame

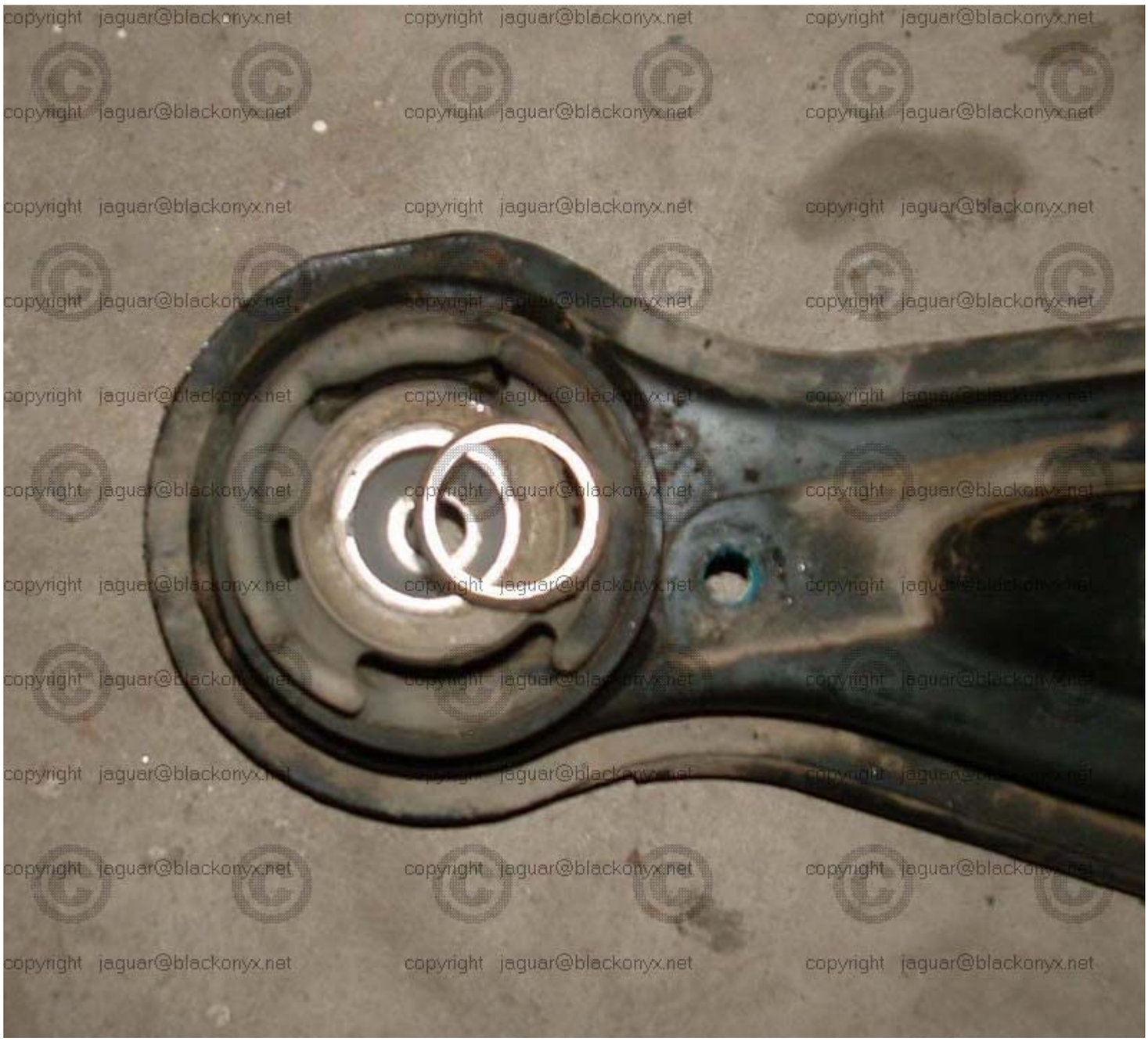
8) Remove the remaining 4 19mm bolts from The a-frame. If someone is helping you remove the A-frame, you may want to leave one of the 19mm bolts in and remove with the A-frame after step #10

9) At this point you will want to support the A-frame with something. I used a floor jack with a piece of sheet welded to it I used for front subframe removal and install.

10) The last 19mm bolts securing the A-frame are on the upper side toward the outer edged behind the mufflers, circled in yellow below.

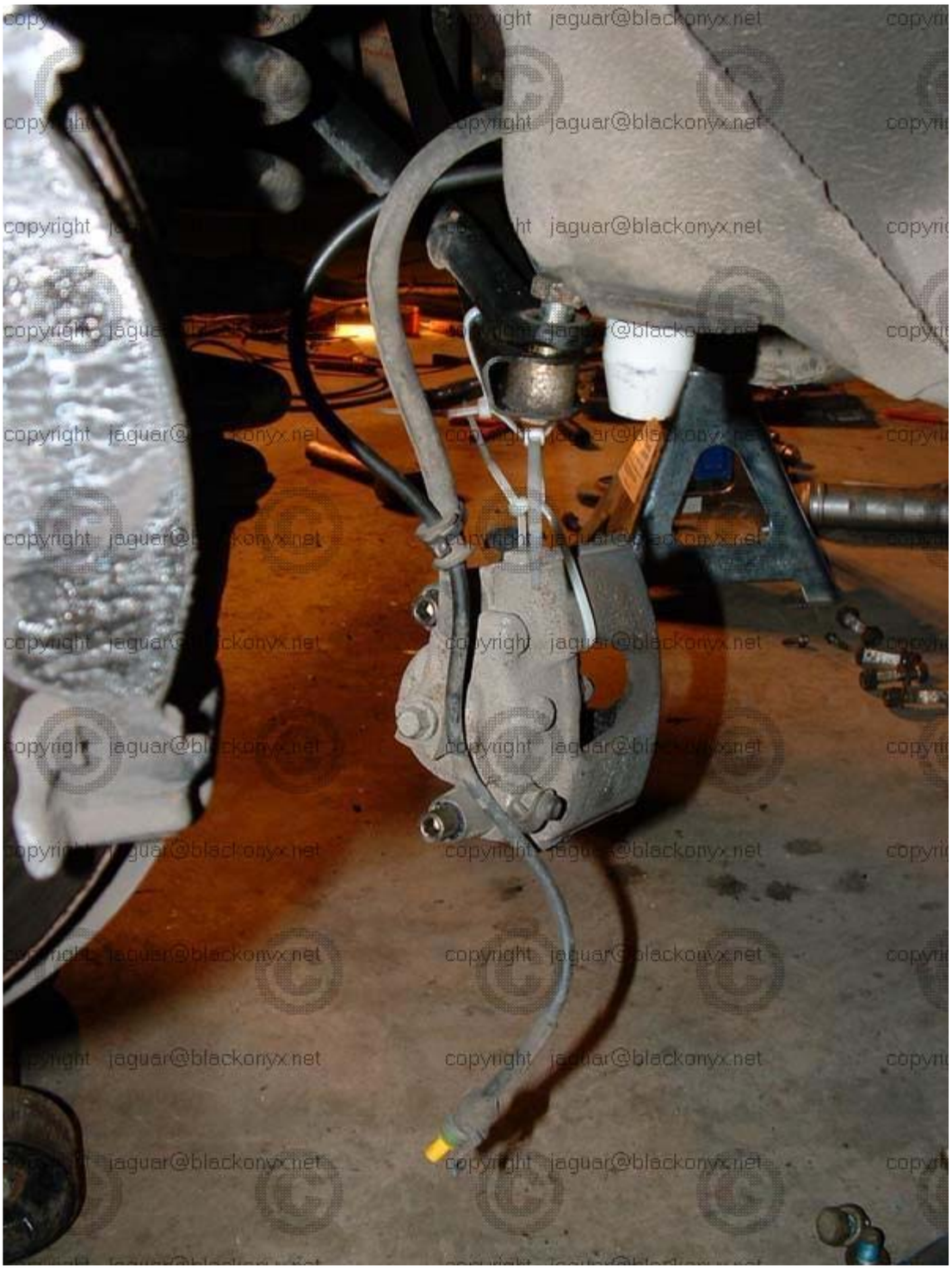
11) Lower the A-frame. While the A-frame isn't very heavy it is bulky. Watch out for two shims above the main A-frame mount bushings, don't lose them..

The shims:

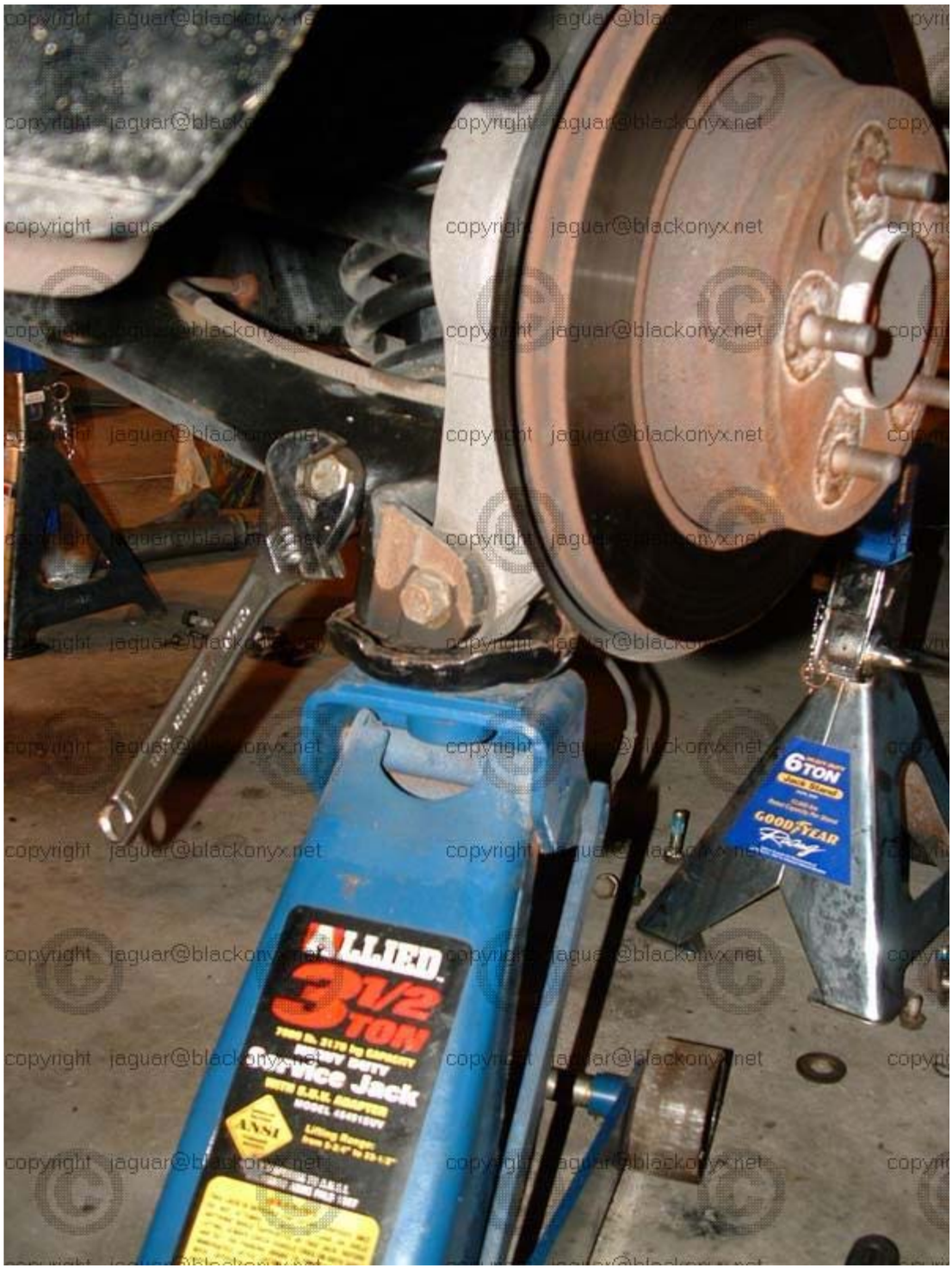


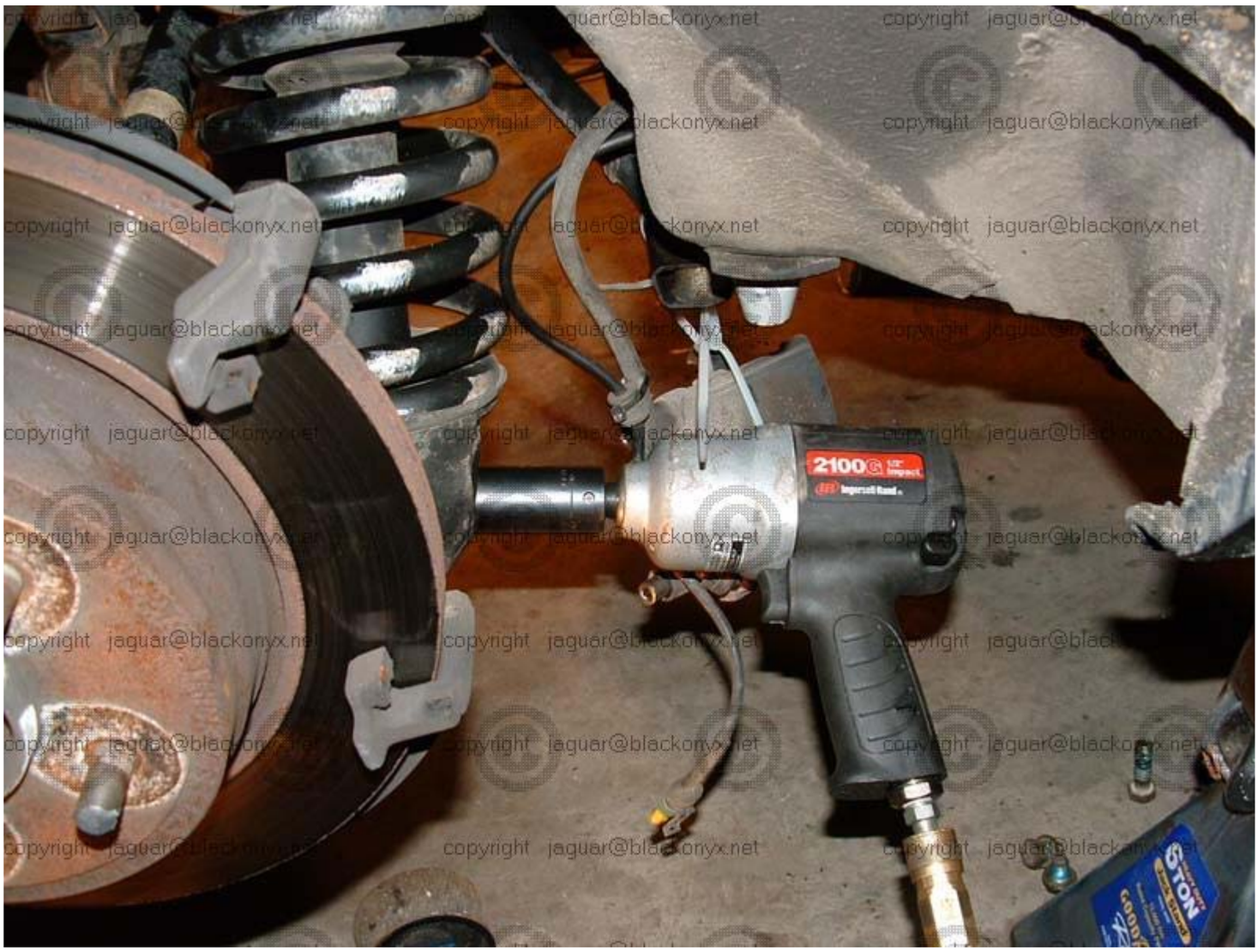
11) If so equipped, remove the two 15 mm bolts securing the anti-roll bar to The lower arms. (no picture provided since ours didn't have the anti-roll bar),

12) In order to gain enough clearance to remove the spring and shock assembly the brake calipers must be relocated and the ABS sensor unplugged. Remove The anti-rattle clip with a flat head screw driver. The caliper is secured with two 7mm Allen bolts covered by dust caps on inner side of the caliper. You may have to compress the piston with a c-clamp a bit to pull The calipers off. . I than hung the caliper so not to put stress on the hose:



13) The shock is bolted to the lower control arm with a 22mm bolt. Hold the bolt head with a wrench or an adjustable wrench while you remove the 22mm nut. Don't remove the bolt at this point!


ALLIED
3 1/2 TON
Service Jack
6 TON
GOODYEAR
Racing



14) Support the outer end of the control arm supported by a floor jack (compress The spring slightly)

15) Tap out the lower shock bolt with a drift and mallet. If the bolt is hard to push out rotate the bolt a bit. Once the bolt is remove the shock will drop a bit.

16) Slowly lower the jack and release pressure from the spring. Allow the control arm to hang at its maximum. You may have to rotate the axle shaft to get the u-joints to their max angles.

17) The spring/ shock assembly is mounted to the body by 4 14mm bolts. The easiest way to get them out is using an extension and a u-joint.

18) Once the four bolts have been removed you can now remove the spring and shock assembly by pulling the lower portion forward and than letting the top drop out and follow.

The assembly removed:

Note the placement of the rubber spring isolator at the bottom of the spring.

Now would also be a good time to grease The inner and outer u-joints of the axle half shaft. Many mechanic over look these and they never get grease.

Removing the old shock and fitting a new shock:

1) Start by removing the spring, rubber spring isolator and spring bushing.

2) Note the order everything goes together. particularly the spring bushing, bushing plate and plastic ring:

3) Remove the old shock from the spring support plate by removing the shock's 17mm top bolt. If the shock shaft spins hold the shaft with a pair of vise grips.. its scrap anyhow.


2000G
Impact

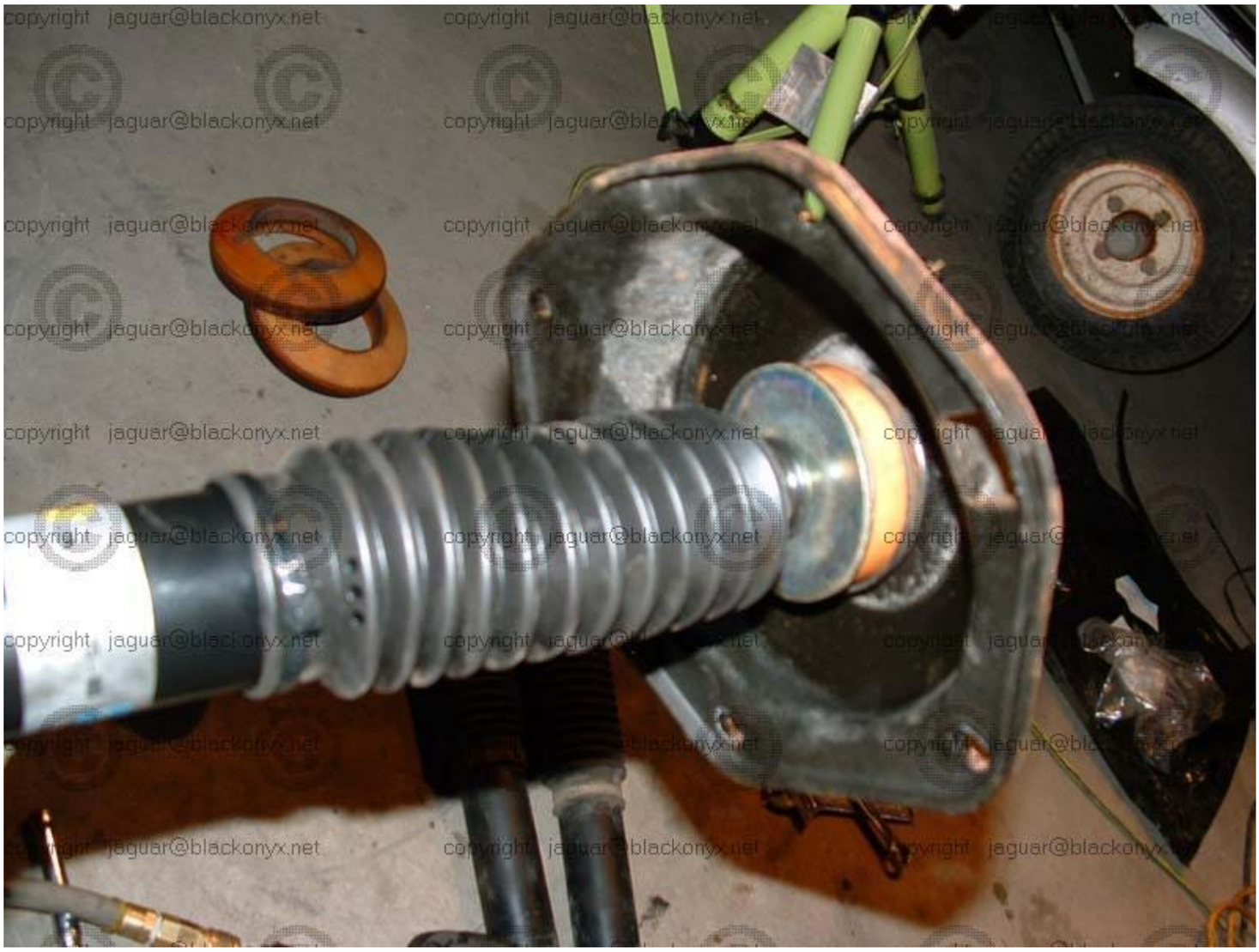
4) Assemble the lower shock bushing. The larger washer goes closer to the shock, followed by the steel spacer, and then the larger foam bushing over it. Like this:

5) Put the shock under the spring support plate.

6) Put the smaller, upper bushing over the shock support plate, followed by the upper washer. The concave part of the washer should be facing upward.

7) Hold the shock and tighten the top 17 mm nut. If you don't have an impact gun to do this with use an adjustable wrench and a 17mm wrench, like so:

The washer will stop compressing the bushing when it comes in contact with the steel sleeve.



8) Put some long lasting grease (I used anti-seize) on the top spring bushings. The bushings didn't seem to be needed, but since I had them and had all this apart it was better to replace them now than 30,000 miles later if they did fail.

9) assemble the bushing plate, bushing and shim as shown earlier

10) Assemble she shock, bushing, spring and lower rubber isolator now. If you forgot which end of the spring up and which is down, The flat part is the top, rounded part is the bottom:

Top:

Bottom:

Refitting assembly:

1) Now comes the fun part... putting that whole assembly in. Just reverse the removal while holding it all together. The high side of the spring plate points out. The pry bar may assist in this.

2) Make sure that the rubber spring isolator is seated correctly.

3) Replace the four 14mm bolts that hold the shock mounting plate in place.

4) Support the control arm with a floor jack. Begin to compress the spring

5) When the shock lower bushing aligns with the lower shock mounting bolt, tap the bolt through with the mallet.

6) Replace the nut for the lower shock bolt, and torque to 80-100 Nm.(59-74 lb-ft)

7) Lower floor jack and inspect shock/spring assembly.

8) Replace brake caliper, torque 7mm Allen head caliper pins to 25-35 Nm (19- 26 lb-ft)

9) Reconnect ABS sensor cable

10) Reverse removal of A-frame putting the blue, medium strength Loctite on all bolts. Don't forget the last bolts you removed and the shims above the A-frame bushing.

Torque values:

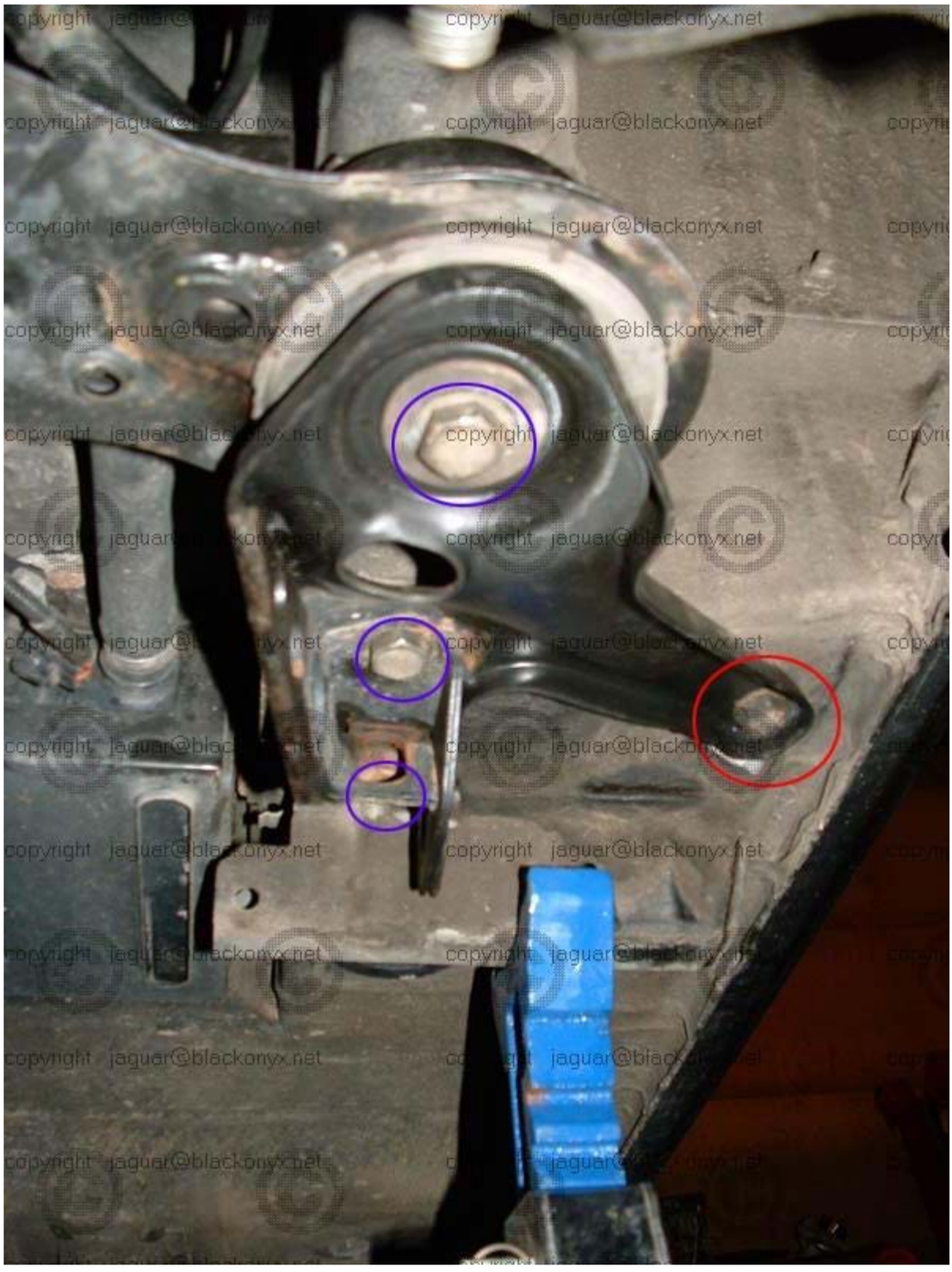
-Four 19mm forward bolts with nuts: 72-98 Nm (53- 72 lb-ft)

-Four 19mm bolts that go into differential: 85-115 Nm (63-84 lb-ft)

-Main A-Frame bushing 19mm bolt to body: 80-100 Nm (59-74 lb-ft)

-Upper link to A-frame 19mm bolt (last hidden bolt to remove): 85-115 Nm (good luck getting a torque wrench in there) (63-84 lb-ft)

-Single smaller A-Frame main mount 17mm bolt (circled in red): 40-50 Nm (30-37 lb-ft)



-Two forward A-Frame main mount 19mm bolts (two blue circles toward bottom of above image): 80-100 Nm (59-74 lb-ft)

-Lugnuts: steel wheels: 68-82 Nm (50-60 lb-ft); alloy wheels: 88-102 Nm (65-75 lb-ft)

When I inspected the shocks I found that the lower bushing to be causing the noise. Instead of a standard rubber bushing it is a spherical type steel bushing similar in design to Johnny Joints. On this XJ8 the joint had lasted about 80,000 miles before it failed.

If you have anything to add to this, or questions, or if you think I have missed something, please feel free to email me.

-Chris