

Changing front shock absorbers.

This job is not the easiest to do, so don't leave yourself only an afternoon to do it!

Parts required:

- 1 left hand shock absorber
- 1 right hand shock absorber
- 2 bump stops
- (2 anti roll bar link arms, optional)

Tools required:

- Coil spring compressors (3 strongly recommended)
- Nut splitter (for seized nuts on anti-roll bar link arms, with new nuts!)
- 22mm ring spanner
- 'Breaking bar' and 22mm IMPACT socket to fit (or another 22mm spanner and a 4ft long scaffold pole or similar) for extra torque to undo the bolts that hold the wheel hub to the strut; they are extremely tight!
- 6mm hex Allen key (or one to fit on a socket)
- 17mm ring/combination spanner
- 14mm socket and 3/8ths ratchet
- 10mm socket and extension
- 14mm ratchet spanner
- Small wire brush
- 2 axle stands
- 1 trolley jack

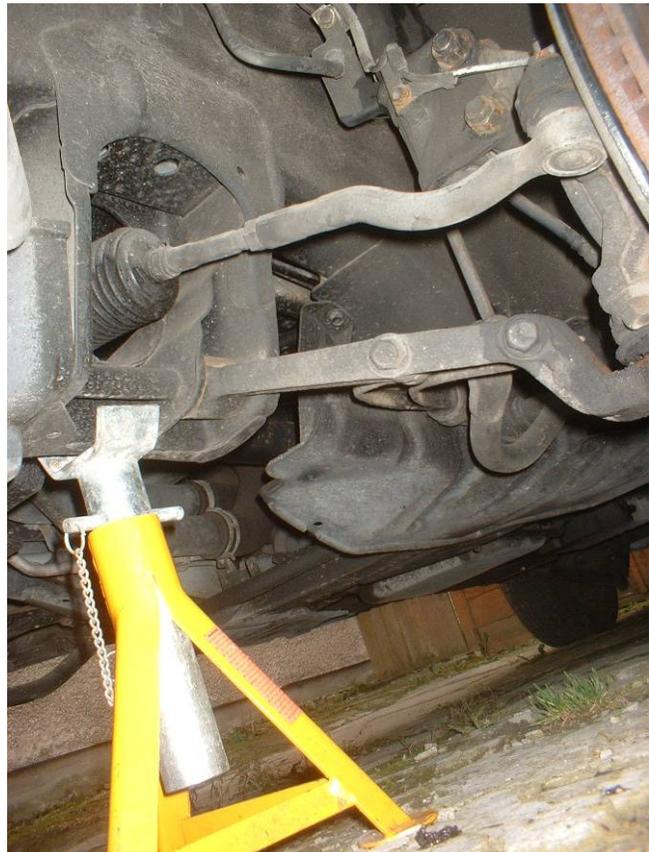
Before starting the job I would recommend checking you can undo the link arm nuts and the large bolts that hold the strut to the hub, just in case you need additional parts.

A nut splitter and new nuts may be useful if there is no play in the link arms and the nuts are seized.

Removing the front shock absorber

Jack up and remove the wheels

1. Slacken all front wheel nuts whilst bus its still on the floor
2. Handbrake on and chock the rear wheels
3. Jack the complete front end of the car up from the center of the front cross-member until the front wheels are clear of the ground by about 3/4 inch
4. Locate the axle stands under the front of the lower wishbone mountings
5. Lower slowly onto the stands, make sure they stay flat as bus lowers
6. Once you are happy that the bus is ready and secure, remove both the front wheels



Disconnect anti-roll bar link arm

7. Clean the exposed thread at both ends of the link arm with wire brush. Any underseal or dirt here will jam into the threads on the nut and prevent it being removed. Then spray with penetrating oil or WD40. Leave it to soak in
8. Clean the threads on the 2 large bolts that hold the wheel hub to the strut in the same way.

Jacked up and wheel removed ready to go



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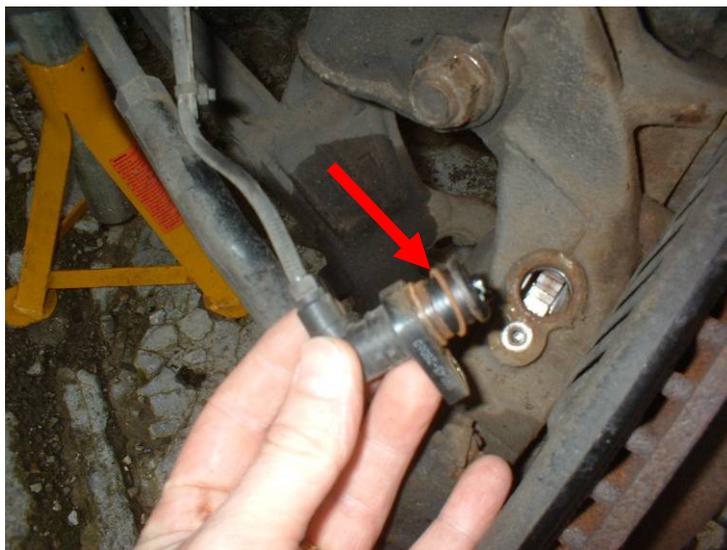
One destroyed bump-stop.
Remaining part stuck at top
of strut.



ABS sensor wiring ready to
remove



Remove the ABS sensor.
Remove the M6 Hex screw
(with 10mm socket). Twist
and pull to release. Watch
out for the O-Ring!



Remove the other M6 Hex screw holding the L shaped cable bracket to the bottom of the strut. Move all to one side. Put ABS sensor in a plastic bag with the screw so you don't lose the o-ring etc



Fit pipe clamp to upper brake hose



Undo the upper solid pipe fitting



Loosen the lower one too,
then pull solid pipe off, and
place somewhere clean.



Prise out sideways, the
metal retaining clip for the
lower hose



Do the same for the upper
hose



Upper hose now clear of the strut



Lower hose now clear of the strut



An idea of the size of extension bar I used to release those tight nuts holding the hub to the strut



Swing like mad on the NUTS to release. Make sure you are going the right way!



This is why you do not use a standard socket !!!
⊗



Large nuts slack and ready to remove



The lower anti-roll bar link arm connection



Using a 6mm Allen key and 17mm ring spanner remove the nuts holding the link arms. The Allen key is used to stop the stud rotating whilst undoing the nut. Check for any play in the joints at either end. If there is any play you must replace these (about £55 from Toyota).

If you damage the inside of the stud with the Allen key you won't be able to re-fit. If it is not going to go then give up and use a nut splitter and fit new nuts!



Remove the large bolts holding the hub, and lower down carefully. Try not to stress the lower ball joint too much. (Don't call it names!)



Hatch at rear of glove box



Prise out



You can see the 3 nuts holding the strut in position. Undo them with a 14mm ratchet.

Don't get stressed, this is the easy side!

Have a second person holding the strut as you undo the last one.

Lower the strut out and put to one side.



Strut out ready to strip

(Anti-roll bar link still on as I was also replacing it due to seized nut and I did not think about nut splitters!)



NOTE: The next few pictures are from the driver's side. I made the stupid mistake of taking off the top bolt without clamping the spring. I thought there was another bolt under the top! *Not funny and very dangerous.*

Fit coil spring compressors to spring. Three are highly recommended; I don't think you could manage with two. Try to compress as many coils as possible.



Start to wind up the spring compressors. Wind up equally across all 3 of them.

(Picture is drivers side)



Keep winding until the spring is compressed enough to be clear of the rubber pads at each end. Make sure every bit of the spring is free, as it can look like you have compressed enough but one part is still under pressure. If you take the top nut off now you will struggle to re-build the strut.

(Picture is drivers side)



Be 100% sure that the spring is fully compressed. Remove the top nut cover.

(Picture is drivers side)



Using a ratchet and socket, undo the top nut.

(Picture is drivers side)



Remove the top nut and upper plate, watch out for the bearing shield show.

(Picture is drivers side)



Remove top plate complete with rubber pad.

(Picture is drivers side)



Slide new bump stop onto new strut. Make sure it's the correct side!

(Notice the smashed green plastic box, that's one reason why you use spring compressors. Sorry; no pictures of the smashed radio or the messed underwear!)



Two people are useful again for this section.

Stand the strut upright and make sure the rubber "mat" is sat correctly with the "nipple" sticking through the hole. Lower the spring into position making sure the end locates into the recess.



Put the lower section of the top plate into position, complete with the rubber pad. The top of the strut shaft is rectangular. Make sure this mates up with the rectangular hole in the plate. Notice on the plate is a triangle marked with "OUT"; make sure this lines up with the centre point between the two brackets that the hub fixes too. Once this is correct, fit the upper plate with the bearing. Make sure the shield (shown earlier) is there.



Slowly wind out the spring. Keep checking it is sat correctly in the bottom. Also check that the top plate "OUT" is still aligned correctly. I found a screw driver in the hub fixings handy to keep twisting it all.

(Picture is drivers side)



**BEFORE RE-FITTING
MAKE SURE THE TOP
NUT IS REALLY TIGHT.**

Have somebody lift the
strut up back into the wheel
arch and re-fit the nuts.



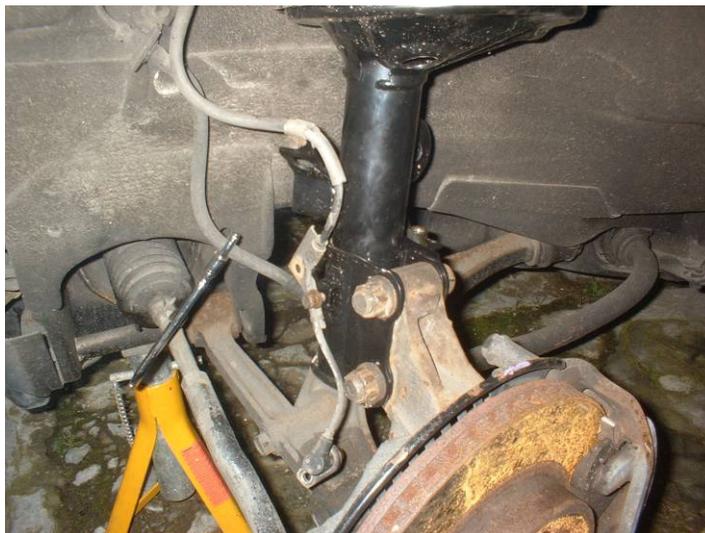
Lift up the hub and loosely
fit the lower bolt and nut.
(Remember the nuts go at
the front of the car)



Swing up the hub and fit
the other bolt and nut.
Tighten up initially with
ratchet and spanner to
close up the gap. Then use
long bar on nut to get very,
very tight.

Re-fit (or replace) the anti-
roll bar link arm (no pics of
this bit as I did not have
them!)

Re-fit the ABS sensor cable
on L shape bracket



Re-fit the ABS sensor. Be sure to push it in squarely.



Re-fit both flexible hoses with the slide clips

(Your link arm should be fitted, not like this picture)



Replace the solid brake pipe between the two hoses. Make sure the ends are spotlessly clean!



Now go round ALL nuts etc and re-tighten them to be sure. DON'T SKIP THIS DOUBLE CHECK!

Strut upper fixing nuts; nuts/bolts to hub; anti-roll bar links; brake pipes; abs sensor and cable brackets

(Picture with old strut fitted, sorry)



Now you need to bleed the brakes after removing the hose clamp.

That's one side done ☺

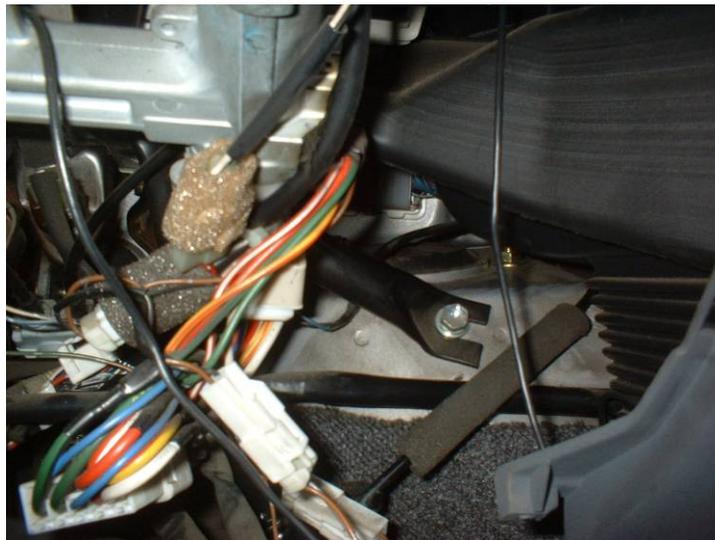
Now the drivers side.....

Exactly the same procedure, only the upper strut fixings are not in the glovebox surprisingly!

Remove the lower dashboard by undoing the 2 screws at the bottom. Pull back off the ignition key switch.

Shine torch into rear corner and you will just see the 3 nuts you need to undo.

Other steps are the same



Well I hope that helps you. If you can suggest any improvements for the text etc please contact me (Timbo) at www.estimaownersclub.org in the forum.

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PLEASE BE CAREFULL