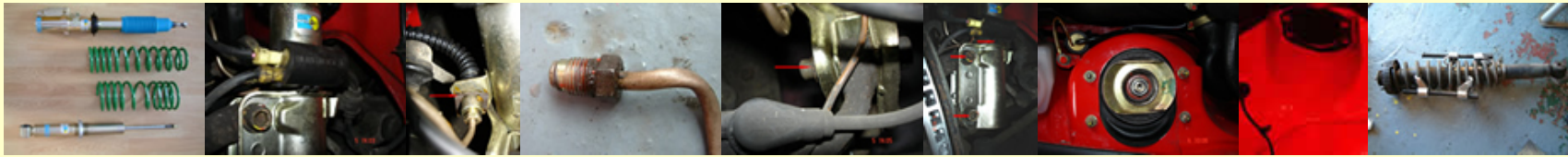


Suspension refit front & Rear

How I went about fitting my Bilstein B6 sport dampers and H&R lowering springs....trials and tribulations...



All the pictures are linked to text, and have an explanation of how I changed my Dampers and springs from the standard C2 Boge setup to Bilstein B6 sport dampers and H&R lowered springs.

One or two points of note,

1. Jack up the car using either the front or rear jacking points, it does not matter which one, the bodyshell is so stiff you can still open and close the car doors when it is up in the air., and for safety's sake please use axle stands and any other safety equipment necessary to prevent injury, especially if you are working alone under a car that is jacked up in the air, play safe it only takes 5 minutes longer...

2. Unless stated all bolts/buts were assembled with PBC or copper grease, if specified as Optimoly in the 964 manual, if this is not mentioned in the manual reduce torque values appropriately.

Click the button below for the suspension write up in pdf format.

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Plain old picture of new springs and dampers, looking good don't you think..

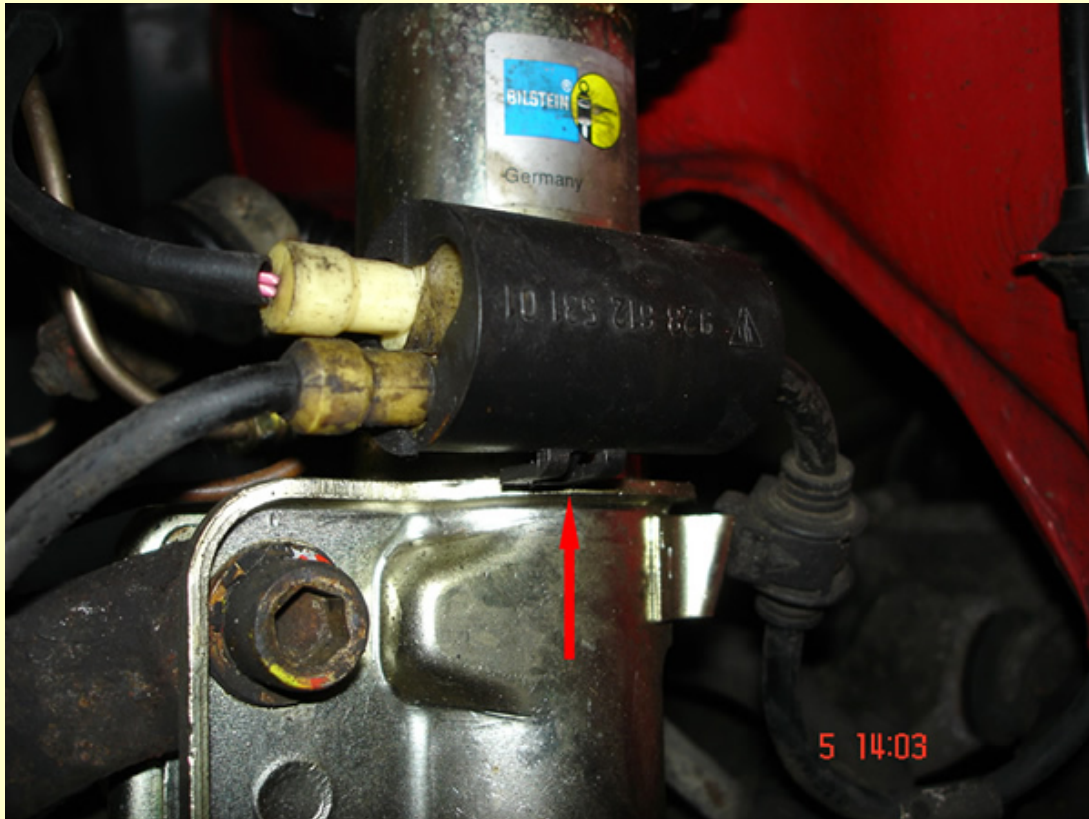


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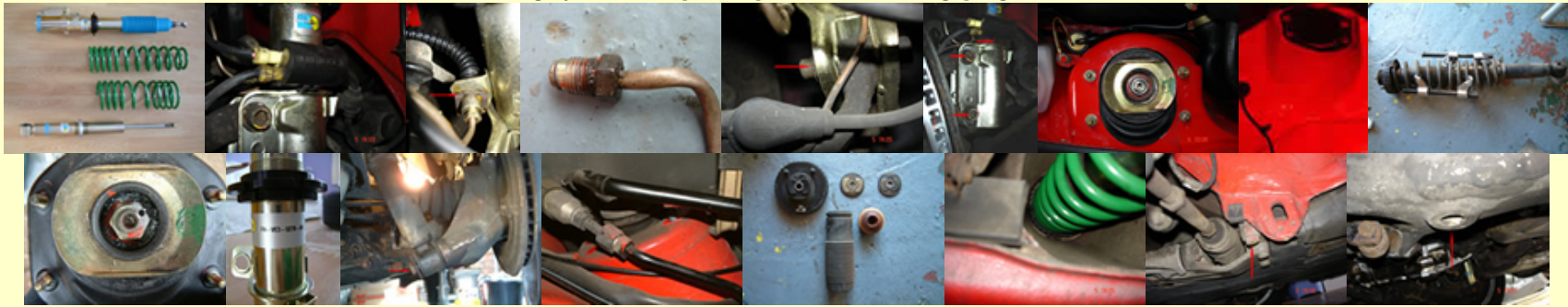
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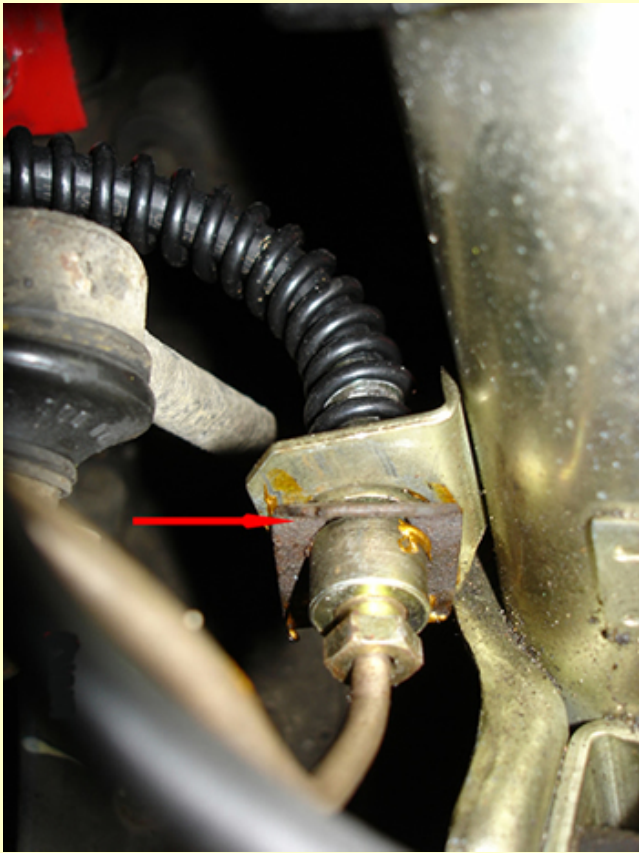
Pictured is the connector for the ABS sensor and Brake pad wear sensor, this must be unclipped where the red arrow is, then the sensors can be unplugged and the connector unit itself twisted up and removed.

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This is the hose retaining clip that requires removing, in the picture to the left. Removal of this allows the flexible hose to be properly located in the lug above, the flat section facing downwards helps stop rotation of the brake hose, and makes it more secure.

Some people advocate cutting the lug to allow brake pipes to be fitted removed without having to undo and of the brake hoses, I do not consider this as practical. However you need to be prepared for what may happen in the next section if you start undoing pipework.

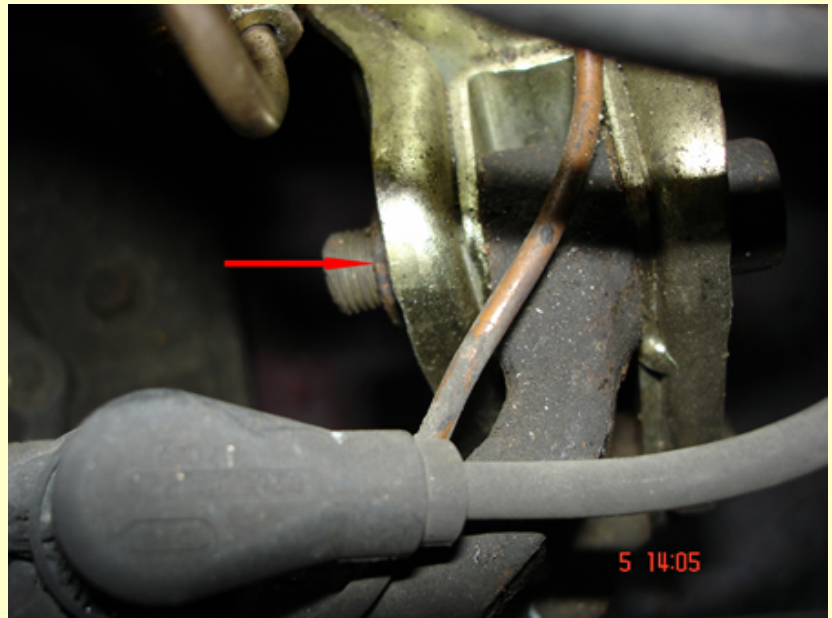
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Shown here is a semi captive nut you need to be aware of when both removing and refitting the suspension, although captive mine would not stay fixed it would always rotate, I had to put sockets on the nuts to keep them from rotating, small issue but none-the-less frustrating.



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Shown to the left are the two bolts holding the lower part of the damper in place.

One or two things before these are undone however.

Firstly. Make sure you have a trolley jack, axle stand or something similar underneath the carrier plate, or front hub assembly, this will stop the whole thing dropping to the floor, and causing issues later. It shouldn't drop far as it is held by other components, but it will drop, so best to prevent this.

Secondly Only undo the bolts a little, make sure they are free, but not completely out, this is so the whole assembly can help with moving the upper part from the bodywork.

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See the four 10mm nuts, these hold the damper in the bodywork, undoing these will allow the whole suspension unit to drop down. Remember we said leave the bottom two bolts attached? Well this is why, using the whole front wheel carrier to help pull the suspension out of the bodywork, it will be tight, it was on mine, no reason yours should be any different ..Remember also we said to put a jack or something under the wheel carrier, well if you didn't whoops, this is pretty weighty, so it was all there to support his coming down.

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Just go easy when removing it all, a light tap with a mallet should be all you'll need it it won't immediately move.

When the whole damper has been removed this is what's left up inside the wing, its a felt/ sponge rubber gasket, that's what caused mine to be stuck so tight. Now with this clear of the bodywork, the lower two bolts in the seventh article can be fully removed.



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Although this is the rear damper/spring shown, the same principles apply, I always, yes always compress my springs with the right spring compressors, I won't be held responsible if anyone gets hurt for doing this wrongly, in fact if you aren't aware of the risks, leave it to someone else to do.



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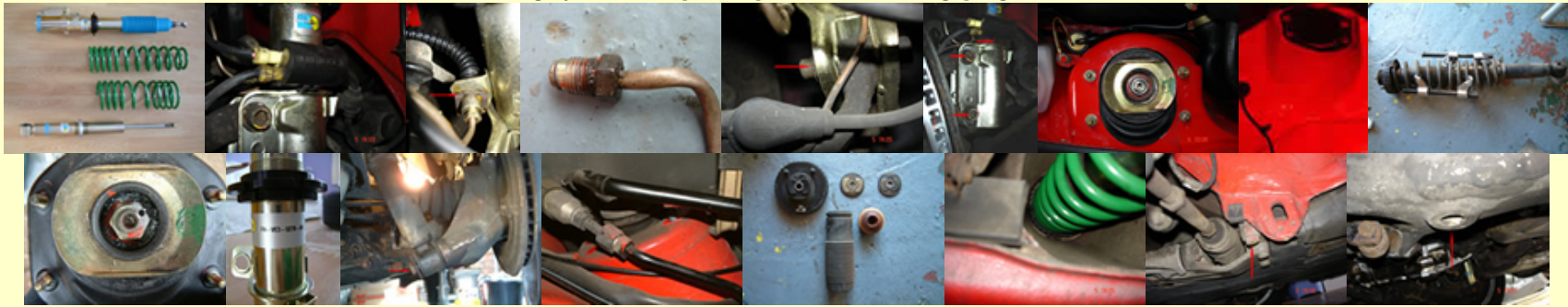
Bugger, this wasn't what I needed, so you might as well be on the lookout as well.

When I finally got the suspension free of the bodywork had undone all the bolts I was left with a nut I couldn't undo, the simple reason....The hexagon in the top of the strut was too soft, and had rounded out. As you need the upper mount/bearing for the whole thing to work, as it wasn't past the sell by date, and as I didn't want to needlessly splash out on another set, I drilled the old nuts off, both sides....It took all told about 30 minutes per side, pilot drill, then ever increasing until the nut pops off, as you are supplied with new nuts, it didn't matter.

Some other folks have had better luck than I with an Impact driver, try it.....You may have better luck than I did.

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New Front damperfitting.

Although fitting is almost exactly a reversal of the whole process, I'll run through the steps.

1. Fit new spring onto damper, make a mental note of how far the spring perch (collar) is up the threads, keep the others the same distance.

2. Fit the bearing carrier/top mount onto the damper, Fit nut and torque up. 59ft/lb



1&2

3. Gently guide the whole unit up into the wing, locate the four holes for the top mount, and hold using nuts and washers, ensure you get this round the right way, towards the inside of the wing if the car is NON turbo bodied.



3



3

4. Place lower part of damper into the carrier and locate with bolts. NB You may have to lift the wheel carrier up here with whatever you used to support it during disassembly.

Once the upper and lower parts are in place, the upper mount(no:3 above) can be torqued up to 17ft/lb

Once done the lower bolts can be torqued up to 101ft/lb

(NB the manual states that these bolts should be replaced, your call on this one).



4



4

5. Replace all the brake lines, going through the damper location hole, make sure though the flexi hose has the flat section on the bottom to line up properly.

Tighten only as much as necessary, unless you've fixed brake lines before it's difficult to judge what is required, just remember you can always tighten them more, but you don't want them to leak.



5

6. Fit the ABS and Brake pad wear sensors back into the connector, and snap the casing shut. They are keyed, one being a figure of eight shape, the other having a flat side, so you can't get this easily wrong.

Once everything has been fitted, go back and check the torque values on the upper and lower mounts, better safe than sorry. Check everything you have disturbed, check the brake lines, and anything else that may get snagged when the car moves, so that nothing is trapped or is likely to be, and everything is tight as it should be, then we can move on.

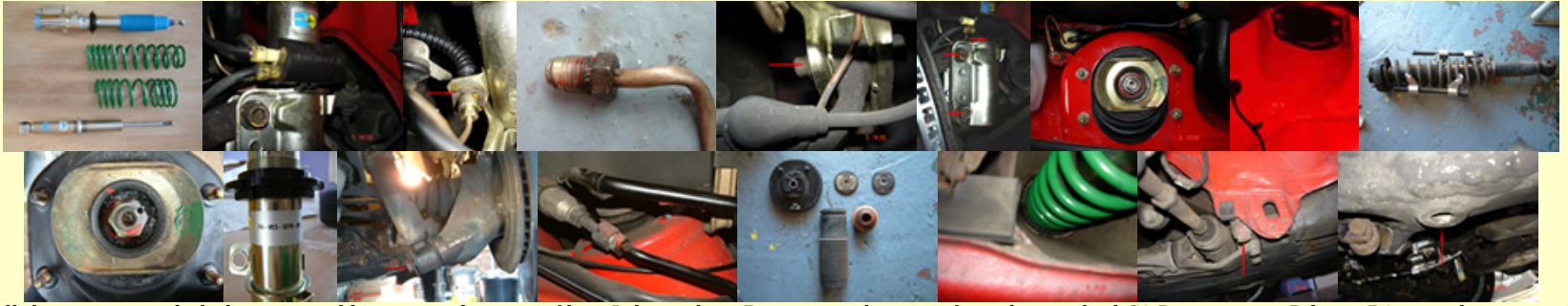
tighten once check twice....



6

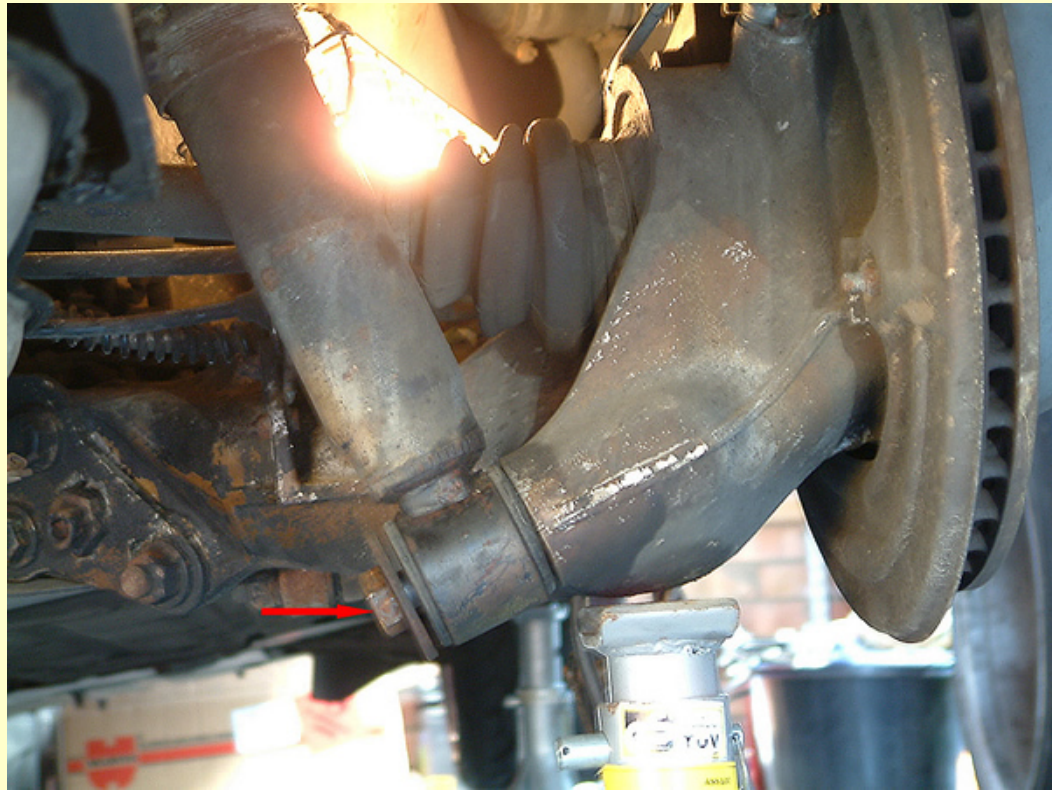
Suspension refit front & Rear

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***Pictured on the left is the lower rear nut, this is torqued up at 147lb/ft. try getting this undone without a breaker bar or air gun, it is really tight after 102,000mls.....
Undo the bolt, but don't completely remove.
Support the trailing arm as shown here using an axle stand or similar, this lot is pretty heavy.***



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Difficult to see here, but trust me, this is the top rear mount. In order to gain access you will have to remove one or two items.

Firstly the Airbox, you may have, or not as the case maybe to remove the Airflow meter, I did not.

Secondly, remove the blower motor on the LHS, I don't not have any photos of this operation, they are not difficult to do.

If you have a Tiptronic gearbox as many owners have, then there are more pipes I am told that require removal, details to follow in time.

Next up there are the top mount nuts to undo, there are three per mount. Looking at mine you can see they protrude about 1 inch, maybe slightly more, if you have an earlier than 91 model car yours will only protrude about 1/2 to 3/4 of an inch.

Undo these nuts completely if you have fully supported the lower trailing arm, then proceed underneath and undo the large bolt holding the damper into the trailing arm. You should then be able to wiggle the whole damper free, if this is unsuccessful then put the bolt back in and use the weight of the trailing arm to help release the upper mount, sometimes these are quite tight.

You will need to use spring clamps again, before you attempt to undo any of the assembly, failure to do so will result in sore knuckles and springs etc flying around the workshop....play safe.



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After removing the spring/damper assembly from the car, and making sure it is properly clamped you can then undo the top nut to release the cush mount, washers bump stop and dust shield.

Looking at the parts that make up the rear assembly we see a couple of steel washers (1), these are beveled, make sure the bevel fits against the "cush" (2) mount.

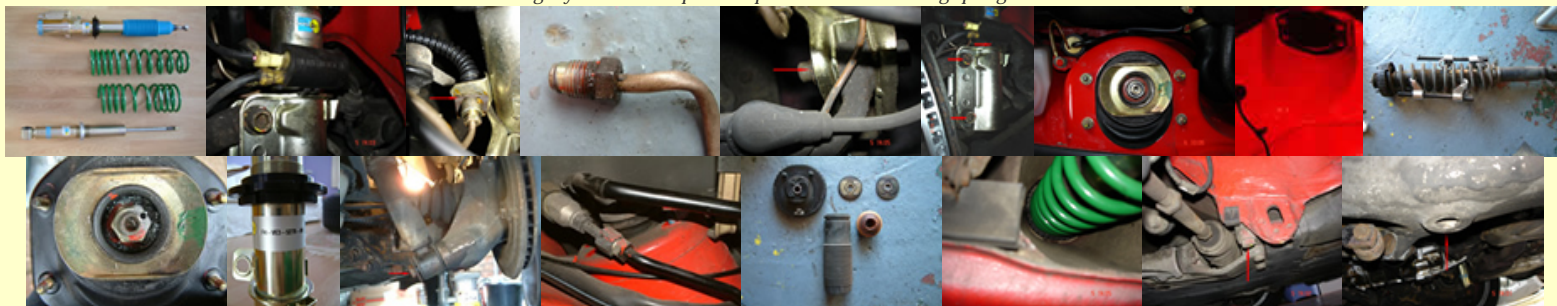
The bump stop (3) can either be cut down and used or thrown away, there are those that use them, and reports from Bilstein that say there are internal bump stops on their rear dampers, I chose to cut mine right down and mount them on as a just in case, you can of course do what you choose to do.

Then we have the dust shield,(4) this fits over the main body of the damper, but again only if you want to.



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After assembling the constituent parts, you can then put the rear damper and spring back into the bodyshell, this bit will be tight, so I put a small amount of rubber lubricant on the outer mount to help it pull up into the body when the three upper mount nuts are tightened.

I would suggest you do this, as space is limited and it is not easy to rotate the assembly into place if it has no lube... I used this photo just to show how damn tight it is up there, not a lot of room to play with.

Once into place, use a jack, another person, or anything else that comes to hand to support the lower part of the damper, otherwise how are you going to do up the nuts on the top mount????

Ok, so supported well, you can now, if you're lucky put the three nuts on the top mount, do not tighten fully, but do remember the washers...

Pop downstairs.. and place the bolt for the lower part of the damper in place, if you can man handle the axle stand to help this, it's a bit awkward on your own.

Once done, torque the three upper nuts up to 27ft/lb post 91 or 15ft/lb pre 91...satisfied that this is all ok, then torque up the lower bolt to 147ft/lb

Finished? Now check all of your connections, anything left over? Anything rubbing/chaffing? make sure it all works before you lower the car to the ground, and that anything you've disturbed has been properly tightened and doesn't leak any fluids...

Now we can remove any axle stands and lower the car to the ground, and remember there's the other side to do, simple replicate the process. after all you're an expert now ;-)

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After both sides of the cars suspension have been changed, you can now settle the vehicle by bouncing it, then taking it for a gentle ride. Nothing aggressive here, remember we have pulled the suspension to bits, nothings now aligned at all, we are starting that process, so take it easy...and get yourself a full tank of petrol, that way the ride height will be more accurate.

Front height measuring point, use this point for starting out, do not use the front wing/ fender for this, it's not meant for that purpose. Remember I said to measure the dampers when putting the springs on the collars, so they would all be roughly similar? Well this will see how accurate you got all of that, and if you need to adjust anything, just make sure you tighten the perches up again properly.

I chose to make mine RS+5mm which IIRC is 125mm at the front.

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The rear measuring point, Again mine is set to 223mm which is about Euro RS+5mm. I used the one in the photo as I could not access the proper cast boss, subtracted 100 mm from the overall height to end up with my figures.

Once you have set all sides both front and rear we now have a choice of what to do nextalways decisions hey, life's never easy.

The initial choice really isn't a choice as such, as you really will have to have the car four wheel aligned, after all, how would you expect a 165mph car to handle if all wheels are going in differing directions?? The second choice is really something only you can decide on in terms of worth to you, that is having the car corner balanced.

Corner balancing is done with 3/4 tank of fuel and the driver in the driver seat D' oh. It is a system of weighing each corner of the car, and then in turn raising or lowering diagonally opposite damper spring perches to transfer weight from one corner to the other until they balance out. However remember that if you do this do it at the same as having the alignment done, that way if you need any fine tuning any where it can all be carried out at the same time/location.

