

At Mark's suggestion I thought I'd write this up so future Coupe lovers can have as much fun* as I did with this job.

My enormous thanks to forum members, particularly *glorfindel*, for their advice when I got stuck during this process.

My alternator was making irregular but loud crunching noises, I suspect this to be the one way pulley. **If your car has an alternator with a one-way pulley, be sure the replacement alternator does too.** You should also check that the electrical fittings match (mine was an M8 stud for B+ and M5 stud for D+, but check your replacement matches. I got a Bosch unit through their alternator exchange programme which came with 12 months warranty, cost £140 (purchased via Euro Car Parts).

I took the belt off and spun everything by hand, but everything was fine as far as I could tell. Since the noise vanished when running with the belt off, I knew it to be one of the ancillaries. I eventually purchased a mechanics stethoscope to listen around the bearings of all the devices, and the sound was loudest near the alternator pulley.

You will need:

- * A replacement alternator
- * 13mm and 15mm ring spanners (ratchet versions will make life easier)
- * 6mm and 8mm allen key bits
- * 10mm and 16mm hex drivers
- * T30 torx
- * Assorted screwdrivers for jubilee clips
- * Will to live

The biggest problem in this job is access. Getting to the nearside alternator fixings is very difficult and requires things to be removed. Even once the alternator is detached, physically removing it from the car is not easy. So, do the following in this order:

Disconnect the battery, following the proper BSI shutdown procedure.

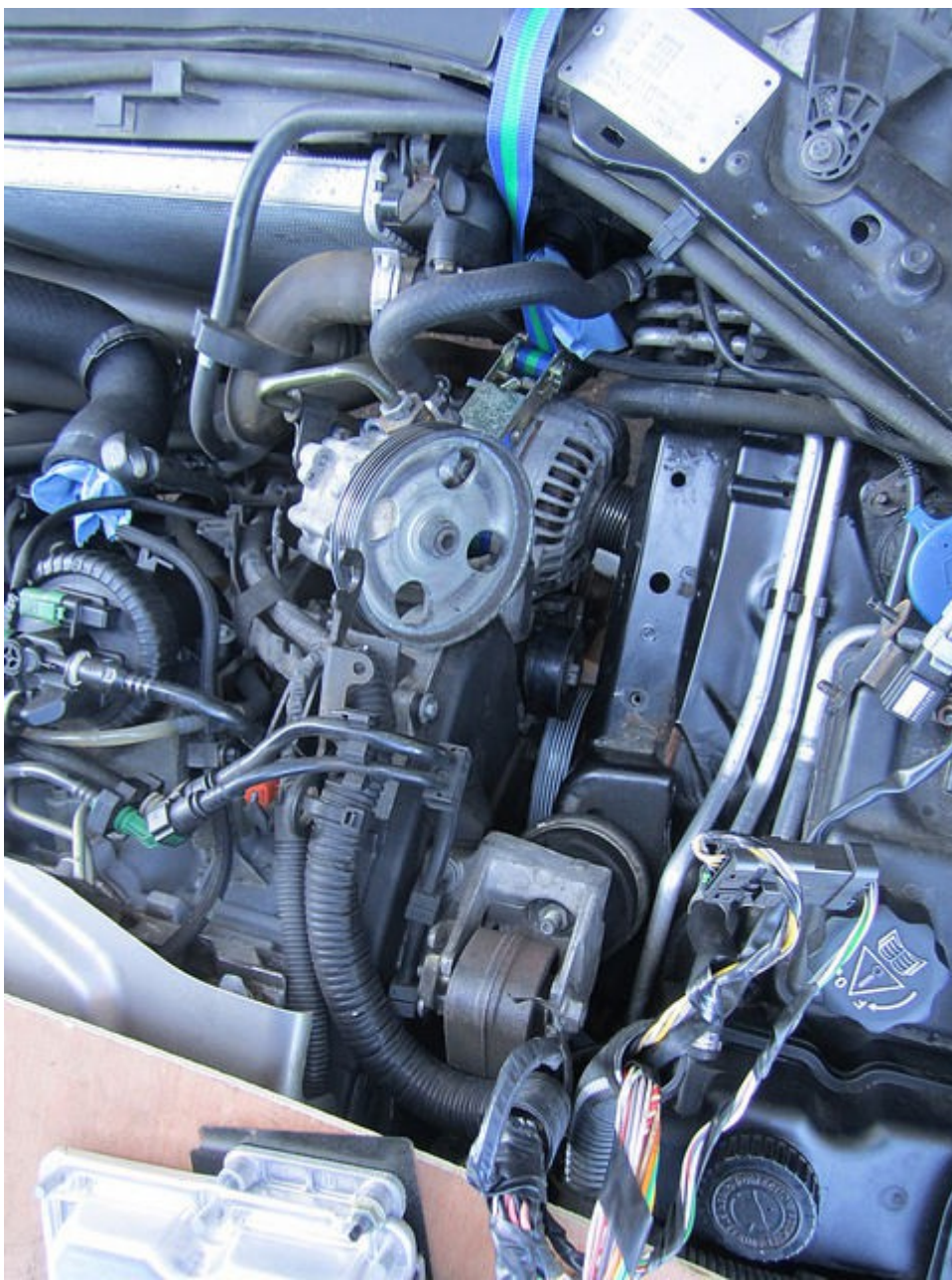
1) PAS pump removal

* Follow the **HDi crankshaft pulley** tutorial until the point where the belt, idler and tensioner are off. If your crankshaft pulley needs renewing, doing so now is a great idea 🤔

Then carry on:

- * Remove engine cover. Detach top and bottom boost hoses from the air doser assembly
- * Remove the 2 rubber bungs from the alternator electrical connections and remove the nuts.
 - * Disconnect the 2 vacuum pipes and remove doser assembly from intake manifold
 - * Loosen upper boost hose from the intercooler and remove the hose from the car
- * Unbolt the PAS pump from its bracket. Remove the nearside (gold) fixing first (13mm ring spanner). There is a centering collar that you should remove and keep safe, noting its orientation. The left offside fixing is a hex, the lower is a torx.
 - * Lift the PAS pump gently and tie its pulley to the engine cover fixing to hold it out of the way.
- * Remove the undertray (where not lost in a ditch somewhere) and disconnect the oil pressure switch.
 - * Unclip the A/C clutch switch from the side of the compressor and disconnect the connector.

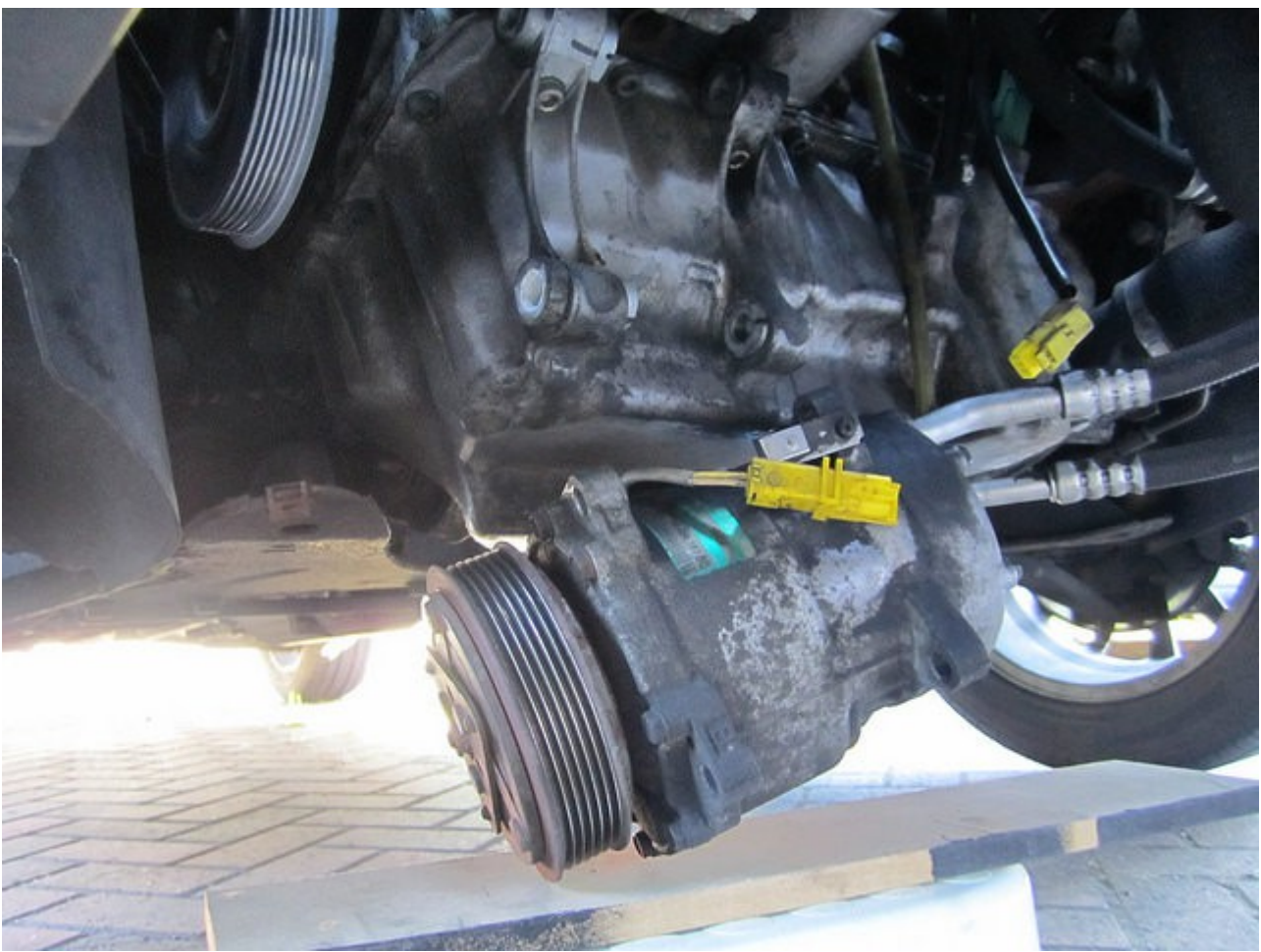
After doing all of that it should look a bit like this (alternator already detached in this pic)



2) A/C compressor

We're going to drop (well, lower) the alternator out of the bottom of the car. So the A/C compressor needs to be moved. It's held on by 4 bolts: the offside are 16mm external hex, and nearside are 8mm internal hex. **Note: the nearside fixings have support brackets and black centering cones. Recover these, again noting orientation.**

The compressor is heavy! There's a fair amount of movement in the pipes, but if you've got the car in the air, it might not reach the ground without excessive strain on the joints. Support it on a block of wood or something.



3) Alternator

OK, here's the hard bit. We need to remove the alternator, but it won't come out of the car without removing the bracket onto which the PAS pump & alternator mount. Catch 22 though: you can't remove the bracket without removing the alternator.

Remove the lower pair of alternator mounting bolts. 16mm external hex, but again, the nearside pair have centering cones **and** collars. Recover and don't lose them.

Slacken off the upper pair of bolts but don't remove them. At this point, the alternator should swing away from the block slightly if you pull it.

I laid a metal bar across the engine bay and strapped it down. Then I took a ratchet strap and tightened it around the alternator, and tied the other end to the metal bar, so there is zero slack. Now the top two alternator bolts can be removed, and the alternator hangs on the ratchet strap in the small void between the block and the radiator. Be careful not to let the alternator swing forwards and smash into the rad!

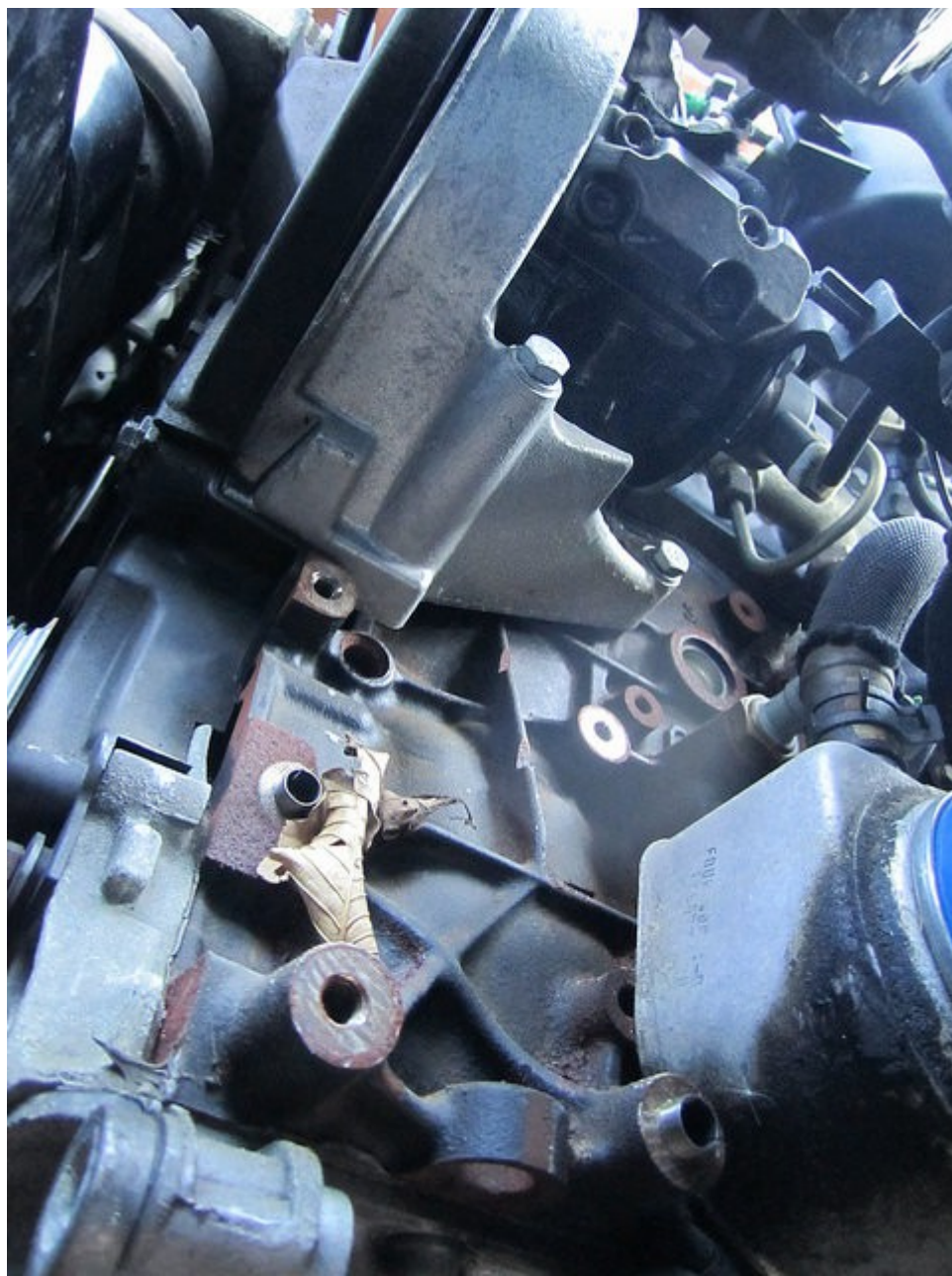
Be careful: the alternator is heavy and you really don't want it smashing through the radiator, its connections, or even worse, your face 😬 Make sure the ratchet strap is fully supporting the alternator before working underneath it.

4) Bracket

There are 5 16mm external bolts holding the bracket in, 3 of which live behind the alternator. 3 of these are very long (10cm or so) and are difficult to remove. This part is particularly hard since the alternator is very in the way. If you have someone to help you, it improves things, since you can ask them to shuffle the alternator left/right/up/down a bit whilst you try and get those 5 bolts out.

The bracket sits on 2 centering sleeves, so don't worry about it falling when you take the bolts out. Once they're all out, the bracket needs to be pulled directly away from the block to free it from the sleeves.

Sleeves visible bottom right and middle left of this pic (plus a complimentary leaf):



Once out of the car it looks like this (tensioner still attached in this pic)



5) Removal

Now, again with someone to wiggle the alternator, the bracket can be lowered out of the car first. This isn't very easy but is just a case of perseverance, being mindful of the radiator and its bottom hose.

Once it's out, you can undo the ratchet strap and lower the alternator out of the car.



Leaving a nice big gap in the engine bay



In traditional Haynes style, refitting is the reverse of removal, with the following in mind:

- * Clean the mating surfaces between the block and the bracket before refitting. And dirt on these will prevent the bracket sitting squarely on the block and will cause the PAS pump and alternator pulleys, as well as the tensioner, to be misaligned.
- * Fitting the bracket back on the centering sleeves is tricky, because you can't see what you're doing. Just remember that it needs to slide towards the block on the sleeves - sliding it around on the block won't work and might damage the sleeves. Be gentle and patient, it took me a good 10-15 mins to get this bit right.
- * Once you've got the bracket back on, and the new alternator 'hanging' in place with the ratchet strap, use an allen key in the upper offside alternator fixing to keep it roughly in place so you can remove the ratchet strap. Then fit **both** nearside alternator fixings, since they have centering cones. Do them up tight enough to position the unit correctly, then fit the offside bolts, then tighten up all 4. The same applies with the A/C pump.
- * Boost hoses need to be done up tight to prevent boost leaks. If you need to change the MAP sensor pipe from the intercooler, it's a good time to do it during this job since access is very easy.

Once everything is back on, start it up and she should be purring like a... well, tractor 🤖