

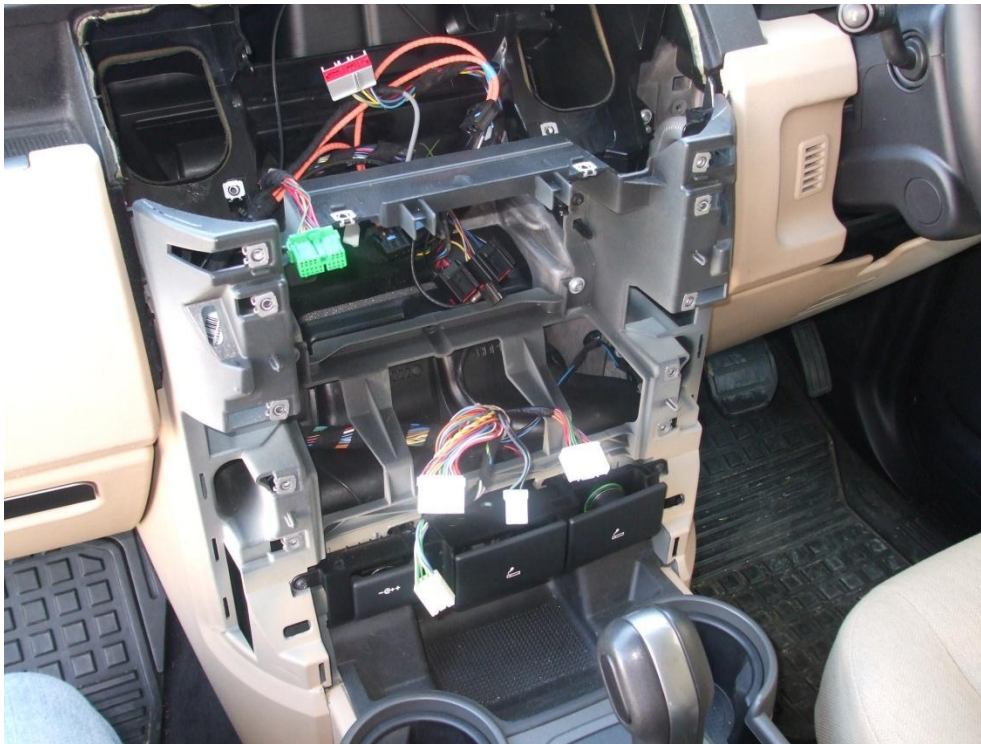
## How to remove the dashboard to access the heater stepper motors

The writer accepts no responsibility for damage to property or persons. This is how I did it; it may not be correct and there could well be other quicker and/or better ways of doing this. If this document is incomplete because I've forgotten something, then I apologise.

1. Make sure the car has gone to sleep by waiting a five minutes-ish after switching off.
2. Disconnect the battery. Don't forget that (amongst other things) the rear tailgate now won't be able to be unlocked and opened.
3. Start by removing the 'H' trim around the controls. There's four clips, two at the bottom and the other two about half way up; pull at the sides near the bottom towards you. The metal clips are specially designed to spring off into the dark recesses of the dashboard never to be seen again.
4. Place the trim, and everything else removed, into a safe place where they're not going to be damaged, along with the screws relating to each bit alongside. At least when you're finished and everything's back together there will be bolts and screws left over. This is useful for the next time.



5. Remove the satnav, stereo and heater controls etc. Be careful of some of the connections at the rear, especially the optic fibre ones. Note that the bottom one, the ashtray and 12v sockets won't come out yet.



6. Remove the passenger side vent. Just pull, from around the bottom. This step is the beginning of the removal of the upper glovebox. I had to do this to successfully remove the main centre section of the dashboard by bending its sides outwards (if this doesn't make sense at the moment, don't worry, it will do in time); I had to do this because I was unable to get the centre console between the seats far back enough so it could be removed the way I think it should be. The console couldn't go back far enough because I was unable to work out how part of the wiring loom disconnected from the automatic gearshift (if it does at all) so it would only move backwards a certain amount. Others may have more success.



7. Remove the inner bit of the upper glovebox. There's two spring clips on either side, located where the arrows are. This was a real pain for me and I thought it was going to break; careful use of a screwdriver to prise it off was needed, plus pushing from behind (explains why the vent had to be removed first). The hole in the bottom centre takes a plastic clip from the inner lining, it seems to stop it coming out easily.





8. ... and here's the clip that makes withdrawing it difficult



... and here's the metal spring clips that come off...

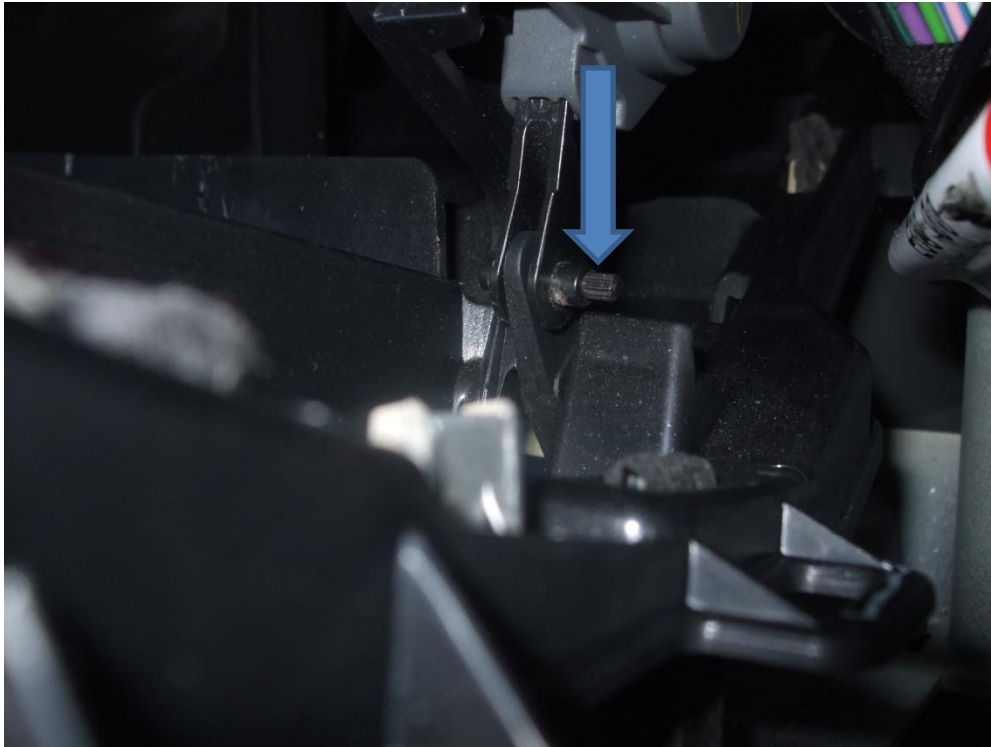
9. Now pull out the two spring clips, both sides



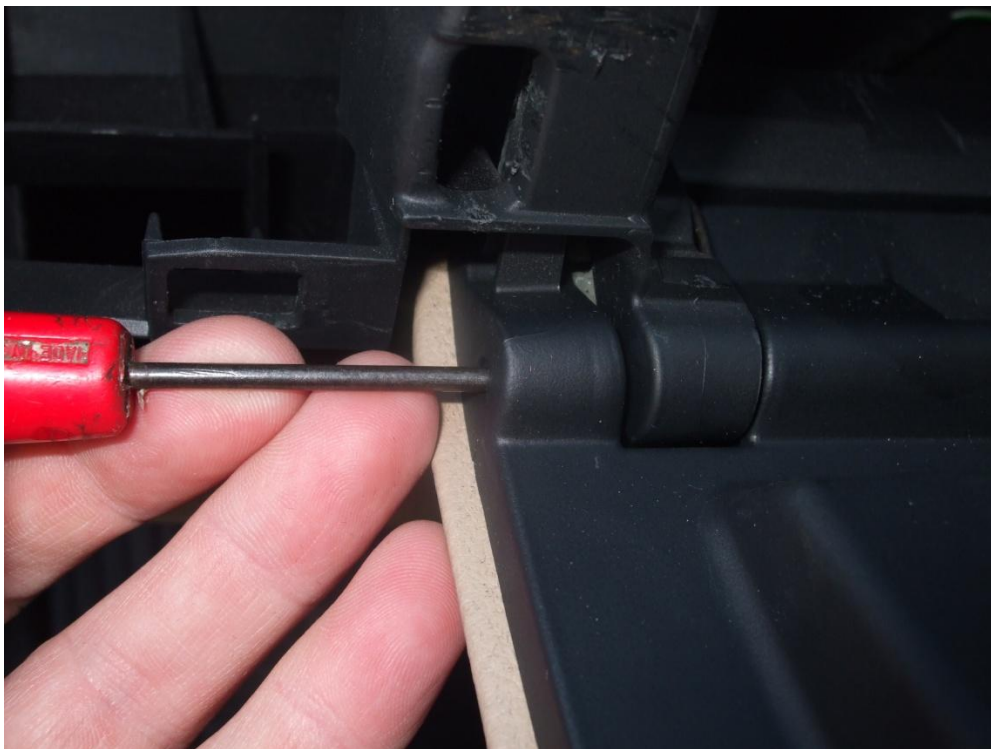
like this



10. Looking inside (where the satnav once was), find the mechanism that dampens the opening of the glovebox door. Move it to a point where you can see as shown below (the pin won't be half out... you need to do this) and push it from the left-hand side with a small screwdriver etc. Don't push out too far or else it's goodbye to the pin. Pull out the remainder of the way with long-nose pliers.



11. Then push inwards the hinge pins on both sides. The right one needs varying lengths of stiff wire.



... and remove the door.



12. Remove the T30 Torx screws from either side of the centre console by sliding the first rows seats forward as far as they will go. A ¼” ratchet should fit; a flexi drive may also be needed as the seat runner just gets in the way.



13. If you have an auto like me the next bit is relevant. If you have a manual, sorry, I haven't got a clue. Hold the gear selector handle and pull upwards... hard... but straight in line with the lever so as not to break the plastic bit goes downwards inside.



14. Remove the Torx screw from just in front the EPB handle.



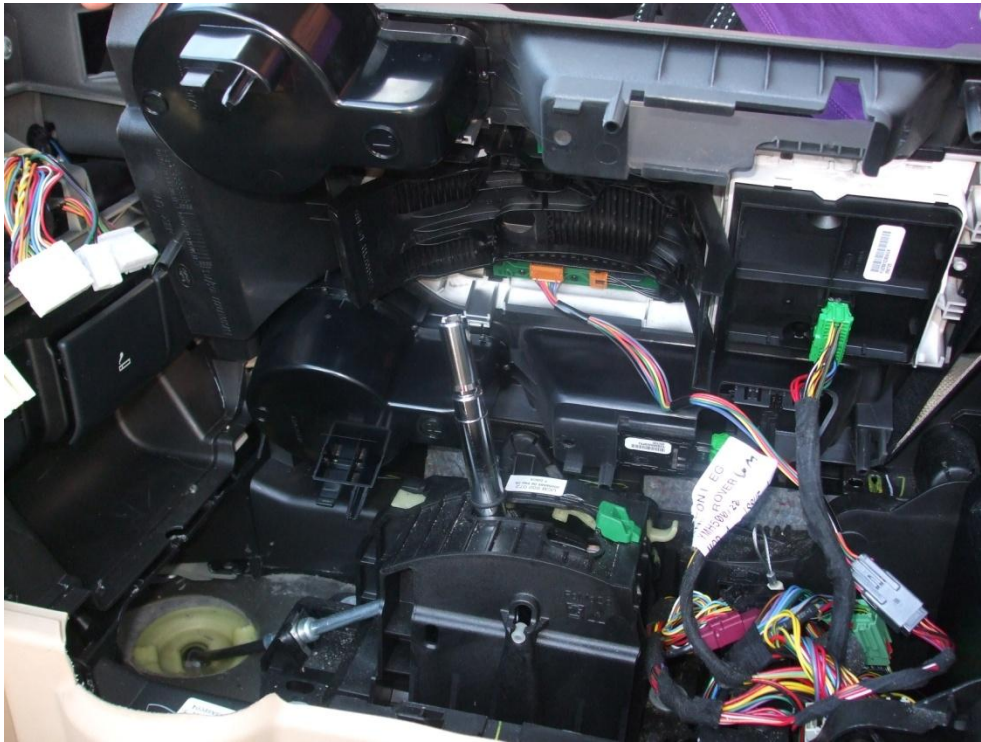
15. Remove the rubber sunglasses holder, and the plastic bit underneath it. A hidden Torx screw should be found underneath. Very cunning.



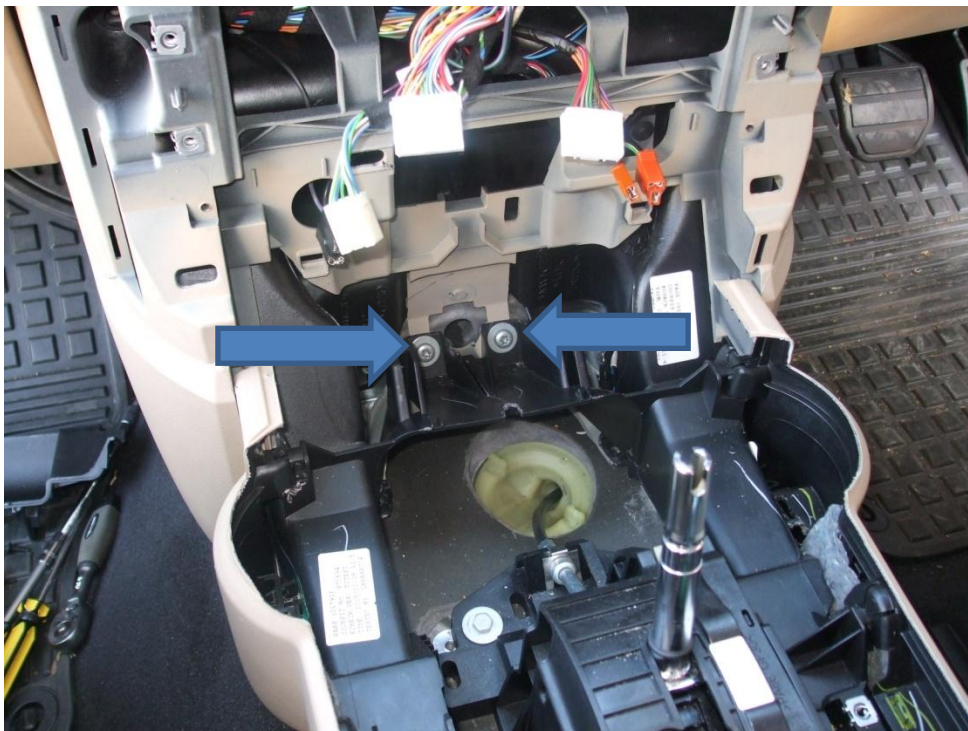
Now pull the top section of the console upwards. A lot of plastic breaking sounds will be made that sound expensive. At least one clip of mine is permanently broken. I don't think there's any trick here, just luck.



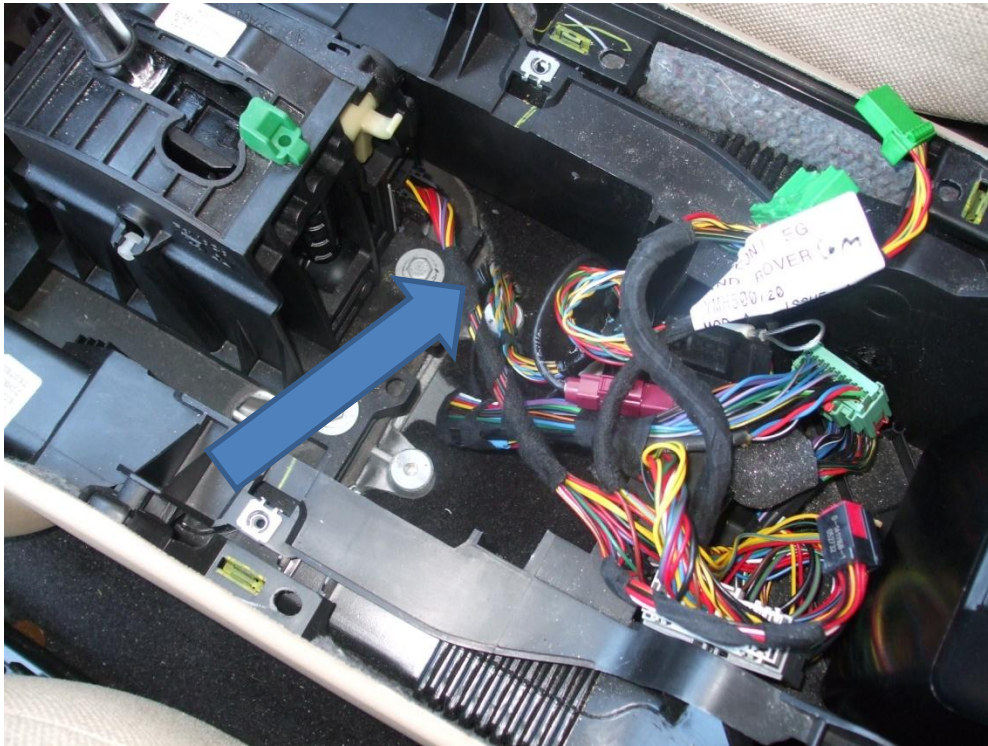
16. Once the top is removed you'll see as below.... this is from the passenger side; there's three wiring looms that need to be unplugged so that the top can be removed.



17. Remove these two Torx bolts.



18. Raising the console at the rear slightly, slide it backwards as far as it will go. Because I never found a way of disconnecting the wiring loom indicated it will only go so far.

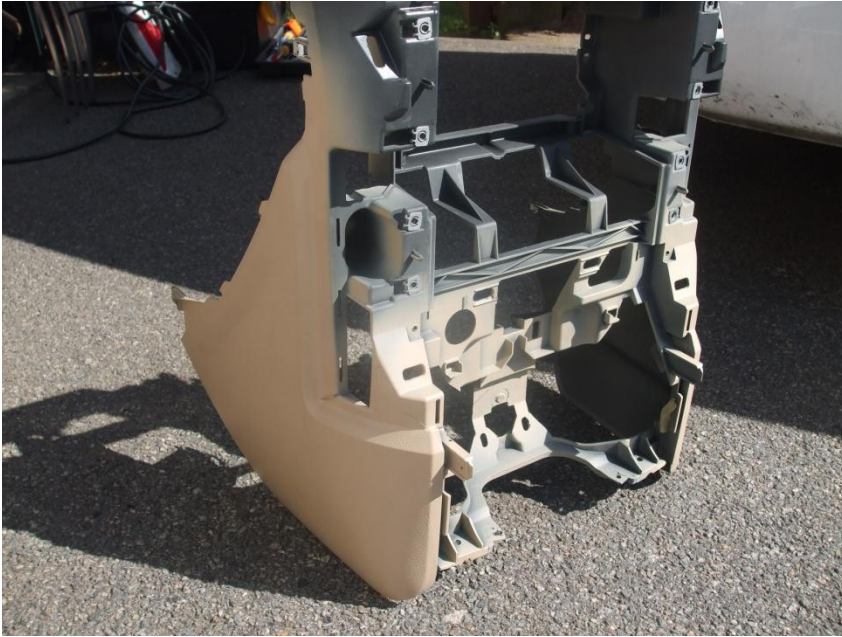


... and the console moved backwards...





19. Now... this bit needs to come out. This is what it looks like once removed. When I did it the first time, this was the trickiest bit.

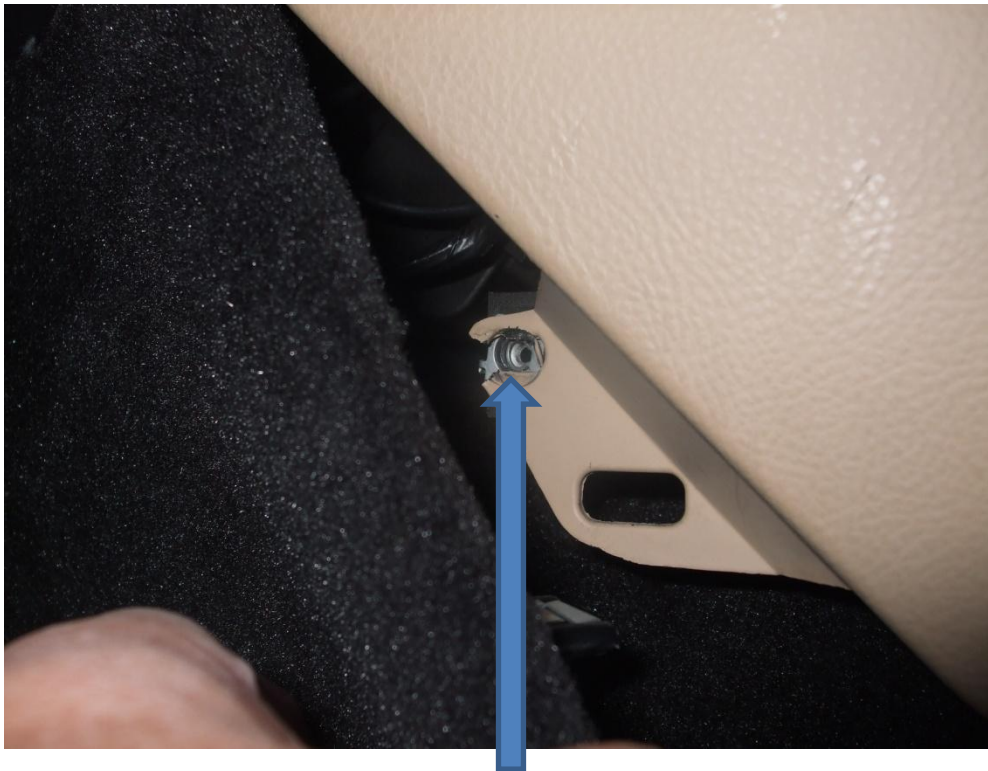


The trouble is the cables as shown below, which I think are fibre optic so damaging them would be the last thing you want to do, are attached to the bottom by plastic fittings which are push-fitted in, and onto which the cables are taped. The best way I found, as the clips wouldn't pop off, was to wrestle underneath and cut the tape – either with a knife (carefully) or side-cutters.





20. On the sides are two screws. Pop off the carpet trim first.



This is with the screw removed on the passenger side.

21. Remove the panel below the steering wheel. There's two spring clips at the top, and it's hinged at the bottom.



22. Squeeze the stays on either side of the lower glovebox when open, so it drops down to its lowest position.

PS. Empty it first.



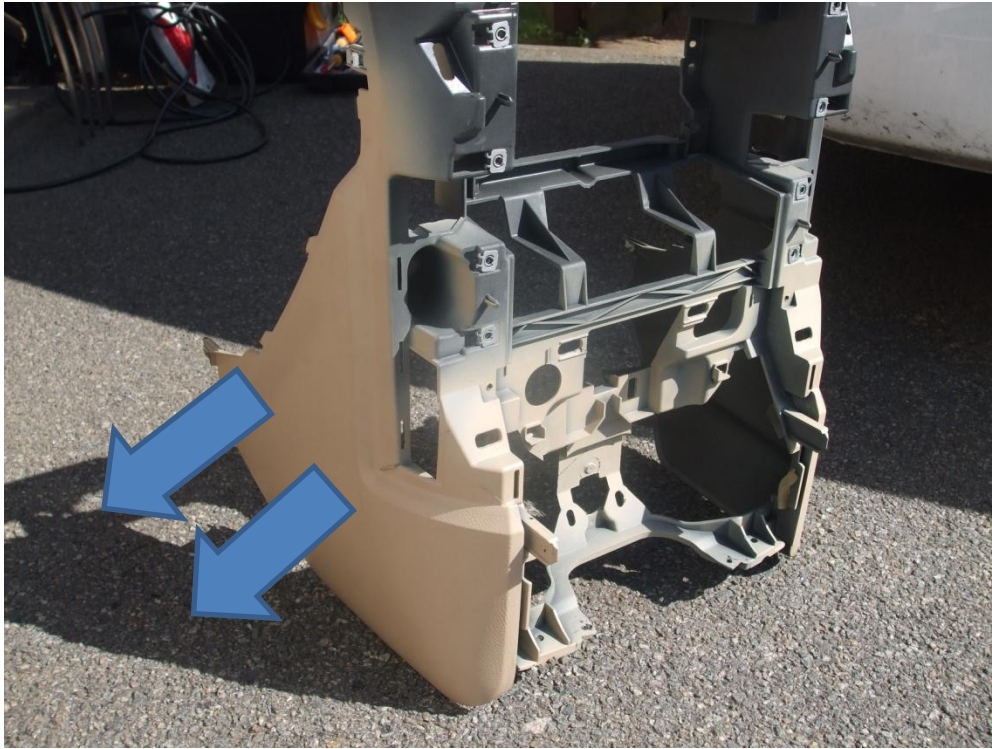
23. Remember this picture? This now needs to come out. It would have been a whole lot easier if the centre console could have slid back further or come out altogether. I should have taken a photo to show the next bit but unfortunately forgot. It is a two person job to make sure nothing breaks or is scratched.

Pull it all towards you, there's a couple of spring clips on the sides and locating lugs. Then hinge it forwards from the top, bending the sides outwards as far as they will go. Hopefully you can jiggle it all and it will come out. Notice that there's plastic ducting at the bottom which needs to be negotiated, but it does disconnect and come out at the top if needs be.

The arrows on the photo show the sides that have to be bent outwards.

Probably best to do this on a warm day when the plastic is soft and flexible. What happens on a cold day when it's brittle doesn't bear thinking about but may well result in a subsequent trip to the nearest Land Rover parts department.





24. So now your pride and joy should look like this. Let's just hope it all goes back together again.



Here's the plastic ducting I referred to in point 23.

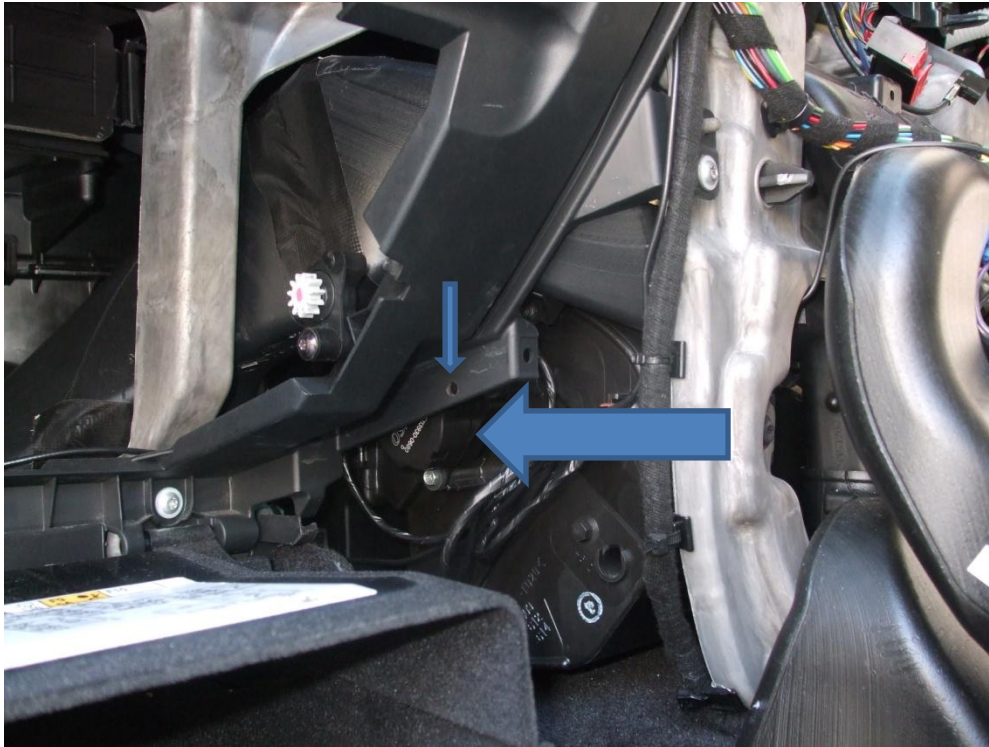


25. Okay. Here's one of the stepper motors we are after.

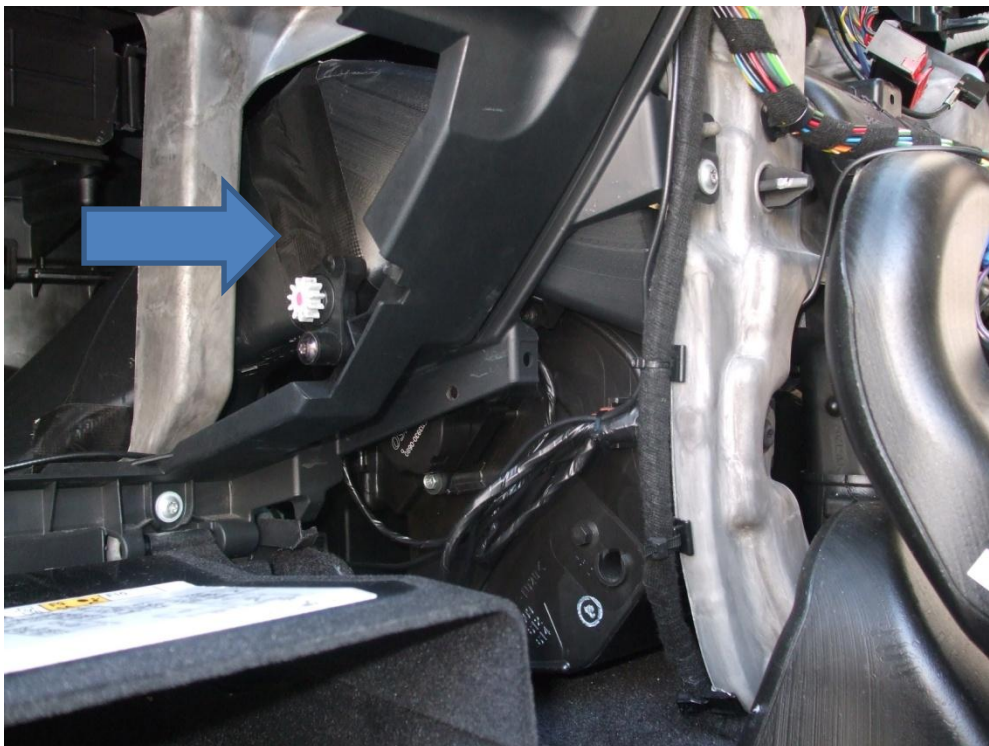


26. From what I found out by trial and error, there's four of these little guys hiding away. There are two on the left (passenger side) – the bottom one (big arrow) does the passenger side temperature mix, the top one controls the air flow between the footwell and the face vents.

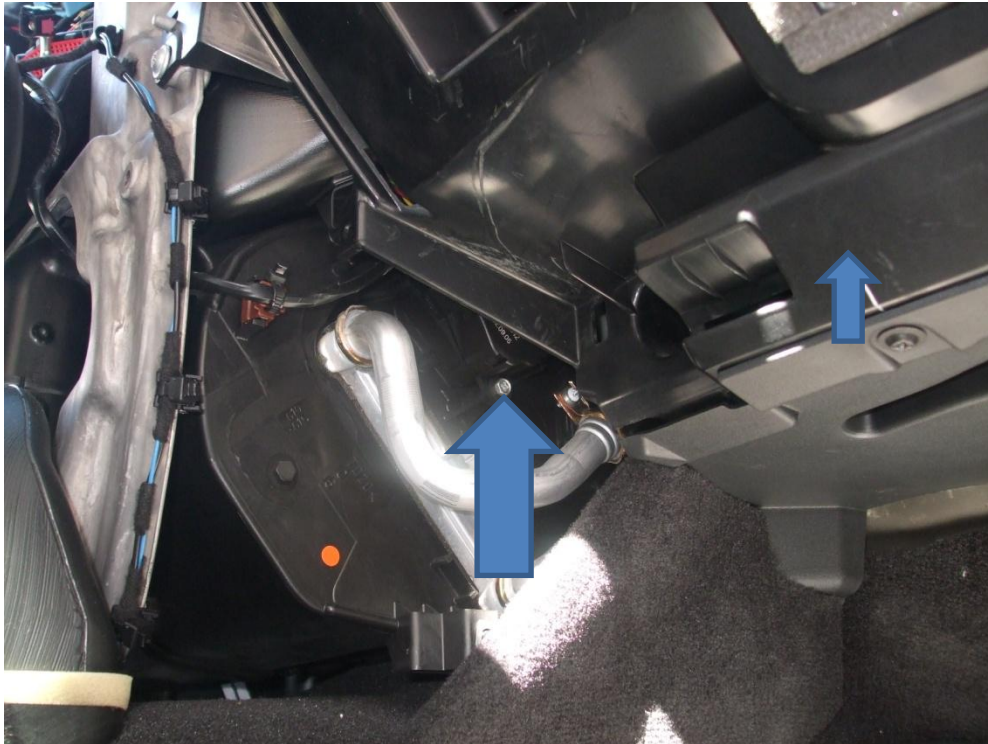
The small arrow indicates a hole I had to drill in the plastic to be able to remove one of the three fixing screws.



Arrowed in the next photo is roughly where the upper (footwell and face) motor is. Access to this involves removal of the plastic ducting.



27. Here's the right (driver's) side. Again, the lower one (large arrow) does the driver's side temperature mix. The upper one (completely hidden from view by plastic ducting) does the windscreen and side window (the ones that can't be opened/closed) vents.



Hopefully the motor you're after is on the passenger side, because the driver's side ones are a *nightmare* to get to. Access probably could be vastly improved by removing the plastic surrounding the steering wheel (small arrow, above). However, I believe that total removal involves taking the steering wheel and steering column controls etc off, so now its decision time.



28. I opted not to remove the steering wheel, so needed to take out all screws and bolts (such as below – after removing the black trim) so the plastic can be forced as far forwards at the bottom as possible. The wiring to the OBD socket also stops it, so remove the two screws securing the socket as well.



The next step involves lying on your back with your head rammed against the brake pedal in the footwell, looking upwards towards the motors. I guess this won't be possible with a manual transmission car as the clutch pedal will get in the way, so it could be back to the steering wheel removal route; obviously I haven't tried this so can't comment if it's successful or not. My method is not at all comfortable and requires bending the left arm in directions never thought possible. It's probably also quite dangerous as anything could drop downwards into eyes, nose, mouth etc.

If you need to access the upper motor, there are a couple of plastic ducts in the way, which do come out.

29. So, here's the photo again of what hopefully you've managed to remove. Swap it with a new one and fit everything back together again.

Tip – be careful if using the trial and error approach that I used the first time when I was working out how it all functioned. Removing one known working motor and fitting it in the faulty location to prove a suspected dodgy one caused problems that sent me around in circles. It appears that the system needs to see all four motors connected so it knows what it's doing on car switch-on. The bottom ones (temperature mix) seem to cycle a bit to work out where they are before the heater control resets itself.



Perhaps another tip, and what I should have done the first time, if changing one on a side, change them both for what it will cost; it saves removing the entire dashboard again when the other motor decides to fail. For a hundred quid, you *could* replace all four; if one's failed then assuming they're all the same age then it follows that more could go faulty afterwards.

30. Once the entire dashboard is back together again, reconnect the battery and turn the car on. Fingers crossed all's okay... and count up the number of bolts left over.