Posts: 905
Joined: Wed Jul 10, 2019 4:31 am
Model: C3 2002-2005, Original shape model
Year: 2003 (53)
Engine Size: 1.4 (8v)
Fuel Type: Petrol
Mileage: 80000
Trim Level: Other
Gearbox: Automatic PRND
DPF: No
LHD or RHD: RHD
Engine name: TU3 (75 PS)
Location: Brisbane, Australia.

Has thanked: 35 times
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Tue Aug 31, 2021 11:42 am

One (and there are many) of the reasons the AL4 automatic gearbox fails is because of the failure of either the torque converter lock up electro-valve or the main pressure modulating electro-valve. Again, this is not the only reason the gearbox fails! There can be damage to mechanical components and all sorts of other reasons. However if you do a bit of research on the 'net and you decide that these electro-valves are the fault in your gearbox, this is the way to service them.
It is best to replace them as a pair as it is difficult to detect which is causing your problem.

There is an existing post on servicing the electro-valves by Jagpurr on this site. Jagpurr's post is very good but seeing as things are very quiet at the moment I have decided to do an entirely new post.

I have added photos with clearer shots of the front of the gearbox and post-installation instructions for alignment of the selector switch and gear selector.

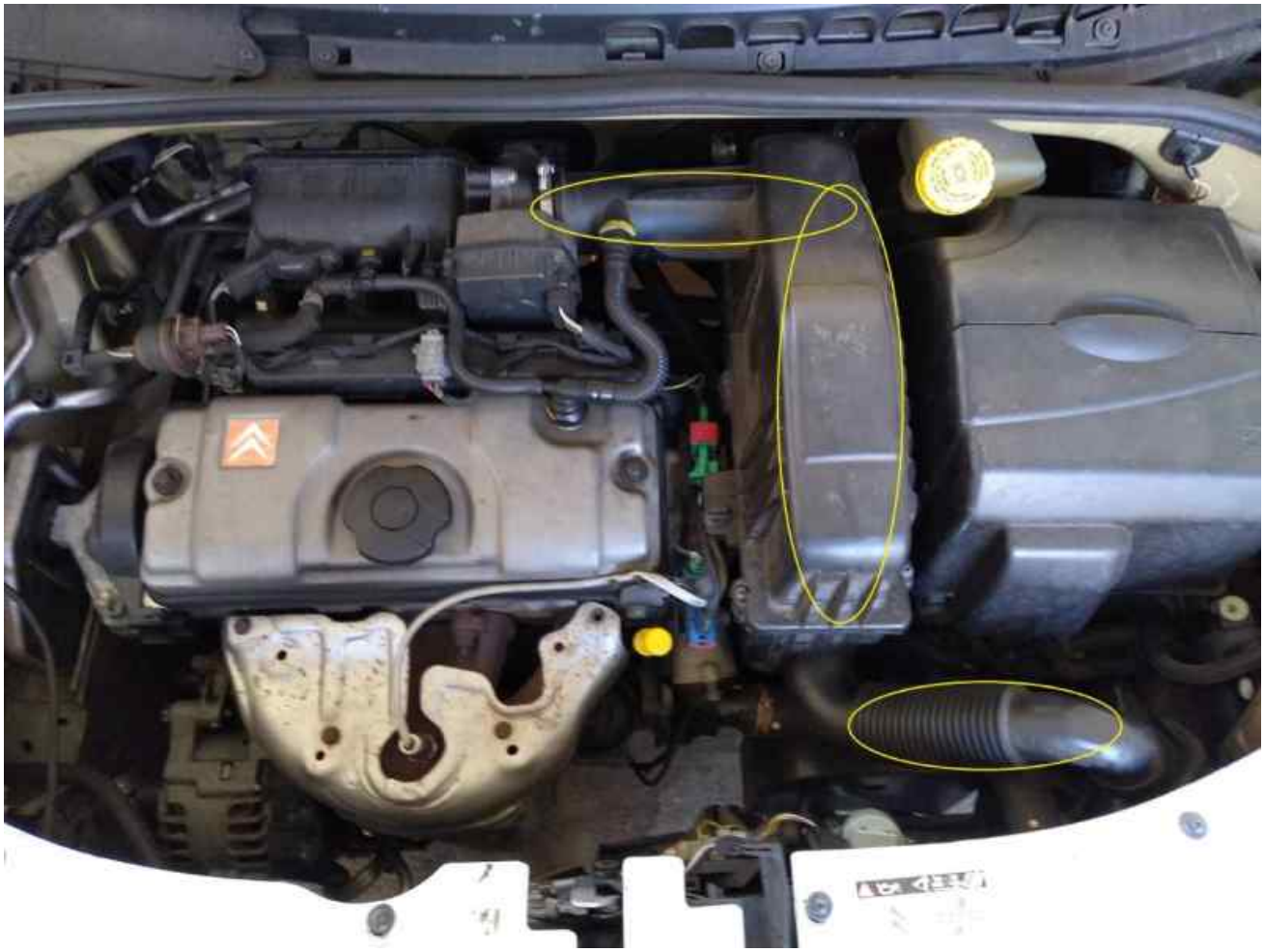
valve_change 001.jpg (37.37 KiB) Viewed 401 times

The first thing I want to address is the "manual valve". To service the valve body you will need to deal with the manual valve. This valve is (basically) a cylindrical, steel valve connected between the selector quadrant (a device in the transmission, I'll get to it in a minute) and the valve body (the "hydraulic heart" of the transmission). Typically it falls out when you remove the valve body from the transmission. It is not retained by anything and can slide all the way through the valve body! So be careful with it. Just for your information, I'll tell you something about it and what it's for.

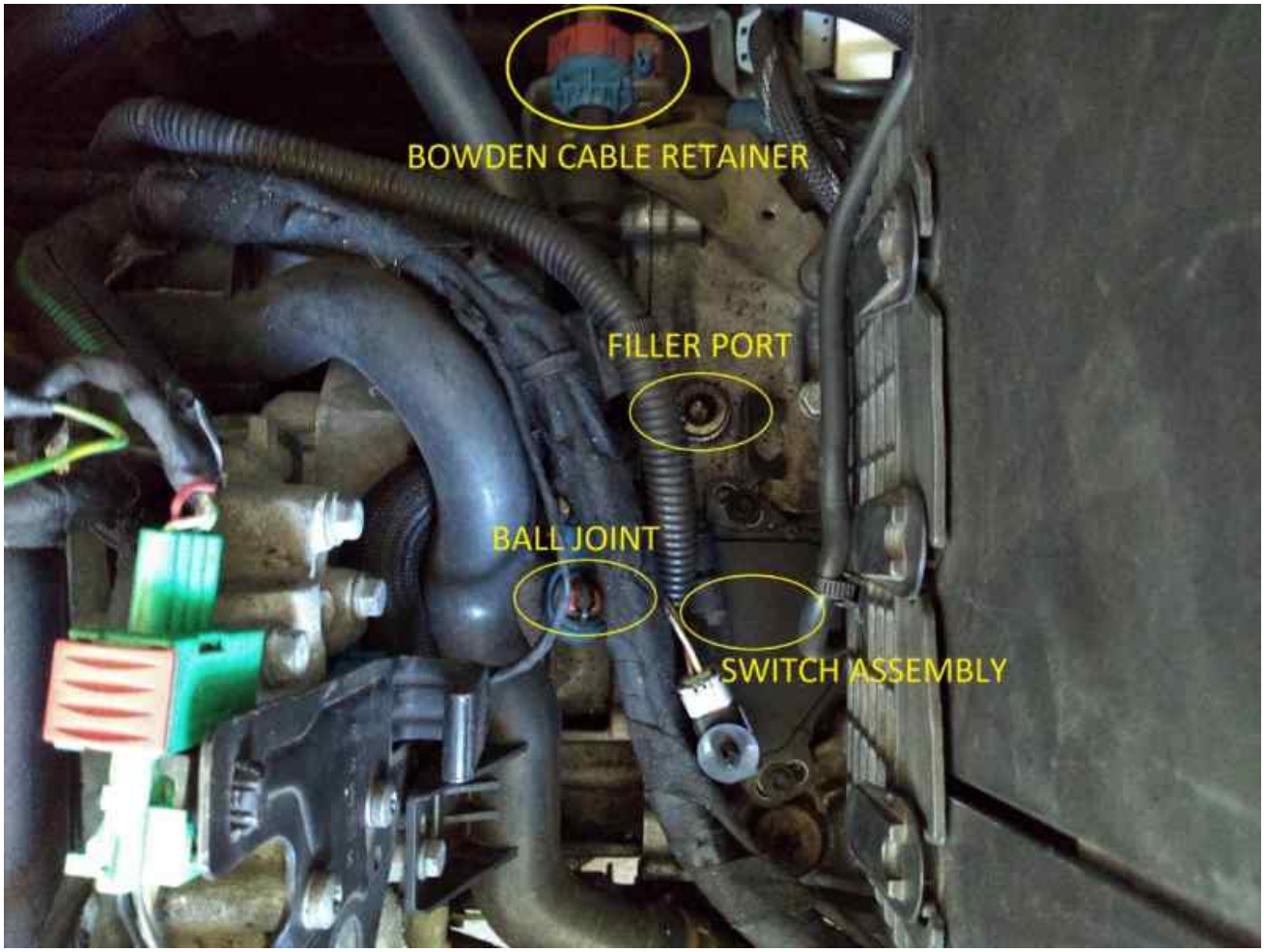
As you know, in most automatic transmissions the actual shifting of gears is done by a computer connected to electro-valves in the transmission. After all that's why this tutorial exists!? The electro-valves go bung? It's all "fly by wire" nowadays isn't it? But where is the fail safe? What if the computer goes psycho? What if it decides to go into reverse while you are driving along the highway? Well, that's where the manual valve comes in. Your selector stick in the cabin is physically connected the

transmission via a Bowden cable and onto this manual valve. The valve directs hydraulic fluid to the forward speed circuit or reverse speed circuit or no where in the case of park and neutral.
So the driver always has fundamental control over the transmission.
Actually, there are a number of these rudimentary types of valves in the valve body, selecting gears and locking up bands. They are controlled by these electro-valves. Yes, valves controlling valves! But again, you can look this stuff on the 'net if you are interested.
Now on with the show!

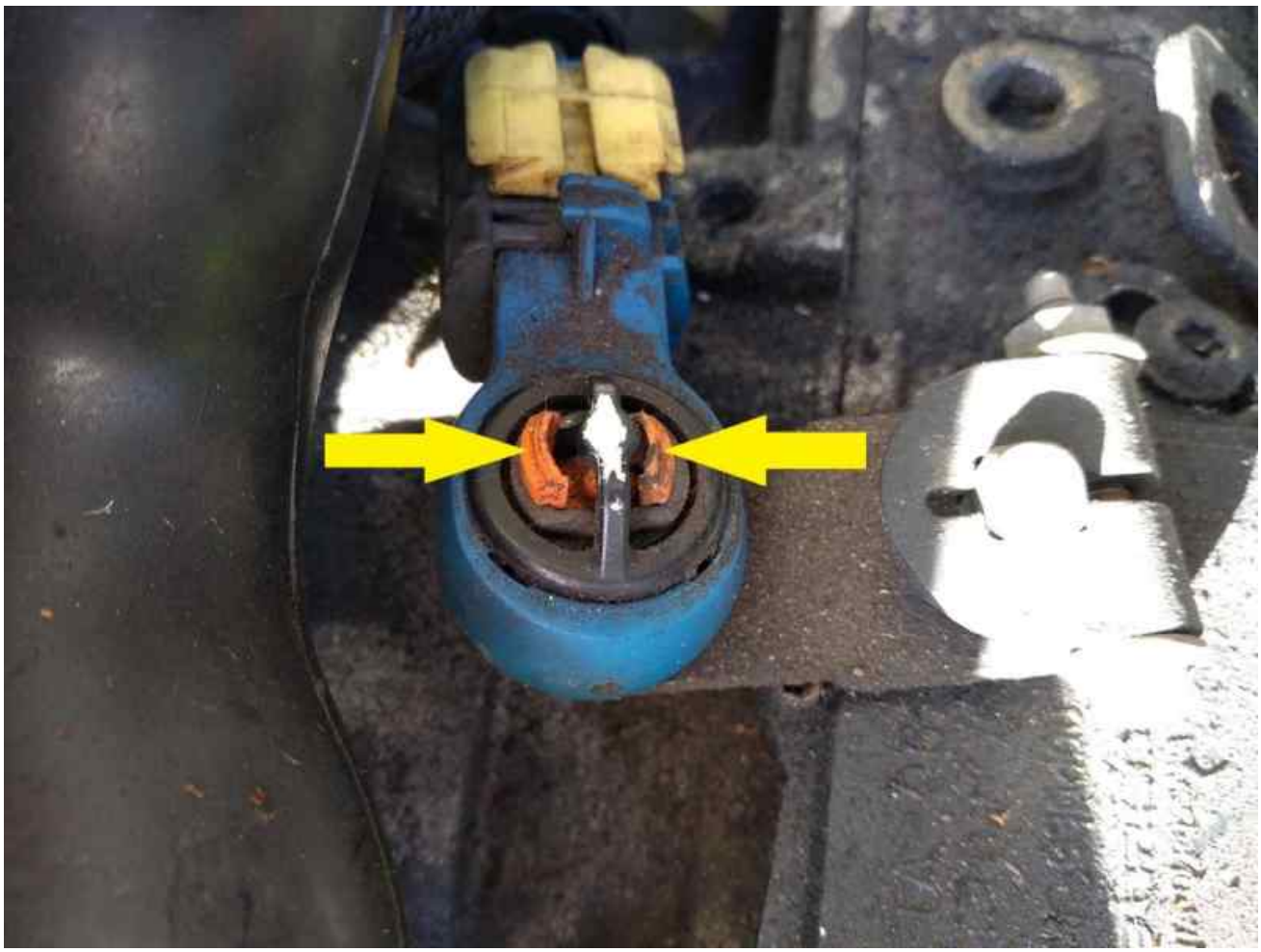
I would recommend disconnecting the battery before proceeding. You will need to perform a BSI reset before and after connecting the battery (search this site). But before doing all that, place the gear selector in the neutral position. Once the battery is removed the selector will be locked if it is left in park. Make sure the hand brake is on and the car can not roll away.



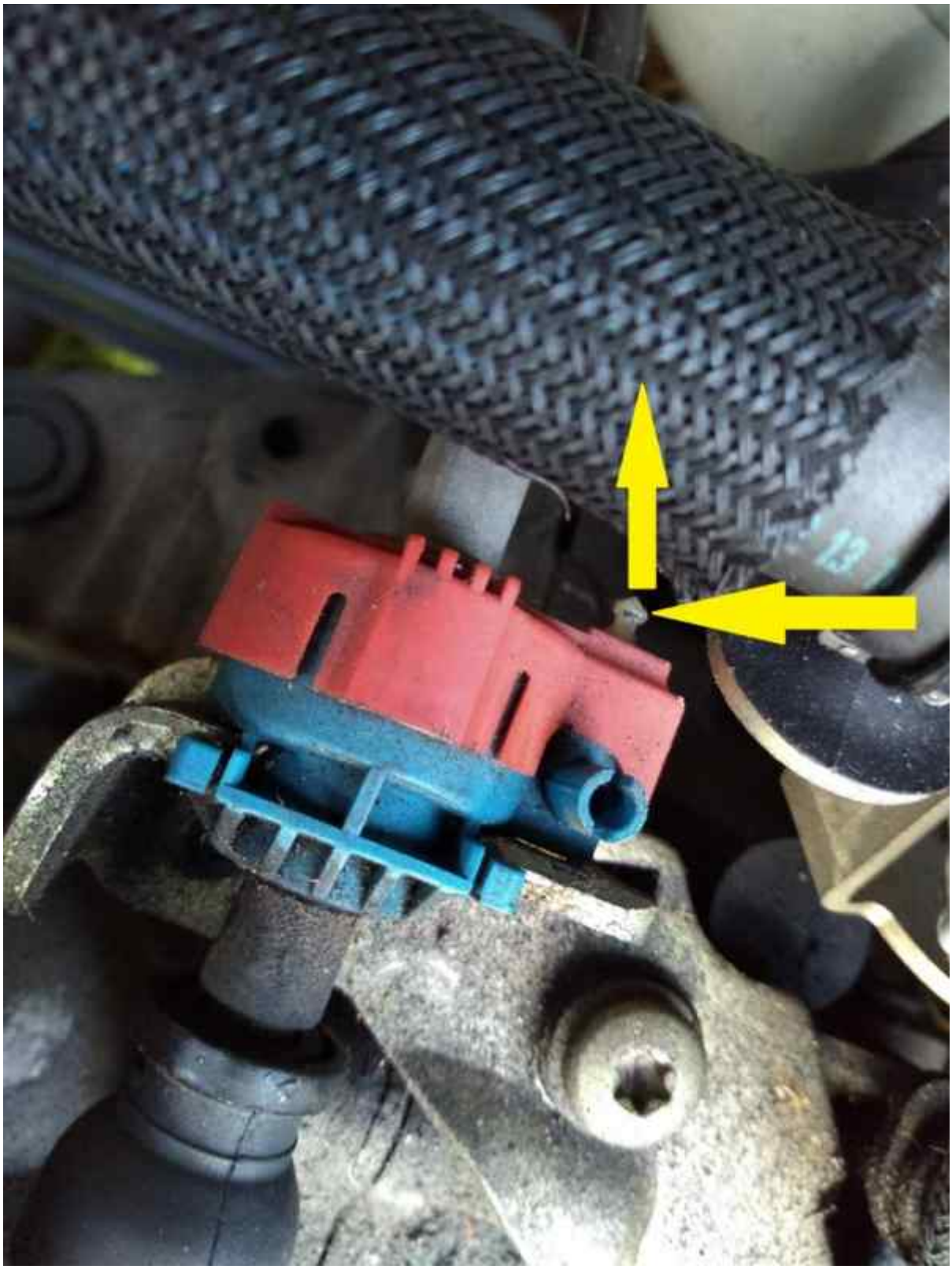
The first thing you will need to do is remove the air filter box.

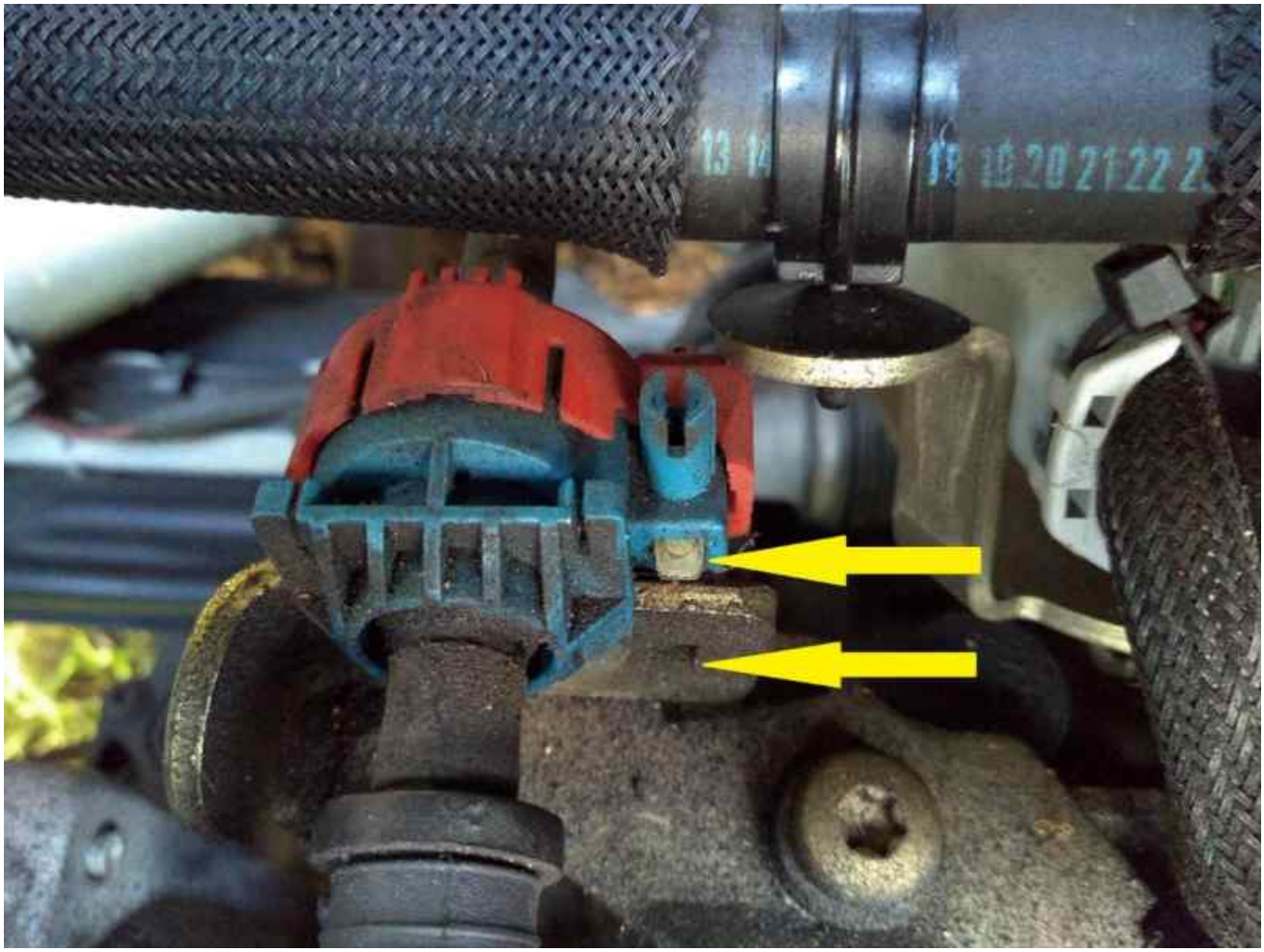


You will (eventually) need to gain access to the oil filler port, the selector cable ball joint, Bowden cable retainer and the selector switch.
I will not be going through draining or refilling the auto box as that is a post all by itself and would over complicate this post (it's already complicated enough).
However at this point there is no need to drain the box as we will be doing that in a minute (you'll see).
The next part involves removing the selector cable. If you feel confident that you can put everything back exactly the way it came, then you can skip removal of the cable. But read through all my instructions and see if you are still confident that you don't need to remove the cable. The cable can be removed at practically any time, it doesn't have to be done a this point. It can be done after the valve body has been serviced but I will go through the steps now.



Remove the ball joint connector from the ball joint on the selector switch arm. Press inward on the orange "ears" of the ball joint retainer. Pull upward on the blue rod end while pushing down and inwards on the orange ears.





The Bowden cable retainer is held in place by a small clear tab. Pull the pin out while pulling the the retainer upwards off the bracket. The pin is spring loaded. You can now move the entire cable assembly out of your way.

The best way to gain access to the valve body is to remove all the coolant hoses in front of the transmission.
The valve body will come out if you leave all the hoses in place. It's faster to leave them on, but not easier...if that makes any sense! You could remove the engine cooling fan assembly too. Again it all can be done with this stuff in the way but its a pain trying to work around them. The valve body that you will eventually remove is heavy, awkward slippery when covered in oil and for the most part you will be doing all of this on you back under the car. Again, I will not be going through draining the cooling system or removal of the radiator hoses. that is covered elsewhere on the site.

The transmission ECU.
The ECU sits on a (heavy steel) bracket on the front of the transmission and in front of the cover to the valve body. It needs to be removed.

Remove the plastic ECU cover. Then remove the large connector from the top of the ECU. There are 3 cable tie fasteners on the ECU bracket and you need to release the cable from the bracket. I hate these things!! You typically destroy them removing them but the wiring loom needs to be separated from the bracket. You could just let the ECU bracket hang down but it gets in the way.