

Disco 3 Clock Spring / Rotary Coupler replacement

I recently had to change my Clock spring and thought some folks may find it helpful to see what it entailed. I did lots of reading around but couldn't find anything on exactly what you need to do, so this is really just pulling all I found out into one place. For most of the guru's on the forum, this job would be a simple task but for folks like me who struggle, you may find this useful.

Had my D3 since May 2011 and loving it. Although I'm enthusiastic about trying to do things myself, my knowledge around mechanics / electronics is not great. I was a little nervous about doing it but all now works fine and I would feel more confident doing other things.

Symptoms

I was initially having problems with the cruise control activation button. Sometimes it would work and sometimes it wouldn't. When it did work, if I pressed the plus or minus too much, the cruise control would suddenly stop working. I had this exact problem about 13 months ago and my local main dealer (Stratstone Solihull) fitted a new cruise control switch, saying it was the faulty part.

Recently started to have the same problem so wondered if it may be the switch again. Airbag light started to also randomly come on and off. Checked all the connections under the seat and had a local Indi (Rocky at Four W Motors – 01564 703337 - in Earlswood, Solihull – top bloke) hook up his laptop that showed the code 'B0002-IB – Drivers frontal Stage 2 – Deployment Control'.

Managed to get a great price from Nick 'The Large One' for a new one (£224, part number LR018556), but was worried about spending that sort of money if that wasn't the fault so instead, I managed to get a used one from Equicar in Wolverhampton for £60.

Doing the Do....

Disclaimer – if your daft enough to follow any of this, be it on your own head and I accept no responsibility of liability! This worked for me but I'm no mechanic or electronics expert. Make sure you read all of this before you do anything!

I took the old one apart just so I could see how it works and having done so, can see why they can play up!

So this is the clock spring... after taking the back off..

then uncoiled it....



So then, first make sure you leave your car with the wheels lined up straight and the steering wheel lock on, then **disconnect the battery (Negative first, then positive)**. Make sure you insulate / cover the connectors so there is no way they can touch the battery. Wait at least 30 minutes before doing anything. I left mine off overnight to make sure there was no residual current left to try and make sure no new faults came up from me messing about. **Tip – if you do want to crack on with it rather than**

leaving it overnight, then you can always do a hard reset which I believe takes the juice out of any capacitors. To do this, you need to short the Positive & Negative CABLES only together. (If they won't reach each other grab a screw driver & place across the ends of the cables...REMEMBER not to short the BATTERY TERMINALS). Leave shorted cables together for a minimum of a minute to discharge capacitors etc.

Given the above pictures, you need to make sure that the flexible cables inside your clock spring are 'centered'. If its new, I guess there is something to make sure it doesn't move around and therefore will be centred already. If it's used and you're not sure if the cables are centred, then it's probably worth carefully fully winding the clock spring the one way, then fully back the other. As you wind it fully back the other, count how many times you do a full rotation. When you know how many full rotations it has, wind it back again half the number of times and this should mean you have an equal amount of cable inside the clock spring when turning the steering wheel left or right. Make sure you area really careful doing this because the last thing you want to do is damage the cables and I guess if your rough with it, it could damage them!

Next, put some masking tape over the steering column shroud and draw a line to show where the steering wheel lined up (Not essential but gave me peace of mind putting the steering wheel back on correctly):



Remove airbag – You can by a tool, but like many, I made my own using a coat hanger, or the metal part of it anyway. You need a hook on the end about 5mm long. I had a longer hook the other end for me to pull on to release the airbag, which worked fine for me:



And this is what you trying to hook and pull (one on each side):



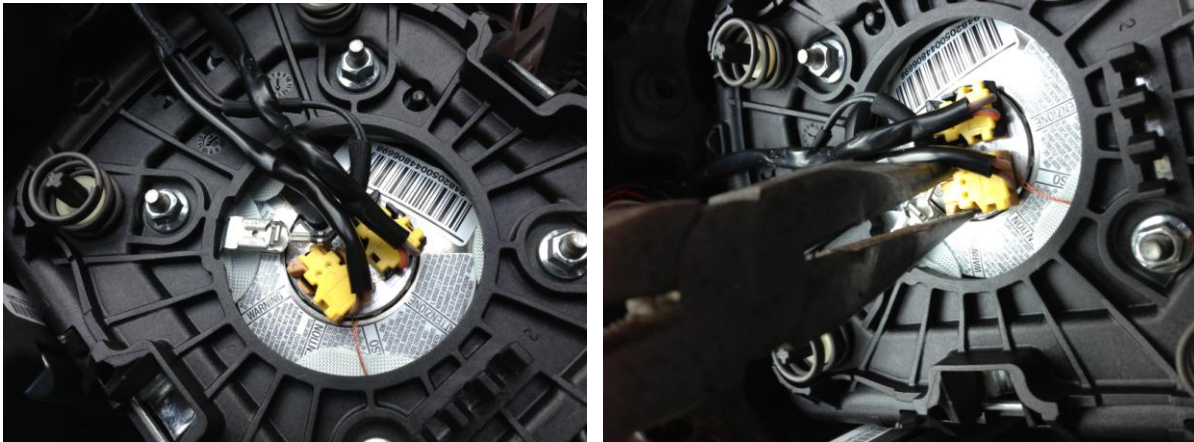
Once you have your tool, slide it into the small hole in the steering column to release the one side. If you fish around, you will feel it.



Once you can feel it hooked on, give it a pull and the airbag will start to pop out from the steering wheel. Does take a bit of force so don't worry if it's not coming free... may need a bit more of a tug. Take the tool back out and repeat on the other side. The airbag should now release more and you can just gently

manipulate it out from the steering wheel. **Please remember to take care... it's an airbag so it CAN GO BANG!**

As you start to remove it, you will see there are 3 wires attached. One is a single wire connected using a spade terminal. Disconnect this one first, followed by the other 2 connectors. For the 2 'yellow' connectors, there are 2 little clips that you simply push together for them to release (they are both different and can only go back in the correct place so don't worry about making a note of which one goes where). I used some crocodile nose pliers to make it easier. Once that's done, move the airbag out of the way and put it on the back seat.



One more connector before removing the steering wheel, which is a white one connecting the buttons on the wheel to the clock spring. Push in the clip and the connector releases:



Now to remove the steering wheel. Use a 16mm socket to remove the bolt, undoing counter clockwise as normal. **Tip – to avoid pulling the wheel off too hard and suffering from a 'steering wheel in the face, don't remove the bolt completely until you have pulled away the steering wheel from the**

spindle so it can slide off easily. Once its removed, you will be able to see there are 2 lines that should... well.. line up. One on the spindle and one on the steering wheel itself:



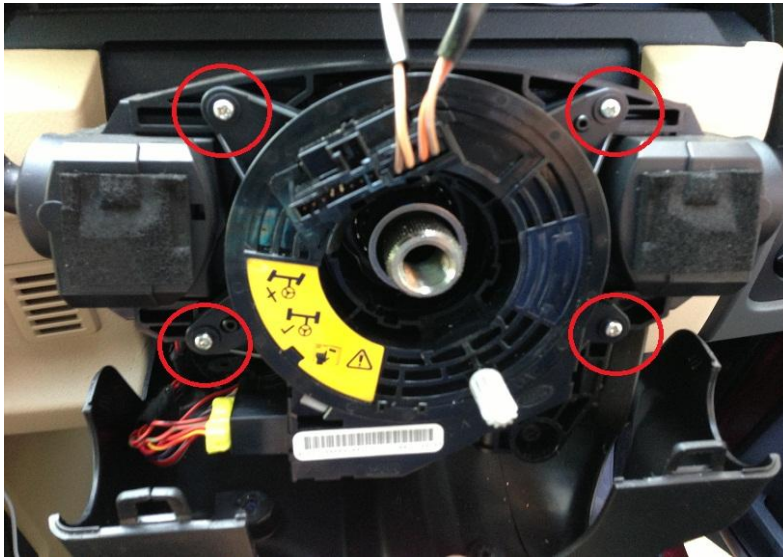
I guess they should always line up but if they don't, make note of where they are in relation to one another to make sure you put it back on how it came off. Steering wheel can now be removed but gently sliding / waggling / pulling it until it is free. You should now be able to see the clock spring:



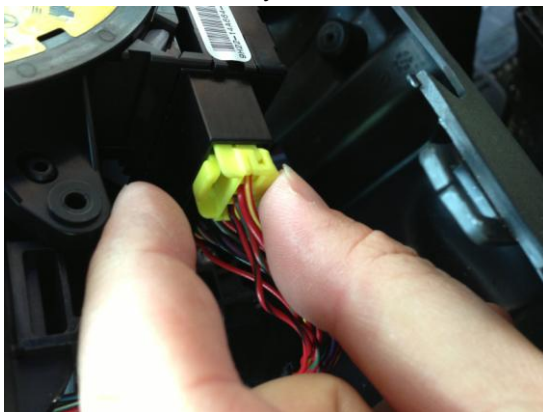
Make sure you take note now on how the clock spring is located – grey lug bottom slightly to the right and the block where the connectors are at the top and slightly to the left. It's important to note this to make sure you put the new one on located in the same way.

Next you need to take off / loosen part of the steering column covering. Towards the front of the column, underneath, there are 2 screws that need to be removed. I used a T20 torx bit which I am guessing should be the same for all. Once you have removed them, you can take off the top part of the cover. I

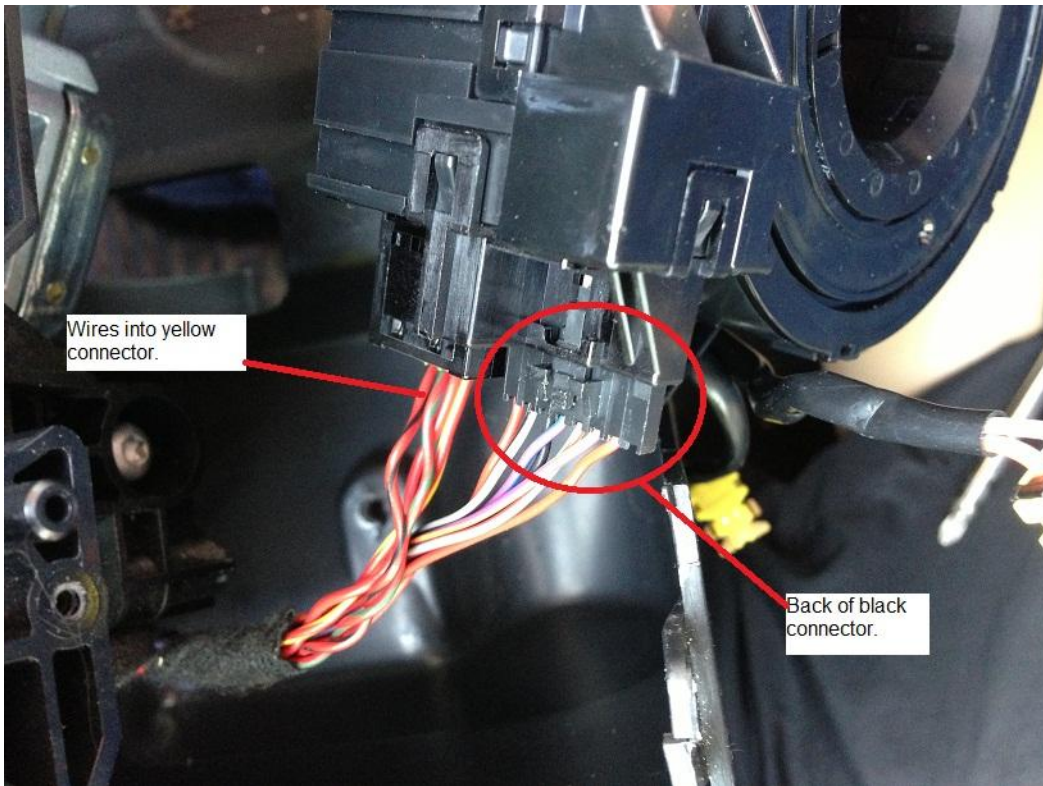
left the bottom one because it was putting up more of a fight (you may be able to leave the top one on as well if you can get to the screws and the connectors). Once you have taken the top one off, you can also move the lower part down to expose the 4 screws you need to move to release the clock spring. I used a number 1 phillFips bit to get them out:



Nearly done! Two more connectors and its off :o) So, there is one chunky yellow connector and one thin black connector. The yellow connector is simple to release... just squeeze the clip down onto the main connector body, then slide out:



The black connector was a little more difficult because it was small. If you carefully take the clock spring off the spindle and turned it over, you can see the clip on the black connector to see what you trying to do! Again, release this clip and slide the connector out... and that's it! One removed clock spring :o).



You now need to put it all back together in reverse order. You need to make sure you sit the new clock spring in the same way you took the old one off so with me, plastic lug at the bottom and slightly right, connector block at the top, slightly to the left. You can plug back in the slim black connector and yellow chunky connector now, just don't put any strain on the wires.

Once that's done, put the 4 screws back in, then the steering column cover. I found lifting the movable steering column shroud up makes getting the top steering column cover back in far easier but took me a while to realise that:



Once back together, put the Torx screws back in, then you're ready to put the steering wheel back on. When your putting the wheel back on, remember to make sure you line up the lines on the spindle and steering wheel and ensure the plastic lug and the connector block from the clock spring go back through the gaps in the steering wheel correctly. You can also now check to make sure the steering wheel still lines up correctly with the pencil line on the masking tape and if it does, then you've got it lined up correctly :o).

Next, replace the bolt and tighten up. If you have got a torque bar, then the correct setting is 63Nm. If you have not got one, just make sure its tight, but don't go mad cos 63 Nm is not a massively tight setting...

Lastly, reconnect the airbag. Attach the two centre connectors first, then the single wire connector. Airbag is now ready to be locked back into place. Before you push it back into place, make sure that the wires from the clock spring to the airbag will not get pinched by anything. The airbag has a spring on each of the four corners which I would imagine is probably the most common place they get caught and pinched, which may then damage the wire.

Once your happy where the wires are seated, push the airbag back into place, but remember to take care. You need a reasonable amount of force but don't go mad. You should hear it 'click' into place and it will be flush with the steering wheel.

Remove the masking tape if you have not already done so and then reconnect the battery. Remember, **connect the positive first, then the negative**. As someone said to me, when disconnecting and reconnecting a battery, the neutral / earth is always first to come off and last to go on!

Fingers crossed, no more pesky airbag warning light!

If it has gone out, sit back and enjoy a cup of coffee and king size twix and congratulate yourself on a job well day and a saving several hundred pounds! If it's still on, once your frustration has calmed, back to the forum to search for more answers or book in to see someone who has more knowledge...