

EPAS guide

I have taken as many pictures as I could with time constraint so hopefully the ones I have taken will be useful. This is not a difficult job, I'd give it a Haynes spanner rating of 3, (go on, give it a go) but does take time to make sure all the small bits are done correctly to allow long term reliability. Just don't rush it.

Including EVERYTHING I have spent just £300 but I did use a few nuts laying around.

A good selection of tools is needed, standard sockets, small and long extenders, torx bits, screwdrivers, wire strippers/crimps, heatgun etc. I'll try and be of help if you have any questions.

Parts

- X65 electric power steering column with control module, blue power lead intact and central plug with a small amount of wire coming out.
- Power steering rack 7700437055
- 7700718613 tensioner bracket
- 8200031832 top bracket
- 7703101094 alternator bolt
- 7703101076 block bolts (3 required)
- Control box from ebay
- Heatshrink crimps (red)
- Heatshrink 9mm
- 2 x 8mm ring connectors that can take 60a
- Old ribbed belt
- 3m of 8 or 4 awg wiring. I used a calculator and 8 awg seems to be substantial enough but if you want to be safe you can use 4
- 60 fuse and holder
- 32mm spanner for inner tie rod.

Removing the rack (no pictures)

Firstly take off the pipes on the pump and drain as much fluid as you can. Undoing the bracket for the high pressure hose on the block helps.

To take the pump off you will need a 9mm allen key to go into the centre of the pump. This will allow you to stop the pump rotating. Whilst doing this remove the 3 bolts holding the pulley to the pump. Take the pulley off and then the 4 bolts holding the pump to the bracket. Then whip the bracket off.

Take the ps reservoir off, this is clipped to the bulkhead, take the hoses off the bottom

Pump off!

Get the front on axle stands and wheels off

To get the rack off start by taking your ball joints out of the hubs.

Remove the dog bone

Remove 2 triangular bits behind sub frame

Undo the back subframe bolts completely and take the front ones almost to the max but make sure they still have a thread or two in place.

Remove arb brackets and pinch bolt from where the column attached to the rack; this can be accessed by moving the rubber boot and with an extender piece. Go in from the back of the subframe (underneath)

Prise down subframe from rear (massive screwdriver or something) and remove bolts holding the rack to the frame. Subframe has dowels so it should stay in position (down) once its popped out.

Remove all brackets attaching the pipes to the rack, remove the pipe banjos from the o/s side of the rack. Take out all the pas pipes, (bracket on side of gearbox x2) you may need to take the battery out to do this. I just bent them until they came out but it depends if you want to save them for sale or not.

From the o/s wheel arch you should now be able to get the rack out of the side, get someone underneath and someone on the side.

Person on the side should prise subframe down not with too much pressure and pull the rack out. Other chap/girl just rotate the rack around the exhaust heat shield and chassis leg.

Boom its out and you're friend is covered in pas fluid. I did the job at the side.

Removing the column

Take the airbag out by popping the metal retainers off the back. Be careful of the connectors as they are fragile. I think it's a t50 for getting the wheel off. Disconnect the other 2 connectors in the wheel. Pull the the wheel off.

Upper and lower cowling are easy, just 3 torx in the bottom. Top one pops off. You will need to remove the radio stalk; mine snapped out so I'm not sure how it's secured.

Now that's off, remove all the connectors from the squib and pull it off, took a bit of welly.

Column is now ready to come off. 4 x 13mm bolts that are reached from the bottom. 1 x 8mm on the left and 1 x 13mm on right, these 2 face towards the driver. Once you've taken them all out you can pull the column out. There is a bit of resistance as the rubber boot comes through the firewall.

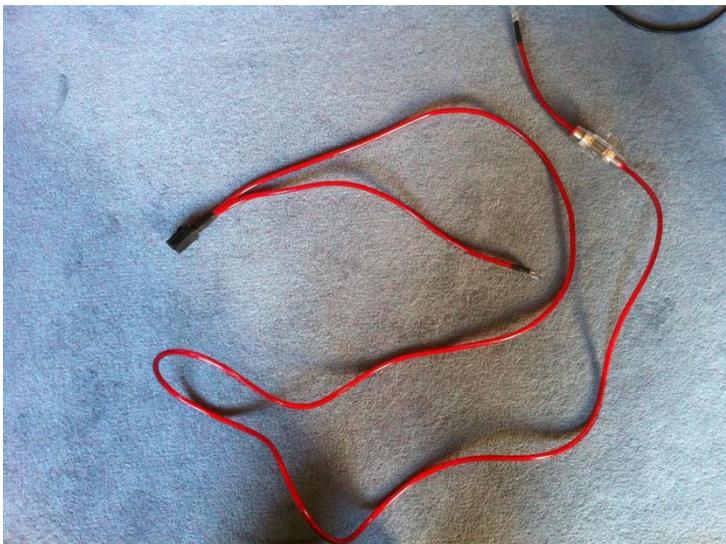


Wiring

I started with the power and earth lead.

You'll need one piece about 2.5m and 1 about 50cm (depending on where you earth it)

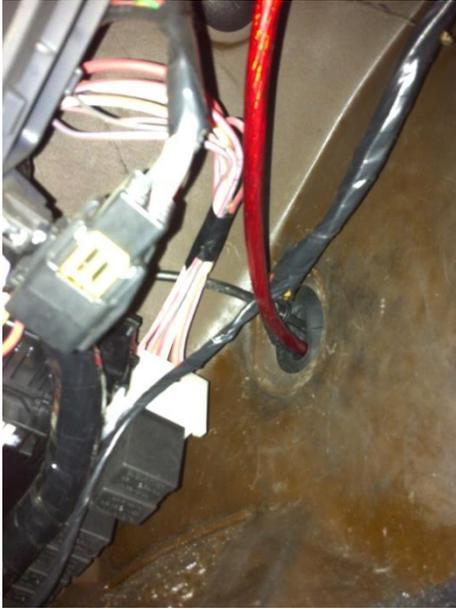
Options, connect to the cables coming out of the plug or rewire the plug being careful of the connectors (I did this) but it really makes no difference. If you chose the latter then its best the cut the cable off and drill (2mm) the copper out of the connector, then prise it open carefully. This is where I used heatshrink for all these connections. Put the 60a fuse in the 2m lead close to the end that will be attached to the battery. The other ends of each cable need to have an 8mm hole connector which is capable of taking 60A.



8mm terminals fitted by a local auto electrician for £3

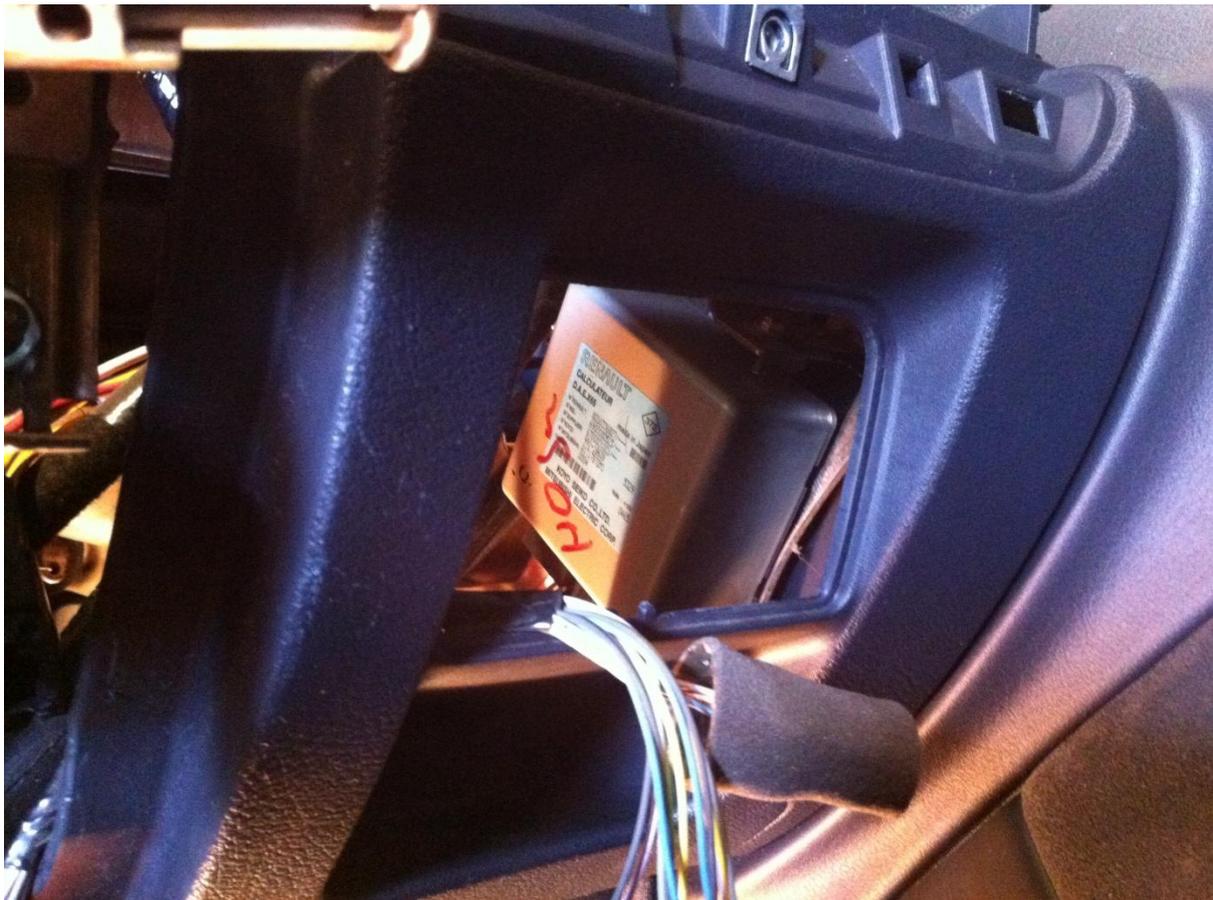
Routing the power cable is the same as other people have done their amp cables, through the bonnet release grommet. I took the top dash off to allow better access (Fubar guide). Take the clocks out. You will need to do this to give you the manoeuvrability when putting the new column in.





Fitting the new column.

Put the ecu on the bracket just behind the cruise panel and secure with an m6 bolt and washer.



There are 2 ways to fit the column. Both ways you will have to remove the motor though with a torx bit.

You can remove the motor and try and get the column through all the brake switches and the lark. I opted to split the column and then put the 2 piece back together when in situ. Put the lower column in, then the motor in the space on the left. Now the top column last, leave this out a little bit, mate the upper and lower together with the allen bolt. Bolt the column in and put the lower boot in the correct position. Now bolt the motor to the side, this is an awkward angle but you should be able to get your fingers in and then use a bendy piece to do the last bit up, t45 I think.

You can now earth the main power using the 13mm nut which faces the driver and is attached to the column

Start on the wiring from the control box, all you need to do is follow the instructions. They are so simple! This is where you use your heatshrink crimps. I didn't have a heat gun so warmed them carefully over the cooker! Do the earth and the power last. I cut the length down of the control knob stalk with a saw and then sanded a notch to allow the securing screw a base. A hole big enough for the thread needs to be drilled wherever you want to mount the control knob. I decided to mount it on the column.



Plug all the connections in as it describes, I used a ground point on top of the dash and just tightened the wire in without a connector (not good practice!). The black power can be spliced into the thick wire coming out of the esp button as this is ignition controlled. This all takes a while to make sure none of the wires are being stretched or rubbing on things, take your time as it's only going to be a pain later taking it all off to correct something.



Done on the inside!

Put it all back together in the reverse order you took it apart ensuring the squib is in the central position. It does 5 turns side to side so take it all the way clock/anticlock then 2.5 the other way. There are odd splines on the column which need to match up with the wheel. Once you've got the inside back together turn the ignition on to the second position, you should hear a click from the PAS ECU. This is the ignition controlled relay, if you don't hear it you know what to do!

Fitting new rack



Swap over your inner track rod ends. The spanner will need to be a 32mm which is about 7mm wide. My Halfords spanner was 11mm wide so I persuaded it on with a mallet. You will also need to swap 1 of the boots over as it will be too big. Take this opportunity to free up, copper slip and clean the thread of the tie rod.

To connect the rack to the subframe you will use 2 of the original bolts that held the rack on. There are 2 nuts

(built in washer) which go with these. With 1 of these nuts file away the washer on both sides so it can slot into the nut position on the o/s of the rack.

Once those are all back on make sure the rack is set straight ahead and slide it in from the o/s wheel arch and attach the rack.

Refit the subframe as you took it all out. Expect to spend ages trying to bolt in the middle arb bushes.

New alternator bracket

Bolt on both brackets to the correct places. Put the alternator in loose and secure a little in the centre of the adjustment with the bolts. Get an old V-Belt, cut it in 2 (any belt over 85cm is fine) wrap it round the pulleys as below and measure the overlap. Take it from the belt length and use common sense to order the belt closest to the size you measured. You will need to use 5pk instead of 6 so it doesn't rub on the cambelt cover. I have used a non standard pulley from woodauto so cannot recommend a belt however my alternator pulley is 55mm and I am using a 5pk838. Others with cup alternator set up have used a 5pk847.



Fit the belt and you're.....

DONE! Coolest thing ever!