

Fitting the shock absorber inserts and the support bearing.

Start by removing the engine as follows:-

You are going to remove fuel pipes, have a fire extinguisher standing by.

The engine is heavy, you will need an engine crane or overhead gantry and somewhere to put it when it is out of the vehicle, maybe a sheet of plywood with some blocks of wood forming a cradle to stop the engine falling over.

You will need a [5/16](#) Whitworth or 15mm. socket spanner.

A hardwood stick about 25 x 50 x 500 will be useful as a drift and lever on some of the tighter bits and pieces; it will not damage the paintwork or the ends of threads when drifting out tight bolts. Take a felt tip pen and write the words "very useful stick" on the side of it and hang it up in the workshop - you won't regret it.

You will need some cable ties to replace ones cut off when dismantling.

You would be well advised to have some new (better quality) mounting rubbers for exhaust pipes and rectifier mountings. I get mine here <http://vibration-mounts.co.uk/>

After removing the bonnet and disconnecting the battery earth lead (when you re-connect there will be a slight sparking from the current draw of the electronics be aware of any petrol fumes or leaks from the disconnected fuel pipes). Lift the front of the vehicle and support it on axle stands under the forward chassis members. Don't forget there is only one wheel at the back so the vehicle is quite unstable if you jack it in the centre at the front!

The next task is to remove the oil pipes and if you are ready for an oil change drain the oil out into an old container. The lower one is the feed and this is where most of the oil drains from. Don't get them the wrong way round when refitting. If not changing the oil, put plugs (14 mm diameter wood with a taper at one end worked for me) in the ends of the pipes and tighten the clips. Not essential but it will be helpful later if you now take out the oil tank complete with the pipes, just remove the four screws holding the clamps and don't lose the rubber liners.

Take out the two bolts holding the cooling fan and after unplugging the cable (note which wire goes where, I am not sure if they are interchangeable) lift it off being careful not to lose the aluminium sleeves from the bolts or the bits of rubber hose which hold the fan housing away from the cylinder fins. Now fit the engine lifting bracket using the fan fixing bolts and aluminium sleeves, make sure they are tight, we don't want to bend them and remember this is a heavy engine.

Use a small chisel to flatten the locking tabs on the exhaust pipe flange nuts and remove the nuts. You will get one more go out of the locking tabs. It is now that you will discover the poor quality of the rubber mounts used for the exhaust pipes and for the rectifier heat sink. It would be best to have some better quality ones standing by. I have repositioned my rectifier to the body in front of the passengers feet where there is much less vibration and I have discarded the rubber mounts. It is worth the effort of removing the exhaust pipes completely to get some space. Unplug and unclip the gas analyser cables first. I have replaced the flange studs and nuts with [5/16](#) 18tpi UNC x [11/2](#) long socket cap screws in stainless; they make a neater job and there is not really enough clearance for the 13 mm socket to undo the hex nuts. Drill and wire them - no need for fancy tab washers then.

Next is the steering rack, remove the bolts through the rose joints from the front wheel steering arms and turn the wheels outwards. Remove the two bolts which hold the rack to the sloping support members. It is a good idea to check how easily they come out, especially if you have the retro fitted cross brace. You may need to drill them a bit over size to make up for this, otherwise it can be almost impossible to get them back in. Take out the bolts and nuts from the upper and lower ends of the supports, you will need to take the top nut off the suspension unit bolts to get the bolts out. Then push the supports backwards at the bottom to get them off the chassis eyes. Juggle them out to the side and

allow them to hang on the brake pipes. Remove the steering column clamp taking the bolt right out, (it goes through a groove in the rack input shaft as an added safety measure). When you replace the clamp you may want to set the steering wheel up with one spoke vertical at the top so that you can see the tachometer and fuel gauge. Now for the tricky bit, the rack will come out even with the retro fitted cross member in place; swivel the rack back (anticlockwise from the right hand end) till the input shaft is underneath pointing forward and slightly down, the rack can then be massaged out to the right, persevere it will come out! Owners of left hand drive vehicles will need to use some transposition - left for right but the technique is the same.

To the top of the engine now, remove the fuel pipes at the 90 deg. Connector behind the cylinders ( there is a small tab which you push in with your thumb while pulling the pipe out of the connector). Mark them right and left for re-fitting. The third, smaller, pipe which has no clip, can be pulled off its connector pipe above the rocker boxes ( just spit on it before pushing it back on later).

Remove all of the electrical plugs, they are numerous but all different so it is not possible to get them wrong on re assembly but a photo might speed things up. Don't forget the ones on the alternator/rectifier and oil filter housing or the feed to the starter solenoid. Most of them have a security clip which has to be lifted with a thumb nail before pulling them out, don't use force! Pull the HT leads off the spark plugs. Remove the knock sensor from behind the inlet manifold on the right cylinder, don't lose the thick seating washer behind it. The two wires on the fuel injectors have a wire clip which can be pushed in to allow the plugs to be pulled out, mark the wires left and right.

The throttle cable is a fiddle, take out the two screws holding the fixing bracket, leaving the outer cable wired in place. Use a length of string with a loop in the end to loop over the little knob on the disc and pull the throttle wide open, tie it in place. You can now feed the slack cable inner down far enough to twist and remove the nipple, note which hole it goes in, there are two.

Remove the earth strap from the top starter motor bolt but leave the starter in place. Strangely this bolt and those in the bell housing require a [5/16](#) Whitworth spanner ( 15mm. will fit) The live feed will be easier to remove when the engine is moved forward an inch.

Remove the rectifier and its mounting plates ( there must be a lighter way of fixing this thing to the vehicle! I have repositioned my rectifier to the body in front of the passengers feet where there is much less vibration and I have discarded the rubber mounts).

Remove the oval plastic sensor from the front bottom right of the crankcase and put a wad of paper in the hole to stop any dirt getting in.

Tie all the cables and pipes back out of the way with a length of string.

Take the weight of the engine on your engine crane or block and tackle being very careful not to lift the vehicle and dislodge the axle stands. Now remove the engine mounting bolts - three each side in the bell housing, two each side holding the engine to the mounting plates and two through the rubber mounts in the chassis. The plates will not come out at this stage but will fall out on their own when you lift the engine later, remember this when you come to reinstalling and be prepared for a struggle getting them in place.

The bell housing bolts come next, place a jack under the gear box just sufficiently to take the weight of the box and no more ( don't lift the whole vehicle off the axle stands) two socket cap screws are fitted from the front at the bottom. The rest are hex head bolts, [5/16](#) Whit. again. The long one goes in the top hole. To reach the one on the left side and the two on the right side cut the mastic along the top and bottom edges of the plastic panels either side of the gearbox with a craft ( Stanley) knife and prise them out making room to get a socket spanner with extension bars in behind. If the mastic is cut

cleanly with a sharp knife it goes back together without the need for re application of any sealant but if you damaged it then a skim of clear silicone sealer will keep the water out. It also helps to unbolt the pedal box and move it to one side as best as you can and remove also the access panels above the foot wells

The engine can now be pulled forward and slightly lifted ( don't lift the whole vehicle off the axle stands) the two tubular dowels are quite tight and may require a bit of CAREFUL leverage. Don't loose them if they fall out. Remove the starter motor cable now.

If you are doing an oil change it is easier to change the filter while the engine is on the bench.

With the engine safely and stably supported on the bench remove the clutch and the bell housing back plate to expose the crankshaft shock absorber coupling this can be done by loosening the fixing bolts a bit at a time through the holes in the starter ring gear. There are three jacking screw holes in the flange to help pull the coupling rubbers out but I did it with my fingers.

The Centa coupling is now exposed and the rubber roller inserts are probably lying on the garage floor. There may be debris and dust from the rollers - clean it all out especially from the recess in the back of the outer, aluminium rotor. Remove the four cap screws holding the front plate to the inner rotor and also the plate, put these aside you will not need to refit them.



Inside the Centa outer rotor showing the recess for the bearing carrier

Take the aluminium bearing housing from the kit and offer it up inside the outer rotor tapered side first. The housing must enter by hand 2 mm deep and no further. If it does not enter you will need the bearing housing turned down to fit, any competent engineer will do this for you or come back to me and I will do it free of charge. If the housing enters all the way, loosely, you will need to have an oversize one made - come back to me, with dimensions, any competent engineer will measure it for you, and I will make one free of charge. Once you have ascertained that it is a good fit put three of the six cap head screws in place ( in every other hole) and tighten them evenly no more than half a turn at a time, being sure that the housing goes in straight without tipping. When they are tight the housing should be flush with the back face of the rotor and you can fit the other three screws and tighten all six fully.



Inside the Centa outer rotor showing the bearing carrier in situ

Note that the three threaded holes in the bearing carrier are for jacking screws should the need to remove the housing arise. The bearing needs no lubrication.



The inner Centa rotor showing the recess for the stub shaft and the front plate removed

Remove the centre bolt from the inner rotor and put the thick washer aside. Now offer up the stub shaft to the rotor, it should enter freely for the first 2 mm and no further, as with the bearing housing, if this is not the case come back to me or refer to a local engineer for advice. If the fit is correct then fit the centre bolt with its new washer and tighten till the stub shaft is all the way in and the bolt is fully tightened.



The stub shaft bolted in position.

The coupling can now be re-assembled with the new inserts in place in the inner rotor.

Inspect the inserts and identify, on each one, the end with a tiny chamfer all round, this end goes towards the front of the vehicle to aid assembly. With the clutch assembly standing vertically on the bench, stand the inserts in position and hold them in place with an elastic band or adhesive tape - I prefer to tie them with PTFE plumbers tape but whatever you use remember it will be left inside the coupling and so should not be hard or abrasive or it may damage the coupling. Now pick up the assembly and while aligning the inserts roughly with the recesses in the outer rotor, slide it fully home, a slight push may be necessary but not brute force! The aluminium plate should be lined up for the starter motor recess and its fixing screws tightened evenly till all are tight. Do not over tighten as the sockets in the heads are quite small and round out easily.

Putting it all back together is just a reversal of the removal operations but be prepared for a bit of time wasted juggling the engine mounting plates, these need to be got in place before the engine is bolted back up to the gearbox bell housing. When replacing the engine swivel it a bit to allow the starter motor to go between the chassis members first.

The steering rack with its support bars are also a faff.

Replace any cable ties which you may have cut off. Don't replace the battery earth lead till last and be sure there is no petrol about when you do it.

The clock will need to be reset but the mileage and trip meter readings are unchanged.

When tightening the engine plate bolts leave the ones through the rubber mounts till last.

Don't forget to fit the starter cable before the engine is all the way in.