

The Nutty Professor's Service Manual

Basic Servicing Part (3) – The Distributor

OK boys and girls, summer is all but upon us and show season is now getting into full swing. This month we continue with Basic Servicing and look at the other parts of the ignition system.

Following on from last months checking and replacement of, spark plugs and HT leads, this month it's the distributor cap, rotor arm, condenser and points.

Once again, as per previous articles, this article is based on Kirsty's 1976 1300 air-cooled VW beetle, but most flat four motors are the same.

Ignition System – The Distributor

Difficulty Rating: *If you can eat a Linda McCartney frozen ready meal without vomiting blood and can at least get to £2000 on "Who Wants To Be A Millionaire", you should be fine with this.*

Approximate Cost: Distributor cap = £4. Rotor arm = 99p. Condenser = £3. Points = £1.20

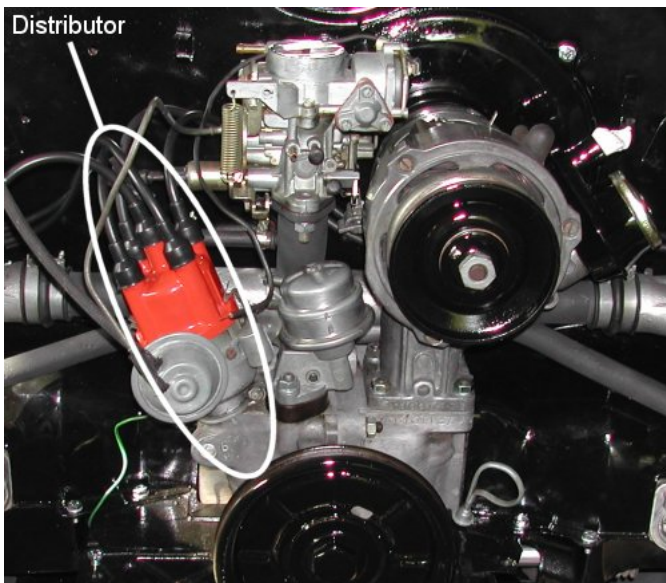
Tools Needed: Flat head screw driver (large one and a small one, preferably magnetic) Set of feeler gauges. (only about a £5 if you need to by some)

According to VW you should change your points every 10,000 miles. When did you last change yours?

Servicing the distributor is like caressing a woman. If you don't do it right, you'll be there all night and the end result will be more agro than it's worth.

Firstly pop to your local branch of German, Swedish & French (Hitchin) and purchase the bits you need.

Lets get started.



The Distributor (pictured) is a very important part of your engine. The rotation of the distributor spins the rotor arm the draws power from the coil (the HT Lead in the centre of the distributor cap) and distributes it to each or the four HT Leads as it rotates, thus firing each of the spark plugs in turn. Which obviously ignites the petrol in the cylinders, which pushes the pistons, which turns the crank shaft, which turns the gearbox and drive shafts, which turn the wheels.

Firstly, we will be changing the Distributor cap. To remove the old distributor cap, simply unclip the spring clips each side of the cap. Prising them off with a

screwdriver should do the job. You will notice that the distributor cap can only go on one way around, due to a small notch out of the rim of the distributor and a reciprocal lump on the rim of the cap. So with this in mind, transfer each of the HT Leads that connect to the distributor cap (five of them) to your new cap.

Rotor Arm



Once you've done that after getting all confused as to which one you pulled off where, leave the cap for the moment. You will now be able to see the rotor arm inside the distributor (Pictured). Pull this up off the shaft, trying not to hit your head, arm, shoulders or knuckles on the engine lid above you.

Underneath the rotor arm you may have a plastic dust cap, though most engines these days seem to have lost the dust cap years back. Remove the cap. Underneath you will see the contact points, held in place with a single flat head screw. **IMPORTANT.** Unless you want to spend the afternoon calling yourself a complete tit, make sure you use a magnetic screwdriver to undo this screw. If you don't, you increase the risk of dropping the screw further down into the distributor and getting it stuck there. Doh!

Once you have undone the screw holding the points in, disconnect the wire from the points to the spade connector and lift the points out. Take a look at the points. The two surfaces should be clean and smooth. Worn points will be pitted with rough deposits and may appear burnt.



Points

The only thing left to remove now is the condenser. When replacing the points you might as well replace the condenser. For the sake of a couple of quid, you'll be saving yourself a future stay on a hard shoulder. The condenser is a small cylinder mounted on the outside of the distributor. The condenser is removed by undoing the mounting screw and removing the nylon terminal block through the side of the distributor body. The other end of the wire from the condenser is connected to the coil.



Condenser

WAIT...! Before you pull this wire off, make a note of which connection on the coil it is connected too. If you put it back wrong, you'll need a new condenser as you'll knacker it as soon as you try and start your engine. Then you'll end up going back to the shop to buy another one. But you'll probably buy two more as you

forgot to note where the condenser was connected to when you knackered it the first time. And so will more than likely to knacker another one.

Once you're back from the shop with your new condenser, put the kettle on and have a cup of tea, while explaining to your wife/girlfriend/live in lover/bit on the side (delete as appropriate) why the ten minute job you started three hours ago is taking all day, and you might not be able to take them shoe shopping after all.

So once you got the new condenser mounted on the distributor and connected up the wire to the coil, it's time to put in the new points and set them. Screw the points in place with the screw, but do not tighten it. Connect the wire from the points onto the spade connector of the Condenser you have just installed.

Now there are two ways of doing the next bit, let me explain.

You will notice that the central shaft in the middle of the distributor has a cam in it (i.e. where the points touch the central shaft, it is uneven. It has four high points.) The cam must be turned so that where it touches the points must be on one of the high points. Some people like to do this by putting the vehicle in gear, taking the handbrake off and gently pushing or rocking the vehicle back and forth to turn the cam into the right position. Now this is not advisable if you're parked on a hill of course. The likelihood of flattening yourself or someone else is great. The other way is to make sure the vehicle is not in gear and the handbrake it on, and use your hand to turn the top pulley to turn the engine over, which will turn the cam. Mind you, make sure you don't get your fingers trapped under the fan belt when you turn the pull, "Cos it F**king Hurts!" I can testify to this, but still prefer this method to pushing the car down a hill, and explaining to the neighbours why they have a flat dog and no garden fence.

Once you have the cam on a high point, grab your feeler gauges. Select 0.4mm (0.016 inch). Depending on your feeler gauges, you may have to make this up with two or more gauges so they add up to the correct width. With the feeler gauges in one hand and your flat head screwdriver in the other, it's time to set the gap. Place the feeler gauge with the correct gap between the two surfaces of the contact points (you may have to push them apart with your fingers to do this). While holding the feeler gauge in place, tighten the screw to hold the points in position. If you have done it right, you should be able to pull the feeler gauges out leaving the correct gap. You should be able to push the feeler gauges in and out of this gap with little resistance. If you can't Do it again! And Again, and again until you get the gap right. It is crucial that this gap is correct. I know.... It's such a tiny part of the engine, how can it make that much of a difference. IT DOES! If the gap is too big, your engine will run lumpy and very rich, drinking petrol like a top fuel dragster, and you'll have to tow a petrol tanker behind you to keep up with the fuel consumption. If the gap is too small, your engine will keep cutting out or stalling, that's if it starts at all.

Now once you have set the points gap, I hope you are pretty good at it. Why? Because you will have to adjust them again in about 500 miles. The new points will slip slightly (usually referred to as bedding in) and will need re-adjusting in about 500 miles. Most people forget about this. Me included, and are only reminded when there vehicle stops working. You then call the helpful RAC man while sitting on the hard shoulder of the M25, who asks you whether you've had the points reset recently. "Err yer.. you reply". "About 500 miles ago?" replies Mr RAC man... Then the penny drops. So save your self a rain soaked stand on a hard shoulder and just check the gap with your feeler gauges after a few hundred miles and adjust it if it seems a little tight.

OK, so now the points are in and set and we can put in the new rotor arm. Don't forget to pop in the dust cap first if you have one. The rotor arm slots onto the top of the central shaft. You will notice that there is a slot cut out of one side of this shaft and if you look on the bottom of your new rotor arm you will notice a reciprocal wedge of plastic that slots down into this. This ensures you put the rotor arm on the right way round. Once the rotor arm is on, put on the distributor cap and clip it in place with the two clips. Make sure it is on the right way around. It should only fit one way! That's it. You're done! Have a final check around to make sure everything is secure and you haven't left half the contents of your tool box in the engine bay, and then have a go at starting the engine.

Servicing Part (4) next month.

Regards,
Simon (aka Nutty Professor)