There will be times when you have to replace the in-line distributor of the B230 engine. The main reason to do so is if your Hall sensor has failed. Or, you may wish to pull the distributor to replace the green large O-ring if you’ve noticed a lot of oil on the Hall plug. These instructions will also be useful if you wish to replace the distributor cap and rotor as part of your tune-up. Whenever you work on electrical parts, I recommend that you disconnect the battery ground cable.

Figure 1. Use Liquid Paper or similar correction pen to mark . . .

Figure 2. . . the top of the distributor (aka spark plug) wires, numbering from passenger side to driver side, 4-3-1-2, as shown. Double-check the connections yourself. (Note that the firing order is 1-3-4-2. How can that be? Hint: check the continuity of each outside post to each post inside the distributor cap. The direction of rotation of the rotor is clockwise, looking from front of engine to rear.)

Figure 3. Pull the spark plug and coil wires from distributor and set out of the way. No need to disconnect spark plug and ignition coil ends. The best tool to remove the 3 hold-down bolts for the distributor cap is an 8 mm ratcheting box end wrench. (If you don’t have one, a 1/4” universal drive can be used instead on the middle bolt and a straight 1/4” drive socket for the side bolts.)

Figure 4. Pull the distributor cap off. Note which way the rotor faces so as to make it easier to pop back on for installation, as long as you haven’t turned the crankshaft. (You may wish to rotate the crankshaft later, though, to test the Hall sensor.)
Figure 5. Fashion two sticks, tapered at one end as shown, to pry the rotor off the distributor shaft. The sticks are about 6" long, ~1/2" wide, and 1/4" thick. I use wood instead of two screwdrivers so as to not damage the rotor or the cover plate beneath.

Figure 6. Insert tapered ends of the two sticks, one on each side of the rotor shaft, and lift rotor off by levering the top ends of the sticks.

Figure 7. Lift off the rotor and plastic cover plate. On models with a Hall sensor in the distributor, the Hall sensor (arrow) and Hall vane will be visible.

Figure 8. On the EZ 117K Ignition System, the timing can be adjusted manually by rotating the distributor baseplate within the allotted range of the flange to achieve 12° before top dead center (BTDC). On some other models the timing cannot be adjusted manually, but is instead, I was informed, done electronically. So, your distributor may be different. If you have the EZ 117K, then use a black felt tip pen to mark on the baseplate the midpoint of the passenger-side 10 mm hold-down bolt (shown by white arrow), as I have done in this photo. By installing the distributor in the same position, you don’t have to recheck the timing when done (unless you find your engine running poorly). I don’t know if you have to make this mark for non-EZ 117K ignition systems.

If all you’re doing is a general tune-up, then your disassembly is finished. Make sure the plastic cover plate (Figure 4) sits flush over the lip of the distributor baseplate by pivoting the cover into place. Align the tip of the new rotor with the notch in the distributor shaft and slip the rotor firmly in place. Then install the new distributor cap by securing the three 8 mm bolts. Make sure you connect the distributor wires per Figure 2.

Otherwise, continue . . .
Figure 9. There are two 10-mm hold-down bolts for the distributor baseplate. The one shown in Figure 8 is on the passenger side. This one (arrow) is on the driver side. A 10-mm ratcheting box-end wrench works best. But a regular 1/4" drive socket wrench will also work.

Figure 10. Once the 10-mm bolts have been removed, use a thin-bladed screwdriver to pry the distributor baseplate free. Notice that there is almost no gap between the baseplate and the back of the valve cover. This is important because on installation you do not want to see a large gap, which is possible if you insert the distributor incorrectly.

Figure 11. This shows the orientation of the distributor baseplate, with the two flanges on the passenger side and the single flange on the driver side.

Figure 12. If you are replacing the distributor, measure the mark on the old distributor and mark the replacement distributor with this same measurement. This is in reference to Figure 8.
Figure 13. Use a pick to pull out the old green large O-ring.

Figure 14. Slip the new O-ring onto the groove at base. Put some petroleum jelly on the O-ring.

Figure 15. Note that the key on the distributor baseplate is offset a bit, something I was initially unaware of. This is important because . . .

**Easy Hall Sensor Test:** If you’re replacing the distributor because of a faulty Hall sensor, I suggest you test your replacement Hall sensor first before inserting the distributor into the camshaft. This can be done by hooking the Hall plug into the Hall plug receptacle on the baseplate, setting up the distributor end (roll back rubber boot to expose terminal) of the ignition coil high tension wire 1/8” from a grounding point, turning ignition “On,” and then spinning the distributor shaft by hand. (See “Diagnosing No-Starts on Some 740/940 Volvos (revised).”) If your Hall sensor works, you should see a spark across the 1/8” gap.

Figure 16. . . . the distributor baseplate can be inserted incorrectly, as shown here. Note how wide the gap is between the bottom of the baseplate and the back of the valve cover. You can even see the green O-ring. I tried to pull the distributor in by inserting and tightening the 10-mm hold-down bolts. I don’t suggest that, as it flexes the baseplate. If the gap is wide, then . . .
Figure 17... pull the distributor baseplate out and rotate the key of Figure 15 180°, then reinsert* baseplate. Insert the 10-mm hold-down bolts through the flanges and into threaded holes on back of cylinder head and lightly tighten to help pull the baseplate in. You should now have very little gap between the bottom of the baseplate and back of valve cover, as shown here. You shouldn’t be able to see the O-ring either. Align the passenger-side 10-mm bolt to the mark (you were instructed to make per Figure 12) on the replacement distributor by rotating the baseplate. Then tighten both bolts.

Put the distributor cap on and secure with the three 8-mm bolts. Put the coil and spark plug wires back on the distributor per Figure 2. Make sure the spark plug wires are 4-3-1-2, passenger side to driver side, as shown. Otherwise your engine won’t run right.

Reconnect battery ground.

You’re done! Now, fire it up and see how the engine runs!

*Thank you, guys from brickboard.com!