

Servicing a Breaker-Points Distributor

by Ken McNeil
and SK Staff

The distributor is a marvelous device. It delivers an immense amount of duty, yet really requires very little service. And when service is required, most times it is rather simple.

Most distributors, regardless of the number of cylinders, are basically the same. There are a few units which get to be more difficult — dual ignition distributors, for example — but most consist of a center shaft, a set (sometimes two sets) of breaker points, a condenser, a rotor which fits on top of the rotating shaft and the distributor cap which contains a center wire coming from the coil, and wires going out to the spark plugs. All of the parts mentioned above are readily accessible by merely removing the distributor cap. The distributor itself does not have to be removed.

We discussed breaker points in the February issue. If the car is in good condition, the breaker points require very little attention. Generally, a minor adjustment is all that is necessary. Remove the distributor cap, and lift off the rotor. Turn the engine over, preferably by hand, until the rubbing block of the point set is resting directly on one of the high spots of the center cam. The points will then be open to their widest. Using a flat, raised-blade feeler gauge (the thickness will be specified in your owner's manual, service manual or a Motor's or Chilton's manual), and test the point gap. Be sure that you clean the blade before inserting it between the points. Even a little oil or grease could contaminate the

points. Make sure that the blade is inserted parallel to the point faces. There should be a slight drag on the blade as you move it between the points. If the blade is 'sloppy' between the points, the gap is too big. If you have to force it between the points, increasing the gap to get it to fit, the gap is too small.

Most point sets have two screws. One attaches the points to the distributor plate and the other is actually a cam, allowing tiny adjustments of the point gap. The adjusting screw is not part of the point set, but part of the breaker

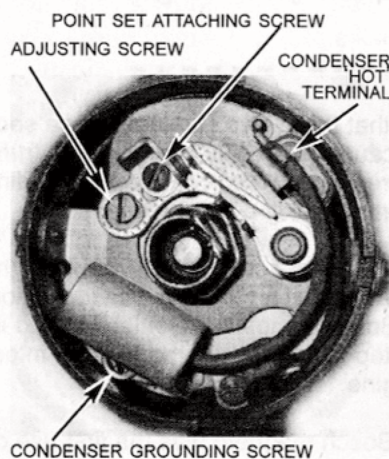


plate. Loosen the first screw that attaches the points to the plate (do not remove it, just loosen it slightly). Now turn the adjustment screw to open or close the point gap so that the feeler gauge slides between the points with

the slightest bit of resistance. Lock down the first screw and again check the point gap to be sure that it didn't move. Use a small paint brush (an artist's paint brush works best) to remove any dirt or dust on the breaker plate, and gently blow it out. Put a tiny bit of cam grease on the center shaft cam, replace the rotor and the distributor cap, and you should be all set.

If there is an accumulation of dirt or dust under the points, or if the point faces look worn (one face may have a pit in it and the other a raised 'hill'), you may want to replace the points. Be sure that you replace the condenser at the same time. Generally you can purchase a set of points, a matched condenser and a small capsule of cam grease as a set from the auto parts store. The condenser should be electrically matched to the points for best wear.

If the condenser is mounted inside the distributor, under the cap, there will be one screw

grounding the condenser to the breaker plate. The wire will be attached to a terminal (generally a set of tiny ignition wrenches are the best way of loosening that attaching screw). If the condenser is mounted outside the distributor, there will be one or two screws holding the grounding bracket, and the wire will pass through the wall of the distributor to the terminal. Also attached to that same terminal will be one side of the point set (sometimes the spring is the connection, and sometimes there is a connector in addition to the spring. Both fit onto the terminal. There will also be a small wire which connects to an insulated terminal and then to the low tension or secondary circuit of the coil. Examine that small wire to be sure that it is not frayed or shorting. If the insulation is frayed, replace it. If that wire shorts during operation, you may get an intermittent spark or no spark at all at the points.

Clean the breaker plate of all oil, grease or dirt. Fit the new points in place of the old, install the condenser, set the points and you are (probably) almost done. Examine the distributor cap; if there are scratches along part of the cap, but not on the other sides, then there is a strong possibility that the center shaft is not running true. Odds are, it's not the shaft itself, but a worn bushing. The distributor will have to be removed and serviced. If there is a lot of dirt or grease inside the distributor, the distributor should be removed and serviced. Plan on the car/truck being laid up for at least a few days.

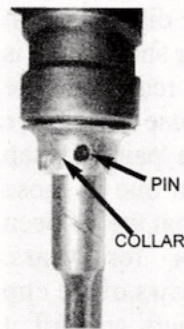
Lightly scratch a mark onto the distributor cap and onto the body of the distributor, or use a drop of white paint, so that you will get the orientation correct when you are ready to re-install the distributor. Remove the distributor cap (do not take the wires out of it.) Before you begin removing anything, note the position of the rotor, or turn over the engine until the rotor is pointing in a direction that you will remember (make a note of it, nevertheless). Remove the vacuum hose from the vacuum advance (if there is one) and remove the bolt which clamps the distributor to the block. Lift the distributor straight up. Put a towel or a rag over the hole in the block so that nothing falls in. Once the distributor is removed, do not turn the engine over.

At the bottom of the center shaft there may be a gear or there may be a raised wedge. The raised wedge will be just slightly off center. That's for timing of the distributor to the engine. That raised edge fits into the oil pump, and the oil pump engages with the cam shaft.

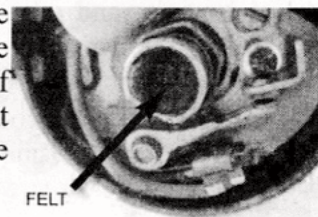


Don't start taking things apart until you have photographed the distributor and examined it carefully. Grasp the body of the distributor in one hand and the bottom of the center shaft in the other. Try wiggling the center shaft. If there is any noticeable play in the shaft, the bushing is worn and has to be replaced. Commonly, the shaft rubs against the bushing, wearing it at one side and eventually converting the round shape of the inside of the bushing to egg-shaped. The shaft will then whip and will result in an irregular spark or damage to the distributor cap and/or rotor. There is a remote chance that the shaft itself is bent. The machine shop can check that when they make the new bushing.

At the bottom of the distributor body there will be a collar with a pin attaching it to the center shaft. Set the collar above the jaws of a vise, with the jaws opened enough to let the pin be driven out. Support the distributor well or you may bend the shaft causing even bigger problems. With the pin removed, slide the collar down over the bottom of the shaft. There may be a washer under the collar. Do not lose it. If the distributor has a gear on the bottom end, it may have to be removed to get the collar off and later to get the shaft out.



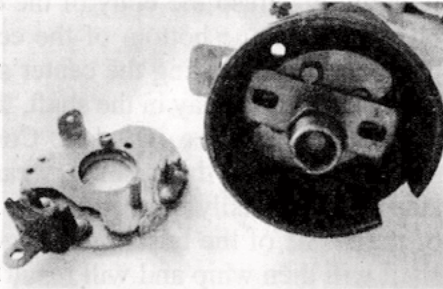
Once the pin is out, it's time to start taking things apart. Get a couple of clean, empty tuna fish or cat food cans for the small screws and parts. Remove the condenser and the points. With a pair of tweezers, pull the felt out of the top of the center shaft.



Follow the vacuum advance (if the distributor has one) to where it is connected to the breaker plate. A tiny clip holds the arm to the vacuum shaft. With tweezers, remove the clip. Remove the two screws that hold the vacuum advance to the distributor body.



The two screws that hold the clips for the top should be removed. They attach the breaker plate to the body. Also remove the screws that are the contacts for low tension coil wire. There is probably an insulated block that fits into a slot in the body. Lift the breaker plate out.



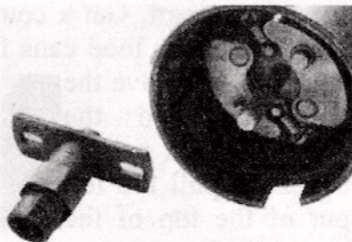
If the distributor has an oil cup on the side, unscrew it from the body. There is a felt wick inside. Do not remove it; just remove the dirt.

You can now see the advance weights and springs inside the body of the distributor. In the opening at the top of the center shaft, there is a little spring clamp that must be removed. The best tools to use to remove the clip are a pair of snap ring pliers and one of those dental picks that we've been harping on for years. Spread the jaws of the clip with the pliers and lift it out with the dental pick.

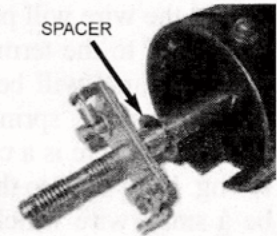


SPRING CLIP

With the clip removed, the entire cam section can be lifted off. The weights and springs are clearly visible now. Use that dental pick again, and lift off the springs. When the springs are detached, lift off the weights. Long needle-nose



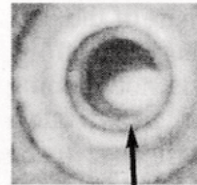
pliers help that job go quickly. If either of the springs are distorted or broken, both must be replaced to assure smooth advance and return. The center shaft can now be lifted out. There is probably a spacer between the weight-plate and the bottom of the body. Do not lose it.



SPACER

Clean all of the parts. Use a degreaser (I prefer to soak the parts in a very warm Oil Eater solution). As the grease softens, use a brass 'toothbrush' and an old nylon toothbrush and a pick to clean all of the grease and crud off the parts. Any remaining dirt can cause problems in the future.

The bronze bushing is visible through the body now. Okay. Stop. Unless you are a machinist, I don't suggest that you do anything further. It is a simple job for a machinist at this point. Don't make his job harder by getting involved in further disassembly. Bring the distributor body and the center shaft to the machinist, and ask him to make a bronze bushing to fit the body and the shaft. Explain that the shaft has to rotate within the bushing, but there cannot be any wobble. The machinist will determine the best clearance.



BRONZE BUSHING

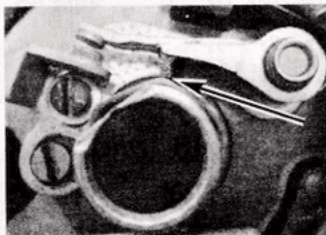
When the parts come back from the machinist, you can paint the body. Do not get paint inside the bushing.

Check the operation of the vacuum advance mechanism. Gently suck on the tube of the vacuum advance and place the tip of your tongue over the opening. The vacuum should hold. If not, replace the vacuum advance unit.

Reassemble the distributor by installing the parts in reverse of the sequence that you disassembled it. Be sure that the weights are not installed upside down; the pins for the spring-

attachments must face upward. Use a light grease on the pivots for the weights. Don't use excess grease; it can find its way up to the points later on and can cause problems and contamination. Make sure the weights move smoothly on their pivots with no binding. Put a light film of oil on the shaft where it passes through the bushing. Install the weight plate onto the shaft. Be sure the raised pins fit into the slots in the plate.

Replace the collar pin with a new one. Replace the gear at the bottom of the shaft with a new pin. When everything is re-assembled, install the points and condenser. With the distributor on the bench, it is a simple job to set the points extremely accurately. Double check the gap.



With the distributor on the bench, it is a simple job to set the rubbing block directly on a high spot of the cam. The point gap can be precisely set.

If the distributor has a gear on the bottom, re-align the rotor so that it is in the same direction it was when the distributor was

removed. If the bottom is a raised edge, it will only fit one way into the top of the oil pump.

If the engine has been cranked over while the distributor was removed, before re-installing the distributor crank the engine over (preferably by hand) until the #1 cylinder is at top dead center (TDC) on the compression stroke. Be sure that the edge of the rotor points to the #1 terminal of the distributor cap (the cap will only fit onto the distributor one way), and install the distributor. The engine will have to be re-timed after installation. It should be close, but timing the engine will bring it up to factory specifications.

Reconnect all wires and start the car. Before you connect the tube to the vacuum advance, plug the tube and time the engine. When the timing is set, tighten down the distributor clamp bolt and reconnect the vacuum tube.

S.K.

A CORRECTION - In our March issue we erred in writing that the the primary was the high tension circuit (page 30). That was incorrect. The high tension is the **SECONDARY** circuit. The low tension is the **PRIMARY** circuit. Apologies.

Editor



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