

# Chrysler Electronic Ignition in a Prestolite distributor

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As most people are now aware, Chrysler electronic ignition parts can readily be used to convert the Prestolite distributor used by Studebaker. The result provides, with very little work, a maintenance free distributor with no points, longer plug life, and freedom from spark scatter; (spark scatter is irregular timing caused by worn distributor bushings allowing the distributor shaft to slop around, changing the point gap randomly). Additionally, you can eliminate the common Prestolite problem of advance-weight wear and breaker plate bearing wear. Finally, this system can be operated at speeds up to 10,000 RPM (?!!!), since there are no points to float at high RPMs. Either an original Studebaker cap and rotor can be used for an authentic appearance, or the commonly available Chrysler cap and rotor can be used for more availability and normally a lower price.

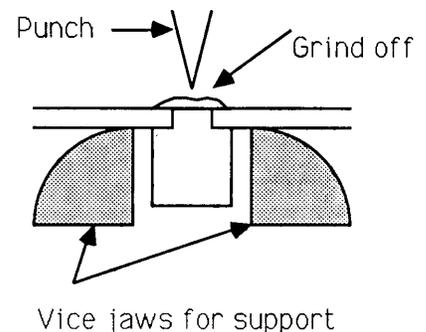
James H. Frakes first wrote up the conversion procedure in Dick Datson's "You Can Drive a Studebaker Forever" book about 1976; I used his procedures in 1979, with a few changes of my own, to convert a Prestolite that has given perfect service in my 1953 Commander since January, 1980, with over 75,000 miles driven in that time. This procedure is my version of Frakes' original, differing only in the attachment of the cap clips and replacement of the advance weight posts.

First, find a used Studebaker Prestolite distributor; this should not be hard, because most people install Delcos for ease of point adjustment. I bought two at the at South Bend National for \$15 and \$20 each. Second, buy from a Chrysler dealer, or have your friendly parts house order from Direct Connection (performance parts division of Chrysler, stocked by American Performance Parts here in Atlanta) a Chrysler Electronic Distributor kit, part number P3690427. This is a kit provided by Chrysler to convert late 60's and early '70s Chrysler 361, 383 and 400 CID engines to electronic ignition, and costs between \$110 and \$130 (Oct. 87), depending on how friendly your parts man is. Even at that price it's a bargain- junkyard 383's are getting scarce, and you start with known quality.

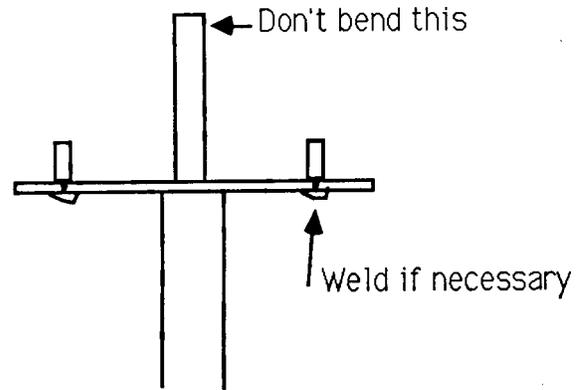
Two other V-8 and a six cylinder kit are also available, but the direction of rotation is wrong; keep this in mind if you are looking for junkyard components. And by the way, if you think you will ever do this conversion, you might want to buy the kit; as the V-6's and 4's take over the racing scene this kit will surely become extinct.

Disassemble the Prestolite distributor per the instructions in the Stude shop manual. Use long thin needle-nose pliers to remove the wire horseshoe clip at the top of the distributor shaft under the oiling felt, and don't bend it up any more than you have to. Disassemble the Chrysler distributor in essentially the same manner. From the Prestolite you will use the main body, the main shaft, and everything from the bottom of the main shaft down; from the Chrysler you will use everything but the main body and the main shaft (but we'll be robbing the weight pivots from this shaft.) Keep track of the Prestolite lower shaft, gear, roll pins, and the shims used on each end of the upper shaft, and assemble them just like they were when you disassembled them.

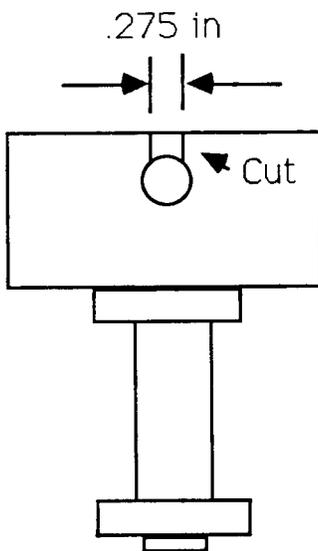
First modify the Prestolite: the bushings will probably be OK but if you can wiggle the upper end of the shaft and get a feelable 'click', have a distributor shop replace the bushings. Be careful not to bend the skinny knurled top extension of the shaft-it bends easily. Examine the weight pivots for wear- chances are they are in good shape, and the weights are worn. If the pivots are badly worn, grind off the staking on the bottom, invert them with the pivot sticking down in the jaws of a loose-fitting vice, and use a punch to drive them out. The vice jaws should prevent the flat plate into which they fit from becoming deformed.



The Chrysler posts are attached similarly, but the base of the post is mushroomed over the surrounding flat. Try to leave as much of the mushroom as you can when grinding, and let the punch and a few hammer blows “un-mushroom” it as you drive it out. Put the Chrysler posts into the holes left in the Prestolite shaft, and peen the mushroom back in place. Be sure this is tight- if there wasn’t enough metal left to do a good mushroom, put a very light weld on the back to hold it in; remember, too much heat will distort the whole thing.



On the main distributor body, tape the top and bottom openings to prevent chips from entering. Locate the breaker plate mounting hole nearest the oiler, and drill out this hole with a #9 (.196) drill. Slide the Chrysler upper/lower plate assembly into the distributor, aligning it’s threaded hole with the newly drilled hole. Using the lower plate as a reference, locate the second lower plate mounting hole and drill with a #9 drill; if you have a dividing head and drill press, it is located 165 degrees clockwise from the first hole. The original unused plate mounting hole should be tapped for a 1/4 x 20 screw, which should be anchored with Lactate as dust protection.

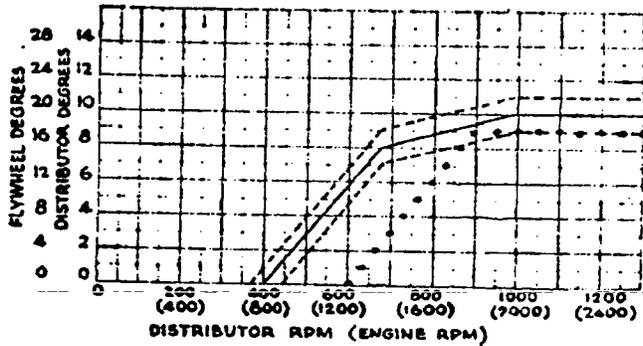


Cut down from the top edge of the distributor into the original wire lead-in hole to provide for a .275 inch slot for the Chrysler wire grommet, which will now press in perfectly. The small roll pin which locates the vacuum advance and lower plate to the Chrysler housing is not used on the Prestolite. Use the Chrysler vacuum advance module- the advance curve is nearly perfect for the Stude V-8s as shown in the graph, and it will be new and not nearly as hard to find replacements for as the Stude. With the upper/lower plate assembly inside the distributor, put the arm of the advance module through the slot in the distributor body, insert it between the plates with the aid of a small screwdriver to pry them gently apart, and slide the arm around until the stud on the end falls into the proper hole in the upper plate. The mounting holes in the Prestolite body match the Chrysler advance module. Insert the screws for the vacuum module and the plates to make sure everything fits, and the upper plate can move freely.

To provide for the cap clips, Frakes uses a machined piece which holds the clips in place; I simply removed the Chrysler clips from the body by grinding away the stakes, turn the Prestolite clip mounting brackets so they point down instead of up, put the Chrysler clips on the Prestolite brackets (with a screwdriver and some force), and drilled locating holes in the body to match . Be sure the vacuum advance module, which locates the Chrysler cap, is in place. Put a cap on, and just eyeball where the holes will have to be to give proper tension to the clips. The Chrysler clips are a good bit longer than the Prestolite clips which is why the retainers must be upside down to work; drill and tap for 10 x 32 screws.

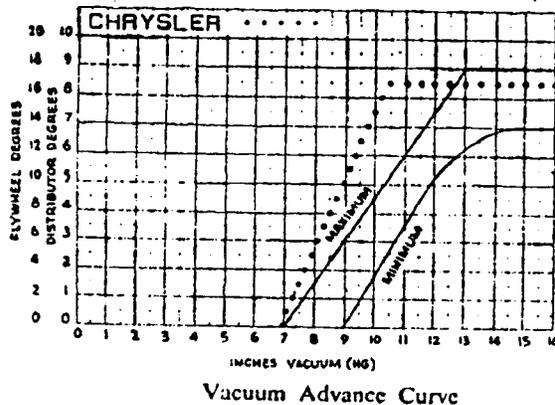
To assemble: slide the Chrysler nylon spacer over the Prestolite upper shaft to space the reluctor above the advance weights; locate the Chrysler advance weights and single spring on the posts on the shaft assembly. (The Chrysler weights have bronze bushing surfaces that will prevent their wearing like the old Prestolite weights did.) Slide the reluctor shaft over the upper shaft, and locate it over the advance weights bosses. Slide the shaft into the body, with the appropriate Prestolite stainless steel shim(s) on the shaft first, depending on what you found upon disassembly;

### Studebaker advance curve



### Centrifugal Advance Curve without Supercharger

### Chrysler advance curve



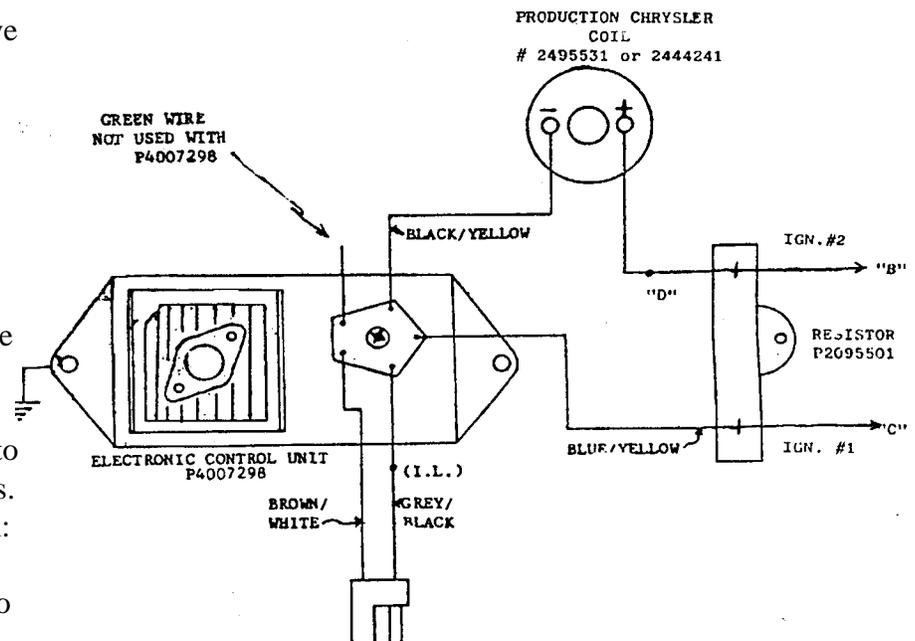
Vacuum Advance Curve

use a little Lubriplate or engine oil on the shaft to lube the bushings, and install the lower shims, gear, and roll pin. Drop the upper/lower plate assembly into the top of the distributor, and install the vacuum advance module arm between the plates as described above. Install the pickup coil assembly on the upper plate, and press the lead-in wire grommet into the slot in the distributor body. Install the screws that mount the vacuum module and the plate assembly. Install the reluctor on the shaft; be sure to **insert the roll pin for counter clockwise rotation (this is critical)**, to ensure that the reluctor wheel tooth to pickup coil relationship is the same as the original rotor to cap terminal relationship. Install the retainer clip on the top end of the distributor shaft with a slim pair of needle nose pliers- install the oiling felt over it. Set the coil to reluctor gap to .008 using a non-magnetic feeler gauge.

The Chrysler wiring diagram reproduced here is self-explanatory, and easily modified to fit the application. The kit includes a wiring harness with the necessary plug-up to the new distributor leads, and enough wiring to make a neat-looking installation of it. You must

find a location for the control box (hide it if authenticity is desired, but be sure it has a good ground to the car's body) and for the ballast resistor, which generates heat, so must be located in a ventilated area. On late cars, there is no reason it can't be located on the bracket where the Stude ballast resistor was located. The blue wire, marked Ign #2, should be wired to the small terminal on the starter relay to the right of the positive cable, the one that doesn't have the lead from the starter attached. This is to provide voltage by-passing the ballast resistor to the ignition during cranking. The wire marked Ign.#1 goes to the ignition switch IGN terminal; use the wire that formerly powered the coil. If you're using junkyard components, be sure you get the extra wiring to allow you to plug up to the distributor leads.

Distributor installation:  
Before removal of the old distributor, orient the engine to



fire #1 plug to give you a reference mark. Remove the distributor, and install the new one with the rotor pointing to the same place as the old one; you may have to realign the oil pump slot before the distributor will seat all the way home. (Use a 2' piece of steel rod with a screwdriver-like tip ground on the end for this- I used an old piece of all-thread that was laying around...) Once seated, rotate the distributor body to align one of the reluctor teeth with the pick-up coil, and temporarily snug down the distributor hold-down bolt. Transfer the wires carefully to the new cap; use the firing order embossed on the intake manifold to check that you've got the wires correctly routed. Now you're ready to fire it up and time it accurately.

This is probably the last time you'll ever time this engine; it's that good. Don't forget to change the cap and rotor when they look like they need it- that's about all you'll ever have to do except for changing plugs.

**Some additional material, from a 1991 issue of *The HillHolder*:**

On several occasions in the past we have published the instructions, first recorded by James Frakes in one of Dick Datson's publications, for converting the Studebaker Prestolite distributor to a Chrysler electronic ignition. This conversion uses the internal parts of a Chrysler distributor and the wiring and computer from a Chrysler electronic ignition, all from a parts car or from Chrysler's electronic ignition conversion kit, Mopar Part Number P3690427.

The conversion involves drilling some strategically placed holes in the Prestolite housing, both to anchor the Chrysler base plate and to hold the cap clips. Drilling the holes with the required degree of location precision has always been a problem.

North Georgia Chapter member Edward Burris has devised this template, which will locate these holes precisely.

Simply cut out or copy the template; be sure that the copy is exactly the same size as the original printed here- enlarge or reduce the image size on your computer or copier to make it exactly fit the circumference of the distributor.

Align it with the existing hole on the line marked "Start", and wrap it around the body of the distributor. The holes marked as "existing" should be lined up, as should the oiler and wiring plug holes. The ends of the template should touch without overlap.

Once alignment is accomplished, gently prick punch the casting where drilling is necessary, and drill and tap as indicated.

This should make the conversion much easier. Thanks, Edward!

