

An Inexpensive Modern Electronic Ignition for A and B Series Engines

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An ignition distributor, in simple terms, triggers a spark event from a coil and sends that spark to the correct spark plug at exactly the right moment. In essence one distributor is the same as the next in that they all perform the same function. The only difference between them is the advance curve, rotation and physical fit in the engine. Armed with this rudimentary knowledge, and a good dose of fearlessness, a cheap modern electronic ignition distributor can be adapted into any engine using the antique Lucas distributor. This article documents the simple procedure to fit a Hitachi distributor to BMC A and B series, Ford Kent, Triumph 4 cylinder engines etc. Of course, there's no reason why a Bosch or Marelli couldn't be made to work. Use your imagination.

The Japanese section of your local boneyard is a gold mine of technology. You want to look for mid-80's Nissan Sentra, Pulsar or any model with the 1.6 l engine, manual gearbox and Hitachi distributor. Some Honda and Subaru engines from the same period also used same distributor. Check the number stamped on the distributor body, the one you want is the Model D4R81-## or D4R82-##. The last two digits indicate which advance curve is programmed into it and, as far as I can tell, the 82 has 10° total



mechanical advance and the 81 has 15°. The reason we want a Hitachi D4R distributor over any of the dozens of different ones in the yard is that it turns the correct direction, CCW, is fully contained, i.e. doesn't have an external module, and it requires a minimum of modification to fit where the Lucas is coming out of. Expect to pay about \$10-50.



Stop by your local public library to look up a copy of the workshop manual for the model you got the distributor from.

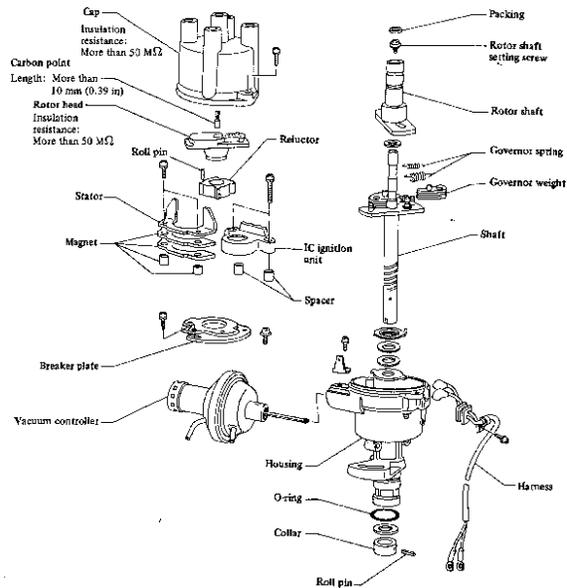
The conversion

Step 1) First thing you want to do is throw out the cap and rotor, new ones are cheap. Check the vacuum advance unit by applying a vacuum to the business end. Most of the ones I've tested have been non-functional so that may need to be binned as well. If you have a choice at the boneyard, find one that works. Of course, if you're shopping at a self-serve yard, there's nothing stopping you from mixing and matching parts to get the best parts. Dismantle the guts by removing the split pin on the drive collar and 2 screws on the advance plate. Everything just falls out from there. Clean everything thoroughly and bead blast the body if you can.

Step 2) next thing to do is get the triangular adjustment lobe off. You can do this with a hacksaw and file or if you have access to one, a small metal lathe. Use the Lucas base clamp as your size guide.

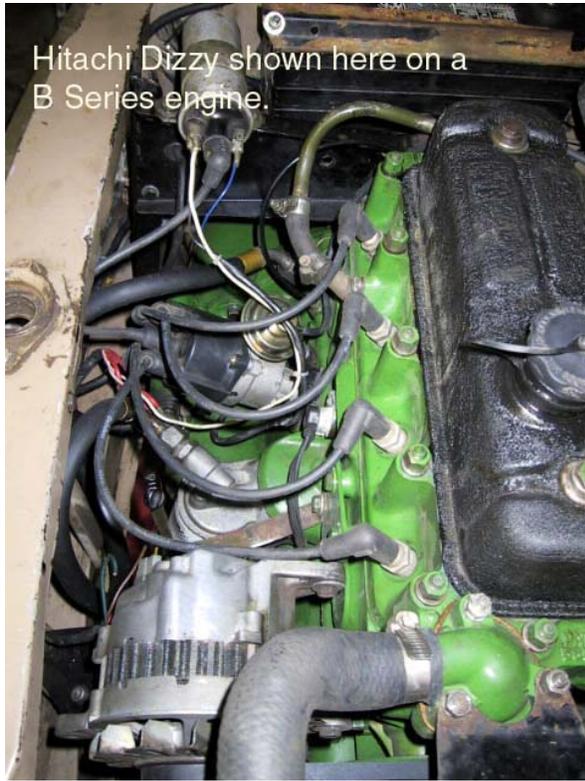
Step 3) reinsert the advance stage and shaft into the body. A Lucas dog drive fits straight on the Hitachi shaft but you will need to adjust the shims between it and the body. The split pin drops right in to the original hole.

Step 4) *The advance curve in the Hitachi distributor will not be what your engine wants, but then again, the distributor that you are replacing probably doesn't have the correct curve in it either! You'll have to get the curve modified to suit your application so check the published data for recommendations. There are whole books written on the subject but none cover it in sufficient detail to allow you to get away without experimentation. Des Hammill has one of the more comprehensive references, but that too has its weak points. Look for *How to Build &**



Power Tune Distributor-Type Ignition Systems published by Veloce Publishing PLC. The curve built into the D4R81-08 is very similar to the standard Lucas 23D4 (Cooper S) and the D4R82-21 curve is close enough to that recommended for heavily modified A series engines. In general modified engines want less overall advance (max 30°) and they want it to max out earlier (~4000 RPM). This means the advance springs need to be lighter. The article on tuning Lucas Distributors from the tech section of www.starchak.ca will be very helpful if you've never recurved a distributor before.

Step 5) after the correct curve has been set in, new cap, rotor and advance unit



Hitachi Dizzy shown here on a B Series engine.

installed it's time to put it in. Because the drive dog is in a different orientation you will have to reset the drive in the engine. Set the engine with #1 at TDC. Insert a 4"-5/16" UNF bolt into the drive, remove the drive housing and extract the drive. Point the rotor arm at #1 position, marked on the body, and determine the new orientation for the drive. "Assembly is the reverse of disassembly" as they say. The two power wires from the distributor go straight to the coil: B/W to +ve, solid blue to -ve. The Hitachi is a bit taller than the Lucas so it gets tight behind the grille on round nose Mini's. You'll want to use new plug leads, so get a universal wire set with right angle boots on both ends. This makes the tidiest installation

Step 6) set your timing, close the bonnet and never think of it again. The Hitachi distributor can go without maintenance for the life of the car.

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2006 update In the 6 years since I put this article out, the "Hitachi Conversion" has become THE conversion around the world, but no more than in Australia. If I had \$1 for every conversion done, I wouldn't have to go to a McJob every day and I'd have more time to play in the workshop. What has also happened is the text of this article has been plagiarized in the Ford Kent and the Land Rover communities. I encourage the spread of my work, but please give credit where it's due. It's not like it costs anything!

One thing that concerns me is that people are just shoving the Hitachi in their engine and hoping for the best without knowing what curve is in it or if it's suitable for their engine. This is primarily because they do not have the means to recurve the distributor. For these people, I have created the 123/Mini distributor, learn more at www.TDCperformance.ca