RX7 s1/2 ELECTRONIC DIZZY - REPLACING MODULES

By **Kimba (**AKA **circle_jerk)**

The stock RX7 Series 1/2 electronic ignition system consists of 5 main components.
(Not including the connecting cables)

1. 1 Rotating, vaned iron core.
2. 2 Reluctors
3. 2 Transistor modules
4. 2 Ignition coils.
5. 4 Spark plugs.

HOW IT WORKS

The iron core inside the distributor rotates in concert with the engine, via a gear driven shaft. As the 4 vanes of the iron core (sometimes known as a "chopper") rotate, the tips of the vanes pass 2 reluctors mounted at specific points around the core. The reluctors are simply coils of wire wrapped around a metal support. A small change in potential, or voltage pulse, is generated in the coil of the reluctor each time the tip of the vane passes. This voltage is carried to the "secret modules" that are mounted on the sides of the distributor, adjacent to the reluctors. One for leading, one for trailing. But there is no secret here. The modules are really just a transistor (admittedly a special kind) that opens and closes a circuit, just like a set of points. These module transistors are switched on and off by the pulse that arrives from the reluctor units. When the reluctor fires, the transistor conducts, and current flows in the primary windings of the ignition coil, when the transistor stops conducting (when reluctor pulse falls below threshold voltage) or is switched off, the magnetic field in the coil windings collapse, generating a high voltage spike that is delivered to the spark plug via the High Tension leads. Easy.

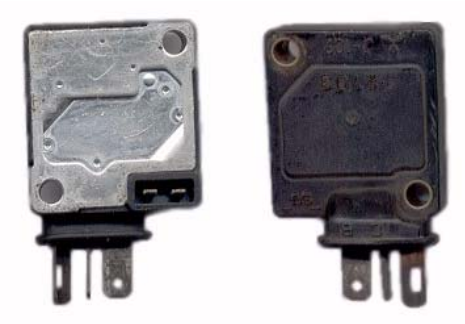
The iron core has four tips, or peaks, therefore both igniters receive a pulse twice for each rotation of the distributor shaft. Two sparks for leading, two for trailing. The shaft is geared for alignment with the firing cycle of the engine and must be oriented correctly to achieve the correct timing.

OTHER OPTIONS

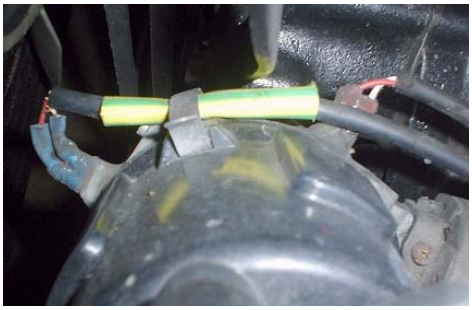
In my opinion, this is a good system. Simple and effective and NO points bounce at six grand, like the good old days. But what happens when the "secret module" goes bust. And fail they do. You get on the fone and start to ring around, soon discovering that Mazda wants over $300 bucks a unit, and they have none in stock (usually). And without two good modules, the engine and the car is going no-where.

There is a solution and it's just up the road. It will still cost you around $80 per module, but that's better than the factory price by a factor of four. In my books it's a bargain. A company called ECHLIN (look 'em up), (and others too) make an igniter module (TP102B) that will do exactly the same job as the Mazda unit. (debatably, even better but that's not for me to say here).

But you can't just come home from the shop and plug 'em in. They don't fit on the dizzy any more so you have to make a new home for them somewhere nearby. This means mounting a heat sink and new cabling to connect the now remote mounted modules. The old modules have two contacts in, and two contacts out, and so have the replacement Echlin modules so the wiring is a no-brainer.



The factory MAZDA modules

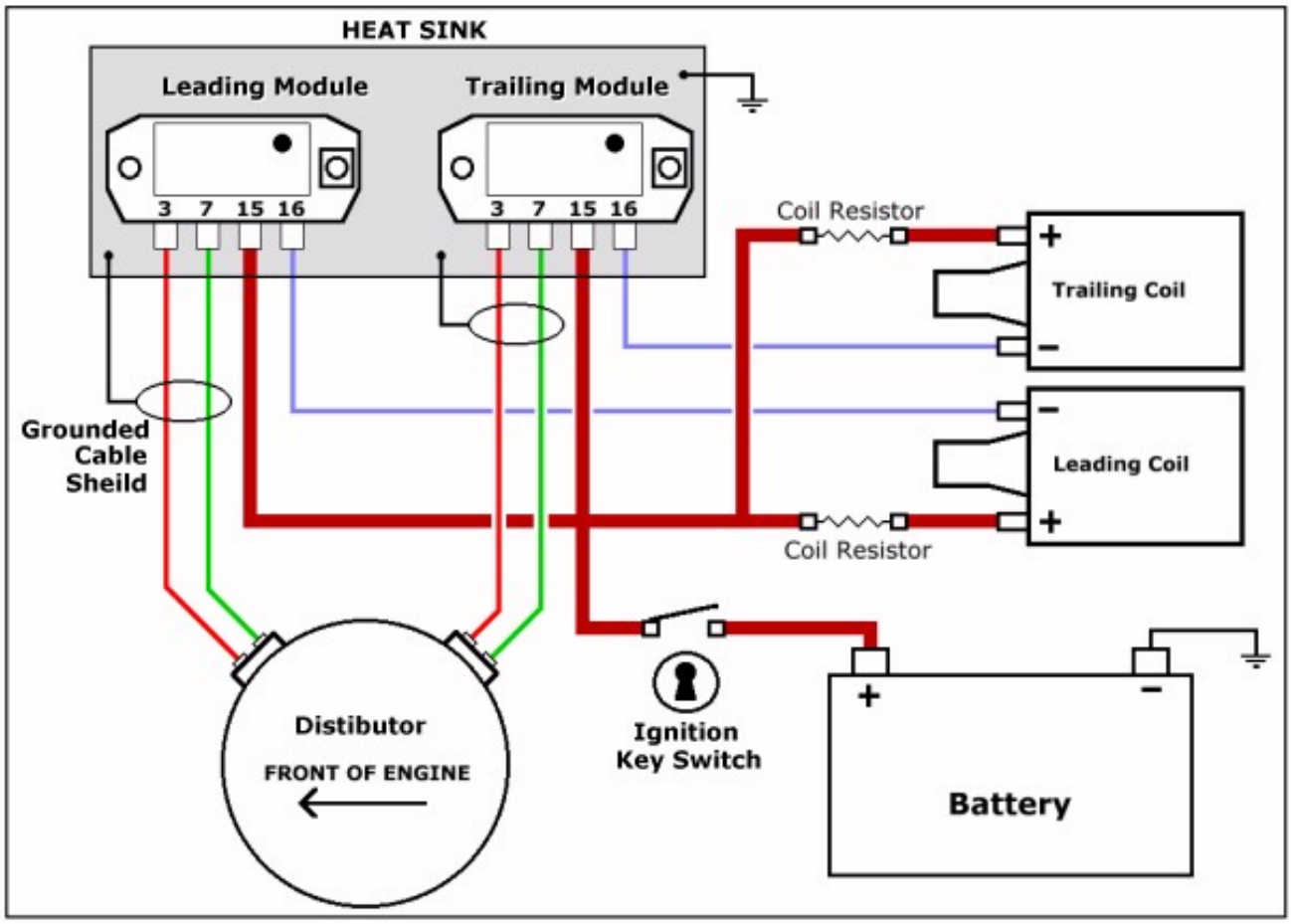


The CONNECTION at the DISTRIBUTOR

The replacement ECHLIN modules

The HEAT SINK and COILS

A SCHEMATIC for MODULE REPLACEMENT



NOTES

- Regular "twin shielded" microphone cable (available from DSE etc) can be used for wiring between the Distributor and the new modules.
- Cables to the coils can be regular auto hook-up wire, although wire around 2mm CSA or more would be advisable.
- Use of resistors at the coils depends on the type of coils you have.
- Modules can be found at any decent Auto shop for under $80.
- The heat sink should grounded, and made from any suitable, thick alloy plate. You can use actual electronics style heat sinks for the modules, but they are harder to mount and can be expensive.
- Don't forget to use the supplied paste when mounting the modules.

COMING SOON

The next article I write will be about Direct Fire Ignition Systems. For those who don't know, Direct Fire is when both leading plugs fire at the same time, have a coil each for each plug, and bypass the rotor button in the distributor. Sound interesting? The ins and outs of Direct Fire, coming soon.

Cheers