



Tim Stock

A Non-Starting but Cranking Honda with Programmed Fuel Injection - PGMFi

In the early 80's, Honda developed a digital port fuel injection system that incorporated an ignition system that combined all the sensors, ignition coil, and final stage amplifier, into one unit.

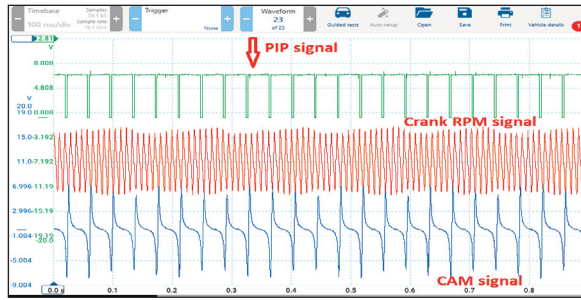
This system has been fitted to many models in the Honda range, and model dependant, it can have either 2 or 3 position sensors fitted. These sensors are analogue inductive sensors measuring RPM, TDC and cam position.

Recently, the helpline had an enquiry for a Honda Civic that was a non-start and had lost its spark. A previous garage had replaced the distributor, thinking it was the issue. Shortly after the distributor was replaced, the fault returned. It was back to no spark and not starting.

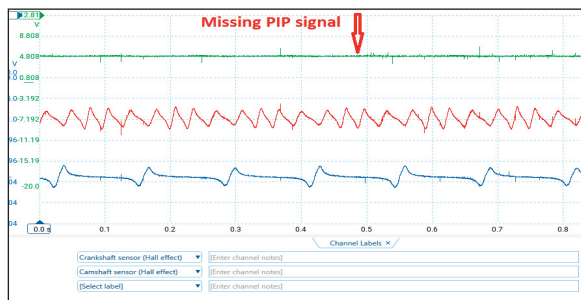
The new workshop had no experience with this system, so they called the helpline for assistance. They needed help with the Picoscope setup, and what signals to expect from this distributor.

As the helpline has the ability to remote access the garage computer, we setup the Pico and took the signals from the ignition system. The Civic was not having any issues at that time, so all the settings and the wave forms were saved for future use when the issue returns.

As you can see from the images, the 2 sensors fitted to this 1998 Civic CRX send a sinewave signal to



This scope trace was taken at idle and shows signals for Crank RPM and cam position, and the returning PIP to the amplifier



This scope trace is missing the PIP signal, and this missing signal is the reason the Civic was not starting

the PGMFi control module, and the module sends a

profile ignition control pulse (PIP) back to the amplifier in the distributor. The amplifier then controls the coil primary signal. The resistance value of the pickups is the same for all sensors, and should be between 700 ohms and 1K ohms.

When the vehicle was back to a non-start situation, the missing PIP from the ECM became obvious. This was traced to the engine main relay failing to power up the ECM. The problem was traced back to dry solder joints under the centre console, a common failure point for these vehicles. Without power supplied to it, the ECM was unable to return the required PIP signal to the distributor. Checking for a missing 5-volt reference at any sensor would reveal an ECM power supply issue.

As this vehicle did not have the usual 16 pin diagnostic connector the technician could not scan the ECM.

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