STAR Case

Case Number: S1618000031

Release Date: 05/25/2016

Symptom/Vehicle Issue: Customer may complain of a Mil-on condition accompanied by one or more DTCs set in the PCM related to the Accelerator Pedal Position Sensor (APPS).

Discussion: Before performing normal diagnostic procedures for APPS-related faults, please read thru the functionality information provided below regarding APPS operation.

What is it and why do we use it?

APPS applications today use Induction/Hall Sensors (non-contact). They are the modern equivalent of potentiometers without the drawback of physical contacts becoming damaged due to wear.

With induction and hall sensors the hardware can stay common between vehicles while custom programming the sensor outputs for individual applications. Because the APP inductive/hall sensor output is programmed after the part is fully assembled, the accuracy is better than when using a potentiometer.

The APPS hardware quality is also dramatically improved using this technology because, as the sensor is programmed, it is also tested for functionality and it is not as likely affected by manufacturing tolerances.

The APPS should not be confused with TPS (throttle position sensor).

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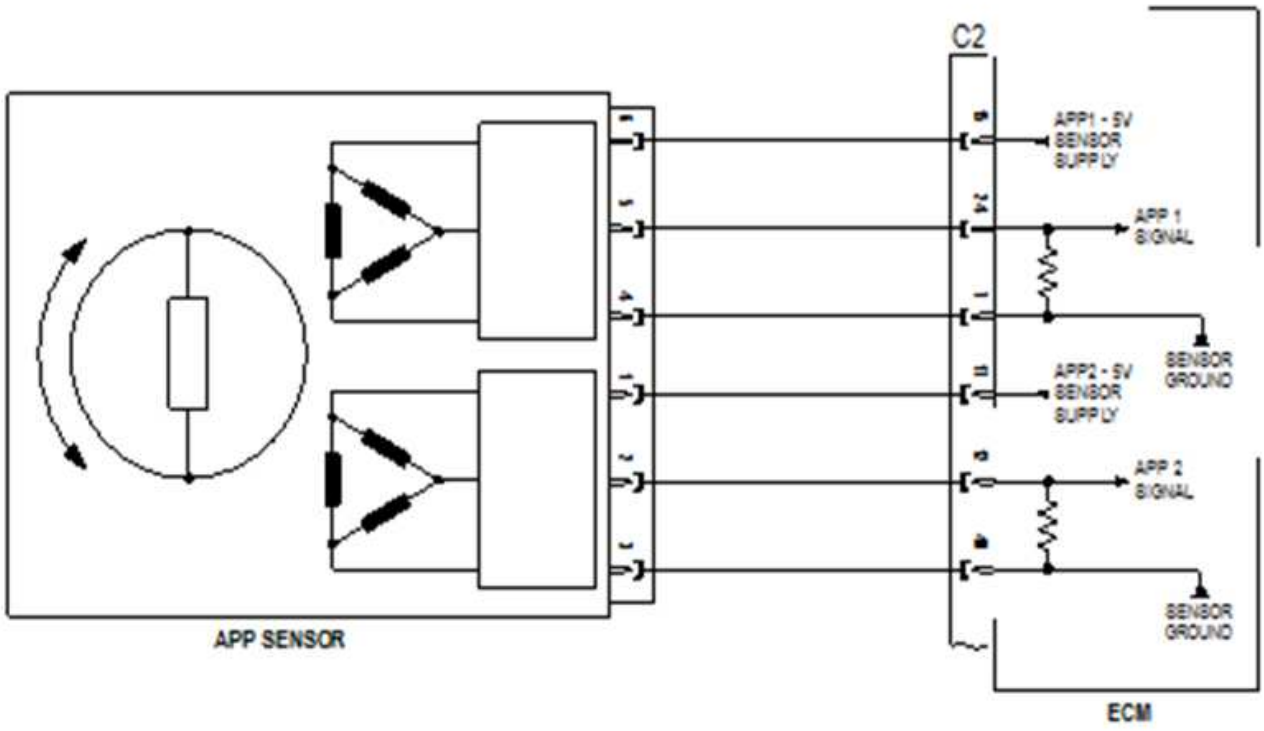
How does it work?

The APPS can be considered an assembly (accelerator pedal assembly). It contains 2 separate sensors that act together as the output or signal from the pedal assembly.

Although the sensors act together, the output voltage from each sensor is unique and different from its counterpart.

APPS1and 2 each have their own separate 5 volt supply, signal and signal return (ground) circuits.



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APPS1 and 2 have an operating range from 0v (voltage low) to approximately 5v (voltage high).

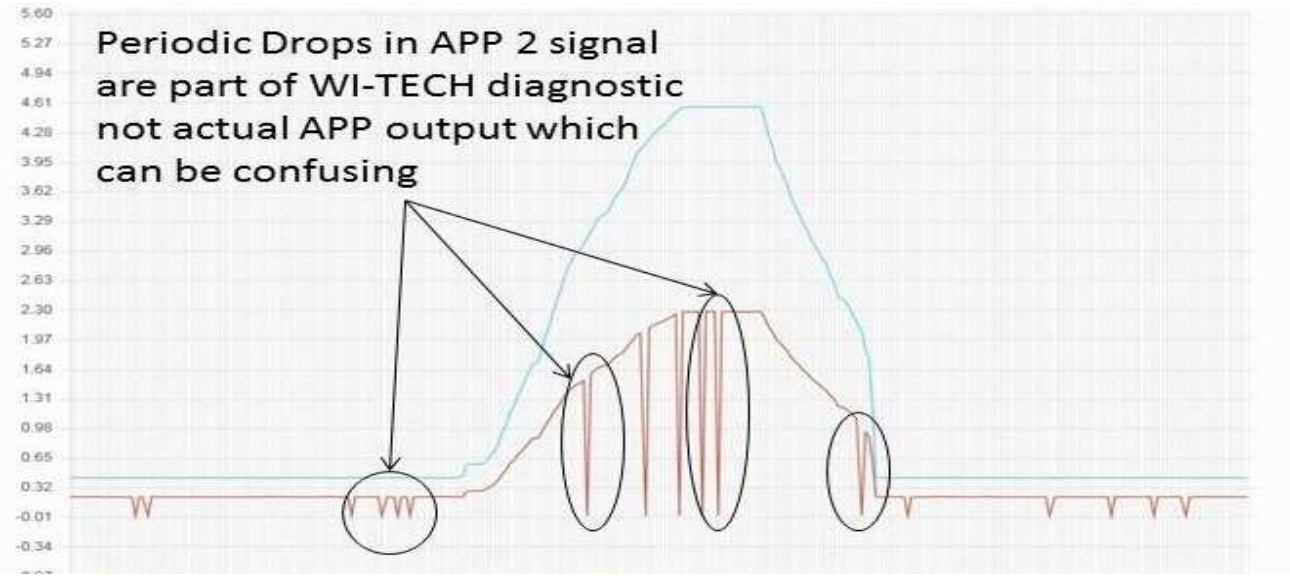
For APPS1, actual operating voltage is typically just over 0v (pedal released) to just under 5v (pedal depressed).

APPS2 output is proportional to APPS1 (starts low at pedal released and goes up when pedal is pressed) but typically will be HALF the voltage of APPS 1 (for example if APPS1 = 2.6v, APPS2 = 1.3v).

Testing APPS output and what should the output look like?

The best way to test the sensor for correct function is in the vehicle using the WiTech tool. The two pedal voltage signals APP1 (Blue) and APP2 (Red) can be plotted by slowly depressing the accelerator pedal from the fully released (up) to fully depressed (down) position.

A “normal” APPS1 and 2 signal output is shown below with a “good” APPS assembly.



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APPS2 (Red) periodic drops to 0v is normal. This characteristic is part of the WiTech diagnostic and should not be considered a reason to replace the APPS assembly.

The APPS assembly should not be replaced for an ETC (throttle body) fault code.

If an APPS assembly is defective, typically one or both APP signal values will not change when pedal is depressed.

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