

Module 16

Vehicle Speed Sensor (VSS)

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16 Vehicle Speed Sensor (VSS)

16.1 General Overview

In the late 1980s Honda began using a vehicle speed sensor (VSS), in some very basic strategies. The earlier VSSs were mounted in the speedometer cluster and were usually referred to as speed pulsar units.

In 1988 the PGMFI system started monitoring the speed pulsar input for failures and would set a diagnostic trouble code (DTC) 17 if a problem was sensed.

Note: The DTC 17 (VSS) was added to all the Honda models in 1988. This was left out of the 1988 Accord manual. This can cause a problem, since the basic idea is if an engine control module (ECM) is displaying a DTC that is not "legitimate", you should replace the ECM. If you have a 1988 Accord with a DTC 17, use the 1989 Accord manual for diagnostic information.

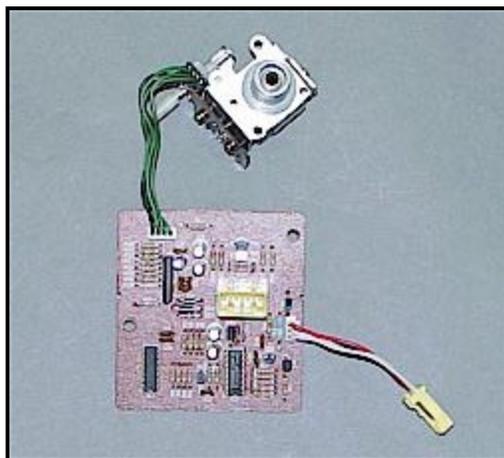
With the addition of the OBD-II system on 1996 models (1995 Accord V-6), the VSS has taken on a more involved role. Many of the OBD-II strategies include the VSS input signal.

16.2 How Do They Work?

Honda used two different types of VSSs, the speedometer cluster mounted and the transmission mounted unit. Both of these units produce similar input signals to the ECM.

16.2.1 Instrument Cluster Speed Pulsar Units

Image 16-1



The earlier speed sensors were mounted in the speedometer head, which was turned by a traditional speedometer cable (shown in Image 16-1). The speed sensors plugged into an amplifier, which amplified the sensor's signal and created the signal that was used by the PCM.

The main amplifier electrical connector fed the amplifier with a +12-volts, a ground, and a 5-volt signal that was generated by the PCM. The amplifier created the 5-volt square wave signal by grounding the 5-volt reference signal that originated at the PCM.

The VSS signal is used by the ECM and the cruise control unit. The signal is a digital type signal that is either 0 volts or 5 volts (see Screen Capture 16-1). The frequency of the VSS signal increases with the increase in vehicle speed

16.2.2 Transmission Mounted Vehicle Speed Sensor Units

Later model Hondas used transmission mounted VSSs. They began using them on 90 Accords, 91 Preludes, and 1992 Civics. These VSSs were located where the speedometer's cable drive gear unit was located. They replaced the traditional speedometer cable. The transmission mounted VSS signal was sent to the speedometer, cruise control, and the ECM.

The signal was a digital type signal that was either 0 volts or 5 volts (see Screen Capture 16-1). The frequency of the VSS signal increased with the increase in vehicle speed. The 5-volt reference signal is generated by the ECM/PCM and grounded by the VSS sensor.

16.3 Component Locations

16.3.1 Speedometer Cluster Mounted Speed Pulsar Units

Image 16-2



The look of the speed pulsar units changed a lot, depending on model and manufacturer of the instrument cluster. If you need to pull the speedometer cluster to repair or replace the speed pulsar unit it is best to consult a Honda service manual. A speedometer cluster mounted VSS is shown in Image 16-1.

16.3.2 Transmission Mounted VSS

The later model VSS is located on the transmission where the speedometer drive assembly was located (see Image 16-2). It is a three-wire sensor and is found towards the rear of the transmission, about in line with the drive axles.

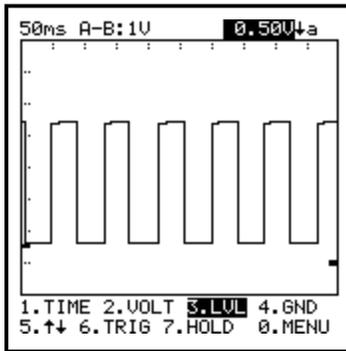
16.4 How Do You Test Them?

The best way to test the VSS input signal is to look at its waveform on a digital storage oscilloscope (DSO). The two VSSs produce a very similar signal

which is a digital (square wave) type that is either 0 volts or 5 volts. The VSS frequency increases with the speed of the car.

16.4.1 Speedometer Mounted Unit

Screen Capture 16-1

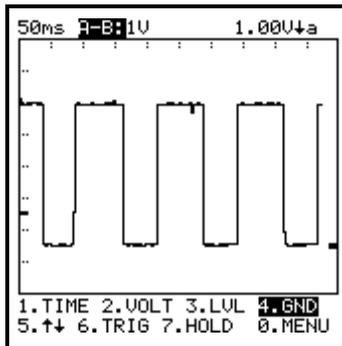


Screen Capture 16-1 is a DSO screen capture of a speedometer mounted speed pulsar at approximately 10 MPH. With the speedometer mounted speed pulsars, it is definitely easier to measure the signal at the ECM terminal.

You will need to refer to a Honda service manual to determine exactly which wire is the input. On the car I used for this waveform it was terminal B16 and the wire was yellow with a red stripe, but that may change from model to model.

16.4.2 Transmission Mounted Unit

Screen Capture 16-2



Screen Capture 16-2 is a DSO screen capture taken from a transmission mounted VSS at approximately 10 MPH. It is easy to measure these signals right at the component. A transmission mounted VSS is similar to a 5-volt reference sensor. One wire is a ground, one wire is a 5-volt reference, and one wire produces a square wave pattern that increases its frequency with the vehicles speed.

16.5 Service Issues

The Honda VSSs have been reasonably durable and reliable. The speedometer mounted units gave virtually no trouble. The transmission mounted units have had some failures. The failures almost always result in the malfunction indicator light (MIL) light notifying the customer of the problem.