



2001 & LATER HYUNDAI

CODE P0500/501; LOSS OF VSS SIGNAL DIAGNOSIS

COMPLAINT: A 2001 & Later Hyundai (all models) may store a diagnostic trouble code P0500 for a loss of VSS signal, or a P0501 for an abnormal VSS signal. The problem that faces the technician is, which is the Vehicle Speed Sensor that is causing the speedometer to become inoperative, turn on the ABS warning lamp, inhibit cruise control operation, late shifts and store the previously mentioned codes.

CAUSE: Hyundai vehicles utilize three (3) types of vehicle speed sensors depending on model.

- (1) It could be located in the speedometer cluster, (**ACCENT ONLY**), this is a Magnetic Reed Switch type that requires the use of a speedometer cable. (See Figure 1)
- (2) It could be located in the transmission over the final drive and is gear driven, this is a Hall Effect type. (See Figure 2)
- (3) It could be the **RIGHT FRONT WHEEL SPEED SENSOR (RF-WSS)**, which is an AC Voltage Pulse Generator. (See Figure 3)

Any one of these speed sensors can cause codes P0500 or P0501 to be stored.
The chart in figure 4 indicates which model uses which combination of Vehicle Speed Sensors.

DESCRIPTION: When driving over a very rough road, the engine will experience a sharply varying load, transferred from the wheels to the crankshaft, which may incorrectly appear to be an engine misfire to the ECM misfire diagnostic logic based on the ECM's analysis of the Crankshaft Position Sensor. The RF-WSS is used to minimize inaccurate diagnoses that an engine misfire has occurred.

The Right Front Wheel Speed Sensor (RF-WSS), in some Hyundai models is used to determine if the vehicle is going over rough road. If the ECM determines that the vehicle is going over rough road, based on the roughness of the signal coming from the RF-WSS, the misfire diagnosis will be suspended until the driving conditions have changed. All Hyundai models with ABS use the RF-WSS to determine rough road conditions.

NOTE: Not all vehicles are equipped with a RF-WSS. Vehicles which are not equipped with a RF-WSS will use a rough road sensor on the left front shock tower.

DIAGNOSTIC AID: Vehicles that are using the RF-WSS for a VSS signal may turn on the ABS warning lamp. Scan the ABS Control Module for a code C1203. This will help narrow the search as to which is the VSS.

CORRECTION: Because the code alone does not pinpoint which sensor/circuit may be generating the code, use the chart in figure 5 to determine this.

Even the same model with different engines will not have the same VSS combination.

SERVICE INFORMATION:

| | |
|--|--------------------|
| <i>Right Front Wheel Speed Sensor.....</i> | <i>95670-2D100</i> |
| <i>Pulse Generator VSS (2 Wire)(Transmission Mounted).....</i> | <i>46517-39000</i> |
| <i>Hall Effect VSS, Gear Driven (3 Wire) (Transmission Mounted).....</i> | <i>46517-39500</i> |
| <i>Reed Switch VSS (Speedometer Mounted).....</i> | <i>94216-33010</i> |

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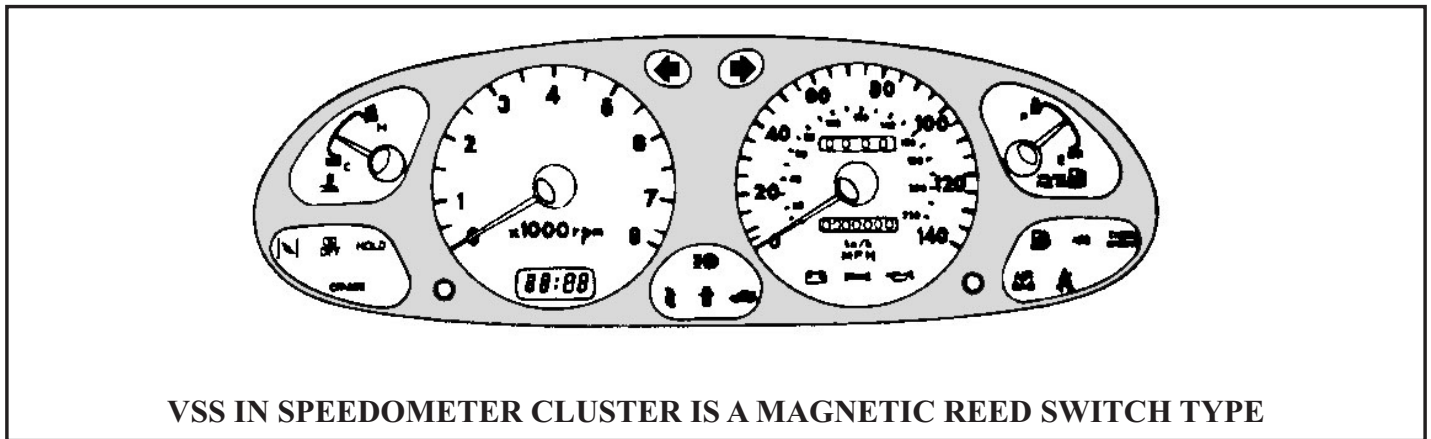
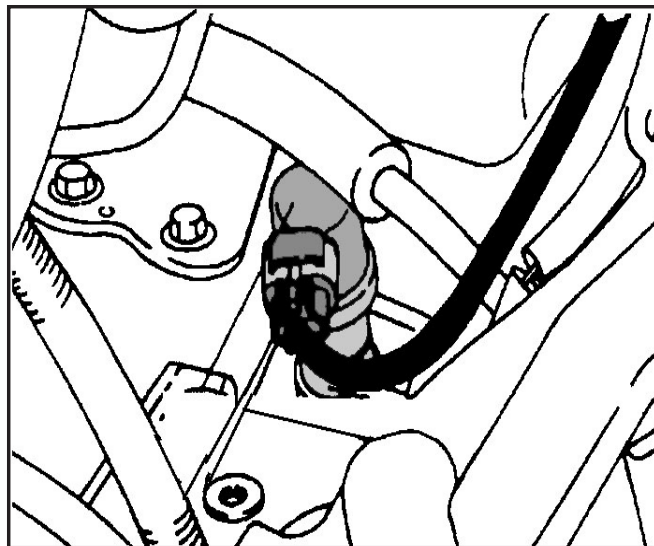


Figure 1



VSS IN TRANSMISSION IS A GEAR DRIVEN HALL EFFECT TYPE

Figure 2

RF-WSS ON THE RIGHT FRONT WHEEL HUB IS AN AC VOLTAGE PULSE GENERATOR

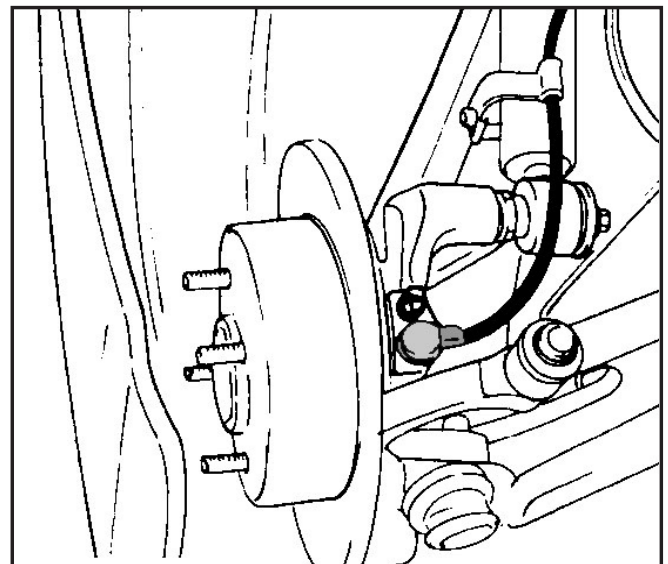


Figure 3



CODE P0500/501; LOSS OF VSS SIGNAL DIAGNOSIS

| VEHICLE SPEED SENSOR APPLICATION CHART | | | | |
|---|---------------|----------------------------|---------------|---------------------------|
| MODEL | ENGINE | VSS ON TRANSMISSION | RF-WSS | VSS IN SPEEDOMETER |
| ELANTRA | 2.0L-I4 | YES | YES | NO |
| SANTA FE | 2.4L-I4 | YES | NO | NO |
| SANTA FE | 2.7L-V6 | YES | YES | NO |
| SONATA | 2.4L-I4 | YES | NO | NO |
| SONATA | 2.5L-V6 | YES | YES | NO |
| XG300 | 3.0L-V6 | YES | NO | NO |
| TIBURON | 2.0L-I4 | YES | NO | NO |
| ACCENT | 1.5L-I4 | NO | NO | YES |
| ACCENT | 1.6L-I4 | NO | NO | YES |

Figure 4

CODE P0500/501; LOSS OF VSS SIGNAL DIAGNOSIS

| VEHICLE SPEED SENSOR DIAGNOSTIC CHART | | | |
|--|--------------------------|---|---|
| MODEL | DETAILS | RF-WHEEL SPEED SENSOR (DISCONNECTED) | VSS ON TRANSMISSION OR IN SPEEDOMETER (DISCONNECTED) |
| ELANTRA | Check Engine Lamp On | YES | NO |
| | Diagnostic Trouble Code | P0501 | NO |
| | Speedometer Operative | OPERATIVE | INOPERATIVE |
| | Data Parameter Available | NO | YES |
| SANTA FE...2.4L | Check Engine Lamp On | | YES |
| | Diagnostic Trouble Code | NO | P0500 |
| | Speedometer Operative | RF-WSS | INOPERATIVE |
| | Data Parameter Available | | NO |
| SANTA FE...2.7L | Check Engine Lamp On | YES | NO |
| | Diagnostic Trouble Code | P0500 | NO |
| | Speedometer Operative | OPERATIVE | INOPERATIVE |
| | Data Parameter Available | NO | YES |
| SONATA...2.4L | Check Engine Lamp On | | YES |
| | Diagnostic Trouble Code | NO | P0500 |
| | Speedometer Operative | RF-WSS | INOPERATIVE |
| | Data Parameter Available | | NO |
| SONATA...2.5L | Check Engine Lamp On | YES | NO |
| | Diagnostic Trouble Code | P0500 | NO |
| | Speedometer Operative | OPERATIVE | INOPERATIVE |
| | Data Parameter Available | NO | YES |
| XG300 | Check Engine Lamp On | ABS/TCS | YES |
| | Diagnostic Trouble Code | C1203 | P0500 |
| | Speedometer Operative | OPERATIVE | INOPERATIVE |
| | Data Parameter Available | | NO |
| TIBURON | Check Engine Lamp On | | YES |
| | Diagnostic Trouble Code | NO | P0501 |
| | Speedometer Operative | RF-WSS | INOPERATIVE |
| | Data Parameter Available | | NO |
| ACCENT | Check Engine Lamp On | | YES |
| | Diagnostic Trouble Code | NO | P0501 |
| | Speedometer Operative | RF-WSS | YES OR NO |
| | Data Parameter Available | | NO |

Figure 5