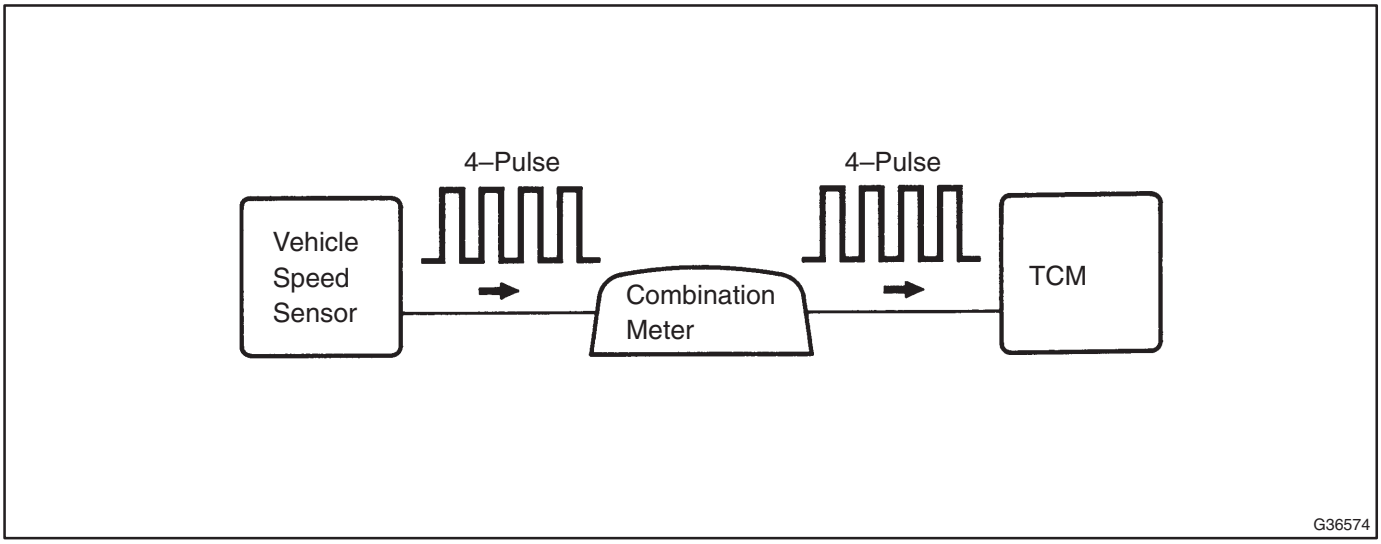
DTC P0500/42 VEHICLE SPEED SENSOR "A"

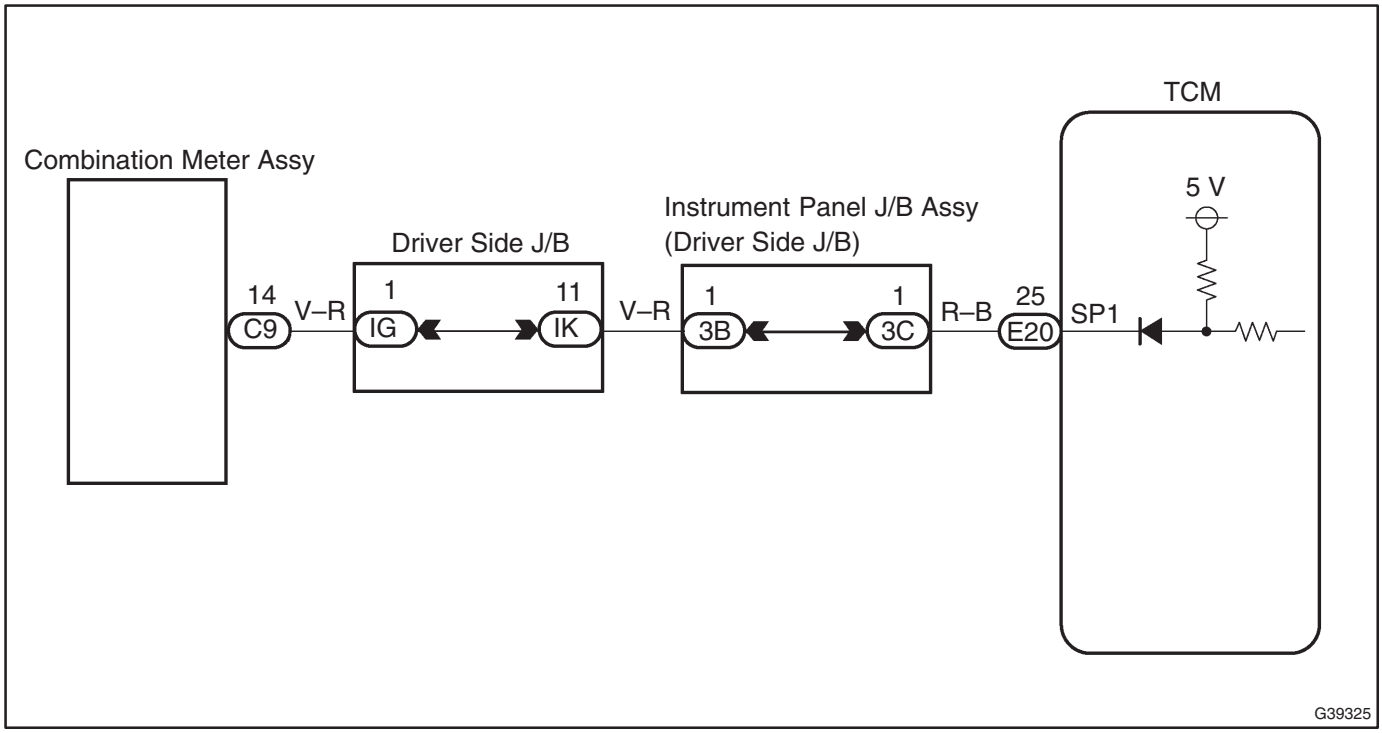
CIRCUIT DESCRIPTION

The vehicle speed sensor outputs a 4–pulse signal for every revolution of the rotor shaft, which is rotated by the transmission output shaft via the driven gear. After this signal is converted into a more precise rectangular waveform by the waveform shaping circuit inside the combination meter, it is then transmitted to the TCM. The TCM determines the vehicle speed based on the frequency of these pulse signals.



DTC No.	DTC Detection Condition	Trouble Area
P0500/42	All conditions below are detected 500 times or more continuously. (1–trip detection logic) (a) Either of the following: • When transfer L4 switch is on, no signal is output from speed sensor SP1 while a 41–pulse signal is simultaneously being output from speed sensor SP2. • When transfer L4 switch is off, no signal is output from speed sensor SP1 while a 16–pulse signal is simultaneously being output from speed sensor SP2. (b) Vehicle speed is 9 km/h (5.6 mph) or more for as least 4 seconds. (c) Neutral start switch is OFF (shift lever not on P or N) (d) Transfer shift lever is not on N	• Open or short in vehicle speed sensor circuit • Vehicle speed sensor • Combinationmeter • TCM

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Read freeze frame data using the intelligent tester II. Freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, if the engine was warmed up or not, and other data from the time the malfunction occurred.

When using intelligent tester II:

1	**READ DATA LIST (VEHICLE SPEED)**

(a) Connect the intelligent tester II to the DLC3.
(b) Start the engine and turn the intelligent tester II ON.
(c) Enter the following menus: Powertrain / ECT / Data List / Vehicle SPD.
(d) Check the vehicle speed at an engine speed of 2,000 rpm or more while the vehicle is running.
OK: Same value as actual vehicle speed.

OK → **CHECK FOR INTERMITTENT PROBLEMS (SEE PAGE 05–439)**

NG

2	CHECK OPERATION OF SPEEDOMETER

(a) Check the speedometer reading in the combination meter.

HINT:

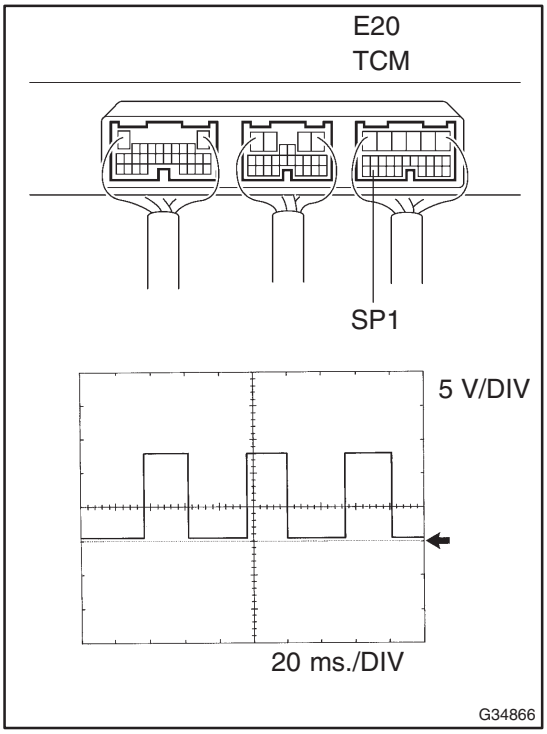
If the vehicle speed sensor has any malfunctions, the speedometer shows abnormal readings.

OK: Speedometer operates normally.

NG → **CHECK SPEEDOMETER CIRCUIT (INCLUDE SPEED SENSOR) (SEE PAGE 05–1416)**

OK

3	CHECK TCM (SP1 SIGNAL)



(a) While idling, check the waveform of the TCM connectors using an oscilloscope.
(b) Move the shift lever to N.
(c) Jack up the vehicle.
(d) Turn the ignition switch ON.
(e) Measure the voltage of the TCM connectors as the wheel is turned slowly.

Standard:

Tester Connection	Specified Condition
E20–25 (SP1) – Body ground	Voltage is generated intermittently

HINT:

When the wheel is turning slowly, voltage is output intermittently.

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR (SEE PAGE 01–36)**

OK

REPLACE TCM

When not using intelligent tester II:

1	CHECK OPERATION OF SPEEDOMETER

(a) Check the speedometer reading in the combination meter.

HINT:

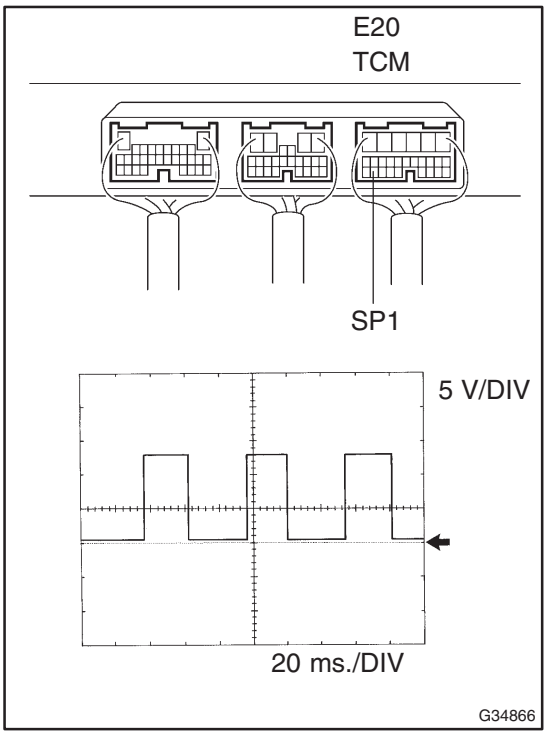
If the vehicle speed sensor has any malfunctions, the speedometer shows abnormal readings.

OK: Speedometer operates normally.

NG → **CHECK SPEEDOMETER CIRCUIT (INCLUDE SPEED SENSOR) (SEE PAGE 05–1416)**

OK

2	CHECK ECT ECU (SP1 SIGNAL)



(a) While idling, check the waveform of the TCM connectors using an oscilloscope.

(b) Move the shift lever to N.

(c) Jack up the vehicle.

(d) Turn the ignition switch ON.

(e) Measure the voltage of the TCM connectors as the wheel is turned slowly.

Standard:

Tester Connection	Specified Condition
E20–25 (SP1) – Body ground	Voltage is generated intermittently

HINT:

When the wheel is turning slowly, voltage is output intermittently.

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR (SEE PAGE 01–36)**

OK

REPLACE TCM