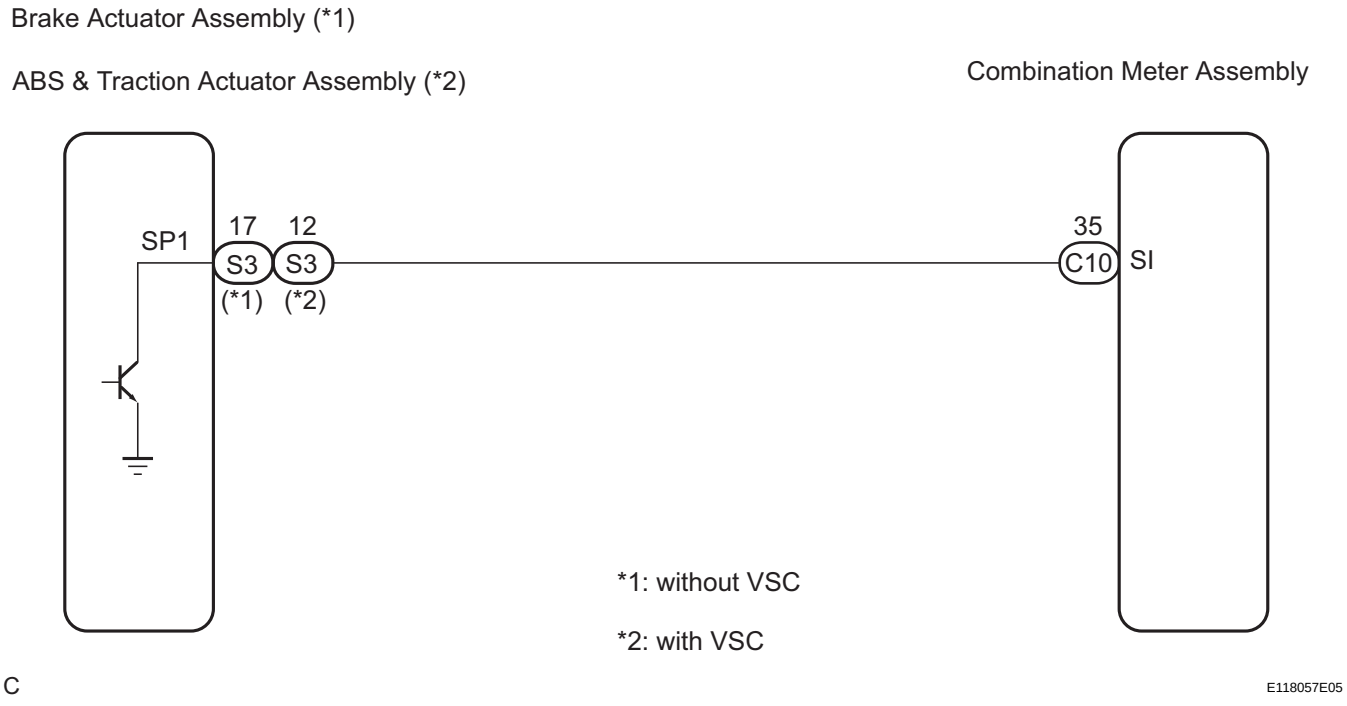
Speedometer Malfunction

DESCRIPTION

Factors that affect the indicated vehicle speed include tire size, tire inflation, and tire wear. The speed indicated on the speedometer has an allowable margin of error. This can be tested using a speedometer tester (calibrated chassis dynamometer). For details about testing and the margin of error, see the reference chart (See page ME-21).

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

If the vehicle speed is outside the allowable range when tested, perform the following procedure (See page ME-21).

1	PERFORM ACTIVE TEST BY INTELLIGENT TESTER

(a) Connect the tester to the DLC3.
(b) Turn the ignition switch to the ON position.
(c) Turn the tester ON.
(d) Enter the following menus: DIAGNOSIS / OBD/MOBD / METER / ACTIVE TEST
(e) Check the operation by referring to the values in the table below.

METER:

Tester Display	Measurement Item/Range	Test Details	Diagnostic Note
SPEED METER	Speedometer	0, 40, 80, 120 (mph) (*1)	-
		0, 40, 80, 120, 160 (km/h) (*2)	-

*1: for U.S.A.
*2: Except for U.S.A.

OK:

Needle indication is within the allowable range.

NG → **REPLACE COMBINATION METER ASSEMBLY**

OK

2	READ VALUE OF INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch to the ON position.
(c) Turn the tester ON.
(d) Enter the following menus: DIAGNOSIS / OBD/MOBD / METER / DATA LIST.
(e) Check the values by referring to the values in the table below.

METER:

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
SPEED METER	Vehicle speed/Min.: 0 km/h (0 mph), Max.: 255 km/h (158 mph)	Almost same as actual speed (When driving)	-

OK:

Vehicle speed displayed on the tester is almost the same as the actual vehicle speed measured using a speedometer tester (calibrated chassis dynamometer).

NG → **Go to step 3**

OK

REPLACE COMBINATION METER ASSEMBLY

3	READ VALUE OF INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch to the ON position.
(c) Turn the tester ON.
(d) Enter the following menus: DIAGNOSIS / ABS/TRAC/ VSC / DATA LIST.
(e) Check the values by referring to the values in the table below.

ABS/TRAC/VSC:

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
(FL/FR/RL/RR) WHEEL SPD	Vehicle speed/Min.: 0 km/h (0 mph), Max.: 326 km/h (202 mph)	Almost same as actual speed (When driving)	-

OK:

Vehicle speed displayed on the tester is almost the same as the actual vehicle speed measured using a speedometer tester (calibrated chassis dynamometer).

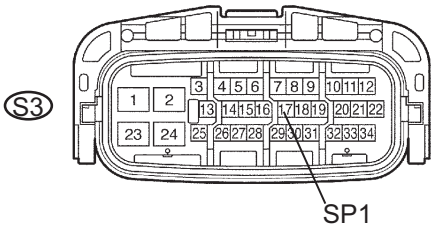
ME

NG → **GO TO BRAKE CONTROL SYSTEM**

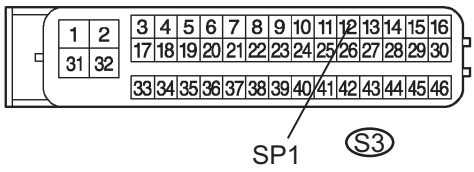
OK

4 INSPECT COMBINATION METER ASSEMBLY

Brake Actuator Assembly (*1)
Wire Harness View:



ABS & Traction Actuator Assembly (*2)
Wire Harness View:



E123270E02

(a) Disconnect the S3 connector.
(b) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection	Condition	Specified Condition
S3-17 (SP1) (*1) - Body ground	Turn the ignition switch to the ON position.	10 to 14 V
S3-12 (SP1) (*2) - Body ground	Turn the ignition switch to the ON position.	10 to 14 V

*1: without VSC
*2: with VSC

Result

Result	Proceed to
OK	A
NG (without VSC)	B
NG (with VSC)	C

B → **Go to step 6**

C → **Go to step 7**

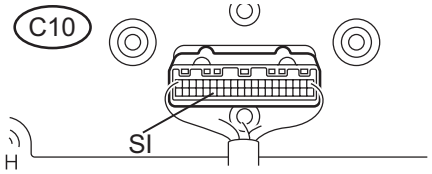
A

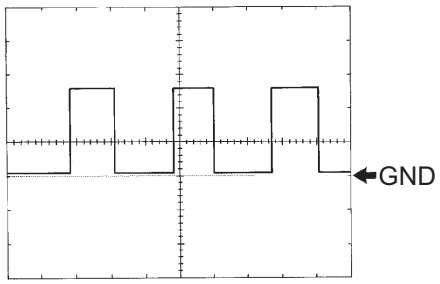
ME

5	INSPECT COMBINATION METER ASSEMBLY

Combination Meter Assembly

Wire Harness View:





E123271E01

(a) Check the input signal waveform.
  (1) Remove the combination meter assembly with connector(s) still connected.
  (2) Connect the oscilloscope to terminal C10-35 (SI) and body ground.
  (3) Turn the wheel slowly.
  (4) Check the signal waveform according to the condition(s) in the table below.

Item	Condition
Tool setting	5 V/DIV., 20 ms./DIV.
Vehicle condition	Driving at approx. 20 km/h (12 mph)

OK:

The waveform is displayed as shown in the illustration.

HINT:

As the vehicle speed increases, the cycle of the signal waveform narrows.

Result

Result	Proceed to
OK	A
NG (without VSC)	B
NG (with VSC)	C

ME

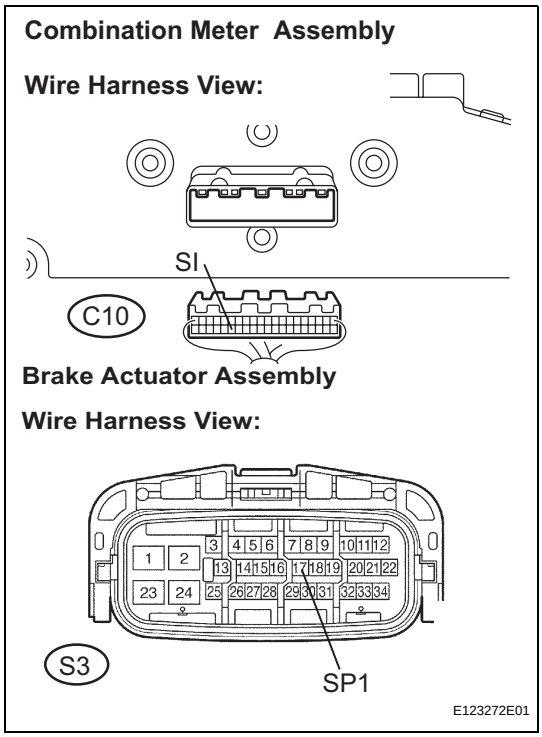
B → **REPLACE BRAKE ACTUATOR ASSEMBLY**

C → **REPLACE ABS & TRACTION ACTUATOR ASSEMBLY**

A

REPLACE COMBINATION METER ASSEMBLY

6	CHECK HARNESS AND CONNECTOR (COMBINATION METER - BRAKE ACTUATOR ASSEMBLY)



(a) Disconnect the S3 and C10 connectors.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
S3-17 (SP1) - C10-35 (SI)	Always	Below 1 Ω
S3-17 (SP1) - Body ground	Always	10 kΩ or higher

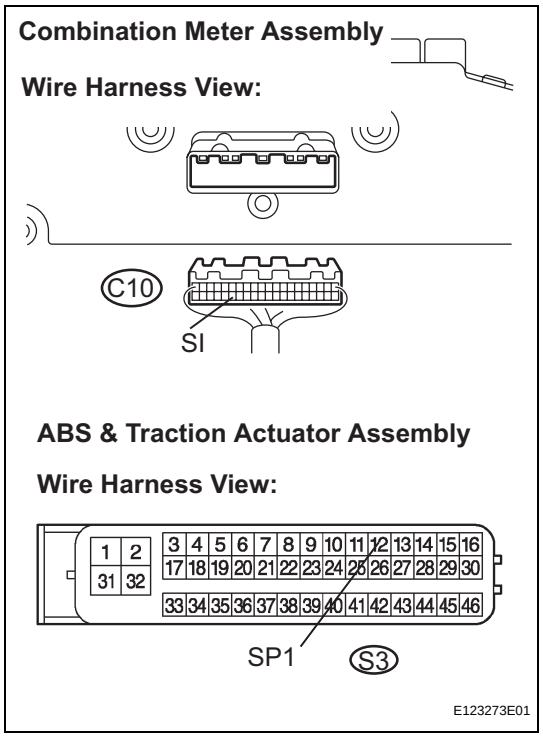
NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE COMBINATION METER ASSEMBLY

ME

7	CHECK HARNESS AND CONNECTOR (COMBINATION METER - ABS & TRACTION ACTUATOR ASSEMBLY)



(a) Disconnect the S3 and C10 connectors.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
S3-12 (SP1) - C10-35 (SI)	Always	Below 1 Ω
S3-12 (SP1) - Body ground	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE COMBINATION METER ASSEMBLY

ME