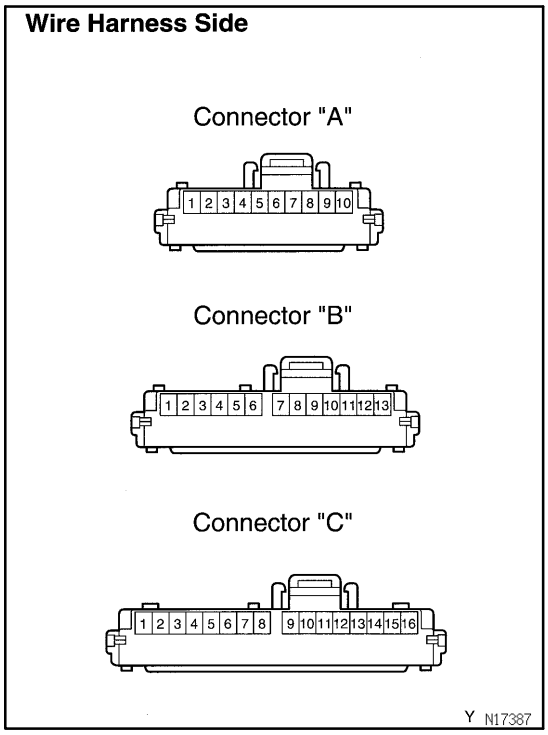
BE1Q8–01

INSPECTION

1. INSPECT COMBINATION METER WIRING CIRCUIT

Disconnect connectors A, B and C from the combination meter and inspect the connectors on the wire harness side as follows.



Ground:

Tester connection	Condition	Specified condition
A1 – Ground	Constant	Continuity
B1 – Ground	Constant	Continuity
C1 – Ground	Constant	Continuity

ECU–B Fuse:

Tester connection	Condition	Specified condition
A2 – Ground	Constant	Battery positive voltage

GAUGE Fuse:

Tester connection	Condition	Specified condition
A5 – Ground	Ignition switch ACC, START	No voltage
A5 – Ground	Ignition switch ON	Battery positive voltage

Brake Warning Switch:

Tester connection	Condition	Specified condition
A8 – Ground	Brake fluid level warning switch ON	Continuity
A8 – Ground	Parking brake switch ON	Continuity

Buckle Switch:

Tester connection	Condition	Specified condition
A10 – Ground	Buckle switch ON	Continuity

Center Diff. Lock Indicator Switch:

Tester connection	Condition	Specified condition
B2 – Ground	Center diff. lock indicator switch ON	Continuity

Engine Oil Level Warning Switch:

Tester connection	Condition	Specified condition
B3 – Ground	Engine oil level warning switch ON	Continuity

Generator "L" Terminal:

Tester connection	Condition	Specified condition
B7 – Ground	Engine stop	Continuity
B7 – Ground	Engine running	Battery positive voltage

Turn Signal Switch and Hazard Warning Switch:

Tester connection	Condition	Specified condition
B8 – Ground	Hazard warning switch ON	Battery positive voltage ↔ 0V
B8 – Ground	Ignition switch ON and turn signal switch "Left"	Battery positive voltage ↔0V
B9 – Ground	Hazard warning switch ON	Battery positive voltage ↔ 0V
B9 – Ground	Ignition switch ON and turn signal switch "Right"	Battery positive voltage ↔ 0V

Headlight:

Tester connection	Condition	Specified condition
C5 – C6	Light control switch "HEAD" (Dimmer switch "LO")	No voltage
C5 – C6	Light control switch "HEAD"(Dimmer switch "HI" or "Flash")	Battery positive voltage

Transfer Neutral Position Switch:

Tester connection	Condition	Specified condition
C7 – Ground	Transfer neutral position switch ON	Continuity

Front Diff. Lock Position Switch:

Tester connection	Condition	Specified condition
C9 – Ground	Front diff. lock position switch ON	Continuity

Rear Diff. Lock Position Switch:

Tester connection	Condition	Specified condition
C10 – Ground	Rear diff. lock position switch ON	Continuity

Fuel Sender Gauge:

Tester connection	Condition	Specified condition
C14 – C1	Float position Full, Approx. 15.0 mm (0.590 in.)	Approx. 3.0 Ω
C14 – C1	Float position Full, Approx. 200.0 mm (7.874 in.)	Approx. 110.0 Ω

IGN Fuse:

Tester connection	Condition	Specified condition
C13 – Ground	*Ignition switch LOCK, ACC, START	No voltage
C13 – Ground	*Ignition switch ON	Battery positive voltage

Door Courtesy Switch:

Tester connection	Condition	Specified condition
C15 – Ground	Door courtesy switch ON	Continuity

DOOM Fuse:

Tester connection	Condition	Specified condition
C16 – Ground	Constant	Battery positive voltage

Park/Neutral Position Switch:

Tester connection	Condition	Specified condition
3 – Ground	Ignition switch ON and shift lever position ”P”	Battery positive voltage
4 – Ground	Ignition switch ON and shift lever position ”R”	Battery positive voltage
5 – Ground	Ignition switch ON and shift lever position ”N”	Battery positive voltage
7 – Ground	Ignition switch ON and shift lever position ”D”	Battery positive voltage
10 – Ground	Ignition switch ON and shift lever position ”2”	Battery positive voltage
11 – Ground	Ignition switch ON and shift lever position ”L”	Battery positive voltage

*2 Shift lever is in the ”N” or ”P” position.

If circuit is not as specified, refer to BE–43 and 44 wiring diagram and inspect the circuit connected to other parts.

2. INSPECT SPEEDOMETER ON–VEHICLE

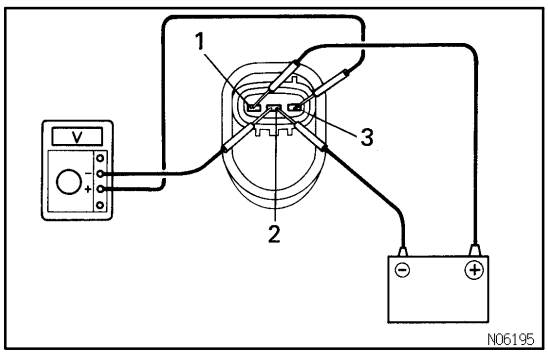
Using a speedometer tester, inspect the speedometer for allowable indication error and check the operation of the odometer.

HINT:

Tire wear and tire over or under inflation will increase the indication error.

If error is excessive, replace the speedometer.

USA (mph)		CANADA (km/h)	
Standard indication	Allowablerange	Standard indication	Allowablerange
20	18 – 24	20	(17 – 24)
40	38 – 44	40	(38 – 46)
60	56 – 66	60	57.5 – 67
80	78 – 88	80	77 – 88
100	98 – 110	100	96 – 109
120	118 – 132	120	115 – 130
–		140	134 – 151.5
–		160	153 – 173



3. INSPECT No.1 VEHICLE SPEED SENSOR

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2.

(b) Connect the positive (+) lead from the tester to terminal 3 and the negative (–) lead to terminal 2.

(c) Revolve shaft.

(d) Check that there is voltage changer from approx. 0 V to 11 V or more between terminals 3 and 2.

HINT:
The voltage change should be 4 times per each revolution of the No. 1 vehicle speed sensor shaft.
If operation is not as specified, replace the sensor.

4. INSPECT TACHOMETER ON–VEHICLE

(a) Connect a tune–up test tachometer, and start the engine.

NOTICE:

Reversing the connection of the tachometer will damage the transistors and diodes inside. When removing or installing the tachometer, be careful not to drop or subject it to heavy shocks.

(b) Compare the tester and tachometer indications.

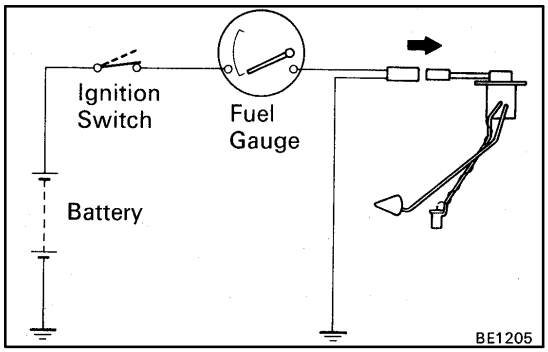
If error is excessive, replace the tachometer.

DC 13.5 V, 25˚C (77˚F)

Standard indication	Allowable range
700	630 – 770
1,000	900 – 1,100
2,000	1,875 – 2,125
3,000	2,850 – 3,150
4,000	3,850 – 4,150
5,000	4,850 – 5,150

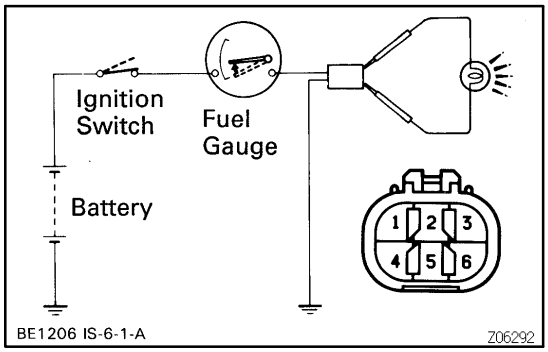
5. INSPECT VOLTMETER ON–VEHICLE

Compare the tester and voltmeter indications.
If error is excessive, replace the voltmeter.



6. INSPECT FUEL RECEIVER GAUGE OPERATION

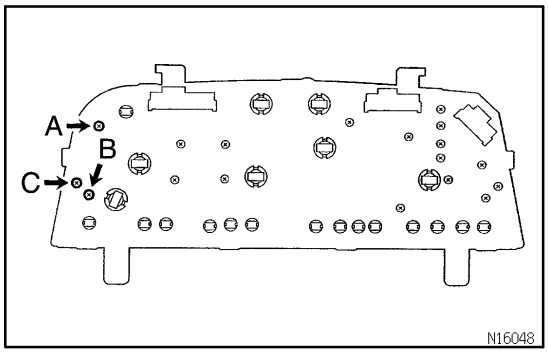
(a) Disconnect the connector from the sender gauge.
(b) Turn the ignition switch ON, and check that the receiver gauge needle indicates EMPTY.



(c) Connect terminals 4 and 5 on the wire harness side connector through a 3.4 W test bulb.
(d) Turn the ignition switch ON, and check that the bulb lights up and the receiver gauge needle moves towards the full side.

HINT:
Because of the silicon oil in the gauge, it will take a short time for needle to stabilize.

If operation is not as specified, inspect the receiver gauge resistance.

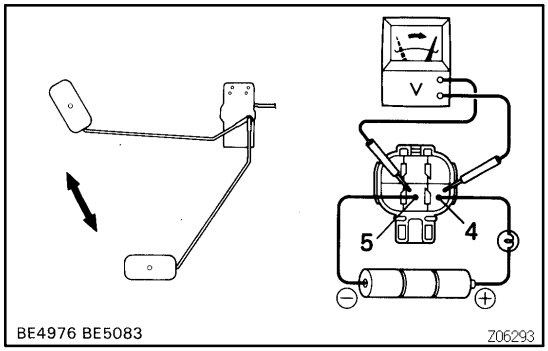


7. INSPECT FUEL RECEIVER GAUGE RESISTANCE

Between terminals	Resistance (Ω)
A – B	85.5 – 105.5
A – C	126 – 150
B – C	*90 – 110

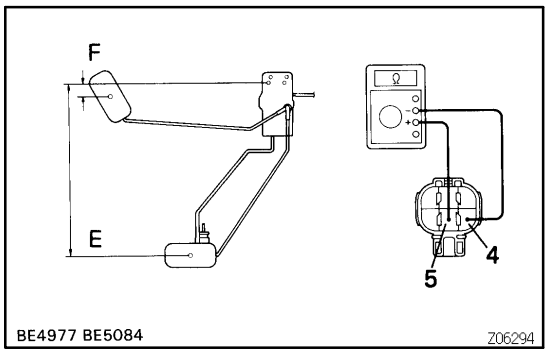
*: Include voltmeter resistance

If resistance value is not as specified, replace the fuel receiver gauge.



8. INSPECT FUEL SENDER GAUGE OPERATION

(a) Connect a series of three 1.5 V dry cell batteries.
(b) Connect the positive (+) lead from the dry cell batteries to terminal 4 through a 3.4 W test bulb and the negative (–) lead to terminal 5.
(c) Connect the positive (+) lead from the voltmeter to terminal 4 and the negative (–) lead to terminal 5.
(d) Check that the voltage rises as the float is moved from the full to empty position.

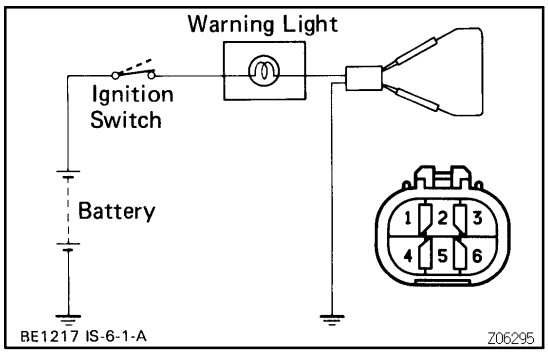


9. INSPECT FUEL SENDER GAUGE RESISTANCE

Measure the resistance between terminals 4 and 5.

Float position: mm (in.)	Resistance (Ω)
F: Approx. 15.0 (0.590)	Approx. 3.0
E: Approx. 200.0 (7.874)	Approx. 110.0

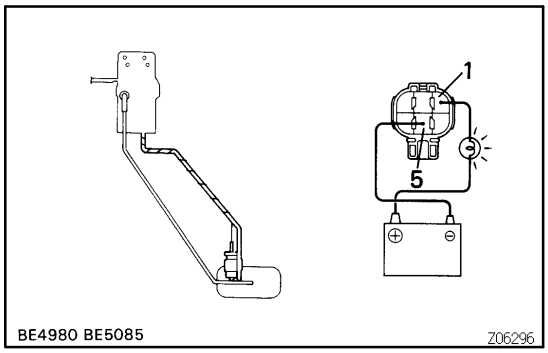
If resistance value is not as specified, replace the sender gauge.



10. INSPECT FUEL LEVEL WARNING LIGHT

(a) Disconnect the connector from the sender gauge.
(b) Connect terminals 1 and 5 on the wire harness side connector.
(c) Turn the ignition switch ON, and check that the warning light lights up.

If the warning light does not light up, test the bulb.

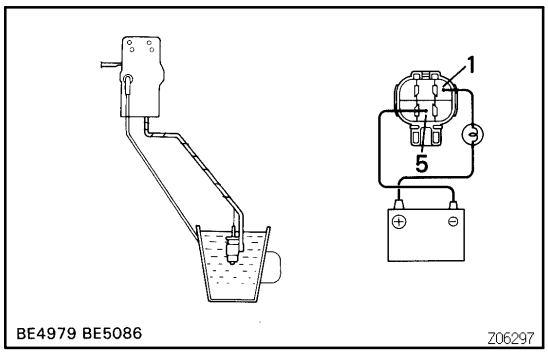


11. INSPECT FUEL LEVEL WARNING SWITCH

(a) Apply battery positive voltage between terminals 1 and 5 through a 3.4 W test bulb, and check that the bulb lights up.

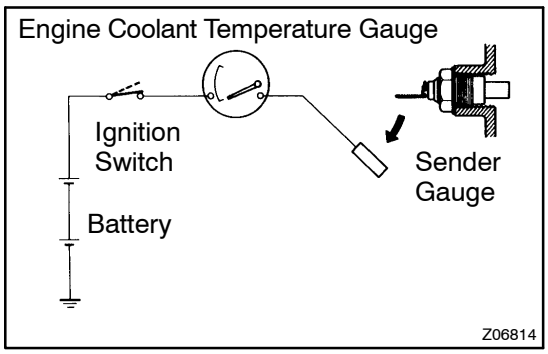
HINT:

It will take a short time for the bulb to light up.



(b) Submerge the switch in fuel, and check that the bulb goes out.

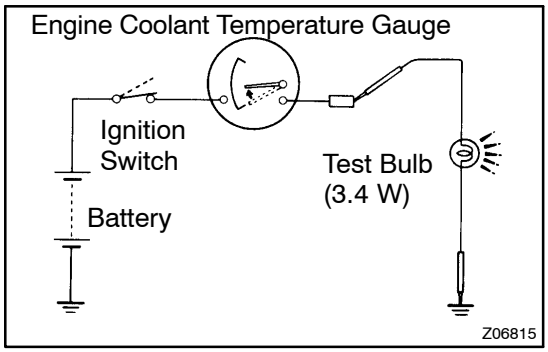
If operation is not as specified, replace the sender gauge.



12. INSPECT ENGINE COOLANT TEMPERATURE RECEIVER GAUGE OPERATION

(a) Disconnect the connector from the sender gauge.

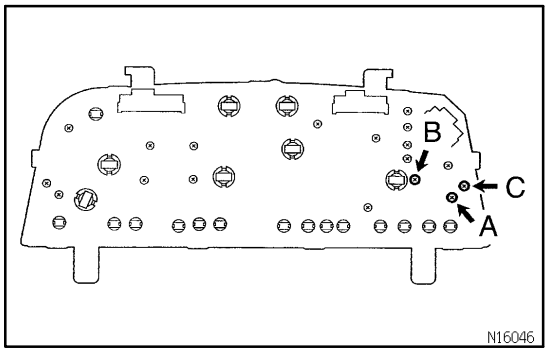
(b) Turn the ignition switch ON, and check that the receiver gauge needle indicates COOL.



(c) Ground terminal on the wire harness side connector through a 3.4 W test bulb.

(d) Turn the ignition switch ON, and check that the bulb lights up and the receiver gauge needle moves to the hot side.

If operation is as specified, replace the sender gauge. Then recheck the system. If operation is not as specified, measure the receiver gauge resistance.

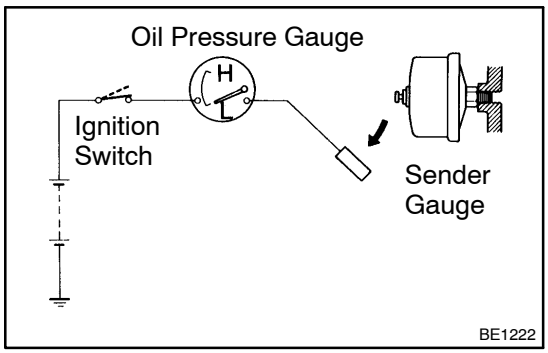


13. INSPECT ENGINE COOLANT TEMPERATURE SENDER GAUGE RESISTANCE

Measure the resistance between terminals.

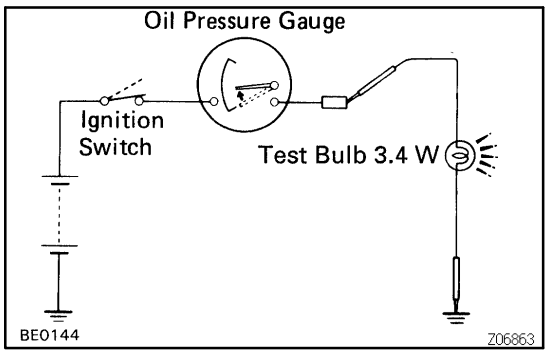
Between terminals	Resistance (Ω)
A – B	71 – 79
A – C	117 – 141
B – C	185 – 215

HINT:
Connect the test leads so that the current from the ohmmeter can flow according to the above order. This circuit include the diode.
If resistance value is not as specified, replace the receiver gauge.



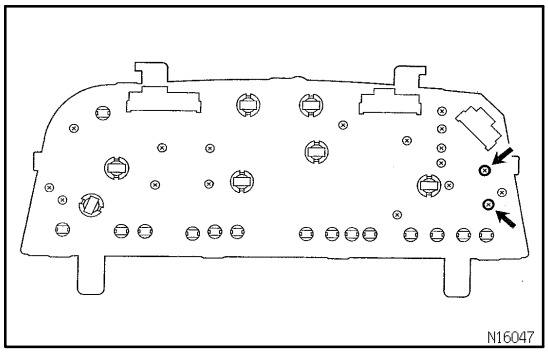
14. INSPECT OIL PRESSURE RECEIVER GAUGE OPERATION

(a) Disconnect the connector from the sender gauge.
(b) Turn the ignition switch ON, and check that the receiver gauge needle indicates LOW.



(c) Ground terminal on the wire harness side through a 3.4 W test bulb.
(d) Turn the ignition switch ON, and check that the bulb lights up and that the receiver gauge needle moves to the high side.

If operation is not as specified, measure the receiver gauge resistance.

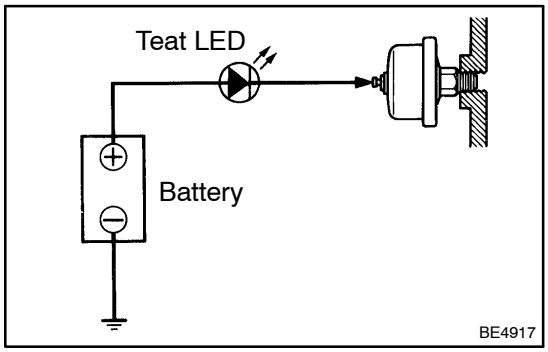


15. INSPECT OIL PRESSURE RECEIVER GAUGE RESISTANCE

Measure the receiver gauge resistance between terminals.

Resistance: 40 – 48 Ω

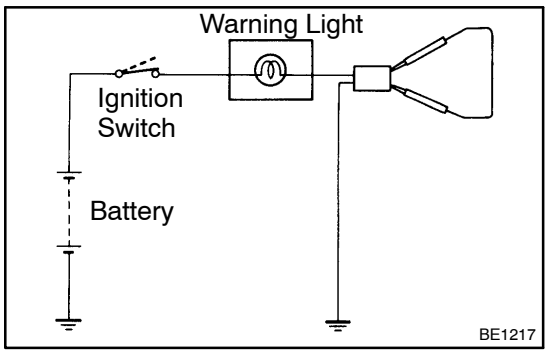
If resistance value is not as specified, replace the receiver gauge.



16. INSPECT OIL PRESSURE SENDER GAUGE OPERATION

(a) Disconnect the connector from the sender gauge.
(b) Apply battery positive voltage to the sender gauge terminal through a test LED.
(c) Check that the bulb does not light when the engine is stopped.
(d) Check that the LED flashes when the engine is running. The number of flashed should vary with engine speed.

If operation is not as specified, replace the sender gauge.

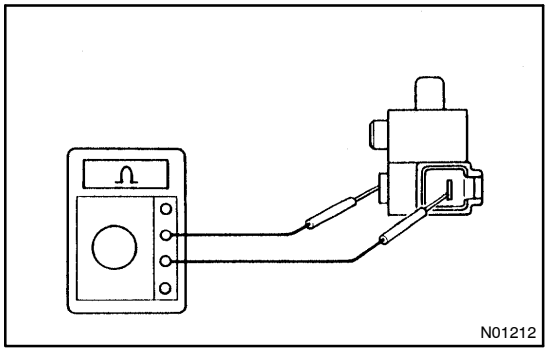


17. INSPECT BRAKE WARNING LIGHT

(a) Disconnect the connectors from the level warning switch and parking brake switch.

(b) Connect terminals on the wire harness side connector of the level warning switch connector.

(c) Turn the ignition switch ON, and check that the warning light lights up.

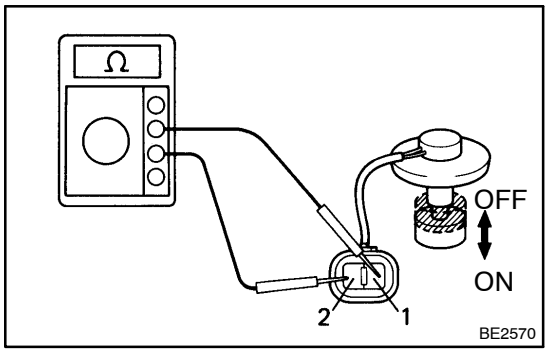


18. INSPECT PARKING BRAKE SWITCH

(a) Check that there is continuity between the terminal and switch set nut with switch pin released (parking brake lever pulled up).

(b) Check that there is no continuity between the terminal and switch set nut with switch pin pushed in. (parking brake lever released)

If operation is not as specified, replace the switch.

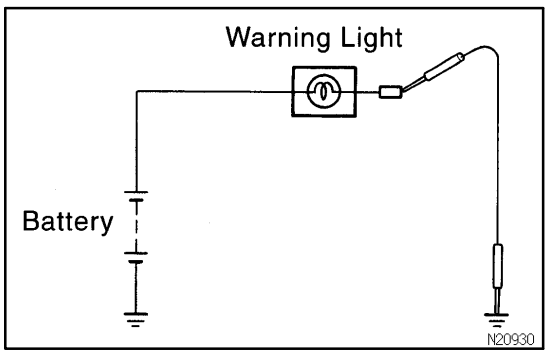


19. INSPECT BRAKE FLUID LEVEL WARNING SWITCH

(a) Check that there is no continuity between terminals with the switch OFF (float up).

(b) Check that there is continuity between terminals with the switch ON (float down).

If operation is not as specified, replace the switch.



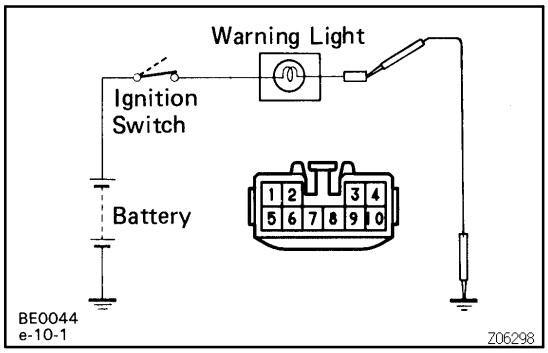
20. INSPECT OPEN DOOR WARNING LIGHT

(a) Disconnect the connector from the door courtesy switch and ground terminal on the wire harness side connector.

(b) Check that the warning light lights up.

If the warning light does not light up, test the bulb.

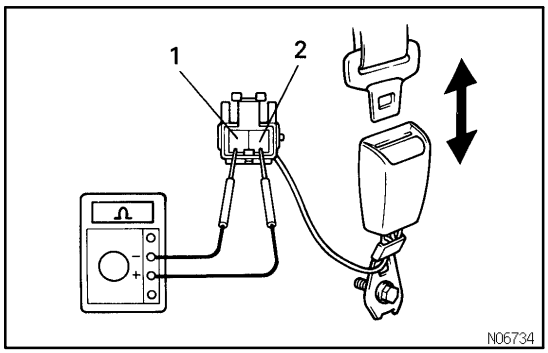
21. INSPECT DOOR COURTESY SWITCH (See page BE–38)



22. INSPECT SEAT BELT WARNING LIGHT

(a) Disconnect the connector from the seat belt warning relay.
(b) Ground terminal 9 on the wire harness side connector.
(c) Turn the ignition switch ON, and check that the warning light lights up.

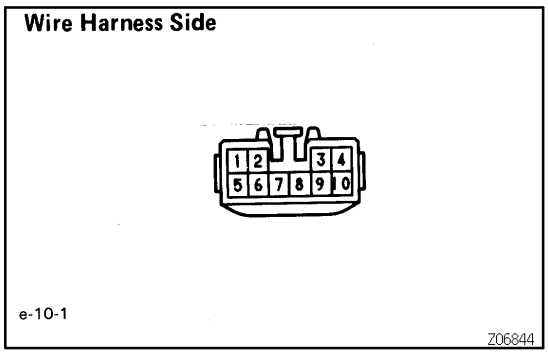
If the warning light does not light up, test the bulb.



23. INSPECT BUCKLE SWITCH

(a) Check that there is continuity between terminals with the switch ON (belt unfastened).
(b) Check that there is no continuity between terminals with the switch OFF (belt fastened).

If operation is not as specified, replace the seat belt inner.

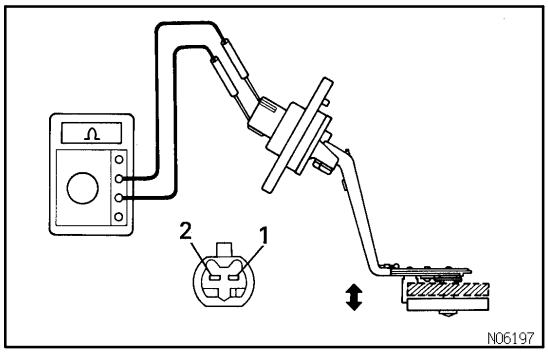


24. INSPECT SEAT BELT WARNING LIGHT RELAY CIRCUIT

Disconnect the connector from the relay and inspect the connector on the wire harness side, as shown in the chart.

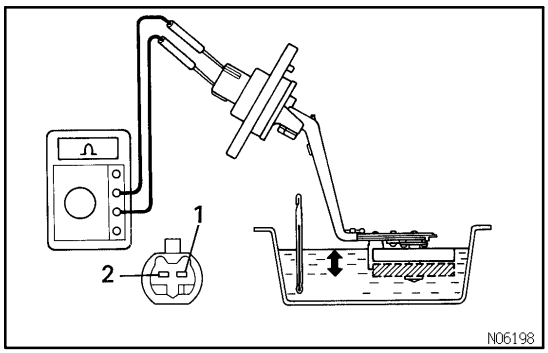
Tester connection	Condition	Specified condition
1 – Ground	Constant	Continuity
4 – Ground	Driver's seat belt position UNFASTEN	Continuity
4 – Ground	Driver's seat belt position FASTEN	No continuity
7 – Ground	Ignition key SET	Continuity
7 – Ground	Ignition key Remove	No continuity
8 – Ground	Driver's door position OPEN	Continuity
8 – Ground	Driver's door position CLOSE	No continuity
5 – Ground	Ignition switch position ON	Battery positive voltage
5 – Ground	Ignition switch position LOCK or ACC	No voltage
9 – Ground	Constant	Battery positive voltage

If circuit is as specified, try another relay. If the circuit is not as specified, refer to wiring diagram and inspect the circuits connected to other parts.



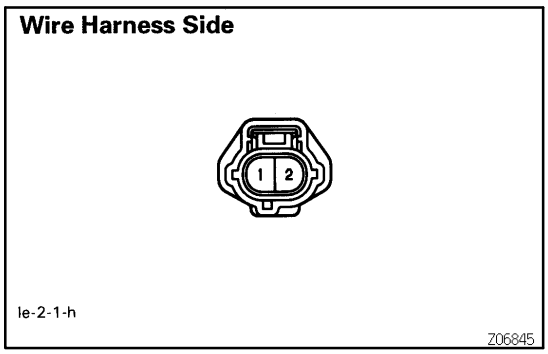
25. INSPECT ENGINE OIL LEVEL WARNING SWITCH CONTINUITY

(a) Check that there is continuity between terminals with the switch at each position.



(b) Heat the switch to above 60°C (140°F) in an oil bath.
(c) Check that there is continuity between terminals with the switch ON (float up).
(d) Check that there is no continuity between terminals with the switch OFF (float down).

If operation is not as specified, replace the switch.

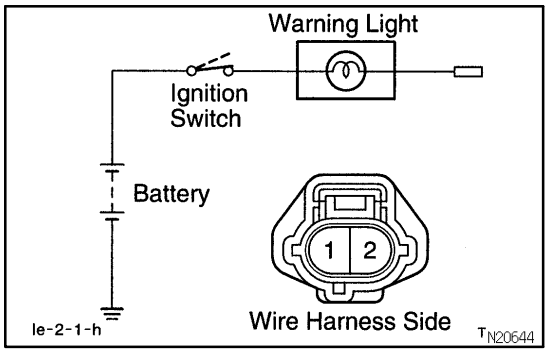


26. INSPECT ENGINE OIL LEVEL WARNING SWITCH CIRCUIT

Disconnect the switch connector and inspect the connector on wire harness side, as shown.

Tester connection	Condition	Specified condition
2 – Ground	Constant	Continuity

If continuity is not as specified, inspect the wire harness or ground point.



27. INSPECT ENGINE OIL LEVEL WARNING LIGHT

(a) Disconnect the connector from the switch.
(b) Turn the ignition switch ON. Check that the warning light lights up after approximately 40 seconds.

If the warning light does not light up, inspect the bulb or wire harness.