BE0LS–04

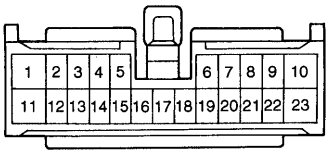
INSPECTION

1. INSPECT COMBINATION METER WIRING CIRCUIT

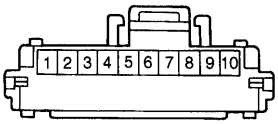
Disconnect connector A, connector B, connector and connector D from the combination meter and inspect the connectors on the wire harness side as follows.

Wire Harness Side

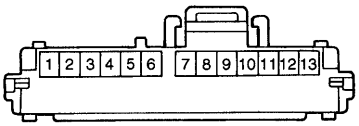
Connector ”A”



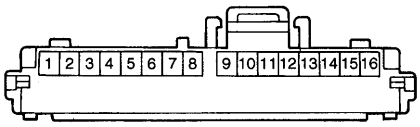
Connector ”B”



Connector ”C”



Connector ”D”



eh–23–1
j–10–1
j–13–1–A
j–16–1

Z19303

Connection	Check for	Tester Connection	Condition		Specified Condition
GAUGE Fuse	Voltage	A2 – Ground	Ignition switch position	ON	Battery positive voltage
				LOCK, ACC START	No voltage
Rheostat Light Control Volume	Voltage	A3 – Ground	Light Control switch at HEAD or TAIL and rheostat volume knob position.	ON (Rheostat knob turned to any position except fully clockwise)	Battery positive voltage or 5V or more
				OFF (Rheostat knob turned fully clockwise)	No voltage
Igniter	Voltage	A9 – Ground	Engine running		Voltage fluctuates
Ground	Continuity	A10 – Ground	Constant		Continuity
DOME Fuse	Voltage	A11 – Ground	Constant		Battery positive voltage
Starter Relay	Voltage	A12 – Ground	Ignition switch position	START ("P" or "N" position)	Battery positive voltage
				LOCK, ACC, ON	No voltage
Speed Sensor	Voltage	A13 – A14	Ignition switch ON	*1 Revolve propeller shaft	Below 1 V to 4.5 – 5.5 V
				*1 Stop propeller shaft	No voltage
Odometer and Twin Trip Switch	Continuity	A14 – A19	Clock/ambient temperature select switch	ON	Continuity
				OFF	No Continuity
		A14 – C10	A/B Switch	ON	Continuity
				OFF	No Continuity
		A14 – C11	Reset switch	ON	Continuity
				OFF	No Continuity
Door Courtesy Switch	Continuity	A15 – Ground	Driver's and Passenger's door	Open (ON)	Continuity
				Closed (OFF)	No Continuity
Fuel Sender Gauge	Resistance	A22 – D15	Float position	Full, Approx. 5.3 mm (0.21 in.)	Approx. 3Ω
				1/2, Approx. 120.9 mm (4.76 in.)	Approx. 30.8Ω
				Empty, Approx. 244.7 mm (9.63 in.)	Approx. 110Ω
Ground	Continuity	A23 – Ground	Constant		Continuity

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Connection	Check for	Tester Connection	Condition		Specified Condition
Ground	Continuity	B2 – Ground	Constant		Continuity
Engine Oil Level Warning Switch	Continuity	B8 – Ground	Oil temperature below approx. 55˚C (131˚F)		Continuity
			Oil temperature above approx. 55˚C (131˚F) and switch position	ON (float up)	Continuity
				OFF (float down)	No Continuity
Park/neutral Position Switch	Voltage	B10 – Ground	Ignition switch ON and shaft lever position	D	Battery positive voltage
HEAD Fuse (SC 400)	Voltage	C2 – Ground	Light control switch ”HEAD”	Dimmer switch ”HI” or ”Flasher”	Battery positive voltage
				Dimmer switch ”ON”	No voltage
Headlight Dimmer Switch	Voltage	C3	Constant (SC300)		Battery positive voltage
			Dimmer switch ”HI” or ”Flasher” (SC400)		Battery positive voltage
Headlight (SC400)	Continuity	C4 – Ground	Constant		Continuity
Headlight Dimmer Switch	Continuity	(SC400)	Dimmer switch ”HI” or ”Flasher”		Continuity
Park/neutral Position Switch	Voltage	C6 – Ground	Ignition switch ON and shaft lever position	P	Battery positive voltage
		C7 – Ground		R	Battery positive voltage
		C8 – Ground		N	Battery positive voltage
		C9 – Ground		2	Battery positive voltage
		C12 – Ground		L	Battery positive voltage
Electronically Controlled Transmission Pattern Select Switch	Voltage	C13 – Ground	Ignition switch ON and electronically controlled transmission pattern select switch	PWR	Battery positive voltage
				NORM	No voltage
O/D OFF Switch	Continuity	D4 – Ground	O/D OFF Switch	ON	Continuity
				OFF	No Continuity

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Connection	Check for	Tester Connection	Condition		Specified Condition
Window Washer Level Warning Switch	Continuity	D5 – Ground (CANADA)	ON (float down)		Continuity
			OFF (float up)		No continuity
Brake Fluid Level Warning Switch and Parking Brake Switch	Continuity	D8 – Ground	Brake fluid level warning switch	ON (float down)	Continuity
				OFF (float up)	No continuity
			Parking brake switch	ON (Depress the pedal)	Continuity
				OFF (Release the pedal)	No continuity
ECU–B	Voltage	D10 – Ground	Constant		Battery positive voltage
Generator "L" Terminal	Continuity	D12 – Ground	Engine stop		Continuity
	Voltage	D13 – Ground	Engine running		Battery positive voltage
Low Oil Pressure Warning Switch	Continuity	D14 – Ground	Engine condition	Running	No continuity
				Stop	Continuity
Fuel Sender Gauge	Continuity	D16 – Ground	Fuel remainder	Full	No continuity
				Empty	Continuity
*1 Jack up the vehicle					

If circuit is not as specified, inspect the circuits connected to other parts.

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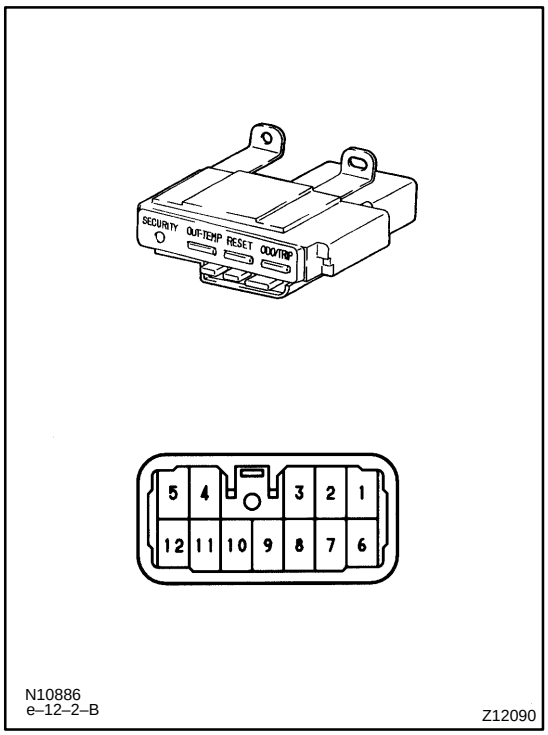


2. INSPECT ODOMETER AND TWIN TRIP SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
RESET	2 – 4	Continuity
A/B	1 – 4	Continuity
SECURITY	3 – 4	Continuity
SET	9 – 12	Continuity
HOUR	8 – 12	Continuity
MINUTE	7 – 12	Continuity
MODE/RESET	4 – 5	Continuity

If continuity is not as specified, replace the odometer and twin trip switch.

3. 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.

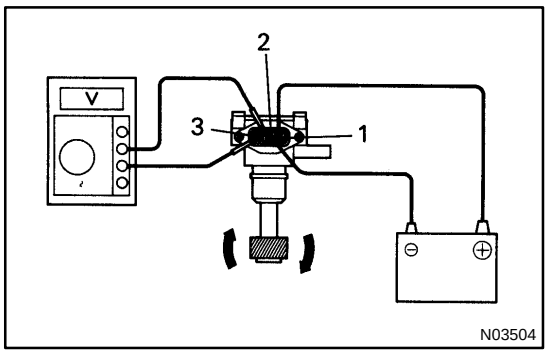
mph (USA)

Standard indication	Allowable range
20	18 – 24
40	38 – 44
60	56 – 66
80	78 – 88
100	98 – 110
120	118 – 132

km/h (CANADA)

Standard indication	Allowable range
20	17 – 24
40	38 – 46
60	57.5 – 67
80	77 – 88
100	96 – 109
120	115 – 130
140	134 – 151.5
160	153 – 173

If error is excessive, replace the speedometer.



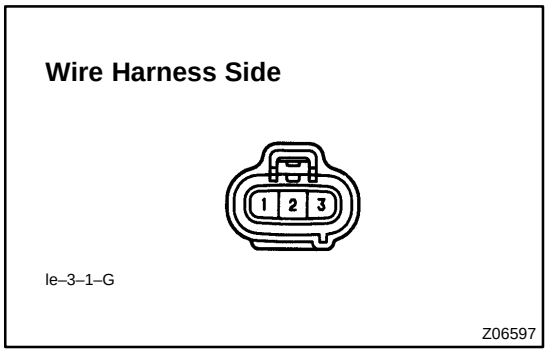
4. INSPECT NO.1 VEHICLE SPEED SENSOR OPERATION

(a) Connect the positive (+) lead from battery to terminal 1 and negative (–) lead to terminal 2.
(b) Connect the positive (+) lead from tester to terminal 3 and negative (–) lead to terminal 2.
(c) Revolve shaft.
(d) Check that there is voltage change from approx. 0 V to 11 V or more between terminal 2 and 3.

HINT:

The voltage change should be 4 times for every revolution of the vehicle speed sensor shaft.

If operation is not as specified, replace the sensor.



5. INSPECT NO.1 VEHICLE SPEED SENSOR CIRCUIT

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

Tester connection	Condition	Specified condition
1 – Ground	Ignition switch LOCK or ACC	No voltage
1 – Ground	Ignition switch ON	Battery positive voltage

If circuit is not as specified, inspect power source or wire harness.

6. INSPECT TACHOMETER (ON–VEHICLE)

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

NOTICE:

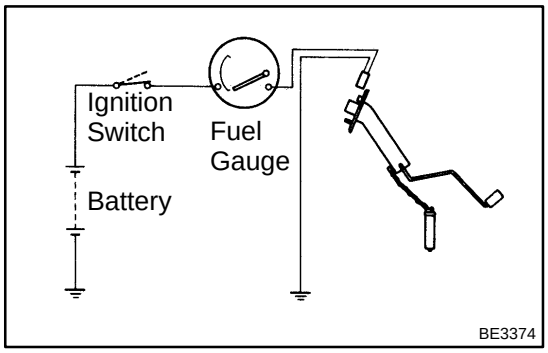
Reversing the connection of the tachometer will damage the transistors and diodes inside.

(b) Compare the tester and tachometer indications.

RPM (DC 13.5 V, 25 ˚C/ 77 ˚F)

Standard indication	Allowable range
700	610 – 750
1,000	900 – 1,000
2,000	1,850 – 2,150
3,000	2,800 – 3,200
4,000	3,800 – 4,200
5,000	4,800 – 5,200
6,500	5,750 – 6,250
7,000	6,700 – 7,300

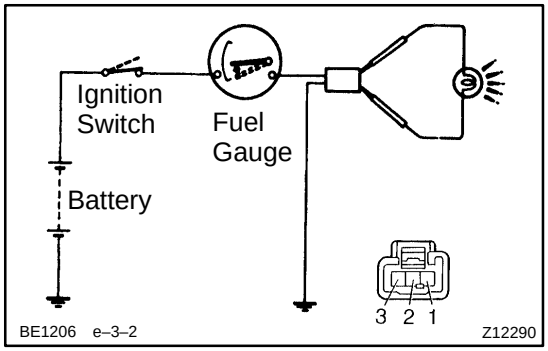
If error is excessive, replace the tachometer.



7. INSPECT FUEL RECEIVER GAUGE OPERATION

(a) Disconnect the connector from the sender gauge.

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



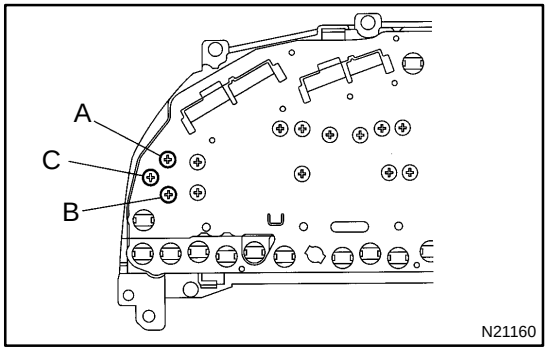
(c) Connect the terminals 1 and 3 on the wire harness side connector through a 3.4 W test bulb.

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

HINT:

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

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



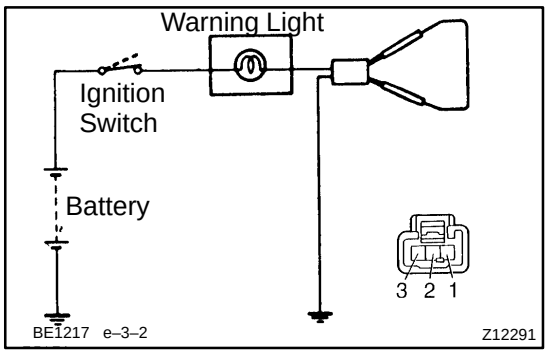
8. INSPECT FUEL RECEIVER GAUGE RESISTANCE

(a) Remove the 3 screws.

(b) Measure the resistance between terminals.

Between terminals	Resistance (Ω)
A – B	Approx. 91.3
A – C	Approx. 231.8
B – C	Approx. 270.8

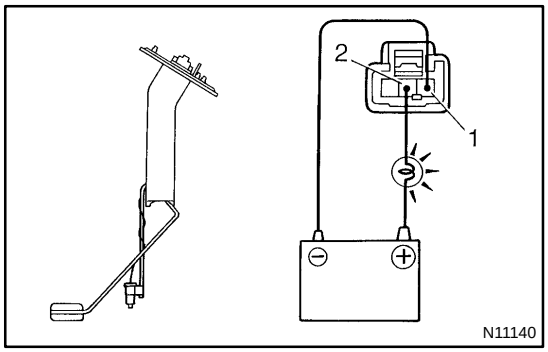
If resistance value is not as specified, replace the fuel receiver gauge.



9. INSPECT FUEL LEVEL WARNING LIGHT

(a) Disconnect the connector from the sender gauge.
(b) Connect terminals 1 and 3 on the wire harness side connector.
(c) Turn the ignition switch ON, check that the warning light lights up.

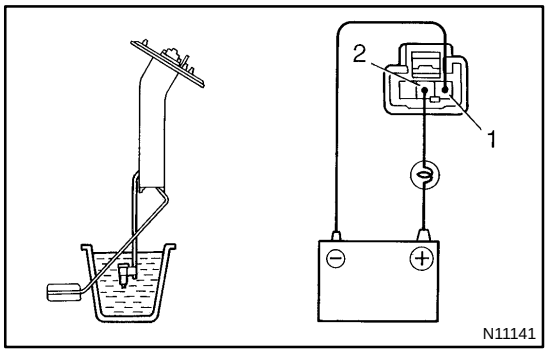
If the warning light does not light up, test the bulb or inspect the wire harness.



10. INSPECT FUEL LEVEL WARNING SWITCH

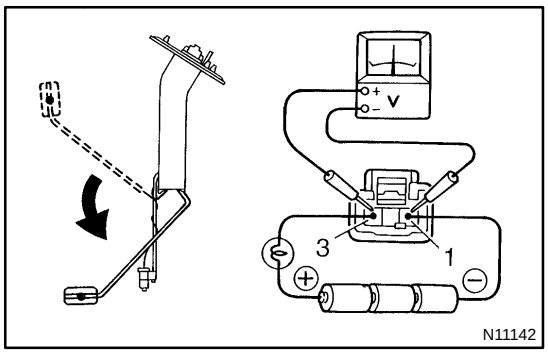
(a) Apply battery positive voltage between terminals 1 and 2 through a 3.4 W test bulb, check that the bulb lights up.

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



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

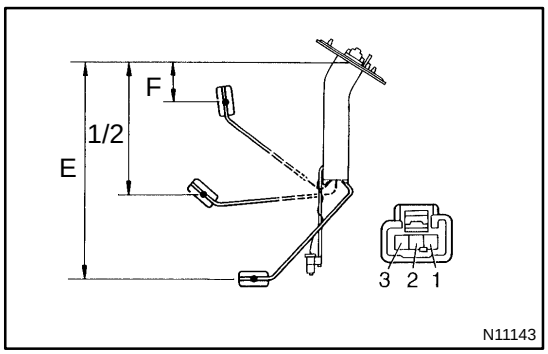
If operation is not as specified, replace the sender gauge.



11. 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 2 through a 3.4 W test bulb and the negative (–) lead to terminal 1.
(c) Check that the voltage rises between terminals 1 and 2 as the float is moved from the top to bottom position.

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

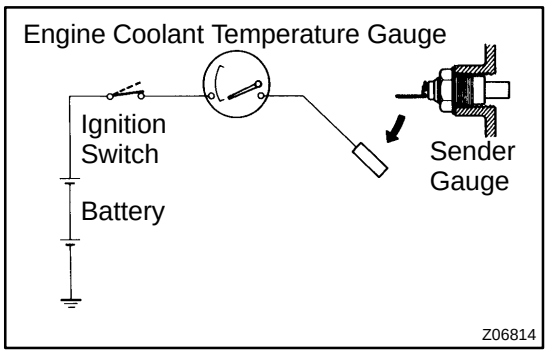


12. INSPECT FUEL SENDER GAUGE RESISTANCE

Measure the resistance between terminals 1 and 2 for each float position.

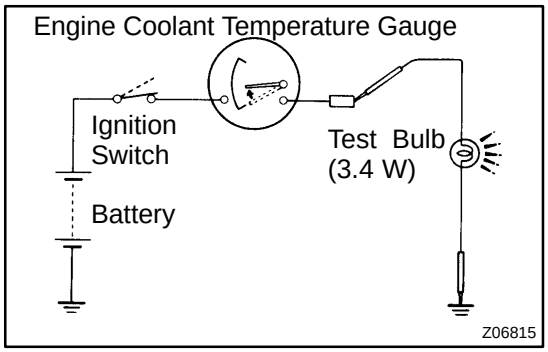
Float position mm (in.)	Resistance (Ω)
F: Approx. 71.8 (2.83)	Approx. 3
1/2: Approx. 184.8 (7.28)	Approx. 30.8
E: Approx. 304.6 (11.99)	Approx. 110

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



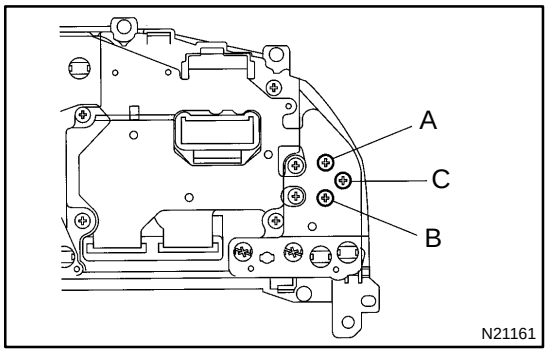
13. INSPECT ENGINE COOLANT TEMPERATURE RECEIVER GAUGE OPERATION

(a) Disconnect the connector from the sender gauge.
(b) Turn the ignition switch ON, 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, check that the bulb lights up and the receiver gauge needle moves toward 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.



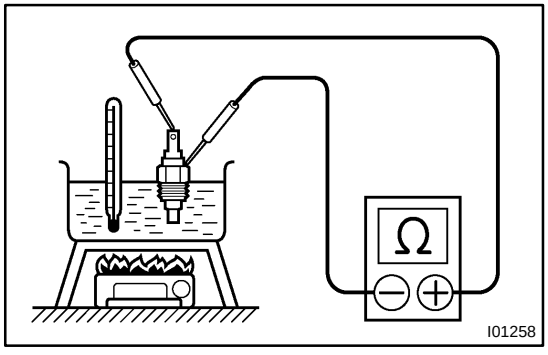
14. INSPECT ENGINE COOLANT TEMPERATURE RECEIVER GAUGE RESISTANCE

(a) Remove the 3 screws.
(b) Measure the resistance between terminals.

HINT:
Connect the test leads so the current from the ohmmeter can flow according to the chart order.

Between terminals	Resistance (Ω)
A – B	Approx. 54
A – C	Approx. 175.7
B – C	Approx. 229.7

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

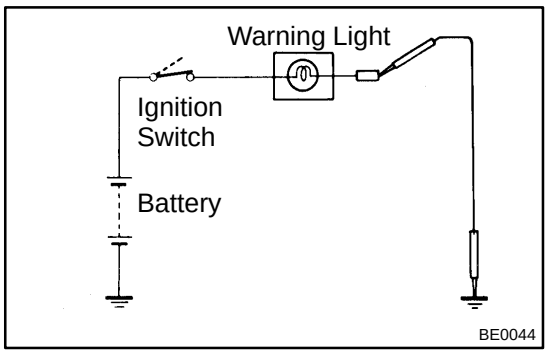


15. INSPECT ENGINE COOLANT TEMPERATURE SENDER GAUGE RESISTANCE

Measure the resistance between the terminal and gauge body.

Temperature °C(°F)	Resistance (Ω)
50 (122.0)	160 – 240
120 (248.0)	17.1 – 21.2

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

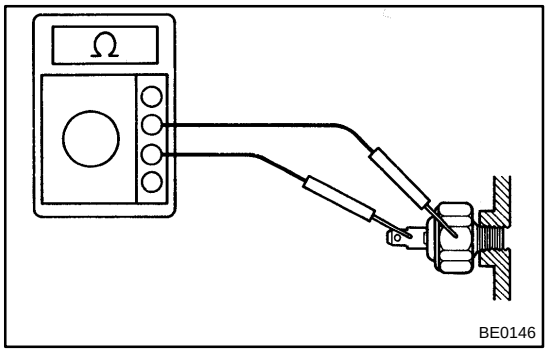


16. INSPECT LOW OIL PRESSURE WARNING LIGHT

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

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

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



17. INSPECT LOW OIL PRESSURE WARNING SWITCH

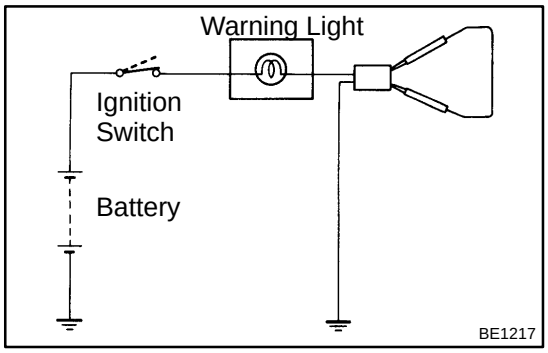
(a) Check that there is continuity between terminal and ground with the engine stopped.

(b) Check that there is no continuity between terminal and ground with the engine running.

HINT:

Oil pressure should be over 29 kPa (0.3 kg/cm, 4.3 psi).

If operation is not as specified, replace the switch.



18. INSPECT BRAKE WARNING LIGHT

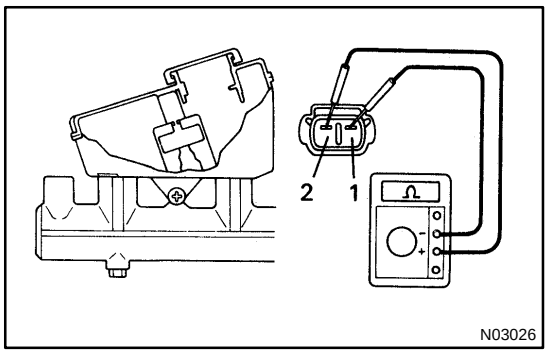
(a) Disconnect the connector from the brake fluid warning switch.

(b) Release the parking brake pedal.

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

(d) Start the engine, check that the warning light lights up.

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



19. INSPECT BRAKE FLUID LEVEL WARNING SWITCH

(a) Remove the reservoir tank cap and strainer.

(b) Disconnect the connector.

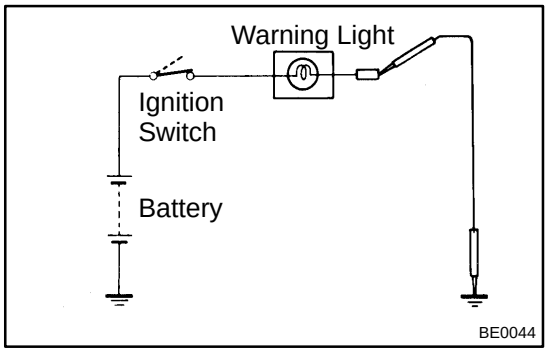
(c) Check that there is no continuity between terminals with the switch OFF (float up).

(d) Use syphon, etc. to take fluid out of the reservoir tank.

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

(f) Pour the fluid back in reservoir tank.

If operation is not as specified, replace the reservoir tank.



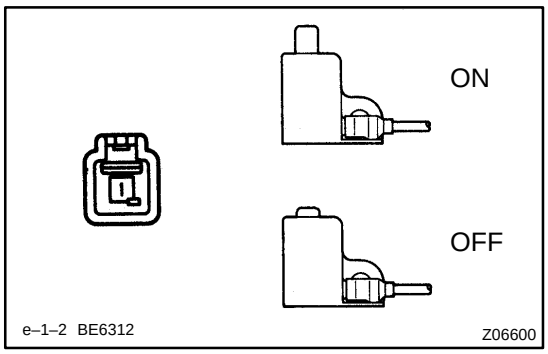
20. INSPECT PARKING BRAKE WARNING LIGHT

(a) Disconnect the connector from the parking brake switch and brake fluid warning switch.

(b) Ground terminal on the wire harness side connector.

(c) Start the engine, check that the warning light lights up.

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

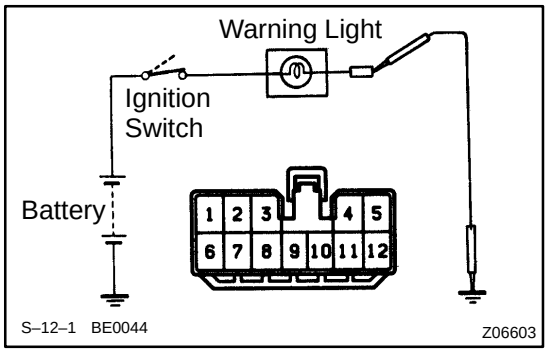


21. INSPECT PARKING BRAKE SWITCH

(a) Check that there is continuity between terminal and switch body with the switch ON (switch pin released).

(b) Check that there is no continuity between terminal and switch body with the switch OFF (switch pin pushed in.)

If continuity is not as specified, replace the switch or inspect ground point.



22. INSPECT REAR LIGHT WARNING LIGHT

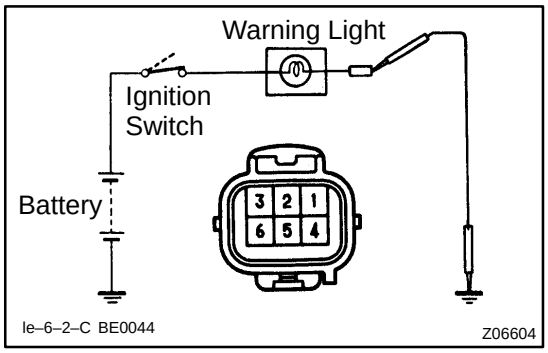
(a) Disconnect the connector from the light failure sensor and ground terminal 4 on the wire harness side connector.

(b) Start the engine, check that the warning light lights up.

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

23. INSPECT LIGHT FAILURE SENSOR

(See page BE–52)



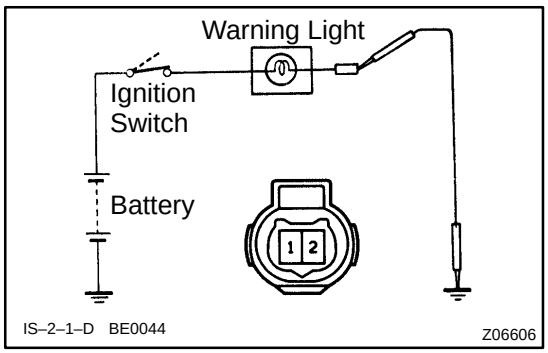
24. INSPECT OPEN DOOR WARNING LIGHT

Disconnect the connector from the door courtesy switch, and ground terminal 3 on the wire harness side connector and check that the warning light lights up.

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

25. INSPECT COURTESY SWITCH

(See page BE–47)



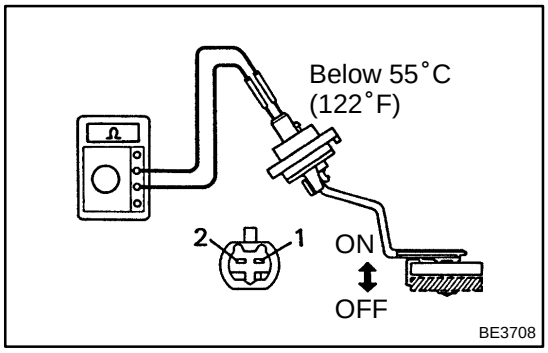
26. INSPECT ENGINE OIL LEVEL WARNING LIGHT

(a) Disconnect the connector from the switch.

(b) Ground terminal 1 on the wire harness connector.

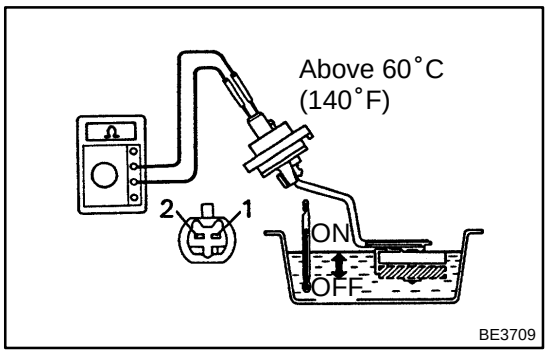
(c) Turn the ignition switch ON. Check that the warning light lights up approximately 40 seconds later.

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



27. INSPECT ENGINE OIL LEVEL WARNING SWITCH

(a) Check that there is continuity between terminal with the switch in 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).

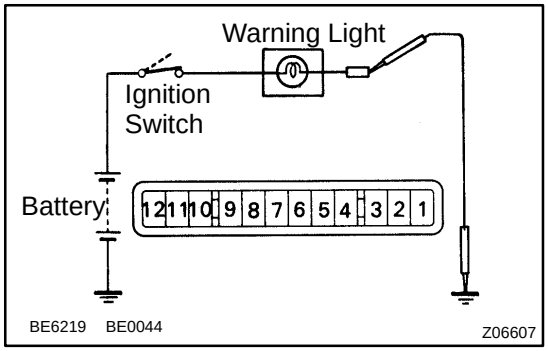
If operation is not as specified, replace the switch.

28. 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

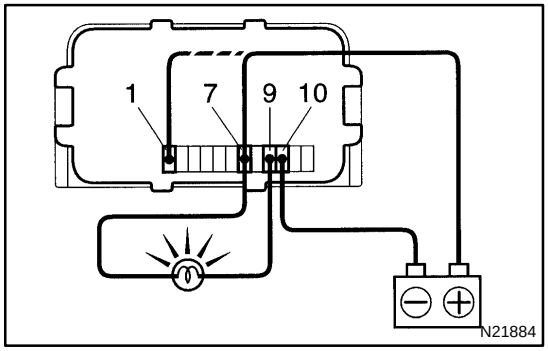
If continuity is not as specified, inspect the wire harness or ground point.



29. INSPECT SEAT BELT WARNING LIGHT

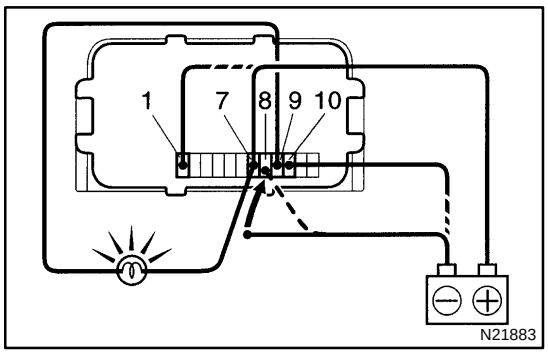
(a) Disconnect the connector from the seat belt warning relay.
(b) Ground terminal A9 on the wire harness side connector.
(c) Turn the ignition switch ON, check that the warning light lights up.

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



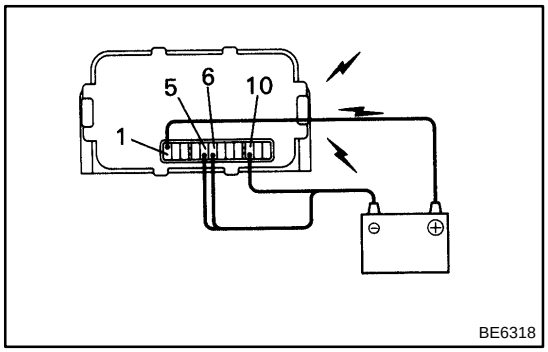
30. Seat belt warning system: INSPECT INTEGRATION RELAY OPERATION

(a) Connect the positive (+) lead from the battery to terminals A1 and A7.
(b) Connect the terminal A7 to terminal A9 through the 3.4 W test bulb.
(c) Connect the negative (–) lead from the battery to terminals A10.



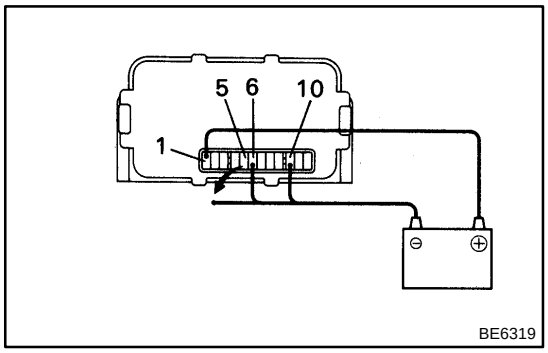
(d) Check that the bulb lights and the chime sounds for 4 – 8 seconds.
(e) Return to step (a), and operate the chime again.
(f) Connect the negative (–) lead from the battery to terminal A8.
(g) Check that the chime stops sounding.

HINT:
Check the chime within a period of 4 to 8 seconds.

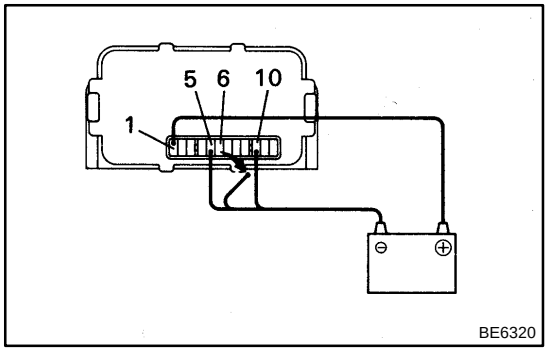


31. Key Unlock Warning system: INSPECT INTEGRATION RELAY OPERATION

(a) Connect the positive (+) lead from the battery to terminal A1.
(b) Connect the negative (–) lead from the battery to terminals A5, A6 and A10.
(c) Check the chime sounds.

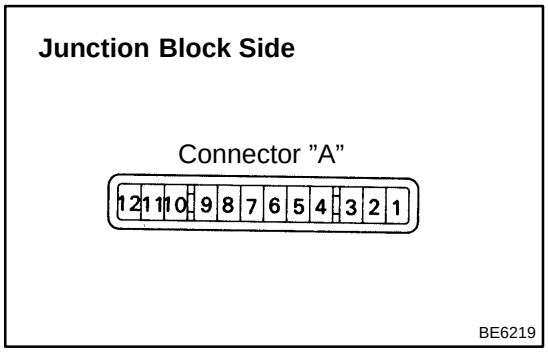


(d) Disconnect the negative (–) lead from the battery to terminals A5.
(e) Check that the chime stops sounding.



(f) Connect the negative (–) lead from the battery to terminals A5.
(g) Disconnect the negative (–) lead from the battery to terminals A6.
(h) Check that the chime stops sounding.

If operation is not as specified, replace the relay.

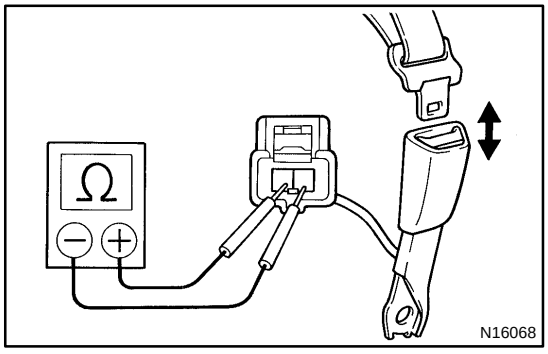


32. INSPECT INTEGRATION RELAY CIRCUIT

Remove the connector from relay and inspect connector on the wire harness side, as shown.

Tester connection	Condition	Specified condition
A5 – Ground	Ignition key removed	No continuity
A5 – Ground	Ignition key set	Continuity
A6 – Ground	Driver's door CLOSE	No continuity
A6 – Ground	Driver's door OPEN	Continuity
A8 – Ground	Driver's buckle switch OFF (Seat best unfastened)	No continuity
A8 – Ground	Driver's buckle switch ON (Seat best fastened)	Continuity
A10 – Ground	Constant	Continuity
A1 – Ground	Constant	Battery positive voltage
A7 – Ground A9 – Ground	Ignition switch OFF or ACC	No voltage
A7 – Ground A9 – Ground	Ignition switch ON	Battery positive voltage

If continuity is not as specified, inspect the circuits connected to other parts.

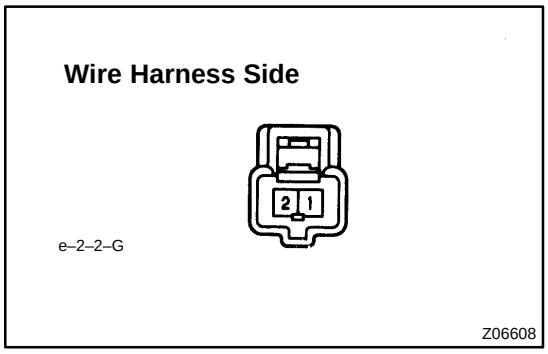


33. INSPECT BUCKLE SWITCH

(a) Check that there is continuity between terminals on the switch side connector with the switch ON (belt fastened).

(b) Check that there is no continuity between terminals on the switch side connector with the switch OFF (belt unfastened).

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

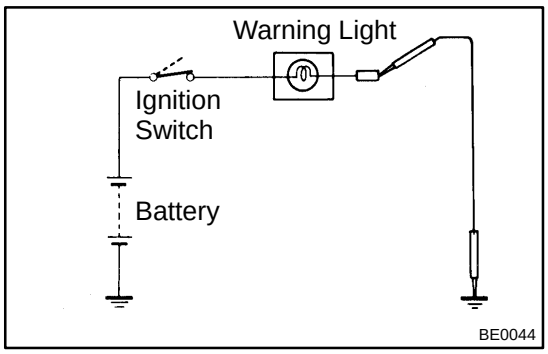


34. INSPECT BUCKLE SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
–	Turn the ignition switch ON	Chime sounds for 4 – 8 sec.
–	Ground terminal 2 and turn the ignition switch ON	No chime sound
1 – Ground	Constant	Continuity

If the circuit is not as specified, inspect the circuits connected to other parts.

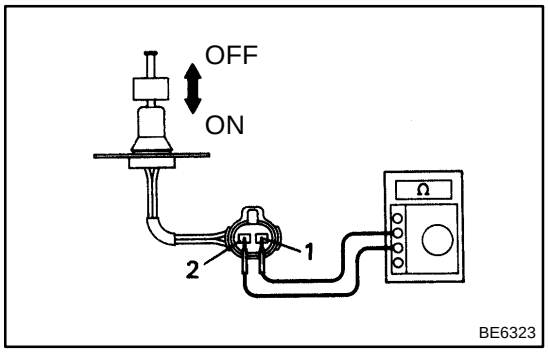


35. INSPECT WINDOW WASHER LEVEL WARNING LIGHT

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

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

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



36. INSPECT WINDOW WASHER 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.