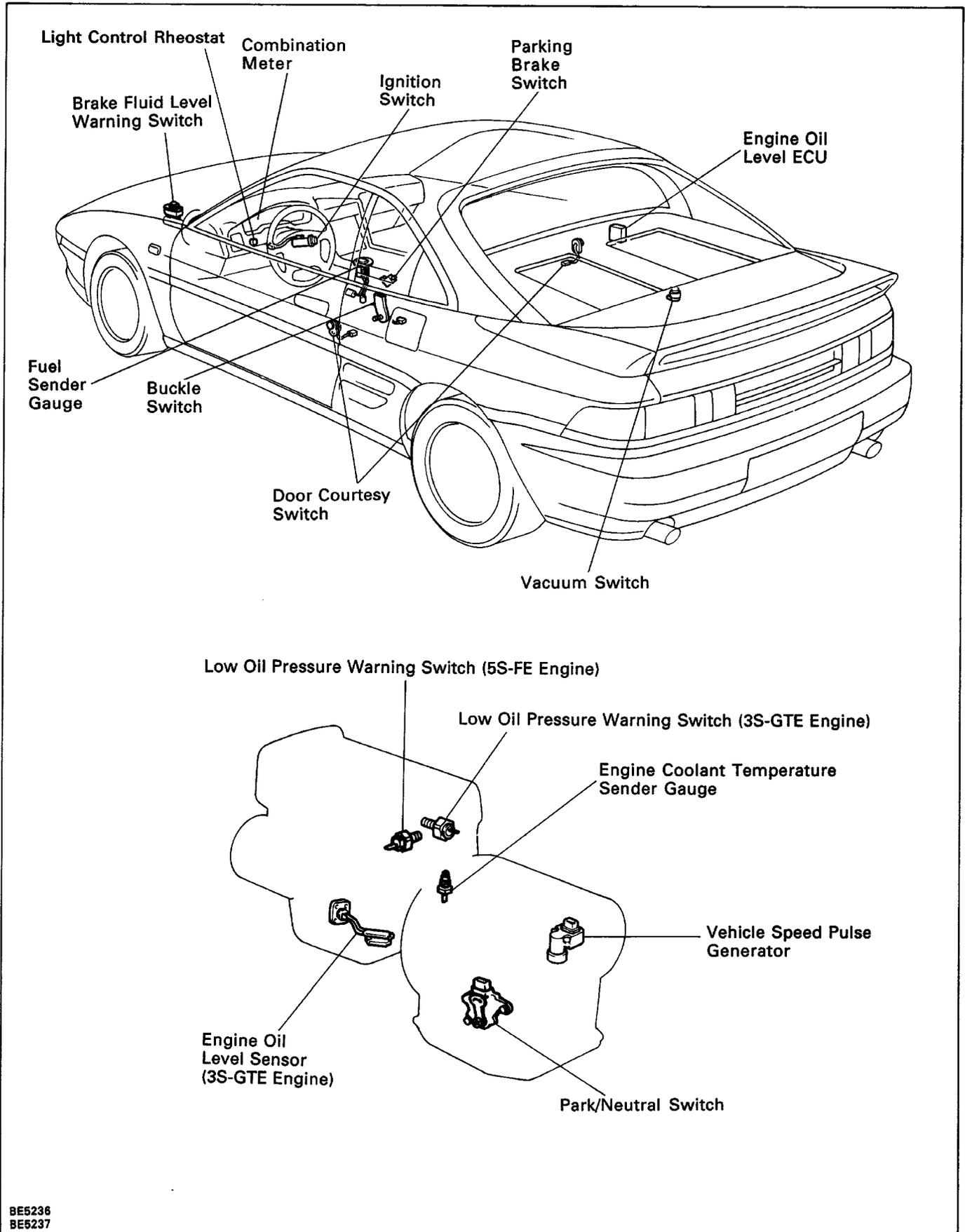
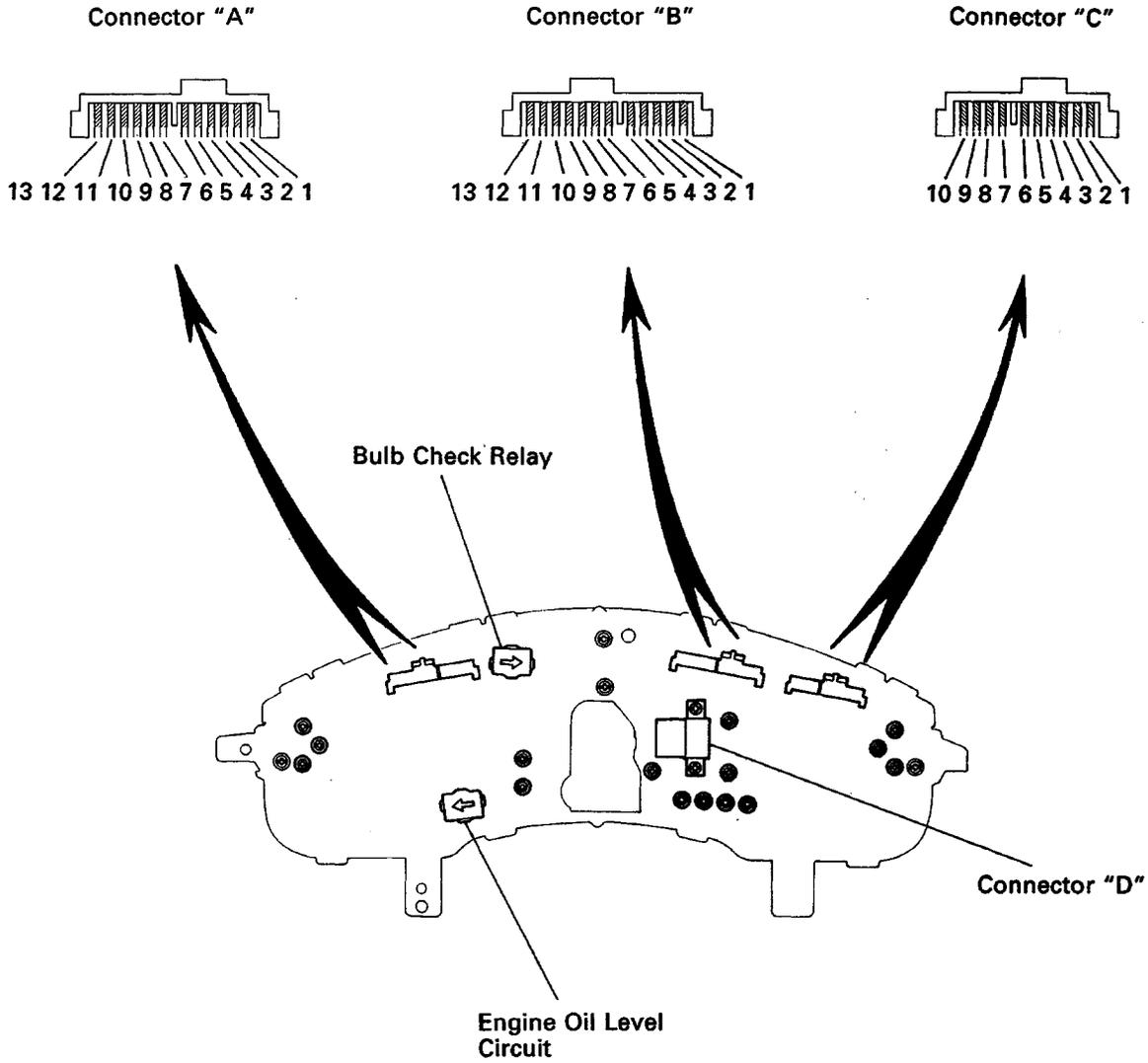
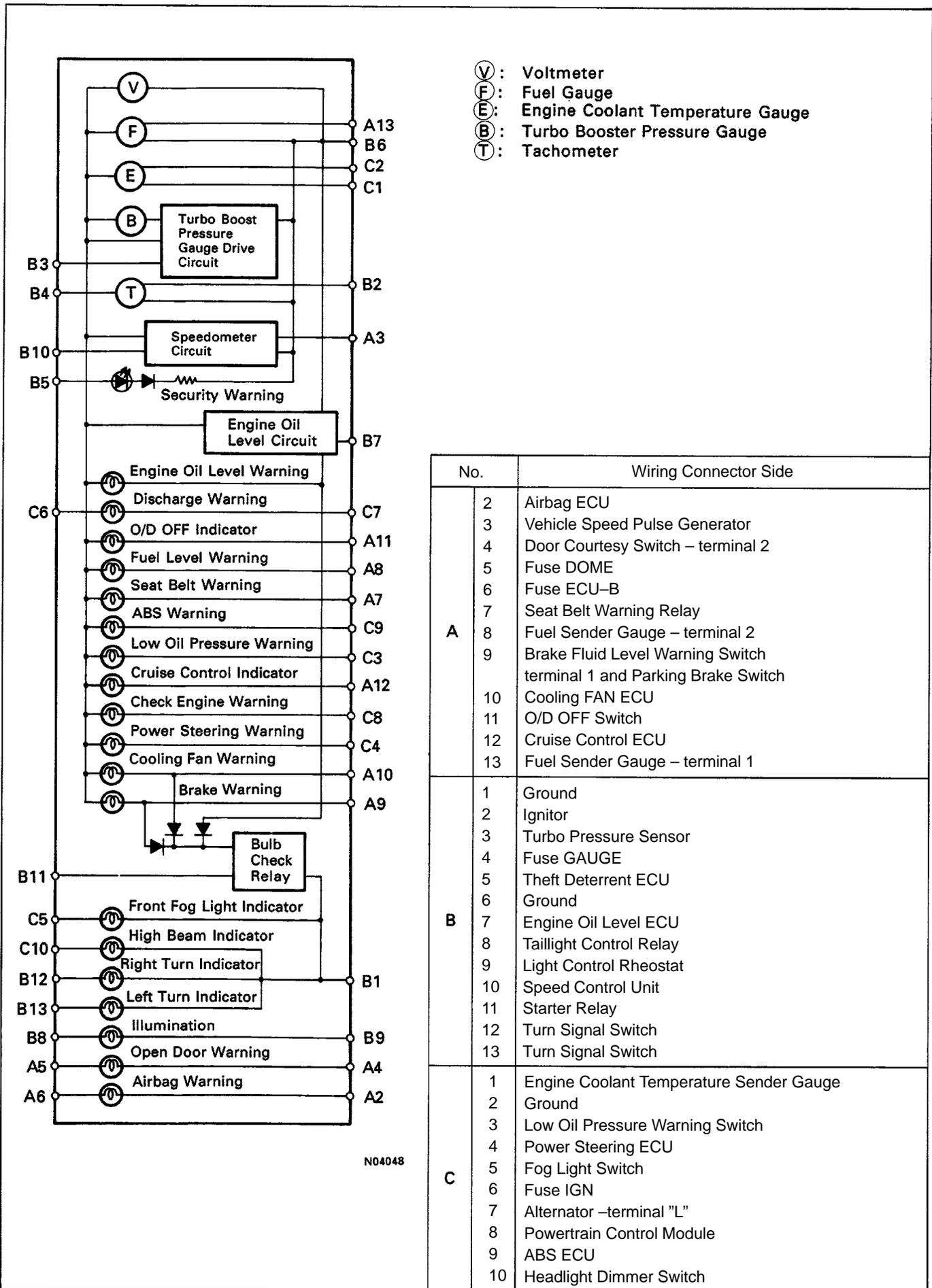


COMBINATION METER PARTS LOCATION



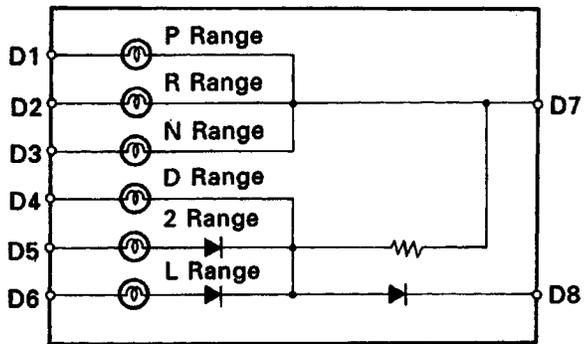
METER CIRCUIT





SHIFT POSITION INDICATOR

Connector "D"



No.		Wiring Connector Side
D	1	Park/Neutral Switch
	2	Park/Neutral Switch
	3	Park/Neutral Switch
	4	Park/Neutral Switch
	5	Park/Neutral Switch
	6	Park/Neutral Switch
	7	Ground
	8	TAIL Fuse

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N04049

TROUBLESHOOTING

You will find the troubles easier using the table well shown below. In this table, each number shows the priority of causes in troubles. Check each part in order. If necessary, replace these parts.

See page	BE-3	BE-68	BE-73	IG-6, 26	BE-75	BE-74	BE-74	BE-76	BE-76	BE-81	BE-82	BE-81	BE-3	BE-83	-	-	-
Part name	Gauge Fuse	Combination Meter Wiring Circuit	Vehicle Speed Pulse Generator	Igniter	Fuel Sender Gauge	Fuel Receiver Gauge	Voltmeter	Engine Coolant Temperature Sender Gauge	Engine Coolant Temperature Receiver Gauge	Turbo Boost Pressure Gauge	Turbo Pressure Sensor	Turbo Meter Drive Circuit	TAIL Fuse	Light Control Rheostat	Bulb	Wire Harness	Other Parts
Trouble																	
Tachometer, Fuel Gauge and Water Temperature Gauge do not operate	1	2														3	4*1
Speedometer does not operate.			1													2	3*2
Tachometer does not operate.		1**		3												2	4*4
Voltmeter does not operate.							1									2	3
Fuel Gauge does not operate or abnormal operation.		3			2	1										4	
Engine Coolant Temperature Gauge does not operate or abnormal operation.		3						2	1							4	
Turbo boost pressure gauge does not operate.										1	2	3				4	5
All illumination lights do not light up.													1	2		3	4**
Brightness does not change even when rheostat turned.														1		2	
Only one illumination light does not light up.															1	2	

*1 Refer to BE-68 inspect the meter circuit plate.

*2 Inspect the speedometer driven gear and drive gear or try another speedometer.

*3 Inspect the B4 terminal.

*4 Refer to BE-68 inspect the meter circuit plate or try another tachometer.

*5 Refer to BE-13 inspect the "Taillight System".

WARNING LIGHTS AND WARNING CHIME

See page	BE-3	BE-3	BE-3	BE-3	BE-78	BE-75	BE-77	BE-77	BE-83	BE-79	BE-79	BE-49	BE-68	-	-	-
Part name	GAUGE Fuse	IG2 Fuse	ECU-B Fuse	DOME Fuse	Low Oil Pressure Warning Switch	Fuel Level Warning Switch	Engine Oil Level Sensor	Engine Oil Level ECU	Light Control Rheostat	Brake Fluid Level Warning Switch	Parking Brake Switch	Door Courtesy Switch	Combination meter Wiring Circuit	Bulb	Wire Harness	Other Parts
Trouble																
Warning lights do not light up. (Except. Discharge, Airbag Door)	1												2 ^{*1}		3	
Low oil pressure warning light does not light up.					3								2 ^{**}	1	4	
Fuel level warning light does not light up.						3							2 ^{**}	1	4	
ABS Warning light does not light up.														1	3	2 ^{*4}
Check engine warning light does not light up.														1	3	2 ^{**}
Seat belt warning light does not light up.														1	2	
Discharge warning light does not light up.		1												2	3	4 ^{**}
Engine oil level warning light does not light up.							2	3						1	4	
Meter illumination lights do not light up.									1					2	3	
Brake warning light does not light up.										4	3		2 ^{**}	1	6	5 ^{**}
Airbag warning light does not light up.			1											2	3	4 ^{**}
Open door warning light does not light up.				1								4	3	2	5	

*1 Inspect B4 terminal.

*2 Inspect C3 terminal.

*3 Inspect A8 terminal.

*4 Inspect ABS ECU.

*5 Inspect Powertrain Control Module

*6 Inspect Bulb Check Relay and Alternator.

*7 Inspect the "Taillight System", "Stop Light System".

*8 Inspect A9 terminal.

*9 Inspect Bulb Check Relay.

*10 Inspect Airbag ECU.

INDICATOR LIGHTS

See page	BE-3	-	AX-34	AX-35	BE-83	BE-68	-	-
Part name	GAUGE Fuse	Bulb	O/D OFF Switch	Park/Neutral Switch	Light Control Rheostat	Combination Meter Wiring Circuit	Wire Harness	Other Parts
Trouble								
O/D OFF indicator light does not light up.		1	3			2 ^{*1}	4	
Cruise control indicator light does not light up.		1					3	2 ^{**}
High beam indicator light does not light up.		1				2 ^{**}	3	4 ^{**}
Turn indicator light does not light up.		1				2 ^{**}	3	4 ^{**}
Shift indicator lights do not light up. (All)		1		3		2 ^{**}	4	
Shift indicator lights do not light up. (L. 2. D)		1		3	4	2 ^{**}	5	
Only one shift indicator does not light up.		1				2	3	
Indicator lights do not light up. (Except. Turn, HI-beam)	1						2	

*1 Inspect Terminal A11.

*2 Inspect Cruise Control ECU.

*3 Inspect C10 and B1 terminal.

*4 Inspect "Headlight System".

*5 Inspect B12, B13 and B1 terminal.

*6 Inspect "Turn Signal and Hazard Warning System".

*7 Inspect terminal 13 and 1.

*8 Inspect terminal 1, 2, 3, 4, 5, 6, 7 and 8.

*9 Inspect terminal 4, 5, 6 and 8.

(mph)

Standard indication	Allowable range	
	3S-GTE	5S-FE
20	18.5 - 21.5	18.5 - 21.5
40	38 - 41.5	38 - 41.5
60	58 - 62	57.5 - 61.5
80	78 - 82.5	77.5 - 82
100	98 - 103	97 - 102
120	118 - 123.5	116.5 - 122
140	138 - 144	136.5 - 142.5

(km/h)

Standard indication	Allowable range
20	18 - 23
40	40 - 44
60	60 - 64.5
80	80 - 85
100	100 - 105
120	120 - 125.5
140	140 - 146
160	160 - 167
180	180 - 188
200	200 - 209
220	220 - 230
240	240 - 251

SPEEDOMETER SYSTEM SPEEDOMETER INSPECTION

INSPECT SPEEDOMETER (ON-VEHICLE)

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

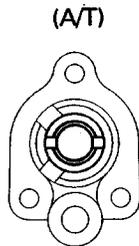
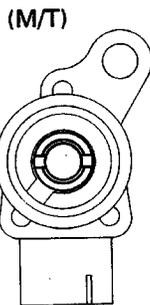
HINT: The wear and tire over or under inflation will increase the indication error.

If error is excessive, replace the speedometer.

- Check the speedometer for pointer vibration and abnormal noise.

HINT: Pointer vibration can be caused by a loose speedometer cable.

Vehicle Speed Pulse Generator Shaft



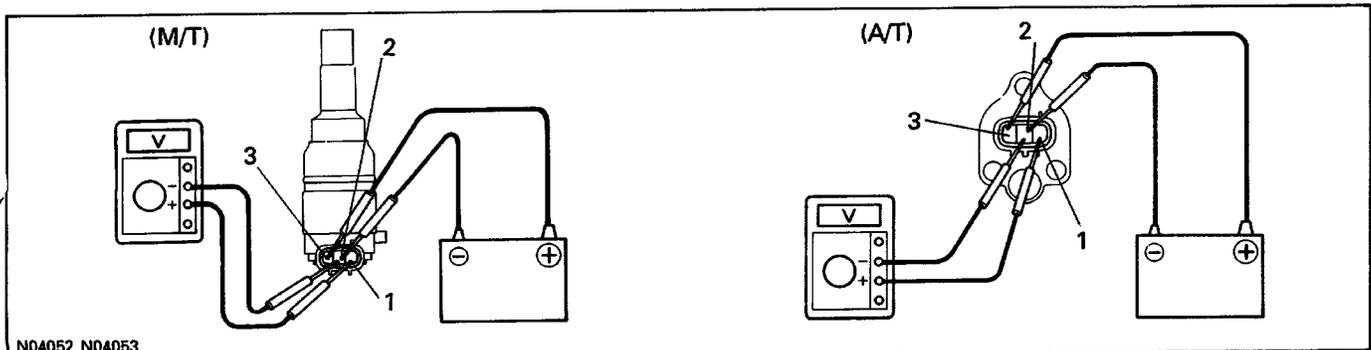
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VEHICLE SPEED PULSE GENERATOR VEHICLE SPEED PULSE GENERATOR INSPECTION

INSPECT VEHICLE SPEED PULSE GENERATOR

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

HINT: The voltage change should be 4 times per each revolution of the vehicle speed pulse generator shaft. If operation is not as specified, replace the generator.



DC 13.5V, 25°C (77°F) rpm	
Standard indication	Allowable range
700	630 - 770
3,000	2,800 - 3,200
5,000	4,800 - 5,200
7,000	6,700 - 7,300

TACHOMETER SYSTEM

TACHOMETER INSPECTION

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.

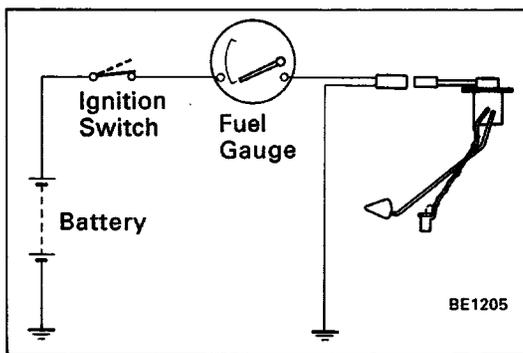
VOLTMETER SYSTEM

VOLTMETER INSPECTION

INSPECT VOLTMETER (ON-VEHICLE)

Compare the tester and voltmeter indications.

If error is excessive, replace the voltmeter.

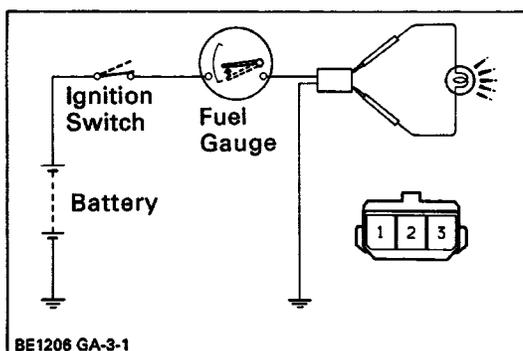


FUEL GAUGE SYSTEM

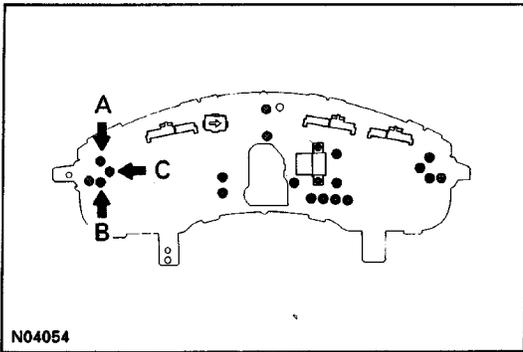
FUEL RECEIVER GAUGE INSPECTION

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 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.

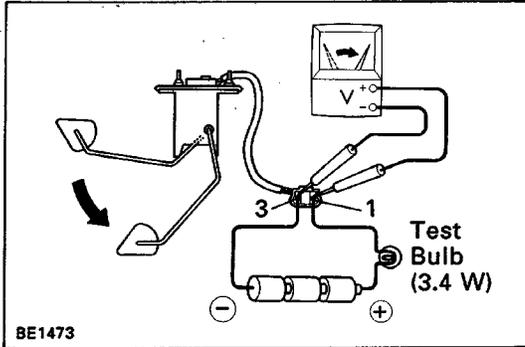


RESISTANCE

Measure the resistance between terminals.

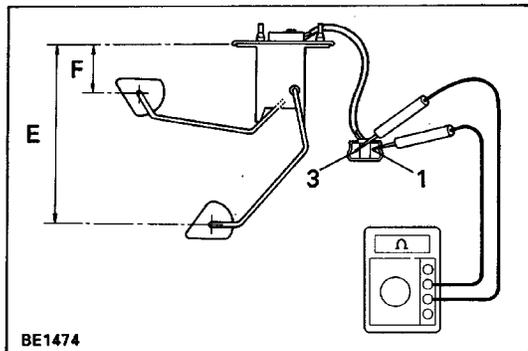
Between terminals	Resistance (Ω)
A-B	Approx. 101.9
A-C	Approx. 203.2
B-C	Approx. 101.3

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



FUEL SENDER GAUGE INSPECTION OPERATION

- Connect a series of three 1.5V dry cell batteries.
- Connect the positive W lead from the dry cell batteries to terminal 1 through a 3.4 w test bulb and the negative H lead to terminal 3.
- Check that the voltage rises between terminals 1 and 3 as the float is moved from the top to bottom position.

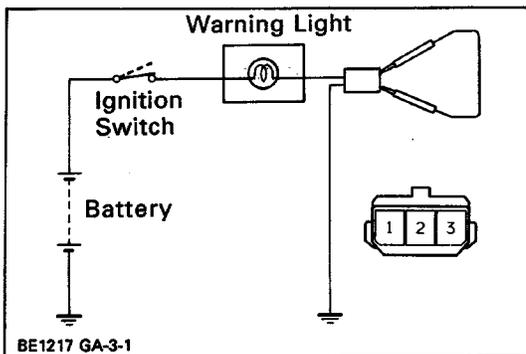


RESISTANCE

Measure the resistance between terminals 1 and 3 for each float position.

Float position mm (in.)	Resistance (Ω)
F	Approx. 59.9 (2.358)
E	Approx. 228.1 (8.980)

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

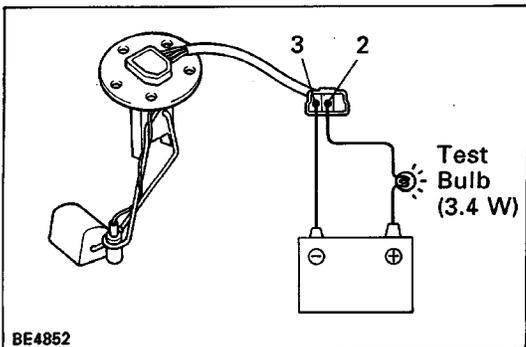


FUEL LEVEL WARNING SYSTEM

FUEL LEVEL WARNING LIGHT INSPECTION INSPECT WARNING LIGHT

- Disconnect the connector from the sender gauge.
- Connect terminals 2 and 3 on the wire harness side connector.
- Turn the ignition switch ON, check that the warning light lights up.

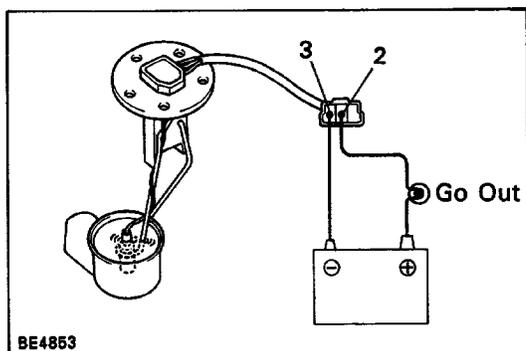
If the warning light does not light up, test the bulb.



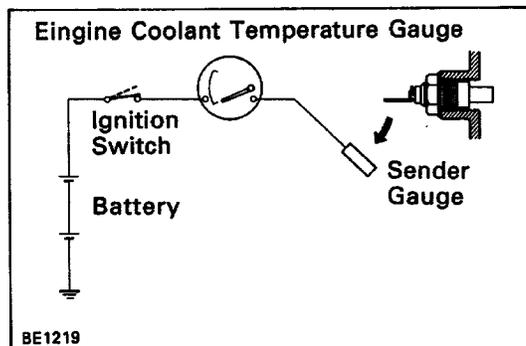
FUEL LEVEL WARNING SWITCH INSPECTION INSPECT WARNING SWITCH

- Apply battery voltage between terminals 2 and 3 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.



ENGINE COOLANT TEMPERATURE GAUGE SYSTEM

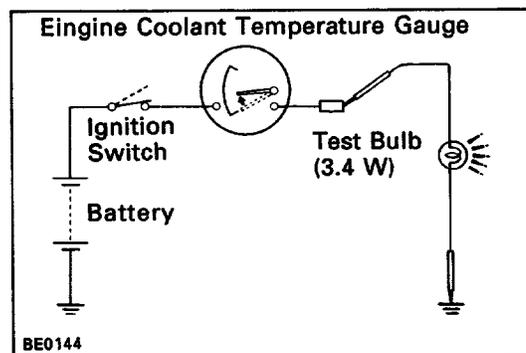
ENGINE COOLANT TEMPERATURE RECEIVER GAUGE INSPECTION

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 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.



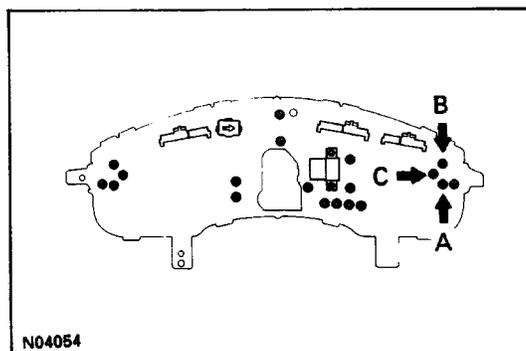
RESISTANCE

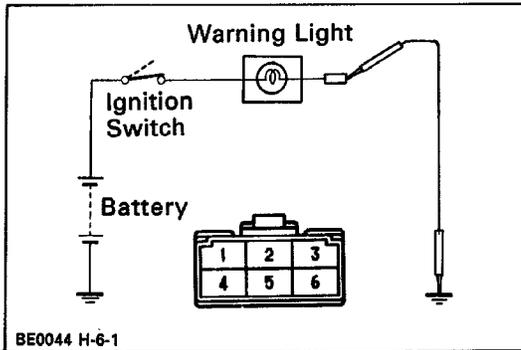
Measure the resistance between terminals.

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

Between terminals	Resistance (Ω)
A-B	Approx. 54
A-C	Approx. 146.2
B-C	Approx. 200.2

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





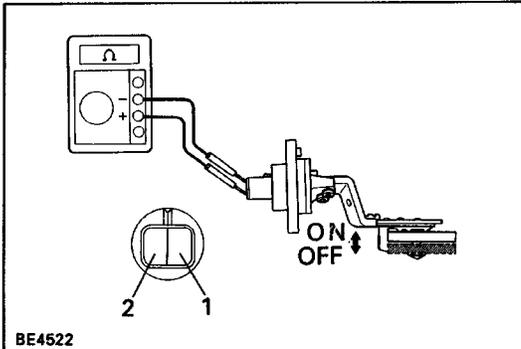
ENGINE OIL LEVEL WARNING SYSTEM

ENGINE OIL LEVEL WARNING LIGHT INSPECTION

INSPECT WARNING LIGHT

- Disconnect the connector from the engine oil level ECU.
- Ground terminal 1 on the wire harness side connector.
- Turn the ignition switch ON, check that the warning light lights up.

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



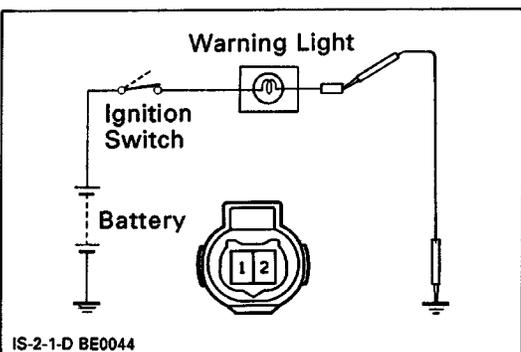
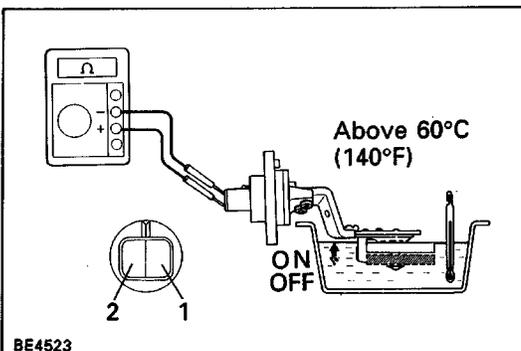
ENGINE OIL LEVEL WARNING SENSOR INSPECTION

INSPECT ENGINE OIL LEVEL WARNING SENSOR

- Check that there is continuity between terminals with the switch each position.

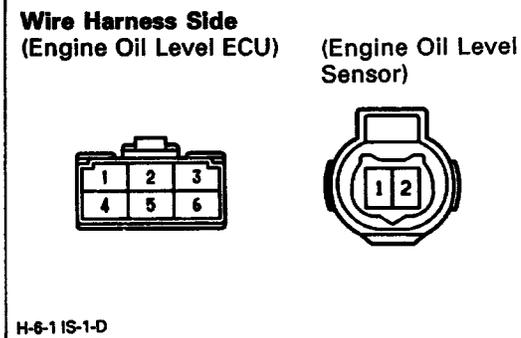
- Heat the switch to above 60°C (140°F) in an oil bath.
- Check that there is continuity between terminals with the switch ON (float up).
- Check that there is no continuity between terminals with the switch OFF (float down).

If operation is not as specified, replace the switch.



ENGINE OIL LEVEL ECU INSPECTION OPERATION

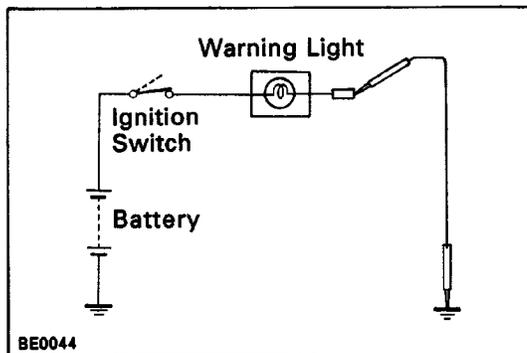
- Disconnect the connector from the engine oil level sensor.
 - Ground terminal 1 on the wire harness side connector.
 - Turn the ignition switch ON, check that the warning light lights up approximately 40 seconds later.
- If operation is not as specified, inspect the relay circuit.

**RELAY CIRCUIT**

- (a) Disconnect the connectors from the engine oil level ECU and engine oil level sensor.
- (b) Inspect the connectors on the wire harness side as shown in the chart.

Check for	Tester connection	Condition		Specified value
Continuity	2/6-1/2	Constant		Continuity
	5/6-2/2	Constant		Continuity
Voltage	3/6 - Ground	Engine condition	Stopped	No voltage
			Running	Battery voltage
	6/6 - Ground	Ignition switch position	LOCK or ACC	No voltage
			ON	Battery voltage

If circuit is as specified, replace the engine oil level ECU,

**LOW OIL PRESSURE WARNING SYSTEM****LOW OIL PRESSURE WARNING LIGHT INSPECTION****INSPECT WARNING LIGHT**

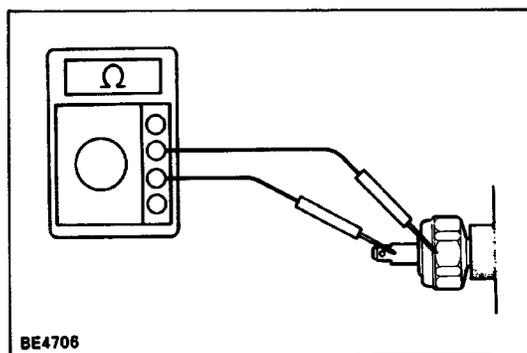
- (a) Disconnect the connector from the warning switch and ground terminal on the wire harness side connector.
 - (b) Turn the ignition switch ON, check that the warning light lights up.
- If the warning light does not light up, test the bulb.

LOW OIL PRESSURE WARNING SWITCH INSPECTION**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.

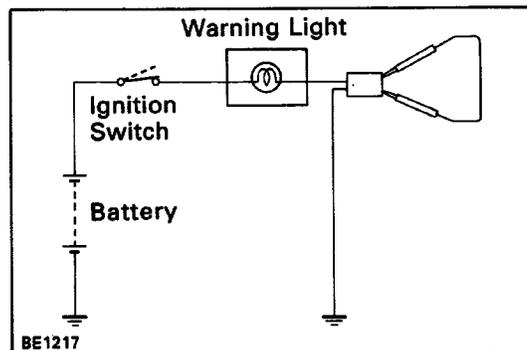
HINT: Oil pressure should be over 49 kPa (0.5 kgf/cm², 7.1 psi).

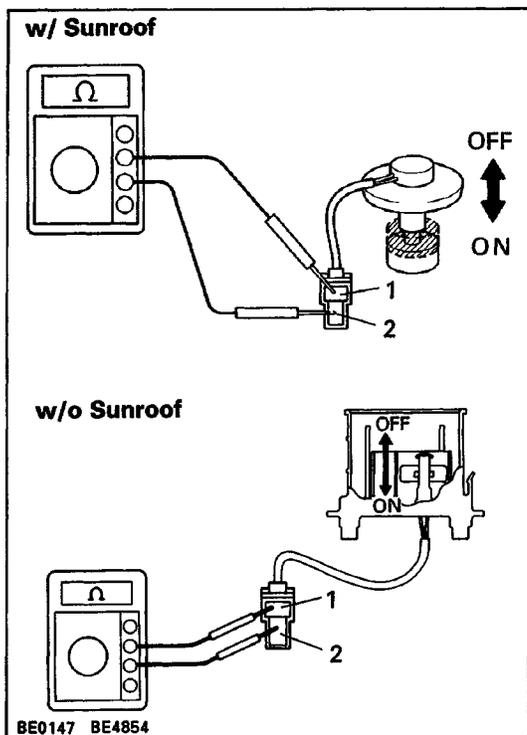
If operation is not as specified, replace the switch.

**BRAKE WARNING SYSTEM****BRAKE WARNING LIGHT INSPECTION****INSPECT WARNING LIGHT**

- (a) Disconnect the connectors from the brake fluid level warning switch and parking brake switch.
- (b) Connect terminals on the wire harness side of the level warning switch connector.
- (e) Turn the ignition switch ON, check that the warning light lights up.

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

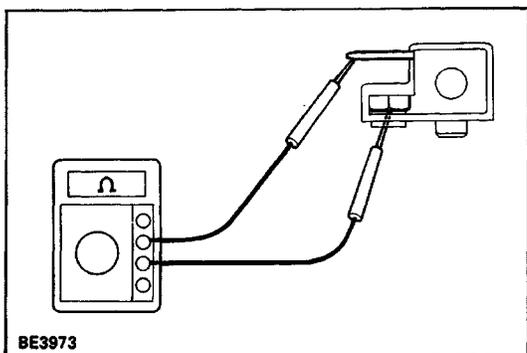




BRAKE FLUID LEVEL WARNING SWITCH INSPECTION

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.

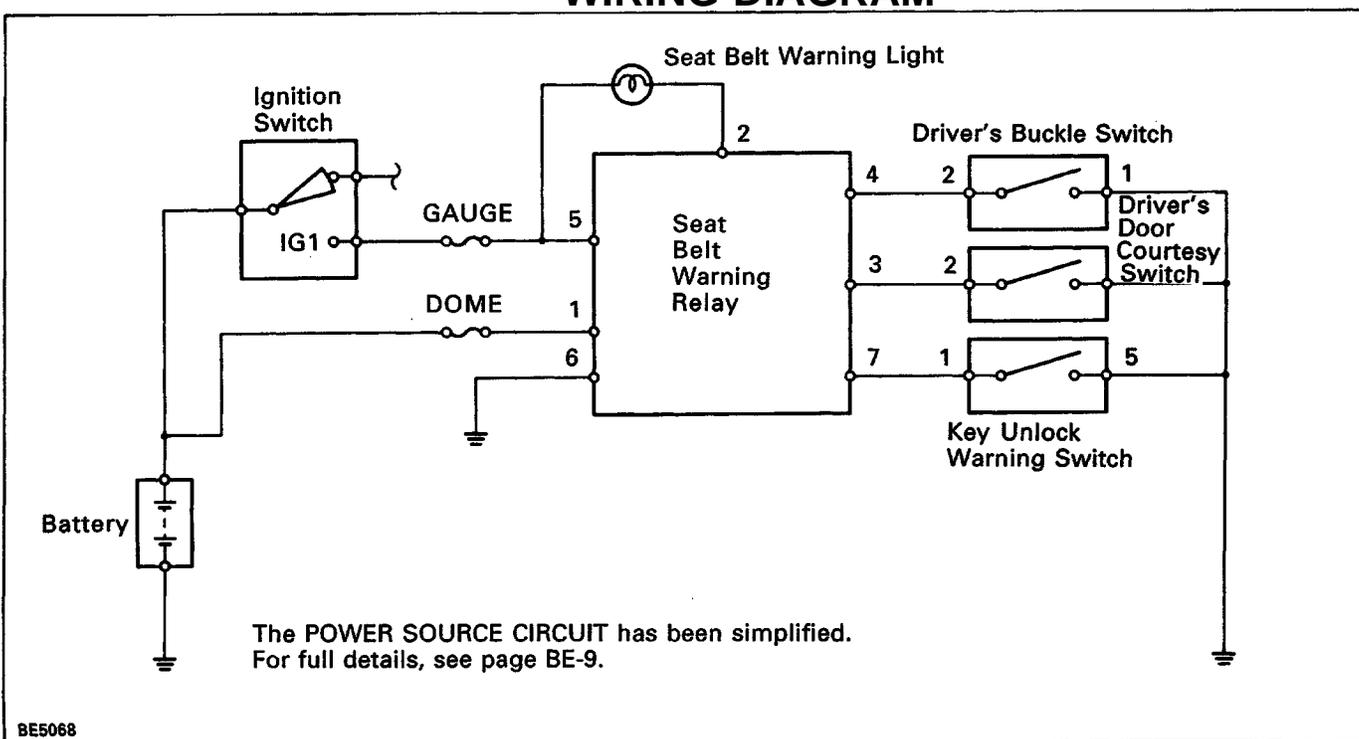


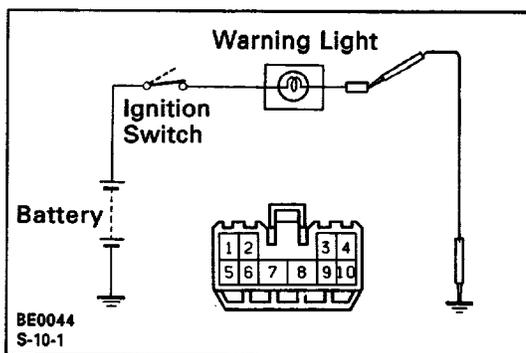
PARKING BRAKE SWITCH INSPECTION

INSPECT PARKING BRAKE SWITCH

- (a) Check that there is continuity between terminals with the switch ON (switch pin released).
- (b) Check that there is no continuity between terminals with the switch OFF (switch pin pushed in).

SEAT BELT WARNING SYSTEM WIRING DIAGRAM

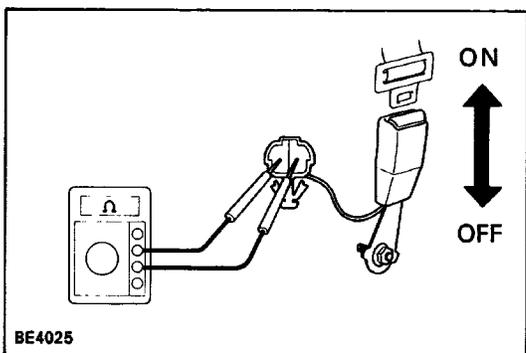




SEAT BELT LEVEL WARNING LIGHT INSPECTION

INSPECT WARNING LIGHT

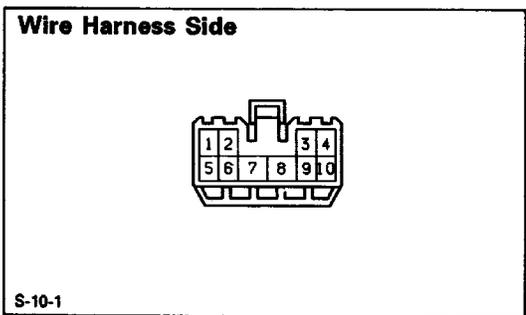
- (a) Disconnect the connector from the seat belt warning relay.
 - (b) Ground terminal 5 on the wire harness side.
 - (c) Turn the ignition switch ON, check that the warning light lights up.
- If the warning lights does not light up, test the bulb.



BUCKLE SWITCH INSPECTION

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.



SEAT BELT WARNING RELAY INSPECTION RELAY CIRCUIT

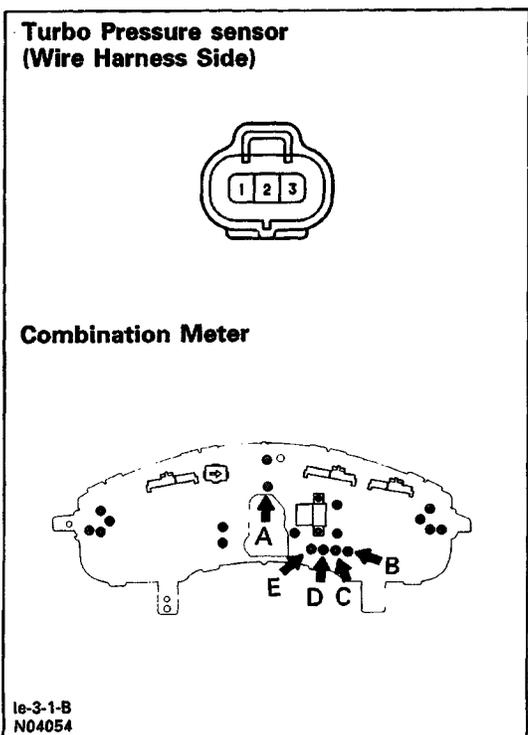
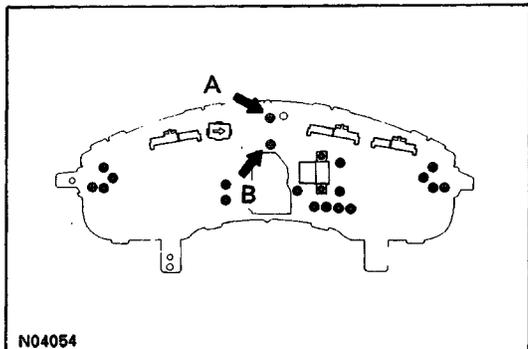
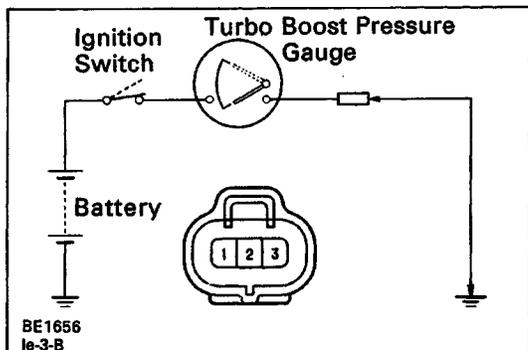
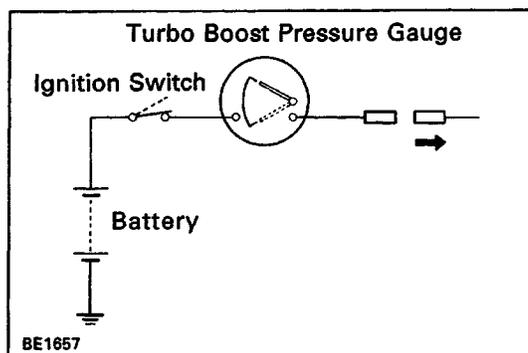
Disconnect connector and inspect connector on wire harness side as shown in the chart.

Check for-	Tester connection	Condition	Specified value	
Continuity	3 - Ground	Driver's door courtesy switch position	OFF (door closed) ON (door- opened)	No continuity Continuity
		4 - Ground	Driver's buckle switch position	OFF (seat belt unfastened) ON (seat belt fastened)
	6 - Ground	Constant		Continuity
	7 - Ground	Key unlock warning switch position	OFF (ignition key removed) ON (ignition key set)	No continuity Continuity
Voltage	1- Ground	Constant	Battery voltage	
	2 - Ground	Ignition switch position	LOCK or ACC	No voltage
	5 - Ground		ON	Battery voltage

If circuit is as specified, replace the relay.

DOOR COURTESY SWITCH INSPECTION

See Interior Light System on page [BE-49](#).



TURBO BOOST PRESSURE GAUGE SYSTEM

TURBO BOOST PRESSURE GAUGE INSPECTION

OPERATION

- Disconnect the connector from the pressure sensor.
- Turn the ignition switch ON, check that the gauge needle moves to upper position.
- Ground terminal 2 on the wire harness side. Check that the gauge needle moves to lower position. If operation is not as specified, inspect the turbo boost pressure gauge drive circuit and resistance.

RESISTANCE

Measure the resistance between terminals A and B.

Resistance: Approx. 72 Ω

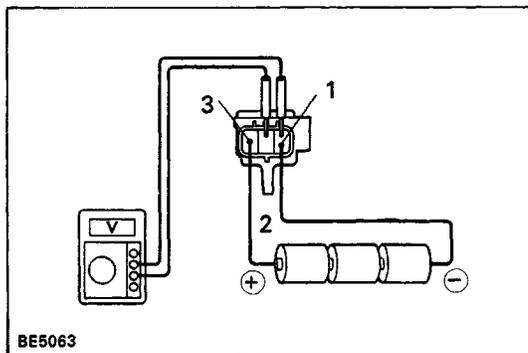
If resistance value is not as specified, replace the turbo boost pressure gauge.

DRIVE CIRCUIT

- Disconnect the connector from the turbo pressure sensor.
- Remove the combination meter with connected three connectors.
- Inspect the connector on the wire harness side and terminals of the turbo boost pressure gauge drive circuit as shown in the chart.

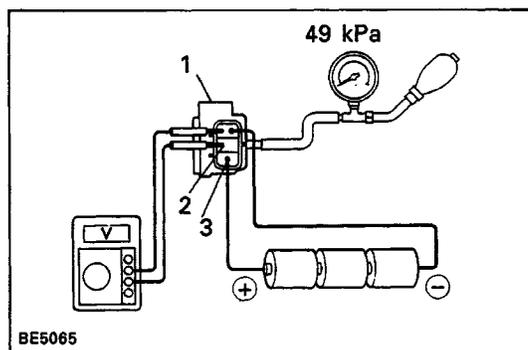
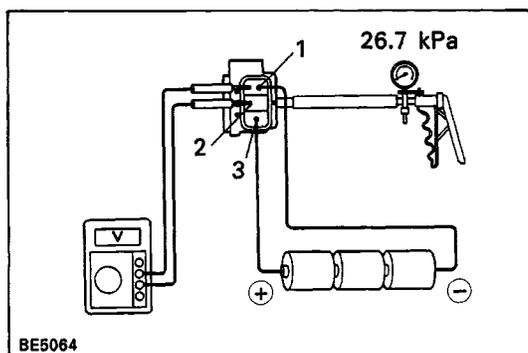
Check for	Tester- connection	Condition		Specified value
Continuity	A-B	Constant		Continuity
	C-2	Constant		Continuity
	D - Ground	Constant		Continuity
	1 - Ground	Constant		Continuity
Voltage	E - Ground	Ignition switch position	LOCK or ACC	No voltage
			ON	Battery voltage
	3 - Ground	Ignition switch position	LOCK or- ACC	No voltage
			ON	Battery voltage

If circuit is as specified, replace the drive circuit.

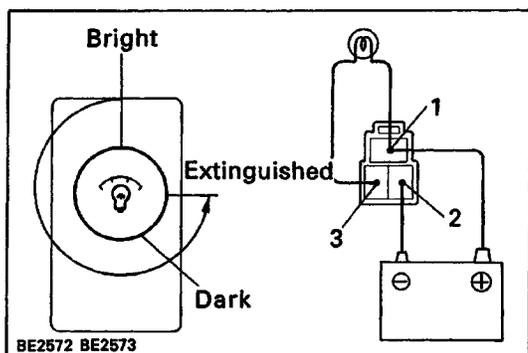


TURBO PRESSURE SENSOR INSPECTION INSPECT TURBO PRESSURE SENSOR

- Connect a series of three 1.5 V dry cell batteries.
- Connect the positive (+) lead from the dry cell batteries to terminal 3 and the negative (-) lead to terminal 1.
- Connect the positive (+) lead from the voltmeter to terminal 2 and the negative (-) lead to terminal 1.
- Check that the voltage between terminals 2 and 1.
Voltage: Approx. 2.4 V
- Apply 26.7 kPa (200 mmHg, 7.87 in.Hg) of vacuum. Check that the voltage drops below approximately 2.4 V.



- Using SST, apply 49 kPa (0.5 kgf/cm², 7.2 psi) of pressure. Check that the voltage rises approximately 2.4 V. SST 09992-00241
If operations are not as specified, replace the sensor.



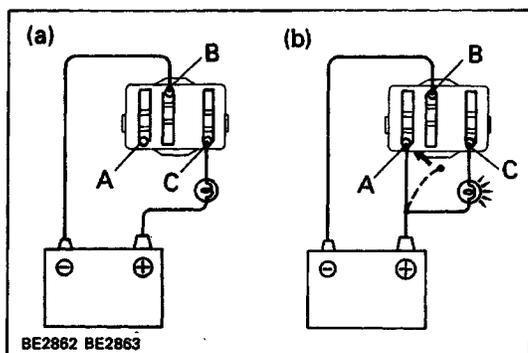
METER ILLUMINATION CONTROL SYSTEM

LIGHT CONTROL RHEOSTAT INSPECTION

INSPECT LIGHT CONTROL RHEOSTAT

- Connect terminals 1 and 3 through a 3.4 W test bulb.
- Connect the positive (+) lead from the battery to terminal 1 and the negative (-) lead to terminal 2.
- Turn the rheostat knob to fully counterclockwise, check that the test bulb goes out.
- Gradually turn the rheostat knob to clockwise, check that the test bulb brightness changes from dark to bright.

If operation is not as specified, replace the rheostat.



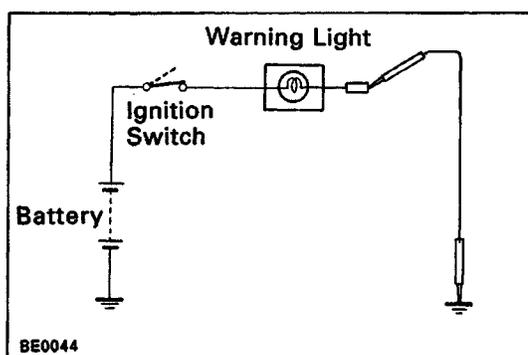
BULB CHECK SYSTEM

BULB CHECK RELAY INSPECTION

INSPECT BULB CHECK RELAY

- Connect the positive (+) lead from the battery to terminal C through a 1.4 W test bulb and the negative (-) lead to terminal B, check that the test bulb does not light up.
- Connect the positive (+) lead from the battery to terminal A, check that the test bulb lights up.

If operation is not as specified, replace the relay.



OPEN DOOR WARNING SYSTEM

OPEN DOOR WARNING LIGHT INSPECTION

INSPECT WARNING LIGHT

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

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

DOOR COURTESY SWITCH INSPECTION

See Interior Light System on page [BE-49](#).