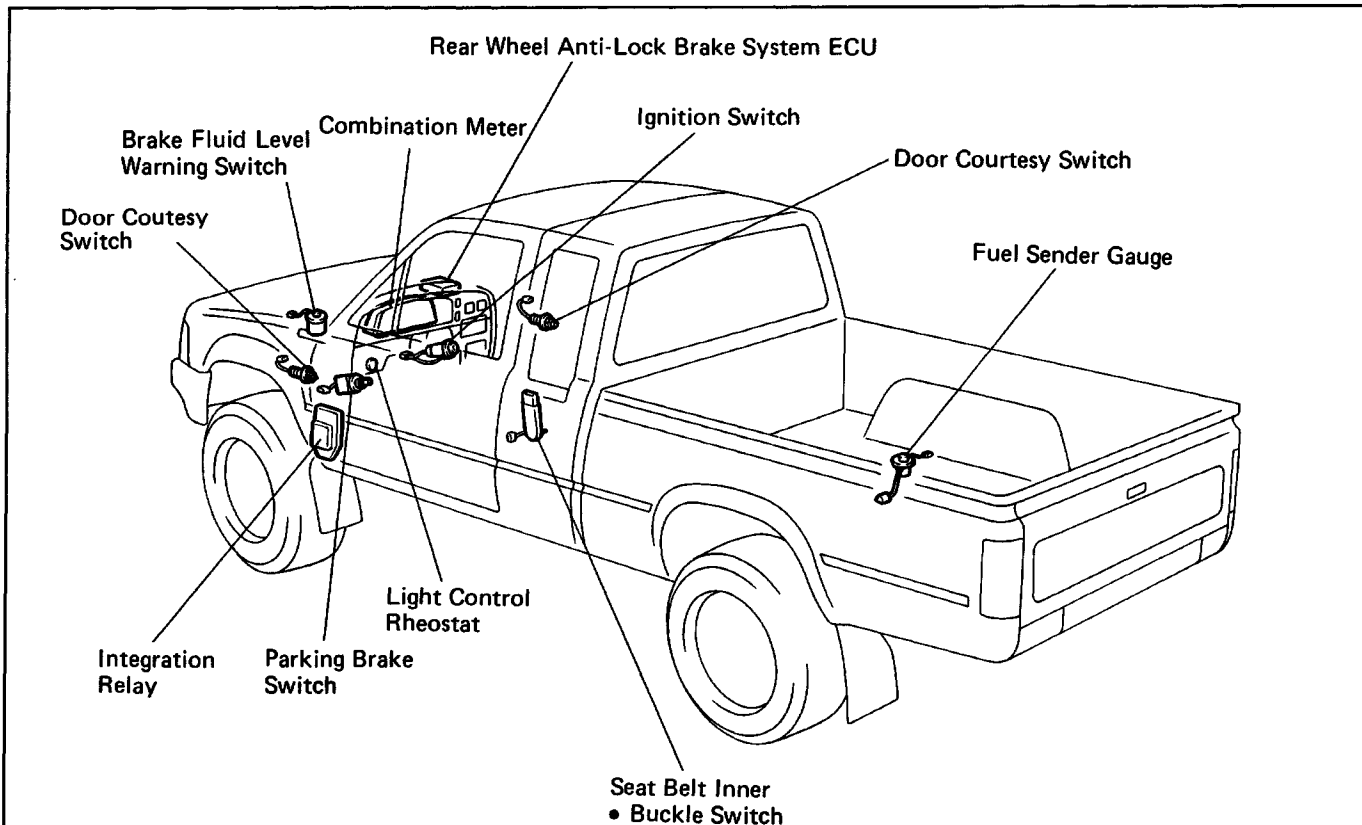
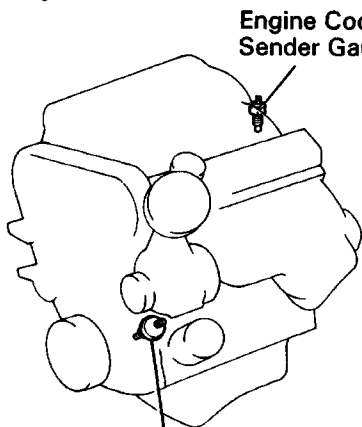


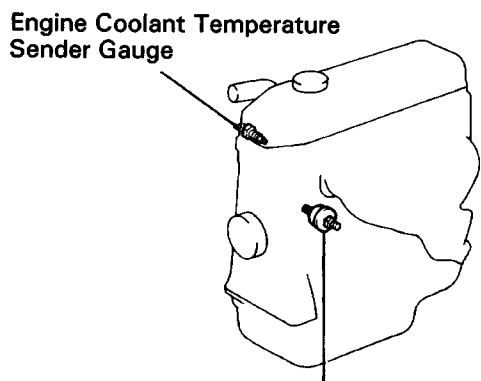
# COMBINATION METER Parts Location



3VZ-E Engine

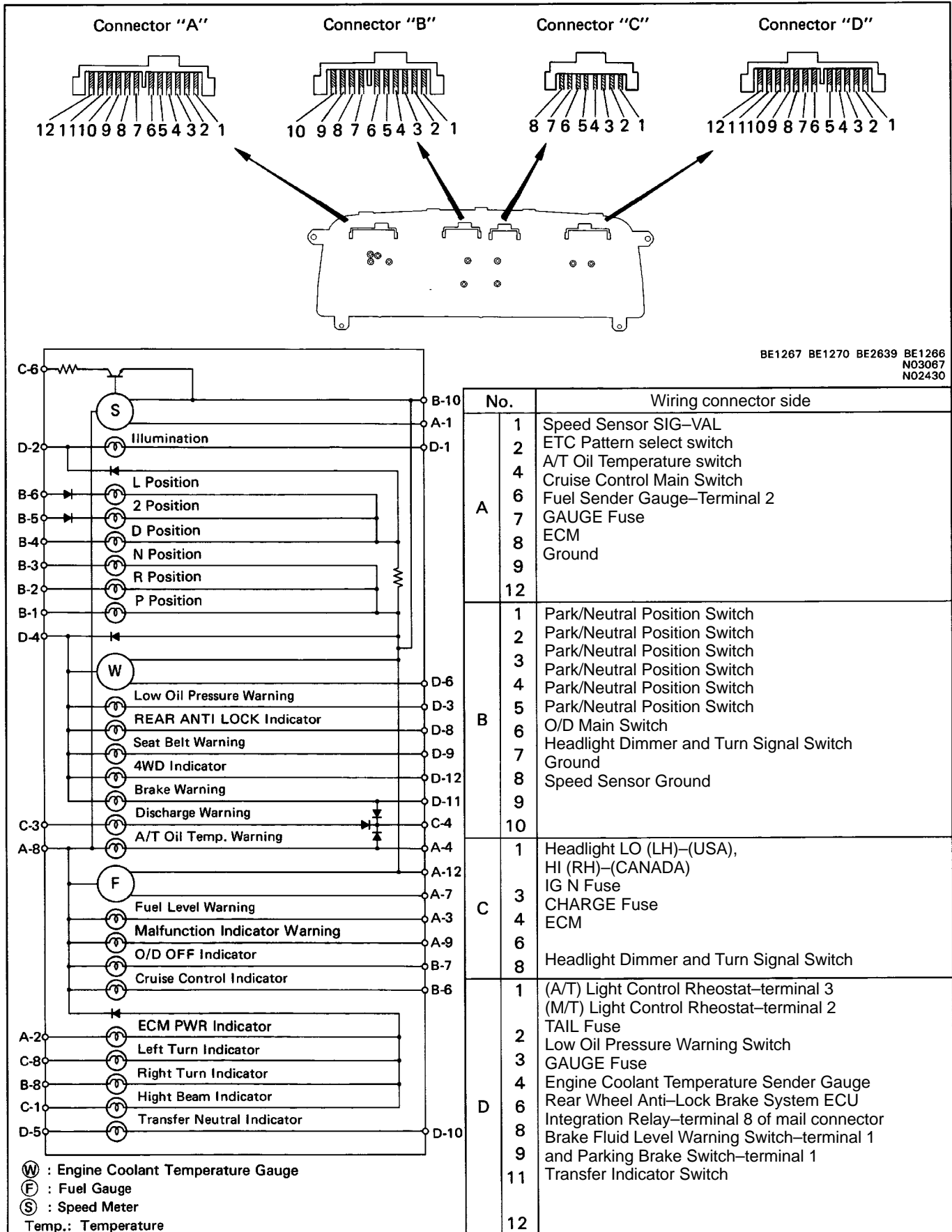


22R-E Engine



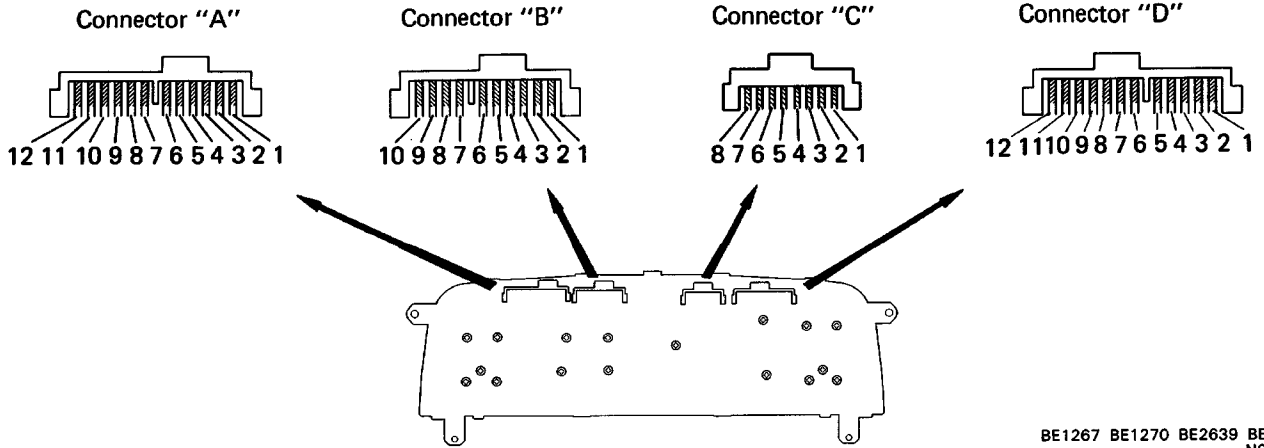
# Meter Circuit

(w/o Tachometer)

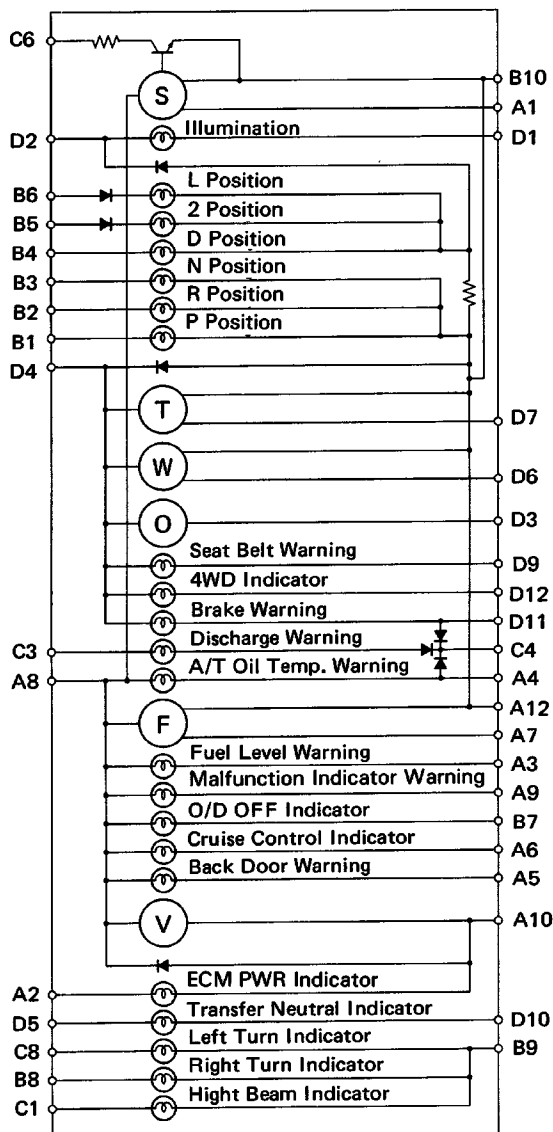


BE1267 BE1270 BE2639 BE1266  
 N03067  
 N02430

(w/ Tachometer)



BE1267 BE1270 BE2639 BE1266  
N03066  
N03074



- Ⓣ : Tachometer
- Ⓜ : Engine Coolant Temperature Gauge
- Ⓞ : Oil Pressure Gauge
- ⓕ : Fuel Gauge
- Ⓥ : Volt Gauge
- Ⓢ : Speed Meter
- Temp.: Temperature

No.	Wiring connector side
A	1 Speed Meter SIG-VAL
	2 ECM Pattern Select Switch
	3 Fuel Sender Gauge-terminal 3
	4 A/T Oil Temperature Switch
	6 Cruise Control Main Switch
	6 Fuel Sender Gauge-terminal 4
	7 GAUGE Fuse
	8 ECM
	9 Ground
	10 Ground
B	1 Park/Neutral Position Switch
	2 Park/Neutral Position Switch
	3 Park/Neutral Position Switch
	4 Park/Neutral Position Switch
	5 Park/Neutral Position Switch
	6 O/D Main Switch
	7 Headlight Dimmer and Turn Signal Switch
	8 Ground
	9 Speed Sensor Ground
	10
C	1 Headlight LO (LH)-(USA), H I (R H)-(CANADA)
	3 IGN Fuse
	4 CHARGE Fuse
	6 ECM
	8 Headlight Dimmer and Turn Signal Switch
D	1 Light Control Rheostat-(DLX Grade) terminal 2, (SR5 and SR5V6 Grades) terminal 3
	2 TAIL Fuse
	3 Oil Pressure Sender Gauge
	4 GAUGE Fuse
	6 Engine Coolant Temperature Sender Gauge
	6 Igniter
	7 Rear Wheel Anti-Lock Brake System ECU
	7 Integration Relay-terminal 8 of mail connector
	8 Brake Fluid Level Warning Switch-terminal 1 and Parking Brake Switch-terminal 1
	9 Transfer Indicator Switch
	11
	12

## Troubleshooting

Problem	Possible cause	Remedy	Page
Gauges and indicator lights do not operate	GAUGE fuse faulty Wiring or ground faulty	Replace fuse and check for short Repair as necessary	BE-3
Voltmeter does not work	Voltmeter faulty Wiring or ground faulty	Check voltmeter Repair as necessary	BE-33
Tachometer does not operate	Tachometer faulty Wiring or ground faulty	Check tachometer Repair as necessary	BE-33
Fuel gauge does not operate	Receiver gauge faulty Sender gauge faulty Wiring or ground faulty	Check gauge Check gauge Repair as necessary	BE-34 BE-35
Engine Coolant temperature gauge does not operate	Receiver gauge faulty Wiring or ground faulty	Check gauge Repair as necessary	BE-36
Oil pressure gauge does not operate	Receiver gauge faulty Sender gauge faulty Wiring or ground faulty	Check gauge Check gauge Repair as necessary	BE-37 BE-38
Brake warning light does not light up	Bulb burned out Brake fluid level warning switch faulty Parking brake switch faulty Wiring or ground faulty	Replace bulb Check switch Check switch Repair as necessary	BE-38 BE-39
Seat belt warning light does not light up	Bulb burned out Integration relay faulty Wiring or ground faulty	Replace bulb Check relay Repair as necessary	BE-40
Discharge warning light does not light up	IGN fuse blown  CHARGE fuse blown  Bulb burned out Wiring or ground faulty	Replace fuse and check for short Replace fuse and check for short Replace bulb Repair as necessary	BE-3  BE-3

Standard indication	Allowable range
20	19 - 22
40	39 - 42.5
60	59.5 - 63.5
80	79.5 - 84
100	100 - 105

(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

## Parts Inspection Speedometer System

### 1. INSPECT SPEEDOMETER (ON-VEHICLE)

- (a) 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.

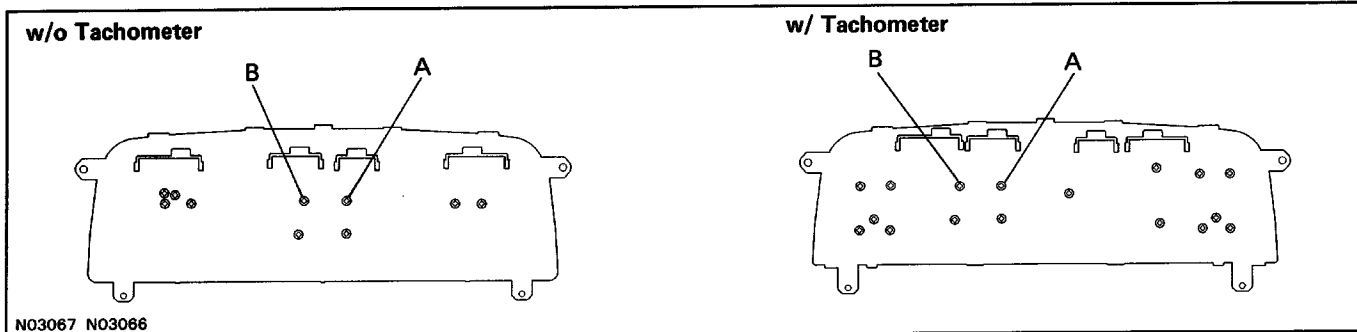
If error.

- (b) Check the speedometer for pointer vibration and abnormal noise.

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

### 2. INSPECT SPEED SENSOR

Check that there is continuity between terminals A and B four times per each revolution of the speedometer shaft. If operation is not as specified, replace the speedometer.



N03067 N03066

DC 13.5 V 200C (680F)	rpm
Standard indication	Allowable range
700	610 - 750
3,000	2,850 - 3,150
5,000	4,850 - 5,150
7,000	6,790 - 7,210

## Tachometer System

### 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.

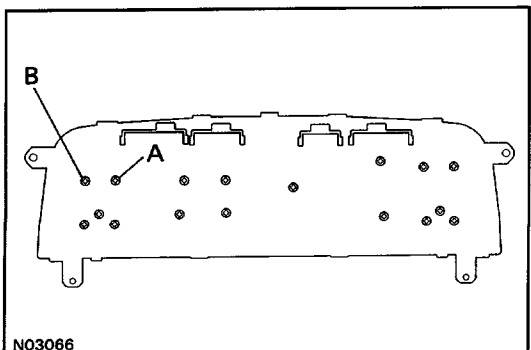
### Volt Gauge System

#### INSPECT VOLT GAUGE

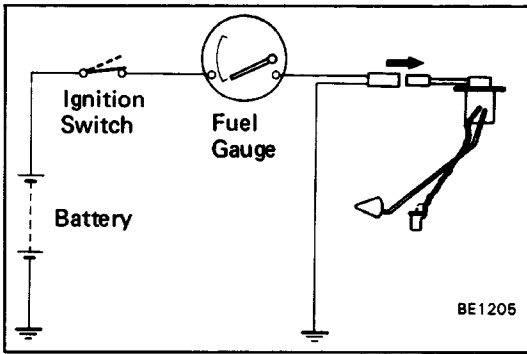
Measure the resistance between terminals A and B.

**Resistance: Approx. 347Ω**

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



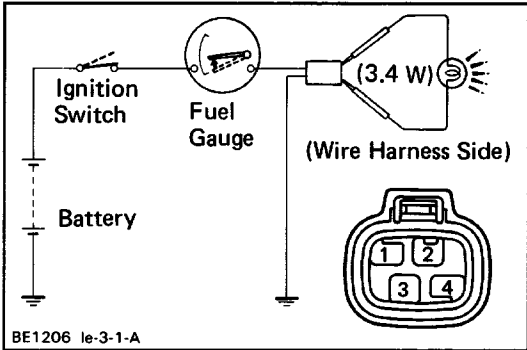
N03066



## Fuel Gauge System

### 1. INSPECT RECEIVER GAUGE

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

HINT: (w/ Tachometer)

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, and the voltage regulator (w/o Tachometer).

### (Voltage Regulator: w/o Tachometer)

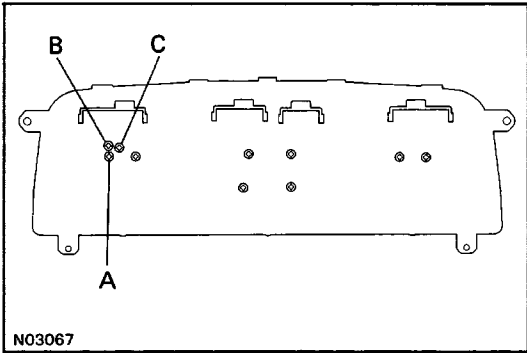
- (a) Connect the positive (+) lead from the battery to terminal A and negative (-) lead to terminal B.
- (b) Connect the positive (+) lead from the voltmeter to terminal C and the negative (-) lead to terminal B, check that the voltmeter needle vibrates near the 7 V position.

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

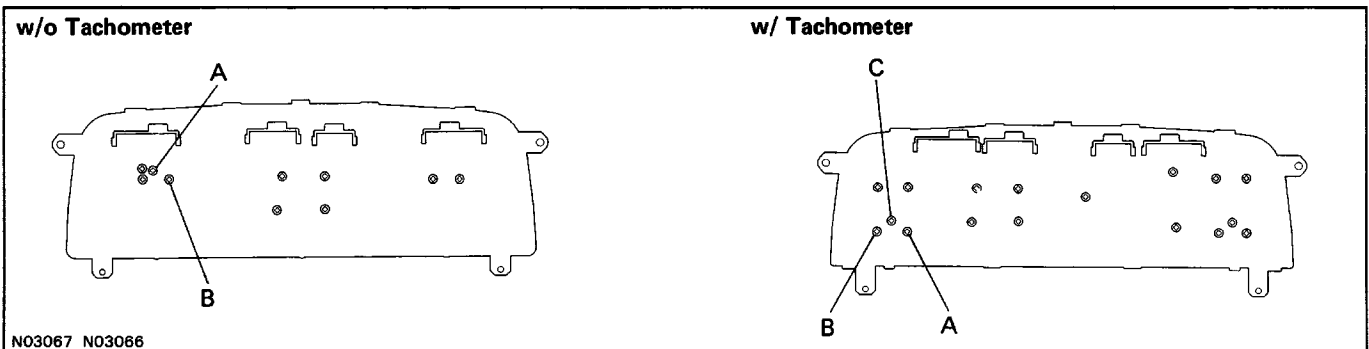
### (Resistance)

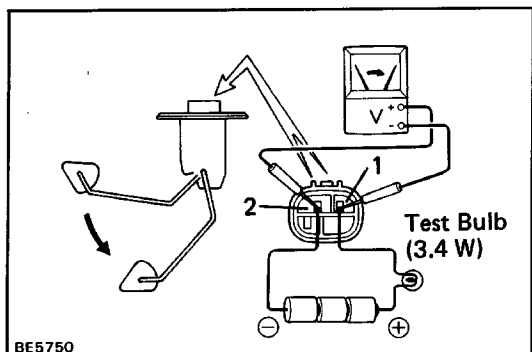
Measure the resistance between terminals.

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



Between terminals	Resistance ( $\Omega$ )	
	w/o Tachometer	w/ Tachometer
A - B	Approx. 55	Approx. 123
A - C	-	Approx. 260
B - C	-	Approx. 137





## 2. INSPECT SENDER GAUGE

(Operation)

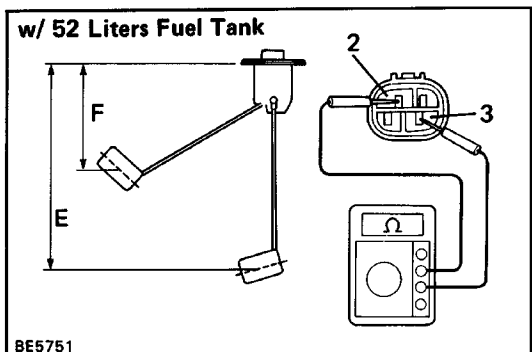
- (a) Connect a series of three 1.5 v dry cell batteries.
- (b) Connect the positive (+) lead from the dry cell batteries to terminal 2 through a 3.4 W test bulb and the negative (-) lead to terminal 1.
- (c) Connect the positive (+) lead from the voltmeter to terminal 2 and negative (-) lead to terminal 1.
- (d) Check that the voltage rises as the float is moved from the top to bottom position.

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

(Resistance)

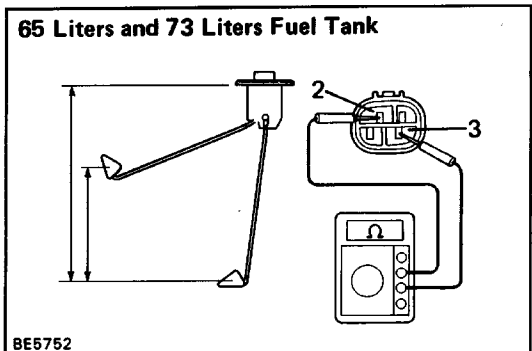
Measure the resistance between terminals 1 and 3.

w/ 52 Liters Fuel Tank



Float position mm (in.)	Resistance 1Ω
F	Approx. 121 (4.76)
E	Approx. 263 (10.35)

w/ 65 Liters Fuel Tank

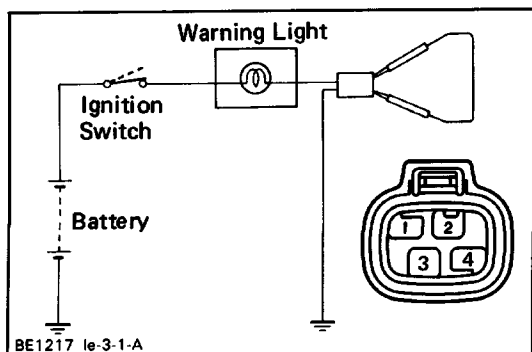


Models	Float position	Resistance (Ω)
2WD	F	Approx. 96 (3.78)
	E	Approx. 281 (11.06)
4WD	F	Approx. 108 (4.25)
	E	Approx. 300 (11.81)

w/ 73 Liters Fuel Tank

Float position	Resistance (Ω)
F	Approx. 116 (4.57)
E	Approx. 319 (12.56)

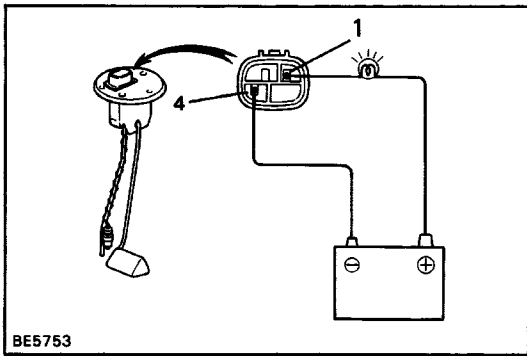
If resistance value is not as specified, replace the sender gauge.



## Fuel Level Warning System

### 1. INSPECT WARNING LIGHT

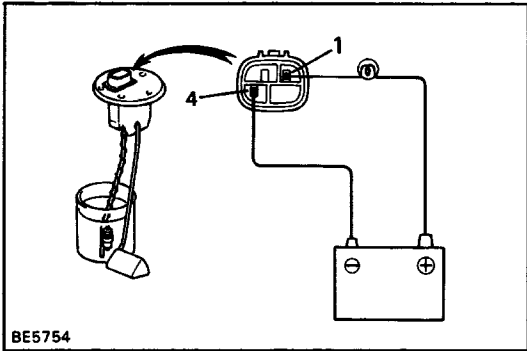
- (a) Disconnect the connector from the sender gauge.
- (b) Connect terminals 1 and 3 on the wire harness side connector.
- (c) Turn the ignition switch ON, check that the warning light will come on.  
If the warning light does not come on, test the bulb.



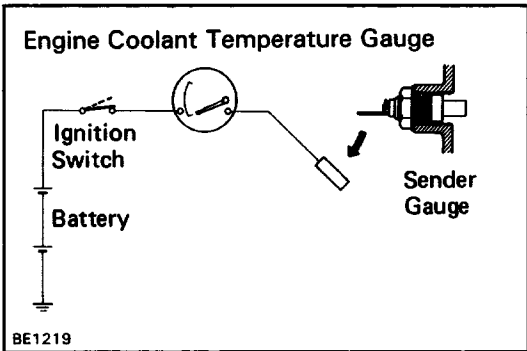
**2. INSPECT WARNING SWITCH**

- (a) Apply battery positive voltage between terminals 1 and 4 through a 3.4 W test bulb, check 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.

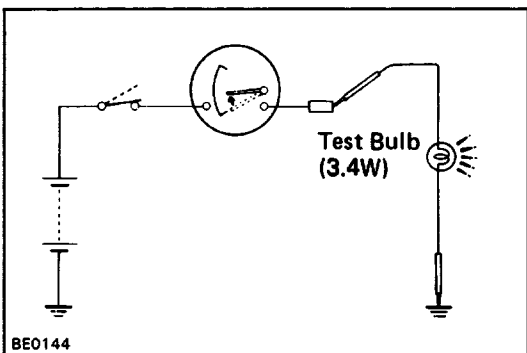


**Engine Coolant Temperature Gauge System**

**INSPECT 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 towards the hot side.

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

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

Between terminals	Resistance ( $\Omega$ )	
	w/o Tachometer	w/ Tachometer
A → B	Approx. 25	Approx. 57
A → C	—	Approx. 135
B → C	—	Approx. 217

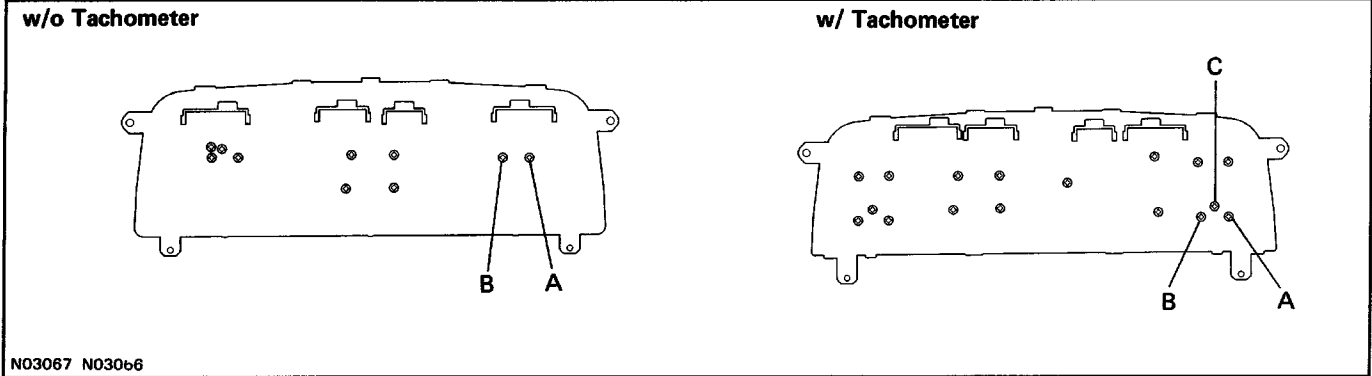


**(Resistance)**

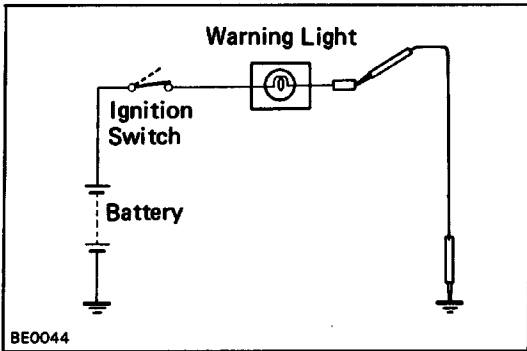
Measure the resistance between terminals.

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

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



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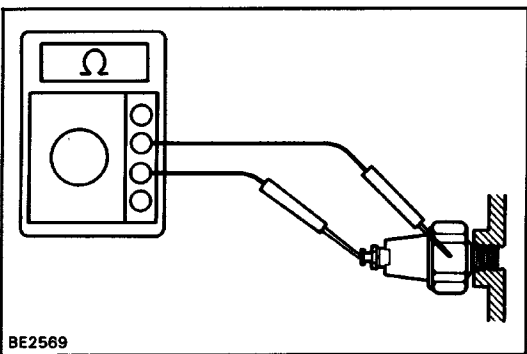


BE0044

**Low Oil Pressure Warning System**

**1. 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 will come on.  
If the warning light does not come on, test the bulb.



BE2569

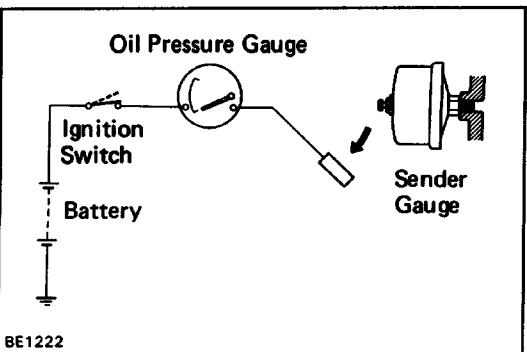
**2. INSPECT WARNING SWITCH**

- (a) Disconnect the connector from the switch.
- (b) Check that there is continuity between terminal and ground with the engine stopped.
- (c) Check that there is no continuity between terminal and ground with the engine running.

HINT: Oil pressure should be over 0.3 kg/cm<sup>2</sup> (4.3 psi, 29 kPa).

If operation is not as specified, replace the switch.

**Oil Pressure Gauge System**

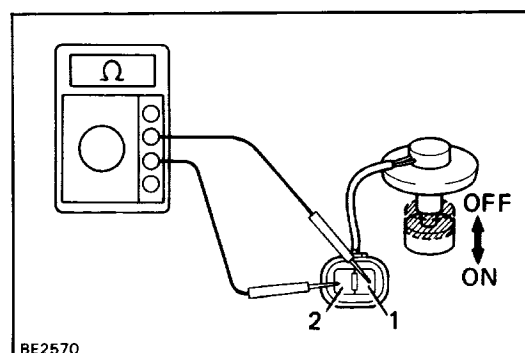
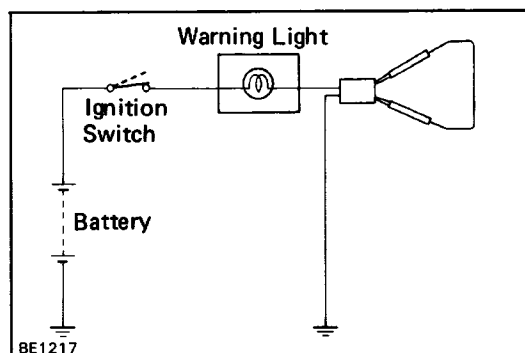
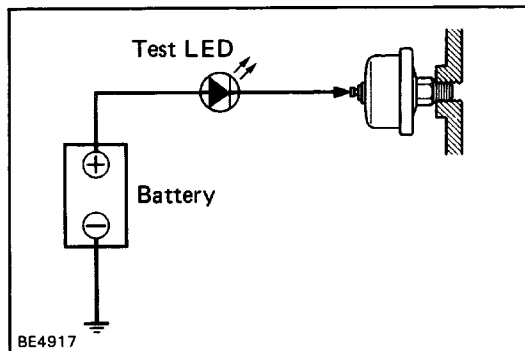
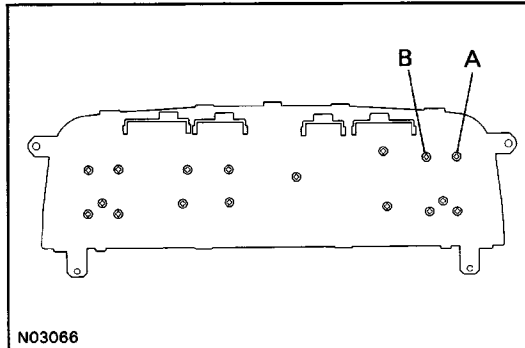
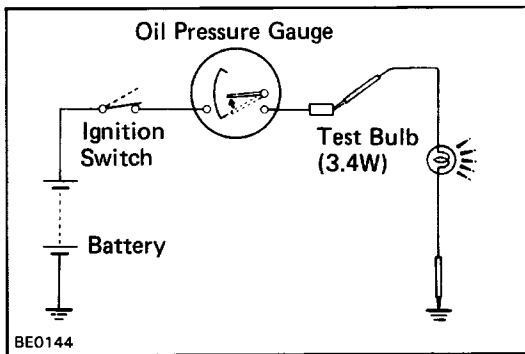


BE1222

**1. INSPECT RECEIVER GAUGE**

**(Operation)**

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



- (e) 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 to the high side.  
If operation is not as specified, measure the receiver gauge resistance.

### (Resistance)

Measure the resistance between terminals A and B.

**Resistance: Approx. 25Ω**

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

## 2. INSPECT SENDER GAUGE

- (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.

## Brake Warning System

### 1. INSPECT WARNING LIGHT

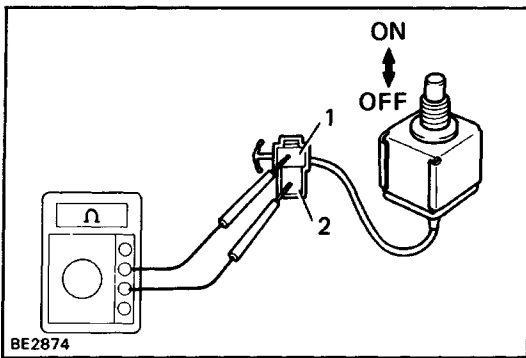
- (a) Disconnect the connectors from the level warning switch and parking brake switch.
- (b) Connect terminals on the wire harness side connector of the level warning switch connector.
- (c) Remove the CHARGE fuse and turn the ignition switch ON, check that the warning light will come on.

If the warning light does not come on, test the bulb.

### 2. INSPECT SWITCHES

#### (Brake Fluid Level Warning Switch)

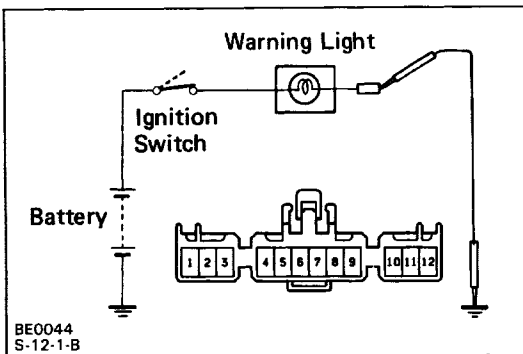
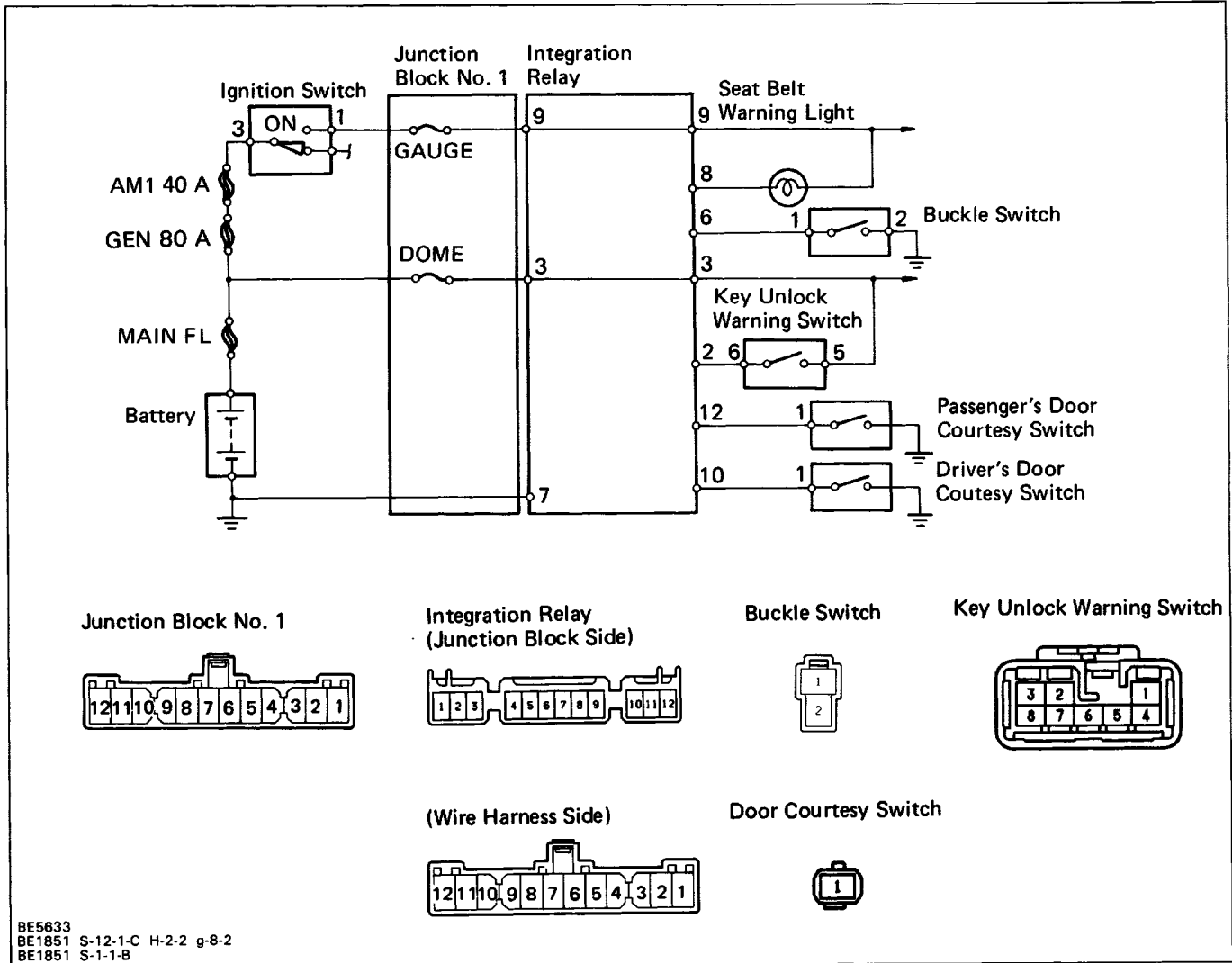
- (a) Check that there is no continuity between terminals with the switch OFF (float up).
- (b) Check that there is continuity between terminals with the switch ON (float down).  
If operation is not as specified, replace the switch.



(Parking Brake Switch)

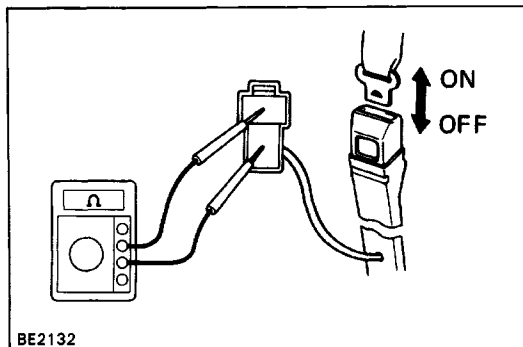
- (a) Check that there is continuity between terminals with the switch ON (switch pin released).
  - (b) Check that there is no continuity between terminals with the switch OFF (switch pin pushed).
- If operation is not as specified, replace the switch.

## Seat Belt Warning System



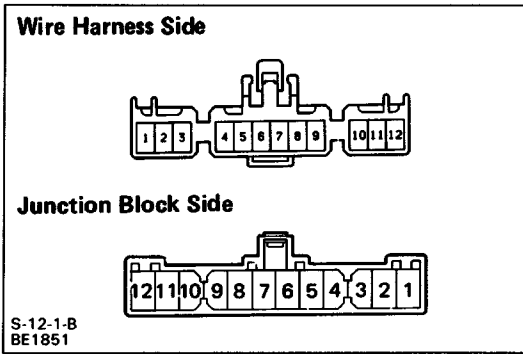
### 1. INSPECT WARNING SWITCH

- (a) Disconnect the wire harness side connector from the integration relay.
- (b) Ground terminal 8 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.



### 2. INSPECT BUCKLE SWITCH

- (a) Check that there is continuity between terminal: with the switch ON (belt unfastened).
  - (b) Check that there is no continuity between terminal: with the switch OFF (belt fastened).
- If operation is not as specified, replace the seat belt inner assembly.



**3. INSPECT INTEGRATION RELAY**

Remove the integration relay and inspect the connectors on the wire harness side and the junction block side as shown in the chart.

**Wire Harness Side**

Check for	Tester connection	Condition	Specified value	
Continuity	2 - 3	Key unlock warning switch position	OFF (Ignition key removed) ON (Ignition key set)	No continuity Continuity
		6 - Ground	Buckle switch position	OFF (Belt fastened) ON (Belt unfastened)
8 - 9	Constant			
Continuity	10 - Ground	Driver's door courtesy switch position	OFF (Door closed) ON (Door opened)	No continuity Continuity
			12 - Ground	Passenger's door courtesy switch position

\*There is resistance because this circuit is included the bulb.

**Junction Block Side**

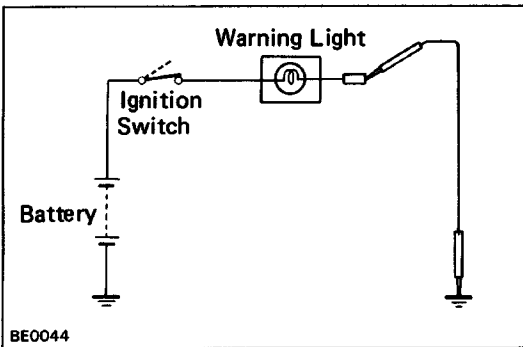
Check for	Tester connection	Condition	Specified value
Continuity	7 - Ground	Constant	Continuity
Voltage	3 - Ground	Constant	Battery positive voltage
		Ignition switch position	LOCK or ACC ON

If circuit is as specified, replace the relay.

**Open Door Warning System**

**1. INSPECT WARNING LIGHT**

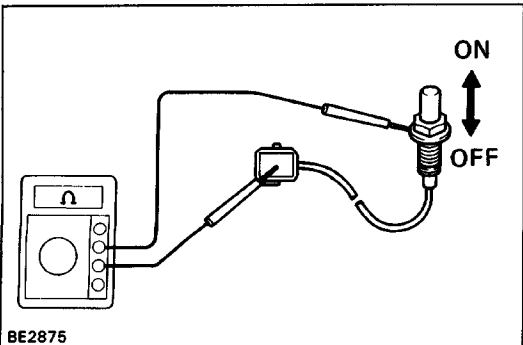
- (a) Disconnect the connector from the door courtesy switch and ground terminal on the wire harness side.
- (b) Turn the ignition switch ON, check that the warning light lights up.  
If the warning light does not light up, test the bulb.

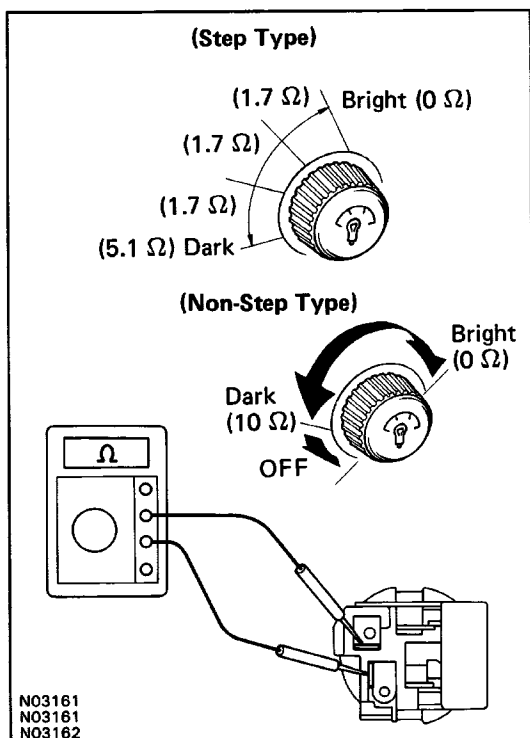


**2. INSPECT COURTESY SWITCH**

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

If operation is not as specified, replace the switch.





## Illumination Control System

### INSPECT LIGHT CONTROL RHEOSTAT

#### 1. STEP TYPE (w/ o Tachometer)

Gradually turn the rheostat knob from the bright side to dark side, check that the resistance between terminals increases from approximately 0 to 5.1Ω.

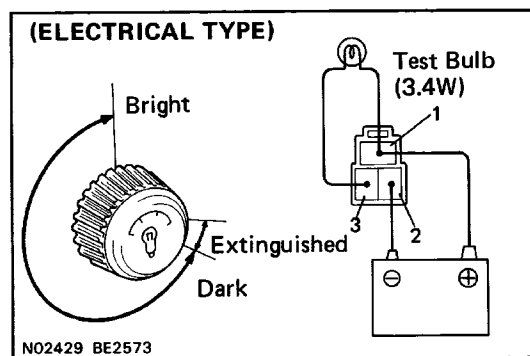
If operation is not as specified, replace the rheostat.

#### 2. NON-STEP TYPE (w/ Tachometer)

(a) Turn the rheostat knob OFF, check that there is no continuity between terminals. (Rheostat knob turned to fully counterclockwise)

(b) Gradually, turn the rheostat knob from the dark side to bright side, check that the resistance decreases from 10 to 0 ohm. (Rheostat knob turned to clockwise)

If operation is not as specified, replace the rheostat.



#### 3. ELECTRICAL TYPE (w/ All AIT Vehicle)

(a) Connect terminals 1 and 3 through a 3.4 W test bulb.

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

(c) Turn the rheostat knob to fully counterclockwise check that the test bulb goes out.

(d) 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.