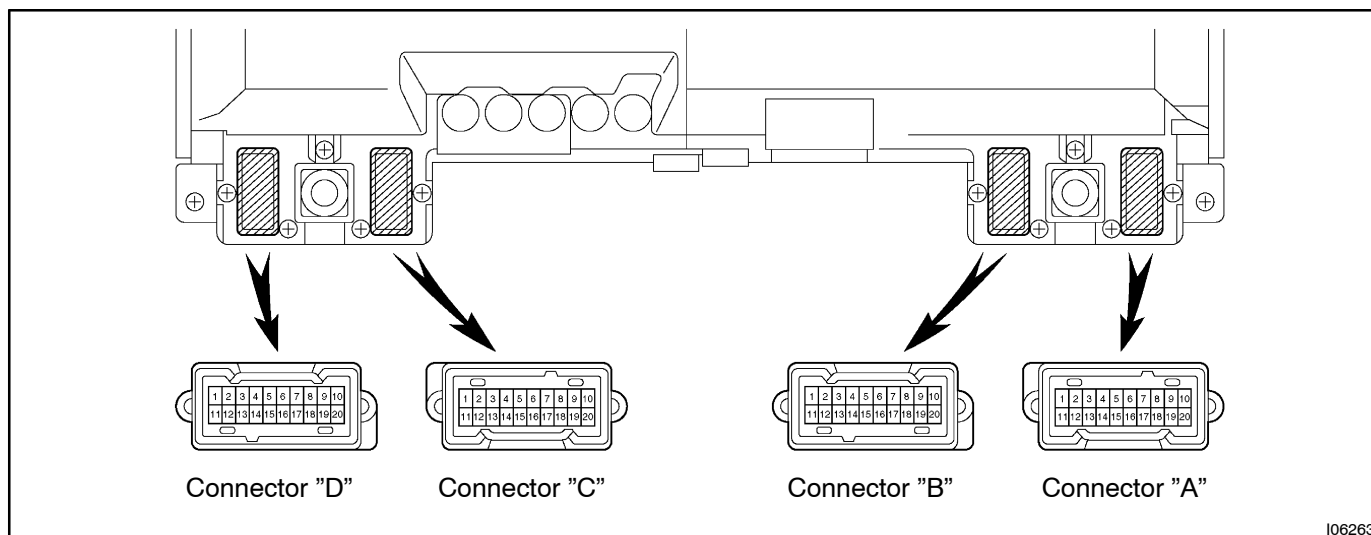


## INSPECTION

### 1. INSPECT COMBINATION METER CIRCUIT

#### Connector disconnected:

Connect the connector "A", "B", "C" and "D" to the combination meter and inspect the wire harness side connectors from the back side as shown in the table.



106263

Tester connection	Condition	Specified condition
A1 – Ground	Key unlock warning switch ON (Key is inserted)	No voltage
A1 – Ground	Key unlock warning switch OFF (Key is removed)	Battery voltage
A2 – Ground	Ignition switch ON	4.5 – 5.5 V
A3 – Ground	Ignition switch ON and fuel sender gauge float UP	Approx. 0.5 V
A3 – Ground	Ignition switch ON and fuel sender gauge float DOWN	Approx. 5.5 V
A4 – Ground	Constant	Continuity
A5 – Ground	Ignition switch ON	4.5 – 5.5 V
A6 – Ground	Ignition switch ON and fuel sub sender gauge float UP	Approx. 0.5 V
A6 – Ground	Ignition switch ON and fuel sub sender gauge float DOWN	Approx. 5.5 V
A7 – Ground	Constant	Continuity
A9 – Ground	Ignition switch ON and ABS warning light light up	No voltage
A9 – Ground	Ignition switch ON and ABS warning light does not light up	Battery voltage
A10 – Ground	Ignition switch ON and light control rheostat volume minimum	No voltage
A10 – Ground	Ignition switch ON and light control rheostat volume maximum	4.5 – 5.5 V
A11 – Ground	Light control switch OFF	No voltage
A11 – Ground	Light control switch TAIL or HEAD	Battery voltage
A12 – Ground	Ignition switch ON and driver door is opened	No voltage

## BODY ELECTRICAL – COMBINATION METER

A12 – Ground	Ignition switch ON and driver door is closed	Battery voltage
A14 – Ground	Ignition switch ON and engine is stopped	No voltage
A14 – Ground	Ignition switch ON and engine is running	Battery voltage
A15 – Ground	Ignition switch ON and seat belt is unfastened	No voltage
A15 – Ground	Ignition switch ON and seat belt is fastened	Battery voltage
A16 – Ground	Ignition switch OFF	No voltage
A16 – Ground	Ignition switch ON	Battery voltage
A17 – Ground	Constant	Battery voltage
A18 – Ground	Ignition switch ON and ABS is error	No voltage
A18 – Ground	Ignition switch ON and ABS is normal	Battery voltage
A19 – Ground	Ignition switch ON and fog light switch OFF	No voltage
A19 – Ground	Ignition switch ON and fog light switch ON	Battery voltage
B1 – Ground	Ignition switch ON and tire carrier is opened	No voltage
B1 – Ground	Ignition switch ON and tire carrier is closed	Battery voltage
B2 – Ground	Ignition switch ON and engine is stopped	No voltage
B2 – Ground	Ignition switch ON and engine is running	Battery voltage
B4 – Ground	Ignition switch OFF	No voltage
B4 – Ground	Ignition switch ACC or ON	Battery voltage
B5 – Ground	Ignition switch ON and A/T shift P indicator light up	No voltage
B5 – Ground	Ignition switch ON and A/T shift P indicator does not light up	Battery voltage
B6 – Ground	Ignition switch ON and except A/T shift P position	No voltage
B6 – Ground	Ignition switch ON and A/T shift P position	Battery voltage
B7 – Ground	Ignition switch ON and except A/T shift R position	No voltage
B7 – Ground	Ignition switch ON and A/T shift R position	Battery voltage
B8 – Ground	Ignition switch ON and A/T oil temperature indicator light up	No voltage
B8 – Ground	Ignition switch ON and A/T oil temperature indicator does not light up	Battery voltage
B9 – Ground	Ignition switch ON and slowly move the wheel	Pulse signal is output below 1.5 V ↔ approx. 5 V or below 1.5 V ↔ Battery voltage
B10 – Ground	Ignition switch ON and slowly move the wheel	Pulse signal is output below 1.5 V ↔ Battery voltage
B11 – Ground	Constant	Continuity
B12 – Ground	Ignition switch ON and rheostat light control volume CANCEL position	No voltage
B12 – Ground	Ignition switch ON and rheostat light control volume maximum	Battery voltage
B13 – Ground	Ignition switch ON and engine is stopping	No voltage
B13 – Ground	Ignition switch ON and engine is running	Battery voltage
B14 – Ground	Ignition switch OFF	No voltage
B14 – Ground	Ignition switch ON	Battery voltage
B15 – Ground	Ignition switch ON and Water temperature 90 °C	Battery voltage
B16 – Ground	Constant	Continuity

B17 – Ground	Engine is running	Pulse generation
B18 – Ground	Ignition switch ON and engine is running	No voltage
B18 – Ground	Ignition switch ON and engine is stopping	Battery voltage
C2 – Ground	Ignition switch ON and rear diff. lock switch OFF	No voltage
C2 – Ground	Ignition switch ON and rear diff. lock switch ON	Battery voltage
C3 – Ground	Constant	Battery voltage
C4 – Ground	Ignition switch ON and ABS indicator light light up	No voltage
C4 – Ground	Ignition switch ON and ABS indicator does not light up	Battery voltage
C5 – Ground	Ignition switch ON and except A/T shift N position	No voltage
C5 – Ground	Ignition switch ON and A/T shift N position	Battery voltage
C6 – Ground	Ignition switch ON and except A/T shift D position	No voltage
C6 – Ground	Ignition switch ON and A/T shift D position	Battery voltage
C7 – Ground	Ignition switch ON and except A/T shift 2nd position	No voltage
C7 – Ground	Ignition switch ON and A/T shift 2nd position	Battery voltage
C8 – Ground	Ignition switch ON and except A/T shift L position	No voltage
C8 – Ground	Ignition switch ON and A/T shift L position	Battery voltage
C10 – Ground	Ignition switch ON and O/D off switch ON	No voltage
C10 – Ground	Ignition switch ON and O/D off switch OFF	Battery voltage
C11 – Ground (M/T vehicle)	Ignition switch ON and ETCS indicator light light up	No voltage
C11 – Ground (M/T vehicle)	Ignition switch ON and ETCS indicator light does not light up	Battery voltage
C12 – Ground	Ignition switch ON and engine oil level warning light up	No voltage
C12 – Ground	Ignition switch ON and engine oil level warning does not light up	Battery voltage
C14 – Ground	Ignition switch ON and cruise control switch OFF	No voltage
C14 – Ground	Ignition switch ON and cruise control switch ON	Battery voltage
C15 – Ground	Ignition switch ON and center diff. lock switch OFF	No voltage
C15 – Ground	Ignition switch ON and center diff. lock switch ON	Battery voltage
D1 – Ground	Ignition switch ON and engine is stopped	No voltage
D1 – Ground	Ignition switch ON and engine is running	Battery voltage
D2 – Ground (Diesel vehicle)	Ignition switch ON and glow indicator light up	No voltage
D2 – Ground (Diesel vehicle)	Ignition switch ON and glow indicator does not light up	Battery voltage
D3 – Ground	Ignition switch ON and HPS indicator light up	No voltage
D3 – Ground	Ignition switch ON and HPS indicator light does not light up	Battery voltage
D4 – Ground	Ignition switch ON and HPS switch N	No voltage
D4 – Ground	Ignition switch ON and HPS switch HI or LO	Battery voltage

## BODY ELECTRICAL – COMBINATION METER

D5 – Ground	Ignition switch ON and HPS switch LO	No voltage
D5 – Ground	Ignition switch ON and HPS switch N	Battery voltage
D6 – Ground	Ignition switch ON and HPS system is operating	No voltage
D6 – Ground	Ignition switch ON and HPS system is OFF	Battery voltage
D7 – Ground	Ignition switch ON and brake fluid level warning switch float DOWN	No voltage
D7 – Ground	Ignition switch ON and brake fluid level warning switch float UP	Battery voltage
D8 – Ground	Ignition switch ON and parking brake lever is pulled	No voltage
D8 – Ground	Ignition switch ON and parking brake lever is released	Battery voltage
D9 – Ground	Ignition switch ON, parking brake lever is released and brake fluid level warning switch float DOWN	No voltage
D9 – Ground	Ignition switch ON, parking brake lever is released and brake fluid level warning switch float UP	Battery voltage
D10 – Ground	Ignition switch ON and pattern select switch NORM	No voltage
D10 – Ground	Ignition switch ON and pattern select switch PWR	Battery voltage
D11 – Ground	Either door is opened	No voltage
D11 – Ground	Either door is closed	Battery voltage
D12 – Ground	Constant	Continuity
D13 – Ground	Ignition switch ON and turn signal switch OFF or RIGHT	No voltage
D13 – Ground	Ignition switch ON and turn signal switch LEFT	Battery voltage
D14 – Ground	Light control switch OFF	No voltage
D14 – Ground	Light control switch HI	Battery voltage
D15 – Ground	Ignition switch ON and turn signal switch OFF or LEFT	No voltage
D15 – Ground	Ignition switch ON and turn signal switch RIGHT	Battery voltage

If circuit is not as specified, wiring diagram and inspect the circuits 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.

**Europe Models and G.C.C countries**

(mph)		(km/h)	
Standard indication	Allowable range	Standard indication	Allowable range
20	20 – 24.5	20	20 – 26
40	40 – 46.5	40	40 – 48
60	60 – 68.5	60	60 – 70
80	80 – 90.5	80	80 – 92
100	100 – 112.5	100	100 – 114
–	–	120	120 – 136
–	–	140	140 – 158
–	–	160	160 – 180

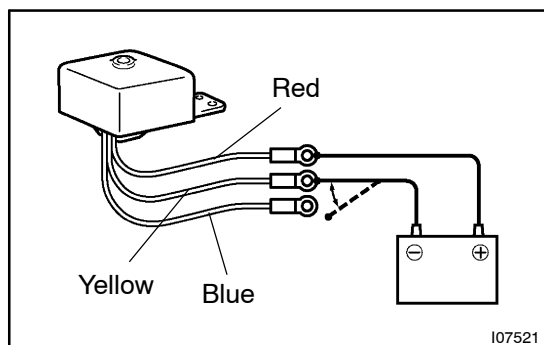
**Australia**

(mph)		(km/h)	
Standard indication	Allowable range	Standard indication	Allowable range
–	–	40	36 – 44
–	–	60	54 – 66
–	–	80	72 – 88
–	–	100	90 – 110
–	–	120	108 – 132
–	–	140	126 – 154
–	–	160	144 – 176

**General Countries**

(mph)		(km/h)	
Standard indication	Allowable range	Standard indication	Allowable range
20	21 – 23.5	20	21 – 25
40	41.5 – 44	40	41.5 – 46
60	62.5 – 66	60	62.5 – 67
80	83 – 87	80	83 – 88
100	104 – 108.5	100	104 – 109
–	–	120	125 – 130.5
–	–	140	145.5 – 151.5
–	–	160	166 – 173

If error is excessive, replace the speedometer.



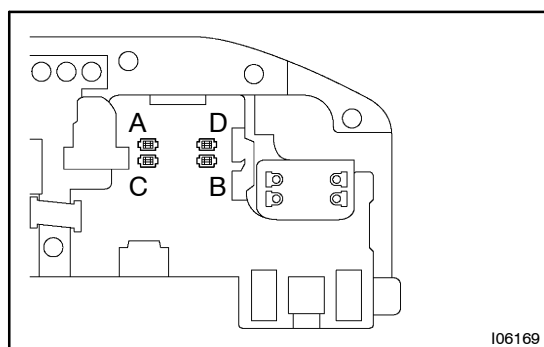
### 3. INSPECT SPEED WARNING BUZZER

- Connect the positive (+) lead from the battery to terminal Red and the negative (-) lead to terminal Blue.
- Connect the intermittently negative (-) lead to terminal Yellow, check that the chime sound.

#### HINT:

The sound will be distorted if the chime is tilted.

If operation is not as specified, replace the buzzer.



### 4. INSPECT SPEEDOMETER RESISTANCE

Measure the resistance between terminals with fixing pointer to the stopper.

Tester connection	Resistance ( $\Omega$ )
A – B	160
C – D	160

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

### 5. INSPECT TACHOMETER/ ON-VEHICLE

- Connect a tune-up test tachometer, and start the engine.

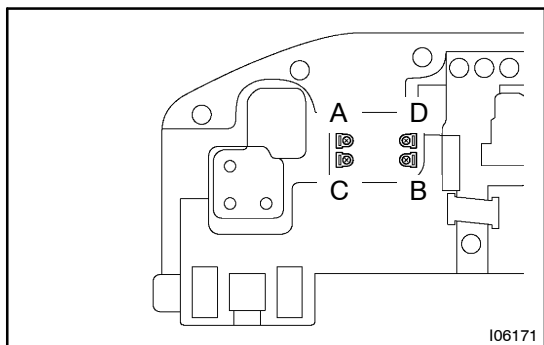
#### NOTICE:

- 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.**

- Compare the tester and tachometer indications.

**DC 13.5 V 25 °C at (77 °F)**

Standard indication	Allowable range
700	630 – 770
1,000	900 – 1,100
2,000	1,850 – 2,150
3,000	2,800 – 3,200
4,000	3,800 – 4,200
5,000	4,800 – 5,200
6,000	5,750 – 6,250
7,000	6,700 – 7,300

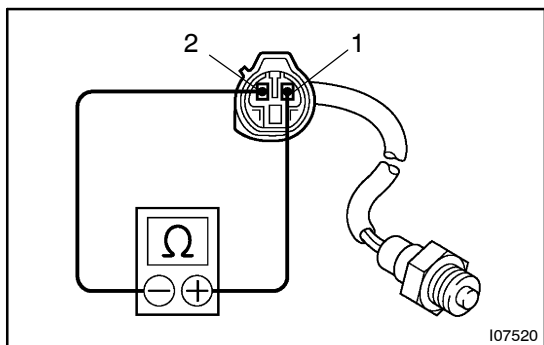


## 6. INSPECT TACHOMETER RESISTANCE

Measure the resistance between terminals with fixing pointer to the stopper.

Tester connection	Resistance ( $\Omega$ )
A - B	160
C - D	160

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

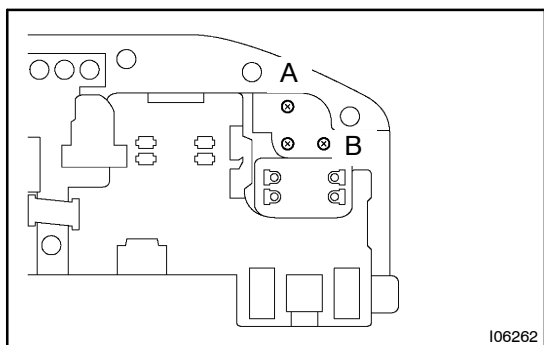


## 7. INSPECT PICK-UP SENSOR (Diesel engine)

Measure the resistance between terminal 1 and 2.

**Resistance: Approx. 730  $\Omega$**

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

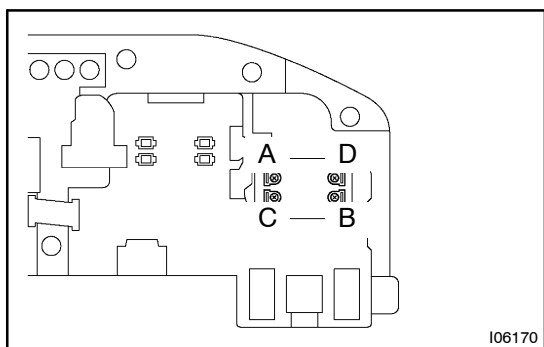


## 8. INSPECT VOLTMETER RESISTANCE

Measure the resistance between terminals with fixing pointer to the stopper.

Tester connection	Resistance ( $\Omega$ )
A - B	347

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

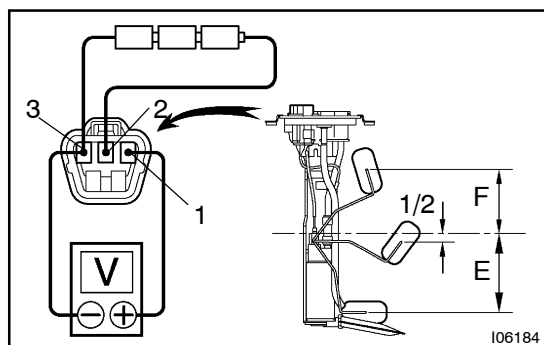


## 9. INSPECT FUEL RECEIVER GAUGE RESISTANCE

Measure the resistance between terminals with fixing pointer to the stopper.

Tester connection	Resistance ( $\Omega$ )
A - B	160
C - D	160

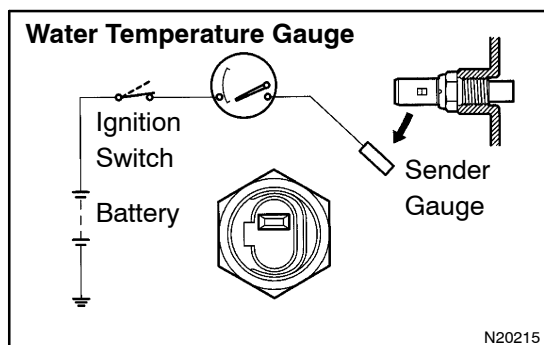
If resistance value is not as specified, replace the receiver gauge.

**10. INSPECT FUEL SENDER GAUGE RESISTANCE**

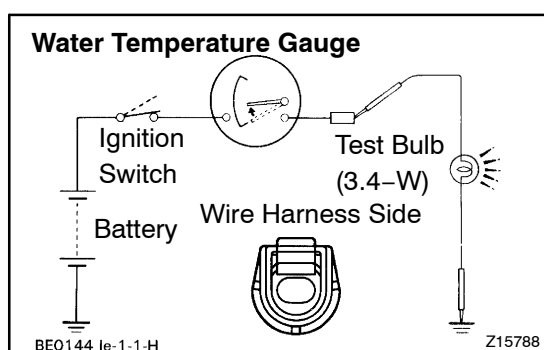
- Apply voltage between terminals 2 and 3.
- Measure voltage between terminals 1 and 2 for each float position.

Float position mm (in.)	Voltage (V)
F: Approx. 85.3 (3.36)	Approx. $0.30 \pm 0.1$
1/2: Approx. 1.7 (0.67)	Approx. $2.45 \pm 0.1$
E: Approx. 91.9 (3.62)	Approx. $4.60 \pm 0.1$

If voltage value is not as specified, replace main sender gauge.

**11. INSPECT WATER TEMPERATURE RECEIVER GAUGE OPERATION**

- Disconnect the connector from the sender gauge.
- Turn the ignition switch ON and check that the receiver gauge needle indicates COOL.

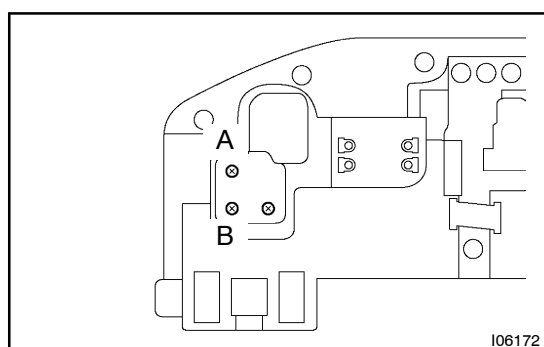


- Ground terminal on the wire harness side connector through a 3.4-W test bulb.
- Turn the ignition switch ON, and check that the bulb lights up and the receiver gauge needle moves to the hot side.

If operation is as specified, replace the sender gauge.

Then recheck the system.

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

**12. INSPECT WATER TEMPERATURE RECEIVER GAUGE RESISTANCE**

Measure the resistance between terminals with fixing pointer to the stopper.

Tester connection	Resistance ( $\Omega$ )
A - B	226.8

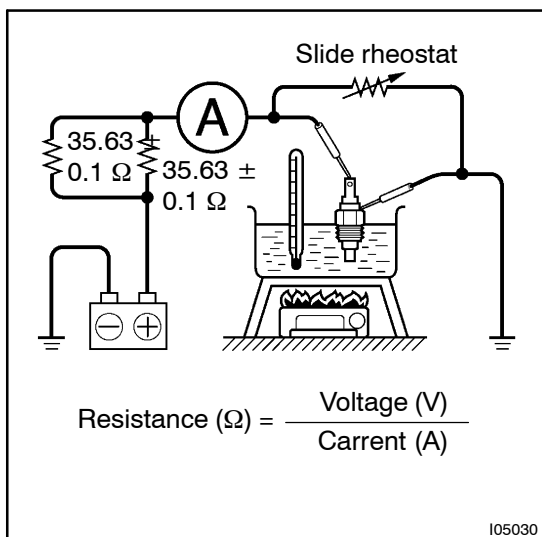
If resistance value is not as specified, replace the receiver gauge.

HINT:

This circuit includes the diode.

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



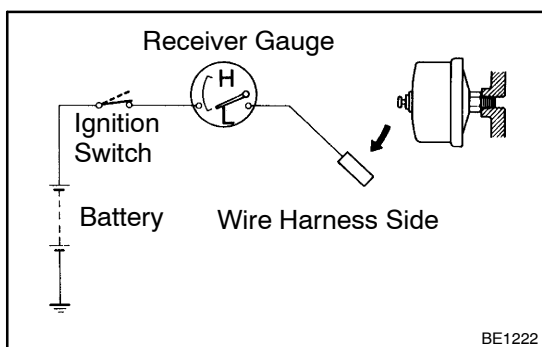


### 13. INSPECT WATER TEMPERATURE SENDER GAUGE RESISTANCE

Connect the wire harness as shown in the illustration, and enter the value in the left formula. Check the resistance conforms to the values in the table below.

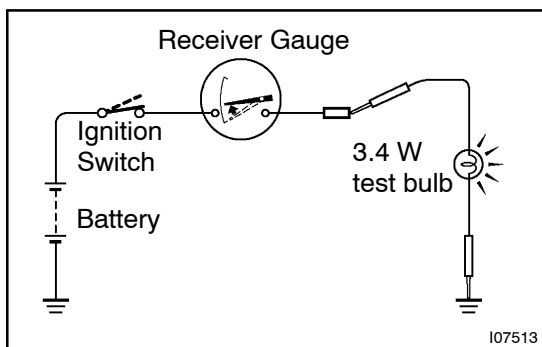
Temperature °C (°F)	Resistance (Ω)
50 (122.0)	160 – 240
120 (248.0)	17.1 – 21.2

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



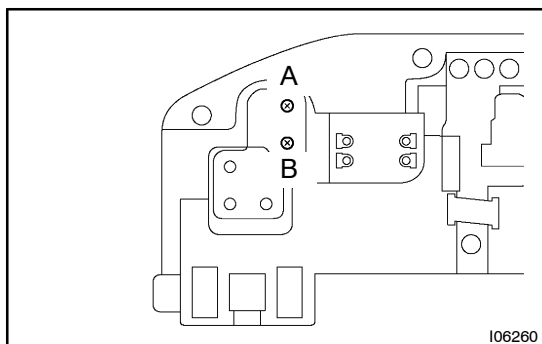
### 14. INSPECT OIL PRESSURE RECEIVER GAUGE OPERATION

- Disconnect the connector from the sender gauge.
- Turn the ignition switch ON and check that the receiver gauge needle indicates LOW.



- Ground terminal on the wire harness side through a 3.4 W test bulb.
- 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.

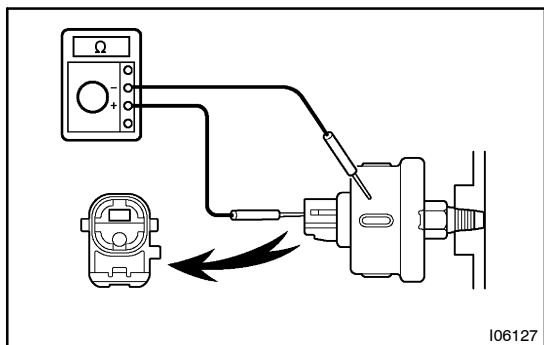


### 15. INSPECT OIL PRESSURE RECEIVER GAUGE RESISTANCE

Measure the resistance between terminals with fixing pointer to the stopper.

Tester connection	Resistance (Ω)
A – B	44

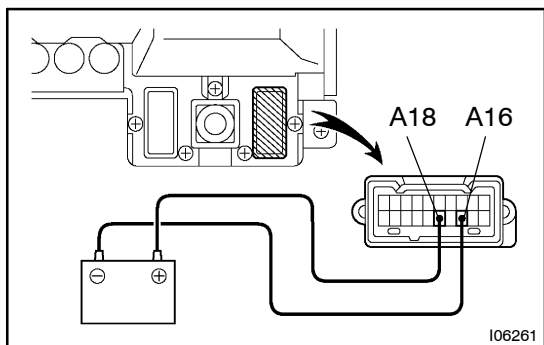
If resistance value is not as the specified, replace the meter.



## 16. INSPECT OIL PRESSURE SENDER GAUGE OPERATION

- Disconnect the connector from the sender gauge.
- Apply Battery voltage to the sender gauge terminal through a test LED.
- Check that the bulb does not light when the engine is stopped.
- Check that the LED flashes when the engine is running. The number of flashed should vary with engine speed.

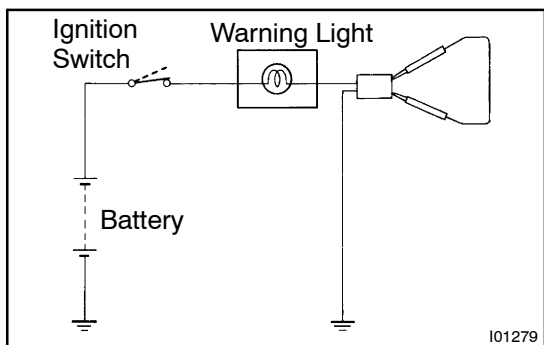
If operation is not as specified, replace the sender gauge.



## 17. INSPECT ABS WARNING BUZZER OPERATION

- Disconnect the connector from the meter connectors.
- Apply Battery voltage to the terminal A16 and A18.

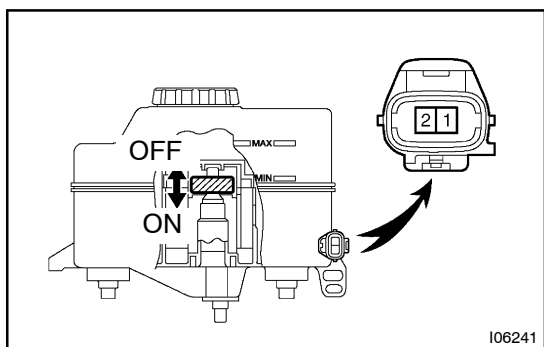
If operation is not as specified, replace the meter.



## 18. Gasoline engine:

### INSPECT BRAKE WARNING LIGHT

- Disconnect the connector from the brake fluid warning switch.
- Release the parking brake pedal.
- Connect the terminals on the wire harness side of the level warning switch connector.
- Start the engine, check that the warning light lights up. If the warning light does not light up, test the bulb or wire harness.

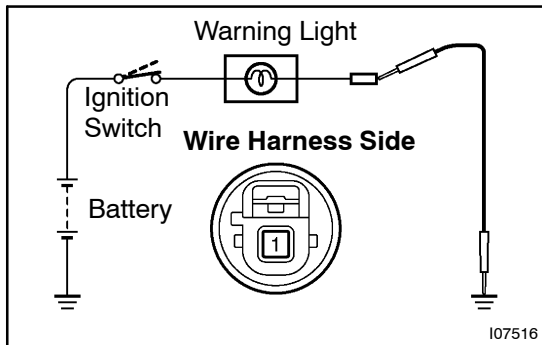


## 19. Gasoline engine:

### INSPECT BRAKE FLUID LEVEL WARNING SWITCH CONTINUITY

- Remove the reservoir tank cap and strainer.
- Disconnect the connector.
- Check that no continuity exists between the terminals with the switch OFF (float up).
- Use siphon, etc. to take fluid out of the reservoir tank.
- Check that continuity exists between the terminals with the switch ON (float down)
- Pour the fluid back in the reservoir tank.

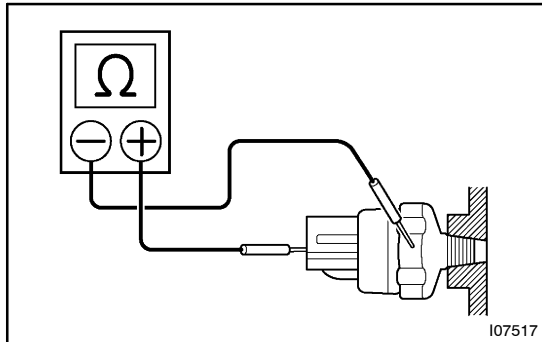
If operation is not as specified, replace the switch.



## 20. Diesel engine: INSPECT WARNING LIGHT

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

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



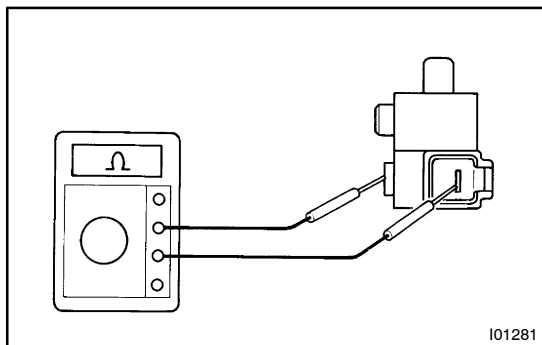
## 21. Diesel engine: INSPECT VACUUM SWITCH OPERATION

- Check that there is continuity between terminal and ground with the engine stopped.
- Check that there is no continuity between terminal and ground with the engine running.

### HINT:

Oil pressure should be over 26.7 kPa (200 mmHg, 7.88 in.Hg)

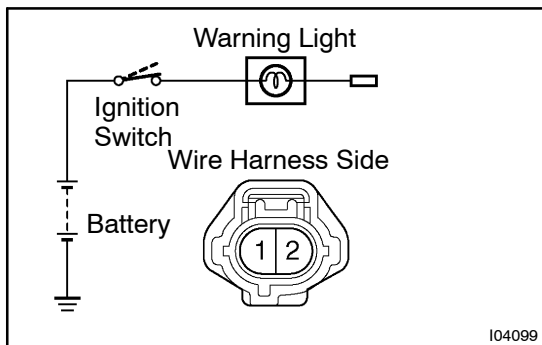
If operation is not as specified, replace the switch.



## 22. Diesel engine: INSPECT PARKING BRAKE SWITCH CONTINUITY

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

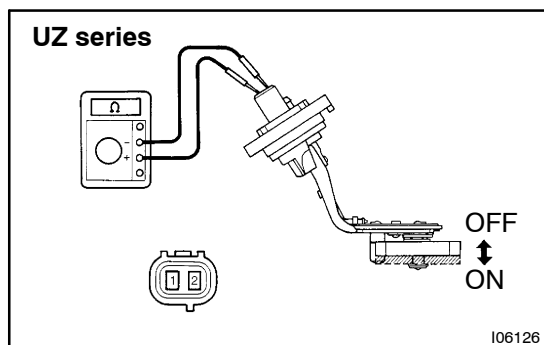
If operation is not as specified, replace the switch or inspect ground point.



## 23. INSPECT ENGINE OIL LEVEL WARNING LIGHT

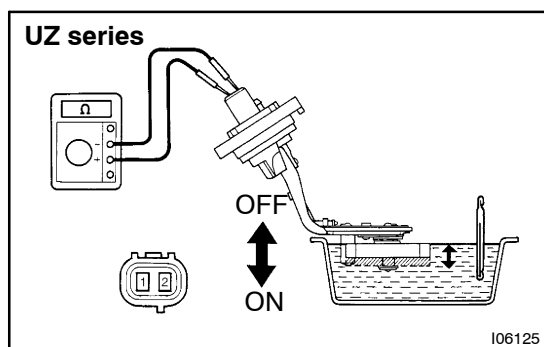
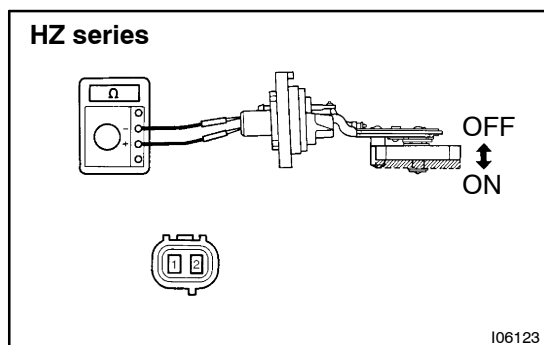
- Disconnect the connector from the switch.
- Run the engine.
- Turn the ignition switch ON, check that the warning light lights up approximately 40 seconds later.

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



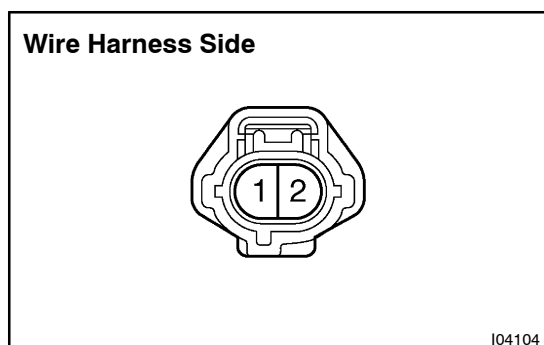
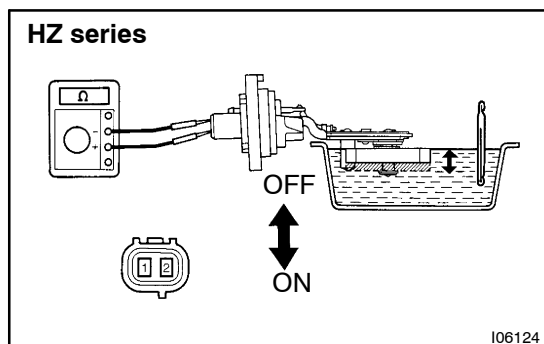
## 24. INSPECT ENGINE OIL LEVEL WARNING SENSOR

- Check that continuity exists between terminals with the switch to below 40 °C (104 °F). (Warning switch ON)
- 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.

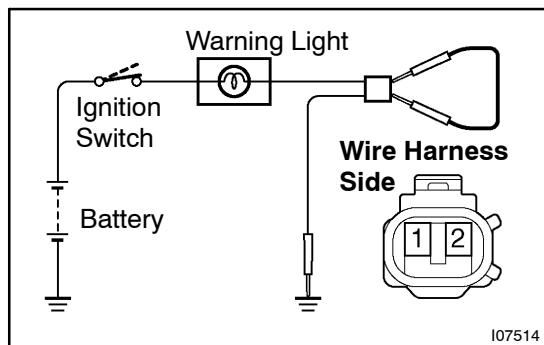


## 25. INSPECT ENGINE OIL LEVEL WARNING SENSOR CIRCUIT

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

Tester connection	Condition	Specified condition
2 - Ground	Constant	Continuity

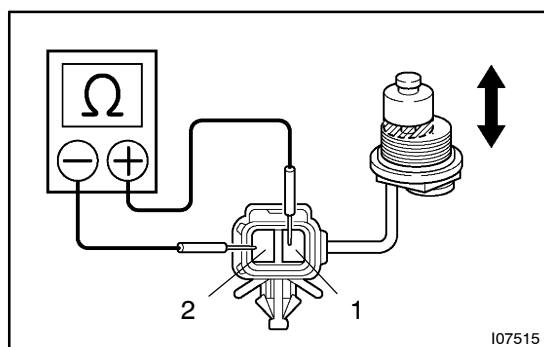
If continuity is not as specified, inspect the wire harness or ground point.



## 26. INSPECT FUEL FILTER WARNING LIGHT

- Disconnect the connector from the warning switch and connector terminals on the wire harness side connector.
- Remove the CHARGE fuse and turn the ignition switch ON.
- Check that the warning light lights up and the warning buzzer sounds.

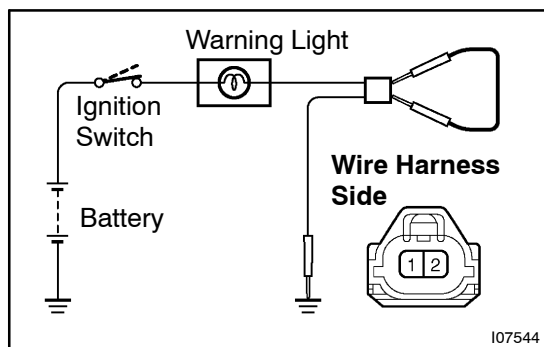
If the warning light does not light up, inspect the bulb or wire harness.



## 27. INSPECT FUEL SEDIMENTER BUZZER OPERATION

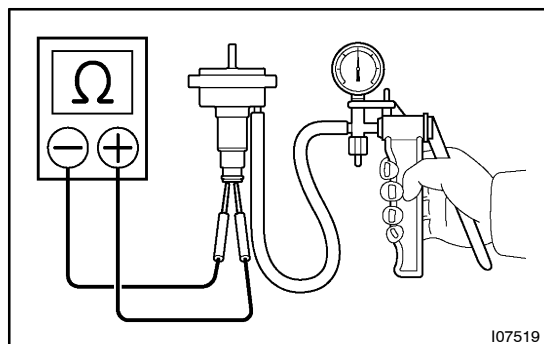
Apply battery voltage between terminals, check that the buzzer sound.

If buzzer does not sound, replace the buzzer.



## 28. INSPECT AIR CLEANER WARNING LIGHT

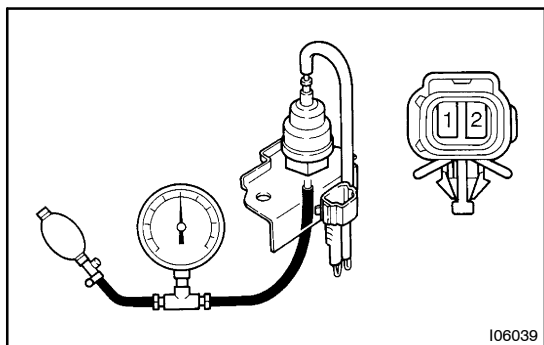
- Disconnect the connector from the air filter warning switch. Connect the wire harness side connector terminals 1 and 2.
  - Start the engine. Check that the bulb lights up.
- If the warning light does not light up, replace the bulb.



## 29. INSPECT VACUUM SENSOR OPERATION

- With a vacuum of  $3.9 \pm 0.5$  kPa ( $29.4 \pm 3.7$  mmHg,  $1.157 \pm 0.146$  in.Hg) or above, check that there is continuity between terminals.
- Check that there is not continuity between terminals with no vacuum.

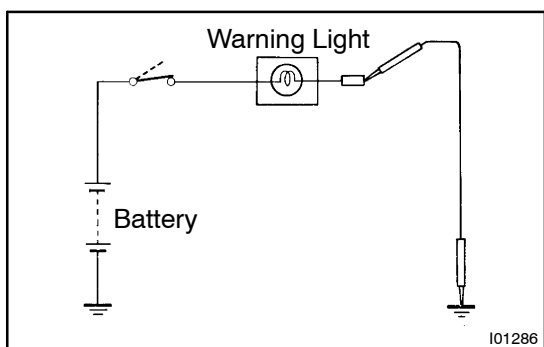
If operation is not as specified, replace the sensor.

**30. INSPECT TURBO PRESSURE SWITCH OPERATION**

- (a) At the 3-way union, disconnect the pressure hose from the compressor elbow and connect a turbocharger pressure gauge (SST).
- SST 09992-00241
- (b) Check that the pressure switch are continuity between terminals, as shown in the chart.

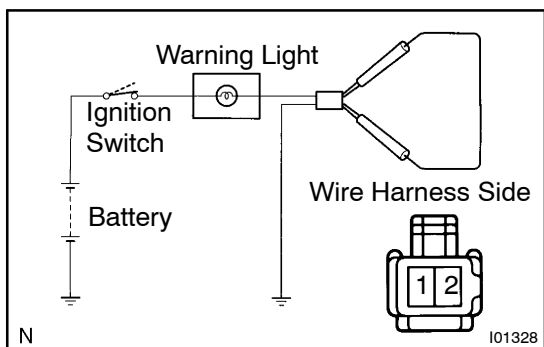
Condition	Terminal	Specified condition
No pressure	1 - 2	Continuity
Apply 1.09 kg/cm <sup>2</sup> (15.54 psi, 107 kPa) of pressure	-	No continuity

If operation is not as specified, replace the switch.

**31. INSPECT OPEN DOOR WARNING LIGHT**

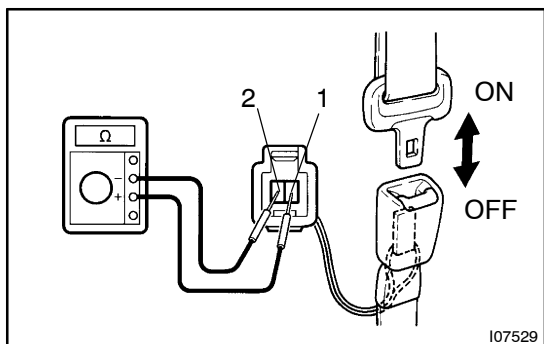
Disconnect the connector from the door courtesy switch and ground terminal 1 on the wire harness side, and check that the warning light lights up.

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

**32. INSPECT SEAT BELT WARNING LIGHT**

- (a) Disconnect the connector from the buckle switch and ground terminal on the wire harness side connector.
- (b) Turn the ignition switch ON and check that the warning light blinking lights up.

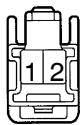
If the warning light does not blinking light up, inspect the bulb or wire harness.

**33. INSPECT SEAT BELT BUCKLE SWITCH CONTINUITY**

- (a) Check that no continuity exists between the terminals 1 and 2 on the switch side connector with the switch OFF (belt fastened).
- (b) Check that continuity exists between the terminals 1 and 2 on the switch side connector with the switch ON (belt unfastened).

If operation is not as specified, replace the switch.

Wire Harness Side



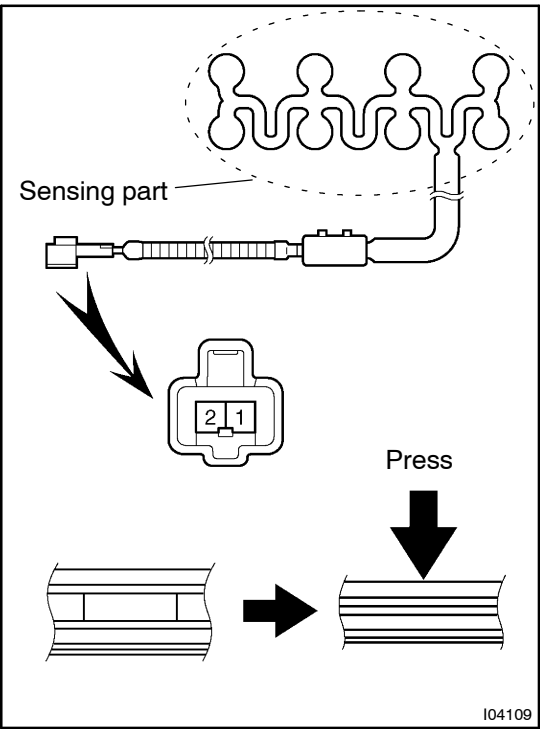
N21309

34. INSPECT SEAT BELT BUCKLE 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
–	Turn the ignition switch ON	Chime sounds for 4 – 8 secs.
–	Ground terminal 1 and turn the ignition switch ON	No chime sound

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

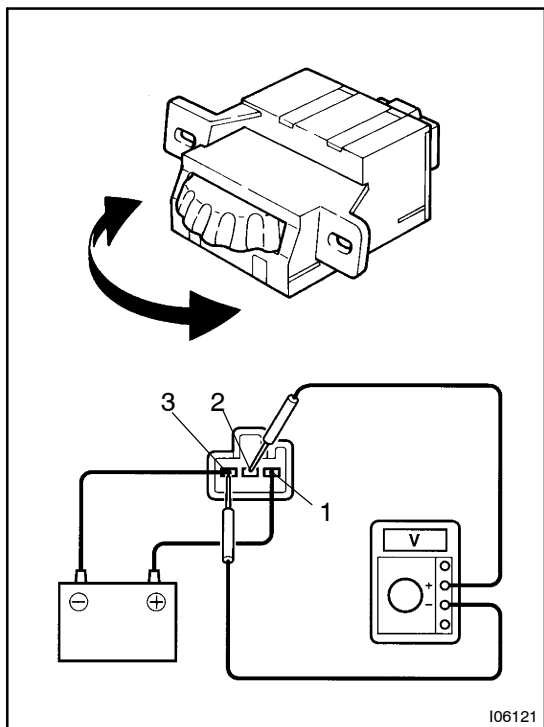


I04109

35. Passenger seat only:  
INSPECT SEAT BELT WARNING OCCUPANT DETECTION SENSOR CONTINUITY

Check that continuity exists between the terminals 1 and 2 when pressing the sensing part.

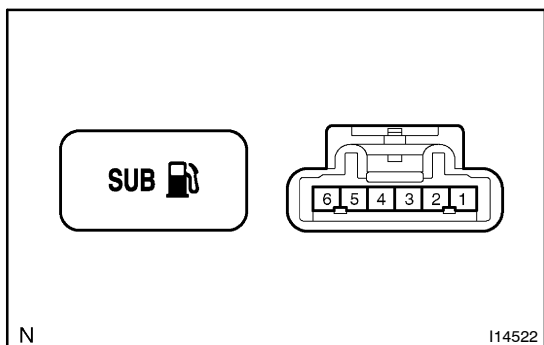
If operation is not as specified, replace the sensor.



I06121

**36. INSPECT LIGHT CONTROL RHEOSTAT**

- Connect the positive (+) lead from the battery to terminal 1 and negative lead (-) to terminal 3.
- Connect the positive (+) lead from the voltmeter to terminal 2 and negative lead to terminal 3.
- Turn the rheostat knob and check that the voltage changes.



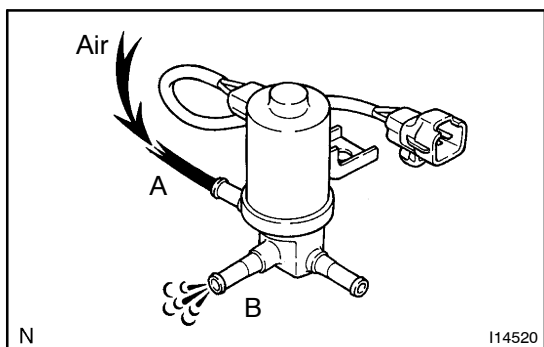
N

I14522

**37. INSPECT FUEL BULB CONTROL SWITCH CONTINUITY**

Condition	Tester connection	Specified condition
OFF	-	Continuity
ON	3 - 4	Continuity
Illumination circuit	1 - 2	Continuity

If continuity is not as specified, replace the switch.

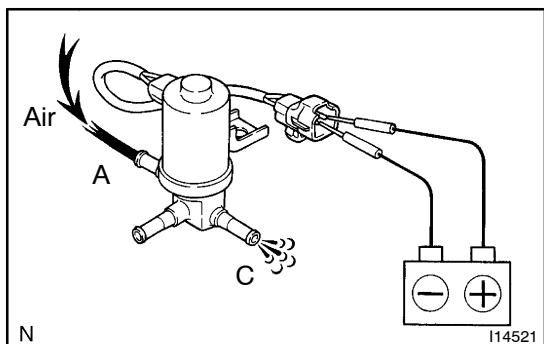


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I14520

**38. INSPECT FUEL TANK SOLENOID VALVE OPERATION**

- Check that air flows with difficulty from port A to B.



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I14521

- Apply battery voltage across the terminals.

- Check that air flows from port A to C.

If continuity is not as specified, replace the valve.