BODY ELECTRICAL SYSTEM

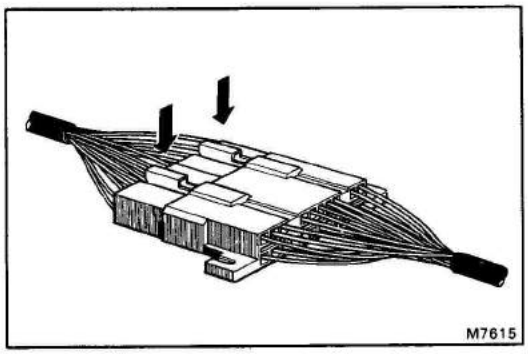
PRECAUTIONS

WIRING COLOR CODE

Wire colors are indicated by an alphabetical code.
The 1st letter indicates the basic wire color and the 2nd indicates the stripe color.

B = Black	BR = Brown
G = Green	GR = Grey
L = Light Blue	LG = Light Green
O = Orange	P = Pink
R = Red	V = Violet
W = White	Y = Yellow

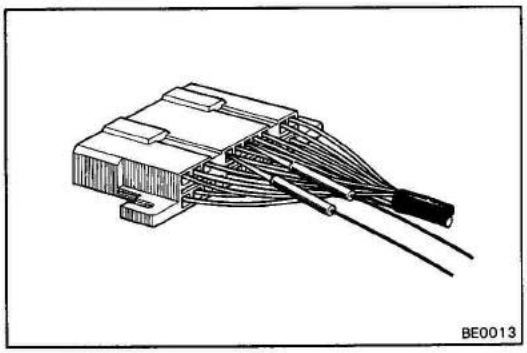
Example: R-G indicates a Red wire with a Green stripe



BULKHEAD TYPE CONNECTOR HANDLING AND INSPECTION

DISCONNECT BULKHEAD TYPE CONNECTOR

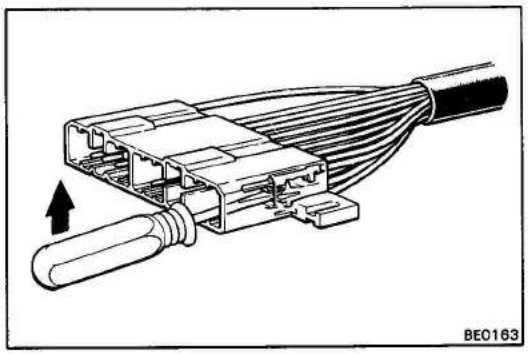
To remove the connector, push the lock levers shown in the figure, and pull out.



INSPECT BULKHEAD TYPE CONNECTOR

When checking the continuity or voltage with a circuit tester, insertion of the test probe into the receptacle connector may open the fitting to the connector and result in poor contact.

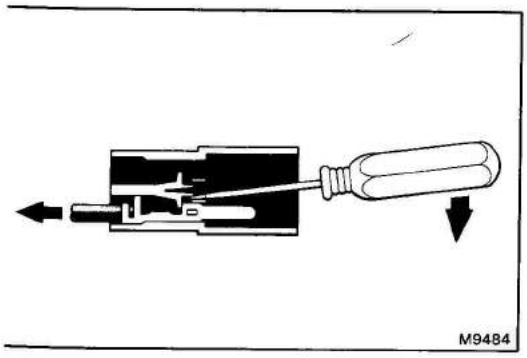
Therefore, ensure that the test probe is inserted only from the wire harness side as shown in the figure.



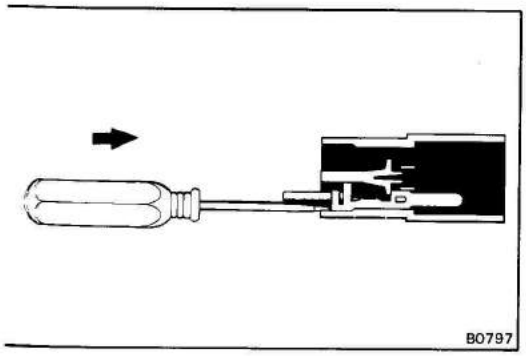
REPLACEMENT OF TERMINAL

REMOVE TERMINALS FROM BULKHEAD CONNECTOR

(a) From the open end, insert a miniature screwdriver between the locking lug and terminal.



(b) Pry up the locking lug with the screwdriver and pull the terminal out from the rear.



INSTALL TERMINALS TO BULKHEAD CONNECTOR

(a) Push in the terminal until it is securely locked in the connector lug.

(b) Pull on the wire to confirm that it is securely locked.

INSPECTION OF CIRCUIT AND CONNECTOR

INSPECT CIRCUIT

When inspecting the circuit, refer to the diagram at the back of the manual.

INSPECT CONNECTOR

All connectors are shown from the component side. Therefore, when inspecting from the body side, the left and right terminal connections will be in reverse.

REPLACEMENT OF FUSE

Install a new fuse with a correct amperage.

CAUTION:

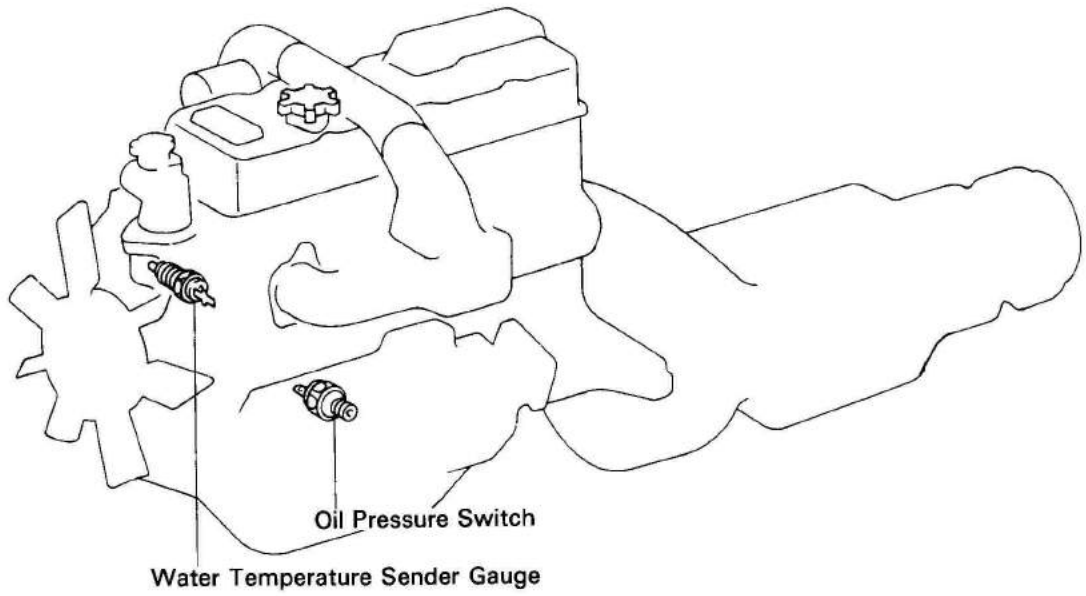
1. **Turn off all electrical components and the ignition switch before replacing a fuse. Do not exceed the fuse amp rating.**
2. **Always use a fuse puller for removing and inserting a fuse. Remove and insert straight in and out without twisting. Twisting could force open the terminals too much, resulting in a bad connection.**

If a fuse continues to blow, a short circuit is indicated. The system must be checked by a qualified technician.

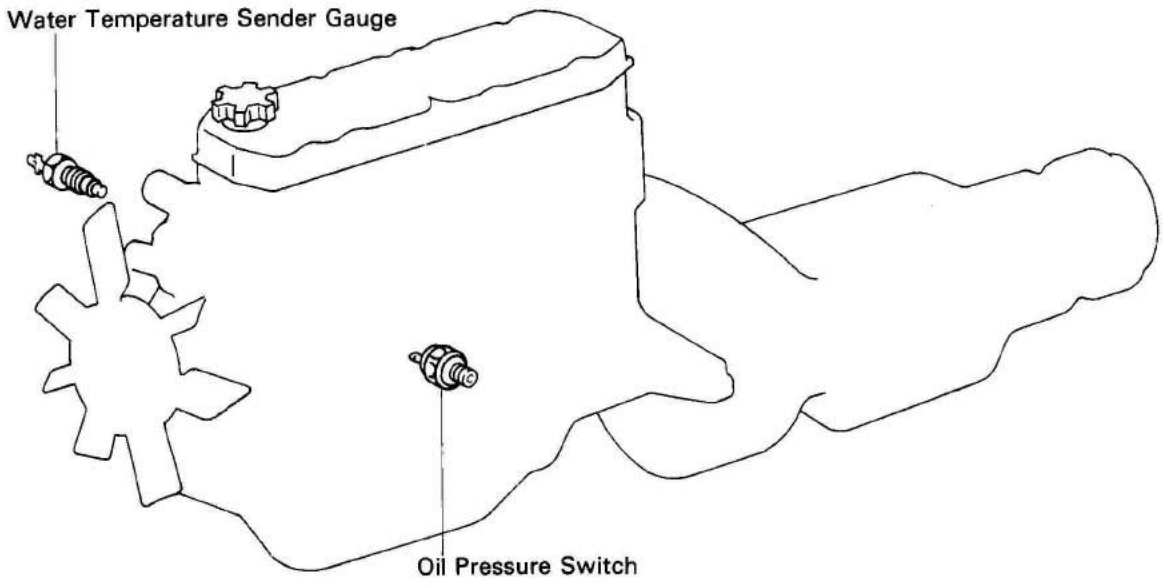
LOCATION OF SWITCHES AND RELAYS

ENGINE COMPARTMENT SWITCHES

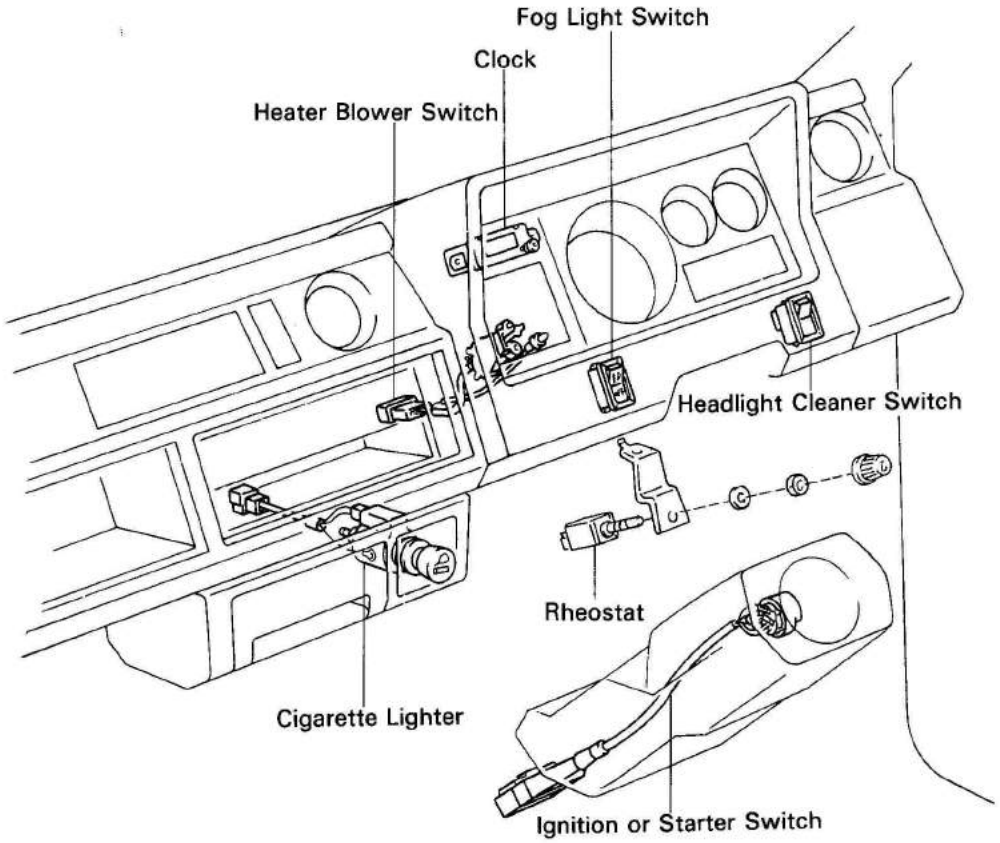
BU series

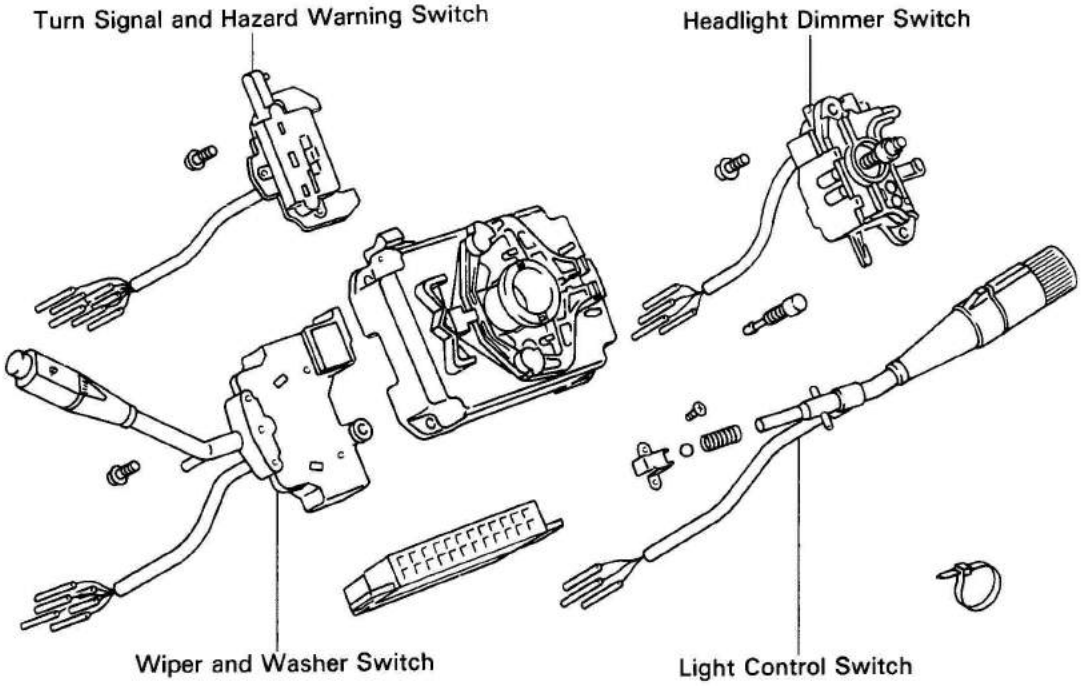


WU, RU, YU series



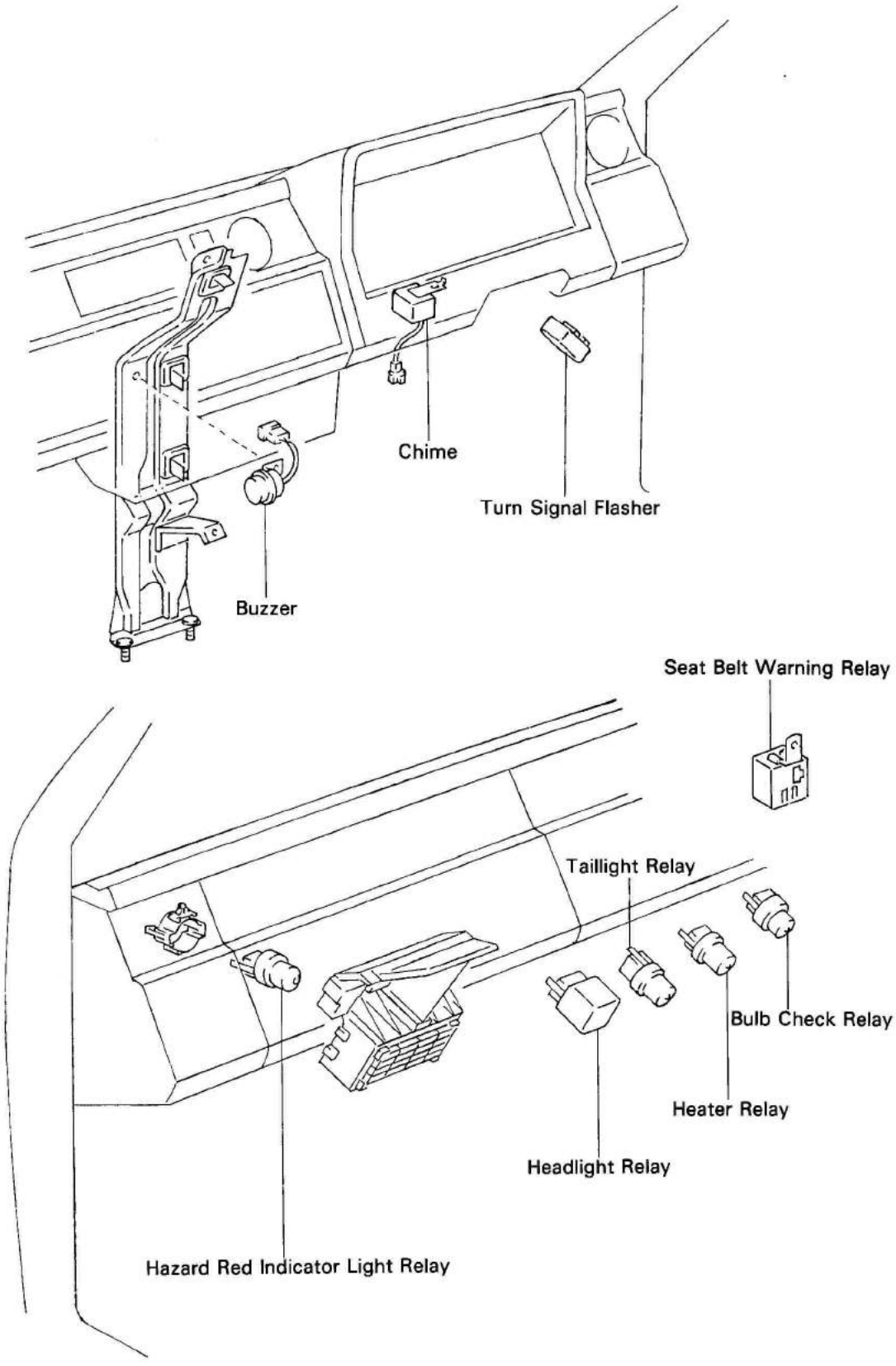
DASH AND STEERING COLUMN SWITCHES AND RELAYS



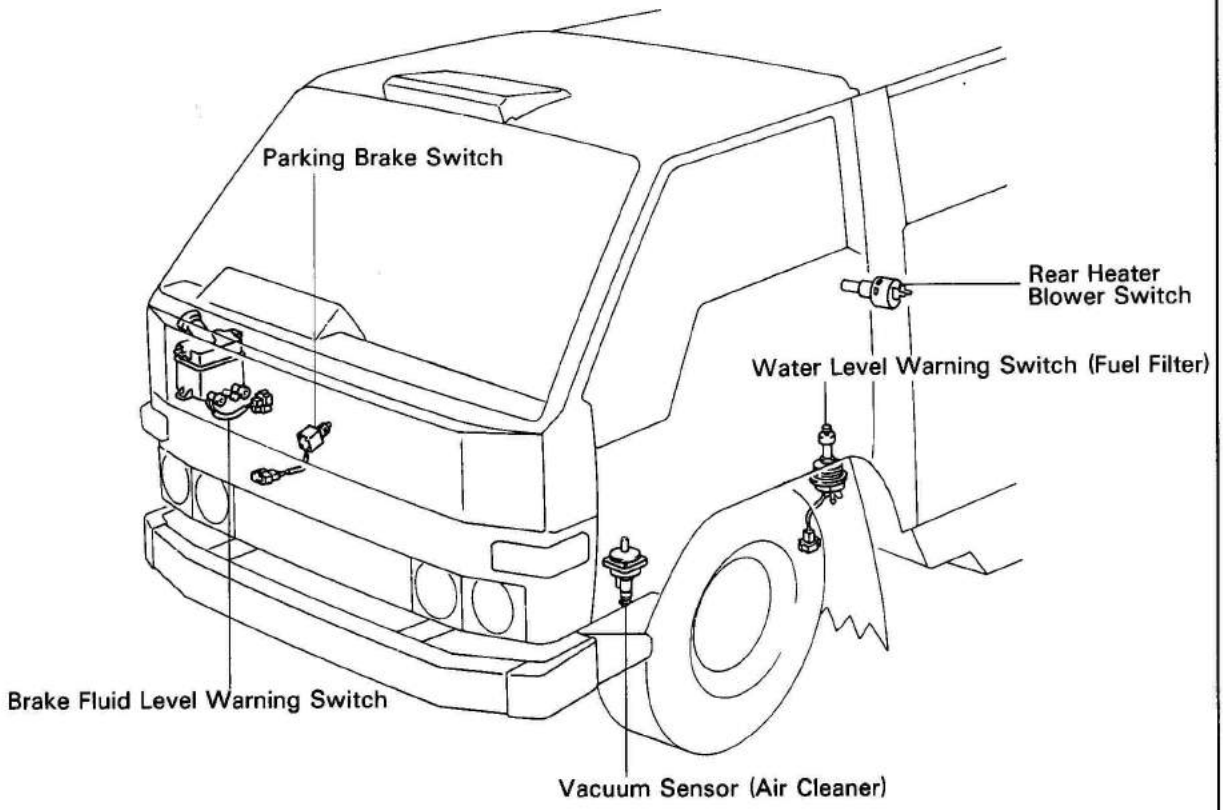


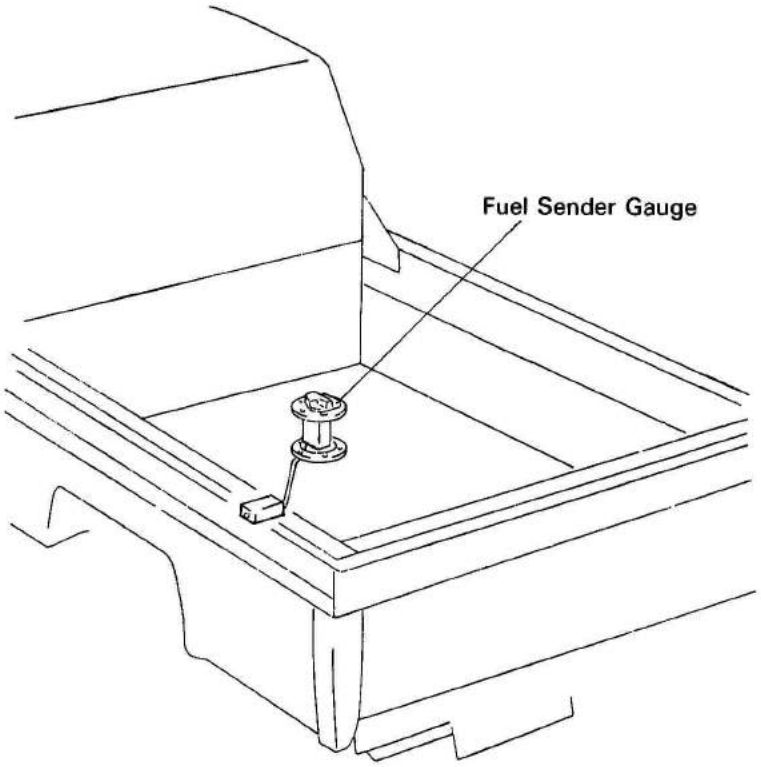
BE0577
BE0578

PASSENGER COMPARTMENT SWITCHES AND RELAYS



VAN AND DOUBLE CAB SWITCHES AND RELAYS



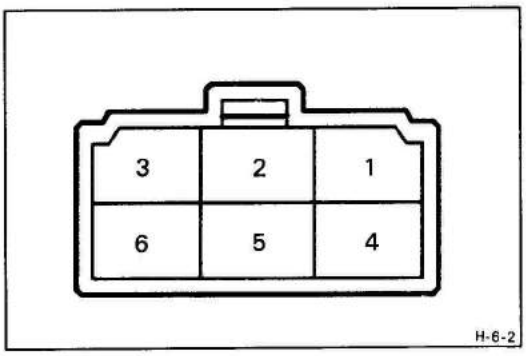


BE0581
BE0582

IGNITION SWITCH AND STARTER SWITCH

INSPECTION OF IGNITION SWITCH AND STARTER SWITCH

INSPECT SWITCH CONTINUITY



BU (B engine only) series

Terminal / Switch position	3 AM	1 ACC	6 M	2 G	5 ST
LOCK					
ACC	○	○			
ON	○	○	○		
GLOW	○		○	○	
START	○		○	○	○

BU (11B, 13B engine), WU, YU and RU series

Terminal / Switch position	1 AM	3 ACC	6 IG	4 ST_1	2 ST_2
OFF					
ACC	○	○			
ON	○	○	○		
START	○		○	○	○

If continuity is not as specified, replace the switch.

LIGHTING

Troubleshooting

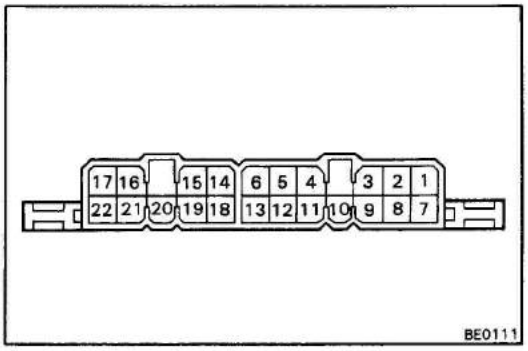
Problem	Possible cause	Remedy	Page
Only one light does not light (all exterior lights come on)	Light bulb burned out Socket, wire or ground faulty	Replace bulb Repair as necessary	
No headlights light	HEAD fuse blown Headlight control relay faulty Light control/dimmer switch faulty Wiring or ground faulty	Replace fuse and check for short Check relay Check switch Repair as necessary	BE-3 BE-11 BE-10
High beam headlights or headlight flasher do not operate	Light control/dimmer switch faulty Wiring or ground faulty	Check switch Repair as necessary	BE-10
Tail, parking and license light do not light	TAIL fuse blown Fusible link blown Taillight control relay faulty Light control switch faulty Wiring or ground faulty	Replace fuse and check for short Replace fusible link Check relay Check switch Repair as necessary	BE-3 BE-11 BE-10
Stop lights do not light	STOP fuse blown Stop light switch faulty Wiring or ground faulty	Replace fuse and check for short Adjust or replace switch Repair as necessary	BE-3
Stop lights stay on	Stop light switch faulty	Adjust or replace switch	
Turn signal does not flash on one side	Turn signal switch faulty Wiring or ground faulty	Check switch Repair as necessary	BE-12
Turn signals or hazard warning lights do not operate	HAZ-HORN fuse blown Turn signal flasher faulty Turn signal/hazard switch faulty Wiring or ground faulty	Replace fuse and check for short Check flasher Check switch Repair as necessary	BE-3 BE-13 BE-12
Fog lights do not light	TAIL fuse blown Fog light switch faulty Light bulb burned out Socket, wire or ground faulty	Replace fuse and check for short Check switch Replace bulb Repair as necessary	BE-3 BE-13

Light Control Switch and Headlight Dimmer Switch

INSPECTION OF LIGHT CONTROL SWITCH AND HEADLIGHT DIMMER SWITCH

INSPECT CONTINUITY OF LIGHT CONTROL SWITCH AND HEADLIGHT DIMMER SWITCH

Inspect the switch continuity between terminals.



Light control switch

Terminal (Wire color) / Switch position	10 EL (W)	11 T (W)	4 H (R)
OFF			
TAIL	○	○	
HEAD	○	○	○

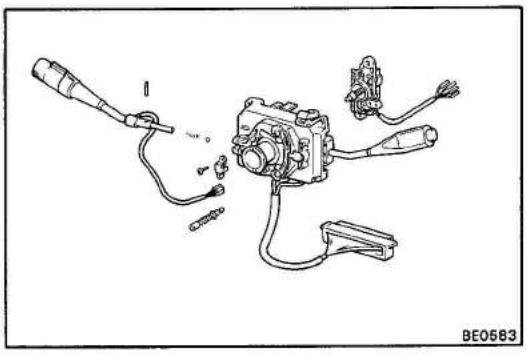
Headlight dimmer switch

Terminal (Wire color) / Switch position	13 E_D (W-B)	6 H_L (R-G)	5 H_U (R-Y)	12 H_F (R-W)
Flash	○		○	○
Low Beam	○	○		
High Beam	○		○	

If continuity is not as specified, replace the switch.

REPLACEMENT OF LIGHT CONTROL SWITCH AND HEADLIGHT DIMMER SWITCH

REPLACE LIGHT CONTROL SWITCH AND HEADLIGHT DIMMER SWITCH

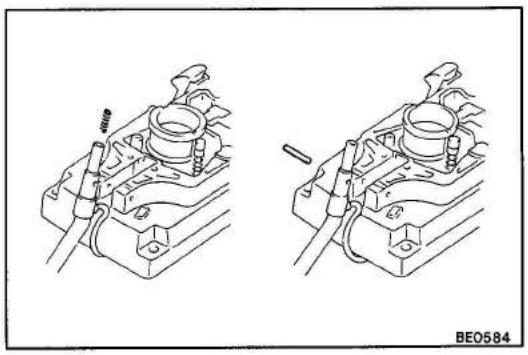


(a) Remove the terminals from the connector. (See page BE-2)

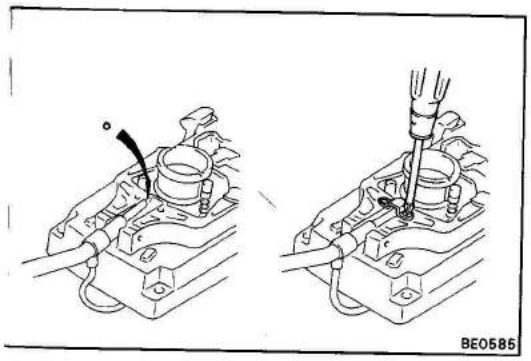
(b) Remove the light control switch.

(c) Remove the headlight dimmer switch.

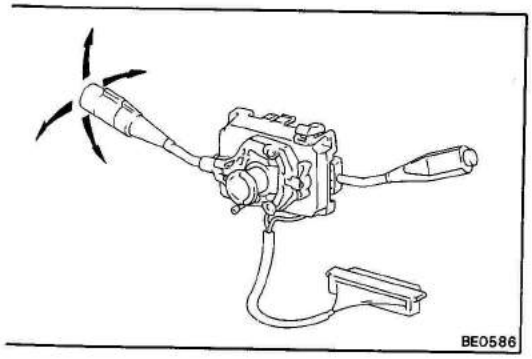
(d) Install the headlight dimmer switch.



(e) Insert the spring into the lever and install the lever with the pin.



(f) Place the ball on the spring, position the lever at HI and install the plate.

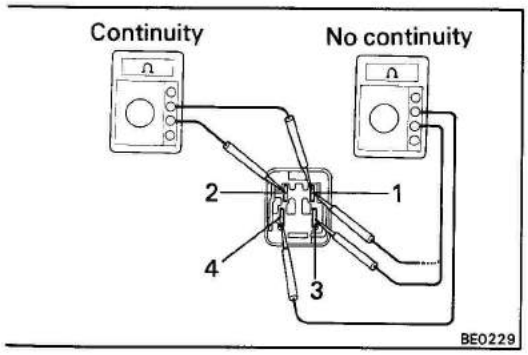


(g) Insure that the switch operates smoothly.

(h) Install the terminals to the connector. (See page BE-3)

Headlight Control Relay

INSPECTION OF HEADLIGHT CONTROL RELAY



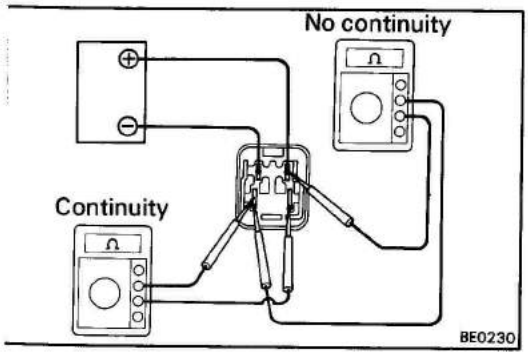
1. INSPECT RELAY CONTINUITY

(a) Check that there is continuity between terminals 1 and 2.

(b) Check that there is no continuity between terminals 3 and 4.

(c) Check that there is no continuity between terminals 1 and 4.

If continuity is not as specified, replace the relay.



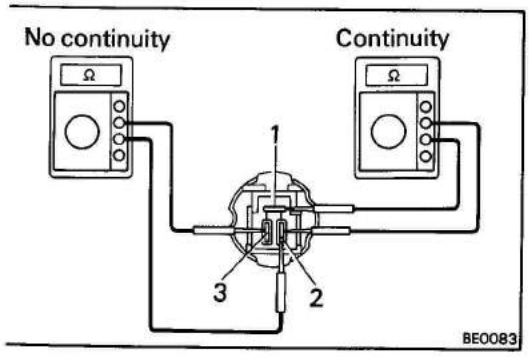
2. INSPECT RELAY OPERATION

(a) Apply battery voltage across terminals 1 and 2.

(b) Check that there is continuity between terminals 3 and 4.

(c) Check that there is no continuity between terminals 1 and 4.

If operation is not as specified, replace the relay.



Taillight Control Relay

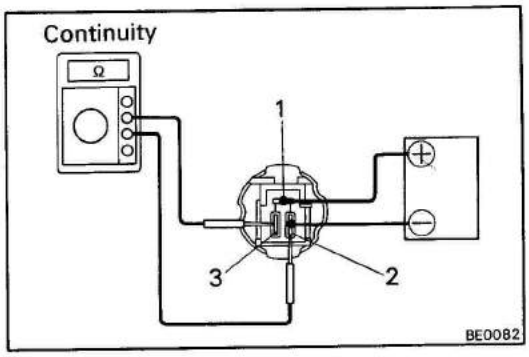
INSPECTION OF TAILLIGHT CONTROL RELAY

1. INSPECT RELAY CONTINUITY

(a) Check that there is continuity between terminals 1 and 2.

(b) Check that there is no continuity between terminals 2 and 3.

If continuity is not as specified, replace the relay.



2. INSPECT RELAY OPERATION

(a) Apply battery voltage across terminals 1 and 2.

(b) Check that there is continuity between terminals 2 and 3.

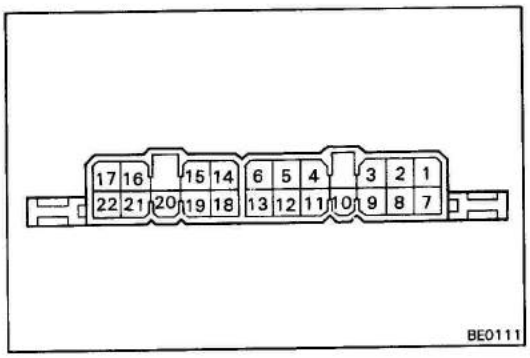
If operation is not as specified, replace the relay.

Turn Signal and Hazard Warning Switch

INSPECTION OF TURN SIGNAL AND HAZARD WARNING SWITCH

INSPECT CONTINUITY OF TURN SIGNAL AND HAZARD WARNING SWITCH

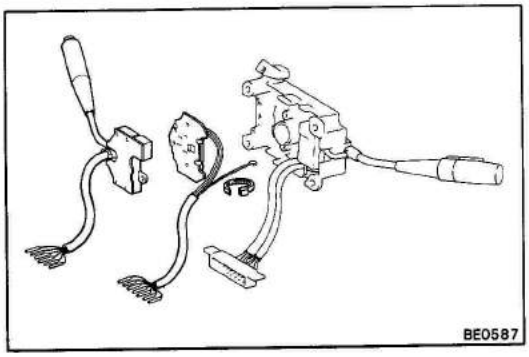
Inspect the switch continuity between terminals.



Terminal (Wire color) / Switch position		9 T_L (G-B)	3 T_B (G-W)	8 T_R (G-Y)	2 B_1 (G-L)	7 F (G)	* B_2 (G-O)
Turn signal	L	○—○			○—○		
	N				○—○		
	R		○—○		○—○		
Hazard	ON	○—○	○—○	○—○		○—○	

If continuity is not as specified, replace the switch.

REPLACEMENT OF TURN SIGNAL AND HAZARD WARNING SWITCH



REPLACE TURN SIGNAL AND HAZARD WARNING SWITCH

(a) Remove the terminals from the connector. (See page BE-2)

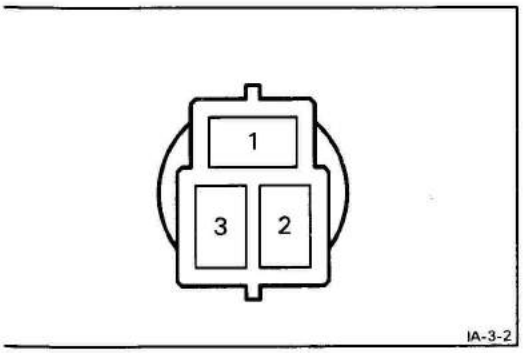
(b) Remove the three screws, and remove the wiper and washer switch.

(c) Remove the turn signal and hazard switch.

(d) Install the turn signal and hazard switch.

(e) Install the wiper and washer switch.

(f) Connect the terminals to the connector. (See page BE-3)



Turn Signal Flasher

INSPECTION OF TURN SIGNAL FLASHER

INSPECT FLASHER OPERATION

(a) Connect the positive (+) lead from the battery to terminal 3. Connect the negative (−) lead to terminal 2.

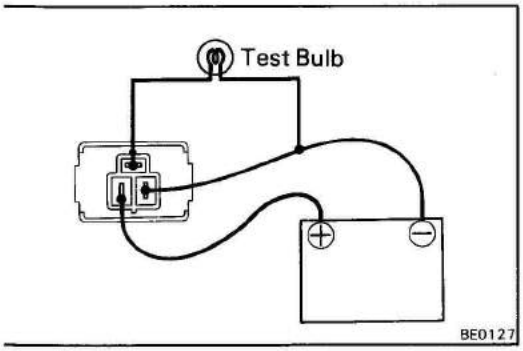
(b) Connect a test bulb between terminals 1 and 2, and check that the bulb goes on and off.

Test bulb
12V system 50W
24V system 55W

NOTE: The turn signal lights should flash 75 to 95 times per minute.

If one of the front or rear turn signal lights has an open circuit, the number of flashes would be more than 120 per minute.

If operation is not as specified, replace the flasher.



Hazard Red Indicator Light Relay

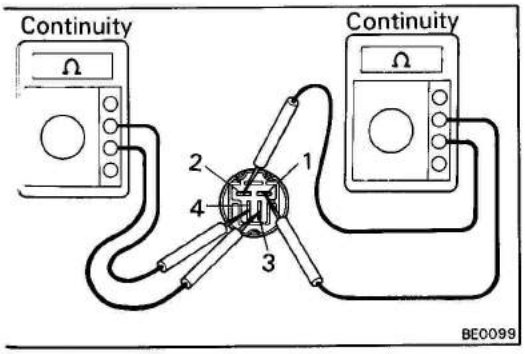
INSPECTION OF RED INDICATOR LIGHT RELAY

1. INSPECT RELAY CONTINUITY

(a) Check that there is continuity between terminals 1 and 2.

(b) Check that there is continuity between terminals 3 and 4.

If continuity is not as specified, replace the relay.

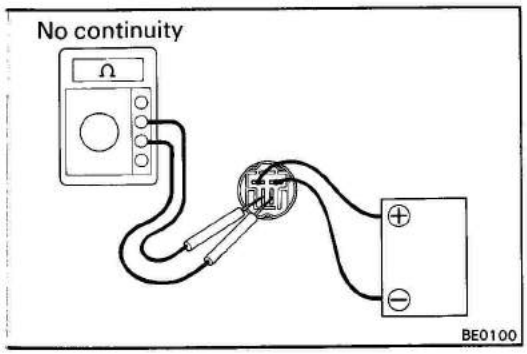


2. INSPECT RELAY OPERATION

(a) Apply battery voltage across terminals 1 and 2.

(b) Check that there is no continuity between terminals 3 and 4.

If operation is not as specified, replace the relay.



Fog Light Switch

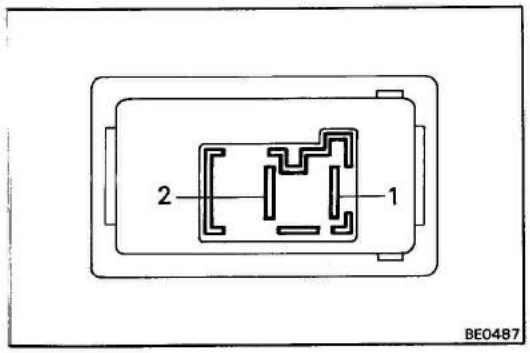
INSPECTION OF FOG LIGHT SWITCH

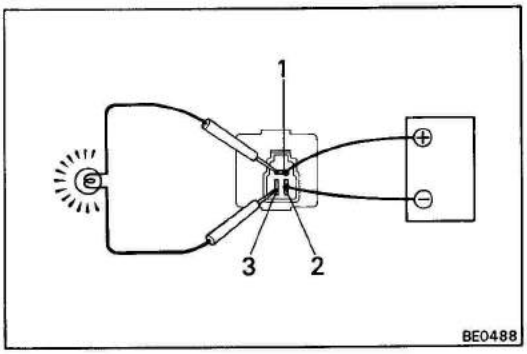
INSPECT SWITCH CONTINUITY

Inspect the switch continuity between terminals.

Terminal / Switch position	1	2
ON	○	○
OFF		

If continuity is not as specified, replace the switch.





Light Control Rheostat

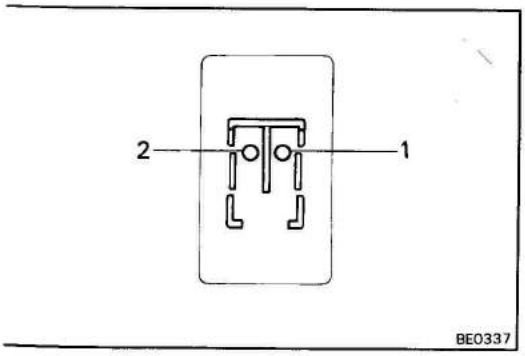
INSPECTION OF LIGHT CONTROL RHEOSTAT

INSPECT RHEOSTAT OPERATION

Connect the positive (+) lead from the battery to terminal 1. Connect the negative (−) lead from the battery to terminal 2, and connect a 3.4W test bulb between terminals 1 and 3.

Gradually slide the rheostat knob toward the bright side and/or dark side and check that the test bulb brightness changes.

If operation is not as specified, replace the rheostat.



HEADLIGHT CLEANER

Headlight Cleaner Switch

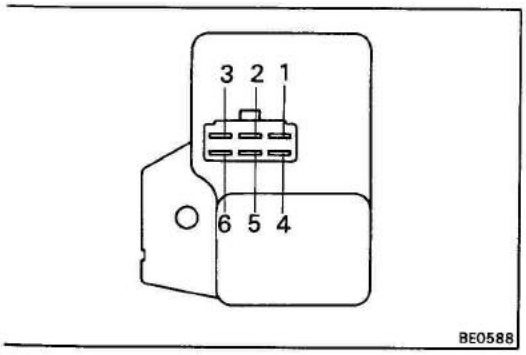
INSPECTION OF HEADLIGHT CLEANER SWITCH

INSPECT SWITCH CONTINUITY

Inspect the switch continuity between terminals.

Switch position \ Terminal	1	2
OFF		
ON	○——○	

If continuity is not as specified, replace the switch.



Headlight Cleaner Control Relay

INSPECTION OF HEADLIGHT CLEANER CONTROL RELAY

INSPECT CONTROL RELAY CIRCUIT

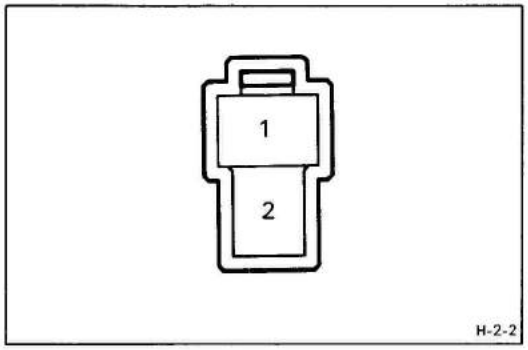
(a) Disconnect the control relay and inspect the connector on the wire harness side as shown in the chart below.

Terminal	Check Item	Tester Connection	Condition	Voltage or Continuity
3	Continuity	3 – Body Ground	Turn light control switch to HEAD and cleaner switch ON	Continuity
			Turn light control switch to OFF or cleaner switch OFF	No Continuity
5	Continuity	5 – Body Ground		Continuity
6	Voltage	6 – Body Ground	Turn ignition switch to ON	Battery Voltage
			Turn ignition switch to LOCK or ACC	No Voltage

(b) With the terminal 4 on the connector side grounded, check that the cleaner motor operates.

CAUTION: These tests must be performed quickly (within 3 – 5 seconds) to prevent the coil from burning out.

If circuit is correct as specified, replace the relay.



Cleaner Motor

INSPECTION OF CLEANER MOTOR

INSPECT MOTOR OPERATION

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

(b) Check that the motor operates.

CAUTION: These tests must be performed quickly (within 3 − 5 seconds) to prevent the coil from burning out.

If operation is not as specified, replace the motor.

WIPER AND WASHER

Troubleshooting

Problem	Possible cause	Remedy	Page
Wipers do not operate or return to off position	WIPER fuse blown	Replace fuse and check for shorts	BE-3
	Wiper motor faulty	Check motor	BE-18
	Wiper switch faulty	Check switch	BE-17
	Wiring or ground faulty	Repair as necessary	
Wipers do not operate in INT position	Wiper switch faulty	Check switch	BE-17
	Wiper motor faulty	Check motor	BE-18
	Wiring or ground faulty	Repair as necessary	
Washer does not operate	Washer hose or nozzle clogged	Repair as necessary	
	Washer motor faulty	Replace motor	
	Wiper switch faulty	Check switch	BE-17
	Wiring or ground faulty	Repair as necessary	

Wiper and Washer Switch

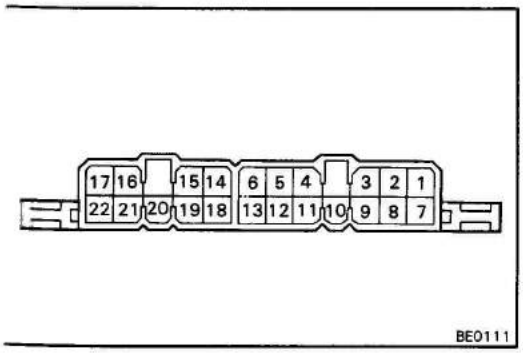
INSPECTION OF WIPER AND WASHER SWITCH

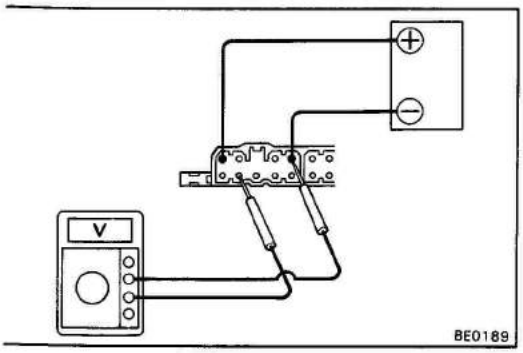
1. INSPECT WIPER AND WASHER SWITCH CONTINUITY

Inspect the switch continuity between terminals.

Switch	Terminal (Wire color) / Switch position	20 +S (L-R)	21 +1 (L-B)	17 +B (L-W)	22 +2 (L-O)	15 W (L)	14 Ew (B)
Wiper	OFF	○	○				
	INT	○	○				
	LO		○	○			
	HI			○	○		
Washer	OFF						
	ON					○	○

If continuity is not as specified, replace the switch.

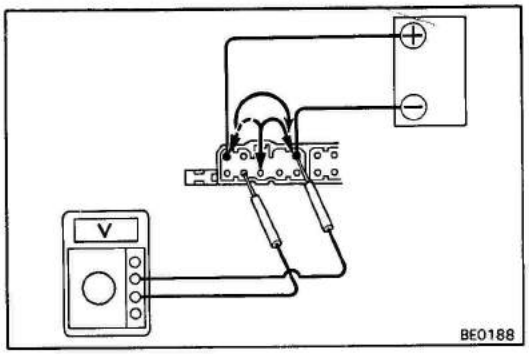




2. INSPECT SWITCH OPERATION (INT Type only)

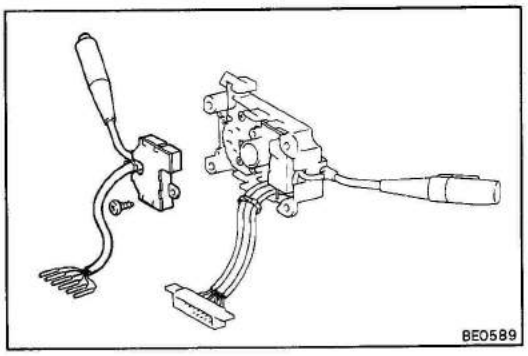
(a) Connect the positive (+) lead from the battery to terminal 17 and connect the negative (−) lead from the battery to terminal 14.

(b) Connect the positive (+) lead from the voltmeter to terminal 21 and connect the negative (−) lead from the voltmeter to terminal 14. Turn the wiper switch to INT position and check that the meter needle indicates battery voltage.



(c) After first connecting the 20 probe to terminal 14, connect it to terminal 17. Then, immediately connect it to terminal 14 again, and check that the tester needle indicates zero volts for 3 – 5 seconds before returning to its original position.

If operation is not as specified, replace the switch.



REPLACEMENT OF WIPER AND WASHER SWITCH

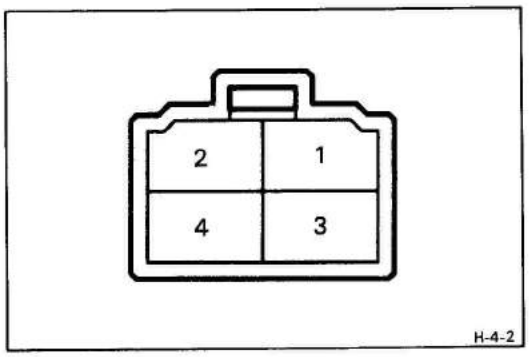
REPLACE WIPER AND WASHER SWITCH

(a) Remove the terminals from the connector. (See page BE-2)

(b) Remove the wiper and washer switch.

(c) Install the wiper and washer switch.

(d) Connect the terminals to the connector. (See page BE-3)



Wiper Motor

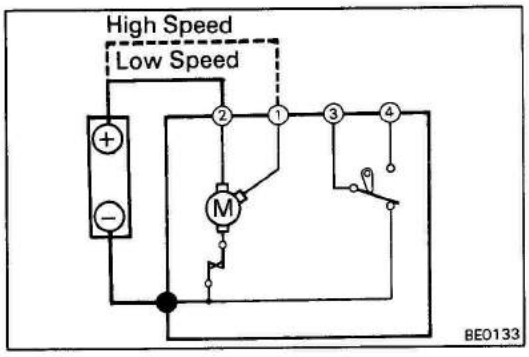
INSPECTION OF WIPER MOTOR

1. INSPECT THAT MOTOR TURNS AT LOW SPEED

(a) Disconnect the connector from the wiper motor.

(b) Connect the positive (+) lead from the battery to terminal 2. Connect the negative (–) lead to the motor body.

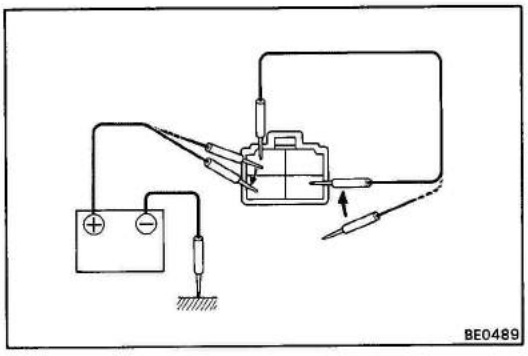
(c) Check that the motor turns at low speed.



2. INSPECT THAT MOTOR TURNS AT HIGH SPEED

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

(b) Check that the motor turns at high speed.



3. INSPECT THAT MOTOR STOPS RUNNING AT STOP POSITION

(a) Turn the motor at low speed.

(b) Stop the motor operation at anywhere except the stop position by disconnecting the battery terminals.

(c) Connect the positive (+) lead from the battery to terminal 4. Connect the negative (–) lead to the motor body. Connect terminals 2 and 3.

(d) Check that the motor stops running at the stop position after the motor operates again.

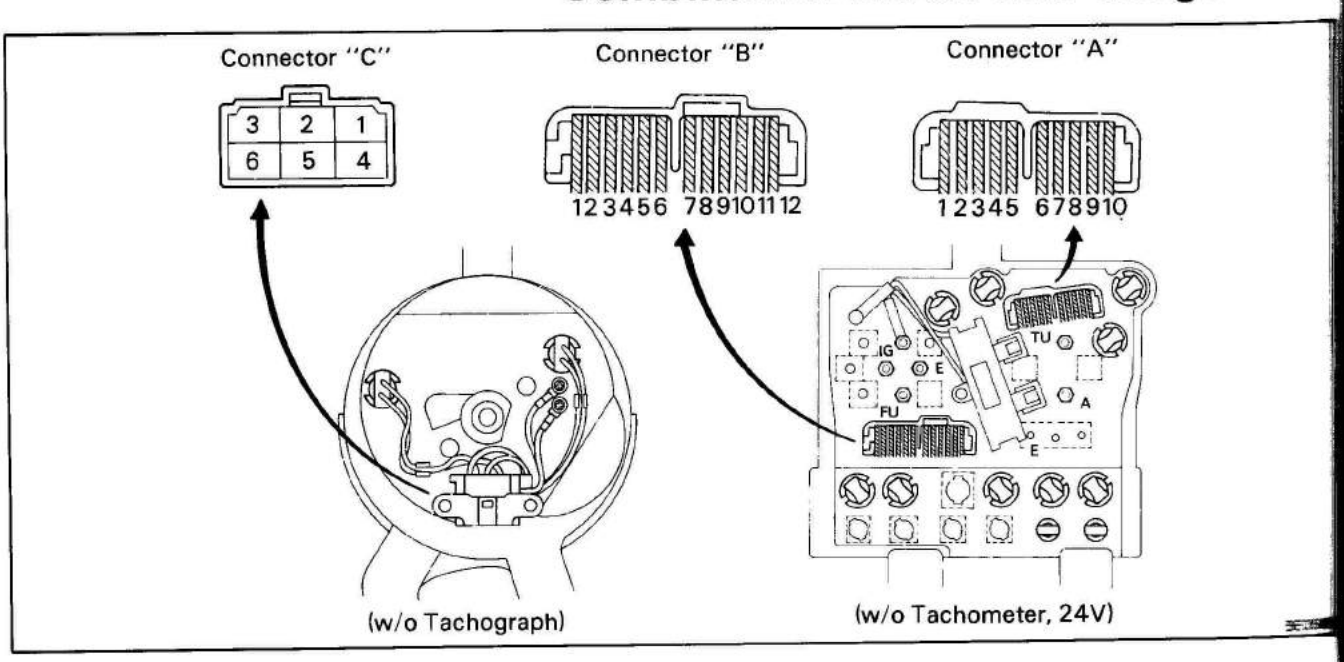
If operation is not as specified, replace the motor.

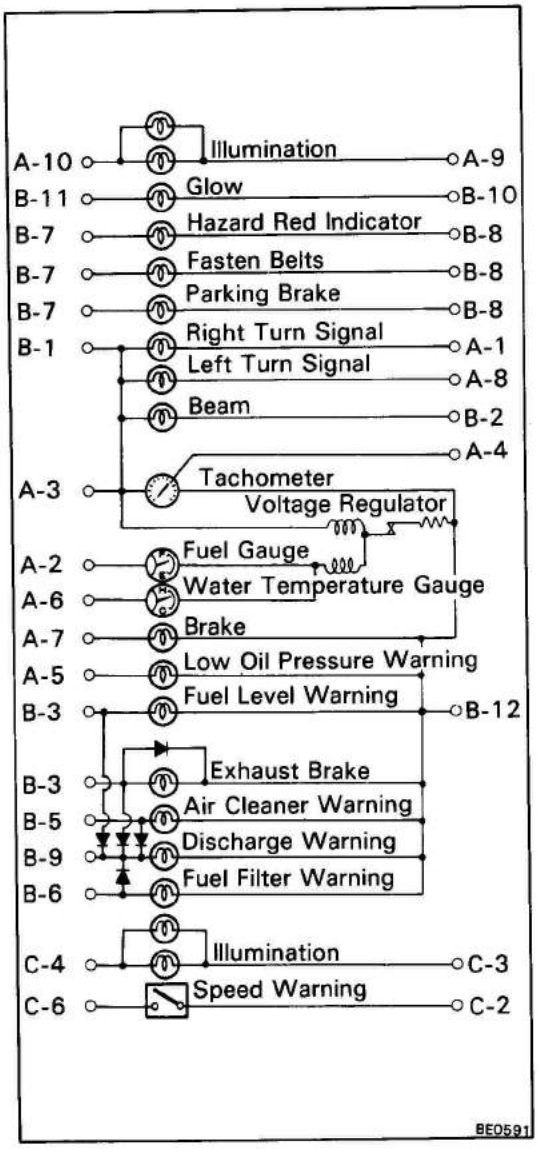
INSTRUMENTS, GAUGES AND WARNING LIGHTS

Troubleshooting

Problem	Possible cause	Remedy	Page
Fuel gauge does not work	GAUGE fuse blown	Replace fuse and check for short	BE-3
	Fuel gauge faulty	Check gauge	BE-23
	Sender gauge faulty	Check sender gauge	BE-23
	Wiring or ground faulty	Repair as necessary	
Water temperature gauge does not work	GAUGE fuse blown	Replace fuse and check for short	BE-3
	Water temperature gauge faulty	Check gauge	BE-24
	Water temperature sender gauge faulty	Check sender gauge	BE-24
	Wiring or ground faulty	Repair as necessary	
Low oil pressure warning light does not work	GAUGE fuse blown	Replace fuse and check for short	BE-3
	Bulb burned out	Replace bulb	
	Oil pressure warning switch faulty	Check switch	BE-25
	Wiring or ground faulty	Repair as necessary	
Brake warning light does not light	GAUGE fuse blown	Replace fuse and check for short	BE-3
	Bulb burned out	Replace bulb	
	Brake fluid level warning switch faulty	Check switch	BE-26
	Wiring or ground faulty	Repair as necessary	
Discharge warning light does not light	CHARGE fuse blown	Replace fuse and check for short	BE-3
	Bulb burned out	Replace bulb	
	Wiring or ground faulty	Repair as necessary	
PARK BRAKE indicator light does not light (Australia only)	GAUGE fuse blown	Replace fuse and check for short	BE-3
	Bulb burned out	Replace bulb	
	Parking brake switch faulty	Check switch	BE-27
	Wiring or ground faulty	Repair as necessary	
EXHAUST BRAKE indicator light does not light	GAUGE fuse blown	Replace fuse and check for short	BE-3
	Bulb burned out	Replace bulb	
	Exhaust brake main switch faulty	Check switch	
	Wiring or ground faulty	Repair as necessary	
AIR CLEANER warning light does not light	GAUGE fuse blown	Replace fuse and check for short	BE-3
	Bulb burned out	Replace bulb	
	Vacuum sensor faulty	Check sensor	BE-29
	Wiring or ground faulty	Repair as necessary	
FILTER warning light does not light	GAUGE fuse blown	Replace fuse and check for short	BE-3
	Bulb burned out	Replace bulb	
	Water level warning switch faulty	Check switch	BE-28
	Wiring or ground faulty	Repair as necessary	

Combination Meter and Gauge

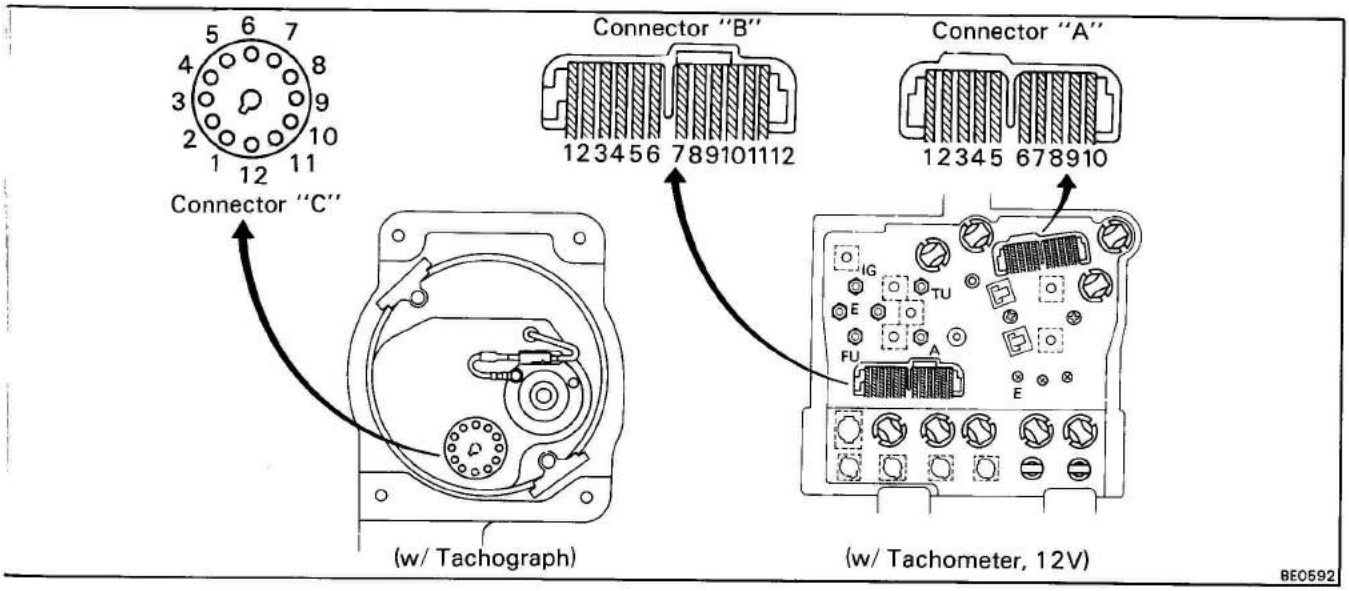


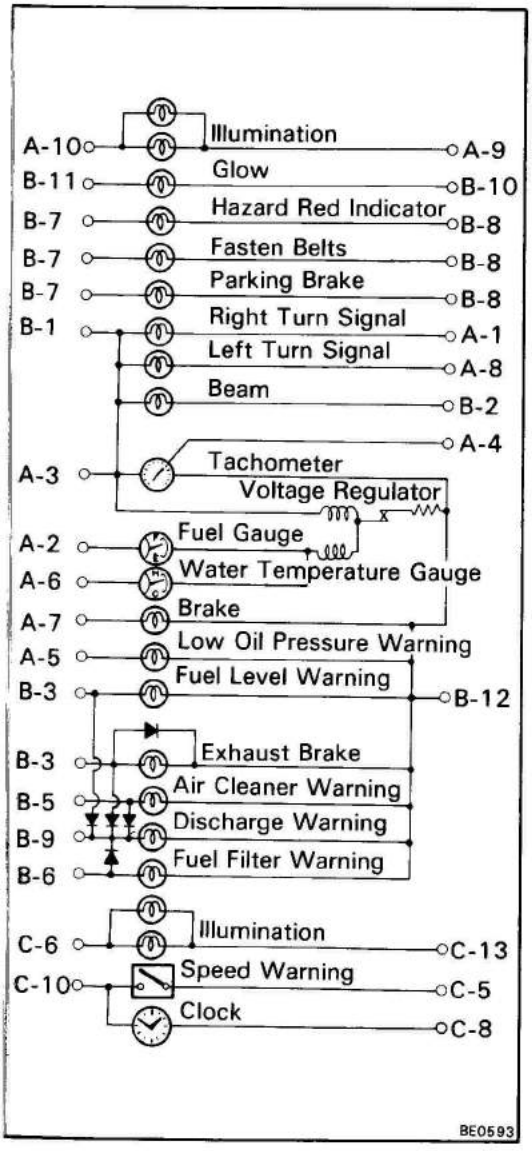


COMBINATION METER CIRCUIT

No.		Wiring connector side
A	1	Turn Signal Switch Terminal 8
	2	Fuel Sender Gauge Terminal 2
	3	Ground
	4	Pick-up Sensor (BU, WU) or Ignition Coil (YU) or Igniter (RU)
	5	Oil Pressure Switch
	6	Water Temperature Sender Gauge
	7	(Ex. Australia) Brake Fluid Level Warning Switch Terminal 1 and Parking Brake Switch Terminal 2 (Diesel) or 1 (Gasoline) (Australia only) Brake Fluid Level Warning Switch Terminal 1 and Bulb Check Relay Terminal 2
	8	Turn Signal Switch Terminal 9
	9	TAIL Fuse
	10	Ground
B	1	Ground
	2	Head Light Dimmer Switch Terminal 6
	3	Exhaust Brake Main Switch and Clutch Switch (Diesel only) or Fuel Sender Gauge Terminal 1 (Gasoline only)
	5	Vacuum Sensor Terminal 1
	6	Water Level Warning Switch
	7	Hazard Red Indicator Relay Terminal 3 (West Germany only) or GAUGE Fuse (Ex. West Germany)
	8	Ground (West Germany only), Parking Brake Switch Terminal 2 (Australia, Diesel) or 1 (Australia, Gasoline) or Seat Belt Warning Relay (Ex. West Germany and Australia)
	9	CHARGE Fuse
	10	GLOW Fuse
	11	Pre-heating Timer
	12	GAUGE Fuse
C	2	Speed Warning Buzzer
	3	TAIL Fuse
	4	Ground
	6	Ground

Combination Meter and Gauge (Cont'd)





COMBINATION METER CIRCUIT

No.		Wiring connector side
A	1	Turn Signal Switch Terminal 8
	2	Fuel Sender Gauge Terminal 2
	3	Ground
	4	Pick-up Sensor (BU, WU) or ignition Coil (YU) or Igniter (RU)
	5	Oil Pressure Switch
	6	Water Temperature Sender Gauge
	7	(Ex. Australia) Brake Fluid Level Warning Switch Terminal 1 and Parking Brake Switch Terminal 2 (Diesel) or 1 (Gasoline) (Australia only) Brake Fluid Level Warning Switch Terminal 1 and Bulb Check Relay Terminal 2
	8	Turn Signal Switch Terminal 9
	9	TAIL Fuse
	10	Ground
B	1	Ground
	2	Head Light Dimmer Switch Terminal 6
	3	Exhaust Brake Main Switch and Clutch Switch (Diesel only) or Fuel Sender Gauge Terminal 1 (Gasoline only)
	5	Vacuum Sensor Terminal 1
	6	Water Level Warning Switch
	7	Hazard Red Indicator Relay Terminal 3 (West Germany only) or GAUGE Fuse (Ex. West Germany)
	8	Ground (West Germany only), Parking Brake Switch Terminal 2 (Australia, Diesel) or 1 (Australia, Gasoline), or Seat Belt Warning Relay (Ex. West Germany and Australia)
	9	CHARGE Fuse
	10	GLOW Fuse
	11	Pre-heating Timer
	12	GAUGE Fuse
C	5	—
	6	TAIL Fuse
	8	Ground
	10	DOME Fuse
	13	Ground

Speedometer

ON-VEHICLE INSPECTION OF SPEEDOMETER

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

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

Europe (w/ tachograph)

Standard indication (km/h)	Allowable range (km/h)
20	18 – 23
40	40 – 44.5
60	60 – 65
80	80 – 85
100	100 – 105

General (w/ trip)

Standard indication (mph)	Allowable range (mph)
20	21 – 23.5
40	41.5 – 44
60	62.5 – 66
80	83 – 87

Australia

Standard indication (km/h)	Allowable range (km/h)
20	17.5 – 21.5
40	38 – 42
60	58 – 63
80	78 – 84
100	99 – 104.5
120	119.5 – 125.5

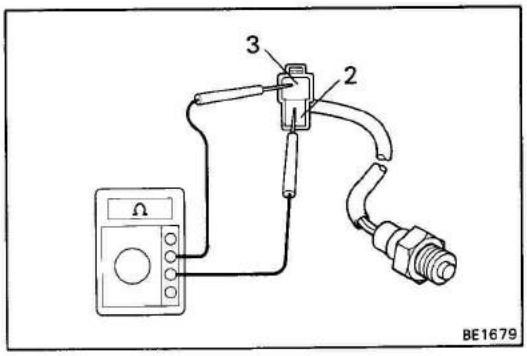
Europe · Middle East · General (w/o trip)

Standard indication (km/h)	Allowable range (km/h)
20	21 – 25
40	41.5 – 46
60	62.5 – 67
80	83 – 88
100	104 – 109
120	125 – 130.5

If the error is excessive, replace the speedometer.

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

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



Tachometer

INSPECTION OF TACHOMETER

1. MEASURE PICK UP SENSOR RESISTANCE

Measure the resistance between terminals.

Resistance: Approx. 330 ± 30 Ω

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

2. INSPECT TACHOMETER OPERATION (ON-VEHICLE)

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

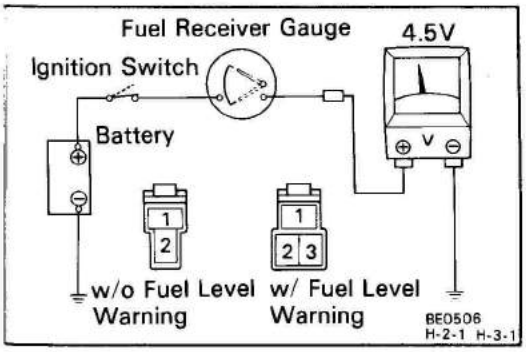
(b) Compare the tester and tachometer indications.

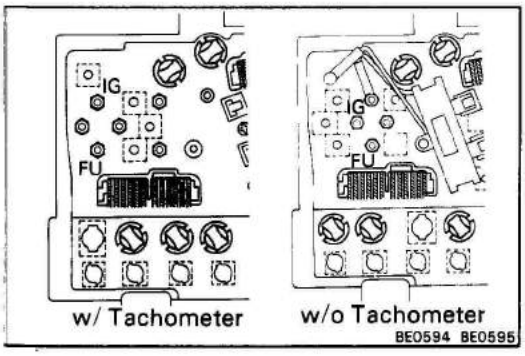
If the error is excessive, replace the tachometer.

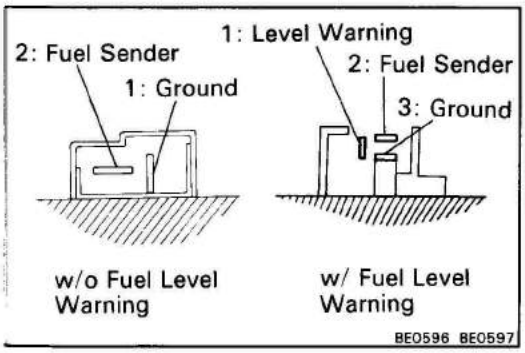
CAUTION:

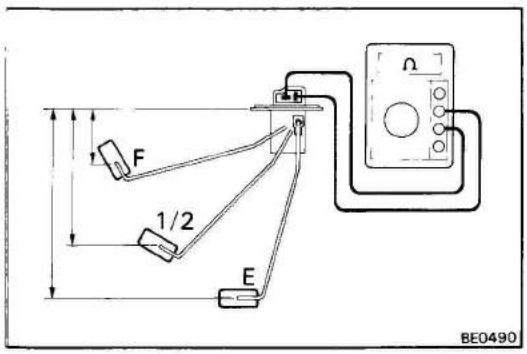
- **Reversing the connection of the tachometer will damage the transistors and diodes inside.**
- **When removing or installing the tachometer, be careful not to drop or subject it to severe impact.**

Standard indication (rpm)	700	3,000	5,000	7,000
Allowable range (rpm)	+20	±200	±200	±300
25°C DC 13V	−120			









Fuel Gauge

INSPECTION OF FUEL GAUGE

1. INSPECT RECEIVER GAUGE OPERATION

(a) Disconnect the connector from the fuel sender gauge. Connect the positive (+) lead from the voltmeter to terminal 2 and connect the negative (−) lead from the voltmeter to body ground.

(b) Turn the ignition switch or starter switch on. Check that the meter needle vibrates near the 4.5V position.

If voltage is not correct, remove and test the receiver gauge.

2. MEASURE RECEIVER GAUGE RESISTANCE

Using an ohmmeter, measure the resistance between terminals FU and IG.

Resistance: Approx. 55 Ω

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

3. MEASURE SENDER GAUGE RESISTANCE

(a) Check that resistance changes as the float is moved from the top to bottom position.

(b) Measure the resistance between terminal 2 and terminal 3 (w/ Level Warning) or 1 (w/o Level Warning) for each float position.

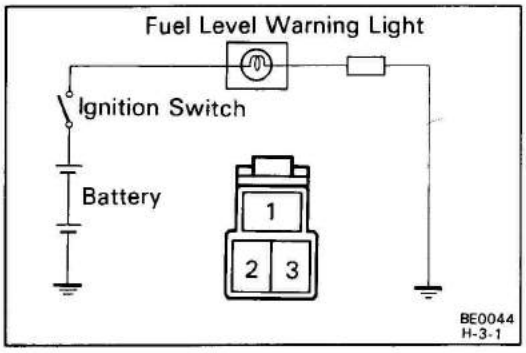
70 and 90 liters

	Float position mm (in.)	Resistance (Ω)
F	60 (2.36)	3^{+2}_{-3}
1/2	173.8 (6.843)	32.5 ± 4.8
E	290 (11.42)	110 ± 7.7

60 and 75 liters

	Float position mm (in.)	Resistance (Ω)
F	63 (2.48)	3^{+2}_{-3}
1/2	152.7 (6.012)	32.5 ± 4.8
E	240 (9.45)	110 ± 7.7

If each resistance value is not as shown in the table above, replace the sender gauge.



Fuel Level Warning

INSPECTION OF FUEL LEVEL WARNING

1. **INSPECT WARNING LIGHT OPERATION**

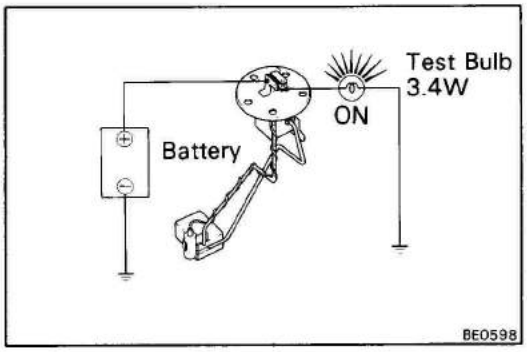
(a) Disconnect the connector from the fuel level warning switch. Connect the wire harness side connector terminal 1 and body ground.

(b) Turn the ignition switch or starter switch on. Check that the bulb lights.

If operation is not correct, remove and test the bulb.

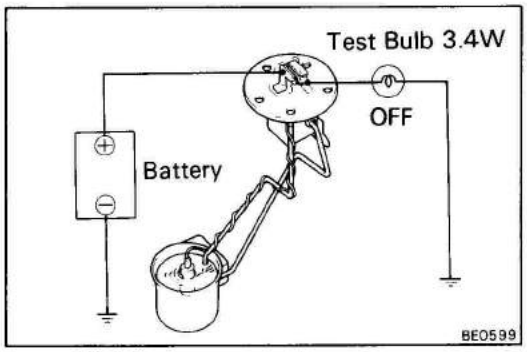
2. **INSPECT LEVEL WARNING SWITCH OPERATION**

(a) Apply battery voltage between terminals 1 and 3 through a 3.4W bulb. Check that the bulb lights



(b) Submerge the switch in gasoline or water. Check that the bulb goes out.

If operation is not correct, replace the sender gauge.



Water Temperature Gauge

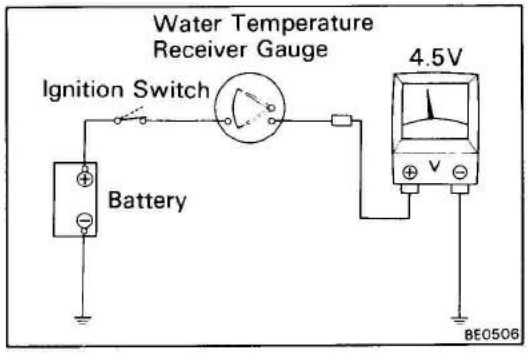
INSPECTION OF WATER TEMPERATURE GAUGE

1. **INSPECT RECEIVER GAUGE OPERATION**

(a) Disconnect the connector from the sender gauge. Connect the positive (+) lead from the voltmeter to terminal and connect the negative (−) lead from the voltmeter to body ground.

(b) Turn the ignition switch or starter switch on. Check that the meter needle vibrates near the 4.5V position.

If voltage value is not correct, remove and test the receiver gauge.

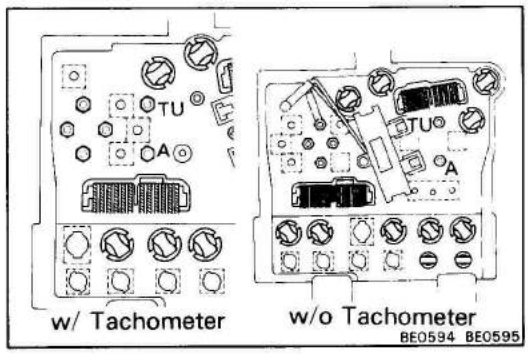


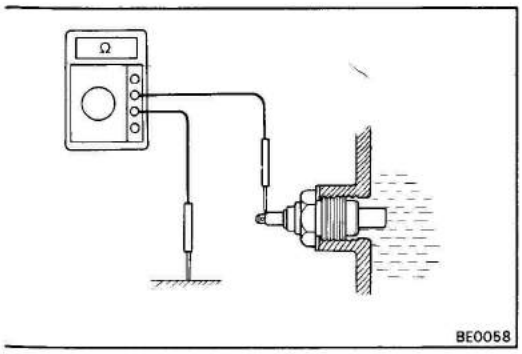
2. **MEASURE RECEIVER GAUGE RESISTANCE**

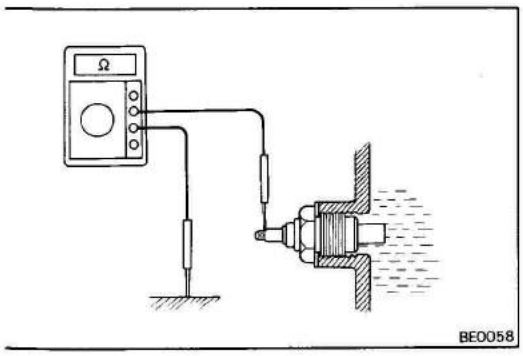
Using an ohmmeter, measure the resistance between terminals TU and A.

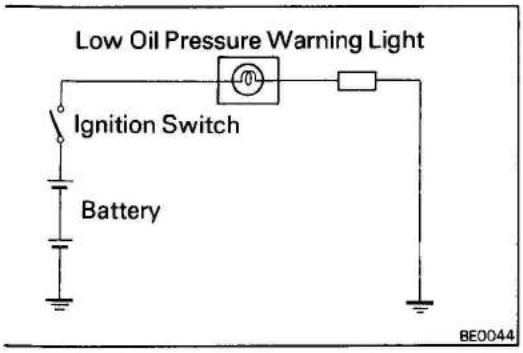
Resistance: Approx. 25Ω (Ex. Middle East)
Approx. 55Ω (Middle East only)

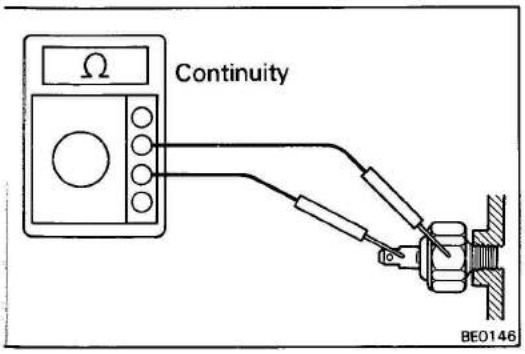
If resistance value is not correct, replace the receiver gauge.

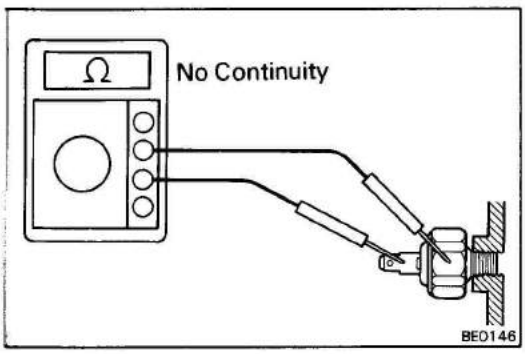












3. MEASURE SENDER GAUGE RESISTANCE

Measure the resistance between the terminal and ground.

Ex. Middle East

Water temperature °C (°F)	Resistance (Ω)	
	Yazaki	Nippondenso
60 (140)	$146\ ^{+26.5}_{-\ 4.0}$	—
115 (239)	$24.3\ ^{+1.3}_{-1.8}$	$24.3\ ^{+2.68}_{-3.68}$

Middle East only

Water temperature °C (°F)	Resistance (Ω)	
	Yazaki	Nippondenso
50 (122)	—	$226\ ^{+33.6}_{-36.6}$
60 (140)	152.7	—
115 (239)	$26.4\ ^{+2.2}_{-2.6}$	$26.4\ ^{+1.71}_{-2.21}$

If each resistance value is not as shown in the table above, replace the sender gauge.

Low Oil Pressure Warning

INSPECTION OF LOW OIL PRESSURE WARNING

1. INSPECT WARNING LIGHT OPERATION

(a) Disconnect the connector from the switch. Connect the wire harness side connector and body ground.

(b) Turn the ignition switch on. Check that the bulb lights.

If operation is not correct, remove and test the bulb.

2. INSPECT SWITCH OPERATION

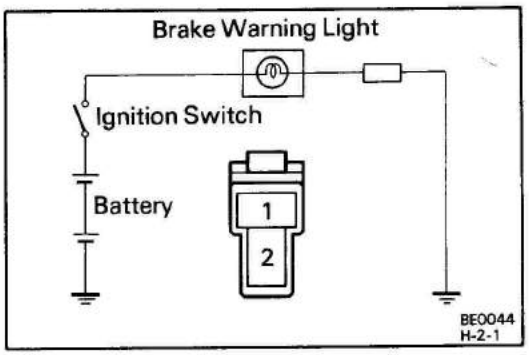
Check the continuity between the terminal and ground.

(a) Check that there is continuity with the engine stopped.

(b) Check that there is no continuity with the engine running.

NOTE: After the engine has started, oil pressure should rise over 0.2 kg/cm² (2.8 psi, 20 kPa).

If operation is not correct, replace the switch.



Brake Warning

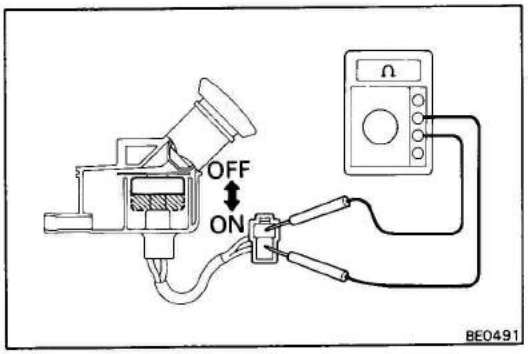
INSPECTION OF BRAKE WARNING

1. INSPECT WARNING LIGHT OPERATION

(a) Disconnect the connector from the brake fluid level warning switch. Connect the wire harness side connector and body ground.

(b) Turn the ignition switch on. Check that the brake warning lights.

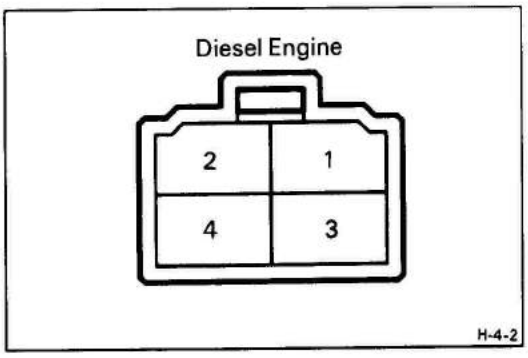
If operation is not correct, remove and test the bulb.



2. INSPECT OPERATION OF BRAKE FLUID LEVEL WARNING SWITCH

Inspect the switch operation when the switch is OFF (float up) and when the switch is ON (float down).

If operation is not correct, replace the switch.



3. (Ex. Australia) INSPECT PARKING BRAKE SWITCH OPERATION

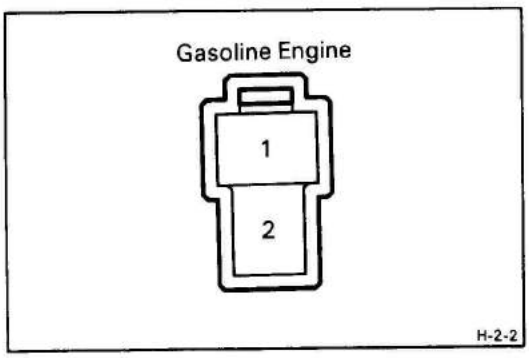
Inspect the continuity between terminals.

Diesel engine:

(a) With the parking brake lever pulled (switch is OFF), check that there is continuity between terminals 2 and 4, and check that there is no continuity between terminals 1 and 3.

(b) With the parking brake lever returned (switch pushed), check that there is continuity between terminals 1 and 3, and check that there is no continuity between terminals 2 and 4.

If operation is not correct, replace the switch.

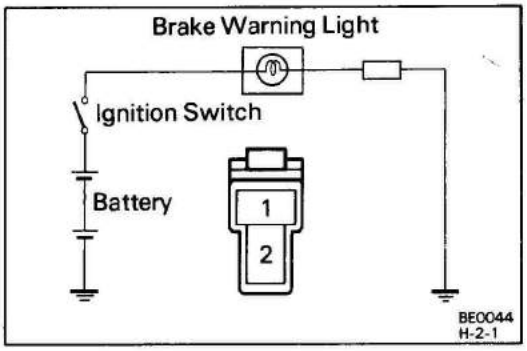


Gasoline engine:

(a) Check that there is continuity between the terminals with the parking brake lever pulled.

(b) Check that there is no continuity between the terminals with the parking brake lever returned.

If operation is not correct, replace the switch.



Brake Warning

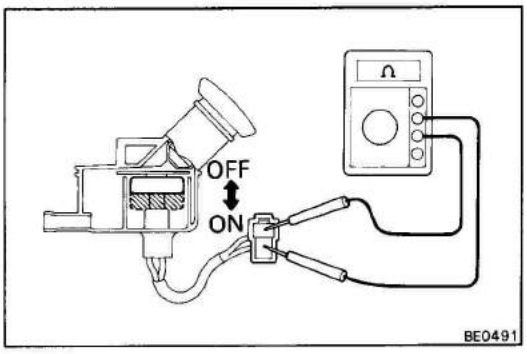
INSPECTION OF BRAKE WARNING

1. INSPECT WARNING LIGHT OPERATION

(a) Disconnect the connector from the brake fluid level warning switch. Connect the wire harness side connector and body ground.

(b) Turn the ignition switch on. Check that the bulb lights.

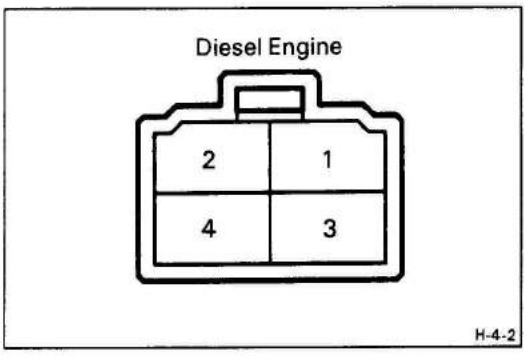
If operation is not correct, remove and test the bulb.



2. INSPECT OPERATION OF BRAKE FLUID LEVEL WARNING SWITCH

Inspect the switch operation when the switch is OFF (float up) and when the switch is ON (float down).

If operation is not correct, replace the switch.



3. (Ex. Australia) INSPECT PARKING BRAKE SWITCH OPERATION

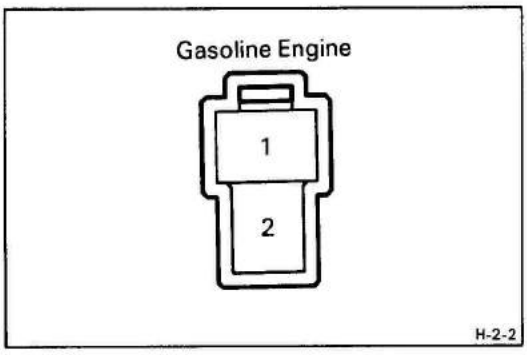
Inspect the continuity between terminals.

Diesel engine:

(a) With the parking brake lever pulled (switch is free), check that there is continuity between terminals 2 and 4, and check that there is no continuity between terminals 1 and 3.

(b) With the parking brake lever returned (switch pin is pushed), check that there is continuity between terminals 1 and 3, and check that there is no continuity between terminals 2 and 4.

If operation is not correct, replace the switch.

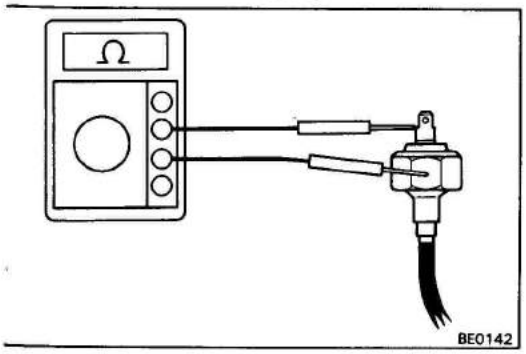


Gasoline engine:

(a) Check that there is continuity between the terminals with the parking brake lever pulled.

(b) Check that there is no continuity between the terminals with the parking brake lever returned.

If operation is not correct, replace the switch.

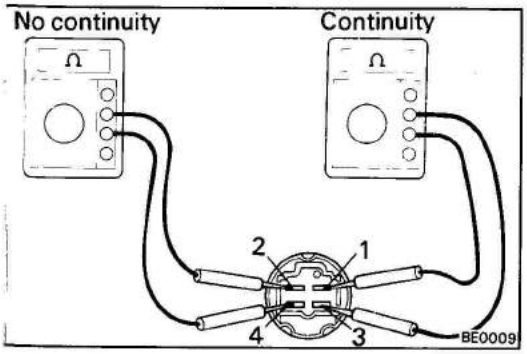


4. INSPECT VACUUM SWITCH OPERATION

(a) With a vacuum of 320 to 375 mmHg (12.60 to 14.76 in.Hg, 42.7 to 50.0 kPa) or above, check that there is no continuity between the switch terminal and body.

(b) Check that there is continuity between the switch terminal and body ground with no vacuum.

If operation is not correct, replace the switch.



Bulb Check Relay (Australia only)

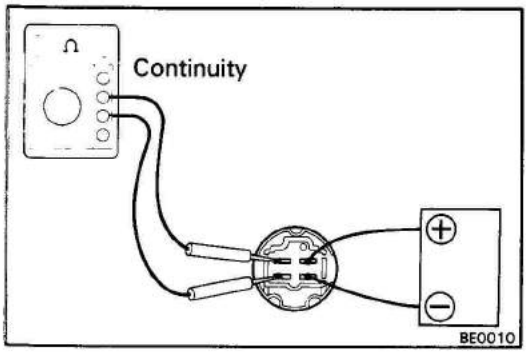
INSPECTION OF BULB CHECK RELAY

1. INSPECT RELAY CONTINUITY

(a) Check that there is continuity between terminals 1 and 3.

(b) Check that there is no continuity between terminals 2 and 4.

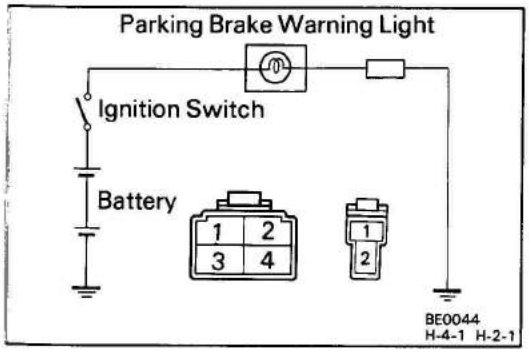
If continuity is not as specified, replace the relay.



2. INSPECT RELAY OPERATION

Connect the positive (+) lead from the battery to terminal 1 and connect the negative (–) lead from the battery to terminal 3. Then, check that there is continuity between terminals 2 and 4.

If operation is not correct, replace the relay.



Parking Brake Warning (Australia only)

INSPECTION OF PARKING BRAKE WARNING

1. INSPECT WARNING LIGHT OPERATION

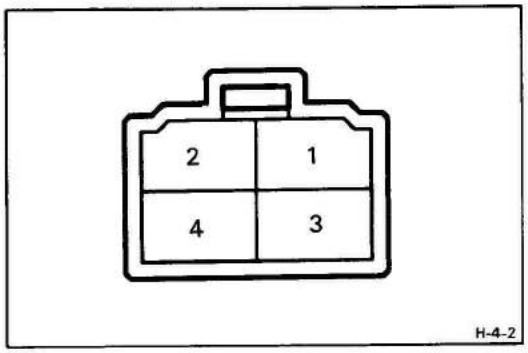
(a) Disconnect the connector from the parking brake switch.

(b) Connect the wire harness side connector terminal 2 and body ground (Diesel).

(c) Connect the wire harness side connector terminal and body ground (Gasoline).

(d) Turn the ignition switch on. Check that the bulb lights.

If operation is not correct, remove and test the bulb.

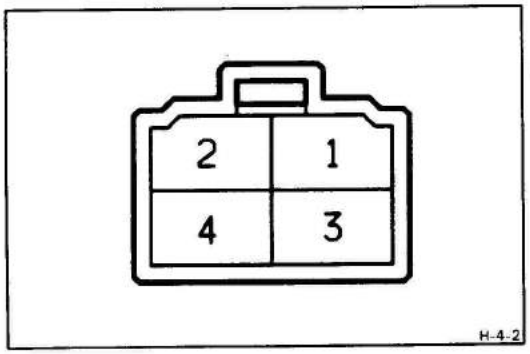


2. INSPECT PARKING BRAKE SWITCH OPERATION

Inspect the continuity between terminals.

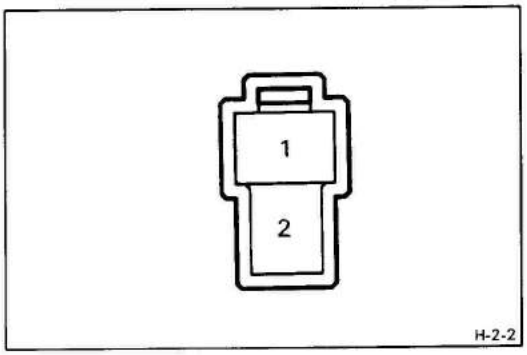
Diesel engine:

(a) With the parking brake lever pulled (switch is free) check that there is continuity between terminals 2 and 4, and check that there is no continuity between terminals 1 and 3.



(b) With the parking brake lever returned (switch pin is pushed), check that there is continuity between terminals 1 and 3, and check that there is no continuity between terminals 2 and 4.

If operation is not correct, replace the switch.

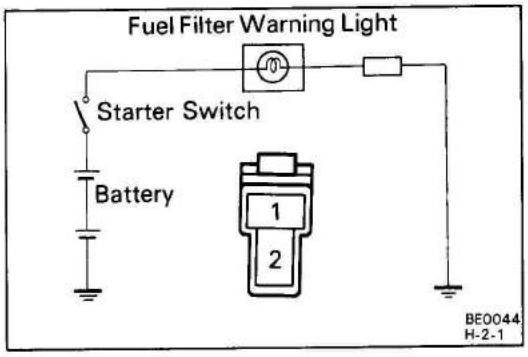


Gasoline engine:

(a) Check that there is continuity between the terminals with the parking brake lever pulled.

(b) Check that there is no continuity between the terminals with the parking brake lever returned.

If operation is not correct, replace the switch.



Fuel Filter Warning

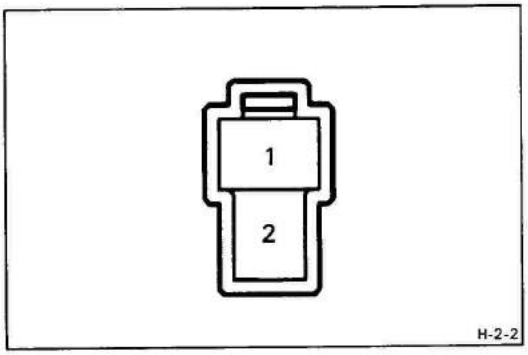
INSPECTION OF FUEL FILTER WARNING

1. INSPECT WARNING LIGHT OPERATION

(a) Disconnect the connector from the switch. Connect the wire harness side connector and body ground.

(b) Turn the starter switch on. Check that the bulb lights

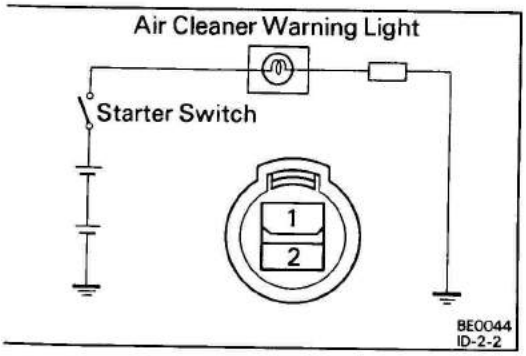
If operation is not correct, remove and test the bulb.

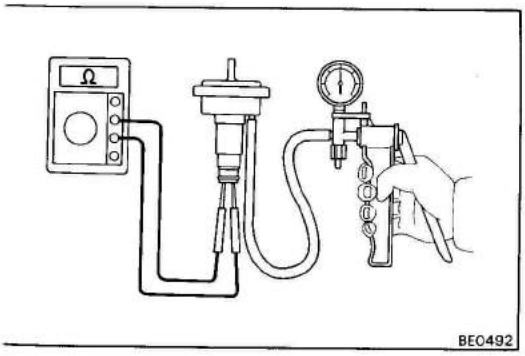


2. INSPECT WATER LEVEL WARNING SWITCH OPERATION

Inspect the switch operation when the switch is ON (float up) and when the switch is OFF (float down).

If operation is not correct, replace the switch.





Air Cleaner Warning

INSPECTION OF AIR CLEANER WARNING

1. INSPECT WARNING LIGHT OPERATION

(a) Disconnect the connector from the vacuum sensor. Connect the wire harness side connector terminal 1 and body ground.

(b) Start the engine. Check that the bulb lights.

If operation is not correct, remove and test the bulb.

2. INSPECT VACUUM SENSOR OPERATION

(a) With a vacuum of 29.4 ± 3.7 mmHg (1.157 ± 0.146 in.Hg, 3.9 ± 0.5 kPa) or above, check that there is continuity between terminals.

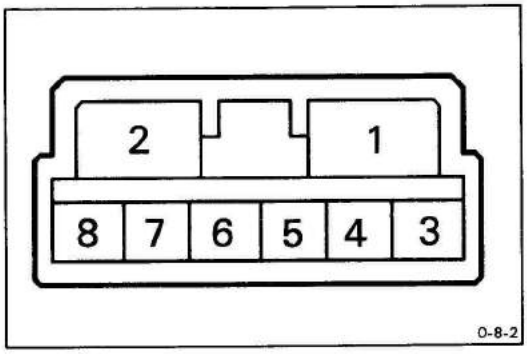
(b) Check that there is no continuity between terminals with no vacuum.

If operation is not correct, replace the sensor.

HEATERS

Troubleshooting

Problem	Possible cause	Remedy	Page	
			Front	Rear
Blower does not work when fan switch is on	Heater or A/C fuse blown	Replace fuse and check for short	BE-3	BE-3
	Heater relay faulty	Check relay	BE-31	
	Heater blower switch faulty	Check switch	BE-30	BE-32
	Heater blower resistor faulty	Check resistor	BE-31	BE-33
	Heater blower motor faulty	Replace motor		
	Wiring or ground faulty	Repair as necessary		
Incorrect temperature output	Control cables broken or binding	Check cables	BE-31	
	Heater hoses leaking or clogged	Replace hose		
	Water valve faulty	Replace valve		
	Air dampers broken	Repair dampers		
	Air ducts clogged	Repair ducts		
	Heater radiator leaking or clogged	Replace radiator		
	Heater control unit faulty	Repair control unit		



Front Heater Blower Switch

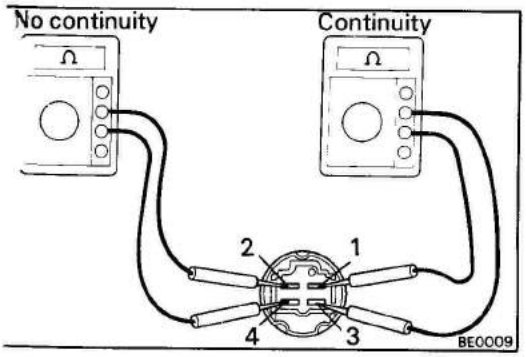
INSPECTION OF FRONT HEATER BLOWER SWITCH

INSPECT SWITCH CONTINUITY

Inspect heater blower switch continuity between terminals.

Terminal / Switch position	2	3	6	1
OFF				
—	○——	——○		
▬	○——	——○	——○	
HI	○——	——○		——○

If continuity is not as specified, replace the switch.



Heater Relay

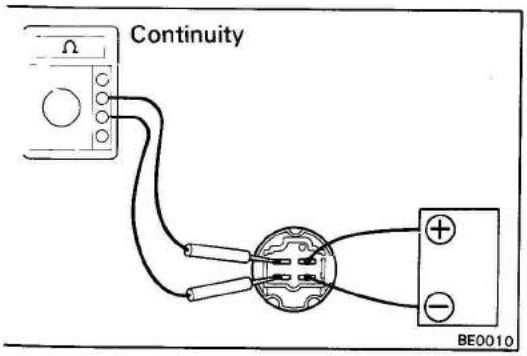
INSPECTION OF HEATER RELAY

1. INSPECT RELAY CONTINUITY

(a) Check that there is continuity between terminals 1 and 3.

(b) Check that there is no continuity between terminals 2 and 4.

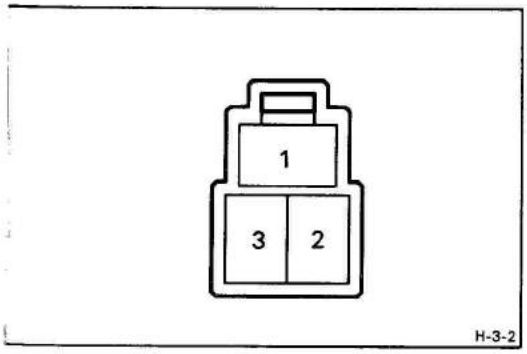
If continuity is not as specified, replace the relay.



2. INSPECT RELAY OPERATION

Connect the positive (+) lead from the battery to terminal 1 and connect the negative (–) lead from the battery to terminal 3. Then, check that there is continuity between terminals 2 and 4.

If operation is not as specified, replace the relay.



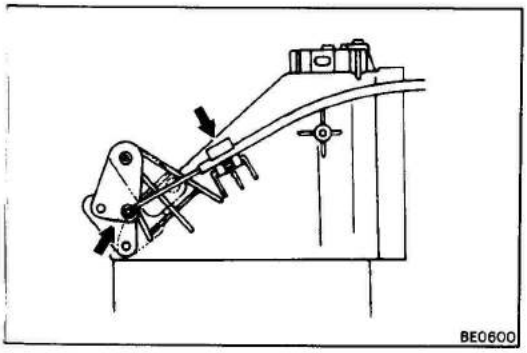
Front Heater Blower Resistor

INSPECTION OF FRONT HEATER BLOWER RESISTOR

INSPECT RESISTOR CONTINUITY

Check that there is continuity between terminals 2 and 3.

If continuity is not as specified, replace the resistor.

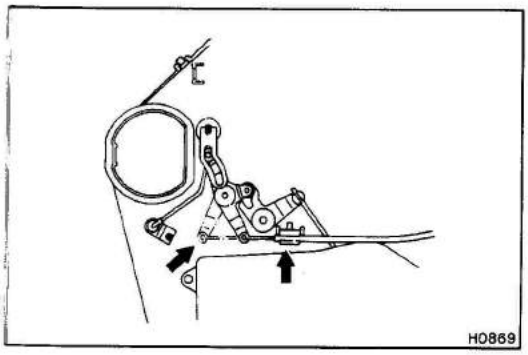


Front Heater Control

ADJUSTMENT OF FRONT HEATER CONTROL

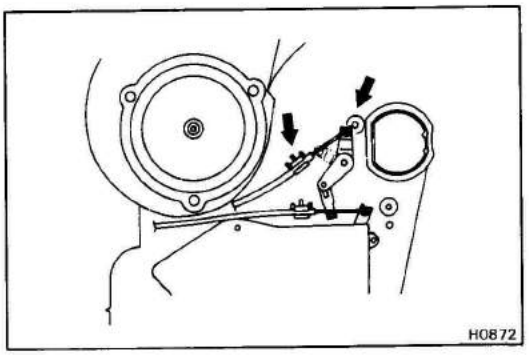
SET AIR INLET DAMPER

Set the air inlet damper and control lever to "Fresh Air".



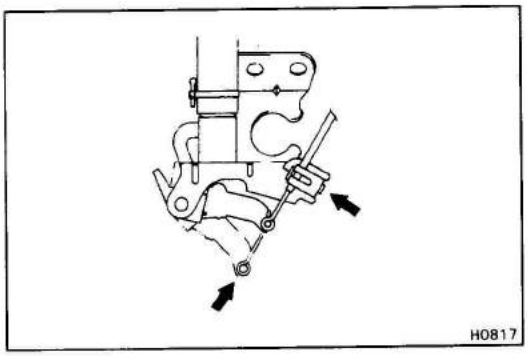
SET MODE SELECTOR DAMPER

Set the mode selector damper and control lever to "Vent".



SET AIR MIX DAMPER

Set the air mix damper and control lever to "Cool".

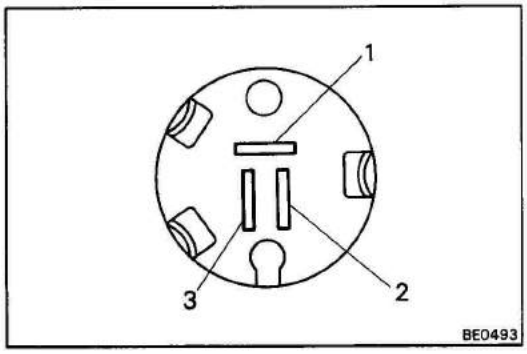


SET WATER VALVE

Set the water valve and control lever to "Cool".

TEST CONTROL CABLE OPERATION

Move the control levers up and down and check for smoothness and binding through full range of the levers.



Rear Heater Blower Switch

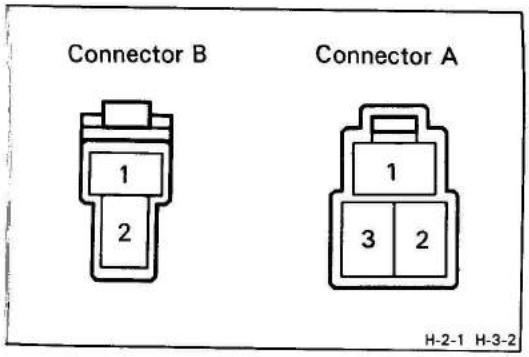
INSPECTION OF REAR HEATER BLOWER SWITCH

INSPECT SWITCH CONTINUITY

Inspect the switch continuity between terminals.

Terminal / Switch position	1	3	2
OFF			
LO	○	○	
HI	○		○

If continuity is not as specified, replace the switch.



Rear Heater Blower Resistor

INSPECTION OF REAR HEATER BLOWER RESISTOR

INSPECT RESISTOR CONTINUITY

(a) Check that there is continuity between terminals 1 of the connector A and 1 of the connector B.

(b) Check that there is continuity between terminals 2 of the connector A and 2 of the connector B.

(c) Check that there is continuity between terminals 3 of the connector A and 2 of the connector B.

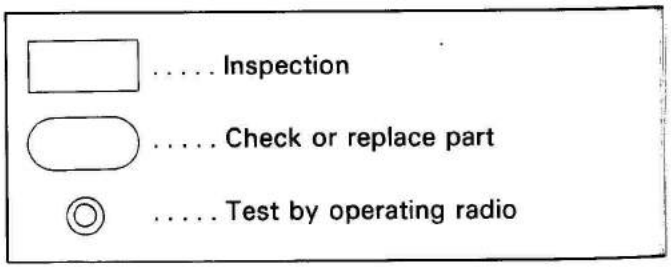
(d) Check that there is continuity between terminals 2 and 3 of the connector A.

If continuity is not as specified, replace the resistor.

RADIO, STEREO TAPE PLAYER AND ANTENNA

Troubleshooting

DESCRIPTION OF SYMBOLS



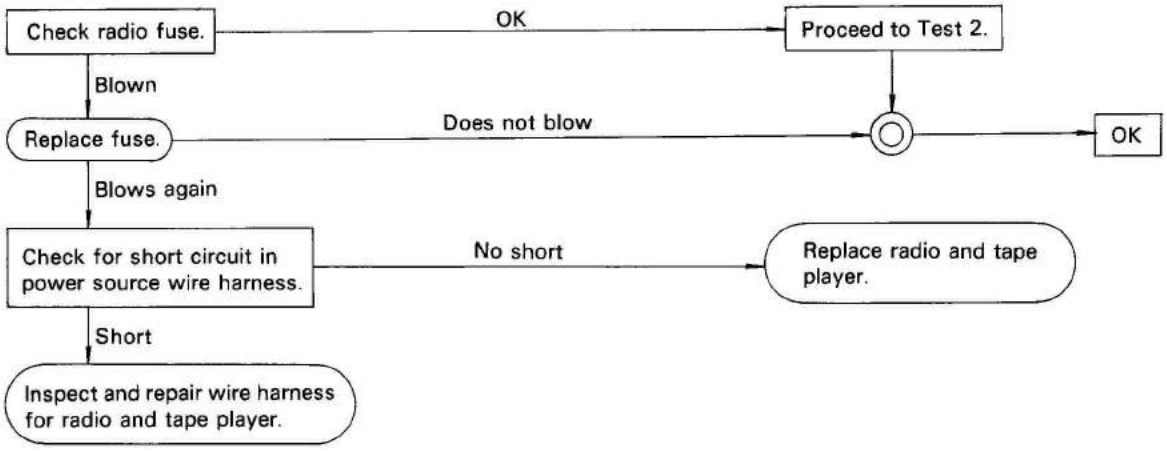
1. DEAD RADIO AND TAPE PLAYER

(a) No power to radio or tape player or power but no sound.

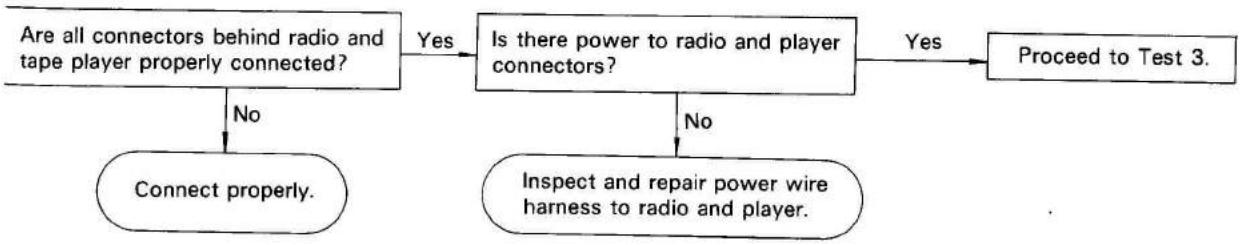
Possible causes:

- Blown radio fuse
- Short circuit or broken wire in power source wire harness
- Loose connectors behind radio and tape player
- Loose speaker connector
- Defective speaker
- Broken wire in speaker wire harness
- Improperly installed radio or tape player
- Defective radio or tape player

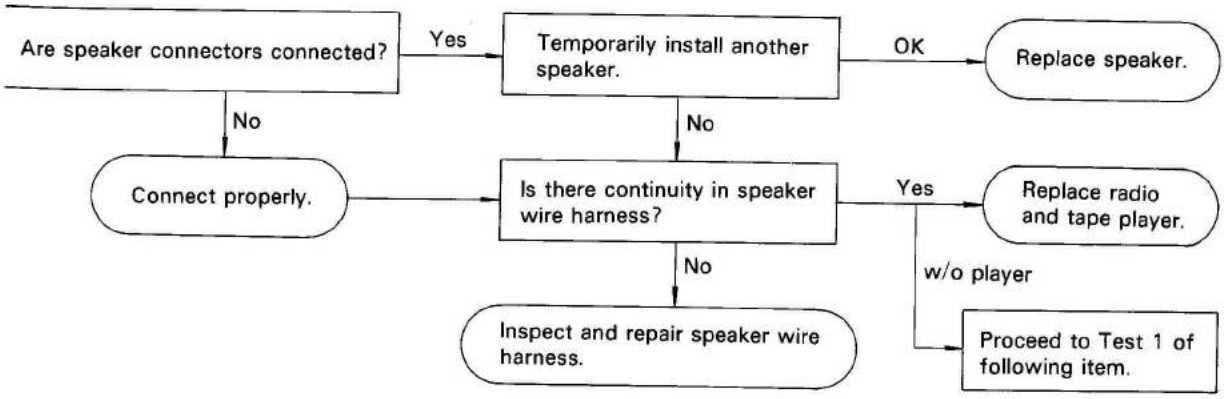
TEST 1



TEST 2



TEST 3

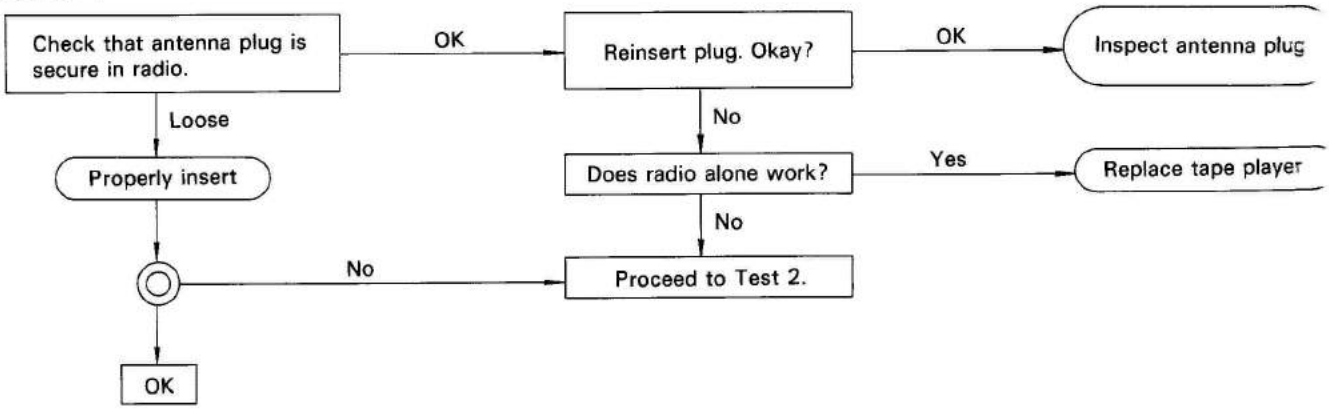


(b) Tape player okay but no sound from AM and/or FM.

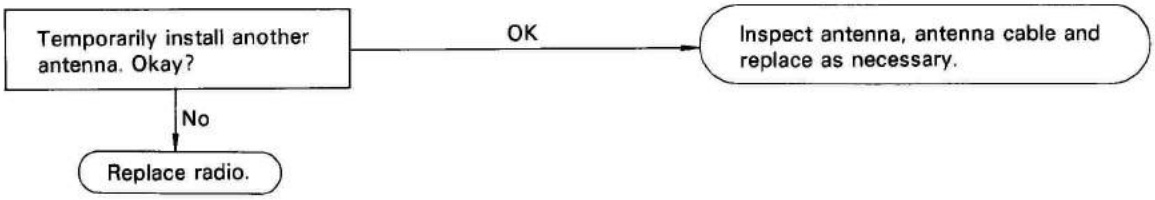
Possible causes:

- Antenna disconnected
- Antenna plug not properly connected
- Defective antenna
- Defective antenna cable
- Defective radio or tape player

TEST 1



TEST 2

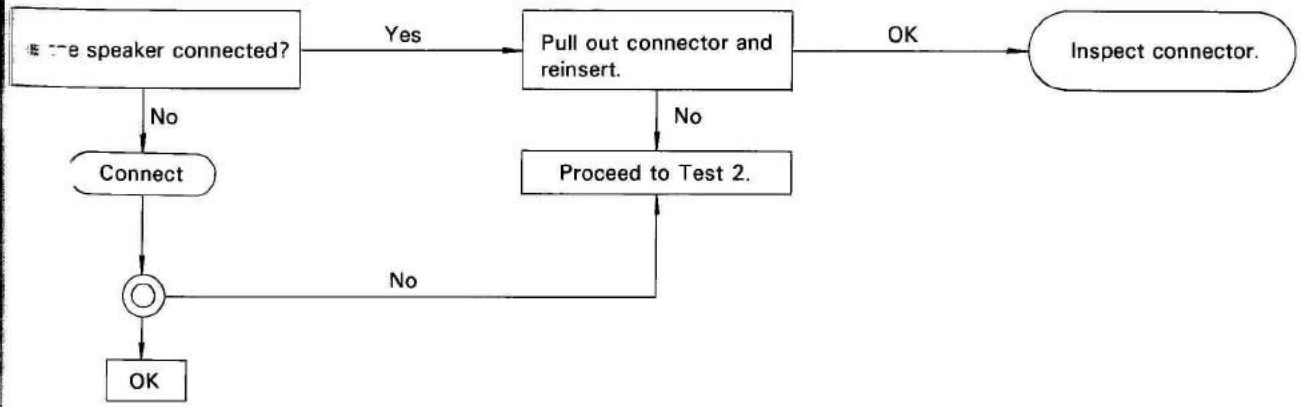


(c) No sound from one speaker.

Possible causes:

- Loose speaker connector
- Broken wire in speaker wire harness
- Defective speaker
- Defective radio and tape player

TEST 1



TEST 2