

SECTION 8

BODY ELECTRICAL SYSTEM

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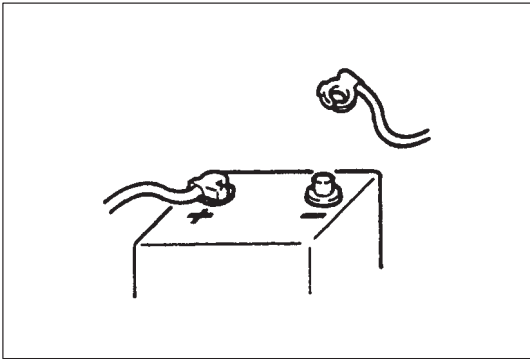
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GENERAL DESCRIPTION

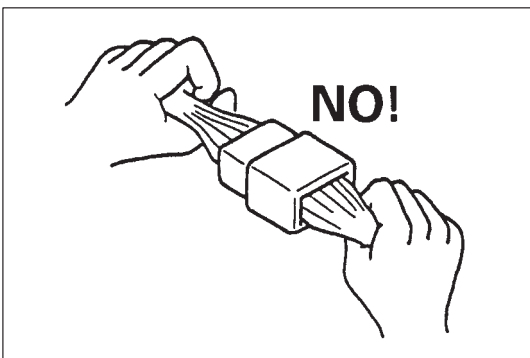
The body electrical components of this vehicle are designed to operate on 12 Volts power supplied by the battery. The electrical system utilizes negative ground polarity.

CAUTIONS IN SERVICING

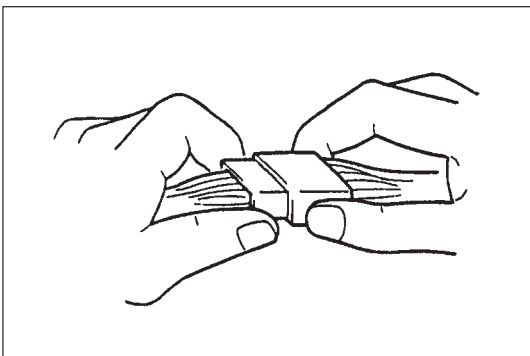
When performing works related to electric systems, observe following cautions for the purpose of protection of electrical parts and prevention of a fire from occurrence.



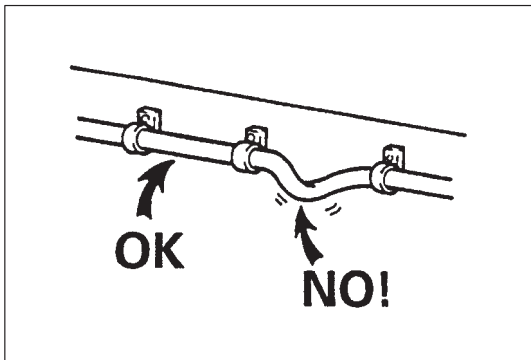
- When removing the battery from the vehicle or disconnecting the cable from the battery terminals for inspection or service works on the electric systems, always confirm first that the ignition switch and all the other switches have been turned OFF. Otherwise, the semi-conductor part may be damaged.
- When disconnecting cables from the battery, be sure to disconnect the one from the negative (–) terminal first and then the other from the positive (+) terminal.
- Reverse the above order when connecting the cables to the battery terminals.



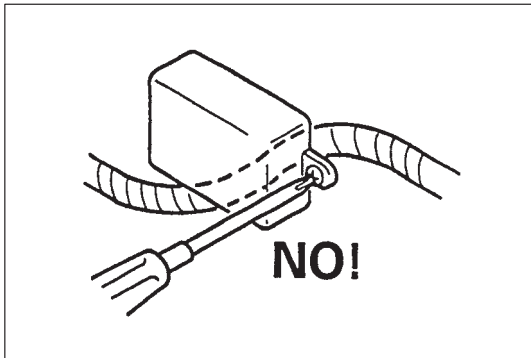
- When disconnecting connectors, never pull the wiring harnesses. Unlock the connector lock first and then pull them apart by holding connectors themselves.



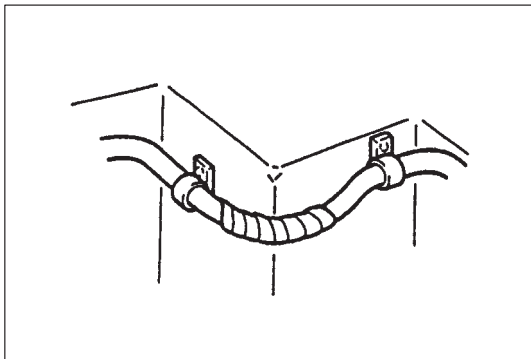
- When connecting connectors, also hold connectors and push them together until they lock securely (a click is heard).



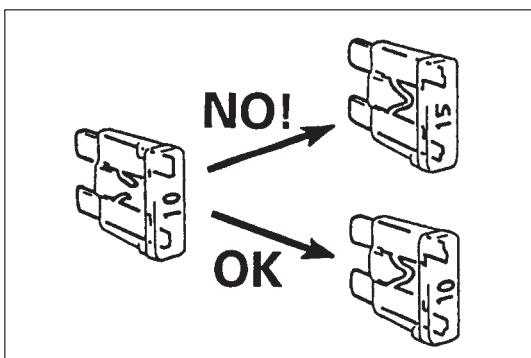
- When installing the wiring harness, fix it with clamps so that no slack is left.



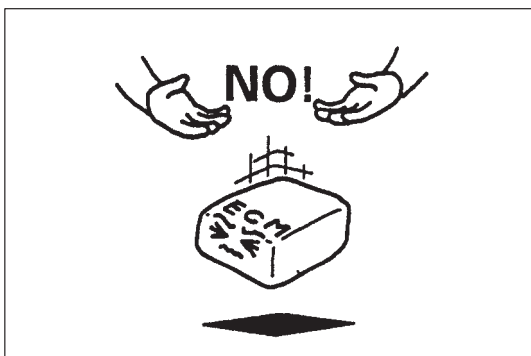
- When installing vehicle parts, be careful so that the wiring harness is not interfered with or caught by any other part.



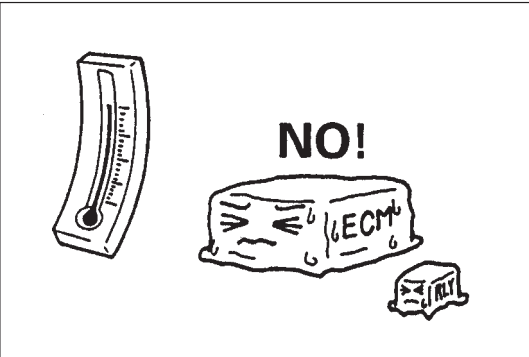
- To avoid damage to the harness, protect its part which may contact against a part forming a sharp angle by winding tape or the like around it.



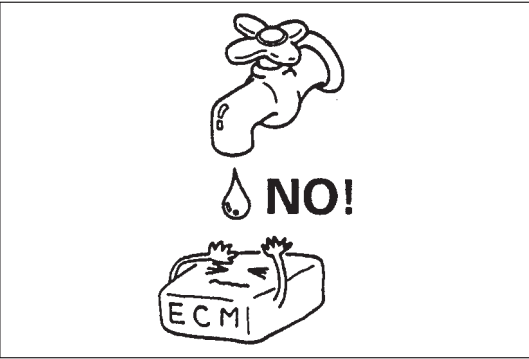
- When replacing a fuse, make sure to use a fuse of the specified capacity. Use of a fuse with a larger capacity will cause a damage to the electrical parts and a fire.



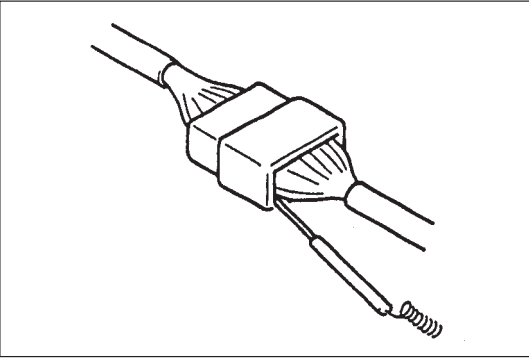
- Always be careful not to handle electrical parts (computer, relay, etc.) in a rough manner or drop them.



- When performing a work that produces a heat exceeding 80°C in the vicinity of the electrical parts, remove the heat sensitive electrical part(s) beforehand.



- Use care not to expose connectors and electrical parts to water which will be a cause of a trouble.

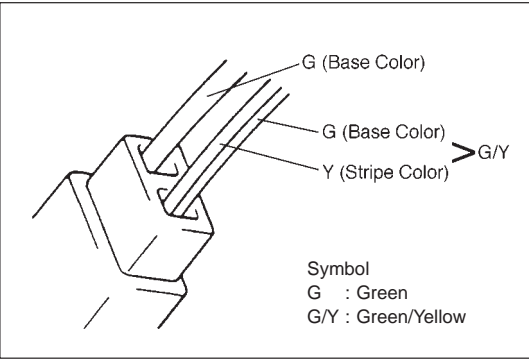


- When using a tester for checking continuity or measuring voltage, be sure to insert the tester probe from the wire harness side.

Symbol	Wire Color	Symbol	Wire Color
B	Black	O	Orange
Bl	Blue	R	Red
Br	Brown	W	White
G	Green	Y	Yellow
Gr	Gray	P	Pink
Lbl	Light blue	V	Violet
Lg	Light green		

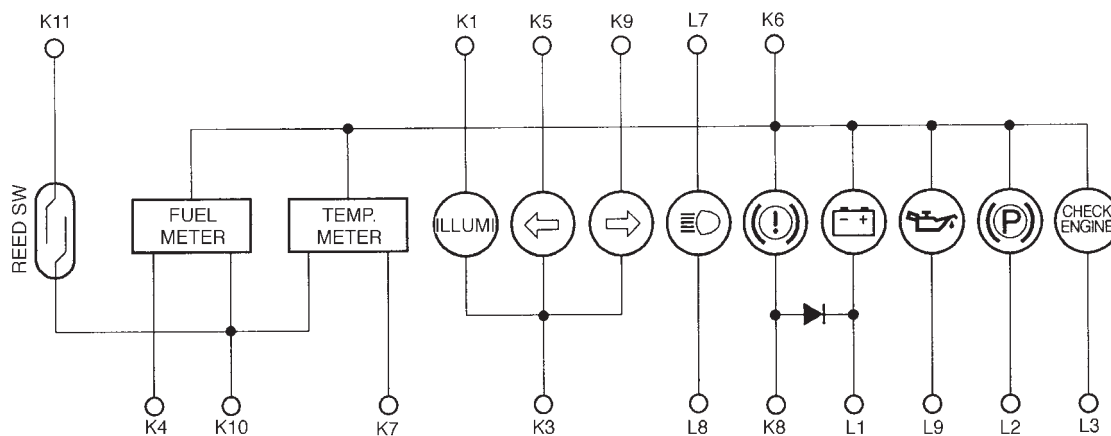
WIRE COLOR SYMBOLS

The wire color is abbreviated to the first (or first two) alphabet(s) of each color.



There are two kinds of colored wire used in this vehicle. One is single-colored wire and the other is dual-colored (striped) wire. The single-colored wire uses only one color symbol (i.e. “G”). The dual-colored wire uses two color symbols (i.e. “G/Y”). The first symbol represents the base color of the wire (“G” in the figure) and the second symbol represents the color of the stripe (“Y” in the figure).

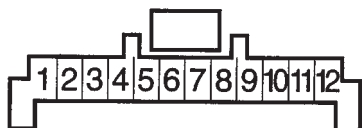
COMBINATION METER



NOTE:

Terminal arrangement of coupler viewed from harness side.

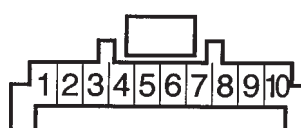
Coupler K



COUPLER K

- | | |
|-----------------------------------|------|
| 1. To lighting switch | R/Y |
| 2. Blank | |
| 3. To ground | B |
| 4. To fuel level gauge | Y/R |
| 5. To combination switch (turn L) | G/R |
| 6. To ignition switch | B/W |
| 7. To ECT sensor | Y/W |
| 8. To brake fluid level switch | R/B |
| 9. To combination switch (turn R) | G/Y |
| 10. To ground | B/BI |
| 11. To ECM | V |
| 12. Blank | |

Coupler L



COUPLER L

- | | |
|----------------------------------------------------|-----|
| 1. To alternator | W/R |
| 2. To parking brake switch | R/B |
| 3. To ECM | V/Y |
| 4. Blank | |
| 5. Blank | |
| 6. Blank | |
| 7. To main fuse | W |
| 8. To combination switch (dimmer & passing switch) | R |
| 9. To oil pressure switch | Y/B |
| 10. Blank | |

DIAGNOSIS

HEADLIGHT

Trouble	Possible Cause	Correction
Headlights do not light up	Bulb blown Headlight switch faulty HEAD R and L fuses blown Wiring or grounding faulty	Replace bulb Replace headlight switch Replace fuses to check for short Repair circuit
Only one headlight does not light up	Bulb blown HEAD R or L fuse blown Wiring or grounding faulty	Replace bulb Replace fuse to check for short Repair circuit
Only one beam ("Hi" or "Lo") does not light	Bulb blown Lighting or dimmer switch faulty Wiring harness faulty	Replace bulb Replace switch Repair circuit

TURN SIGNAL AND HAZARD WARNING LIGHTS

Trouble	Possible Cause	Correction
Flash rate high or one side only flashes	Bulb blown on "flash rate high"-side Incorrect bulb Turn signal/hazard warning relay faulty Open circuit or high resistance existing between combination switch (turn signal/hazard warning switch) and light on one side Wiring or grounding faulty	Replace bulb Replace bulb Replace relay Repair circuit Repair circuit
No flashing	HAZARD HORN and/or TURN BACK fuse blown Open circuit or high resistance existing between battery and switch Turn signal/hazard relay faulty Combination switch (turn signal/hazard switch) faulty Wiring or grounding faulty	Replace fuses to check for short Check bulb and check circuit Replace relay Replace switch Repair circuit
Flash rate low	Supply voltage low Turn signal/hazard relay faulty	Check charging system Replace relay

CLEARANCE, TAIL AND LICENSE PLATE LIGHTS

Trouble	Possible Cause	Correction
All lights do not light up	Bulb(s) blown TAIL STOP fuse blown Combination switch (lighting and dimmer switch) faulty Wiring or grounding faulty	Replace bulb (s) Replace fuse to check for short Replace switch Repair circuit
Some lights do not light up	Bulb(s) blown Wiring or grounding faulty	Replace bulb (s) Repair circuit

BACK-UP LIGHT

Trouble	Possible Cause	Correction
Back-up lights do not light up	Bulb(s) blown TURN BACK fuse blown Back-up light switch faulty Wiring or grounding faulty	Replace bulb (s) Replace fuse to check for short Replace switch Repair circuit
Back-up lights stay on	Back-up light switch faulty	Check or replace switch

BRAKE LIGHTS

Trouble	Possible Cause	Correction
Brake lights do not light up	Bulb(s) blown TAIL STOP fuse blown Brake light switch faulty Wiring or grounding faulty	Replace bulb (s) Replace fuse to check for short Replace switch Repair circuit
Brake lights stay on	Brake light switch faulty	Check, adjust or replace switch

FUEL METER AND FUEL GAUGE UNIT

Trouble	Possible Cause	Correction
Fuel meter shows no operation or incorrect operation	IG-COIL fuse blown Fuel gauge unit faulty Printed plate in combination meter faulty Fuel meter faulty Wiring or grounding faulty	Replace fuse to check for short Replace fuel gauge unit Replace printed plate Replace fuel meter Repair circuit

ENGINE COOLANT TEMP. (ECT) METER AND ECT SENSOR

Trouble	Possible Cause	Correction
Engine coolant temp. meter shows no operation or incorrect operation	IG-COIL fuse blown ECT meter faulty Printed plate in combination meter faulty ECT sensor faulty Wiring or grounding faulty	Replace fuse to check for short Replace ECT meter Replace printed plate Replace ECT sensor Repair circuit

OIL PRESSURE LIGHT

Trouble	Possible Cause	Correction
Oil pressure warning light does not light up when ignition switch is on at engine off	Bulb in combination meter blown IG-COIL fuse blown Printed plate in combination meter faulty Oil pressure switch faulty Wiring or grounding faulty	Replace bulb Replace fuse to check for short Replace printed plate Replace oil pressure switch Repair circuit

BRAKE AND PARKING BRAKE WARNING LIGHT

Trouble	Possible Cause	Correction
Brake warning light does not light up when fluid low level	Bulb in combination meter blown IG-COIL fuse blown Printed plate in combination meter faulty Brake fluid level switch faulty Wiring or grounding faulty	Replace bulb Replace fuse to check for short Replace printed plate Replace brake fluid level switch Repair circuit
Brake warning light does not light up when parking brake pull up	Bulb in combination meter blown IG-COIL fuse blown Printed plate in combination meter faulty Parking brake switch faulty Wiring or grounding faulty	Replace bulb Replace fuse to check for short Replace printed plate Replace parking brake switch Repair circuit
Brake warning light stay on	Brake fluid level switch and/or parking brake switch faulty	Replace switch

WINDSHIELD WIPER AND WASHER FRONT WIPER AND WASHER

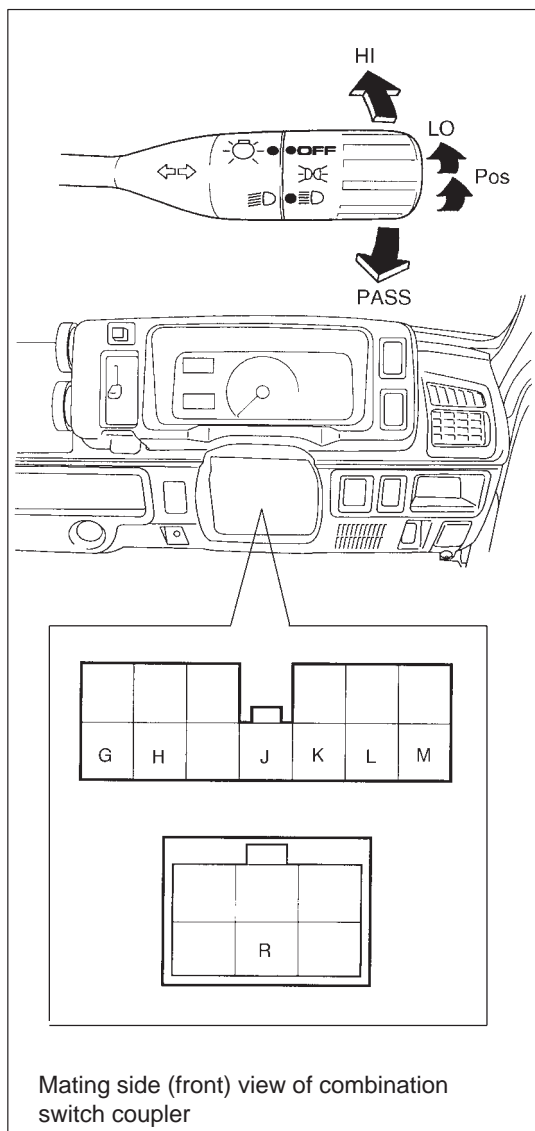
Trouble	Possible Cause	Correction
Wiper malfunctions or does not return to its original position	WIPER WASHER fuse blown Wiper motor faulty Combination switch (wiper switch) faulty Wiring or grounding faulty	Replace fuse to check for short Replace wiper motor Replace switch Replace circuit
Washer malfunctions	Washer hose or nozzle clogged WIPER WASHER fuse blown Washer motor faulty Combination switch (wiper switch) faulty Wiring or grounding faulty	Clean or repair clogged hose or nozzle Replace fuse to check for short Replace washer motor Replace switch Repair circuit

INTERIOR LIGHT

Trouble	Possible Cause	Correction
Interior light does not light up	Bulb blown TAIL STOP fuse blown Interior light switch faulty Door switch faulty Wiring or grounding faulty	Replace bulb Replace fuse to check for short Replace switch Replace switch Repair circuit

HORN

Trouble	Possible Cause	Correction
Horn does not operate	HAZARD HORN fuse blown Horn switch faulty Horn faulty	Replace fuse to check for short Replace horn switch Replace horn



ON-VEHICLE SERVICE

HEADLIGHT

HEADLIGHT SWITCH

INSPECTION

- 1) Disconnect negative cable at battery.
- 2) Disconnect combination switch lead wire coupler.
- 3) Check for continuity between terminals at each switch position shown below. If check result is not as specified, replace.

Lighting switch

Terminal	K	L	M	R	J
Switch Position					
OFF	○	○			
SMALL	○	○	○		
HEAD	○	○	○	○	○

Dimmer and passing switch

Terminal	R	H	J	G
Switch Position				
HI		○	○	
LO			○	○
PASS	○	○	○	○

REMOVAL AND INSTALLATION

Refer to COMBINATION SWITCH ASSEMBLY in section 3C.

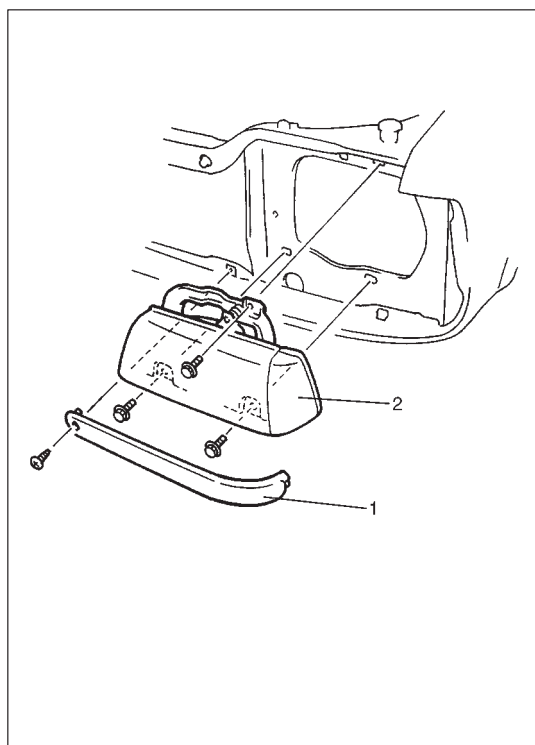
HEADLIGHT

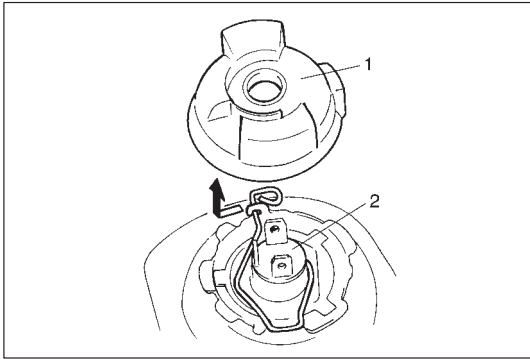
REMOVAL

- 1) Disconnect negative cable at battery.
- 2) Remove front grille.
- 3) Remove garnish (1) installed under the headlight.
- 4) Remove headlight mounting bolts.
- 5) Detach headlight assembly (2) from vehicle.
- 6) Disconnect couplers from headlight assembly.
- 7) Remove headlight assembly.

INSTALLATION

Reverse removal procedure for installation.





BULB REPLACEMENT

WARNING:

To avoid danger of being burned, don't touch when the bulb is hot.

- 1) Disconnect negative cable at battery.
- 2) Disconnect harness from bulb.
- 3) Remove socket cover (1) and bulb (2).
- 4) Replace bulb and assemble all removed parts.

HEADLIGHT AIMING WITH SCREEN

NOTE:

- Unless otherwise obligated by local regulations, adjust headlight aiming according to following procedure.
- After replacing headlight, be sure to adjust aiming.

Before adjustment, make sure the following.

- a) Place vehicle on a flat surface in front of blank wall (screen) ahead of headlight surface.

Clearance "a": 10 m (32.8 ft.)

- b) Adjust air pressure of all tires to a specified value respectively.
- c) Bounce vehicle body up and down by hand to stabilize suspension.
- d) Carry out with one driver aboard.

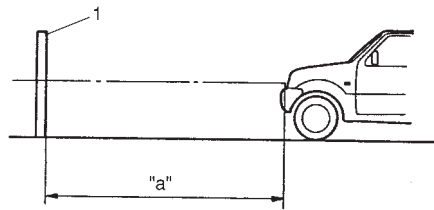
Driver's weight: 75 kg (165 lb)

Adjustment

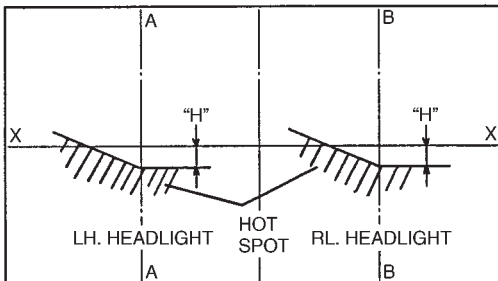
- 1) Check to see if hot spot (high intensity zone) of each main (low) beam axis falls as illustrated.

Clearance "H": Approx. 130 mm (5.15 in.)

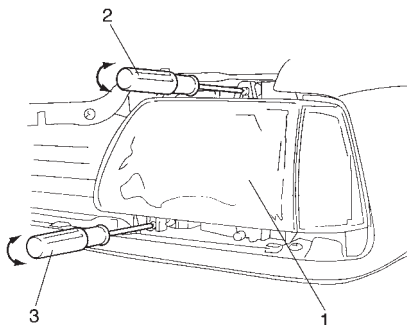
- 2) If headlight aiming is not set properly, align it to specification by adjusting aiming screw and aiming gear.



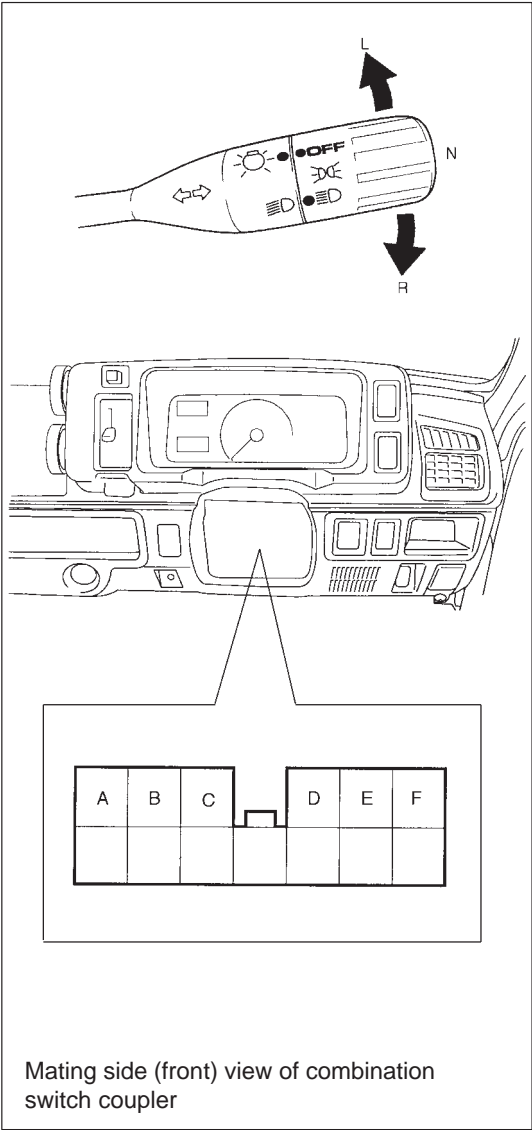
1. Screen



X - X: Horizontal center line of headlight bulb
A - A: Vertical center line of left headlight bulb
B - B: Vertical center line of right headlight bulb



1. Headlight assembly
2. Aiming (for up/down adjustment)
3. Aiming (for right/left adjustment)



TURN SIGNAL AND HAZARD WARNING LIGHT

TURN SIGNAL LIGHT SWITCH INSPECTION

- 1) Disconnect negative cable at battery.
- 2) Disconnect combination switch lead wire coupler.
- 3) Check for continuity between terminals at each switch position shown below. If check result is not as specified, replace.

Hazard SW	Turn Signal SW	Terminal					
		A	B	C	D	E	F
OFF	L	○	—	○			
	N				○	—	○
	R		○	○			
ON		○	○	○		○	○

REMOVAL AND INSTALLATION

Refer to COMBINATION SWITCH ASSEMBLY in Section 3C.

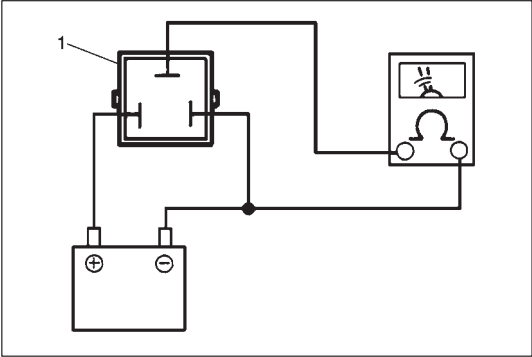
TURN SIGNAL/HAZARD RELAY

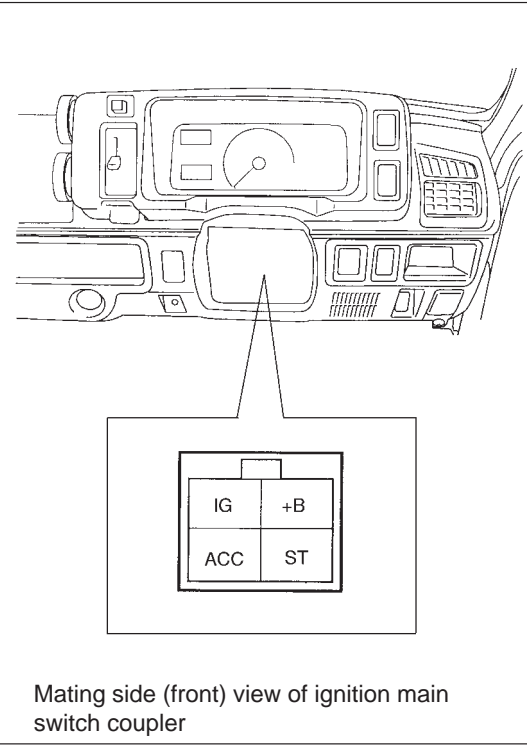
The turn signal/hazard relay (1) is located on the fuse box (2).

INSPECTION

Connect battery and tester as shown left.
Unless a continued click sound is heard, replace relay (1).

Reference flashing cycle : 60 – 120 cycle/minute





IGNITION SWITCH

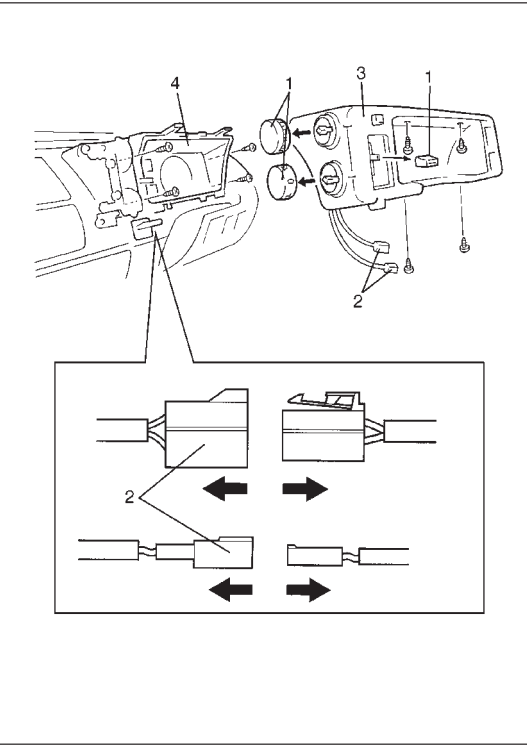
INSPECTION

- 1) Disconnect negative cable at battery.
- 2) Disconnect ignition main switch lead wire coupler.
- 3) Check for continuity between terminals at each switch position shown below. If check result is not as specified, replace.

Terminal		+B	ACC	IG	ST
key	Position				
OUT	LOCK				
IN	ACC	○	○		
	ON	○	○	○	
	START	○		○	○

REMOVAL AND INSTALLATION

Refer to STEERING LOCK ASSEMBLY (IGNITION SWITCH) in section 3C.



COMBINATION METER

REMOVAL

- 1) Disconnect negative cable at battery.
- 2) Remove heater control knobs (1) and mounting bolts.
- 3) Disconnect heater control lead wire couplers (2).
- 4) Loosen steering column mounting nuts of upper side, and lower steering column.
- 5) Remove meter cluster (3).
- 6) Pull out combination meter (4), and disconnect speedometer cable and combination meter lead wire couplers.

INSTALLATION

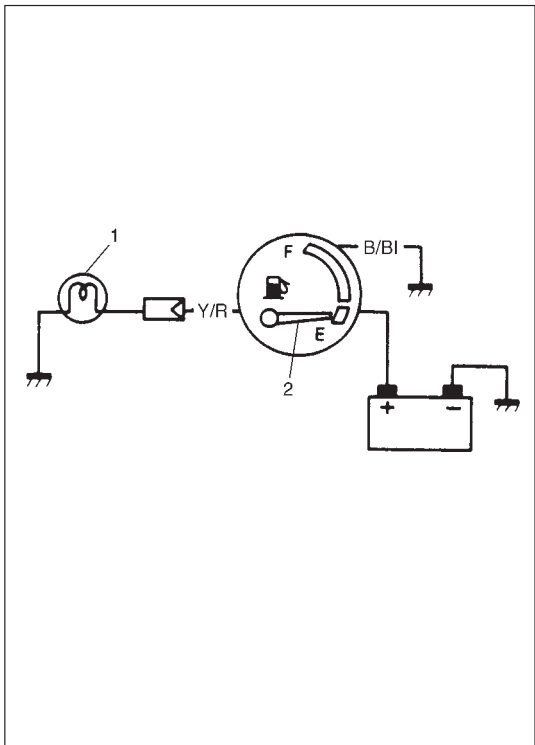
Reverse removal procedure for installation.

FUEL METER/FUEL GAUGE UNIT

FUEL METER

INSPECTION

- 1) Remove rear seat cushion. Refer to REAR SEAT in Section 9.
- 2) Disconnect Y/R lead wire coupler under the rear seat cushion.
- 3) Turning switch ON, and check that fuel meter indicates E.
- 4) Turn ignition switch OFF.
- 5) Ground Y/R lead through a 3.4 W test bulb (1) as illustrated.
- 6) Turn ignition switch ON and check that bulb light up and pointer (2) moves to F side.
- 7) If fuel meter shows no operation, repair or replace defective parts.



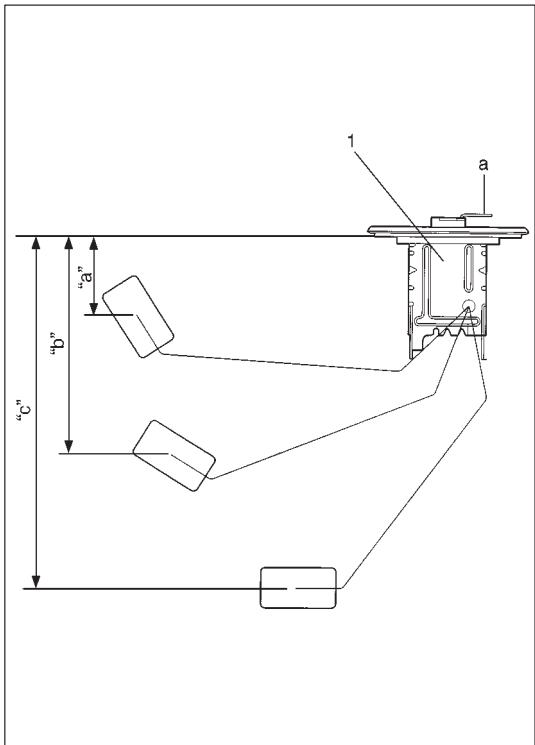
FUEL SENDER GAUGE

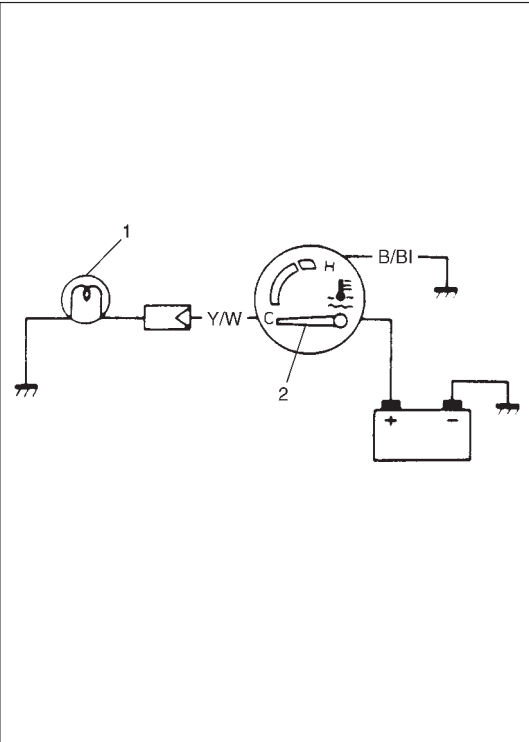
INSPECTION

- 1) Remove fuel tank referring to FUEL TANK REMOVAL in Section 6C.
- 2) Remove fuel gauge unit (1) from tank.
- 3) Check resistance between terminal (a) and gauge unit (ground) in individual each float position below.

Float Position		Resistance (Ω)
Full Upper "a"	40.9 mm (1.61 in.)	1 - 5
Middle (1/2) "b"	106.2 mm (4.18 in.)	28.5 - 36.5
Full Lower "c"	169.5 mm (6.67 in.)	103 - 117

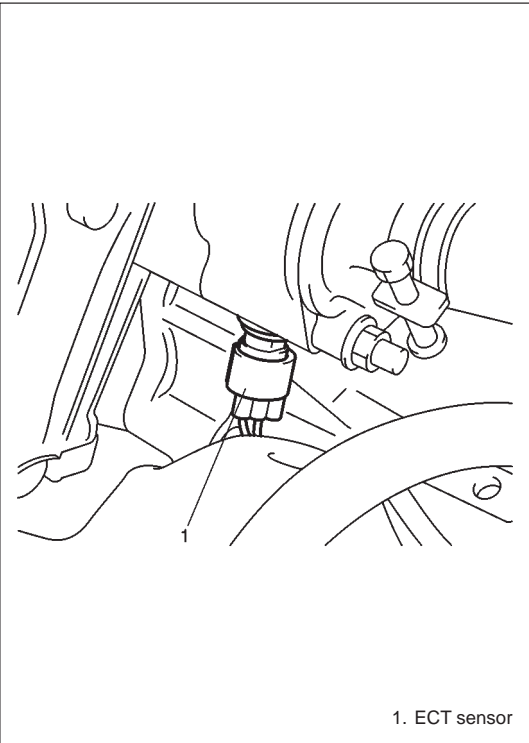
If the measured value is out of specification, replace.





ENGINE COOLANT TEMPERATURE (ECT) METER AND SENSOR UNIT
ENGINE COOLANT TEMPERATURE (ECT) METER INSPECTION

- 1) Disconnect Y/W lead wire going to ECT sensor.
- 2) Turn ignition switch ON, and check that ECT meter indicates COOL.
- 3) Turn ignition switch OFF.
- 4) Ground Y/W lead wire through a 3.4 W test bulb (1) as illustrated.
- 5) Turn ignition switch ON, and check that bulb light up and pointer (2) moves to hot side.
- 6) If ECT meter shows no operation, repair or replace defective parts.



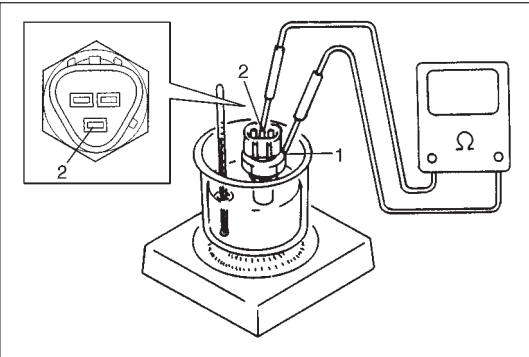
ENGINE COOLANT TEMPERATURE (ECT) SENSOR FOR METER

WARNING:

- Make sure that engine coolant temperature is cold before removing any part of cooling system.
- Also be sure to disconnect negative cable from battery terminal before removing any part.

REMOVAL AND INSTALLATION

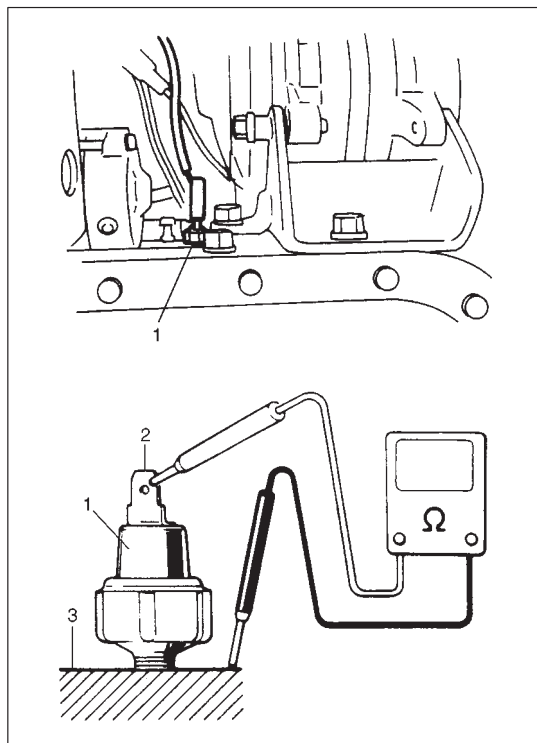
Refer to ENGINE COOLANT TEMPERATURE SENSOR in section 6E1.



INSPECTION

Warm up ECT sensor (1) observing resistance between sensor terminal (2) and sensor unit (1). Resistance should be decreased with increase of its temperature.

Temperature	Resistance
50°C (122°F)	136 - 216 Ω
120°C (248°F)	16.4 - 19.4 Ω



OIL PRESSURE WARNING LIGHT

OIL PRESSURE SWITCH

INSPECTION

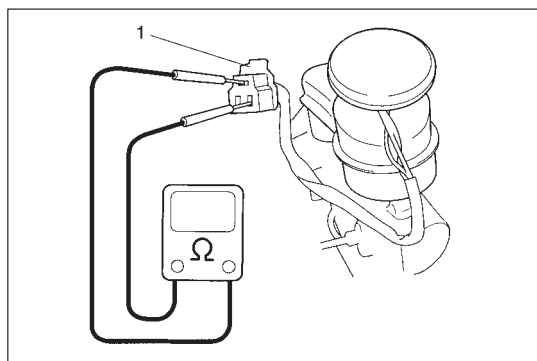
- 1) Disconnect oil pressure switch (1) lead wire.
- 2) Check for continuity between oil pressure switch terminal (2) and cylinder block (3) as shown.

During Engine Running	No continuity
At Engine Stop	Continuity

If check result is not as specified, replace oil pressure switch (1).

REMOVAL AND INSTALLATION

Refer to OIL PRESSURE CHECK in Section 6A1.



BRAKE AND PARKING BRAKE WARNING LIGHT

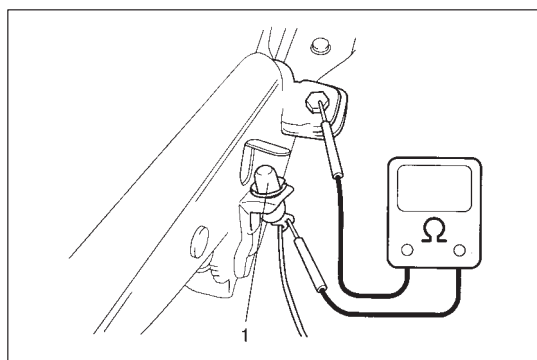
INSPECTION

• BRAKE FLUID LEVEL SWITCH

Check switch (1) for continuity.

If check result is not as specified, replace switch.

OFF position (float up)	No continuity
ON position (float down)	Continuity



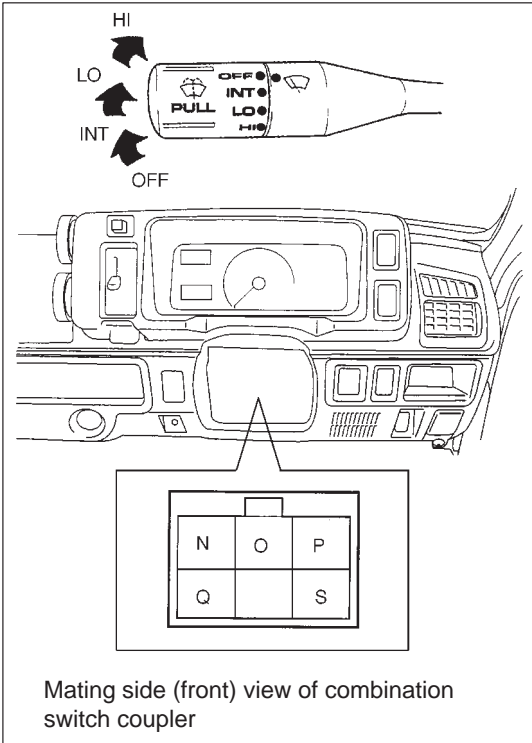
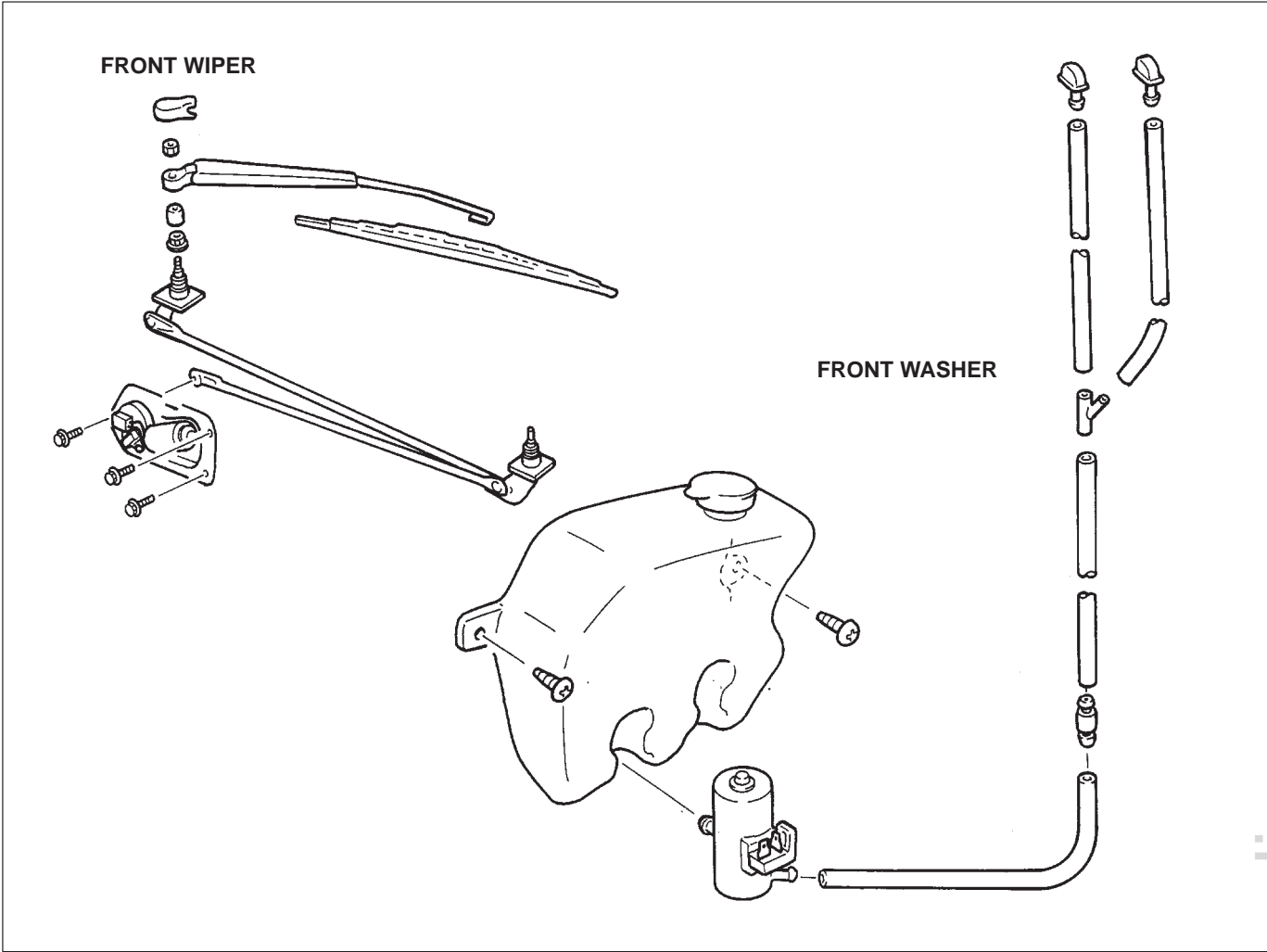
• PARKING BRAKE SWITCH

Check switch (1) for continuity.

If check result is not as specified, replace switch.

OFF position (parking brake released)	No continuity
ON position (parking brake lever pulled up)	Continuity

WIPERS AND WASHERS
COMPONENTS



FRONT WIPER/WASHER SWITCH
INSPECTION

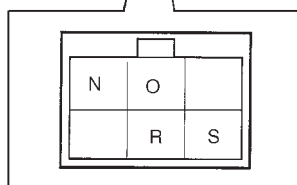
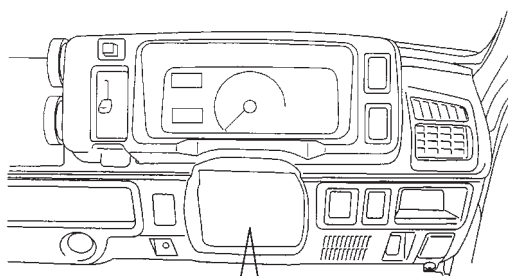
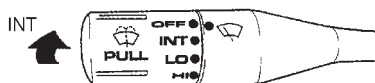
- 1) Disconnect negative cable at battery.
- 2) Disconnect combination switch lead wire coupler.
- 3) Check for continuity between terminals at each switch position as shown below. If check result is not as specified, replace switch.

Terminal	N	P	O	S
Wiper SW				
OFF			<input type="radio"/>	<input type="radio"/>
INT			<input type="radio"/>	<input type="radio"/>
LO	<input type="radio"/>		<input type="radio"/>	
HI	<input type="radio"/>	<input type="radio"/>		

Terminal	N	Q
Washer SW		
OFF		
ON	<input type="radio"/>	<input type="radio"/>

REMOVAL AND INSTALLATION

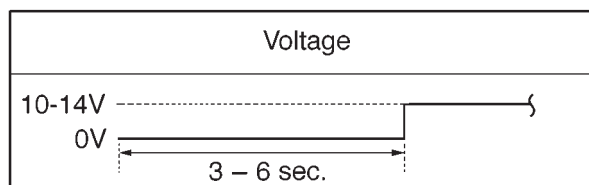
Refer to COMBINATION SWITCH ASSEMBLY in Section 3C.

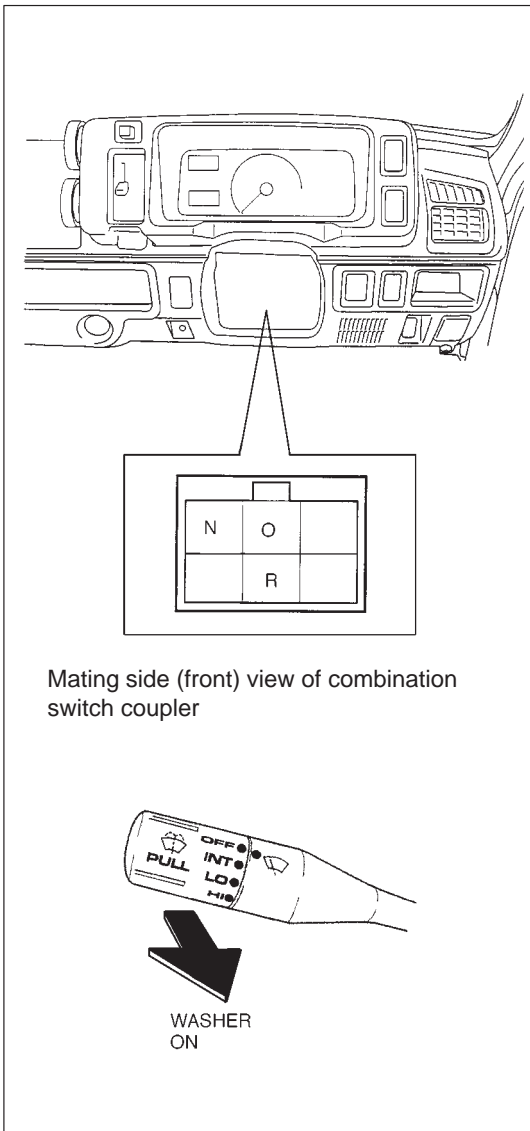


Mating side (front) view of combination switch coupler

INTERMITTENT WIPER RELAY CIRCUIT INSPECTION

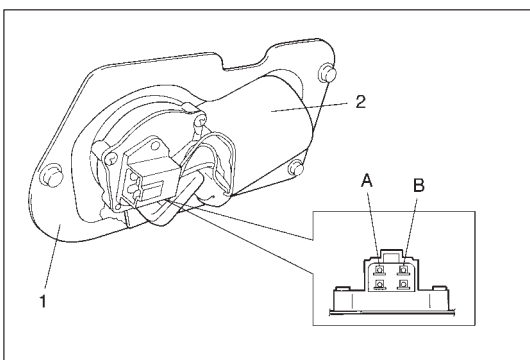
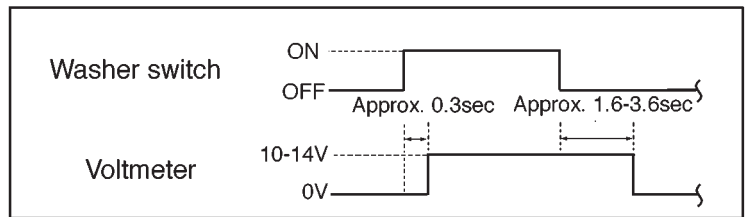
- 1) Disconnect negative cable at battery.
- 2) Disconnect combination switch lead wire coupler.
- 3) Turn the front wiper switch to INT position.
- 4) Connect battery positive terminal to terminal "N" and battery negative terminal to terminal "R".
- 5) Connect voltmeter positive lead to terminal "O" and negative lead to terminal "R".
Check that the voltmeter indicates the battery voltage (10 – 14V).
- 6) Connect terminal "S" and terminal "N" by a jumper wire. Then move jumper wire end connected to terminal "N" to terminal "R". Observe the voltmeter voltage drops to 0V right after connecting the jumper wire from terminal "N" to "R". Then the voltage rises to battery voltage (10 – 14 V) within the time shown below.





WASHER LINKED OPERATION INSPECTION

- 1) Disconnect negative cable at battery.
- 2) Disconnect combination switch lead wire coupler.
- 3) Make sure that front wiper switch is at OFF position.
- 4) Connect battery positive terminal to terminal "N" and battery negative terminal to terminal "R".
- 5) Connect voltmeter positive lead to terminal "O" and negative lead to terminal "R".
- 6) Push washer switch and check that voltage changes as shown in the diagram.

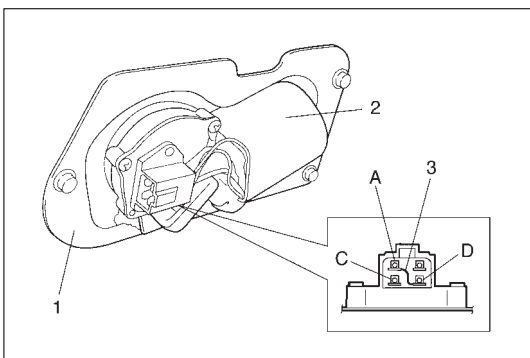


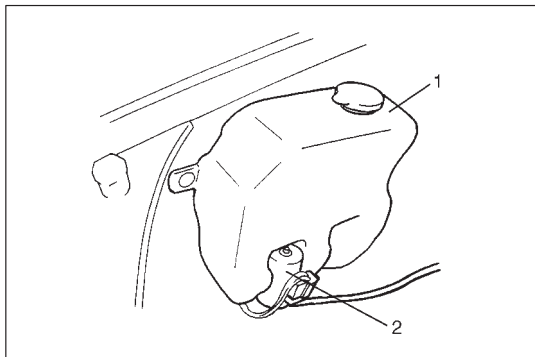
FRONT WIPER MOTOR INSPECTION

- 1) As illustrated left, have a 12V battery and connect its (+) terminal to terminal "A", and its (-) terminal to bracket (1) (wiper ground). If motor (2) rotates at a low revolution speed of 45 to 55 rpm, it is proper. As for high speed check, connect battery (+) terminal to terminal "B", and its (-) terminal to bracket (1) (wiper ground). If motor (2) rotates at a high revolution speed of 67 to 83 rpm, it is proper.

2) Testing automatic stop action

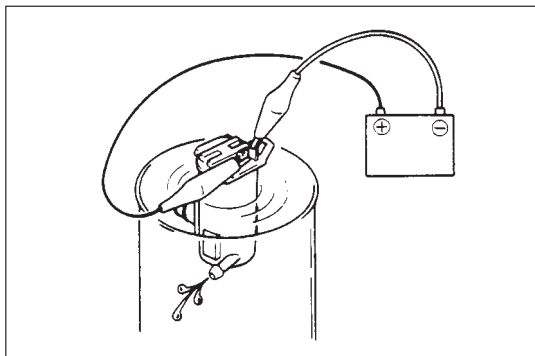
- a) Connect 12V battery (+) terminal to terminal "A" of wiper motor (2) and (-) terminal to bracket (1) (wiper ground) and let the motor turn.
- b) Disconnect terminal "A" from battery, and let the motor stop.
- c) Connect terminal "A" and "D" with a jumper wire (3), and connect terminal "C" to battery (+) terminal. Observe the motor turns once again then stops at a given position.
- d) Repeat a) thru c) several times and inspect if the motor stops at the given position every time.





FRONT WASHER PUMP REMOVAL

- 1) Disconnect negative cable at battery.
- 2) Remove washer tank fitting screws.
- 3) Disconnect pump lead wire and hoses.
- 4) Remove washer tank (1).
- 5) Remove pump (2) from tank.



INSPECTION

Connect battery (+) and (-) terminals to pump (+) and (-) terminals respectively to check pumping rate.

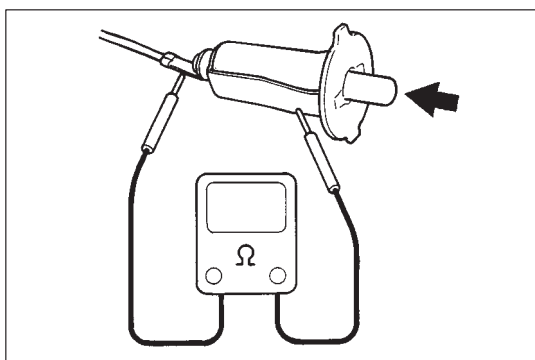
Check for front washer pump.

Pumping Rate:

More than 1.0 l/min (2.1 US pt./min, 1.76 Imp pt./min)

Installation

Reverse removal procedure for installation.



DOOR SWITCH

INSPECTION

Pull out door switch from body and check switch for continuity.

If found defective, replace switch.