

SECTION 3

STEERING, SUSPENSION, WHEELS AND TIRES

NOTE:

For the items with asterisk (*) in the "CONTENTS" below, refer to the same section of the Service Manual mentioned in "FOREWORD" of this manual.

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POWER STEERING (P/S) SYSTEM

WARNING:

For vehicles equipped with a Supplemental Restraint (Air Bag) System:

- Service on and around the air bag system components or wiring must be performed only by an authorized SUZUKI dealer. Refer to “Air Bag System Components and Wiring Location View” under “General Description” in air bag system section in order to confirm whether you are performing service on or near the air bag system components or wiring. Please observe all WARNINGS and “Service Precautions” under “On-Vehicle Service” in air bag system section before performing service on or around the air bag system components or wiring. Failure to follow WARNINGS could result in unintentional activation of the system or could render the system inoperative. Either of these two conditions may result in severe injury.
- Technical service work must be started at least 90 seconds after the ignition switch is turned to the “LOCK” position and the negative cable is disconnected from the battery. Otherwise, the system may be activated by reserve energy in the Sensing and Diagnostic Module (SDM).

NOTE:

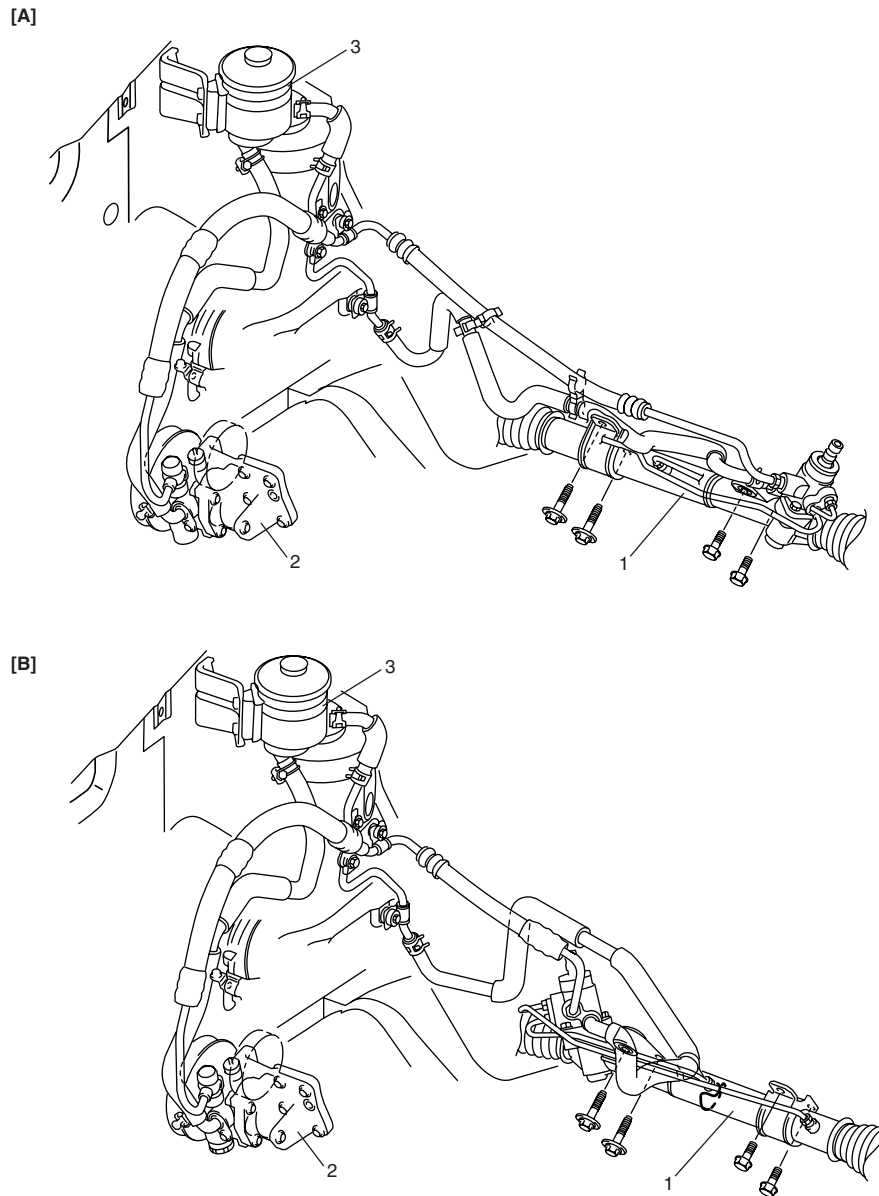
- Some parts in the Power Steering Gear Box cannot be disassembled or adjusted. For detailed information, refer to the description of POWER STEERING GEAR BOX under ON-VEHICLE SERVICE.
- All steering gear fasteners are important attaching parts in that they could affect the performance of vital parts and systems, and/or could result in major repair expense. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of these parts.
- Although the figures in this section show only the left-hand steering vehicle, the same work procedure and data apply to the right-hand steering vehicle.

General Description

P/S System Description

The power steering (P/S) system in this vehicle reduces the driver's effort needed in turning the steering wheel by utilizing the hydraulic pressure generated by the power steering (P/S) pump which is driven by the engine. It is an integral type with the rack and pinion gears and the control valve unit, hydraulic pressure cylinder unit all built in the steering gear box.

The pump is a vane type and is driven by the V-ribbed belt from the crankshaft.



[A] : For left-hand steering vehicle	1. Power steering gear box	3. P/S fluid reservoir
[B] : For right-hand steering vehicle	2. Power steering pump	

Diagnosis

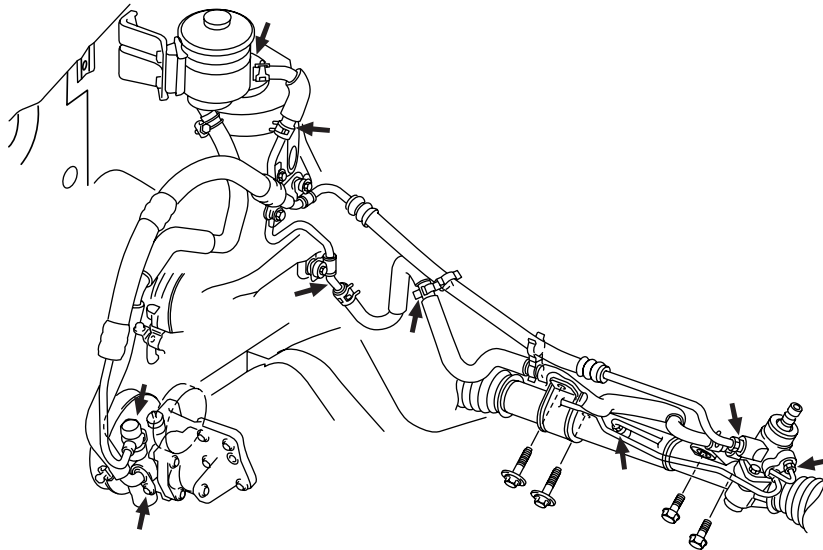
Fluid Leakage Check

Start engine and turn steering wheel fully to the right and left so that maximum hydraulic pressure is provided. Then visually check gear box, P/S pump and P/S fluid reservoir themselves and each joint of their connecting pipes for leakage.

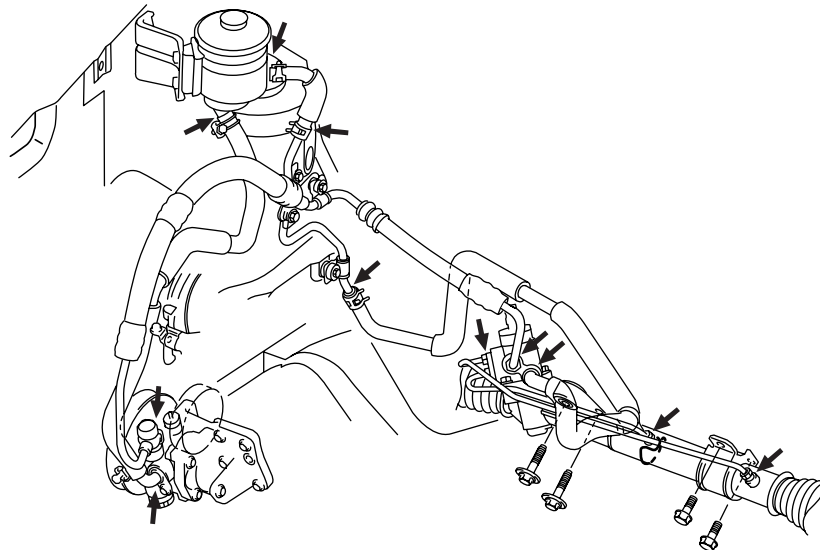
CAUTION:

Never keep steering wheel turned fully for longer than 10 seconds.

[A]



[B]



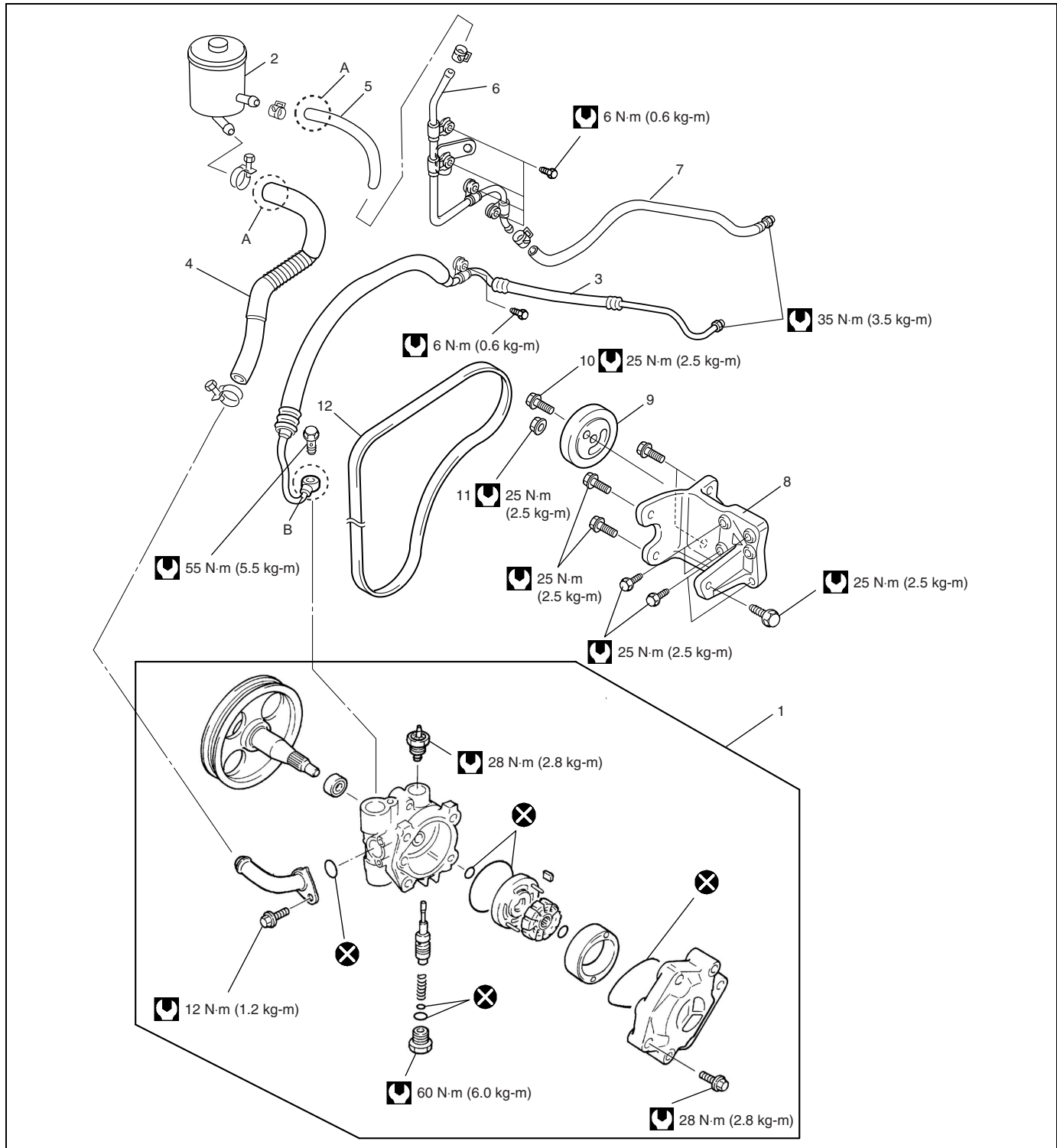
[A] : Left-Hand Steering Vehicle

[B] : Right-Hand Steering Vehicle

On-vehicle Service

Power Steering Pump

COMPONENTS



1. Power steering pump assembly	7. Low pressure return hose & pipe (Gear box side)	Tightening torque
2. Power steering fluid reservoir tank	8. Bracket	Do not reuse.
3. High pressure hoses & pipe	9. Belt tension pulley	"A": Match marking with projection of reservoir tank.
4. Suction hose	10. Belt tension pulley bolt	"B": Tighten bolt with pipe stopper contacted to projection of P/S pump.
5. Low pressure return hose (Reservoir side)	11. Belt tension pulley nut	
6. Low pressure return pipe	12. Power steering belt	

REMOVAL

NOTE:

Be sure to clean each joint of suction and discharge sides thoroughly before removal.

- 1) Remove engine under cover of right side, loosen belt tension pulley and remove P/S belt.
- 2) Disconnect high pressure pipe and suction hose from pump.
As fluid flows out of disconnected joints, put a container under joints or a plug to hose.

CAUTION:

Take care not to cause damage to A/C condenser during service operation, if equipped.

- 3) Disconnect pressure switch lead harness and A/C wire harness.
- 4) Remove A/C compressor from bracket with A/C hose still attached (if equipped).

NOTE:

Hang removed A/C compressor with a wire hook or the like so as to prevent A/C hose from bending and twisting excessively or being pulled.

- 5) Remove oil pump from bracket.

NOTE:

Plug each port of removed pump to prevent dust or any other foreign matter from entering.

INSTALLATION

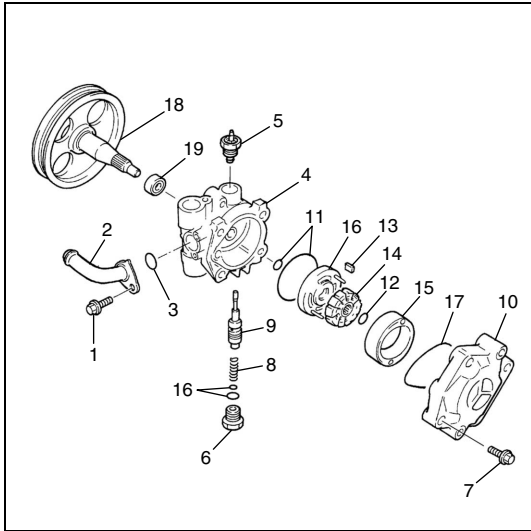
Reverse removal procedure.

NOTE:

- **Fill specified power steering fluid after installation and bleed air without failure.**
- **For tightening torques, refer to components figure.**
- **Adjust power steering belt tension referring to “POWER STEERING BELT TENSION ADJUSTMENT” in this section.**
- **Bleed air from P/S system by referring to “AIR BLEEDING PROCEDURE” in this section.**

DISASSEMBLY

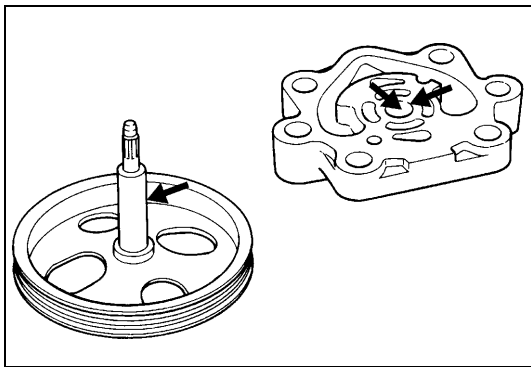
- 1) Clean its exterior thoroughly.
- 2) With aluminum plates placed on vise first, grip pump body with it.



- 3) Remove suction connector bolt (1), suction connector (2) and O-ring (3) from pump body (4).
- 4) Remove power steering pressure switch (terminal set) (5) from pump body.
- 5) Remove plug (6), flow control spring (8) and relief valve (flow control valve) (9) from pump body.
- 6) Remove cover bolts (7), pump cover (10) and O-ring (17) from pump body.
- 7) Remove snap ring (12) from pump shaft.
- 8) Remove vanes (13) from rotor (14).
- 9) Remove cam ring (15), rotor (14), side plate (16) and O-rings (11) from pump body.
- 10) Pull out pulley (18) from pump body.
- 11) Remove oil seal (19) from pump body.

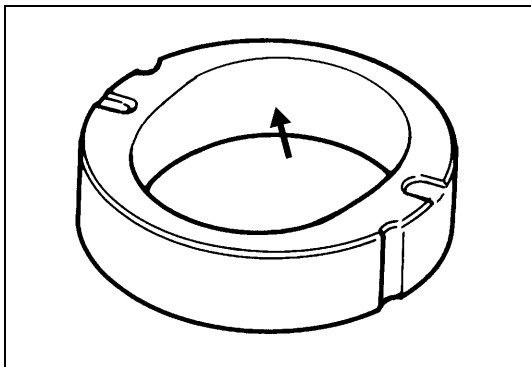
INSPECTION

Pump body, cover, side plate and shaft



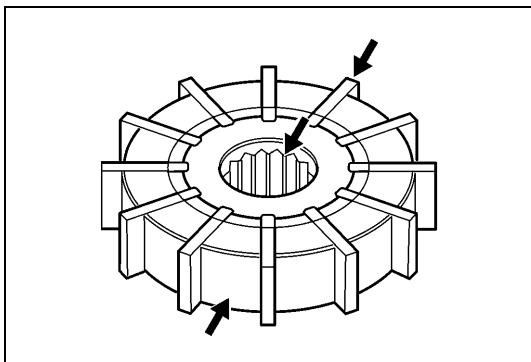
Check sliding surfaces of each part for wear and damage. If any defect is found, replace pump assembly.

Cam ring

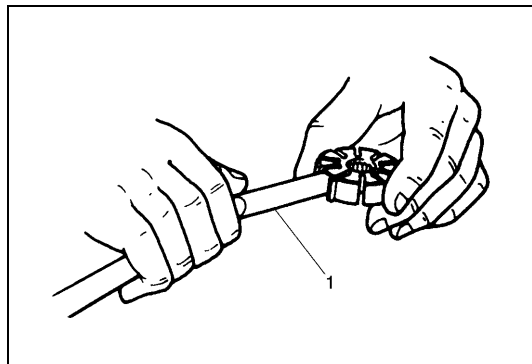


Check vane sliding surface of cam ring for wear and damage. If any defect is found, replace pump assembly.

Rotor and vane



- Check sliding surfaces of rotor and vane for wear and damage.



- Check clearance between rotor and vane.

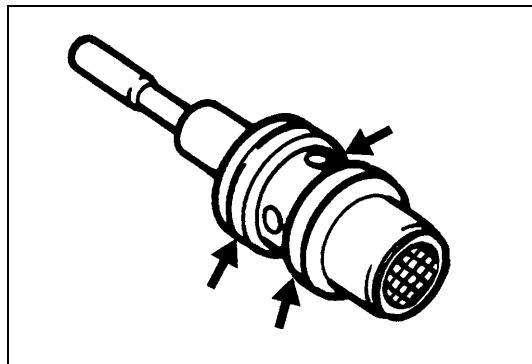
Clearance:

Standard 0.01 mm (0.0004 in.)

Limit 0.06 mm (0.0023 in.)

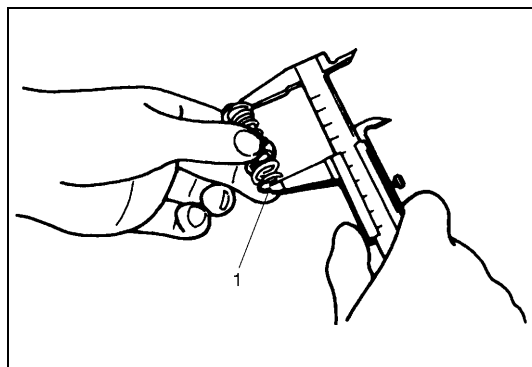
Replace pump assembly if any defect is found in above checks.

1. Thickness gauge



Relief valve (flow control valve) and its spring

- Check fluid passage of relief valve and orifice of connector for obstruction (clogged).
- Check sliding surface of relief valve for wear and damage.



- Check free length of relief valve spring (1).

Free length:

Standard 22.0 mm (0.866 in.)

Limit 19.0 mm (0.748 in.)

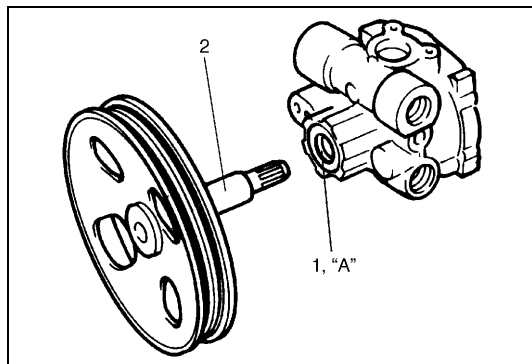
Replace if any defective is found.

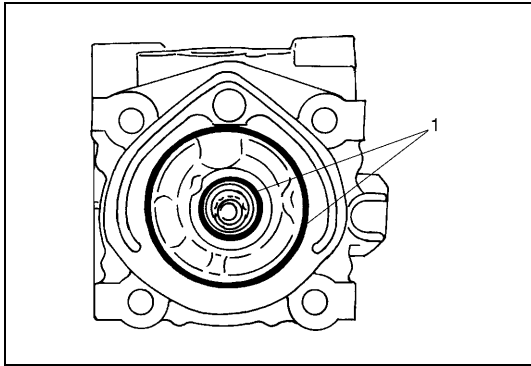
REASSEMBLY

Reverse disassembly procedure for assembly, noting the following.

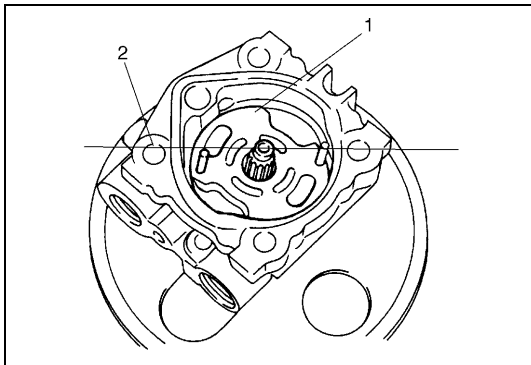
- 1) Apply grease to oil seal lip (1). Apply power steering fluid to sliding surface of the shaft (2) and then insert shaft in the pump body.

“A”: Grease 99000-25010





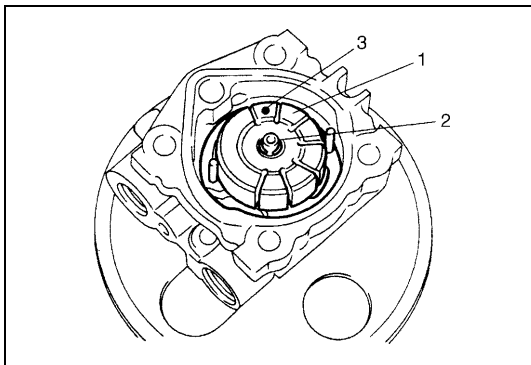
- 2) Apply power steering fluid to O-rings (1) and fit them to pump body.



- 3) Install side plate (1) to pump body.

NOTE:

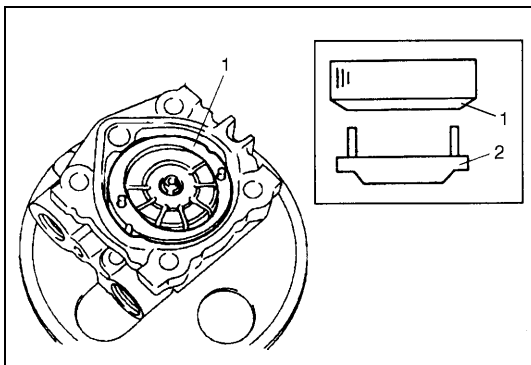
Carefully align the dowel pins on the side plate (1) at bolt hole (2) as shown in figure.



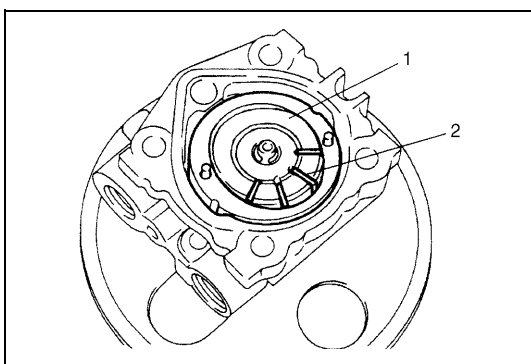
- 4) Apply power steering fluid to sliding surface of rotor (1).
 5) Install rotor to shaft, directing dot (3) marked side of rotor facing up.
 6) Install new snap ring (2) to shaft, then make sure to fit snap ring into shaft groove securely.

NOTE:

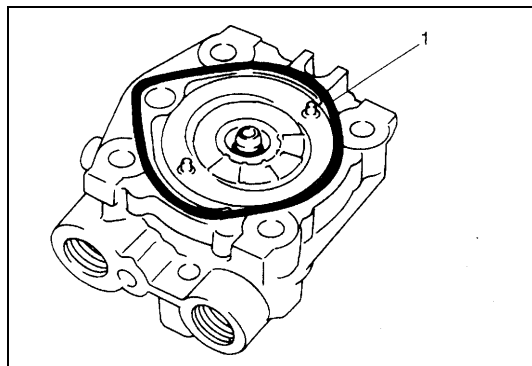
Never reuse the removed snap ring.



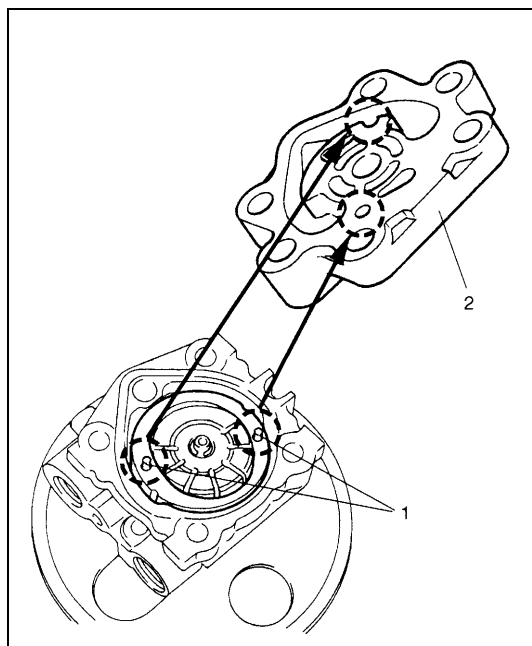
- 7) Apply power steering fluid to sliding surface of cam ring (1).
 8) Install cam ring to pump body. The tapered end of cam ring (1) should face the side plate (2).



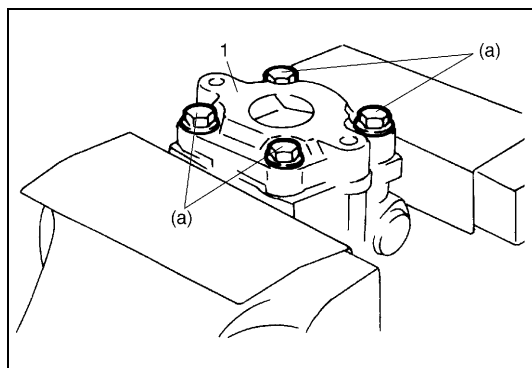
- 9) Apply power steering fluid to each vane (2).
 10) Install vanes (12 pieces) (2) to rotor (1).



- 11) Apply power steering fluid to O-ring (1).
- 12) Install O-ring (1) to pump body.
- 13) Apply power steering fluid to sliding surface of pump cover and rotor.



- 14) Match the dowel pins (1) to the holes of the cover plate (2) as shown and install pump cover to pump body.



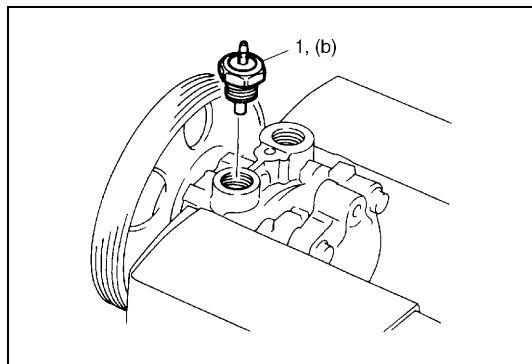
- 15) Gradually tighten pump cover bolts to specified torque.

NOTE:

After installing pump cover (1), check to make sure that shaft can be turned by hand.

Tightening torque

Pump cover bolts (a) : 28 N-m (2.8 kg-m, 20.0 lb-ft)

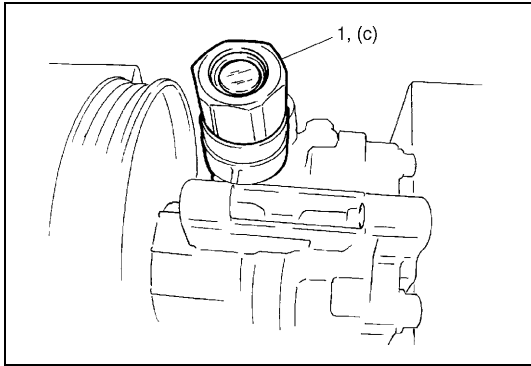


- 16) Apply power steering fluid to O-ring of terminal switch.
- 17) Install pressure switch (1) to pump body.

Tightening torque

Pressure switch (b) : 28 N-m (2.8 kg-m, 20.0 lb-ft)

- 18) Apply power steering fluid to relief valve (flow control valve).
- 19) Install relief valve (flow control valve) to pump body.
- 20) Install flow control spring.
- 21) Apply power steering fluid to O-rings of plug.
- 22) Install O-rings to plug.

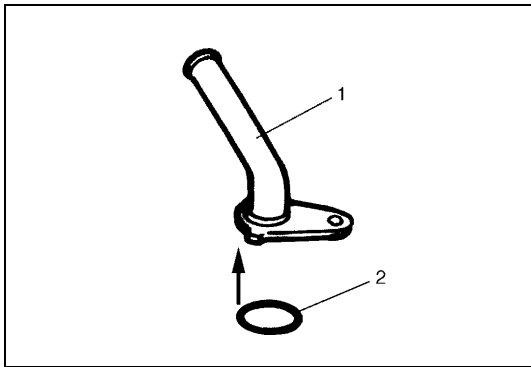


23) Tighten plug (1) to specified torque.

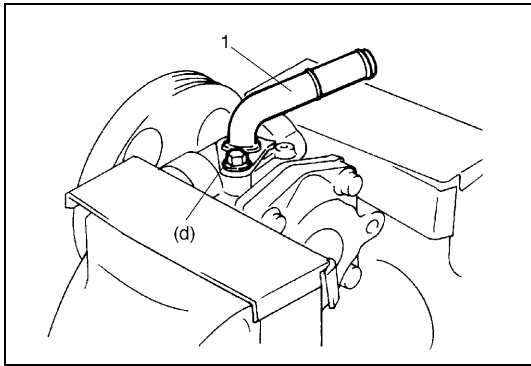
Tightening torque

Plug (c) : 60 N·m (6.0 kg-m, 43.5 lb-ft)

24) Apply power steering fluid to O-ring of suction connector.



25) Install O-ring (2) to suction connector (1).



26) Install suction connector (1) to pump body as shown in figure. Tighten suction connector bolt to specified torque.

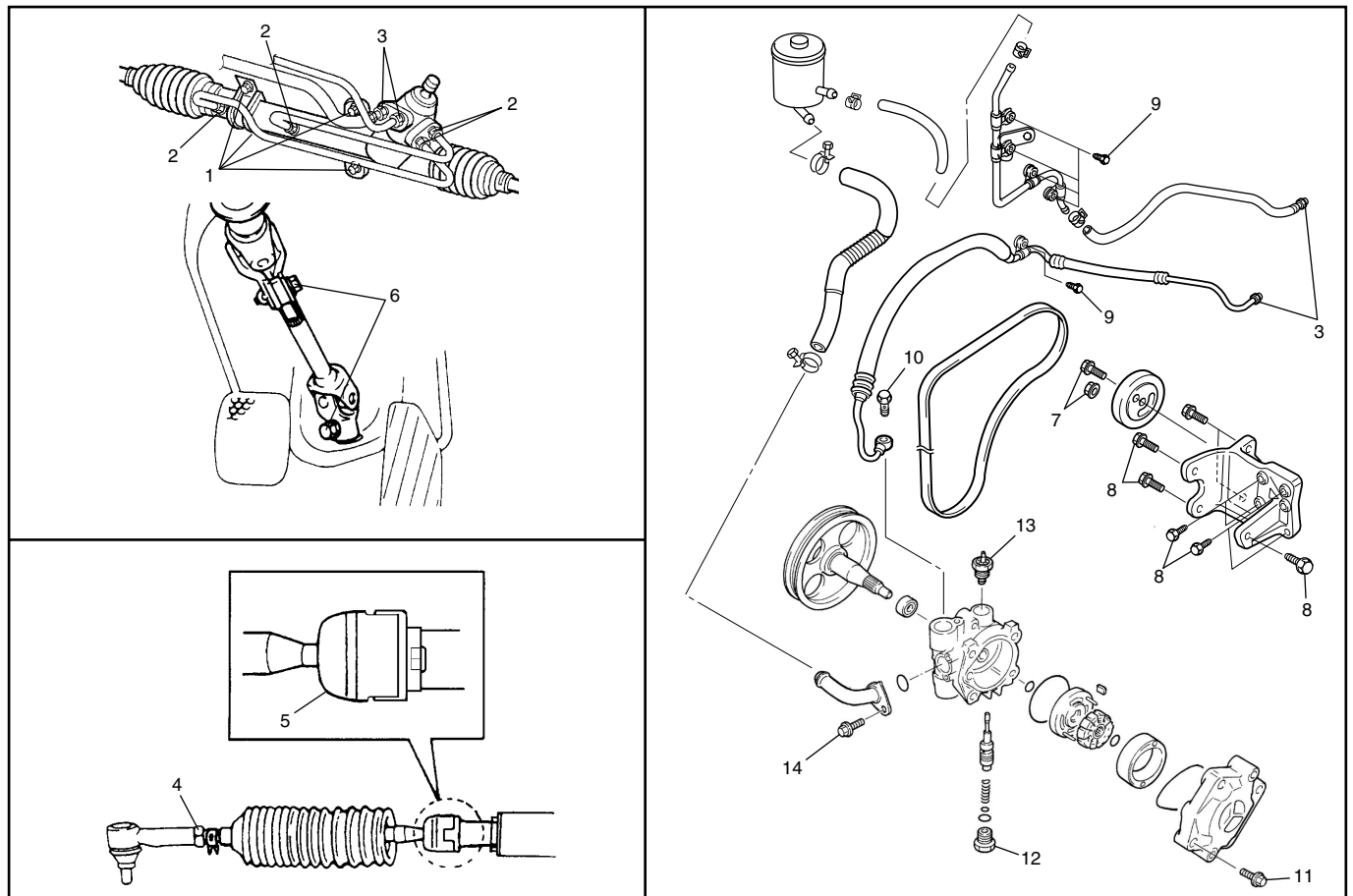
Tightening torque

Suction connector bolt

(d) : 12 N·m (1.2 kg-m, 8.5 lb-ft)

Tightening Torque Specification

Fastening part	Tightening torque		
	N·m	kg-m	lb-ft
Gear box mounting bolts (1)	55	5.5	40.0
Gear box cylinder pipe flare nuts (2)	25	2.5	18.0
Gear box high & low pressure pipe flare nuts (3)	35	3.5	25.0
Tie rod end lock nut (4)	45	4.5	32.5
Tie rod ball nut (5)	70	7.0	50.5
Steering shaft upper and lower joint bolts (6)	25	2.5	18.0
Tension pulley bolt and nut (7)	25	2.5	18.0
P/S pump mount bolts (8)	25	2.5	18.0
Pipe clamp bolt (9)	6	0.6	4.5
High pressure pipe mount bolt (Pipe to pump) (10)	55	5.5	40.0
Pump cover bolts (11)	28	2.8	20.0
Plug (12)	60	6.0	43.5
Pressure switch (Terminal) (13)	28	2.8	20.0
Suction connector bolt (14)	12	1.2	8.5
Tie rod end castle nut	35 – 55	3.5 – 5.5	25.5 – 39.5



SECTION 6K

EXHAUST SYSTEM

NOTE:

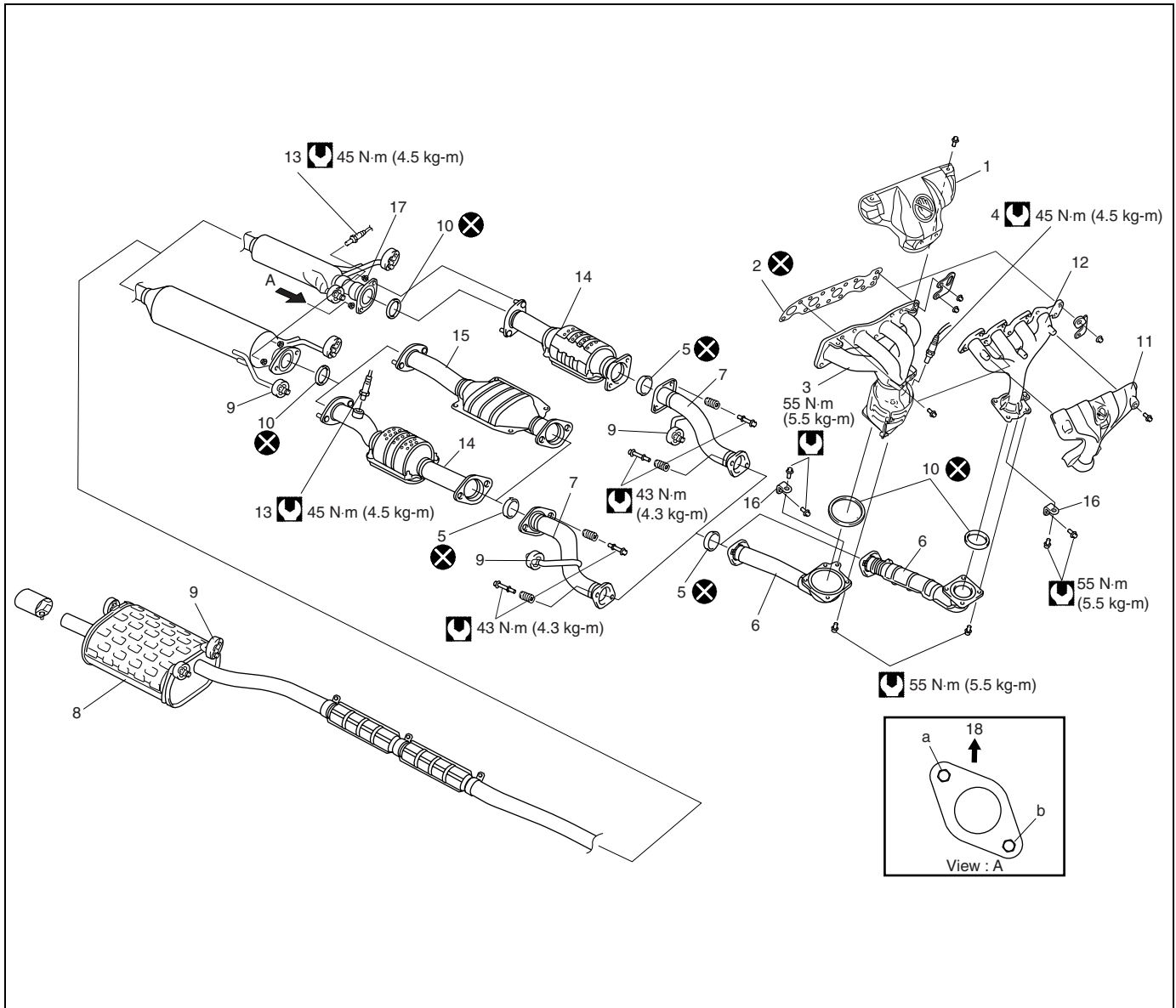
For the items with asterisk (*) in the "CONTENTS" below, refer to the same section of the Service Manual mentioned in "FOREWORD" of this manual.

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On-Vehicle Service

Components



1. Exhaust manifold cover (with oxygen sensor)	8. Muffler	15. Exhaust chamber
2. Gasket	9. Muffler mounting	16. Exhaust manifold stiffener
3. Exhaust manifold (with oxygen sensor)	10. Gasket	17. Exhaust pipe nut: Tighten exhaust pipe nut (a) first and next (b) as shown in View "A".
4. Heated oxygen sensor-1	11. Exhaust manifold cover (without oxygen sensor)	18. Upper side
5. Seal ring	12. Exhaust manifold (without oxygen sensor)	Tightening torque
6. Exhaust No.1 pipe	13. Heated oxygen sensor-2 (if equipped)	Do not reuse.
7. Exhaust No.2 pipe	14. Catalyst case	

WARNING:

To avoid the danger of being burned, do not touch the exhaust system when the system is hot. Any service on the exhaust system should be performed when the system is cool.

SECTION 7B1

AUTOMATIC TRANSAXLE

7B1

WARNING:

For vehicles equipped with Supplemental Restraint (Air Bag) System :

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- Technical service work must be started at least 90 seconds after the ignition switch is turned to the “LOCK” position and the negative cable is disconnected from the battery. Otherwise, the system may be activated by reserve energy in the Sensing and Diagnostic Module (SDM).

NOTE:

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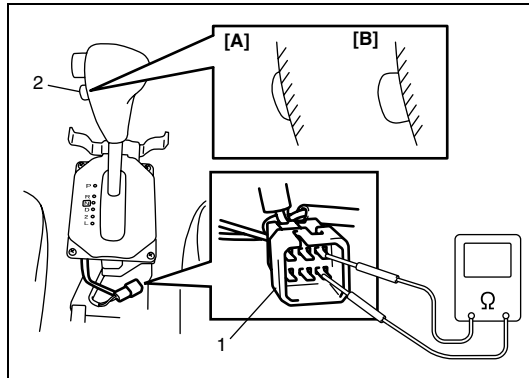
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DTC P1700/DTC No.32 or No.33 Throttle Position Signal Circuit Malfunction.....	*	Differential Side Oil Seal	*
DTC P1702/DTC No.52 Internal Malfunction of TCM.....	*	Shift Lock Solenoid, If Equipped.....	*
DTC P1705/DTC No.51 Engine Coolant Temperature Signal Circuit Malfunction.....	*	Brake Interlock System, If Equipped.....	*
DTC P1730/DTC No.64 Engine Torque Signal Circuit Malfunction	*	Key Interlock Cable, If Equipped	*
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On-Vehicle Service

O/D OFF Switch

INSPECTION

- 1) Remove console box.
- 2) Disconnect O/D off switch connector (1).
- 3) Check continuity between O/D off switch terminals.



O/D off switch (2) position	Pushing	Free
Continuity	Continuity	No continuity

[A]: Pushing position

[B]: Free position

SECTION 8

BODY ELECTRICAL SYSTEM

WARNING:

For vehicles equipped with a Supplemental Restraint (Air Bag) System :

- Service on and around the air bag system components or wiring must be performed only by an authorized SUZUKI dealer. Refer to “Air Bag System Components and Wiring Location View” under “General Description” in air bag system section in order to confirm whether you are performing service on or near the air bag system components or wiring. Please observe all WARNINGS and “Service Precautions” under “On-Vehicle Service” in air bag system section before performing service on or around the air bag system components or wiring. Failure to follow WARNINGS could result in unintentional activation of the system or could render the system inoperative. Either of these two conditions may result in severe injury.
- Technical service work must be started at least 90 seconds after the ignition switch is turned to the “LOCK” position and the negative cable is disconnected from the battery. Otherwise, the system may be activated by reserve energy in the Sensing and Diagnostic Module (SDM).

NOTE:

For the items with asterisk (*) in the “CONTENTS” below, refer to the same section of the Service Manual mentioned in “FOREWORD” of this manual.

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Diagnosis

Brake Light

Condition	Possible Cause	Correction
Brake lights do not light up	Bulb(s) blown	Replace bulb(s).
	15A fuse (brake light fuse) installed at end of right side in fuse box on engine room blown	Replace fuse to check for short.
	Brake light (stop lamp) switch faulty	Check switch.
	Wiring or grounding faulty	Repair circuit.
Brake lights stay on	Brake light (stop lamp) switch faulty	Check, adjust or replace switch.

Combination Meter

Condition	Possible Cause	Correction
Display and indicator lamps do not light up	"METER" fuse blown	Replace fuse to check for short.
	Power source circuit (between ignition switch and combination meter) open or short	Repair circuit.
	Wiring or grounding faulty	Repair circuit.
	Combination meter faulty	Replace combination meter.

Fuel Meter

Condition	Possible Cause	Correction
Fuel meter all segments blinks	Wiring harness between combination meter and fuel level sensor is short to ground	Repair short.
	Fuel level sensor faulty	Check fuel level sensor.
Fuel meter lowest segments blinks even if fuel is refilled	Fuel level sensor faulty	Check fuel level sensor.
	Wiring harness connected to fuel level sensor is open	Repair open.
	Combination meter faulty	Replace combination meter.
Fuel meter shows no operation or incorrect operation	Fuel level sensor faulty	Check fuel level sensor.
	Combination meter faulty	Replace combination meter.
	"RADIO DOME" fuse blown	Replace fuse to check for short.

Low Fuel Warning Light

NOTE:

- Confirm that fuel meter is in good condition before referring to the following possible causes.
- The low fuel warning light comes ON when the vehicle is in the following insufficient fuel level.

Low fuel warning light operation :

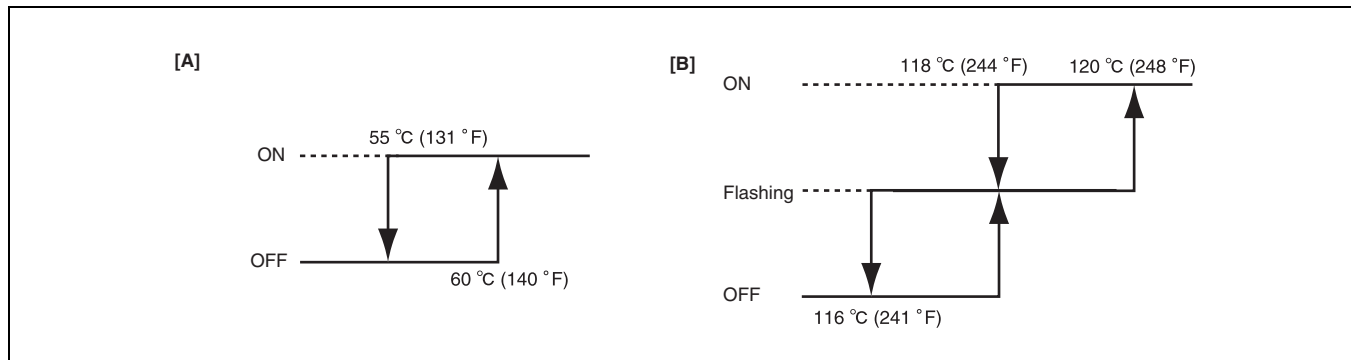
Low fuel warning light operation	Fuel level in fuel tank	Fuel level sensor resistance
OFF	Approx. 7 liter (1.85 gal/US) or more	Approx. 10 - 112 Ω
ON	Approx. 0 – 7 liter (0 – 1.85 gal/US)	Approx. 112 - 130 Ω

Condition	Possible Cause	Check or Correct
Low fuel warning light does not come ON when fuel level is lower than specification	Combination meter internal circuit faulty	Replace combination meter.
Low fuel warning light comes ON steady	Low fuel	Refill fuel.
	Combination meter internal circuit faulty	Replace combination meter.

Low Engine Coolant Temperature Light and High Engine Coolant Temperature Warning Light

NOTE:

The low engine coolant temperature light and the high engine coolant temperature warning light come ON or flash when the specified engine coolant temperature shown below is detected by ECT sensor.



[A] : Low engine coolant temperature light operation
 [B] : High engine coolant temperature warning light operation

Condition	Possible Cause	Check or Correct
Low engine coolant temperature light and/or high engine coolant temperature warning light does not come ON after ignition switch turns to ON position	Combination meter internal circuit faulty	Check combination meter.
	Wiring or grounding faulty	Repair.
Low engine coolant temperature light comes ON steady or flashing	Engine coolant is lower than specified temperature	-
	Combination meter internal circuit faulty	Check combination meter.
	ECT sensor faulty	Check ECT sensor.
	ECT signal from ECM faulty	Check "Engine Coolant Temp. Signal for Combination meter" referring to "Inspection of ECM and Its Circuit" in Section 6.
	Wiring or grounding faulty	Repair.
High engine coolant temperature light comes ON steady or flashing	Engine coolant is excessive high temperature	Cool engine off
	Combination meter internal circuit faulty	Check combination meter.
	ECT sensor faulty	Check ECT sensor.
	ECT signal from ECM faulty	Check "Engine Coolant Temp. Signal for Combination meter" referring to "Inspection of ECM and Its Circuit" in Section 6.
	Wiring or grounding faulty	Repair.

Wiper and Washer (Rear)

Condition	Possible Cause	Correction
Wiper malfunction	“WIPER/WASHER” fuse blown	Replace fuse to check for short.
	Wiper motor faulty	Check wiper motor.
	Combination switch (wiper switch) faulty	Check wiper switch.
	Rear wiper intermittent relay faulty	Check rear wiper intermittent relay.
	Wiring or grounding faulty	Repair circuit.
Washer malfunction	Washer hose or nozzle clogged	Clean or repair clogged hose or nozzle.
	“WIPER/WASHER” fuse blown	Replace fuse to check for short.
	Washer motor faulty	Check washer motor.
	Combination switch (washer switch) faulty	Check washer motor.
	Wiring or grounding faulty	Repair circuit.

Clock and Thermometer Unit

NOTE:

This thermometer indicates the ambient temperature in front of the radiator. Under any one of the following listed conditions, however, even when the ambient temperature goes up, the thermometer display does not rise so as to correct the rise of the ambient temperature caused by the radiant heat of the engine. When the ambient temperature drops, the thermometer reading follows the change in the temperature.

Be sure to bear this in mind when diagnosing trouble.

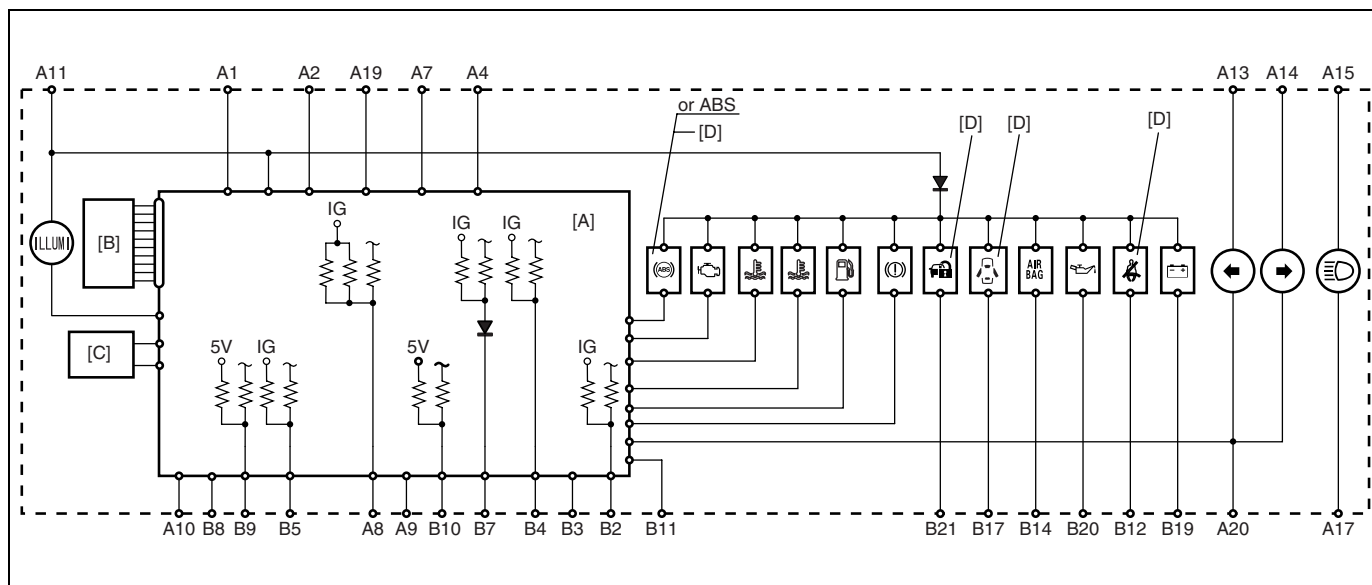
- The vehicle speed is 30 km/h (18 mph) or lower.
- VSS signal is faulty.
- The ignition switch is turned on again within 2 hours.

Condition	Possible Cause	Check or Correct
No displaying of clock and/or thermometer	“ACC” and/or “DOME” fuse Blown	Replace fuse to check for short.
	Wiring and/or grounding faulty	Repair as necessary.
	Clock and thermometer unit faulty	Replace unit.
Incorrect thermometer display	Outside air temperature sensor faulty	Replace outside air temperature sensor.
	VSS signal faulty	Check VSS referring to “DTC P0500 Vehicle Speed Sensor (VSS) Malfunction” in Section 6.
	Wiring and/or grounding faulty	Repair as necessary.
No changing display at -30°C (-22°F)	Outside air temperature is less than -30°C (-22°F)	-
	Outside air temperature sensor faulty	Replace outside air temperature sensor.
	Outside air temperature sensor wiring circuit open circuit and/or short to power circuit	Repair as necessary.
No changing display at 50°C (122°F)	Outside air temperature is more than 50°C (122°F)	-
	Outside air temperature sensor faulty	Replace outside air temperature sensor.
	Outside air temperature sensor wiring circuit short to ground circuit	Repair as necessary.

On-Vehicle Service

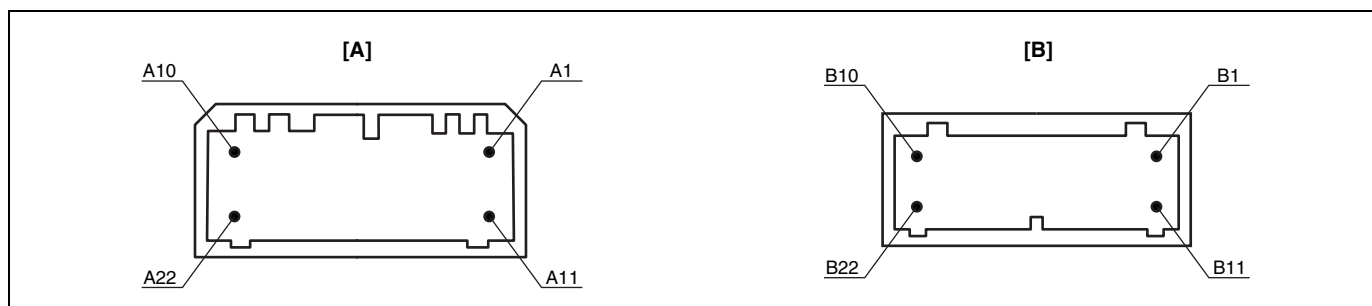
Combination Meter

Circuit



[A]: Computer assembly	[C]: Buzzer unit
[B]: Display (speed/Tacho/Fuel, Shift position indicator (A/T vehicle only), O/D OFF indicator (A/T vehicle only), ODO/TRIP METER, CRUISE ON indicator)	[D]: If equipped

Terminal arrangement of coupler viewed from terminal side

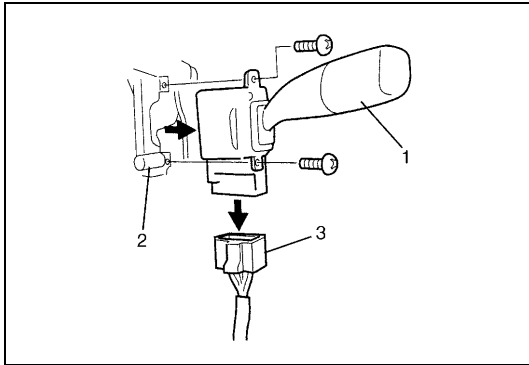


[A] : Connector A		[B] : Connector B	
1. To main fuse	WHT/RED	1. Blank	-
2. To headlight relay	RED/YEL	2. To ABS control module (if equipped)	RED/WHT
3. Blank	-	3. To ABS control module (if equipped)	PNK/GRN
4. To ignition switch	BLU/ORN	4. To brake fluid level switch and parking brake switch	RED/BLK
5. Blank	-	5. To ECM	PPL/YEL
6. Blank	-	6. Blank	-
7. To DLC	BLU	7. To VSS	PPL
8. To fuel level gauge	YEL	8. To ECM	LT GRN/BLK
9. To ground of fuel level gauge	BLK/ORN	9. To ECM	YEL/GRN
10. To ground	BLK/ORN	10. To TCM	RED/YEL
11. To ignition switch	BLK/RED	11. To door switch (driver side)	BLK/YEL
12. Blank	-	12. To seat belt switch (if equipped)	BRN/YEL
13. To combination switch (turn L)	GRN/RED	13. Blank	-
14. To combination switch (turn R)	BLU/YEL	14. To air bag control module (if equipped)	YEL/RED
15. To main fuse	WHT/RED	15. Blank	-
16. Blank	-	16. Blank	-
17. To combination switch (dimmer switch)	RED	17. To door switch (Except driver side) (if equipped)	BLK/RED
18. Blank	-	18. Blank	-
19. To illumination lights (if equipped)	BLK	19. To generator	WHT/BLU
20. To ground of illumination	BLK	20. To oil pressure switch	BLU
		21. To ECM (Vehicle with Immobilizer control system)	PNK
		22. Blank	-

Wipers and Washers

Rear wiper and washer switch

REMOVAL



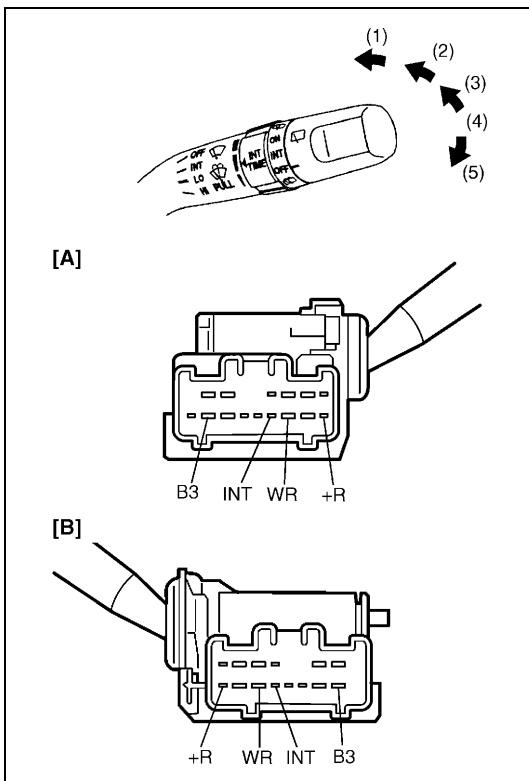
- 1) Disconnect negative cable at battery.
- 2) Remove steering column hole cover.
- 3) Remove steering column covers.
- 4) Remove wiper and washer switch (1) from combination switch (2) and disconnect its coupler (3).

INSPECTION

Check for continuity between terminals at each switch position as shown below. If check result is not as specified, replace.

Position \ Terminal	B3	WR	INT	+R
(1) WIPER and WASHER ON	○	○		○
(2) WIPER ON	○			○
(3) INT ON	○		○	
(4) OFF				
(5) WASHER and WIPER ON	○	○		

- [A] : LH steering vehicle
- [B] : RH steering vehicle



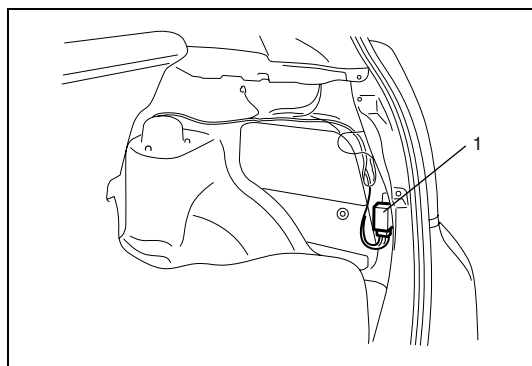
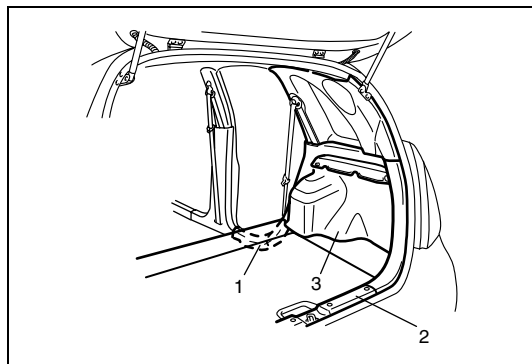
INSTALLATION

Reverse removal procedure for installation.

Rear wiper intermittent relay

REMOVAL

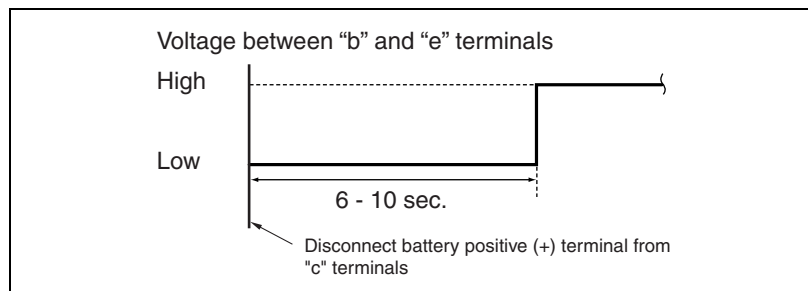
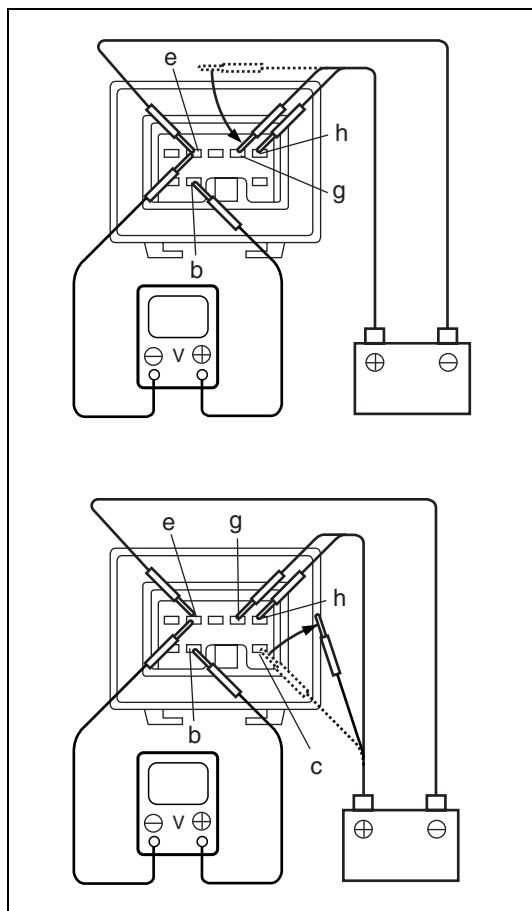
- 1) Disconnect negative (-) cable from battery.
- 2) Remove rear side still scuff (1), rear luggage end garnish (2) and quarter inner trim (3).



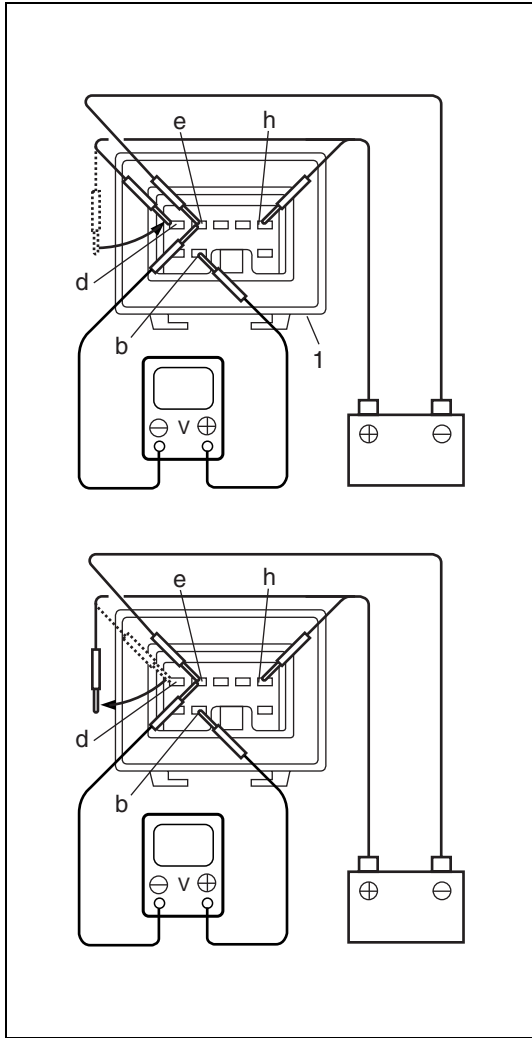
- 3) Remove rear wiper intermittent relay (1) from vehicle.

INSPECTION

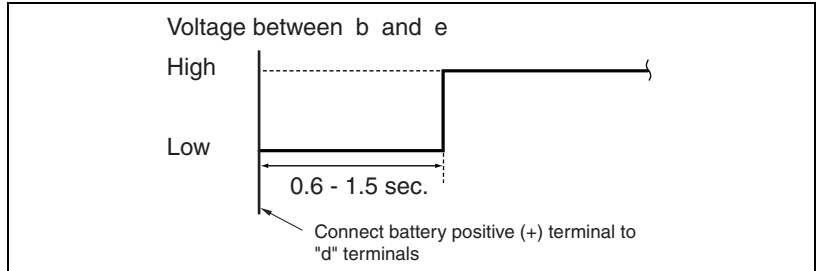
- 1) Check INT circuit as follows.
 - a) Connect battery positive (+) terminal to "h" terminal and battery negative (-) terminal to "e" terminal.
 - b) Check that voltage between "b" terminal and "e" terminal changes from 0 V to battery voltage when connecting battery positive (+) terminal to "g" terminal. If check result is not satisfied, replace relay.
 - c) Connect battery positive (+) terminal to "c" terminal.
 - d) Check that voltage between "b" and "e" terminals changes as in below figure when disconnecting battery positive (+) terminal from "c" terminals. If check result is not satisfied, replace relay.



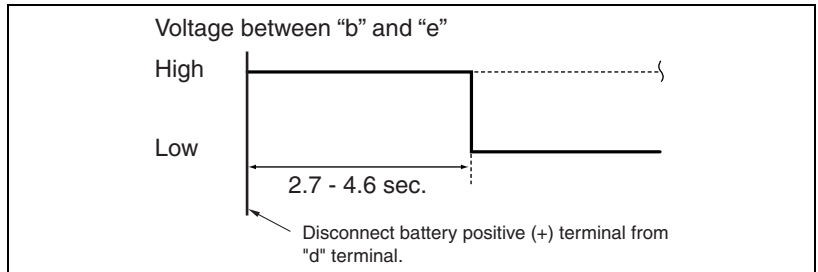
1. Rear wiper intermittent relay



- 2) Check WIPER AND WASH circuit as follows.
- Connect battery positive (+) terminal to “h” terminal and battery negative (-) terminal to “e” terminal.
 - Check that voltage between “b” terminal and “e” terminal changes as below figure when connecting battery positive (+) terminal to “d”.
- If check result is not satisfied, replace relay.



- Check that voltage between “b” terminal and “e” terminal changes as below figure when disconnecting battery positive (+) terminal from “d”.
- If check result is not satisfied, replace relay.



1. Rear wiper intermittent relay

INSTALLATION

Reverse removal procedure to install rear wiper intermittent relay.

Stop (Brake) Lamp

Stop (brake) lamp switch

INSPECTION

Check stop lamp (brake) switch for continuity under each condition below.

If check result is not as specified, replace switch.

[A]:

Terminal	a	b	c	d
Shaft condition				
FREE	○		○	
PUSH		○	○	○

[B]:

Terminal	a	b	c	d
Shaft condition				
FREE	○		○	
PUSH		○		○

