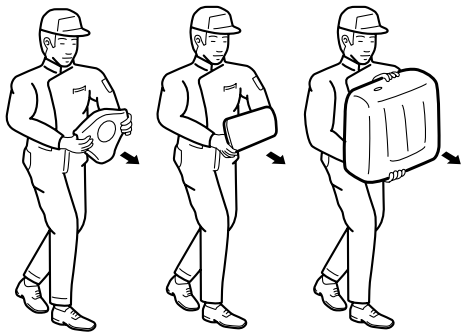
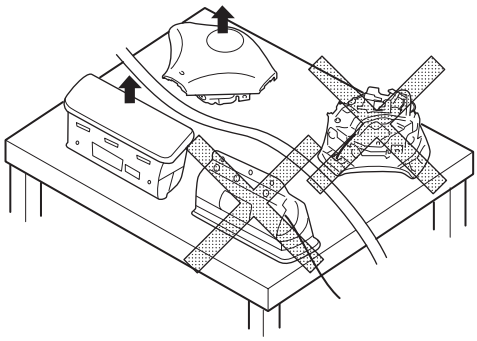
Servicing and handling

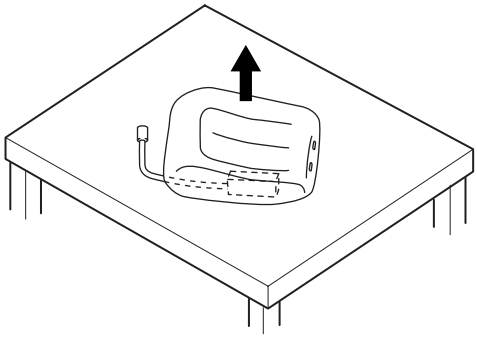
[A]



[B]



[C]



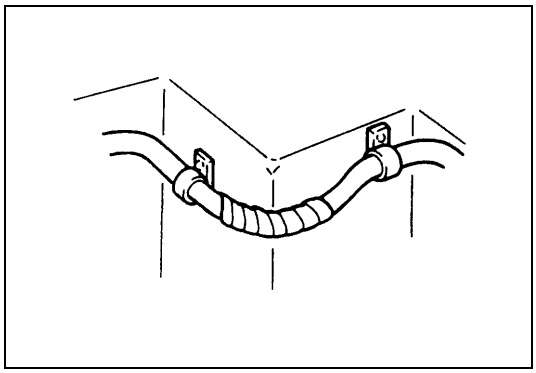
WARNING:

Many of service procedures require disconnection of "AIR BAG" fuse and all air bag (inflator) module(s) from initiator circuit to avoid an accidental deployment.

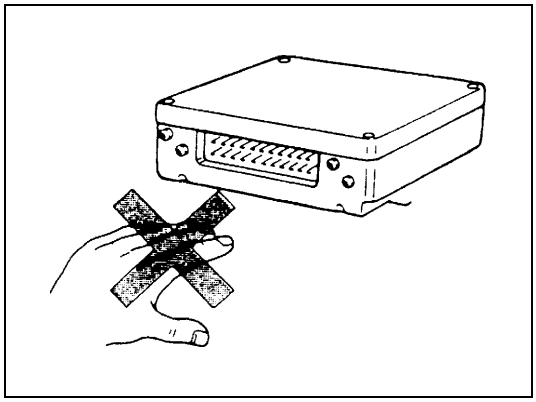
Driver, Passenger and Side Air Bag (Inflator) Modules

- **For handling and storage of a live air bag (inflator) module, select a place where the ambient temperature below 65°C (150°F), without high humidity and away from electric noise.**
- **When carrying a live air bag (inflator) module, make sure the bag opening is pointed away from you. In case of an accidental deployment, the bag will then deploy with minimal chance of injury. Never carry the air bag (inflator) module by the wires or connector on the underside of the module. When placing a live air bag (inflator) module on a bench or other surface, always face the bag up, away from the surface. The front seat back with the live air bag (inflator) module must be placed with its frontal seat cover facing up. It is also prohibited to place anything on top of the trim cover and stack air bag (inflator) modules. This is necessary so that a free space is provided to allow the air bag to expand in the unlikely event of accidental deployment. Otherwise, personal injury may result.**
- **Never dispose of live (undeployed) air bag (inflator) modules (driver, passenger and side). If disposal is necessary, be sure to deploy them according to deployment procedures described in Section 10B before disposal.**
- **The air bag (inflator) module immediately after deployment is very hot. Wait for at least half an hour to cool it off before proceeding the work.**
- **After an air bag (inflator) module has been deployed, the surface of the air bag may contain a powdery residue. This powder consists primarily of cornstarch (used to lubricate the bag as it inflates) and by-products of the chemical reaction. As with many service procedures, gloves and safety glasses should be worn.**

[A] :	ALWAYS CARRY AIR BAG (INFLATOR) MODULE WITH TRIM COVER (AIR BAG OPENING) AWAY FROM BODY.
[B] :	ALWAYS PLACE AIR BAG (INFLATOR) MODULE ON WORKBENCH WITH TRIM COVER (AIR BAG OPENING) UP, AWAY FROM LOOSE OBJECTS.
[C] :	ALWAYS PLACE WITH ITS FRONTAL SEAT COVER FACING UP, AWAY FROM LOOSE OBJECTS.

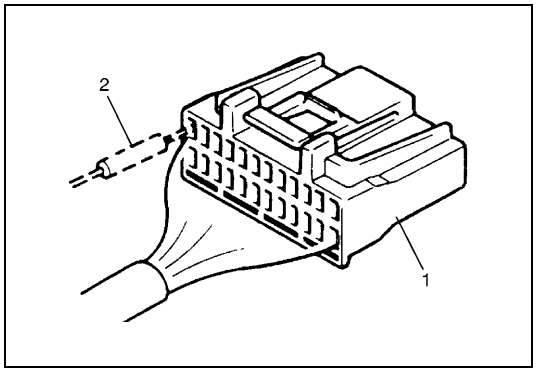


- To avoid damage to the harness, protect its part which may contact against a part forming a sharp angle by winding tape or the like around it.

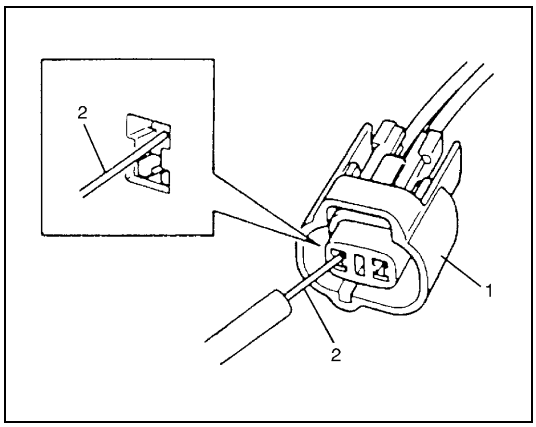


- Be careful not to touch the electrical terminals of parts which use microcomputers (e.g. electronic control unit like as ECM, PCM, P/S controller, etc). The static electricity from your body can damage these parts.
- Never connect any tester (voltmeter, ohmmeter, or whatever) to electronic control unit when its coupler is disconnected. Attempt to do it may cause damage to it.
- Never connect an ohmmeter to electronic control unit with its coupler connected to it. Attempt to do it may cause damage to electronic control unit and sensors.

- Be sure to use a specified voltmeter/ohmmeter. Otherwise, accurate measurements may not be obtained or personal injury may result. If not specified, use a voltmeter with high impedance (M Ω/V minimum) or a digital type voltmeter.



- When taking measurements at electrical connectors using a tester probe, be sure to insert the probe (2) from the wire harness side (backside) of the connector (1).



- When connecting meter probe (2) from terminal side of coupler (1) because it can't be connected from harness side, use extra care not to bend male terminal of coupler of force its female terminal open for connection.
  In case of such coupler as shown connect probe as shown to avoid opening female terminal.
  Never connect probe where male terminal is supposed to fit.
- When checking connection of terminals, check its male half for bend and female half for excessive opening and both for locking (looseness), corrosion, dust, etc.

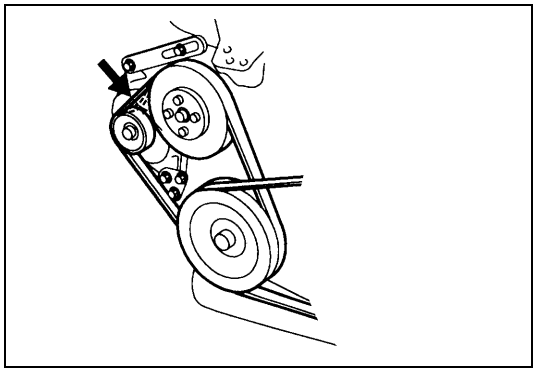
Maintenance Service

Engine

Drive belt

WARNING:
Be sure to disconnect negative cable from battery before checking, adjusting and replacing belt.

WATER PUMP AND GENERATOR DRIVE BELT INSPECTION



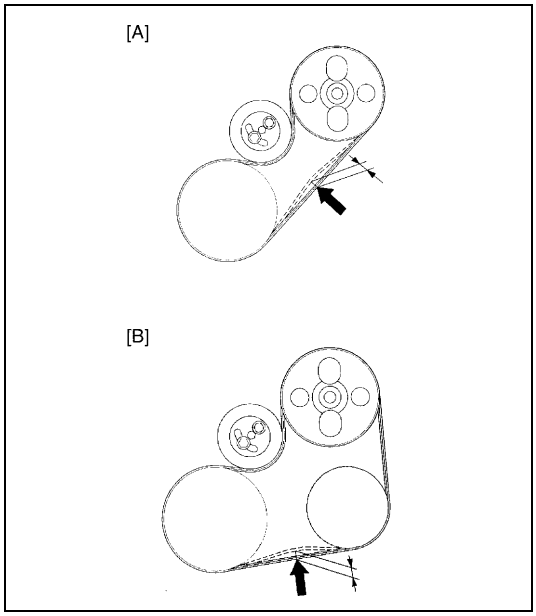
Inspect belt for cracks, cuts, deformation, wear, cleanliness and tension referring to "WATER PUMP/GENERATOR DRIVE BELT TENSION INSPECTION AND ADJUSTMENT" in Section 6B.

If any faulty condition is found, adjust or replace.

WATER PUMP AND GENERATOR DRIVE BELT REPLACEMENT

Replace belt with new one referring to "WATER PUMP/GENERATOR DRIVE BELT" in Section 6B.

A/C COMPRESSOR AND/OR POWER STEERING PUMP DRIVE BELT INSPECTION (IF EQUIPPED)

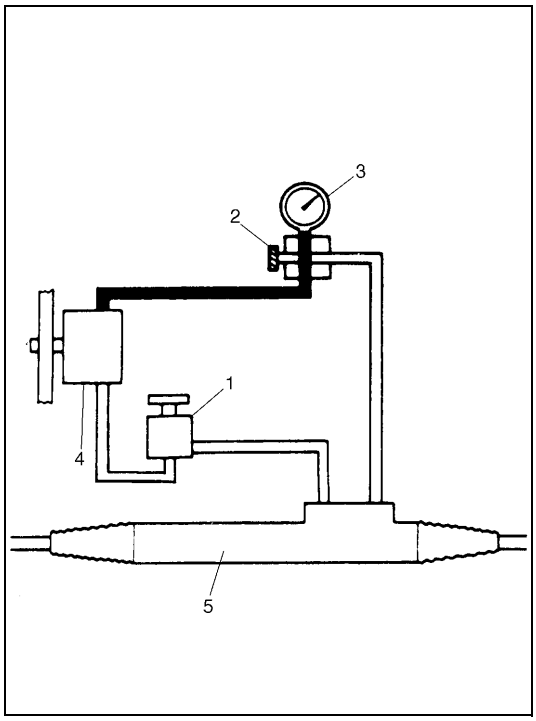


Inspect belt for cracks, cuts, deformation, wear, cleanliness and tension referring to "POWER STEERING BELT CHECK" in Section 3.
If any faulty condition is found, adjust or replace.

[A] :	Vehicle with power steering
[B] :	Vehicle with power steering and air conditioning

REPLACEMENT

Replace belt with new one referring to "POWER STEERING BELT" in Section 3.



5) Check relief pressure.
- Increase engine speed to about 1,500 r/min (rpm). Close gauge valve (2) gradually while watching pressure increase indicated by gauge and take reading of relief pressure (maximum hydraulic pressure).

Relief pressure

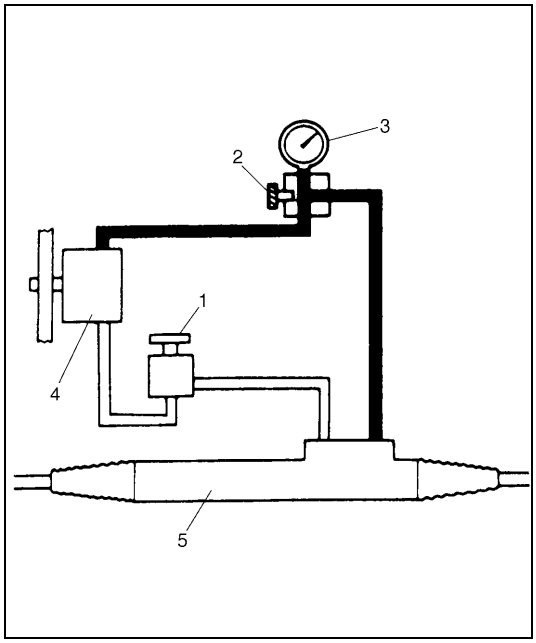
: 8200 – 8900 kPa (82 – 89 kg/cm^2, 1166 – 1265 psi)

- When it is higher than specified values, possible cause is malfunction of relief valve.
- When it is lower than specified values, possible cause is either failure of P/S pump (4) or setting of relief valve spring.

CAUTION:

Be sure not to close gauge valve for longer than 10 seconds.

1. P/S fluid reservoir
3. Oil pressure gauge
5. P/S gear box



- Next, open gauge valve (2) fully and increase engine speed to about 1,500 r/min. Then turn steering wheel to the left or right fully and take reading of relief pressure.

Relief pressure

: 8200 – 8900 kPa (82 – 89 kg/cm^2, 1166 – 1265 psi)

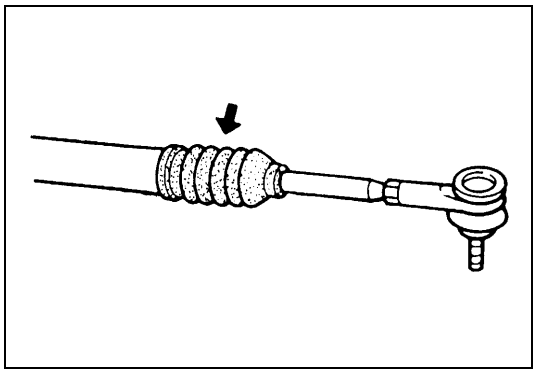
- When it is higher than specified values, possible cause is malfunction of relief valve.
- When it is lower than specified values, possible cause is failure in steering gear box (5). Replace gear box.

CAUTION:

Be sure not to hold steering wheel at fully turned position for longer than 10 seconds.

1. P/S fluid reservoir
3. Oil pressure gauge
4. P/S pump

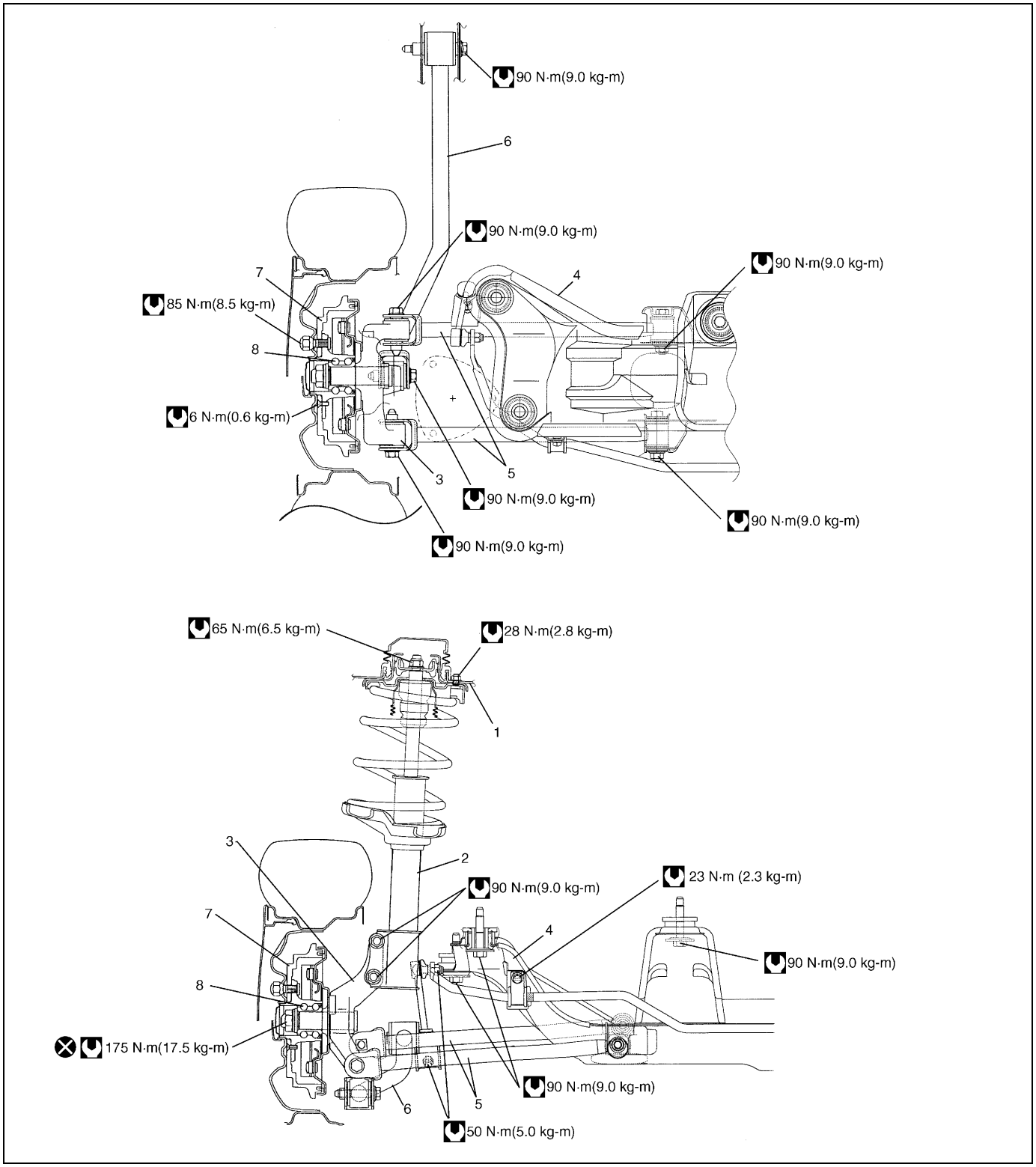
Steering Rack Boot Check



Check boot for crack and damage which, if any, means possibility of rusty gear, entry of dust or lack of grease. Also, check if any of such faulty conditions exists.

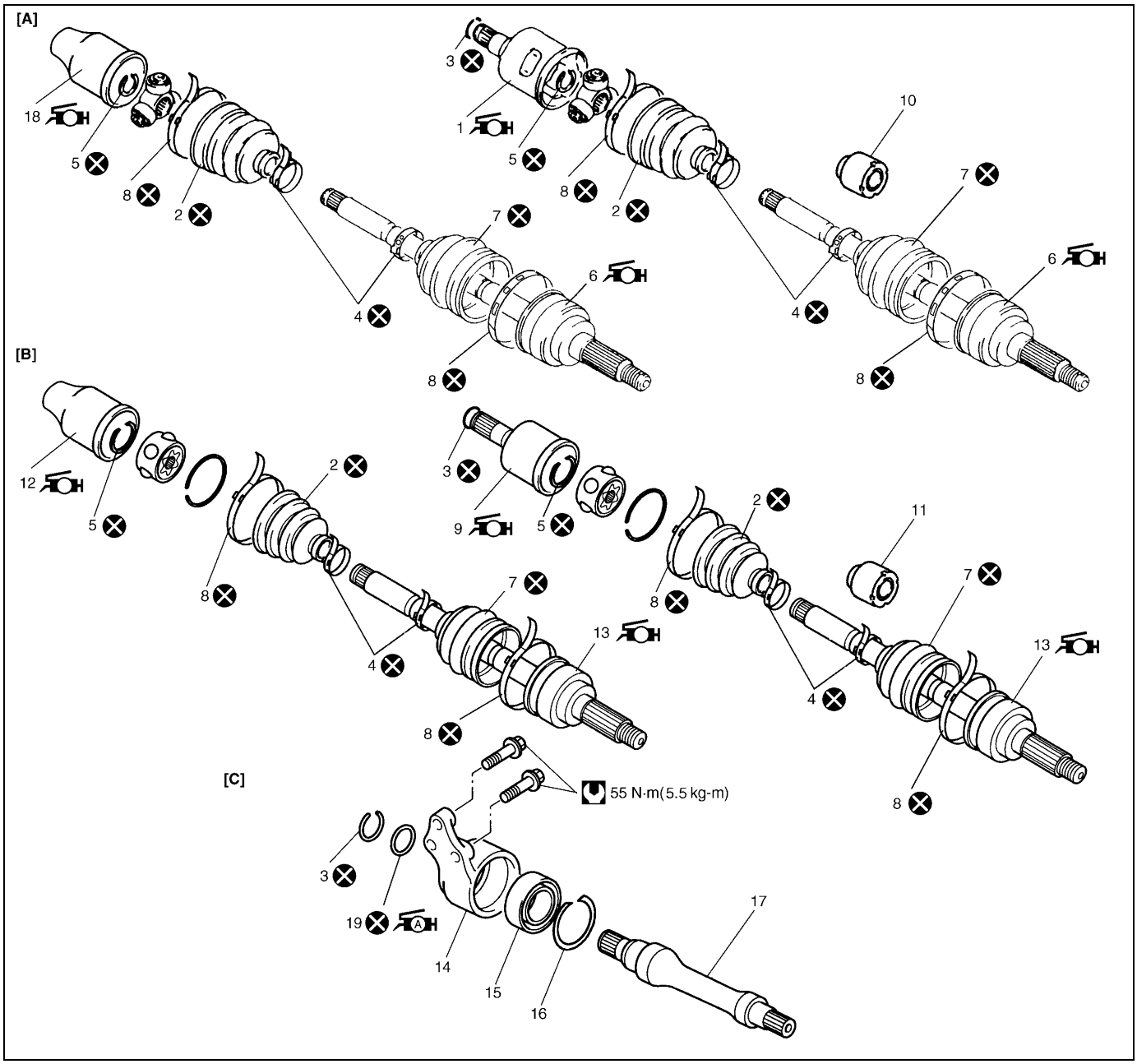
General Description

Construction



1. Vehicle body	5. Control rod	Tightening torque
2. Strut assembly	6. Trailing rod	Do not reuse.
3. Rear knuckle	7. Brake drum	
4. Suspension frame	8. Wheel Bearing	

On-Vehicle Service



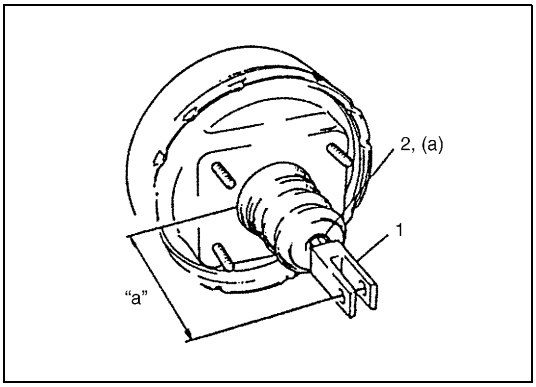
1. Differential side joint (A/T vehicle) :Apply yellow grease included in spare part to joint.	9. Differential side joint (LH of M/T vehicles) :Apply light black grease included in spare part to joint.	17. Center shaft
2. Boot (Differential, transfer or center shaft side)	10. Dynamic damper (2WD vehicle and left side of 4WD model vehicle)	18. Transfer side joint (RH of A/T 4WD vehicle) :Apply yellow grease included in spare part to joint.
3. Circlip	11. Dynamic damper (LH of M/T vehicle)	19. O-ring :Apply grease 99000-25010 to all round of O-ring.
4. Boot band (Small)	12. Center shaft side joint (RH of M/T vehicle) :Apply light black grease included in spare part to joint.	[A] : Tripod type constant velocity joint
5. Snap ring	13. Wheel side joint :Apply black grease included in spare part to joint.	[B] : Double offset type constant velocity joint
6. Wheel side joint :Apply gray grease included in spare part to joint.	14. Center bearing support	[C] : Center shaft for M/T vehicle
7. Boot (Wheel side)	15. Center bearing	Tightening torque
8. Boot band (Large)	16. Circlip	Do not reuse.

Diagnosis Table

Condition	Possible Cause	Correction
Not enough braking force	Brake oil leakage from brake lines	Locate leaking point and repair.
	Brake disc or pads stained with oil	Clean or replace.
	Overheated brakes	Determine cause and repair.
	Poor contact of shoes on brake drum	Repair for proper contact.
	Brake shoes linings stained with oil or wet with water	Replace.
	Badly worn brake pad linings	Replace.
	Defective wheel cylinders	Repair or replace.
	Malfunctioning caliper assembly	Repair or replace.
	Air in system	Bleed system.
	Maladjusted sensor spring length of LSPV, if equipped	Check or adjust.
	Broken sensor spring of LSPV, if equipped	Replace.
	Defective LSPV, if equipped	Replace.
	Malfunctioning ABS (Antilock brake system), if equipped	Check system and replace as necessary.
Brake pull (Brakes not working in unison)	Pad linings and/or shoe linings are wet with water or stained with oil in some brakes	Replace.
	Drum-to-shoe clearance out of adjustment in some brakes (Malfunctioning auto adjusting mechanism)	Check for inoperative auto adjusting mechanism.
	Disc and/or drum is out of round in some brakes	Replace.
	Wheel tires are inflated unequally	Inflate equally.
	Malfunction in wheel cylinders	Repair or replace.
	Disturbed front end alignment	Adjust as prescribed.
	Unmatched tires on same axle	Tires with approximately the same amount of tread should be used on the same axle.
	Restricted brake pipes or hoses	Check for soft hoses and damaged lines. Replace with new hoses and new double-walled steel brake tubing.
	Malfunctioning caliper assembly	Check for stuck or sluggish pistons and proper lubrication of caliper slide bush. Caliper should slide.
	Loose suspension parts	Check all suspension mountings.
	Loose calipers	Check and torque bolts to specifications.
Noise (high pitched squeak without brake applied)	Front lining worn out	Replace linings.
	Contact wear indicator to brake disc	Replace pads.
Rear brake locked prematurely	Maladjusted sensor spring length of LSPV, if equipped	Check or adjust.
	Malfunction LSPV assembly, if equipped	Replace assembly.

INSPECTION AND ADJUSTMENT

Installation position of push rod

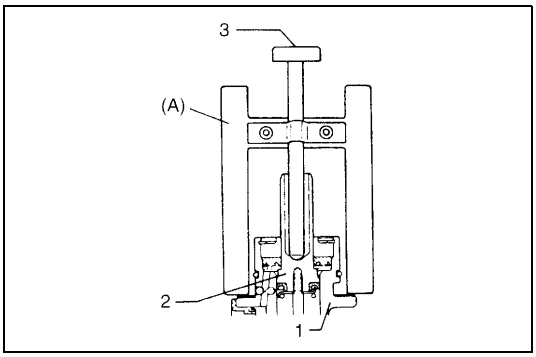


If push rod clevis (1) has been removed, adjust distance between booster installation surface (without including packing) and the center of clevis pin hole to standard value "a" and tighten nut (2) to specified torque.

Distance "a" between center of booster clevis pin hole and booster surface
Standard : 104.5 - 105.5 mm (4.11 - 4.15 in.)

Tightening torque
Clevis pin lock nut (a) : 25 N·m (2.5 kg-m, 18.5 lb-ft)

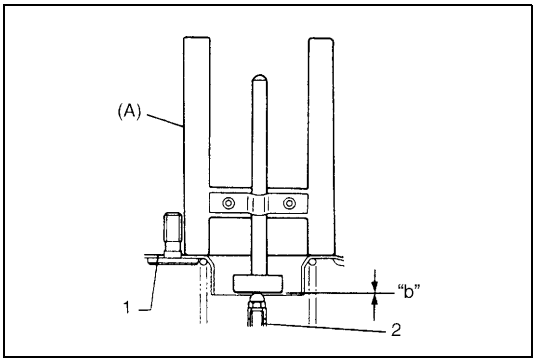
Clearance Between Booster Piston Rod And Master Cylinder Piston



[For left-hand steering vehicle]

a) Set special tool (A) on master cylinder (1) and push pin head (3) until it contacts piston (2).

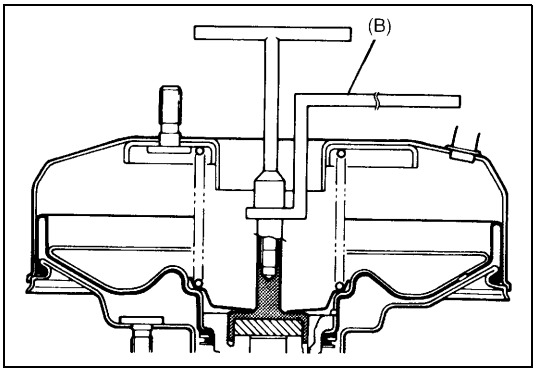
Special tool
(A) : 09950-96010



b) Turn special tool upside down and place it on booster (1). Adjust booster piston rod (2) length until rod end contacts pin head.

Clearance "b" (Between special tool and piston rod):
0 mm (0 in.)

Special tool
(A) : 09950-96010



c) Adjust clearance by turning adjusting screw of piston rod.

Special tool
(B) : 09952-16010

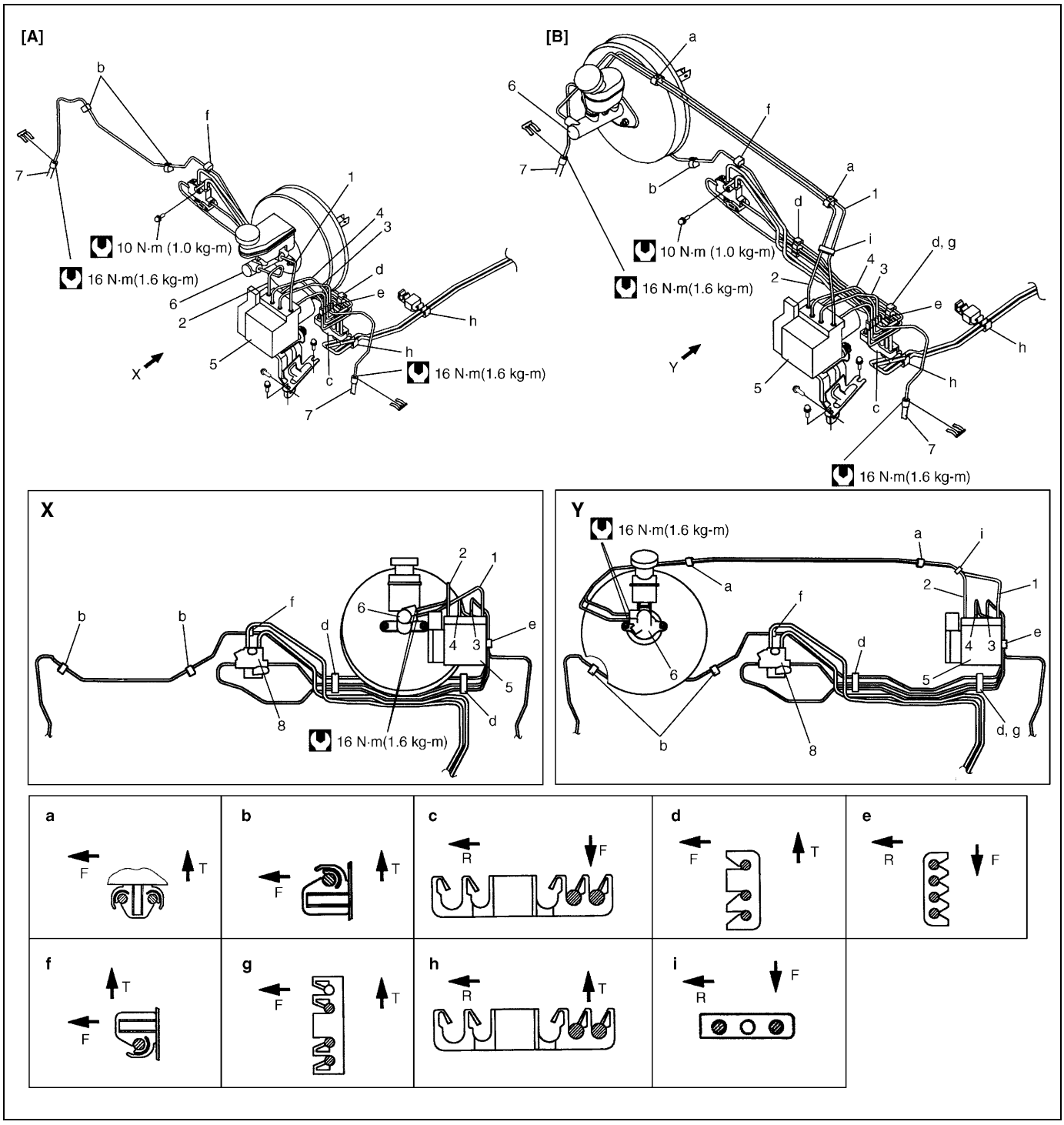
[For right-hand steering vehicle]

NOTE:
Adjustment of clearance between booster piston rod and master cylinder piston is not necessary.

Brake Hose/Pipe

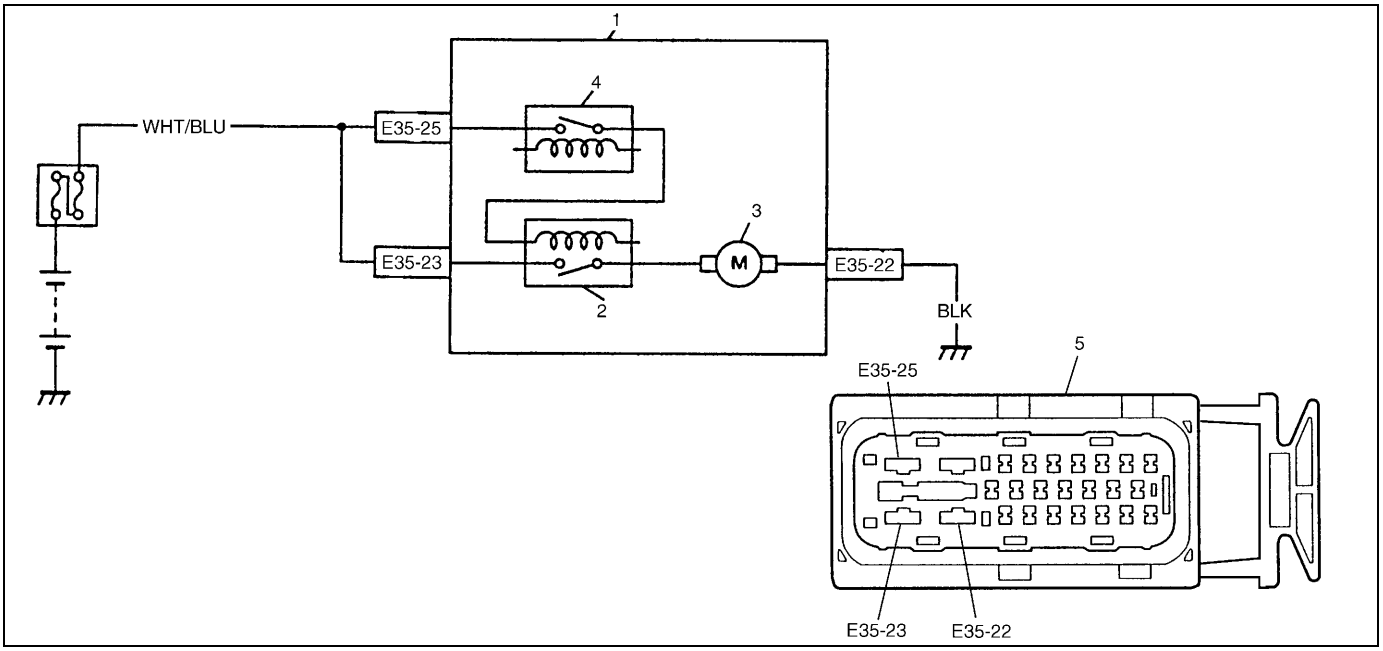
Front brake hose/pipe

For vehicle with ABS



[A] : For left-hand steering vehicle	Y: View Y	5. ABS hydraulic unit
[B] : For right-hand steering vehicle	a-i: Clamp	6. Master cylinder
T : Top side	1. From master cylinder primary to ABS hydraulic unit	7. Front brake hose
F : Front side	2. From master cylinder secondary to ABS hydraulic unit	8. 4-way joint
R : Right side	3. From ABS hydraulic unit to left front brake	Tightening torque
X : View X	4. From ABS hydraulic unit to right front brake	

DTC C1061 (DTC 61) – ABS Pump Motor Circuit



1. ABS hydraulic unit/control module assembly	3. ABS pump motor	5. ABS hydraulic unit/control module connector
2. ABS pump motor relay	4. ABS fail safe relay	

DESCRIPTION

The ABS control module monitors the voltage at monitor terminal of pump motor circuit constantly with the ignition switch turned ON. It sets this DTC when the voltage at the monitor terminal does not become high/low according to ON/OFF commands to the motor relay of the module (does not follow these commands).

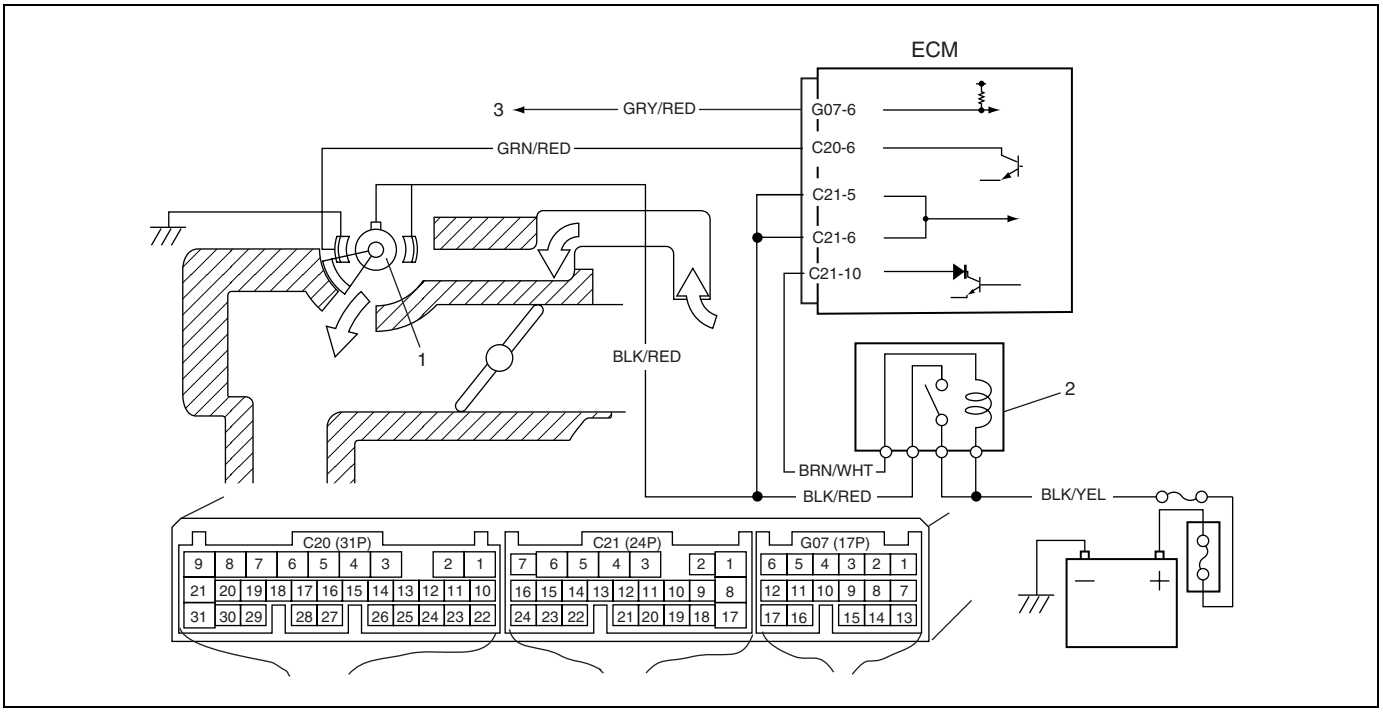
INSPECTION

Step	Action	Yes	No
1	1) Check pump motor referring to "ABS HYDRAULIC UNIT OPERATION CHECK" in this section. Is it in good condition?	Check terminals "E35-25" and "E35-23" connection. If connections OK, substitute a known-good ABS hydraulic unit/control module assembly and recheck.	Go to Step 2.
2	1) Ignition switch OFF. 2) Disconnect ABS hydraulic unit/control module connector. 3) Check for proper connection to ABS hydraulic unit/control module connector at terminal "E35-23". 4) If OK, then measure voltage between terminal "E35-23" of module connector and body ground. Is it 10 – 14 V?	Go to Step 3.	"WHT/BLU" circuit open.
3	Measure resistance between terminal "E35-22" of ABS hydraulic unit/control module connector and body ground. Is it infinite (∞)?	"BLK" circuit open.	Substitute a known-good ABS hydraulic unit/control module assembly and recheck.

DTC NO.	DETECTING ITEM	DETECTING CONDITION (DTC will set when detecting :)	MIL (vehicle with immobilizer indicator lamp)	MIL (vehicle without immobilizer indicator lamp)
P0601 (No.71)	Internal control module memory check sum error	Data write error (or check sum error) when written into ECM	2 driving cycles	1 driving cycle
P1450 (No.29)	Barometric pressure sensor circuit malfunction	Barometric pressure is lower or higher than specification. (or sensor malfunction)	1 driving cycle	1 driving cycle
P1451	Barometric pressure sensor performance problem	Difference between manifold absolute pressure (MAP sensor value) and barometric pressure (barometric pressure sensor value) is larger than specification during cranking.	2 driving cycles	Not applicable
P1500	Starter signal circuit malfunction	Starter signal is not inputted from engine cranking till its start and after or it is always inputted	2 driving cycles	Not applicable
P1510	ECM backup power source malfunction	No backup power after starting engine	1 driving cycle	Not applicable
P1600	Serial communication problem between ECM and TCM	No signal or check sum error while engine running	1 driving cycle	Not applicable
P1717	AT D-range signal circuit malfunction	No “D” range (park/neutral position signal) is inputted while vehicle running	2 driving cycles	Not applicable

DTC NO.	DETECTING ITEM	DETECTING CONDITION (DTC will set when detecting :)	MIL
✱P0705	Transmission Range Sensor Circuit Malfunction	Refer to Section 7B.	
☆✱P0710	Transmission Fluid Temperature Sensor Circuit Malfunction		
✱P0715	Input/turbine Speed Sensor Circuit Malfunction		
✱P0720	Output Shaft Speed Sensor Circuit Malfunction		
✱P0725	Engine Speed Input Circuit Malfunction		
✱P0741	Torque Converter Clutch System Performance or Stuck Off		
✱P0743	Torque Converter Clutch System Electrical		
✱P0748	Pressure Control Solenoid A Electrical		
✱P0751	Shift solenoid A (No.1) performance or stuck off		
✱P0753	Shift Solenoid A (No.1) Electrical		
✱P0756	Shift solenoid B (No.2) performance or stuck off		
✱P0758	Shift Solenoid B (No.2) Electrical		
✱P1700	Throttle Position Signal Input Malfunction		
✱P1702	Internal Control Module Memory Check Some Error		

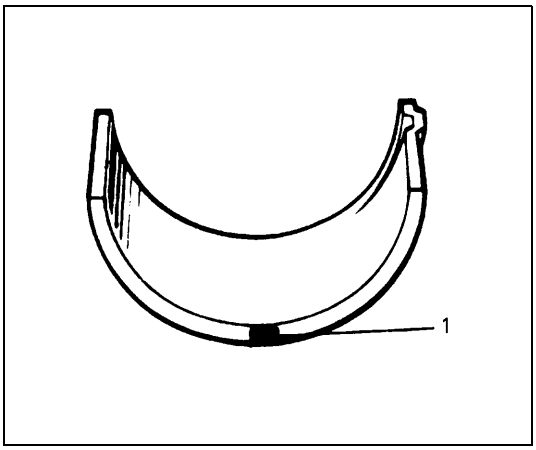
Table B-4 Idle Air Control System Check



1. IAC valve	2. Main relay	3. To TCM

INSPECTION

Step	Action	Yes	No
1	Check engine idle speed and IAC duty referring to “Idle Speed/IAC Duty Inspection” in Section 6E1. Is idle speed within specification?	Go to Step 2.	Go to Step 4.
2	Is IAC duty within specification in Step 1?	Go to Step 3.	Check for followings : Vacuum leak EVAP canister purge control system Clog of IAC air passage Accessory engine load Closed throttle position (TP sensor) Stuck of PCV valve
3	Is engine idle speed kept specified speed even with headlight ON?	Vehicle with power steering system: Go to Step 4. Vehicle without power steering system: System is in good condition.	Check electric load signal circuit referring to TABLE B-6. If check result is OK, check IAC system for operation referring to Step 3 or Step 4 of DTC P0505 Diag. Flow Table.

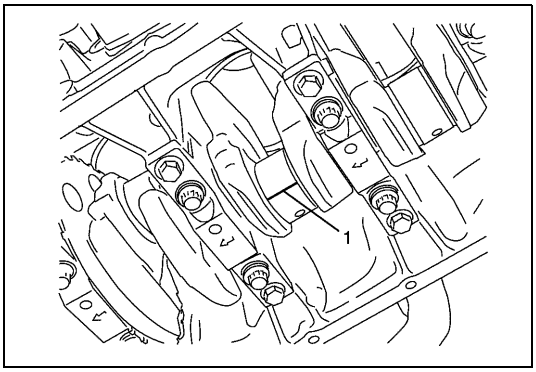


- Rod bearing :
  Inspect bearing shells for signs of fusion, pitting, burn or flaking and observe contact pattern. Bearing shells found in defective condition must be replaced.
  Two kinds of rod bearing are available; standard size bearing and 0.25 mm (0.0098 in.) undersize bearing. For identification of undersize bearing, it is painted red at the position as indicated in figure, undersize bearing thickness is 1.605 – 1.615 mm (0.0632 – 0.0635 in.) at the center of it.

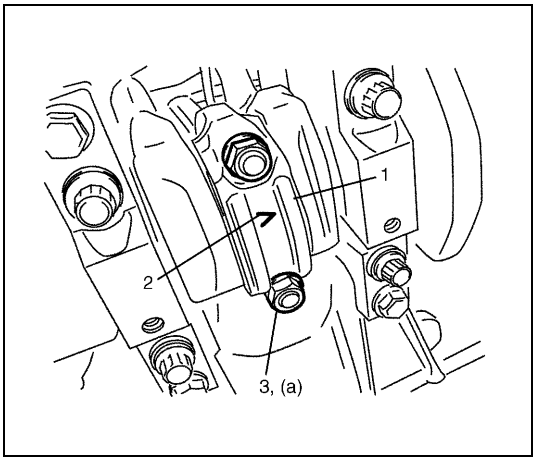
1. Red paint

- Rod bearing clearance :

1) Before checking bearing clearance, clean bearing and crank pin.
2) Install bearing in connecting rod and bearing cap.

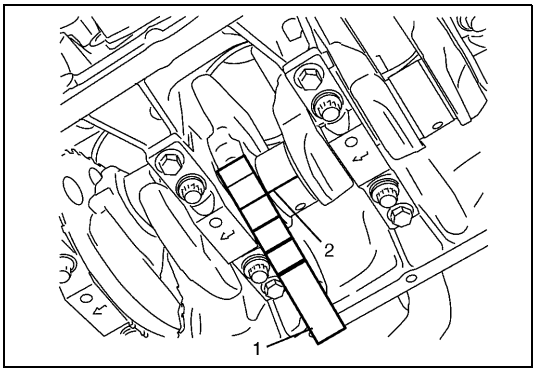


3) Place a piece of gaging plastic (1) to full width of crank pin as contacted by bearing (parallel to crankshaft), avoiding oil hole.



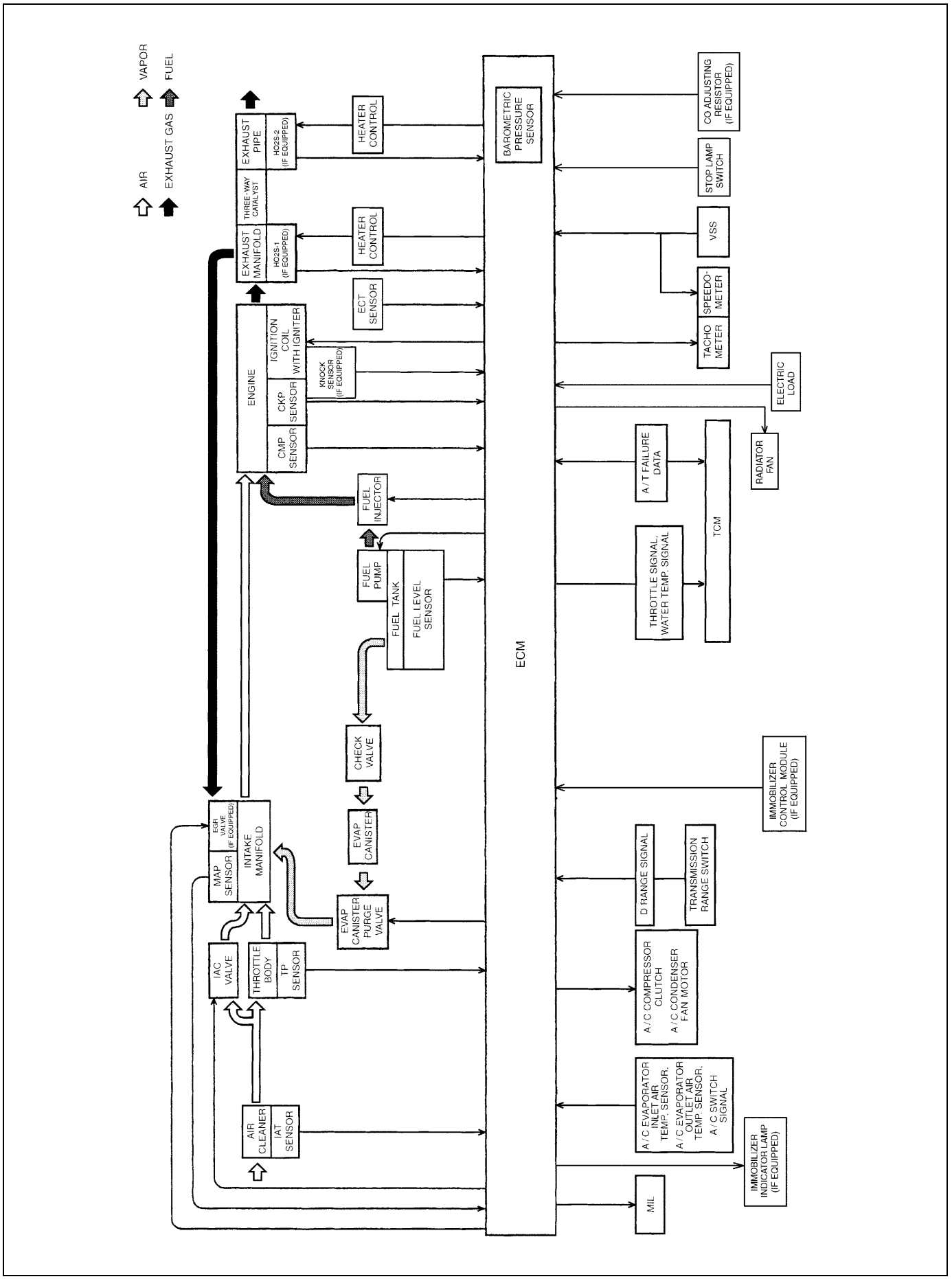
4) Install rod bearing cap (1) to connecting rod.
   When installing cap, be sure to point arrow mark (2) on cap to crankshaft pulley side, as shown in figure. After applying engine oil to rod bolts and tighten cap nuts (3) gradually as follows.
   a) Tighten all cap nuts to 15 N·m (1.5 kg-m, 11.0 lb-ft).
   b) Retighten them to 45°.
   c) Repeat step b) once again.

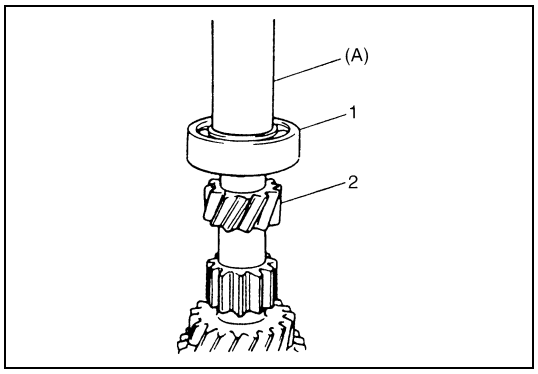
Tightening torque
Connecting rod bearing cap nuts
(a) : 15 N·m (1.5 kg-m, 11.0 lb-ft) and extra tighten 90°



5) Remove cap and using a scale (1) on gaging plastic (2) envelope, measure gaging plastic width at the widest point (clearance).
   If clearance exceeds its limit, use a new standard size bearing and remeasure clearance.

Connecting rod bearing clearance
Standard : 0.029 – 0.047 mm (0.0011 – 0.0019 in.)
Limit : 0.065 mm (0.0026 in.)

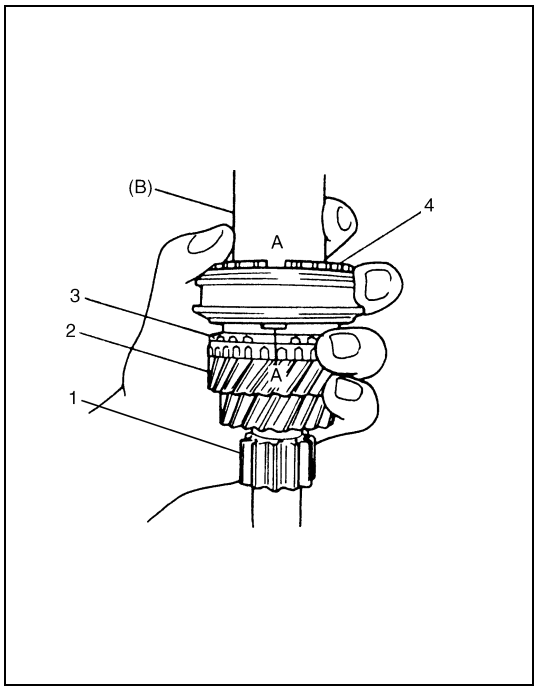

AIR
EXHAUST GAS
VAPOR
FUEL
AIR CLEANER
IAT SENSOR
IAC VALVE
THROTTLE BODY
TP SENSOR
MAP SENSOR
EGR VALVE (IF EQUIPPED)
INTAKE MANIFOLD
EVAP CANISTER PURGE VALVE
EVAP CANISTER
CHECK VALVE
FUEL TANK
FUEL LEVEL SENSOR
FUEL PUMP
FUEL INJECTOR
ENGINE
CMP SENSOR
CKP SENSOR
IGNITION COIL WITH IGNITER
KNOCK SENSOR (IF EQUIPPED)
ECT SENSOR
EXHAUST MANIFOLD
HO2S-1 (IF EQUIPPED)
THREE-WAY CATALYST
EXHAUST PIPE
HO2S-2 (IF EQUIPPED)
HEATER CONTROL
HEATER CONTROL
BAROMETRIC PRESSURE SENSOR
ECM
MIL
IMMOBILIZER INDICATOR LAMP (IF EQUIPPED)
A/C EVAPORATOR INLET AIR TEMP. SENSOR, A/C EVAPORATOR OUTLET AIR TEMP. SENSOR, A/C SWITCH SIGNAL
A/C COMPRESSOR CLUTCH
A/C CONDENSER FAN MOTOR
D RANGE SIGNAL
TRANSMISSION RANGE SWITCH
IMMOBILIZER CONTROL MODULE (IF EQUIPPED)
THROTTLE SIGNAL, WATER TEMP. SIGNAL
A/T FAILURE DATA
TCM
RADIATOR FAN
ELECTRIC LOAD
TACHO METER
SPEEDO-METER
VSS
STOP LAMP SWITCH
CO ADJUSTING RESISTOR (IF EQUIPPED)



5) Drive in R bearing (1) by using special tool and hammer.

Special tool
(A) : 09913-80112

2. Input shaft



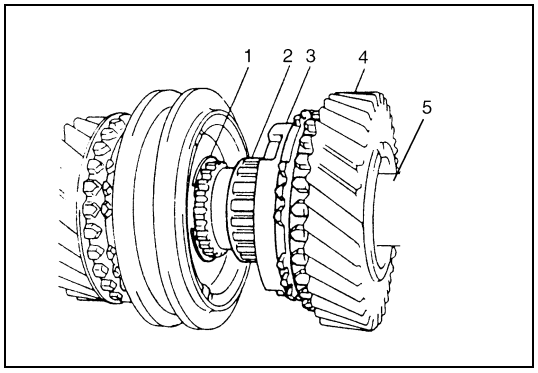
6) Install 3rd gear needle bearing, apply oil to it, then install 3rd gear (2) and synchronizer ring (3).
7) Drive in high speed sleeve & hub assembly (4) by using special tool and hammer.

NOTE:

- **While press-fitting sleeve & hub, make sure that synchronizer ring key slots are aligned with keys in sleeve & hub assembly.**
- **Check free rotation of 3rd gear after press-fitting sleeve & hub assembly.**
- **Needle bearings and synchronizer rings for 3rd and 4th are identical respectively.**

Special tool
(B) : 09913-84510

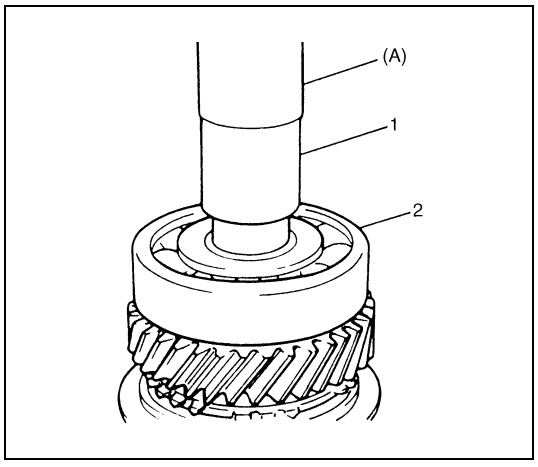
1 : Input shaft
A : Key way



8) Install circlip (1), needle bearing (2), apply oil to bearing, then install synchronizer ring (3) and 4th gear (4).

CAUTION:
Confirm that circlip is installed in groove securely.

5 : Input shaft



9) Press-fit L bearing (2) by using special tool and hammer.

Special tool
(A) : 09913-80112

10) Using the same special tool, drive in 5th gear spacer (1).

CAUTION:
To prevent 5th gear spacer from being distorted because of excessive compression, do not press-fit it with L bearing at once.