
MANUAL TRANSMISSION

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MANUAL TRANSMISSION

CONTENTS

22109000388

GENERAL INFORMATION	2	4WD Detection Switch Continuity Check	4
LUBRICANTS	2	High/Low Detection Switch Continuity Check ...	4
SEALANTS	2	TRANSMISSION CONTROL	5
ON-VEHICLE SERVICE	3	TRANSMISSION ASSEMBLY	7
Transmission Oil Check	3	4WD INDICATOR-ECU	11
Oil Replacement	3		

GENERAL INFORMATION

22100010236

Items		Specifications	
Transmission model		V5MT1-4-BFG	V5MT1-4-AEG
Engine model		4D5	6G7
Type		5-speed, floor-shift	
Gear ratio	1st	3.918	
	2nd	2.261	
	3rd	1.395	
	4th	1.000	
	5th	0.829	
	Reverse	3.925	
Transfer type		2-speed	
Gear ratio	High	1.000	
	Low	1.925	
Speedometer gear ratio (driven/drive)		26/8	25/8

LUBRICANTS

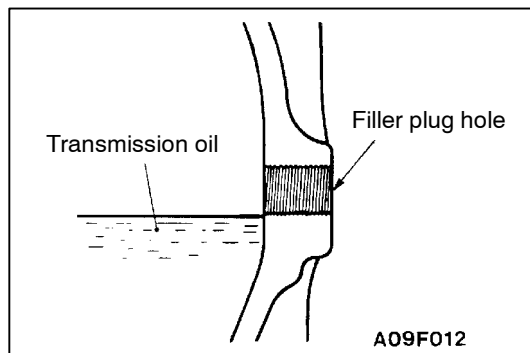
22100040303

Items	Specified lubricants	Quantity L
Transmission oil	Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API GL-4	2.5
Transfer oil	Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API GL-4	2.3

SEALANTS

22100050108

Items	Specified sealant	Remarks
Oil filler plug	3M ATD Part No. 8660 or equivalent	Semi-drying sealant
Oil drain plug	3M ATD Part No. 8660 or equivalent	Semi-drying sealant
Control lever gasket	3M ATD Part No. 8661 or equivalent	Semi-drying sealant
Control lever assembly mounting bolt	3M Stud Locking No. 4170 or equivalent	Anaerobic sealant



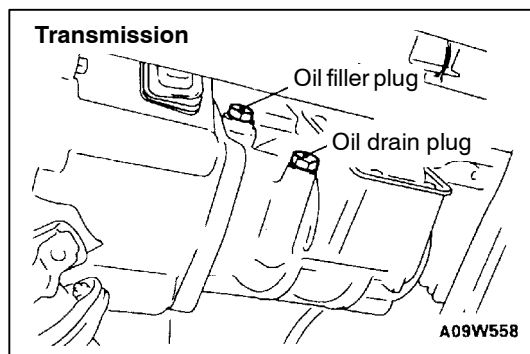
ON-VEHICLE SERVICE

22100090292

TRANSMISSION OIL CHECK

1. Remove the oil filler plug.
2. Oil level should be at the lower portion of the filler plug hole.
3. Check that the transmission oil is not noticeably dirty, and that it has a suitable viscosity.
4. Tighten the filler plug to the specified torque.

Tightening torque: 70 Nm



OIL REPLACEMENT

22100100308

1. Remove oil filler plug and oil drain plug.
2. Drain oil.
3. Tighten the oil drain plug to the specified torque.

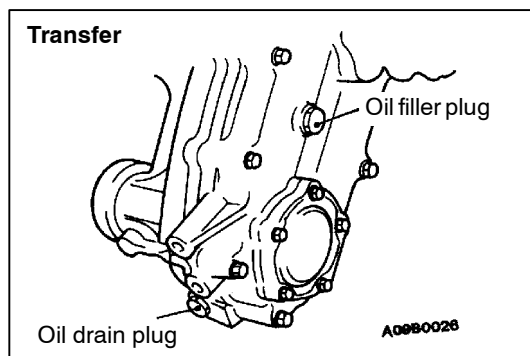
Tightening torque: 70 Nm

NOTE

Apply sealant to the oil drain plug threads.

Specified sealant:

3M ATD Part No. 8660 or equivalent



4. Fill with specified oil till the level comes to the lower portion of oil filler plug hole.

Specified transmission oil:

**Hypoid gear oil SAE 75W-90 or 75W-85W
conforming to API GL-4**

Quantity:

Transmission 2.5 L

Transfer 2.3 L

5. Tighten the oil filler plug to the specified torque.

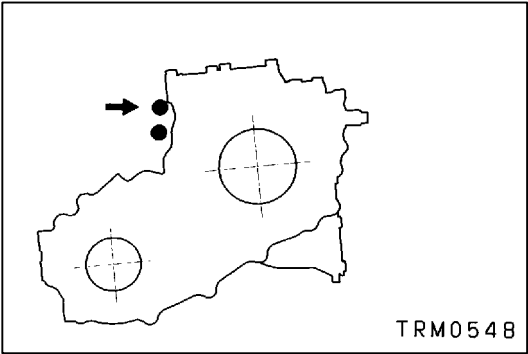
Tightening torque: 70 Nm

NOTE

Apply sealant to the oil filler plug threads.

Specified sealant:

3M ATD Part No. 8660 or equivalent

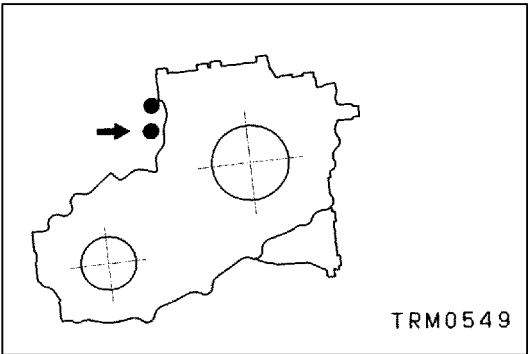


4WD DETECTION SWITCH CONTINUITY CHECK

22100170040

Check the continuity between terminals of the black connector indicated in the illustration.

Transfer lever position	Terminal No.	
	1	2
2H		
4H		



HIGH/LOW DETECTION SWITCH CONTINUITY CHECK

22100210063

Check the continuity between terminals of the gray connector indicated in the illustration.

Transfer lever position	Terminal No.	
	1	2
4H		
4L		
4H-4L		

TRANSMISSION CONTROL

22100380306

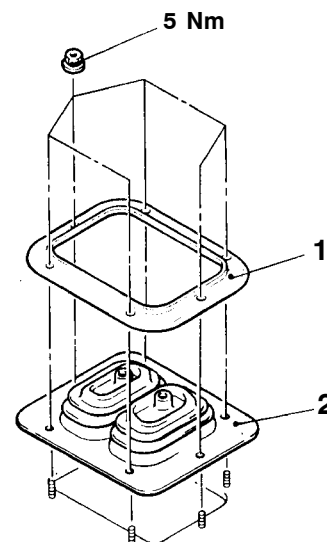
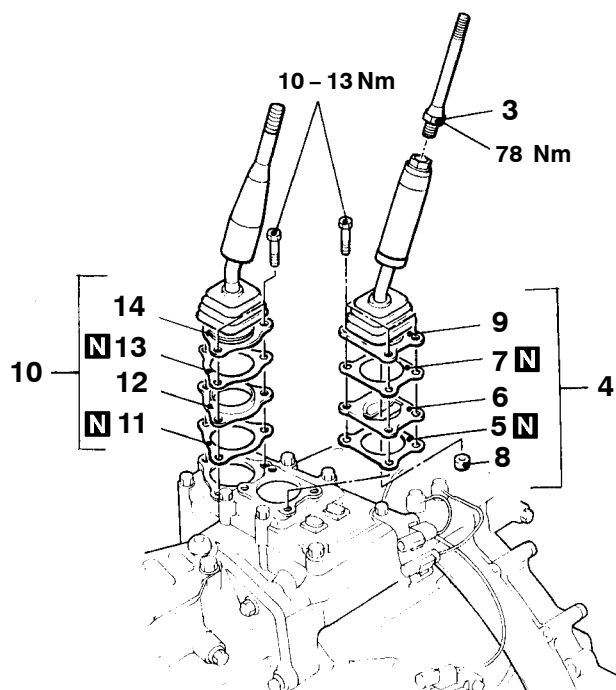
REMOVAL AND INSTALLATION

Pre-removal Operation

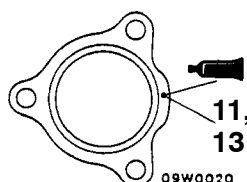
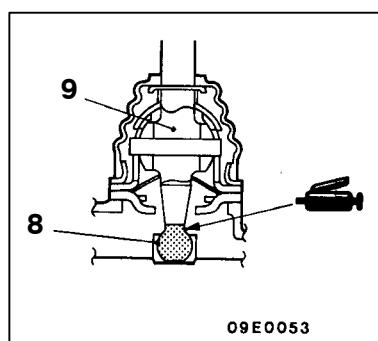
- Shift the Transmission Control Lever to the N Position.
- Shift the Transfer Control Lever to the 4H Position.
- Floor Consol Removal (Refer to GROUP 52A – Floor Consol.)

Post-installation Operation

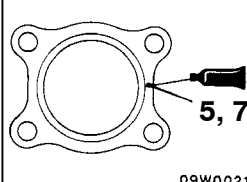
- Floor Consol Installation (Refer to GROUP 52A – Floor Consol.)
- Check the Operation of the Transmission and Transfer Control Levers and the Movement in Each Lever Position.



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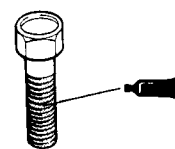
Apply the sealant to both sides of the gasket



Apply the sealant to both sides of the gasket

Sealant:
3M ATD Part No. 8661 or equivalent

Control lever assembly mounting bolt



Adhesive:
3M Stud Locking No. 4170 or equivalent

Transmission control lever assembly removal steps

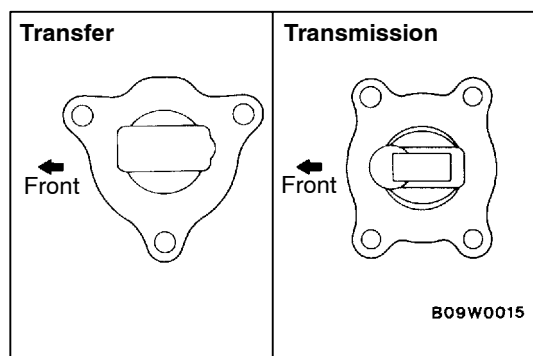
- ◀A▶
- ▶D▶ 1. Retainer plate
 - ▶C▶ 2. Dust cover
 - ▶B▶ 3. Shift lever shaft
 - ▶B▶ 4. Transmission control lever assembly
 - ▶A▶ 5. Gasket
 - ▶A▶ 6. Stopper plate
 - ▶A▶ 7. Gasket
 - ▶A▶ 8. Control lever bushing
 - ▶A▶ 9. Transmission control lever

Transfer control lever assembly removal steps

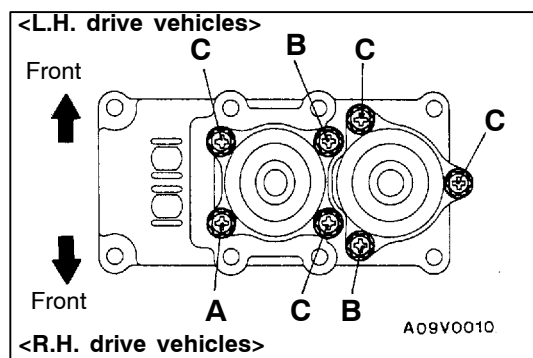
- ▶D▶ 1. Retainer plate
- ▶B▶ 2. Dust cover
- ▶B▶ 10. Transfer control lever assembly
- ▶A▶ 11. Gasket
- ▶A▶ 12. Stopper plate
- ▶A▶ 13. Gasket
- ▶A▶ 14. Transfer control lever

REMOVAL SERVICE POINT**◀A▶ SHIFT LEVER SHAFT REMOVAL****Caution**

Hold the transmission control lever with the spanner and loosen the shift lever shaft.

**INSTALLATION SERVICE POINTS****▶A▶ STOPPER PLATE INSTALLATION**

Install the stopper plates so that they face as shown in the illustration.

**▶B▶ TRANSFER CONTROL LEVER ASSEMBLY/
TRANSMISSION CONTROL LEVER ASSEMBLY**

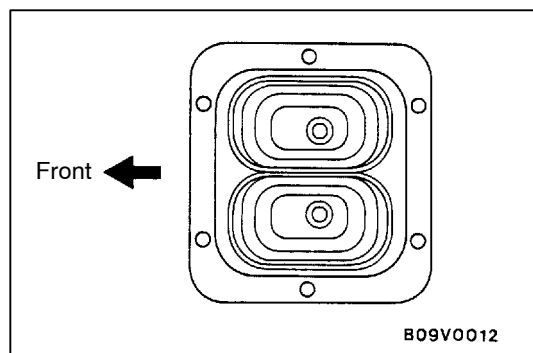
1. Remove the adhesive sticking to the control lever assembly mounting bolts.
2. Use a tap (M8 x 1.25) to remove the adhesive sticking to the bolt holes in the control housing, and clean it by blowing in air.
3. Apply specified adhesive to the threads of the control lever assembly mounting bolts.

Specified adhesive:

3M Stud Locking No. 4170 or equivalent

4. The dimensions of the mounting bolts vary according to their mounting locations, so do not confuse them when installing.

Bolt	Diameter x Length mm
A	8 x 18
B	8 x 22
C	8 x 23

**▶C▶ SHIFT LEVER SHAFT INSTALLATION****Caution**

Hold the transmission control lever with the spanner and tighten the shift lever shaft.

▶D▶ DUST COVER INSTALLATION

Install the dust cover so that they face as shown in the illustration.

22100350086

TRANSMISSION ASSEMBLY

REMOVAL AND INSTALLATION

Caution

*: Indicates parts which should be initially tightened, and then fully tightened after placing the vehicle horizontally and loading the full weight of the engine on the vehicle body.

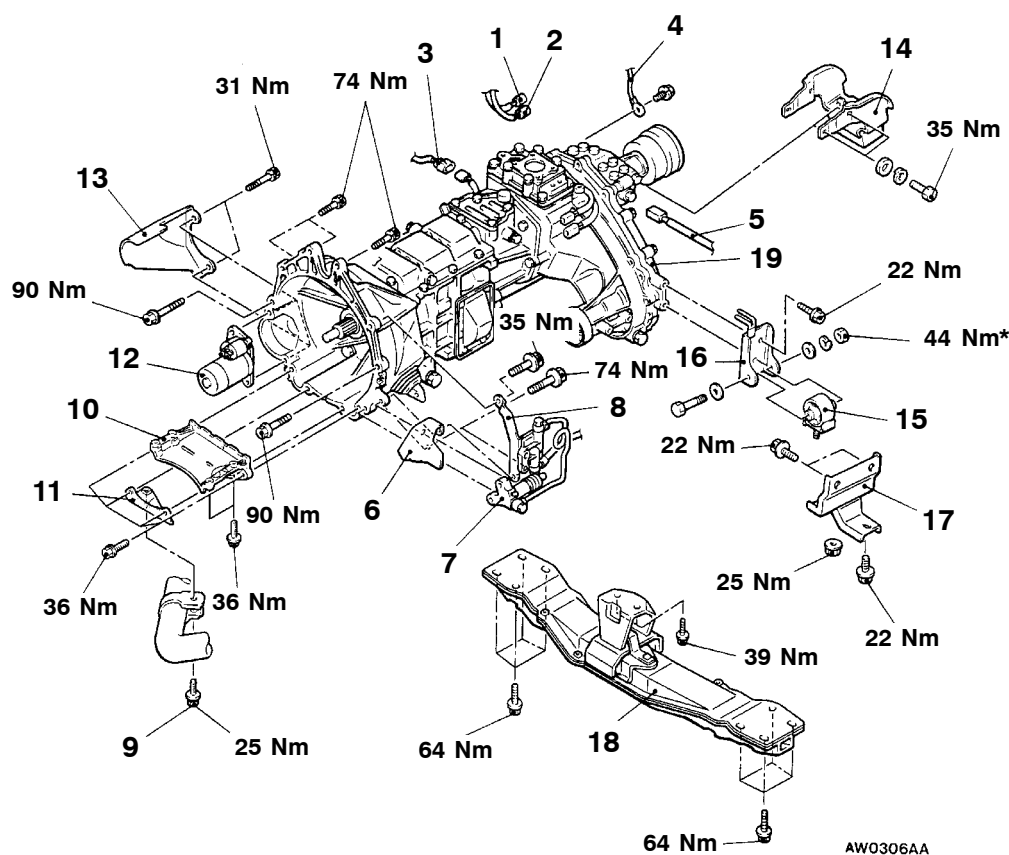
Pre-removal Operation

- Transmission and Transfer Control Lever Removal (Refer to P.22-5.)
- Transfer Case Protector Removal
- Transmission and Transfer Oil Draining (Refer to P.22-3.)
- Front and Rear Propeller Shaft Removal (Refer to GROUP 25 – Propeller Shaft.)
- Front and Center Exhaust Pipe Removal <4D5> (Refer to GROUP 15 – Exhaust Pipe and Main Muffler)

Post-installation Operation

- Front and Center Exhaust Pipe Installation <4D5> (Refer to GROUP 15 – Exhaust Pipe and Main Muffler)
- Front and Rear Propeller Shaft Installation (Refer to GROUP 25 – Propeller Shaft.)
- Transmission and Transfer Oil Filling (Refer to P.22-3.)
- Transfer Case Protector Installation
- Transmission and Transfer Control Lever Installation (Refer to P.22-5.)
- Transmission and Transfer Control Lever Operation Check

<6G7>



Removal steps

1. High/low detection switch connector
2. 4WD detection switch connector
3. Back-up lamp switch connector
4. Earth cable
5. Speed sensor connector
6. Heat protector
7. Clutch release cylinder
8. Clutch damper assembly
<R.H. drive vehicles>
9. Exhaust pipe clamp mounting bolt
10. Transmission stay

11. Exhaust clamp bracket
12. Starter motor
13. Starter motor cover
14. Dynamic damper assembly
 - Support the transmission with a transmission jack
15. Transfer roll stopper
16. Transfer mount bracket
17. Transfer support bracket
18. No. 2 crossmember
19. Transmission assembly

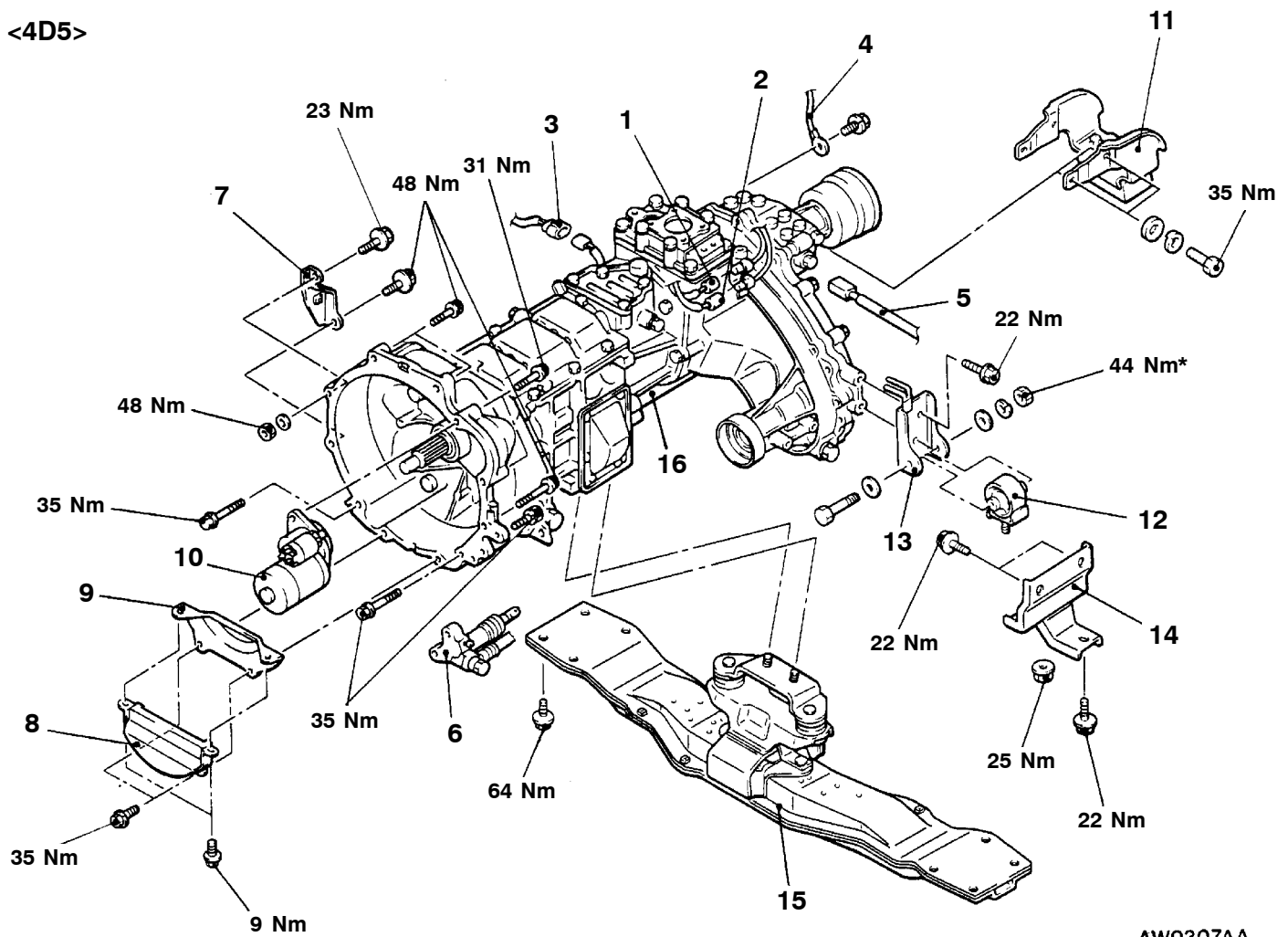
<A>

>B<

<C>

>A<

<4D5>



AW0307AA

Removal steps

1. High/low detection switch connector
2. 4WD detection switch connector
3. Back-up lamp switch connector
4. Earth cable
5. Speed sensor connector
6. Clutch release cylinder
7. Exhaust pipe support bracket
8. Space rubber
9. Bell housing cover

◀B▶

10. Starter motor
11. Dynamic damper assembly
 - Support the transmission with a transmission jack

▶B◀

12. Transfer roll stopper
13. Transfer mount bracket
14. Transfer support bracket
15. No. 2 crossmember

◀C▶

▶A◀

16. Transmission assembly

REMOVAL SERVICE POINTS**◀A▶ CLUTCH RELEASE CYLINDER REMOVAL**

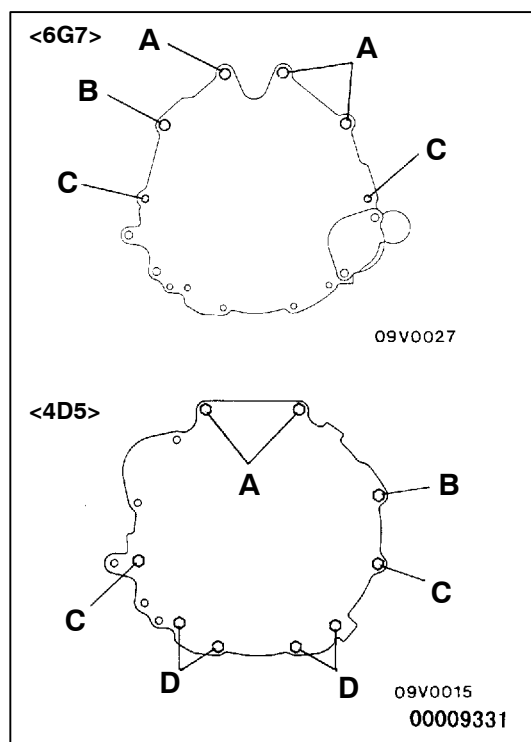
Remove the clutch release cylinder without disconnecting fluid line. Then suspend them with a cord.

◀B▶ STARTER MOTOR REMOVAL

Remove the starter motor with the starter motor harnesses still connected, and secure it inside the engine compartment.

◀C▶ TRANSMISSION ASSEMBLY REMOVAL**Caution**

When removing the transmission assembly from the engine, care must be taken not to shake or rock with force, because to do so might cause damage to the end of the main drive gear, the pilot bearing, or the clutch disc, etc.

**INSTALLATION SERVICE POINTS****▶A◀ TRANSMISSION ASSEMBLY INSTALLATION**

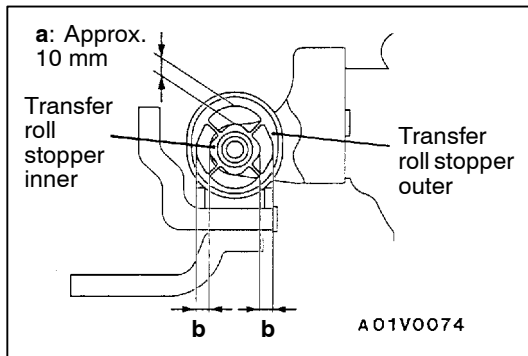
The sizes of the mounting bolts are different. So be sure not to confuse them.

<6G7>

Bolt		Diameter x Length mm
A		12 x 40
B	L.H. drive vehicles	12 x 40
	R.H. drive vehicles	12 x 45
C		12 x 55

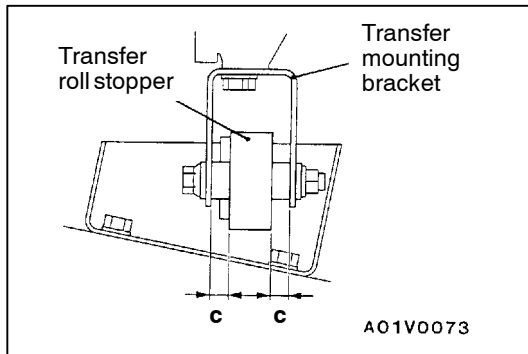
<4D5>

Bolt		Diameter x Length mm
A		10 x 45
B		8 x 30
C		10 x 80
D		10 x 25



►B◄ TRANSFER ROLL STOPPER INSTALLATION

1. Tighten the transfer roll stopper provisionally.
2. Make the engine and transmission assembly rest on the engine mount.
3. Tighten the transfer roll stoppers inner and outer finally so that the clearance (a) between the two are at the shown dimension.
4. Check that the right and left clearances (b) between the stoppers are equal.



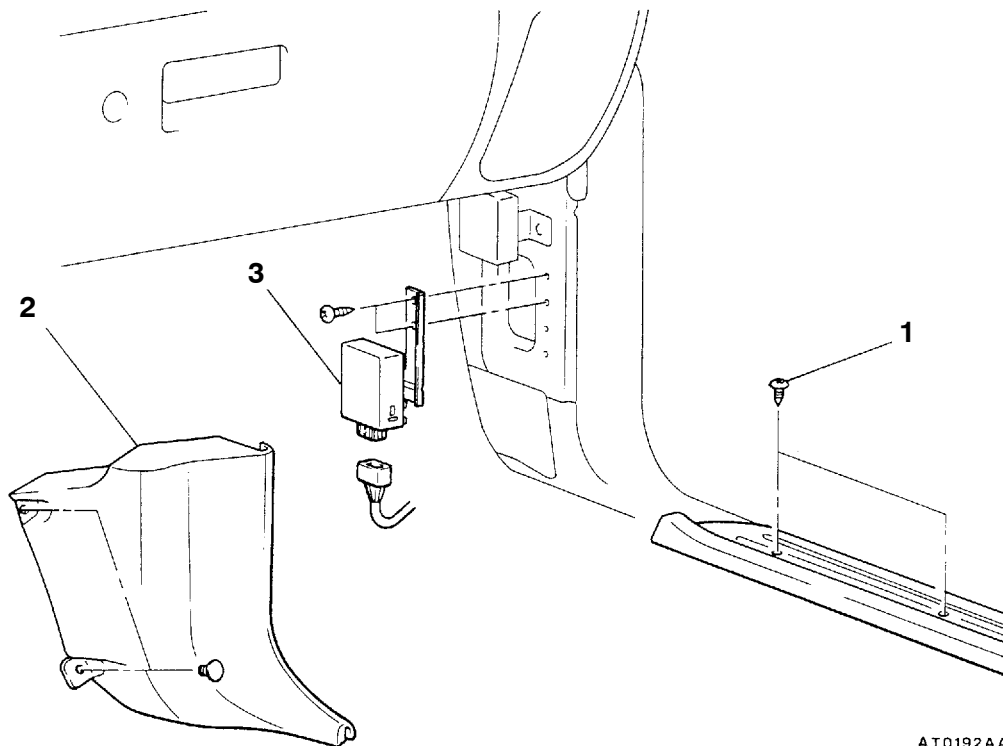
5. Check that the clearances (c) between the transfer roll stopper and transfer mounting bracket are equal.

NOTE

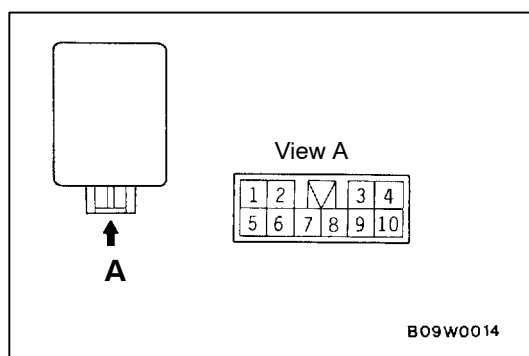
When new, a transfer roll stopper consists of one part, but will separate into outer and inner part during use. This is normal.

4WD INDICATOR-ECU

22100620040

REMOVAL AND INSTALLATION**Removal steps**

1. Front scuff plate attaching screw
2. Cowl side trim
3. 4WD indicator-ECU

**INSPECTION**

22100640039

4WD INDICATOR-ECU

1. Measure the voltage with the control unit and harness still connected.
2. Earth terminal (8) and then measure terminal voltage.

Terminal No.	Inspection item	Inspection condition 1: Ignition switch	Inspection condition 2: Transfer lever position	Terminal voltage
1	Free wheel engage switch	ON	2H	System voltage
			4H*1	0 V
2	4WD detection switch	ON	2H	System voltage
			4H, 4L	0 V
3	Ignition switch (IG1)	OFF	–	0 V
		ON	–	System voltage
6	HI/LOW detection switch	ON	Shifting from 4H to 4L or vice versa	System voltage
			2H, 4H, 4L	0 V
7	Free wheel clutch changeover solenoid valve	ON	4H, 4L	0 V
			2H*2	System voltage
10	4WD Indicator lamp	ON	2H	0 V
			4H, 4L	System voltage

NOTE

*1: When vehicle has been moved once.

*2: Shift the lever from 4H to 2H, and then turn the ignition switch to OFF and then back to ON.