

GENERAL INFORMATION

Items		Specifications		
Transmission model		V5MT1	V5M31	
Engine model		6G7	4M4	6G7
Type		5-speed, floor-shift		
Gear ratio	1st	3.918	3.952, 4.234* ¹ , 3.789* ²	3.952, 4.234* ³
	2nd	2.261	2.238, 2.057* ²	2.238
	3rd	1.395	1.398, 1.421* ²	1.398
	4th	1.000		
	5th	0.829	0.761, 0.731* ²	0.761, 0.819* ³
	Reverse	3.925	3.553, 3.865* ²	3.553
Transfer type		2-speed		
Gear ratio	High	1.000		
	Low	1.925	1.900	

NOTE:

*1 indicates vehicles for South Africa-short wheelbase, *2 indicates vehicles for South Africa-long wheelbase, *3 indicates vehicles with 6G74

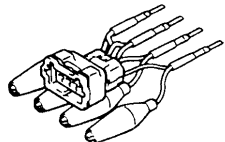
LUBRICANTS

Items	Specified lubricants	Quantity L
Transmission oil	Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API GL-4	3.2
Transfer oil	Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API GL-4	2.5

SEALANTS

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

SPECIAL TOOL

Tool	Number	Name	Use
 B991536	MD991536	Test harness set	Inspection of throttle position sensor

TROUBLESHOOTING <SS4 II>

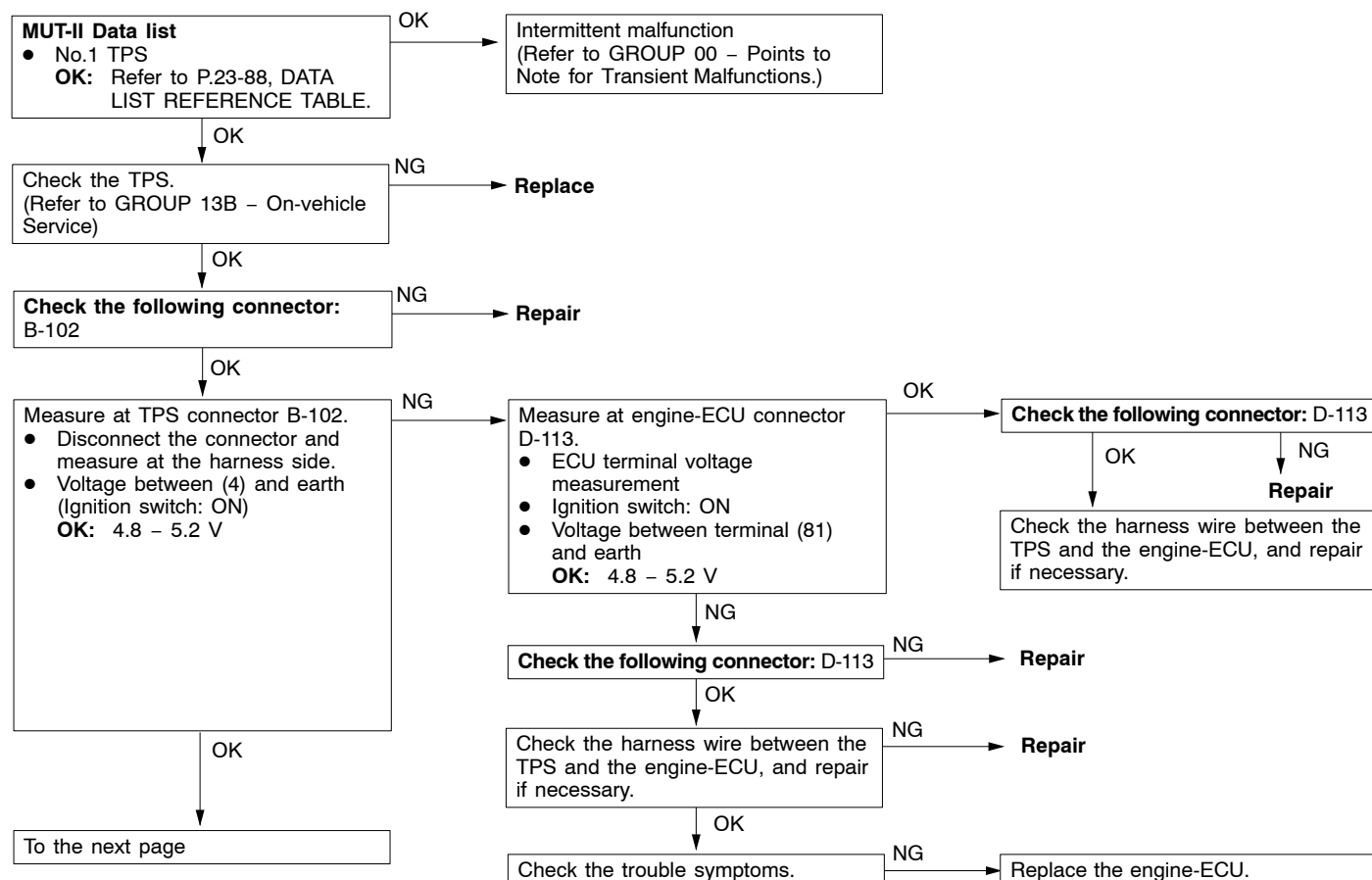
For items other than the following service procedures, refer to GROUP 23 – Troubleshooting <SS4 II>.

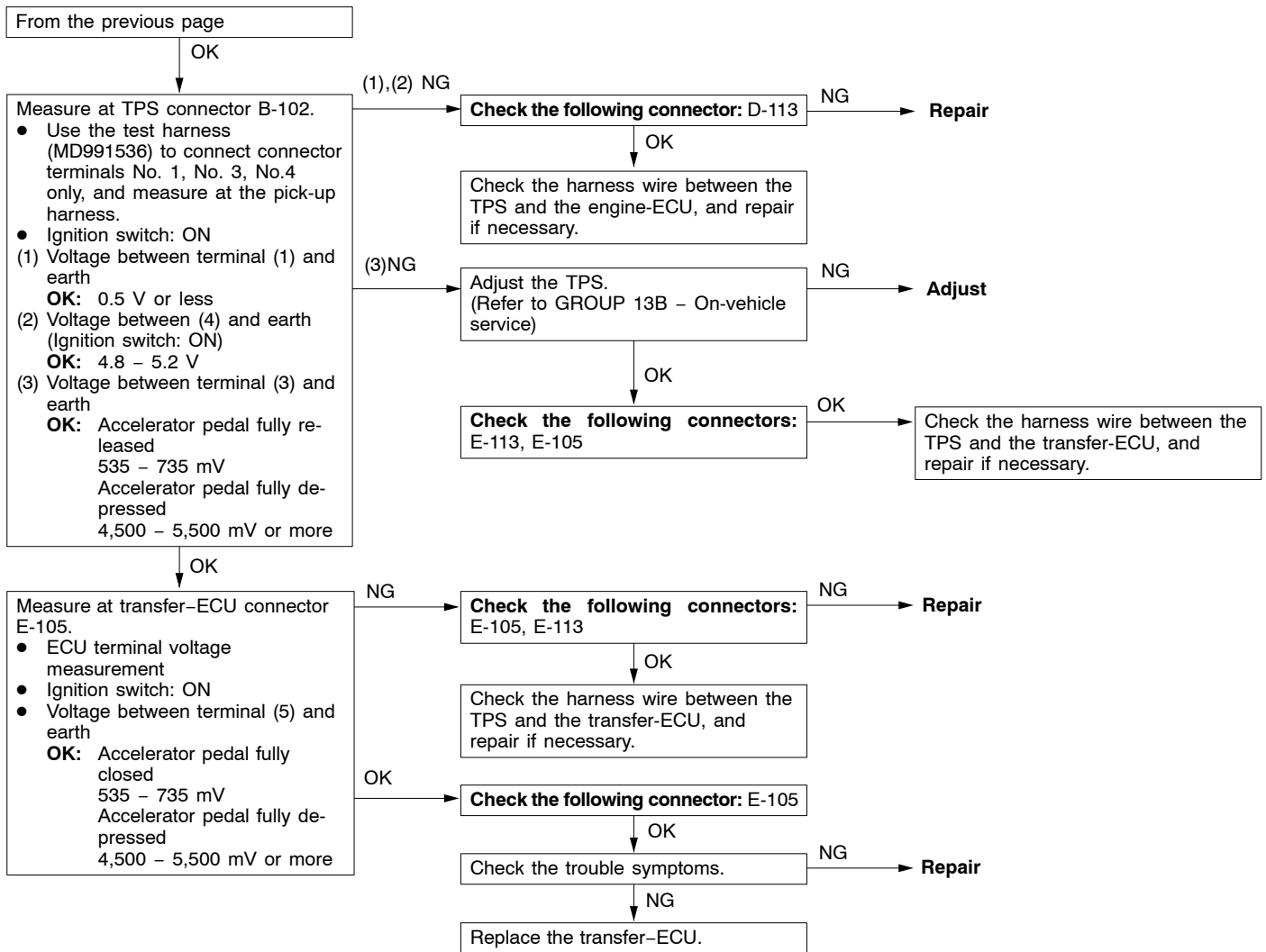
INSPECTION CHART FOR DIAGNOSIS CODES

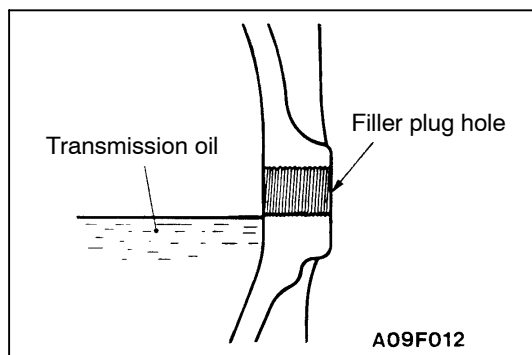
Diagnosis code	Diagnosis item	Reference page
21	Throttle position sensor (TPS) system <6G7-MPI> Open circuit/Malfunction of sensor	22-3

INSPECTION PROCEDURE FOR DIAGNOSIS CODES

Code No.21 Throttle position sensor (TPS) system <6G7-MPI>	Probable cause
If the TPS output voltage becomes 0.2 V or less at idling, code No.21 will be set as open circuit or maladjustment of the TPS.	<ul style="list-style-type: none"> • Malfunction of the TPS • Malfunction of harness or connector • Malfunction of transfer-ECU • Malfunction of the engine-ECU







ON-VEHICLE SERVICE

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: 32 ± 2 N·m

OIL REPLACEMENT

1. Remove oil filler plug and oil drain plug.
2. Drain oil.
3. Apply sealant to the oil drain plug threads.

Specified sealant:

3M ATD Part No. 8660 or equivalent

4. Tighten the oil drain plug to the specified torque.

Tightening torque:

V5MT1 39 ± 5 N·m

V5M31 32 ± 2 N·m

Transfer 32 ± 2 N·m

5. 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 3.2 L

Transfer 2.5 L

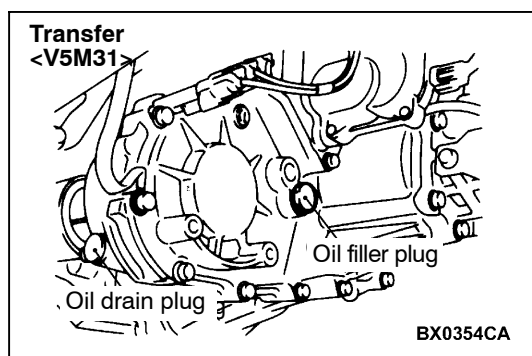
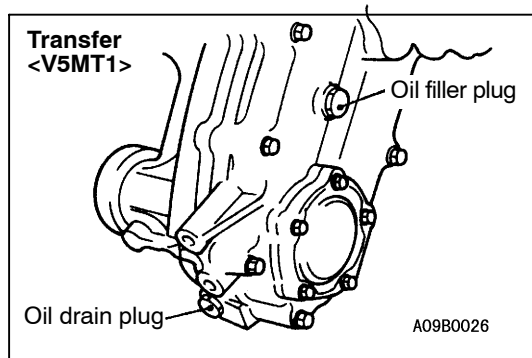
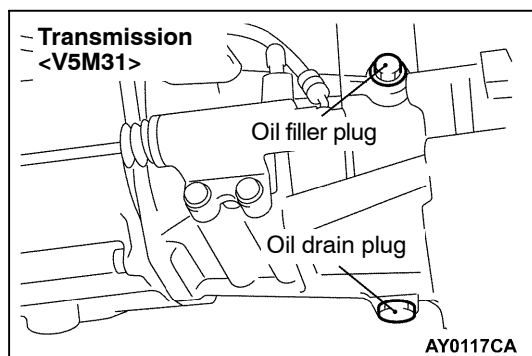
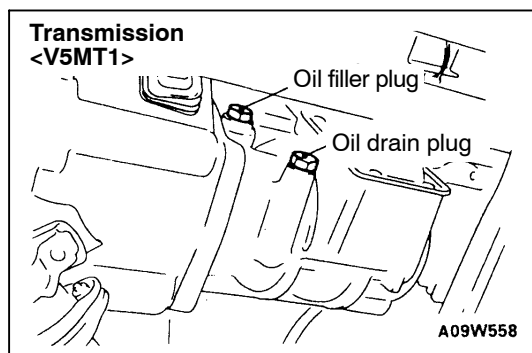
6. Apply sealant to the oil filler plug threads.

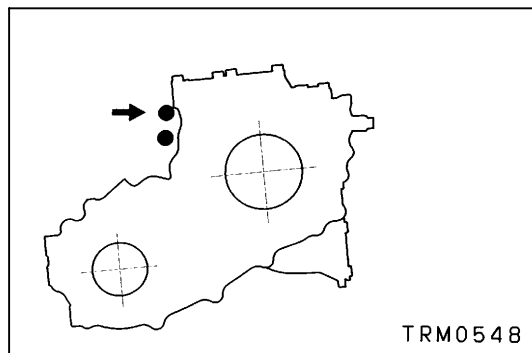
Specified sealant:

3M ATD Part No. 8660 or equivalent

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

Tightening torque: 32 ± 2 N·m

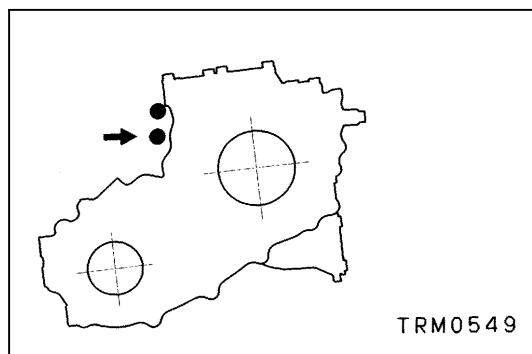




4WD DETECTION SWITCH CONTINUITY CHECK <PART TIME 4WD>

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 <PART TIME 4WD>

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 <PART TIME 4WD>

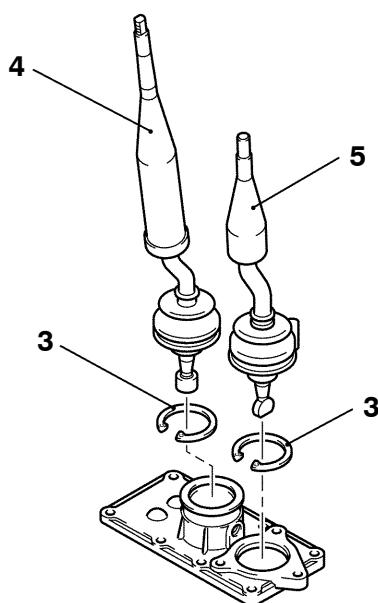
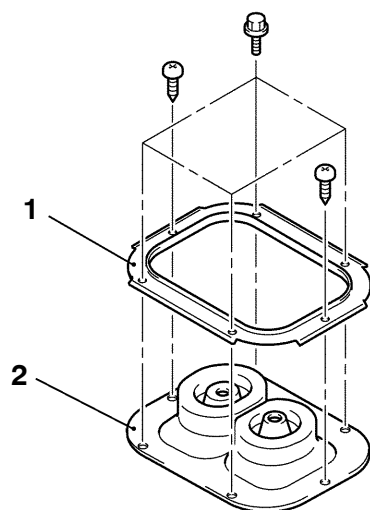
REMOVAL AND INSTALLATION

Pre-removal Operation

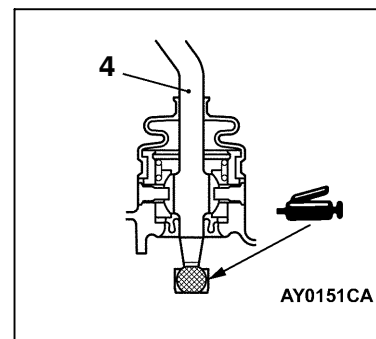
- Shift the Transmission Control Lever to the N Position.
- Shift the Transfer Control Lever to the 4H Position.

Post-installation Operation

Check the Operation of the Transmission and Transfer Control Levers and the Movement in Each Lever Position.



AY0150CA



AY0151CA

Transmission control lever assembly removal steps

- Indicator panel (Refer to GROUP 52A – Floor console)
1. Retainer plate
 2. Shift control boot
 3. Snap ring
 4. Transmission control lever assembly

Transfer control lever assembly removal steps

- Indicator panel (Refer to GROUP 52A – Floor console)
1. Retainer plate
 2. Shift control boot
 3. Snap ring
 5. Transfer control lever assembly

TRANSMISSION CONTROL<SS4 II>

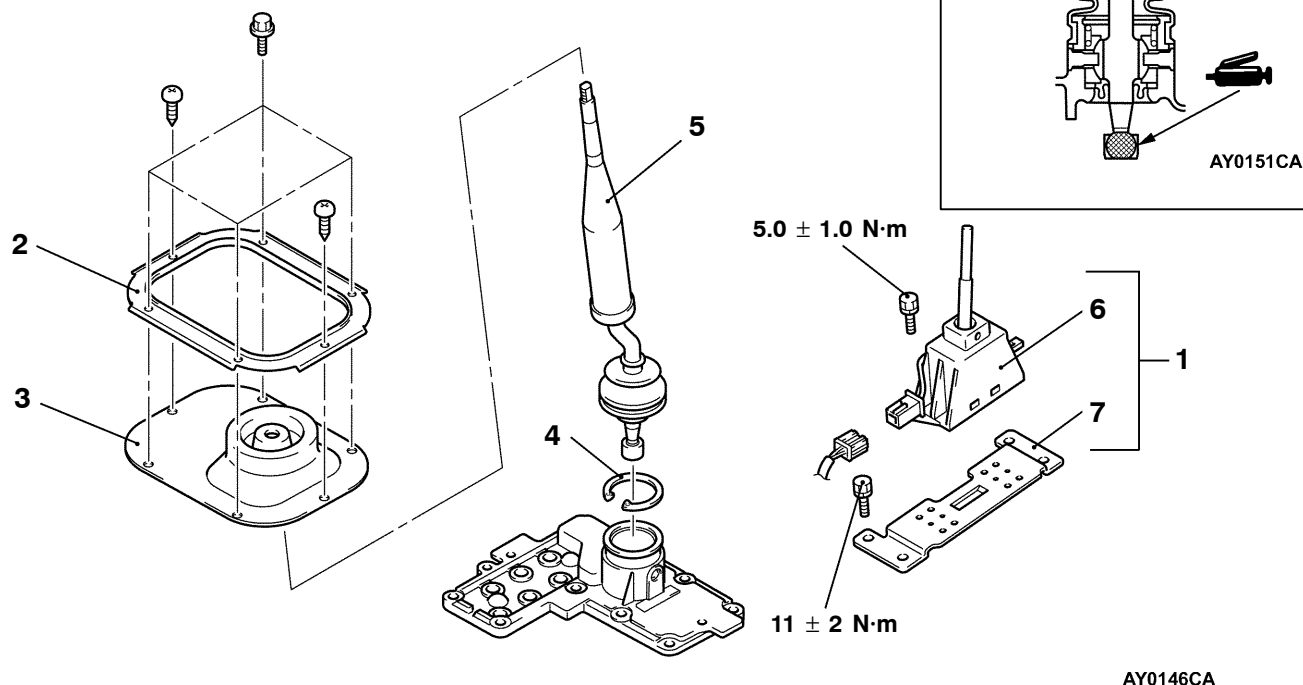
REMOVAL AND INSTALLATION

Pre-removal Operation

Shift the Transmission Control Lever to the N Position.

Post-installation Operation

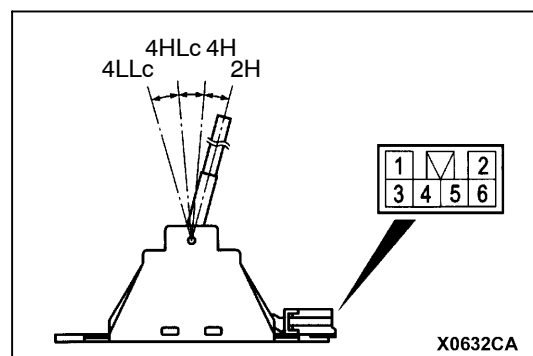
Check the Operation of the Transmission and Transfer Control Levers and the Movement in Each Lever Position.

**Transmission control lever assembly removal steps**

- Indicator panel (Refer to GROUP 52A – Floor Console)
- 1. Transfer select switch assembly
- 2. Retainer plate
- 3. Shift control boot
- 4. Snap ring
- 5. Transmission control lever assembly

Transfer select switch assembly removal steps

- Indicator panel (Refer to GROUP 52A – Floor Console)
- 6. Transfer select switch
- 7. Transfer select switch bracket



INSPECTION

TRANSFER SELECT SWITCH CONTINUITY CHECK

Switch position	Terminal No.				
	1	2	3	5	6
2H	○		○		
4H	○			○	
4HLc	○				○
4LLc	○	○			

TRANSMISSION ASSEMBLY

REMOVAL AND INSTALLATION

Caution

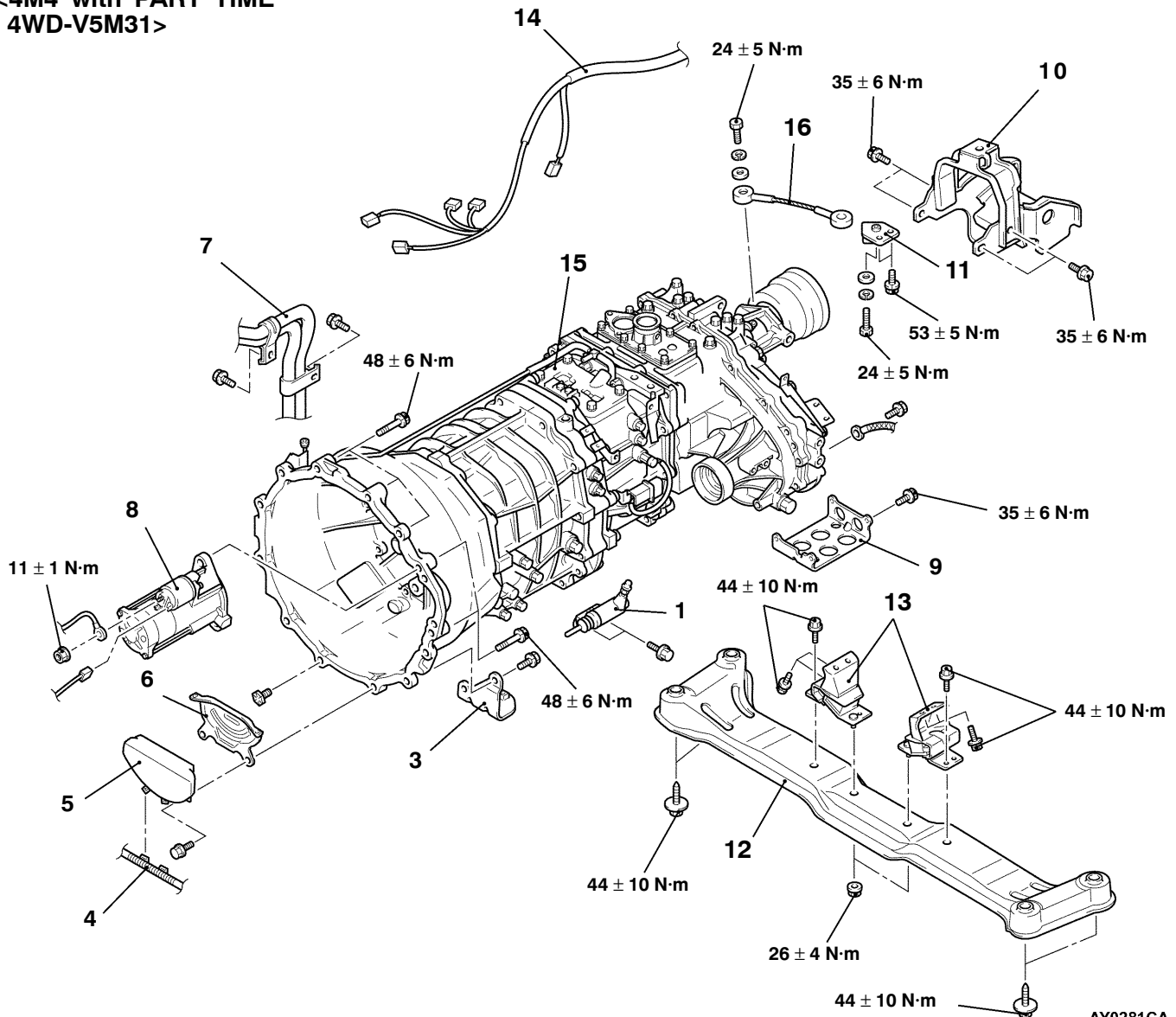
The rear propeller shaft is made of fiber-reinforced plastic tube, so always refer to GROUP 25 prior to its removal.

<4M4>

Pre-removal and Post-installation Operations

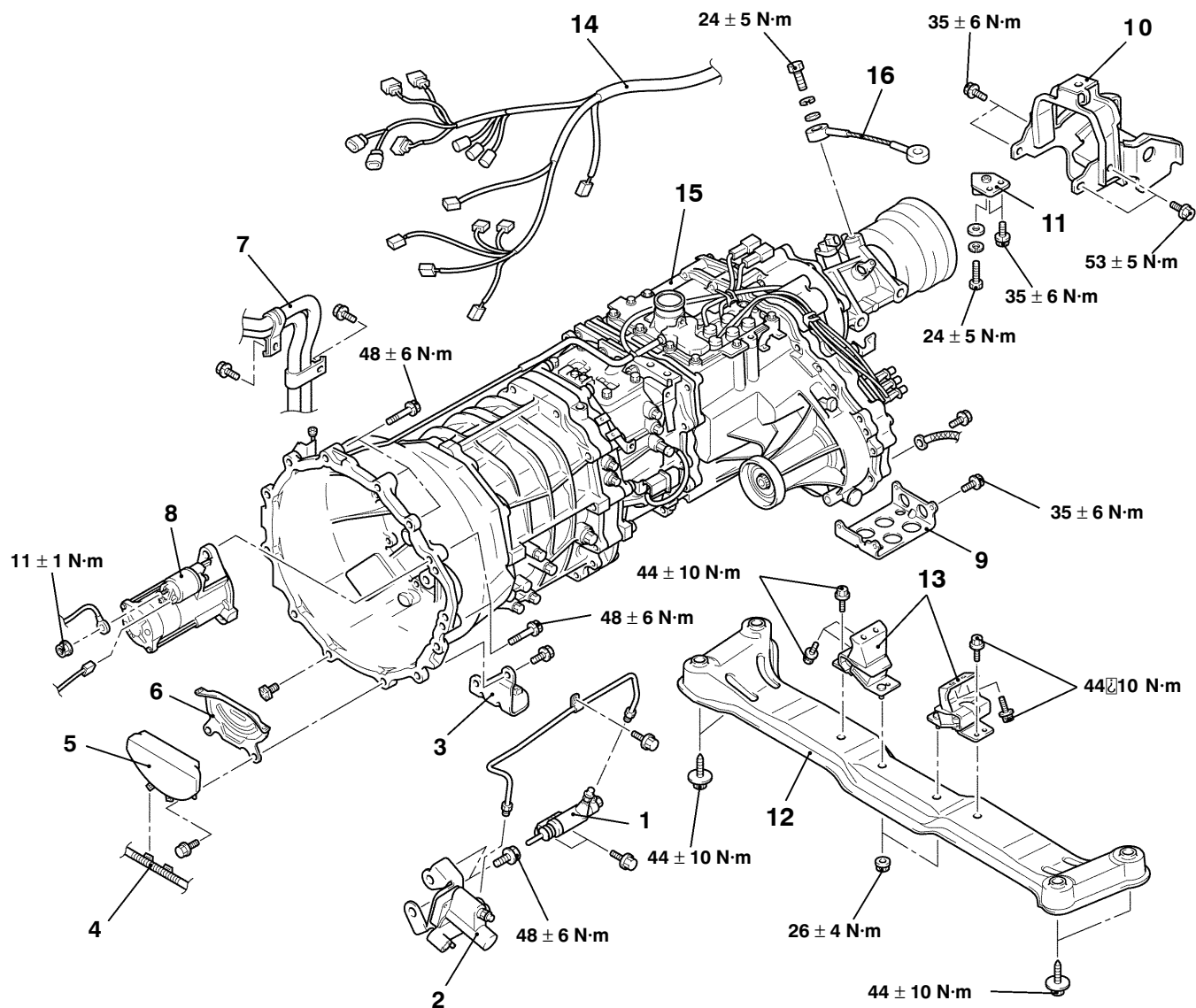
- Skid Plate and Under Cover Removal and Installation
- Transmission Fluid and Transfer Oil Draining and Refilling (Refer to P.22-5.)
- Front and Rear Propeller Shaft Removal and Installation (Refer to GROUP 25.)
- Front Exhaust Pipe and Catalytic Converter Removal and Installation (Refer to GROUP 15.)
- Radiator Shroud Lower Cover Removal and Installation (Refer to GROUP 14.)
- Intercooler Removal and Installation (Refer to GROUP 15)

**<4M4 with PART TIME
4WD-V5M31>**



AY0281CA

<4M4 with SS4 II-V5M31>



AY0282CA

Removal steps

1. Clutch release cylinder
(Refer to GROUP15)
2. Clutch dumper assembly
<4M41 only> (Refer to GROUP15)
3. Exhaust support bracket
4. Battery cable connection
5. Spacing rubber
6. Dust cover
7. Heater hose connection
8. Starter motor
9. Transfer under guard
10. Dynamic damper
11. Tension wire bracket
 - Support the transmission with a transmission jack
12. Transmission mount center member assembly
13. Transmission mount insulator assembly
14. Transmission harness connector connection
 - Clutch release bearing disconnection
15. Transmission assembly
16. Tension wire

◀A▶

◀B▶

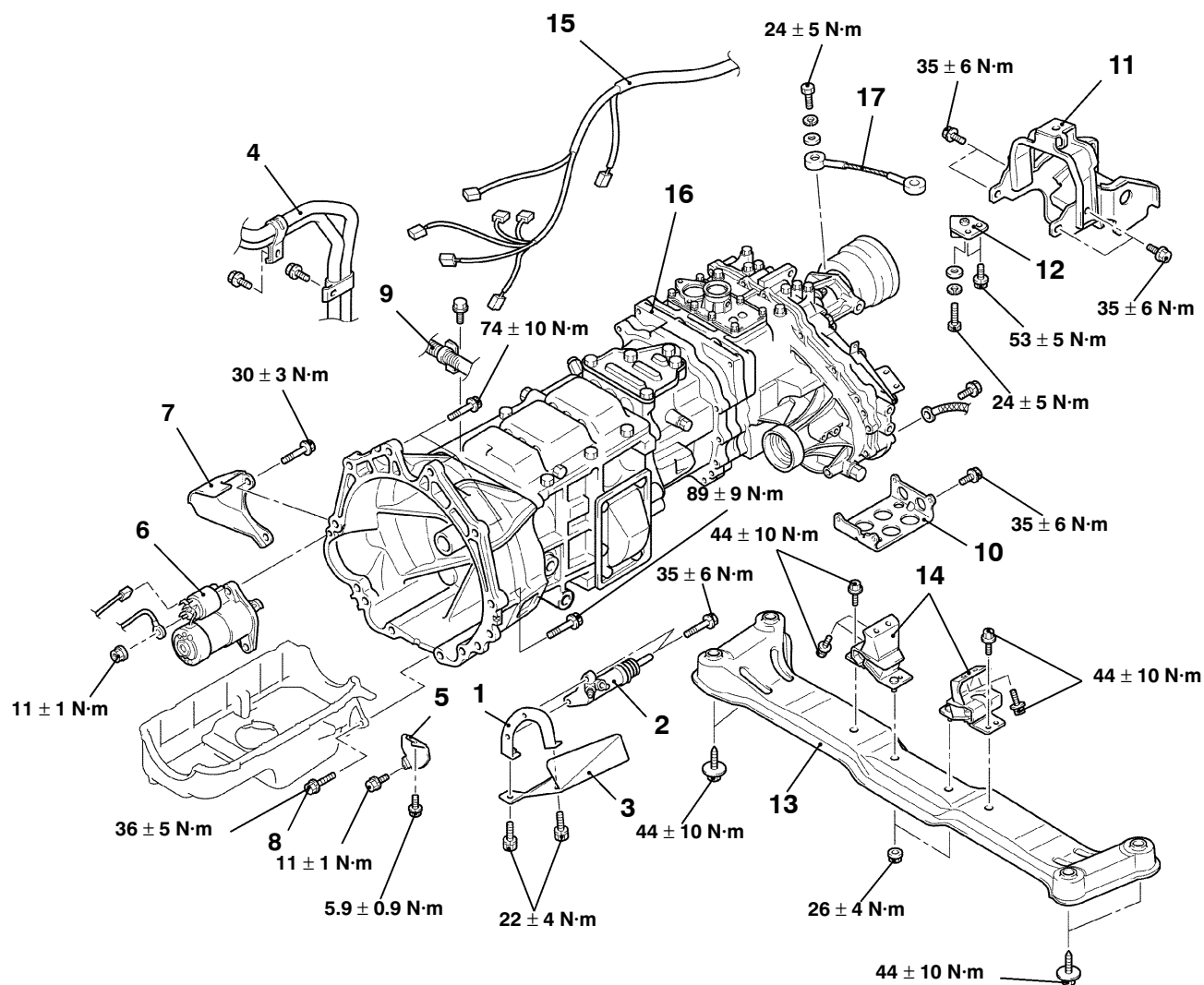
▶A▶

<6G7>

Pre-removal and Post-installation Operations

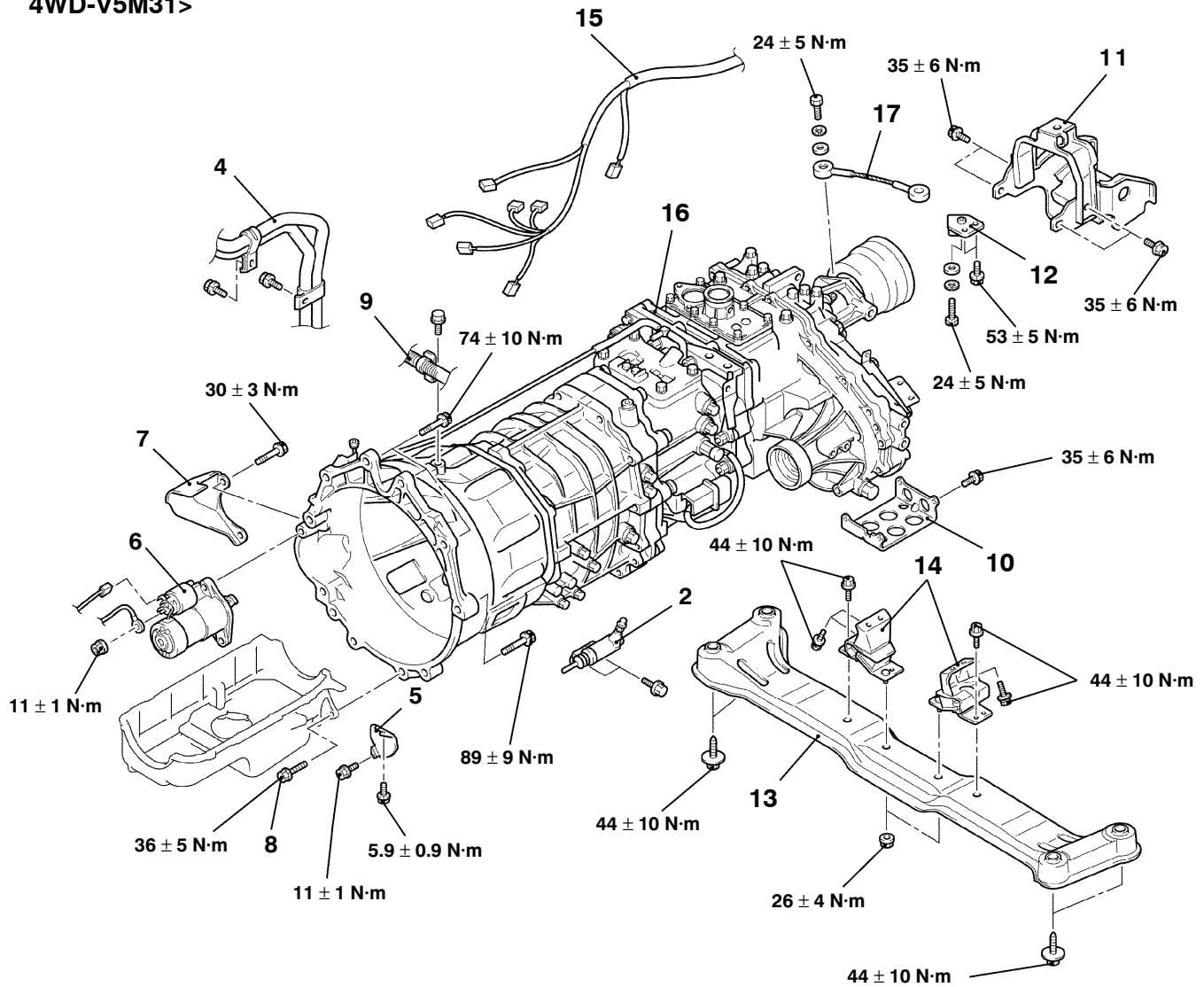
- Skid Plate and Under Cover Removal And Installation
- Transmission Fluid and Transfer Oil Draining And Refilling (Refer to P.22-5.)
- Front and Rear Propeller Shaft Removal and Installation (Refer to GROUP 25.)
- Front Exhaust Pipe Removal And Installation (Refer to GROUP 15.)
- Radiator Shroud Lower Cover Removal And Installation (Refer to GROUP 14.)

<6G7 with PART TIME 4WD-V5MT1>



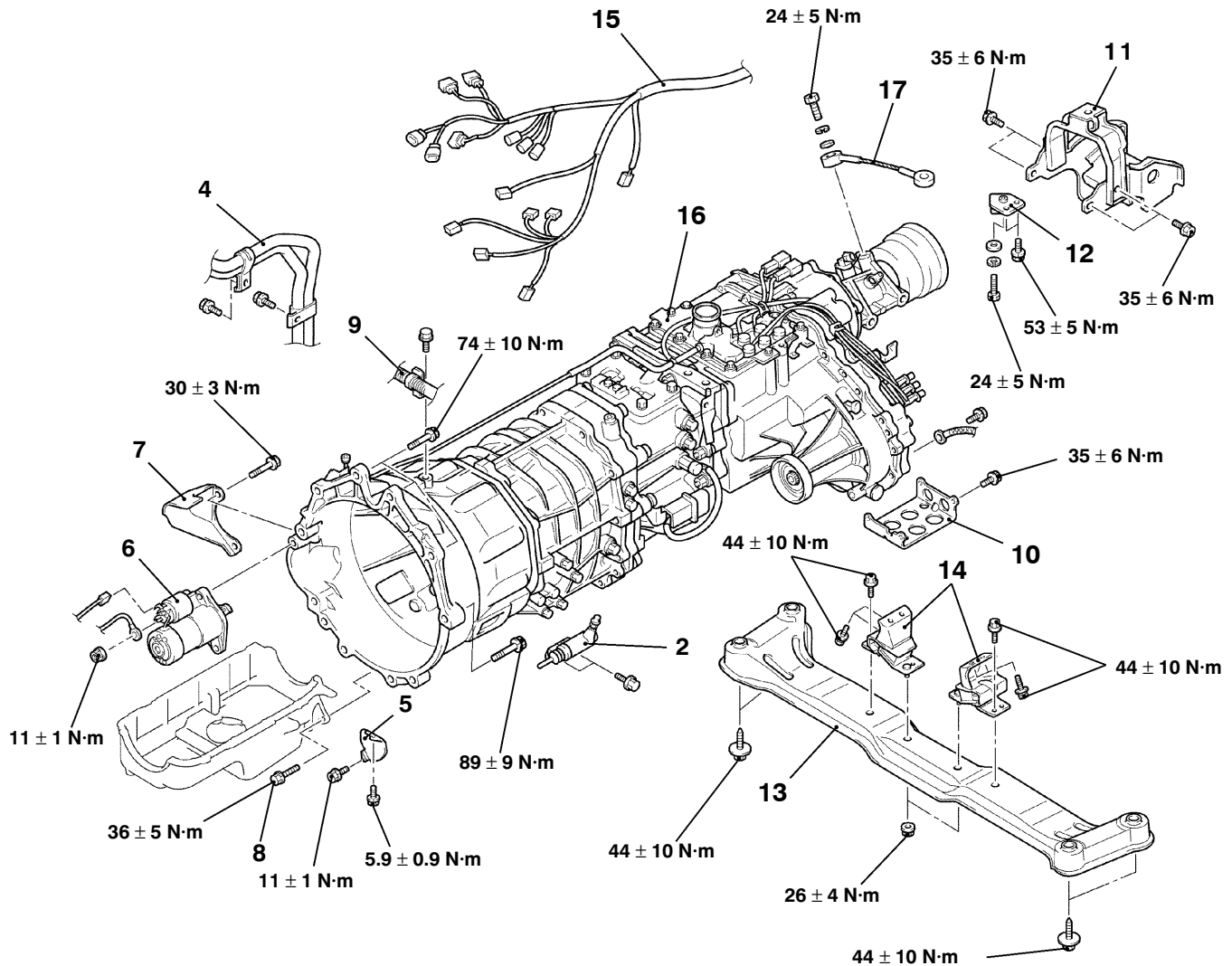
AY0283CA

<6G7 with PART TIME
4WD-V5M31>



AY0284CA

<6G7 with SS4 II-V5M31>



Y0285CA

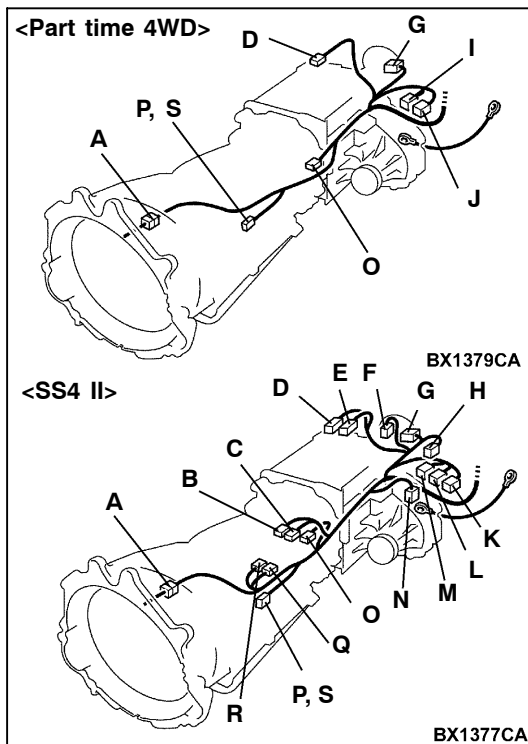
Removal steps

1. Heat protector bracket <6G7 with Part Time 4WD-V5MT1>
2. Clutch release cylinder (Refer to GROUP15)
3. Heat protector <6G7 with Part Time 4WD-V5MT1>
4. Heater hose connection
5. Cover
6. Starter motor
7. Starter cover
8. Oil pan connection bolts
9. Battery cable connection
10. Transfer under guard
11. Dynamic damper
12. Tension wire bracket
 - Support the transmission with a transmission jack
13. Transmission mount center member assembly
14. Transmission mount insulator assembly
15. Transmission harness connector connection
 - Clutch release bearing disconnection
16. Transmission assembly
17. Tension wire

◀A▶

◀B▶

▶A◀

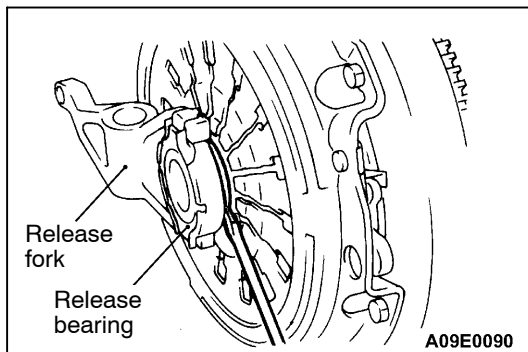


REMOVAL SERVICE POINT

◀A▶ TRANSMISSION WIRING HARNESS CONNECTOR DISCONNECTION

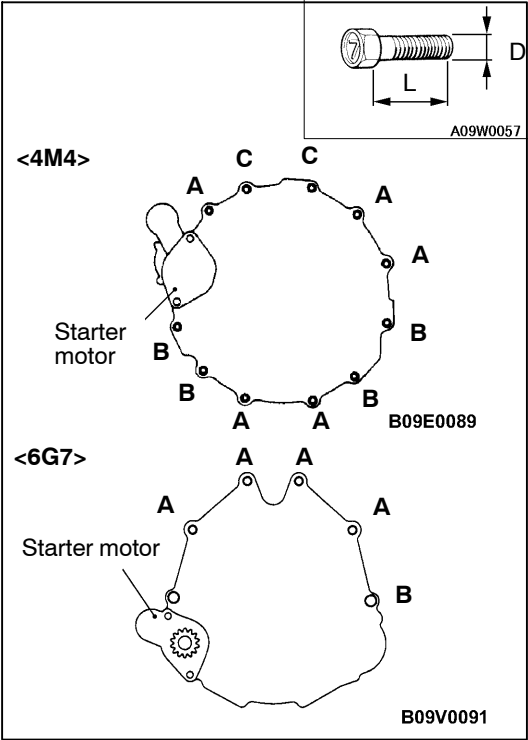
1. Lower the transmission to a position where the transmission harness connector can be disconnected, and then disconnect the connector.
2. Place the disconnected transmission harness so that it stays on the vehicle body.

Code	Connector name
A	Transmission wiring harness and battery wiring harness combination
B	Select rail switch <4M4>
C	1st and 2nd rail switch <4M4>
D	4LLC (Direct low range 4WD) switch
E	2WD operation detection switch
F	Rear propeller shaft speed sensor
G	Vehicle speed sensor
H	Shift actuator
I	High range/low range detection switch
J	4WD operation detection switch
K	2WD/4WD detection switch
L	4H (Full time 4WD) switch
M	Center differential lock detection switch
N	Front propeller shaft speed sensor
O	Back-up lamp switch
P	Oxygen sensor <MPI> (Vehicles with catalytic converter (except for Australia)
Q	Back-up lamp switch <4M4>
R	3rd and 4th rail switch <4M4>
S	Oxygen sensor <MPI> (Vehicles for Australia)



◀B▶ CLUTCH RELEASE BEARING DISCONNECTION

1. Remove the service hole cover at the clutch housing.
2. Operate the release fork, and push the release bearing towards the clutch side.
3. Insert the flat-tipped screwdriver to separate the release bearing.



INSTALLATION SERVICE POINT

►A◄ TRANSMISSION ASSEMBLY INSTALLATION

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

<4M4>

Bolt	Diameter D x Length L mm
A	12 x 25
B	10 x 45
C	10 x 50

<6G7>

Bolt	Diameter D x Length L mm
A	12 x 40
B	12 x 55

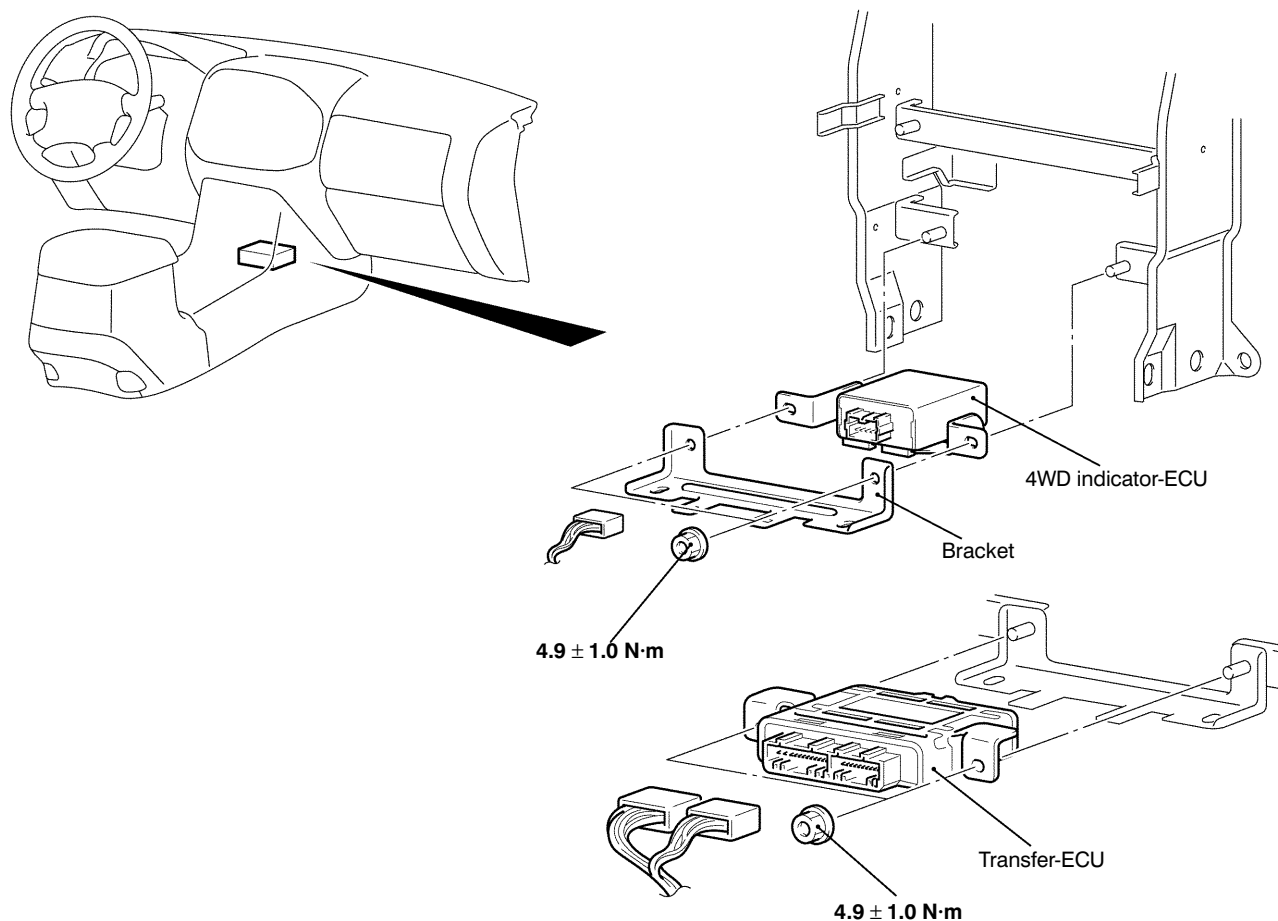
4WD INDICATOR-ECU/TRANSFER-ECU

REMOVAL AND INSTALLATION

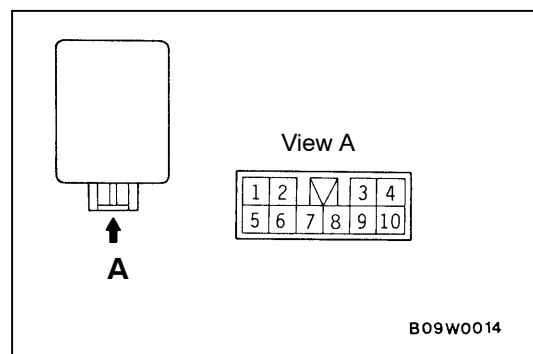
Pre-removal and Post-installation Operation

Indicator panel, Floor console front panel removal and installation

(Refer to GROUP 52A – Floor Console)



AY0153CA



INSPECTION

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.

TRANSFER-ECU

Measure the terminal voltage (Refer to GROUP 23 – Troubleshooting <SS4 II>).