
MANUAL TRANSMISSION

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120002610

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GENERAL INFORMATION

120002611

Items		Vehicles with 4G63 or 4D56 engine	Vehicles with 4G63 or 4G64 engine	Vehicles with 4D56 engine
Transmission model		R5M21-7	R5M21-7	R5M31-7
Type		5-speed, column-shift	5-speed, floor-shift	5-speed, column-shift
Gear ratio	1st	3.967	3.967	3.952
	2nd	2.136	2.136	2.238
	3rd	1.360	1.360	1.398
	4th	1.000	1.000	1.000
	5th	0.856	0.856	0.760
	Reverse	3.578	3.578	3.553
Speedometer gear ratio (driven/drive)		26/8 QF 30/8 EJ, EJJ	28/8 GHDL 30/8 EJDJ	29/9

Items		Vehicles with 4G64 or 4D56 engine	Vehicles with 4D56 engine
Transmission model		V5M21-7	V5M31-7
Type		5-speed, floor-shift	5-speed, column-shift
Gear ratio	1st	3.967	3.952
	2nd	2.136	2.238
	3rd	1.360	1.398
	4th	1.000	1.000
	5th	0.856	0.760
	Reverse	3.578	3.553
Transfer type		2-speed	2-speed
Gear ratio	High	1.000	1.000
	Low	1.925	1.900
Speedometer gear ratio (driven/drive)		27/8	31/9

SERVICE SPECIFICATION

120000349

Item	Standard value
Clearance between shift lever guide and steering column mm	2.4–3.6

LUBRICANTS

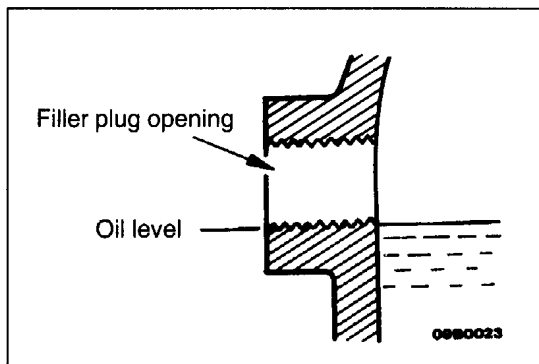
120002612

Items	Specified lubricants	Quantity ℓ
Transmission oil	Hypoid gear oil SAE 75W-90, 75W-85W or 80W conforming to API GL-4	2.3 <R5M21> 3.7 <R5M31> 2.2 <V5M21> 3.7 <V5M31>
Transfer oil	Hypoid gear oil SAE 75W-90, 75W-85W or 80W conforming to API GL-4	2.2 <V5M21> 2.5 <V5M31>

SEALANTS

120000351

Items	Specified sealant	Remarks
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



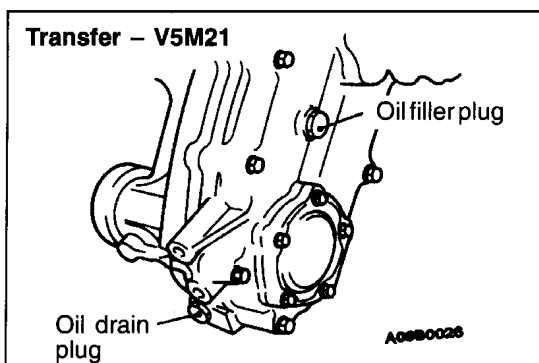
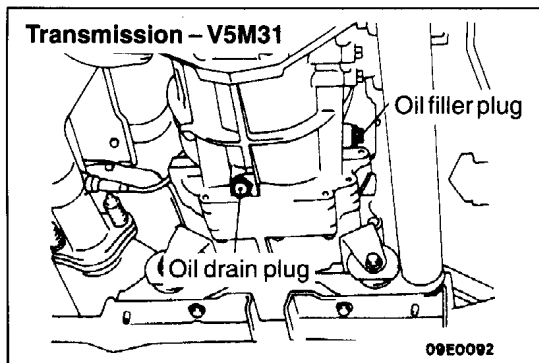
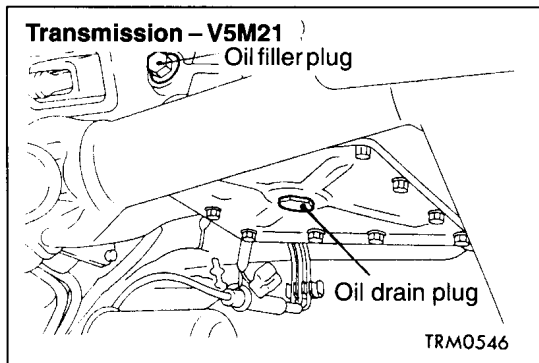
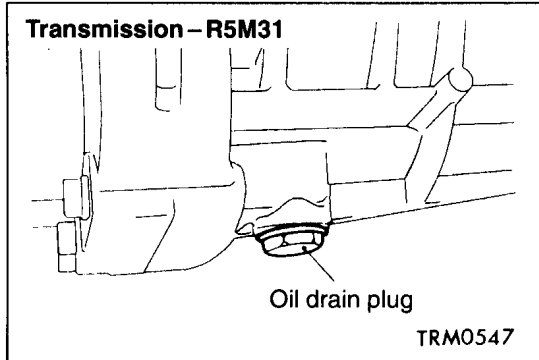
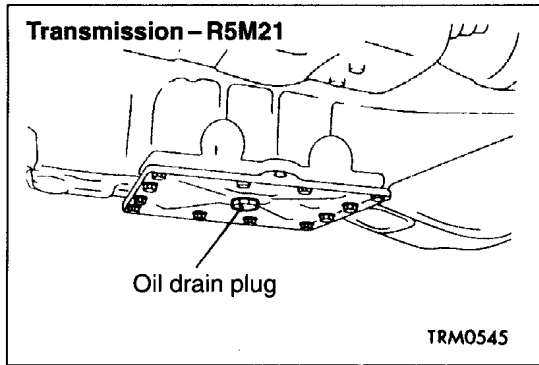
SERVICE ADJUSTMENT PROCEDURES

120000352

OIL LEVEL CHECK

Inspect each component for evidence of leakage, and check the oil level by removing the filler plug. If the oil is contaminated, it is necessary to replace it with new oil.

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



OIL REPLACEMENT

120002613

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

Specified torque: 33 Nm

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

Specified transmission oil:

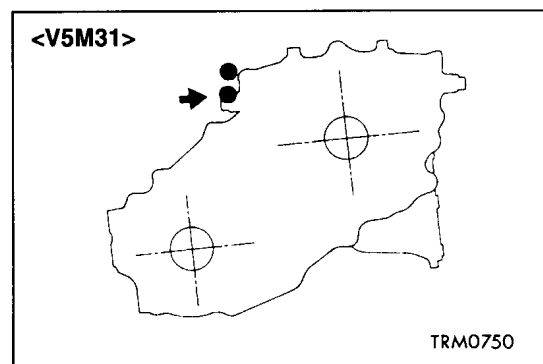
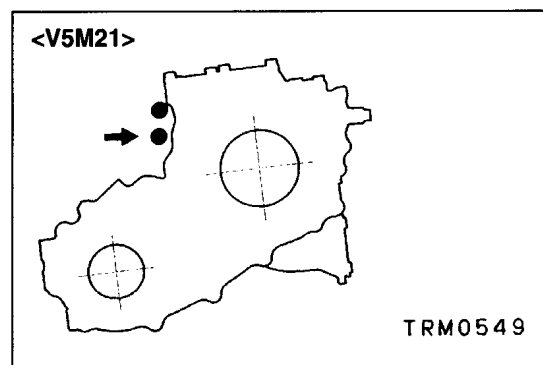
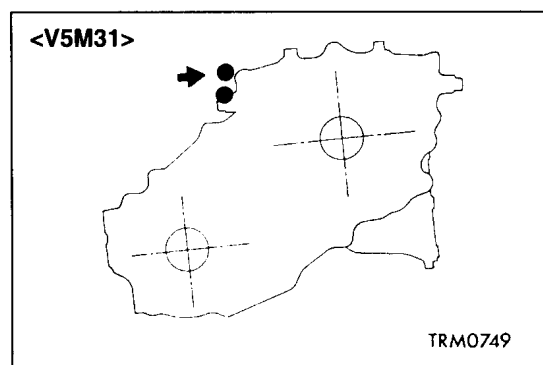
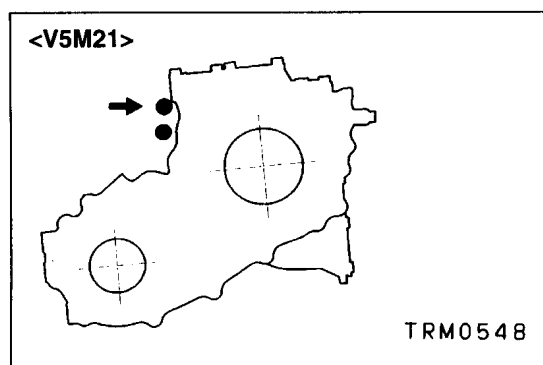
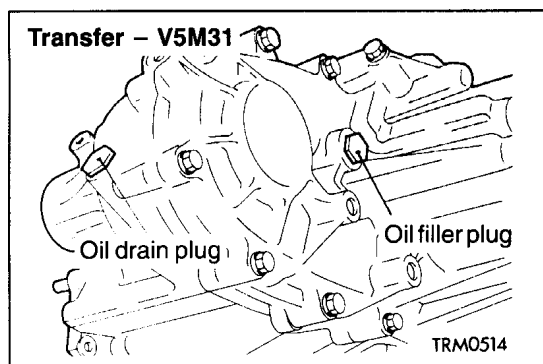
Hypoid gear oil SAE 75W-90, 75W-85W or 80W conforming to API GL-4

Quantity:

Transmission	2.3ℓ	<R5M21>
	3.7ℓ	<R5M31>
	2.2ℓ	<V5M21>
	2.5ℓ	<V5M31>
Transfer	2.2ℓ	<V5M21>
	2.5ℓ	<V5M31>

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

Specified torque: 33 Nm



4WD DETECTION SWITCH CONTINUITY INSPECTION <4WD>

120002614

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 INSPECTION <4WD>

120002615

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

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

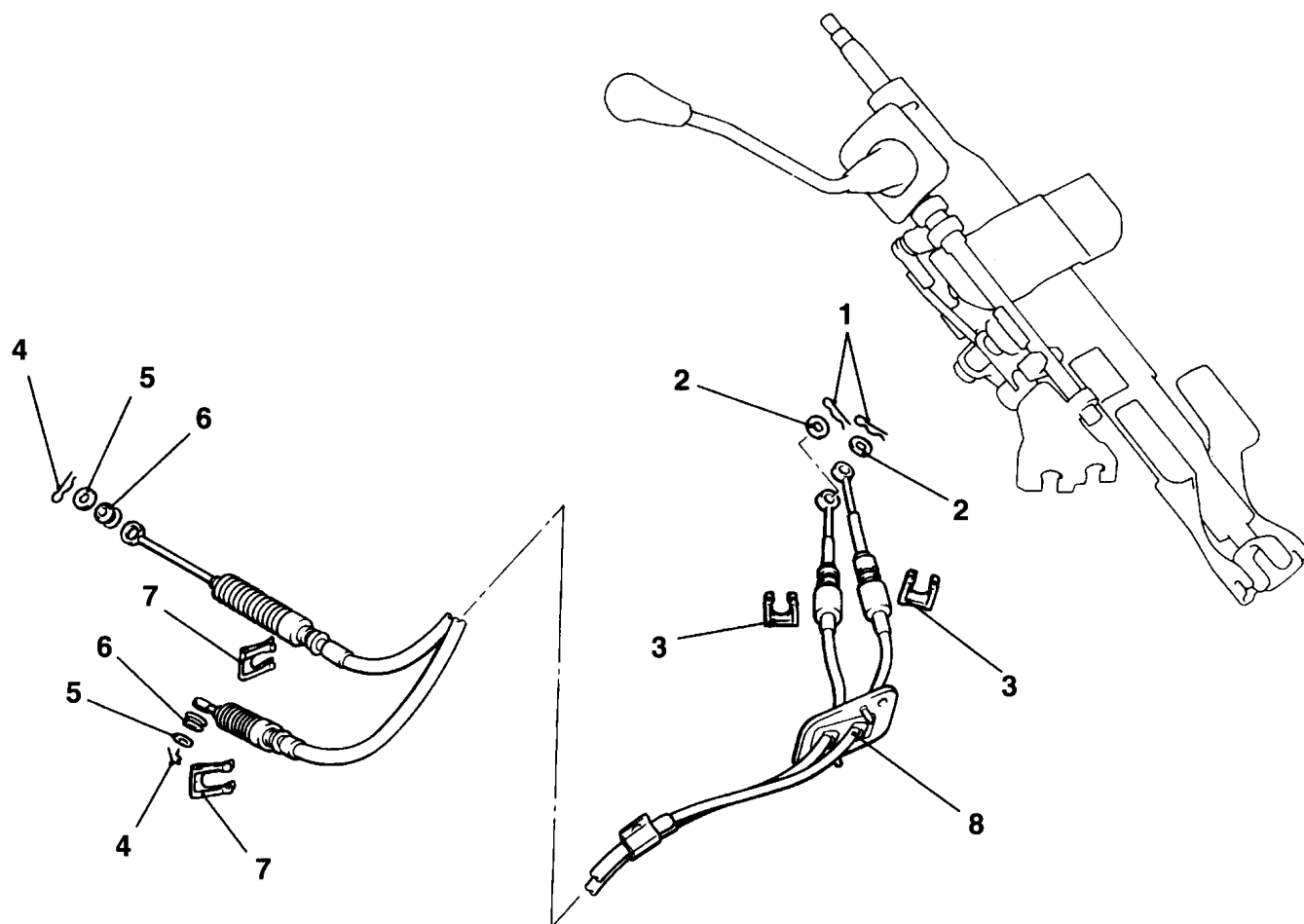
TRANSMISSION CONTROL <2WD-COLUMN SHIFT>

120000353

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation

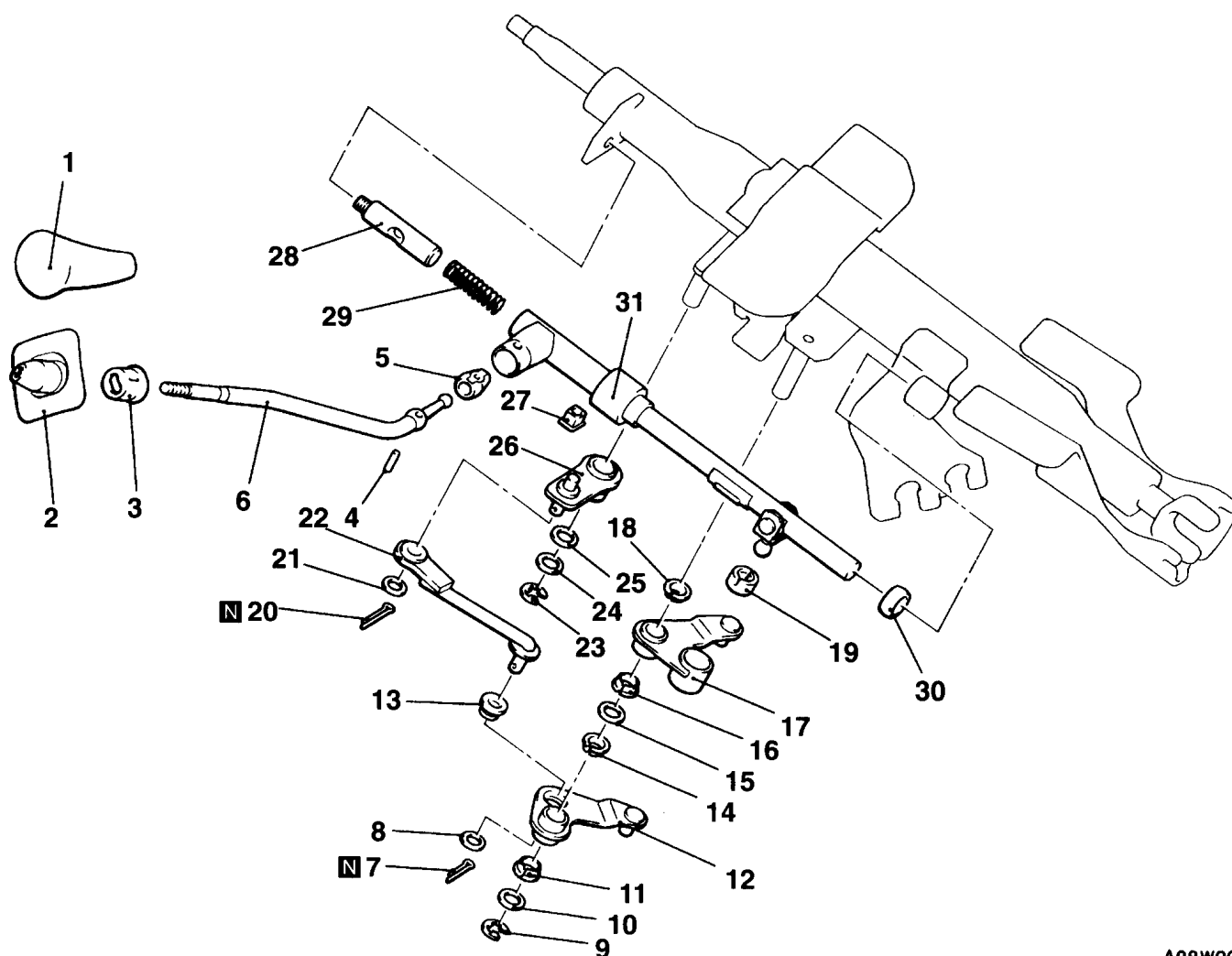
- (1) Air Cleaner Removal and Installation <Petrol-powered vehicles> (Refer to GROUP 15 – Air Cleaner.)
- (2) Column Cover Upper, Lower, Under Cover Removal and Installation (Refer to GROUP 37A – Steering Wheel and Shaft.)



A09W0063

Transmission control cable assembly removal steps

1. Snap pin
2. Washer
3. Clip
4. Snap pin
5. Washer
6. Bushing
7. Clip
8. Transmission control cable assembly



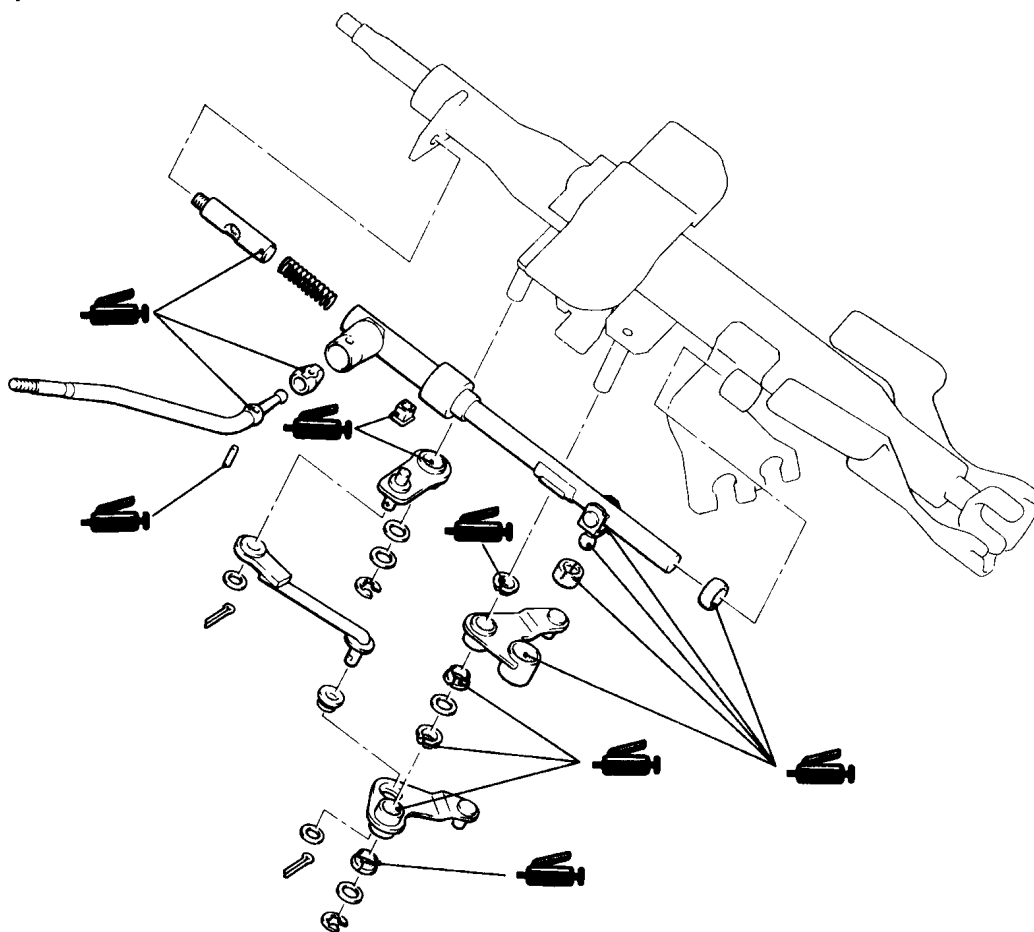
A09W0062

Control rod removal steps

- | | |
|------------------------------|-------------------------|
| 1. Shift knob | 17. Shift link lever B |
| 2. Boot | 18. Bushing |
| 3. Retainer | 19. Bushing |
| 4. Pin | 20. Split pin |
| 5. Shift lever support cover | 21. Plane washer |
| 6. Shift lever | 22. Select rod |
| 7. Split pin | 23. Snap ring |
| 8. Plane washer | 24. Plane washer |
| 9. Snap ring | 25. Spring washer |
| 10. Washer | 26. Select link lever A |
| 11. Bushing | 27. Bushing |
| 12. Select link lever B | 28. Shift lever guide |
| 13. Bushing | 29. Spring |
| 14. Bushing | 30. Bushing |
| 15. Washer | 31. Control rod |
| 16. Bushing | |



Lubrication points



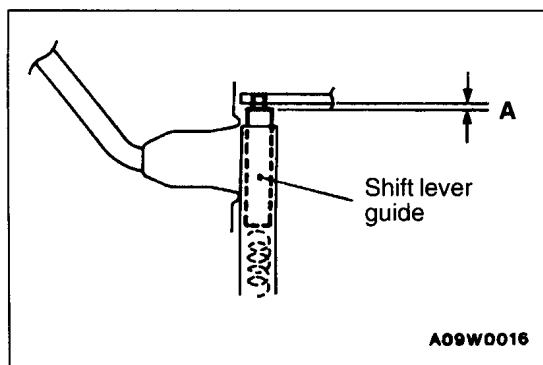
A09W0066

INSTALLATION SERVICE POINT

►A◄ SHIFT LEVER GUIDE INSTALLATION

Install so that the dimension shown in the illustration is at the standard value.

Standard value (A): 2.4–3.6 mm



A09W0016

TRANSMISSION CONTROL <2WD-FLOOR SHIFT>

120000354

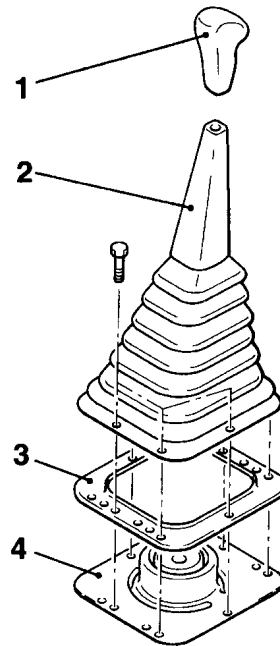
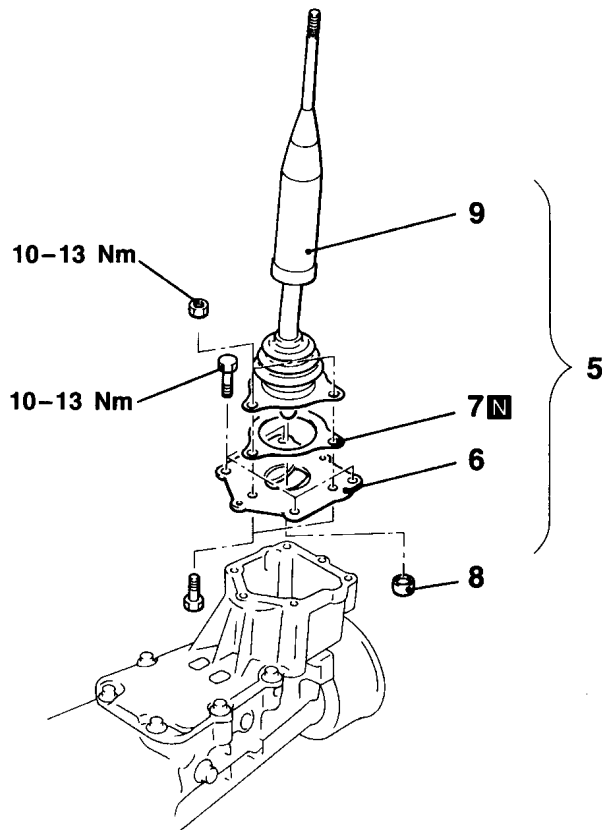
REMOVAL AND INSTALLATION

Pre-removal Operation

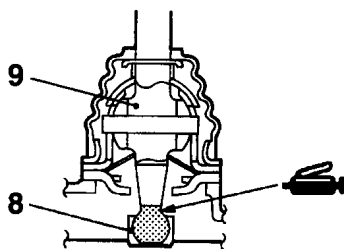
Shift the Transmission Control Lever to the N Position.

Post-installation Operation

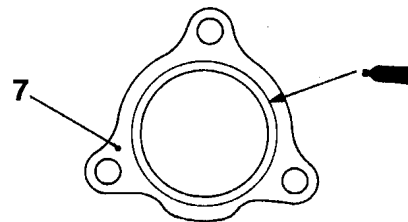
Check the Operation of the Transmission Control Lever and the Movement in Each Lever Position



09W0085 00001459



09E0053



Apply the sealant to both sides of the gasket

Sealant: 3M ATD Part No. 8661 or equivalent

Removal steps

1. Transmission shift lever knob
2. Shift lever boot
3. Retainer
4. Control lever boot
5. Transmission control lever assembly

6. Stopper plate
7. Gasket
8. Control lever bushing
9. Transmission control lever

TRANSMISSION CONTROL <4WD-FLOOR SHIFT>

120002659

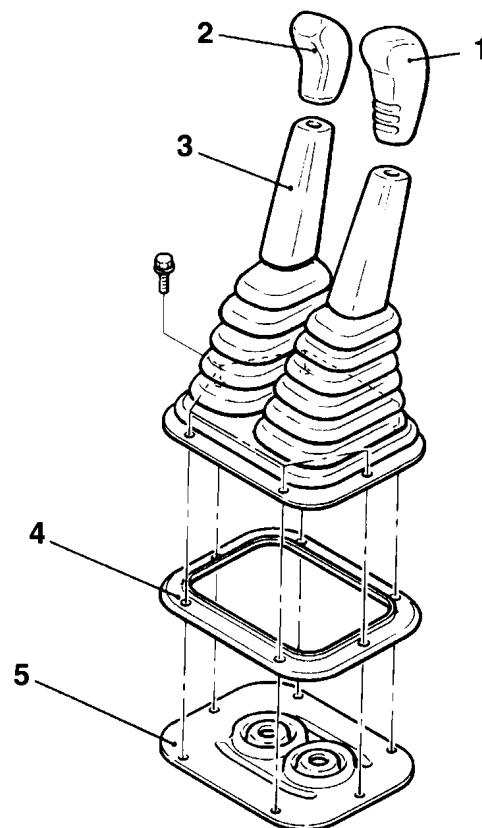
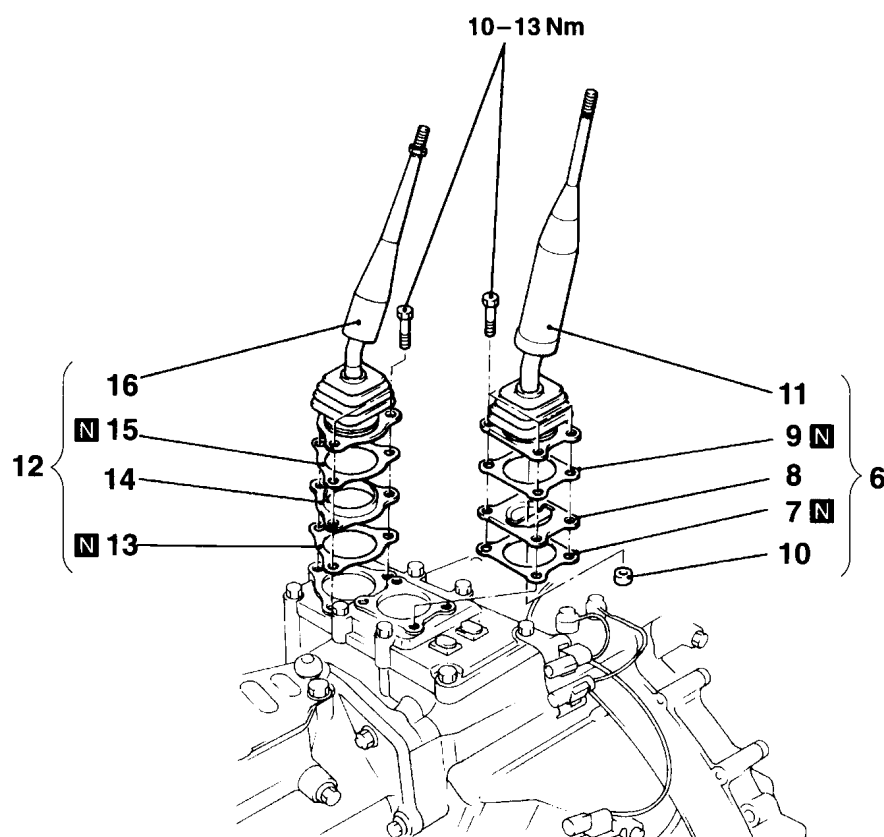
REMOVAL AND INSTALLATION

Pre-removal Operation

- (1) Shift the Transmission Control Lever to the N Position.
- (2) 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.



A09W0061

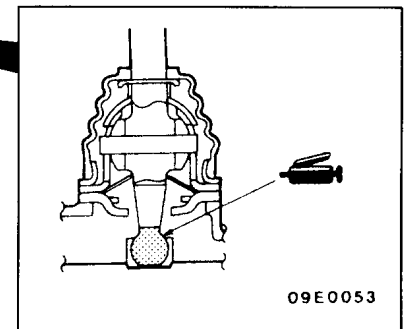
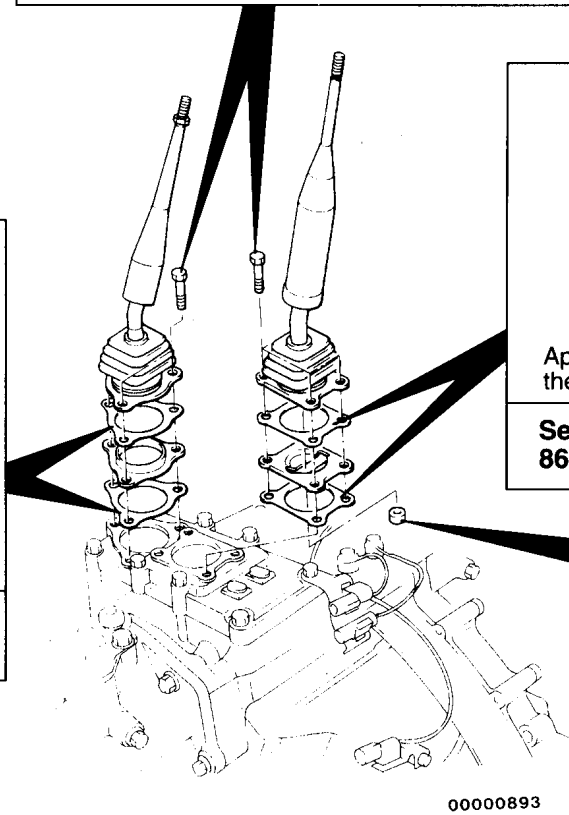
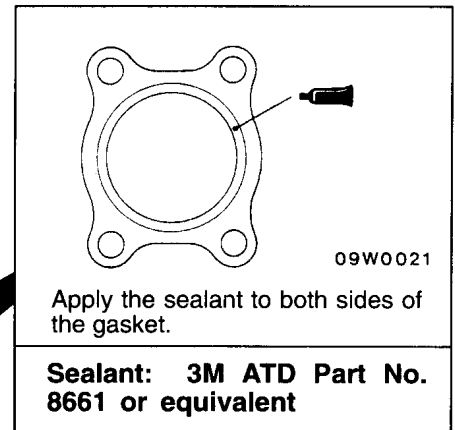
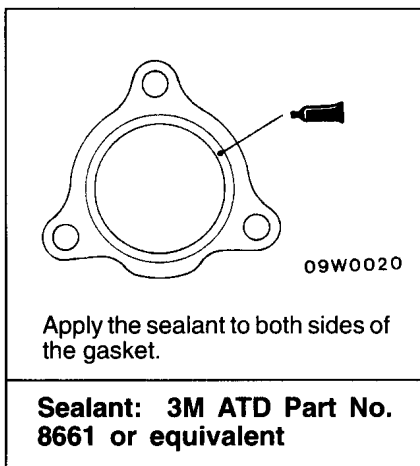
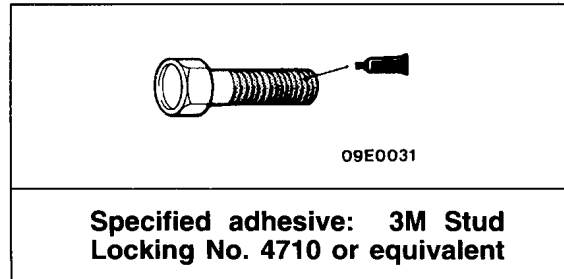
Transmission control lever assembly removal steps

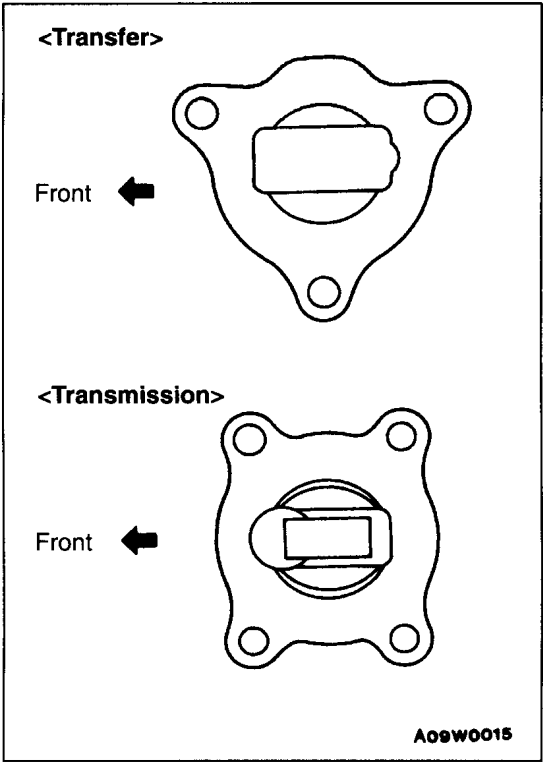
1. Transmission shift lever knob
2. Transfer shift lever knob
3. Shift lever boot
4. Retainer
5. Control lever boot
- ▶B◀ 6. Transmission control lever assembly
- ▶A◀ 7. Gasket
8. Stopper plate
9. Gasket
10. Control lever bushing
11. Transmission control lever

Transfer control lever assembly removal steps

1. Transmission shift lever knob
2. Transfer shift lever knob
3. Shift lever boot
4. Retainer
5. Control lever boot
- ▶B◀ 12. Transfer control lever assembly
- ▶A◀ 13. Gasket
14. Stopper plate
15. Gasket
16. Transfer control lever

Lubrication points

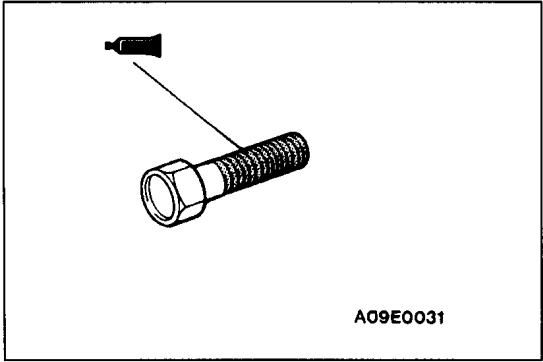




INSTALLATION SERVICE POINTS

◀A▶ STOPPER PLATE INSTALLATION

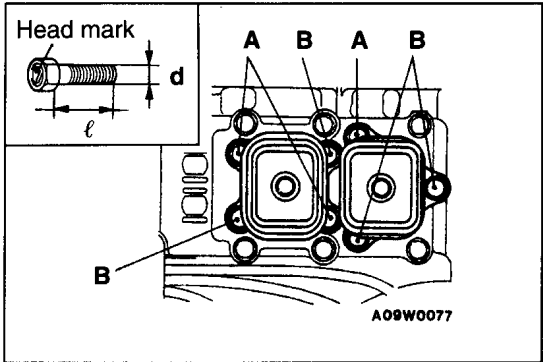
Install the stopper plates so that they face as shown in the illustration.



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

- (1) Remove the adhesive sticking to the lever assembly mounting bolts.
- (2) Use a tap (M8x1.25) to remove the adhesive sticking to the screw holes in the control housing, and clean it by blowing in air.
- (3) Apply specified adhesive to the threads of the lever assembly mounting bolts.

Specified adhesive: 3M Stud Locking No. 4710 or equivalent



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

Bolt	Head mark	$d \times \ell$ mm
A	4T	8×22
B		8×23

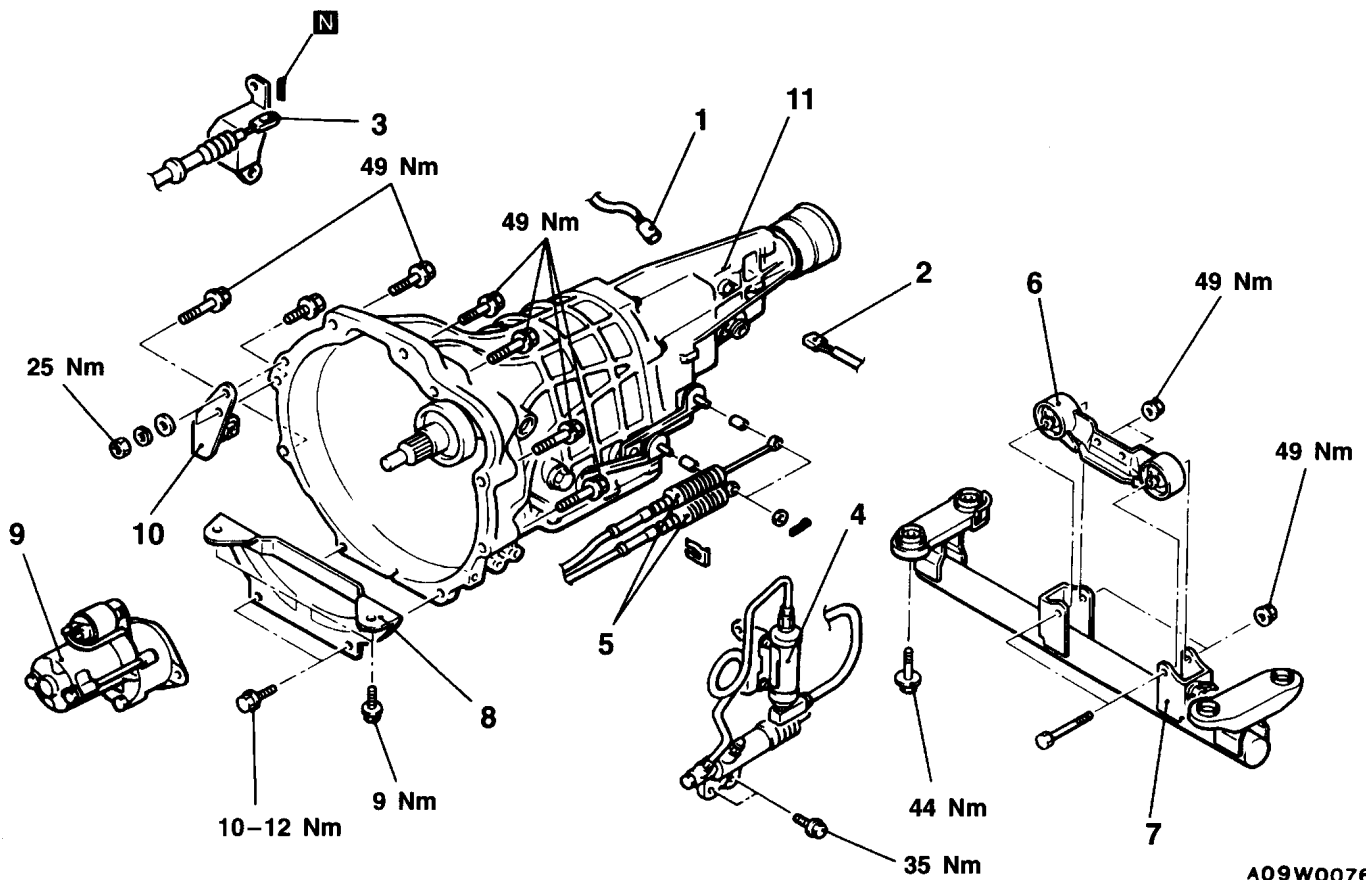
TRANSMISSION ASSEMBLY <2WD>

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation

- (1) Transmission Control Lever Assembly Removal and Installation <Floor Shift> (Refer to P. 22-9.)
 (2) Propeller Shaft Removal and Installation (Refer to GROUP 25 – Propeller Shaft.)

<COLUMN SHIFT>



A09W0076

Removal steps

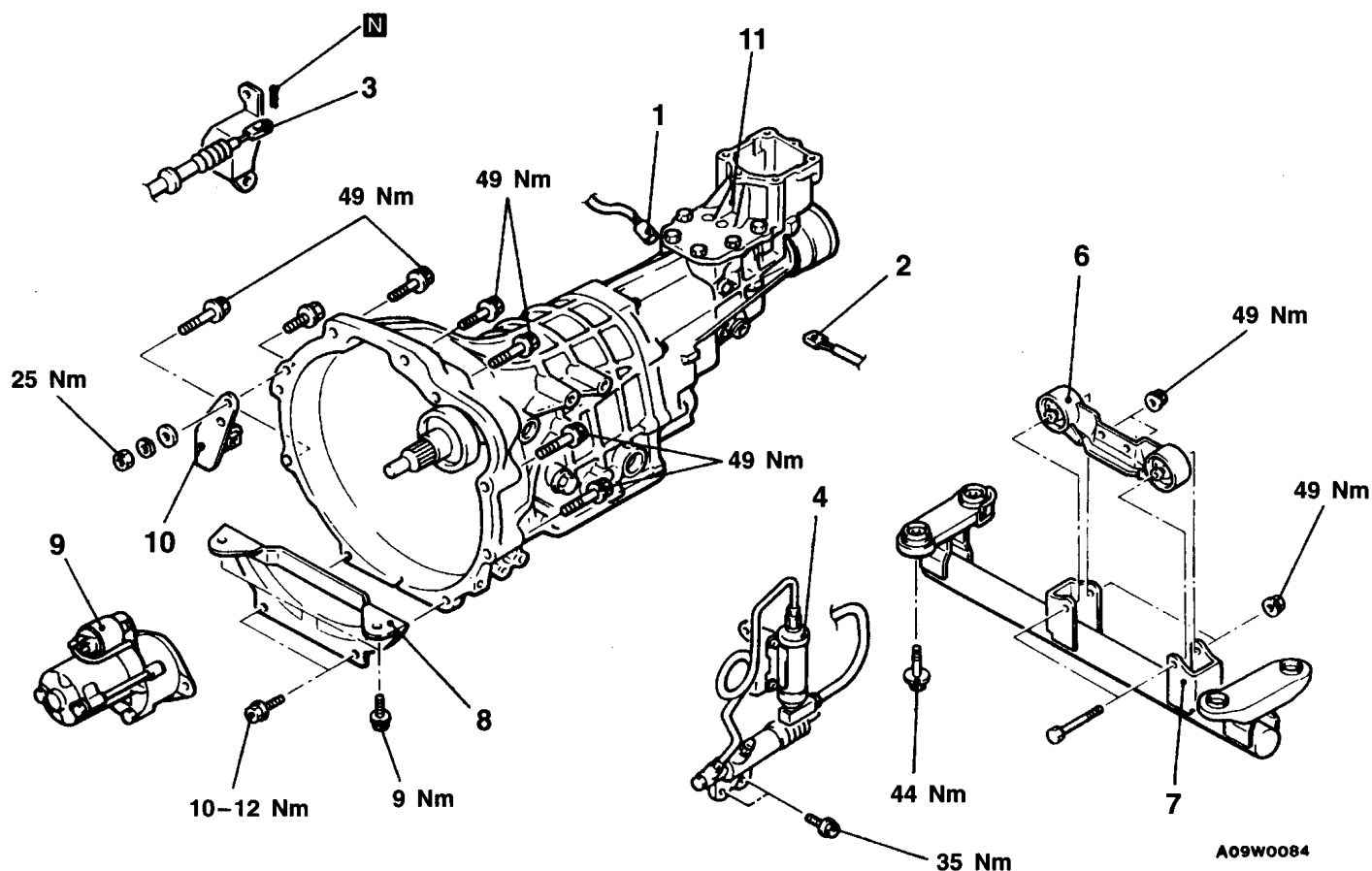
1. Back-up lamp switch connector
 2. Vehicle speed sensor connector
 3. Clutch cable connection <4G63>
 4. Clutch release cylinder, clutch fluid chamber <4D56, 4G64>
 5. Shift select cable connection
 • Support the transmission with a transmission jack.
 6. Transmission mount insulator assembly

7. Transmission mount crossmember assembly
 8. Bell housing cover
 9. Starter motor
 10. Transmission hanger bracket
 11. Transmission assembly

<A>

<C> ▶ A ◀

<FLOOR SHIFT>



A09W0084

Removal steps

1. Back-up lamp switch connector
2. Vehicle speed sensor connector
3. Clutch cable connection <4G63>
4. Clutch release cylinder, clutch fluid chamber <4G64>
 - Support the transmission with a transmission jack.
6. Transmission mount insulator assembly

7. Transmission mount crossmember assembly
8. Bell housing cover
9. Starter motor
10. Transmission hanger bracket
11. Transmission assembly

REMOVAL SERVICE POINTS**<A> CLUTCH RELEASE CYLINDER, CLUTCH FLUID CHAMBER REMOVAL <4G64>**

Remove the clutch release cylinder and clutch fluid chamber 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 POINT**▶A◀ TRANSMISSION ASSEMBLY INSTALLATION**

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

<4D56>

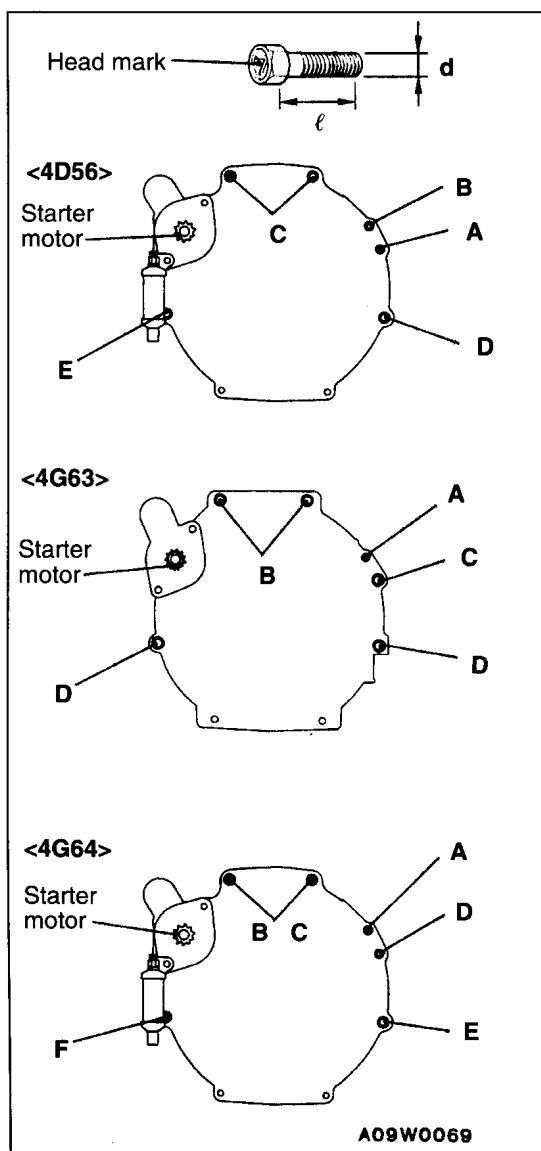
Bolt	Head mark	d×ℓ mm
A	7T	8×35
B		8×55
C		10×40
D		10×65
E		10×70

<4G63>

Bolt	Head mark	d×ℓ mm
A	7T	8×35
B		10×40
C		10×60
D		10×65

<4G64>

Bolt	Head mark	d×ℓ mm
A	7T	8×55
B		10×35
C		10×40
D		10×60
E		10×65
F		10×70



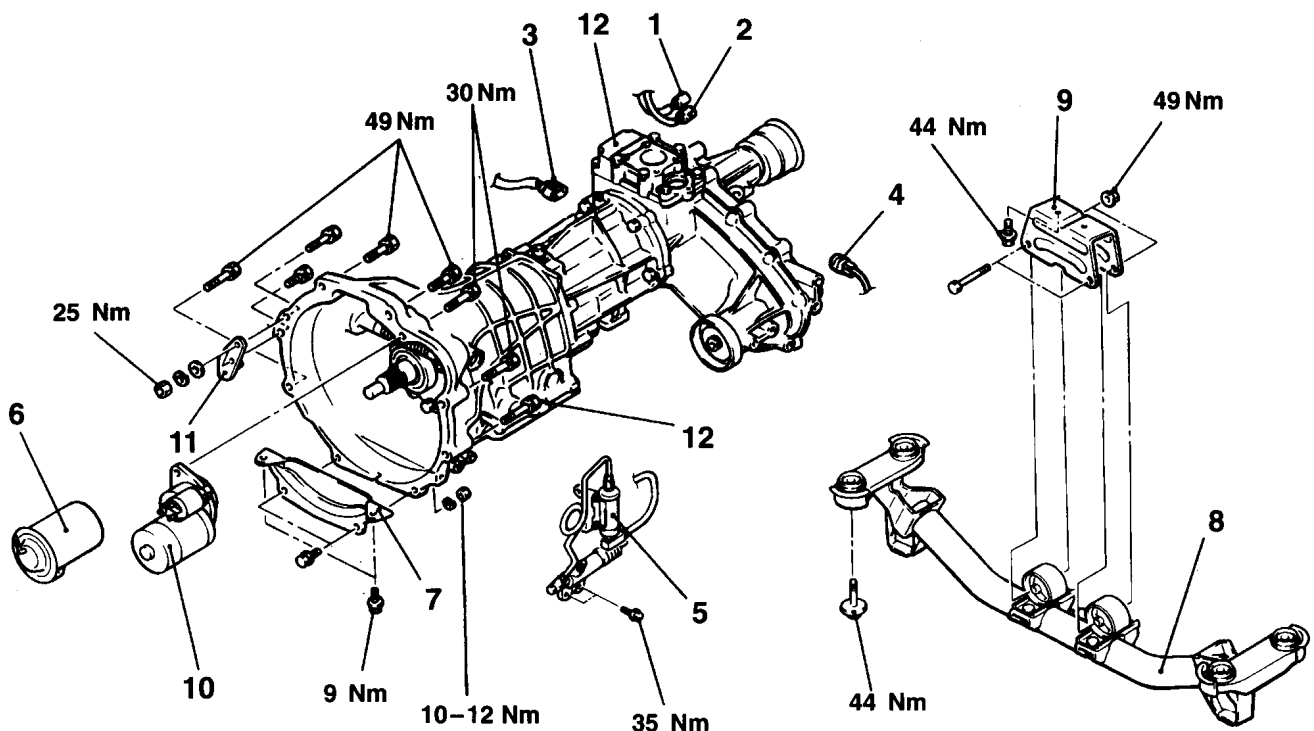
TRANSMISSION ASSEMBLY <4WD>

120002223

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation

- (1) Transmission and Transfer Control Lever Assembly Removal and Installation (Refer to 22-10.)
- (2) Transmission Fluid and Transfer Fluid Draining and Supplying (Refer to 22-4.)
- (3) Front and Rear Propeller Shaft Removal and Installation (Refer to GROUP 25 – Propeller Shaft.)



A09W0049

Removal steps

1. HI/LOW detection switch connector
2. 2WD/4WD detection switch connector
3. Back-up lamp switch connector
4. Vehicle speed sensor connector
5. Clutch release cylinder, clutch fluid chamber <4D56, 4G64>
6. Vacuum tank
7. Bell housing cover
- Support the transmission with a transmission jack.

8. Transmission mount crossmember assembly
9. Transmission mount bracket
10. Starter motor
11. Transmission hanger bracket
12. Transmission assembly

<C>

>A<

<A>

REMOVAL SERVICE POINTS**◀A▶ CLUTCH RELEASE CYLINDER, CLUTCH FLUID CHAMBER REMOVAL <4D56, 4G64>**

Remove the clutch release cylinder and clutch fluid chamber 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 POINT**▶A▶ TRANSMISSION ASSEMBLY INSTALLATION**

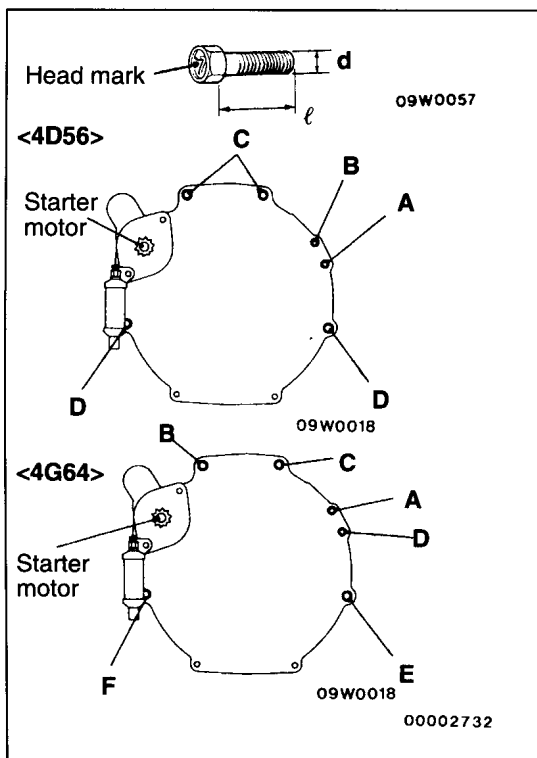
The sizes of the mounting bolts are different. So be sure not to confuse them.

<4D56>

Bolt	Head mark	d×ℓ mm
A	7T	8×35
B		8×55
C		10×40
D		10×65

<4G64>

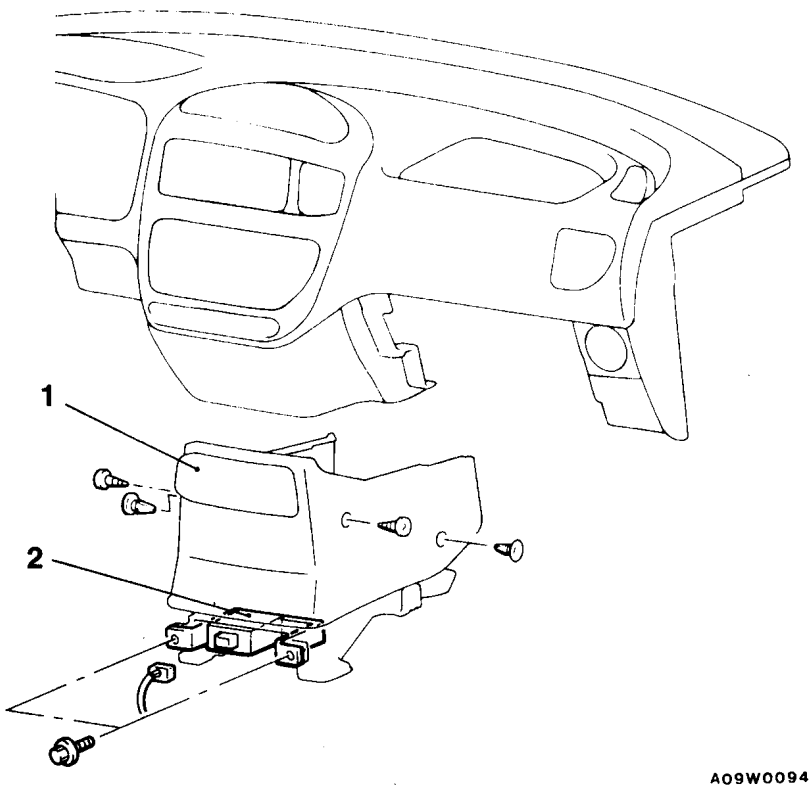
Bolt	Head mark	d×ℓ mm
A	7T	8×55
B		10×35
C		10×40
D		10×60
E		10×65
F		10×70



4WD INDICATOR-ECU

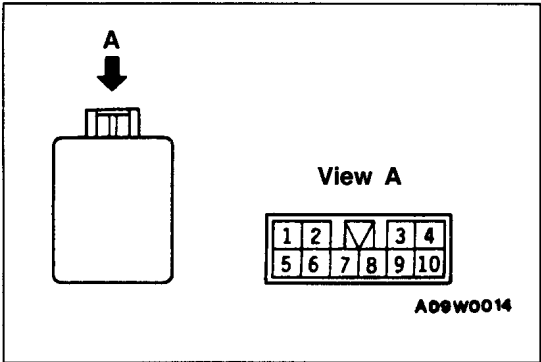
REMOVAL AND INSTALLATION

120002322



A09W0094

- Removal steps**
- 1. Computer cover
 - 2. 4WD indicator-ECU



A09W0014

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	0V
2	4WD operation detection switch	ON	2H	System voltage
			4H, 4L	0V

Terminal No.	Inspection item		Inspection condition 1: Ignition switch	Inspection condition 2: Transfer lever position	Terminal voltage
3	Ignition switch (IG2)		OFF	—	0V
			ON	—	System voltage
5	Free-wheel differential indicator lamp		ON	2H	System voltage
				4H*1	0V
6	HI/LOW detection switch		ON	Shifting from 4H to 4L or vice versa	System voltage
				2H, 4H, 4L	0V
7	Free-wheeling clutch changeover solenoid valve		ON	4H, 4L	0V
				2H*2	System voltage
9	2WD/4WD indicator lamp	Rear wheel lamp	ON	Shifting from 4H to 4L or vice versa	0V
				2H, 4H, 4L	System voltage
10		Front wheel lamp	ON	2H	0V
				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.