MANUAL TRANSMISSION

Click on the applicable bookmark to selected the required model year

MANUAL TRANSMISSION

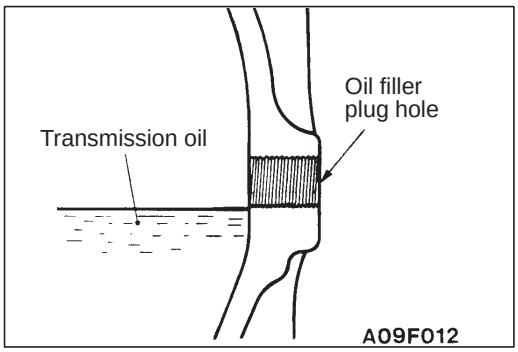
CONTENTS

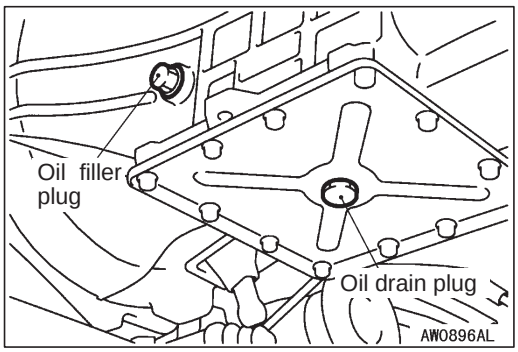
LUBRICANT

Items	Specified lubricants	Quantity ℓ
Transmission oil	Hypoid gear oil SAE 75W – 90 or 75W – 85W conforming to API GL-4	2.4
Transfer oil		2.2

SEALANTS AND ADHESIVES

Items	Specified sealant	Remarks
Contact surface between transmission and transmission control lever, thread (except outer surface) of stopper bracket assembly installation bolts and transfer control lever gasket	3M ATD Part No.8660 or equivalent	Semi-drying sealant
Thread of stopper bracket assembly installation bolts and thread of transfer control lever assembly installation bolts	3M Stud Locking No.4170 or equivalent	Anaerobic sealant





ON-VEHICLE SERVICE

TRANSMISSION OIL CHECK

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

   Tightening torque: 29 – 34 Nm

TRANSMISSION OIL CHANGE

1. Remove the oil drain plug to drain oil.
2. Tighten the oil drain plug to the specified torque.

   Tightening torque: 39 Nm

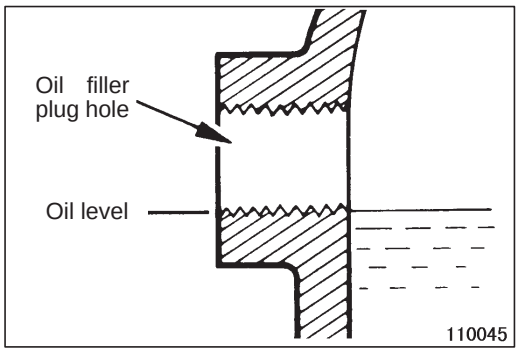
3. Remove the oil filler plug and fill with specified oil till the level comes to the lower portion of oil filler plug hole.

   Specified oil:
   Hypoid gear oil SAE 75W – 90 or 75W – 85W conforming to API GL-4

   Quantity: 2.4 ℓ

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

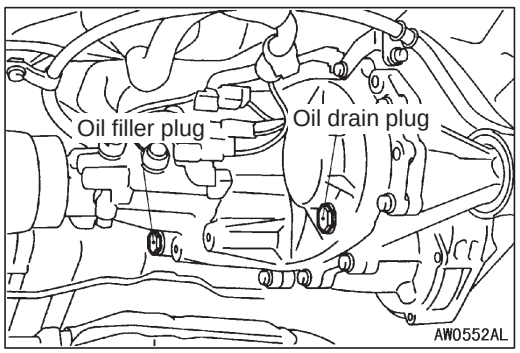
   Tightening torque: 29 – 34 Nm



TRANSFER OIL CHECK

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

   Tightening torque: 29 – 34 Nm



TRANSFER OIL CHANGE

1. Remove the oil drain plug to drain oil.
2. Install the oil drain plug, and then tighten it to the specified torque.

   Tightening torque: 29 – 34 Nm

3. Remove the oil filler plug, and then fill with specified oil till the level comes to the lower portion of oil filler plug hole.

   Specified oil:
   Hypoid gear oil SAE 75W – 90 or 75W – 85W conforming to API GL-4

   Quantity: 2.2 ℓ

4. Install the oil filler plug, and then tighten it to the specified torque.

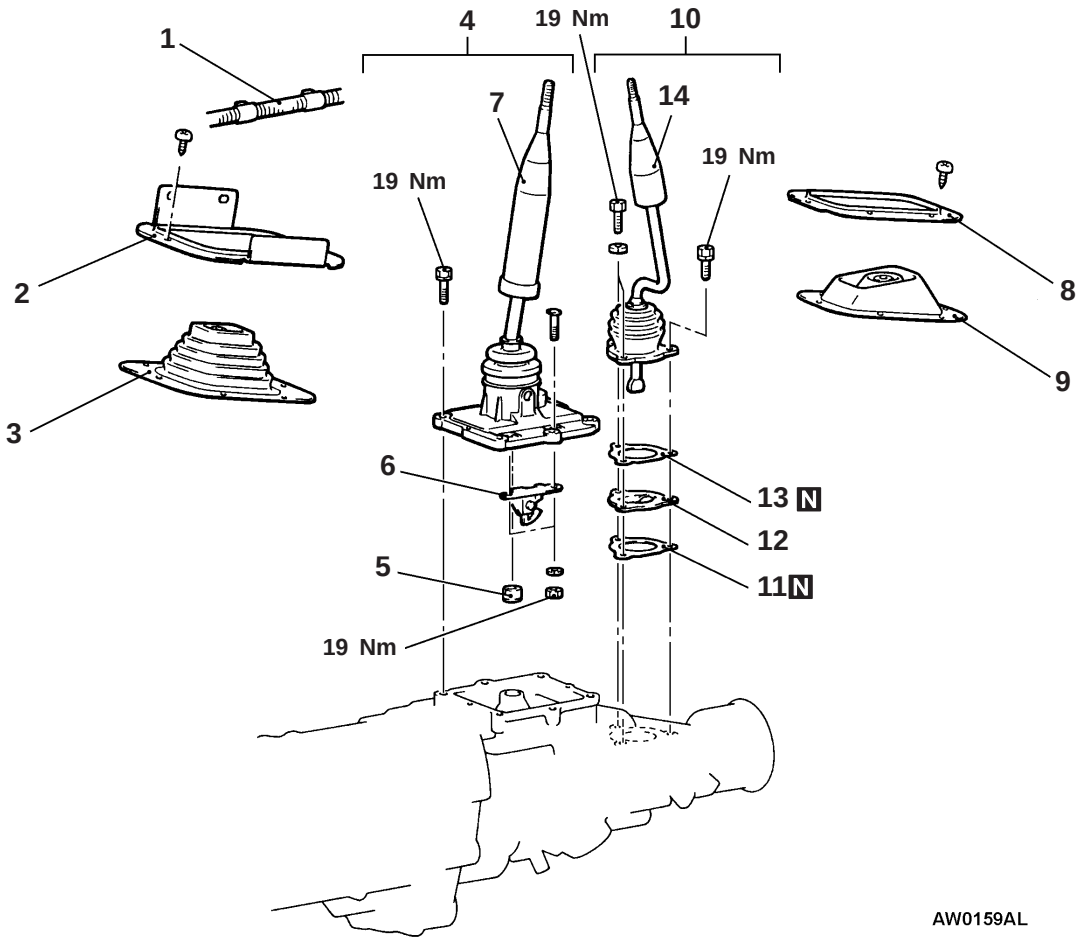
   Specified torque: 29 – 34 Nm

TRANSMISSION CONTROL

REMOVAL AND INSTALLATION

Pre-removal Operation
Move the transmission control lever and transfer control lever to the following positions.
- Transmission control lever: Neutral
- Transfer control lever: 4H

Post-installation Operation
Check that the transmission control lever and the transfer control lever are moved to each position smoothly and correctly.



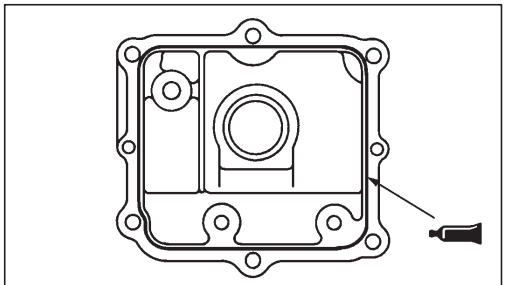
Transmission control lever assembly removal steps
- Front floor console and rear floor console (Refer to GROUP 52A.)

1. Harness connection
2. Retainer
3. Shift lever cover
◀A▶ 4. Transmission control lever assembly
5. Control lever bushing
▶C◀ 6. Stopper bracket assembly
7. Transmission control lever

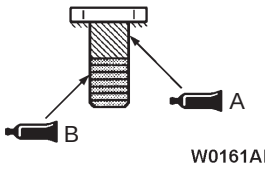
Transfer control lever assembly removal steps
- Rear floor console (Refer to GROUP 52A.)

8. Retainer
9. Transfer lever inner boots
▶B◀ 10. Transfer control lever assembly
11. Gasket
▶A◀ 12. Stopper plate
13. Gasket
14. Transfer control lever

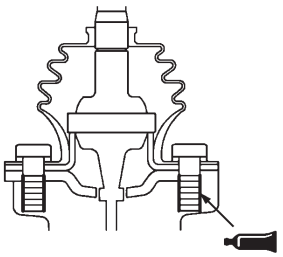
SEALANT APPLICATION POINTS



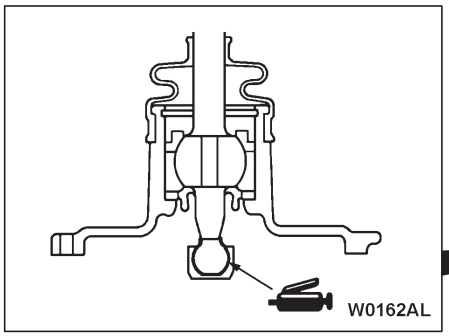
Sealant:
3M ATD Part No.8660 or equivalent

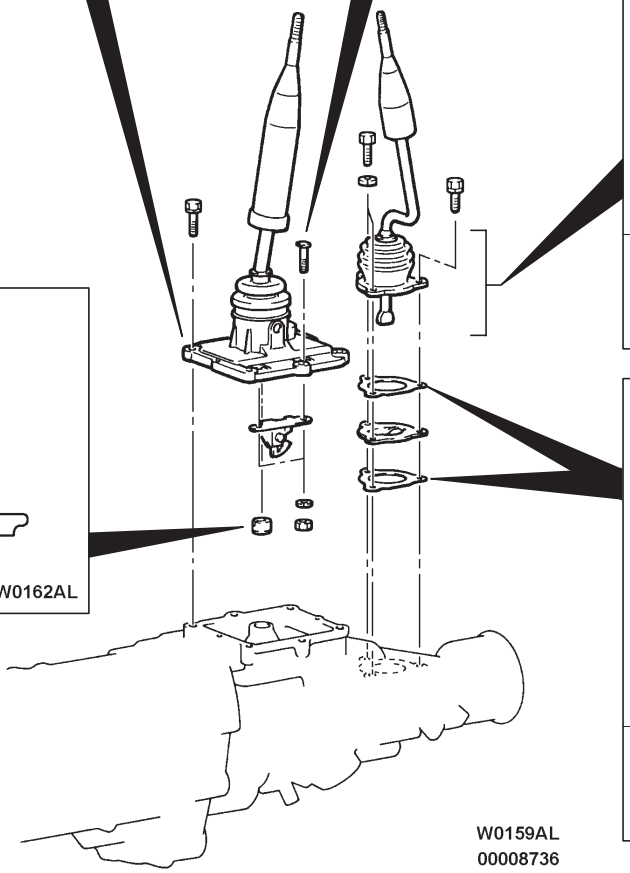


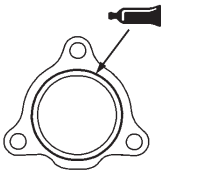
A: Sealant:
3M ATD Part No.8660 or equivalent
B: Sealant:
3M Stud Locking No.4170 or equivalent



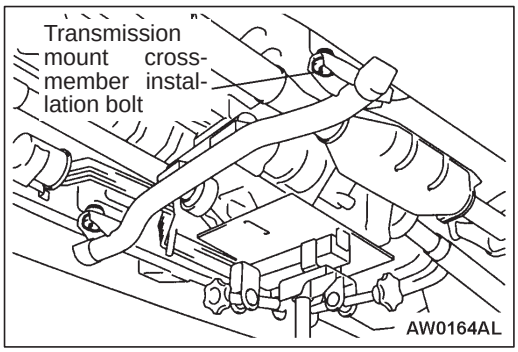
Sealant:
3M Stud Locking No.4170 or equivalent







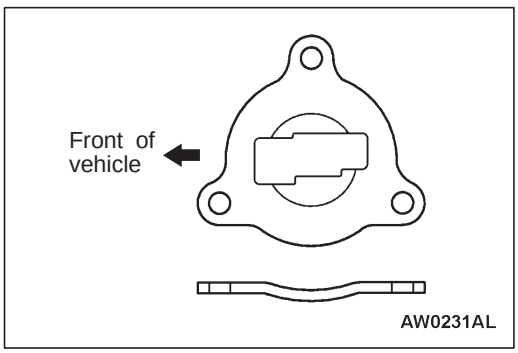
Sealant:
3M ATD Part No.8660 or equivalent



REMOVAL SERVICE POINT

◀A▶ TRANSMISSION CONTROL LEVER ASSEMBLY REMOVAL

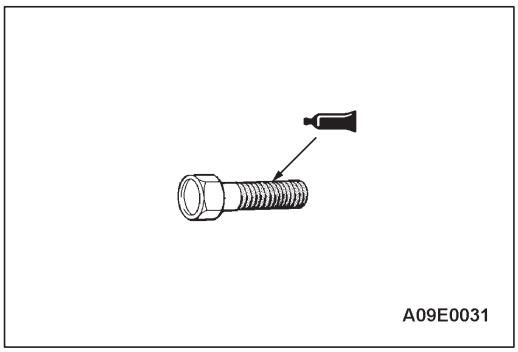
1. Support the transfer with a transmission jack, and then remove the transmission mount crossmember installation bolt.
2. Lower the transmission until the transmission control lever assembly installation bolts can be removed.
3. Remove the bolts, and then remove the transmission control lever assembly.



INSTALLATION SERVICE POINTS

▶A◀ STOPPER PLATE INSTALLATION

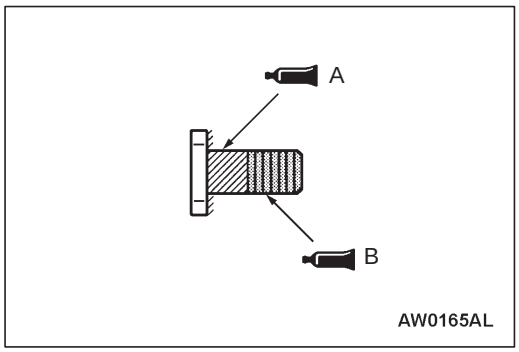
Install the stopper plate as shown in the illustration.



▶B◀ TRANSFER CONTROL LEVER ASSEMBLY INSTALLATION

1. Eliminate adhesive adhered to the transfer control lever assembly installation bolts.
2. Use a tap (M8 × 1.25) to eliminate adhesive adhered to the threaded holes of the control housing, and then clean the holes with a compressed air.
3. Apply the specified adhesive to the transfer control lever assembly installation bolts, and then install the transfer control lever assembly.

Specified adhesive:
3M Stud Locking No.4170 or equivalent



▶C◀ STOPPER BRACKET ASSEMBLY INSTALLATION

1. Eliminate sealant and adhered to the stopper bracket assembly installation bolts.
2. Use a tap (M8 × 1.25) to eliminate adhesive adhered to the threaded holes of the stopper bracket assembly installation nuts, and then clean the holes with a compressed air.
3. Apply the specified sealant to the stopper bracket assembly installation bolts (A shown in the illustration) and the specified adhesive to the threaded part of the stopper bracket assembly installation bolts (B shown in the illustration), and then install the stopper bracket assembly.

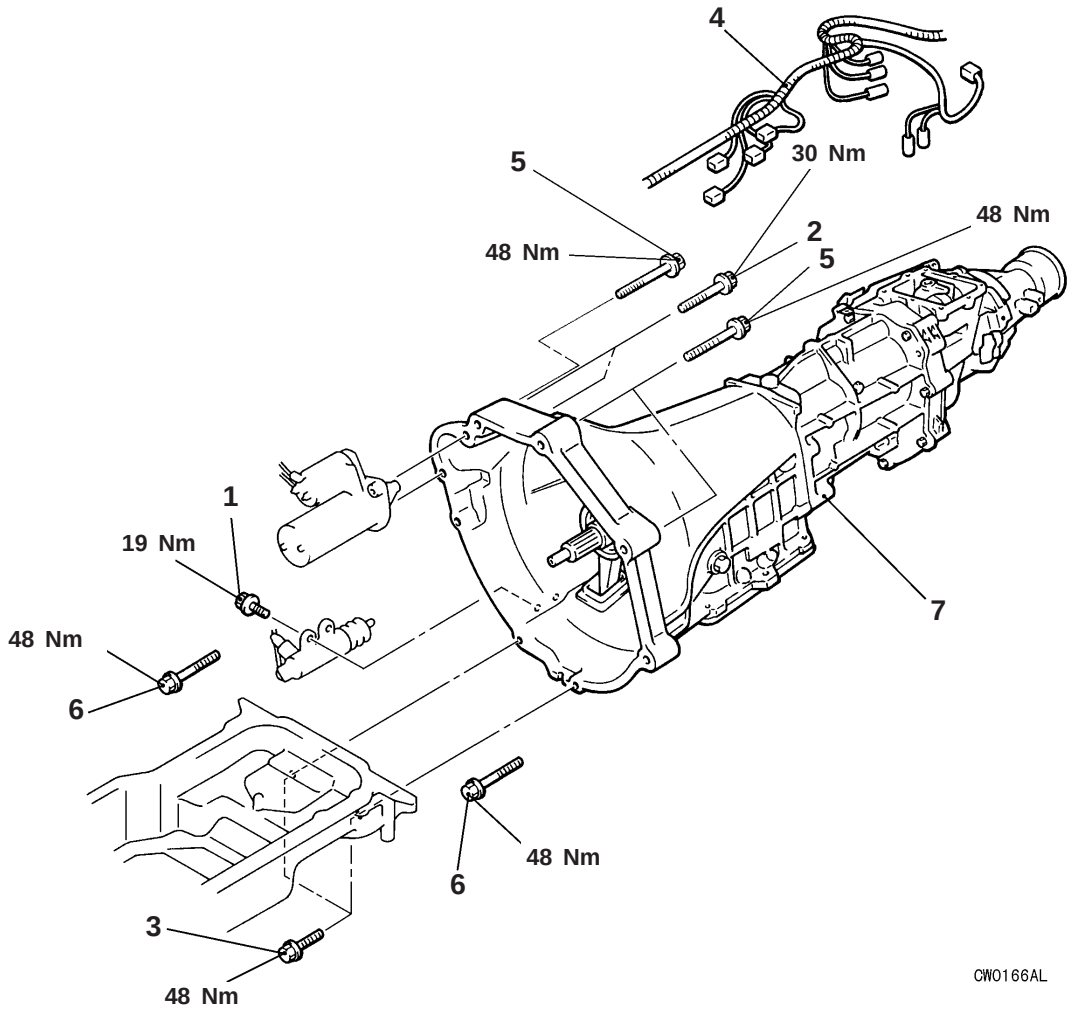
Specified sealant (A):
3M ATD Part No.8660 or equivalent

Specified adhesive (B):
3M Stud Locking No.4170 or equivalent

TRANSMISSION AND TRANSFER ASSEMBLY

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Transmission Oil and Transfer Oil Draining and Refilling (Refer to P.22-2, 3.)
- Transmission Control Lever Assembly and Transfer Control Lever Assembly Removal and Installation (Refer to P.22-4.)
- Front Propeller Shaft and Rear Propeller Shaft Removal and Installation (Refer to GROUP 25.)
- Front Exhaust Pipe and Catalytic Converter Removal and Installation (Refer to GROUP 17 – Emission Control.)
- Shift Lever Operation Check <only after installation>
- Instruments Operation Check <only after installation>

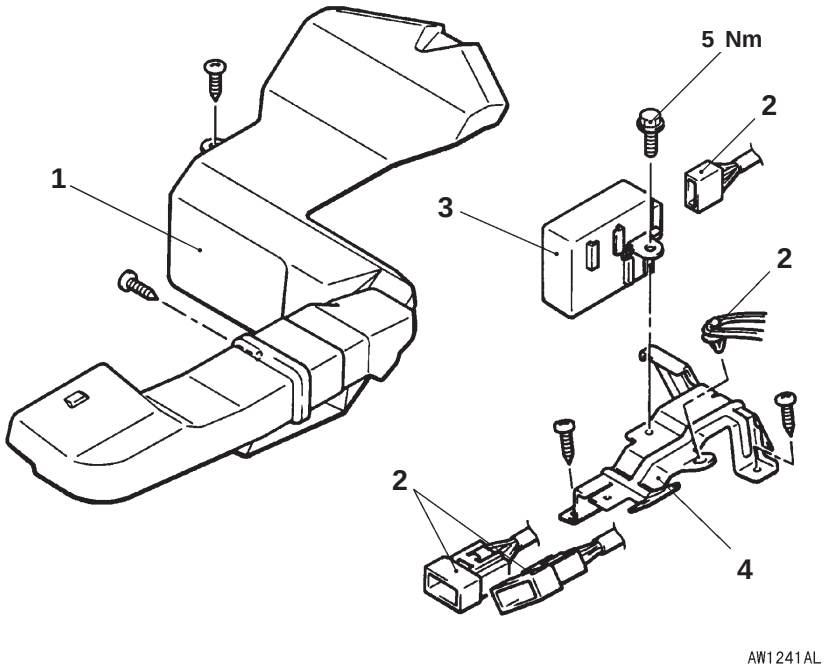


Removal steps
1. Clutch release cylinder installation bolts
2. Starter motor installation bolts
3. Oil pan connection bolts
- Adapter (Refer to GROUP 32 – Transmission mount.)
4. Transmission harness connector connection
5. Transmission assembly upper coupling bolts
6. Transmission assembly lower coupling bolts
7. Transmission and transfer assembly

4WD INDICATOR CONTROL UNIT

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Seat Assembly (Driver's side) and Rear Seat Cushion Removal and Installation (Refer to GROUP 52A – Seat.)
- Front Scuff Plate (Right) and Quarter Trim (Right) Removal and Installation (Refer to GROUP 52A – Trims.)
- Front Floor Console and Rear Floor Console Removal and Installation (Refer to GROUP 52A.)



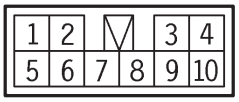
Removal steps

1. Rear heater duct (right)
   - Turn up the carpet.
2. Harness connector connection
3. 4WD indicator control unit
4. Bracket

NSPECTION

4WD INDICATOR CONTROL UNIT CHECK

Measure terminal voltage on each condition. Connect the harness to the control unit. Insert the probe from the back side of the connector and measure the voltage between the terminal No.8 (earth terminal) and each terminal.



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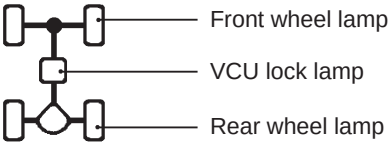

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Terminal No.	Check item		Check condition 1: Ignition switch	Check condition 2: Transfer lever position	Normal condition
1	High/Low detection switch		ON	Move from $4HL_C$ to $4LL_C$ or vice versa	System voltage*
				$4HL_C$, $4LL_C$	0 V
2	4WD operation detection switch		ON	2H	System voltage*
				4H	0 V
3	Ignition switch		OFF	–	0 V
			ON	–	System voltage
4	4WD indicator lamp	VCU lock lamp	ON	4H	System voltage
				$4HL_C$	1.5 V or lower
5	VCU lock detection switch		ON	4H	System voltage*
				$4HL_C$	0 V
6	Free wheel engage switch		ON	2WD condition	System voltage*
				4WD condition	0 V
7	VCU lock operation detection switch		ON	4H	System voltage*
				$4HL_C$	0 V
9	4WD indicator lamp	Rear wheel	ON	Move from $4HL_C$ to $4LL_C$ or vice versa	0 V
				$4HL_C$, $4LL_C$	System voltage*
10	4WD indicator lamp	Front wheel	ON	2WD condition	0 V
				4WD condition	System voltage*

NOTE
System voltage marked with * is low slightly (from 1 V to 2 V).

GROUP 22
MANUAL TRANSMISSION

GENERAL

OUTLINE OF CHANGE

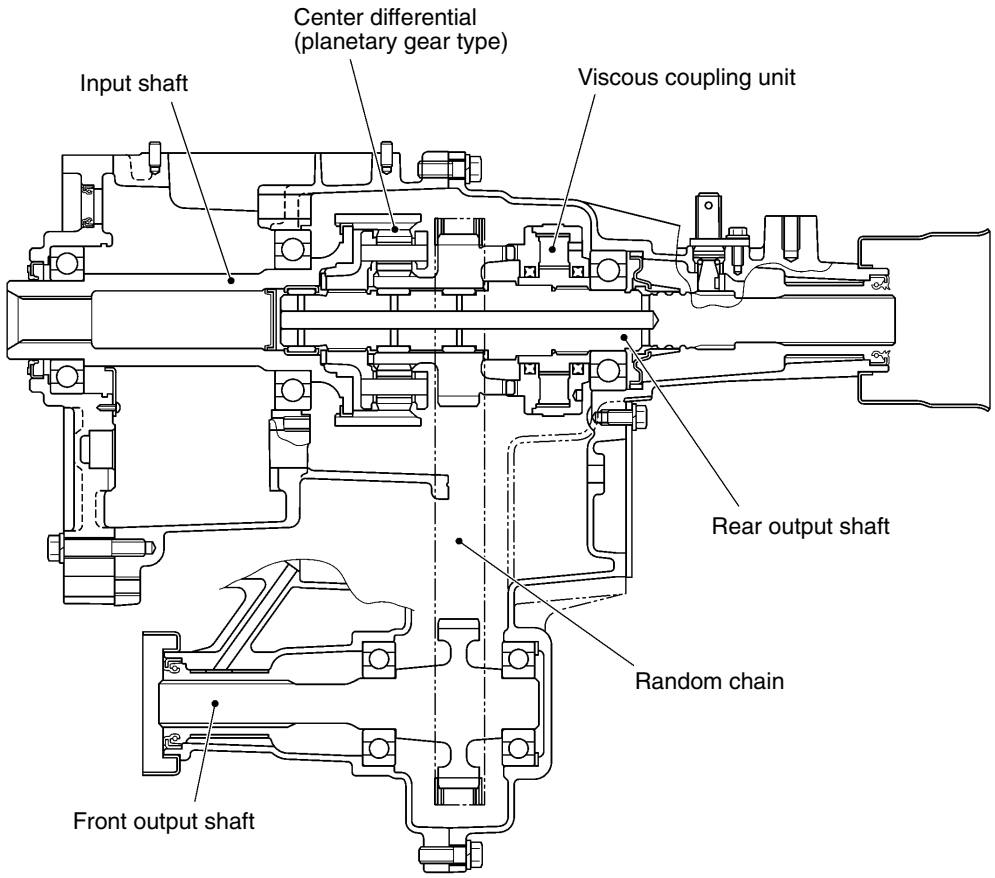
Due to the addition of the vehicles with the 4G93-MPI engine, the V5M21 type transmission has been adopted. This transmission is basically the same as that of the vehicles with 4G94 engine except for the following items.

- A full-time 4WD model has been added.
- Due to the adoption of a full-time 4WD, the transfer control lever and the 4WD indicator control unit have been discontinued.

GENERAL INFORMATION

TRANSFER

SECTIONAL VIEW



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CENTRE DIFFERENTIAL (PLANETARY GEAR TYPE)

The planetary gear type has been adopted for the center differential.
Driving power transmitted from the transmission to the input shaft passes on the pinion gear of the center differential. Then, driving power is transmitted to the front output shaft via the drive sprocket and to the rear output shaft via the pinion carrier.
The drive sprocket and the pinion carrier are driven by the pinion gear simultaneously while 50% of driving power is distributed to the drive sprocket (front output shaft) and the remaining 50% of driving power is distributed to the pinion carrier (rear output shaft).
VCU is installed between the drive sprocket and the rear output shaft so that driving power can be properly distributed if there are any discrepancies in driving power between the front output shaft and the rear output shaft.