

# AUTOMATIC TRANSMISSION

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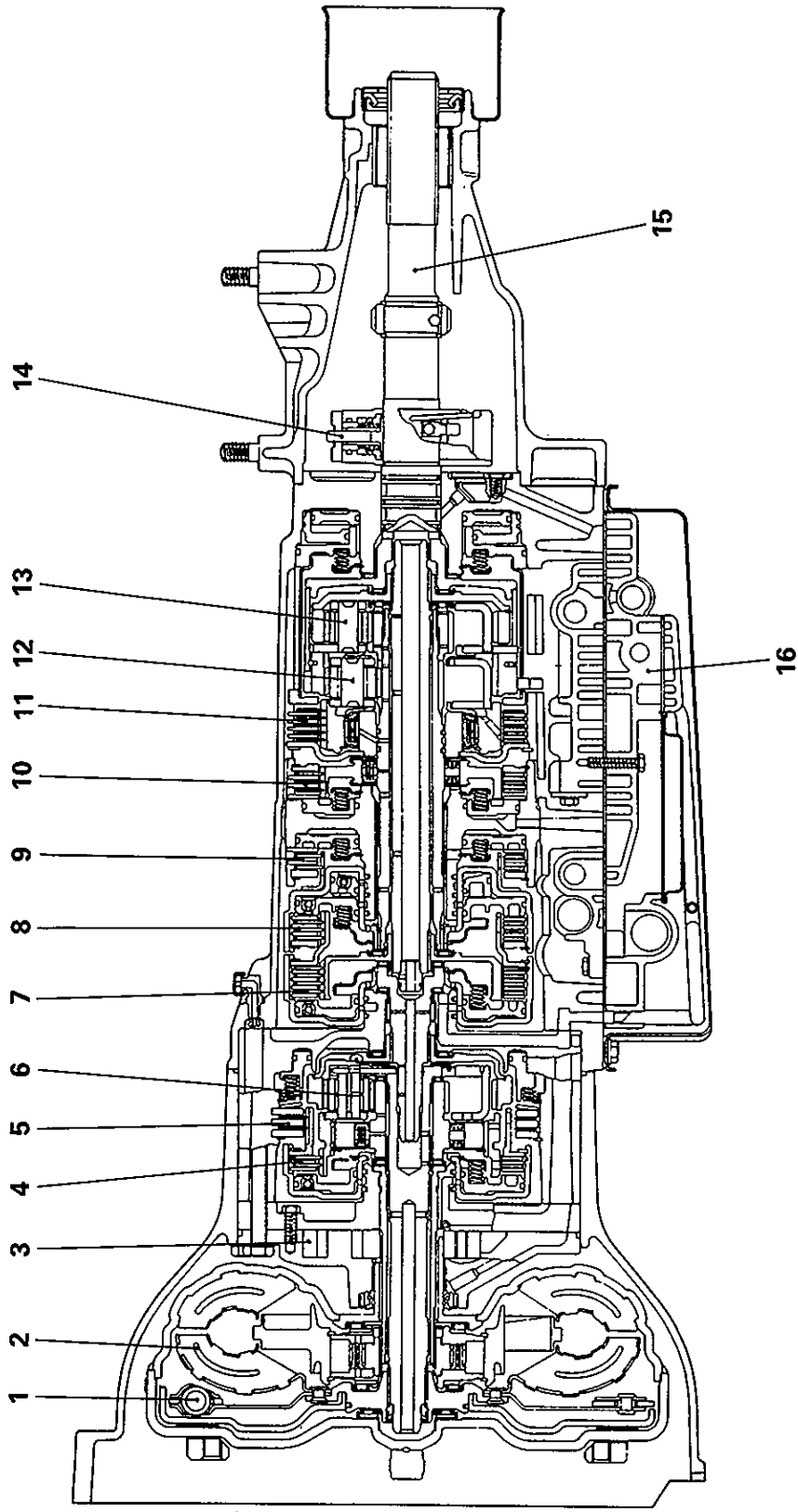
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## GENERAL INFORMATION

### Precautions to be taken when disassembling and reassembling the transmission

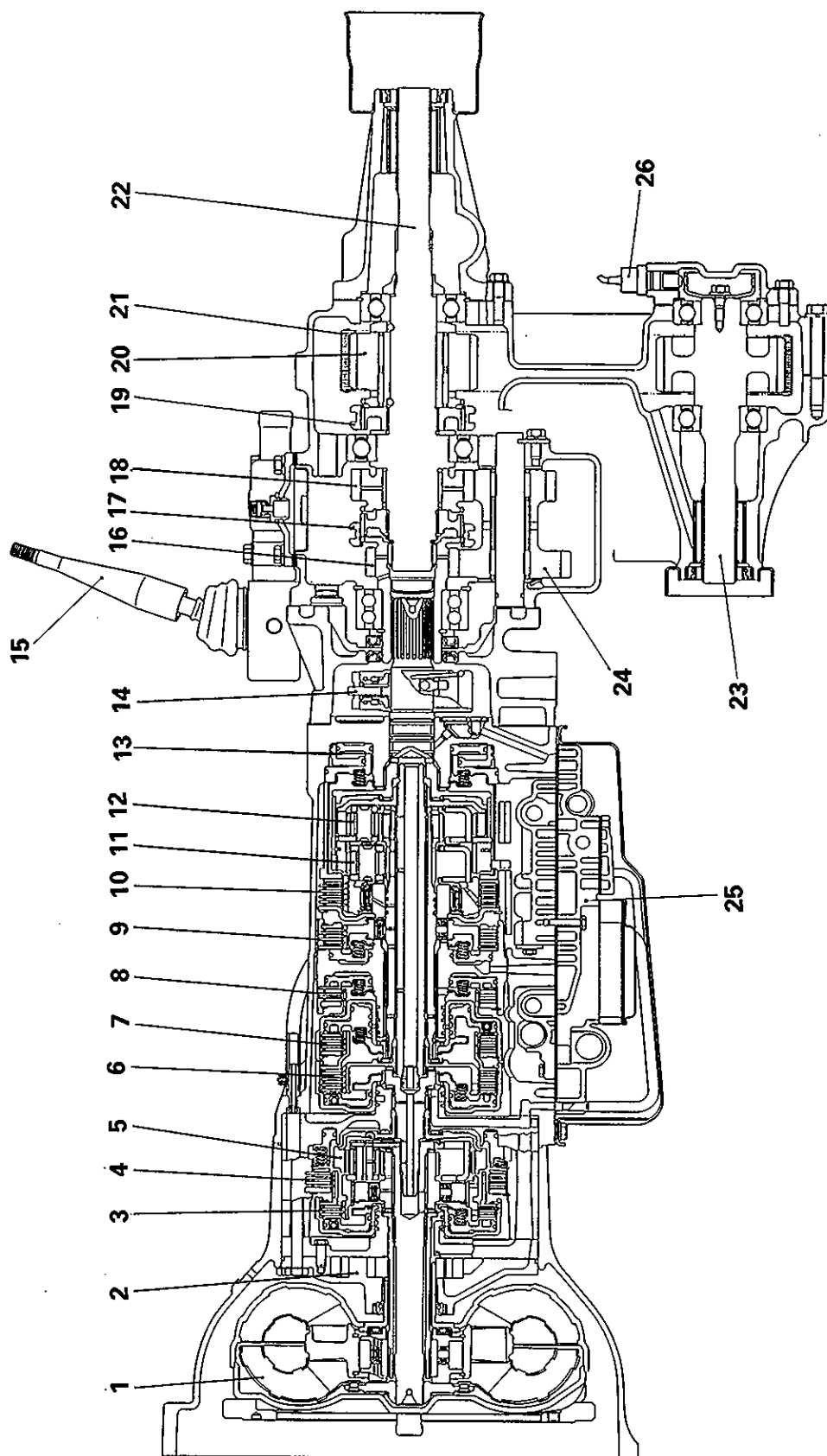
- Because the automatic transmission is composed of component parts of an especially high degree of precision, these parts should be very carefully handled during disassembly and assembly so as not to scar or scratch them.
- A rubber mat should be placed on the workbench, and it should always be kept clean.
- During disassembly, cloth gloves or shop towels should not be used. If such items must be used, either use articles made of nylon, or use paper towels.
- All disassembled parts must be thoroughly cleaned.  
Metal parts may be cleaned with ordinary detergents, but must be thoroughly air dried.
- Clean the clutch disc, resin thrust plate and rubber parts by using ATF (automatic transmission fluid), being very careful that dust, dirt, etc. do not adhere to them.
- Do not reuse gaskets, oil seals, or rubber parts.  
Replace such parts with new ones at every reassembly. The O-ring of the oil level gauge need not be replaced.
- Do not use grease other than petrolatum jelly.
- Apply ATF to friction components, rotating parts, and sliding parts before installation.
- Do not apply sealer or adhesive to gaskets.
- When a bushing must be replaced, replace the assembly in which it is incorporated.
- If the transmission main unit is damaged, also disassemble and clean the cooler system.

MODEL R4AW2 – FOUR SPEED REAR WHEEL DRIVE TRANSMISSION



- |                             |                          |
|-----------------------------|--------------------------|
| 1. Lockup clutch            | 9. Brake No. 1           |
| 2. Torque converter         | 10. Brake No. 2          |
| 3. Oil pump                 | 11. Brake No. 3          |
| 4. Overdrive clutch         | 12. Front planetary gear |
| 5. Overdrive brake          | 13. Rear planetary gear  |
| 6. Overdrive planetary gear | 14. Governor             |
| 7. Forward clutch           | 15. Output shaft         |
| 8. Direct clutch            | 16. Valve body           |

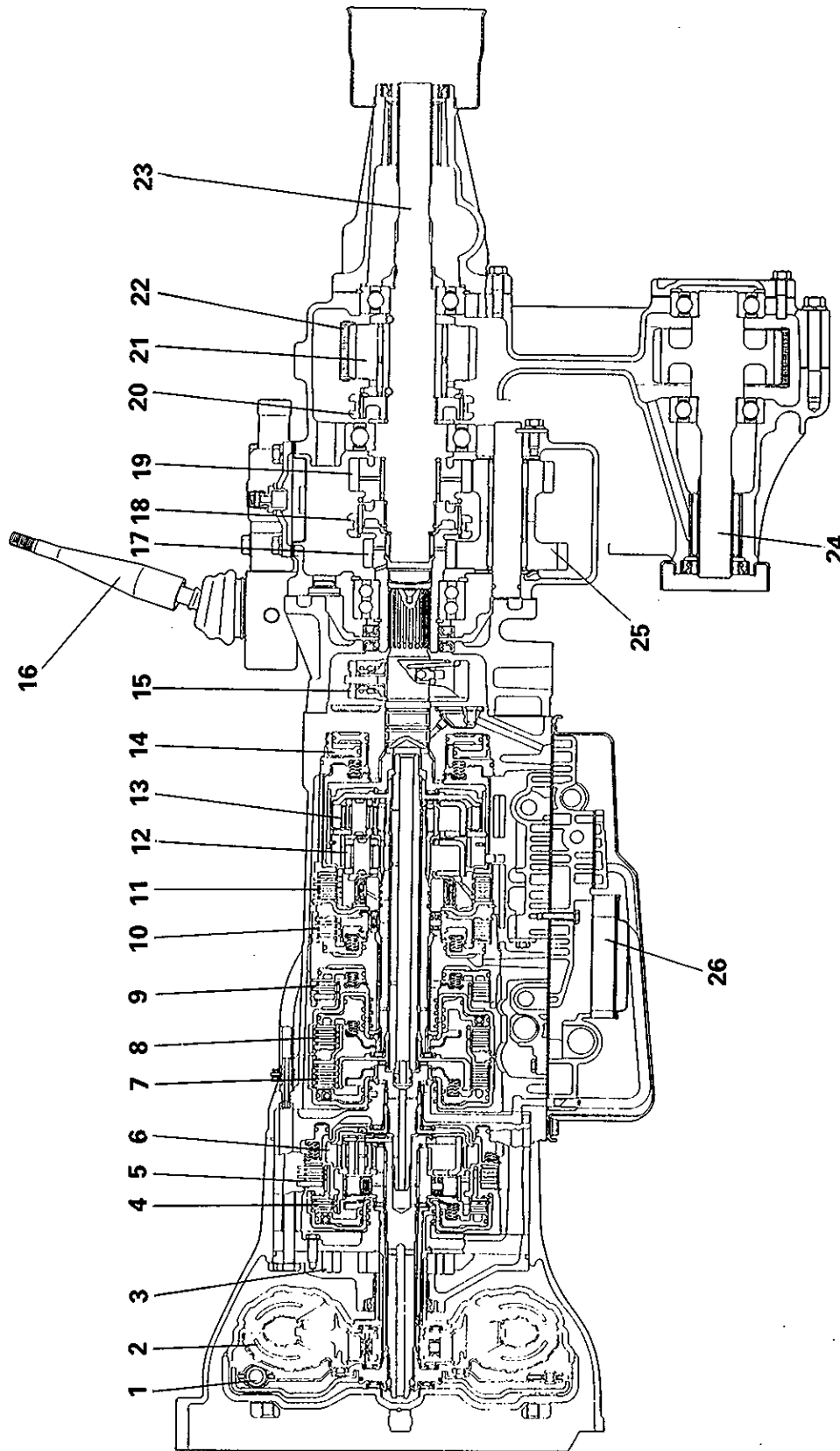
MODEL V4AW2-1 – FOUR SPEED FOUR WHEEL DRIVE TRANSMISSION  
WITHOUT LOCK-UP CLUTCH



- |                             |                            |                        |
|-----------------------------|----------------------------|------------------------|
| 1. Torque converter         | 10. Brake No. 3            | 19. 2WD-4WD clutch     |
| 2. Oil pump                 | 11. Front planetary gear   | 20. Drive sprocket     |
| 3. Overdrive clutch         | 12. Rear planetary gear    | 21. Chain              |
| 4. Overdrive brake          | 13. Brake No. 3 piston     | 22. Rear output shaft  |
| 5. Overdrive planetary gear | 14. Governor               | 23. Front output shaft |
| 6. Forward clutch           | 15. Transfer control lever | 24. Counter gear       |
| 7. Direct clutch            | 16. Input gear             | 25. Valve body         |
| 8. Brake No. 1              | 17. High-low clutch        | 26. Pulse generator    |
| 9. Brake No. 2              | 18. Low speed gear         |                        |



MODEL V4AW2-1 – FOUR SPEED FOUR WHEEL DRIVE TRANSMISSION WITH LOCK-UP CLUTCH

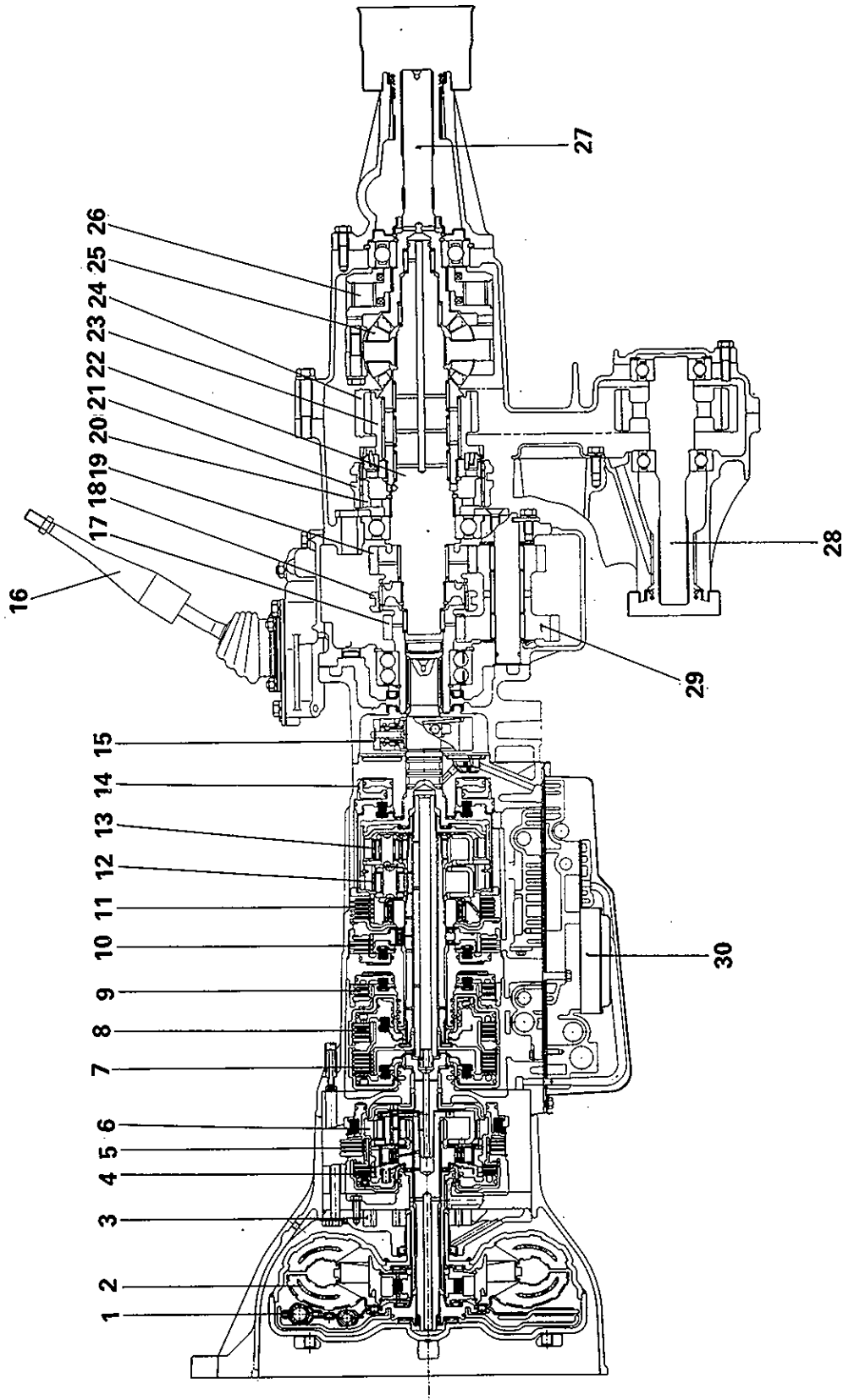


- 19. Low speed gear
- 20. 2WD-4WD clutch
- 21. Drive sprocket
- 22. Chain
- 23. Rear output shaft
- 24. Front output shaft
- 25. Counter gear
- 26. Valve body

- 10. Brake No. 2
- 11. Brake No. 3
- 12. Front planetary gear
- 13. Rear planetary gear
- 14. Brake No. 3 piston
- 15. Governor
- 16. Transfer control lever
- 17. Input gear
- 18. High-low clutch

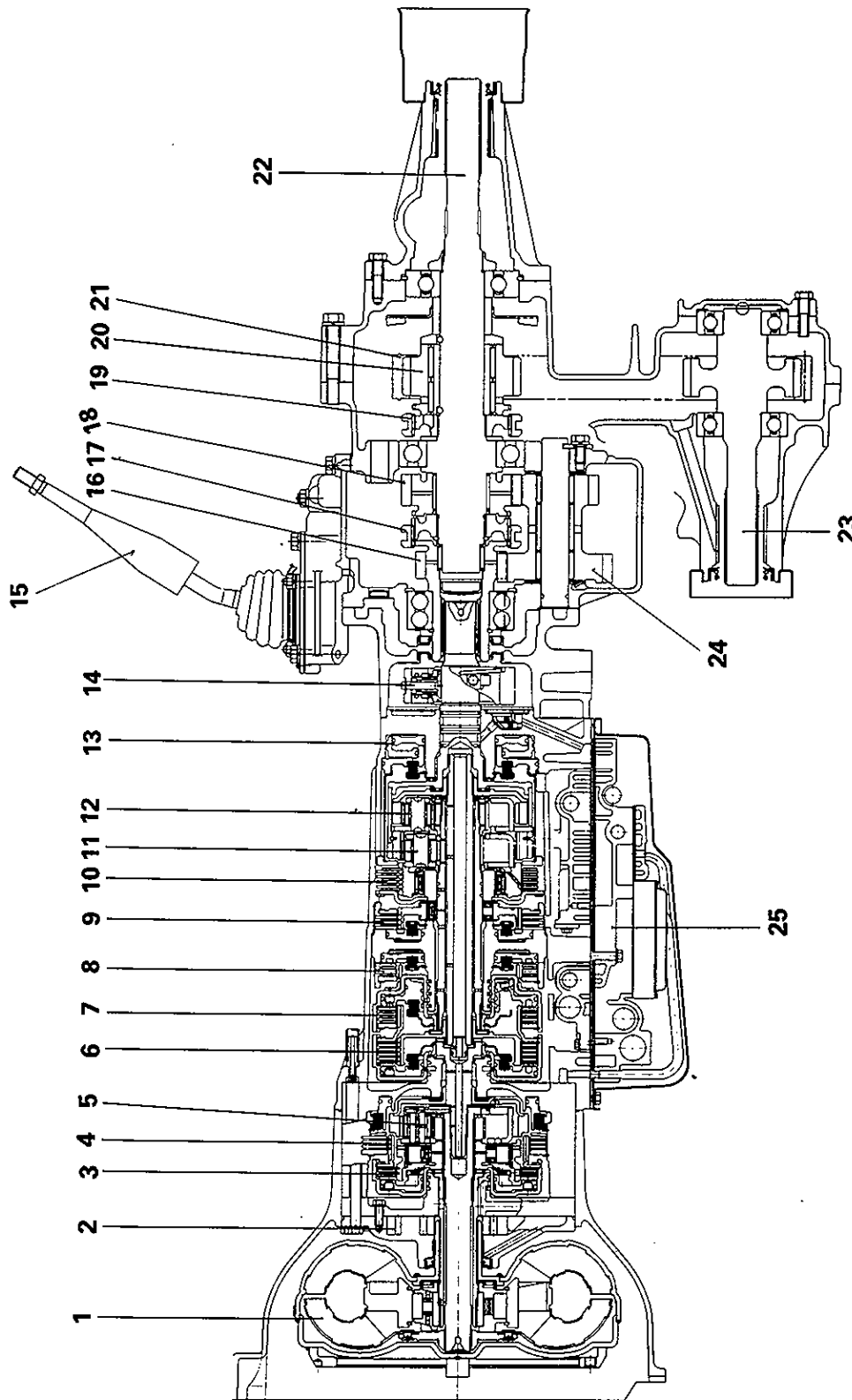
- 1. Lockup clutch
- 2. Torque converter
- 3. Oil pump
- 4. Overdrive clutch
- 5. Overdrive brake
- 6. Overdrive planetary gear
- 7. Forward clutch
- 8. Direct clutch
- 9. Brake No. 1

**MODEL V4AW2-3, 7 – FOUR SPEED FOUR WHEEL DRIVE TRANSMISSION WITH LOCK-UP CLUTCH and VISCOUS COUPLING**



- |  |  |  |
|--|--|--|
| <ul style="list-style-type: none"> <li>1. Lockup clutch</li> <li>2. Torque converter</li> <li>3. Oil pump</li> <li>4. Overdrive clutch</li> <li>5. Overdrive brake</li> <li>6. Overdrive planetary gear</li> <li>7. Forward clutch</li> <li>8. Direct clutch</li> <li>9. Brake No. 1</li> <li>10. Brake No. 2</li> </ul> | <ul style="list-style-type: none"> <li>11. Brake No. 3</li> <li>12. Front planetary gear</li> <li>13. Rear planetary gear</li> <li>14. Brake No. 3 piston</li> <li>15. Governor</li> <li>16. Transfer control lever</li> <li>17. Input gear</li> <li>18. High-low clutch</li> <li>19. Low speed gear</li> <li>20. Differential lock hub</li> </ul> | <ul style="list-style-type: none"> <li>21. 2WD-4WD synchronizer sleeve</li> <li>22. Transfer drive shaft</li> <li>23. Drive sprocket</li> <li>24. Chain</li> <li>25. Center differential</li> <li>26. Viscous coupling</li> <li>27. Rear output shaft</li> <li>28. Front output shaft</li> <li>29. Counter gear</li> <li>30. Valve body</li> </ul> |
|--|--|--|

MODEL V4AW2-3, 7 – FOUR SPEED FOUR WHEEL DRIVE TRANSMISSION WITHOUT LOCK-UP COUTCH



- |   |  |   |
|---|--|---|
| <ul style="list-style-type: none"> <li>1. Torque converter</li> <li>2. Oil pump</li> <li>3. Overdrive clutch</li> <li>4. Overdrive brake</li> <li>5. Overdrive planetary gear</li> <li>6. Forward clutch</li> <li>7. Direct clutch</li> <li>8. Brake No. 1</li> <li>9. Brake No. 2</li> </ul> | <ul style="list-style-type: none"> <li>10. Brake No. 3</li> <li>11. Front planetary gear</li> <li>12. Rear planetary gear</li> <li>13. Brake No. 3 piston</li> <li>14. Governor</li> <li>15. Transfer control lever</li> <li>16. Input gear</li> <li>17. High-low clutch sleeve</li> <li>18. Low speed gear</li> </ul> | <ul style="list-style-type: none"> <li>19. 2WD-4WD clutch sleeve</li> <li>20. Drive sprocket</li> <li>21. Chain</li> <li>22. Rear output shaft</li> <li>23. Front output shaft</li> <li>24. Counter gear</li> <li>25. Valve body</li> </ul> |
|---|--|---|

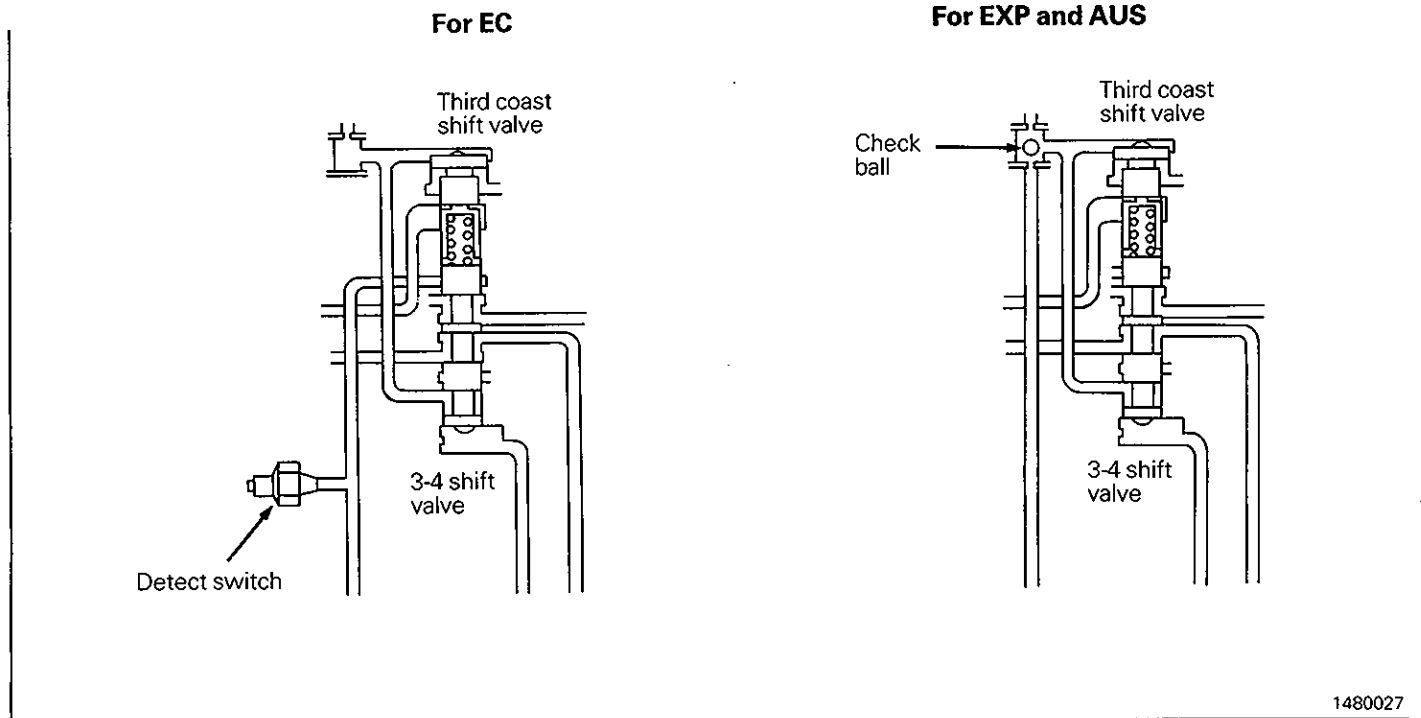
**HYDRAULIC CONTROL SYSTEM for EC**

Owing to change of the 3rd – 4th upshift point, the hydraulic circuit around the 3rd – 4th shift valve has been changed as shown below. By this circuit change, detent regulator valve pressure no more acts on the upper part of the third coast shift valve.

In the OD condition, the shifting into 4th gear can be made even in the full throttle zone.

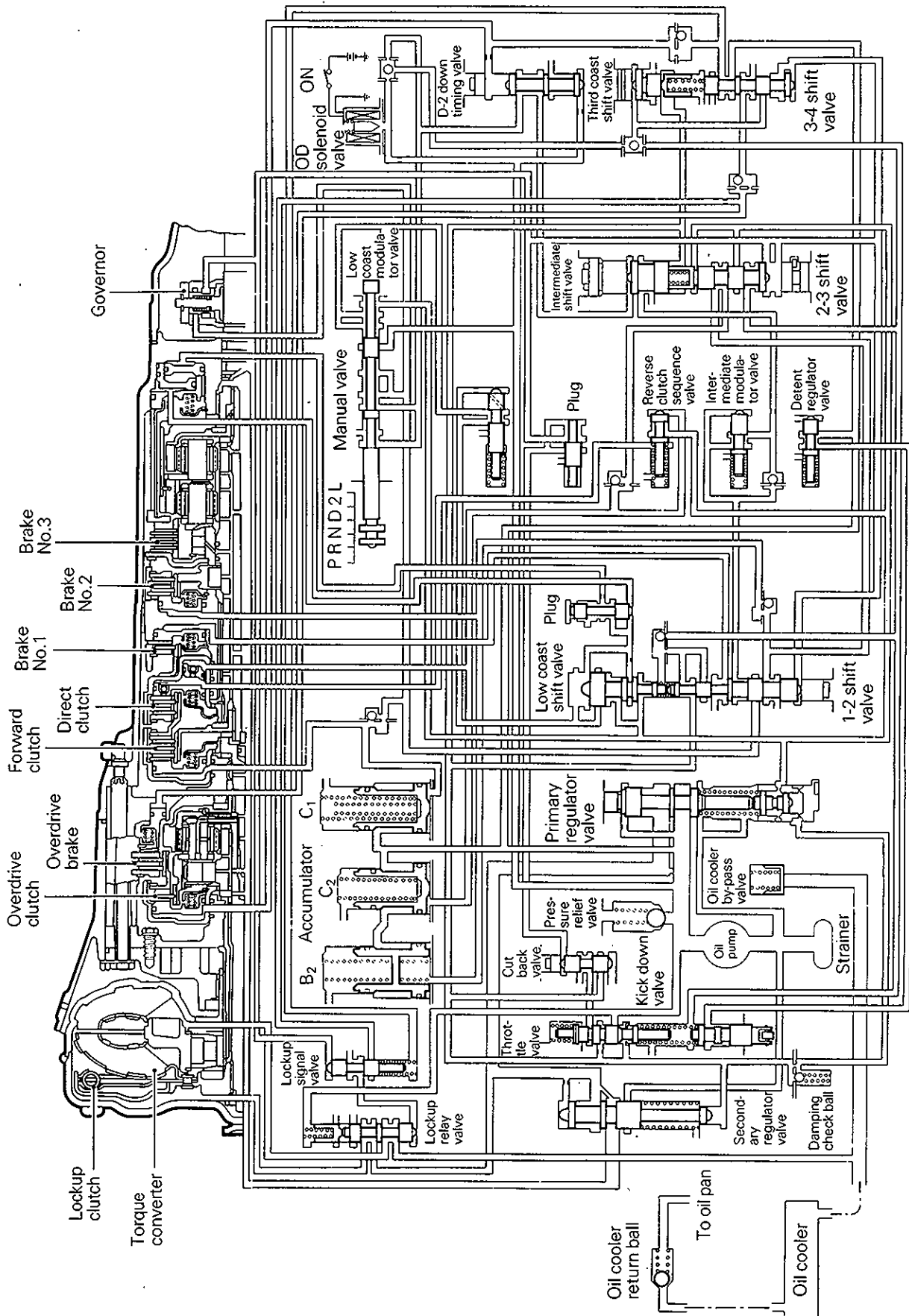
At the same time, the control for keeping the OD solenoid OFF up to the set speed and moving the 3rd ↔ 4th shift point to the high speed is added to ensure acceleration capability in the 3rd speed and full throttle zone. This control has been made possible by putting information from the detect switch (for detecting the throttle opening) and vehicle speed sensor into the OD solenoid drive relay control.

Addition of these two controls makes it possible to perform 3rd – 4th upshift when the set speed is exceeded in the full throttle zone.



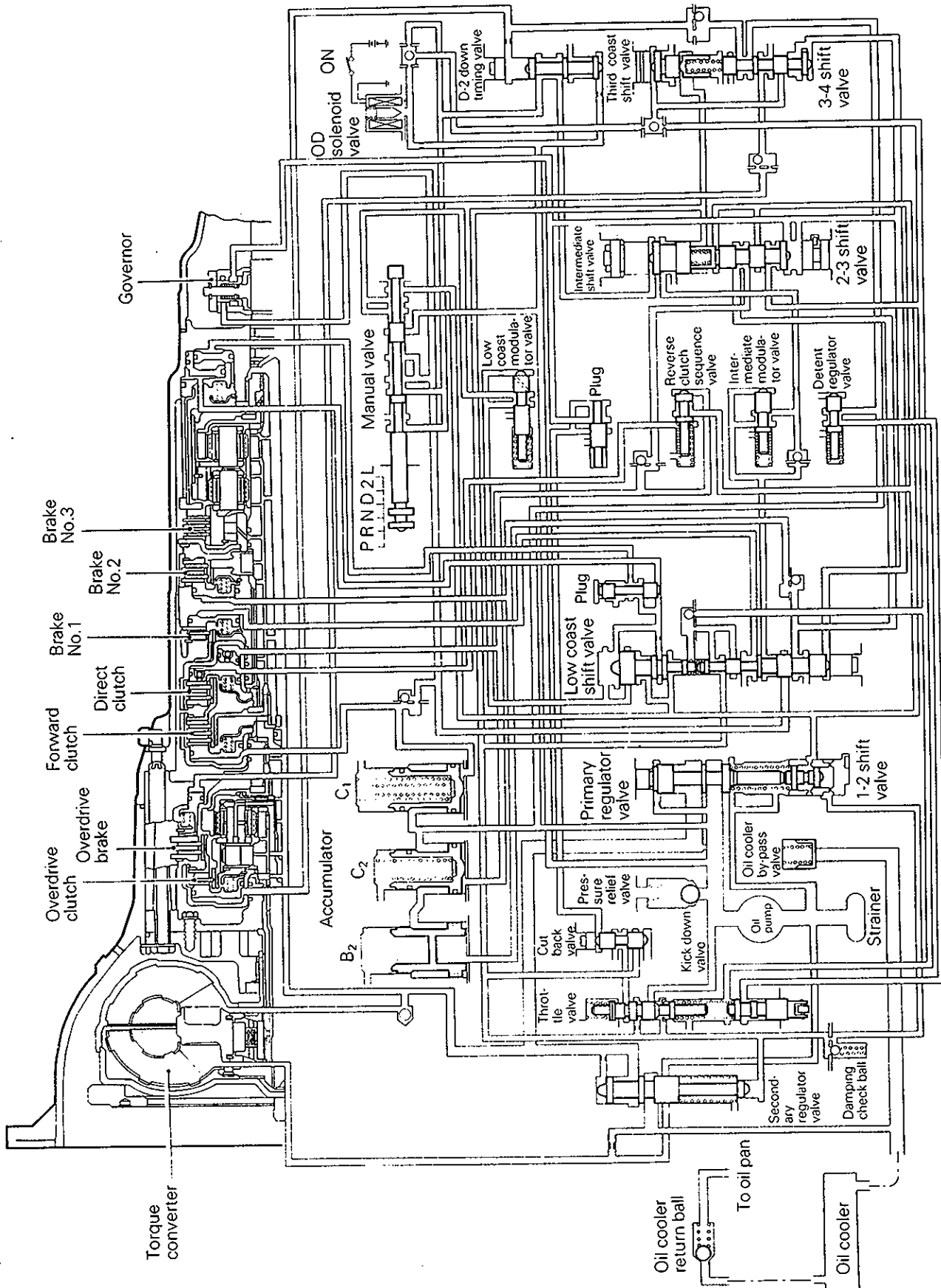
1480027

HYDRAULIC CONTROL SYSTEM with LOCKUP CLUTCH



TRA0383

HYDRAULIC CONTROL SYSTEM without LOCKUP CLUTCH



TRA0384

**1. SPECIFICATIONS****TRANSMISSION MODEL TABLE – MODEL 1987**

Transmission model	Gear ratio	Lockup clutch	Speedometer gear ratio	Vehicle model	Engine model
EC KM148-2-D2	C	–	27/8	L049G	4D56 Turbocharger
AUS AW372L-5-B2	A	X	22/6	P03V,P13V,P03W	4G63
AW372L-5-B3	A	X	20/6	P04W	4G64
KM148-2-CS1	C	–	26/8	L047G	4G54

**TRANSMISSION MODEL TABLE – MODEL 1988**

Transmission model	Gear ratio	Lockup clutch	Speedometer gear ratio	Vehicle model	Engine model
EC KM148-2-E1	C	–	26/8	L044G	4D56 Turbocharger
KM148-2-E2	C	–	27/8	L049G	4D56 Turbocharger
EXP AW372L-5-B2	A	X	22/6	P03W	4G63
KM148-2-C2	C	–	27/8	L047G	4G54
KM148-2-C3	C	–	25/8	L047G	4G54
AUS AW372L-5-B2	A	X	22/6	P03V,P13V,P03W	4G63
AW372L-5-B3	A	X	20/6	P04W	4G64
KM148-2-CS2	C	–	27/8	L047G	4G54

**TRANSMISSION MODEL TABLE – MODEL 1989**

Transmission model	Gear ratio	Lockup clutch	Speedometer gear ratio	Vehicle model	Engine model
EC KM148-6-E1	D	X	26/8	L044G	4D56 with turbocharger and Intercooler
KM148-6-E2	D	X	27/8	L049G	4D56 with turbocharger and Intercooler
KM148-6-G1	D	–	26/8	L146G	6G72
EXP AW372L-5-B6	A	X	21/6	P03W	4G63
KM148-3-C2	D	–	27/8	L047G	4G54
KM148-3-C3	D	–	25/8	L047G	4G54
KM148-6-F1	D	–	26/8	L146G	6G72
AUS AW372L-5-B2	A	X	22/6	P03V,P13V,P03W	4G63
AW372L-5-B3	A	X	20/6	P04W	4G64
KM148-6-FS1	D	–	26/8	L146G	6G72

## TRANSMISSION MODEL TABLE – MODEL 1990

Transmission model	Gear ratio	Lockup clutch	Speedometer gear ratio	Vehicle model	Engine model
EC V4AW2-1-QFP	D	X	26/8	L144G	4D56 with turbocharger and Intercooler
V4AW2-1-QGP	D	X	27/8	L149G	4D56 with turbocharger and Intercooler
V4AW2-1-LFP	E	X	26/8	L146G	6G72
EXP R4AW2-2-EG	B	X	21/6	P03W	4G63
V4AW2-1-JG	D	–	27/8	L047G	4G54
V4AW2-1-JE	D	–	25/8	L047G	4G54
V4AW2-1-LF	E	X	26/8	L146G	6G72
AUS R4AW2-2-EH	B	X	22/6	P03V,P13V,P03W	4G63
R4AW2-2-GF	B	X	20/6	P04W	4G64
V4AW2-1-LFS	E	X	26/8	L146G	6G72

## TRANSMISSION MODEL TABLE – MODEL 1991

Transmission model	Gear ratio	Lockup clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model
EC V4AW2-3-QGP	D	X	X	27/8	V44W	4D56 with turbocharger and Intercooler
V4AW2-3-QGPL	D	X	X	27/8	V44W	4D56 with turbocharger and Intercooler
V4AW2-3-OHP	D	X	X	28/8	V44W	4D56 with turbocharger and Intercooler
V4AW2-3-OHPL	D	X	X	28/8	V44W	4D56 with turbocharger and Intercooler
V4AW2-3-LFP	E	X	X	26/8	V23W,V43W	6G72
V4AW2-3-LFPL	E	X	X	26/8	V23W,V23C,V43W	6G72
EXP R4AW2-2-EG	B	X	–	21/6	P03W	4G63
R4AW2-2-EH	B	X	–	22/6	P03W	4G63
R4AW2-2-PF	B	X	–	20/6	P05W	4D56
V4AW2-1-JG	D	–	–	27/8	L047G	4G54
V4AW2-1-JE	D	–	–	25/8	L047G	4G54
V4AW2-1-LF	E	X	–	26/8	L146G	6G72
AUS R4AW2-2-EH	B	X	–	22/6	P03V,P13V	4G63
R4AW2-2-PH	B	X	–	22/6	P05V,P15V	4D56
R4AW2-2-GF	B	X	–	20/6	P04W	4G64
V4AW2-3-LF	E	X	X	26/8	V43W	6G72



**TRANSMISSION MODEL TABLE – MODEL 1992**

Transmission model	Gear ratio	Lockup clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model
EC R4AW2-2-EH	B	X	–	22/6	P03W	4G63
EXP V4AW2-3-JGTL	D	–	–	27/8	V32W	4G54
V4AW2-3-JETL	D	–	–	25/8	V32W	4G54
V4AW2-3-LFL	E	X	X	26/8	V43W	6G72
AUS R4AW2-2-EH	B	X	–	22/6	P03V,P13V	4G63
R4AW2-2-PH	B	X	–	22/6	P05V,P15V	4D56
R4AW2-2-GF	B	X	–	20/6	P04W	4G64
R4AW2-2-GH	B	X	–	22/6	P14V	4G64

**TRANSMISSION MODEL TABLE – MODEL 1993**

Transmission model	Gear ratio	Lockup clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model
EC R4AW2-2-EHX	B	X	–	22/6	P03W	4G63
V4AW2-3-QGP	D	X	X	27/8	V44W	4D56 with turbocharger and Intercooler
V4AW2-3-QGPL	D	X	X	27/8	V44W	4D56 with turbocharger and Intercooler
V4AW2-3-LFP	E	X	X	26/8	V23W,V43W	6G72
V4AW2-3-LFPL	E	X	X	26/8	V23W,V23C,V43W	6G72
EXP R4AW2-2-EG	B	X	–	21/6	P03W	4G63
R4AW2-2-EHX	B	X	–	22/6	P03W	4G63
R4AW2-2-GF	B	X	–	20/6	P04W	4G64
R4AW2-2-PF	B	X	–	20/6	P05W	4D56
V4AW2-3-LE	E	X	X	25/8	V43W	6G72
V4AW2-2-QH	D	X	X	28/8	V44W	4D56 with turbocharger and Intercooler
V4AW2-2-QHL	D	X	X	28/8	V44W	4D56 with turbocharger and Intercooler
V4AW2-3-JGTL	D	–	–	27/8	V32W	4G54
V4AW2-3-JETL	D	–	–	25/8	V32W	4G54
V4AW2-3-LEL	E	X	X	25/8	V23W,V25W,V43W	6G72
AUS R4AW2-2-EHX	B	X	–	22/6	P03V,P13V	4G63
R4AW2-2-PH	B	X	–	22/6	P05V,P15V	4D56
R4AW2-2-GF	B	X	–	20/6	P04W	4G64
V4AW2-3-LF	E	X	X	26/8	V43W	6G72

## TRANSMISSION MODEL TABLE – MODEL 1994

Transmission model	Gear ratio	Lockup clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model	
EC	R4AW2-2-EHX	B	X	–	22/6	P03W	4G63
	V4AW2-7-LFP	E	X	X	26/8	V23W,V43W	6G72
	V4AW2-7-LFPL	E	X	X	26/8	V23W,V23C,V43W	6G72
EXP	R4AW2-2-EG	B	X	–	21/6	P03W	4G63
	R4AW2-2-EHX	B	X	–	22/6	P03W	4G63
	R4AW2-2-GF	B	X	–	20/6	P04W	4G64
	R4AW2-2-PF	B	X	–	20/6	P05W	4D56
	V4AW2-7-JGTL	D	–	–	27/8	V32W	4G54
	V4AW2-7-JETL	D	–	–	25/8	V32W	4G54
	V4AW2-7-LEL	E	X	X	25/8	V23W,V25W,V43W	6G72
AUS	R4AW2-2-EHX	B	X	–	22/6	P03V,P13V	4G63
	R4AW2-2-PH	B	X	–	22/6	P05V,P15V	4D56
	R4AW2-2-GF	B	X	–	20/6	P04W	4G64
	V4AW2-7-LE	E	X	X	25/8	V23W	6G72
	V4AW2-7-LF	E	X	X	26/8	V43W	6G72

## TRANSMISSION MODEL TABLE – MODEL 1995

Transmission model	Gear ratio	Lockup clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model	
EC	R4AW2-5-FHP	B	X	–	22/6	PA3W	4G63
	R4AW2-5-GGP	B	X	–	21/6	PA4W	4G64
EXP	R4AW2-5-EI	B	X	–	23/6	PA3W	4G63
	R4AW2-5-PF	B	X	–	20/6	PA5W	4D56 with turbocharger
	R4AW2-5-GH	B	X	–	22/6	PA4W	4G64
	V4AW2-7-JGTL	D	–	–	27/8	V32W	4G54
	V4AW2-7-JETL	D	–	–	25/8	V32W	4G54
	V4AW2-7-QH	D	X	X	28/8	V44W	4D56 with turbocharger and Intercooler
	V4AW2-7-QHL	D	X	X	26/8	V44W	4D56 with turbocharger and Intercooler
	V4AW2-7-LEL	E	X	X	25/8	V43W	6G72
	V4AW2-7-LF	E	X	X	26/8	V43W	6G72
	V4AW2-7-LFL	E	X	X	26/8	V43W	6G72
AUS	R4AW2-5-EH	B	X	–	22/6	PA3W	4G63
	R4AW2-5-GG	B	X	–	21/6	PA4W	4G64
	R4AW2-5-GH	B	X	–	22/6	PB4V	4G64
	R4AW2-8-EI	B	X	–	23/6	P03V	4G63
	R4AW2-8-GH	B	X	–	22/6	P14V	4G64
	R4AW2-8-PF	B	X	–	20/6	P05V,P15V	4D56
	V4AW2-7-LE	E	X	X	25/8	V23W,V43W	6G72
	V4AW2-7-LF	E	X	X	26/8	V43W	6G72

**TRANSMISSION MODEL TABLE – MODEL 1996**

Transmission model	Gear ratio	Lockup clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model
EC R4AW2-5-FHP	B	×	–	22/6	PA3W	4G63
R4AW2-5-GGP	B	×	–	21/6	PA4W	4G64
EXP R4AW2-5-EG	B	×	–	21/6	P03W	4G63
R4AW2-5-EI	B	×	–	23/6	PA3W	4G63
R4AW2-5-GH	B	×	–	22/6	PA4W	4G64
R4AW2-5-PF	B	×	–	20/6	PA5W	4D56 with turbocharger
V4AW2-7-JETL	D	–	–	25/8	V32W	4G63
V4AW2-7-JGTL	D	–	–	27/8	V32W	4G63
V4AW2-7-LEL	E	×	×	25/8	V23W	6G72
V4AW2-7-LF	E	×	×	26/8	V43W	6G72
V4AW2-7-LFL	E	×	×	26/8	V23W, V33W, V43W	6G72
V4AW2-7-QHU	D	×	×	28/8	V44W	4D56 with turbocharger and intercooler
AUS R4AW2-2-EHX	B	×	–	22/6	P03W	4G63
R4AW2-5-EH	B	×	–	22/6	PA3W	4G63
R4AW2-5-GG	B	×	–	21/6	PA4W	4G64
R4AW2-5-GH	B	×	–	22/6	PB4V	4G64
R4AW2-8-EI	B	×	–	23/6	P03W	4G63
R4AW2-8-GH	B	×	–	22/6	P14V	4G64
R4AW2-8-PF	B	×	–	20/6	P05V, P15V	4D56
V4AW2-7-LE	E	×	×	25/8	V43W	6G72
V4AW2-7-LF	E	×	×	26/8	V23W	6G72

**TRANSMISSION MODEL TABLE – MODEL 1997**

Transmission model	Gear ratio	Lockup clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model
EC R4AW2-5-FHPC	B	×	–	22/6	PA3W	4G63
R4AW2-5-GGPC	B	×	–	21/6	PA4W	4G64
EXP V4AW2-2-LEL	E	×	×	25/8	V23W	6G72
V4AW2-2-AEL	E	×	×	25/8	V23W	6G72
R4AW2-5-EIC	B	×	–	23/6	PA3W	4G63
R4AW2-5-PFC	B	×	–	20/6	PA5W	4D56 with turbocharger and intercooler
R4AW2-5-GHC	B	×	–	22/6	PA4W	4G64
V4AW2-7-LEL	E	×	×	25/8	V33W, V43W	6G72
V4AW2-7-QHU	D	×	×	28/8	V44W	4D56 with turbocharger and intercooler
V4AW2-A-GGTL	D	×	–	27/8	V31W	4G64
V4AW2-A-GETL	D	×	–	25/8	V31W	4G64
AUS R4AW2-5-GHC	B	×	–	22/6	PB4V	4G64
R4AW2-5-EHC	B	×	–	22/6	PA3W	4G63
R4AW2-5-GGC	B	×	–	21/6	PA4W	4G64
V4AW2-7-LF	E	×	×	26/8	V23W	6G72

## TRANSMISSION MODEL TABLE – MODEL 1998

Transmission model	Gear ratio	Lockup clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model
EC R4AW2-5-FHPC	B	×	–	22/6	PA3W	4G63
R4AW2-5-GGPC	B	×	–	21/6	PA4W	4G64
R4AW2-6-FHPC	B	×	–	22/6	K62T	4G63
V4AW2-6-QEBL	D	×	×	25/8	K74T	4D56 with turbocharger and intercooler
R4AW2-8-EI	B	×	–	23/6	PA4W	4G64
R4AW2-8-PF	B	×	–	20/6	PA4W	4G64
EXP R4AW2-5-EIC	B	×	–	23/6	PA3W	4G63
R4AW2-5-GHC	B	×	–	22/6	PA4W	4G64
V4AW2-7-LEL	E	×	×	25/8	V23W, V43W	6G72
V4AW2-7-QHU	D	×	×	28/8	V44W	4D56 with turbocharger and intercooler
V4AW2-A-GGTL	D	×	–	27/8	V31W	4G64
AUS R4AW2-5-GHC	B	×	–	22/6	PB4V	4G64
R4AW2-5-EHC	B	×	–	22/6	PA3W	4G63
R4AW2-5-GGC	B	×	–	21/6	PB4W	4G64
R4AW2-6-GFD	B	×	–	20/6	K65T	4G64
R4AW2-8-EID	B	×	–	23/6	P03V	4G63
R4AW2-8-GHD	B	×	–	22/6	P14V	4G64
R4AW2-8-FID	B	×	–	23/6	P03W	4G63

**TRANSMISSION MODEL TABLE – MODEL 1999**

Transmission model	Gear ratio	Lockup clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model
EC R4AW2-5-FHPC	B	×	–	22/6	PA3W	4G63
R4AW2-5-GGPC	B	×	–	21/6	PA4W	4G64
R4AW2-6-FHPC	B	×	–	22/6	K62T	4G63
V4AW2-6-QEBL	D	×	×	25/8	K74T	4D56 with turbocharger and intercooler
R4AW2-8-EI	B	×	–	23/6	PA4W	4G64
R4AW2-8-PF	B	×	–	20/6	PA4W	4G64
EXP R4AW2-5-EIC	B	×	–	23/6	PA3W	4G63
R4AW2-5-GHC	B	×	–	22/6	PA4W	4G64
V4AW2-7-LEL	E	×	×	25/8	V23W, V43W	6G72
V4AW2-7-QHU	D	×	×	28/8	V44W	4D56 with turbocharger and intercooler
V4AW2-A-GGTL	D	×	–	27/8	V31W	4G64
V4AW2-A-GETL	D	×	–	25/8	V31W	4G64
AUS R4AW2-5-FJC	B	×	–	24/6	PB3V	4G63
R4AW2-5-GHC	B	×	–	22/6	PB4W	4G64
R4AW2-5-FHC	B	×	–	22/6	PA3W	4G63
R4AW2-5-GGC	B	×	–	21/6	PB4W	4G64
R4AW2-6-GFD	B	×	–	20/6	K65T	4G64
R4AW2-8-EID	B	×	–	23/6	P03V	4G63
R4AW2-8-GHD	B	×	–	22/6	P14V, P04W	4G64
R4AW2-8-FID	B	×	–	23/6	P03W	4G63

**TRANSMISSION MODEL TABLE – MODEL 2000**

Transmission model	Gear ratio	Lockup clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model
EC R4AW2-6-FHPD	B	×	–	22/6	K62T	4G63
V4AW2-6-QEHL	D	×	×	25/8	K74T	4D56 with turbocharger and intercooler
EXP V4AW2-7-LFTL	E	×	–	26/8	V13W, V33V	6G72
V4AW2-7-LDTL	E	×	–	24/8	V13W, V33V	6G72
V4AW2-7-LFL	E	×	×	26/8	V23W, V43W	6G72
V4AW2-7-QHU	D	×	×	28/8	V44W	4D56 with turbocharger and intercooler
R4AW2-8-EHD	B	×	–	22/6	P03W	4G63
R4AW2-8-EID	B	×	–	23/6	P03W	4G63
AUS R4AW2-6-GFD	B	×	–	20/6	K65T	4G64
R4AW2-5-GHC	B	×	–	22/6	PB4V	4G64
R4AW2-5-FHC	B	×	–	22/6	PA3W	4G63
R4AW2-5-GGC	B	×	–	21/6	PB4W	4G64
R4AW2-8-EID	B	×	–	23/6	P03V	4G63
R4AW2-8-GHD	B	×	–	22/6	P14V	4G64
R4AW2-8-FID	B	×	–	23/6	P03W	4G63

## TRANSMISSION MODEL TABLE - MODEL 2001

Transmission model	Gear ratio	Lockup clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model
EC R4AW2-6-FHPD	B	×	-	22/6	K62T	4G63
V4AW2-6-QEHL	D	×	×	25/8	K74T	4D56 with turbocharger and intercooler

## GEAR RATIO TABLE

	Gear ratio	A	B	C	D	E
Transmission	1st	2.826	2.826	2.826	2.826	2.826
	2nd	1.493	1.493	1.493	1.493	1.493
	3rd	1.000	1.000	1.000	1.000	1.000
	4th	0.688	0.730	0.688	0.688	0.730
	Reverse	2.703	2.703	2.703	2.703	2.703
Transfer	High	-	-	1.000	1.000	1.000
	Low	-	-	1.944	1.925	1.925

**SERVICE SPECIFICATIONS**

mm (in.)

	Standard	Limit
<b>Transmission</b>		
Input shaft end play .....	0.3 – 0.9 (0.012– 0.035)	
Oil pump side clearance .....	0.02 – 0.05 (0.0008 – 0.0020)	0.1 (0.004)
Overdrive clutch piston stroke (C <sub>0</sub> ) .....	2 discs ..... 1.56 – 2.53 (Without cushion plate) (0.061 – 0.100)	
	2 discs ..... 1.92 – 2.64 (With cushion plate) (0.076 – 0.104)	
	1 disc ..... 1.77 – 2.58 (With cushion plate) (0.0697 – 0.1016) <L300 (4G64), L400 (4G64) MODEL 1995>	
	1 disc ..... 1.73 – 2.62 (With cushion plate) (0.0681 – 0.1031) <L300 (4G64), L400 (4G64) MODEL 1996>	
Forward clutch piston stroke (C <sub>1</sub> ) .....	4 discs ..... 1.32 – 2.66 (0.052 – 0.105)	
	5 discs ..... 1.43 – 2.93 (0.059 – 0.115)	
Direct clutch piston stroke (C <sub>2</sub> ) .....	Double piston ..... 1.06 – 2.14 (0.042 – 0.084)	
	Single piston ..... 0.91 – 1.99 (0.036 – 0.078)	
Overdrive brake clearance (B <sub>0</sub> ) .....	2 discs ..... 0.56 – 1.92 (0.022 – 0.076)	
	3 discs ..... 0.65 – 2.21 (0.026 – 0.087)	
No. 1 brake piston stroke (B <sub>1</sub> ) .....	0.80 – 1.73 (0.031 – 0.068)	
No. 2 brake piston stroke (B <sub>2</sub> ) .....	1.01 – 2.25 (0.040 – 0.089)	
No. 3 brake clearance (B <sub>3</sub> ) .....	0.61 – 2.64 (0.024 – 0.104)	
Stator support bushing bore (Front) .....	21.501 – 21.527 (0.8465 – 0.8475)	21.577 (0.8495)
Stator support bushing bore (Rear) .....	23.025 – 23.051 (0.9065 – 0.9075)	23.101 (0.9095)
Oil pump body bushing bore .....	38.113 – 38.138 (1.5005 – 1.5015)	38.188 (1.5035)
Overdrive sun gear bushing bore (Front and Rear) .....	23.062 – 23.088 (0.9080 – 0.9090)	23.188 (0.9109)
Overdrive input shaft bushing .....	11.200 – 11.221 (0.4409 – 0.4418)	11.271 (0.4437)
Sun gear bushing bore (Front and Rear) .....	21.501 – 21.527 (0.8465 – 0.8475)	21.577 (0.8495)
Center support bushing bore .....	36.386 – 36.411 (1.4325 – 1.4335)	36.461 (1.4355)
Transmission case bushing bore .....	38.113 – 38.138 (1.5005 – 1.5015)	38.188 (1.5035)
Output shaft bushing .....	18.001 – 18.026 (0.7087 – 0.7097)	18.076 (0.7117)
Extension housing bushing bore .....	39.636 – 39.661 (1.5605 – 1.5615)	39.711 (1.5634)

mm (in.)

	Standard	Limit
<b>Transfer</b>		
H-L clutch hub end play .....	0 – 0.08 (0 – 0.0031)	
Input gear bearing end play .....	0 – 0.06 (0 – 0.0024)	
Input gear end play .....	0 – 0.06 (0 – 0.0024)	
Rear output shaft end play .....	0 – 0.1 (0 – 0.0039)	
Center differential end play (SUPER SELECT 4WD only) <Up to November 1992> .....	0.025 – 0.150 (0.00098 – 0.00591)	
Differential lock hub end play (SUPER SELECT 4WD only) .....	0 – 0.08 (0 – 0.0031)	
2-4WD synchronizer hub end play (SUPER SELECT 4WD only) .....	0 – 0.08 (0 – 0.0031)	
Rear output shaft bearing end play (SUPER SELECT 4WD only) .....	0 – 0.08 (0 – 0.0031)	
Clearance between outer synchronizer ring back side and drive sprocket (SUPER SELECT 4WD only) .....		0.3 (0.0118)



**VALVE BODY SPRING IDENTIFICATION**

mm (in.)

	Free height	Outside diameter	Number of loops	Wire diameter	Identification color
<b>Upper front valve body</b>					
Throttle valve spring .....	21.94 (0.864)	8.58 (0.338)	8	0.71 (0.028)	None
<b>Kickdown valve spring</b>					
4G54, 4G63-CARB .....	43.44 (1.710)	10.87 (0.428)	15.5	1.2 (0.047)	Orange
4G63-MPI, 4G64, 6G72 .....	39.76 (1.565)	10.83 (0.426)	11.5	1.2 (0.047)	Purple
4D56 .....	40.46 (1.593)	10.82 (0.426)	17.5	1.2 (0.047)	Blue
Secondary regulator valve spring .....	71.27 (2.806)	17.43 (0.686)	15	1.93 (0.076)	Green
<b>Upper rear valve body</b>					
Intermediate modulator valve spring .....	35.43 (1.395)	8.80 (0.346)	14.4	0.9 (0.035)	Red
<b>Reverse clutch sequence valve spring</b>					
4G54 .....	33.72 (1.327)	9.32 (0.367)	13	1.32 (0.052)	Yellow
4G63, 4G64, 6G72, 4D56 .....	37.55 (1.478)	9.2 (0.362)	14	1.2 (0.047)	Red
Low coast modulator valve spring .....	42.35 (1.667)	9.24 (0.364)	15	0.084 (0.033)	None
2-3 shift valve spring .....	35.10 (1.382)	8.96 (0.353)	12.5	0.76 (0.030)	White
<b>Detent regulator valve spring</b>					
4G54 .....	30.43 (1.198)	8.90 (0.350)	13	0.9 (0.035)	Green
4G63, 4G64, 6G72 .....	31.39 (1.236)	8.85 (0.348)	13.5	0.9 (0.035)	Orange
4D56 for EC*1, *2, 4D56*3 .....	26.44 (1.041)	8.85 (0.348)	13.5	0.9 (0.035)	Purple
4D56 for EXP, AUS*1, *2 .....	25.26 (0.994)	8.85 (0.348)	13.5	0.9 (0.035)	White
4D56 with turbocharger and intercooler <MODEL 1996> .....	25.26 (0.994)	8.85 (0.348)	13.5	0.9 (0.035)	White
(When replacing the spring, be sure to install the same one as currently installed.)	26.00 (1.024)	8.94 (0.352)	13.0	0.9 (0.035)	Pink
	26.44 (1.041)	8.85 (0.348)	13.5	0.9 (0.035)	Yellowish green

	Free height	Outside diameter	Number of loops	Wire diameter	Identification color
mm (in.)					
Lower valve body					
1-2 shift valve spring .....	34.62 (1.363)	7.56 (0.298)	13	0.56 (0.022)	None
3-4 shift valve spring					
4G54, 6G72, 4G63, 4G64 .....	35.18 (1.385)	10.6 (0.417)	14.5	1.10 (0.043)	Green
4D56 for EC*2, 4D56*1 .....	40.08 (1.578)	10.5 (0.413)	13	1.10 (0.043)	Light green
4D56 for EXP, AUS*2 .....	36.28 (1.428)	10.6 (0.417)	14.5	1.10 (0.043)	Red
4D56*3 .....	33.65 (1.325)	10.6 (0.417)	14.5	1.10 (0.043)	Orange
Pressure relief valve spring .....	32.14 (1.265)	13.14 (0.517)	9	2.03 (0.080)	None
Oil cooler bypass valve spring .....	28.9 (1.138)	13.8 (0.543)	6.5	1.60 (0.063)	Orange
Primary regulator valve spring					
4G54, 4G63*1, 4G64*1 .....	55.21 (2.174)	17.02 (0.670)	10.5	1.7 (0.067)	White
4G63*3, 4G64*4 .....	56.9 (2.240)	17.02 (0.670)	10.5	1.7 (0.067)	Yellow
4G64*5 .....	67.31 (2.650)	15.14 (0.596)	11.8	1.5 (0.059)	None
6G72 .....	59.59 (2.346)	17.02 (0.670)	10.5	1.7 (0.067)	Light blue
4D56 .....	54.12 (2.131)	17.02 (0.670)	10.5	1.7 (0.067)	Purple
Damping check valve spring .....	20.00 (0.787)	4.97 (0.196)	16	0.40 (0.016)	None
Lock-up signal valve spring					
4G63, 4G64 .....	45.31 (1.784)	9.6 (0.378)	15.7	1.00 (0.039)	White
6G72 .....	46.0 (1.811)	9.7 (0.382)	14.5	1.00 (0.039)	Yellow
4D56 .....	37.38 (1.472)	9.7 (0.382)	13.5	1.10 (0.043)	Purple
Lock-up relay valve spring .....	18.5 (0.728)	5.2 (0.205)	13	0.55 (0.022)	White

## NOTE

\*1: For L300

\*4: For L400 &lt;Up to MODEL 1995&gt;

\*2: For Pajero/Montero

\*5: For L400 &lt;From MODEL 1996&gt;

\*3: For L400

**ACCUMULATOR PISTON IDENTIFICATION**

	mm (in.)
	OD x Length
C <sub>1</sub> .....	31.8 x 49.5 (1.252 x 1.949)
C <sub>2</sub> .....	31.8 x 45.0 (1.252 x 1.772)
B <sub>2</sub> .....	34.8 x 48.5 (1.512 x 1.909)

**ACCUMULATOR PISTON SPRING IDENTIFICATION**

	Free height	Outside diameter	Number of loops	Wire diameter	Identification color
C <sub>1</sub> : Single spring 4G54, 4G63* <sup>1</sup> , 4D56* <sup>1,2</sup> , 4G64* <sup>5</sup> .....	64.68 (2.546)	17.5 (0.689)	22.5	2.0 (0.079)	None
C <sub>1</sub> : Twin spring					
No. 1					
4G63* <sup>3</sup> , 4G64, 6G72 .....	29.4 (1.157)	12.7 (0.5)	6.1	1.2 (0.047)	Pink
4D56* <sup>3</sup> .....	30.5 (1.201)	13.45 (0.530)	7.0	1.1 (0.043)	None
No. 2					
4G63* <sup>3</sup> , 4G64, 6G72, 4D56* <sup>3</sup> .....	57.2 (2.252)	17.5 (0.689)	17.3	1.9 (0.075)	Pink
C <sub>2</sub> : Single spring					
4D56* <sup>1</sup> , 4G63 (Carb) .....	58.96 (2.321)	16.5 (0.650)	13.5	2.5 (0.098)	Light blue
C <sub>2</sub> : Twin spring					
No. 1					
4G54 .....	32.73 (1.289)	14.8 (0.583)	8.23	1.3 (0.051)	Green
6G72, 4G64* <sup>5</sup> .....	30.0 (1.181)	15.5 (0.610)	6.15	1.8 (0.071)	None
4G63 (MPI), 4D56* <sup>2,3</sup> .....	30.8 (1.213)	14.1 (0.555)	7.25	1.5 (0.059)	White
4G64* <sup>1,2,4</sup> .....	32.2 (1.268)	14.7 (0.579)	6.5	1.6 (0.063)	Orange

					mm (in.)
	Free height	Outside diameter	Number of loops	Wire diameter	Identification color
No. 2					
4G54, 4G63 (MPI), 4D56*2, *3 .....	43.22 (1.702)	13.84 (0.545)	10.5	2.0 (0.079)	Red
6G72 .....	43.56 (1.715)	14.3 (0.563)	9.45	1.8 (0.071)	Blue
B <sub>2</sub> : Single spring					
4G54 .....	66.68 (2.625)	20.4 (0.803)	12	3.2 (0.126)	Light green
B <sub>2</sub> : Twin spring					
No. 1					
4G63 (MPI), 4G64, 4D56*1, *2, 6G72	35.13 (1.383)	16.16 (0.636)	6	1.3 (0.051)	Red
4D56*3 .....	48.14 (1.895)	19.32 (0.761)	8.75	2.1 (0.083)	White
No. 2					
4G63*1 .....	55.18 (2.172)	18.32 (0.721)	11	2.6 (0.102)	Light green
4G64*1, *2, *4, 4D56*2, 6G72 .....	55.18 (2.172)	22.39 (0.881)	11.75	2.9 (0.114)	Orange
4G64*5 .....	55.9 (2.201)	19.6 (0.777)	9.25	2.8 (0.110)	Light gray
4D56*1 .....	55.18 (2.172)	17.65 (0.695)	11	2.3 (0.091)	Light blue
4G63 (MPI) .....	50.68 (1.995)	19.15 (0.754)	9.25	3.0 (0.118)	Purple
4D56*3 .....	32.0 (1.260)	15.37 (0.605)	8	1.9 (0.075)	Yellow
Outer spring					
4G63 (Carb) .....	17.5 (0.689)	12.5 (0.492)	4	1.6 (0.063)	Red
Inner spring					
4G63 (Carb) .....	56.4 (2.220)	18.8 (0.740)	9.2	2.4 (0.094)	Green

## NOTE:

- In case of twin spring, No. 1 spring is valve body side one, while No. 2 spring is transmission case side one.
- \*1: For L300, \*2: For Pajero/Montero, \*3: For L400, \*4: For L400 <Up to MODEL 1995>, \*5: For L400 <From MODEL 1996>

**TORQUE SPECIFICATIONS**

	Torque		
	Nm	kgm	ft.lbs.
<b>Transmission</b>			
Converter housing installation bolts			
10 mm (0.39 in.) dia. bolt .....	35	3.5	25
12 mm (0.47 in.) dia. bolt .....	58	5.8	42
Oil pump assembly installation bolt .....	22	2.2	16
Oil pump body and cover-tightening bolt .....	7.5	0.75	5.4
Center support installation bolt .....	26	2.6	19
Adapter installation bolt .....	35	3.5	25
Cover plate installation screw .....	7.5	0.75	5.4
All bolts of valve body .....	5.5	0.55	4.0
Throttle cam installation bolt .....	7.5	0.75	5.4
Valve body assembly installation bolt .....	10	1.0	7.2
Oil screen installation bolt .....	5.5	0.55	4.0
Parking cam plate installation bolt .....	7.5	0.75	5.4
Oil pan installation bolt .....	4.5	0.45	3.3
Plug (for hydraulic test) .....	7.5	0.75	5.4
Oil pan drain plug .....	21	2.1	15
Overdrive solenoid valve installation bolt .....	13	1.3	9
Plug .....	13	1.3	9
Manual lever installation nut .....	16	1.6	12

	Torque		
	Nm	kgm	ft.lbs.
<b>Transfer</b>			
Transfer case installation bolt .....	36	3.6	26
Transfer case installation nut .....	36	3.6	26
Chain cover bolt .....	36	3.6	26
Side cover bolt .....	9	0.9	6.5
Rear cover bolt .....	36	3.6	26
Cover bolt .....	19	1.9	14
Control housing bolt .....	19	1.9	14
Oil filler plug .....	33	3.3	24
Drain plug .....	33	3.3	24
Select plug .....	33	3.3	24
Locking plate bolt .....	19	1.9	14
Rear output shaft lock nut .....	115	11.5	83
Speedometer sleeve clamp bolt .....	19	1.9	14
Seal plug (V4AW2-1 only) .....	36	3.6	26
4WD switch (V4AW2-1 only) .....	30	3.0	22
Control lever assembly to control housing .....	19	1.9	14
Pulse generator (V4AW2-1 only) .....	12	1.2	8.1
Pulse rotor (V4AW2-1 only) .....	8	0.8	5.8
Detection switch (V4AW2-3, 7 only) .....	36	3.6	26
Poppet plug (V4AW2-3, 7 only) .....	36	3.6	26
H-L shift rail plug (V4AW2-3, 7 only) .....	33	3.3	24
Oil dam cover (SUPER SELECT 4WD only) .....	9	0.9	6.5
Bearing retainer (SUPER SELECT 4WD only) .....	19	1.9	14
Dynamic damper (SUPER SELECT 4WD-6G72 engine only) .....	70	7.0	51
Center differential case .....	65	6.5	47

**SEALANTS**

	Specified sealants and adhesives	Quantity
<b>Transmission</b>		
Oil pump bolt (threads) .....	3M ATD Part No. 8660 or equivalent .....	As required
<b>Transfer</b>		
Adapter gasket (both sides) .....	Mitsubishi genuine sealant .....	As required
	Part No. MD997740 or equivalent	
Air breather (press-in circumference) – V4AW2-1 only .....	Mitsubishi genuine sealant .....	As required
	Part No. MD997740 or equivalent	
Chain cover gasket (both sides) – V4AW2-1 only .....	Mitsubishi genuine sealant .....	As required
	Part No. MD997740 or equivalent	
Rear cover gasket (both sides) – V4AW2-1 only .....	Mitsubishi genuine sealant .....	As required
	Part No. MD997740 or equivalent	
Cover gasket (both sides) – V4AW2-1 only .....	Mitsubishi genuine sealant .....	As required
	Part No. MD997740 or equivalent	
Chain cover – V4AW2-3, 7 only .....	Mitsubishi genuine sealant .....	As required
	Part No. MD997740 or equivalent	
Rear cover – V4AW2-3, 7 only .....	Mitsubishi genuine sealant .....	As required
	Part No. MD997740 or equivalent	
Cover – V4AW2-3, 7 only .....	Mitsubishi genuine sealant .....	As required
	Part No. MD997740 or equivalent	
Poppet plug – V4AW2-3, 7 only .....	3M ATD Part No. 8660 or equivalent .....	As required
Plug – V4AW2-3, 7 only .....	3M ATD Part No. 8660 or equivalent .....	As required
Bolt (threads) .....	3M STUD Locking 4170 or equivalent .....	As required

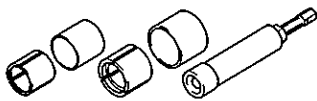

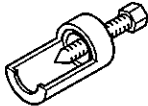
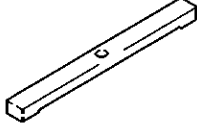
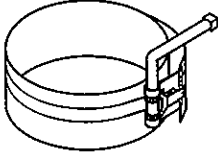
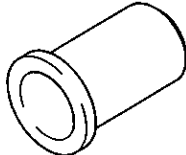

**ADJUSTMENT SNAP RINGS AND SPACERS**

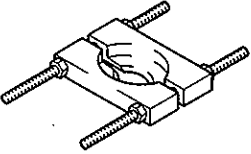
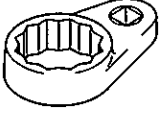
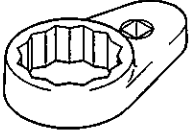


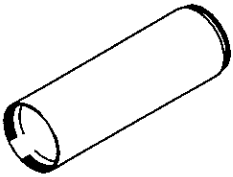
Part name	Thickness mm (in.)	Identification symbol	Parts No.
<b>Transfer</b>			
Snap ring .....	2.30 (0.091)	–	MD704199
	(For adjustment of input gear bearing)	2.35 (0.093)	Red
		2.40 (0.094)	White
		2.45 (0.096)	Blue
		2.50 (0.098)	Green
Snap ring .....	2.70 (0.106)	Purple	MD704204
	(For adjustment of input gear assembly)	2.75 (0.108)	Pink
		2.80 (0.110)	Yellow
		2.85 (0.112)	White
		2.90 (0.114)	Blue
Snap ring .....	2.14 (0.084)	–	MD704212
	(For adjustment of H-L clutch hub)	2.21 (0.087)	Yellow
		2.28 (0.090)	White
		2.35 (0.093)	Blue
		2.42 (0.095)	Red

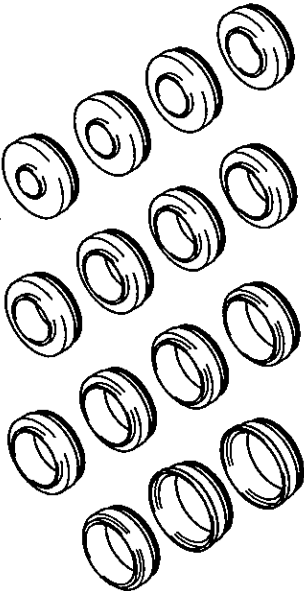
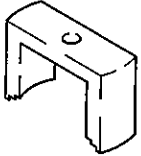
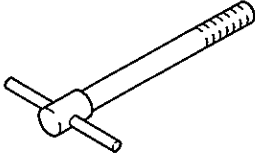
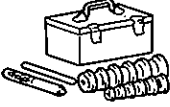
Part name	Thickness mm (in.)	Identification symbol	Parts No.
Spacer .....	0.84 (0.033)	84	MD734326
(For adjustment of rear output shaft)	0.93 (0.037)	93	MD734327
(For adjustment of center differential end play)	1.02 (0.040)	02	MD734328
<V4AW2-3, 7 (Super-select 4WD)>	1.11 (0.044)	11	MD734329
	1.20 (0.047)	20	MD734330
	1.29 (0.051)	29	MD734331
	1.38 (0.054)	38	MD734332
	1.47 (0.058)	47	MD734333
	1.56 (0.061)	56	MD734334
	1.65 (0.065)	65	MD734335
	1.74 (0.069)	74	MD734336
	1.83 (0.072)	83	MD734337
	1.92 (0.076)	92	MD734338
	2.01 (0.079)	01	MD734339
Snap ring .....	2.26 (0.089)	–	MD734311
V4AW2-3, 7 (Super-select 4WD)	2.33 (0.092)	Red	MD734312
(For adjustment of rear output shaft bearing end play)	2.40 (0.094)	White	MD734313
	2.47 (0.097)	Blue	MD734314
Snap ring .....	2.56 (0.101)	–	MD738393
V4AW2-3, 7 (Super-select 4WD)	2.63 (0.104)	Red	MD738394
(For adjustment of 2-4WD synchronizer hub end play)	2.70 (0.106)	White	MD738395
	2.77 (0.109)	Blue	MD738396
	2.84 (0.112)	Yellow	MD738397
Snap ring .....	2.56 (0.101)	–	MD738386
V4AW2-3, 7 (Super-select 4WD)	2.63 (0.104)	Red	MD738387
(For adjustment of differential lock hub end play)	2.70 (0.106)	White	MD738388
	2.77 (0.109)	Blue	MD738389
	2.84 (0.112)	Yellow	MD738390
	2.91 (0.115)	Green	MD738391
	2.98 (0.117)	Purple	MD738392



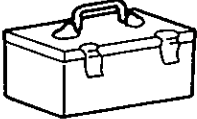



**2. SPECIAL TOOLS**

Tool	Number	Name	Use
	MD998192	Counter gear bearing puller	Installation of the bearing
	MD998211	Retainer	Disassembly and reassembly of No. 3 brake spring
	MD998212	Oil pump puller	Removal of oil pump
	MD998217	Gauge	Check of quality of assembly condition
	MD998335	Oil pump band	Assembly of oil pump
	MD998382	Oil seal installer	Installation of clutch hub (H-L)
	MD998412	Guide	Installation of oil pump

Tool	Number	Name	Use
	MD998801 MD998901	Bearing remover Bearing remover	Removal of bearing Removal of bearing
	MD998809	Lock nut wrench (41)	Removal of the transfer rear output shaft lock nut
	MD998810	Lock nut wrench (46)	Removal and installation of rear output shaft lock nut
	MD998812	Installer cap	Installation of the bearing
	MD998813	Installer-100	Installation of the bearing
	MD998814	Installer-200	Installation of the bearing

Tool	Number	Name	Use
	MD998815 MD998816 MD998817 MD998818 MD998819 MD998820 MD998821 MD998822 MD998823 MD998824 MD998825 MD998826 MD998827 MD998829 MD998830	Installer adapter	Installation of the bearing
	MD998903	Spring compressor	Disassembly and reassembly of clutch and brake
	MD998904	Bolt	Disassembly and reassembly of No. 3 brake spring
	MB990925	Bearing and oil seal installer set	Installation of the oil seal

## CONTENTS OF BEARING AND OIL SEAL INSTALLER SET MB990925

Set	Contents			
	Tool	Name	Tool No.	Diameter mm (in.)
Bearing and oil seal installer set MB990925  		Installer adapter	MB990926	39 (1.535)
			MB990927	45 (1.772)
			MB990928	49.5 (1.949)
			MB990929	51 (2.008)
			MB990930	54 (2.126)
			MB990931	57 (2.244)
			MB990932	61 (2.402)
			MB990933	63.5 (2.500)
			MB990934	67.5 (2.657)
			MB990935	71.5 (2.815)
			MB990936	75.5 (2.972)
			MB990937	79 (3.110)
				
		Brass bar	MB990939	–

### 3. TRANSMISSION

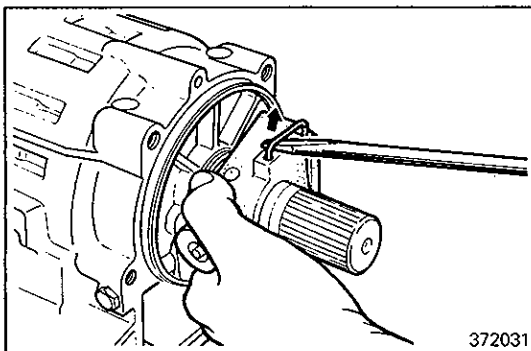
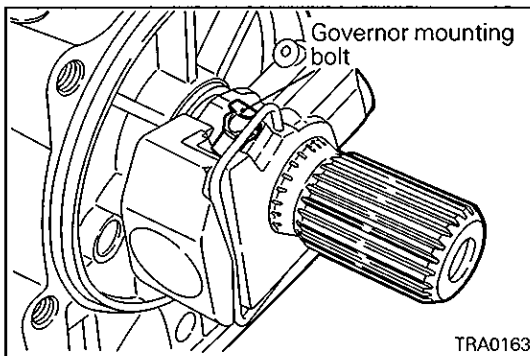
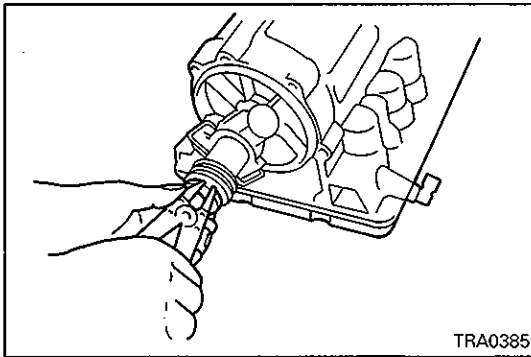
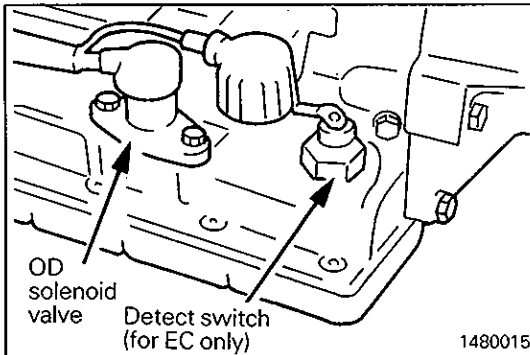
#### DISASSEMBLY

- (1) Prior to disassembling any transmission and transfer assemblies, plug all openings and thoroughly clean exterior of the unit, preferably by steam.
- (2) Remove the torque converter.
- (3) Remove the transfer subassembly from transmission subassembly.
- (4) Place the transmission subassembly on a bench with the oil pan down.

#### Caution

- **Do not place the assembly with the oil pan up before the oil pan is removed. This is necessary to prevent foreign matter in the oil pan from entering the valve body.**

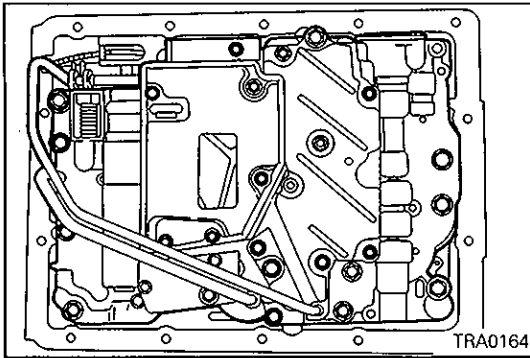
- (5) Remove the O.D. solenoid valve and the detect switch (EC only).
- (6) Remove the extension housing and gasket (2WD).



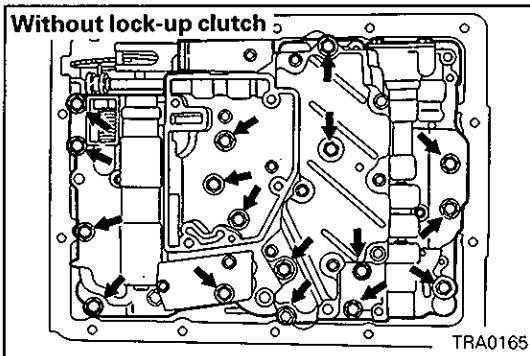
- (7) Remove the snap ring and speedometer drive gear (2WD).

- (8) Remove the adapter and gasket, and remove the oil seal from the adapter (4WD).
- (9) Remove the governor mounting bolt.

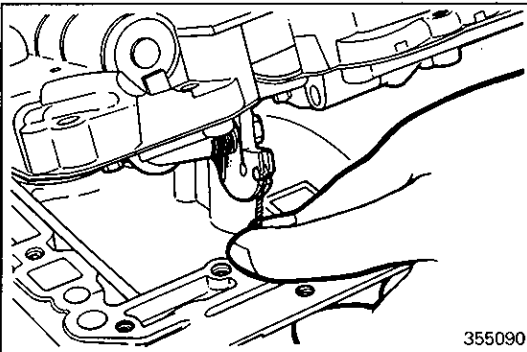
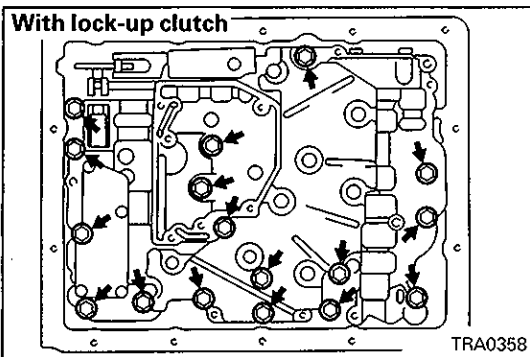
- (10) Lift up the governor retaining ring lightly by a screwdriver and remove the governor assembly from the output shaft.



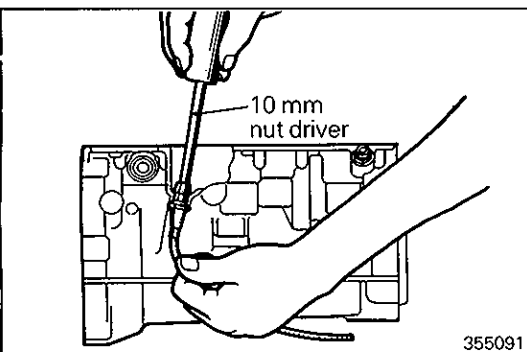
- (11) With the oil pan down, remove the oil pan bolts and then remove the oil pan and gasket.
- (12) Place the assembly with the valve body up.
- (13) Remove the oil pipe, prying with a screwdriver and using care not to cause deformation.
- (14) Remove the oil screen and spacer.



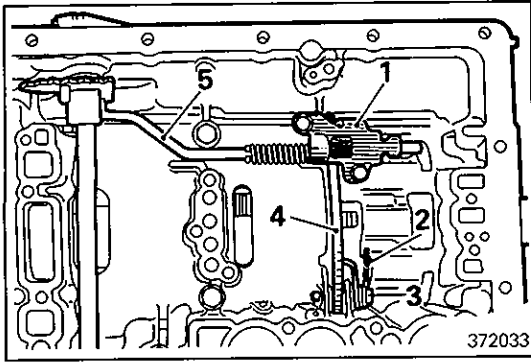
- (15) Remove 17 bolts attaching the valve body assembly.



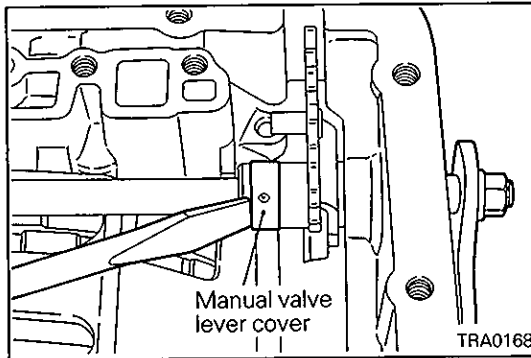
- (16) Raise the valve body assembly slowly and remove the throttle inner cable from the throttle cam. Then, remove the valve body assembly.



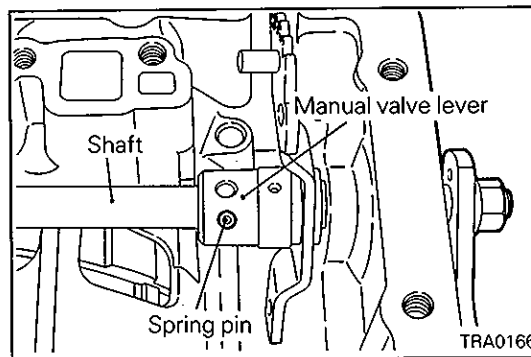
- (17) Push the throttle cable adapter to disconnect the throttle cable from the case.



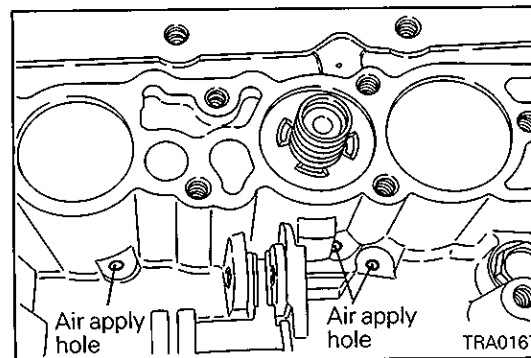
(18) Remove the plate 1 and parking pawl torsion spring 2. Then, pull out pivot pin 3 and remove parking pawl 4. Remove parking rod 5 from the manual valve detent lever.



(19) Using a screwdriver, move the manual valve lever cover.



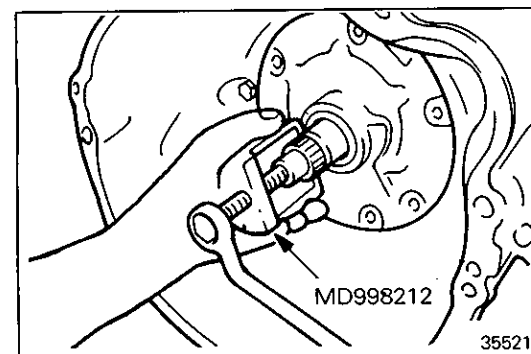
(20) Drive out spring pin, and then remove shaft and manual valve lever.  
 (21) Remove the oil seal from the manual valve shaft using a screwdriver. When installing the oil seal, do so evenly.



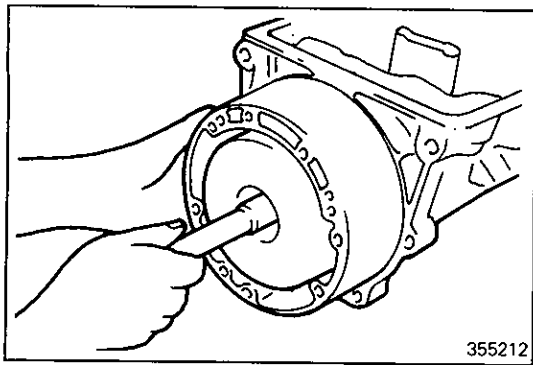
(22) Remove the accumulator piston by blowing air from the illustrated position.

**Caution**

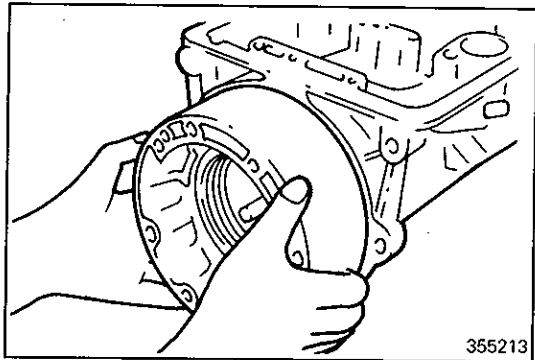
- Use care as the piston and fluid pops and gushes out. Pistons for B<sub>2</sub>, C<sub>2</sub>, and C<sub>1</sub> have been installed from the front to rear in the order shown. Store the removed pistons and springs arranged in this order.



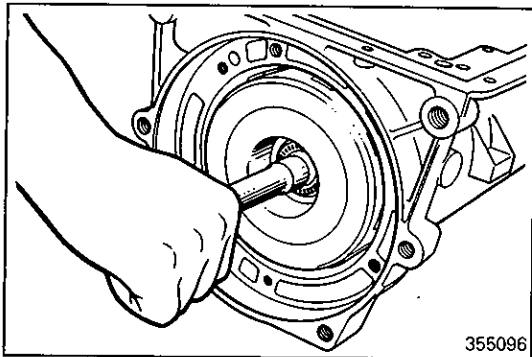
(23) Remove the oil pump attaching bolts.  
 (24) Remove the oil pump by using the special tool.  
 (25) Remove the converter housing attaching bolts.  
 (26) Holding the O.D. input shaft by hand, remove the converter housing.



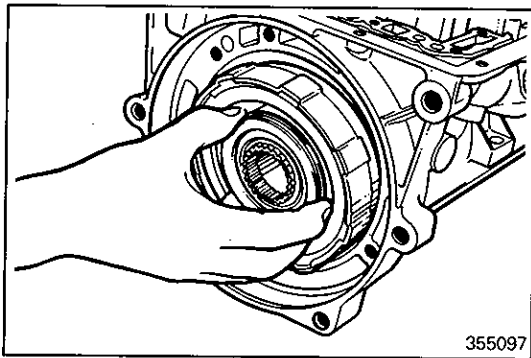
- (27) Remove the O.D. input shaft, planetary gear and O.D. clutch assembly from the O.D. case.
- (28) Separate the O.D. clutch from the O.D. planetary gear.



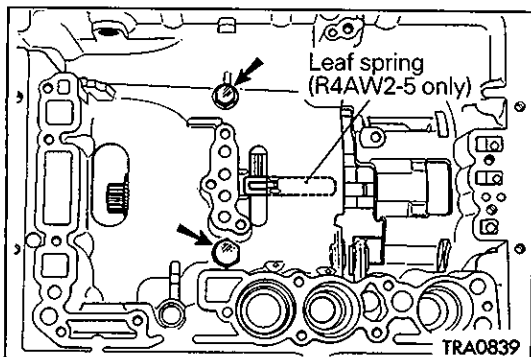
- (29) Remove the O.D. case assembly.



- (30) Remove the forward clutch assembly.

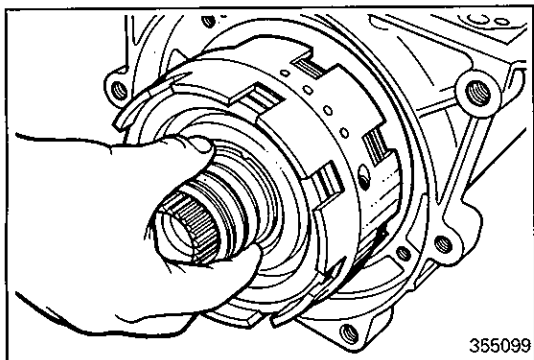


- (31) Remove the direct clutch assembly.

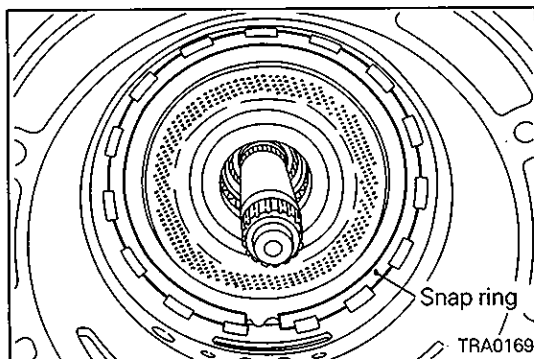


- (32) Remove the two center support attaching bolts.
- (33) Remove the leaf spring. <R4AW2-5>

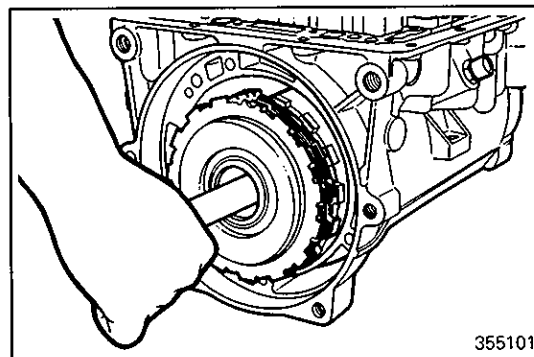




(34) Remove the center support and sun gear assembly together from the case.

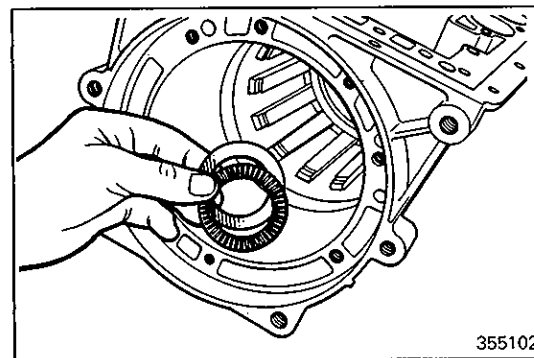


(35) Remove the snap ring from the front planetary carrier by using a screwdriver.

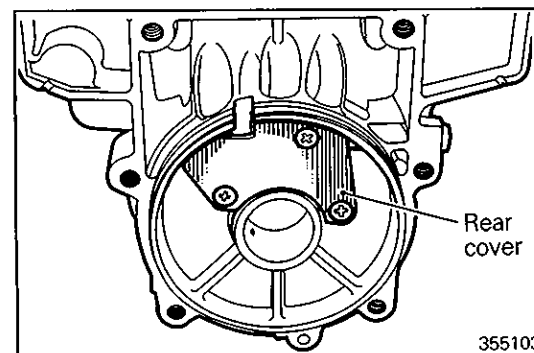


(36) Holding the intermediate shaft, remove the carrier assembly from the case.

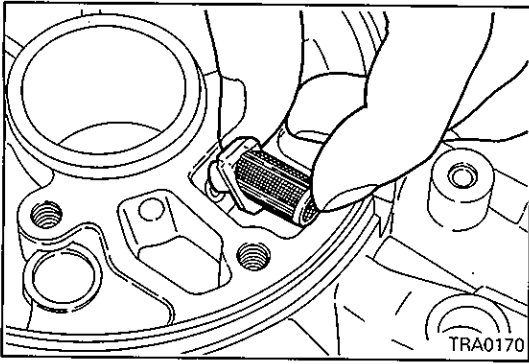
(37) Remove the No. 3 brake tube.



(38) Remove the output shaft thrust bearing and race from the case.



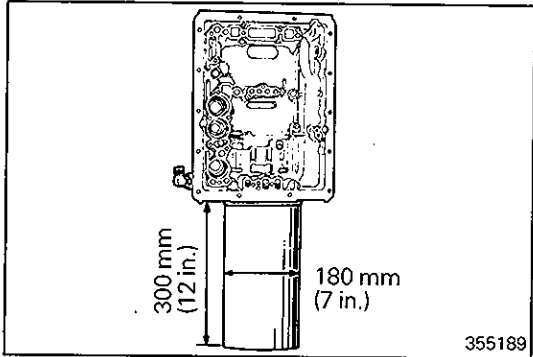
(39) Remove the rear cover and rear cover gasket.



(40) Remove the filter.

**REASSEMBLY**

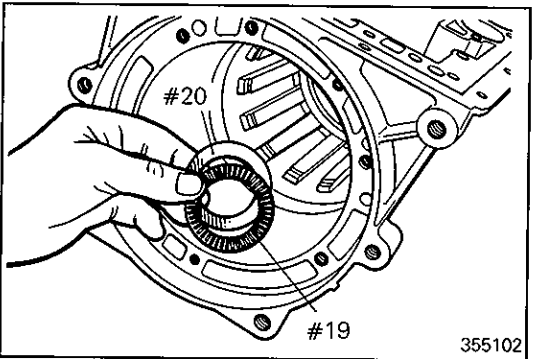
(1) Place the transmission case on a cylinder as illustrated. Use of a cylinder measuring 300 mm (12 in.) long and 180 mm (7 in.) in diameter is recommended. Place shock absorbing material between the case and the cylinder to prevent damage to the case.



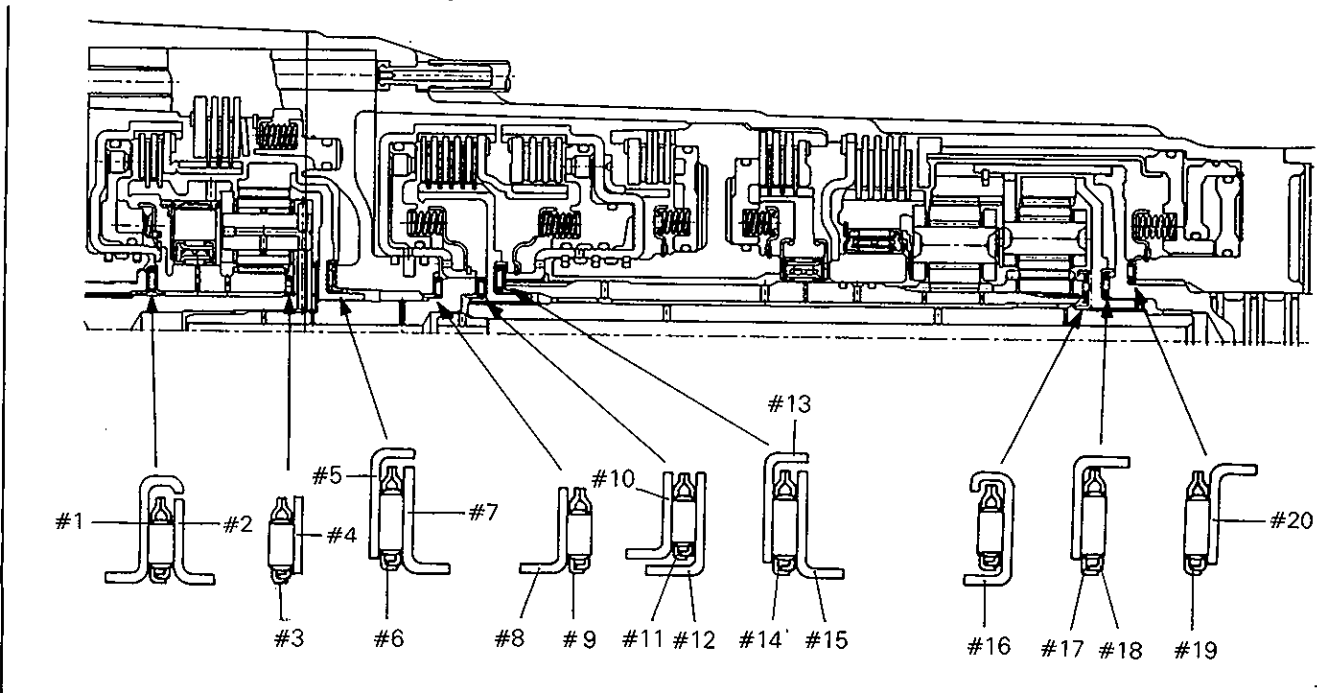
(2) Install output shaft thrust bearing race #20 and thrust bearing #19 in the case.

**Caution**

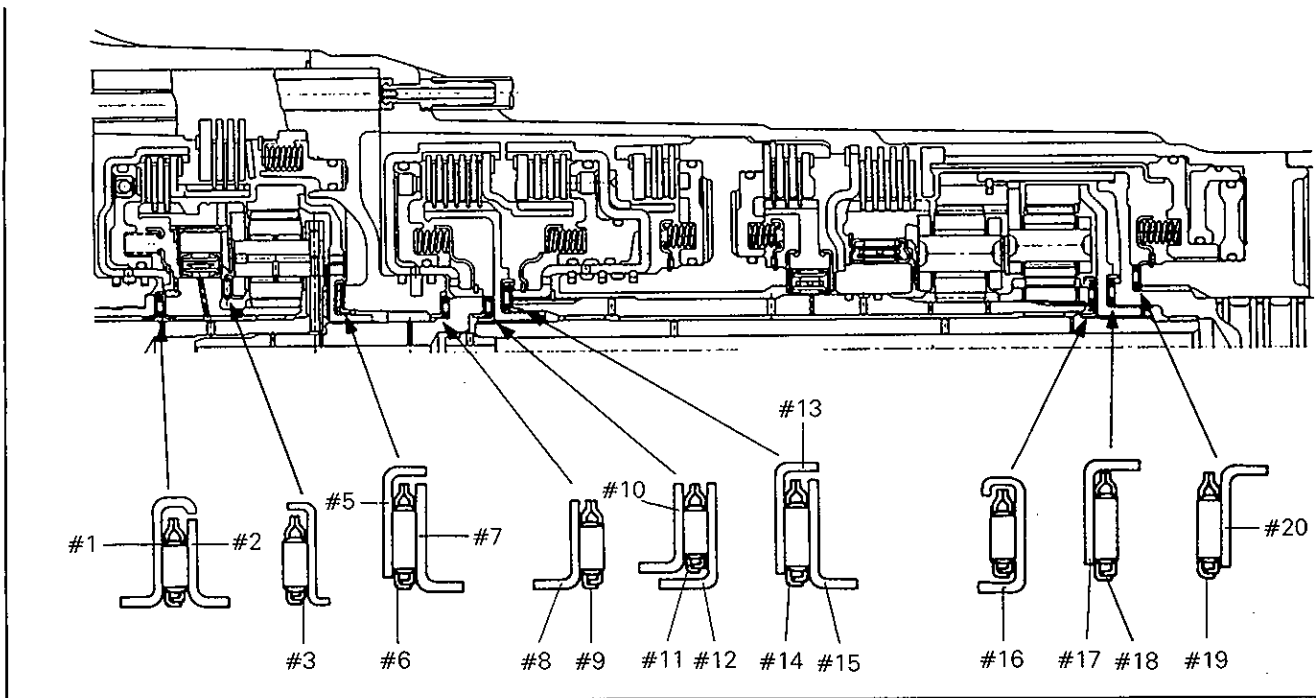
- When installing the thrust bearing and race, note their direction, referring to the illustration.



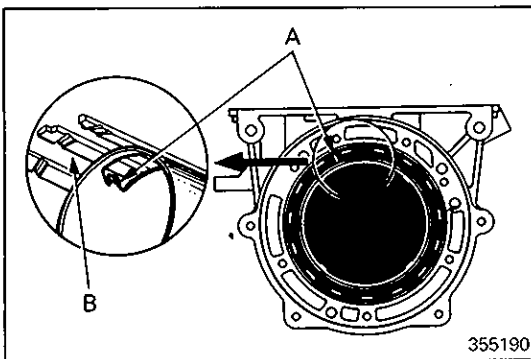
**Transmission with 4th speed gear ratio of 0.688**



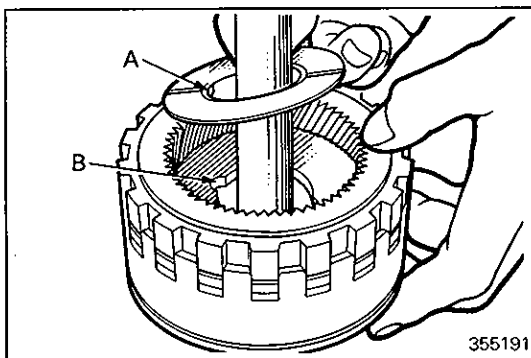
Transmission with 4th gear ratio of 0.730



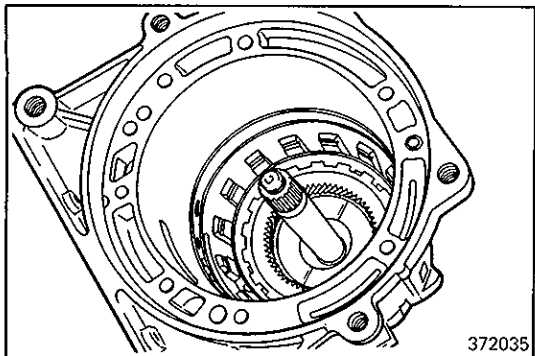
TRA0359



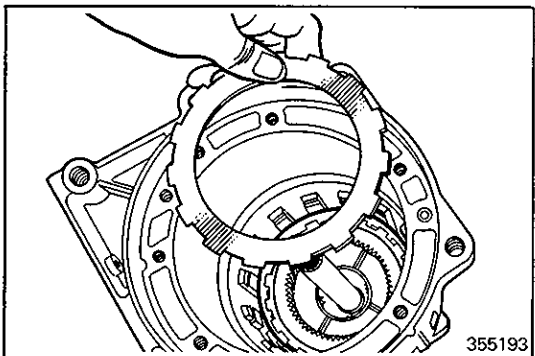
- (3) Install the apply tube in the case. Make sure that the pawl at the end of the tube is inserted to inside of the piston.



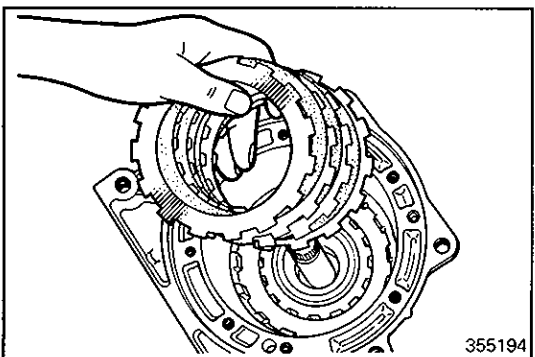
- (4) Install the thrust washer on the planetary carrier, seating its pawl (A) securely in the (B) of the carrier.



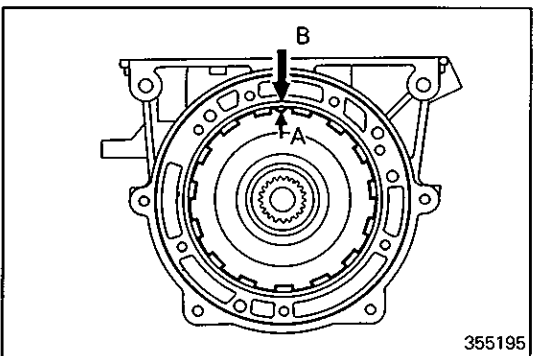
- (5) Install the rear planetary gear and output shaft assembly in the case. Insert slowly and taking care not to hit at the bearing.



- (6) Install the backing plate in the case. Insert firmly until it comes into contact with the apply tube.



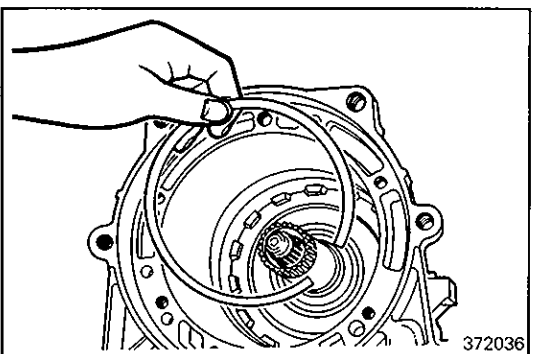
- (7) Apply grease to the thrust washer and attach it to the front planetary gear carrier. Then install the front planetary gear assembly in the ring gear.  
 (8) Install the clutch discs and plates alternately in this order on the backing plate.



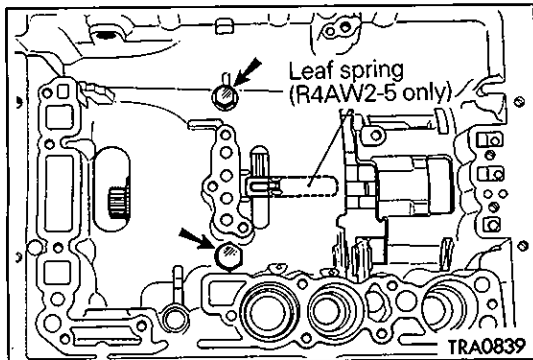
- (9) Place the transmission case on a bench with the oil pan mounting surface up.  
 (10) Insert the sun gear in the one-way clutch inner race and install the assembly in the case, aligning (A) of the one-way clutch inner race with (B) of the case. If the inner race is hard to engage, turn the sun gear while holding the front planetary ring gear. Then, holding the one-way clutch inner race, remove the sun gear. Fit the removed sun gear to the center support.

#### Caution

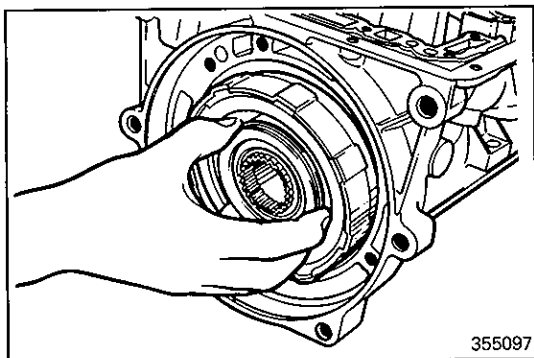
- Check the snap ring end gap position to make sure that the carrier is seated completely.



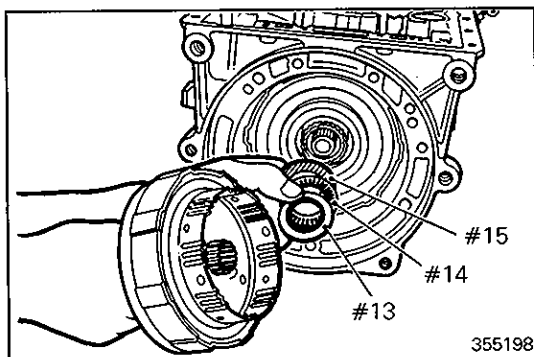
- (11) Install the snap ring.



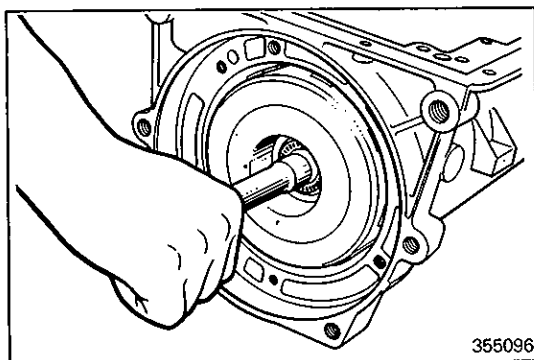
- (12) Install the leaf spring. <R4AW2-5>
- (13) Install the center support assembly in the case, checking correct seating of the one-way clutch on the center support and pushing the center support while pulling the sun gear. The center support will not be installed completely in the case if the one-way clutch is floating.
- (14) Pushing the center support backward, tighten the bolts alternately on side (A) in about 7 Nm (0.7 kgm, 5 ft.lbs.) increments. Finally tighten to specified torque.



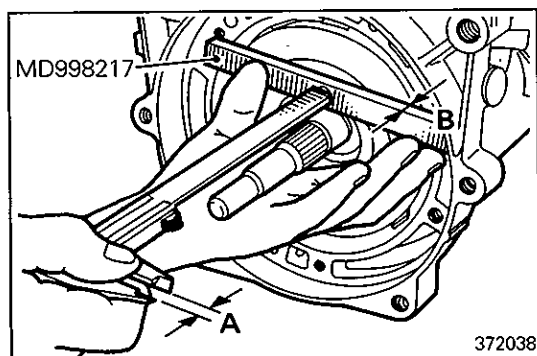
- (15) Install the direct clutch assembly.



- (16) Attach thrust race #13, bearing #14 and thrust race #15 onto the rear of the forward clutch hub using petrolatum and noting the direction of the thrust bearing race.

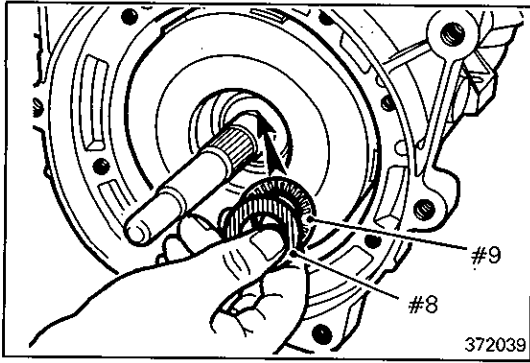


- (17) Install the forward clutch assembly, using care not to drop the thrust bearing attached in the step above.

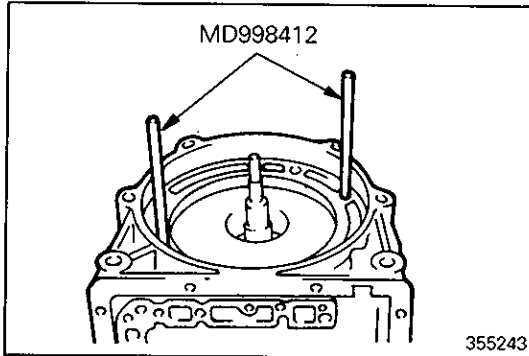


- (18) Check that the forward clutch has been installed completely by using the special tool.  
Measured value (A) – gauge thickness (B) = forward clutch installation height

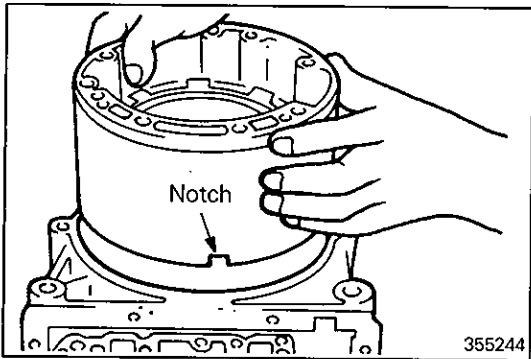
**Standard value: Approx. 1.5 mm (0.059 in.)**



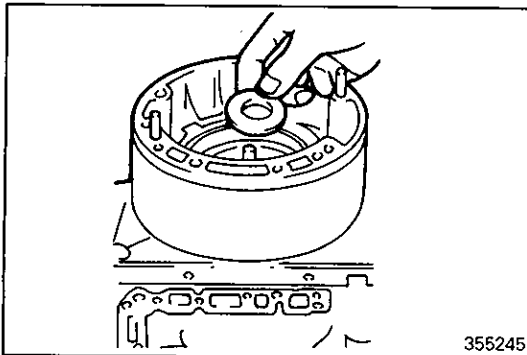
(19) Attach thrust bearing #9 and race #8 to the forward clutch using petrolatum and noting the direction of the thrust bearing race.



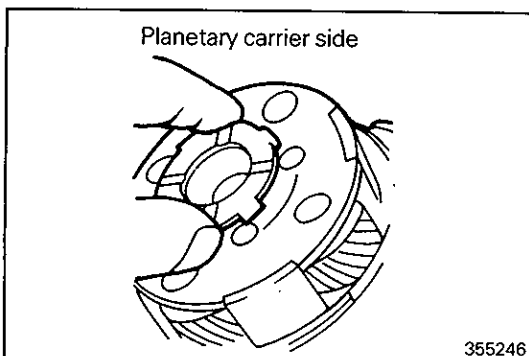
(20) Install special tool in the transmission case.



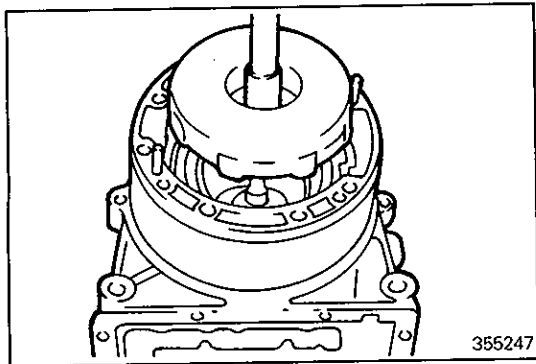
(21) Along the guides, install the O.D. case assembly in the transmission case, positioning the O.D. case notch as illustrated.



(22) Install the thrust washer on the O.D. planetary gear.



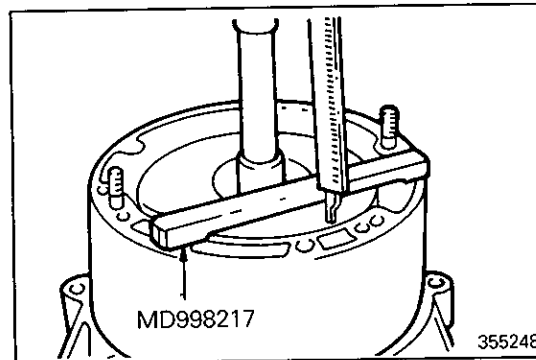
(23) Apply petrolatum to the rear of the O.D. planetary carrier and attach the thrust washer thereon.



(24) Install the O.D. clutch and planetary gear assembly with the thrust washer in the case slowly.

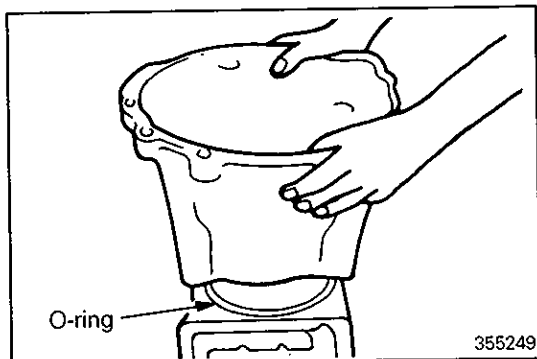
**NOTE**

Align the O.D. case clutch disc lugs.

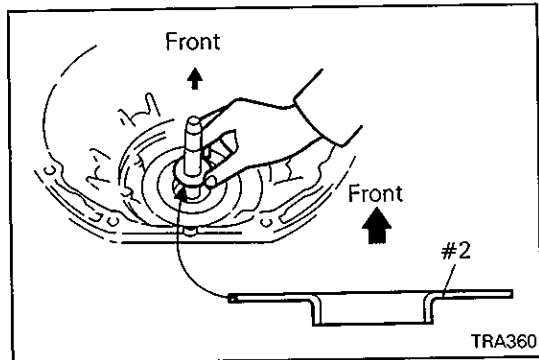


(25) Check that the O.D. clutch and planetary gear set assembly has been installed completely by using the special tool. Measured value – gauge thickness = O.D. clutch assembly installed height

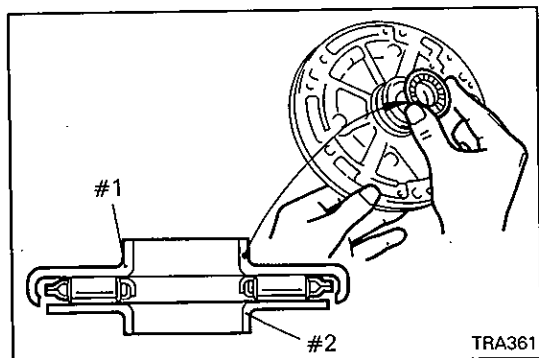
**Standard value: Approx. 2 mm (0.08 in.)**



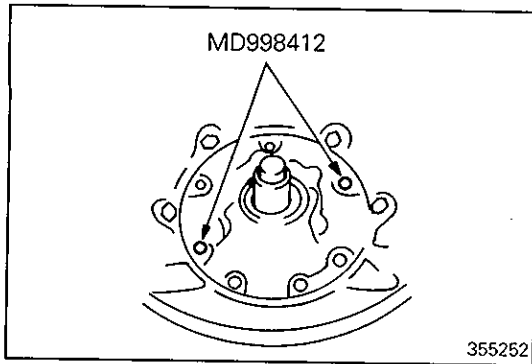
(26) Install the O-ring at illustrated position and then install the converter housing.



(27) Install thrust bearing race #2 over the O.D. input shaft.



(28) Apply petrolatum to the oil pump and install thrust bearing and race #1.



- (29) Install the oil pump slowly by using the special tools.  
 (30) Apply sealer to the set bolts and tighten them uniformly and little by little. Check input shaft end play and check that the shaft turns lightly.

**Specified sealant: 3M ART Part No. 8660 or equivalent**

- (31) Tighten the oil pump assembly attaching bolts to specified torque and check the input shaft end play.

**Standard value: 0.3 – 0.9 mm (0.012 – 0.035 in.)**

- (32) Supply low pressure air to each circuit and check operation by operating noise.

1. O.D. clutch
2. Forward clutch
3. Brake No. 1
4. Brake No. 2
5. Direct clutch
6. Brake No. 3
7. O.D. brake

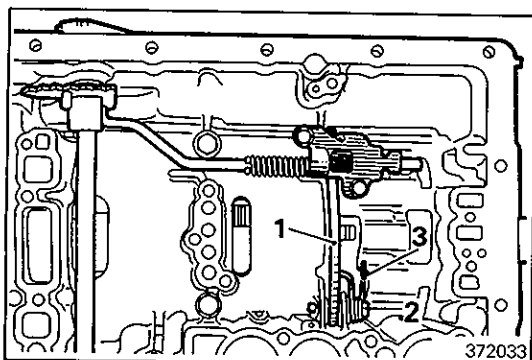
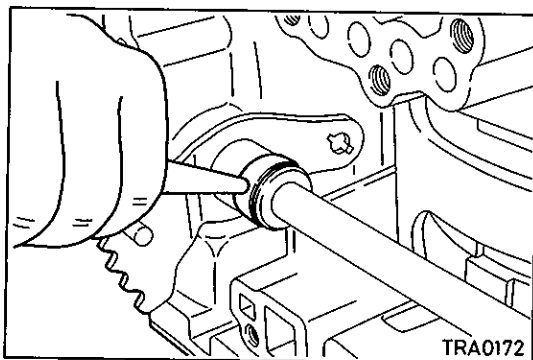
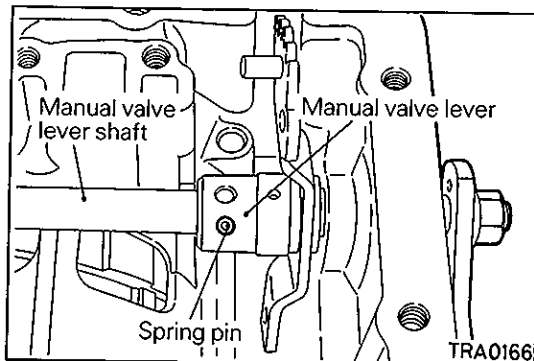
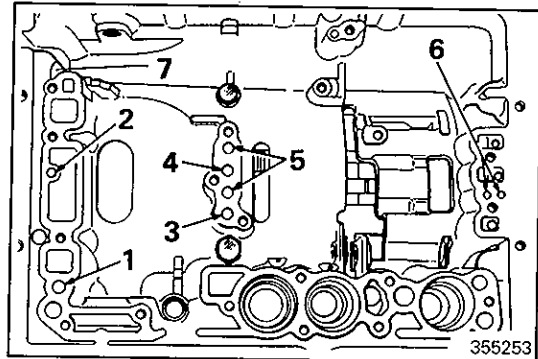
- (33) Install the parking rod assembly on manual valve lever and insert manual valve lever shaft in the case. Then, drive in slotted spring pin.

**Caution**

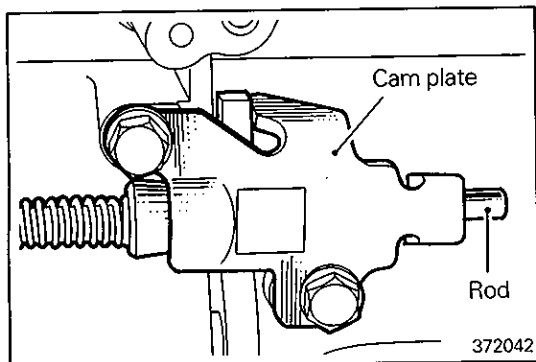
- Be sure to use a new slotted spring pin.
- Install the slotted spring pin in such a way that its end protrudes approx. 1 mm (0.4 in.) from the lever.

- (34) Align the staking hole in the manual valve lever with the indentation in cover and stake the cover using a punch.

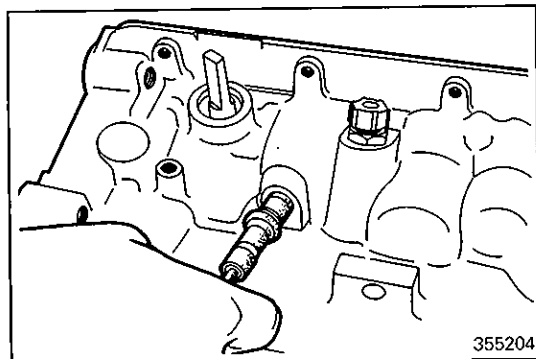
- (35) Place parking pawl 1 in the case and install pivot pin 2 and spring 3.



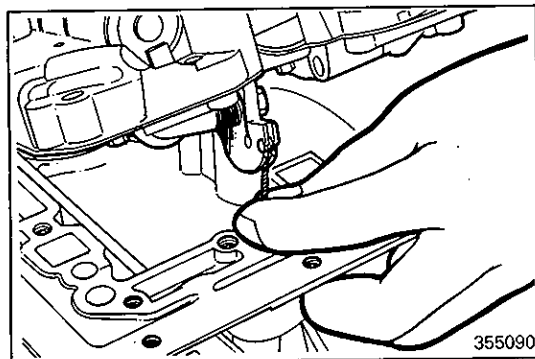




(36) Install the cam plate, making sure that the parking rod assembly protrudes from the cam plate.



(37) Insert the throttle cable in the case, using care not to damage the O-ring.

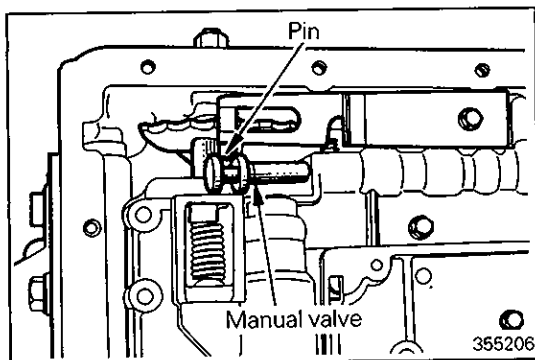


(38) Install accumulator pistons and springs; No. 1 (B2), No. 2 (C2) and No. 3 (C1) from front side.

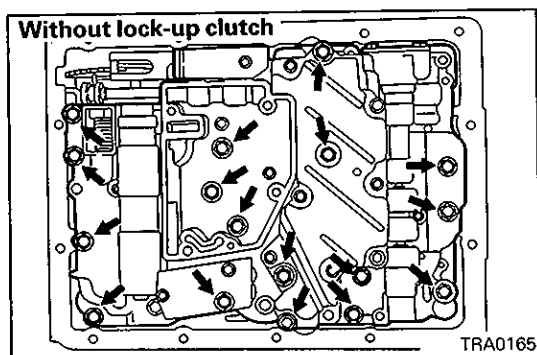
**NOTE**

For identification of accumulator springs, refer to P.23A-1-6.

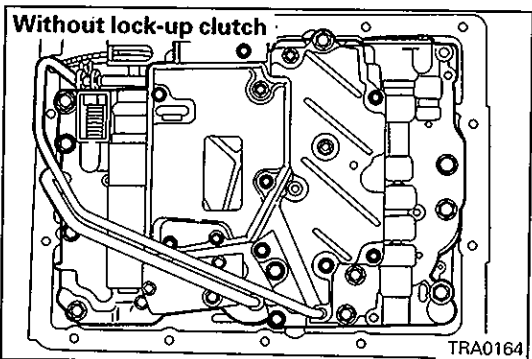
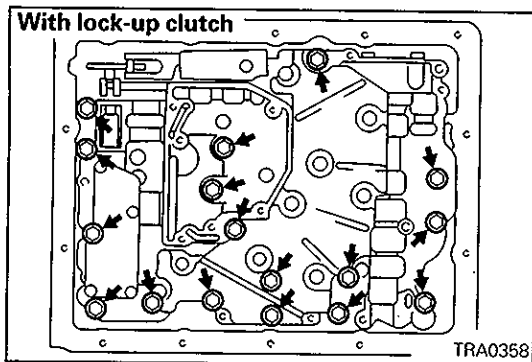
(39) Install throttle cable to the throttle cam of the valve body assembly.



(40) Install two or three valve body attaching bolts temporarily and place the manual valve lever pin in the manual valve groove.



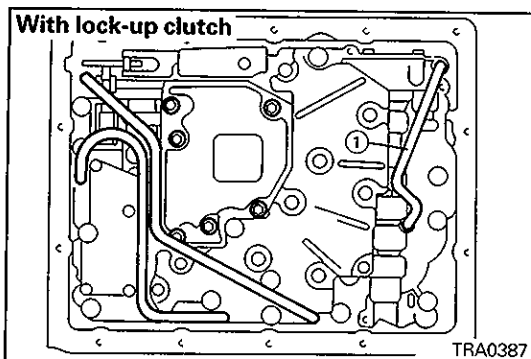
(41) Install 17 valve body attaching bolts and tighten uniformly to specified torque.



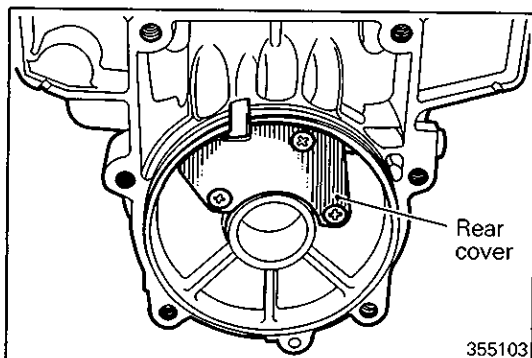
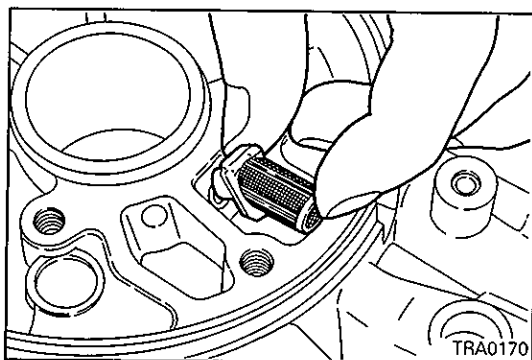
- (42) Install the oil screen and spacer.  
 (43) Shift to "L" and "P" to check that the detent spring roller is completely seated in each portion of the detent lever.  
 (44) Install the oil pipes.

## NOTE:

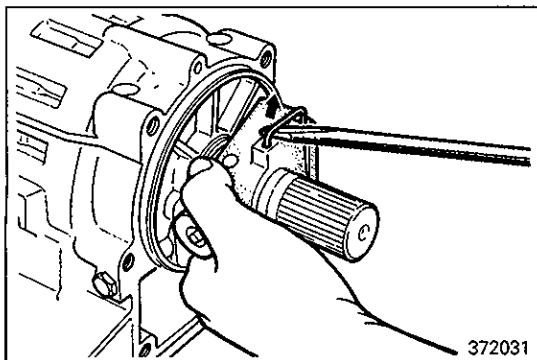
Oil pipe ① is provided only in the transmissions for vehicles for Europe.



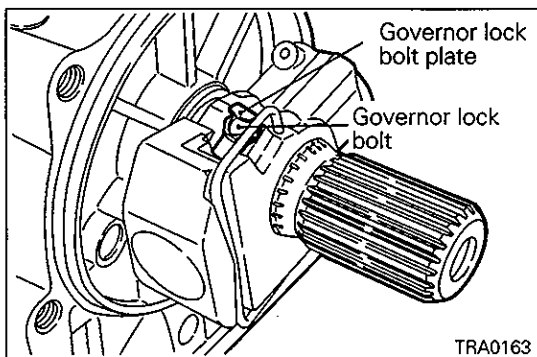
- (45) Attach the magnet to the oil pan (to area directly below the oil screen).  
 (46) Install the oil pan with oil pan gasket attached. First tighten 14 bolts temporarily and then tighten to specified torque uniformly.  
 (47) Install the filter.



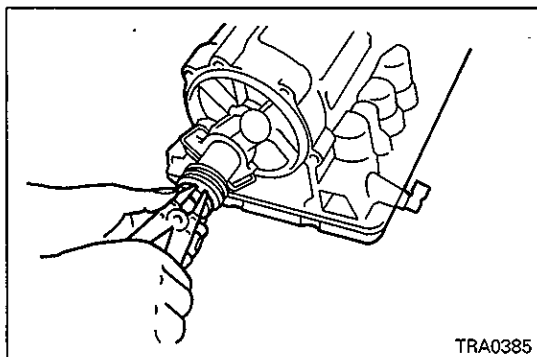
- (48) Install the rear cover on the transmission rear with a rear cover gasket.



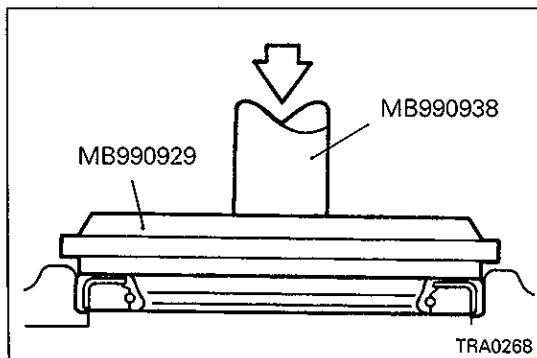
(49) Insert a slot screwdriver between the governor retaining ring and governor body and install the governor to the output shaft.



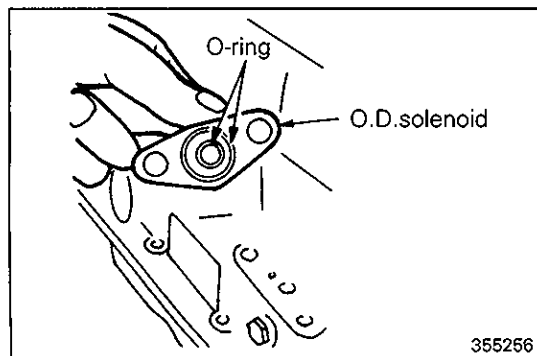
(50) Stake the plate on the governor lock bolt.



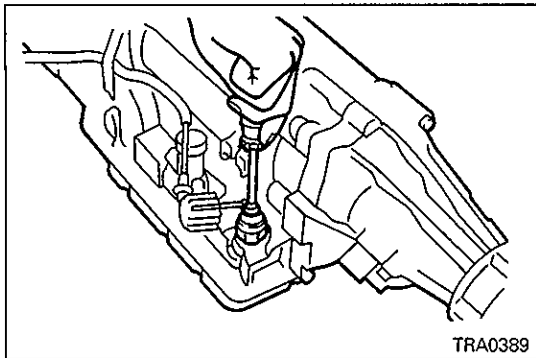
(51) Install the speedometer drive gear and snap ring.  
 (52) Install the extension housing and gasket (2WD).



(53) Using a special tool, install an oil seal on the adaptor, and then pack the oil seal lips with grease. (4WD).  
 (54) Install the adapter and gasket (4WD).



(55) Install the O.D. solenoid with two O-rings.



- (56) Install the detect switch (EC only).  
 (57) Apply a sealant to both sides of the adaptor gasket (4WD).

**Specified sealant:**

**Mitsubishi genuine sealant Part No. 997740 or equivalent**

**Caution**

- Squeeze the sealant out evenly to make sure that it is not broken or excessively supplied.

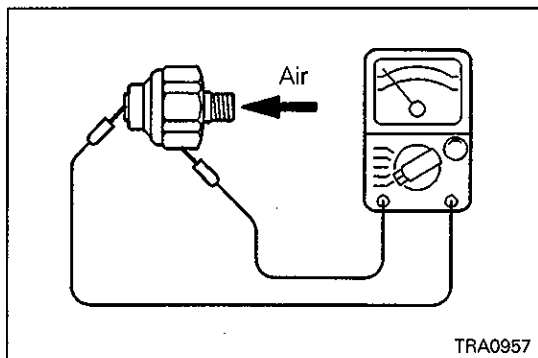
- (58) Install the transfer assembly.  
 (59) Install torque converter to transmission.

**INSPECTION <EC only>**

**INSPECTION OF DETECT SWITCH**

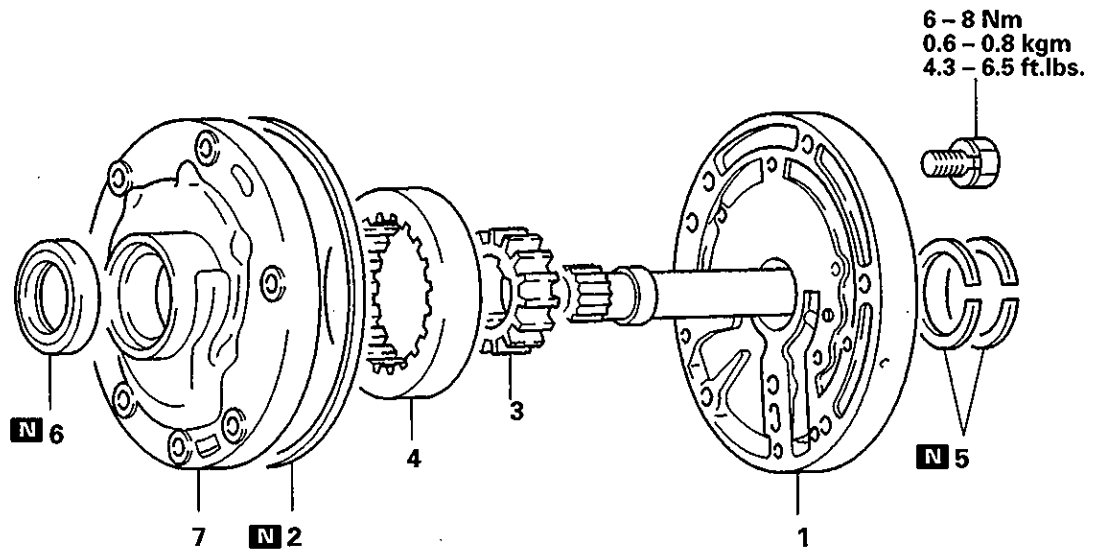
While blowing the low-compressed air into the switch, check the continuity between terminal and switch body.

**Resistance: 0 Ω**



## 4. OIL PUMP

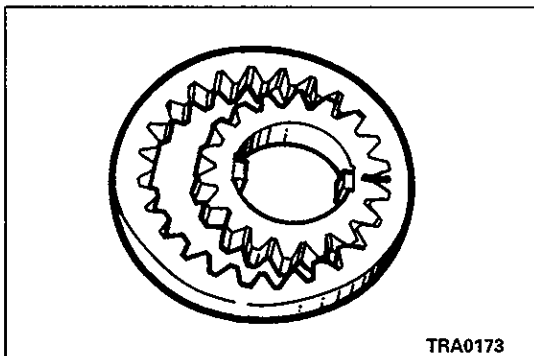
### DISASSEMBLY AND REASSEMBLY



#### Disassembly steps

- 1. Stator support
- 2. O-ring
- Ⓐ Ⓒ 3. Oil pump drive gear
- Ⓐ Ⓒ 4. Oil pump driven gear
- Ⓑ 5. Seal ring
- Ⓐ 6. Oil seal
- 7. Oil pump body

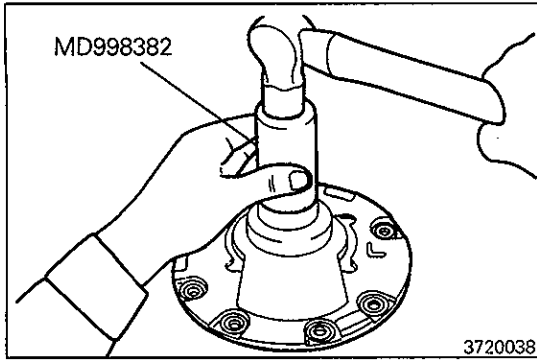
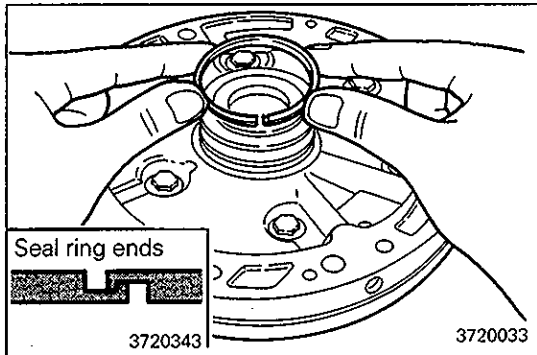
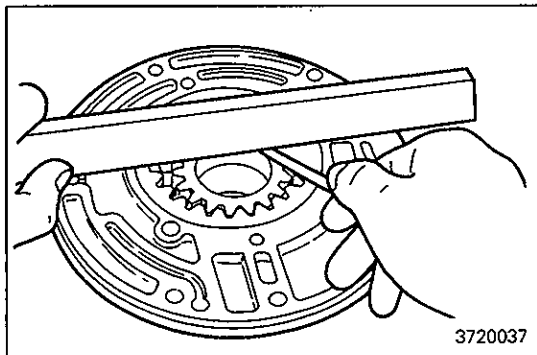
TRA0913



#### SERVICE POINT OF DISASSEMBLY

##### Ⓐ REMOVAL OF OIL PUMP DRIVE GEAR / OIL PUMP DRIVEN GEAR

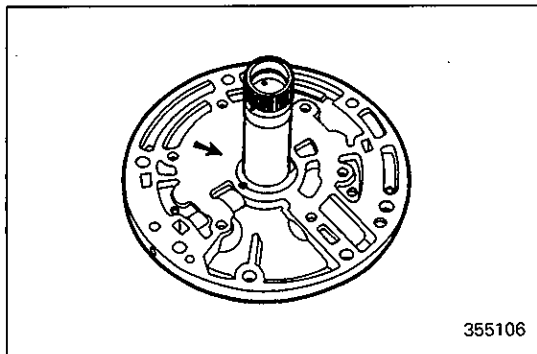
- (1) Take out the oil pump drive gear and driven gear from the pump body. Put mating marks on the side of removed gears for their reassembly in correct direction. (Use a felt marker or equivalent.)

**SERVICE POINT OF REASSEMBLY****A INSTALLATION OF OIL SEAL****B INSTALLATION OF SEAL RINGS****C INSTALLATION OF OIL PUMP DRIVEN GEAR / OIL PUMP DRIVE GEAR**

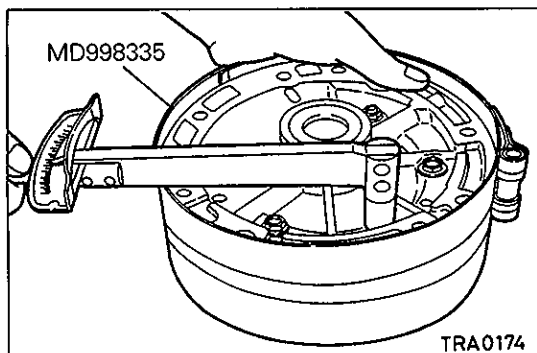
- (1) Install the driven and drive gears on the oil pump body in correct directions according to the marks put during disassembly.
- (2) Using a steel straightedge and a feeler gauge, measure the side clearance of drive and driven gears.

**Standard value: 0.02 – 0.05 mm (0.0008 – 0.0020 in.)**

**Limit: 0.1 mm (0.004 in.)**

**D INSTALLATION OF STATOR SUPPORT**

- (1) Damage or wear of the stator support surface in contact with the oil pump gear (indicated by arrow).



- (2) Assemble the body and stator support and tighten the six bolts finger-tight.
- (3) Tighten outside of the cover and support by using the special tool.
- (4) Tighten the bolts to specified torque.

# 5. OVERDRIVE CLUTCH

## DISASSEMBLY AND REASSEMBLY

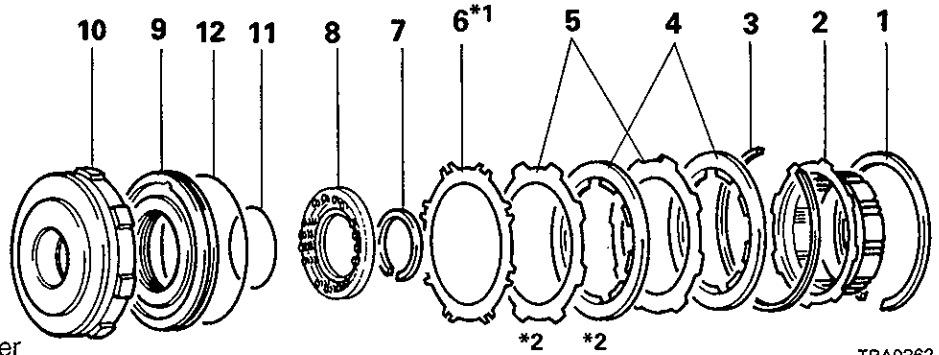
### Disassembly steps

- 1. Snap ring No. 2
- 2. OD brake hub
- 3. Snap ring No. 1
- 4. Clutch disc
- 5. Clutch plate
- 6. Cushion plate\*1
- 7. Snap ring
- 8. Return spring and retainer
- 9. OD clutch piston
- 10. OD clutch cylinder
- 11. O-ring
- 12. O-ring

**NOTE:**

\*1 Not provided in transmissions combined with 4G54 engine.

\*2 Except L300 (4G64) and L400 (4G64)

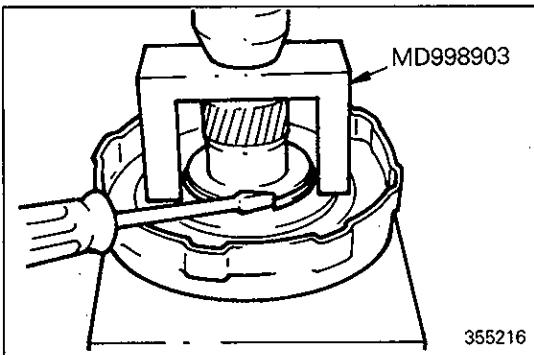


TRA0362

### SERVICE POINT OF DISASSEMBLY

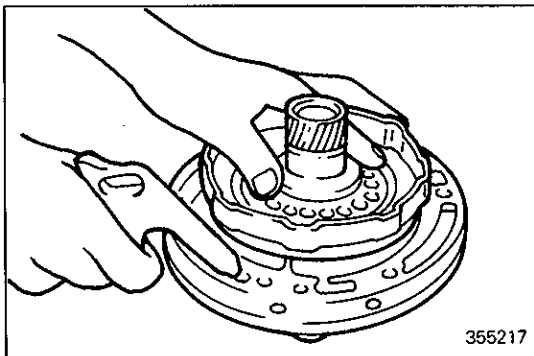
#### Ⓐ REMOVAL OF SNAP RING

- (1) Compress the spring and remove the snap ring by using the special tool.



#### Ⓑ REMOVAL OF OVERDRIVE CLUTCH PISTON

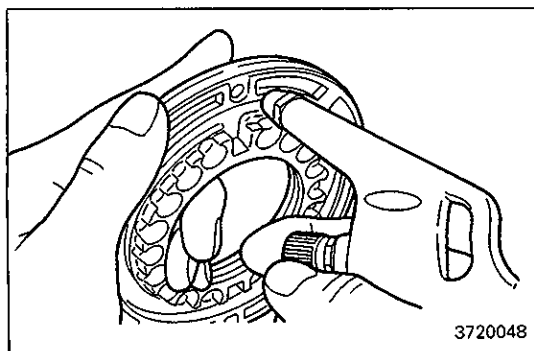
- (1) Install the O.D. clutch cylinder on the oil pump and blow air into the oil pump oil hole to remove the piston.

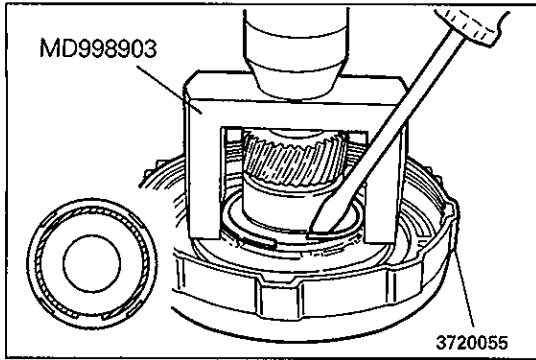


### SERVICE POINT OF REASSEMBLY

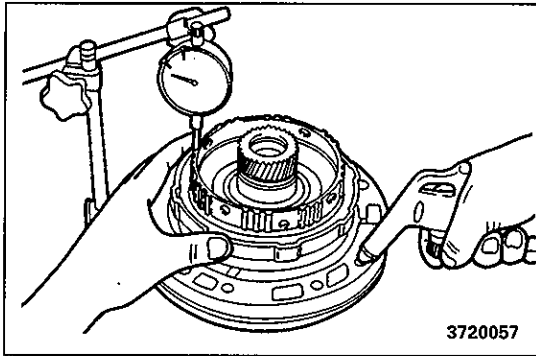
#### Ⓐ INSPECTION OF OVERDRIVE CLUTCH PISTON

- (1) Check that the check ball is free by shaking the piston.
- (2) Check that the valve does not leak by applying low-pressure compressed air.



**B INSTALLATION OF SNAP RING**

- (1) Place the special tool on the spring retainer, and compress the springs on shop press.
- (2) Install the snap ring with a screwdriver.  
Be sure the end gap of the snap ring is not aligned with the spring retainer claw.

**C INSPECTION OF OVERDRIVE CLUTCH STROKE**

- (1) Place the cushion plate, clutch plates, and clutch discs into the cylinder.
- (2) Install the overdrive brake hub and snap ring No. 2 (the wider one). Do not install snap ring No. 1 (the narrower one).
- (3) Install the overdrive clutch cylinder onto the oil pump body.
- (4) Using a dial indicator, measure the stroke applying and releasing the compressed air (400 – 800 kPa, 4 – 8 kg/cm<sup>2</sup>, 58 – 116 psi) as shown.

**Standard value:**

**1.56 – 2.53 mm (0.061 – 0.100 in.)**

**<2 discs – Without cushion plate>**

**1.92 – 2.64 mm (0.076 – 0.104 in.)**

**<2 discs – With cushion plate>**

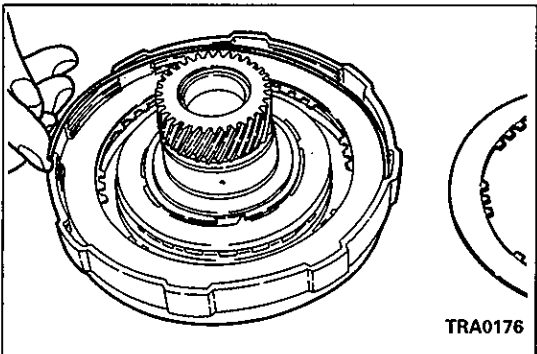
**1.77 – 2.58 mm (0.070 – 0.102 in.)**

**<L300 (4G64), L400 (4G64) ... MODEL 1995>**

**1.73 – 2.62 mm (0.068 – 0.103 in.)**

**<L300 (4G64), L400 (4G64) ... MODEL 1996>**

- (5) Remove snap ring No. 2 and overdrive brake hub.

**D INSTALLATION OF SNAP RING NO. 1****NOTE**

To make the job easier, first remove one clutch disc, fit snap ring No. 1 into position, then reinstall the clutch disc back again.

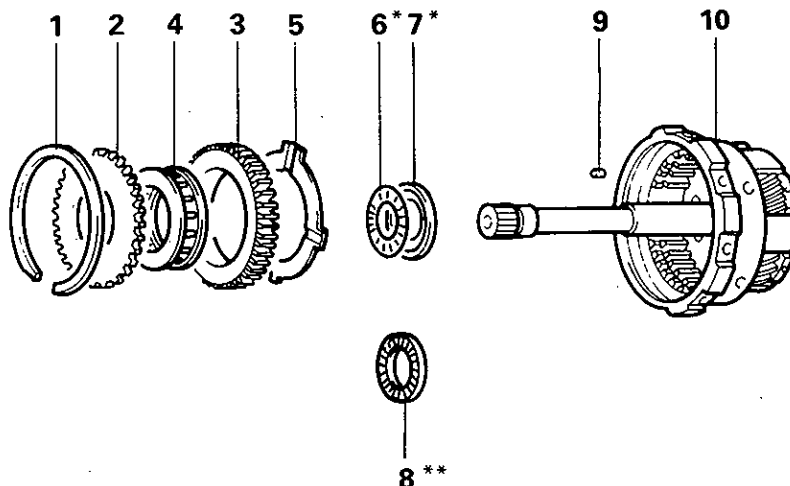


## 6. OVERDRIVE PLANETARY GEAR

### DISASSEMBLY AND REASSEMBLY

#### Disassembly steps

- ▶C◀ 1. Snap ring No. 3
- ▶B◀ 2. One-way clutch retainer
- ▶B◀ 3. One-way clutch outer race
- ▶B◀ 4. One-way clutch assembly
- ▶A◀ 5. Thrust washer
- 6. Thrust bearing #3\*
- 7. Thrust bearing race #4\*
- 8. Thrust bearing #3\*\*
- 9. Pinion shaft plug (4)
- 10. OD planetary gear

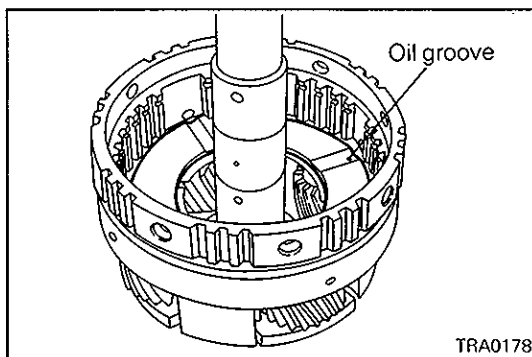


#### NOTE:

\* Transmissions with 4th speed gear ratio of 0.688

\*\* Transmissions with 4th speed gear ratio of 0.730

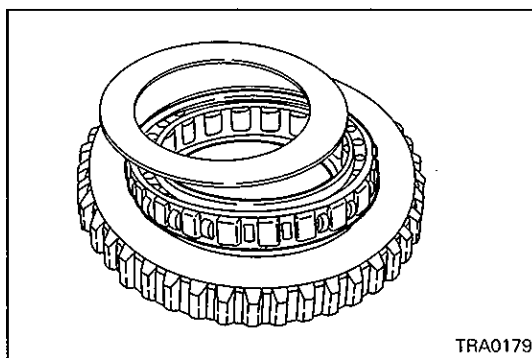
TRA0390



#### SERVICE POINTS OF REASSEMBLY

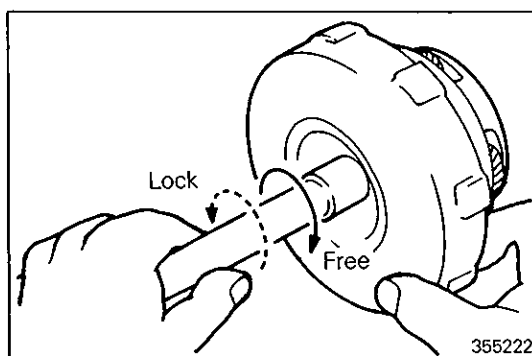
##### ▶A◀ INSTALLATION OF THRUST WASHER

- (1) Install the thrust washer so that its oil groove faces up.



##### ▶B◀ REASSEMBLY OF ONE-WAY CLUTCH

- (1) Reassemble the one-way clutch assembly so that it is oriented as shown.



##### ▶C◀ CHECK OPERATION OF ONE-WAY CLUTCH

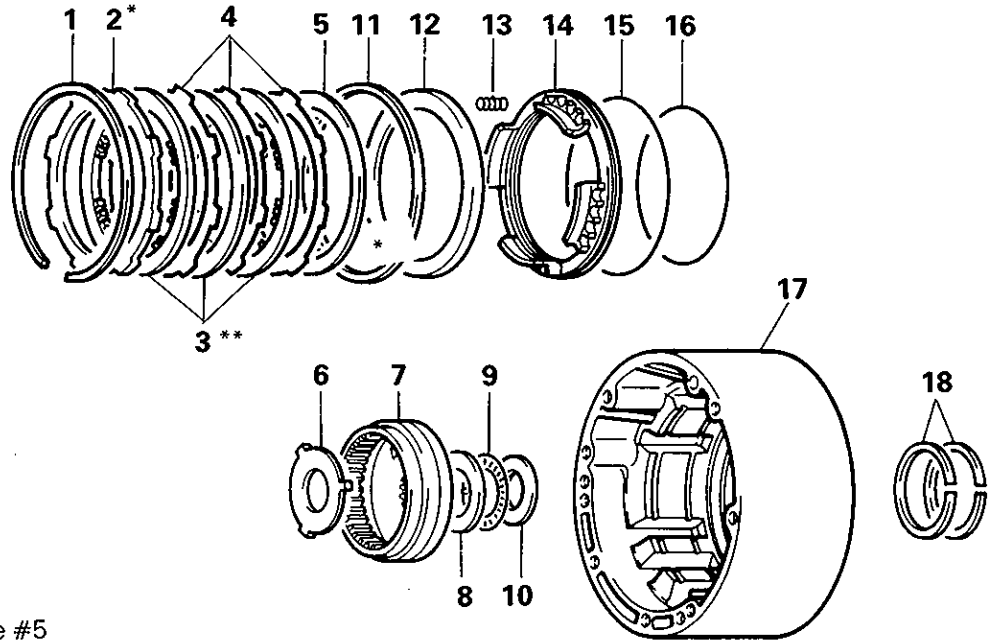
- (1) With the clutch cylinder held by hand, turn the input shaft clockwise to see that the shaft turns smoothly and turn it counterclockwise to see that the shaft is locked.

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## NOTES

# 7. OVERDRIVE BRAKE

## DISASSEMBLY AND REASSEMBLY



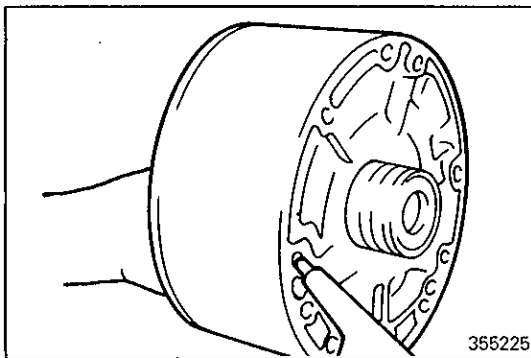
### Disassembly steps

- ▶D▶ 1. Snap ring
- ▶C▶ 2. Flange\*
- ▶C▶ 3. Brake disc\*\*
- ▶C▶ 4. Brake plate
- ▶C▶ 5. Cushion plate
- ▶C▶ 6. Thrust race
- ▶C▶ 7. Planetary ring gear
- ▶B▶ 8. Thrust bearing race #5
- ▶B▶ 9. Thrust bearing #6
- ▶B▶ 10. Thrust bearing race #7
- ▶A▶ 11. Snap ring
- ▶A▶ 12. Spring retainer
- ▶A▶ 13. Return spring
- ◊A◊ 14. Brake piston
- ▶A▶ 15. O-ring
- ▶A▶ 16. O-ring
- ▶A▶ 17. OD case
- ▶A▶ 18. Seal ring

### NOTE:

- \* Provided only in transmissions combined with 4G54, 4G64, 6G72 or 4D56-Intercooler turbo
- \*\* Two discs for transmissions combined with 4G63 or 4D56

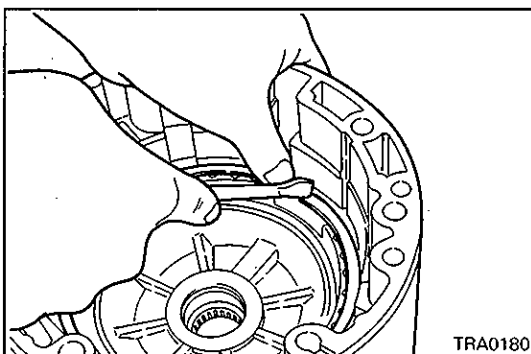
TRA0364



### SERVICE POINT OF DISASSEMBLY

#### ◊A◊ REMOVAL OF BRAKE PISTON

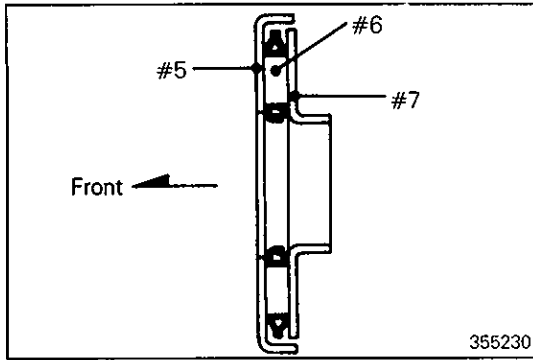
- (1) Blow air into the O.D. case through the oil hole to remove the piston.



### SERVICE POINTS OF REASSEMBLY

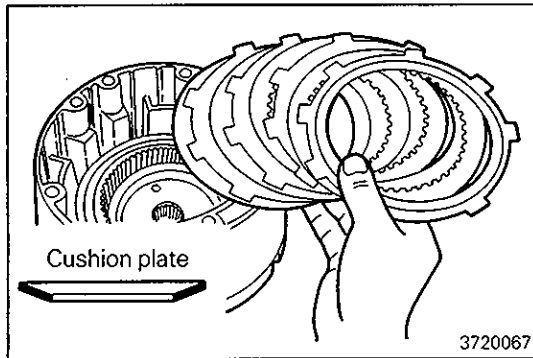
#### ▶A▶ INSTALLATION OF RETURN SPRING, SPRING RETAINER AND SNAP RING

- (1) Fit the spring into the piston carefully not allowing the spring to tilt.
- (2) Holding the retainer with your fingers, fit the snap ring into the groove in the O.D. case.



**B** INSTALLATION OF THRUST BEARING AND THRUST BEARING RACE

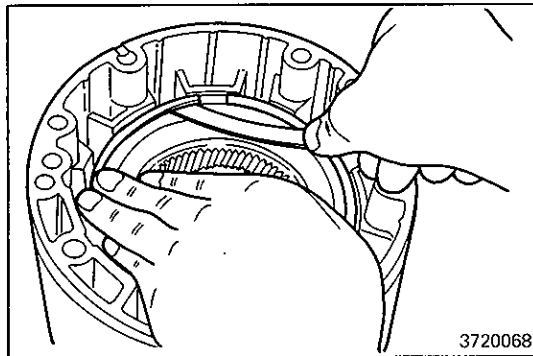
- (1) Make sure that thrust bearing races #5 and #7 and thrust bearing #6 face as shown when they are installed.



**C** INSTALLATION OF CUSHION PLATE, BRAKE PLATE, BRAKE DISC AND FLANGE

- (1) Make sure that the cushion plate and flange face the correct direction when installed.

Cushion plate ..... rounded end down  
 Flange ..... flat end down



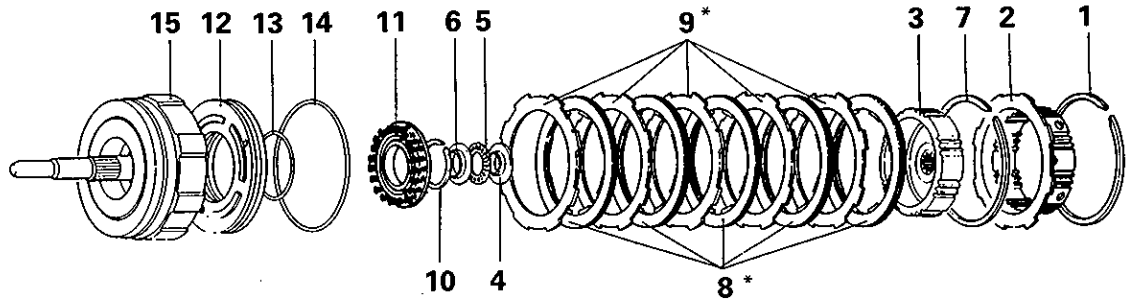
**D** INSPECTION OF OVERDRIVE BRAKE CLEARANCE

- (1) Measure the distance between snap ring and flange with feeler gauge to check the brake clearance.

**Standard clearance:**  
 0.56 – 1.92 mm (0.022 – 0.076 in.) ..... Two discs  
 0.65 – 2.21 mm (0.026 – 0.087 in.) ..... Three discs

# 8. FORWARD CLUTCH

## DISASSEMBLY AND REASSEMBLY

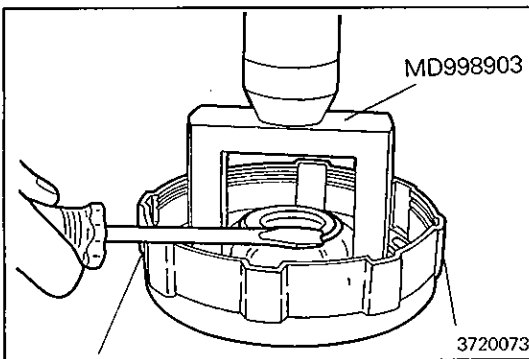


### Disassembly steps

- E** 1. Snap ring
- 2. Direct clutch hub
- 3. Forward clutch hub
- 4. Thrust bearing race #12
- 5. Thrust bearing #11
- 6. Thrust bearing race #10
- D** 7. Snap ring
- C** 8. Clutch disc\*
- C** 9. Clutch plate\*
- B** 10. Snap ring
- B** **A** 11. Clutch return spring and retainer
- A** 12. Forward clutch piston
- 13. O-ring
- 14. O-ring
- 15. Forward clutch cylinder assembly

NOTE:  
\* 4 plates for transmissions combined with 4G63 or 4D56

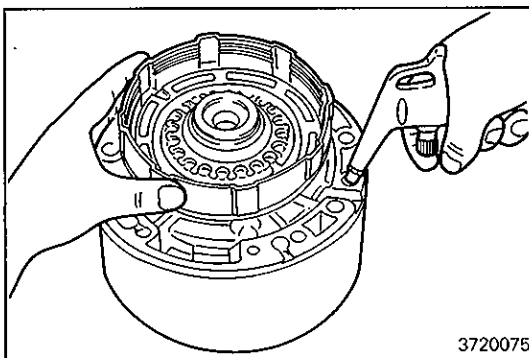
TRA0365



### SERVICE POINTS OF DISASSEMBLY

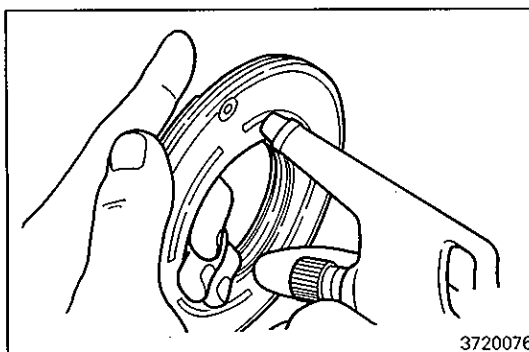
#### **A** REMOVAL OF SNAP RING

- (1) Place the front clutch cylinder on a press bench and compress the clutch return spring by using the special tool. Remove the snap ring.



#### **B** REMOVAL OF FORWARD CLUTCH PISTON

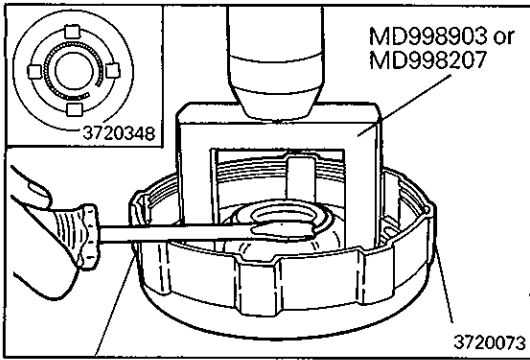
- (1) Assemble the forward clutch cylinder and piston on the overdrive case and force out the piston by compressed air.



### SERVICE POINTS OF REASSEMBLY

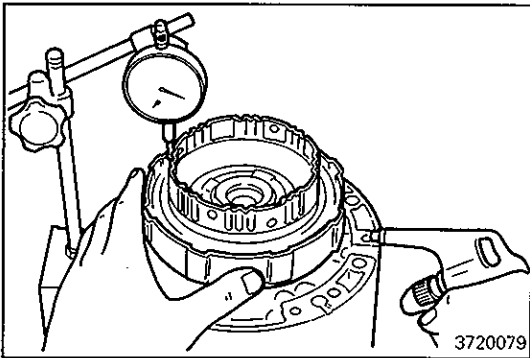
#### **A** INSPECTION OF FORWARD CLUTCH PISTON

- (1) Check that check ball is free by shaking the forward clutch piston.
- (2) Check that the valve does not leak by applying low-pressure compressed air.



**B INSTALLATION OF SNAP RING**

- (1) Set the special tool on the spring retainer, and compress the springs on a shop press.
- (2) Install the snap ring using a screwdriver.  
Be sure the end gap of snap ring is not aligned with the spring retainer claw.



**C INSPECTION OF FORWARD CLUTCH PISTON STROKE**

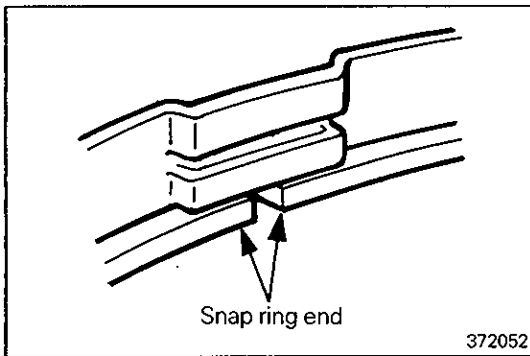
- (1) Install the clutch plates and discs alternately. Do not install the snap ring (thinner) yet.
- (2) Install the direct clutch hub and snap ring (thicker).
- (3) Install the forward clutch cylinder assembly onto the overdrive case.

Using a dial indicator, measure the stroke applying and releasing the compressed air (400 – 800 kPa, 4 – 8 kg/cm<sup>2</sup>, 58 – 116 psi).

**Standard stroke:**

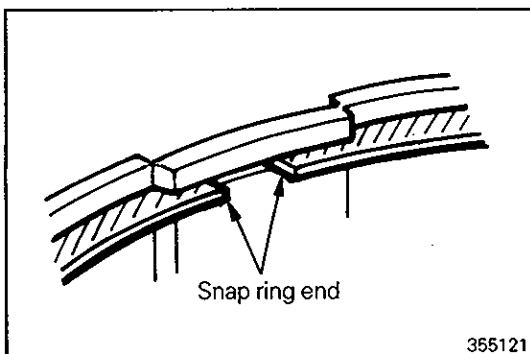
1.32 – 2.66 mm (0.05 – 0.1 in.)	.....	<b>Four discs</b>
1.43 – 2.93 mm (0.06 – 0.1 in.)	.....	<b>Five discs</b>

- (4) After the check, remove the snap ring and direct clutch hub.



**D INSTALLATION OF SNAP RING**

- (1) With one clutch disc removed, fit the snap ring into position.
- (2) The snap ring should be located with its ends as illustrated.
- (3) Reinstall the clutch disc which has been removed in step (1).



**E INSTALLATION OF SNAP RING**

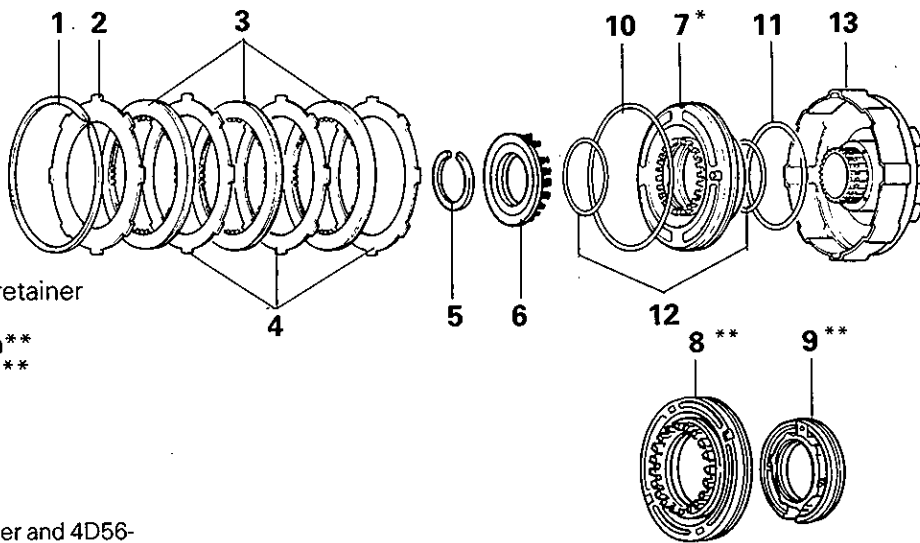
- (1) Install the snap ring so that its ends are located as shown on the left.

# 9. DIRECT CLUTCH

## DISASSEMBLY AND REASSEMBLY

### Disassembly steps

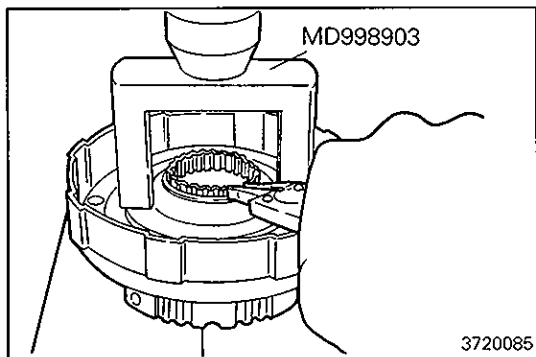
- 1. Snap ring
- 2. Flange
- 3. Clutch disc
- 4. Clutch plate
- 5. Snap ring
- 6. Piston return spring and retainer
- 7. Direct clutch piston
- 8. Direct clutch outer piston\*\*
- 9. Direct clutch inner piston\*\*
- 10. O-ring
- 11. O-ring
- 12. O-ring
- 13. Direct clutch cylinder



**NOTE:**

- \* 4G54, 4G64, 6G72, 4D56-turbocharger and 4D56-turbocharger and intercooler
- \*\* 4G63 and 4D56

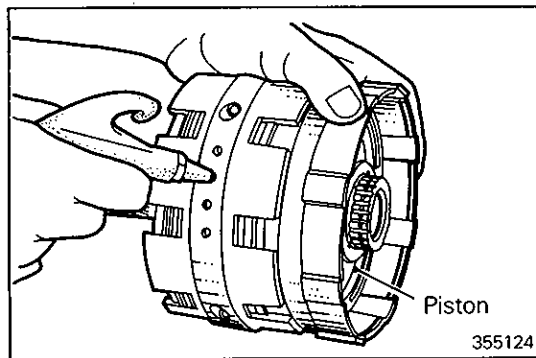
TRA0391



### SERVICE POINTS OF DISASSEMBLY

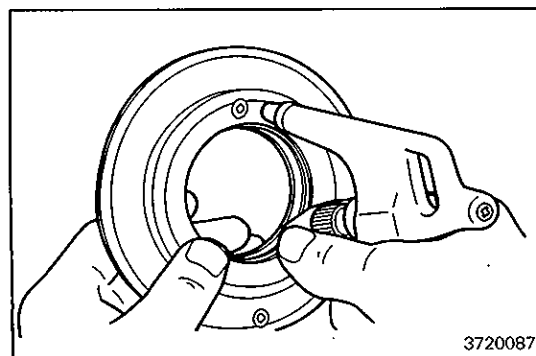
#### (A) REMOVAL OF SNAP RING

- (1) Place the rear clutch on a press bench, compress the return spring by using the special tool to remove the snap ring.



#### (B) REMOVAL OF DIRECT CLUTCH PISTON

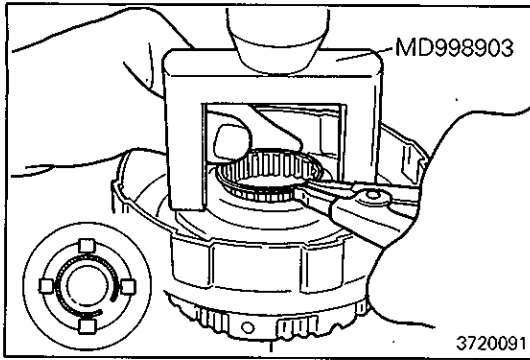
- (1) Install the clutch cylinder in the center support and blow air through the oil hole of the center support to remove the piston from the cylinder.



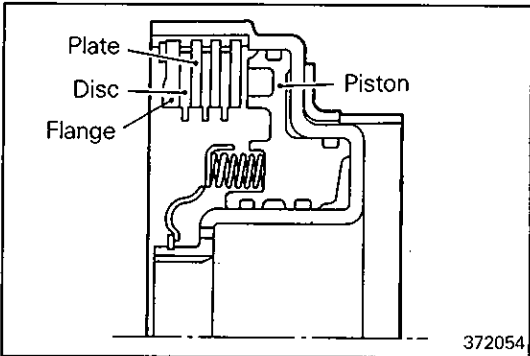
### SERVICE POINTS OF REASSEMBLY

#### (A) INSPECTION OF DIRECT CLUTCH PISTON

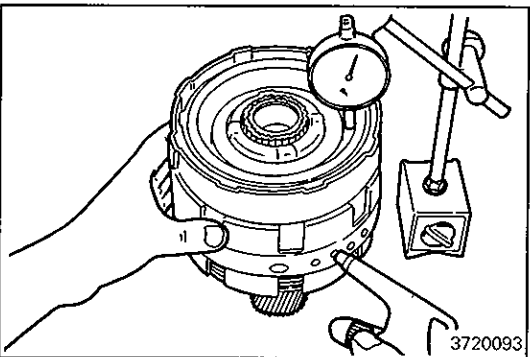
- (1) Check that the check ball is free by shaking each piston.
- (2) Check that the valve does not leak by applying low-pressure compressed air.

**B INSTALLATION OF SNAP RING**

- (1) Compress the return spring, fit the snap ring by using the special tool.
- (2) Be sure the end gap of the snap ring is not aligned with the spring retainer claw.

**C INSTALLATION OF CLUTCH PLATE, CLUTCH DISC, FLANGE AND SNAP RING**

- (1) Make sure that the flat end of the flange faces down.

**D INSPECTION OF FORWARD CLUTCH PISTON STROKE**

- (1) Install the direct clutch onto the center support. Using a dial indicator, measure the stroke applying and releasing the compressed air (400 – 800 kPa, 4 – 8 kg/cm<sup>2</sup>, 58 – 116 psi) as shown.

**Standard piston stroke:**

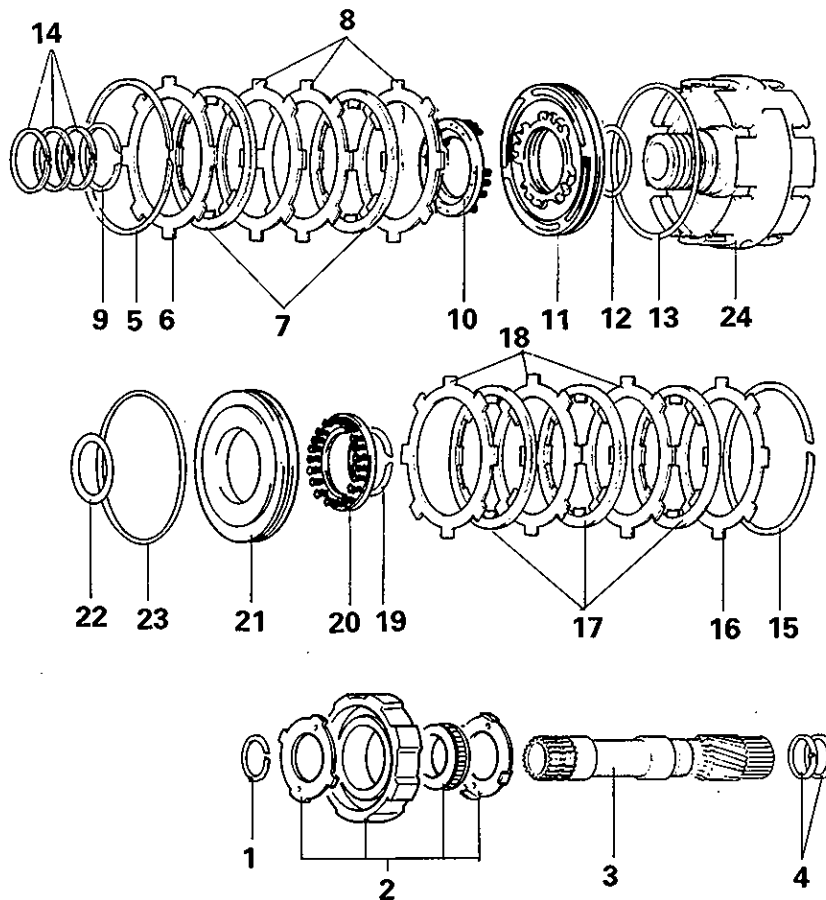
0.91 – 1.99 mm (0.04 – 0.08 in.)	.....	Single piston
1.06 – 2.14 mm (0.04 – 0.08 in.)	.....	Double piston



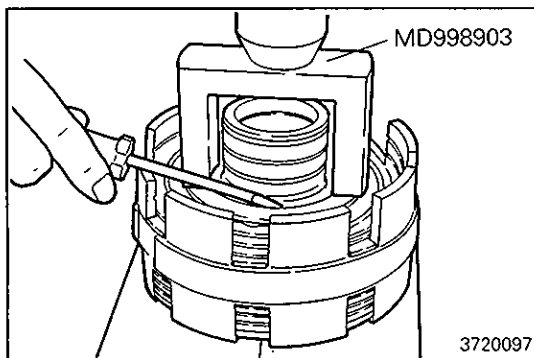
# 10. CENTER SUPPORT DISASSEMBLY AND REASSEMBLY

## Disassembly steps

- 1. Snap ring
- G** 2. One-way clutch assembly
- 3. Planetary sun gear
- 4. Seal ring
- F** 5. Snap ring
- E** 6. Flange
- D** 7. Brake disc
- C** 8. Brake plate
- B** 9. Snap ring
- A** 10. Spring and retainer
- B** 11. No. 1 brake piston
- 12. O-ring
- 13. O-ring
- 14. Seal ring
- B** 15. Snap ring
- C** 16. Flange
- B** 17. Brake disc
- B** 18. Brake plate
- B** 19. Snap ring
- A** 20. Spring and retainer
- C** 21. No. 2 brake piston
- D** 22. O-ring
- 23. O-ring
- 24. Center support



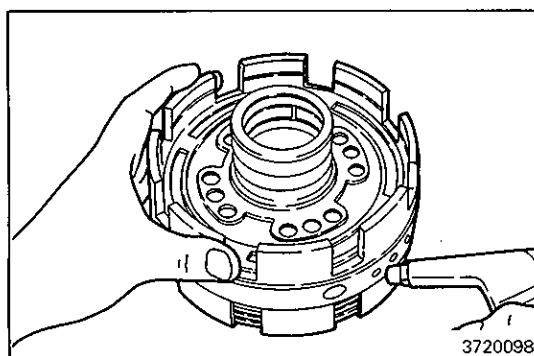
TRA0367



## SERVICE POINTS OF DISASSEMBLY

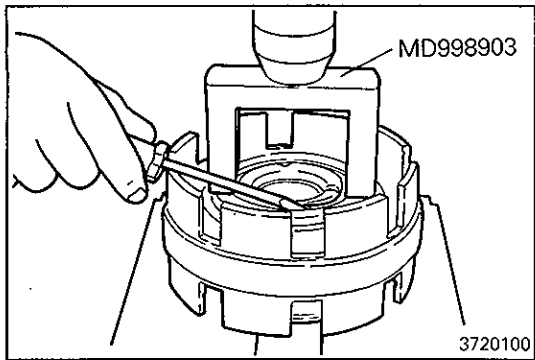
### **A** REMOVAL OF SNAP RING

- (1) Set the special tool on the spring retainer and compress the springs with a shop press. Using a screwdriver, remove the snap ring.

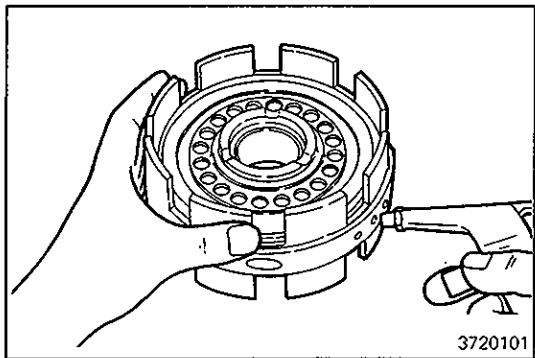


### **B** REMOVAL OF NO. 1 BRAKE PISTON

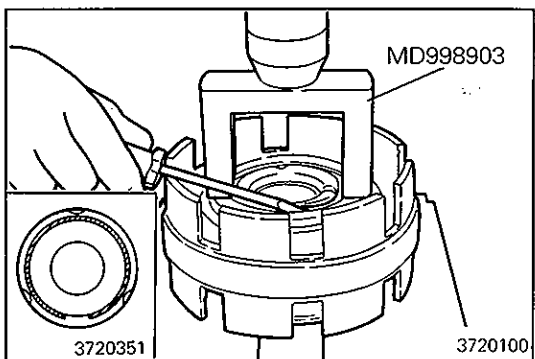
- (1) Blow compressed air through the center support oil hole to remove the No. 1 brake piston.

**Ⓒ REMOVAL OF SNAP RING**

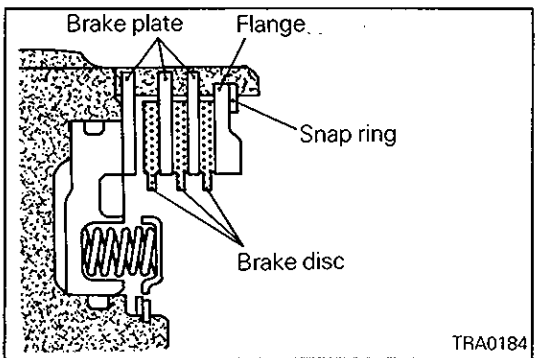
- (1) Set the special tool on the spring retainer and compress the springs with a shop press.  
Using a screwdriver, remove the snap ring.

**Ⓓ REMOVAL OF NO. 2 BRAKE PISTON**

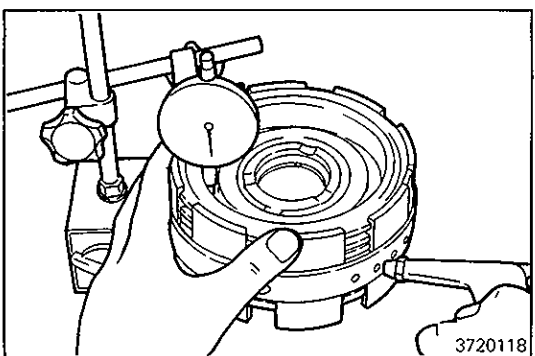
- (1) Blow compressed air through the center support oil hole to remove the No. 2 brake piston.

**SERVICE POINT OF REASSEMBLY****Ⓐ INSTALLATION OF SNAP RING**

- (1) Set the special tool on the spring retainer, and compress the springs on a shop press.  
Install the snap ring with a screwdriver.  
Be sure the end gap of the snap ring is not aligned with the spring retainer claw.

**Ⓑ INSTALLATION OF BRAKE PLATE, BRAKE DISC, FLANGE AND SNAP RING**

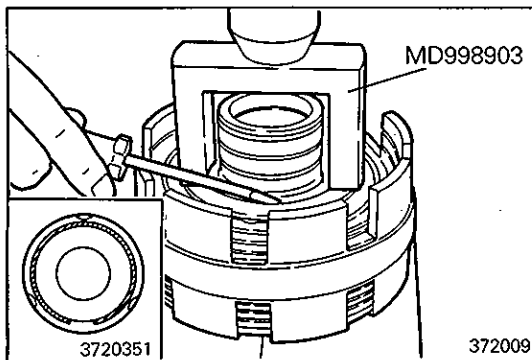
- (1) Make sure that the flat end of the flange faces down.

**Ⓒ INSPECTION OF NO. 2 BRAKE PISTON STROKE**

- (1) Using a dial indicator, measure the stroke applying and releasing the compressed air (400 – 800 kPa, 4 – 8 kg/cm<sup>2</sup>, 58 – 116 psi) as shown.

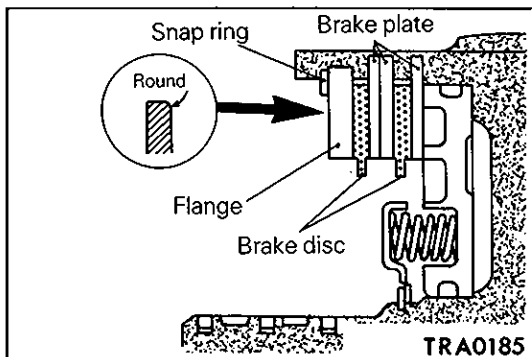
**Standard piston stroke:**

**1.01 – 2.25 mm (0.040 – 0.089 in.)**



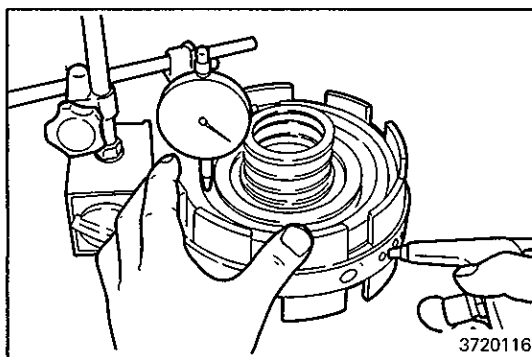
**D INSTALLATION OF SNAP RING**

- (1) Set the special tool on the spring retainer, and compress the springs on a shop press. Install the snap ring with a screwdriver. Be sure the end gap of the snap ring is not aligned with the spring retainer claw.



**E INSTALLATION OF BRAKE PLATE, BRAKE DISC, FLANGE AND SNAP RING**

- (1) Make sure the brake plates are installed in the correct order and the round edge of the flange faces down.

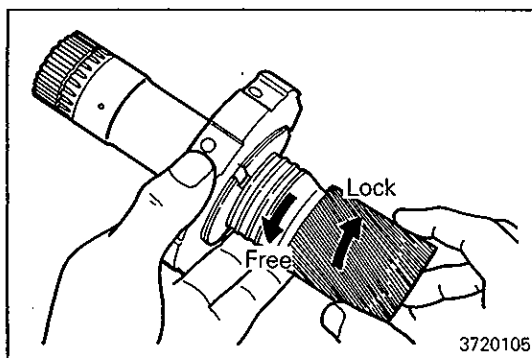


**F INSPECTION OF NO. 1 BRAKE PISTON STROKE**

- (1) Using a dial indicator, measure the stroke applying and releasing the compressed air (400 – 800 kPa, 4 – 8 kg/cm<sup>2</sup>, 58 – 116 psi) as shown.

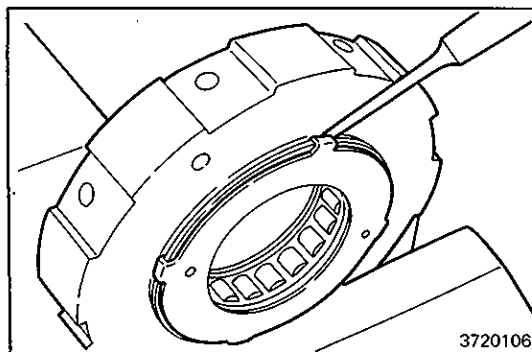
**Standard piston stroke:**

**0.80 – 1.73 mm (0.031 – 0.068 in.)**

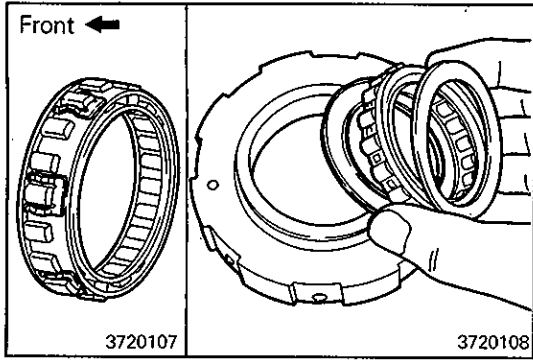


**G INSPECTION OF ONE-WAY CLUTCH ASSEMBLY**

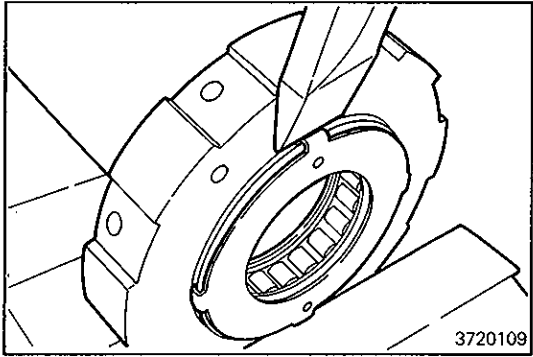
- (1) Hold the No. 2 brake hub and turn the planetary sun gear. The sun gear should turn freely counterclockwise and should lock clockwise. If the one-way clutch does not operate properly, replace it.



- (2) If necessary, replace the one-way clutch:
  - (a) Bend the tabs back with a tapered punch.
  - (b) Pry off the retainer with a screwdriver. Leave the other retainer on the hub.
  - (c) Remove the one-way clutch.



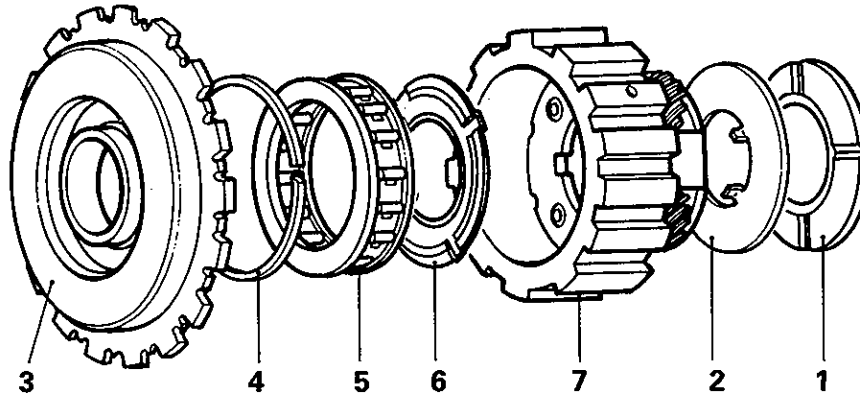
(d) Install the one-way clutch into the brake hub facing the spring cage toward the front.



(e) Hold the brake hub in vise with soft jaws, and bend the tabs with a chisel.

(f) Check to make sure that the retainer is centered.

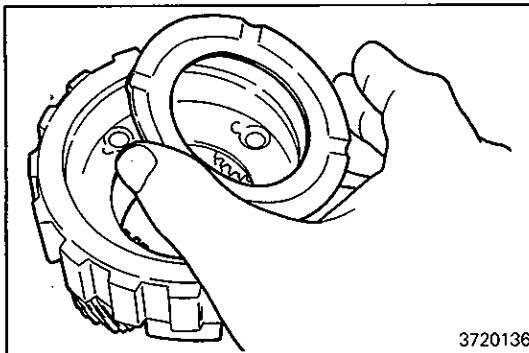
# 11. FRONT PLANETARY GEAR DISASSEMBLY AND REASSEMBLY



**Disassembly steps**

- |   |  |
|---|--|
| <p><b>C</b> 1. Thrust washer (nylon washer)<br/>2. Thrust washer (steel washer)<br/>3. On-way clutch inner race</p> | <p><b>B</b> 4. Retaining ring<br/><b>A</b> 5. One-way clutch<br/>6. Thrust washer (nylon washer)<br/>7. Front planetary gear</p> |
|---|--|

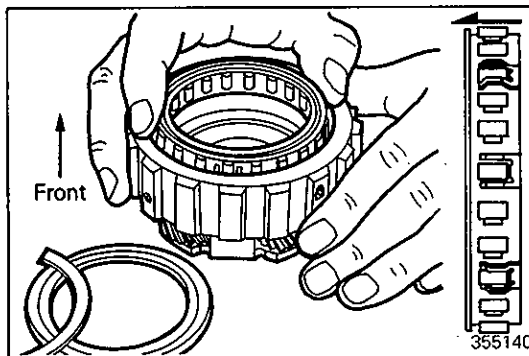
TRA0186



**SERVICE POINT OF REASSEMBLY**

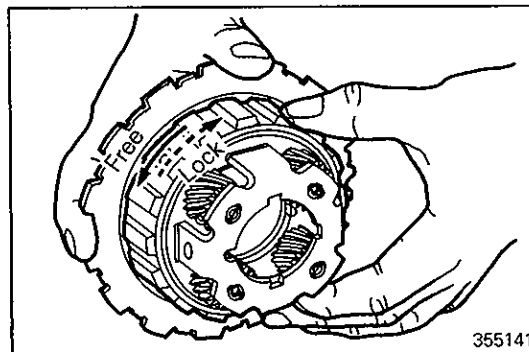
**A INSTALLATION OF THRUST WASHER**

- (1) Install the thrust washer so that its oil grooves face up.



**B INSTALLATION OF ONE-WAY CLUTCH**

- (1) Install the one-way clutch into the front planetary gear, ensuring the one-way clutch facing the correct direction.



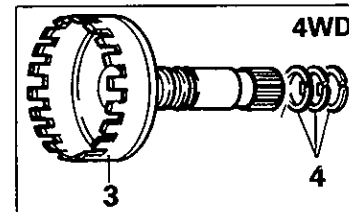
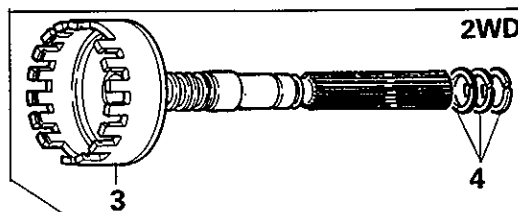
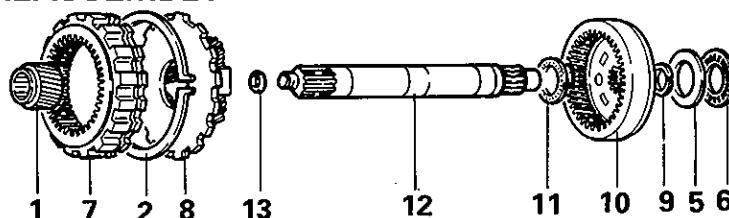
**C INSPECTION OF ONE-WAY CLUTCH**

- (1) Fix the inner race and check that the front planetary gear turns smoothly when rotated counterclockwise and that it locks securely when rotated clockwise.

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## NOTES

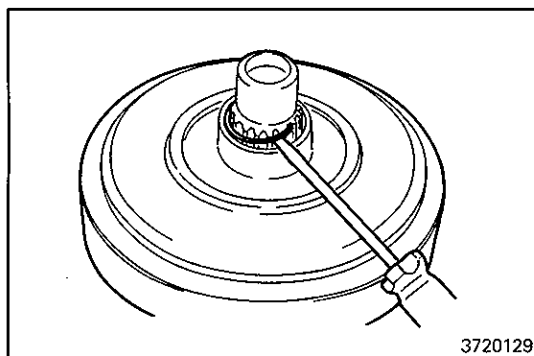
## 12. REAR PLANETARY GEAR AND OUTPUT SHAFT DISASSEMBLY AND REASSEMBLY



### Disassembly steps

- |   |   |
|---|---|
| <p>◆◆ 1. Planetary sun gear<br/>◆◆ 2. Retaining ring<br/>◆◆ 3. Output shaft assembly<br/>◆◆ 4. Seal ring<br/>◆◆ 5. Thrust bearing race #17<br/>◆◆ 6. Thrust bearing #18<br/>◆◆ 7. Front planetary ring gear<br/>◆◆ 8. Rear planetary gear</p> | <p>◆◆ 9. Split ring<br/>◆◆ 10. Rear planetary ring gear<br/>◆◆ 11. Thrust bearing #16<br/>◆◆ 12. Intermediate shaft<br/>◆◆ 13. O-ring</p> |
|---|---|

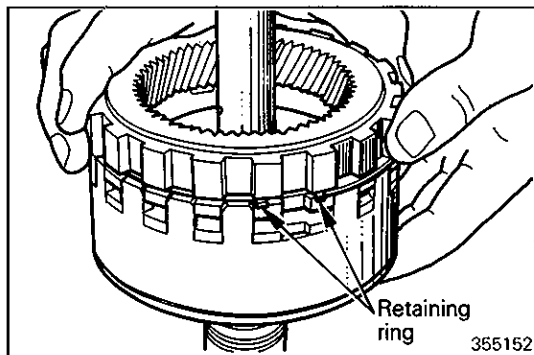
TRA0392



### SERVICE POINT OF DISASSEMBLY

#### ◆◆ REMOVAL OF SPLIT RING

- (1) Remove the split ring using a screwdriver as shown.



### SERVICE POINT OF REASSEMBLY

#### ◆◆ INSTALLATION OF RETAINING RING

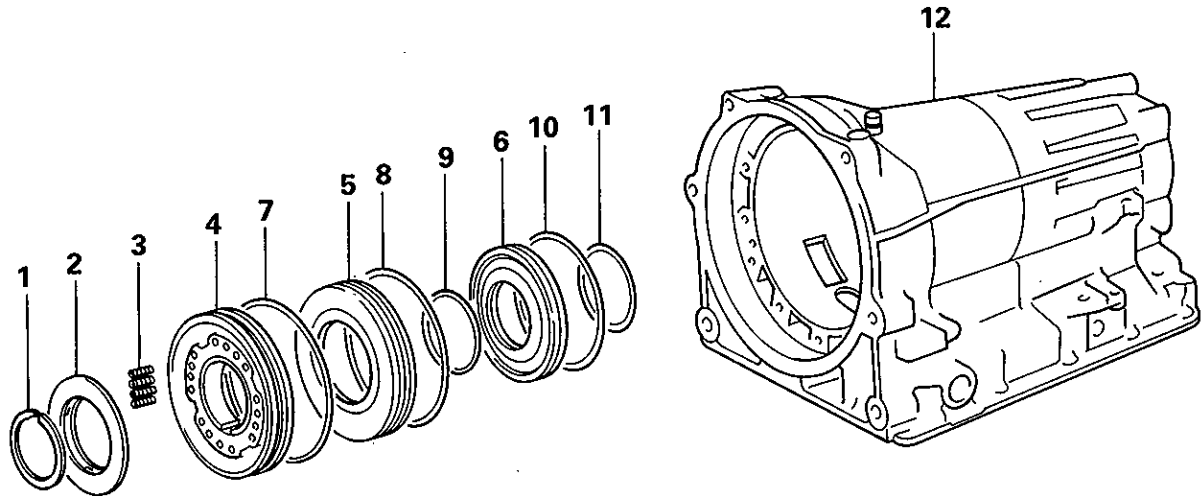
- (1) Install the snap ring on the front planetary ring gear.
- (2) Set the front planetary ring gear on the output shaft drum. Align the ends of the snap ring with the wide gap between the teeth.
- (3) While pushing down the front planetary ring gear, squeeze the snap ring ends to install it into the groove.

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## NOTES



# 13. BRAKE NO. 3 PISTON DISASSEMBLY AND REASSEMBLY

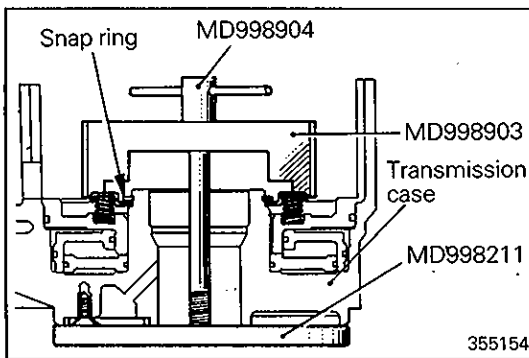


**Disassembly steps**

- |   |  |
|---|--|
| <p>(A) (A) 1. Snap ring</p> <p>(B) 4. Brake No. 3 primary piston</p> <p>(B) 5. Reaction sleeve</p> <p>(B) 6. Brake No. 3 secondary piston</p> | <p>2. Spring retainer</p> <p>3. Spring</p> <p>7. O-ring</p> <p>8. O-ring</p> <p>9. O-ring</p> <p>10. O-ring</p> <p>11. O-ring</p> <p>12. Transmission case</p> |
|---|--|

**NOTE:**  
Depending on the model and year model, the spring retainer (2) may be integrated with spring (3).

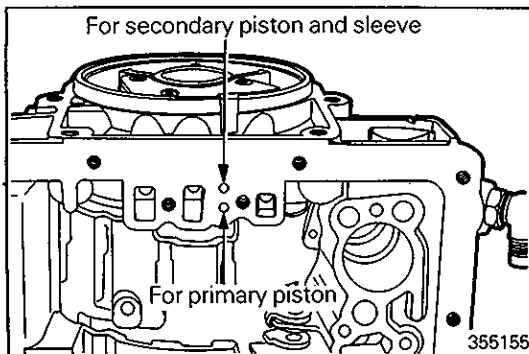
3720353



**SERVICE POINT OF DISASSEMBLY**

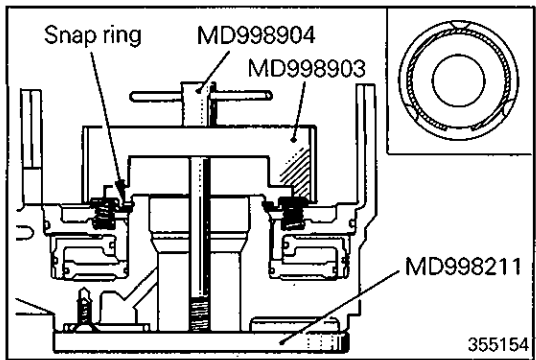
**(A) REMOVAL OF SNAP RING**

- (1) Compress the spring and remove the snap ring by using the special tools.



**(B) REMOVAL OF PRIMARY PISTON, REACTION SLEEVE AND SECONDARY PISTON**

- (1) With the front end down, place the transmission case on a workbench. Place several clean shop rags under the case to catch the piston and sleeve. Apply compressed air to the primary and secondary piston oil holes to force the piston and sleeve out.



## SERVICE POINT OF REASSEMBLY

### **A** INSTALLATION OF SNAP RING

- (1) Compress the springs and fit the snap ring by using the special tools.
- (2) Push the snap ring by hand into place. Visually check to make sure it is fully seated and centered by the three lugs on the spring retainer.

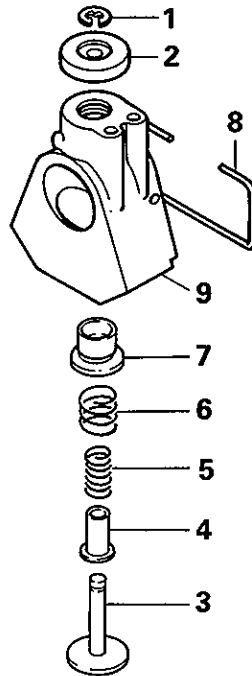
# 14. GOVERNOR

## DISASSEMBLY AND REASSEMBLY

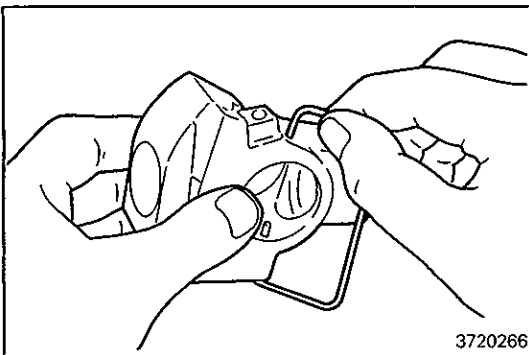
### Disassembly steps

- 1. E-ring
- 2. Governor weight
- 3. Governor valve shaft
- 4. Secondary weight
- 5. Inner governor spring
- 6. Outer governor spring
- 7. Governor valve
- 8. Governor retaining ring
- 9. Governor body

Ⓐ B  
A



372066

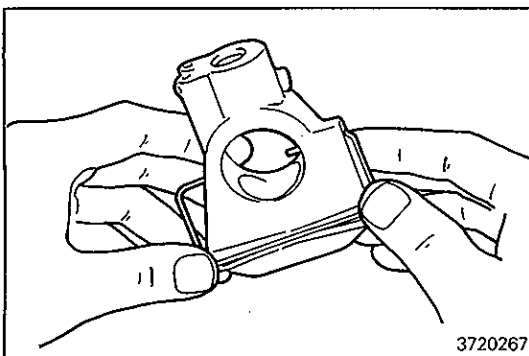


3720266

### SERVICE POINT OF DISASSEMBLY

#### Ⓐ REMOVAL OF GOVERNOR RETAINING RING

- (1) Remove the governor retaining ring with its end which is not through the governor body first. Use care not to damage the governor body.

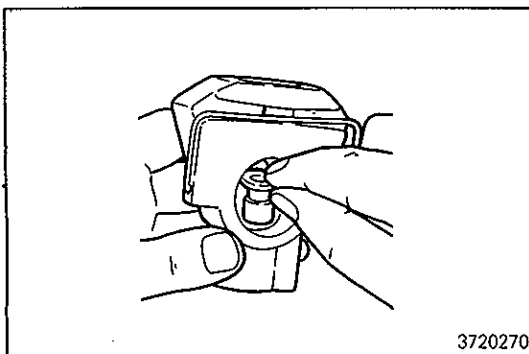


3720267

### SERVICE POINT OF REASSEMBLY

#### Ⓐ INSTALLATION OF GOVERNOR RETAINING RING

- (1) Fit the end of the governor retaining ring which goes through the governor body first.



3720270

#### Ⓑ INSTALLATION OF GOVERNOR VALVE

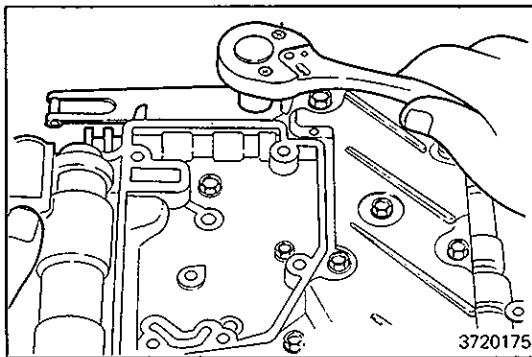
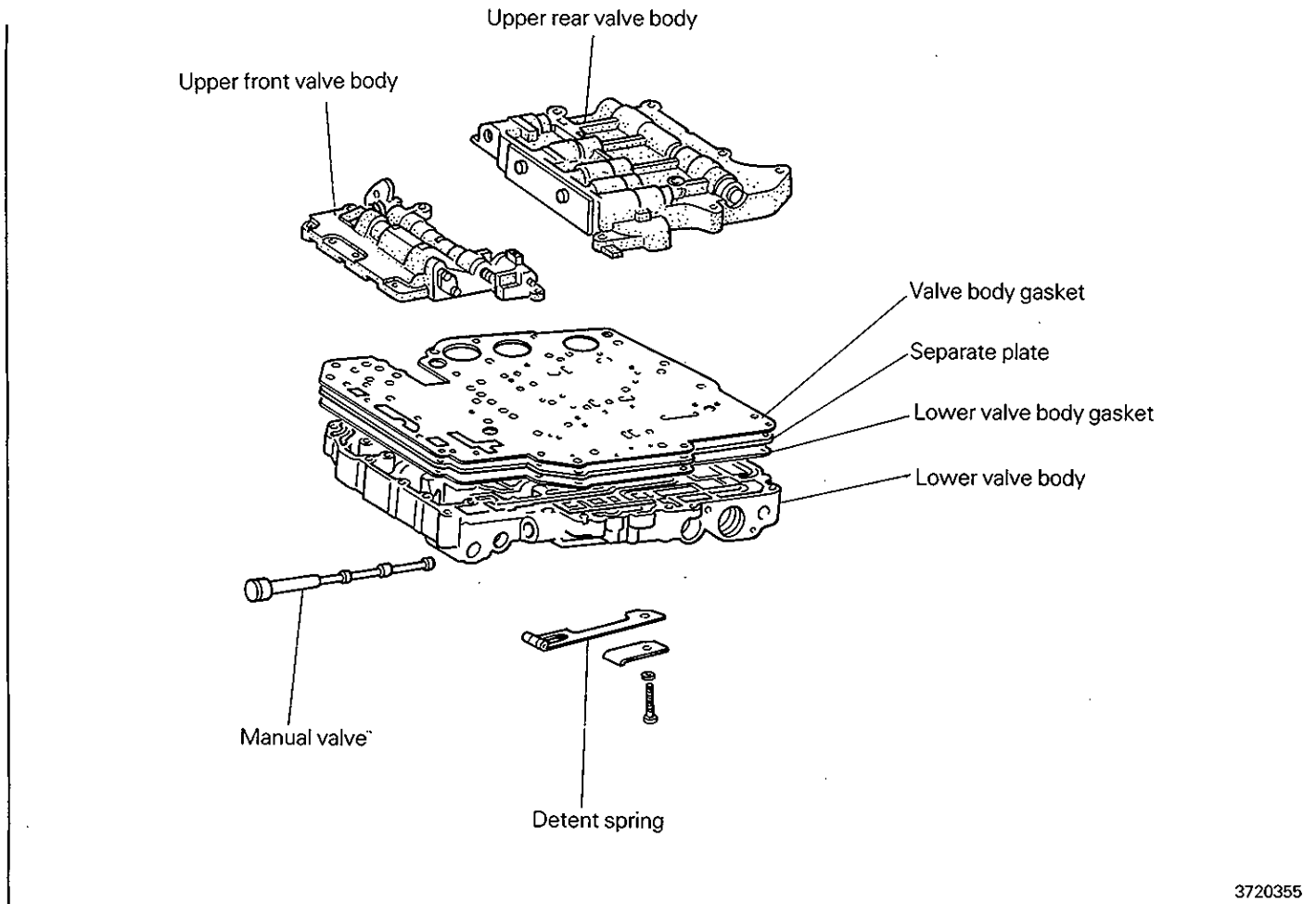
- (1) Insert the governor valve into the hole in the output shaft with care not to damage the governor valve.

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## NOTES

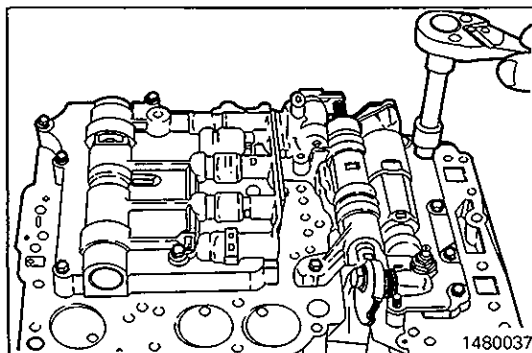
# 15. VALVE BODY

## DISASSEMBLY AND REASSEMBLY

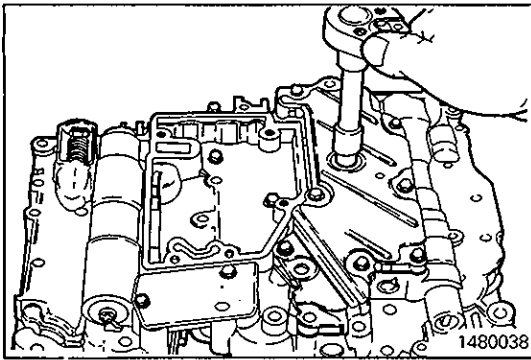


### DISASSEMBLY

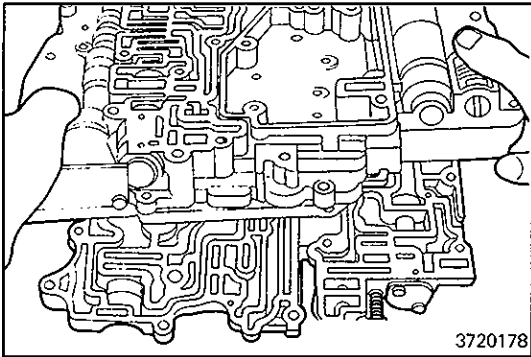
- (1) Remove the detent spring.
- (2) Remove the manual valve.



- (3) Turn the valve body assembly upside down and remove the 10 bolts from the upper front and upper rear valve bodies.



- (4) Turn over the assembly and remove the set bolts from the lower valve body.



- (5) Remove the lower valve body and plate by lifting them up together.

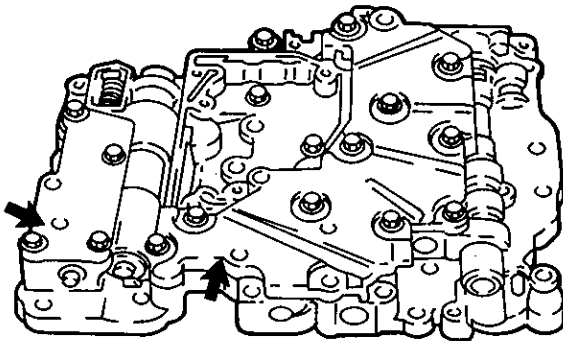
**Caution**

- Use care not to drop the check valve and ball.

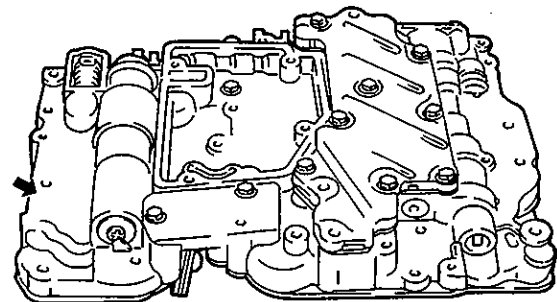
**DIFFERENCE BETWEEN TWO TYPES OF VALVE BODIES**

The valve body assembly of the transmission with lockup clutch differs from that of the transmission without lockup clutch as indicated by arrow in the following illustration.

**With lockup clutch**

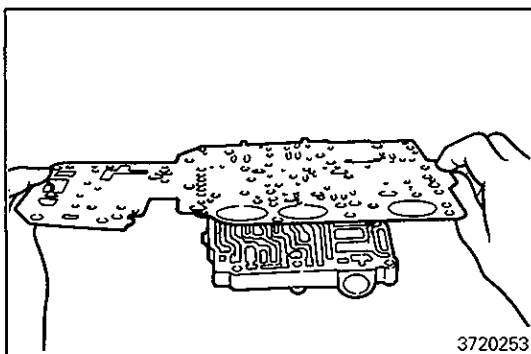


**Without lockup clutch**



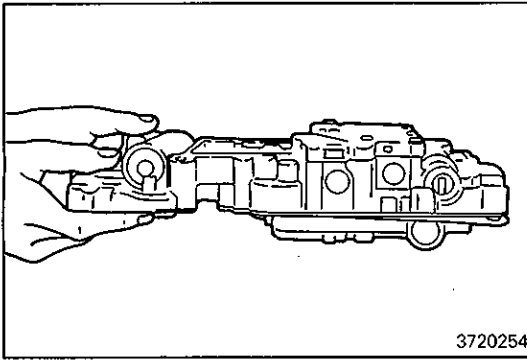
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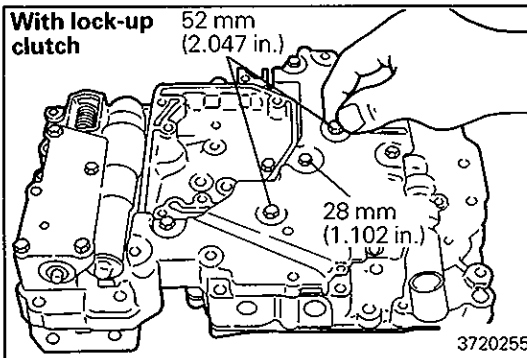


**REASSEMBLY**

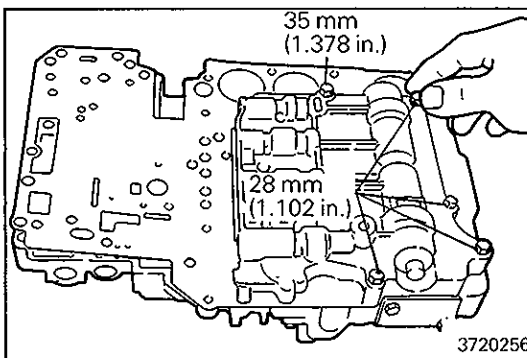
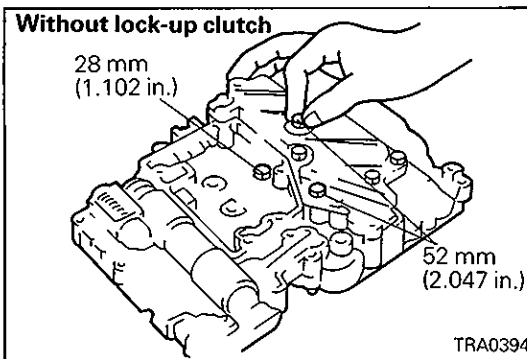
- (1) Put a new gasket on the upper rear valve body. Before installations, make sure that the new gasket matches with the old gasket. Align the gasket with the lower right-hand corner.



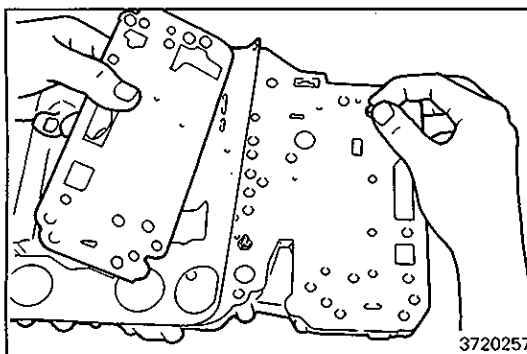
(2) Place the lower valve body with plate on the upper rear valve body with the R.H. side corners in alignment.



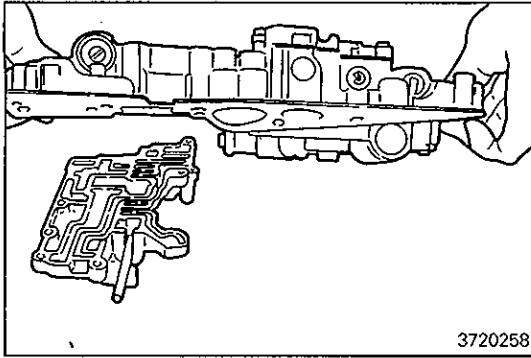
(3) Use three bolts to loosely tighten the upper rear valve body to the lower valve body.



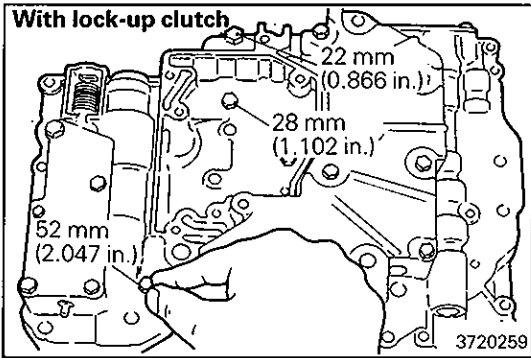
(4) Turn the valve body assembly upside down, check the gasket for alignment and then tighten the five bolts in the upper rear valve body.



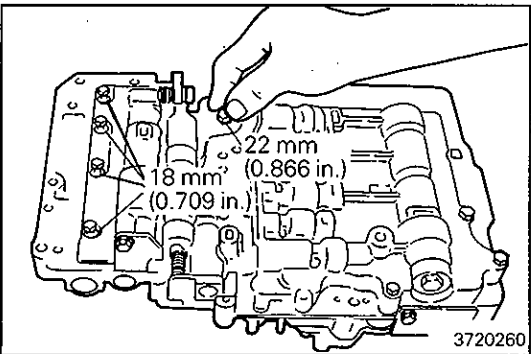
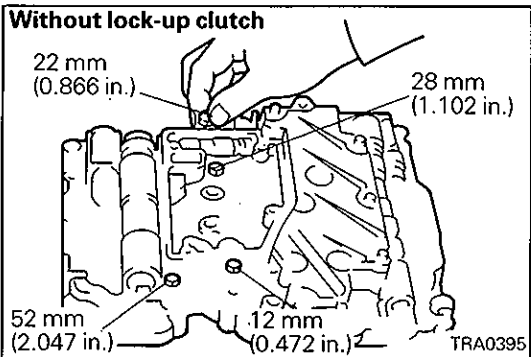
(5) Remove the loosened bolt from the plate.



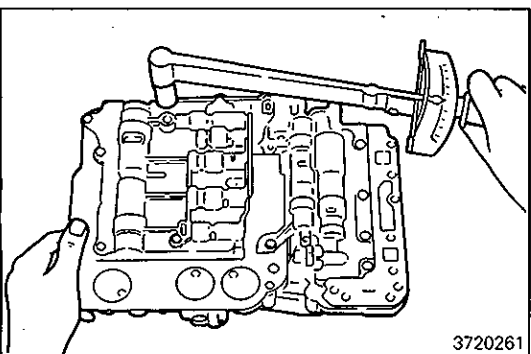
- (6) Put the lower and upper rear valve body assemblies on the upper front valve body.



- (7) Tighten the lower valve body set bolts by hand to secure the upper front valve body.

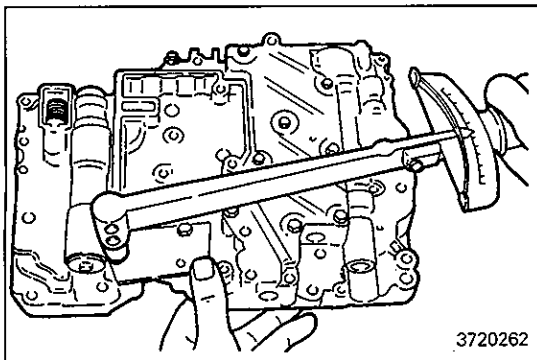


- (8) Turn the valve body assembly upside down and tighten the five bolts in the upper front valve body by hand.

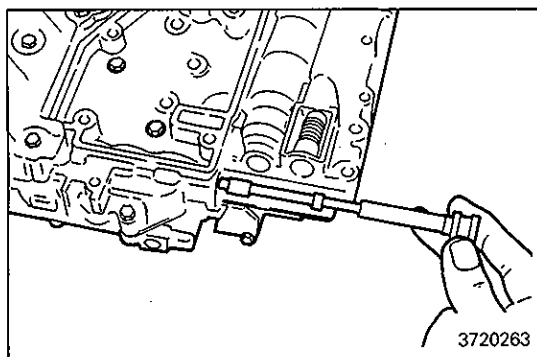
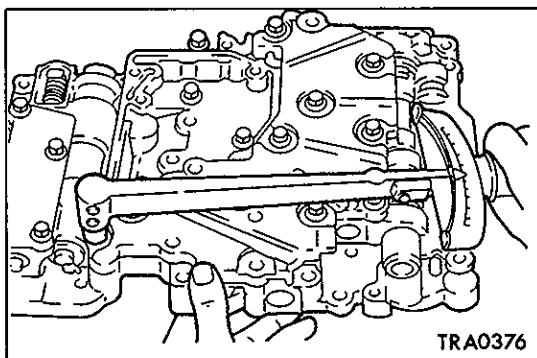


- (9) Make sure again that the gaskets are in alignment. Tighten the upper front valve body and upper rear valve body bolts to specified torque.

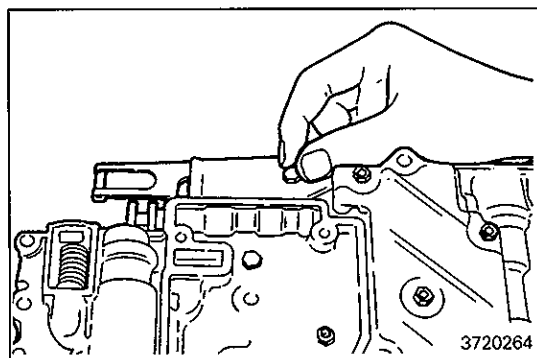




(10) Turn over the assembly and tighten the lower valve body bolts to specified torque.

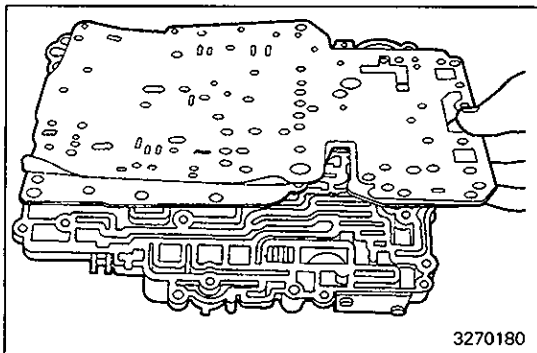
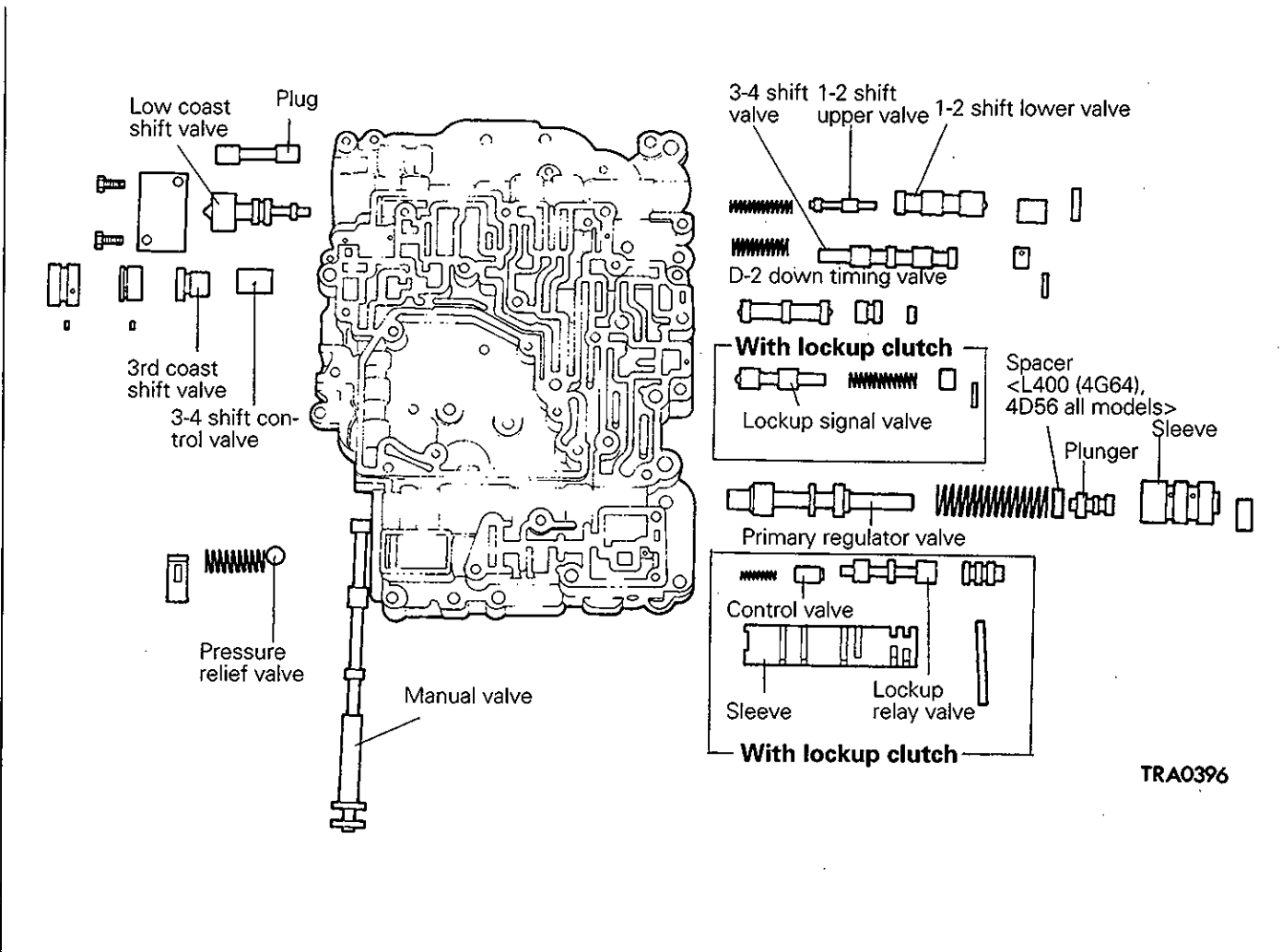


(11) Insert the manual valve in the valve body.



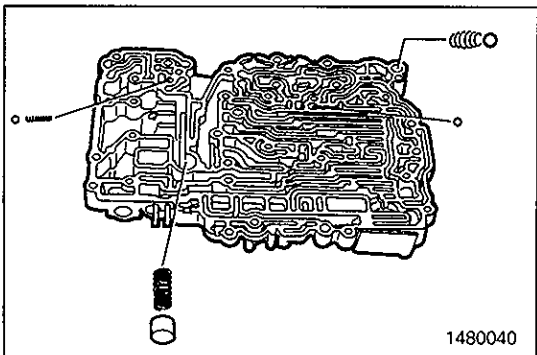
(12) Install the detent spring and tighten the bolts to specified torque.

**LOWER VALVE BODY  
DISASSEMBLY AND REASSEMBLY**

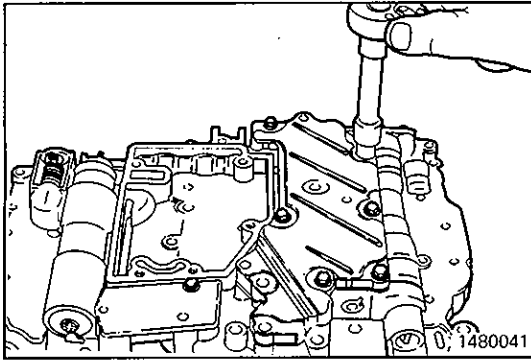


**DISASSEMBLY**

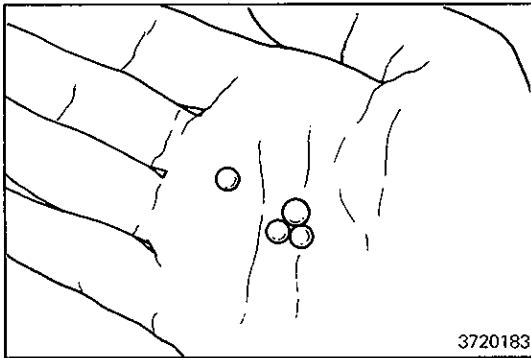
(1) Remove the lower valve body plate and gaskets.



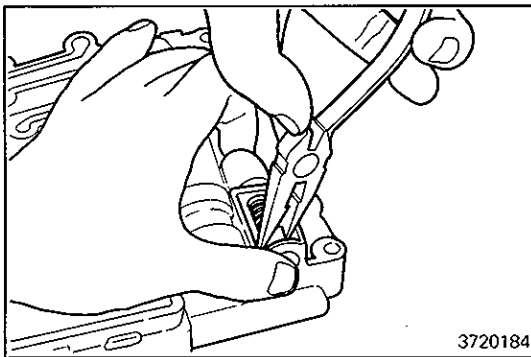
(2) Remove the check balls, damping check ball, spring, oil cooler return ball, spring, oil cooler bypass valve and spring.



- (3) Turn the assembly upside down, remove the set bolts and remove the lower valve body cover, plate and gasket.



- (4) Remove the four check balls, using care not to damage the grooves. Store the balls together so as not to lose any of them.

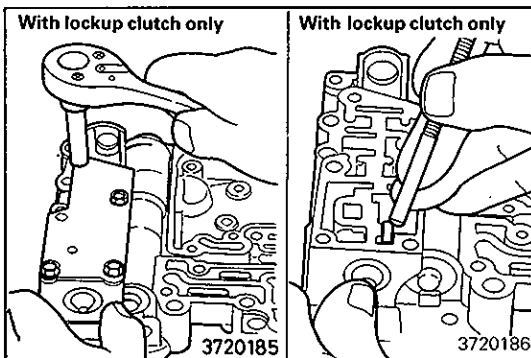


- (5) Remove the retainer from the pressure relief valve assembly.

**Caution**

- **Cover the spring with a hand. Then, use long nose pliers to pull out the spring seat while exercising care not to bend the spring.**

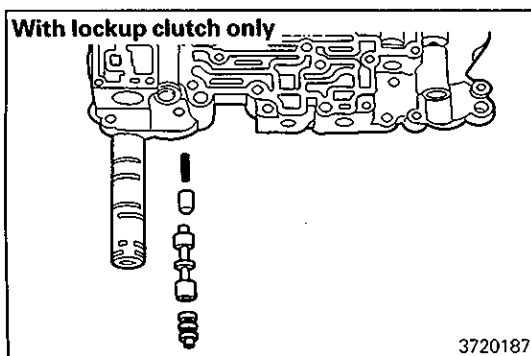
- (6) Remove the pressure relief valve spring and ball.



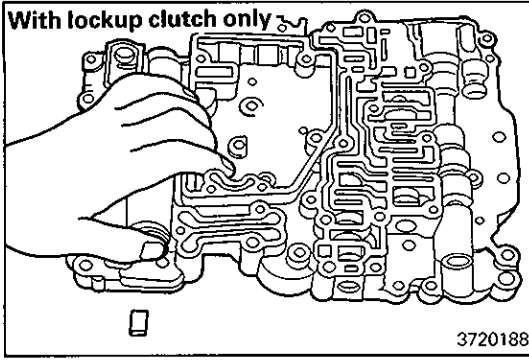
- (7) Remove the plate and gasket. (With lockup clutch only)

- (8) Remove the lockup relay valve. (With lockup clutch only)

- (a) Remove the plug retainer and plug.



- (b) Remove the sleeve together with the lockup relay valve, control valve and spring.

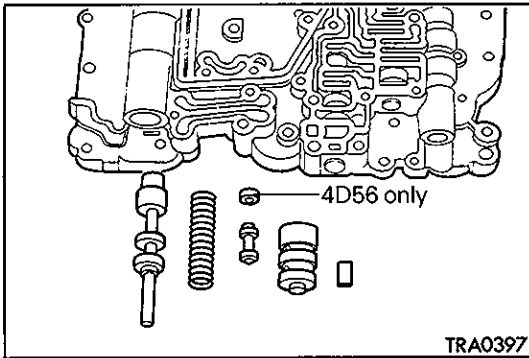


- (9) Remove the valve retainer from the primary regulator valve. (With lockup clutch only)

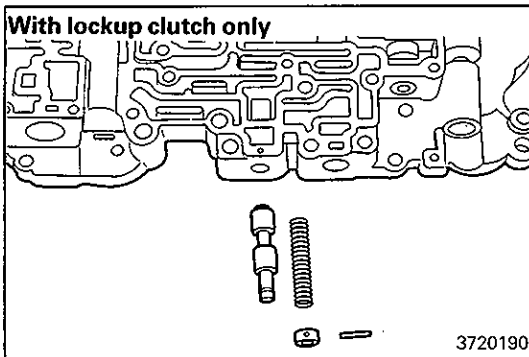
**Caution**

- **Since the primary regulator valve contains a fully compressed spring, do not bring your face close to it.**

To remove the retainer, hold the primary regulator valve with its valve body side surface down. Then press in the valve sleeve, and the retainer will drop off. Release the spring slowly.

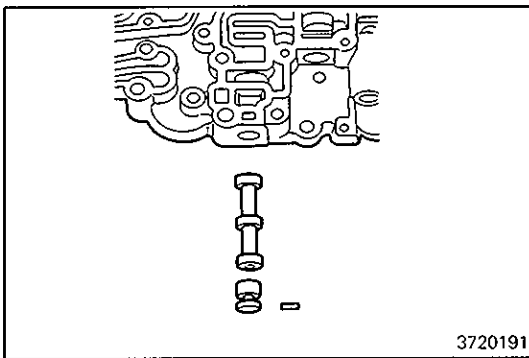


- (10) Remove the sleeve, plunger, spring and primary regulator valve.



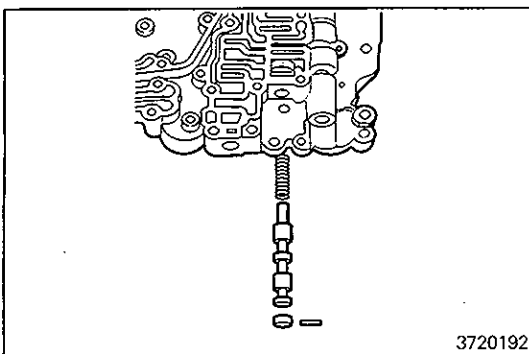
- (11) Remove the locating pin from the lockup signal valve. (With lockup clutch only)

- (12) Remove the plug, spring and lockup signal valve. (With lockup clutch only)



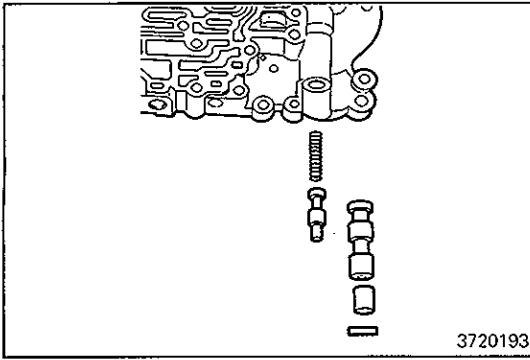
- (13) Remove the valve retainer from the D-2 down timing valve.

- (14) Remove the plug and D-2 down timing valve.

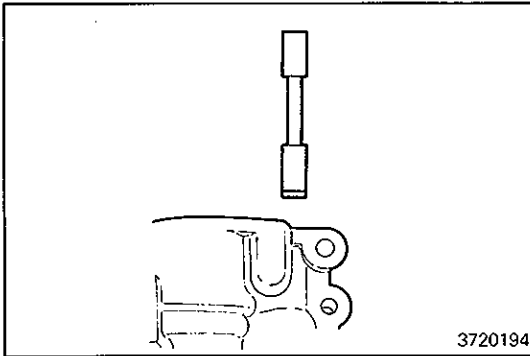


- (15) Remove the locating pin from the 3-4 shift valve.

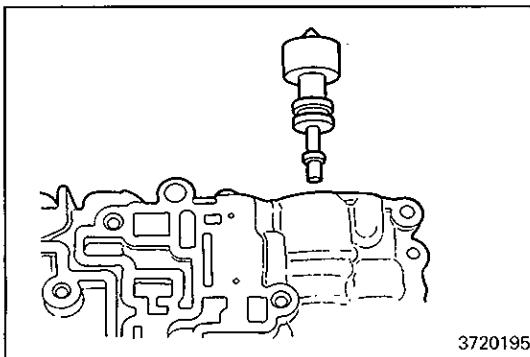
- (16) Remove the plug, 3-4 shift valve and spring.



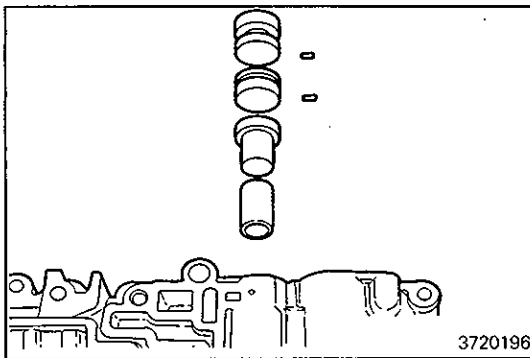
- (17) Remove the valve retainer from the 1-2 shift valve.
- (18) Remove the plug, 1-2 shift valve and spring.



- (19) Remove the cover plate.
- (20) Remove the plug.



- (21) Remove the low-coast shift valve.



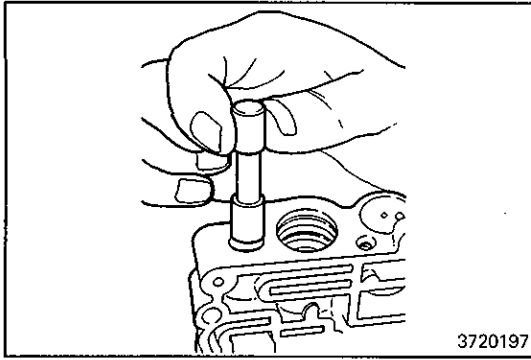
- (22) Remove the locating pins from the 3rd-coast shift valve.
- (23) Remove the two plugs, 3rd-coast shift valve and 3-4 shift control valve.

**INSPECTION  
VALVE SPRING**

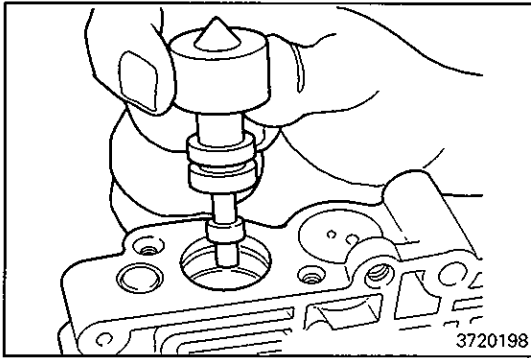
Check the spring for damage, rust and permanent set. Measure the free length of the spring. If it is below the standard value, replace the spring. (Refer to Spring Identification Table.)

**REASSEMBLY**

(1) Install the plug.

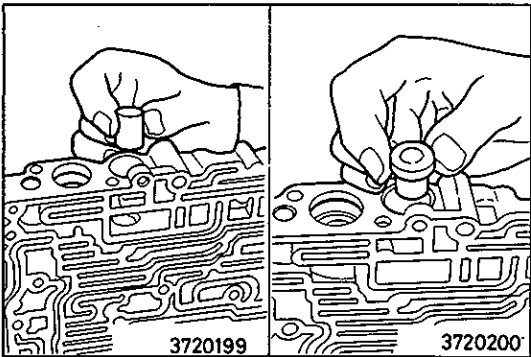


(2) Insert the low-coast shift valve carefully with its small end down.



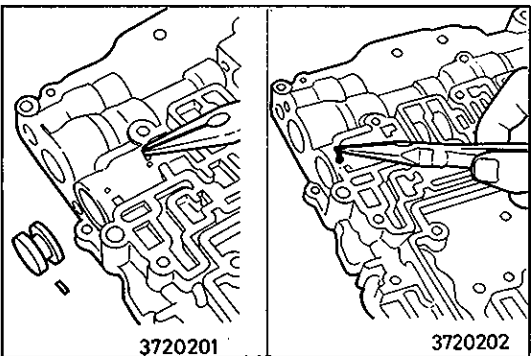
(3) Install the 3-4 shift control valve and 3rd-coast shift valve as follows:

- (a) Insert the 3-4 shift control valve with its cup side down.
- (b) Insert the 3rd-coast shift valve with its small end down.

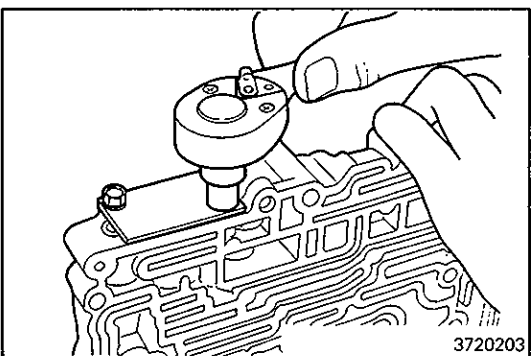


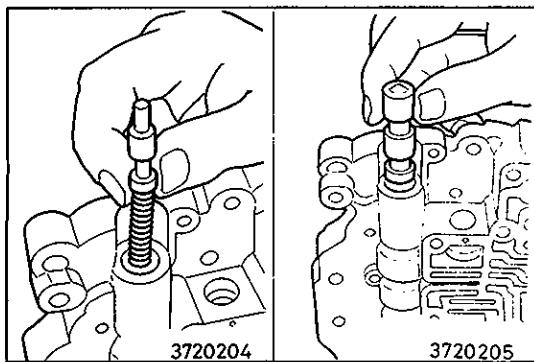
(4) Insert two plugs and locating pins.

- (a) Insert the 3rd-coast shift valve inside plug with its thick face side down.
- (b) Use long nose pliers to insert the locating pin.
- (c) Insert the outside plug and then the locating pin.

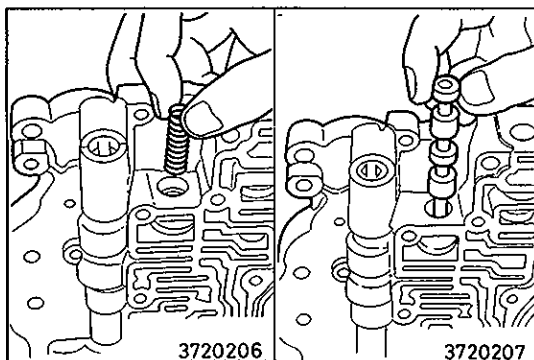


(5) Install the low-coast shift valve cover.

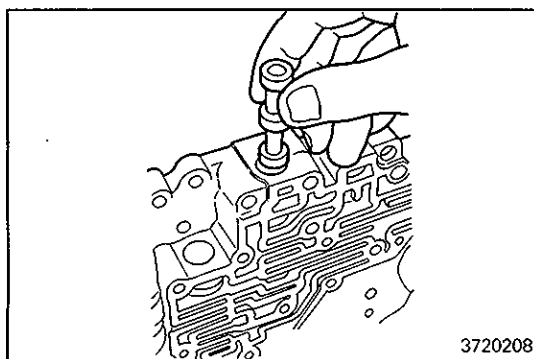




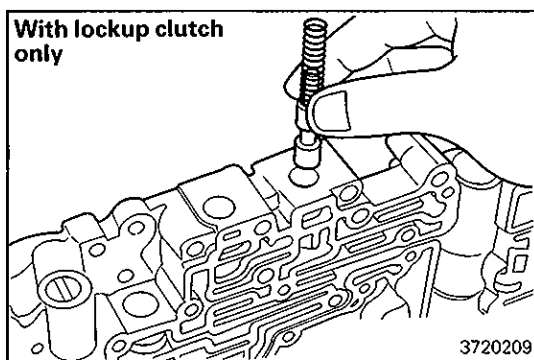
- (6) With the valve body held vertically, insert the spring, 1-2 upper and lower shift valves and plug in the valve body.
- (7) Install the valve retainer to the 1-2 shift valve.



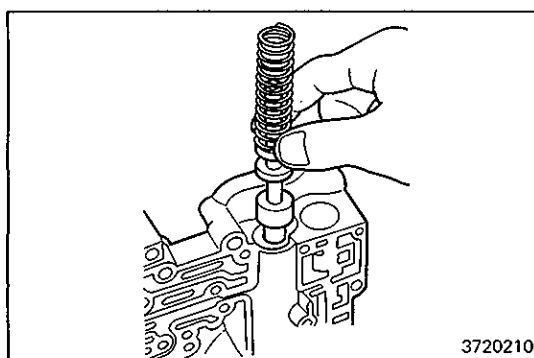
- (8) With the valve body held vertically, insert the spring, 3-4 shift valve (with the small end held down) and plug carefully.
- (9) Install the 3-4 shift valve locating pin.



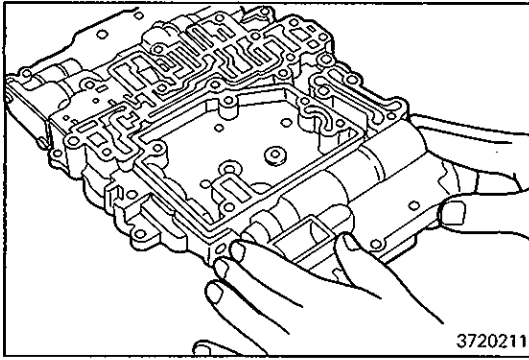
- (10) Insert the small end of the D-2 down timing valve first. Then insert it in the big end of the plug.
- (11) Install the valve retainer to the D-2 down timing valve.



- (12) Install the lockup signal valve (with its big end down), spring and plug (with its small end down). (With lockup clutch only)
- (13) Install the lockup signal valve locating pin. (With lockup clutch only)



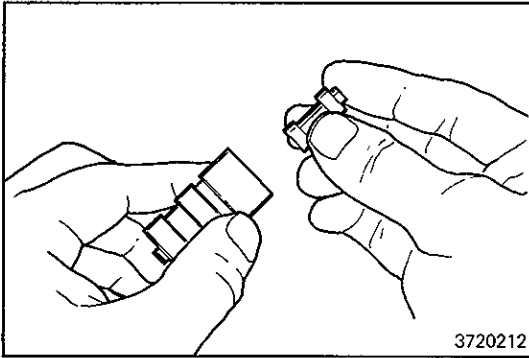
- (14) Insert the primary regulator valve and spring.



(15) Make sure that the valve is properly located.

**NOTE**

Be sure to see that the primary regulator valve surface is flush with the valve body surface.

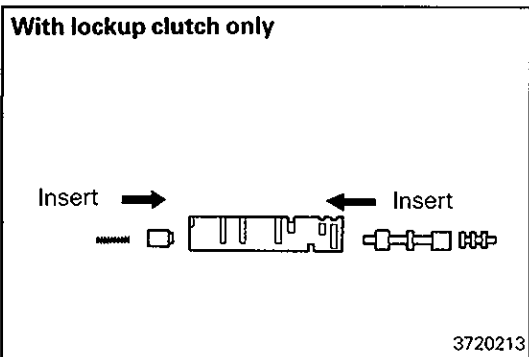


(16) Insert the primary regulator valve plunger in the sleeve.

Be sure to insert the rounded end first and make sure that the plunger is fully inserted until it is drawn into the sleeve.

(17) Insert the sleeve together with the plunger.

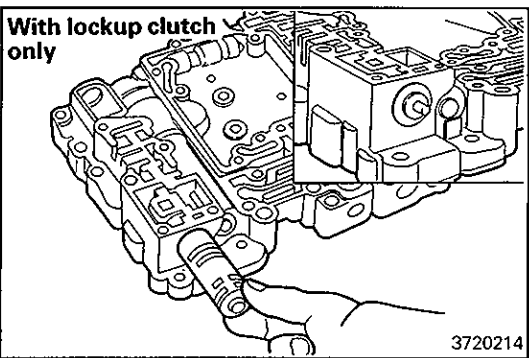
(18) Install the valve retainer.



(19) Insert the lockup relay valve as follows:

(With lockup clutch only)

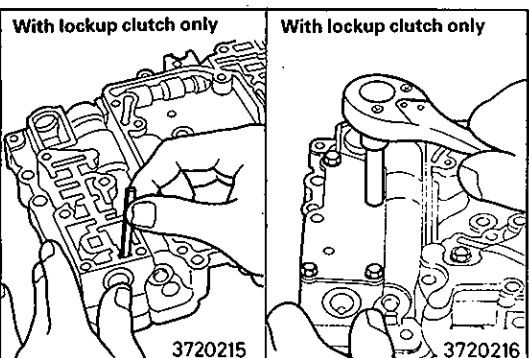
(a) Assemble the spring, lockup relay control valve, lockup relay valve and plug to the sleeve.



(b) Insert the sleeve in the hole.

**NOTE**

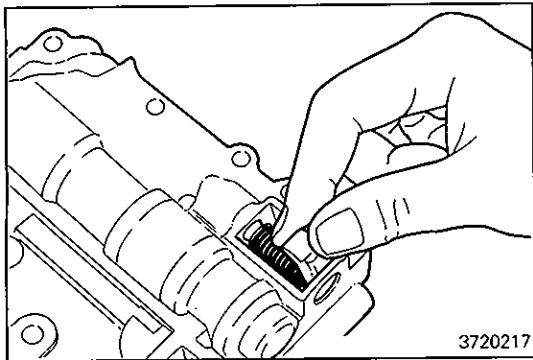
Be sure to insert the sleeve with its smaller void up as shown in the illustration.



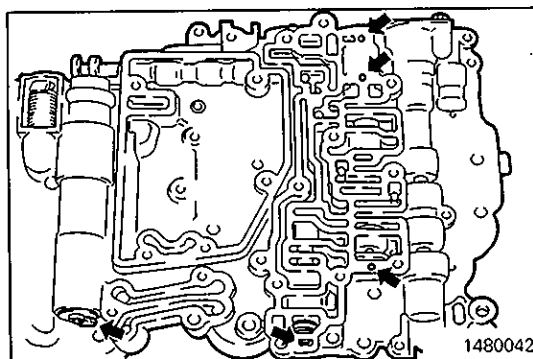
(c) Install the plug retainer.

(20) Install the plate together with the gasket and tighten the four bolts. (With lockup clutch only)

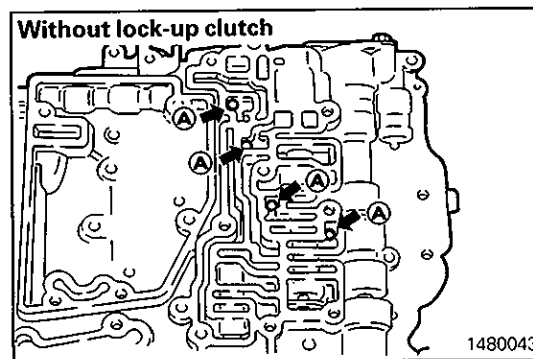




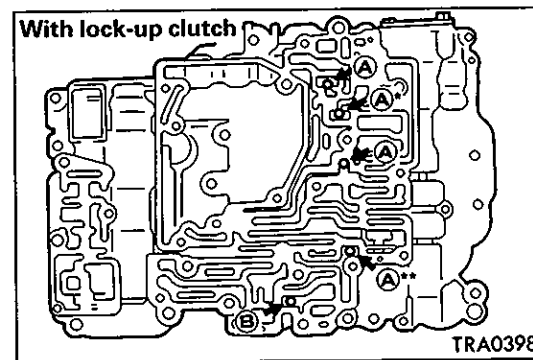
(21)Install the pressure relief valve, spring and retainer.



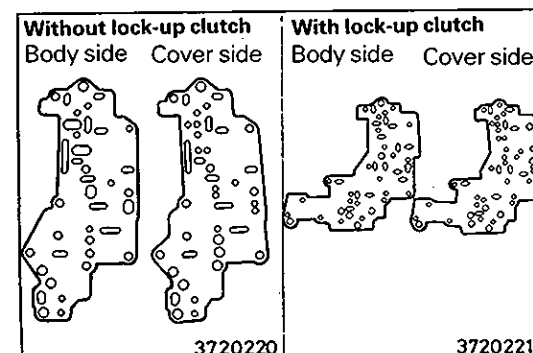
(22)Check the retainer and locating pin to make sure that the retainer and pin are properly installed.



(23)Install the three or four check balls.



Check ball **(A)**:Diameter 5.5 mm (0.216 in.)  
 Check ball **(B)**:Diameter 6.4 mm (0.252 in.)  
 \*: Pajero/Montero, L300 for EXP, AUS  
 \*\*: 6G72 for EC

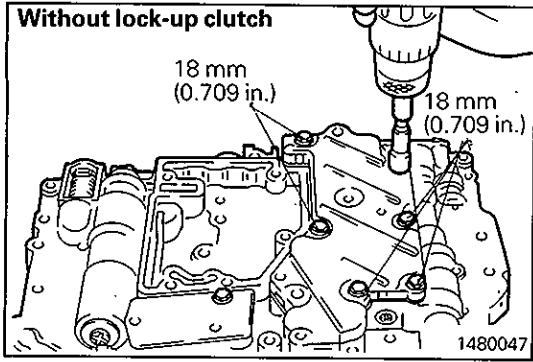


(24)Install the lower valve body cover by the following sequence.

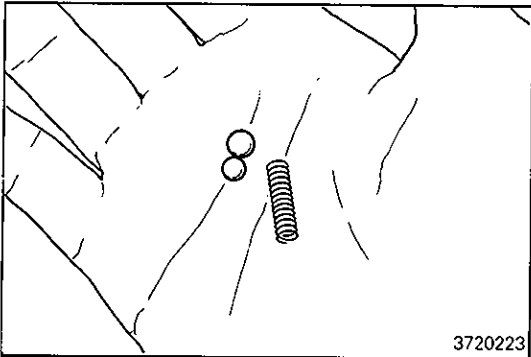
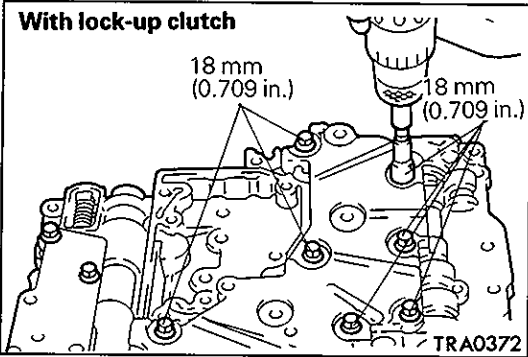
Gasket (body side) → plate → gasket (cover side) → cover

**NOTE**

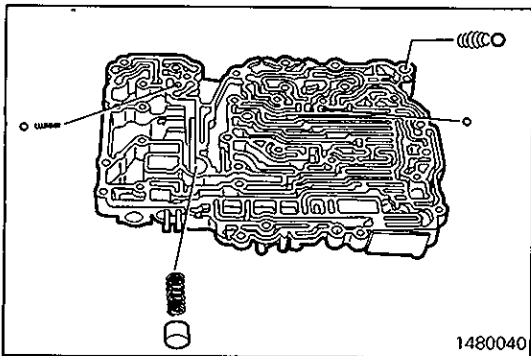
The upper gasket is not interchangeable with the lower gasket.



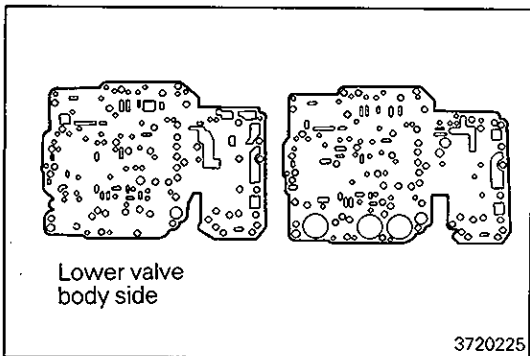
(25) Install the lower valve body cover set bolts.



(26) Identify the check balls and springs.  
Note that the two rubber check balls differ in size. A larger ball is installed on the damping side of the spring.



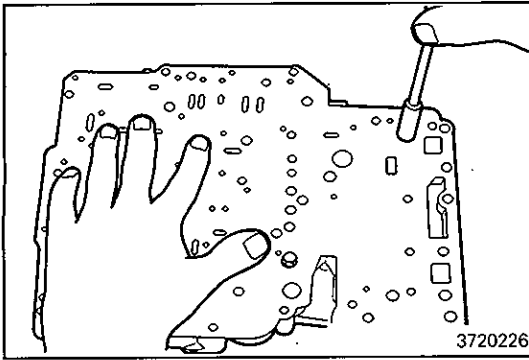
(27) Install the check ball, damping check ball, spring, oil cooler return ball, spring, oil cooler bypass valve and spring.



(28) Install the valve body gaskets.  
The two gaskets are not interchangeable with each other.

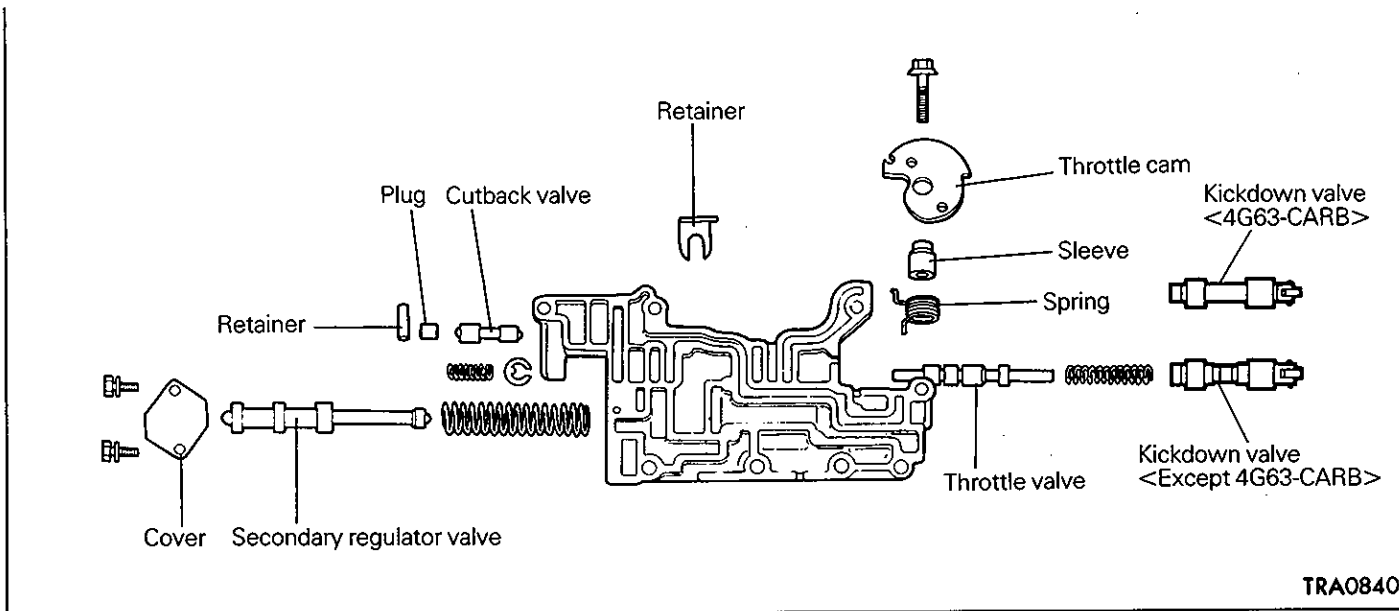
**Caution**

- When replacing the gasket, make sure that a new gasket matches with the old gasket.



- (29) Install the separator plate.  
 Set the plate in the specified location.  
 Finger tighten the two oil strainer mounting bolts so that the check valve floated by spring force may be held by the plate.

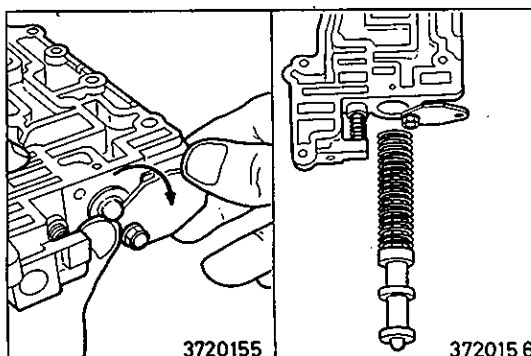
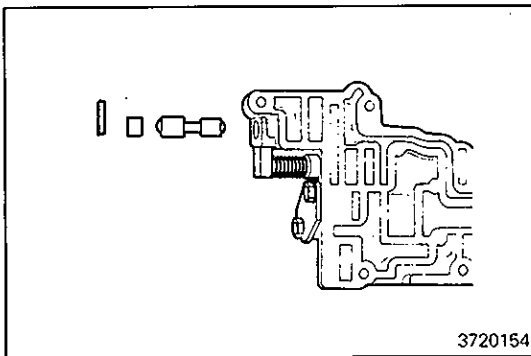
**UPPER FRONT VALVE BODY  
 DISASSEMBLY AND REASSEMBLY**



TRA0840

**DISASSEMBLY**

- (1) Remove the retainer, plug and cutback valve.



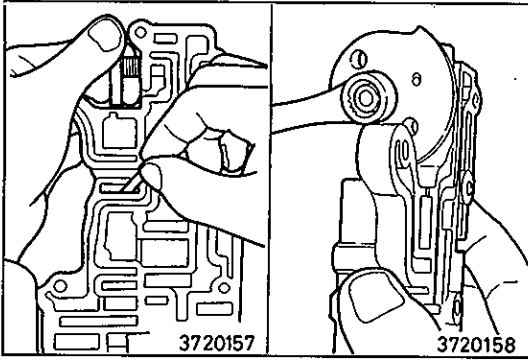
- (2) Remove the secondary regulator valve and spring as follows:

- (a) Remove one cover mounting bolt and loose the other bolt slightly. Rotate the cover slowly until the valve is visible, and hold with a finger.

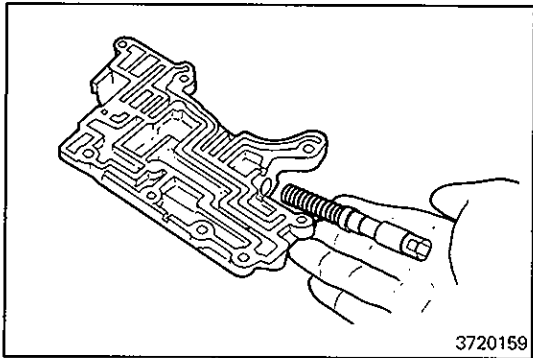
**Caution**

- As the spring has a strong force, be sure to prevent the valve from jumping out.

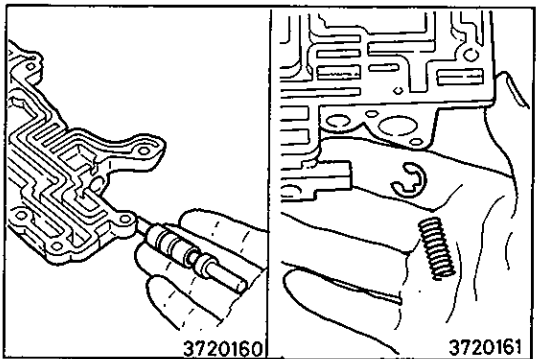
- (b) Remove the valve and spring.  
 (c) Remove the bolt and cover.



- (3) Rotate the throttle cam, press-fit the downshift plug into the valve body, insert the cutback valve plug retainer in the illustrated position and hold the throttle valve.
- (4) Remove the throttle cam spring.



- (5) Pull out the retainer inserted in (3) above and remove the downshift plug and spring.



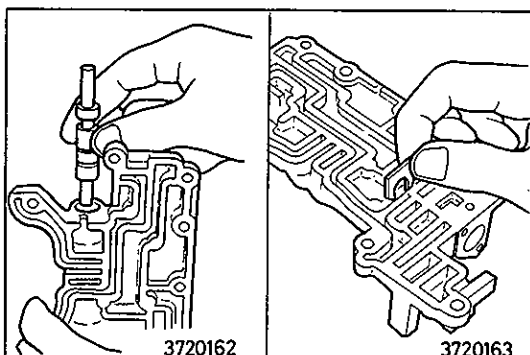
- (6) Pull out the throttle valve retainer and remove the throttle valve and spring.

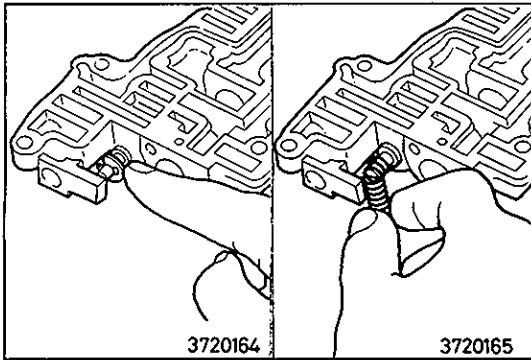
### INSPECTION

- (1) Check the valve spring for damage, rust and permanent set. Measure the free length of the spring. If it is below the standard value, replace the spring. (Refer to Spring Identification Table.)

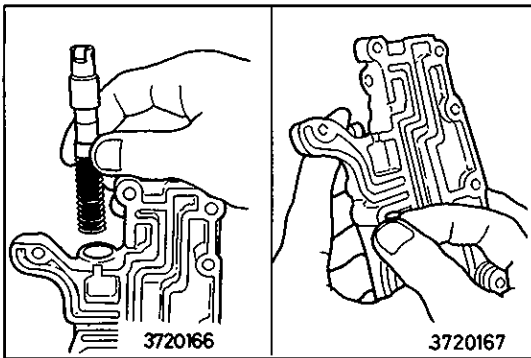
### REASSEMBLY

- (1) Insert the throttle valve fully in the hole made in the valve body.
- (2) Coat the throttle valve retainer with petrolatum and insert it in the illustrated position.

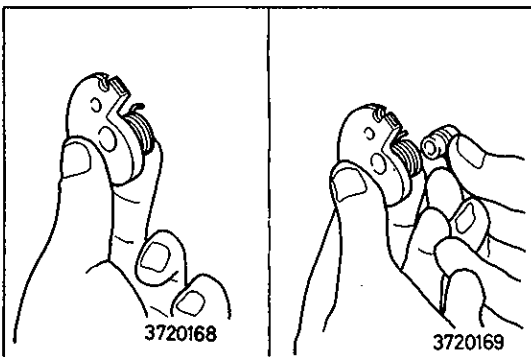




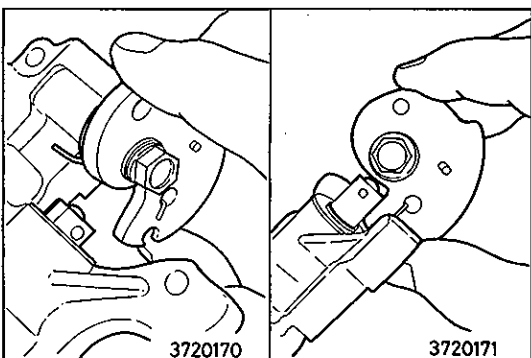
(3) Install the spring to the end of the throttle valve.



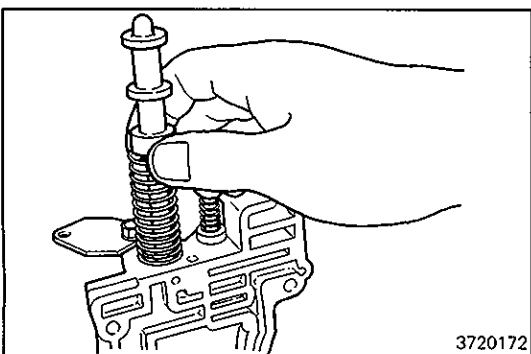
(4) Install the spring and downshift plug.  
 (5) Press-fit the downshift plug and insert the cutback valve plug retainer in the illustrated location.



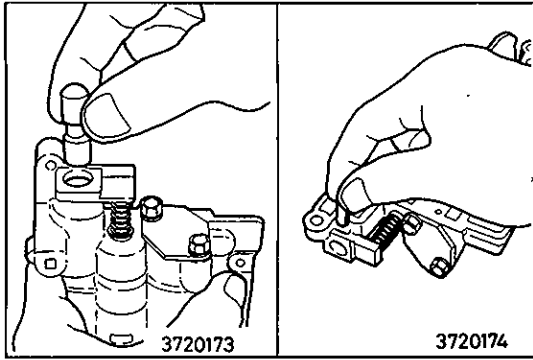
(6) Install the spring with its end hooked to the hole made in the throttle cam.  
 (7) Insert the sleeve.



(8) Install the throttle cam to the valve body. Make sure that the spring end is properly hooked.  
 (9) Remove the valve plug retainer inserted in (5) above.

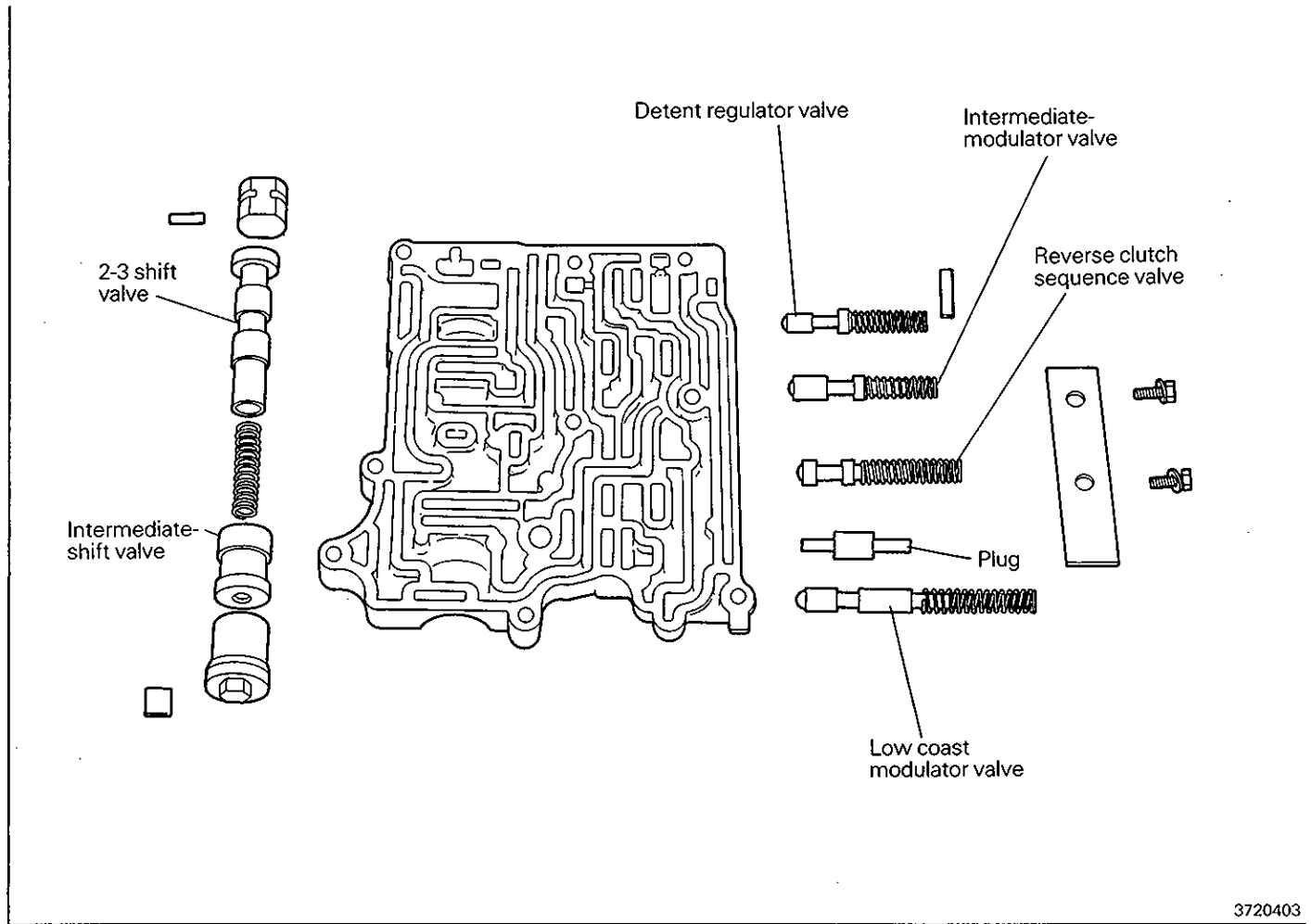


(10) Install the secondary regulator valve as follows:  
 (a) Use one bolt to install the cover.  
 (b) Install the spring and secondary regulator valve.  
 (c) Press-fit the valve and rotate the cover to close.  
 (d) Install the other bolt and tighten to specified torque.

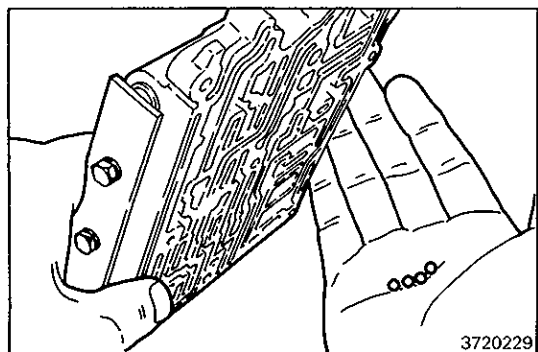


- (11) Insert the cutback valve and plug.
- (12) Coat the retainer with petrolatum and insert it in the illustrated location.

**UPPER REAR VALVE BODY  
DISASSEMBLY AND REASSEMBLY**



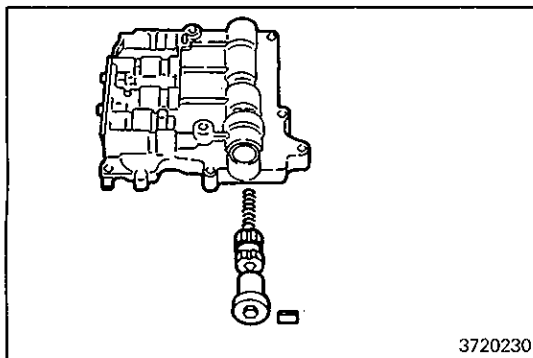
3720403



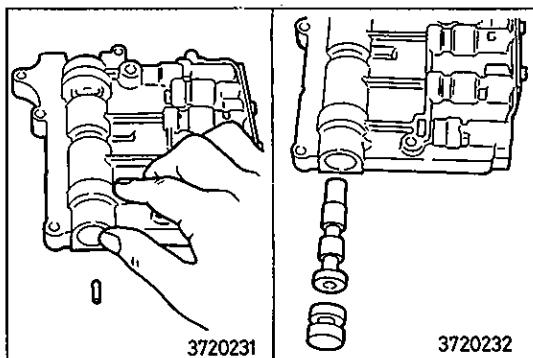
**DISASSEMBLY**

- (1) Use tweezers to remove the check balls (three rubber balls and one steel ball).

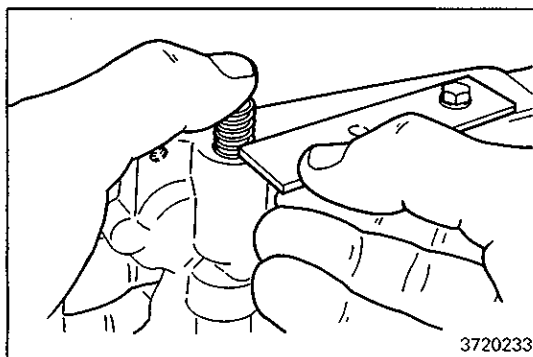
3720229



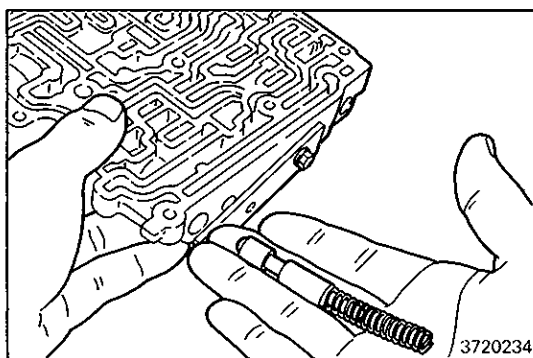
- (2) Remove the valve retainer from the intermediate-coast shift valve.
- (3) Remove the plug, intermediate-coast shift valve and spring.



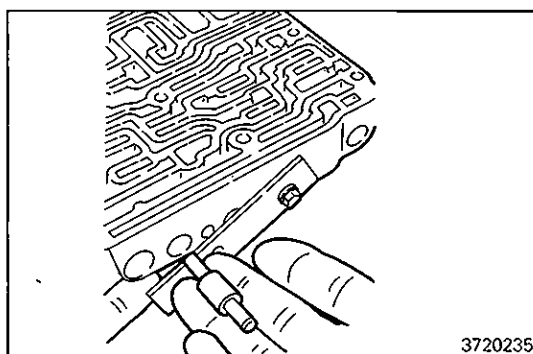
- (4) Remove the 2-3 shift valve as follows:
  - (a) Remove the valve retainer from the 2-3 shift valve.
  - (b) Remove the plug and 2-3 shift valve.



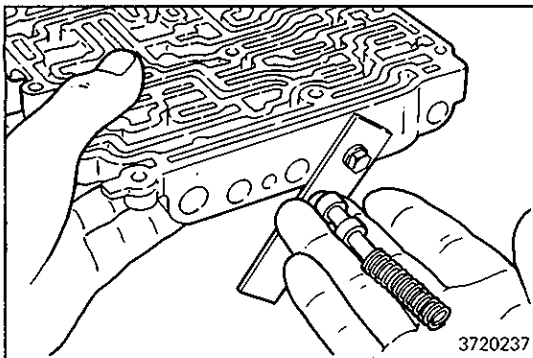
- (5) Of the two bolts, remove the one which is installed on the low-coast modulator valve side, from the rear valve cover.
- (6) Slide the cover slightly to remove the low-coast modulator valve only.



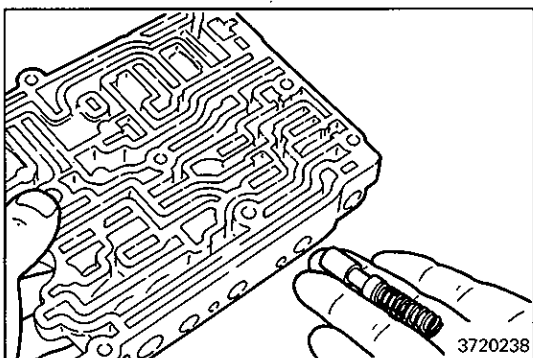
- (7) Remove the spring and low-coast modulator valve.



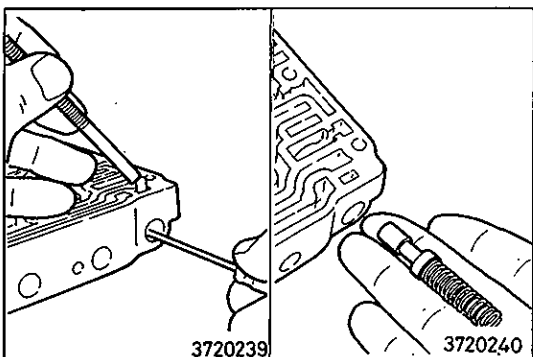
- (8) Slide the cover further to remove the plug.



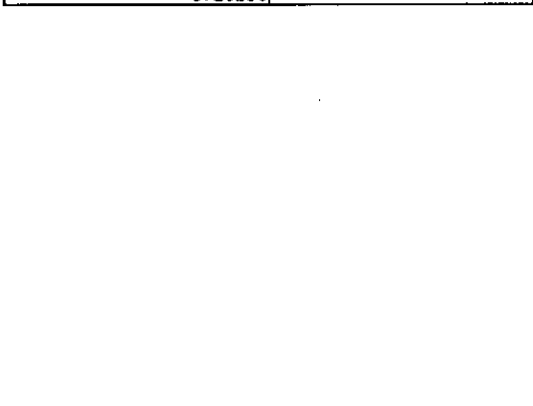
- (9) Rotate the cover still further to remove the spring and reverse clutch sequence valve.



- (10) Remove the rear cover, spring and intermediate modulator valve.



- (11) Remove the valve retainer from the detent regulator valve.  
 (12) Remove the spring and detent regulator valve.



## INSPECTION

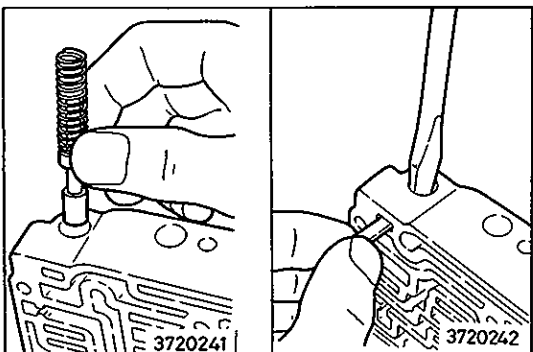
- (1) Check the valve spring for damage, rust and permanent set. Measure the free length of the spring. If it is below the standard value, replace the spring. (Refer to Spring Identification Table.)

## REASSEMBLY

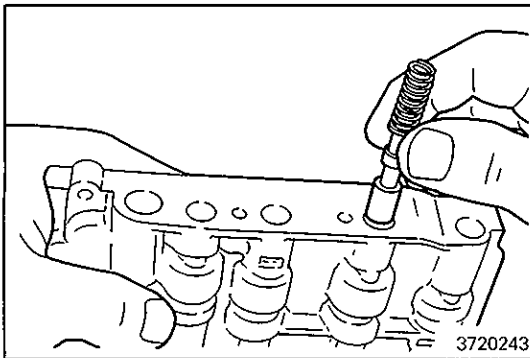
- (1) Install the detent regulator valve, spring and retainer as follows:  
 Insert the valve (with its rounded end down) and spring in the hole. Fit a large screwdriver on the spring end. Then compress the spring to install the retainer in the specified location.

### NOTE

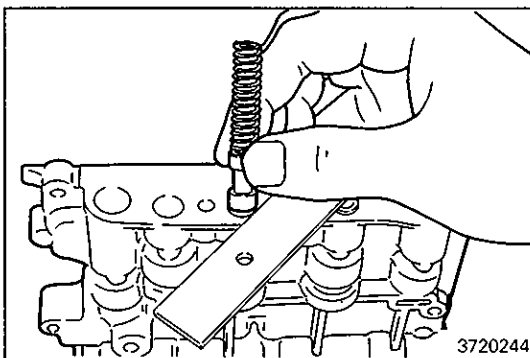
Make sure that the retainer is installed over the entire end of the spring.



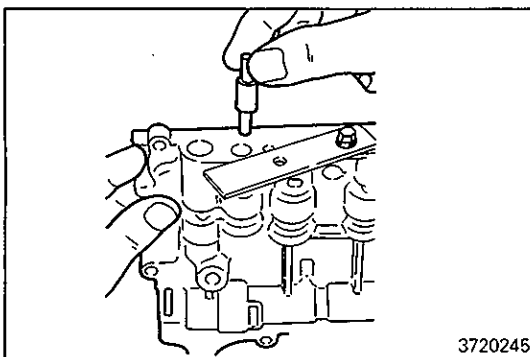




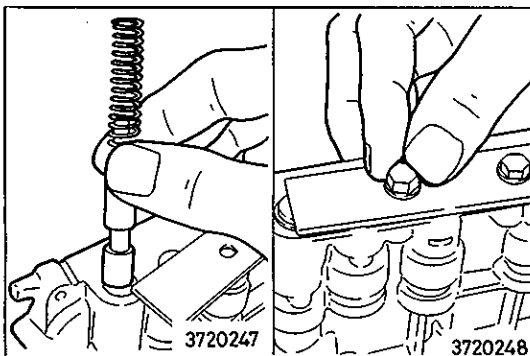
- (2) Insert the intermediate modulator valve and spring. Be sure to insert the valve with its rounded end down.



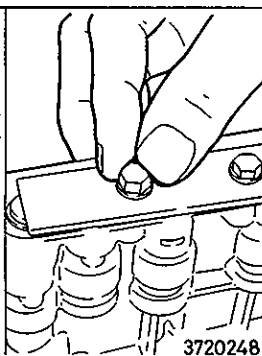
- (3) Put the rear valve cover in place and loosely tighten the bolt on the intermediate modulator valve side.  
 (4) Insert the reverse clutch sequence valve and spring. Be sure to insert the valve with its rounded end down.



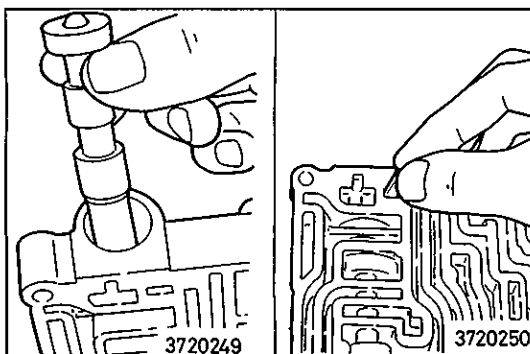
- (5) Insert the plug.



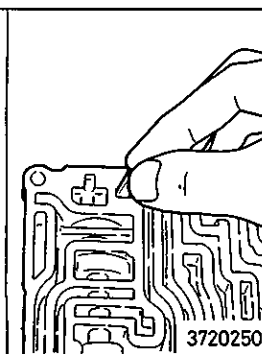
- (6) Insert the low-coast modulator valve and spring. Be sure to insert the valve with its rounded end down.

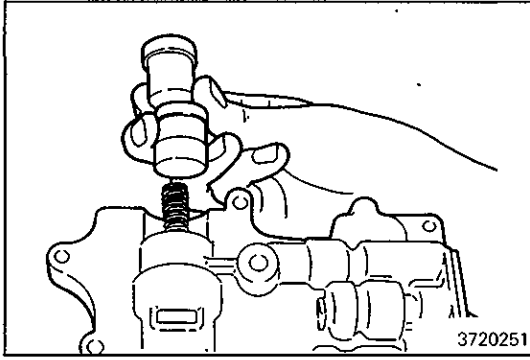


- (7) Install the other rear valve cover bolt and tighten both bolts.

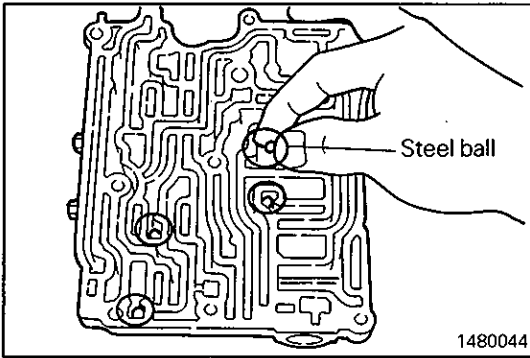


- (8) Insert the 2-3 shift valve as follows:  
 (a) Insert the 2-3 shift valve with its small end down. Then, insert the plug.





- (9) Insert the spring and intermediate-coast shift valve in the hole. Be sure to install the valve with its rounded end down.  
(10) Insert the valve and retainer.

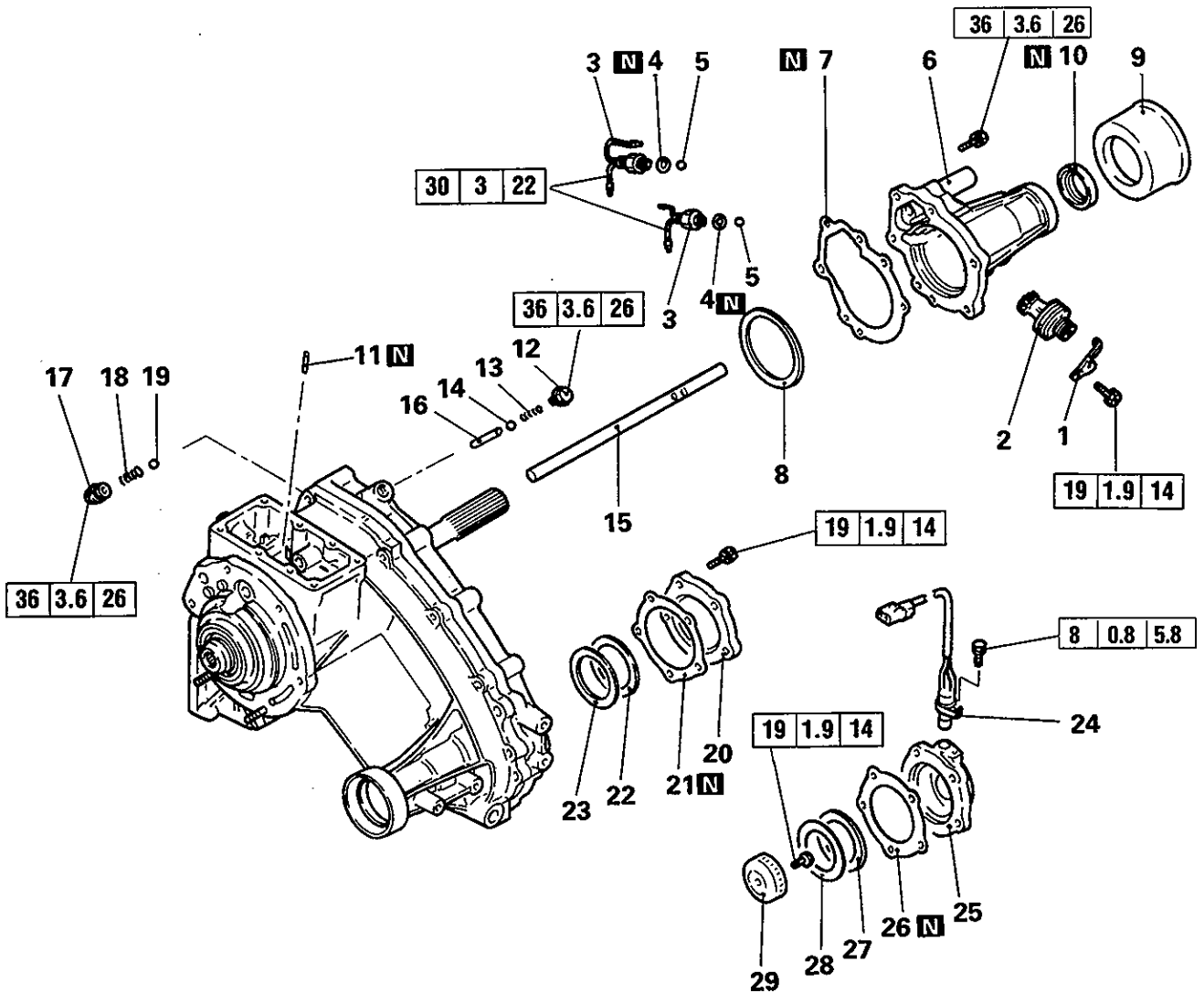


- (11) Install the steel ball in the location shown in the illustration. The three rubber balls are identical and may be installed in any location.

16. TRANSFER

V4AW2-1

DISASSEMBLY AND REASSEMBLY

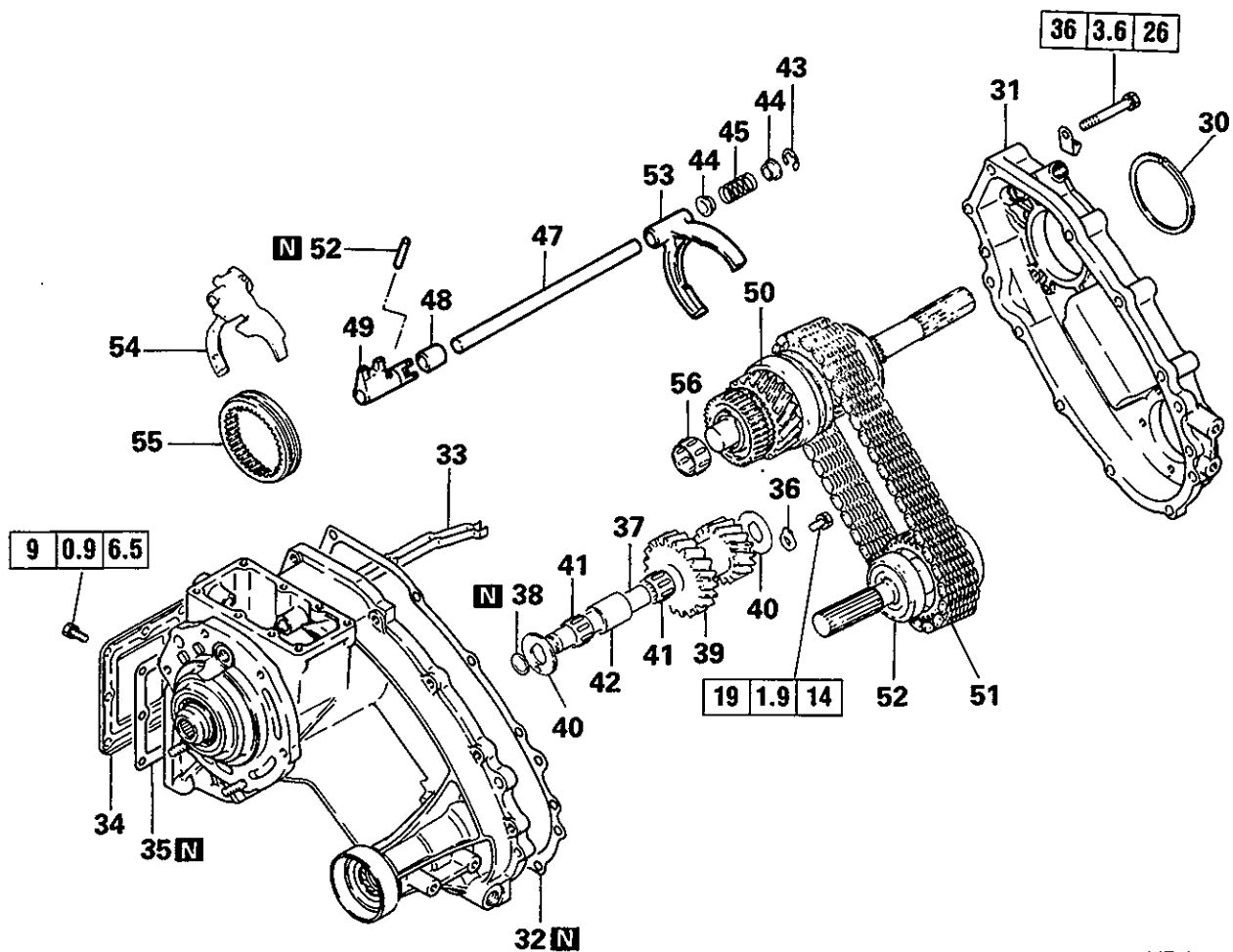


TRA0187

Disassembly steps

- |                               |                       |                                      |
|-------------------------------|-----------------------|--------------------------------------|
| 1. Sleeve clamp               | 16. Interlock plunger |                                      |
| W 2. Speedometer gear         | 17. Seal plug         |                                      |
| 3. 4WD indicator light switch | 18. Poppet spring     |                                      |
| 4. Gasket                     | 19. Steel ball        |                                      |
| 5. Steel ball                 | Q 20. Cover           |                                      |
| V 6. Rear cover               | Q 21. Cover gasket    |                                      |
| V 7. Rear cover gasket        | 22. Spacer            |                                      |
| V 8. Spacer                   | 23. Wave spring       |                                      |
| 9. Dust seal guard            | 24. Pulse generator   | } Vehicles with pulse generator only |
| T 10. Oil seal                | 25. Cover             |                                      |
| O 11. Spring pin              | 26. Cover gasket      |                                      |
| 12. Seal plug                 | 27. Spacer            |                                      |
| 13. Poppet spring             | 28. Wave spring       |                                      |
| 14. Steel ball                | 29. Pulse rotor       |                                      |
| A N 15. H-L shift rail        |                       |                                      |

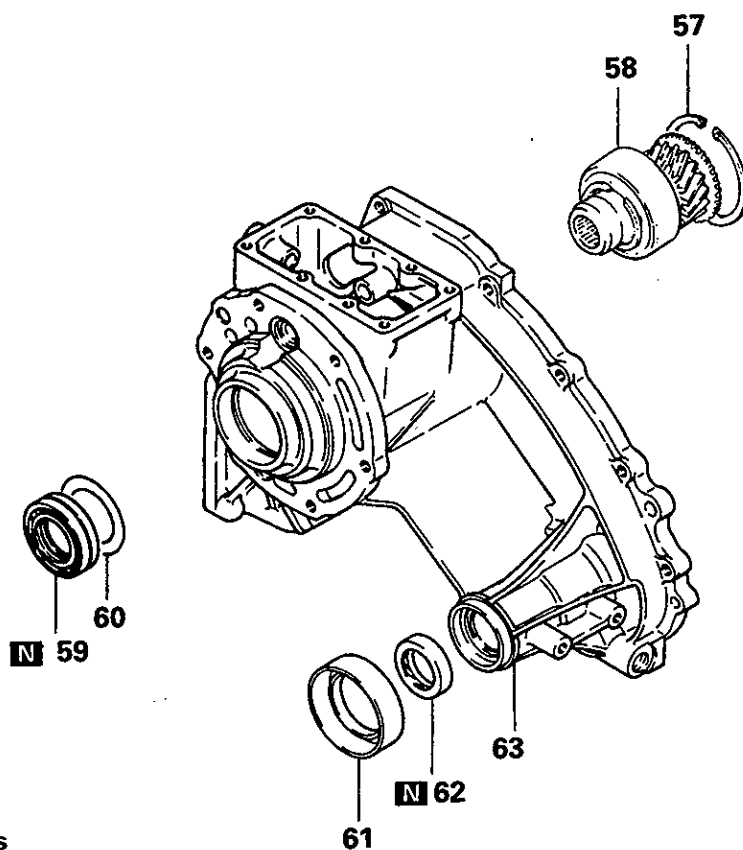
## V4AW2-1



MT10021

## Disassembly steps

- 30. Snap ring
- ▶L▶ 31. Chain cover
- ▶K▶ 32. Chain cover gasket
- 33. Oil guide
- 34. Side cover
- 35. Side cover gasket
- 36. Lock plate
- 37. Counter gear shaft
- 38. O-ring
- 39. Counter gear
- ▶E▶ 40. Thrust washer
- 41. Needle bearing
- 42. Bearing spacer
- 43. Snap ring
- 44. Spring retainer
- 45. Spring
- ▶a▶ 46. Spring pin
- 47. 2-4WD shift rail
- 48. Distance piece
- 49. 2-4WD shift lug
- ◊C◊ ▶J▶ 50. Rear output shaft
- ◊C◊ ▶J▶ 51. Chain
- ◊C◊ ▶J▶ 52. Front output shaft
- 53. 2-4WD shift fork
- 54. H-L shift fork
- 55. H-L clutch sleeve
- 56. Needle bearing

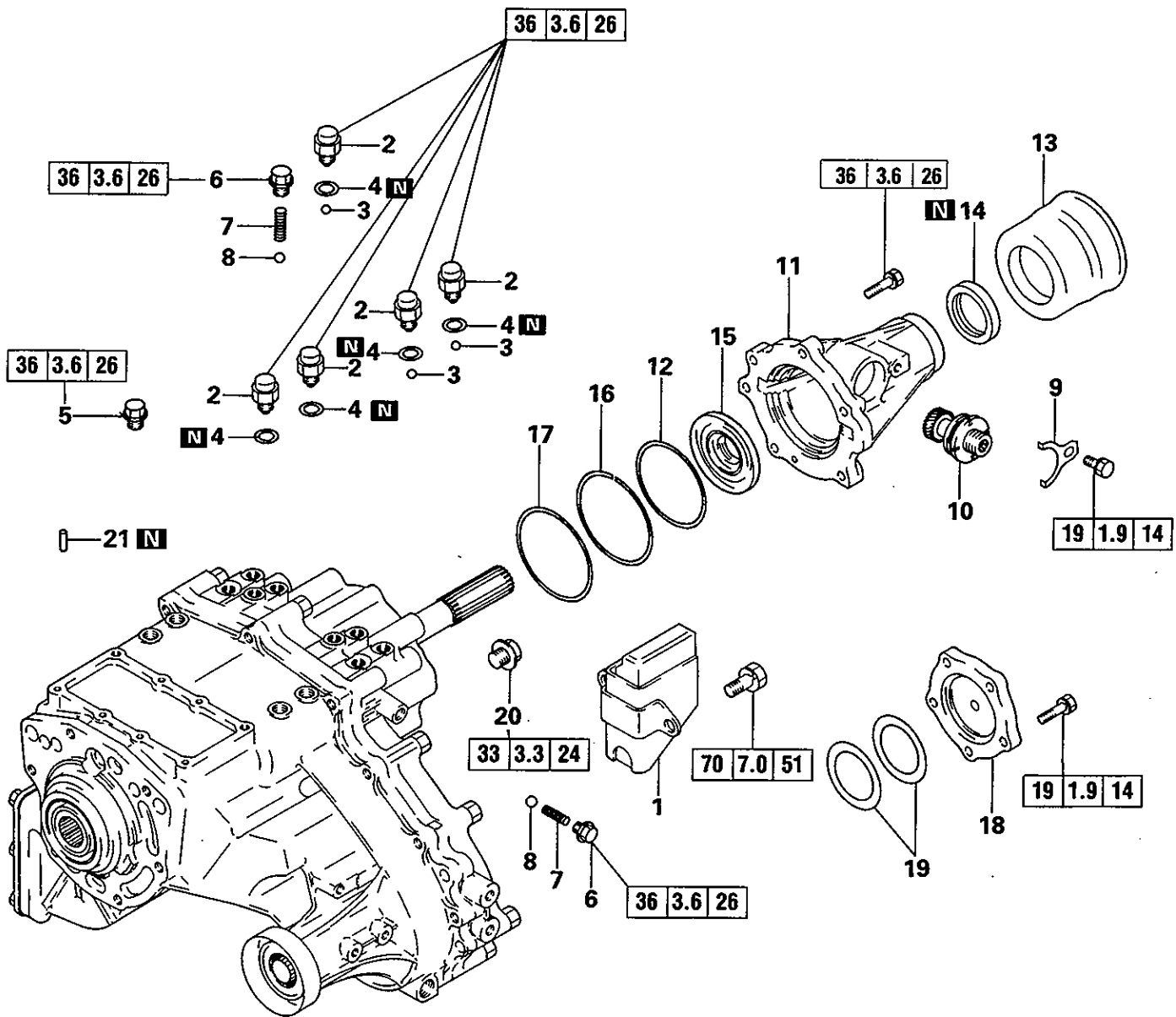


**Disassembly steps**

- ▶D▶ 57. Snap ring
- 58. Input gear
- ▶B▶ 59. Oil seal (Input gear)
- 60. Baffle plate
- 61. Dust seal guide
- ▶A▶ 62. Oil seal (Front output shaft)
- 63. Transfer case

145084

## V4AW2-3, 7 (SUPER SELECT 4WD) • LHD



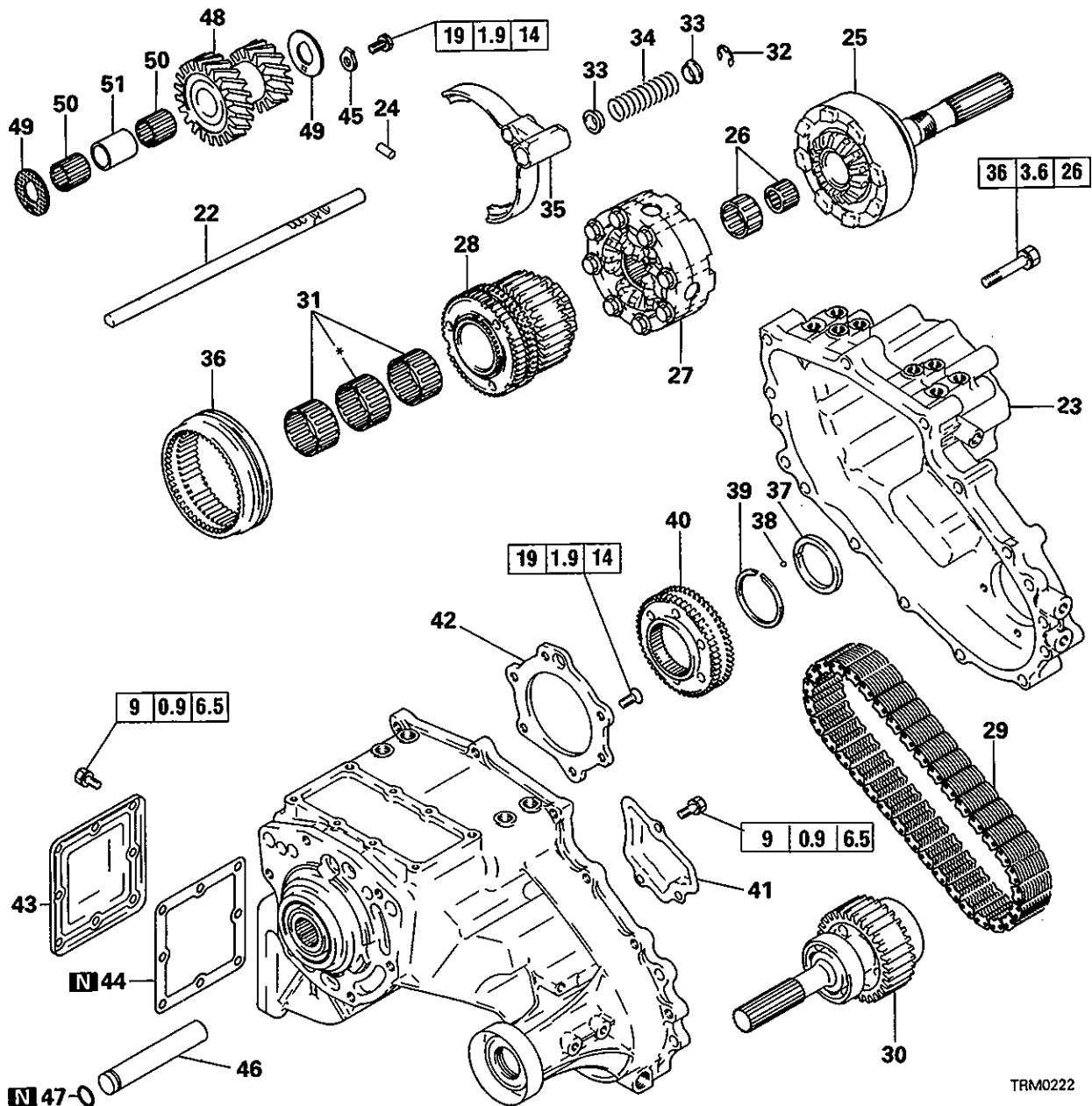
## Disassembly steps

- 1. Dynamic damper (6G72 engine only)
- ◆Z◆ 2. Detection switch
- 3. Steel ball
- 4. Gasket
- ◆Y◆ 5. Plug
- ◆X◆ 6. Poppet plug
- 7. Poppet spring
- 8. Steel ball
- 9. Sleeve damp
- ◆W◆ 10. Speedometer gear
- ◆U◆ 11. Rear cover

- ◆U◆ 12. Spacer
- 13. Dust seal guard
- ◆T◆ 14. Oil seal
- ◆S◆ 15. Oil seal
- ◆R◆ 16. Snap ring } (Up to November 1992)
- ◆R◆ 17. Spacer
- ◆P◆ 18. Cover
- ◆P◆ 19. Wave spring (Spacer)
- 20. H-L shift rail plug
- ◆O◆ 21. Spring pin (H-L shift fork)

TRM0259

V4AW2-3, 7 (SUPER SELECT 4WD) • LHD



**Disassembly steps**

- ◊B▶▶O▶▶ 22.H-L shift rail
- ◊B▶▶M▶▶ 23.Chain cover
- ▶M▶▶ 24.Interlock plunger
- 25.Rear output shaft
- 26.Needle bearing
- 27.Center differential case
- ◊D▶▶▶I▶▶▶ 28.2-4WD synchronizer
- ◊D▶▶▶I▶▶▶ 29.Chain
- ◊D▶▶▶I▶▶▶ 30.Front output shaft
- ◊D▶▶▶I▶▶▶ 31.Needle bearing
- ◊E▶▶▶F▶▶▶ 32.Snap ring (2-4WD shift rail)
- 33.Spring seat
- 34.Spring
- 35.2-4WD shift fork
- 36.2-4WD synchronizer sleeve

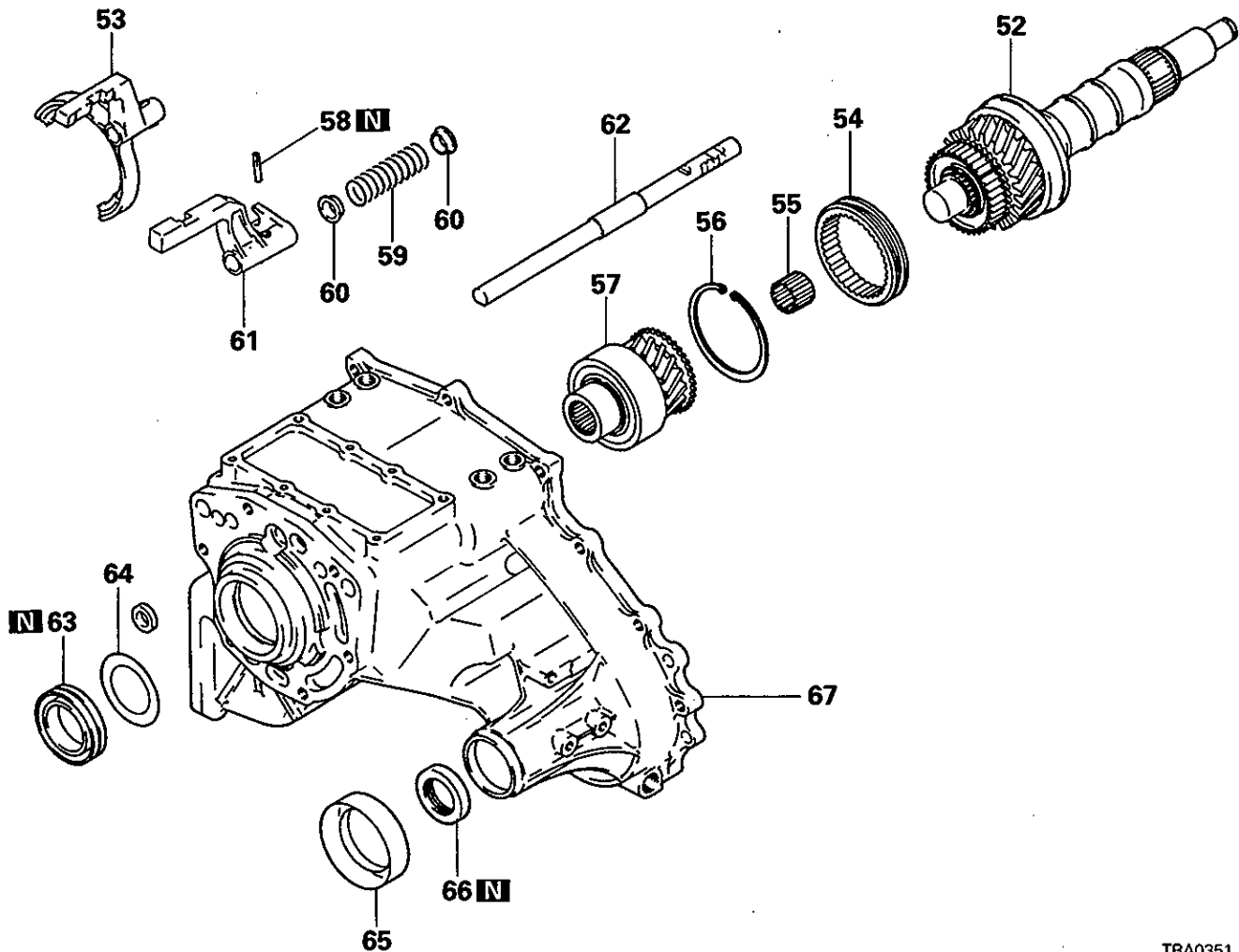
- 37.Sleeve
- 38.Steel ball
- ▶H▶▶▶ 39.Snap ring
- 40.Differential lock hub
- 41.Oil dam cover
- ▶G▶▶▶ 42.Bearing retainer
- 43.Side cover
- 44.Side cover gasket
- 45.Lock plate
- ◊Et▶▶▶F▶▶▶ 46.Counter gear shaft
- 47.O-ring
- 48.Counter gear
- ▶E▶▶▶ 49.Thrust washer
- 50.Needle bearing
- 51.Bearing spacer

**NOTE**

\* One needle bearing disused (From December 1992)

TRM0222

## V4AW2-3, 7 (SUPER SELECT 4WD) • LHD



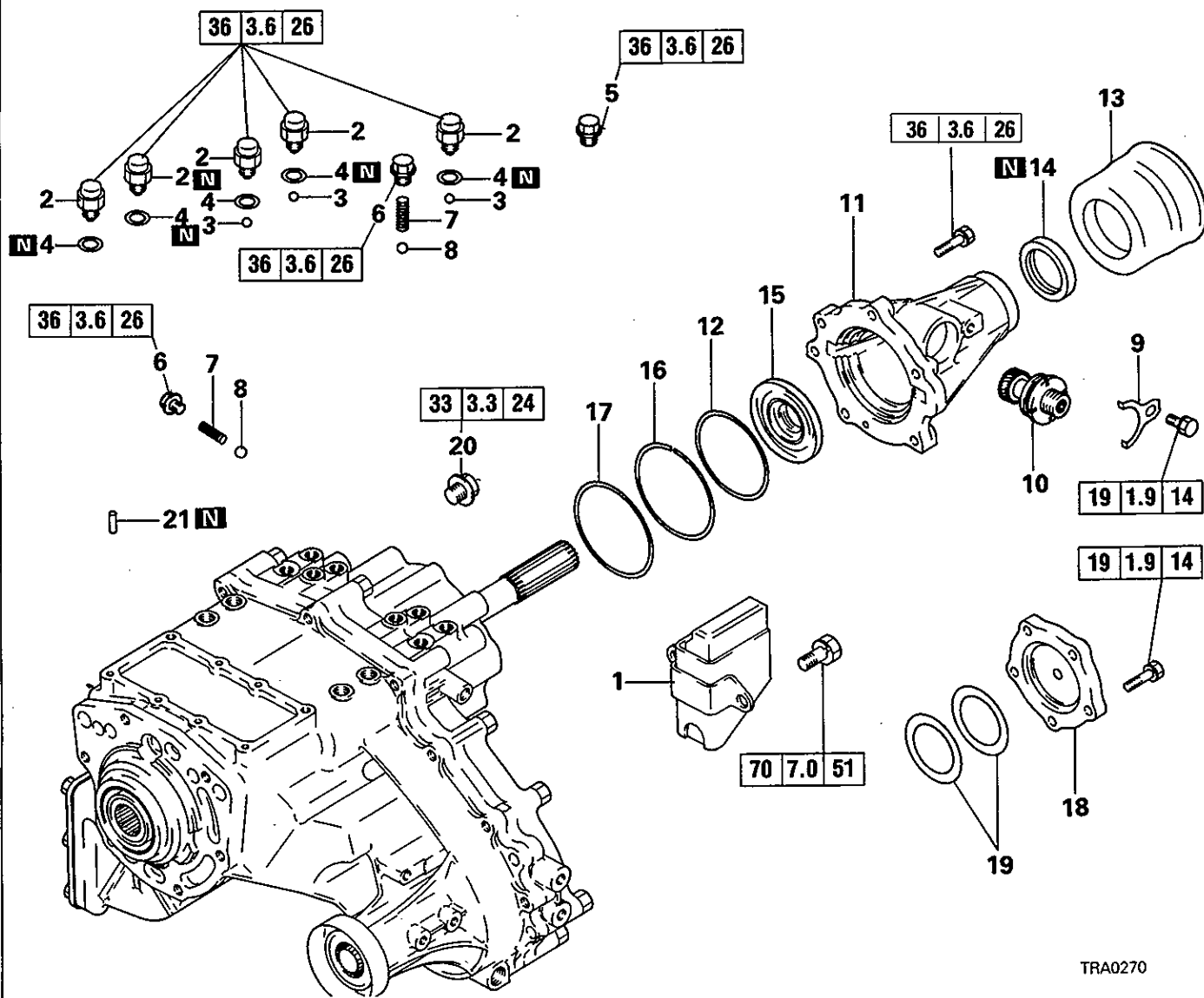
TRA0351

**Disassembly steps**

- 52. Drive shaft
- 53. H-L shift fork
- 54. H-L clutch sleeve
- 55. Needle bearing
- ▶D▶ 56. Snap ring
- 57. Input gear
- ▶C▶ 58. Spring pin (2-4WD shift lug)
- ▶C▶ 59. Spring
- ▶C▶ 60. Spring retainer
- ▶C▶ 61. 2-4WD shift lug
- ▶C▶ 62. 2-4WD shift rail
- ▶B▶ 63. Oil seal (Input gear)
- 64. Baffle plate
- 65. Dust seal guard
- ▶A▶ 66. Oil seal (Front output shaft)
- 67. Transfer case



V4AW2-3, 7 (SUPER SELECT 4WD) • RHD

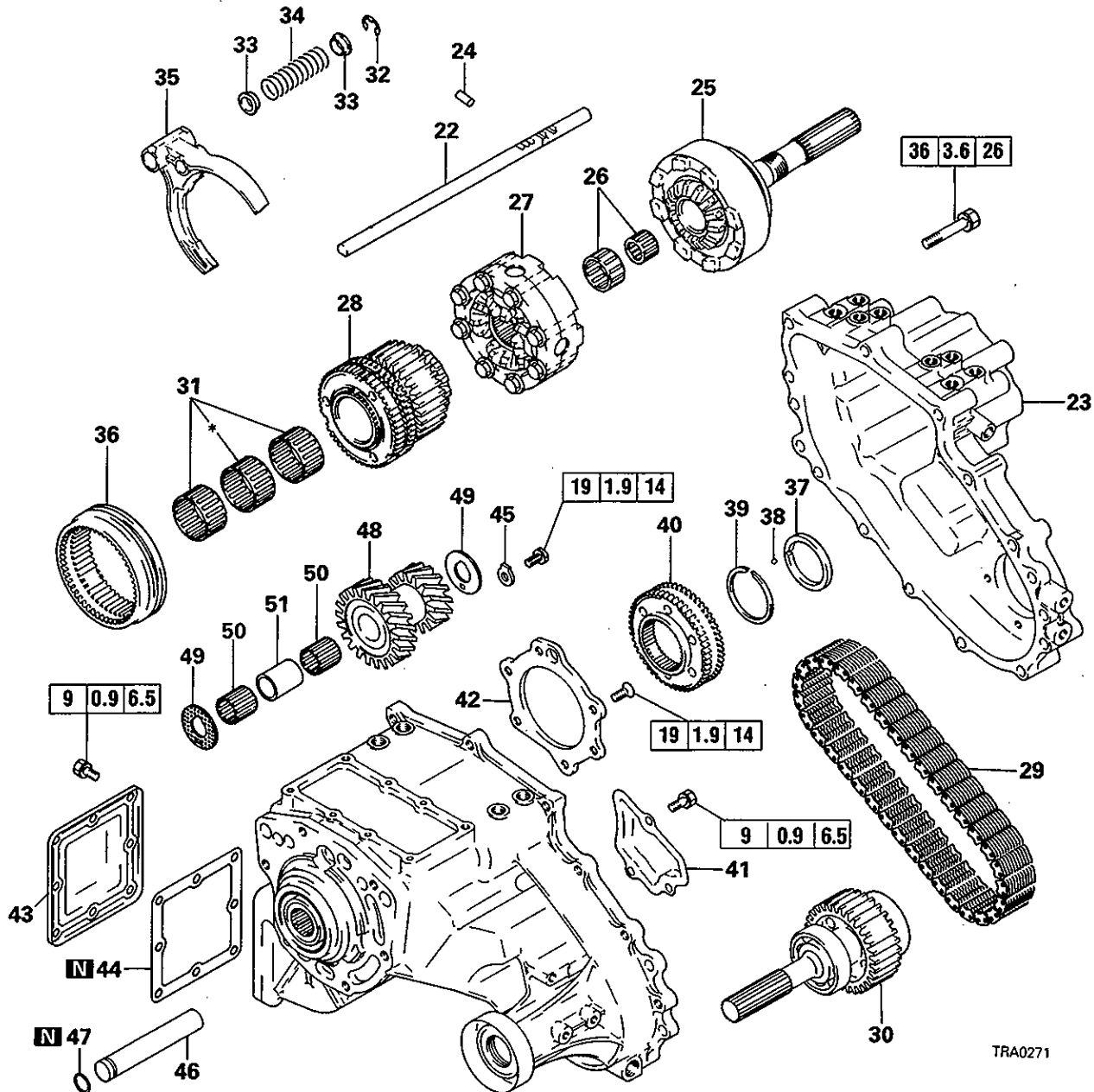


TRA0270

**Disassembly steps**

- 1. Dynamic damper (6G72 engine only)
- Z 2. Detection switch
- 3. Steel ball
- 4. Gasket
- Y 5. Plug
- X 6. Poppet plug
- 7. Poppet spring
- 8. Steel ball
- 9. Sleeve damp
- W 10. Speedometer gear
- U 11. Rear cover
- U 12. Spacer
- 13. Dust seal guard
- T 14. Oil seal
- S 15. Oil seal
- R 16. Snap ring } (Up to November 1992)
- R 17. Spacer }
- P 18. Cover
- P 19. Wave spring (Spacer)
- 20. H-L shift rail plug
- O 21. Spring pin (H-L shift fork)

## V4AW2-3, 7 (SUPER SELECT 4WD) • RHD



TRA0271

## NOTE

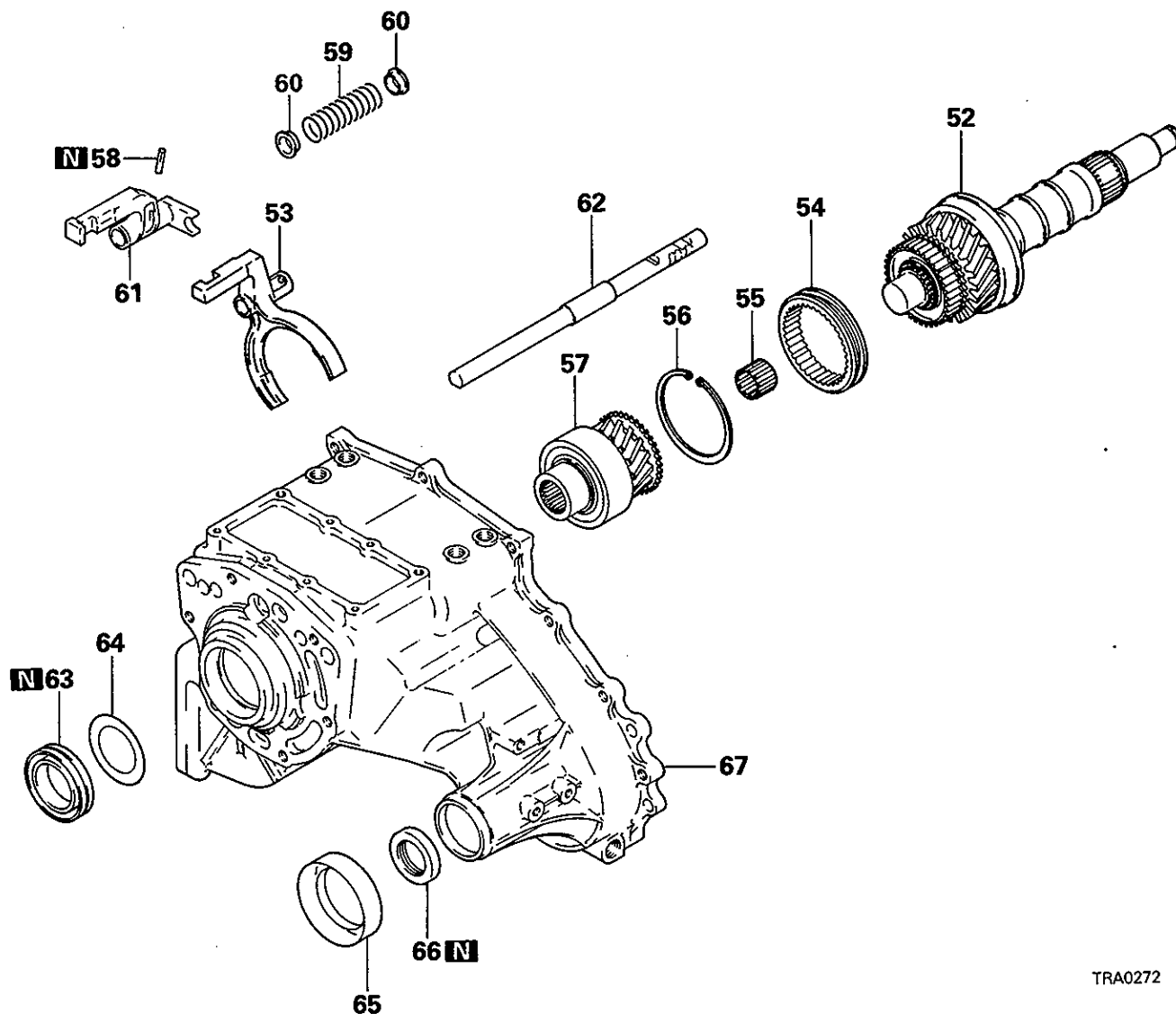
\*One needle bearing disused (From December 1992)

## Disassembly steps

- ◊B◊ ◊O◊ 22.H-L shift rail
- ◊B◊ ◊M◊ 23.Chain cover
- ◊M◊ 24.Interlock plunger
- 25.Rear output shaft
- 26.Needle bearing
- 27.Center differential case
- ◊D◊ ◊I◊ 28.2-4WD synchronizer
- ◊D◊ ◊I◊ 29.Chain
- ◊D◊ ◊I◊ 30.Front output shaft
- ◊D◊ ◊I◊ 31.Needle bearing
- 32.Snap ring (2-4WD shift rail)
- 33.Spring seat
- 34.Spring
- 35.2-4WD shift fork
- 36.2-4WD synchronizer sleeve

- 37.Sleeve
- 38.Steel ball
- ◊H◊ 39.Snap ring
- 40.Differential lock hub
- 41.Oil dam cover
- ◊G◊ 42.Bearing retainer
- 43.Side cover
- 44.Side cover gasket
- 45.Lock plate
- ◊E◊ ◊F◊ 46.Counter gear shaft
- 47.O-ring
- 48.Counter gear
- ◊E◊ 49.Thrust washer
- 50.Needle bearing
- 51.Bearing spacer

**V4AW2-3, 7 (SUPER SELECT 4WD) • RHD**

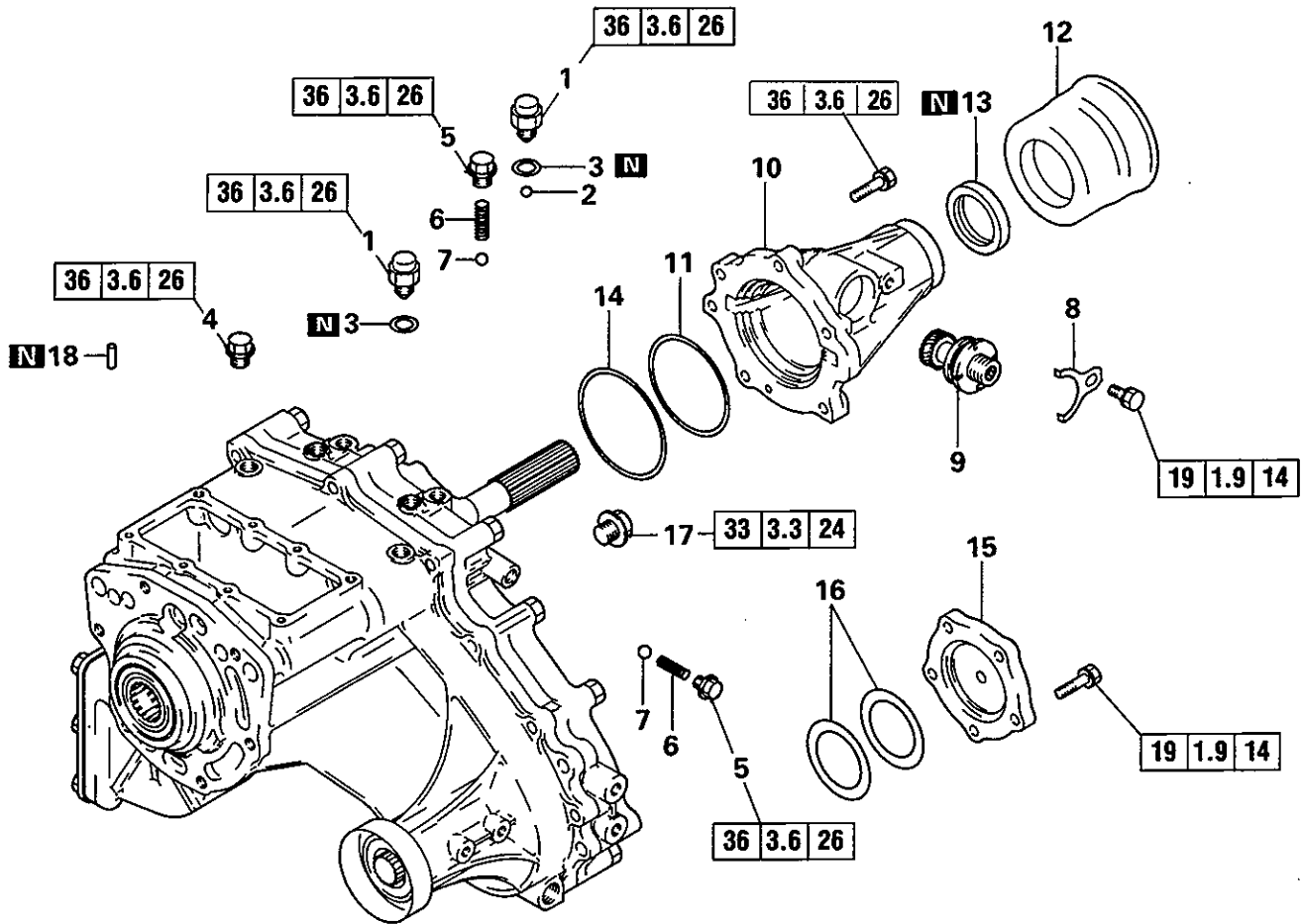


TRA0272

**Disassembly steps**

- 52. Drive shaft
- 53. H-L shift fork
- 54. H-L clutch sleeve
- 55. Needle bearing
- ▶D▶56. Snap ring
- 57. Input gear
- ▶C▶58. Spring pin (2-4WD shift lug)
- ▶C▶59. Spring
- ▶C▶60. Spring retainer
- ▶C▶61. 2-4WD shift lug
- ▶C▶62. 2-4WD shift rail
- ▶B▶63. Oil seal
- 64. Baffle plate
- 65. Dust seal guard
- ▶A▶66. Oil seal
- 67. Transfer case

## V4AW2-3, 7 (PART TIME 4WD)

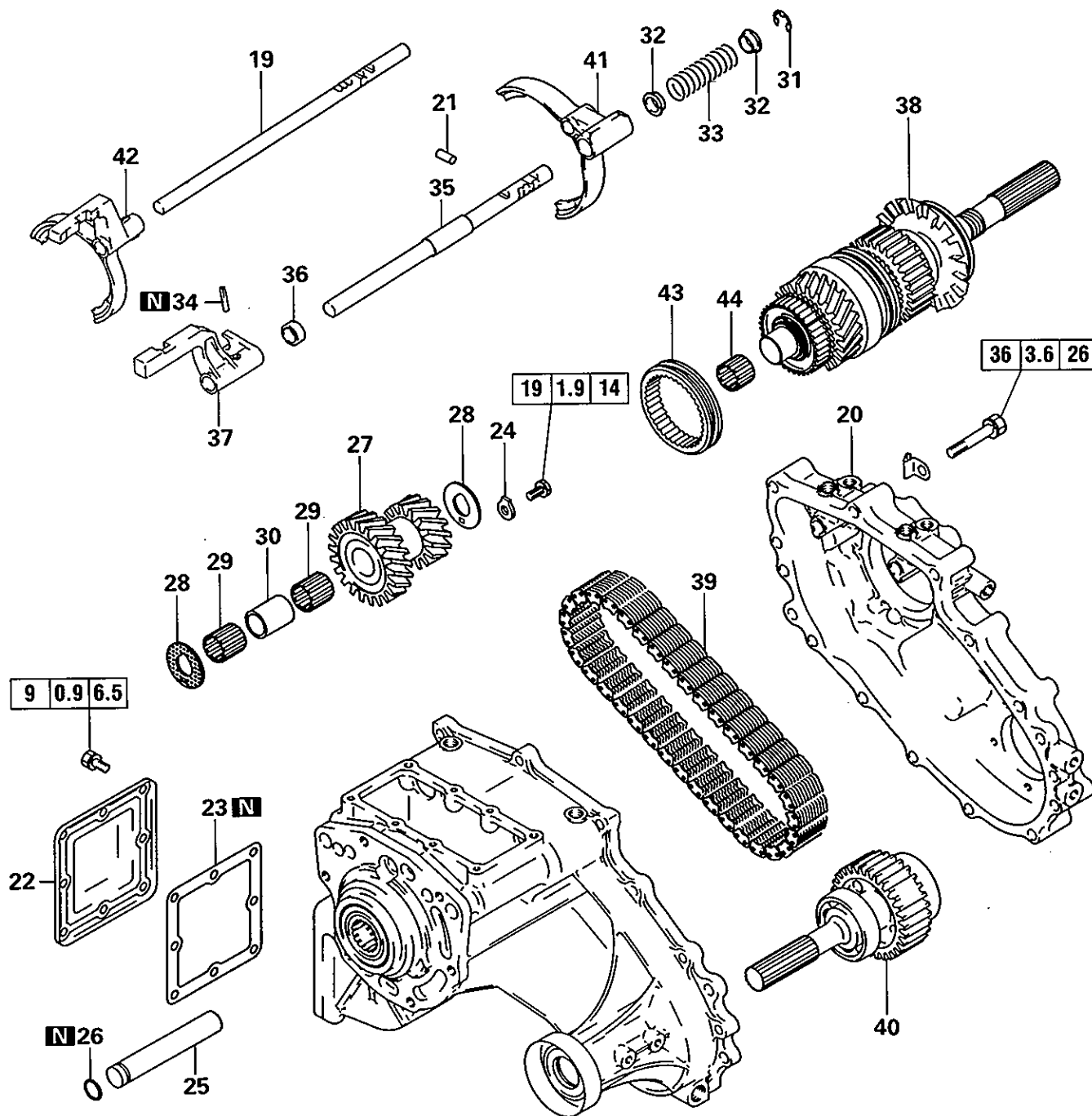


TRA0257

**Disassembly steps**

- ◆Z◆ 1. Detection switch
- 2. Steel ball
- 3. Gasket
- ◆Y◆ 4. Plug
- ◆X◆ 5. Poppet plug
- 6. Poppet spring
- 7. Steel ball
- 8. Sleeve clamp
- ◆W◆ 9. Speedometer gear
- ◆U◆ 10. Rear cover
- ◆U◆ 11. Spacer
- 12. Dust seal guard
- ◆T◆ 13. Oil seal
- 14. Snap ring
- ◆P◆ 15. Cover
- ◆P◆ 16. Wave spring (Spacer)
- 17. H-L shift rail plug
- ◆O◆ 18. Spring pin (H-L shift fork)

V4AW2-3, 7 (PART TIME 4WD)

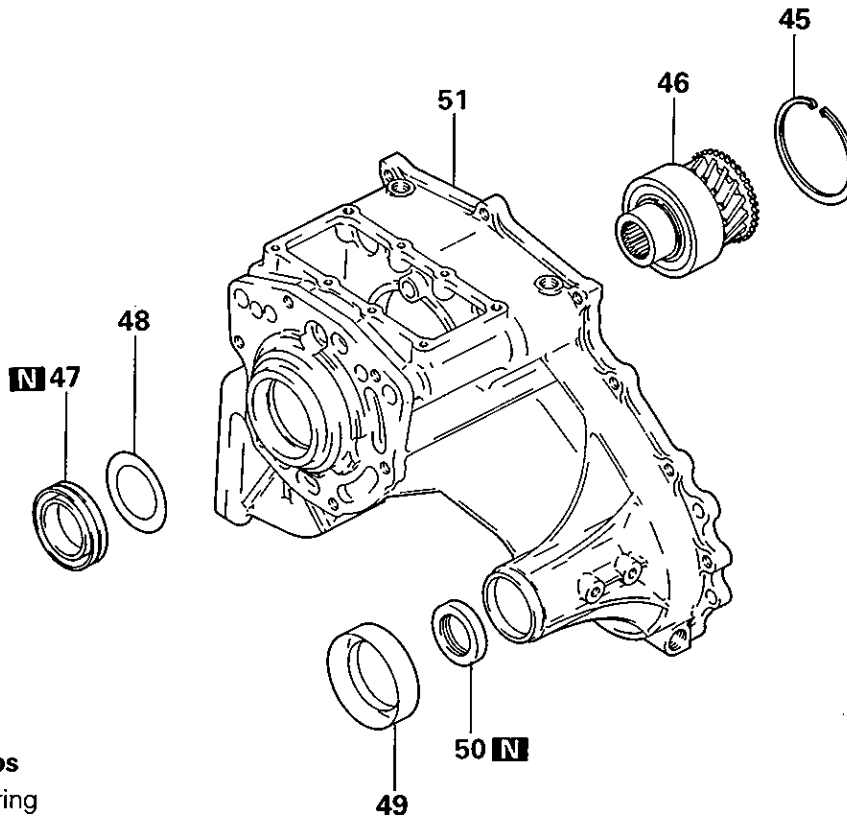


**Disassembly steps**

- ◊B◊ ◊O◊ 19. H-L shift rail
- ◊B◊ ◊M◊ 20. Chain cover
- ◊M◊ 21. Interlock plunger
- 22. Side cover
- 23. Side cover gasket
- 24. Lock plate
- ◊E◊ ◊F◊ 25. Counter gear shaft
- 26. O-ring
- ◊E◊ 27. Counter gear
- ◊E◊ 28. Thrust washer
- 29. Needle bearing
- 30. Bearing spacer
- 31. Snap ring (2-4WD shift rail)
- 32. Spring retainer
- 33. Spring
- ◊a◊ 34. Spring pin (2-4WD shift lug)
- 35. 2-4WD shift rail
- 36. Distance piece
- 37. 2-4WD shift lug
- ◊C◊ ◊J◊ 38. Rear output shaft
- ◊C◊ ◊J◊ 39. Chain
- ◊C◊ ◊J◊ 40. Front output shaft
- 41. 2-4WD shift fork
- 42. H-L shift fork
- 43. H-L clutch sleeve
- 44. Needle bearing

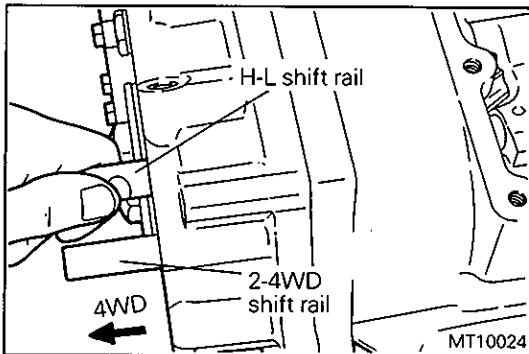
TRA0353

## V4AW2-3, 7 (PART TIME 4WD)

**Disassembly steps**

- ◆D 45. Snap ring
- ◆B 46. Input gear
- ◆B 47. Oil seal (Input gear)
- 48. Baffle plate
- 49. Dust seal guide
- ◆A 50. Oil seal (Front output shaft)
- 51. Transfer case

TRA0275

**SERVICE POINTS OF DISASSEMBLY****◁A▷ REMOVAL OF H-L SHIFT RAIL**

- (1) Shift the 2-4WD shift rail to the 4WD position.

**NOTE**

If the 2-4WD shift rail is left in the 2WD position, the interlock is actuated, preventing removal of the H-L shift rail.

- (2) Remove the H-L shift rail.

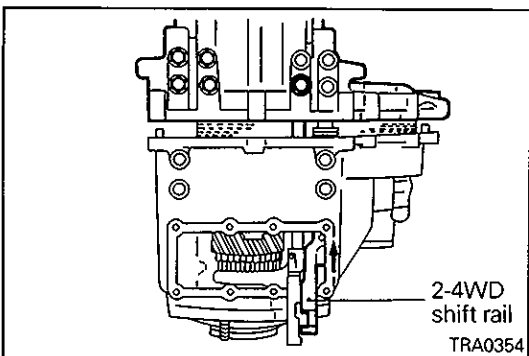
**◁B▷ REMOVAL OF H-L SHIFT RAIL, CHAIN COVER**

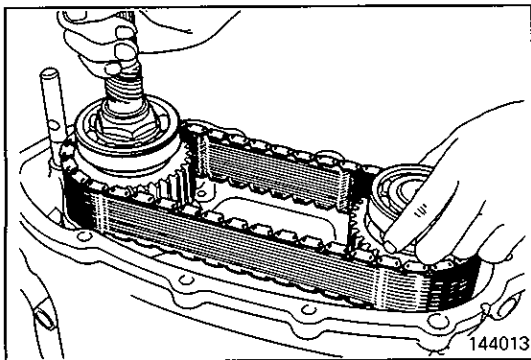
- (1) Fix the H-L shift rail at the High side, using the poppet spring.
- (2) Place the 2-4WD shift rail at the 4WD position.

**NOTE**

If the 2-4WD shift rail is placed at the 2WD position, the chain cover cannot be removed because of interlocking.

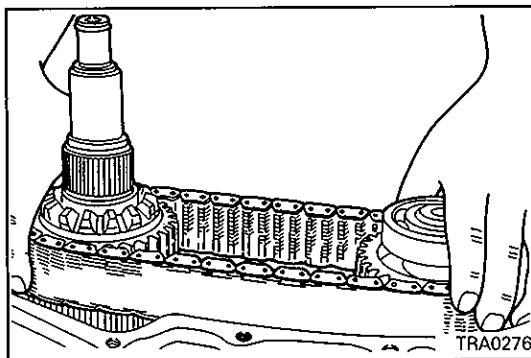
- (3) Remove the chain cover and remove the H-L shift rail.





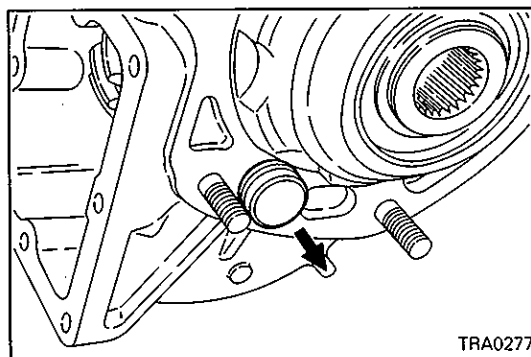
**◁C▷ REMOVAL OF REAR OUTPUT SHAFT, CHAIN, FRONT OUTPUT SHAFT**

- (1) Remove the front output shaft, rear output shaft and chain together.



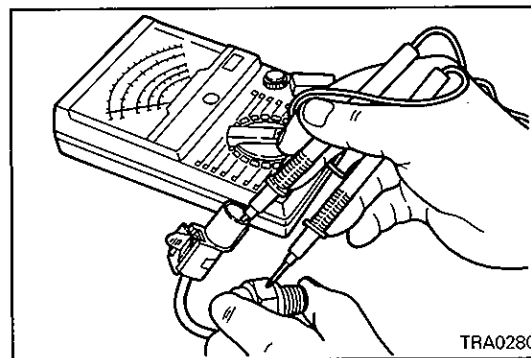
**◁D▷ REMOVAL OF 2-4WD SYNCHRONIZER, CHAIN FRONT OUTPUT SHAFT**

- (1) Remove the 2-4WD Synchronizer, front output shaft and chain together.



**◁E▷ REMOVAL OF COUNTER GEAR SHAFT**

- (1) Remove the counter gear shaft toward the transmission case.

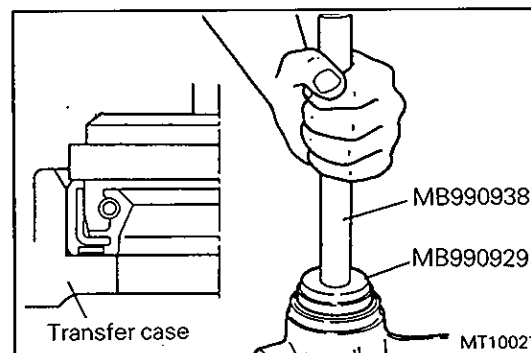


**INSPECTION**

**INSPECTION OF DETECTION SWITCH**

- (1) Check for continuity across the connector terminal and switch body.

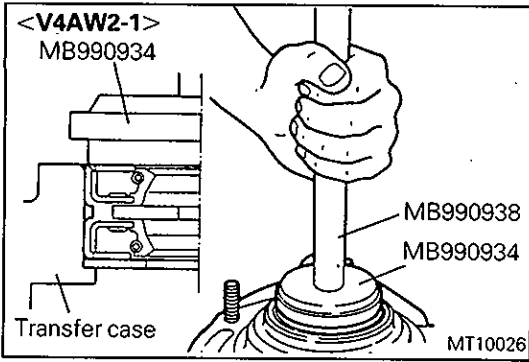
Switch state	Continuity
Switch end pressed	No
Switch end released	Yes



**SERVICE POINTS OF REASSEMBLY**

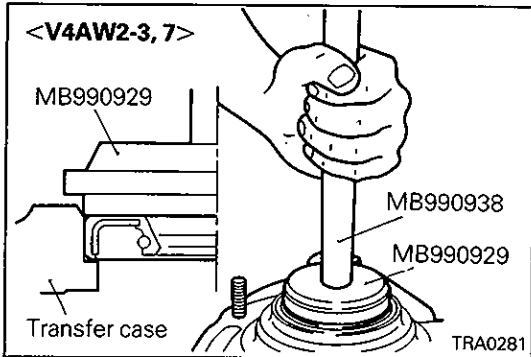
**▶A▶ INSTALLATION OF OIL SEAL (FRONT OUTPUT SHAFT)**

- (1) Apply transmission oil to the lip of the oil seal before press-fitting.



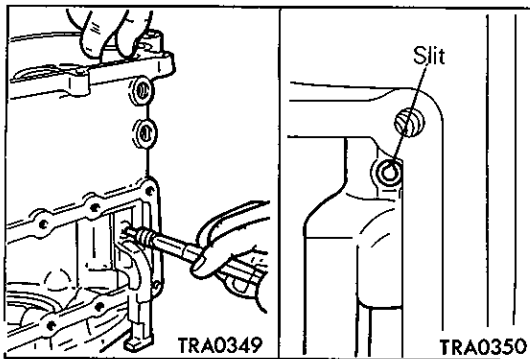
**▶B▶ INSTALLATION OF OIL SEAL (INPUT GEAR)**

- (1) Apply transmission oil to the lip of the oil seal before press-fitting.



**▶C▶ INSTALLATION OF 2-4WD SHIFT RAIL, 2-4WD SHIFT LUG, SPRING RETAINER, SPRING, SPRING PIN FOR 2-4WD SHIFT LUG**

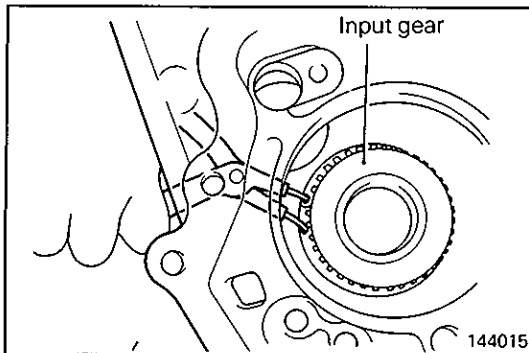
- (1) Mount the spring retainer and spring in the shift rail and set with the shift lug in the transfer case.
- (2) While paying attention to the direction of the shift rail, line up the shift lug and shift rail spring pin hole.
- (3) While pressing the rail, install the spring pin in such a way that the slit of the spring pin will face the axial center of the shift rail.



**▶D▶ INSTALLATION OF SNAP RING**

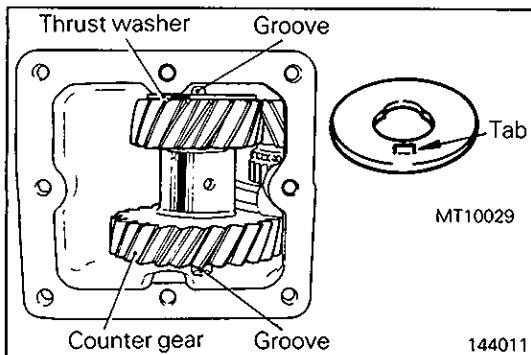
- (1) Select the thickest snap ring that will fit into the groove and install it.

**Standard value: 0 – 0.06 mm (0 – 0.0024 in.)**

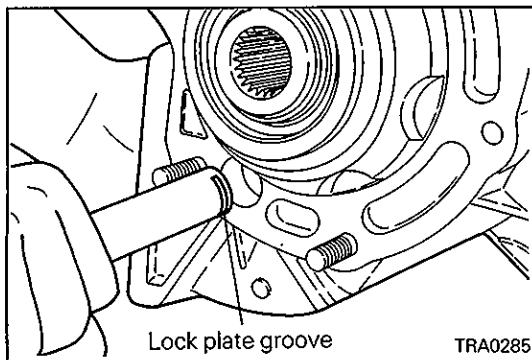


**▶E▶ INSTALLATION OF THRUST WASHER**

- (1) Install the thrust washer so that the tab will fit in the groove of the case.

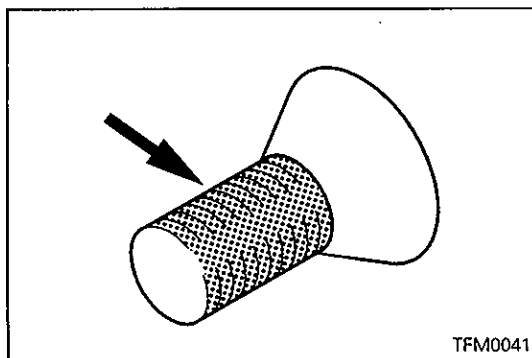






**◆F◆ INSTALLATION OF COUNTER GEAR SHAFT**

- (1) Insert the transfer counter gear shaft from the transmission case side, while paying attention to the lock plate groove position.

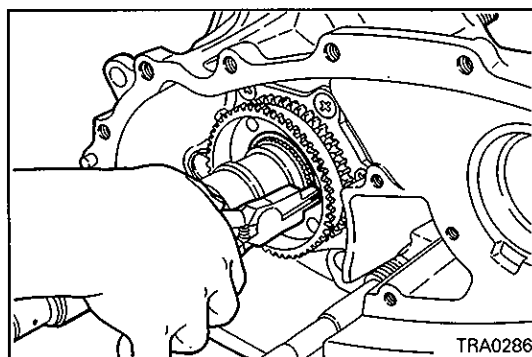


**◆G◆ INSTALLATION OF BEARING RETAINER**

- (1) The bearing retainer screw is a precoated bolt. When it is to be reused, apply a sealant beforehand.

**Specified adhesive:**

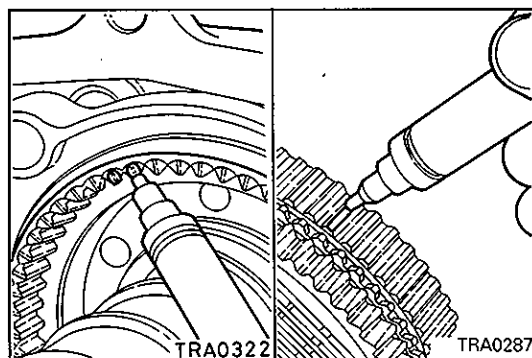
**3M STUD Locking No. 4170 or equivalent**



**◆H◆ INSTALLATION OF SNAP RING**

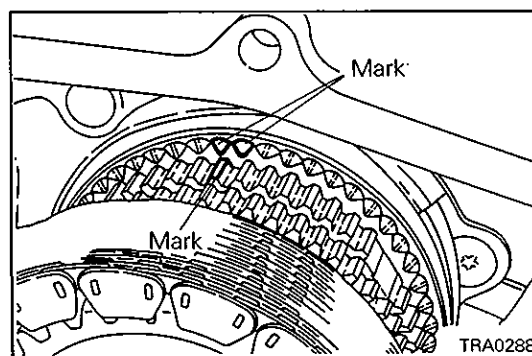
- (1) Select and install the thickest snap ring that can fit in the groove.

**Standard value: 0 – 0.08 mm (0 – 0.003 in.)**

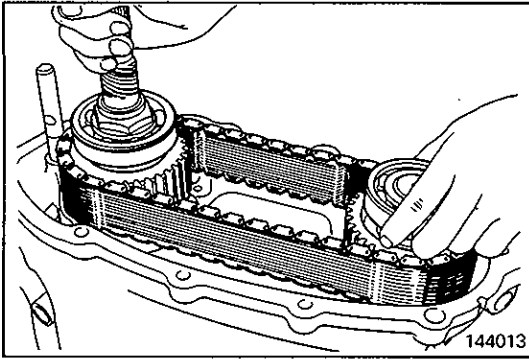


**◆I◆ INSTALLATION OF 2-4WD SYNCHRONIZER, CHAIN, FRONT OUTPUT SHAFT**

- (1) Make a white paint mark on the deep groove portions (three places) of the 2-4WD synchronizer.
- (2) Make a white paint mark on the projections (three places) of the 2-4WD synchronizer sleeve splines.

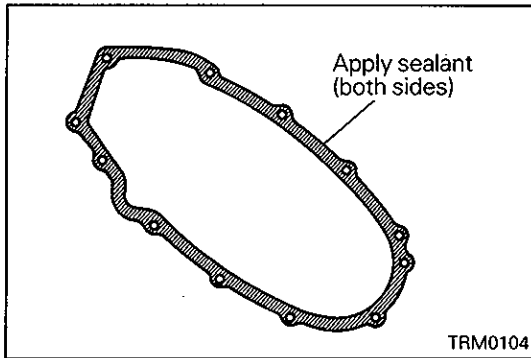


- (3) Place the chain in tight mesh with the 2-4WD synchronizer and front output shaft sprockets.
- (4) With both sprockets spaced the farthest apart, install them on the transfer case simultaneously.



#### ◆J◆ INSTALLATION OF REAR OUTPUT SHAFT, CHAIN, FRONT OUTPUT SHAFT

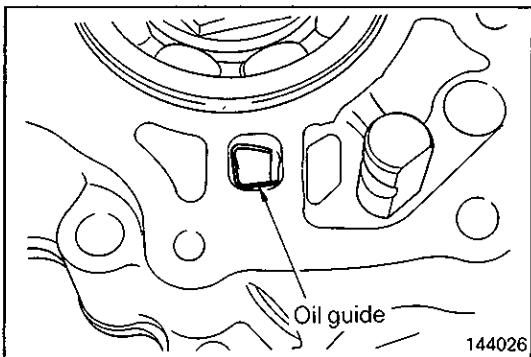
- (1) Engage the chain precisely with the sprockets of the rear output shaft and the front output shaft.
- (2) Install the 2-4WD shift fork on the 2-4WD clutch sleeve. While passing them along the 2-4WD shift rail, install the rear and front output shaft and chain.



#### ◆K◆ APPLICATION OF SEALANT TO CHAIN COVER GASKET

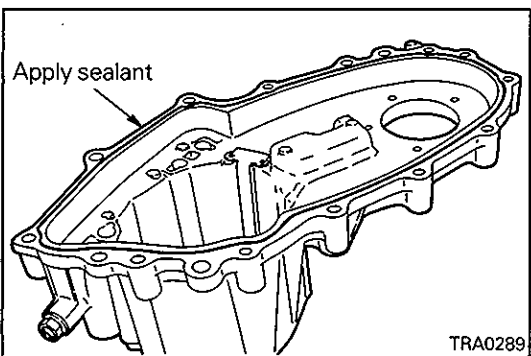
##### Specified sealant:

**Mitsubishi genuine sealant Part No. 997740 or equivalent**



#### ◆L◆ INSTALLATION OF CHAIN COVER

- (1) Install the chain cover so that the end of the oil guide may enter the hole shown in the illustration.



#### ◆M◆ INSTALLATION OF CHAIN COVER, INTERLOCK PLUNGER

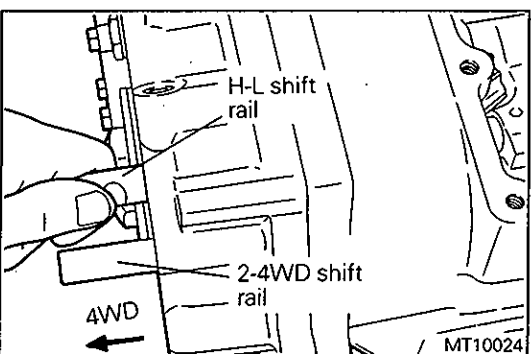
- (1) Insert the interlock plunger into a position where it does not interfere with the 2-4WD shift rail.
- (2) Apply a sealant to the chain cover before installing it.

##### Specified sealant:

**Mitsubishi genuine sealant Part No. 997740 or equivalent**

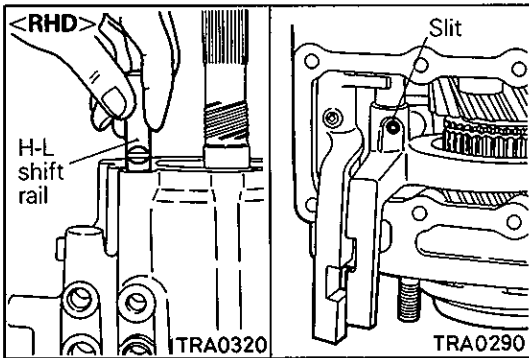
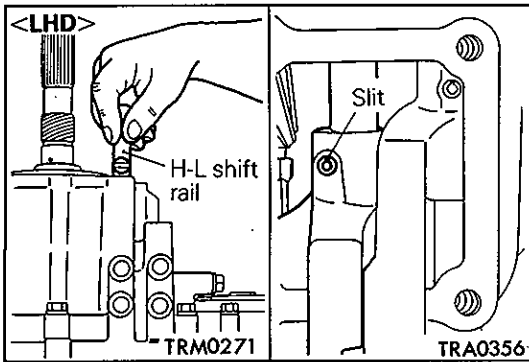
##### Caution

- Squeeze the sealant out evenly to make sure that it is not broken or excessively supplied.



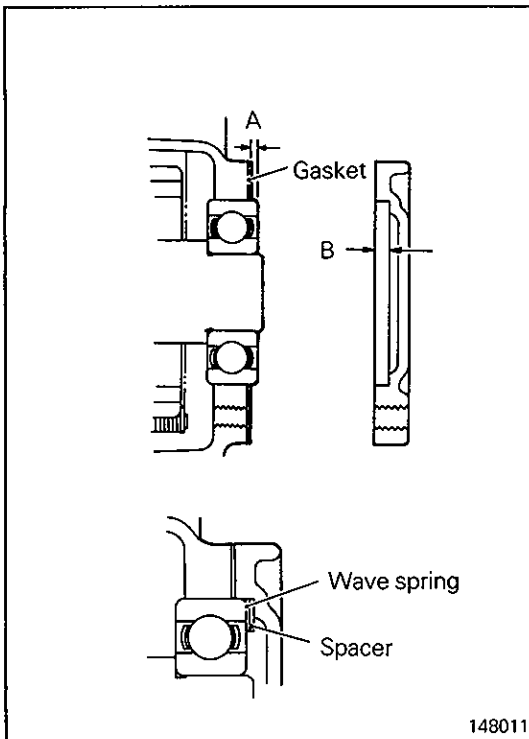
#### ◆N◆ INSTALLATION OF H-L SHIFT RAIL

- (1) Shift the 2-4WD shift rail to the 4WD position.
- (2) Insert the H-L shift rail from the case and pass the rail through the shift fork.



**0** INSTALLATION OF H-L SHIFT RAIL, SPRING PIN FOR H-L SHIFT FORK

- (1) Insert the H-L shift rail from the H-L shift rail plug hole, while paying attention to its direction.
- (2) Line up the shift rail and shift fork spring pin hole and install the spring pin so that the slit of the spring pin will face the axial center of the shift rail.



**P** INSTALLATION OF COVER, WAVE SPRING (SPACER)

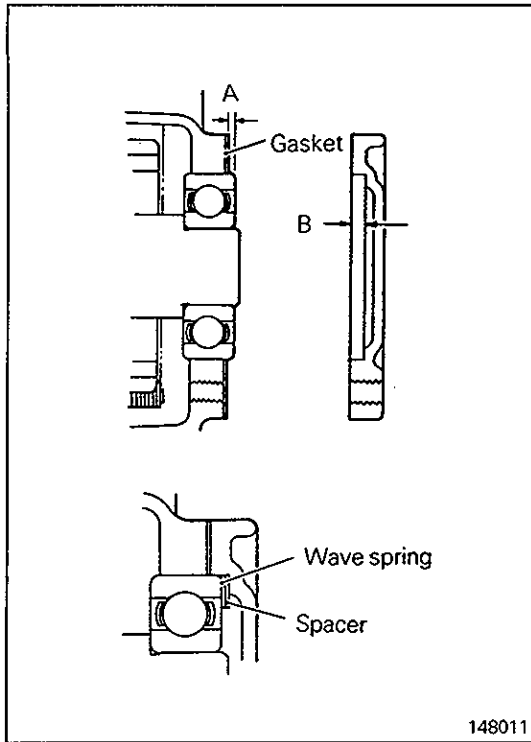
- (1) Measure projection "A" of the front output shaft rear bearing and depth "B" of the cover.  
If subtraction of A from B makes more than 2 mm, add a spacer between the wave spring and cover.  
If the subtracted value is 2 mm or less, the wave spring only is enough.
- (2) Apply a sealant to the cover and mounting bolt thread before installation.

**Specified sealant:**

**Mitsubishi genuine sealant Part No. 997740 or equivalent** ..... **Cover**  
**3M STUD Locking No. 4170 or equivalent** ..... **Bolt**

**Caution**

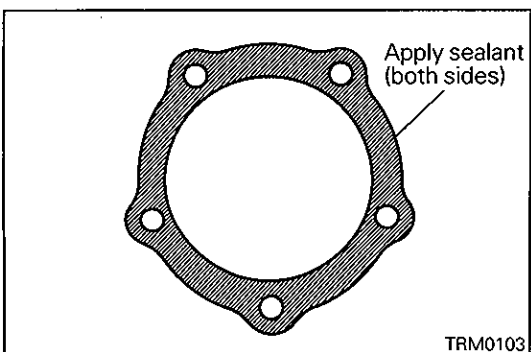
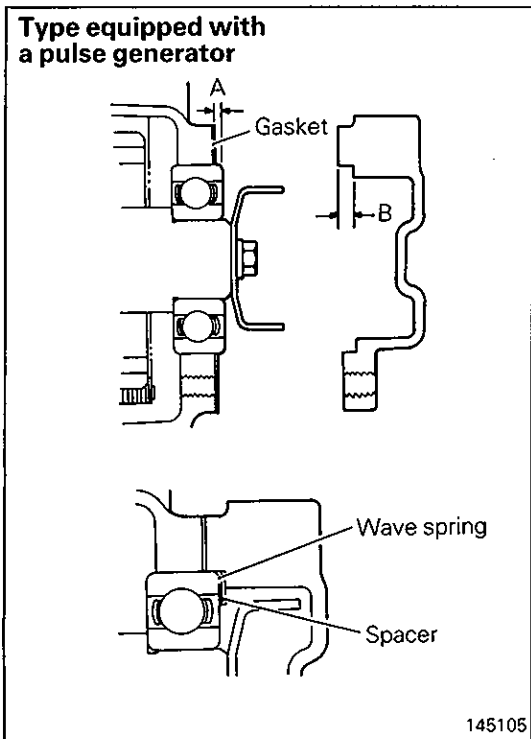
- Squeeze the sealant out evenly to make sure that it is not broken or excessively supplied.



### ◆◆ INSTALLATION OF COVER GASKET, COVER

- (1) Measure the projection (A) of the rear bearing from the end of the front output shaft and the depth (B) of indentation in the cover.

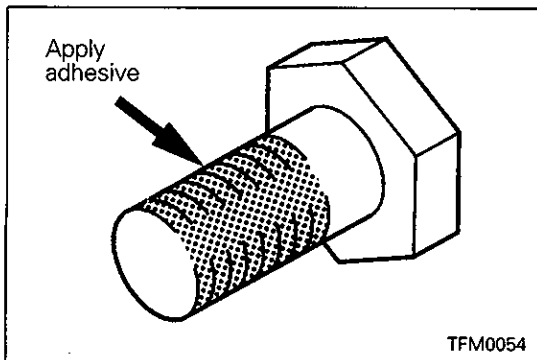
If the clearance (a difference between A and B) exceeds 2 mm, insert a spacer between the cover and the wave spring. If the clearance is 2 mm or less, use the wave spring alone.



- (2) Apply specified sealant to both sides of the cover gasket.

#### **Specified sealant:**

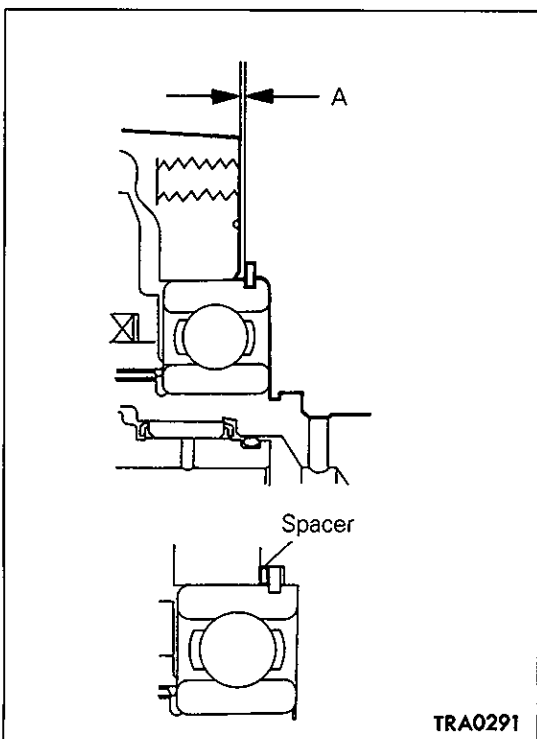
**Mitsubishi genuine sealant Part No. 997740 or equivalent**



- (3) Install the cover.
- (4) Apply the specified adhesive to the threaded part of the cover installation bolt.

**Specified adhesive:**  
**3M STUD Locking No. 4170 or equivalent**

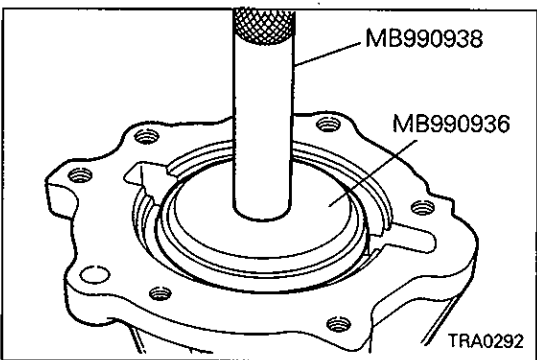
- (5) Tighten the cover installation bolt at the specified torque.



**▶R◀ INSTALLATION OF SNAP RING, SPACER (Up to November 1992)**

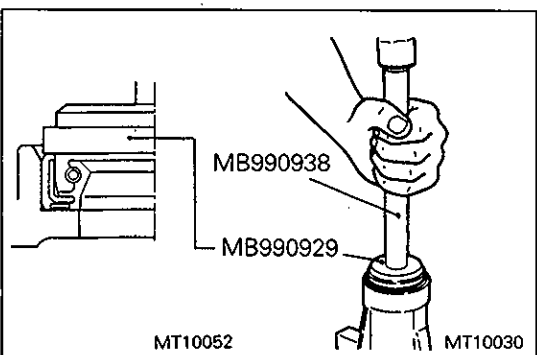
- (1) Measure clearance "A" between the ball bearing snap ring and the chain cover. Select a spacer of the thickness equivalent to the sum of measured value "A" and the following value.

**Standard value: 0.025 – 0.150 mm ( 0.00098 – 0.00591 in.)**



**▶S◀ INSTALLATION OF OIL SEAL**

- (1) Apply transmission oil to the lip of the oil seal before press-fitting.



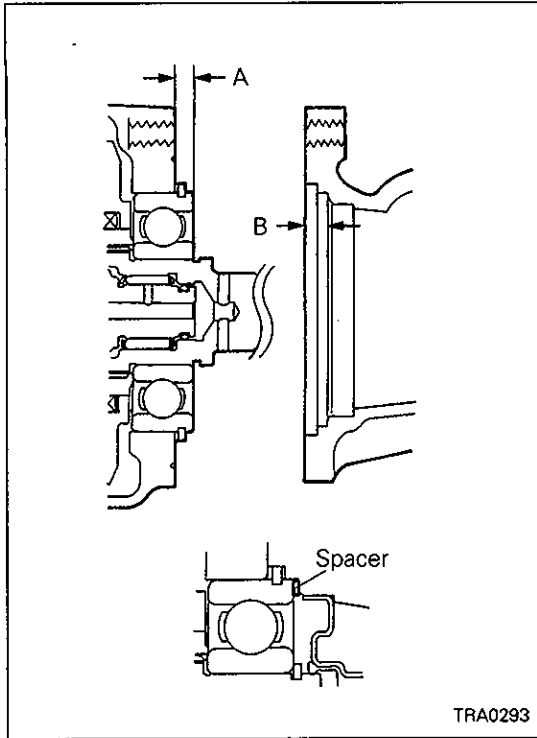
**▶T◀ INSTALLATION OF OIL SEAL**

- (1) Apply transmission oil to the lip of the oil seal before press-fitting.

▶U◀ **INSTALLATION OF SPACER, REAR COVER**

- (1) Measure projection "A" of the rear output shaft bearing and depth "B" of the second stage of the rear cover. Subtract A from B and let the answer be C. Subtract the thickness of the spacer from C, and select a spacer so that the subtracted value will be the standard value shown below.

**Standard value: 0 – 0.1 mm (0 – 0.0039 in.)**



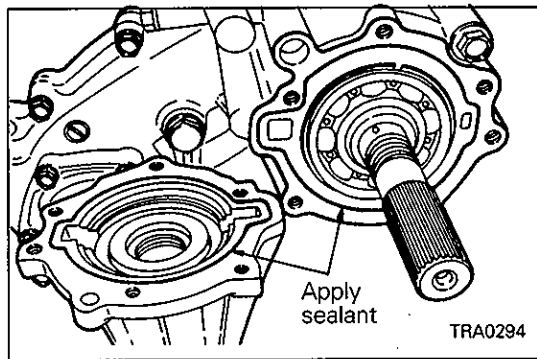
- (2) Apply a sealant to the rear cover and mounting bolt thread (case through bolts only) before installation.

**Specified sealant:**

**Mitsubishi genuine sealant Part No. 997740 or equivalent** ..... Cover  
**3M STUD Locking No. 4170 or equivalent** .... Bolts

**Caution**

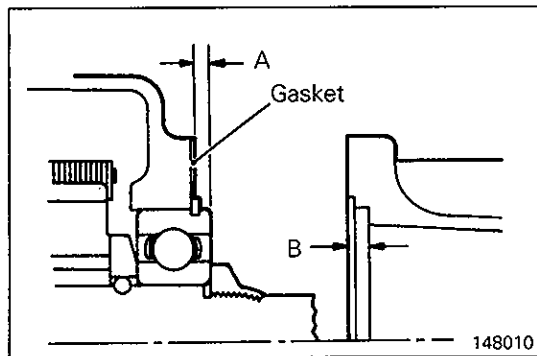
- Squeeze the sealant out evenly to make sure that it is not broken or excessively supplied.



▶V◀ **INSTALLATION OF SPACER, REAR COVER GASKET, REAR COVER**

- (1) Measure the amount of protrusion of the rear output shaft rear bearing "A" and the amount of inset in the cover "B". Select a spacer which adjusts the end play to the standard value.

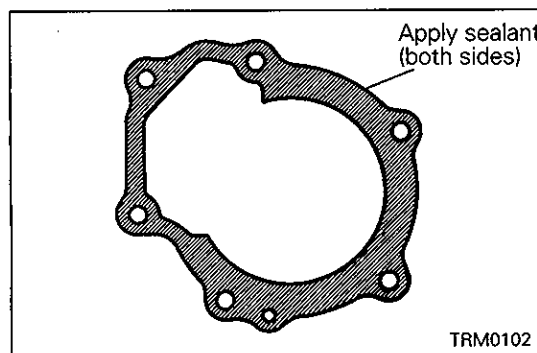
**Standard value: 0 – 0.1 mm (0 – 0.0039 in.)**

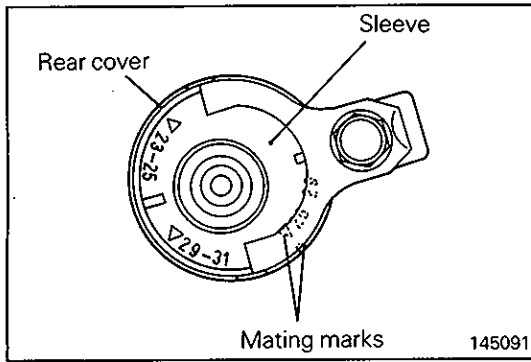


- (2) Apply sealant to both sides of the rear cover gasket.

**Specified sealant:**

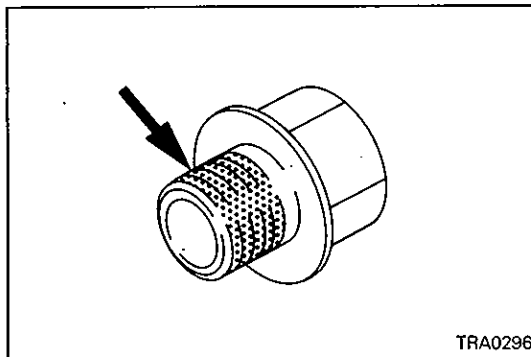
**Mitsubishi genuine sealant Part No. 997740 or equivalent**





**W INSTALLATION OF SPEEDOMETER GEAR**

(1) Match the mating marks to the number of teeth.

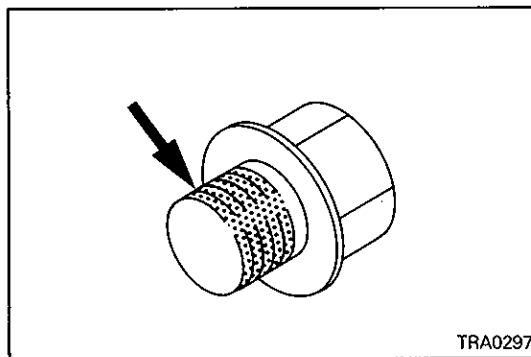


**X INSTALLATION OF POPPET PLUG**

(1) Apply a sealant to the poppet plug before installation.

**Specified sealant:**

**3M ATD Part No. 8660 or equivalent**

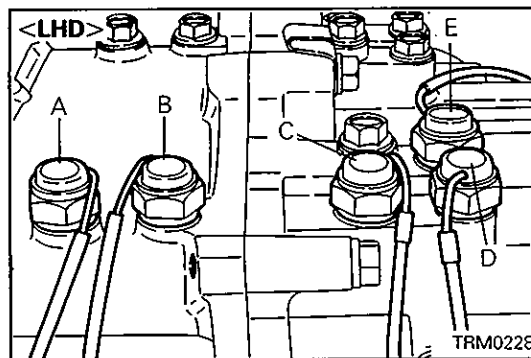


**Y INSTALLATION OF PLUG**

(1) The plug is a precoated one. When it is to be reused, apply a sealant to the plug beforehand.

**Specified sealant:**

**3M ATD Part No. 8660 or equivalent**



**Z INSTALLATION OF DETECTION SWITCH**

(1) Mount detection switch in the right positions, while using care to prevent confusion.

V4AW2-3, 7 (SUPER SELECT 4WD)

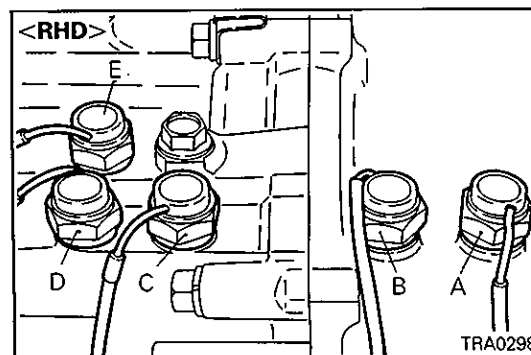
A: Ball built in, connector brown

B: Ball built in, connector black

C: Ball separate, connector brown

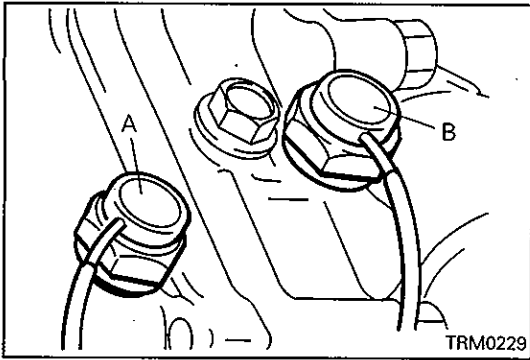
D: Ball separate, connector black

E: Ball separate, connector white

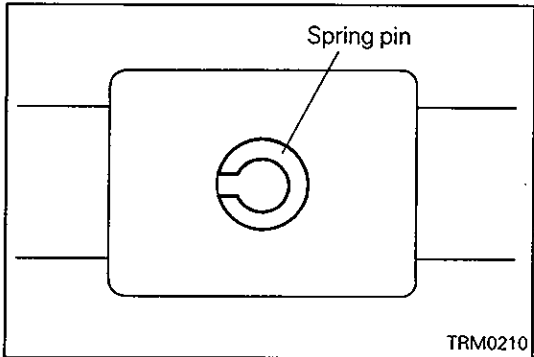


V4AW2-3, 7 (PART TIME 4WD)

- A: Ball built-in
- B: Ball separate



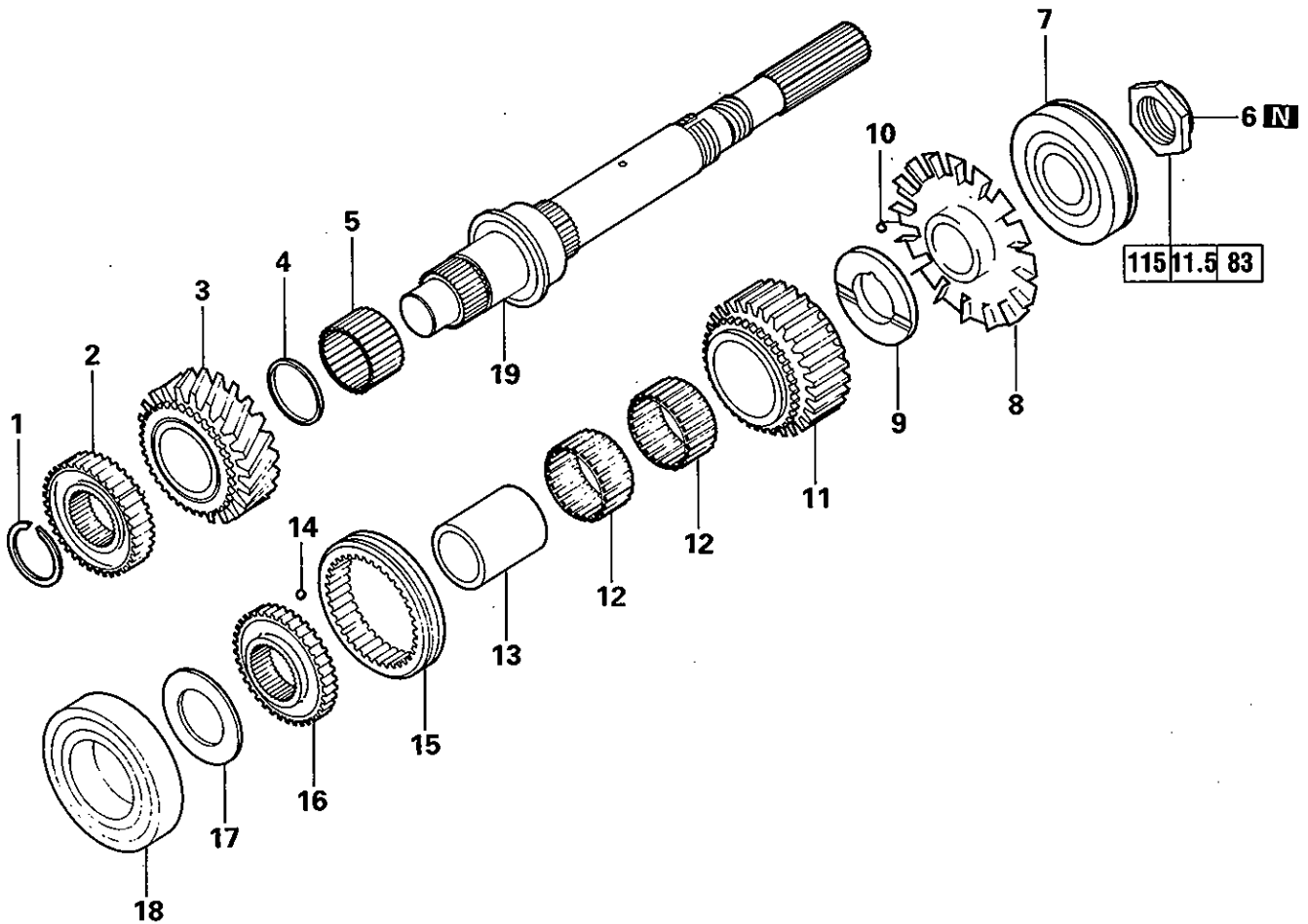
▶◀ INSTALLATION OF SPRING PIN





# 17. REAR OUTPUT SHAFT <V4AW2-1, V4AW2-3, 7 (PART TIME 4WD)>

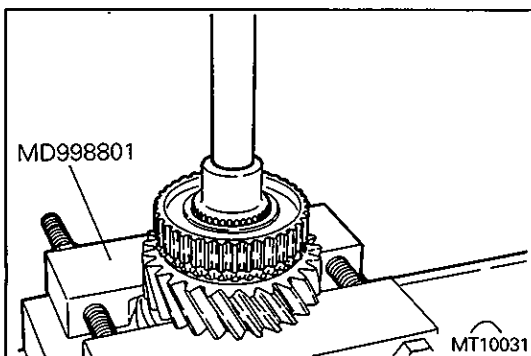
## DISASSEMBLY AND REASSEMBLY



### Disassembly steps

- |         |  |                         |                       |
|---------|--|-------------------------|-----------------------|
| ◆F◆     | 1. Snap ring                                   | 11. Drive sprocket      |                       |
| ◇A◇ ◆E◆ | 2. H-L clutch hub                              | 12. Needle bearing      |                       |
|         | 3. Low speed gear                              | 13. Sprocket sleeve     |                       |
|         | 4. Bearing spacer                              | 14. Steel ball          |                       |
|         | 5. Needle bearing                              | 15. 2-4WD clutch sleeve |                       |
| ◇B◇ ◆D◆ | 6. Lock nut                                    | ◇D◇ ◆B◆                 | 16. 2-4WD clutch hub  |
| ◇C◇ ◆C◆ | 7. Radial ball bearing                         | ◇D◇ ◆A◆                 | 17. Stopper plate     |
|         | 8. Oil guide <V4AW2-3, 7 (Part Time 4WD) only> | ◇D◇ ◆A◆                 | 18. Ball bearing      |
|         | 9. Sprocket spacer                             |                         | 19. Rear output shaft |
|         | 10. Steel ball                                 |                         |                       |

TRA0315



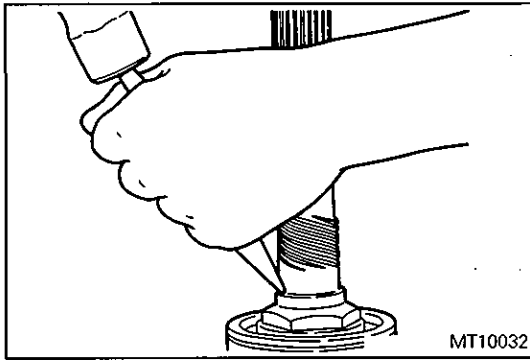
### SERVICE POINTS OF DISASSEMBLY

#### ◇A◇ REMOVAL OF H-L CLUTCH HUB

- (1) Set a special tool in such a way that the load will be placed on the low speed gear.
- (2) Press the rear output shaft front end with a press and remove the hub and gear.

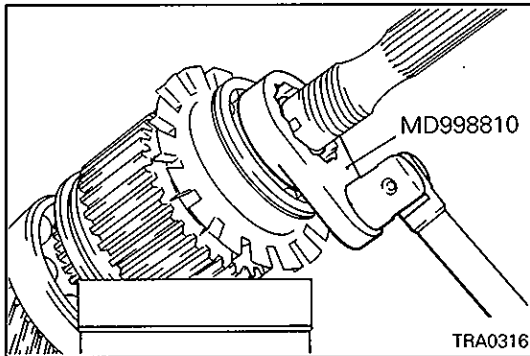
#### NOTE:

The hub is loosely coupled with the shaft and may be removable without use of a press.

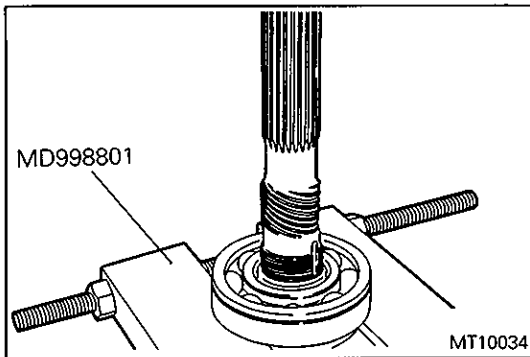


**◁B▷ REMOVAL OF LOCK NUT**

- (1) Hold the drive sprocket in a strapped vice.
- (2) Using a chisel, loosen the staked lock nut.



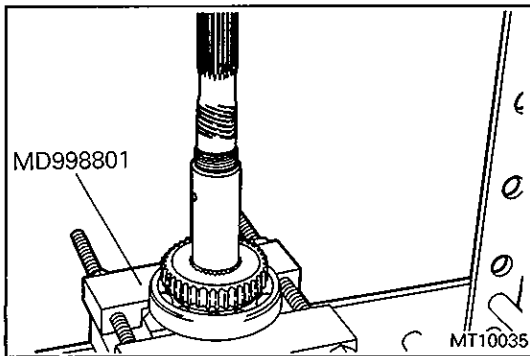
- (3) Place the clutch sleeve in mesh with the drive sprocket to prevent the rear output shaft from turning.
- (4) Using a special tool, remove the lock nut.



**◁C▷ REMOVAL OF RADIAL BALL BEARING**

**NOTE:**

The bearing is loosely coupled with the shaft and may be removable without use of a press.

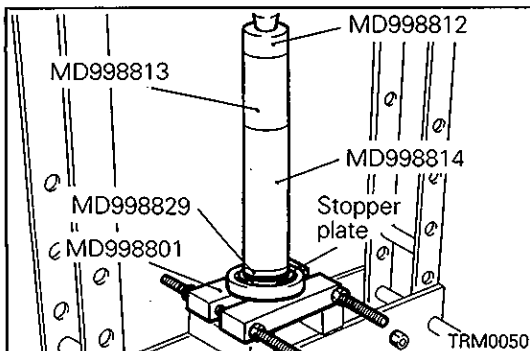


**◁D▷ REMOVAL OF 2-4WD CLUTCH HUB, STOPPER PLATE, BALL BEARING**

- (1) Set a special tool so that the load will be placed on the ball bearing.
- (2) Press the rear end of the rear output shaft with a press and remove the hub and bearing.

**NOTE:**

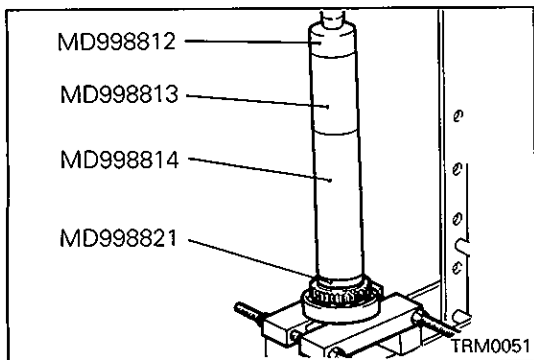
The hub is loosely coupled with the shaft and may be removal without use of a press.



**SERVICE POINTS OF REASSEMBLY**

**▷A◁ INSTALLATION OF BALL BEARING, STOPPER PLATE**

- (1) Place the stopper plate on the ball bearing.
- (2) Using a special tool, install the ball bearing on the rear output shaft.

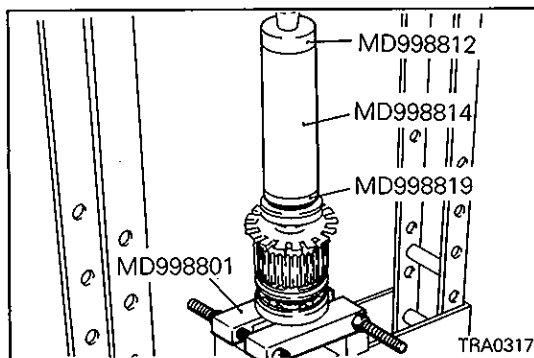


**▶B▶ INSTALLATION OF 2-4WD CLUTCH HUB**

- (1) Install the hub on the rear output shaft in the direction shown in the illustration.

**NOTE:**

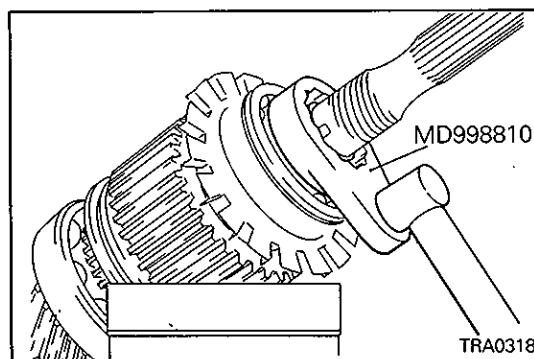
The hub is loosely coupled with the shaft and may be mountable without use of a press.



**▶C▶ INSTALLATION OF RADIAL BALL BEARING**

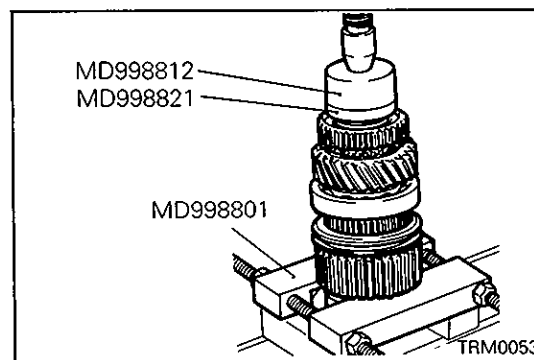
**NOTE:**

The hub is loosely coupled with the shaft and may be mountable without use of a press.



**▶D▶ INSTALLATION OF LOCK NUT**

- (1) Using a special tool and torque wrench, tighten the lock nut to the specified torque.
- (2) Using a punch, stake the lock nut in the groove of the rear output shaft.

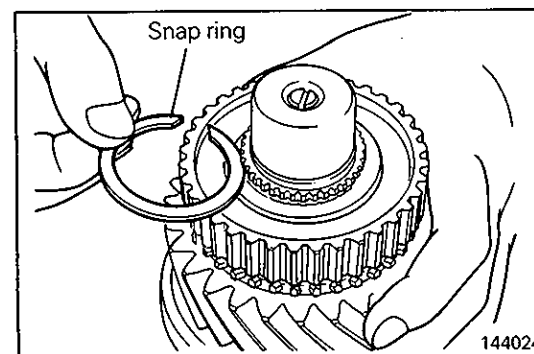


**▶E▶ INSTALLATION OF H-L CLUTCH HUB**

- (1) Install the hub on the rear output shaft in the direction shown in the illustration.

**NOTE:**

The hub is loosely coupled with the shaft and may be mountable without use of a press.



**▶F▶ INSTALLATION OF SNAP RING**

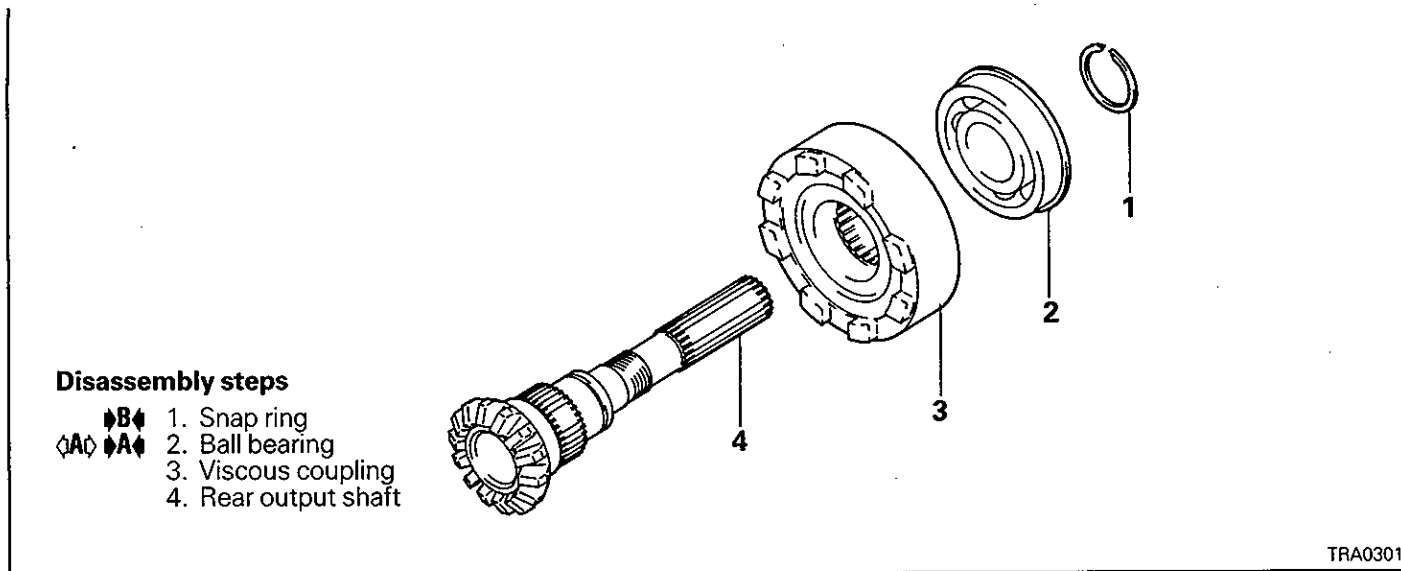
- (1) Select and mount the thickest snap ring that can fit in the groove.

**Standard value: 0 – 0.08 mm (0 – 0.003 in.)**

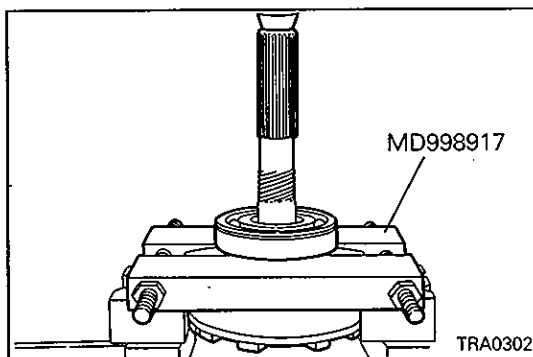
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## NOTES

# 18. REAR OUTPUT SHAFT <V4AW2-3, 7 (SUPER SELECT 4WD)> DISASSEMBLY AND REASSEMBLY

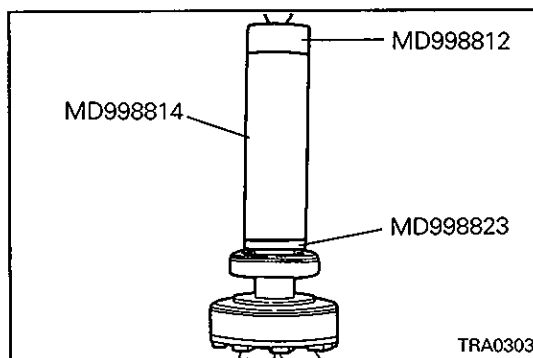


TRA0301



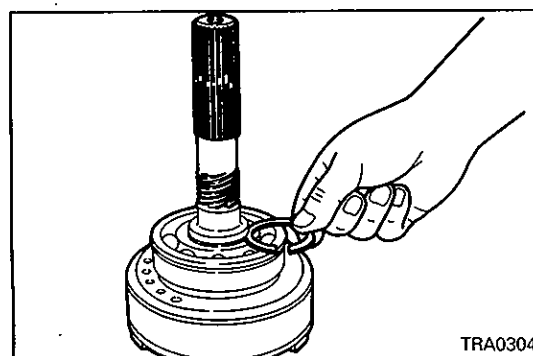
## SERVICE POINT OF DISASSEMBLY

◆A◆ REMOVAL OF BALL BEARING



## SERVICE POINTS OF REASSEMBLY

◆A◆ INSTALLATION OF BALL BEARING



## ◆B◆ INSTALLATION OF SNAP RING

(1) Select and mount the thickest snap ring that can fit in the groove.

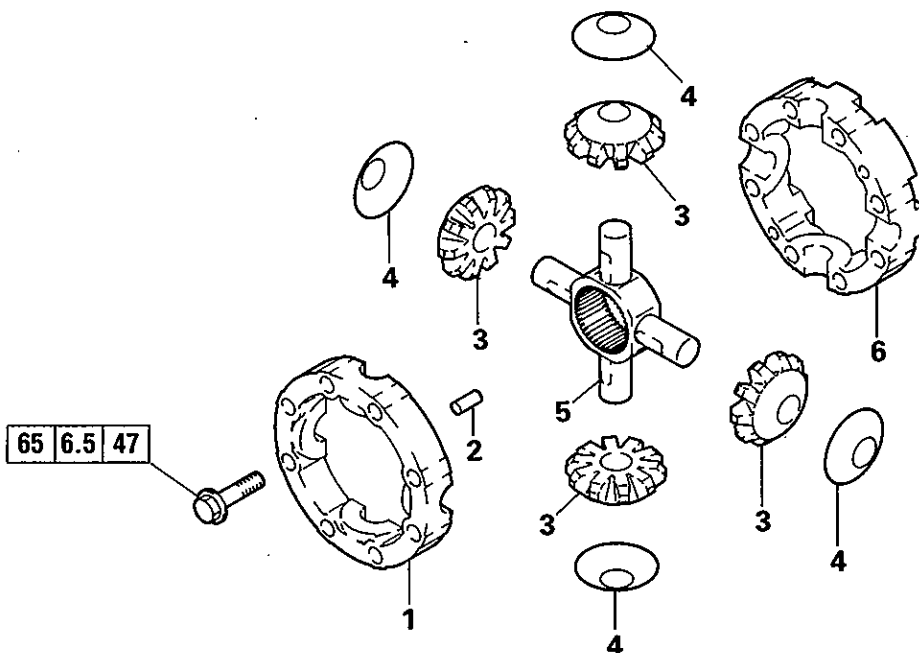
**Standard value: 0 – 0.08 mm (0 – 0.003 in.)**

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## NOTES

# 19. CENTER DIFFERENTIAL CASE <V4AW2-3, 7 (SUPER SELECT 4WD) only>

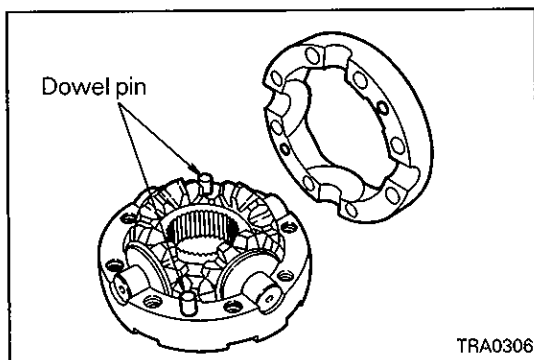
## DISASSEMBLY AND REASSEMBLY



### Disassembly steps

- ◆◆ 1. Center differential case front
- 2. Dowel pin
- 3. Pinion
- 4. Thrust washer
- 5. Pinion shaft
- 6. Center differential case rear

TRA0305



TRA0306

### SERVICE POINT OF REASSEMBLY

#### ◆◆ INSTALLATION OF CENTER DIFFERENTIAL CASE

- (1) Pay attention to the positions of the dowel pins when reassembling, and make sure that the alignment marks on the outside circumference are in alignment.

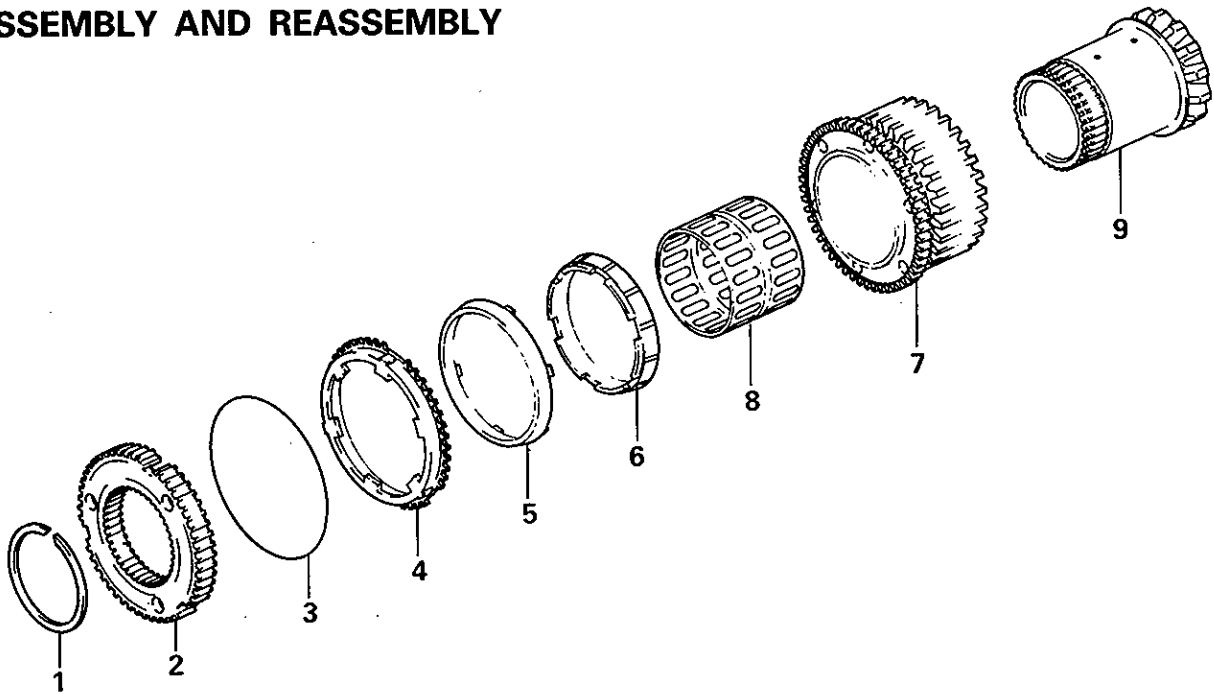
---

## NOTES



## 20. 2-4WD SYNCHRONIZER <V4AW2-3, 7 (SUPER SELECT 4WD) only>

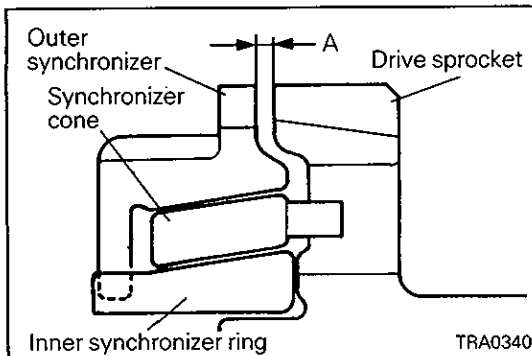
### DISASSEMBLY AND REASSEMBLY



#### Disassembly steps

- ◆C◆ 1. Snap ring
- 2. 2-4WD synchronizer hub
- 3. Synchronizer spring
- ◆B◆ 4. Outer synchronizer ring
- 5. Synchronizer center cone
- ◆A◆ 6. Inner synchronizer ring
- 7. Drive sprocket
- 8. Needle bearing
- 9. Front drive pinion

TRA0307



### INSPECTION

#### SYNCHRONIZER RING, SYNCHRONIZER CONE

- (1) Combine the inner and outer synchronizer rings and cone with the drive sprocket and measure the dimension A in the illustration. If the dimension A is less than the limit, replace them as a set.

**Limit: 0.3 mm (0.0118 in.)**

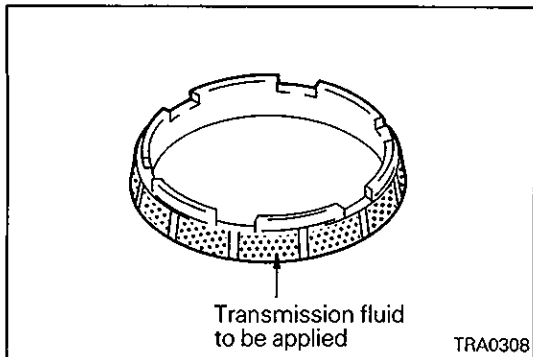
#### NOTE:

Scratches are produced on the cone surface in the rotating direction by the liners of the synchronizer rings. Therefore, the parts need not be replaced if the above-mentioned clearance is satisfied.

### SERVICE POINT OF REASSEMBLY

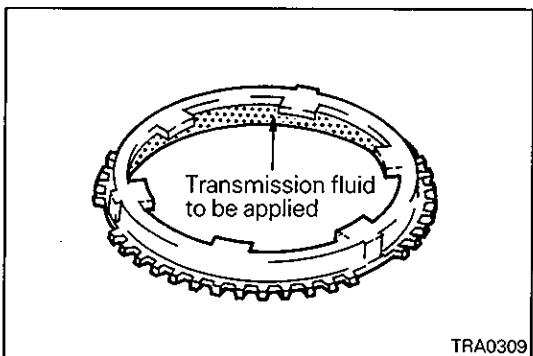
#### ◆A◆ INSTALLATION OF INNER SYNCHRONIZER RING

- (1) Apply transmission fluid to the synchronizer ring cone surface before installation.



#### ◆B◆ INSTALLATION OF OUTER SYNCHRONIZER RING

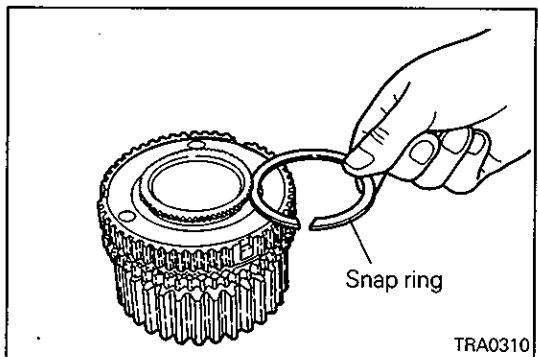
- (1) Apply transmission fluid to the synchronizer ring cone surface before installation.



#### ◆C◆ INSTALLATION OF SNAP RING

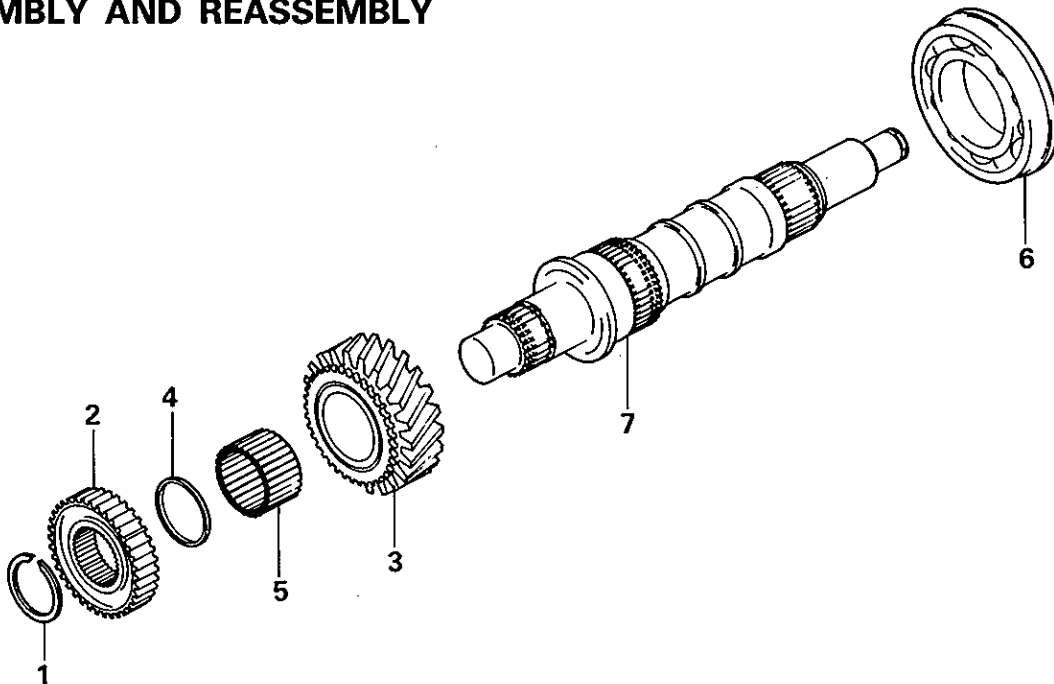
- (1) Select and mount the thickest snap ring that can fit in the groove.

**Standard value: 0 – 0.08 mm (0 – 0.003 in.)**



**21. TRANSFER DRIVE SHAFT <V4AW2-3, 7 (SUPER SELECT 4WD) only>**

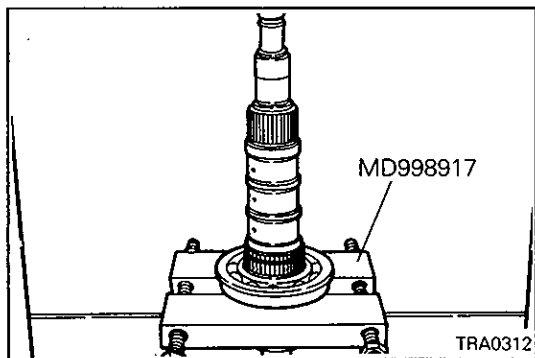
**DISASSEMBLY AND REASSEMBLY**



**Disassembly steps**

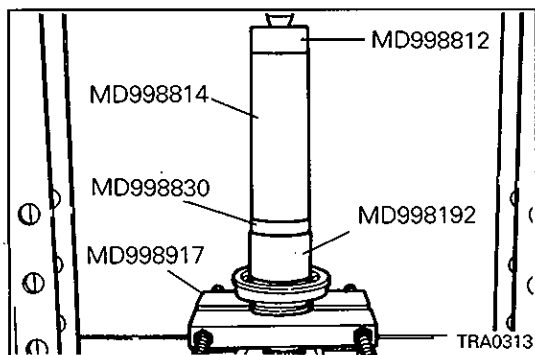
- ▶B▶ 1. Snap ring
- 2. H-L clutch hub
- 3. Low speed gear
- 4. Bearing spacer
- 5. Needle bearing
- ◁A▶▶A▶ 6. Ball bearing
- 7. Transfer drive shaft

TRA0311



**SERVICE POINT OF DISASSEMBLY**

◁A▶ REMOVAL OF BALL BEARING



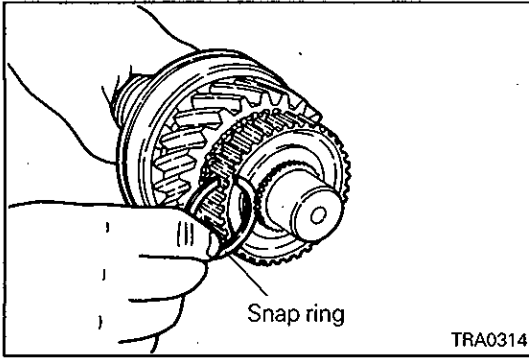
**SERVICE POINTS OF REASSEMBLY**

▶A▶ INSTALLATION OF BALL BEARING

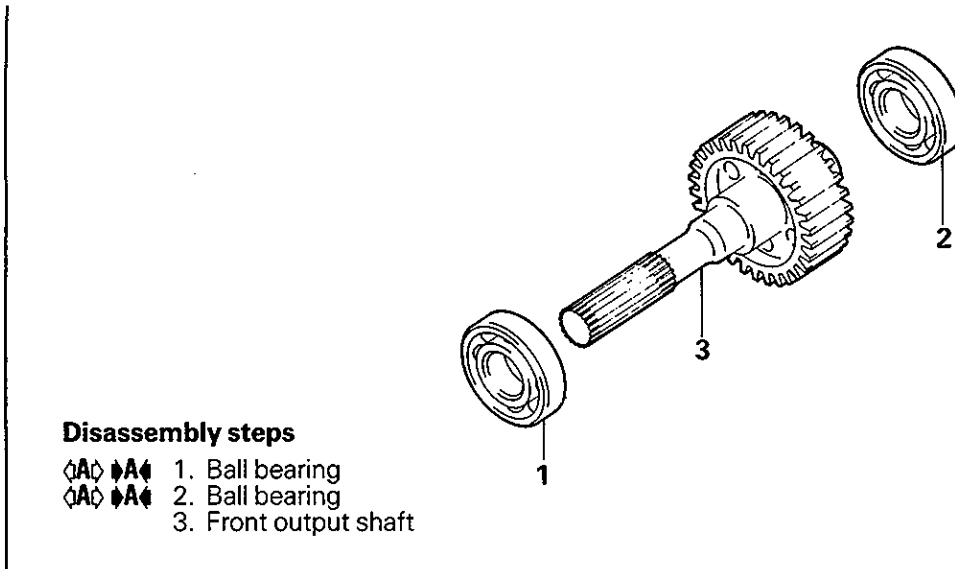
**◆B◆** INSTALLATION OF SNAP RING

- (1) Select and mount the thickest snap ring that can fit in the groove.

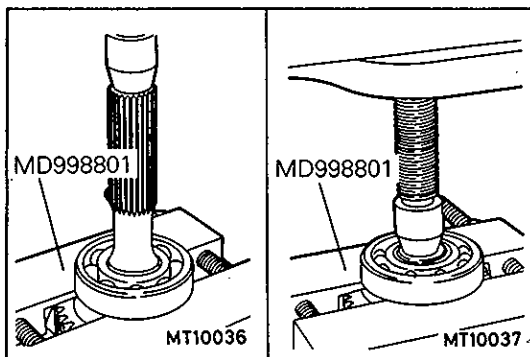
**Standard value: 0 – 0.08 mm (0 – 0.003 in.)**



## 22. FRONT OUTPUT SHAFT DISASSEMBLY AND REASSEMBLY

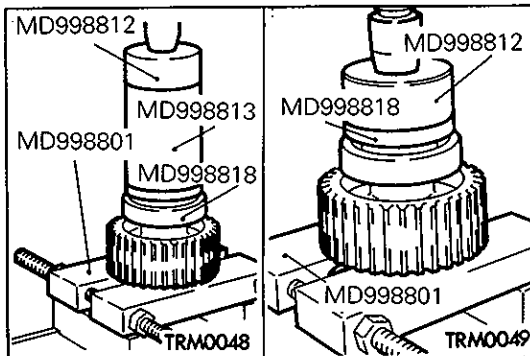


TRA0319



### SERVICE POINT OF DISASSEMBLY

◁A▷ REMOVAL OF BALL BEARING



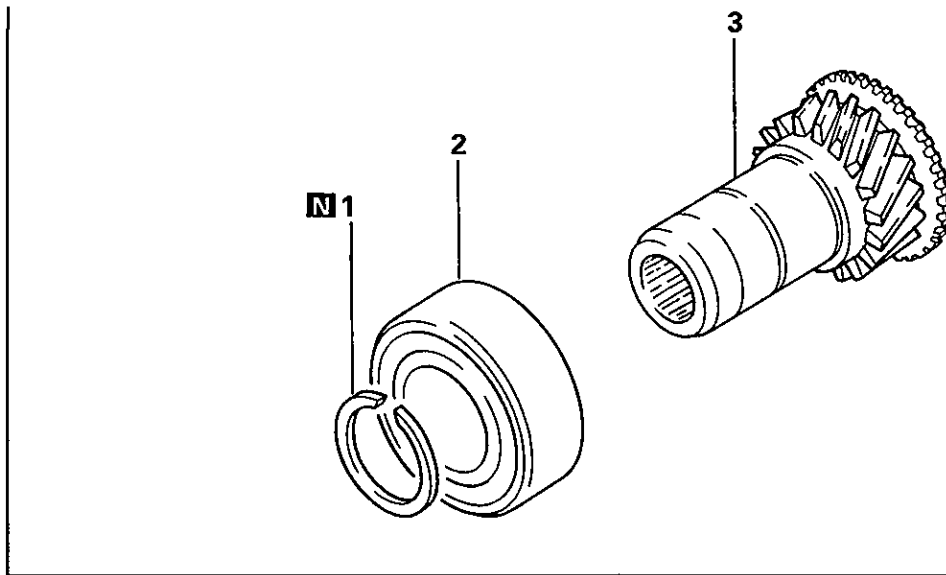
### SERVICE POINT OF REASSEMBLY

◁A▷ INSTALLATION OF BALL BEARING

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## NOTES

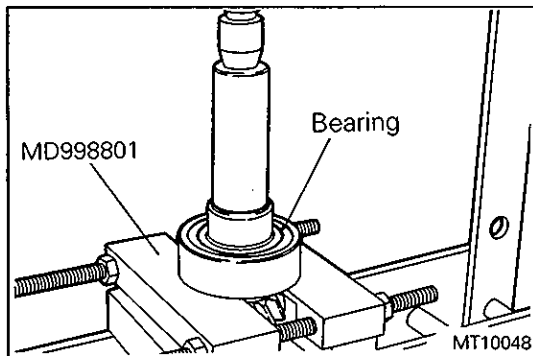
## 23. INPUT GEAR DISASSEMBLY AND REASSEMBLY



### Disassembly steps

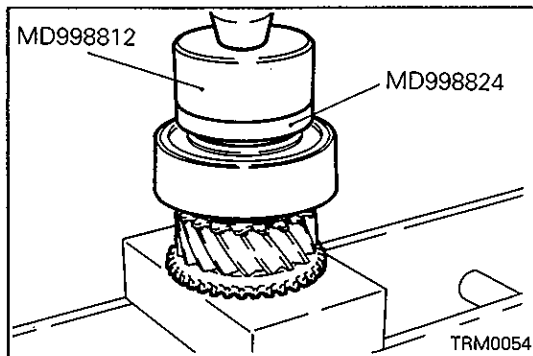
- ▶B▶ 1. Snap ring
- ◁A▶▶A▶ 2. Bearing
- 3. Input gear

145086



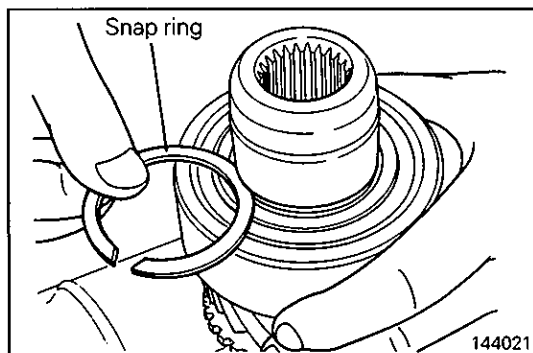
### SERVICE POINT OF DISASSEMBLY

◁A▶ REMOVAL OF BEARING



### SERVICE POINTS OF REASSEMBLY

▶A▶ INSTALLATION OF BEARING



### ▶B▶ INSTALLATION OF SNAP RING

- (1) Select the thickest snap ring that will fit into the groove in the front end of the input gear and install it.

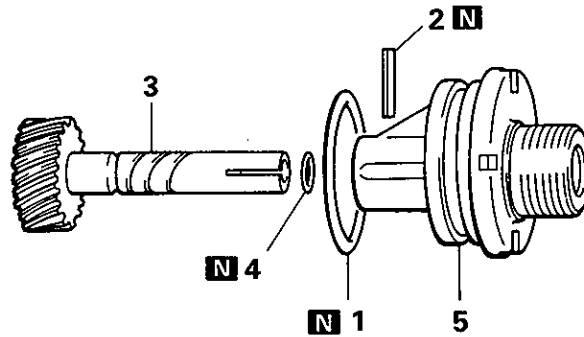
**Standard value: 0 – 0.06 mm (0 – 0.0024 in.)**

---

## NOTES



## 24. SPEEDOMETER SLEEVE DISASSEMBLY AND REASSEMBLY



### Disassembly steps

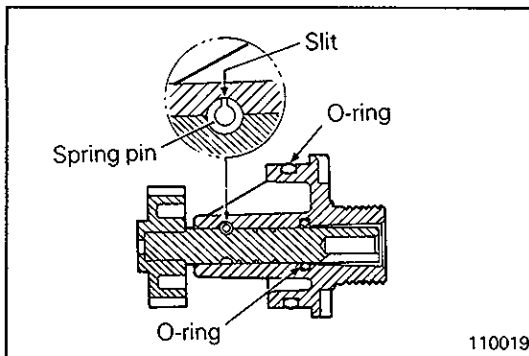
- 1. O-ring
- ▶B▶ 2. Spring pin
- ▶A▶ 3. Speedometer driven gear
- 4. O-ring
- 5. Sleeve

110008

### SERVICE POINTS OF REASSEMBLY

#### ▶A▶ INSTALLATION OF SPEEDOMETER DRIVEN GEAR

- (1) Apply gear oil sparingly to the shaft of the speedometer driven gear before insertion.



110019

#### ▶B▶ INSTALLATION OF SPRING PIN

- (1) Drive the spring pin into position so that its slit faces the direction shown in the illustration.

---

## NOTES

# AUTOMATIC TRANSMISSION

## R4AW3, V4AW3

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**REMARKS**

**This manual covers two models of automatic transmissions, R4AW3 and V4AW3.**

When using this manual, please note that model designations "V4AW3" or "R4AW3, V4AW3" appearing in the headline of each page do not necessarily indicate applicability of the instruction included in the page.

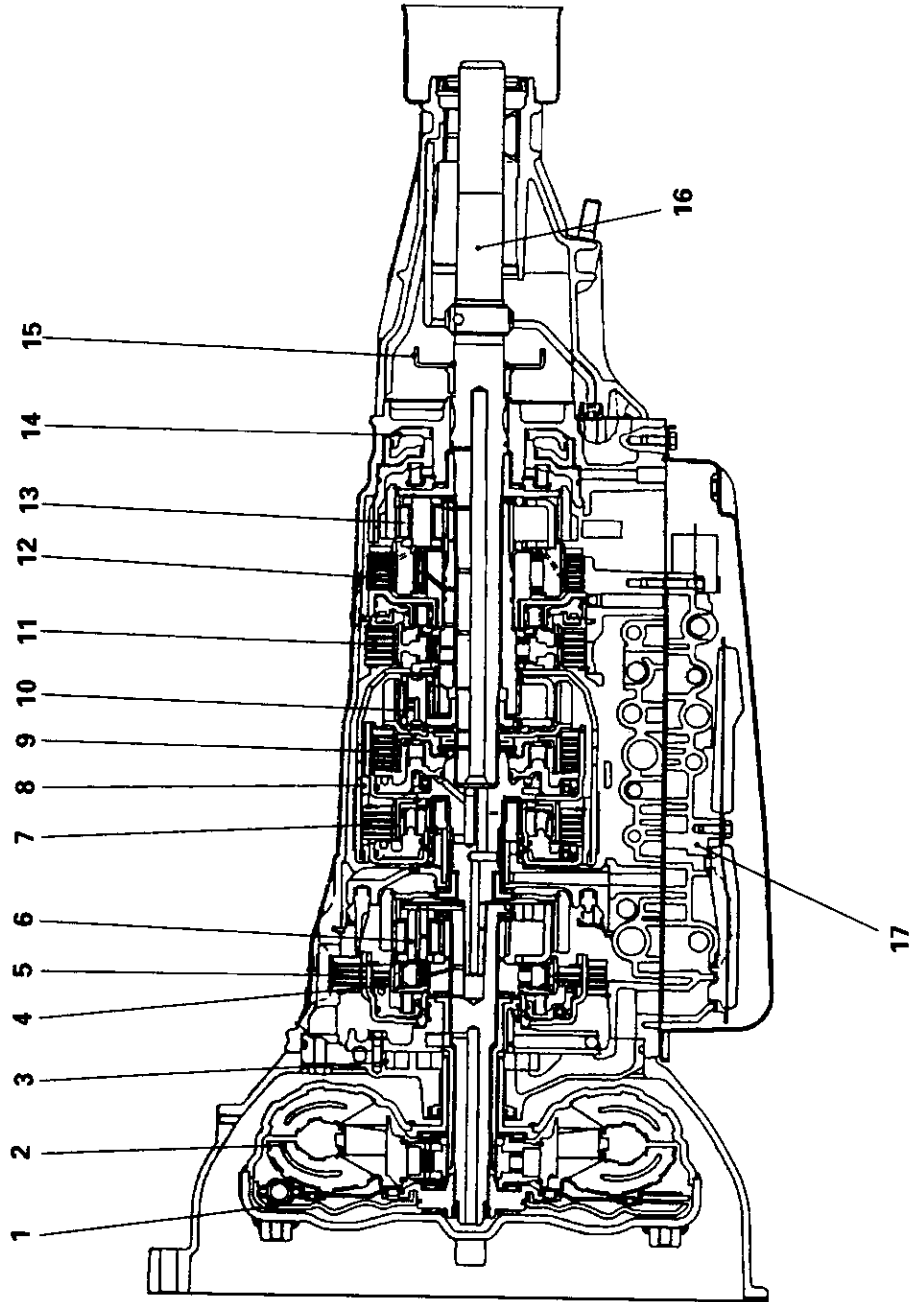
**You are requested to follow appropriate instructions according to the applicability indications included in text.**

## GENERAL INFORMATION

### Precautions to be taken when disassembling and reassembling the transmission

- Because the automatic transmission is composed of component parts of an especially high degree of precision, these parts should be very carefully handled during disassembly and assembly so as not to scar or scratch them.
- A rubber mat should be placed on the workbench, and it should always be kept clean.
- During disassembly, cloth gloves or shop towels should not be used. If such items must be used, either use articles made of nylon, or use paper towels.
- All disassembled parts must be thoroughly cleaned.  
Metal parts may be cleaned with ordinary detergents, but must be thoroughly air dried.
- Clean the clutch disc, resin thrust plate and rubber parts by using ATF (automatic transmission fluid), being very careful that dust, dirt, etc. do not adhere to them.
- Do not reuse gaskets, oil seals, or rubber parts.  
Replace such parts with new ones at every reassembly. The O-ring of the oil level gauge need not be replaced.
- Do not use grease other than petrolatum jelly.
- Apply ATF to friction components, rotating parts, and sliding parts before installation.
- Do not apply sealer or adhesive to gaskets.
- When a bushing must be replaced, replace the assembly in which it is incorporated.
- If the transmission main unit is damaged, also disassemble and clean the cooler system.

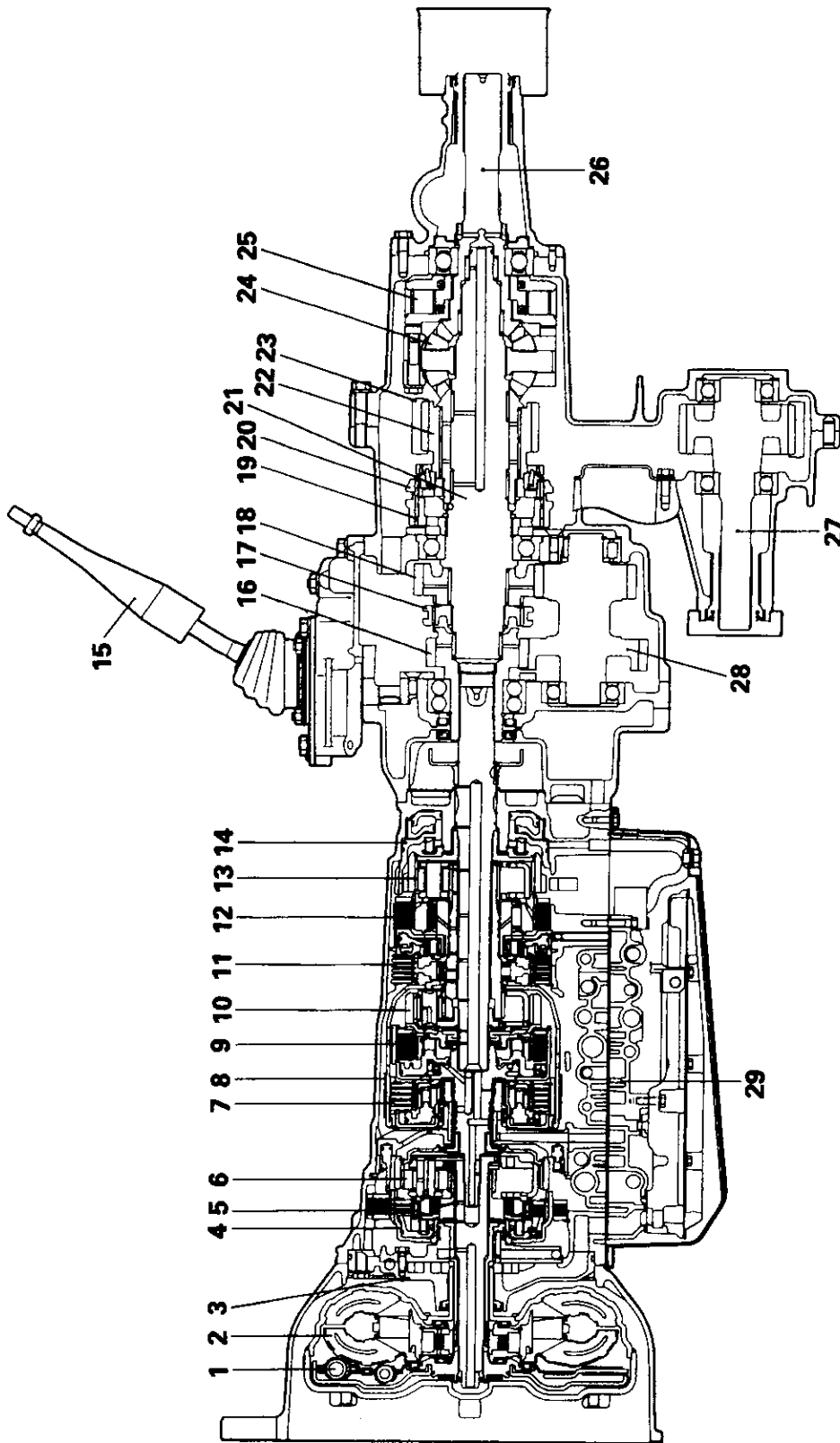
MODEL R4AW3



TRA0801

- |  |   |  |
|--|---|--|
| <ul style="list-style-type: none"> <li>1. Lock-up clutch</li> <li>2. Torque converter</li> <li>3. Oil pump</li> <li>4. Overdrive direct clutch</li> <li>5. Overdrive brake</li> <li>6. Overdrive planetary gear</li> </ul> | <ul style="list-style-type: none"> <li>7. Forward clutch</li> <li>8. Direct clutch</li> <li>9. Second coast brake</li> <li>10. Second brake</li> <li>11. First &amp; reverse brake</li> <li>12. Front planetary gear</li> </ul> | <ul style="list-style-type: none"> <li>13. Rear planetary gear</li> <li>14. First and reverse brake piston</li> <li>15. AT speed sensor rotor</li> <li>16. Output shaft</li> <li>17. Valve body</li> </ul> |
|--|---|--|

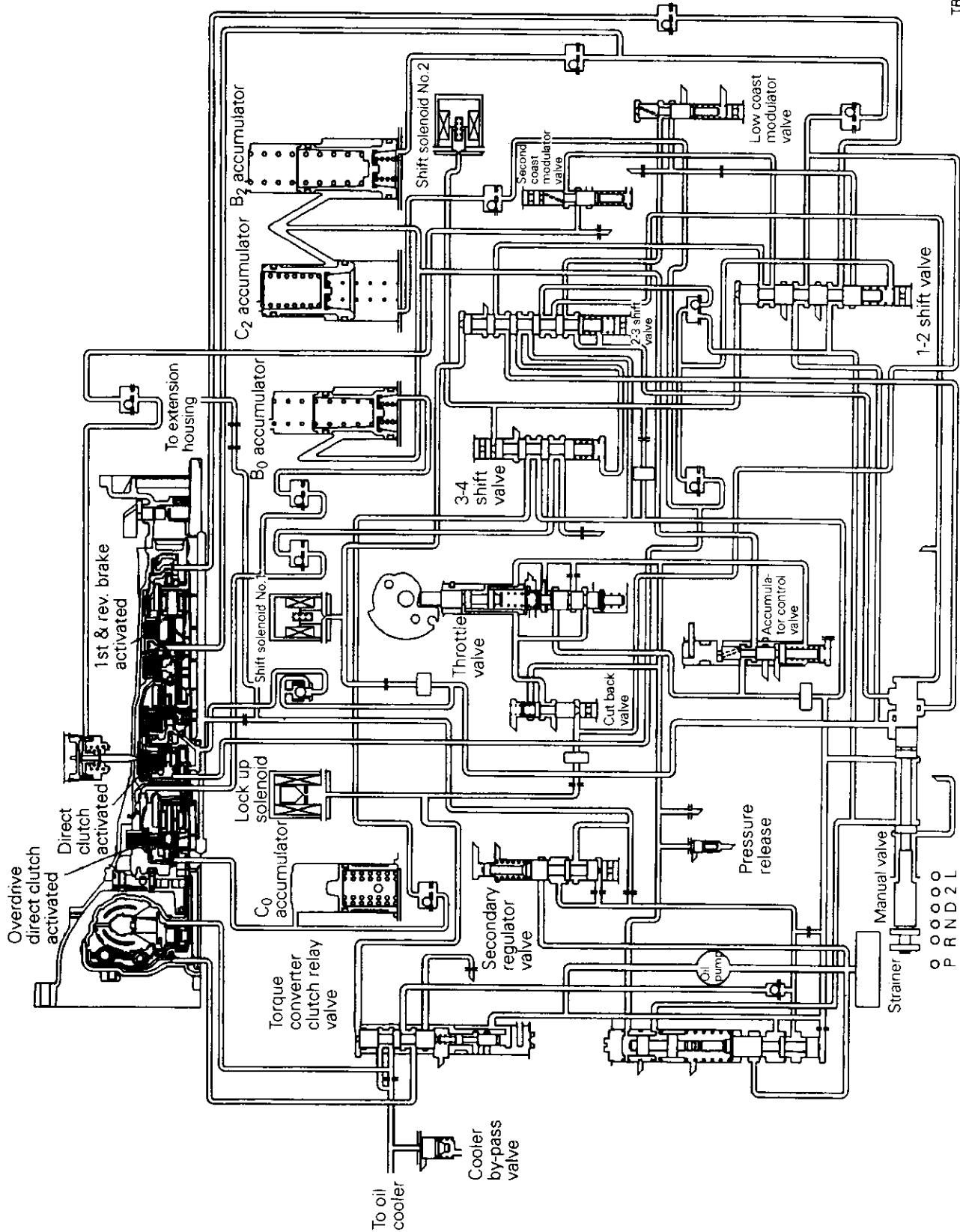
**MODEL V4AW3 — FOUR SPEED FOUR WHEEL DRIVE TRANSMISSION  
WITH LOCK-UP CLUTCH and VISCOUS COUPLING**



9RA0085

- |  |   |   |
|--|---|---|
| <ul style="list-style-type: none"> <li>1. Torque converter clutch</li> <li>2. Torque converter</li> <li>3. Oil pump</li> <li>4. Overdrive clutch</li> <li>5. Overdrive brake</li> <li>6. Overdrive planetary gear</li> <li>7. Direct clutch</li> <li>8. Second coast brake</li> <li>9. Forward clutch</li> <li>10. Front planetary gear</li> </ul> | <ul style="list-style-type: none"> <li>11. Second brake</li> <li>12. First &amp; reverse brake</li> <li>13. Rear planetary gear</li> <li>14. First &amp; reverse brake piston</li> <li>15. Transfer control lever</li> <li>16. Input gear</li> <li>17. High-low clutch</li> <li>18. Low speed gear</li> <li>19. Differential lock hub</li> <li>20. 2-4WD synchronizer sleeve</li> </ul> | <ul style="list-style-type: none"> <li>21. Transfer drive shaft</li> <li>22. Drive sprocket</li> <li>23. Chain</li> <li>24. Center differential</li> <li>25. Viscous coupling</li> <li>26. Rear output shaft</li> <li>27. Front output shaft</li> <li>28. Counter gear</li> <li>29. Valve body</li> </ul> |
|--|---|---|

HYDRAULIC CONTROL SYSTEM



TRA0735

Q O O O O  
P R N D 2 L



## 1. SPECIFICATIONS

## TRANSMISSION MODEL TABLE — MODEL 1993

Transmission model	Gear ratio	Torque converter clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model
EC V4AW3-7-UI	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UIL	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UJ	A	×	×	30/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UJL	A	×	×	30/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-MH	B	×	×	28/9	V25W, V45W	6G74
V4AW3-7-MHL	B	×	×	28/9	V25W, V45W	6G74
EXP V4AW3-7-UI	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UIL	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-MH	B	×	×	28/9	V45W	6G74
V4AW3-7-MHL	B	×	×	28/9	V25W, V45W	6G74
AUS V4AW3-7-MH	B	×	×	28/9	V45W	6G74

## TRANSMISSION MODEL TABLE — MODEL 1994

Transmission model	Gear ratio	Torque converter clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model
EC V4AW3-7-UI	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UIL	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UJ	A	×	×	30/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UJL	A	×	×	30/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-MH	B	×	×	28/9	V25W, V45W	6G74
V4AW3-7-MHL	B	×	×	28/9	V25W, V45W	6G74
EXP V4AW3-7-UI	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UIL	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-SJL	A	×	×	30/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-SKL	A	×	×	31/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-MG	B	×	×	27/9	V45W	6G74
V4AW3-7-MGL	B	×	×	27/9	V25W, V45W	6G74
V4AW3-7-MH	B	×	×	28/9	V45W	6G74
V4AW3-7-MHL	B	×	×	28/9	V25W, V45W	6G74
AUS V4AW3-7-MH	B	×	×	28/9	V45W	6G74

## TRANSMISSION MODEL TABLE — MODEL 1995

Transmission model	Gear ratio	Torque converter clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model
EC V4AW3-7-UI	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UIL	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UJ	A	×	×	30/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UJL	A	×	×	30/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-LI	B	×	×	29/9	V23W, V43W	6G72
V4AW3-7-LIL	B	×	×	29/9	V23W, V43W	6G72
V4AW3-7-MH	B	×	×	28/9	V25W, V45W	6G74
V4AW3-7-MHL	B	×	×	28/9	V25W, V45W	6G74
EXP V4AW3-7-UI	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UIL	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-MG	B	×	×	27/9	V45W	6G74
V4AW3-7-MGL	B	×	×	27/9	V25W, V45W	6G74
V4AW3-7-MH	B	×	×	28/9	V45W	6G74
V4AW3-7-MHL	B	×	×	28/9	V25W, V45W	6G74
AUS R4AW3-5-LE	C	×	—	19/9	PB6W	6G72

## TRANSMISSION MODEL TABLE — MODEL 1996

Transmission model	Gear ratio	Torque converter clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model
EC V4AW3-7-LIA	B	×	×	29/9	V23W, V23C, V43W	6G72
V4AW3-7-LILA	B	×	×	29/9	V23W, V23C, V43W	6G72
V4AW3-7-MH	B	×	×	28/9	V45W	6G74
V4AW3-7-MHA	B	×	×	28/9	V24W	6G74
V4AW3-7-MHL	B	×	×	28/9	V45W	6G74
V4AW3-7-MHLA	B	×	×	28/9	V24W	6G74
V4AW3-7-UI	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UIL	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UJ	A	×	×	30/9	V46W	4M40 with turbocharger and intercooler
EXP V4AW3-7-MGA	B	×	×	27/9	V45W	6G74
V4AW3-7-MGLA	B	×	×	27/9	V25W, V45W	6G74
V4AW3-7-MHA	B	×	×	28/9	V45W	6G74
V4AW3-7-MHLA	B	×	×	28/9	V25W, V45W	6G74
V4AW3-7-UI	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UIL	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
AUS R4AW3-5-LF	C	×	—	19/9	PB6W	6G72
V4AW3-7-MHA	B	×	×	28/9	V45W	6G74

## TRANSMISSION MODEL TABLE — MODEL 1997

Transmission model	Gear ratio	Torque converter clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model
EC V4AW3-7-LHA	B	×	×	28/9	V23C, V23W	6G72
V4AW3-7-LHLA	B	×	×	28/9	V23C, V23W	6G72
V4AW3-7-LIA	B	×	×	29/9	V43W	6G72
V4AW3-7-LILA	B	×	×	29/9	V43W	6G72
V4AW3-7-MFA	B	×	×	26/9	V25W, V45W	6G74
V4AW3-7-MFLA	B	×	×	26/9	V25W, V45W	6G74
V4AW3-7-UI	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UIL	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UJ	A	×	×	30/9	V46W	4M40 with turbocharger and intercooler
EXP V4AW3-7-MGA	B	×	×	27/9	V45W	6G74
V4AW3-7-MGLA	B	×	×	27/9	V25W, V45W	6G74
V4AW3-7-MHA	B	×	×	28/9	V45W	6G74
V4AW3-7-MHLA	B	×	×	28/9	V25W, V45W	6G74
V4AW3-7-UI	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-7-UIL	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
AUS R4AW3-5-LEC	B	×	×	25/9	PB6W	6G72
V4AW3-6-LIT	B	×	×	29/9	K76T	6G72
V4AW3-7-MGA	B	×	×	27/9	V45W	6G74
V4AW3-7-MIA	B	×	×	29/9	V45W	6G74

**TRANSMISSION MODEL TABLE — MODEL 1998**

Transmission model	Gear ratio	Torque converter clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model
EC V4AW3-B-LHA	B	×	×	28/9	V23C, V23W	6G72
V4AW3-B-LHLA	B	×	×	28/9	V23C, V23W	6G72
V4AW3-B-LIA	B	×	×	29/9	V43W	6G72
V4AW3-B-LILA	B	×	×	29/9	V43W	6G72
V4AW3-B-NFA	B	×	×	26/9	V25W, V45W	6G74
V4AW3-B-NFLA	B	×	×	26/9	V25W, V45W	6G74
V4AW3-B-UI	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-B-UIL	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-B-UJ	A	×	×	30/9	V46W	4M40 with turbocharger and intercooler
EXP V4AW3-B-MGA	B	×	×	27/9	V45W	6G74
V4AW3-B-MGLA	B	×	×	27/9	V25W, V45W	6G74
V4AW3-B-MHA	B	×	×	28/9	V45W	6G74
V4AW3-B-MHLA	B	×	×	28/9	V25W, V45W	6G74
V4AW3-B-UI	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-B-UIL	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
AUS R4AW3-5-LEC	B	×	×	25/9	PB6W	6G72
V4AW3-6-LIT	B	×	×	29/9	K76T	6G72
V4AW3-7-MGA	B	×	×	27/9	V45W	6G74
V4AW3-7-MIA	B	×	×	29/9	V45W	6G74

## TRANSMISSION MODEL TABLE — MODEL 1999

Transmission model	Gear ratio	Torque converter clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model
EC V4AW3-B-LHLA	B	×	×	28/9	V23C, V23W	6G72
V4AW3-B-LHA	B	×	×	28/9	V23C, V23W	6G72
V4AW3-7-LILA	B	×	×	29/9	V43W	6G72
V4AW3-B-LIA	B	×	×	29/9	V43W	6G72
V4AW3-B-NFLA	B	×	×	26/9	V25W, V45W	6G74
V4AW3-B-NFA	B	×	×	26/9	V25W, V45W	6G74
V4AW3-B-UI	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-B-UIL	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-B-UJ	A	×	×	30/9	V46W	4M40 with turbocharger and intercooler
EXP V4AW3-7-LILA	B	×	×	29/9	V43W	6G72
V4AW3-B-LIA	B	×	×	29/9	V43W	6G72
V4AW3-B-MGA	B	×	×	27/9	V45W	6G74
V4AW3-B-MGLA	B	×	×	27/9	V25W, V45W	6G74
V4AW3-B-NGLA	B	×	×	27/9	V45W	6G74
V4AW3-B-UIL	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-B-UI	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
AUS V4AW3-6-LHGF	B	×	×	28/9	K96W	6G72
V4AW3-6-LIT	B	×	×	29/9	K76T	6G72
V4AW3-B-NGA	B	×	×	27/9	V25W, V45W	6G74
V4AW3-B-NIA	B	×	×	29/9	V45W	6G74

**TRANSMISSION MODEL TABLE — MODEL 2000**

Transmission model	Gear ratio	Torque converter clutch	VCU	Speedometer gear ratio	Vehicle model	Engine model
EC V4AW3-B-LHLA	B	×	×	28/9	V23C, V23W	6G72
V4AW3-B-LHA	B	×	×	28/9	V23C, V23W	6G72
V4AW3-7-LILA	B	×	×	29/9	V43W	6G72
V4AW3-B-LIA	B	×	×	29/9	V43W	6G72
V4AW3-B-NFLA	B	×	×	26/9	V25W, V45W	6G74
V4AW3-B-NFA	B	×	×	26/9	V25W, V45W	6G74
V4AW3-B-UI	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-B-UIL	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-B-UJ	A	×	×	30/9	V46W	4M40 with turbocharger and intercooler
V4AW3-B-UJL	A	×	×	30/9	V46W	4M40 with turbocharger and intercooler
EXP V4AW3-7-LILA	B	×	×	29/9	V43W	6G72
V4AW3-B-LIA	B	×	×	29/9	V43W	6G72
V4AW3-B-MGA	B	×	×	27/9	V45W	6G74
V4AW3-B-MGLA	B	×	×	27/9	V25W, V45W	6G74
V4AW3-B-NGLA	B	×	×	27/9	V45W	6G74
V4AW3-B-UIL	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
V4AW3-B-UI	A	×	×	29/9	V46W	4M40 with turbocharger and intercooler
AUS V4AW3-6-LHGF	B	×	×	28/9	K96W	6G72
V4AW3-6-LIT	B	×	×	29/9	K76T	6G72
V4AW3-B-NGA	B	×	×	27/9	V25W, V45W	6G74
V4AW3-B-NIA	B	×	×	29/9	V45W	6G74

**GEAR RATIO TABLE**

Gear ratio		A	B	C
Transmission	1st	2.804	2.804	2.804
	2nd	1.531	1.531	1.531
	3rd	1.000	1.000	1.000
	4th	0.705	0.754	0.754
	Reverse	2.393	2.393	2.393
Transfer	High	1.000	1.000	—
	Low	1.900	1.900	—



## SERVICE SPECIFICATIONS

mm (in.)

	Standard	Limit
<b>Transmission</b>		
Clearance between second ..... 4M40, 6G72 .....	0.6 – 1.12 (0.024 – 0.044)	
brake drum and plate		
6G74 .....	0.7 – 1.22 (0.028 – 0.048)	
Clearance between snap ring and flange .....	0.62 – 1.98 (0.024 – 0.078)	
Second brake piston stroke .....	1.5 – 3.0 (0.059 – 0.118)	
Output shaft end play .....	0.27 – 0.86 (0.011 – 0.034)	
Torque converter housing clearance .....	31.1 or more (1.22 or more)	
Oil pump body clearance .....	0.07 – 0.15 (0.003 – 0.006)	0.30 (0.012)
Oil pump tip clearance .....	0.11 – 0.14 (0.004 – 0.006)	0.30 (0.012)
Oil pump side clearance .....	0.02 – 0.05 (0.0008 – 0.0020)	0.30 (0.012)
Overdrive direct clutch disc thickness .....		1.84 (0.072)
Overdrive direct clutch return spring free length .....	Approx. 15.8 (Approx. 0.62)	
Overdrive direct piston stroke .....	1.85 – 2.15 (0.073 – 0.085)	
Overdrive support assembly return spring free length .....	Approx. 18.6 (Approx. 0.73)	
Direct clutch disc thickness .....		1.84 (0.072)
Direct clutch return spring free length .....	Approx. 19.8 (Approx. 0.78)	
Direct clutch piston stroke .....	1.37 – 1.67 (0.054 – 0.066)	
Forward clutch disc thickness .....		1.84 (0.072)
Forward clutch return spring free length .....	Approx. 11.55 (Approx. 0.45)	
Forward clutch piston stroke .... 4M40, 6G72 .....	2.65 – 3.98 (1.104 – 0.157)	
6G74 .....	2.90 – 4.29 (0.114 – 0.169)	
Second brake assembly return spring free length .....	Approx. 15.05 (Approx. 0.59)	
First & reverse brake disc thickness .....		1.51 (0.059)
First & reverse brake return spring free length .....	Approx. 13.09 (Approx. 0.52)	
Oil pump body busing ID .....		38.18 (1.503)
Oil pump stator shaft bushing ID (Front) .....		21.57 (0.849)
(Rear) .....		27.07 (1.066)

		mm (in.)
	Standard	Limit
Overdrive direct clutch drum bushing ID .....		27.11 (1.067)
Overdrive planetary gear bushing ID .....		11.27 (0.444)
Direct clutch drum bushing ID .....		53.97 (2.125)
Forward clutch drum bushing ID .....		24.07 (0.948)
Front planetary ring gear bushing ID .....		24.07 (0.948)
Planetary sun gear bushing ID .....		24.07 (0.948)
<b>Transfer</b>		
H-L clutch hub end play .....	0 – 0.08 (0 – 0.0031)	
Input gear bearing end play .....	0 – 0.06 (0 – 0.0024)	
Center differential end play .....	0.025 – 0.150 (0.00098 – 0.00591)	
Differential lock hub end play .....	0 – 0.08 (0 – 0.0031)	
2-4WD synchronizer hub end play .....	0 – 0.08 (0 – 0.0031)	
Rear output shaft bearing end play .....	0 – 0.08 (0 – 0.0031)	
Countershaft gear end play .....	0 – 0.15 (0 – 0.0059)	
Countershaft gear bearing end play .....	0 – 0.08 (0 – 0.0031)	
Clearance between outer synchronizer ring back side and drive sprocket .....		0.3 (0.0118)

## VALVE BODY SPRING IDENTIFICATION

mm (in.)

	Free height	Outside diameter	Number of loops	Wire diameter
<b>Lower valve body</b>				
1-2 shift valve spring .....	30.8 (1.213)	9.7 (0.381)	8.5	0.9 (0.035)
Primary regulator valve spring .....	62.3 (2.453)	18.6 (0.732)	12.5	1.7 (0.067)
<Except V4AW3-B-U>				
<V4AW3-B-U only> .....	66.7 (2.626)	17.6 (0.693)	10.5	1.6 (0.063)
Accumulator control valve spring .....	33.9 (1.335)	8.8 (0.346)	10.0	0.8 (0.031)
<Except V4AW3-B-N, U>				
<V4AW3-B-N, U only> .....	29.8 (1.173)	8.8 (0.346)	16.0	0.8 (0.031)
Check valve spring .....	17.53 (0.690)	12.1 (0.476)	3.2	1.1 (0.043)
Relief valve spring .....	11.2 (0.441)	6.4 (0.252)	7.5	0.9 (0.035)
<b>Upper valve body</b>				
Downshift valve .....	27.3 (1.075)	8.7 (0.343)	10.5	1.0 (0.039)
Throttle valve .....	20.6 (0.811)	9.2 (0.362)	7.5	0.7 (0.028)
3-4 shift valve .....	30.8 (1.213)	9.7 (0.381)	8.5	0.9 (0.035)
Second coast modulator valve .....	30.9 (1.217)	8.6 (0.339)	9.5	1.1 (0.043)
<Except V4AW3-B-U>				
<V4AW3-B-U only> .....	29.6 (1.165)	8.3 (0.327)	10.5	1.0 (0.039)
Lock-up relay valve .....	21.4 (0.843)	5.5 (0.217)	15.5	0.6 (0.024)
Secondary regulator valve .....	30.9 (1.217)	11.2 (0.441)	8.5	1.5 (0.059)
Cut back valve .....	21.8 (0.858)	6.0 (0.236)	11.5	0.6 (0.024)
2-3 shift valve .....	30.8 (1.213)	9.7 (0.381)	8.5	0.9 (0.035)
Low coast modulator valve .....	30.4 (1.197)	8.3 (0.327)	8.5	0.8 (0.031)

## ACCUMULATOR PISTON SPRING IDENTIFICATION

				mm (in.)		
		Free height	Outside diameter	Number of loops	Wire diameter	
C <sub>0</sub> :	Outer spring 1 .....	74.6 (2.937)	20.9 (0.823)	12.3	2.3 (0.091)	
	Outer spring 2 .....	46.10 (1.811)	14.0 (0.551)	12.5	2.2 (0.087)	
C <sub>2</sub> :	Outer spring	4M40 <Except 98– model PAJERO/MONTERO> .....	22.0 (0.866)	11.9 (0.469)	5.3	1.7 (0.067)
		6G72 <PAJERO/MONTERO, L200> .....	24.0 (0.945)	12.0 (0.472)	5.4	1.7 (0.067)
		6G72 <L400> .....	21.0 (0.827)	10.5 (0.413)	3.9	1.7 (0.067)
		6G74 <Except 98– model PAJERO/MONTERO> .....	20.0 (0.787)	12.1 (0.476)	4.5	1.7 (0.067)
		6G74, 4M40 <98– model PAJERO/MONTERO> .....	22.0 (0.866)	12.0 (0.472)	5.3	1.7 (0.067)
	Inner spring	4M40 <Except 98– model PAJERO/MONTERO> .....	64.0 (2.520)	20.2 (0.795)	10.3	2.2 (0.087)
		6G74 <Except 98– model PAJERO/MONTERO> .....	70.2 (2.764)	20.2 (0.795)	10.1	2.3 (0.091)
	Inner spring 1	4M40 <98– model PAJERO/MONTERO> .....	68.5 (2.697)	20.2 (0.795)	9.1	2.2 (0.087)
		6G72 .....	64.0 (2.520)	20.2 (0.795)	10.3	2.2 (0.087)
		6G74 <98– model PAJERO/MONTERO> .....	64.0 (2.520)	20.2 (0.795)	12.3	2.2 (0.087)
Inner spring 2	6G72 .....	42.1 (1.657)	14.7 (0.579)	9.25	2.5 (0.098)	
	6G74, 4M40 <98– model PAJERO/MONTERO> .....	42.1 (1.657)	14.7 (0.579)	7.3	2.5 (0.098)	
B <sub>0</sub> :	Outer spring .....	14.5 (0.571)	13.0 (0.512)	3.0	2.1 (0.083)	
	Inner spring .....	62.0 (2.441)	16.0 (0.630)	11.9	2.1 (0.083)	
B <sub>2</sub> :	Outer spring	4M40 <Except 98– model PAJERO/MONTERO> .....	17.0 (0.669)	12.7 (0.499)	3.3	2.1 (0.083)
		4M40 <98– model PAJERO/MONTERO> .....	20.0 (0.787)	14.0 (0.551)	5.2	1.9 (0.075)
		6G72 .....	23.0 (0.901)	14.0 (0.551)	4.9	2.0 (0.079)
		6G74 <Except 98– model PAJERO/MONTERO> .....	22.0 (0.886)	14.0 (0.551)	5.2	1.9 (0.075)
		6G74 <98– model PAJERO/MONTERO> .....	19.0 (0.748)	14.0 (0.551)	5.7	2.0 (0.079)
	Inner spring	4M40 <Except 98– model PAJERO/MONTERO> .....	70.5 (2.776)	19.9 (0.783)	10.4	2.4 (0.094)
		4M40 <98– model PAJERO/MONTERO> .....	72.6 (2.858)	19.9 (0.783)	12.5	2.8 (0.110)
		6G72 .....	70.5 (2.776)	19.7 (0.776)	12.9	2.7 (0.106)
		6G74 <Except 98– model PAJERO/MONTERO> .....	72.6 (2.858)	19.9 (0.783)	12.5	2.8 (0.110)
		6G74 <98– model PAJERO/MONTERO> .....	75.3 (2.964)	20.0 (0.787)	14.3	2.7 (0.106)

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## ADJUSTMENT SNAP RINGS AND SPACERS

Part name	Thickness mm (in.)	Identification symbol	Part No.
<b>Transfer</b>			
Snap ring ..... (For adjustment of input gear bearing end play)	2.30 (0.091)	—	MD704199
	2.35 (0.093)	Red	MD704200
	2.40 (0.094)	White	MD704201
	2.45 (0.096)	Blue	MD704202
	2.50 (0.098)	Green	MD704203
Snap ring ..... (For adjustment of H-L clutch hub end play)	2.18 (0.086)	Blue	MR110983
	2.25 (0.089)	—	MR110984
	2.32 (0.091)	Brown	MR110985
	2.39 (0.094)	White	MR110986
Snap ring ..... (For adjustment of differential lock hub end play)	2.56 (0.101)	—	MD738386
	2.63 (0.104)	Red	MD738387
	2.70 (0.106)	White	MD738388
	2.77 (0.109)	Blue	MD738389
	2.84 (0.112)	Yellow	MD738390
	2.91 (0.115)	Green	MD738391
	2.98 (0.117)	Purple	MD738392
Snap ring ..... (For adjustment of 2-4WD synchronizer hub end play)	2.56 (0.101)	—	MD738393
	2.63 (0.104)	Red	MD738394
	2.70 (0.106)	White	MD738395
	2.77 (0.109)	Blue	MD738396
	2.84 (0.112)	Yellow	MD738397
Snap ring ..... (For adjustment of transfer counter gear bearing end play)	1.48 (0.058)	Blue	MB919176
	1.62 (0.064)	—	MB919177
Spacer ..... (For adjustment of transfer counter gear end play)	1.77 (0.070)	—	MB896728
	1.91 (0.0752)	Blue	MB896729
	2.05 (0.0807)	Brown	MB896730
	2.19 (0.0862)	White	MB896731
	2.33 (0.0917)	Red	MB896732
Snap ring ..... (For adjustment of rear output shaft bearing end play)	2.26 (0.089)	—	MD734311
	2.33 (0.092)	Red	MD734312
	2.40 (0.094)	White	MD734313
	2.47 (0.097)	Blue	MD734314

Part name	Thickness mm (in.)	Identification symbol	Part No.
Spacer ..... (For adjustment of center differential end play)	0.84 (0.033)	84	MD734326
	0.93 (0.037)	93	MD734327
	1.02 (0.040)	02	MD734328
	1.11 (0.044)	11	MD734329
	1.20 (0.047)	20	MD734330
	1.29 (0.051)	29	MD734331
	1.38 (0.054)	38	MD734332
	1.47 (0.058)	47	MD734333
	1.56 (0.061)	56	MD734334
	1.65 (0.065)	65	MD734335
	1.74 (0.069)	74	MD734336
	1.83 (0.072)	83	MD734337
	1.92 (0.076)	92	MD734338
2.01 (0.079)	01	MD734339	

## TORQUE SPECIFICATIONS

	Torque		
	Nm	kgm	ft.lbs.
<b>Transmission</b>			
Transmission case .....	36	3.6	26
Case adapter <4WD> .....	36	3.6	26
Extension housing <2WD> .....	29	2.9	21
Transmission control shaft lever .....	16	1.6	12
Parking lock rod .....	7	0.7	5
Speedometer driven gear <2WD> .....	16	1.6	12
A/T Speed sensor .....	16	1.6	12
O/D support mounting bolt .....	26	2.6	19
Oil pump .....	22	2.2	16
Throttle cable .....	6	0.6	4.3
Valve body mounting bolt .....	10	1.0	7.2
Transmission wire .....	6	0.6	4.3
Oil strainer .....	10	1.0	7.2
Oil screen <2WD> .....	6	0.6	4.3
Oil screen <4WD> .....	7	0.7	5
Oil pan .....	8	0.8	5.8
Drain plug .....	21	2.1	15
Oil temperature sensor .....	15	1.5	11
Converter housing			
10 mm (0.39 in.) diameter bolt .....	35	3.5	25
12 mm (0.47 in.) diameter bolt .....	58	5.8	42
Inhibitor switch			
bolt .....	13	1.3	9
nut .....	4	0.4	2.9
Oil pump stator .....	8	0.8	5.8
Valve body upper bolt .....	7	0.7	5
Manual detent spring .....	10	1.0	7.2
Throttle valve cam .....	10	1.0	7.2
Shift solenoid			
No.1 .....	10	1.0	7.2
No.2 .....	10	1.0	7.2
Lock up solenoid .....	10	1.0	7.2
<b>Transfer</b>			
Rear cover .....	19	1.9	14
Chain cover .....	36	3.6	26
Center differential case .....	65	6.5	47
Bearing retainer .....	19	1.9	14
Oil pool cover .....	9	0.9	6.5
Lock plate .....	19	1.9	14
Detection switch .....	36	3.6	26
Plug .....	36	3.6	26
Poppet plug .....	36	3.6	26
H-L shift rail plug .....	33	3.3	24



	Torque		
	Nm	kgm	ft.lbs.
<b>Transfer</b>			
Dynamic damper <6G74> .....	70	7.0	51
Side cover .....	9	0.9	6.5
Sleeve clamp .....	19	1.9	14

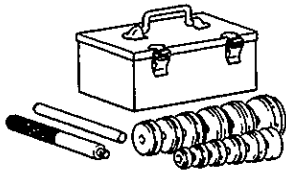
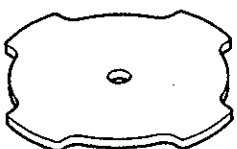
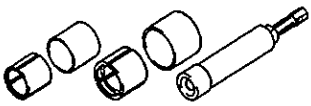
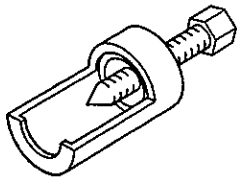
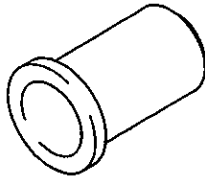
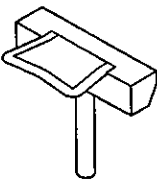
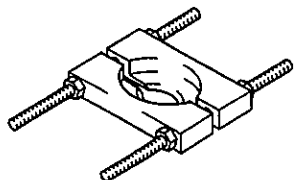
## SEALANTS

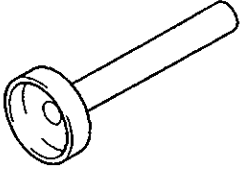
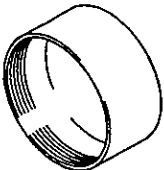
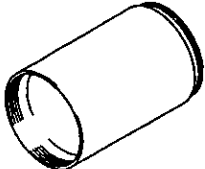
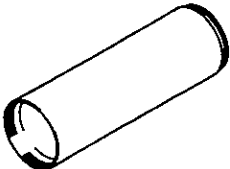

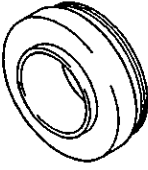
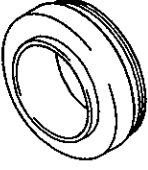
	Specified sealants and adhesives	Quantity
<b>Transmission</b>		
Oil pin .....	Threebond Seal Packing 1281 .....	As required
<b>Transfer</b>		
Adapter gasket (transmission sides) .....	Threebond Seal Packing 1281 .....	As required
Adapter gasket (transfer sides) .....	Mitsubishi genuine sealant .....	As required
	Part No. MD997740 or equivalent	
Chain cover .....	Mitsubishi genuine sealant .....	As required
	Part No. MD997740 or equivalent	
Rear cover .....	Mitsubishi genuine sealant .....	As required
	Part No. MD997740 or equivalent	
Transfer case plate .....	Mitsubishi genuine sealant .....	As required
	Part No. MD997740 or equivalent	
Poppet plug .....	3M ATD Part No. 8660 or equivalent .....	As required
Plug .....	3M ATD Part No. 8660 or equivalent .....	As required
Bolt (threads) .....	3M STUD Locking 4170 or equivalent .....	As required

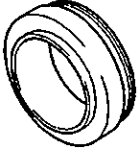
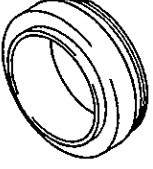
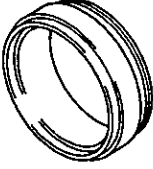
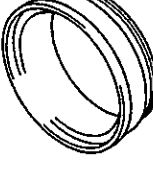
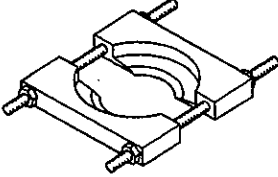
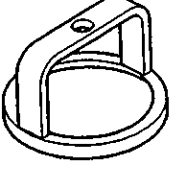
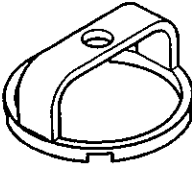
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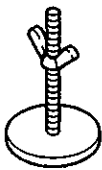
## NOTES

## 2. SPECIAL TOOLS

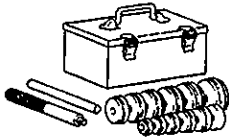
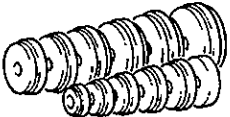

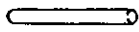
Tool	Number	Name	Use
	MB990925 MB990929 MB990934 MB990936 MB990938	Bearing and oil seal installer set	Installation of bearing and oil seal
	MB991556	Spring compressor	Removal and installation of O/D support snap ring
	MD998192	Counter gear bearing puller	Installation of transfer drive shaft bearing (top part only used)
	MD998212	Oil pump puller	Removal of oil pump
	MD998382	Countershaft front oil seal installer	Installation of oil pump oil seal
	MD998727	Oil pan remover	Removal of oil pan
	MD998801	Bearing remover	Removal of bearings and gears

Tool	Number	Name	Use
	MD998803	Differential oil seal installer	Installation of input gear oil seal
	MD998812	Installer cap	Installation of bearings and gears
	MD998813	Installer-100	Installation of bearings and gears
	MD998814	Installer-200	Installation of bearings and gears
	MD998818	Installer adapter	Installation of bearings and gears
	MD998819	Installer adapter	Installation of bearings and gears
	MD998821	Installer adapter	Installation of bearings and gears

Tool	Number	Name	Use
	MD998823	Installer adapter	Installation of bearings and gears
	MD998824	Installer adapter	Installation of bearings and gears
	MD998829	Installer adapter	Installation of bearings and gears
	MD998830	Installer adapter	Installation of bearings and gears
	MD998917	Bearing remover	Removal of bearings
	MD998921	Spring compressor	Removal and installation of snap ring for O/D direct clutch, direct clutch, forward clutch and first & reverse brake
	MD998923	Spring compressor	Removal and installation of second brake snap ring

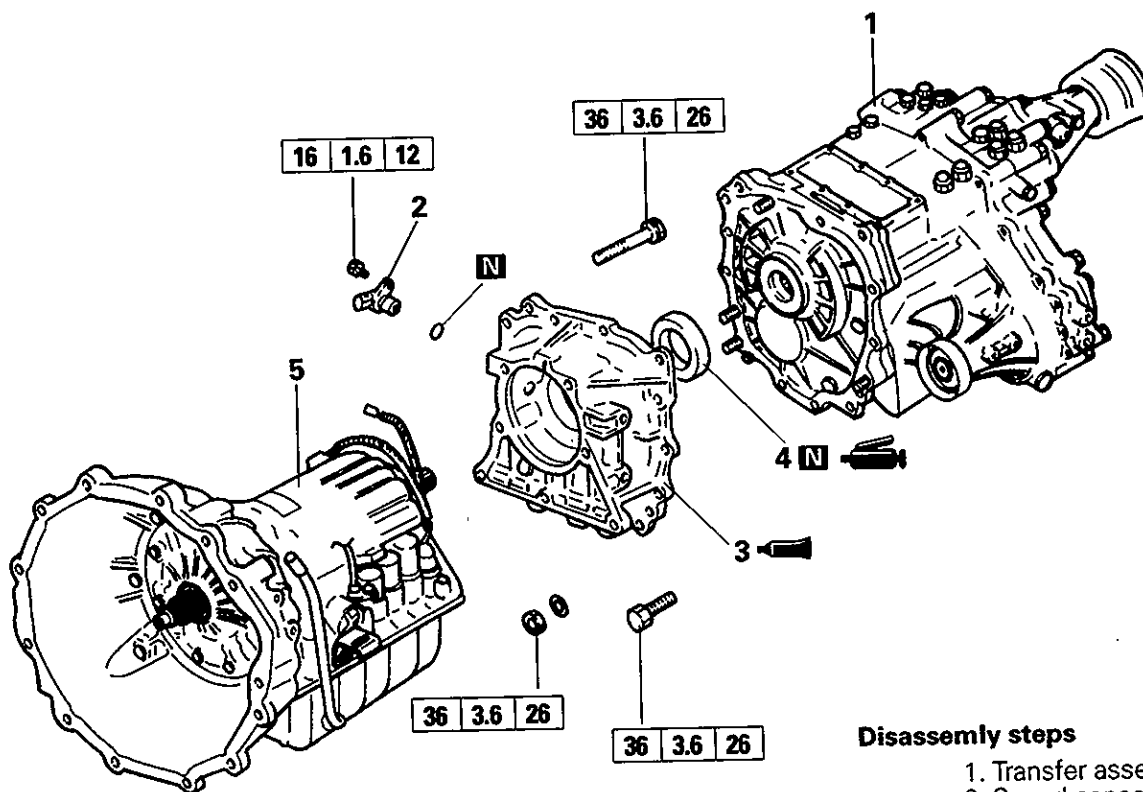
Tool	Number	Name	Use
	MD998924	Spring ring compressor retainer	Used with MD998921, MD998922 and MD998923

**CONTENTS OF BEARING AND OIL SEAL INSTALLER SET MB990925**

Set	Contents			
	Tool	Name	Tool No.	Diameter mm (in.)
 <p>Bearing and oil seal installer set MB990925</p>		Installer adapter	MB990926	39 (1.535)
			MB990927	45 (1.772)
			MB990928	49.5 (1.949)
			MB990929	51 (2.008)
			MB990930	54 (2.126)
			MB990931	57 (2.244)
			MB990932	61 (2.402)
			MB990933	63.5 (2.500)
			MB990934	67.5 (2.657)
			MB990935	71.5 (2.815)
			MB990936	75.5 (2.972)
	MB990937	79 (3.110)		
		Installer bar	MB990938	—
	Brass bar	MB990939	—	

### 3. TRANSMISSION AND TRANSFER

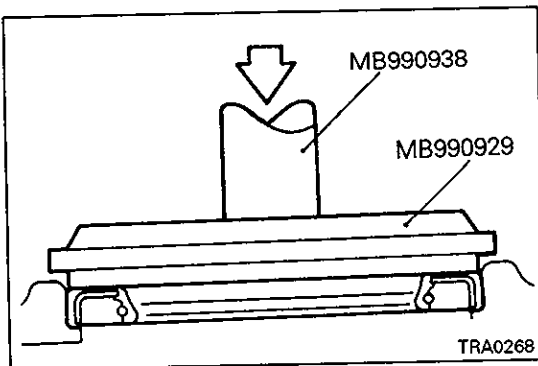
#### DISASSEMBLY AND REASSEMBLY



**Disassembly steps**

1. Transfer assembly
2. Speed sensor
- ▶B◀ 3. Transfer case adapter
- ▶A◀ 4. Oil seal
5. Transmission assembly

TRA0451

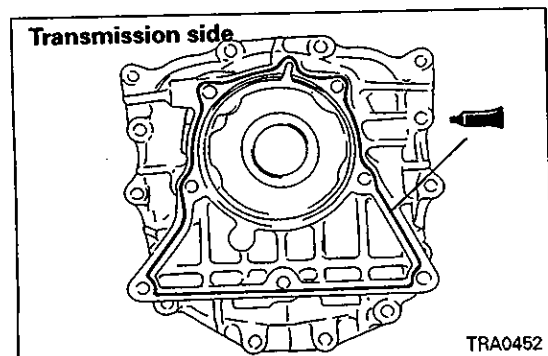


TRA0268

#### REASSEMBLY SERVICE POINTS

##### ▶A◀ OIL SEAL INSTALLATION

- (1) Using the special tool, install an oil seal on the adapter, and then pack the oil seal lips with grease.



TRA0452

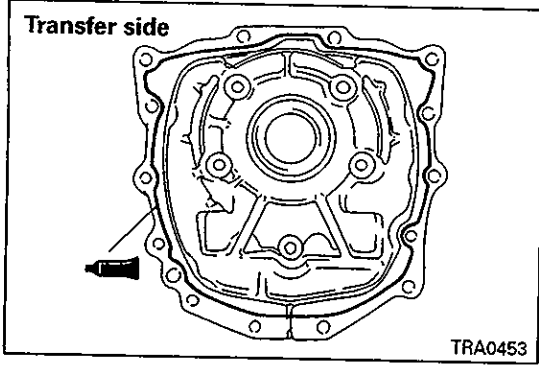
##### ▶B◀ TRANSFER CASE ADAPTER INSTALLATION

**Specified sealant:**

Threebond Seal Packing 1281 ..... Transmission side  
 Mitsubishi genuine sealant Part No. MD997740  
 or equivalent ..... Transfer side

**Caution**

- Squeeze the sealant out evenly to make sure that it is not broken or excessively supplied.





## 4. TRANSMISSION

### DISASSEMBLY

#### Caution

- When removing the transmission assembly from the vehicle, care must be taken to make sure that the oil pan is not struck by the transmission jack.
- The automatic transmission is composed of component parts of an especially high degree of precision. Therefore, handle these component parts very carefully during disassembly so as not to scar or scratch them.
- When separating cases and other parts made of light alloys from the junctions, lightly hit them with a soft hammer (plastic hammer) if it is difficult to release them. Don't jimmy them free using a screwdriver or the like.
- Replace a rubber mat on the workbench so that it may always be kept clean.
- During disassembly, do not use cloth gloves or shop towels. If such items are required, use either articles made of nylon or paper towels.
- Clean all disassembled parts thoroughly. Metal parts may be cleaned with ordinary detergents, but must be thoroughly air-dried.
- Clean the clutch discs, brake discs, and other resin and rubber parts by using ATF (automatic transmission fluid), being very careful that dust, dirt, etc. do not adhere to them.
- If the transmission proper is damaged, also disassemble and clean the cooler system.

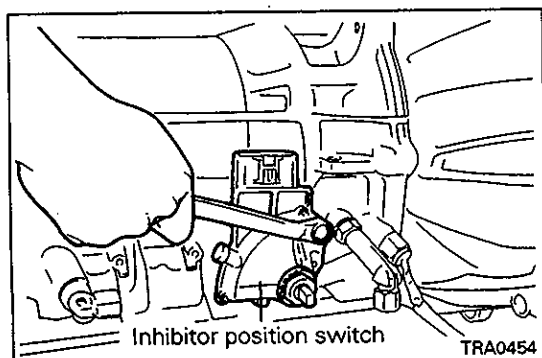
- (1) Remove sand, mud, etc. from the exterior of the transmission.
- (2) Place the transmission assembly on a bench with the oil pan down.

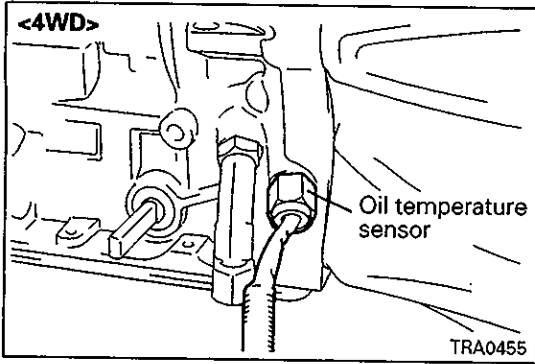
#### Caution

- Do not place the assembly with the oil pan up before the oil pan is removed. This is necessary to prevent foreign matter in the oil pan from entering the valve body.

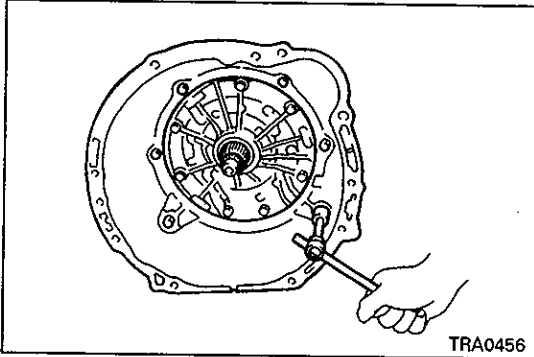
- (3) Remove the torque converter.
- (4) Remove the oil level gauge and oil filler tube. Remove the O-rings from the oil filler tube.
- (5) Remove the harness connector bracket and throttle cable clamp.
- (6) Remove the control shaft lever.

- (7) Unlock the lock washer and remove the inhibitor switch. Remove the lock washer and grommet.

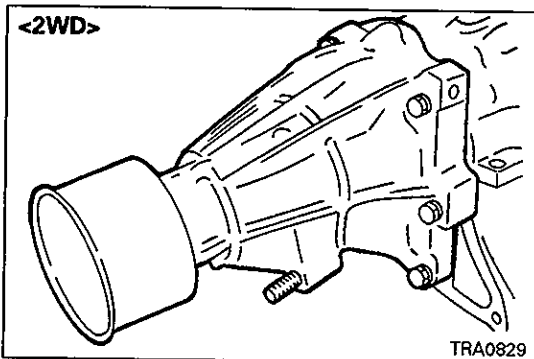




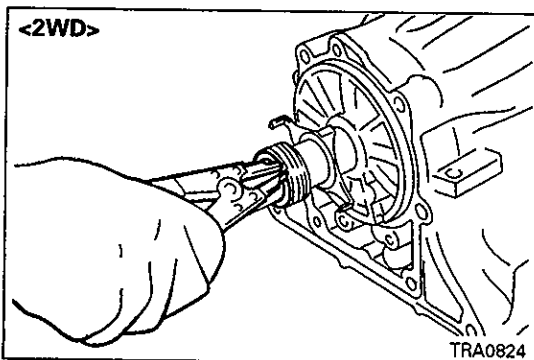
(8) Remove the oil temperature sensor.



(9) Remove the torque converter housing.



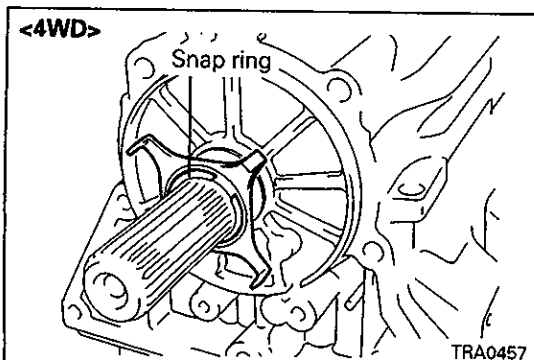
(10) Remove the extension housing and gasket. <2WD>



(11) Remove the snap ring and speedometer drive gear. Remove the sensor rotor and then the key. <2WD>

**Caution**

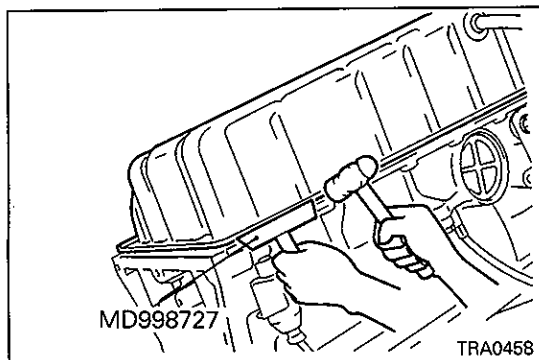
- Be careful not to bend the blades of the sensor rotor.



(12) Remove the snap ring. Remove the sensor rotor and then the key. <4WD>

**Caution**

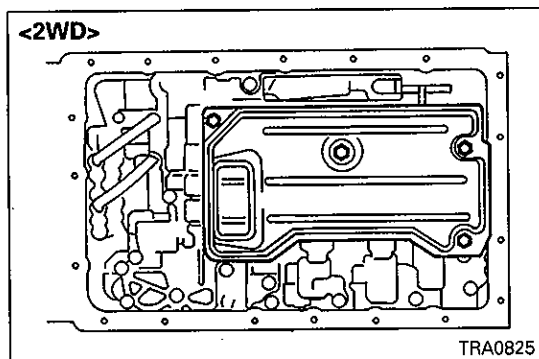
- Be careful not to bend the blades of the sensor rotor.



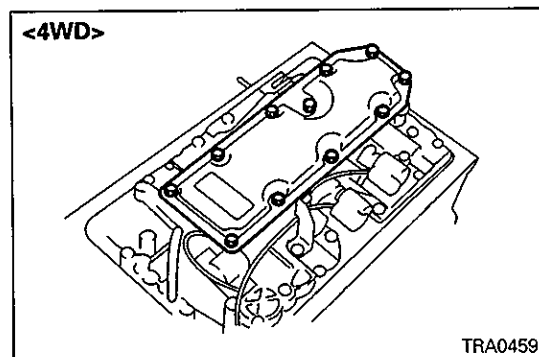
(13) Remove the 19 oil pan bolts and use the special tool (oil pan remover) to remove the oil pan.

**Caution**

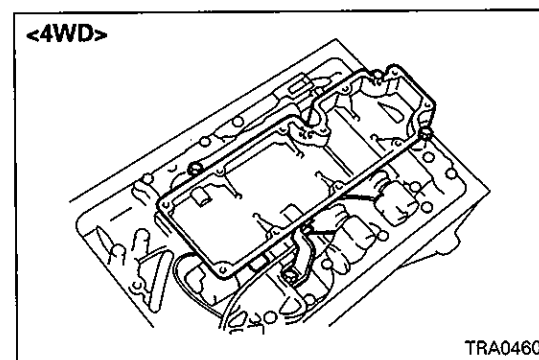
- Drive in the special tool carefully so as not to deform the oil pan.



(14) Remove the 4 bolts and then remove the oil screen assembly. <2WD>

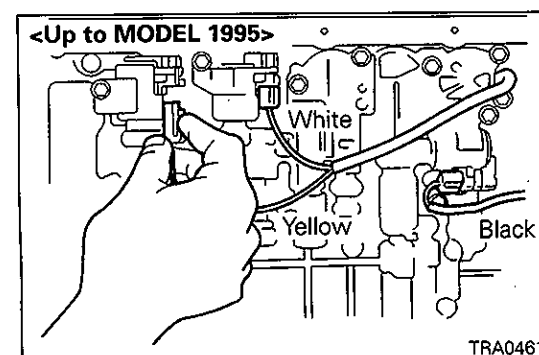


(15) Remove the 11 bolts and then remove the oil screen assembly and gasket. <4WD>

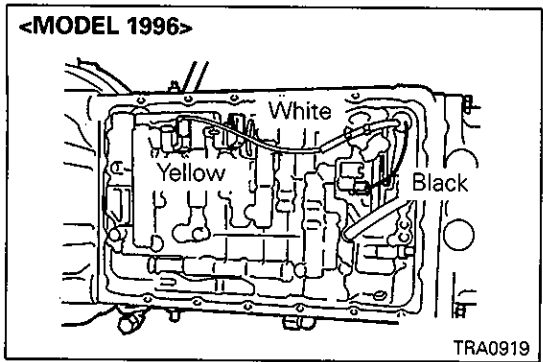


(16) Remove the 5 bolts and then remove the spacer and oil screen. <4WD>

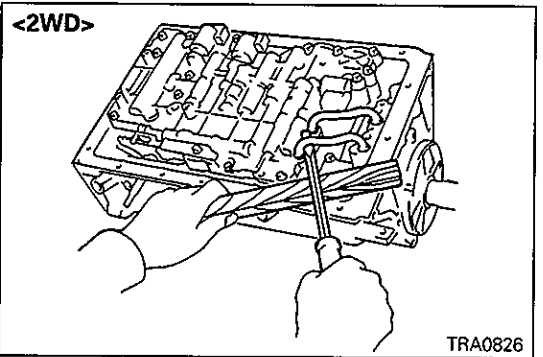
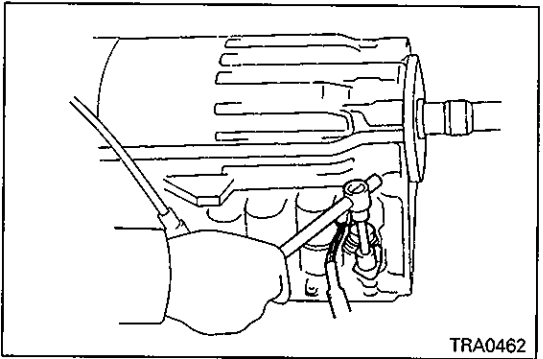
(17) Remove the two gaskets. <4WD>



(18) Separate the 3 transmission solenoid connectors.



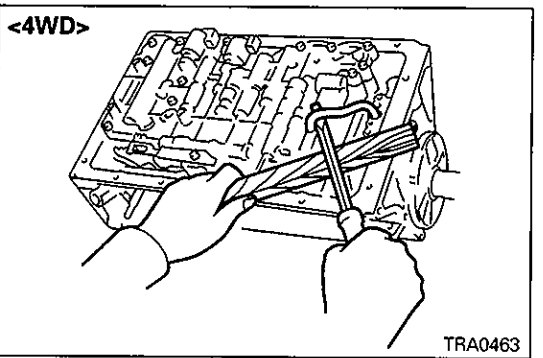
- (19) Remove the grommet stopper plate from the transmission case and then remove the transmission wire.  
 (20) Remove the O-ring from the grommet.



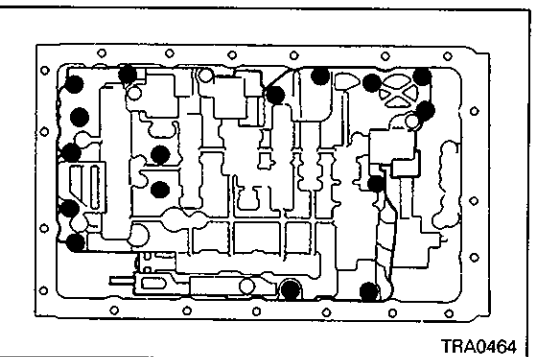
- (21) Using a screwdriver, wood piece, etc., remove the brake tubes.

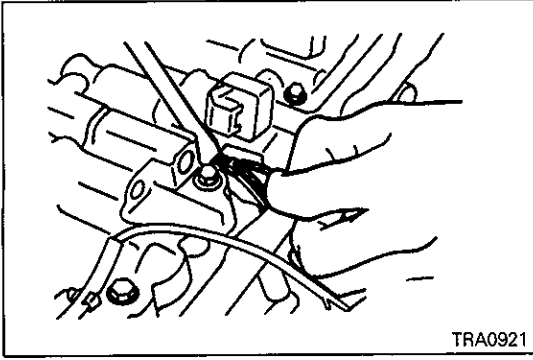
**Caution**

- Be careful not to deform the brake tube.



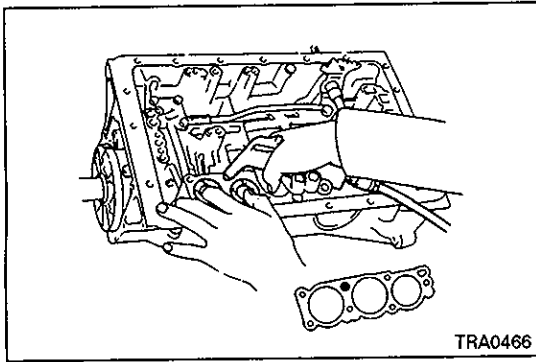
- (22) Remove the 16 mounting bolts from the valve body.





(23) Remove the throttle cable from the throttle cam. Then, remove the valve body.

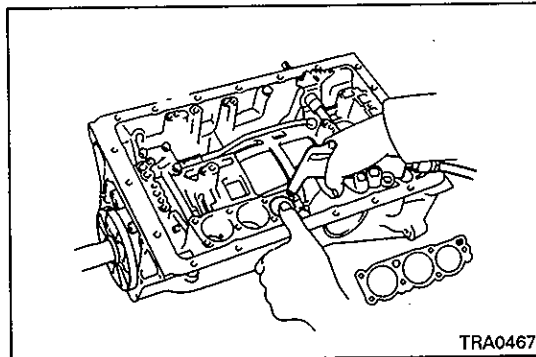
Intentionally blank



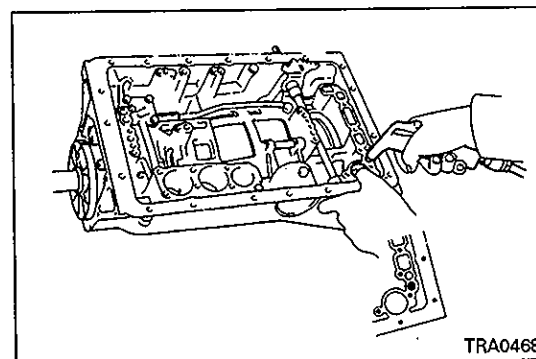
- (24) Remove the two springs from the C<sub>0</sub> accumulator piston.  
 (25) Remove the check ball body and spring.  
 (26) Remove the B<sub>2</sub> and C<sub>2</sub> accumulator pistons and two springs by blowing air slowly from the illustrated oil hole.

## NOTE

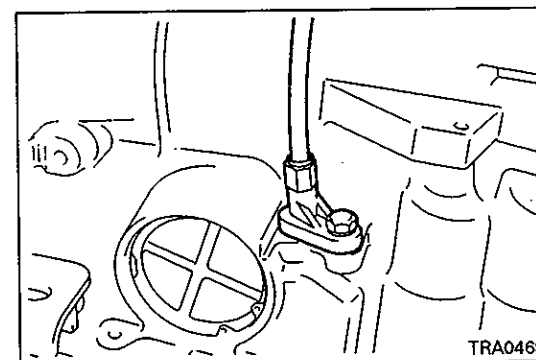
Both B<sub>2</sub> and C<sub>2</sub> pistons can be released by blowing air while pushing the B<sub>2</sub> piston stronger.



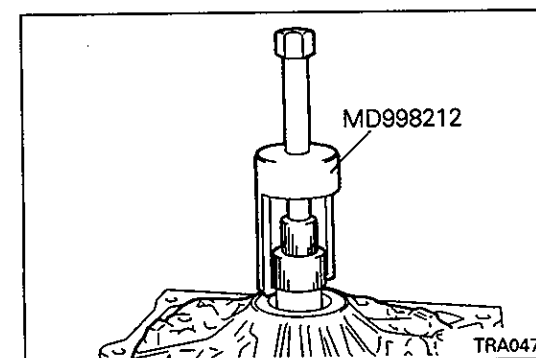
- (27) Remove the B<sub>0</sub> accumulator piston and spring by blowing air slowly from the illustrated oil hole.



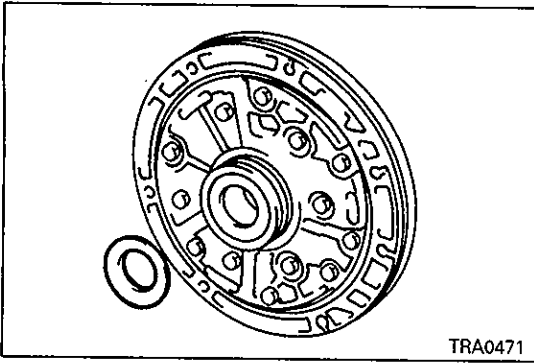
- (28) Remove the C<sub>0</sub> accumulator piston and spring by blowing air slowly from the illustrated oil hole.  
 (29) Remove the O-ring from each piston.



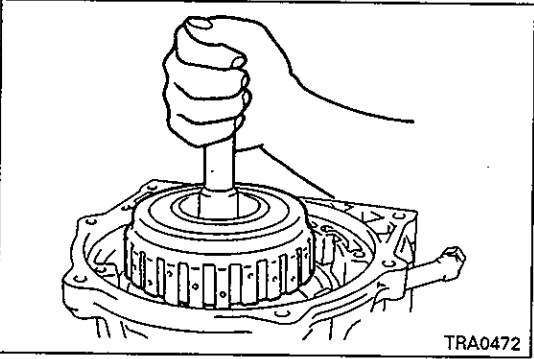
- (30) Remove the bolt. Pull out the throttle cable while holding the retainer.  
 (31) Remove the O-ring from the throttle cable.



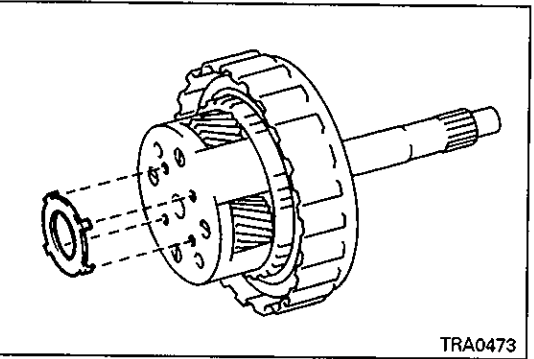
- (32) Remove the 7 bolts attaching the oil pump.  
 (33) Using the special tool (oil pump puller), remove the oil pump.



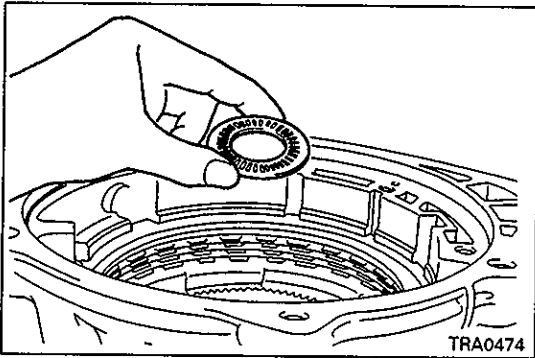
(34) Remove the race from the rear side of the oil pump.



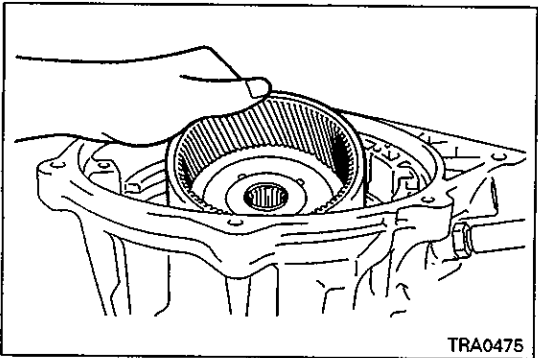
(35) Holding the input shaft by hand, remove the overdrive planetary gear assembly and overdrive direct clutch assembly.



(36) Remove the race from the rear side of the overdrive planetary gear.

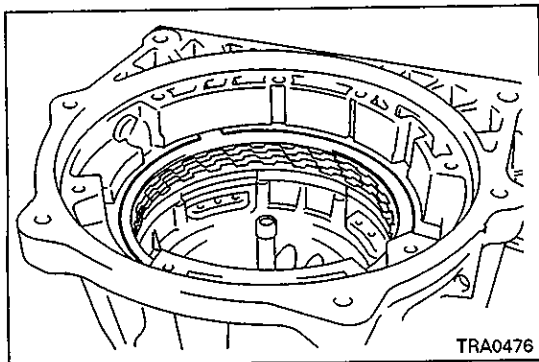


(37) Remove the bearing and race.

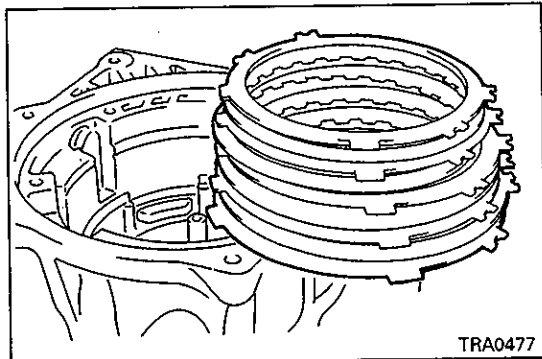


(38) Remove the overdrive planetary ring gear.





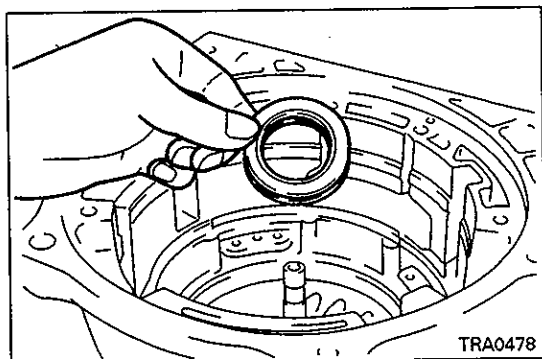
(39) Remove the snap ring.



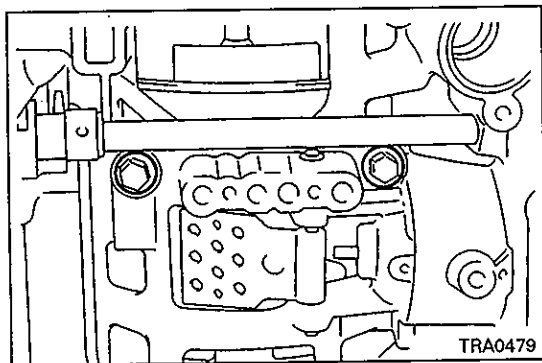
(40) Remove the two flanges, four discs and three plates of the overdrive brake.

NOTE

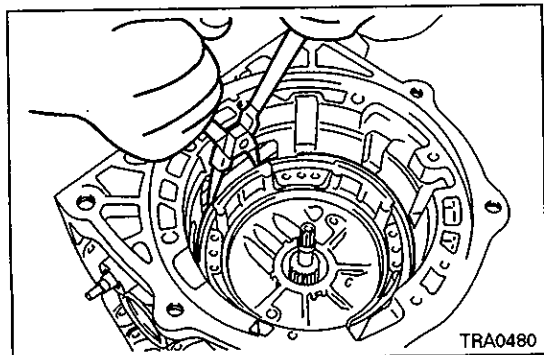
Remember the direction in which the brake flanges have been installed.



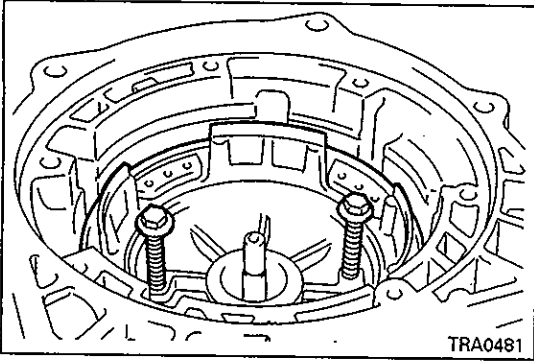
(41) Remove the race and bearing.



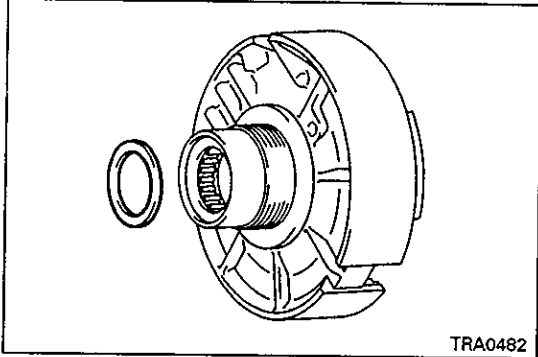
(42) Remove the two bolts attaching the overdrive support.



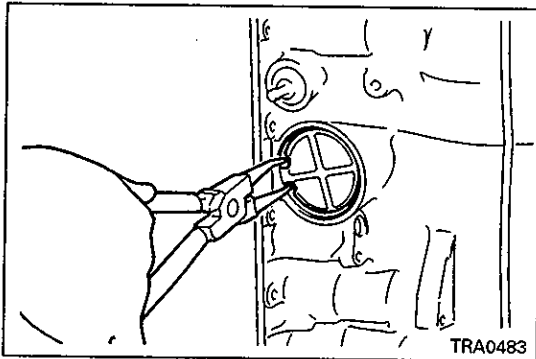
(43) Remove the snap ring.



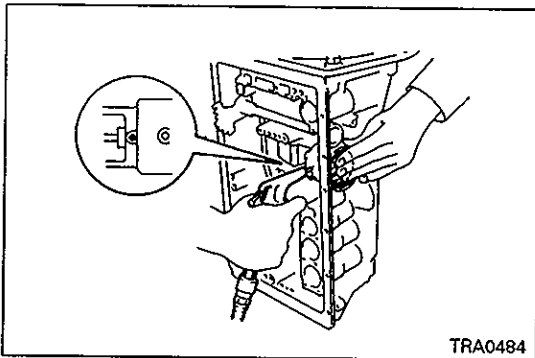
(44) Remove the overdrive support assembly by making use of the two overdrive support mounting bolts.



(45) Remove the race from the rear side of the overdrive support assembly.



(46) Remove the snap ring from the second coast brake piston.

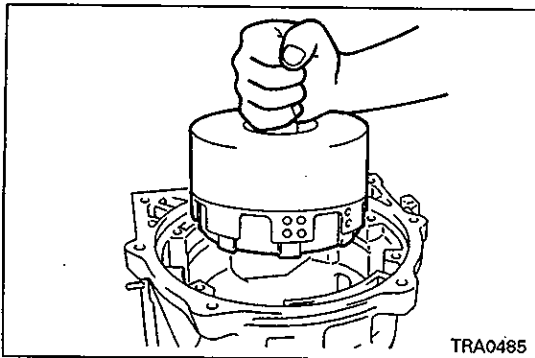


(47) Remove the second coast brake cover, piston assembly and spring by blowing air slowly from the illustrated oil hole.

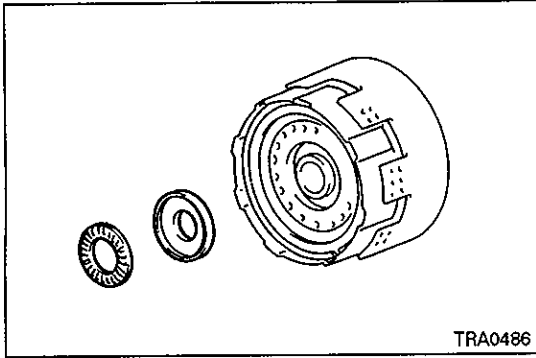
**Caution**

- Use a shop towel, etc. to prevent the cover and fluid from popping and gushing out.

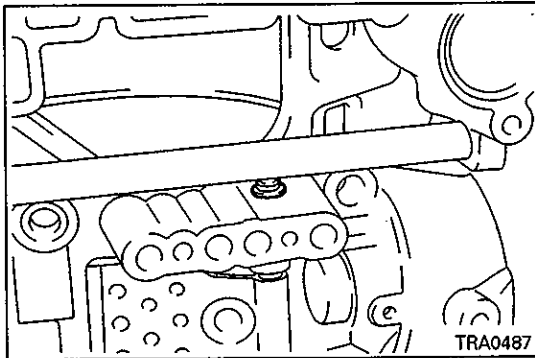
(48) Remove the two O-rings from the piston cover.



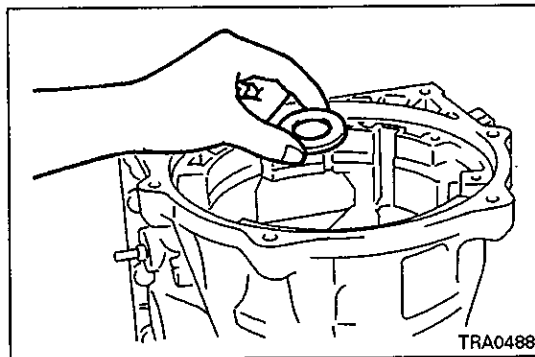
(49) Holding the input shaft of the forward clutch, remove the forward clutch assembly and direct clutch assembly.



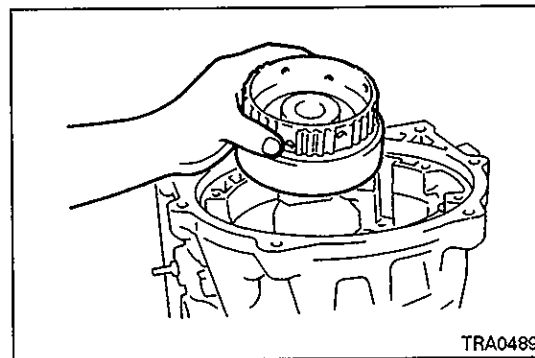
(50) Remove the race and bearing from the rear side of the forward clutch assembly.



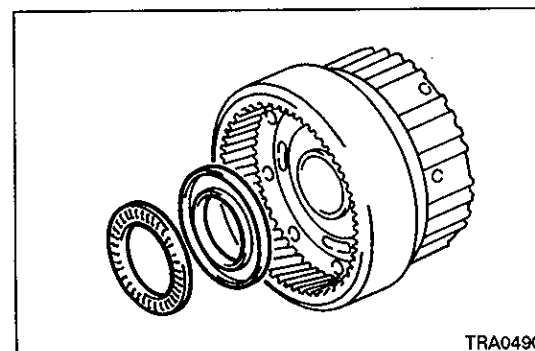
(51) Push the E-ring out of position and pull out the pin downward. Then remove the second coast brake band.  
 (52) Remove the E-ring from the pin.



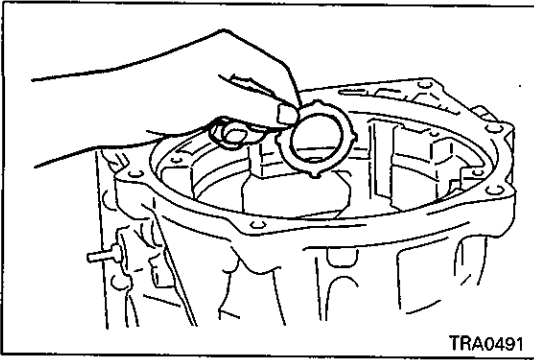
(53) Remove the race.



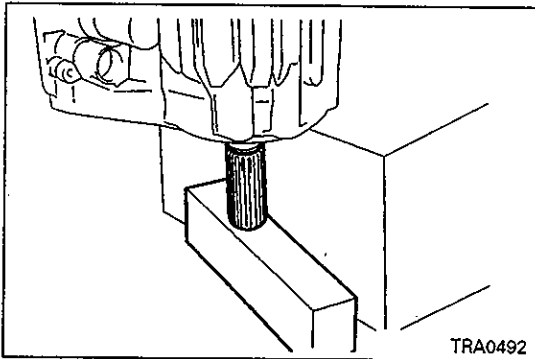
(54) Remove the front planetary ring gear.



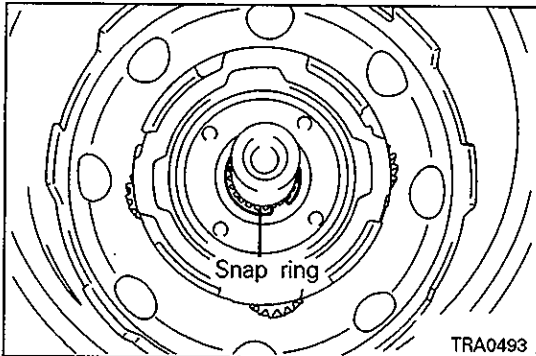
(55) Remove the race and bearing from the rear side of the front planetary ring gear.



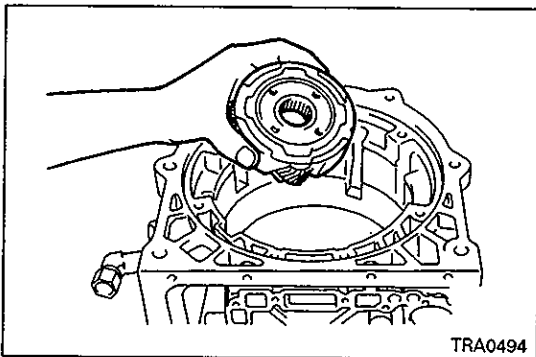
(56) Remove the race.



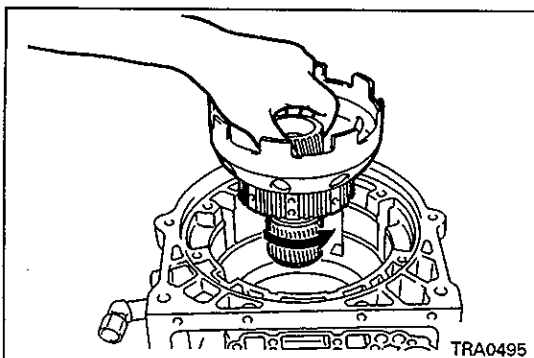
(57) Use wood pieces or the like so as to push the output shaft a little toward the front side.



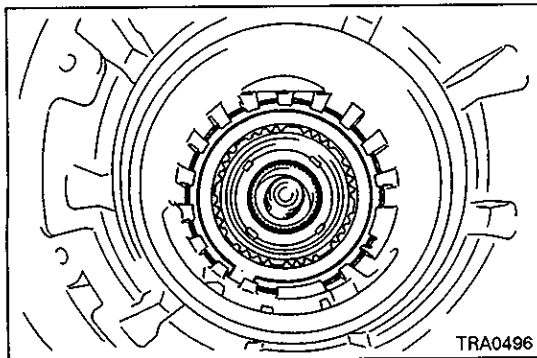
(58) Remove the snap ring.



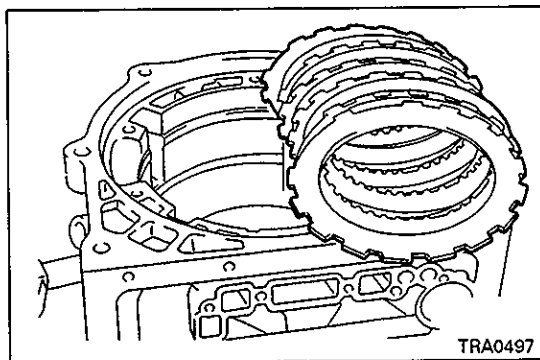
(59) Remove the front planetary gear assembly.  
 (60) Remove the bearing.



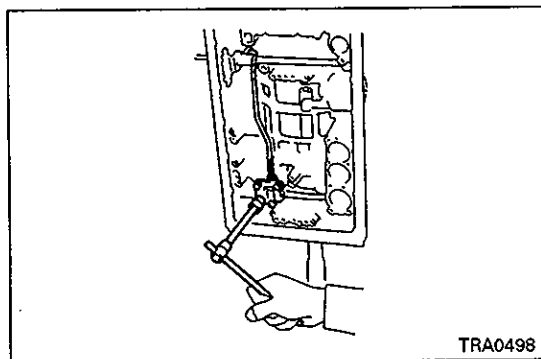
(61) Rotate the sun gear input drum counterclockwise to remove it together with the one-way clutch assembly.



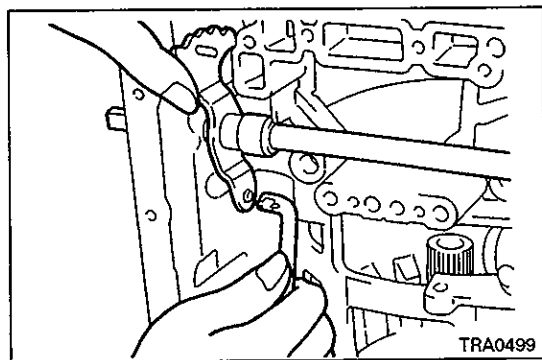
(62) Remove the snap ring.



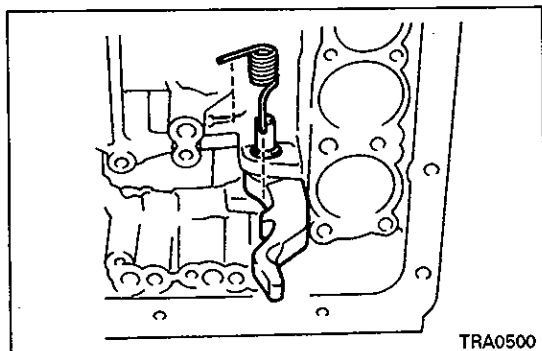
(63) Remove the flange, five discs and five plates of the flange.



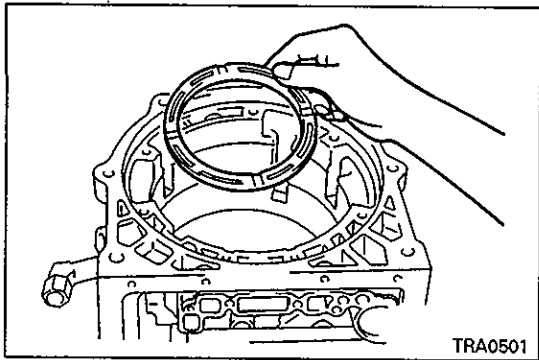
(64) Remove the three bolts and then remove the parking lock pawl bracket.



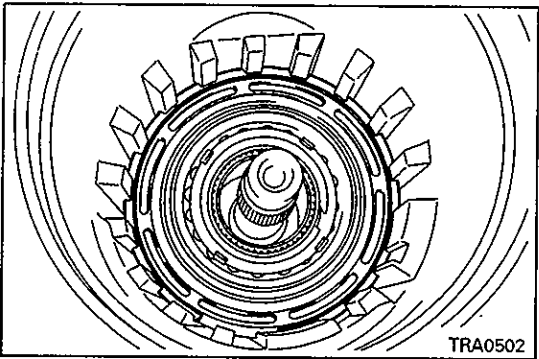
(65) Remove the parking lock rod from the manual valve lever.



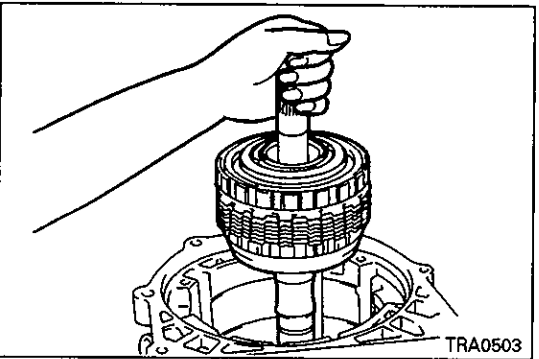
(66) Remove the spring, parking lock pawl shaft and pawl.  
 (67) Remove the E-ring from the parking lock pawl shaft.



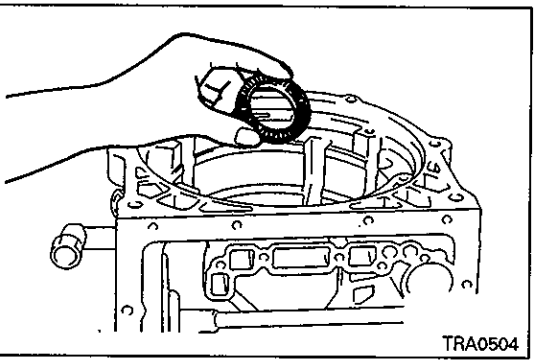
(68) Remove the second brake piston sleeve.



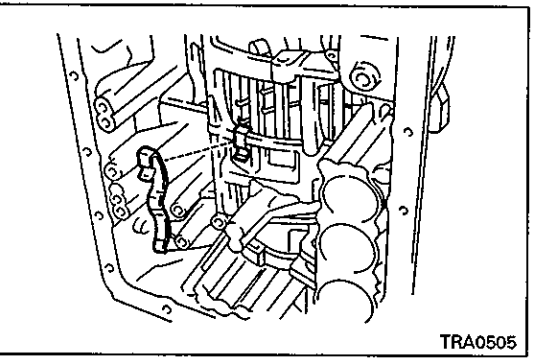
(69) Remove the snap ring.



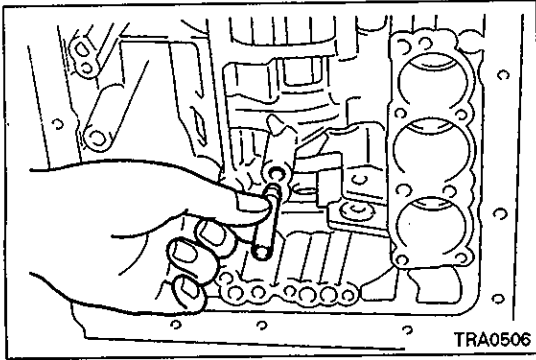
(70) Remove the output shaft, second brake drum sub-assembly and rear planetary gear assembly together.



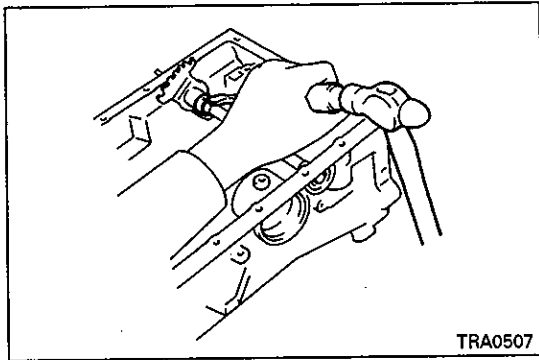
(71) Remove the bearing with the attached race from the transmission case.



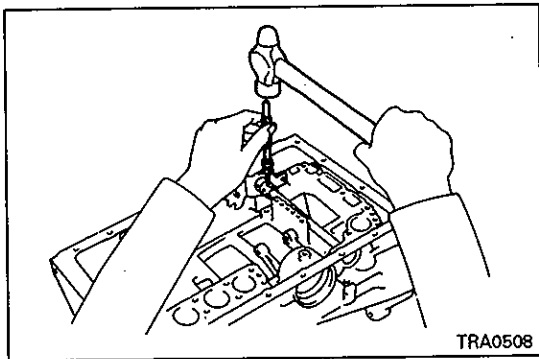
(72) Remove the leaf spring from the transmission case.



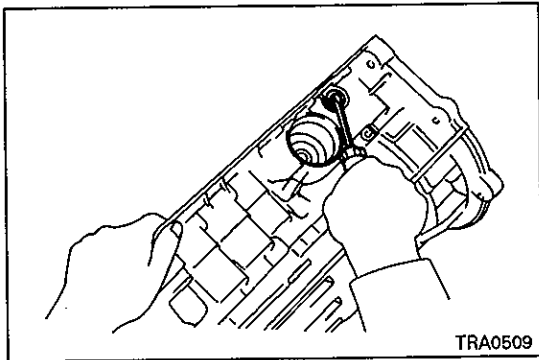
(73) Remove the brake drum gasket.



(74) Using a screwdriver, etc., unstick the spacer.



(75) Using a pin punch, drive out the slotted spring pin.  
 (76) Pull out the manual valve lever shaft and remove the manual valve lever.  
 (77) Remove the spacer from the manual valve lever.

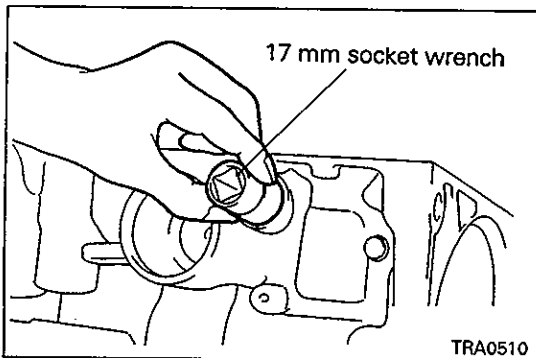


(78) Remove the two oil seals from the manual valve lever shaft.

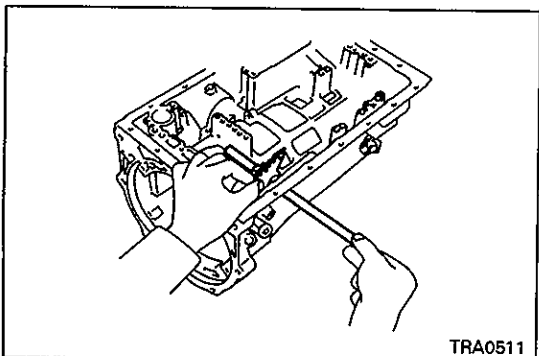
## REASSEMBLY

### Caution

- The automatic transmission is composed of component parts of an especially high degree of precision. During reassembly, therefore, handle these component parts very carefully so as not to scar or scratch them. Damage may cause fluid leakage and degeneration in performance. Check each part carefully before installation.
- Clean all parts thoroughly before reassembly. Metal parts may be cleaned with ordinary detergents, but must be thoroughly air-dried.
- Clean the clutch discs, brake discs, resin thrust plates and rubber parts by using ATF (automatic transmission fluid), being very careful that dust, dirt, etc. do not adhere to them.
- Do not reuse gaskets, oil seals, or other rubber parts. Be sure to replace them with new ones.
- Do not use grease other than petrolatum jelly.
- Apply ATF to friction components, rotating parts, and sliding parts before installation.
- Dip the new clutch discs and brake discs in ATF for at least two hours before installation.
- Do not apply sealer or adhesive to gaskets.
- When a bushing must be replaced, replace the assembly in which it is incorporated.
- Tighten each component to the specified torque.

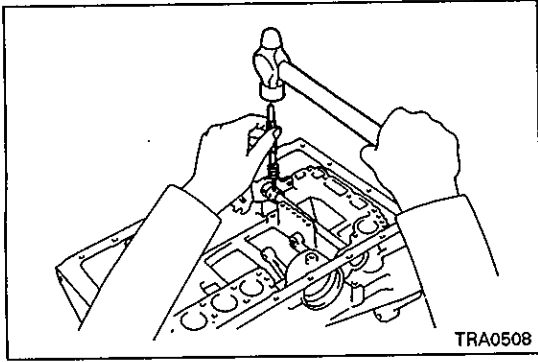


- (1) Using an appropriate socket wrench, etc., drive in the two oil seals until they are flush with the end face of the transmission case.

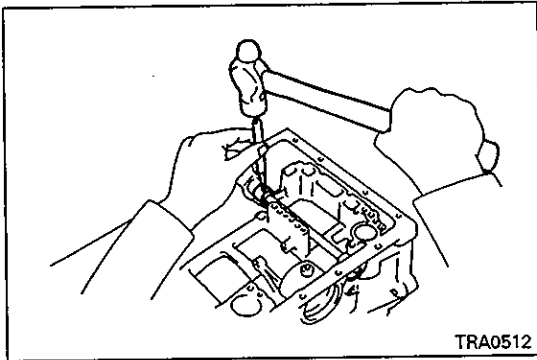


- (2) Install a new spacer to the manual valve lever.
- (3) Install the manual valve lever and shaft in the transmission case.

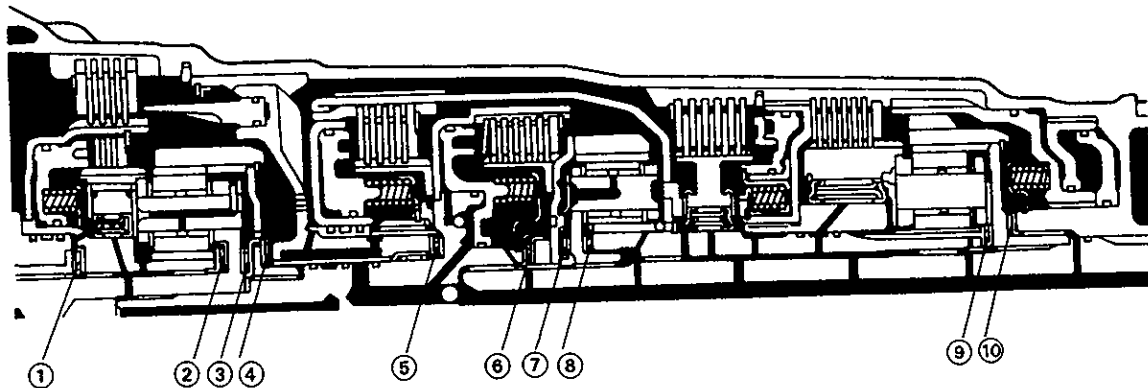
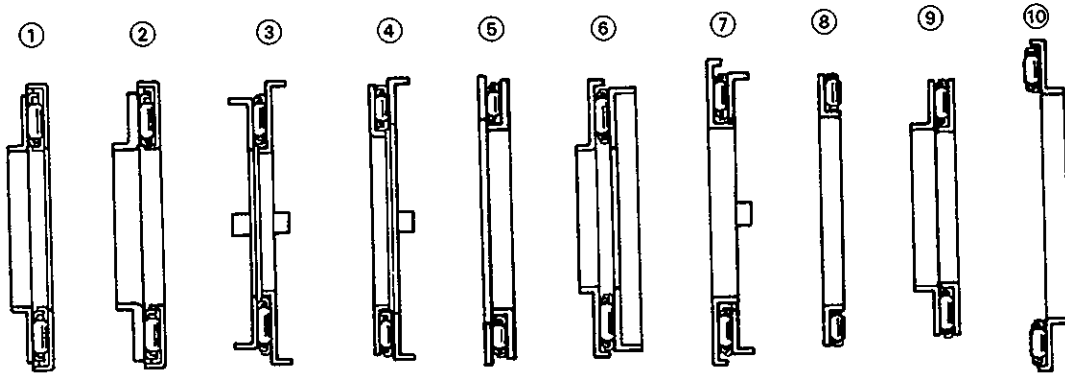




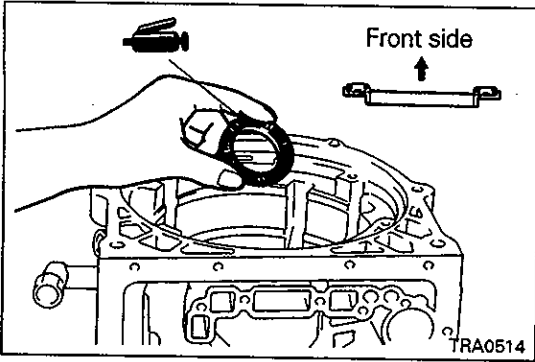
(4) Align the hole in the manual valve lever with that in the shaft and drive in a new slotted spring pin to fix them.



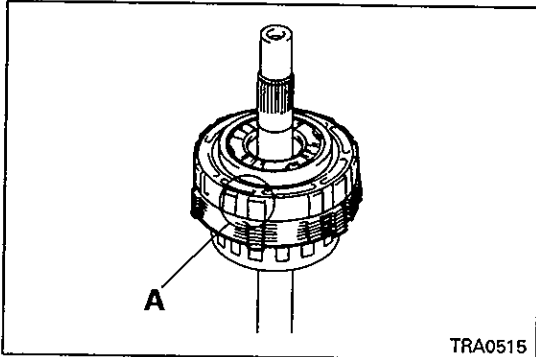
(5) Align the indentation in the manual valve lever with the spacer hole and stake it firmly using a punch.  
 (6) Check that the manual valve lever shaft rotates smoothly.  
 (7) Place wood pieces (used in disassembly) below the transmission case to prevent the output shaft from dropping.



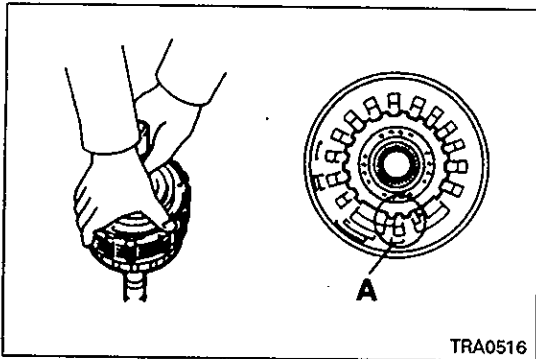
TRA0513



(8) Apply petrolatum to the bearing with race [57.7mm (2.27 in.) in outer diameter and 39.2 mm (1.54 in.) in inner diameter] and attach it in the transmission case.



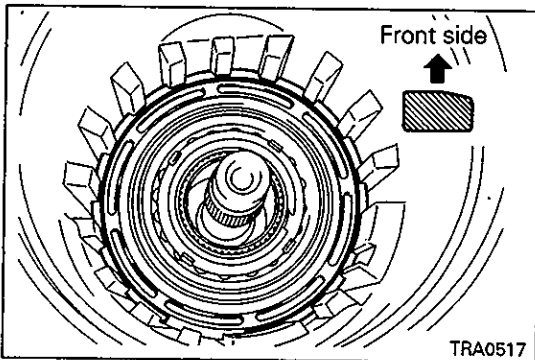
(9) As illustrated, align the lugs of the flange, disc, plate and second brake drum.



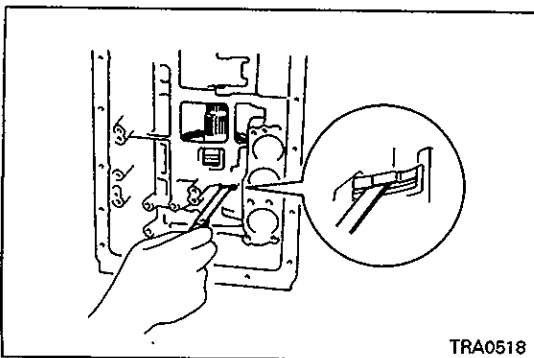
(10) Align the portion A illustrated in step (9) with the portion A of the transmission case. Install the output shaft, second brake drum sub assembly and rear planetary gear assembly together.

**NOTE**

While holding the input shaft, push the second brake drum.



(11) Install the snap ring along the groove.

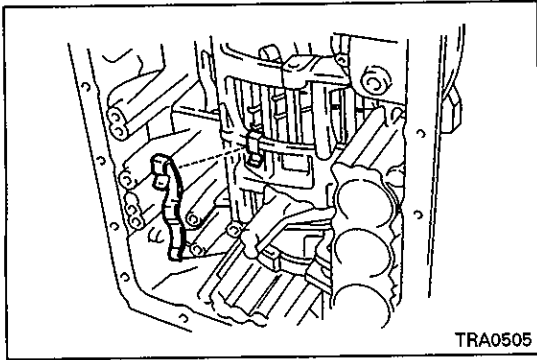


(12) Check the clearance between the second brake drum and the plate inserting a feeler gauge from the service hole on the valve body side.

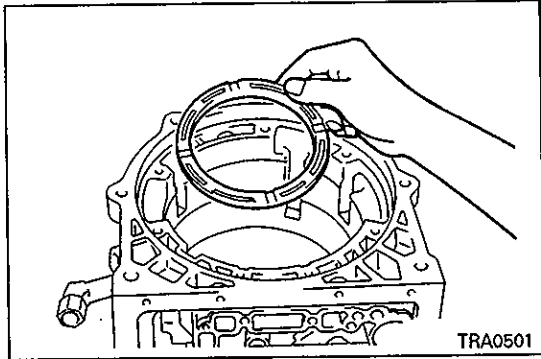
**Standard value:**

0.6 – 1.12 mm (0.024 – 0.044 in.) ..... 4M40, 6G72  
 0.7 – 1.22 mm (0.028 – 0.048 in.) ..... 6G74

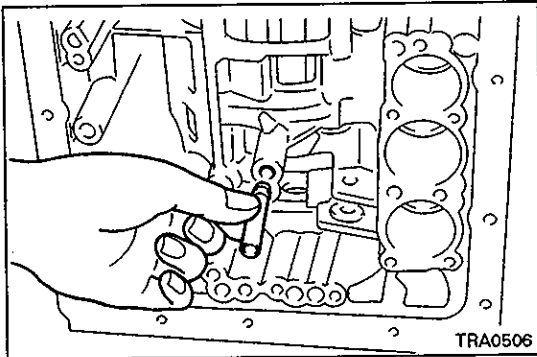
If the clearance is not within this range, the second brake drum may have not been installed properly. In this case, reinstall it and check the clearance again.



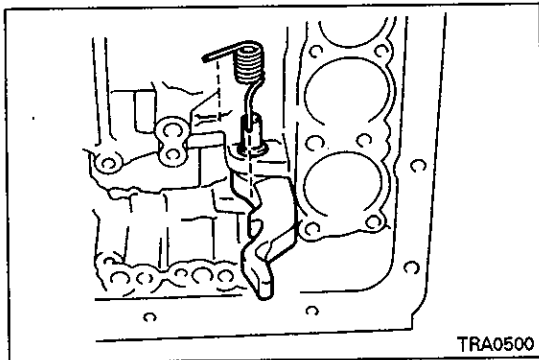
(13) Install the leaf spring.



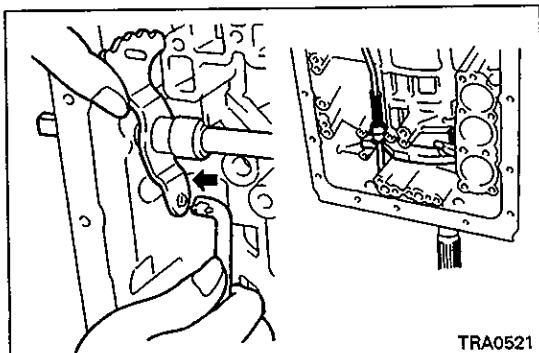
(14) With the indented side of the second brake piston sleeve up, install it firmly.  
 (15) Check that the thrust washer No.2 is installed on the second brake drum.



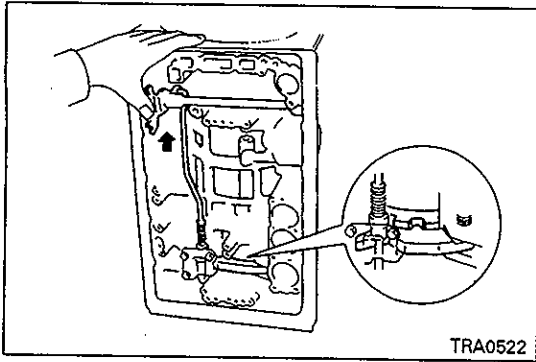
(16) Apply ATF to the new brake drum gasket and install it from the valve body side.



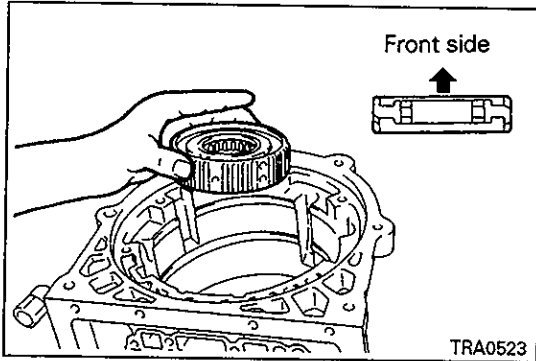
(17) Install the E-ring to the parking lock pawl shaft.  
 (18) Install the parking lock pawl, shaft and spring.



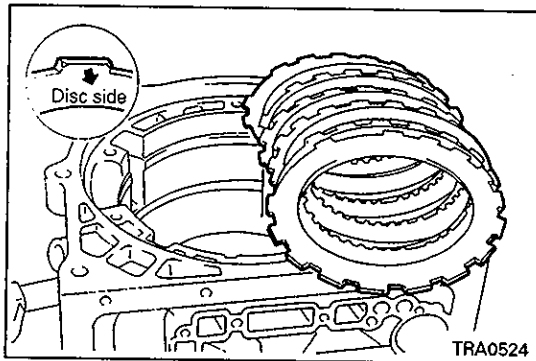
(19) Install the parking lock rod to the manual valve lever and place it on the lock pawl.  
 (20) With three bolts, install the parking lock pawl bracket.



- (21) By shifting the manual valve lever toward the P range, check that the lock pawl locks the planetary ring gear.



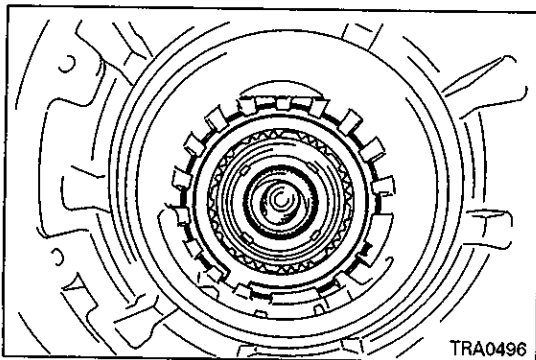
- (22) Install the one-way clutch assembly in the illustrated direction.



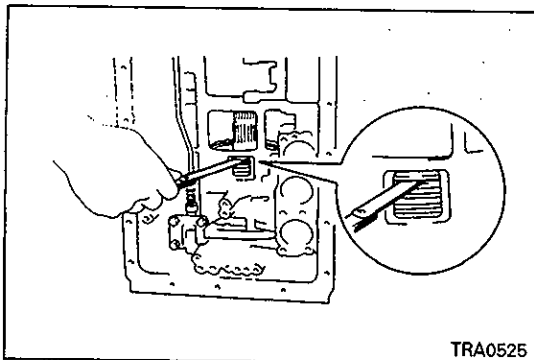
- (23) Install the 1.8 mm (0.070 in.) plate and then install the five discs and four 2.5 mm (0.098 in.) plates alternately.  
 (24) Install the brake flange.

**NOTE**

The 1.8 mm (0.070 in.) plate and the brake flange must be installed in such a way that their chamfers face the disc side.



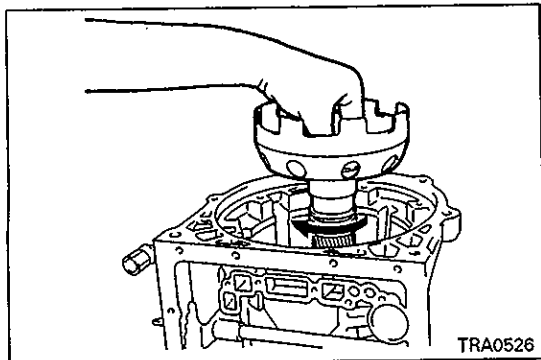
- (25) Install the snap ring.



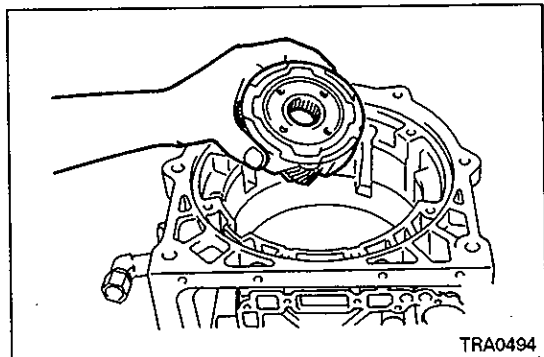
- (26) Check the clearance between the snap ring and flange by inserting a feeler gauge from the service hole on the valve body side.

**Standard value: 0.62 – 1.98 mm (0.024 – 0.078 in.)**

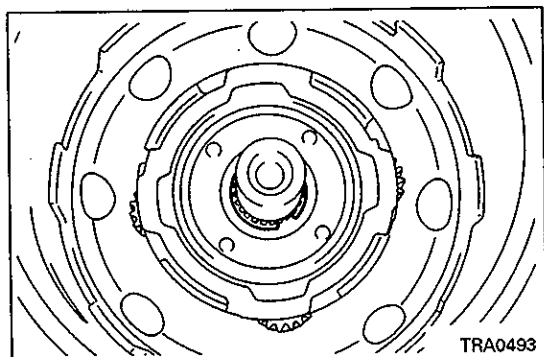
If the clearance is not within this range, an improper installation is suspected. In this case, reassemble and check the clearance again.



(27) Check that the one-way clutch No.1 washer is installed to the sun gear input drum. Push in the sun gear input drum fully while rotating it clockwise.



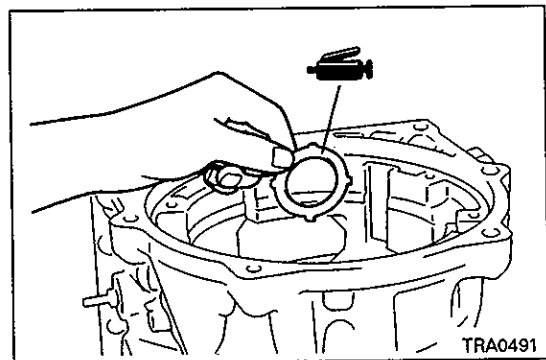
(28) Check that the race and bearing are installed to the rear side of the front planetary gear. Install the planetary gear assembly to the sun gear.



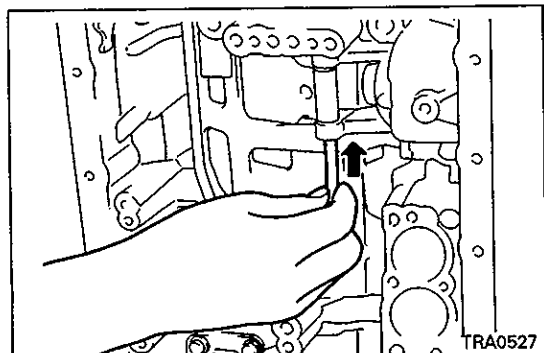
(29) While pushing the output shaft to the front side, install a new snap ring [23.7 mm (0.93 in.) in inner diameter] to the output shaft.

**Caution**

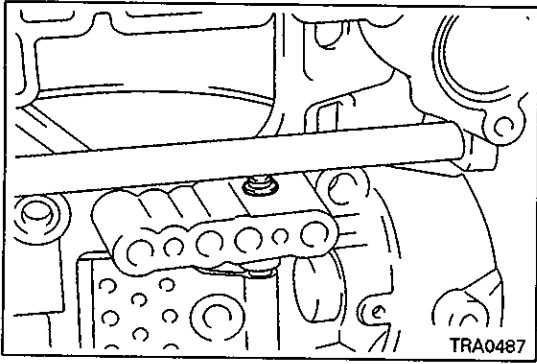
- Do not open the snap ring more than necessary.



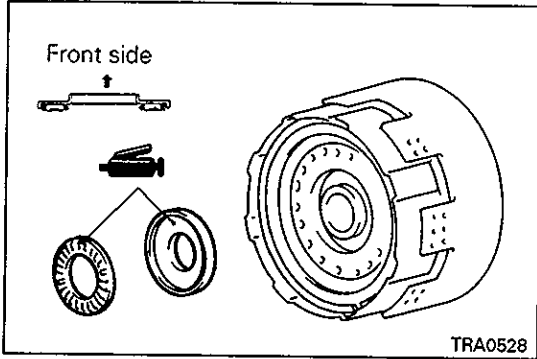
(30) Apply petrolatum to the race [47.8 mm (1.88 in.) in outer diameter and 34.3 mm (1.35 in.) in inner diameter]. Aligning its four lugs with the holes in the planetary gear assembly, install it thereon.



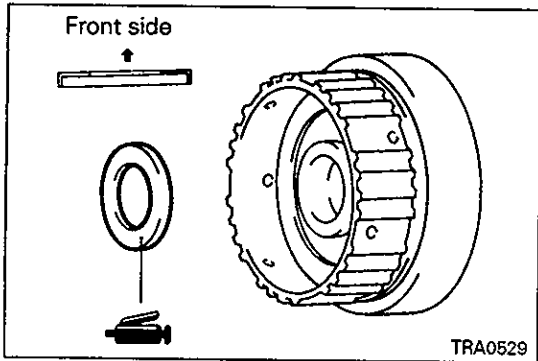
(31) Insert the second coast brake band in the transmission case.  
 (32) Attach a new E-ring to one side of the pin and install it through the second coast brake band.



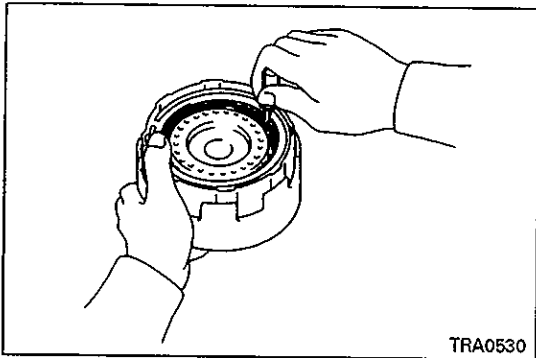
(33) Attach a new E ring to the upper side of the pin.



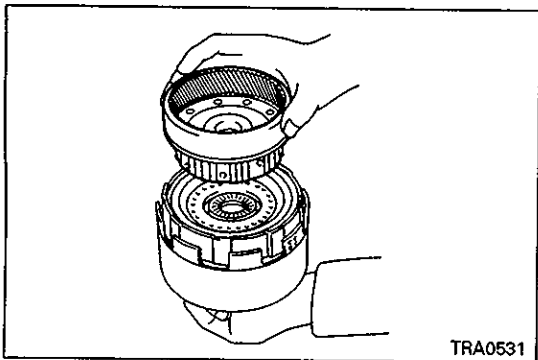
(34) Apply petrolatum to the front side race [48.9 mm (1.93 in.) in outer diameter and 26.0 mm (1.02 in.) in inner diameter] and bearing [46.7 mm (1.84 in.) in outer diameter and 26.0 mm (1.02 in.) in inner diameter] and install them to the rear side of the forward clutch.



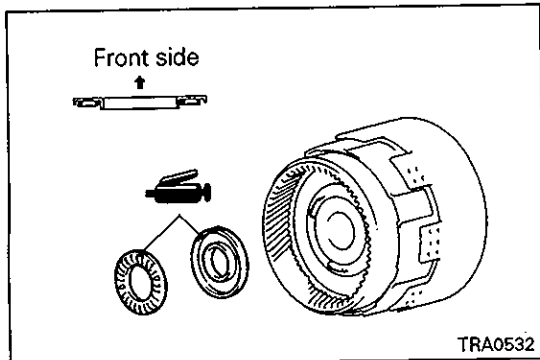
(35) Apply petrolatum to the rear side race [47.0 mm (1.85 in.) in outer diameter and 26.8 mm (1.06 in.) in inner diameter] and install it to the front side of the front planetary ring gear.



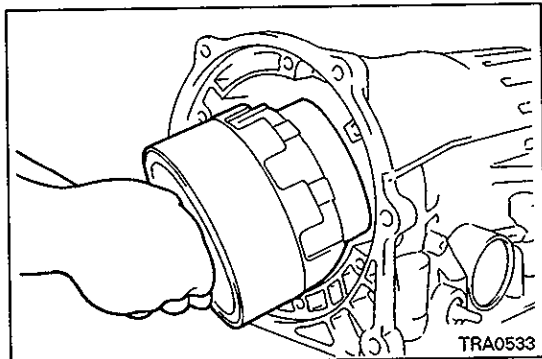
(36) Using a screwdriver, align the forward clutch disc lugs.



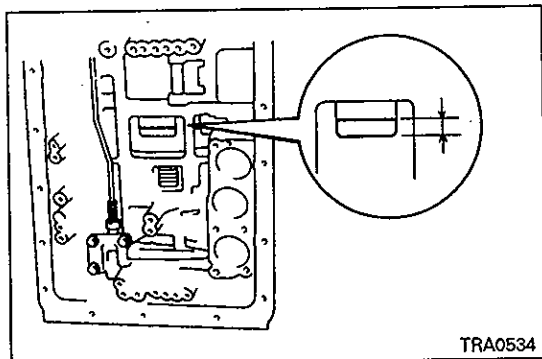
(37) Install the front planetary ring gear to the forward clutch assembly by lightly pushing and rotating it.



(38) Apply petrolatum to the race [53.6 mm (2.11 in.) in outer diameter and 30.6 mm (1.20 in.) in inner diameter] and bearing [47.4 mm (1.87 in.) in outer diameter and 32.6 mm (1.28 in.) in inner diameter] and install them to the ring gear.



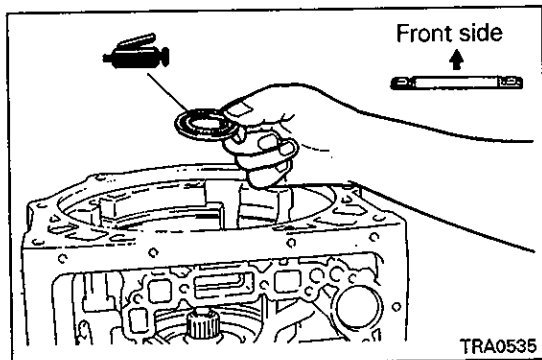
(39) Install the direct clutch assembly, forward clutch assembly and ring gear together in the transmission case.



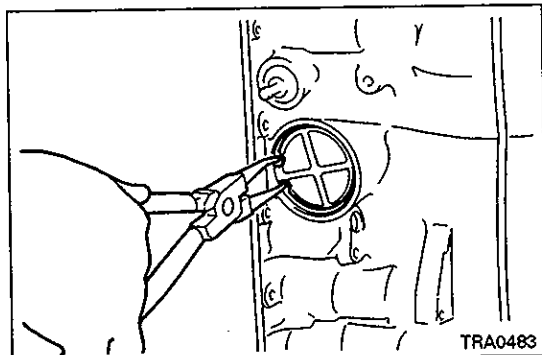
(40) Using a caliper, check the clearance between the sun gear input drum and the lug edge of the direct clutch drum.

**Reference value: 5.3 - 7.3 mm (0.21 - 0.29 in.)**

If the clearance is not within this range, the direct clutch, forward clutch and ring gear may have not be installed properly. In this case, reinstall them and check the clearance again.



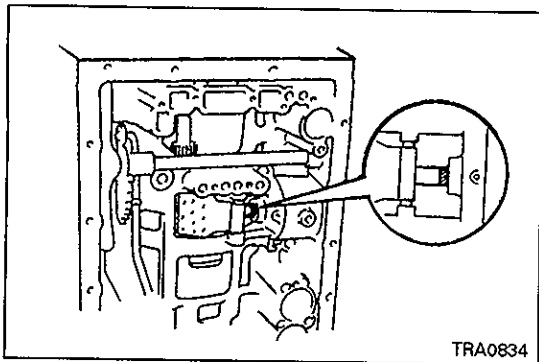
(41) Apply petrolatum to the bearing with race [47.6 mm (1.87 in.) in outer diameter and 33.7 mm (1.33 in.) in inner diameter] and slide it over the input shaft of the forward clutch.



(42) Apply ATF to two new O-rings and attach them to the piston cover.

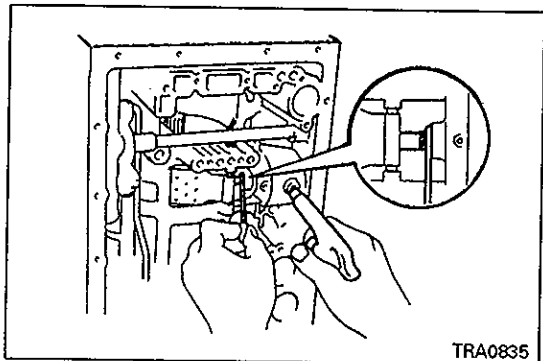
(43) Install the spring, piston assembly and piston cover.

(44) Install the snap ring.



TRA0834

(45) Apply minimum oil on the second coast brake piston rod.



TRA0835

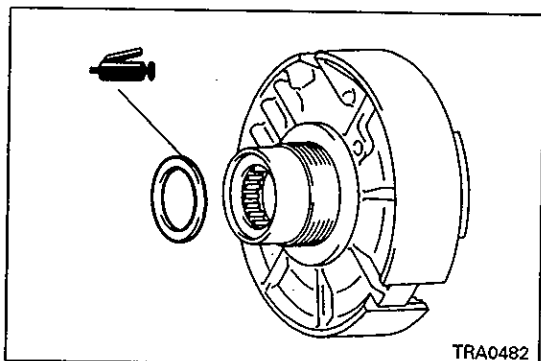
(46) Apply air pressure [400 – 800 kPa (4 – 8 kg/cm<sup>2</sup>, 56 – 113 psi) ] to the oil hole shown in the illustration, and measure the stroke of the second coast brake piston using wire gauges.

**Standard value: 1.5 – 3.0 mm (0.059 – 0.118 in.)**

**NOTE**

Measure the stroke several times and take an average.

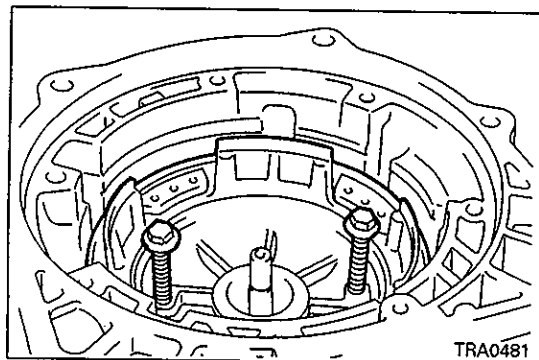
(47) If the stroke is out of specification, reinstall the piston and measure the piston stroke again.



TRA0482

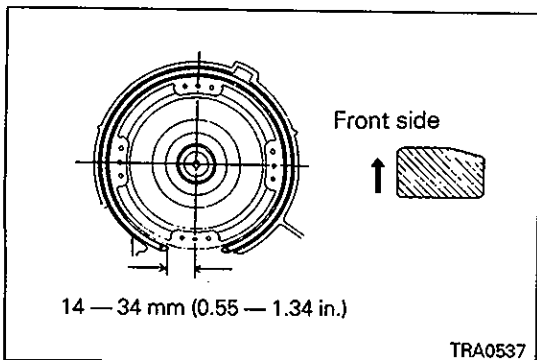
(48) Check that the clutch drum thrust washer is attached to the rear side of the overdrive support.

(49) Apply petrolatum to the race [50.9 mm (2.00 in.) in outer diameter and 36.8 mm (1.45 in.) in inner diameter] and attach it to the rear side of the overdrive support.



TRA0481

(50) While aligning the oil hole and bolt hole of the overdrive support with the bolt holes in the transmission case using the two overdrive support attaching bolts, insert the overdrive support in the transmission case toward the valve body side.

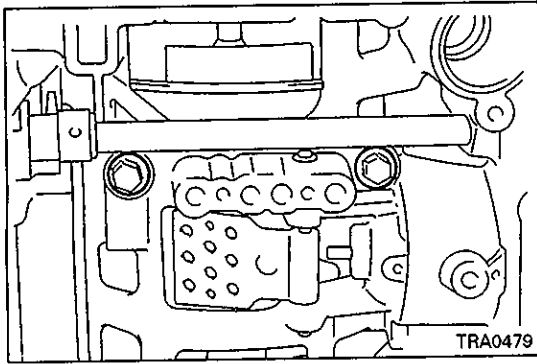


TRA0537

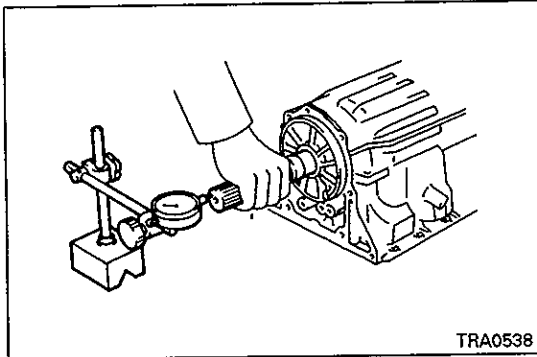
(51) Install the snap ring as illustrated.

**Standard value: 14 – 34 mm (0.55 – 1.34 in.)**





(52) Alternately tighten the two overdrive support attaching bolts uniformly and little by little.



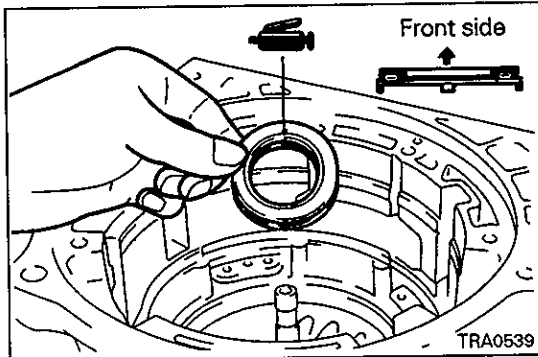
(53) Apply a dial gauge to the end of the output shaft and check its end play.

**Standard value: 0.27 – 0.86 mm (0.011 – 0.034 in.)**

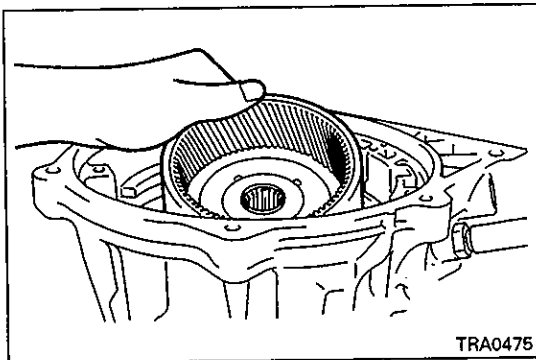
(54) Check that the output shaft rotates smoothly.

NOTE

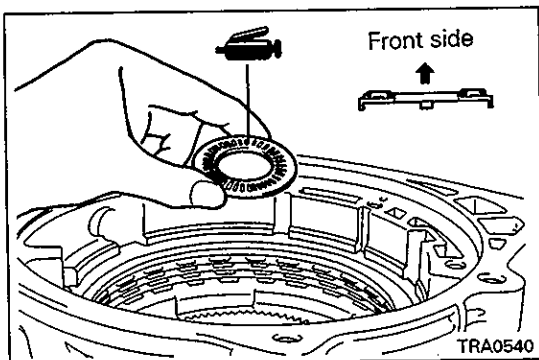
Check that the output shaft is not in the parking state.



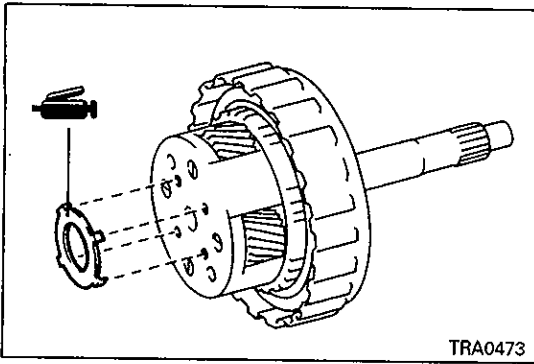
(55) Apply petrolatum to the races [58.8 mm (2.31 in.) in outer diameter and 37.2 mm (1.46 in.) in inner diameter] and bearing [51.1 mm (2.01 in.) in outer diameter and 33.7 mm (1.33 in.) in inner diameter]. Aligning the four bearing lugs with the overdrive support notches, attach the bearing and then the races to the overdrive support.



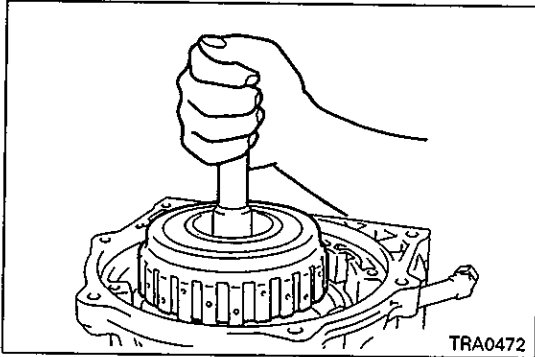
(56) Install the overdrive planetary ring gear.



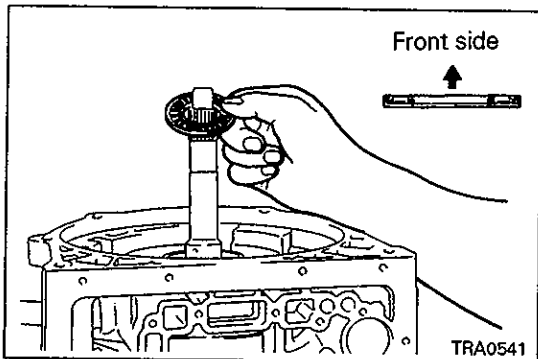
(57) Apply petrolatum to the race [47.8 mm (1.88 in.) in outer diameter and 24.2 mm (0.95 in.) in inner diameter] and bearing [46.8 mm (1.84 in.) in outer diameter and 26.0 mm (1.02 in.) in inner diameter]. Aligning the four bearing lugs with the holes of the ring gear, attach the race and bearing to the gear.



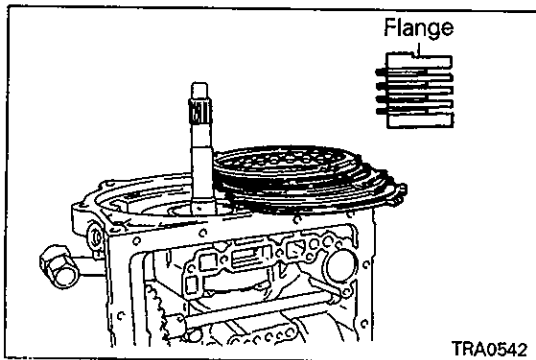
(58) Apply petrolatum to the race [41.8 mm (1.65 in.) in outer diameter and 27.3 mm (1.07 in.) in inner diameter]. Aligning the four race lugs with the holes of the overdrive planetary gear, attach it to the gear.



(59) Holding the input shaft, install the overdrive planetary gear assembly and overdrive direct clutch assembly together.



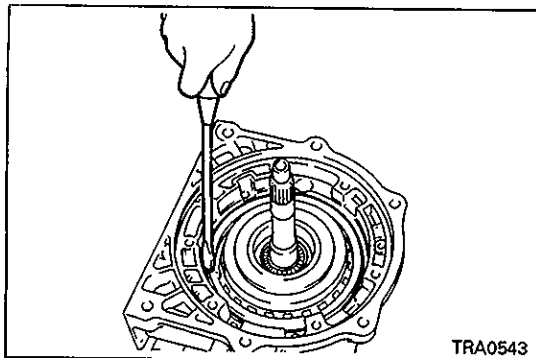
(60) Install the race with bearing [50.2 mm (1.98 in.) in outer diameter and 28.9 mm (1.14 in.) in inner diameter] through the input shaft.



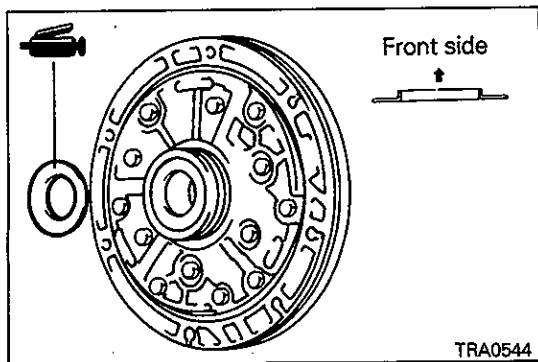
(61) Install one 4.0 mm (0.16 in.) thickness flange in such a way that its chamfer faces the disc side. Install the four discs and three plates alternately. Install the other flange in the illustrated direction.

**Caution**

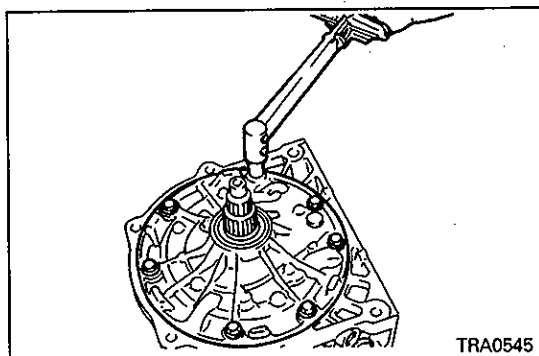
- When the 4.0 mm (0.16 in.) flange is used also on the front side, its chamfer must also face the disc side.



(62) Install the snap ring.

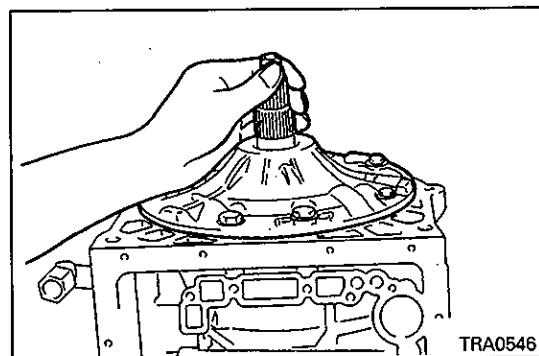


(63) Apply petrolatum to the race [47.3 mm (1.86 in.) in outer diameter and 28.1 mm (1.11 in.) in inner diameter] and attach it to the rear side of the oil pump.

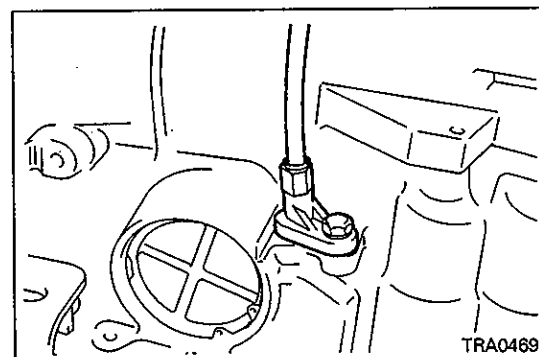


(64) Align the bolt holes in the oil pump with those in the transmission case.

(65) Install the oil pump by hitting at its upper face lightly and uniformly with a plastic hammer. Then, fix it by tightening the seven bolts uniformly and little by little.

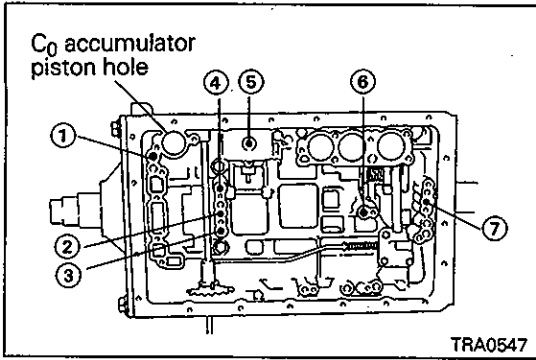


(66) Check that the input shaft rotates smoothly.



(67) Apply ATF to a new O-ring and attach it to the throttle cable.

(68) Install the throttle cable to the transmission case.



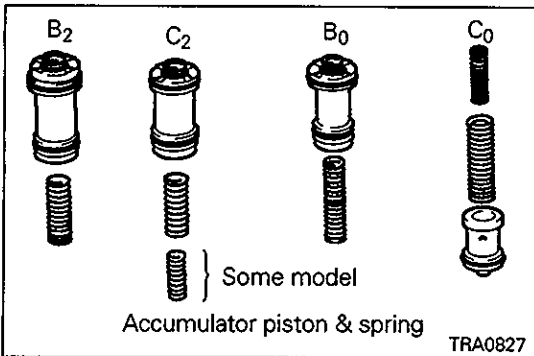
(69) Blow air in each illustrated oil hole to check for operation noise.

- ① Overdrive direct clutch
- ② Direct clutch
- ③ Forward clutch
- ④ Overdrive brake
- ⑤ Second coast brake
- ⑥ Second brake
- ⑦ First & reverse brake

**Caution**

- When checking the overdrive direct clutch, close the C<sub>0</sub> accumulator piston hole.

If no operation noise is recognized, disassemble the structure and check if each part is installed properly.



(70) Apply ATF to the new O-rings.

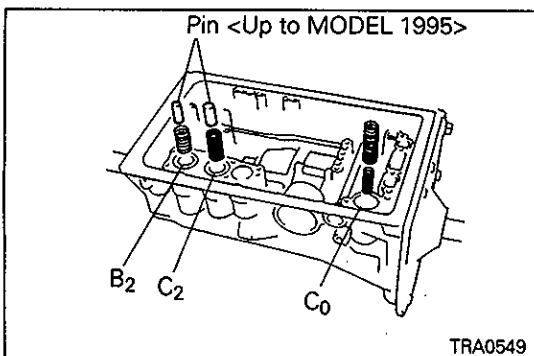
(71) Install the spring, accumulator piston and pin <Up to MODEL 1995>.

**Accumulator piston**

Dimension		mm (in.)	
Place	Outer diameter	Length	
B <sub>2</sub>	36.9 (1.45)	62.5 (2.461)	
C <sub>2</sub>	36.9 (1.45)	56.6 (2.228)	
B <sub>0</sub>	31.9 (1.26)	52.0 (2.047)	
C <sub>0</sub>	29.9 (1.18)	44.0 (1.732)	

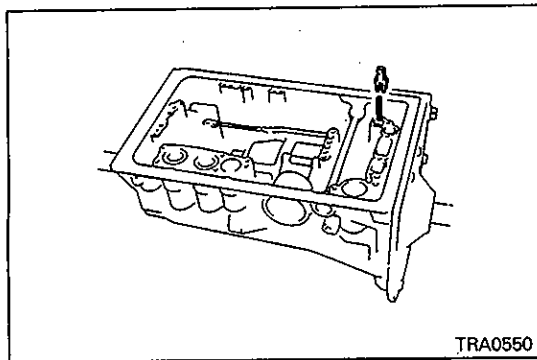
[Reference]

Each piston has an identification code (B<sub>2</sub>, C<sub>2</sub>, B<sub>0</sub> or C<sub>0</sub>), indicating the accumulator to which it is to be installed.



**Pin <Up to MODEL 1995>**

Dimension		mm (in.)	
Place	Outer diameter	Inner diameter	
B <sub>2</sub>	11.85 – 12.15 (0.467 – 0.478)	35.0 – 35.4 (1.378 – 1.394)	
C <sub>2</sub>	13.55 – 13.85 (0.533 – 0.545)	33.0 – 33.4 (1.299 – 1.315)	



## Spring

Dimension		mm (in.)			
Place		Free height	Outside diameter	Number of loops	Wire diameter
C <sub>0</sub>	Outer spring 1	74.6 (2.937)	20.9 (0.823)	12.3	2.3 (0.091)
	Outer spring 2	46.0 (1.811)	14.0 (0.551)	12.5	2.2 (0.087)
C <sub>2</sub>	Outer spring 4M40*1	22.0 (0.866)	11.9 (0.469)	5.3	1.7 (0.067)
	6G72 <PAJERO/ MONTERO, 200>	24.0 (0.945)	12.0 (0.472)	5.4	1.7 (0.067)
	6G72 <L400>	21.0 (0.827)	10.5 (0.413)	3.9	1.7 (0.067)
	6G74*1	20.0 (0.787)	12.1 (0.476)	4.5	1.7 (0.067)
	6G74, 4M40*2	22.0 (0.866)	12.0 (0.472)	5.3	1.7 (0.067)
C <sub>2</sub>	Inner spring 4M40*1	64.0 (2.520)	20.2 (0.795)	10.3	2.2 (0.087)
	6G74*1	70.2 (2.764)	20.2 (0.795)	10.1	2.3 (0.091)
	Inner spring1 4M40*2	68.5 (2.697)	20.2 (0.795)	9.1	2.2 (0.087)
	6G72	64.0 (2.520)	20.2 (0.795)	10.3	2.2 (0.087)
	6G74*2	64.0 (2.520)	20.2 (0.795)	12.3	2.2 (0.087)
	Inner spring 2 6G72	42.1 (1.657)	14.7 (0.579)	9.25	2.5 (0.098)
	6G74, 4M40*2	42.1 (1.657)	14.7 (0.579)	7.3	2.5 (0.098)
B <sub>0</sub>	Outer spring	14.5 (0.571)	13.0 (0.512)	3.0	2.1 (0.083)
	Inner spring	62.0 (2.441)	16.0 (0.630)	11.9	2.1 (0.083)
B <sub>2</sub>	Outer spring 4M40*1	17.0 (0.669)	12.7 (0.499)	3.3	2.1 (0.083)
	4M40*2	20.0 (0.787)	14.0 (0.551)	5.2	1.9 (0.075)
	6G72	23.0 (0.901)	14.0 (0.551)	4.9	2.0 (0.079)
	6G74*1	22.0 (0.866)	14.0 (0.551)	5.2	1.9 (0.075)
	6G74*2	19.0 (0.748)	14.0 (0.551)	5.7	2.0 (0.079)

## NOTE

\*1: Except 98 – model PAJERO/MONTERO

\*2: 98 – model PAJERO/MONTERO

Place		Dimension	Free height	Outside diameter	Number of loops	Wire diameter
B <sub>2</sub>	Inner spring 4M40*1		70.5 (2.776)	19.9 (0.783)	10.4	2.4 (0.094)
	4M40*2		72.6 (2.858)	19.9 (0.783)	12.5	2.8 (0.110)
	6G72		70.5 (2.776)	19.7 (0.776)	12.9	2.7 (0.106)
	6G74*1		72.6 (2.858)	19.9 (0.783)	12.5	2.8 (0.110)
	6G74*2		75.3 (2.964)	20.0 (0.787)	14.3	2.7 (0.106)

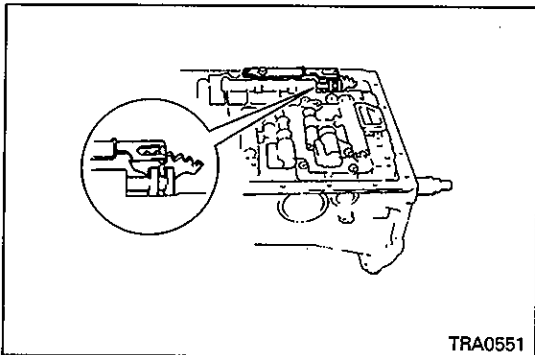
## NOTE

\*1: Except 98 – model PAJERO/MONTERO

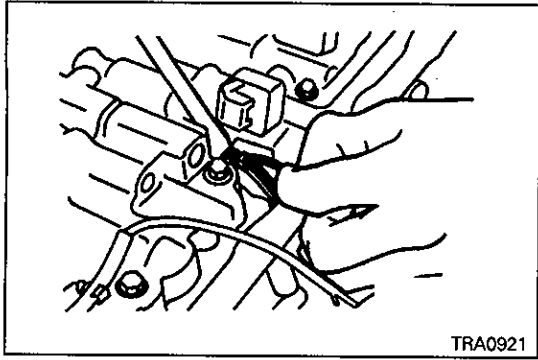
\*2: 98 – model PAJERO/MONTERO

(72) Install the spring and check ball body.

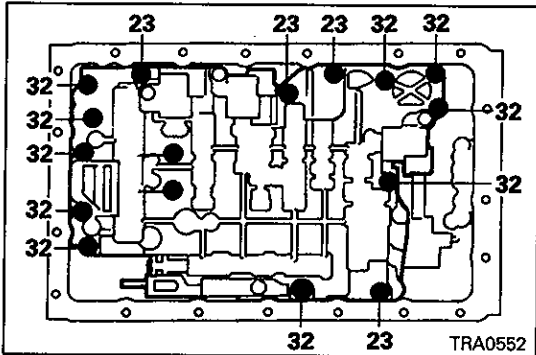
(73) Align the groove of the manual valve with the pin of the manual valve lever.



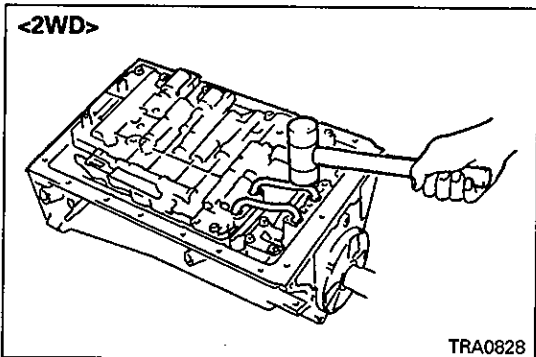
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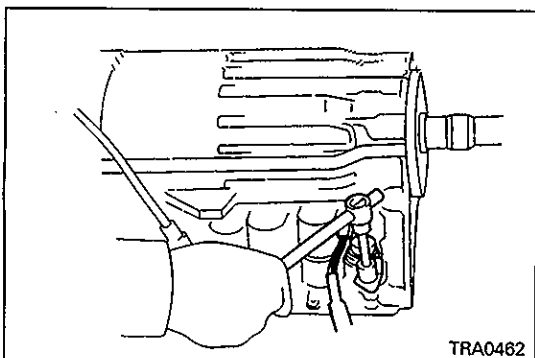
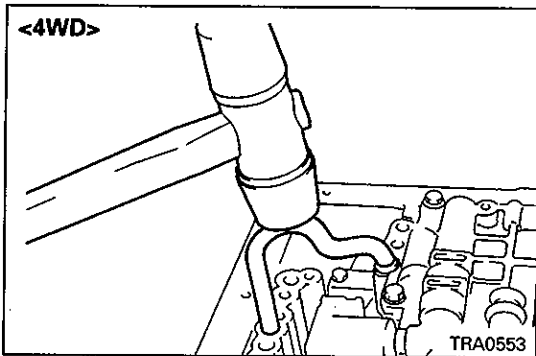
- (74) Install the throttle cable nipple to the throttle cam.
- (75) Check that the spring and collar of the accumulator piston are installed on the valve body side.



- (76) Install the valve body by tightening the 16 bolts uniformly step by step. (The values in the illustration denote the shank length of each bolt.)

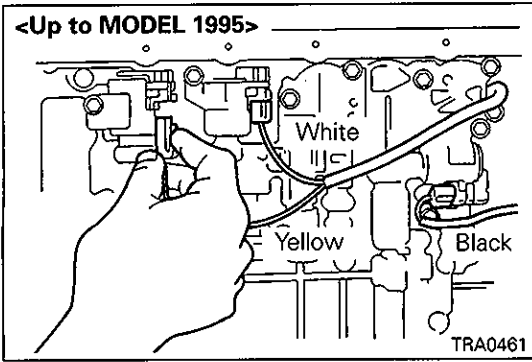


- (77) Using a plastic hammer, install the brake tube.

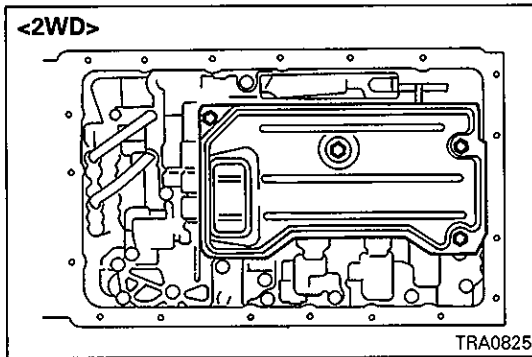
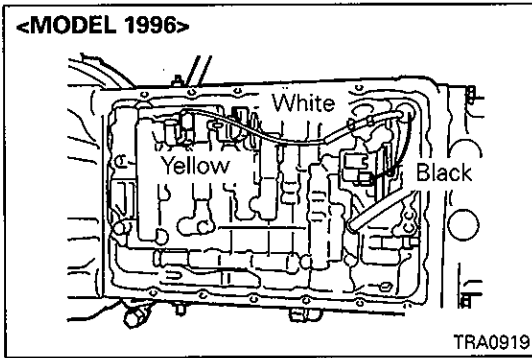


- (78) Apply ATF to a new O-ring.
- (79) Insert the transmission wire in the transmission case and secure it with the stopper plate.

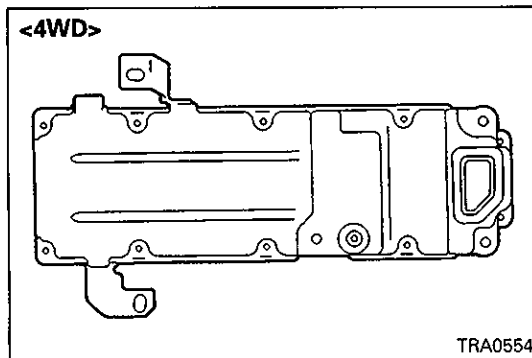




(80) Install the three connectors to the transmission solenoid.

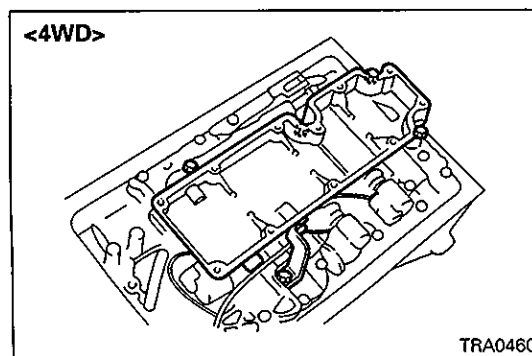


(81) Install the oil screen assembly using the 4 bolts. <2WD>

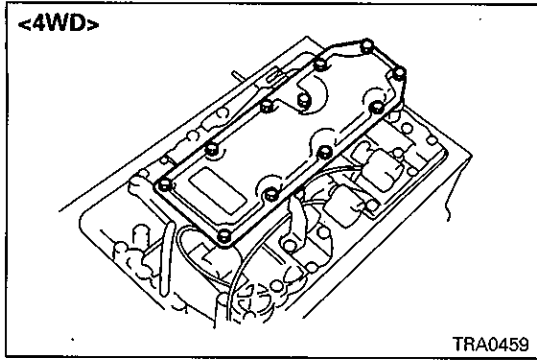


(82) With a scraper and wire brush and by air blow, clean the gasket mounting surface of the oil strainer. <4WD>

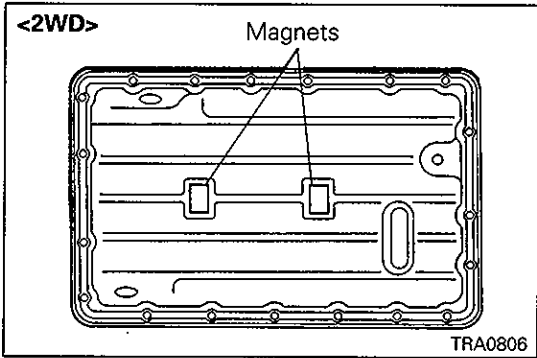
(83) Attach the two new gaskets, one to the spacer and the other to the oil screen. <4WD>



(84) Using five bolts, install the spacer and oil screen. <4WD>



(85) After setting a new gasket, install the oil screen assembly using the 11 bolts. <4WD>

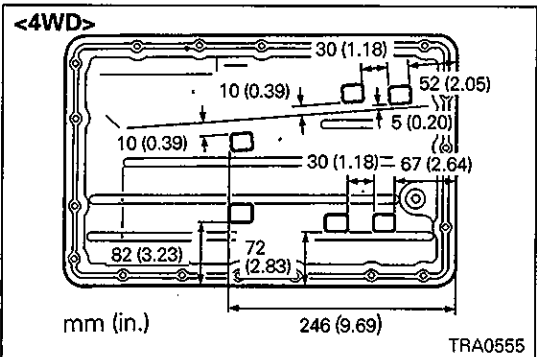


(86) Using a scraper and wire brush, remove sealer sticking on the transmission case and oil pan. Then, wash off oil with detergent.

**Caution**

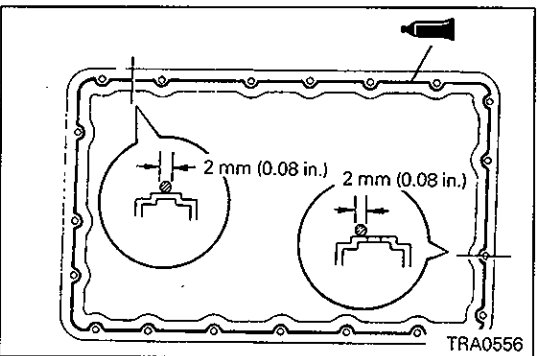
- When cleaning and washing the transmission case, the valve body side must be kept down.

(87) Wash the magnets and attach them as illustrated.

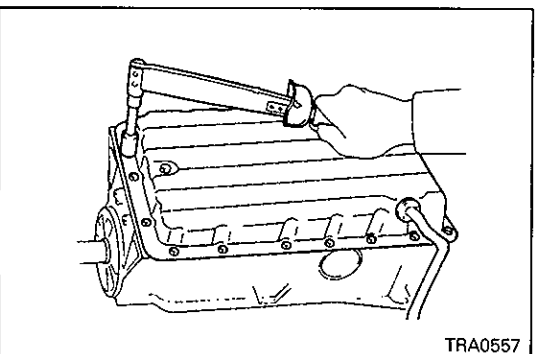


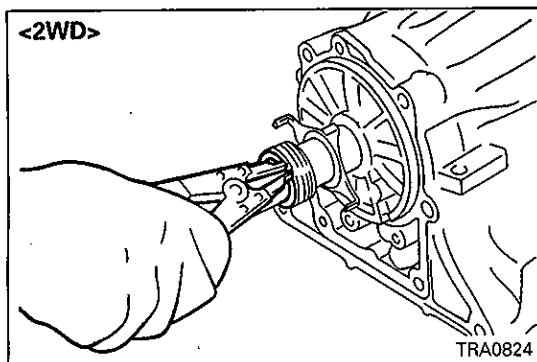
(88) Apply sealer to the oil pan and install it to the transmission case.

**Specified sealant: Threebond Seal Packing 1281**



(89) Tighten the 19 bolts uniformly and step by step.



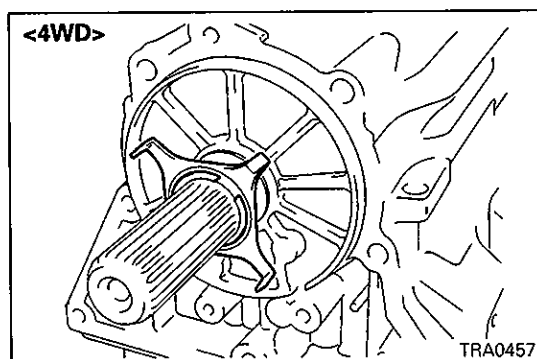


(90) Install the key and then the sensor rotor to the output shaft.

<2WD>

(91) Install the speedometer drive gear and the snap ring.

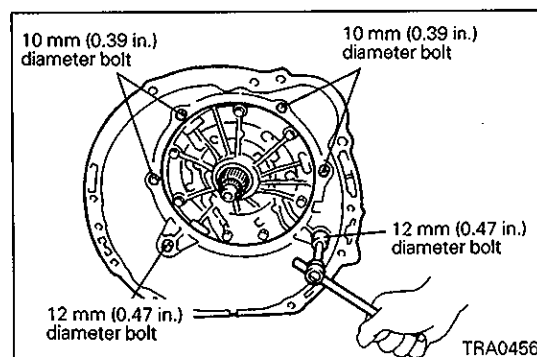
<2WD>



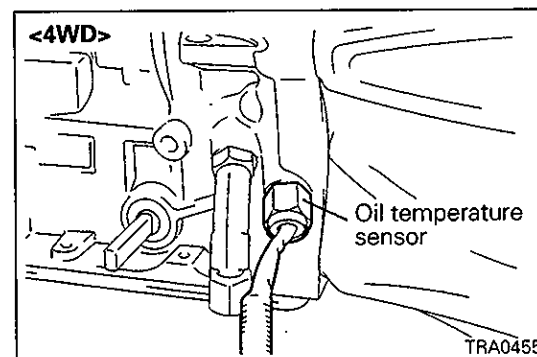
(92) Install the key and then the sensor rotor to the output shaft.

<4WD>

(93) Install the snap ring. <4WD>



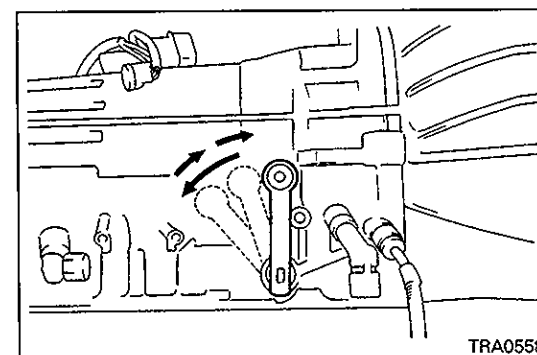
(94) Using the 6 bolts, install the housing to the transmission case.



(95) Apply ATF to a new O-ring and attach it to the oil temperature sensor. <4WD>

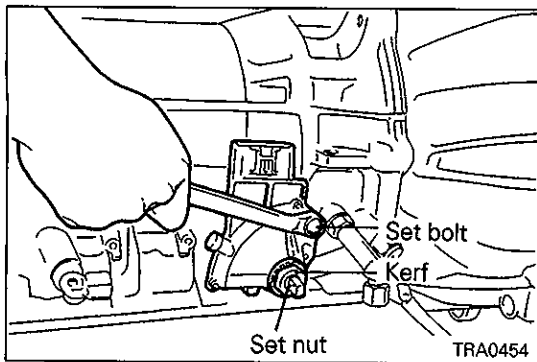
(96) Install the oil temperature sensor to the transmission case.

<4WD>



(97) Set the control shaft lever to the N range position by rotating the manual control shaft fully backward and then returning it by two notches.

(98) Insert park/neutral position switch in the manual valve shaft and tentatively tighten the set bolt.



- (99) Install the new gasket and lock washer and tighten the set nut.
- (100) Aligning the kerf in the switch with the neutral reference line, tighten the set bolt firmly.
- (101) Bend lock washer tabs.

**Caution**

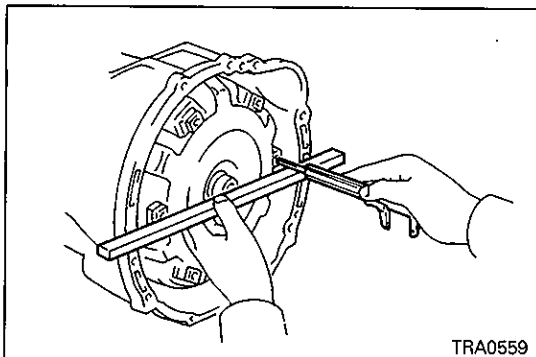
- **Two or more lugs must be bent.**

- (102) Install the control shaft lever.

- (103) Install the harness connector bracket and throttle cable clamp.

- (104) Apply ATF to a new O-ring and attach it to the oil filler tube. Install the tube to the oil pan.

- (105) Install the oil level gauge.



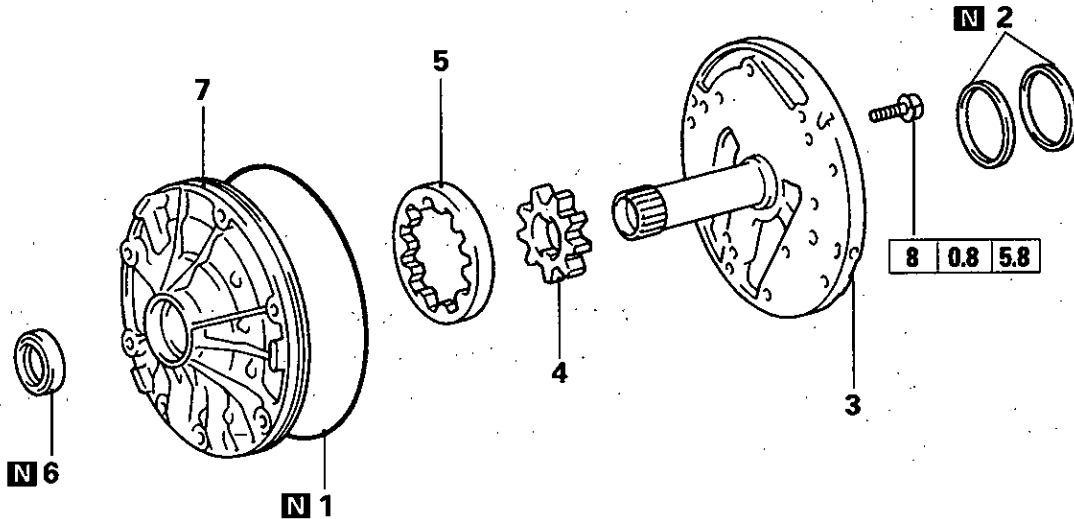
- (106) Aligning the notch of the torque converter with the inner lug of the oil pump, install the torque converter.

- (107) Check the illustrated dimension of the installed torque converter.

**Standard value: 31.1 mm (1.22 in.) or more**


# 5. OIL PUMP

## DISASSEMBLY AND REASSEMBLY

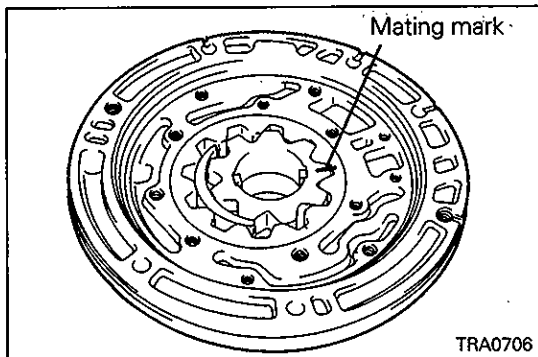


### Disassembly steps

- 1. O-ring
- ↗B 2. Seal ring
- 3. Stator shaft
- ↔A↔ 4. Drive gear
- ↔A↔ 5. Driven gear
- ↗A 6. Oil seal
- 7. Oil pump body

 Lubricate all internal parts with automatic transmission fluid during reassembly.

TRA0560



### DISASSEMBLY SERVICE POINT

#### ↔A↔ DRIVE GEAR / DRIVEN GEAR REMOVAL

- (1) Put mating marks on the side of removed gears for their reassembly in correct direction. (Use a felt marker or equivalent.)

### INSPECTION

#### DRIVE GEAR AND DRIVEN GEAR

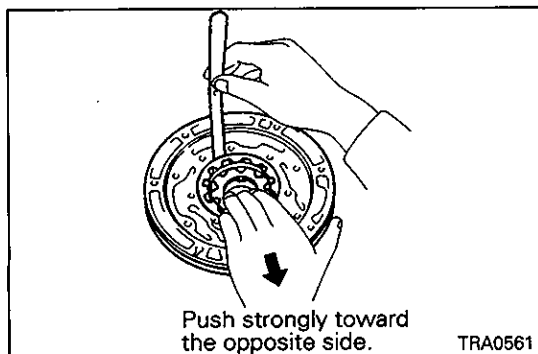
##### Body Clearance

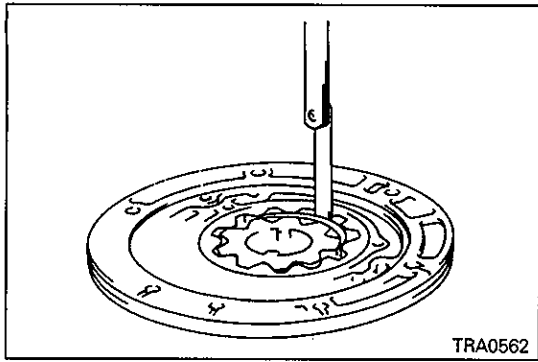
- (1) Measure the clearance between the driven gear and oil pump body with a feeler gauge while pushing the driven gear strongly toward the opposite side.

**Standard value: 0.07 – 0.15 mm (0.003 – 0.006 in.)**

**Limit: 0.30 mm (0.012 in.)**

If the limit is exceeded, replace the driven gear or oil pump body.





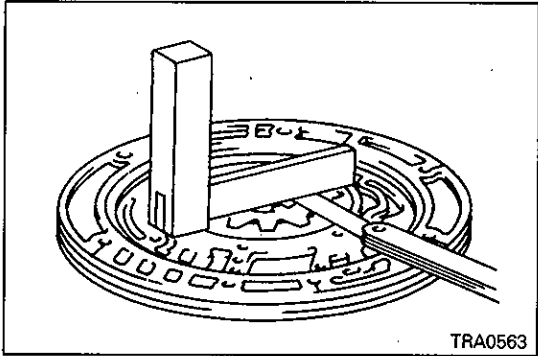
**Tip Clearance**

- (1) Using a feeler gauge, measure the crescent-to-driven gear clearance.

**Standard value: 0.11 – 0.14 mm (0.004 – 0.006 in.)**

**Limit: 0.30 mm (0.012 in.)**

If the limit is exceeded, replace the driven gear or oil pump body.



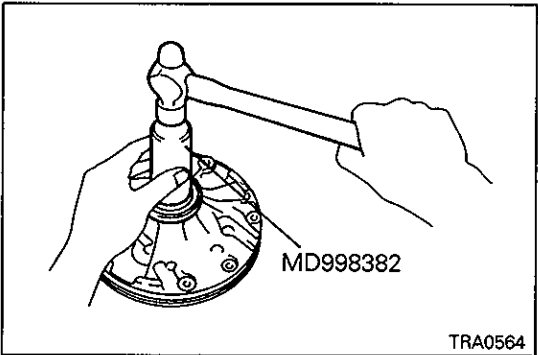
**Side Clearance**

- (1) Using a square and feeler gauge, measure the side clearance of the gears with respect to the stator shaft mounting surface.

**Standard value: 0.02 – 0.05 mm (0.0008 – 0.0020 in.)**

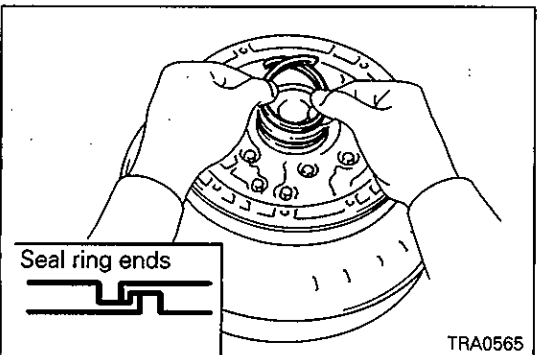
**Limit: 0.30 mm (0.012 in.)**

If the limit is exceeded, replace the drive gear, driven gear or oil pump body.



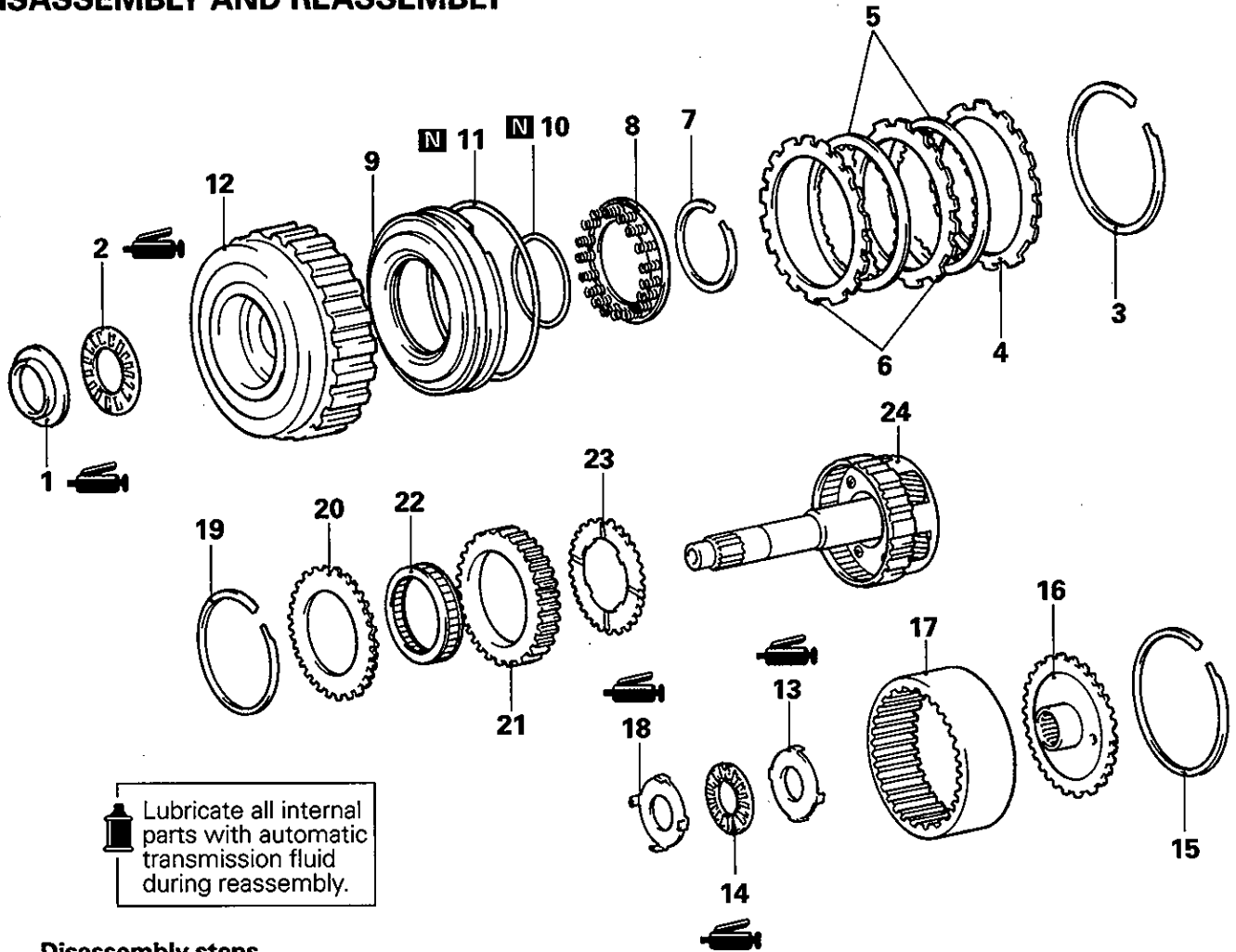
**REASSEMBLY SERVICE POINT**

**▶◀ OIL SEAL INSTALLATION**



**▶◀ SEAL RING INSTALLATION**

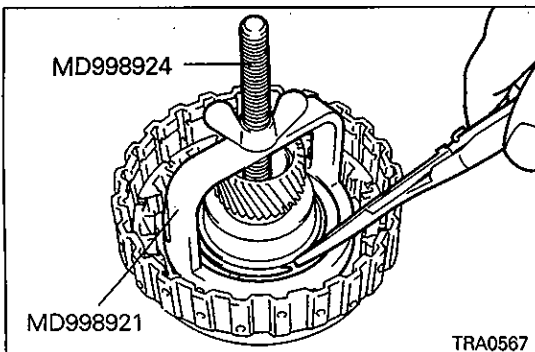
# 6. OVERDRIVE PLANETARY GEAR AND OVERDRIVE DIRECT CLUTCH DISASSEMBLY AND REASSEMBLY



**Disassembly steps**

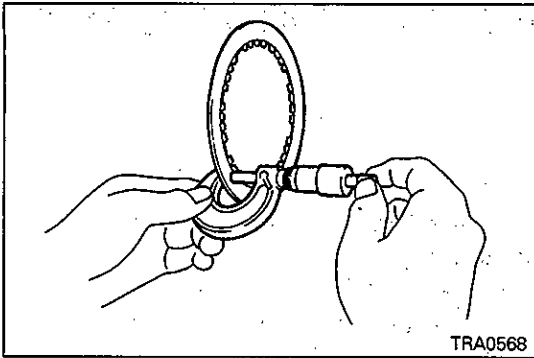
- |                                   |   |
|-----------------------------------|---|
| 1. Thrust race                    | 14. Thrust bearing                                  |
| 2. Thrust bearing                 | 15. Snap ring                                       |
| 3. Snap ring                      | 16. Overdrive planetary ring gear flange            |
| ▶D▶ 4. Clutch flange              | 17. Overdrive planetary ring gear                   |
| 5. Clutch disc                    | 18. Thrust race                                     |
| 6. Clutch plate                   | 19. Snap ring                                       |
| ◁A▶▶C▶ 7. Snap ring               | 20. Retaining plate                                 |
| 8. Return spring assembly         | 21. One-way clutch outer race                       |
| 9. Overdrive direct clutch piston | ▶B▶ 22. Overdrive one-way clutch                    |
| 10. O-ring                        | ▶A▶ 23. Overdrive planetary gear thrust washer No.3 |
| 11. O-ring                        | 24. Overdrive planetary gear assembly               |
| 12. Overdrive direct clutch drum  |   |
| 13. Thrust race                   |   |

TRA0566



**DISASSEMBLY SERVICE POINTS**

◁A▶ **SNAP RING REMOVAL**

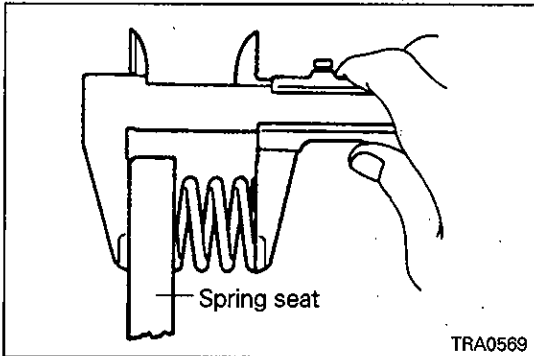
**INSPECTION****OVERDRIVE DIRECT CLUTCH DISC**

- (1) Using a micrometer, measure the thickness of the clutch disc.

**Limit: 1.84 mm (0.072 in.)**

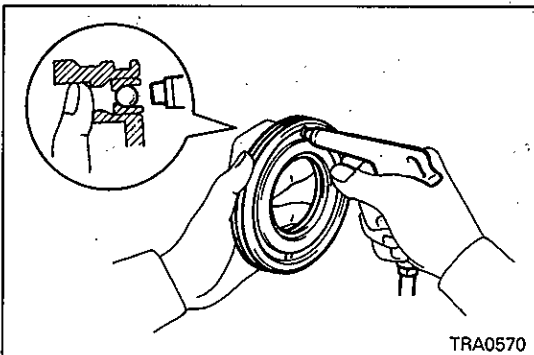
**NOTE**

The thickness must be measured at two or three points. Compare the average value with the limit.

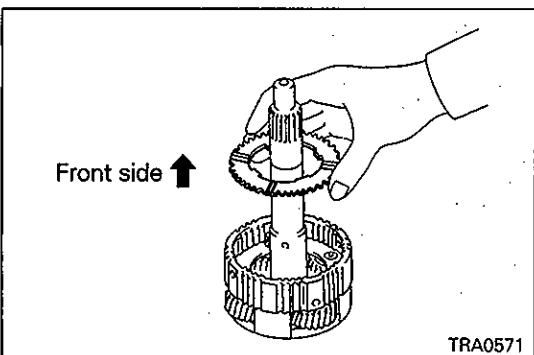
**RETURN SPRING ASSEMBLY**

- (1) Measure the free length of the spring including the spring seat.

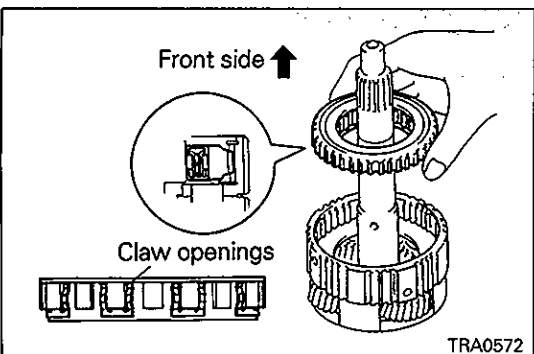
**Standard value: Approx. 15.8 mm (0.62 in.)**

**OVERDRIVE DIRECT CLUTCH PISTON**

- (1) Check that the check ball is free by shaking the piston.
- (2) Check that the valve does not leak by applying low-pressure compressed air.

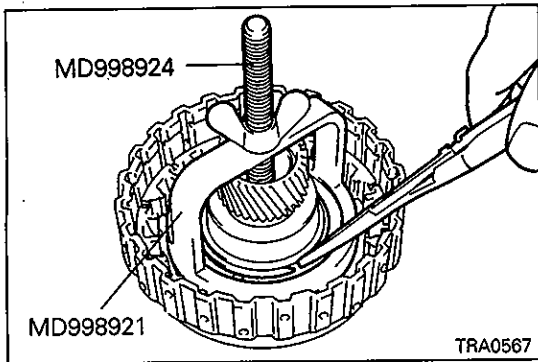
**REASSEMBLY SERVICE POINTS****▶▶ OVERDRIVE PLANETARY GEAR THRUST WASHER NO.3 INSTALLATION**

- (1) Install the thrust washer so that its oil groove is oriented to the front side.

**▶▶ OVERDRIVE ONE-WAY CLUTCH INSTALLATION**

- (1) Install the clutch so that its claw openings are oriented to the front side as illustrated.

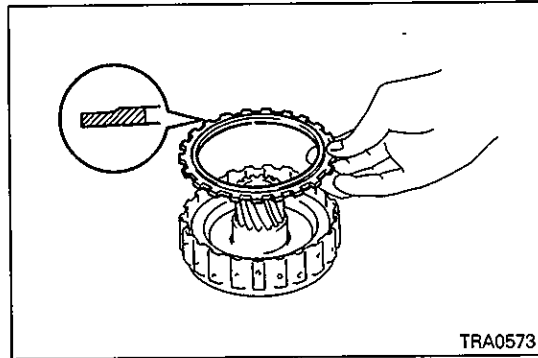




**▶C▶ SNAP RING INSTALLATION**

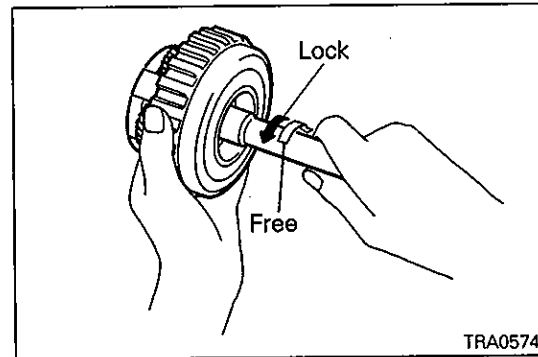
**Caution**

- Be sure the end gap of the snap ring is not aligned with the stopper of the spring seat.



**▶D▶ CLUTCH FLANGE INSTALLATION**

- (1) Install the clutch flange to the overdrive direct clutch drum so that the flange's convex side faces up as illustrated.



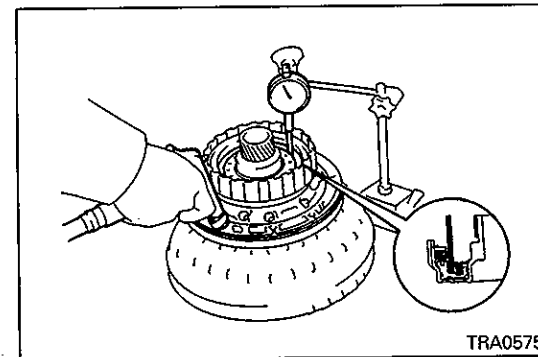
**INSPECTION**

**OPERATION OF ONE-WAY CLUTCH**

- (1) While holding the overdrive direct clutch drum, turn the input shaft clockwise to see that the shaft turns smoothly and turn it counterclockwise to see that the shaft is locked.

**NOTE**

- (1) If the shaft turns or locks in both directions, replace the one-way clutch.
- (2) If the shaft turns counterclockwise while it doesn't turn clockwise, the one-way clutch may have been assembled in the reverse direction.



**OVERDRIVE DIRECT CLUTCH PISTON STROKE**

- (1) Install the oil pump to the torque converter. Install the overdrive direct clutch assembly to the oil pump.
- (2) Using a dial gauge, measure the piston stroke by applying compressed air (400 – 800 kPa, 4 – 8 kg/cm<sup>2</sup>, 57 – 113 psi) into the oil hole of the oil pump as shown and then releasing the air.

**Standard value: 1.85 – 2.15 mm (0.073 – 0.085 in.)**

If the stroke is out of this range, replace the clutch flange with an appropriate one so that the stroke becomes within this range.

**NOTE**

When selecting the flange, aim at the center of the range.

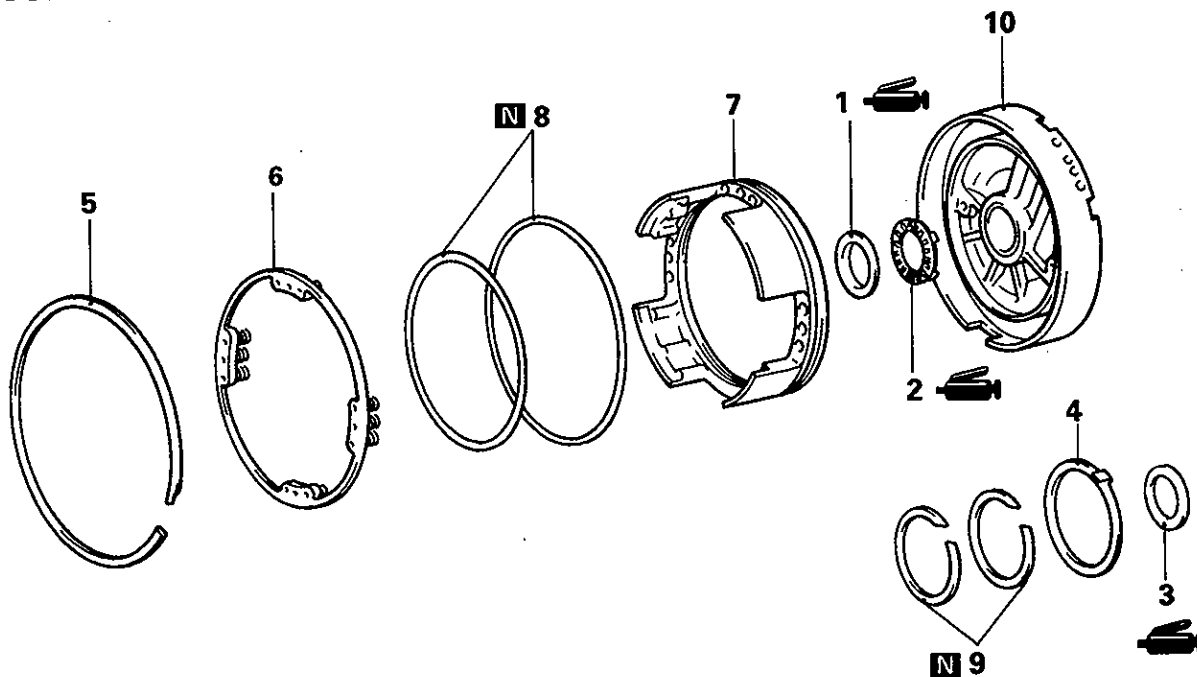
[Available flange]

Identification code	16	17	18	19	20	21
Thickness mm (in.)	3.6 (0.142)	3.5 (0.138)	3.4 (0.134)	3.3 (0.130)	3.2 (0.126)	3.1 (0.122)

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## NOTES

# 7. OVERDRIVE SUPPORT DISASSEMBLY AND REASSEMBLY

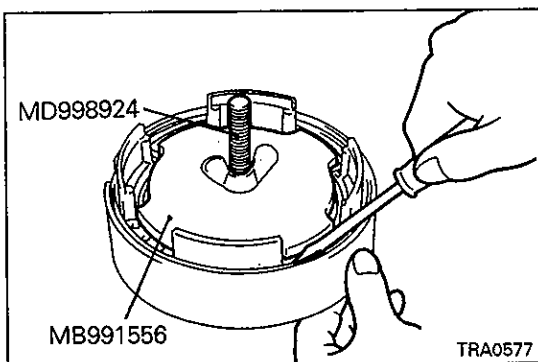


**Disassembly steps**

1. Thrust race
2. Thrust bearing
3. Thrust race
4. Clutch drum thrust washer
5. Snap ring
6. Return spring assembly
7. Overdrive brake piston
8. O-ring
9. Seal ring
10. Overdrive support assembly

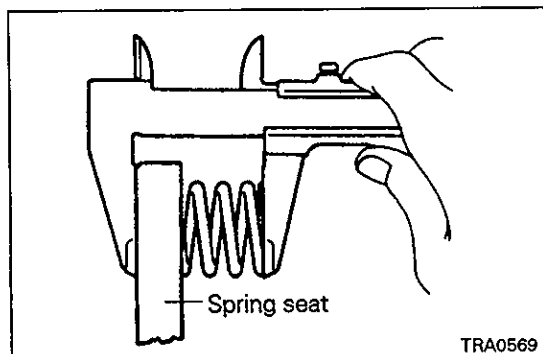
 Lubricate all internal parts with automatic transmission fluid during reassembly.

TRA0576



**DISASSEMBLY SERVICE POINTS**

 **SNAP RING REMOVAL**

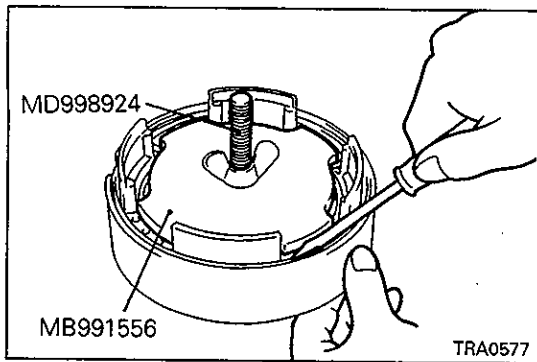


**INSPECTION**

**RETURN SPRING ASSEMBLY**

(1) Measure the free length of the spring including the spring seat.

**Standard value: Approx. 18.6 mm (0.73 in.)**



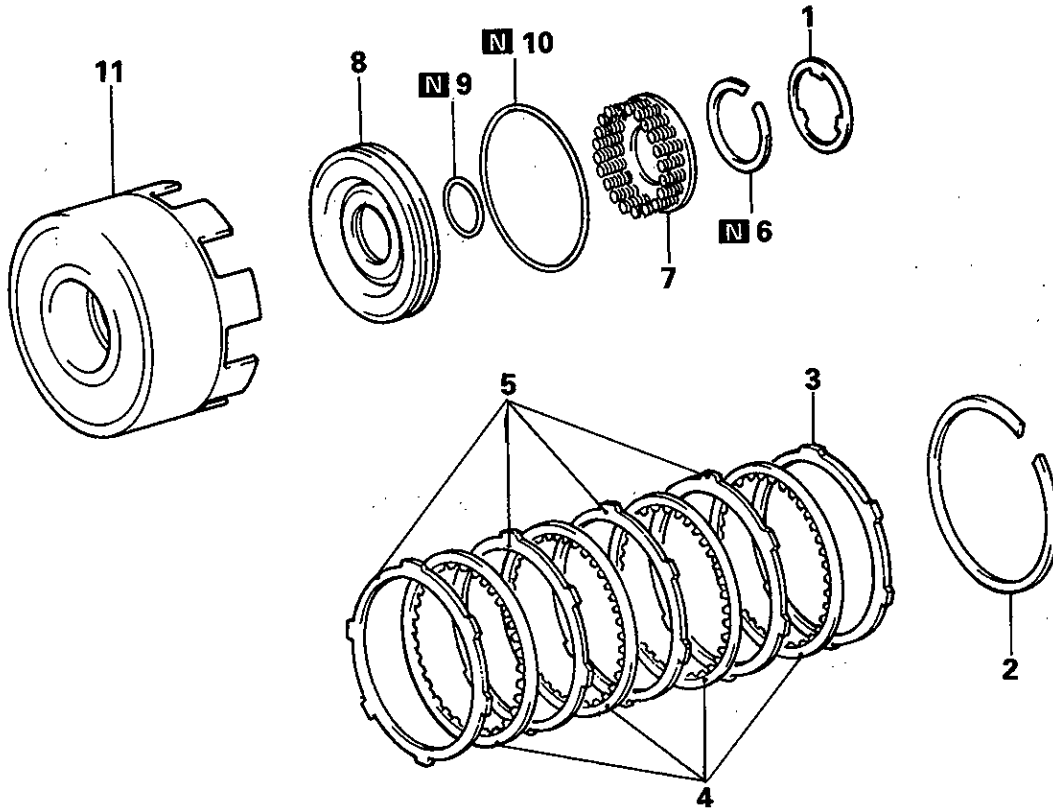
## REASSEMBLY SERVICE POINTS

### ▶▶ SNAP RING INSTALLATION

#### Caution


- Be sure the end gap of the snap ring is not aligned with the cutout of the support.
- Set the support in such a way that its central convex portion doesn't touch the workbench.

# 8. DIRECT CLUTCH DISASSEMBLY AND REASSEMBLY

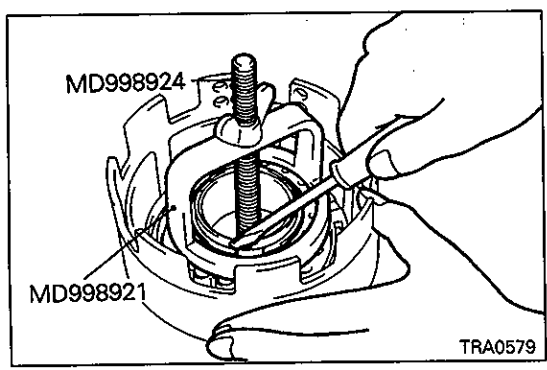


**Disassembly steps**

1. Thrust washer No.2
- ↻C↻ 2. Snap ring
- ↻B↻ 3. Clutch flange
4. Clutch disc
5. Clutch plate
- ↻A↻ ↻A↻ 6. Snap ring
7. Return spring assembly
8. Direct clutch piston
9. O-ring
10. O-ring
11. Direct clutch drum

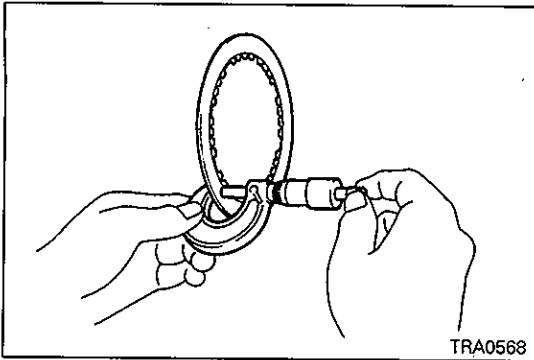
 Lubricate all internal parts with automatic transmission fluid during reassembly.

TRA0578



**DISASSEMBLY SERVICE POINTS**

↻A↻ **SNAP RING REMOVAL**

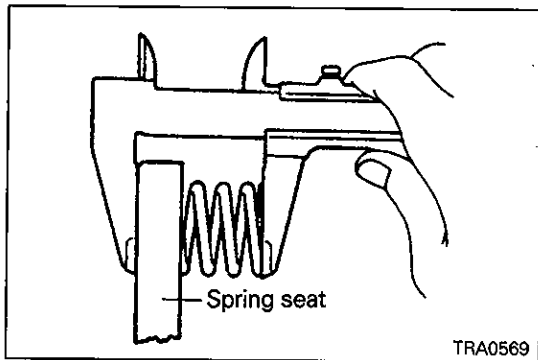
**INSPECTION****DIRECT CLUTCH DISC**

- (1) Using a micrometer, measure the thickness of the clutch disc.

**Limit: 1.84 mm (0.072 in.)**

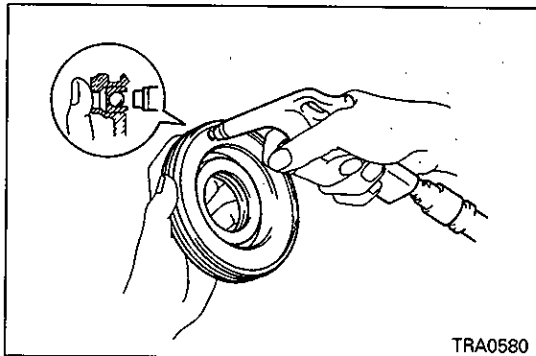
**NOTE**

The thickness must be measured at two or three points. Compare the average value with the limit.

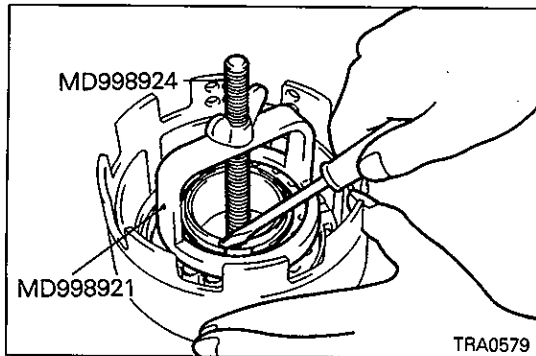
**RETURN SPRING ASSEMBLY**

- (1) Measure the free length of the spring including the spring seat.

**Standard value: Approx. 19.8 mm (0.78 in.)**

**DIRECT CLUTCH PISTON**

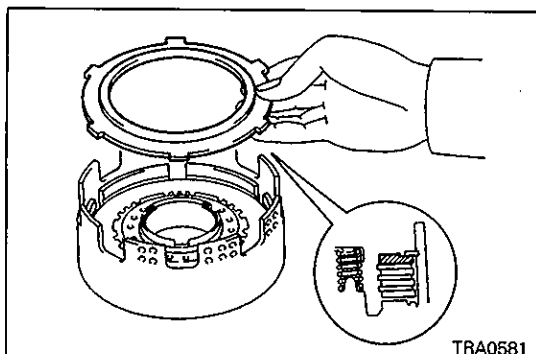
- (1) Check that the check ball is free by shaking the piston.
- (2) Check that the valve does not leak by applying low-pressure compressed air.

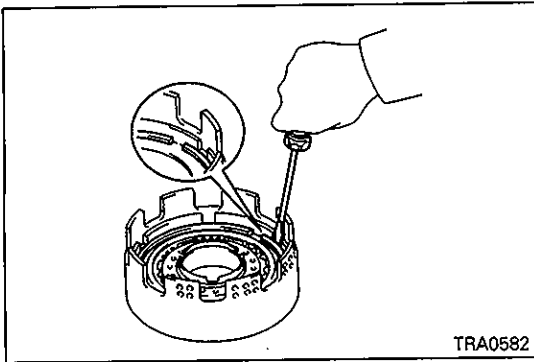
**REASSEMBLY SERVICE POINTS****▶A◀ SNAP RING INSTALLATION****Caution**

- Be sure the end gap of the snap ring is not aligned with the stopper of the spring seat.

**▶B◀ CLUTCH FLANGE INSTALLATION**

- (1) Install the clutch flange to the direct clutch drum so that the flange's convex side is oriented to the rear side.

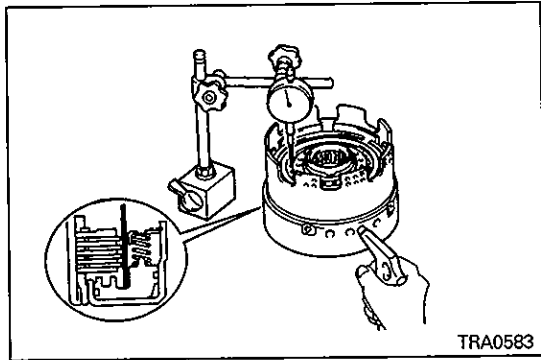




TRA0582

**▶◀ SNAP RING INSTALLATION**

- (1) Install the snap ring so that the end gap of the snap ring is not aligned with the inner cutout of the direct clutch drum.



TRA0583

**INSPECTION AFTER REASSEMBLY  
DIRECT CLUTCH PISTON STROKE**

- (1) Install the direct clutch to the overdrive support assembly.
- (2) Using a dial gauge, measure the piston stroke by applying compressed air (400 – 800 kPa, 4 – 8 kg/cm<sup>2</sup>, 57 – 113 psi) into the oil hole of the overdrive support as shown and then releasing the air.

**Standard value: 1.37 – 1.67 mm (0.054 – 0.066 in.)**

If the stroke is out of this range, replace the clutch flange with an appropriate one so that the stroke becomes within this range.

**NOTE**

When selecting the flange, aim at the center of the range.

[Available flanges]

Identifica- tion code	33	32	31	30	29	28	27	34
Thick- ness mm (in.)	3.0 (0.118)	3.1 (0.122)	3.2 (0.126)	3.3 (0.130)	3.4 (0.134)	3.5 (0.138)	3.6 (0.142)	3.7 (0.146)

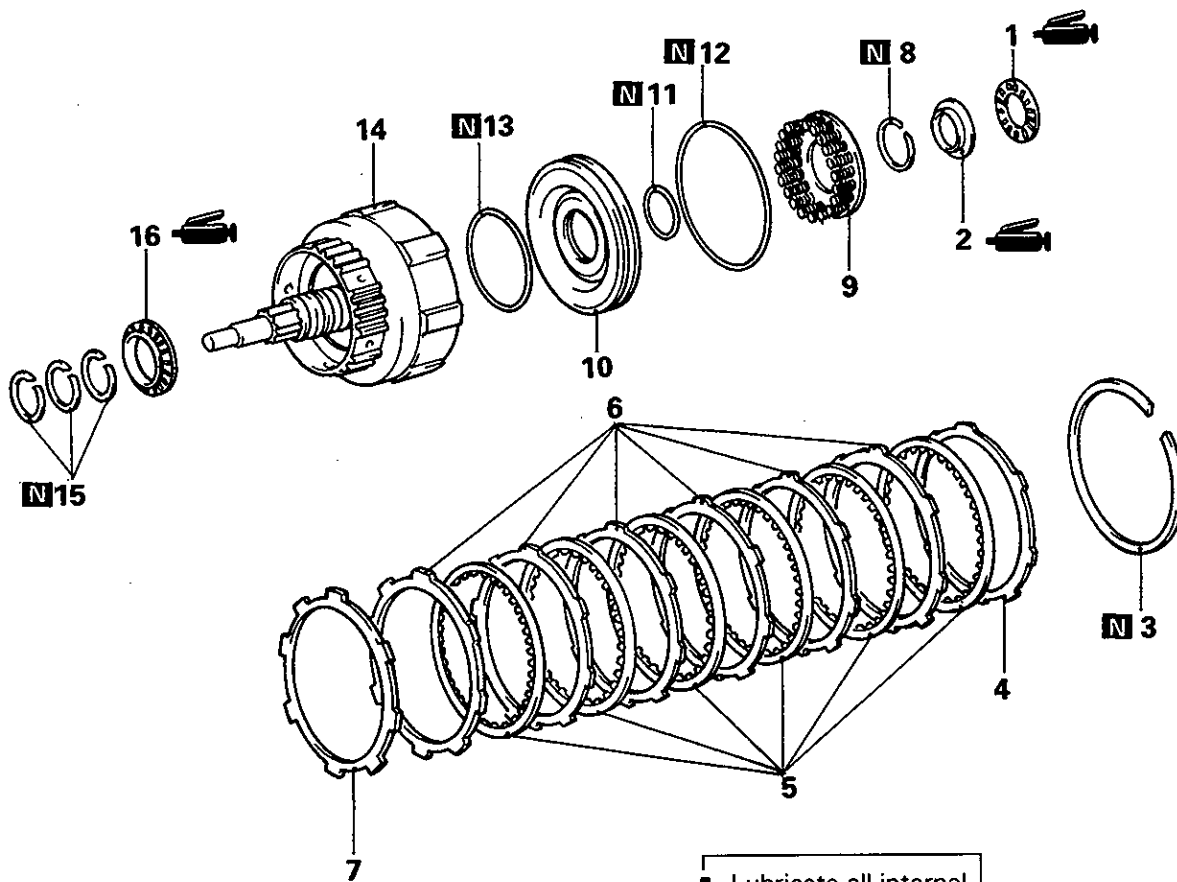
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## NOTES




# 9. FORWARD CLUTCH

## DISASSEMBLY AND REASSEMBLY



### Disassembly steps

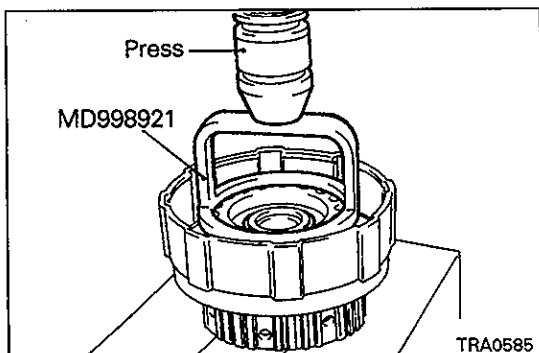
1. Thrust bearing
2. Thrust race
- ▶D▶ 3. Snap ring
- ▶C▶ 4. Clutch flange
5. Clutch disc
6. Clutch plate
- ▶B▶ 7. Cushion plate
- ◀A▶▶A▶ 8. Snap ring
9. Return spring assembly
10. Forward clutch piston
11. O-ring
12. O-ring
13. O-ring
14. Forward clutch drum
15. Seal ring
16. Thrust bearing

 Lubricate all internal parts with automatic transmission fluid during reassembly.

### No. of clutch discs/plates

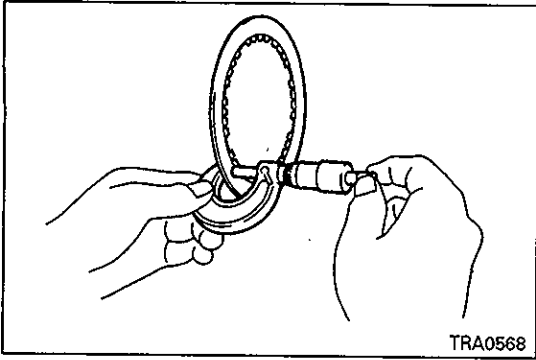
	Clutch disc	Clutch plate
4M40, 6G72	5	5
6G74	6	6

TRA0584



### DISASSEMBLY SERVICE POINTS

◀A▶ SNAP RING REMOVAL

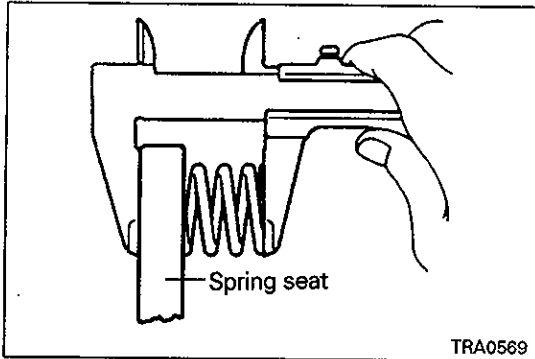
**INSPECTION****FORWARD CLUTCH DISC**

- (1) Using a micrometer, measure the thickness of the clutch disc.

**Limit: 1.84 mm (0.072 in.)**

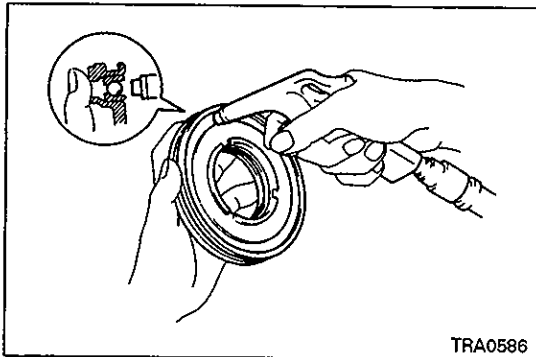
**NOTE**

The thickness must be measured at two or three points. Compare the average value with the limit.

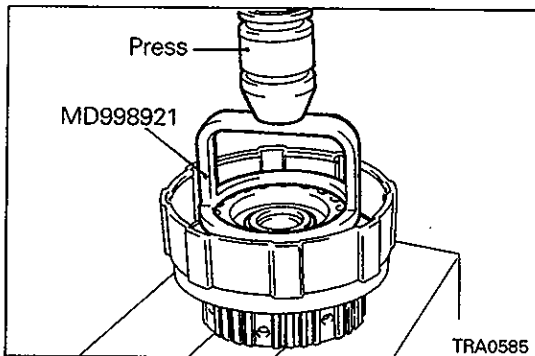
**RETURN SPRING ASSEMBLY**

- (1) Measure the free length of the spring including the spring seat.

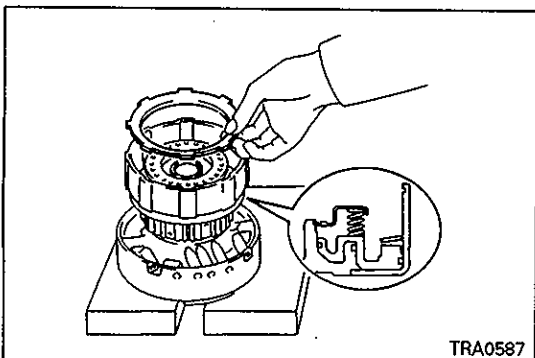
**Standard value: Approx. 11.55 mm (0.455 in.)**

**FORWARD CLUTCH PISTON**

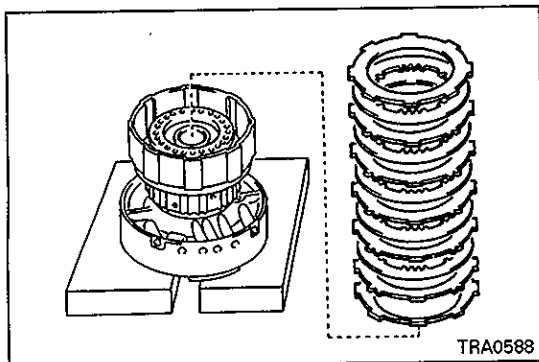
- (1) Check that the check ball is free by shaking the piston.
- (2) Check that the valve does not leak by applying low-pressure compressed air.

**REASSEMBLY SERVICE POINTS****◆A◆ SNAP RING INSTALLATION****Caution**

- Be sure the end gap of the snap ring is not aligned with the stopper of the spring seat.

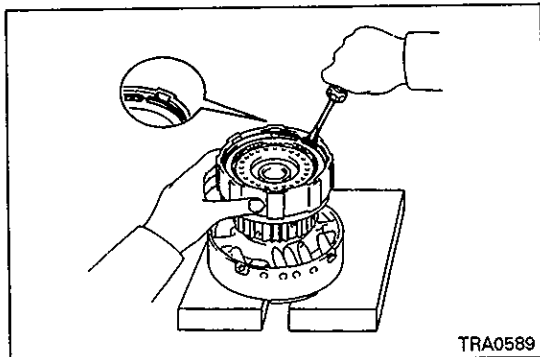
**◆B◆ CUSHION PLATE INSTALLATION**

- (1) Install the cushion plate to the forward clutch drum so that its convex side is oriented to the piston side.



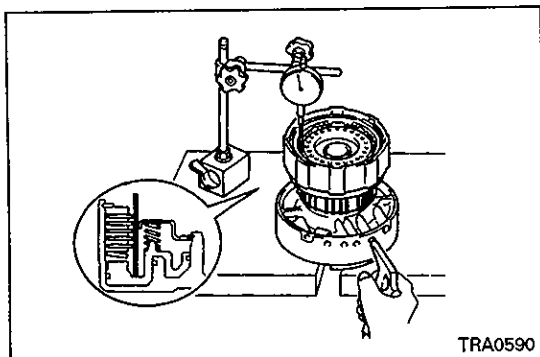
### ◆C◆ CLUTCH FLANGE INSTALLATION

- (1) Install the clutch flange to the forward clutch drum so that the flange's chamfer is oriented to the disc side.



### ◆D◆ SNAP RING INSTALLATION

- (1) Install the snap ring so that the end gap of the snap ring is not aligned with the inner cutout of the direct clutch drum.



### INSPECTION AFTER REASSEMBLY FORWARD CLUTCH PISTON STROKE

- (1) Install the forward clutch to the overdrive support assembly.
- (2) Using a dial gauge, measure the piston stroke by applying compressed air (400 – 800 kPa, 4 – 8 kg/cm<sup>2</sup>, 57 – 113 psi) into the oil hole of the overdrive support as shown and then releasing the air.

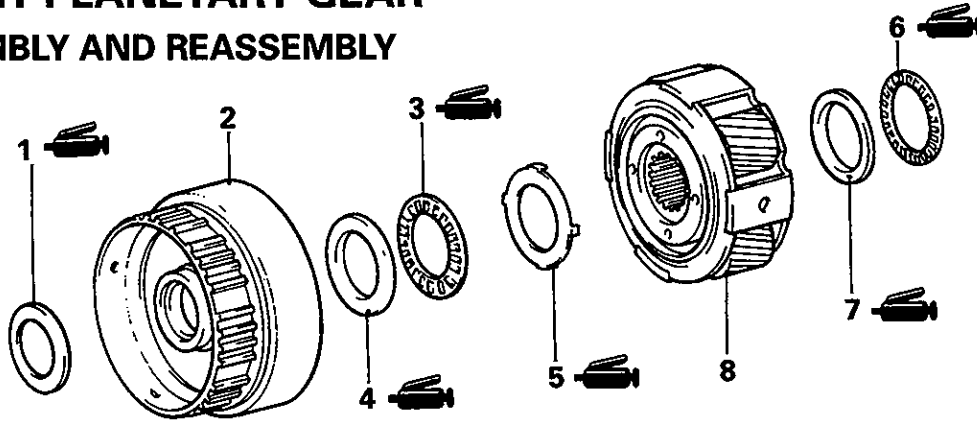
#### Standard value:

2.65 – 3.98 mm (0.104 – 0.157 in.)	.....	4M40, 6G72
2.90 – 4.29 mm (0.114 – 0.169 in.)	.....	6G74

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## NOTES

# 10.FRONT PLANETARY GEAR DISASSEMBLY AND REASSEMBLY

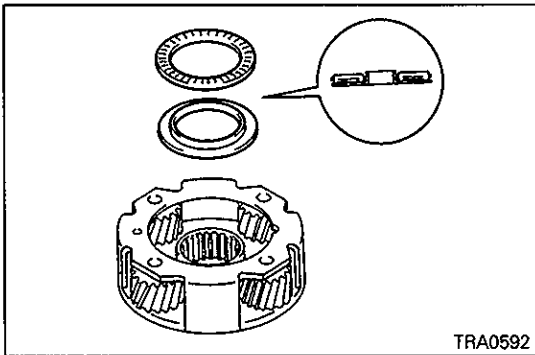


### Disassembly steps

1. Thrust race
2. Front planetary ring gear assembly
- ▶C◀ 3. Thrust bearing
- ▶C◀ 4. Thrust race
- ▶B◀ 5. Thrust race
- ▶A◀ 6. Thrust bearing
- ▶A◀ 7. Thrust race
8. Front planetary gear assembly

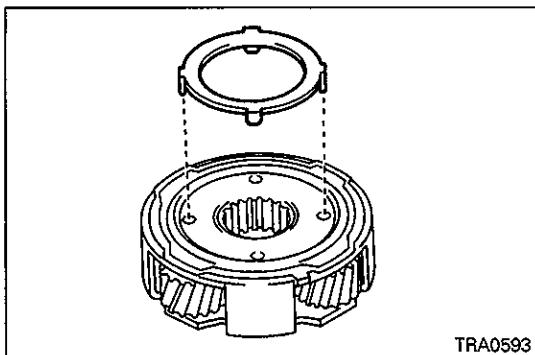
 Lubricate all internal parts with automatic transmission fluid during reassembly.

TRA0591



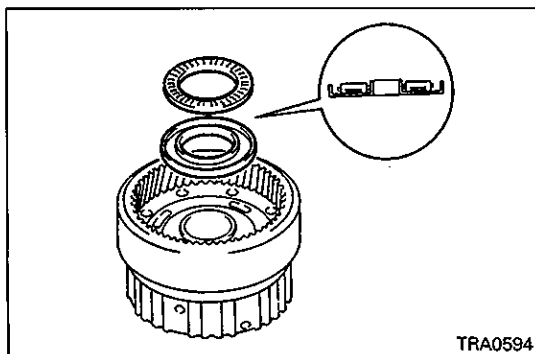
### REASSEMBLY SERVICE POINTS

#### ▶A◀ THRUST RACE / THRUST BEARING INSTALLATION



#### ▶B◀ THRUST RACE INSTALLATION

- (1) Install the thrust race to the planetary gear assembly while aligning its claws with the holes of the front planetary gear.



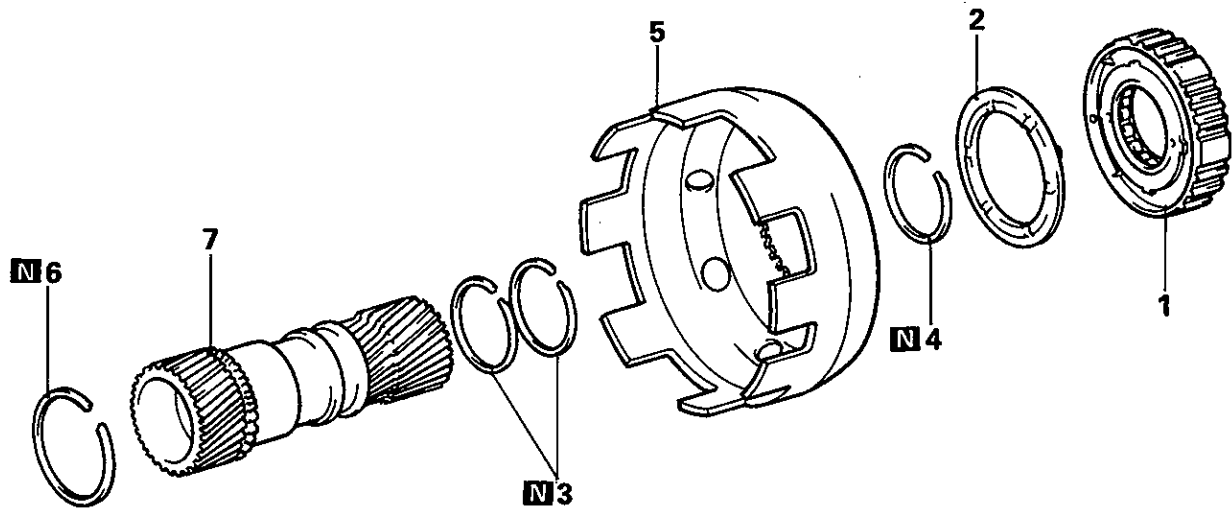
#### ▶C◀ THRUST RACE / THRUST BEARING INSTALLATION

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## NOTES

# 11. PLANETARY SUN GEAR AND ONE-WAY CLUTCH NO.1

## DISASSEMBLY AND REASSEMBLY



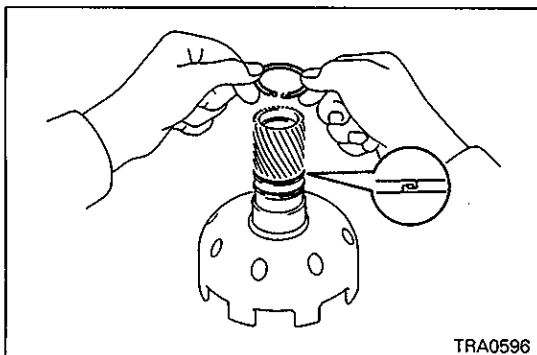
### Disassembly steps

- ◆C◆ 1. One-way clutch assembly
- ◆B◆ 2. One-way clutch thrust washer No.1
- ◆A◆ 3. Seal ring
- 4. Snap ring
- 5. Sun gear input drum
- 6. Snap ring
- 7. Planetary sun gear



Lubricate all internal parts with automatic transmission fluid during reassembly.

TRA0595

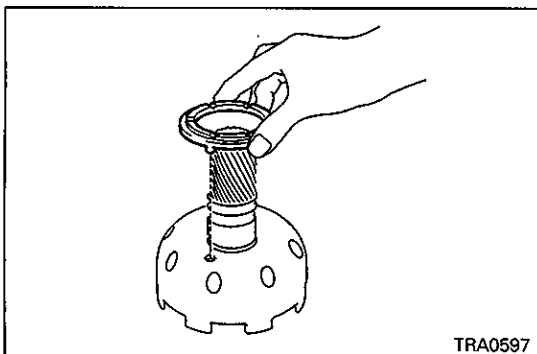


TRA0596

### REASSEMBLY SERVICE POINTS

#### ◆A◆ SEAL RING INSTALLATION

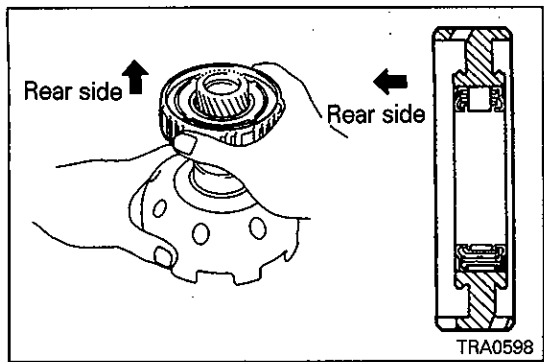
- (1) Don't open the seal ring wider than necessary. Be careful not to bend the claws.



TRA0597

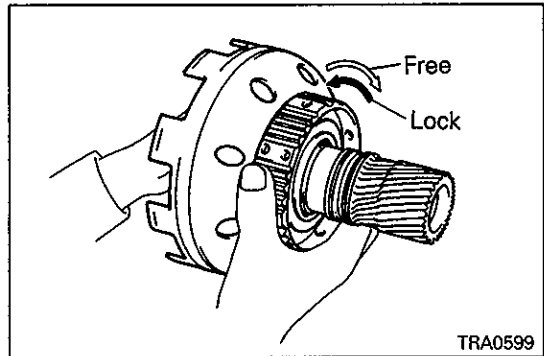
#### ◆B◆ ONE-WAY CLUTCH THRUST WASHER NO.1 INSTALLATION

- (1) Install the thrust washer to the sun gear input drum while aligning its convex with the hole of the drum.



### ⇄ ONE-WAY CLUTCH ASSEMBLY INSTALLATION

- (1) Install the one-way clutch assembly to the planetary sun gear in the direction shown in the illustration.



### INSPECTION AFTER REASSEMBLY

#### OPERATION OF ONE-WAY CLUTCH

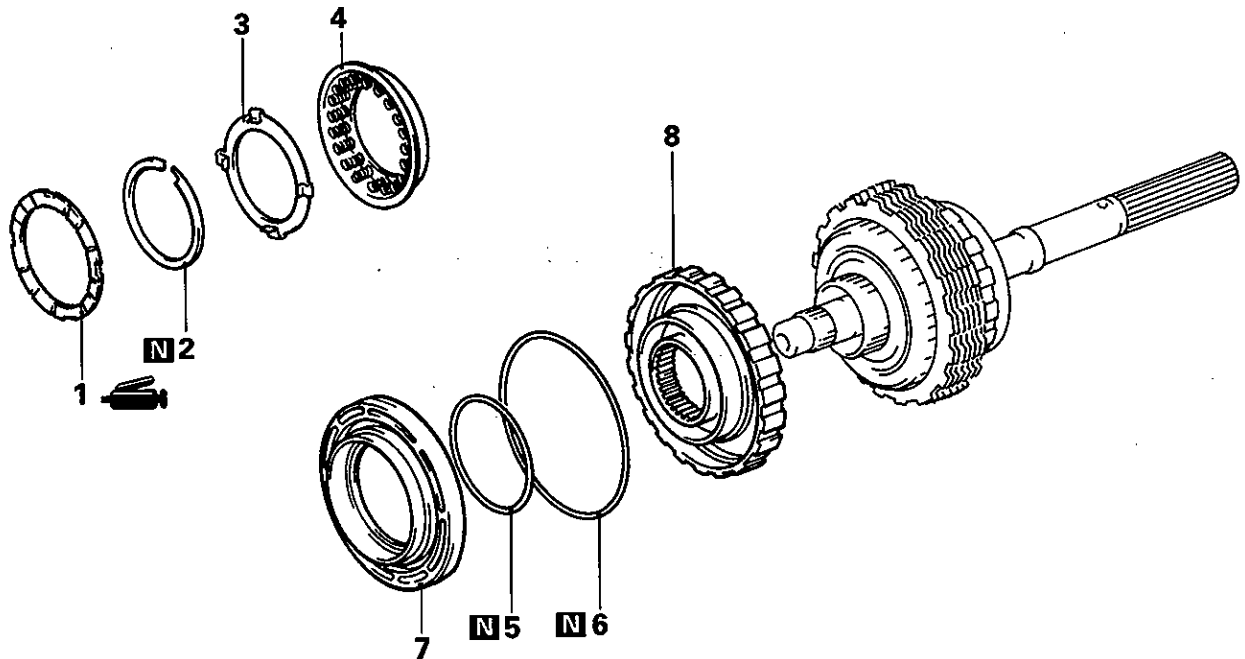
- (1) While holding planetary sun gear, turn the one-way clutch clockwise to see that the clutch turns smoothly and turn it counterclockwise to see that the clutch is locked.

#### NOTE

- (1) If the one-way clutch turns or locks in both directions, replace the one-way clutch.
- (2) If the one-way clutch turns counterclockwise while it doesn't turn clockwise, the one-way clutch may have been installed in the reverse direction.




# 12. SECOND BRAKE DISASSEMBLY AND REASSEMBLY

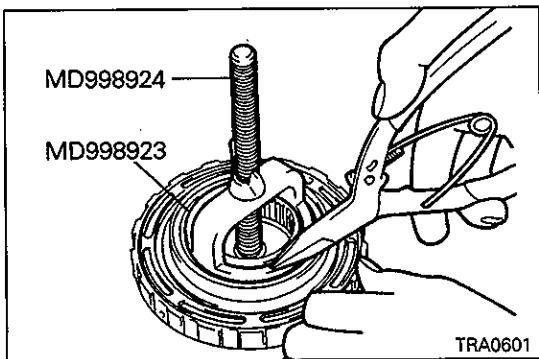


**Disassembly steps**

- 1. One-way clutch thrust washer No.2
- ◊A◊ ◊A◊ 2. Snap ring
- 3. Return spring seat
- 4. Return spring assembly
- 5. O-ring
- 6. O-ring
- ◊B◊ 7. Second brake piston
- 8. Second brake drum assembly

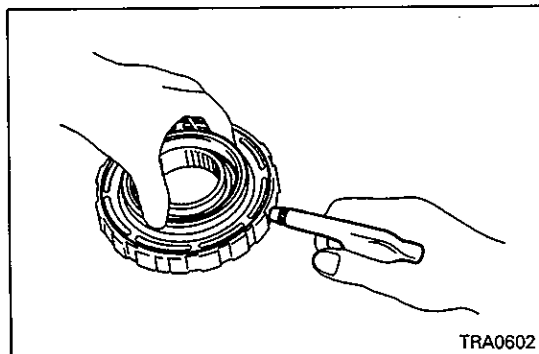
 Lubricate all internal parts with automatic transmission fluid during reassembly.

TRA0600



**DISASSEMBLY SERVICE POINTS**

◊A◊ **SNAP RING REMOVAL**

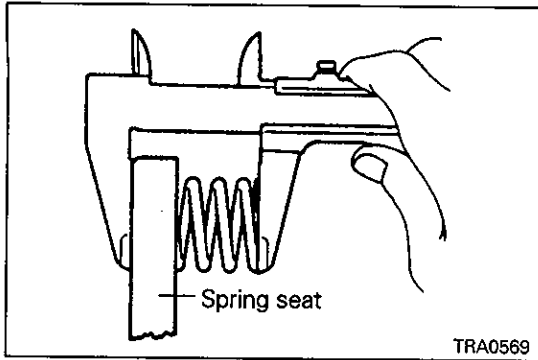


◊B◊ **SECOND BRAKE PISTON REMOVAL**

- (1) With the second brake piston held, blow air into the second brake drum through the oil hole to remove the second brake piston.

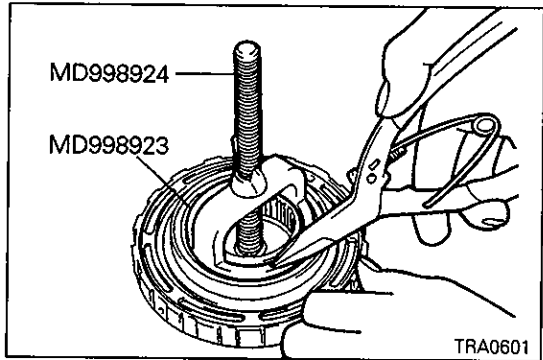
**Caution**

- Do not blow air suddenly because the piston may be tipped and become hard to remove.

**INSPECTION****RETURN SPRING ASSEMBLY**

- (1) Measure the free length of the spring including the spring seat.


**Standard value: Approx. 15.05 mm (0.593 in.)**

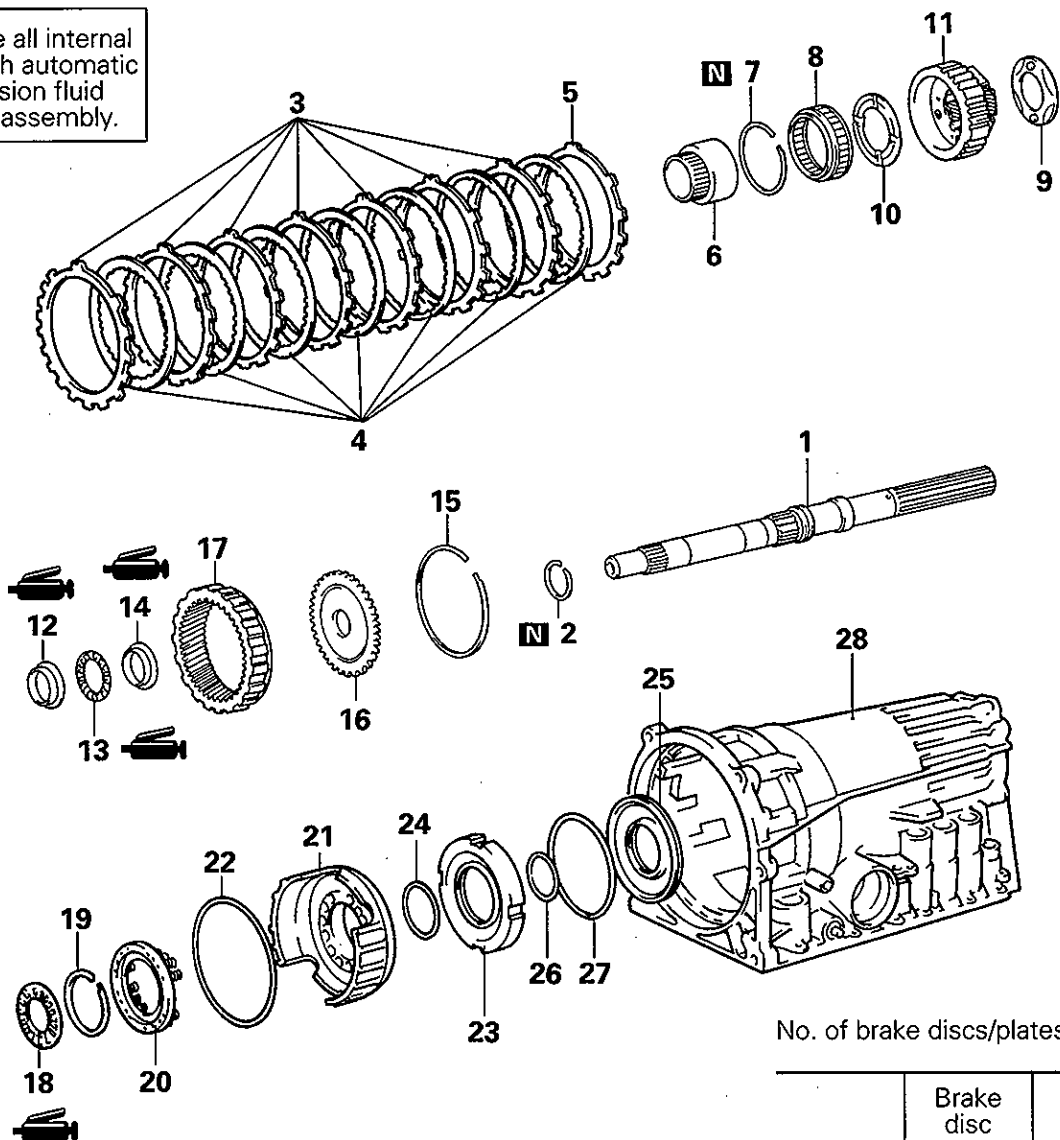
**REASSEMBLY SERVICE POINTS****◆◆ SNAP RING INSTALLATION****Caution**

- Be sure the end gap of the snap ring is not aligned with the stopper of the spring seat.

# 13. REAR PLANETARY GEAR, OUTPUT SHAFT AND FIRST & REVERSE BRAKE

## DISASSEMBLY AND REASSEMBLY

 Lubricate all internal parts with automatic transmission fluid during reassembly.

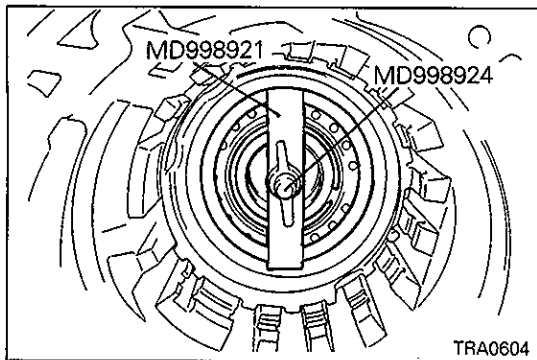


No. of brake discs/plates

	Brake disc	Brake plate
4M40, 6G72	6	6
6G74	7	7

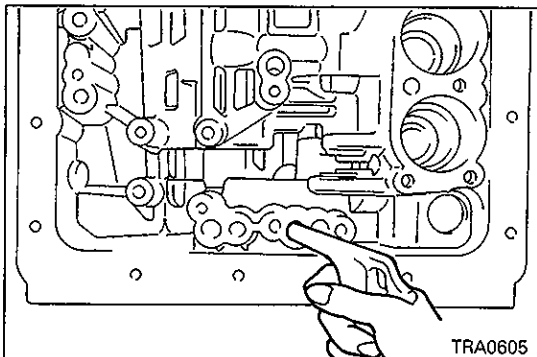
### Disassembly steps

- 1. Output shaft
- ▶I 2. Seal ring
- 3. Brake plate
- 4. Brake disc
- 5. Brake flange
- ▶H 6. One-way clutch inner race
- 7. Snap ring
- ▶G 8. One-way clutch No.2
- ▶F 9. Planetary carrier thrust washer No.1
- ▶F 10. Planetary carrier thrust washer No.2
- 11. Rear planetary gear assembly
- ▶E 12. Thrust race
- ▶E 13. Thrust bearing
- ▶E 14. Thrust race
- 15. Snap ring
- 16. Rear planetary ring gear flange
- 17. Rear planetary ring gear
- ▶D 18. Thrust bearing with race
- ◊A 19. Snap ring
- ▶C 20. Return spring assembly
- ◊B 21. First & Reverse brake piston No.2
- 22. O-ring
- ◊C 23. Brake reaction sleeve
- 24. O-ring
- ◊D 25. First & Reverse brake piston No.1
- 26. O-ring
- 27. O-ring
- 28. Transmission case assembly



## DISASSEMBLY SERVICE POINTS

### ◊A◊ SNAP RING INSTALLATION

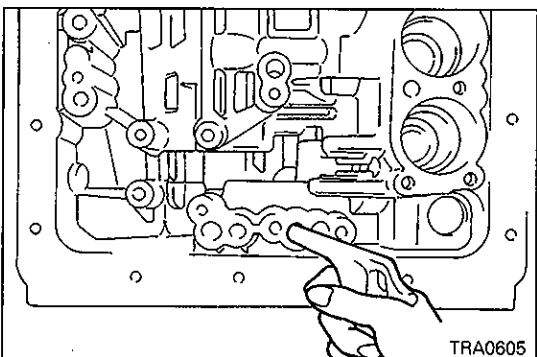


### ◊B◊ FIRST & REVERSE BRAKE PISTON NO.2 REMOVAL

- (1) With the first & reverse brake piston No.2 held, blow air into the transmission case through the oil hole to remove the first & reverse brake piston No.2.

#### Caution

- Do not blow air suddenly because the piston may be tipped and become hard to remove.

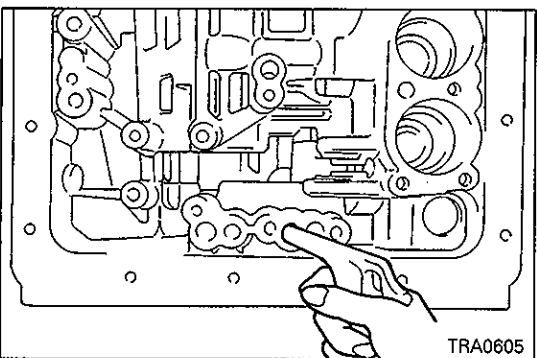


### ◊C◊ BRAKE REACTION SLEEVE REMOVAL

- (1) With the brake reaction sleeve held, blow air into the transmission case through the oil hole to remove the brake reaction sleeve.

#### Caution

- Do not blow air suddenly because the sleeve may be tipped and become hard to remove.

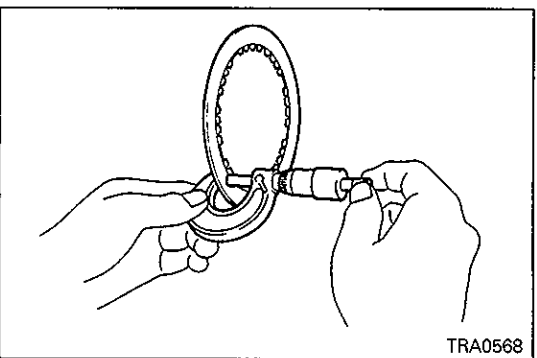


### ◊D◊ FIRST & REVERSE BRAKE PISTON NO.1 REMOVAL

- (1) With the first & reverse brake piston No.1 held, blow air into the transmission case through the oil hole to remove the piston.

#### Caution

- Do not blow air suddenly because the piston may be tipped and become hard to remove.



## INSPECTION

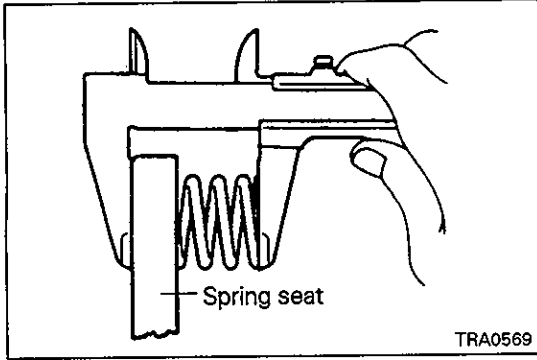
### FIRST & REVERSE BRAKE DISC

- (1) Using a micrometer, measure the thickness of the brake disc.

**Limit: 1.51 mm (0.059 in.)**

#### NOTE

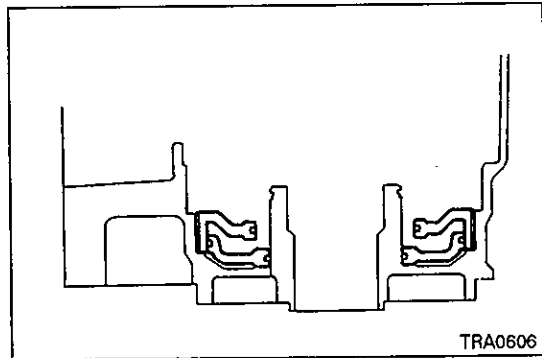
The thickness must be measured at two or three points. Compare the average value with the limit.



### RETURN SPRING ASSEMBLY

- (1) Measure the free length of the spring including the spring seat.

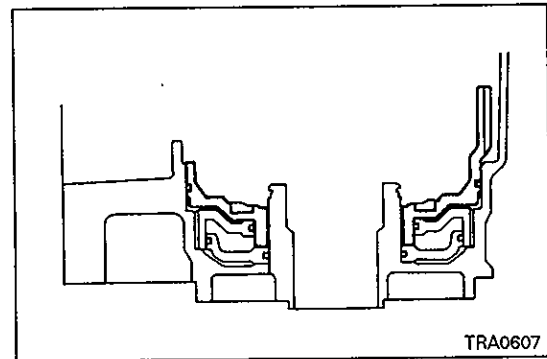
**Standard value: Approx. 13.09 mm (0.515 in.)**



### REASSEMBLY SERVICE POINTS

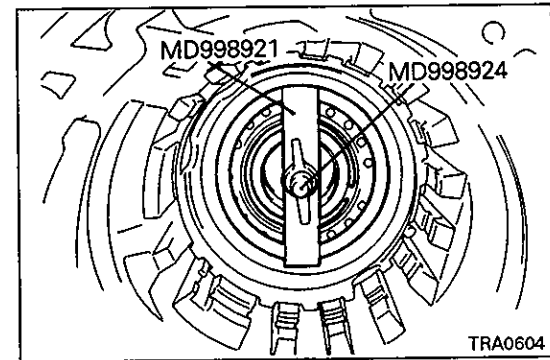
#### ◆A◆ FIRST & REVERSE BRAKE PISTON NO.1 / REVERSE BRAKE SLEEVE INSTALLATION

- (1) Install the first & reverse brake piston No.1 and the reverse brake sleeve together to the transmission case.



#### ◆B◆ FIRST & REVERSE BRAKE PISTON NO.2 INSTALLATION

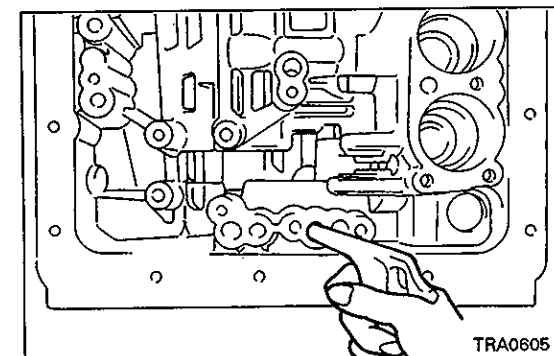
- (1) Aligning the convex of the first & reverse brake piston No.2 with the concave of the transmission case, install the piston to the case.



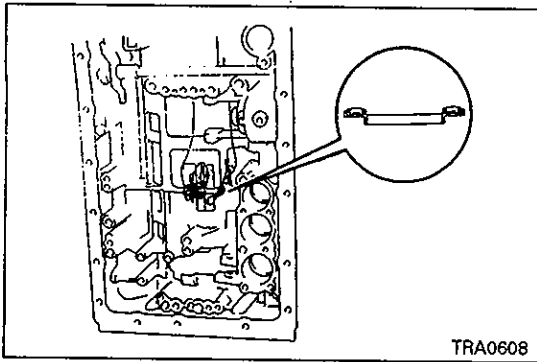
#### ◆C◆ SNAP RING INSTALLATION

##### Caution

- Be sure the end gap of the snap ring is not aligned with the stopper of the spring seat.

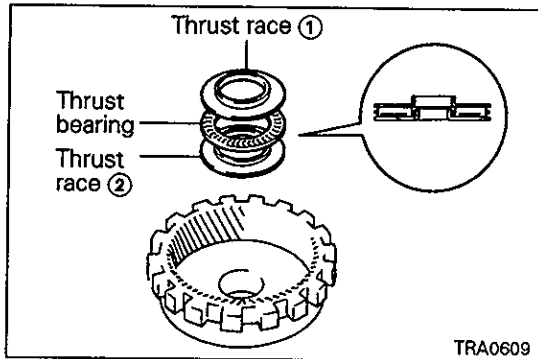


- (1) After the snap ring is installed, check the operation of the first & reverse brake piston as follows:
- (2) By applying compressed air (400 – 800 kPa, 4 – 8 kg/cm<sup>2</sup>, 57 – 113 psi) into the oil hole of the transmission case as illustrated, check that the first & reverse brake piston slides smoothly.



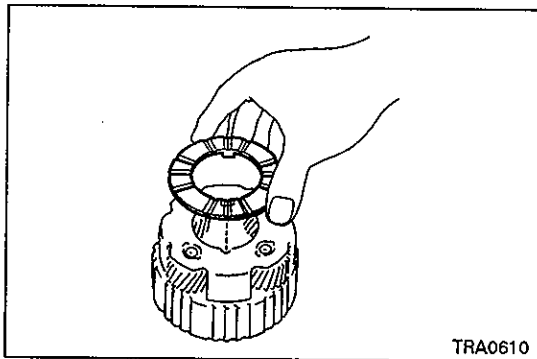
**◆D◆ THRUST BEARING WITH RACE INSTALLATION**

- (1) Apply petrolatum to the thrust bearing with race and attach it so that the race side is oriented to the transmission case side.



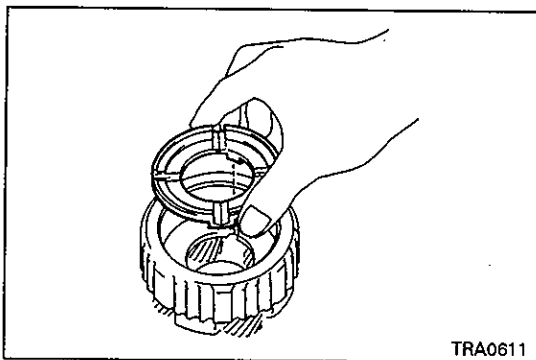
**◆E◆ THRUST RACE / THRUST BEARING / THRUST RACE INSTALLATION**

- (1) Apply petrolatum to the thrust bearing, thrust race [28.8 mm (1.13 in.) in inner diameter] and thrust race [27.6 mm (1.09 in.) in inner diameter] and attach them to the rear planetary ring gear in the illustrated order and direction.

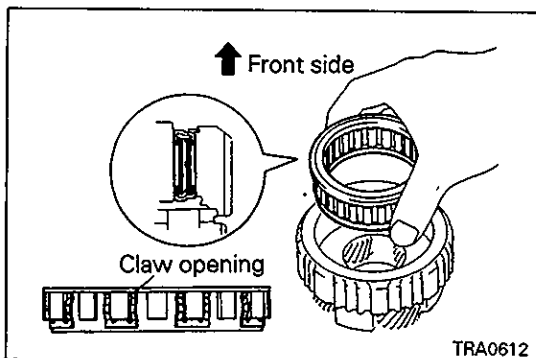


**◆F◆ PLANETARY CARRIER THRUST WASHERS NO.1 AND NO.2 INSTALLATION**

- (1) Aligning the convex of the thrust washer No.1 with the hole of the rear planetary gear, install the washer to the gear.

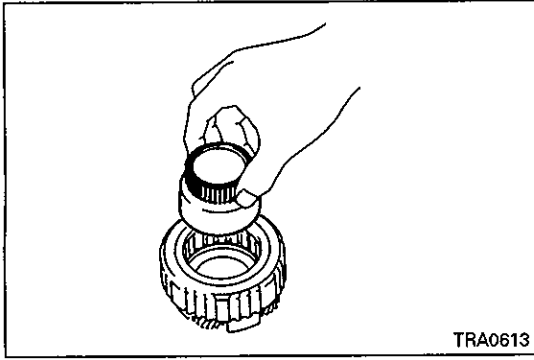


- (2) Turn the rear planetary gear over. Aligning the convex of the thrust washer No.2 with the hole of the rear planetary gear, install the washer to the gear.



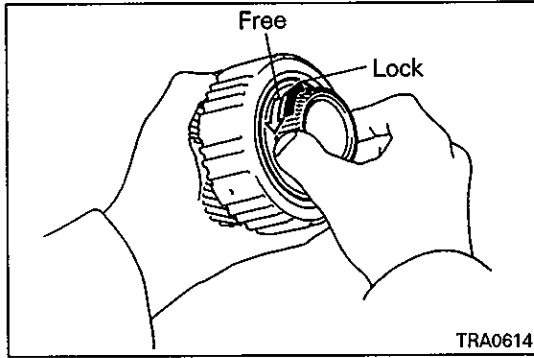
**◆G◆ ONE-WAY CLUTCH NO.2 INSTALLATION**

- (1) Install the one-way clutch No.2 to the rear planetary gear in the illustrated direction.



**◆H◆ ONE-WAY CLUTCH INNER RACE INSTALLATION**

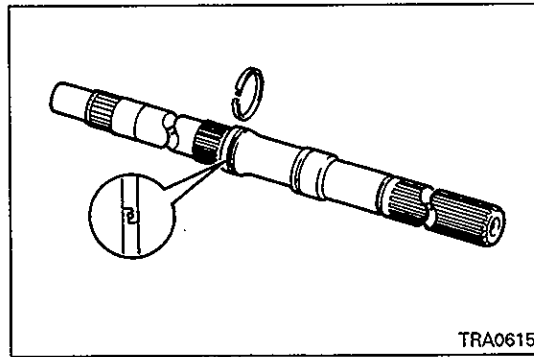
(1) After the one-way clutch inner race is installed, check the operation of the one-way clutch No.2 as follows:



(2) While holding the rear planetary gear, turn the one-way clutch clockwise to see that the clutch is locked and turn it counterclockwise to see that the clutch turns.

**NOTE**

- (1) If the one-way clutch turns or locks in both directions, replace the one-way clutch.
- (2) If the one-way clutch turns clockwise while it doesn't counterclockwise, the one-way clutch may have been assembled in the reverse direction.



**◆H◆ SEAL RING INSTALLATION**

(1) Apply ATF to the seal ring and attach it to the output shaft.

**Caution**

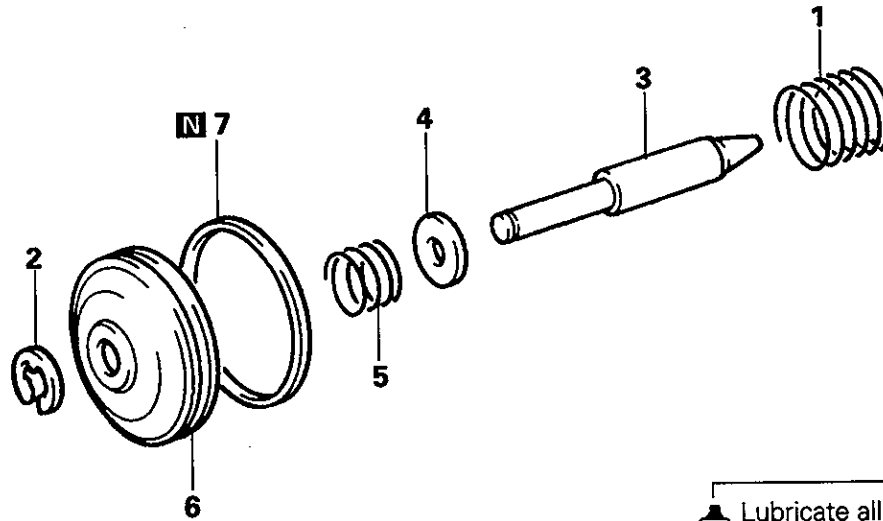
- Do not bend the claw of the seal ring.
- Do not open the seal ring wider than necessary.


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## NOTES



## 14. SECOND COAST BRAKE PISTON DISASSEMBLY AND REASSEMBLY



 Lubricate all internal parts with automatic transmission fluid during reassembly.

### Disassembly steps

1. Spring
2. E-ring
3. Second coast brake piston rod
4. Plate washer
5. Spring
6. Second coast brake piston
7. Seal ring

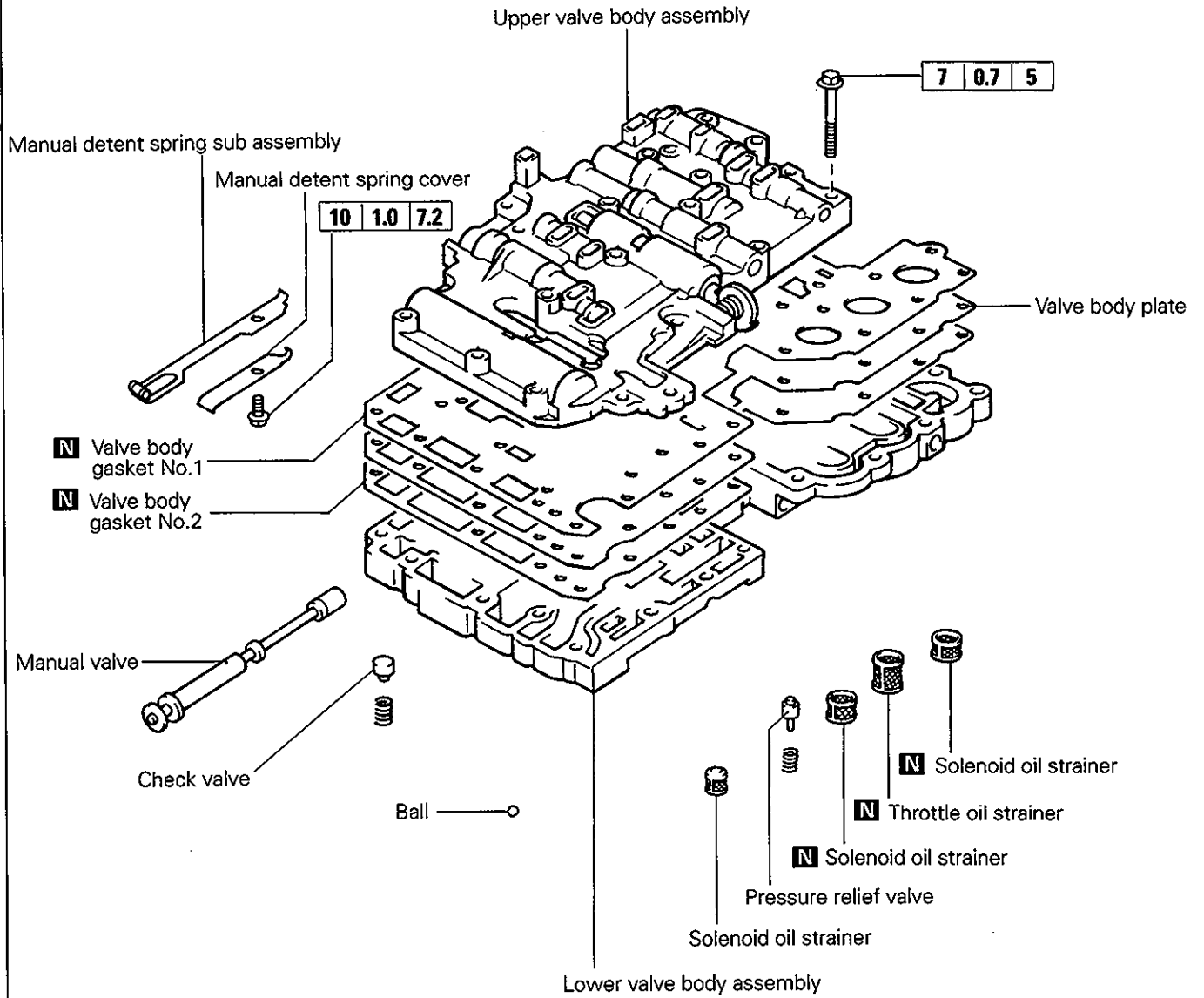
TRA0616


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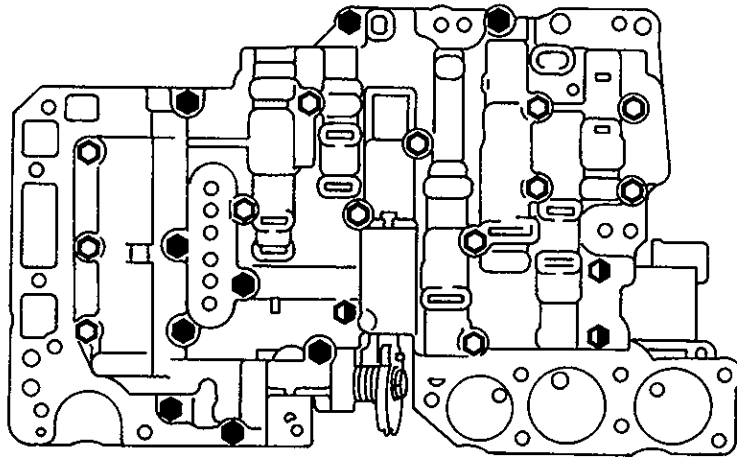
## NOTES

# 15. VALVE BODY

## DISASSEMBLY AND REASSEMBLY



 Lubricate all internal parts with automatic transmission fluid during reassembly.



Bolt shank length

⬡ : 38 mm (1.50 in.)

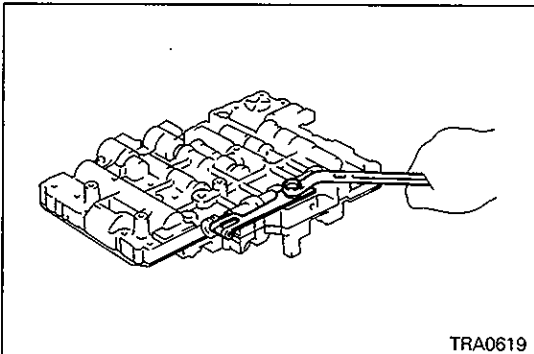
● : 20 mm (0.79 in.)

⬢ : 28 mm (1.10 in.)

TRA0618

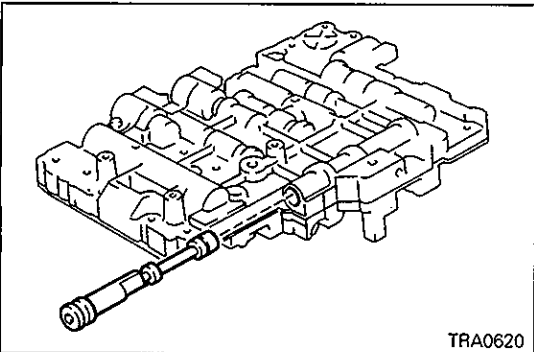
## DISASSEMBLY

- (1) Remove the bolt and then remove the detent spring and cover.



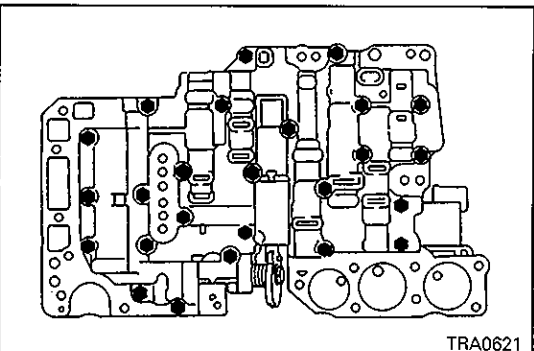
TRA0619

- (2) Remove the manual valve from the lower valve body.

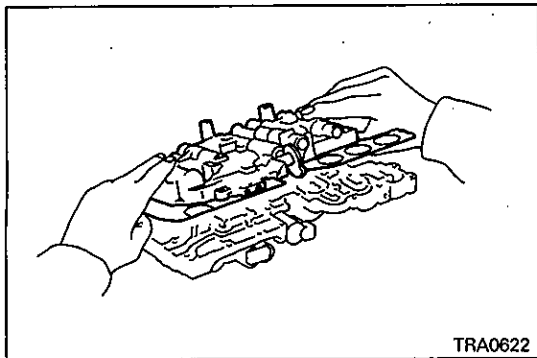


TRA0620

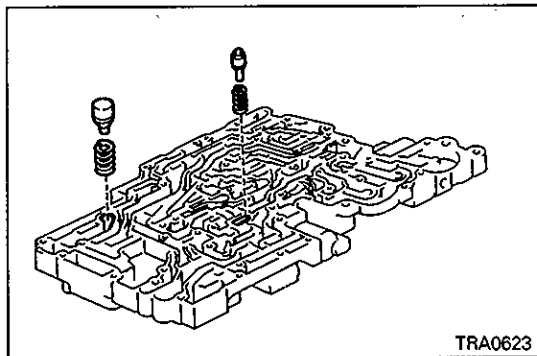
- (3) Using a deep socket wrench [8 mm (0.31 in.)], remove the 25 bolts from the upper valve body.



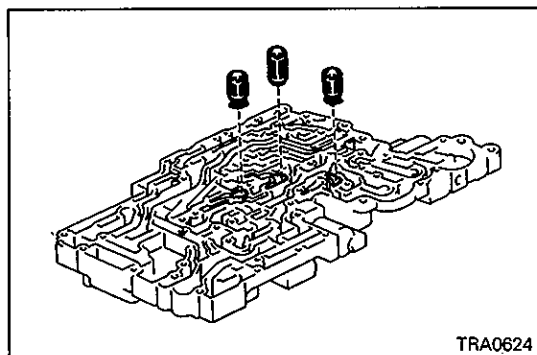
TRA0621



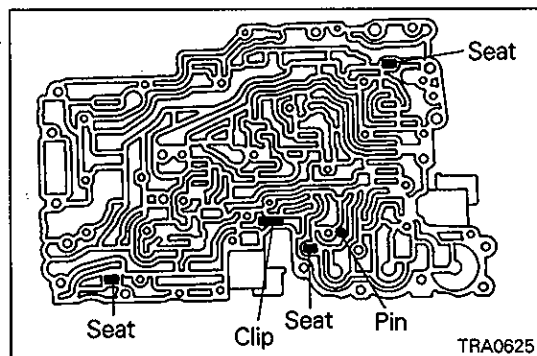
- (4) Separate the upper valve body from the lower valve body by pushing the valve body plate and gasket toward the upper valve body.
- (5) Place the upper valve body on the workbench with the side having the gasket and plate upward.



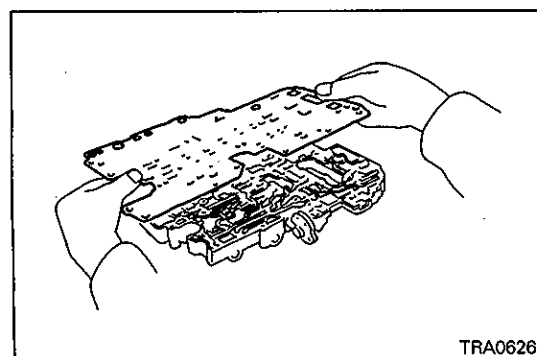
- (6) Remove the check valve and spring from the lower valve body.
- (7) Remove the pressure relief valve and spring from the lower valve body.



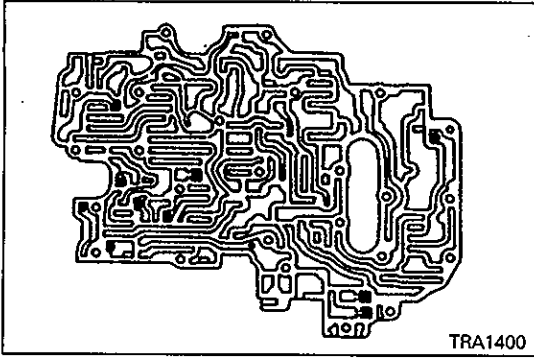
- (8) Remove the three strainers from the lower valve body.



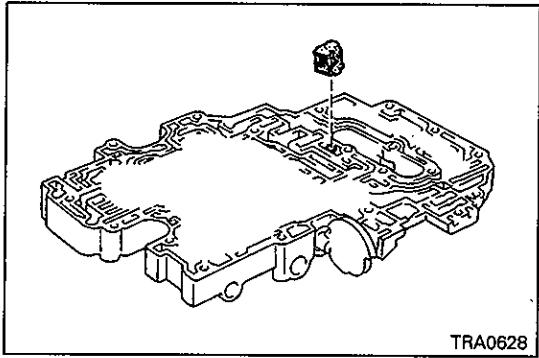
- (9) Check that the three seats, one pin and one clip are in position on the lower valve body.



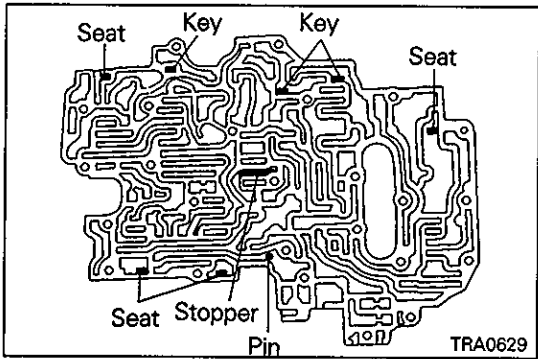
- (10) Remove the two valve body gaskets and the plate from the upper valve body.



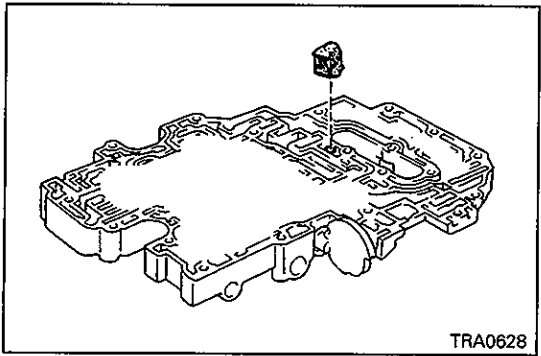
(11) Remove the 9 balls or 10 balls from the upper valve body.



(12) Remove the strainer from the upper valve body.

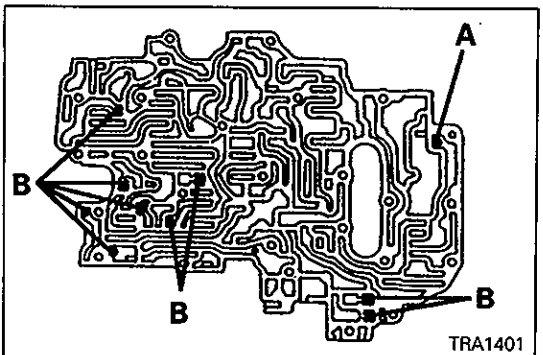


(13) Check that the one pin, four seats, three keys and one vibrating stopper are all in position.



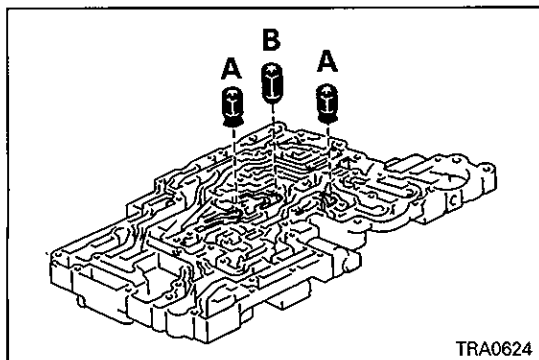
**REASSEMBLY**

(1) Install the solenoid oil strainer to the upper valve body.



(2) Install two types of 9 balls or 10 balls to the upper valve body.  
mm (in.)

Place	Dimension	Outer diameter
Rubber ball A		6.35 (0.250)
Rubber ball B		5.56 (0.219)

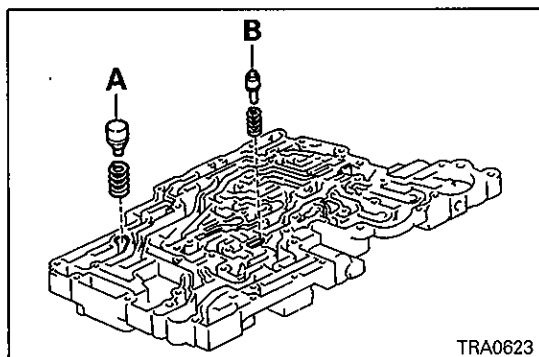


TRA0624

(3) Install the two solenoid oil strainers and one throttle oil strainer to the lower valve body.

mm (in.)

Type	Dimension	Outer diameter	Height
Solenoid oil strainer A		10.2 – 10.4 (0.401 – 0.409)	12.2 – 12.6 (0.480 – 0.488)
Throttle oil strainer B		10.2 – 10.4 (0.401 – 0.409)	19.3 – 19.7 (0.760 – 0.776)



TRA0623

(4) Install the two springs and then the check valve and pressure relief valve to the lower valve body.

**Spring**

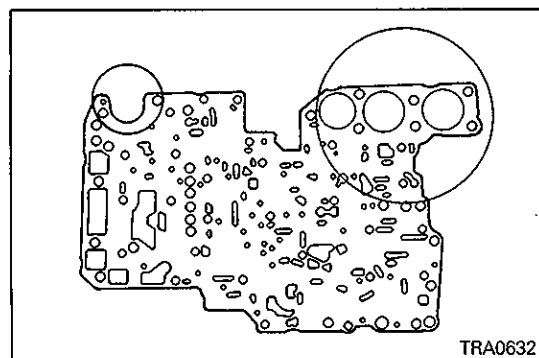
mm (in.)

Place	Dimension	Free height	Outside diameter	Number of loops	Wire diameter
Check valve		17.53 (0.690)	12.1 (0.476)	3.2	1.1 (0.043)
Relief valve		11.2 (0.441)	6.4 (0.252)	7.5	0.9 (0.035)

**Valve**

mm (in.)

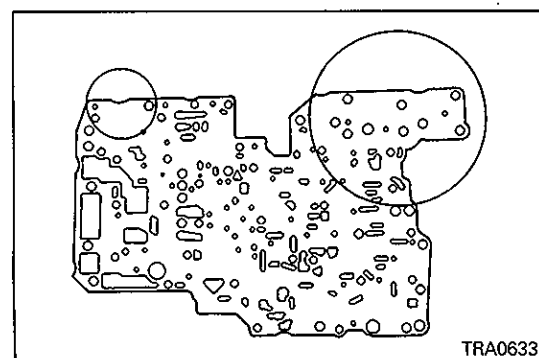
Type	Dimension	Outer diameter	Height
Check valve A		12.8 (0.504)	17.5 (0.689)
Pressure relief valve B		6.7 (0.264)	16.5 (0.650)



TRA0632

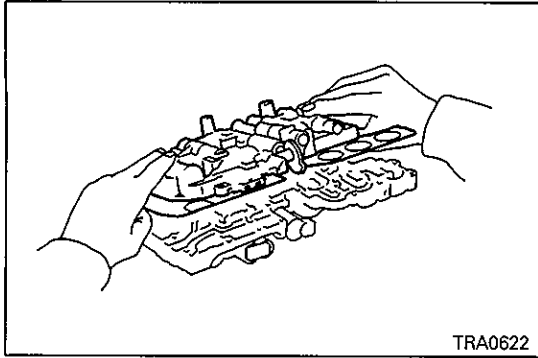
(5) In alignment with the bolt holes, install a new valve body gasket No.1 on the upper valve body.

(6) In alignment with the bolt holes, put the plate on the gasket No.1.



TRA0633

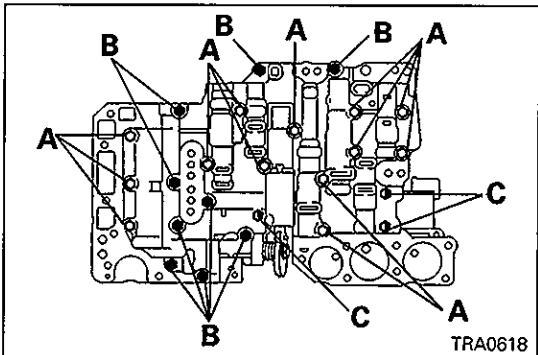
(7) Put a new valve body gasket No.2 on the plate.



- (8) While pushing the gaskets and the plate against the upper valve body, put the upper valve body on the lower valve body.

**Caution**

- Be careful not to drop the checkballs and strainers from the upper valve body.

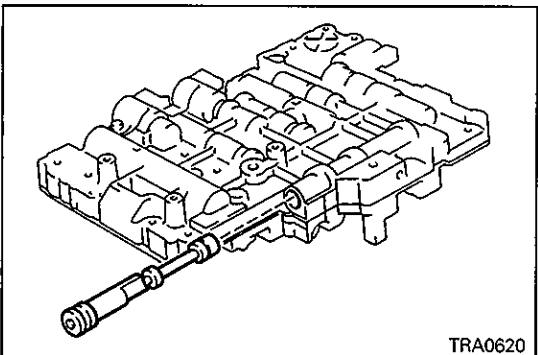


- (9) Insert the 25 bolts from the upper valve body side.

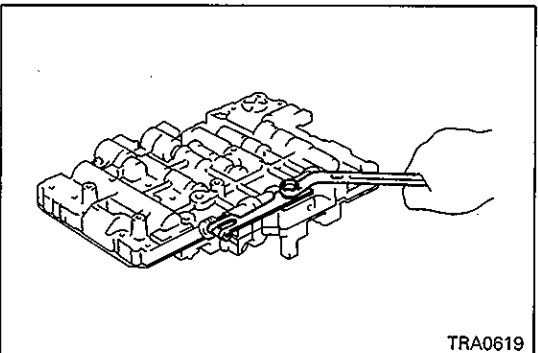
A: 38 mm (1.50 in.)

B: 20 mm (0.79 in.)

C: 28 mm (1.10 in.)



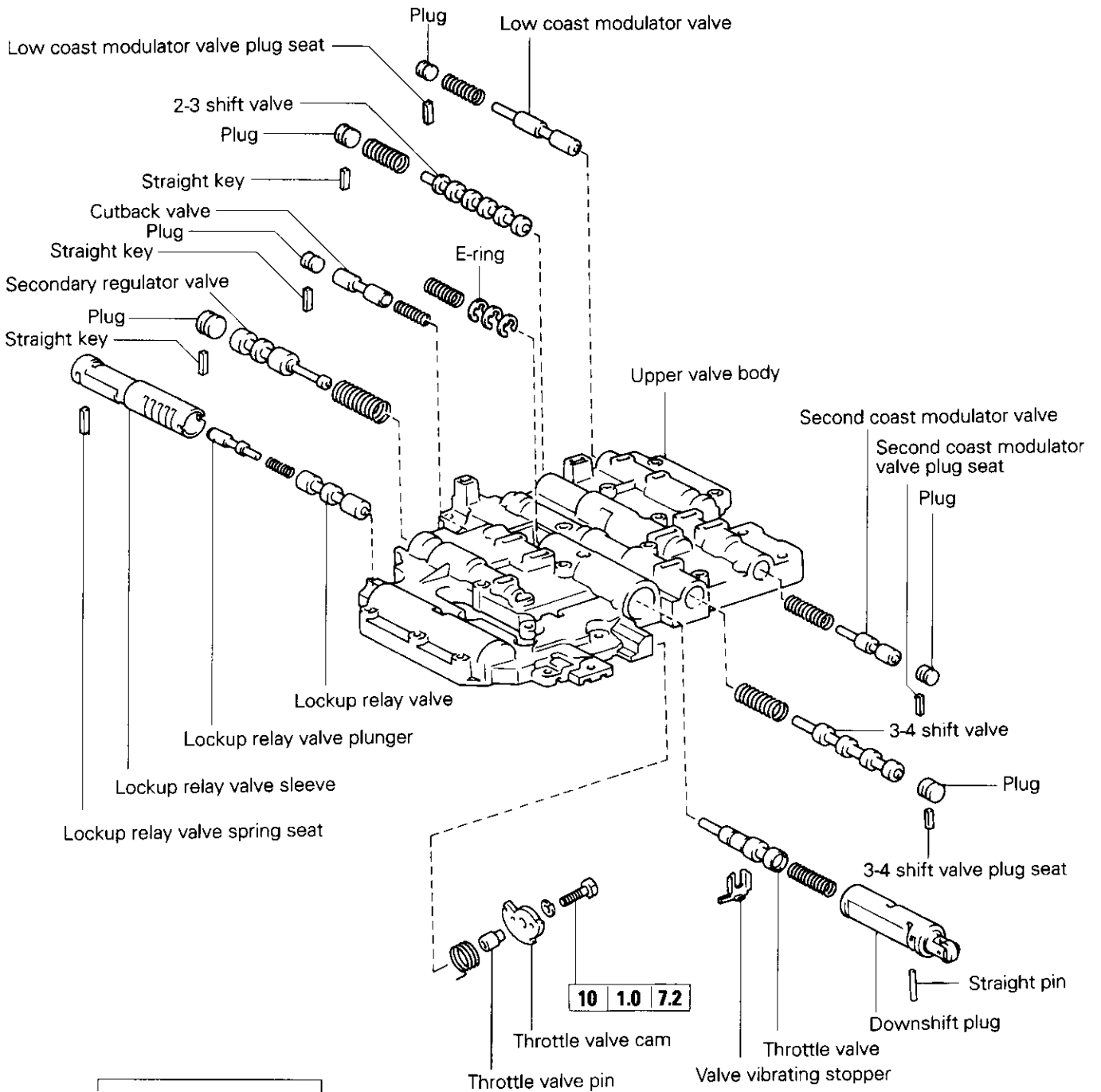
- (10) Install the manual valve to the lower valve body.




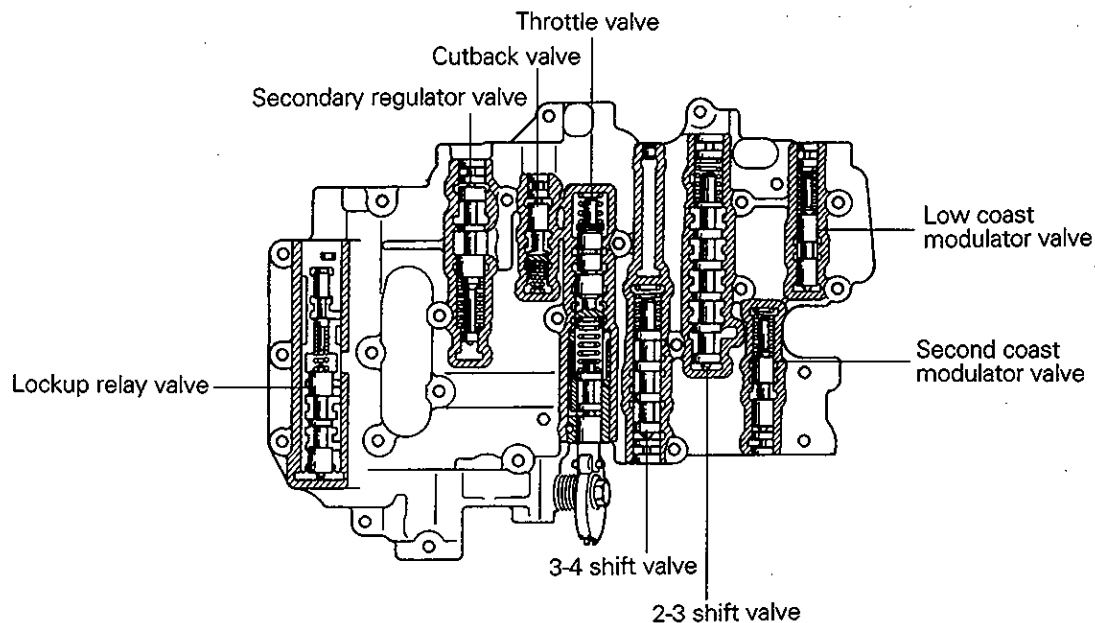
- (11) Install the detent spring and cover by tightening the bolt.



# 16. UPPER VALVE BODY DISASSEMBLY AND REASSEMBLY



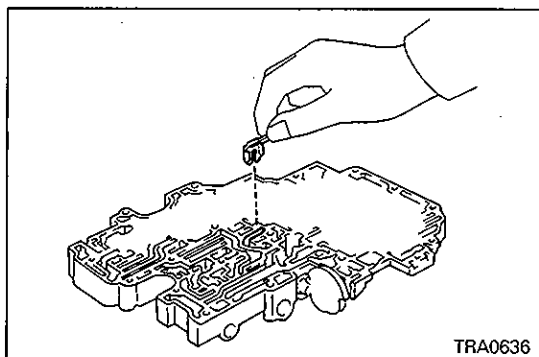
 Lubricate all internal parts with automatic transmission fluid during reassembly.



TRA0635

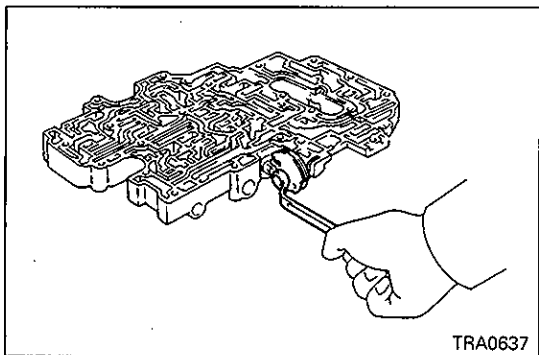
## DISASSEMBLY

- (1) Remove the valve vibrating stopper.



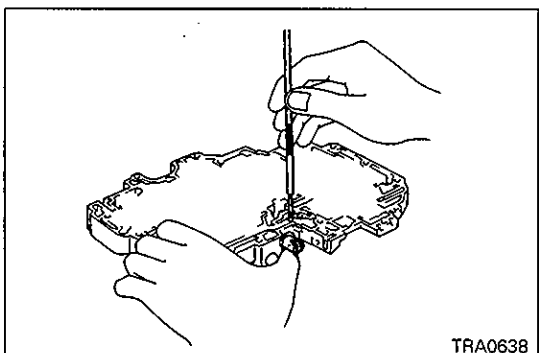
TRA0636

- (2) Remove the bolt and washer and then the throttle valve cam, pin and spring.

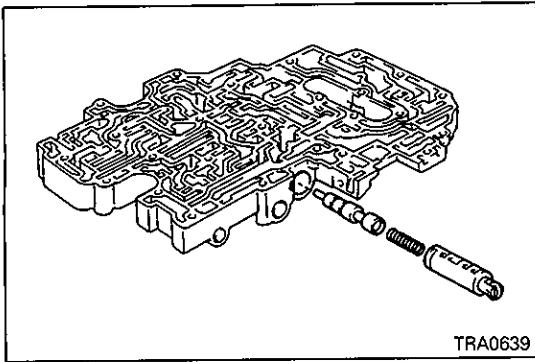


TRA0637

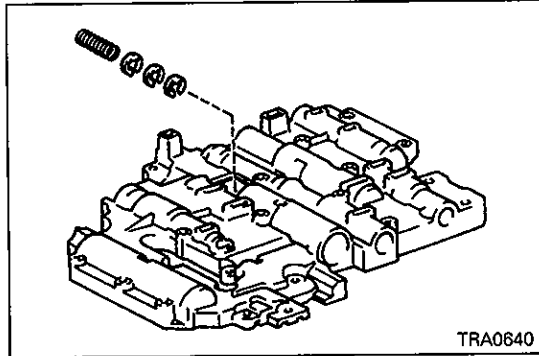
- (3) While pushing the downshift plug with a finger, use a magnet to remove the pin.



TRA0638



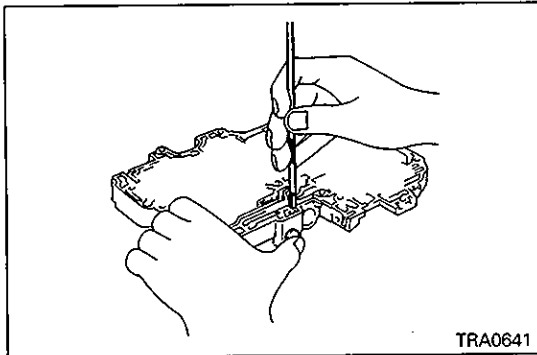
(4) Remove the downshift plug, spring and throttle valve.



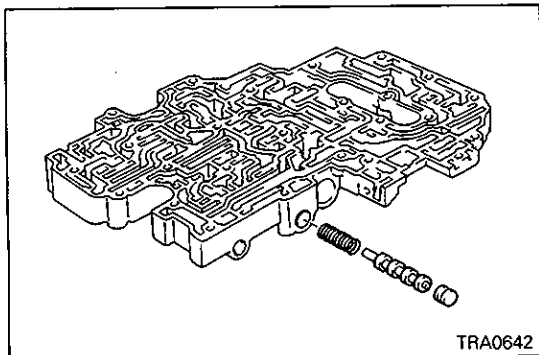
(5) Remove the spring and E-rings from the rear of the valve body.

**Caution**

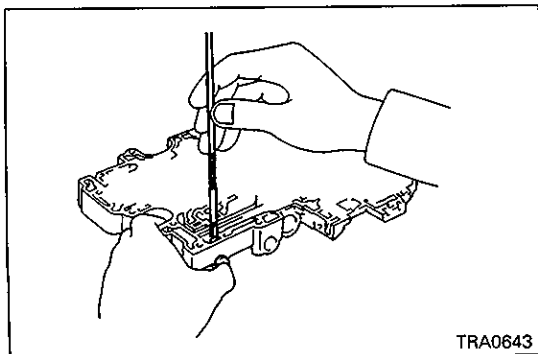
- Because the throttle pressure changes depending on the number of E-rings, remember how many E-rings have been used (sometimes zero).



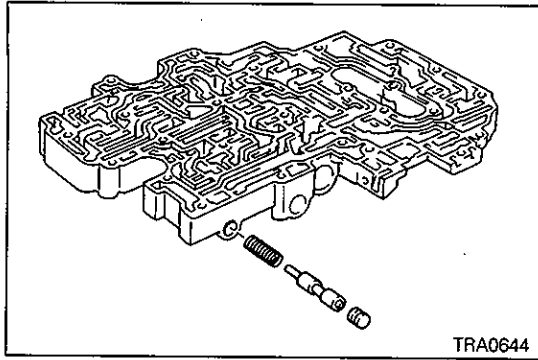
(6) While pushing the plug with a finger, use a magnet to remove the seat.



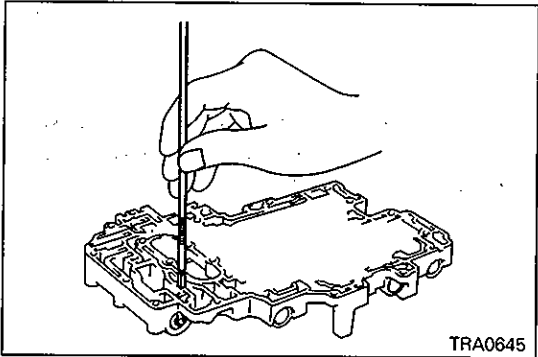
(7) Remove the plug, 3-4 sift valve and spring.



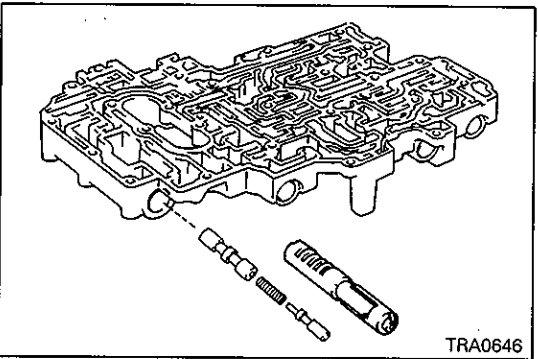
(8) While pushing the plug with a finger, use a magnet to remove the seat.



(9) Remove the plug, second coast modulator valve and spring.

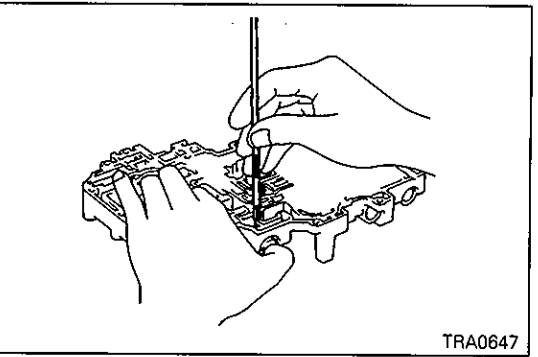


(10) Using a magnet, remove the seat.

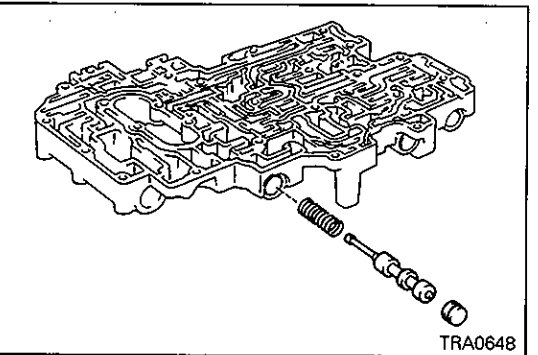


(11) Remove the lockup relay valve sleeve, lockup relay plunger, spring and lockup relay valve together.

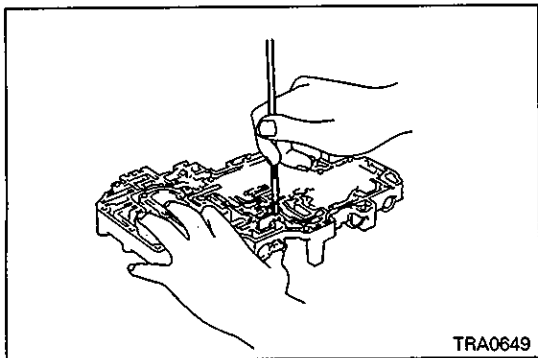
(12) Remove the lockup relay valve, spring and lockup relay valve plunger from the lockup relay valve sleeve.



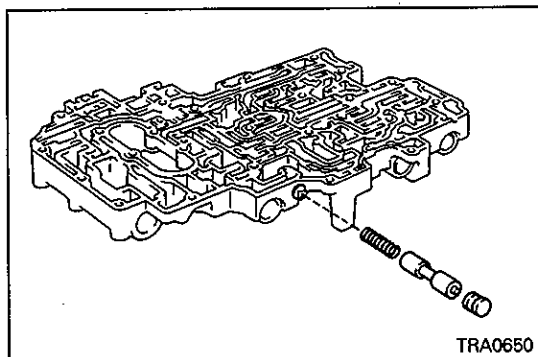
(13) While pushing the plug with a finger, use a magnet to remove the key.



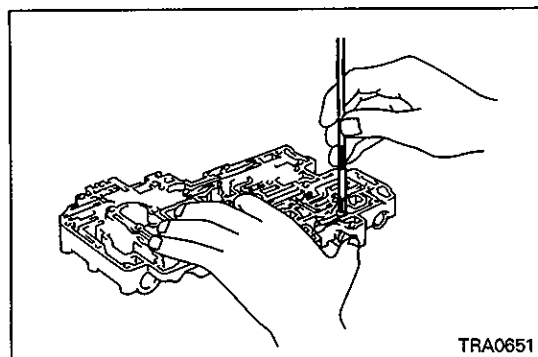
(14) Remove the plug, second regulator valve and spring.



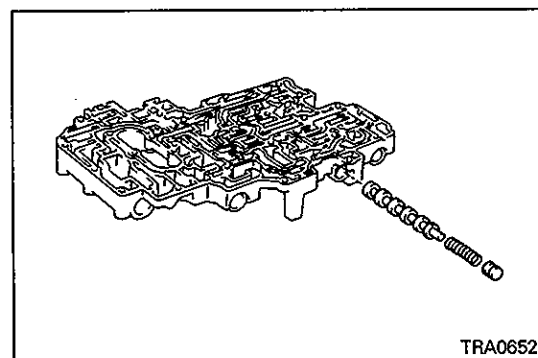
(15) While pushing the plug with a finger, use a magnet to remove the key.



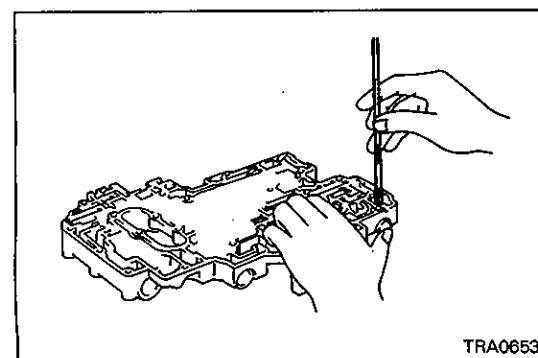
(16) Remove the plug, cutback valve and spring.



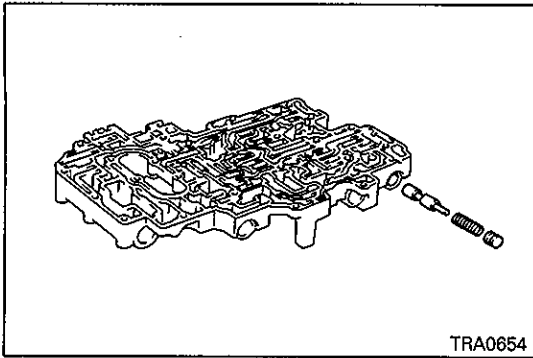
(17) While pushing the plug with a finger, use a magnet to remove the key.



(18) Remove the plug, spring and 2-3 shift valve.



(19) While pushing the plug with a finger, use a magnet to remove the seat.



(20) Remove the plug, spring and low coast modulator valve.

## INSPECTION VALVE SPRING

(1) Check the free height and outside diameter of each spring.

### Standard value

Place	Dimension	Free height	Outside diameter	Number of loops	Wire diameter
(1) Downshift plug		27.3 (1.075)	8.7 (0.343)	10.5	1.0 (0.039)
(2) Throttle valve		20.6 (0.811)	9.2 (0.362)	7.5	0.7 (0.028)
(3) 3-4 shift valve		30.8 (1.213)	9.7 (0.381)	8.5	0.9 (0.035)
(4) Second coast modulator valve*1		30.9 (1.217)	8.6 (0.339)	9.5	1.1 (0.043)
Second coast modulator valve*2		29.6 (1.165)	8.3 (0.327)	10.5	1.0 (0.039)
(5) Lockup relay valve		21.4 (0.843)	5.5 (0.217)	15.5	0.6 (0.024)
(6) Secondary regulator valve		30.9 (1.217)	11.2 (0.441)	8.5	1.5 (0.059)
(7) Cutback valve		21.8 (0.858)	6.0 (0.236)	11.5	0.6 (0.024)
(8) 2-3 shift valve		30.8 (1.213)	9.7 (0.381)	8.5	0.9 (0.035)
(9) Low coast modulator valve		30.4 (1.197)	8.3 (0.327)	8.5	0.8 (0.031)

Unit of free height, outside diameter and wire diameter: mm (in.)

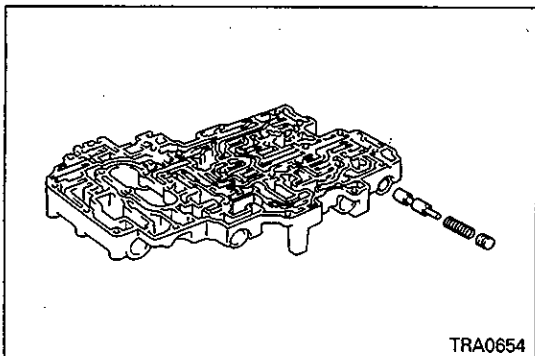
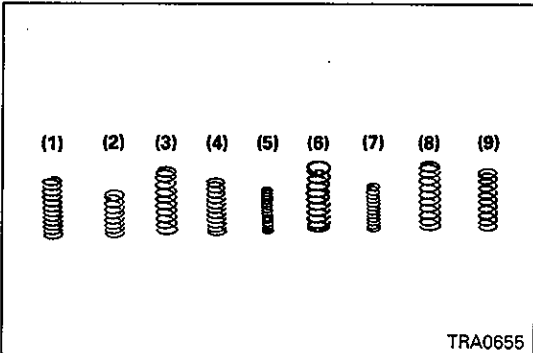
### NOTE

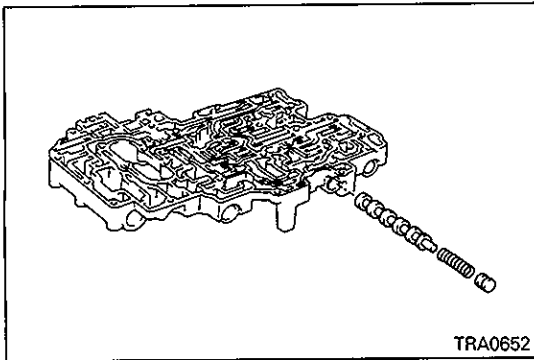
\*1: Except V4AW3-B-U

\*2: V4AW3-B-U only

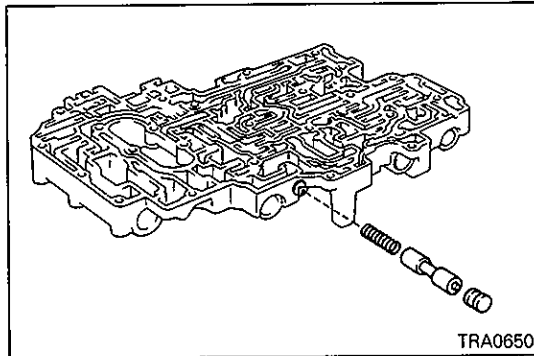
## REASSEMBLY

- (1) Install the low coast modulator valve, spring and plug as illustrated.
- (2) While pushing the plug with a finger, install the seat.

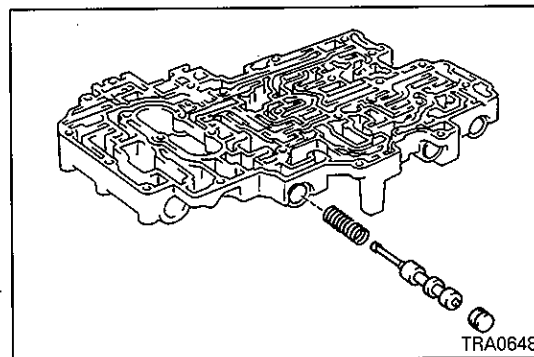




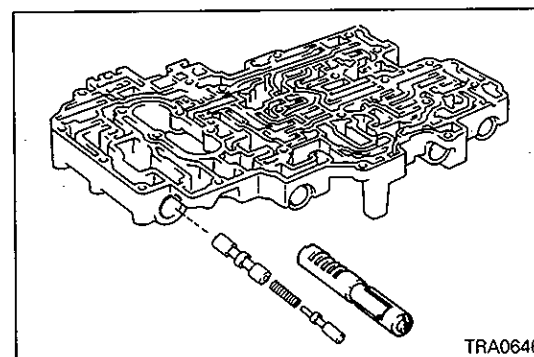
- (3) Install the 2-3 shift valve, spring and plug as illustrated.
- (4) While pushing the plug with a finger, install the key.



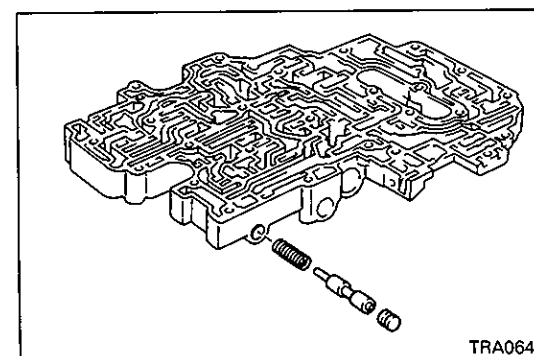
- (5) Install the spring, cutback valve and plug as illustrated.
- (6) While pushing the plug with a finger, install the key.



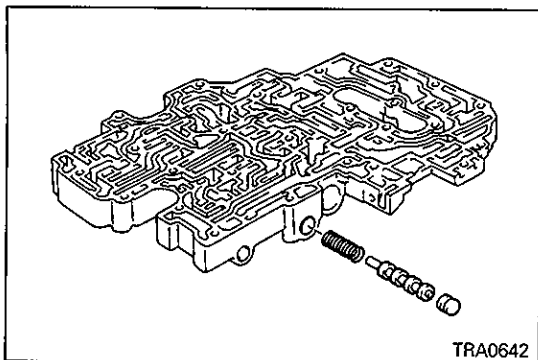
- (7) Install the spring, secondary regulator valve and plug as illustrated.
- (8) While pushing the plug with a finger, install the key.



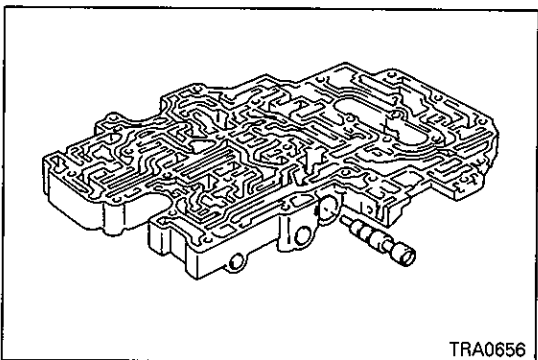
- (9) Install the lockup relay valve plunger and spring to the lockup relay valve sleeve as illustrated.
- (10) Install the lockup relay valve to the lockup relay valve sleeve.
- (11) Install the lockup relay valve sleeve, lockup relay valve, spring, and lockup relay valve plunger together as illustrated.
- (12) Install the seat.



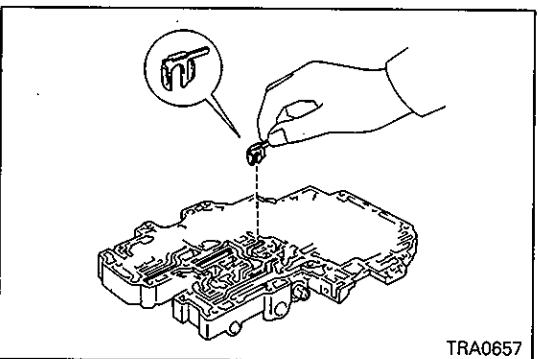
- (13) Install the spring, second coast modulator valve and plug as illustrated.
- (14) While pushing the plug with a finger, install the seat.



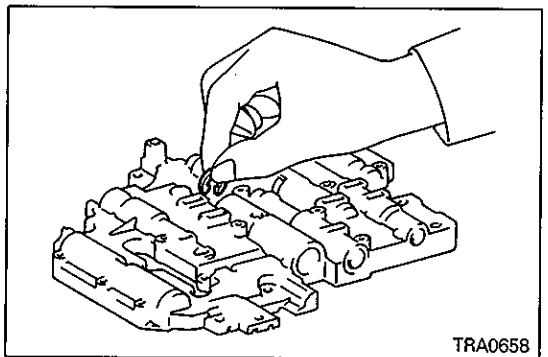
- (15) Install the spring, 3-4 shift valve and plug as illustrated.  
 (16) While pushing the plug with a finger, install the seat.



- (17) Install the throttle valve to the valve body as illustrated.



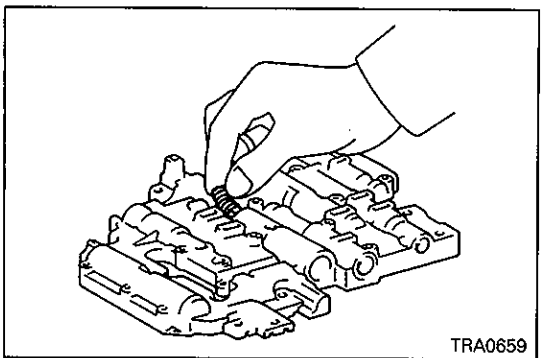
- (18) Install the valve vibrating stopper in the illustrated position.



- (19) With the valve vibrating stopper held with a finger, turn the valve body over. Install the E-rings to the throttle valve.

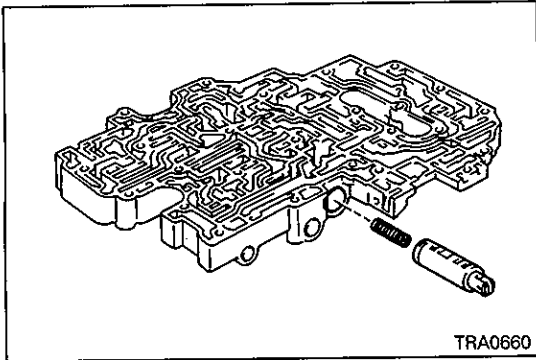
**Caution**

- The number of E-rings to be installed must be equal to that of the E-rings which were removed.

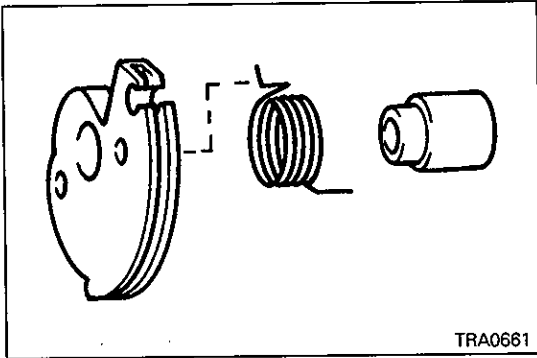


- (20) Install the spring to the throttle valve.

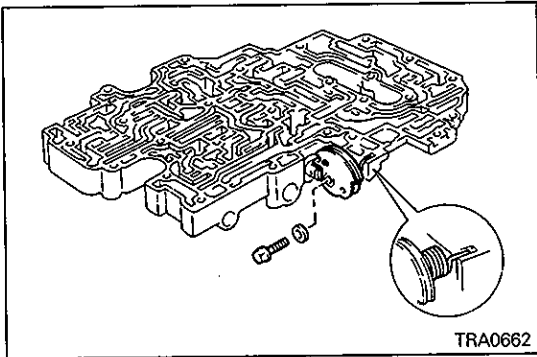




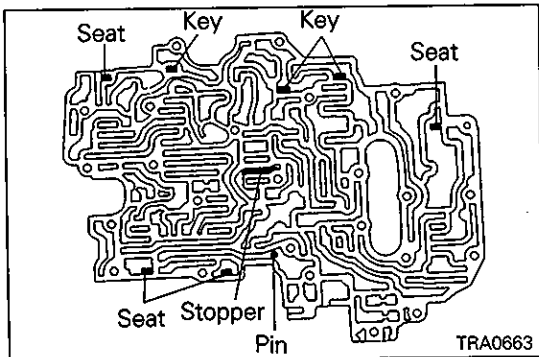
- (21) Turn the valve body over again. Install the spring and downshift valve as illustrated.
- (22) While pushing the downshift valve with a finger, install the pin.



- (23) Install the spring and collar to the throttle valve cam.



- (24) Install the throttle valve cam to the valve body and check that the spring is anchored to the valve body by the claw.
- (25) Tighten the bolt together with the washer.



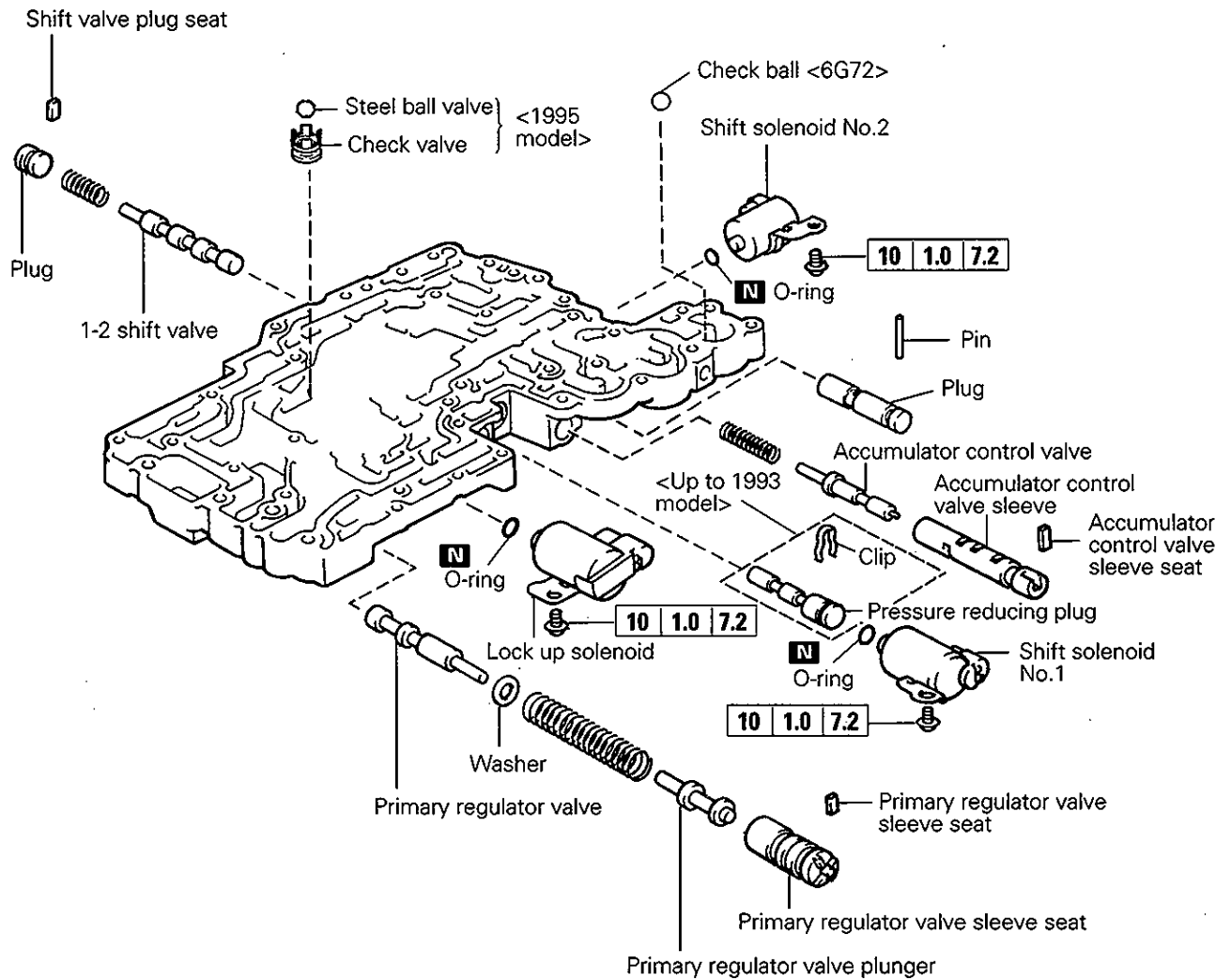
- (26) Check that the one pin, four seats, three keys and one vibrating stopper are installed as illustrated.


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## NOTES

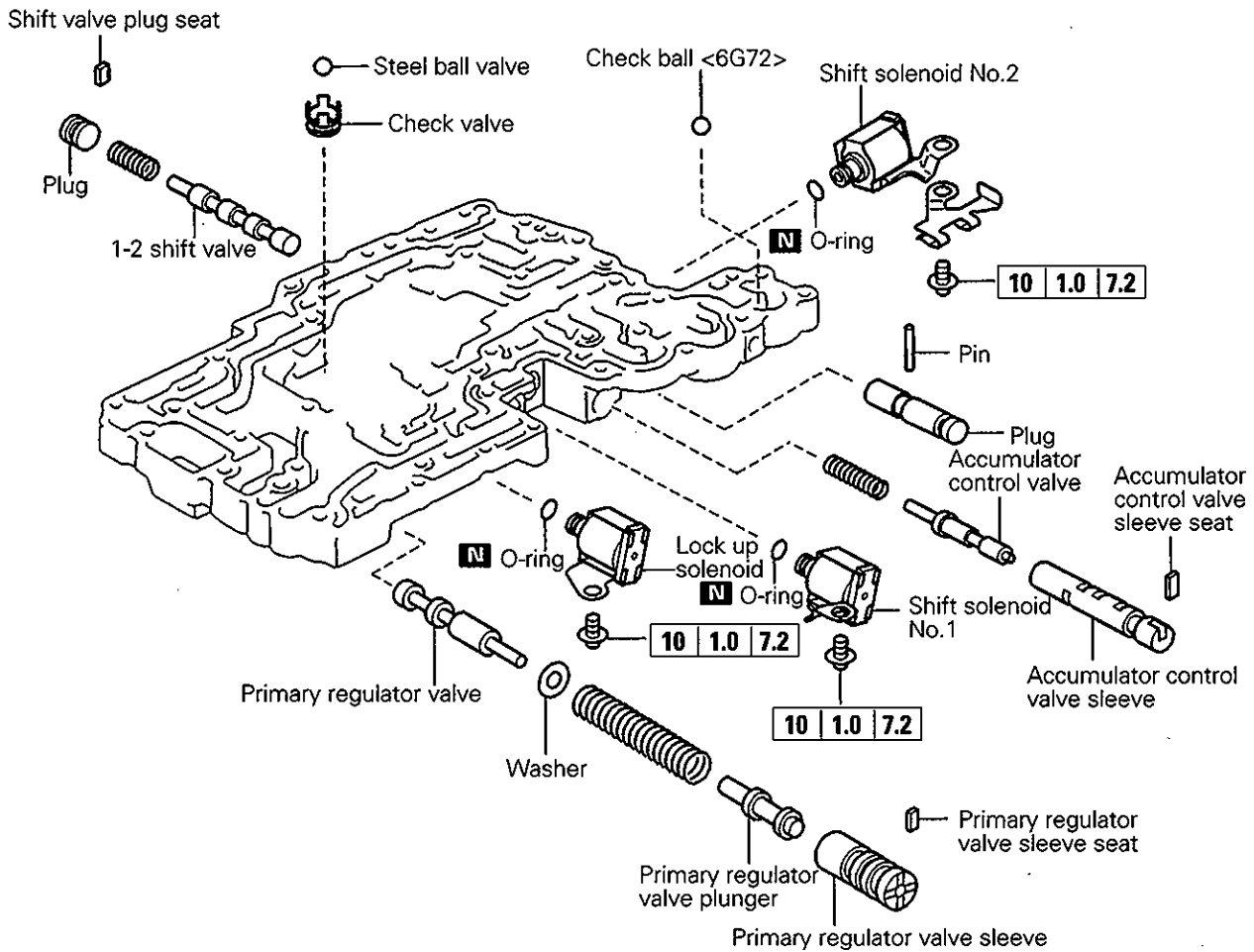
# 17. LOWER VALVE BODY


## DISASSEMBLY AND REASSEMBLY <Up to 1995 models>



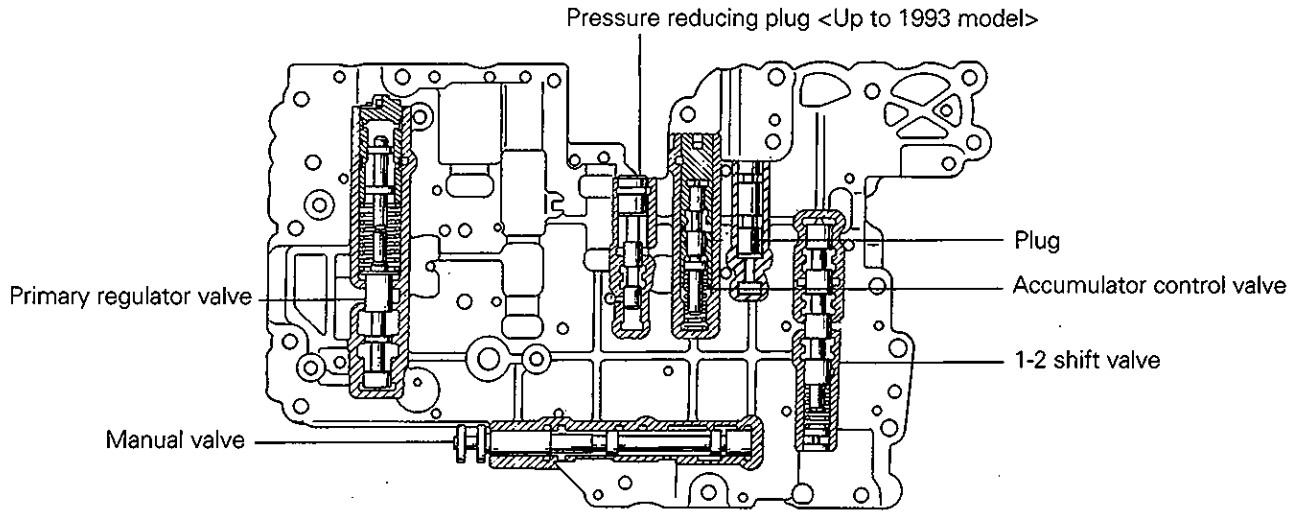
 Lubricate all internal parts with automatic transmission fluid during reassembly.

DISASSEMBLY AND REASSEMBLY <1996 model>



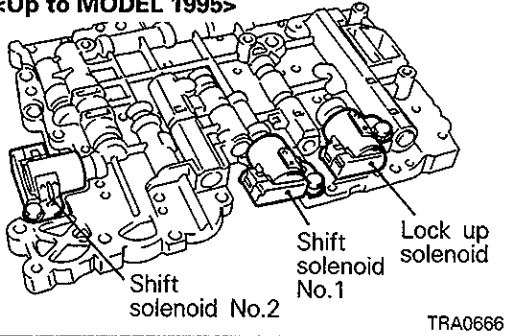
 Lubricate all internal parts with automatic transmission fluid during reassembly.

Intentionally blank



TRA0837

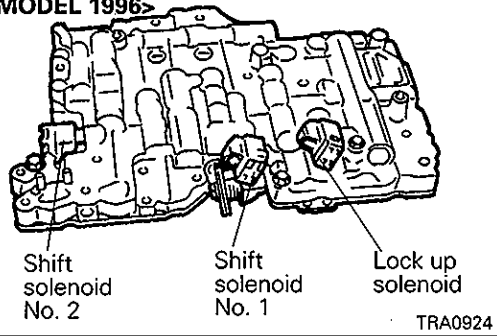
<Up to MODEL 1995>



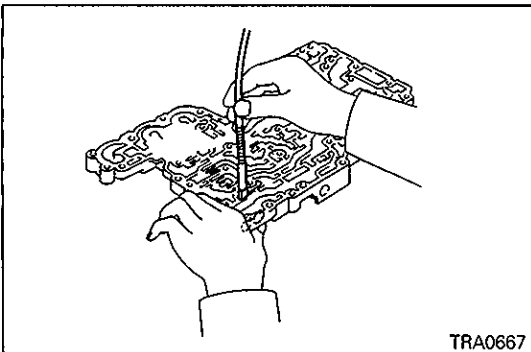
**DISASSEMBLY**

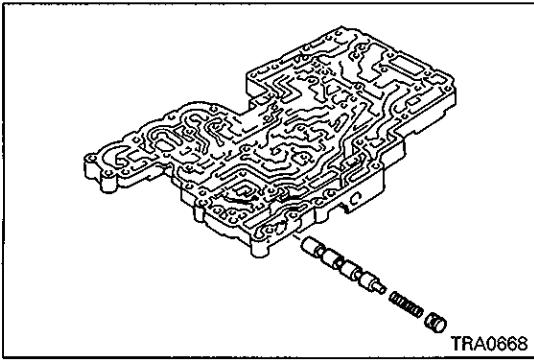
- (1) Remove the steel ball and check valve.
- (2) Remove the check ball. <6G72>
- (3) Remove each bolt and then remove the shift solenoids No.1, No.2 and lock up solenoid.
- (4) Remove the O-ring from each solenoid.

<MODEL 1996>



- (5) While pushing the plug with a finger, use a magnet to remove the seat.

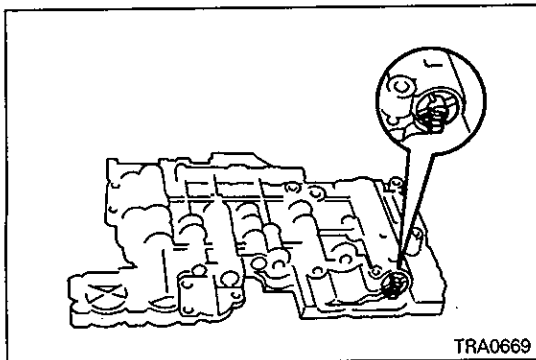




(6) Remove the plug, spring and 1-2 shift valve.

Intentionally blank

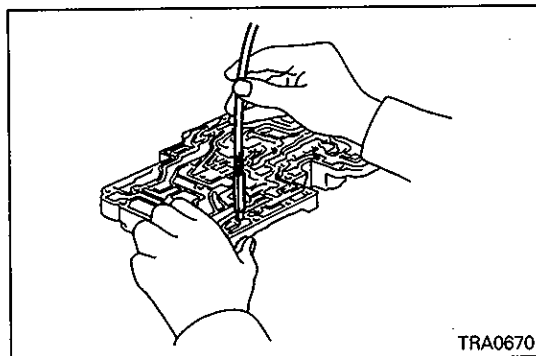




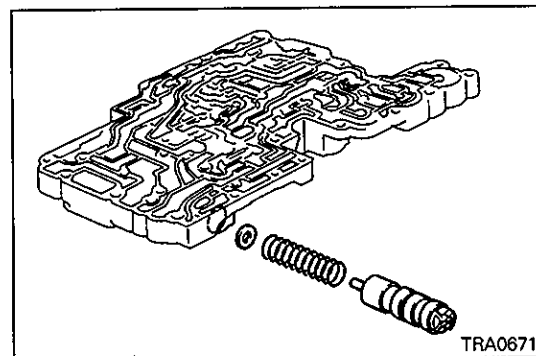
- (7) Examine which groove of the primary regulator valve sleeve engages with the seat.

**Caution**

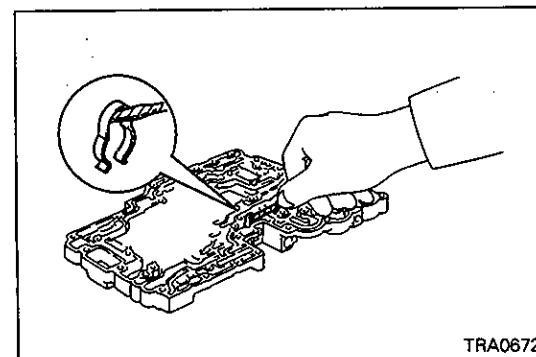
- Because this has influence on the line pressure, make a note of it.



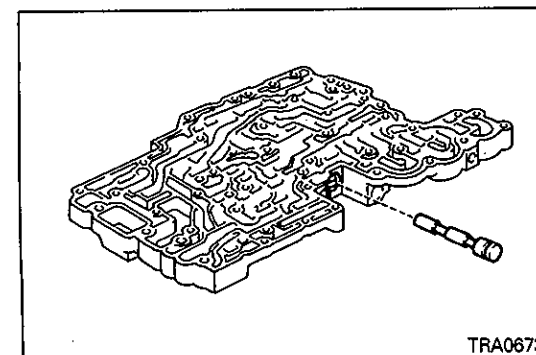
- (8) While pushing the sleeve with a finger, use a magnet to remove the seat.



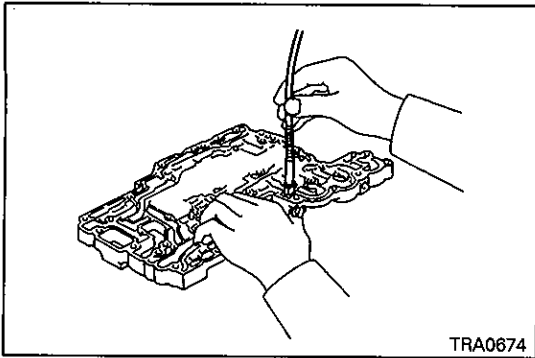
- (9) Remove the primary regulator valve sleeve and primary regulator valve plunger together and then remove the spring, washer and primary regulator valve.  
 (10) Remove the primary regulator valve plunger from the primary regulator valve sleeve.



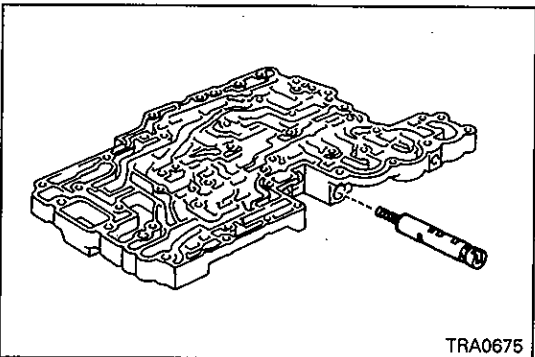
- (11) Using a screwdriver, remove the clip. <Up to 1993 model>



- (12) Remove the pressure reducing plug. <Up to 1993 model>

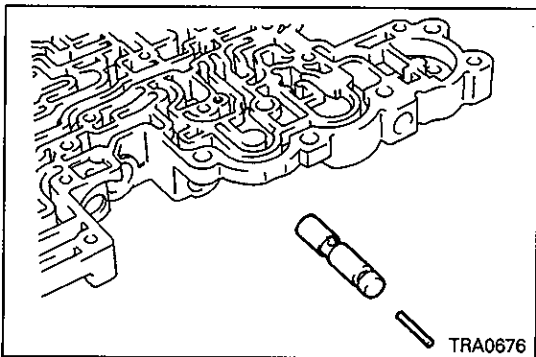


(13) While pushing the sleeve with a finger, use a magnet to remove the seat.



(14) Remove the accumulator control valve sleeve, accumulator control valve and spring together.

(15) Remove the spring and accumulator control valve from the accumulator control valve sleeve.



(16) Using a magnet, remove the pin.

(17) Remove the plug.

**INSPECTION  
VALVE SPRING**

(1) Check the free height and outside diameter of each spring.

**Standard value**

Place / Dimension	Free height	Outside diameter	Number of loops	Wire diameter
(1) 1-2 shift valve	30.8 (1.213)	9.7 (0.381)	8.5	0.9 (0.035)
(2) primary regulator valve*1	62.3 (2.453)	18.6 (0.732)	12.5	1.7 (0.067)
primary regulator valve*2	66.7 (2.626)	17.6 (0.693)	10.5	1.6 (0.063)
(3) accumulator control valve*3	33.9 (1.335)	8.8 (0.346)	10.0	0.8 (0.031)
accumulator control valve*4	29.8 (1.173)	8.8 (0.346)	16.0	0.8 (0.031)

Unit of free height, outside diameter and wire diameter: mm (in.)

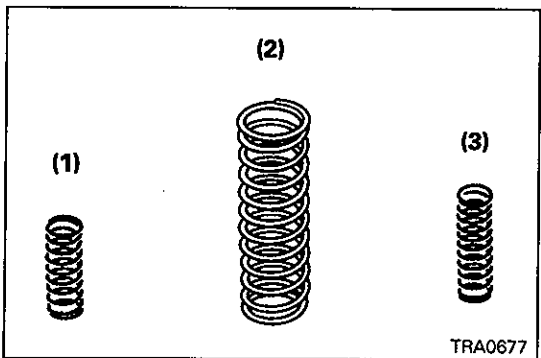
**NOTE**

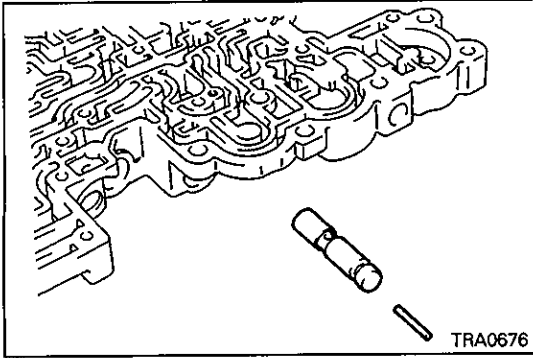
\*1: Except V4AW3-B-U

\*2: V4AW3-B-U

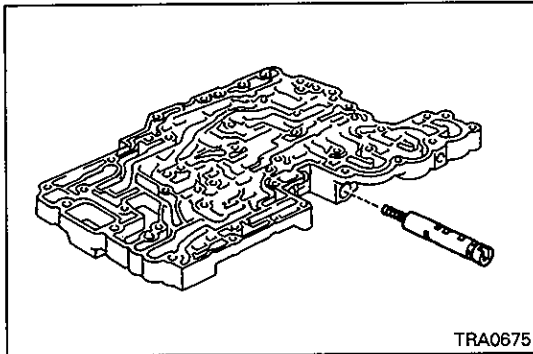
\*3: Except V4AW3-B-N, U

\*4: V4AW3-B-N, U

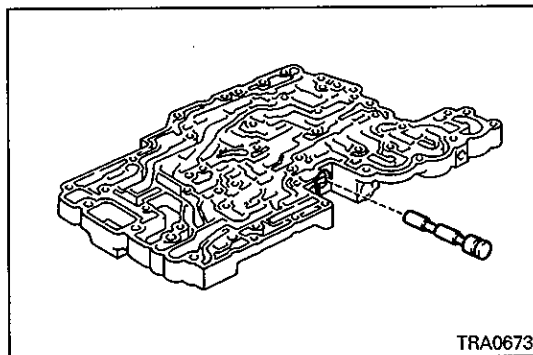


**REASSEMBLY**

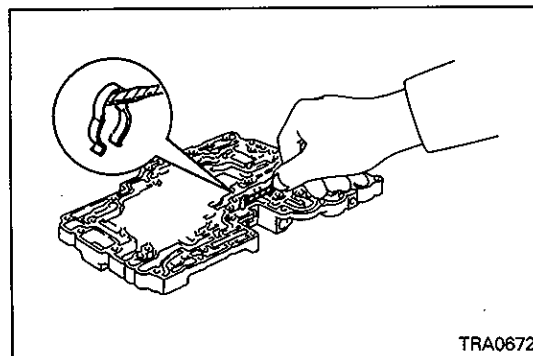
- (1) Install the plug as illustrated.
- (2) Install the pin.



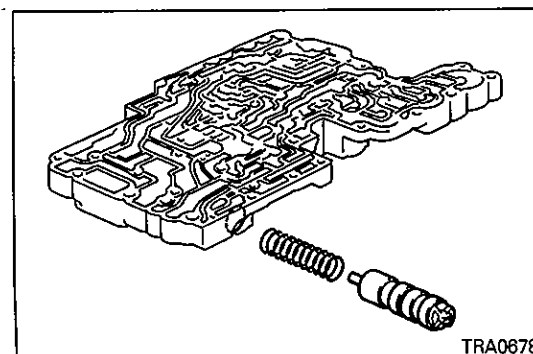
- (3) Install the accumulator control valve and spring to the accumulator control valve sleeve as illustrated.
- (4) Install the accumulator control valve sleeve, accumulator control valve and spring together.
- (5) While pushing the accumulator control valve sleeve with a finger, install the seat.



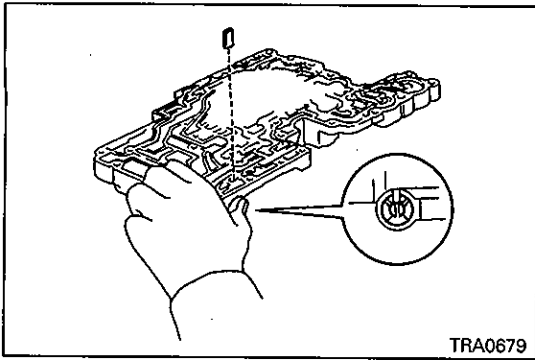
- (6) Install the pressure reducing plug as illustrated. <Up to 1993 model>



- (7) Install the clip along the groove of the pressure reducing plug. <Up to 1993 model>



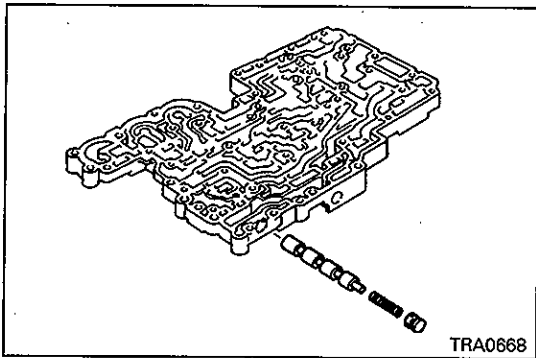
- (8) Install the washer to the primary regulator valve.
- (9) Install the washer and primary regulator valve together.
- (10) Install the primary regulator valve plunger to the pressure regulator valve sleeve as illustrated.
- (11) Install the spring, pressure regulator valve sleeve and primary regulator valve plunger together.



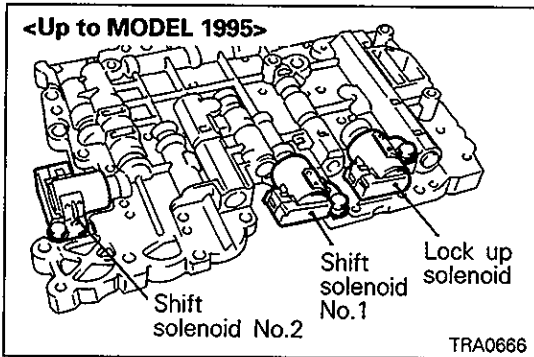
(12) While pushing the pressure regulator valve sleeve with a finger, install the seat.

**Caution**

- The seat must engage with the same groove of the primary regulator valve sleeve as before.

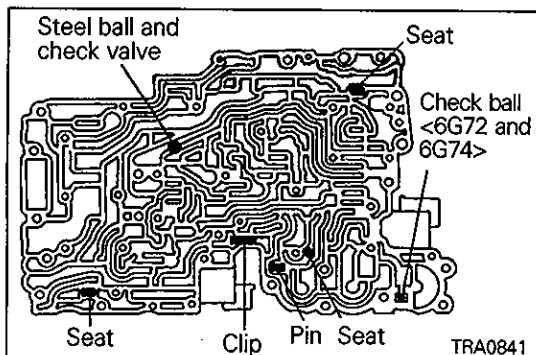
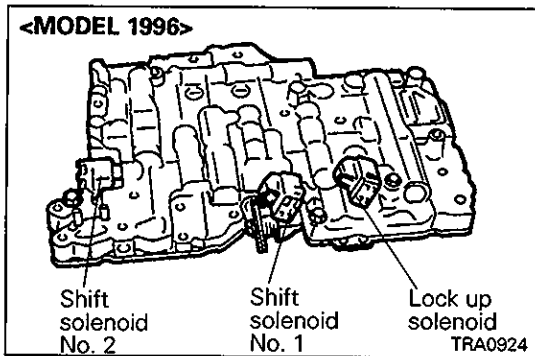


(13) Install the 1-2 shift valve, spring and plug as illustrated.  
 (14) While pushing the plug, install the seat.



(15) Apply ATF to three new O-rings and install them to the solenoids respectively.

(16) Put the shift solenoids No.1, No.2 and lock up solenoid as illustrated and tighten the bolts.



(17) Check that the three seats and one clip are installed as illustrated.

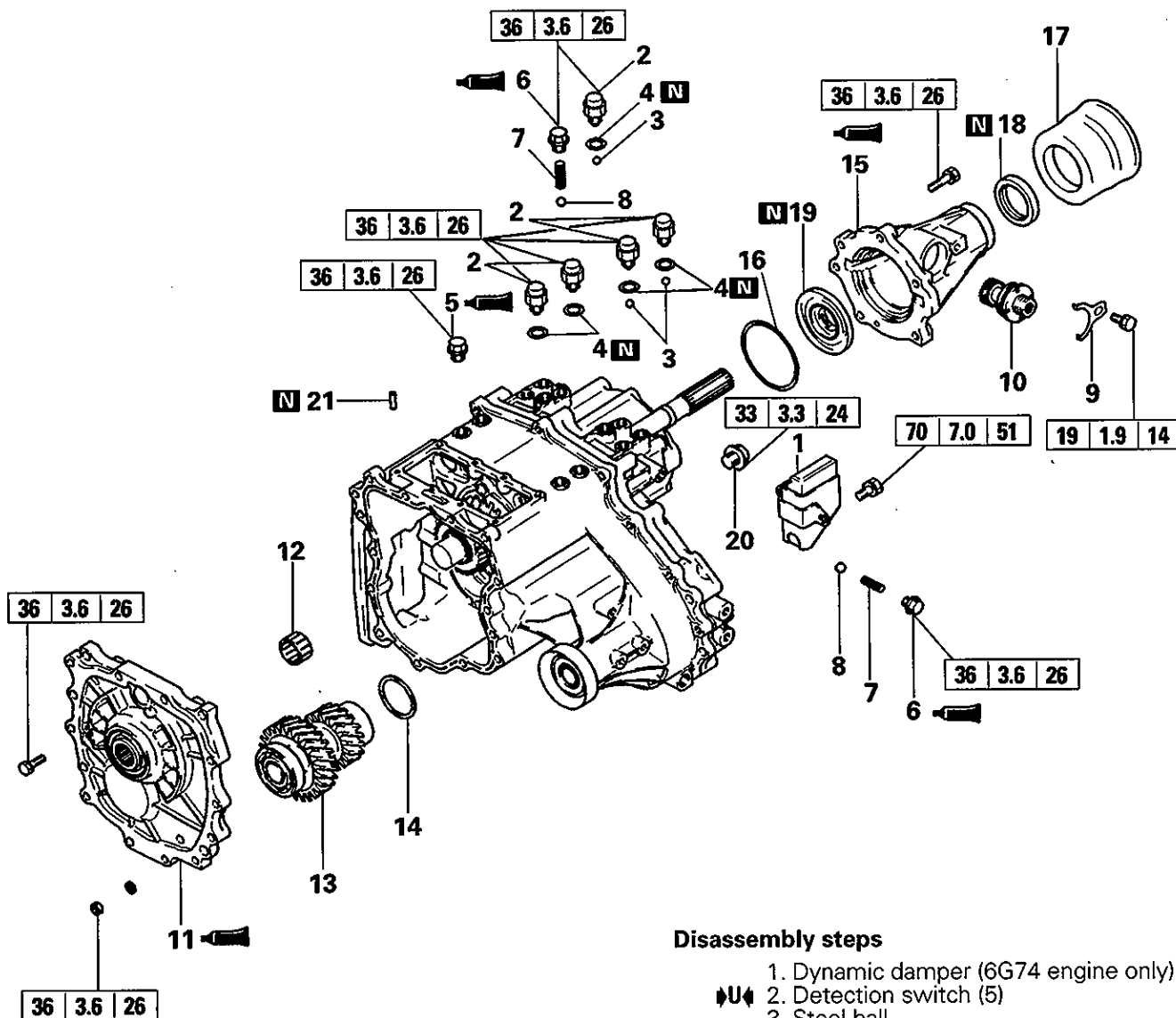
(18) Install the check ball. <6G72 and 6G74>

(19) Install the steel ball and check valve.

# 18. TRANSFER


## DISASSEMBLY AND REASSEMBLY

<LHD>



[36 | 3.6 | 26]

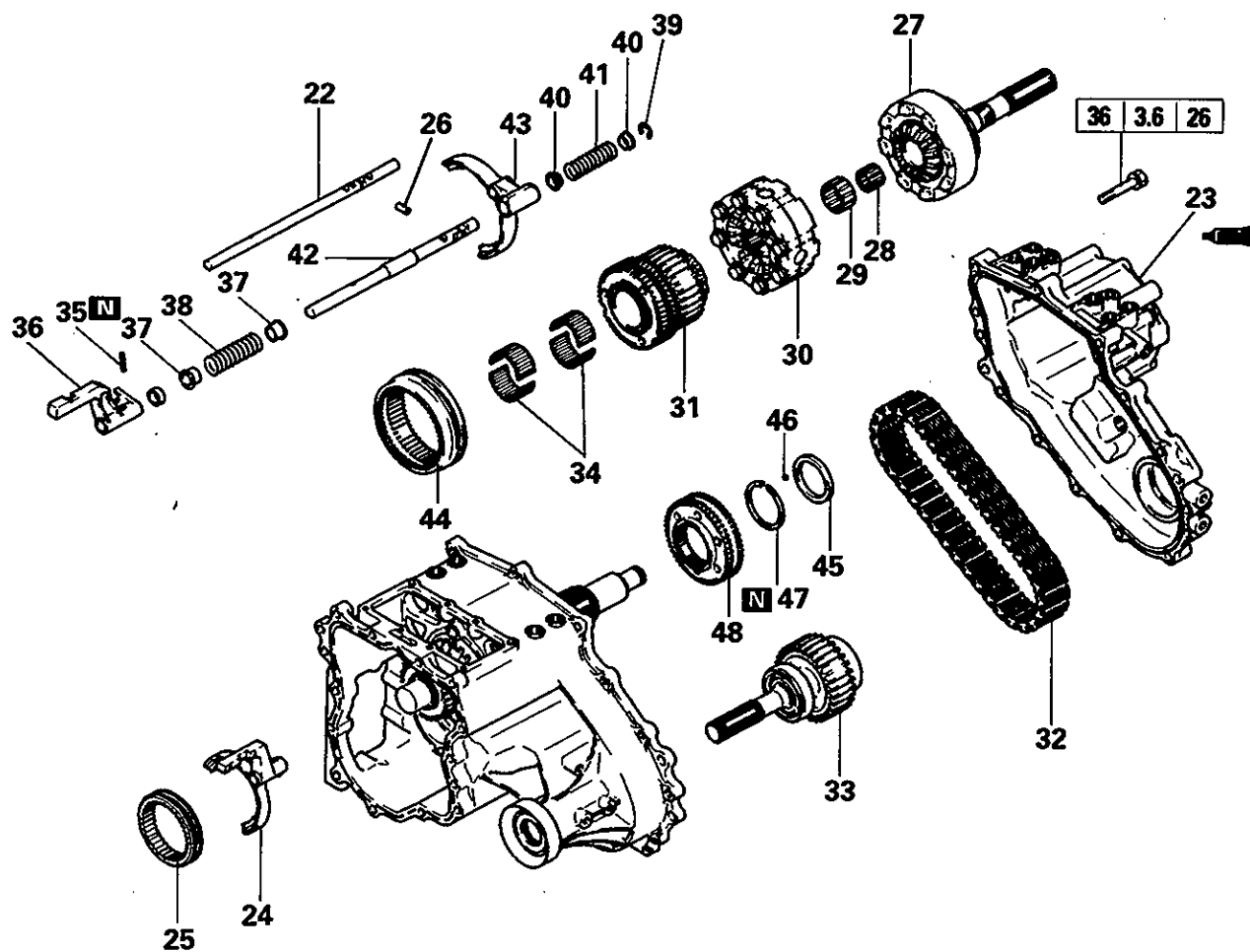
[36 | 3.6 | 26]

 Lubricate all internal parts with gear oil during reassembly.

### Disassembly steps

1. Dynamic damper (6G74 engine only)
- U 2. Detection switch (5)
3. Steel ball
4. Gasket
- T 5. Plug (7)
- S 6. Poppet plug
- R 7. Poppet spring
8. Steel ball
9. Sleeve clamp
- Q 10. Speedometer gear assembly
- P 11. Transfer case plate
12. Needle bearing
13. Countershaft gear
- O 14. Spacer
- N 15. Rear cover
- M 16. Spacer
17. Dust seal guard
- L 18. Oil seal
- K 19. Oil seal
20. H-L shift rail plug
- J 21. Spring pin (H-L shift fork)

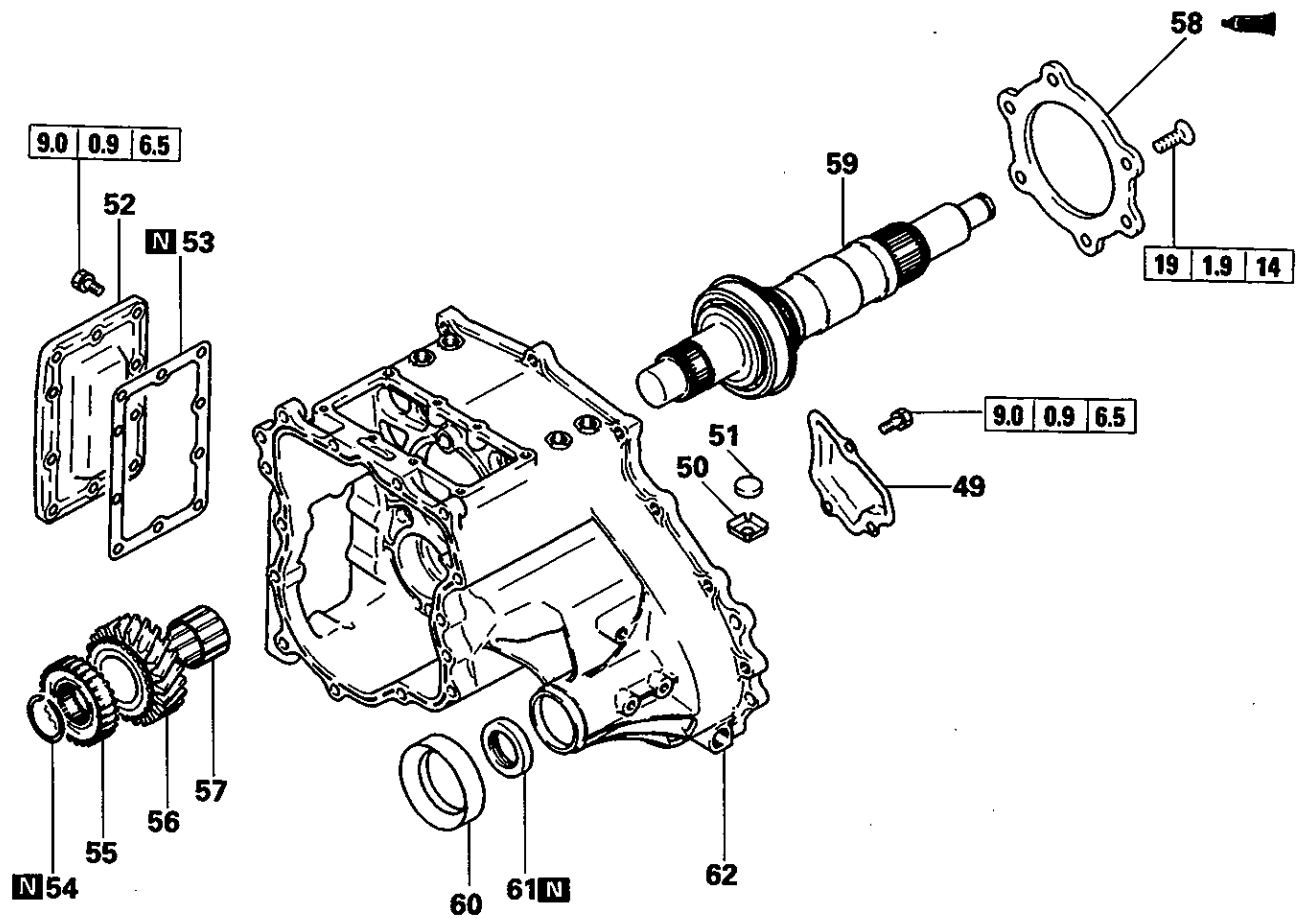
TRA0703



Lubricate all internal parts with gear oil during reassembly.

### Disassembly steps

- ◇A◇ ▶J◇ 22. H-L shift rail
- ◇A◇ ▶I◇ 23. Chain cover
- 24. H-L shift fork
- 25. H-L clutch sleeve
- ▶I◇ 26. Interlock plunger
- 27. Rear output shaft
- 28. Needle bearing
- 29. Needle bearing
- 30. Center differential case
- ◇B◇ ▶H◇ 31. 2-4WD synchronizer
- ◇B◇ ▶H◇ 32. Chain
- ◇B◇ ▶H◇ 33. Front output shaft
- 34. Needle bearing
- ◇C◇ ▶G◇ 35. Spring pin (2-4WD shift lug)
- ▶G◇ 36. 2-4WD shift lug
- ▶G◇ 37. Spring seat
- ▶G◇ 38. Spring
- 39. E-ring
- 40. Spring seat
- 41. Spring
- ▶G◇ 42. 2-4WD shift rail
- 43. 2-4WD shift fork
- 44. 2-4WD synchronizer sleeve
- 45. Sleeve
- 46. Steel ball
- ▶F◇ 47. Snap ring
- 48. Differential lock hub



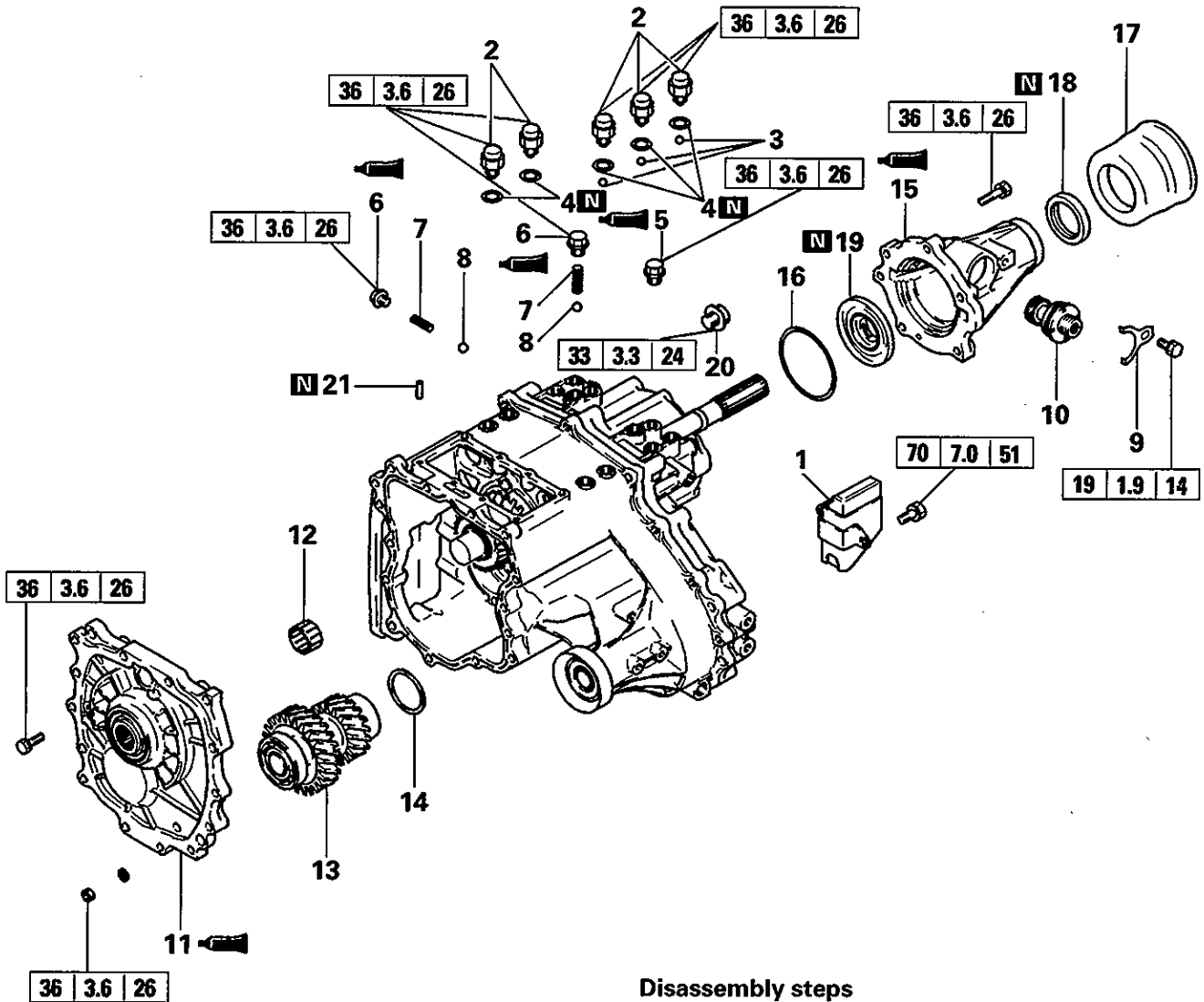
### Disassembly steps


- 49. Oil pool cover
- ▶E▶ 50. Magnet holder
- ▶E▶ 51. Magnet
- 52. Side cover
- 53. Side cover gasket
- ▶D▶ 54. Snap ring
- ▶C▶ 55. H-L clutch hub
- 56. Low speed gear
- 57. Needle bearing
- ▶B▶ 58. Rear bearing retainer
- 59. Transfer drive shaft
- 60. Dust seal guard
- ▶A▶ 61. Oil seal
- 62. Transfer case



Lubricate all internal parts with gear oil during reassembly.

<RHD>

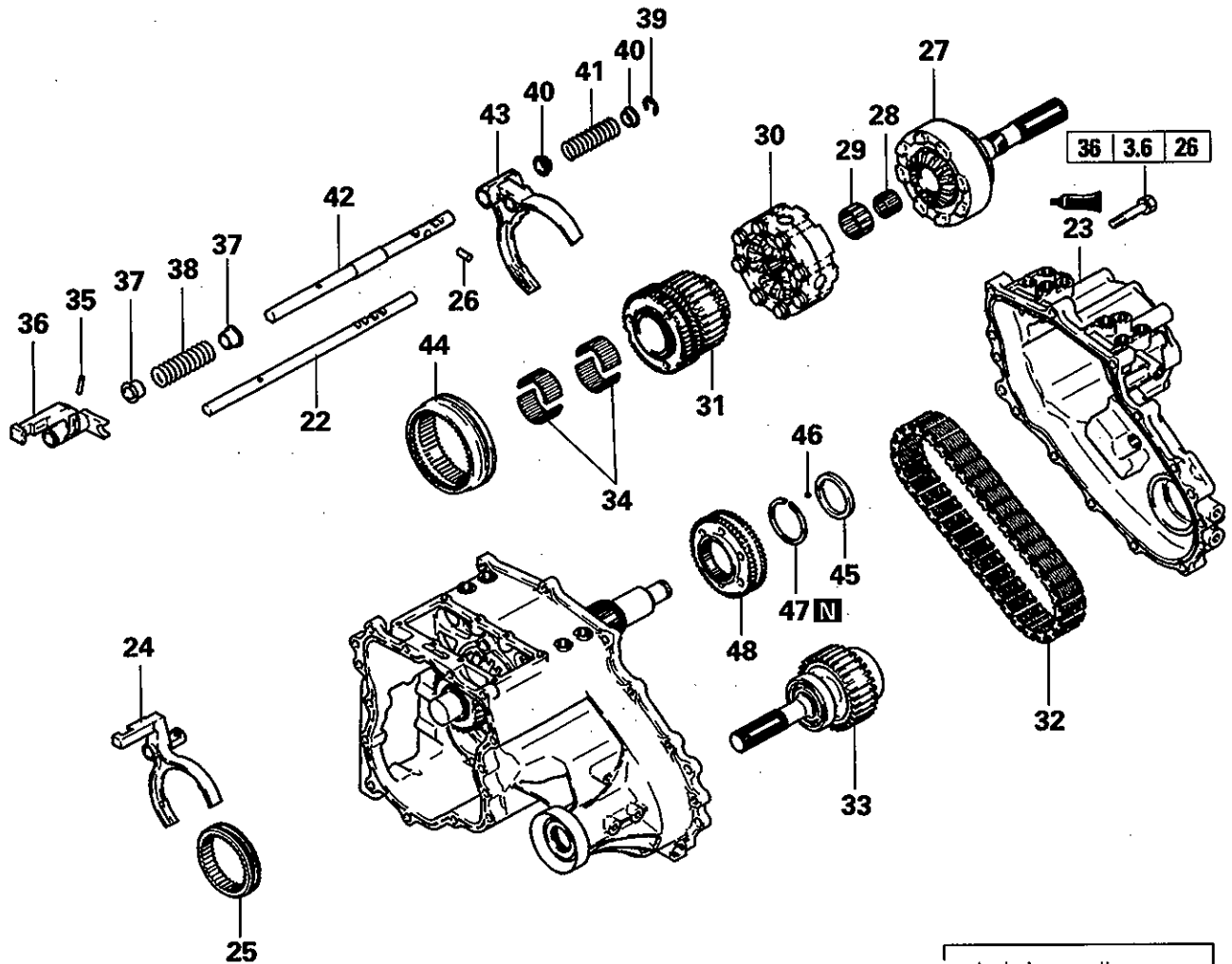



 Lubricate all internal parts with gear oil during reassembly.

**Disassembly steps**

- 1. Dynamic damper (6G74 engine only)
- ➔U 2. Detection switch (5)
- 3. Steel ball
- 4. Gasket
- ➔T 5. Plug (7)
- ➔S 6. Poppet plug
- ➔R 7. Poppet spring
- 8. Steel ball
- 9. Sleeve clamp
- ➔Q 10. Speedometer gear assembly
- ➔P 11. Transfer case plate
- 12. Needle bearing
- 13. Countershaft gear
- ➔O 14. Spacer
- ➔N 15. Rear cover
- ➔M 16. Spacer
- 17. Dust seal guard
- ➔L 18. Oil seal
- ➔K 19. Oil seal
- 20. H-L shift rail plug
- ➔J 21. Spring pin (H-L shift fork)



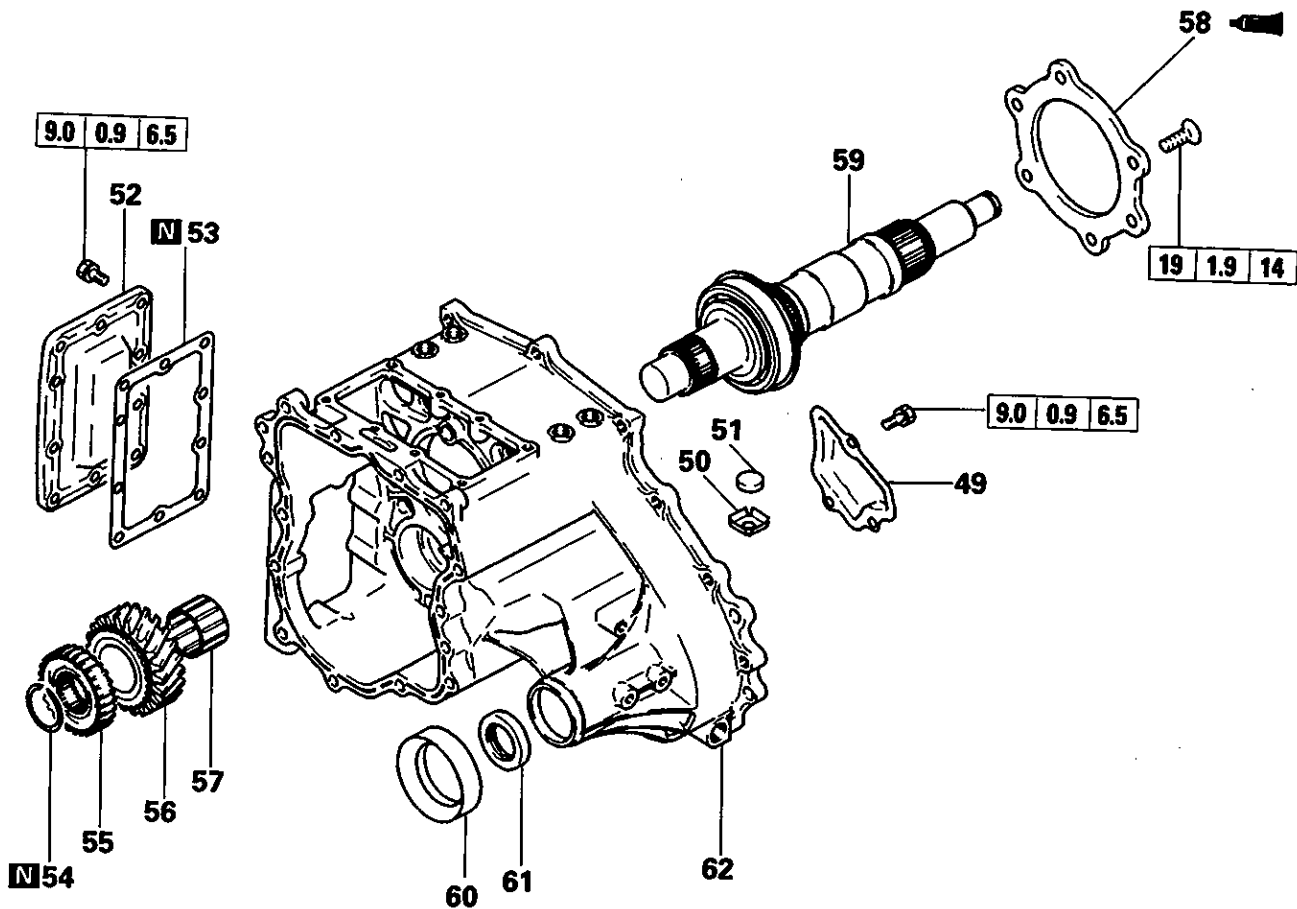


 Lubricate all internal parts with gear oil during reassembly.

**Disassembly steps**


- ◊A◊▶J◊ 22. H-L shift rail
- ◊A◊▶I◊ 23. Chain cover
- ▶I◊ 24. H-L shift fork
- ▶I◊ 25. H-L clutch sleeve
- ▶I◊ 26. Interlock plunger
- ▶I◊ 27. Rear output shaft
- ▶I◊ 28. Needle bearing
- ▶I◊ 29. Needle bearing
- ▶I◊ 30. Center differential case
- ◊B◊▶H◊ 31. 2-4WD synchronizer
- ◊B◊▶H◊ 32. Chain
- ◊B◊▶H◊ 33. Front output shaft
- ▶I◊ 34. Needle bearing
- ◊C◊▶G◊ 35. Spring pin (2-4WD shift lug)

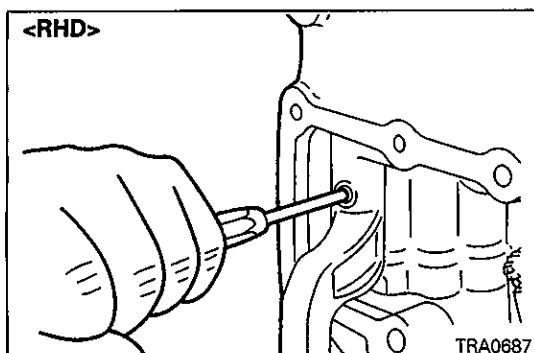
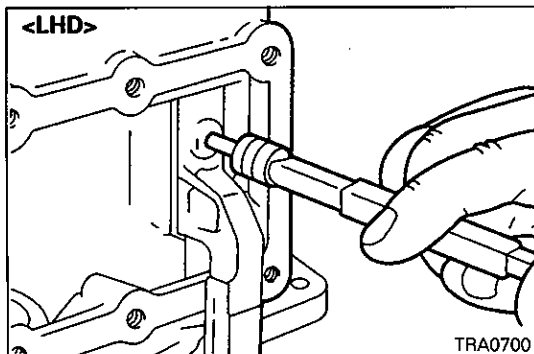
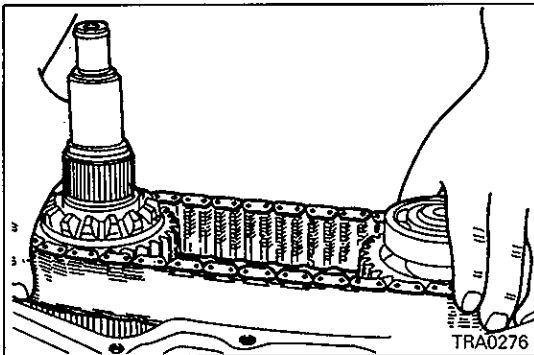
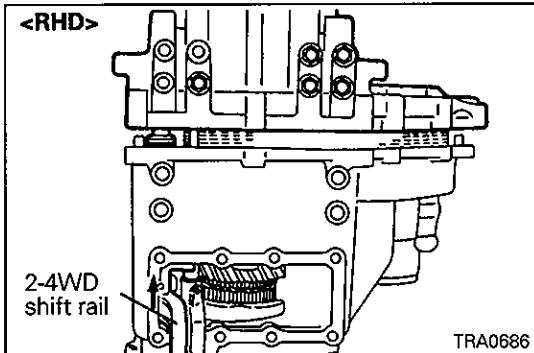
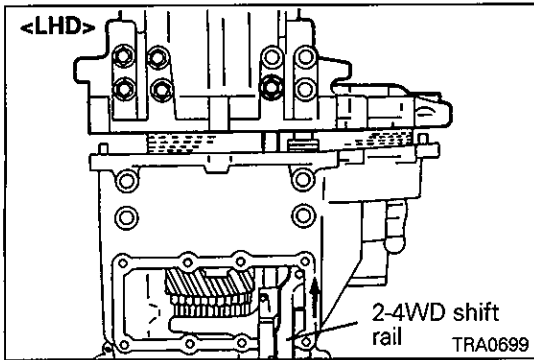
- ▶G◊ 36. 2-4WD shift lug
- ▶G◊ 37. Spring seat
- ▶G◊ 38. Spring
- ▶I◊ 39. E-ring
- ▶I◊ 40. Spring seat
- ▶I◊ 41. Spring
- ▶G◊ 42. 2-4WD shift rail
- ▶I◊ 43. 2-4WD shift fork
- ▶I◊ 44. 2-4WD synchronizer sleeve
- ▶I◊ 45. Sleeve
- ▶I◊ 46. Steel ball
- ▶F◊ 47. Snap ring
- ▶I◊ 48. Differential lock hub



**Disassembly steps**

- 49. Oil pool cover
- ◆E◆ 50. Magnet holder
- ◆E◆ 51. Magnet
- 52. Side cover
- 53. Side cover gasket
- ◆D◆ 54. Snap ring
- ◆C◆ 55. H-L clutch hub
- 56. Low speed gear
- 57. Needle bearing
- ◆B◆ 58. Rear bearing retainer
- 59. Transfer drive shaft
- 60. Dust seal guard
- ◆A◆ 61. Oil seal
- 92. Transfer case

 Lubricate all internal parts with gear oil during reassembly.



## DISASSEMBLY SERVICE POINTS

### ◊A◊ H-L SHIFT RAIL / CHAIN COVER REMOVAL

- (1) Fix the H-L shift rail at the High side.
- (2) Place the 2-4WD shift rail at the 4WD position.

#### NOTE

If the 2-4WD shift rail is placed at the 2WD position, the chain cover cannot be removed because of interlocking.

- (3) Remove the chain cover and remove H-L shift rail.

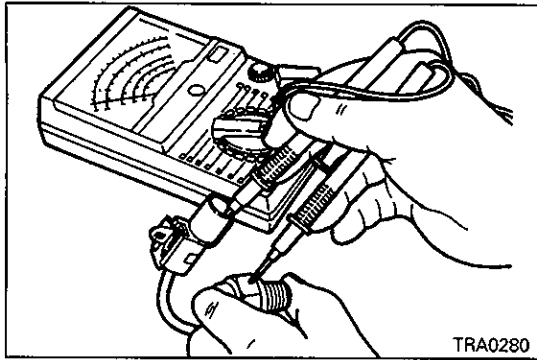
### ◊B◊ 2-4WD SYNCHRONIZER / CHAIN / FRONT OUTPUT SHAFT REMOVAL

- (1) Remove the 2-4WD synchronizer, chain and front output shaft as a set.

### ◊C◊ SPRING PIN REMOVAL

#### Caution

- The spring may fly out.

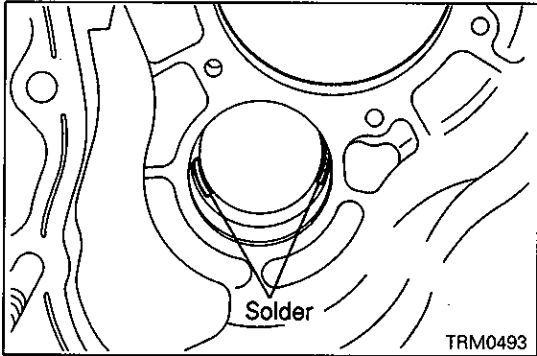


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**INSPECTION  
DETECTION SWITCH**

- (1) Check for continuity between the connector terminal and switch body.

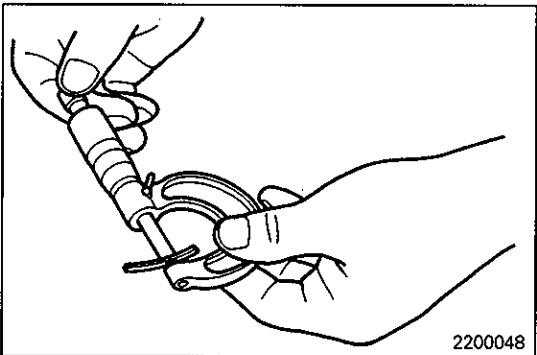
Switch state	Continuity
Switch end pressed	No
Switch end released	Yes



TRM0493

**ADJUSTMENT BEFORE REASSEMBLY  
SPACER SELECTION FOR ADJUSTMENT OF COUNTER-SHAFT GEAR END PLAY**

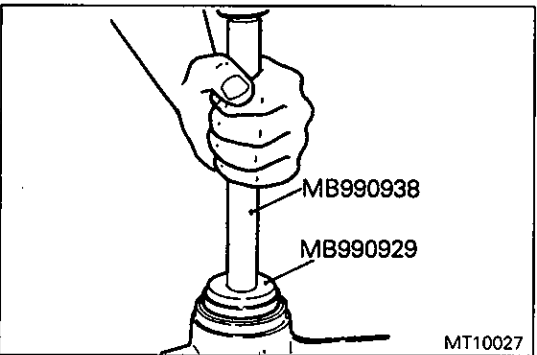
- (1) Place a solder bar (about 10 mm in length and 1.6 mm in diameter) on the transfer case as illustrated.  
 (2) Install the countershaft gear and transfer case plate and tighten the bolts to the specified torque.  
 (3) If the solder is not deformed, repeat the steps (1) and (2) using a thicker solder bar.



2200048

- (4) Using a micrometer, measure the thickness of the crushed solder bar. Based on the result, select a spacer which adjust the end play to the standard value shown below:

**Standard value: 0 – 0.15 mm (0 – 0.0006 in.)**

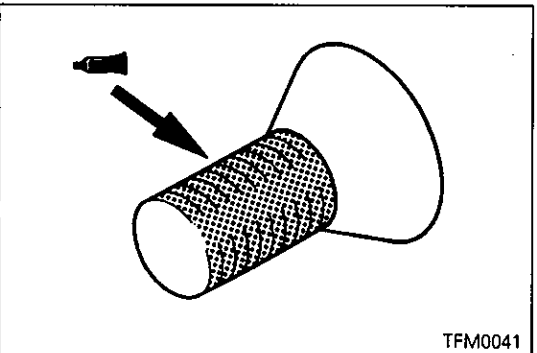


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**REASSEMBLY SERVICE POINTS**

**◆A◆ OIL SEAL INSTALLATION**

- (1) Apply gear oil to the lip of the oil seal after press-fitting.

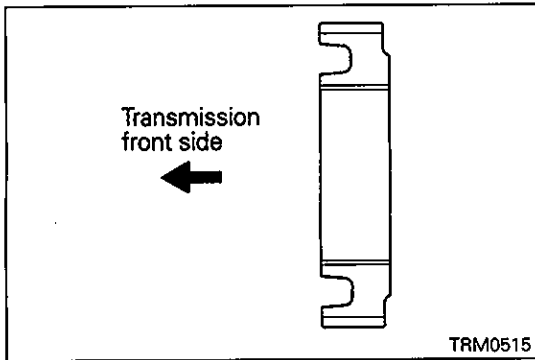


TFM0041

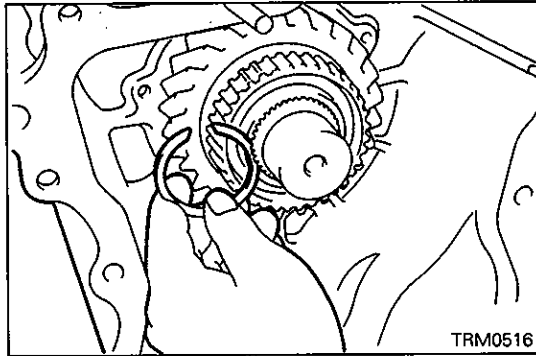
**◆B◆ REAR BEARING RETAINER INSTALLATION**

- (1) The rear bearing retainer screw is a precoated screw. When it is to be reused, apply sealant beforehand.

**Specified sealant:  
3M STUD Locking No. 4170 or equivalent**



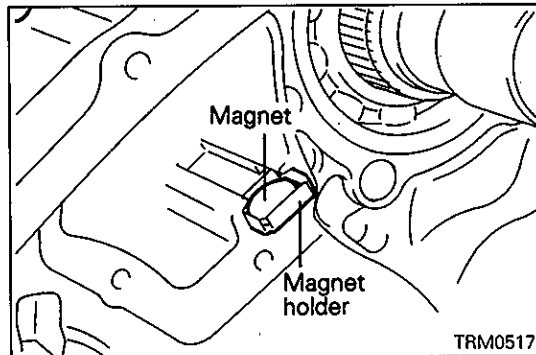
### ▶◀ H-L CLUTCH HUB INSTALLATION



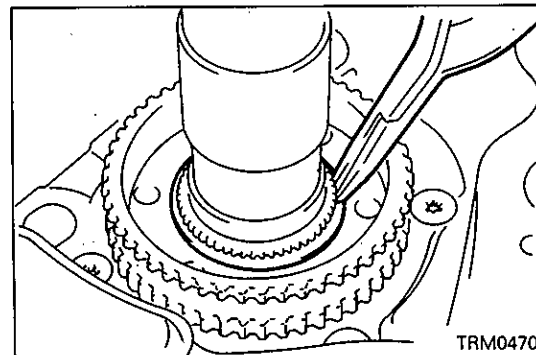
### ▶◀ SNAP RING INSTALLATION

- (1) Select and install the snap ring which adjusts the H-L clutch hub end play to the standard value.

**Standard value: 0 – 0.08 mm (0 – 0.0031 in.)**



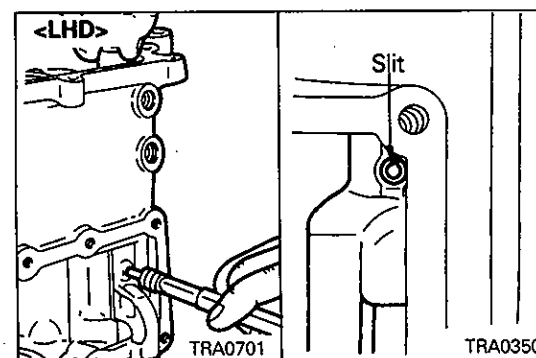
### ▶◀ MAGNET / MAGNET HOLDER INSTALLATION



### ▶◀ SNAP RING INSTALLATION

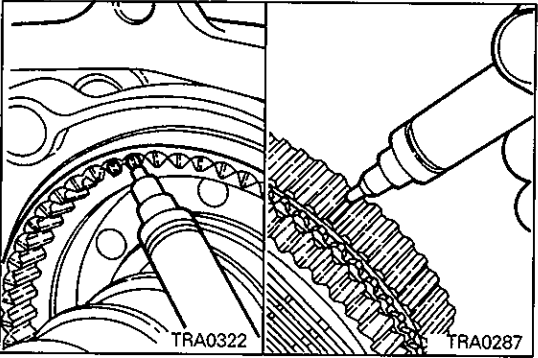
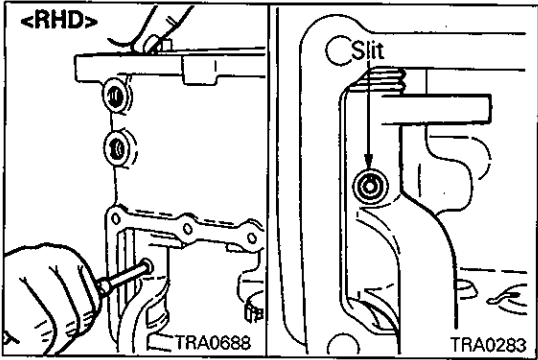
- (1) Select a snap ring which adjusts the differential lock hub end play to the standard value shown below:

**Standard value: 0 – 0.08 mm (0 – 0.0031 in.)**



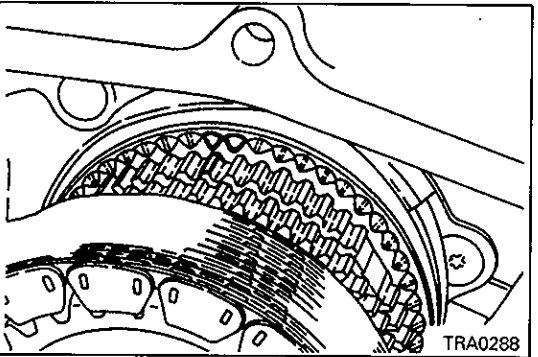
### ▶◀ 2-4WD SHIFT RAIL / 2-4WD SHIFT LUG / SPRING SEAT / SPRING / SPRING PIN INSTALLATION

- (1) Slide the spring seats and spring over the shift rail and set the shift lug in position in the transfer case.
- (2) While paying attention to the direction of the shift rail, insert the shift rail in the shift lug and line up the shift lug and shift rail spring pin holes.
- (3) While pressing the rail, install the spring pin in such a way that the slit of the spring pin will face the axial center of the shift rail.

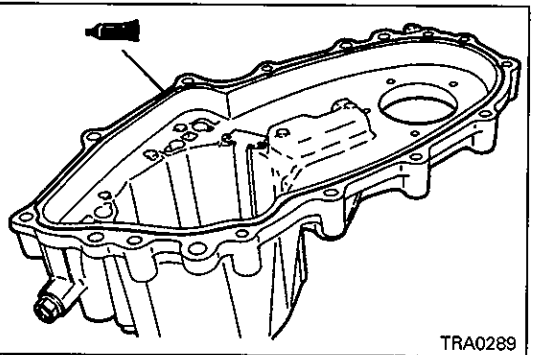


#### ▶H◀ FRONT OUTPUT SHAFT / CHAIN / 2-4WD SYNCHRONIZER INSTALLATION

- (1) Make a white paint mark on the deep groove portions (three places) of the 2-4WD synchronizer.
- (2) Make a white paint mark on the projections (three places) of the 2-4WD synchronizer sleeve splines.



- (3) Place the chain in tight mesh with the 2-4WD synchronizer and front output shaft sprockets.
- (4) With both sprockets spaced the farthest apart, install them on the transfer case simultaneously.



#### ▶I◀ INTERLOCK PLUNGER / CHAIN COVER INSTALLATION

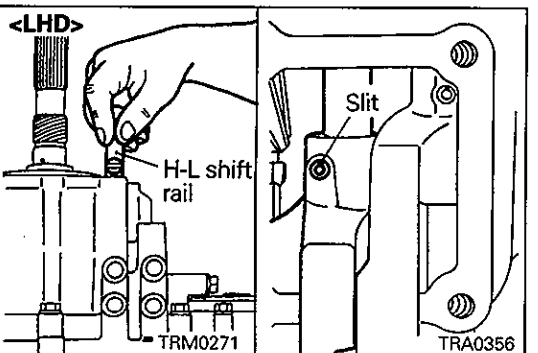
- (1) Insert the interlock plunger into a position where it does not interfere with the 2-4WD shift rail.
- (2) Apply a sealant to the illustrated position of the chain cover.

##### Specified sealant:

**Mitsubishi genuine sealant Part No. MD997740 or equivalent**

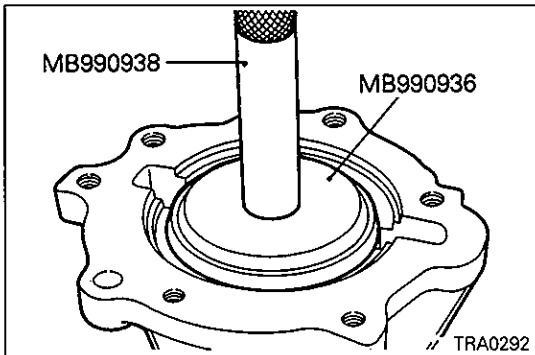
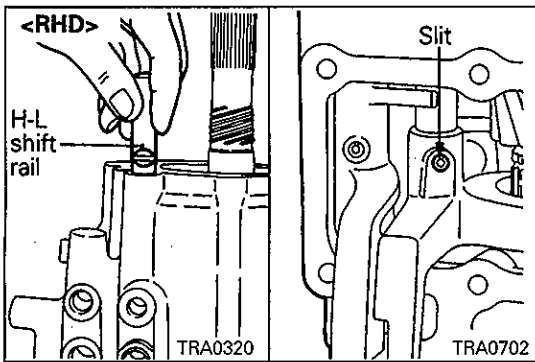
##### Caution

- Squeeze the sealant out evenly to make sure that it is not broken or excessively supplied.



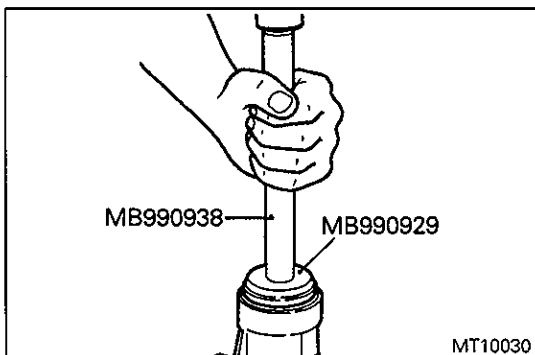
#### ▶J◀ H-L SHIFT RAIL / SPRING PIN INSTALLATION

- (1) Insert the H-L shift rail in the transfer case, while paying attention to its direction.
- (2) Line up the shift rail and shift fork spring pin holes and install the spring pin so that the slit of the spring pin will face the axial center of the shift rail.



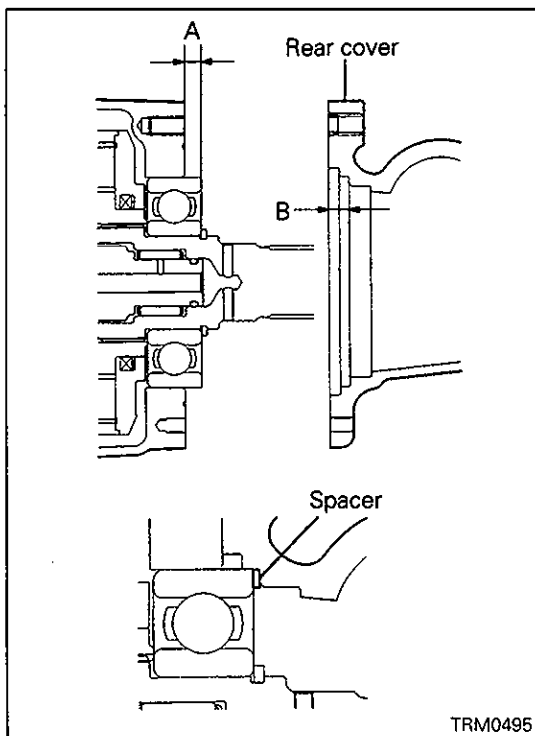
#### ▶K◀ OIL SEAL INSTALLATION

- (1) Apply gear oil to the lip of the oil seal after press-fitting.



#### ▶L◀ OIL SEAL INSTALLATION

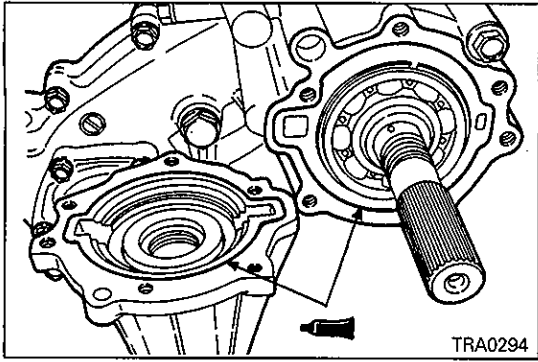
- (1) Apply gear oil to the lip of the oil seal after press-fitting.



#### ▶M◀ SPACER INSTALLATION

- (1) Measure projection "A" of the rear output shaft bearing and depth "B" to the second stage in the rear cover recess.
- (2) Subtract A from B and let the answer be C. Subtract the thickness of the spacer from C, and select a spacer so that the subtracted value will be the standard value shown below.

**Standard value: 0.025 – 0.150 mm (0.00098 – 0.00591 in.)**



### ◆N◆ REAR COVER INSTALLATION

- (1) Apply sealant to the rear cover as illustrated.

#### Specified sealant:

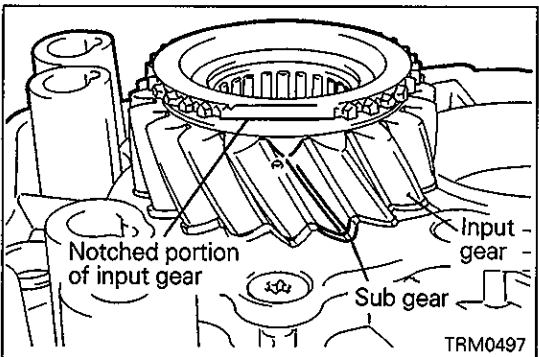
**Mitsubishi genuine sealant Part No. MD997740 or equivalent**

#### Caution

- Squeeze the sealant out evenly to make sure that it is not broken or excessively supplied.

### ◆0◆ SPACER INSTALLATION

- (1) Install the previously selected spacer (see "ADJUSTMENT BEFORE REASSEMBLY").



### ◆P◆ TRANSFER CASE PLATE INSTALLATION

- (1) Align one of the sub gear teeth with the notched tooth of the input gear.

- (2) Apply a bead of sealant to the transfer case plate as illustrated.

#### Specified sealant:

**Mitsubishi genuine sealant Part No. MD997740 or equivalent**

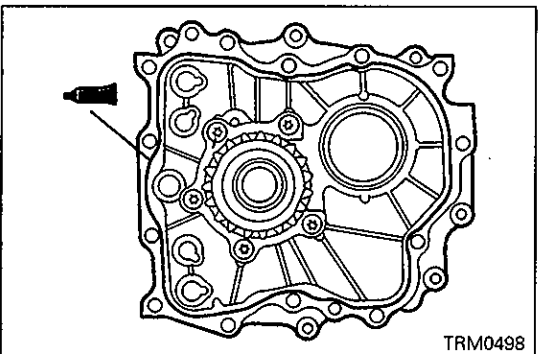
#### Caution

- Squeeze the sealant out evenly to make sure that it is not broken or excessively supplied.

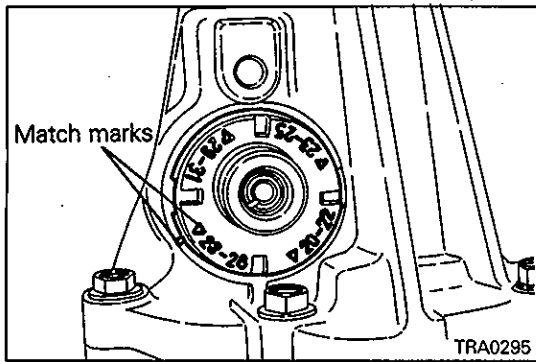
- (3) Install the transfer case plate together with the input gear, while sliding the input gear tooth aligned in Step (1) along the tooth space of the countershaft cluster gear.

#### NOTE

The transfer case plate must be installed smoothly without hitch.





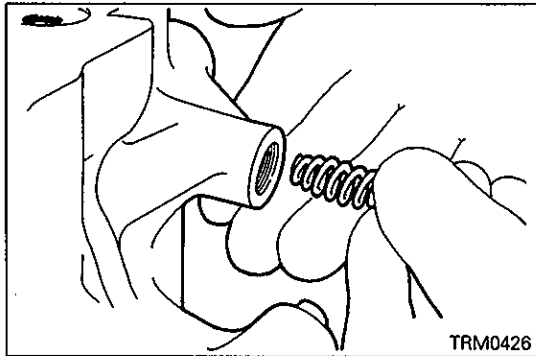


### ◆Q◆ SPEEDOMETER GEAR INSTALLATION

- (1) Align the match marks according to the number of teeth.

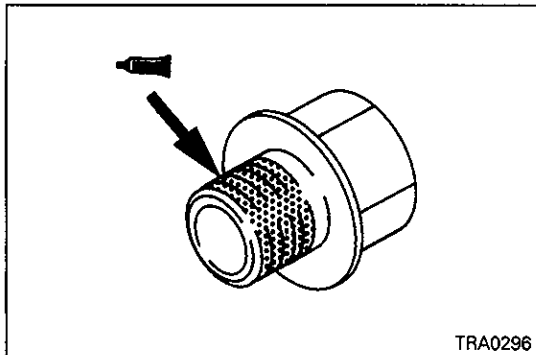
#### Caution

- The number marked on the sleeve is the number of teeth of the driven gear.



### ◆R◆ POPPET SPRING INSTALLATION

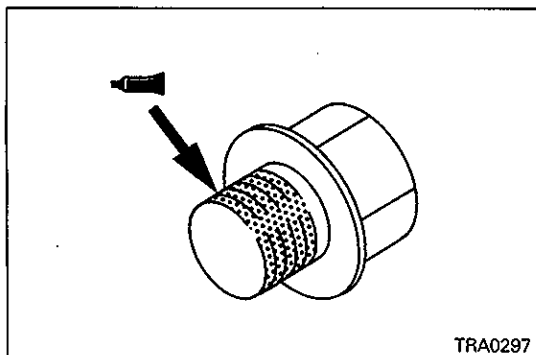
- (1) Install the spring with its tapered end oriented to the ball side.



### ◆S◆ POPPET PLUG INSTALLATION

- (1) The poppet plug is a precoated plug. When it is to be reused, apply sealant beforehand.

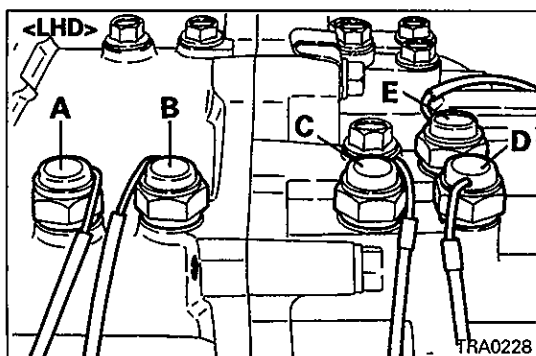
**Specified sealant: 3M ATD Part No. 8660 or equivalent**



### ◆T◆ PLUG INSTALLATION

- (1) The plug is precoated. When it is to be reused, apply sealant beforehand.

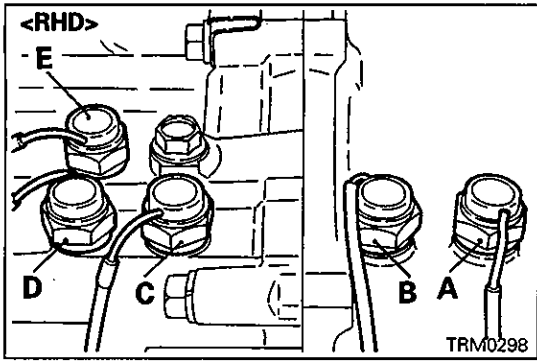
**Specified sealant: 3M ATD Part No. 8660 or equivalent**



### ◆U◆ DETECTION SWITCH INSTALLATION


- (1) Mount detection switches in the right positions, while using care to prevent confusion.

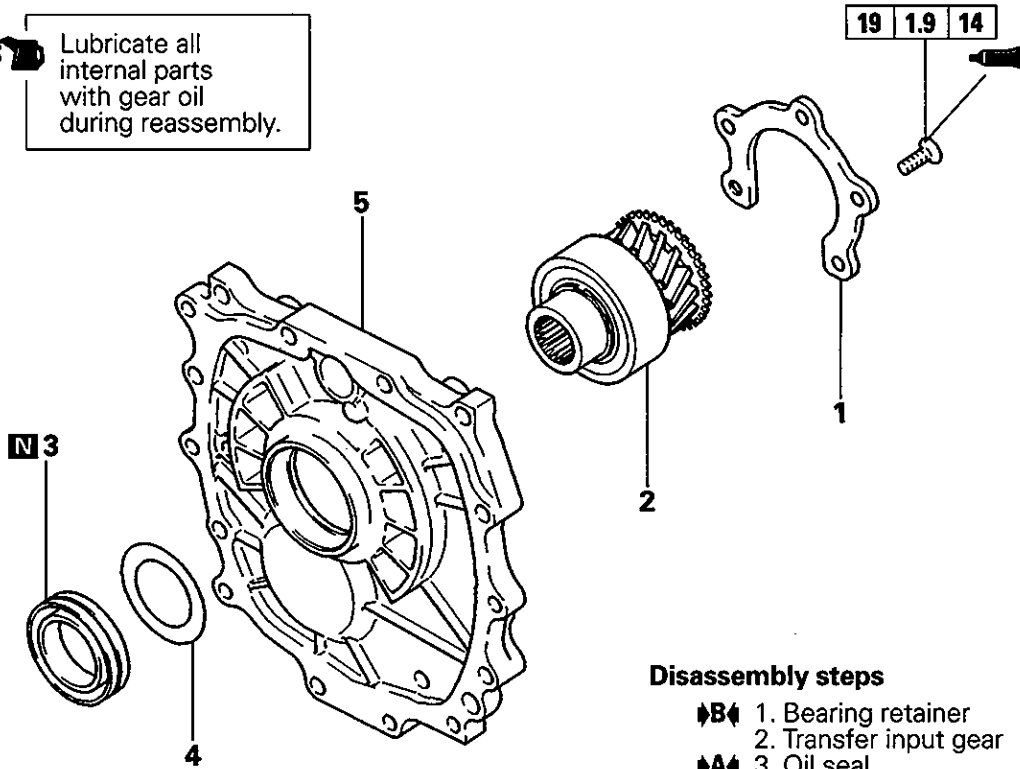
- A: Ball built in, connector brown
- B: Ball built in, connector black
- C: Ball separate, connector brown
- D: Ball separate, connector black
- E: Ball separate, connector white



# 19. TRANSFER CASE PLATE

## DISASSEMBLY AND REASSEMBLY

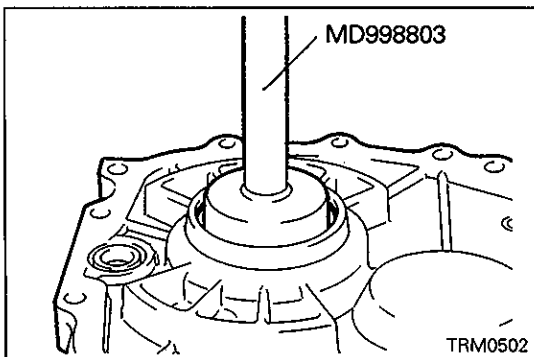
 Lubricate all internal parts with gear oil during reassembly.



### Disassembly steps

- ▶B◀ 1. Bearing retainer
- ▶B◀ 2. Transfer input gear
- ▶A◀ 3. Oil seal
- ▶A◀ 4. Baffle plate
- ▶A◀ 5. Transfer case plate

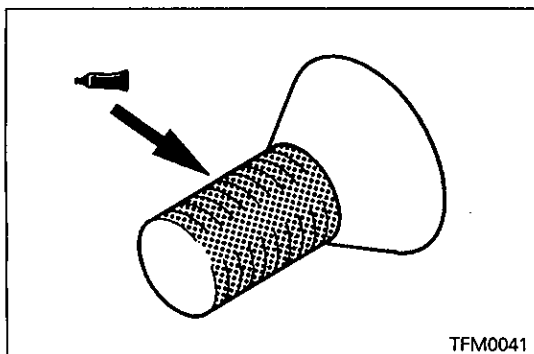
TRA0690



### REASSEMBLY SERVICE POINTS

#### ▶A◀ OIL SEAL INSTALLATION

- (1) After installing, apply gear oil to the lip of the oil seal.



#### ▶B◀ BEARING RETAINER INSTALLATION

- (1) The rear bearing retainer bolt is a precoated bolt. When it is to be reused, apply sealant beforehand.

#### Specified sealant:

**Mitsubishi genuine sealant Part No. MD997740 or equivalent**

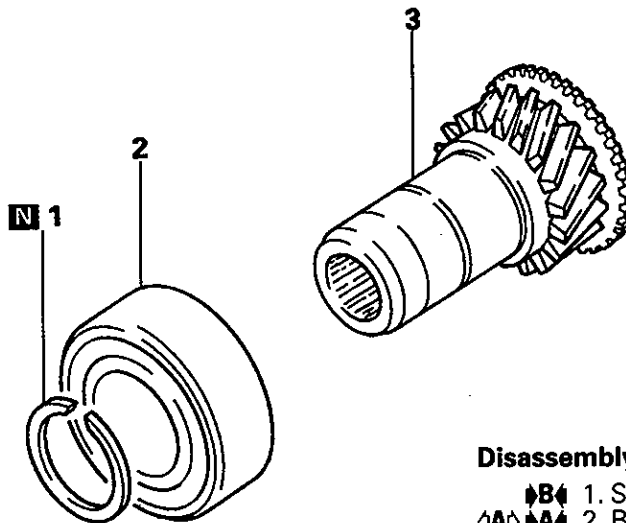
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## NOTES

## 20. TRANSFER INPUT GEAR DISASSEMBLY AND REASSEMBLY



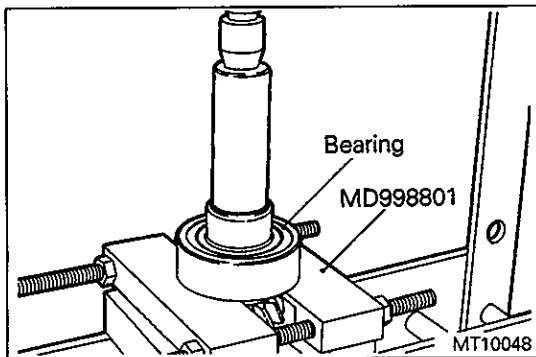
Lubricate all internal parts with gear oil during reassembly.



### Disassembly steps

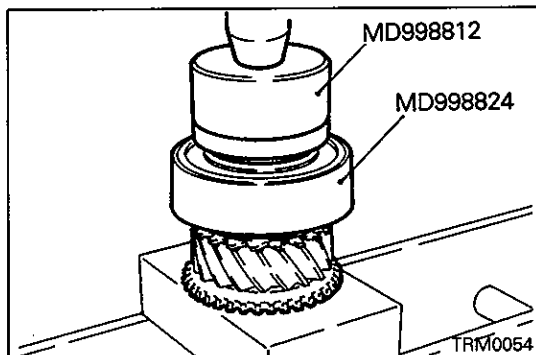
- ⇨B⇨ 1. Snap ring
- ⇨A⇨ ⇨A⇨ 2. Ball bearing
- 3. Transfer input gear

145086



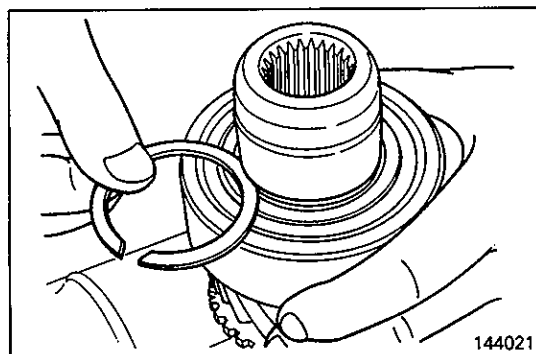
### DISASSEMBLY SERVICE POINT

⇨A⇨ **BALL BEARING REMOVAL**



### REASSEMBLY SERVICE POINTS

⇨A⇨ **BALL BEARING INSTALLATION**



### ⇨B⇨ **SNAP RING INSTALLATION**

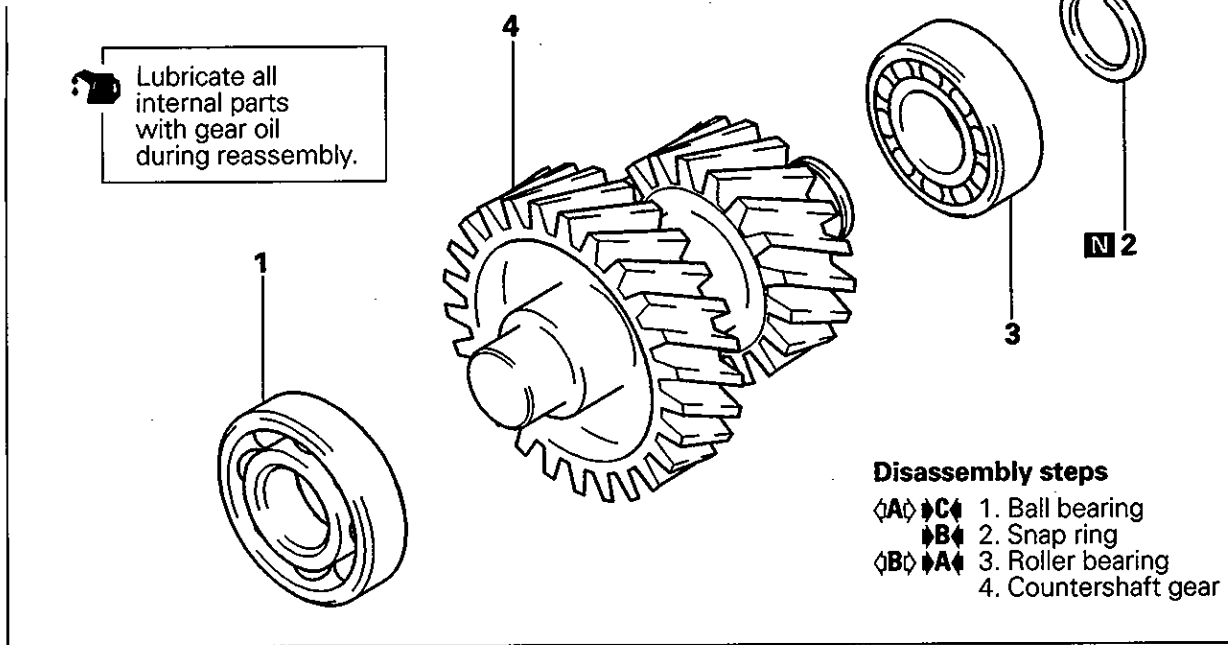
- (1) Select and install the snap ring which adjust the transfer input gear bearing end play to the standard value.

**Standard value: 0 – 0.06 mm (0 – 0.0024 in.)**

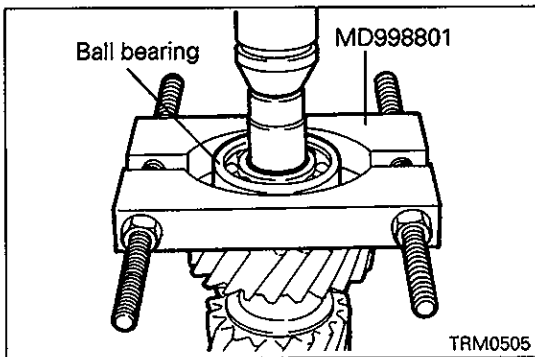
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## NOTES

## 21. COUNTERSHAFT GEAR DISASSEMBLY AND REASSEMBLY

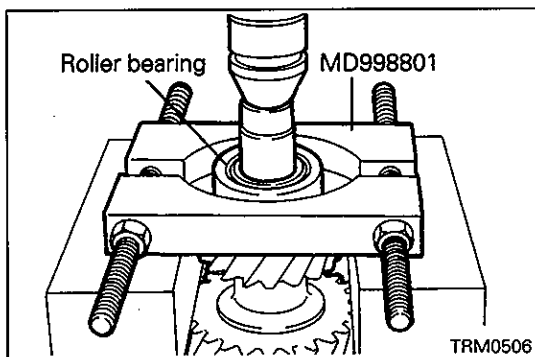


TRM0504

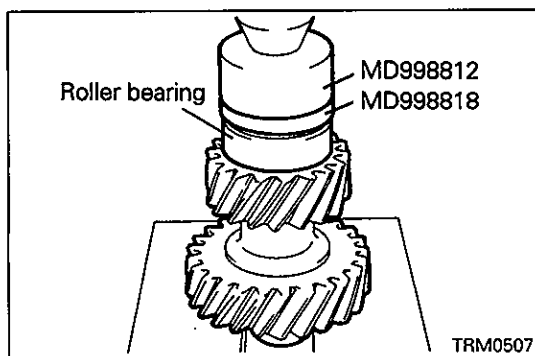


### DISASSEMBLY SERVICE POINT

$\leftarrow A \rightarrow$  BALL BEARING REMOVAL

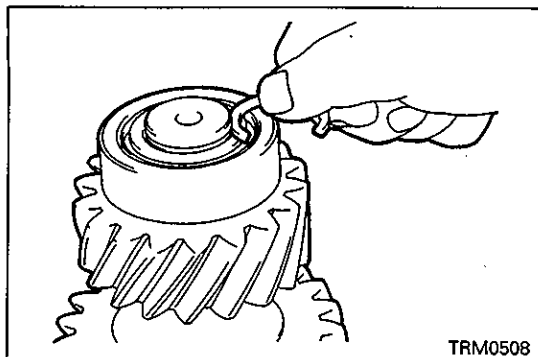


$\leftarrow B \rightarrow$  ROLLER BEARING REMOVAL



### REASSEMBLY SERVICE POINTS

$\rightarrow A \leftarrow$  ROLLER BEARING INSTALLATION

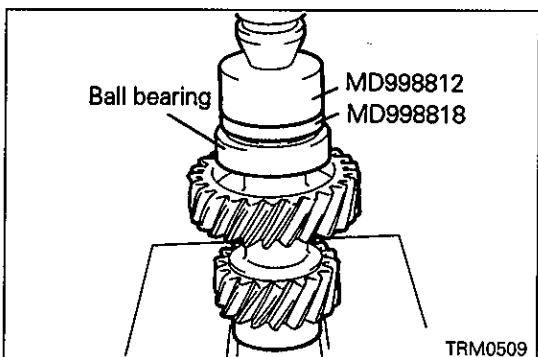


TRM0508

**▶B▶ SNAP RING INSTALLATION**

- (1) Select a snap ring that adjusts the end play of the countershaft gear roller bearing to the standard value shown below:

**Standard value: 0 – 0.08 mm (0 – 0.0031 in.)**




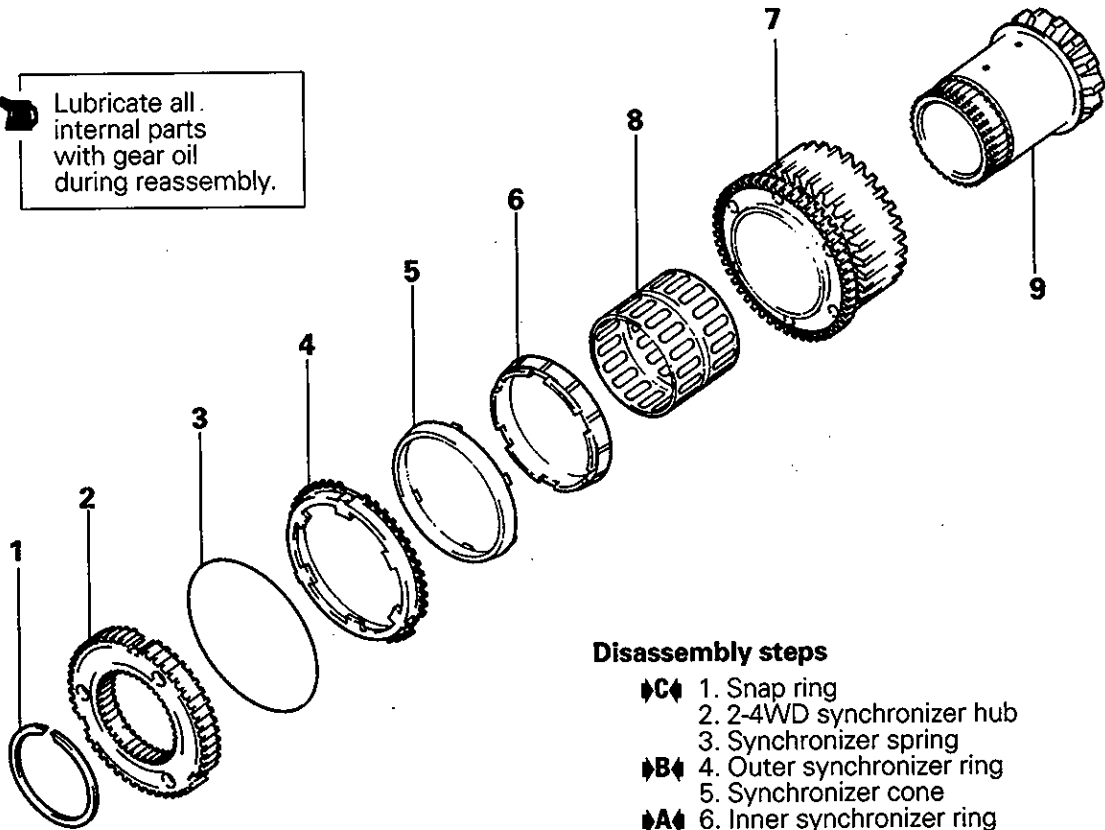
TRM0509

**▶C▶ BALL BEARING INSTALLATION**



## 22.2-4WD SYNCHRONIZER DISASSEMBLY AND REASSEMBLY

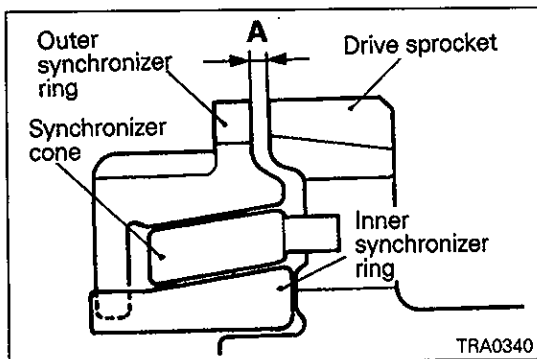
 Lubricate all internal parts with gear oil during reassembly.



### Disassembly steps

- ▶C▶ 1. Snap ring
- ▶ 2. 2-4WD synchronizer hub
- ▶ 3. Synchronizer spring
- ▶B▶ 4. Outer synchronizer ring
- ▶ 5. Synchronizer cone
- ▶A▶ 6. Inner synchronizer ring
- ▶ 7. Drive sprocket
- ▶ 8. Needle bearing
- ▶ 9. Front side gear

TRA0307



TRA0340

## INSPECTION

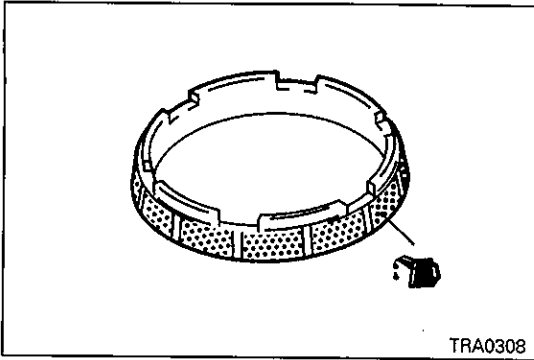
### SYNCHRONIZER RING AND SYNCHRONIZER CONE

- (1) Combine the inner and outer synchronizer rings and cone with the drive sprocket and measure the dimension A in the illustration. If the dimension A is less than the limit, replace them as a set.

**Limit: 0.3 mm (0.012 in.)**

#### NOTE

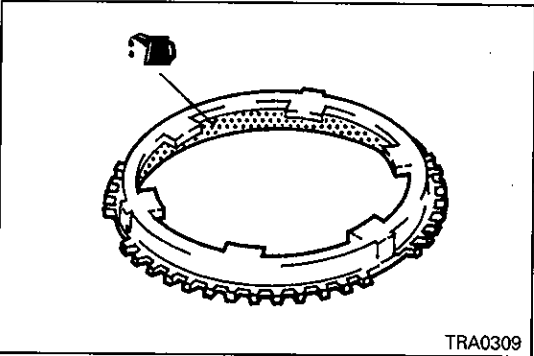
Scratches may be found on the cone surface in the rotating direction these are produced by the liners of the synchronizer rings and do not mean the malfunction. Therefore, the parts need not be replaced if the above-mentioned clearance is satisfied.



## REASSEMBLY SERVICE POINTS

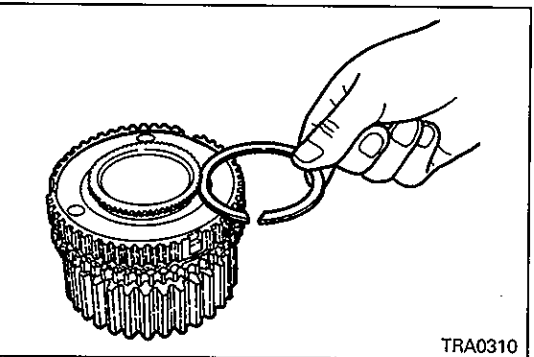
### ▶A◀ INNER SYNCHRONIZER RING INSTALLATION

- (1) Apply gear oil to the synchronizer ring cone surface before installation.



### ▶B◀ OUTER SYNCHRONIZER RING INSTALLATION

- (1) Apply gear oil to the synchronizer ring cone surface before installation.



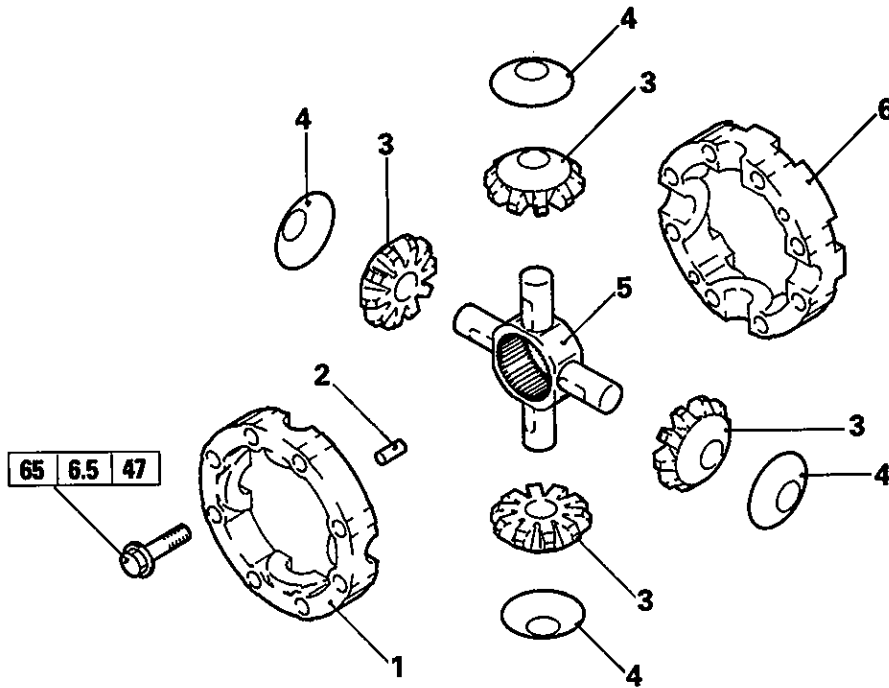
### ▶C◀ SNAP RING INSTALLATION

- (1) Select and install the snap ring which adjusts the 2-4WD synchronizer hub end play to the standard value:

**Standard value: 0 – 0.08 mm (0 – 0.0031 in.)**

## 23. CENTER DIFFERENTIAL CASE

### REASSEMBLY DISASSEMBLY



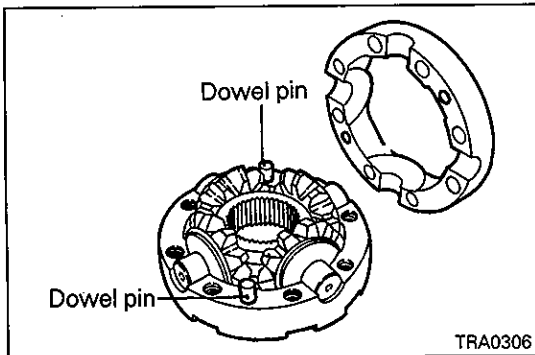
#### Disassembly steps

- ▶A▶ 1. Center differential case front
2. Dowel pin
3. Pinion
4. Thrust washer
5. Pinion shaft
6. Center differential case rear



Lubricate all internal parts with gear oil during reassembly.

TRA0305



#### REASSEMBLY SERVICE POINT

##### ▶A▶ CENTER DIFFERENTIAL CASE INSTALLATION


- (1) Pay attention to the positions of the dowel pins when reassembling, and make sure that the match marks on the outside circumference are in alignment.

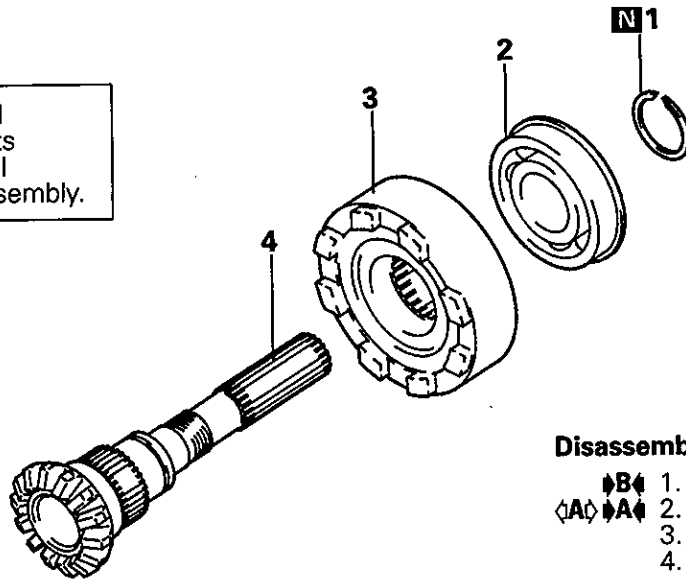
TRA0306

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## NOTES

## 24. REAR OUTPUT SHAFT DISASSEMBLY AND REASSEMBLY

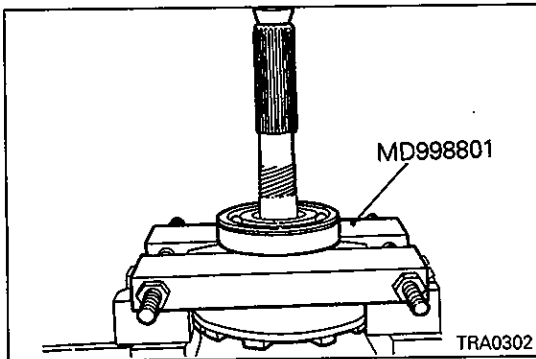
 Lubricate all internal parts with gear oil during reassembly.



### Disassembly steps

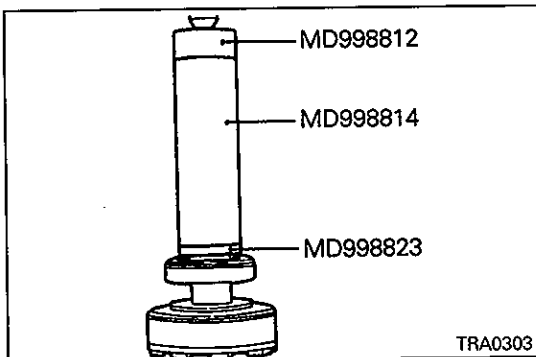
-  1. Snap ring
-  2. Ball bearing
-  3. Viscous coupling
-  4. Rear output shaft

TRA0301



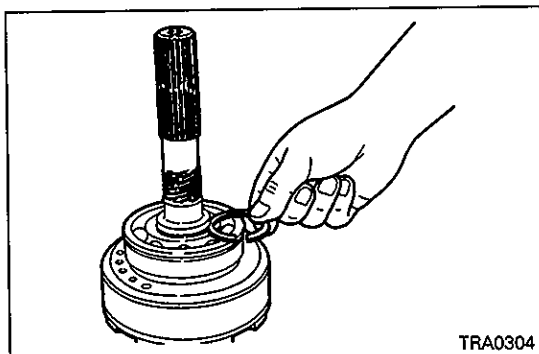
### DISASSEMBLY SERVICE POINT

#### BALL BEARING REMOVAL



### REASSEMBLY SERVICE POINTS

#### BALL BEARING INSTALLATION



#### SNAP RING INSTALLATION

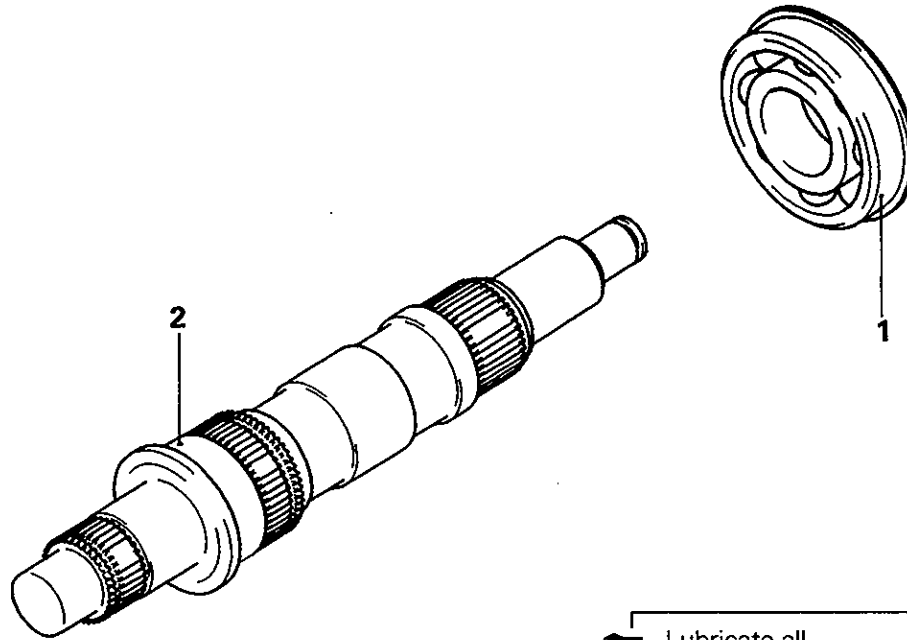
- (1) Select and install the snap ring which adjusts the rear output shaft bearing end play to the standard value.


**Standard value: 0 – 0.08 mm (0 – 0.0031 in.)**

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## NOTES

## 25. TRANSFER DRIVE SHAFT DISASSEMBLY AND REASSEMBLY

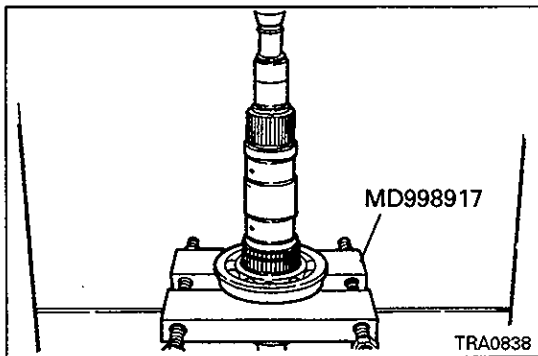


 Lubricate all internal parts with gear oil during reassembly.

### Disassembly steps

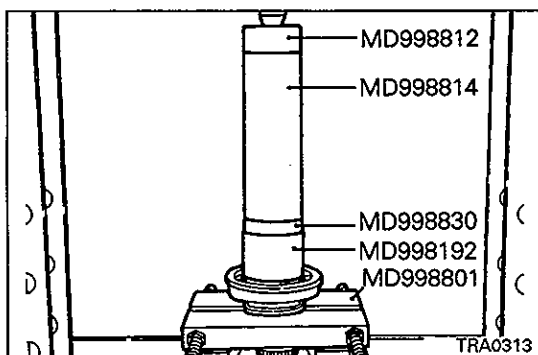
- ◁A▷ ▷A◁ 1. Ball bearing
- 2. Transfer drive shaft

TRM0510



### DISASSEMBLY SERVICE POINT

◁A▷ BALL BEARING REMOVAL



### REASSEMBLY SERVICE POINTS

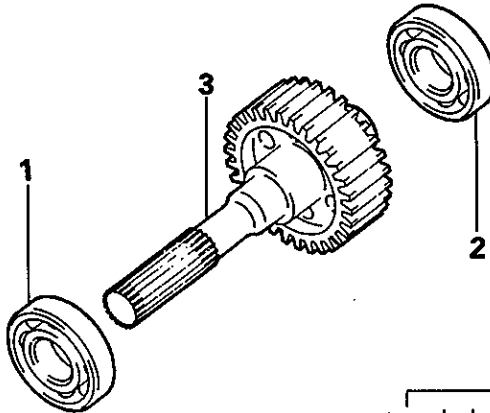
▷A◁ BALL BEARING INSTALLATION

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## NOTES



## 26. FRONT OUTPUT SHAFT DISASSEMBLY AND REASSEMBLY



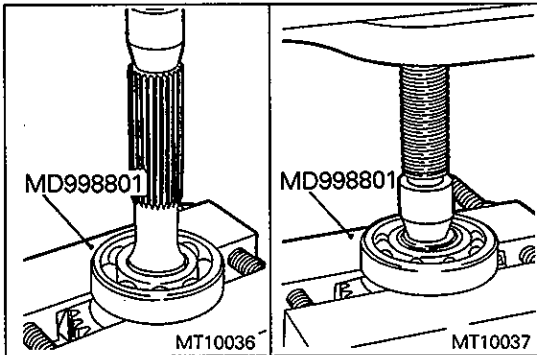
### Disassembly steps

- ↔↔▶▶ 1. Ball bearing
- ↔↔▶▶ 2. Ball bearing
- 3. Front output shaft



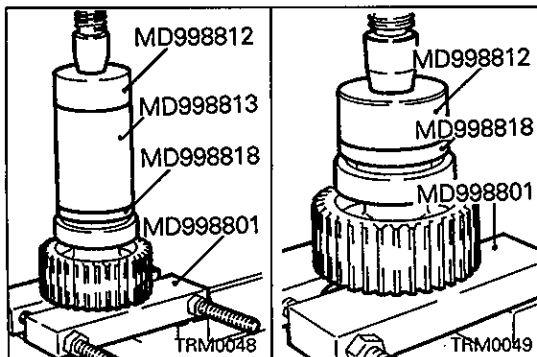
Lubricate all internal parts with gear oil during reassembly.

TRA0319



### DISASSEMBLY SERVICE POINT

↔↔ BALL BEARING REMOVAL



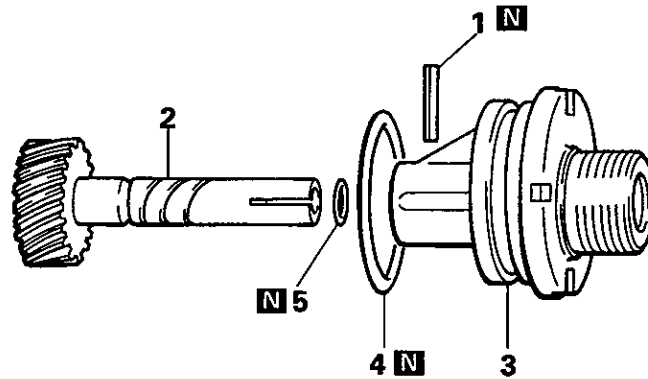
### REASSEMBLY SERVICE POINT

▶▶ BALL BEARING INSTALLATION

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## NOTES

## 27. SPEEDOMETER GEAR DISASSEMBLY AND REASSEMBLY

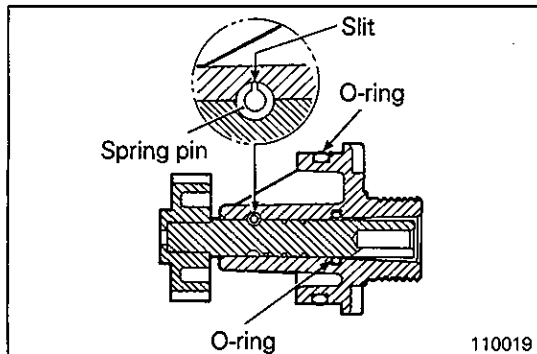


### Disassembly steps

- ◆A◆ 1. Spring pin
2. Speedometer driven gear
3. Speedometer sleeve
4. O-ring
5. O-ring

 Lubricate all internal parts with gear oil during reassembly.

110008



110019

### REASSEMBLY SERVICE POINT

#### ◆A◆ SPRING PIN INSTALLATION

- (1) Drive the spring pin into position so that its slit faces the direction shown in the illustration.

---

## NOTES

# AUTOMATIC TRANSMISSION V4AW4

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24. REAR OUTPUT SHAFT .....	23C-24-1

NOTES

# STANDARD HOSE END PART DRAWING

Part No.	Description	Part No.	Description
1	HOSE	1	HOSE
2	HOSE	2	HOSE
3	HOSE	3	HOSE
4	HOSE	4	HOSE
5	HOSE	5	HOSE
6	HOSE	6	HOSE
7	HOSE	7	HOSE
8	HOSE	8	HOSE
9	HOSE	9	HOSE
10	HOSE	10	HOSE
11	HOSE	11	HOSE
12	HOSE	12	HOSE
13	HOSE	13	HOSE
14	HOSE	14	HOSE
15	HOSE	15	HOSE
16	HOSE	16	HOSE
17	HOSE	17	HOSE
18	HOSE	18	HOSE
19	HOSE	19	HOSE
20	HOSE	20	HOSE
21	HOSE	21	HOSE
22	HOSE	22	HOSE
23	HOSE	23	HOSE
24	HOSE	24	HOSE
25	HOSE	25	HOSE
26	HOSE	26	HOSE
27	HOSE	27	HOSE
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29	HOSE	29	HOSE
30	HOSE	30	HOSE
31	HOSE	31	HOSE
32	HOSE	32	HOSE
33	HOSE	33	HOSE
34	HOSE	34	HOSE
35	HOSE	35	HOSE
36	HOSE	36	HOSE
37	HOSE	37	HOSE
38	HOSE	38	HOSE
39	HOSE	39	HOSE
40	HOSE	40	HOSE
41	HOSE	41	HOSE
42	HOSE	42	HOSE
43	HOSE	43	HOSE
44	HOSE	44	HOSE
45	HOSE	45	HOSE
46	HOSE	46	HOSE
47	HOSE	47	HOSE
48	HOSE	48	HOSE
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95	HOSE	95	HOSE
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99	HOSE	99	HOSE
100	HOSE	100	HOSE

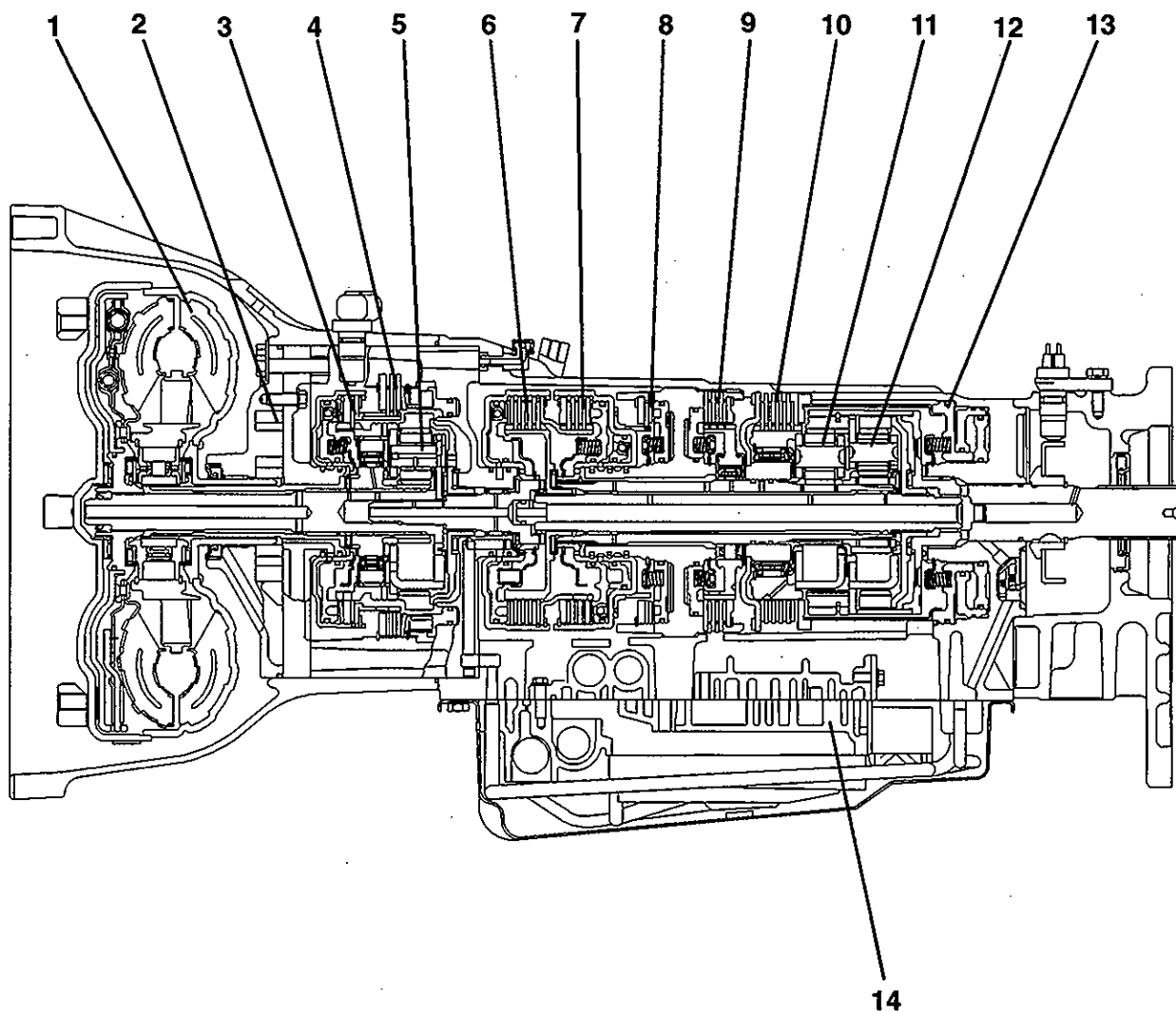
## GENERAL INFORMATION

### TRANSMISSION

This transmission is an Aisin AW, electronically-controlled, 4-speed, automatic transmission.

- It comprises three multiple-plate clutch assemblies, four multiple-plate brake assemblies, and three planetary gear assemblies.
- Two individual speed sensors are used to detect the input speed and the output speed.
- Holding three individual solenoid valves, the valve body regulates the control oil pressure and adjusts shaft timing.

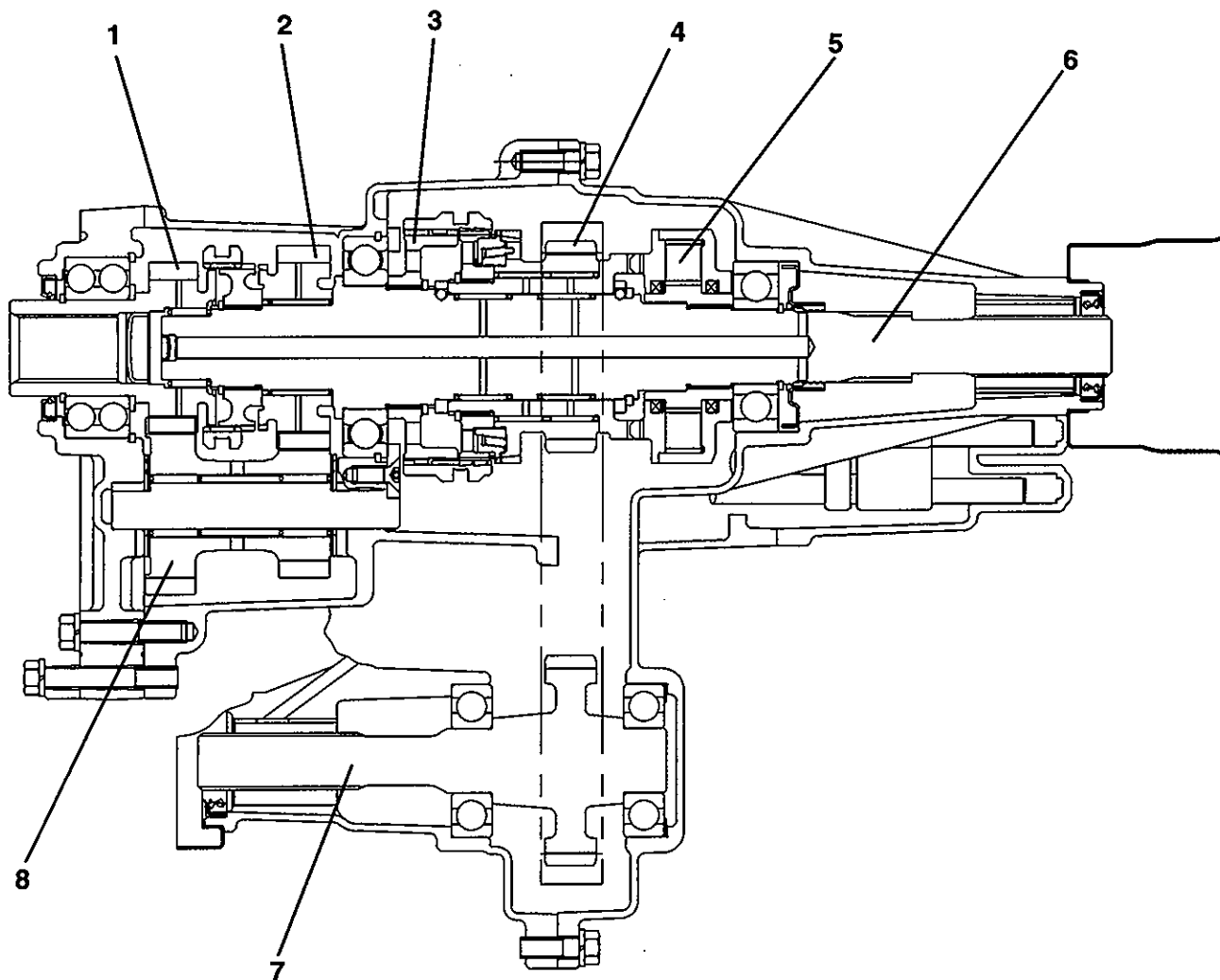
### SECTION VIEW



1. Torque converter
2. Oil pump
3. Overdrive clutch
4. Overdrive brake
5. Overdrive planetary gear
6. Forward clutch
7. Direct clutch

8. No.1 brake
9. No.2 brake
10. No.3 brake
11. Front planetary gear
12. Rear planetary gear
13. No.3 brake piston
14. Valve body

TRA1573

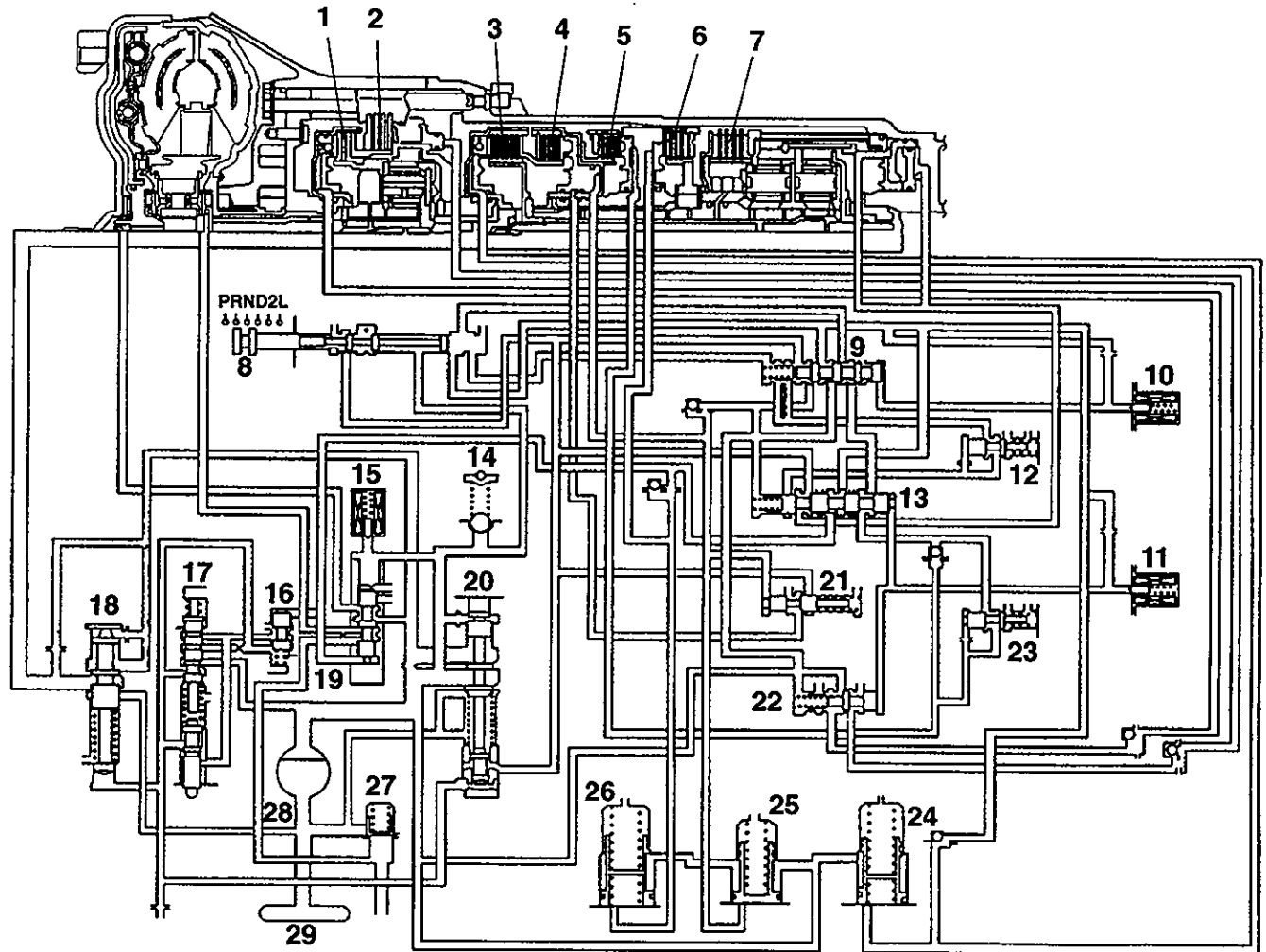
**TRANSFER  
SECTION VIEW**

TRA1762

1. Input gear
2. Low-speed gear
3. Differential lock hub
4. 2WD/4WD synchronizer
5. Viscous coupling
6. Rear output shaft
7. Front output shaft
8. Counter shaft



## HYDRAULIC CIRCUIT DIAGRAM



AW0179AG

- |                               |                                   |
|-------------------------------|-----------------------------------|
| 1. Overdrive clutch           | 16. Cutback valve                 |
| 2. Overdrive brake            | 17. Throttle valve                |
| 3. Forward clutch             | 18. Secondary regulator valve     |
| 4. Direct clutch              | 19. Lockup control valve          |
| 5. No.1 brake                 | 20. Primary regulator valve       |
| 6. No.2 brake                 | 21. Reverse clutch sequence valve |
| 7. No.3 brake                 | 22. 3-4 shift valve               |
| 8. Manual valve               | 23. Intermediate modulator valve  |
| 9. 2-3 shift valve            | 24. C1 accumulator                |
| 10. Solenoid valve No.1       | 25. C2 accumulator                |
| 11. Solenoid valve No.2       | 26. B2 accumulator                |
| 12. Low coast modulator valve | 27. Oil cooler bypass valve       |
| 13. 1-2 shift valve           | 28. Oil pump                      |
| 14. Pressure relief valve     | 29. Strainer                      |
| 15. Solenoid valve No.3       |                                   |

---

## NOTES

# 1. SPECIFICATIONS

## TRANSMISSION MODEL TABLE - MODEL 1999

Transmission models		Vehicle model	Engine model
EUR	V4AW4-D-AG	H66W	4G93-GDI
	V4AW4-D-AH	H66W	4G93-GDI
EXP	V4AW4-D-CJ	H65W	4G18-SOHC
	V4AW4-D-AG	H66W, H76W	4G93-GDI
	V4AW4-D-BH	H76W	4G93-SOHC
MMAL	V4AW4-D-BH	H76W	4G93-SOHC

## TRANSMISSION MODEL TABLE - MODEL 2001

Transmission models		Vehicle model	Engine model
EUR	V4AW4-D-D1	H67W, H77W	4G94-GDI
EXP	V4AW4-D-CJ	H65W	4G18-SOHC
	V4AW4-D-AG	H66W, H76W	4G93-GDI
	V4AW4-D-BH	H76W	4G93-SOHC
MMAL	V4AW4-D-BH	H76W	4G93-SOHC

## GENERAL SPECIFICATIONS

Item		V4AW4	
Torque convertor	Type	3-element, 1-stage, 2-phase type with lockup clutch	
Transmission	Type	4-speed, fully automatic	
	Gear ratios	1st gear	2.826
		2nd gear	1.493
		3rd gear	1.000
		4th gear	0.730
		Reverse	2.703
	Number of overdrive clutch discs		1
	Number of overdrive brake discs		2
	Number of forward clutch discs		4
	Number of direct clutch discs		3
	Number of No.1 brake discs		1
Number of No.2 brake discs		3	
Number of No.3 brake discs		5	
Transfer	Type	2-speed full-time transfer with differential lock	
	Gear ratios	High	1.000
		Low	1.548

**SERVICE SPECIFICATIONS****TRANSMISSION**

Item		Standard value	Limit value
Oil pump	Side clearance mm	0.02 – 0.05	0.1
	Body clearance mm	0.07 – 0.15	0.3
	Tip clearance mm	0.11 – 0.14	0.3
Clutch and brake piston strokes	Overdrive clutch mm	1.74 – 2.44	–
	Forward clutch mm	1.40 – 1.60	–
	Direct clutch mm	0.90 – 1.30	–
	No.1 brake mm	0.78 – 1.32	–
	No.2 brake mm	1.03 – 1.65	–
Brake clearance	Overdrive brake mm	0.56 – 1.62	–
	No.3 brake mm	0.52 – 1.27	–
Throttle cable adjusting mark clearance mm		0.8 – 1.5	–
Resistance between solenoid valve terminal and solenoid valve body $\Omega$		10 – 16	–

**TRANSFER**

Item	Standard value (mm)	Limit value (mm)
2WD/4WD clutch end play	0 – 0.08	–
Input gear end play	0 – 0.06	–
Input gear bearing clearance	0 – 0.06	–
Hi-Lo clutch hub end play	0 – 0.08	–
Differential lock hub end play	0 – 0.08	–
Rear output shaft rear bearing clearance	0 – 0.08	–
Clearance between synchronizer outer ring back side and drive sprocket	–	0.3

## IDENTIFICATION OF SPRING

## VALVE BODY

Spring name		Free height mm	Outside diameter mm	Number of coils	Wire diameter mm	Identification color
Upper rear valve body	1-2 shift valve spring	29.15	8.90	10.0	0.90	Blue
	2-3 shift valve spring	29.15	8.90	10.0	0.90	Blue
	3-4 shift valve spring	29.15	8.90	10.0	0.90	Blue
	Reverse clutch sequence valve spring	37.55	9.1	12.34	1.10	Light blue
Upper front valve body	Throttle valve spring	21.94	8.58	8	0.71	–
	Down shift valve spring	39.55	10.90	9.39	1.20	Green
	Secondary regulator valve spring	71.27	17.43	15	1.93	Green
	Cutback valve spring	23.0	6.85	10.5	0.65	Green
Lower valve body	Lockup control valve spring	32.6	11.4	8.25	1.0	Green
	Pressure regulator valve spring	50.28	17.02	10.5	1.7	Blue
	Intermediate modulator valve spring	27.26	9.04	9.5	1.1	Green
	Low coast modulator valve spring	42.35	9.24	15	0.84	–
	Pressure relief valve spring	32.14	13.14	9	2.03	–
	Oil cooler bypass valve spring	28.90	13.80	6.5	1.60	Orange

## ACCUMULATOR

Spring name		Free height mm	Outside diameter mm	Number of coils	Wire diameter mm	Identification color
C1 accumulator piston spring	Outer	29.5	13.45	7	1.1	–
	Inner	57.18	17.5	14.59, 2.68	1.9	Pink
C2 accumulator piston spring <V4AW4-D-A, B>		55.18	15.22	12.5	2.7	Green
C2 accumulator piston spring <V4AW4-D-C>		55.18	15.94	11.4	2.5	Yellow + Blue
B2 accumulator piston spring <V4AW4-D-A, B>	Outer	17.5	13	3.57	1.3	Light blue
	Inner	56.4	18.79	9.2	2.4	Green
B2 accumulator piston spring <V4AW4-D-C>	Outer	17.5	12.5	4	1.6	Red
	Inner	57.06	18	11.2	2.2	Pink

## TORQUE SPECIFICATION

### TRANSMISSION

Items	Torque Nm
Center support mounting bolt	25
Valve body mounting bolt	10
Oil strainer mounting bolt	5.4
Solenoid valve connector lock plate	5.4
Oil pan mounting bolt	4.4
Transmission rear adaptor mounting bolt	34
Transmission housing M10 mounting bolt	34
Transmission housing M12 mounting bolt	57
Union	25
Oil temperature sensor mounting bolt	25
Inhibitor switch center locking nut	4.0
Inhibitor switch locking bolt	5.4
Transmission control lever mounting bolt	7.0
Oil pump mounting bolt	22
Stator support mounting bolt	7.0
Transfer mounting bolt	35

### TRANSFER

Items	Torque Nm
Transfer case plate to transfer case mounting bolt	35
Transfer case to transfer rear cover mounting bolt	35
Center bearing retainer mounting seal bolt	18
Interlock plunger seal bolt	35
Vehicle speed sensor mounting bolt	11
Transfer control housing mounting bolt	18
Select plunger seal bolt	32
Poppet seal bolt	35
Various detection switches	34

**SNAP RINGS AND SPACERS FOR ADJUSTMENT****TRANSFER****Snap ring (for adjustment of input gear end play)**

Thickness mm	Identification color	Part number
2.70	Purple	MD704204
2.75	Pink	MD704205
2.80	Yellow	MD704206
2.85	White	MD704207
2.90	Blue	MD704208

**Snap ring (for adjustment of input gear bearing clearance)**

Thickness mm	Identification color	Part number
2.30	None	MD704199
2.35	Red	MD704200
2.40	White	MD704201
2.45	Blue	MD704202
2.50	Green	MD704203

**Snap ring (for adjustment of Hi-Lo clutch hub end play)**

Thickness mm	Identification color	Part number
2.14	None	MD704212
2.21	Yellow	MD704213
2.28	White	MD704214
2.35	Blue	MD704215
2.42	Red	MD704216

**Snap ring (for adjustment of differential lock hub end play)**

Thickness mm	Identification color	Part number
2.56	None	MD738386
2.63	Red	MD738387
2.70	White	MD738388
2.77	Blue	MD738389
2.84	Yellow	MD738390
2.91	Green	MD738391
2.98	Purple	MD738392

**Snap ring (for adjustment of rear output shaft rear bearing clearance)**

Thickness mm	Identification color	Part number
2.18	Blue	MR388669
2.25	None	MR388670
2.32	Brown	MR388671
2.39	White	MR388672



**Snap ring (for adjustment of 2-4WD clutch hub end play)**

Thickness mm	Identification color	Part number
2.56	None	MD738393
2.63	Red	MD738394
2.70	White	MD738395
2.77	Blue	MD738396
2.84	Yellow	MD738397

**SEALANTS**

Item	Specified sealant
Transmission	
Oil pump bolt	3M ATD part No. 8660 or equivalent
Transfer	
Mating surface between transfer control housing and transfer rear cover	Mitsubishi genuine sealant part No. MD997740 or equivalent
Mating surface between transfer case plate and transfer case	
Mating surface between transfer case and transfer rear cover	
Air breather to transfer case mounting area	
Threads of the center bearing retainer seal bolt (when reused)	3M STUD locking part No. 4170 or equivalent
Threads of the interlock plunger seal bolt (when reused)	3M ATD part No. 8660 or equivalent
Threads of the select plunger seal bolt (when reused)	
Threads of the poppet seal bolt (when reused)	

**FORM-IN-PLACE GASKET**

The transmission has several areas where the form-in-place gasket (FIPG) is in use. To ensure that the gasket fully serves its purpose, it is necessary to observe some precautions when applying the gasket. Bead size, continuity and location are of paramount importance. Too thin a bead could cause leaks. Too thick a bead, on the other hand, could be squeezed out of location, causing blocking or narrowing of the fluid feed line. To eliminate the possibility of leaks from a joint, therefore, it is absolutely necessary to apply the gasket evenly without a break, while observing the correct bead size.

Since the RTV hardens as it reacts with the moisture in the atmospheric air, it is normally used in the metallic flange areas.

**Disassembly**

The parts assembled with the FIPG can be easily disassembled without use of a special method. In some cases, however, the sealant between the joined surfaces may have to be broken by lightly striking with a mallet or similar tool. A flat and thin gasket scraper may be lightly hammered in between the joined surfaces. In this case, however, care must be taken to prevent damage to the joined surfaces.

**Surface preparation**

Thoroughly remove all substances deposited on the gasket application surfaces, using a gasket scraper or wire brush. Check to ensure that the surfaces to which the FIPG is to be applied is flat. Make sure that there are no oils, greases and foreign substances deposited on the application surfaces. Do not forget to remove the old sealant remained in the bolt holes.

**Form-in-place gasket application**

When assembling parts with the FIPG, you must observe some precautions, but the procedure is very simple as in the case of a conventional pre-cut gasket.

Applied FIPG bead should be of the specified size and without breaks. Also be sure to encircle the bolt hole circumference with a completely continuous bead. The FIPG can be wiped away unless it is hardened. While the FIPG is still moist (in less than 15 minutes), mount the parts in position. When the parts are mounted, make sure that the gasket is applied to the required area only. In addition, do not apply any oil or water to the sealing locations or start the engine until a sufficient amount of time (about one hour) has passed after installation is completed.

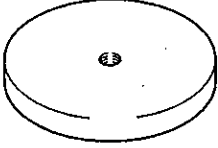
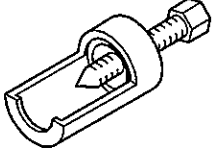
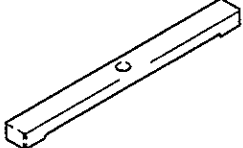
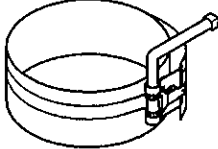
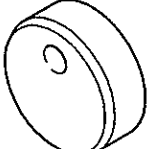
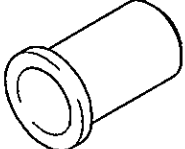
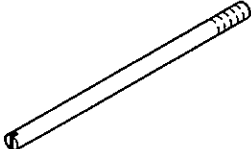
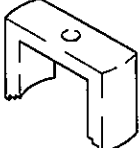
The FIPG application procedure may vary on different areas. Observe the procedure described in the text when applying the FIPG.

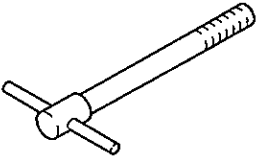
**LUBRICANTS****TRANSFER**

Item	Specified lubricant
Lip of the transfer case plate's oil seal	Mitsubishi genuine grease part No. 0101011 or equivalent
Lip of the transfer case's oil seal	
Lip of the transfer rear cover's oil seal	
Wave spring	
Spline section of the transfer input shaft	
Synchronizer cone surface	Hypoid gear oil SAE 75W-85W conforming to API classification GL-4 or higher

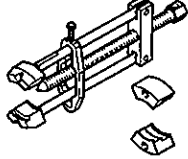
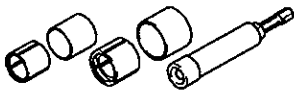
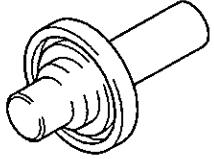
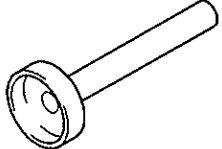
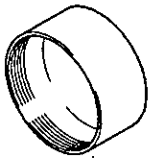
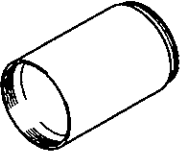
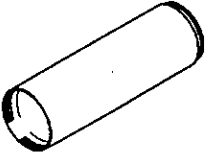
## 2. SPECIAL TOOLS


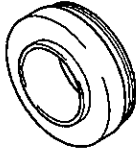
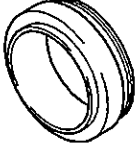

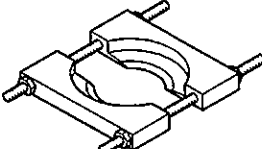
### TRANSMISSION

Tool	Number	Name	Use
	MD998211	Retainer	Disassembly and reassembly of No.3 brake
	MD998212	Oil pump puller	Removal of the oil pump
	MD998217	Gauge	Inspection of assembly condition
	MD998335	Oil pump band	Assembly of the oil pump
	MD998381	Oil seal installer	Assembly of oil seals
	MD998382	Oil seal installer	Assembly of oil seals
	MD998412	Guide	Installation of the oil pump
	MD998903	Spring compressor	Disassembly and reassembly of clutches

Tool	Number	Name	Use
	MD998904	Bolt	Disassembly and reassembly of clutches

**TRANSFER**

Tool	Number	Name	Use
	MD998020	Bearing puller	Removal of ball bearings
	MD998192	Bearing puller	Installation of the center bearing
	MD998800	Oil seal installer	Installation of oil seals
	MD998803	Differential oil seal installer	Installation of oil seals
	MD998812	Installer cap	Used with installer and installer adaptor
	MD998813	Installer (100)	Used with installer cap and installer adaptor
	MD998814	Installer (200)	Used with installer cap and installer adaptor

Tool	Number	Name	Use
	MD998818	Installer adaptor (38)	Installation of ball bearings
	MD998819	Installer adaptor (40)	Installation of ball bearings
	MD998825	Installer adaptor (52)	Installation of the input gear bearing
	MD998830	Installer adaptor (66)	Mounting of the oil guide and center bearing
	MD998917	Bearing remover	Removal of ball bearing and center bearing

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**NOTES**

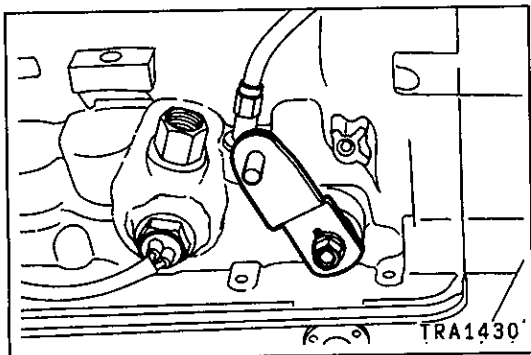
### 3. TRANSMISSION

#### DISASSEMBLY

##### Caution

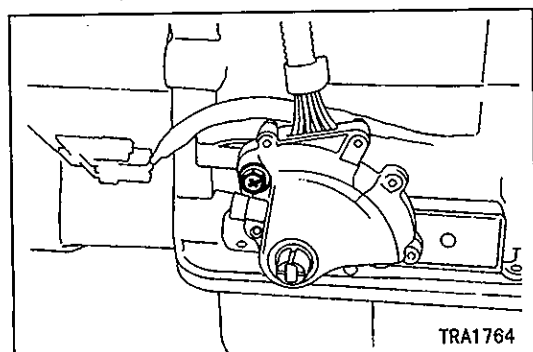
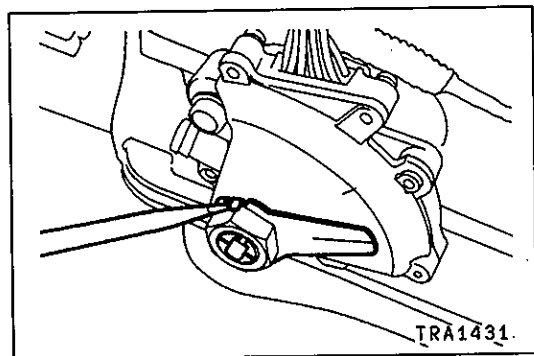
- The automatic transmission contains high precision components. The utmost care must be taken to ensure that these components are not damaged in any way during the disassembly procedure.
- Perform the following procedures using bare hands or plastic gloves; cotton gloves must not be used. In addition, although nylon cloth or paper towels may be used when necessary, rags must not be used.
- All disassembled components must be cleaned. Although metal parts may be cleaned using a regular detergent, they must be dried off thoroughly using compressed air.
- Clutch discs, plastic thrust races, and rubber components must be cleaned using automatic transmission fluid (ATF). While cleaning, ensure that no dirt or foreign object become attached to these components.
- If the transmission proper is damaged, the cooler system must also be disassembled and cleaned.

1. Place the transmission on the work surface with the oil pan facing downward. Remove the transfer.

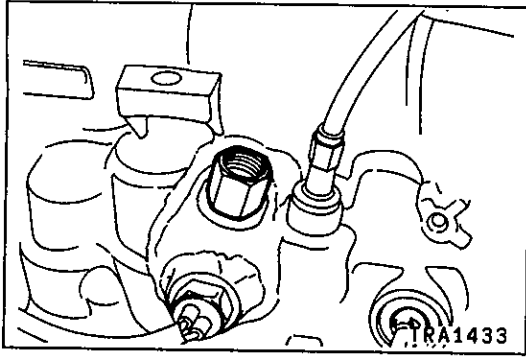


##### Caution

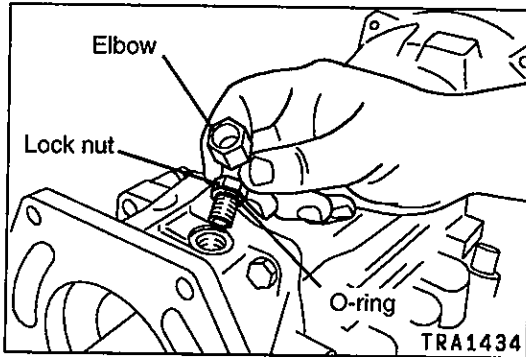
- As there is a danger that any foreign objects and dirt contained in the oil pan could enter the valve body or other similar components, the transmission should not be positioned with the oil pan mounting side upward before the oil pan is removed.
2. Remove the nut and spring washer followed by the transmission control shaft lever.
  3. Bend back the locking tabs of the inhibitor switch neutral adjustment plate; then remove the lock nut.
  4. Remove the neutral adjustment plate and the packing.



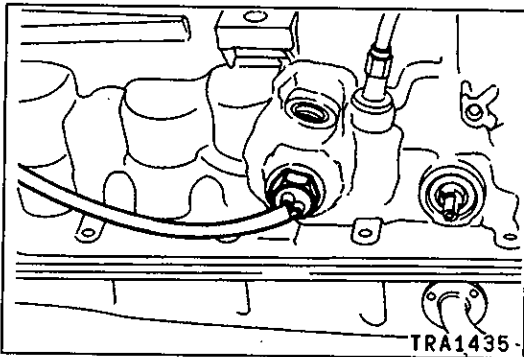
5. Remove the inhibitor switch.



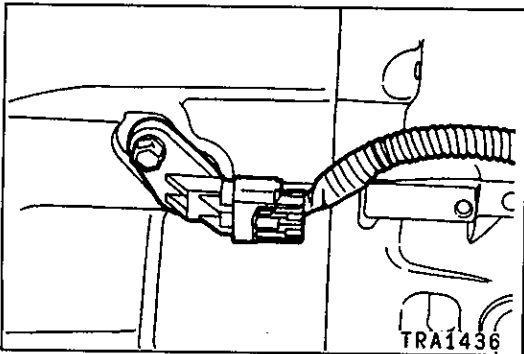
6. Remove the union (front side) and its O-ring.



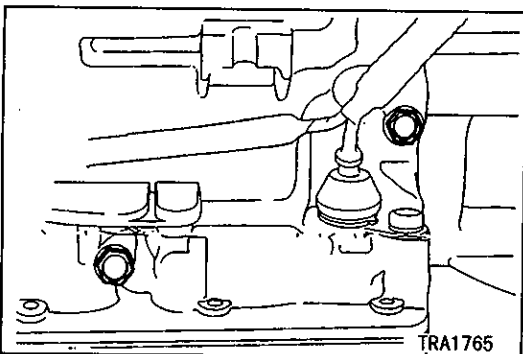
7. Loosen the lock nut; then remove the elbow and its O-ring.



8. Remove the oil temperature sensor and its O-ring.

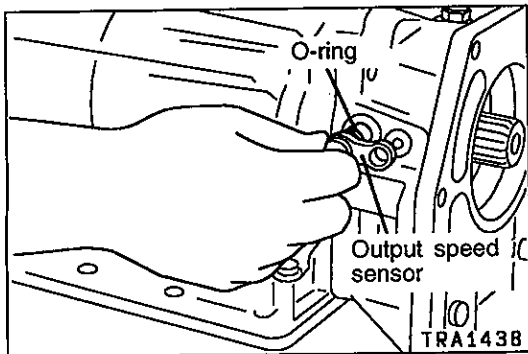


9. Remove the input speed sensor and its O-ring.

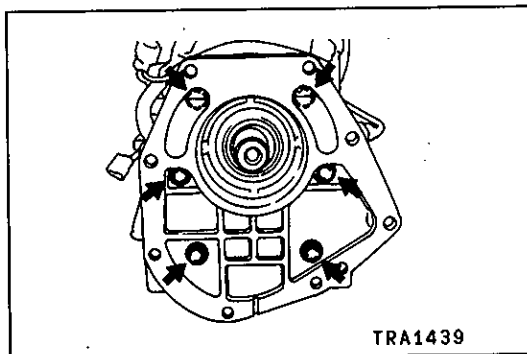


10. Remove each transmission case plug and its O-ring. (2 locations)

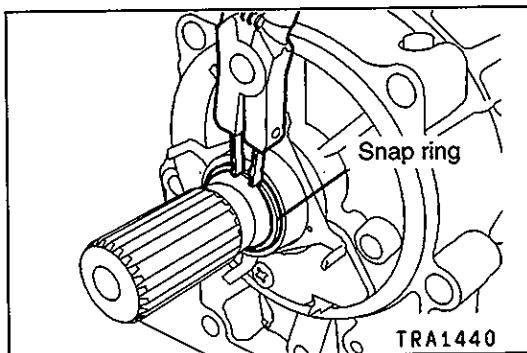




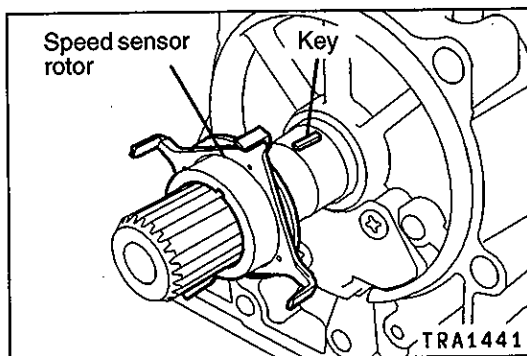
11. Remove the output speed sensor and its O-ring.



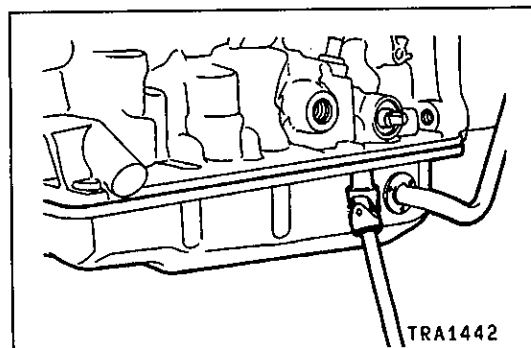
12. Remove the bolts shown in the illustration; then remove the transmission adaptor and gasket.  
13. Remove the oil seal.



14. Remove the snap ring.



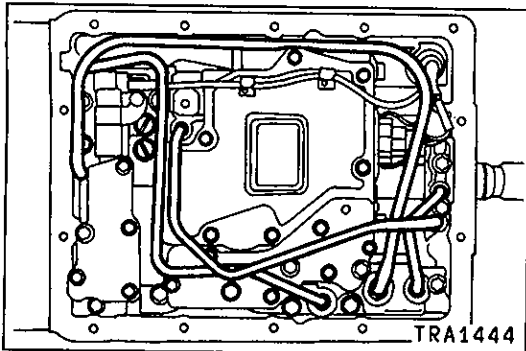
15. Remove the speed sensor rotor and the key.



16. Remove the oil pan, the gasket, and the magnets.

**Caution**

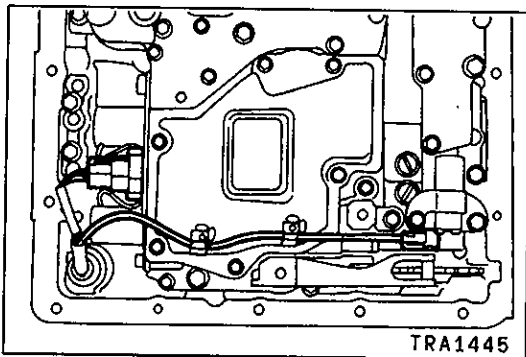
- As there is a danger that any foreign objects and dirt contained in the oil pan could enter the valve body or other similar components, the transmission should not be positioned with the oil pan mounting side upward before the oil pan is removed.



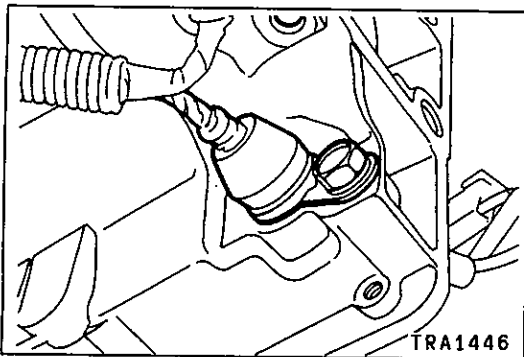
17. Pull out both ends of the oil tube little by little, finally removing the oil tube completely.

**Caution**

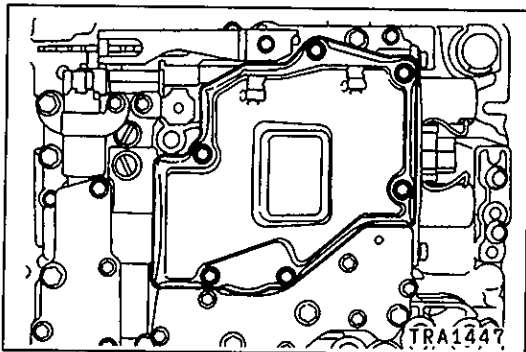
- The oil tube must not be distorted or deformed by bending.



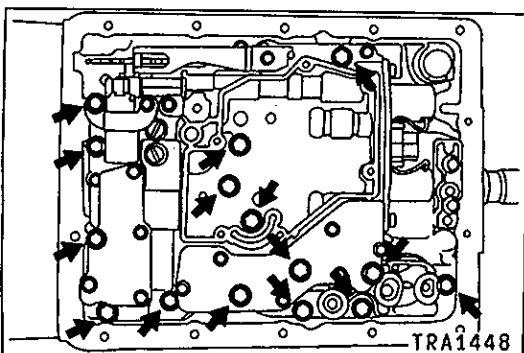
18. Remove the connector from the solenoid valve; then the harness from the harness clamp.



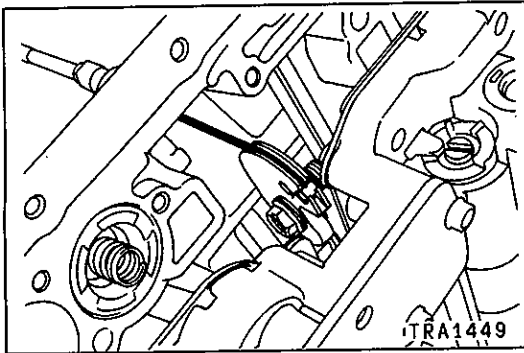
19. Remove the lock plate and then the solenoid valve harness.  
20. Remove the O-ring from the solenoid valve harness.



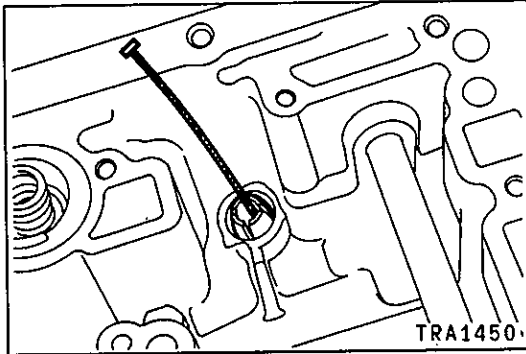
21. Remove the bolts shown in the illustration; then remove the oil strainer, the spacer, and the gasket.



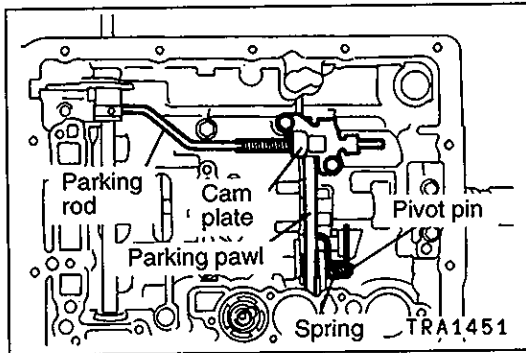
22. Loosen uniformly the bolts indicated in the illustration on the left. Then remove the bolts.



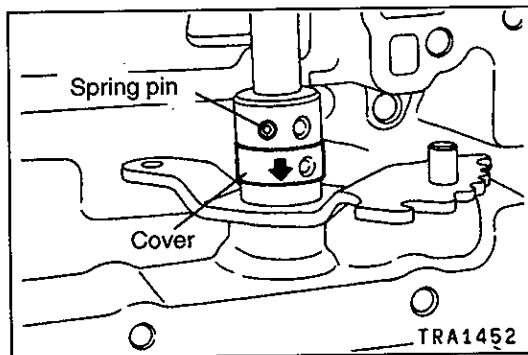
23. Lift up the valve body and remove the throttle cable from the throttle cam.
24. Remove the valve body.



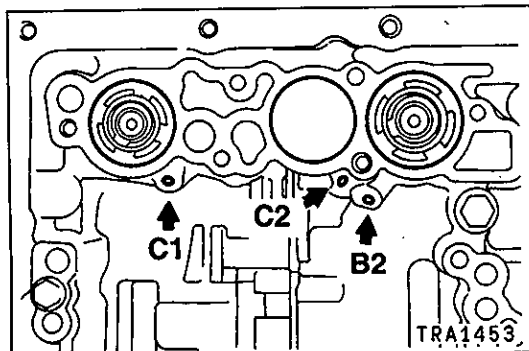
25. Remove the throttle cable.



26. Remove the cam plate, the spring, the pivot pin, the parking pawl, and the parking rod.



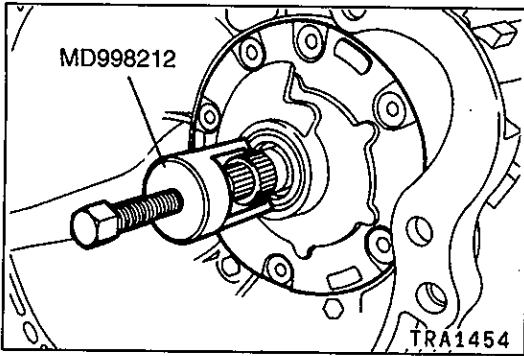
27. Move the cover and tap out the spring pin.
28. Remove the shaft and the manual valve lever.



29. Blow in air at the points indicated in the illustration on the left to remove the accumulator pistons.

#### Caution

- There is a danger that the piston and fluid may fly out at a considerable speed: Take the necessary precautions.
- Pistons and springs are assembled in the order B2, C2, C1 from the front side. They should be stored in this order following removal.

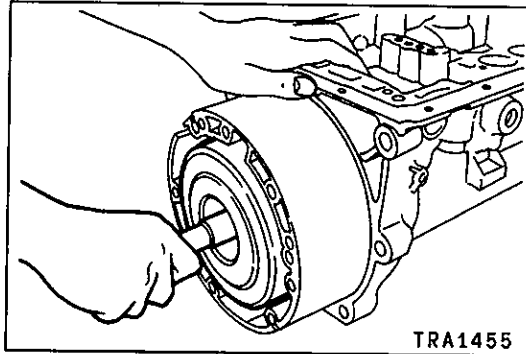


30. Remove the oil pump mounting bolts; then remove the oil pump using the appropriate special tool.
31. Remove the thrust bearing and the thrust race.

**NOTE**

There may be a case where the thrust race is stuck to the oil pump side.

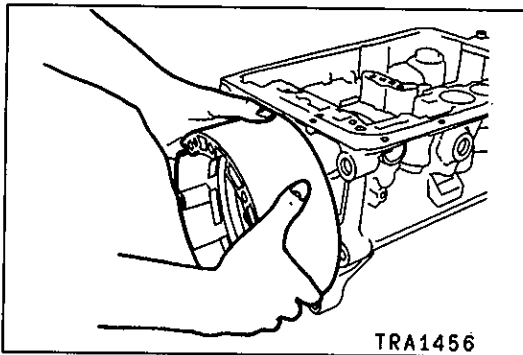
32. Remove the converter housing mounting bolts.
33. Remove the converter housing while manually holding down the overdrive input shaft.



34. Remove the overdrive input shaft, the overdrive planetary gear, and the overdrive clutch from the overdrive case.
35. Remove the two thrust washers.

**NOTE**

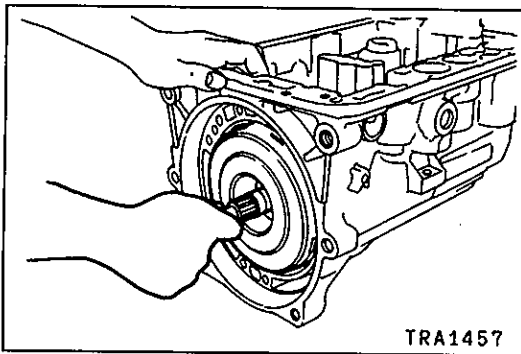
There may be a case where the thrust washer is stuck to the overdrive planetary gear side.



36. Remove the overdrive case.
37. Remove the thrust race and the thrust bearing.

**NOTE**

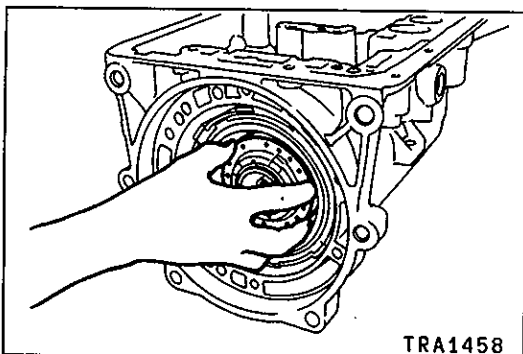
There may be a case where the thrust race is stuck to the overdrive case side.



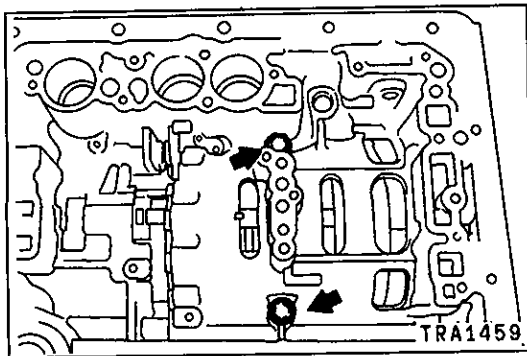
38. Remove the forward clutch.
39. Remove the thrust bearing, and the two thrust races.

**NOTE**

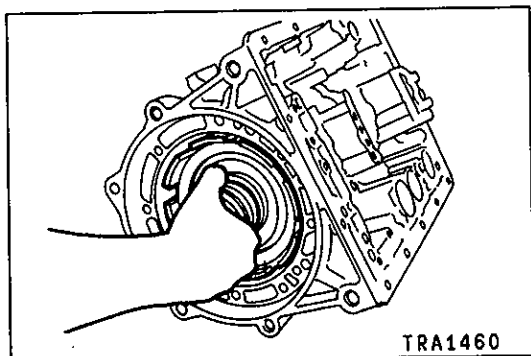
There may be a case where the thrust race is stuck to the forward clutch side.



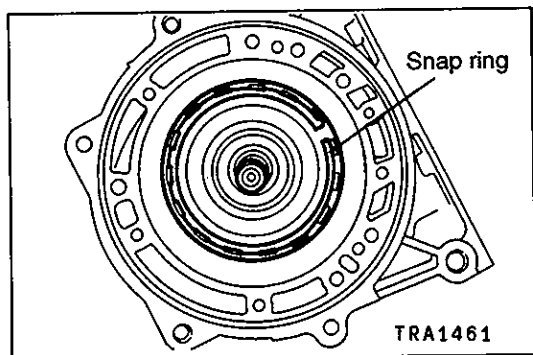
40. Remove the direct clutch.



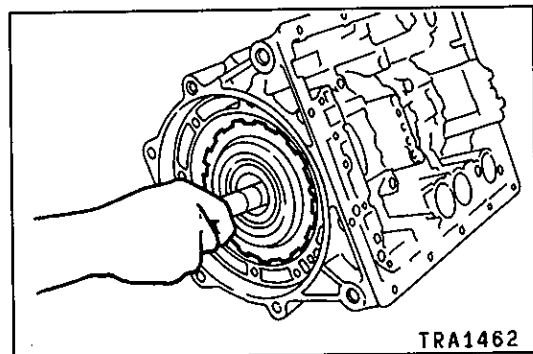
41. Remove the center support mounting bolts.



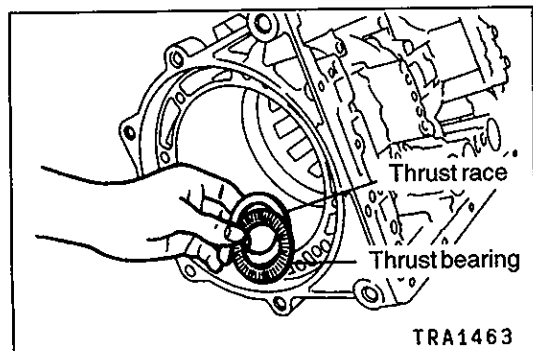
42. Remove the center support and the sun gear as a unit.



43. Remove the snap ring.



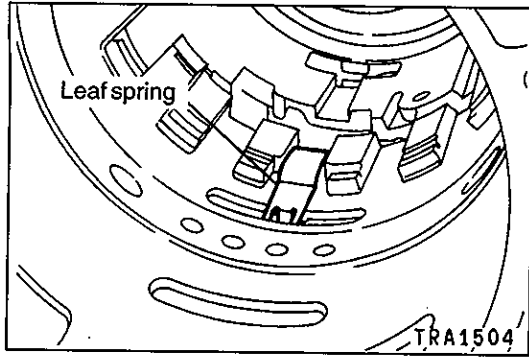
44. Hold the intermediate shaft and remove both the front planetary gear and the rear planetary gear.



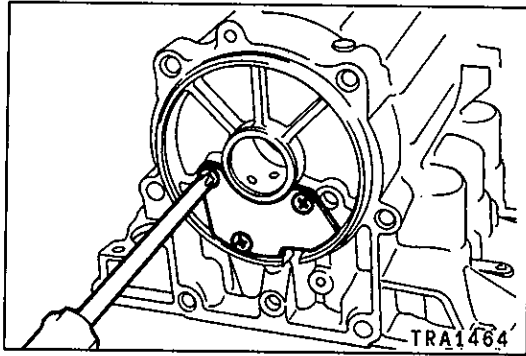
45. Remove the thrust bearing and the thrust race.

**NOTE**

There may be a case where the thrust bearing is stuck to the rear planetary carrier side.



46. Remove the leaf spring.

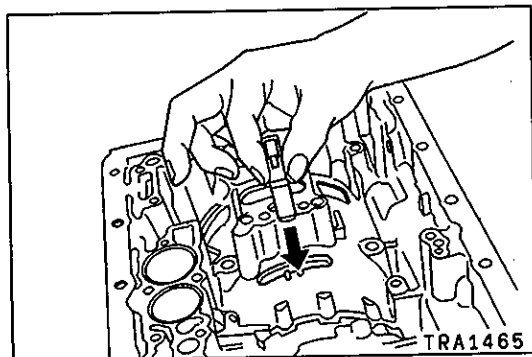


47. Remove the rear cover and the gasket.

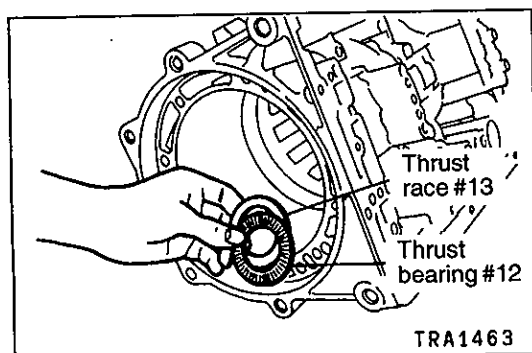
## REASSEMBLY

### Caution

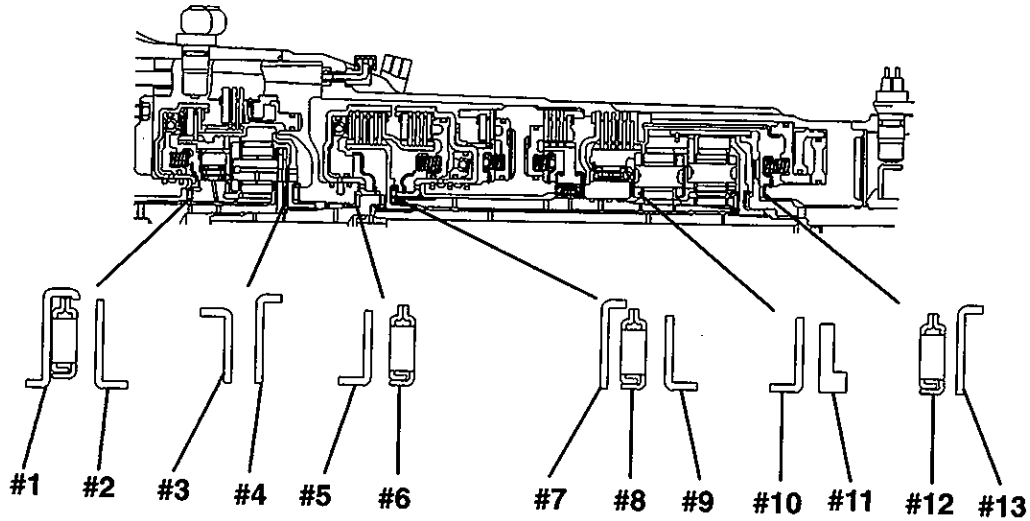
- The automatic transmission contains high precision components. The utmost care must be taken to ensure that these components are not damaged in any way during the assembly procedure.
- Damage can lead to leakage of automatic transmission fluid (ATF) or to performance being impaired. Consequently, assembly operations should be performed with care and while inspecting carefully for damage.
- Frictional elements, rotating sections, and sliding sections should be coated with ATF before reassembly.
- All disassembled components must be cleaned. Although metal parts may be cleaned using a regular detergent, they must be dried off thoroughly using compressed air.
- Clutch discs, plastic thrust races, and rubber components must be cleaned using ATF. While cleaning, ensure that no dirt or foreign object become attached to these components.
- Gaskets, oil seals, and other similar rubber parts cannot be reused. They should always be replaced with new parts for assembly.
- When new clutch discs or brake discs are to be assembled, they must be soaked in ATF for at least 2 hours in advance.
- Sealant or adhesive must not be used with gaskets.
- Greases other than petrolatum or industrial vaseline must never be used.
- If a bushing should be replaced, replace the assembly containing that bushing.



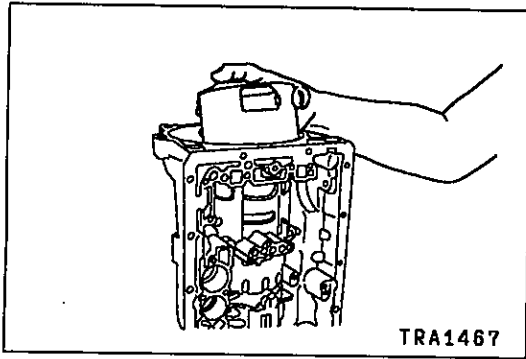
1. Install the leaf spring.



2. Assemble thrust race #13 and thrust bearing #12.

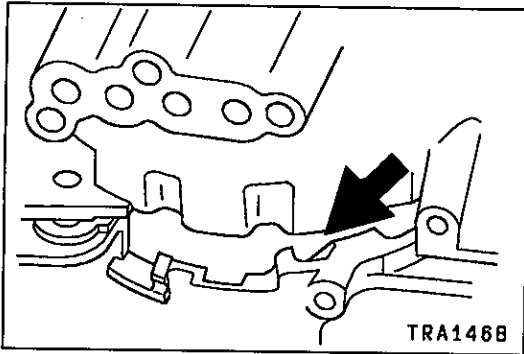


TRA1466



TRA1467

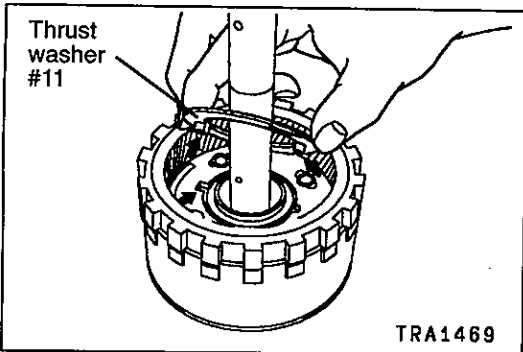
3. Install the apply-tube.



TRA1468

**Caution**

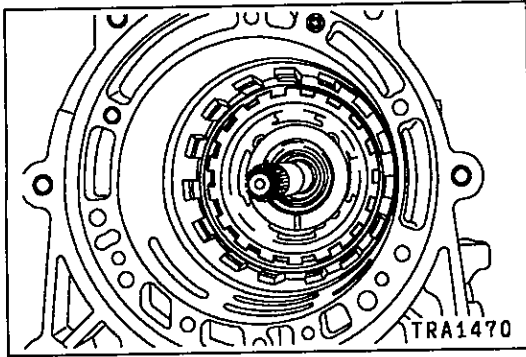
- Fit the apply-tube lug securely in the case at the position shown in the illustration.



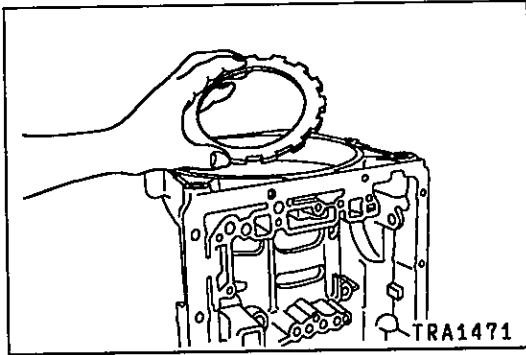
TRA1469

4. Mount the thrust washer #11 to the rear planetary carrier.

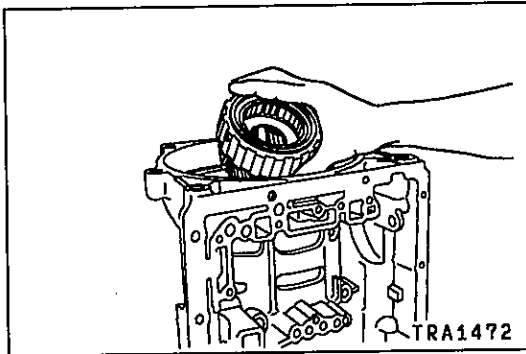




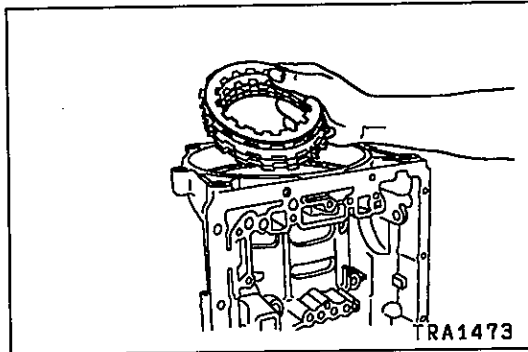
5. Attach the rear planetary carrier.



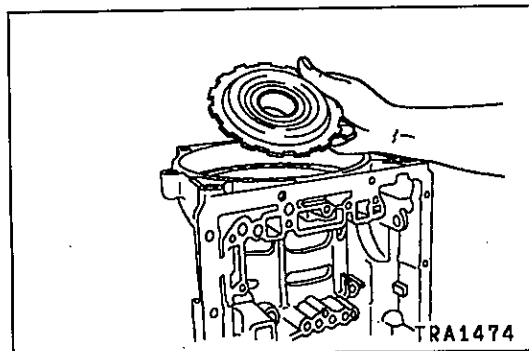
6. Install the backing plate.



7. Coat the thrust washer #10 with petrolatum or vaseline and then attach it to the front planetary carrier. Following this, install the front planetary carrier in the ring gear of the rear planetary carrier.



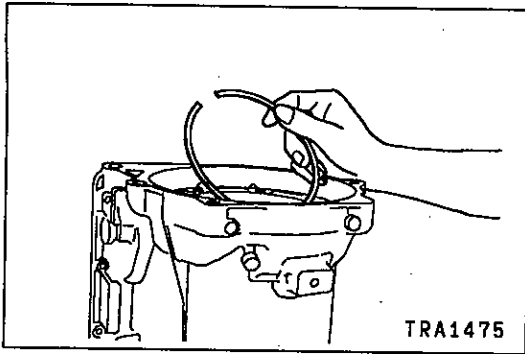
8. Install the clutch discs and the clutch plates alternately onto the backing plate.



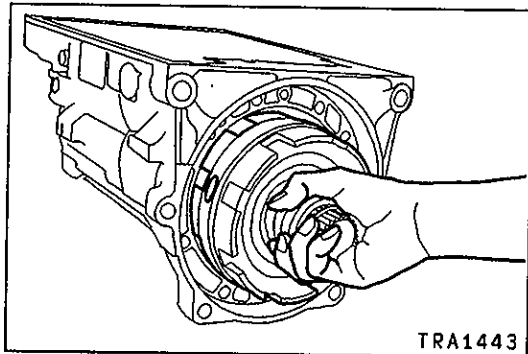
9. Install the inner race.

#### Caution

- The inner race must be installed in such a way that the illustrated marker is facing the valve body side.
- The snap ring groove should be completely visible when the carriers and the inner race have been assembled. Verify that this is the case.



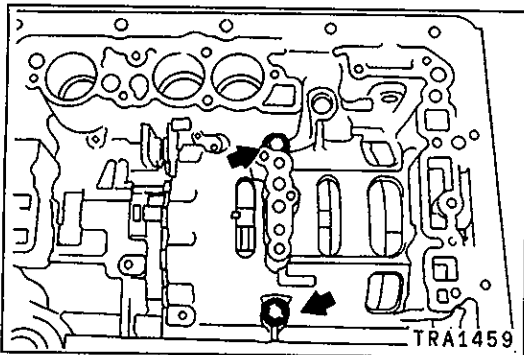
10. Install the snap ring.



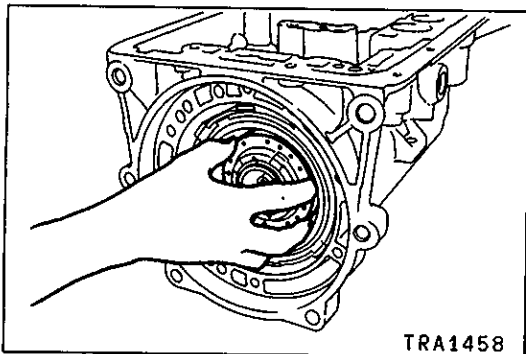
11. Install the center support.

**Caution**

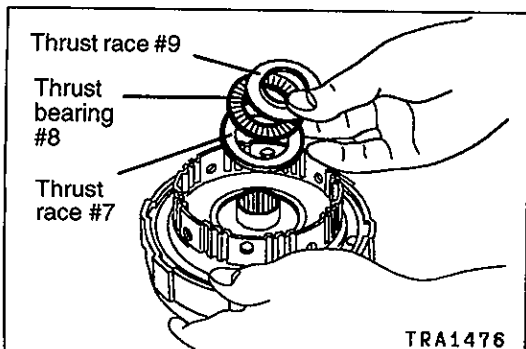
- The center support mounting bolt holes should be lined up before the center support is pushed into place.



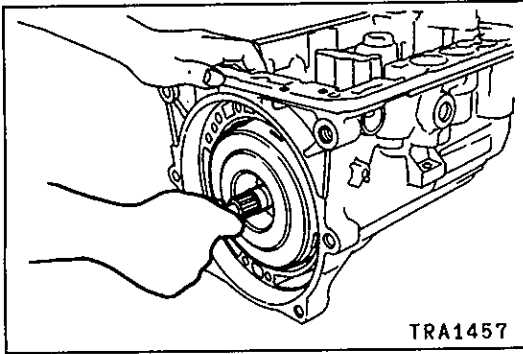
12. Tighten the indicated bolts handtight while the center support is being pushed into place.



13. Attach the direct clutch.



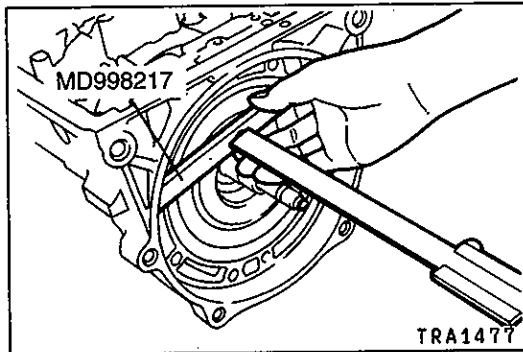
14. Coat the thrust race #7, the thrust bearing #8, and the thrust race #9 with petrolatum or vaseline and attach to the forward clutch hub.



15. Attach the forward clutch while aligning with the lugs of the direct clutch discs.

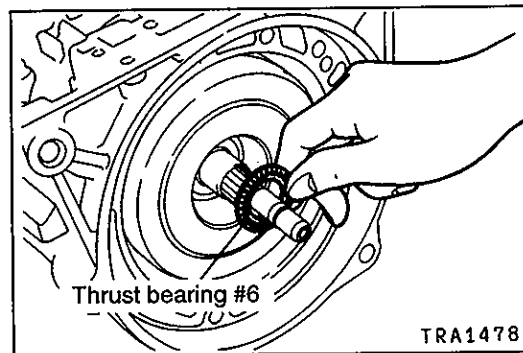
**Caution**

- Ensure that the thrust races and the thrust bearing which were attached in the previous step do not fall off during this step.

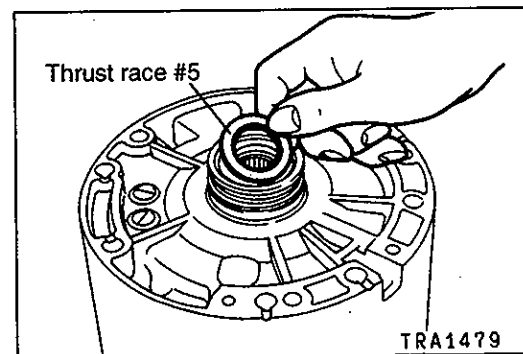


16. Measure the distance to the forward clutch from the front end face of the special tool and verify that the correct installation condition has been achieved.

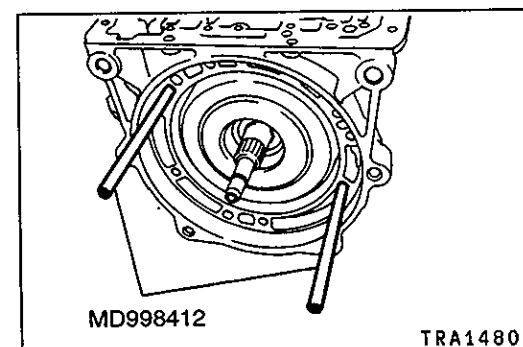
**Standard value (i.e., measured value – thickness of special tool): Approx. 1.5 mm**



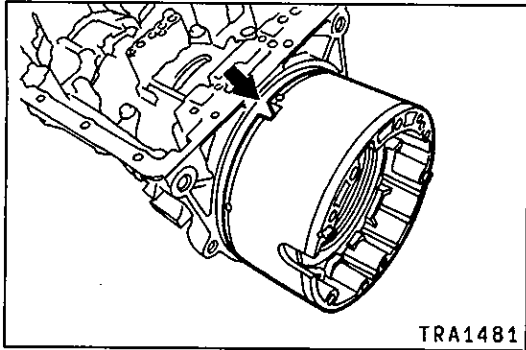
17. Attach the thrust bearing #6 to the forward clutch.



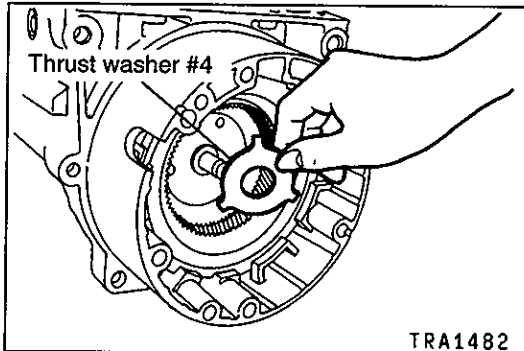
18. Apply either petrolatum or vaseline to the thrust race #5; then attach it to the overdrive case.



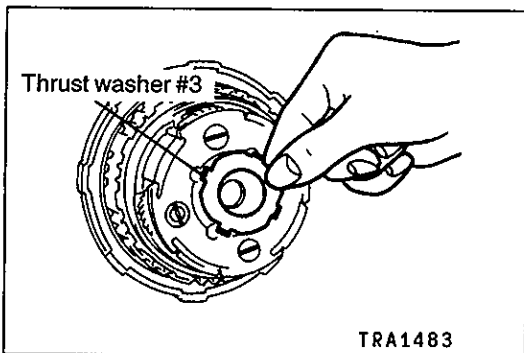
19. Attach the indicated special tools to the transmission case.



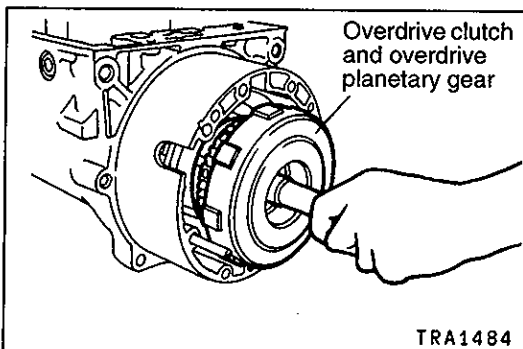
20. Pass the overdrive case along the two special tools with the notch in the case directed as shown and carefully attach to the transmission case.



21. Mount the thrust washer #4 in the ring gear located inside the overdrive case.



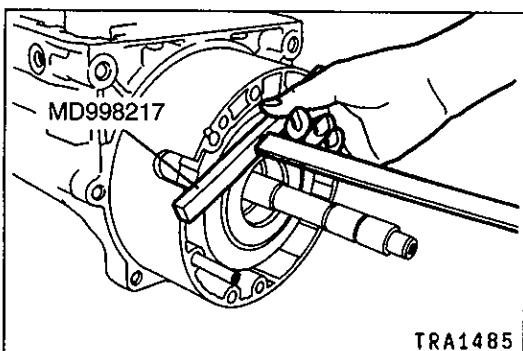
22. Assemble the overdrive clutch and the overdrive planetary gear, apply either petrolatum or vaseline to the thrust washer #3, and attach this washer to the overdrive planetary carrier.



23. Align the lugs of the overdrive brake discs with each other; following this, install the overdrive clutch and the overdrive planetary gear which were assembled the last step.

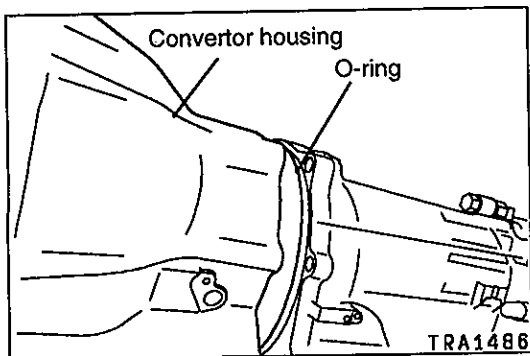
**Caution**

- Ensure that the thrust washer which was attached in the previous step does not fall off during this step.

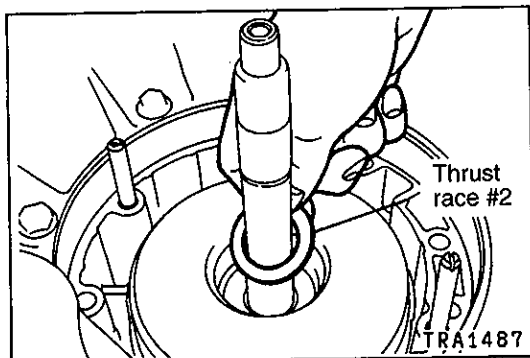


24. Measure the distance to the overdrive clutch from the front end face of the special tool and verify that the correct installation condition has been achieved.

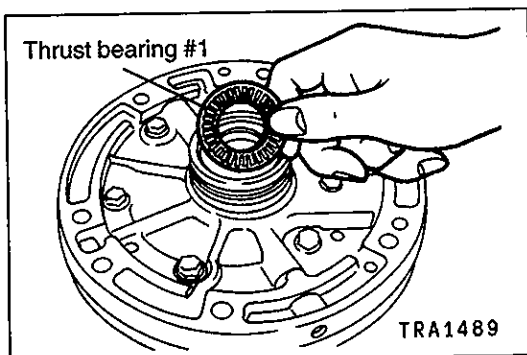
**Standard value (i.e., measured value – thickness of special tool): Approx. 2.0 mm**



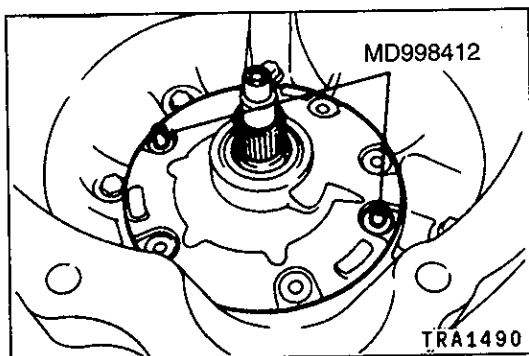
25. Install the O-ring and then the convertor housing.



26. Attach the thrust race #2 to the overdrive clutch.



27. Apply either petrolatum or vaseline to the thrust bearing #1; then attach it to the oil pump.



28. Attach the oil pump using the indicated special tools as guides.

**Caution**

- Ensure that the thrust washer which was attached in the previous step does not fall off during this step.

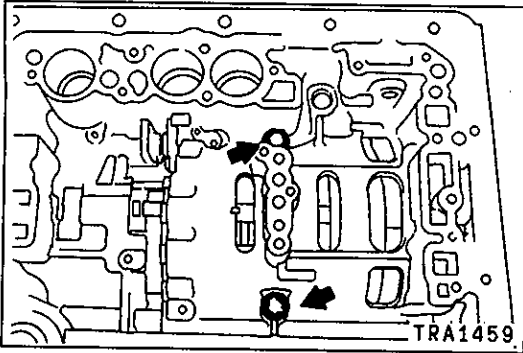
29. Mount the bolts after sealant has been applied to them.

**Specified sealant: 3M ART Part No. 8660 or equivalent**

**Caution**

- Bolts should be tightened gradually and uniformly.
- The input shaft end play should be checked continually as the bolts are being tightened.

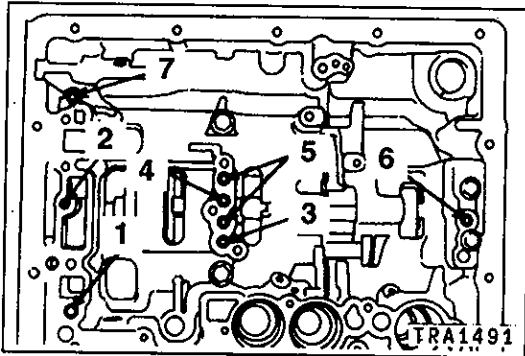
**Standard value: 0.3 – 0.9 mm**



30. Alternately tighten the center support mounting bolts little by little.

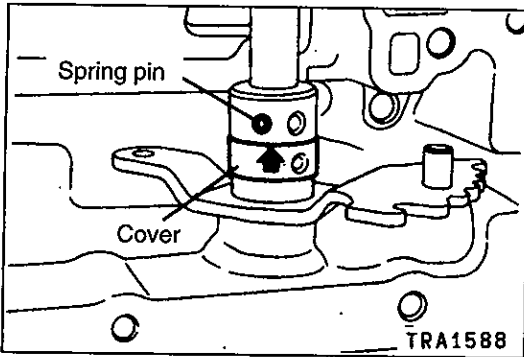
**NOTE**

Start tightening from the bolt on the accumulator side.



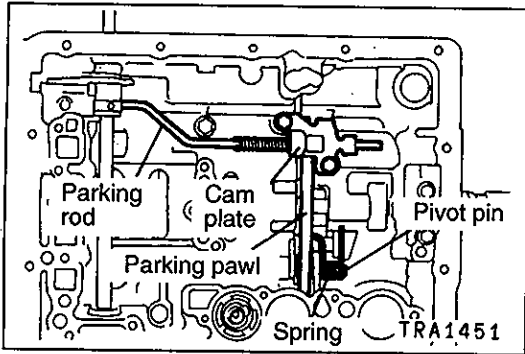
31. Blow in low pressure air at the points indicated in the illustration and confirm that each piston can be heard to operate.

1. Overdrive clutch
2. Forward clutch
3. Brake No.1
4. Brake No.2
5. Direct clutch
6. Brake No.3
7. Overdrive brake

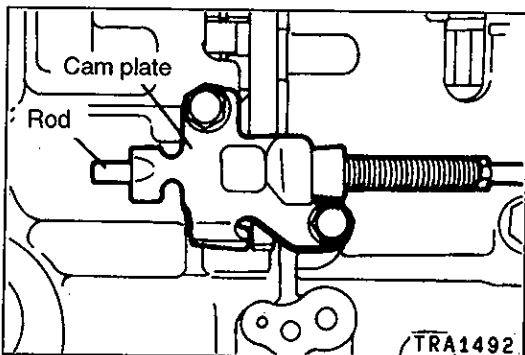


32. Insert the manual lever shaft into the case, attach the manual lever and the cover to the shaft, and tap the spring pin into place.

33. Move the cover up over the spring pin and stake it in position.

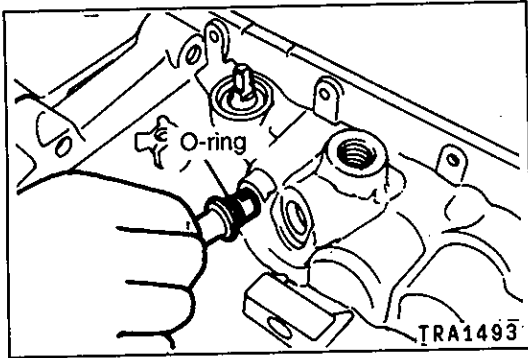


34. Install the parking rod, parking pawl, pivot pin, spring, and cam plate.

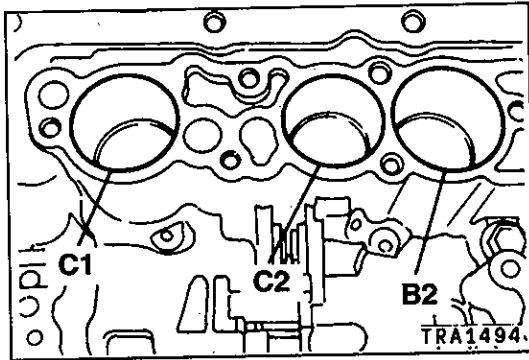


**Caution**

- Verify that the rod is protruding from the cam plate.



35. Insert a new O-ring and attach the throttle cable.



36. Install each accumulator piston and spring.

**Accumulator piston dimensions**

	Piston outer diameter (mm)	Piston length (mm)
B2	34.80 – 34.85	48.50
C1	31.80 – 31.85	49.50
C2	31.80 – 31.85	45.00

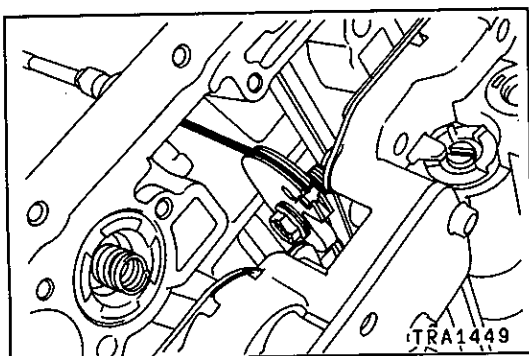
**Accumulator spring dimensions**

**V4AW4-D-A, B**

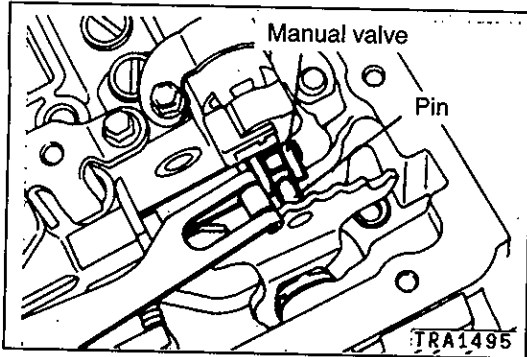
	Free height (mm)	Outside diameter (mm)	Identification color
B2	17.5	13.0	Light blue
	56.4	18.79	Green
C1	29.5	13.45	–
	57.18	17.5	Pink
C2	55.18	15.22	Green

**V4AW4-D-C**

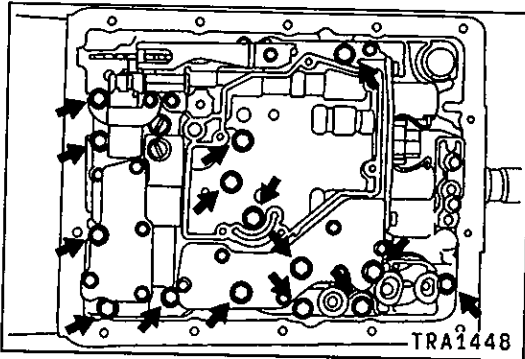
	Free height (mm)	Outside diameter (mm)	Identification color
B2	17.5	12.5	Red
	57.06	18	Pink
C1	29.5	13.45	–
	57.18	17.5	Pink
C2	55.18	15.94	Yellow + Blue



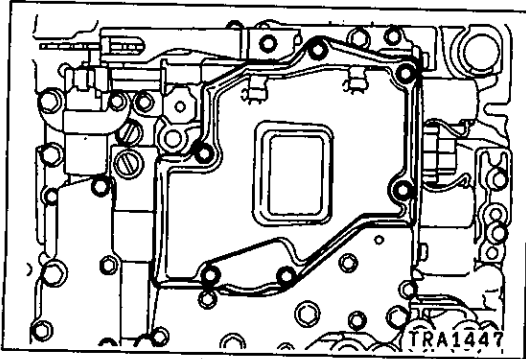
37. Place the valve body on the transmission case and connect the throttle cable to the throttle cam.



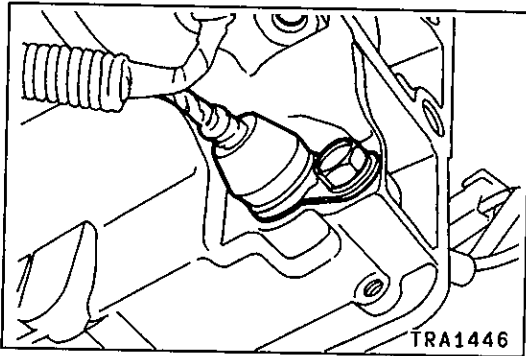
38. Position the valve body in such a way that the manual valve lever pin sits in the manual valve groove.



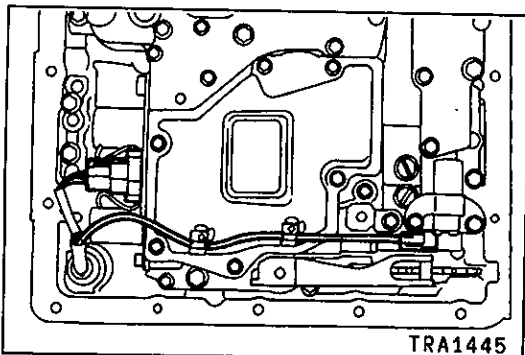
39. Install valve body mounting bolts in the indicated positions and tighten uniformly.



40. Attach the oil strainer, spacer, and gasket; tighten mounting bolts uniformly.

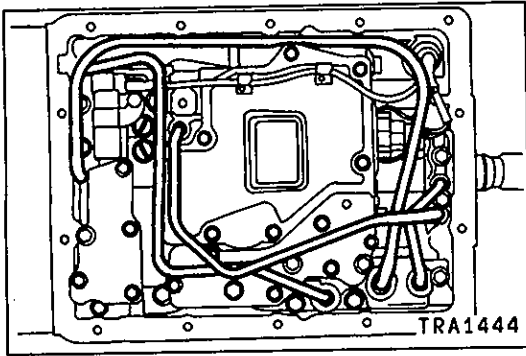


41. Install a new O-ring, apply automatic transmission fluid, and then place the solenoid valve harness inside the case.  
42. Attach the lock plate and secure using a bolt.



43. Attach the connector to the solenoid valve and secure the harness to the harness clamps.

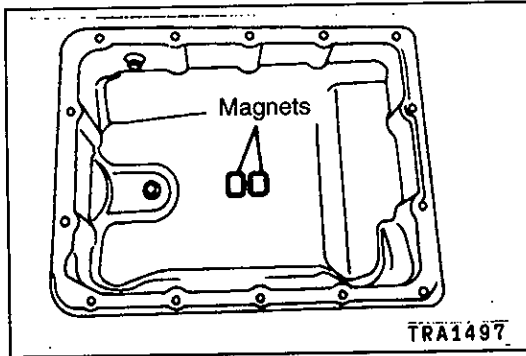




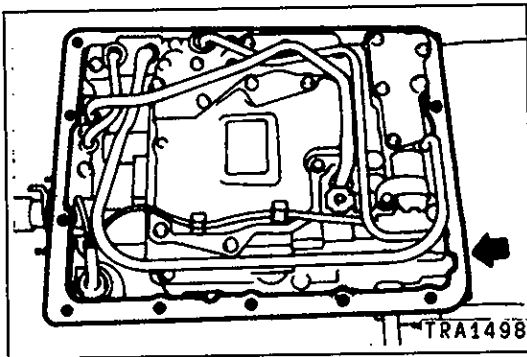
44. Use a plastic hammer or another similar tool to lightly and evenly tap the ends of the oil tube and secure it in place.

**Caution**

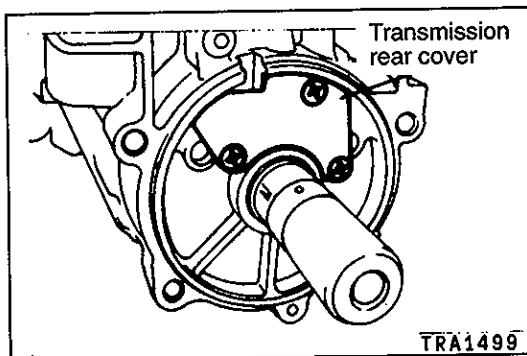
- Ensure that the oil tube is firmly fastened as far as the stopper position.



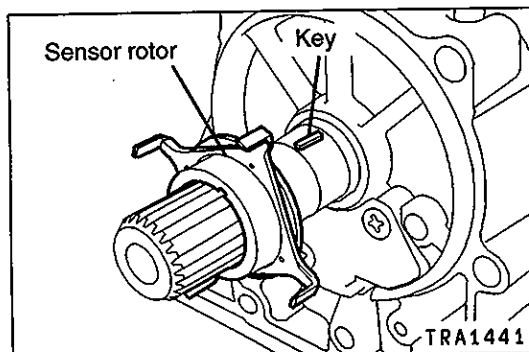
45. Attach the magnets at the positions indicated in the illustration.



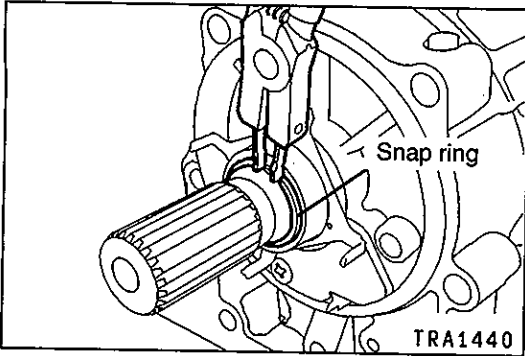
46. Attach a new gasket in such a way that the notch is positioned as illustrated.  
47. Attach the oil pan and tighten the mounting bolts evenly.



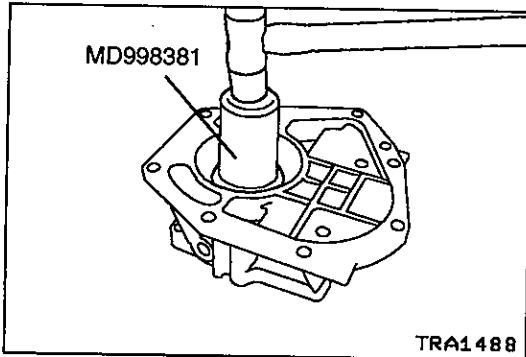
48. Attach the transmission case rear cover through a new gasket.



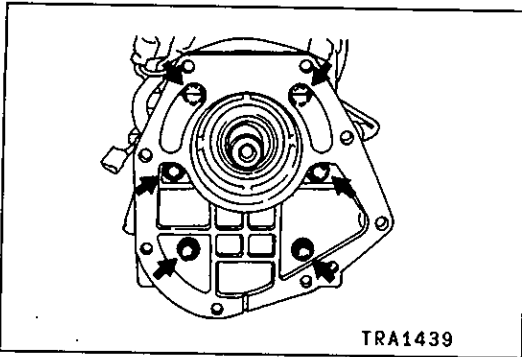
49. Mount the key and the sensor rotor on the output shaft.



50. Attach the snap ring.



51. Install an oil seal in the transmission rear adaptor using the indicated special tool.

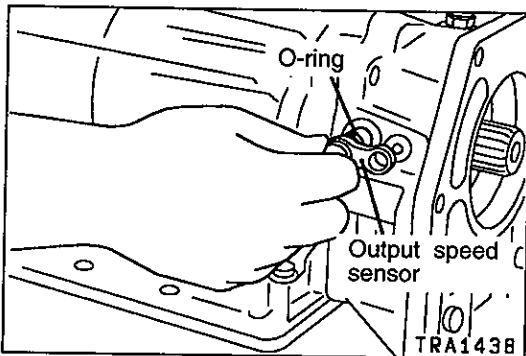


52. Mount the transmission rear adaptor through a new gasket.

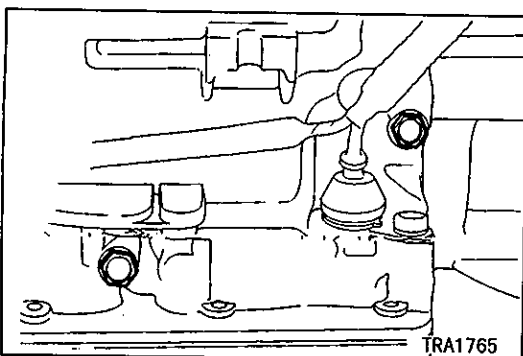
**Caution**

- Take care not to damage the oil seal with the splined section of the output shaft.

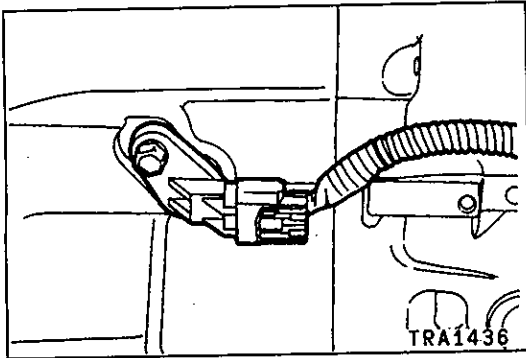
53. Uniformly tighten the bolts indicated in the illustration.



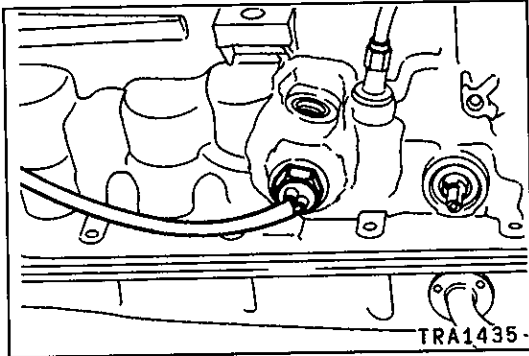
54. Attach a new O-ring to the output speed sensor; following this install the output speed sensor.



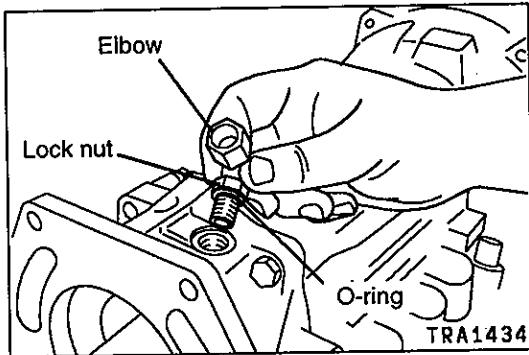
55. After installing a new O-ring into the transmission case plug, attach this plug.



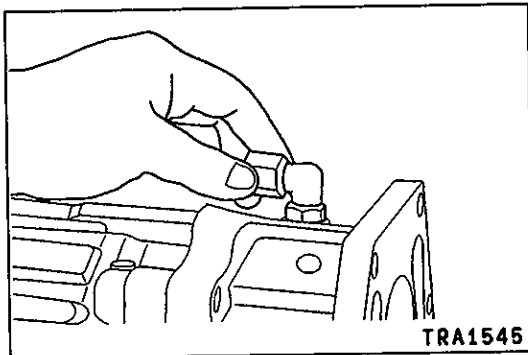
56. Install a new O-ring into the input speed sensor and attach this sensor.



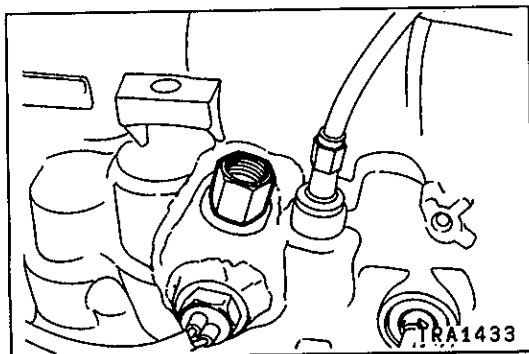
57. After installing a new O-ring into the oil temperature sensor, attach this sensor.



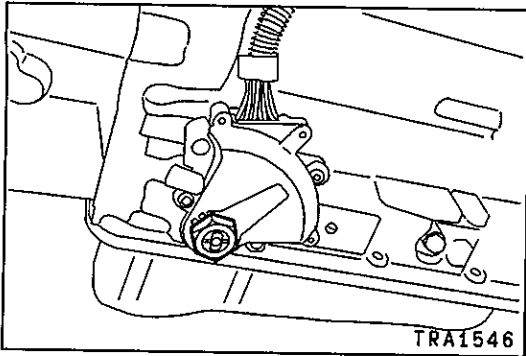
58. Install a new O-ring on the elbow, then attach the elbow.



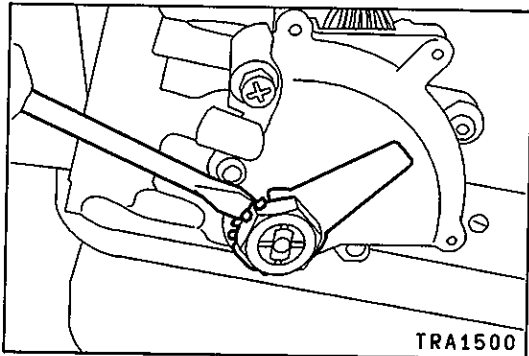
59. While holding the elbow in the forward facing position, tighten the lock nut.



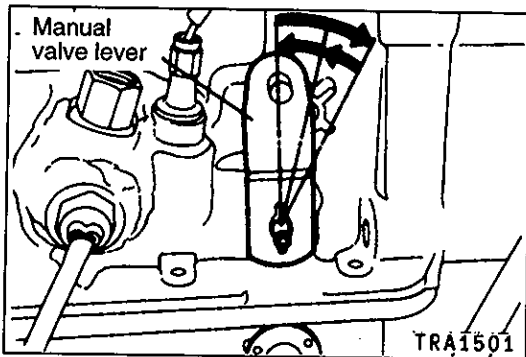
60. After installing a new O-ring into the union, attach the union.



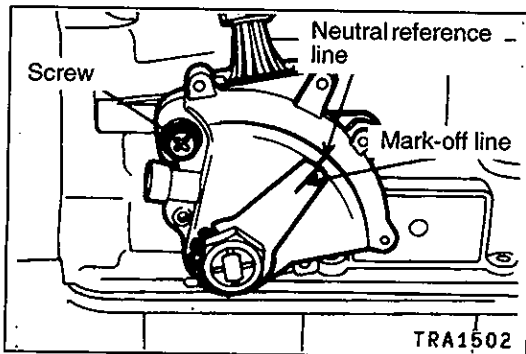
61. Attach the inhibitor switch to the manual valve lever shaft.
62. Fit the packing and neutral adjusting plate and secure with the mounting nut.



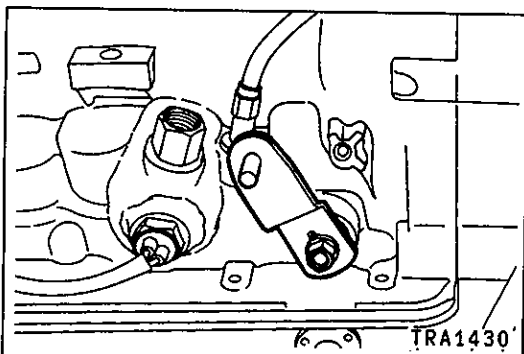
63. Using a screwdriver or something similar, bend the locking tabs of the neutral adjusting plate over the nut to lock it.



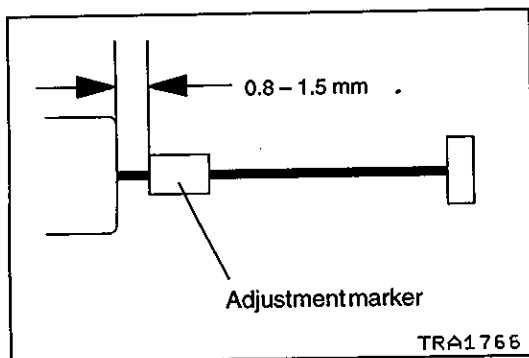
64. Temporarily attach the manual valve lever and rotate the manual valve lever shaft fully backwards; following this, return the lever by two detents to bring it to the neutral position.



65. Align the neutral reference line on the inhibitor switch with the mark-off line on the neutral adjusting plate to adjust the neutral position.



66. Attach the control lever.



67. Bend the area around the center of the throttle cable to a radius of approximately 200 mm, pull the cable until there is no remaining play, and punch the adjustment marker at the illustrated position.

**Standard value: 0.8 – 1.5 mm**

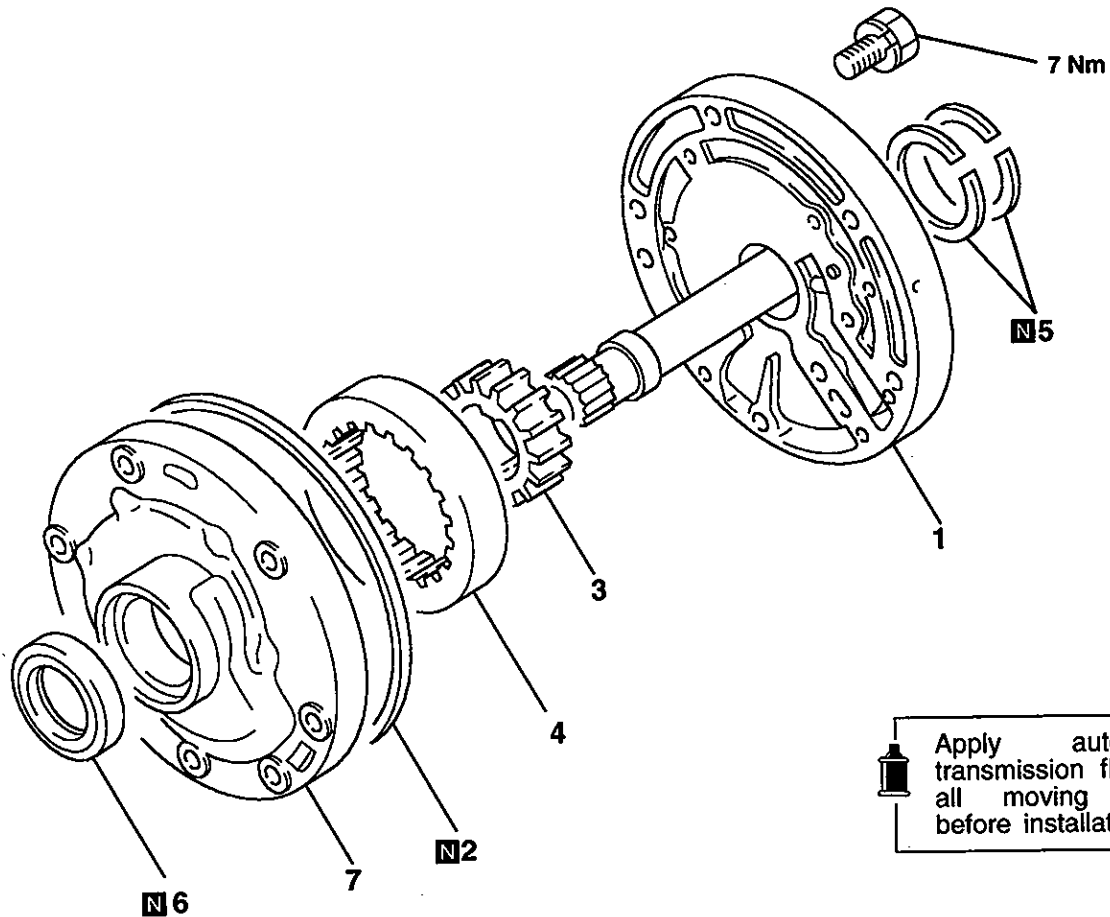
68. Mount the transfer.

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**NOTES**

# 4. OIL PUMP

## DISASSEMBLY AND REASSEMBLY

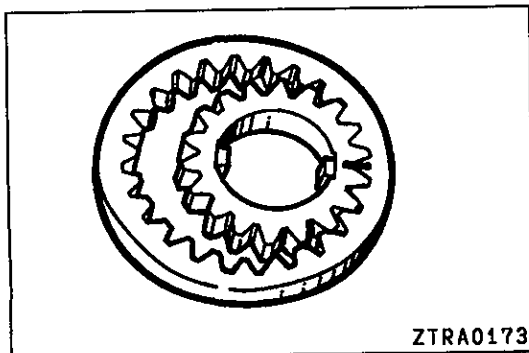


TRA1575

### Disassembly steps

- ▶C◀ 1. Stator support
- ▶A◀ ▶B◀ 2. O-ring
- ▶A◀ ▶B◀ 3. Oil pump drive gear
- ▶A◀ ▶B◀ 4. Oil pump driven gear

- ▶A◀ 5. Seal ring
- ▶A◀ 6. Oil seal
- ▶A◀ 7. Oil pump body

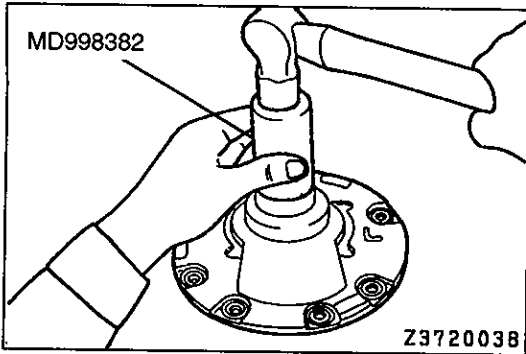


ZTRA0173

### DISASSEMBLY SERVICE POINT

#### ▶A◀ OIL PUMP DRIVE GEAR / OIL PUMP DRIVEN GEAR REMOVAL

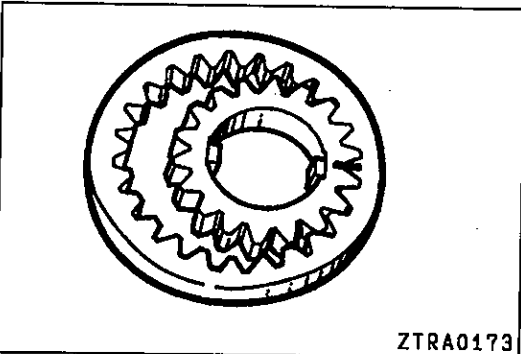
- (1) In order that the gears can be reassembled with the correct orientations, apply mating marks to the side of each one.



## REASSEMBLY SERVICE POINTS

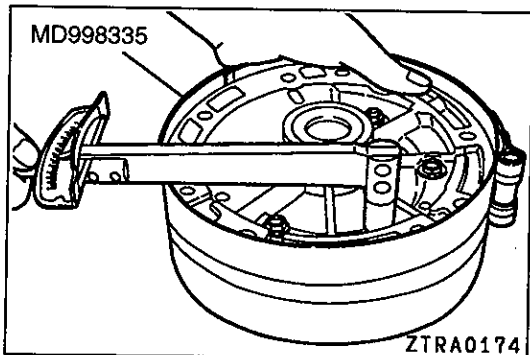
### ▶A◀ OIL SEAL INSTALLATION

- (1) Use the indicated special tool to install the oil seal.



### ▶B◀ DRIVE GEAR / DRIVEN GEAR INSTALLATION

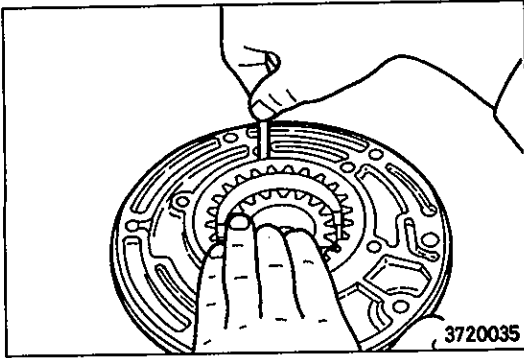
- (1) Reinstall the gears with the mating marks applied during disassembly in alignment.



### ▶C◀ STATOR SUPPORT INSTALLATION

- (1) Assemble the oil pump body to the stator support; then fasten the bolts fingertight.
- (2) Clamp the oil pump cover and the stator support together using the indicated special tool; then tighten the bolts to the specified torque.





## INSPECTION

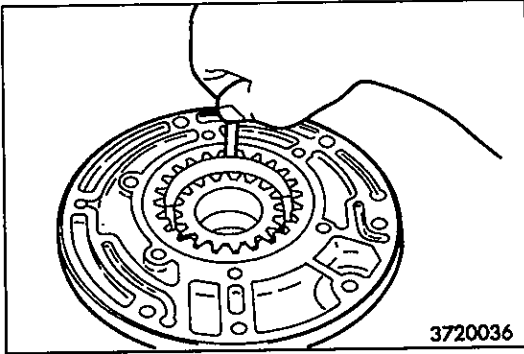
### DRIVE GEAR AND DRIVEN GEAR

#### Body clearance inspection

- (1) Pull the driven gear fully to one side; using a feeler gauge, measure the clearance that opens up on the opposing side between the driven gear and the oil pump body.

**Standard value: 0.07 – 0.15 mm**

**Limit value: 0.3 mm**

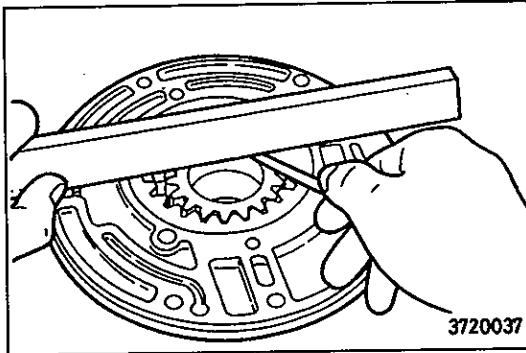


#### Tip clearance inspection

- (1) Measure the clearance between the crescent and the driven gear using a feeler gauge.

**Standard value: 0.11 – 0.14 mm**

**Limit value: 0.3 mm**



#### Side clearance inspection

- (1) Using a square and a feeler gauge, measure the clearance between the end face of the gears and that of the pump body on the stator shaft mounting side.

**Standard value: 0.02 – 0.05 mm**

**Limit value: 0.1 mm**

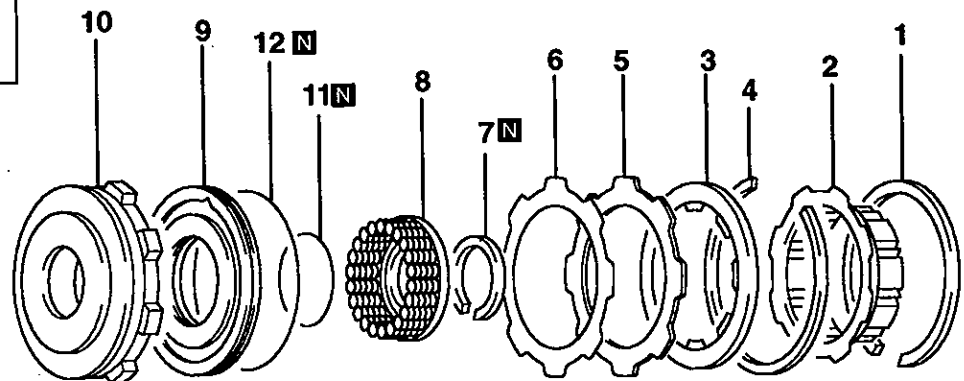
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**NOTES**

# 5. OVERDRIVE CLUTCH

## DISASSEMBLY AND REASSEMBLY

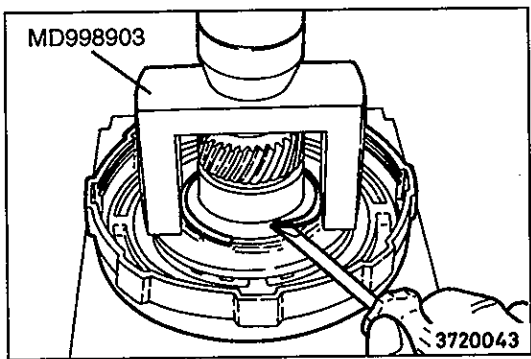
Apply automatic transmission fluid to all moving parts before installation.



TRA1547

### Disassembly steps

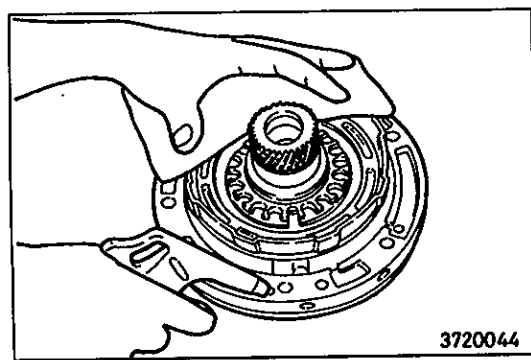
- |     |                        |         |                               |
|-----|------------------------|---------|-------------------------------|
| ▶D◀ | 1. Snap ring           | ◀A▶ ▶A◀ | 7. Snap ring                  |
| ▶B▶ | 2. Overdrive brake hub | ◀B▶     | 8. Return spring              |
| ▶C▶ | 3. Clutch disc         |         | 9. Overdrive clutch piston    |
| ▶B▶ | 4. Snap ring           |         | 10. Overdrive clutch cylinder |
| ▶B▶ | 5. Backing plate       |         | 11. O-ring                    |
| ▶B▶ | 6. Cushion plate       |         | 12. O-ring                    |



### DISASSEMBLY SERVICE POINTS

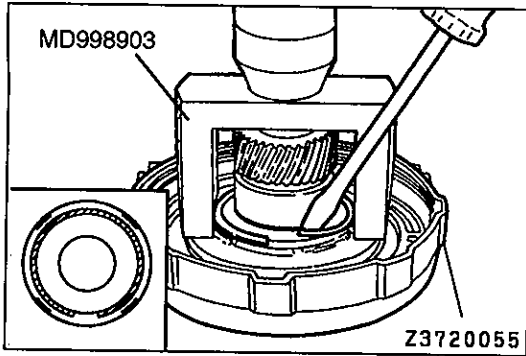
#### ◀A▶ SNAP RING REMOVAL

- (1) Compress the return spring using the indicated special tool and remove the snap ring.



#### ◀B▶ OVERDRIVE CLUTCH PISTON REMOVAL

- (1) Attach the overdrive clutch to the oil pump; then blow air into the clutch to remove the overdrive piston.



## REASSEMBLY SERVICE POINTS

### ▶A◀ SNAP RING INSTALLATION

- (1) Compress the return spring using the indicated special tool and attach the snap ring.

#### Caution

- Ensure that the end gap in the snap ring is not aligned with any of the spring retainer tabs.

### ▶B◀ CUSHION PLATE / BACKING PLATE / CLUTCH DISC INSTALLATION

- (1) Use compressed air to blow any excess automatic transmission fluid from the clutch disc.

#### Caution

- There is a danger that the disc may be damaged in this process: Do not bring the air gun any closer to the surface of the disc than necessary.

- (2) Attach the cushion plate, the backing plate, and the clutch disc.

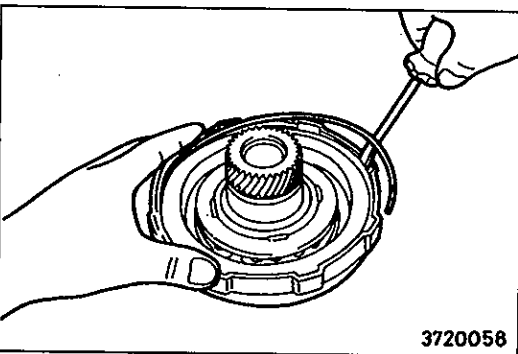
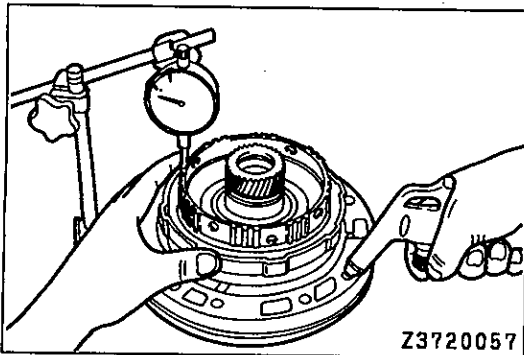
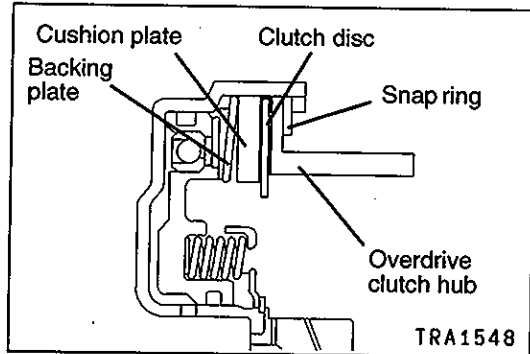
- (3) Attach the overdrive clutch hub and the snap ring.

- (4) Attach the overdrive clutch cylinder to the oil pump. Then, blow in low pressure air (395 – 785 kPa) and inspect the stroke of the piston.

**Standard value: 1.74 – 2.44 mm**

If this standard value is exceeded, it will indicate possible wearing of the disc. Alternatively, if the stroke is less than the standard value, it will point to a possible mistake in assembly.

- (5) After the inspection of the stroke has been completed, remove the snap ring and the overdrive clutch hub.

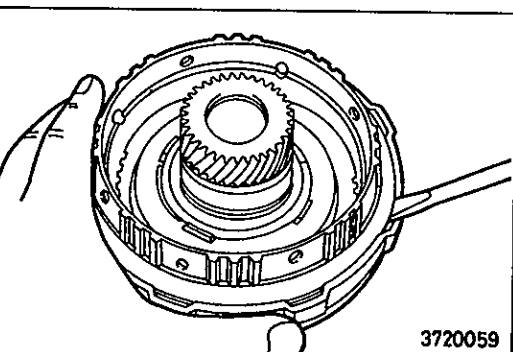


### ▶C◀ SNAP RING INSTALLATION

- (1) Insert the snap ring into the groove in the clutch cylinder.

#### Caution

- Ensure that the ends of the snap ring are not aligned with any of the recesses.

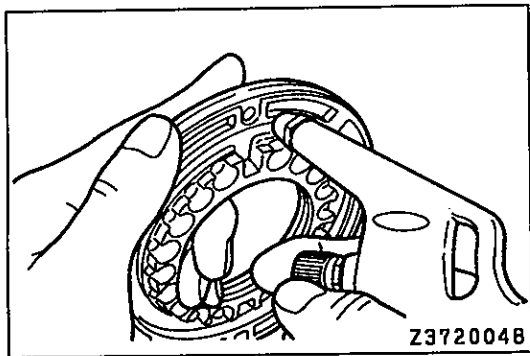


### ▶D◀ SNAP RING INSTALLATION

- (1) Insert the snap ring into the groove in the clutch cylinder.

#### Caution

- Ensure that the ends of the snap ring are not aligned with any of the recesses.



## INSPECTION


### OVERDRIVE CLUTCH PISTON

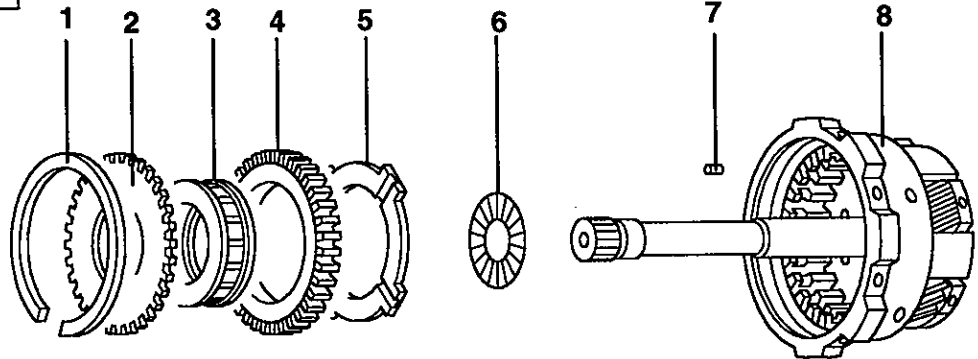
- (1) Shake the overdrive piston to confirm that the check ball can move freely.
- (2) Blow in air and confirm that there is no leakage from the valve.

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**NOTES**

## 6. OVERDRIVE PLANETARY GEAR DISASSEMBLY AND REASSEMBLY

 Apply automatic transmission fluid to all moving parts before installation.

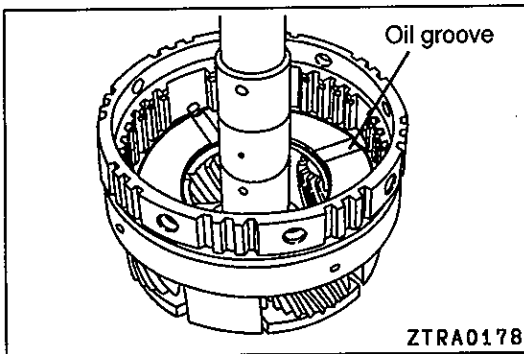


TRA1549

### Disassembly steps

- ▶B◀
1. Snap ring
  2. One-way clutch retainer
  3. One-way clutch
  4. One-way clutch outer race

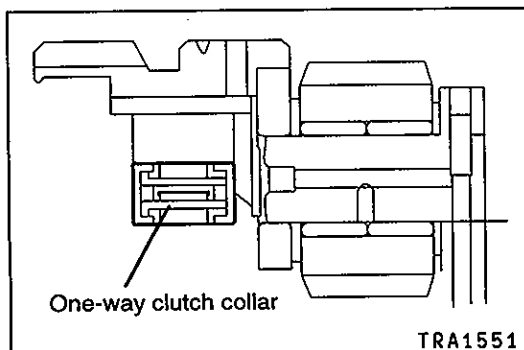
- ▶A◀
5. Thrust washer
  6. Thrust bearing
  7. Pinion shaft plug
  8. Overdrive planetary carrier



### REASSEMBLY SERVICE POINTS

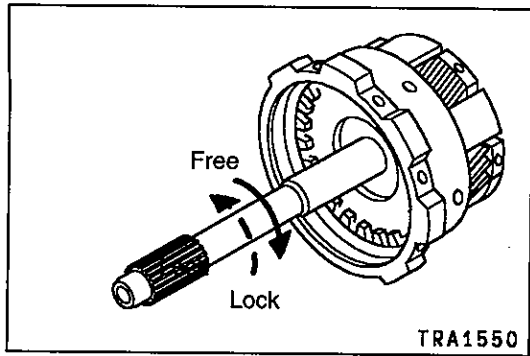
#### ▶A◀ THRUST WASHER INSTALLATION

- (1) Install the thrust washer in such a way that its oil grooves are positioned as illustrated.



#### ▶B◀ ONE-WAY CLUTCH INSTALLATION

- (1) Install the one-way clutch in such a way that its collar is positioned as illustrated.



## INSPECTION

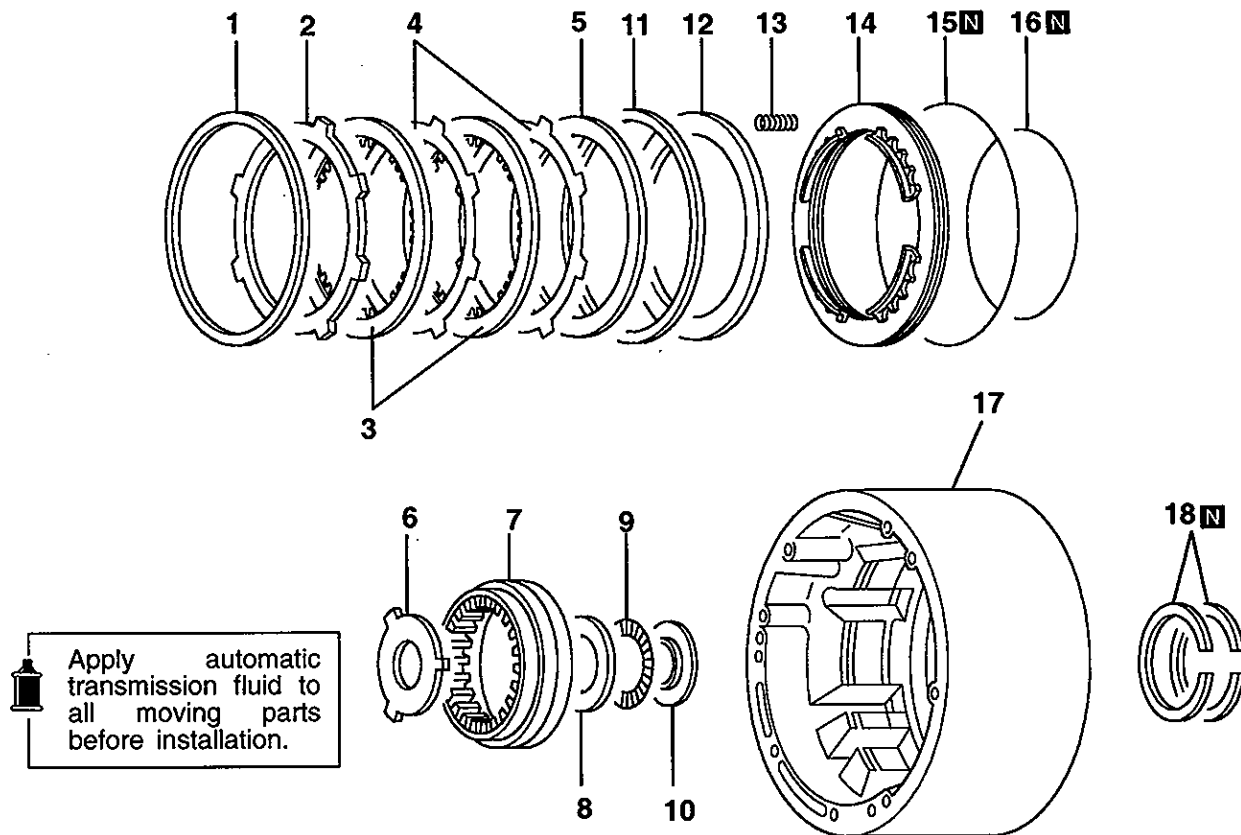
### ONE-WAY CLUTCH

- (1) While holding the overdrive planetary carrier firmly, rotate the input shaft. Confirm that the input shaft rotates smoothly in the clockwise direction and that it locks in the counterclockwise direction.



# 7. OVERDRIVE BRAKE

## DISASSEMBLY AND REASSEMBLY

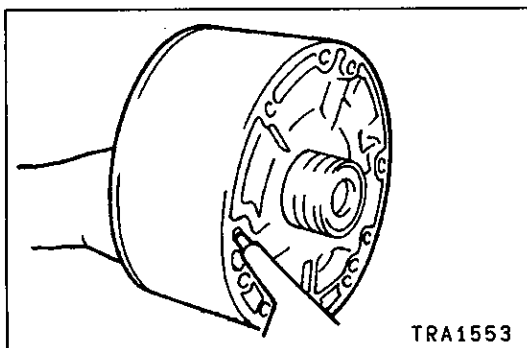


TRA1552

### Disassembly steps

- ▶D◀ 1. Snap ring
- ▶C◀ 2. Backing plate
- ▶C◀ 3. Brake discs
- ▶C◀ 4. Brake plates
- ▶C◀ 5. Cushion plate
- ▶B◀ 6. Thrust race
- ▶B◀ 7. Planetary ring gear
- ▶B◀ 8. Thrust bearing race
- ▶B◀ 9. Thrust bearing

- ▶B◀ 10. Thrust bearing race
- ▶A◀ 11. Snap ring
- ▶A◀ 12. Spring retainer
- ▶A◀ 13. Return spring
- ▶A◀ 14. Brake piston
- ▶A◀ 15. O-ring
- ▶A◀ 16. O-ring
- ▶A◀ 17. Overdrive case
- ▶A◀ 18. Seal ring

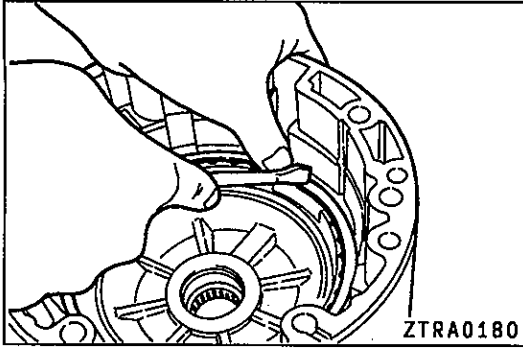


TRA1553

### DISASSEMBLY SERVICE POINT

#### ◀A▶ BRAKE PISTON REMOVAL

- (1) Blow in air to remove the brake piston.



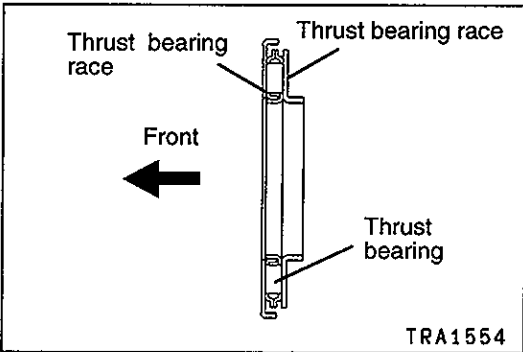
## REASSEMBLY SERVICE POINTS

### ▶A◀ SNAP RING INSTALLATION

- (1) Insert the snap ring.

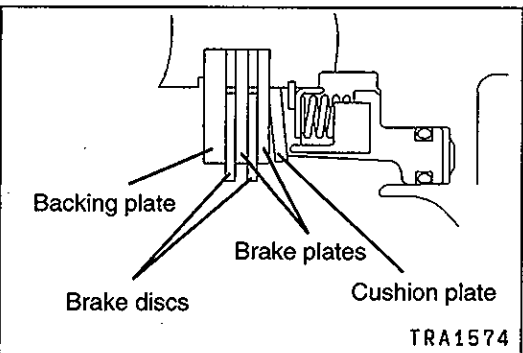
#### Caution

- Ensure that the ends of the snap ring are not aligned with any of the recesses in the case.



### ▶B◀ THRUST BEARING / THRUST BEARING RACES INSTALLATION

- (1) Assemble the thrust bearing and the two thrust bearing races in such a way that they are oriented as illustrated. Then, install the assembly into the overdrive case.

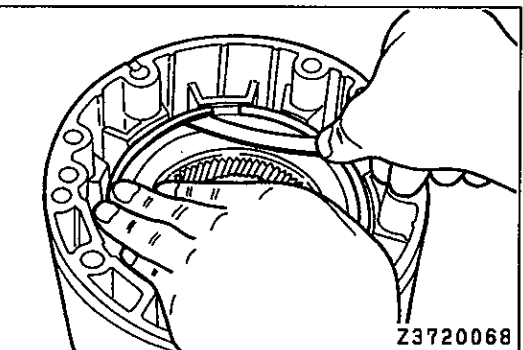


### ▶C◀ CUSHION PLATE / BRAKE PLATES / BRAKE DISCS / BACKING PLATE INSTALLATION

- (1) Use compressed air to blow any excess automatic transmission fluid from the brake discs.

#### Caution

- There is a danger that a disc may be damaged in this process: Do not bring the air gun any closer to the surface of the disc than necessary.
- (2) Attach the cushion plate, brake plates, brake discs, and backing plate.



### ▶D◀ SNAP RING INSTALLATION

- (1) Insert the snap ring into the groove in the overdrive case.

#### Caution

- Ensure that the ends of the snap ring are not aligned with any of the recesses in the case.
- (2) Measure the clearance between the snap ring and the backing plate using a feeler gauge to inspect the stroke of the overdrive brake piston.

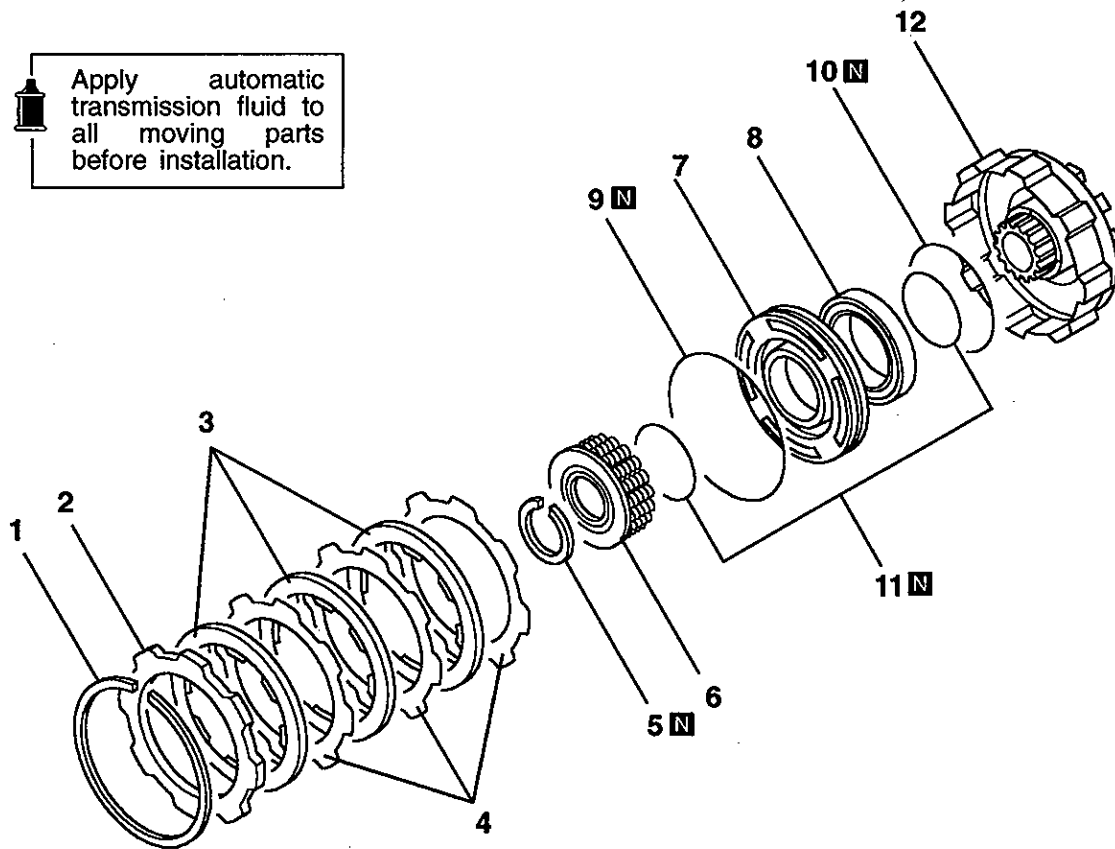
**Standard value: 0.56 – 1.62 mm**

If this standard value is exceeded, it will indicate possible wearing of the disc. Alternatively, if the stroke is less than the standard value, it will point to a possible mistake in assembly.

# 8. DIRECT CLUTCH

## DISASSEMBLY AND REASSEMBLY

Apply automatic transmission fluid to all moving parts before installation.

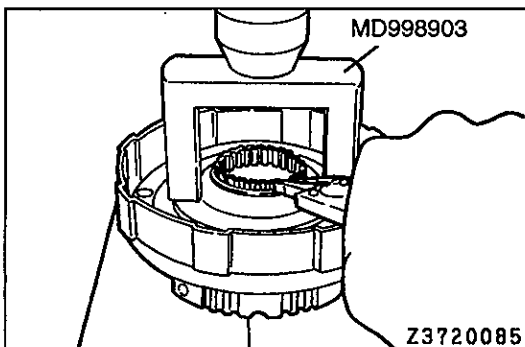


TRA1559

### Disassembly steps

- ◀B▶ 1. Snap ring
- ◀B▶ 2. Backing plate
- ◀B▶ 3. Clutch discs
- ◀B▶ 4. Clutch plates
- ◀A▶ 5. Snap ring
- ◀A▶ 6. Spring retainer

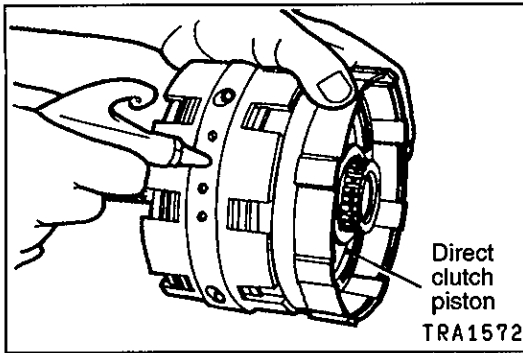
- ◀B▶ 7. Direct clutch outer piston
- 8. Direct clutch inner piston
- 9. O-ring
- 10. O-ring
- 11. O-ring
- 12. Direct clutch cylinder



### DISASSEMBLY SERVICE POINTS

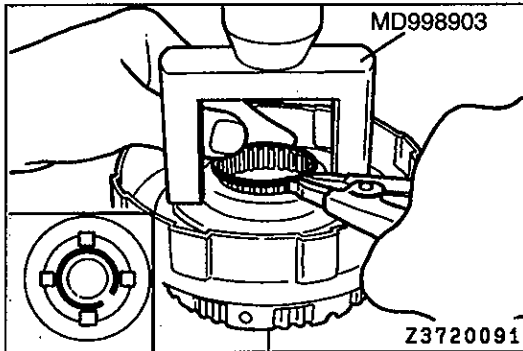
#### ◀A▶ SNAP RING REMOVAL

- (1) Compress the return spring using the indicated special tool and remove the snap ring.



### ◀B▶ DIRECT CLUTCH PISTON REMOVAL

- (1) Attach the direct clutch cylinder to the center support.
- (2) Blow air into the cylinder to remove the direct clutch piston.



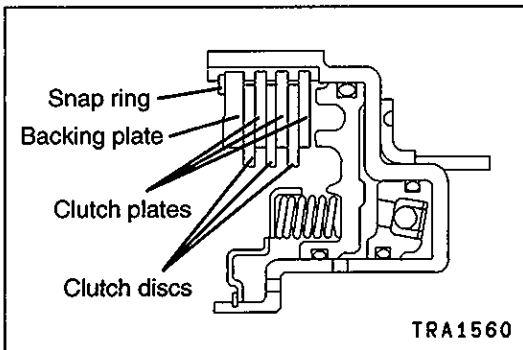
### REASSEMBLY SERVICE POINTS

#### ▶A▶ SNAP RING INSTALLATION

- (1) Compress the return spring using the indicated special tool and attach the snap ring.

#### Caution

- Ensure that the end gap in the snap ring is not aligned with any of the spring retainer lugs.



#### ▶B▶ CLUTCH PLATES / CLUTCH DISCS / BACKING PLATE / SNAP RING INSTALLATION

- (1) Use compressed air to blow any excess automatic transmission fluid from the clutch discs.

#### Caution

- There is a danger that a disc may be damaged in this process: Do not bring the air gun any closer to the surface of the disc than necessary.

- (2) Attach the clutch plates, clutch discs, backing plate; then attach the snap ring.
- (3) Attach the direct clutch to the center support. Then, blow in low pressure air (395 – 785 kPa) in a continued fashion and inspect the stroke of the piston.

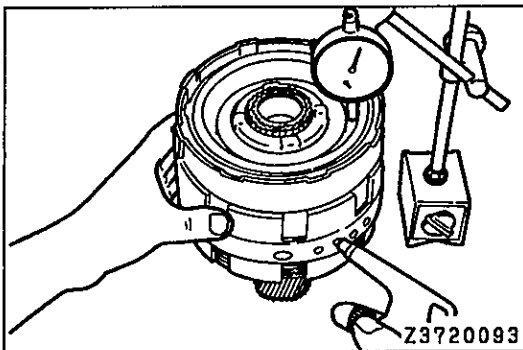
**Standard value: 0.90 – 1.30 mm**

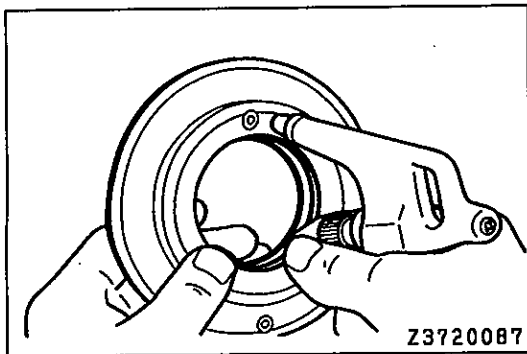
#### When reinstalling previously used parts:

If this standard value is exceeded, it will indicate possible wearing of the disc. Alternatively, if the stroke is less than the standard value, it will point to a possible mistake in assembly.

#### When installing new parts:

Select a clutch plate (thickness: 3.55 mm, 3.75 mm, or 4.00 mm) and adjust to give the standard value.





## INSPECTION

### DIRECT CLUTCH PISTON

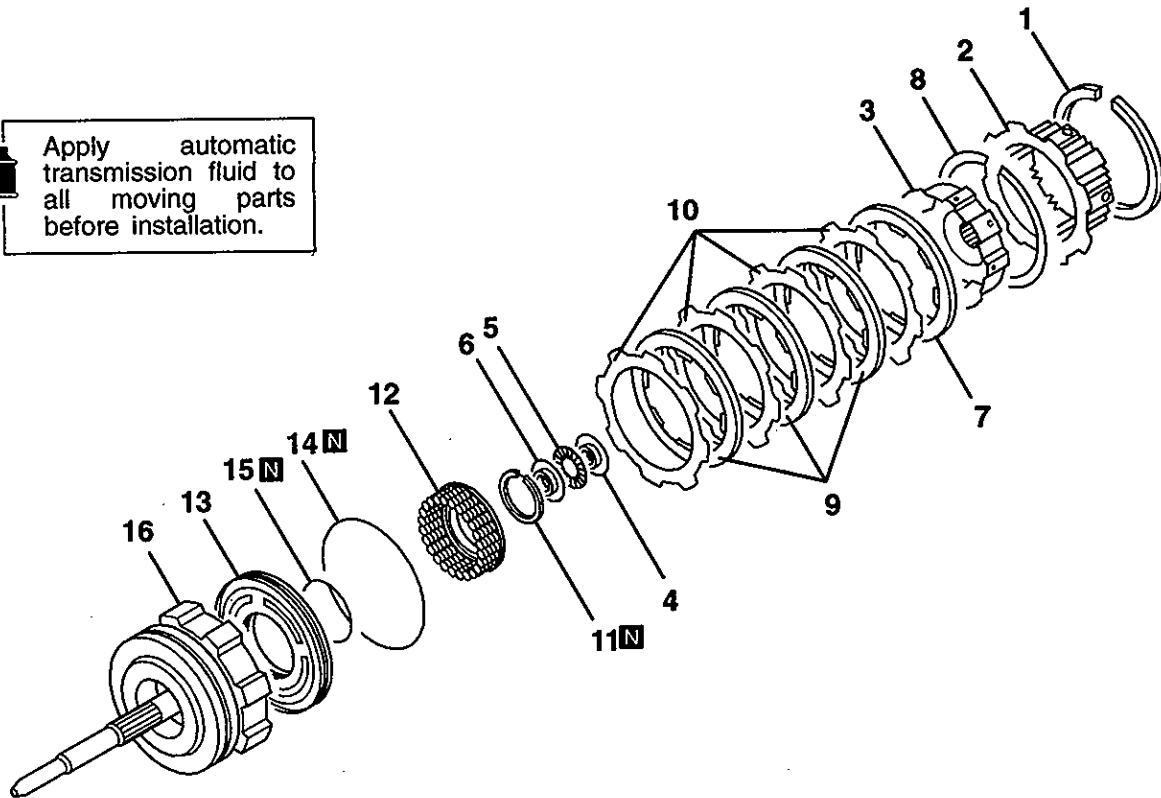
- (1) Shake the direct clutch piston to confirm that the check ball can move freely.
- (2) Blow in air and confirm that there is no leakage from the valve.

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**NOTES**

# 9. FORWARD CLUTCH DISASSEMBLY AND REASSEMBLY

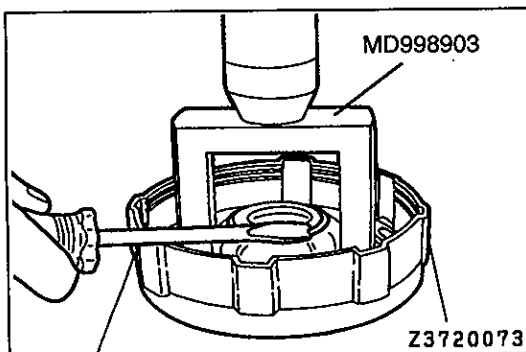
Apply automatic transmission fluid to all moving parts before installation.



TRA1555

### Disassembly steps

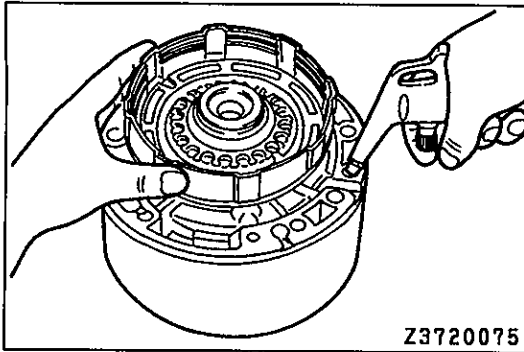
- |     |                        |     |                             |
|-----|------------------------|-----|-----------------------------|
| ▶D◀ | 1. Snap ring           | ▶B◀ | 9. Clutch discs             |
|     | 2. Direct clutch hub   | ▶B◀ | 10. Clutch plates           |
|     | 3. Forward clutch hub  | ▶A◀ | 11. Snap ring               |
|     | 4. Thrust bearing race |     | 12. Return spring           |
|     | 5. Thrust bearing      | ▶B◀ | 13. Forward clutch piston   |
|     | 6. Thrust bearing race |     | 14. O-ring                  |
| ▶B◀ | 7. Clutch disc         |     | 15. O-ring                  |
| ▶C◀ | 8. Snap ring           |     | 16. Forward clutch cylinder |



### DISASSEMBLY SERVICE POINTS

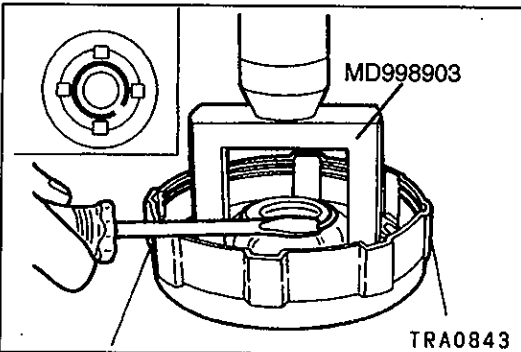
#### ▶A◀ SNAP RING REMOVAL

- (1) Compress the return spring using the indicated special tool and remove the snap ring.



### ◀B▶ FORWARD CLUTCH PISTON REMOVAL

- (1) Attach the forward clutch cylinder to the overdrive case.
- (2) Blow air into the cylinder to remove the forward clutch piston.



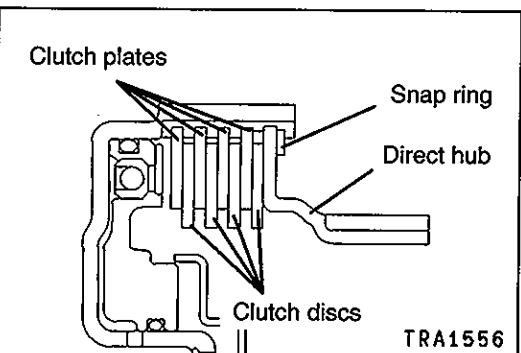
### REASSEMBLY SERVICE POINTS

#### ▶A◀ SNAP RING INSTALLATION

- (1) Compress the return spring using the indicated special tool and attach the snap ring.

#### Caution

- Ensure that the end gap in the snap ring is not aligned with any of the spring retainer lugs.



#### ▶B◀ CLUTCH PLATES / CLUTCH DISCS INSTALLATION

- (1) Use compressed air to blow any excess automatic transmission fluid from the clutch discs.

#### Caution

- There is a danger that a disc may be damaged in this process: Do not bring the air gun any closer to the surface of the disc than necessary.

- (2) Assemble the clutch plates and the clutch discs alternately in the cylinder; then attach the direct clutch hub and the snap ring.

- (3) Attach the forward clutch cylinder to the overdrive case. Then, blow in low pressure air (395 – 785 kPa) in a continued fashion and inspect the stroke of the piston.

**Standard value: 1.74 – 2.44 mm**

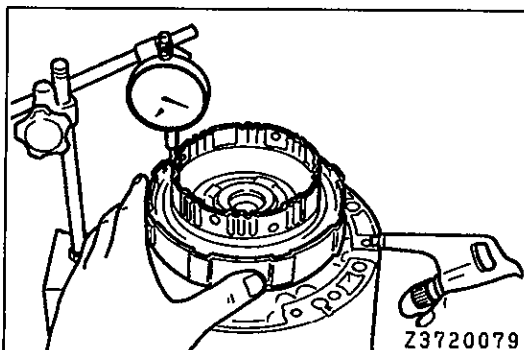
#### When reinstalling previously used parts:

If this standard value is exceeded, it will indicate possible wearing of the disc. Alternatively, if the stroke is less than the standard value, it will point to a possible mistake in assembly.

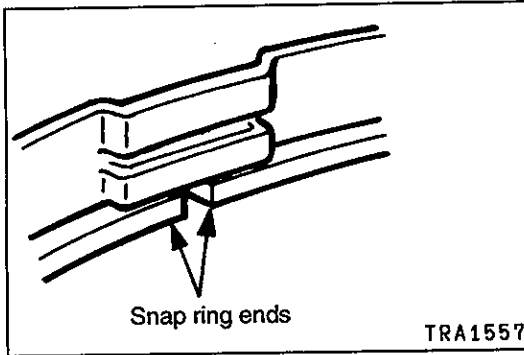
#### When installing new parts:

Select a clutch plate (thickness: 1.8 mm or 2.0mm) and adjust to give the standard value.

- (4) After the inspection of the stroke has been completed, remove the snap ring and the direct clutch hub.





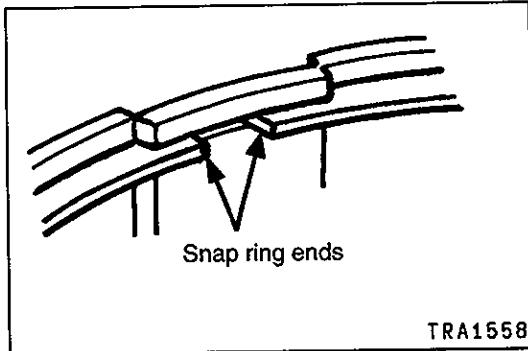


### ▶C◀ SNAP RING INSTALLATION

- (1) Insert the snap ring.

#### Caution

- Ensure that the ends of the snap ring are not aligned with any of the recesses.

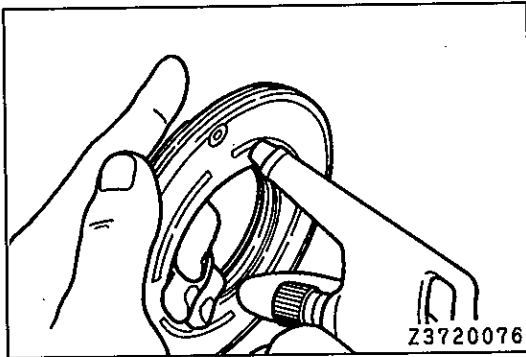


### ▶D◀ SNAP RING INSTALLATION

- (1) Insert the snap ring.

#### Caution

- Ensure that the ends of the snap ring are not aligned with any of the recesses.



## INSPECTION

### FORWARD CLUTCH PISTON

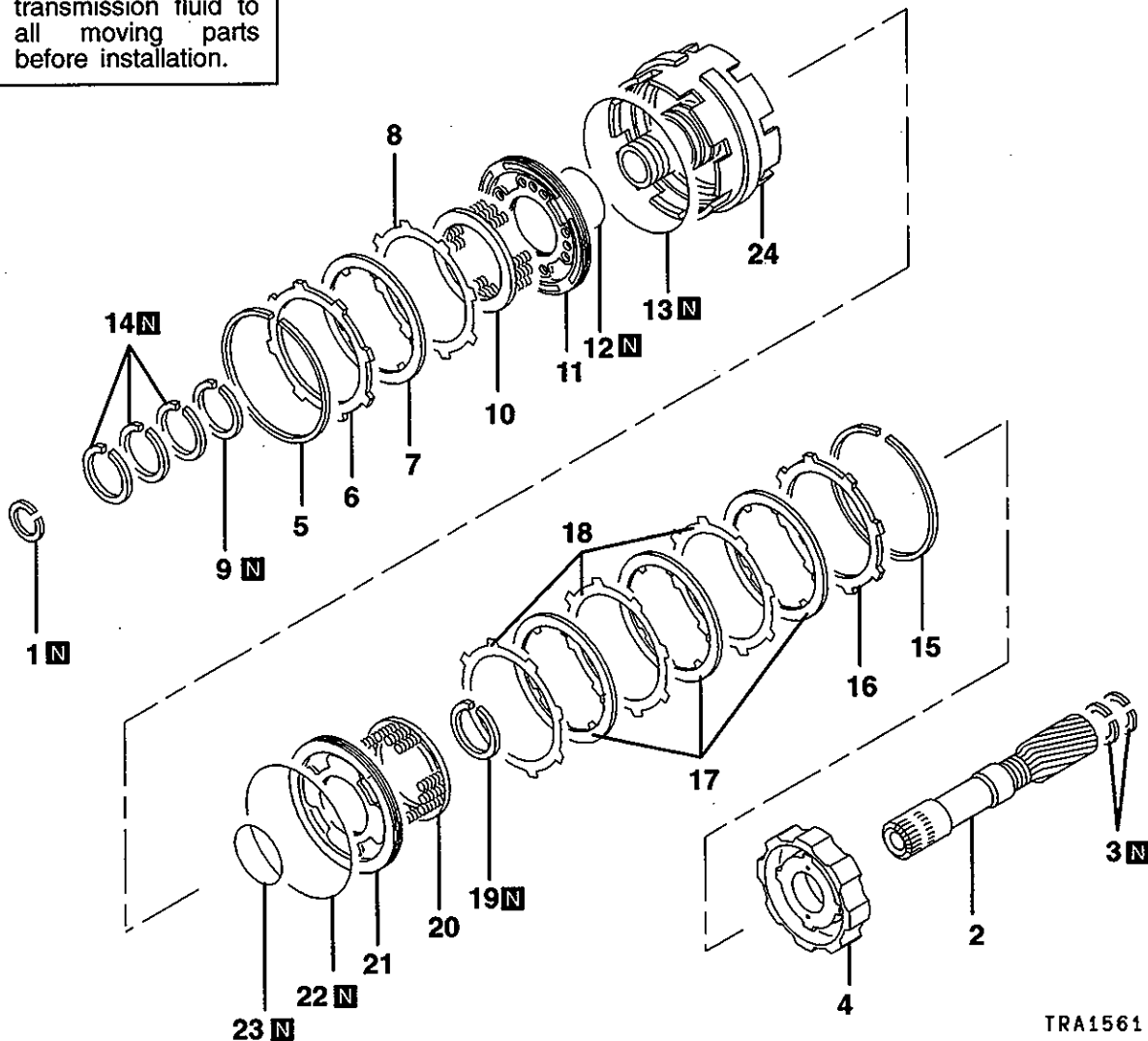
- (1) Shake the overdrive piston to confirm that the check ball can move freely.
- (2) Blow in air and confirm that there is no leakage from the valve.

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**NOTES**

# 10. CENTER SUPPORT DISASSEMBLY AND REASSEMBLY

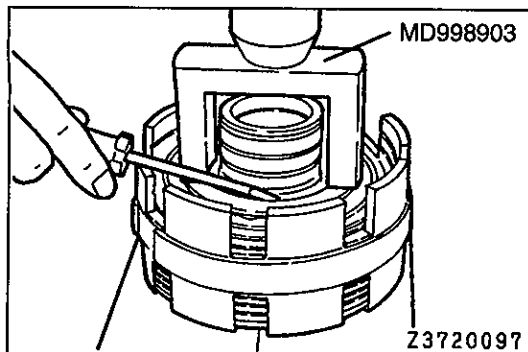
Apply automatic transmission fluid to all moving parts before installation.



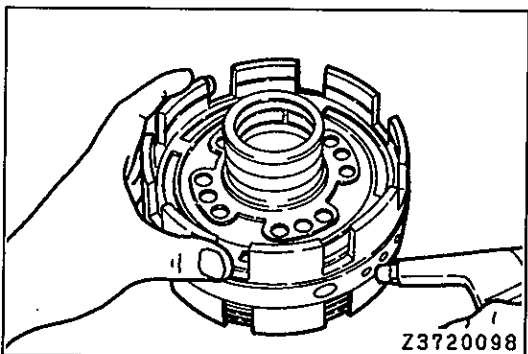
TRA1561

### Disassembly steps

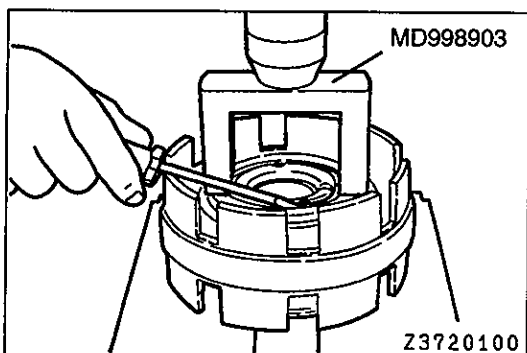
- |     |                             |  |                       |
|-----|-----------------------------|--|-----------------------|
|     | 1. Snap ring                |  | 13. O-ring            |
|     | 2. Planetary sun gear shaft |  | 14. Seal rings        |
|     | 3. Seal ring                |  | 15. Snap ring         |
|     | 4. No.2 brake hub           |  | 16. Backing plate     |
|     | 5. Snap ring                |  | 17. Brake discs       |
|     | 6. Backing plate            |  | 18. Brake plates      |
|     | 7. Brake disc               |  | 19. Snap ring         |
|     | 8. Brake plate              |  | 20. Return spring     |
|     | 9. Snap ring                |  | 21. No.2 brake piston |
| ◀A▶ | 10. Return spring           |  | 22. O-ring            |
| ◀B▶ | 11. No.1 brake piston       |  | 23. O-ring            |
|     | 12. O-ring                  |  | 24. Center support    |

**DISASSEMBLY SERVICE POINTS****◀A▶ SNAP RING REMOVAL**

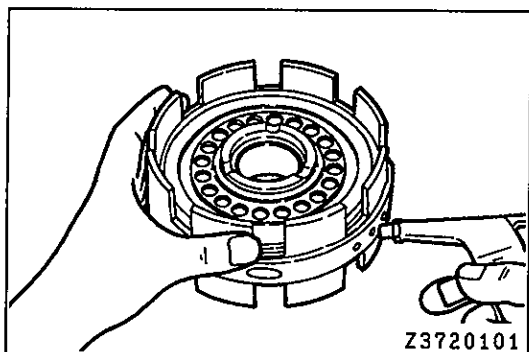
- (1) Compress the return spring using the indicated special tool and remove the snap ring.

**◀B▶ NO.1 BRAKE PISTON REMOVAL**

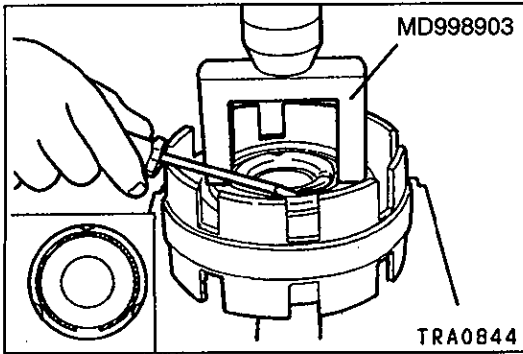
- (1) Blow in low pressure air to remove the piston.

**◀C▶ SNAP RING REMOVAL**

- (1) Compress the return spring using the indicated special tool and remove the snap ring.

**◀D▶ NO.2 BRAKE PISTON REMOVAL**

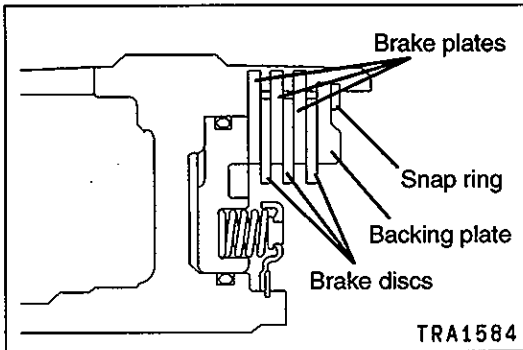
- (1) Blow in low pressure air to remove the piston.

**REASSEMBLY SERVICE POINTS****▶A◀ SNAP RING INSTALLATION**

- (1) Compress the return spring using the indicated special tool and attach the snap ring.

**Caution**

- Ensure that the end gap in the snap ring is not aligned with any of the spring retainer lugs.

**▶B◀ BRAKE PLATES / BRAKE DISCS / BACKING PLATE / SNAP RING INSTALLATION**

- (1) Use compressed air to blow any excess automatic transmission fluid from the brake discs.

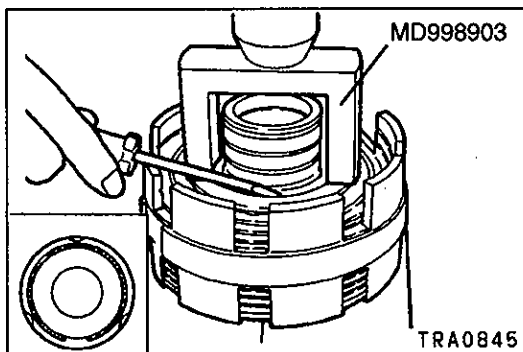
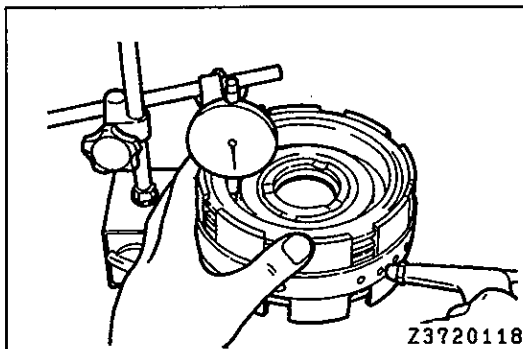
**Caution**

- There is a danger that a disc may be damaged in this process: Do not bring the air gun any closer to the surface of the disc than necessary.

- (2) Attach the brake plates, brake discs, backing plate; then attach the snap ring.
- (3) Blow in low pressure air (395 – 785 kPa) in a continued fashion and inspect the piston stroke for the No.2 brake.

**Standard value: 1.03 – 1.65 mm**

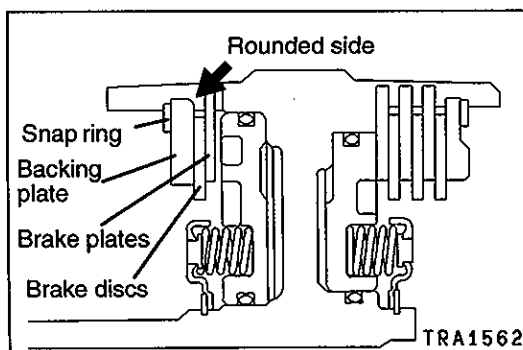
If this standard value is exceeded, it will indicate possible wearing of the disc. Alternatively, if the stroke is less than the standard value, it will point to a possible mistake in assembly.

**▶C◀ SNAP RING INSTALLATION**

- (1) Compress the return spring using the indicated special tool and attach the snap ring.

**Caution**

- Ensure that the end gap in the snap ring is not aligned with any of the spring retainer lugs.

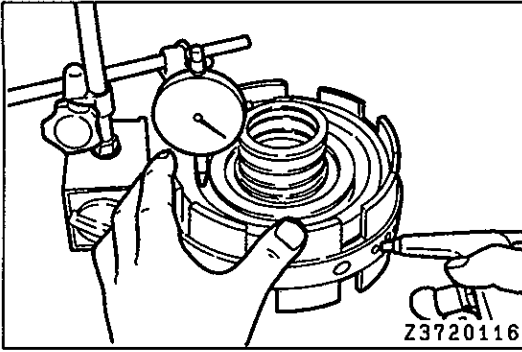
**▶D◀ BRAKE PLATES / BRAKE DISCS / BACKING PLATE / SNAP RING INSTALLATION**

- (1) Use compressed air to blow any excess automatic transmission fluid from the brake disc.

**Caution**

- There is a danger that the disc may be damaged in this process: Do not bring the air gun any closer to the surface of the disc than necessary.

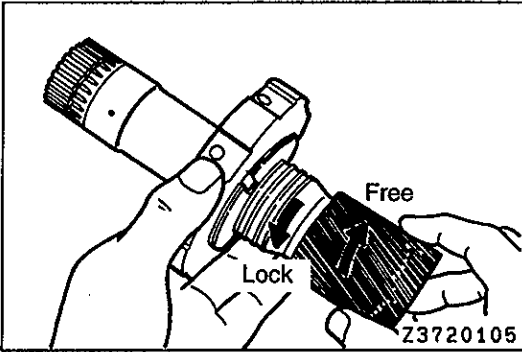
- (2) Attach the brake plate, brake disc, backing plate; then attach the snap ring.



- (3) Blow in low pressure air (395 – 785 kPa) in a continued fashion and inspect the piston stroke for the No.1 brake.

**Standard value: 0.78 – 1.32 mm**

If this standard value is exceeded, it will indicate possible wearing of the disc. Alternatively, if the stroke is less than the standard value, it will point to a possible mistake in assembly.



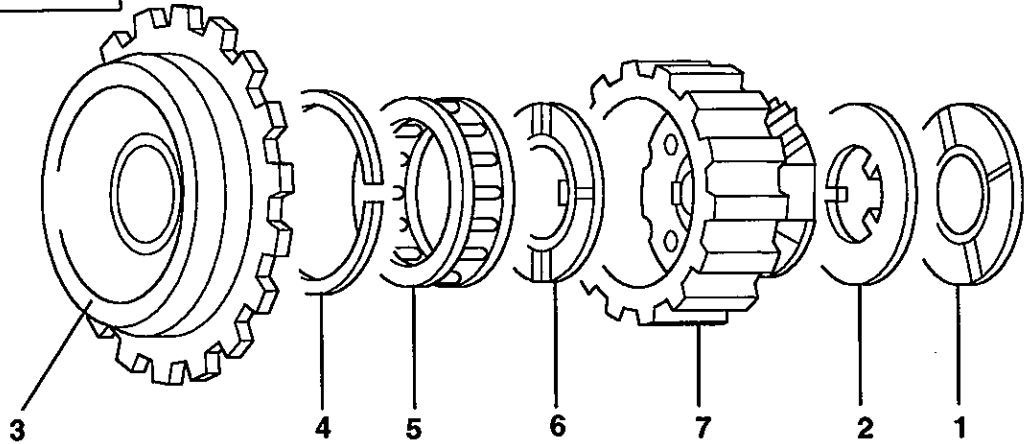
### ►E◄ NO.2 BRAKE HUB INSTALLATION

- (1) Attach the No.2 brake hub to the sun gear shaft. While holding the No.2 brake hub firmly, rotate the sun gear shaft to check if it rotates smoothly in the clockwise direction and locks in the counterclockwise direction.

# 11. FRONT PLANETARY GEAR

## DISASSEMBLY AND REASSEMBLY



 Apply automatic transmission fluid to all moving parts before installation.

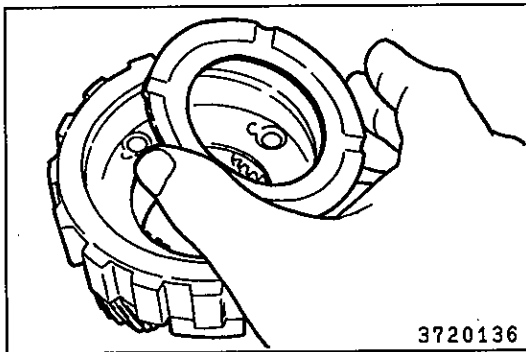


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### Disassembly steps

1. Thrust washer
2. Thrust washer
3. One-way clutch inner race
4. Retaining ring

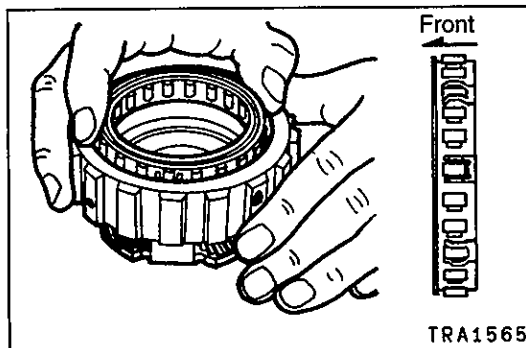
-  5. One-way clutch  
 6. Thrust washer  
 7. Front planetary gear



### REASSEMBLY SERVICE POINTS

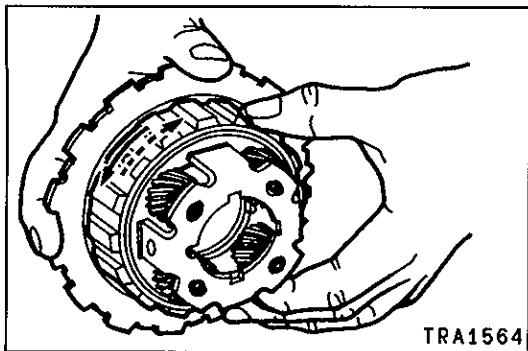
#### ▶A◀ THRUST WASHER INSTALLATION

- (1) Install the thrust washer in such a way that its oil grooves are aligned with the oil holes in the planetary gear.



#### ▶B◀ ONE-WAY CLUTCH INSTALLATION

- (1) Install the one-way clutch in the illustrated direction.



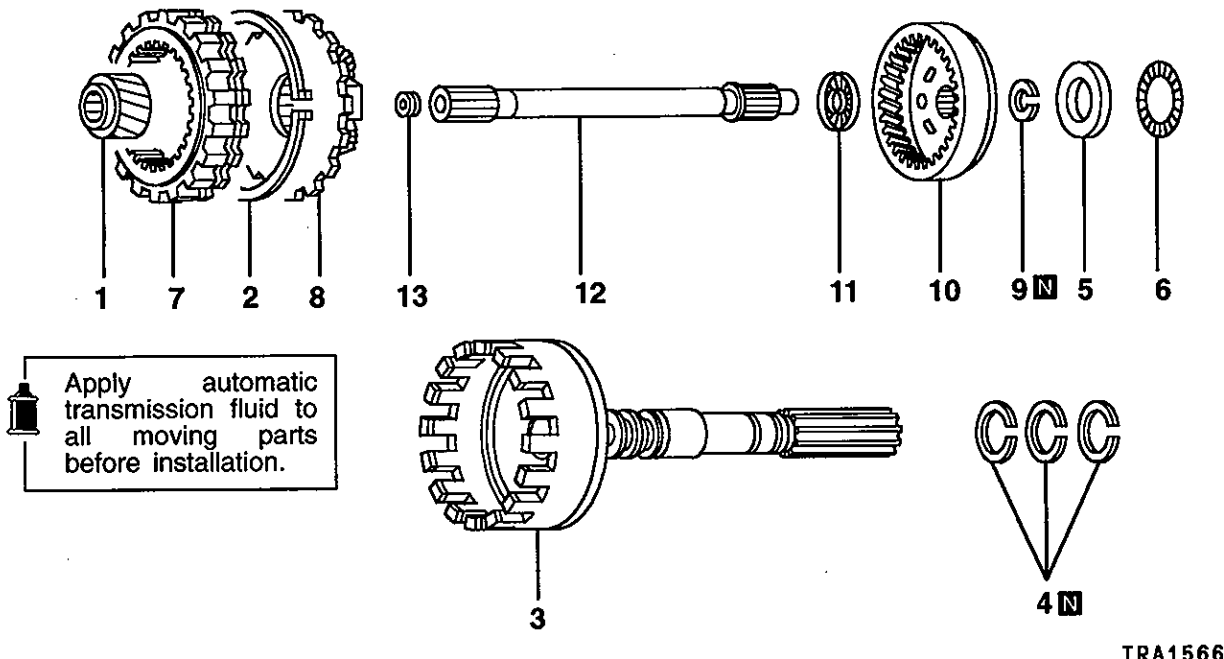
## INSPECTION

### ONE-WAY CLUTCH

- (1) Firmly hold the inner race by hand and turn the front planetary gear in either direction. Check to ensure that it rotates smoothly in the counterclockwise direction and that it locks in the clockwise direction.



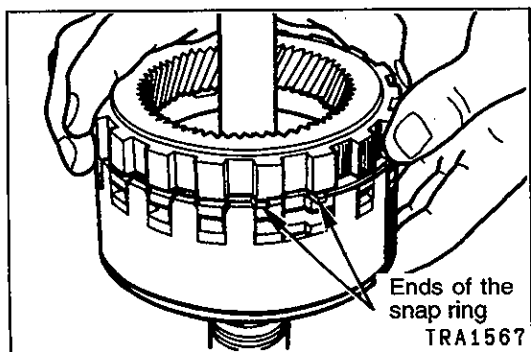
# 12. REAR PLANETARY GEAR AND OUTPUT SHAFT DISASSEMBLY AND REASSEMBLY



### Disassembly steps

- ▶A◀
1. Planetary sun gear
  2. Snap rings
  3. Output shaft
  4. Seal ring
  5. Thrust bearing race
  6. Thrust bearing
  7. Front planetary ring gear

8. Rear planetary gear
9. Snap ring
10. Rear planetary ring gear
11. Thrust bearing
12. Intermediate shaft
13. O-ring



### REASSEMBLY SERVICE POINT

#### ▶A◀ SNAP RING INSTALLATION

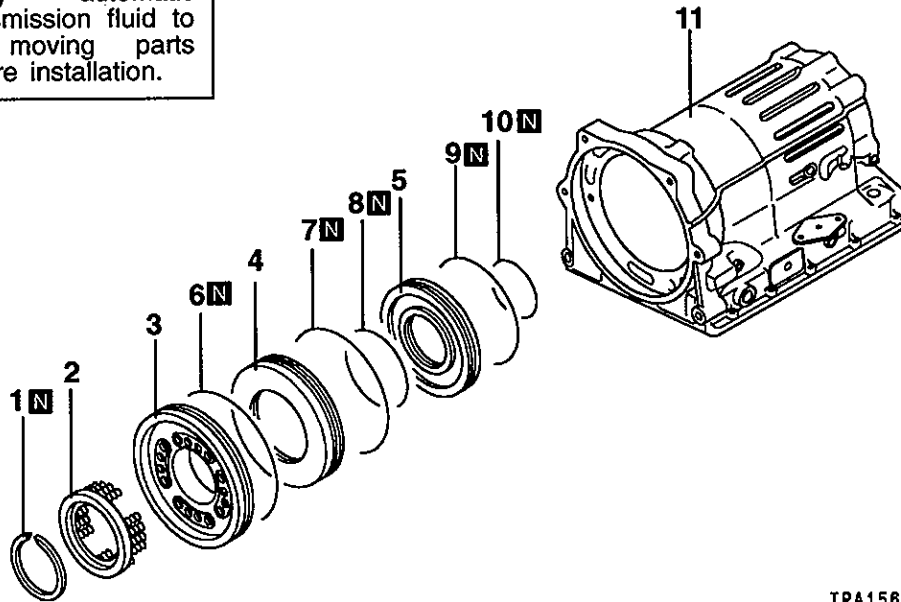
- (1) Attach the snap ring to the front planetary ring gear.
- (2) Place the front planetary ring gear on the drum of the output shaft and align the ends of the snap ring with the wide inter-tooth section.
- (3) Push down the front planetary ring gear to install the snap ring into the groove.

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**NOTES**

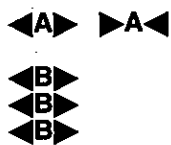
# 13. NO.3 BRAKE PISTON DISASSEMBLY AND REASSEMBLY

 Apply automatic transmission fluid to all moving parts before installation.

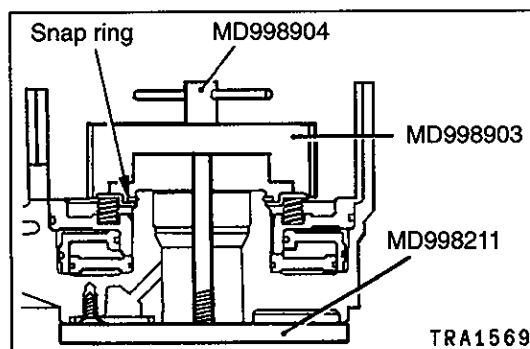


TRA1588

### Disassembly steps



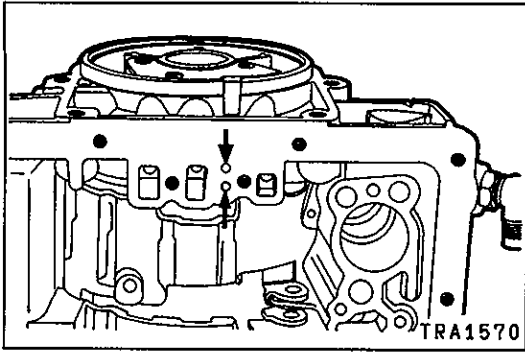
- 1. Snap ring
- 2. Return spring
- 3. No. 3 brake primary piston
- 4. Reaction sleeve
- 5. No. 3 brake secondary piston
- 6. O-ring
- 7. O-ring
- 8. O-ring
- 9. O-ring
- 10. O-ring
- 11. Transmission case



### DISASSEMBLY SERVICE POINTS

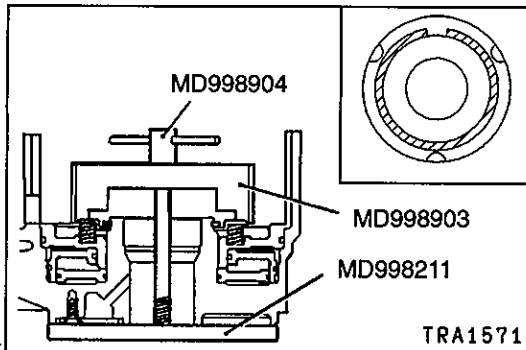
#### ◀A▶ SNAP RING REMOVAL

- (1) Compress the return spring using the indicated special tool and remove the snap ring.



### ◀B▶ NO.3 BRAKE PRIMARY PISTON / REACTION SLEEVE / NO.3 BRAKE SECONDARY PISTON REMOVAL

- (1) Place the transmission case on the work surface with the front side facing downward. In order that the No.3 brake primary piston, reaction sleeve, and No.3 brake secondary piston are not damaged during this operation, several clean rags should be laid on this surface in advance.
- (2) Blow air into both of the indicated oil holes to remove the No.3 brake primary piston, reaction sleeve, and No.3 brake secondary piston.



### REASSEMBLY SERVICE POINT

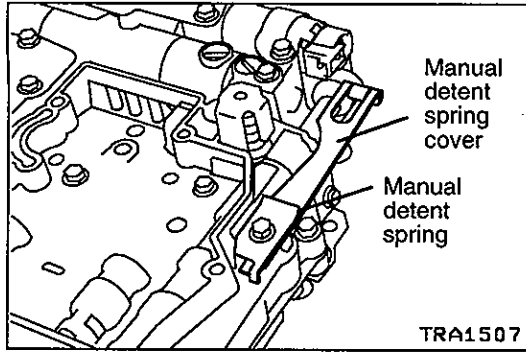
#### ▶A◀SNAP RING INSTALLATION

- (1) Compress the return spring using the indicated special tool and attach the snap ring.

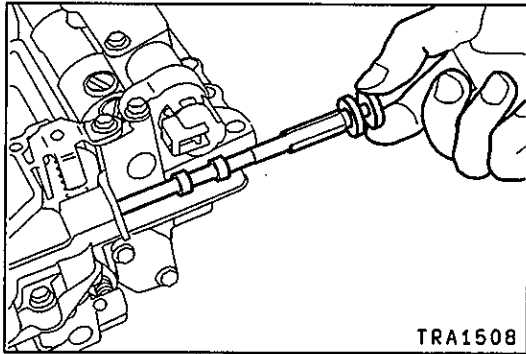
#### Caution

- Ensure that the end gap in the snap ring is not aligned with any of the spring retainer lugs.

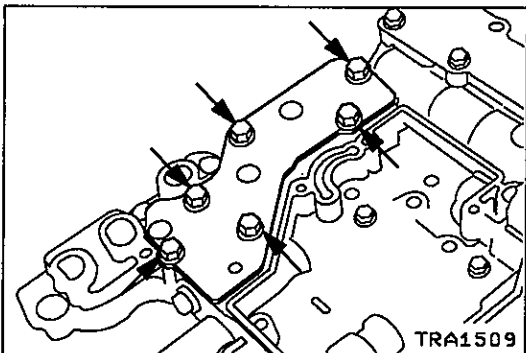


**DISASSEMBLY**

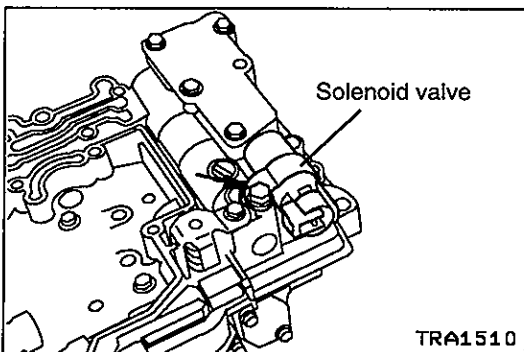
- (1) Remove both the manual detent spring cover and the manual detent spring.



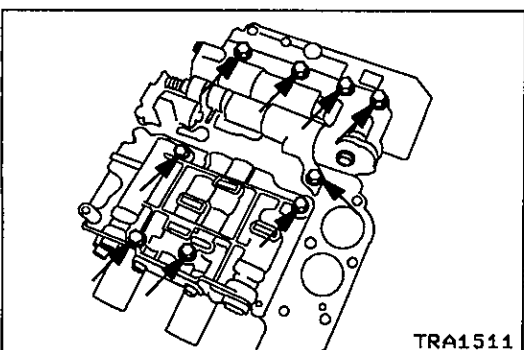
- (2) Remove the manual valve.



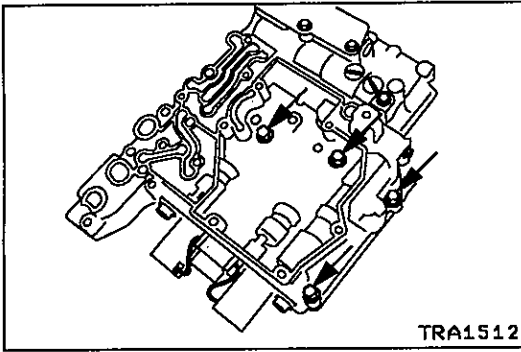
- (3) Remove the bolts indicated in the illustration; then remove the valve body cover and the gasket.



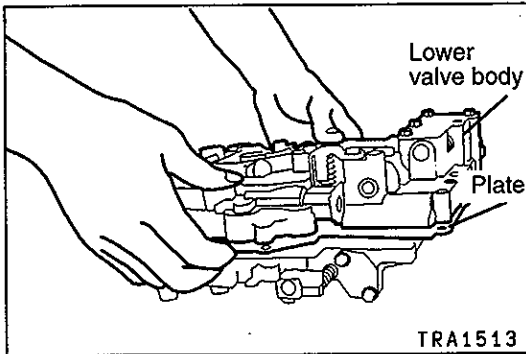
- (4) Unscrew the bolt arrowed in the illustration and remove the solenoid valve.
- (5) Remove the O-ring from the solenoid valve.



- (6) Remove the arrowed bolts from the upper valve body.

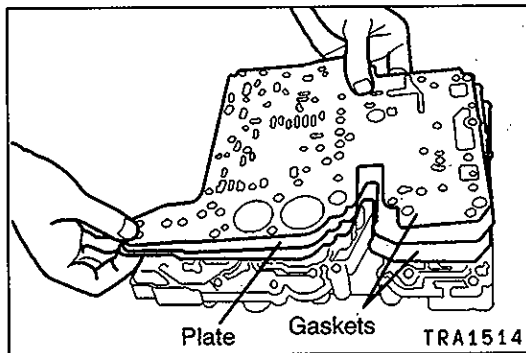


(7) Remove the arrowed bolts from the lower valve body.

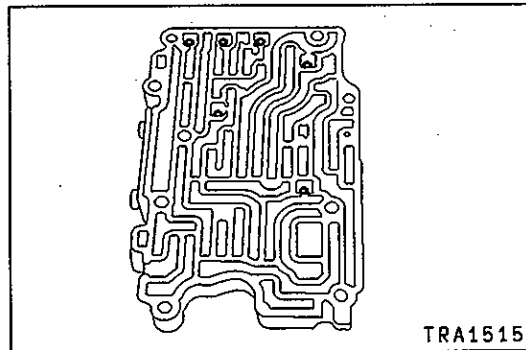


(8) While pushing the gaskets and the plate against lower valve body, disconnect the lower valve body from the upper valve body.

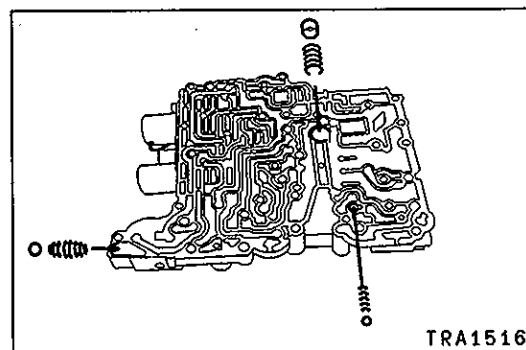
(9) Place down the lower valve body with the gasket and plate mounting side facing upward.



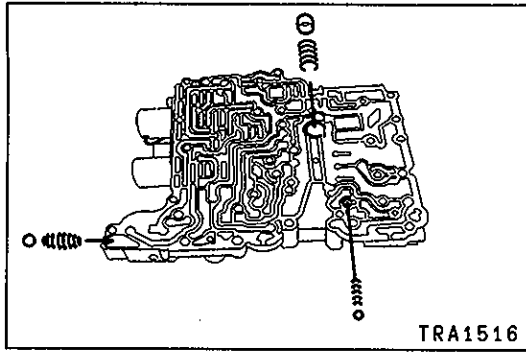
(10) Remove the two valve body gaskets and the plate.



(11) Remove the six check balls from the rear upper valve body.

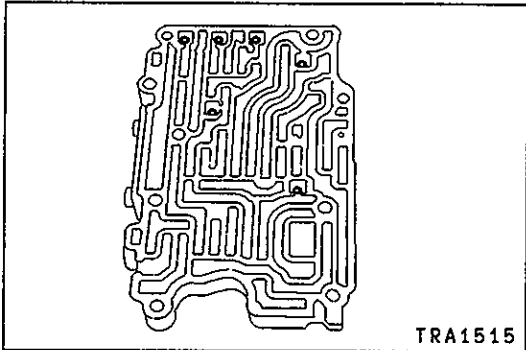


(12) Remove the check ball, the damping ball, the oil cooler bypass valve and their springs from the lower valve body.

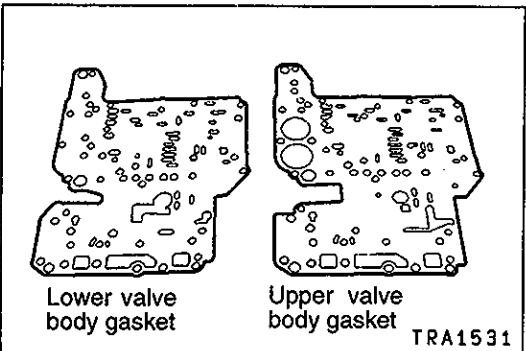


## REASSEMBLY

- (1) Insert the check ball, the damping ball, the oil cooler bypass valve and their springs into the lower valve body as illustrated.



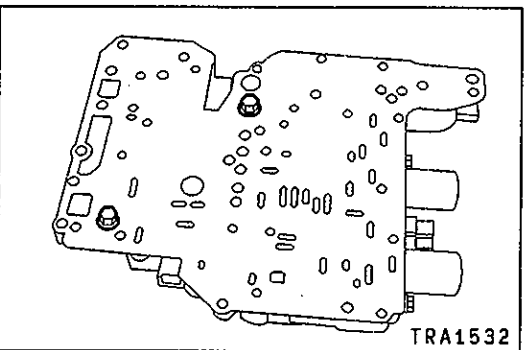
- (2) Insert the six check balls into the rear upper valve body at the indicated positions.



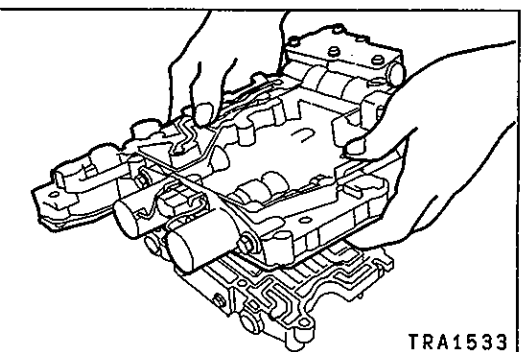
- (3) Lay a new lower valve body gasket and the plate on the lower valve body.

### Caution

- The upper valve body gasket and the lower valve body gasket differ in shape: Take care not to mistake either of these components with each other.

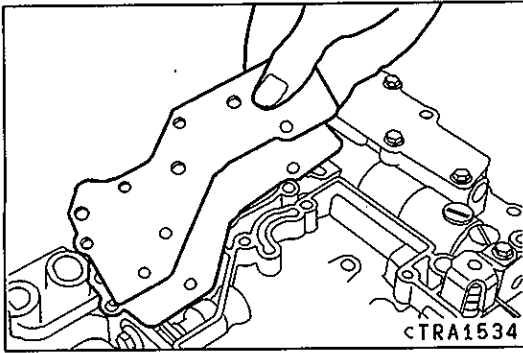


- (4) Secure the plate to the lower valve body temporarily by screwing suitable bolts at the illustrated positions.
- (5) Lay a new upper valve body gasket on the lower valve body.

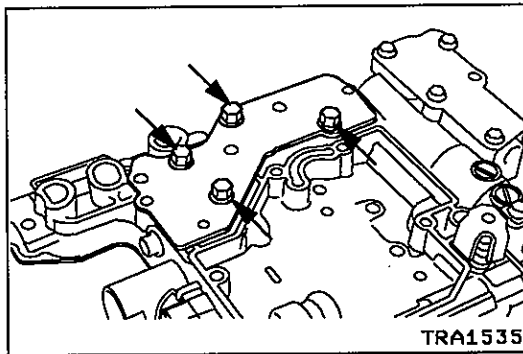


- (6) Lay the lower valve body on the rear upper valve body.

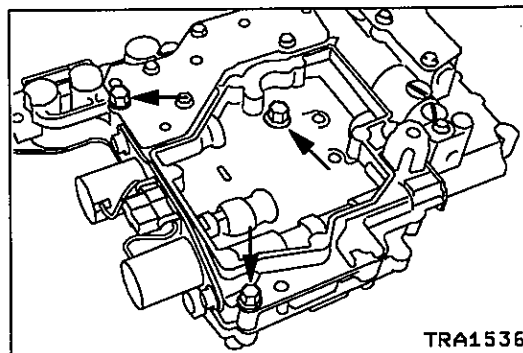




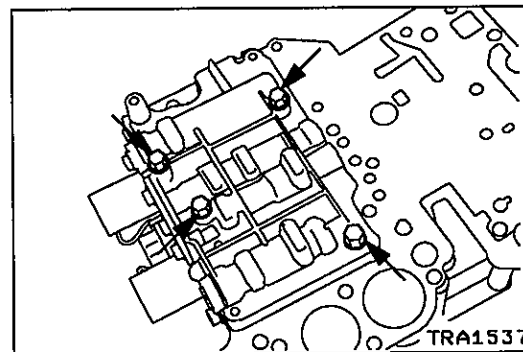
- (7) Attach the valve body cover with a new gasket to the lower valve body.



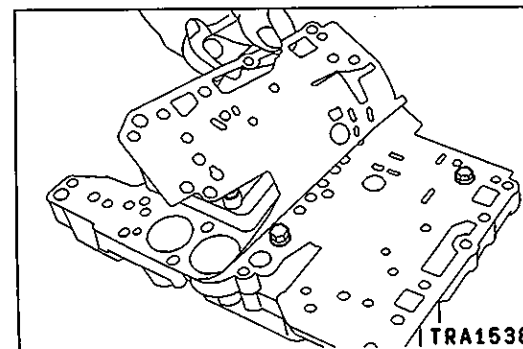
- (8) Tighten the arrowed bolts evenly to secure the valve body cover.



- (9) Attach the bolts at the illustrated positions.



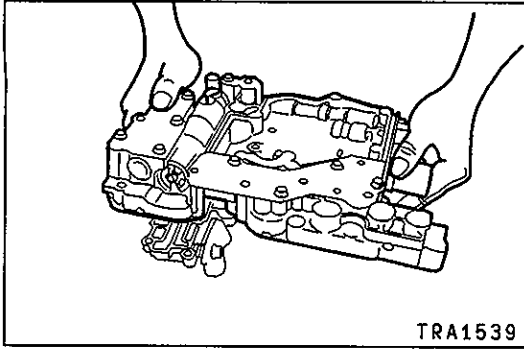
- (10) Turn the valve body over. Attach bolts at the arrowed positions on the rear upper body side, then tighten them fingertight.



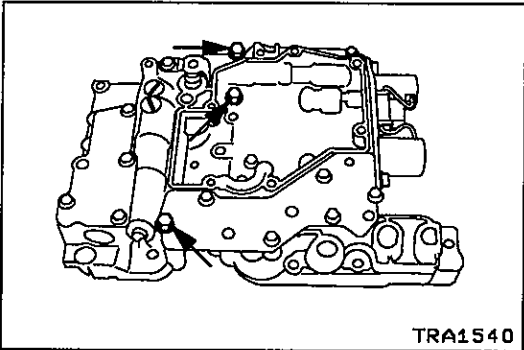
- (11) Remove the bolts which were fastened temporarily in step 4.

**Caution**

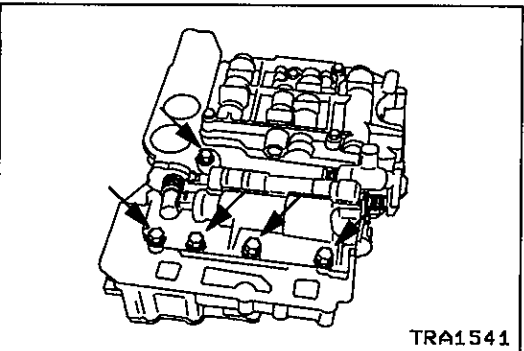
- Be careful not to damage the upper valve body gasket during this operation.



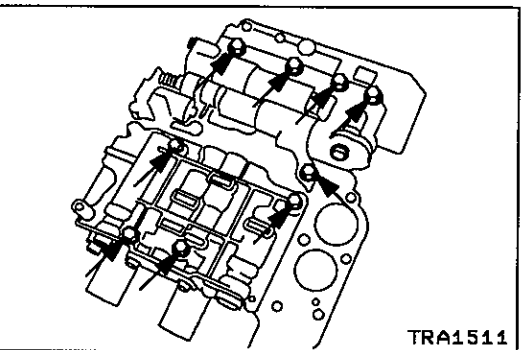
(12) Lay the lower valve body on the front upper valve body.



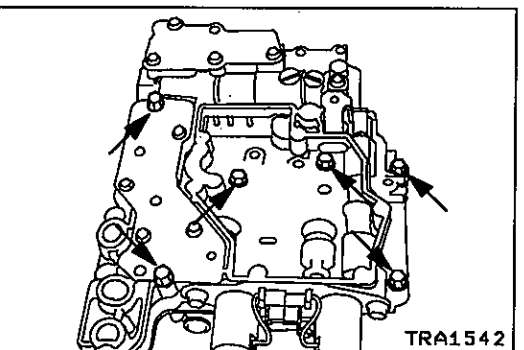
(13) Attach bolts at the arrowed positions.



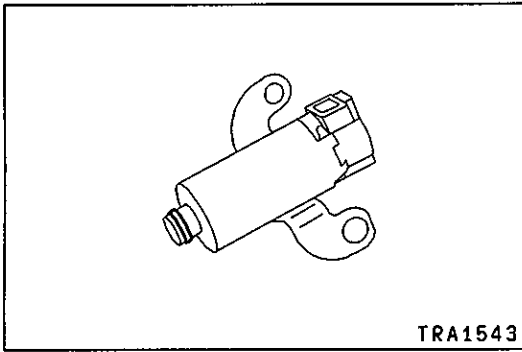
(14) Turn the valve body over and attach bolts at the arrowed positions on the front upper valve body side.



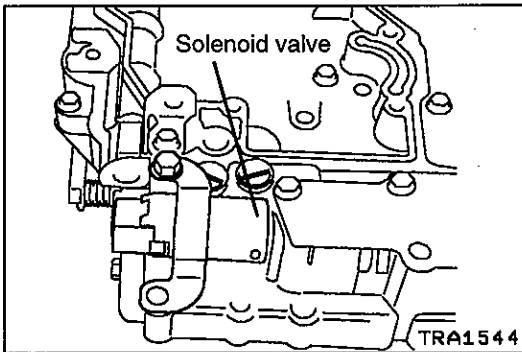
(15) Uniformly tighten the bolts on the rear upper valve body and the bolts on the front upper valve body.



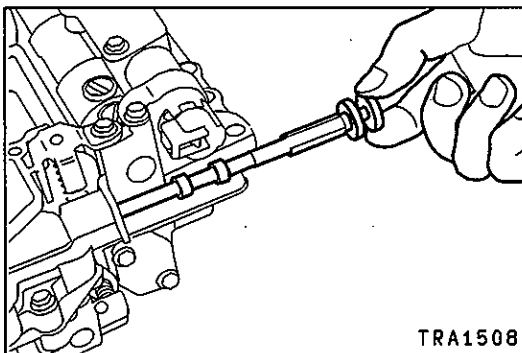
(16) Turn the valve body over and uniformly tighten the bolts on the lower valve body side.



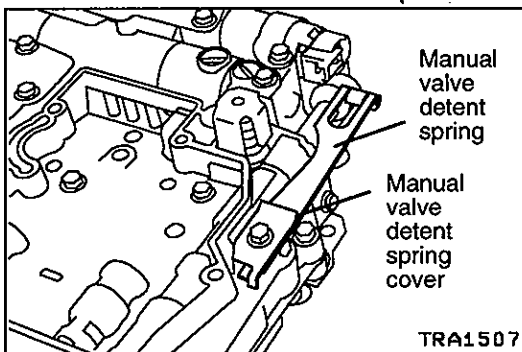
(17) Fit a new O-ring.



(18) Attach the solenoid valve to the lower valve body.



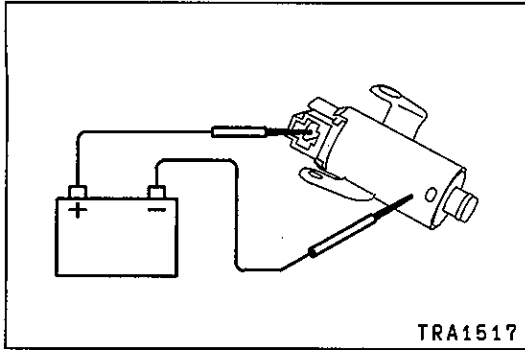
(19) Attach the manual valve.



(20) Attach the manual valve detent spring and the manual valve detent spring cover.

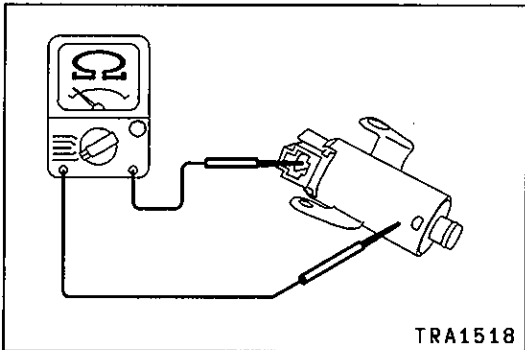
**INSPECTION****SOLENOID VALVE**

- (1) Using jumper wires, attach the positive terminal of a battery to the solenoid valve terminal and attach the negative terminal to the solenoid valve body. Verify that the valve can be heard to operate.



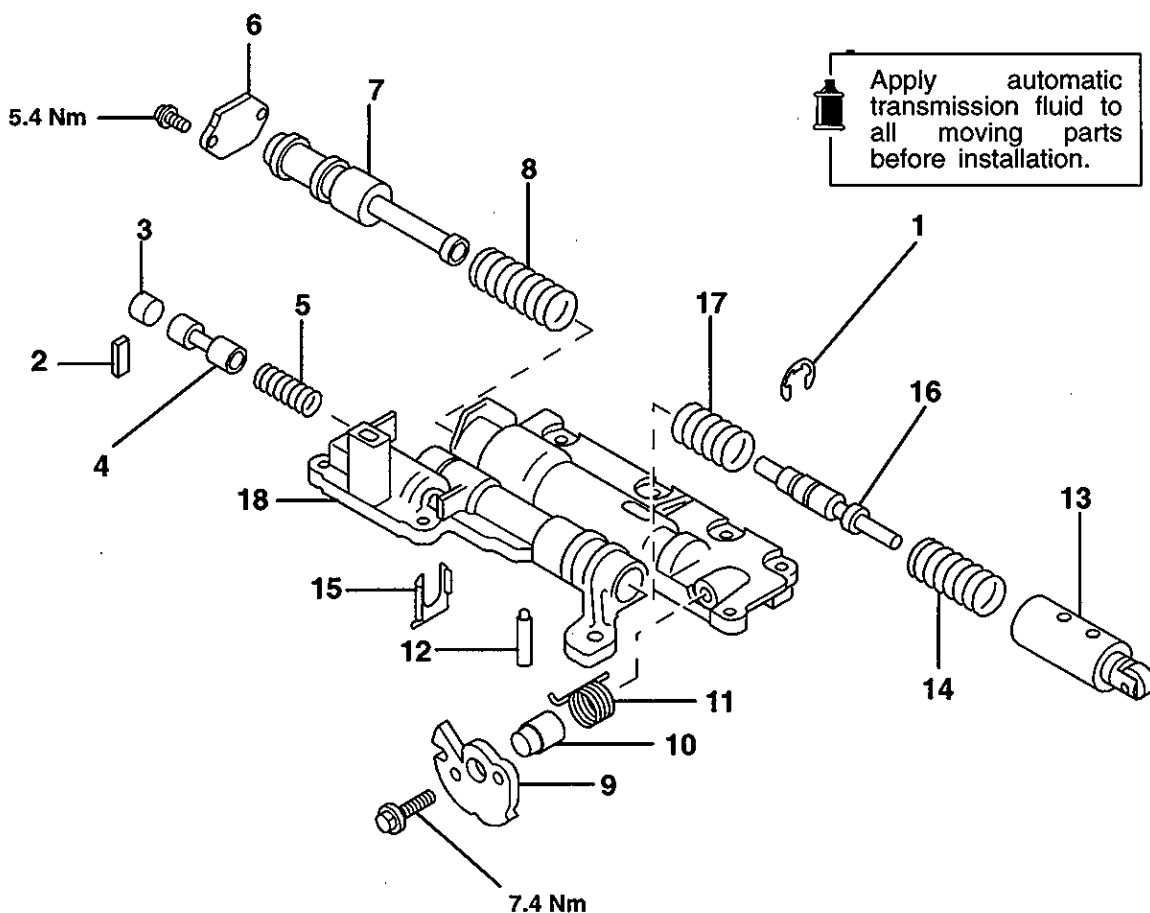
- (2) Measure the resistance between the solenoid valve terminal and the solenoid valve body.

**Standard value: 10 – 16  $\Omega$**



# 15. FRONT UPPER VALVE BODY

## DISASSEMBLY AND REASSEMBLY

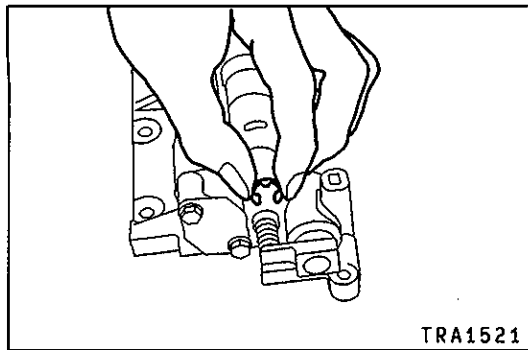


TRA1506

### Disassembly steps

- ◀A▶ ▶C▶ 1. Snap ring
- ▶B▶ 2. Seat
- ▶A▶ 3. Plug
- ▶A▶ 4. Cut-back valve
- ▶A▶ 5. Spring
- ▶A▶ 6. Cover
- ▶A▶ 7. Secondary regulator valve
- ▶A▶ 8. Spring
- ▶A▶ 9. Throttle cam

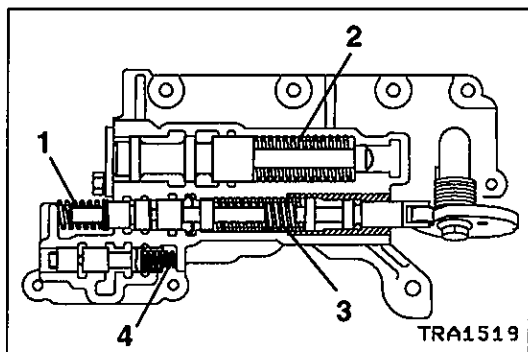
- ▶B▶ 10. Sleeve
- ▶B▶ 11. Spring
- ▶B▶ 12. Down-shift plug sleeve pin
- ▶A▶ 13. Down-shift plug
- ▶B▶ 14. Spring
- ▶B▶ 15. Valve vibrating stopper
- ▶A▶ 16. Throttle valve
- ▶A▶ 17. Spring
- ▶A▶ 18. Front upper valve body

**DISASSEMBLY SERVICE POINT****◀▶ SNAP RING(S) REMOVAL**

- (1) Remove the throttle pressure adjustment snap ring(s).

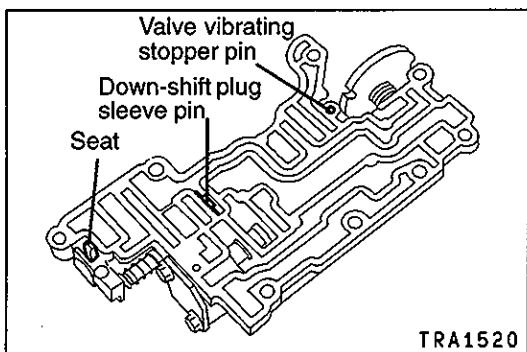
**Caution**

- Verify the number of snap rings. (Certain cases exist where no snap rings are assembled.)

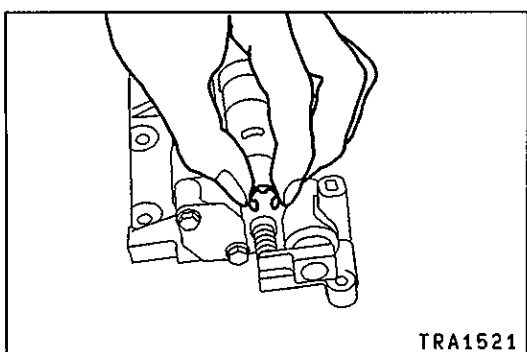
**REASSEMBLY SERVICE POINTS****▶◀ SPRINGS INSTALLATION**

- (1) Correctly install each spring.

	Installation location	Free height (mm)	Outside diameter (mm)
1	Throttle valve	21.94	8.58
2	Secondary regulator valve	71.27	17.43
3	Down-shift plug	39.55	10.90
4	Cut-back plug	23.00	6.85

**▶◀ VALVE VIBRATING STOPPER / DOWN-SHIFT PLUG SLEEVE PIN / SEAT INSTALLATION**

- (1) Install the valve vibrating stopper, down-shift plug sleeve pin, and seat as illustrated.

**▶◀ SNAP RING(S) INSTALLATION**

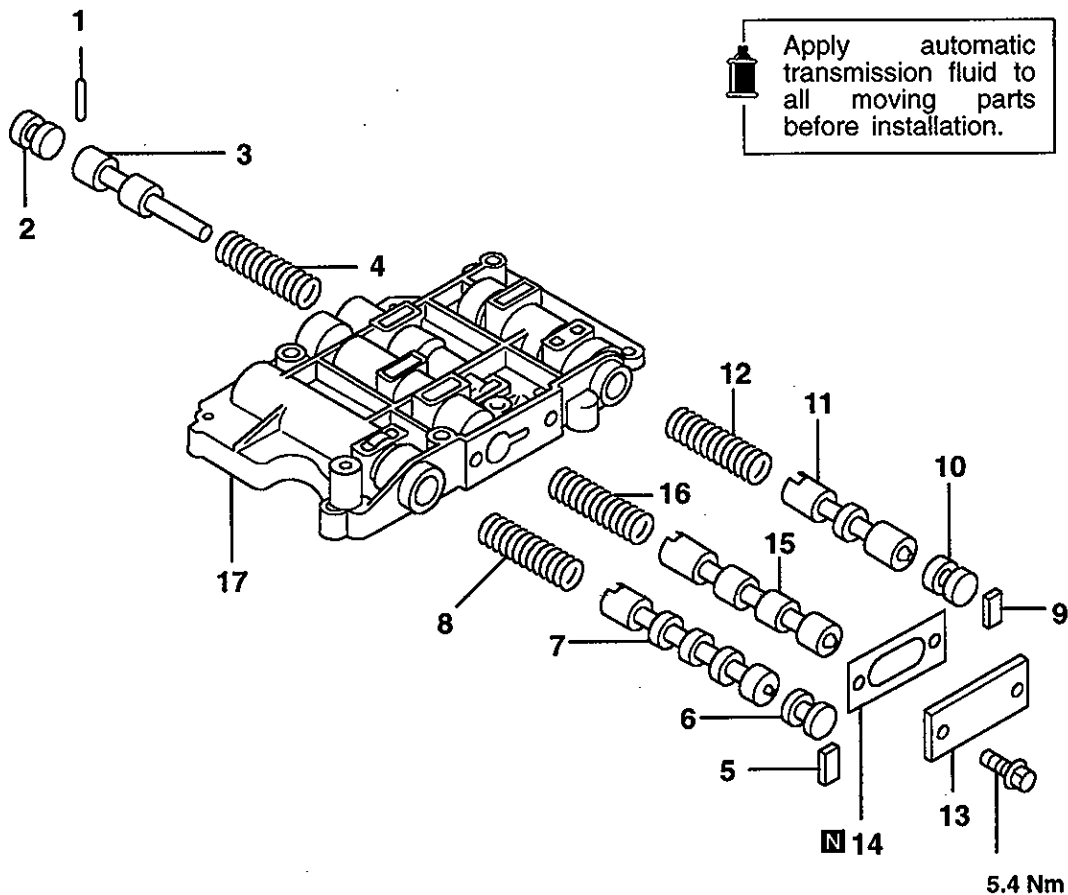
- (1) Install the throttle pressure adjustment snap ring(s).

**Caution**

- Reinstall the same number of snap rings as were originally installed; failure to do so will result in the throttle pressure being altered.

# 16. REAR UPPER VALVE BODY

## DISASSEMBLY AND REASSEMBLY

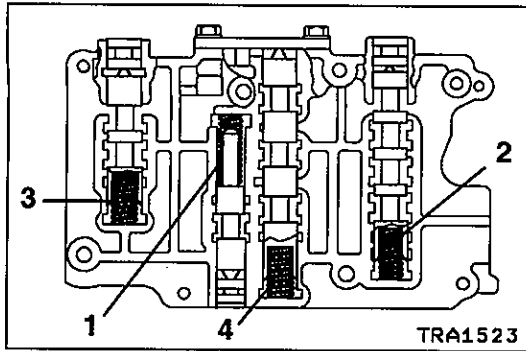


TRA1522

### Disassembly steps

- ▶B◀ 1. Roller
- ▶B◀ 2. Plug
- ▶A◀ 3. Reverse clutch sequence valve
- ▶B◀ 4. Spring
- ▶B◀ 5. Seat
- ▶A◀ 6. Plug
- ▶A◀ 7. 2-3 shift valve
- ▶A◀ 8. Spring
- ▶B◀ 9. Seat

- ▶A◀ 10. Plug
- ▶A◀ 11. 3-4 shift valve
- ▶A◀ 12. Spring
- ▶A◀ 13. Cover
- ▶A◀ 14. Gasket
- ▶A◀ 15. 1-2 shift valve
- ▶A◀ 16. Spring
- ▶A◀ 17. Rear upper valve body

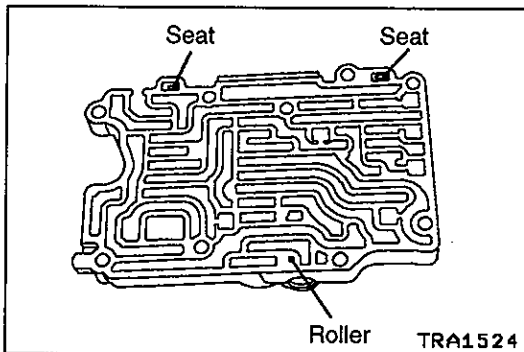


## REASSEMBLY SERVICE POINTS

### ►A◄ SPRINGS INSTALLATION

(1) Correctly install each spring.

	Installation location	Free height (mm)	Outside diameter (mm)
1	Reverse clutch sequence valve	37.55	9.1
2	2-3 shift valve	29.15	8.9
3	3-4 shift valve	29.15	8.9
4	1-2 shift valve	29.15	8.9



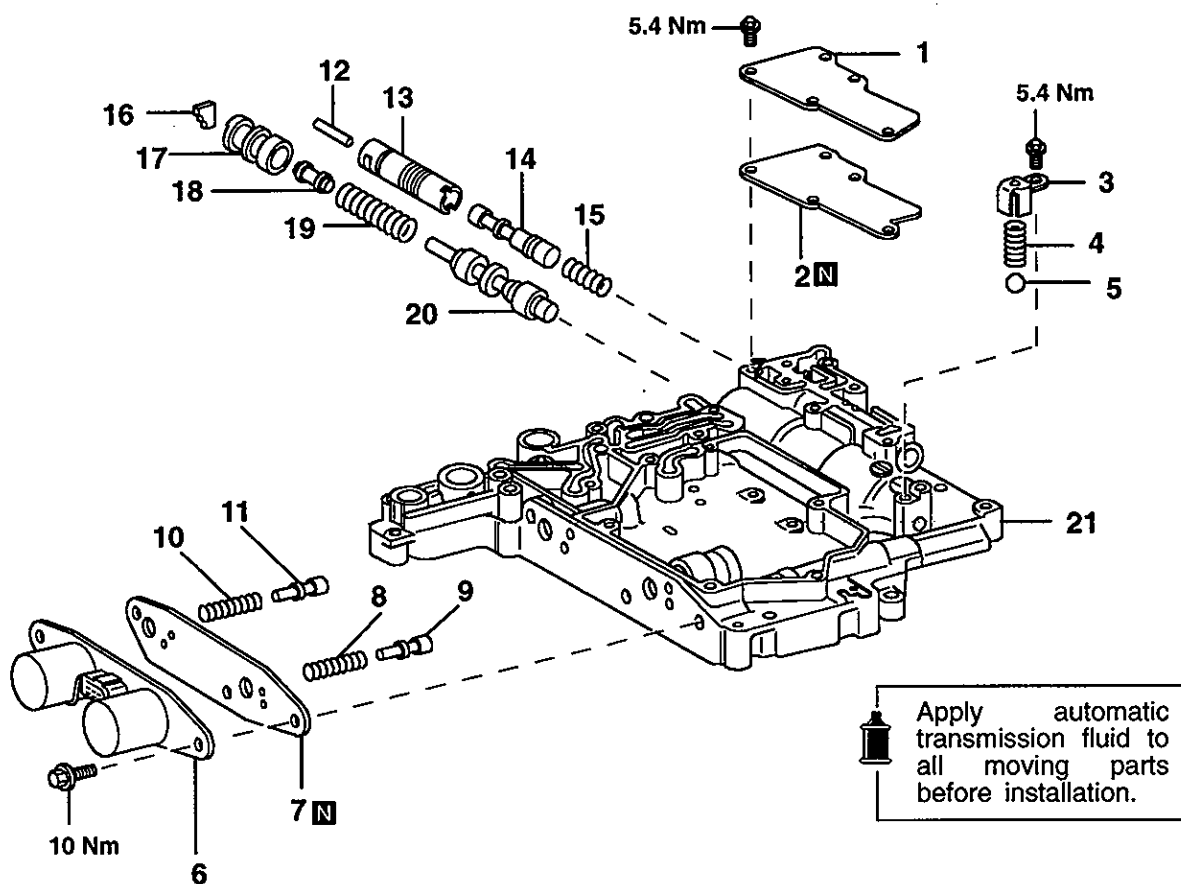
### ►B◄ ROLLER / SEAT INSTALLATION

(1) Install the roller and seats in the illustrated positions.



# 17. LOWER VALVE BODY

## DISASSEMBLY AND REASSEMBLY

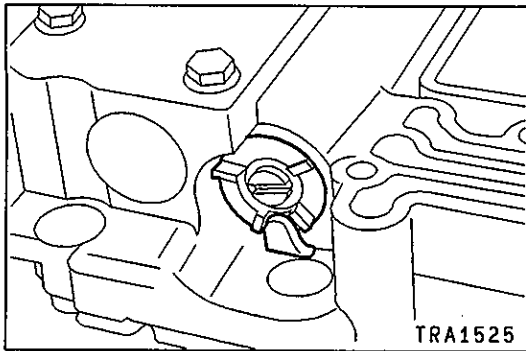


TRA1528

### Disassembly steps

- ▶D◀ 1. Plate
- ▶D◀ 2. Gasket
- ▶A◀ 3. Valve spring seat
- ▶A◀ 4. Spring
- ▶A◀ 5. Ball
- ▶A◀ 6. Solenoid valve
- ▶A◀ 7. Gasket
- ▶A◀ 8. Spring
- ▶A◀ 9. Low coast modulator valve
- ▶A◀ 10. Spring
- ▶A◀ 11. Intermediate modulator valve

- ▶C◀ 12. Pin
- ▶C◀ 13. Sleeve
- ▶A◀ 14. Lock-up relay valve
- ▶A◀ 15. Spring
- ▶B◀ 16. Plate
- ▶B◀ 17. Sleeve
- ▶B◀ 18. Plunger
- ▶A◀ 19. Spring
- ▶A◀ 20. Pressure regulator valve
- ▶A◀ 21. Lower valve body



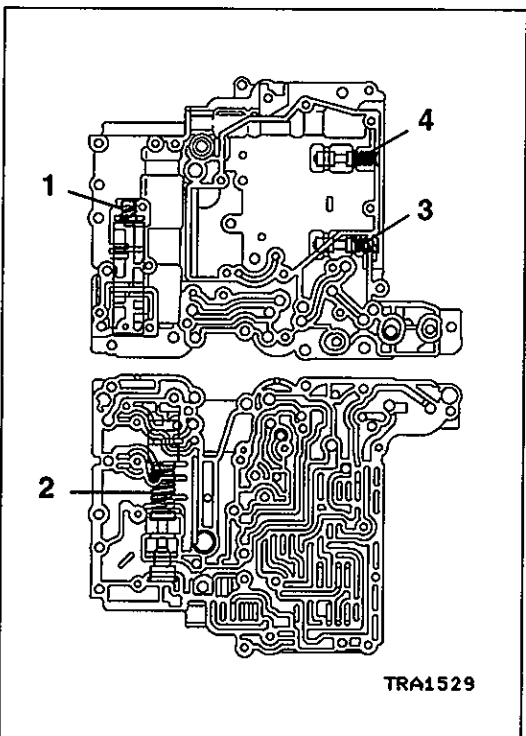
## DISASSEMBLY SERVICE POINT

### ◀A▶ SLEEVE / PLATE REMOVAL

- (1) Before proceeding with the disassembly, check what division of the sleeve the plate seats in.

#### Caution

- The sleeve division in which the plate seats determines the line pressure: Always check this before disassembly.

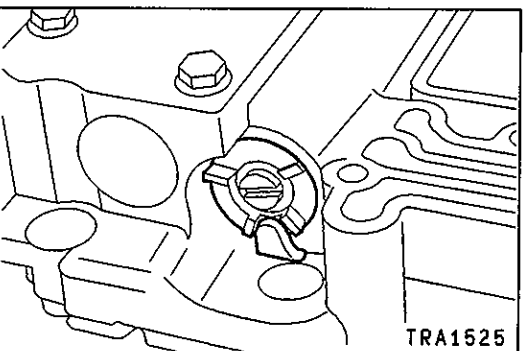


## REASSEMBLY SERVICE POINTS

### ▶A◀ SPRINGS INSTALLATION

- (1) Correctly install each spring.

	Installation location	Free height (mm)	Outside diameter (mm)
1	Lock-up relay valve	32.60	11.40
2	Pressure regulator valve	50.28	17.02
3	Intermediate modulator valve	27.26	9.04
4	Low coast modulator valve	42.35	9.24

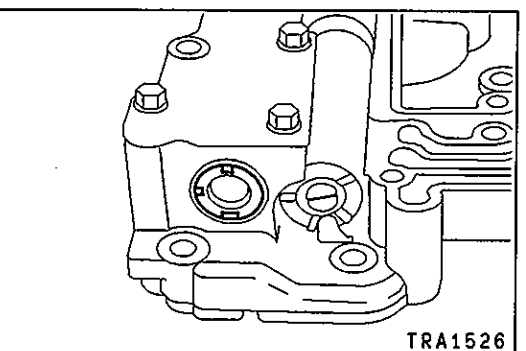


### ▶B◀ SLEEVE / PLATE INSTALLATION

- (1) Install the plate in such a way that it may seat in the same sleeve position as prior to disassembly.

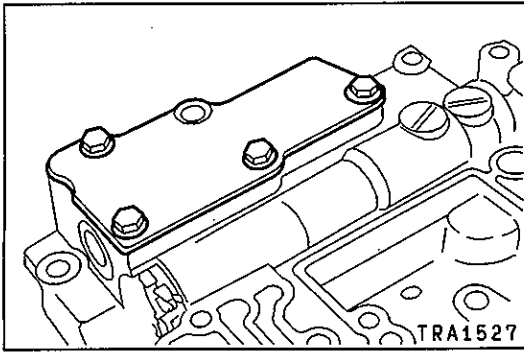
#### Caution

- The sleeve division in which the plate seats determines the line pressure: Always let the plate seat on the sleeve in the division which was verified before disassembly.



### ▶C◀ SLEEVE / PIN INSTALLATION

- (1) Install the sleeve such that its three notches are located as illustrated, then secure with the pin.

**▶D◀ PLATE / GASKET INSTALLATION**

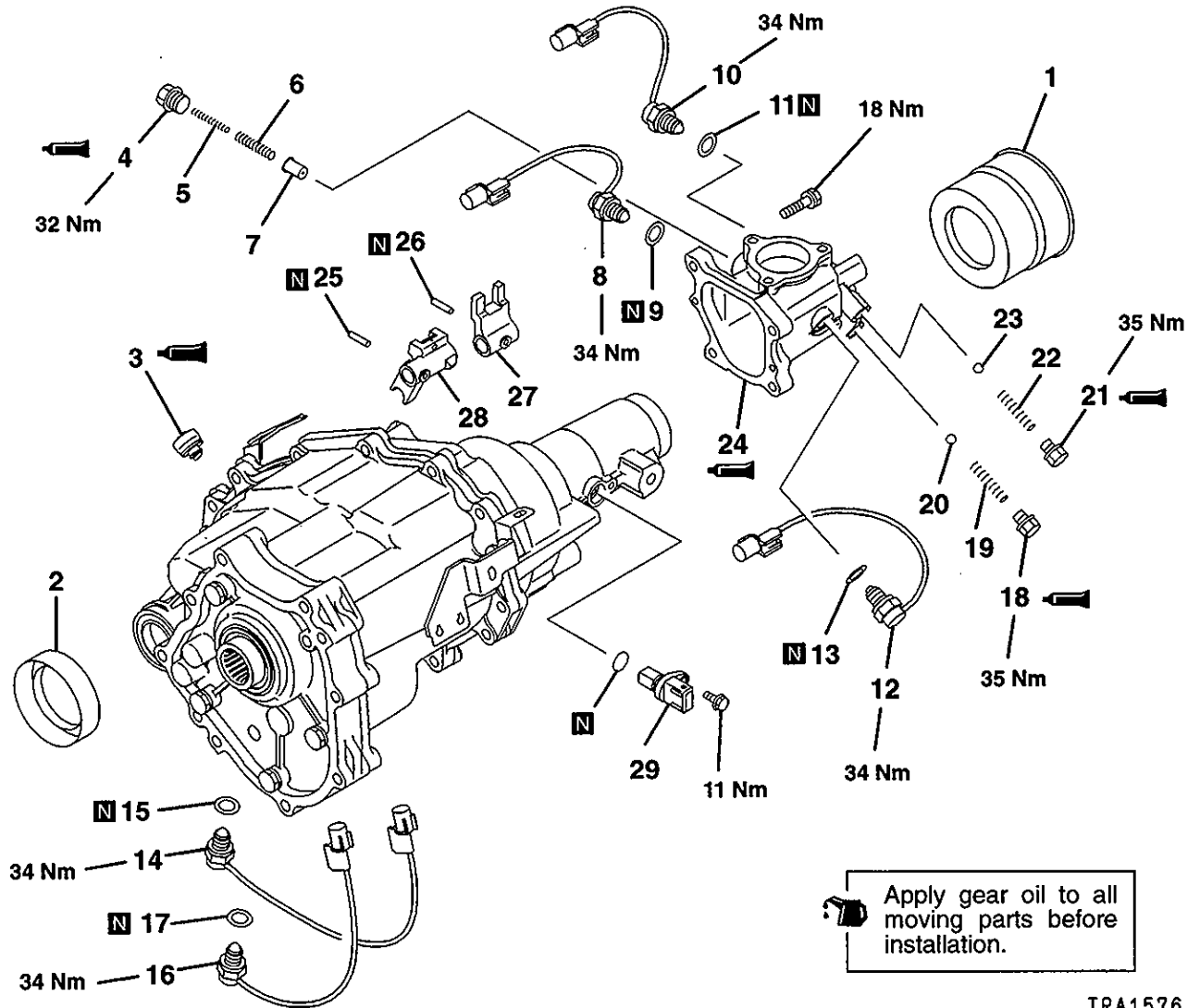
- (1) Install the plate together with a new gasket. Uniformly tighten the bolts indicated in the illustration.

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**NOTES**

# 18. TRANSFER

## DISASSEMBLY AND REASSEMBLY

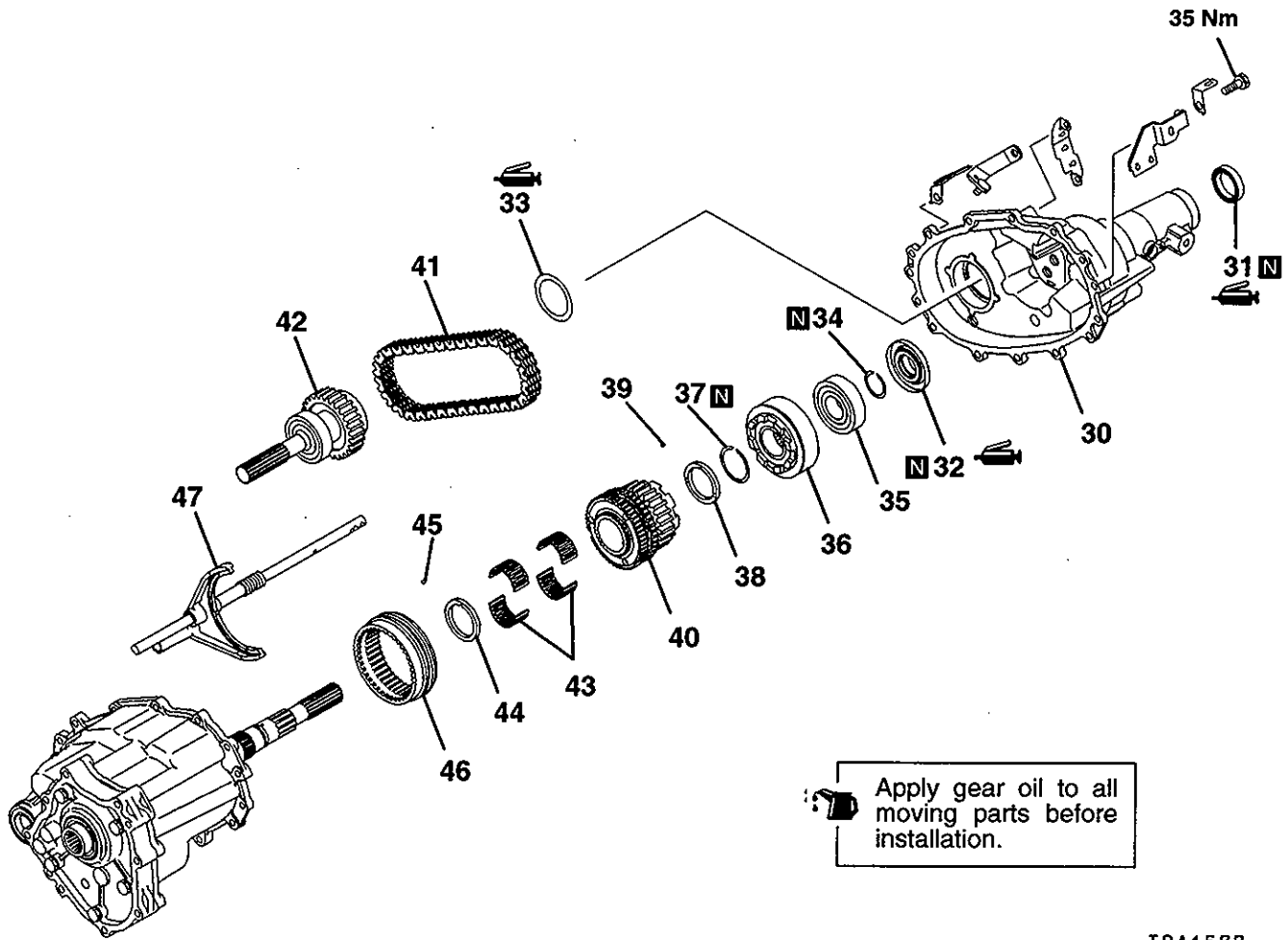


TRA1576

### Disassembly steps

- 1. Dust seal guard
- 2. Dust seal guard
- ▶d◀ 3. Air breather
- ▶c◀ 4. Select plunger seal plug
- 5. Return spring
- 6. Return spring
- 7. Select plunger
- ▶b◀ 8. Hi-Lo detector switch
- 9. Gasket
- ▶b◀ 10. 4WD operation detector switch
- 11. Gasket
- ▶a◀ 12. Lock operation detector switch
- 13. Gasket
- ▶Z◀ 14. 4WD detector switch
- 15. Gasket

- ▶Z◀ 16. Lock detector switch
- 17. Gasket
- ▶Y◀ 18. Poppet seal bolt
- ▶X◀ 19. Spring
- 20. Steel ball
- ▶Y◀ 21. Poppet seal bolt
- ▶X◀ 22. Spring
- 23. Steel ball
- ▶A◀ ▶W◀ 24. Transfer control housing
- ▶V◀ 25. Spring pin
- ▶U◀ 26. Spring pin
- ▶T◀ 27. Hi-Lo shift lug
- 28. 2WD/4WD shift lug
- 29. Vehicle speed sensor



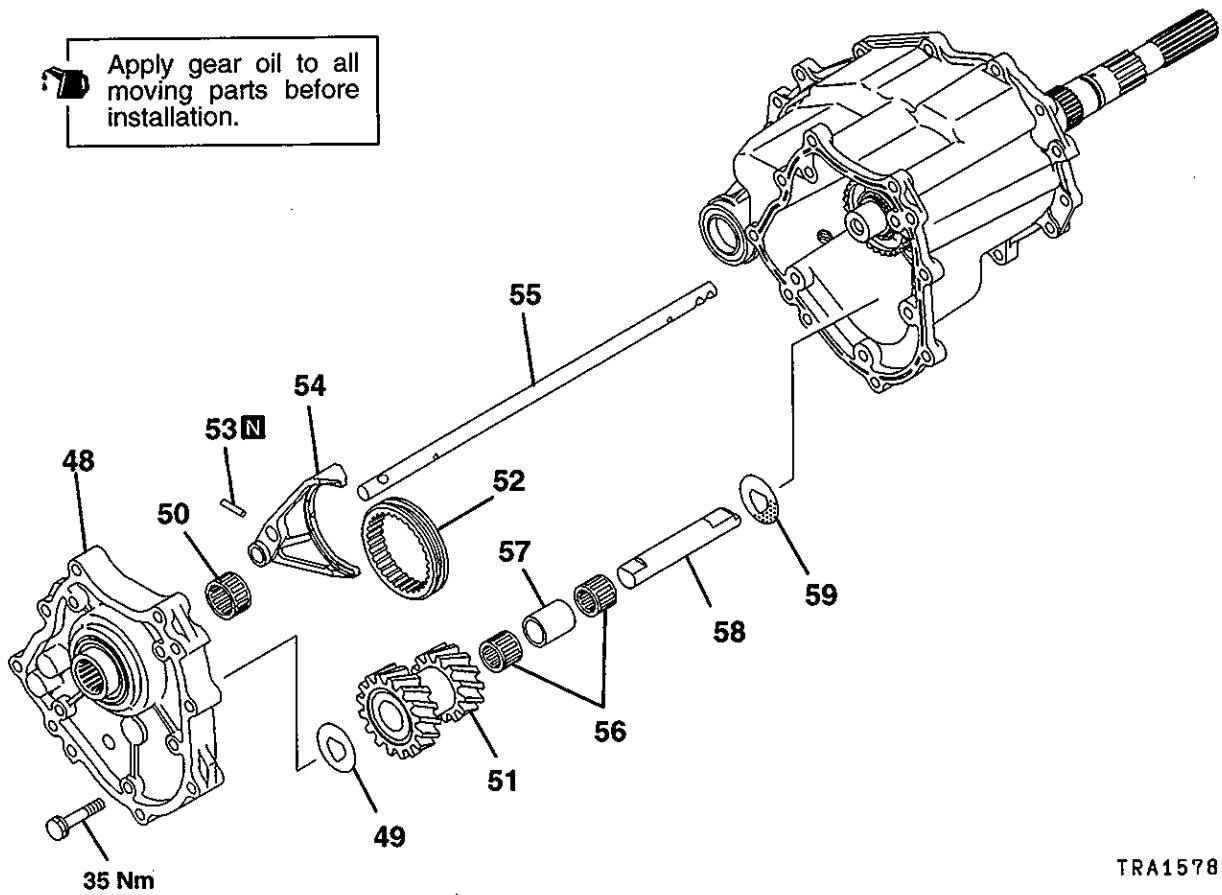
TRA1577

**Disassembly steps**

- ◀B▶ ▶S▶ 30. Transfer rear cover
- ▶R▶ 31. Oil seal
- ▶Q▶ 32. Oil guide
- ▶P▶ 33. Wave spring
- ▶O▶ 34. Snap ring
- ◀C▶ ▶N▶ 35. Ball bearing
- ▶M▶ 36. Viscous coupling
- ▶L▶ 37. Snap ring
- ▶L▶ 38. Spacer

- ▶D▶ ▶K▶ 39. Steel ball
- ▶D▶ ▶K▶ 40. 2WD/4WD synchronizer
- ▶D▶ ▶K▶ 41. Chain
- ▶K▶ 42. Front output shaft
- ▶J▶ 43. Needle bearings
- ▶J▶ 44. Spacer
- ▶I▶ 45. Steel ball
- ▶I▶ 46. Synchronizer sleeve
- ▶I▶ 47. 2WD/4WD shift fork and rail

Apply gear oil to all moving parts before installation.

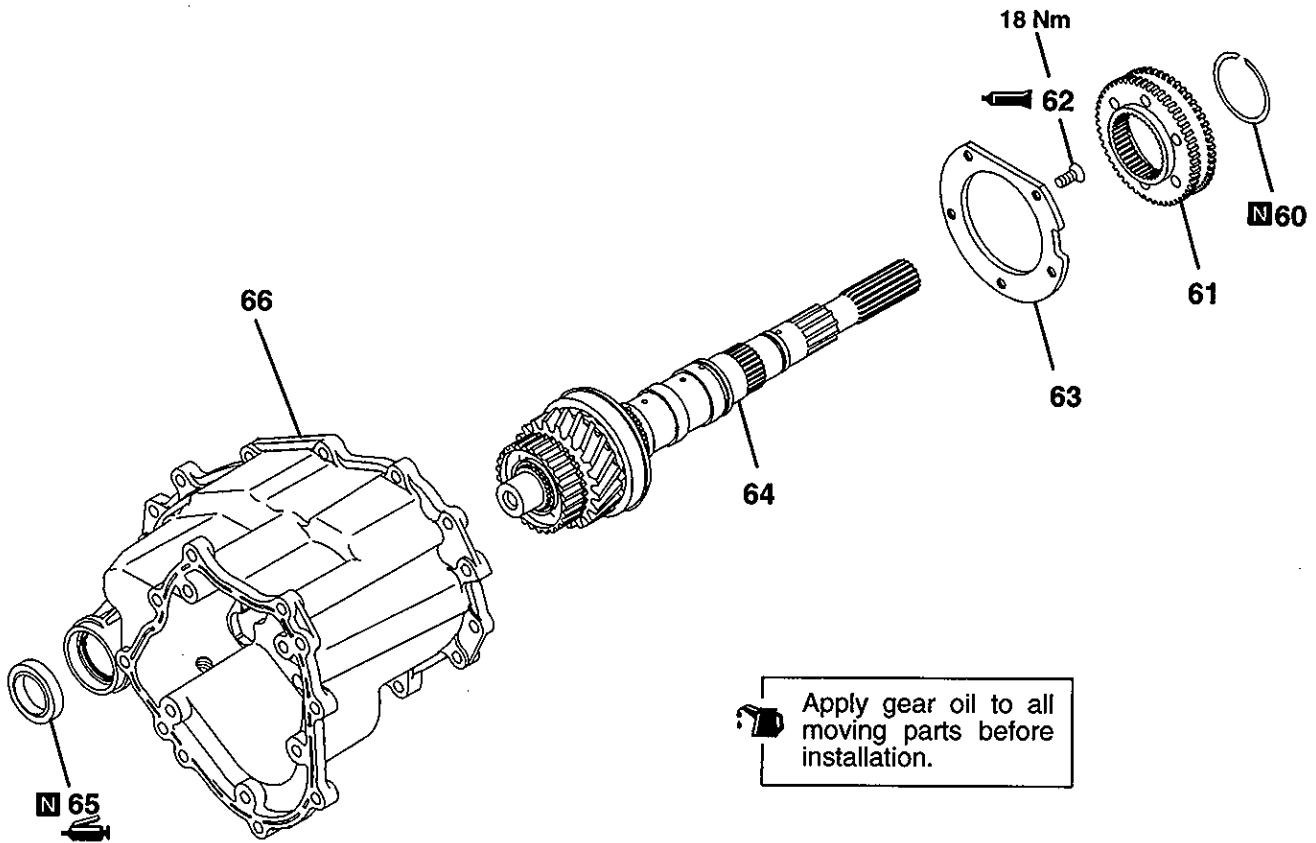


TRA1578

**Disassembly steps**

- ◀E▶ ▶H▶ 48. Transfer case plate
- ▶G▶ 49. Thrust washer
- ▶F▶ 50. Needle bearing
- ▶E▶ 51. Counter gear
- ▶F▶ 52. Hi-Lo clutch sleeve
- ▶E▶ 53. Spring pin

- ▶E▶ 54. Hi-Lo shift fork
- ▶E▶ 55. Hi-Lo shift rail
- ▶E▶ 56. Needle bearings
- ▶D▶ 57. Bearing spacer
- ▶D▶ 58. Counter gear shaft
- ▶D▶ 59. Thrust washer

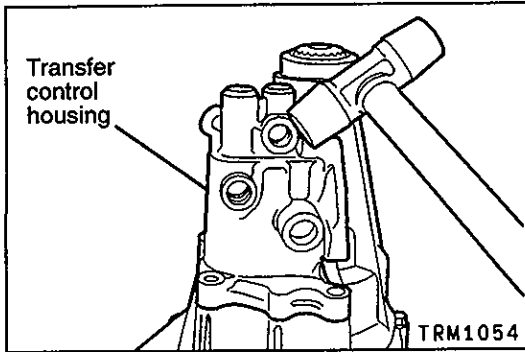


TRA1579

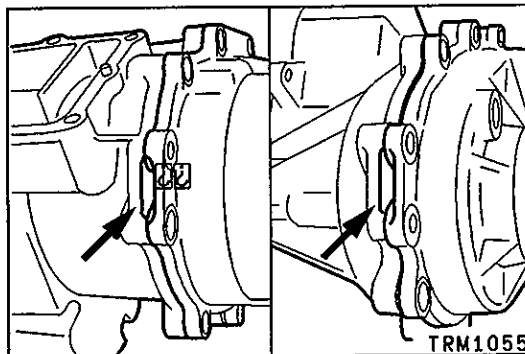
**Disassembly steps**

- ▶C◀ 60. Snap ring
- 61. Differential lock hub
- ▶B◀ 62. Center bearing retainer seal bolt
- 63. Center bearing retainer
- 64. Rear output shaft
- ▶A◀ 65. Oil seal
- 66. Transfer case

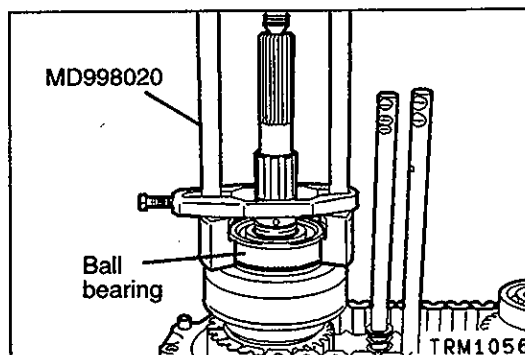


**DISASSEMBLY SERVICE POINTS****◀A▶ TRANSFER CONTROL HOUSING REMOVAL**

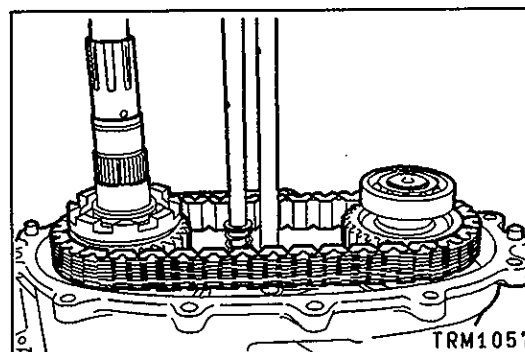
- (1) Remove the transfer control housing by tapping lightly with a plastic hammer or some other similar tool.

**◀B▶ TRANSFER REAR COVER REMOVAL**

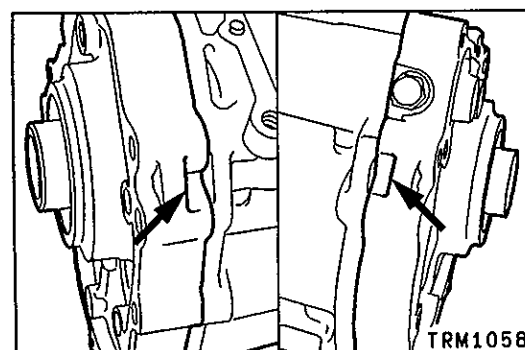
- (1) Tap the transfer rear cover at the two locations indicated in the illustration to remove it.

**◀C▶ BALL BEARING REMOVAL**

- (1) Remove the ball bearing using the indicated special tool.

**◀D▶ 2WD/4WD SYNCHRONIZER / CHAIN / FRONT OUTPUT SHAFT REMOVAL**

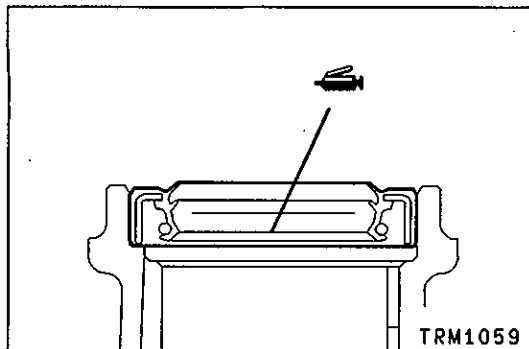
- (1) Remove the 2WD/4WD synchronizer, chain, and front output shaft at the same time.

**◀E▶ TRANSFER CASE PLATE REMOVAL**

- (1) Tap the transfer case plate at the two locations indicated in the illustration to remove it.

**Caution**

- The counter gear and ancillary parts will be freed together; take care to avoid letting them fall.



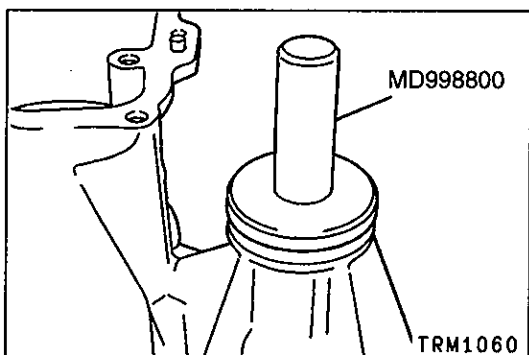
## REASSEMBLY SERVICE POINTS

### ▶A◀ OIL SEAL INSTALLATION

- (1) Apply grease to the lip of the oil seal; then assemble the seal using the indicated special tool.

#### Specified grease:

**Mitsubishi genuine grease Part No. MD0101011 or equivalent**



### ▶B◀ CENTER BEARING RETAINER SEAL BOLT INSTALLATION (when reused)

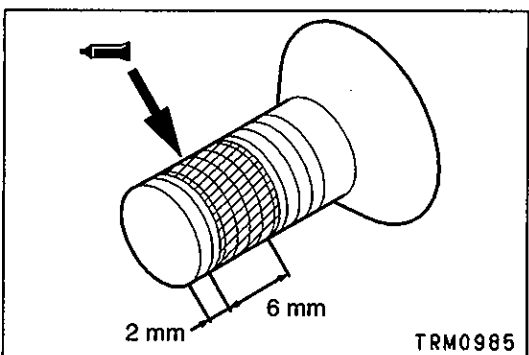
- (1) Apply sealant to the threaded area of the bolt indicated in the illustration; following this, tighten to the specified torque.

#### Specified sealant:

**3M STUD Locking No. 4170 or equivalent**

#### NOTE

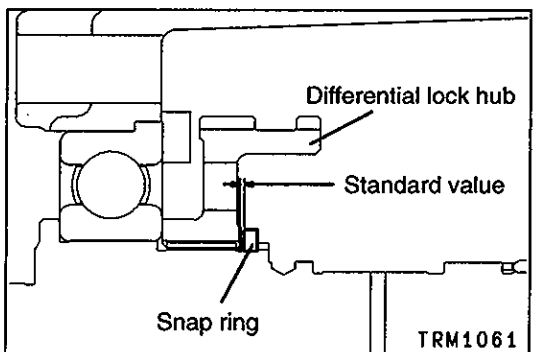
Ensure that any old sealant still adhering to the seal bolt is fully removed.



### ▶C◀ SNAP RING INSTALLATION

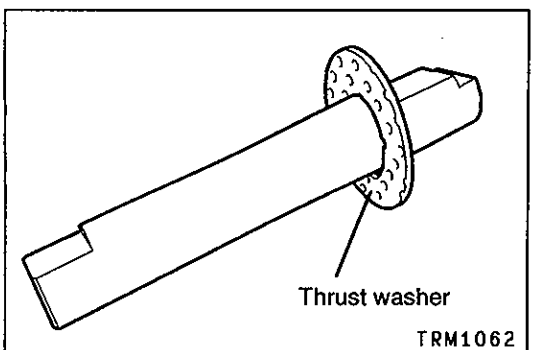
- (1) Select and install a suitable snap ring to ensure that the differential lock hub end play is at the standard value.

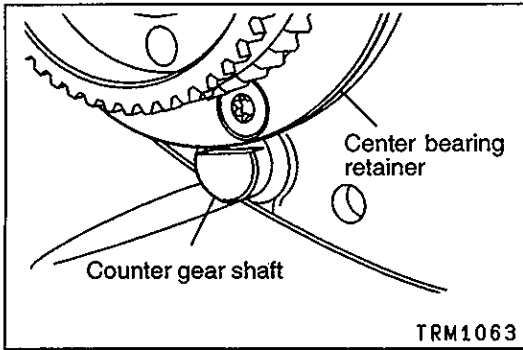
**Standard value: 0 – 0.08 mm**



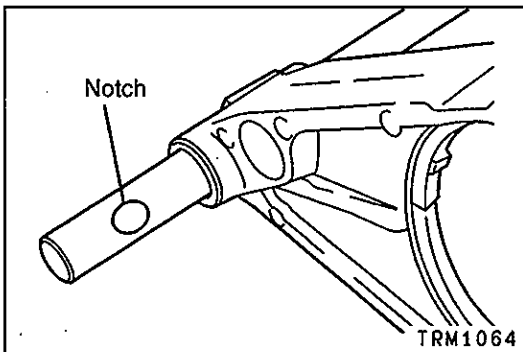
### ▶D◀ THRUST WASHER / COUNTER GEAR SHAFT INSTALLATION

- (1) Install the thrust washer on the counter gear shaft as shown with the oil grooves in the washer oriented in the indicated direction.



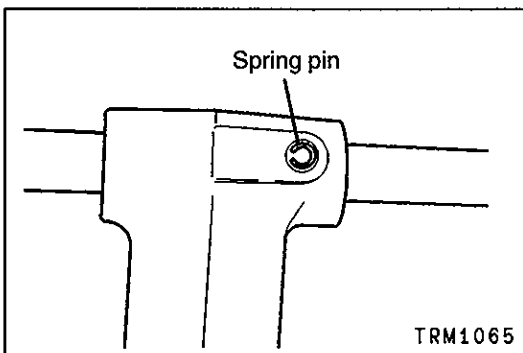


- (2) Install the counter gear shaft with its notch toward the center bearing retainer so that it can be prevented from turning by the retainer.

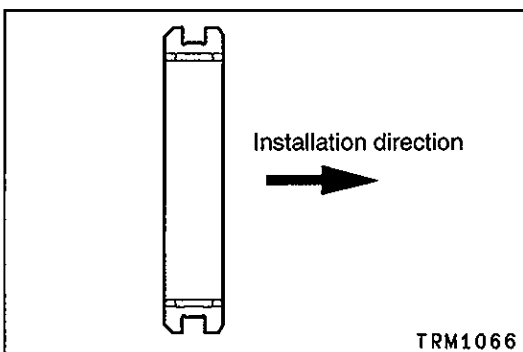


#### ►E◄ HI-LO SHIFT RAIL / HI-LO SHIFT FORK / SPRING PIN INSTALLATION

- (1) Assemble the Hi-Lo shift rail and Hi-Lo shift fork in such a way that they are oriented as shown.

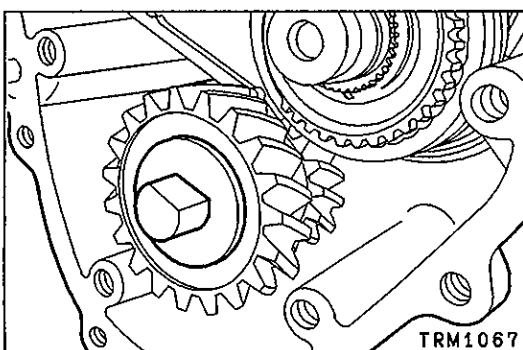


- (2) Drive in the spring pin with its slit oriented as shown.



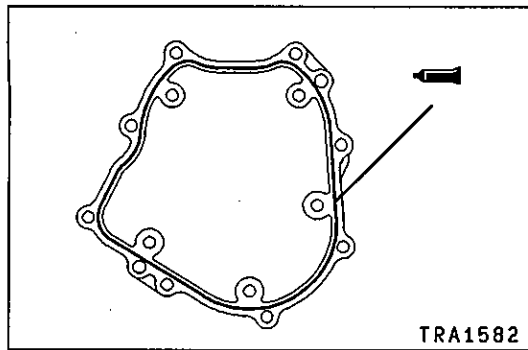
#### ►F◄ HI-LO CLUTCH SLEEVE INSTALLATION

- (1) Install the Hi-Lo clutch sleeve in the indicated orientation.



#### ►G◄ THRUST WASHER INSTALLATION

- (1) Align the flat of the thrust washer with that of the counter gear shaft, then install the thrust washer with its oil-grooved surface facing the counter gear.



### ►H◄ TRANSFER CASE PLATE INSTALLATION

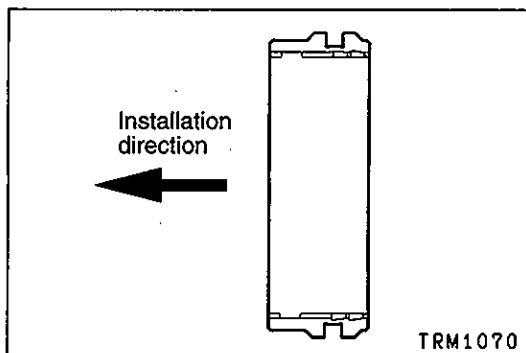
- (1) Apply sealant to the transfer case plate mounting surface of the transfer case.

#### Specified sealant:

Mitsubishi genuine sealant Part No. MD997740 or equivalent

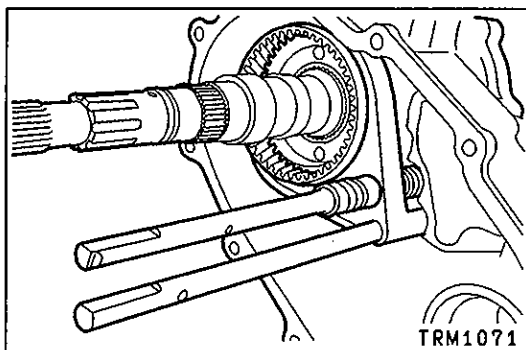
#### Caution

- Squeeze the sealant out evenly to ensure that the bead is not broken and that over-application is not performed.
- (2) Direct the notch in the input gear toward the counter gear, then install the transfer case plate.

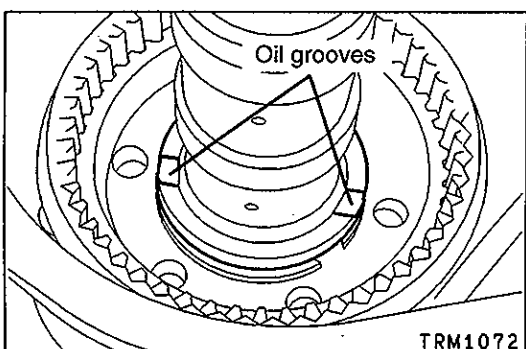


### ►I◄ 2WD/4WD SHIFT FORK, SHIFT RAIL / SYNCHRONIZER SLEEVE INSTALLATION

- (1) Install the synchronizer sleeve in the indicated direction.

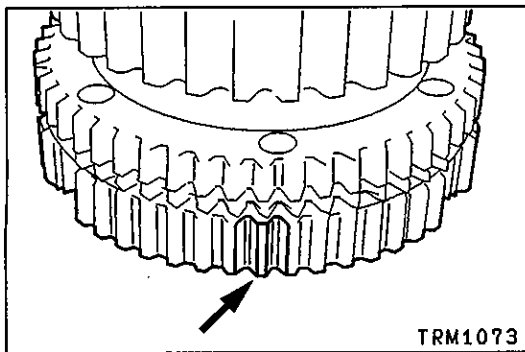


- (2) Shift the Hi-Lo shift rail in the illustrated position, then assemble the synchronizer sleeve, the 2WD/4WD shift fork, and the shift rail.



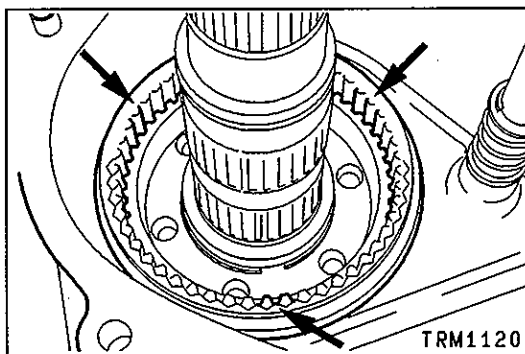
### ►J◄ SPACER INSTALLATION

- (1) Install the spacer with its oil grooves oriented as indicated.

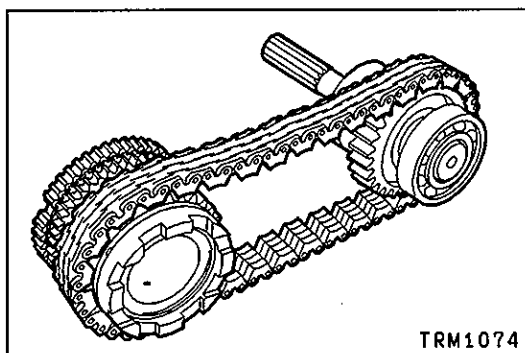


### ►K◄ FRONT OUTPUT SHAFT / CHAIN / 2WD/4WD SYNCHRONIZER INSTALLATION

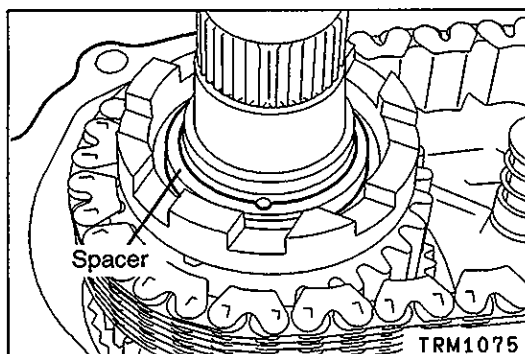
- (1) Apply white paint or something similar to the three deep tooth grooves in the 2WD/4WD synchronizer sprocket.



- (2) Apply white paint or something similar to the three spline projections on the synchronizer sleeve.

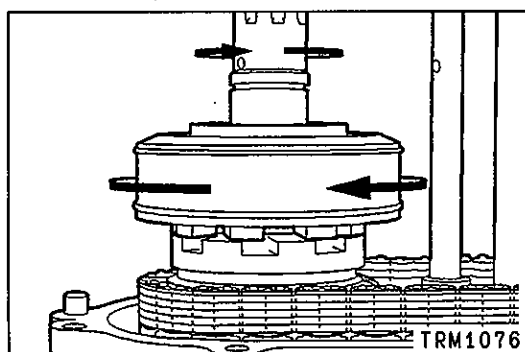


- (3) Mesh the chain with the 2WD/4WD synchronizer sprocket and the front output shaft sprocket.
- (4) With the sprockets distanced as far from each other as possible, install the assembly in the case while aligning the markings made in steps (1) and (2) above.



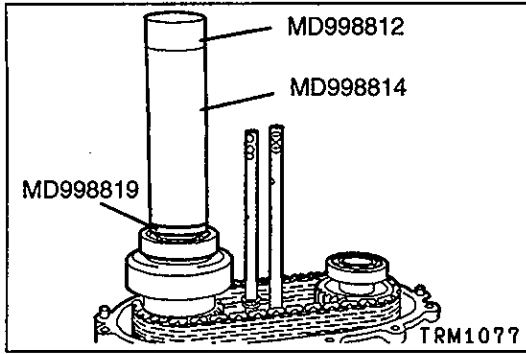
### ►L◄ SPACER INSTALLATION

- (1) Install the spacer with its oil grooves facing the 2WD/4WD synchronizer.



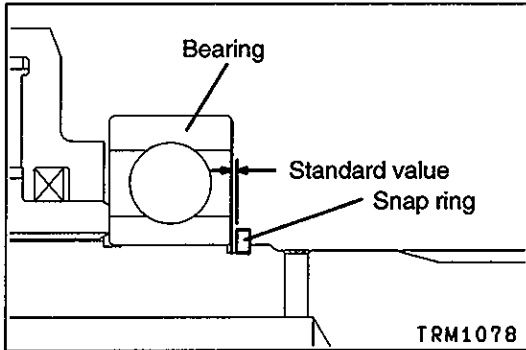
### ►M◄ VISCOUS COUPLING INSTALLATION

- (1) If the grooves in the viscous coupling and the 2WD/4WD synchronizer are not aligned, slowly rotate either the rear output shaft or the viscous coupling itself to bring each into alignment.



### ▶N◀ BALL BEARING INSTALLATION

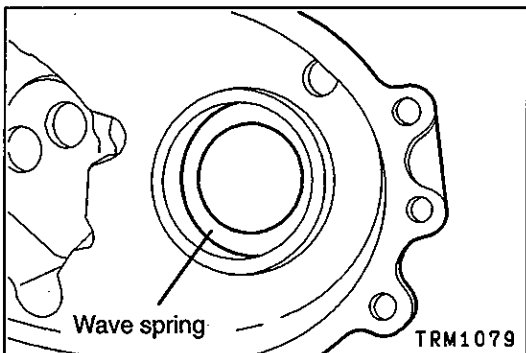
- (1) Assemble the ball bearing using the indicated special tools.



### ▶O◀ SNAP RING INSTALLATION

- (1) Select and install a suitable snap ring to ensure that the rear output shaft rear bearing clearance is at the standard value.

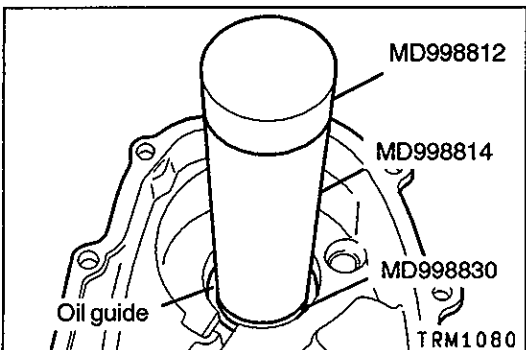
**Standard value: 0 – 0.08 mm**



### ▶P◀ WAVE SPRING INSTALLATION

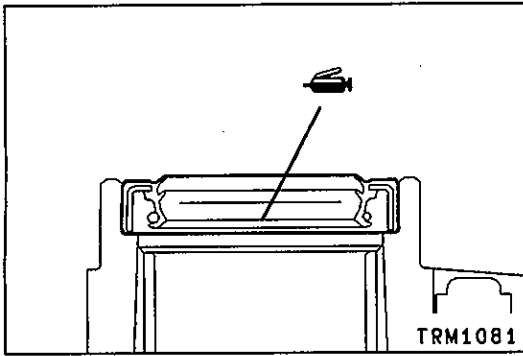
- (1) Apply grease to the wave spring and secure it to the transfer rear cover.

**Specified grease:**  
**Mitsubishi genuine grease Part No. MD0101011**  
**or equivalent**



### ▶Q◀ OIL GUIDE INSTALLATION

- (1) Install the oil guide using the indicated special tools.

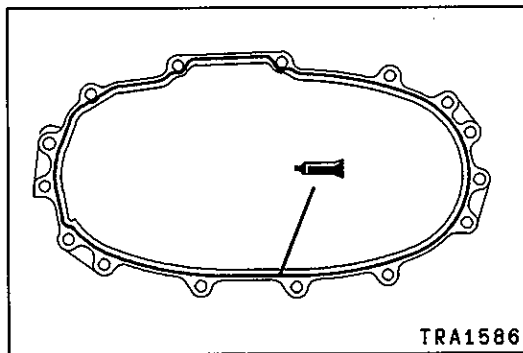
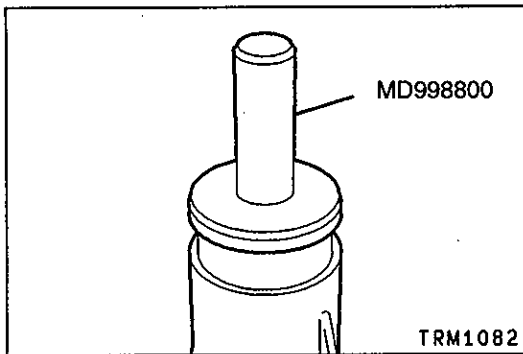


### ►R◄ OIL SEAL INSTALLATION

- (1) Apply grease to the lip of the oil seal; then assemble the seal using the indicated special tool.

#### Specified grease:

**Mitsubishi genuine grease Part No. MD0101011 or equivalent**



### ►S◄ TRANSFER REAR COVER INSTALLATION

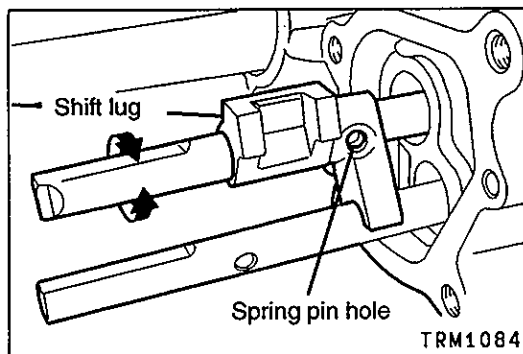
- (1) Apply sealant to the transfer rear cover mounting surface of the transfer case.

#### Specified sealant:

**Mitsubishi genuine sealant Part No. MD997740 or equivalent**

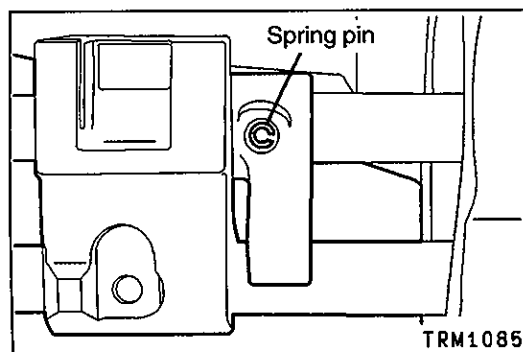
#### Caution

- Squeeze the sealant out evenly to ensure that the bead is not broken and that over-application is not performed.



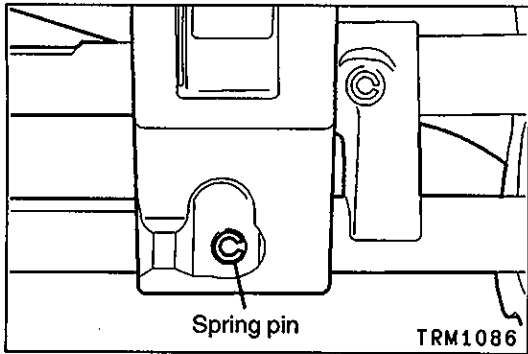
### ►T◄ 2WD/4WD SHIFT LUG INSTALLATION

- (1) Rotate the 2WD/4WD shift rail to line up the spring pin hole in the 2WD/4WD shift lug with that in the shift rail.



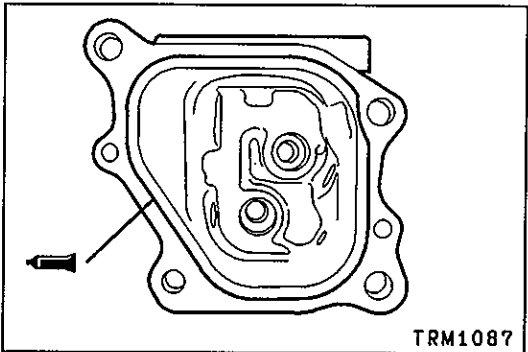
### ►U◄ SPRING PIN INSTALLATION

- (1) Drive in the spring pin in such a way that its slit is oriented as shown.



### ►V◄ SPRING PIN INSTALLATION

- (1) Drive in the spring pin in such a way that its slit is oriented as shown.



### ►W◄ TRANSFER CONTROL HOUSING INSTALLATION

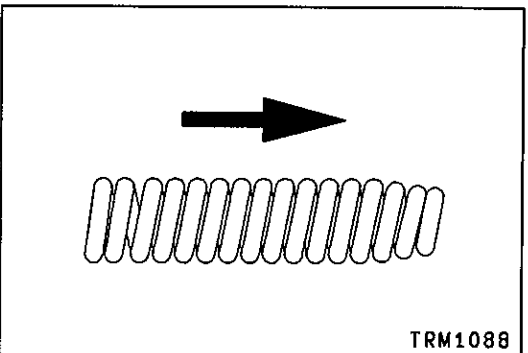
- (1) Apply sealant to the transfer control housing at the indicated position.

#### Specified sealant:

Mitsubishi genuine sealant Part No. MD997740 or equivalent

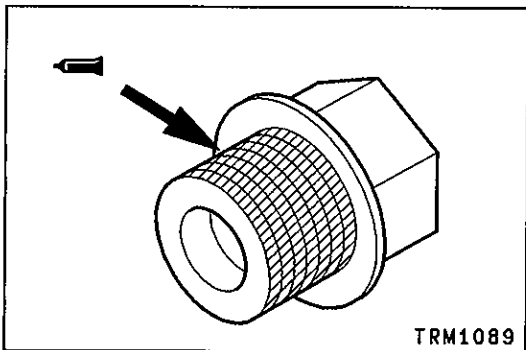
#### Caution

- Squeeze the sealant out evenly to ensure that the bead is not broken and that over-application is not performed.



### ►X◄ SPRING INSTALLATION

- (1) Install the spring with the tapered end facing the ball side.



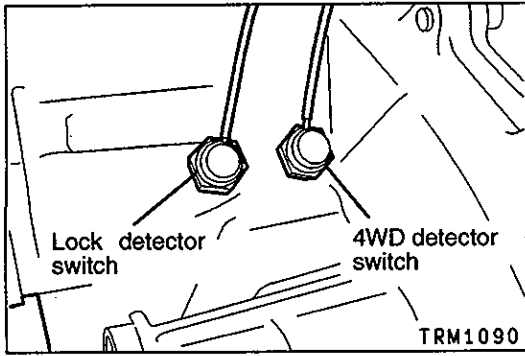
### ►Y◄ POPPET SEAL BOLT INSTALLATION (when reused)

- (1) Apply sealant to the threaded area of the poppet seal bolt before tightening to the specified torque.

#### Specified sealant:

3M ATD Part No. 8660 or equivalent

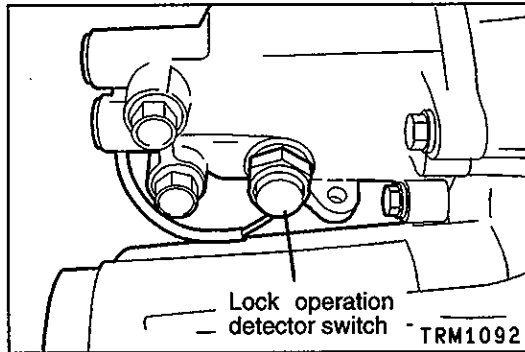
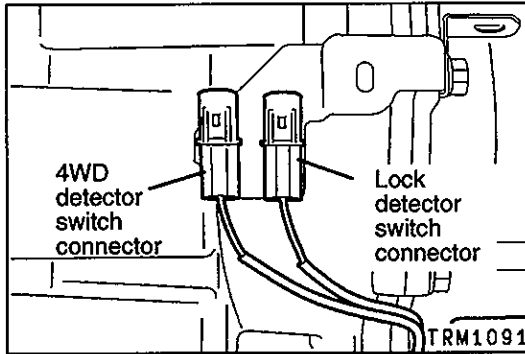




**▶Z◀ LOCK DETECTOR SWITCH / 4WD DETECTOR SWITCH INSTALLATION**

- (1) Install each of the detector switches at the correct position.

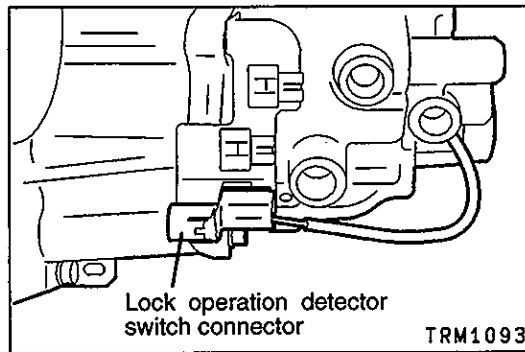
Name	Connector color	Harness tube color
Lock detector switch	Brown	Black
4WD detector switch	White	Black

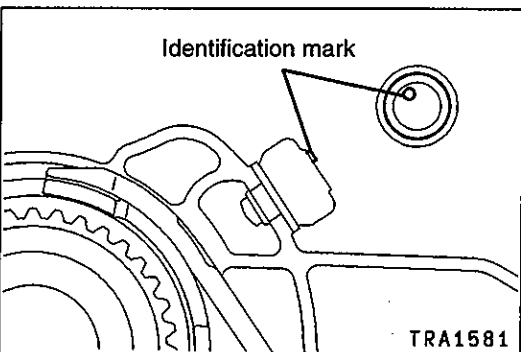
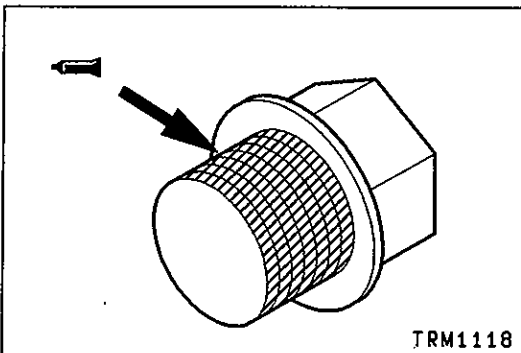
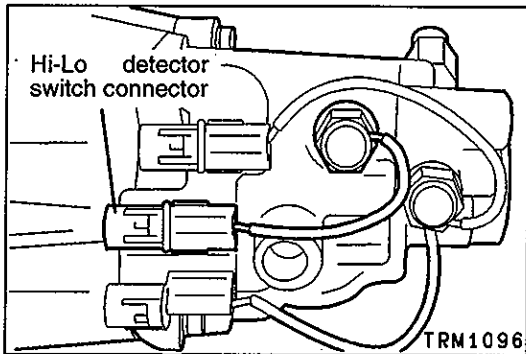
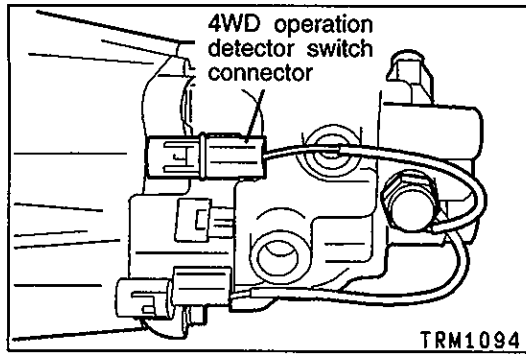


**▶a◀ LOCK OPERATION DETECTOR SWITCH INSTALLATION**

- (1) Install the detector switch as illustrated.

Name	Connector color	Harness tube color
Lock operation detector switch	Brown	Yellow





### ►b◄ 4WD OPERATION DETECTOR SWITCH / HI-LO DETECTOR SWITCH INSTALLATION

- (1) Install each of these detector switches as illustrated.

Name	Connector color	Harness tube color
4WD operation detector switch	White	Blue
Hi-Lo detector switch	Black	Black

### ►c◄ SELECT PLUNGER SEAL PLUG INSTALLATION (when reused)

- (1) Apply sealant to the threaded area of the seal plug before tightening to the specified torque.

**Specified sealant:**  
3M ATD Part No. 8660 or equivalent

### ►d◄ AIR BREATHER INSTALLATION


- (1) Apply sealant to the air breather's mounting area.

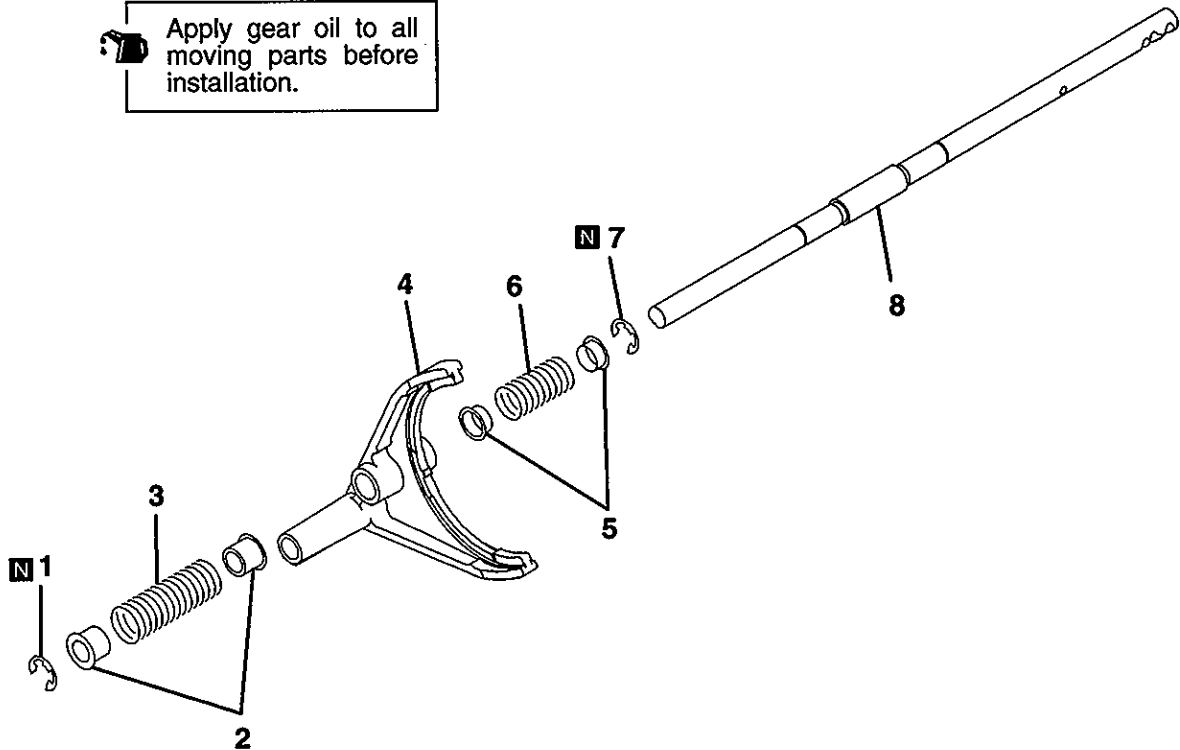
**Specified sealant:**  
Mitsubishi genuine sealant Part No. MD997740 or equivalent

- (2) Assemble the air breather with the identification mark facing upward.

## 19. 2WD/4WD SHIFT FORK AND RAIL

### DISASSEMBLY AND REASSEMBLY

 Apply gear oil to all moving parts before installation.



TRM1097

#### Disassembly steps


1. Snap ring
2. Spring retainers
3. Return spring
4. 2WD/4WD shift fork
5. Spring retainers
6. Return spring
7. Snap ring
8. 2WD/4WD shift rail

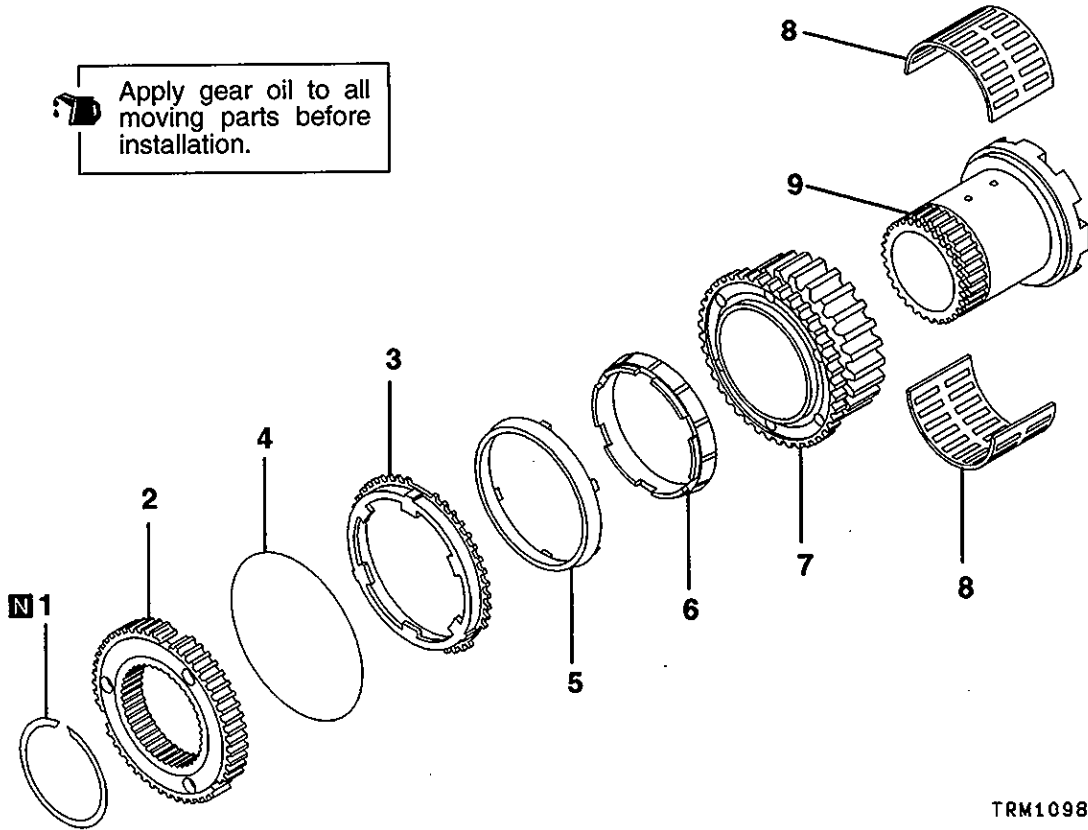
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**NOTES**

## 20. 2WD/4WD SYNCHRONIZER

### DISASSEMBLY AND REASSEMBLY

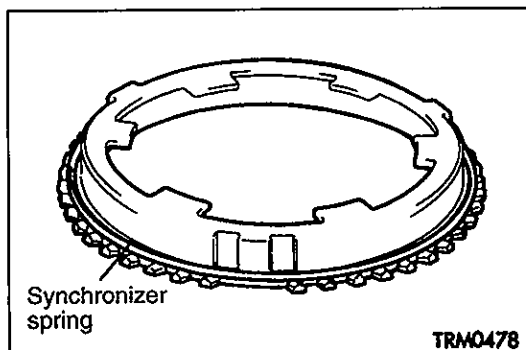
 Apply gear oil to all moving parts before installation.



TRM1098

#### Disassembly steps

- ▶C▶ 1. Snap ring
- ▶B▶ 2. 2WD/4WD clutch hub
- ▶A▶ 3. Outer synchronizer ring
- ▶A▶ 4. Synchronizer spring
- ▶A▶ 5. Synchronizer cone
- ▶A▶ 6. Inner synchronizer ring
- ▶A▶ 7. Drive sprocket
- ▶A▶ 8. Needle bearing
- ▶A▶ 9. Front input sleeve

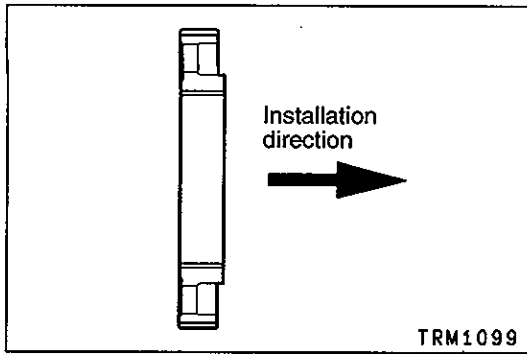


TRM0478

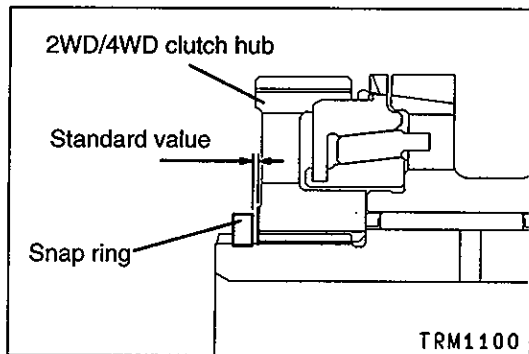
#### REASSEMBLY SERVICE POINTS

##### ▶A◀ SYNCHRONIZER SPRING INSTALLATION

- (1) Securely mount the synchronizer spring on the outer synchronizer ring.

**▶B◀ 2WD/4WD CLUTCH HUB INSTALLATION**

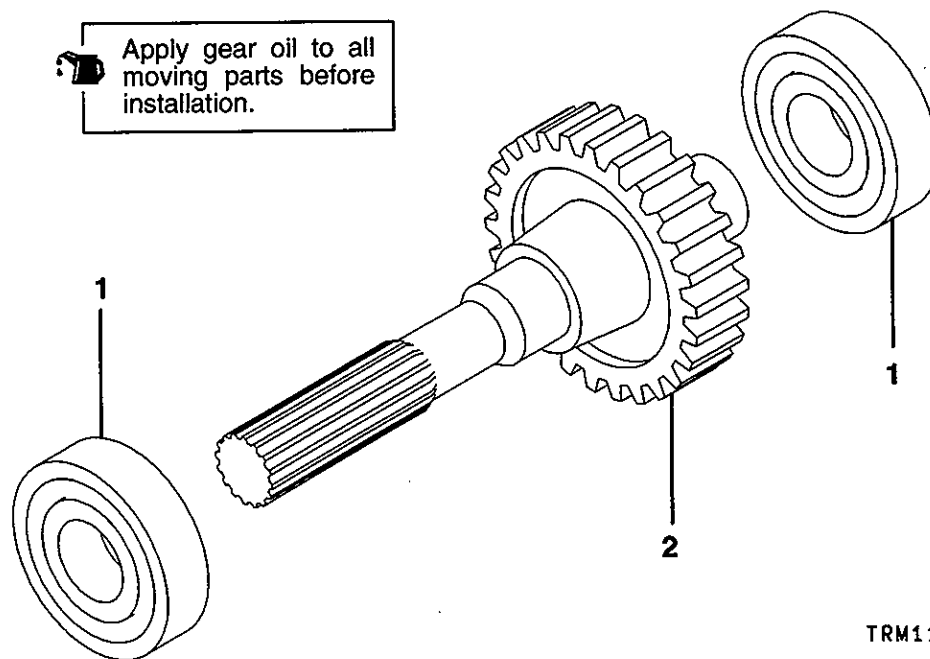
- (1) Install the 2WD/4WD clutch hub in the arrowed direction.

**▶C◀ SNAP RING INSTALLATION**

- (1) Choose and assemble a suitable snap ring to ensure that the 2WD/4WD clutch hub end play is at the standard value.

**Standard value: 0 – 0.08 mm**

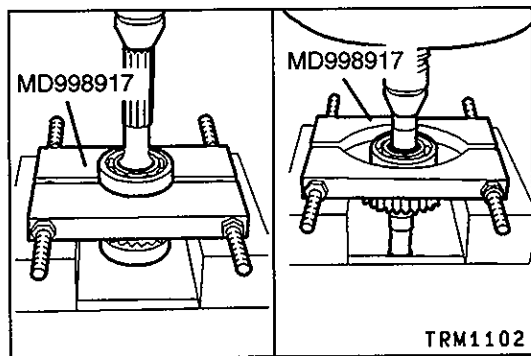
# 21. FRONT OUTPUT SHAFT DISASSEMBLY AND REASSEMBLY



TRM1101

### Disassembly steps

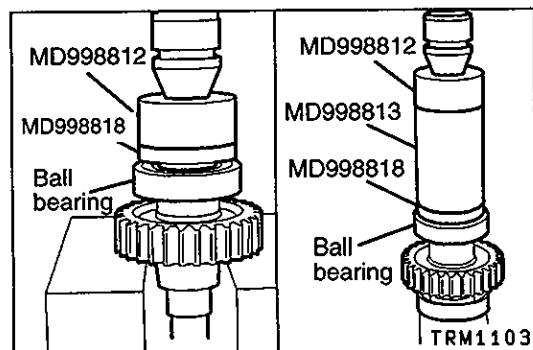
- ◀A▶ ▶A▶
1. Ball bearings
  2. Front output shaft



### DISASSEMBLY SERVICE POINT

#### ◀A▶ BALL BEARINGS REMOVAL

- (1) Remove the ball bearings using the indicated special tool.



### REASSEMBLY SERVICE POINT

#### ▶A◀ BALL BEARING INSTALLATION

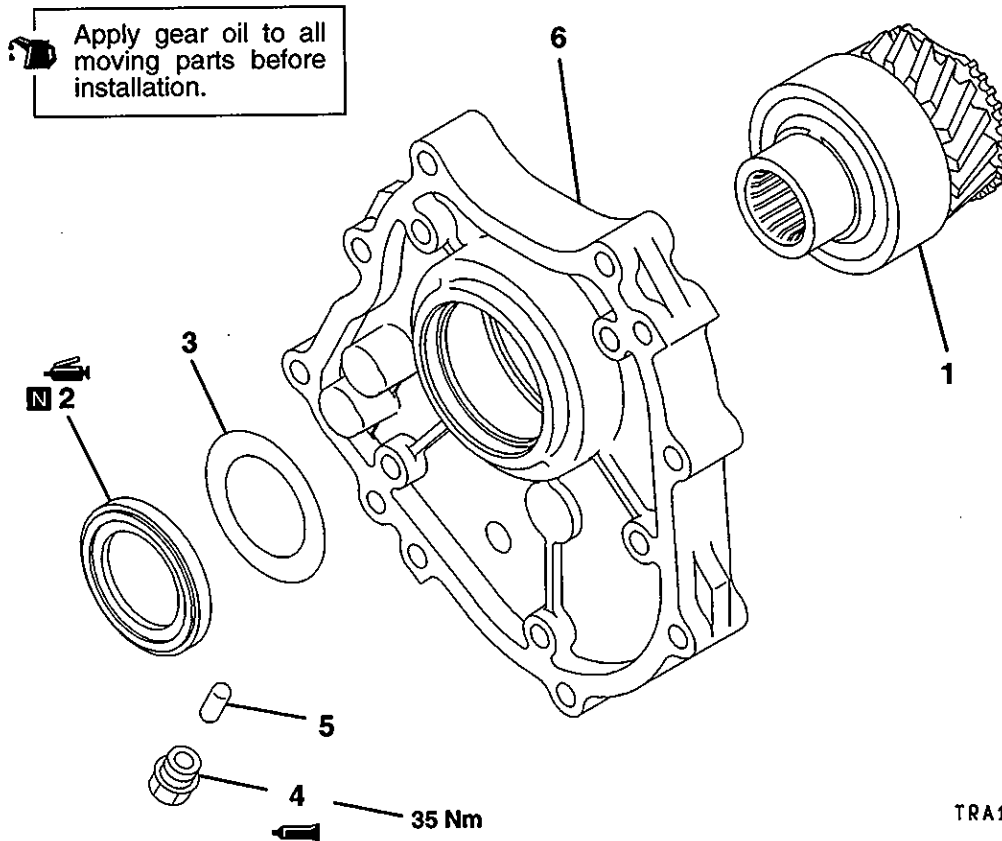
- (1) Install the ball bearings using the indicated special tool.

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**NOTES**

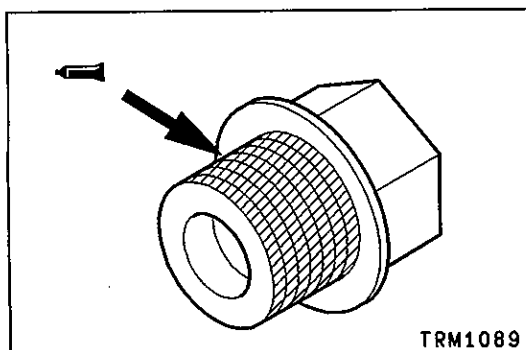


## 22. TRANSFER CASE PLATE DISASSEMBLY AND REASSEMBLY



### Disassembly steps

- ▶B◀ 1. Input gear
- ▶B◀ 2. Oil seal
- ▶A◀ 3. Baffle plate
- ▶A◀ 4. Interlock plunger seal bolt
- ▶A◀ 5. Interlock plunger
- ▶A◀ 6. Transfer case plate



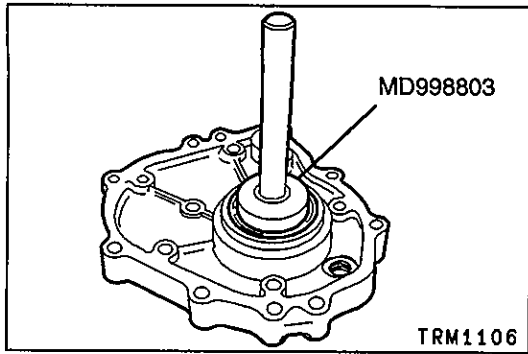
### REASSEMBLY SERVICE POINTS

#### ▶A◀ INTERLOCK PLUNGER SEAL BOLT INSTALLATION (when reused)

- (1) Apply sealant to the threaded area of the seal bolt before tightening to the specified torque.

**Specified sealant:**

**3M ATD Part No. 8660 or equivalent**

**▶B◀ OIL SEAL INSTALLATION**


- (1) Install the oil seal using the indicated special tool. Following this, apply grease to the lip of the oil seal.

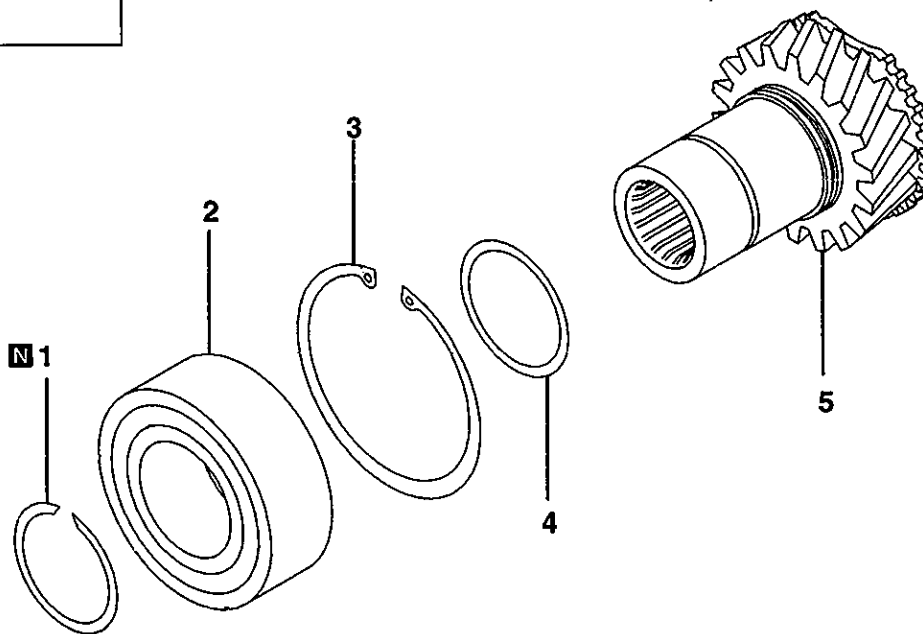
**Specified grease:**

**Mitsubishi genuine grease Part No. MD0101011  
or equivalent**

## 23. INPUT GEAR





### DISASSEMBLY AND REASSEMBLY

 Apply gear oil to all moving parts before installation.

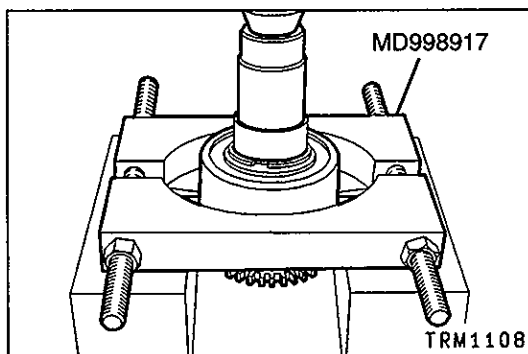


TRA1763

#### Disassembly steps

- 
 1. Snap ring  
 2. Bearing  
 3. Snap ring

4. Spacer  
 5. Input gear



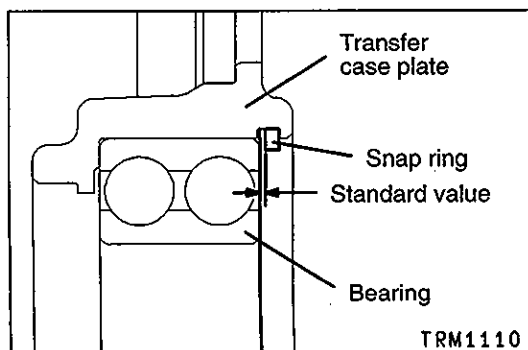
#### DISASSEMBLY SERVICE POINT

##### BEARING REMOVAL

- (1) Remove the bearing using the indicated special tool.

##### Caution

- Do not allow the special tool to contact the spacer.

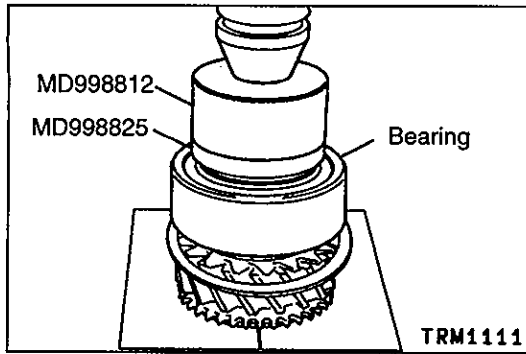


#### REASSEMBLY SERVICE POINTS

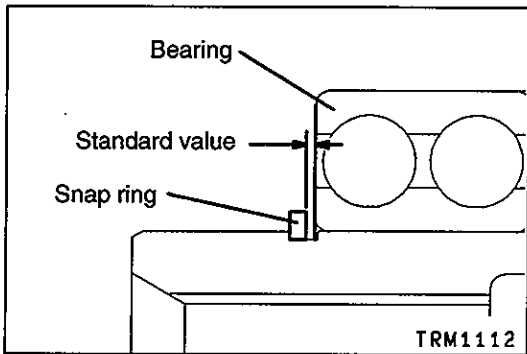
##### SNAP RING SELECTION

- (1) Install the bearing in the transfer case plate.  
 (2) Choose and assemble a suitable snap ring to ensure that the input gear end play is at the standard value.

**Standard value: 0 – 0.06 mm**

**▶B◀ BEARING INSTALLATION**

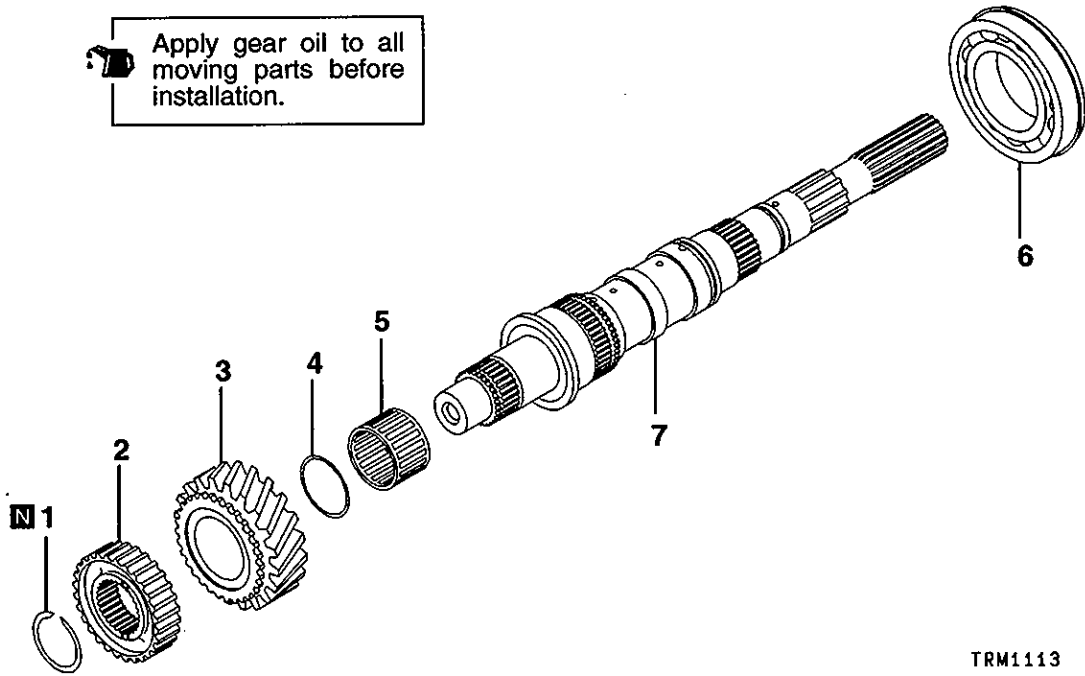
- (1) Install the bearing using the indicated special tool.

**▶C◀ SNAP RING INSTALLATION**

- (1) Choose and assemble a suitable snap ring to ensure that the input gear bearing clearance is at the standard value.

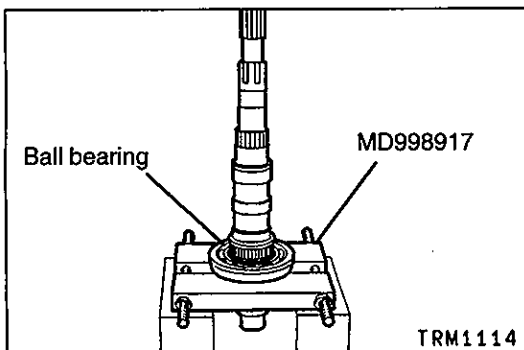
**Standard value: 0 – 0.06 mm**

# 24. REAR OUTPUT SHAFT DISASSEMBLY AND REASSEMBLY



**Disassembly steps**

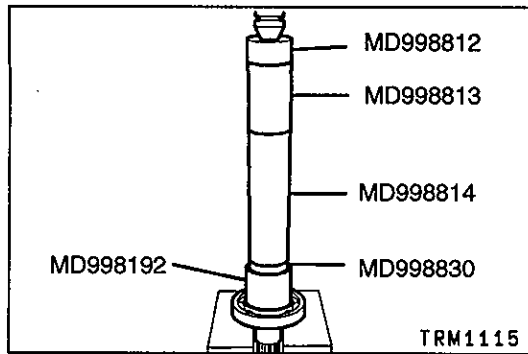
- ◀C▶ 1. Snap ring
- ◀B▶ 2. Hi-Lo clutch hub
- 3. Low speed gear
- 4. Bearing spacer
- 5. Needle bearing
- ◀A▶ ▶A▶ 6. Center bearing
- 7. Rear output shaft



**DISASSEMBLY SERVICE POINT**

◀A▶ **CENTER BEARING REMOVAL**

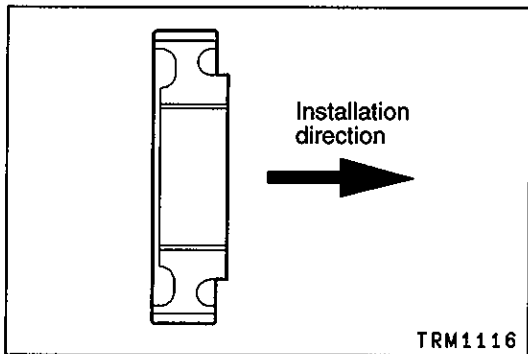
- (1) Remove the center bearing using the indicated special tool.



## REASSEMBLY SERVICE POINT

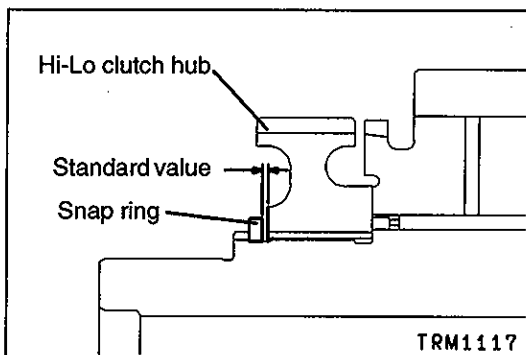
### ▶A◀ CENTER BEARING INSTALLATION

- (1) Install the center bearing using the indicated special tool.



### ▶B◀ HI-LO CLUTCH HUB INSTALLATION

- (1) Install the Hi-Lo clutch hub in the direction indicated by arrow.



### ▶C◀ SNAP RING INSTALLATION

- (1) Choose and assemble a suitable snap ring to ensure that the Hi-Lo clutch hub end play is at the standard value.

**Standard value: 0 – 0.08 mm**

# AUTOMATIC TRANSMISSION R4A51, V4A51

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**NOTES**

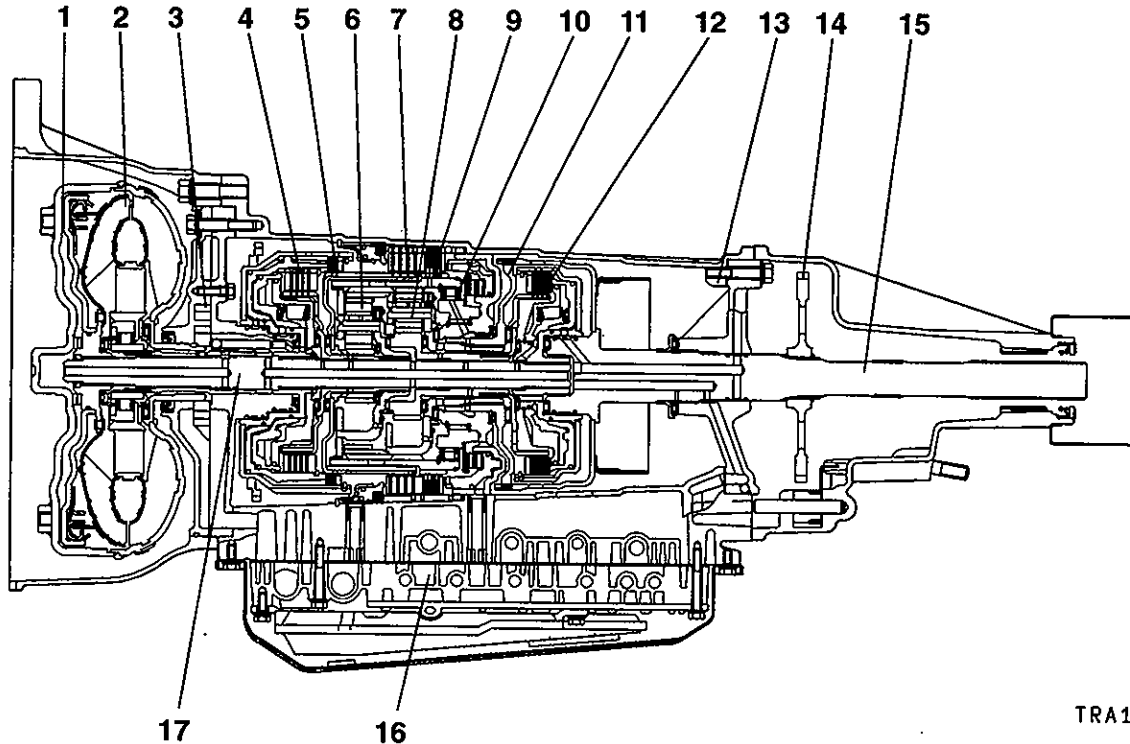


## GENERAL INFORMATION

This transmission is the newly developed 4-speed automatic transmission that merges advanced electronic technology and mechanical technology.

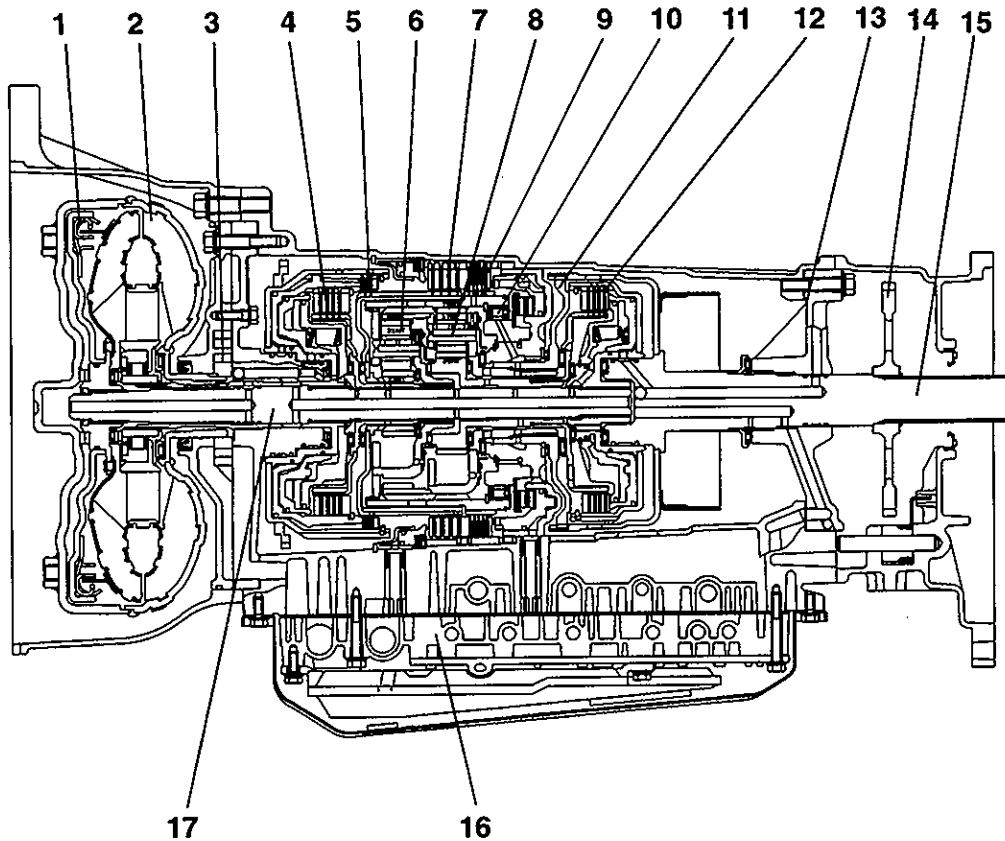
- (1) A hydraulic balance mechanism is incorporated for the transmission clutch, allowing speed changes at ultra-high speeds to be handled.
- (2) The weight has been reduced by using precision sheet metal pressing of the clutch retainer, etc., and using aluminum die cast for the oil pump housing, etc.

### SECTIONAL VIEW <R4A51>



- |                                |                          |
|--------------------------------|--------------------------|
| 1. Torque converter clutch     | 10. One-way clutch       |
| 2. Torque converter            | 11. Center support       |
| 3. Oil pump                    | 12. Underdrive clutch    |
| 4. Overdrive clutch            | 13. Output shaft support |
| 5. Reverse clutch              | 14. Parking gear         |
| 6. Overdrive planetary carrier | 15. Output shaft         |
| 7. Second brake                | 16. Valve body           |
| 8. Output planetary carrier    | 17. Input shaft          |
| 9. Low/reverse brake           |                          |

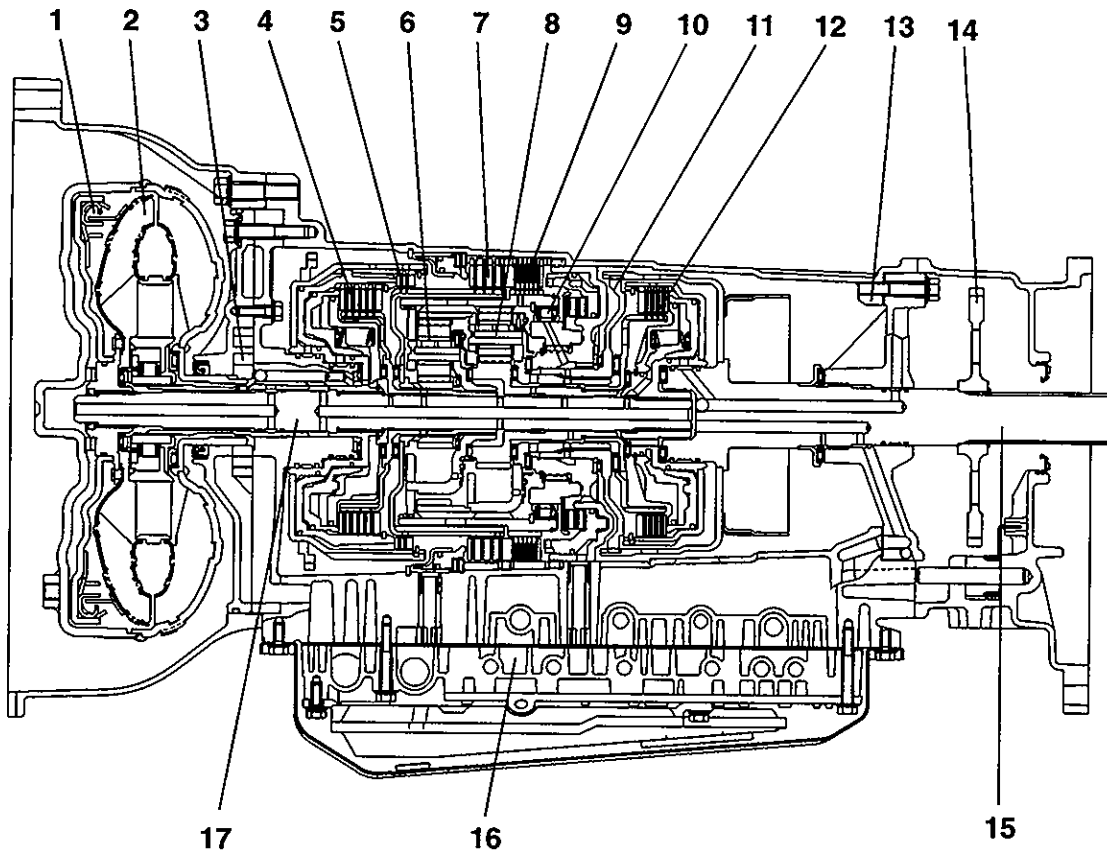
## SECTIONAL VIEW &lt;V4A51 TRANSMISSION&gt; – 6G72 ENGINE



TRA1839

- |                                |                          |
|--------------------------------|--------------------------|
| 1. Torque converter clutch     | 10. One-way clutch       |
| 2. Torque converter            | 11. Center support       |
| 3. Oil pump                    | 12. Underdrive clutch    |
| 4. Overdrive clutch            | 13. Output shaft support |
| 5. Reverse clutch              | 14. Parking gear         |
| 6. Overdrive planetary carrier | 15. Output shaft         |
| 7. Second brake                | 16. Valve body           |
| 8. Output planetary carrier    | 17. Input shaft          |
| 9. Low/reverse brake           |                          |

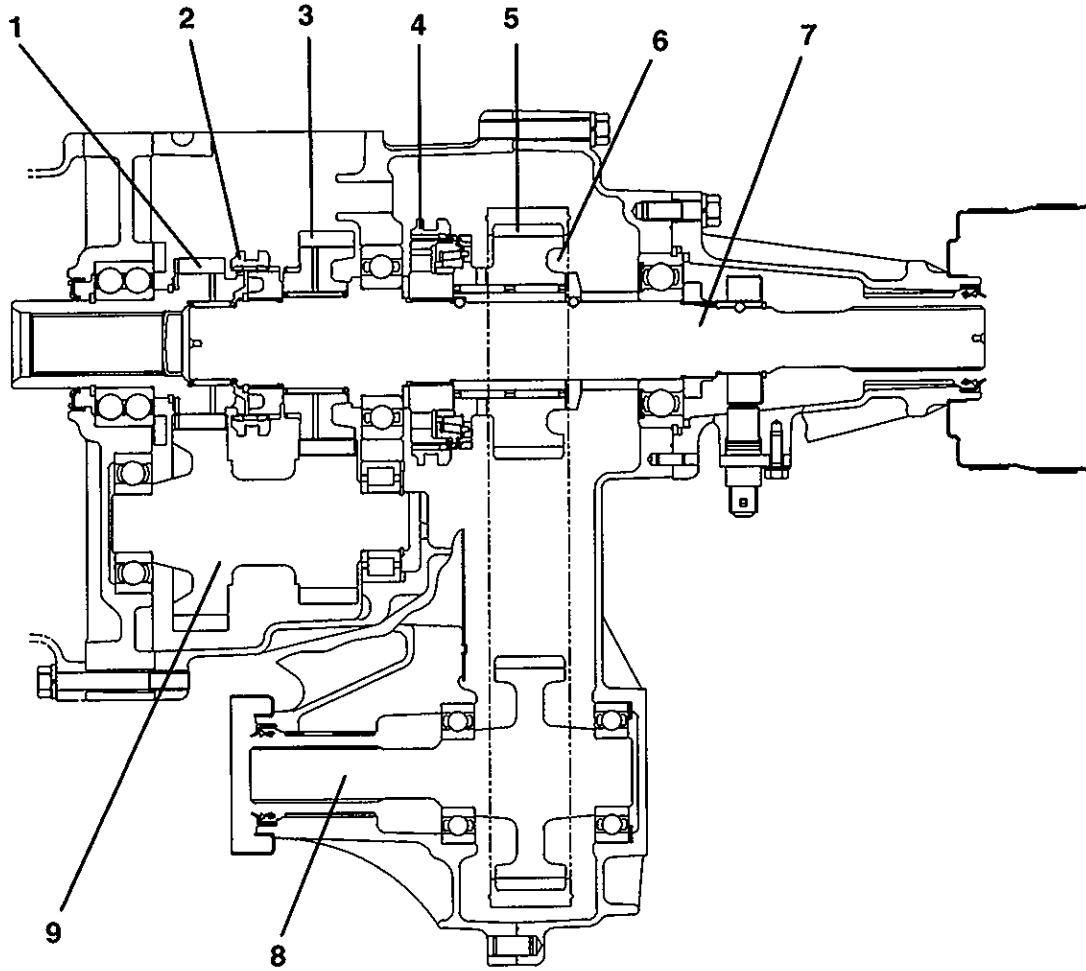
## SECTIONAL VIEW &lt;V4A51 TRANSMISSION&gt; – 4M40 ENGINE, 6G74 ENGINE



TRA1856

- |                                |                          |
|--------------------------------|--------------------------|
| 1. Torque converter clutch     | 10. One-way clutch       |
| 2. Torque converter            | 11. Center support       |
| 3. Oil pump                    | 12. Underdrive clutch    |
| 4. Overdrive clutch            | 13. Output shaft support |
| 5. Reverse clutch              | 14. Parking gear         |
| 6. Overdrive planetary carrier | 15. Output shaft         |
| 7. Second brake                | 16. Valve body           |
| 8. Output planetary carrier    | 17. Input shaft          |
| 9. Low/reverse brake           |                          |

## SECTIONAL VIEW &lt;V4A51 TRANSFER&gt; – PART TIME 4WD

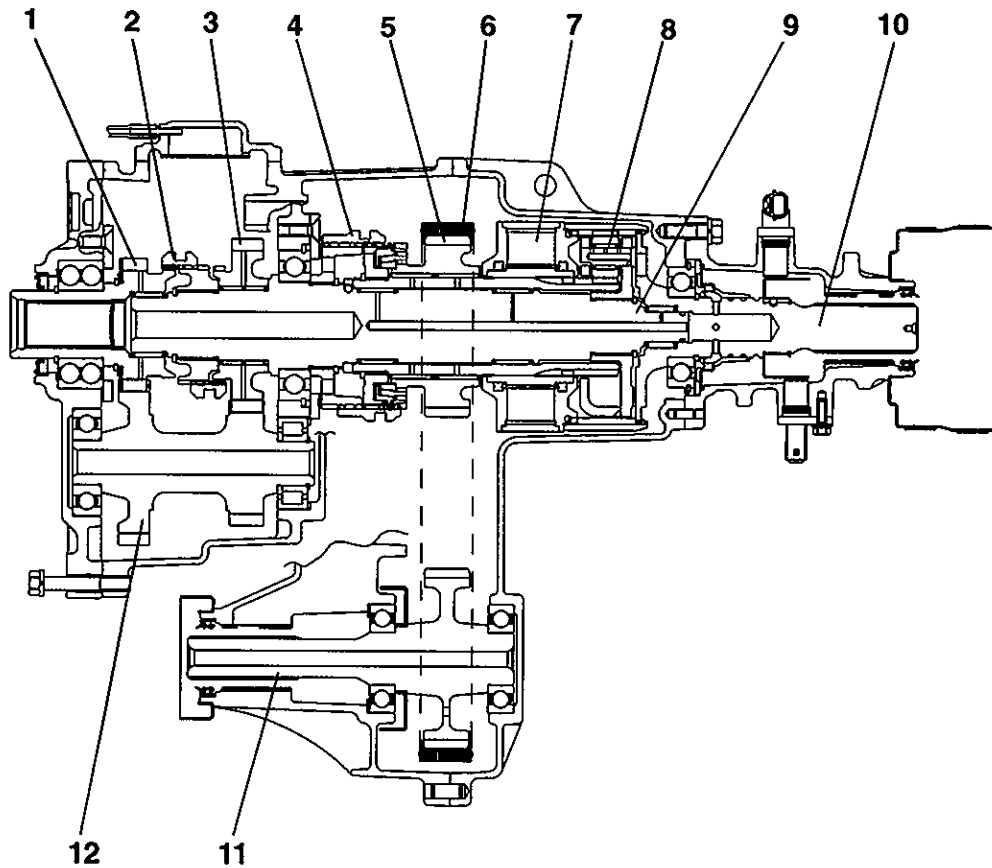


TRA1857

1. Transfer input gear
2. H-L clutch
3. Low speed gear
4. 2-4WD clutch sleeve
5. Drive sprocket

6. Chain
7. Rear output shaft
8. Front output shaft
9. Counter shaft gear

## SECTIONAL VIEW &lt;V4A51 TRANSFER&gt; – SUPER SELECT 4WD II

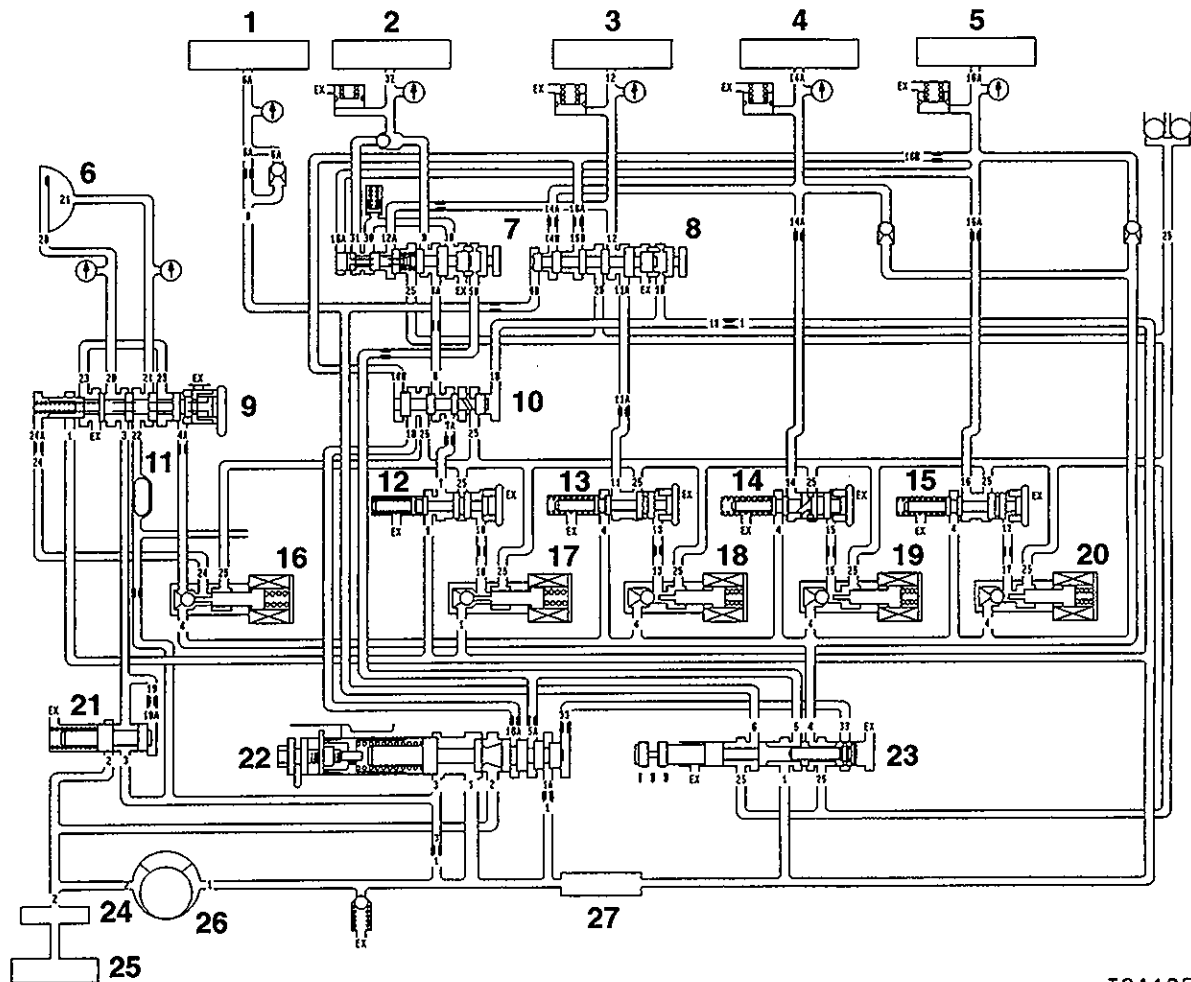


TRA1840

- 1. Transfer input gear
- 2. H-L clutch
- 3. Low speed gear
- 4. 2-4WD synchronizer sleeve
- 5. Drive sprocket
- 6. Chain

- 7. Viscous coupling
- 8. Center differential planetary carrier
- 9. Transfer drive shaft
- 10. Rear output shaft
- 11. Front output shaft
- 12. Transfer counter gear

## HYDRAULIC CONTROL SYSTEM



TRA1356

- |  |  |
|--|--|
| 1. Reverse clutch                            | 15. Overdrive clutch pressure control valve        |
| 2. Low/reverse brake                         | 16. Torque converter clutch control solenoid valve |
| 3. Second brake                              | 17. Low-reverse brake solenoid valve               |
| 4. Underdrive clutch                         | 18. Second brake solenoid valve                    |
| 5. Overdrive clutch                          | 19. Underdrive clutch solenoid valve               |
| 6. Torque converter clutch                   | 20. Overdrive clutch solenoid valve                |
| 7. Fail-safe valve A                         | 21. Torque converter pressure control valve        |
| 8. Fail-safe valve B                         | 22. Regulator valve                                |
| 9. Torque converter clutch control valve     | 23. Manual valve                                   |
| 10. Switching valve                          | 24. Oil filter                                     |
| 11. Cooler                                   | 25. Oil pan  |
| 12. Low-reverse brake pressure control valve | 26. Oil pump                                       |
| 13. Second brake pressure control valve      | 27. Oil strainer                                   |
| 14. Underdrive clutch pressure control valve |  |

# 1. SPECIFICATIONS

## TRANSMISSION MODEL TABLE - MODEL 2000

Transmission models		Vehicle model	Engine model
EUR	V4A51-5-DHA3	K96W	6G72
	V4A51-5-DHA4	K96W	6G72
EXP	R4A51-5-DCA	K86W	6G72
	R4A51-5-DEA	K86W	6G72
	V4A51-5-DHA3	K96W	6G72
	V4A51-5-DHA4	K96W	6G72
	V4A51-5-QIA	K97W	4M40
	V4A51-5-QIA1	K97W	4M40

## TRANSMISSION MODEL TABLE - MODEL 2001

Transmission models		Vehicle model	Engine model
EUR	V4A51-5-DHA3	K96W	6G72
	V4A51-5-DHA4	K96W	6G72
EXP	V4A51-7-QBA	V66W, V76W	4M40
	V4A51-7-DCA	V63W, V73W	6G72
	V4A51-7-DCA1	V63W, V73W	6G72
	R4A51-5-DCA	K86W	6G72
	R4A51-5-DEA1	K86W	6G72
	V4A51-5-DHA3	K96W	6G72
	V4A51-5-DHA4	K96W	6G72
	V4A51-5-QIA	K97W	4M40
	V4A51-5-QIA1	K97W	4M40
MMAL	R4A51-4-DHA	K66T	6G72
	R4A51-4-GDA	K66T	6G72
	V4A51-4-DIA	K76T	6G72
	V4A51-5-DHA4	K96W	6G72

## GENERAL SPECIFICATIONS

Item		R4A51	V4A51
Torque converter	Type	3-element, 1-stage, 2-phase type with lockup clutch	
Transmission	Type	4-speed, fully automatic	
	Gear ratios	1st gear	2.884
		2nd gear	1.495
		3rd gear	1.000
		4th gear	0.731
Reverse		2.720	
Transfer	Type	–	2-speed constant mesh
	Gear ratios	High	1.000
		Low	1.900



**SERVICE SPECIFICATIONS****TRANSMISSION**

Item	Standard value
Output shaft end play mm	0.25 – 0.55
Underdrive clutch end play mm	1.6 – 1.8
Input shaft end play mm	0.25 – 0.81
Overdrive clutch end play <for 6G72 engine> mm	1.6 – 1.8
Overdrive clutch end play <for 4M40 engine> mm	2.0 – 2.2
Overdrive clutch return spring retainer end play mm	0 – 0.09
Second brake end play mm	1.49 – 1.95
Center support end play mm	0 – 0.16
Brake reaction plate end play mm	0 – 0.16
Reverse clutch end play mm	1.5 – 1.7
Low/reverse brake end play <for 6G72 engine> mm	1.35 – 1.81
Low/reverse brake end play <for 4M40 engine> mm	1.65 – 2.11

**TRANSFER <V4A51>**

Item	Standard value
Input gear bearing end play mm	0 – 0.06
Countershaft gear end play mm	0 – 0.15
Countershaft gear bearing end play mm	0 – 0.08
H-L clutch hub end play mm	0 – 0.08
Rear output shaft end play (Part time 4WD) mm	0 – 0.1
2-4WD clutch hub end play (Super select 4WD II) mm	0 – 0.08
Rear output shaft end play (Super select 4WD II) mm	0 – 0.12
Rear output shaft preload (Super select 4WD II) mm	0.12 – 0.24
Rear output shaft bearing end play (Super select 4WD II) mm	0 – 0.08
Annulus gear end play (Super select 4WD II) mm	0 – 0.08
Differential lock hub end play (Super select 4WD II) mm	0 – 0.08
Clearance between outer synchronizer ring and drive sprocket (Super select 4WD II) mm	Limit: 0.3

**VALVE BODY SPRING IDENTIFICATION**

Item	Wire diameter mm	Outside diameter mm	Free height mm	Number of loops
Orifice check ball spring	0.5	4.5	15.4	15
Torque converter clutch control valve spring	0.7	5.9	28.1	19
Damping valve spring	1.0	7.7	35.8	17
Torque converter pressure control valve spring	1.6	11.2	29.4	9.5
Fail-safe valve A spring	0.7	8.9	21.9	9.5
Pressure control valve spring	0.7	7.6	37.7	25
Line relief valve spring	1.0	7.0	17.3	10
Regulator valve spring	1.3	13.3	44.6	10.5

**TORQUE SPECIFICATIONS****TRANSMISSION**

Item	Torque Nm
Output shaft support mounting bolt	23
Upper valve body mounting bolt	11
Park/neutral position switch mounting bolt	11
Extension housing mounting bolt <R4A51>	47
Oil pan mounting bolt	11
Oil filter mounting bolt	5.9
Oil pump mounting bolt	23
Cable end bracket mounting bolt	47
Converter housing to transmission case tightening bolt	47
Output shaft speed sensor mounting bolt	11
Speedometer sleeve clamp mounting bolt <R4A51>	18
Separating plate mounting bolt	5.9
Solenoid support mounting bolt	5.9
Transfer to transfer case adapter tightening bolt <V4A51>	47
Transmission case to transfer case adapter tightening bolt <V4A51>	47
Input shaft speed sensor mounting bolt	11
Valve body mounting bolt	11
Detent spring mounting bolt	5.9
Manual control lever mounting nut	22
Lower valve body mounting bolt	11
Lower valve body cover mounting bolt	11

**TRANSFER <V4A51>****Part time 4WD**

Item	Torque Nm
Detection switches	34
Control housing to transfer case tightening bolt	18
Side cover mounting bolt	8.8
Support pin	21
Speedometer sleeve clamp mounting bolt	18
Transfer case to chain cover tightening bolt	35
Transfer case plate to bearing retainer mounting bolt	18
Transfer case plate to transfer case tightening bolt and nut	35
H-L shift rail plug	32
Harness bracket	18
Plug	35
Rear output shaft jam nut	255
Rear cover to chain cover tightening bolt	35
Low switch	35

**Super select 4WD II**

Item	Torque Nm
Dynamic damper	35
Transfer case cover tightening bolt	19
Input gear bearing retainer mounting bolt	20
Transfer case to chain cover tightening bolt	35
Rear bearing retainer mounting bolt	20
Transfer case plate to transfer case tightening bolt and nut	35
Rear cover to chain cover tightening bolt	35
Shift actuator mounting bolt	11
4LLC switch	35
2WD switch	35
Center differential lock switch	35
4H switch	35
2WD-4WD switch	35
Vehicle speed sensor mounting bolt	11
Front output sensor mounting bolt	11
Rear output sensor mounting bolt	11

Intentionally blank

**SNAP RING, THRUST RACE, SPACER AND PRESSURE PLATE FOR ADJUSTMENT TRANSMISSION****Thrust race (for adjustment of output shaft end play)**

Thickness mm	Identification symbol	Part number
1.6	None	MR276705
1.8	None	MR276706
2.0	None	MR276707
2.2	None	MR276708
2.3	None	MR276709

**Snap ring (for adjustment of underdrive clutch and overdrive clutch end play)**

Thickness mm	Identification symbol	Part number
1.6	Brown	MD759960
1.7	None	MD759961
1.8	Blue	MD759962
1.9	Brown	MD758892
2.0	None	MD750841
2.1	Blue	MD750842
2.2	Brown	MD750843
2.3	None	MD750844
2.4	Blue	MD750845
2.5	Brown	MD750846
2.6	None	MD750847
2.7	Blue	MD750848
2.8	Brown	MD750849
2.9	None	MD750850
3.0	Blue	MD750851

**Thrust race (for adjustment of input shaft end play)**

Thickness mm	Identification symbol	Part number
1.4	None	MD723063
1.6	None	MD707267
1.8	None	MD723064
2.0	None	MD707268
2.2	None	MD723065
2.4	None	MD724358
2.6	None	MD754798

**Snap ring (for adjustment of overdrive clutch return spring retainer end play)**

Thickness mm	Identification symbol	Part number
1.48	Brown	MR336158
1.53	Black	MR336159
1.58	None	MR336160
1.63	Brown	MR336161

**Pressure plate (for adjustment of second brake end play)**

Thickness mm	Identification symbol	Part number
1.6	F	MR336390
1.8	E	MR336391
2.0	D	MR336392
2.2	C	MR336393
2.4	B	MR336394
2.6	A	MR336395
2.8	0	MR336396
3.0	1	MR336397

**Snap ring (for adjustment of center support and brake reaction plate end play)**

Thickness mm	Identification symbol	Part number
2.2	None	MD756784
2.3	Blue	MD756785
2.4	Brown	MD758552
2.5	None	MD758553

**Snap ring (for adjustment of reverse clutch end play)**

Thickness mm	Identification symbol	Part number
1.6	None	MD761088
1.7	Blue	MD761089
1.8	Brown	MD761090
1.9	None	MD758947
2.0	Blue	MD756690
2.1	Brown	MD756691
2.2	None	MD756692
2.3	Blue	MD756693
2.4	Brown	MD756694
2.5	None	MD756695
2.6	Blue	MD756696
2.7	Brown	MD756697
2.8	None	MD756698



**Snap ring (for adjustment of low/reverse brake end play)**

Thickness mm	Identification symbol	Part number
1.8	E	MD759425
2.0	D	MD759426
2.2	C	MD759427
2.4	B	MD759428
2.6	A	MD759429
2.8	0	MD759430
3.0	1	MD759431

**TRANSFER <V4A51>****Spacer (for adjustment of input gear bearing end play)**

Thickness mm	Identification symbol	Part number
2.30	None	MD704199
2.35	Red	MD704200
2.40	White	MD704201
2.45	Blue	MD704202
2.50	Green	MD704203

**Spacer (for adjustment of countershaft gear end play)**

Thickness mm	Identification symbol	Part number
1.77	None	MB896728
1.91	Blue	MB896729
2.05	Brown	MB896730
2.19	White	MB896731
2.33	Red	MB896732

**Snap ring (for adjustment of countershaft gear bearing end play)**

Thickness mm	Identification symbol	Part number
1.48	Blue	MB919176
1.62	None	MB919177

**Spacer (for adjustment of rear output shaft end play) – Part time 4WD**

Thickness mm	Identification symbol	Part number
2.75	B75	MR528586
2.79	B79	MR528587
2.83	B83	MR528588
2.87	B87	MR528589
2.91	B91	MR528590
2.95	B95	MR528591
2.99	B99	MR528592
3.03	C03	MR528593
3.07	C07	MR528594
3.11	C11	MR528595

**Snap ring (for adjustment of H-L clutch hub end play) – Part time 4WD**

Thickness mm	Identification symbol	Part number
2.18	Blue	MR110983
2.25	None	MR110934
2.32	Brown	MR110935
2.39	White	MR110936

**Snap ring (for adjustment of H-L clutch hub end play) – Super select 4WD II**

Thickness mm	Identification symbol	Part number
2.18	None	MR410928
2.25	None	MR410929
2.32	None	MR410930
2.39	None	MR410931

**Snap ring (for adjustment of differential lock hub end play) – Super select 4WD II**

Thickness mm	Identification symbol	Part number
2.56	None	MD738386
2.63	Red	MD738387
2.70	White	MD738388
2.77	Blue	MD738389
2.84	Yellow	MD738390
2.91	Green	MD738391
2.98	Brown	MD738392

**Snap ring (for adjustment of 2-4WD clutch hub end play) – Super select 4WD II**

Thickness mm	Identification symbol	Part number
2.56	None	MD738393
2.63	Red	MD738394
2.70	White	MD738395
2.77	Blue	MD738396
2.84	Yellow	MD738397

**Snap ring (for adjustment of rear output shaft bearing end play) – Super select 4WD II**

Thickness mm	Identification symbol	Part number
2.26	None	MD734311
2.33	Red	MD734312
2.40	White	MD734313
2.47	Blue	MD734314

**Snap ring (for adjustment of rear output shaft annulus gear end play) – Super select 4WD II**

Thickness mm	Identification symbol	Part number
1.90	None	MR305024
1.94	None	MR305025
1.98	None	MR305026
2.02	None	MR305027
2.06	None	MR305028
2.10	None	MR305029

**Snap ring (for adjustment of rear output shaft preload) – Super select 4WD II**

Thickness mm	Identification symbol	Part number
1.57	None	MR486340
1.63	None	MR486341
1.69	None	MR486342
1.75	None	MR486343
1.81	None	MR486344
1.87	None	MR486345
1.93	None	MR486346
1.99	None	MR486347
2.05	None	MR477935
2.11	None	MR477936
2.17	None	MR477937
2.23	None	MR477938
2.29	None	MR477939
2.35	None	MR477940
2.41	None	MR477941
2.47	None	MR477942
2.53	None	MR477943
2.59	None	MR477944
2.65	None	MR477945
2.71	None	MR477946

**Spacer (for adjustment of rear output shaft end play) – Super select 4WD II**

Thickness mm	Identification symbol	Part number
2.57	None	MR477950
2.63	None	MR477951
2.69	None	MR477952
2.75	None	MR477953
2.81	None	MR477954
2.87	None	MR477955
2.93	None	MR477956
2.99	None	MR477957
3.05	None	MR477958
3.11	None	MR477959
3.17	None	MR477960
3.23	None	MR477961
3.29	None	MR477962
3.35	None	MR477963
3.41	None	MR477964
3.47	None	MR477965

Thickness mm	Identification symbol	Part number
3.53	None	MR477966
3.59	None	MR477967
3.65	None	MR477968
3.71	None	MR486348
3.77	None	MR486349
3.83	None	MR486350
3.89	None	MR486351
3.95	None	MR486352

**SEALANTS****TRANSMISSION**

Item	Specified sealant
Oil pan	MITSUBISHI genuine sealant part No. MR166584 or equivalent
Transfer case adapter (transmission side)	MITSUBISHI genuine sealant part No. MR166584 or equivalent

**TRANSFER <V4A51>**

Item	Specified sealant
Bearing retainer mounting bolt	MITSUBISHI genuine sealant part No. MD997740 or equivalent
Chain cover	MITSUBISHI genuine sealant part No. MD997740 or equivalent
Control housing (Part time 4WD)	MITSUBISHI genuine sealant part No. MD997740 or equivalent
H-L shift rail plug (Part time 4WD)	3M™ AAD part No. 8672 or equivalent
Plug (Part time 4WD)	3M™ AAD part No. 8672 or equivalent
Rear cover	MITSUBISHI genuine sealant part No. MD997740 or equivalent
Support pin insertion (Part time 4WD)	3M™ AAD part No. 8672 or equivalent
Support pin thread (Part time 4WD)	MITSUBISHI genuine adhesive part No. MD160450 or equivalent
Transfer case plate	MITSUBISHI genuine sealant part No. MD997740 or equivalent
Transfer case cover (Super select 4WD II)	MITSUBISHI genuine sealant part No. MD997740 or equivalent
Sealing cap (Super select 4WD II)	3M™ AAD part No. 8672 or equivalent

**FORM-IN-PLACE GASKET (FIPG)**

The transmission has several areas where the form-in-place gasket (FIPG) is in use. To ensure that the gasket fully serves its purpose, it is necessary to observe some precautions when applying the gasket. Bead size, continuity and location are of paramount importance. Too thin a bead could cause leaks. Too thick a bead, on the other hand, could be squeezed out of location, causing blocking or narrowing of the fluid feed line. To eliminate the possibility of leaks from a joint, therefore, it is absolutely necessary to apply the gasket evenly without a break, while observing the correct bead size.

Since the FIPG used in the transmission hardens as it reacts with the moisture in the atmospheric air, it is normally used in the metallic flange areas.

**Disassembly**

The parts assembled with the FIPG can be easily disassembled without use of a special method. In some cases, however, the sealant between the joined surfaces may have broken by lightly striking with a mallet or similar tool. A flat and thin gasket scraper may be lightly hammered in between the joined surfaces. In this case, however, care must be taken to prevent damage to the joined surfaces.

**Surface preparation**

Thoroughly remove all substances deposited on the gasket application surfaces, using a gasket scraper or wire brush. Check to ensure that the surfaces to which the FIPG is to be applied is flat. Make sure that there are no oils, greases and foreign substances deposited on the application surfaces. Do not forget to remove the old FIPG remaining in the bolt holes.

**Form-in-place gasket application**

When assembling parts with the FIPG, you must observe some precautions, but the procedure is very simple as in the case of a conventional pre-cut gasket.

Applied FIPG bead should be of the specified size and without breaks. Also be sure to encircle the bolt hole circumference with a completely continuous bead. The FIPG can be wiped away unless it is hardened. While the FIPG is still moist (in less than 15 minutes), mount the parts in position. When the parts are mounted, make sure that the gasket is applied to the required area only. In addition, do not apply any oil or water to the sealing locations or start the engine until a sufficient amount of time (about one hour) has passed after installation is completed.

The FIPG application procedure may vary on different areas. Observe the procedure described in the text when applying the FIPG.

**LUBRICANTS <V4A51>****TRANSFER**



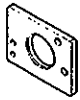
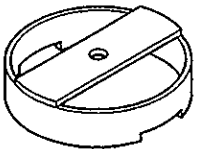

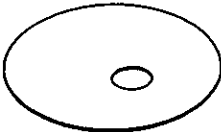
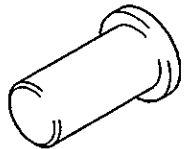
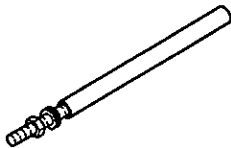
Item	Specified lubricant
Lip of transfer case oil seal	MITSUBISHI genuine grease part No. 0101011 or equivalent
Lip of transfer case plate oil seal	
Lip of rear cover oil seal	

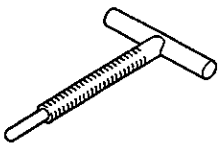
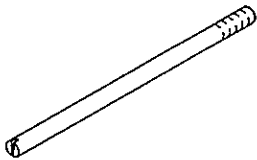
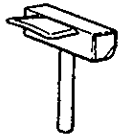

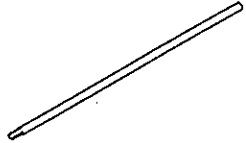
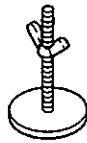

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**NOTES**

## 2. SPECIAL TOOLS



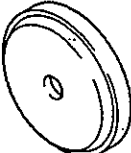
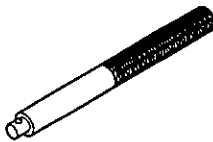
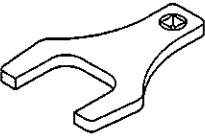
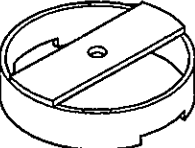
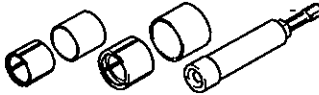
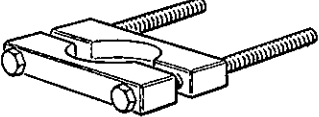
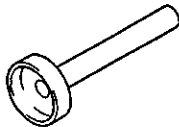
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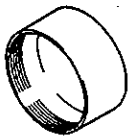
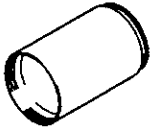
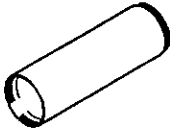

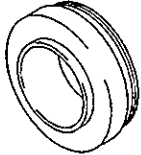

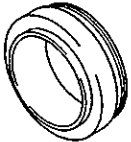
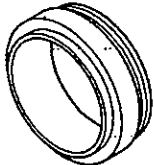

Tool	Number	Name	Use
	MB990929	Installer adapter	Installation of extension housing oil seal (R4A51) and transfer case adapter oil seal (V4A51)
	MB990938	Handle	Use with installer adapter
	MB991603	Bearing installer stopper	Measurement of output shaft and center support end plays
	MB991629	Spring compressor	Measurement of overdrive clutch and underdrive clutch end plays
	MB991630	Spring compressor	Removal and installation of center support snap ring
	MB991632	Clearance dummy plate	Measurement of brake reaction plate, second brake and low/reverse brake end plays
	MD998304	Oil seal installer	Measurement of output shaft end play
	MD998316	Dial gauge support	Measurement of input shaft end play

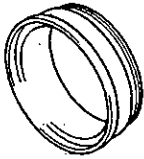
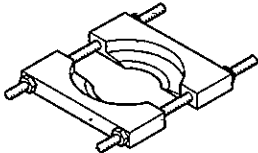
Tool	Number	Name	Use
	MD998333	Oil pump remover	Removal of oil pump
	MD998412	Guide	Installation of oil pump
	MD998727	Oil pan remover	Removal of oil pan
	MD998907	Spring compressor	Removal and installation of underdrive clutch spring retainer snap ring
	MD998913	Dial gauge extension	Measurement of brake reaction plate, second brake and low/reverse brake end plays
	MD998924	Spring compressor retainer	Use with spring compressor
	MD999590	Spring compressor	Removal and installation of reverse and overdrive clutch spring retainer snap ring



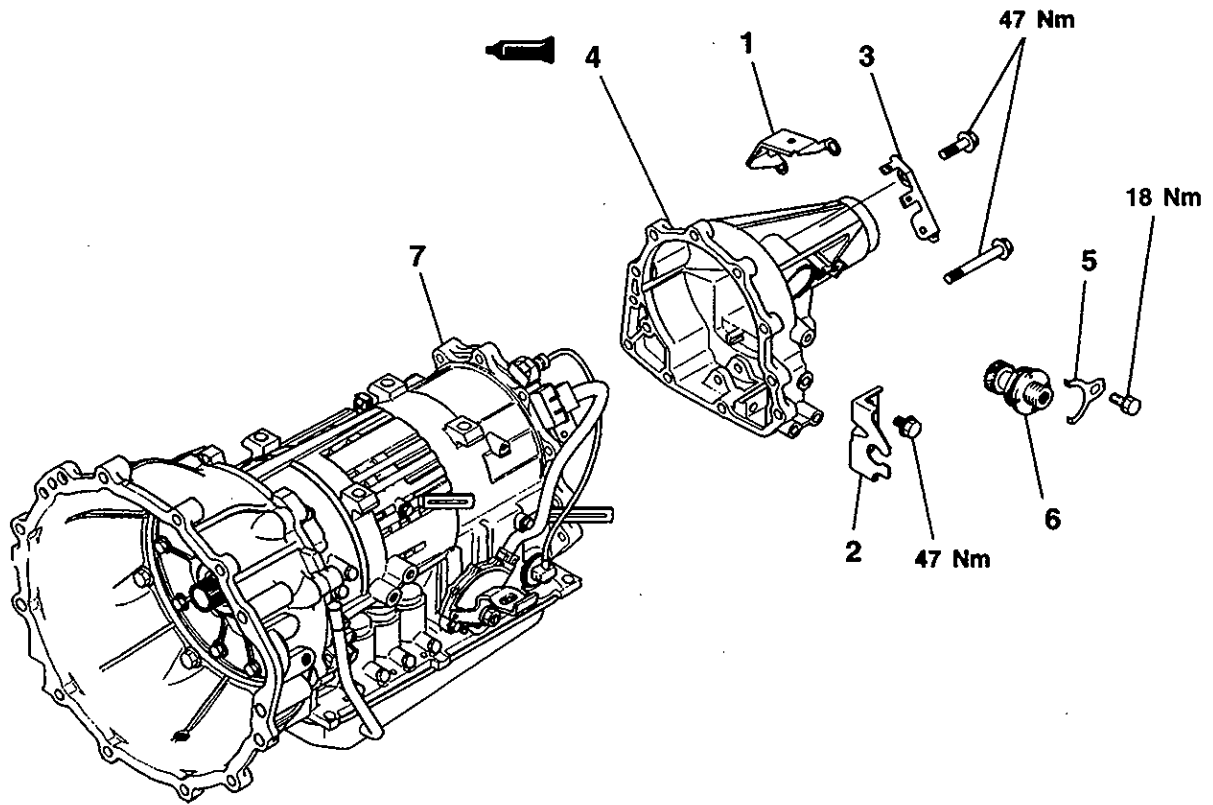
## TRANSFER &lt;V4A51&gt;

Tool	Number	Name	Use
	MB990929	Installer adapter	Installation of transfer case oil seal and rear cover oil seal (Part time 4WD)
	MB990932	Installer adapter	Installation of oil seal (Super select 4WD II)
	MB990936	Installer adapter	Installation of oil seal (Super select 4WD II)
	MB990938	Handle	Use with installer adapter
	MB991013	Special spanner	Removal and installation of rear output shaft jam nut (Part time 4WD)
	MB991789	Spring compressor	Adjustment of reverse clutch end play
	MD998192	Bearing puller	Installation of transfer drive shaft bearing (Super select 4WD II)
	MD998801	Bearing remover	Removal and installation of bearing
	MD998803	Differential oil seal installer	Installation of transfer case plate oil seal (Part time 4WD)

Tool	Number	Name	Use
	MD998812	Installer cap	Use with installer and installer adapter
	MD998813	Installer-100	Use with installer cap and installer adapter
	MD998814	Installer-200	Use with installer cap and installer adapter
	MD998818	Installer adapter (38)	Installation of countershaft gear bearing, front output shaft bearing
	MD998820	Installer adapter (42)	Installation of rear output shaft bearing (Part time 4WD)
	MD998821	Installer adapter (44)	Installation of 2-4WD and H-L clutch hubs (Part time 4WD)
	MD998824	Installer adapter (50)	Installation of transfer input gear bearing
	MD998826	Installer adapter (52)	Installation of transfer input gear bearing (Super select 4WD II)
	MD998829	Installer adapter (60)	Installation of rear output shaft ball bearing (Part time 4WD)

Tool	Number	Name	Use
	MD998830	Installer adapter (66)	Installation of transfer drive shaft bearing (Super select 4WD II)
	MD998917	Bearing remover	Removal and installation of bearing (Super select 4WD II)

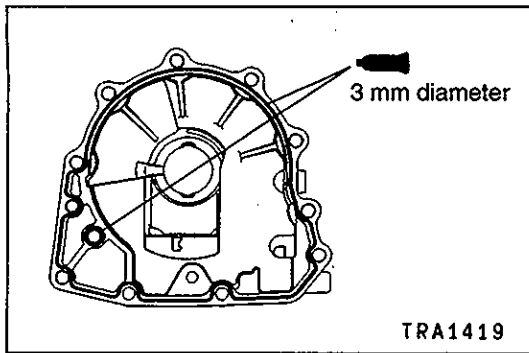
### 3. TRANSMISSION AND EXTENSION HOUSING <R4A51> DISASSEMBLY AND ASSEMBLY



TRA1418

#### Disassembly steps

- 1. Harness bracket
- 2. Cable end bracket
- 3. Harness bracket
- ▶A◀ 4. Extension housing
- ▶B◀ 5. Speedometer sleeve clamp
- 6. Speedometer gear
- 7. Transmission



## REASSEMBLY SERVICE POINTS

### ▶A◀ EXTENSION HOUSING INSTALLATION

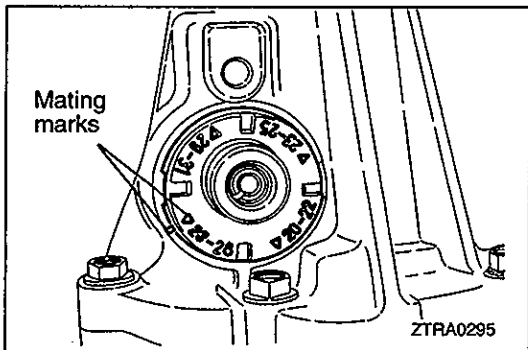
1. Apply Vaseline or petrolatum jelly on the bushing inside the extension housing.
2. After squeezing out and applying sealant on the extension housing at the section indicated in the illustration, install onto the transmission case.

#### Specified sealant:

**MITSUBISHI** genuine sealant part No. MR166584 or equivalent

#### Caution

- Evenly squeeze out and apply the sealant so that it is not excessive and does not ooze out.

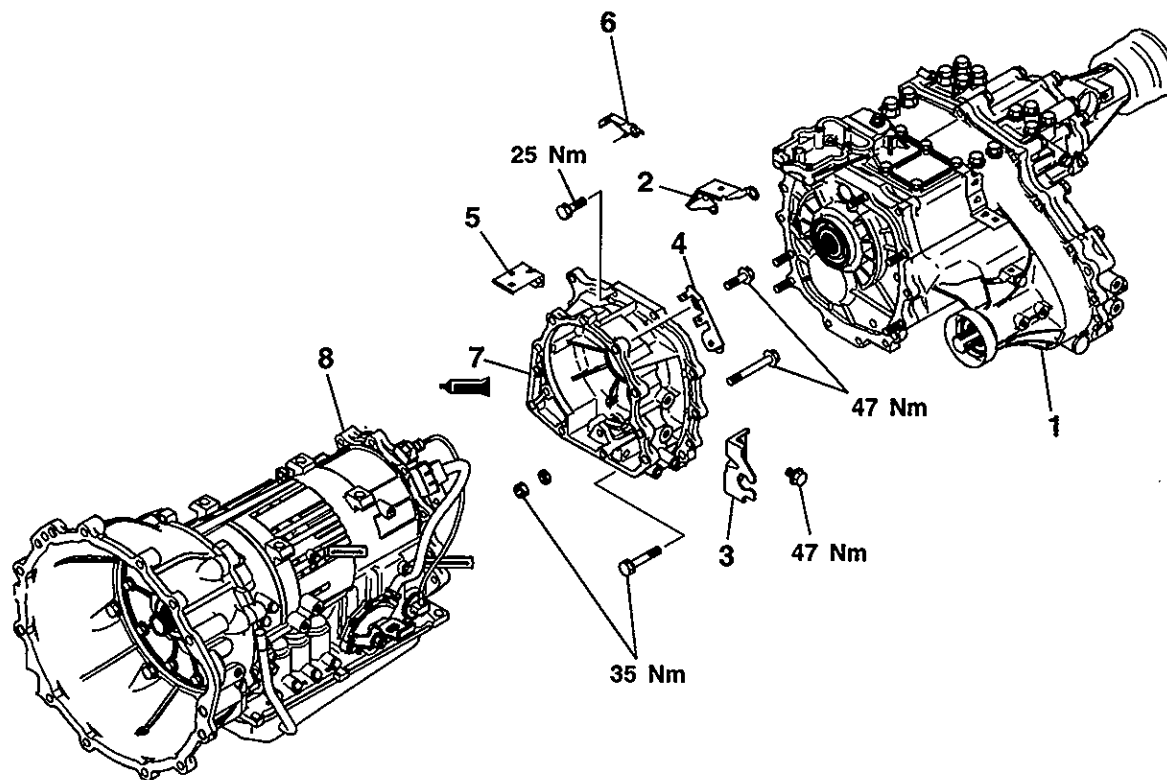


### ▶B◀ SPEEDOMETER GEAR INSTALLATION

Match the mating marks to the number of teeth.

## 4. TRANSMISSION AND TRANSFER <V4A51>

### DISASSEMBLY AND ASSEMBLY



TRA1858

#### Disassembly steps

1. Transfer
2. Harness bracket (V4A51-5)
3. Cable end bracket
4. Harness bracket
5. Harness bracket (V4A51-5)
6. Harness bracket (V4A51-7)
- ▶◀ 7. Transfer case adapter
8. Transmission

#### ASSEMBLY SERVICE POINT

##### ▶◀ TRANSFER CASE ADAPTER INSTALLATION

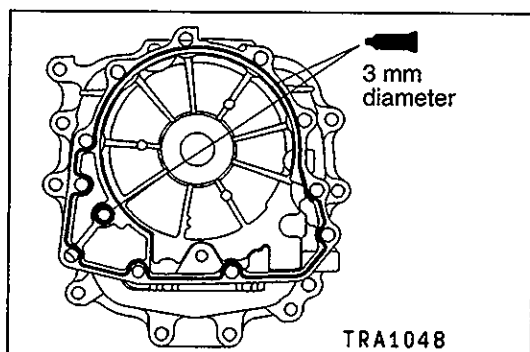
After squeezing out and applying sealant on the transfer case adapter at the section indicated in the illustration, install onto the transmission case.

##### Specified sealant:

**MITSUBISHI** genuine sealant part No. MR166584 or equivalent

##### Caution

- Evenly squeeze out and apply the sealant so that it is not excessive and does not ooze out.



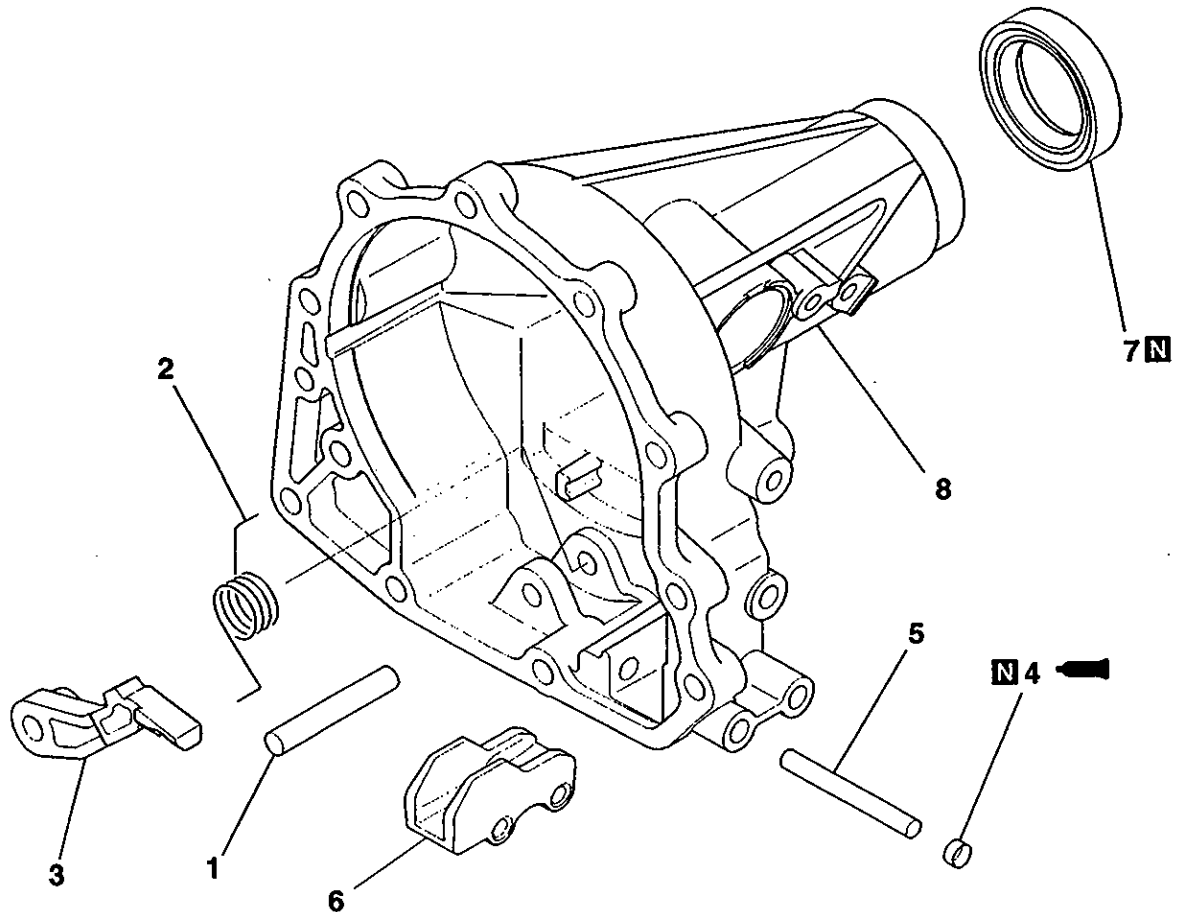
TRA1048

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**NOTES**

## 5. EXTENSION HOUSING <R4A51>

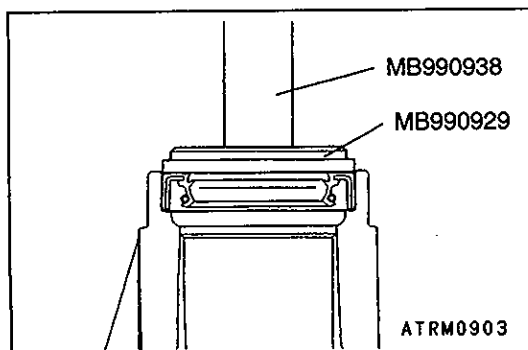
### DISASSEMBLY AND ASSEMBLY



TRA1421

#### Disassembly steps

- ▶C◀ 1. Parking sprag shaft
- ▶C◀ 2. Parking sprag spring
- ▶C◀ 3. Parking sprag
- ▶B◀ 4. Sealing cap
- ▶B◀ 5. Parking roller support shaft
- ▶B◀ 6. Parking roller support
- ▶A◀ 7. Oil seal
- ▶A◀ 8. Extension housing

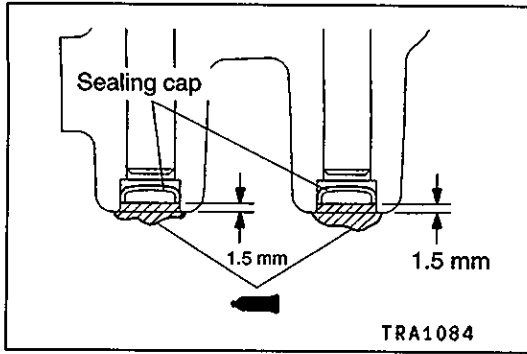


#### ASSEMBLY SERVICE POINTS

##### ▶A◀ OIL SEAL INSTALLATION

Use the special tools to install the oil seal.



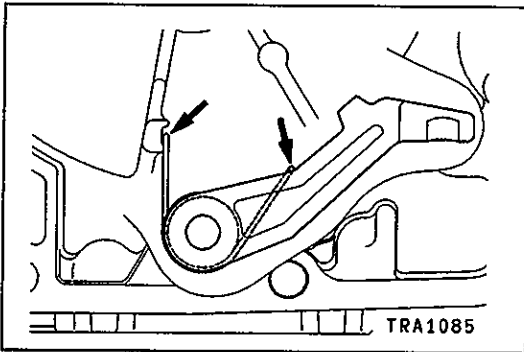


### ►B◄ SEALING CAP INSTALLATION

1. Press the sealing caps into the dimensions shown in the illustration so that they are not slanted.
2. Apply sealant as shown in the illustration.

**Specified sealant:**

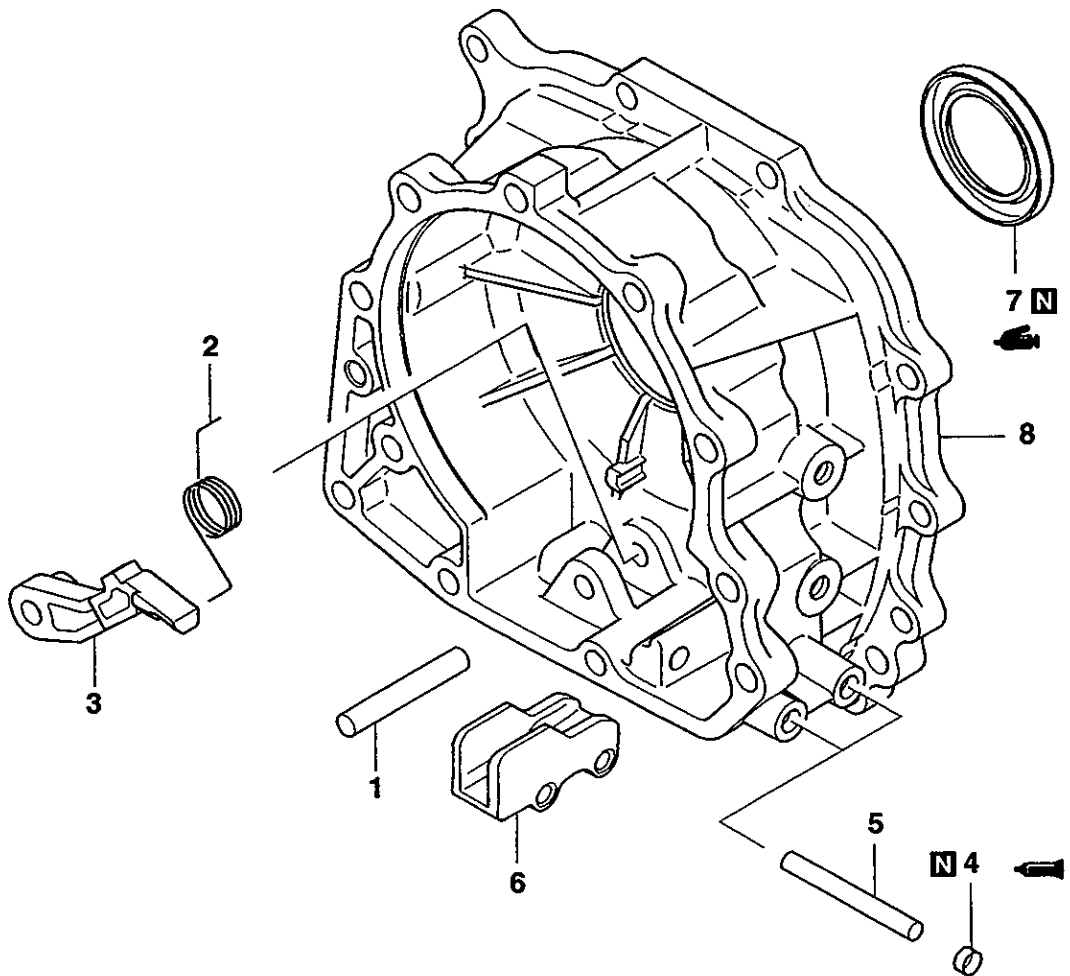
**3M™ AAD part No. 8672 or equivalent**



### ►C◄ PARKING SPRAG SPRING INSTALLATION

Attach the end of the spring to the position shown in the illustration.

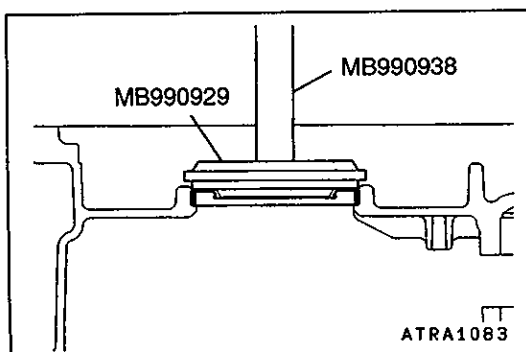
## 6. TRANSFER CASE ADAPTER <V4A51> DISASSEMBLY AND ASSEMBLY



TRA1066

### Disassembly steps

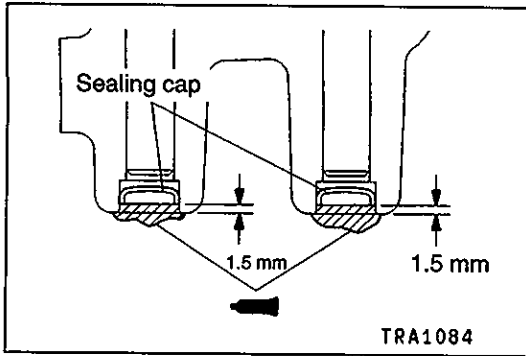
- ▶C◀ 1. Parking sprag shaft
- ▶C◀ 2. Parking sprag spring
- ▶C◀ 3. Parking sprag
- ▶B◀ 4. Sealing cap
- ▶B◀ 5. Parking roller support shaft
- ▶B◀ 6. Parking roller support
- ▶A◀ 7. Oil seal
- ▶A◀ 8. Transfer case adapter



### ASSEMBLY SERVICE POINTS

#### ▶A◀ OIL SEAL INSTALLATION

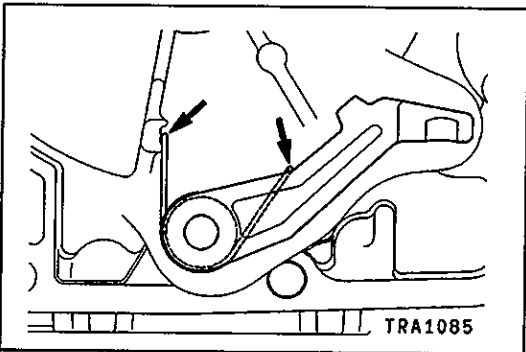
Use the special tools to install the oil seal.

**▶B◀ SEALING CAP INSTALLATION**

1. Press the sealing caps into the dimensions shown in the illustration so that they are not slanted.
2. Apply sealant as shown in the illustration.

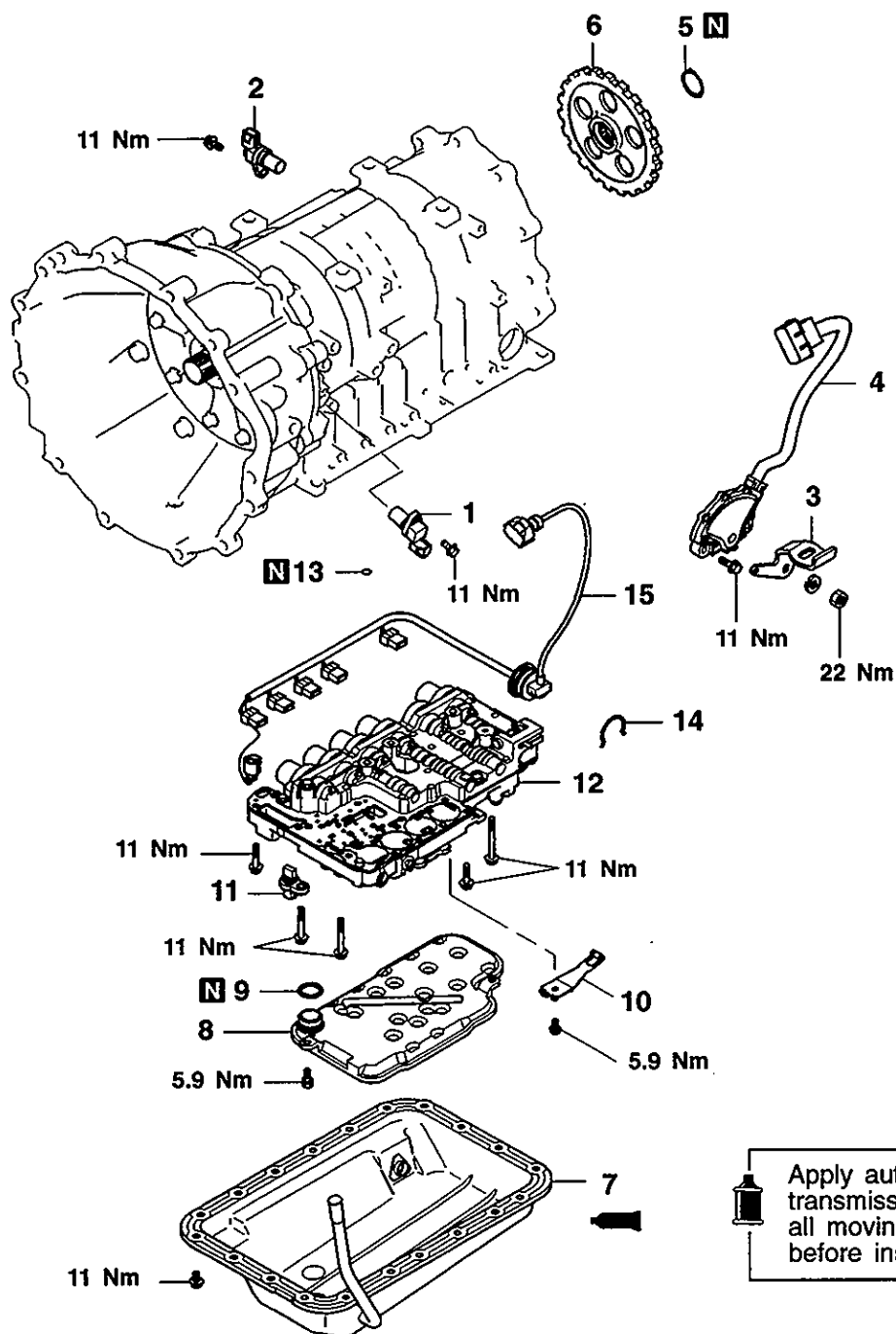
**Specified sealant:**

**3M™ AAD part No. 8672 or equivalent**

**▶C◀ PARKING SPRAG SPRING INSTALLATION**

Attach the end of the spring to the position shown in the illustration.

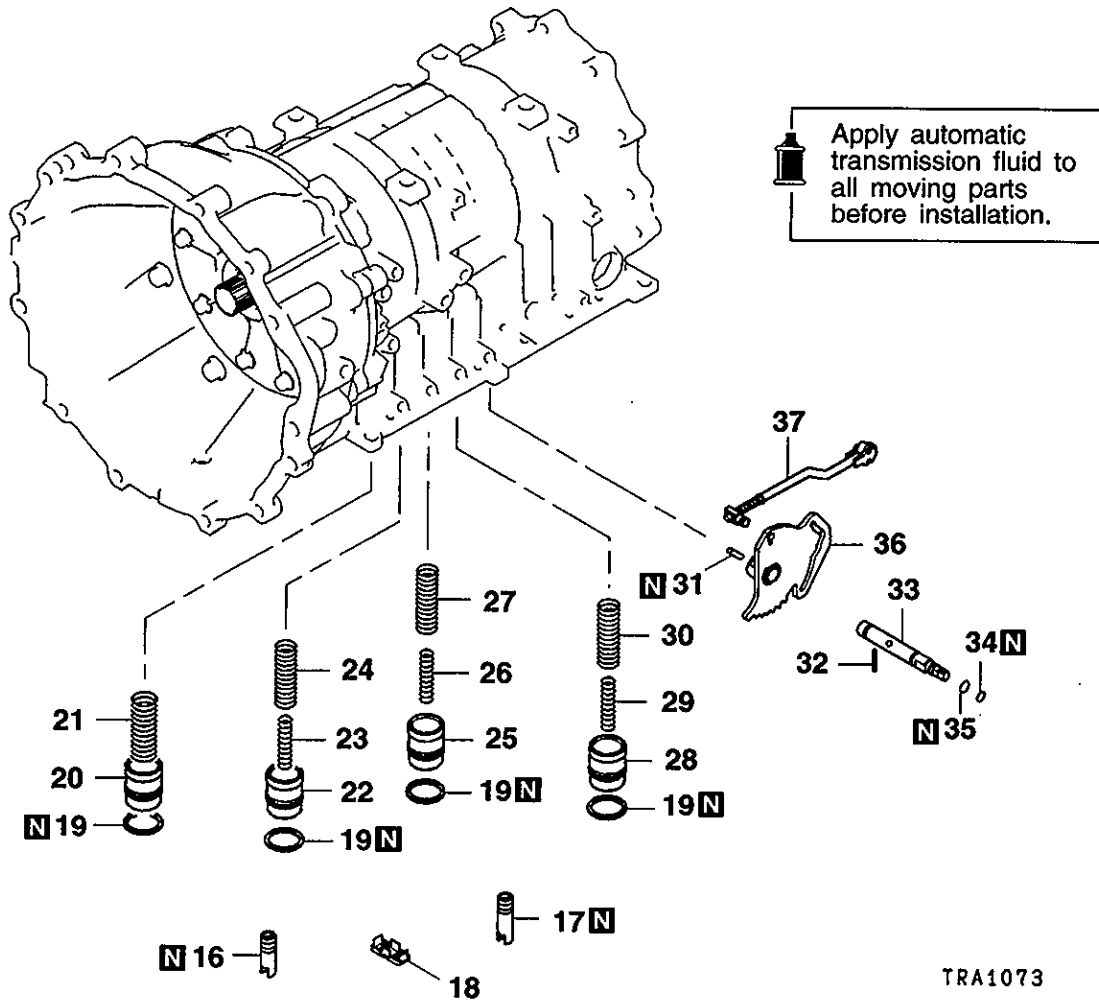
## 7. TRANSMISSION DISASSEMBLY AND ASSEMBLY



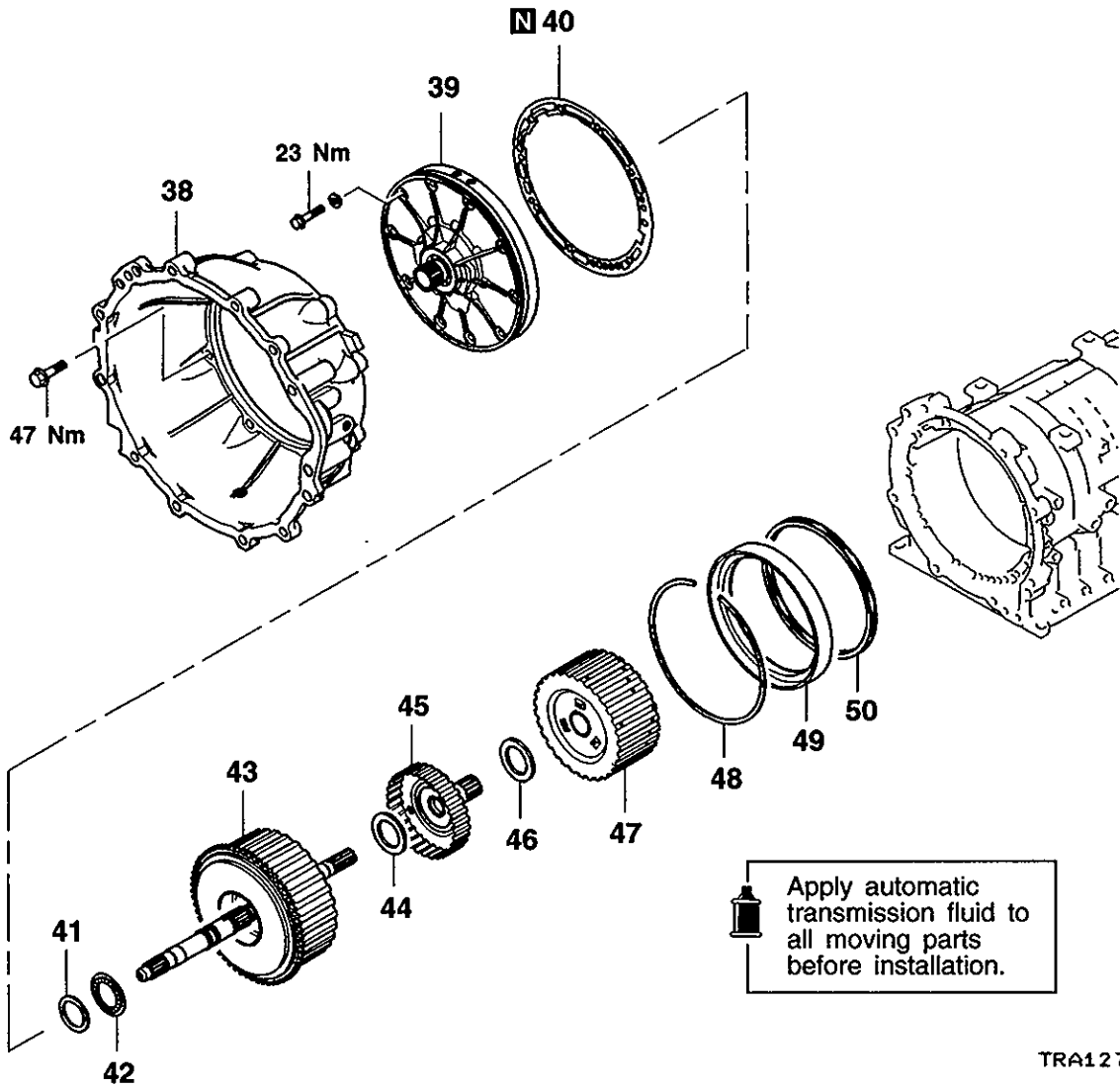
TRA1212

1. Input shaft speed sensor
2. Output shaft speed sensor
3. Manual control lever
4. Park/neutral position switch
5. Snap ring
6. Parking gear
7. Oil pan
8. Oil filter

9. O-ring
10. Detent spring
11. Oil temperature sensor
12. Valve body
13. O-ring
14. Snap ring
15. Solenoid valve harness



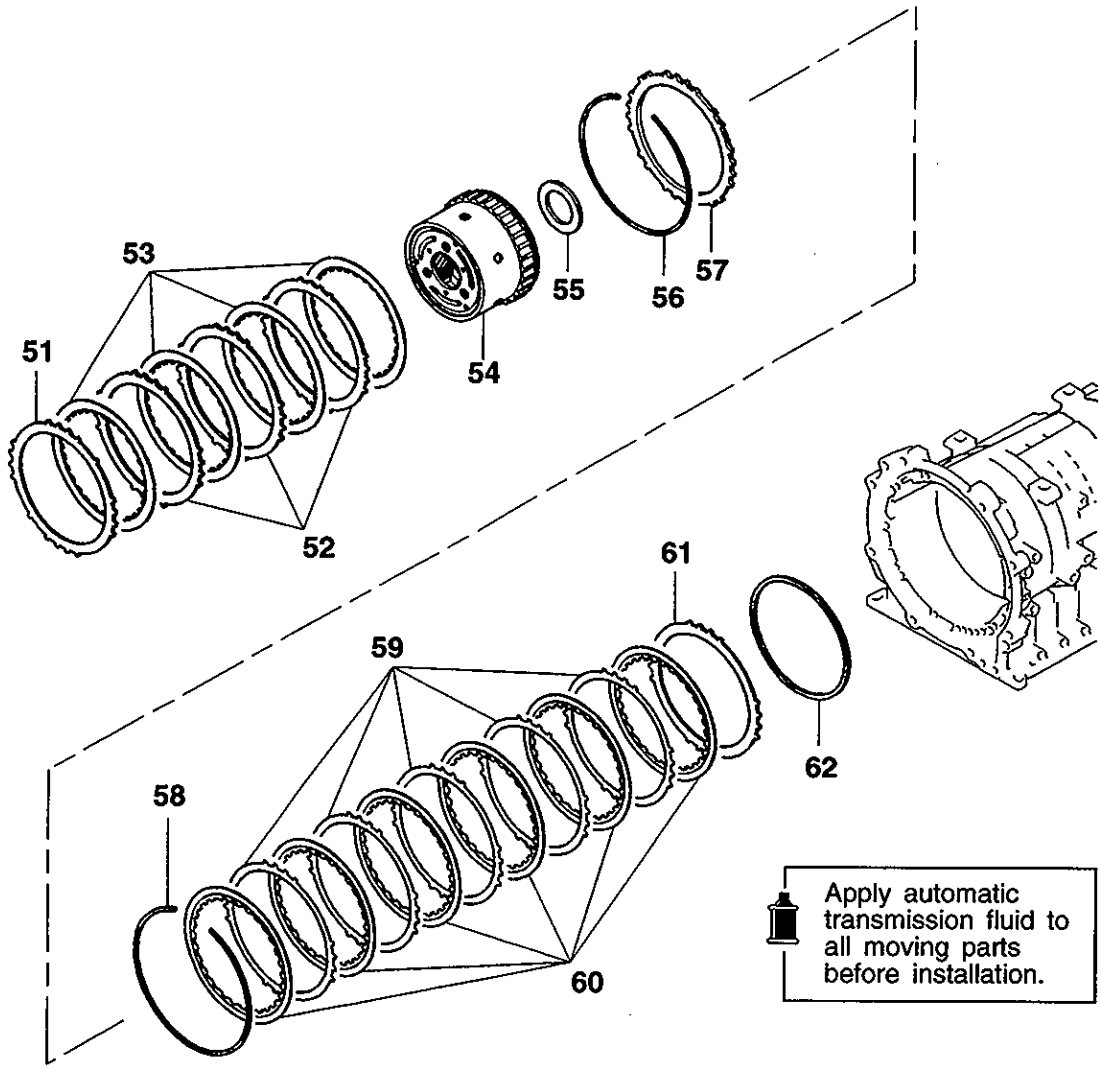
TRA1073



- 38. Converter housing
- 39. Oil pump
- 40. Oil pump gasket
- 41. Thrust race No.1
- 42. Thrust bearing No.2
- 43. Reverse and overdrive clutch
- 44. Thrust bearing No.3

- 45. Overdrive clutch hub
- 46. Thrust bearing No.4
- 47. Reverse sun gear
- 48. Snap ring
- 49. Second brake
- 50. Return spring

TRA1277



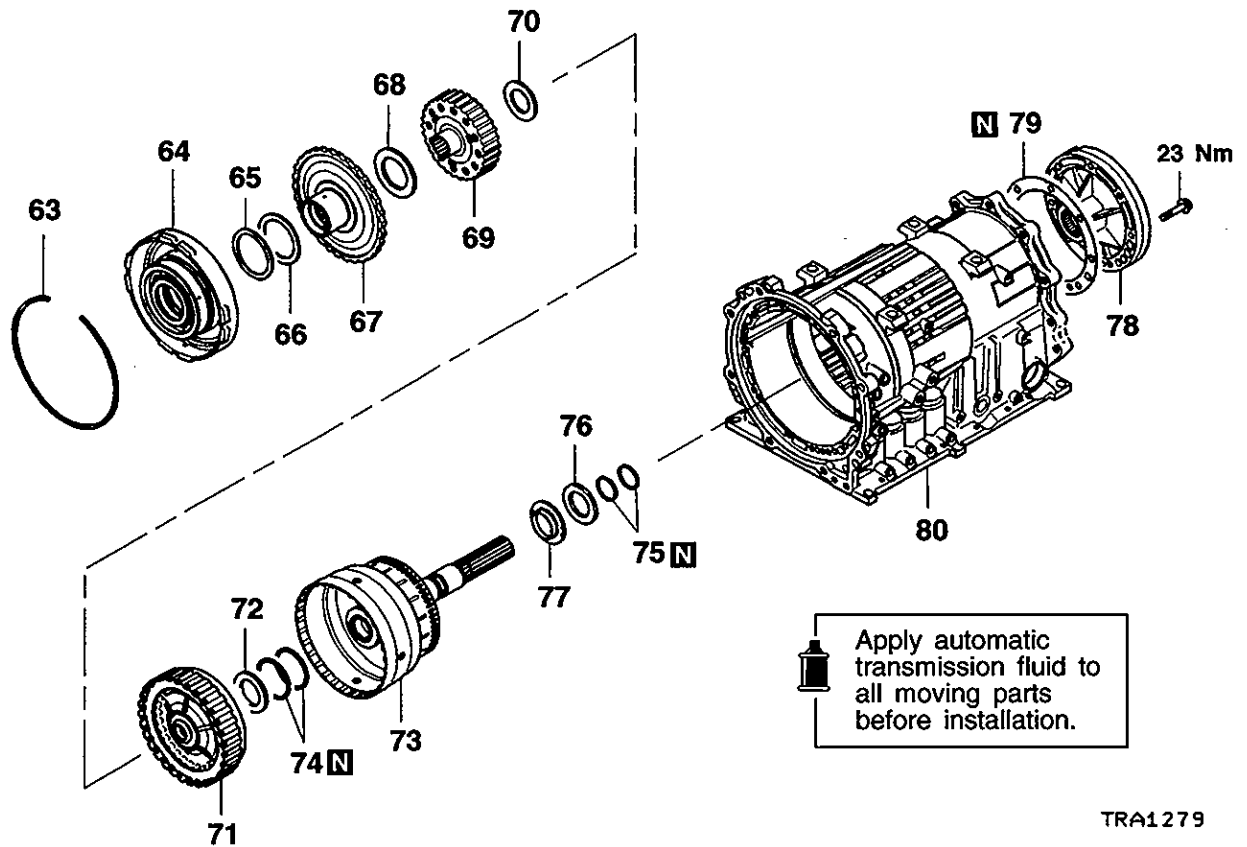
TRA1278

- 51. Pressure plate
- 52. Brake plate
- 53. Brake disc
- 54. Low/reverse annulus gear
- 55. Thrust bearing No.7
- 56. Snap ring

- 57. Reaction plate
- 58. Snap ring
- 59. Brake plate
- 60. Brake disc
- 61. Pressure plate
- 62. Wave spring

**LOW AND REVERSE BRAKE**

	For 6G72 engine	For 4M40 engine
Number of brake discs	5	6
Number of brake plates	4	5



- 63. Snap ring
- 64. Center support
- 65. Thrust race No.8
- 66. Thrust bearing No.9
- 67. Output flange
- 68. Thrust bearing No.10
- 69. Underdrive clutch hub
- 70. Thrust bearing No.11
- 71. Underdrive clutch

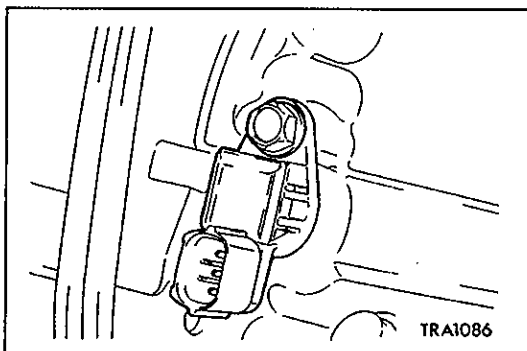
- 72. Thrust bearing No.12
- 73. Output shaft
- 74. Seal ring
- 75. Seal ring
- 76. Thrust bearing No.13
- 77. Bearing retainer
- 78. Output shaft support
- 79. Output shaft support gasket
- 80. Transmission case



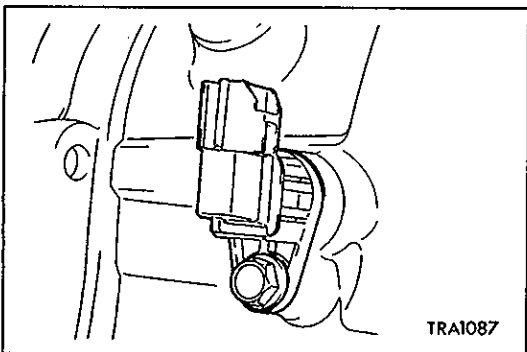
## DISASSEMBLY

### Caution

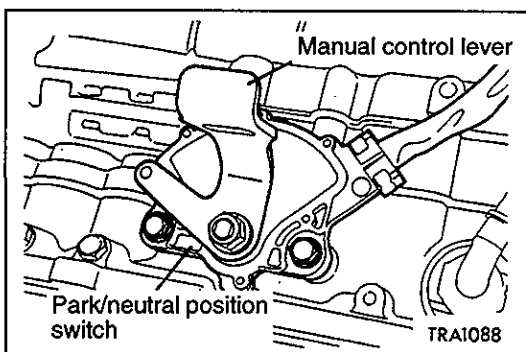
- Because the automatic transmission is manufactured from high-precision parts, sufficient care must be taken not to scratch or damage these parts during disassembly and reassembly.
- During the work, always use bare hands or vinyl gloves. Do not use cotton gloves. Use nylon cloth or paper towels when necessary. Do not use shop towel.
- Parts which have been disassembled should all be cleaned. Metal parts can be cleaned with normal detergent, but they should be dried completely using compressed air.
- Clutch discs, plastic thrust race and rubber parts should be cleaned with ATF automatic transmission fluid so that they do not become dirty.
- If the transmission body has been damaged, disassemble and clean the cooler system also.



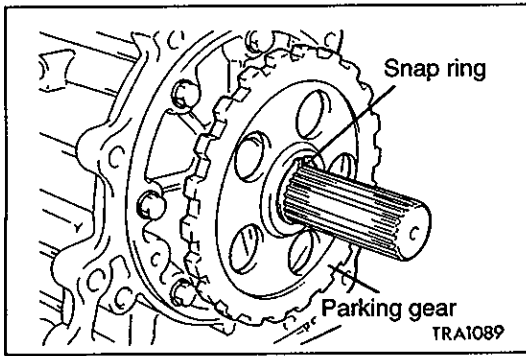
1. Remove the input shaft speed sensor.



2. Remove the output shaft speed sensor.



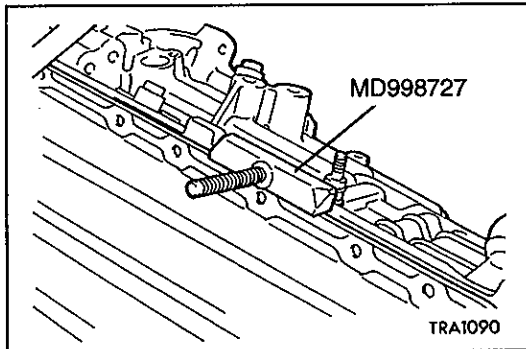
3. Remove the manual control lever, and then remove the park/neutral position switch.



4. Remove the snap ring, and remove the parking gear using a puller (corresponding load approximately 9,800 N).

**NOTE**

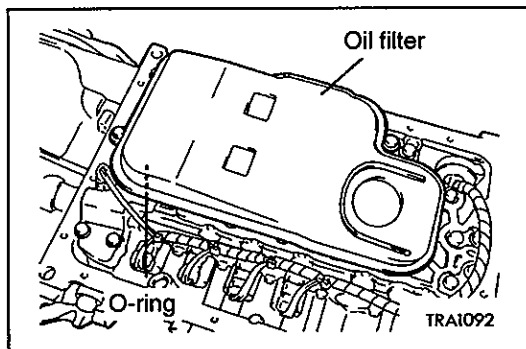
The parking gear may be removed without using a puller.



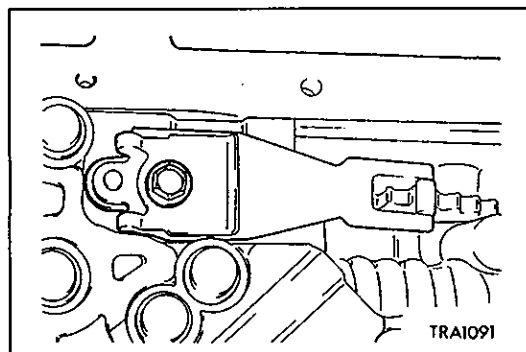
5. Remove the twenty oil pan mounting bolts and then remove the oil pan using the special tool.

**Caution**

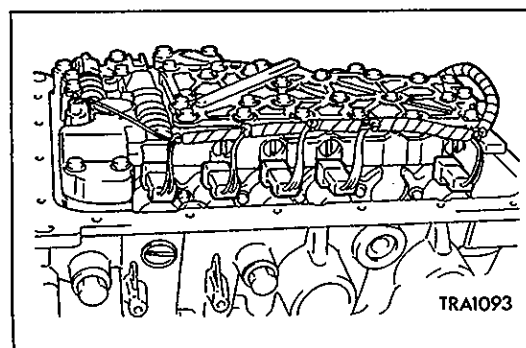
- Carefully hammer the special tool so that the oil pan mounting surface is not damaged.



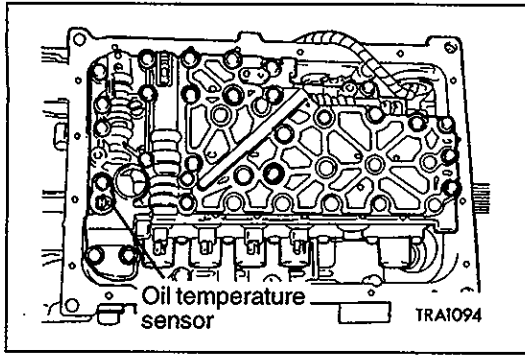
6. Remove the oil filter and O-ring.



7. Remove the detent spring.



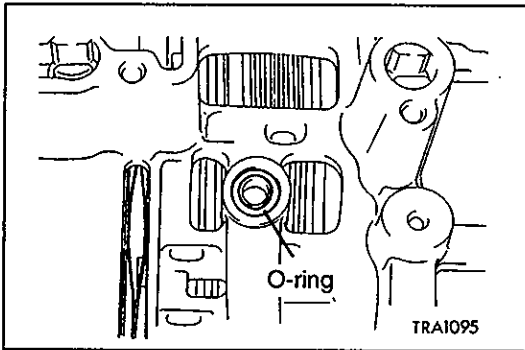
8. Disconnect the harness connectors of the valve body.



9. Remove the twenty valve body mounting bolts and then remove the valve body, O-ring and oil temperature sensor.

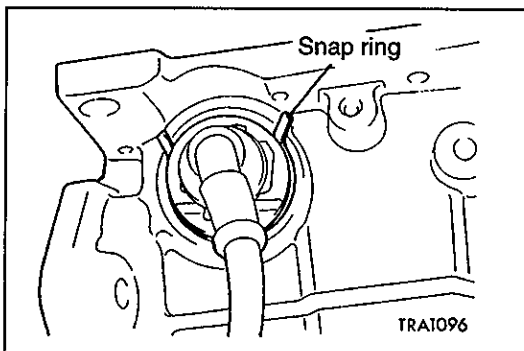
**NOTE**

The twenty valve body mounting bolts are plated bolts.

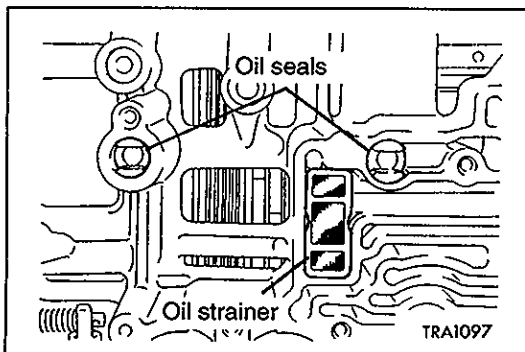


**NOTE**

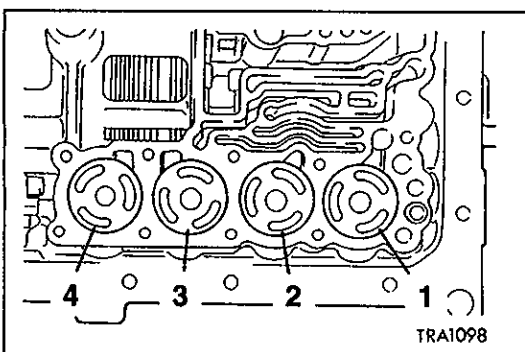
The O-ring is mounted on the transmission case side as shown in the illustration. However there may be cases when it will come off with the valve body.



10. Remove the snap ring and disconnect the solenoid valve harness.



11. Remove the oil strainer and two oil seals.

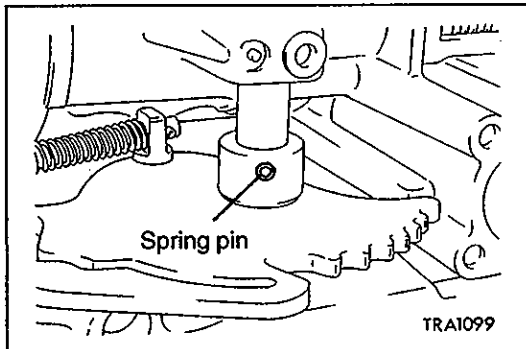


12. Remove each accumulator piston, seal ring and spring.

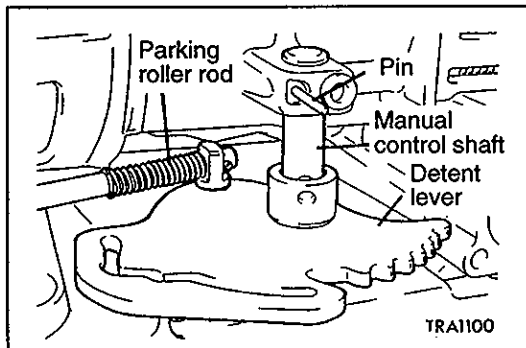
No.	Name
1	For overdrive clutch
2	For second brake
3	For low/reverse brake
4	For underdrive clutch

## NOTE

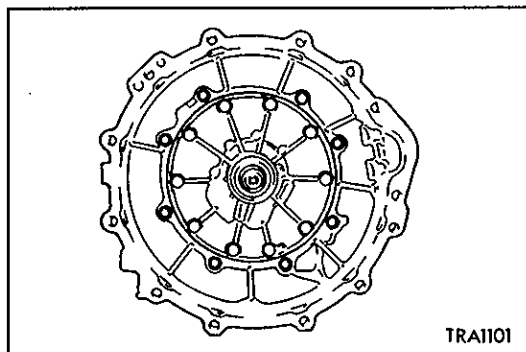
To make assembly easier, attach an identification tag on the removed accumulator piston.



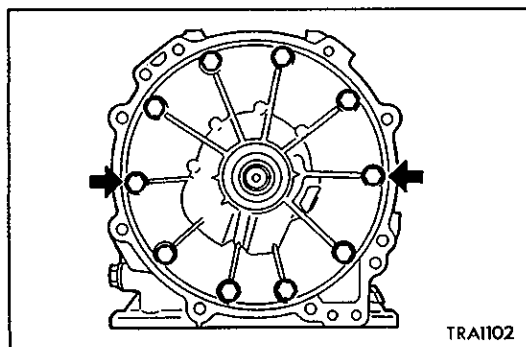
13. Remove the detent lever spring pin.



14. Remove the pin, and then remove the manual control shaft, two O-rings, detent lever and parking roller rod.

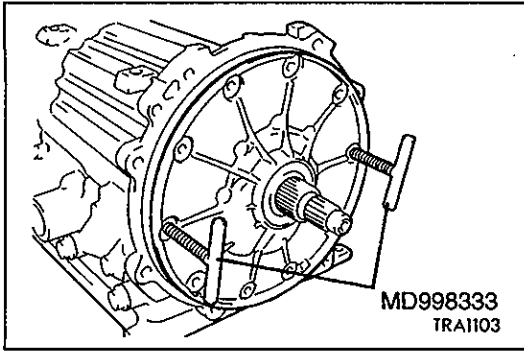


15. Remove the eight converter housing mounting bolts, and then converter housing.

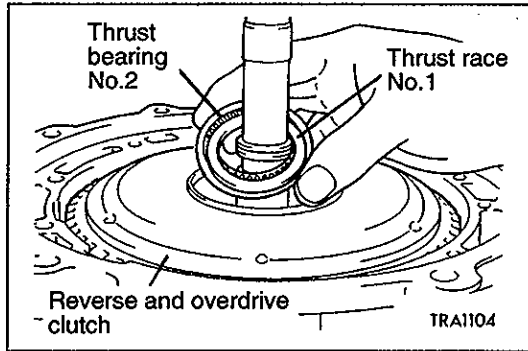


16. Remove the ten oil pump mounting bolts.

17. Install the special tool into the bolt hole shown in the illustration.



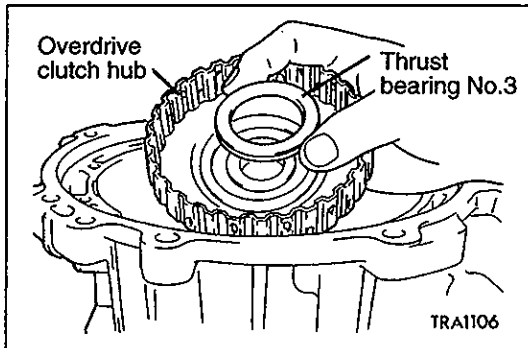
18. While screwing in the special tool evenly, remove the oil pump.
19. Remove the oil pump gasket.



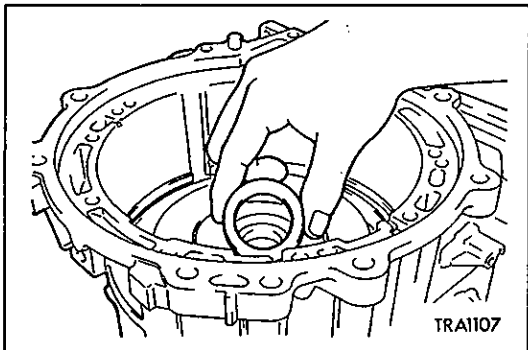
20. Remove the reverse and overdrive clutch, thrust race No.1 and thrust bearing No.2.

**NOTE**

The thrust race No.1 may be attached to the oil pump.



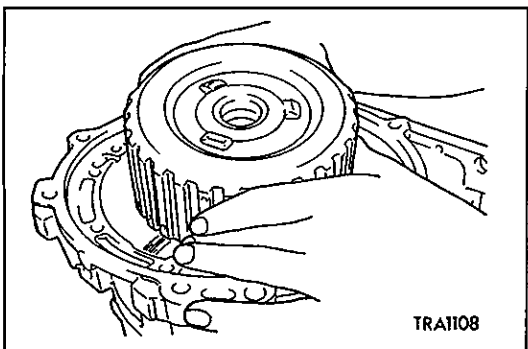
21. Remove the overdrive clutch hub and thrust bearing No.3.



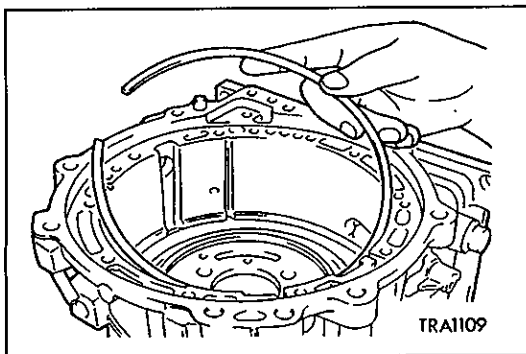
22. Remove the thrust bearing No.4.

**NOTE**

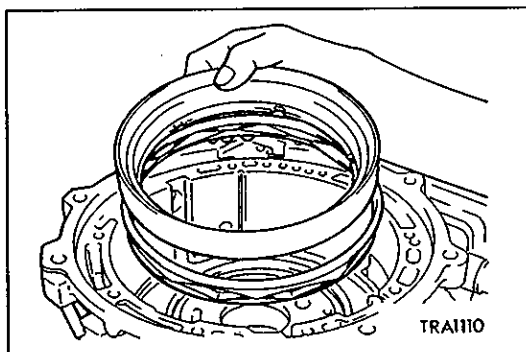
The thrust bearing No.4 may be attached to the overdrive clutch hub.



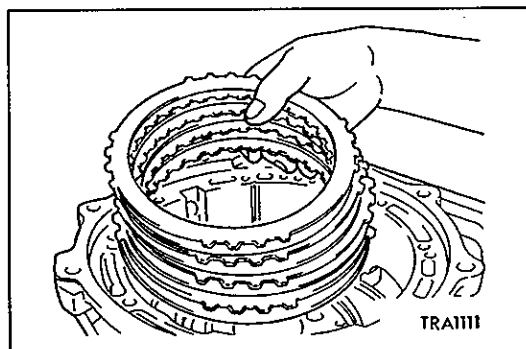
23. Remove the reverse sun gear.



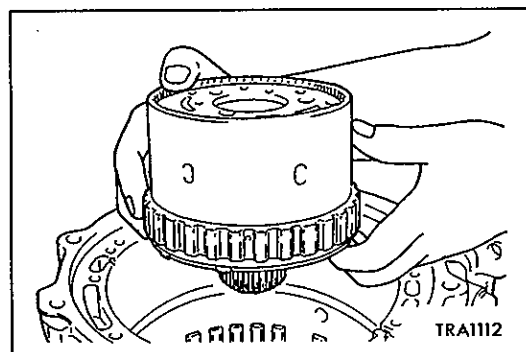
24. Remove the snap ring.



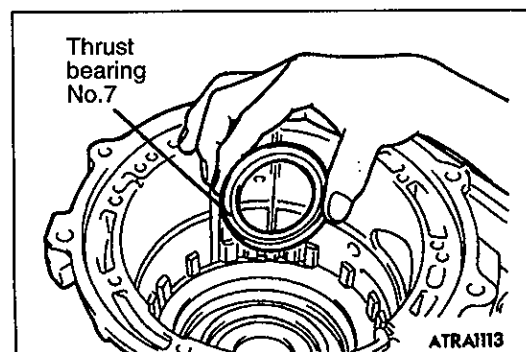
25. Remove the second brake and return spring.



26. Remove the pressure plates, brake plates and brake discs.



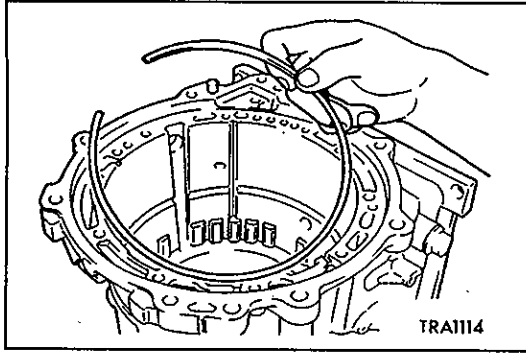
27. Remove the low/reverse annulus gear.



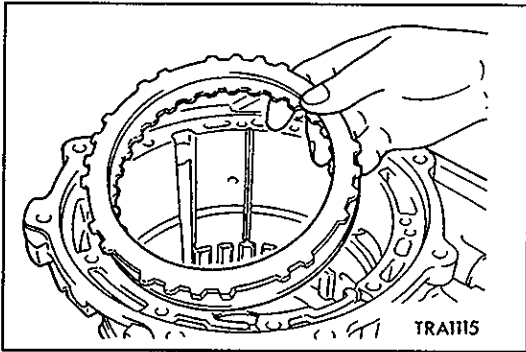
28. Remove the thrust bearing No.7.

**NOTE**

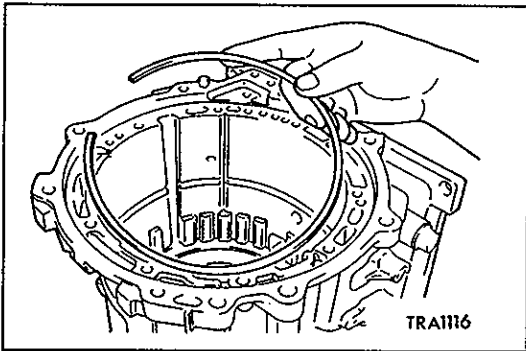
The thrust bearing No.7 may be attached to the low/reverse annulus gear.



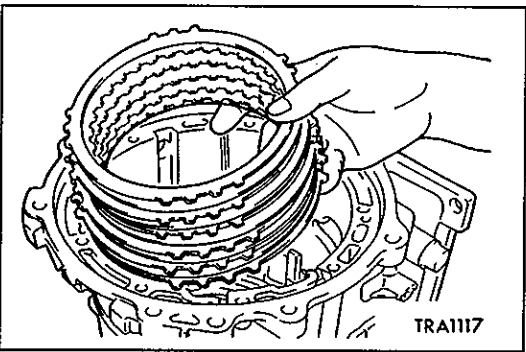
29. Remove the snap ring.



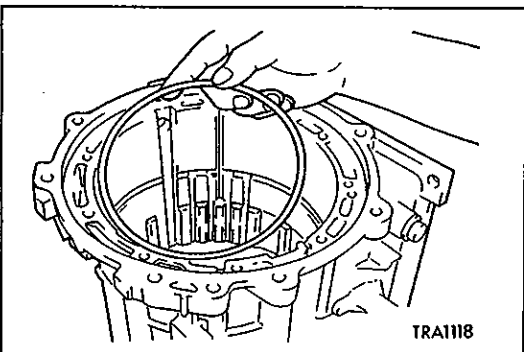
30. Remove the reaction plate and one brake disc.



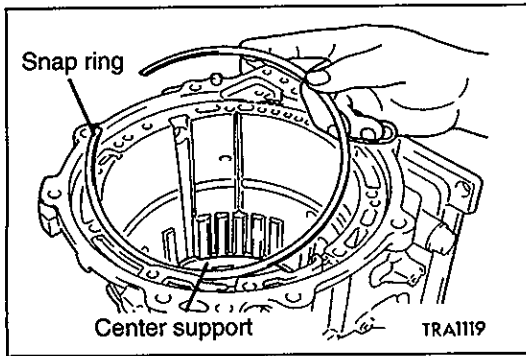
31. Remove the snap ring.



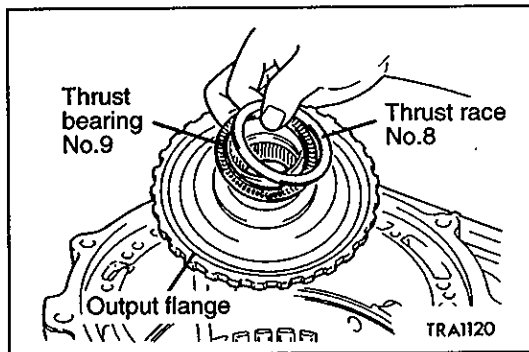
32. Remove the brake plates, brake discs, and pressure plate.



33. Remove the wave spring.



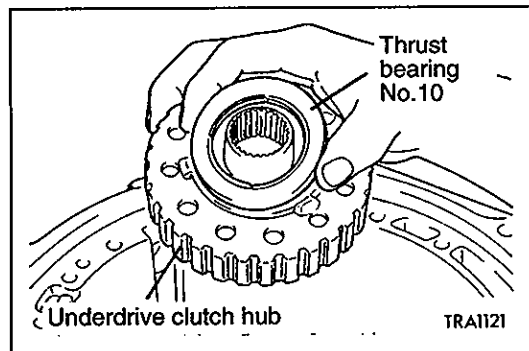
34. Remove the snap ring and center support.



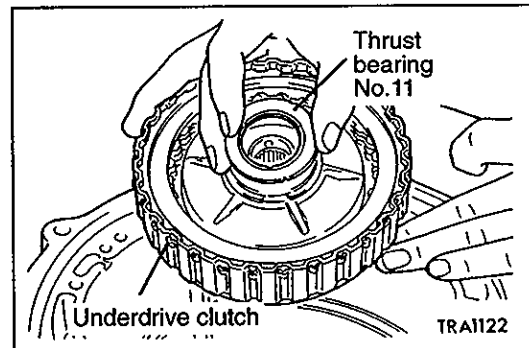
35. Remove the thrust race No.8, thrust bearing No.9 and output flange.

**NOTE**

The thrust race No.8 may be attached to the center support.



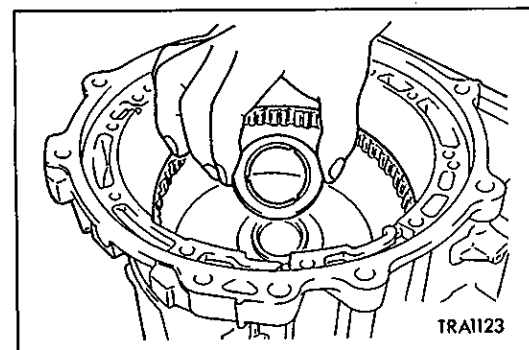
36. Remove the thrust bearing No.10 and underdrive clutch hub.



37. Remove the thrust bearing No.11 and underdrive clutch.

**NOTE**

The thrust bearing No.11 may be attached to the underdrive clutch hub.

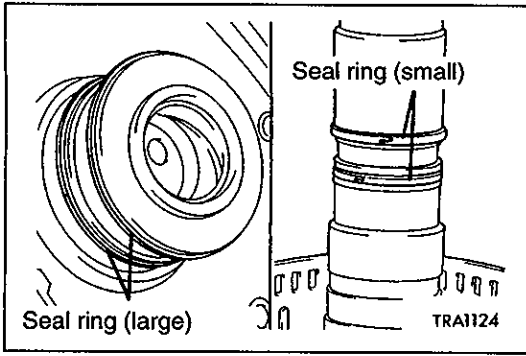


38. Remove the thrust bearing No.12 and output shaft.

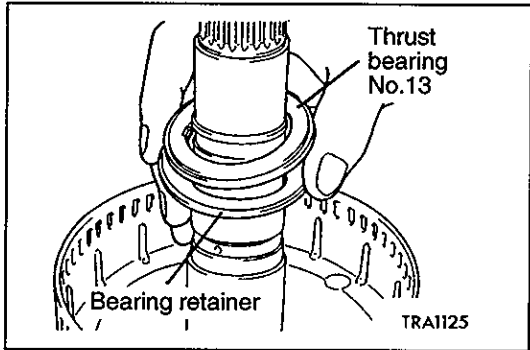
**NOTE**

The thrust bearing No.12 may be attached to the underdrive clutch.





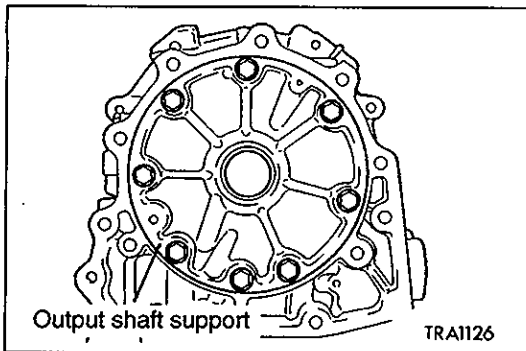
39. Remove the two large and two small seal rings from the output shaft.



40. Remove the thrust bearing No.13 and bearing retainer.

**NOTE**

The thrust bearing No.13 may be attached to the output shaft support.

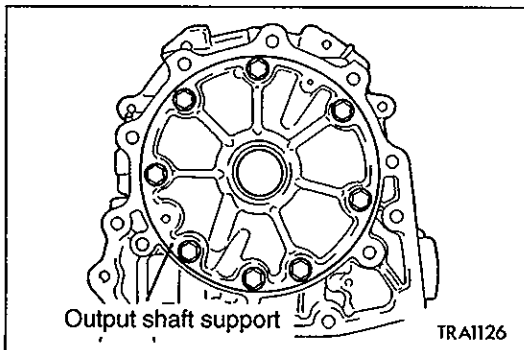


41. Remove the eight output shaft support mounting bolts, and then remove the output shaft support and gasket.

## REASSEMBLY

### Caution

- Never reuse the gasket, O-ring, oil seal, etc. Always replace with a new one when reassembling.
- Never use grease other than blue petrolatum jelly and white Vaseline.
- Apply ATF to friction components, rotating parts, and sliding parts before installation. Immerse a new clutch disc or brake disc in ATF for at least two hours before assembling them.
- Never apply sealant or adhesive to gaskets.
- When replacing a bushing, replace the assembly which it belongs to.
- During the work, always use bare hands or vinyl gloves. Do not use cotton gloves. Use nylon cloth or paper towels when necessary. Do not use shop towel.
- Change the oil in the cooler system.

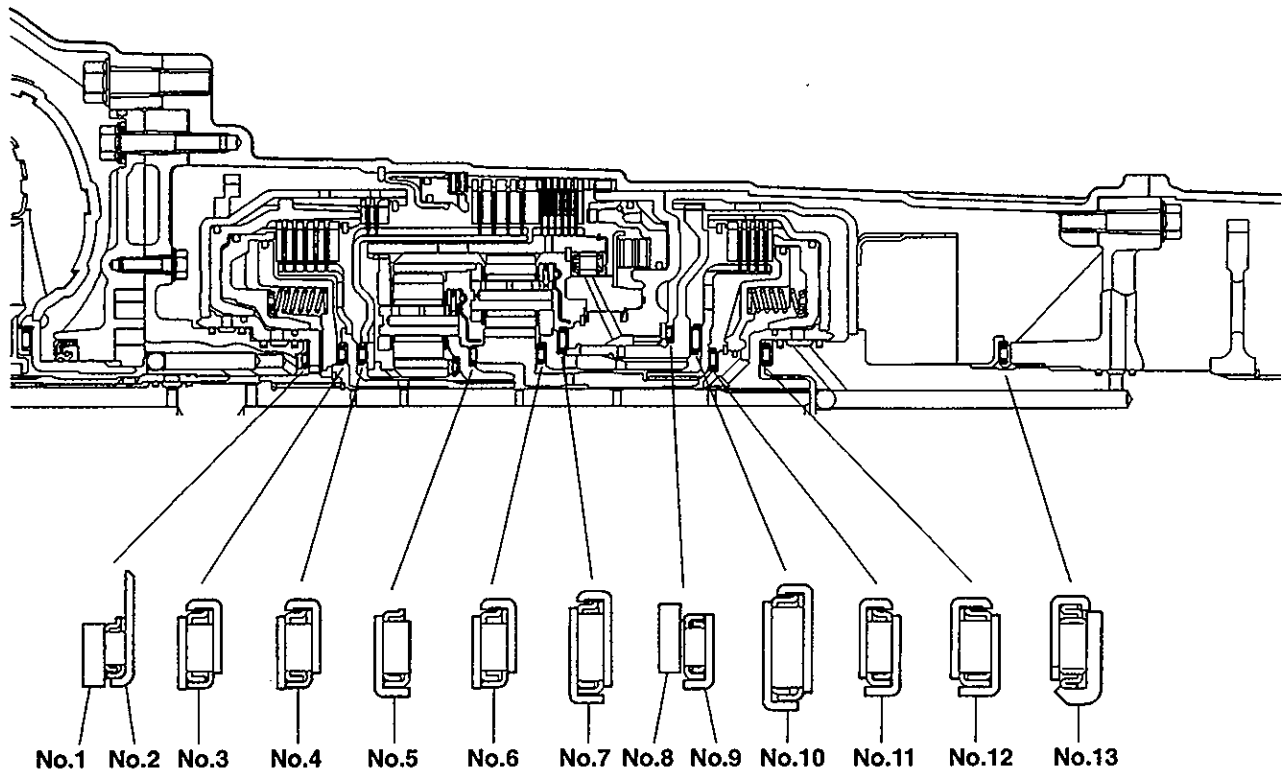


1. Install a new gasket and output shaft support.

### Caution

- Never reuse a gasket.
2. Tighten the eight output shaft support mounting bolts to the specified torque.

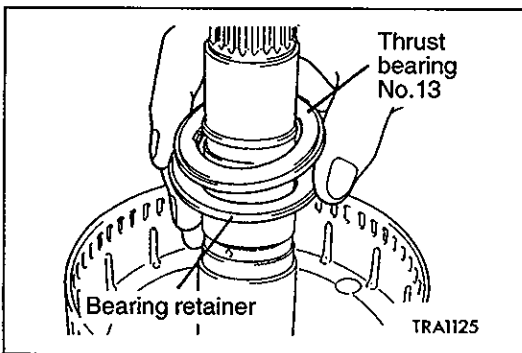
## Identification of thrust bearings and thrust races



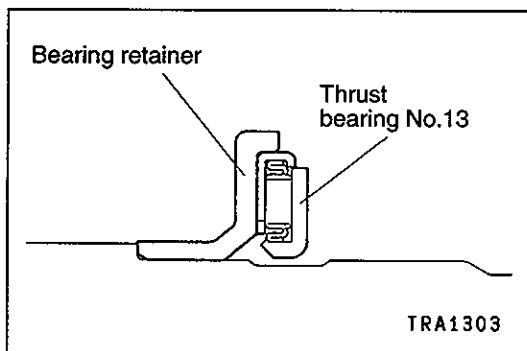
TRA1105

Symbol	OD mm	ID mm	Thickness mm	Part No.
No.1	48.9	37	1.4	MD723063
			1.6	MD707267
			1.8	MD723064
			2.0	MD707268
			2.2	MD723065
			2.4	MD724358
			2.6	MD754798
No.2	59	37	2.8	MR305718
No.3	57	38.5	4.12	MD758556
No.4	57	38.5	4.12	MD758556
No.5	54.4	38.5	3.3	MD761683
No.6	57	38.5	4.12	MD758556
No.7	70	48.8	4.0	MR222902

Symbol	OD mm	ID mm	Thickness mm	Part No.
No.8	73	60	1.6	MR276705
			1.8	MR276706
			2.0	MR276707
			2.2	MR276708
			2.4	MR276709
No.9	71.4	57	2.78	MR276587
No.10	71.9	48	4.6	MR263281
No.11	54.1	34	3.83	MR276588
No.12	57	38.5	4.62	MR222936
No.13	58	37.5	4.8	MD758555

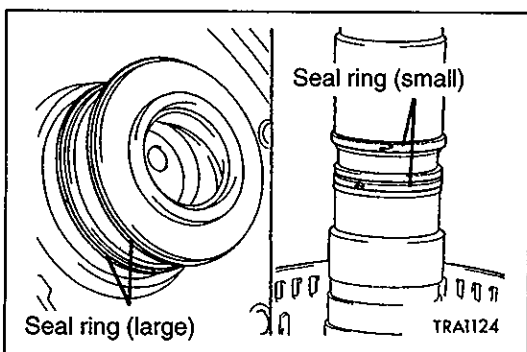


3. Install the bearing retainer and thrust bearing No.13 onto the output shaft.

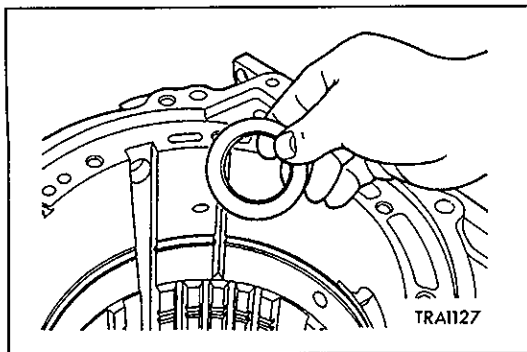


#### Caution

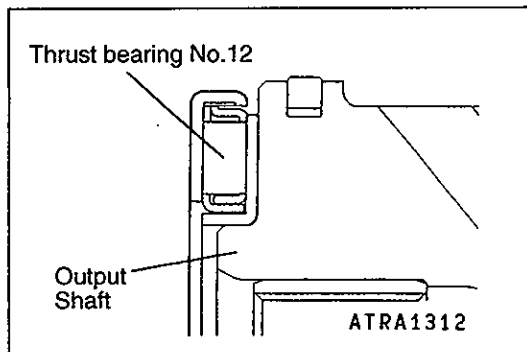
- Take care not to mistake the thrust bearing mounting direction.



4. Install new seal rings (two large pieces and two small pieces) onto the output shaft.
5. Insert the output shaft into the output shaft support.

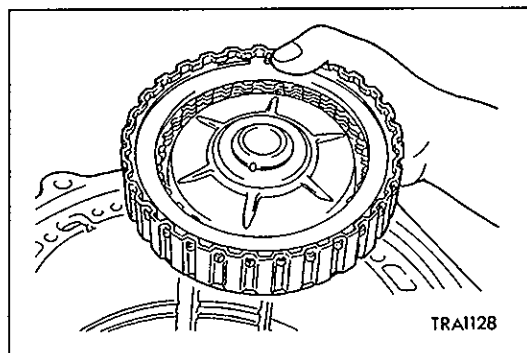


6. Apply Vaseline or petrolatum jelly on the thrust bearing No.12, and then install on the front end of the output shaft.

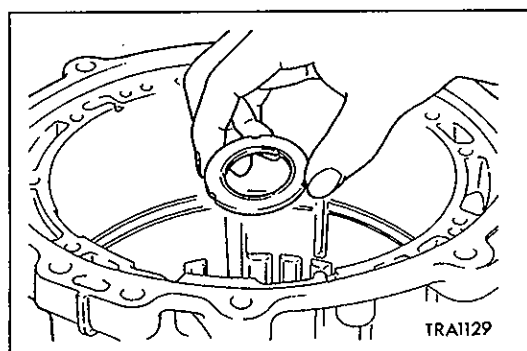


**Caution**

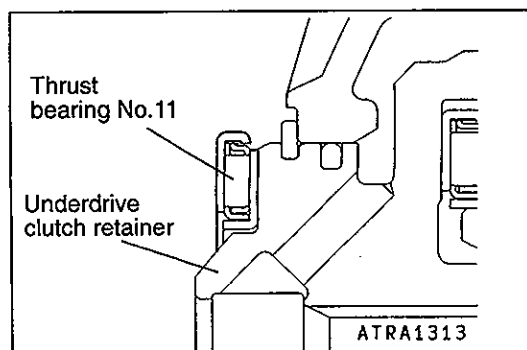
- Take care not to mistake the thrust bearing No.12 mounting direction.



7. Install the underdrive clutch.

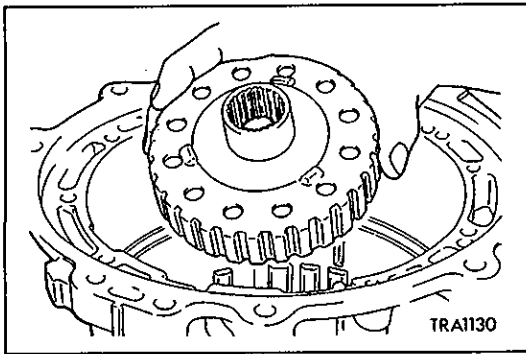


8. Apply Vaseline or petrolatum jelly on the thrust bearing No.11, and then install on the front end of the underdrive clutch retainer.

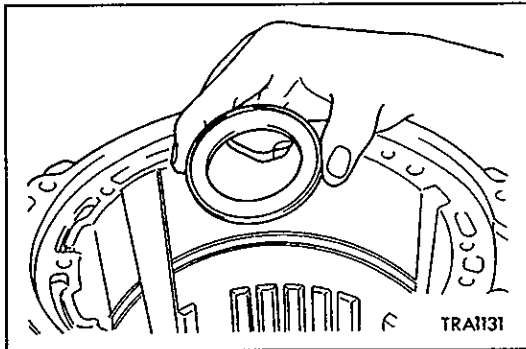


**Caution**

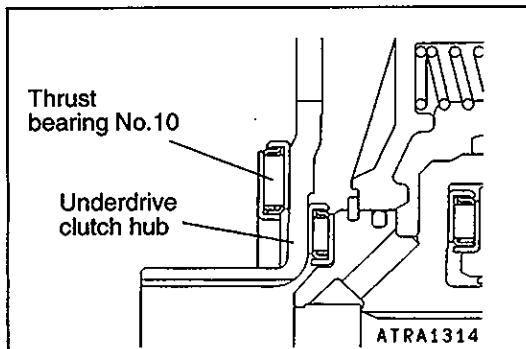
- Take care not to mistake the thrust bearing No.11 mounting direction.



9. Install the underdrive clutch hub.

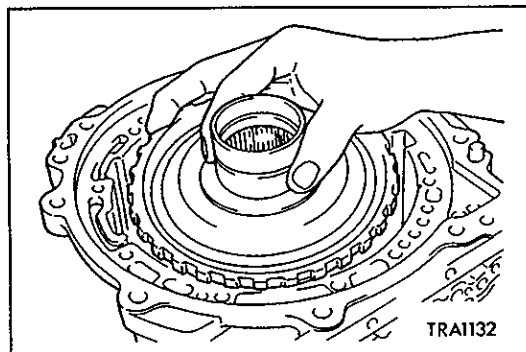


10. Apply Vaseline or petrolatum jelly on the thrust bearing No.10, and then install on the underdrive clutch hub.

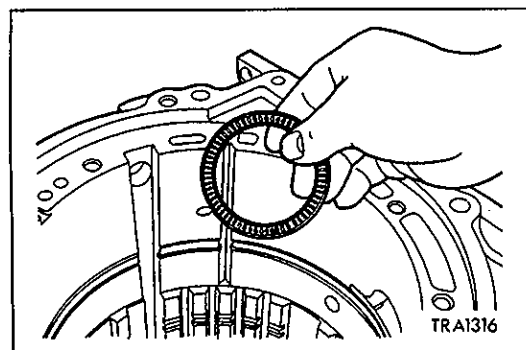


**Caution**

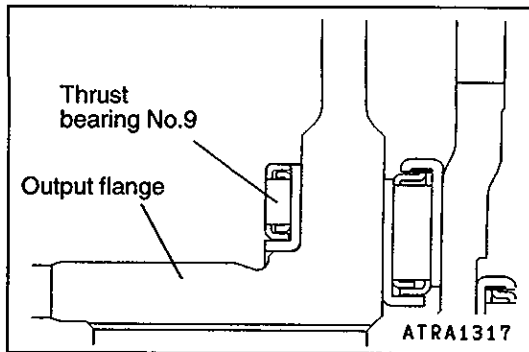
- Take care not to mistake the thrust bearing No.10 mounting direction.



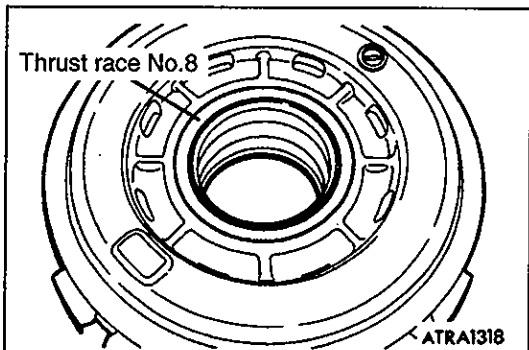
11. Install the output flange.



12. Apply Vaseline or petrolatum jelly on the thrust bearing No.9, and then install on the output flange.

**Caution**

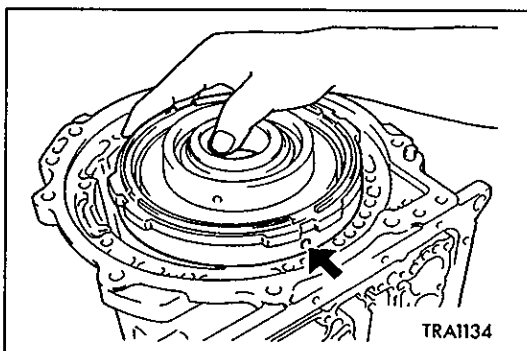
- Take care not to mistake the thrust bearing No.9 mounting direction.



13. Apply Vaseline or blue petrolatum jelly on the thrust race No.8 being used, and then install on the rear side of the center support.

**Caution**

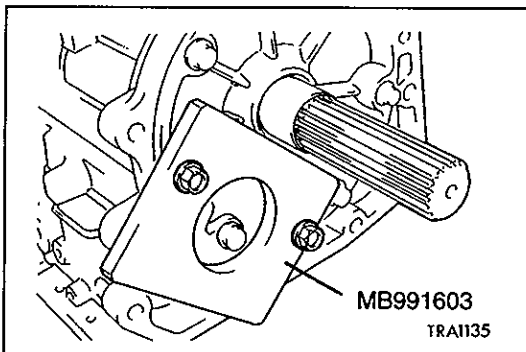
- Measure and record the thickness of the thrust race No.8 to be assembled.



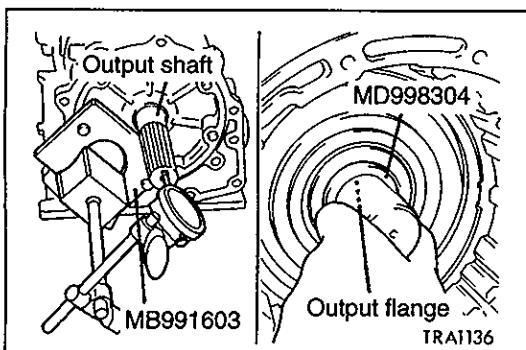
14. Install the center support.

**Caution**

- Install the center support so that the oil holes shown in the illustration face the lower side of the transmission case.
- Make sure that the thrust race No.8 attached to the rear side of the center support does not fall off.



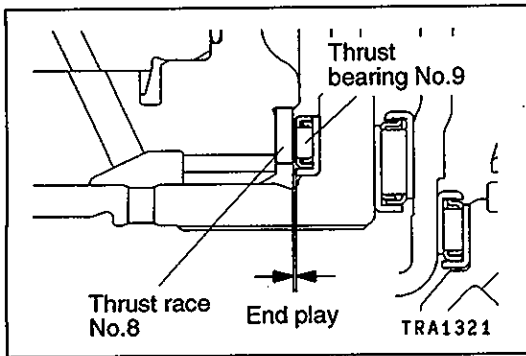
15. Remove the two output shaft support mounting bolts.
16. Using the two removed bolts, install the special tool to the specified torque.



17. Select the thrust race No.8 with the following procedure:
  - (1) Fix a dial gauge to the special tool.
  - (2) Alternately press in the output shaft and output flange, and measure the end play of the output shaft.

**NOTE**

- (1) When pressing in the output shaft, make sure that the center support does not move.
- (2) When pressing in the output flange, use the special tool.



- (3) Replace the thrust race No.8 installed in step 13 with a suitable one which can bring the end play of the output shaft to the standard value. Then, reassemble.

## NOTE

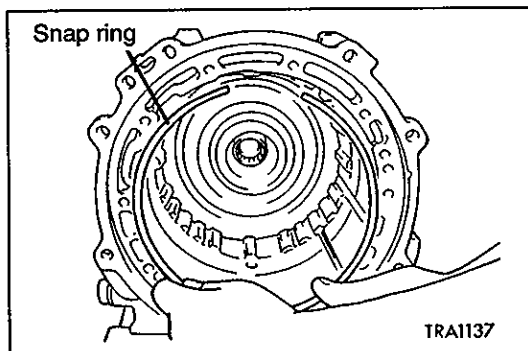
Refer to the thickness recorded in step 13.

**Standard value: 0.25 – 0.55 mm**

- (4) Measure the end play again, and confirm that it is within the standard value.

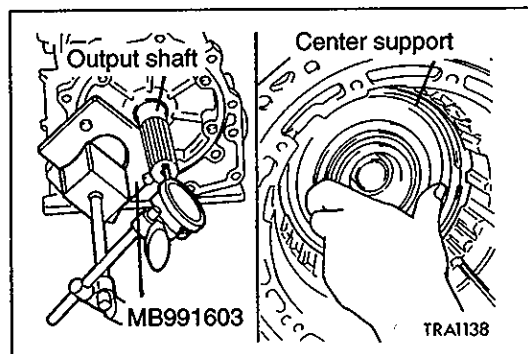
## NOTE

Carry this step out with the special tool and dial gauge installed.



18. Using the following steps, select a suitable snap ring for fixing the center support.

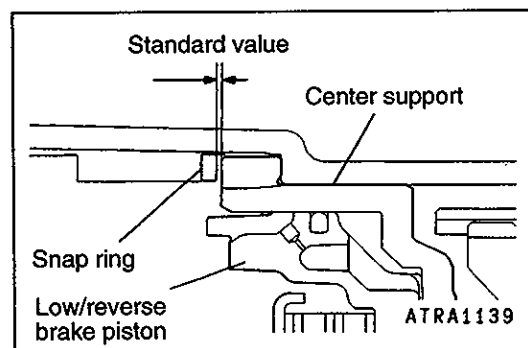
- (1) Install the snap ring which has been used for fixing the center support.



- (2) Alternately press in the output shaft and center support, and measure the end play of the center support.

## NOTE

Be sure to press the output shaft in fully until the center support contacts the snap ring.

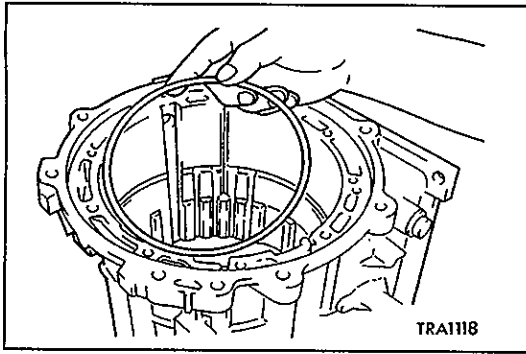


- (3) Replace the snap ring for fixing the center support installed in step 18 (1) with a suitable one so that the end play of the center support is at the standard value. Then, reassemble.

**Standard value: 0 – 0.16 mm**

- (4) Measure the end play again, and confirm that it is within the standard value.





19. Using the following steps, select a snap ring for adjusting the brake reaction plate end play and second brake end play, and a pressure plate for adjusting the low/reverse brake end play.

(1) Install the wave spring onto the low/reverse brake piston.

(2) Install the special tool in the position shown in the illustration instead of the pressure plate for the low/reverse brake. Install the brake discs, brake plates and snap ring.

	For 6G72 engine	For 6G74 engine
No. of brake discs	5	6
No. of brake plates	4	5

(3) Install the reaction plate and snap ring that was used.

**Caution**

- Take care to the assembly direction of the reaction plate.

(4) Install a dial gauge onto special tool (MD998913) so that the tool end contacts the brake reaction plate. Measure the end play by moving special tool (MB991632).

(5) Replace the snap ring installed in step 19 (3) with a suitable one so that the end play may fall within the standard value. Then, reassemble.

**Standard value: 0 – 0.16 mm**

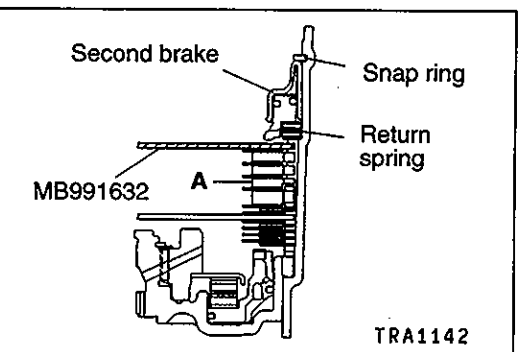
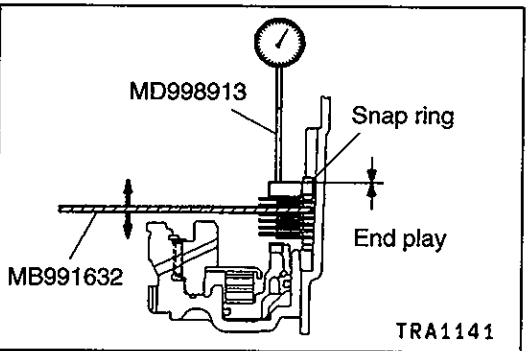
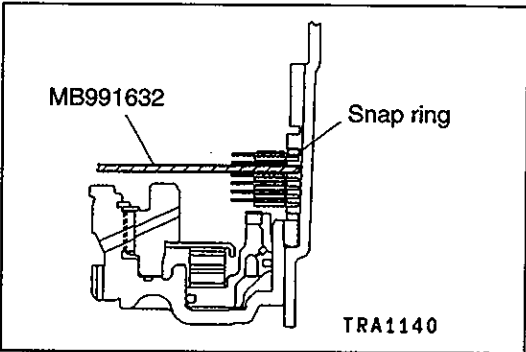
(6) Measure the end play again, and confirm that it is within the standard value.

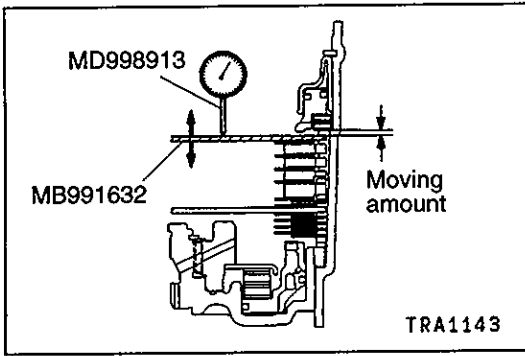
(7) Next, install the special tool instead of the pressure plate for the second brake. Install the four brake discs and three brake plates.

**Caution**

- Take care to the shape and assembly direction of the brake plates installed at section "A" shown in the illustration.

(8) Install the return spring, second brake and snap ring.



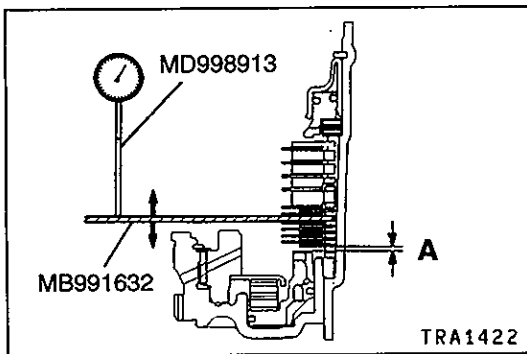


- (9) Install a dial gauge onto special tool (MD998913) so that the end contacts the special tool (MB991632). Move special tool (MB991632) and measure the moving amount. Select a pressure plate with a thickness that corresponds to the measured moving amount from the following table.

**End play standard value (reference):**  
**1.49 – 1.95 mm**

Moving amount mm	Pressure plate		
	Thickness mm	ID Symbol	Part No.
1.2 or more – less than 1.4	1.6	F	MR336390
1.4 or more – less than 1.6	1.8	E	MR336391
1.6 or more – less than 1.8	2.0	D	MR336392
1.8 or more – less than 2.0	2.2	C	MR336393
2.0 or more – less than 2.2	2.4	B	MR336394
2.2 or more – less than 2.4	2.6	A	MR336395
2.4 or more – less than 2.6	2.8	0	MR336396
2.6 or more – less than 2.8	3.0	1	MR336397

- (10) Remove the snap ring, second brake, return spring and special tool installed in step (8).  
 (11) Install the pressure plate selected in step (9), and install the return spring, second brake and snap ring again.

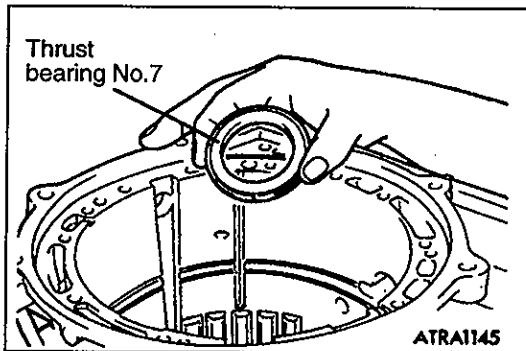


- (12) Install a dial gauge onto special tool (MD998913) so that the end contacts the special tool (MB991632). Move special tool (MB991632) and measure the moving amount. Select a pressure plate with a thickness that corresponds to the measured moving amount from the following table.

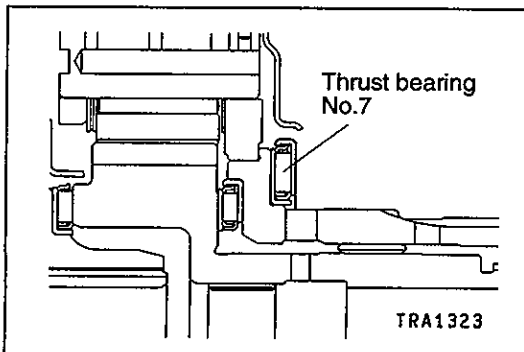
**End play standard value (reference):**  
**1.35 – 1.81 mm <for 6G72 engine>**  
**1.65 – 2.11 mm <for 4M40 engine>**

Moving amount mm		Pressure plate		
For 6G72 engine	For 4M40 engine	Thickness mm	ID symbol	Part No.
1.2 or more – less than 1.4	1.5 or more – less than 1.7	1.8	E	MD759425
1.4 or more – less than 1.6	1.7 or more – less than 1.9	2.0	D	MD759426
1.6 or more – less than 1.8	1.9 or more – less than 2.1	2.2	C	MD759427
1.8 or more – less than 2.0	2.1 or more – less than 2.3	2.4	B	MD759428
2.0 or more – less than 2.2	2.3 or more – less than 2.5	2.6	A	MD759429
2.2 or more – less than 2.4	2.5 or more – less than 2.7	2.8	0	MD759430
2.4 or more – less than 2.6	2.7 or more – less than 2.9	3.0	1	MD759431

(13) Remove the parts installed in steps 19 (1) to (12).

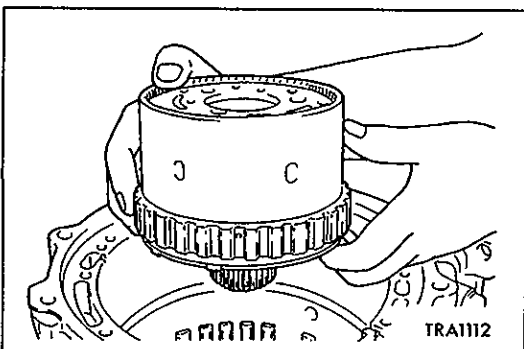


20. Apply Vaseline or petrolatum jelly on the thrust bearing No.7, and then install the bearing on the rear side of the low/reverse annulus gear.



**Caution**

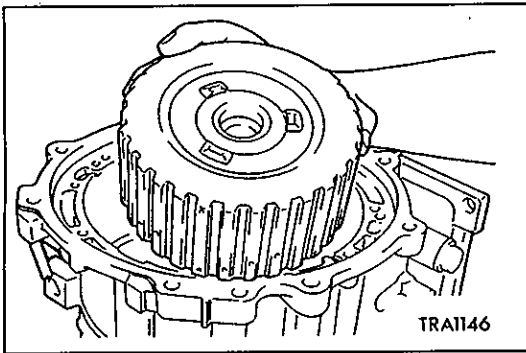
- Take care not to mistake the thrust bearing No.7 mounting direction.



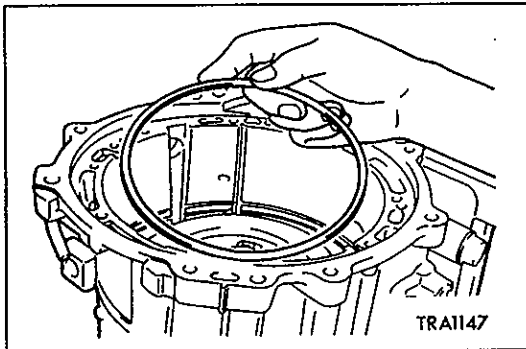
21. Install the low/reverse annulus gear.

**Caution**

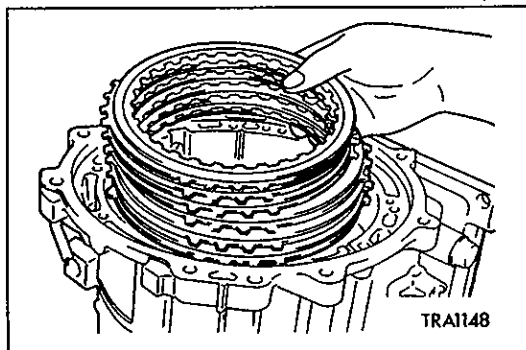
- Make sure that the thrust bearing No.7 attached to the rear side of the low/reverse annulus gear does not fall off.



22. Install the reverse sun gear.

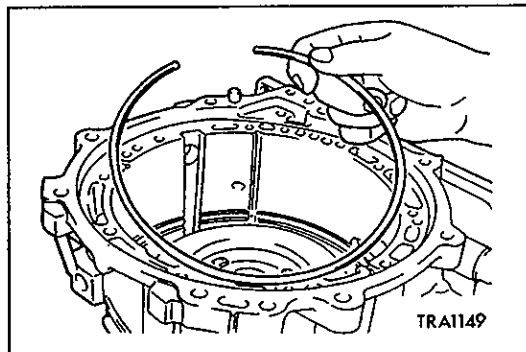


23. Install the wave spring to the low/reverse brake piston.

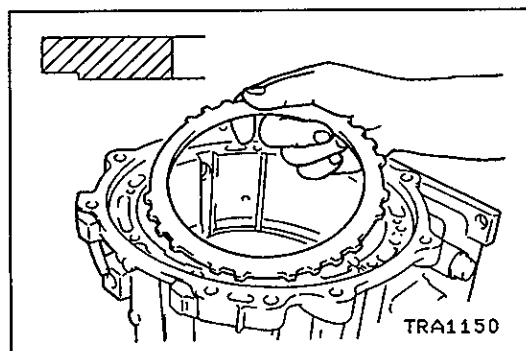


24. Install the pressure plate selected in step 19 (12), brake discs and brake plates.

	For 6G72 engine	For 4M40 engine
No. of brake discs	5	6
No. of brake plates	4	5



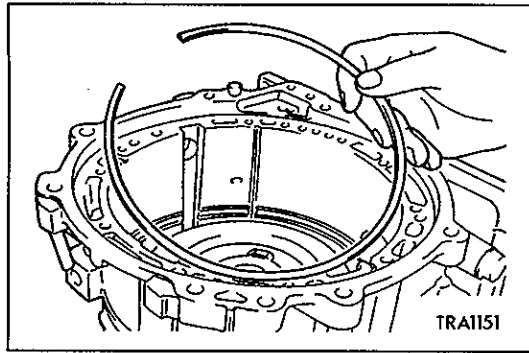
25. Install the snap ring.



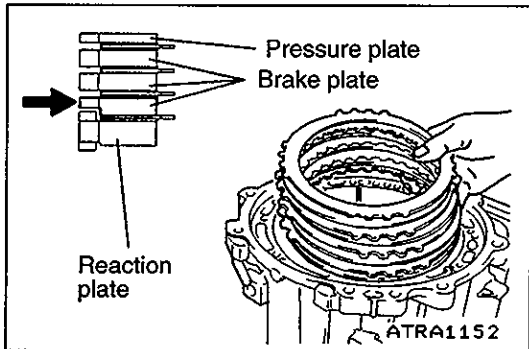
26. Install the reaction plate.

**Caution**

- Take care not to mistake the reaction plate installation direction.



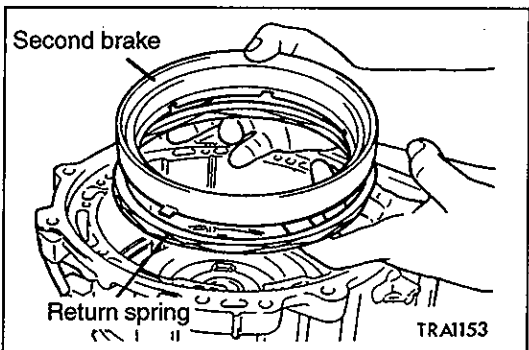
27. Install the snap ring selected in step 19 (5).



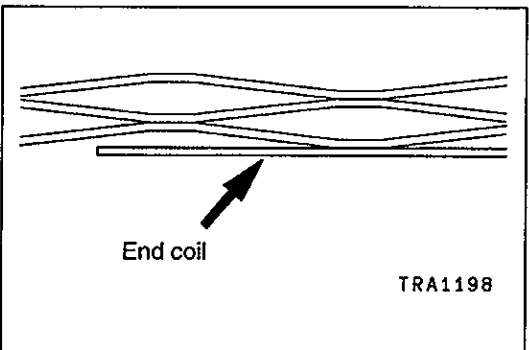
28. Install the brake discs, brake plates and pressure plate selected in step 19 (9).

**Caution**

- Take care not to mistake the brake plate (reaction plate side) installation direction.

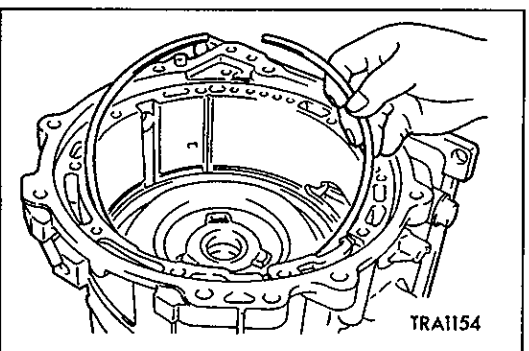


29. Install the return spring and second brake.

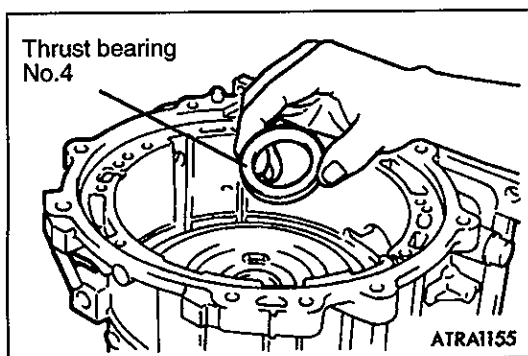


**Caution**

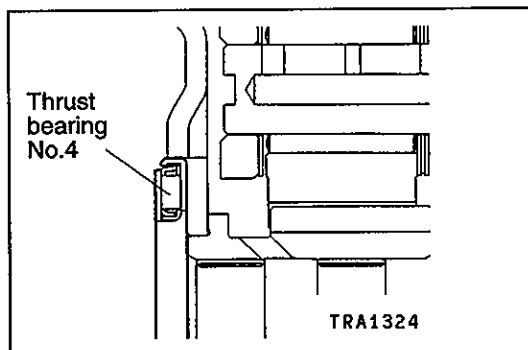
- Install the return spring so that the end coil side faces the back of the transmission.



30. Install the snap ring.

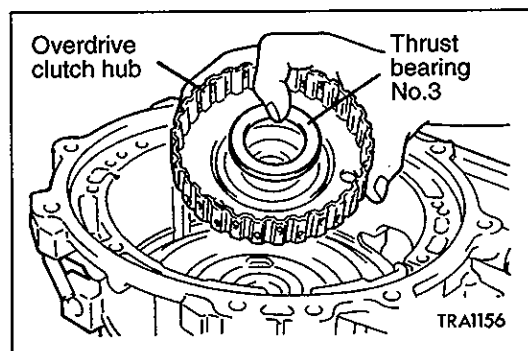


31. Apply Vaseline or petrolatum jelly on the thrust bearing No.4, and then install on the reverse sun gear.

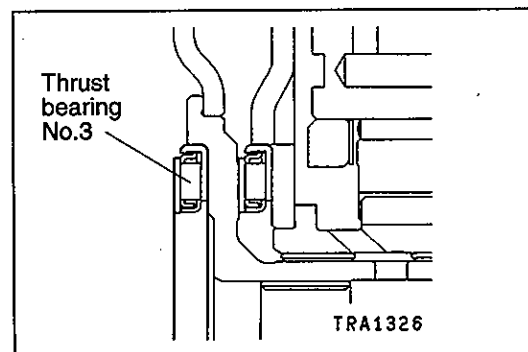


**Caution**

- Take care not to mistake the thrust bearing No.4 installation direction.

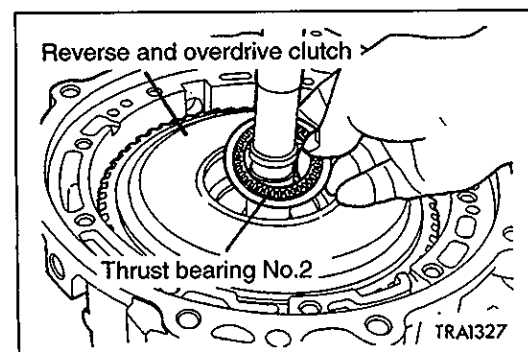


32. Apply Vaseline or petrolatum jelly on the thrust bearing No.3, and then install on the overdrive clutch hub.
33. Install the overdrive clutch hub.

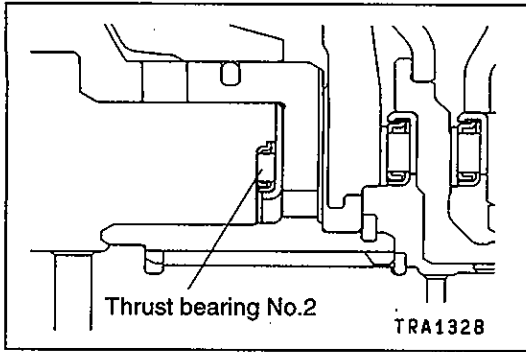


**Caution**

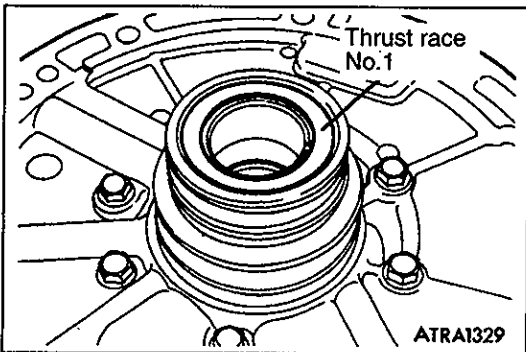
- Take care not to mistake the thrust bearing No.3 mounting direction.



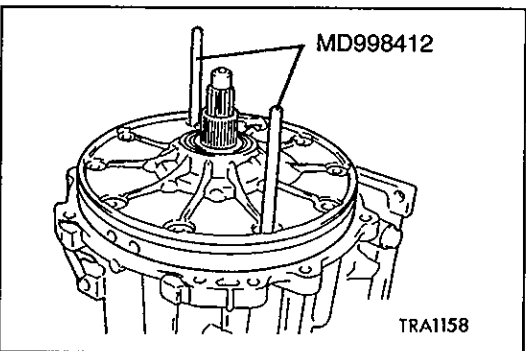
34. Install the reverse and overdrive clutch.
35. Apply Vaseline or petrolatum jelly on the thrust bearing No.2, and then install on the reverse and overdrive clutch.

**Caution**

- Take care not to mistake the thrust bearing No.2 mounting direction.



36. Apply Vaseline or petrolatum jelly on the thrust race No.1, and then install on the oil pump.

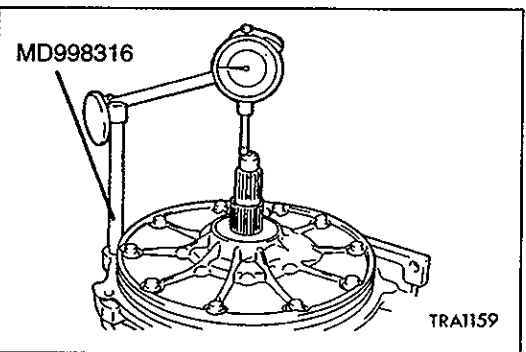


37. Install the special tool at the position shown in the illustration, and using this as a guide, install the oil pump and gasket.

**Caution**

- Never reuse the gasket.

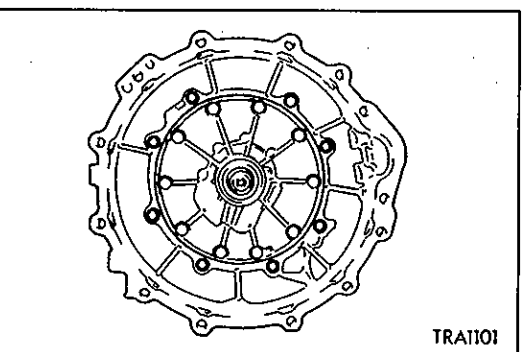
38. Tighten the ten oil pump mounting bolts to the specified torque.



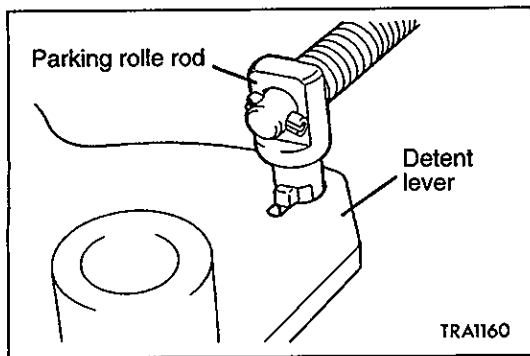
39. Using the special tool, set a dial gauge as shown in the illustration. Measure the end play of the input shaft, and replace the thrust race installed in step 36 with a suitable one so that the end play may meet the standard value. Then, reassemble.

**Standard value: 0.25 – 0.81 mm**

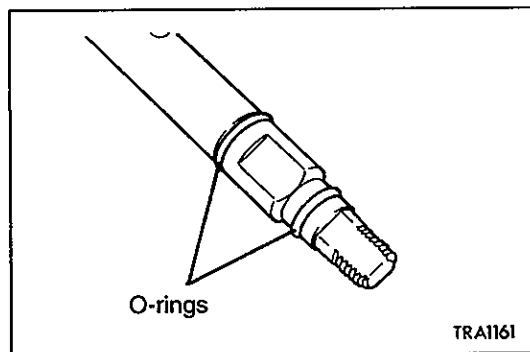
40. Measure the end play again, and confirm that it is within the standard value.



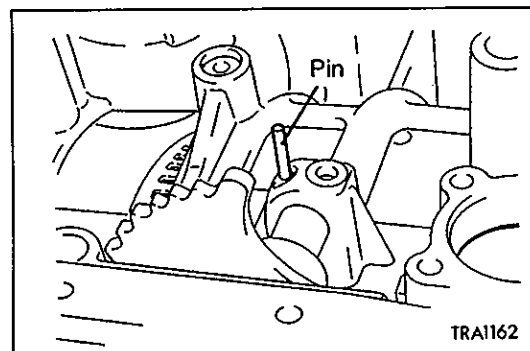
41. Install the converter housing.  
42. Tighten the eight converter housing mounting bolts to the specified torque.



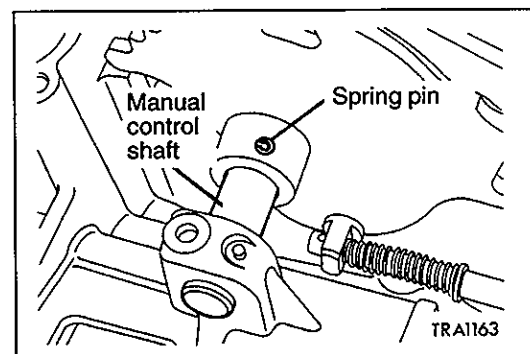
43. Install the parking roller rod to the detent lever.



44. Install two new O-rings to the manual control shaft, and assemble onto the transmission case together with the detent lever and parking roller rod.

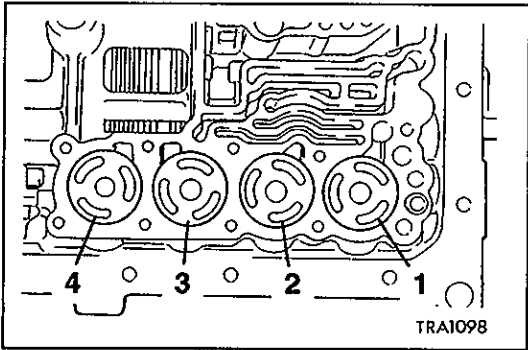
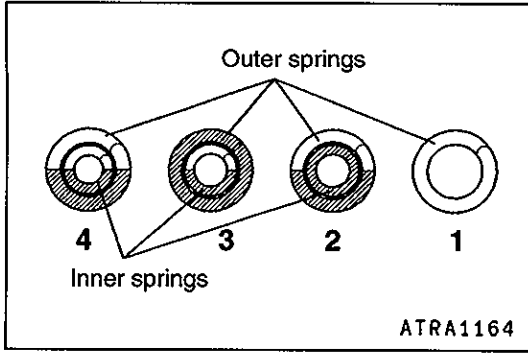


45. Install the pin.



46. Hammer in the spring pin so that its slit is perpendicular to the axial direction of the manual control shaft.



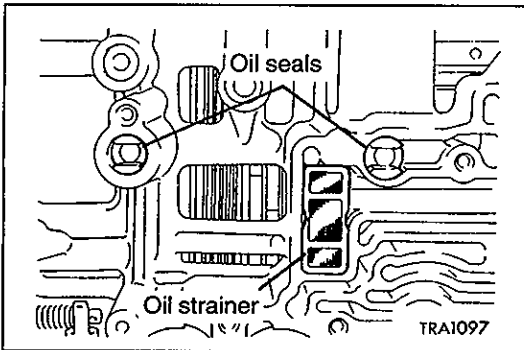


47. Install a new seal ring onto each accumulator piston.
48. Install each accumulator piston and spring.

**NOTE**

- (1) Install the accumulator pistons to the original positions following the identification tags attached when they were removed.
- (2) The springs are identified by paint application position as shown below. Assemble following this table.

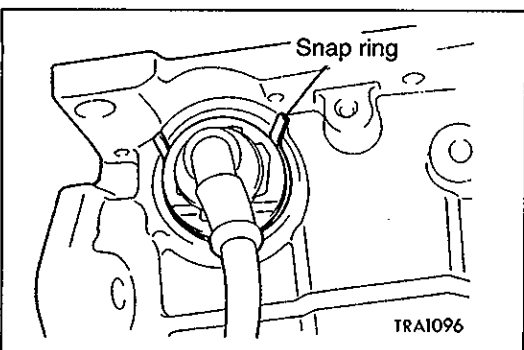
No.	Name	Identification paint application position	
1	For overdrive clutch	None	
2	For second brake	Inner	Applied on all surfaces including both ends
		Outer	Applied on half of surface including both ends
3	For low/reverse brake	Inner	Applied on half of surface including both ends
		Outer	Applied on entire surface of one side
4	For underdrive clutch	Inner	Applied on half of surface including both ends
		Outer	Applied on half of surface including both ends



49. Install the oil strainer and two new oil seals. Install the oil seals so that the notched section is oriented as shown in the illustration.

**Caution**

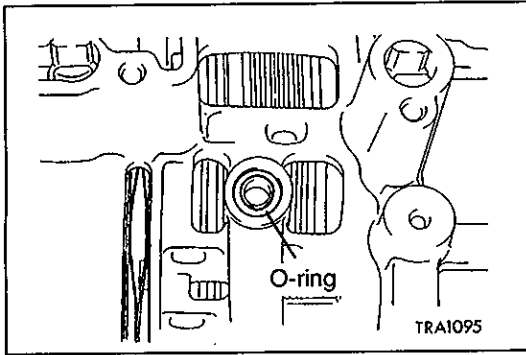
- Take care to the installation direction of the oil seal.



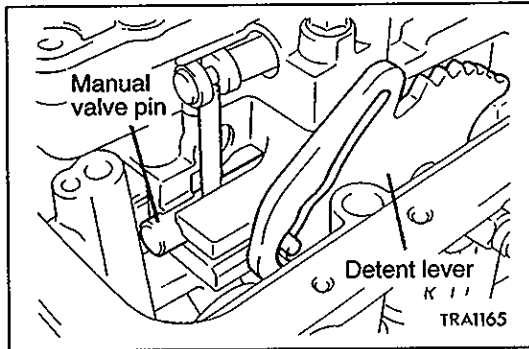
50. Install the solenoid valve harness, and then secure the snap ring to connector groove.

**NOTE**

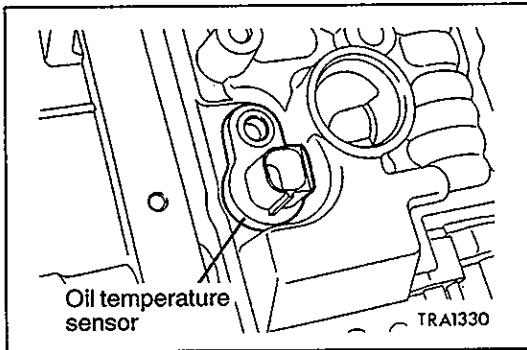
Install the harness so that it is oriented as shown in the illustration.



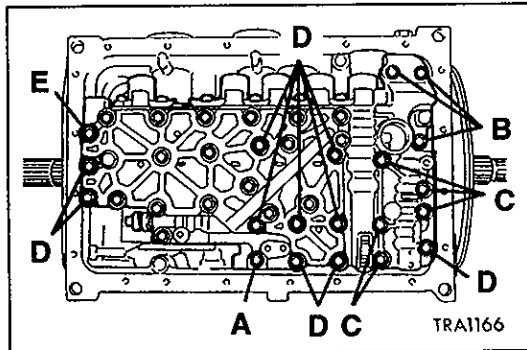
51. Install a new O-ring onto the transmission case at the position shown in the illustration.



52. Install the valve body while inserting the manual valve pin into the detent lever groove.

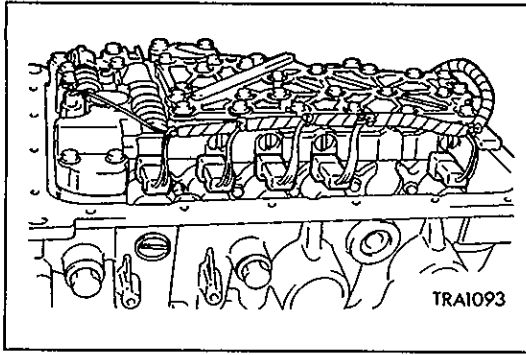


53. Install the oil temperature sensor.

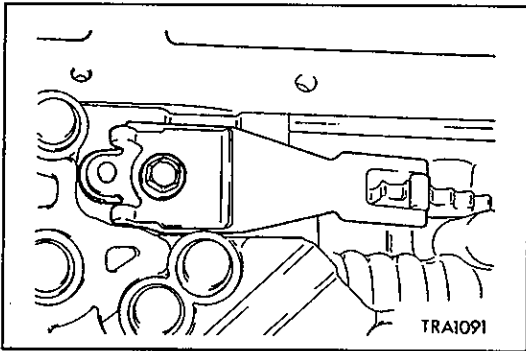


54. Tighten the twenty valve body mounting bolts to the specified torque.

Bolt	Length mm
A	25
B	30
C	40
D	45
E	55

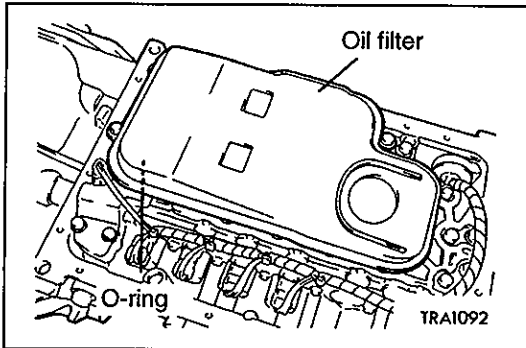


55. Connect the connector to the valve body.

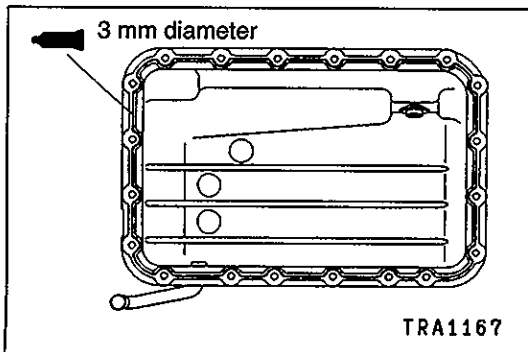


56. Install the detent spring.

57. Tighten the detent spring mounting bolt to the specified torque.



58. Install the oil filter and a new O-ring.



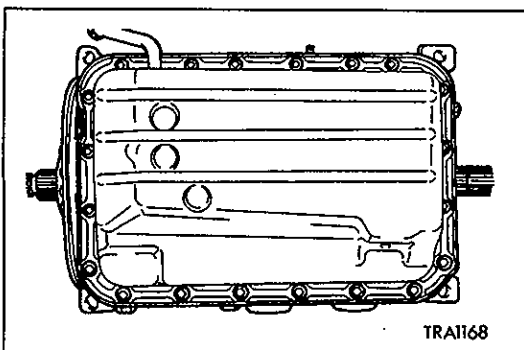
59. Apply sealant on the oil pan.

**Specified sealant:**

**MITSUBISHI** genuine sealant part No. MR166584  
or equivalent

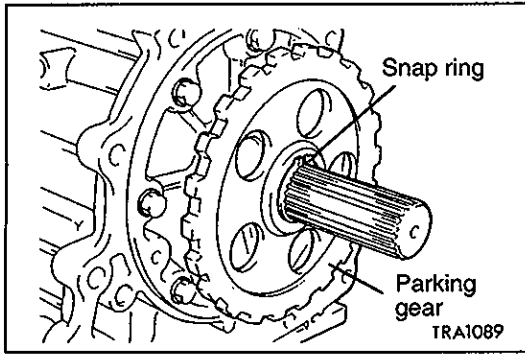
**Caution**

- Evenly squeeze out the sealant so that it is not insufficient or excessive.

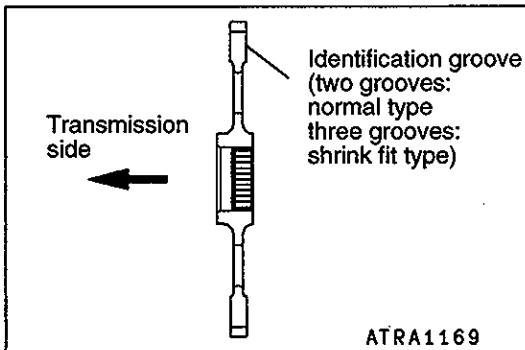


60. Install the oil pan.

61. Tighten the oil pan mounting bolts to the specified torque.

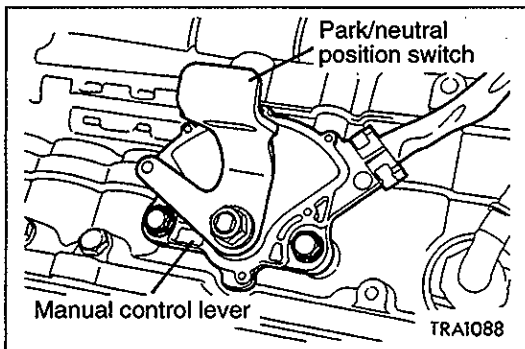


62. Install the parking gear and snap ring.

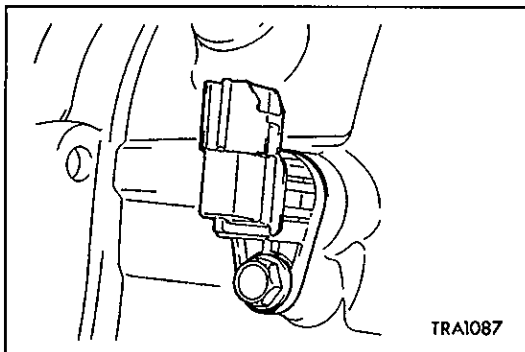


#### Caution

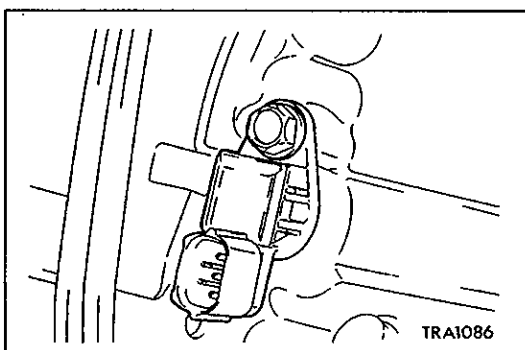
- Install the parking gear so that the side without the spline cut faces the transmission side.
- Heat the parking gear to 160 – 180°C, and shrink fit up to the stepped section of the output shaft. (Only the type with three identification grooves.) Do not heat for longer than necessary at this time.



63. Install the park/neutral position switch and manual control lever.



64. Install the output shaft speed sensor.



65. Install the input shaft speed sensor.

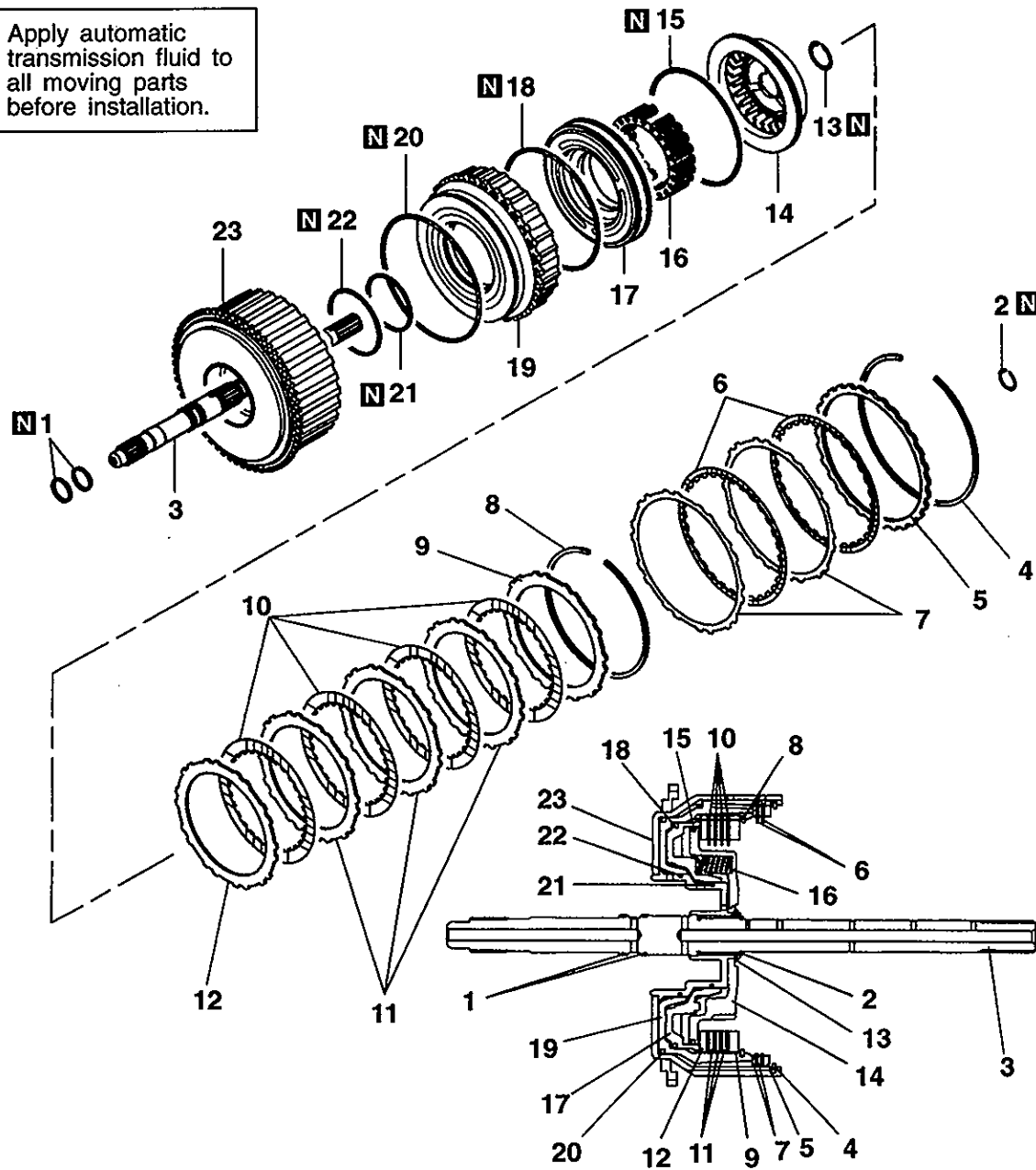
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**NOTES**

# 8. REVERSE AND OVERDRIVE CLUTCH

## DISASSEMBLY AND ASSEMBLY <FOR 6G72 ENGINE>

Apply automatic transmission fluid to all moving parts before installation.



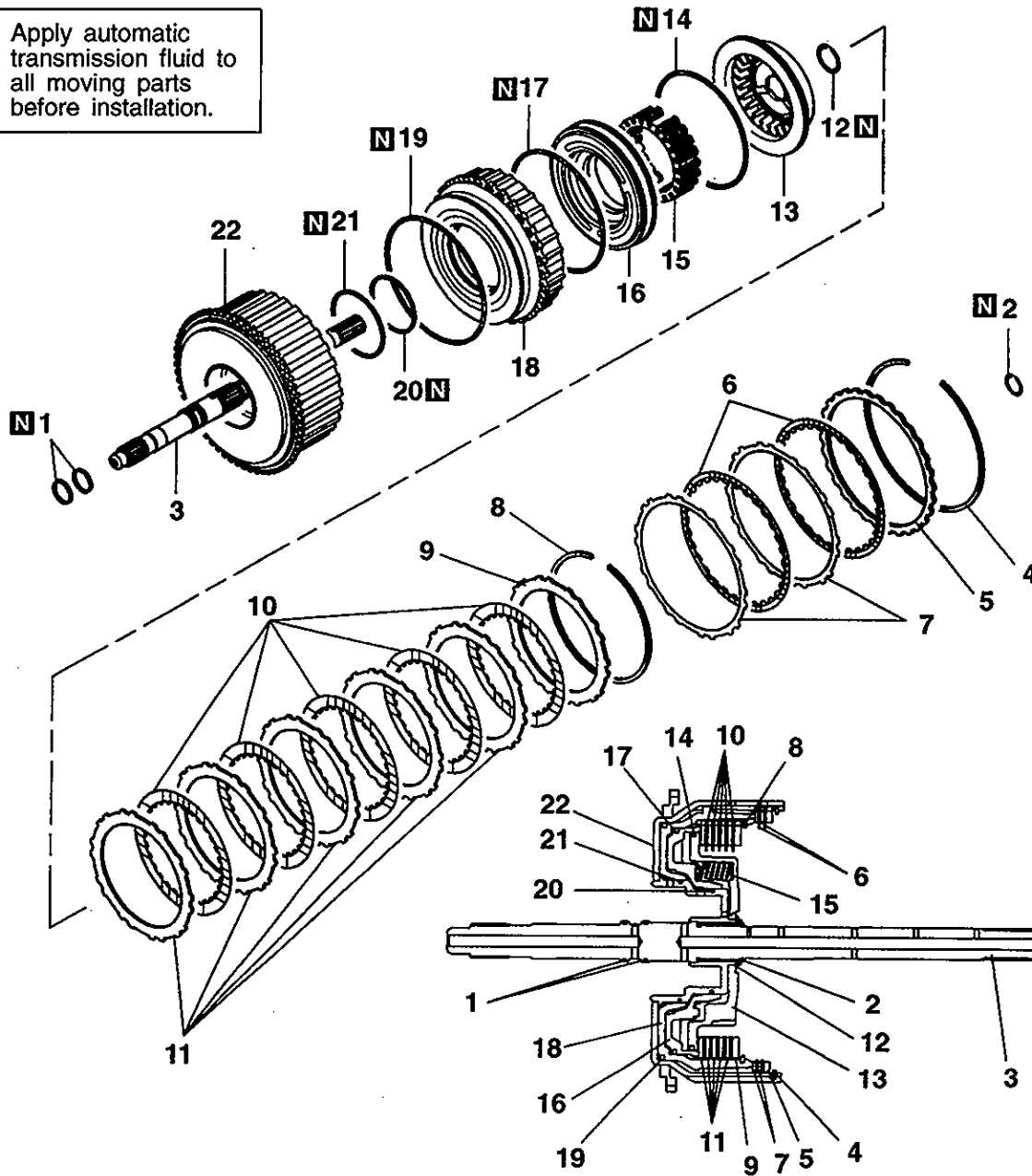
TRA1424

### Disassembly steps

- |                        |                                 |
|------------------------|---------------------------------|
| 1. Seal ring           | ▶D◀ 13. Snap ring               |
| 2. Snap ring           | ▶D◀ 14. Spring retainer         |
| 3. Input shaft         | ▶A◀ 15. D-ring                  |
| ▶H◀ 4. Snap ring       | ▶C◀ 16. Return spring           |
| ▶G◀ 5. Reaction plate  | ▶A◀ 17. Overdrive clutch piston |
| ▶G◀ 6. Clutch disc     | ▶A◀ 18. D-ring                  |
| ▶G◀ 7. Clutch plate    | ▶B◀ 19. Reverse clutch piston   |
| ▶F◀ 8. Snap ring       | ▶A◀ 20. D-ring                  |
| ▶E◀ 9. Reaction plate  | ▶A◀ 21. D-ring                  |
| ▶E◀ 10. Clutch disc    | ▶A◀ 22. D-ring                  |
| ▶E◀ 11. Clutch plate   | ▶A◀ 23. Reverse clutch retainer |
| ▶E◀ 12. Pressure plate |                                 |

DISASSEMBLY AND ASSEMBLY <FOR 4M40 ENGINE>

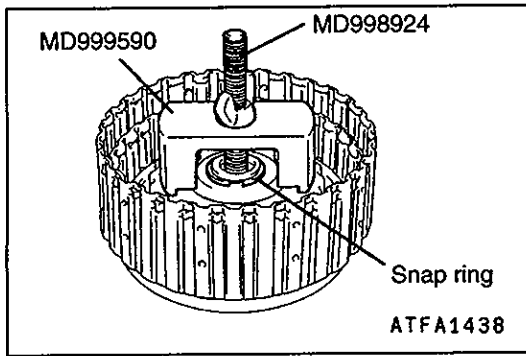
Apply automatic transmission fluid to all moving parts before installation.



TRA1423

Disassembly steps

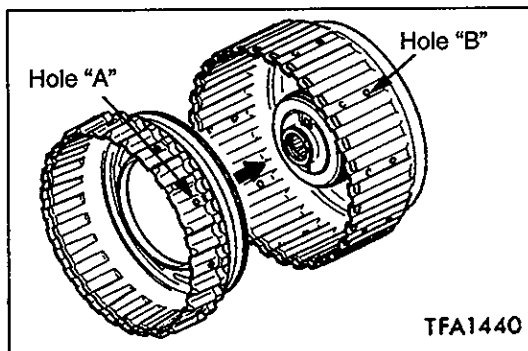
- |       |                   |       |       |                             |
|-------|-------------------|-------|-------|-----------------------------|
| ▶▶H▶▶ | 1. Seal ring      | ◀◀A▶▶ | ▶▶D▶▶ | 12. Snap ring               |
| ▶▶G▶▶ | 2. Snap ring      | ▶▶A▶▶ | ▶▶C▶▶ | 13. Spring retainer         |
| ▶▶G▶▶ | 3. Input shaft    | ▶▶B▶▶ | ▶▶A▶▶ | 14. D-ring                  |
| ▶▶G▶▶ | 4. Snap ring      | ▶▶A▶▶ | ▶▶A▶▶ | 15. Return spring           |
| ▶▶F▶▶ | 5. Reaction plate | ▶▶A▶▶ | ▶▶A▶▶ | 16. Overdrive clutch piston |
| ▶▶E▶▶ | 6. Clutch disc    | ▶▶A▶▶ | ▶▶A▶▶ | 17. D-ring                  |
| ▶▶E▶▶ | 7. Clutch plate   | ▶▶A▶▶ | ▶▶A▶▶ | 18. Reverse clutch piston   |
| ▶▶E▶▶ | 8. Snap ring      | ▶▶A▶▶ | ▶▶A▶▶ | 19. D-ring                  |
| ▶▶E▶▶ | 9. Reaction plate | ▶▶A▶▶ | ▶▶A▶▶ | 20. D-ring                  |
| ▶▶E▶▶ | 10. Clutch disc   | ▶▶A▶▶ | ▶▶A▶▶ | 21. D-ring                  |
| ▶▶E▶▶ | 11. Clutch plate  |       |       | 22. Reverse clutch retainer |

**DISASSEMBLY SERVICE POINT****◀A▶ SNAP RING REMOVAL**

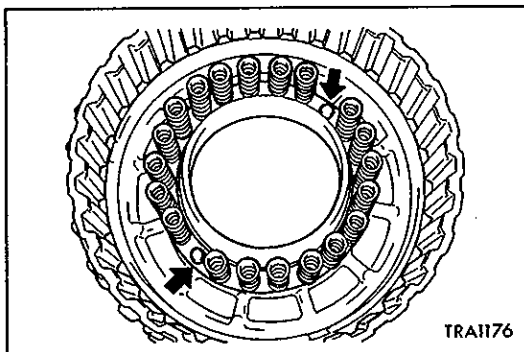
1. Set the special tools as shown in the illustration.
2. Compress the return spring, and remove the snap ring.

**ASSEMBLY SERVICE POINTS****▶A◀ D-RING INSTALLATION**

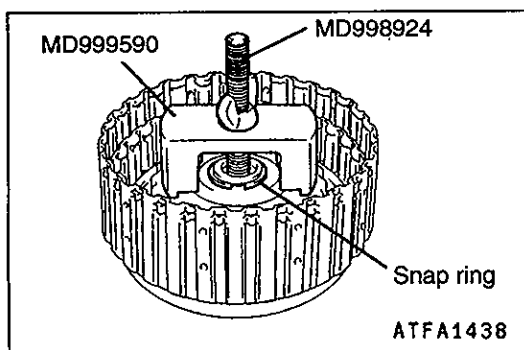
1. Apply ATF to the D-ring.
2. Install the D-rings in the reverse clutch retainer, piston, overdrive clutch piston and spring retainer grooves. Make sure that they are not twisted or damaged when installing.

**▶B◀ REVERSE CLUTCH PISTON INSTALLATION**

Align the holes ("A" and "B") in the reverse clutch piston and reverse clutch retainer and then assemble.

**▶C◀ RETURN SPRING INSTALLATION**

Align the two return spring holes with the two projections on the overdrive clutch piston, and then assemble the return springs.

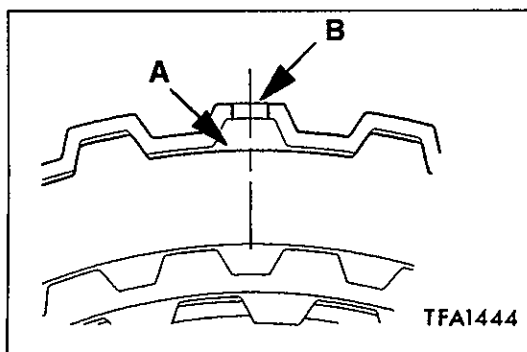
**▶D◀ SNAP RING INSTALLATION**

1. Set the special tools as shown in the illustration.
2. Tighten the special tool nut, and press the spring retainer against the reverse clutch retainer.
3. Install the thickest snap ring that can be fitted in the snap ring groove of the reverse clutch retainer.
4. Confirm that clearance between the snap ring and spring retainer is the standard value.

**Standard value: 0 – 0.09 mm**

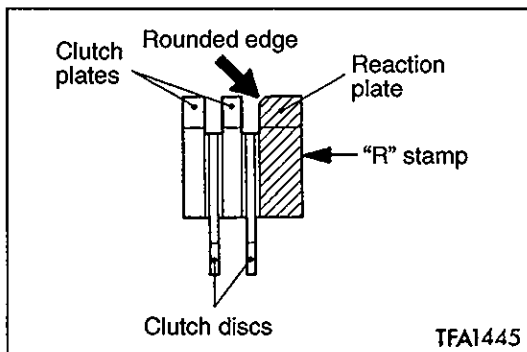






### ►G◄ CLUTCH PLATE / CLUTCH DISC/REACTION PLATE INSTALLATION

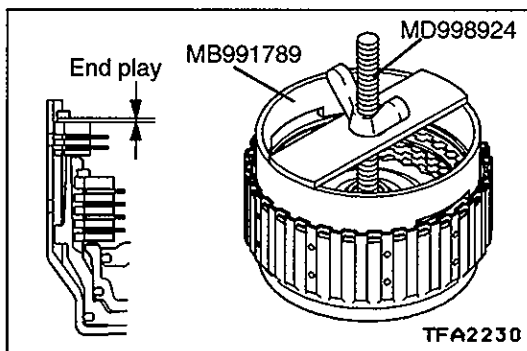
1. Alternately assemble the clutch plates and clutch discs in the reverse clutch retainer.  
When assembling the clutch plates, align the section where there are no teeth (A in the illustration) with the reverse clutch retainer hole (B in the illustration).
2. Install the reaction plate so that it is oriented as shown in the illustration.  
Assemble in the same manner as the clutch plate so that the section with no teeth ("A" in the illustration) matches the retainer hole ("B" in the illustration).



### ►H◄ SNAP RING INSTALLATION

1. Install the snap ring in the reverse clutch retainer groove.
2. Set the special tools as shown in the illustration, and compress the clutch element.
3. Check that the clearance between the snap ring and reaction plate (reverse clutch end play) is the standard value.  
If the clearance is not at the standard value, select a suitable snap ring and adjust so that the clearance is within the standard value.

**Standard value: 1.5 – 1.7 mm**

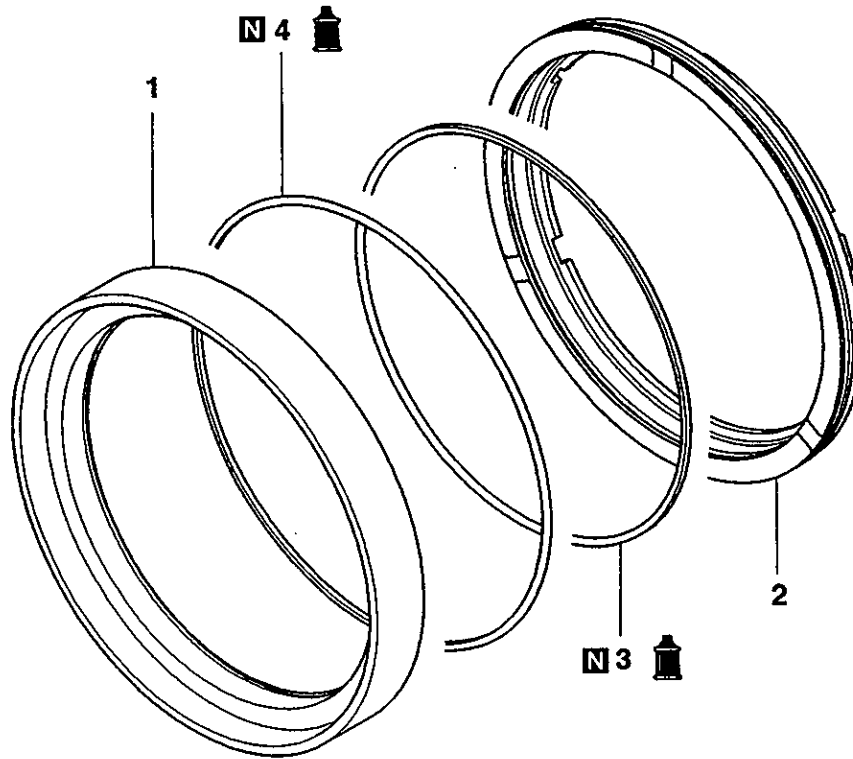


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## NOTES

## 9. SECOND BRAKE

### DISASSEMBLY AND ASSEMBLY



TRA1060

#### Disassembly steps

1. Second brake retainer
2. Second brake piston
3. D-ring
4. D-ring



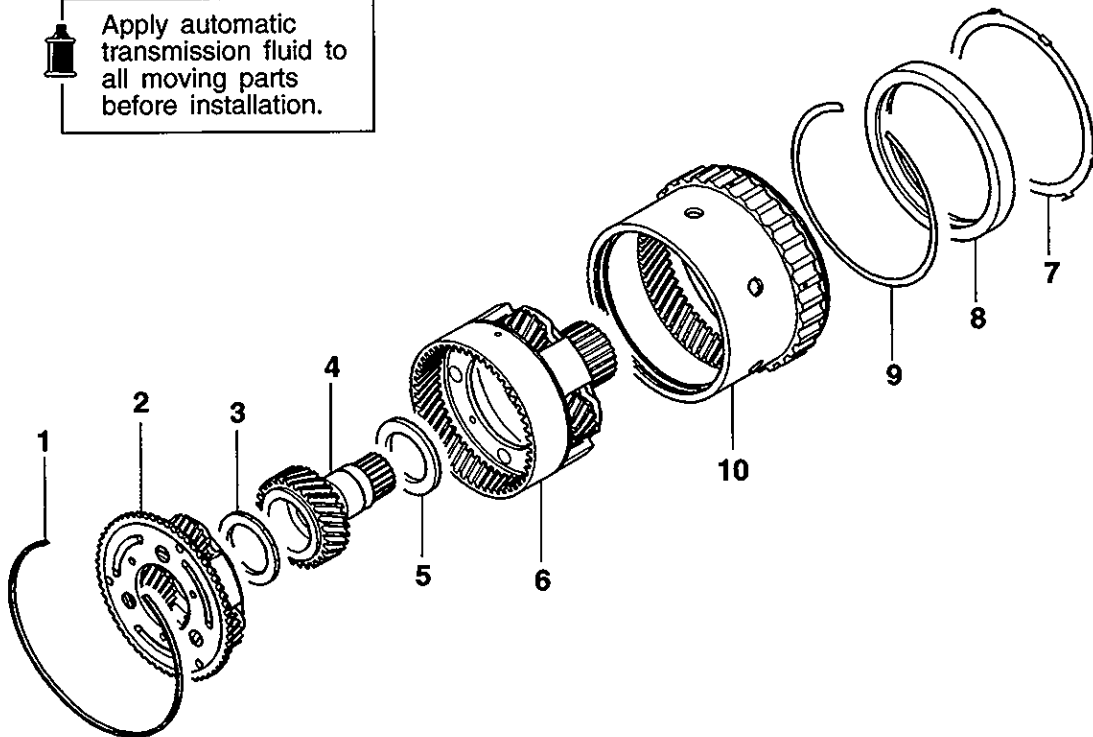
#### ASSEMBLY SERVICE POINT

##### ▶A◀ D-RING INSTALLATION

1. Apply ATF to the D-ring.
2. Install the D-ring in the groove on the outer and inner periphery of the piston. Make sure that the D-ring is not twisted or damaged when installing.

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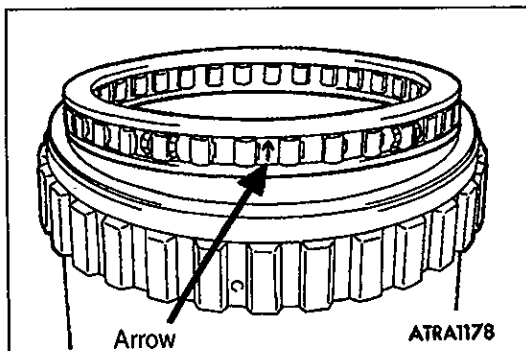
## NOTES

**10. LOW/REVERSE ANNULUS GEAR****DISASSEMBLY AND ASSEMBLY**

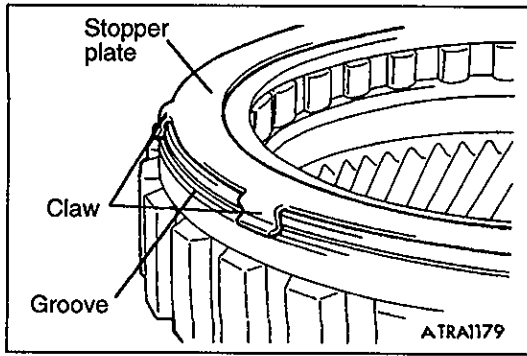
TRA1059

**Disassembly steps**

1. Snap ring
2. Overdrive planetary carrier
- ▶D◀ 3. Thrust bearing No.5
- ▶C◀ 4. Underdrive sun gear
- ▶C◀ 5. Thrust bearing No.6
- ▶B◀ 6. Output planetary carrier
- ▶B◀ 7. Stopper plate
- ▶A◀ 8. One-way clutch
9. Snap ring
10. Low/reverse annulus gear

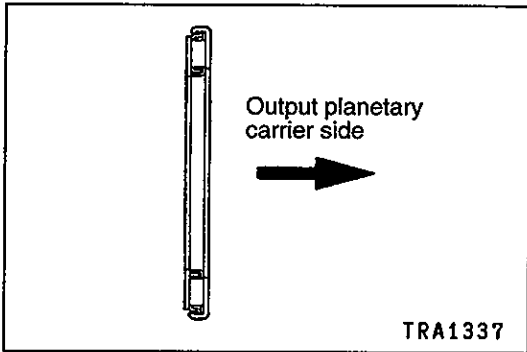
**ASSEMBLY SERVICE POINTS****▶A◀ ONE-WAY CLUTCH INSTALLATION**

Install the one-way clutch so that the arrow stamp is oriented as shown in the illustration.



### ►B◄ STOPPER PLATE INSTALLATION

Install the stopper plate onto the low/reverse annulus gear. Make sure that the stopper plate claws are securely engaged in the annulus gear groove.

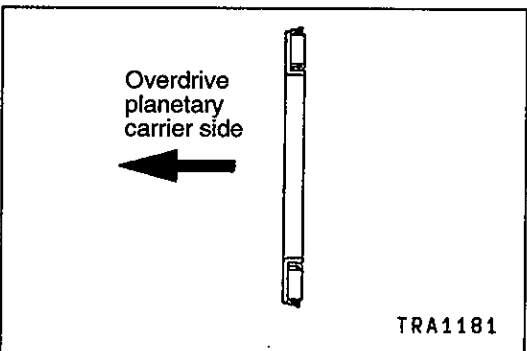


### ►C◄ THRUST BEARING NO.6 INSTALLATION

Apply Vaseline or petrolatum jelly on the thrust bearing No.6, and then install on the output planetary carrier.

#### Caution

- Take care not to mistake the thrust bearing No.6 mounting direction.



### ►D◄ THRUST BEARING NO.5 INSTALLATION

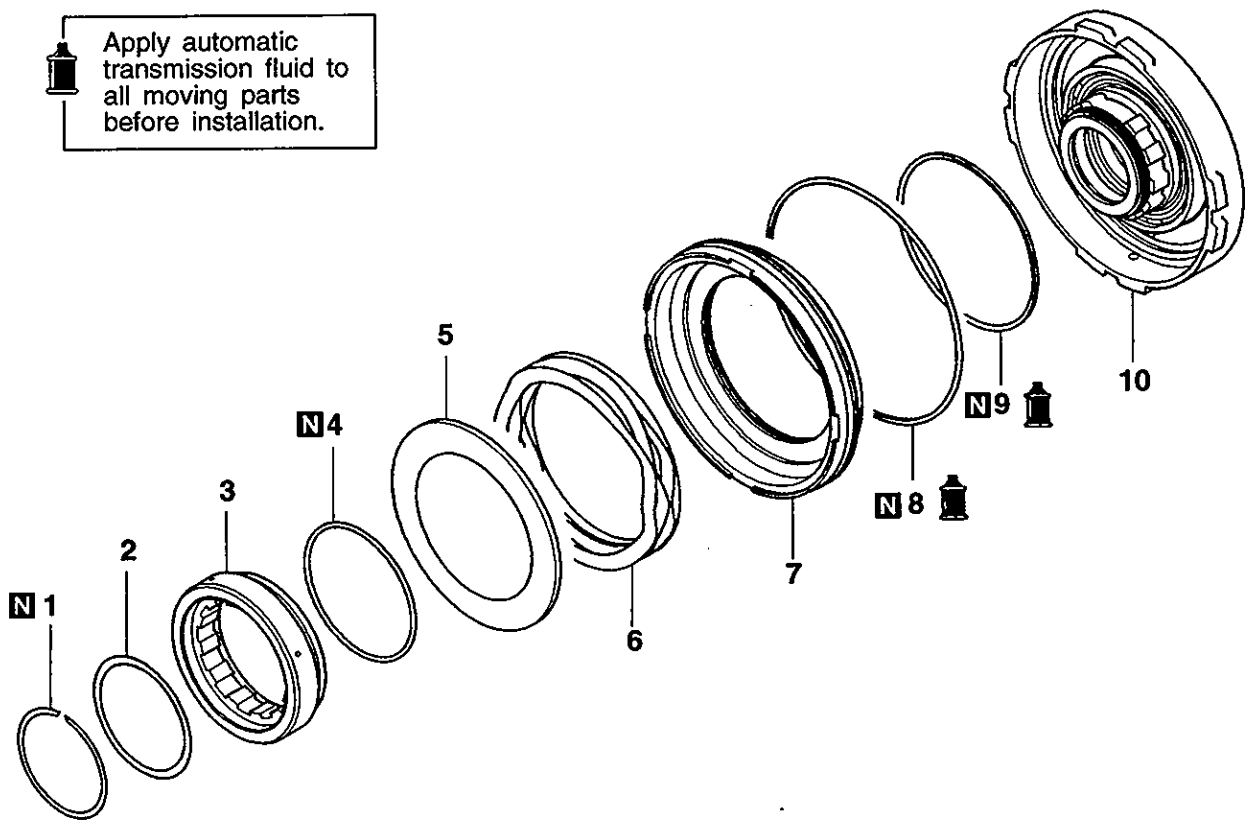
Apply Vaseline or petrolatum jelly on the thrust bearing No.5, and then install on the overdrive planetary carrier.

#### Caution

- Take care not to mistake the thrust bearing No.5 mounting direction.

# 11. CENTER SUPPORT DISASSEMBLY AND ASSEMBLY

Apply automatic transmission fluid to all moving parts before installation.



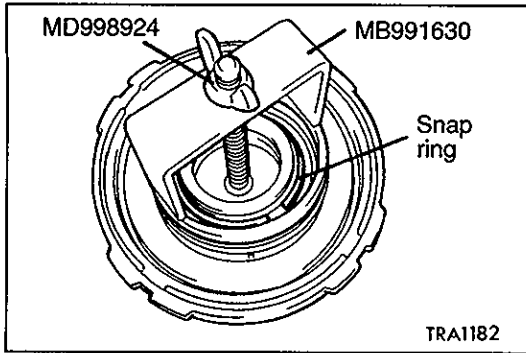
TRA1058

### Disassembly steps

- ◀A▶ ▶C▶ 1. Snap ring
- ▶B▶ 2. Plate
- ▶B▶ 3. One-way clutch inner race
- ▶B▶ 4. O-ring
- ▶B▶ 5. Spring retainer

- ▶A▶ ▶A▶ 6. Return spring
- ▶A▶ ▶A▶ 7. Low/reverse brake piston
- ▶A▶ ▶A▶ 8. D-ring
- ▶A▶ ▶A▶ 9. D-ring
- ▶A▶ ▶A▶ 10. Center support





## DISASSEMBLY SERVICE POINT

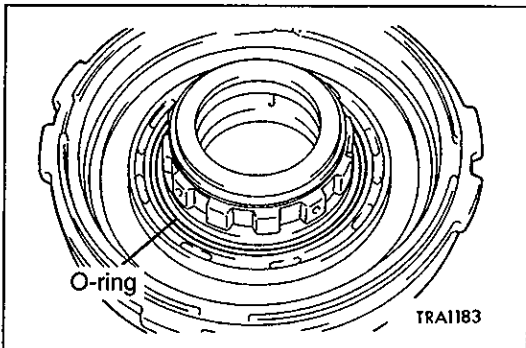
### ◀A▶ SNAP RING REMOVAL

1. Set the special tools as shown in the illustration so that they are pressed against the inner race of the one-way clutch.
2. Screw in the special tool nut, and lightly press against the inner race of the one-way clutch.
3. Remove the snap ring.

## ASSEMBLY SERVICE POINTS

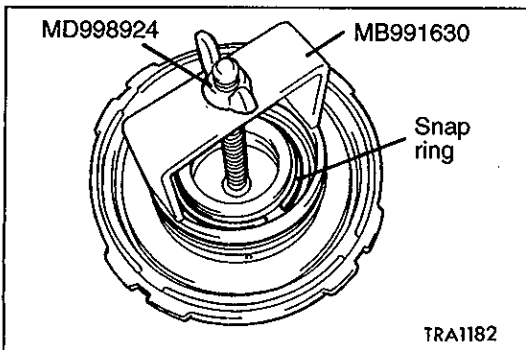
### ▶A◀ D-RING INSTALLATION

1. Apply ATF to the D-ring.
2. Install the D-ring in the groove on the outer and inner periphery of the piston. Make sure that the D-ring is not twisted or damaged when installing.



### ▶B◀ O-RING INSTALLATION

Install the O-ring onto the center support at the position shown in the illustration.




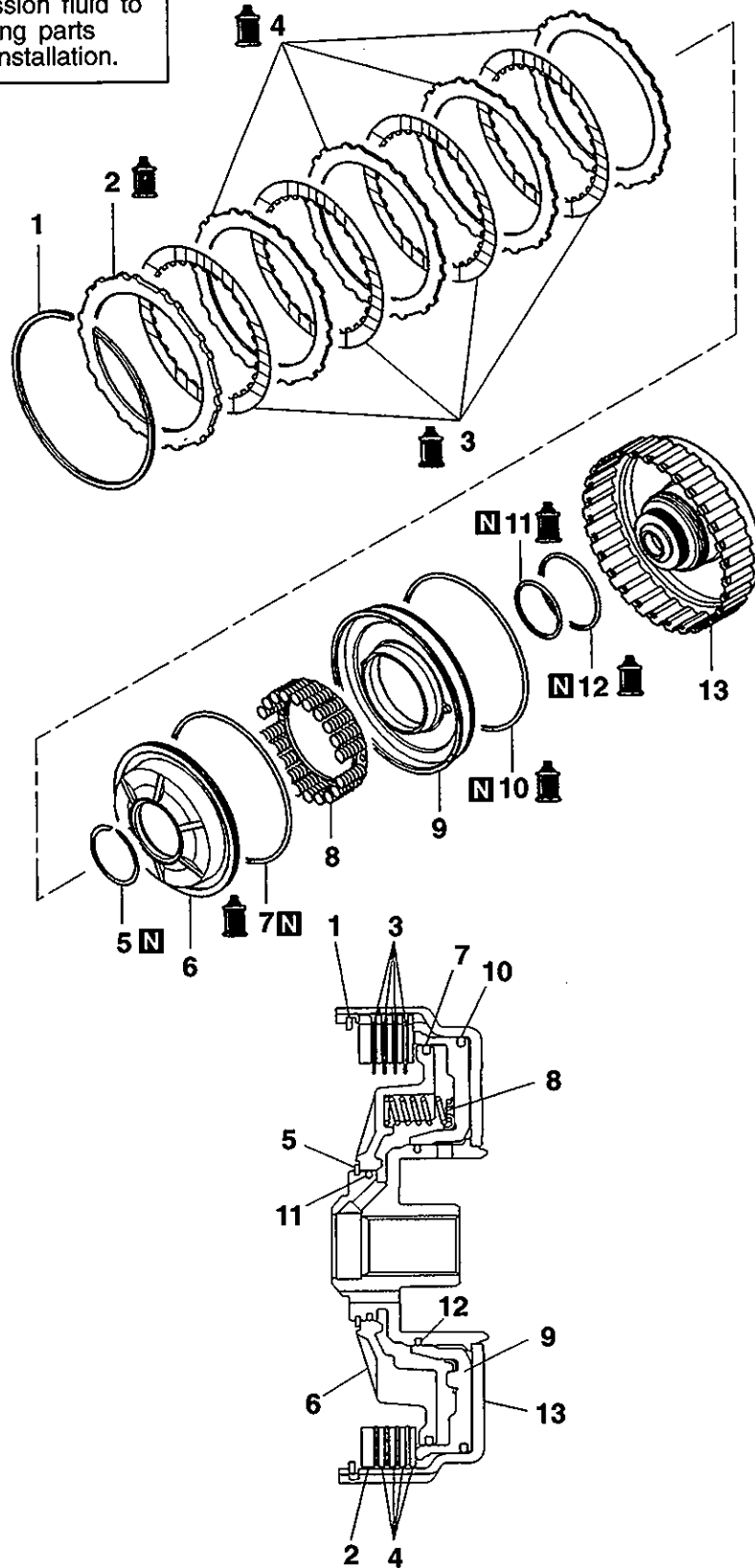
### ▶C◀ SNAP RING INSTALLATION

1. Set the special tools as shown in the illustration.
2. Screw in the special tool nut, and lightly press against the inner race of the one-way clutch.
3. Install the snap ring.

# 12. UNDERDRIVE CLUTCH

## DISASSEMBLY AND ASSEMBLY

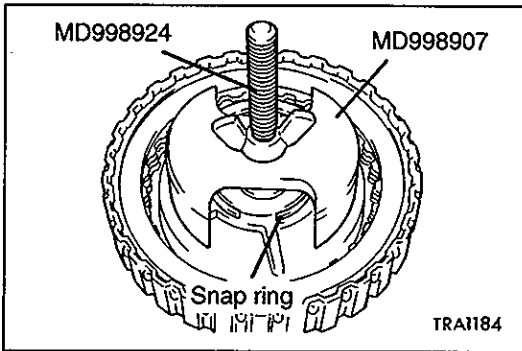
 Apply automatic transmission fluid to all moving parts before installation.



TRA1057

**Disassembly steps**

- |     |                   |     |                                |
|-----|-------------------|-----|--------------------------------|
| ▶E◀ | 1. Snap ring      | ▶B◀ | 8. Return spring               |
| ▶D◀ | 2. Reaction plate | ▶A◀ | 9. Underdrive clutch piston    |
| ▶D◀ | 3. Clutch disc    | ▶A◀ | 10. D-ring                     |
| ▶D◀ | 4. Clutch plate   | ▶A◀ | 11. D-ring                     |
| ◀A▶ | 5. Snap ring      | ▶A◀ | 12. D-ring                     |
| ▶C◀ | 6. Snap retainer  |     | 13. Underdrive clutch retainer |
| ▶A◀ | 7. D-ring         |     |                                |

**DISASSEMBLY SERVICE POINT****◀A▶ SNAP RING REMOVAL**

1. Set the special tools as shown in the illustration.
2. Compress the return spring, and remove the snap ring.

**ASSEMBLY SERVICE POINTS****▶A◀ D-RING INSTALLATION**

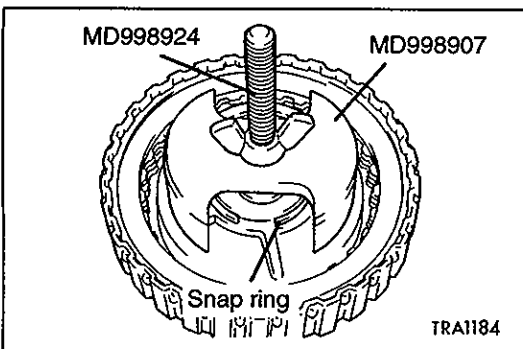
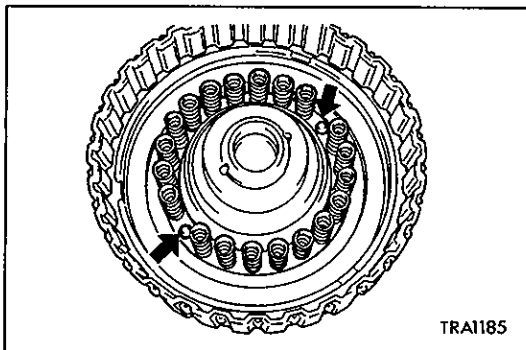
1. Apply ATF to the D-ring.
2. Install the D-ring in the groove of the underdrive clutch retainer and spring retainer. Make sure that the D-ring is not twisted or damaged when installing.

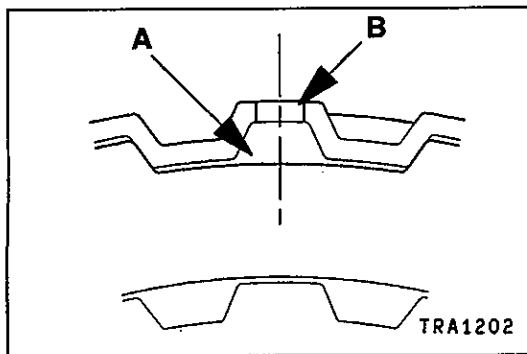
**▶B◀ RETURN SPRING INSTALLATION**

Align the two return spring holes with the two projections on the underdrive clutch piston, and then assemble the return springs.

**▶C◀ SNAP RING INSTALLATION**

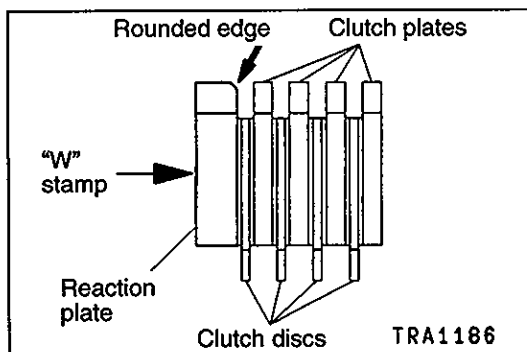
1. Set the special tools as shown in the illustration.
2. Compress the return spring, and install the snap ring.



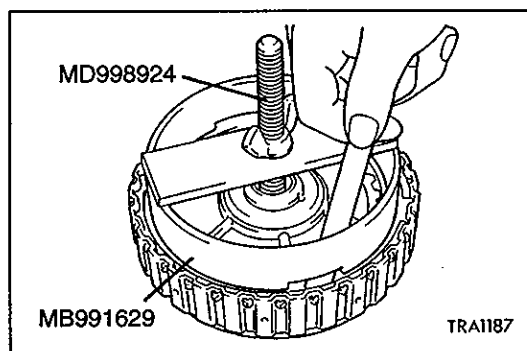


### ►D◄ CLUTCH PLATE / CLUTCH DISC / REACTION PLATE INSTALLATION

1. Alternately assemble the clutch plates and clutch discs in the underdrive clutch retainer. When assembling the four clutch plates, align the section where there are no teeth (A in the illustration) with the underdrive clutch retainer hole (B in the illustration).



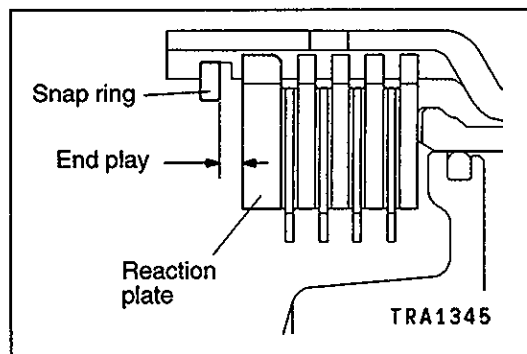
2. Install the reaction plate so that it is oriented as shown in the illustration. Assemble in the same manner as the clutch plate so that the section with no teeth ("A" in the illustration) matches the retainer hole ("B" in the illustration).



### ►E◄ SNAP RING INSTALLATION

1. Install the snap ring in the groove of the underdrive clutch retainer.
2. Set the special tools as shown in the illustration, and compress the clutch element.
3. Confirm that the clearance between the snap ring and reaction plate (underdrive clutch end play) is the standard value. If the clearance is not at the standard value, select a suitable snap ring and adjust so that the clearance is within the standard value.

**Standard value: 1.6 – 1.8 mm**

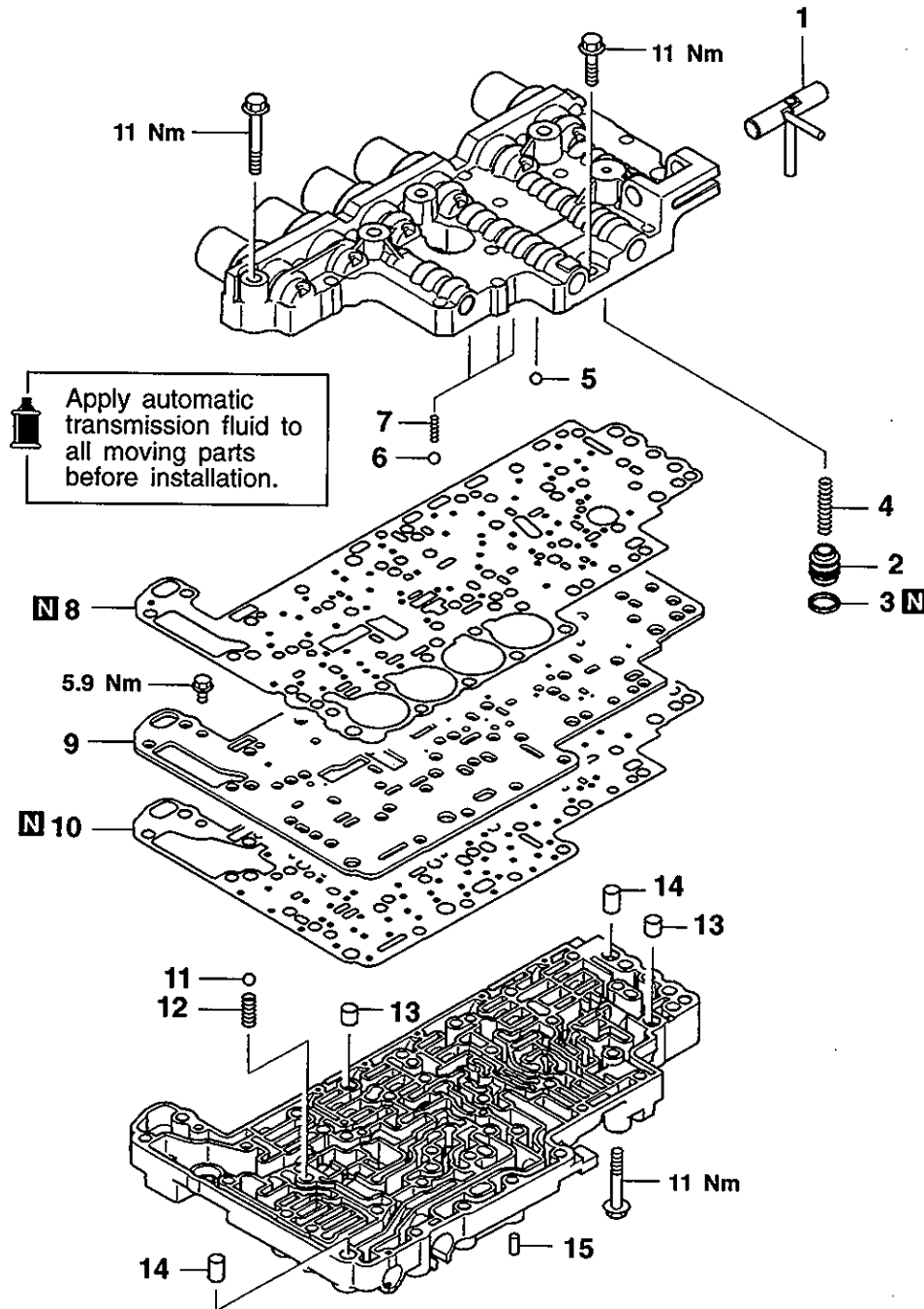


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**NOTES**

# 13. VALVE BODY

## DISASSEMBLY AND ASSEMBLY

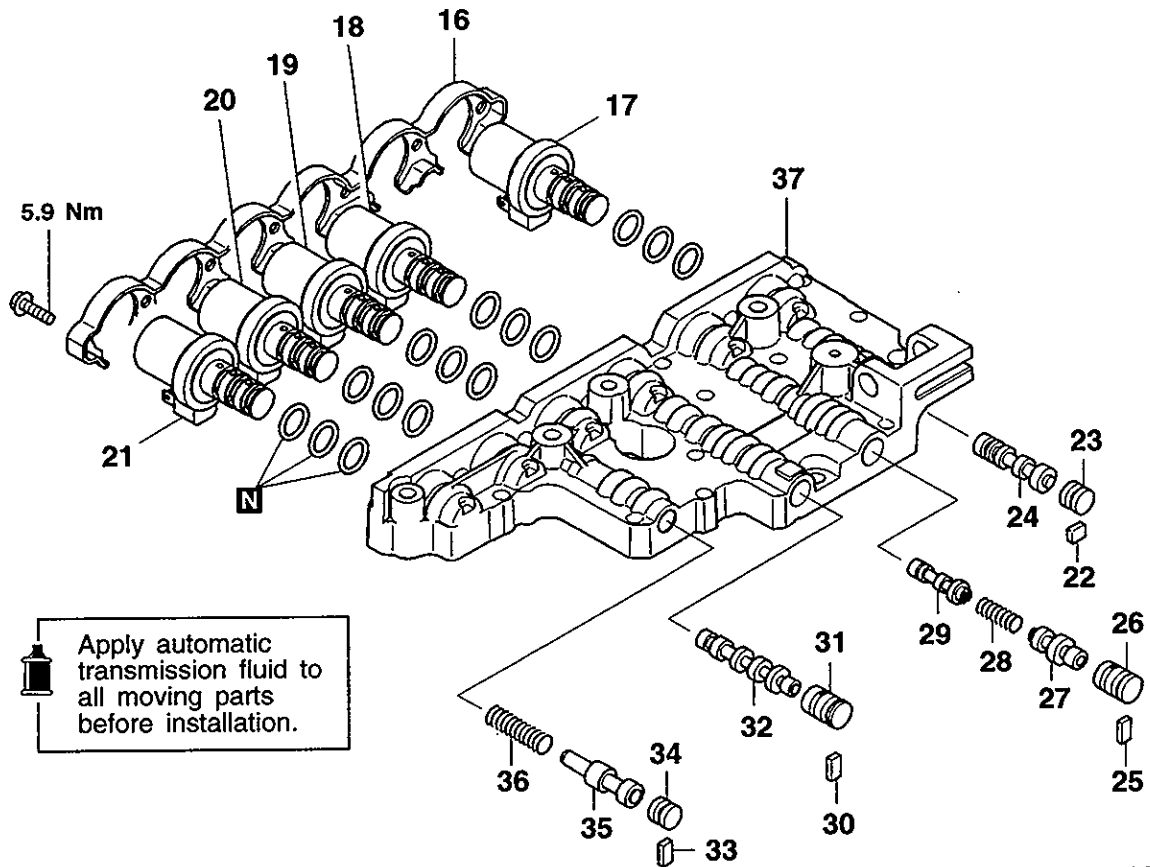


TRA1062

### Disassembly steps

- ▶▶G▶▶ 1. Manual valve pin
- ▶▶F▶▶ 2. Damping valve
- ▶▶F▶▶ 3. Seal ring
- ▶▶F▶▶ 4. Damping valve spring
- ▶▶F▶▶ 5. Ball (orifice check ball)
- ▶▶F▶▶ 6. Steel ball (orifice check ball)
- ▶▶F▶▶ 7. Spring
- ▶▶F▶▶ 8. Upper valve body gasket

- ▶▶E▶▶ 9. Separating plate
- ▶▶E▶▶ 10. Lower valve body gasket
- ▶▶E▶▶ 11. Steel ball (line relief)
- ▶▶E▶▶ 12. Spring
- ▶▶D▶▶ 13. Knock bushing
- ▶▶C▶▶ 14. Knock bushing
- ▶▶B▶▶ 15. Dowel pin

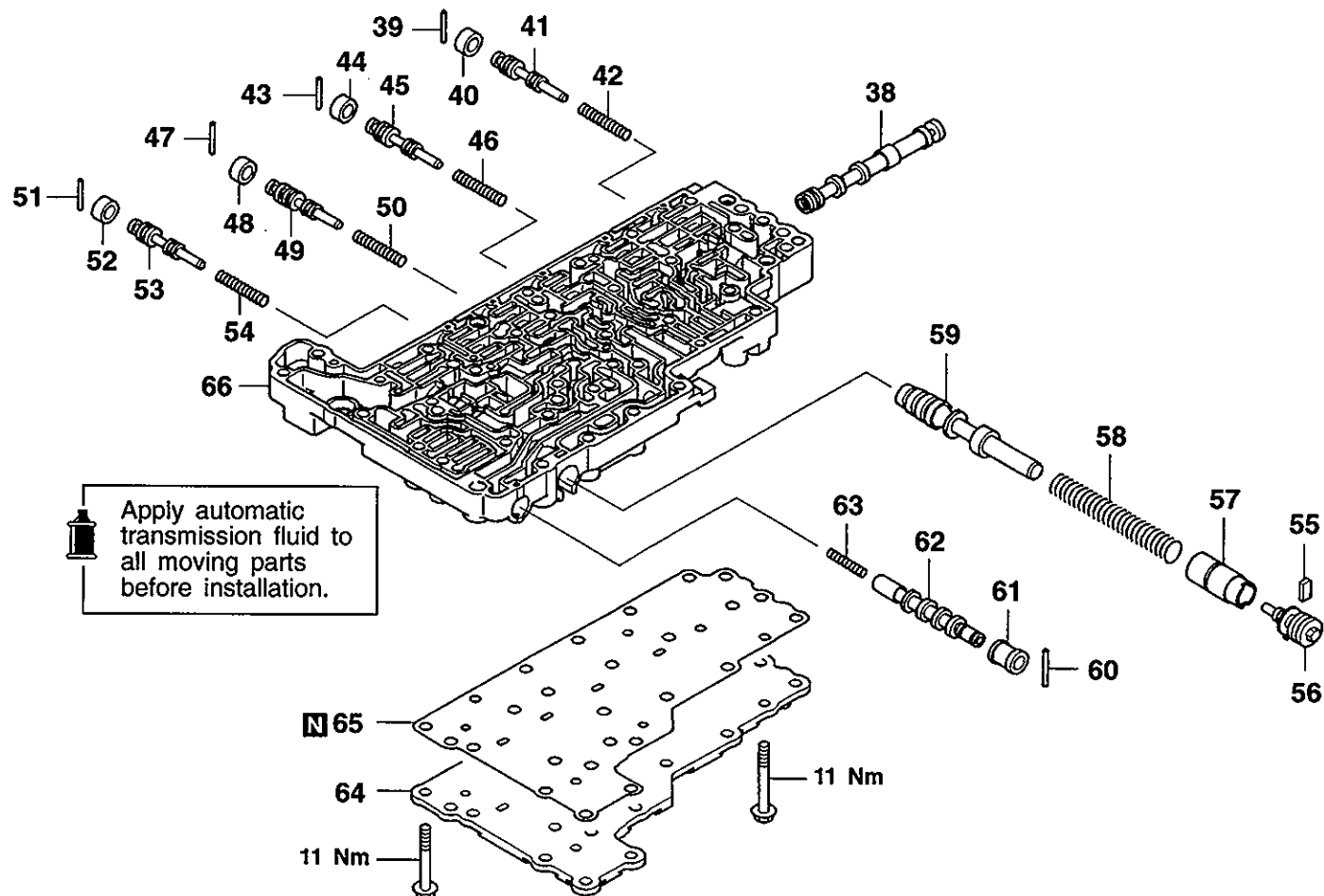


TRA1063

**Disassembly steps**



- ▶A▶ 16. Solenoid support
- ▶A▶ 17. Low/reverse brake solenoid valve
- ▶A▶ 18. Second brake solenoid valve
- ▶A▶ 19. Underdrive clutch solenoid valve
- ▶A▶ 20. Overdrive clutch solenoid valve
- ▶A▶ 21. Torque converter clutch control solenoid valve
- 22. Stopper plate
- 23. Stopper plug
- 24. Switching valve
- 25. Stopper plate
- 26. Fail-safe valve A sleeve
- 27. Fail-safe valve A<sub>2</sub>
- 28. Fail-safe valve A spring
- 29. Fail-safe valve A<sub>1</sub>
- 30. Stopper plate
- 31. Fail-safe valve B sleeve
- 32. Fail-safe valve B
- 33. Stopper plate
- 34. Stopper plug
- 35. Torque converter pressure control valve
- 36. Torque converter pressure control valve spring
- 37. Upper valve body



TRA1064

**Disassembly steps**

- |   |  |
|---|--|
| 38. Manual valve                                    | 51. Roller   |
| 39. Roller  | 52. Overdrive clutch pressure control valve sleeve |
| 40. Low/reverse brake pressure control valve sleeve | 53. Overdrive clutch pressure control valve        |
| 41. Low/reverse brake pressure control valve        | 54. Overdrive clutch pressure control valve spring |
| 42. Low/reverse brake pressure control valve spring | 55. Stopper plate                                  |
| 43. Roller  | 56. Regulator valve adjusting screw                |
| 44. Second brake pressure control valve sleeve      | 57. Regulator valve sleeve                         |
| 45. Second brake pressure control valve             | 58. Regulator valve spring                         |
| 46. Second brake pressure control valve spring      | 59. Regulator valve                                |
| 47. Roller  | 60. Roller   |
| 48. Underdrive clutch pressure control valve sleeve | 61. Torque converter clutch control valve sleeve   |
| 49. Underdrive clutch pressure control valve        | 62. Torque converter clutch control valve          |
| 50. Underdrive clutch pressure control valve spring | 63. Torque converter clutch control valve spring   |
|   | 64. Cover  |
|   | 65. Cover gasket                                   |
|   | 66. Lower valve body                               |



**DISASSEMBLY SERVICE POINT****◀A▶ SOLENOID VALVE REMOVAL**

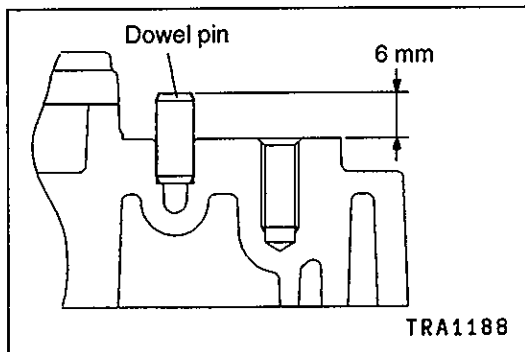
Before removing the solenoid valves, make marks with white paint, etc., so that these valves can be reinstalled in the original positions.

**ASSEMBLY SERVICE POINTS****▶A◀ SOLENOID VALVE INSTALLATION**

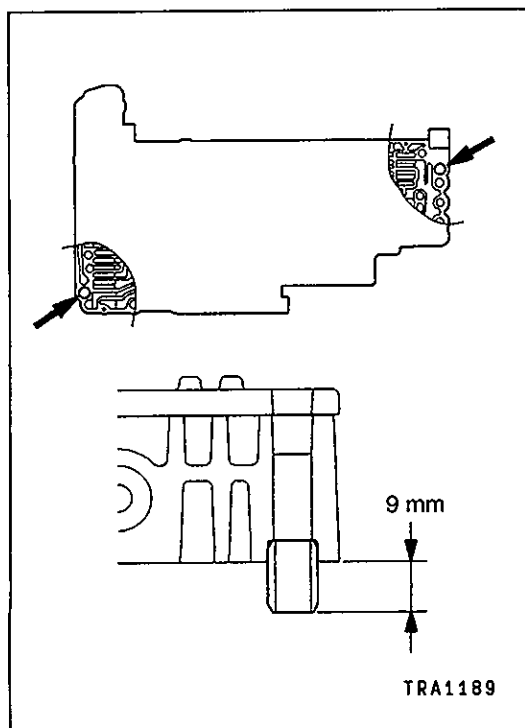
1. Apply ATF, petrolatum jelly or Vaseline to O-rings, and install them to solenoid valves.
2. Following the marks made during removal, install each solenoid valve.

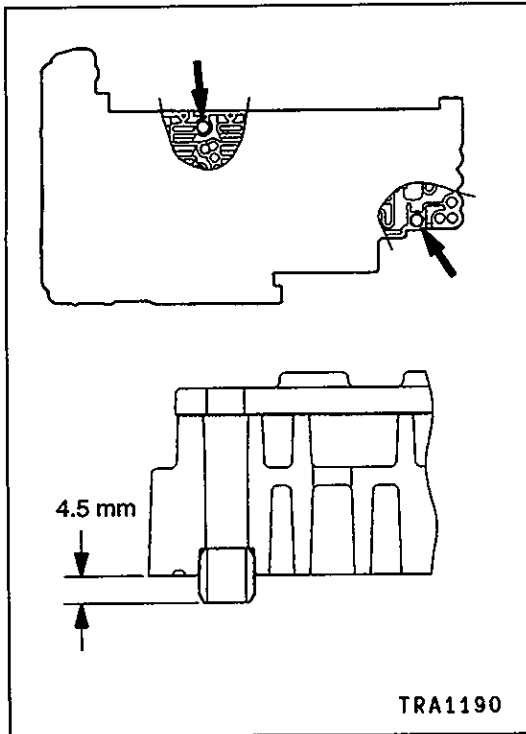
**▶B◀ DOWEL PIN INSTALLATION**

Install the dowel pin at the specified position on the lower valve body.

**▶C◀ KNOCK BUSHING INSTALLATION**

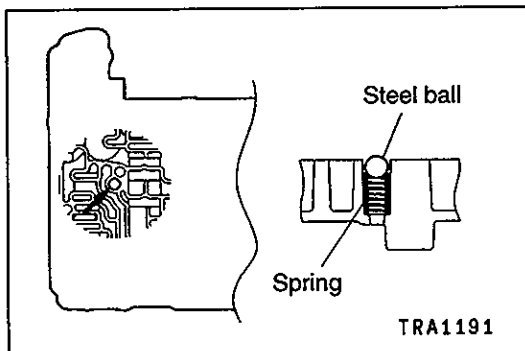
Install the knock bushing onto the lower valve body position shown in the illustration.





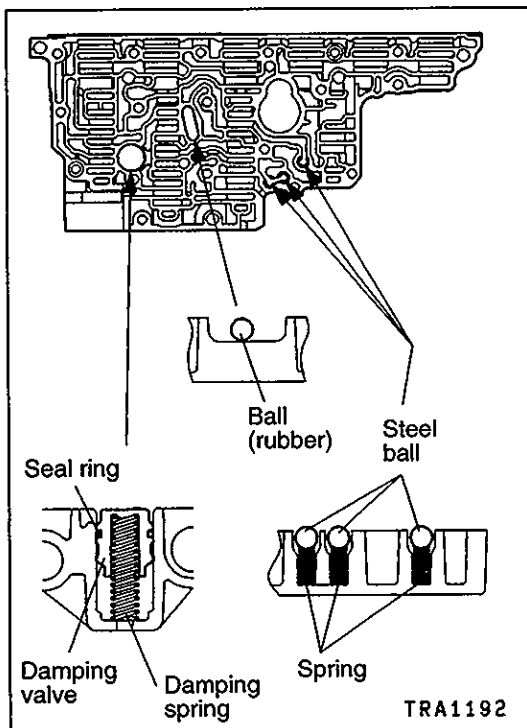
### ►D◄ KNOCK BUSHING INSTALLATION

Install the knock bushing onto the lower valve body position shown in the illustration.



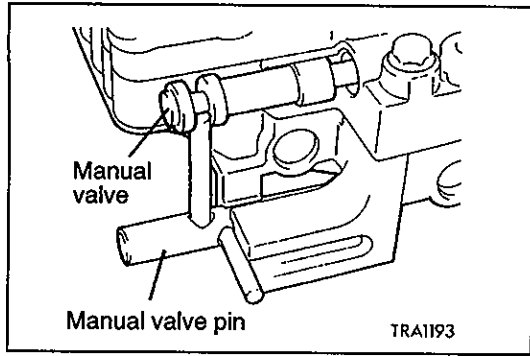
### ►E◄ SPRING / STEEL BALL (LINE RELIEF) INSTALLATION

Install the spring (7 mm in diameter, 17.3 mm in length) and the steel ball (6.4 mm in diameter) onto the lower valve body position shown in the illustration.



### ►F◄ SPRING / STEEL BALL (ORIFICE CHECK BALL) / BALL (ORIFICE CHECK BALL) / DAMPING VALVE SPRING / SEAL RING / DAMPING VALVE INSTALLATION

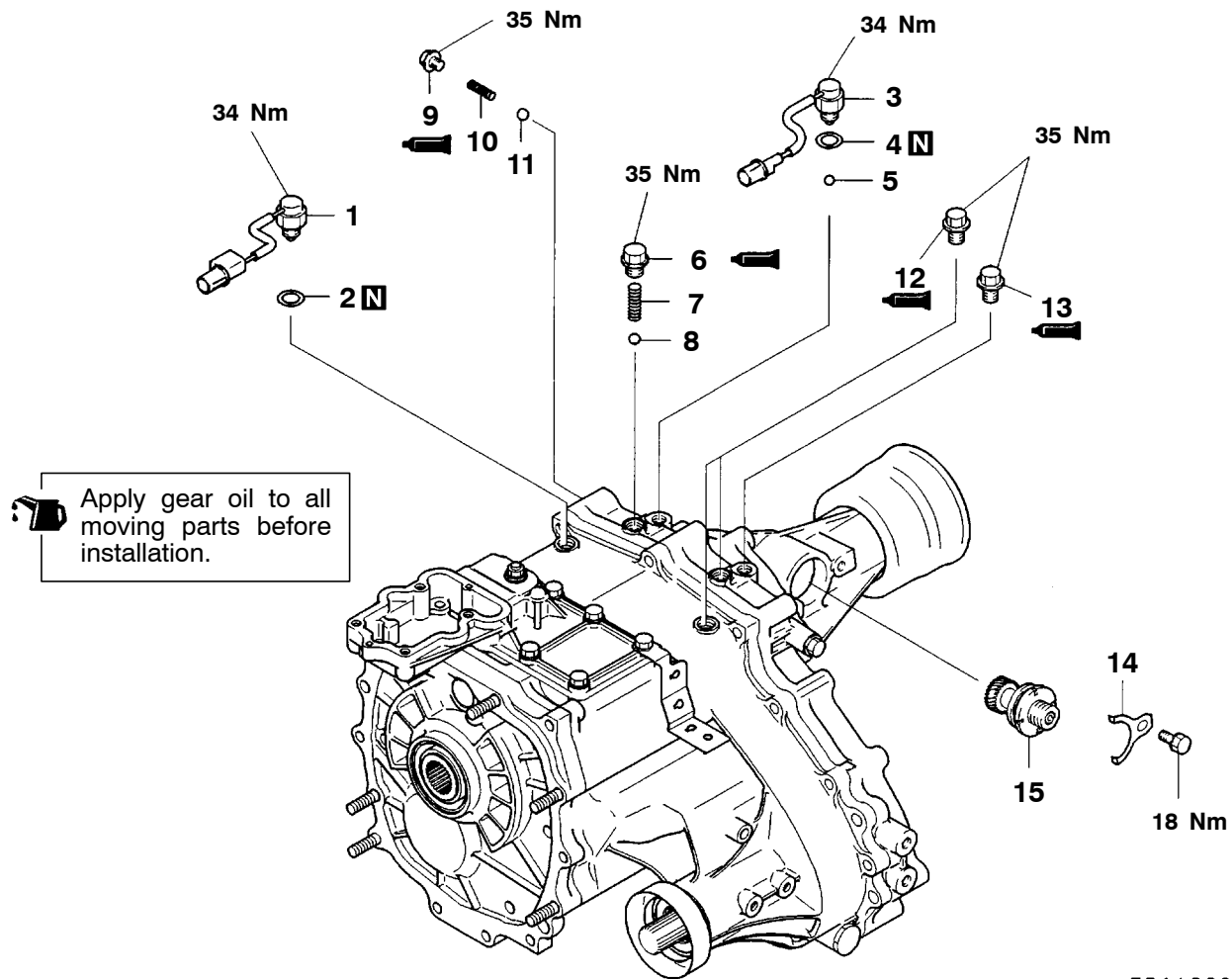
1. Install the spring (4.5 mm in diameter, 15.4 mm in length) and the steel ball (6.4 mm in diameter) onto the upper valve body position shown in the illustration.
2. Install the ball (rubber) (6.4 mm in diameter) onto the upper valve body position shown in the illustration.
3. After installing the seal ring onto the damping valve, install together with the damping valve spring (7.7 mm in diameter, 35.8 mm in length) onto the upper valve body position shown in the illustration.

**▶G◀ MANUAL VALVE INSTALLATION**

Fit the manual valve pin into the groove of the manual valve.

## 14. TRANSFER &lt;V4A51&gt;

## DISASSEMBLY AND ASSEMBLY - V4A51-4 PART TIME 4WD



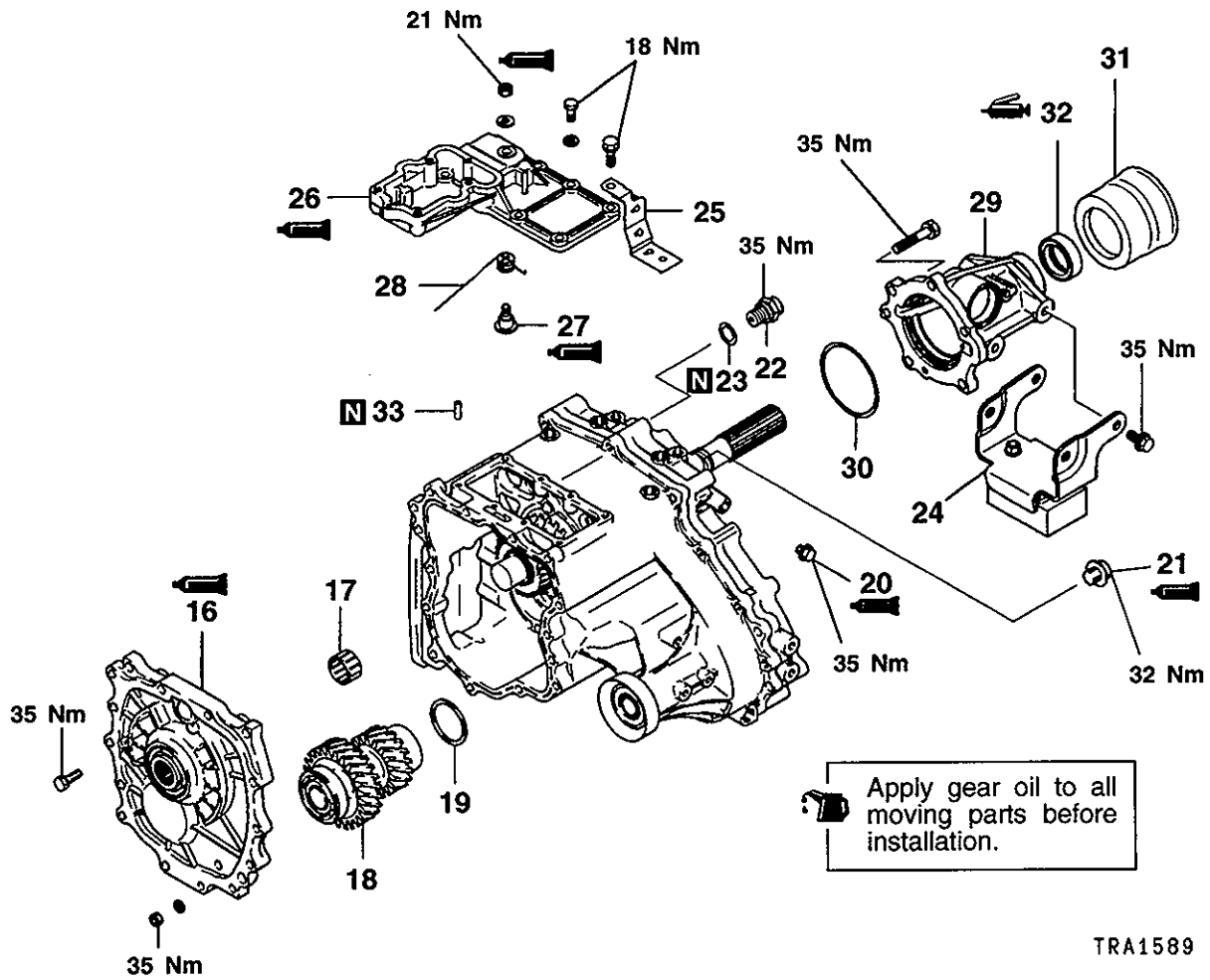
TRA1332

**Disassembly steps**

1. 2-4WD detection switch
2. Gasket
3. H-L detection switch
4. Gasket
5. Steel ball
6. Plug
7. Spring
8. Steel ball



9. Plug
10. Spring
11. Steel ball
12. Plug
13. Plug
14. Speedometer sleeve clamp
15. Speedometer gear

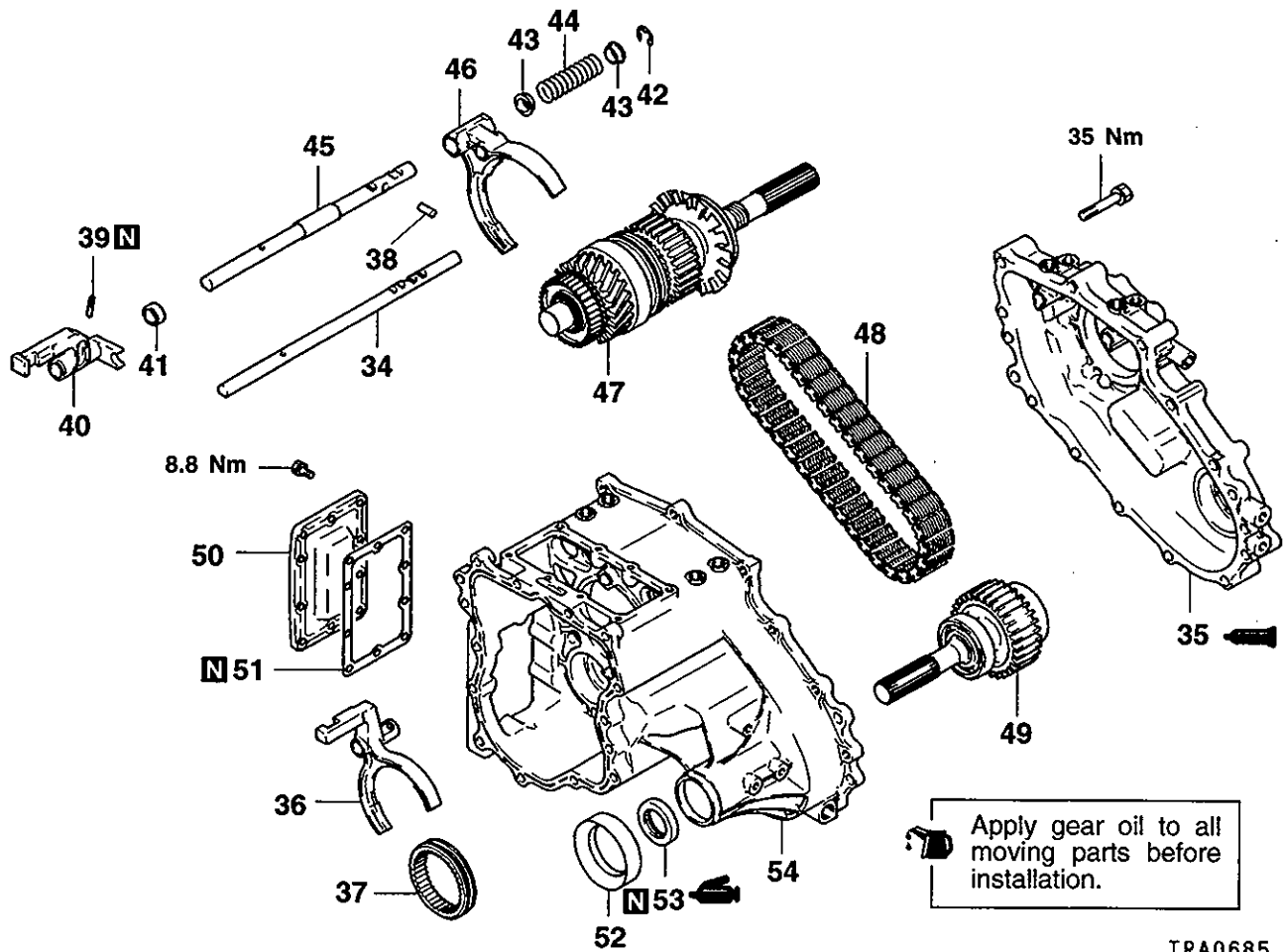


TRA1589

**Disassembly steps**

- ▶N◀ 16. Transfer case plate
- ▶M◀ 17. Needle bearing
- ▶L◀ 18. Countershaft gear
- ▶K◀ 19. Spacer
- ▶J◀ 20. Plug
- ▶I◀ 21. H-L shift rail plug
- ▶H◀ 22. Low switch
- ▶G◀ 23. Gasket
- ▶F◀ 24. Dynamic damper

- ▶J◀ 25. Harness bracket
- ▶I◀ 26. Control housing
- ▶H◀ 27. Support pin
- ▶G◀ 28. Return spring
- ▶F◀ 29. Rear cover
- ▶E◀ 30. Spacer
- ▶D◀ 31. Dust seal guard
- ▶C◀ 32. Oil seal
- ▶B◀ 33. Spring pin (H-L shift fork)



**Disassembly steps**

- ◀A▶ ▶E▶
- ◀A▶ ▶D▶
- ▶D▶
- ▶C▶

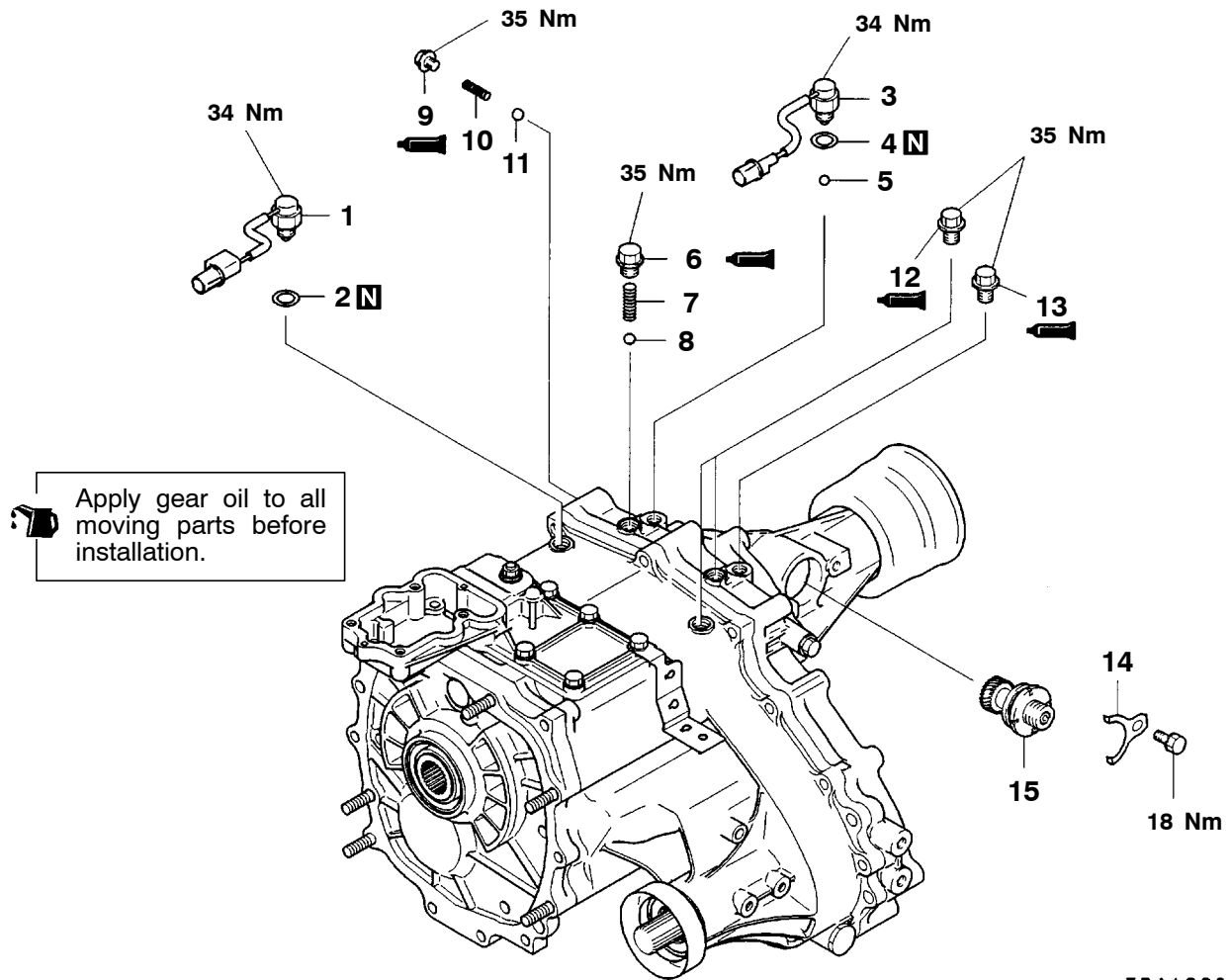
- 34. H-L shift rail
- 35. Chain cover
- 36. H-L shift fork
- 37. H-L clutch sleeve
- 38. Interlock plunger
- 39. Spring pin
- 40. 2-4WD shift lug
- 41. Distance piece
- 42. E-clip
- 43. Spring seat
- 44. Spring

- ▶B▶ ▶B▶
- ▶B▶ ▶B▶
- ▶B▶ ▶B▶

- ▶A▶

- 45. 2-4WD shift rail
- 46. 2-4WD shift fork
- 47. Rear output shaft
- 48. Chain
- 49. Front output shaft
- 50. Side cover
- 51. Side cover gasket
- 52. Dust seal guard
- 53. Oil seal
- 54. Transfer case

DISASSEMBLY AND ASSEMBLY - V4A51-5 PART TIME 4WD



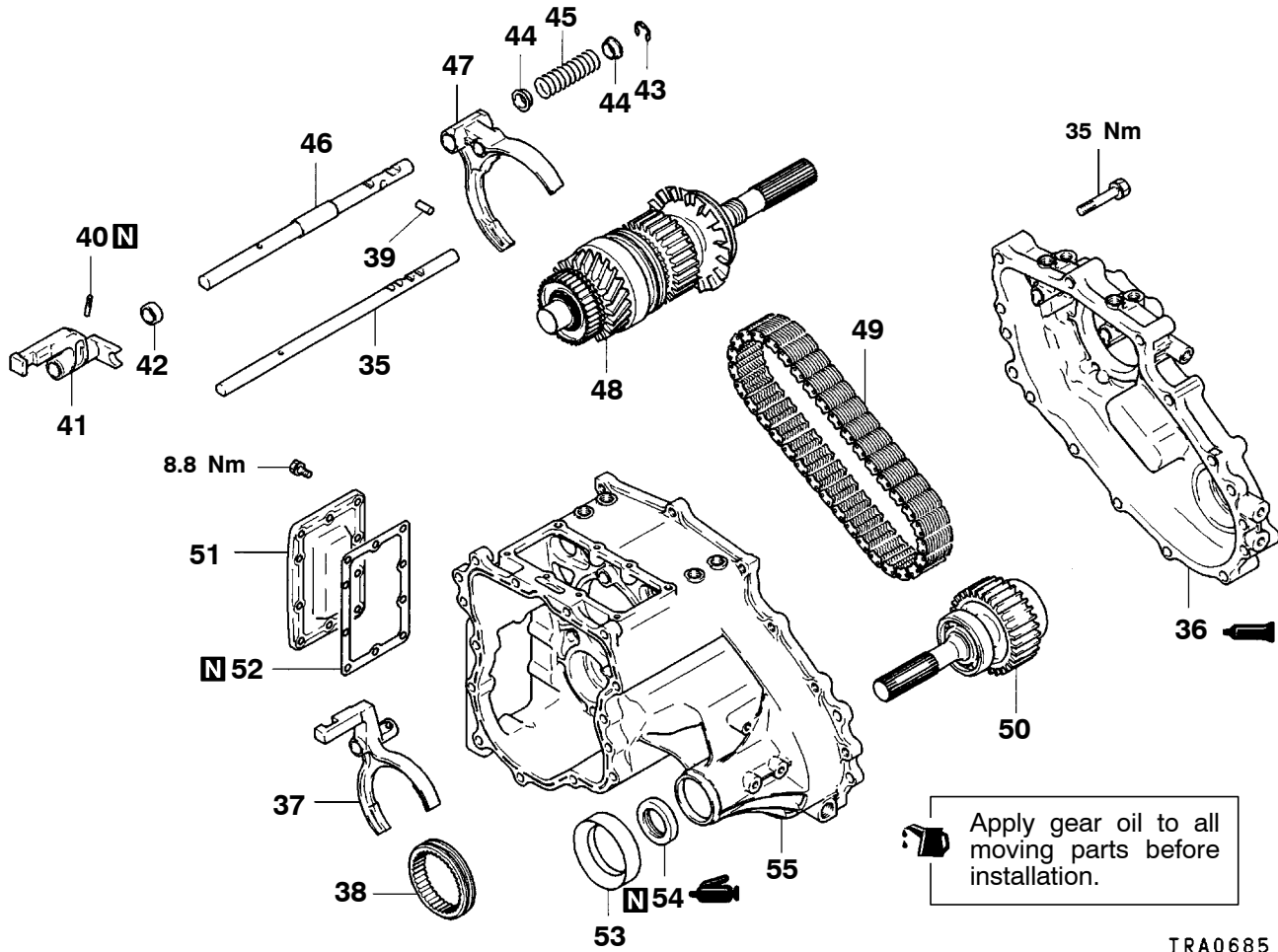
TRA1332

**Disassembly steps**

- |                           |                                  |
|---------------------------|----------------------------------|
| 1. 2-4WD detection switch | ▶L▶ 9. Plug                      |
| 2. Gasket                 | ▶P▶ 10. Spring                   |
| 3. H-L detection switch   | ▶L▶ 11. Steel ball               |
| 4. Gasket                 | ▶L▶ 12. Plug                     |
| 5. Steel ball             | ▶L▶ 13. Plug                     |
| ▶L▶ 6. Plug               | ▶O▶ 14. Speedometer sleeve clamp |
| ▶P▶ 7. Spring             | ▶O▶ 15. Speedometer gear         |
| 8. Steel ball             |                                  |







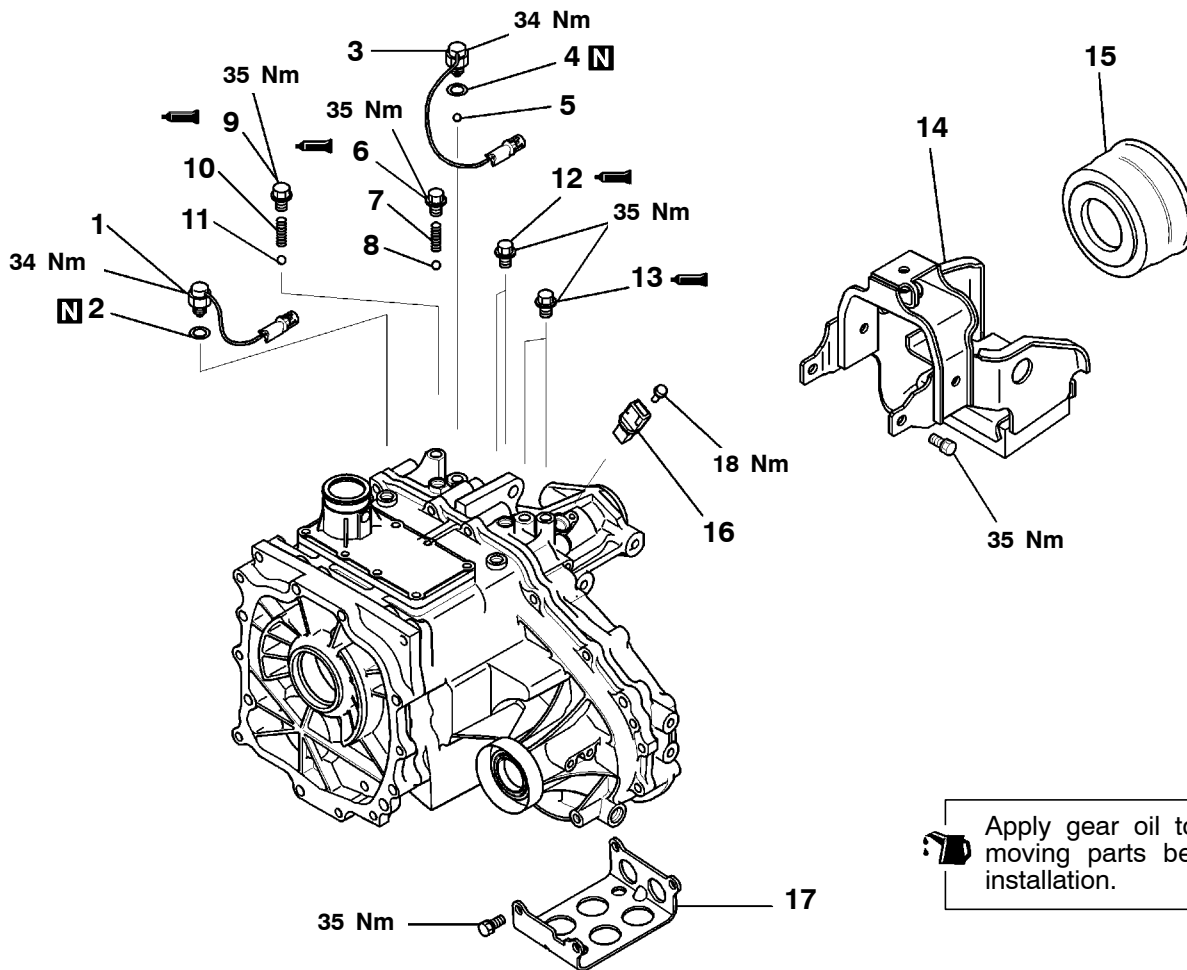
TRA0685

**Disassembly steps**

- ◀A▶ ▶E▶ 35. H-L shift rail
- ◀A▶ ▶D▶ 36. Chain cover
- ▶D▶ 37. H-L shift fork
- ▶D▶ 38. H-L clutch sleeve
- ▶C▶ ▶D▶ 39. Interlock plunger
- ▶C▶ 40. Spring pin
- ▶C▶ 41. 2-4WD shift lug
- ▶C▶ 42. Distance piece
- ▶C▶ 43. E-clip
- ▶C▶ 44. Spring seat
- ▶C▶ 45. Spring

- ▶B▶ ▶B▶ 46. 2-4WD shift rail
- ▶B▶ ▶B▶ 47. 2-4WD shift fork
- ▶B▶ ▶B▶ 48. Rear output shaft
- ▶B▶ ▶B▶ 49. Chain
- ▶B▶ ▶B▶ 50. Front output shaft
- ▶B▶ ▶B▶ 51. Side cover
- ▶B▶ ▶B▶ 52. Side cover gasket
- ▶B▶ ▶B▶ 53. Dust seal guard
- ▶A▶ ▶A▶ 54. Oil seal
- ▶A▶ ▶A▶ 55. Transfer case

DISASSEMBLY AND ASSEMBLY - V4A51-7 PART TIME 4WD



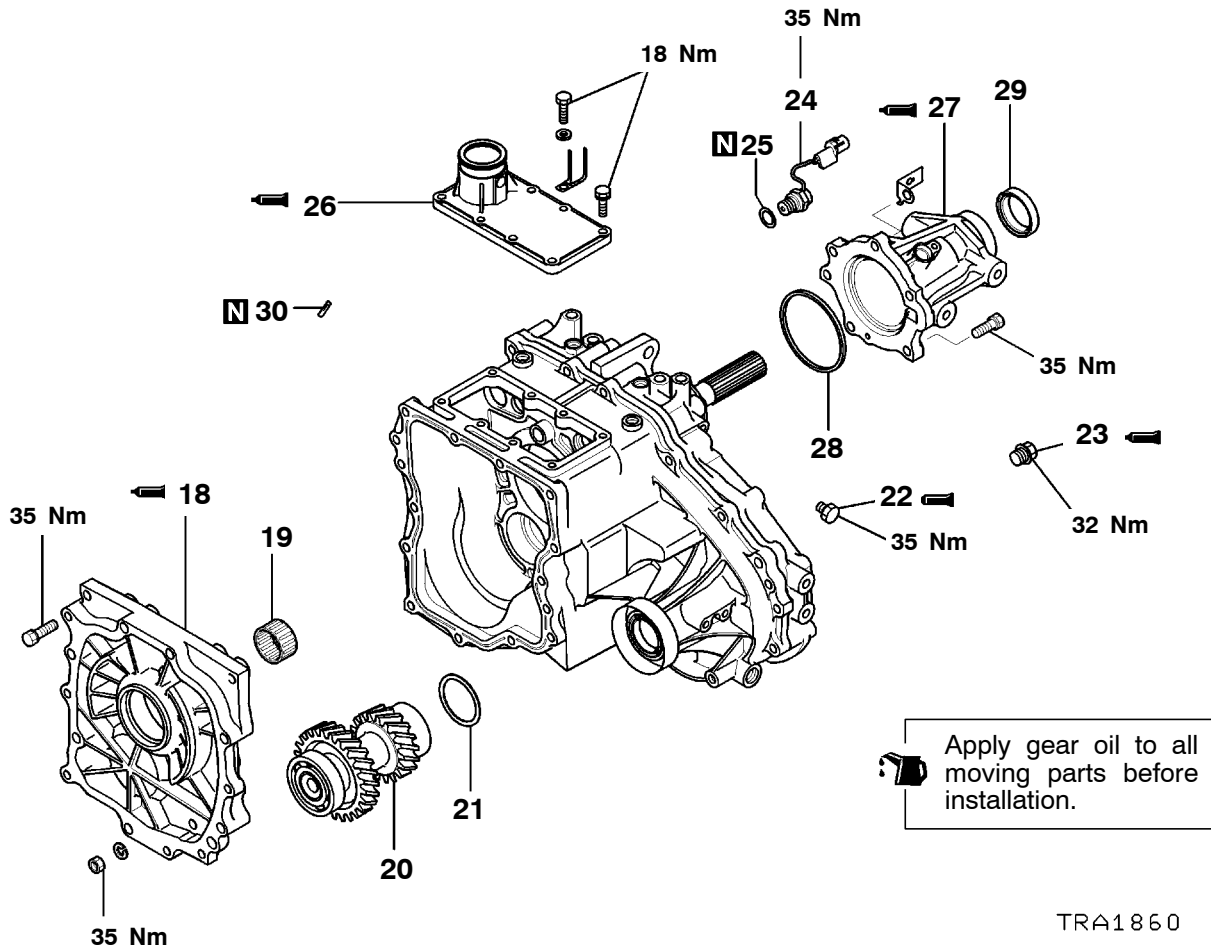
Apply gear oil to all moving parts before installation.

TRA1859

**Disassembly steps**

- 1. 4WD switch
- 2. Gasket
- 3. Transfer switch
- 4. Gasket
- 5. Steel ball
- ▶L▶ 6. Plug
- ▶P▶ 7. Spring
- ▶L▶ 8. Steel ball
- ▶L▶ 9. Plug

- ▶P▶ 10. Spring
- ▶L▶ 11. Steel ball
- ▶L▶ 12. Plug
- ▶L▶ 13. Plug
- 14. Dynamic damper
- 15. Dust seal guard
- 16. Vehicle speed sensor
- 17. Under guard

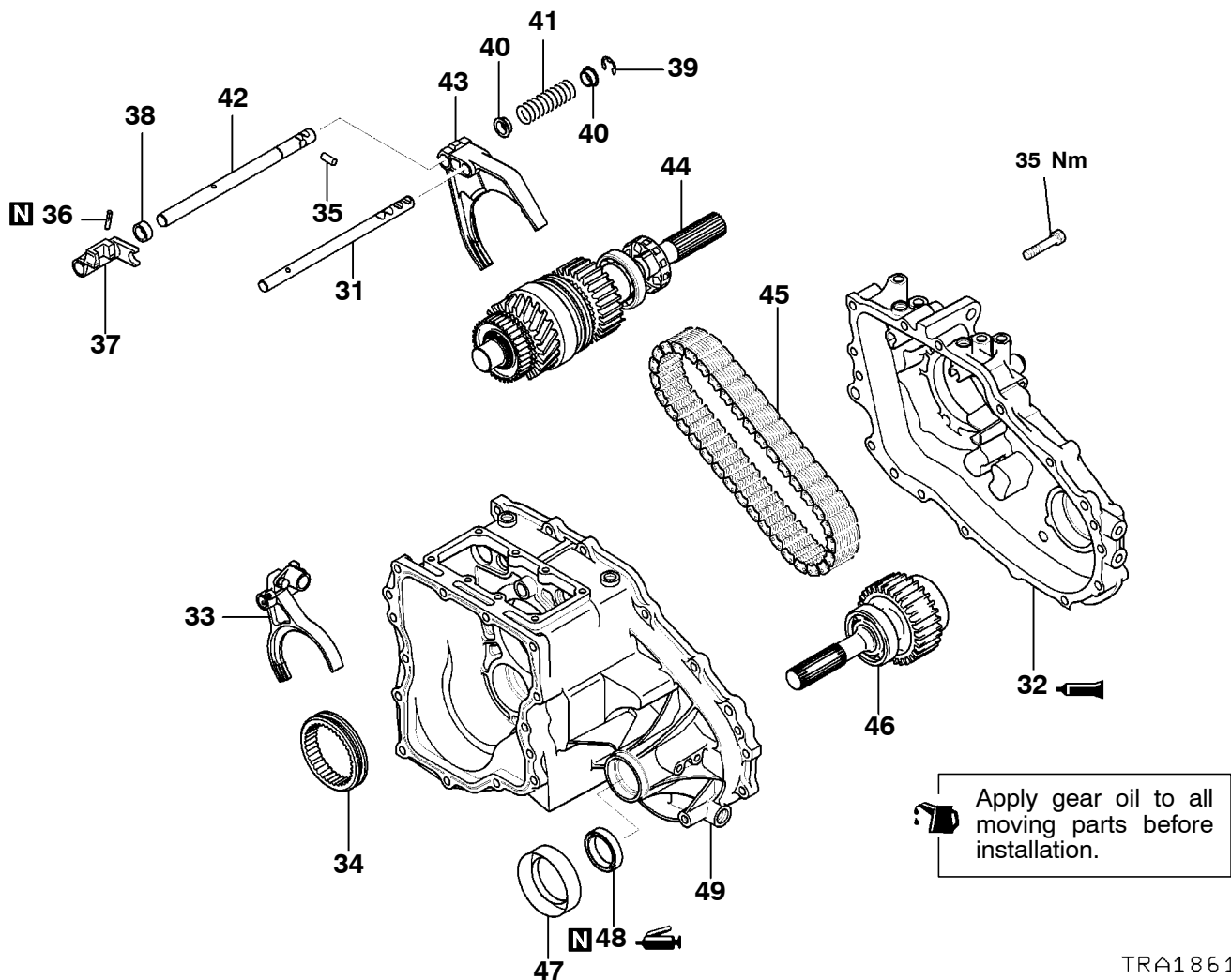


TRA1860

**Disassembly steps**

- ▶N◀ 18. Transfer case plate
- ▶N◀ 19. Needle bearing
- ▶M◀ 20. Countershaft gear
- ▶L◀ 21. Spacer
- ▶K◀ 22. Plug
- ▶K◀ 23. H-L shift rail plug
- ▶K◀ 24. Low switch

- ▶J◀ 25. Gasket
- ▶H◀ 26. Control housing
- ▶G◀ 27. Rear cover
- ▶F◀ 28. Spacer
- ▶E◀ 29. Oil seal
- ▶E◀ 30. Spring pin (H-L shift fork)

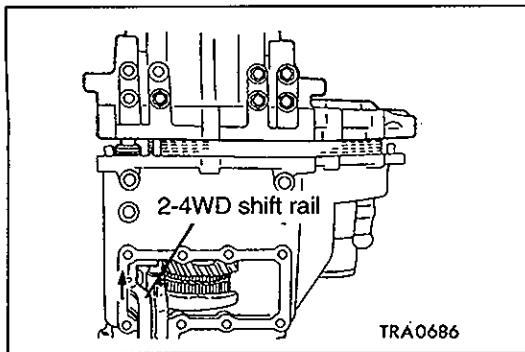


TRA1861

**Disassembly steps**

- ◀A▶ ▶E▶ 31. H-L shift rail
- ◀A▶ ▶D▶ 32. Chain cover
- ▶D▶ 33. H-L shift fork
- ▶C▶ 34. H-L clutch sleeve
- ▶D▶ 35. Interlock plunger
- ▶C▶ 36. Spring pin
- ▶D▶ 37. 2-4WD shift lug
- ▶C▶ 38. Distance piece
- ▶D▶ 39. E-clip
- ▶C▶ 40. Spring seat

- ▶B▶ ▶B▶ 41. Spring
- ▶B▶ ▶B▶ 42. 2-4WD shift rail
- ▶B▶ ▶B▶ 43. 2-4WD shift fork
- ▶B▶ ▶B▶ 44. Rear output shaft
- ▶B▶ ▶B▶ 45. Chain
- ▶B▶ ▶B▶ 46. Front output shaft
- ▶A▶ ▶B▶ 47. Dust seal guard
- ▶A▶ ▶B▶ 48. Oil seal
- ▶A▶ ▶B▶ 49. Transfer case



## DISASSEMBLY SERVICE POINTS

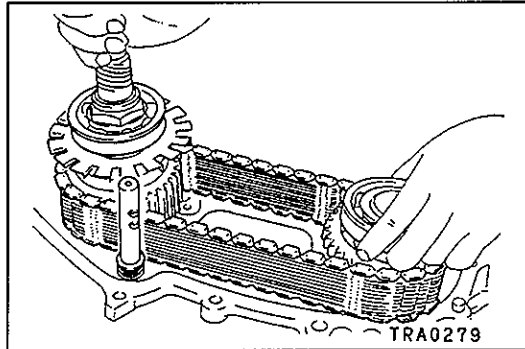
### ◀A▶ H-L SHIFT RAIL / CHAIN COVER REMOVAL

1. Shift the 2-4WD shift rail to the 4WD position.

#### NOTE

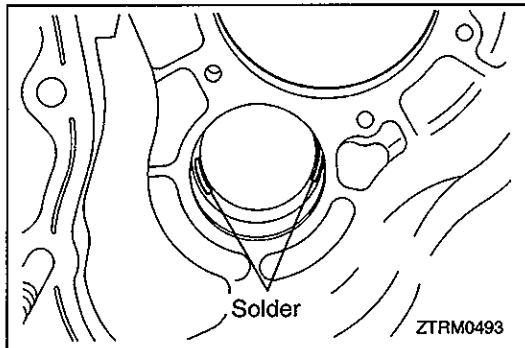
If the 2-4WD shift rail is at the 2WD position, the chain cover cannot be removed because interlock is actuated.

2. Remove the chain cover, and then remove the H-L shift rail.



### ◀B▶ REAR OUTPUT SHAFT / CHAIN / FRONT OUTPUT SHAFT REMOVAL

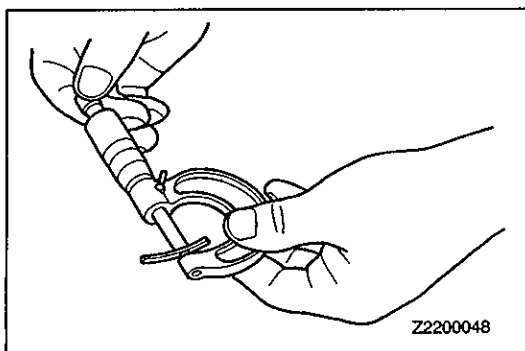
Remove the rear output shaft, chain and front output shaft as a set.



## ADJUSTMENT BEFORE ASSEMBLY

### SPACER SELECTION FOR ADJUSTMENT OF COUNTERSHAFT GEAR END PLAY

1. Place pieces of solder (approximately 10 mm in length and 1.6 mm in diameter) in the transfer case housing as shown.
2. Install the countershaft gear into the transfer case.
3. Install the transfer case plate and tighten the bolts.

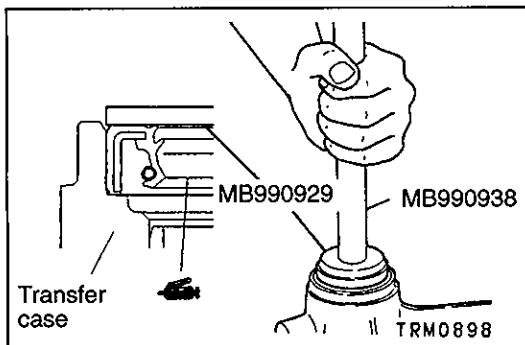


4. Using a micrometer, measure the thickness of the crushed solder. Based on the result, select a spacer which adjusts the end play to the standard value shown below:

**Standard value: 0 – 0.15 mm**

#### NOTE

If the solder is not crushed, repeat steps 1 and 2 using thicker pieces of solder.



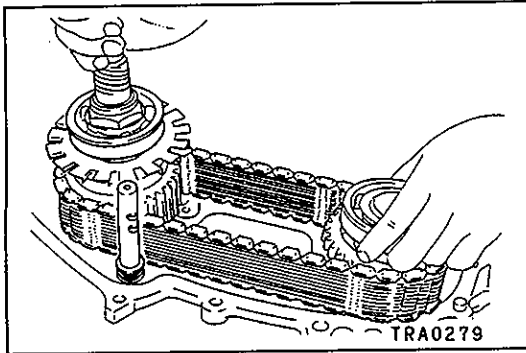
## ASSEMBLY SERVICE POINTS

### ▶A◀ OIL SEAL INSTALLATION

1. Use the special tools to install the oil seal.
2. Apply grease to the lip of the oil seal.

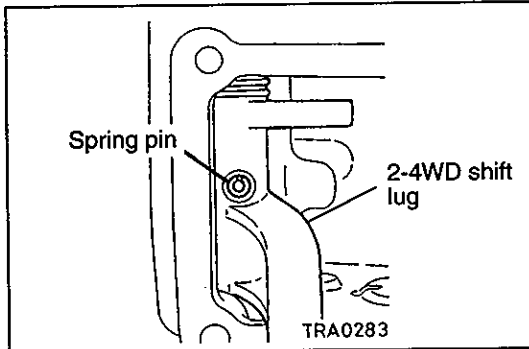
#### Specified grease:

**MITSUBISHI genuine grease Part No. 0101011 or equivalent**



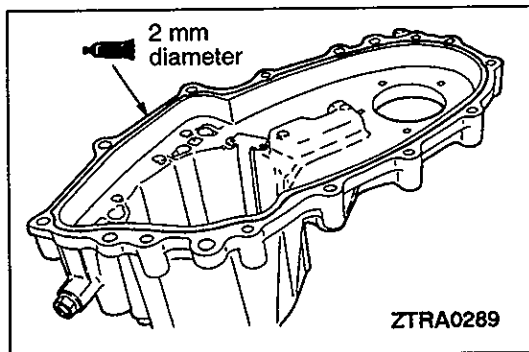
### ►B◄ FRONT OUTPUT SHAFT / CHAIN / REAR OUTPUT SHAFT INSTALLATION

1. Engage the chain precisely with the sprockets of the rear output shaft and the front output shaft.
2. Install the 2-4WD shift fork on the 2-4WD clutch sleeve. While sliding the shift fork over the 2-4WD shift rail, install the front output shaft, chain and rear output shaft.



### ►C◄ SPRING PIN INSTALLATION

1. Align the spring pin hole in the 2-4WD shift lug with that in the 2-4WD shift rail.
2. Hammer in the spring pin so that the spring pin slit matches the center axis of the shift rail shaft.



### ►D◄ INTERLOCK PLUNGER / CHAIN COVER INSTALLATION

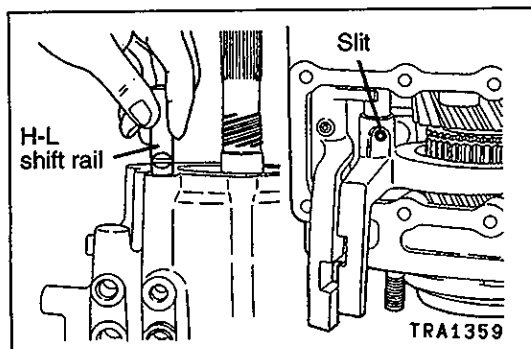
1. Insert the interlock plunger into the chain cover hole up to a position where it does not interfere with 2-4WD shift rail.
2. Apply sealant to the chain cover, and then install the chain cover.

#### Specified sealant:

**MITSUBISHI genuine sealant Part No. MD997740 or equivalent**

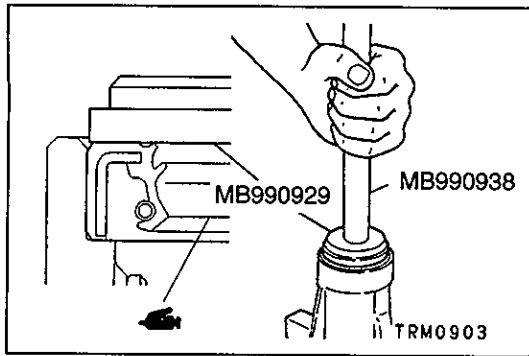
#### Caution

- Squeeze the sealant out evenly to apply it in an unbroken, non-excessive quantity.



### ►E◄ H-L SHIFT RAIL / SPRING PIN INSTALLATION

1. Insert the H-L shift rail into the H-L shift rail hole, paying attention to the direction of the shift rail.
2. Align the spring pin holes in the shift rail and the shift fork. Then tap in the spring pin so that the slit of the spring pin is facing the center axis of the shift rail.

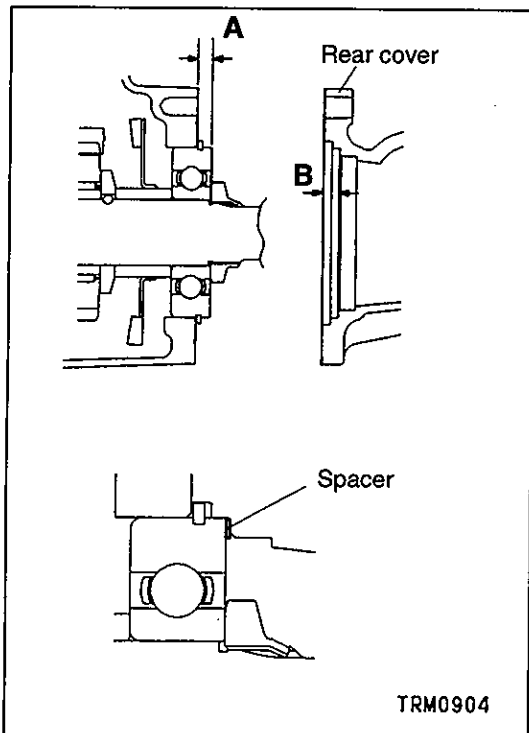


### ▶F◀ OIL SEAL INSTALLATION

1. Use the special tools to install the oil seal.
2. Apply grease to the lip of oil seal.

#### Specified grease:

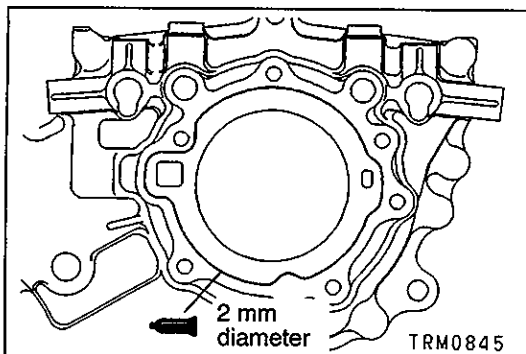
**MITSUBISHI** genuine grease Part No. 0101011 or equivalent



### ▶G◀ SPACER INSTALLATION

1. Measure projection "A" of the rear output shaft bearing and depth "B" of the second stage of the rear cover.
2. Subtract "A" from "B" and let the answer be "C." Select a spacer so that the subtracted value will be the standard value shown below.

**Standard value: 0 – 0.1 mm**

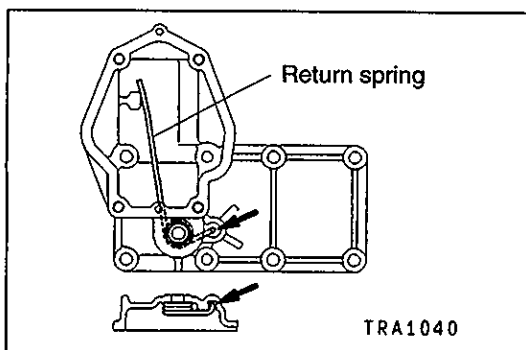


### ▶H◀ REAR COVER INSTALLATION

Apply sealant to the chain cover.

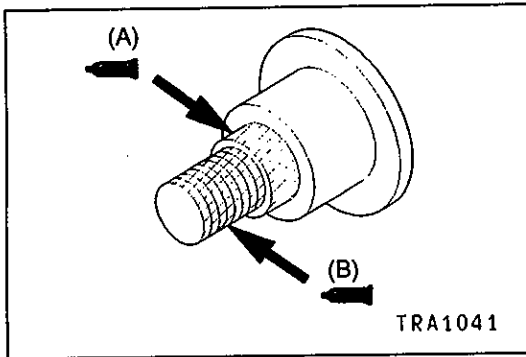
#### Specified sealant:

**MITSUBISHI** genuine sealant Part No. MD997740 or equivalent



### ▶I◀ RETURN SPRING / SUPPORT PIN INSTALLATION

1. Insert the bent section of the return spring into the control housing as shown.



- Apply sealant to the support pin.

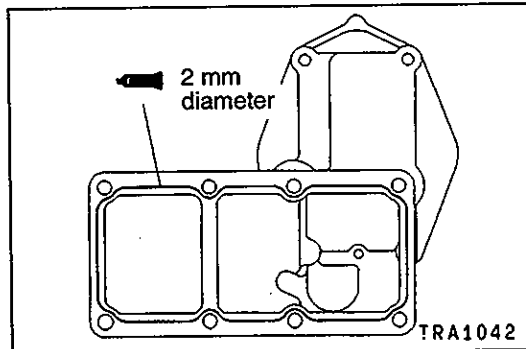
**Specified sealant:**

3M™ AAD Part No. 8672 or equivalent ..... (A)

MITSUBISHI genuine adhesive

Part No. MB160450 or equivalent ..... (B)

- Insert the support pin and install the nut.

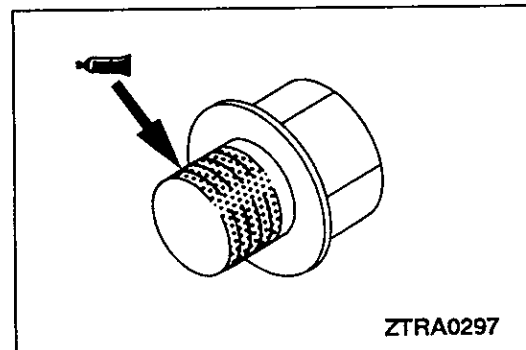


**▶J◀ CONTROL HOUSING INSTALLATION**

- Apply sealant to the control housing.

**Specified sealant:**

MITSUBISHI genuine sealant Part No. MD997740  
or equivalent



**▶K◀ H-L SHIFT RAIL PLUG INSTALLATION**

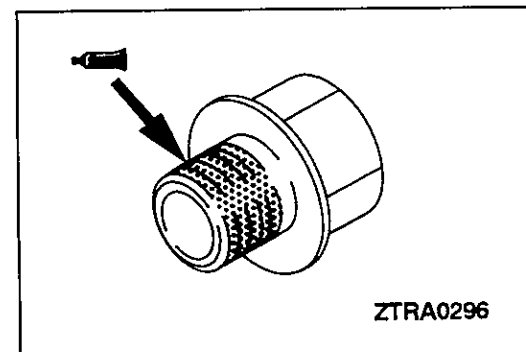
Apply sealant to the threads.

**Specified sealant:**

3M™ AAD Part No. 8672 or equivalent

**NOTE**

The new plug is precoated with sealant, so sealant does not need to be applied.



**▶L◀ PLUG INSTALLATION**

Apply sealant to the threads.

**Specified sealant:**

3M™ AAD Part No. 8672 or equivalent

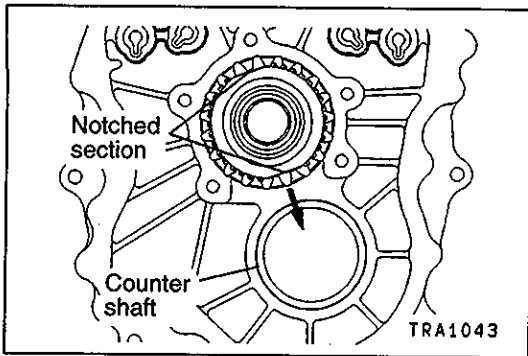
**NOTE**

The new plug is precoated with sealant, so sealant does not need to be applied.

**▶M◀ SPACER INSTALLATION**

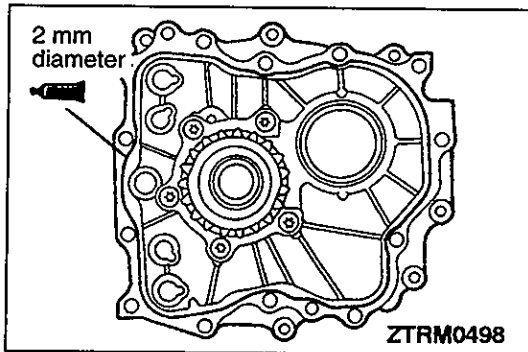
Install the previously selected spacer (see "ADJUSTMENT BEFORE ASSEMBLY").





### ▶N◀ TRANSFER CASE PLATE INSTALLATION

1. Face the notched section of the input gear in the direction shown in the illustration.



2. Apply sealant to the transfer case plate.

#### Specified sealant:

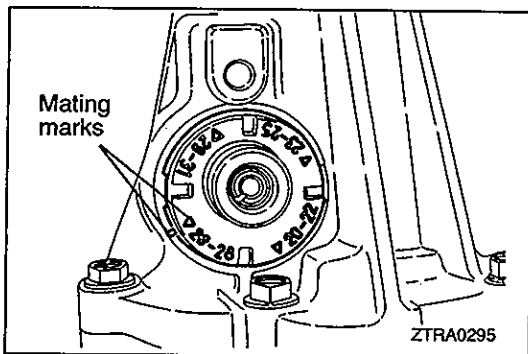
**MITSUBISHI** genuine sealant Part No. MD997740 or equivalent

#### Caution

- Apply sealant evenly. Too much or too little sealant may cause leaks and/or damage to the components.
3. Install the transfer case plate together with the input gear. Slide the input gear tooth aligned in Step 1 along the tooth space of the countershaft gear.

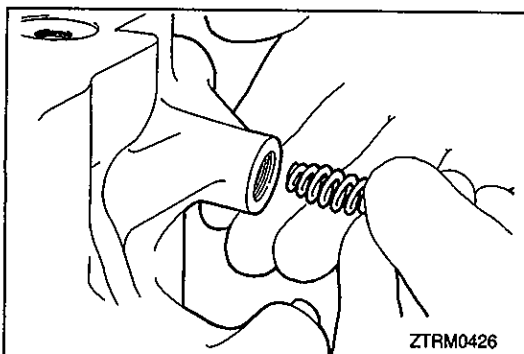
#### Caution

- The transfer case plate must be installed smooth and straight to get a good seal.



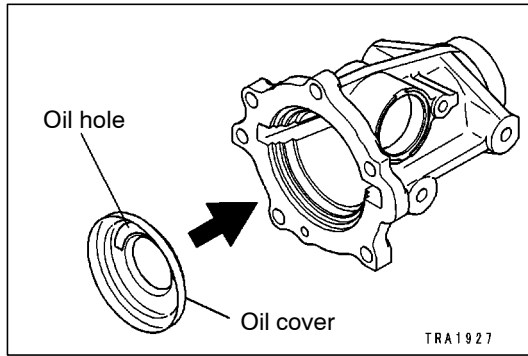
### ▶O◀ SPEEDOMETER GEAR INSTALLATION

Match the mating marks to the number of teeth.



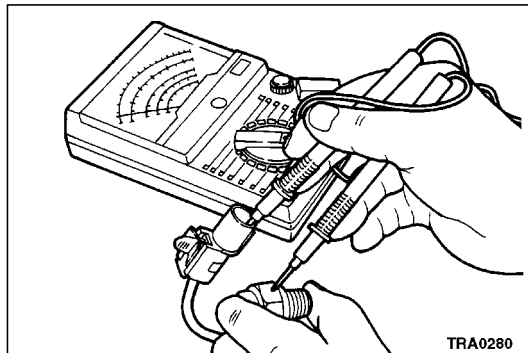
### ▶P◀ SPRING INSTALLATION

Install the spring with its tapered end toward the ball.



### ▶◀OIL COVER INSTALLATION

Install the oil cover so that the oil hole is located as shown in the illustration.



### INSPECTION

#### 2-4WD, H-L DETECTION SWITCH

Check for the continuity between the connector terminal and switch body.

Switch state	Continuity
Switch end pressed	No
Switch end released	Yes

#### LOW RANGE OPERATION DETECTION SWITCH

Check for the continuity between the connector terminal and switch body.

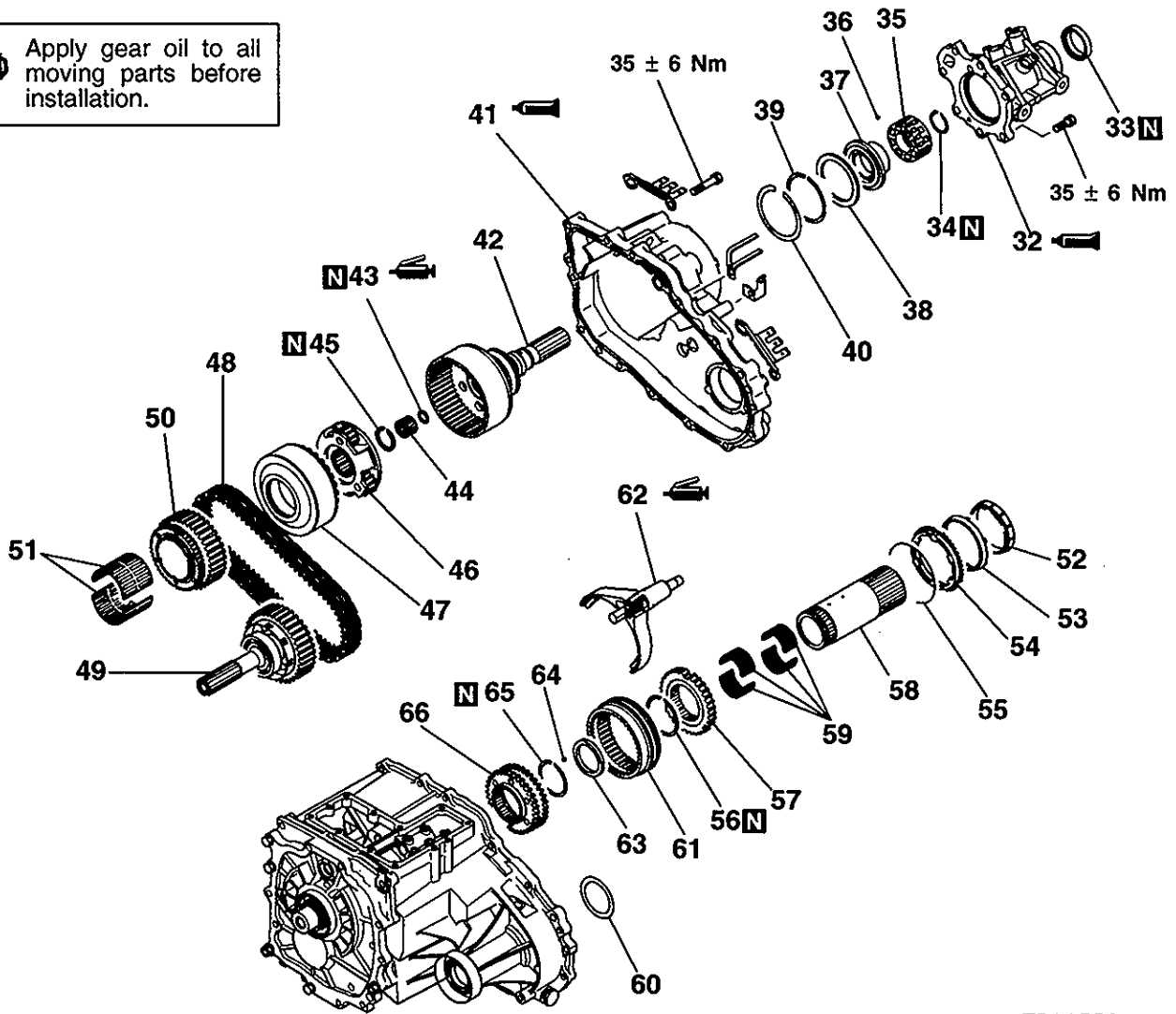
Switch state	Continuity
Switch end pressed	Yes
Switch end released	No



**Disassembly steps**

- |     |                                    |     |                           |
|-----|------------------------------------|-----|---------------------------|
| ▶W◀ | 1. Vacuum hose                     | ▶V◀ | 17. Transfer case cover   |
|     | 2. 4LLC switch                     | ▶U◀ | 18. Shift rail drive gear |
|     | 3. Gasket                          | ▶U◀ | 19. Shift rail drive gear |
|     | 4. Steel ball                      |     | 20. Dust seal guard       |
| ▶W◀ | 5. 2WD switch                      |     | 21. Dynamic damper        |
|     | 6. Gasket                          |     | 22. Vehicle speed sensor  |
|     | 7. Steel ball                      |     | 23. O-ring                |
| ▶W◀ | 8. Center differential lock switch |     | 24. Rear output sensor    |
|     | 9. Gasket                          |     | 25. O-ring                |
|     | 10. Steel ball                     |     | 26. Front output sensor   |
| ▶W◀ | 11. 4H switch                      |     | 27. O-ring                |
|     | 12. Gasket                         | ▶T◀ | 28. Shift actuator        |
|     | 13. Steel ball                     |     | 29. O-ring                |
| ▶W◀ | 14. 2WD-4WD switch                 | ▶T◀ | 30. Main shift rail       |
|     | 15. Gasket                         |     | 31. Under guard           |
|     | 16. Steel ball                     |     |                           |

Apply gear oil to all moving parts before installation.

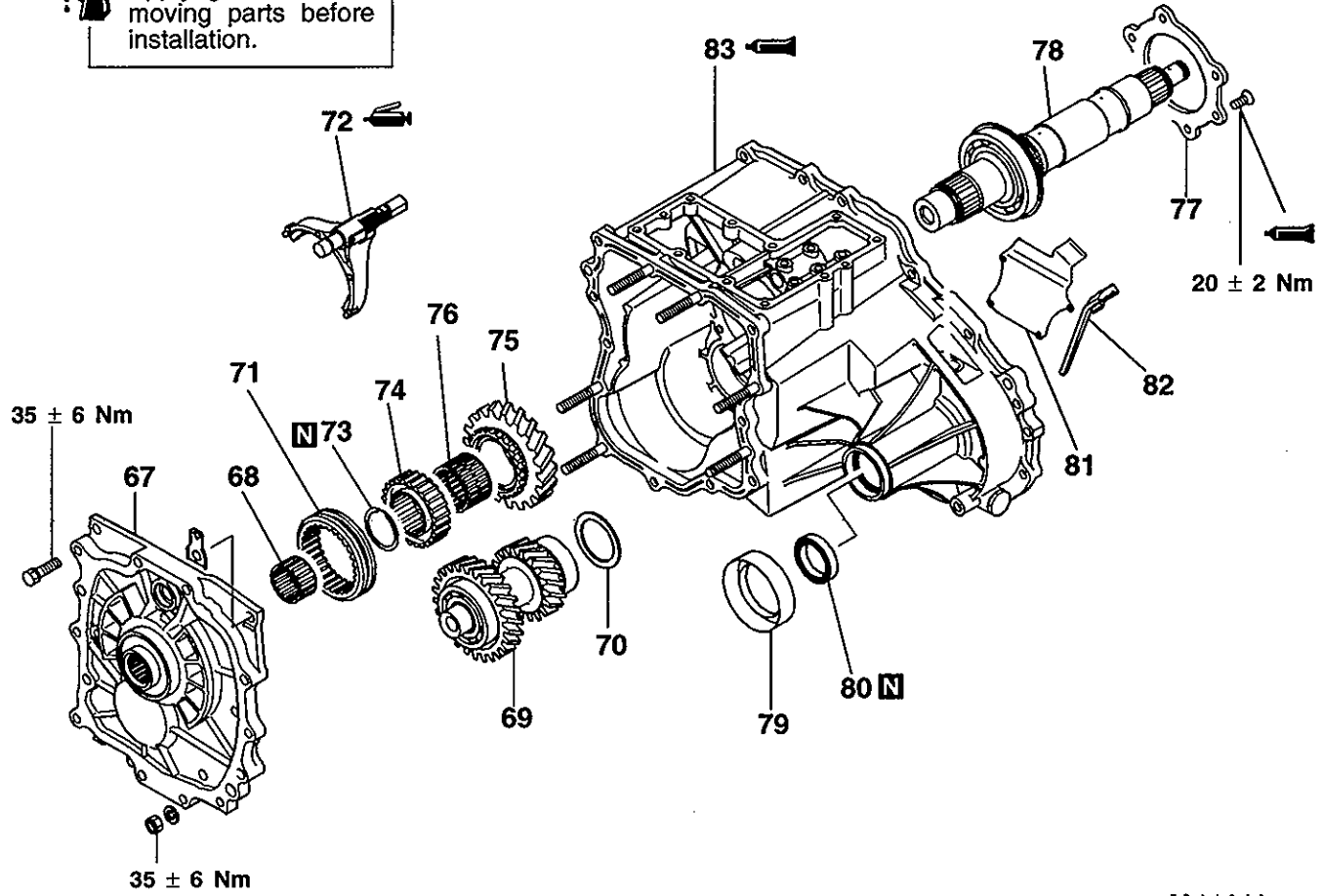


TRA1776

**Disassembly steps**

- |     |   |     |                             |
|-----|---|-----|-----------------------------|
| ▶S◀ | 32. Rear cover                            | ▶M◀ | 50. Drive sprocket          |
| ▶R◀ | 33. Oil seal                              | ▶L◀ | 51. Bearing                 |
|     | 34. Snap ring                             | ▶L◀ | 52. Synchronizer inner ring |
|     | 35. Sensor rotor                          | ▶L◀ | 53. Synchronizer cone       |
|     | 36. Steel ball                            | ▶K◀ | 54. Synchronizer outer ring |
|     | 37. Oil guide                             |     | 55. Synchronizer spring     |
| ▶Q◀ | 38. Spacer                                |     | 56. Snap ring               |
| ▶P◀ | 39. Snap ring                             |     | 57. 2-4WD clutch hub        |
| ▶O◀ | 40. Snap ring                             | ◀A▶ | 58. Sun gear                |
| ▶N◀ | 41. Chain cover                           |     | 59. Bearing                 |
|     | 42. Rear output shaft                     |     | 60. Wave spring             |
|     | 43. O-ring                                | ▶J◀ | 61. 2-4WD clutch sleeve     |
|     | 44. Bearing                               | ▶J◀ | 62. 2-4WD shift fork        |
|     | 45. Snap ring                             | ▶I◀ | 63. Spacer                  |
|     | 46. Center differential planetary carrier | ▶I◀ | 64. Steel ball              |
|     | 47. Viscous coupling                      | ▶H◀ | 65. Snap ring               |
| ◀A▶ | 48. Chain                                 |     | 66. Differential lock hub   |
| ◀A▶ | 49. Front output shaft                    |     |                             |

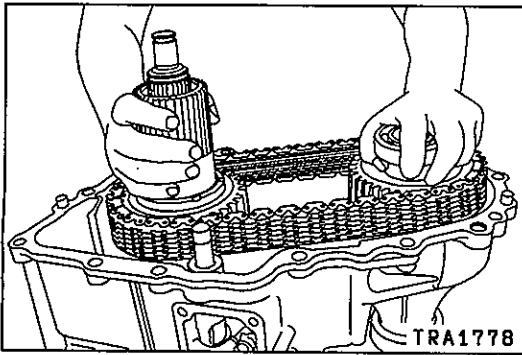
Apply gear oil to all moving parts before installation.



TRA1849

**Disassembly steps**

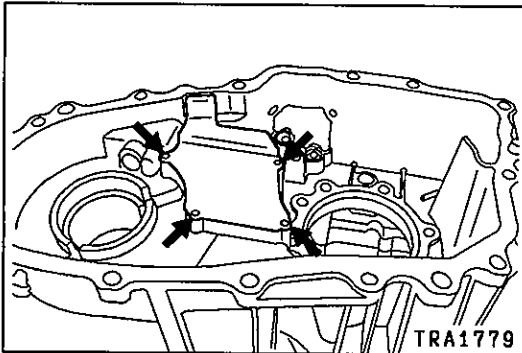
- ▶G◀ 67. Transfer case plate
- ▶E◀ 68. Bearing
- ▶E◀ 69. Counter shaft gear
- ▶F◀ 70. Spacer
- ▶E◀ 71. H-L clutch sleeve
- ▶E◀ 72. H-L shift fork
- ▶D◀ 73. Snap ring
- ▶D◀ 74. H-L clutch hub
- ▶D◀ 75. Low speed gear
- ▶C◀ 76. Bearing
- ▶C◀ 77. Rear bearing retainer
- ▶C◀ 78. Transfer drive shaft
- ▶C◀ 79. Dust seal guard
- ▶B◀ 80. Oil seal
- ▶B◀ 81. Oil pool cover
- ▶A◀ 82. Oil guide
- ▶B◀ 83. Transfer case



**DISASSEMBLY SERVICE POINTS**

**◀A▶ CHAIN / FRONT OUTPUT SHAFT / SUN GEAR REMOVAL**

Remove the chain, front output shaft and sun gear as a set from the transfer case.

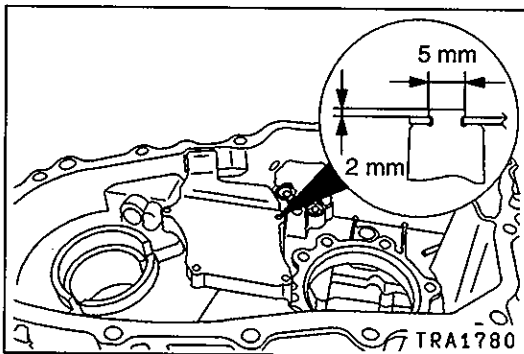


**◀B▶ OIL POOL COVER REMOVAL**

Unstake the positions shown in the illustration to remove the oil pool cover.

**Caution**

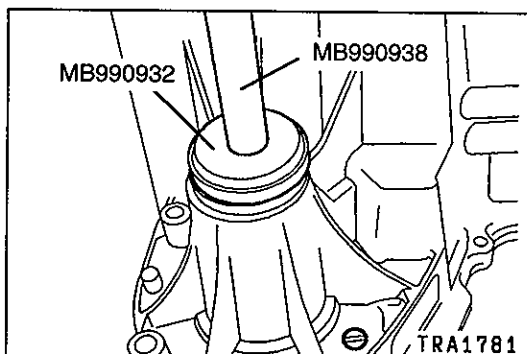
- The oil pool cover normally does not require disassembly. Once it is removed, the transfer case cannot be reused.



**ASSEMBLY SERVICE POINTS**

**▶A◀ OIL POOL COVER INSTALLATION**

Install the oil pool cover on a new transfer case. Stake the projecting portions of the transfer so that the dimensions will be as illustrated.

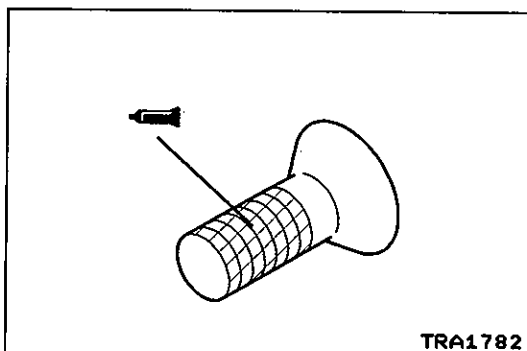


**▶B◀ OIL SEAL INSTALLATION**

1. Use the special tools to install the oil seal on the transfer case.
2. Apply grease to the lip of the oil seal.

**Specified grease:**

**MITSUBISHI genuine grease part No. 0101011 or equivalent**



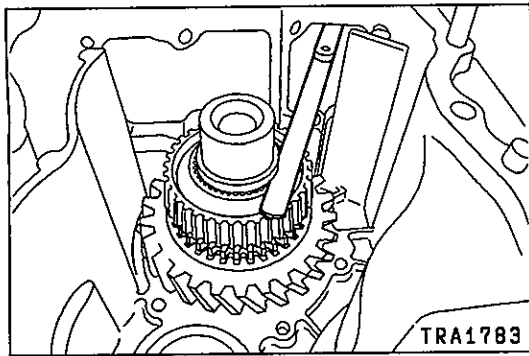
**▶C◀ REAR BEARING RETAINER INSTALLATION**

The bolts used for mounting the rear bearing retainer are pre-coated ones.

When they are to be reused, apply sealant to the threaded portion before installation.

**Specified sealant:**

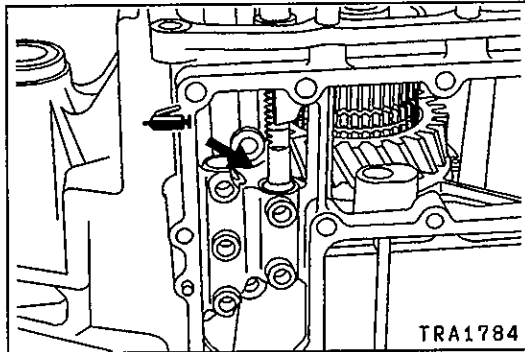
**MITSUBISHI genuine sealant part No. MD997740 or equivalent**



### ▶D◀ SNAP RING INSTALLATION

Select a proper snap ring so that the end play of the H-L clutch hub will have the standard value, and install the snap ring on the transfer drive shaft.

**Standard value: 0 – 0.08 mm**

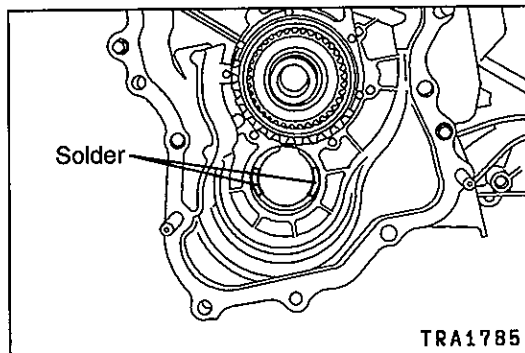


### ▶E◀ H-L SHIFT FORK / H-L CLUTCH SLEEVE INSTALLATION

Apply grease to the H-L shift fork shaft inserting portion, and install the H-L shift fork and H-L clutch sleeve in combined state in the transfer case.

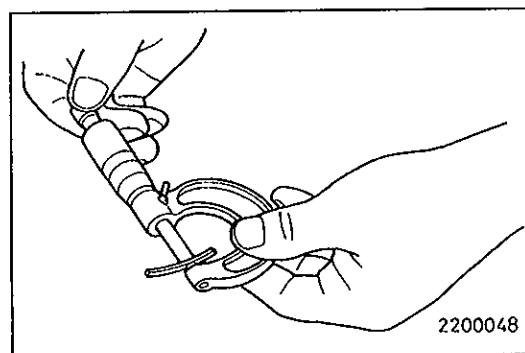
**Specified grease:**

**MITSUBISHI genuine grease part No. 0101011 or equivalent**



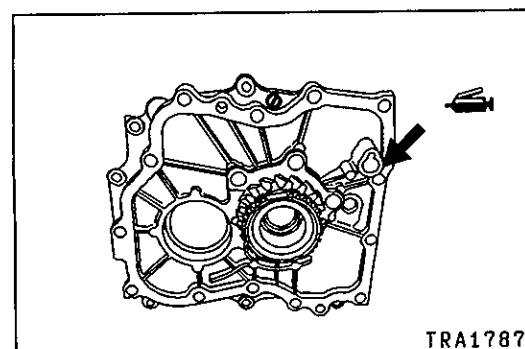
### ▶F◀ SPACER INSTALLATION

1. Put pieces of solder (approx. 10 mm long and 1.6 mm in diameter) at the illustrated positions of the transfer case.
2. Install the countershaft gear and transfer case plate and tighten the bolts to the specified torque.
3. If the pieces of solder are not crushed, put thicker pieces of solder and perform Steps 1 and 2.



4. Measure the thickness of the crushed pieces of solder with a micrometer, and select a spacer of proper thickness so that the end play will have the standard value.

**Standard value: 0 – 0.15 mm**



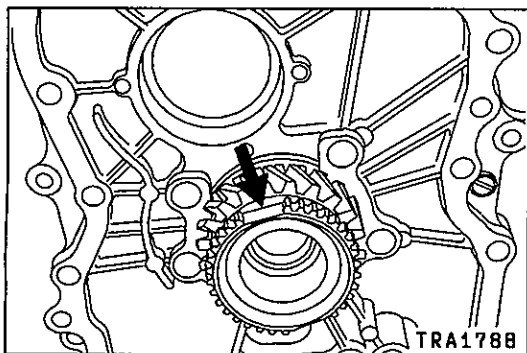
### ▶G◀ TRANSFER CASE PLATE INSTALLATION

1. Apply grease to the illustrated position of the high/low shift rail inserting portion of the transfer case plate.

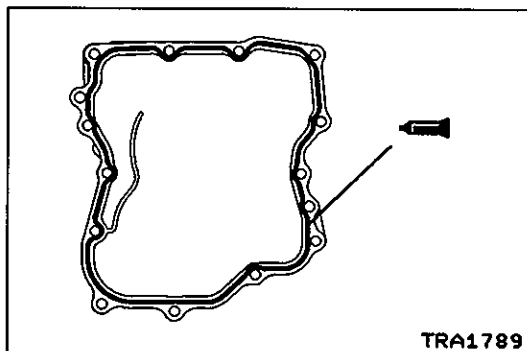
**Specified grease:**

**MITSUBISHI genuine grease part No. 0101011 or equivalent**





2. Face the notched portion of the input gear in the illustrated direction (in the direction of the countershaft gear bearing hole).



3. Apply sealant to the illustrated position of the transfer case.

**Specified sealant:**

**MITSUBISHI** genuine sealant part No. MD997740 or equivalent

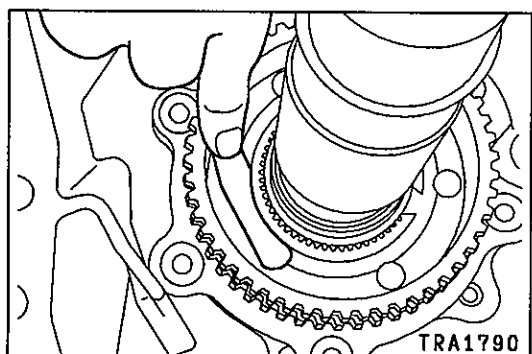
**Caution**

- Squeeze sealant out evenly to make sure that it is not broken or excessively supplied.

4. While making sure that the notched portion of the input gear positioned in Step 2 is in alignment with the gear portion of the countershaft, install the transfer case plate.

**Caution**

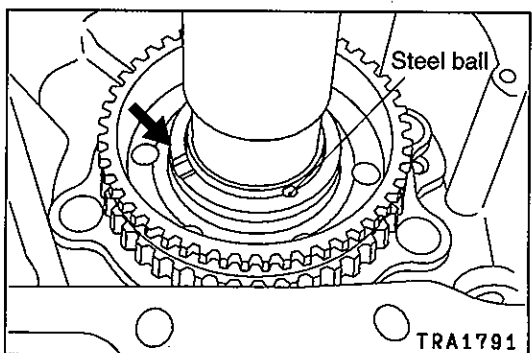
- If the sub gear does not readily come in mesh with the countershaft gear, rotate the transfer drive shaft, etc. to securely engage it.



**▶◀ SNAP RING INSTALLATION**

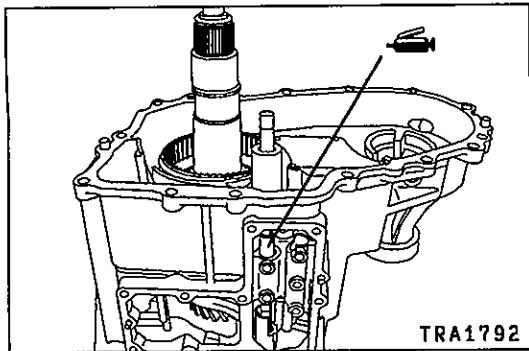
Select a proper snap ring so that the end play of the differential lock hub will have the standard value, and install it on the transfer drive shaft.

**Standard value: 0 – 0.08 mm**



**▶◀ STEEL BALL / SPACER INSTALLATION**

Install the steel ball in the illustrated position of the transfer drive shaft and install the spacer with its oil groove toward the chain cover.

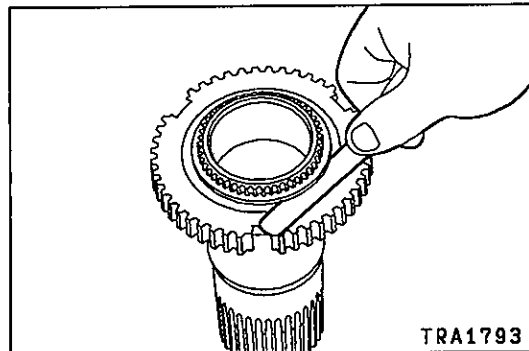


### ▶J◀ 2-4WD SHIFT FORK / 2-4WD CLUTCH SLEEVE INSTALLATION

Apply grease to the 2-4WD shift fork shaft inserting portion and install the 2-4WD shift fork and 2-4WD clutch sleeve in combined state in the transfer case.

#### Specified grease:

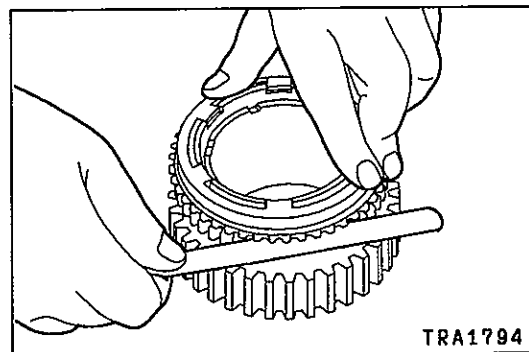
**MITSUBISHI** genuine grease part No. 0101011 or equivalent



### ▶K◀ SNAP RING INSTALLATION

Select a proper snap ring so that the end play of the 2-4WD clutch hub will have the standard value, and install it on the sun gear.

**Standard value: 0 – 0.08 mm**

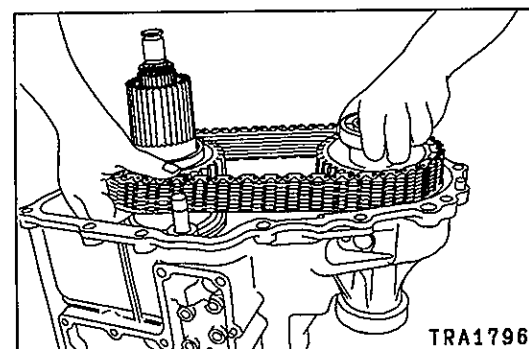
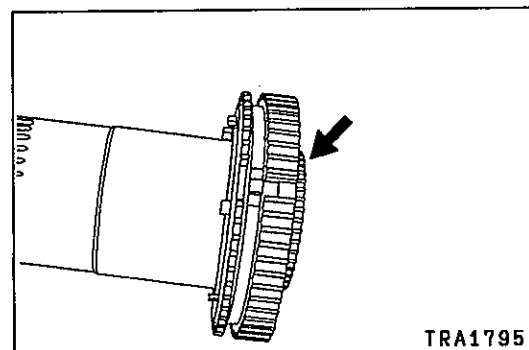


### ▶L◀ SYNCHRONIZER OUTER RING / SYNCHRONIZER CONE / SYNCHRONIZER INNER RING INSTALLATION

1. Combine the synchronizer outer ring, synchronizer cone and synchronizer inner ring, press them against the drive sprocket, and measure the dimension shown in the illustration.

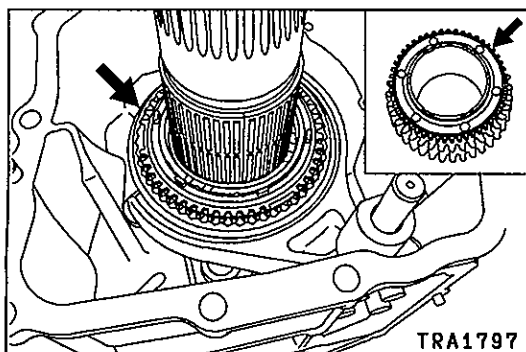
**Limit: 0.3 mm**

2. If the dimension is out of the limit value, replace them with a synchronizer ring set.
3. Apply gear oil to the synchronizer outer ring and synchronizer inner ring.
4. Line up the notched portion of the 2-4WD clutch hub with the projecting portion of the synchronizer ring and install the ring on the 2-4WD clutch hub.

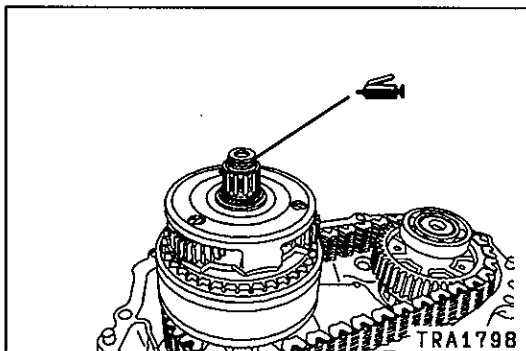


### ▶M◀ DRIVE SPROCKET / FRONT OUTPUT SHAFT / CHAIN INSTALLATION

1. Set the chain in mesh with the drive sprocket and front output shaft sprocket and install them in the transfer case.



2. Install the drive sprocket so that its illustrated holes will match the projecting portions of the synchronizer cone.

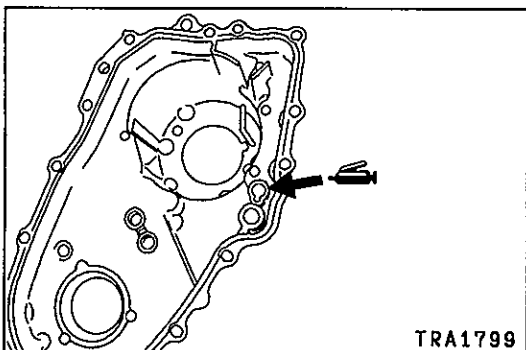


#### ►◄ REAR OUTPUT SHAFT INSTALLATION

Apply grease to the O-ring at the illustrated position and install the rear output shaft.

**Specified grease:**

**MITSUBISHI genuine grease part No. 0101011 or equivalent**

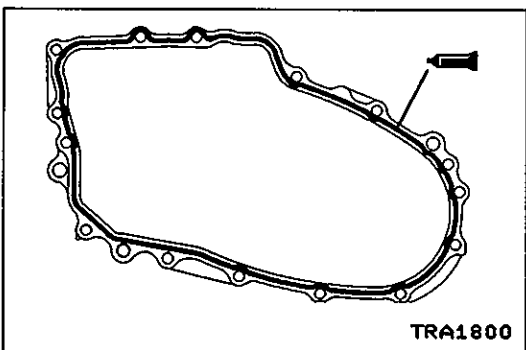


#### ►◄ CHAIN COVER INSTALLATION

1. Apply grease to the indicated 2-4WD shift rail inserting portion.

**Specified grease:**

**MITSUBISHI genuine grease part No. 0101011 or equivalent**



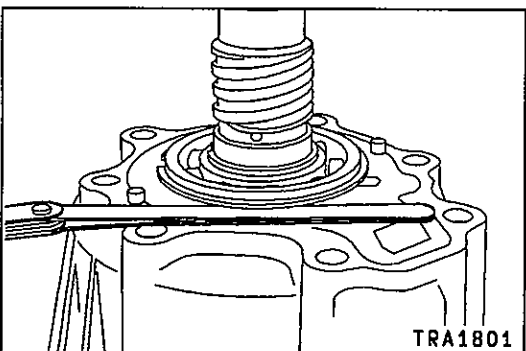
2. Apply a bead of sealant to the illustrated position of the chain cover.

**Specified sealant:**

**MITSUBISHI genuine sealant part No. MD997740 or equivalent**

**Caution**

- Squeeze the sealant out evenly to make sure that it is not broken or excessively supplied.

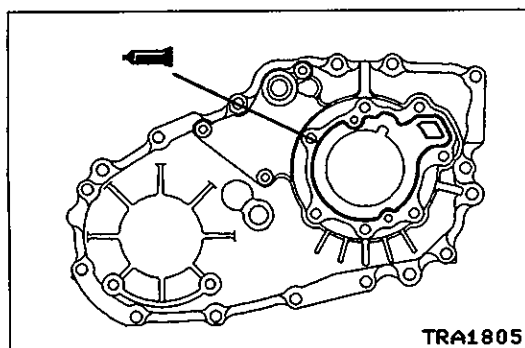
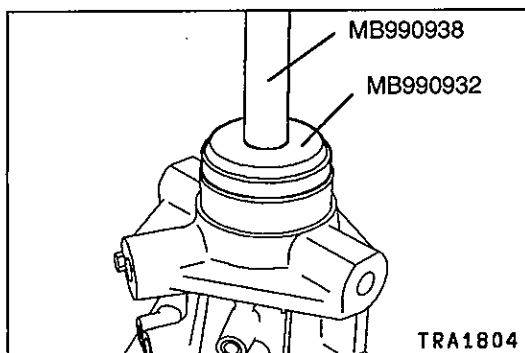
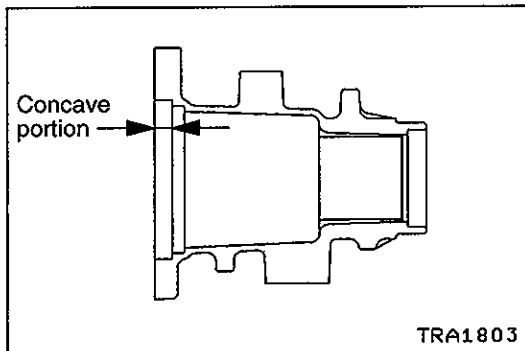
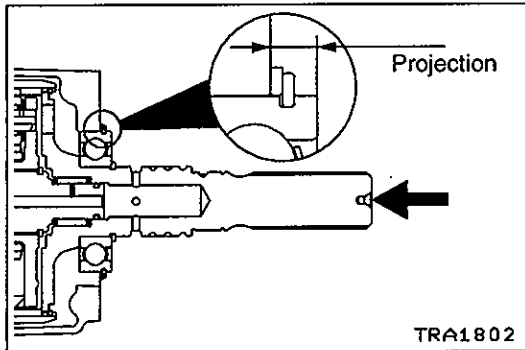


#### ►◄ SNAP RING ISNTALLATION

1. Install the snap ring in the bearing groove of the rear output shaft.
2. With the rear output shaft pressed against the chain cover, measure the clearance between the chain cover and snap ring.
3. Select a snap ring whose thickness is the dimension of the measured clearance plus the standard value.

**Standard value: 0.12 – 0.24 mm**

- Remove the snap ring from the bearing groove of the rear output shaft, install the selected snap ring, and reinstall the removed snap ring in the bearing groove of the rear output shaft.



#### ►Q◄ SPACER INSTALLATION

- With the rear output shaft pressed toward the chain cover, measure the projection of the bearing from the chain cover.

##### Caution

- Measure the projection with the snap ring installed.

- Measure the dimension of the rear cover concave portion at the illustrated position.
- Subtract the measured value in Step 1 from the measured value in Step 2 to calculate the clearance between the bearing and rear cover. Select a proper spacer so that the clearance will have the standard value.

**Standard value: 0 – 0.12 mm**

#### ►R◄ OIL SEAL INSTALLATION

- Use the special tools to install the oil seal in the rear cover.
- Apply grease to the lip of the oil seal.

##### Specified grease:

**MITSUBISHI genuine grease part No. 0101011 or equivalent**

#### ►S◄ REAR COVER INSTALLATION

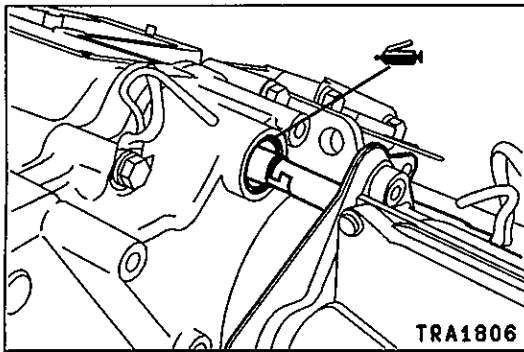
Apply sealant to the illustrated position of the chain cover.

##### Specified sealant:

**MITSUBISHI genuine sealant part No. MD997740 or equivalent**

##### Caution

- Squeeze the sealant out evenly to make sure that it is not broken or excessively supplied.



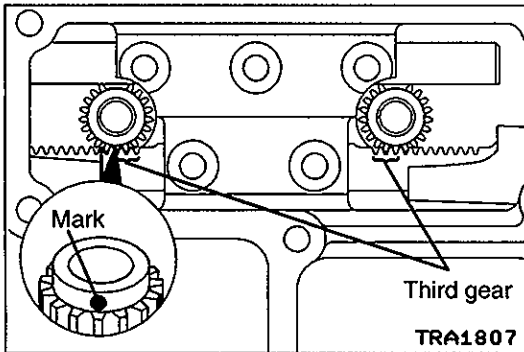
►T◄ MAIN SHIFT RAIL / SHIFT ACTUATOR INSTALLATION

1. Apply grease to the O-ring.

**Specified grease:**

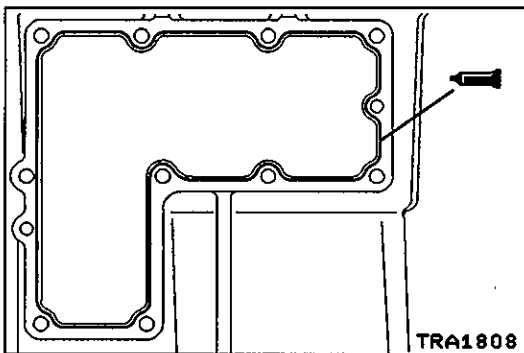
**MITSUBISHI** genuine grease part No. 0101011 or equivalent

2. Combine the main shift rail key with actuator key and insert them in the transfer case.



►U◄ SHIFT RAIL DRIVE GEAR INSTALLATION

Install the shift rail drive gear with its marked tooth in mesh with the third gear groove of each shift rail.



►V◄ TRANSFER CASE COVER INSTALLATION

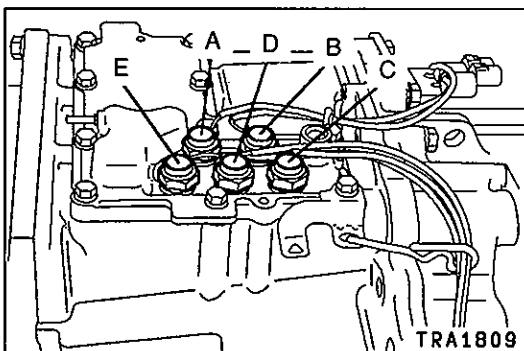
Apply sealant to the illustrated position of the transfer case cover.

**Specified sealant:**

**MITSUBISHI** genuine sealant part No. MD997740 or equivalent

**Caution**

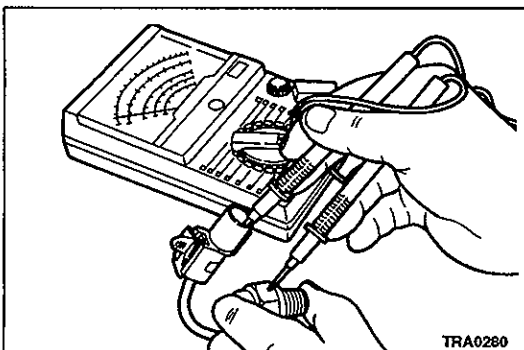
- Squeeze the sealant out evenly to make sure that it is not broken or excessively supplied.



►W◄ SWITCH INSTALLATION

Install the switches in the right positions.

	Switch name	Tube color	Connector color
A	4LLC switch	Black	Brown
B	2WD switch	Black	Black
C	Center differential lock switch	Blue	Brown
D	4H switch	Blue	White
E	2-4WD switch	Blue	Black



**INSPECTION**

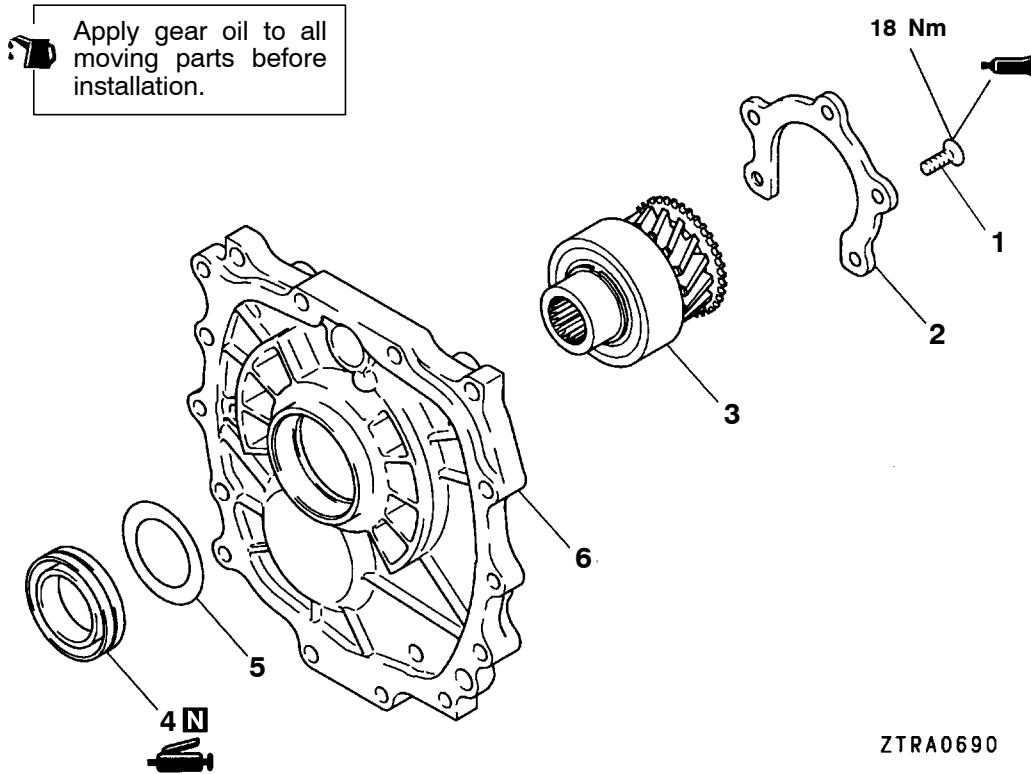
**SWITCHES**

Check for the continuity between the connector terminal and switch body. Replace the switch if found faulty.

Switch state	Continuity
Switch end pressed	No
Switch end released	Yes

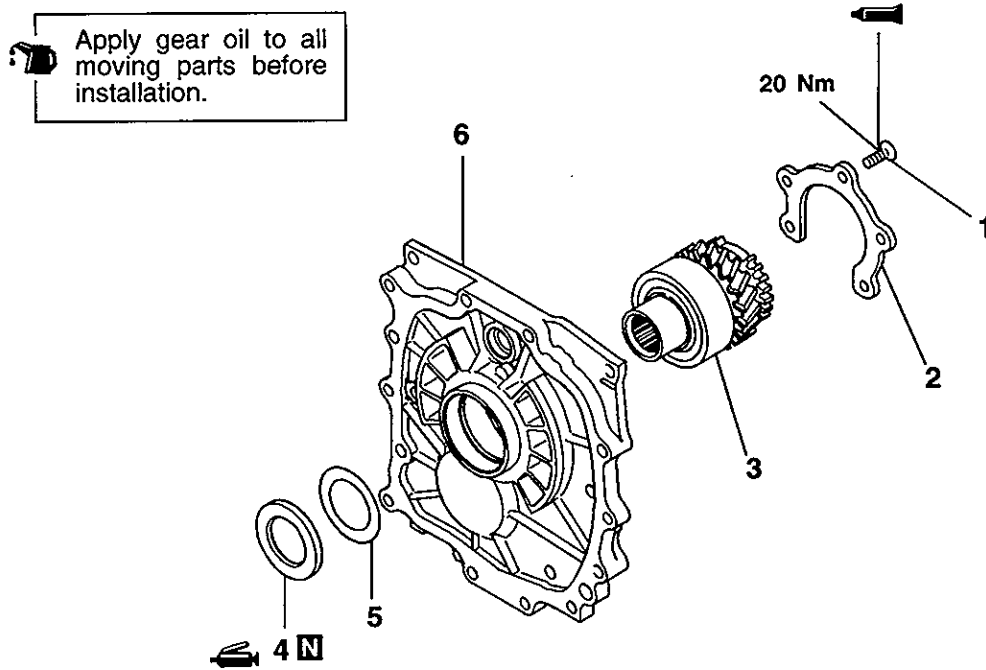
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**NOTES**

**15. TRANSFER CASE PLATE <V4A51>****DISASSEMBLY AND ASSEMBLY <V4A51-4, 5>****Disassembly steps**

- ▶B◀ 1. Bolt  
2. Bearing retainer  
3. Transfer input gear
- ▶A◀ 4. Oil seal  
5. Baffle plate  
6. Transfer case plate

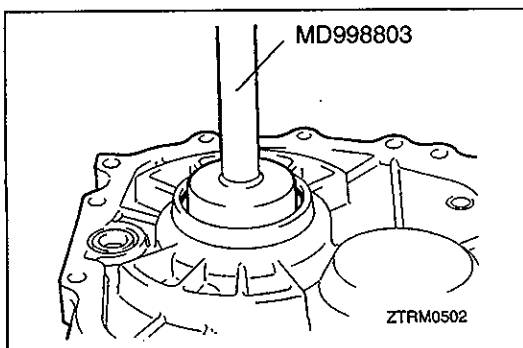
## DISASSEMBLY AND ASSEMBLY &lt;V4A51-7&gt;



TRA1848

## Disassembly steps

- B◄ 1. Bolt  
2. Bearing retainer  
3. Transfer input gear
- C◄ 4. Oil seal  
5. Baffle plate  
6. Transfer case plate



## ASSEMBLY SERVICE POINTS

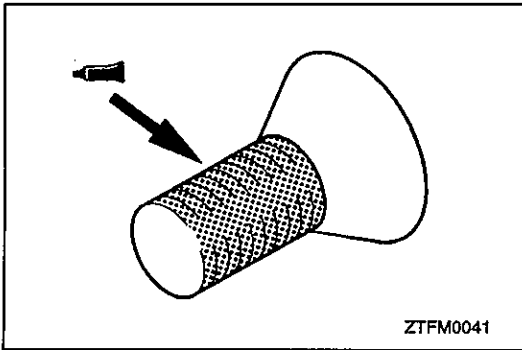
## ►A◄ OIL SEAL INSTALLATION

1. Use the special tool to install the oil seal.
2. Apply grease to the lip of the oil seal.

## Specified grease:

**MITSUBISHI** genuine grease part No. 0101011 or equivalent



**►B◄ BOLT INSTALLATION**

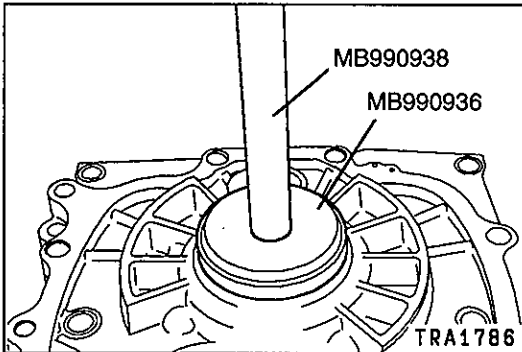
Apply sealant to the threads.

**Specified sealant:**

**MITSUBISHI** genuine sealant part No. MD997740 or equivalent

**NOTE**

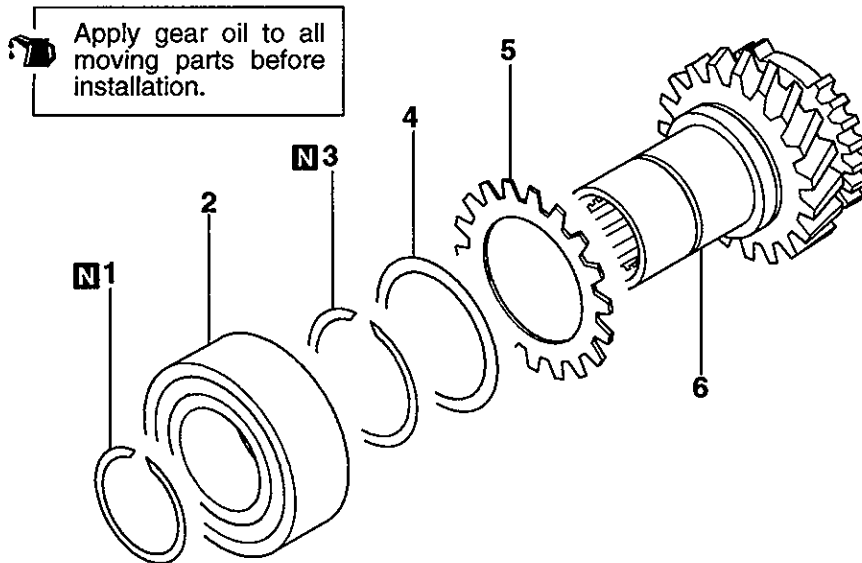
New bolts are precoated with sealant, so sealant does not need to be applied.

**►C◄ OIL SEAL INSTALLATION**

1. Use the special tool to install the oil seal.
2. Apply grease to the lip of the oil seal.

**Specified grease:**

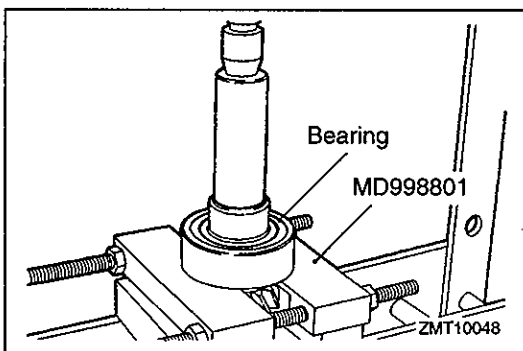
**MITSUBISHI** genuine grease part No. 0101011 or equivalent

**16. INPUT GEAR <V4A51>****DISASSEMBLY AND ASSEMBLY**

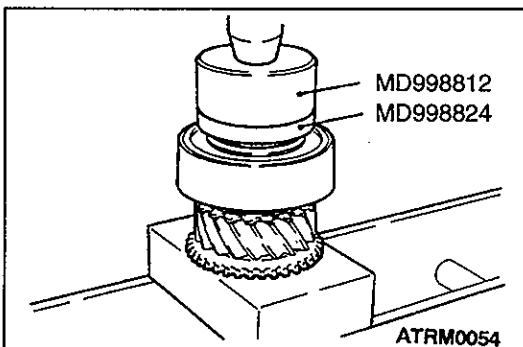
TRA1822

**Disassembly steps**

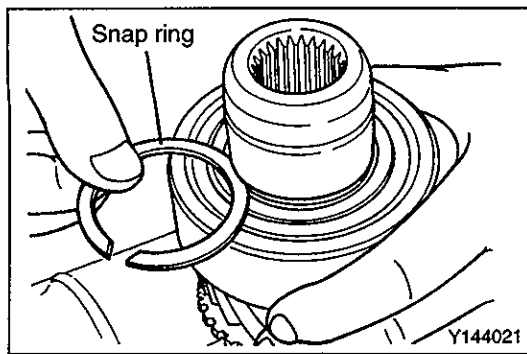
- ◀A▶ ▶B▶  
 ▶A▶
1. Snap ring
  2. Ball bearing
  3. Snap ring (some model)
  4. Cone spring (some model)
  5. Sub gear (some model)
  6. Transfer input gear

**DISASSEMBLY SERVICE POINT****◀A▶ BALL BEARING REMOVAL**

Use the special tool to remove the ball bearing.

**ASSEMBLY SERVICE POINTS****▶A▶ BALL BEARING INSTALLATION**

Use the special tools to install the ball bearing.


**▶B◀ SNAP RING INSTALLATION**

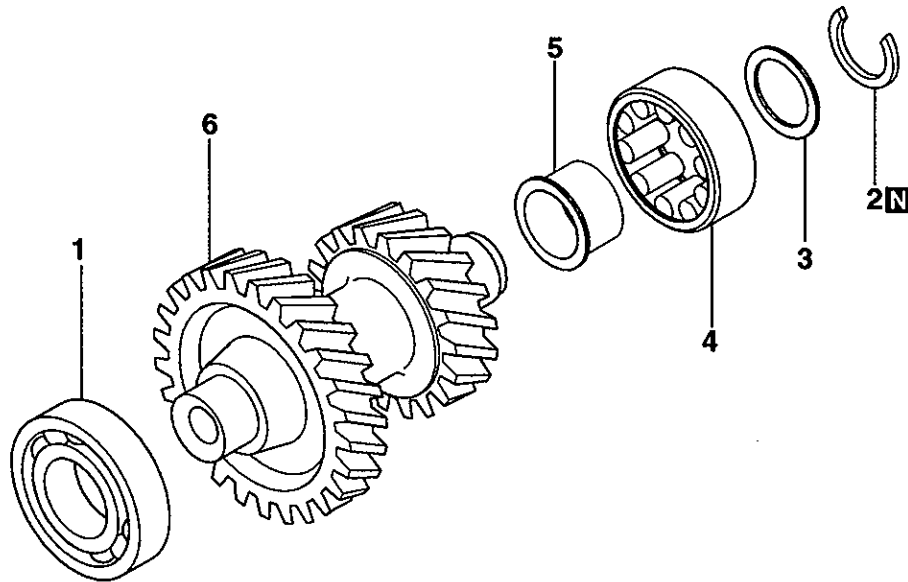
1. Install the thickest snap ring that can be fitted in the snap ring groove of the input gear.
2. Make sure that the ball bearing end play meets the standard value.

**Standard value: 0 – 0.06 mm**

# 17. COUNTERSHAFT GEAR <V4A51>

## DISASSEMBLY AND ASSEMBLY

 Apply gear oil to all moving parts before installation.

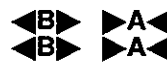


TRA1826

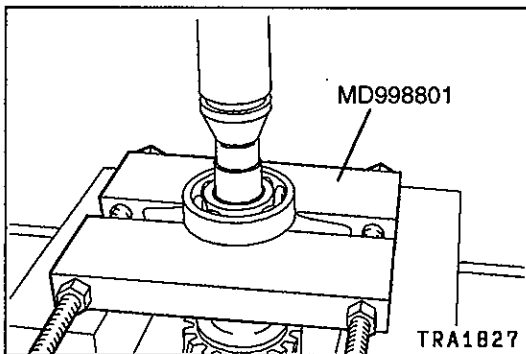
### Disassembly steps



- 1. Ball bearing
- 2. Snap ring
- 3. Spacer



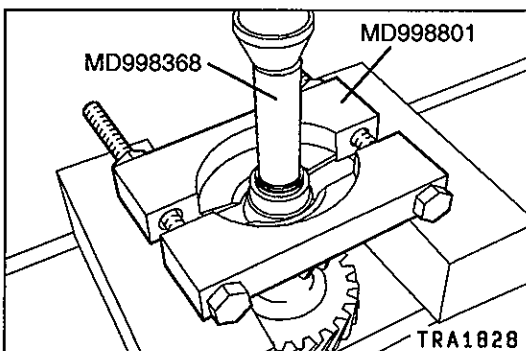
- 4. Roller bearing
- 5. Inner race
- 6. Countershaft gear



### DISASSEMBLY SERVICE POINTS

#### ◀A▶ BALL BEARING REMOVAL

Use the special tool to remove the ball bearing.

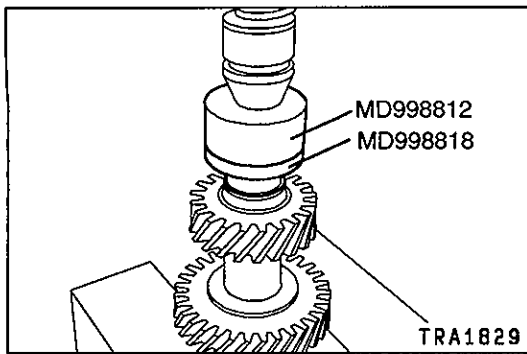


#### ◀B▶ SPACER / ROLLER BEARING / INNER RACE REMOVAL

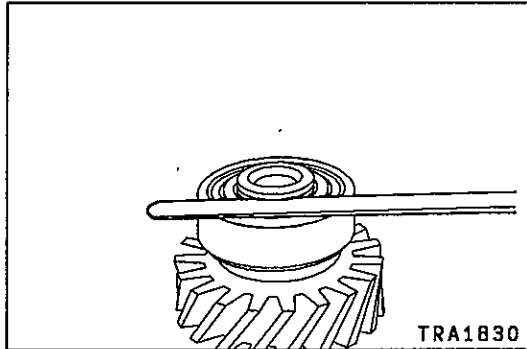
1. Remove the spacer and roller bearing.
2. Using the special tool, remove the inner race.

#### NOTE

The removal sequence of roller bearing parts vary depending on the direction that the roller bearing was installed. In some cases, the inner race, roller bearing and spacer may have to be simultaneously removed.

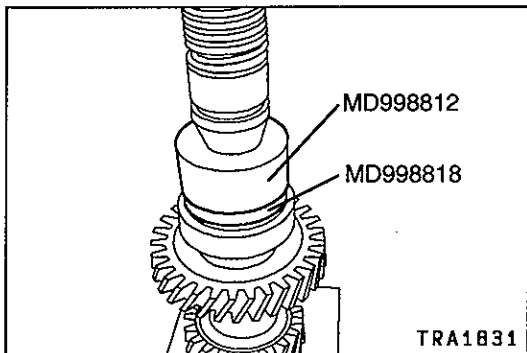
**ASSEMBLY SERVICE POINTS****▶A◀ INNER RACE / ROLLER BEARING / SPACER INSTALLATION**

1. Using the special tool, install the inner race.
2. Install the roller bearing and spacer.

**▶B◀ SNAP RING INSTALLATION**

Install the thickest snap ring that can be fitted in the snap ring groove of the countershaft gear. Make sure that the roller bearing end play meets the standard value.

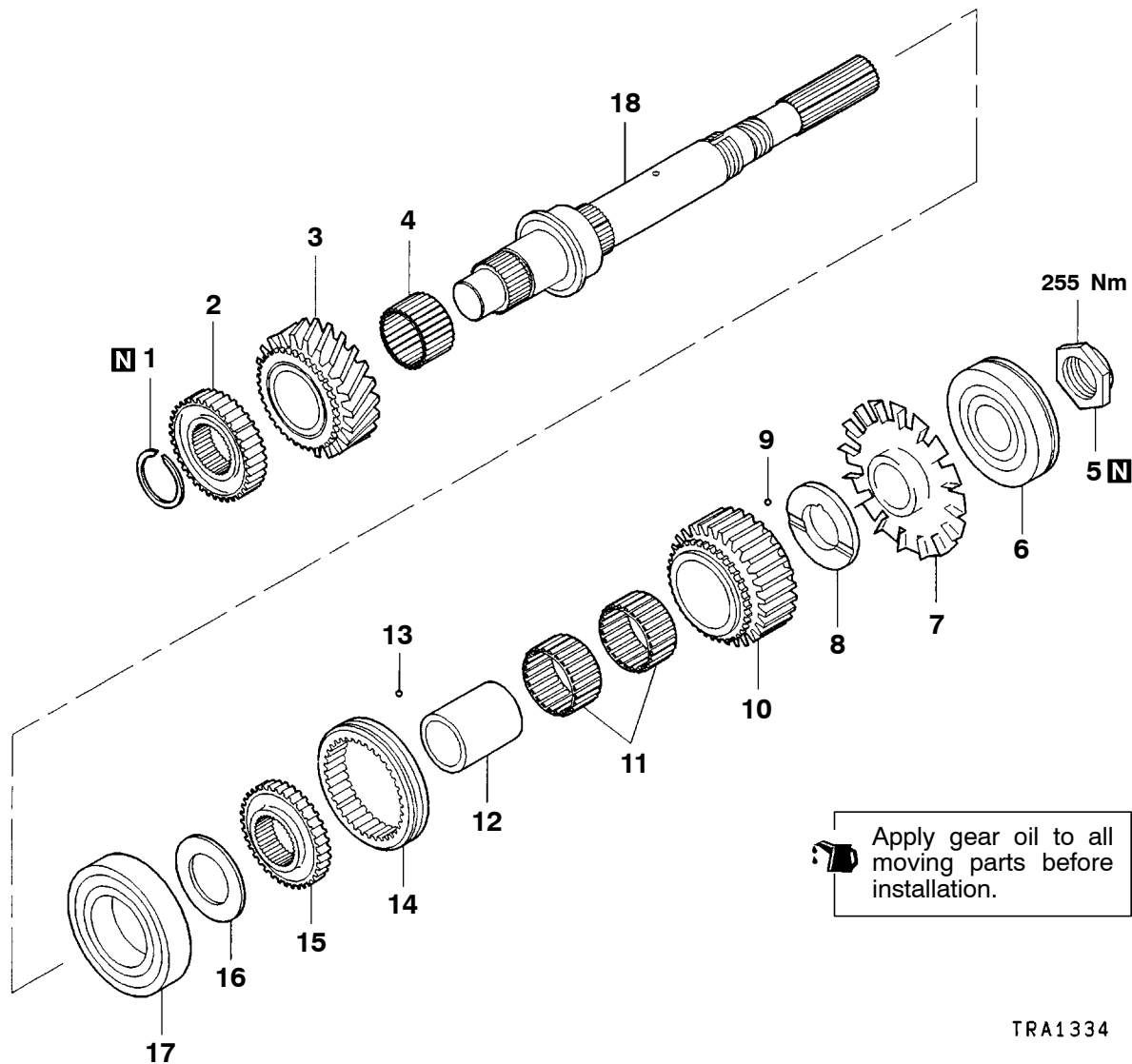
**Standard value: 0 – 0.08 mm**

**▶C◀ BALL BEARING INSTALLATION**

Use the special tools to install the ball bearing.

# 18. REAR OUTPUT SHAFT <V4A51 - Part Time 4WD>

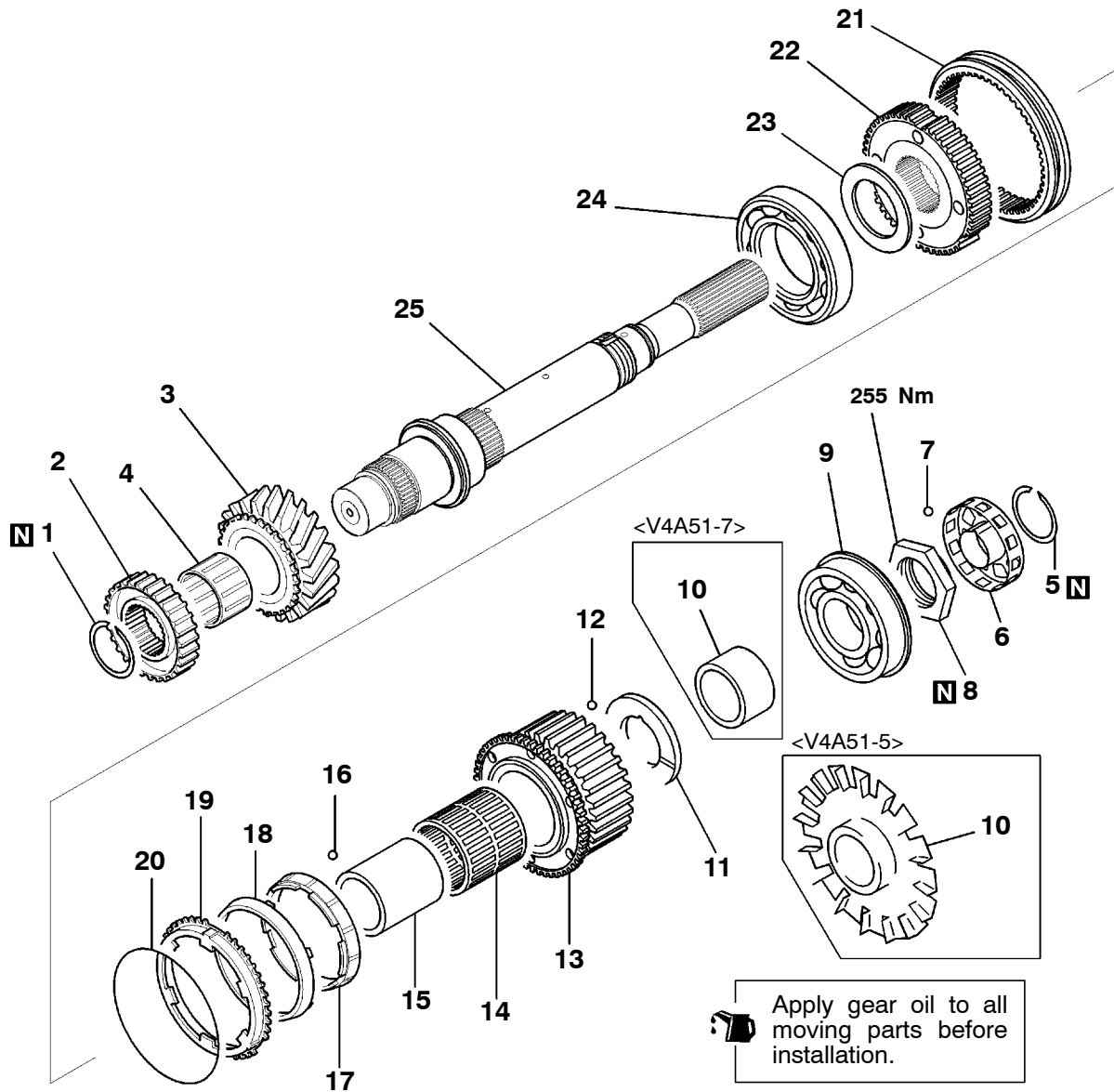
## DISASSEMBLY AND ASSEMBLY <V4A51-4>



### Disassembly steps

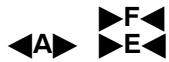
- |     |     |                    |                       |
|-----|-----|--------------------|-----------------------|
| ◀A▶ | ▶F▶ | 1. Snap ring       | 10. Drive sprocket    |
|     | ▶E▶ | 2. Clutch hub      | 11. Needle bearing    |
|     |     | 3. Low speed gear  | 12. Sprocket sleeve   |
|     |     | 4. Needle bearing  | 13. Steel ball        |
| ▶B▶ | ▶D▶ | 5. Jam nut         | 14. Clutch sleeve     |
| ▶C▶ | ▶C▶ | 6. Ball bearing    | 15. Clutch hub        |
|     |     | 7. Oil guide       | ▶B▶                   |
|     |     | 8. Sprocket spacer | ▶A▶                   |
|     |     | 9. Steel ball      | ▶A▶                   |
|     |     |                    | ▶D▶                   |
|     |     |                    | ▶D▶                   |
|     |     |                    | ▶D▶                   |
|     |     |                    | 16. Stopper plate     |
|     |     |                    | 17. Ball bearing      |
|     |     |                    | 18. Rear output shaft |

DISASSEMBLY AND ASSEMBLY <V4A51-5, 7>



TRA1928

Disassembly steps



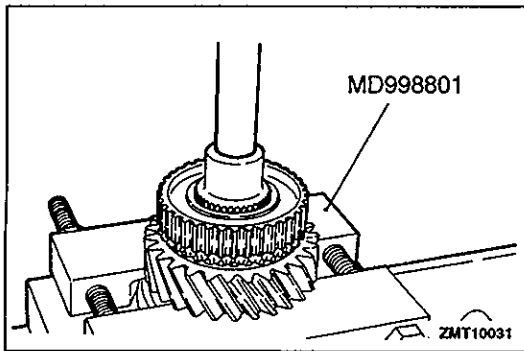
- 1. Snap ring
- 2. Clutch hub
- 3. Low speed gear
- 4. Needle bearing
- 5. Snap ring (V4A51-7)
- 6. Rotor (V4A51-7)



- 7. Steel ball
- 8. Jam nut
- 9. Ball bearing
- 10. Spacer (V4A51-7)  
Oil guide (V4A51-5)
- 11. Sprocket spacer
- 12. Steel ball



- 13. Drive sprocket
- 14. Needle bearing
- 15. Sprocket sleeve
- 16. Steel ball
- 17. Synchronizer inner ring
- 18. Synchronizer cone
- 19. Synchronizer outer ring
- 20. Synchronizer spring
- 21. Clutch hub
- 22. Clutch hub
- 23. Stopper plate
- 24. Ball bearing
- 25. Rear output shaft



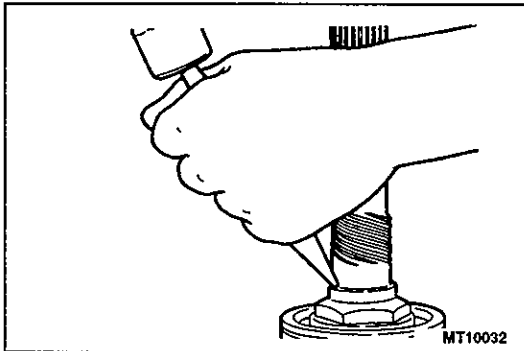
## DISASSEMBLY SERVICE POINTS

### ◀A▶ CLUTCH HUB REMOVAL

1. Use the special tool to support the low speed gear.
2. Use a press to push at the front end of the rear output shaft and then remove the hub and gear.

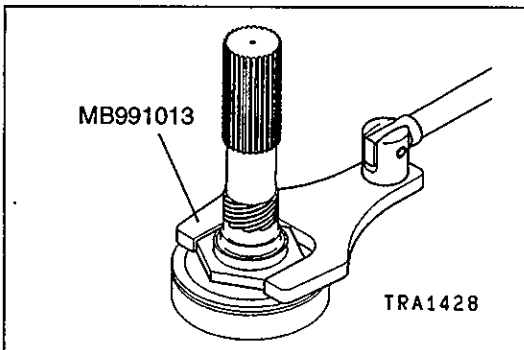
#### NOTE

The clutch hub may be fitted loosely on the shaft, so that removal is possible without using a press.

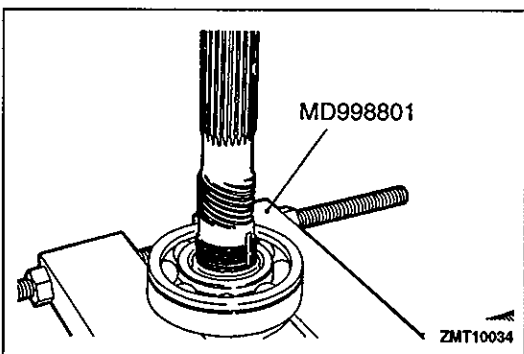


### ◀B▶ JAM NUT REMOVAL

1. Remove the staked nut from the shaft.



2. Hold the drive sprocket in a soft-jaw vise.
3. Shift the clutch sleeve to the drive sprocket side.
4. Use the special tool to remove the jam nut.

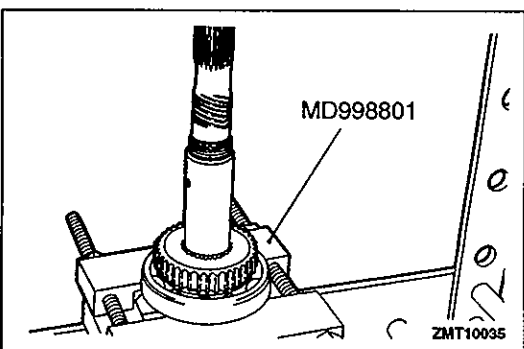


### ◀C▶ RADIAL BALL BEARING REMOVAL

1. Use the special tool to support the ball bearing.
2. Use a press to push at a rear end of the rear output shaft, and then remove the radial ball bearing.

#### NOTE

The bearing may be fitted loosely on the shaft, so that removal is possible without using a press.



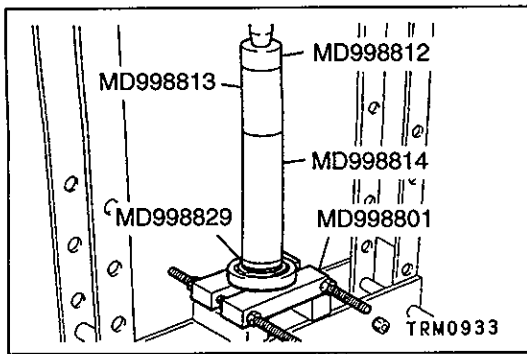
### ◀D▶ CLUTCH HUB REMOVAL

1. Place the special tool so that the load is applied at the bearing.
2. Use a press to push at the rear end of the rear output shaft, and then remove the clutch hub and ball bearing.

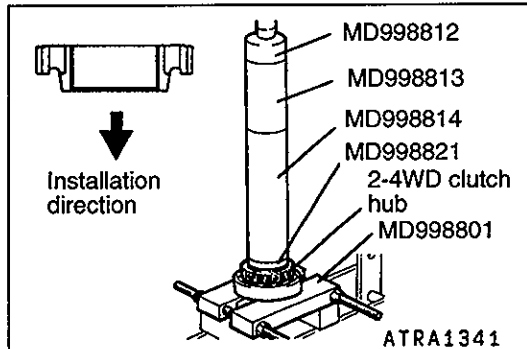
#### NOTE

The clutch hub may be fitted loosely on the shaft, so that removal is possible without using a press.



**ASSEMBLY SERVICE POINTS****▶A◀ BALL BEARING / STOPPER PLATE INSTALLATION**

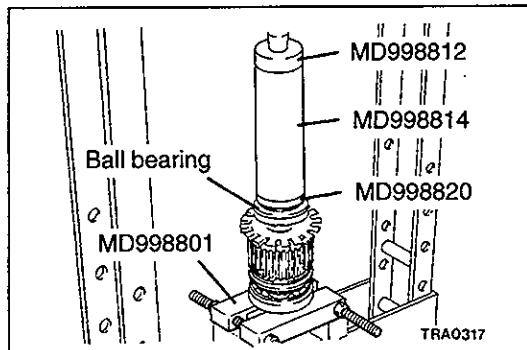
1. Use the special tool to support the rear output shaft.
2. Fit the ball bearing and the stopper plate onto the rear output shaft.
3. Use the special tools to press in the ball bearing.

**▶B◀ CLUTCH HUB INSTALLATION**

1. Use the special tool to support the rear output shaft.
2. Confirm the clutch hub installation direction, and fit the clutch hub onto the rear output shaft.
3. Use the special tools to press in the clutch hub.

**NOTE**

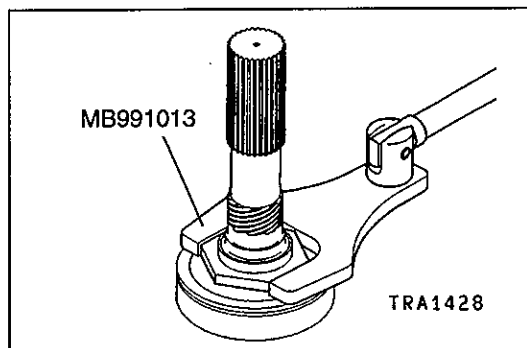
The clutch hub may be fitted loosely on the shaft, so that installation is possible without using a press.

**▶C◀ BALL BEARING INSTALLATION**

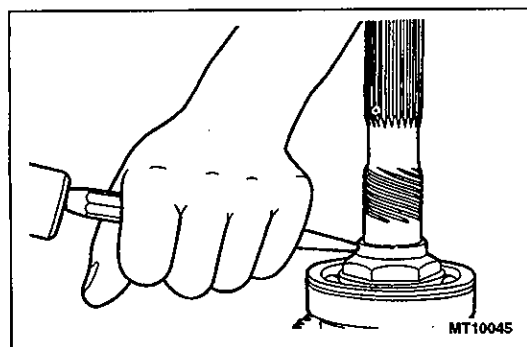
1. Use the special tool to support the rear output shaft.
2. Use special tools to install the radial ball bearing.

**NOTE**

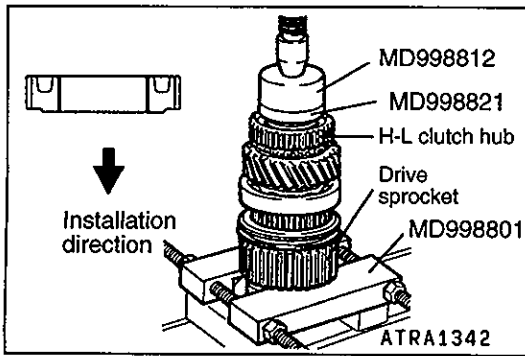
The ball bearing may be fitted loosely on the shaft, so that installation is possible without using a press.

**▶D◀ JAM NUT INSTALLTION**

1. Hold the drive sprocket in a soft-jaws vise.
2. Shift the clutch sleeve to the drive sprocket side.
3. Using the special tool, tighten the jam nut to the specified torque.

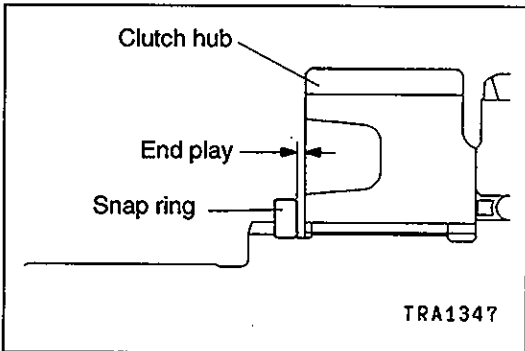


4. Stake the two places of the jam nut as shown in illustration.



**▶E◀ CLUTCH HUB INSTALLATION**

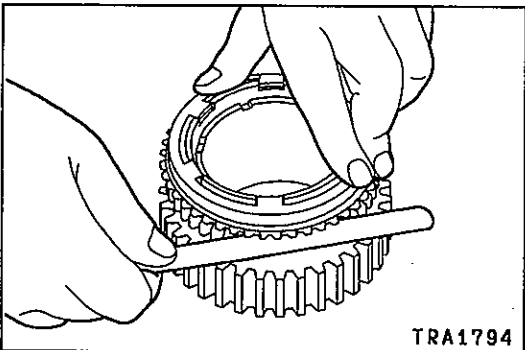
1. Use the special tool to support the drive sprocket.
2. Confirm the clutch hub installation direction, and fit the clutch hub onto the rear output shaft.
3. Use the special tools to press in the clutch hub.



**▶F◀ SNAP RING INSTALLATION**

1. Install the thickest snap ring that can be fitted in the snap ring groove of the rear output shaft.
2. Make sure that the clutch hub end play meets the standard value.

**Standard value: 0 – 0.08 mm**



**INSPECTION**


**SYNCHRONIZER OUTER RING / SYNCHRONIZER CONE / SYNCHRONIZER INNER RING INSTALLATION**

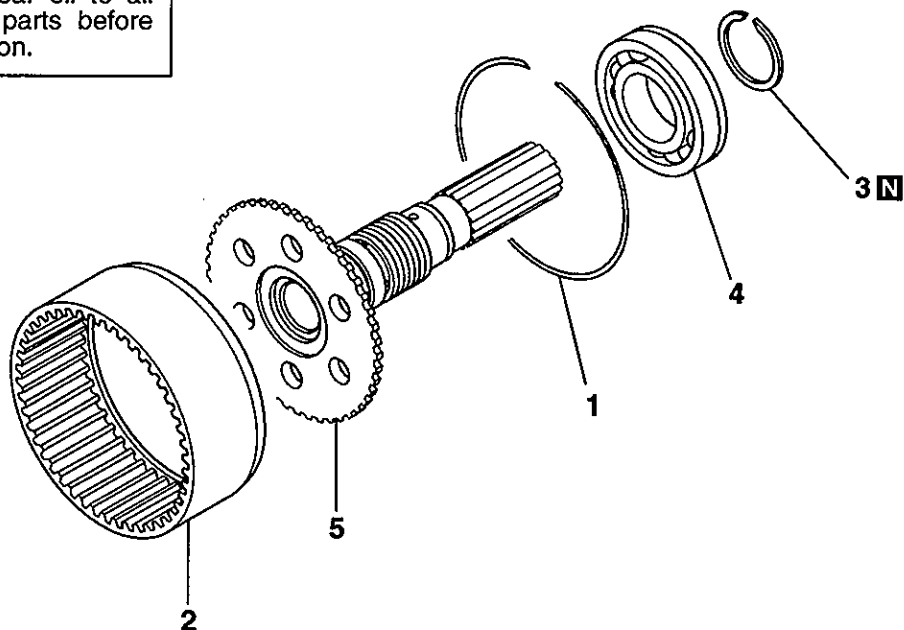
1. Push the synchronizer outer ring, synchronizer cone and the synchronizer inner ring to the drive sprocket in combined state, and then measure the indicated dimension of the drive sprocket and synchronizer outer ring.

**Limit: 0.3 mm**

2. In case that the value is out of limit, exchange as the synchronizer ring set.

# 18a. REAR OUTPUT SHAFT <V4A51 – Super Select 4WD II> DISASSEMBLY AND ASSEMBLY

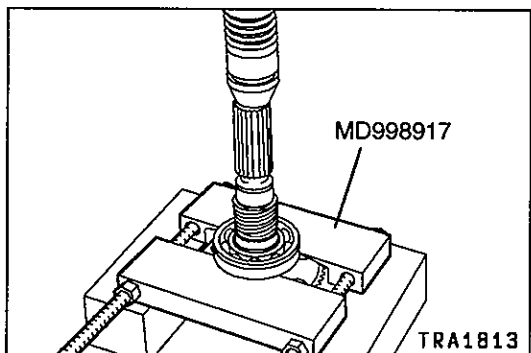
 Apply gear oil to all moving parts before installation.



TRA1812

### Disassembly steps

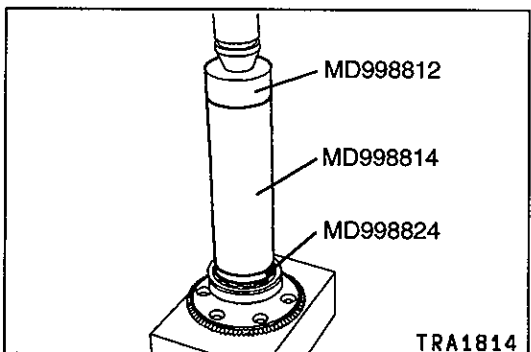
- ▶C◀ 1. Snap ring
- ▶B◀ 2. Annulus gear
- ◀A▶ 3. Snap ring
- ▶A◀ 4. Ball bearing
- ▶A◀ 5. Rear output shaft



### DISASSEMBLY SERVICE POINT

#### ◀A▶ BALL BEARING REMOVAL

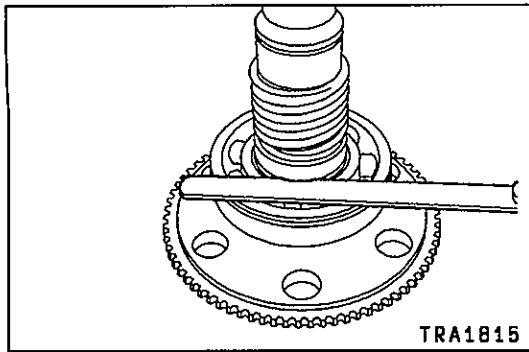
Use the special tool to remove the ball bearing.



### ASSEMBLY SERVICE POINTS

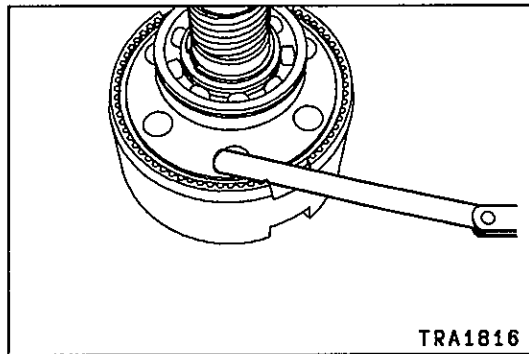
#### ▶A◀ BALL BEARING INSTALLATION

Use the special tools to install the ball bearing.

**▶B◀ SNAP RING INSTALLATION**

1. Install the thickest snap ring that can be fitted in the snap ring groove of the rear output shaft.
2. Make sure that the rear output shaft bearing end play meets the standard value.

**Standard value: 0 – 0.08 mm**


**▶C◀ SNAP RING INSTALLATION**

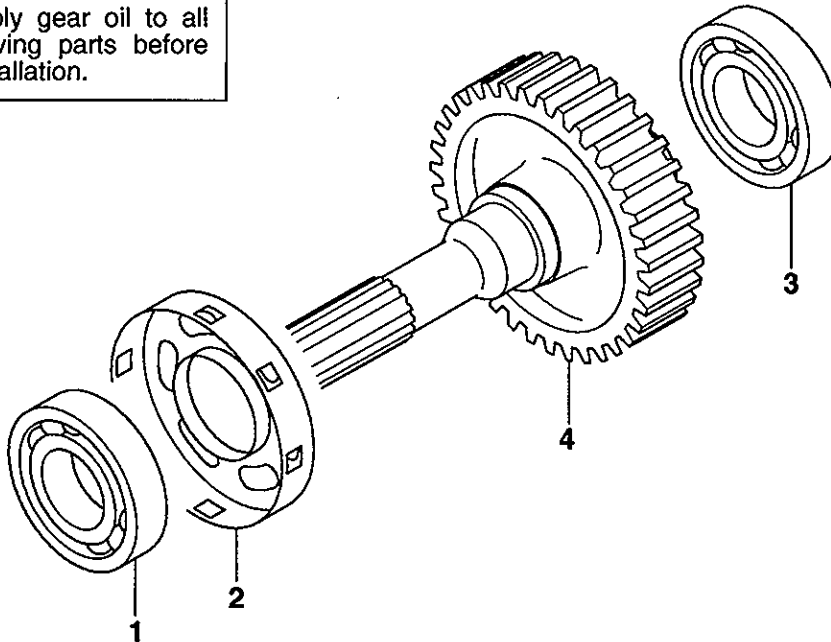
1. Install the thickest snap ring that can be fitted in the snap ring groove of the annulus gear.
2. Make sure that the annulus gear end play meets the standard value.

**Standard value: 0 – 0.08 mm**

## 19. FRONT OUTPUT SHAFT <V4A51>

### DISASSEMBLY AND ASSEMBLY

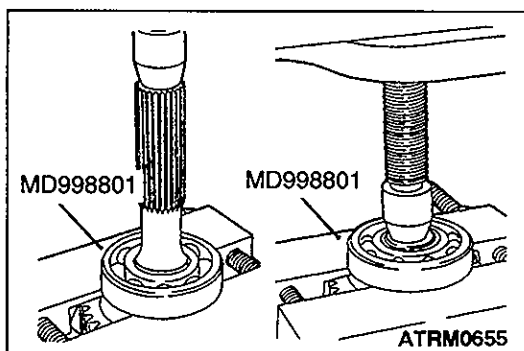
 Apply gear oil to all moving parts before installation.



TRA1817

#### Disassembly steps

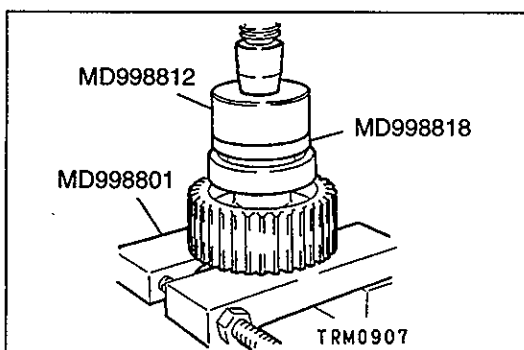
- ◀A▶ ▶B▶ 1. Ball bearing  
 ▶A▶ ▶A▶ 2. Sensor rotor (V4A51-7)  
 ▶A▶ ▶A▶ 3. Ball bearing  
 ▶A▶ ▶A▶ 4. Front output shaft



#### DISASSEMBLY SERVICE POINT

##### ◀A▶ BALL BEARING REMOVAL

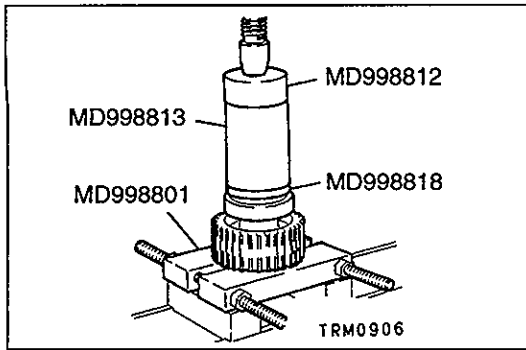
1. Use the special tool to support the ball bearing.
2. Press the front output shaft with a press and remove the ball bearings.



#### ASSEMBLY SERVICE POINTS


##### ▶A▶ BALL BEARING INSTALLATION

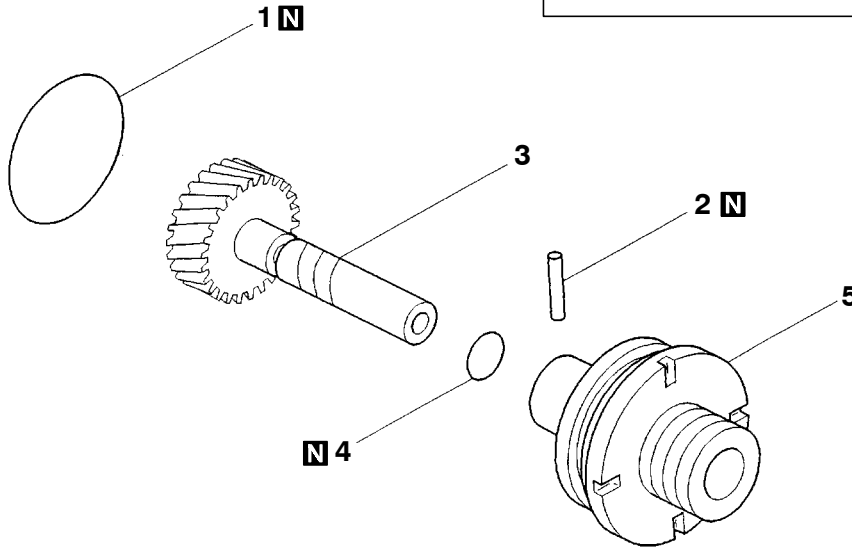
1. Use the special tool to support the front output shaft.
2. Use the special tools to install the ball bearing.

**▶B◀ BALL BEARING INSTALLATION**

1. Use the special tool to support the front output shaft.
2. Use the special tools to install the ball bearing.

## 20. SPEEDOMETER GEAR <R4A51-4, 5, V4A51-4, 5> DISASSEMBLY AND ASSEMBLY

 Apply gear oil to all moving parts before installation.

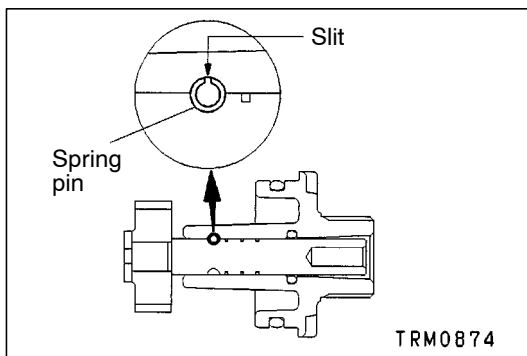


TRM0860

### Disassembly steps



1. O-ring
2. Spring pin
3. Driven gear
4. O-ring
5. Sleeve



### ASSEMBLY SERVICE POINT

#### ▶A◀ SPRING PIN INSTALLATION


Drive the spring pin in, while making sure that slit does not face gear shaft.

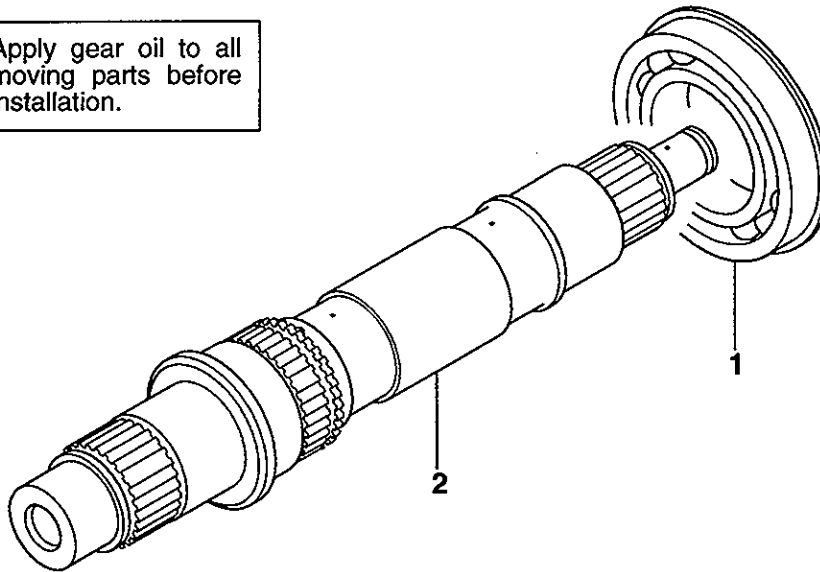
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**NOTES**



## 21. TRANSFER DRIVE SHAFT <V4A51 – Super Select 4WD II> DISASSEMBLY AND ASSEMBLY

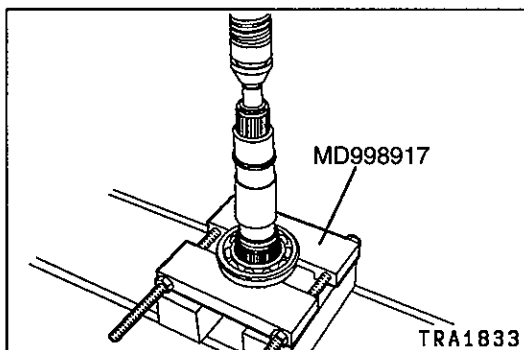
 Apply gear oil to all moving parts before installation.



TRA1832

### Disassembly steps

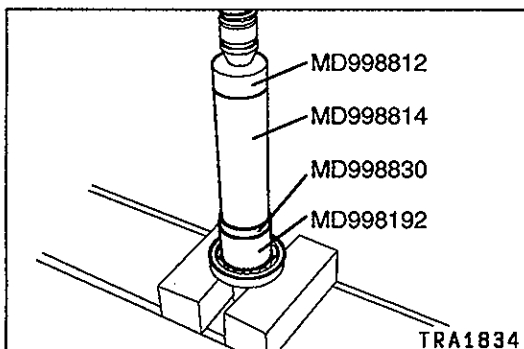
- ◀A▶ ▶A◀  
 1. Ball bearing  
 2. Transfer drive shaft



### DISASSEMBLY SERVICE POINT

#### ◀A▶ BALL BEARING REMOVAL

Use the special tool to remove the ball bearing.




### ASSEMBLY SERVICE POINT

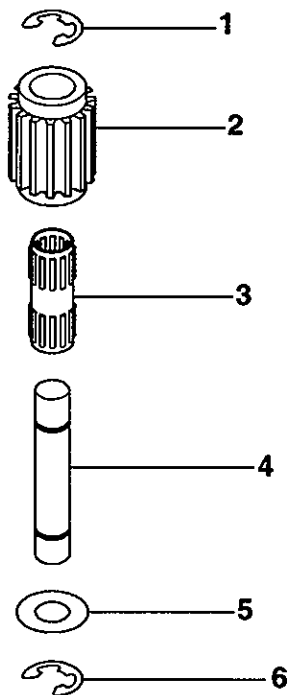
#### ▶A◀ BALL BEARING INSTALLATION

Use the special tools to install the ball bearing.

## 22. SHIFT RAIL DRIVE GEAR <V4A51 – Super Select 4WD II>

### DISASSEMBLY AND ASSEMBLY

 Apply gear oil to all moving parts before installation.

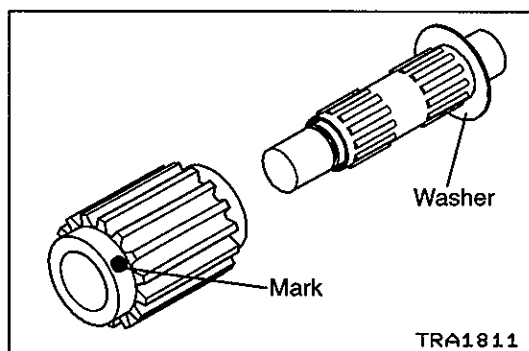


TRA1810

#### Disassembly steps

- ▶◀
1. Snap ring
  2. Shift rail drive gear
  3. Bearing

4. Shift rail drive gear shaft
5. Washer
6. Snap ring




#### ASSEMBLY SERVICE POINT

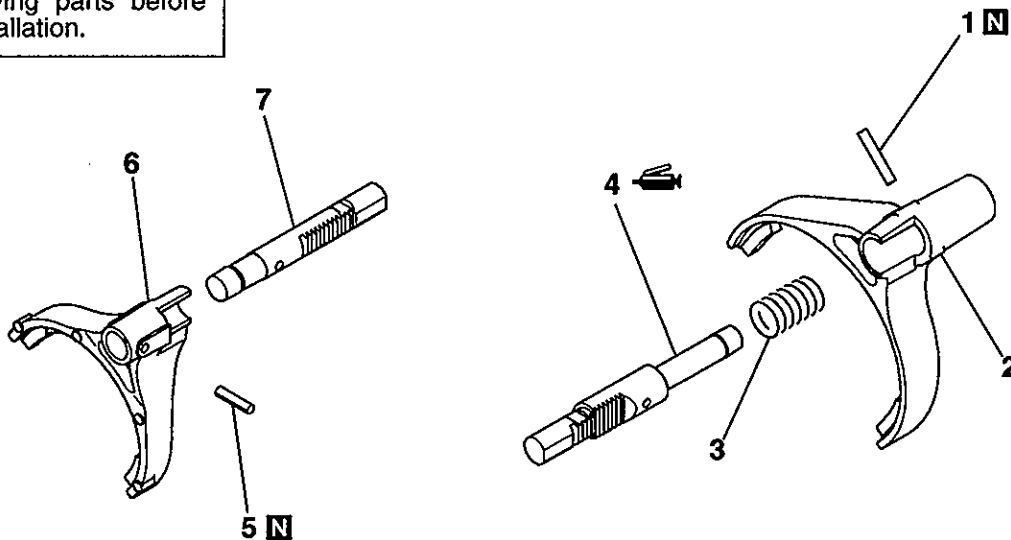
##### ▶◀ SHIFT RAIL DRIVE GEAR INSTALLATION

Install the shift rail drive gear such that its mark does not face the washer.

## 23. 2-4WD SHIFT RAIL AND H-L SHIFT RAIL <V4A51 – Super Select 4WD II>


### DISASSEMBLY AND ASSEMBLY





 Apply gear oil to all moving parts before installation.

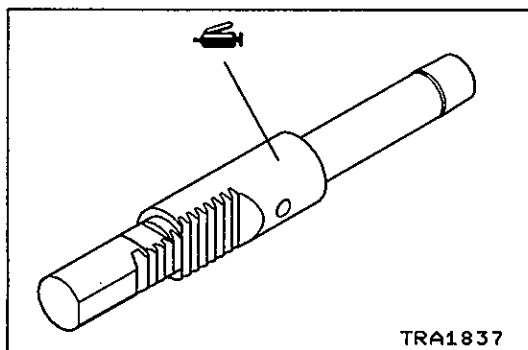


TRA1835

#### Disassembly steps

-  1. Spring pin
-  2. 2-4WD shift fork
-  3. Spring

-  4. 2-4WD shift rail
-  5. Spring pin
-  6. H-L shift fork
-  7. H-L shift rail



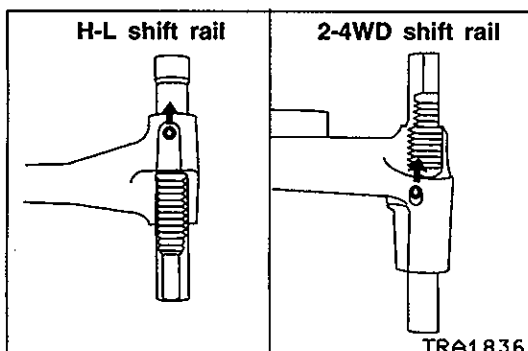
### ASSEMBLY SERVICE POINTS

#### ▶A◀ SHIFT FORK / SHIFT RAIL INSTALLATION

Apply grease to the outer periphery of the shift fork mounting portion of the shift rail and then assemble the shift fork and shift rail.

#### Specified grease:

Mitsubishi genuine grease part No. 0101011 or equivalent



#### ▶B◀ SPRING PIN INSTALLATION

Install the spring pin with its split toward the forward end of the transfer.