

# AUTOMATIC TRANSMISSION V5A51

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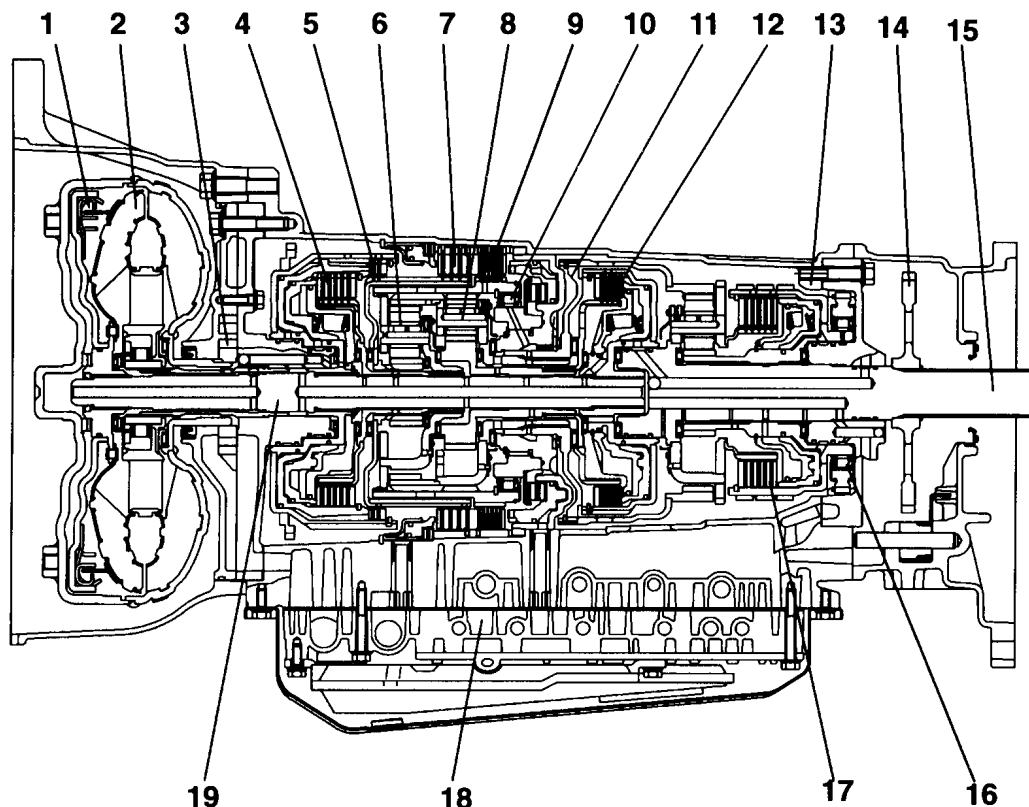
**NOTES**

## GENERAL INFORMATION

This transmission is the newly developed 5-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.

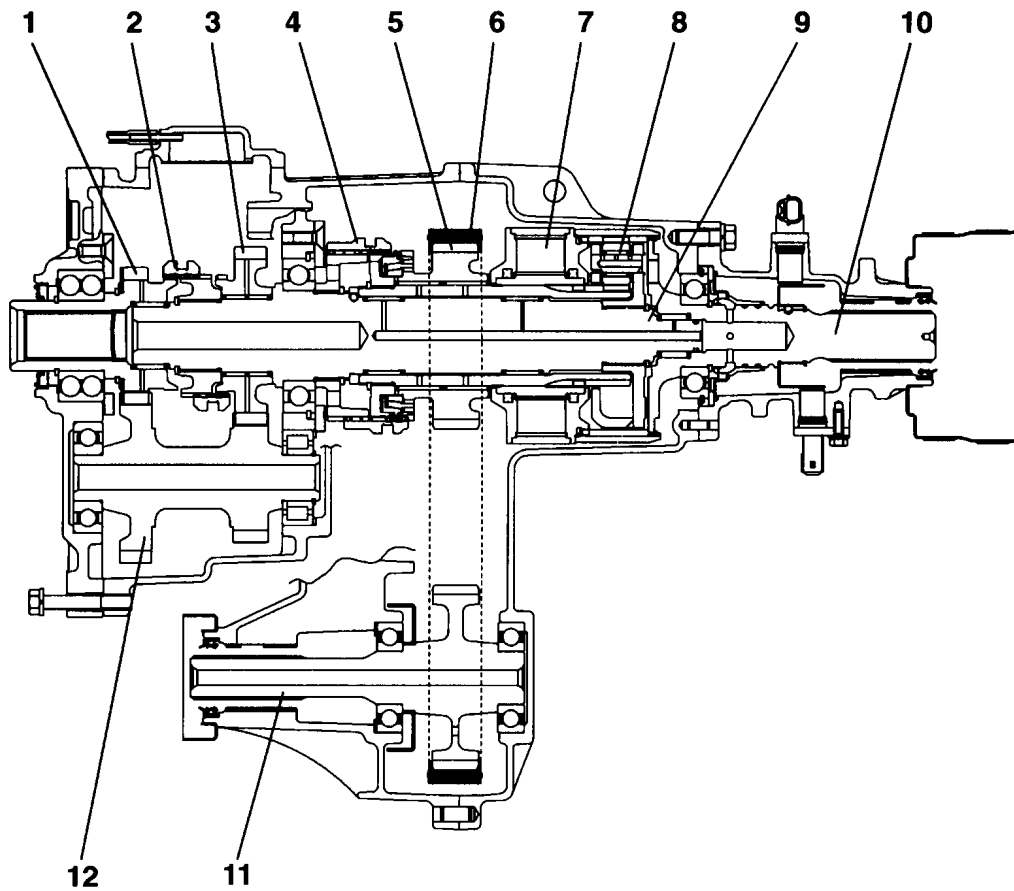
## SECTIONAL VIEW <TRANSMISSION>



TRA1851

- |                                |                          |
|--------------------------------|--------------------------|
| 1. Torque converter clutch     | 11. Center support       |
| 2. Torque converter            | 12. Underdrive clutch    |
| 3. Oil pump                    | 13. Output shaft support |
| 4. Overdrive clutch            | 14. Parking gear         |
| 5. Reverse clutch              | 15. Output shaft         |
| 6. Overdrive planetary carrier | 16. One-way clutch       |
| 7. Second brake                | 17. Direct clutch        |
| 8. Output planetary carrier    | 18. Valve body           |
| 9. Low/reverse brake           | 19. Input shaft          |
| 10. One-way clutch             |                          |

## SECTIONAL VIEW &lt;TRANSFER&gt;

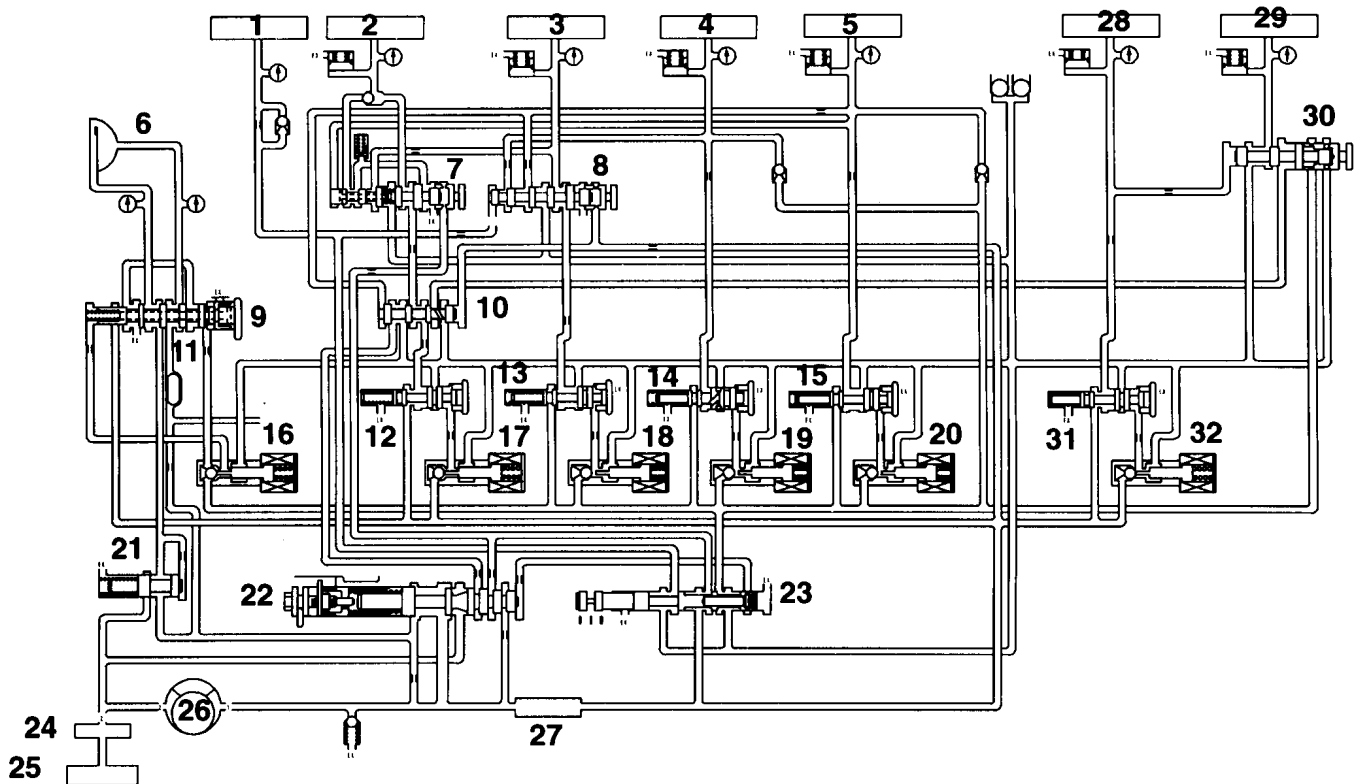


TRA1852

- 1. Transfer input gear
- 2. H-L clutch
- 3. Low speed gear
- 4. 2-4WD clutch 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. Counter shaft gear

## HYDRAULIC CONTROL SYSTEM



TRA1357

- |  |   |
|--|---|
| 1. Reverse clutch                                  | 17. Low-reverse brake solenoid valve        |
| 2. Low/reverse brake                               | 18. Second brake solenoid valve             |
| 3. Second brake                                    | 19. Underdrive clutch solenoid valve        |
| 4. Underdrive clutch                               | 20. Overdrive clutch solenoid valve         |
| 5. Overdrive clutch                                | 21. Torque converter pressure control valve |
| 6. Torque converter clutch                         | 22. Regulator valve                         |
| 7. Fail-safe valve A                               | 23. Manual valve                            |
| 8. Fail-safe valve B                               | 24. Oil filter                              |
| 9. Torque converter clutch control valve           | 25. Oil pan                                 |
| 10. Switching valve                                | 26. Oil pump                                |
| 11. Cooler   | 27. Oil strainer                            |
| 12. Low-reverse brake pressure control valve       | 28. Reduction brake                         |
| 13. Second brake pressure control valve            | 29. Direct clutch                           |
| 14. Underdrive clutch pressure control valve       | 30. Fail-safe valve C                       |
| 15. Overdrive clutch pressure control valve        | 31. Reduction brake pressure control valve  |
| 16. Torque converter clutch control solenoid valve | 32. Reduction brake solenoid valve          |

# 1. SPECIFICATIONS

## TRANSMISSION MODEL TABLE – MODEL 2001

Transmission models		Vehicle model	Engine model
EUR	V5A51-7-ACA	V65W, V75W	6G74
	V5A51-7-SDA	V68W, V78W	4M41
EXP	V5A51-7-CCA1	V75W	6G74
	V5A51-7-CCA2	V65W, V75W	6G74
	V5A51-7-SDA1	V78W	4M41

## GENERAL SPECIFICATIONS

Item		V5A51	
Torque converter	Type	3-element, with torque converter clutch	
Transmission	Type	5-speed, fully automatic	
	Gear ratio	1st	3.789
		2nd	2.057
		3rd	1.421
		4th	1.000
		5th	0.731
		Reverse	3.865
Transfer	Type	2-speed constant mesh	
	Gear ratio	High	1.000
		Low	1.900

**SERVICE SPECIFICATIONS****TRANSMISSION**

Item	Standard value
Direct planetary carrier mm	0.25 – 0.55
Underdrive clutch end play mm	1.6 – 1.8
Input shaft end play mm	0.25 – 0.81
Direct clutch end play mm	1.0 – 1.2
Overdrive clutch end play 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 mm	1.65 – 2.11

**TRANSFER**

Item	Standard value	Limit
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	–
2-4WD clutch hub end play mm	0 – 0.08	–
H-L clutch hub end play mm	0 – 0.08	–
Rear output shaft preload mm	0.12 – 0.24	–
Rear output shaft end play mm	0 – 0.12	–
Rear output shaft bearing end play mm	0 – 0.08	–
Rear output shaft annulus gear end play mm	0 – 0.08	–
Differential lock hub end play mm	0 – 0.08	–
Clearance between outer synchronizer ring and drive sprocket mm	–	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 ± 3
Upper valve body mounting bolt	11 ± 1
Park/neutral position switch mounting bolt	11 ± 1
Anchor plug	98 ± 15
Oil pan mounting bolt	11 ± 1
Oil filter mounting bolt	6 ± 1
Oil pump mounting bolt	23 ± 3
Cable end bracket mounting bolt	48 ± 6
Converter housing to transmission case tightening bolt	48 ± 6
Output shaft speed sensor mounting bolt	11 ± 1
Reduction brake piston nut	19 ± 3
Separating plate mounting bolt	6 ± 1
Solenoid support mounting bolt	6 ± 1
Transfer to transfer case adapter tightening bolt	35 ± 6
Transmission case to transfer case adapter tightening bolt	48 ± 6
Input shaft speed sensor mounting bolt	11 ± 1
Valve body mounting bolt	11 ± 1
Detent spring mounting bolt	6 ± 1
Manual control lever mounting nut	22 ± 3
Lower valve body mounting bolt	11 ± 1
Lower valve body cover mounting bolt	11 ± 1

## TRANSFER

Item	Torque Nm
Dynamic damper	35 ± 6
Transfer case cover tightening bolt	19 ± 2
Input gear bearing retainer mounting bolt	20 ± 2
Transfer case to chain cover tightening bolt	35 ± 6
Rear bearing retainer mounting bolt	20 ± 2
Transfer case plate to transfer case tightening bolt and nut	35 ± 6
Rear cover to chain cover tightening bolt	35 ± 6
Shift actuator mounting bolt	11 ± 1
4LLC switch	35 ± 6
2WD switch	35 ± 6
Center differential lock switch	35 ± 6
4H switch	35 ± 6
2WD-4WD switch	35 ± 6
Vehicle speed sensor mounting bolt	11 ± 1
Front output sensor mounting bolt	11 ± 1
Rear output sensor mounting bolt	11 ± 1

**SNAP RING, THRUST RACE, SPACER AND PRESSURE PLATE FOR ADJUSTMENT TRANSMISSION****Thrust race (for adjustment of direct planetary carrier 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 direct clutch end play)**

Thickness mm	Identification symbol	Part number
1.9	Brown	MD758946
2.0	None	MD753397
2.1	Blue	MD753398
2.2	Brown	MD753399
2.3	None	MD753400
2.4	Blue	MD753401
2.5	Brown	MD753402
2.6	None	MD753403
2.7	Blue	MD753404
2.8	Brown	MD753405
2.9	None	MD753406
3.0	Blue	MD753497

**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****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

**Snap ring (for adjustment of H-L clutch hub end play)**

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)**

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)**

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)**

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)**

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)**

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)**

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
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

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
Transfer case cover	MITSUBISHI genuine sealant part No. MD997740 or equivalent
Rear cover	MITSUBISHI genuine sealant part No. MD997740 or equivalent
Sealing cap	3M™ AAD part No. 8672 or equivalent
Transfer case plate	MITSUBISHI genuine sealant part No. MD997740 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.

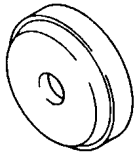
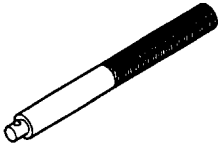
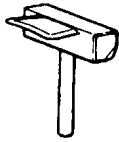
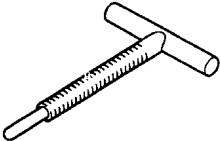
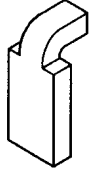
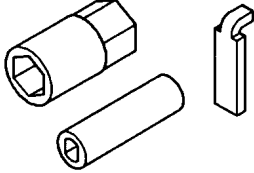
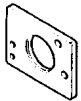
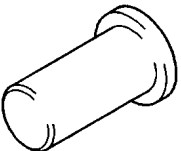
## LUBRICANTS

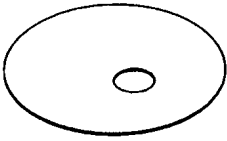
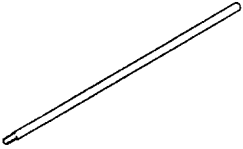
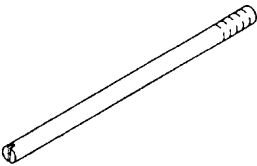
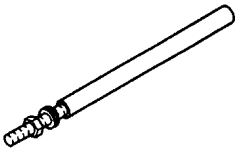

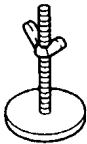
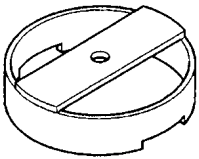
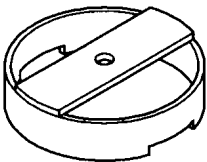

### TRANSFER


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	

## 2. SPECIAL TOOLS

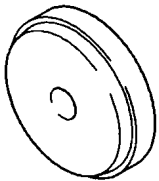
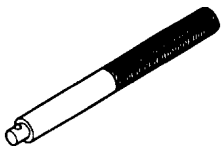
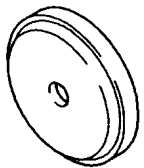
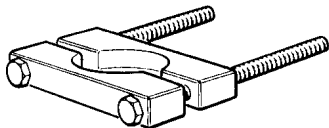

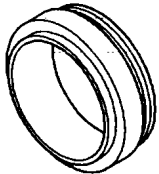

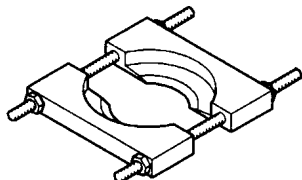
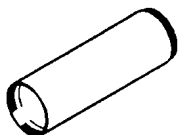
### TRANSMISSION

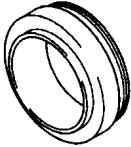
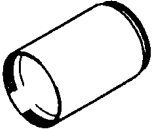
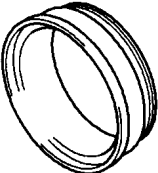
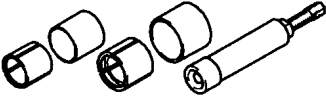
Tool	Number	Name	Use
	MB990929	Installer adapter	Installation of transfer case adapter oil seal
	MB990938	Handle	Use with installer adapter
	MD998727	Oil pan remover	Removal of oil pan
	MD998333	Oil pump remover	Removal of oil pump
	MB991693	Reduction brake stopper	Adjustment reduction brake piston
	MB991633	Reduction brake wrench set	Adjustment reduction brake piston
	MB991603	Bearing installer stopper	Measurement of direct planetary carrier and center support end plays
	MD998304	Oil seal installer	Measurement of direct planetary carrier end play

Tool	Number	Name	Use
	MB991632	Clearance dummy plate	Measurement of brake reaction plate, second brake and low/reverse brake end plays
	MD998913	Dial gauge extension	Measurement of brake reaction plate, second brake and low/reverse brake end plays
	MD998412	Guide	Installation of oil pump
	MD998316	Dial gauge support	Measurement of input shaft end play
	MD999590	Spring compressor	Removal and installation of reverse and overdrive clutch spring retainer snap ring
	MD998924	Spring compressor retainer	Use with spring compressor
	MB991629	Spring compressor	Measurement of overdrive clutch and underdrive clutch end plays
	MB991789	Spring compressor	Adjustment reverse clutch end play
	MB991630	Spring compressor	Removal and installation of center support snap ring and direct clutch snap ring

Tool	Number	Name	Use
	MD998907	Spring compressor	Removal and installation of underdrive clutch spring retainer snap ring

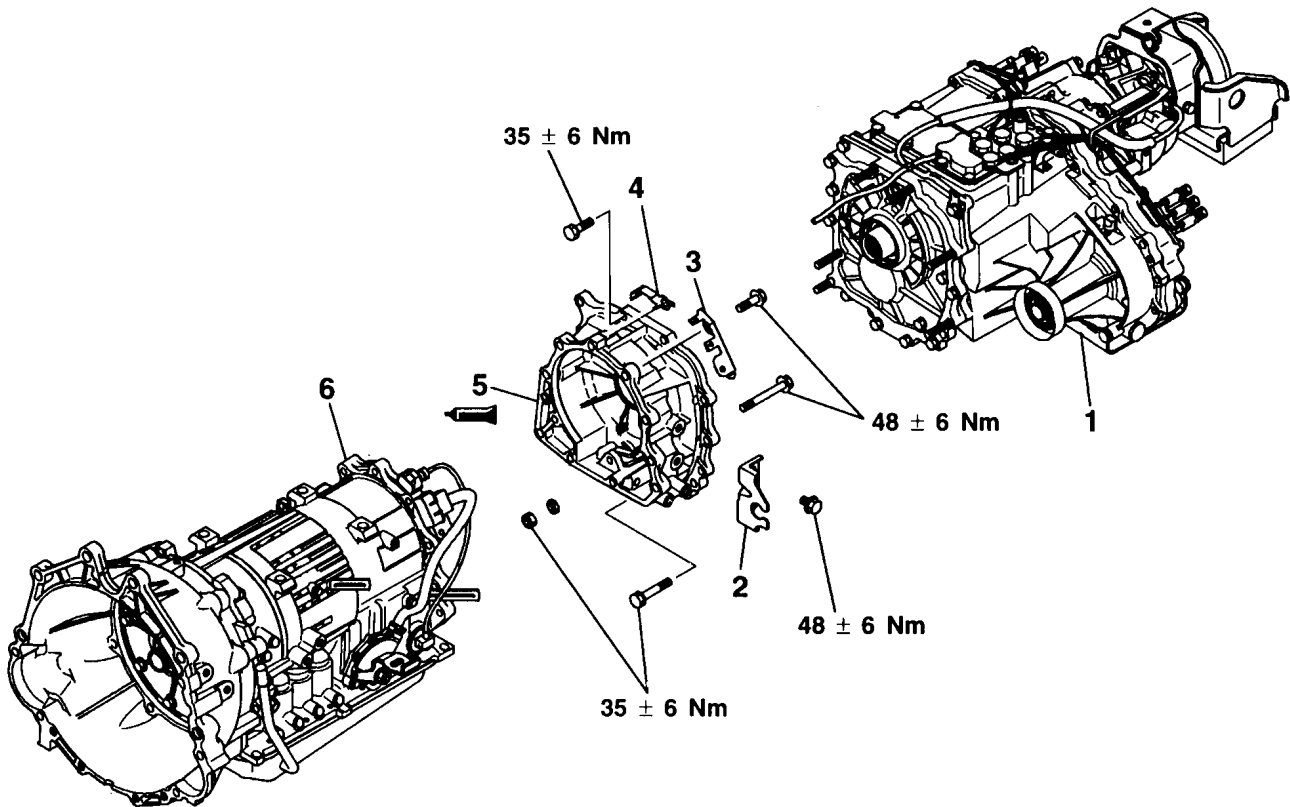
## TRANSFER

Tool	Number	Name	Use
	MB990932	Installer adapter	Installation of oil seal
	MB990938	Handle	Use with installer adapter
	MB990936	Installer adapter	Installation of oil seal
	MD998801	Bearing remover	Removal and installation of bearing
	MD998812	Installer cap	Use with installer and installer adapter
	MD998826	Installer adapter (52)	Installation of transfer input gear bearing
	MD998818	Installer adapter (38)	Installation of countershaft gear bearing, front output shaft bearing
	MD998917	Bearing remover	Removal and installation of bearing
	MD998814	Installer-200	Use with installer cap and installer adapter

Tool	Number	Name	Use
	MD998824	Installer adapter (50)	Installation of rear output shaft bearing
	MD998813	Installer-100	Use with installer cap and installer adapter
	MD998830	Installer adapter (66)	Installation of transfer drive shaft bearing
	MD998192	Bearing puller	Installation of transfer drive shaft bearing

### 3. TRANSMISSION AND TRANSFER

#### DISASSEMBLY AND ASSEMBLY



TRA1853

#### Disassembly steps

1. Transfer
2. Cable end bracket
3. Harness bracket
4. Harness bracket
- ▶A◀ 5. Transfer case adapter
6. Transmission

#### ASSEMBLY SERVICE POINT

##### ▶A◀ TRANSFER CASE ADAPTER INSTALLATION

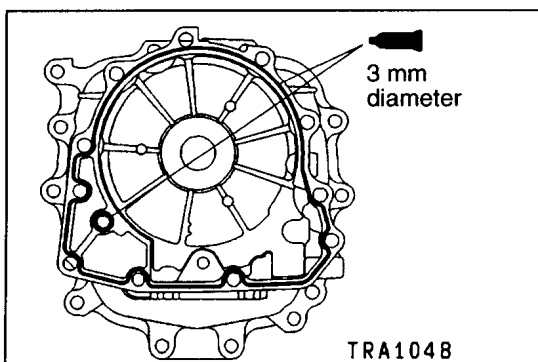
After squeezing out and applying sealant on the transfer case adapter at the section indicated in the illustration, install onto the transmission case.

#### Specified sealant:

**MITSUBISHI** genuine sealant part No. MR166584 or equivalent

#### Caution

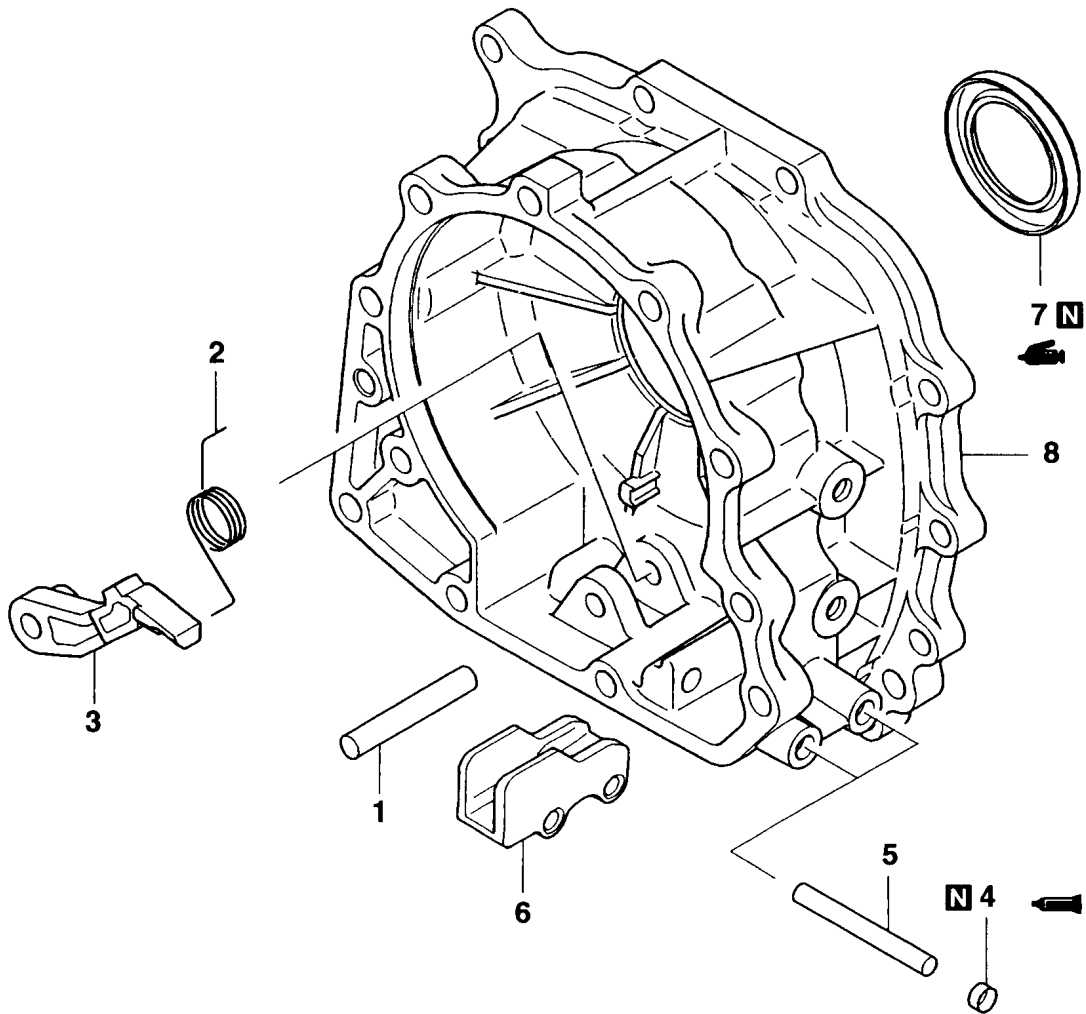
- Evenly squeeze out and apply the sealant so that it is not excessive and does not ooze out.





## 4. TRANSFER CASE ADAPTER

### DISASSEMBLY AND ASSEMBLY



TRA1066

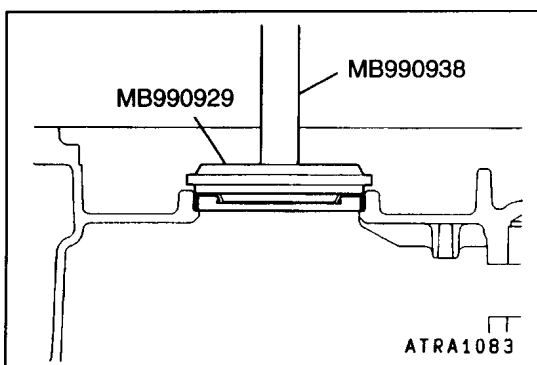
#### Disassembly steps

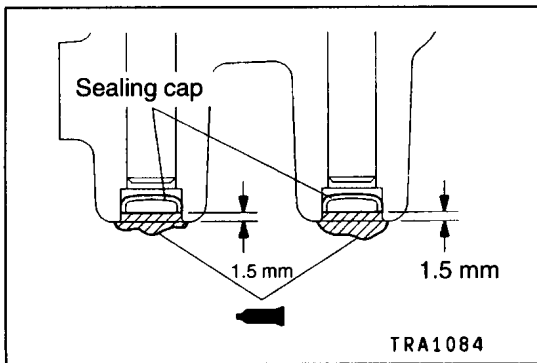
- ▶C◀ 1. Parking sprag shaft
- ▶C◀ 2. Parking sprag spring
- ▶B◀ 3. Parking sprag
- ▶B◀ 4. Sealing cap
- ▶A◀ 5. Parking roller support shaft
- ▶A◀ 6. Parking roller support
- ▶A◀ 7. Oil seal
- ▶A◀ 8. Transfer case adapter

#### ASSEMBLY SERVICE POINTS

##### ▶A◀ OIL SEAL INSTALLATION

Use the special tools to install the oil seal.

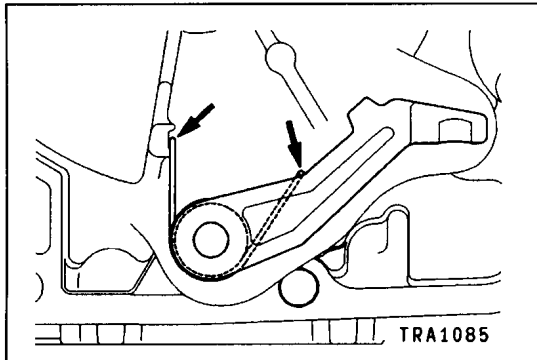


**▶B◀ SEALING CAP INSTALLATION**

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:**

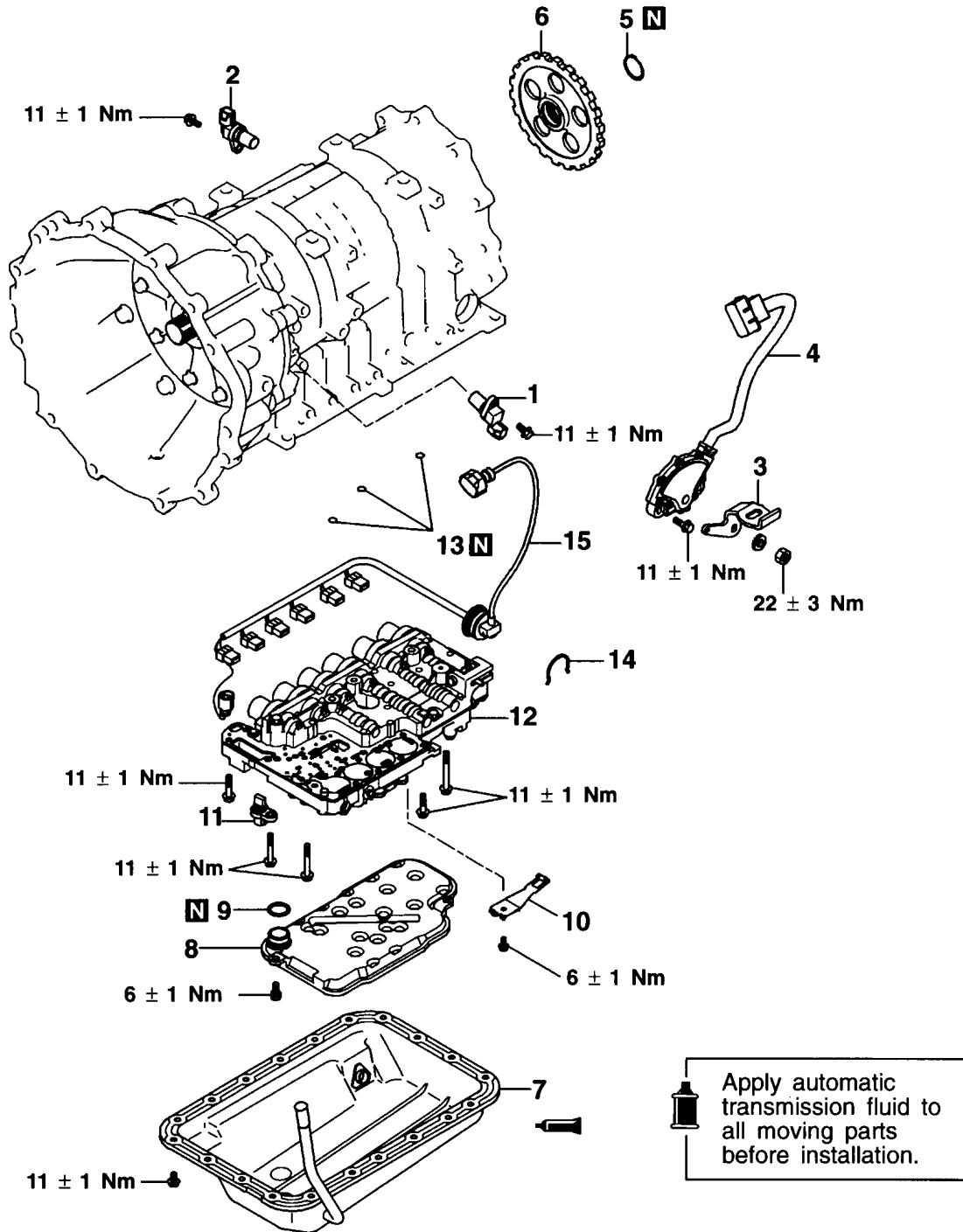
**3M™ AAD part No. 8672 or equivalent**

**▶C◀ PARKING SPRAG SPRING INSTALLATION**

Attach the end of the spring to the position shown in the illustration.

# 5. TRANSMISSION

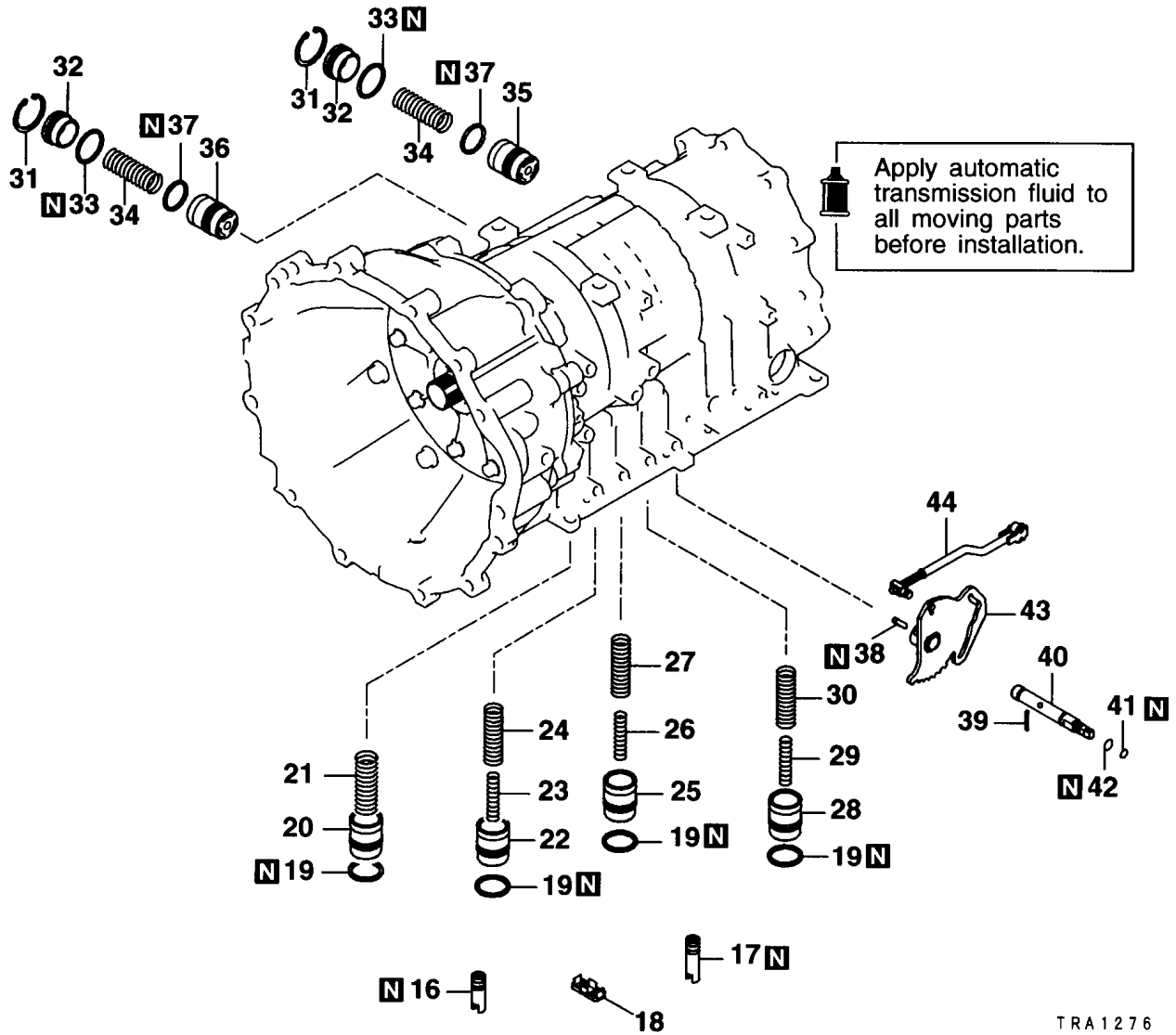
## DISASSEMBLY AND ASSEMBLY



TRA1275

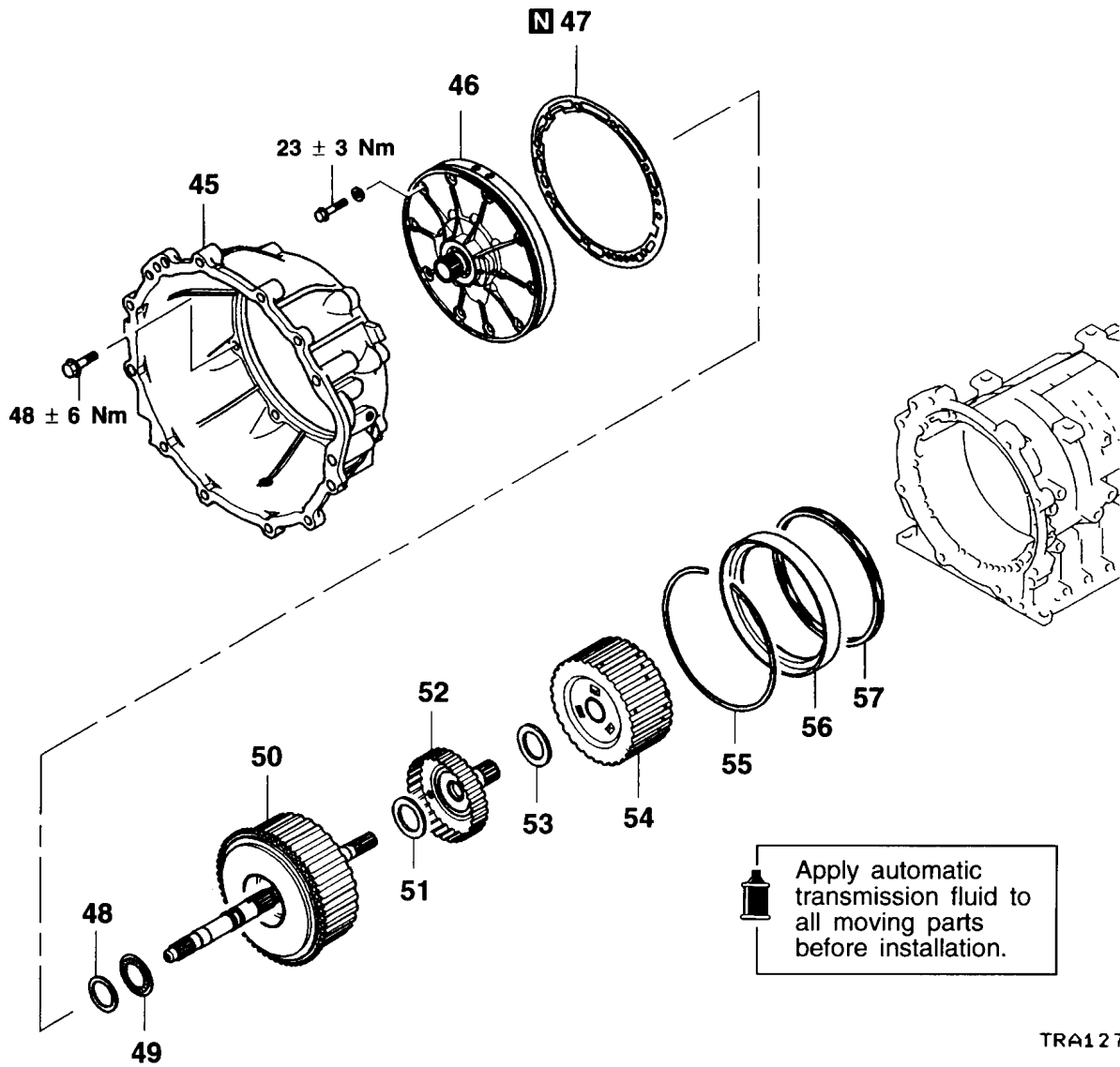
- 1. Input shaft speed sensor
- 2. Output shaft speed sensor
- 3. Manual control lever
- 4. Park/neutral position switch
- 5. Snap ring
- 6. Parking gear
- 7. Oil pan
- 8. Oil filter

- 9. O-ring
- 10. Detent spring
- 11. Oil temperature sensor
- 12. Valve body
- 13. O-ring
- 14. Snap ring
- 15. Solenoid valve harness



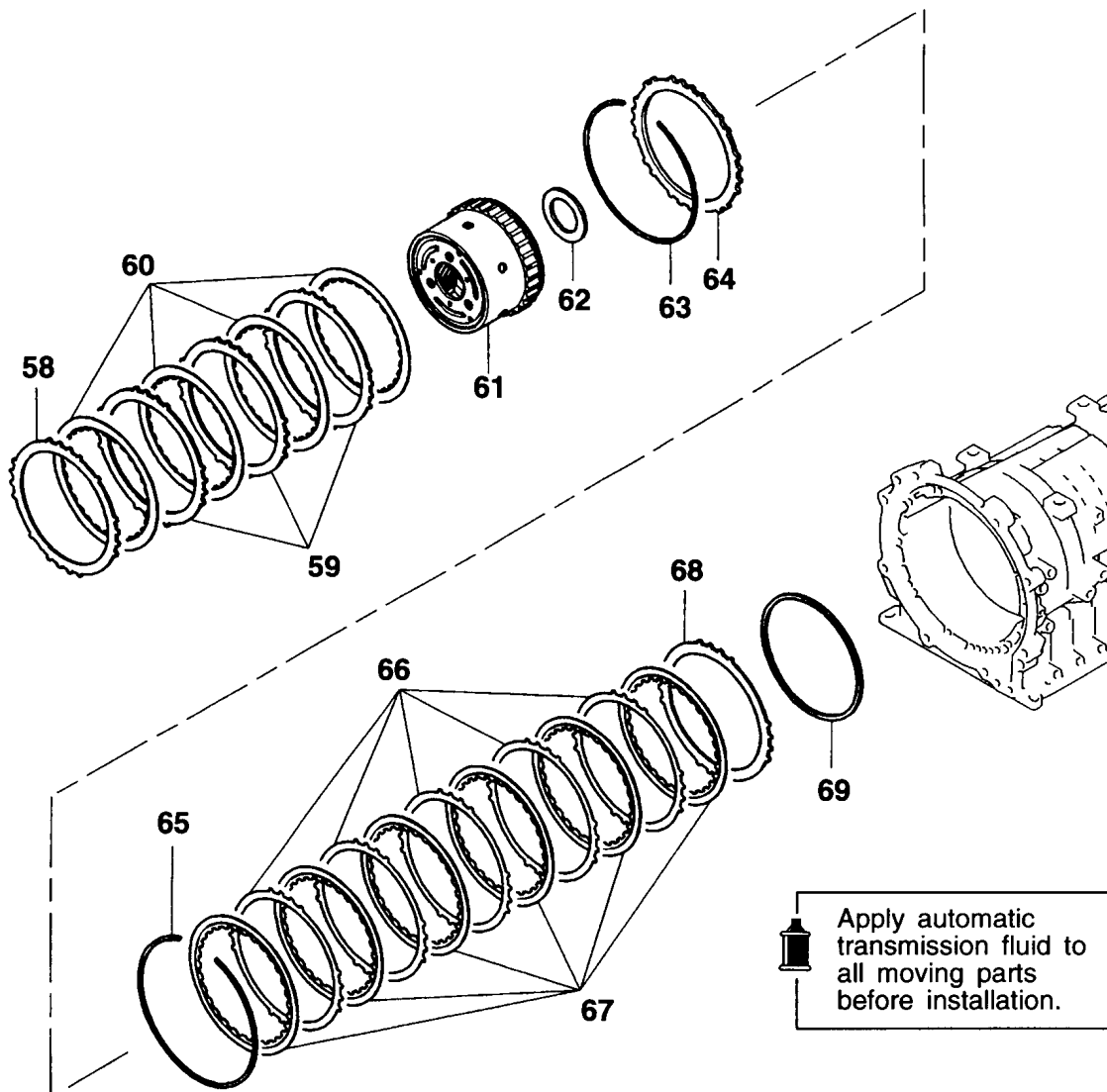
- |   |   |
|---|---|
| 16. Oil seal                                      | 30. Outer spring                                |
| 17. Oil seal                                      | 31. Snap ring                                   |
| 18. Oil strainer                                  | 32. Accumulator cover                           |
| 19. Seal ring                                     | 33. O-ring                                      |
| 20. Accumulator piston<br>(for overdrive clutch)  | 34. Accumulator spring                          |
| 21. Accumulator spring                            | 35. Accumulator piston<br>(for reduction brake) |
| 22. Accumulator piston<br>(for second brake)      | 36. Accumulator piston<br>(for direct clutch)   |
| 23. Inner spring                                  | 37. Seal ring                                   |
| 24. Outer spring                                  | 38. Spring pin                                  |
| 25. Accumulator piston<br>(for low/reverse brake) | 39. Pin   |
| 26. Inner spring                                  | 40. Manual control shaft                        |
| 27. Outer spring                                  | 41. O-ring                                      |
| 28. Accumulator piston<br>(for underdrive clutch) | 42. O-ring                                      |
| 29. Inner spring                                  | 43. Detent lever                                |
|   | 44. Parking roller rod                          |

TRA1276



- 45. Converter housing
- 46. Oil pump
- 47. Oil pump gasket
- 48. Thrust race No.1
- 49. Thrust bearing No.2
- 50. Reverse and overdrive clutch
- 51. Thrust bearing No.3

- 52. Overdrive clutch hub
- 53. Thrust bearing No.4
- 54. Reverse sun gear
- 55. Snap ring
- 56. Second brake
- 57. Return spring

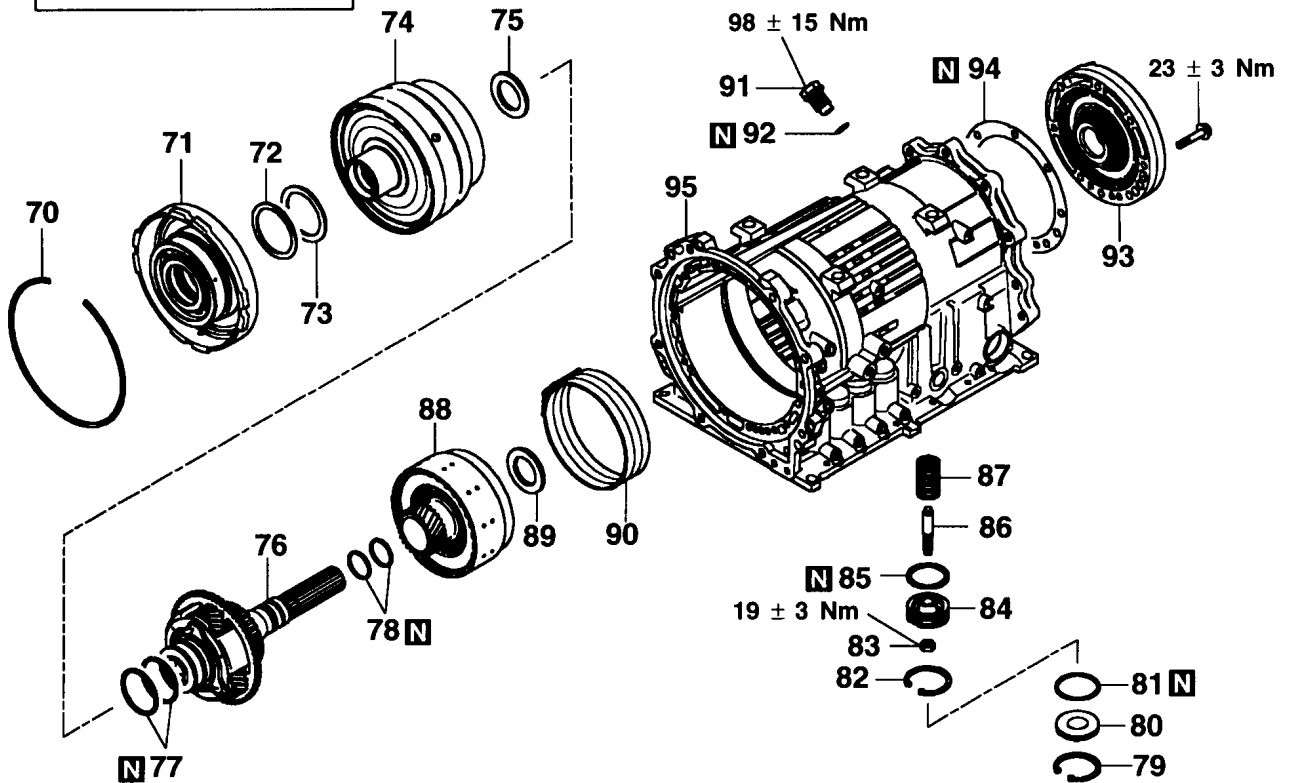


TRA1278

- 58. Pressure plate
- 59. Brake plate
- 60. Brake disc
- 61. Low/reverse annulus gear
- 62. Thrust bearing No.7
- 63. Snap ring

- 64. Reaction plate
- 65. Snap ring
- 66. Brake plate
- 67. Brake disc
- 68. Pressure plate
- 69. Wave spring

Apply automatic transmission fluid to all moving parts before installation.



TRA1280

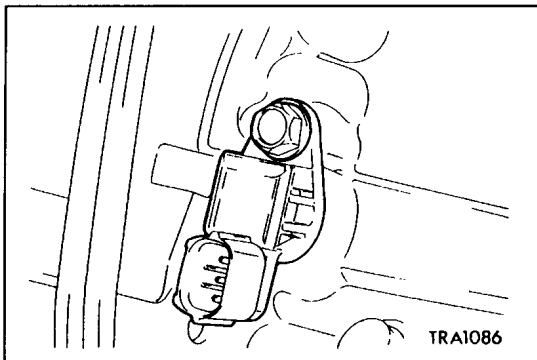
- 70. Snap ring
- 71. Center support
- 72. Thrust race No.8
- 73. Thrust bearing No.9
- 74. Direct annulus gear
- 75. Thrust bearing No.12
- 76. Direct planetary carrier
- 77. Seal ring
- 78. Seal ring
- 79. Snap ring
- 80. Reduction brake cover
- 81. O-ring
- 82. Snap ring

- 83. Reduction brake piston nut
- 84. Reduction brake piston
- 85. Seal ring
- 86. Reduction brake piston adjusting rod
- 87. Reduction brake spring
- 88. Direct clutch
- 89. Thrust bearing No.13
- 90. Reduction brake band
- 91. Anchor plug
- 92. O-ring
- 93. Output shaft support
- 94. Output shaft support gasket
- 95. Transmission case

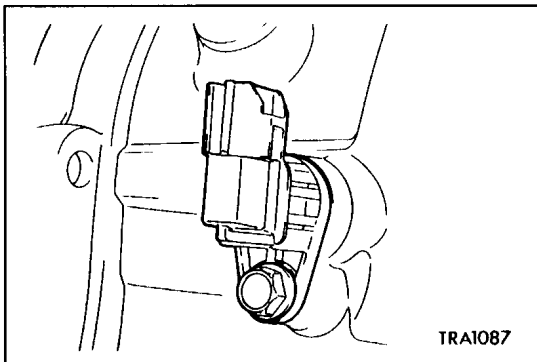
## DISASSEMBLY

### Caution

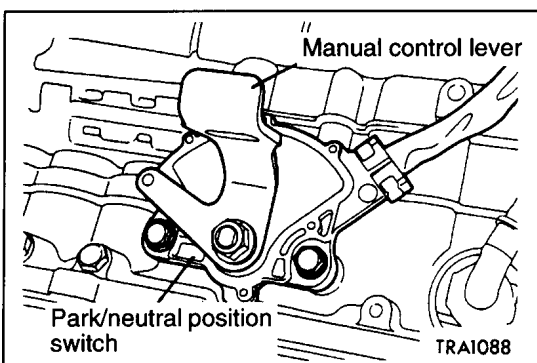
- Because the automatic transmission is manufactured from high-precision parts, sufficient care must be taken not to scratch or damage these parts during disassembly and reassembly.
- During the work, always use bare hands or vinyl gloves. Do not use cotton gloves. Use nylon cloth or paper towels when 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.

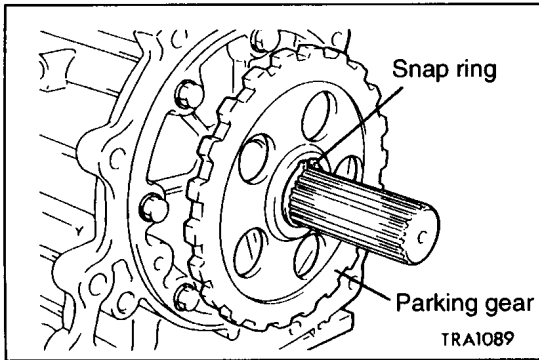


2. Remove the output shaft speed sensor.



3. Remove the manual control lever, and then remove the park/neutral position switch.

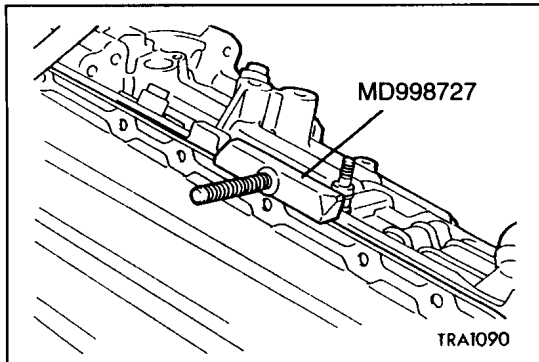




4. Remove the snap ring, and remove the parking gear using a puller (corresponding load approximately 9,800 N).

**NOTE**

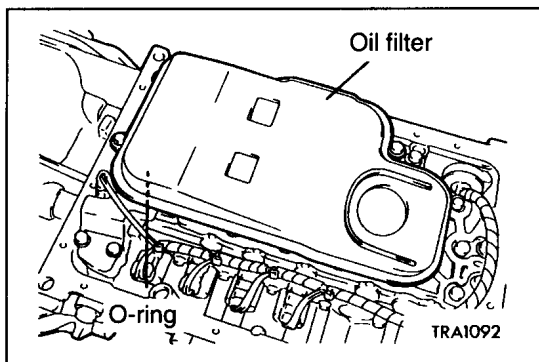
The parking gear may be removed without using a puller.



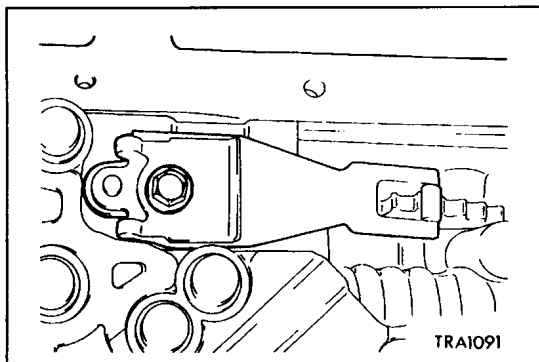
5. Remove the twenty oil pan mounting bolts and then remove the oil pan using the special tool.

**Caution**

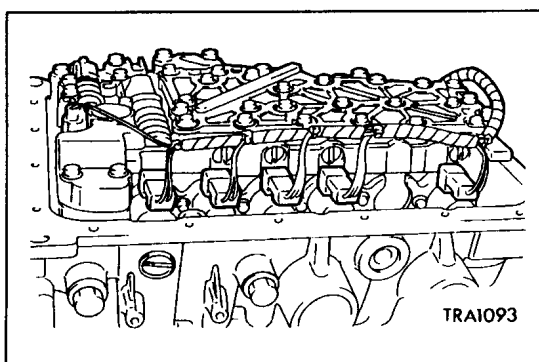
- Carefully hammer the special tool so that the oil pan mounting surface is not damaged.



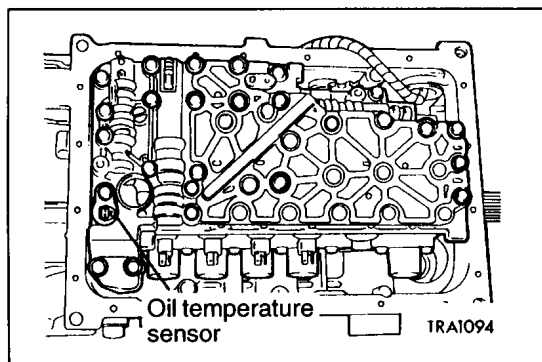
6. Remove the oil filter and O-ring.



7. Remove the detent spring.



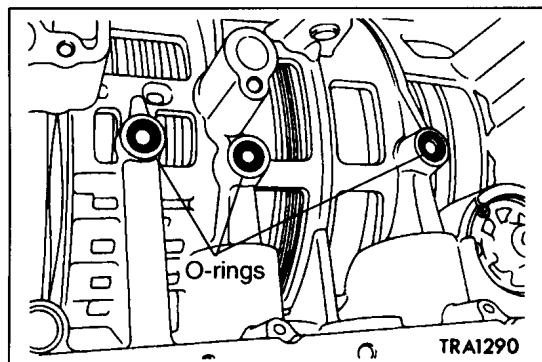
8. Disconnect the harness connectors of the valve body.



9. Remove the twenty valve body mounting bolts and then remove the valve body, three O-rings and oil temperature sensor.

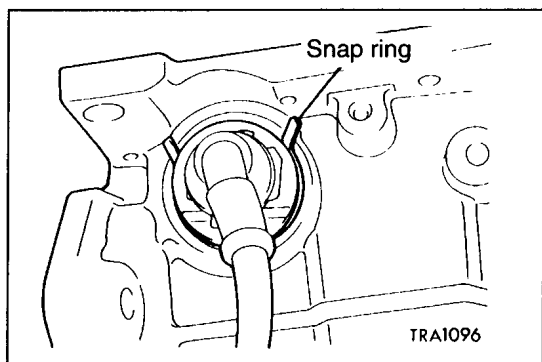
**NOTE**

The twenty valve body mounting bolts are plated bolts.

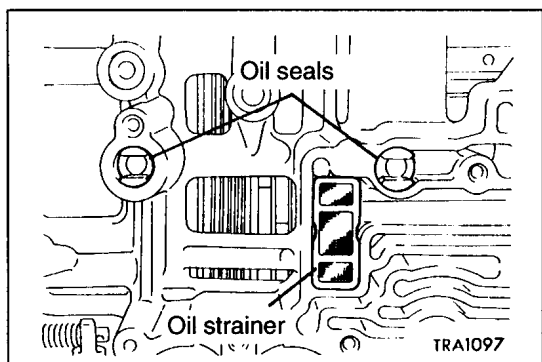


**NOTE**

The O-rings are mounted on the transmission case side as shown in the illustration. However there may be cases where they will come off with the valve body.

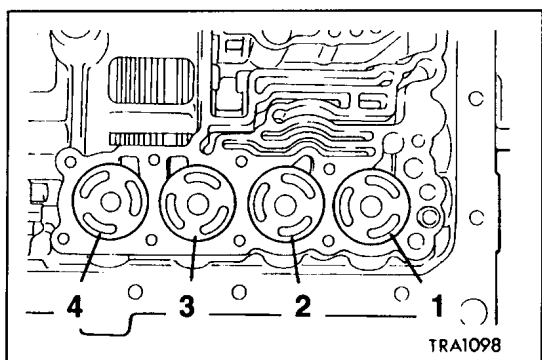


10. Remove the snap ring and disconnect the solenoid valve harness.

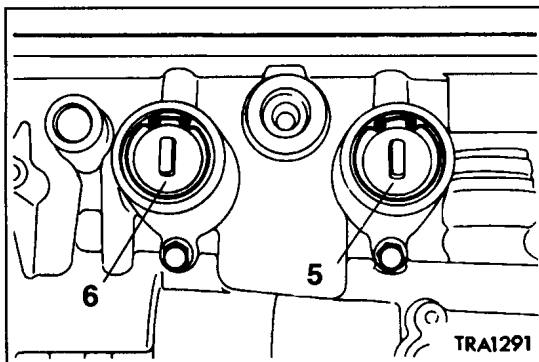


11. Remove the oil strainer and two oil seals.

12. Remove each accumulator piston, seal ring and spring. Remove the snap ring, then remove the accumulator cover, O-ring and spring.

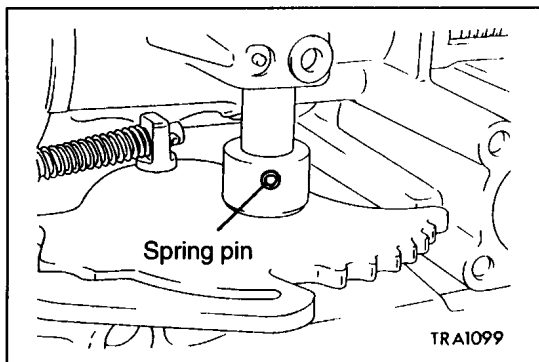


No.	Name
1	For overdrive clutch
2	For second brake
3	For low/reverse brake
4	For underdrive clutch
5	For reduction brake
6	For direct clutch

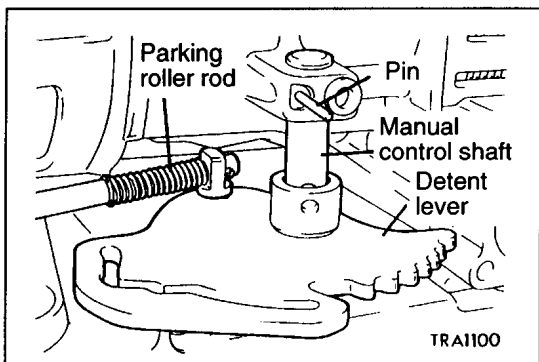


## NOTE

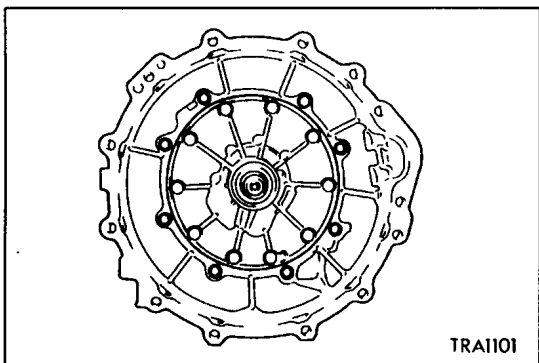
To make assembly easier, attach an identification tag on the removed accumulator piston.



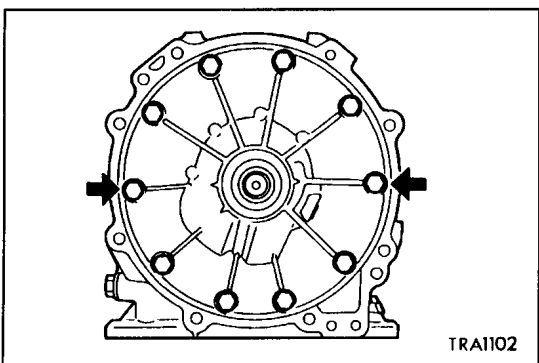
13. Remove the detent lever spring pin.



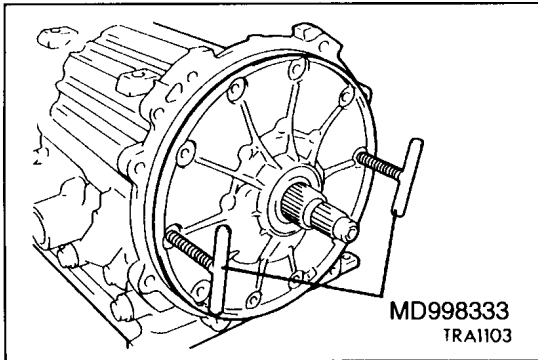
14. Remove the pin, and then remove the manual control shaft, two O-rings, detent lever and parking roller rod.



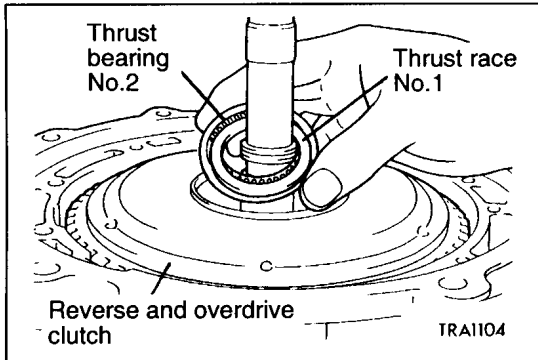
15. Remove the eight converter housing mounting bolts, and then converter housing.



16. Remove the ten oil pump mounting bolts.  
17. Install the special tool into the bolt hole shown in the illustration.



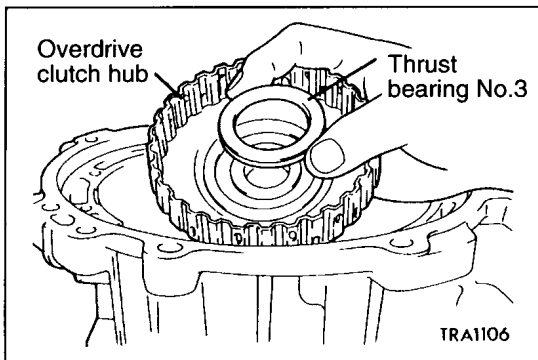
18. While screwing in the special tool evenly, remove the oil pump.
19. Remove the oil pump gasket.



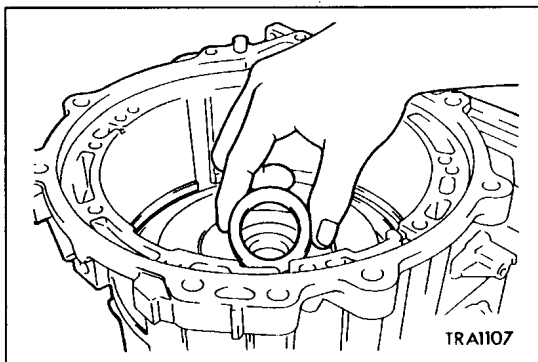
20. Remove the reverse and overdrive clutch, thrust race No.1 and thrust bearing No.2.

**NOTE**

The thrust race No.1 may be attached to the oil pump.



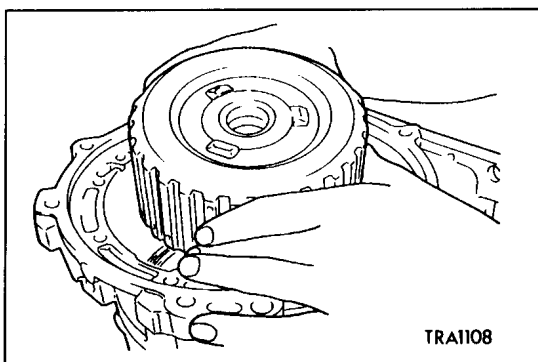
21. Remove the overdrive clutch hub and thrust bearing No.3.



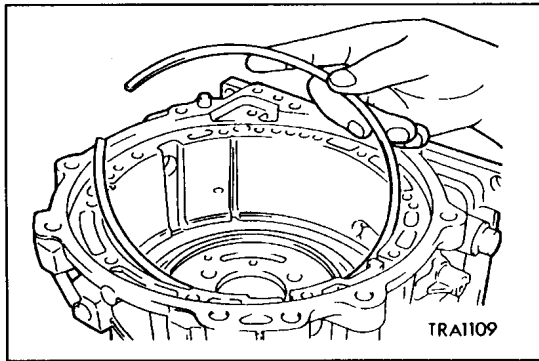
22. Remove the thrust bearing No.4.

**NOTE**

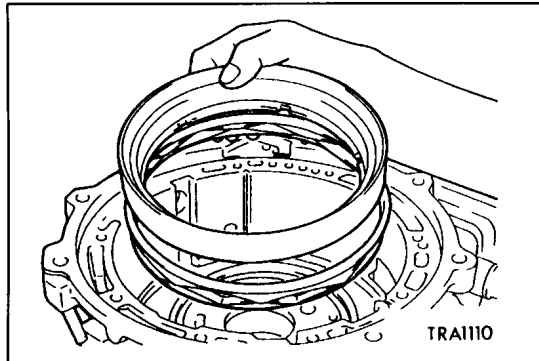
The thrust bearing No.4 may be attached to the overdrive clutch hub.



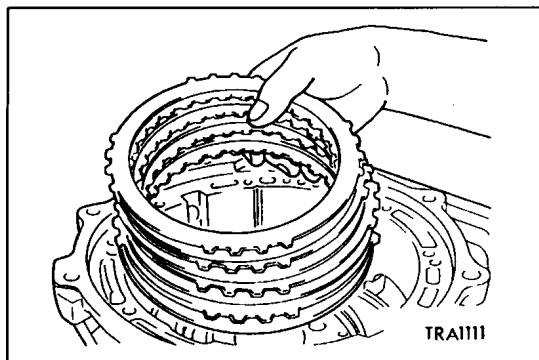
23. Remove the reverse sun gear.



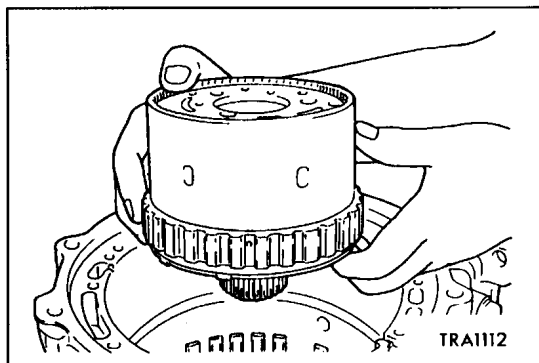
24. Remove the snap ring.



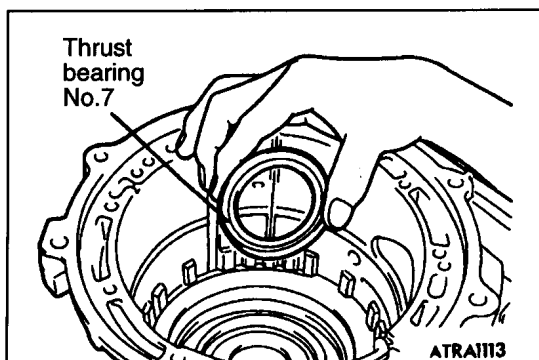
25. Remove the second brake and return spring.



26. Remove the pressure plate, brake plates and brake discs.



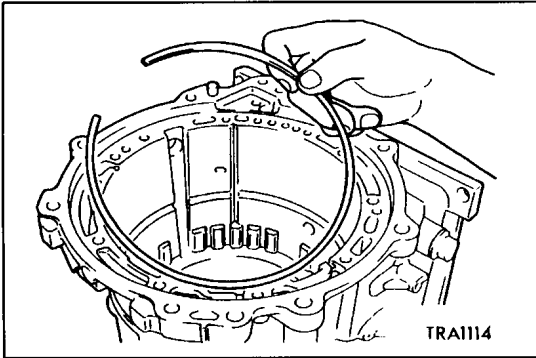
27. Remove the low/reverse annulus gear.



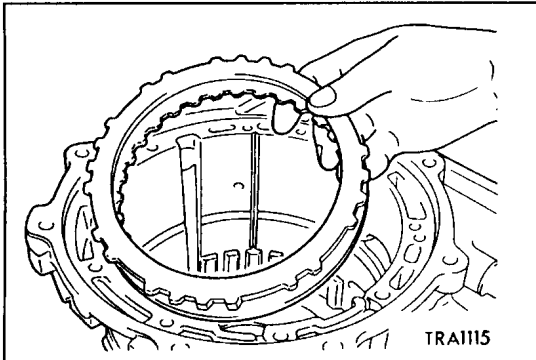
28. Remove the thrust bearing No.7.

**NOTE**

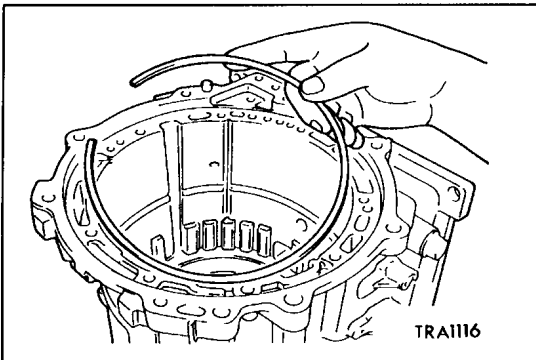
The thrust bearing No.7 may be attached to the low/reverse annulus gear.



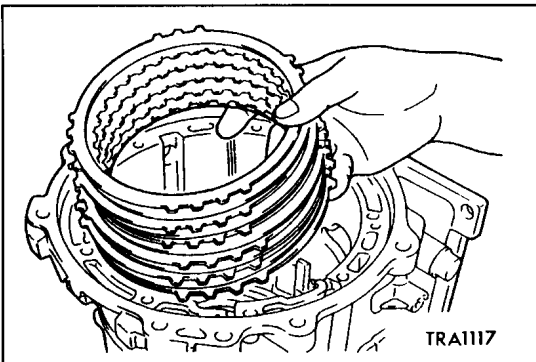
29. Remove the snap ring.



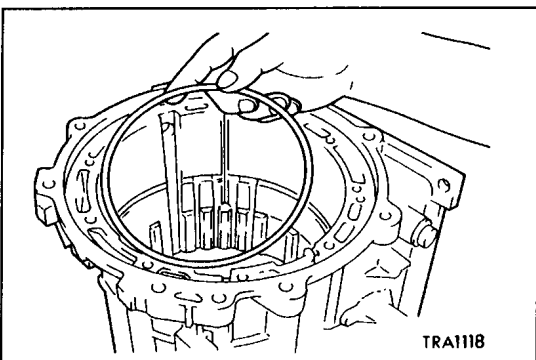
30. Remove the reaction plate and one brake disc.



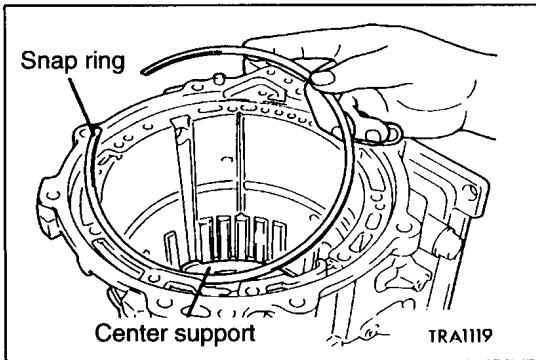
31. Remove the snap ring.



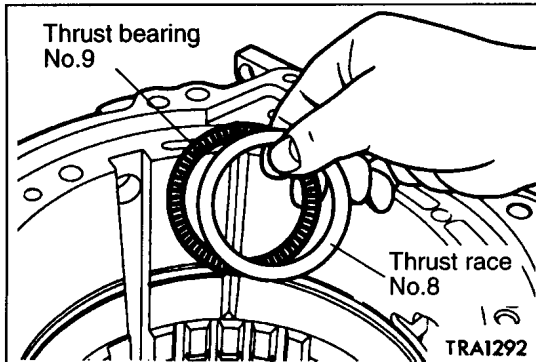
32. Remove the brake plates, brake discs, and pressure plate.



33. Remove the wave spring.



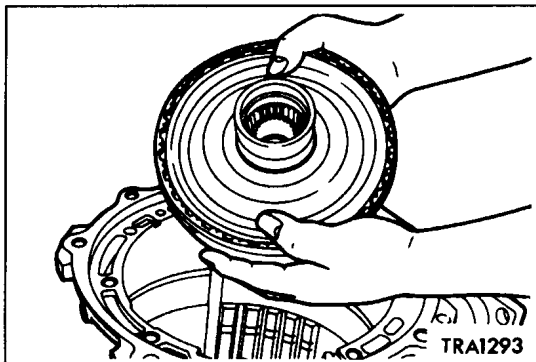
34. Remove the snap ring and center support.



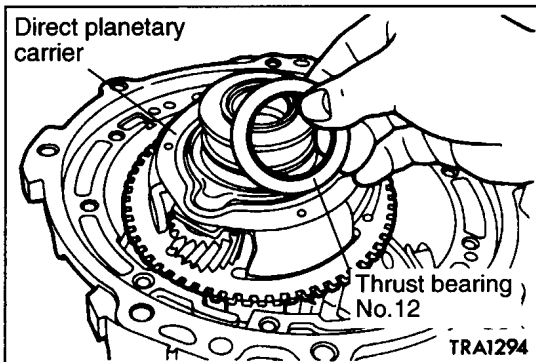
35. Remove the thrust race No.8 and thrust bearing No.9.

**NOTE**

The thrust race No.8 may be attached to the center support.



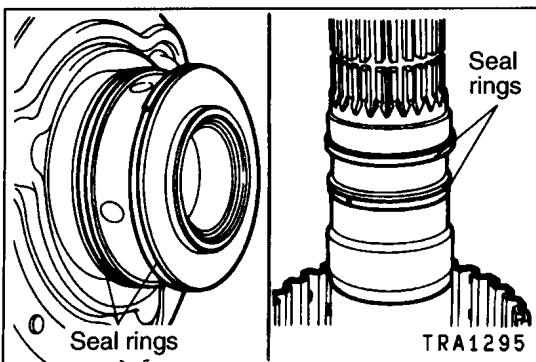
36. Remove the direct annulus gear.



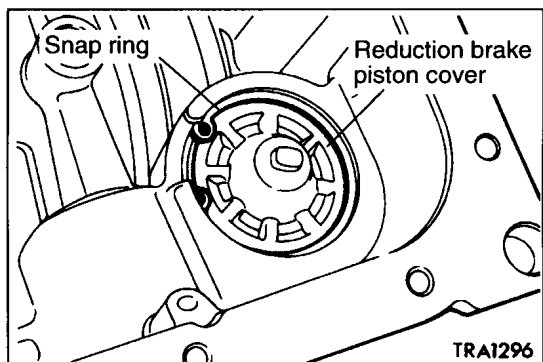
37. Remove the thrust bearing No.12 and direct planetary carrier.

**NOTE**

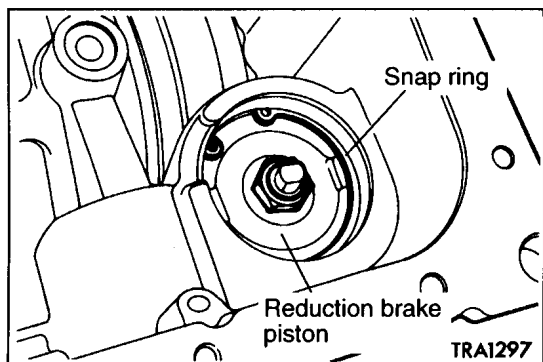
The thrust bearing No.12 may be attached to the direct annulus gear.



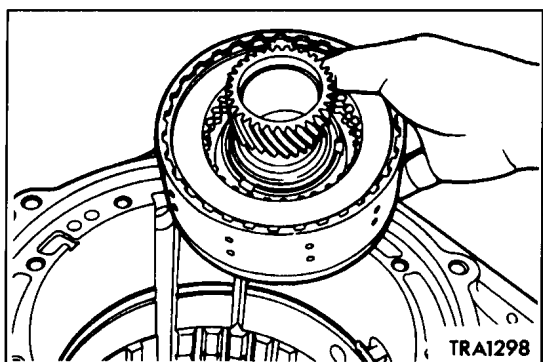
38. Remove the two large and two small seal rings from the direct planetary carrier.



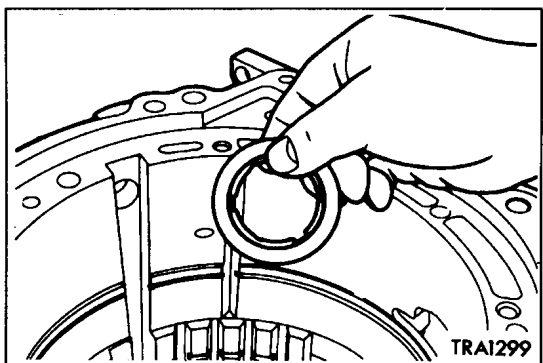
39. Remove the snap ring and then the reduction brake piston cover and O-ring.



40. Remove the snap ring and then the nut, reduction brake piston, seal ring, adjusting rod and spring.



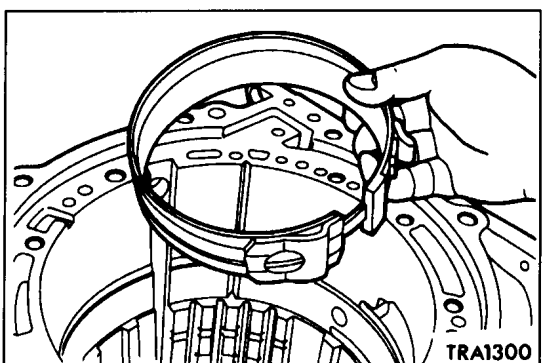
41. Remove the direct clutch.



42. Remove the thrust bearing No.13.

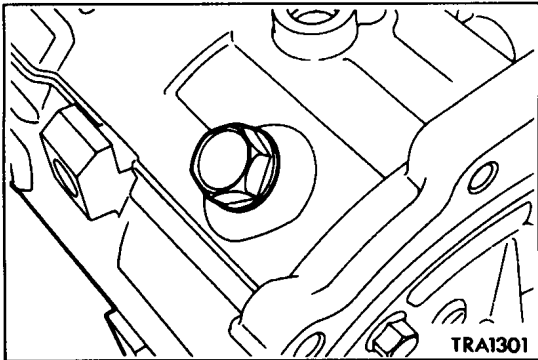
**NOTE**

The thrust bearing No.13 may be attached to the direct clutch.

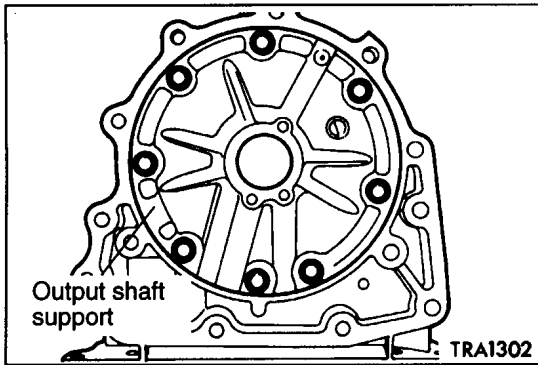


43. Remove the reduction brake band.





44. Remove the anchor plug and the O-ring.

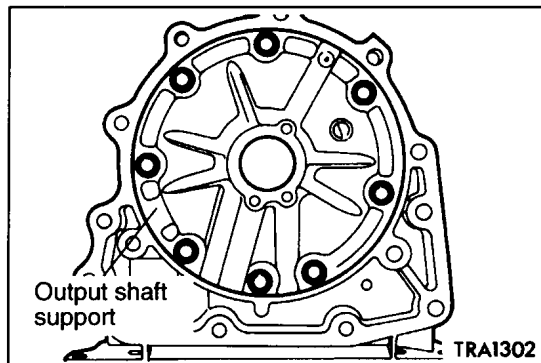


45. Remove the eight output shaft support mounting bolts, and then remove the output shaft support and gasket.

## ASSEMBLY

### 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.

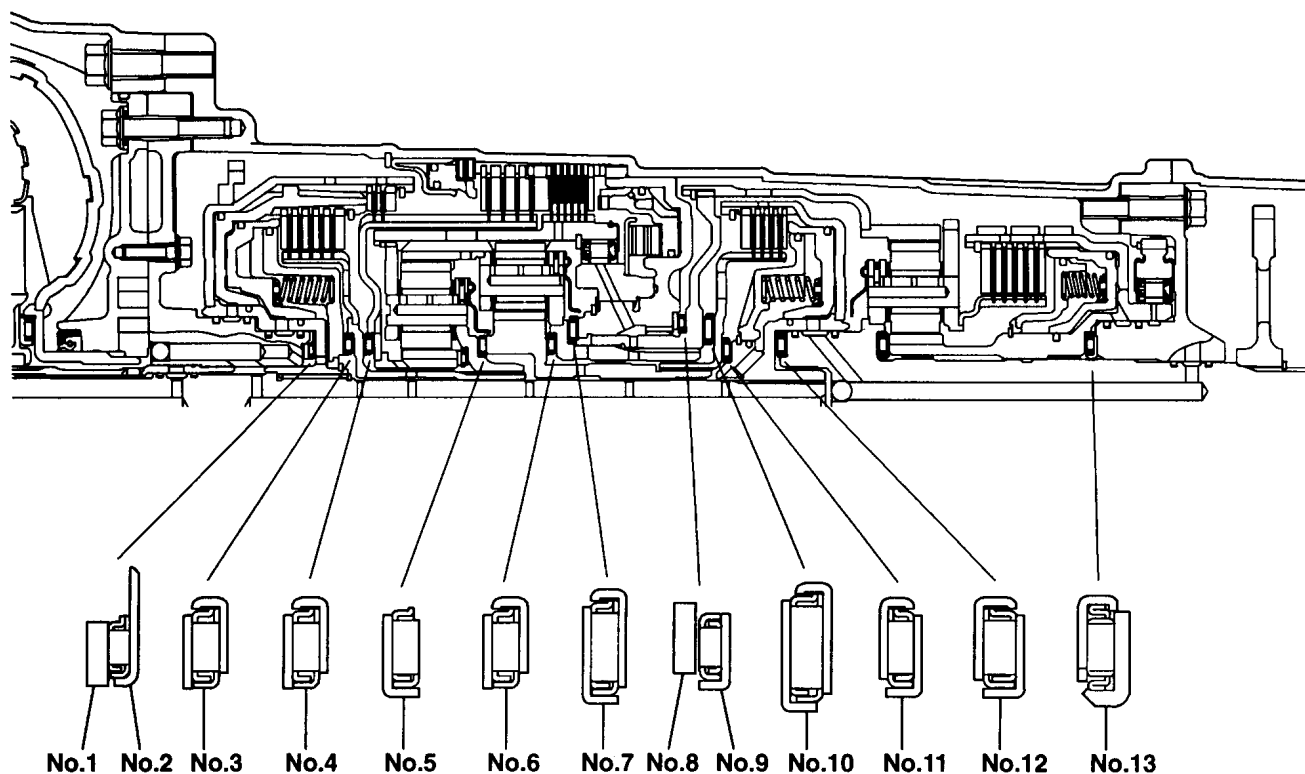


1. Install a new gasket and output shaft support.

### Caution

- **Never reuse a gasket.**
2. Tighten the eight output shaft support mounting bolts to the specified torque.

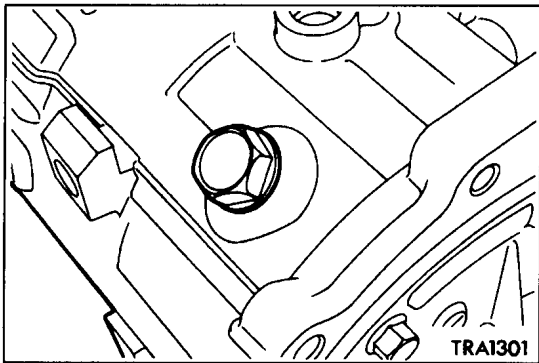
## Identification of thrust bearings and thrust races



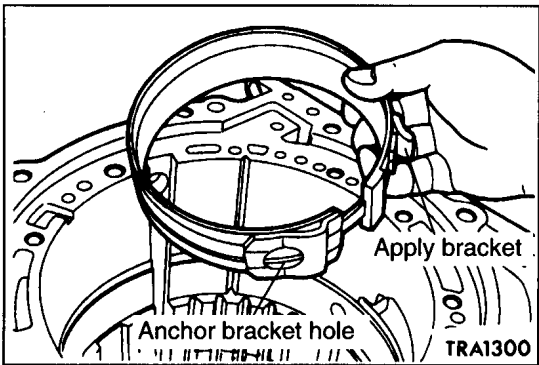
TRA1335

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

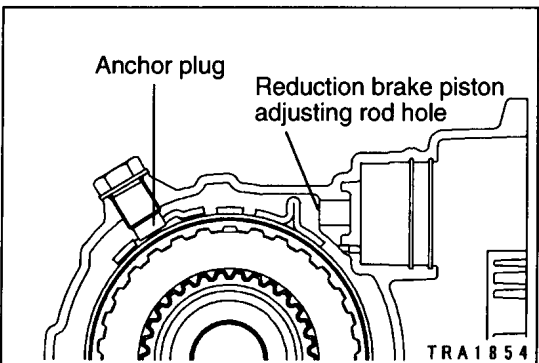
Symbol	OD mm	ID mm	Thickness mm	Part No.
No.8	73	60	1.6	MR276705
			1.8	MR276706
			2.0	MR276707
			2.2	MR276708
			2.4	MR276709
No.9	71.4	57	2.78	MR276587
No.10	71.9	48	4.6	MR263281
No.11	54.1	34	3.83	MR276588
No.12	57	38.5	4.62	MR222936
No.13	58	37.5	4.8	MD758555



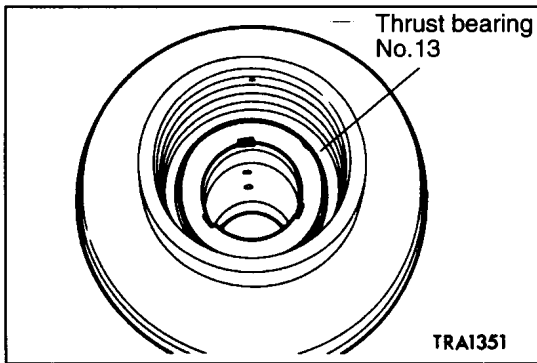
3. Install a new O-ring on the anchor plug and tighten the anchor plug to the specified torque.



4. Install the reduction brake band.



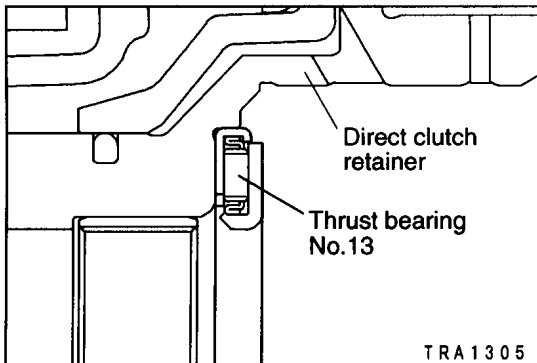
Fit the anchor bracket hole of the brake band onto the anchor plug tip, and then insert the apply bracket part into the hole for reduction brake piston adjusting rod.



5. Install the thrust bearing No.13 onto the direct clutch retainer.

**Caution**

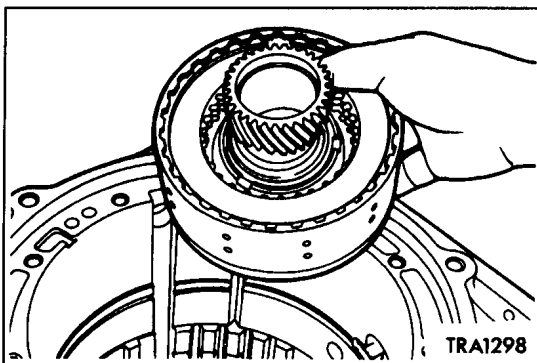
- Take care not to mistake the thrust bearing No.13 mounting direction.



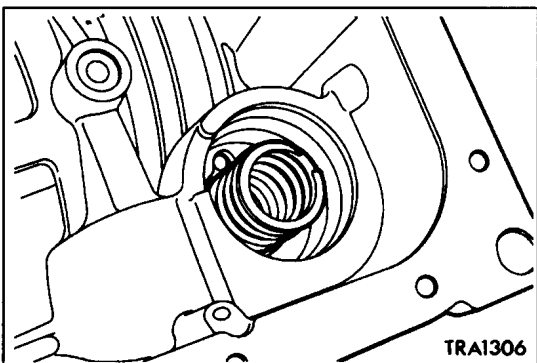
6. Install the direct clutch.

**Caution**

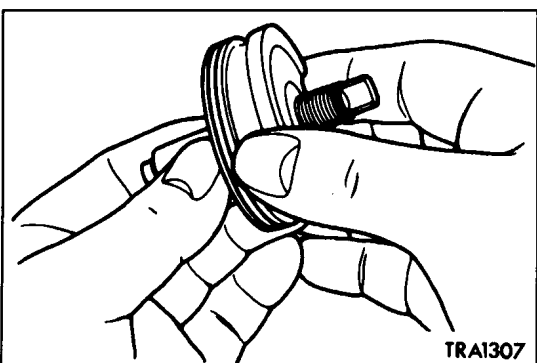
- Take care that the reduction brake band does not come off the anchor plug and the hole for the reduction brake piston adjusting rod.

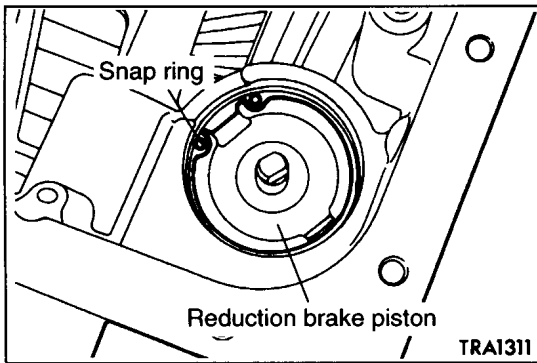


7. Install the reduction brake spring.



8. Screw the reduction brake piston adjusting rod into the reduction brake piston manually to the full.
9. Install new seal ring on the piston.

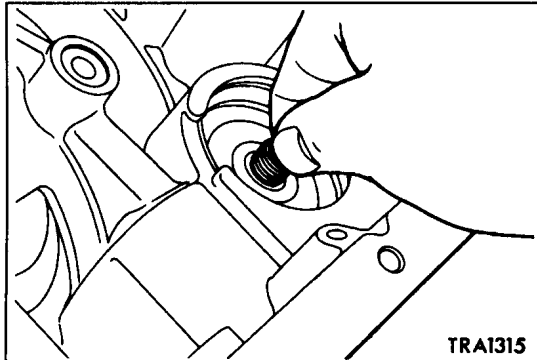




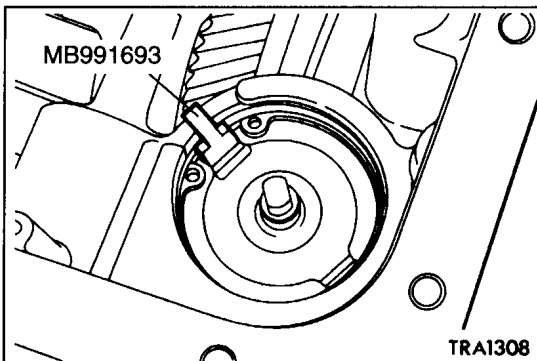
10. Press the reduction brake piston into the transmission case, and then install the snap ring.

**NOTE**

Set the open of the snap ring at indicated location.

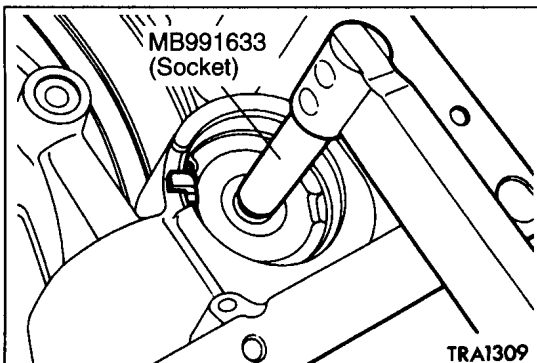


11. Tighten the reduction brake piston adjusting rod manually to the full.

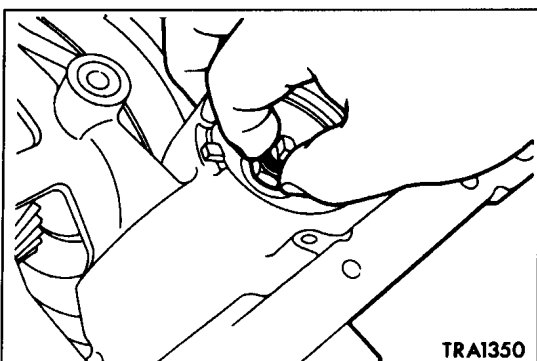


- 12 Adjust the reduction brake piston by the following procedure.

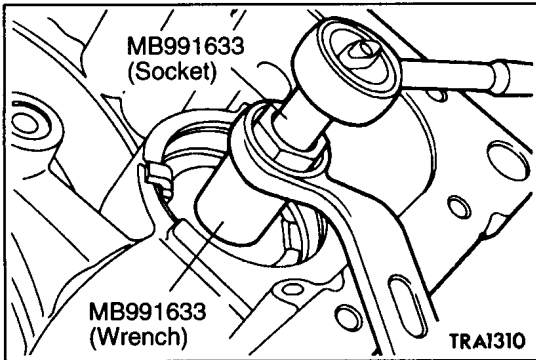
- (1) Mount the special tool so that the reduction brake piston does not rotate.



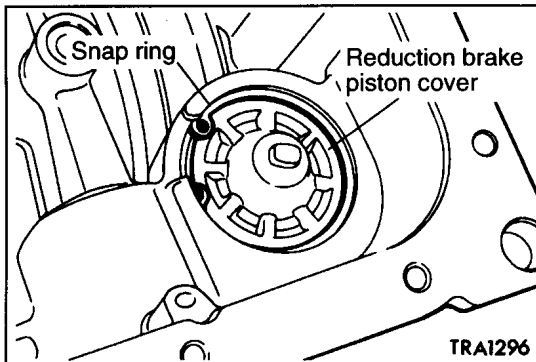
- (2) Mount the torque wrench to the special tool (Socket), and after repeating tightening and turning back with a torque of 10 Nm twice, tighten the reduction brake piston adjusting rod to the specified torque of 5 Nm. Then turn the reduction brake piston adjusting rod  $5\frac{1}{2}$  to  $5\frac{3}{4}$  turns back.



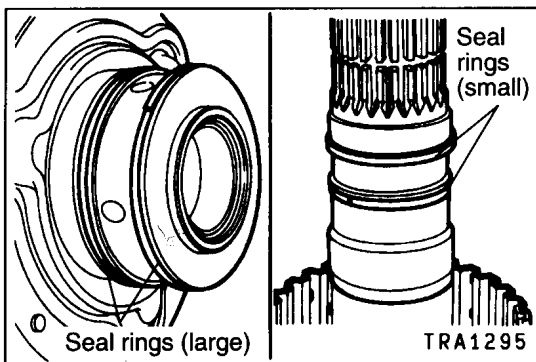
- (3) Remove the special tool and tighten the reduction brake piston nut manually.



- (4) Tighten the reduction brake piston nut to the specified torque of  $19 \pm 3$  Nm using the special tool (Wrench) while fixing the special tool (Socket) so as not to rotate.

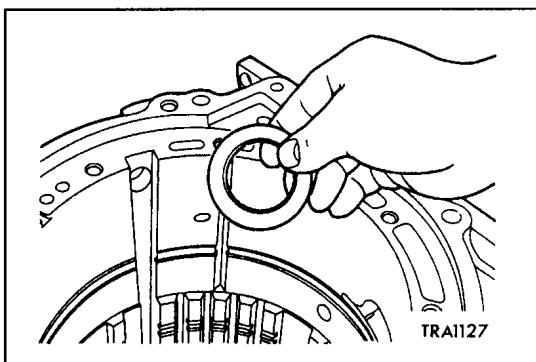


13. Install a new O-ring on the reduction brake piston cover, and then install the cover and the snap ring on the transmission case.

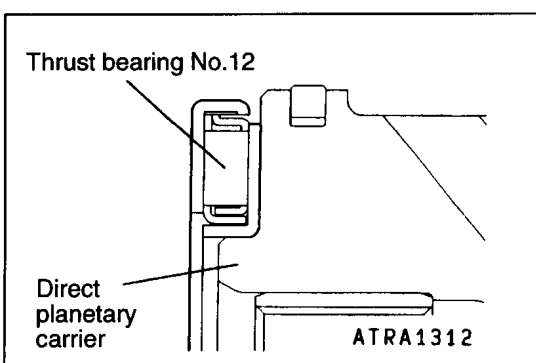


14. Install new seal rings (two large pieces) onto the front end of the direct planetary carrier, and new seal rings (two small pieces) onto the shaft of the direct planetary carrier.

15. Insert the direct planetary carrier into the output shaft support.

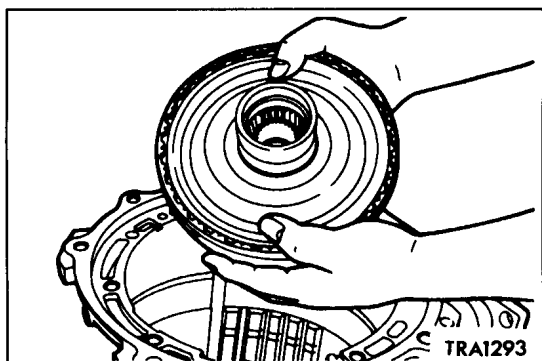


16. Apply Vaseline or petrolatum jelly on the thrust bearing No.12, and then install on the front end of the direct planetary carrier.



#### Caution

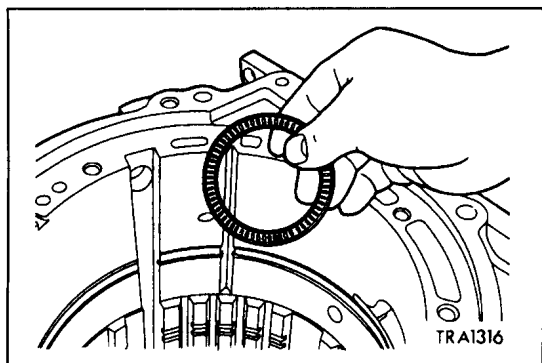
- Take care not to mistake the thrust bearing No.12 mounting direction.



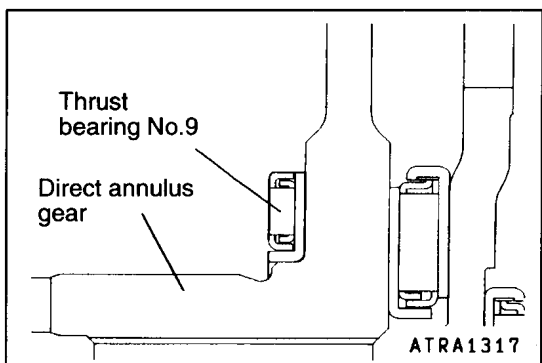
17. Install the direct annulus gear.

**Caution**

- Confirm that the thrust bearing No.10 in the direct annulus gear is still at the specified location.

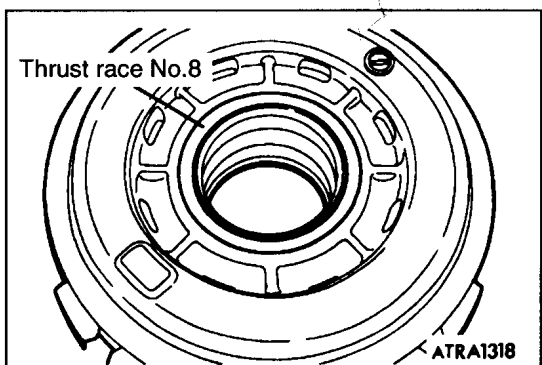


18. Apply Vaseline or petrolatum jelly to the thrust bearing No.9, and then install on the direct annulus gear.



**Caution**

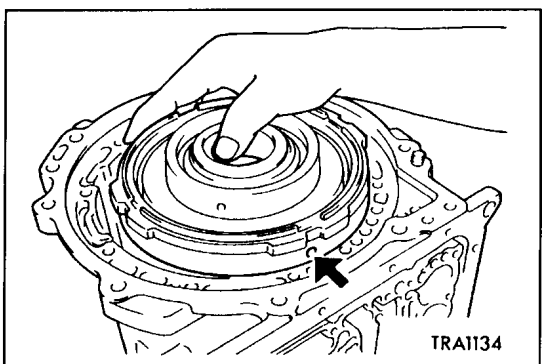
- Take care not to mistake the thrust bearing No.9 mounting direction.



19. Apply Vaseline or blue petrolatum jelly on the thrust race No.8 removed, and then install it on the rear side of the center support.

**Caution**

- Measure and record the thickness of the thrust race No.8 before assembling.

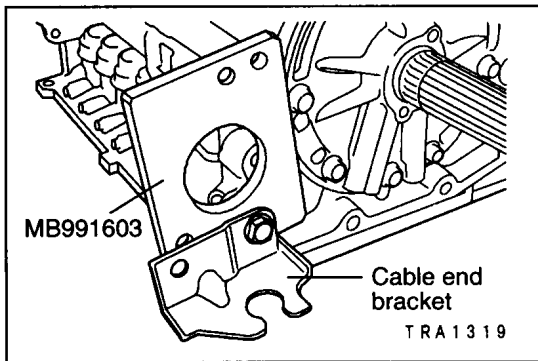


20. Install the center support.

**Caution**

- Install the center support so that the oil hole shown in the illustration faces the lower side of the transmission case.
- Use care that the thrust race No.8 attached to the rear side of the center support does not fall off.

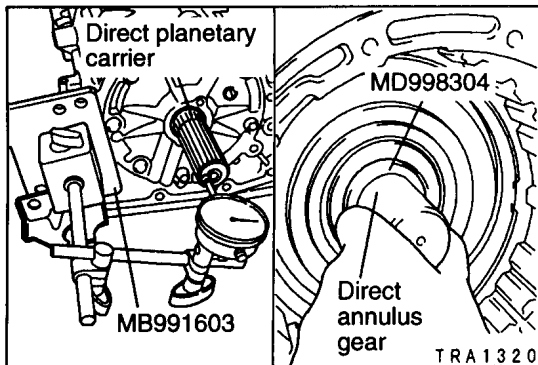




21. Using the transfer case adapter bolt, install special tool MB991603.

**Caution**

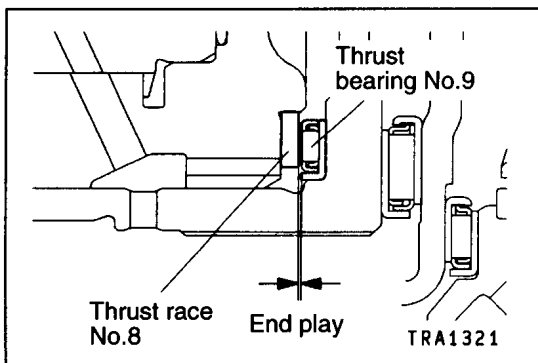
- Install the cable end bracket together with the special tool.



22. Select the thrust race No.8 with the following procedure:
- (1) Fix a dial gauge to the special tool.
  - (2) Push the direct planetary carrier and direct annulus gear in alternately, and measure the end play of the direct planetary carrier.

**NOTE**

- (1) When pushing in the direct planetary carrier, make sure that the center support does not move.
- (2) When pushing in the direct annulus gear, use the special tool.



- (3) Replace the thrust race No.8 installed in step 19 with a suitable one which can bring the end play of the direct planetary carrier to the standard value. Then, reassemble.

**NOTE**

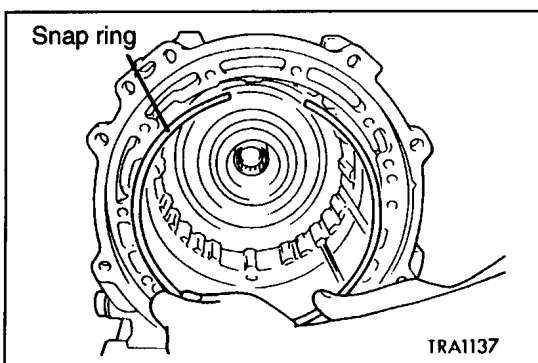
Refer to the thickness recorded in step 19.

**Standard value: 0.25 – 0.55 mm**

- (4) Measure the end play again, and confirm that it is within the standard value.

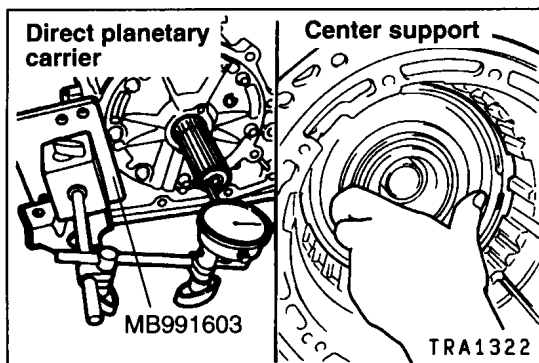
**NOTE**

Carry this step out with the special tool and dial gauge installed.



23. Using the following steps, select a suitable snap ring for fixing the center support.

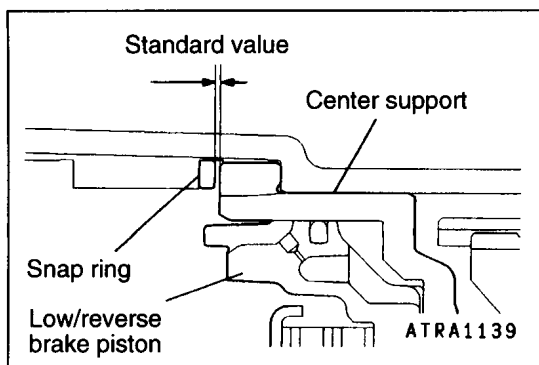
- (1) Install the snap ring which has been used for fixing the center support.



- (2) Alternately push in the direct planetary carrier and center support, and measure the end play of the center support.

## NOTE

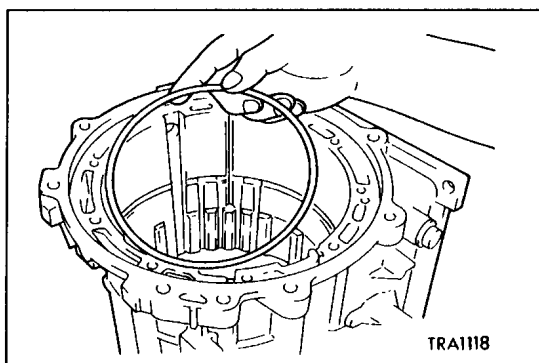
Be sure to push the direct planetary carrier in fully until the center support contacts the snap ring.



- (3) Replace the snap ring for fixing the center support installed in step 23 (1) with a suitable one so that the end play of the center support is at the standard value. Then, reassemble.

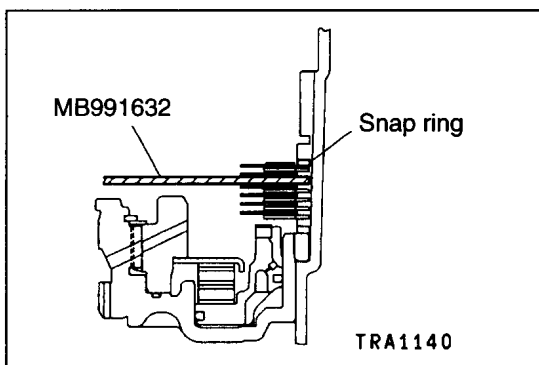
**Standard value: 0 – 0.16 mm**

- (4) Measure the end play again, and confirm that it is within the standard value.



24. 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.

- (3) Install the reaction plate and snap ring that was used.

**Caution**

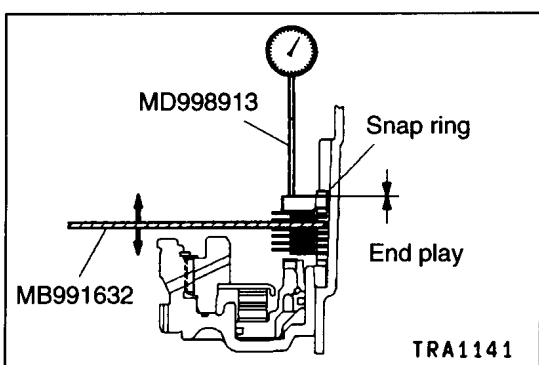
- Take care to the assembly direction of the reaction plate.

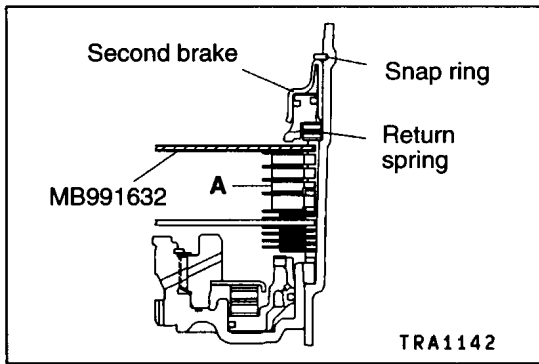
- (4) Install a dial gauge onto special tool (MD998913) so that the tool end contacts the brake reaction plate. Measure the end play by moving special tool (MB991632).

- (5) Replace the snap ring installed in step 24 (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.



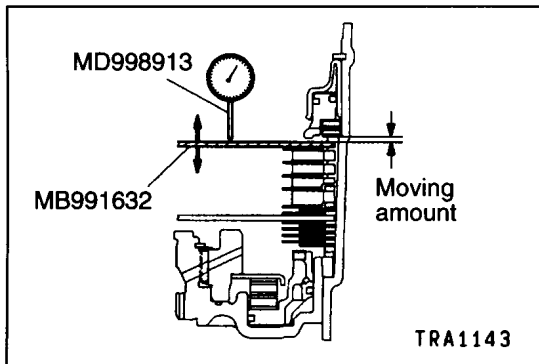


(7) Next, install the special tool instead of the pressure plate for the second brake. Install the four brake discs and three brake plates.

**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

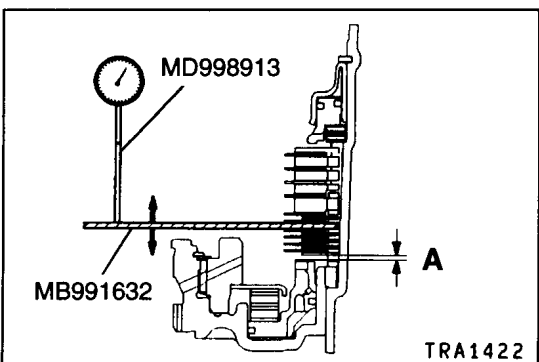
(10) Remove the snap ring, second brake, return spring and special tool installed in step (8).

(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.

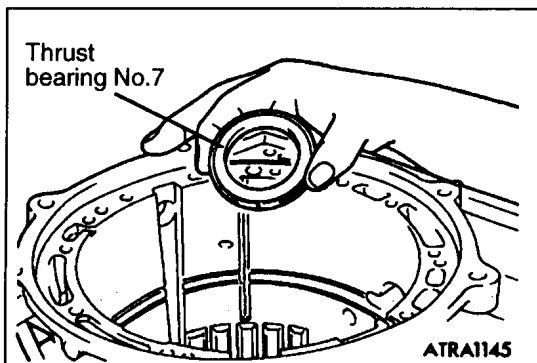
Select a pressure plate with a thickness that corresponds to the measured moving amount from the following table.

**End play standard value (reference):**  
1.65 – 2.11 mm

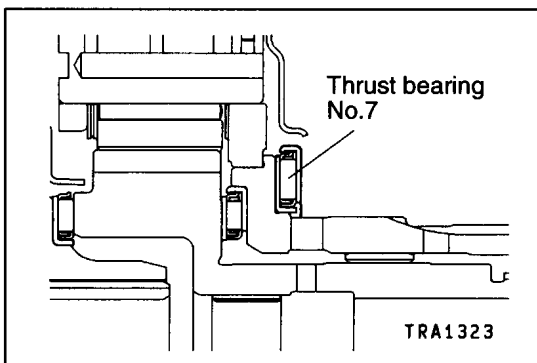


Moving amount mm	Pressure plate		
	Thickness mm	ID symbol	Part No.
1.5 or more – less than 1.7	1.8	E	MD759425
1.7 or more – less than 1.9	2.0	D	MD759426
1.9 or more – less than 2.1	2.2	C	MD759427
2.1 or more – less than 2.3	2.4	B	MD759428
2.3 or more – less than 2.5	2.6	A	MD759429
2.5 or more – less than 2.7	2.8	0	MD759430
2.7 or more – less than 2.9	3.0	1	MD759431

(13) Remove the parts installed in steps 24 (1) to (12).

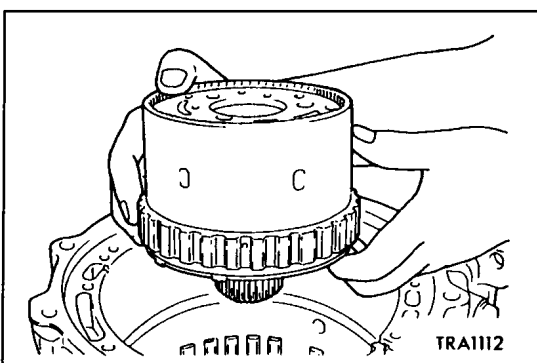


25. Apply Vaseline or petrolatum jelly on the thrust bearing No.7, and then install the bearing on the rear side of the low/reverse annulus gear.



#### Caution

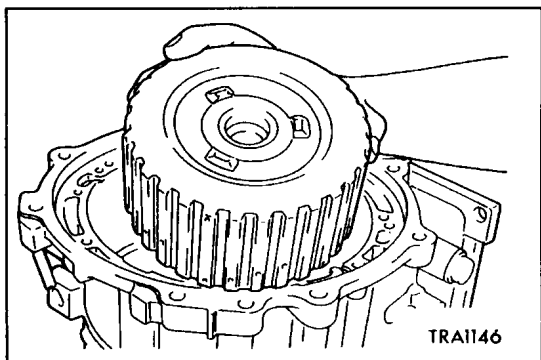
- Take care not to mistake the thrust bearing No.7 mounting direction.



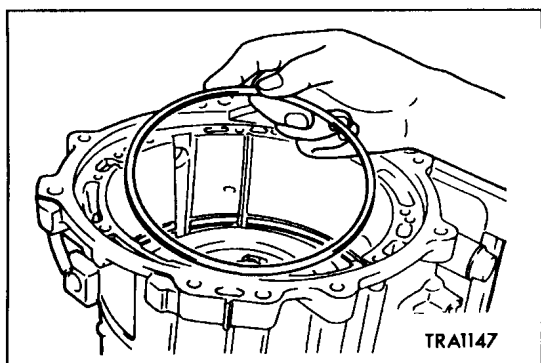
26. Install the low/reverse annulus gear.

#### Caution

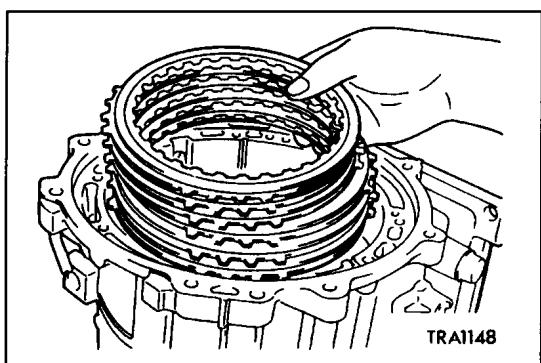
- Make sure that the thrust bearing No.7 attached to the rear side of the low/reverse annulus gear does not fall off.



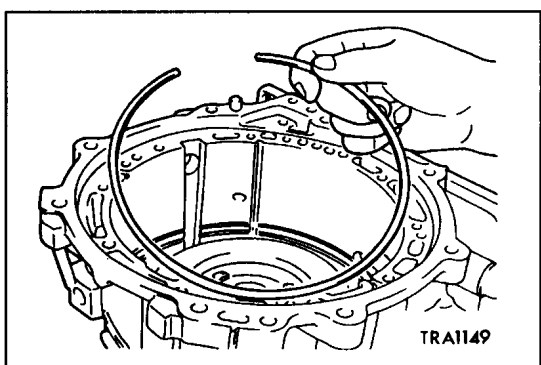
27. Install the reverse sun gear.



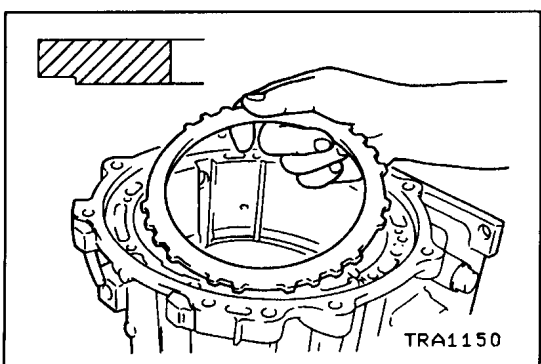
28. Install the wave spring onto the low/reverse brake piston.



29. Install the pressure plate selected in step 24 (12), brake discs and brake plates.



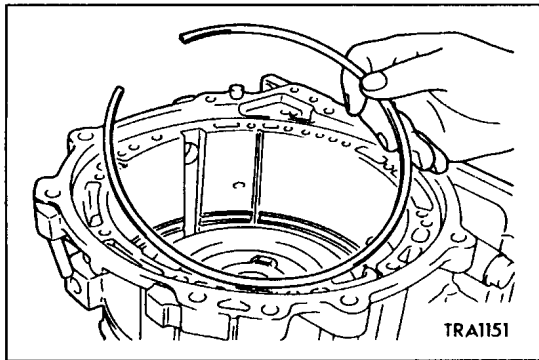
30. Install the snap ring.



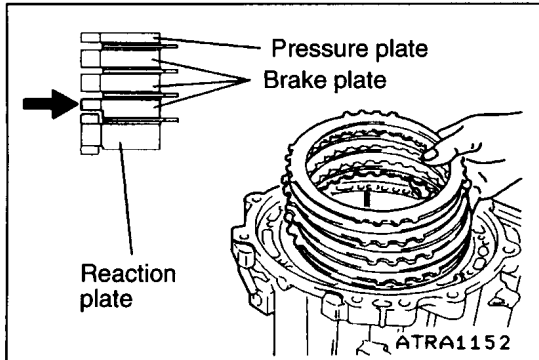
31. Install the reaction plate.

**Caution**

- Take care not to mistake the reaction plate installation direction.



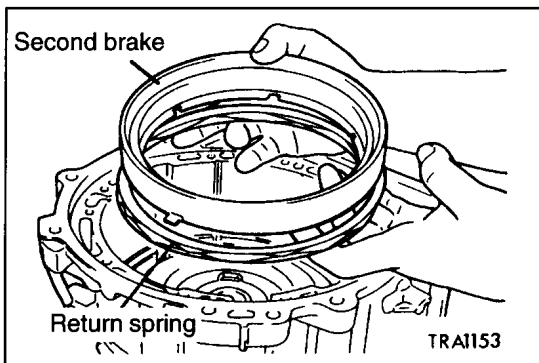
32. Install the snap ring selected in step 24 (5).



33. Install the brake discs, brake plates and pressure plate selected in step 24 (9).

**Caution**

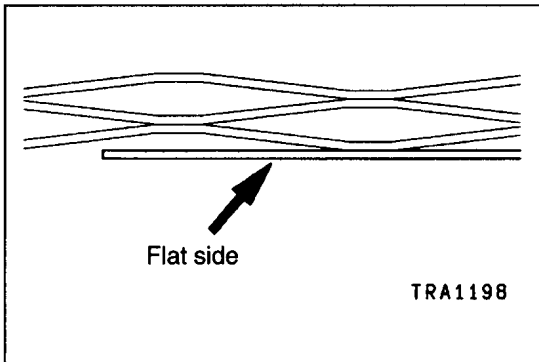
- Take care not to mistake the brake plate (reaction plate side) installation direction.



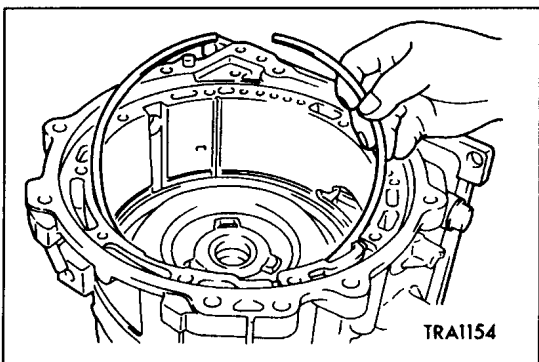
34. Install the return spring and second brake.

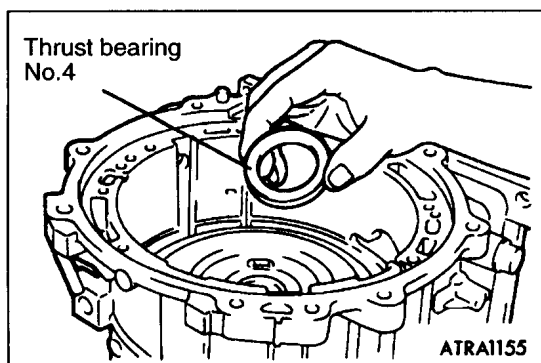
**Caution**

- Install the return spring so that the flat side faces the back of the transmission.

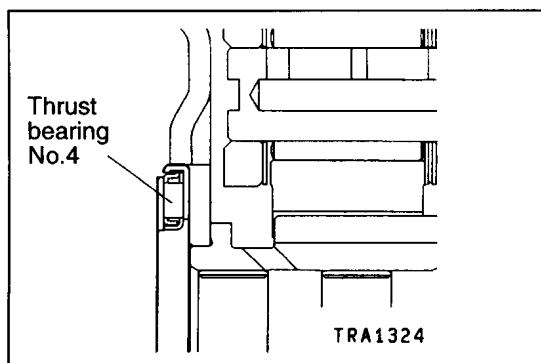


35. Install the snap ring.



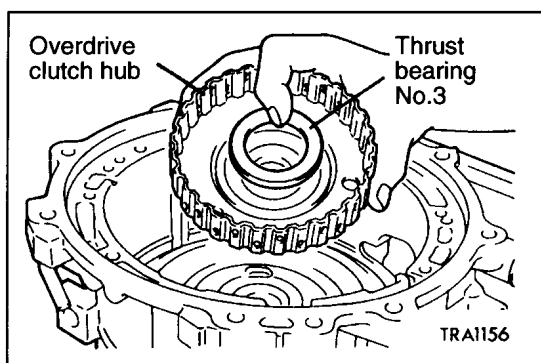


36. Apply Vaseline or petrolatum jelly on the thrust bearing No.4, and then install on the reverse sun gear.

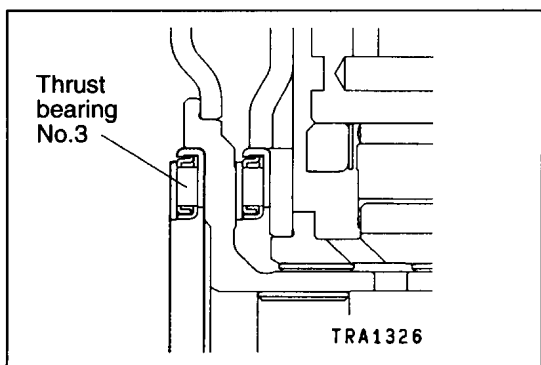


#### Caution

- Take care not to mistake the thrust bearing No.4 installation direction.

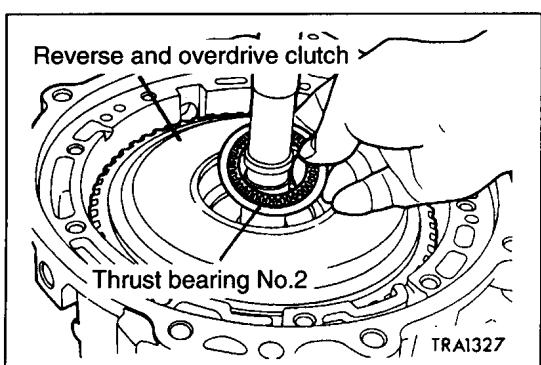


37. Apply Vaseline or petrolatum jelly on the thrust bearing No.3, and then install on the overdrive clutch hub.
38. Install the overdrive clutch hub.

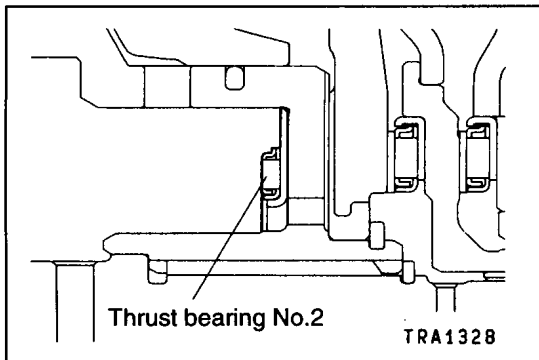


#### Caution

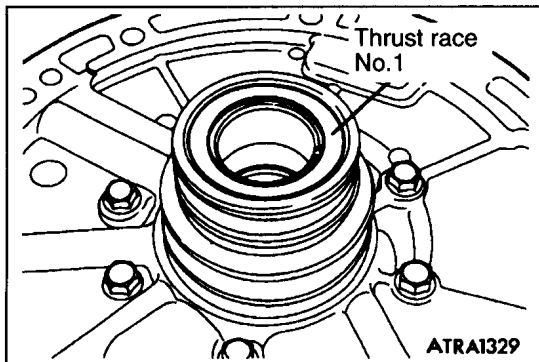
- Take care not to mistake the thrust bearing No.3 mounting direction.



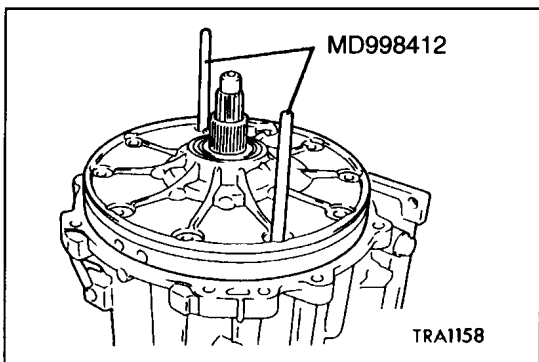
39. Install the reverse and overdrive clutch.
40. Apply Vaseline or petrolatum jelly on the thrust bearing No.2, and then install on the reverse and overdrive clutch.

**Caution**

- Take care not to mistake the thrust bearing No.2 mounting direction.



41. Apply Vaseline or petrolatum jelly on the thrust race No.1, and then install on the oil pump.

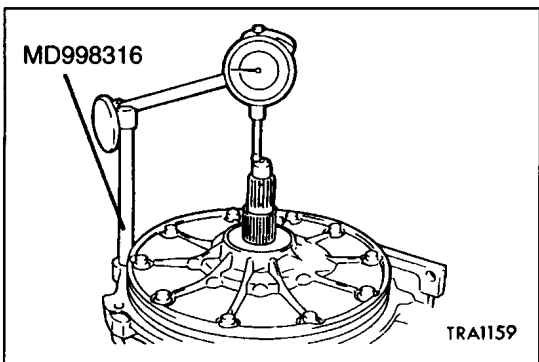


42. Install the special tool at the position shown in the illustration, and using this as a guide, install the oil pump and gasket.

**Caution**

- Never reuse the gasket.

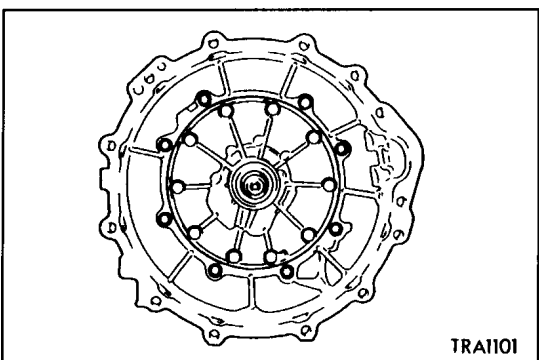
43. Tighten the ten oil pump mounting bolts to the specified torque.



44. 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 41 with a suitable one so that the end play may meet the standard value. Then, reassemble.

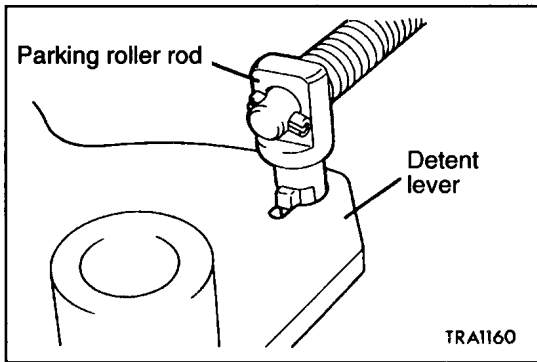
**Standard value: 0.25 – 0.81 mm**

45. Measure the end play again, and confirm that it is within the standard value.

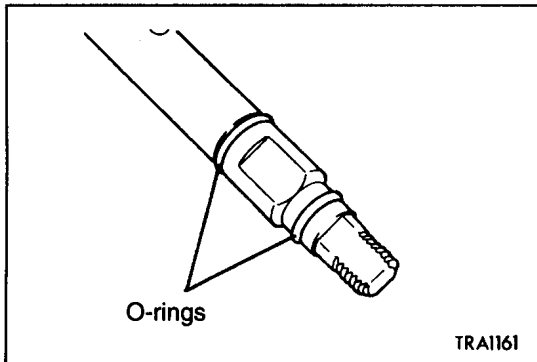


46. Install the converter housing.
47. Tighten the eight converter housing mounting bolts to the specified torque.

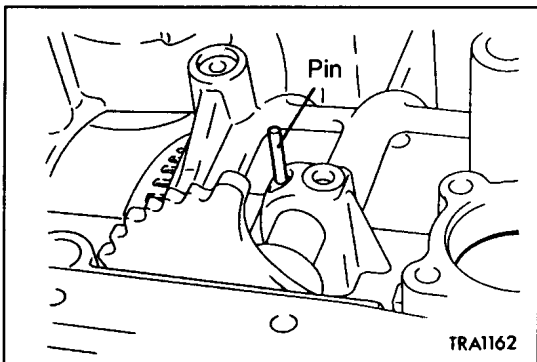




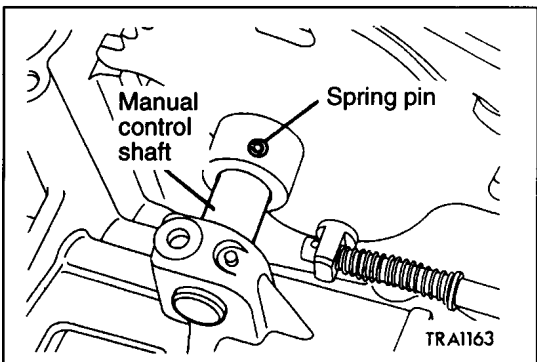
48. Install the parking roller rod to the detent lever.



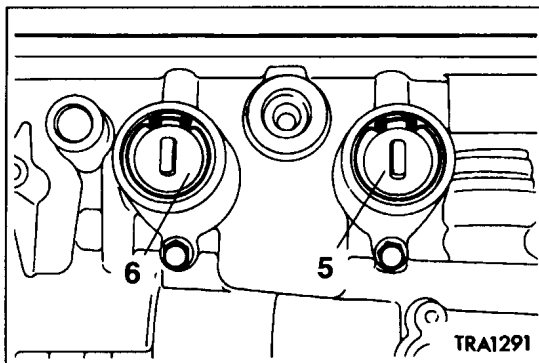
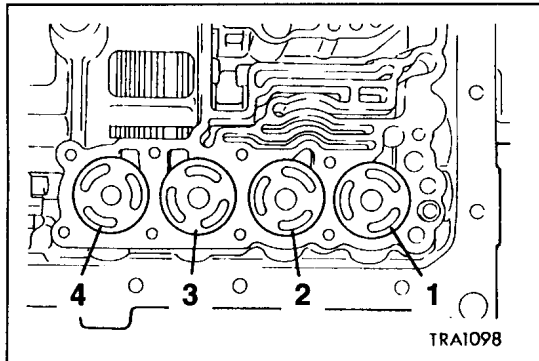
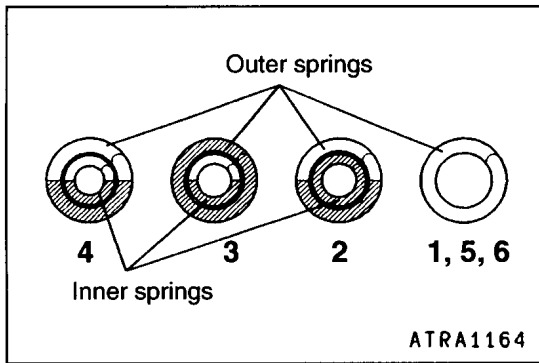
49. Install two new O-rings to the manual control shaft, and assemble onto the transmission case together with the detent lever and parking roller rod.



50. Install the pin.



51. Hammer in the spring pin so that its slit is perpendicular to the axial direction of the manual control shaft.

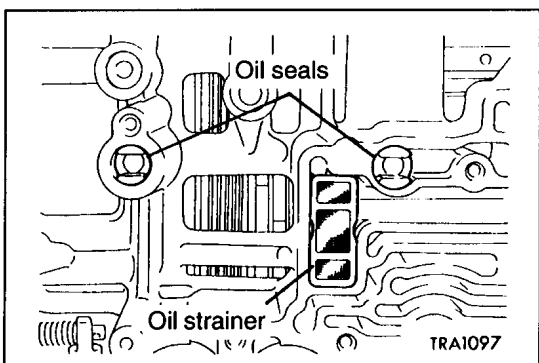


52. Install a new seal ring onto each accumulator piston.
53. Install each accumulator piston and spring, then install accumulator cover with O-ring and snap ring.

**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.

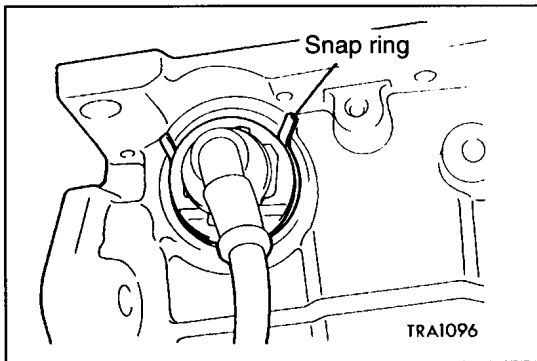
No.	Name	Identification paint application position	
1	For overdrive clutch	None	
2	For second brake	Inner	Applied on all surfaces including both ends
		Outer	Applied on half of surface including both ends
3	For low/reverse brake	Inner	Applied on half of surface including both ends
		Outer	Applied on 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
5	For reduction brake	None	
6	For direct clutch	None	



54. 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**

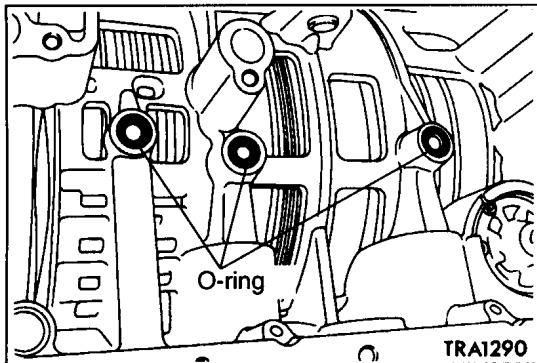
- Take care to the installation direction of the oil seal.



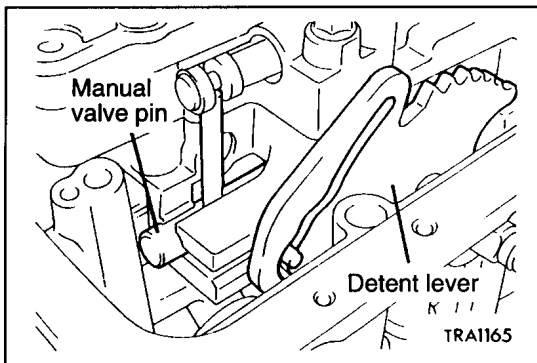
55. Install the solenoid valve harness, and then secure the snap ring to connector groove.

**NOTE**

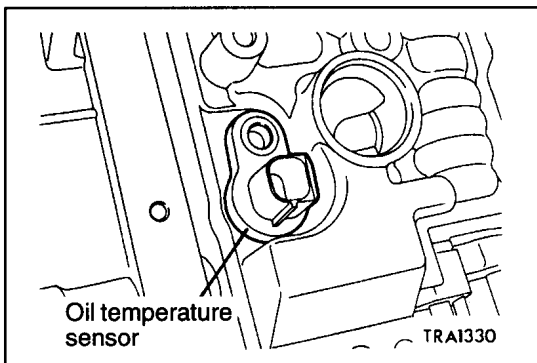
Install the harness so that it is oriented as shown in the illustration.



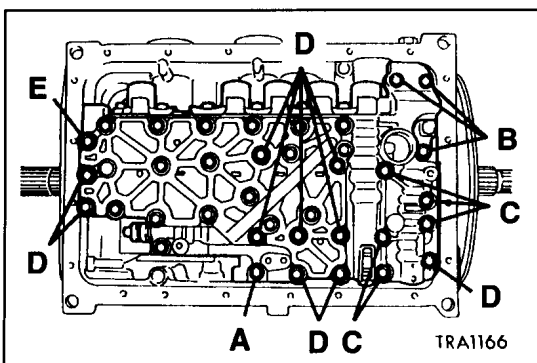
56. Install new three O-rings onto the transmission case at the positions shown in the illustration.



57. Install the valve body while inserting the manual valve pin into the detent lever groove.

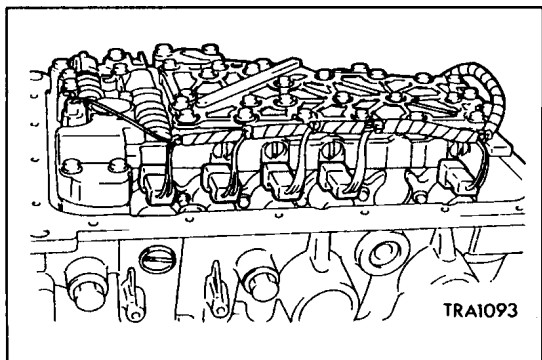


58. Install the oil temperature sensor.

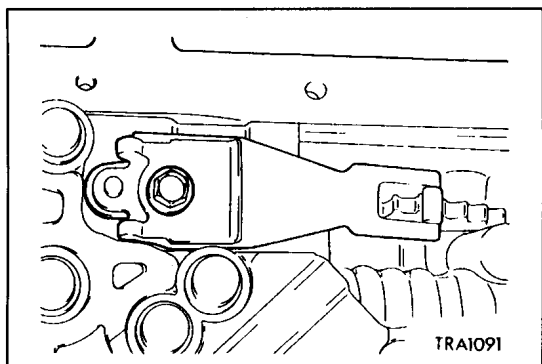


59. Tighten the twenty valve body mounting bolts to the specified torque.

Bolt	Length mm
A	25
B	30
C	40
D	45
E	55

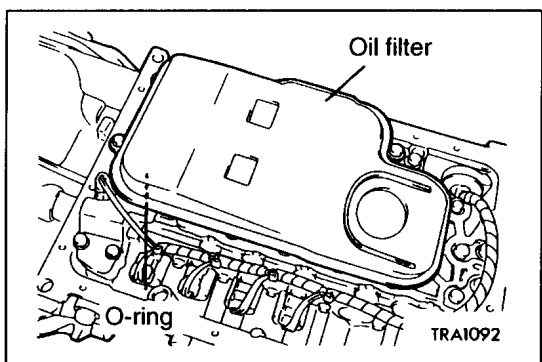


60. Connect the connector to the valve body.

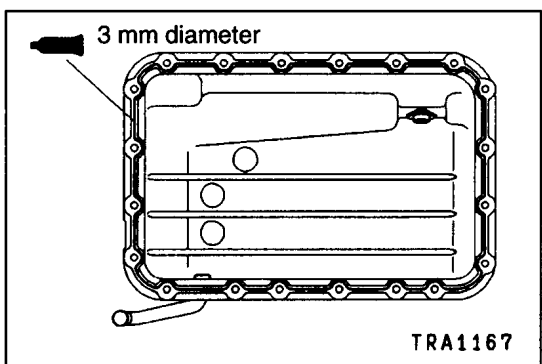


61. Install the detent spring.

62. Tighten the detent spring mounting bolt to the specified torque.



63. Install the oil filter and a new O-ring.



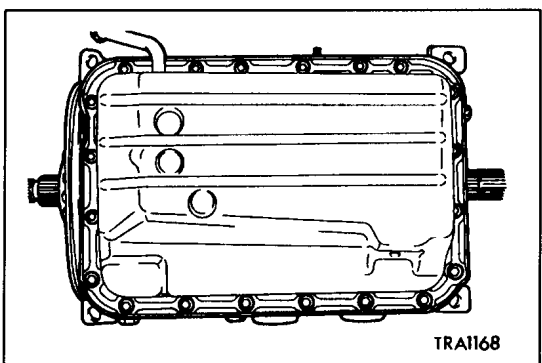
64. Apply sealant on the oil pan.

**Specified sealant:**

**MITSUBISHI genuine sealant part No. MR166584 or equivalent**

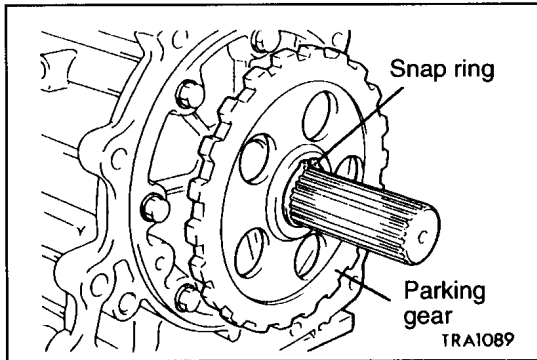
**Caution**

- Evenly squeeze out the sealant so that it is not insufficient or excessive.



65. Install the oil pan.

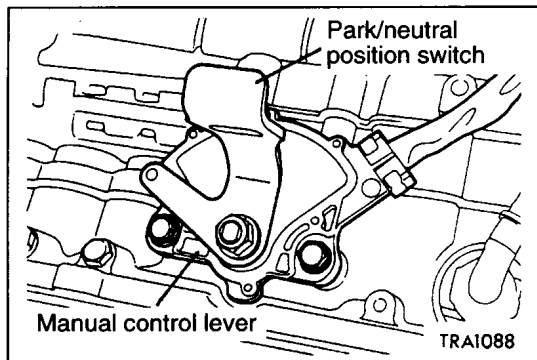
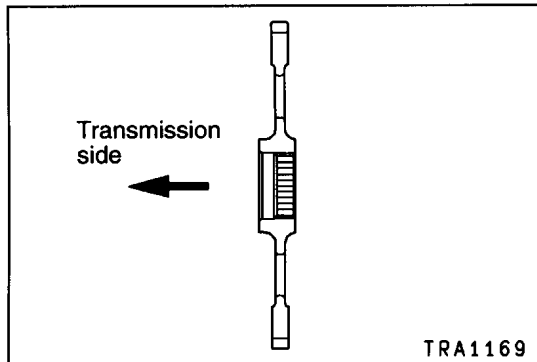
66. Tighten the oil pan mounting bolts to the specified torque.



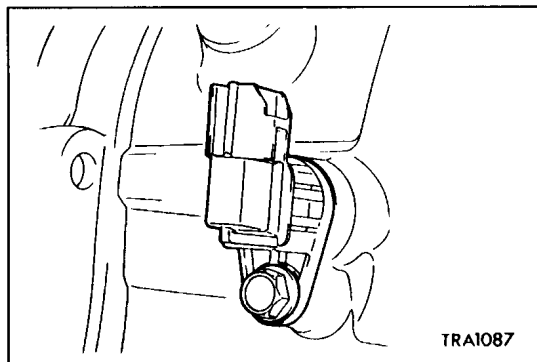
67. Install the parking gear and snap ring.

**Caution**

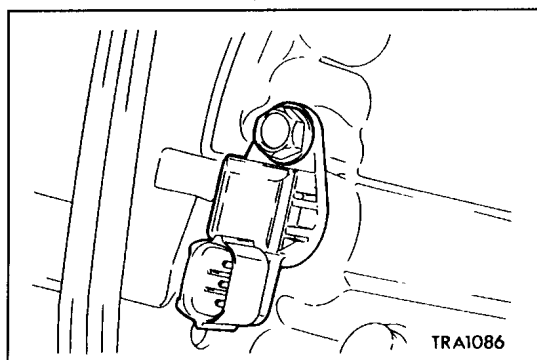
- Install the parking gear so that the side without the spline cut faces the transmission side.
- Heat the parking gear to 160 – 180°C, and shrink fit up to the stepped section of the output shaft.



68. Install the park/neutral position switch and manual control lever.



69. Install the output shaft speed sensor.

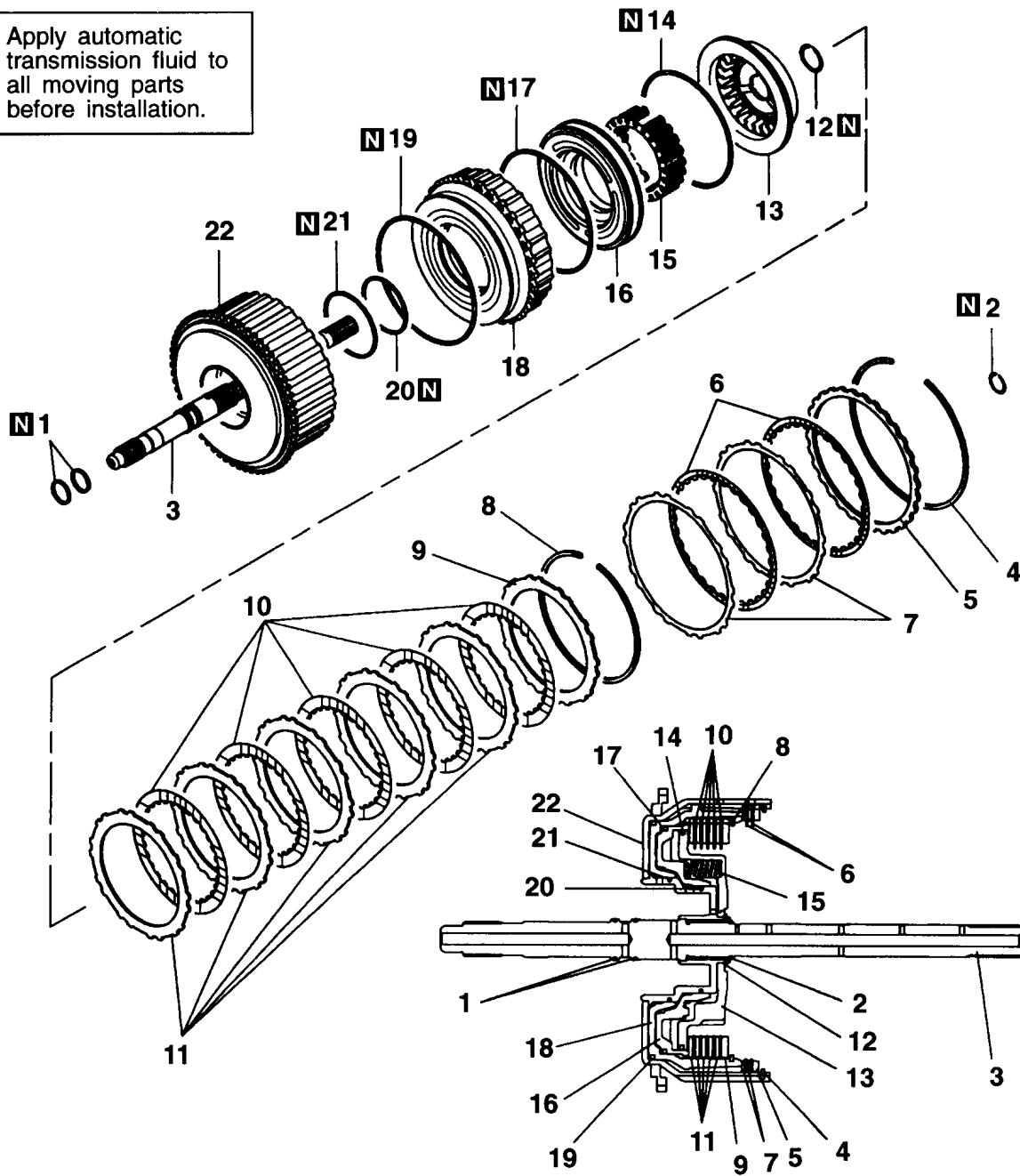


70. Install the input shaft speed sensor.

# 6. REVERSE AND OVERDRIVE CLUTCH

## DISASSEMBLY AND ASSEMBLY

Apply automatic transmission fluid to all moving parts before installation.

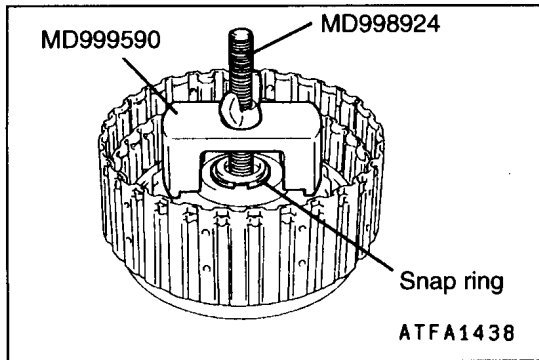


TRA1423

### Disassembly steps

- 1. Seal ring
- 2. Snap ring
- 3. Input shaft
- 4. Snap ring
- 5. Reaction plate
- 6. Clutch disc
- 7. Clutch plate
- 8. Snap ring
- 9. Reaction plate
- 10. Clutch disc
- 11. Clutch plate

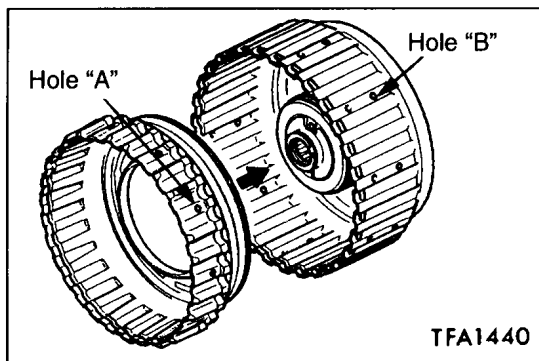
- 12. Snap ring
- 13. Spring retainer
- 14. D-ring
- 15. Return spring
- 16. Overdrive clutch piston
- 17. D-ring
- 18. Reverse clutch piston
- 19. D-ring
- 20. D-ring
- 21. D-ring
- 22. Reverse clutch retainer

**DISASSEMBLY SERVICE POINT****◀A▶ SNAP RING REMOVAL**

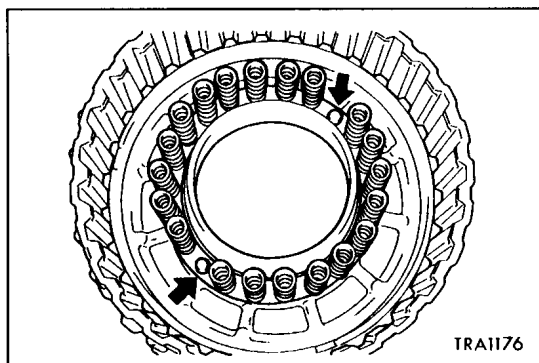
1. Set the special tools as shown in the illustration.
2. Compress the return spring, and remove the snap ring.

**ASSEMBLY SERVICE POINTS****▶A◀ D-RING INSTALLATION**

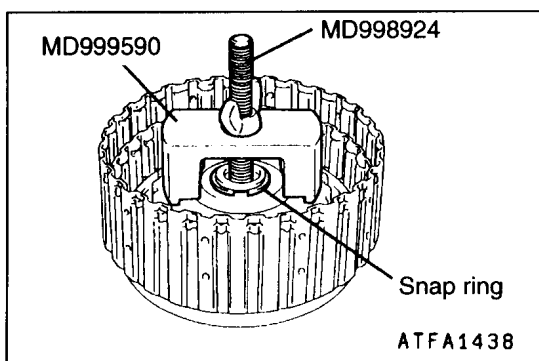
1. Apply ATF to the D-ring.
2. Install the D-rings in the reverse clutch retainer, piston, overdrive clutch piston and spring retainer grooves. Make sure that they are not twisted or damaged when installing.

**▶B◀ REVERSE CLUTCH PISTON INSTALLATION**

Align the holes ("A" and "B") in the reverse clutch piston and reverse clutch retainer and then assemble.

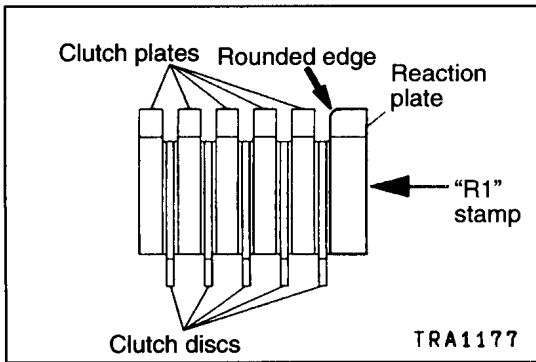
**▶C◀ RETURN SPRING INSTALLATION**

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**

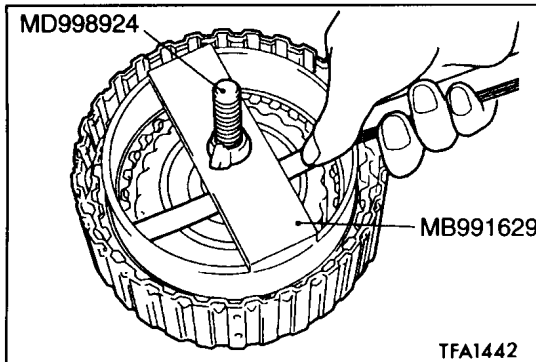
1. Set the special tools as shown in the illustration.
2. Tighten the special tool nut, and press the spring retainer against the reverse clutch retainer.
3. Install the thickest snap ring that can be fitted in the snap ring groove of the reverse clutch retainer.
4. Confirm that clearance between the snap ring and spring retainer is the standard value.

**Standard value: 0 – 0.09 mm**



►E◄ CLUTCH PLATE / CLUTCH DISC / REACTION PLATE INSTALLATION

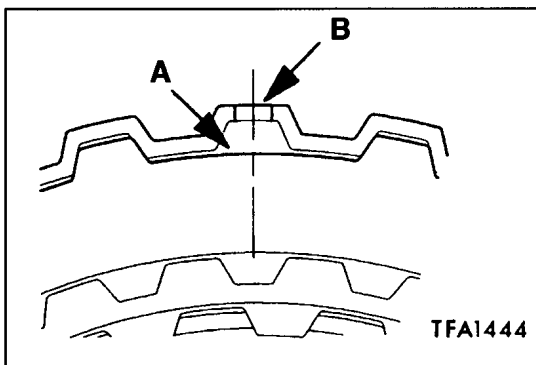
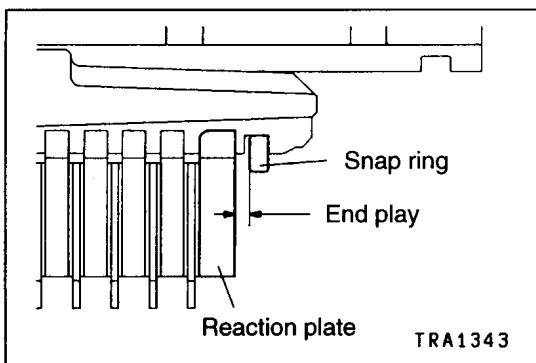
1. Alternately assemble the clutch discs and clutch plates in the reverse clutch piston.
2. Install the reaction plate so that it is oriented as shown in the illustration.



►F◄ SNAP RING INSTALLATION

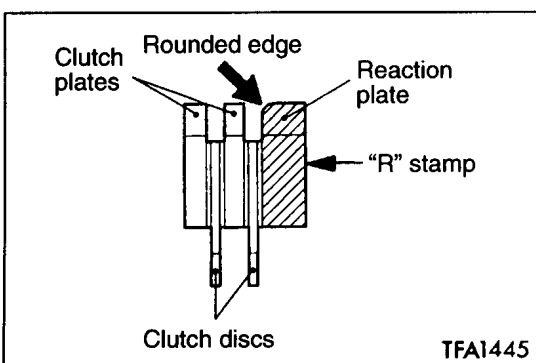
1. Install the snap ring in the reverse clutch piston groove.
2. Set the special tools as shown in the illustration, and compress the clutch element.
3. Confirm that the clearance between the snap ring and reaction plate (overdrive clutch end play) is the standard value. If the clearance is not at the standard value, select a suitable snap ring and adjust so that the clearance is within the standard value.

Standard value: 2.0 – 2.2 mm



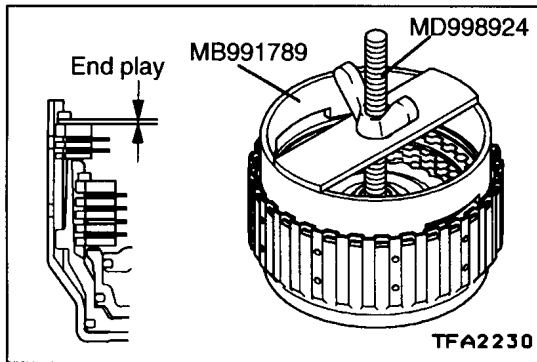
►G◄ CLUTCH PLATE / CLUTCH DISC/REACTION PLATE INSTALLATION

1. Alternately assemble the clutch plates and clutch discs in the reverse clutch retainer. When assembling the clutch plates, align the section having 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**

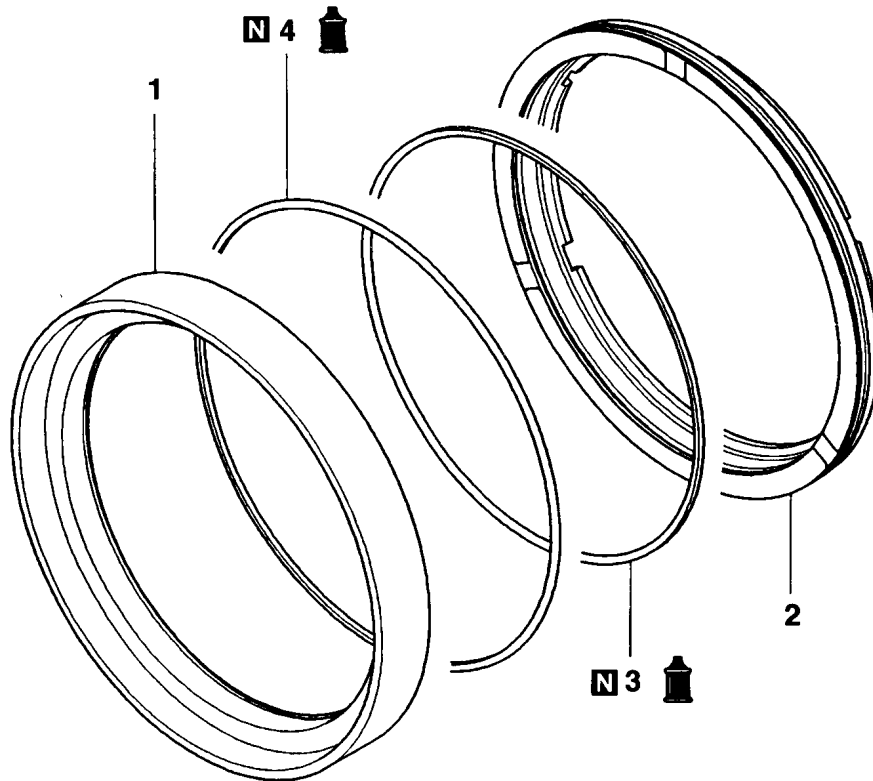
1. Install the snap ring in the reverse clutch retainer groove.
2. Set the special tools as shown in the illustration, and compress the clutch element.
3. Check that the clearance between the snap ring and reaction plate (reverse clutch end play) is the standard value.

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**

## 7. SECOND BRAKE

### DISASSEMBLY AND ASSEMBLY



TRA1060

#### Disassembly steps


- ▶A◀  
 ▶A◀
1. Second brake retainer
  2. Second brake piston
  3. D-ring
  4. D-ring

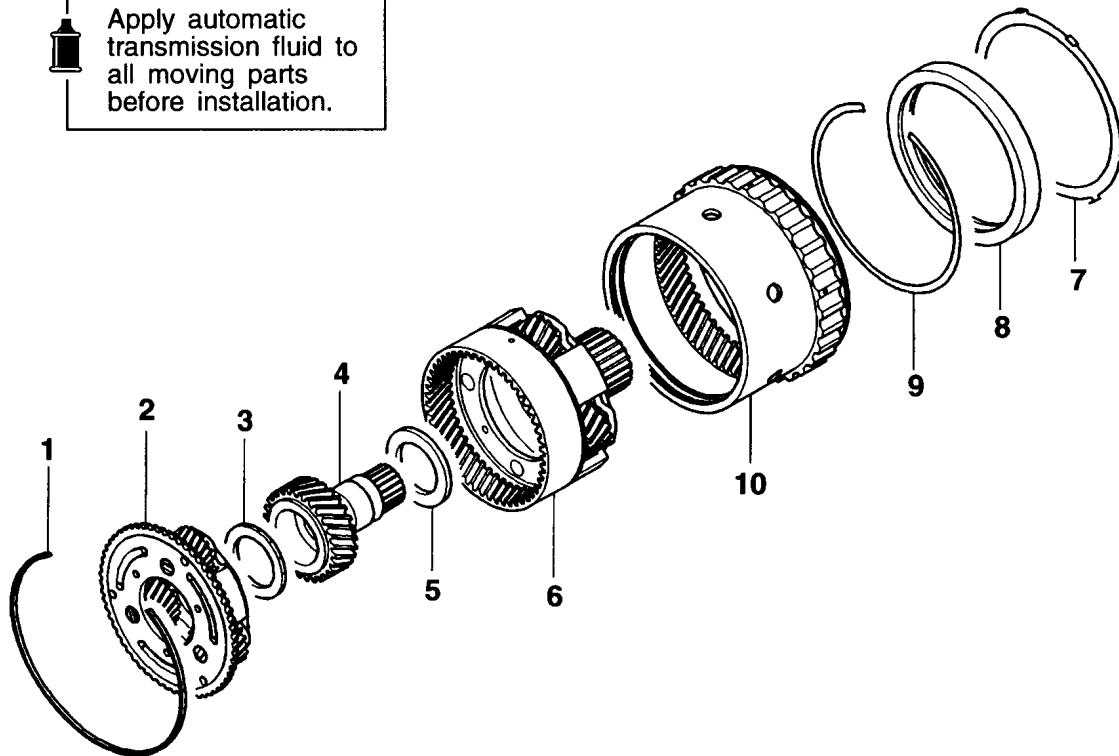
### ASSEMBLY SERVICE POINT

#### ▶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.

# 8. LOW/REVERSE ANNULUS GEAR DISASSEMBLY AND ASSEMBLY

 Apply automatic transmission fluid to all moving parts before installation.



TRA1059

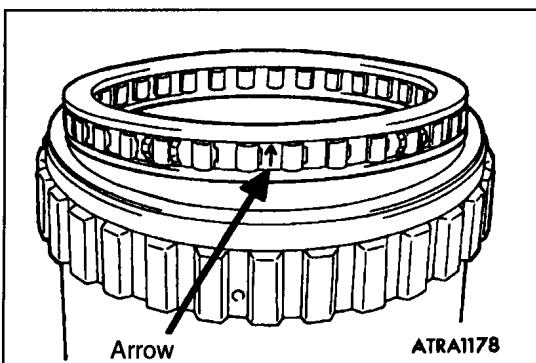
### Disassembly steps

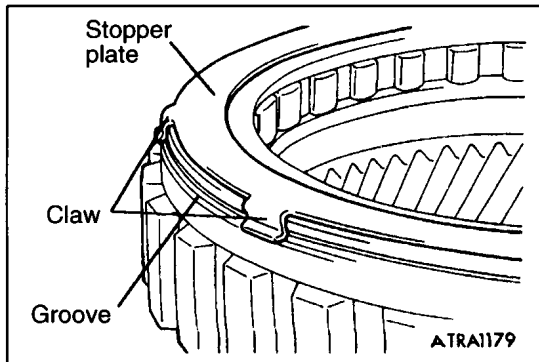
- 1. Snap ring
- ▶D◀ 2. Overdrive planetary carrier
- ▶C◀ 3. Thrust bearing No.5
- ▶C◀ 4. Underdrive sun gear
- ▶B◀ 5. Thrust bearing No.6
- ▶B◀ 6. Output planetary carrier
- ▶A◀ 7. Stopper plate
- ▶A◀ 8. One-way clutch
- 9. Snap ring
- 10. Low/reverse annulus gear

### ASSEMBLY SERVICE POINTS

#### ▶A◀ ONE-WAY CLUTCH INSTALLATION

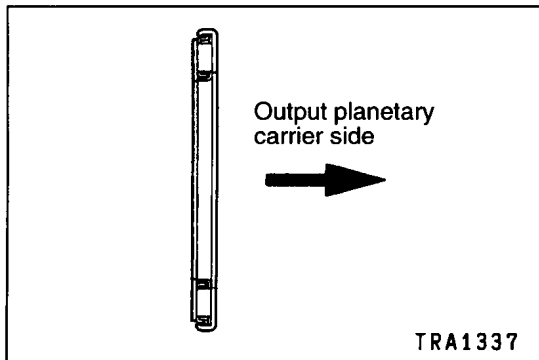
Install the one-way clutch so that the arrow stamp is oriented as shown in the illustration.





### ►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.

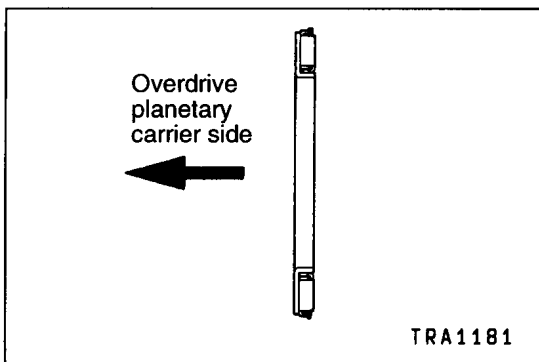


### ►C◄ THRUST BEARING NO.6 INSTALLATION

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.

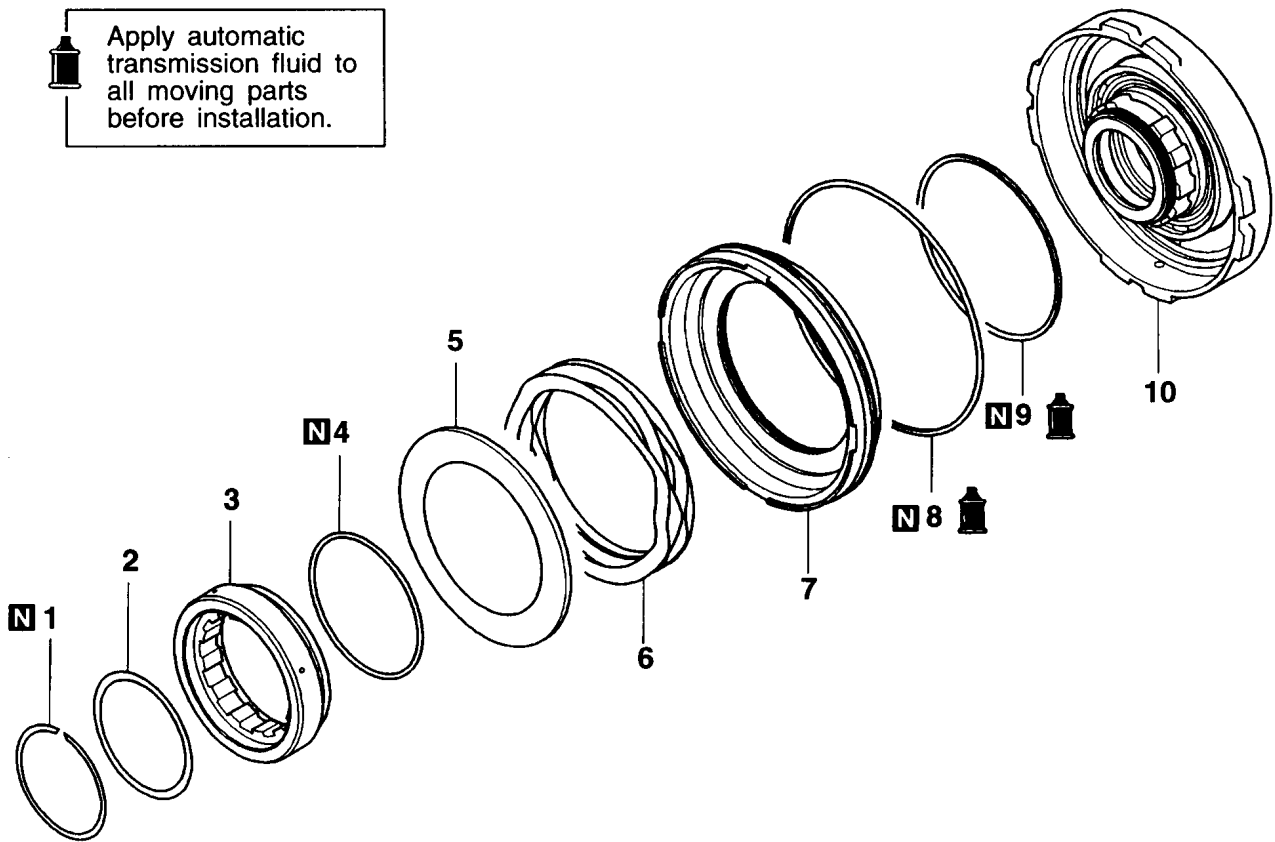
#### Caution

- Take care not to mistake the thrust bearing No.5 mounting direction.

# 9. CENTER SUPPORT

## DISASSEMBLY AND ASSEMBLY

 Apply automatic transmission fluid to all moving parts before installation.

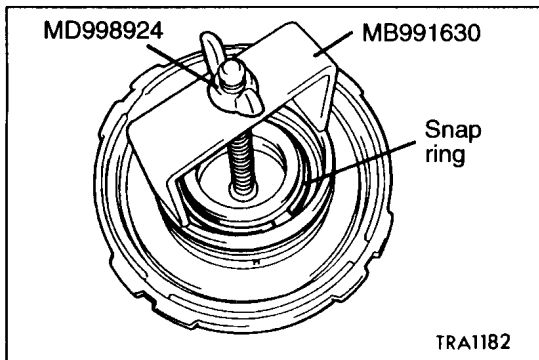


TRA1058

### 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

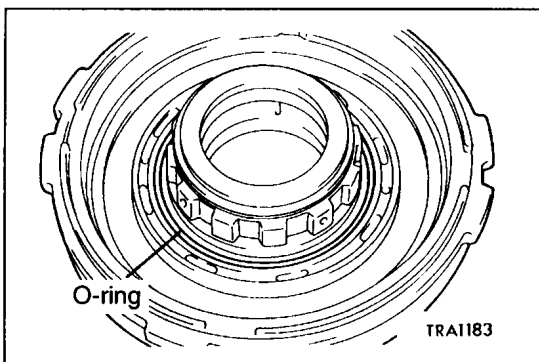
### ◀▶ SNAP RING REMOVAL

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

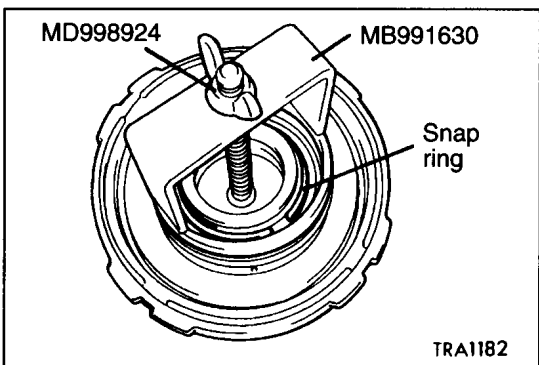
### ▶◀ D-RING INSTALLATION

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.



### ▶◀ O-RING INSTALLATION

Install the O-ring onto the center support at the position shown in the illustration.




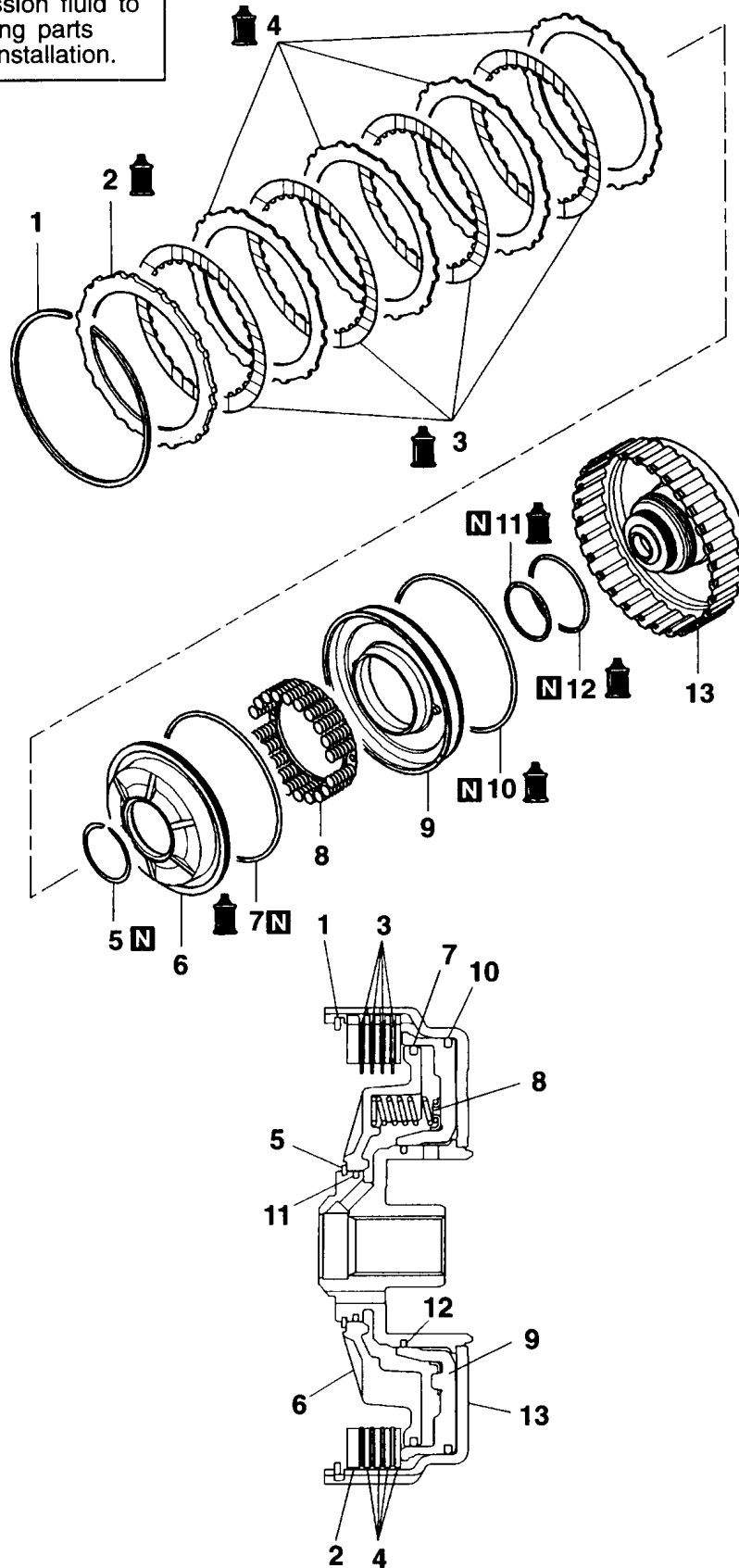
### ▶◀ SNAP RING INSTALLATION

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.

# 10. UNDERDRIVE CLUTCH

## DISASSEMBLY AND ASSEMBLY

 Apply automatic transmission fluid to all moving parts before installation.

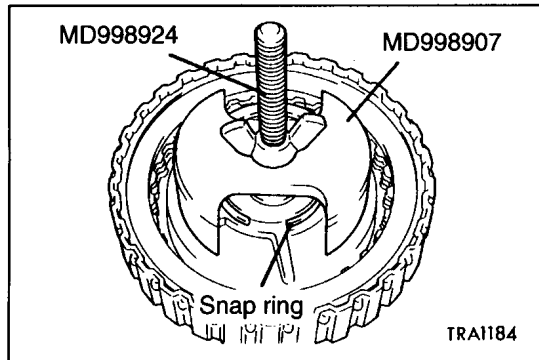


TRA1057

**Disassembly steps**

- ▶E◀ 1. Snap ring
- ▶D◀ 2. Reaction plate
- ▶D◀ 3. Clutch disc
- ▶D◀ 4. Clutch plate
- ◀A▶ 5. Snap ring
- ▶C◀ 6. Snap retainer
- ▶A◀ 7. D-ring

- ▶B◀ 8. Return spring
- 9. Underdrive clutch piston
- ▶A◀ 10. D-ring
- ▶A◀ 11. D-ring
- ▶A◀ 12. D-ring
- 13. Underdrive clutch retainer

**DISASSEMBLY SERVICE POINT****◀A▶ SNAP RING REMOVAL**

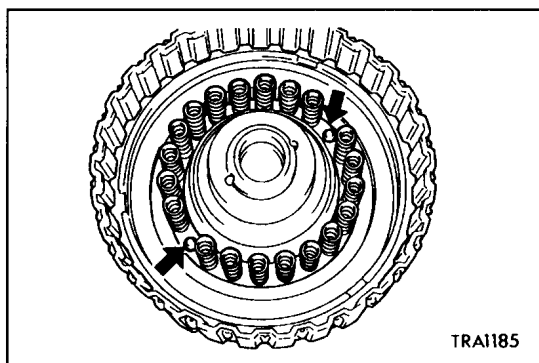
1. Set the special tools as shown in the illustration.
2. Compress the return spring, and remove the snap ring.

**ASSEMBLY SERVICE POINTS****▶A◀ D-RING INSTALLATION**

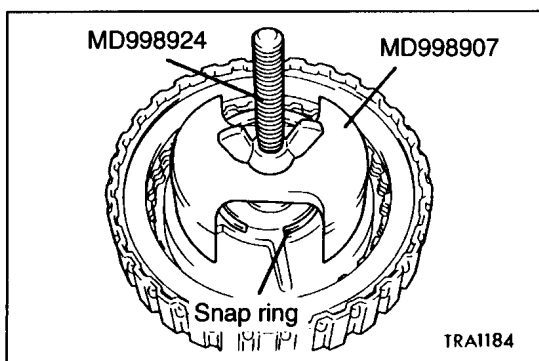
1. Apply ATF to the D-ring.
2. Install the D-ring in the groove of the underdrive clutch retainer and spring retainer. Make sure that the D-ring is not twisted or damaged when installing.

**▶B◀ RETURN SPRING INSTALLATION**

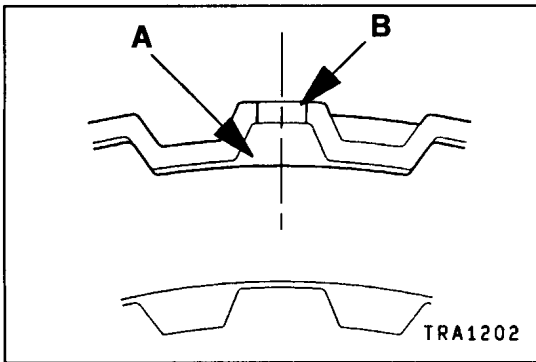
Align the two return spring holes with the two projections on the underdrive clutch piston, and then assemble the return springs.

**▶C◀ SNAP RING INSTALLATION**

1. Set the special tools as shown in the illustration.
2. Compress the return spring, and install the snap ring.

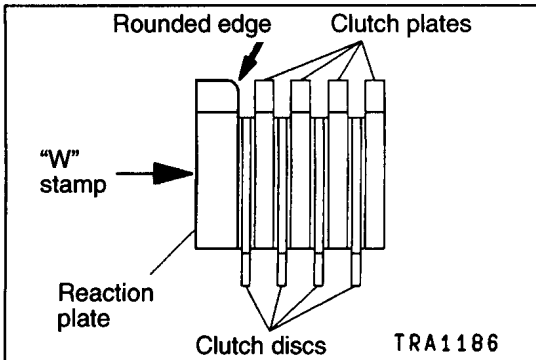




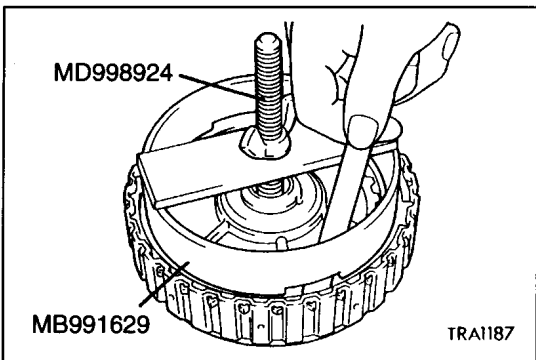


### ►D◄ CLUTCH PLATE / CLUTCH DISC / REACTION PLATE INSTALLATION

1. Alternately assemble the clutch plates and clutch discs in the underdrive clutch retainer.  
When assembling the four clutch plates, align the section having no teeth (A in the illustration) with the underdrive clutch retainer hole (B in the illustration).



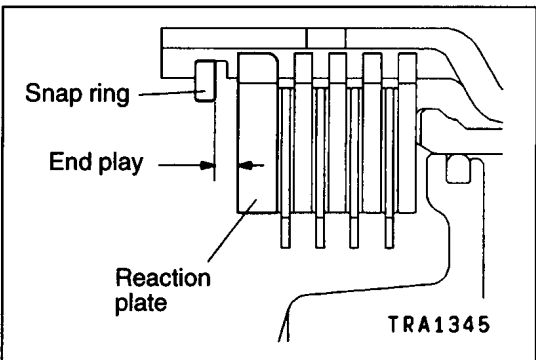
2. Install the reaction plate so that it is oriented as shown in the illustration.  
Assemble in the same manner as the clutch plate so that the section with no teeth ("A" in the illustration) matches the retainer hole ("B" in the illustration).



### ►E◄ SNAP RING INSTALLATION

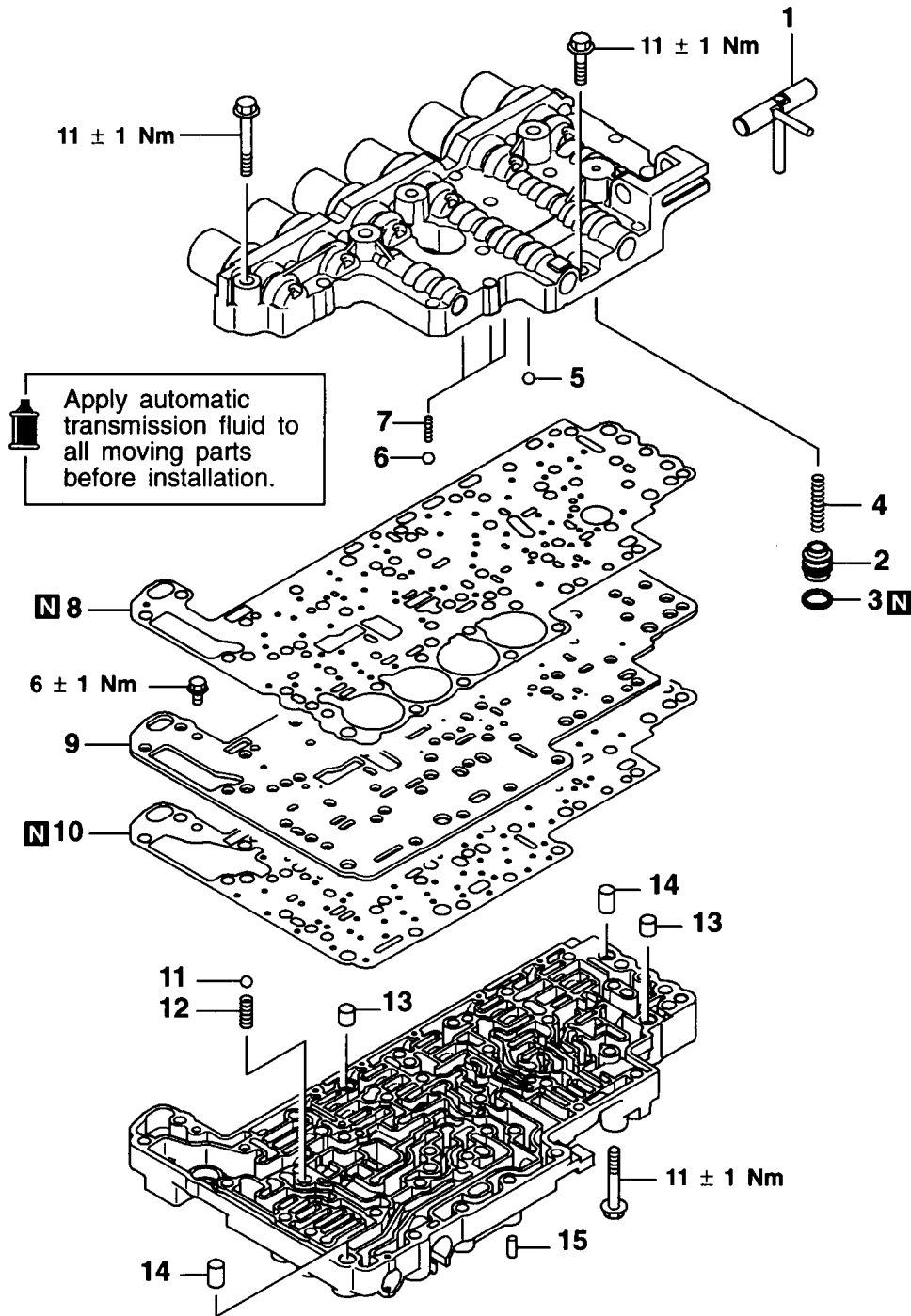
1. Install the snap ring in the groove of the underdrive clutch retainer.
2. Set the special tools as shown in the illustration, and compress the clutch element.
3. Confirm that the clearance between the snap ring and reaction plate (underdrive clutch end play) is the standard value. If the clearance 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**



# 11. VALVE BODY

## DISASSEMBLY AND ASSEMBLY



TRA1283

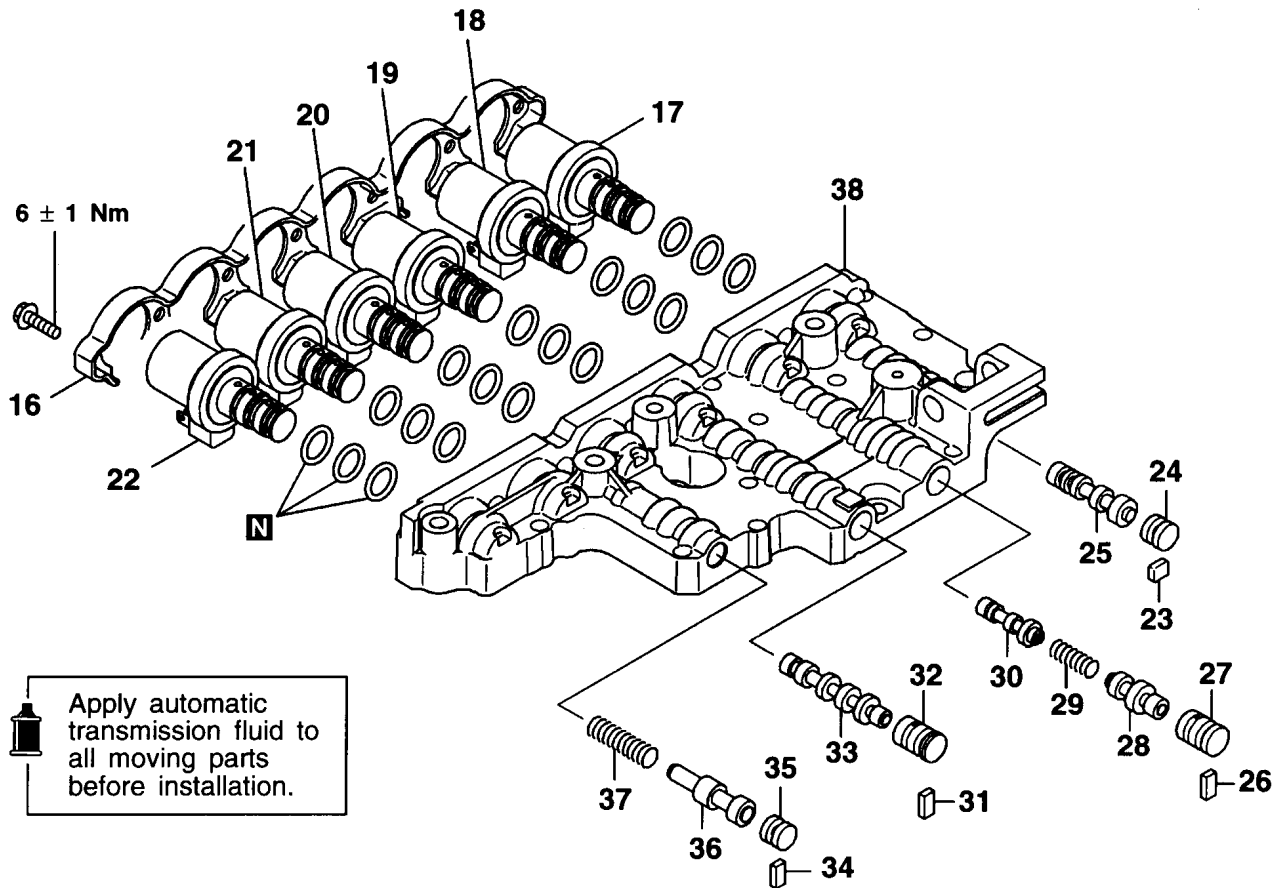
### Disassembly steps



1. Manual valve pin
2. Damping valve
3. Seal ring
4. Damping valve spring
5. Ball (orifice check ball)
6. Steel ball (orifice check ball)
7. Spring
8. Upper valve body gasket



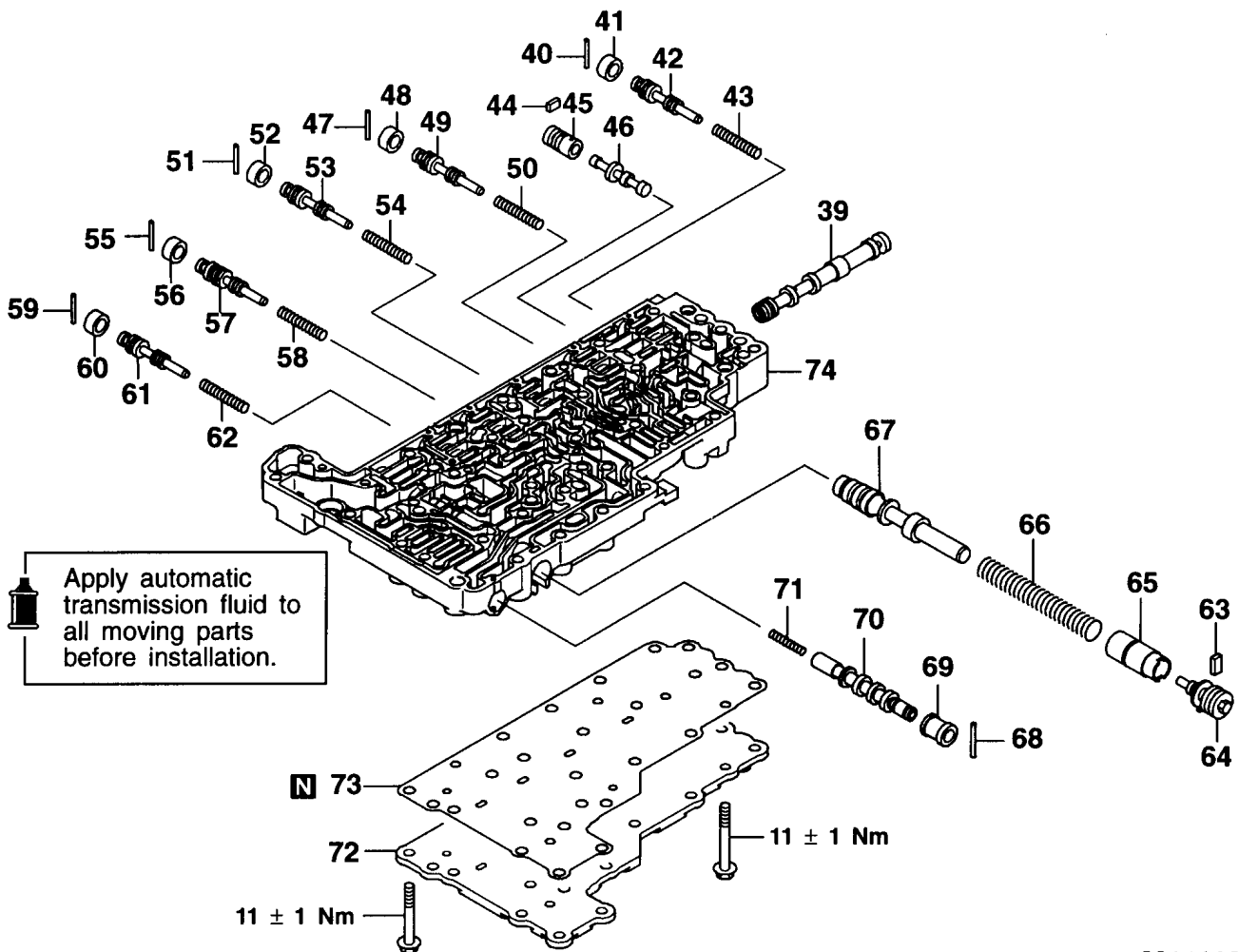
9. Separating plate
10. Lower valve body gasket
11. Steel ball (line relief)
12. Spring
13. Knock bushing
14. Knock bushing
15. Dowel pin



TRA1284

**Disassembly steps**

- |     |     |  |  |
|-----|-----|--|--|
| ◀A▶ | ▶A◀ | 16. Solenoid support                               | 28. Fail-safe valve A <sub>2</sub>                 |
| ◀A▶ | ▶A◀ | 17. Low/reverse brake solenoid valve               | 29. Fail-safe valve A spring                       |
| ◀A▶ | ▶A◀ | 18. Reduction brake solenoid valve                 | 30. Fail-safe valve A <sub>1</sub>                 |
| ◀A▶ | ▶A◀ | 19. Second brake solenoid valve                    | 31. Stopper plate                                  |
| ◀A▶ | ▶A◀ | 20. Underdrive clutch solenoid valve               | 32. Fail-safe valve B sleeve                       |
| ◀A▶ | ▶A◀ | 21. Overdrive clutch solenoid valve                | 33. Fail-safe valve B                              |
| ◀A▶ | ▶A◀ | 22. Torque converter clutch control solenoid valve | 34. Stopper plate                                  |
|     |     | 23. Stopper plate                                  | 35. Stopper plug                                   |
|     |     | 24. Stopper plug                                   | 36. Torque converter pressure control valve        |
|     |     | 25. Switching valve                                | 37. Torque converter pressure control valve spring |
|     |     | 26. Stopper plate                                  | 38. Upper valve body                               |
|     |     | 27. Fail-safe valve A sleeve                       |  |



TRA1285

**Disassembly steps**

- |   |   |
|---|---|
| 39. Manual valve                                    | 57. Underdrive clutch pressure control valve        |
| 40. Roller  | 58. Underdrive clutch pressure control valve spring |
| 41. Low/reverse brake pressure control valve sleeve | 59. Roller  |
| 42. Low/reverse brake pressure control valve        | 60. Overdrive clutch pressure control valve sleeve  |
| 43. Low/reverse brake pressure control valve spring | 61. Overdrive clutch pressure control valve         |
| 44. Stopper plate                                   | 62. Overdrive clutch pressure control valve spring  |
| 45. Fail-safe valve C sleeve                        | 63. Stopper plate                                   |
| 46. Fail-safe valve C                               | 64. Regulator valve adjusting screw                 |
| 47. Roller  | 65. Regulator valve sleeve                          |
| 48. Reduction brake pressure control valve sleeve   | 66. Regulator valve spring                          |
| 49. Reduction brake pressure control valve          | 67. Regulator valve                                 |
| 50. Reduction brake pressure control valve spring   | 68. Roller  |
| 51. Roller  | 69. Torque converter clutch control valve sleeve    |
| 52. Second brake pressure control valve sleeve      | 70. Torque converter clutch control valve           |
| 53. Second brake pressure control valve             | 71. Torque converter clutch control valve spring    |
| 54. Second brake pressure control valve spring      | 72. Cover   |
| 55. Roller  | 73. Cover gasket                                    |
| 56. Underdrive clutch pressure control valve sleeve | 74. Lower valve body                                |

**DISASSEMBLY SERVICE POINT****◀A▶ SOLENOID VALVE REMOVAL**

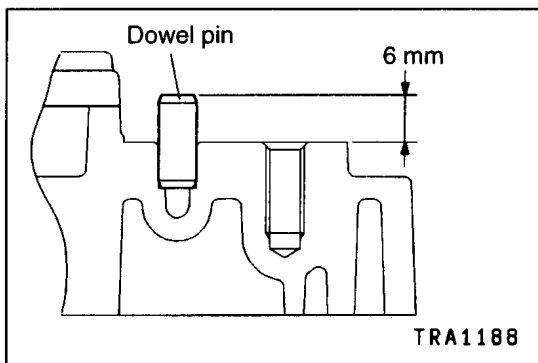
Before removing the solenoid valves, make marks with white paint, etc., so that these valves can be reinstalled in the original positions.

**ASSEMBLY SERVICE POINTS****▶A◀ SOLENOID VALVE INSTALLATION**

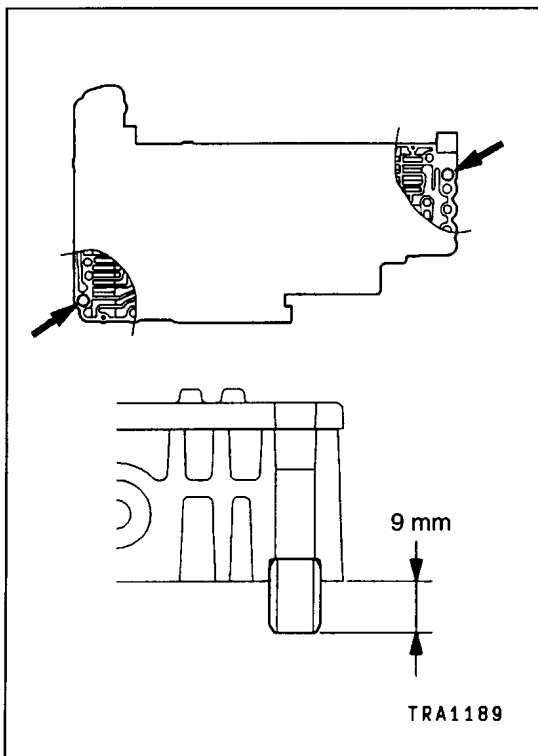
1. Apply ATF, petrolatum jelly or Vaseline to O-rings, and install them to solenoid valves.
2. Following the marks made during removal, install each solenoid valve.

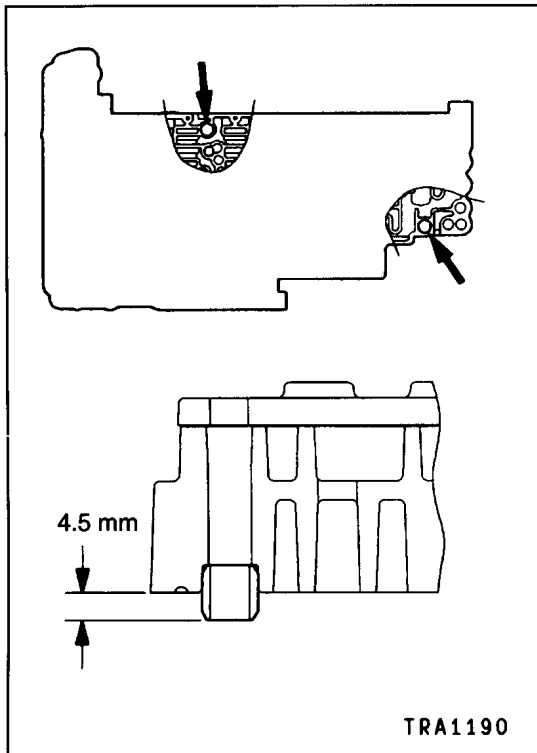
**▶B◀ DOWEL PIN INSTALLATION**

Install the dowel pin at the specified position on the lower valve body.

**▶C◀ KNOCK BUSHING INSTALLATION**

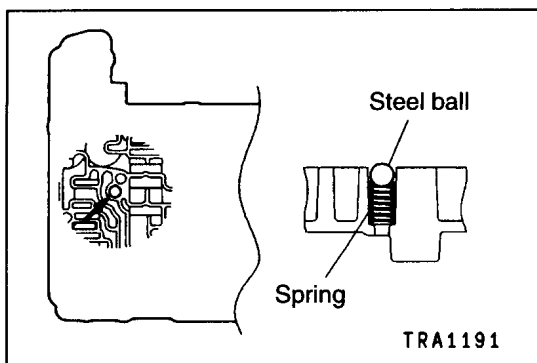
Install the knock bushing onto the lower valve body position shown in the illustration.





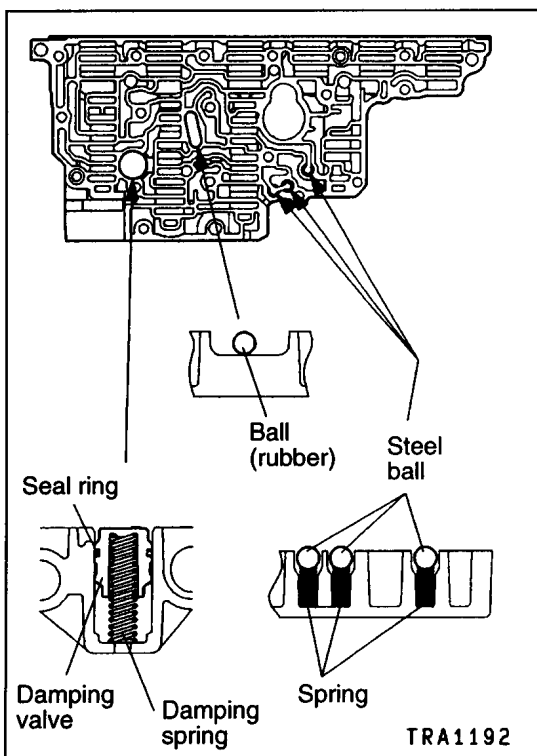
### ►D◄ KNOCK BUSHING INSTALLATION

Install the knock bushing onto the lower valve body position shown in the illustration.



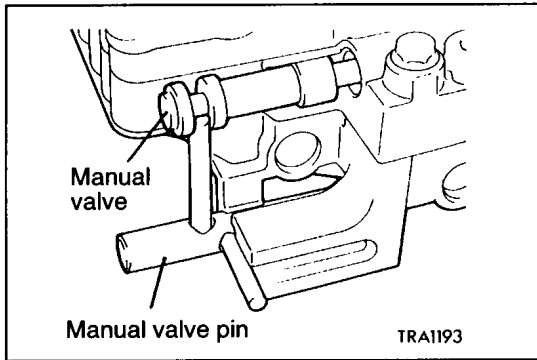
### ►E◄ SPRING / STEEL BALL (LINE RELIEF) INSTALLATION

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

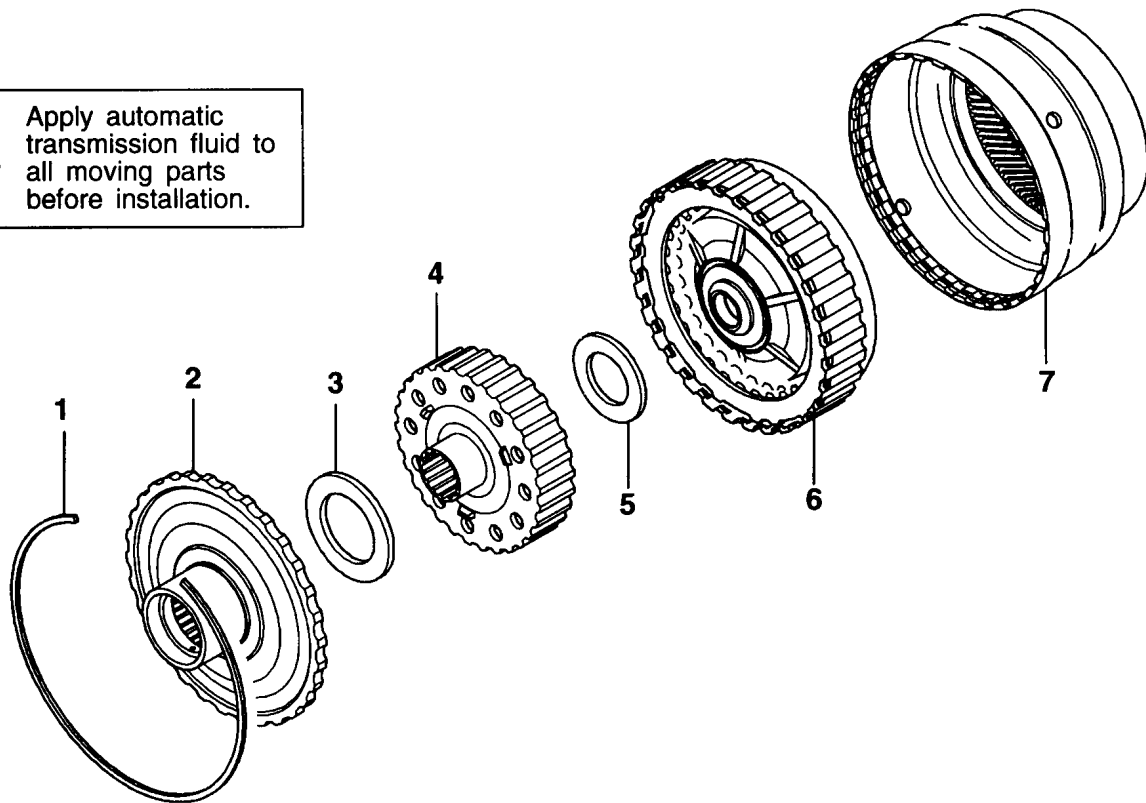
1. Install the spring (4.5 mm in diameter, 15.4 mm in length) and the steel ball (6.4 mm in diameter) onto the upper valve body position shown in the illustration.
2. Install the ball (rubber) (6.4 mm in diameter) onto the upper valve body position shown in the illustration.
3. After installing the seal 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.

## 12. DIRECT ANNULUS GEAR DISASSEMBLY AND ASSEMBLY

 Apply automatic transmission fluid to all moving parts before installation.

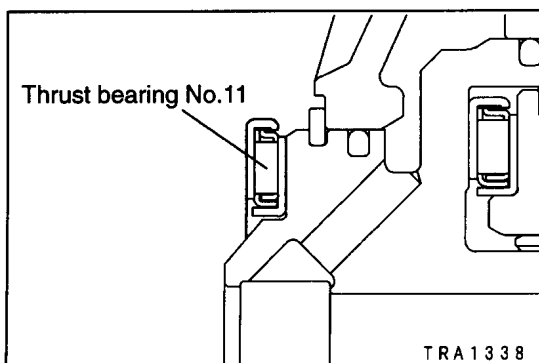


TRA1281

### Disassembly steps

- ▶B◀
1. Snap ring
  2. Output flange
  3. Thrust bearing No.10
  4. Underdrive clutch hub

- ▶A◀
5. Thrust bearing No.11
  6. Underdrive clutch
  7. Direct annulus gear



### ASSEMBLY SERVICE POINTS

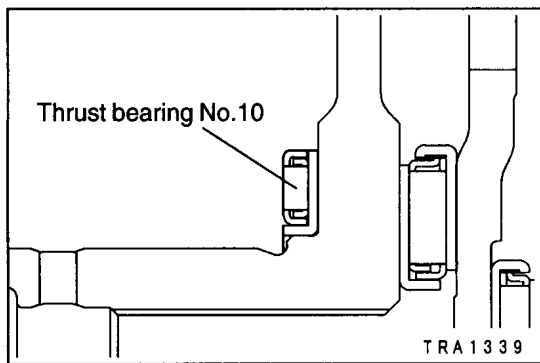
#### ▶A◀ THRUST BEARING NO.11 INSTALLATION

Apply vaseline or petrolatum jelly on the thrust bearing No.11, and then install on the underdrive clutch.

#### Caution

- Take care not to mistake the thrust bearing No.11 mounting direction.



**►B◄ THRUST BEARING NO.10 INSTALLATION**

Apply vaseline or petrolatum jelly on the thrust bearing No.10, and then install on the underdrive clutch hub.

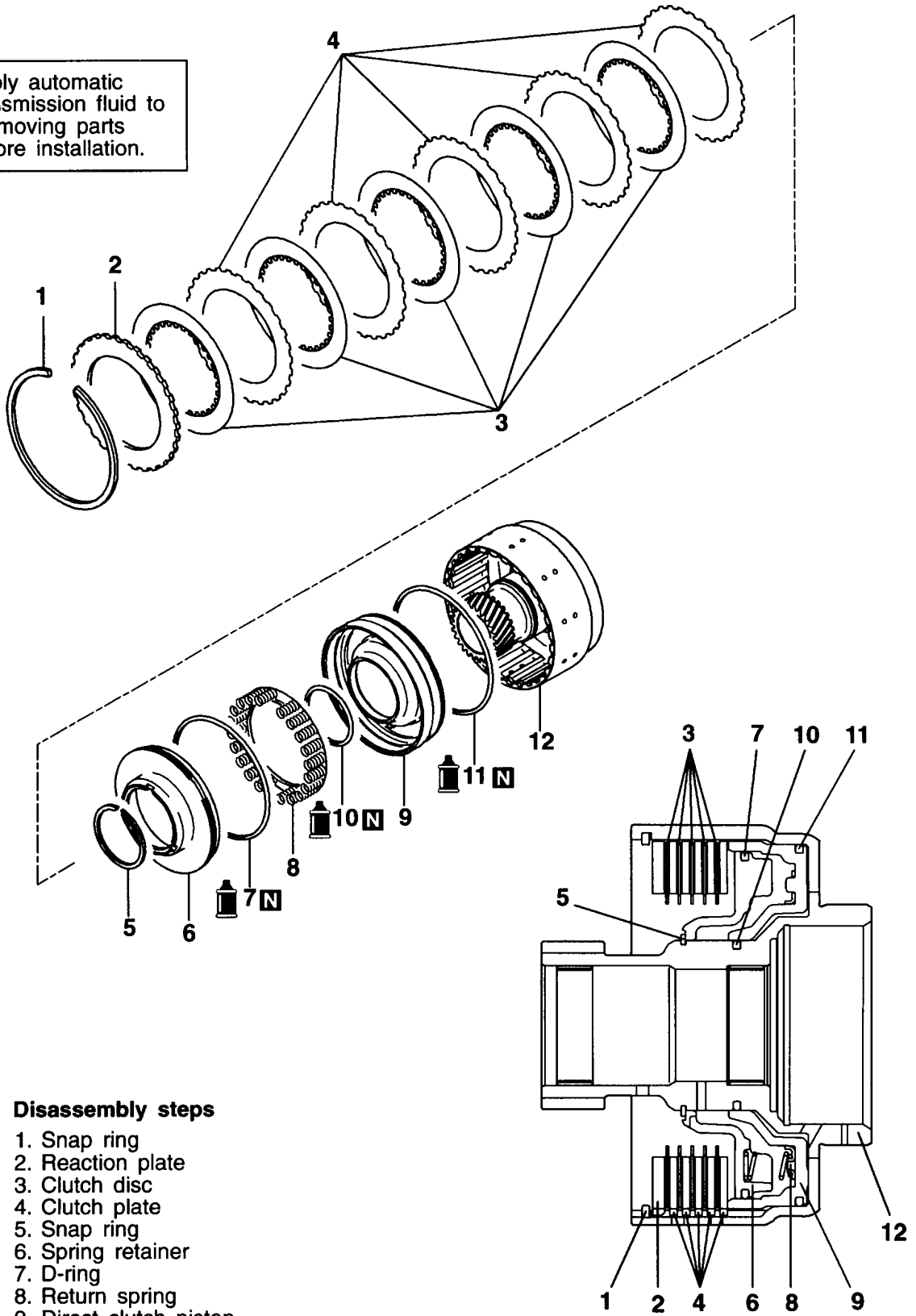
**Caution**

- Take care not to mistake the thrust bearing No.10 mounting direction.

# 13. DIRECT CLUTCH

## DISASSEMBLY AND ASSEMBLY

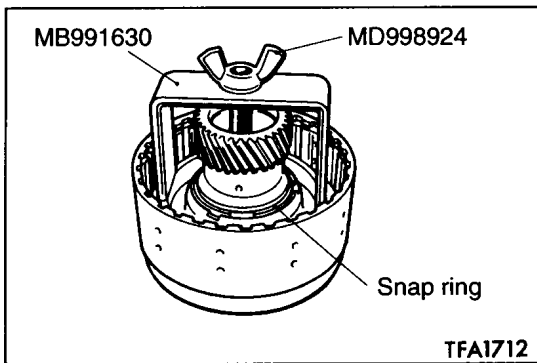
Apply automatic transmission fluid to all moving parts before installation.



**Disassembly steps**

- ▶D▶ 1. Snap ring
- ▶C▶ 2. Reaction plate
- ▶C▶ 3. Clutch disc
- ▶C▶ 4. Clutch plate
- ▶A▶▶B▶ 5. Snap ring
- ▶A▶▶B▶ 6. Spring retainer
- ▶A▶ 7. D-ring
- ▶A▶ 8. Return spring
- ▶A▶▶B▶ 9. Direct clutch piston
- ▶A▶▶B▶ 10. D-ring
- ▶A▶▶B▶ 11. D-ring
- ▶A▶▶B▶ 12. Direct clutch retainer

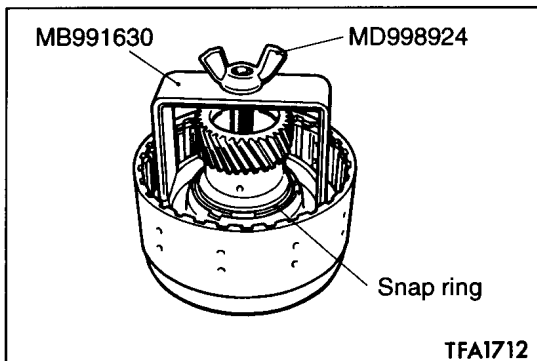
TRA1282

**DISASSEMBLY SERVICE POINT****◀▶ SNAP RING REMOVAL**

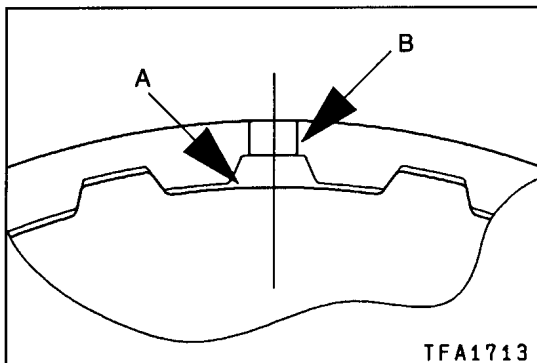
1. Set the special tools as shown in the illustration.
2. Compress the return spring, and remove the snap ring.

**ASSEMBLY SERVICE POINTS****▶◀ D-RING INSTALLATION**

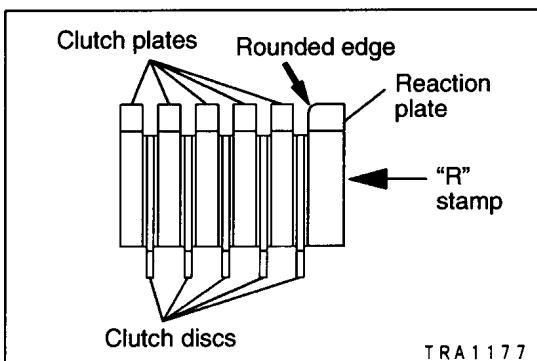
1. Apply ATF to the D-ring.
2. Install the D-ring in the direct clutch piston and spring retainer groove. Make sure that the D-ring is not twisted or damaged when installing.

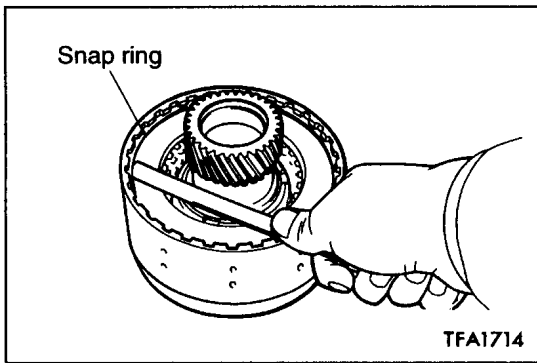
**▶◀ SNAP RING INSTALLATION**

1. Set the special tools as shown in the illustration.
2. Compress the return spring, and install the snap ring.

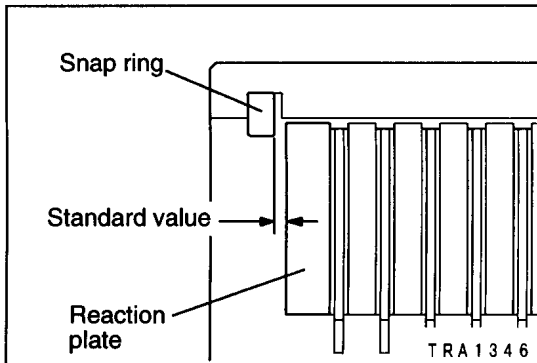
**▶◀ CLUTCH PLATE / CLUTCH DISC / REACTION PLATE INSTALLATION**

1. Alternately assemble the clutch plates and clutch discs in the reverse clutch retainer. Align the section having no teeth of the clutch plates (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).



**▶D◀ SNAP RING INSTALLATION**

1. Install the snap ring in the direct clutch retainer groove.




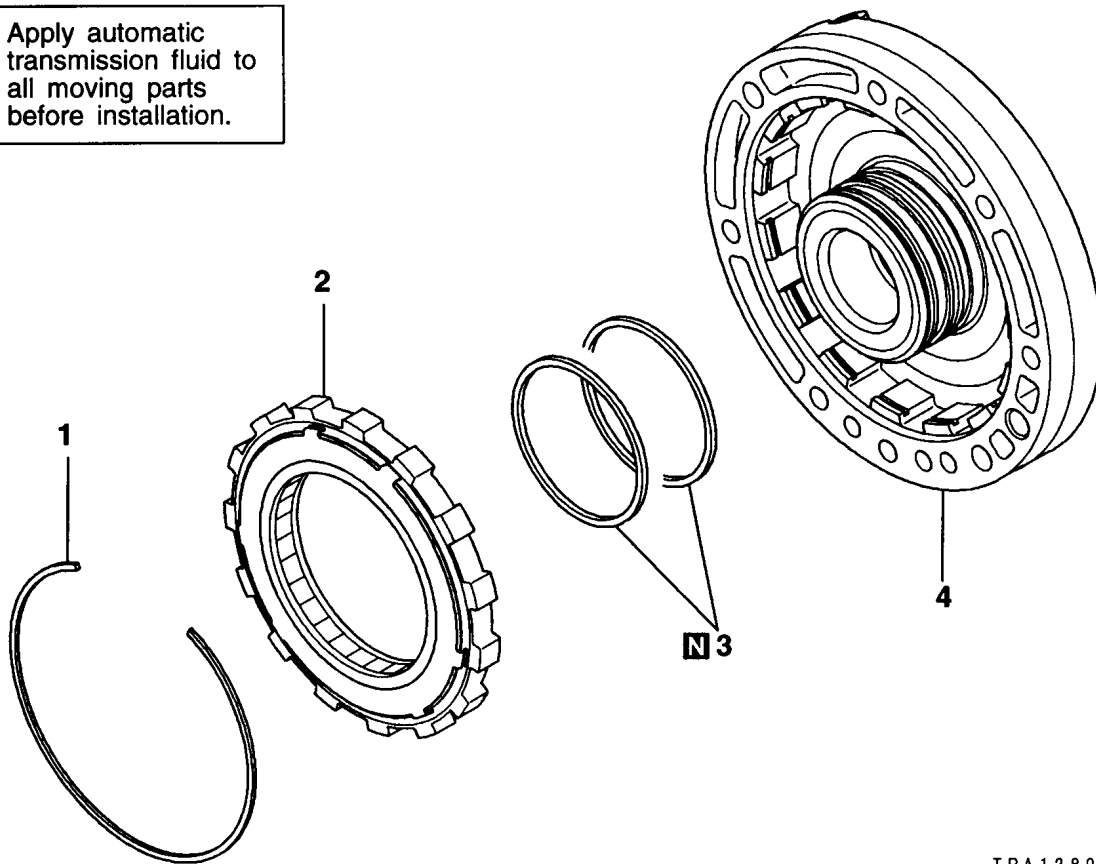
2. Press the entire periphery of the reaction plate with a force of 49 N, and confirm that the clearance between the snap ring and reaction plate (direct clutch end play) is the standard value. If the clearance is not at the standard value, select a suitable snap ring and adjust so that the clearance is within the standard value.

**Standard value: 1.0 – 1.2 mm**

# 14. OUTPUT SHAFT SUPPORT

## DISASSEMBLY AND ASSEMBLY

 Apply automatic transmission fluid to all moving parts before installation.

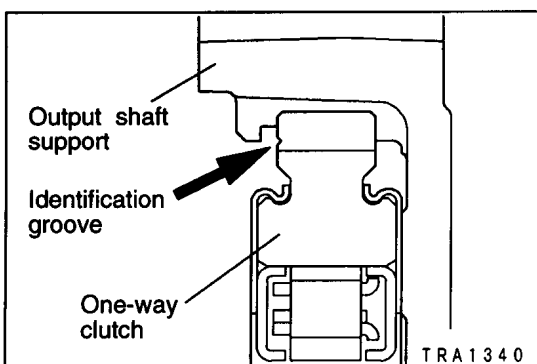


TRA1289

### Disassembly steps

- ▶A◀ 1. Snap ring
- ▶A◀ 2. One-way clutch

- 3. Seal ring
- 4. Output shaft support



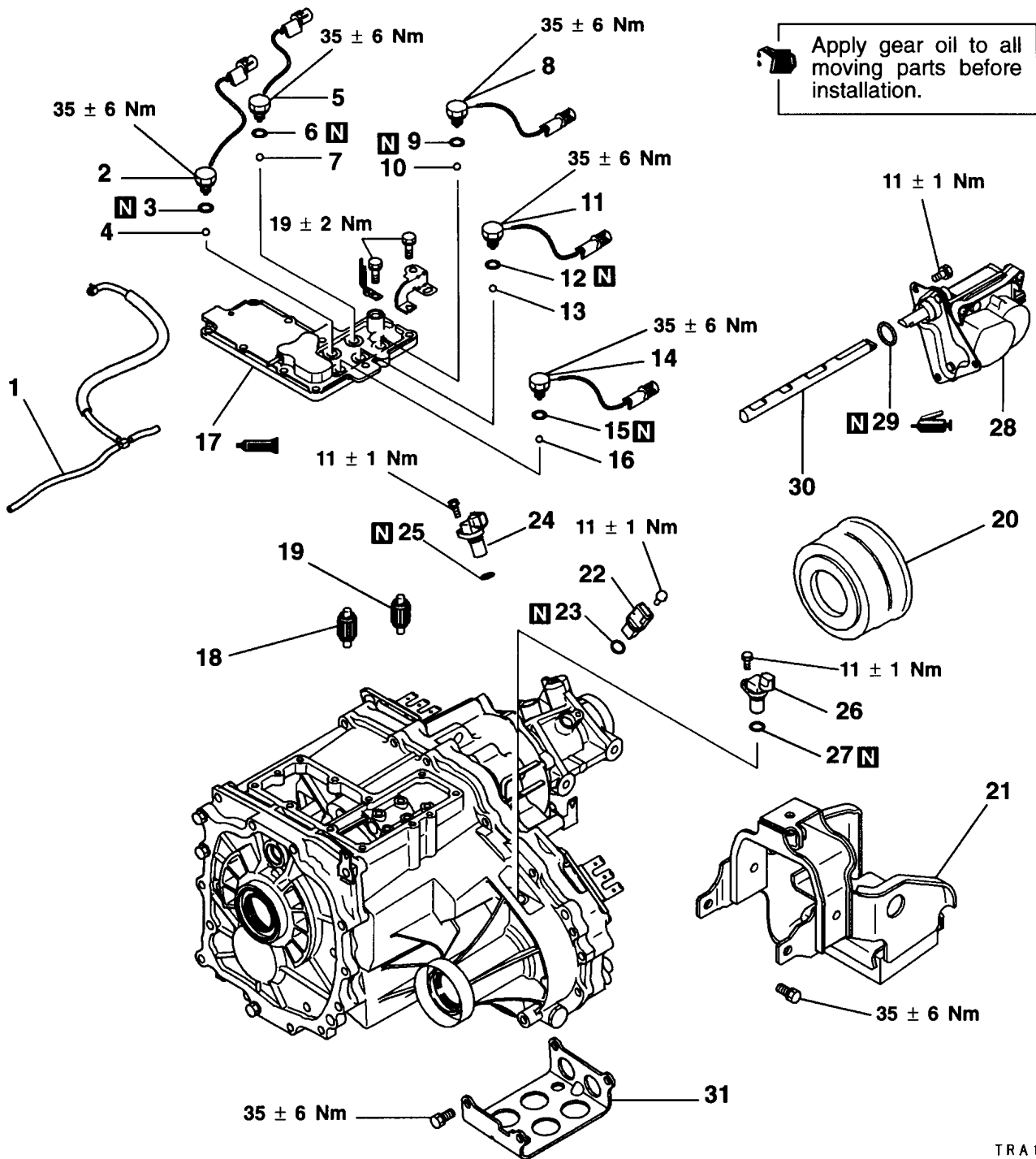
### ASSEMBLY SERVICE POINT

#### ▶A◀ ONE-WAY CLUTCH INSTALLATION

Install the one-way clutch in such a way that it will be oriented in the direction shown.

# 15. TRANSFER

## DISASSEMBLY AND ASSEMBLY

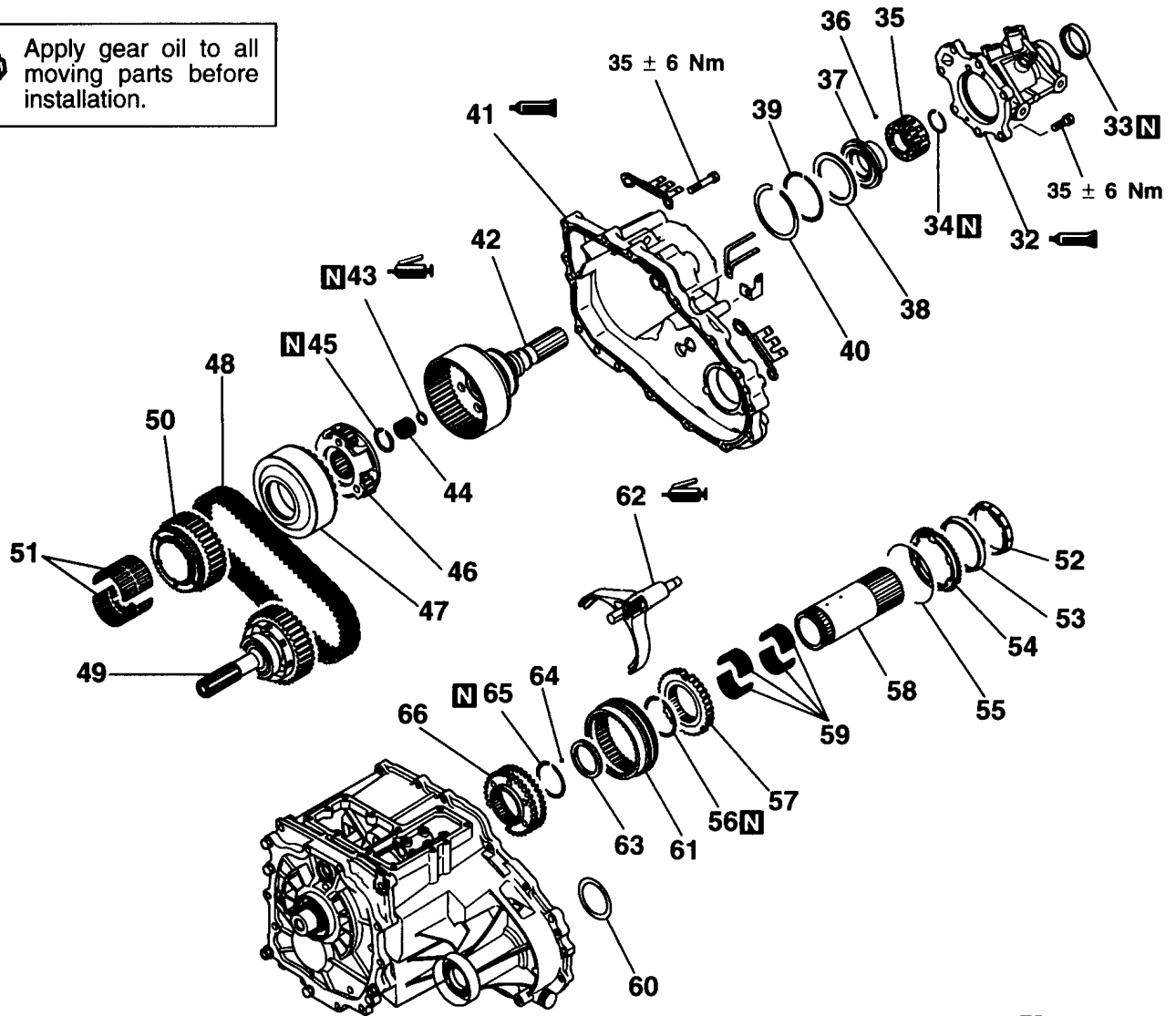


TRA1850

**Disassembly steps**

- |     |                                    |     |                           |
|-----|------------------------------------|-----|---------------------------|
| ▶W◀ | 1. Vacuum hose                     | ▶V◀ | 17. Transfer case cover   |
| ▶W◀ | 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 (EXP)     |
|     | 16. Steel ball                     |     |                           |

Apply gear oil to all moving parts before installation.

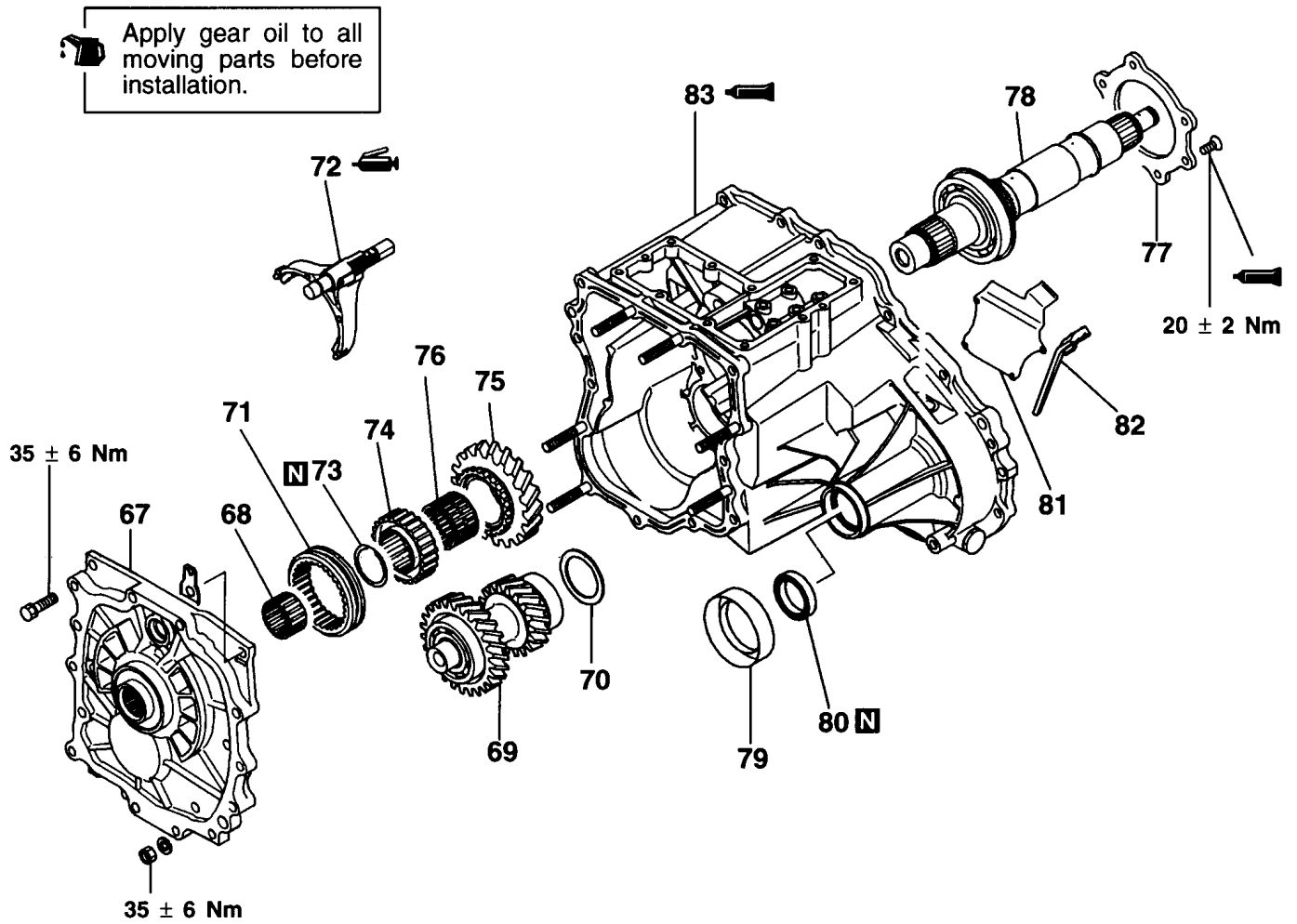


TRA1776

**Disassembly steps**

- |     |   |     |                             |
|-----|---|-----|-----------------------------|
| ▶S◀ | 32. Rear cover                            | ▶M◀ | 50. Drive sprocket          |
| ▶R◀ | 33. Oil seal                              |     | 51. Bearing                 |
|     | 34. Snap ring                             | ▶L◀ | 52. Synchronizer inner ring |
|     | 35. Sensor rotor                          | ▶L◀ | 53. Synchronizer cone       |
|     | 36. Steel ball                            | ▶L◀ | 54. Synchronizer outer ring |
|     | 37. Oil guide                             |     | 55. Synchronizer spring     |
| ▶Q◀ | 38. Spacer                                | ▶K◀ | 56. Snap ring               |
|     | 39. Snap ring                             |     | 57. 2-4WD clutch hub        |
| ▶P◀ | 40. Snap ring                             | ◀A▶ | 58. Sun gear                |
| ▶O◀ | 41. Chain cover                           |     | 59. Bearing                 |
| ▶N◀ | 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   |
| ▶M◀ | 49. Front output shaft                    |     |                             |



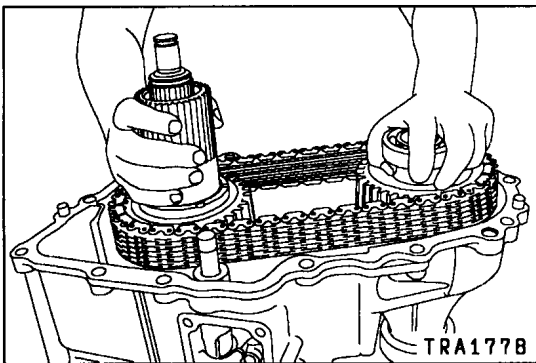


TRA1849

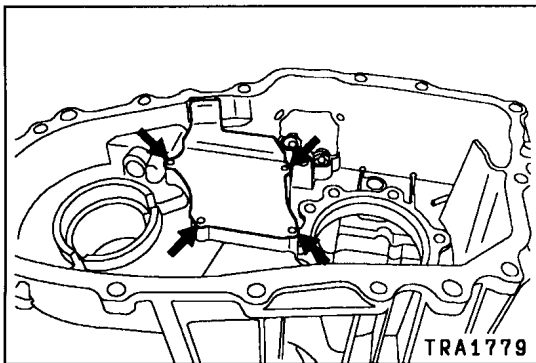
**Disassembly steps**

- ▶G◀ 67. Transfer case plate
- ▶E◀ 68. Bearing
- ▶F◀ 69. Counter shaft gear
- ▶E◀ 70. Spacer
- ▶E◀ 71. H-L clutch sleeve
- ▶E◀ 72. H-L shift fork
- ▶D◀ 73. Snap ring
- ▶E◀ 74. H-L clutch hub
- ▶E◀ 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
- ▶A◀ 81. Oil pool cover
- ▶A◀ 82. Oil guide
- ▶B◀ 83. Transfer case

**DISASSEMBLY SERVICE POINTS****◀A▶ CHAIN / FRONT OUTPUT SHAFT / SUN GEAR REMOVAL**

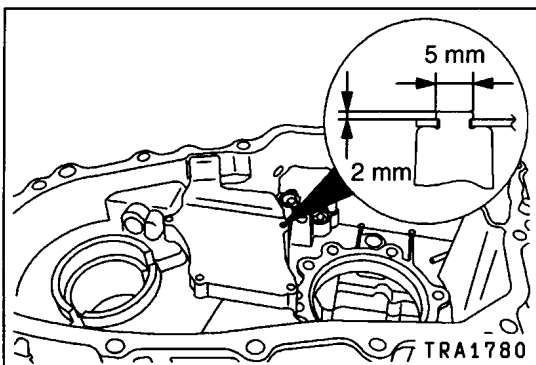
Remove the chain, front output shaft and sun gear as a set from the transfer case.

**◀B▶ OIL POOL COVER REMOVAL**

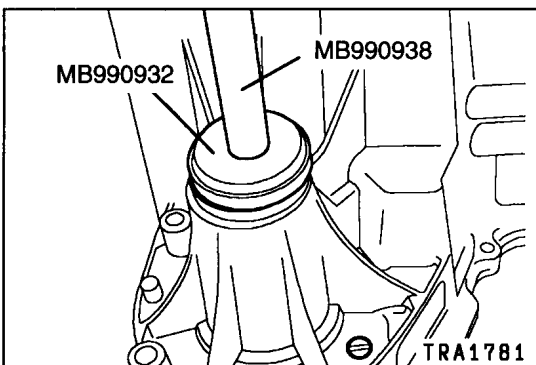
Unstake the positions shown in the illustration to remove the oil pool cover.

**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**

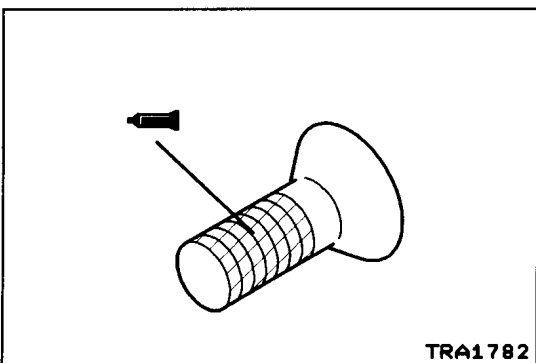
Install the oil pool cover on a new transfer case. Stake the projecting portions of the transfer so that the dimensions will be as illustrated.

**▶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

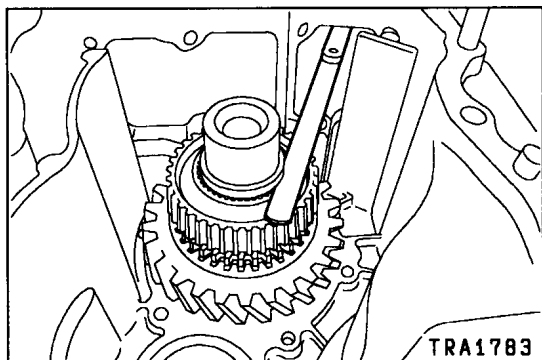
**▶C◀ REAR BEARING RETAINER INSTALLATION**

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:**

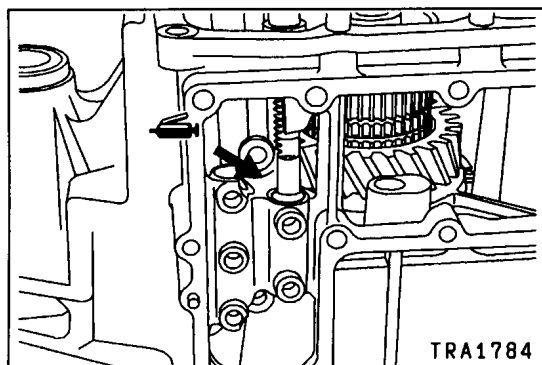
**MITSUBISHI** genuine sealant part No. MD997740 or equivalent



#### ►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**

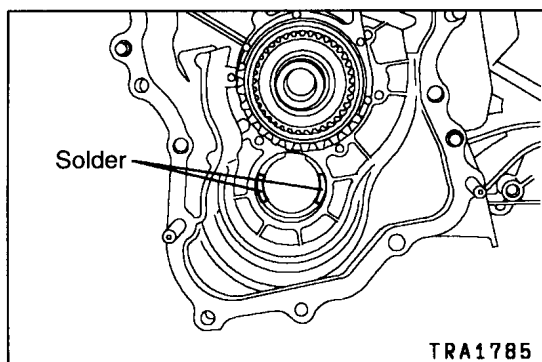


#### ►E◄ H-L SHIFT FORK / H-L CLUTCH SLEEVE INSTALLATION

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:**

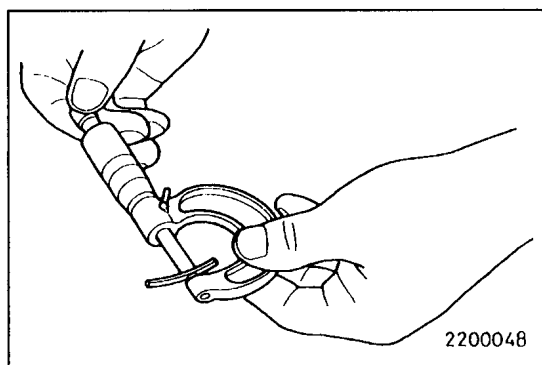
**MITSUBISHI genuine grease part No. 0101011 or equivalent**



#### ►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**

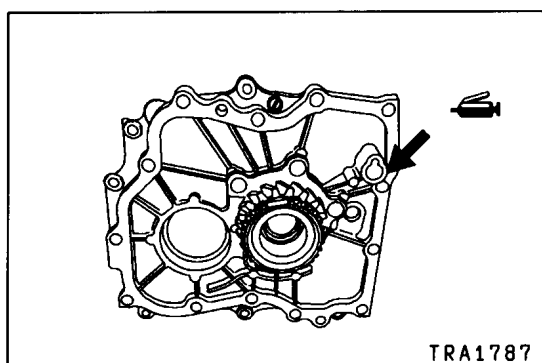


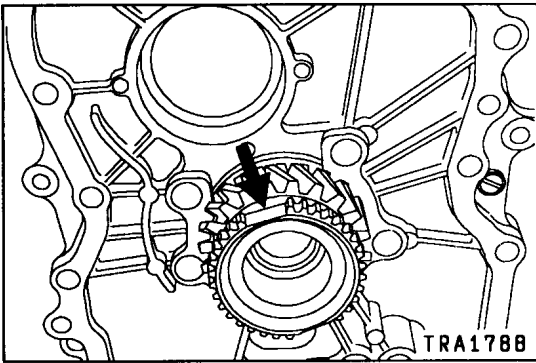
#### ►G◄ TRANSFER CASE PLATE INSTALLATION

1. Apply grease to the illustrated position of the high/low shift rail inserting portion of the transfer case plate.

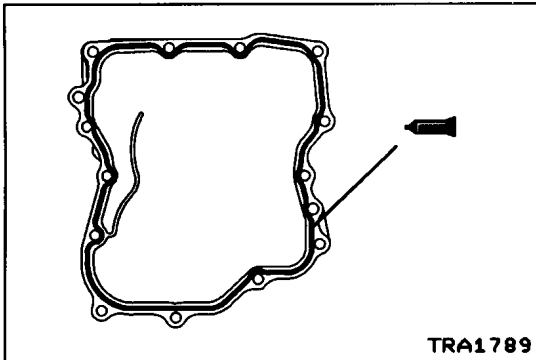
**Specified grease:**

**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**

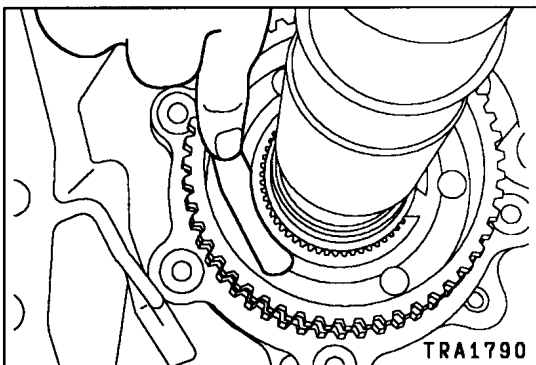
**Caution**

- 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**

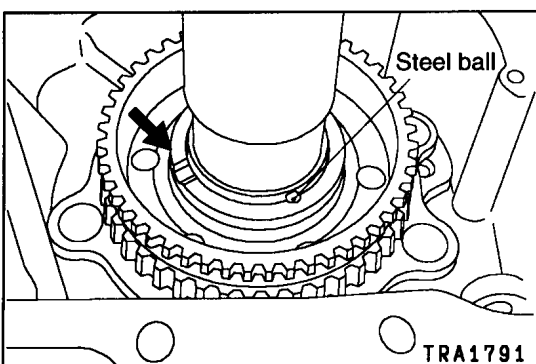
- If the sub gear does not readily come in mesh with the countershaft gear, rotate the transfer drive shaft, etc. to securely engage it.



**▶◀ SNAP RING INSTALLATION**

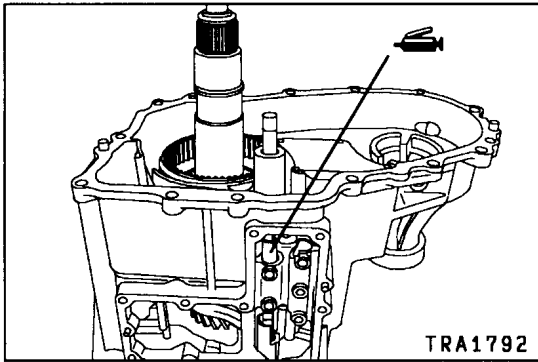
Select a proper snap ring so that the end play of the differential lock hub will have the standard value, and install it on the transfer drive shaft.

**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.

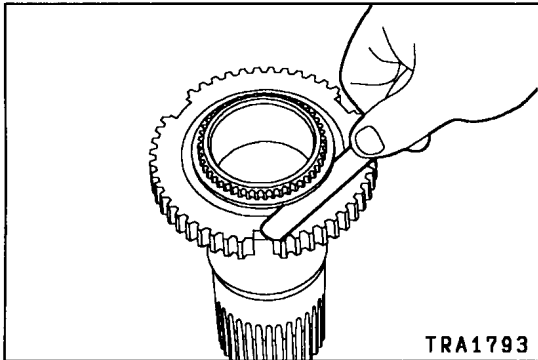


### ►J◄ 2-4WD SHIFT FORK / 2-4WD CLUTCH SLEEVE INSTALLATION

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:

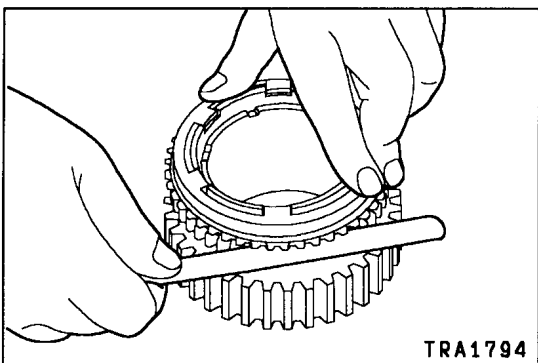
**MITSUBISHI** genuine grease part No. 0101011 or equivalent



### ►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**

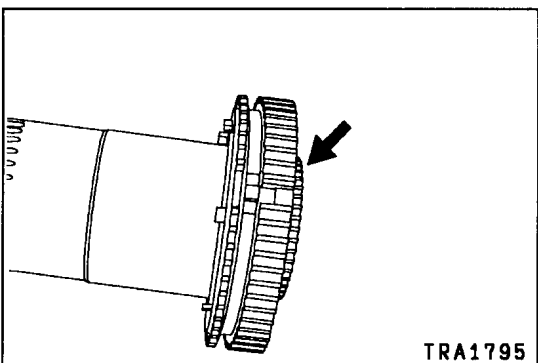


### ►L◄ SYNCHRONIZER OUTER RING / SYNCHRONIZER CONE / SYNCHRONIZER INNER RING INSTALLATION

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.

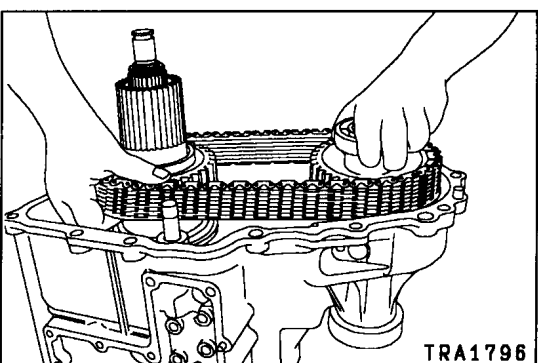
**Limit: 0.3 mm**

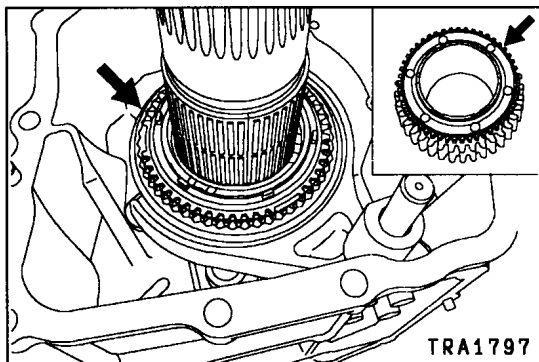
2. If the dimension is out of the limit value, replace them with a synchronizer ring set.
3. Apply gear oil to the synchronizer outer ring and synchronizer inner ring.
4. Line up the notched portion of the 2-4WD clutch hub with the projecting portion of the synchronizer ring and install the ring on the 2-4WD clutch hub.



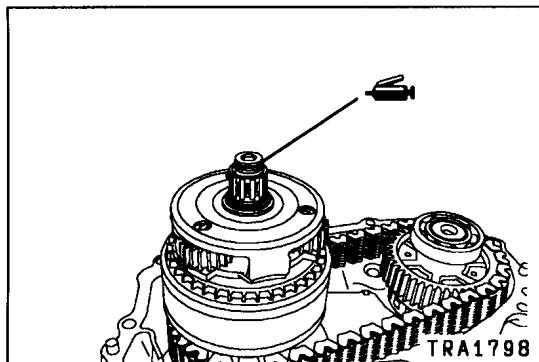
### ►M◄ DRIVE SPROCKET / FRONT OUTPUT SHAFT / CHAIN INSTALLATION

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.

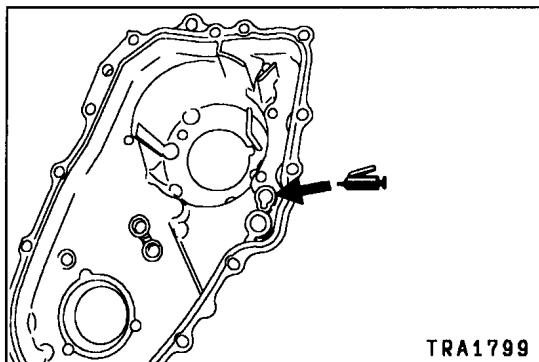


### ►◄ REAR OUTPUT SHAFT INSTALLATION

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

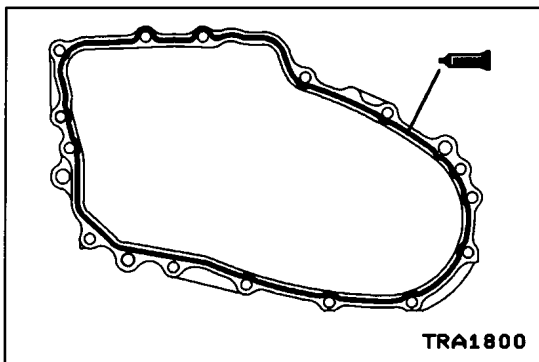


### ►◄ CHAIN COVER INSTALLATION

1. Apply grease to the indicated 2-4WD shift rail inserting portion.

#### Specified grease:

**MITSUBISHI** genuine grease part No. 0101011 or equivalent



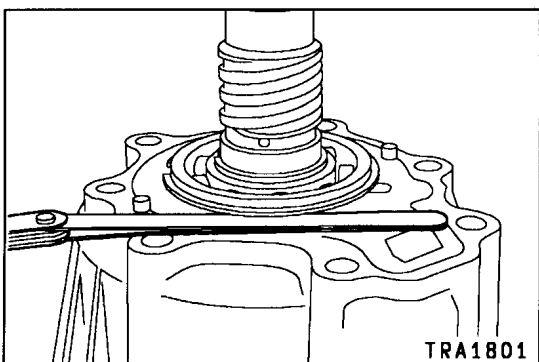
2. Apply a bead of sealant to the illustrated position of the chain cover.

#### 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.

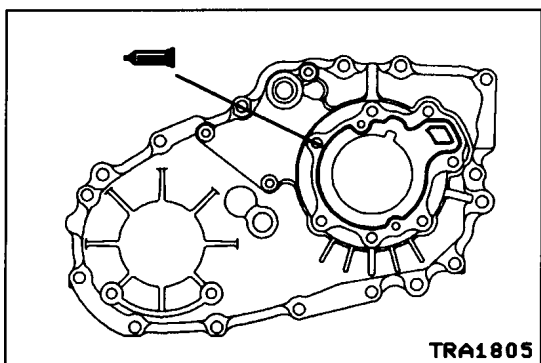
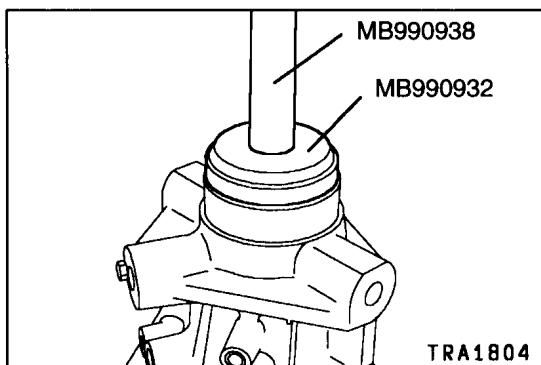
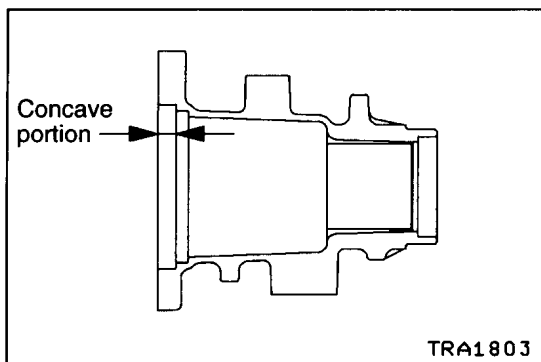
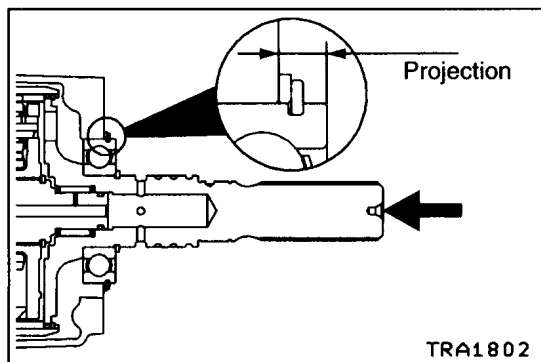


### ►◄ SNAP RING ISNTALLATION

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

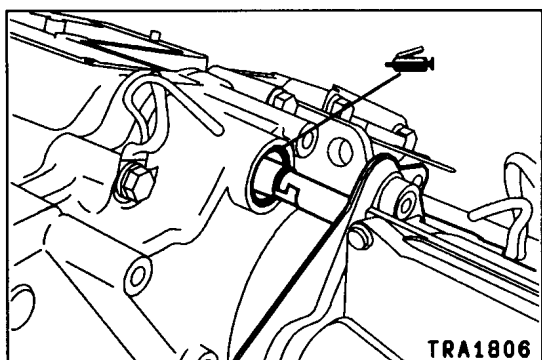
Apply sealant to the illustrated position of the chain cover.

##### 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.



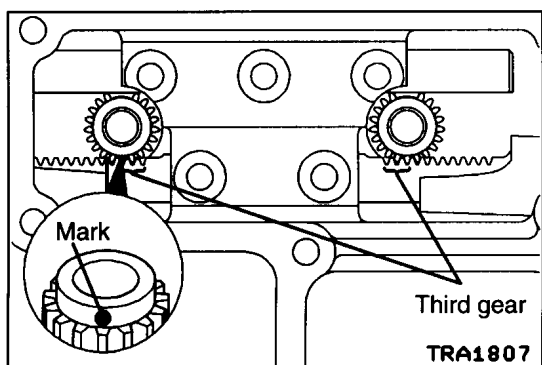
### ▶T◀ MAIN SHIFT RAIL / SHIFT ACTUATOR INSTALLATION

1. Apply grease to the O-ring.

#### Specified grease:

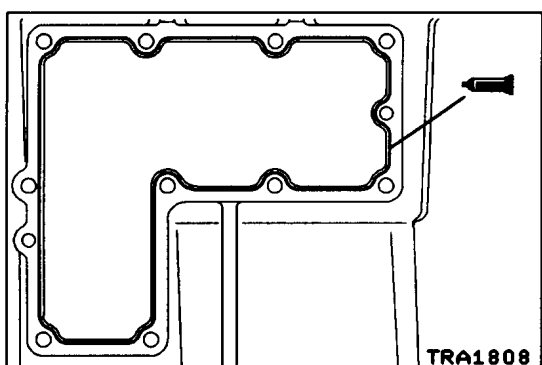
**MITSUBISHI genuine grease part No. 0101011 or equivalent**

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

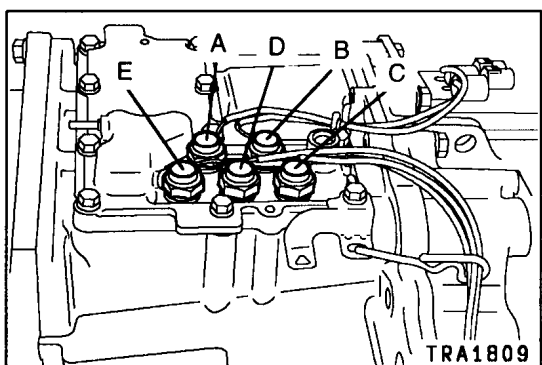
Apply sealant to the illustrated position of the transfer case cover.

#### Specified sealant:

**MITSUBISHI genuine sealant part No. MD997740 or equivalent**

#### Caution

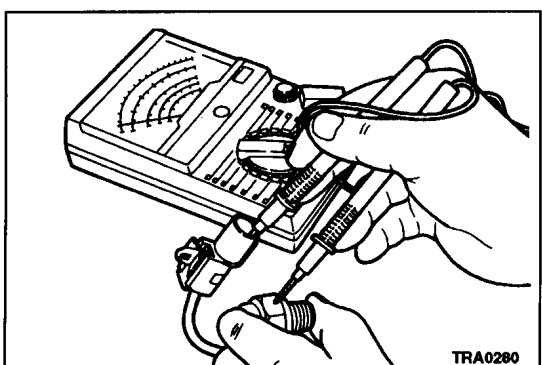
- Squeeze the sealant out evenly to make sure that it is not broken or excessively supplied.



### ▶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

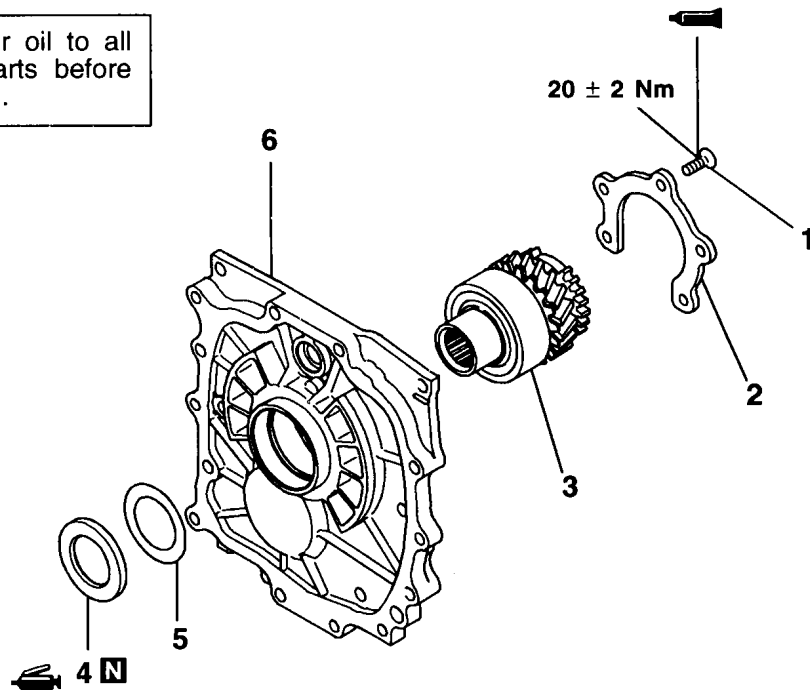
Check for the continuity between the connector terminal and switch body. Replace the switch if found faulty.

Switch state	Continuity
Switch end pressed	No
Switch end released	Yes



## 16. TRANSFER CASE PLATE DISASSEMBLY AND ASSEMBLY

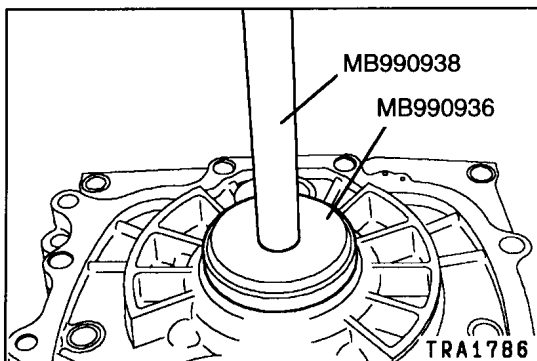
 Apply gear oil to all moving parts before installation.



TRA1848

### Disassembly steps

- ▶B◀ 1. Bolt
- 2. Bearing retainer
- 3. Transfer input gear
- ▶A◀ 4. Oil seal
- 5. Baffle plate
- 6. Transfer case plate



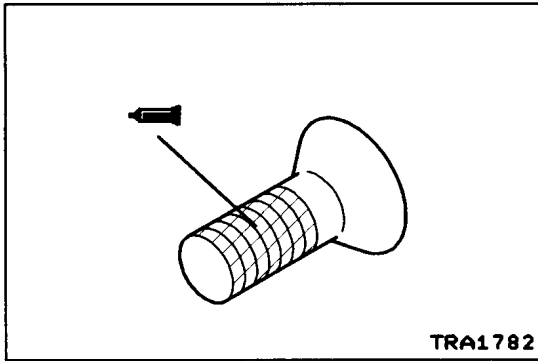
### ASSEMBLY SERVICE POINTS

#### ▶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:**

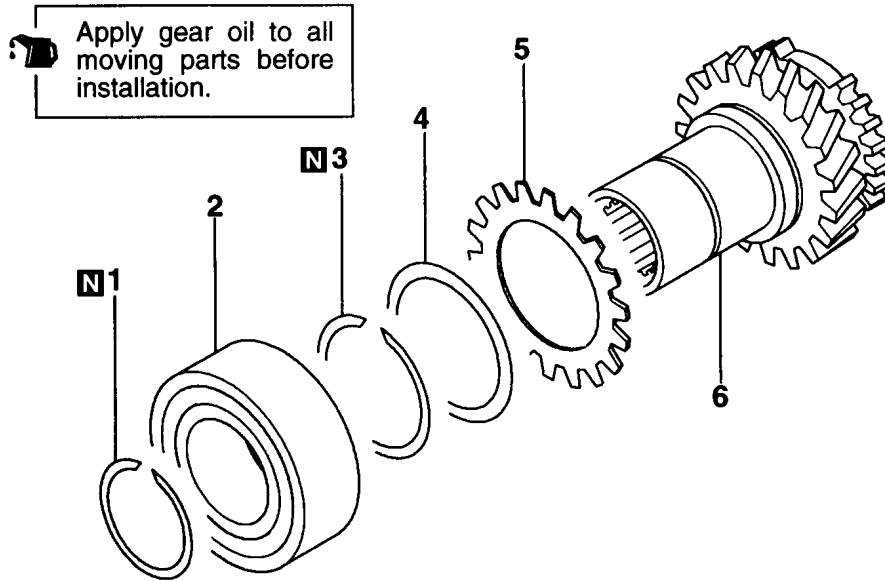
**MITSUBISHI genuine sealant part No. MD997740 or equivalent**

**NOTE**

New bolts are precoated with sealant, so sealant does not need to be applied.

# 17. INPUT GEAR

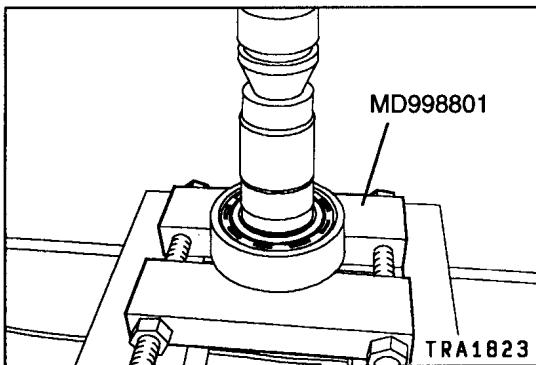
## DISASSEMBLY AND ASSEMBLY



TRA1822

### Disassembly steps

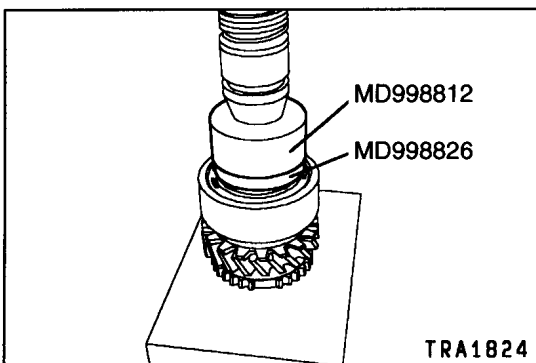
- ◀A▶ ▶B▶ 1. Snap ring
- ▶A▶ 2. Ball bearing
- ▶A▶ 3. Snap ring (some model)
- ▶A▶ 4. Cone spring (some model)
- ▶A▶ 5. Sub gear (some model)
- ▶A▶ 6. Transfer input gear



### DISASSEMBLY SERVICE POINT

#### ◀A▶ BALL BEARING REMOVAL

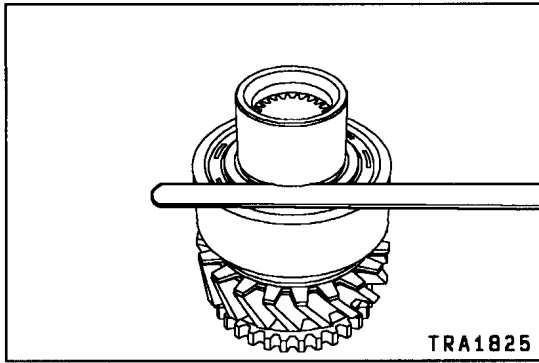
Use the special tool to remove the ball bearing.



### ASSEMBLY SERVICE POINTS

#### ▶A▶ BALL BEARING INSTALLATION

Use the special tools to install the ball bearing.


**▶B◀ SNAP RING INSTALLATION**

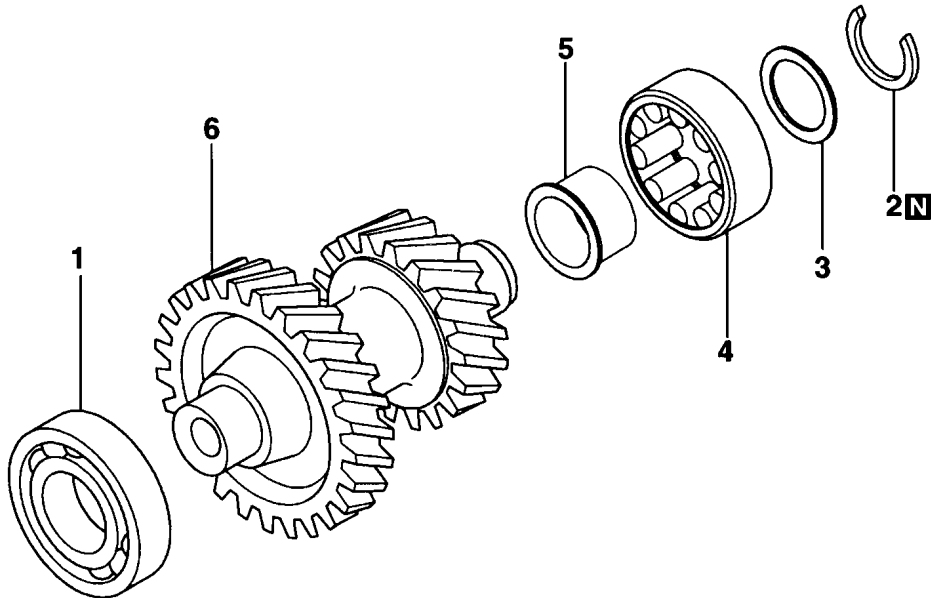
1. Install the thickest snap ring that can be fitted in the snap ring groove of the input gear.
2. Make sure that the ball bearing end play meets the standard value.

**Standard value: 0 – 0.06 mm**

# 18. COUNTERSHAFT GEAR







## DISASSEMBLY AND ASSEMBLY







 Apply gear oil to all moving parts before installation.

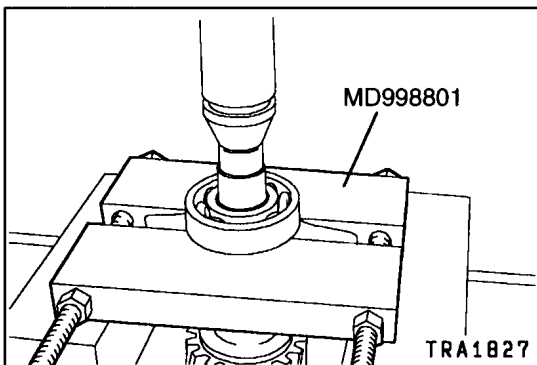


TRA1826

### Disassembly steps

-   1. Ball bearing
-   2. Snap ring
-   3. Spacer

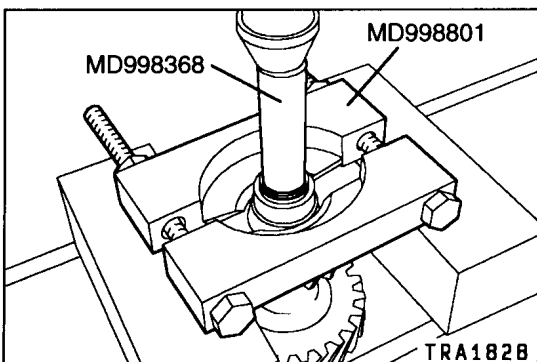
-   4. Roller bearing
-   5. Inner race
-   6. Countershaft gear



### DISASSEMBLY SERVICE POINTS

#### BALL BEARING REMOVAL

Use the special tool to remove the ball bearing.

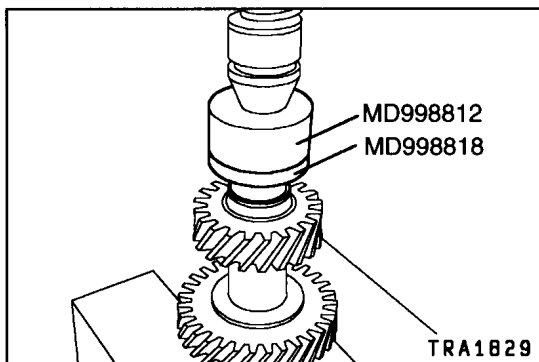


#### SPACER / ROLLER BEARING / INNER RACE REMOVAL

1. Remove the spacer and roller bearing.
2. Using the special tool, remove the inner race.

#### NOTE

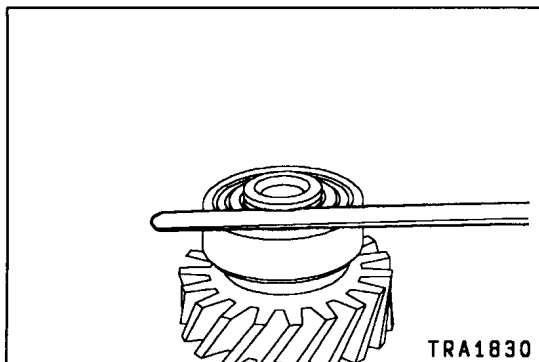
The removal sequence of roller bearing parts vary depending on the direction that the roller bearing was installed. In some cases, the inner race, roller bearing and spacer may have to be simultaneously removed.



### ASSEMBLY SERVICE POINTS

#### ▶A◀ INNER RACE / ROLLER BEARING / SPACER INSTALLATION

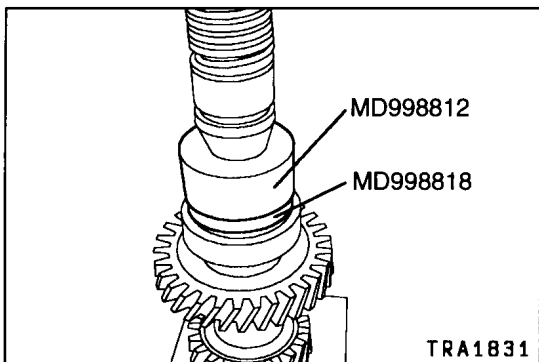
1. Using the special tool, install the inner race.
2. Install the roller bearing and spacer.



#### ▶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**

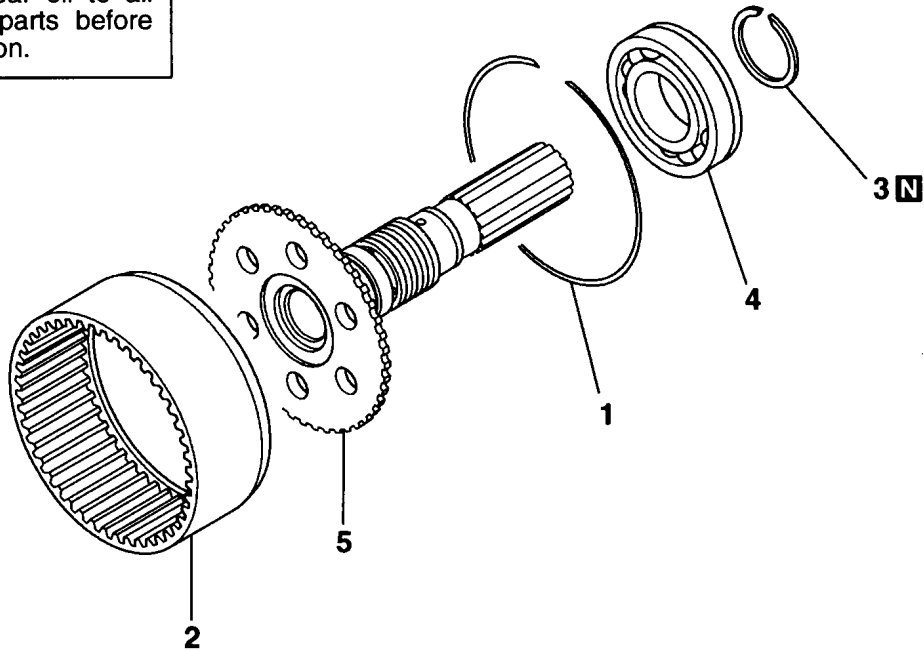


#### ▶C◀ BALL BEARING INSTALLATION

Use the special tools to install the ball bearing.

# 19. REAR OUTPUT SHAFT DISASSEMBLY AND ASSEMBLY

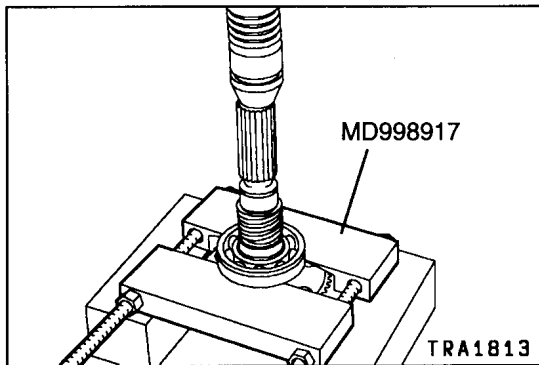
Apply gear oil to all moving parts before installation.



TRA1812

### Disassembly steps

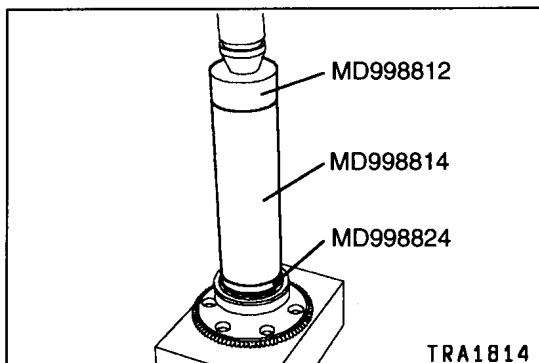
- ▶C◀ 1. Snap ring
- ▶B◀ 2. Annulus gear
- ▶A◀ ▶B◀ 3. Snap ring
- ▶A◀ ▶A◀ 4. Ball bearing
- 5. Rear output shaft



### DISASSEMBLY SERVICE POINT

#### ◀A▶ BALL BEARING REMOVAL

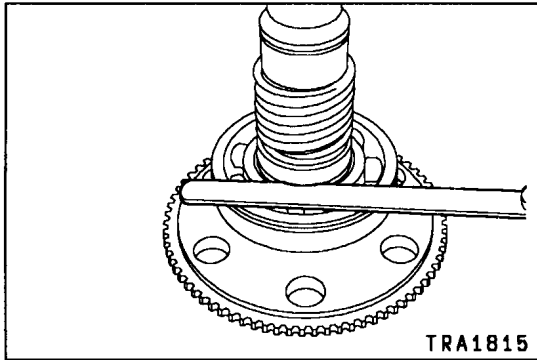
Use the special tool to remove the ball bearing.



### ASSEMBLY SERVICE POINTS

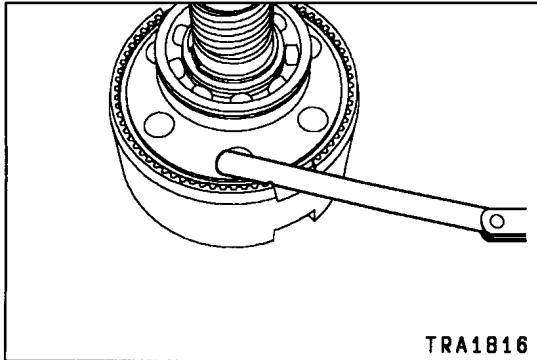
#### ▶A◀ BALL BEARING INSTALLATION

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.

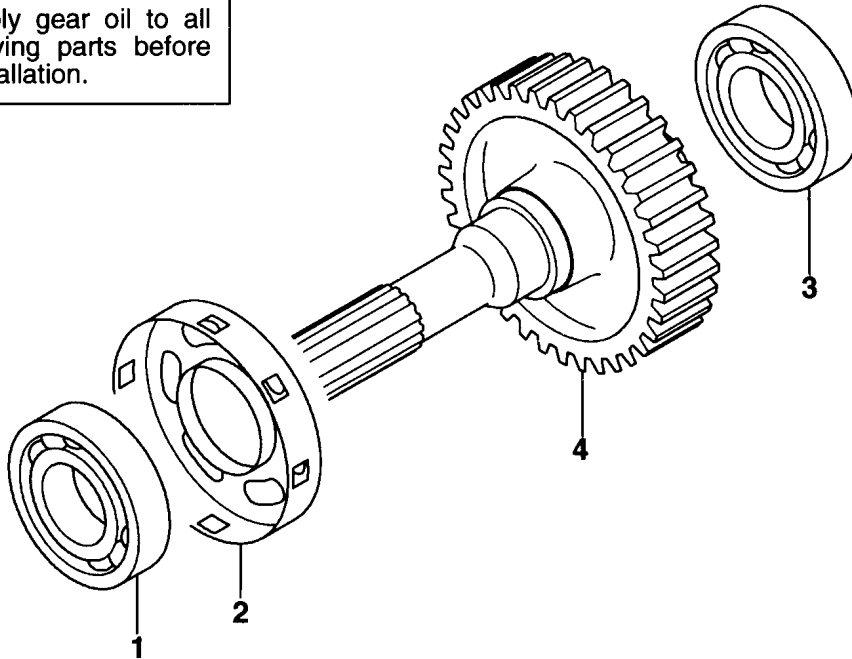
**Standard value: 0 – 0.08 mm**



## 20. FRONT OUTPUT SHAFT

### DISASSEMBLY AND ASSEMBLY

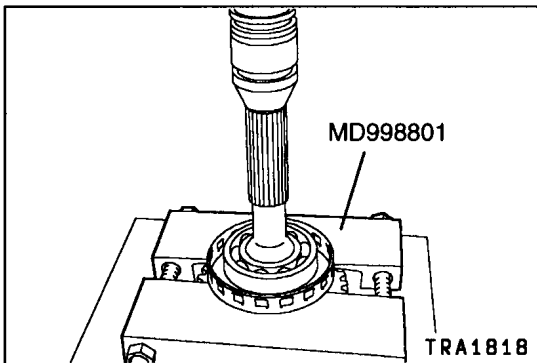
 Apply gear oil to all moving parts before installation.



TRA1817

#### Disassembly steps

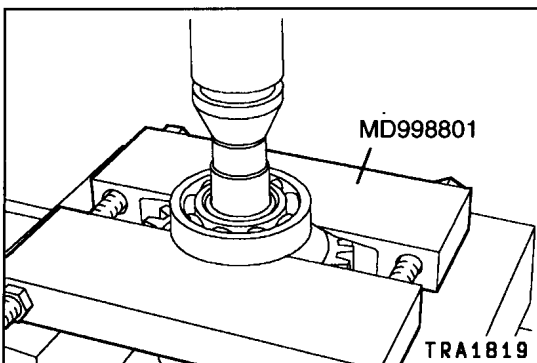
- ◀A▶ ▶B▶ 1. Ball bearing  
 2. Sensor rotor  
 ▶B▶ ▶A▶ 3. Ball bearing  
 4. Front output shaft



#### DISASSEMBLY SERVICE POINT

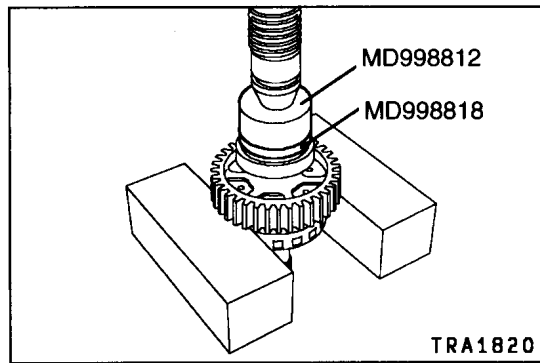
##### ◀A▶ BALL BEARING REMOVAL

1. Use the special tool to support the ball bearing.
2. Press the front output shaft with a press and remove the ball bearings.

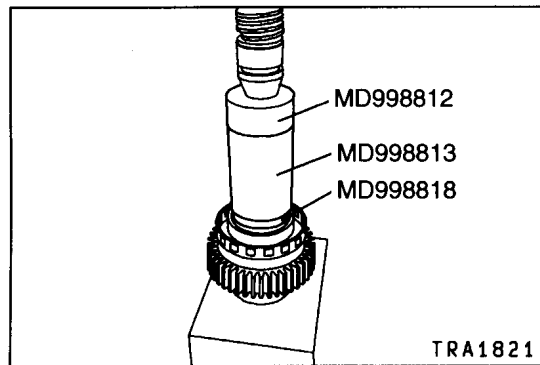


##### ▶B▶ BALL BEARING REMOVAL

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**

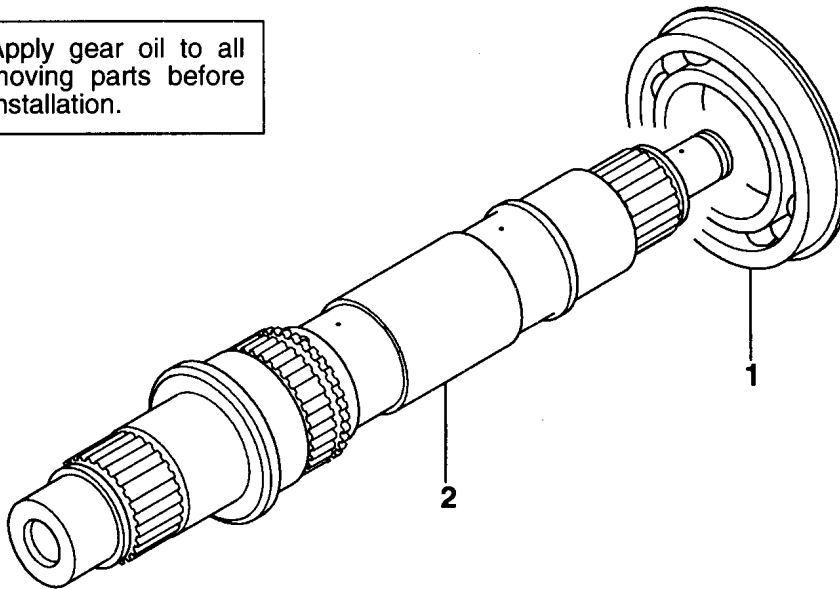
1. Use the special tool to support the front output shaft.
2. Use the special tools to install the ball bearing.

**▶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.

## 21. TRANSFER DRIVE SHAFT DISASSEMBLY AND ASSEMBLY

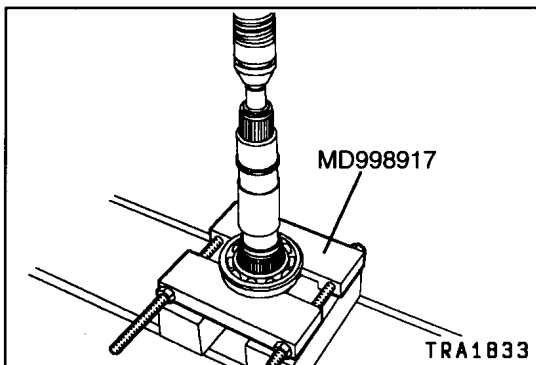
 Apply gear oil to all moving parts before installation.



TRA1832

### Disassembly steps

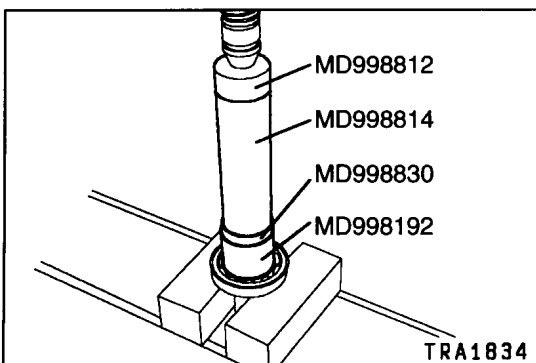
- ◀A▶ ▶A◀
1. Ball bearing
  2. Transfer drive shaft



### DISASSEMBLY SERVICE POINT

#### ◀A▶ BALL BEARING REMOVAL

Use the special tool to remove the ball bearing.




### ASSEMBLY SERVICE POINT

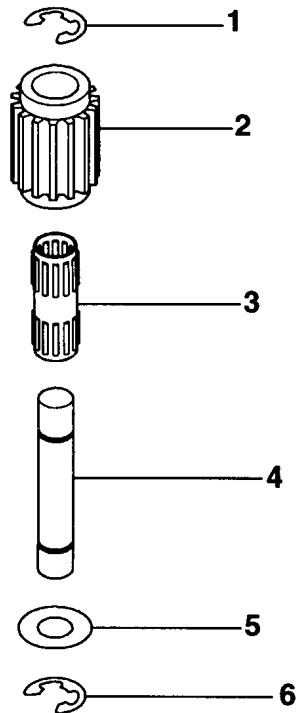
#### ▶A◀ BALL BEARING INSTALLATION

Use the special tools to install the ball bearing.

## 22. SHIFT RAIL DRIVE GEAR

### DISASSEMBLY AND ASSEMBLY

 Apply gear oil to all moving parts before installation.

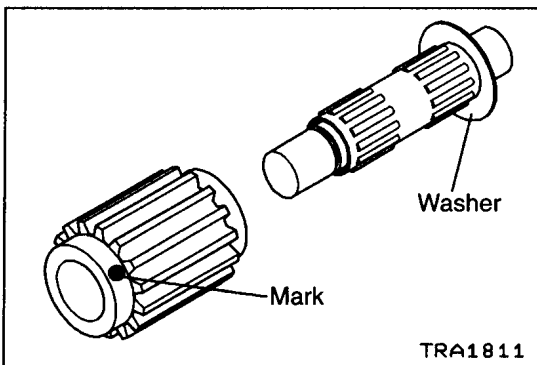


TRA1810

#### Disassembly steps

- ▶A◀
1. Snap ring
  2. Shift rail drive gear
  3. Bearing

4. Shift rail drive gear shaft
5. Washer
6. Snap ring




#### ASSEMBLY SERVICE POINT

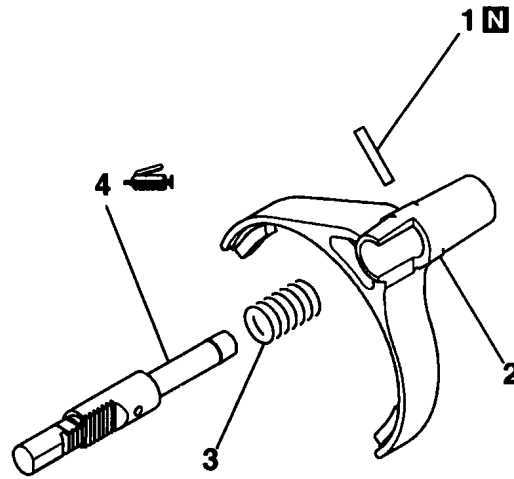
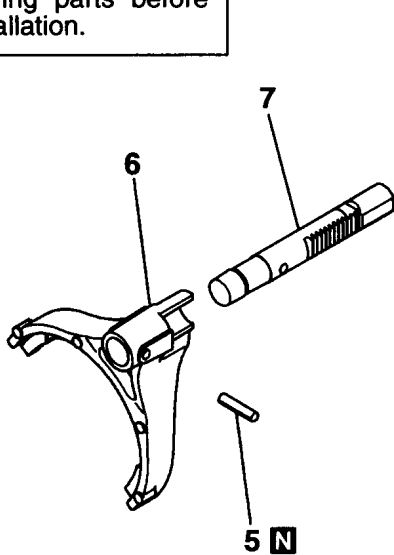
##### ▶A◀ SHIFT RAIL DRIVE GEAR INSTALLATION

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

### DISASSEMBLY AND ASSEMBLY

 Apply gear oil to all moving parts before installation.

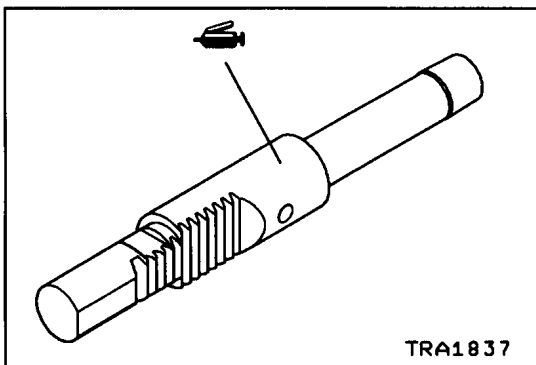


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#### Disassembly steps

- ▶B◀ 1. Spring pin
- ▶A◀ 2. 2-4WD shift fork
- 3. Spring

- ▶A◀ 4. 2-4WD shift rail
- ▶B◀ 5. Spring pin
- ▶A◀ 6. H-L shift fork
- ▶A◀ 7. H-L shift rail



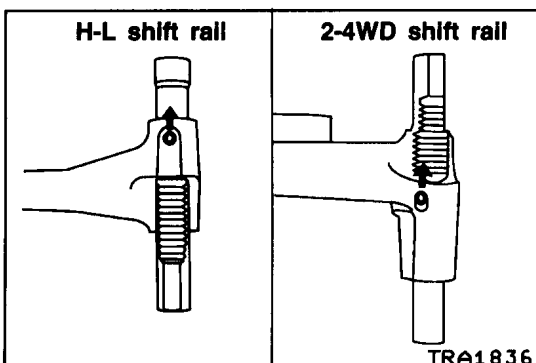
### ASSEMBLY SERVICE POINTS

#### ▶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.