

# AUTOMATIC TRANSMISSION R4A51, V4A51

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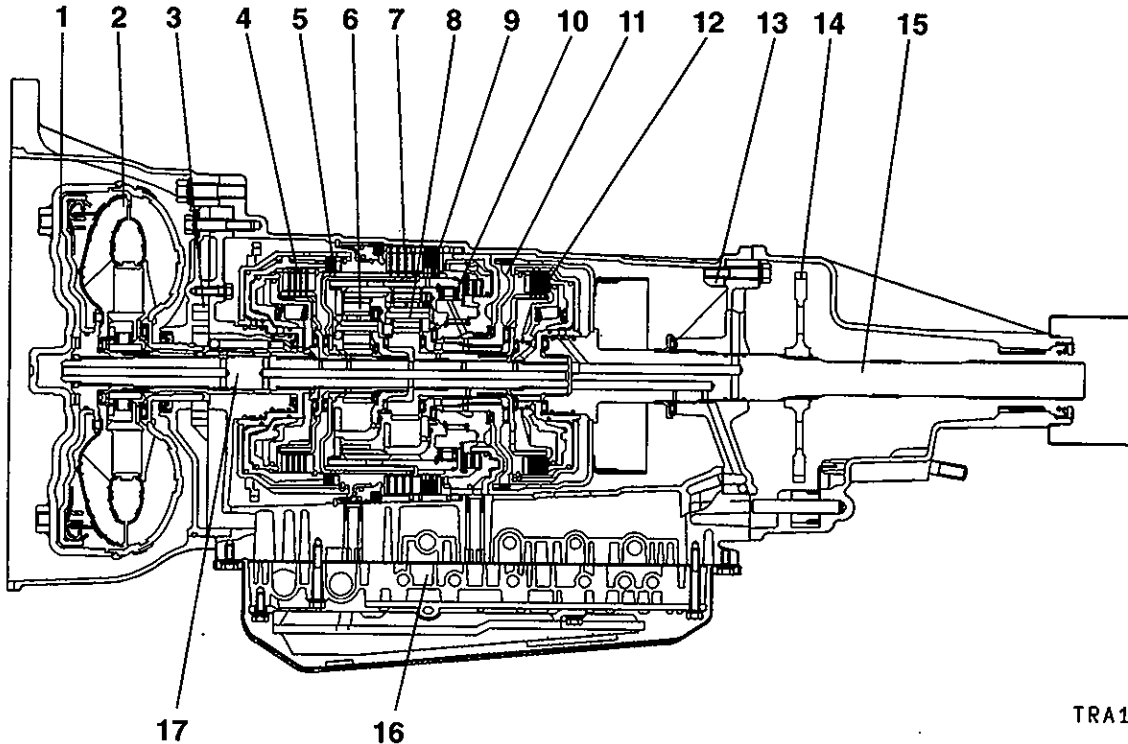
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## GENERAL INFORMATION

This transmission is the newly developed 4-speed automatic transmission that merges advanced electronic technology and mechanical technology.

- (1) A hydraulic balance mechanism is incorporated for the transmission clutch, allowing speed changes at ultra-high speeds to be handled.
- (2) The weight has been reduced by using precision sheet metal pressing of the clutch retainer, etc., and using aluminum die cast for the oil pump housing, etc.

### SECTIONAL VIEW <R4A51>



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

**TRANSMISSION MODEL TABLE – MODEL 2002**

Transmission models		Vehicle model	Engine model
EUR	V4A51-5-DHB3	K96W	6G72
	V4A51-5-DHB4	K96W	6G72
EXP	V4A51-7-QBB	V66W, V76W	4M40
	V4A51-7-DCB	V63W, V73W	6G72
	V4A51-7-DCB1	V63W, V73W	6G72
	V4A51-7-DCB2	V73W	6G72
	R4A51-5-DCB	K86W	6G72
	R4A51-5-DEB1	K86W	6G72
	V4A51-5-DHB3	K96W	6G72
	V4A51-5-DHB4	K96W	6G72
	V4A51-5-QIA	K97W	4M40
	V4A51-5-QIA1	K97W	4M40
MMAL	R4A51-4-DHB	K66T	6G72
	R4A51-4-DGB	K66T	6G72
	V4A51-4-DIB	K76T	6G72
	V4A51-5-DHB4	K96W	6G72

**TRANSMISSION MODEL TABLE – MODEL 2003**

Transmission models		Vehicle model	Engine model
EXP	V4A51-7-QBB	V66W, V76W	4M40
	V4A51-7-DCB	V63W, V73W	6G72
	V4A51-7-DCB1	V73W	6G72
	V4A51-7-DCB2	V73W	6G72
MMAL	R4A51-4-DHB	K66T	6G72
	R4A51-4-DGB	K66T	6G72
	R4A51-4-DIB	K76T	6G72

Thickness mm	Identification symbol	Part number
3.53	None	MR477966
3.59	None	MR477967
3.65	None	MR477968
3.71	None	MR486348
3.77	None	MR486349
3.83	None	MR486350
3.89	None	MR486351
3.95	None	MR486352

**SEALANTS****TRANSMISSION**

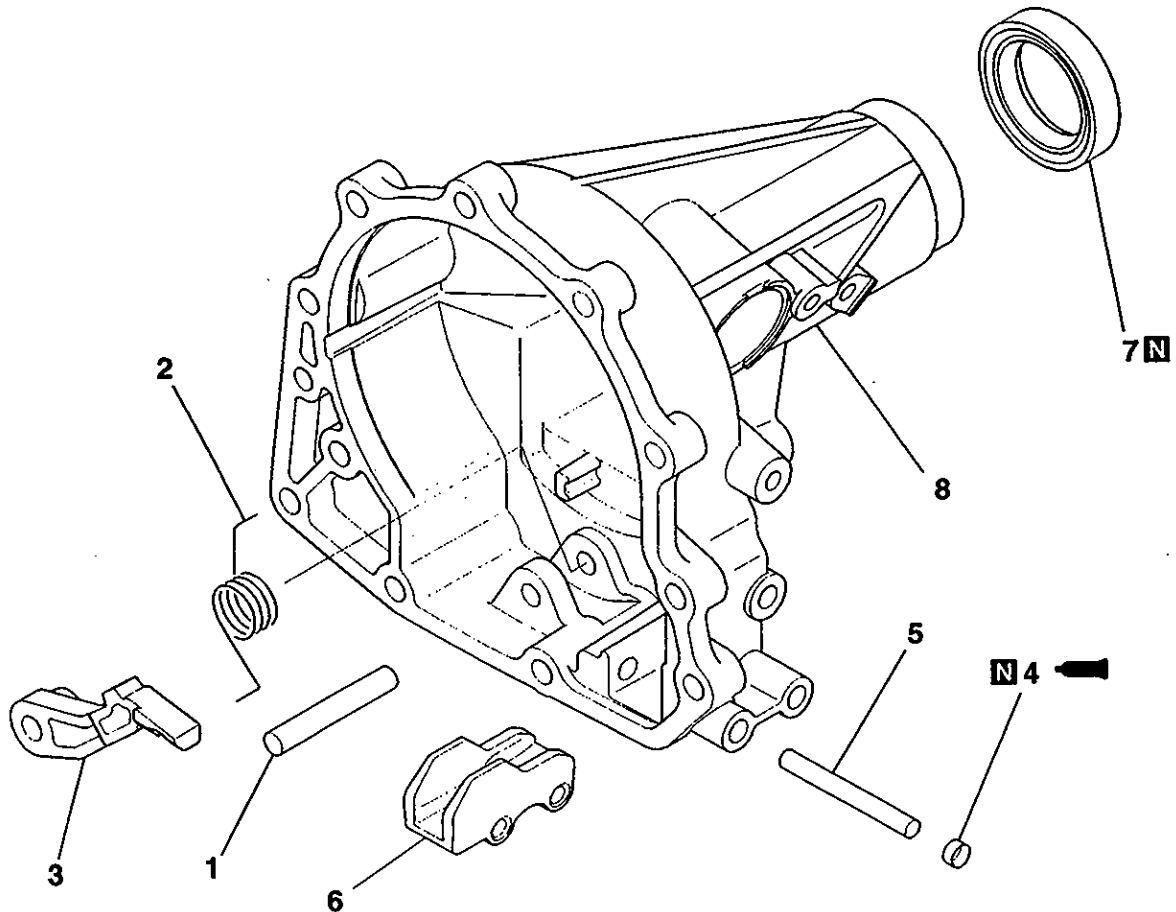
Item	Specified sealant
Oil pan	mitsubishi genuine sealant part No. MR166584 or equivalent
Transfer case adapter (transmission side)	mitsubishi genuine sealant part No. MR166584 or equivalent
Converter housing	mitsubishi genuine sealant part No. MR166584 or equivalent

**TRANSFER <V4A51>**

Item	Specified sealant
Bearing retainer mounting bolt	mitsubishi genuine sealant part No. MD997740 or equivalent
Chain cover	mitsubishi genuine sealant part No. MD997740 or equivalent
Control housing (Part time 4WD)	mitsubishi genuine sealant part No. MD997740 or equivalent
H-L shift rail plug (Part time 4WD)	3M™ AAD part No. 8672 or equivalent
Plug (Part time 4WD)	3M™ AAD part No. 8672 or equivalent
Rear cover	mitsubishi genuine sealant part No. MD997740 or equivalent
Support pin insertion (Part time 4WD)	3M™ AAD part No. 8672 or equivalent
Support pin thread (Part time 4WD)	mitsubishi genuine adhesive part No. MD160450 or equivalent
Transfer case plate	mitsubishi genuine sealant part No. MD997740 or equivalent
Transfer case cover (Super select 4WD II)	mitsubishi genuine sealant part No. MD997740 or equivalent
Sealing cap (Super select 4WD II)	3M™ AAD part No. 8672 or equivalent

# 5. EXTENSION HOUSING <R4A51>

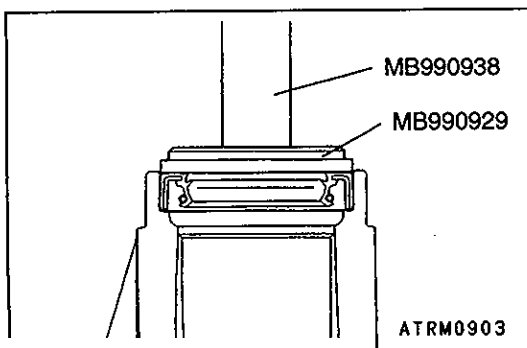
## DISASSEMBLY AND ASSEMBLY



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### Disassembly steps

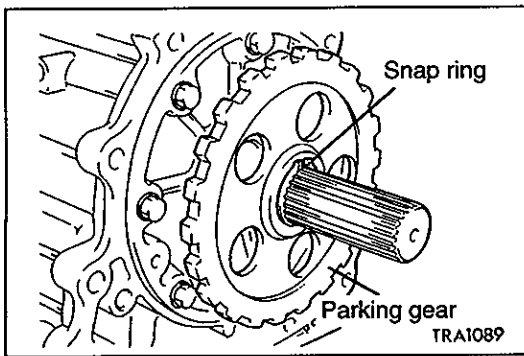
- ▶C◀ 1. Parking sprag shaft
- ▶C◀ 2. Parking sprag spring
- ▶C◀ 3. Parking sprag
- ▶B◀ 4. Sealing cap
- ▶B◀ 5. Parking roller support shaft
- ▶B◀ 6. Parking roller support
- ▶A◀ 7. Oil seal
- ▶A◀ 8. Extension housing



### ASSEMBLY SERVICE POINTS

#### ▶A◀ OIL SEAL INSTALLATION

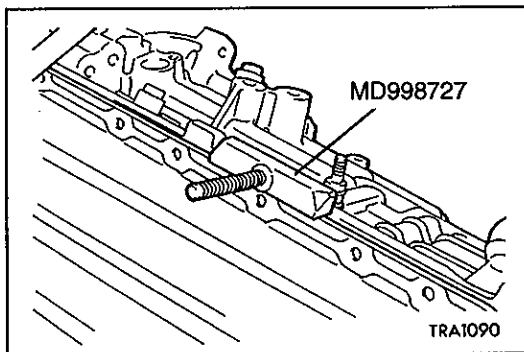
Use the special tools to install the oil seal.



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

**NOTE**

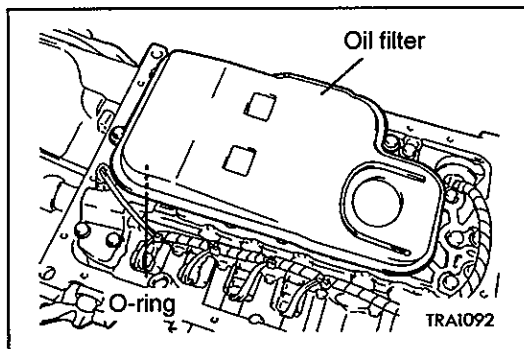
The parking gear may be removed without using a puller.



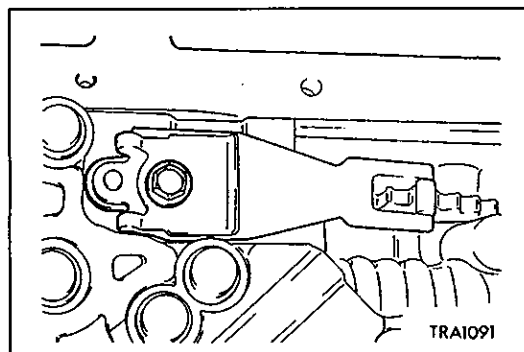
5. Remove the twenty oil pan mounting bolts and then remove the oil pan using the special tool.

**Caution**

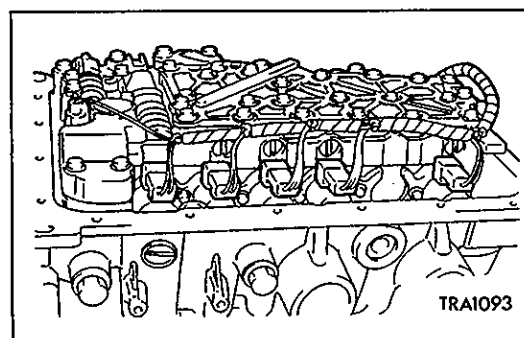
- Carefully hammer the special tool so that the oil pan mounting surface is not damaged.



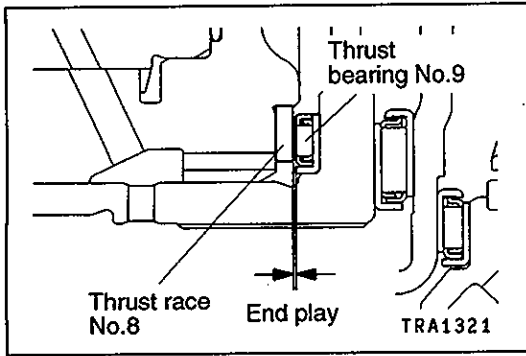
6. Remove the oil filter and O-ring.



7. Remove the detent spring.



8. Disconnect the harness connectors of the valve body.



- (3) Replace the thrust race No.8 installed in step 13 with a suitable one which can bring the end play of the output shaft to the standard value. Then, reassemble.

## NOTE

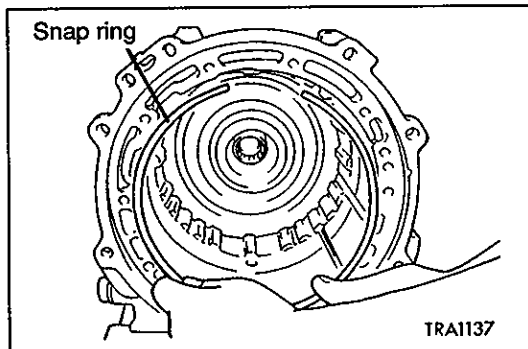
Refer to the thickness recorded in step 13.

**Standard value: 0.25 – 0.55 mm**

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

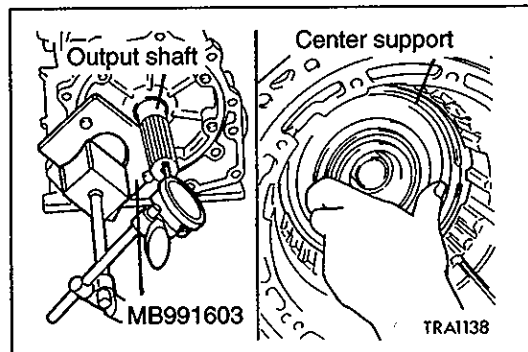
## NOTE

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



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

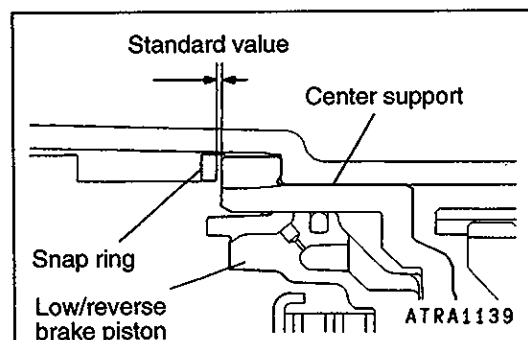
- (1) Install the snap ring which has been used for fixing the center support.



- (2) Alternately press in the output shaft and center support, and measure the end play of the center support.

## NOTE

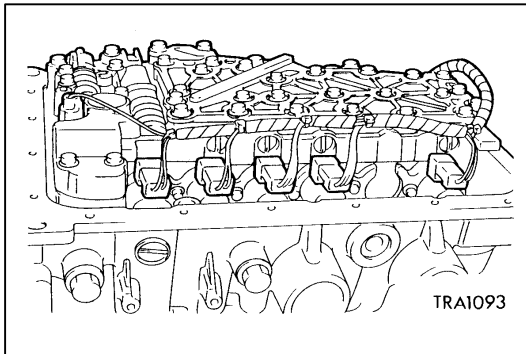
Be sure to press the output shaft in fully until the center support contacts the snap ring.



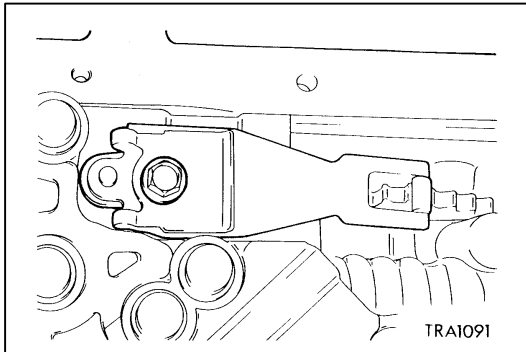
- (3) Replace the snap ring for fixing the center support installed in step 18 (1) with a suitable one so that the end play of the center support is at the standard value. Then, reassemble.

**Standard value: 0 – 0.16 mm**

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

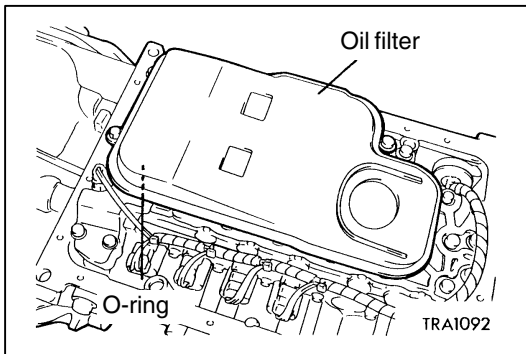


55. Connect the connector to the valve body.

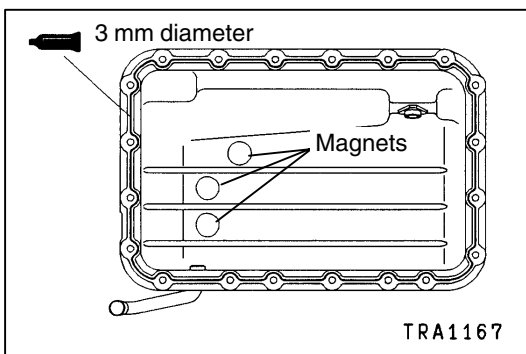


56. Install the detent spring.

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



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



58a. Install three magnets.

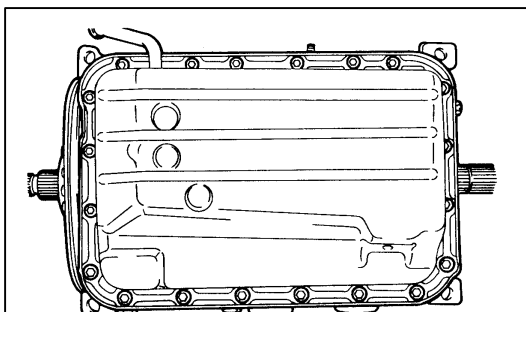
59. Apply sealant on the oil pan.

**Specified sealant:**

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

**Caution**

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



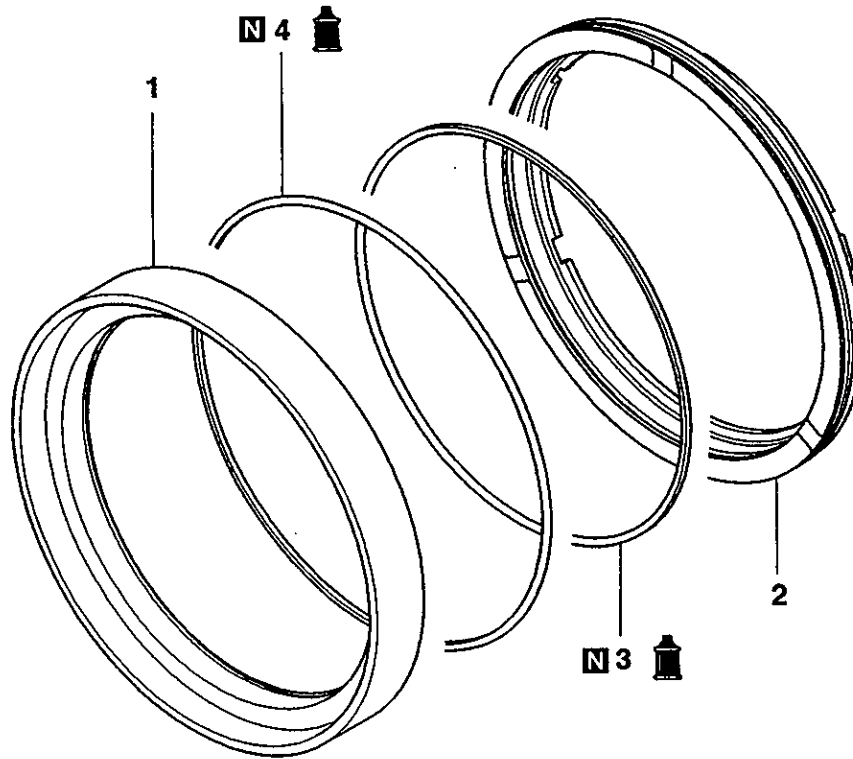
60. Install the oil pan.

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



## 9. SECOND BRAKE

### DISASSEMBLY AND ASSEMBLY



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#### Disassembly steps

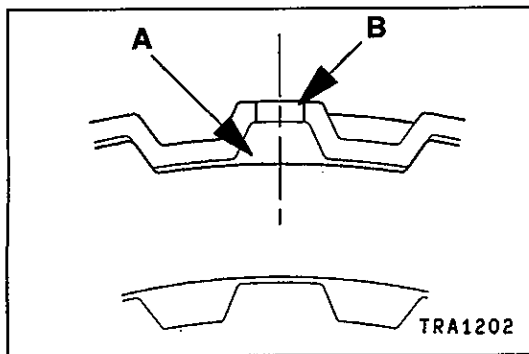
1. Second brake retainer
2. Second brake piston
3. D-ring
4. D-ring



#### ASSEMBLY SERVICE POINT

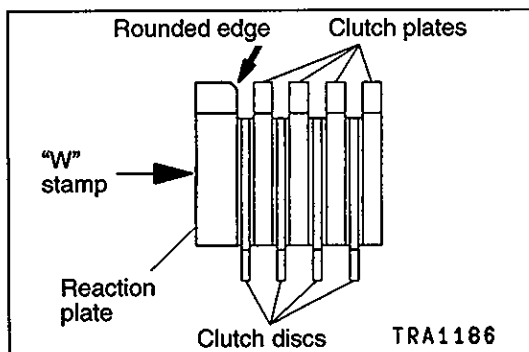
##### ►A◀ D-RING INSTALLATION

1. Apply ATF to the D-ring.
2. Install the D-ring in the groove on the outer and inner periphery of the piston. Make sure that the D-ring is not twisted or damaged when installing.

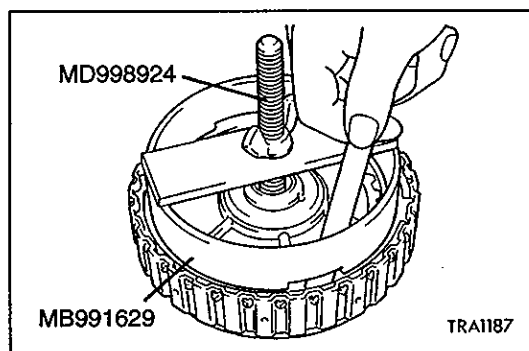


### ►D◄ CLUTCH PLATE / CLUTCH DISC / REACTION PLATE INSTALLATION

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



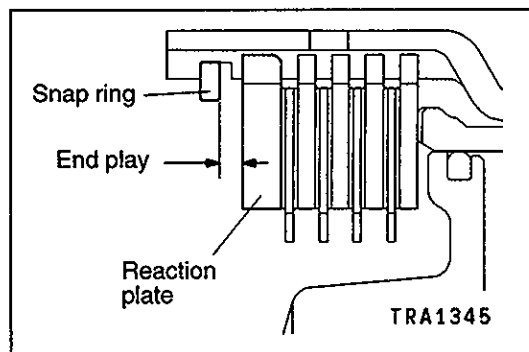
2. Install the reaction plate so that it is oriented as shown in the illustration. Assemble in the same manner as the clutch plate so that the section with no teeth ("A" in the illustration) matches the retainer hole ("B" in the illustration).

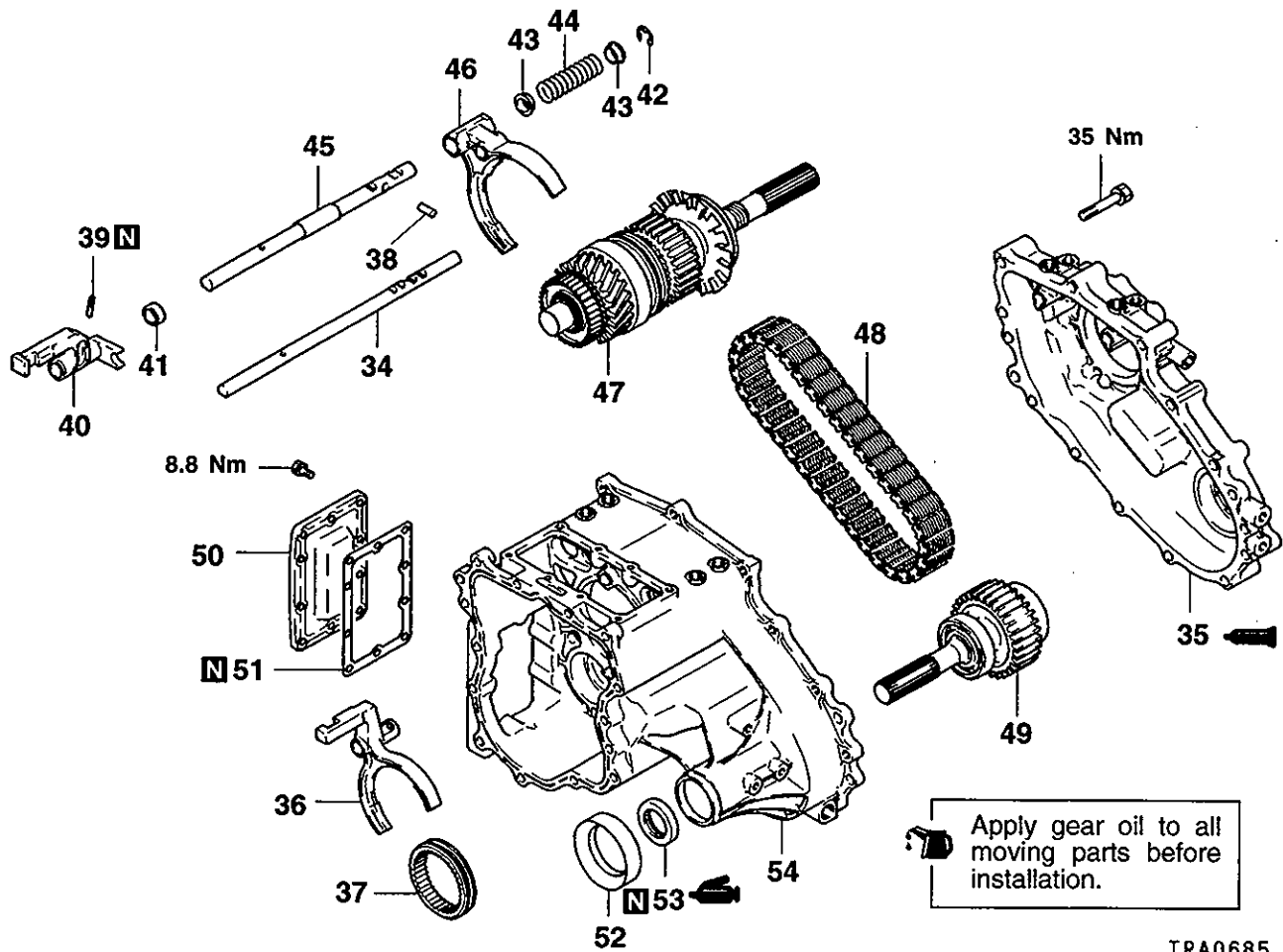


### ►E◄ SNAP RING INSTALLATION

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

**Standard value: 1.6 – 1.8 mm**





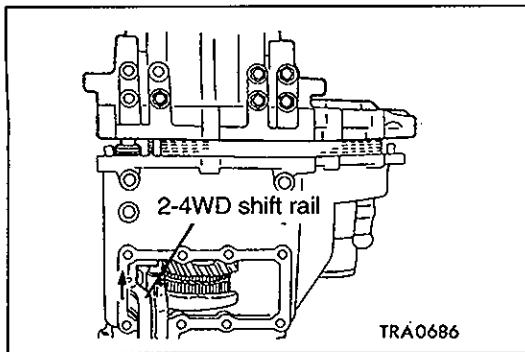
**Disassembly steps**

- ◀A▶ ▶E▶
- ◀A▶ ▶D▶
- ▶D▶
- ▶C▶

- 34. H-L shift rail
- 35. Chain cover
- 36. H-L shift fork
- 37. H-L clutch sleeve
- 38. Interlock plunger
- 39. Spring pin
- 40. 2-4WD shift lug
- 41. Distance piece
- 42. E-clip
- 43. Spring seat
- 44. Spring

- ▶B▶ ▶B▶
- ▶B▶ ▶B▶
- ▶B▶ ▶B▶

- 45. 2-4WD shift rail
- 46. 2-4WD shift fork
- 47. Rear output shaft
- 48. Chain
- 49. Front output shaft
- 50. Side cover
- 51. Side cover gasket
- 52. Dust seal guard
- ▶A▶ 53. Oil seal
- 54. Transfer case



## DISASSEMBLY SERVICE POINTS

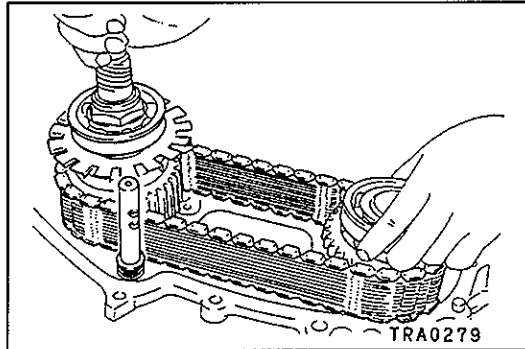
### ◀A▶ H-L SHIFT RAIL / CHAIN COVER REMOVAL

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

#### NOTE

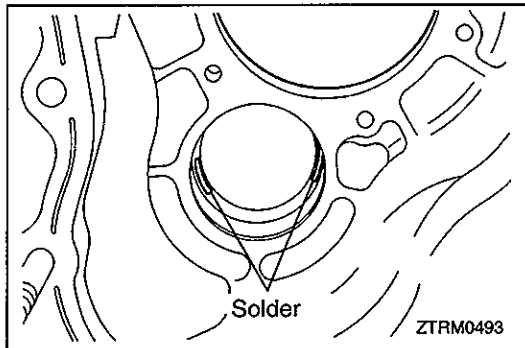
If the 2-4WD shift rail is at the 2WD position, the chain cover cannot be removed because interlock is actuated.

2. Remove the chain cover, and then remove the H-L shift rail.



### ◀B▶ REAR OUTPUT SHAFT / CHAIN / FRONT OUTPUT SHAFT REMOVAL

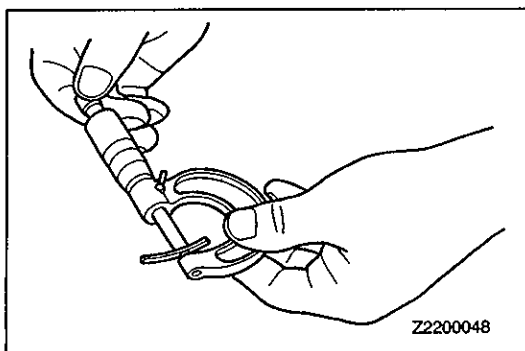
Remove the rear output shaft, chain and front output shaft as a set.



## ADJUSTMENT BEFORE ASSEMBLY

### SPACER SELECTION FOR ADJUSTMENT OF COUNTERSHAFT GEAR END PLAY

1. Place pieces of solder (approximately 10 mm in length and 1.6 mm in diameter) in the transfer case housing as shown.
2. Install the countershaft gear into the transfer case.
3. Install the transfer case plate and tighten the bolts.

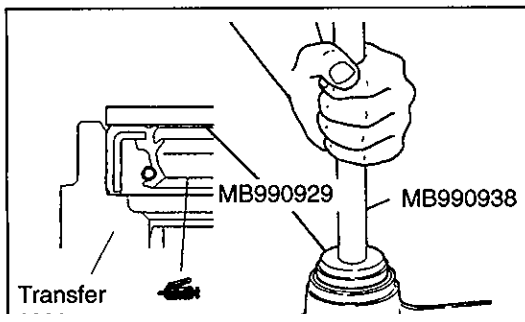


4. Using a micrometer, measure the thickness of the crushed solder. Based on the result, select a spacer which adjusts the end play to the standard value shown below:

**Standard value: 0 – 0.15 mm**

#### NOTE

If the solder is not crushed, repeat steps 1 and 2 using thicker pieces of solder.



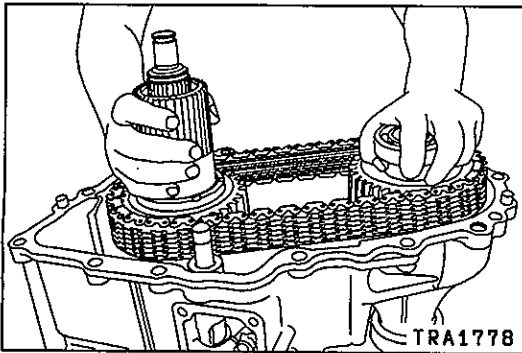
## ASSEMBLY SERVICE POINTS

### ▶A◀ OIL SEAL INSTALLATION

1. Use the special tools to install the oil seal.
2. Apply grease to the lip of the oil seal.

#### Specified grease:

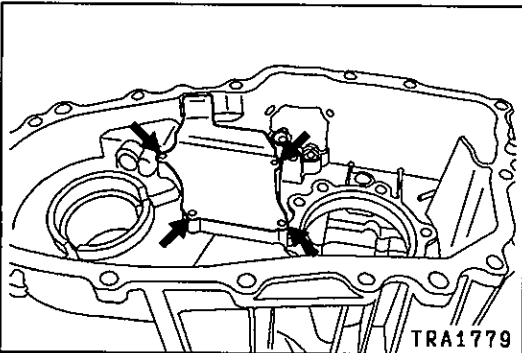
**MITSUBISHI genuine grease Part No. 0101011 or equivalent**



**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.

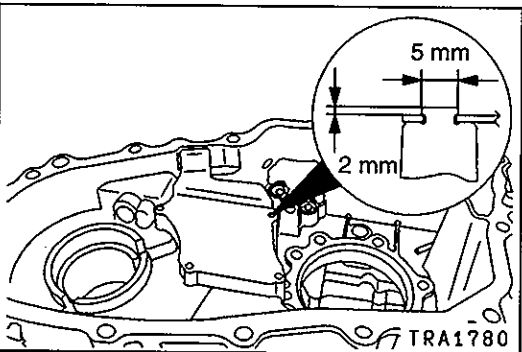


**◀B▶ OIL POOL COVER REMOVAL**

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

**Caution**

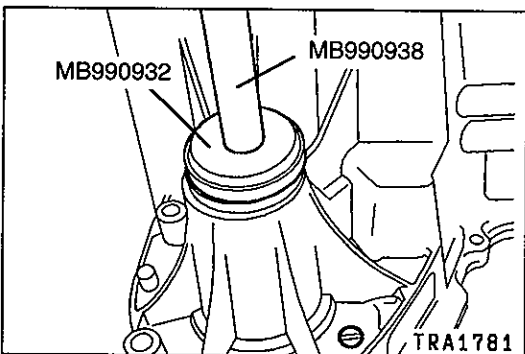
- The oil pool cover normally does not require disassembly. Once it is removed, the transfer case cannot be reused.



**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.

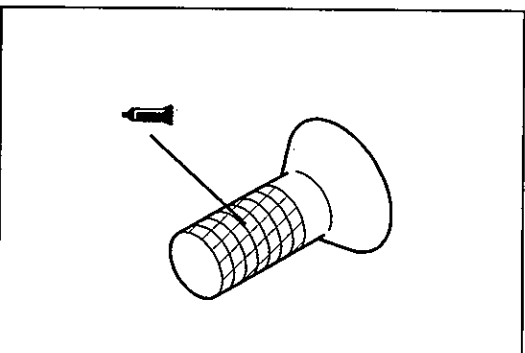


**▶B◀ OIL SEAL INSTALLATION**

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**



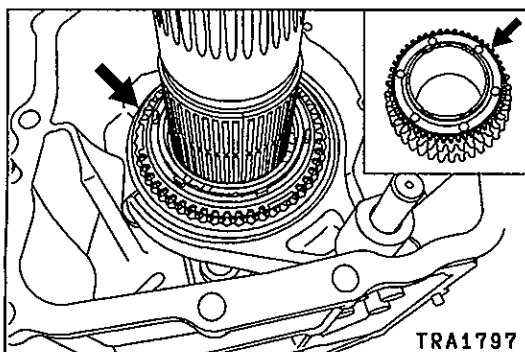
**▶C◀ REAR BEARING RETAINER INSTALLATION**

The bolts used for mounting the rear bearing retainer are pre-coated ones.

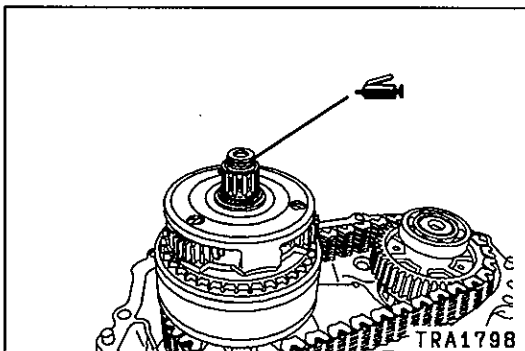
When they are to be reused, apply sealant to the threaded portion before installation.

**Specified sealant:**

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



2. Install the drive sprocket so that its illustrated holes will match the projecting portions of the synchronizer cone.

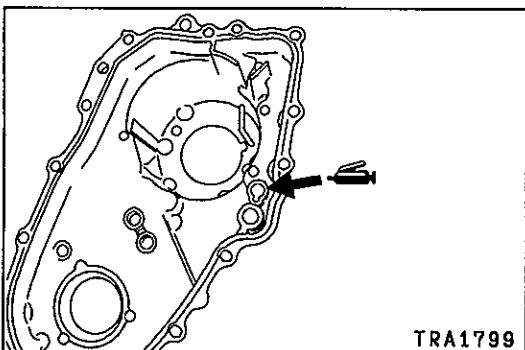


#### ►◄ REAR OUTPUT SHAFT INSTALLATION

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**

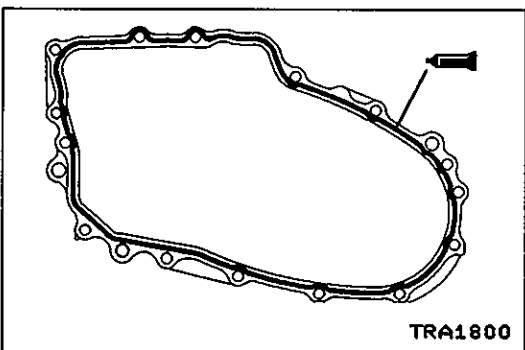


#### ►◄ CHAIN COVER INSTALLATION

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

**Specified grease:**

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



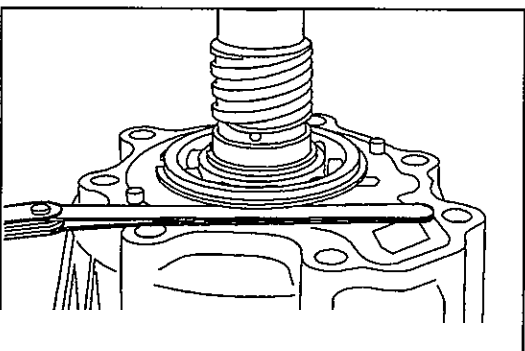
2. Apply a bead of sealant to the illustrated position of the chain cover.

**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

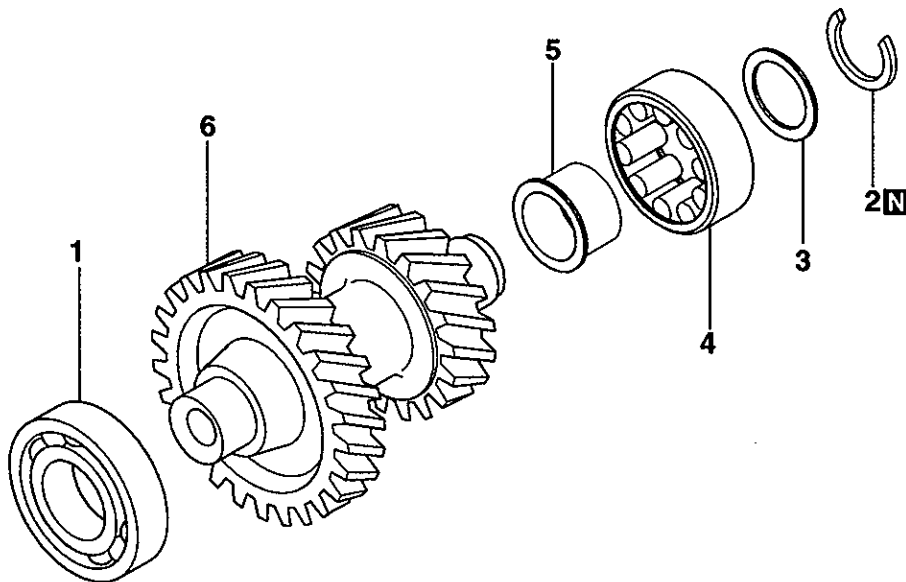
1. Install the snap ring in the bearing groove of the rear output shaft.
2. With the rear output shaft pressed against the chain cover, measure the clearance between the chain cover and snap ring.
3. Select a snap ring whose thickness is the dimension of the measured clearance plus the standard value.

**Standard value: 0.12 – 0.24 mm**

# 17. COUNTERSHAFT GEAR <V4A51>

## DISASSEMBLY AND ASSEMBLY

 Apply gear oil to all moving parts before installation.



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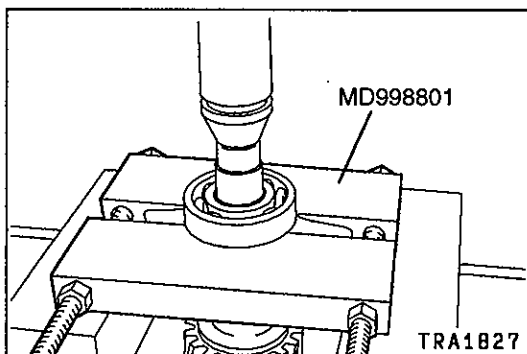
### Disassembly steps



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



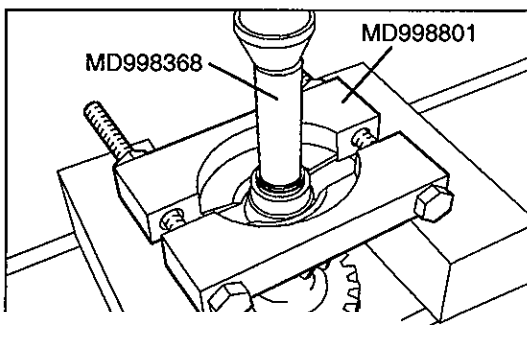
- 4. Roller bearing
- 5. Inner race
- 6. Countershaft gear



### DISASSEMBLY SERVICE POINTS

#### ◀A▶ BALL BEARING REMOVAL

Use the special tool to remove the ball bearing.



#### ◀B▶ SPACER / ROLLER BEARING / INNER RACE REMOVAL

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

#### NOTE

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