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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>

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

1. Reverse clutch
2. Low/reverse brake
3. Second brake
4. Underdrive clutch
5. Overdrive clutch
6. Torque converter clutch
7. Fail-safe valve A
8. Fail-safe valve B
9. Torque converter clutch control valve
10. Switching valve
11. Cooler
12. Low-reverse brake pressure control valve
13. Second brake pressure control valve
14. Underdrive clutch pressure control valve
15. Overdrive clutch pressure control valve
16. Torque converter clutch control solenoid valve
17. Low-reverse brake solenoid valve
18. Second brake solenoid valve
19. Underdrive clutch solenoid valve
20. Overdrive clutch solenoid valve
21. Torque converter pressure control valve
22. Regulator valve
23. Manual valve
24. Oil filter
25. Oil pan
26. Oil pump
27. Oil strainer
28. Reduction brake
29. Direct clutch
30. Fail-safe valve C
31. Reduction brake pressure control valve
32. Reduction brake solenoid valve
### TRANSMISSION MODEL TABLE - MODEL 2001

<table>
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<tr>
<th>Transmission models</th>
<th>Vehicle model</th>
<th>Engine model</th>
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<tr>
<td>EUR</td>
<td>V5A51-7-ACA</td>
<td>V65W, V75W</td>
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## GENERAL SPECIFICATIONS

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<td>3-element, with torque converter clutch</td>
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<td>Transmission</td>
<td>Type</td>
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<td>Transfer</td>
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### SERVICE SPECIFICATIONS

#### TRANSMISSION

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<tr>
<td>Underdrive clutch end play mm</td>
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<tr>
<td>Input shaft end play mm</td>
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<tr>
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<tr>
<td>Overdrive clutch end play mm</td>
<td>2.0 - 2.2</td>
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<tr>
<td>Overdrive clutch return spring retainer end play mm</td>
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<tr>
<td>Second brake end play mm</td>
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<tr>
<td>Center support end play mm</td>
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<tr>
<td>Brake reaction plate end play mm</td>
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<tr>
<td>Reverse clutch end play mm</td>
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<td>Low/reverse brake end play mm</td>
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#### TRANSFER

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<td>Countershaft gear end play mm</td>
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<td>Countershaft gear bearing end play mm</td>
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<tr>
<td>2-4WD clutch hub end play mm</td>
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<tr>
<td>H-L clutch hub end play mm</td>
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<td>Rear output shaft preload mm</td>
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<tr>
<td>Rear output shaft end play mm</td>
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<tr>
<td>Rear output shaft bearing end play mm</td>
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<tr>
<td>Rear output shaft annulus gear end play mm</td>
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<td>Differential lock hub end play mm</td>
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<td>Clearance between outer synchronizer ring and drive sprocket mm</td>
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## VALVE BODY SPRING IDENTIFICATION

<table>
<thead>
<tr>
<th>Item</th>
<th>Wire diameter mm</th>
<th>Outside diameter mm</th>
<th>Free height mm</th>
<th>Number of loops</th>
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<td>Torque converter clutch control valve spring</td>
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<td>5.9</td>
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<td>19</td>
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<td>Damping valve spring</td>
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<td>Fail-safe valve A spring</td>
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<td>Line relief valve spring</td>
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<td>Regulator valve spring</td>
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## TORQUE SPECIFICATIONS

### TRANSMISSION

<table>
<thead>
<tr>
<th>Item</th>
<th>Torque Nm</th>
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<tr>
<td>Output shaft support mounting bolt</td>
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<tr>
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<tr>
<td>Park/neutral position switch mounting bolt</td>
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</tr>
<tr>
<td>Anchor plug</td>
<td>98 ± 15</td>
</tr>
<tr>
<td>Oil pan mounting bolt</td>
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</tr>
<tr>
<td>Oil filter mounting bolt</td>
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<tr>
<td>Oil pump mounting bolt</td>
<td>23 ± 3</td>
</tr>
<tr>
<td>Cable end bracket mounting bolt</td>
<td>48 ± 6</td>
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<tr>
<td>Converter housing to transmission case tightening bolt</td>
<td>48 ± 6</td>
</tr>
<tr>
<td>Output shaft speed sensor mounting bolt</td>
<td>11 ± 1</td>
</tr>
<tr>
<td>Reduction brake piston nut</td>
<td>19 ± 3</td>
</tr>
<tr>
<td>Separating plate mounting bolt</td>
<td>6 ± 1</td>
</tr>
<tr>
<td>Solenoid support mounting bolt</td>
<td>6 ± 1</td>
</tr>
<tr>
<td>Transfer to transfer case adapter tightening bolt</td>
<td>35 ± 6</td>
</tr>
<tr>
<td>Transmission case to transfer case adapter tightening bolt</td>
<td>48 ± 6</td>
</tr>
<tr>
<td>Input shaft speed sensor mounting bolt</td>
<td>11 ± 1</td>
</tr>
<tr>
<td>Valve body mounting bolt</td>
<td>11 ± 1</td>
</tr>
<tr>
<td>Detent spring mounting bolt</td>
<td>6 ± 1</td>
</tr>
<tr>
<td>Manual control lever mounting nut</td>
<td>22 ± 3</td>
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<td>Lower valve body mounting bolt</td>
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<tr>
<td>Lower valve body cover mounting bolt</td>
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## TRANSFER

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<thead>
<tr>
<th>Item</th>
<th>Torque Nm</th>
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<tr>
<td>Dynamic damper</td>
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<td>Transfer case cover tightening bolt</td>
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<tr>
<td>Input gear bearing retainer mounting bolt</td>
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<tr>
<td>Transfer case to chain cover tightening bolt</td>
<td>35 ± 6</td>
</tr>
<tr>
<td>Rear bearing retainer mounting bolt</td>
<td>20 ± 2</td>
</tr>
<tr>
<td>Transfer case plate to transfer case tightening bolt and nut</td>
<td>35 ± 6</td>
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<tr>
<td>Rear cover to chain cover tightening bolt</td>
<td>35 ± 6</td>
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<tr>
<td>Shift actuator mounting bolt</td>
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<tr>
<td>4LLC switch</td>
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<tr>
<td>2WD switch</td>
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<td>Center differential lock switch</td>
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<td>2WD-4WD switch</td>
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<td>Vehicle speed sensor mounting bolt</td>
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<tr>
<td>Front output sensor mounting bolt</td>
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</tr>
<tr>
<td>Rear output sensor mounting bolt</td>
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SNAP RING, THRUST RACE, SPACER AND PRESSURE PLATE FOR ADJUSTMENT
TRANSMISSION

Thrust race (for adjustment of direct planetary carrier end play)

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Snap ring (for adjustment of underdrive clutch and overdrive clutch end play)

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Thrust race (for adjustment of input shaft end play)

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Snap ring (for adjustment of overdrive clutch return spring retainer end play)

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### Pressure plate (for adjustment of second brake end play)

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### Snap ring (for adjustment of center support and brake reaction plate end play)

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### Snap ring (for adjustment of reverse clutch end play)

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### Snap ring (for adjustment of direct clutch end play)

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### Snap ring (for adjustment of low/reverse brake end play)

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### TRANSFER

### Spacer (for adjustment of input gear bearing end play)

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### Spacer (for adjustment of countershaft gear end play)

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<td>2.05</td>
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### Snap ring (for adjustment of countershaft gear bearing end play)

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

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### Snap ring (for adjustment of differential lock hub end play)

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## Spacer (for adjustment of rear output shaft end play)

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### SEALANTS

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<td>MITSUBISHI genuine sealant part No. MR166584 or equivalent</td>
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<tr>
<td>Transfer case adapter (transmission side)</td>
<td>MITSUBISHI genuine sealant part No. MR166584 or equivalent</td>
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### TRANSFER

<table>
<thead>
<tr>
<th>Item</th>
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</thead>
<tbody>
<tr>
<td>Bearing retainer mounting bolt</td>
<td>MITSUBISHI genuine sealant part No. MD997740 or equivalent</td>
</tr>
<tr>
<td>Chain cover</td>
<td>MITSUBISHI genuine sealant part No. MD997740 or equivalent</td>
</tr>
<tr>
<td>Transfer case cover</td>
<td>MITSUBISHI genuine sealant part No. MD997740 or equivalent</td>
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<tr>
<td>Rear cover</td>
<td>MITSUBISHI genuine sealant part No. MD997740 or equivalent</td>
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<tr>
<td>Sealing cap</td>
<td>3M™ AAD part No. 8672 or equivalent</td>
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<tr>
<td>Transfer case plate</td>
<td>MITSUBISHI genuine sealant part No. MD997740 or equivalent</td>
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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 procedures is very simple as in the case of a conventional precut 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

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## 2. SPECIAL TOOLS

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<td>Installer adapter</td>
<td>Installation of transfer case adapter oil seal</td>
</tr>
<tr>
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<td>MB990938</td>
<td>Handle</td>
<td>Use with installer adapter</td>
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<td>MD998727</td>
<td>Oil pan remover</td>
<td>Removal of oil pan</td>
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PWEE8920-I
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<th>Name</th>
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<tr>
<td>MD998826</td>
<td>Installer adapter (52)</td>
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<td>Installation of transfer input gear bearing</td>
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<td>MD998818</td>
<td>Installer adapter (38)</td>
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<td>Installation of countershaft gear bearing, front output shaft bearing</td>
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<tr>
<td>MD998917</td>
<td>Bearing remover</td>
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<td>Removal and installation of bearing</td>
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<td>MD998814</td>
<td>Installer-200</td>
<td></td>
<td>Use with installer cap and installer adapter</td>
</tr>
<tr>
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<td>Name</td>
<td>Use</td>
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<td>Installer adapter (50)</td>
<td>Installation of rear output shaft bearing</td>
</tr>
<tr>
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<td>MD998813</td>
<td>Installer-100</td>
<td>Use with installer cap and installer adapter</td>
</tr>
<tr>
<td></td>
<td>MD998830</td>
<td>Installer adapter (66)</td>
<td>Installation of transfer drive shaft bearing</td>
</tr>
<tr>
<td></td>
<td>MD998192</td>
<td>Bearing puller</td>
<td>Installation of transfer drive shaft bearing</td>
</tr>
</tbody>
</table>
3. TRANSMISSION AND TRANSFER
DISASSEMBLY AND ASSEMBLY

Disassembly steps
1. Transfer
2. Cable end bracket
3. Harness bracket
4. Harness bracket
5. Transfer case adapter
6. Transmission

ASSEMBLY SERVICE POINT

TRANSFER CASE ADAPTER INSTALLATION

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

Specified sealant:
MITSUBISHI genuine sealant part No. MR166584 or equivalent

Caution
- Evenly squeeze out and apply the sealant so that it is not excessive and does not ooze out.
4. TRANSFER CASE ADAPTER
DISASSEMBLY AND ASSEMBLY

Disassembly steps
1. Parking sprag shaft
2. Parking sprag spring
3. Parking sprag
4. Sealing cap
5. Parking roller support shaft
6. Parking roller support
7. Oil seal
8. Transfer case adapter

ASSEMBLY SERVICE POINTS

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.
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

Apply automatic transmission fluid to all moving parts before installation.
Apply automatic transmission fluid to all moving parts before installation.

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

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
Apply automatic transmission fluid to all moving parts before installation.

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.

- 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.

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>For overdrive clutch</td>
</tr>
<tr>
<td>2</td>
<td>For second brake</td>
</tr>
<tr>
<td>3</td>
<td>For low/reverse brake</td>
</tr>
<tr>
<td>4</td>
<td>For underdrive clutch</td>
</tr>
<tr>
<td>5</td>
<td>For reduction brake</td>
</tr>
<tr>
<td>6</td>
<td>For direct clutch</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Symbol</th>
<th>OD mm</th>
<th>ID mm</th>
<th>Thickness mm</th>
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<td>4.12</td>
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<td>ID mm</td>
<td>Thickness mm</td>
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<td>58</td>
<td>37.5</td>
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</table>

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 ± 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

<table>
<thead>
<tr>
<th>Moving amount mm</th>
<th>Pressure plate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness mm</td>
<td>ID Symbol</td>
</tr>
<tr>
<td>1.2 or more - less than 1.4</td>
<td>1.6</td>
</tr>
<tr>
<td>1.4 or more - less than 1.6</td>
<td>1.8</td>
</tr>
<tr>
<td>1.6 or more - less than 1.8</td>
<td>2.0</td>
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<tr>
<td>1.8 or more - less than 2.0</td>
<td>2.2</td>
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<tr>
<td>2.0 or more - less than 2.2</td>
<td>2.4</td>
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<tr>
<td>2.4 or more - less than 2.6</td>
<td>2.8</td>
</tr>
<tr>
<td>2.6 or more - less than 2.8</td>
<td>3.0</td>
</tr>
</tbody>
</table>

(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
(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.
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. 

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Identification paint application position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>For overdrive clutch</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>For second brake</td>
<td>Inner: Applied on all surfaces including both ends</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Outer: Applied on half of surface including both ends</td>
</tr>
<tr>
<td>3</td>
<td>For low/reverse brake</td>
<td>Inner: Applied on half of surface including both ends</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Outer: Applied on entire surface of one side</td>
</tr>
<tr>
<td>4</td>
<td>For underdrive clutch</td>
<td>Inner: Applied on half of surface including both ends</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Outer: Applied on half of surface including both ends</td>
</tr>
<tr>
<td>5</td>
<td>For reduction brake</td>
<td>None</td>
</tr>
<tr>
<td>6</td>
<td>For direct clutch</td>
<td>None</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Bolt</th>
<th>Length mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>25</td>
</tr>
<tr>
<td>B</td>
<td>30</td>
</tr>
<tr>
<td>C</td>
<td>40</td>
</tr>
<tr>
<td>D</td>
<td>45</td>
</tr>
<tr>
<td>E</td>
<td>55</td>
</tr>
</tbody>
</table>
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.
Apply automatic transmission fluid to all moving parts before installation.

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).
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

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.
8. LOW/REVERSE ANNULUS GEAR
DISASSEMBLY AND ASSEMBLY

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

ASSEMBLY SERVICE POINTS

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

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.

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.

Disassembly steps

1. Snap ring
2. Plate
3. One-way clutch inner race
4. O-ring
5. Spring retainer
6. Return spring
7. Low/reverse brake piston
8. D-ring
9. D-ring
10. Center support

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DISASSEMBLY SERVICE POINT

A. SNAP RING REMOVAL
1. Set the special tools as shown in the illustration so that they are pressed against the inner race of the one-way clutch.
2. Screw in the special tool nut, and lightly press against the inner race of the one-way clutch.
3. Remove the snap ring.

ASSEMBLY SERVICE POINTS

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

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

C. SNAP RING INSTALLATION
1. Set the special tools as shown in the illustration.
2. Screw in the special tool nut, and lightly press against the inner race of the one-way clutch.
3. Install the snap ring.
Apply automatic transmission fluid to all moving parts before installation.
Disassembly steps

1. Snap ring
2. Reaction plate
3. Clutch disc
4. Clutch plate
5. Snap ring
6. Snap retainer
7. D-ring
8. Return spring
9. Underdrive clutch piston
10. D-ring
11. D-ring
12. D-ring
13. Underdrive clutch retainer

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 groove of the underdrive clutch retainer and spring retainer. Make sure that the D-ring is not twisted or damaged when installing.

RETURN SPRING INSTALLATION

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

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
Apply automatic transmission fluid to all moving parts before installation.

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
Apply automatic transmission fluid to all moving parts before installation.

Disassembly steps

16. Solenoid support
17. Low/reverse brake solenoid valve
18. Reduction brake solenoid valve
19. Second brake solenoid valve
20. Underdrive clutch solenoid valve
21. Overdrive clutch solenoid valve
22. Torque converter clutch control solenoid valve
23. Stopper plate
24. Stopper plug
25. Switching valve
26. Stopper plate
27. Fail-safe valve A sleeve
28. Fail-safe valve A_2
29. Fail-safe valve A spring
30. Fail-safe valve A_1
31. Stopper plate
32. Fail-safe valve B sleeve
33. Fail-safe valve B
34. Stopper plate
35. Stopper plug
36. Torque converter pressure control valve
37. Torque converter pressure control valve spring
38. Upper valve body
Apply automatic transmission fluid to all moving parts before installation.

Disassembly steps

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

Disassembly steps
1. Snap ring
2. Output flange
3. Thrust bearing No.10
4. Underdrive clutch hub

ASSEMBLY SERVICE POINTS

Thrust bearing No.11

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.
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

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

Apply automatic transmission fluid to all moving parts before installation.
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 direct clutch piston and spring retainer groove. Make sure that the D-ring is not twisted or damaged when installing.

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

C 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).
**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**
Apply automatic transmission fluid to all moving parts before installation.

Disassembly steps
1. Snap ring
2. One-way clutch
3. Seal ring
4. Output shaft support

ASSEMBLY SERVICE POINT
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

Apply gear oil to all moving parts before installation.

35 ± 6 Nm

11 ± 1 Nm

11 ± 2 Nm

35 ± 6 Nm

11 ± 1 Nm

11 ± 1 Nm

35 ± 6 Nm

Apply gear oil to all moving parts before installation.
Disassembly steps
1. Vacuum hose
2. 4LLC switch
3. Gasket
4. Steel ball
5. 2WD switch
6. Gasket
7. Steel ball
8. Center differential lock switch
9. Gasket
10. Steel ball
11. 4H switch
12. Gasket
13. Steel ball
14. 2WD-4WD switch
15. Gasket
16. Steel ball
17. Transfer case cover
18. Shift rail drive gear
19. Shift rail drive gear
20. Dust seal guard
21. Dynamic damper
22. Vehicle speed sensor
23. O-ring
24. Rear output sensor
25. O-ring
26. Front output sensor
27. O-ring
28. Shift actuator
29. O-ring
30. Main shift rail
31. Under guard (EXP)
Apply gear oil to all moving parts before installation.

Disassembly steps

- 32. Rear cover
- 33. Oil seal
- 34. Snap ring
- 35. Sensor rotor
- 36. Steel ball
- 37. Oilguide
- 38. Spacer
- 39. Snap ring
- 40. Snap ring
- 41. Chain cover
- 42. Rear output shaft
- 43. O-ring
- 44. Bearing
- 45. Snap ring
- 46. Center differential planetary carrier
- 47. Viscous coupling
- 48. Chain
- 49. Front output shaft
- 50. Drive sprocket
- 51. Bearing
- 52. Synchronizer inner ring
- 53. Synchronizer cone
- 54. Synchronizer outer ring
- 55. Synchronizer spring
- 56. Snap ring
- 57. 2-4WD clutch hub
- 58. Sun gear
- 59. Bearing
- 60. Wave spring
- 61. 2-4WD clutch sleeve
- 62. 2-4WD shift fork
- 63. Spacer
- 64. Steel ball
- 65. Snap ring
- 66. Differential lock hub
Apply gear oil to all moving parts before installation.

Disassembly steps

67. Transfer case plate
68. Bearing
69. Counter shaft gear
70. Spacer
71. H-L clutch sleeve
72. H-L shift fork
73. Snap ring
74. H-L clutch hub
75. Low speed gear
76. Bearing
77. Rear bearing retainer
78. Transfer drive shaft
79. Dust seal guard
80. Oil seal
81. Oil pool cover
82. Oil guide
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.

**N. 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

**O. 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.

**P. Snap Ring Installation**

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
4. 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

1. 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.

2. Measure the dimension of the rear cover concave portion at the illustrated position.

3. 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**

**OIL SEAL INSTALLATION**

1. Use the special tools to install the oil seal in the rear cover.

2. Apply grease to the lip of the oil seal.

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

**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.
**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.

**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.

**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.

**SWITCH INSTALLATION**

Install the switches in the right positions.

<table>
<thead>
<tr>
<th>Switch name</th>
<th>Tube color</th>
<th>Connector color</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 4LLC switch</td>
<td>Black</td>
<td>Brown</td>
</tr>
<tr>
<td>B 2WD switch</td>
<td>Black</td>
<td>Black</td>
</tr>
<tr>
<td>C Center differential lock switch</td>
<td>Blue</td>
<td>Brown</td>
</tr>
<tr>
<td>D 4H switch</td>
<td>Blue</td>
<td>White</td>
</tr>
<tr>
<td>E 2-4WD switch</td>
<td>Blue</td>
<td>Black</td>
</tr>
</tbody>
</table>

**INSPECTION SWITCHES**

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

<table>
<thead>
<tr>
<th>Switch state</th>
<th>Continuity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch end pressed</td>
<td>No</td>
</tr>
<tr>
<td>Switch end released</td>
<td>Yes</td>
</tr>
</tbody>
</table>
16. TRANSFER CASE PLATE
DISASSEMBLY AND ASSEMBLY

Apply gear oil to all moving parts before installation.

Disassembly steps
- Bolt
- Bearing retainer
- Transfer input gear
- Oil seal
- Baffle plate
- Transfer case plate

ASSEMBLY SERVICE POINTS

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
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

Apply gear oil to all moving parts before installation.

Disassembly steps

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

DISASSEMBLY SERVICE POINT

BALL BEARING REMOVAL
Use the special tool to remove the ball bearing.

ASSEMBLY SERVICE POINTS

BALL BEARING INSTALLATION
Use the special tools to install the ball bearing.
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.

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.

Disassembly steps
- 1. Snap ring
- 2. Annulus gear
- 3. Snap ring
- 4. Ball bearing
- 5. Rear output shaft

DISASSEMBLY SERVICE POINT

BALL BEARING REMOVAL
Use the special tool to remove the ball bearing.

ASSEMBLY SERVICE POINTS

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**
Apply gear oil to all moving parts before installation.

**Disassembly steps**

- 1. Ball bearing
- 2. Sensor rotor
- 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

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

mB BALL BEARING INSTALLATION
1. Use the special tool to support the front output shaft.
2. Use the special tools to install the ball bearing.
Apply gear oil to all moving parts before installation.

Disassembly steps

1. Ball bearing
2. Transfer drive shaft

DISASSEMBLY SERVICE POINT

BALL BEARING REMOVAL
Use the special tool to remove the ball bearing.

ASSEMBLY SERVICE POINT

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.

Disassembly steps
1. Snap ring
2. Shift rail drive gear
3. Bearing
4. Shift rail drive gear shaft
5. Washer
6. Snap ring

ASSEMBLY SERVICE POINT

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.

Disassembly steps

- Spring pin
- 2-4WD shift fork
- Spring

ASSEMBLY SERVICE POINTS

- 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

- SPRING PIN INSTALLATION
  Install the spring pin with its split toward the forward end of the transfer.