

## GROUP 23C

# AUTOMATIC TRANSAXLE OVERHAUL

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## GENERAL INFORMATION

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This automatic transaxle is made up of the following main parts.

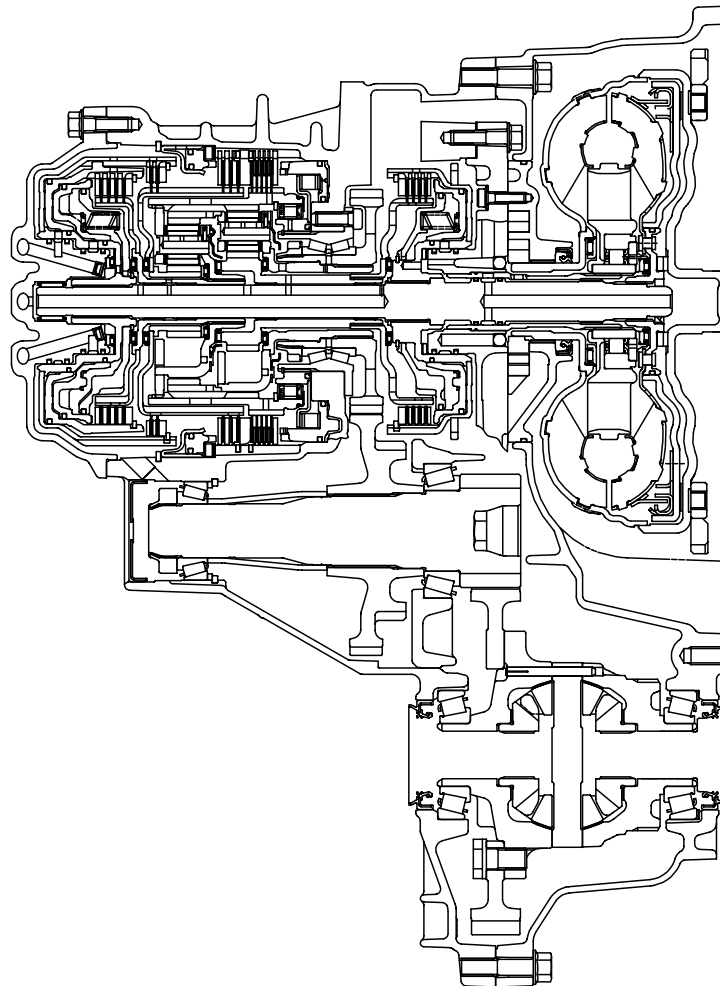
The torque converter employs a 3 element, 1 step, 2 phase lock-up clutch.

The gear train is made up of 3 multi-plate clutches, 2 multi-plate brakes and 2 planetary gears made up of a sun gear, carrier, pinion gear and annulus gear.

The cases consist of a converter housing, transaxle case, rear cover and a valve body cover.

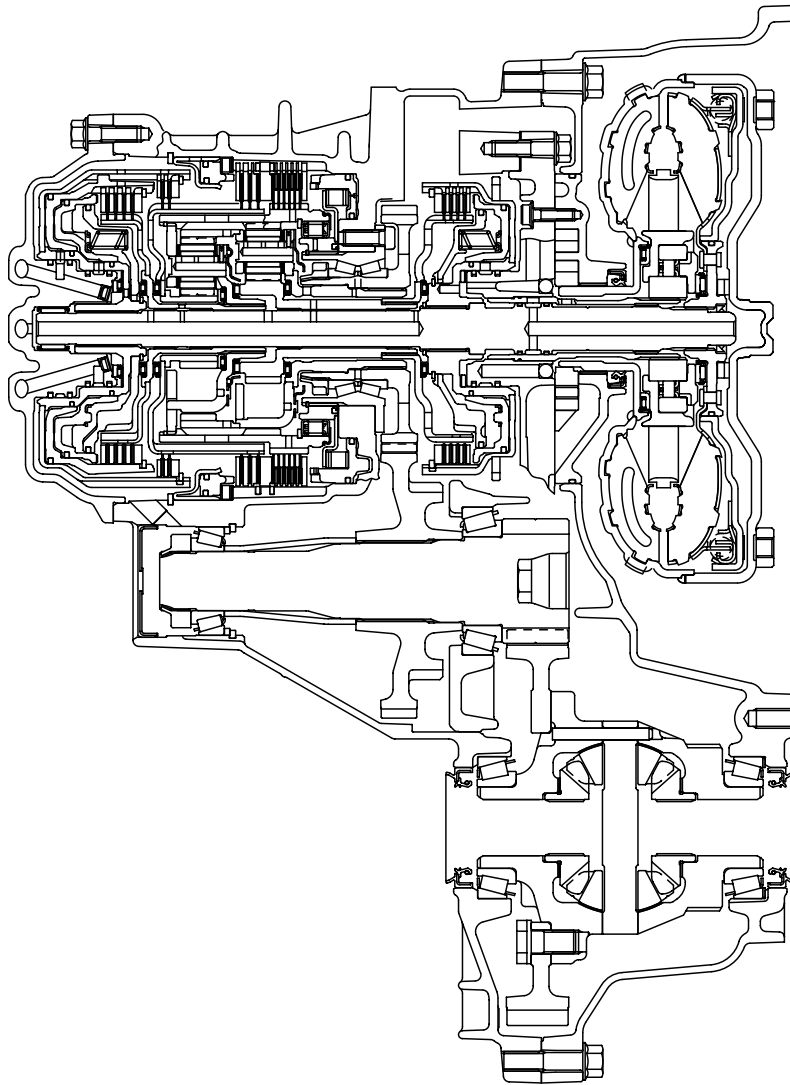
Parts related to oil pressure regulation are the oil pump, which pressurizes the oil; the regulator, which controls the pressure setting; the solenoid valves, which change the oil pressure with electrical signals; the pressure control valve, which controls the oil pressure coming from the solenoid valve that affects each clutch and brake; valves, which retain the oil pressure through the lines; and finally the valve body, which houses all the valves.

### SECTIONAL VIEW<F4A4B-1>



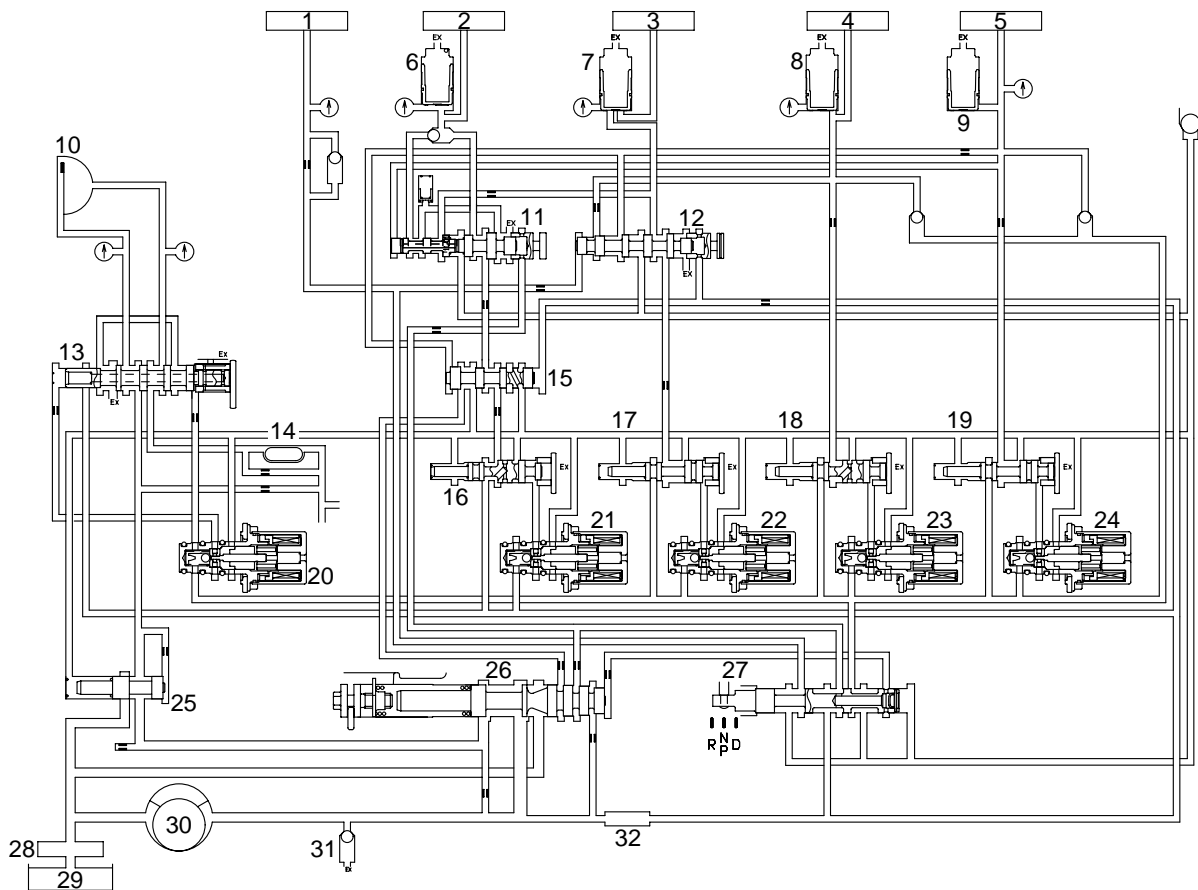
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## HYDRAULIC CIRCUIT

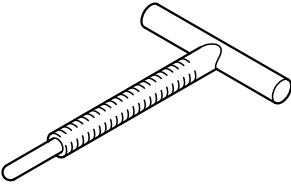
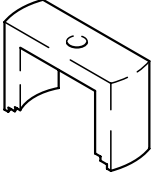
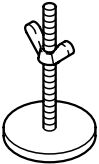
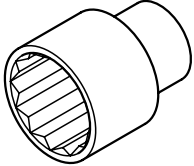
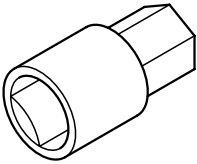
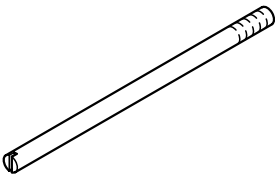
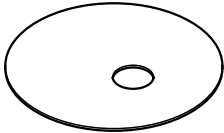


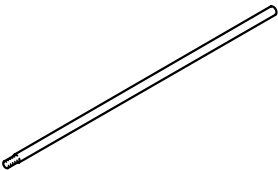
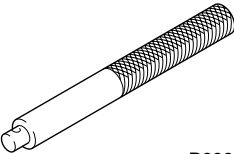
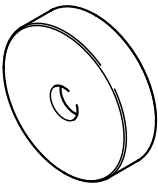
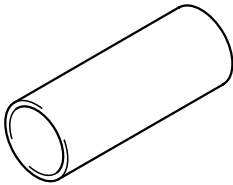
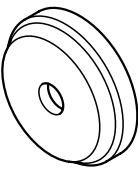
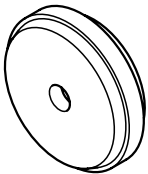
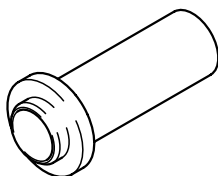
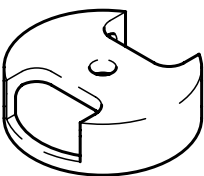
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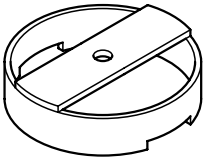
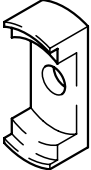
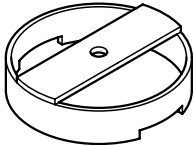
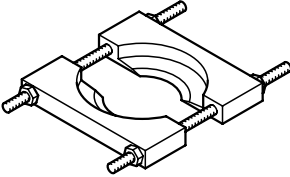
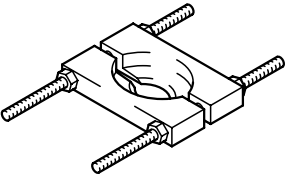
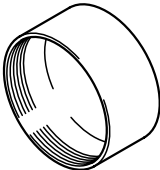
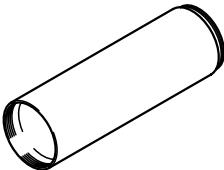
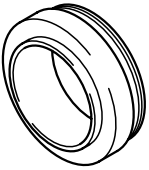
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|---|--|
| 1. REVERSE CLUTCH                         | 18. UNDERDRIVE PRESSURE CONTROL VALVE              |
| 2. LOW-REVERSE BRAKE                      | 19. OVERDRIVE PRESSURE CONTROL VALVE               |
| 3. SECOND BRAKE                           | 20. TORQUE CONVERTER CLUTCH CONTROL SOLENOID VALVE |
| 4. UNDERDRIVE CLUTCH                      | 21. LOW-REVERSE SOLENOID VALVE                     |
| 5. OVERDRIVE CLUTCH                       | 22. SECOND SOLENOID VALVE                          |
| 6. LOW-REVERSE ACCUMULATOR                | 23. UNDERDRIVE SOLENOID VALVE                      |
| 7. SECOND ACCUMULATOR                     | 24. OVERDRIVE SOLENOID VALVE                       |
| 8. UNDERDRIVE ACCUMULATOR                 | 25. TORQUE CONVERTER PRESSURE CONTROL VALVE        |
| 9. OVERDRIVE ACCUMULATOR                  | 26. REGULATOR VALVE                                |
| 10. TORQUE CONVERTER CLUTCH               | 27. MANUAL VALVE                                   |
| 11. FAIL-SAFE VALVE A                     | 28. OIL FILTER                                     |
| 12. FAIL-SAFE VALVE B                     | 29. OIL PAN  |
| 13. TORQUE CONVERTER CLUTCH CONTROL VALVE | 30. OIL PUMP                                       |
| 14. COOLER                                | 31. RELIEF VALVE                                   |
| 15. SWITCHING VALVE                       | 32. OIL STRAINER                                   |
| 16. LOW-REVERSE PRESSURE CONTROL VALVE    |  |
| 17. SECOND PRESSURE CONTROL VALVE         |  |

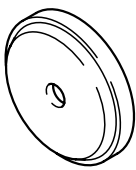
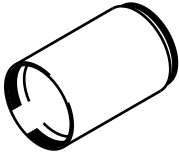
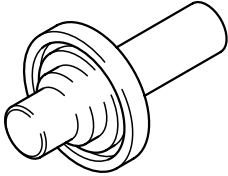
## SPECIAL TOOLS

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| TOOL  | TOOL NUMBER AND NAME                   | SUPERSESSION                           | APPLICATION   |
|---|--|--|---|
|    | MD998333<br>Oil pump remover           | MD998333-01                            | Removal of oil pump   |
|    | MD998903<br>Spring compressor          | MD998903                               | Removal and installation of one-way clutch inner race snap ring           |
|    | MD998924<br>Spring compressor retainer | MD998924-01                            | Use with spring compressor  |
|   | MB991625<br>Socket (41)                | MB991625-01 or<br>General service tool | Removal and installation of output shaft jam nut                          |
|  | MB990607<br>Torque wrench socket       | MB990607-01                            | Removal and installation of output shaft jam nut                          |
|  | MD998412<br>Guide                      | MD998412                               | Installation of oil pump and transfer drive gear                          |
|  | MB991631<br>Clearance dummy plate      | MB991631-01                            | Measurement of reaction plate low-reverse brake and second brake end play |

| TOOL   | TOOL NUMBER AND NAME             | SUPERSESION                         | APPLICATION  |
|--|----------------------------------|-------------------------------------|--|
|             | MD998913<br>Dial gauge extension | MD998913-01                         | Measurement of low-reverse brake end play  |
| <br>B990938 | MB990938<br>Handle               | MB990938-01                         | <ul style="list-style-type: none"> <li>• Installation of input shaft rear bearing</li> <li>• Use with installer adapter</li> </ul> |
|             | MB990930<br>Installer adapter    | MB990930-01 or General service tool | Installation of output shaft taper roller bearing outer race   |
|            | MD998350<br>Bearing installer    | MD998350-01                         | Installation of output shaft collar and taper roller bearing   |
|           | MB990931<br>Installer adapter    | MB990931-01 or General service tool | Installation of cap  |
|           | MB990935<br>Installer adapter    | MB990935-01 or General service tool | Installation of differential taper roller bearing outer race   |
|           | MD998334<br>Oil seal installer   | MD998334-01                         | Installation of oil pump oil seal  |
|           | MD998907<br>Spring compressor    | MD998907-01                         | Removal and installation of underdrive clutch snap ring  |

| TOOL  | TOOL NUMBER AND NAME               | SUPERSESION                         | APPLICATION   |
|---|------------------------------------|-------------------------------------|---|
|    | MB991628<br>Spring compressor      | MB991628-01                         | Measurement of underdrive clutch and overdrive clutch end play  |
|    | MD999590<br>Spring compressor      | MIT305039                           | Removal and installation of overdrive clutch snap ring  |
|    | MB991790<br>Spring compressor      | MB991790-01                         | Measurement of reverse clutch end play  |
|   | MD998917<br>Bearing remover        | General service tool or MD998348-01 | Removal of transfer driven gear   |
|  | MD998801<br>Bearing remover        | MD998348-01                         | Removal of each bearing   |
|  | MD998812<br>Installer cap          | General service tool                | Use with installer and installer adapter  |
|  | MD998814<br>Installer 200          | MIT304180                           | Use with installer cap and installer adapter  |
|  | MD998823<br>Installer adapter (48) | General service tool                | Installation of output shaft taper roller bearing, transfer driven gear and differential taper roller bearing |

| TOOL  | TOOL NUMBER AND NAME           | SUPERSESSION                           | APPLICATION  |
|---|--------------------------------|--|--|
|  | MB990936<br>Installer adapter  | MB990936-01 or<br>General service tool | Installation of output shaft<br>taper roller bearing outer<br>race |
|  | MD998813<br>Installer 100      | General service tool                   | Use with installer cap and<br>installer adapter                    |
|  | MD998800<br>Oil seal installer | General service tool                   | Installation of driveshaft oil<br>seal                             |

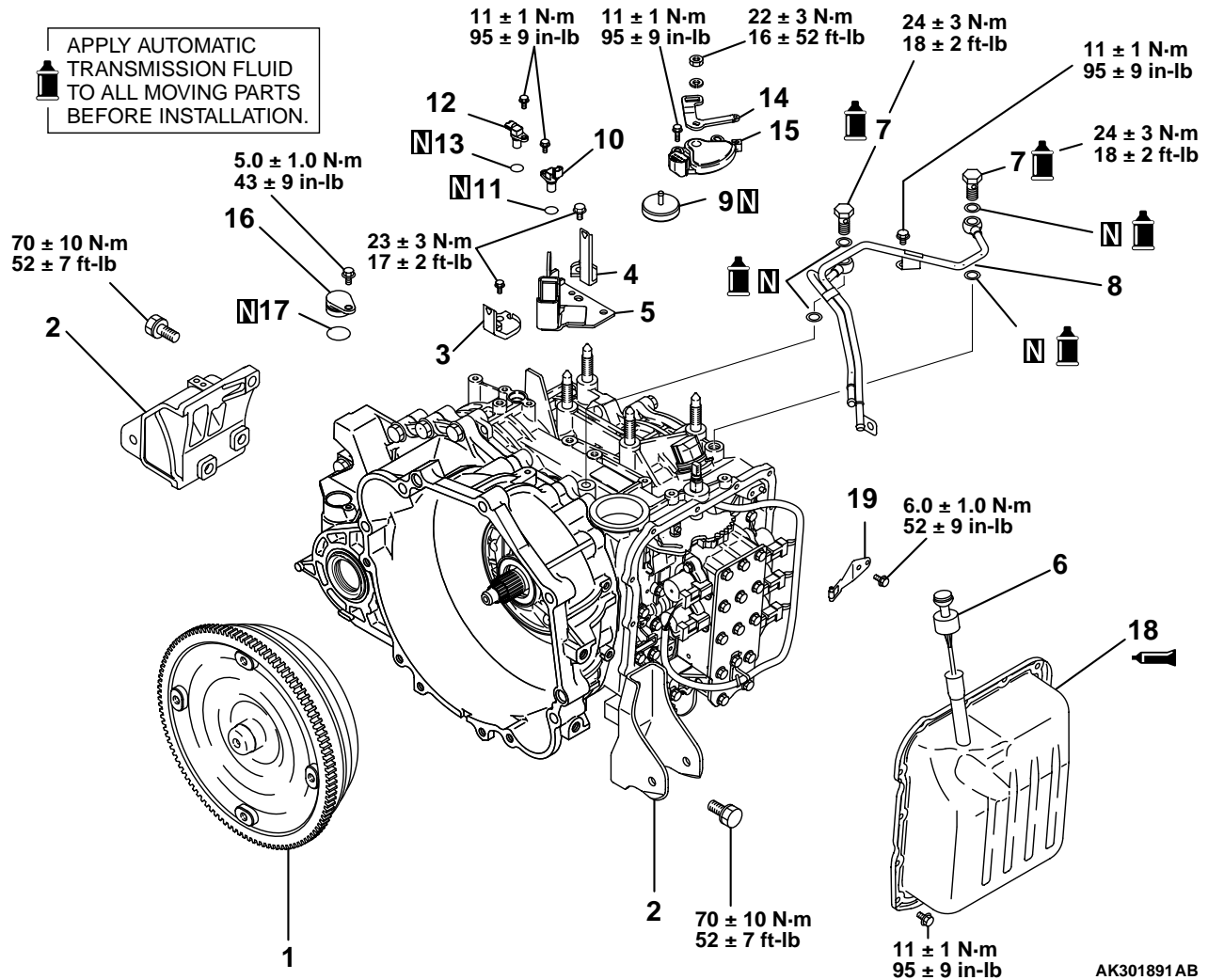


# TRANSAXLE

## DISASSEMBLY AND ASSEMBLY

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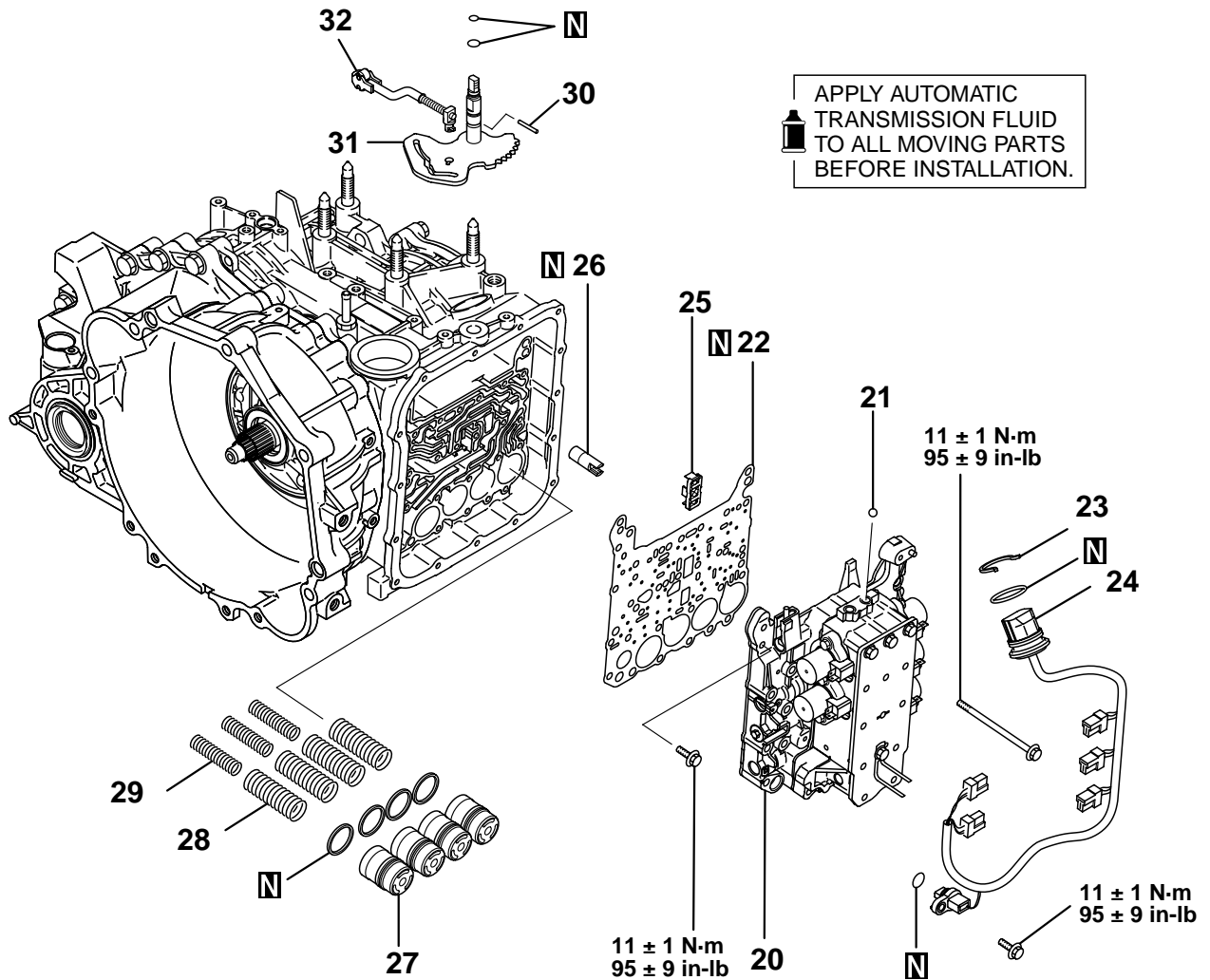
1. TORQUE CONVERTER
2. ROLL STOPPER BRACKET
3. HARNESS BRACKET
4. HARNESS BRACKET
5. CONTROL CABLE SUPPORT BRACKET
6. OIL DIPSTICK
7. EYE BOLT
8. OIL COOLER FEED TUBE
9. AIR BREATHER
10. INPUT SHAFT SPEED SENSOR

11. O-RING
12. OUTPUT SHAFT SPEED SENSOR
13. O-RING
14. MANUAL CONTROL LEVER
15. PARK/NEUTRAL POSITION SWITCH
16. SEALING CAP
17. O-RING
18. VALVE BODY COVER
19. MANUAL CONTROL SHAFT DETENT

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### Required Special Tools:

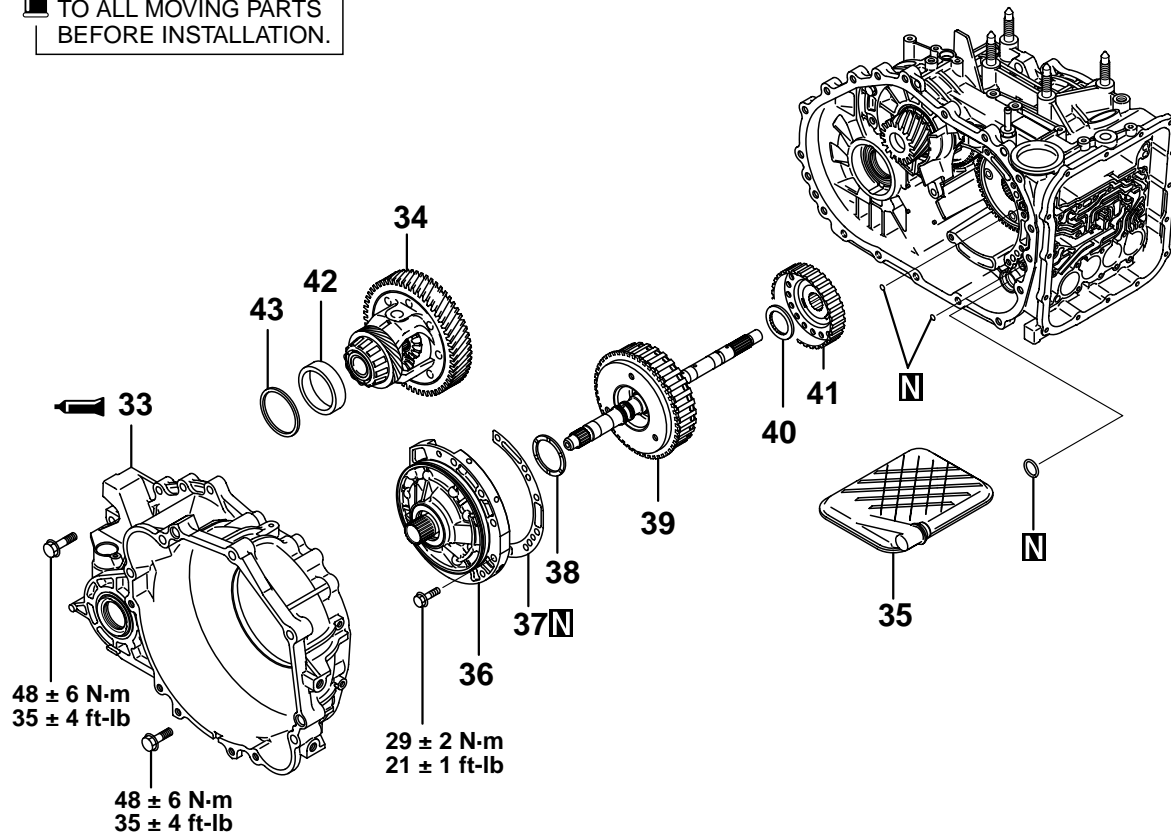
- MB990607: Torque Wrench Socket
- MB990930: Installer Adapter
- MB990931: Installer Adapter
- MB990935: Installer Adapter
- MB990938: Handle
- MB991625: Special Socket (41)
- MB991631: Clearance Dummy Plate
- MD998333: Oil Pump Remover
- MD998350: Bearing Installer
- MD998412: Guide
- MD998903: Spring Compressor
- MD998913: Dial Gauge Extension
- MD998924: Spring Compressor Retainer



- 20. VALVE BODY
- 21. STEEL BALL
- 22. GASKET
- 23. SNAP RING
- 24. SOLENOID VALVE HARNESS
- 25. STRAINER
- 26. SECOND BRAKE RETAINER OIL SEAL

- 27. ACCUMULATOR PISTON
- 28. ACCUMULATOR SPRING
- 29. ACCUMULATOR SPRING
- 30. MANUAL CONTROL LEVER SHAFT ROLLER
- 31. MANUAL CONTROL LEVER SHAFT
- 32. PARKING PAWL ROD

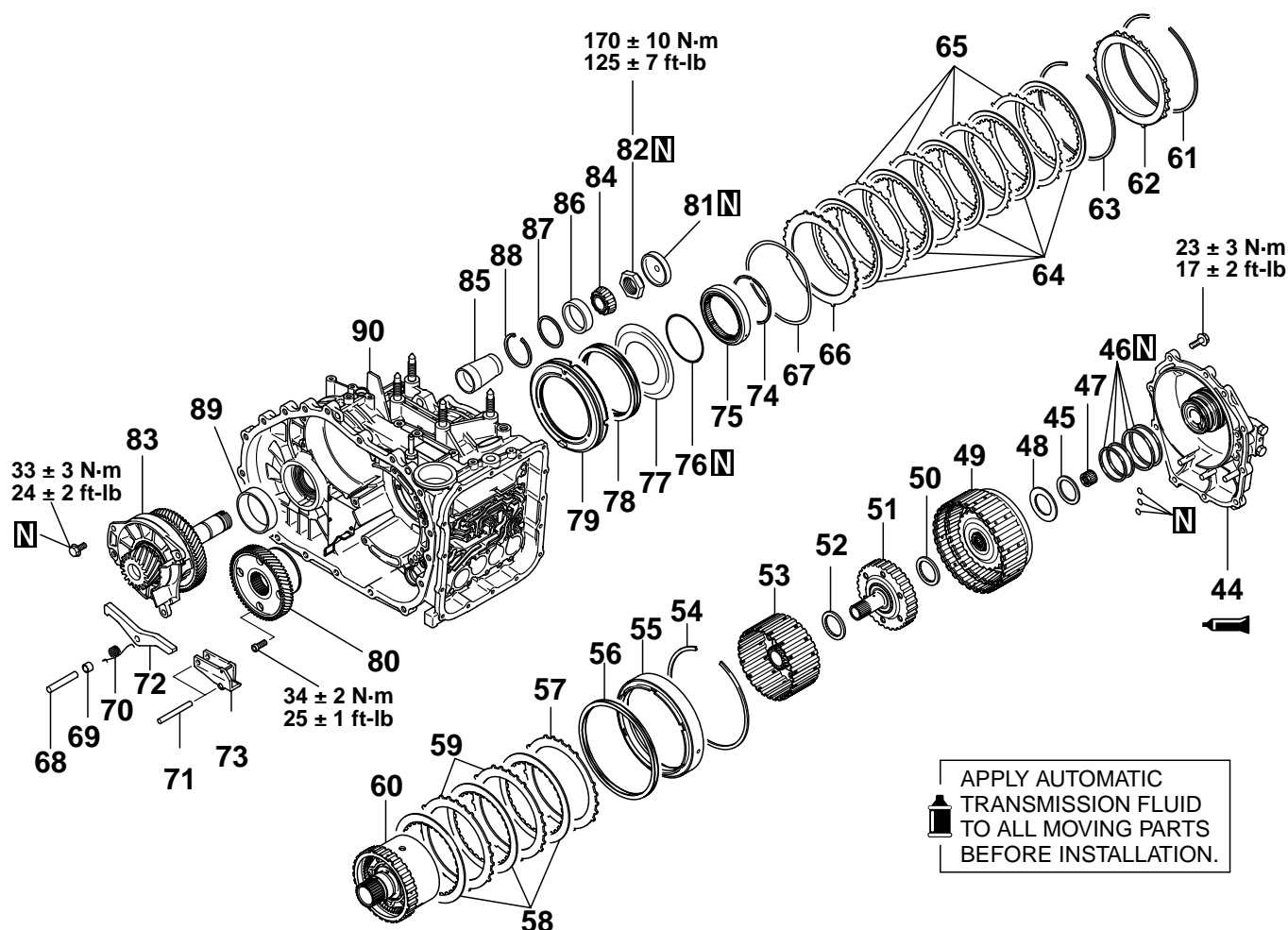
APPLY AUTOMATIC  
TRANSMISSION FLUID  
TO ALL MOVING PARTS  
BEFORE INSTALLATION.



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- 33. TORQUE CONVERTER HOUSING
- 34. DIFFERENTIAL
- 35. OIL FILTER
- 36. OIL PUMP
- 37. GASKET
- 38. THRUST WASHER NO.1

- 39. UNDERDRIVE CLUTCH AND INPUT SHAFT
- 40. THRUST BEARING NO.2
- 41. UNDERDRIVE CLUTCH HUB
- 42. OUTER RACE
- 43. SPACER

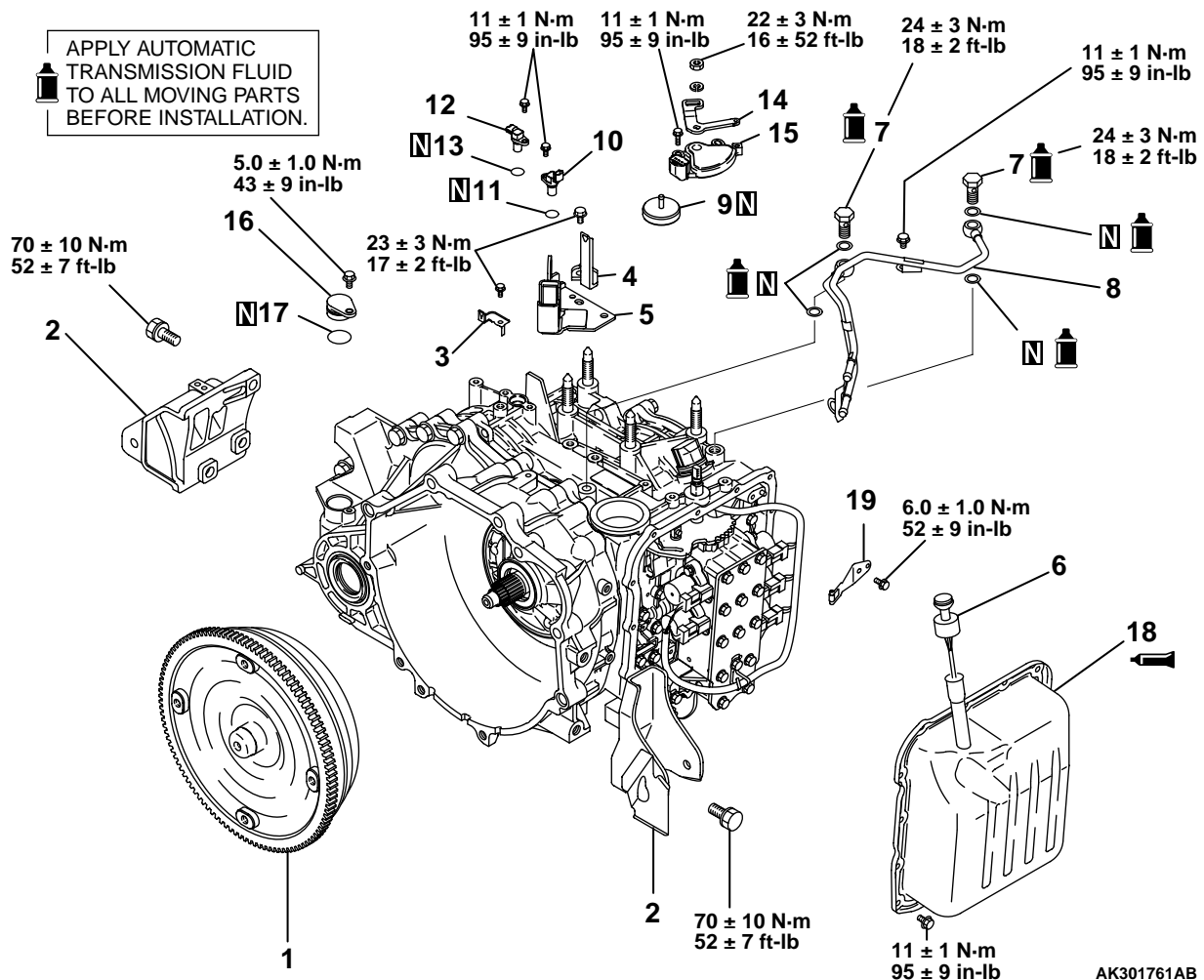


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|----------------------------------|----------------------------------|
| 44. REAR COVER                   | 67. WAVE SPRING                  |
| 45. THRUST RACE NO.8             | 68. PARKING PAWL SHAFT           |
| 46. SEAL RING                    | 69. SPACER                       |
| 47. INPUT SHAFT REAR BEARING     | 70. PARKING PAWL SPRING          |
| 48. THRUST BEARING NO.7          | 71. PARKING ROLLER SUPPORT SHAFT |
| 49. REVERSE AND OVERDRIVE CLUTCH | 72. PARKING PAWL                 |
| 50. THRUST BEARING NO.6          | 73. PARKING ROLLER SUPPORT       |
| 51. OVERDRIVE CLUTCH HUB         | 74. SNAP RING                    |
| 52. THRUST BEARING NO.5          | 75. ONE-WAY CLUTCH INNER RACE    |
| 53. PLANETARY REVERSE SUN GEAR   | 76. O-RING                       |
| 54. SNAP RING                    | 77. SPRING RETAINER              |
| 55. SECOND BRAKE PISTON          | 78. RETURN SPRING                |
| 56. RETURN SPRING                | 79. LOW-REVERSE BRAKE PISTON     |
| 57. PRESSURE PLATE               | 80. TRANSFER DRIVE GEAR          |
| 58. SECOND BRAKE DISCS           | 81. CAP                          |
| 59. SECOND BRAKE PLATES          | 82. JAM NUT                      |
| 60. PLANETARY CARRIER ASSEMBLY   | 83. OUTPUT SHAFT                 |
| 61. SNAP RING                    | 84. TAPER ROLLER BEARING         |
| 62. REACTION PLATE               | 85. COLLAR                       |
| 63. SNAP RING                    | 86. OUTER RACE                   |
| 64. LOW-REVERSE BRAKE DISCS      | 87. SPACER                       |
| 65. LOW-REVERSE BRAKE PLATES     | 88. SNAP RING                    |
| 66. PRESSURE PLATE               |                                  |

89. OUTER RACE  
90. TRANSAXLE CASE

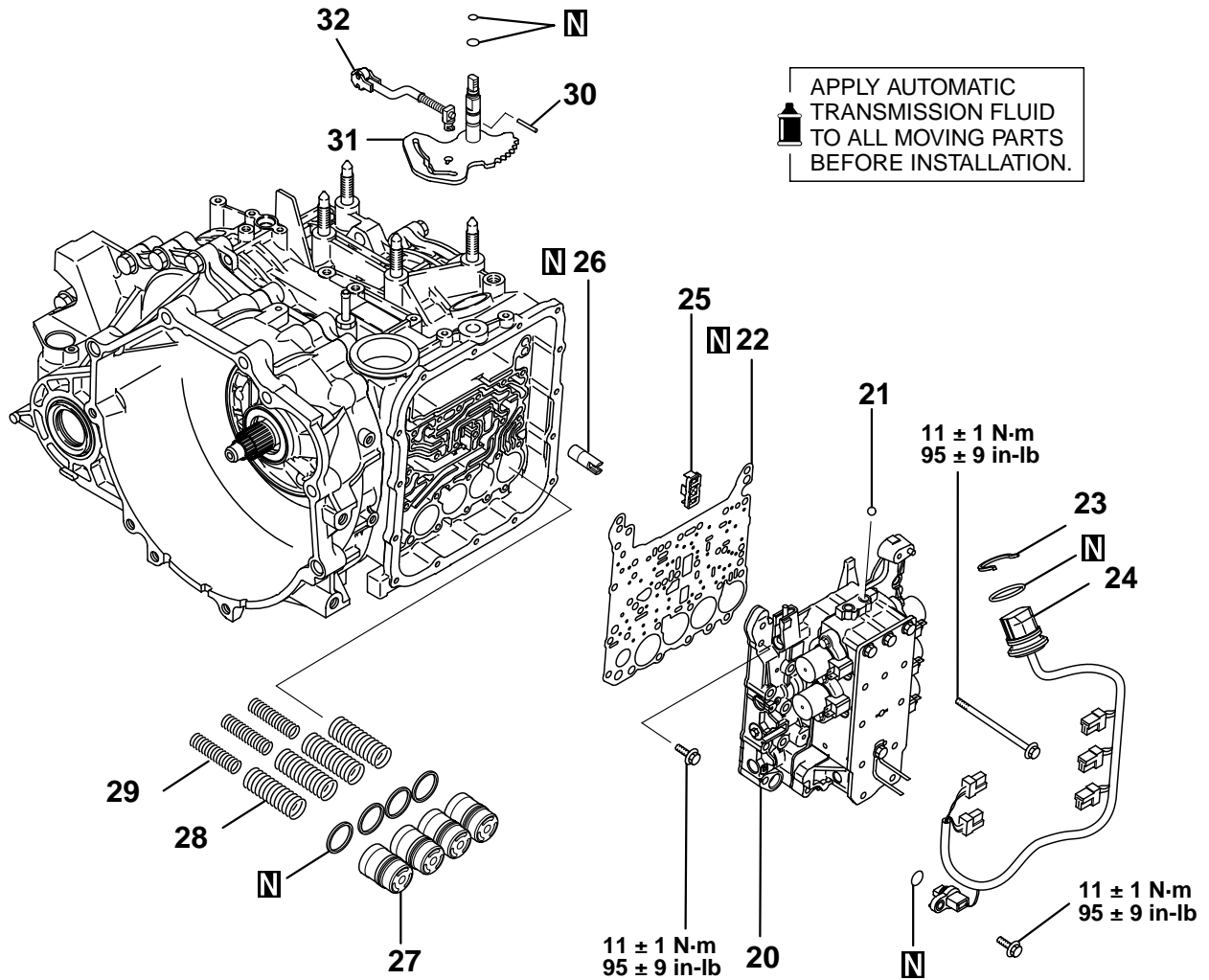
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|----------------------------------|----------------------------------|
| 1. TORQUE CONVERTER              | 11. O-RING                       |
| 2. ROLL STOPPER BRACKET          | 12. OUTPUT SHAFT SPEED SENSOR    |
| 3. HARNESS BRACKET               | 13. O-RING                       |
| 4. HARNESS BRACKET               | 14. MANUAL CONTROL LEVER         |
| 5. CONTROL CABLE SUPPORT BRACKET | 15. PARK/NEUTRAL POSITION SWITCH |
| 6. OIL DIPSTICK                  | 16. SEALING CAP                  |
| 7. EYE BOLT                      | 17. O-RING                       |
| 8. OIL COOLER FEED TUBE          | 18. VALVE BODY COVER             |
| 9. AIR BREATHER                  | 19. MANUAL CONTROL SHAFT DETENT  |
| 10. INPUT SHAFT SPEED SENSOR     |                                  |

**Required Special Tools:**

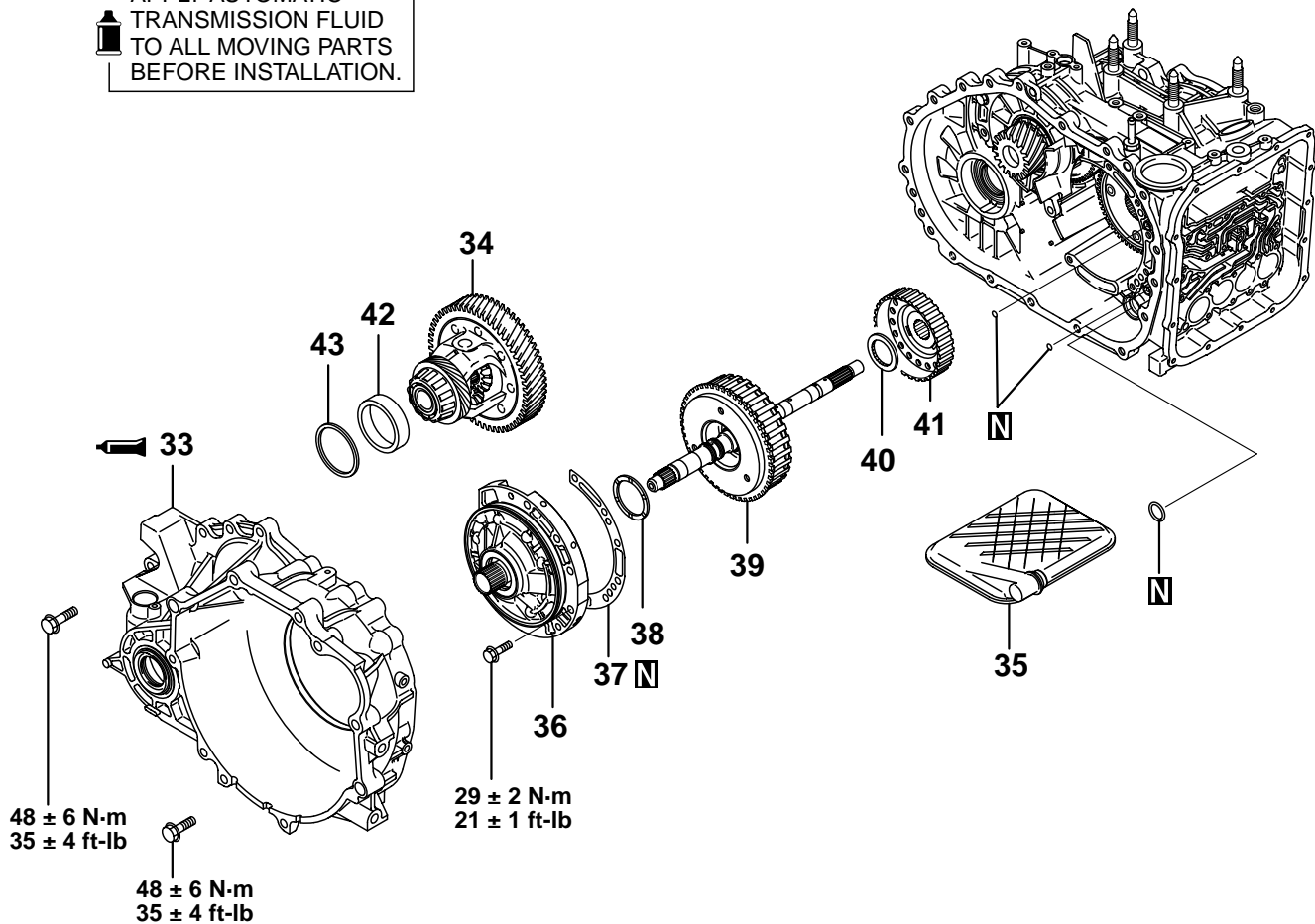
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| • MB990607: Torque Wrench Socket  | • MD998333: Oil Pump Remover           |
| • MB990930: Installer Adapter     | • MD998350: Bearing Installer          |
| • MB990931: Installer Adapter     | • MD998412: Guide                      |
| • MB990935: Installer Adapter     | • MD998903: Spring Compressor          |
| • MB990938: Handle                | • MD998913: Dial Gauge Extension       |
| • MB991625: Special Socket (41)   | • MD998924: Spring Compressor Retainer |
| • MB991631: Clearance Dummy Plate |  |



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- |                                    |                                       |
|------------------------------------|---------------------------------------|
| 20. VALVE BODY                     | 27. ACCUMULATOR PISTON                |
| 21. STEEL BALL                     | 28. ACCUMULATOR SPRING                |
| 22. GASKET                         | 29. ACCUMULATOR SPRING                |
| 23. SNAP RING                      | 30. MANUAL CONTROL LEVER SHAFT ROLLER |
| 24. SOLENOID VALVE HARNESS         | 31. MANUAL CONTROL LEVER SHAFT        |
| 25. STRAINER                       | 32. PARKING PAWL ROD                  |
| 26. SECOND BRAKE RETAINER OIL SEAL |                                       |

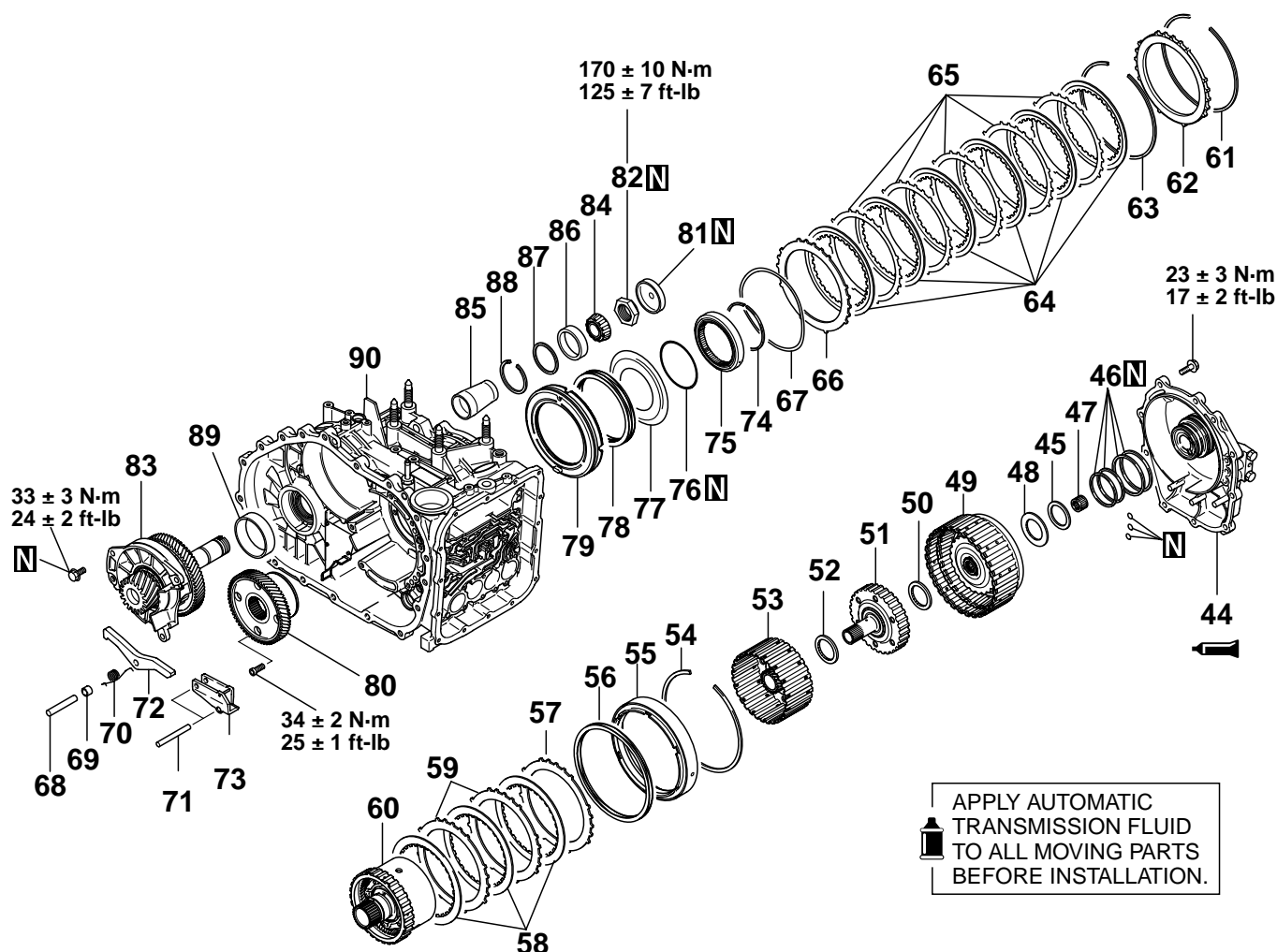
APPLY AUTOMATIC  
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- 33. TORQUE CONVERTER HOUSING
- 34. DIFFERENTIAL
- 35. OIL FILTER
- 36. OIL PUMP
- 37. GASKET
- 38. THRUST WASHER NO.1

- 39. UNDERDRIVE CLUTCH AND INPUT SHAFT
- 40. THRUST BEARING NO.2
- 41. UNDERDRIVE CLUTCH HUB
- 42. OUTER RACE
- 43. SPACER



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- |                                  |                                  |
|----------------------------------|----------------------------------|
| 44. REAR COVER                   | 68. PARKING PAWL SHAFT           |
| 45. THRUST RACE NO.8             | 69. SPACER                       |
| 46. SEAL RING                    | 70. PARKING PAWL SPRING          |
| 47. INPUT SHAFT REAR BEARING     | 71. PARKING ROLLER SUPPORT SHAFT |
| 48. THRUST BEARING NO.7          | 72. PARKING PAWL                 |
| 49. REVERSE AND OVERDRIVE CLUTCH | 73. PARKING ROLLER SUPPORT       |
| 50. THRUST BEARING NO.6          | 74. SNAP RING                    |
| 51. OVERDRIVE CLUTCH HUB         | 75. ONE-WAY CLUTCH INNER RACE    |
| 52. THRUST BEARING NO.5          | 76. O-RING                       |
| 53. PLANETARY REVERSE SUN GEAR   | 77. SPRING RETAINER              |
| 54. SNAP RING                    | 78. RETURN SPRING                |
| 55. SECOND BRAKE PISTON          | 79. LOW-REVERSE BRAKE PISTON     |
| 56. RETURN SPRING                | 80. TRANSFER DRIVE GEAR          |
| 57. PRESSURE PLATE               | 81. CAP                          |
| 58. SECOND BRAKE DISCS           | 82. JAM NUT                      |
| 59. SECOND BRAKE PLATES          | 83. OUTPUT SHAFT                 |
| 60. PLANETARY CARRIER ASSEMBLY   | 84. TAPER ROLLER BEARING         |
| 61. SNAP RING                    | 85. COLLAR                       |
| 62. REACTION PLATE               | 86. OUTER RACE                   |
| 63. SNAP RING                    | 87. SPACER                       |
| 64. LOW-REVERSE BRAKE DISCS      | 88. SNAP RING                    |
| 65. LOW-REVERSE BRAKE PLATES     | 89. OUTER RACE                   |
| 66. PRESSURE PLATE               | 90. TRANSAXLE CASE               |
| 67. WAVE SPRING                  |                                  |

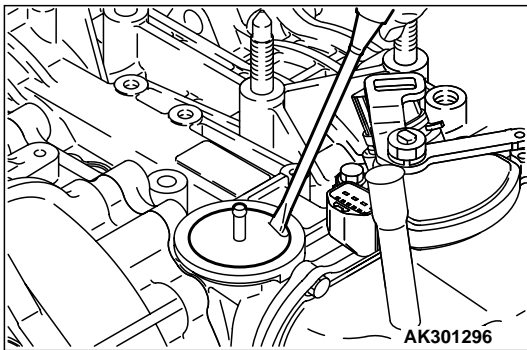
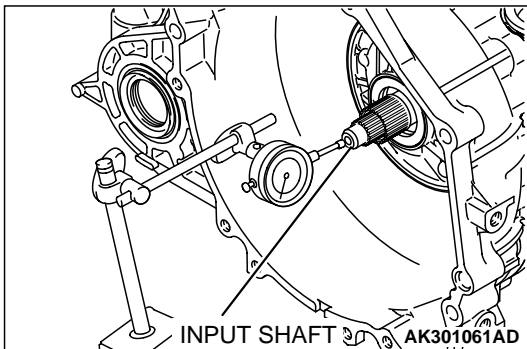


## DISASSEMBLY

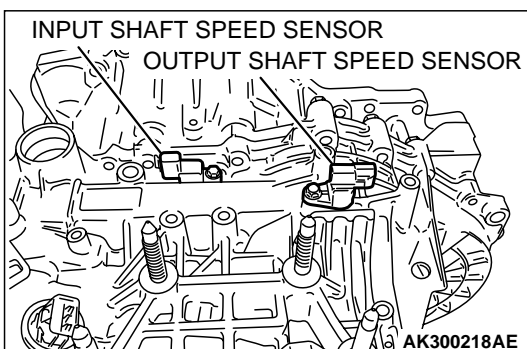
### **⚠ CAUTION**

- Because the automatic transaxle is manufactured from high-precision parts, care must be taken not to scratch or damage these parts during disassembly and assembly.
- Work on a rubber mat and keep it clean at all times.
- Do not wear any cloth gloves and do not use any shop towels during disassembly. Use only nylon cloth, paper towels or any other lint-free material.
- 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 plates and rubber parts should be cleaned with automatic transmission fluid (ATF).
- If the transaxle body has been damaged, disassemble and clean the cooler system.

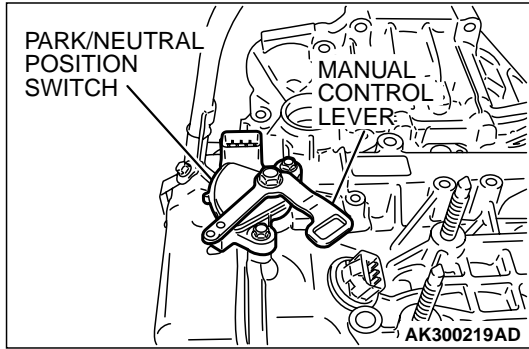
1. Remove the torque converter.
2. Use a dial gauge to measure the input shaft end play.
3. Remove each bracket.
4. Remove the dipstick.
5. Remove the eye bolt, gaskets and the oil cooler feed tube.



6. Remove the air breather by jabbing a screw driver into the air breather and prying it up.

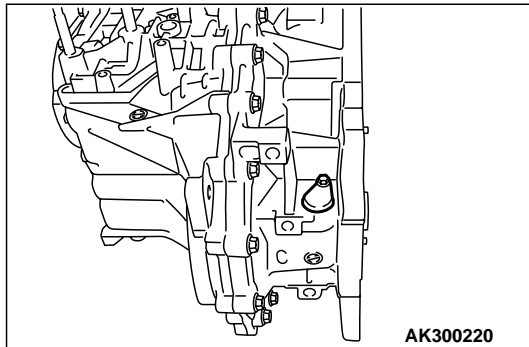


7. Remove the input shaft speed sensor and output shaft speed sensor.

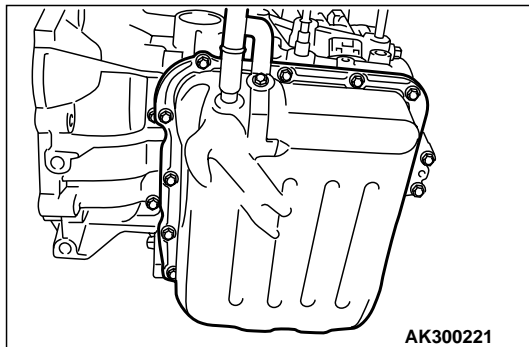
**⚠ CAUTION**

The manual control lever tightening nut must be removed before removing the valve body. If the valve body is removed before the nut, the park/neutral position switch will be damaged.

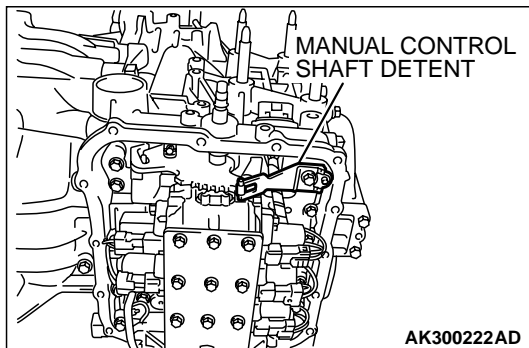
8. Loosen the manual control lever tightening nut, and then remove the manual control lever and the park/neutral position switch.



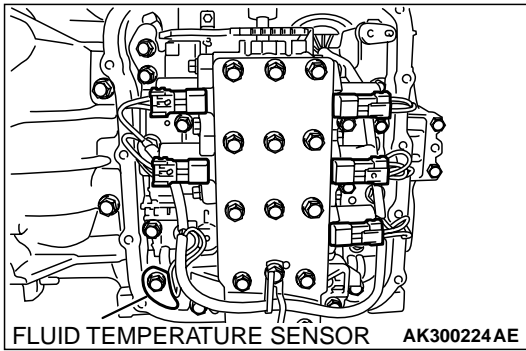
9. Remove the Sealing cap and o-ring.



10. Remove the valve body cover.



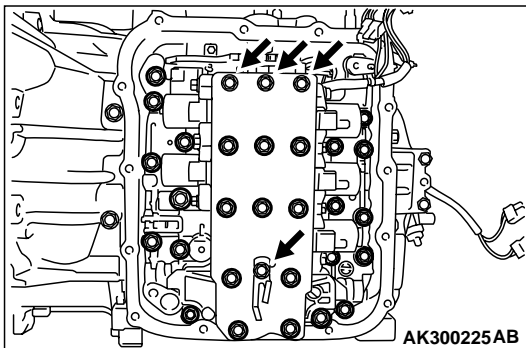
11. Remove the manual control shaft detent.



12. Disconnect the solenoid valve harness from the valve body by disconnecting the fluid temperature sensor and all the connectors.

**⚠ CAUTION**

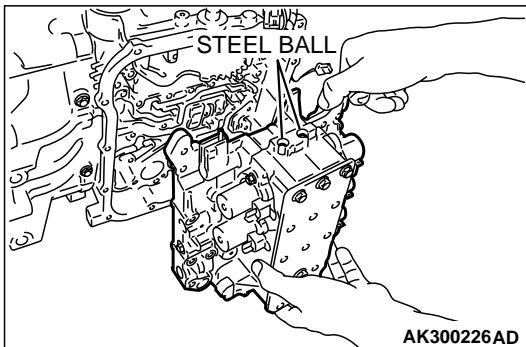
- Make sure that the manual control lever and the park/neutral position switch are removed. See step 8.
- Do not remove the bolts (four pieces) shown in the illustration.



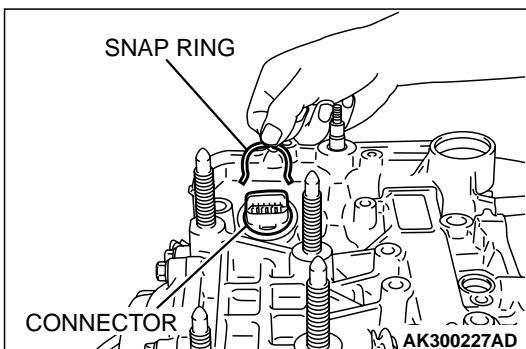
13. Remove the valve body mounting bolts (twenty seven pieces).

**⚠ CAUTION**

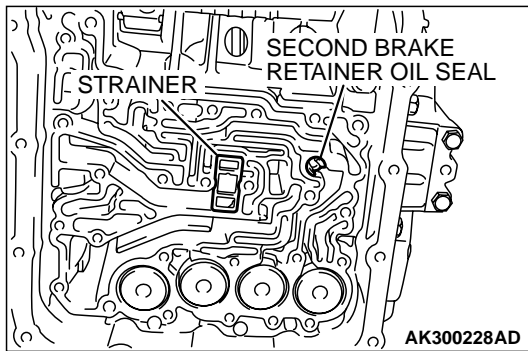
**Do not lose the two steel balls.**



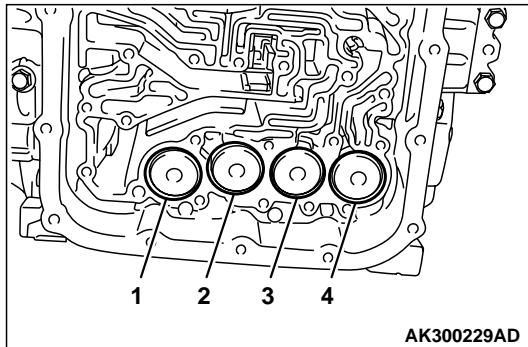
14. Remove the valve body, gasket, and the steel balls (two pieces).



15. Remove the snap ring from the connector. Push the connector into the transaxle case and remove the solenoid valve harness.

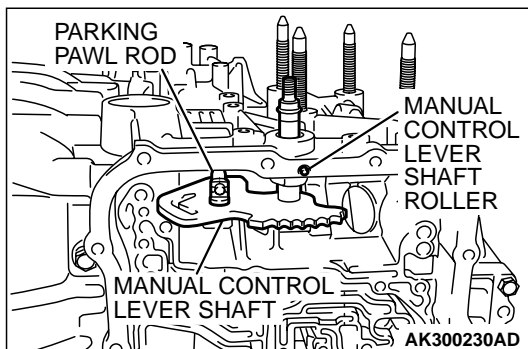


16. Remove the strainer and the second brake retainer oil seal.



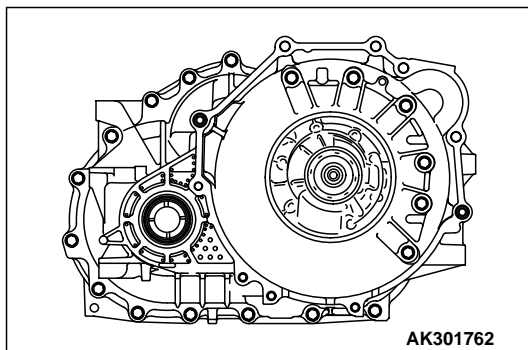
17. Remove each accumulator piston and spring.

| NUMBER | NAME                  |
|--------|-----------------------|
| 1      | For low-reverse brake |
| 2      | For underdrive clutch |
| 3      | For second brake      |
| 4      | For overdrive clutch  |



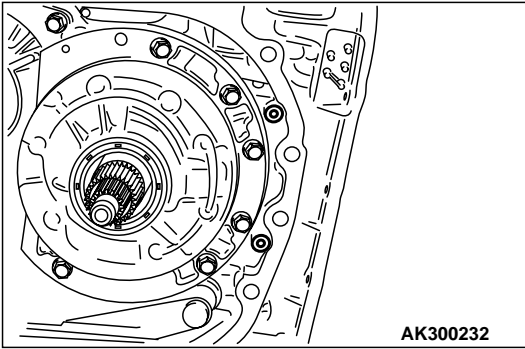
18. Remove the manual control lever shaft roller.

19. Remove the manual control lever shaft and the parking pawl rod.

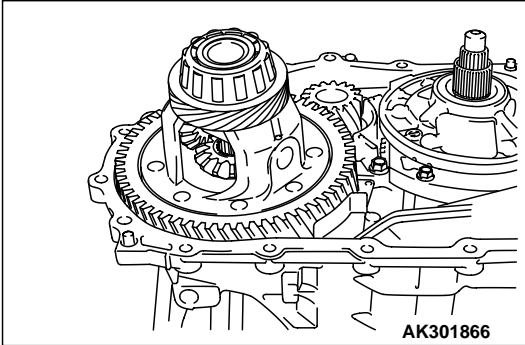


20. Remove the torque converter housing mounting bolts (eighteen pieces), and then remove the torque converter housing.

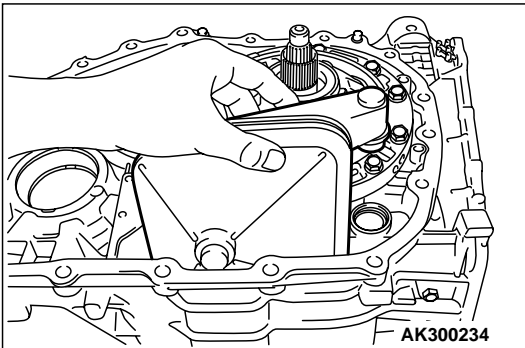
21. Remove the differential bearing outer race and spacer from the torque converter housing.



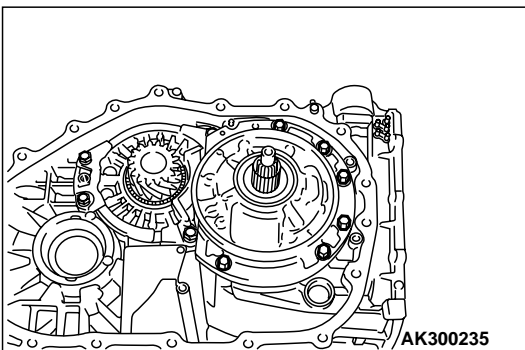
22.Remove the O-rings (two pieces).



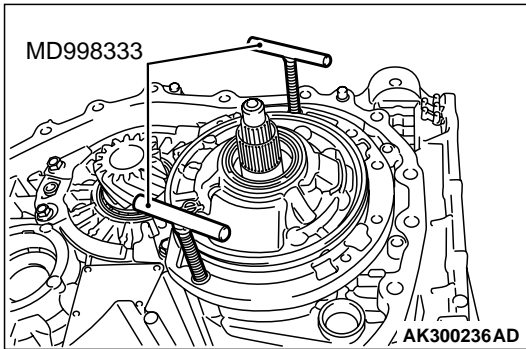
23.Remove the differential.



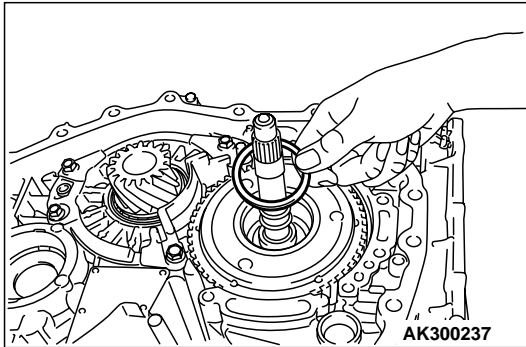
24.Remove the oil filter.



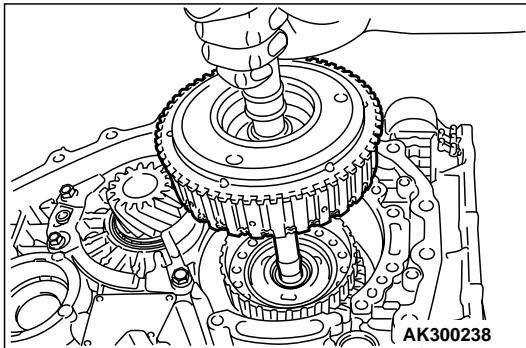
25.Remove the oil pump mounting bolts (six pieces).



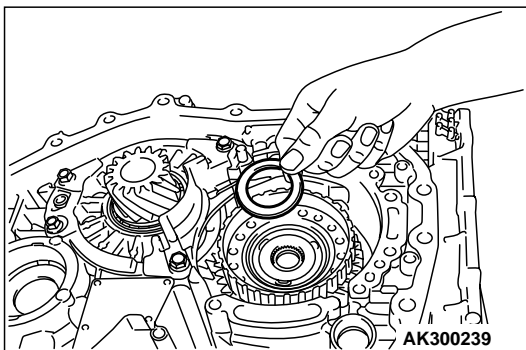
26. Use special tools MD998333 in position shown in the drawing.
27. Turn special tools MD998333 to remove the oil pump.
28. Remove the oil pump gasket.



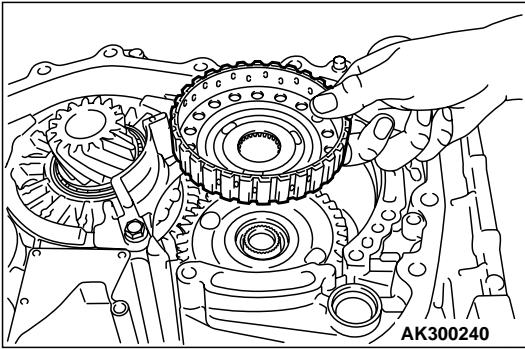
29. Remove thrust washer number 1.



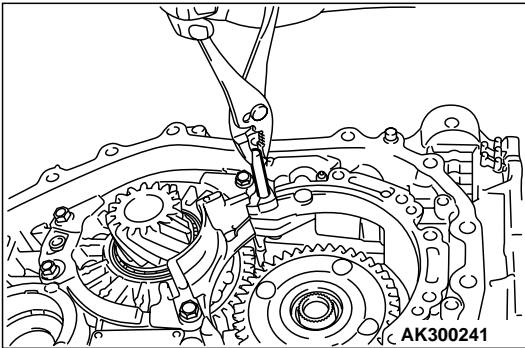
30. Holding the input shaft, remove the underdrive clutch and input shaft.



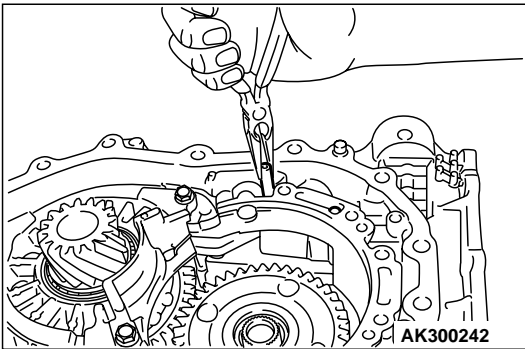
31. Remove thrust bearing number 2.



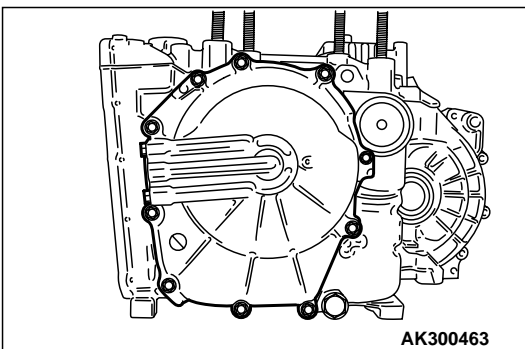
32.Remove the underdrive clutch hub.



33.Remove the parking pawl shaft, and then remove the spacer and spring.



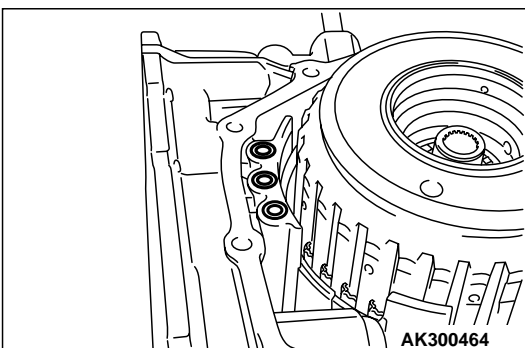
34.Remove the parking roller support shafts (two pieces), and then remove the parking pawl and parking roller support.



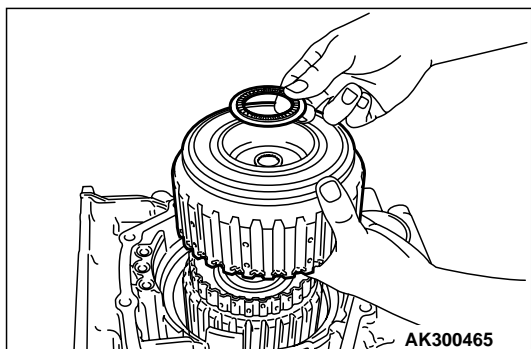
35.Remove the rear cover and input shaft rear bearing.

36.Remove thrust race number 8.

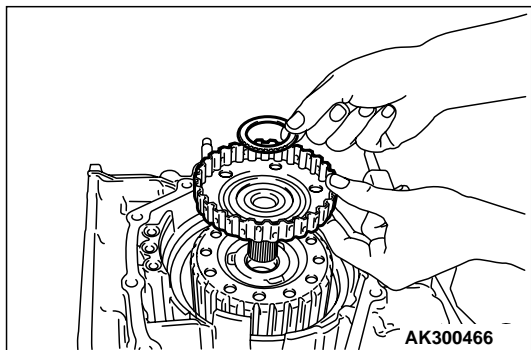
37.Remove the seal rings (four pieces).



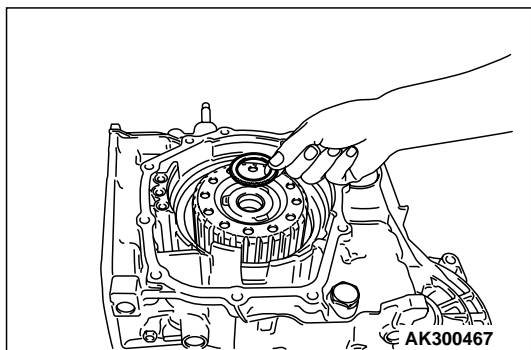
38.Remove the O-rings (three pieces).



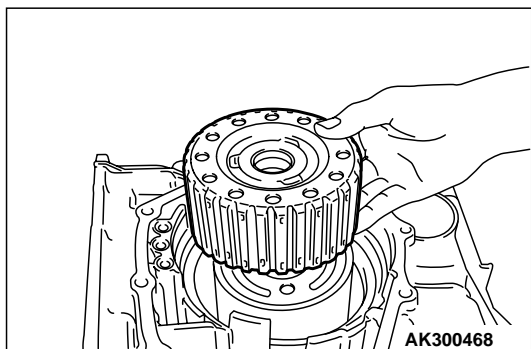
39.Remove the reverse and overdrive clutch and thrust bearing number 7.



40.Remove overdrive clutch hub and thrust bearing number 6.

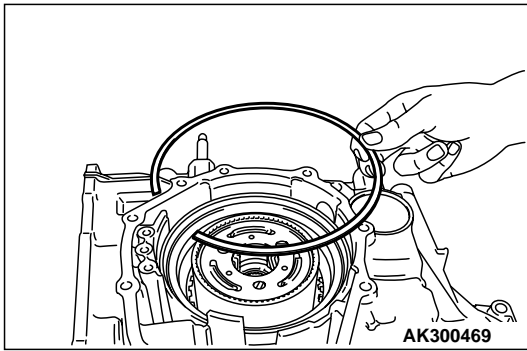


41.Remove thrust bearing number 5.

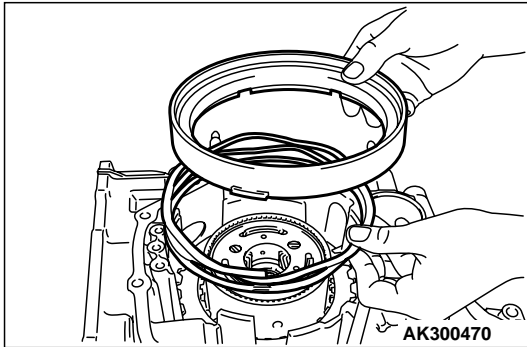


42.Remove the planetary reverse sun gear.

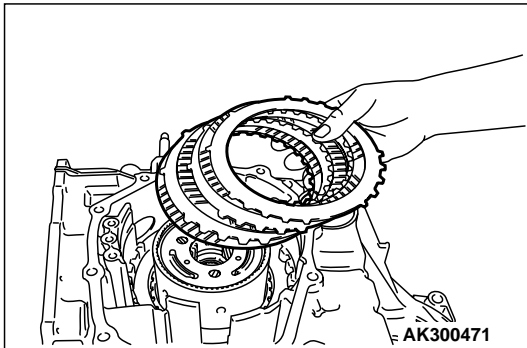




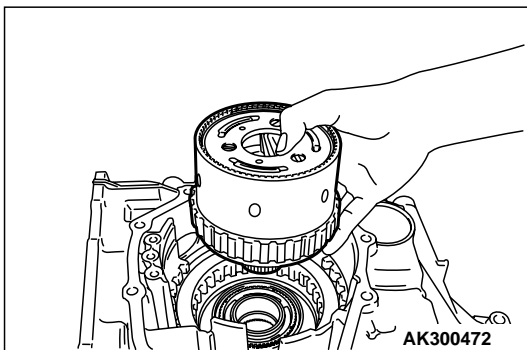
43.Remove the snap ring.



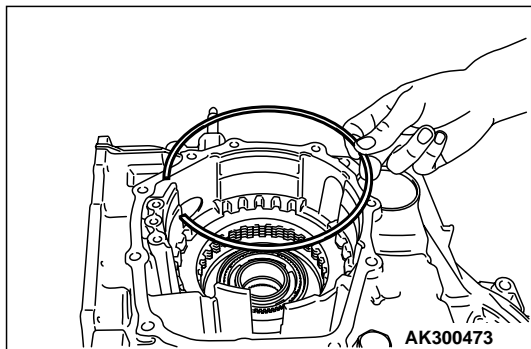
44.Remove the second brake piston and the return spring.



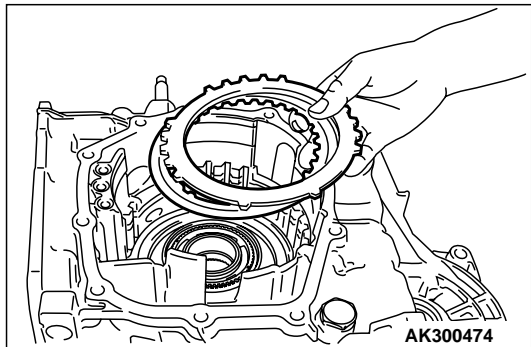
45.Remove the brake plates (two pieces), brake discs (three pieces) and pressure plate.



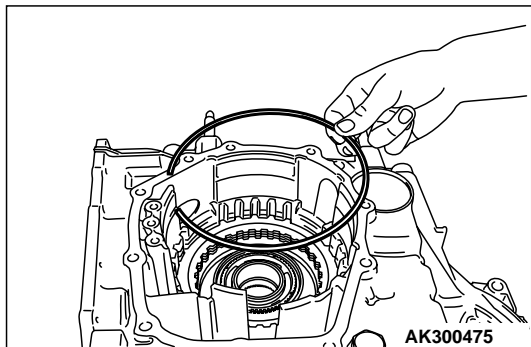
46.Remove the planetary carrier assembly.



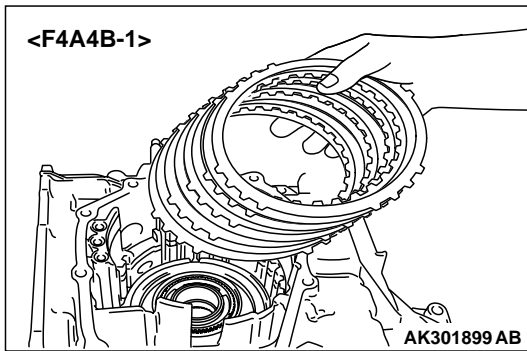
47.Remove the snap ring.



48.Remove the reaction plate and the brake disc.



49.Remove the snap ring.

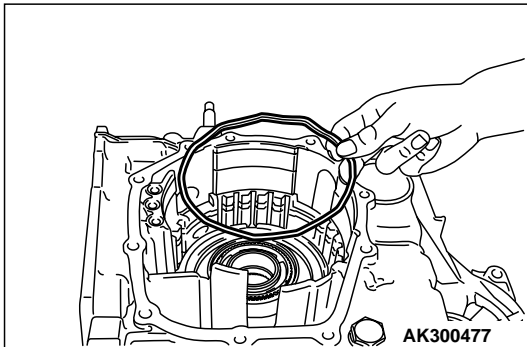
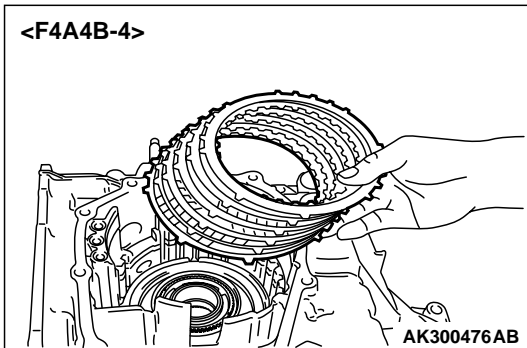


50. Remove the brake plates, brake discs and pressure plate.

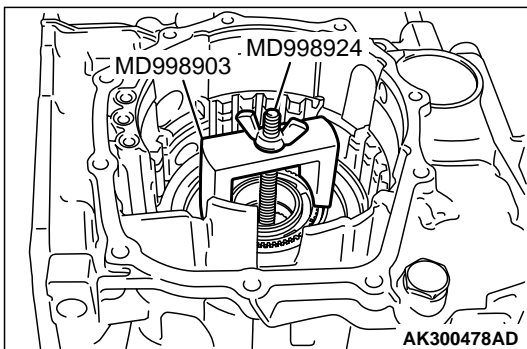
**Number of brake discs and plates**

| Model   | Brake disc | Brake plate | Pressure plate |
|---------|------------|-------------|----------------|
| F4A4B-1 | 4*         | 5           | 1              |
| F4A4B-4 | 5*         | 6           | 1              |

*NOTE: \*Includes the brake discs removed in step 48.*

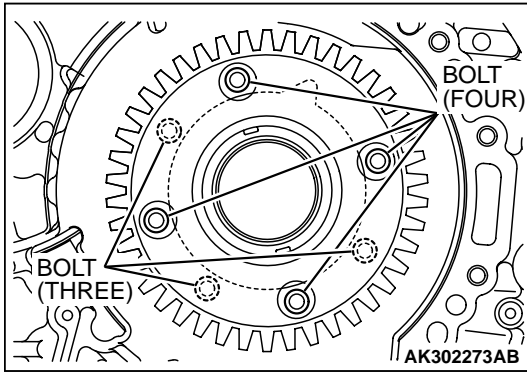


51. Remove the wave spring.

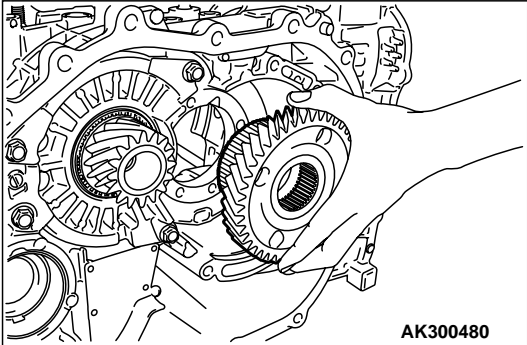


52. Remove the one-way clutch inner race and low-reverse brake piston as follows:

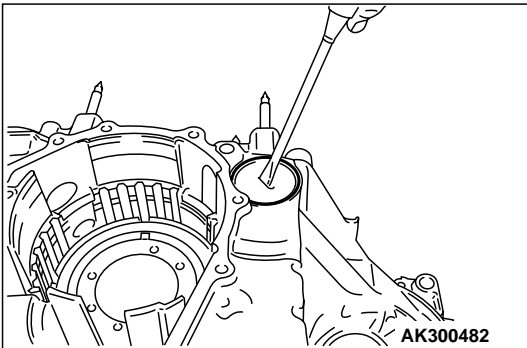
- (1) Using special tools MD998903 and MD998924, compress the one-way clutch inner race.
- (2) Remove the snap ring.
- (3) Remove the special tools.
- (4) Remove the one-way clutch inner race, O-ring, spring retainer, return spring and low-reverse brake piston.



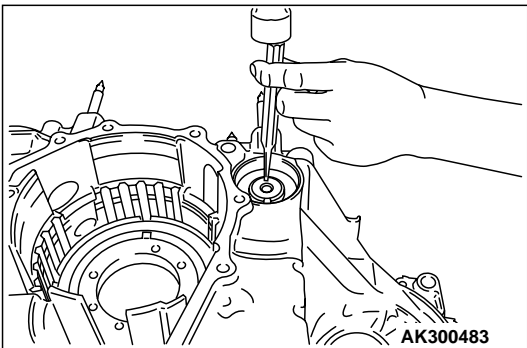
53. Remove the transfer drive gear bearing mounting bolts (three or four pieces). Then, turn the gear 1/8 turn (45 degree angle) and remove the remaining bolts.



54. Remove the transfer drive gear.



55. Remove the cap by jabbing a screw driver into the center of the cap and prying it up.

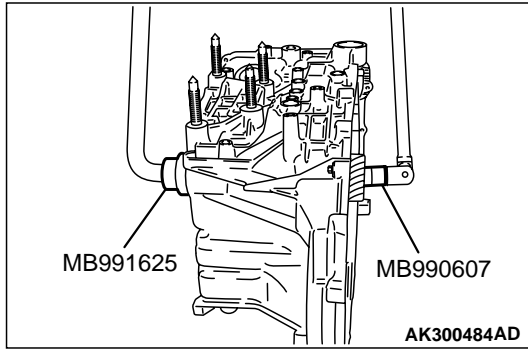


56. Using a chisel, straighten the staked portions from the output shaft jam nut.

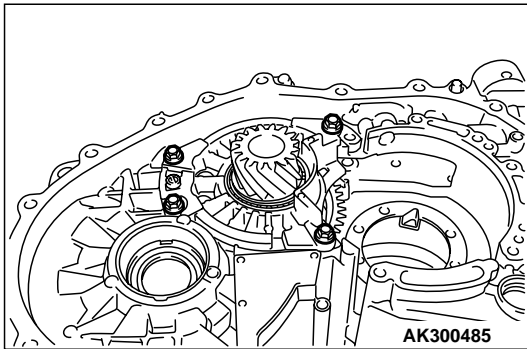
**⚠ CAUTION**

The jam nut is reverse threaded.

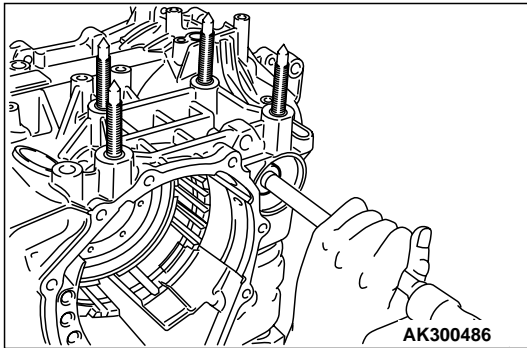
57. Use special tools MB991625 and MB990607 to remove the output shaft jam nut.



58. Remove the bearing retainer mounting bolts.



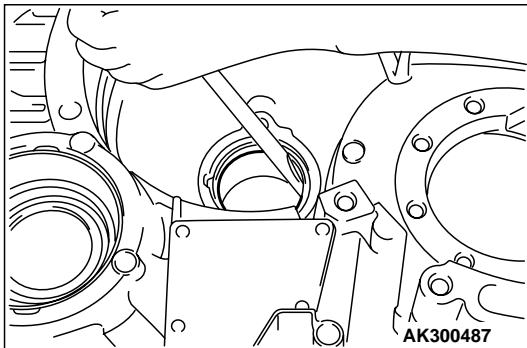
59. Tap on the rear end of the output shaft to remove the output shaft, taper roller bearing and collar.



60. Tap out the outer race and the spacer.

61. Remove the snap ring.

62. Remove the differential bearing outer race from the transaxle case.

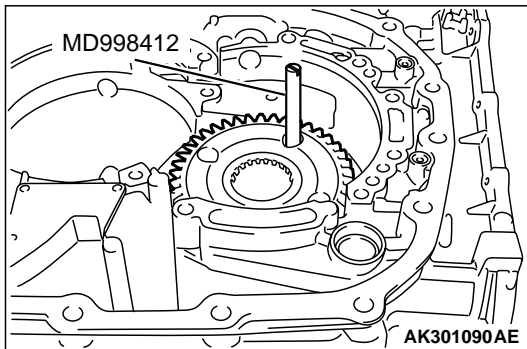


## ASSEMBLY

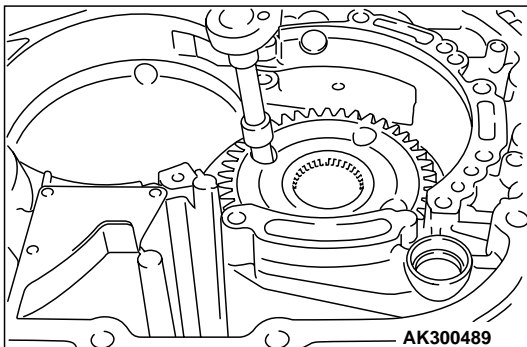
**⚠ CAUTION**

- Do not reuse the gasket, O-ring, oil seal. Always replace with a new one when assembling.
- Do not use grease. Use petroleum jelly (i.e. Vaseline).
- Apply ATF to friction components, rotating parts, and sliding parts before installation. Immerse new clutch discs or brake discs in ATF for at least two hours before assembling them.
- When replacing a bushing, replace the assembly which it belongs to.
- Do not use cloth gloves or shop towels during assembly. Use nylon cloth or other lint-free material.

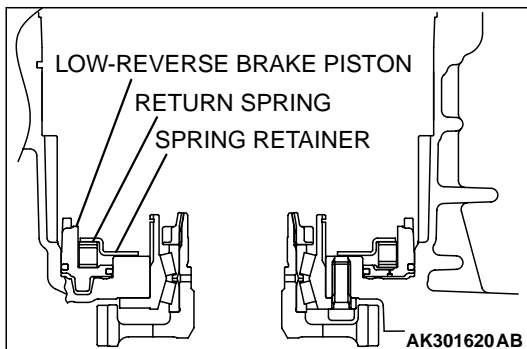
1. Install special tool MD998412 in the installation screw hole of the transfer drive gear bearing located in the transaxle case. Using this as a guide, install the transfer drive gear bearing and gear in the transaxle case.

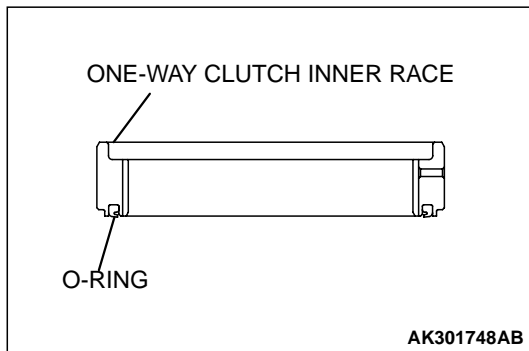


2. Tighten the mounting bolts (seven pieces) of the transfer drive gear bearing to the specified torque.

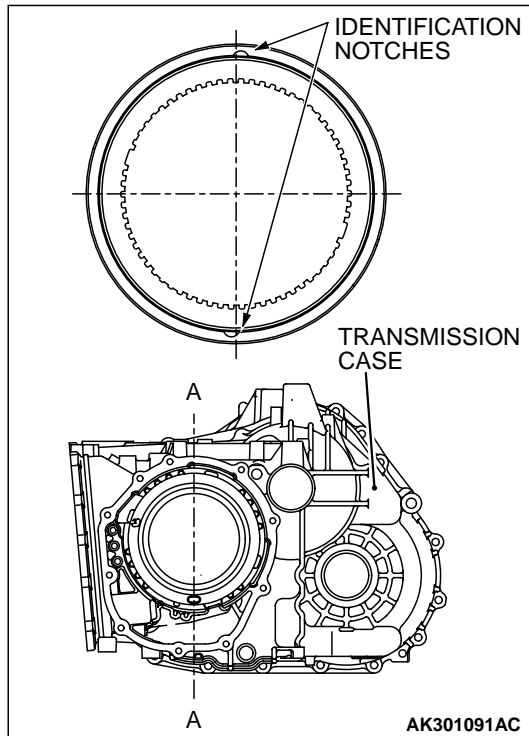
**Tightening torque:** **$34 \pm 2 \text{ N}\cdot\text{m}$  ( $25 \pm 1 \text{ ft}\cdot\text{lb}$ )**

3. Install the low-reverse brake piston, return spring, and spring retainer into the transaxle case.

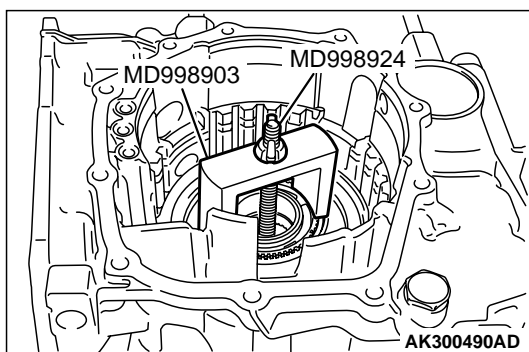




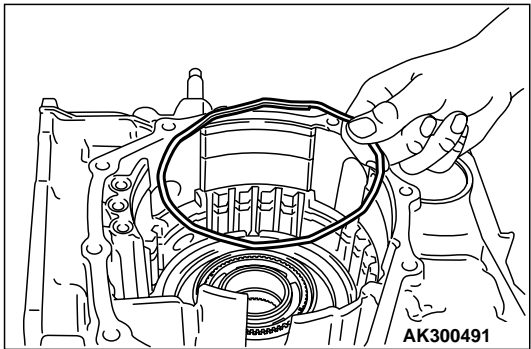
4. Fit a new O-ring into the groove of one-way clutch inner race.



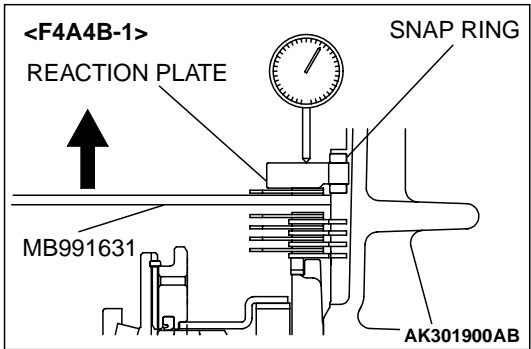
5. Check the placement of the identification notches in the one-way clutch inner race. Install the one-way clutch inner race to the transfer drive gear bearing so that the notches fall along the A – A line.



6. Put the snap ring on the inner race.
7. Set special tools MD998903 and MD998924 as shown, and then compress the one-way clutch inner race and install the snap ring.



8. Install the wave spring onto the low-reverse brake piston.



9. Install the brake discs, brake plates and snap ring as shown in the figure.

Number of brake discs and plates

| Model   | Brake disc | Brake plate |
|---------|------------|-------------|
| F4A4B-1 | 4*         | 5           |
| F4A4B-4 | 5*         | 6           |

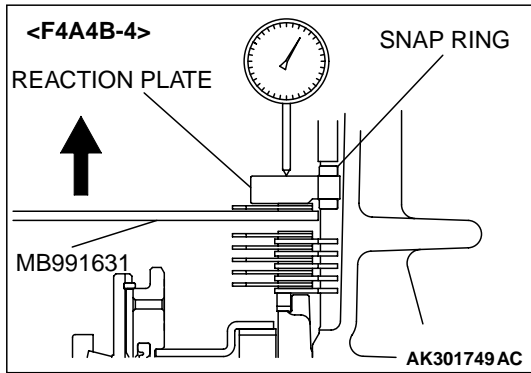
*NOTE: Do not install the pressure plate at this time.*

10. Install special tool MB991631 on the brake disc.

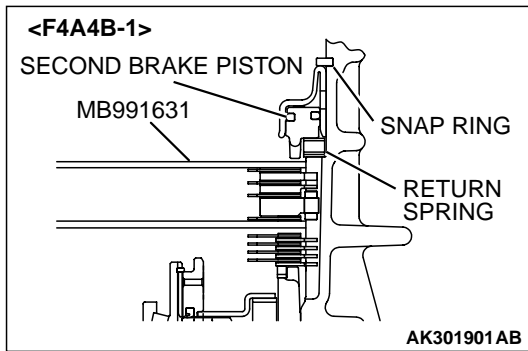
11. Install the reaction plate and the used snap ring.

12. Move special tool MB991631 to measure the end play of reaction plate. Then replace the snap ring installed in step 11 to adjust the end play to standard value.

**Standard value: 0 – 0.16 mm (0 – 0.0063 inch)**





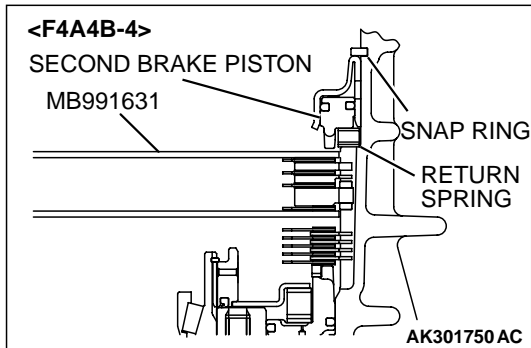


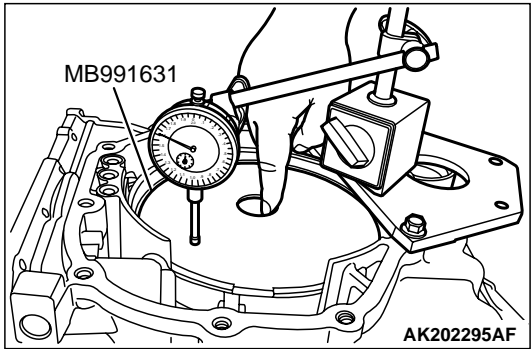
13. Install the brake discs (three pieces) and brake plates (two pieces) as shown in the figure.

*NOTE: Do not install the pressure plate at this time.*

14. Place special tool MB991631 on top of the brake disc in place of the pressure plate.

15. Install the return spring, second brake piston and snap ring.





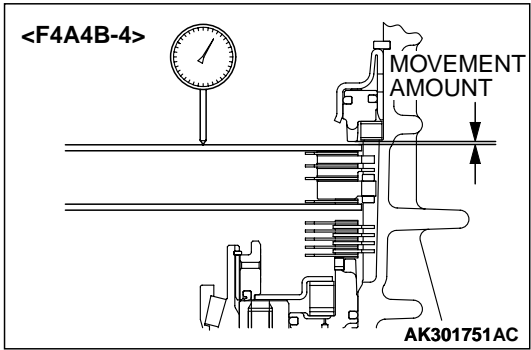
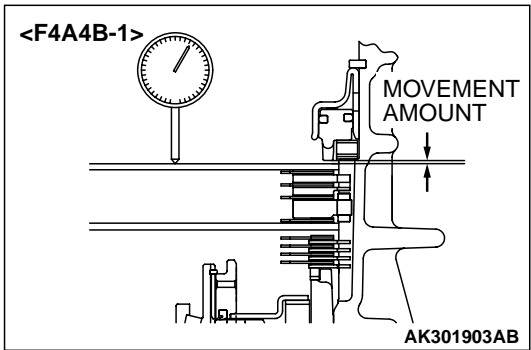
16.Move special tool MB991631 and measure its movement.

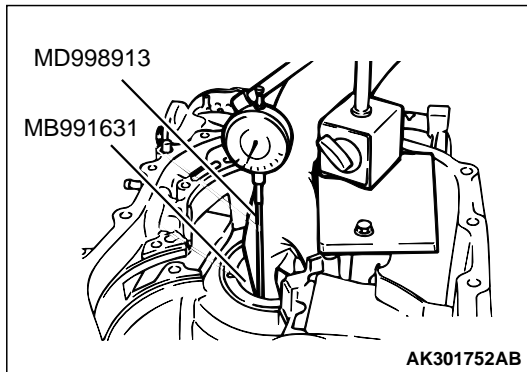
**Standard value of end play (Reference):**  
**0.79 – 1.25 mm (0.0311 – 0.0492 inch)**

17.Select a pressure plate whose thickness corresponds to the measured amount of movement from the following table.

**PRESSURE PLATE FOR SECOND BRAKE**

| MOVEMENT<br>AMOUNT<br>mm (in) | THICKNESS<br>mm (in) | ID<br>SYMBOL |
|-------------------------------|----------------------|--------------|
| 0.6 – 0.8<br>(0.024 – 0.031)  | 1.6 (0.063)          | L            |
| 0.8 – 1.0<br>(0.031 – 0.039)  | 1.8 (0.071)          | 1            |
| 1.0 – 1.2<br>(0.039 – 0.047)  | 2.0 (0.079)          | 0            |
| 1.2 – 1.4<br>(0.047 – 0.055)  | 2.2 (0.087)          | 2            |
| 1.4 – 1.6<br>(0.055 – 0.063)  | 2.4 (0.094)          | 4            |
| 1.6 – 1.8<br>(0.063 – 0.071)  | 2.6 (0.102)          | 6            |





18. Turn the transaxle over so that the installation surface of the torque converter housing is facing up.

Install special tool MD998913 in a dial gauge, and then move special tool MB991631 and measure its movement.

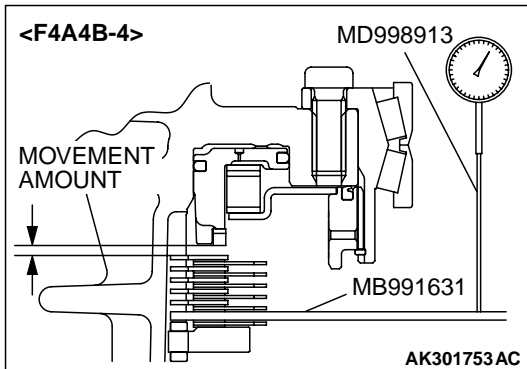
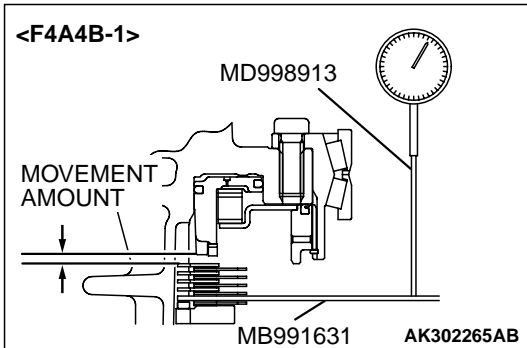
**Standard value of end play (Reference):**

**1.35 – 1.81 mm (0.0531 – 0.0713 inch) <F4A4B-1>**

**1.65 – 2.11 mm (0.0649 – 0.0831 inch) <F4A4B-4>**

19. Select a pressure plate whose thickness corresponds to the measured amount of movement from the table below.

**PRESSURE PLATE FOR LOW-REVERSE BRAKE  
<F4A4B-1>**



| MOVEMENT<br>AMOUNT<br>mm (in) | THICKNESS<br>mm (in) | ID<br>SYMBOL |
|-------------------------------|----------------------|--------------|
| 1.0 – 1.2<br>(0.039 – 0.047)  | 1.6 (0.063)          | L            |
| 1.2 – 1.4<br>(0.047 – 0.055)  | 1.8 (0.071)          | 1            |
| 1.4 – 1.6<br>(0.055 – 0.063)  | 2.0 (0.079)          | 0            |
| 1.6 – 1.8<br>(0.063 – 0.071)  | 2.2 (0.087)          | 2            |
| 1.8 – 2.0<br>(0.071 – 0.079)  | 2.4 (0.094)          | 4            |
| 2.0 – 2.2<br>(0.079 – 0.087)  | 2.6 (0.102)          | 6            |
| 2.2 – 2.4<br>(0.087 – 0.094)  | 2.8 (0.110)          | 8            |
| 2.4 – 2.6<br>(0.094 – 0.102)  | 3.0 (0.118)          | D            |

**PRESSURE PLATE FOR LOW-REVERSE BRAKE  
<F4A4B-4>**

| <b>MOVEMENT<br/>AMOUNT<br/>mm (in)</b> | <b>THICKNESS<br/>mm (in)</b> | <b>ID<br/>SYMBOL</b> |
|--|------------------------------|----------------------|
| 1.3 – 1.5<br>(0.051 – 0.059)           | 1.6 (0.063)                  | L                    |
| 1.5 – 1.7<br>(0.059 – 0.067)           | 1.8 (0.071)                  | 1                    |
| 1.7 – 1.9<br>(0.067 – 0.075)           | 2.0 (0.079)                  | 0                    |
| 1.9 – 2.1<br>(0.075 – 0.083)           | 2.2 (0.087)                  | 2                    |
| 2.1 – 2.3<br>(0.083 – 0.091)           | 2.4 (0.094)                  | 4                    |
| 2.3 – 2.5<br>(0.091 – 0.098)           | 2.6 (0.102)                  | 6                    |
| 2.5 – 2.7<br>(0.098 – 0.106)           | 2.8 (0.110)                  | 8                    |
| 2.7 – 2.9<br>(0.106 – 0.114)           | 3.0 (0.118)                  | D                    |

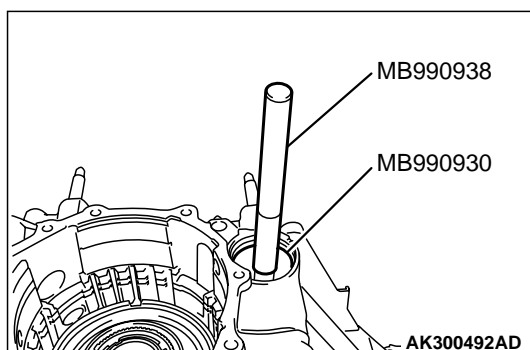
**⚠ CAUTION**

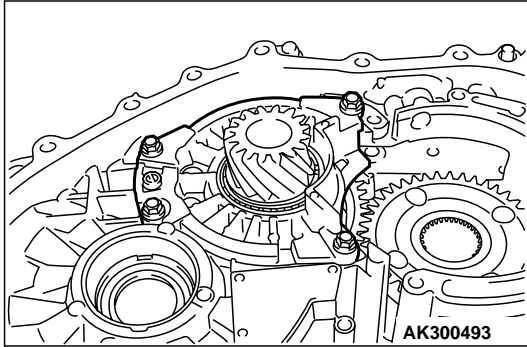
**If necessary, take the measurements in steps 9 to 18 after replacing the pressure plate, brake plate and brake disc.**

20. Remove all parts and special tools that were installed to take the measurements in steps 9 to 18. Remove and separate the pressure plate and snap ring chosen in steps 12, 16 and 18.

21. Install the snap ring into the groove of transaxle case output shaft bore.

22. Use special tools MB990930 and MB990938 to tap the output shaft bearing outer race in the transaxle case.





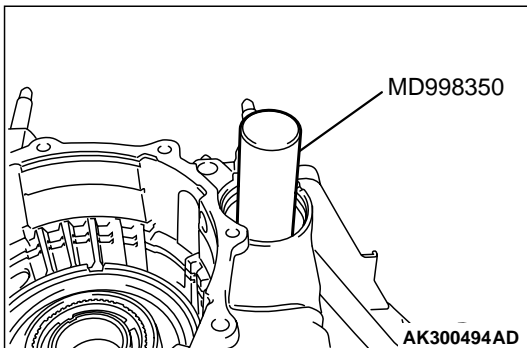
**⚠ CAUTION**

**Do not reuse the bolt, as it has had sealant applied.**

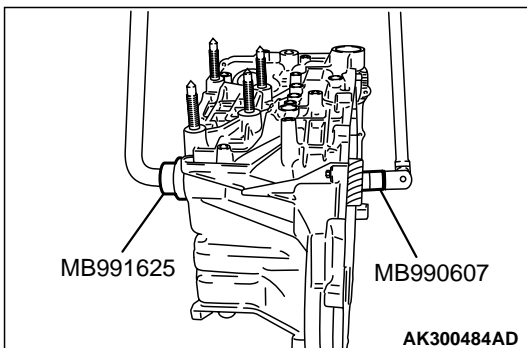
23. Tighten the mounting bolts of the output shaft bearing retainer to the specified torque.

**Tightening torque:**

**$29 \pm 2 \text{ N}\cdot\text{m}$  ( $21 \pm 1 \text{ ft}\cdot\text{lb}$ )**



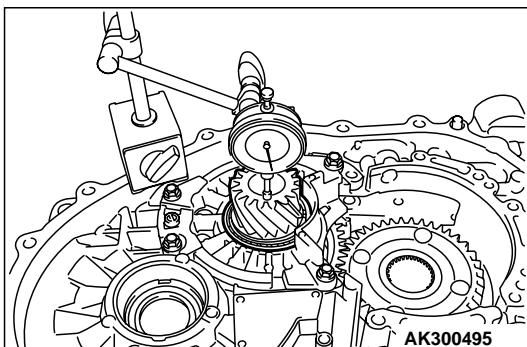
24. Use special tool MD998350 to install the collar and taper roller bearing on the output shaft.



25. Apply ATF to a new jam nut, and use special tools MB990607 and MB991625 to tighten the jam nut to the specified torque. Then turn back one turn, and tighten to the specified torque again.

**Tightening torque:  $170 \pm 10 \text{ N}\cdot\text{m}$  ( $125 \pm 7 \text{ ft}\cdot\text{lb}$ )**

**NOTE: The jam nut is reverse threaded.**



26. Move the output shaft to measure the end play and record the measurement value.

27. Remove the parts that were installed in steps 22 to 25.

28. Select a spacer whose thickness corresponds to the measured amount of movement from the following table.

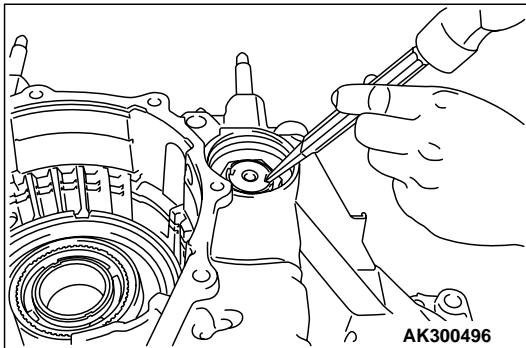
## SPACER FOR OUTPUT SHAFT

| MOVEMENT<br>AMOUNT<br>mm (in)    | THICKNESS<br>mm (in) | ID<br>SYMBOL |
|----------------------------------|----------------------|--------------|
| 1.81 – 1.85 (0.0713<br>– 0.0728) | 1.88 (0.0740)        | 88           |
| 1.85 – 1.89 (0.0728<br>– 0.0744) | 1.92 (0.0756)        | 92           |
| 1.89 – 1.93 (0.0744<br>– 0.0760) | 1.96 (0.0772)        | 96           |
| 1.93 – 1.97 (0.0760<br>– 0.0776) | 2.00 (0.0787)        | 00           |
| 1.97 – 2.01 (0.0776<br>– 0.0791) | 2.04 (0.0803)        | 04           |
| 2.01 – 2.05 (0.0791<br>– 0.0807) | 2.08 (0.0819)        | 08           |
| 2.05 – 2.09 (0.0807<br>– 0.0823) | 2.12 (0.0835)        | 12           |
| 2.09 – 2.13 (0.0823<br>– 0.0839) | 2.16 (0.0850)        | 16           |
| 2.13 – 2.17 (0.0839<br>– 0.0854) | 2.20 (0.0866)        | 20           |
| 2.17 – 2.21 (0.0854<br>– 0.0870) | 2.24 (0.0882)        | 24           |
| 2.21 – 2.25 (0.0870<br>– 0.0886) | 2.28 (0.0898)        | 28           |
| 2.25 – 2.29 (0.0886<br>– 0.0902) | 2.32 (0.0913)        | 32           |
| 2.29 – 2.33 (0.0902<br>– 0.0917) | 2.36 (0.0929)        | 36           |
| 2.33 – 2.37 (0.0917<br>– 0.0933) | 2.40 (0.0945)        | 40           |
| 2.37 – 2.41 (0.0933<br>– 0.0949) | 2.44 (0.0961)        | 44           |
| 2.41 – 2.45 (0.0949<br>– 0.0965) | 2.48 (0.0976)        | 48           |
| 2.45 – 2.49 (0.0965<br>– 0.0980) | 2.52 (0.0992)        | 52           |
| 2.49 – 2.53 (0.0980<br>– 0.0996) | 2.56 (0.1008)        | 56           |
| 2.53 – 2.57 (0.0996<br>– 0.1012) | 2.60 (0.1024)        | 60           |

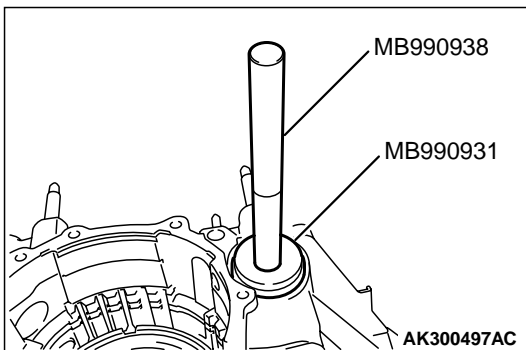
| <b>MOVEMENT<br/>AMOUNT<br/>mm (in)</b> | <b>THICKNESS<br/>mm (in)</b> | <b>ID<br/>SYMBOL</b> |
|--|------------------------------|----------------------|
| 2.57 – 2.61 (0.1012<br>– 0.1028)       | 2.64 (0.1039)                | 64                   |
| 2.61 – 2.65 (0.1028<br>– 0.1043)       | 2.68 (0.1055)                | 68                   |
| 2.65 – 2.69 (0.1043<br>– 0.1059)       | 2.72 (0.1071)                | 72                   |
| 2.69 – 2.73 (0.1059<br>– 0.1075)       | 2.76 (0.1087)                | 76                   |

29.Repeat steps 22 to 25 again, installing each part and using the appropriate adjustment spacer determined in step 28.

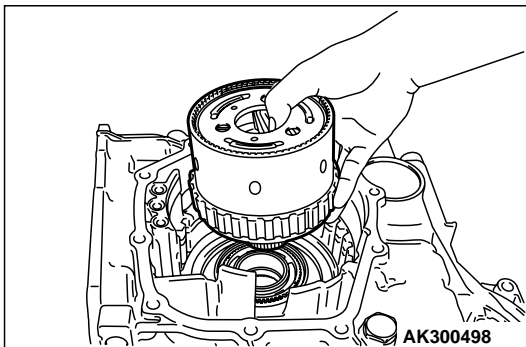
30.Stake the jam nut with a punch (two places).

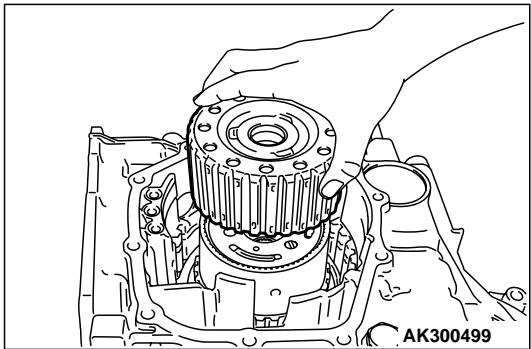


31.Use special tools MB990931 and MB990938 to install the cap as shown in the illustration.

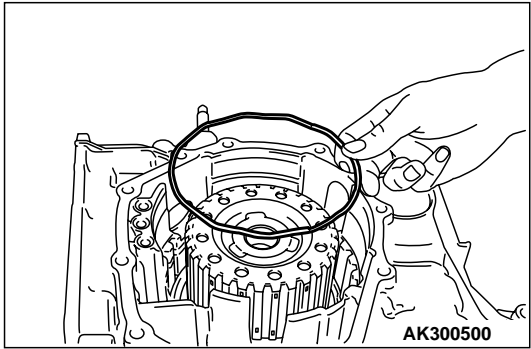


32.Install the planetary carrier assembly.

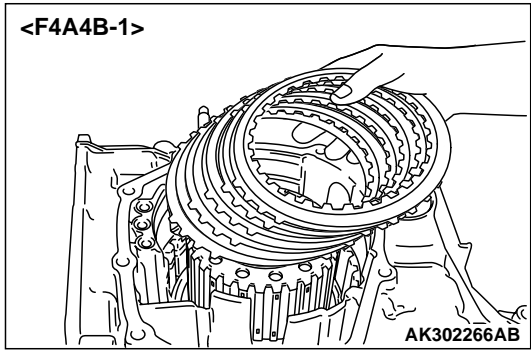




33.Install the planetary reverse sun gear.



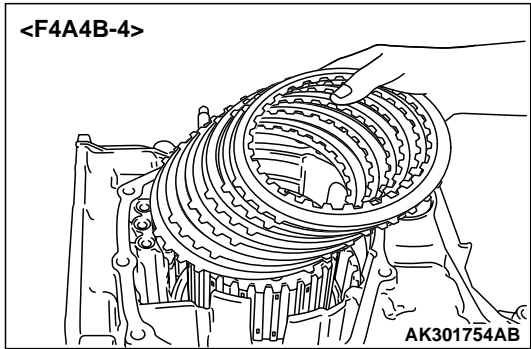
34.Install the wave spring on the low-reverse brake piston.



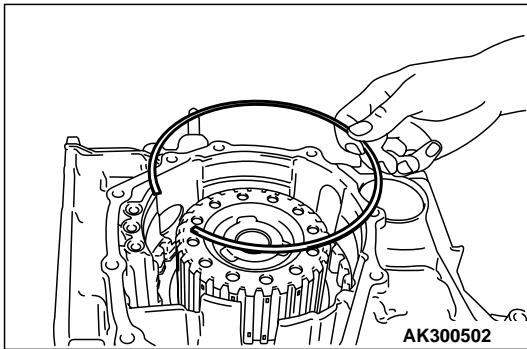
35.Install the pressure plate that was selected in step 19. Next, install brake discs and brake plates, one on top of the other.

**Number of brake discs and plates**

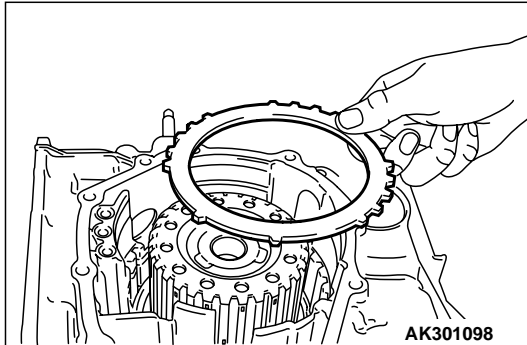
| Model   | Brake disc | Brake plate | Pressure plate |
|---------|------------|-------------|----------------|
| F4A4B-1 | 4          | 5           | 1              |
| F4A4B-4 | 5          | 6           | 1              |



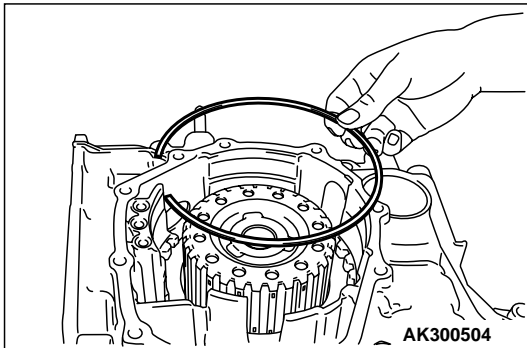




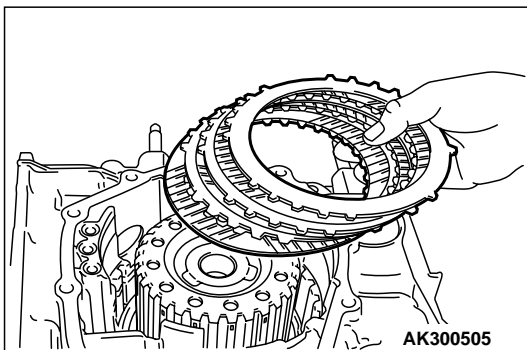
36. Install the snap ring.



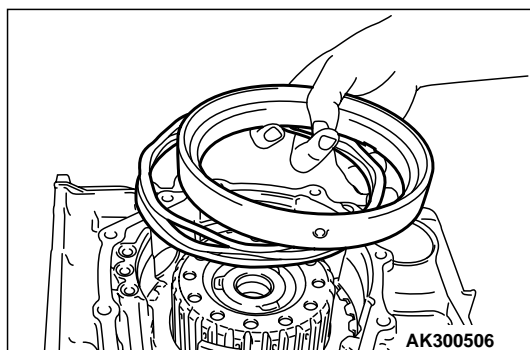
37. Install the reaction plate.



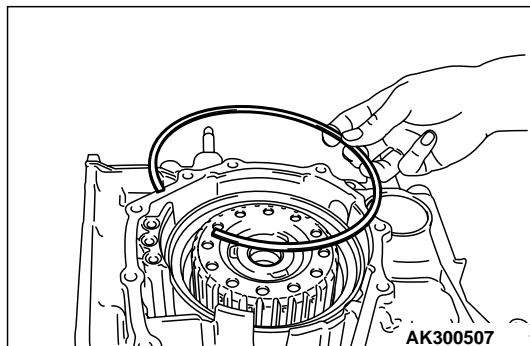
38. Install the snap ring that was selected in step 12.



39. Install brake discs (three pieces) and brake plates (two pieces), one on top of the other. Next, install the pressure plate that was selected in step 17.

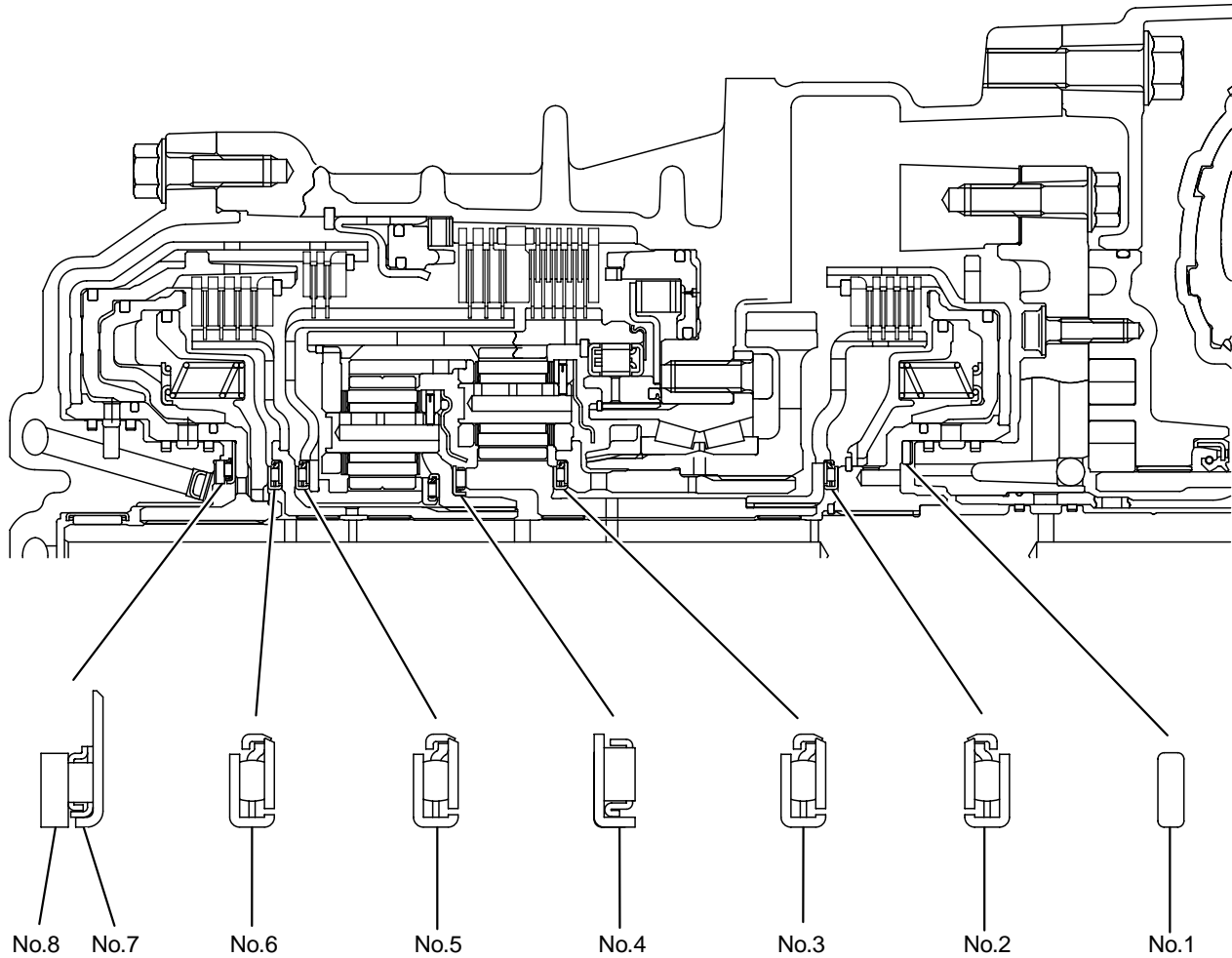


40. Install the return spring and second brake piston.



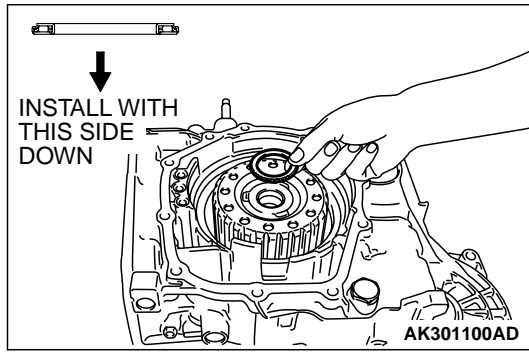
41. Install the snap ring.

**IDENTIFICATION OF THRUST BEARING, THRUST RACES, AND THRUST WASHERS**



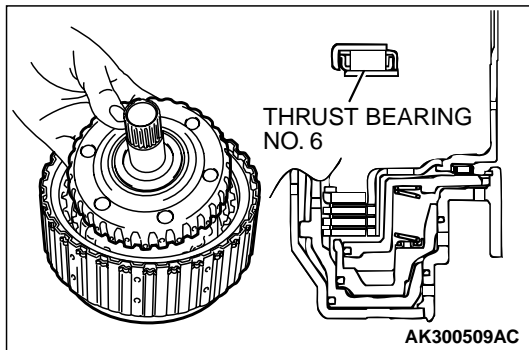
AK301755 AB

| SYMBOL | OD mm<br>(in) | ID mm<br>(in) | THICKNESS<br>mm (in) | SYMBOL | OD mm (in)   | ID mm<br>(in) | THICKNESS<br>mm (in) |
|--------|---------------|---------------|----------------------|--------|--------------|---------------|----------------------|
| No. 1  | 59 (2.32)     | 47 (1.85)     | 1.8 (0.071)          | No. 8  | 48.9 (1.925) | 37 (1.46)     | 1.6 (0.063)          |
|        | 59 (2.32)     | 47 (1.85)     | 2.0 (0.079)          |        | 48.9 (1.925) | 37 (1.46)     | 1.7 (0.067)          |
|        | 59 (2.32)     | 47 (1.85)     | 2.2 (0.087)          |        | 48.9 (1.925) | 37 (1.46)     | 1.8 (0.071)          |
|        | 59 (2.32)     | 47 (1.85)     | 2.4 (0.094)          |        | 48.9 (1.925) | 37 (1.46)     | 1.9 (0.075)          |
|        | 59 (2.32)     | 47 (1.85)     | 2.6 (0.102)          |        | 48.9 (1.925) | 37 (1.46)     | 2.0 (0.079)          |
|        | 59 (2.32)     | 47 (1.85)     | 2.8 (0.110)          |        | 48.9 (1.925) | 37 (1.46)     | 2.1 (0.083)          |
| No. 2  | 49 (1.93)     | 34 (1.34)     | 3.6 (0.142)          |        | 48.9 (1.925) | 37 (1.46)     | 2.2 (0.087)          |
| No. 3  | 49 (1.93)     | 34 (1.34)     | 3.6 (0.142)          |        | 48.9 (1.925) | 37 (1.46)     | 2.3 (0.091)          |
| No. 4  | 46 (1.81)     | 31 (1.22)     | 3.3 (0.130)          |        | 48.9 (1.925) | 37 (1.46)     | 2.4 (0.094)          |
| No. 5  | 49 (1.93)     | 34 (1.34)     | 3.6 (0.142)          |        | 48.9 (1.925) | 37 (1.46)     | 2.5 (0.098)          |
| No. 6  | 49 (1.93)     | 34 (1.34)     | 3.6 (0.142)          |        | 48.9 (1.925) | 37 (1.46)     | 2.6 (0.102)          |
| No. 7  | 59 (2.32)     | 37 (1.46)     | 2.8 (0.110)          |        |              |               |                      |

**⚠ CAUTION**

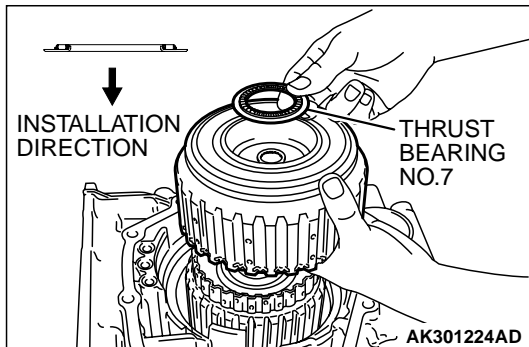
Be sure to install the thrust bearing in the correct direction as shown.

42. Check the installation direction of the thrust bearing number 5, and install it on the hub of the planetary reverse sun gear.

**⚠ CAUTION**

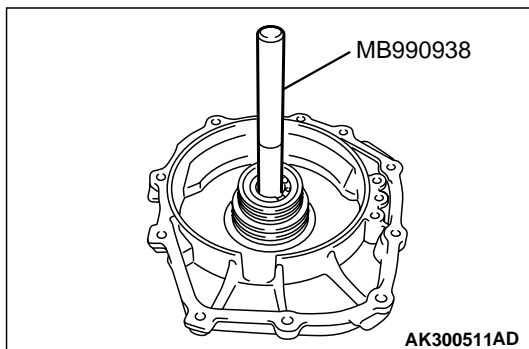
Use care to install the thrust bearing in the proper direction.

43. Attach thrust bearing number 6 to the inside of the overdrive clutch hub using petroleum jelly (Vaseline). Then install the assembly in the reverse and overdrive clutch.

**⚠ CAUTION**

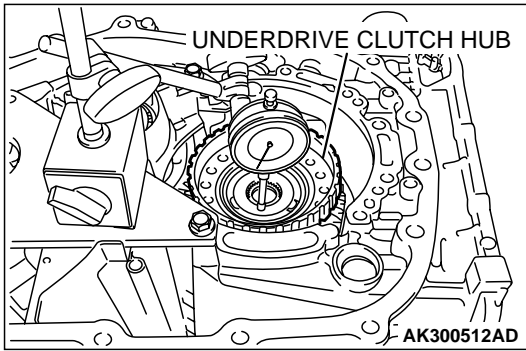
Be sure to install the thrust bearing in the correct direction as shown.

44. Check the installation direction of thrust bearing number 7, and install it on the reverse clutch retainer.



45. Use special tool MB990938 to tap the input shaft rear bearing in the rear cover.

46. Install the seal rings (four pieces) in the grooves of the rear cover.



47. Measure the end play of the under drive sun gear by the following procedures:

- (1) Install the thinnest thrust race number 8 [thickness 1.6 mm (0.063 inch); part number MD707267] on thrust bearing number 7.
- (2) Install the rear cover on the transaxle case and tighten the bolts to the specified torque.

**Tightening torque: 23 ± 3 N·m (17 ± 2 ft-lb)**

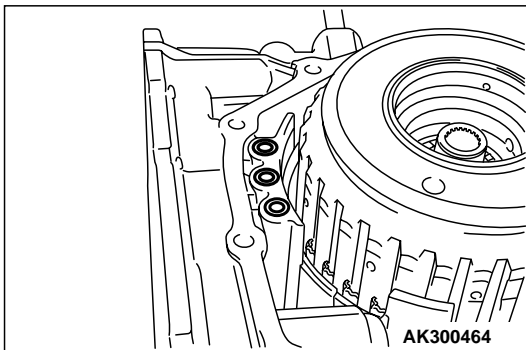
- (3) Turn over the transaxle case so that the installation surface of the torque converter housing is facing up.
- (4) Install the under drive clutch hub on the under drive sun gear.
- (5) Measure end play of the underdrive sun gear and record the measurement value.

**Standard value (Reference):**

**0.25 – 0.45 mm (0.0098 – 0.0177 inch)**

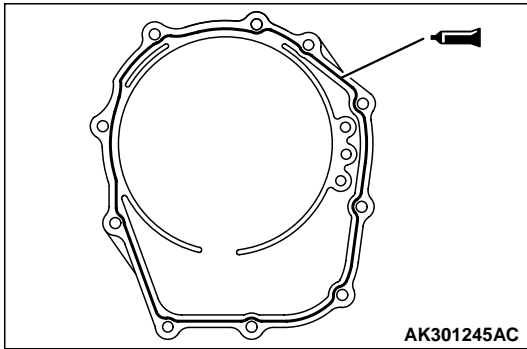
- (6) After taking the measurement in steps (5), take out the installed parts in steps (1) through (4).

48. Install the O-rings (three pieces).



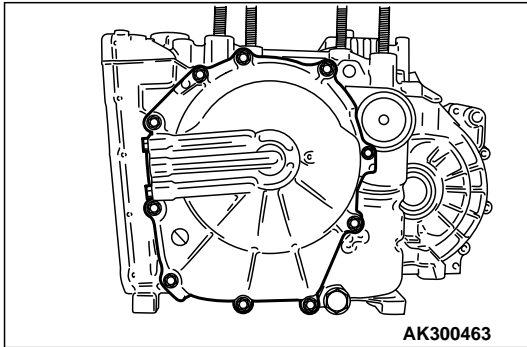
49. Select a thrust race number 8 whose thickness corresponds to the measured values taken in step 47 from the table below. Install it on thrust bearing number 7.

| <b>MEASUREMENT VALUE<br/>mm (in)</b> | <b>THICKNESS<br/>mm (in)</b> |
|--------------------------------------|------------------------------|
| 0.3 – 0.4 (0.012 – 0.016)            | 1.6 (0.063)                  |
| 0.4 – 0.5 (0.016 – 0.020)            | 1.7 (0.067)                  |
| 0.5 – 0.6 (0.020 – 0.024)            | 1.8 (0.071)                  |
| 0.6 – 0.7 (0.024 – 0.028)            | 1.9 (0.075)                  |
| 0.7 – 0.8 (0.028 – 0.031)            | 2.0 (0.079)                  |
| 0.8 – 0.9 (0.031 – 0.035)            | 2.1 (0.083)                  |
| 0.9 – 1.0 (0.035 – 0.039)            | 2.2 (0.087)                  |
| 1.0 – 1.1 (0.039 – 0.043)            | 2.3 (0.091)                  |
| 1.1 – 1.2 (0.043 – 0.047)            | 2.4 (0.094)                  |
| 1.2 – 1.3 (0.047 – 0.051)            | 2.5 (0.098)                  |
| 1.3 – 1.4 (0.051 – 0.055)            | 2.6 (0.102)                  |



50. Apply a 2 mm (0.08 inch) diameter bead of sealant (MITSUBISHI Genuine Part number MD974421 or equivalent) to the illustrated position of the rear cover.

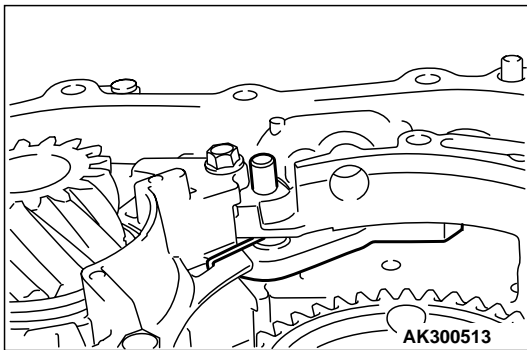
*NOTE: Be sure to install the case quickly while the sealant is wet (within 15 minutes). Leaks will occur if the rear cover is installed after the sealant dries.*



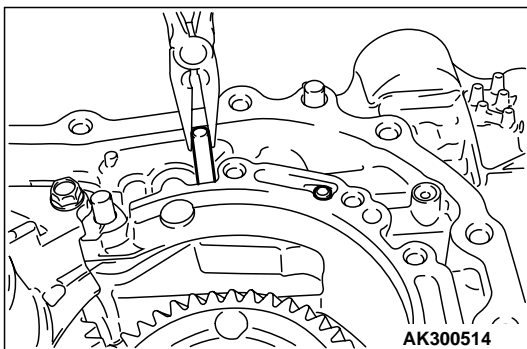
51. Install the rear cover, and tighten its mounting bolts to the specified torque.

**Tightening torque:  $23 \pm 3$  N·m ( $17 \pm 2$  ft-lb)**

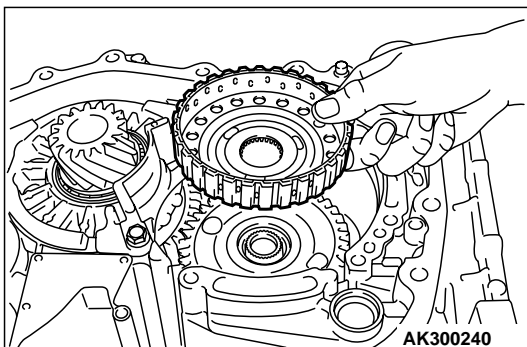
*NOTE: After installation, keep the sealed area away from ATF for approximately one hour.*



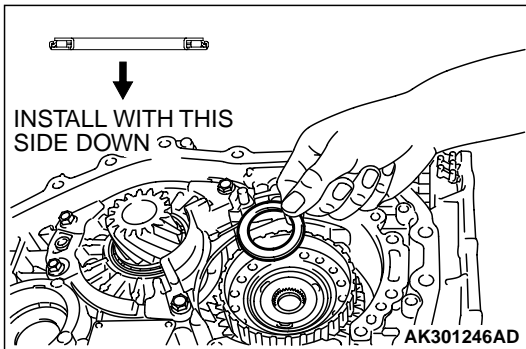
52. Install the parking pawl, spacer, and spring. Then insert the parking pawl shaft.



53. Install the parking roller support, and then insert the parking roller support shafts (two pieces).



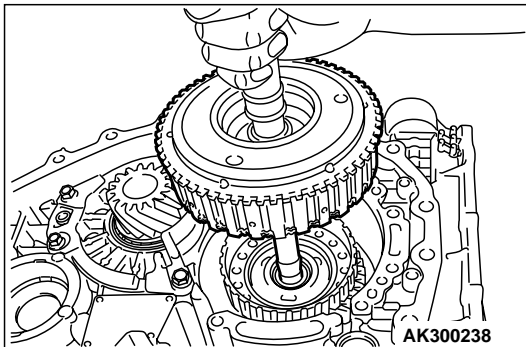
54. Install the underdrive clutch hub to the underdrive sun gear.



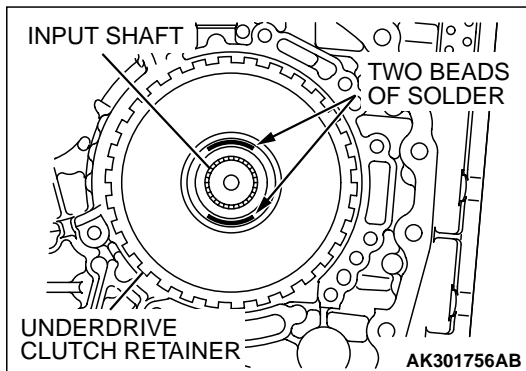
**⚠ CAUTION**

**Be sure to install the thrust bearing in the correct direction as shown.**

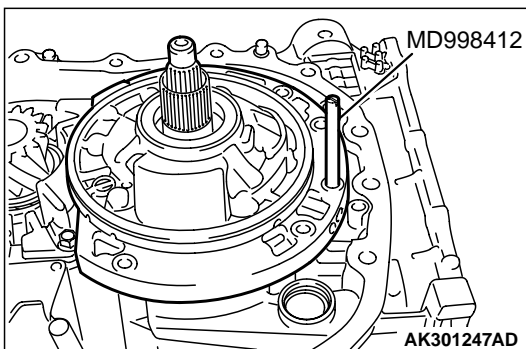
55. Check the installation direction of thrust bearing number 2, and install it on the underdrive clutch hub.



56. Hold the input shaft, and install the underdrive clutch.



57. Place two beads of solder [each 10 mm (0.39 inch) in length, 3.5 mm (0.14 inch) in diameter] on the underdrive clutch retainer as shown in the illustration.



58. Install special tool MD998412 as shown.

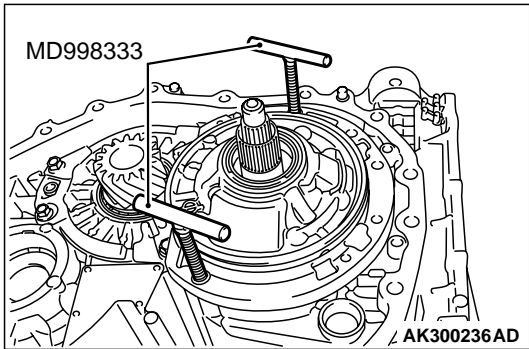
59. Install the oil pump to the transaxle case.

*NOTE: Do not install the oil pump gasket at this time.*

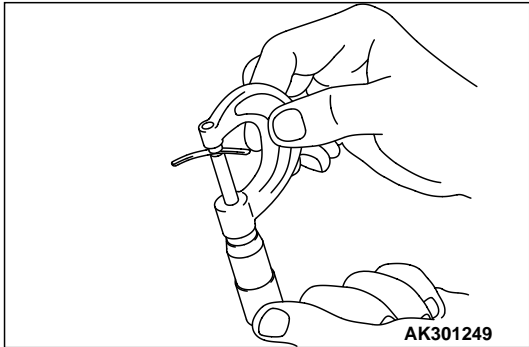
60. Tighten the six oil pump mounting bolts to the specified torque.

**Tightening torque: 29 ± 2 N·m (21 ± 1 ft-lb)**

61. Remove the oil pump mounting bolts.



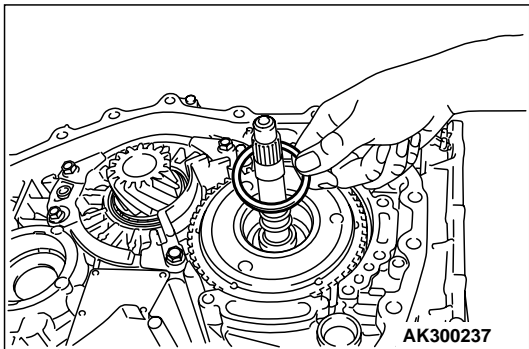
62.Using special tools MD998333, remove the oil pump and the crushed solders.



63.Use a micrometer to measure the thickness of the crushed solder beads and record the measured value.

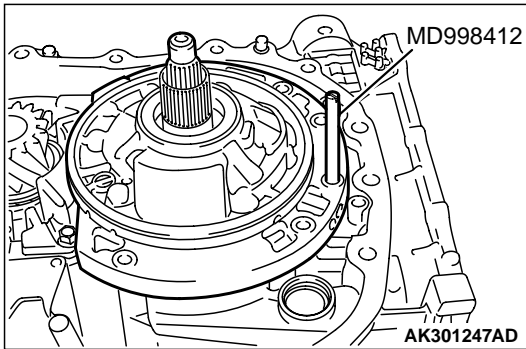
64.Select a thrust washer number 1 whose thickness corresponds to the measured value from table below.

| MEASUREMENT<br>VALUE mm (in)   | THICKNESS<br>mm (in) | ID<br>SYMBOL |
|--------------------------------|----------------------|--------------|
| 2.25 – 2.45<br>(0.089 – 0.096) | 1.8 (0.071)          | 18           |
| 2.45 – 2.65<br>(0.096 – 0.104) | 2.0 (0.079)          | 20           |
| 2.65 – 2.85<br>(0.104 – 0.112) | 2.2 (0.087)          | 22           |
| 2.85 – 3.05<br>(0.112 – 0.120) | 2.4 (0.094)          | 24           |
| 3.05 – 3.25<br>(0.120 – 0.128) | 2.6 (0.102)          | 26           |
| 3.25 – 3.45<br>(0.128 – 0.136) | 2.8 (0.110)          | 28           |



65.Install thrust washer number 1 that was selected in step 64 on the underdrive clutch retainer.



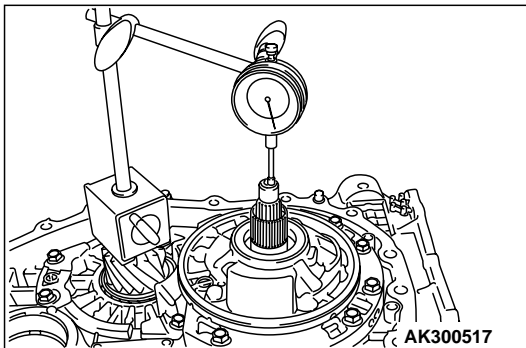


66. Install special tool MD998412 as shown.

67. Install the new oil pump gasket on the transaxle case.

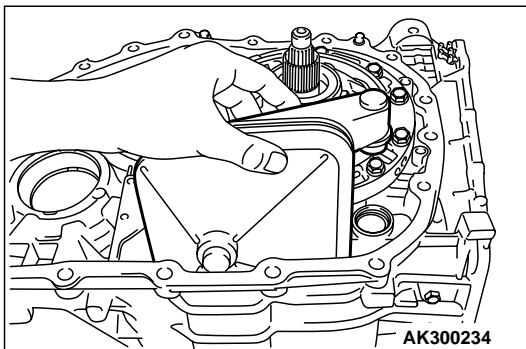
68. Install the oil pump and tighten the six mounting bolts to the specified torque.

**Tightening torque:  $29 \pm 2$  N·m ( $21 \pm 1$  ft-lb)**

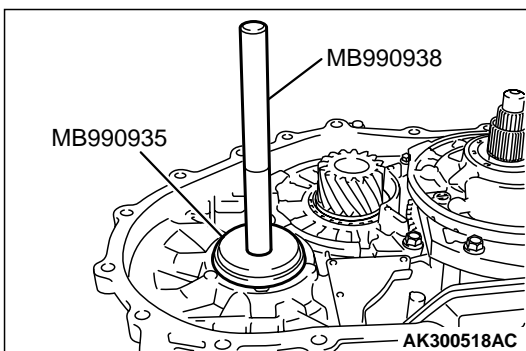


69. Make sure that the input shaft end play meets the standard value.

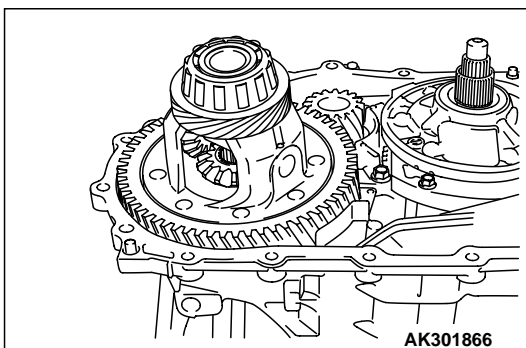
**Standard value : 0.70 – 1.45 mm (0.028 – 0.057 inch)**



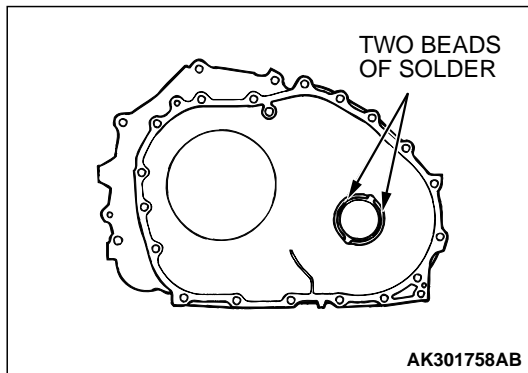
70. Install the oil filter.



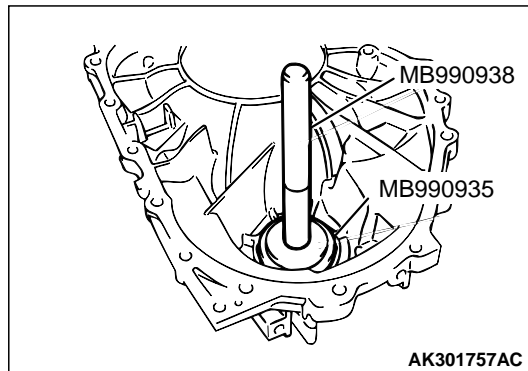
71. Use special tools MB990935 and MB990938 to tap the differential bearing outer race in the transaxle case.



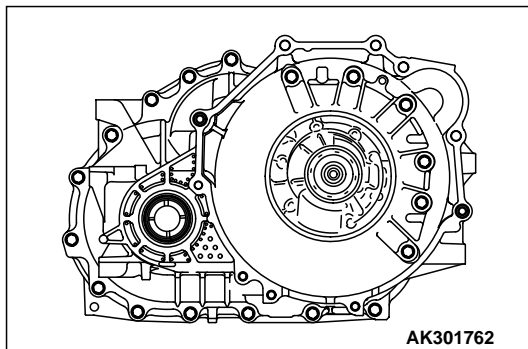
72. Install the differential.



73. Place two beads of solder [each 10 mm (0.39 inch) in length, 3 mm (0.12 inch) in diameter] on the torque converter housing as shown in the illustration.



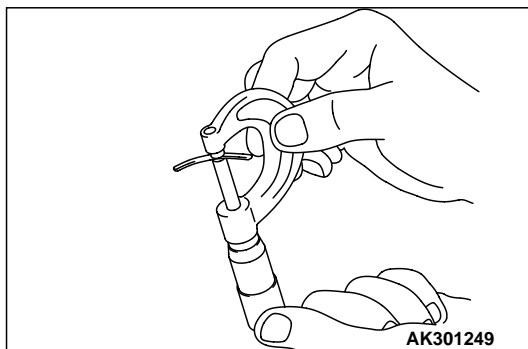
74. Use special tools MB990935 and MB990938 to press the differential bearing outer race into the torque converter housing.



75. Install the torque converter housing to the transaxle case without applying sealant. Tighten its mounting bolts to the specified torque.

**Tightening torque:  $48 \pm 6$  N·m ( $35 \pm 4$  ft·lb)**

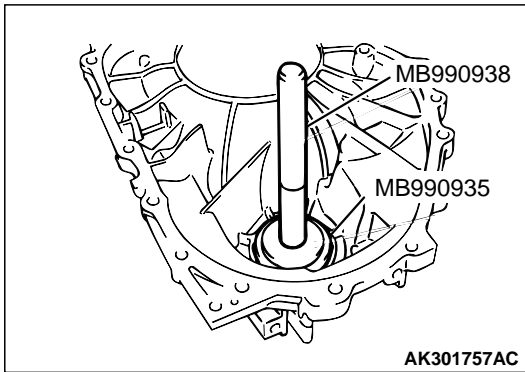
76. Loosen all the bolts, and remove the torque converter housing. Then remove the outer race and the crushed solders.



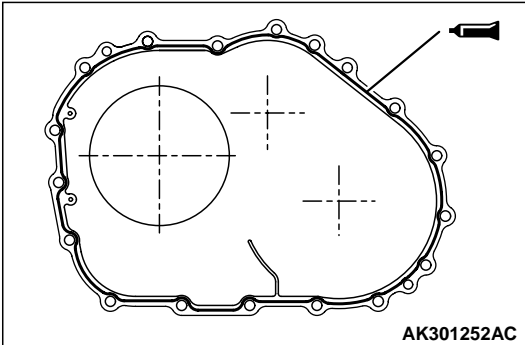
77. Use a micrometer to measure the thickness of the crushed solder beads and record the measured value. Add 0.045 to 0.105 mm (0.0018 to 0.0041 inch)\* to the measured value and select a spacer with the corresponding thickness. Adjustment spacer sizes are all listed on [P.23C-83](#). Select the most suitable one from among those listed.

*NOTE: \* is the thickness for the differential case preload.*

78. Install the spacer selected in step 77 to the torque converter housing.



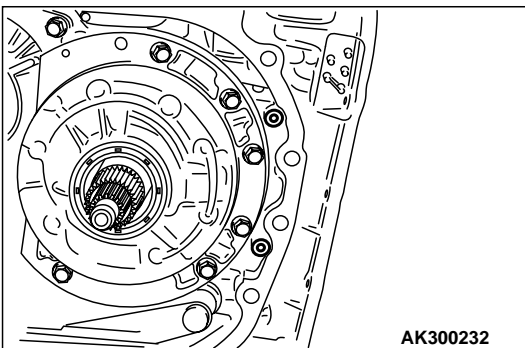
79. Use special tools MB990935 and MB990938 to press the outer race into housing.



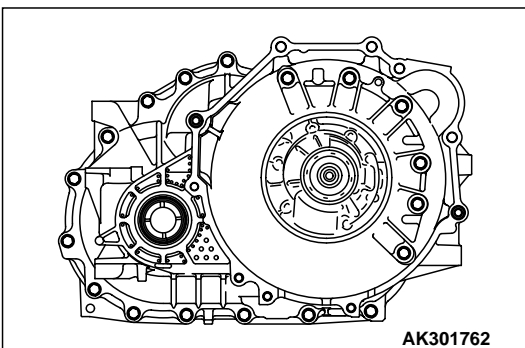
80. Apply a 2 mm (0.08 inch) diameter bead of sealant (MITSUBISHI Genuine Part number MD974421 or equivalent) to the torque converter housing in the area shown.

*NOTE: Be sure to install the case quickly while the sealant is wet (with 15 minutes). Leaks will occur if the rear cover is installed after the sealant dries.*

*NOTE: After installation, keep the sealed area away from ATF for approximately one hour.*



81. Install the O-rings (two pieces).

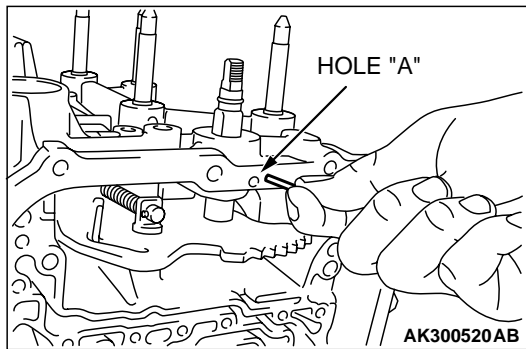


82. Install the torque converter housing and then tighten its mounting bolts (eighteen pieces) to the specified torque.

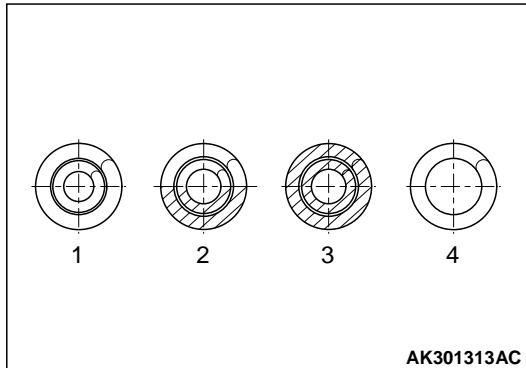
**Tightening torque:  $48 \pm 6$  N·m ( $35 \pm 4$  ft·lb)**

83. Insert the O-rings (two pieces) into the grooves of the manual control lever shaft.

84. Install the manual control lever shaft and parking pawl rod.

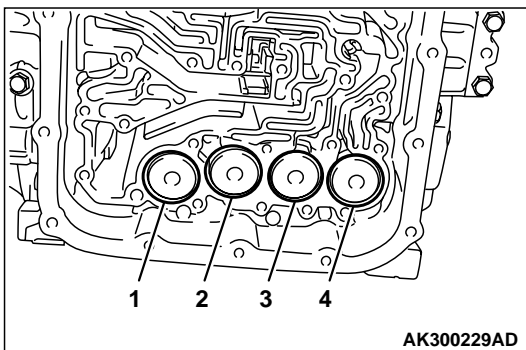


85. Align hole "A" with the groove in the manual control lever shaft. Insert the manual control lever shaft roller into hole "A".



86. Insert the new seal rings in the grooves of the accumulator pistons.

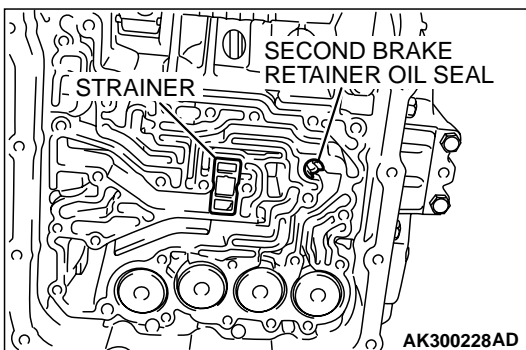
*NOTE: The piston and seal ring are common parts.*



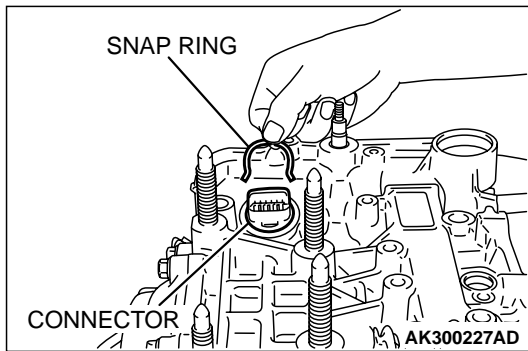
87. Identify the accumulator spring and insert it and the accumulator piston into each hole of the transaxle case.

*NOTE: Accumulator springs are identified as shown in the illustration.*

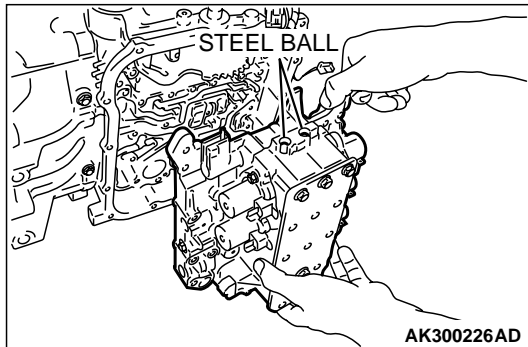
| NO. | NAME                  | IDENTIFICATION "BLUEING" |
|-----|-----------------------|--------------------------|
| 1   | For low-reverse brake | None                     |
| 2   | For underdrive clutch | Half                     |
| 3   | For second brake      | Whole surface            |
| 4   | For overdrive clutch  | None                     |



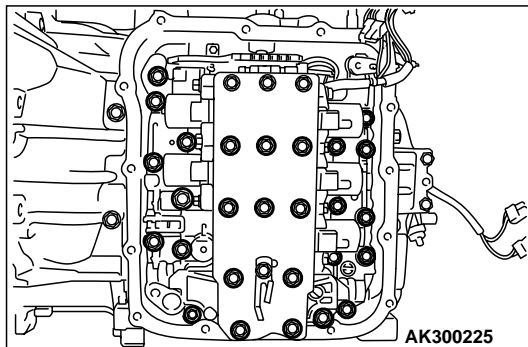
88. Install the strainer and second brake retainer oil seal.



89. Insert a new O-ring to the groove of the solenoid valve harness connector.
90. Insert the solenoid valve harness connector into the hole from the inside of the transaxle case so it is oriented as shown in the illustration. Then secure the snap ring to the connector groove.

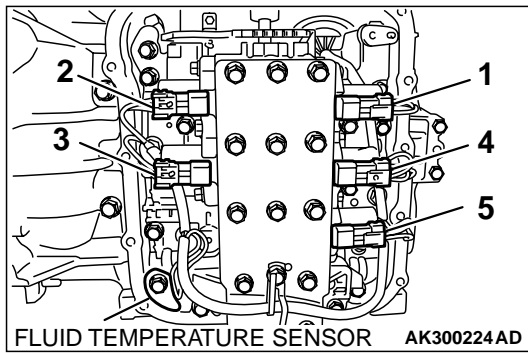


91. Install the steel balls into each of the two holes in the top face of the valve body (outside valve body).
92. Install the valve body and gasket to the transaxle case. Make sure that the manual valve's pin is in the groove in the detent plate of the manual control lever.



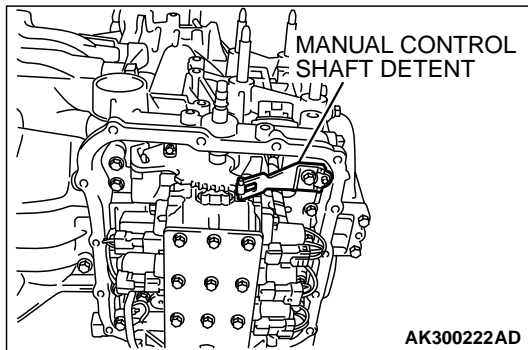
93. Install the valve body mounting bolts (twenty seven pieces), and tighten to the specified torque.

**Tightening torque:  $11 \pm 1$  N·m ( $95 \pm 9$  in-lb)**



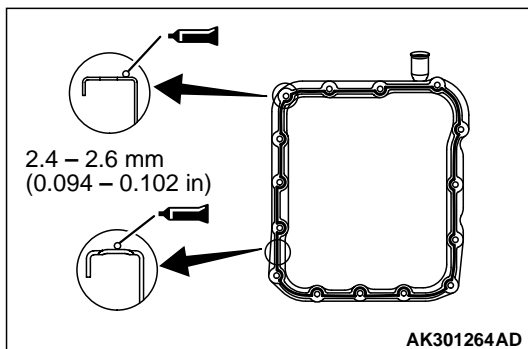
94. Attach the solenoid valve harness to the valve body by connecting the fluid temperature sensor and all the connectors.

| NO. | PARTS TO BE CONNECTED                          | SOLENOID VALVE HARNESS |                         |
|-----|--|------------------------|-------------------------|
|     |  | CABLE COLOR            | CONNECTOR HOUSING COLOR |
| 1   | Underdrive solenoid valve                      | White, red, red        | Black                   |
| 2   | Overdrive solenoid valve                       | Orange, red            | Black                   |
| 3   | Low-reverse solenoid valve                     | Brown, yellow          | Milky white             |
| 4   | Second solenoid valve                          | Blue, red, red         | Milky white             |
| 5   | Torque converter clutch control solenoid valve | Blue, yellow, yellow   | Black                   |



95. Install the manual control shaft detent and tighten the bolt to the specified torque.

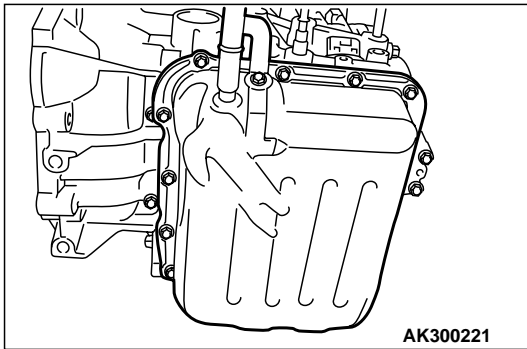
**Tightening torque: 6.0 ± 1.0 N·m (52 ± 9 in-lb)**



96. Apply a 2 mm (0.08 inch) diameter bead of sealant (MITSUBISHI Genuine Part number MD974421 or equivalent) to the valve body cover in the area shown.

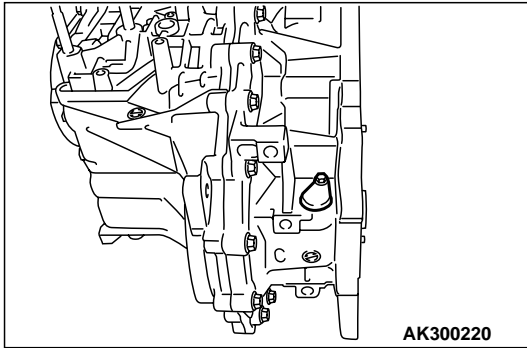
*NOTE: Be sure to install the case quickly while the sealant is wet (with 15 minutes) or leaks will occur if the rear cover is installed after the sealant dries.*

*NOTE: After installation, keep the sealed area away from ATF for approximately one hour.*



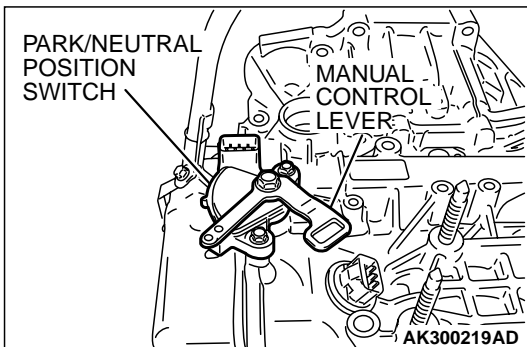
97. Install the valve body cover, and then tighten its mounting bolts to the specified torque.

**Tightening torque:  $11 \pm 1$  N·m ( $95 \pm 9$  in-lb)**



98. Install the Sealing cap and tighten the bolt to the specified torque.

**Tightening torque:  $5.0 \pm 1.0$  N·m ( $43 \pm 9$  in-lb)**

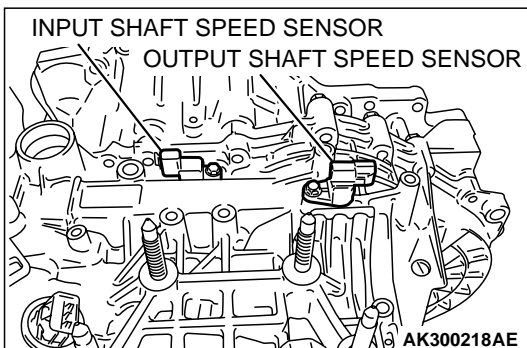


99. Install the park/neutral position switch and tighten the bolt to the specified torque.

**Tightening torque:  $11 \pm 1$  N·m ( $95 \pm 9$  in-lb)**

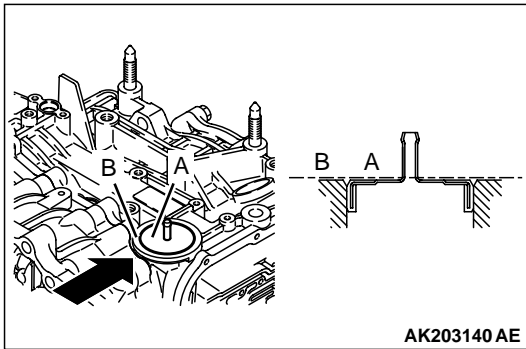
100. Install the manual control lever and tighten the nut to the specified torque.

**Tightening torque:  $22 \pm 3$  N·m ( $16 \pm 2$  ft-lb)**



101. Install the input shaft speed sensor and output shaft speed sensor and tighten the bolt to the specified torque.

**Tightening torque:  $11 \pm 1$  N·m ( $95 \pm 9$  in-lb)**



102. Press Face "A" of the air breather to be on the same plane as the Face "B" of the transmission case as shown in the drawing.

103. Apply ATF on the both sides of the new gasket and threads of the eyebolts, and then tighten to the specified torque.

**Tightening torque:  $24 \pm 3$  N·m ( $18 \pm 2$  ft-lb)**

104. Tighten the oil cooler feed pipe clamp bolt to the specified torque.

**Tightening torque:  $11 \pm 1$  N·m ( $95 \pm 9$  in-lb)**

105. Install the oil dipstick.

106. Install the cable support brackets to the specified torque.

**Tightening torque:  $23 \pm 3$  N·m ( $17 \pm 2$  ft-lb)**

107. Install the roll stopper brackets.

**Tightening torque:  $70 \pm 10$  N·m ( $52 \pm 7$  ft-lb)**

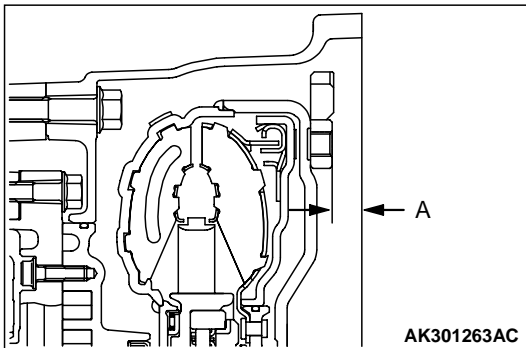
**⚠ CAUTION**

Apply ATF to the oil pump drive hub before installing the torque converter. Be careful not to damage the oil seal lip when installing the torque converter.

108. Install the torque converter, and align it with the oil pump so that the shown dimension "A" meets the reference value.

**Reference value:**

**Approximately 12.2 mm (0.48 inch)**



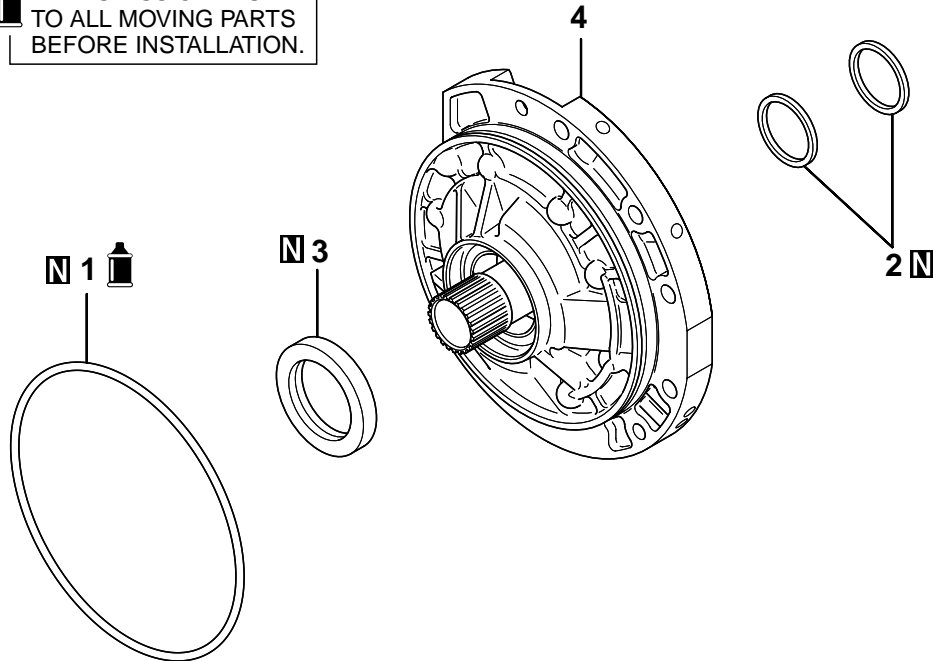


## OIL PUMP

### DISASSEMBLY AND ASSEMBLY

M1233001300217

APPLY AUTOMATIC  
TRANSMISSION FLUID  
TO ALL MOVING PARTS  
BEFORE INSTALLATION.



AK301599AB

- >>B<< DISASSEMBLY STEPS**
1. O-RING
  2. SEAL RING

- >>A<< DISASSEMBLY STEPS**
3. OIL SEAL
  4. OIL PUMP ASSEMBLY

#### Required Special Tool:

- MD998334: Oil Seal Installer

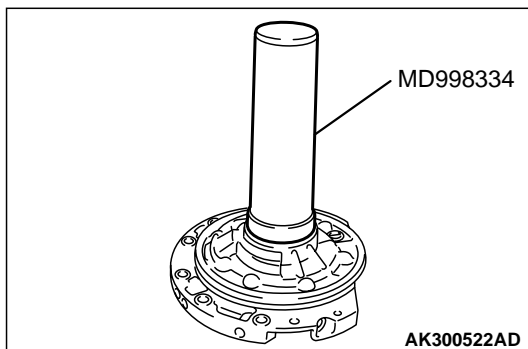
### ASSEMBLY SERVICE POINTS

#### >>A<< OIL SEAL INSTALLATION

1. Apply a small amount of ATF to the oil seal lip.
2. Use special tool MD998334 to tap the oil seal in the oil pump body.

#### >>B<< O-RING INSTALLATION

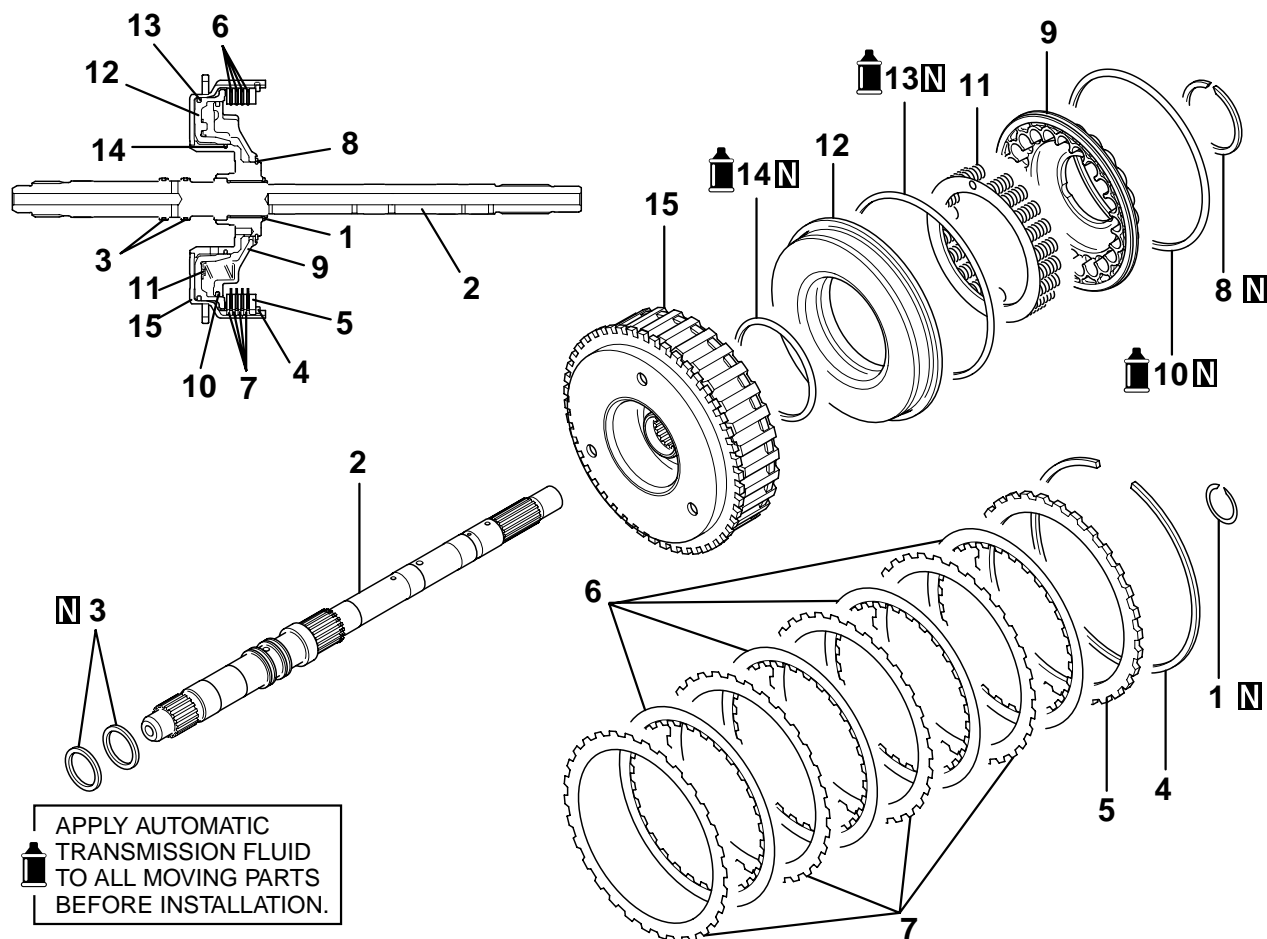
Install a new O-ring to the outer groove of the oil pump, and apply ATF or petroleum jelly (Vaseline) to the O-ring.



# UNDERDRIVE CLUTCH AND INPUT SHAFT

## DISASSEMBLY AND ASSEMBLY

M1233024500115



AK301600 AB

### DISASSEMBLY STEPS

1. SNAP RING
2. INPUT SHAFT
3. SEAL RING
- >>D<< 4. SNAP RING
- >>C<< 5. CLUTCH REACTION PLATE
- >>C<< 6. CLUTCH DISC
- <<A>> >>C<< 7. CLUTCH PLATE
- >>B<< 8. SNAP RING

### DISASSEMBLY STEPS

9. SPRING RETAINER
- >>A<< 10. D-RING
11. RETURN SPRING
- >>A<< 12. UNDERDRIVE CLUTCH PISTON
- >>A<< 13. D-RING
14. D-RING
- >>A<< 15. UNDERDRIVE CLUTCH RETAINER

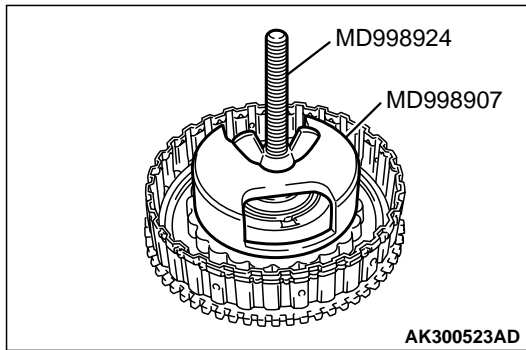
### Required Special Tools:

- MB991628: Spring Compressor
- MD998907: Spring Compressor
- MD998924: Spring Compressor Retainer

## DISASSEMBLY SERVICE POINT

### <<A>> SNAP RING REMOVAL

1. Set special tools MD998907 and MD998924 as shown in the illustration.
2. Compress the return spring and remove the snap ring.



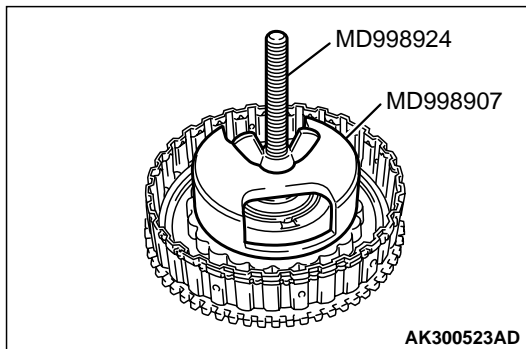
## ASSEMBLY SERVICE POINTS

### >>A<< D-RING INSTALLATION

1. Install a D-ring in the groove in the underdrive clutch retainer and piston, and in the groove in the outside of the spring retainer. Be careful not to twist or damage the D-rings.
2. Apply ATF or petroleum jelly (Vaseline) to the D-rings.

### >>B<< SNAP RING INSTALLATION

1. Place the snap ring on top of the spring retainer, and then set special tool MD998907 and MD998924 as shown in the illustration.
2. Compress the return spring and install the snap ring.

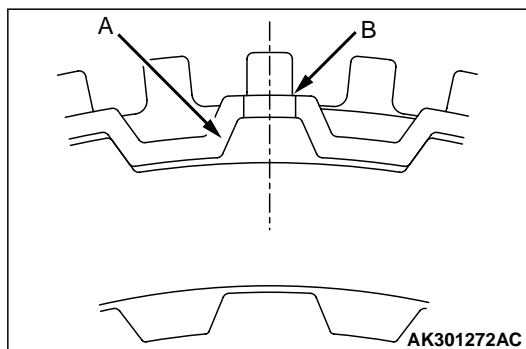


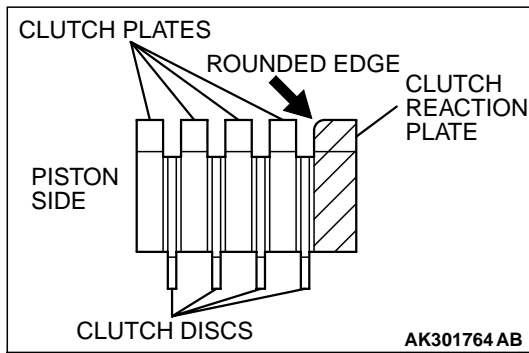
### >>C<< CLUTCH PLATE/CLUTCH DISC/CLUTCH REACTION PLATE INSTALLATION

#### CAUTION

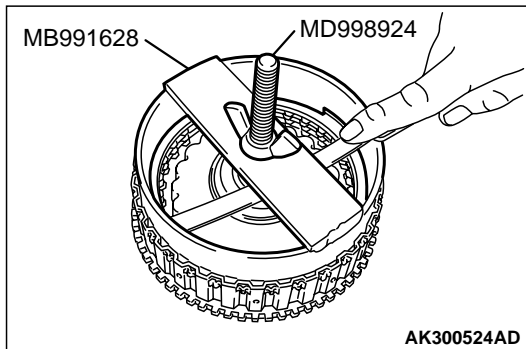
**Immerse the clutch disc in ATF before assembling it. If the clutch disc is new, soak it in ATF for at least two hours.**

1. Assemble the four clutch plates and four clutch discs one on top of the other inside the underdrive clutch retainer. All four clutch plates should be assembled so that the places with no teeth (marked "A") are aligned with the holes in the retainer (marked "B").





2. Install the clutch reaction plate in the direction shown. Install it the same as the clutch plates, so that the areas with no teeth (marked "A") are aligned with the retainer (marked "B").



### >>D<< SNAP RING INSTALLATION

1. Install the snap ring into the groove of clutch retainer.
2. Set special tools MB991628 and MD998924 as shown in the illustration, and then compress the clutch element.
3. Check that the clearance between the snap ring and the clutch reaction plate is within the standard value. If not within the standard value, select a snap ring so that it is.

**Standard value: 1.60 – 1.80 mm (0.0630 – 0.0709 inch)**

# REVERSE AND OVERDRIVE CLUTCH

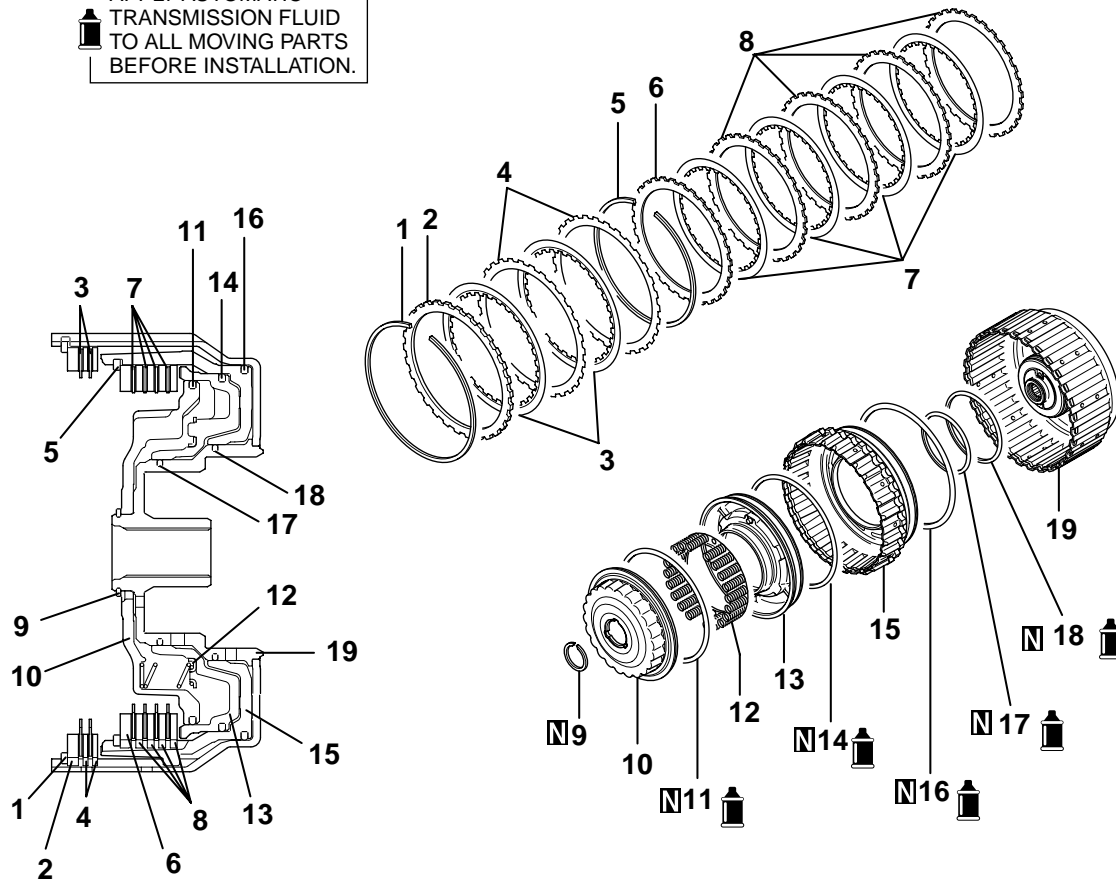
## DISASSEMBLY AND ASSEMBLY

M1233024800127

### NUMBER OF CLUTCH DISCS AND PLATES

|                   | CLUTCH DISC | CLUTCH PLATE | CLUTCH REACTION PLATE |
|-------------------|-------------|--------------|-----------------------|
| Over drive clutch | 4           | 4            | 1                     |
| Reverse clutch    | 2           | 2            | 1                     |

APPLY AUTOMATIC  
TRANSMISSION FLUID  
TO ALL MOVING PARTS  
BEFORE INSTALLATION.



AK301601 AB

### DISASSEMBLY STEPS

- >>G<< 1. SNAP RING
- >>F<< 2. CLUTCH REACTION PLATE
- >>F<< 3. CLUTCH DISC
- >>F<< 4. CLUTCH PLATE
- >>E<< 5. SNAP RING
- >>D<< 6. CLUTCH REACTION PLATE
- >>D<< 7. CLUTCH DISC
- >>D<< 8. CLUTCH PLATE
- <<A>> >>C<< 9. SNAP RING
- 10. SPRING RETAINER

### DISASSEMBLY STEPS

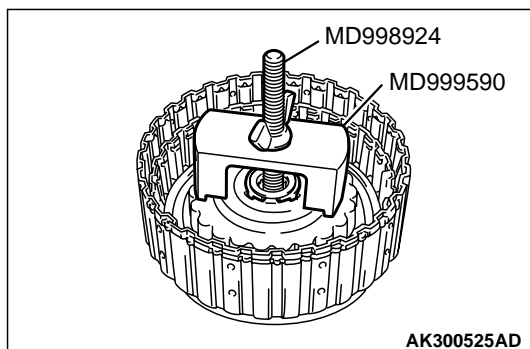
- >>A<< 11. D-RING
- 12. RETURN SPRING
- 13. OVERDRIVE CLUTCH PISTON
- >>A<< 14. D-RING
- >>B<< 15. REVERSE CLUTCH PISTON
- >>A<< 16. D-RING
- >>A<< 17. D-RING
- >>A<< 18. D-RING
- 19. REVERSE CLUTCH RETAINER

### Required Special Tools:

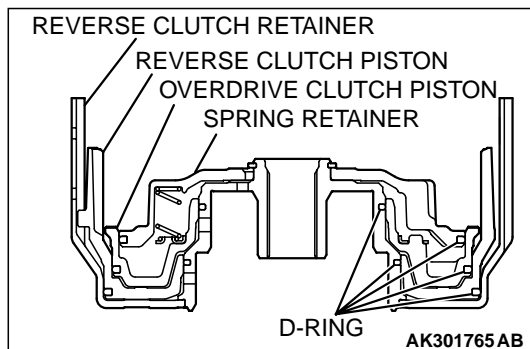
- MB991628: Spring Compressor
- MB991790: Spring Compressor
- MD998924: Spring Compressor Retainer
- MD999590: Spring Compressor

**DISASSEMBLY SERVICE POINT****<<A>> SNAP RING REMOVAL**

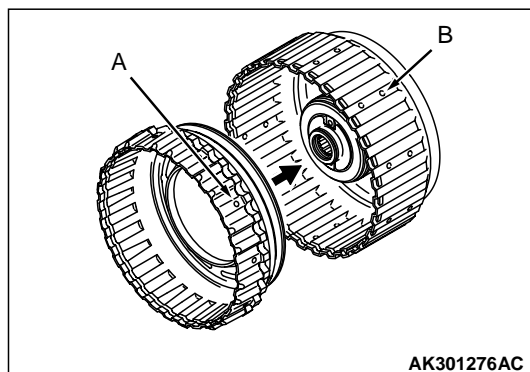
1. Set special tools MD999590 and MD998924 as shown in the illustration.
2. Compress the return spring and remove the snap ring.

**ASSEMBLY SERVICE POINTS****>>A<< D-RING INSTALLATION**

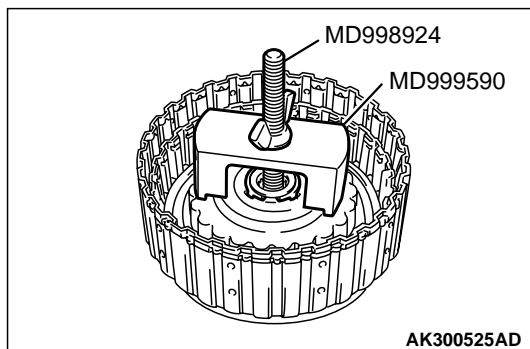
1. Install D-rings in the grooves on the reverse clutch retainer, piston, overdrive clutch piston and spring retainer. Be careful not to twist or damage the D-rings.
2. Apply ATF or petroleum jelly (Vaseline) to D-rings.

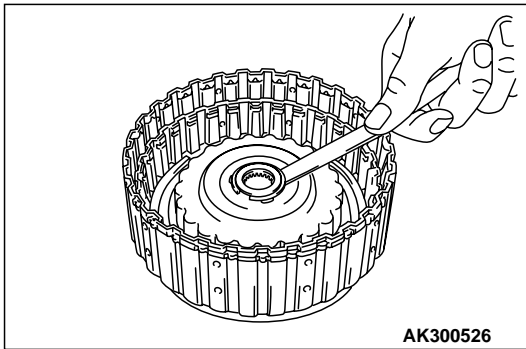
**>>B<< REVERSE CLUTCH PISTON INSTALLATION**

Align the outer circumference holes ("A" and "B") of the reverse clutch piston and the reverse clutch retainer to assemble them.

**>>C<< SNAP RING INSTALLATION**

1. Set special tools MD999590 and MD998924 as shown in the illustration.
2. Tighten the nut on the special tool to press down on the spring retainer and reverse clutch retainer, and then install the snap ring.





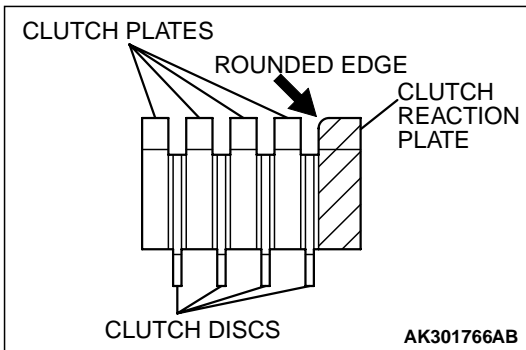
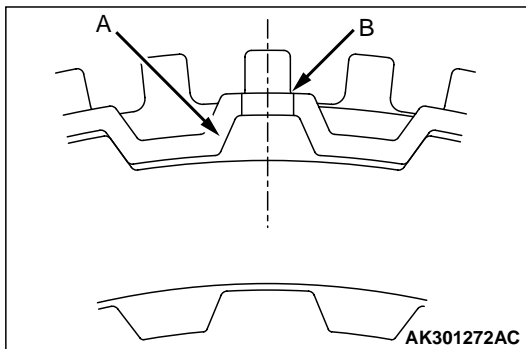
3. Check that the clearance between the snap ring and the return spring retainer is within the standard value. If not within the standard value, select a snap ring so that it is.  
**Standard value: 0 – 0.09 mm (0 – 0.0035 inch)**

### >>D<< PRESSURE PLATE/CLUTCH PLATE/CLUTCH DISC/CLUTCH REACTION PLATE INSTALLATION

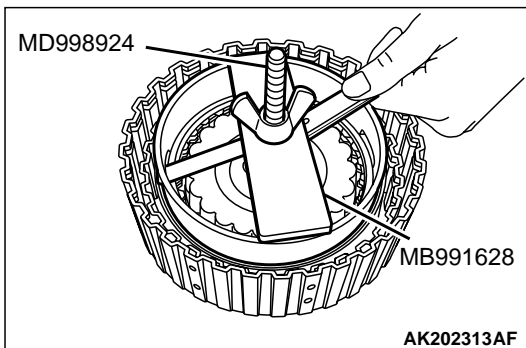
#### **⚠ CAUTION**

**Immerse the clutch disc in ATF before assembling it. If the clutch disc is new, soak it in ATF for more than two hours.**

1. Assemble the clutch discs (four pieces) and clutch plates (four pieces), one on top of the other, inside the reverse clutch piston. Assemble both clutch plates so that the places with no teeth (marked "A") are aligned with the holes in the retainer (marked "B").



2. Install the clutch reaction plate in the direction shown.



### >>E<< SNAP RING INSTALLATION

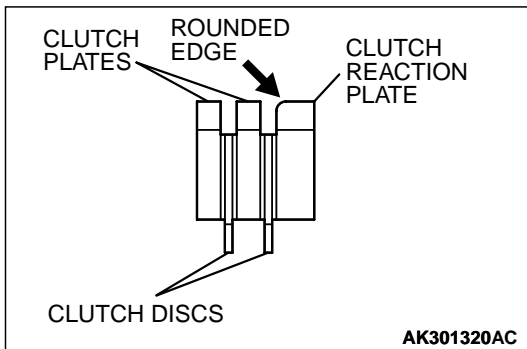
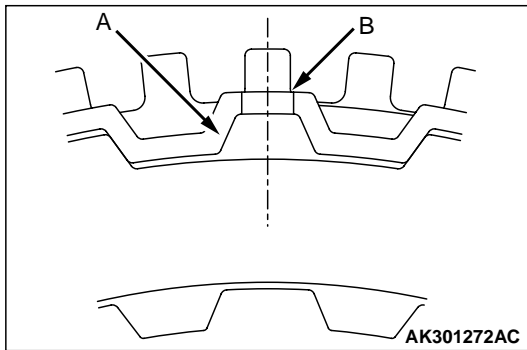
1. Install the snap ring into the groove in the reverse clutch piston.
2. Set special tools MB991628 and MD998924 as shown in the illustration, and compress the clutch element.
3. Check that the clearance between the snap ring and the clutch reaction plate is within the standard value. If not within the standard value, select a snap ring so that it is.

**Standard value: 1.6 – 1.8 mm (0.0630 – 0.0709 inch)**

>>F<< CLUTCH PLATE/CLUTCH DISC/CLUTCH REACTION  
PLATE INSTALLATION**⚠ CAUTION**

Immerse the clutch disc in ATF before assembling it. If the clutch disc is new, soak it in ATF for at least two hours.

1. Assemble two clutch discs and two clutch plates, one on top of the other, inside the reverse clutch retainer. Assemble both clutch plates so that the places with no teeth (marked "A") are aligned with the holes in the retainer (marked "B").

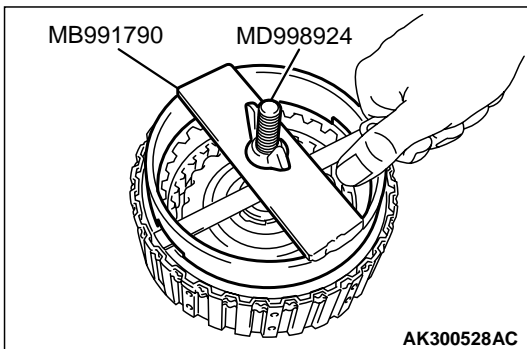


2. Install the clutch reaction plate in the direction shown. Install it the same as the clutch plate, so that the places with no teeth (marked "A") are aligned with the holes in the retainer (marked "B").

## &gt;&gt;G&lt;&lt; SNAP RING INSTALLATION

1. Install the snap ring into the groove of reverse clutch retainer.
2. Set special tools MB991790 and MD998924 as shown in the illustration, and compress the clutch element.
3. Check that the clearance between the snap ring and the clutch reaction plate is within the standard value. If not within the standard value, select a snap ring so that it is.

**Standard value: 1.5 – 1.7 mm (0.0591 – 0.0669 inch)**

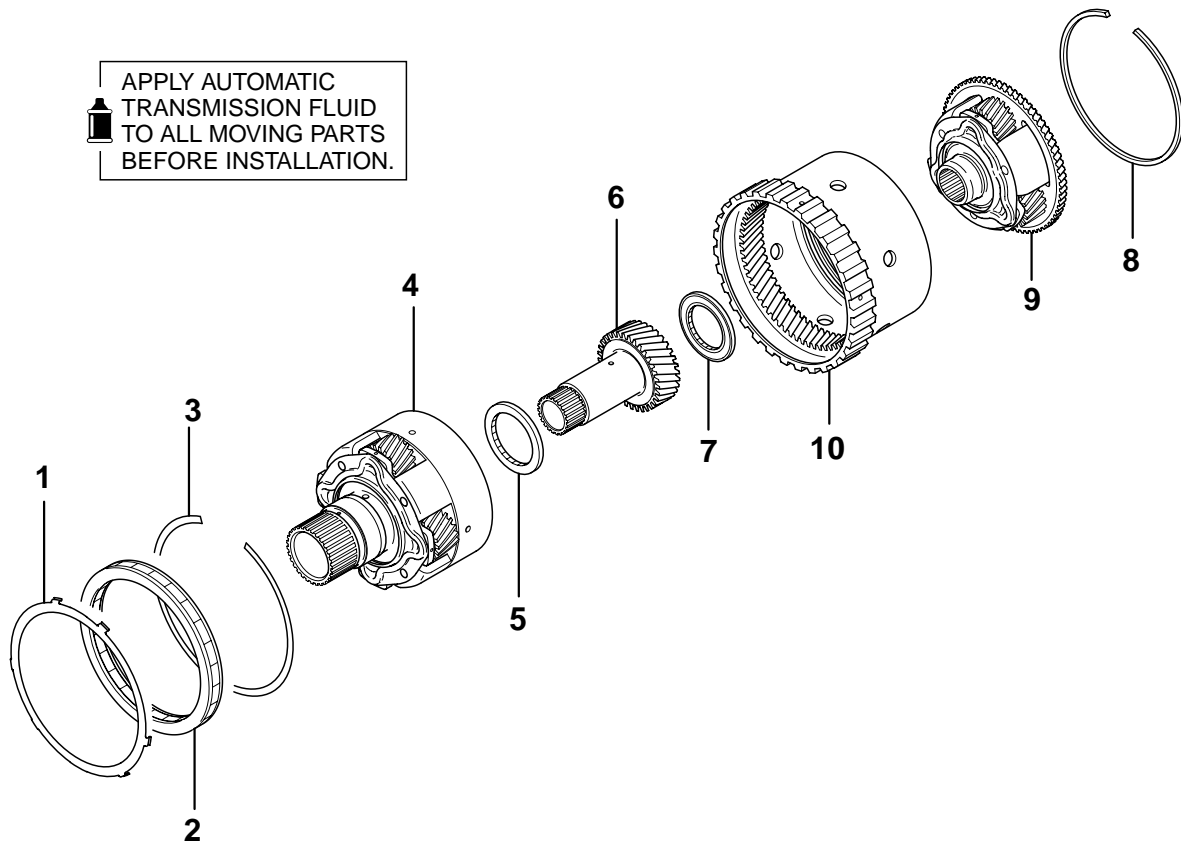




# PLANETARY GEAR

## DISASSEMBLY AND ASSEMBLY

M1233002500184



AK301602AB

### DISASSEMBLY STEPS

- >>B<<
1. STOPPER PLATE
  2. ONE-WAY CLUTCH
  3. SNAP RING
- >>A<<
4. OUTPUT PLANETARY CARRIER
  5. THRUST BEARING NUMBER 3
  6. UNDERDRIVE SUN GEAR

### DISASSEMBLY STEPS

- >>A<<
7. THRUST BEARING NUMBER 4
  8. SNAP RING
  9. OVERDRIVE PLANETARY CARRIER
  10. OVERDRIVE ANNULUS GEAR

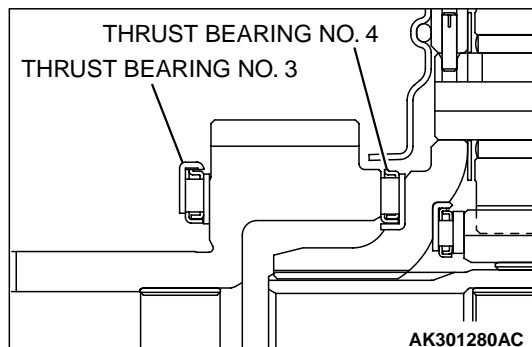
## ASSEMBLY SERVICE POINTS

## &gt;&gt;A&lt;&lt; THRUST BEARING NUMBER 3 AND THRUST BEARING NUMBER 4 INSTALLATION

**⚠ CAUTION**

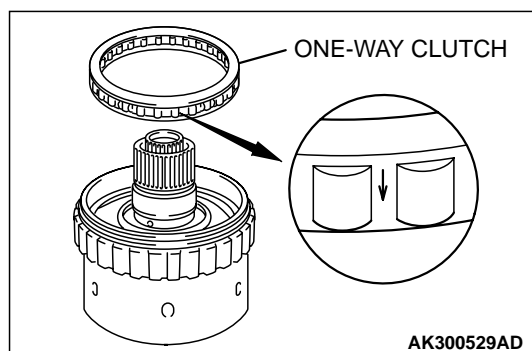
Use care to install the thrust bearings in the correct direction.

Check the installation direction of thrust bearings number 3 and 4, and install them as shown.



## &gt;&gt;B&lt;&lt; ONE-WAY CLUTCH INSTALLATION

Insert the one-way clutch into the overdrive annulus gear so that the arrow points towards the output planetary carrier.

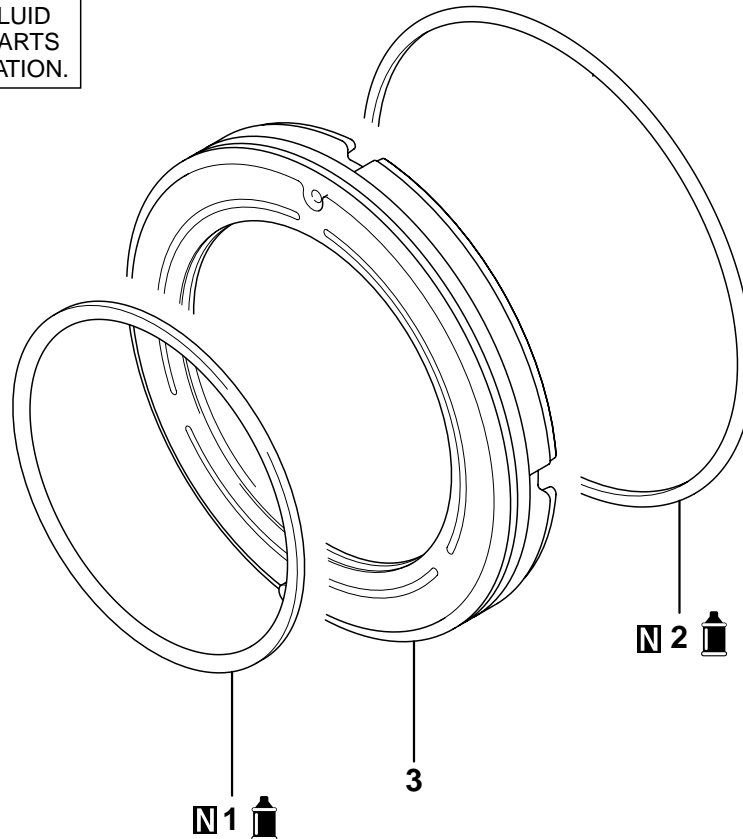


## LOW-REVERSE BRAKE

### DISASSEMBLY AND ASSEMBLY

M1233003700222

APPLY AUTOMATIC  
TRANSMISSION FLUID  
TO ALL MOVING PARTS  
BEFORE INSTALLATION.



AK301603AB

**>>A<< DISASSEMBLY STEPS**  
1. D-RING

**>>A<< DISASSEMBLY STEPS**  
2. D-RING  
3. LOW-REVERSE BRAKE PISTON

### ASSEMBLY SERVICE POINT

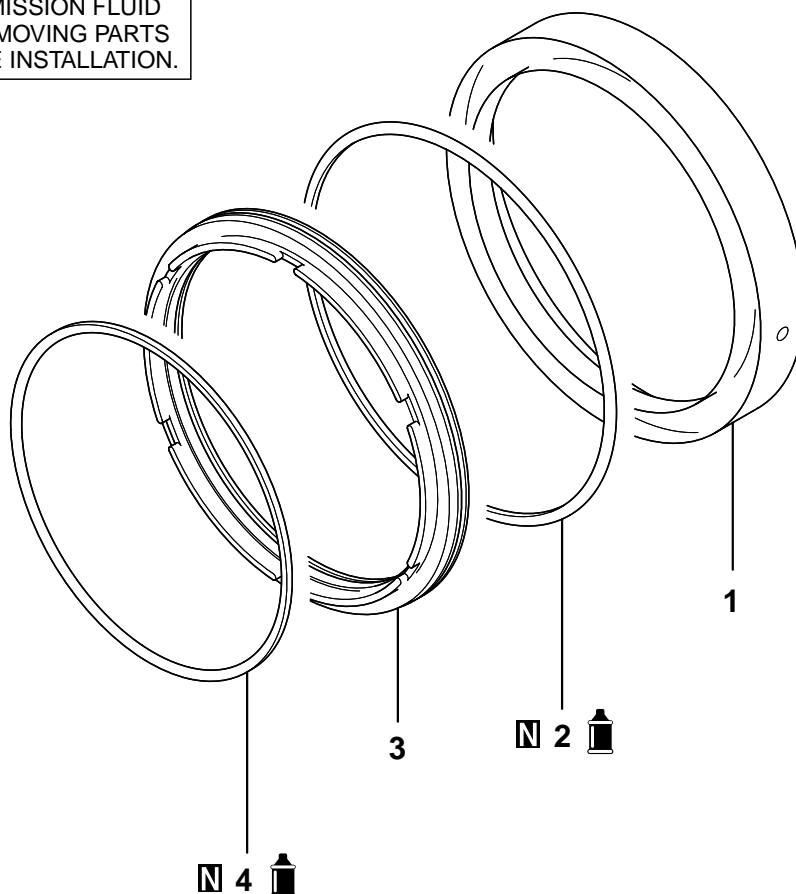
#### >>A<< D-RING INSTALLATION

Apply ATF or petroleum jelly (Vaseline) to the D-ring, and install carefully.

**SECOND BRAKE****DISASSEMBLY AND ASSEMBLY**

M1233025400081

APPLY AUTOMATIC  
TRANSMISSION FLUID  
TO ALL MOVING PARTS  
BEFORE INSTALLATION.



AK301604 AB

- >>A<< DISASSEMBLY STEPS**
1. SECOND BRAKE RETAINER
  2. D-RING

- >>A<< DISASSEMBLY STEPS**
3. SECOND BRAKE PISTON
  4. D-RING

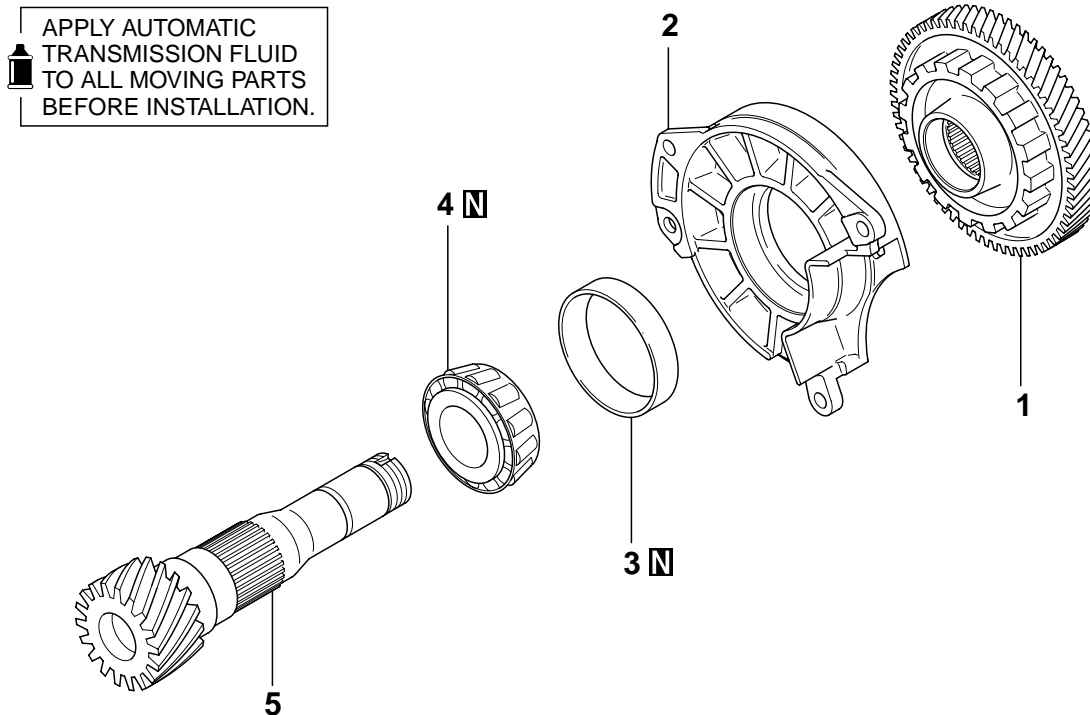
**ASSEMBLY SERVICE POINT****>>A<< D-RING INSTALLATION**

Apply ATF or petroleum jelly (Vaseline) to the D-ring, and install carefully.

# OUTPUT SHAFT

## DISASSEMBLY AND ASSEMBLY

M1233025700101



AK301605 AB

- DISASSEMBLY STEPS**
- <<A>>    >>C<<    1. TRANSFER DRIVEN GEAR  
                         2. BEARING RETAINER  
                         >>B<<    3. OUTER RACE

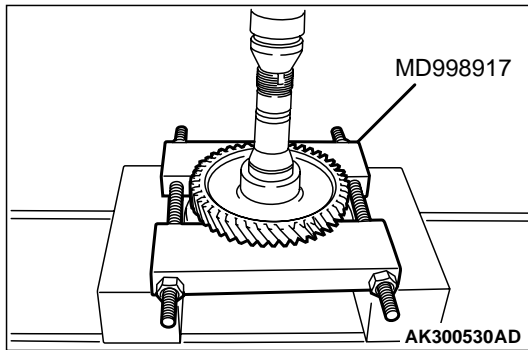
- DISASSEMBLY STEPS**
- <<B>>    >>A<<    4. TAPER ROLLER BEARING  
                         5. OUTPUT SHAFT

### Required Special Tools:

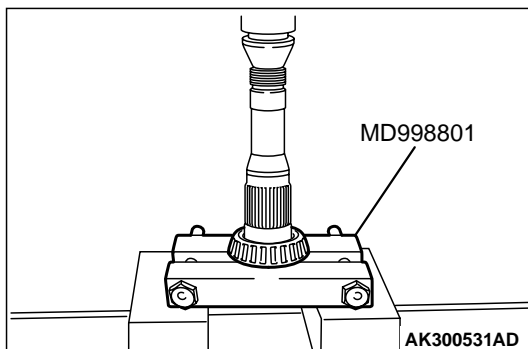
- MB990936: Installer Adapter
- MB990938: Handle
- MD998801: Bearing Remover
- MD998812: Installer Cap
- MD998813: Installer 100
- MD998814: Installer 200
- MD998823: Installer Adapter (48)
- MD998917: Bearing Remover

**DISASSEMBLY SERVICE POINTS****<<A>> TRANSFER DRIVEN GEAR REMOVAL**

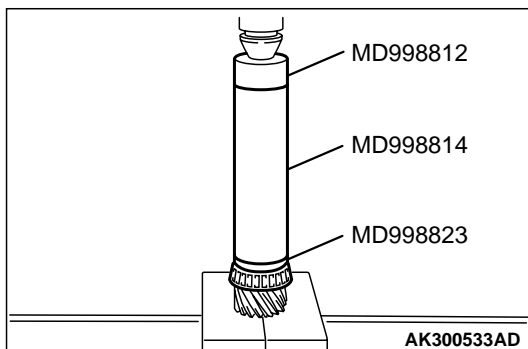
1. Support the transfer driven gear with general service tool or special tool MD998917, and then set them on the press.
2. Push down on the output shaft with the press to remove the transfer driven gear.

**<<B>> TAPER ROLLER BEARING REMOVAL**

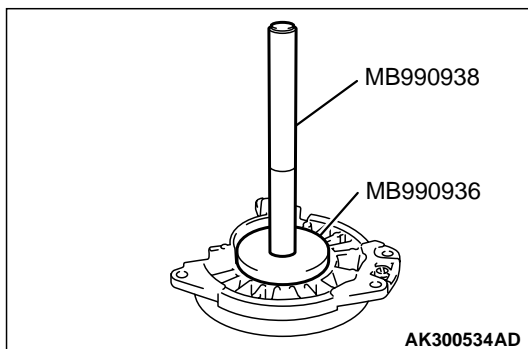
1. Support the taper roller bearing with the special tool MD998801, and then set them on the press.
2. Push down on the output shaft with the press to remove the taper roller bearing.

**ASSEMBLY SERVICE POINTS****>>A<< TAPER ROLLER BEARING INSTALLATION**

1. Set the output shaft on the press support stand.
2. Using special tools MD998823, MD998812 and MD998814, press in the taper roller bearing.

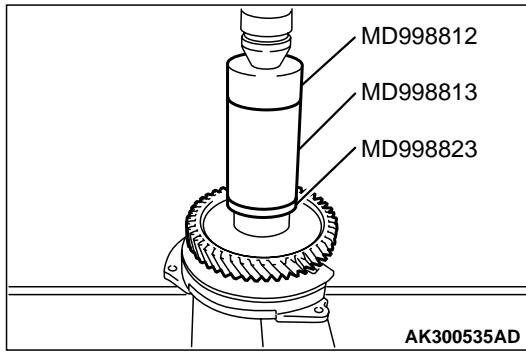
**>>B<< OUTER RACE INSTALLATION**

Use the special tools MB990936 and MB990938 to tap the outer race in the bearing retainer.



**>>C<< TRANSFER DRIVEN GEAR INSTALLATION**

1. Set the output shaft on the press support stand.
2. Using special tools MD998823, MD998812 and MD998813, press in the transfer driven gear.

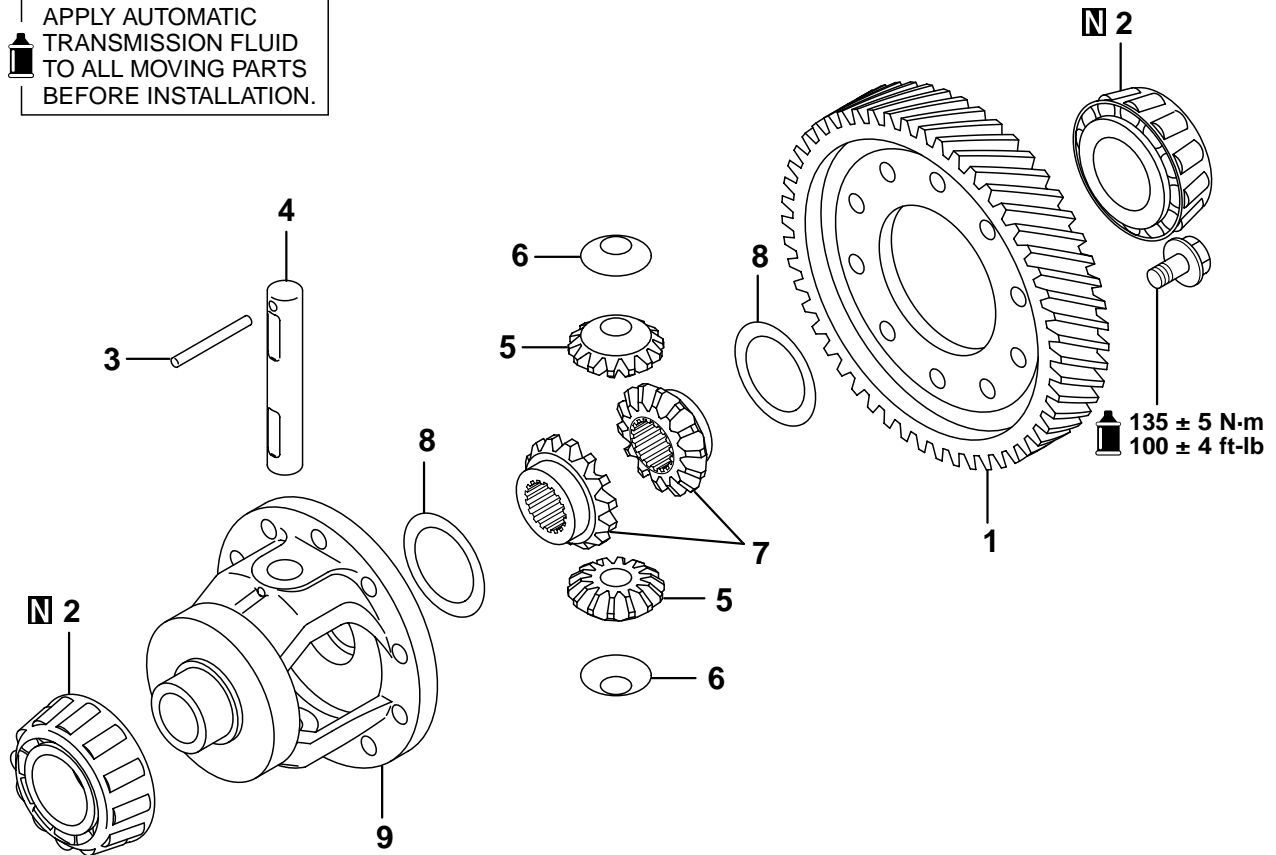


## DIFFERENTIAL

## DISASSEMBLY AND ASSEMBLY

M1233003100253

APPLY AUTOMATIC  
TRANSMISSION FLUID  
TO ALL MOVING PARTS  
BEFORE INSTALLATION.



AK301606AB

- DISASSEMBLY STEPS**
- <<A>> >>D<< 1. DIFFERENTIAL DRIVE GEAR  
>>C<< 2. TAPER ROLLER BEARINGS  
>>B<< 3. LOCK PIN  
>>A<< 4. PINION SHAFT  
>>A<< 5. PINIONS

- DISASSEMBLY STEPS**
- >>A<< 6. WASHERS  
>>A<< 7. SIDE GEARS  
>>A<< 8. SPACERS  
9. DIFFERENTIAL CASE

**Required Special Tools:**

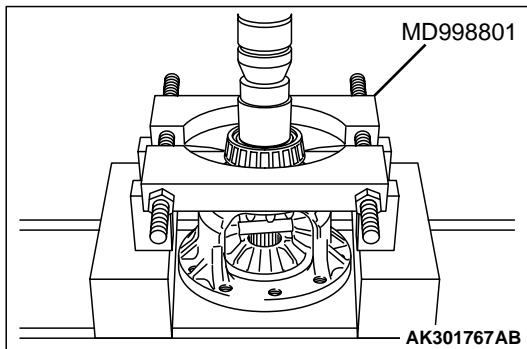
- MD998801: Bearing Remover
- MD998812: Installer Cap
- MD998823: Installer Adapter (48)



## DISASSEMBLY SERVICE POINT

### <<A>> TAPER ROLLER BEARING REMOVAL

1. Support the taper roller bearing with special tool MD998801, and then set them on the press.
2. Push down on the differential case with the press to remove the bearing.



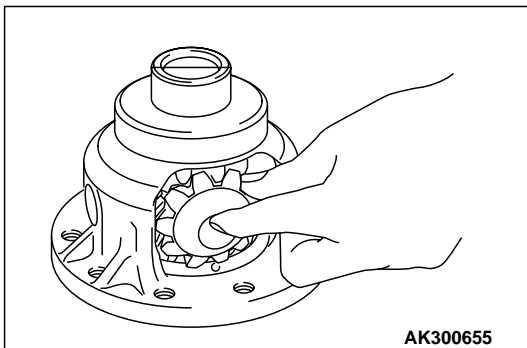
## ASSEMBLY SERVICE POINTS

### >>A<< SPACER, SIDE GEAR, WASHER, PINION AND PINION SHAFT INSTALLATION

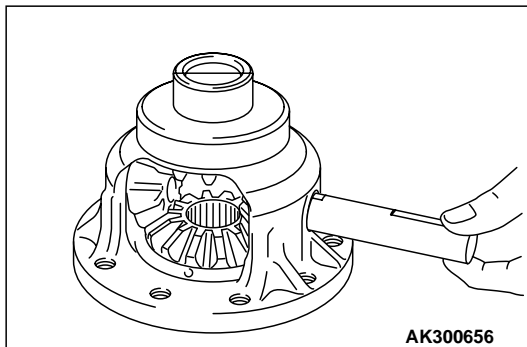
1. Mount a spacer on the back surface of the side gear, and then install the side gear in the differential case.

*NOTE: When a new side gear is to be installed, use a medium thickness spacer [0.93 to 1.00 mm (0.0366 to 0.0395 inch)].*

2. Set the washer on the back of each pinion, and put both pinions simultaneously in mesh with the side gears. While rotating them, install them into position.



3. Insert the pinion shaft.



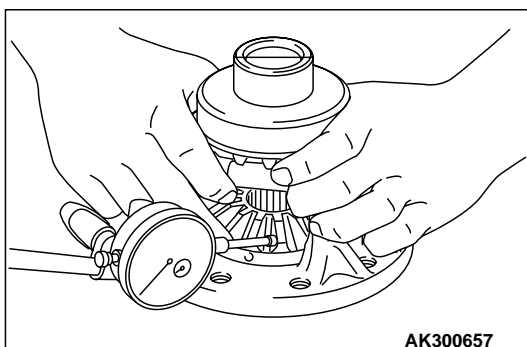
4. Measure the backlash between the side gear and pinion.

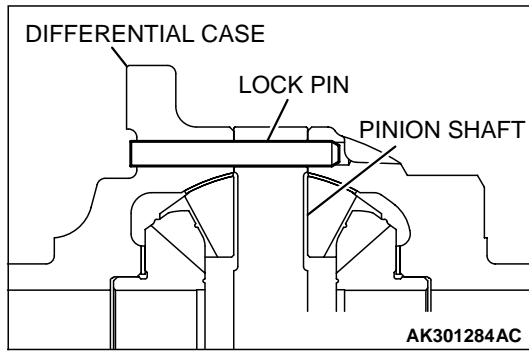
**Standard value:**

**0.025 – 0.150 mm (0.0010 – 0.0059 inch)**

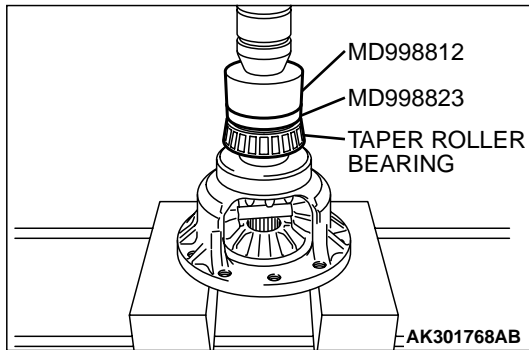
5. If the backlash is out of the standard value, select a spacer and re-measure the backlash.

*NOTE: Adjust until the backlash on both sides are equal.*

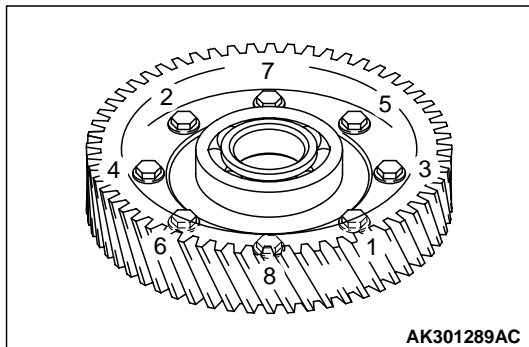


**>>B<< LOCK PIN INSTALLATION**

Install the lock pin so that it will be oriented in the direction shown.

**>>C<< TAPER ROLLER BEARING INSTALLATION**

Using special tools MD998812 and MD998823, press in the taper roller bearing.

**>>D<< DIFFERENTIAL DRIVE GEAR INSTALLATION**

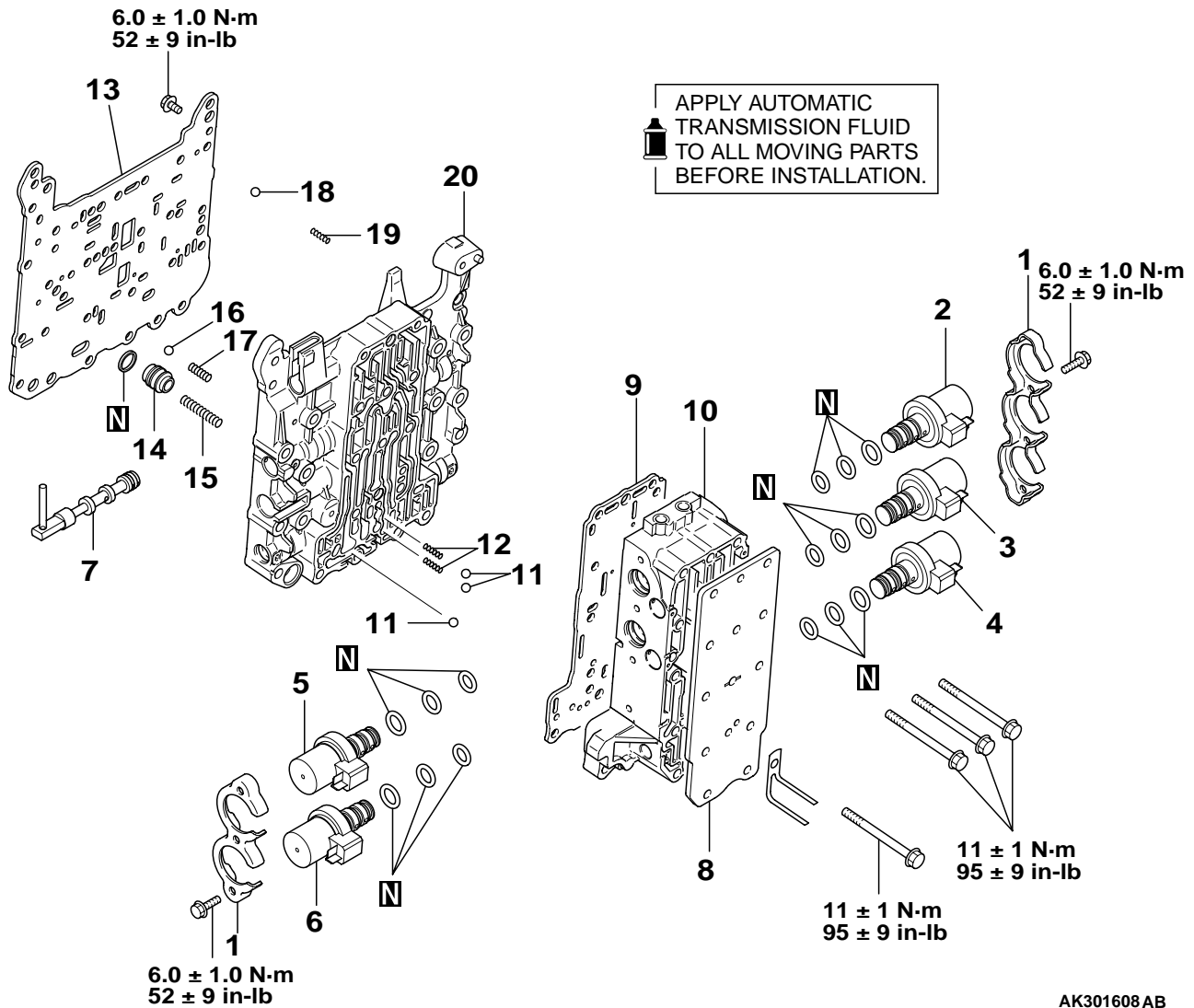
Apply ATF to the bolt, and then tighten the bolts to the specified torque in the sequence shown.

**Tightening torque:  $135 \pm 5 \text{ N}\cdot\text{m}$  ( $100 \pm 4 \text{ ft}\cdot\text{lb}$ )**

# VALVE BODY

## DISASSEMBLY AND ASSEMBLY

M1233005500235



AK301608 AB

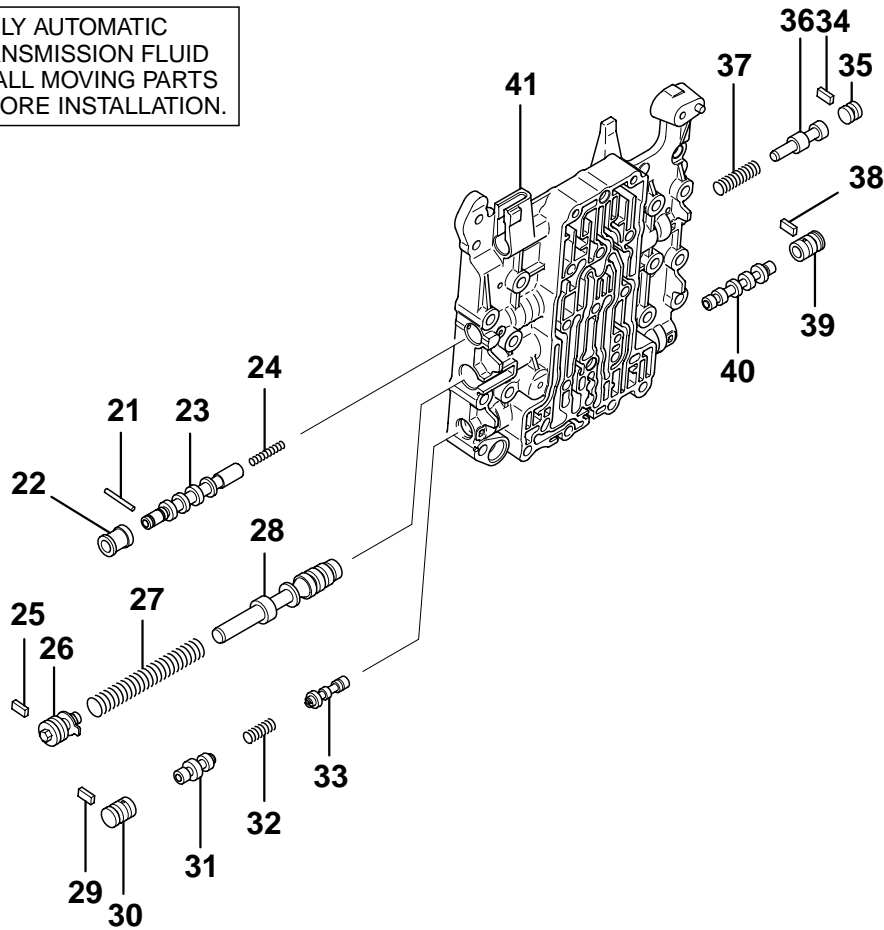
### DISASSEMBLY STEPS

- |       |       |     |   |
|-------|-------|-----|---|
| <<A>> | >>C<< | 1.  | SOLENOID VALVE SUPPORT                            |
| <<A>> | >>C<< | 2.  | UNDERDRIVE SOLENOID VALVE                         |
| <<A>> | >>C<< | 3.  | SECOND SOLENOID VALVE                             |
| <<A>> | >>C<< | 4.  | TORQUE CONVERTER CLUTCH<br>CONTROL SOLENOID VALVE |
| <<A>> | >>C<< | 5.  | OVERDRIVE SOLENOID VALVE                          |
| <<A>> | >>C<< | 6.  | LOW-REVERSE SOLENOID<br>VALVE                     |
|       |       | 7.  | MANUAL VALVE                                      |
|       |       | 8.  | COVER   |
|       |       | 9.  | PLATE   |
|       |       | 10. | OUTSIDE VALVE BODY<br>ASSEMBLY                    |

### DISASSEMBLY STEPS

- |       |     |                                    |
|-------|-----|------------------------------------|
| >>B<< | 11. | STEEL BALL (ORIFICE CHECK<br>BALL) |
| >>B<< | 12. | SPRING                             |
|       | 13. | PLATE                              |
| >>A<< | 14. | DAMPING VALVE                      |
| >>A<< | 15. | DAMPING VALVE SPRING               |
| >>A<< | 16. | STEEL BALL (LINE RELIEF)           |
| >>A<< | 17. | SPRING                             |
| >>A<< | 18. | STEEL BALL (ORIFICE CHECK<br>BALL) |
| >>A<< | 19. | SPRING                             |
|       | 20. | INSIDE VALVE BODY ASSEMBLY         |

APPLY AUTOMATIC  
TRANSMISSION FLUID  
TO ALL MOVING PARTS  
BEFORE INSTALLATION.




AK301609AB

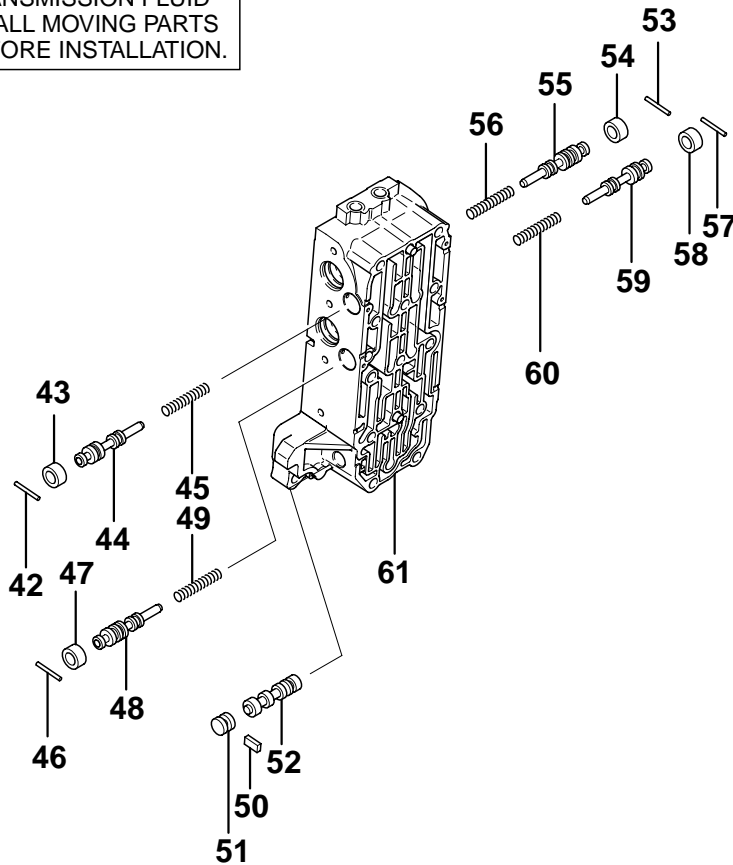
**DISASSEMBLY STEPS**

21. ROLLER
22. TORQUE CONVERTER CLUTCH  
CONTROL VALVE SLEEVE
23. TORQUE CONVERTER CLUTCH  
CONTROL VALVE
24. TORQUE CONVERTER CLUTCH  
CONTROL VALVE SPRING
25. PLATE
26. SCREW
27. REGULATOR VALVE SPRING
28. REGULATOR VALVE
29. PLATE
30. FAIL-SAFE VALVE A SLEEVE

**DISASSEMBLY STEPS**

31. FAIL-SAFE VALVE A2
32. FAIL-SAFE VALVE A SPRING
33. FAIL-SAFE VALVE A1
34. PLATE
35. PLUG
36. TORQUE CONVERTER VALVE
37. TORQUE CONVERTER VALVE  
SPRING
38. PLATE
39. FAIL-SAFE VALVE B SLEEVE
40. FAIL-SAFE VALVE B
41. INSIDE VALVE BODY

 **APPLY AUTOMATIC  
TRANSMISSION FLUID  
TO ALL MOVING PARTS  
BEFORE INSTALLATION.**



AK301610 AB

**DISASSEMBLY STEPS**

- 42. ROLLER
- 43. OVERDRIVE PRESSURE  
CONTROL VALVE SLEEVE
- 44. OVERDRIVE PRESSURE  
CONTROL VALVE
- 45. OVERDRIVE PRESSURE  
CONTROL VALVE SPRING
- 46. ROLLER
- 47. LOW-REVERSE PRESSURE  
CONTROL VALVE SLEEVE
- 48. LOW-REVERSE PRESSURE  
CONTROL VALVE
- 49. LOW-REVERSE PRESSURE  
CONTROL VALVE SPRING
- 50. PLATE
- 51. PLUG

**DISASSEMBLY STEPS**

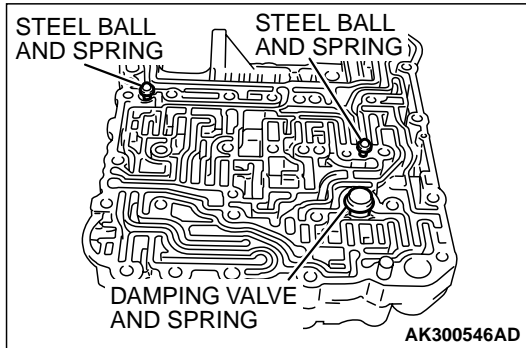
- 52. SWITCHING VALVE
- 53. ROLLER
- 54. UNDERDRIVE PRESSURE  
CONTROL VALVE SLEEVE
- 55. UNDERDRIVE PRESSURE  
CONTROL VALVE
- 56. UNDERDRIVE PRESSURE  
CONTROL VALVE SPRING
- 57. ROLLER
- 58. SECOND PRESSURE CONTROL  
VALVE SLEEVE
- 59. SECOND PRESSURE CONTROL  
VALVE
- 60. SECOND PRESSURE CONTROL  
VALVE SPRING
- 61. OUTSIDE VALVE BODY

**DISASSEMBLY SERVICE POINT****<<A>> SOLENOID VALVES REMOVAL**

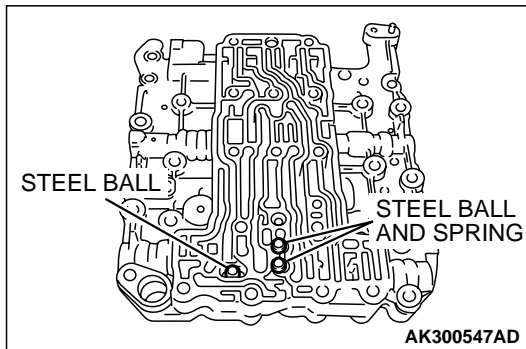
Mark the solenoid valves with white paint to make assembly easier.

**ASSEMBLY SERVICE POINTS****>>A<< SPRING, STEEL BALL, DAMPING VALVE AND DAMPING VALVE SPRING INSTALLATION**

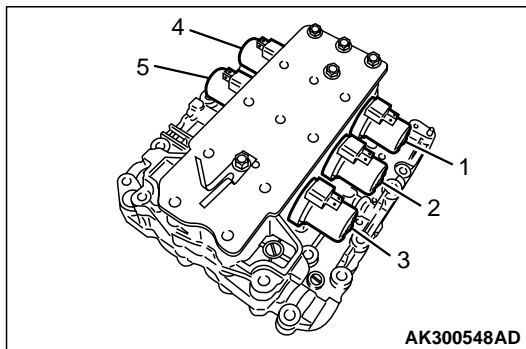
1. Install the steel balls (two pieces) and springs (two pieces) to the inside valve body as shown.
2. Install the damping valve and spring to the inside valve body as shown.

**>>B<< SPRING AND STEEL BALL INSTALLATION**

Install the steel balls (three pieces) and springs (two pieces) to the inside valve body as shown.

**>>C<< SOLENOID VALVES INSTALLATION**

1. Apply ATF or petroleum jelly (Vaseline) to the O-ring and install carefully.
2. Install the solenoid valves by referring to the marks applied during disassembly.

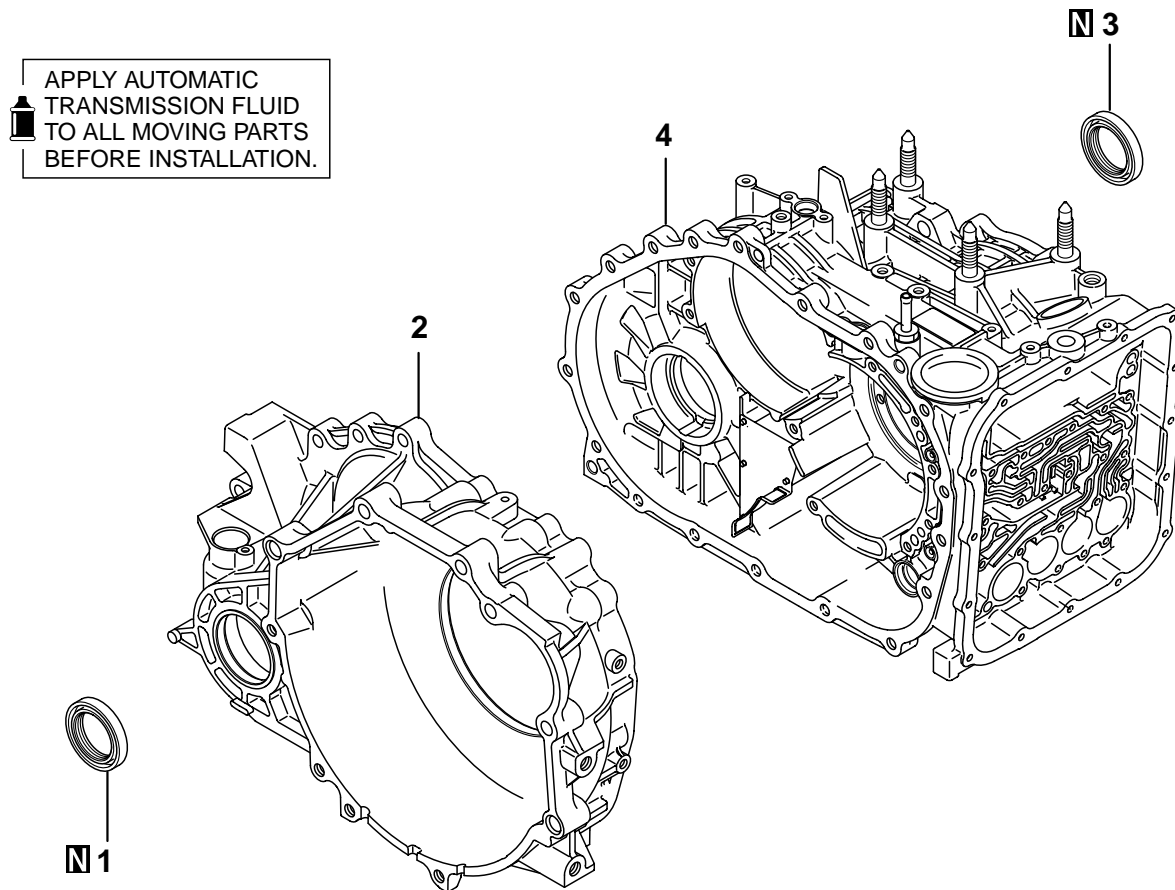


| NO. | NAME   |
|-----|--|
| 1   | Underdrive solenoid valve                      |
| 2   | Second solenoid valve                          |
| 3   | Torque converter clutch control solenoid valve |
| 4   | Overdrive solenoid valve                       |
| 5   | Low-reverse solenoid valve                     |

## DRIVE SHAFT OIL SEAL

### DISASSEMBLY AND ASSEMBLY

M1233004300164



AK301611 AB

- >>A<<**
- DISASSEMBLY STEPS**
1. OIL SEAL
  2. TORQUE CONVERTER HOUSING

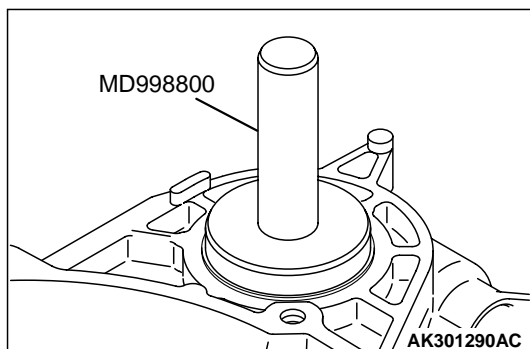
- >>B<<**
- DISASSEMBLY STEPS**
3. OIL SEAL
  4. TRANSAXLE CASE

#### Required Special Tool:

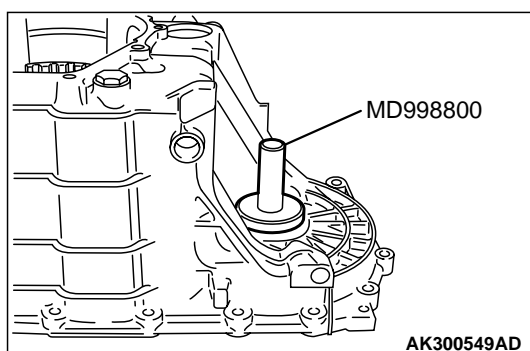
- MD998800: Oil Seal Installer

**ASSEMBLY SERVICE POINTS****>>A<< OIL SEAL INSTALLATION**

Use special tool MD998800 to tap the oil seal into the torque converter housing.

**>>B<< OIL SEAL INSTALLATION**

Use special tool MD998800 to tap the oil seal in the transaxle case.





## SPECIFICATIONS

### FASTENER TIGHTENING SPECIFICATIONS

M1233023100404

| ITEMS      |   | SPECIFICATIONS               |
|------------|---|------------------------------|
| Transaxle  | Roll stopper bracket                      | 70 ± 10 N·m (52 ± 7 ft-lb)   |
|            | Control cable bracket                     | 23 ± 3 N·m (17 ± 2 ft-lb)    |
|            | Eye bolt                                  | 24 ± 3 N·m (18 ± 2 ft-lb)    |
|            | Oil cooler feed tube                      | 11 ± 1 N·m (95 ± 9 in-lb)    |
|            | Input shaft speed sensor                  | 11 ± 1 N·m (95 ± 9 in-lb)    |
|            | Output shaft speed sensor                 | 11 ± 1 N·m (95 ± 9 in-lb)    |
|            | Manual control lever                      | 23 ± 3 N·m (17 ± 2 ft-lb)    |
|            | Park/neutral position switch (PNP switch) | 11 ± 1 N·m (95 ± 9 in-lb)    |
|            | Sealing cap                               | 5.0 ± 1.0 N·m (43 ± 9 in-lb) |
|            | Valve body cover                          | 11 ± 1 N·m (95 ± 9 in-lb)    |
|            | Manual control shaft detente              | 6.0 ± 1.0 N·m (52 ± 9 in-lb) |
|            | Valve body mounting bolt                  | 11 ± 1 N·m (95 ± 9 in-lb)    |
|            | Fluid temperature sensor                  | 11 ± 1 N·m (95 ± 9 in-lb)    |
|            | Torque converter housing                  | 47 ± 6 N·m (35 ± 3 ft-lb)    |
|            | Oil pump                                  | 29 ± 2 N·m (21 ± 1 ft-lb)    |
|            | Rear cover                                | 23 ± 3 N·m (17 ± 2 ft-lb)    |
|            | Transfer drive gear                       | 34 ± 2 N·m (25 ± 1 ft-lb)    |
|            | Output shaft jam nut                      | 170 ± 10 N·m (125 ± 7 ft-lb) |
|            | Output shaft bearing retainer             | 33 ± 3 N·m (24 ± 2 ft-lb)    |
| Components | Differential drive gear                   | 135 ± 5 N·m (100 ± 4 ft-lb)  |
|            | Solenoid valve support                    | 6.0 ± 1.0 N·m (52 ± 9 in-lb) |
|            | Valve body                                | 11 ± 1 N·m (95 ± 9 in-lb)    |
|            | Plate                                     | 6.0 ± 1.0 N·m (52 ± 9 in-lb) |
| Transfer   | Transfer cover                            | 23 ± 3 N·m (17 ± 2 ft-lb)    |

### GENERAL SPECIFICATIONS

M1233000200433

| ITEMS            |                    | SPECIFICATIONS                                   |             |
|------------------|--------------------|--|-------------|
| Model            |                    | F4A4B-1-J1Z                                      | F4A4B-4-L2Z |
| Type             |                    | Electronically controlled 4-speed full-automatic |             |
| Torque converter | Type               | 3-element with torque converter clutch           |             |
|                  | Stall torque ratio | 2.1  | 2.0         |
| Gear ratio       | 1st                | 2.842  |             |
|                  | 2nd                | 1.529  | 1.573       |
|                  | 3rd                | 1.000  |             |
|                  | 4th                | 0.712  | 0.688       |
|                  | Reverse            | 2.480  | 2.214       |
| Final gear ratio |                    | 4.041  | 4.212       |

## SERVICE SPECIFICATIONS

M1233000300300

| ITEMS  | STANDARD VALUE                  |
|--|---------------------------------|
| Output shaft preload mm (in)   | 0.01 – 0.09 (0.0004 – 0.0035)   |
| Brake reaction plate end play mm (in)                                | 0 – 0.16 (0 – 0.0063)           |
| Low-reverse brake end play mm (in) <F4A4B-1>                         | 1.35 – 1.81 (0.0531 – 0.0713)   |
| Low-reverse brake end play mm (in) <F4A4B-4>                         | 1.65 – 2.11 (0.0649 – 0.0831)   |
| Second brake end play mm (in)  | 0.79 – 1.25 (0.0311 – 0.0492)   |
| Underdrive sun gear end play mm (in)                                 | 0.25 – 0.45 (0.0098 – 0.0177)   |
| Input shaft end play mm (in)   | 0.70 – 1.45 (0.028 – 0.057)     |
| Differential case preload mm (in)                                    | 0.045 – 0.105 (0.0018 – 0.0041) |
| Underdrive clutch end play mm (in)                                   | 1.6 – 1.8 (0.0630 – 0.0709)     |
| Reverse and overdrive clutch return spring retainer end play mm (in) | 0 – 0.09 (0 – 0.0035)           |
| Overdrive clutch end play mm (in)                                    | 1.5 – 1.7 (0.0590 – 0.0669)     |
| Reverse clutch end play mm (in)                                      | 1.6 – 1.8 (0.0630 – 0.0709)     |
| Backlash between differential side gear and pinion mm (in)           | 0.025 – 0.150 (0.0010 – 0.0059) |

## VALVE BODY SPRING IDENTIFICATION TABLE

M1233022900140

| SPRING                                       | WIRE<br>DIAMETER<br>mm (in) | OUTSIDE<br>DIAMETER<br>mm (in) | FREE LENGTH<br>mm (in) | NUMBER OF<br>LOOPS |
|--|-----------------------------|--------------------------------|------------------------|--------------------|
| Regulator valve spring                       | 1.8 (0.071)                 | 15.7 (0.618)                   | 86.7 (3.413)           | 24                 |
| Underdrive pressure control valve spring     | 0.7 (0.028)                 | 7.6 (0.299)                    | 37.7 (1.484)           | 25                 |
| Overdrive pressure control valve spring      | 0.7 (0.028)                 | 7.6 (0.299)                    | 37.7 (1.484)           | 25                 |
| Low-reverse pressure control valve spring    | 0.7 (0.028)                 | 7.6 (0.299)                    | 37.7 (1.484)           | 25                 |
| Second pressure control valve spring         | 0.7 (0.028)                 | 7.6 (0.299)                    | 37.7 (1.484)           | 25                 |
| Torque converter spring                      | 1.6 (0.063)                 | 11.2 (0.441)                   | 34.4 (1.354)           | 12.5               |
| Torque converter clutch control valve spring | 0.7 (0.028)                 | 5.9 (0.232)                    | 28.1 (1.106)           | 19                 |
| Fail-safe valve spring                       | 0.7 (0.028)                 | 8.9 (0.350)                    | 21.9 (0.862)           | 9.5                |
| Damping valve spring                         | 1.0 (0.039)                 | 7.7 (0.303)                    | 35.8 (1.409)           | 17                 |
| Line relief valve spring                     | 1.0 (0.039)                 | 7.0 (0.276)                    | 17.3 (0.681)           | 10                 |
| Orifice check ball spring                    | 0.5 (0.020)                 | 4.5 (0.177)                    | 17.2 (0.677)           | 15                 |

## ADJUSTING PLATE, SNAP RING AND SPACERS

M1233023000281

### Thrust washer (For adjustment of input shaft end play)

| THICKNESS mm (in) | IDENTIFICATION SYMBOL | THICKNESS mm (in) | IDENTIFICATION SYMBOL |
|-------------------|-----------------------|-------------------|-----------------------|
| 1.8 (0.071)       | 18                    | 2.4 (0.094)       | 24                    |
| 2.0 (0.079)       | 20                    | 2.6 (0.102)       | 26                    |
| 2.2 (0.087)       | 22                    | 2.8 (0.110)       | 28                    |

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

| THICKNESS mm (in) | IDENTIFICATION SYMBOL | THICKNESS mm (in) | IDENTIFICATION SYMBOL |
|-------------------|-----------------------|-------------------|-----------------------|
| 1.6 (0.063)       | None                  | 2.4 (0.094)       | Brown                 |
| 1.7 (0.067)       | Blue                  | 2.5 (0.098)       | None                  |
| 1.8 (0.071)       | Brown                 | 2.6 (0.102)       | Blue                  |
| 1.9 (0.075)       | None                  | 2.7 (0.106)       | Brown                 |
| 2.0 (0.079)       | Blue                  | 2.8 (0.110)       | None                  |
| 2.1 (0.083)       | Brown                 | 2.9 (0.114)       | Blue                  |
| 2.2 (0.087)       | None                  | 3.0 (0.118)       | Brown                 |
| 2.3 (0.091)       | Blue                  |                   |                       |

### Snap ring (For adjustment of low-reverse brake and second brake reaction plates end play)

| THICKNESS mm (in) | IDENTIFICATION SYMBOL | THICKNESS mm (in) | IDENTIFICATION SYMBOL |
|-------------------|-----------------------|-------------------|-----------------------|
| 2.2 (0.087)       | Blue                  | 2.4 (0.094)       | None                  |
| 2.3 (0.091)       | Brown                 | 2.5 (0.098)       | Blue                  |

### Pressure plate (For adjustment of low-reverse brake and second brake end play)

| THICKNESS mm (in) | IDENTIFICATION SYMBOL | THICKNESS mm (in) | IDENTIFICATION SYMBOL |
|-------------------|-----------------------|-------------------|-----------------------|
| 1.6 (0.063)       | L                     | 2.4 (0.094)       | 4                     |
| 1.8 (0.071)       | 1                     | 2.6 (0.102)       | 6                     |
| 2.0 (0.079)       | 0                     | 2.8 (0.110)       | 8                     |
| 2.2 (0.087)       | 2                     | 3.0 (0.118)       | D                     |

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

| THICKNESS mm (in) | IDENTIFICATION SYMBOL | THICKNESS mm (in) | IDENTIFICATION SYMBOL |
|-------------------|-----------------------|-------------------|-----------------------|
| 1.6 (0.063)       | None                  | 2.3 (0.091)       | Blue                  |
| 1.7 (0.067)       | Blue                  | 2.4 (0.094)       | Brown                 |
| 1.8 (0.071)       | Brown                 | 2.5 (0.098)       | None                  |
| 1.9 (0.075)       | None                  | 2.6 (0.102)       | Blue                  |
| 2.0 (0.079)       | Blue                  | 2.7 (0.106)       | Brown                 |
| 2.1 (0.083)       | Brown                 | 2.8 (0.110)       | None                  |
| 2.2 (0.087)       | None                  |                   |                       |

### Snap ring (For adjustment of reverse clutch and overdrive clutch spring retainer end plays)

| THICKNESS mm (in) | IDENTIFICATION SYMBOL | THICKNESS mm (in) | IDENTIFICATION SYMBOL |
|-------------------|-----------------------|-------------------|-----------------------|
| 1.48 (0.0583)     | Brown                 | 1.58 (0.0622)     | Blue                  |
| 1.53 (0.0602)     | None                  | 1.63 (0.0642)     | Brown                 |

**Thrust race (For adjustment of underdrive sun gear end play)**

| THICKNESS mm (in) | IDENTIFICATION SYMBOL | THICKNESS mm (in) | IDENTIFICATION SYMBOL |
|-------------------|-----------------------|-------------------|-----------------------|
| 1.6 (0.063)       | —                     | 2.2 (0.087)       | —                     |
| 1.7 (0.067)       | —                     | 2.3 (0.091)       | —                     |
| 1.8 (0.071)       | —                     | 2.4 (0.094)       | —                     |
| 1.9 (0.075)       | —                     | 2.5 (0.098)       | —                     |
| 2.0 (0.079)       | —                     | 2.6 (0.102)       | —                     |
| 2.1 (0.083)       | —                     |                   |                       |

**Spacer (For adjustment of output shaft preload)**

| THICKNESS mm (in) | IDENTIFICATION SYMBOL | THICKNESS mm (in) | IDENTIFICATION SYMBOL |
|-------------------|-----------------------|-------------------|-----------------------|
| 1.88 (0.0740)     | 88                    | 2.36 (0.0929)     | 36                    |
| 1.92 (0.0756)     | 92                    | 2.40 (0.0945)     | 40                    |
| 1.96 (0.0772)     | 96                    | 2.44 (0.0961)     | 44                    |
| 2.00 (0.0787)     | 00                    | 2.48 (0.0976)     | 48                    |
| 2.04 (0.0803)     | 04                    | 2.52 (0.0992)     | 52                    |
| 2.08 (0.0819)     | 08                    | 2.56 (0.1008)     | 56                    |
| 2.12 (0.0835)     | 12                    | 2.60 (0.1024)     | 60                    |
| 2.16 (0.0850)     | 16                    | 2.64 (0.1039)     | 64                    |
| 2.20 (0.0866)     | 20                    | 2.68 (0.1055)     | 68                    |
| 2.24 (0.0882)     | 24                    | 2.72 (0.1071)     | 72                    |
| 2.28 (0.0898)     | 28                    | 2.76 (0.1087)     | 76                    |
| 2.32 (0.0913)     | 32                    |                   |                       |

**Spacer (For adjustment of differential case preload)**

| THICKNESS mm (in) | IDENTIFICATION SYMBOL | THICKNESS mm (in) | IDENTIFICATION SYMBOL |
|-------------------|-----------------------|-------------------|-----------------------|
| 0.71 (0.0280)     | 71                    | 1.07 (0.0421)     | 07                    |
| 0.74 (0.0291)     | 74                    | 1.10 (0.0433)     | J                     |
| 0.77 (0.0303)     | 77                    | 1.13 (0.0445)     | D                     |
| 0.80 (0.0315)     | 80                    | 1.16 (0.0457)     | K                     |
| 0.83 (0.0327)     | 83                    | 1.19 (0.0469)     | L                     |
| 0.86 (0.0339)     | 86                    | 1.22 (0.0480)     | G                     |
| 0.89 (0.0350)     | 89                    | 1.25 (0.0492)     | M                     |
| 0.92 (0.0362)     | 92                    | 1.28 (0.0504)     | N                     |
| 0.95 (0.0374)     | 95                    | 1.31 (0.0516)     | E                     |
| 0.98 (0.0386)     | 98                    | 1.34 (0.0528)     | O                     |
| 1.01 (0.0398)     | 01                    | 1.37 (0.0539)     | P                     |
| 1.04 (0.0409)     | 04                    |                   |                       |

**Spacer (For adjustment of backlash between differential side gear and pinion)**

| THICKNESS mm (in)             | IDENTIFICATION SYMBOL | THICKNESS mm (in)             | IDENTIFICATION SYMBOL |
|-------------------------------|-----------------------|-------------------------------|-----------------------|
| 0.75 – 0.82 (0.0295 – 0.0323) | —                     | 1.01 – 1.08 (0.0398 – 0.0425) | —                     |
| 0.83 – 0.92 (0.0327 – 0.0362) | —                     | 1.09 – 1.16 (0.0429 – 0.0457) | —                     |
| 0.93 – 1.00 (0.0366 – 0.0394) | —                     |                               |                       |

**SEALANTS**

M1233000500252

| ITEMS                    | SPECIFIED SEALANT  |
|--------------------------|--|
| Rear cover               | MITSUBISHI genuine sealant Part No. MD974421 or equivalent |
| Torque converter housing | MITSUBISHI genuine sealant Part No. MD974421 or equivalent |
| Valve body cover         | MITSUBISHI genuine sealant Part No. MD974421 or equivalent |

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## NOTES