GROUP 23D

AUTOMATIC TRANSAXLE OVERHAUL

CONTENTS

TRANSAXLE MODELS

M1233000101785

Transaxle model	Engine model	Vehicle model
F6AJA-1-F1Z	6B31	CW6WX
W6AJA-1-F1ZA	6B31	CW6WX
W6AJA-1-F1ZB	6B31	CW6WX

GENERAL SPECIFICATIONS

M1233000201232

Item		Specifications	
Transaxle model		F6AJA	W6AJA
Transaxle type		Electronically controlled 6-speed full-automatic	
Torque converter	Type	3-element with torque converter clutch	
	Stall torque ratio	1.96	
	Lock-up	Present	
Transaxle gear ratio	1st	4.199	
	2nd	2.405	
	3rd	1.583	
	4th	1.161	
	5th	0.855	
	6th	0.685	
	Reverse	3.457	
Final gear ratio		3.571	
Transfer type		–	Center differential type full-time 4WD
Transfer gear ratio		–	0.425

SERVICE SPECIFICATIONS

M1233000300872

Item	Standard value mm (in)
Reduction gear preload	0.16 – 0.22 (0.006 – 0.009)
Differential preload	0.19 – 0.25 (0.008 – 0.010)
Low-reverse brake clearance	1.9 – 2.2 (0.07 – 0.09)
2-6 brake clearance	1.9 – 2.2 (0.07 – 0.09)
Reduction sun gear end play	0.4 – 0.7 (0.02 – 0.03)
Side cover end play	0.70 – 1.05 (0.028 – 0.041)
Drum support end play	0 – 0.35 (0 – 0.014)
3-5 reverse clutch end play	0.55 – 0.85 (0.022 – 0.034)

TORQUE SPECIFICATIONS

M1233023101645

Transaxle

Item	N·m
Output gear set mounting bolt	41 ± 1 (30 ± 1 ft-lb)
Side cover mounting bolt	27 ± 2 (20 ± 1 ft-lb)
Parking plate mounting bolt	7.9 (70 in-lb)
Oil strainer mounting bolt	9.4 (83 in-lb)
Oil pump assembly mounting bolt	21 (15 ft-lb)
Converter housing mounting bolt	47 ± 2 (35 ± 1 ft-lb)
ATF adjusting bolt	7.4 ± 2.4 (65 ± 21 in-lb)
Detent spring mounting bolt	4.9 (43 in-lb)
Oil temperature sensor mounting bolt	7.9 (70 in-lb)
Control valve assembly mounting bolt	7.9 (70 in-lb)
Control valve cover mounting bolt	9.0 ± 0.9 (80 ± 8 in-lb)
Cooler tube eye bolt	33 ± 3 (24 ± 2 ft-lb)
Cooler tube mounting bolt	22 ± 1 (16 ± 1 ft-lb)
Baffle plate mounting bolt	6.6 ± 1.0 (58 ± 9 in-lb)
Pressure test port bolt	7.4 (65 in-lb)
Water-cooled transmission fluid cooler mounting bolt	4.3 ± 0.6 (38 ± 5 in-lb)
Manual control lever mounting nut	22 ± 3 (16 ± 2 ft-lb)
Park/neutral position switch mounting bolt	5.9 (52 in-lb)
Turbine sensor mounting bolt	5.9 (52 in-lb)
Speed sensor mounting bolt	5.9 (52 in-lb)
Control cable bracket mounting bolt	23 ± 3 (17 ± 2 ft-lb)
Oil filler tube mounting bolt	11 ± 1 (97 ± 8 in-lb)
Harness bracket mounting bolt	23 ± 3 (17 ± 2 ft-lb)
Corrugate clamp bracket mounting bolt	23 ± 3 (17 ± 2 ft-lb)
FR roll stopper bracket mounting bolt	90 ± 10 (66 ± 7 ft-lb)
RR roll stopper bracket mounting bolt	90 ± 10 (66 ± 7 ft-lb)
Final gear mounting bolt	144 (106 ft-lb)

Transfer

Item	N·m
Transfer mounting bolt	69 ± 9 (51 ± 6 ft-lb)
Cover mounting bolt	12 ± 2 (106 ± 18 in-lb)

Size of torque wrench used

Tool size	Main parts to be used
E16	Side cover
E18	Output gear set
E20	Converter housing

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ADJUSTING PLATE, SNAP RING, SHIM, SPACER, NEEDLE BEARING, THRUST WASHER AND BEARING RACE

M1233023001068

Retaining plate (For adjustment of Low-reverse brake clearance)

Thickness mm (in)	Identification symbol	Thickness mm (in)	Identification symbol
2.9 (0.11)	None	3.7 (0.15)	None
3.1 (0.12)	None	3.9 (0.15)	None
3.3 (0.13)	None	4.1 (0.16)	None
3.5 (0.14)	None		

Retaining plate (For adjustment of 2-6 brake clearance)

Thickness mm (in)	Identification symbol	Thickness mm (in)	Identification symbol
2.0 (0.08)	None	2.6 (0.10)	None
2.2 (0.09)	None	2.8 (0.11)	None
2.4 (0.09)	None	3.0 (0.12)	None

Differential taper bearing shim (For adjustment of differential preload)

Thickness mm (in)	Identification symbol	Thickness mm (in)	Identification symbol
0.12 (0.005)	None	0.60 (0.024)	None
0.16 (0.006)	None	0.64 (0.025)	None
0.18 (0.007)	None	0.68 (0.027)	None
0.20 (0.008)	None	0.72 (0.028)	None
0.24 (0.009)	None	0.76 (0.030)	None
0.28 (0.011)	None	0.80 (0.032)	None
0.32 (0.013)	None	0.84 (0.033)	None
0.36 (0.014)	None	0.88 (0.035)	None
0.40 (0.016)	None	0.92 (0.036)	None
0.44 (0.017)	None	0.96 (0.038)	None
0.48 (0.019)	None	1.00 (0.039)	None
0.52 (0.021)	None	1.22 (0.050)	None
0.56 (0.022)	None		

Reduction gear taper bearing shim (For adjustment of reduction gear taper bearing preload))

Thickness mm (in)	Identification symbol	Thickness mm (in)	Identification symbol
0.12 (0.005)	None	0.56 (0.022)	None
0.14 (0.006)	None	0.60 (0.024)	None
0.16 (0.006)	None	0.64 (0.025)	None
0.20 (0.009)	None	0.68 (0.027)	None
0.24 (0.009)	None	0.72 (0.028)	None
0.28 (0.011)	None	0.76 (0.030)	None
0.32 (0.013)	None	0.80 (0.032)	None
0.36 (0.014)	None	0.84 (0.033)	None
0.40 (0.016)	None	0.88 (0.035)	None

Thickness mm (in)	Identification symbol	Thickness mm (in)	Identification symbol
0.44 (0.017)	None	0.92 (0.036)	None
0.48 (0.019)	None	0.98 (0.039)	None
0.52 (0.021)	None		

Spacer (For adjustment of reduction sun gear end play)

Thickness mm (in)	Identification symbol	Thickness mm (in)	Identification symbol
1.0 (0.04)	None	1.8 (0.07)	None
1.2 (0.05)	None	2.0 (0.08)	None
1.4 (0.06)	None	2.2 (0.09)	None
1.6 (0.06)	None		

Needle bearing (For adjustment of side cover)

Thickness mm (in)	Identification symbol	Thickness mm (in)	Identification symbol
2.8 (0.11)	None	3.6 (0.14)	None
3.0 (0.12)	None	3.8 (0.15)	None
3.2 (0.13)	None	4.0 (0.16)	None
3.4 (0.13)	None		

Thrust washer (For adjustment of drum support)

Thickness mm (in)	Identification symbol	Thickness mm (in)	Identification symbol
1.5 (0.06)	None	2.3 (0.09)	None
1.7 (0.07)	None	2.5 (0.10)	None
1.9 (0.07)	None	2.7 (0.11)	None
2.1 (0.08)	None		

Bearing race (For adjustment of 3-5 reverse clutch)

Thickness mm (in)	Identification symbol	Thickness mm (in)	Identification symbol
2.0 (0.08)	None	2.6 (0.10)	None
2.2 (0.09)	None	2.8 (0.11)	None
2.4 (0.09)	None	3.0 (0.12)	None

SEALANTS

M1233000501169

Transaxle

Item	Specified sealant
Side cover	Three bond 1216B
Converter housing	

Transfer

Item	Specified sealant
Cover	3M^{TM} ATD part No. 8660 or equivalent

FORM-IN-PLACE GASKET (FIPG)

This transaxle has several areas where the form-in-place gasket (FIPG) is used for sealing. To ensure that the FIPG fully serves its purpose, it is necessary to observe some precautions when applying it. Bead size, continuity and location are of paramount importance.
Too thin a bead could cause leaks. Too thick a bead, on the other hand, could be squeezed out of location, causing blocking or narrowing of fluid passages. To prevent leaks or blocking of passages, therefore, it is absolutely necessary to apply the FIPG evenly without a break, while observing the correct bead size.
FIPG hardens as it reacts with the moisture in the atmospheric air, and it is usually used for sealing metallic flange areas.

⚠ CAUTION

When re-applying liquid gasket (FIPG), be sure that:

1. **Residues of FIPG are cleared from all the ins and outs of parts;**
2. **Use Mitsubishi genuine parts cleaner (MZ100387) or equivalent to well degrease the FIPG-applied surface.**
3. **FIPG is correctly applied in accordance with FIPG Application.**

Disassembly

Parts sealed with a FIPG can be easily removed without need for the use of a special method. In some cases, however, the FIPG in joints may have to be broken by tapping parts with a mallet or similar tool.

Surface Preparation

Thoroughly remove all substances deposited on the FIPG application surface, using a gasket scraper. Make sure that the FIPG application surfaces is flat and smooth. Also make sure that the surface is free from oils, greases and foreign substances. Do not fail to remove old FIPG that may remain in the fastener fitting holes.

FIPG Application

Applied FIPG bead should be of the specified size and free of any break. FIPG can be wiped away unless it has completely hardened. Install the mating parts in position while the FIPG is still wet. Do not allow FIPG to spread beyond the sealing areas during installation. Avoid operating the transaxle or letting oils or water come in contact with the sealed area before a time sufficient for FIPG to harden (approximately one hour) has passed.
FIPG application method may vary from location to location. Follow the instruction for each particular case described later in this manual.

LUBRICANTS

M1233000400501

Transaxle

Item	Specified lubricant
Transmission fluid	DiaQueen ATF-J3

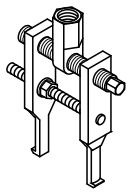
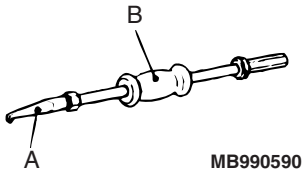
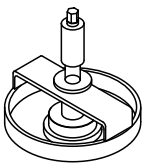
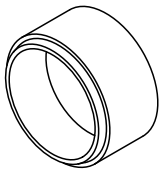
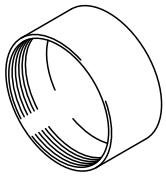
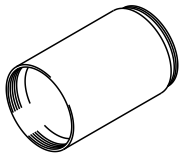
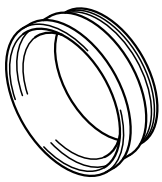
Transfer

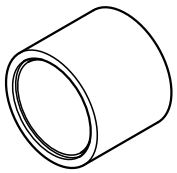
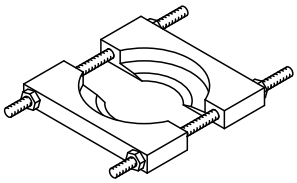
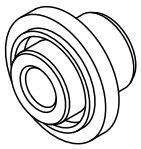
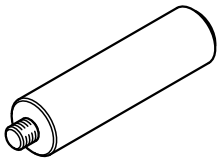
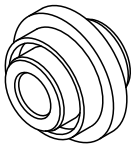
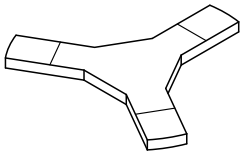
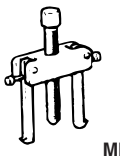
Item	Specified lubricant
Grease application parts	Retinax A
Hypoid gear oil application parts	Hypoid gear oil API classification GL-5 SAE 80

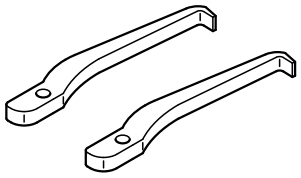
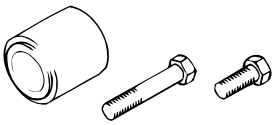
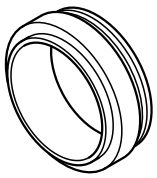
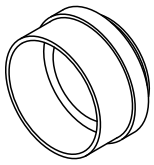
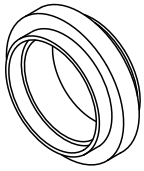
SPECIAL TOOLS

M1233000601218

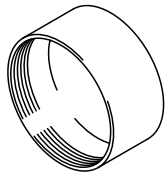
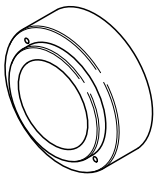
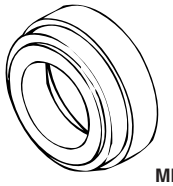
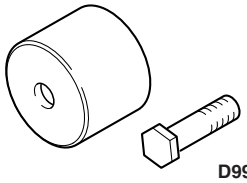
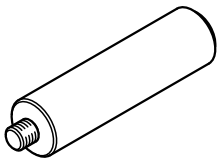
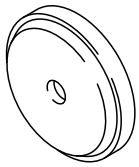
Transaxle

Tool	Tool number and name	Supersession	Application
	MB992039 Slid hammer puller	MB992039-01	Remove of bearing outer race
	MB990590 Real axle shaft oil seal remover	MB990211-01	Use with slid hammer puller
	MB992195 Spring compressor	–	Removal and installation of low and reverse brake snap ring
	MB991550 Bearing outer race installer	–	Installation of differential taper roller bearing outer race
	MD998812 Installer cap	MIT304180-A or General service tool	Use with installer and installer adapter
	MD998813 Installer-100	MIT304180-A or General service tool	Use with installer cap and installer adapter
	MD998830 Installer adapter	MD998830-01	Installation of bearing outer race

Tool	Tool number and name	Supersession	Application
	MB991445 Bushing remover and installer base	MB991445-01	Installation of differential taper roller bearing outer race <W6AJ>
	MD998917 Bearing remover	General service tool or MD998348-01	Removal and installation of bearing
	MB992197 Oil seal installer	–	Installation of differential side oil seal
	MB992075 Handle	–	Use with oil seal installer
	MB992198 Oil seal installer	–	Installation of converter housing oil seal
	MB992196 Spring compressor	–	Removal and installation of 2-6 brake piston snap ring
 MB990801	MB990801 Rear axle bearing puller	–	Remove of tapered roller bearing
 MB990811	MB990811 Side bearing puller cap	–	Use with rear axle bearing puller

Tool	Tool number and name	Supersession	Application
 MB990956	MB990956 Needle bearing installer	–	Use with rear axle bearing puller
 MB990810	MB990810 Side bearing puller	–	Remove of tapered roller bearing
	MD999566 Claw	–	Use with side bearing puller
 MD998761	MD998761 Cam oil seal installer	–	Use with side bearing puller
	MD998826 Installer adapter	–	Installation of tapered roller bearing <F6AJ>
 B991559	MB991559 Cam oil seal installer adapter	–	Installation of tapered roller bearing <F6AJ>
	MB992213 Bearing installer	–	Installation of tapered roller bearing
	MB992150 Oil seal installer	–	Installation of tapered roller bearing

Transfer

Tool	Tool number and name	Supersession	Application
	MD998812 Installer cap	MIT304180-A or General service tool	Installation of reduction gear bearing inner race (converter housing side and transaxle case side), installation of differential side bearing outer race (converter housing side), installation of differential side bearing inner race (converter housing side), installation of reduction pinion gear installation of transfer oil seal
	MB992154 Oil seal installer	–	Installation of transfer oil seal
 MD998777	MD998777 Camshaft oil seal installer adapter	–	Installation of transfer dust seal
 D998713	MD998713 Camshaft oil seal installer	–	Installation of transfer dust seal
	MB992075 Handle	–	Installation of oil seal
	MB992142 Oil seal installer	–	Installation of transfer oil seal
	MB990936 Oil seal installer	–	Installation of transfer oil seal

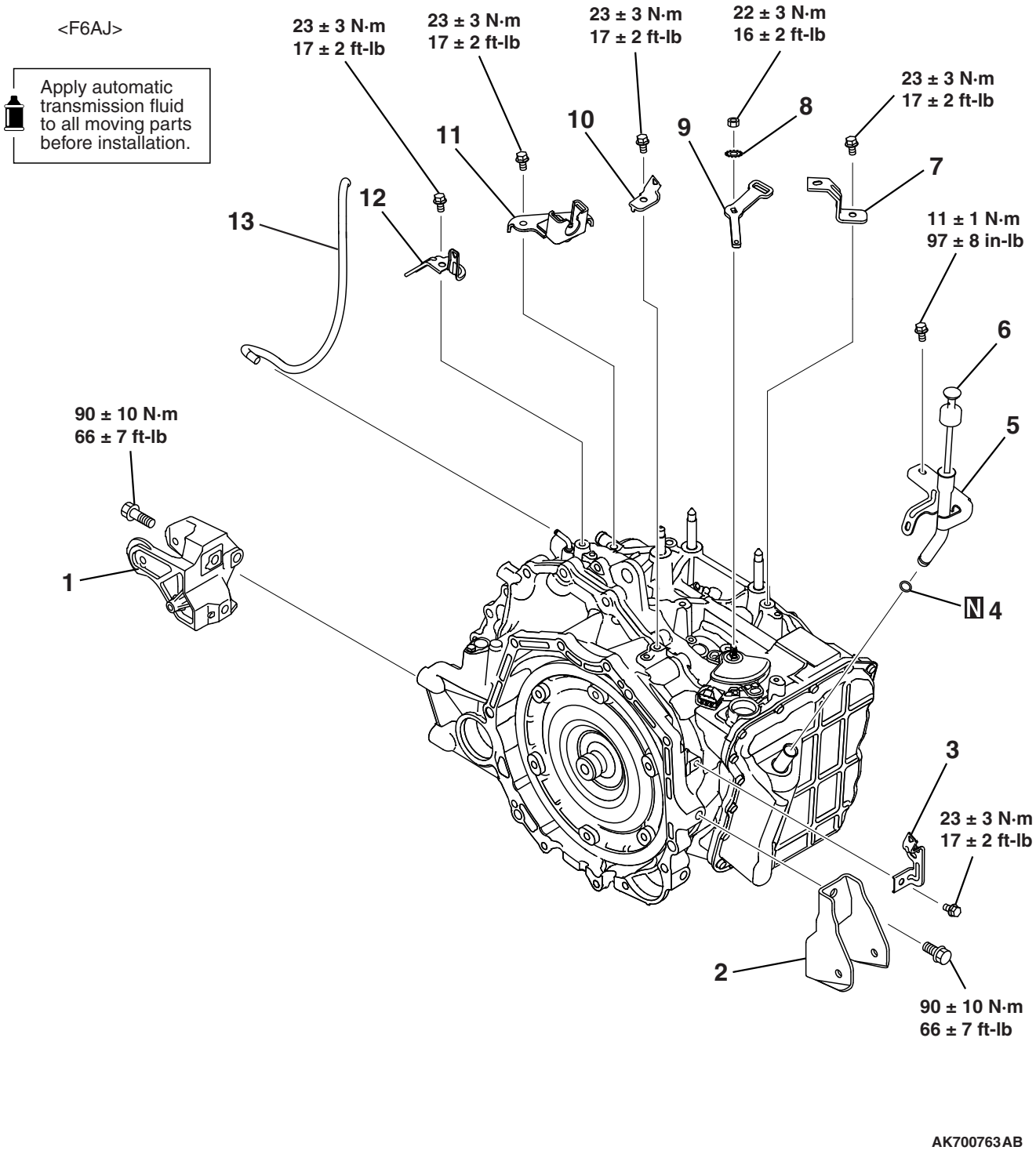
TRANSAXLE

DISASSEMBLY AND ASSEMBLY

M1233001001941

⚠ CAUTION

- **Use a fluid of the designated brand for transmission fluid. Use of transmission fluid not specified by the manufacturer can affect driveability and the durability of the automatic transmission, and can even lead to damage to the transmission.**
- **Perform disassembly work in a clean, dustproof room.**
- **Wash sand and mud adhering to the outside of the transaxle well using steam or washing oil outside a dustproof room before disassembly to prevent them from entering the inside during disassembly and assembly. (Do not blow steam in the inside of the transaxle or wash rubber-made parts with washing oil.)**
- **Pull out the torque converter from the transaxle after it is cleaned and drain transmission fluid.**
- **During the disassembly and assembly work, always use bare hands or vinyl gloves.**
- **Do not touch internal parts with your hands which touched the outside of the transaxle. (Wash your hands before touching internal parts.)**
- **Use paper towels instead of cotton gloves and shop towels to prevent entry of lint.**
- **Check the normal condition before performing disassembly and assembly work.**
- **Do not reuse drained transmission fluid.**



1. RR roll stopper bracket
2. FR roll stopper bracket
3. Corrugate clamp bracket
4. O-ring
5. Oil filler tube
6. Oil level gauge
7. Harness bracket
8. Spring washer
9. Manual control lever
10. Corrugate clamp bracket
11. Control cable bracket
12. Corrugate clamp bracket
13. Breather hose

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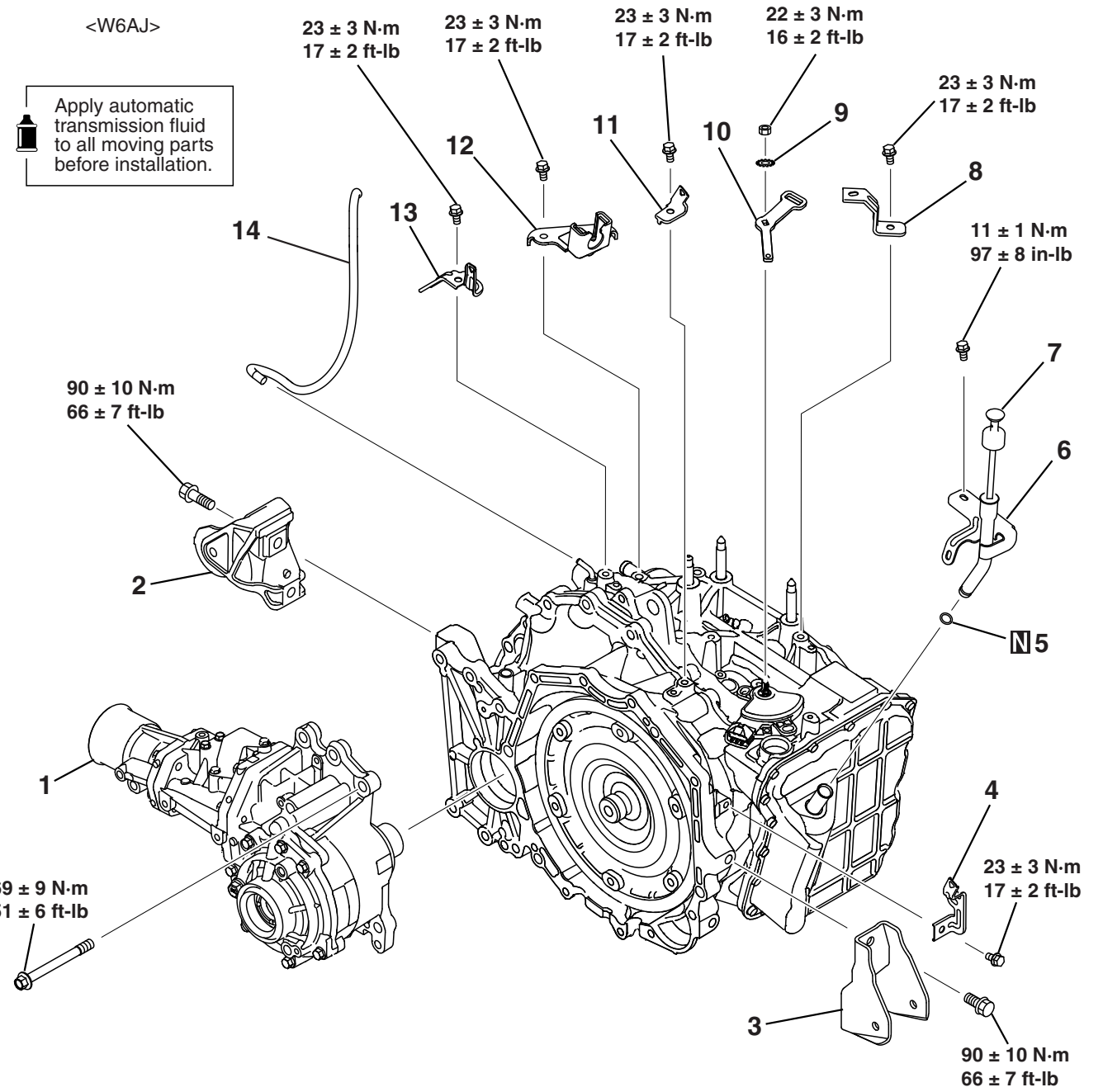
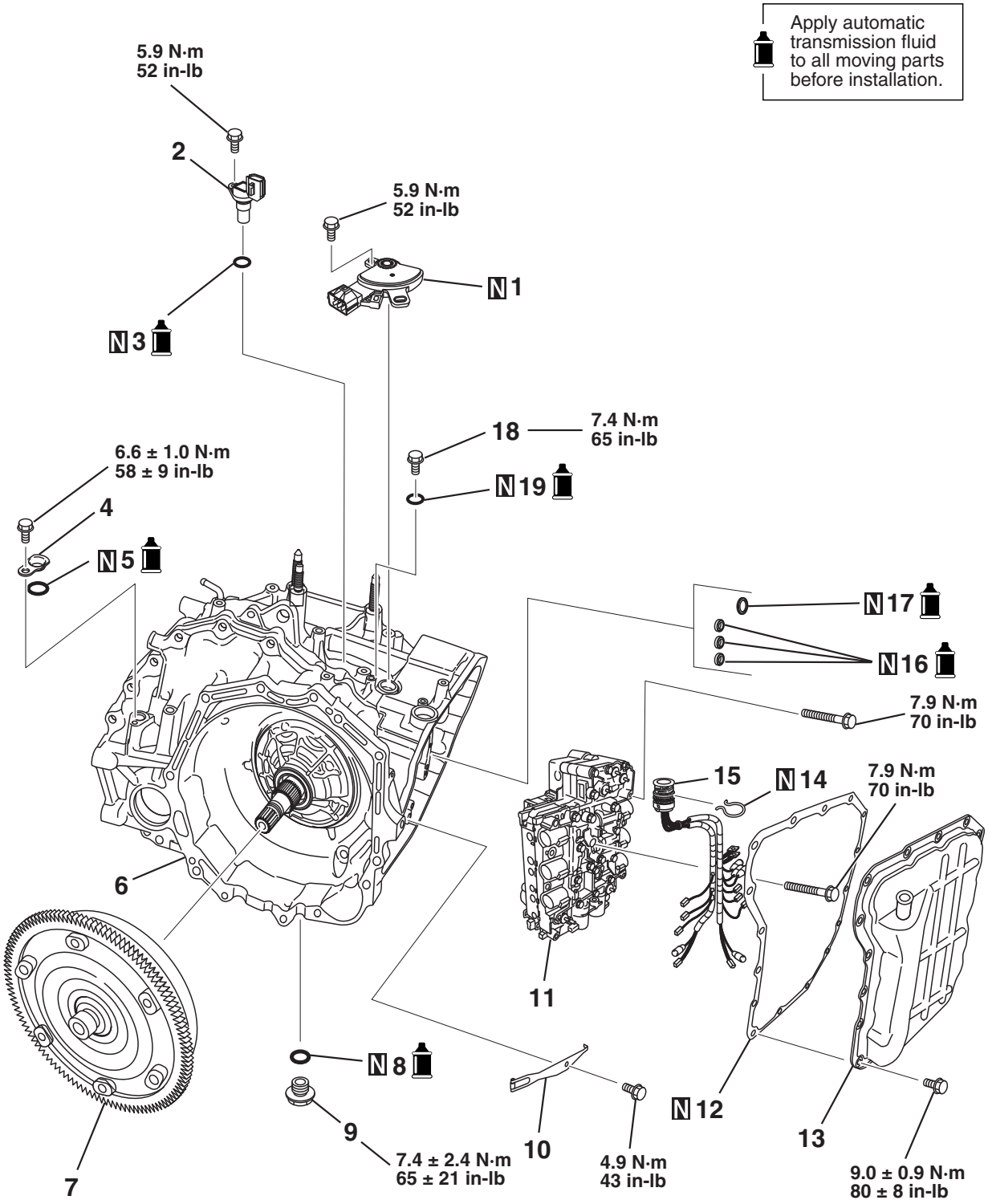


AK605144AF

1. Transfer assembly
2. RR roll stopper bracket
3. FR roll stopper bracket
4. Corrugate clamp bracket
5. O-ring
6. Oil filler tube
7. Oil level gauge
8. Harness bracket
9. Spring washer
10. Manual control lever
11. Corrugate clamp bracket
12. Control cable bracket
13. Corrugate clamp bracket
14. Breather hose

TSB Revision

<F6AJ>

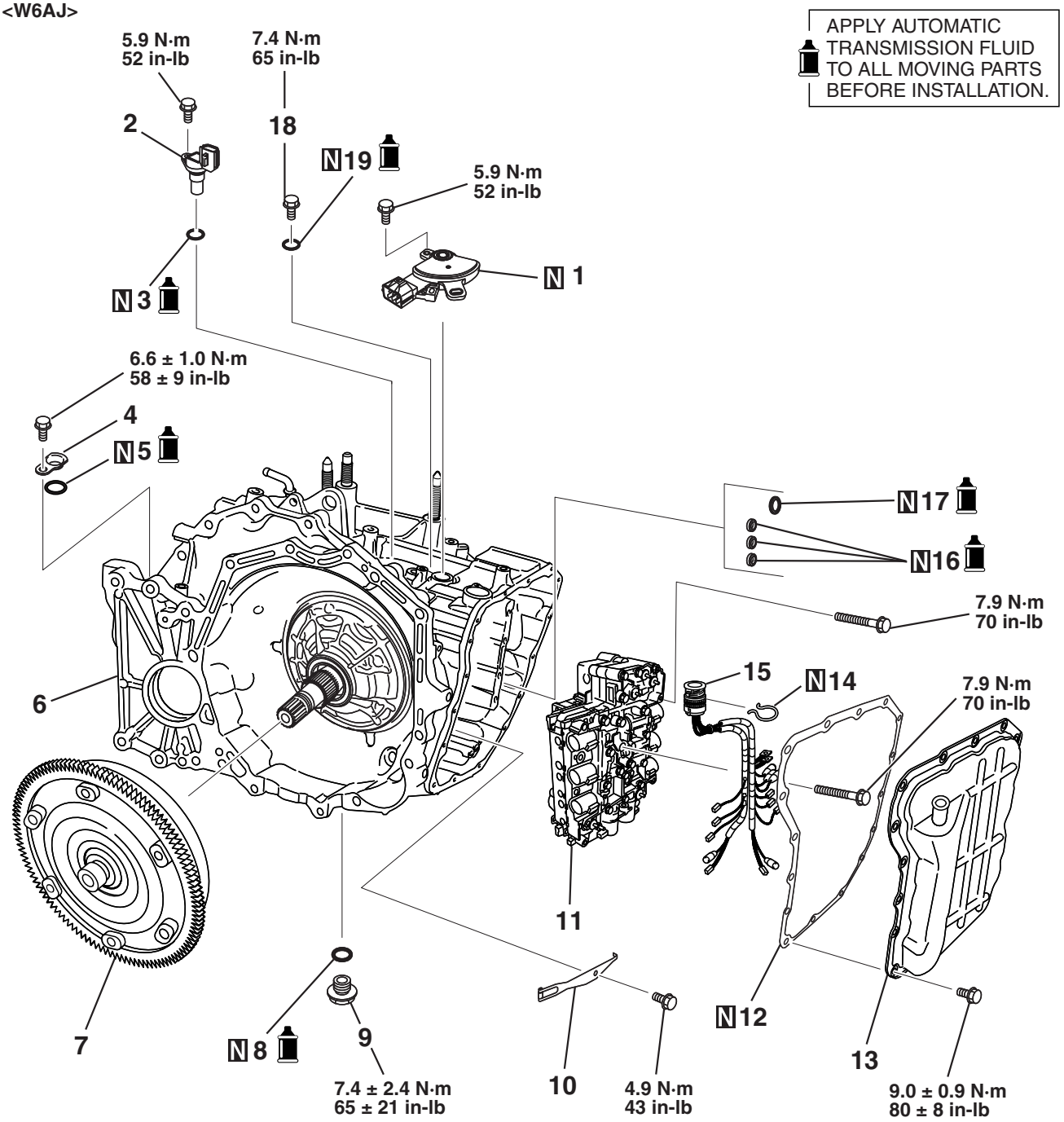


AK700764AC

TSB Revision

1. Park/neutral position switch
2. Turbine sensor
3. O-ring
4. Baffle plate
5. O-ring
6. Transaxle assembly
7. Torque converter
8. O-ring
9. ATF adjusting bolt
10. Detent spring
11. Control valve assembly
12. Control valve cover gasket
13. Control valve cover
14. Snap ring
15. Terminal assembly
16. Lip seal
17. Lip seal
18. Pressure test port bolt
19. O-ring

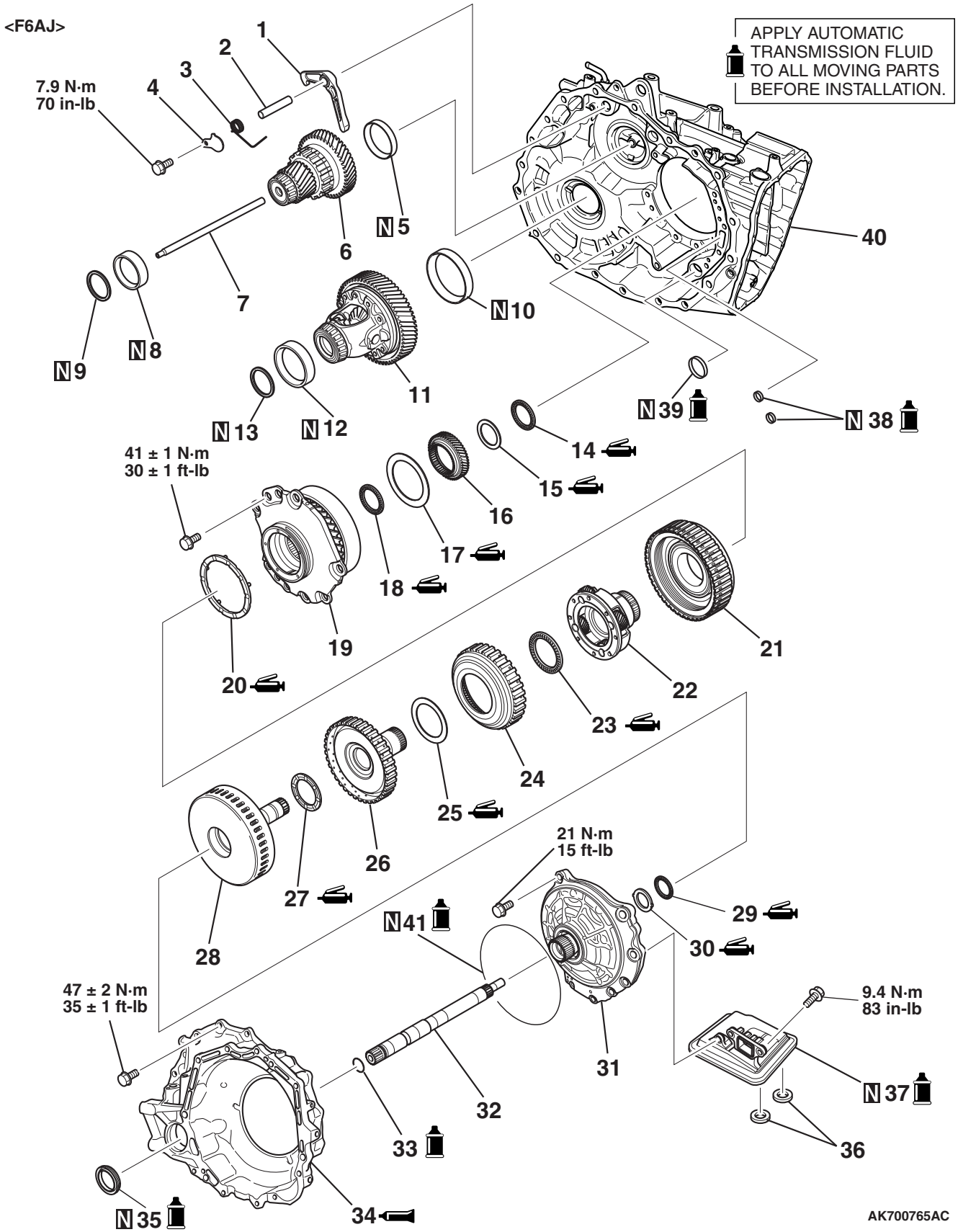
<W6AJ>



AK603216AG

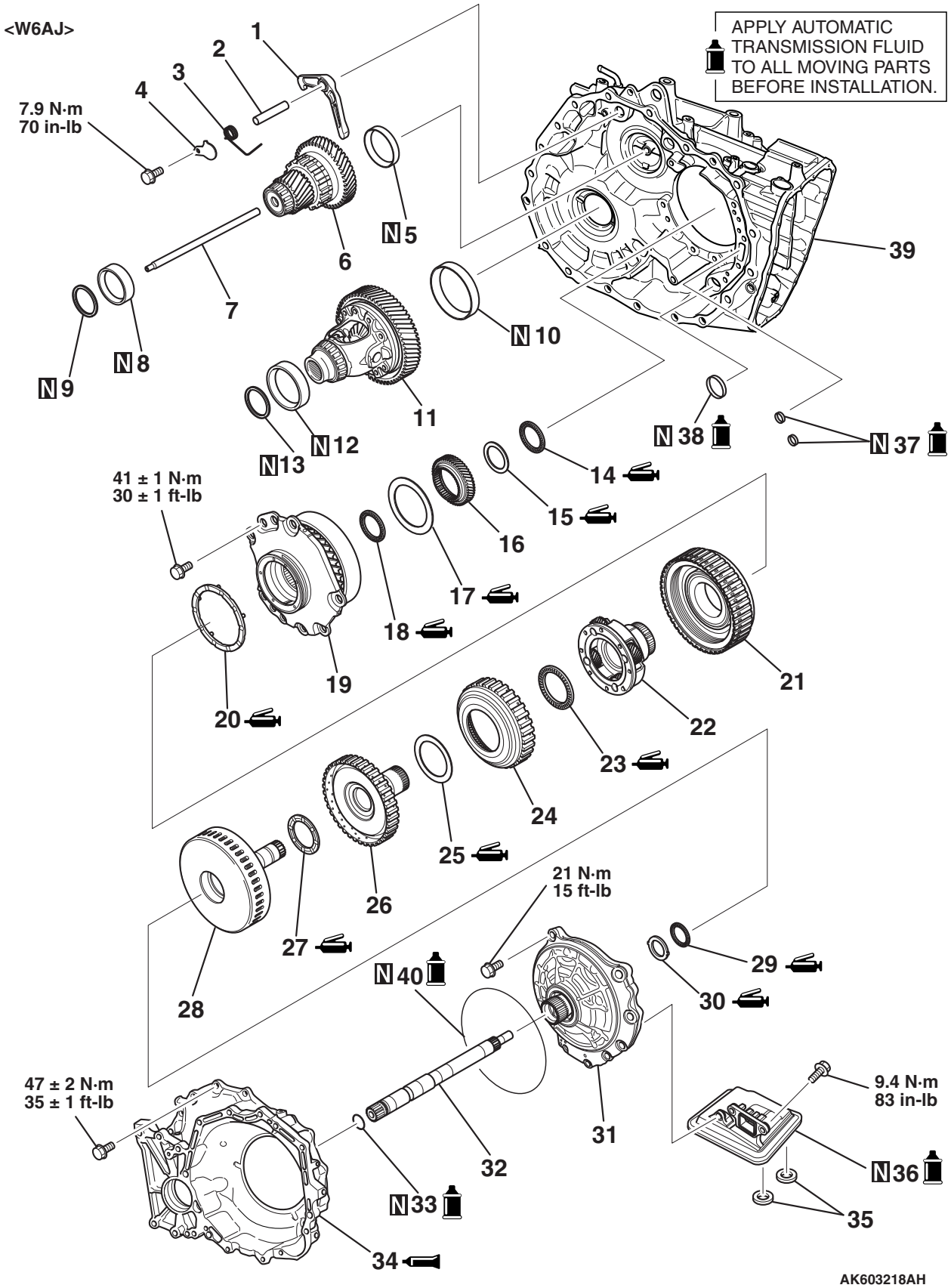
1. Park/neutral position switch
2. Turbine sensor
3. O-ring
4. Baffle plate
5. O-ring
6. Transaxle assembly
7. Torque converter
8. O-ring
9. ATF adjusting bolt
10. Detent spring
11. Control valve assembly
12. Control valve cover gasket
13. Control valve cover
14. Snap ring
15. Terminal assembly
16. Lip seal
17. Lip seal
18. Pressure test port bolt
19. O-ring

TSB Revision



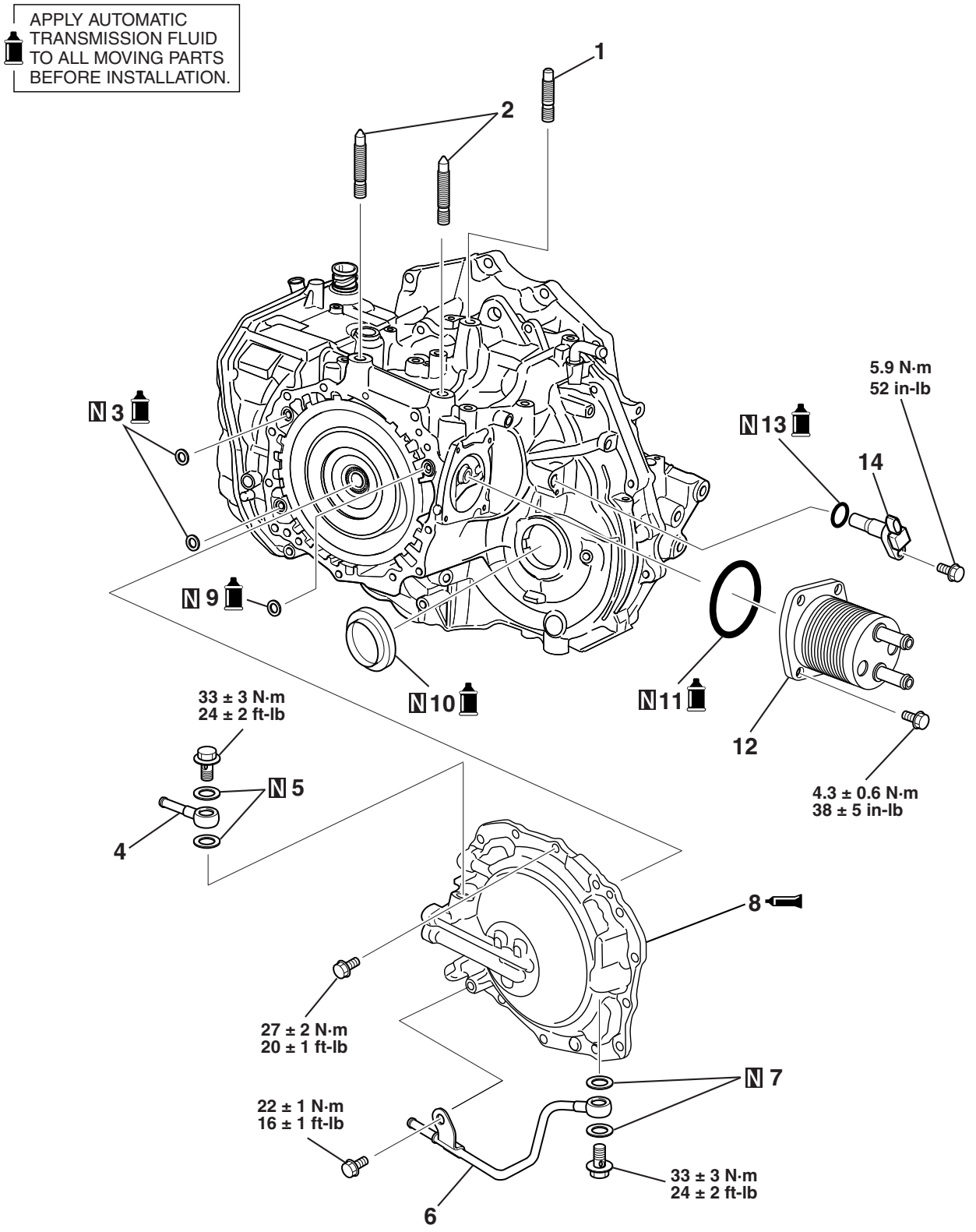
TSB Revision

1. Parking pawl
2. Parking pawl shaft
3. Return spring
4. Pawl shaft plate
5. Outer race
6. Reduction gear assembly
7. Reduction gear lubrication tube
8. Outer race
9. Reduction gear taper bearing shim
10. Outer race
11. Differential assembly
12. Outer race
13. Differential taper bearing shim
14. Needle bearing
15. Bearing race
16. RR sun gear (front side)
17. Bearing race
18. Needle bearing
19. Output gear set
20. Thrust washer
21. Low clutch assembly
22. FR carrier
23. Needle bearing
24. FR internal gear
25. Needle bearing
26. FR sun gear
27. Needle bearing
28. 3-5 Reverse clutch assembly
29. Needle bearing
30. Bearing race
31. Oil pump assembly
32. Input shaft
33. O-ring
34. Converter housing
35. Side oil seal
36. Magnet
37. Oil strainer
38. O-ring
39. O-ring
40. Transaxle case
41. O-ring



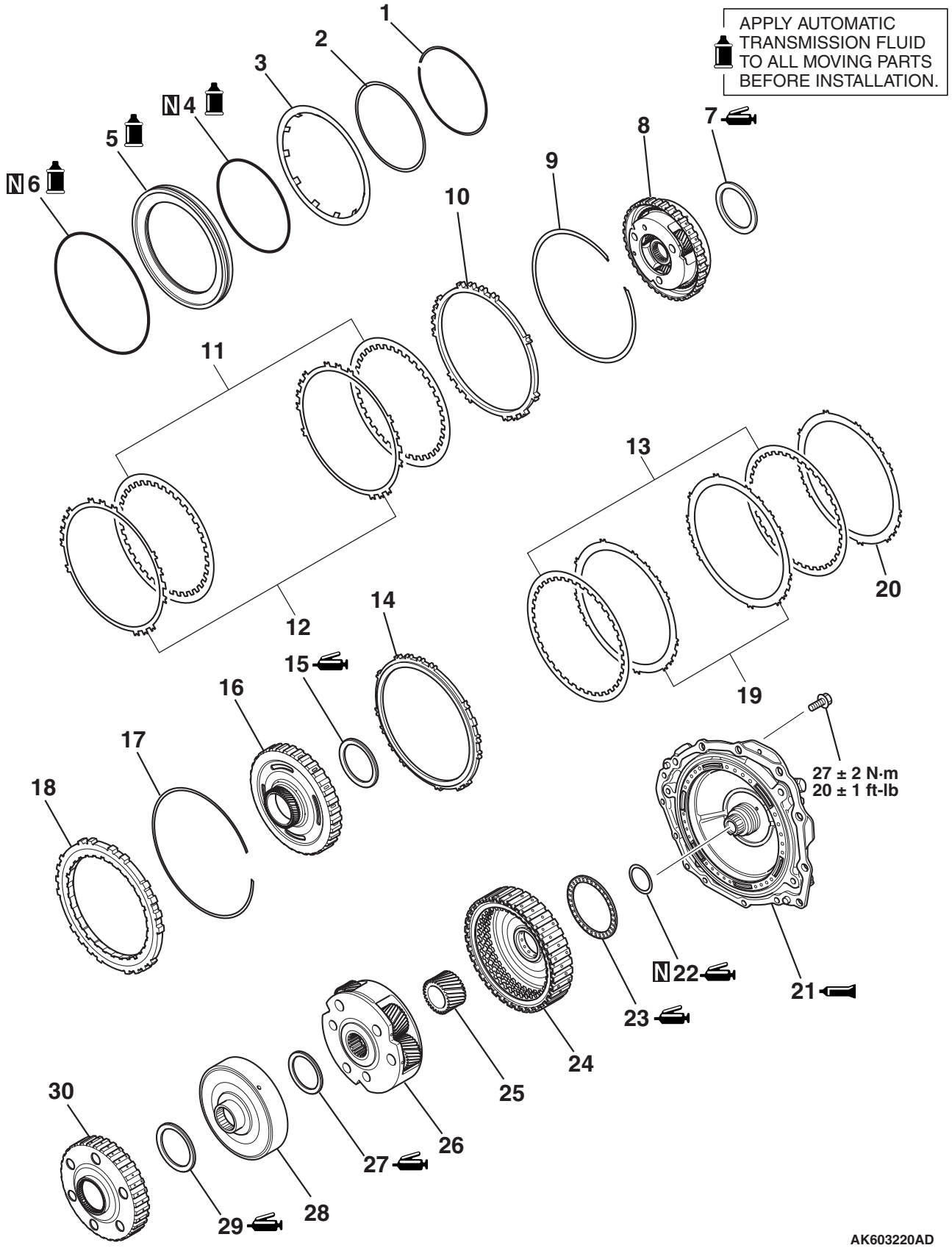
TSB Revision

1. Parking pawl
2. Parking pawl shaft
3. Return spring
4. Pawl shaft plate
5. Outer race
6. Reduction gear assembly
7. Reduction gear lubrication tube
8. Outer race
9. Reduction gear taper bearing shim
10. Outer race
11. Differential assembly
12. Outer race
13. Differential taper bearing shim
14. Needle bearing
15. Bearing race
16. RR sun gear (front side)
17. Bearing race
18. Needle bearing
19. Output gear set
20. Thrust washer
21. Low clutch assembly
22. FR carrier
23. Needle bearing
24. FR internal gear
25. Needle bearing
26. FR sun gear
27. Needle bearing
28. 3-5 Reverse clutch assembly
29. Needle bearing
30. Bearing race
31. Oil pump assembly
32. Input shaft
33. O-ring
34. Converter housing
35. Magnet
36. Oil strainer
37. O-ring
38. O-ring
39. Transaxle case
40. O-ring



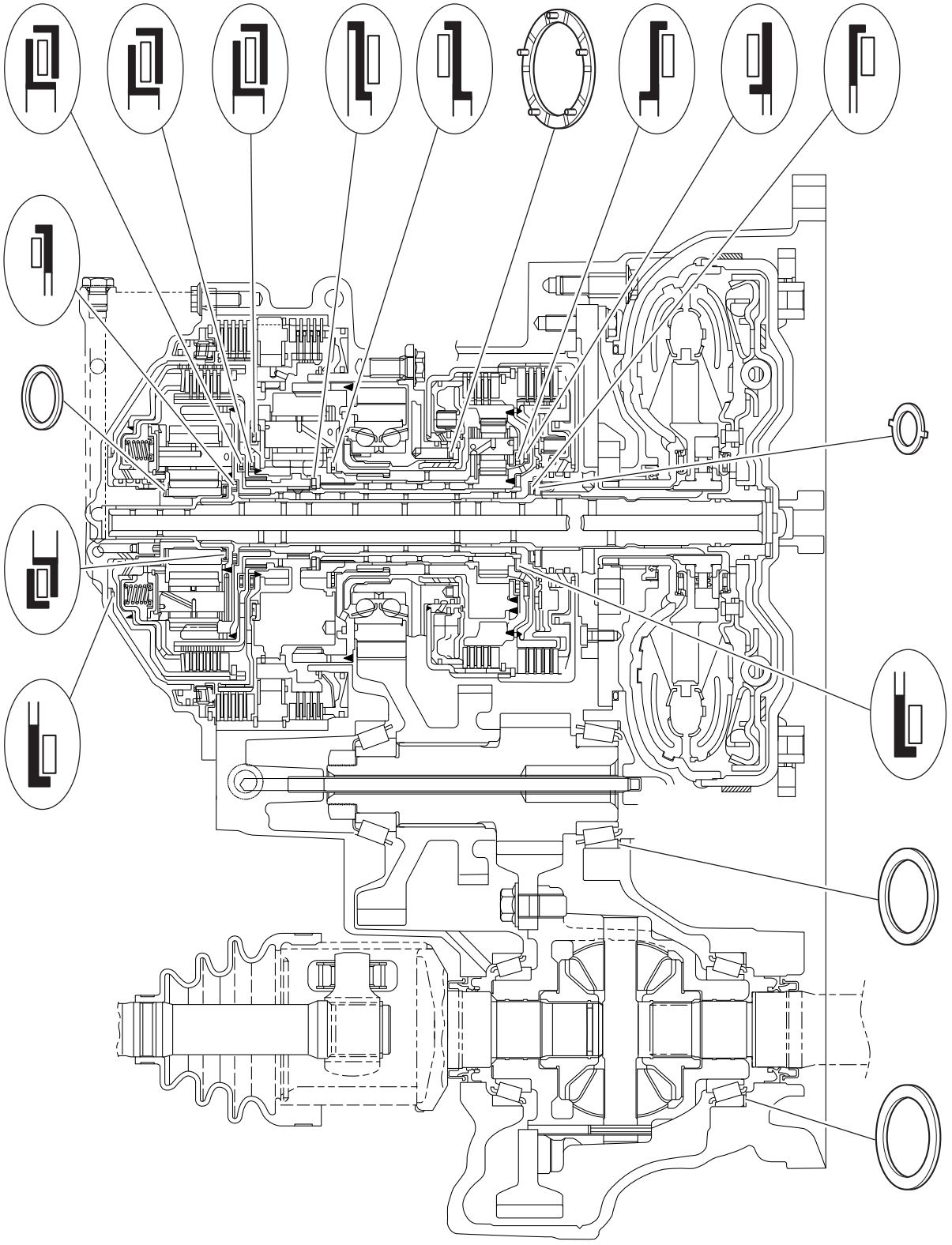
1. Stud bolt
2. Stud bolt
3. O-ring
4. Cooler tube (IN)
5. Washer
6. Cooler tube (OUT)
7. Washer
8. Side cover
9. O-ring
10. Side oil seal
11. O-ring
12. Water-cooled transmission fluid cooler
13. O-ring
14. Speed sensor

TSB Revision


APPLY AUTOMATIC TRANSMISSION FLUID TO ALL MOVING PARTS BEFORE INSTALLATION.
1
2
3
N 4
5
N 6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
27 ± 2 N·m
20 ± 1 ft-lb
N 22
21
23
24
25
26
27
28
29
30
AK603220AD

1. Snap ring
2. Diaphragm spring retainer
3. Diaphragm spring
4. D-ring
5. Low-reverse brake piston
6. D-ring
7. Needle bearing
8. RR carrier assembly
9. Snap ring
10. Retaining plate
11. Drive plate
12. Driven plate
13. Drive plate
14. Retaining plate
15. Needle bearing
16. RR sun gear (rear side)
17. Snap ring
18. One-way clutch
19. Driven plate
20. Retaining plate
21. Side cover
22. Spacer
23. Needle bearing
24. High clutch assembly
25. Reduction sun gear
26. Reduction carrier
27. Needle bearing
28. Reduction internal gear
29. Needle bearing
30. High clutch hub

INSTALLATION LOCATION OF ADJUST SHIM, NEEDLE BEARING AND THRUST WASHER



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TSB Revision

Required special tools:

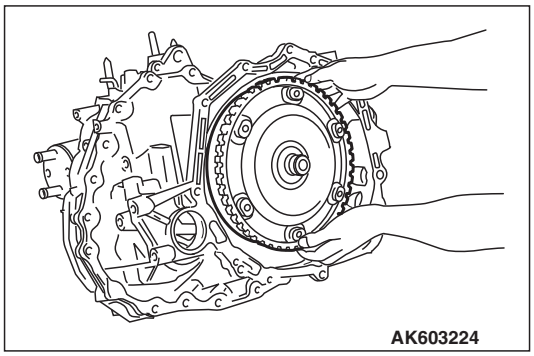
- MB992039: Slide hammer puller
- MB990590: Real axle shaft oil seal remover
- MB992195: Spring compressor
- MB991550: Bearing outer race installer
- MD998812: Installer cap
- MD998813: Installer-100
- MD998830: Installer adapter
- MB991445: Busing remover and installer base
- MB992198: Oil seal installer
- MB992197: Oil seal installer
- MB992075: Handle

DISASSEMBLY

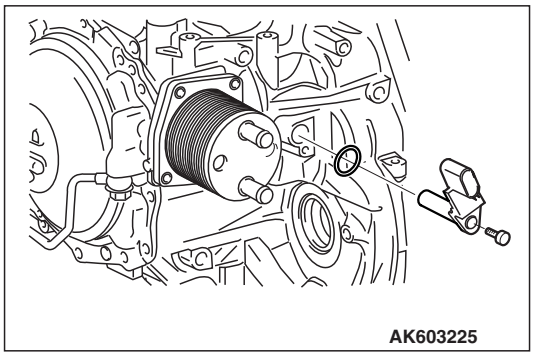
⚠ CAUTION

Do not disassemble parts other than those described in this volume.

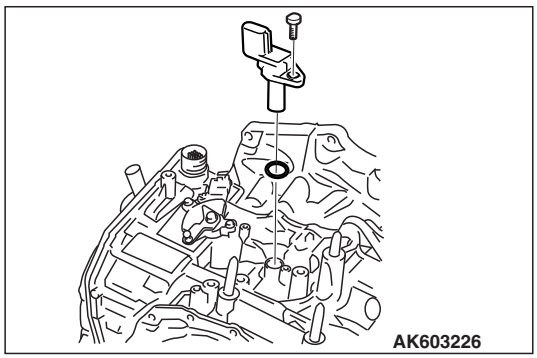
1. Remove the transfer from the transaxle. <W6AJ>
2. Remove the RR roll stopper bracket and FR roll stopper bracket from the transaxle.
3. Remove the harness bracket from the transaxle.
4. Remove the oil filler tube and oil level gage from the transaxle.
5. Remove the control cable bracket and breather hose from the transaxle.
6. Remove the torque converter from the transaxle.

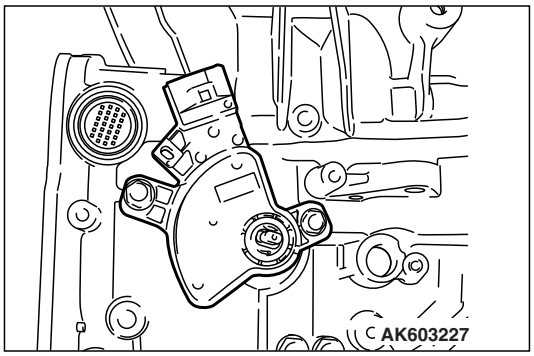

AK603224

7. Remove the vehicle speed sensor from the transaxle case.
8. Remove the O-ring from the vehicle speed sensor.

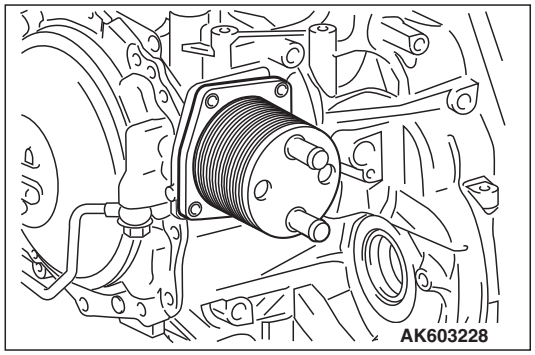

AK603225

9. Remove the turbine sensor from the transaxle case.
10. Remove the O-ring from the turbine sensor.

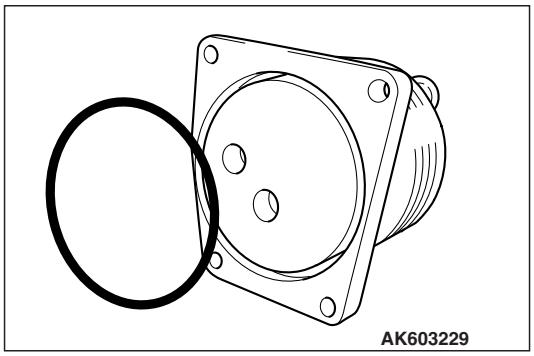

AK603226



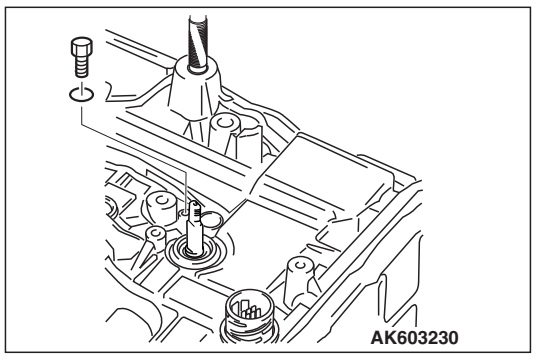
11.Remove the park/neutral position switch.



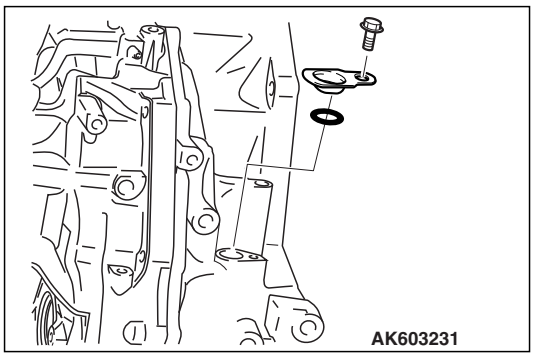
12.Remove the water-cooled transmission fluid cooler from the transaxle case.



13.Remove the O-ring from the water-cooled transmission fluid cooler.



14.Remove the pressure test port bolt from the transaxle case.
15.Remove the O-ring from the pressure test port bolt.



16.Remove the baffle plate from the converter housing.
17.Remove the O-ring from the baffle plate.

TSB Revision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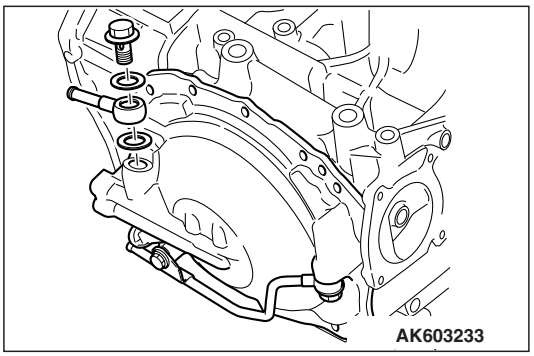
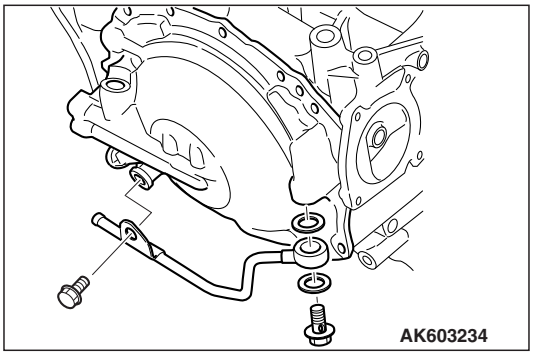
18.Remove stud bolts from the transaxle case.


AK603233

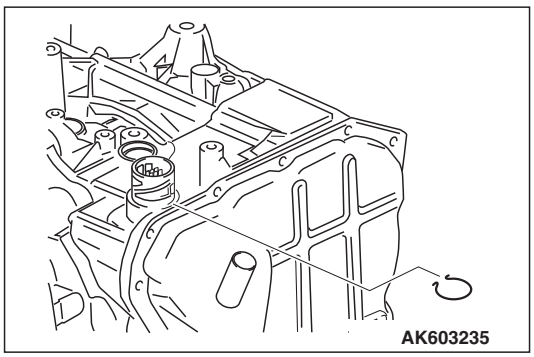
19.Remove the cooler tube (IN) from the side cover.


AK603234

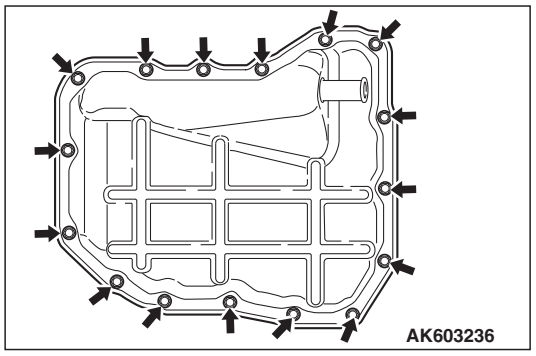
20.Remove the cooler tube (OUT) from the side cover.

⚠ CAUTION

Be careful not to break the terminal body.

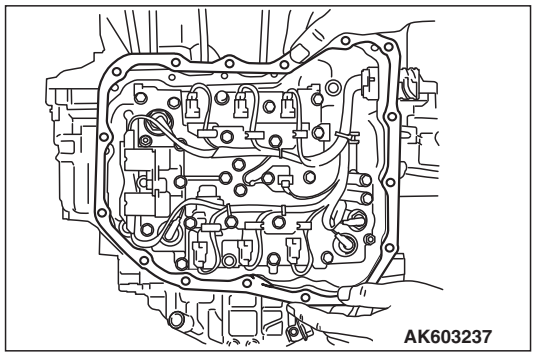

AK603235

21.Remove the snap ring from the terminal body and push the terminal body into the transaxle case.



22.Remove the control valve cover from the transaxle case.

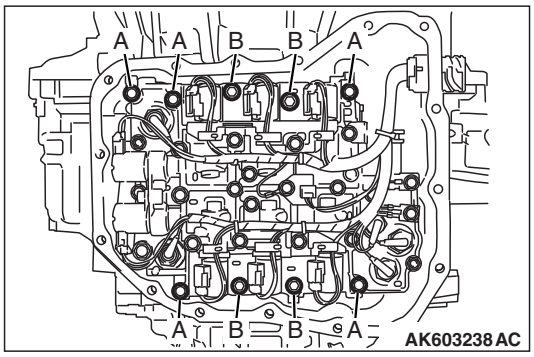
No. of bolts	16



23.Remove the control valve cover gasket from the transaxle case.

⚠ CAUTION

- **Mounting bolt A is a hexagon head bolt.**
- **Mounting bolt B is a hexagon socket head bolt.**

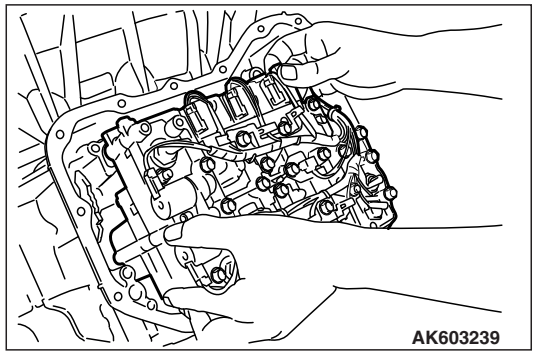


24.Remove control valve assembly mounting bolts A and B.

Bolt code	A	B
Shank length mm (in)	71.5 (2.82)	58.0 (2.28)
No. of bolts	5	4

⚠ CAUTION

Remove the control valve assembly by pulling it straight.

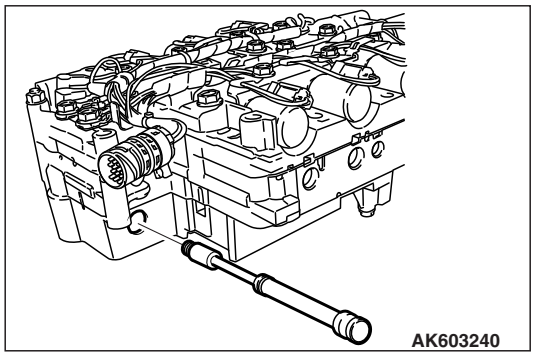


25.Remove the control valve assembly from the transaxle case.

⚠ CAUTION

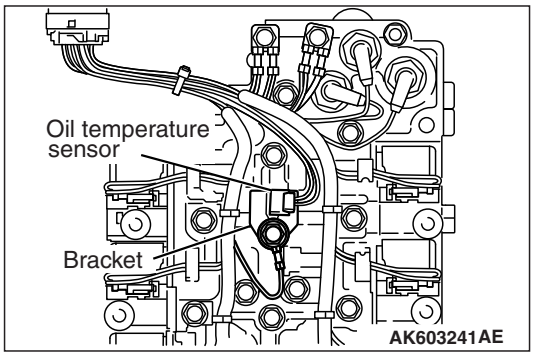
Be careful not to drop the manual valve.

26.Remove the manual valve from the control valve.

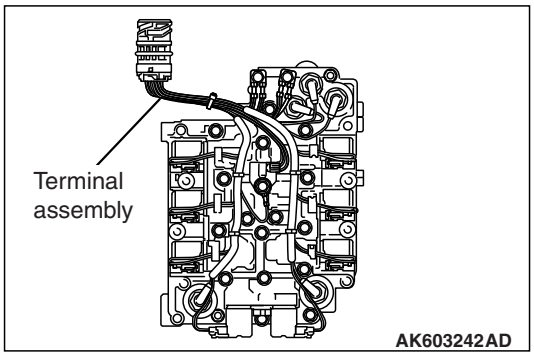


27.Remove the oil temperature sensor and bracket from the control valve.

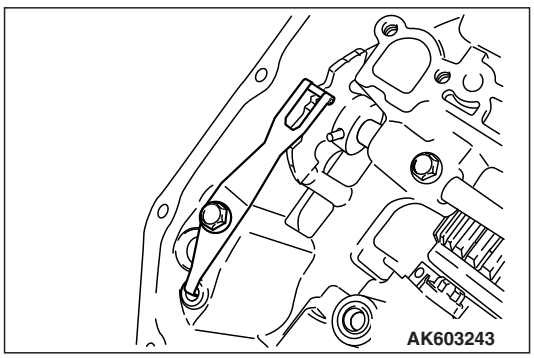
28.Remove the bracket from the oil temperature sensor.

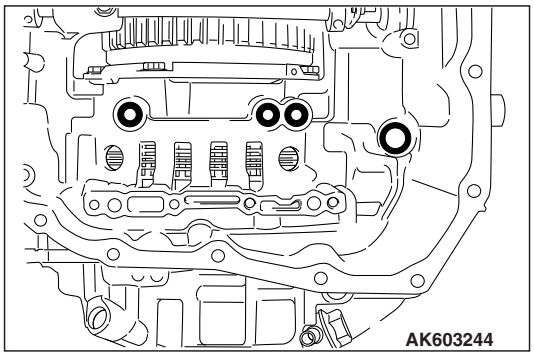


29.Remove the terminal assembly from the control valve.



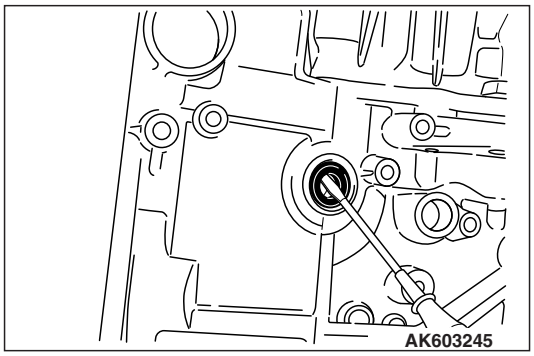
30.Remove the detent spring.



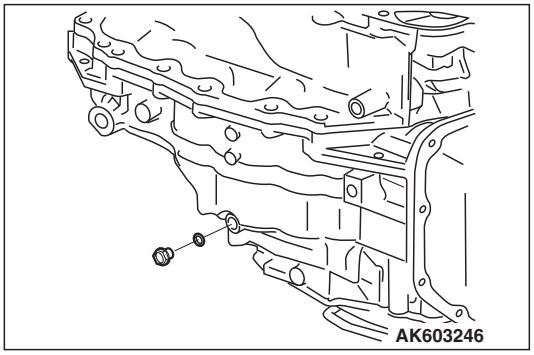

AK603244

31.Remove lip seals from the transaxle case.

⚠ CAUTION
Do not damage the manual shaft oil seal mounting surface of the transaxle case when removing the manual shaft oil seal.

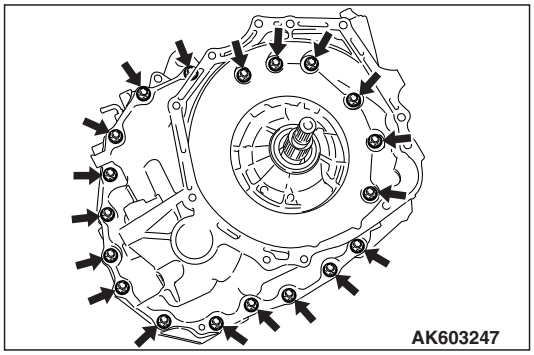

AK603245

32.Using a flat-head screwdriver or equivalent, remove the manual shaft oil seal from the transaxle case.


AK603246

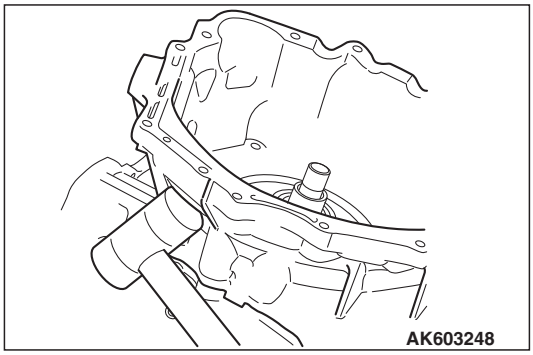
33.Remove the transmission fluid adjusting bolt from the transaxle case.
34.Remove the O-ring from the ATF adjusting bolt.

⚠ CAUTION
Mounting bolts are Torx E20 bolts.


AK603247

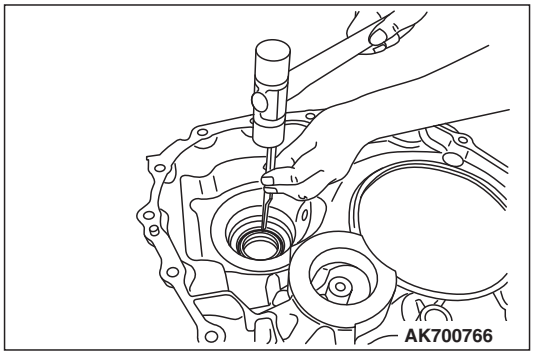
35.Remove converter housing mounting bolts.

No. of bolts	19

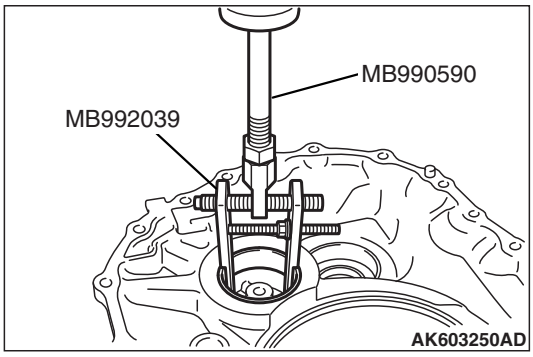


36.Lightly tap the converter housing with a plastic hammer or equivalent to remove.

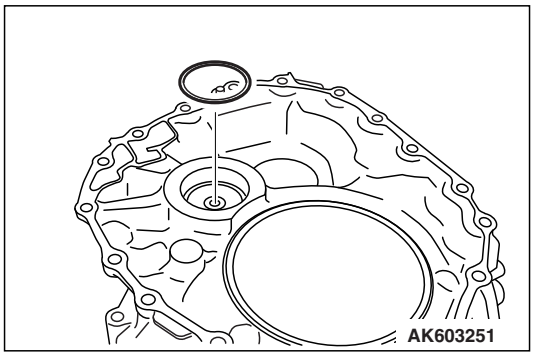
⚠ CAUTION
Do not damage the converter housing when removing the side oil seal.



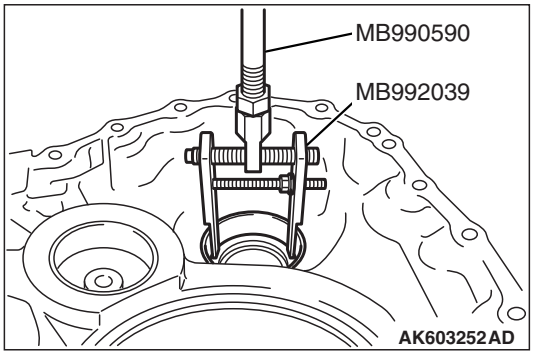
37.Remove the side oil seal from the converter housing using a pin punch or equivalent. <F6AJ>



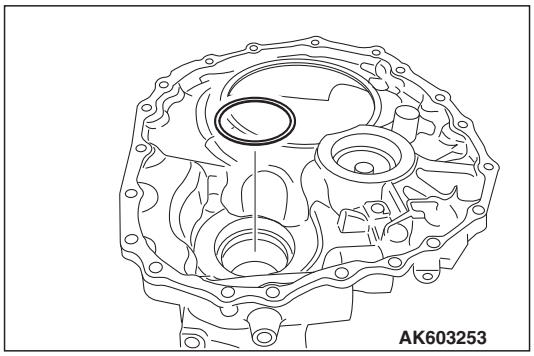
38.Using the special tools MB992039 and MB990590, remove the outer race of the reduction gear bearing from the converter housing.



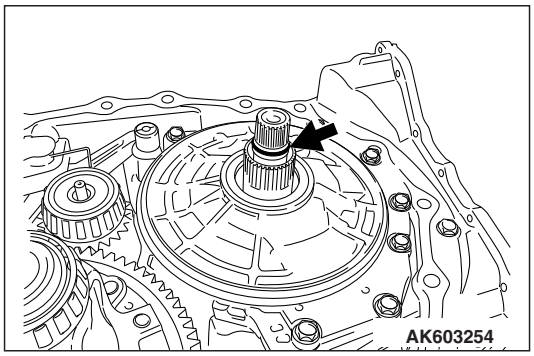
39.Remove the reduction gear taper bearing shim from the converter housing.



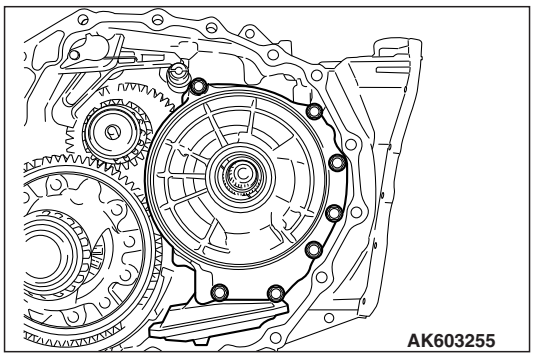
40.Using the special tools MB992039 and MB990590, remove the outer race of the differential side bearing from the converter housing.



41.Remove the differential taper bearing shim from the converter housing.

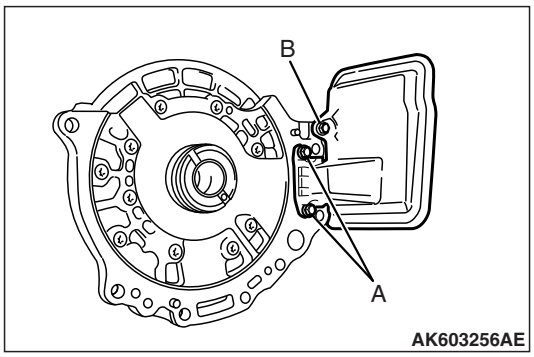


42.Remove the O-ring from the input shaft.



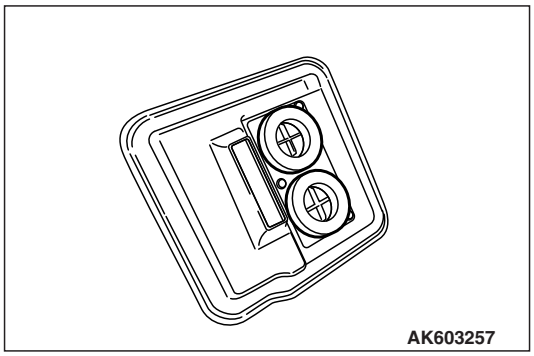
43.Remove the oil pump assembly and oil strainer as one unit.

No. of bolts	7

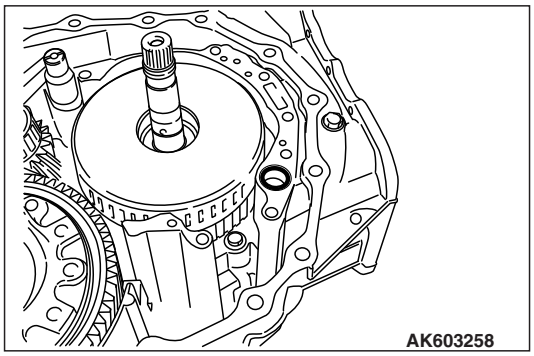


44.Remove the oil strainer from the oil pump assembly.

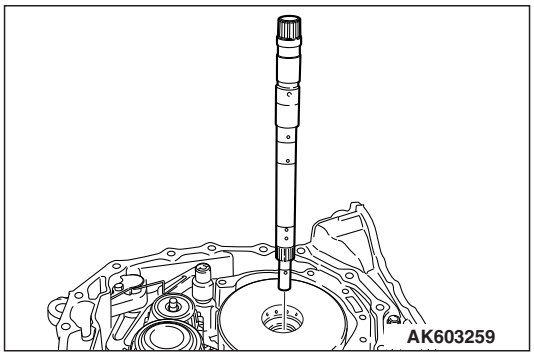
Bolt code	A	B
Shank length mm (in)	25 (1.0)	16 (0.6)
No. of bolts	2	1


AK603257

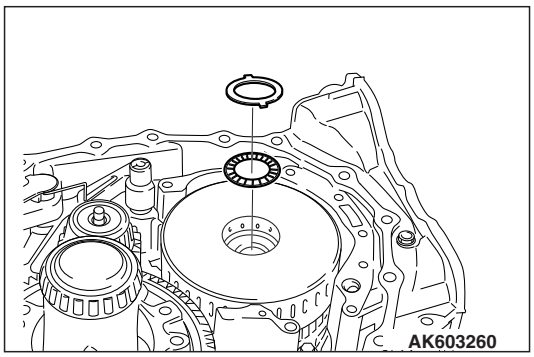
45.Remove the magnet from the oil strainer.


AK603258

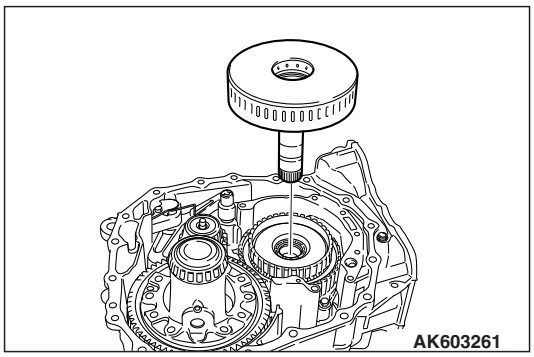
46.Remove the O-ring from the transaxle case.


AK603259

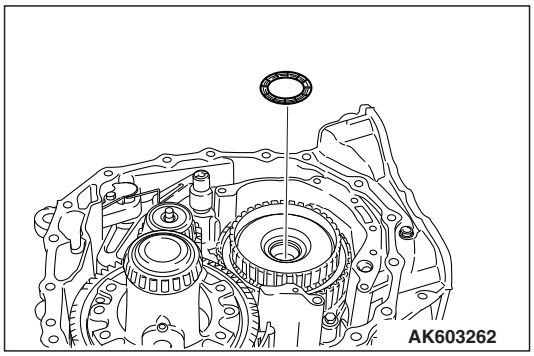
47.Remove the input shaft.


AK603260

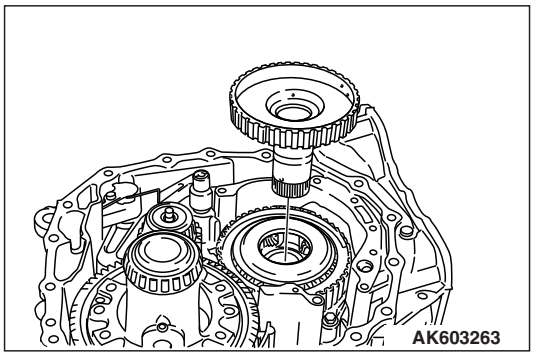
48.Remove the bearing race and needle bearing from the 3-5 reverse clutch drum.


AK603261

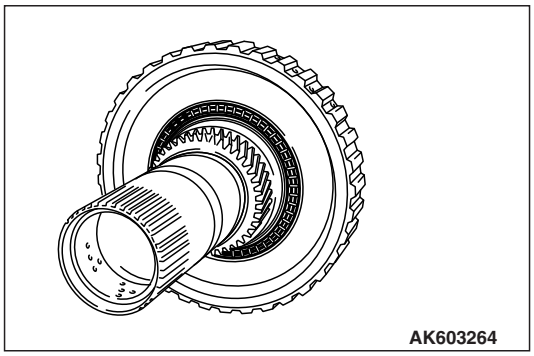
49.Remove the 3-5 reverse clutch assembly.


AK603262

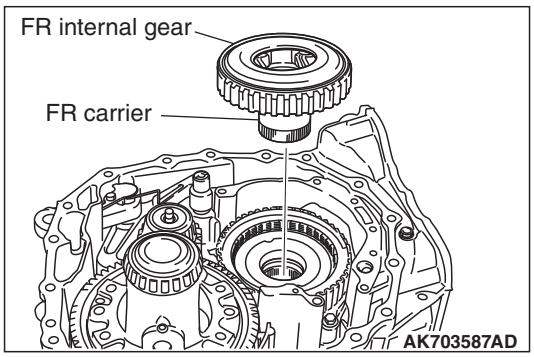
50.Remove the needle bearing from the FR sun gear.


AK603263

51.Remove the FR sun gear.

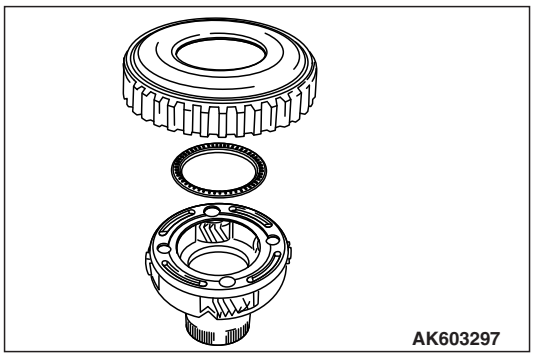

AK603264

52.Remove the needle bearing from the FR sun gear.



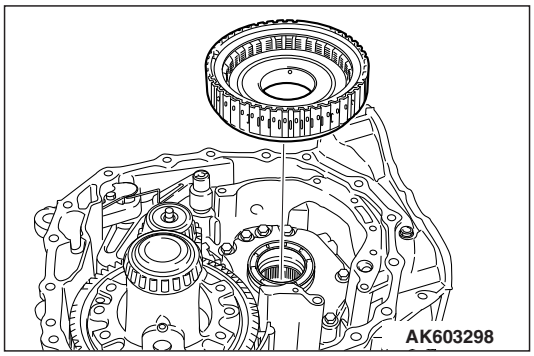
AK703587AD

53.Remove the FR internal gear and FR carrier as one unit.

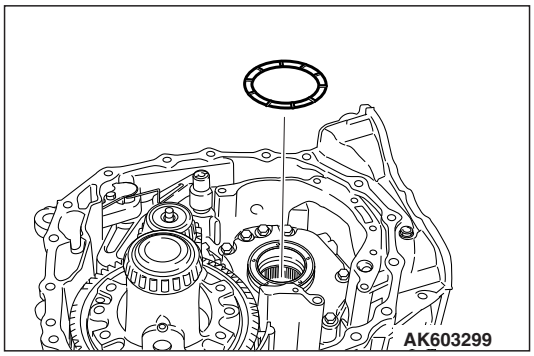

AK603297

54.Remove the FR internal gear and needle bearing from the FR carrier.

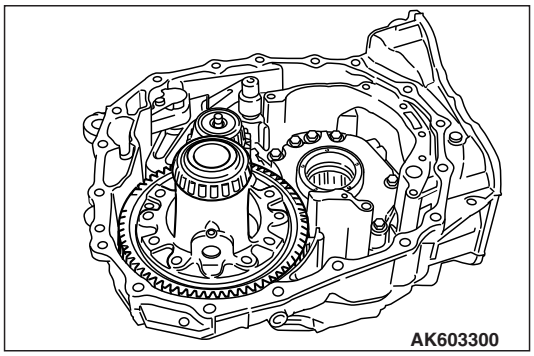
TSB Revision



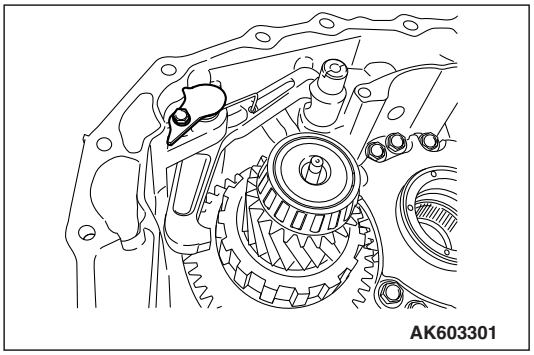
55.Remove the low clutch assembly.



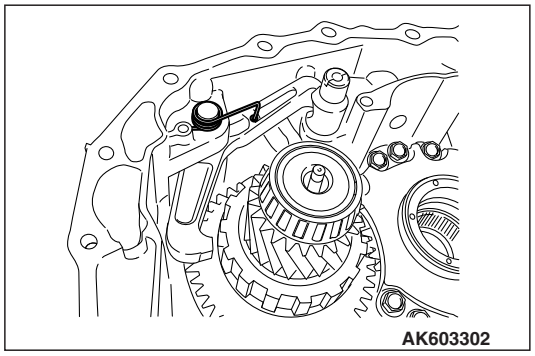
56.Remove the thrust washer from the drum support.



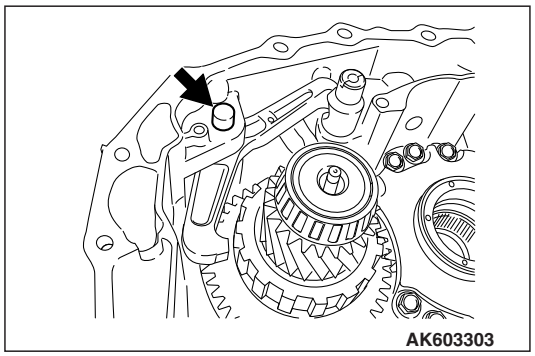
57.Remove the differential assembly.



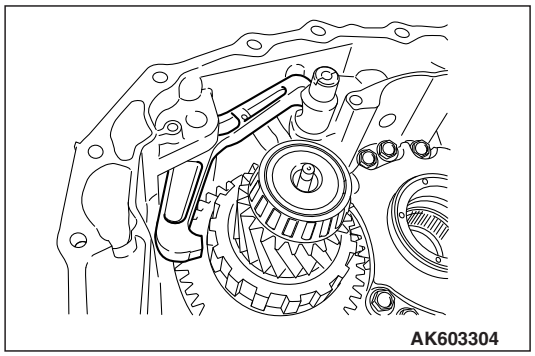
58.Remove the pawl shaft plate.



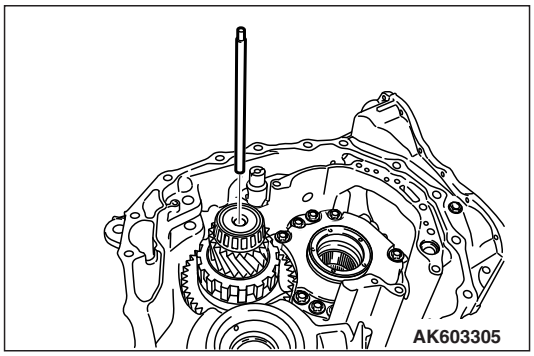
59.Remove the return spring.


AK603303

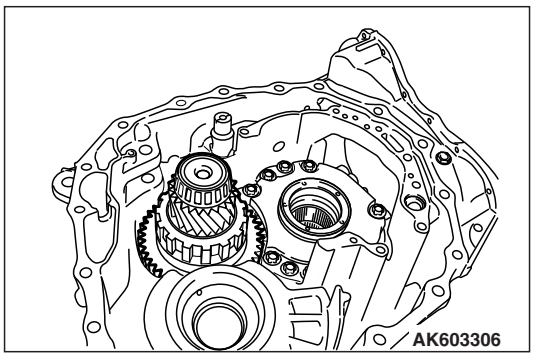
60.Remove the parking pawl shaft.


AK603304

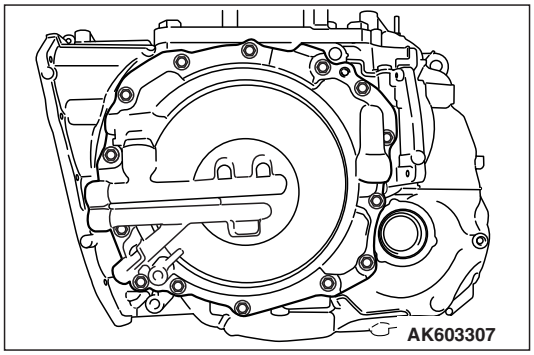
61.Remove the parking pawl.


AK603305

62.Remove the reduction gear lubrication tube.


AK603306

63.Remove the reduction gear assembly.

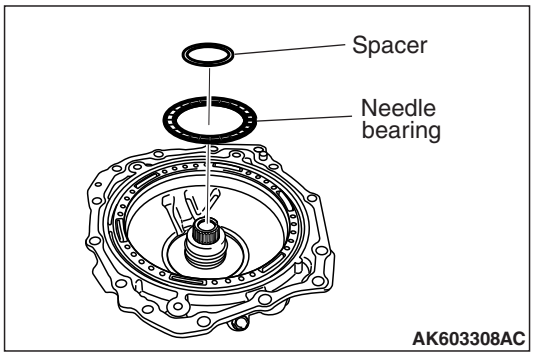


⚠ CAUTION

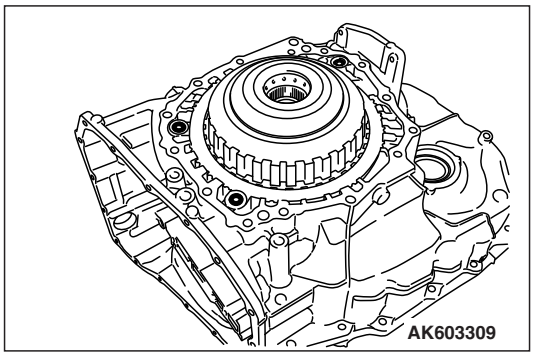
Mounting bolts are Torx E16 bolts.

64.Remove the side cover.

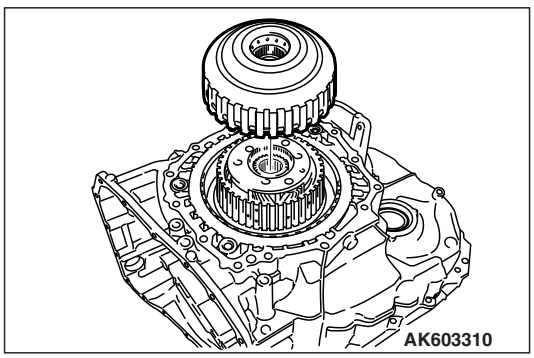
No. of bolts	14



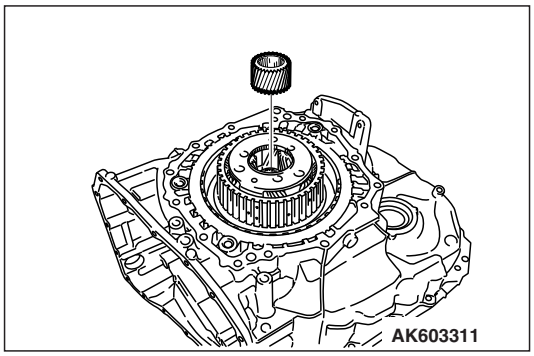
65.Remove the spacer and needle bearing from the side cover.



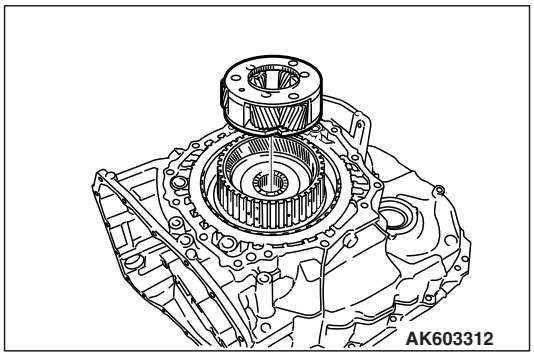
66.Remove the O-ring from the transaxle case.



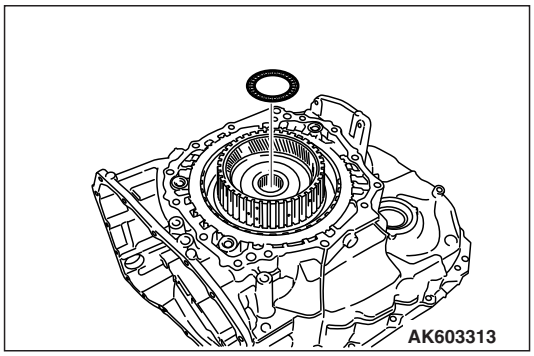
67.Remove the high clutch assembly.


AK603311

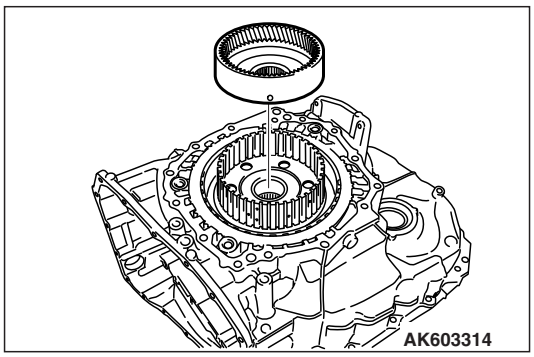
68.Remove the reduction sun gear.


AK603312

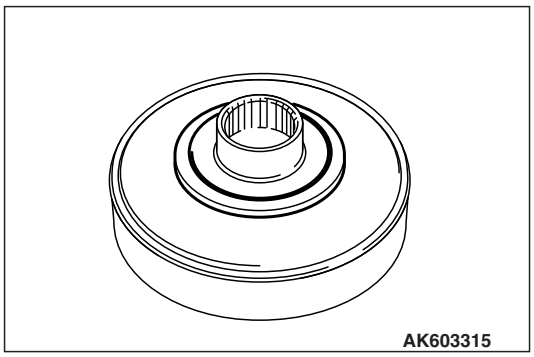
69.Remove the reduction carrier.


AK603313

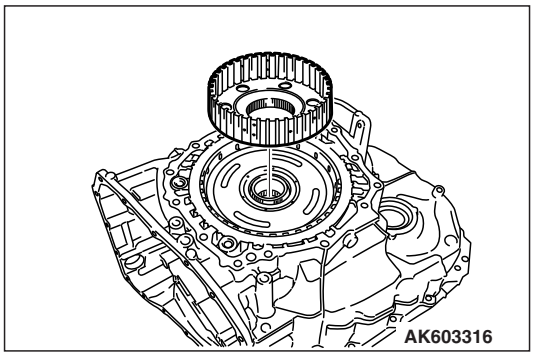
70.Remove the needle bearing from the reduction internal gear.


AK603314

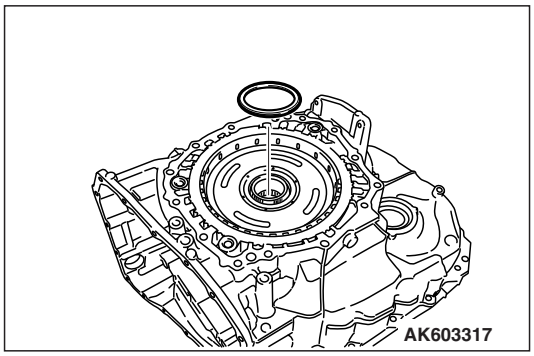
71.Remove the reduction internal gear from the high clutch hub.


AK603315

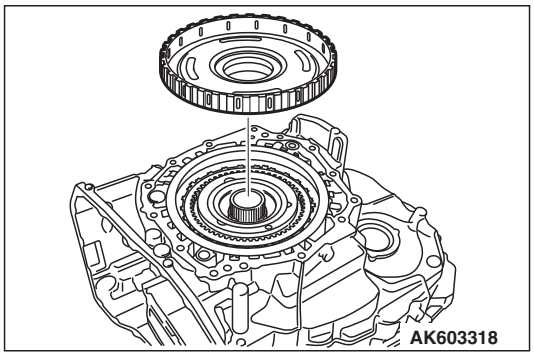
72.Remove the needle bearing from the reduction internal gear.


AK603316

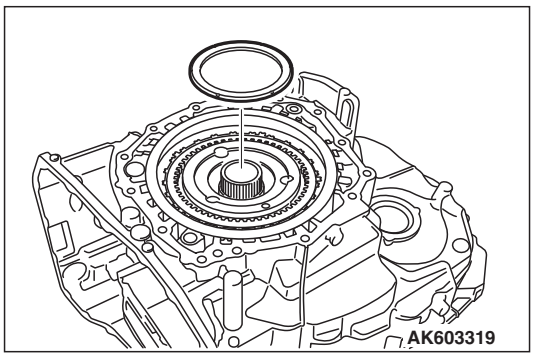
73.Remove the high clutch hub.


AK603317

74.Remove the needle bearing from the RR sun gear on the rear side.


AK603318

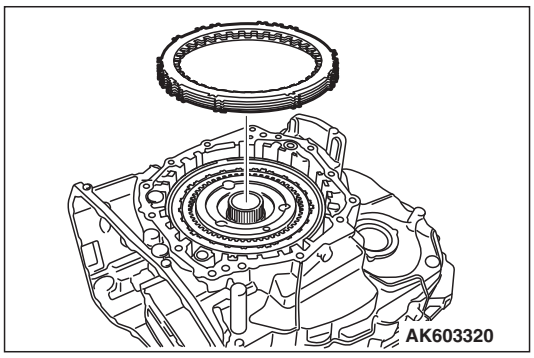
75.Remove the RR sun gear on the rear side.


AK603319

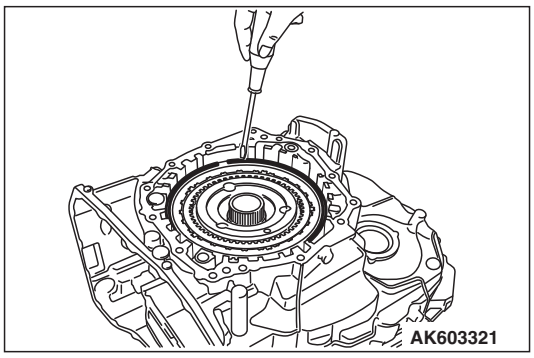
76.Remove the needle bearing from the RR carrier assembly.

⚠ CAUTION

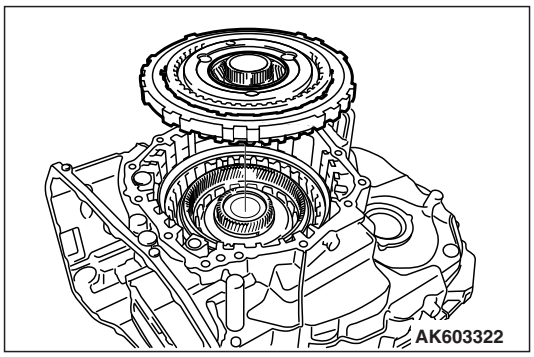
Check the plates for damage, deformation, surface burn or permanent strain. If faulty, replace.



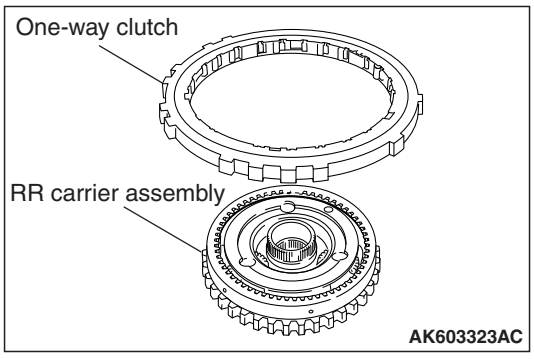
77. Remove the 2-6 brake retaining plate, drive plate and driven plate from the transaxle case.



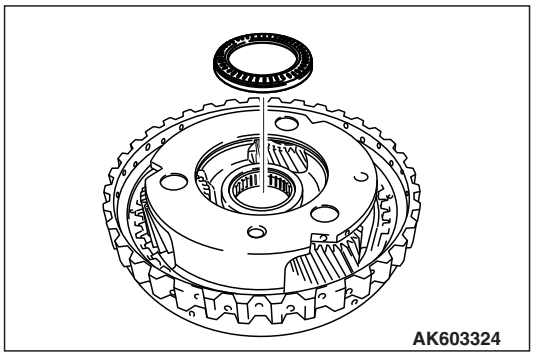
78. Using a flat-head screwdriver or equivalent, remove the snap ring.



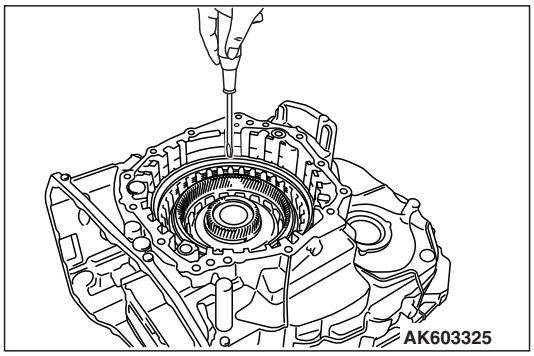
79. Remove the one-way clutch and RR carrier assembly as one unit.



80. Separate the one-way clutch and RR carrier assembly.

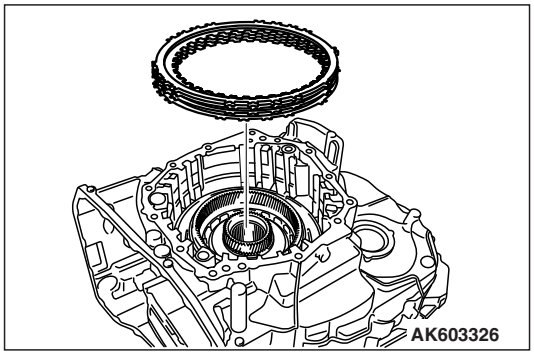

AK603324

81.Remove the needle bearing from the RR carrier assembly.

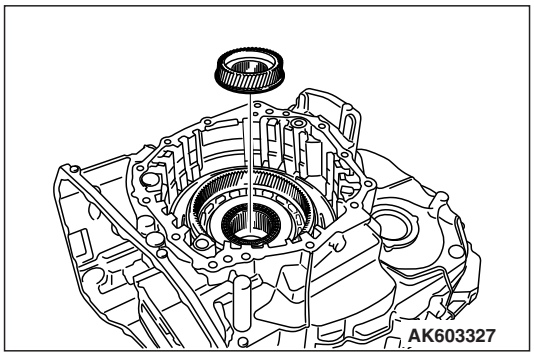

AK603325

82.Using a flat-head screwdriver or equivalent, remove the snap ring.

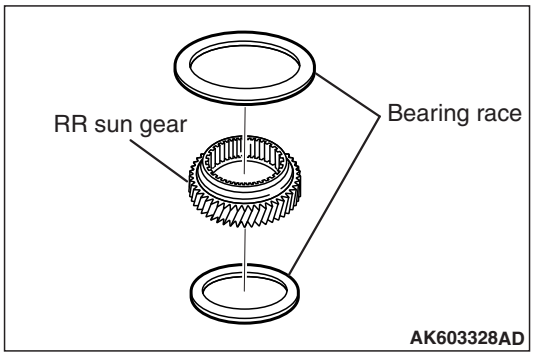
⚠ CAUTION
Check the plates for damage, deformation, surface burn or permanent strain. If faulty, replace.


AK603326

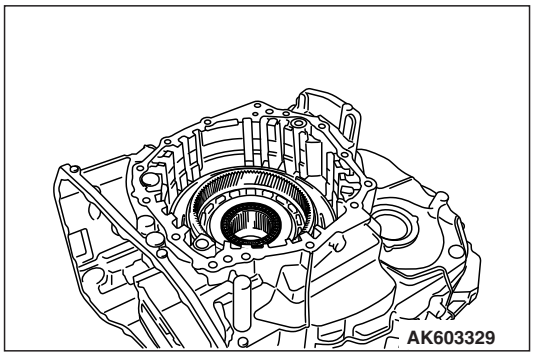
83.Remove the low-reverse brake retaining plate, drive plate and driven plate.


AK603327

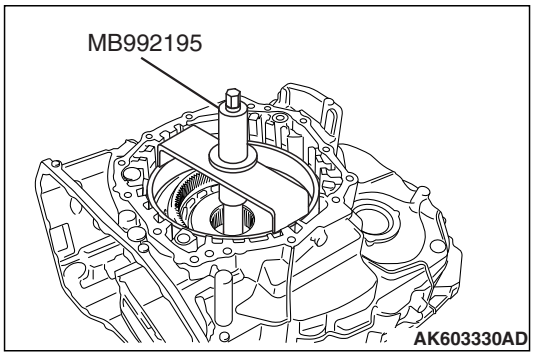
84.Remove the RR sun gear on the front side.



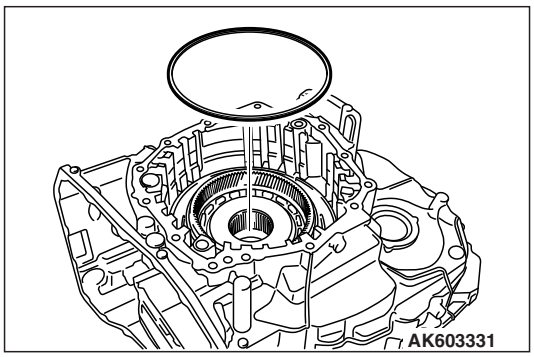
85.Remove the bearing race from the RR sun gear on the front side.



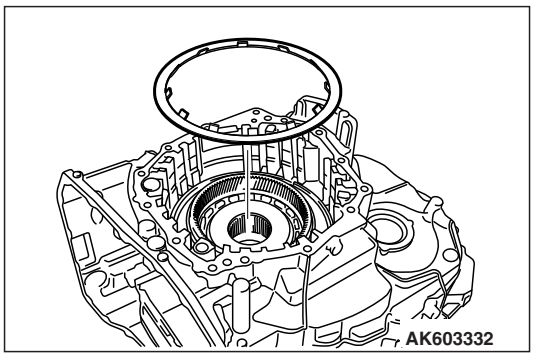
86.Remove the needle bearing.



87.Using the special tool MB992195, remove the snap ring.



88.Remove the diaphragm spring retainer.

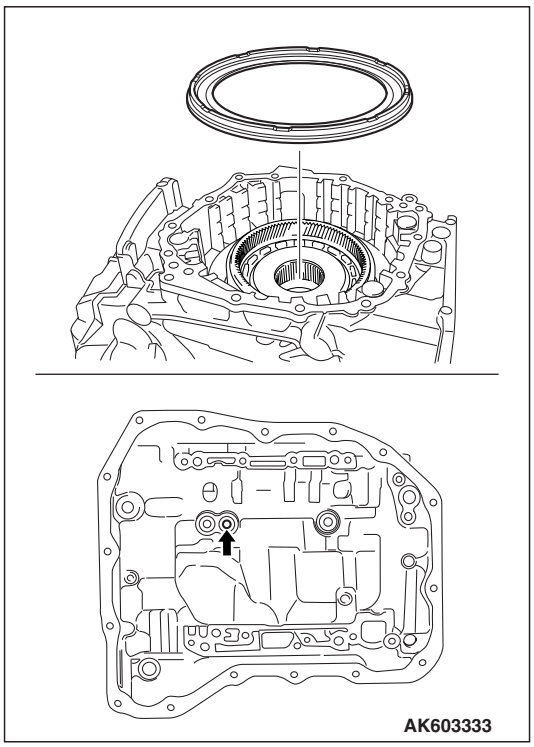


89.Remove the diaphragm spring.

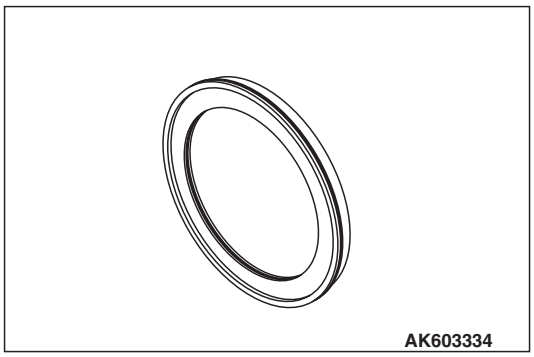
⚠ CAUTION

Do not feed air abruptly. Otherwise, the low-reverse brake piston may become stuck in the clutch drum.

90.Feed air through the oil hole as indicated in the illustration to remove the low-reverse brake piston from the transaxle case.



91.Remove D-rings from the low-reverse brake piston.

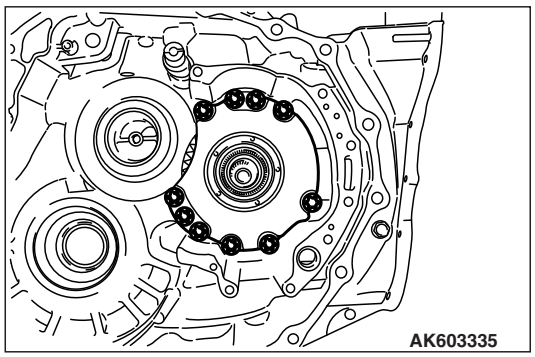


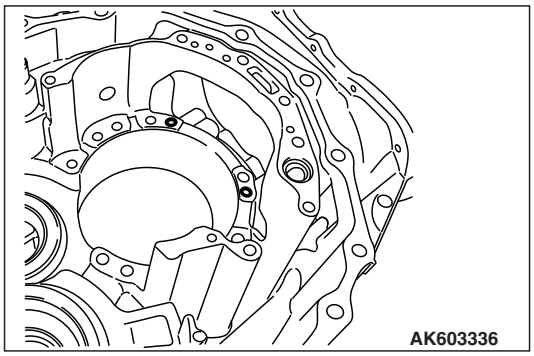
⚠ CAUTION

Mounting bolts are Torx E18 bolts.

92.Remove the Output gear set.

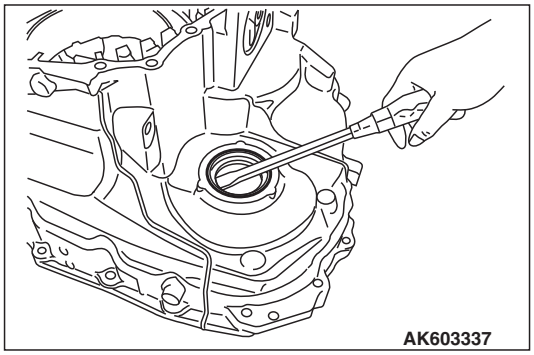
No. of bolts	10



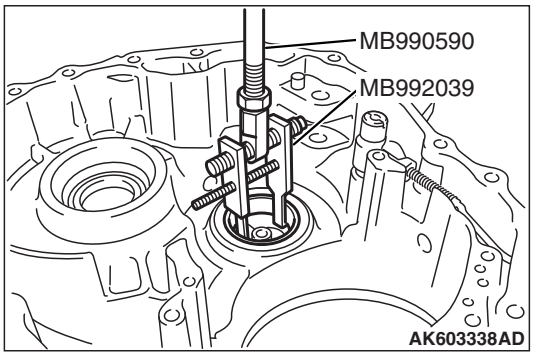


93.Remove the O-ring from the transaxle case.

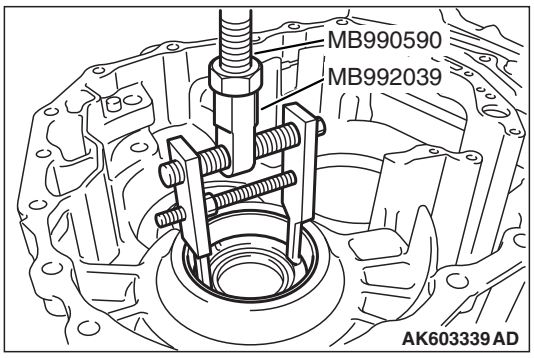
⚠ CAUTION
Do not damage the transaxle case when removing the side oil seal.



94.Using a flat-head screwdriver or equivalent, remove the side oil seal from the transaxle case.



95.Using the special tools MB992039 and MB990590, remove the outer race of the reduction gear bearing from the transaxle case equivalent.



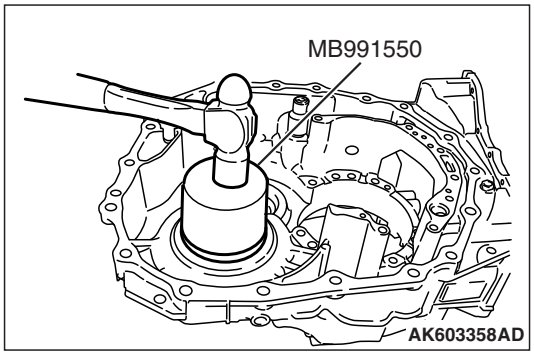
96.Using the special tools MB992039 and MB990590, remove the outer race of the differential side bearing from the transaxle case.

ASSEMBLY

⚠ CAUTION

Never reuse the outer race.

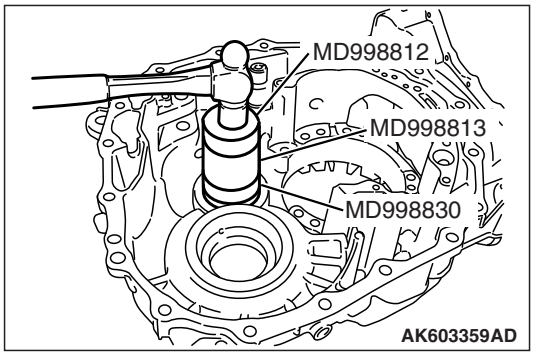
1. Using the special tool MB991550, Install the outer race of the differential side bearing on the transaxle case.



⚠ CAUTION

Never reuse the outer race.

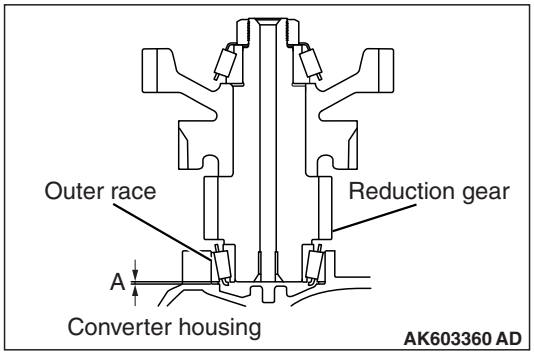
2. Using the special tools MD998812, MD998813 and MD998830, install the outer race of the reduction gear bearing on the transaxle case.

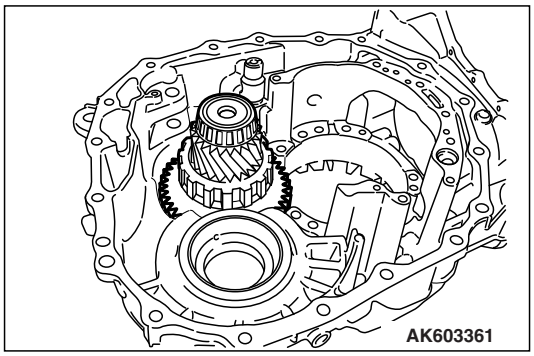


⚠ CAUTION

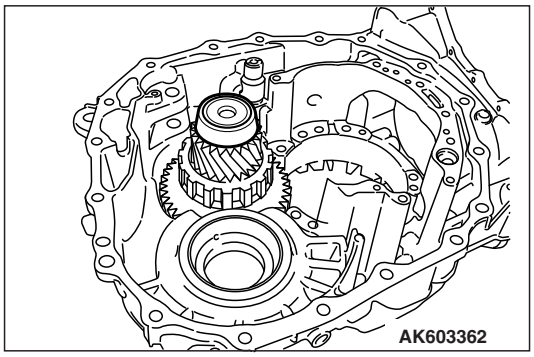
- **Apply transmission fluid to the bearing so that the interference can be adjusted in a smooth condition.**
- **Measure the end play at more than two locations and obtain the average of the measurements.**

3. Measure an interference (A) of the reduction gear assembly in the following procedure. Refer to "SERVICE DATA" for the interference of the reduction gear assembly.

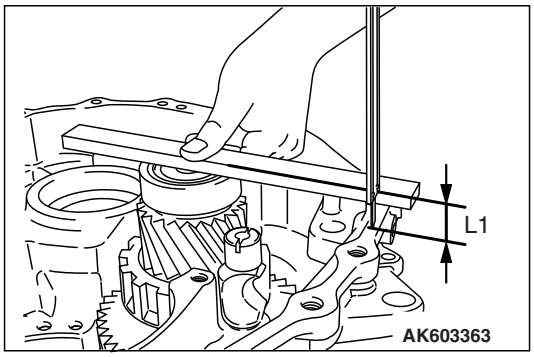




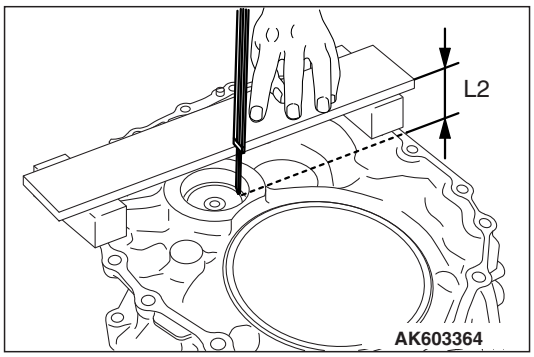
(1) Install the reduction gear assembly on the transaxle case.



(2) Set the outer race on the reduction gear bearing.



(3) Measure distance L1 from the outer race to the end face of the transaxle case.



(4) Place a block on the end face of the converter housing and measure distance L2 to the reduction gear taper bearing shim mounting surface.

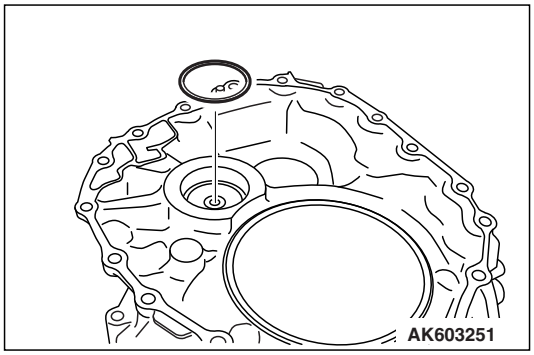
(5) Calculate distance L3 from the end face of the converter housing to the outer race of the reduction gear assembly from the following formula.

L3 = L2 - Height of block

(6) Calculate the thickness of the reduction gear taper bearing shim from the following formula.

Thickness of reduction gear taper bearing shim = L3 - L1 + Interference

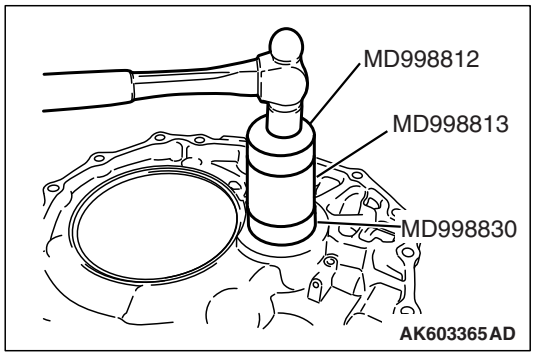
Standard value: 0.16 – 0.22 mm (0.006 – 0.009 in) (For reduction gear preload)



⚠ CAUTION

Never reuse the reduction gear taper bearing shim.

4. Install a selected reduction gear taper bearing shim on the converter housing. Refer to "SERVICE DATA" for selecting the reduction gear taper bearing shim.



⚠ CAUTION

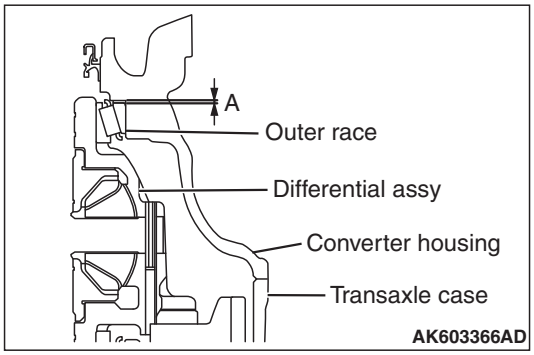
Never reuse the outer race.

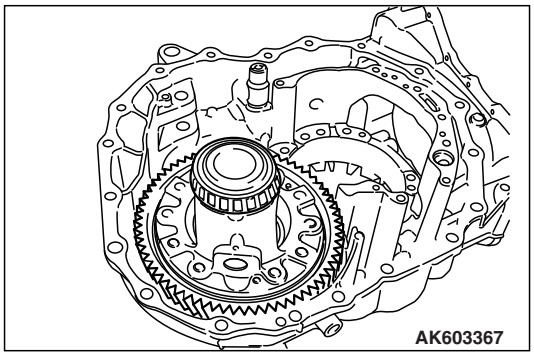
5. Using the special tools MD998812, MD998813 and MD998830, install the outer race of the reduction gear bearing on the converter housing.

⚠ CAUTION

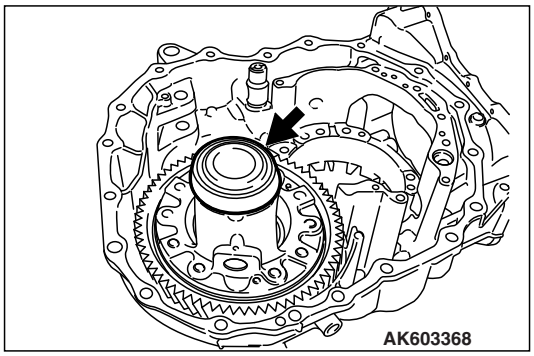
- **Apply transmission fluid to the bearing so that the interference can be adjusted in a smooth condition.**
- **Measure the end play at more than two locations and obtain the average of the measurements.**

6. Measure an interference (A) of the differential assembly in the following procedure. Refer to "SERVICE DATA" for the interference of the differential assembly.

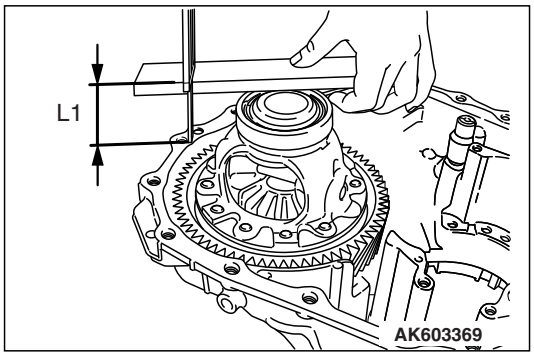




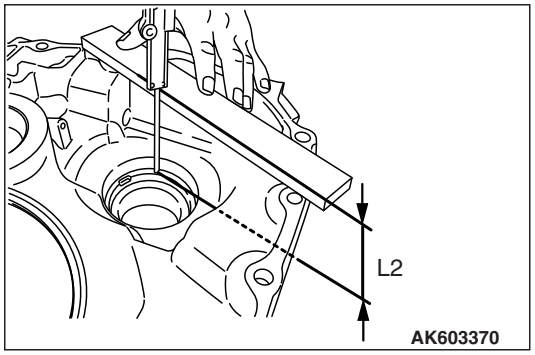
(1) Install the differential assembly on the transaxle case.



(2) Set the outer race on the differential side bearing.



(3) Measure distance L1 from the outer race to the end face of the transaxle case.



(4) Measure distance L2 from the end face of the converter housing to the differential taper bearing shim mounting surface of the converter housing.
(5) Calculate the thickness of the differential taper bearing shim from the following formula.

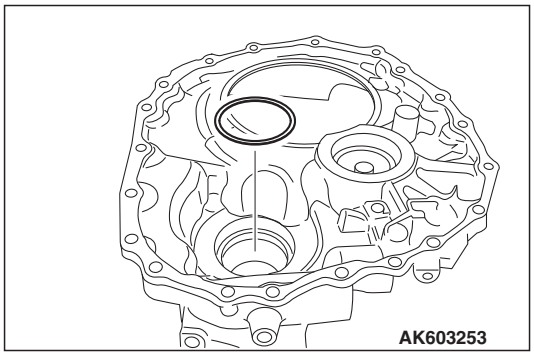
Thickness of differential taper bearing shim = L2 - L1 + Interference

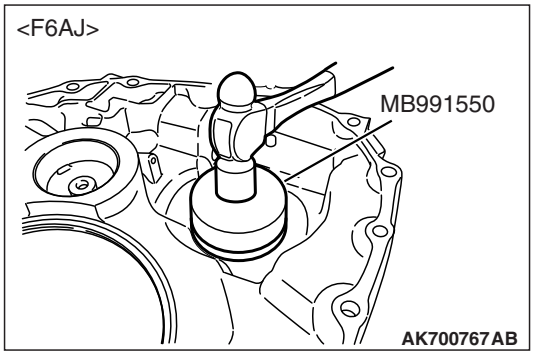
Standard value: 0.19 – 0.25 mm (0.008 – 0.010 in) (For differential preload)

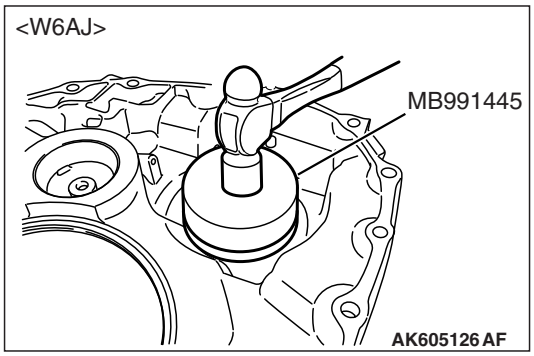
⚠ CAUTION

Never reuse the differential taper bearing shim.

7. Install a selected differential taper bearing shim on the converter housing. Refer to "SERVICE DATA" for selecting the differential taper bearing shim.







⚠ CAUTION

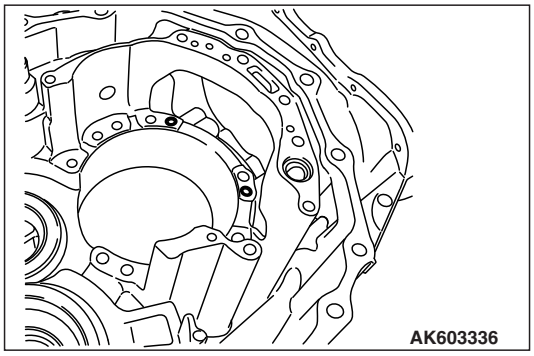
Never reuse the outer race.

8. Using the special tool MB991550 <F1CJA> or MB991445 <W1CJA>, Install the outer race of the differential side bearing on the converter housing.

⚠ CAUTION

- **Never reuse the O-rings.**
- **Apply transmission fluid to the O-rings before installation.**

9. Install an O-ring on the transaxle case.



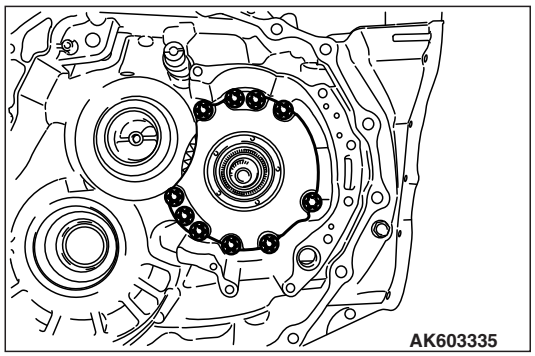
⚠ CAUTION

Mounting bolts are Torx E18 bolts.

10. Install the output gear set. Refer to the following or the exploded view for the tightening torque.

No. of bolts	10

Tightening torque: 41 ± 1 N·m (30 ± 1 ft-lb)

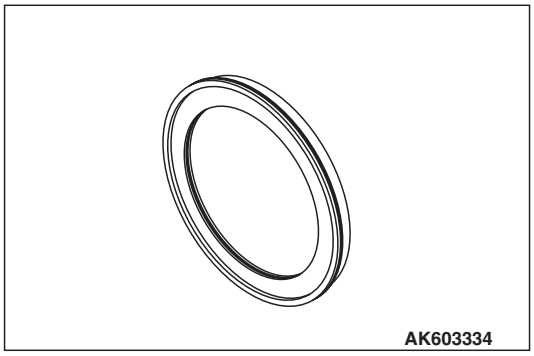


TSB Revision

⚠ CAUTION

- **Never reuse the D-rings.**
- **Apply transmission fluid to the D-rings before installation.**

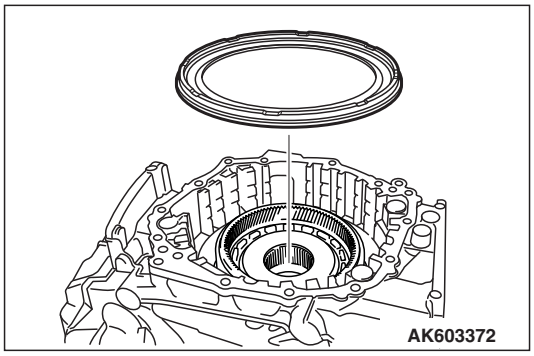
11.Install D-rings on the low-reverse brake piston.


AK603334

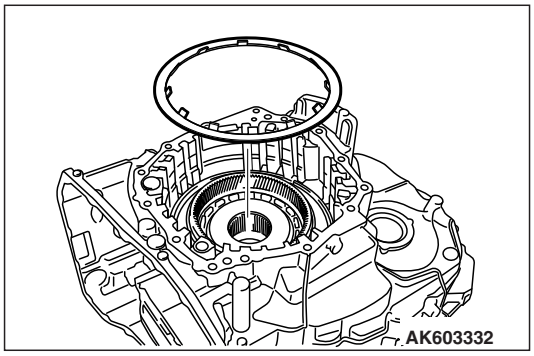
⚠ CAUTION

Apply transmission fluid to the low-reverse brake piston before installation.

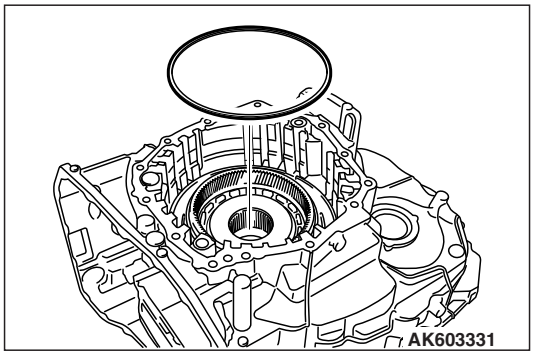
12.Install the low-reverse brake piston on the transaxle case.

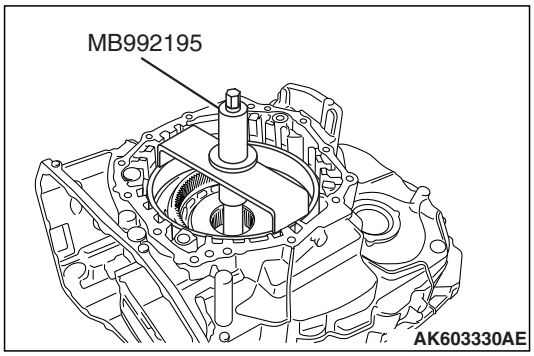

AK603372

13.Install the diaphragm spring.


AK603332

14.Install the diaphragm spring retainer.

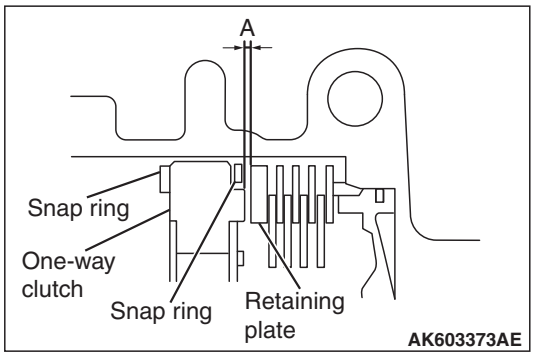

AK603331

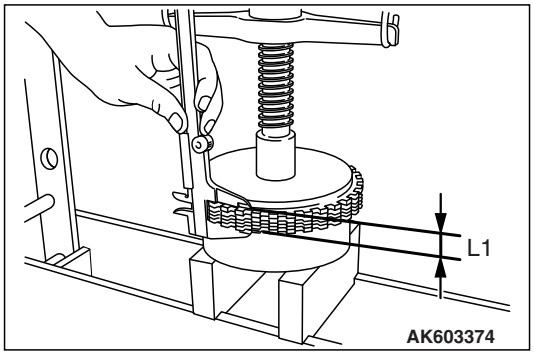


15.Using the special tool MB992195, install the snap ring.

⚠ CAUTION
Measure the end play at more than two locations and obtain the average of the measurements.

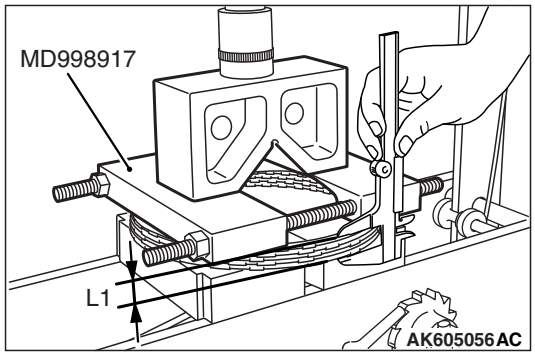
16.Measure the clearance (A) of the low-reverse brake using the following procedure. Refer to "SERVICE DATA" for the specified low-reverse brake clearance.



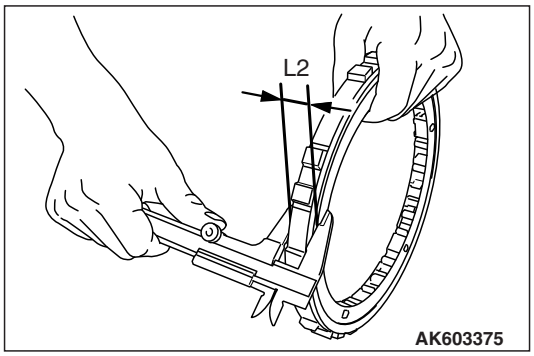


(1) While compressing the drive plates, driven plates and retaining plate, measure the thickness L1 of the pack.

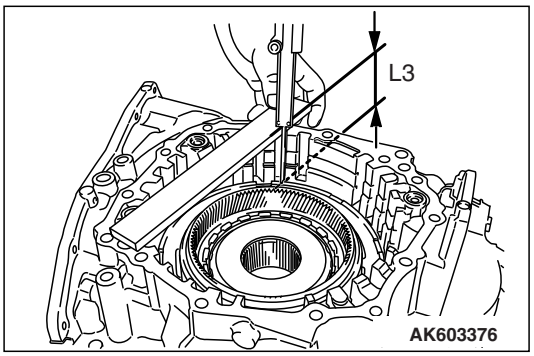
Compression load [N (kgf)]	7056 – 8056 (720 – 822)



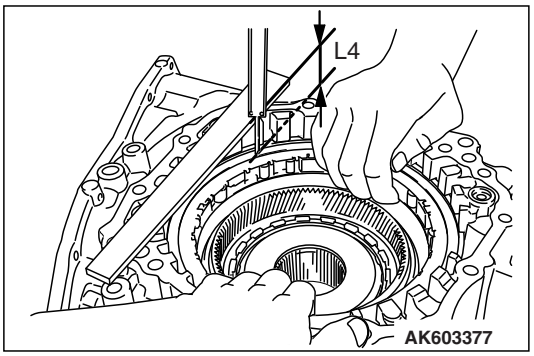
NOTE: If there is no appropriate plate, use the special tool, MD998917



(2) Measure thickness L2 of the one-way clutch.



(3) Measure distance L3 from the end face of the transaxle case to the low-reverse brake piston.

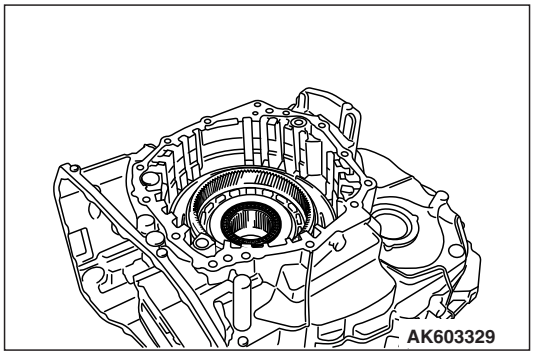


(4) Temporarily assemble the snap ring, one-way clutch and snap ring to the transaxle case.
(5) Measure distance L4 from the end face of the transaxle case to the one-way clutch, while pulling up the one-way clutch.
(6) Remove the temporarily assembled snap ring, one-way clutch and snap ring from the transaxle case.
(7) Calculate the clearance using the following formula.Clearance = L3 - (L1 + L2 + L4)
(8) Select an appropriate retaining plate so that the specified clearance is obtained. Refer to "SERVICE DATA" for selecting the retaining plate.

Standard value: 1.9 – 2.2 mm (0.07 – 0.09 in)
(For low-reverse brake clearance)

⚠ CAUTION
- **Apply vaseline to the needle bearing before installation.**
- **Ensure that the needle bearing faces the correct direction.**

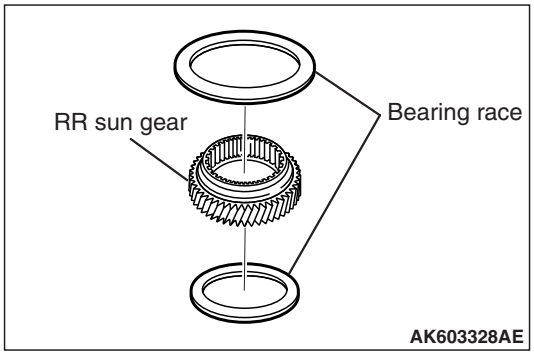
17.Install the needle bearing.



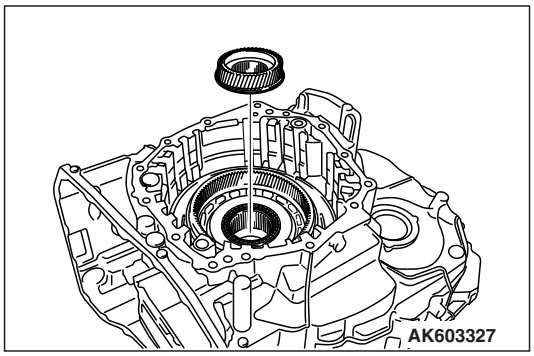
⚠ CAUTION

Apply vaseline to the bearing race before installation.

18.Install the bearing race on the RR sun gear on the front side.



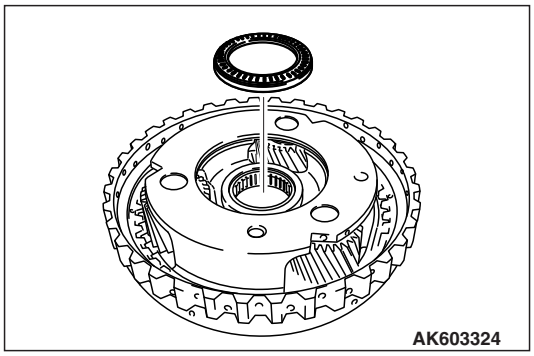
19.Install the RR sun gear on the front side.



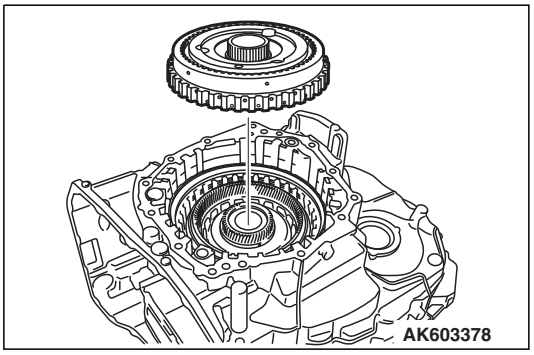
⚠ CAUTION

- **Apply vaseline to the needle bearing before installation.**
- **Ensure that the needle bearing faces the correct direction.**

20.Install the needle bearing on the RR carrier assembly.



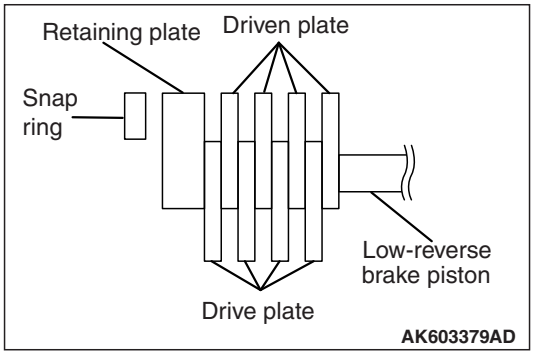
21.Install the RR carrier assembly.



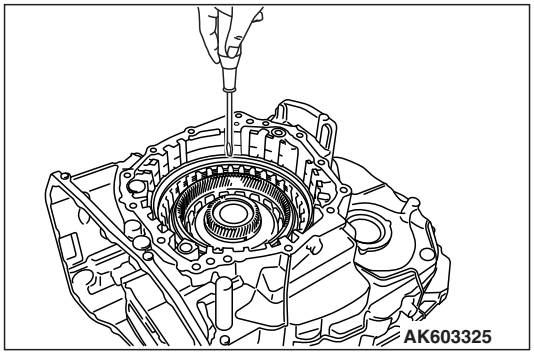
⚠ CAUTION

Ensure that the various plates are installed in the correct order.

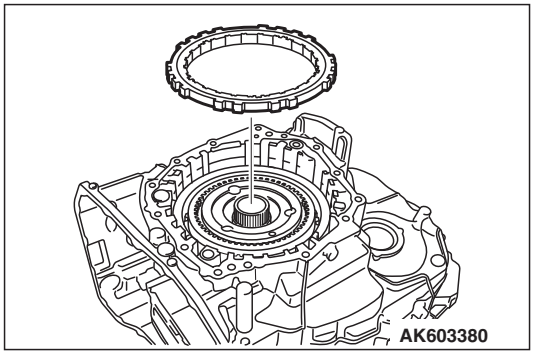
22.Install the low-reverse brake drive plate, driven plate and selected retaining plate on the transaxle case.



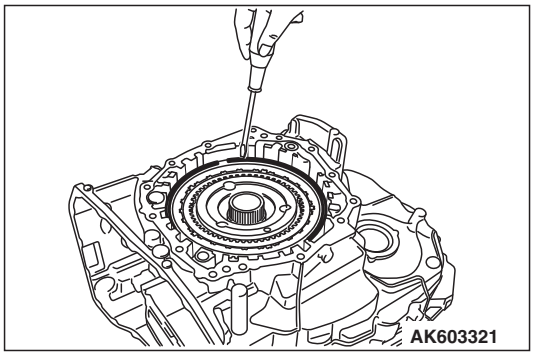
23.Using a flat-head screwdriver or equivalent, install the snap ring.

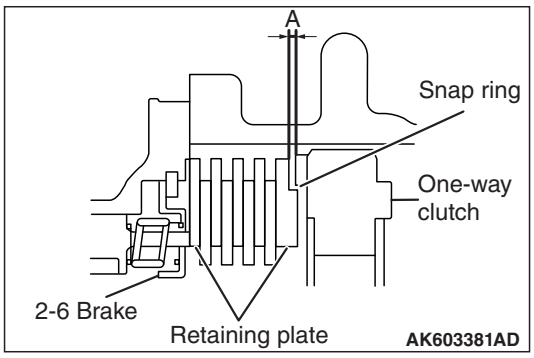


24.Install the one-way clutch.



25.Using a flat-head screwdriver or equivalent, install the snap ring.

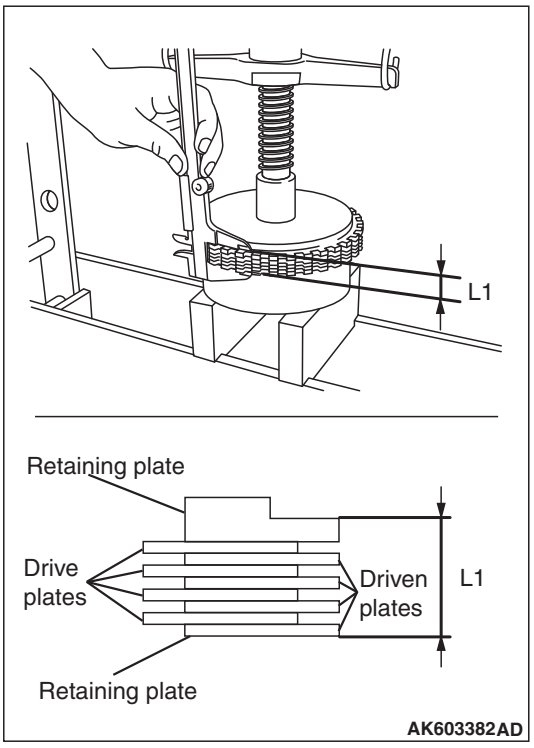




⚠ CAUTION

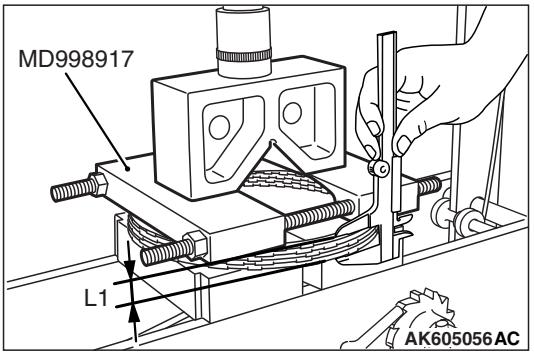
Measure the end play at more than two locations and obtain the average of the measurements.

26. Measure the clearance (A) of the 2-6 brake using the following procedure. Refer to "SERVICE DATA" for the specified 2-6 brake clearance.

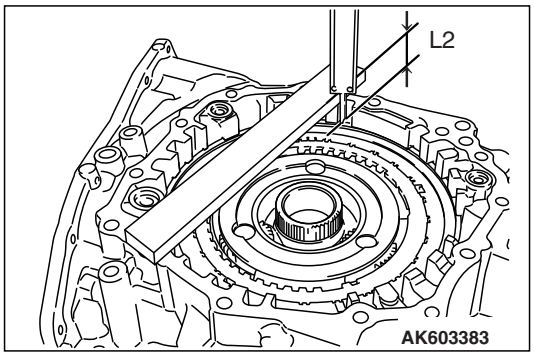


(1) While compressing the drive plates, driven plates and retaining plate, measure thickness L1 of the pack.

Compression load [N (kgf)]	800 – 1800 (82 – 184)



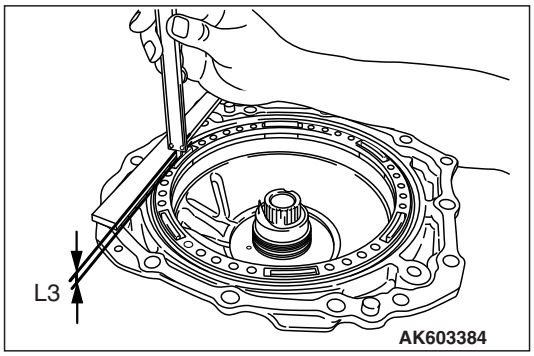
NOTE: If there is no appropriate plate, use the special tool, MD998917



(2) Measure distance L2 from the end face of the transaxle case to the snap ring.

⚠ CAUTION

When measuring L3, use the same straight bar as used when L2 is measured.



(3) Measure distance L3 from the end face of the side cover to the 2-6 brake piston.

(4) Calculate the clearance using the following formula.

Clearance = L2 - (L1 + L3)

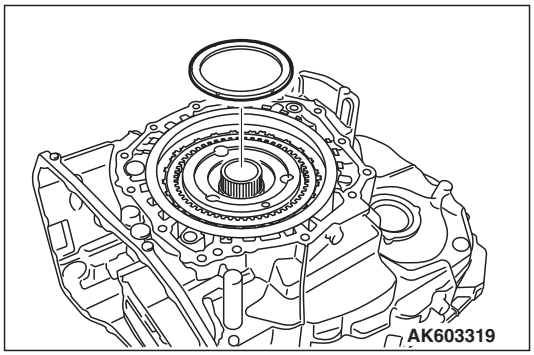
(5) Select an appropriate retaining plate so that the specified clearance is obtained. Refer to "SERVICE DATA" for selecting the retaining plate.

Standard value: 1.9 – 2.2 mm (0.07 – 0.09 in)
(For 2-6 brake clearance)

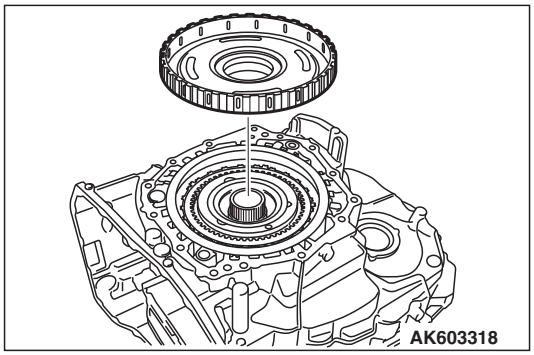
⚠ CAUTION

- **Apply vaseline to the needle bearing before installation.**
- **Ensure that the needle bearing faces the correct direction.**

27. Install the needle bearing on the RR carrier assembly.



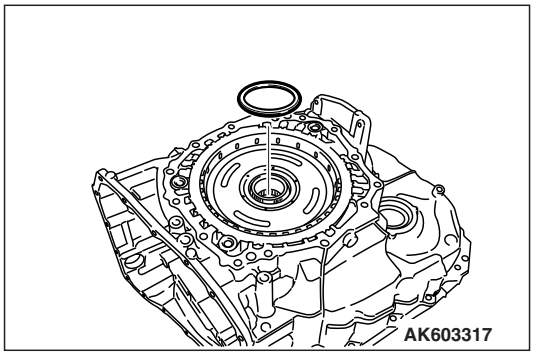
28. Install the RR sun gear on the rear side.



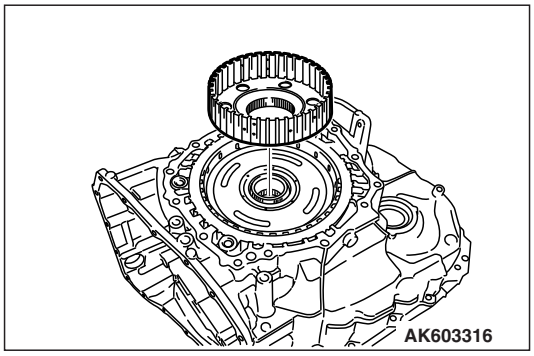
⚠ CAUTION

- **Apply vaseline to the needle bearing before installation.**
- **Ensure that the needle bearing faces the correct direction.**

29.Install the needle bearing on the RR sun gear on the rear side.



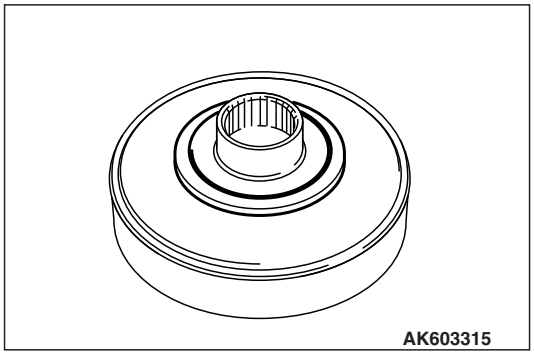
30.Install the high clutch hub.



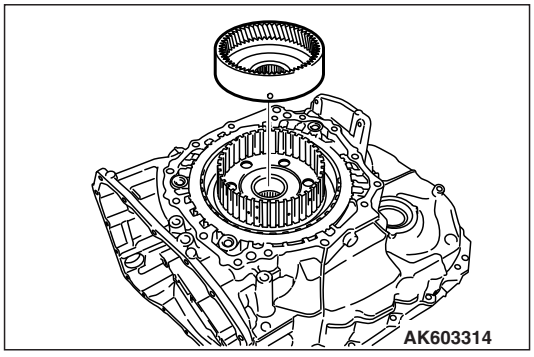
⚠ CAUTION

- **Apply vaseline to the needle bearing before installation.**
- **Ensure that the needle bearing faces the correct direction.**

31.Install the needle bearing on the reduction internal gear.



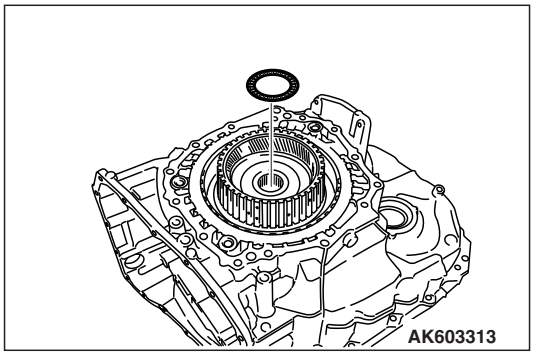
32.Install the reduction internal gear on the high clutch hub.



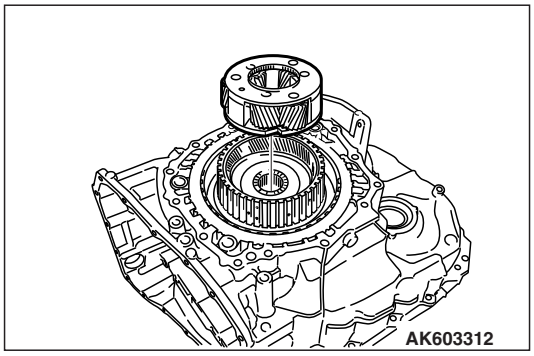
⚠ CAUTION

- **Apply vaseline to the needle bearing before installation.**
- **Ensure that the needle bearing faces the correct direction.**

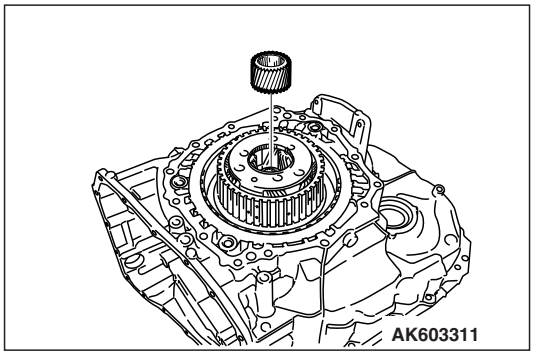
33.Install the needle bearing on the reduction internal gear.



34.Install the reduction carrier.



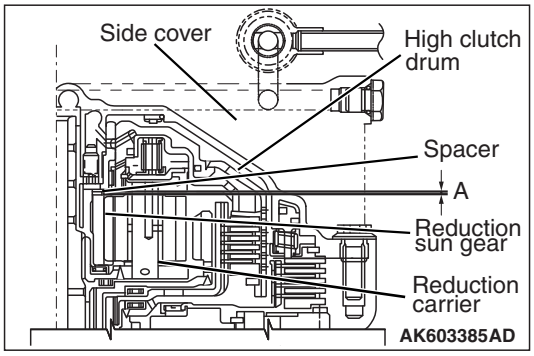
35.Install the reduction sun gear.

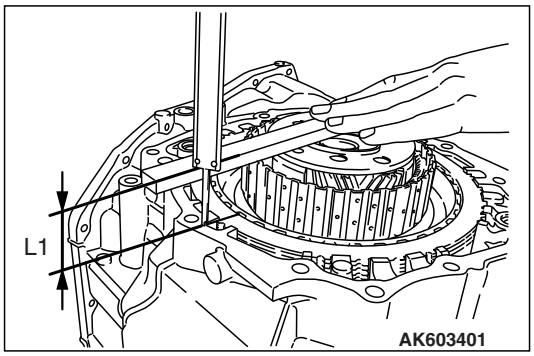


⚠ CAUTION

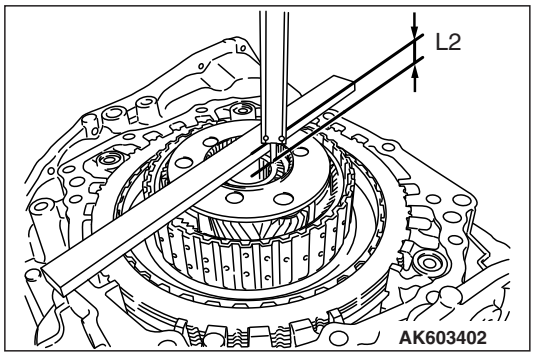
Measure the end play at more than two locations and obtain the average of the measurements.

36.Measure the reduction sun gear end play (A) using the following procedure. Refer to "SERVICE DATA" for the specified reduction sun gear end play (A).

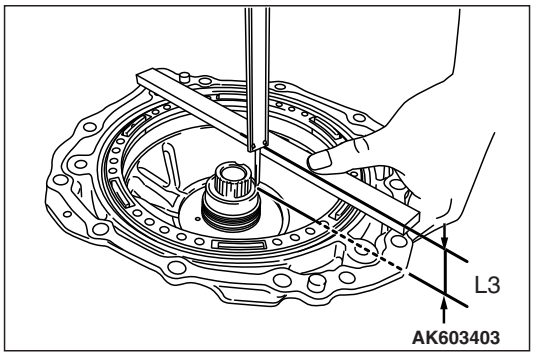




(1) Measure distance L1 from the reduction carrier to the end face of the transaxle case.



(2) Measure distance L2 from the reduction carrier to the reduction sun gear.



(3) Measure distance L3 from the end face of the side cover to the end face of the high clutch support area.

(4) Calculate the end play using the following formula.

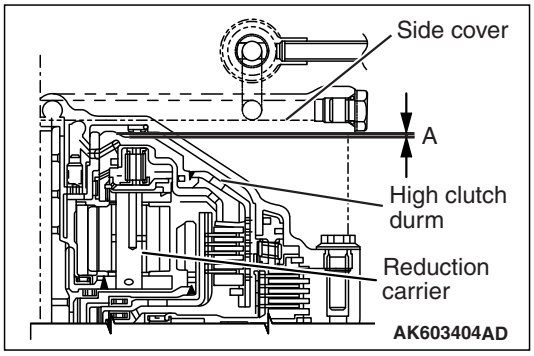
End play = L3 - (L1 - L2) - Thickness of straight bar - Thickness of spacer

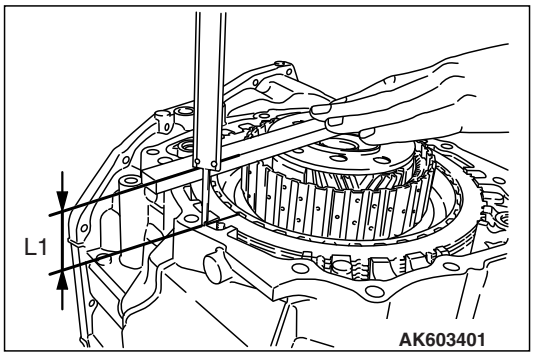
(5) Select an appropriate spacer so that the specified end play is obtained. Refer to "SERVICE DATA" for selecting the spacer.

Standard value: 0.4 – 0.7 mm (0.02 – 0.03 in)
(For reduction sun gear end play)

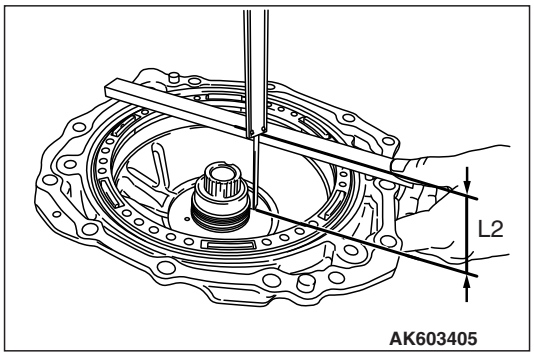
⚠ CAUTION
Measure the end play at more than two locations and obtain the average of the measurements.

37. Measure the side cover end play (A) in the following procedure. Refer to "SERVICE DATA" for the specified side cover end play (A).

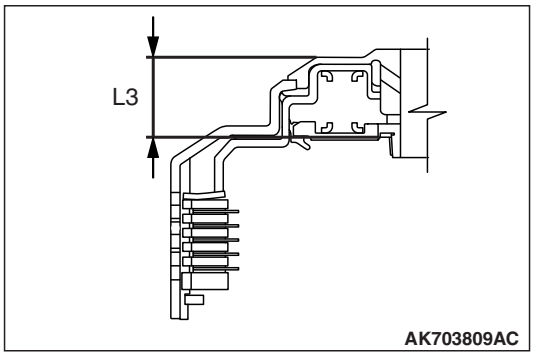




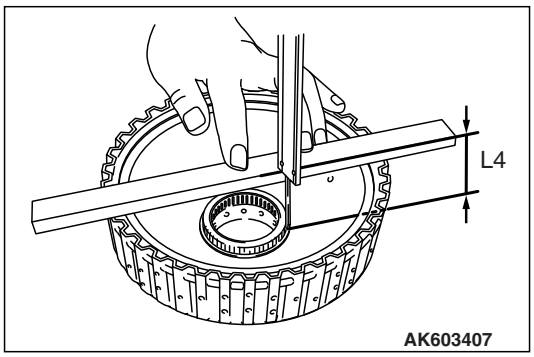
(1) Measure distance L1 from the reduction carrier to the end face of the transaxle case.



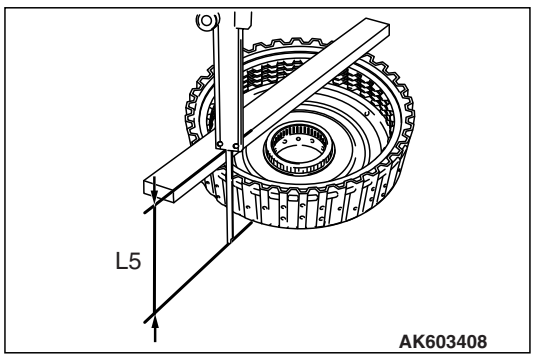
(2) Measure distance L2 from the end face of the side cover to the needle bearing mounting surface.



(3) Measure distance L3 from the contact surface with the needle bearing of the high clutch drum to the snap ring of the cancel cover in the following procedure.

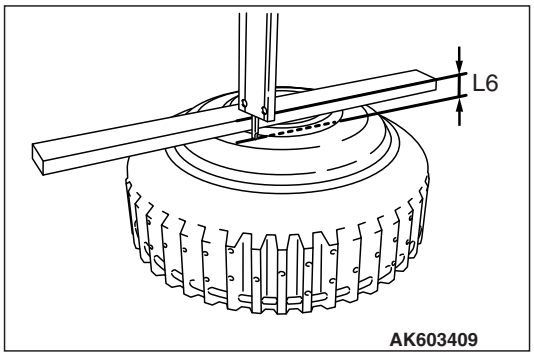


a. Measure distance L4 from the high clutch drum edge to the snap ring of the cancel cover.



b. Measure height L5 of the high clutch drum.

TSB Revision



c. Measure distance L6 from the underside of the high clutch drum to the contact surface with the needle bearing.

d. Calculate L3 using the following formula.

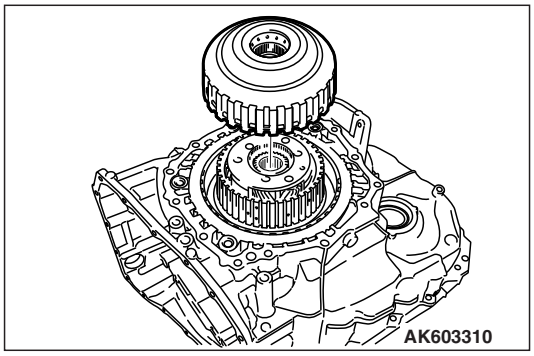
L3 = L5 - (L4 + L6) + Thickness of straight bar

(4) Calculate the end play using the following formula.

End play = L2 - (L1 + L3) - Thickness of needle bearing

(5) Select an appropriate needle bearing so that the specified end play is obtained. Refer to "SERVICE DATA" for selecting the needle bearing.

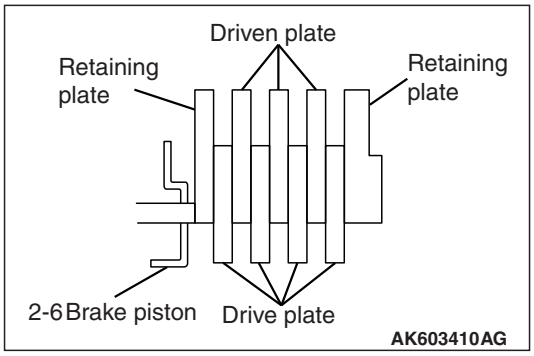
Standard value: 0.70 – 1.05 mm (0.028 – 0.041 in) (For side cover end play)



38.Install the high clutch assembly.

⚠ CAUTION

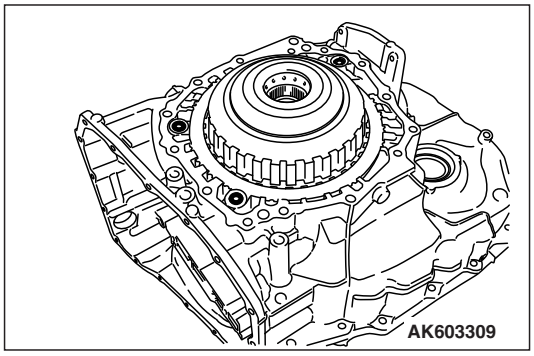
Ensure that the various plates are installed in the correct order.



39.Install the 2-6 brake drive plate, driven plate and selected retaining plate on the transaxle case.

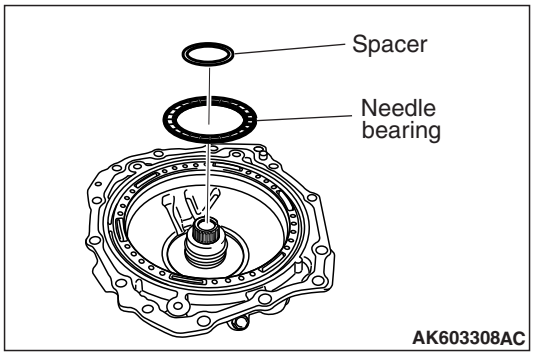
⚠ CAUTION

- **Never reuse the O-rings.**
- **Apply transmission fluid to the O-rings before installation.**



40.Install an O-ring on the transaxle case.

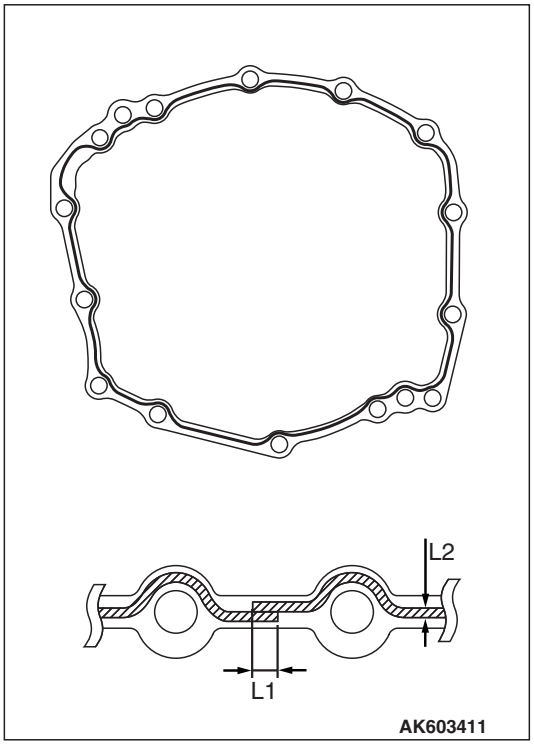
TSB Revision



⚠ CAUTION

- **Never reuse the spacer.**
- **Apply vaseline to the spacer and needle bearing before installation.**
- **Ensure that the needle bearing faces the correct direction.**

41. Install an appropriate spacer and the needle bearing on the side cover.



⚠ CAUTION

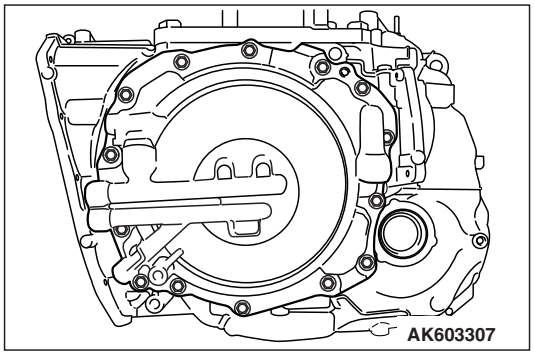
- **Completely degrease the FIPG-applied surface so that water and oil including the old sealant cannot adhere to the surface coated with the sealant. Never touch the degreased surface by hand.**
- **Make sure the starting point and the ending point are about the middle between the bolts.**

42. Apply the sealant to the transaxle case mounting surface of the side cover (almost the center line of the surface).

Specified sealant: Three Bond 1216B

L1 mm (in)	3 – 5 (0.1 - 0.2)	L2 mm (in)	2.3 (0.09)

TSB Revision


AK603307

⚠ CAUTION

Mounting bolts are Torx E16 bolts.

43. Install the side cover on the transaxle case. Refer to the following or the exploded view for the tightening torque.

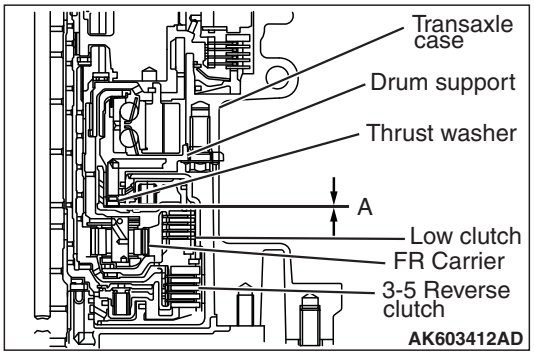
No. of bolts	14

Tightening torque: 27 ± 2 N·m (20 ± 1 ft-lb)

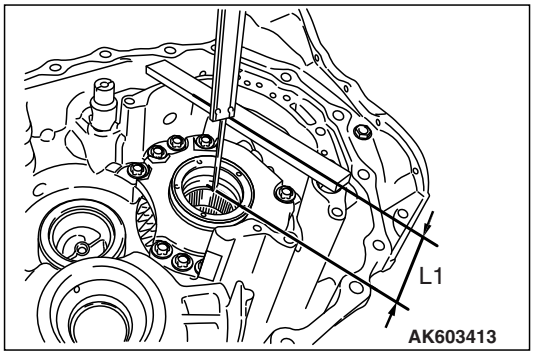
⚠ CAUTION

Measure the end play at more than two locations and obtain the average of the measurements.

44. Measure the drum support end play (A) using the following procedure. Refer to "SERVICE DATA" for the specified drum support end play (A).

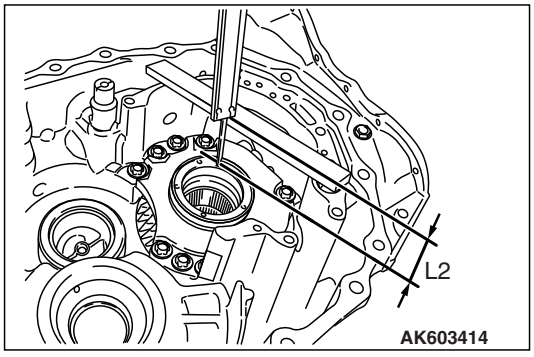


AK603412AD



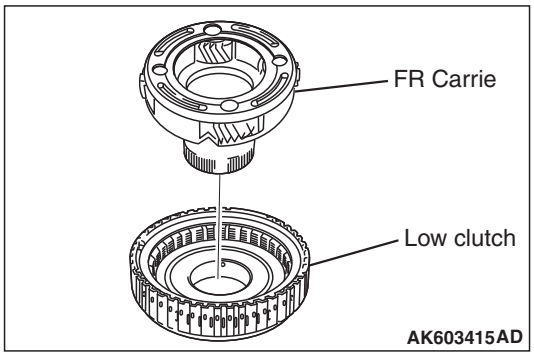
AK603413

(1) Measure distance L1 between the end face of the RR internal gear splines and the oil pump mounting surface of the transaxle case.

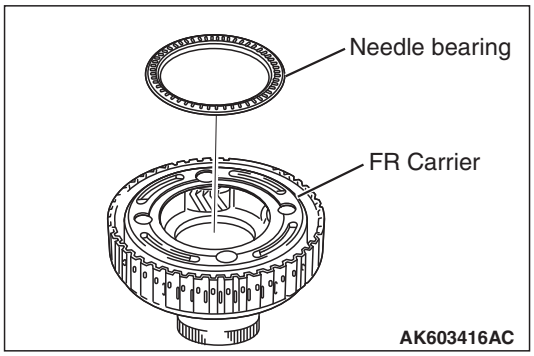


AK603414

(2) Measure distance L2 between the thrust washer mounting surface of the drum support and the oil pump mounting surface of the transaxle case.



(3) Measure distance L3 using the following procedure.

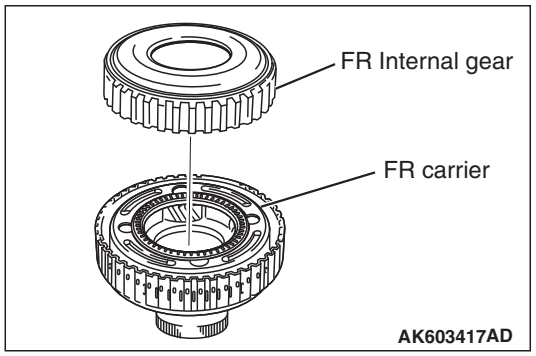


a. Install the FR carrier on the low clutch assembly.

⚠ CAUTION

- **Apply vaseline to the needle bearing before installation.**
- **Ensure that the needle bearing faces the correct direction.**

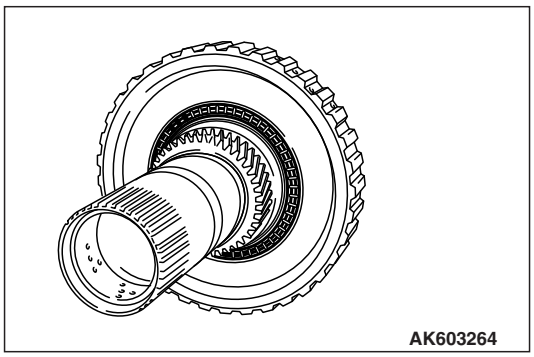
b. Install the needle bearing on the FR carrier.



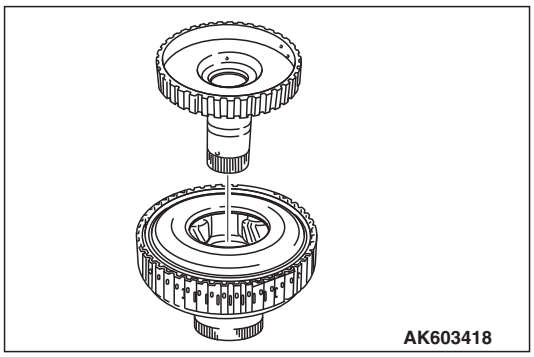
c. Install the FR internal gear on the FR carrier.

⚠ CAUTION

- **Apply vaseline to the needle bearing before installation.**
- **Ensure that the needle bearing faces the correct direction.**



d. Install the needle bearing on the FR sun gear.

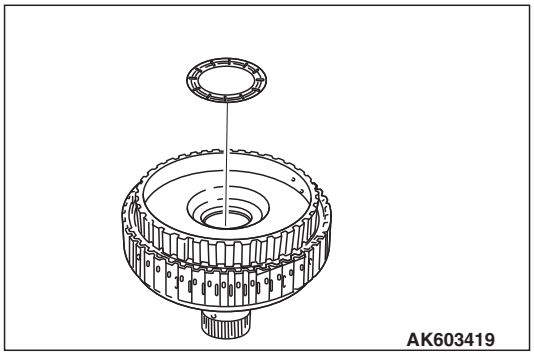


e. Install the FR sun gear.

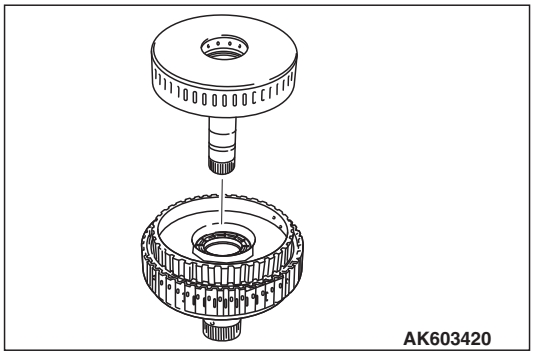
⚠ CAUTION

- **Apply vaseline to the needle bearing before installation.**
- **Ensure that the needle bearing faces the correct direction.**

f. Install the needle bearing on the FR sun gear.



g. Install the 3-5 reverse clutch assembly.



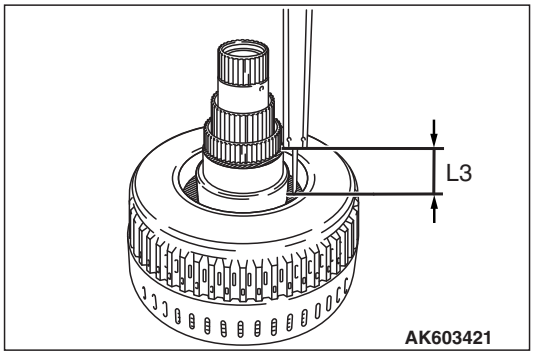
h. Measure distance L3 between A and B.

(4) Calculate the end play using the following formula.

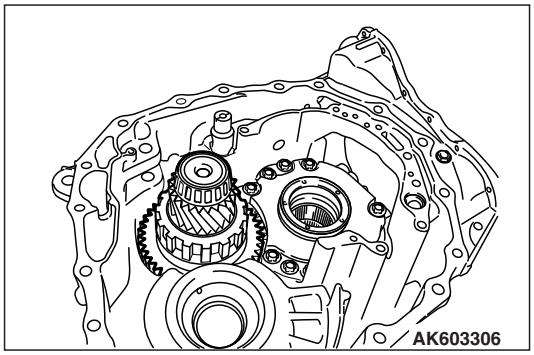
End play = L3 - (L1 - L2) - Thrust washer thickness

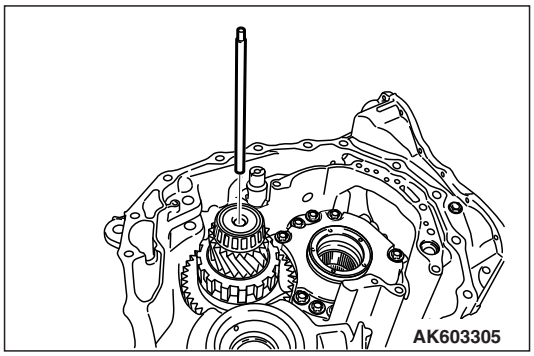
(5) Select an appropriate thrust washer so that the specified end play is obtained. Refer to "SERVICE DATA" for selecting the thrust washer.

Standard value: 0 – 0.35 mm (0 – 0.014 in)
(For drum support end play)

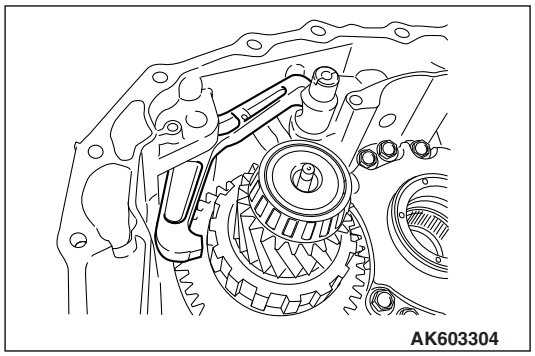


45.Install the reduction gear assembly.

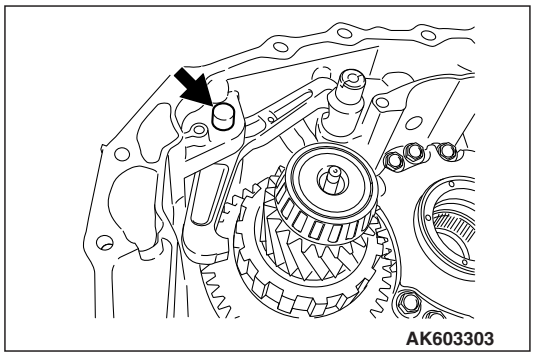



AK603305

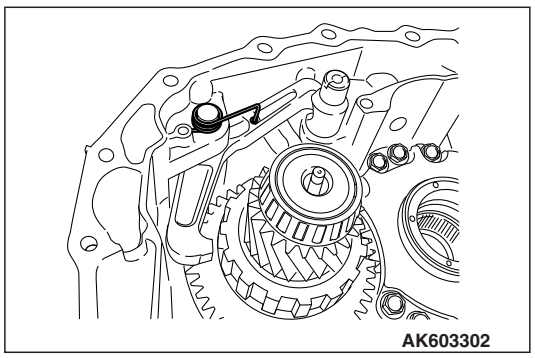
46.Install the reduction gear lubrication tube.


AK603304

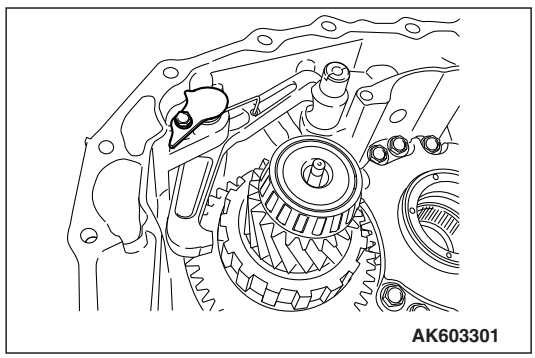
47.Install the parking pawl.


AK603303

48.Install the parking pawl shaft.


AK603302

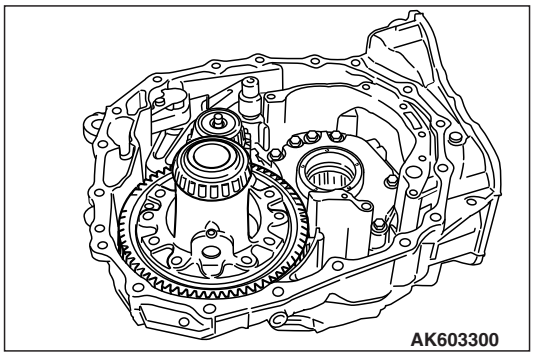
49.Install the return spring.


AK603301

50.Install the pawl shaft plate. Refer to the following or the exploded view for the tightening torque.

Tightening torque: 7.9 N·m (70 in-lb)

TSB Revision

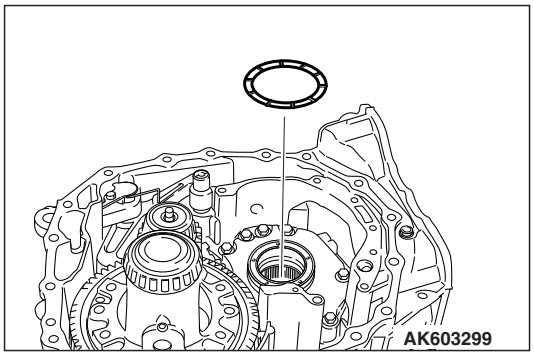

AK603300

51.Install the differential gear assembly.

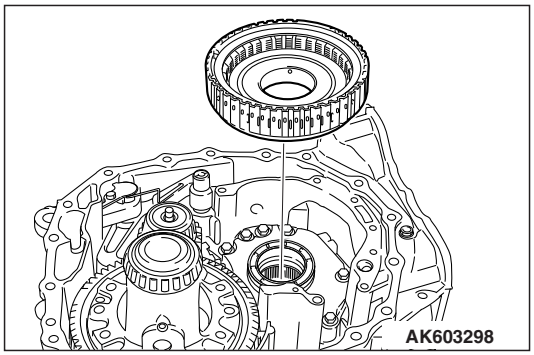
⚠ CAUTION

- **Ensure that the claws on the thrust washer are correctly engaged with the holes in the drum support.**
- **Apply vaseline to the thrust washer before installation.**

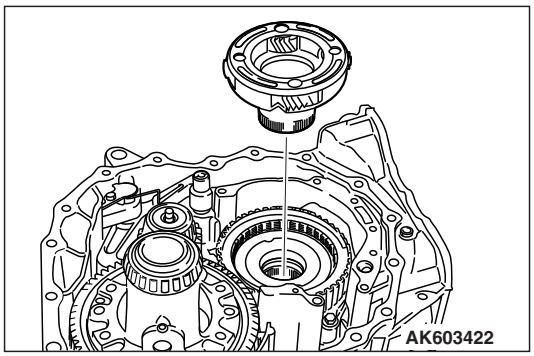
52.Install an appropriate thrust washer on the drum support.


AK603299

53.Install the low clutch assembly.


AK603298

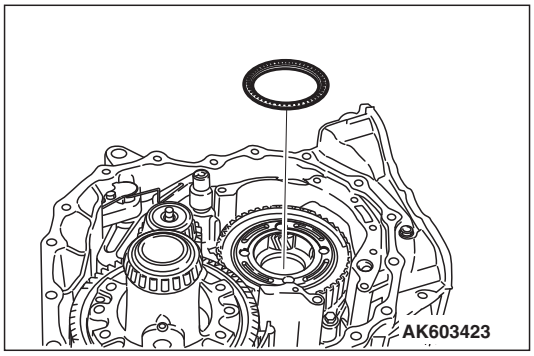
54.Install the FR carrier on the low clutch assembly.


AK603422

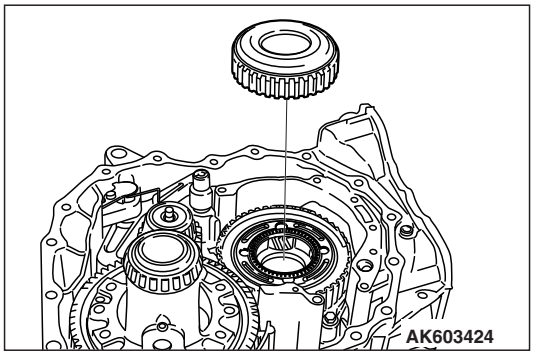
⚠ CAUTION

- **Apply vaseline to the needle bearing before installation.**
- **Ensure that the needle bearing faces the correct direction.**

55.Install the needle bearing on the FR carrier.



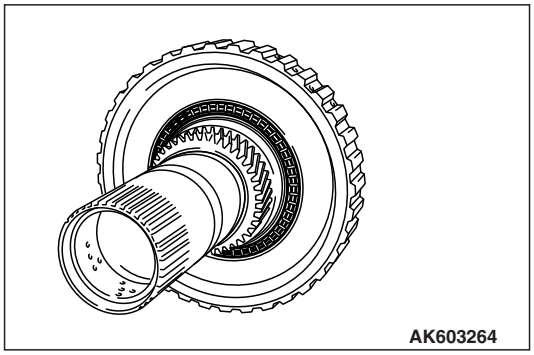
56.Install the FR internal gear on the FR carrier.



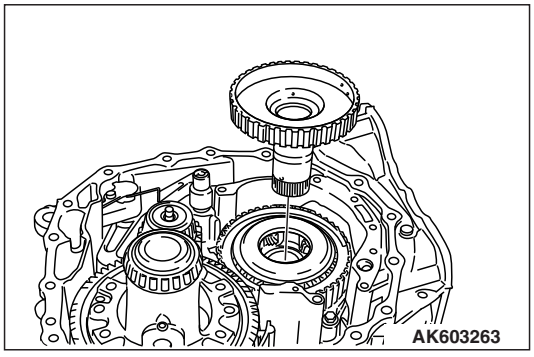
⚠ CAUTION

- **Apply vaseline to the needle bearing before installation.**
- **Ensure that the needle bearing faces the correct direction.**

57.Install the needle bearing on the FR sun gear.



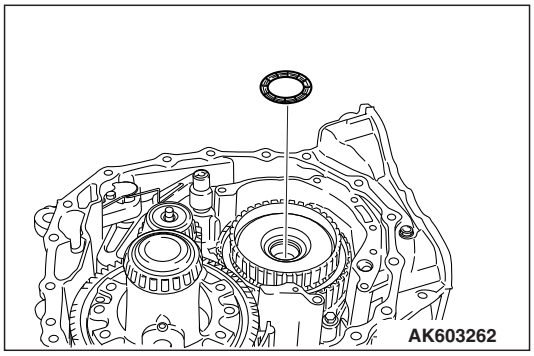
58.Install the FR sun gear.



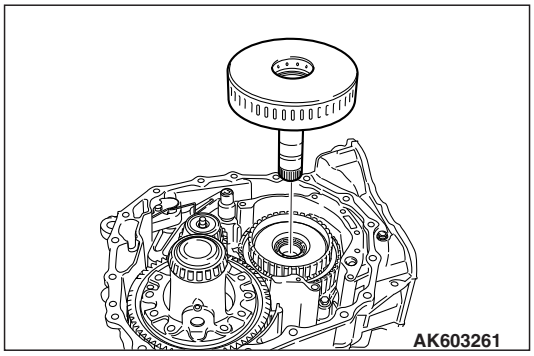
⚠ CAUTION

- **Apply vaseline to the needle bearing before installation.**
- **Ensure that the needle bearing faces the correct direction.**

59.Install the needle bearing on the FR sun gear.



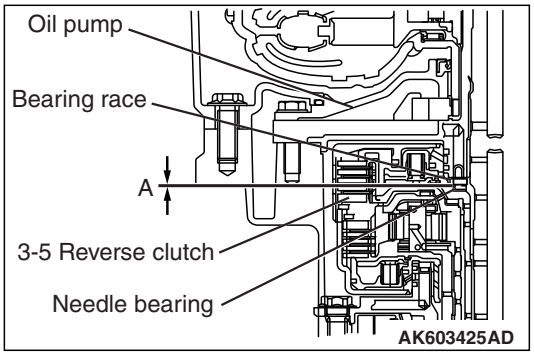
60.Install the 3-5 reverse clutch assembly.



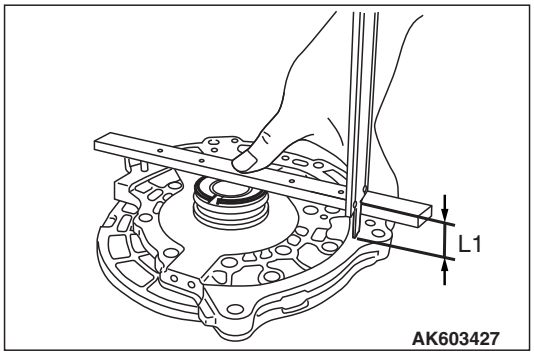
⚠ CAUTION

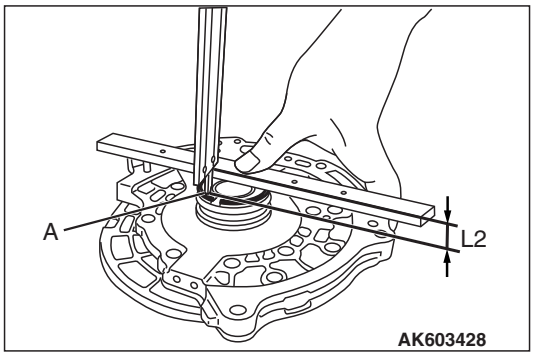
Measure the end play at more than two locations and obtain the average of the measurements.

61.Measure the 3-5 reverse clutch end play (A) using the following procedure. Refer to "SERVICE DATA" for the specified 3-5 reverse clutch end play (A).

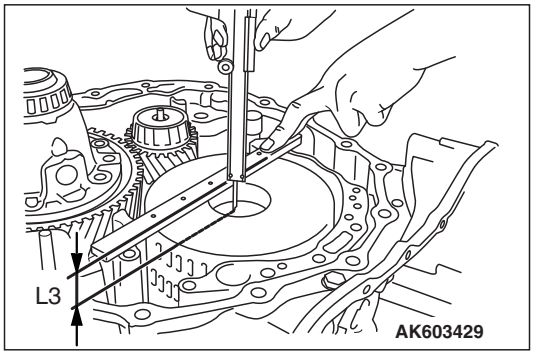


(1) Measure distance L1 between the oil pump assembly end face and A.

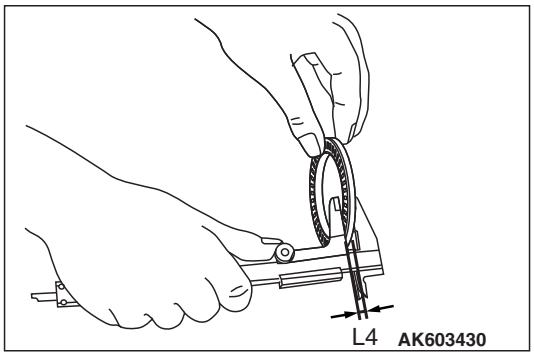




(2) Measure distance L2 between A and the bearing race mounting surface.



(3) Measure distance L3 between the oil pump mounting surface of the transaxle case and the needle bearing mounting surface of the 3-5 reverse clutch drum.



(4) Measure thickness L4 of the needle bearing.
(5) Calculate the end play using the following formula.

End play = L3 - (L1 - L2) - L4 - Bearing race thickness

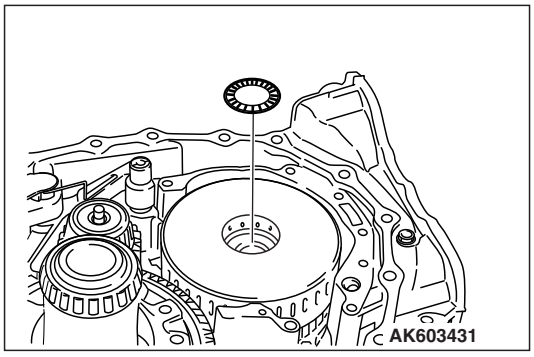
(6) Select an appropriate bearing race so that the specified end play is obtained. Refer to "SERVICE DATA" for selecting the bearing race.

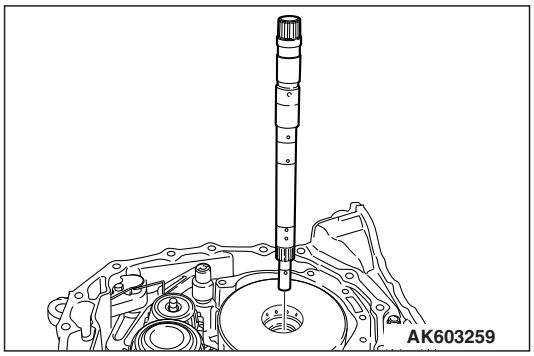
Standard value: 0.55 – 0.85 mm (0.022 – 0.034 in) (For 3-5 reverse clutch end play)

⚠ CAUTION

- **Apply vaseline to the needle bearing before installation.**
- **Ensure that the needle bearing faces the correct direction.**

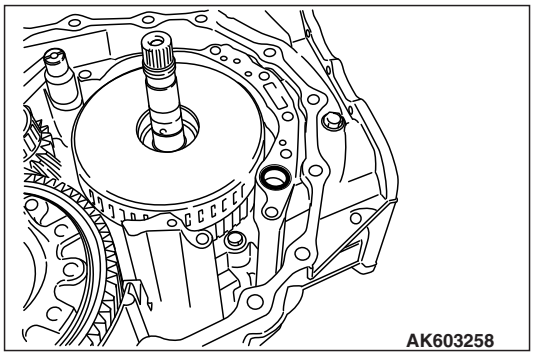
62. Install the needle bearing on the 3-5 reverse clutch drum.



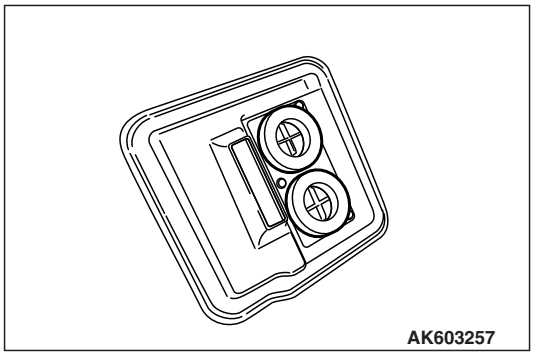

AK603259

63.Install the input shaft.

⚠ CAUTION
- **Never reuse the O-rings.**
- **Apply transmission fluid to the O-rings before installation.**

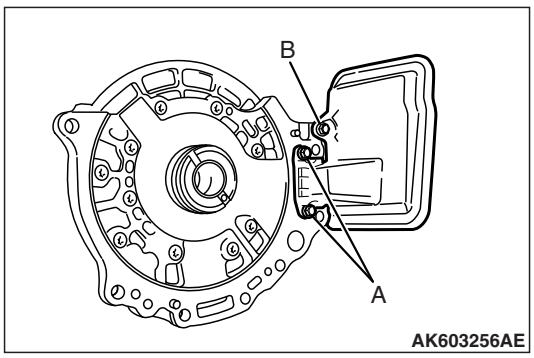

AK603258

64.Install an O-ring on the transaxle case.


AK603257

65.Install the magnets on the oil strainer.

⚠ CAUTION
- **Never reuse the oil strainer.**
- **Apply transmission fluid to the O-ring of the oil strainer.**



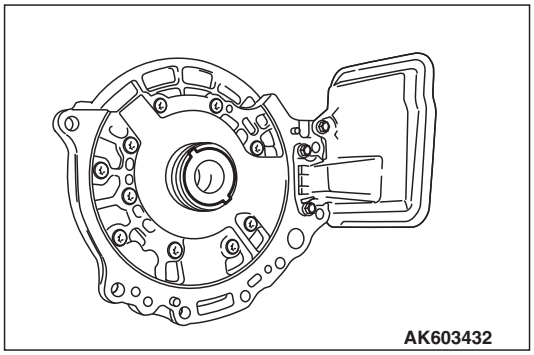
AK603256AE

66.Install the oil strainer on the oil pump assembly. Refer to the following or the exploded view for the tightening torque.

Bolt code	A	B
Shank length mm (in)	25 (1.0)	16 (0.6)
No. of bolts	2	1

Tightening torque: 9.4 N·m (83 in-lb)

TSB Revision


AK603432

⚠ CAUTION

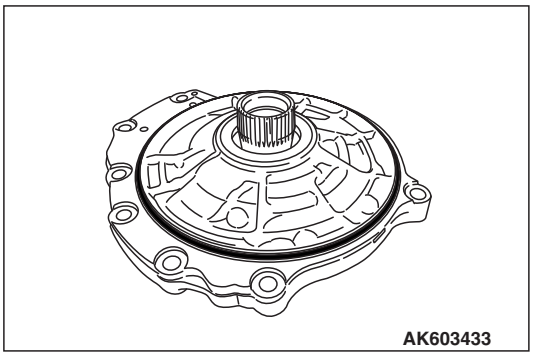
Apply vaseline to the bearing race before installation.

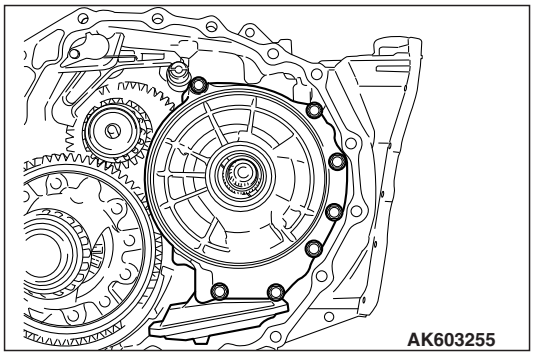
67. Install an appropriate bearing race on the oil pump assembly.

⚠ CAUTION

- **Never reuse the O-rings.**
- **Apply transmission fluid to the O-rings before installation.**
- **Apply the transmission fluid as little as possible because too much transmission fluid applied to the O-ring, could cause some confusion over oil leakage.**

68. Install an O-ring on the oil pump.


AK603433


AK603255

69. Install the oil pump assembly and oil strainer as one unit. Refer to the following or the exploded view for the tightening torque.

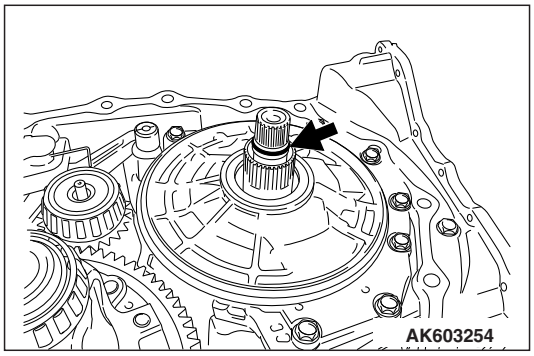
No. of bolts	7

Tightening torque: 21 N·m (15 ft-lb)

⚠ CAUTION

- **Never reuse the O-rings.**
- **Apply transmission fluid to the O-rings before installation.**

70.Install an O-ring on the input shaft.



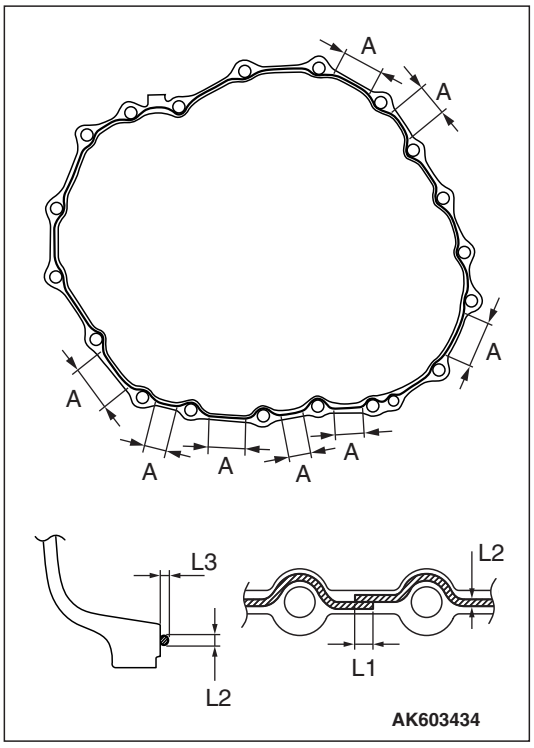
⚠ CAUTION

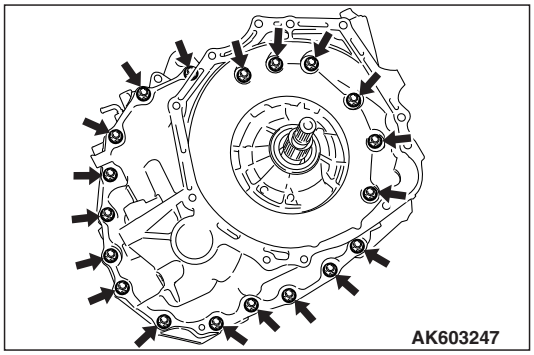
- **Completely degrease the FIPG-applied surface so that water and oil including the old sealant cannot adhere to the surface coated with the sealant. Never touch the degreased surface by hand.**
- **Make sure the starting point and the ending point are about the middle between the bolts.**
- **Apply a double bead of sealant in sections A.**

71.Apply the sealant to the transaxle case mounting surface of the converter housing (almost the center line of the surface).

Specified sealant: Three Bond 1216B

L1 mm (in)	3 – 5 (0.1 - 0.2)
L2 mm (in)	2.3 (0.09)
L3 mm (in)	1.8 (0.07)





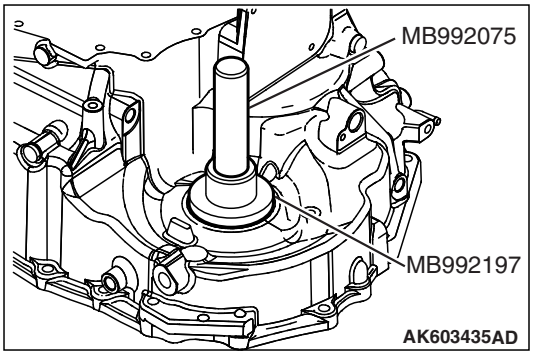
⚠ CAUTION

Mounting bolts are Torx E20 bolts.

72. Install the converter housing on the transaxle case. Refer to the following or the exploded view for the tightening torque.

No. of bolts	19

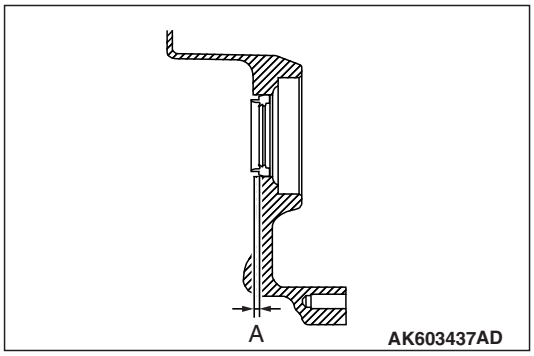
Tightening torque: 47 ± 2 N·m (35 ± 1 ft-lb)



⚠ CAUTION

- **Never reuse the side oil seal.**
- **Apply transmission fluid to the side oil seal before installation.**

73. Using the special tools MB992197 and MB992075, install a side oil seal.

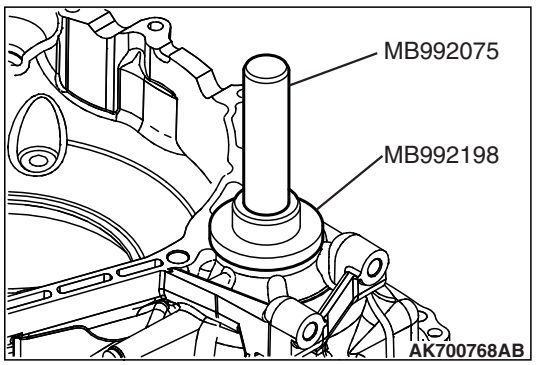


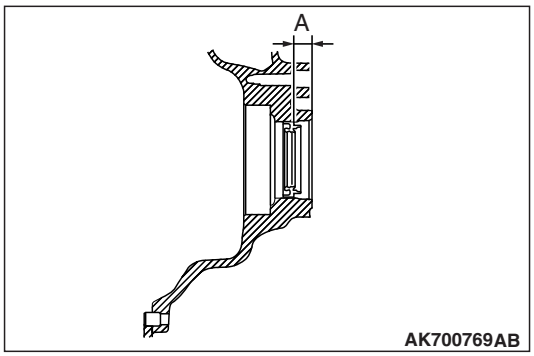
⚠ CAUTION
- **Ensure that the side oil seal is installed to the specified depth shown in the table below.**
- **Measure the installed depth of the seal at four locations diagonally. Any difference between the measurements should be no more than 0.3 mm.**

On the transaxle case side	**Seal depth (A) from case end face: 4.0 ± 0.5 mm (0.2 ± 0.02 in) or less**

⚠ CAUTION
- **Never reuse the side oil seal.**
- **Apply transmission fluid to the side oil seal before installation.**

74. Using the special tools MB992198 and MB992075, install a side oil seal.<F6AJ>





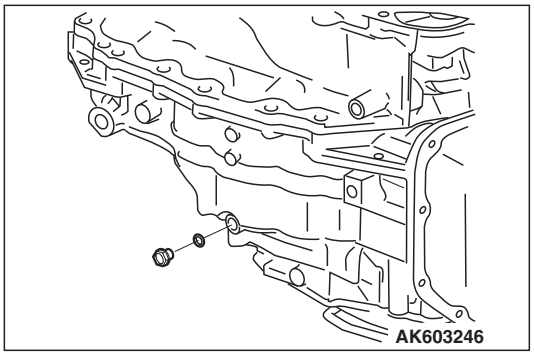
⚠ CAUTION
- **Ensure that the side oil seal is installed to the specified depth shown in the table below.**
- **Measure the installed depth of the seal at four locations diagonally. Any difference between the measurements should be no more than 0.3 mm.**

On the converter housing case side	**Seal depth (A) from housing end face: 14.0 ± 0.5 mm (0.6 ± 0.02 in) or less**

⚠ CAUTION
- **Never reuse the O-rings.**
- **Apply transmission fluid to the O-rings before installation.**

75. Install an O-ring on the ATF adjusting bolt.
76. Install the ATF adjusting bolt on the transaxle case. Refer to the following or the exploded view for the tightening torque.

Tightening torque: 7.4 ± 2.4 N·m (65 ± 21 in-lb)

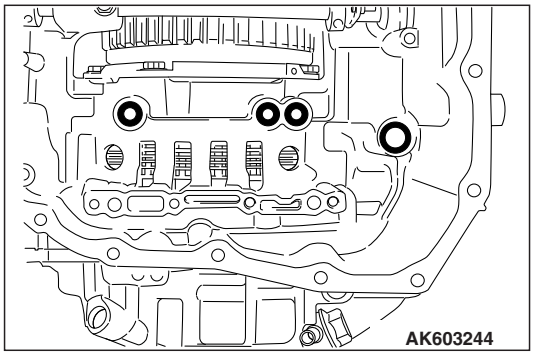


TSB Revision

⚠ CAUTION

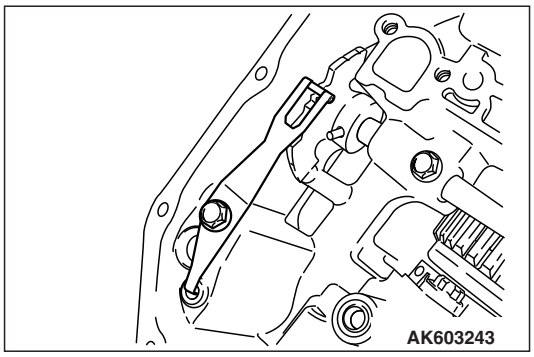
- **Never reuse the lip seals.**
- **Apply transmission fluid to the lip seals before installation.**

77.Install the lip seals on the transaxle case.



78.Install the detent spring. Refer to the following or the exploded view for the tightening torque.

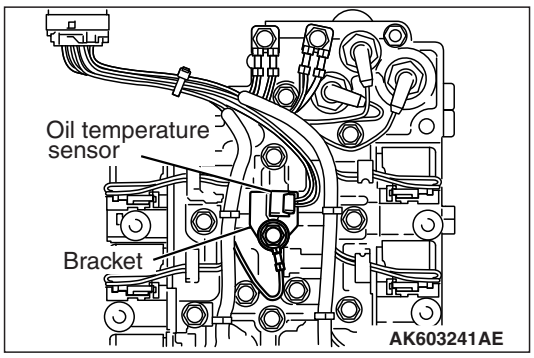
Tightening torque: 4.9 N·m (43 in-lb)



79.Install the bracket on the oil temperature sensor.

80.Install the oil temperature sensor on the control valve. Refer to the following view for the tightening torque.

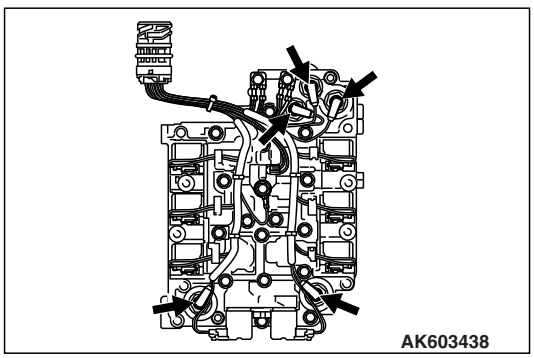
Tightening torque: 7.9 N·m (70 in-lb)



⚠ CAUTION

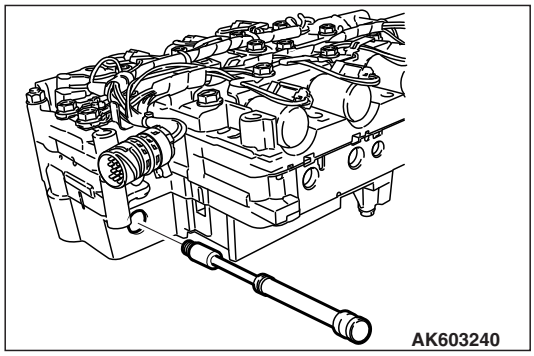
Check the oil pressure switch connectors (each indicated with an arrow) for correct fit.

81.Install the terminal assembly on the control valve.

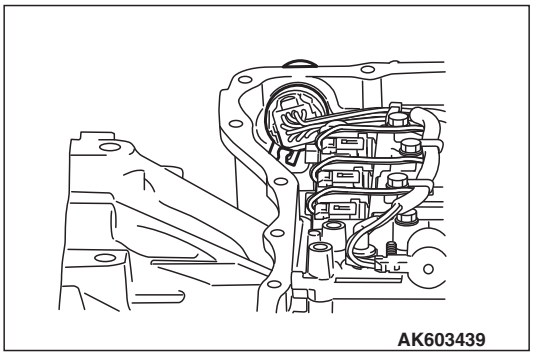


⚠ CAUTION
Apply transmission fluid to the manual valve before installation.

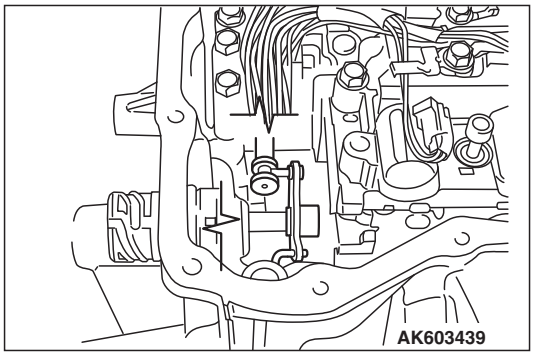
82.Install the manual valve on the control valve.


AK603240

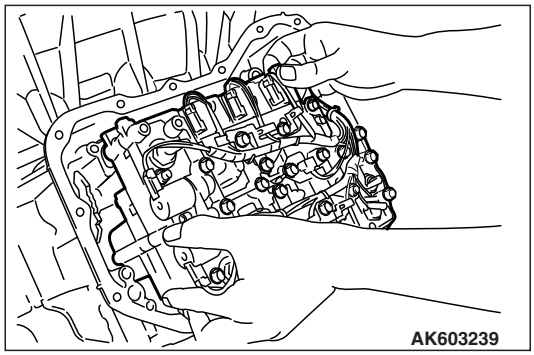
83.Press the terminal body into the transaxle case.

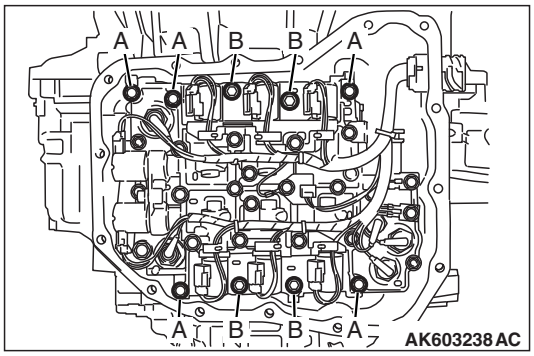

AK603439

⚠ CAUTION
Ensure that the notch in the manual valve is engaged with the lug on the manual plate.


AK603439

84.Install the control valve assembly on the transaxle case.


AK603239



⚠ CAUTION

- **Mounting bolt A is a hexagon head bolt.**
- **Mounting bolt B is a hexagon socket head bolt.**

85.Install the control valve assembly mounting bolts A and B. Refer to the following or the exploded view for tightening torque.

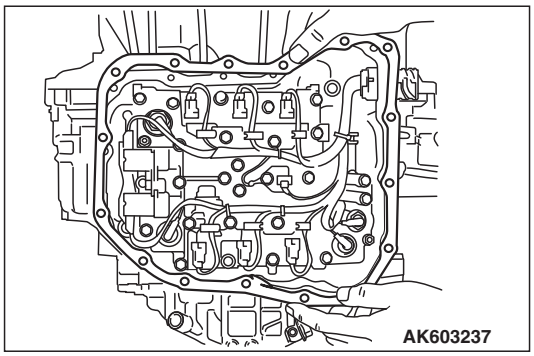
Bolt code	A	B
Shank length mm (in)	71.5 (2.82)	58.0 (2.28)
No. of bolts	5	4

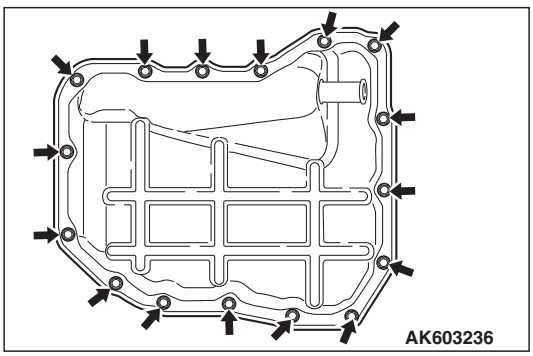
Tightening torque: 7.9 N·m (70 in-lb)

⚠ CAUTION

- **Never reuse the control valve cover gasket.**
- **Thoroughly clean the control valve cover gasket mounting surface of the transaxle case so that it is completely free of moisture, lubricant and the old gasket.**

86.Install the control valve cover gasket on the transaxle case.

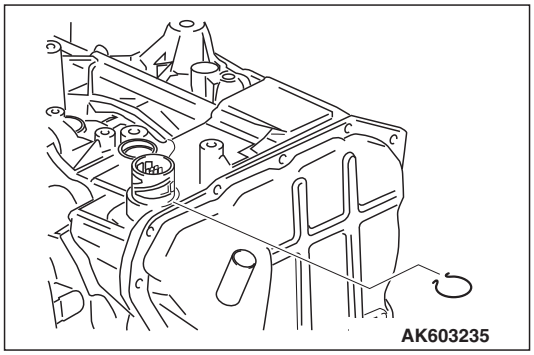




87.Install the control valve cover on the transaxle case. Refer to the following or the exploded view for the tightening torque.

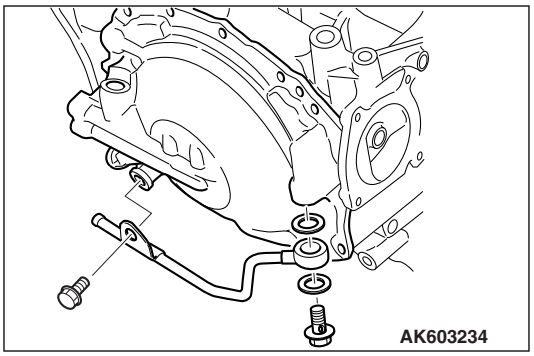
No. of bolts	16

Tightening torque: 9.0 ± 0.9 N·m (80 ± 8 in-lb)


AK603235

⚠ CAUTION
Never reuse the snap ring.

88.Install a snap ring on the terminal body.

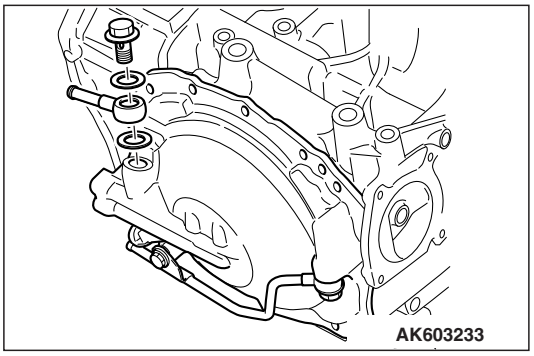

AK603234

⚠ CAUTION
Never reuse the copper washers.

89.Refer to the following or the exploded view for the tightening torque to install the cooler tube (OUT) onto the side cover.

Eye bolt tightening torque: 33 ± 3 N·m (29 ± 2 ft-lb)

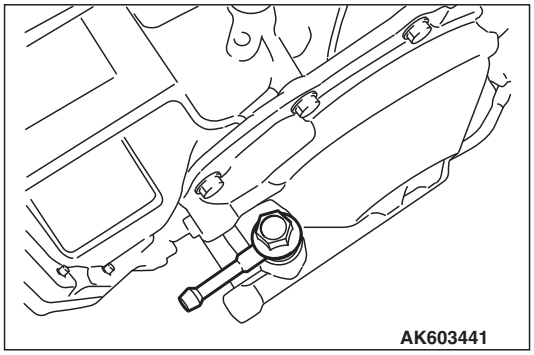
Bracket tightening torque: 22 ± 1 N·m (16 ± 1 ft-lb)


AK603233

⚠ CAUTION
Never reuse the copper washers.

90.Refer to the following or the exploded view for the tightening torque to install the cooler tube (IN) on the side cover.

Tightening torque: 33 ± 3 N·m (29 ± 2 ft-lb)

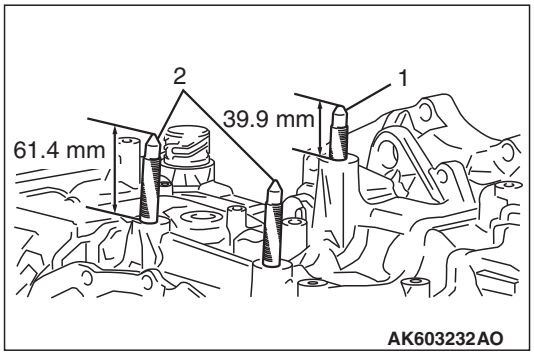

AK603441

⚠ CAUTION
Ensure that the cooler tube (IN) is against the stop on the side cover.

⚠ CAUTION

Ensure that the stud bolts protrude from the case as much as indicated in the table below.

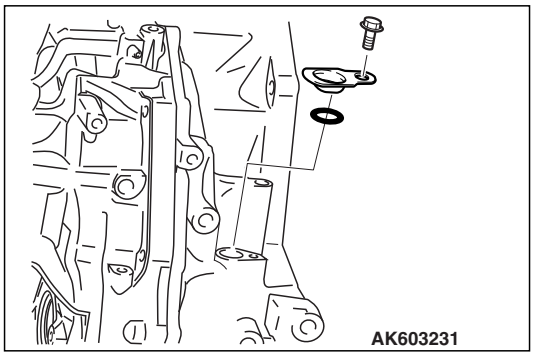
Stud bolt code	1	2
Projection amount mm (in)	39.9 (1.57)	61.4 (2.42)



91. Install stud bolt 1 and 2 on the transaxle case.

⚠ CAUTION

- **Never reuse the O-rings.**
- **Apply transmission fluid to the O-rings before installation.**

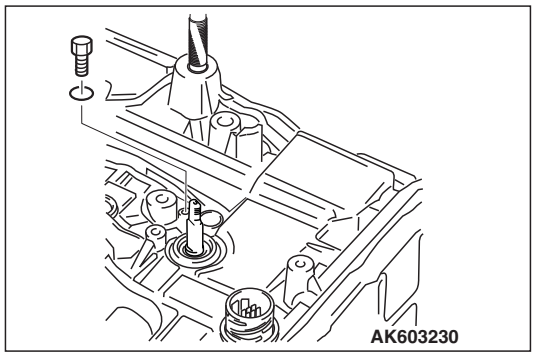


92. Install an O-ring on the baffle plate.
93. Install the baffle plate on the converter housing. Refer to the following or the exploded view for the tightening torque.

Tightening torque: 6.6 ± 1.0 N·m (58 ± 9 in-lb)

⚠ CAUTION

- **Never reuse the O-rings.**
- **Apply transmission fluid to the O-rings before installation.**



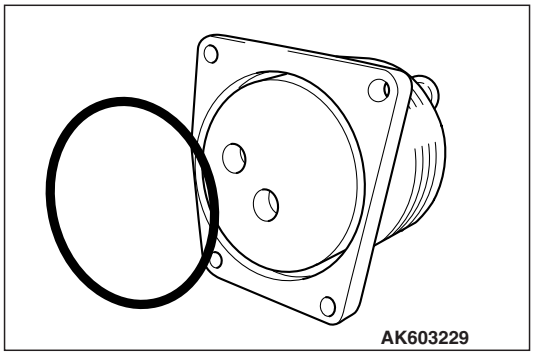
94. Install an O-ring on the pressure test port bolt.
95. Install the pressure test port bolt on the transaxle case. Refer to the following or the exploded view for the tightening torque.

Tightening torque: 7.4 N·m (65 in-lb)

⚠ CAUTION

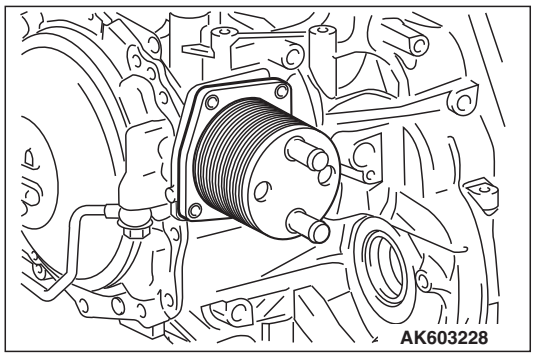
- **Never reuse the O-rings.**
- **Apply transmission fluid to the O-rings before installation.**

96.Install an O-ring on the water-cooled transmission fluid cooler.


AK603229

97.Install the water-cooled transmission fluid cooler on the transaxle case. Refer to the following or the exploded view for the tightening torque.

Tightening torque: 4.3 ± 0.6 N·m (38 ± 16 in-lb)

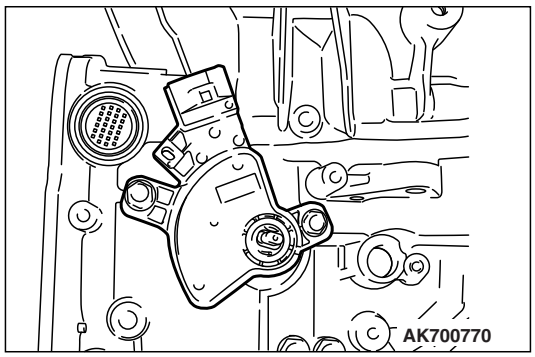

AK603228

⚠ CAUTION

- **Never reuse the park/neutral position switch.**
- **When loosely installing the switch, insert it squarely onto the manual shaft. (Do not hold the switch at an angle.)**

98.Install an park/neutral position switch using the following procedure.

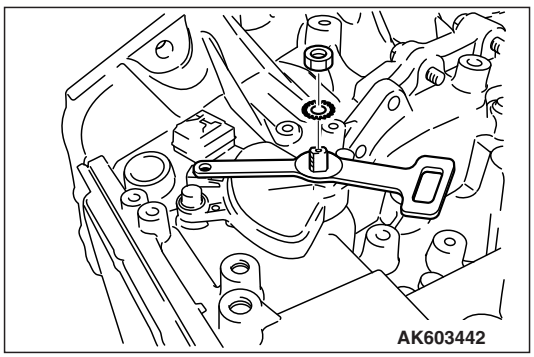
(1) Loosely install an park/neutral position switch on the manual shaft.


AK700770

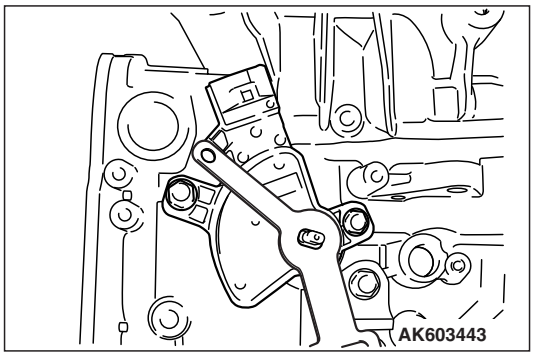
(2) Install the shift plate on the manual shaft. Refer to the following or the exploded view for the tightening torque.

Tightening torque: 22 ± 3 N·m (17 ± 2 ft-lb)

(3) Set the manual shaft to Range N.


AK603442

TSB Revision

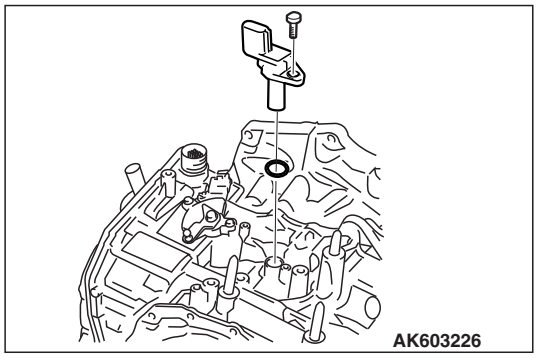


(4) Align the hole in the park/neutral position switch with the hole in the shift plate. With the holes aligned, insert a pin (ϕ5 mm) or equivalent through the holes. Now, tighten the bolt to the specified torque shown in the following or in the exploded view. Refer to the following or the exploded view for the tightening torque.

Tightening torque: 5.9 N·m (52 in-lb)

⚠ CAUTION

- **Never reuse the O-rings.**
- **Apply transmission fluid to the O-rings before installation.**



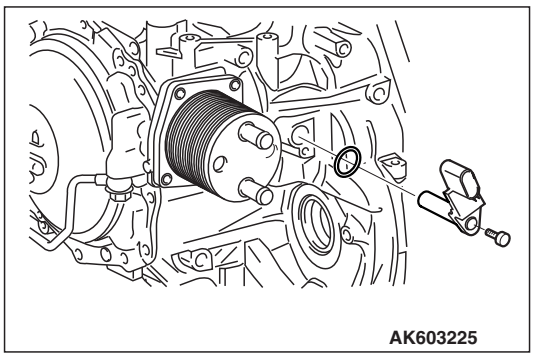
99.Install an O-ring on the turbine sensor.

100.Install the turbine sensor on the transaxle case. Refer to the following or the exploded view for the tightening torque.

Tightening torque: 5.9 N·m (52 in-lb)

⚠ CAUTION

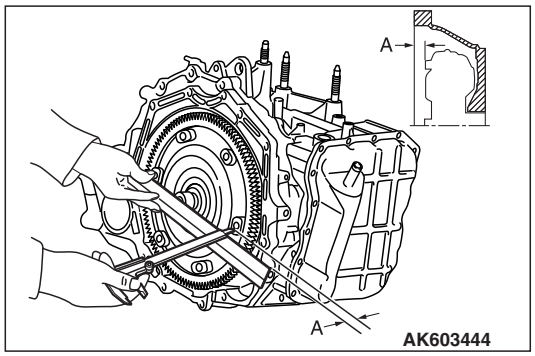
- **Never reuse the O-rings.**
- **Apply transmission fluid to the O-rings before installation.**



101.Install an O-ring on the vehicle speed sensor.

102.Install the vehicle speed sensor on the transaxle case. Refer to the following or the exploded view for the tightening torque.

Tightening torque: 5.9 N·m (52 in-lb)



⚠ CAUTION

Measure the end play at more than two locations and obtain the average of the measurements.

103.Install the torque converter on the transaxle. Ensure that the dimension A is to the specification.

Dimension A mm (in)	11.6 (0.46)

104.Install the control cable bracket and breather hose on the transaxle. Refer to the following or the exploded view for the tightening torque.

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

105.Install the oil filler tube and oil level gage on the transaxle. Refer to the following or the exploded view for the tightening torque.

Tightening torque: 11 ± 1 N·m (97 ± 8 in-lb)

106.Install the harness bracket on the transaxle. Refer to the following or the exploded view for the tightening torque.

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

107.Install the corrugate clamp bracket on the transaxle. Refer to the following or the exploded view for the tightening torque.

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

108.Install the RR roll stopper bracket and FR roll stopper bracket on the transaxle. Refer to the following or the exploded view for the tightening torque.

Tightening torque: 90 ± 10 N·m (66 ± 7 ft-lb)

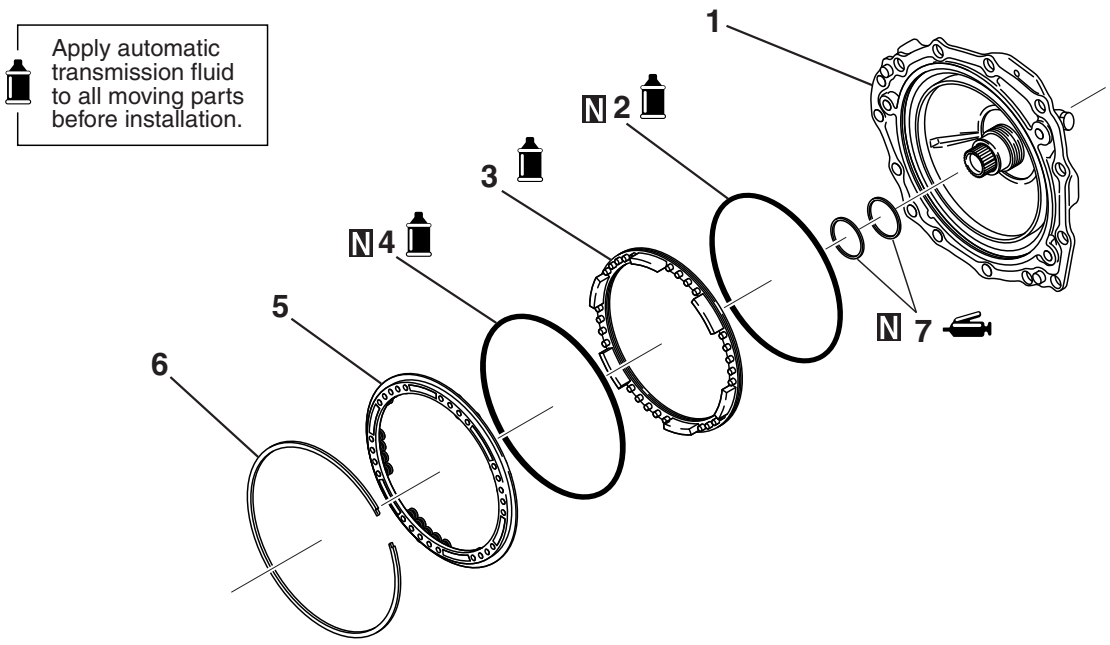
109.Install the transfer on the transaxle. Refer to the following or the exploded view for the tightening torque. <W6AJ>

Tightening torque: 69 ± 9 N·m (51 ± 6 ft-lb)

SIDE COVER

DISASSEMBLY AND ASSEMBLY

M1233030700055



AK603426AD

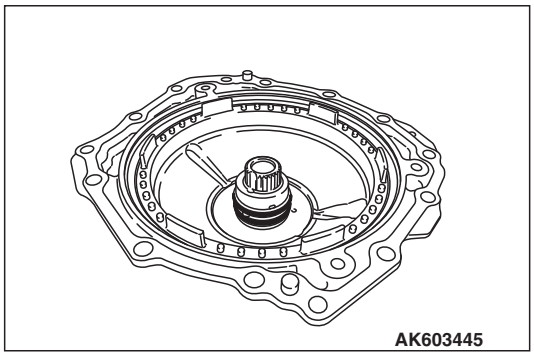
1. Side cover
2. D-ring
3. 2-6 brake piston
4. D-ring
5. Spring retainer
6. Snap ring
7. Seal ring

Required special tools:

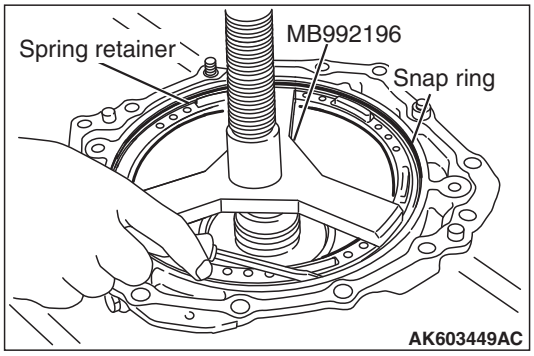
- MB992196: Spring compressor

DISASSEMBLY

1. Remove the seal rings from the side cover.

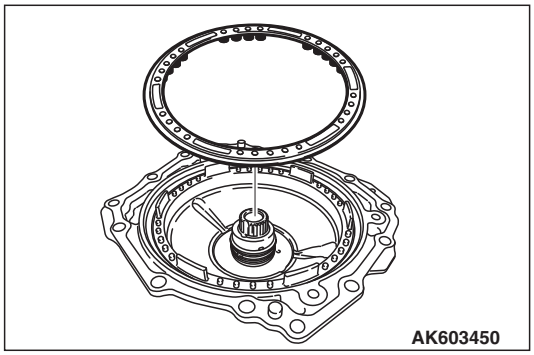


⚠ CAUTION
Ensure that the special tool MB992196 is correctly set, directly above the return springs of the spring retainer assembly.



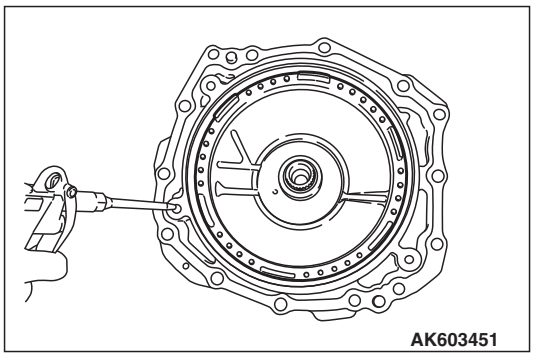
2. Using the special tool MB992196, remove the snap ring while pushing the spring retainer assembly.

⚠ CAUTION
Do not remove the return springs from the spring retainer assembly.

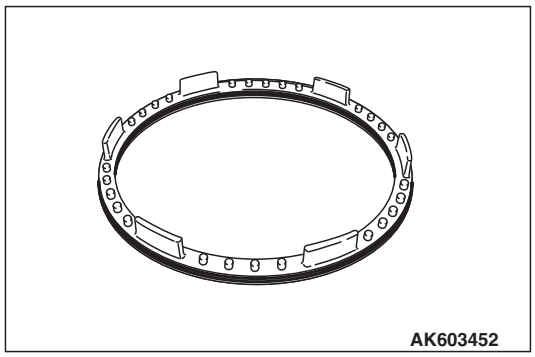


3. Remove the spring retainer assembly from the 2-6 brake piston.

⚠ CAUTION
Do not feed air abruptly. Otherwise, the 2-6 brake piston may become stuck in the side cover.



4. Feed air through the oil hole as indicated in the illustration to remove the 2-6 brake piston from the side cover.



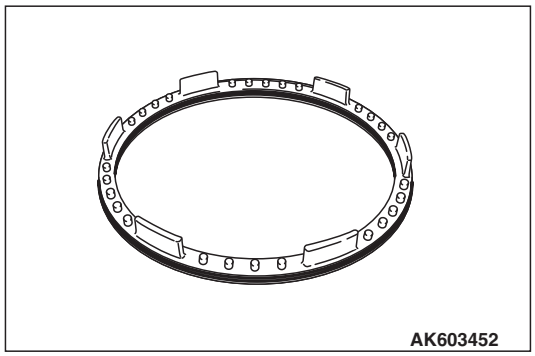
5. Remove the D-rings from the 2-6 reverse brake piston.

ASSEMBLY

⚠ CAUTION

- **Never reuse the D-rings.**
- **Apply transmission fluid to the D-rings before installation.**

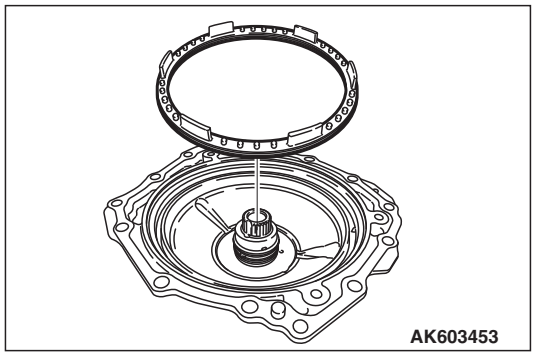
1. Install D-rings onto the 2-6 brake piston.

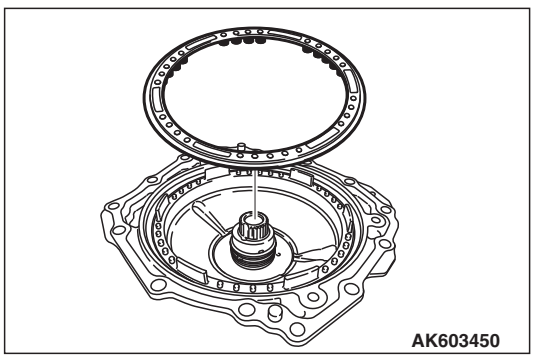


⚠ CAUTION

Apply transmission fluid to the 2-6 brake piston before installation.

2. Install the 2-6 brake piston onto the side cover.

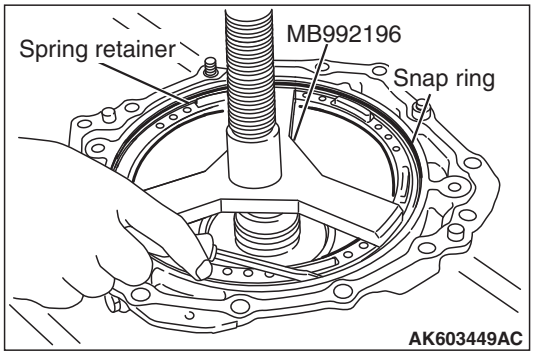




3. Install the spring retainer assembly onto the 2-6 brake piston.

⚠ CAUTION

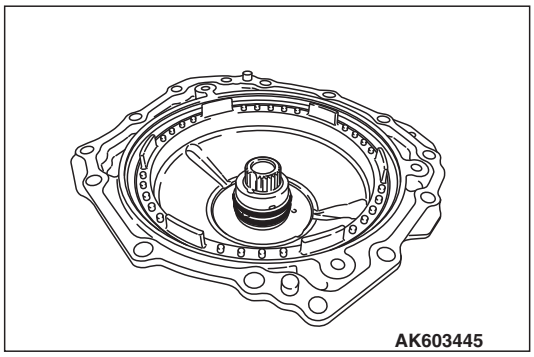
Ensure that the special tool MB992196 is correctly set, directly above the return springs of the spring retainer assembly.



4. Using the special tool MB992196, install the snap ring while pushing the spring retainer assembly.

⚠ CAUTION

- **Never reuse the seal rings.**
- **Apply vaseline to the seal rings before installation.**

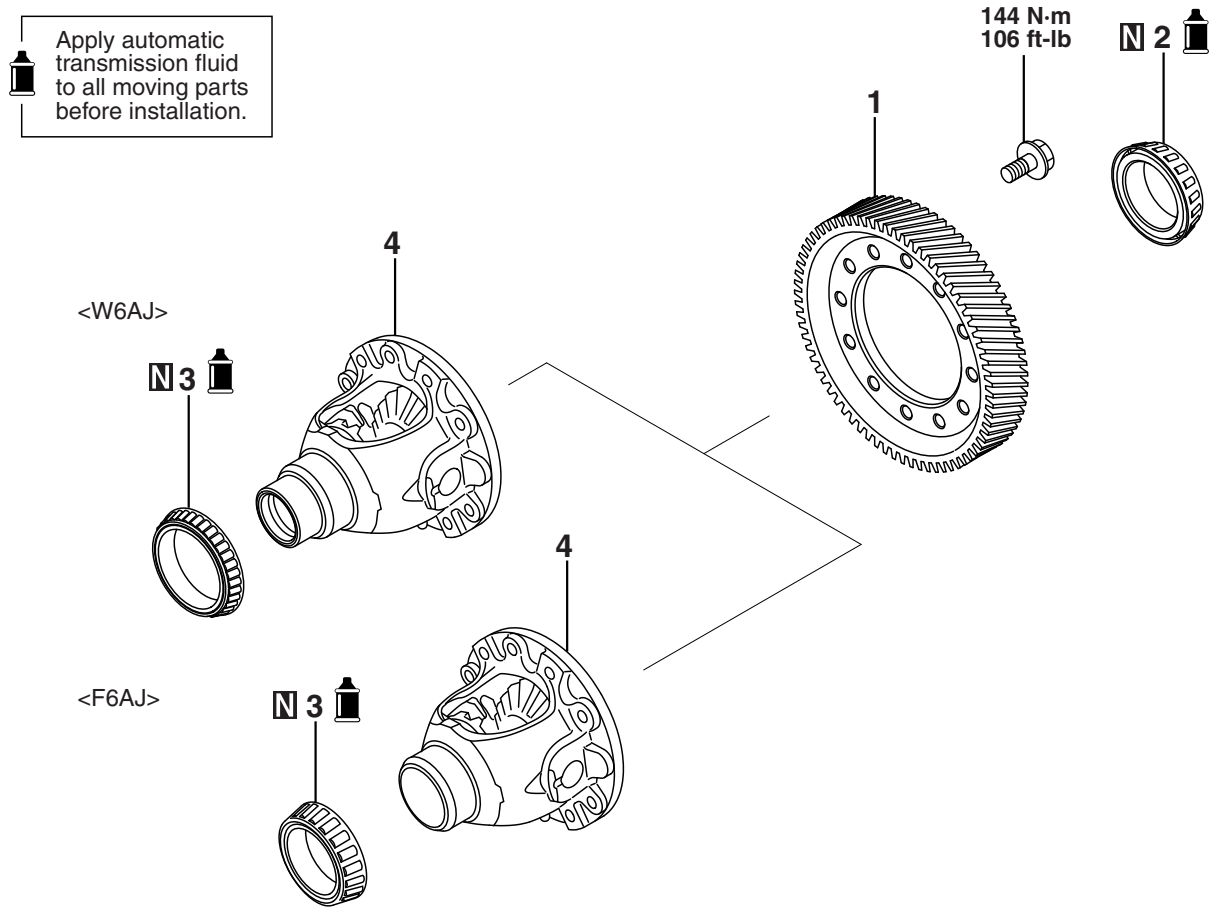


5. Install seal rings onto the side cover.

DIFFERENTIAL

DISASSEMBLY AND ASSEMBLY

M1233003100565



AK700771AB

Disassembly Steps

>>**C**<< 1. Final gear
<<**A**>> >>**B**<< 2. Differential side bearing (transmission case side)

Disassembly Steps (Continued)

<<**B**>> >>**A**<< 3. Differential side bearing (converter housing side)
4. Differential sub-assembly

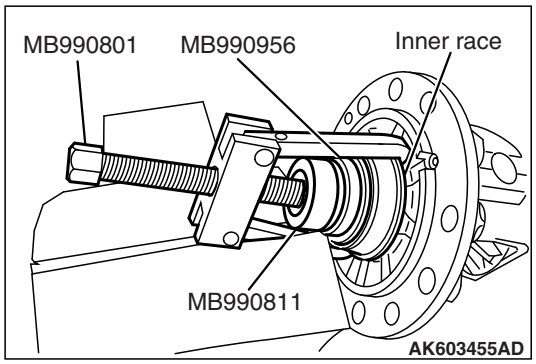
Required special tools:

- MB990801: Real axle bearing puller
- MB990811: Side bearing puller cap
- MB990956: Needle bearing installer
- MB990810: Side bearing puller
- MD999566: Claw
- MD998761: Cam oil seal installer
- MD998812: Installer cap
- MD998813: Installer-100
- MD998826: Installer adapter
- MB991559: Cam oil seal installer adapter
- MB992213: Bearing installer
- MB992150: Oil seal installer

TSB Revision

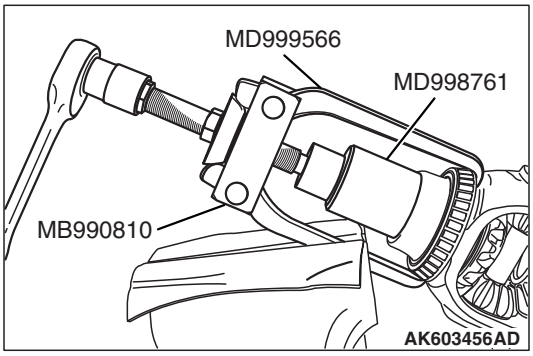
DISASSEMBLY SERVICE POINT

<<A>> DIFFERENTIAL SIDE BEARING REMOVAL



1. Break and remove the roller of the differential side bearing.
2. Using the special tools MB990801, MB990811 and MB990956, remove the inner race of differential side bearing (transmission case side) from the differential sub-assembly.

<<B>> DIFFERENTIAL SIDE BEARING REMOVAL



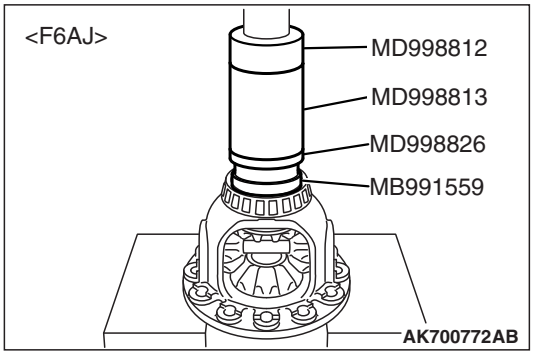
1. Using the special tools MB990810, MD999566 and MD998761, remove the inner race of differential side bearing (converter housing side) from the differential sub-assembly.

ASSEMBLY SERVICE POINT

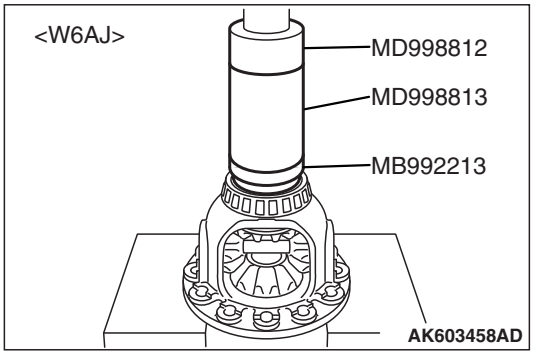
>>A<< DIFFERENTIAL SIDE BEARING INSTALLATION

⚠ CAUTION

- **Do not re-use the inner race.**
- **Replace the inner race together with the outer race.**



Using the special tools MD998812, MD998813, MD998826 <F6AJ> and MB991559 <F6AJ> or MB992213 <W6AJ>, install the differential side bearing (converter housing side) on the differential sub-assembly.

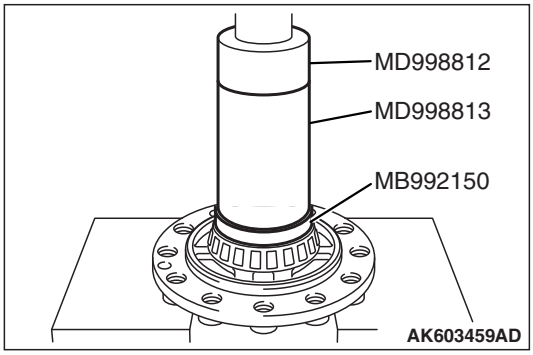


>>B<< DIFFERENTIAL SIDE BEARING INSTALLATION

⚠ CAUTION

- **Do not re-use the inner race.**
- **Replace the inner race together with the outer race.**

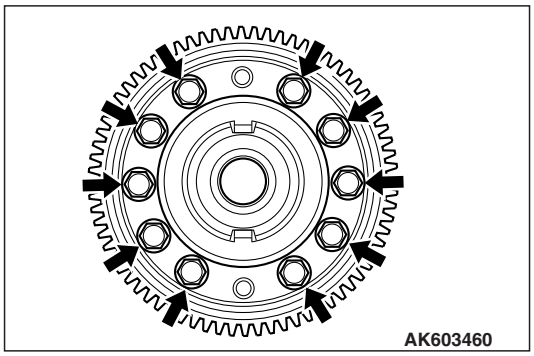
Using the special tools MD998812, MD998813 and MB992150, install the inner race of differential side bearing (transmission case side) on the differential sub-assembly.



>>C<< FINAL GEAR INSTALLTION

⚠ CAUTION

- **The differential sub-assembly can be only assembled, but not disassembled.**
- **Assemble the final gear to the differential assembly in the chamfer direction in the inside diameter of the final gear.**
- **Tighten bolts diagonally.**


AK603460

Install the final gear on the differential assembly. Refer to the following or the exploded view for the tightening torque.

No. of bolts	10

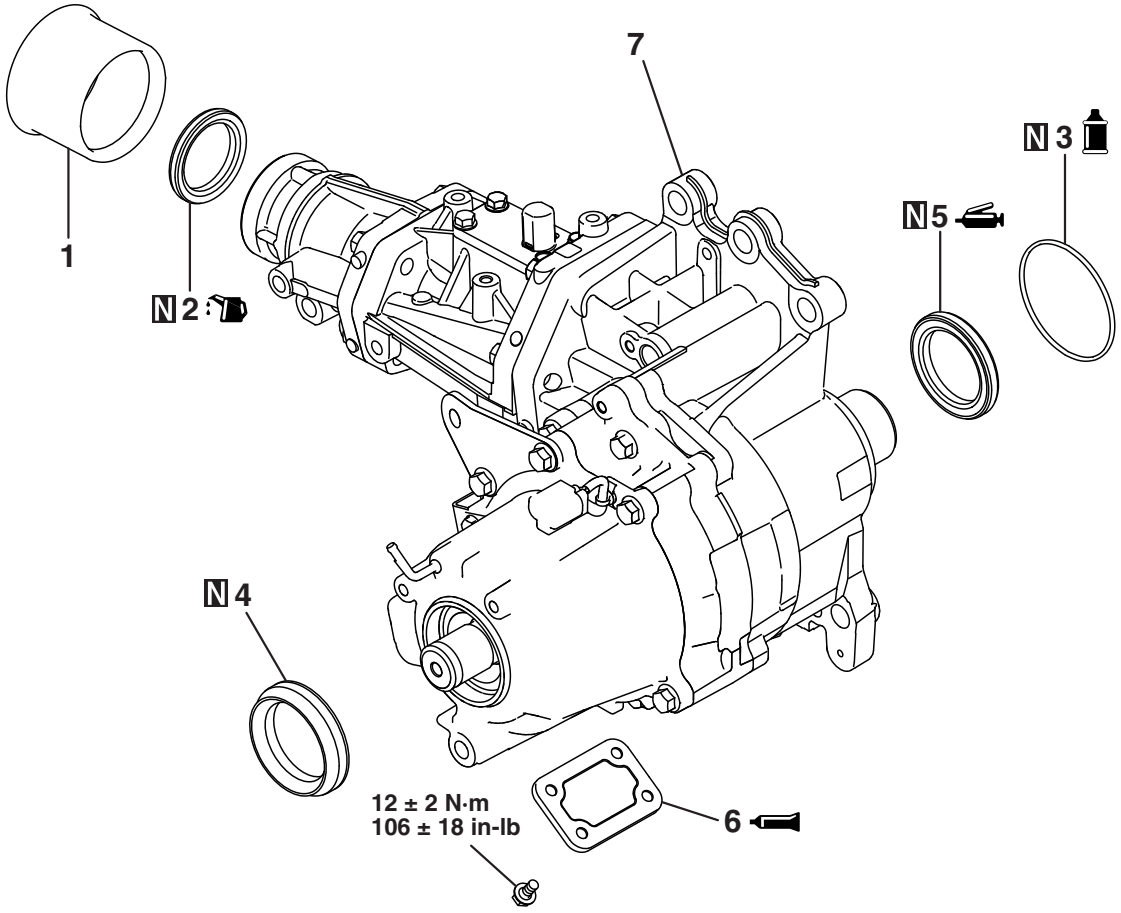
Tightening torque: 144 N·m (106 ft-lb)

TRANSFER

DISASSEMBLY AND ASSEMBLY

M1233006700748

<Vehicles with S-AWC>



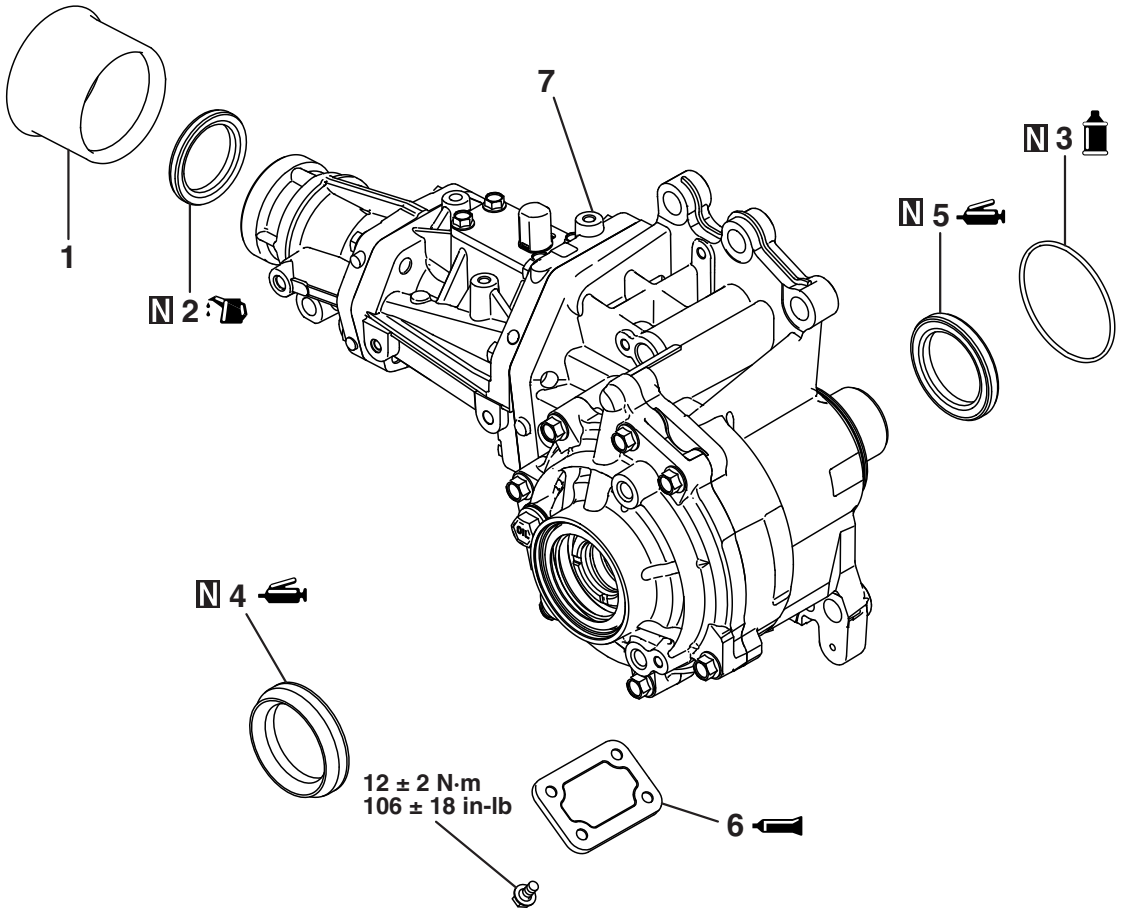
AK900246AC

		Disassembly steps
	1.	Dust seal guard
>>E<<	2	Oil seal
	3.	O-ring
>>C<<	4.	Dust seal

		Disassembly steps (Continued)
>>B<<	5.	Oil seal
>>A<<	6.	Cover
	7.	Transfer

TSB Revision

<Vehicles without S-AWC>



AK800123AF

Disassembly steps

1. Dust seal guard
>>E<< 2. Oil seal
3. O-ring
>>D<< 4. Oil seal

Disassembly steps (Continued)

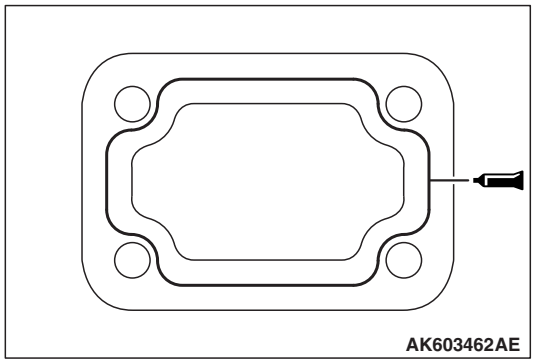
>>B<< 5. Oil seal
>>A<< 6. Cover
7. Transfer

Required special tools:

- MD998812: Installer cap
- MB992154: Oil seal installer
- MB992075: Handle
- MD998777: Camshaft oil seal installer adapter
- MD998713: Camshaft oil seal installer
- MB992142: Oil seal installer
- MB990936: Installer adapter

ASSEMBLY SERVICE POINT

>>A<< COVER INSTALLATION


AK603462AE

1. Apply a 1.5 mm diameter bead of sealant as illustrated onto the cover.

   3M™ATD Part No.8660 or equivalent

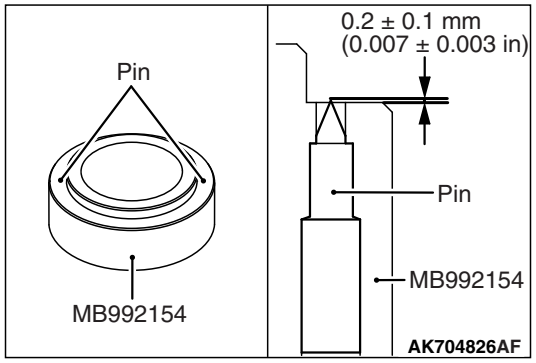
2. Attach the cover to the transfer and tighten it to the specified torque.

   Tightening torque: 12 ± 2 N·m (106 ± 18 in-lb)

>>B<< OIL SEAL INSTALLATION

⚠ CAUTION

Pay attention to the transfer case that can possibly twist when the pin projection is too large.

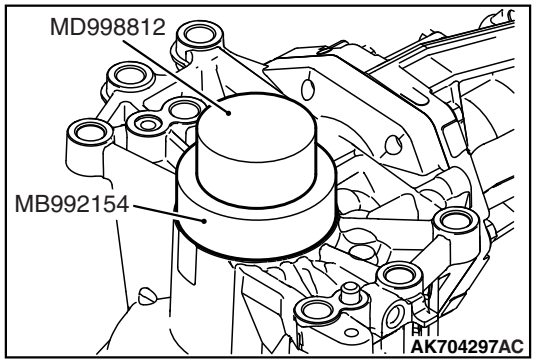


1. Adjust the projection allowances of the two pins of the special tool, Oil Seal Installer (MB992154) to be 0.2 ± 0.1 mm (0.007 ± 0.003 in).

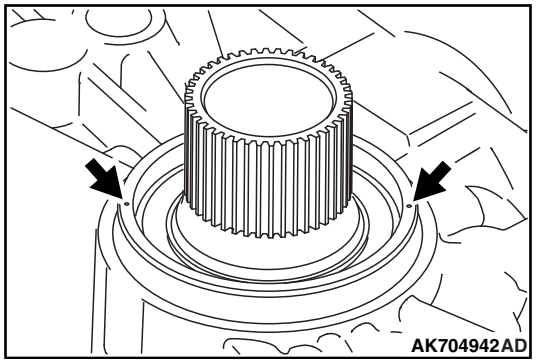
NOTE: The two pins are inserted into the special tool, Oil Seal Installer (MB992154). When the oil seal is replaced, the traces are found on the transfer case so that the replacement using the specified special tool can be recognized.

2. Apply specified grease to the oil seal lip area.

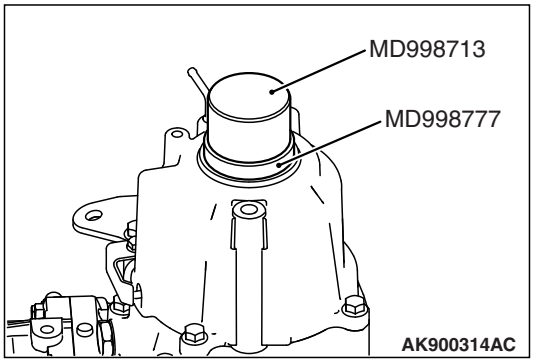
   Specified grease: Retinax A



3. Using the special tool MD998812 and MB992154, install the oil seal.

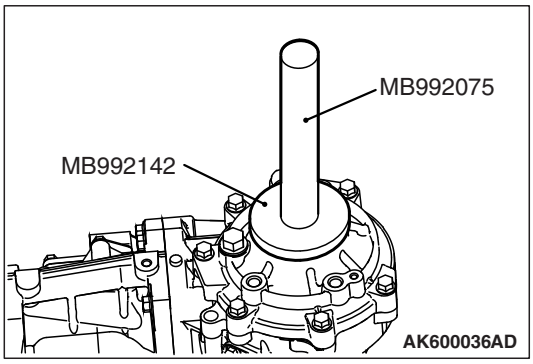

AK704942AD

4. Check whether the two traces are found on the transfer case.



>>C<< DUST SEAL INSTALLATION

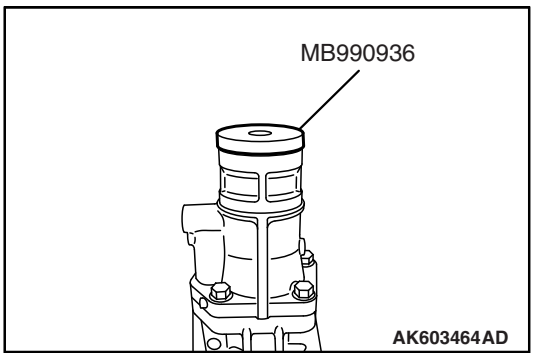
1. Using the special tool MD998777 and MD998713, install the oil seal.



>>D<< OIL SEAL INSTALLATION

1. Using the special tool MB992075 and MB992142, install the oil seal.
2. Apply specified grease to the oil seal lip area.

   Specified grease: Retinax A



>>E<< OIL SEAL INSTALLATION

1. Using the special tool MB990936, install the oil seal.
2. Apply transfer oil to the lip of oil seal.

NOTES