GENERAL DESCRIPTION

M1233000100577

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

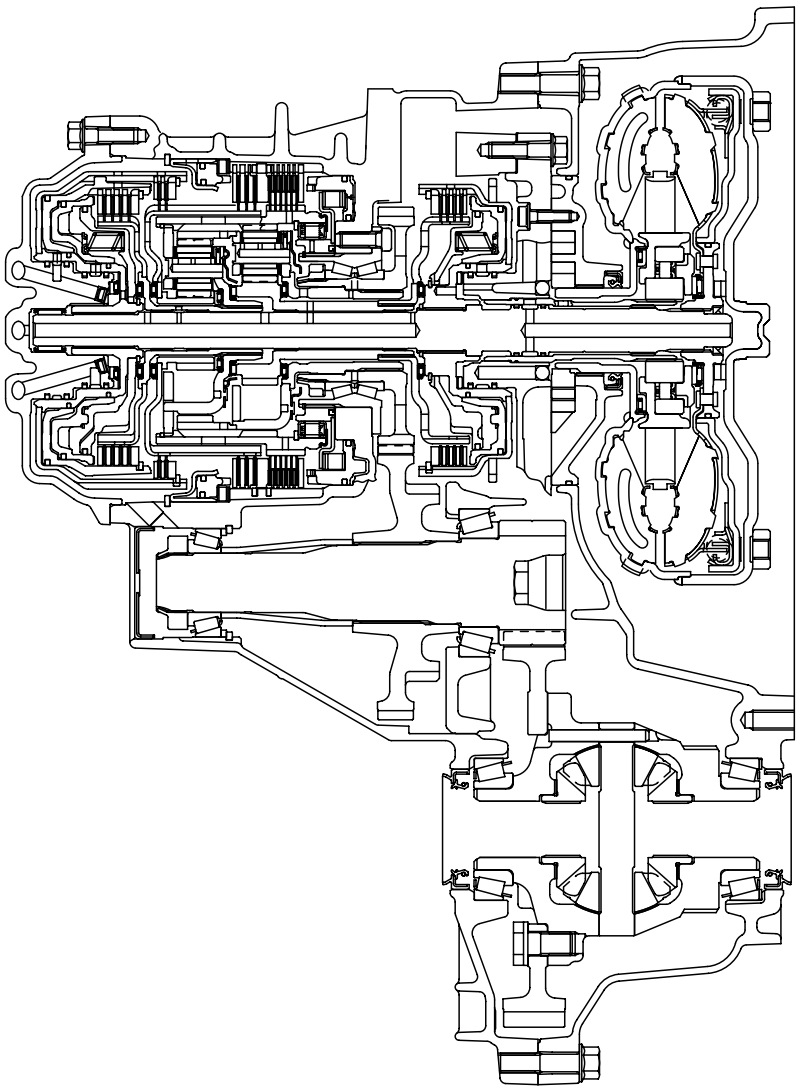
The torque converter employs a 3 element, 1 step, 2 phase lock-up clutch.

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

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

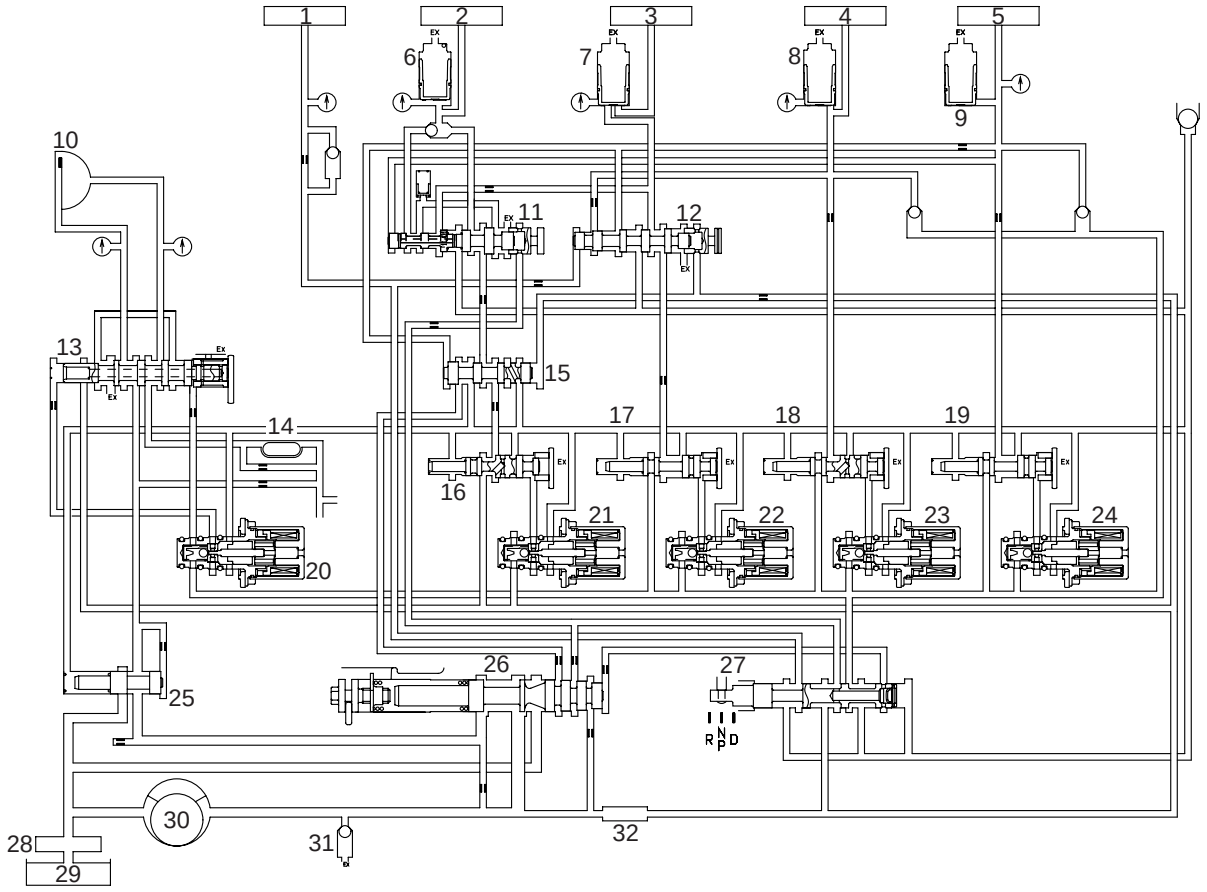
Parts related to oil pressure regulation are the oil pump, which pressurizes the oil; the regulator, which controls the pressure setting; the solenoid valves, which change the oil pressure with electrical signals; the pressure control valve, which controls the oil pressure coming from the solenoid valve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

SECTIONAL VIEW



AK301596

HYDRAULIC CIRCUIT

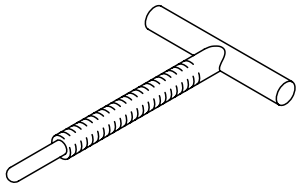
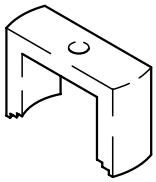
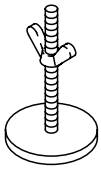
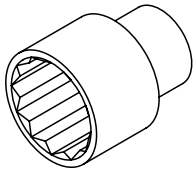
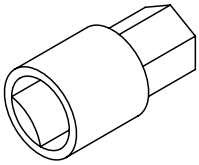
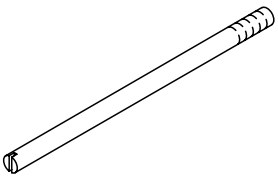
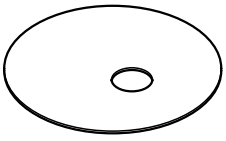


1. REVERSE CLUTCH
2. LOW-REVERSE BRAKE
3. SECOND BRAKE
4. UNDERDRIVE CLUTCH
5. OVERDRIVE CLUTCH
6. LOW-REVERSE ACCUMULATOR
7. SECOND ACCUMULATOR
8. UNDERDRIVE ACCUMULATOR
9. OVERDRIVE ACCUMULATOR
10. TORQUE CONVERTER CLUTCH
11. FAIL-SAFE VALVE A
12. FAIL-SAFE VALVE B
13. TORQUE CONVERTER CLUTCH CONTROL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

TSB Revision

SPECIAL TOOLS

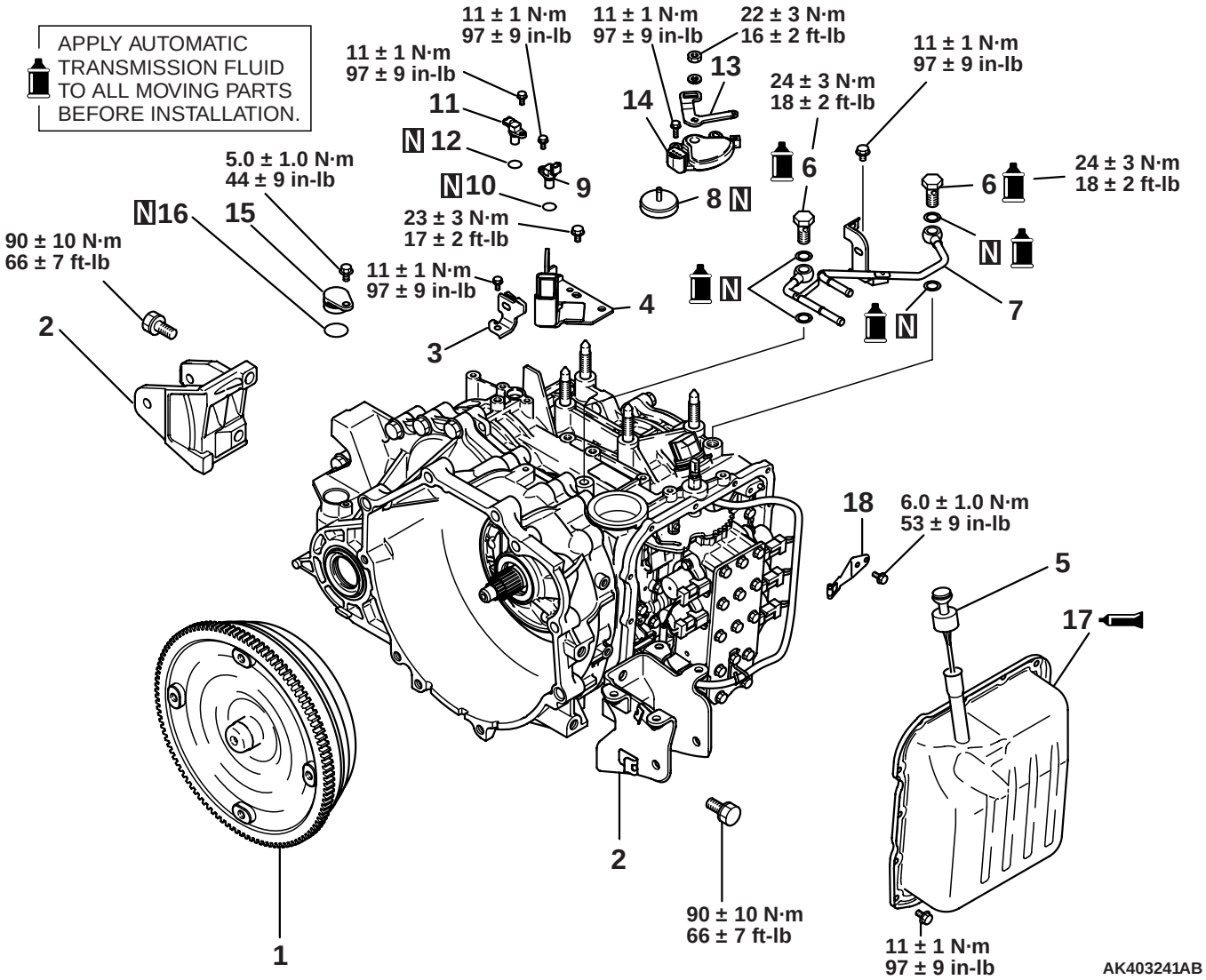
M1233000600497

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

TRANSAXLE

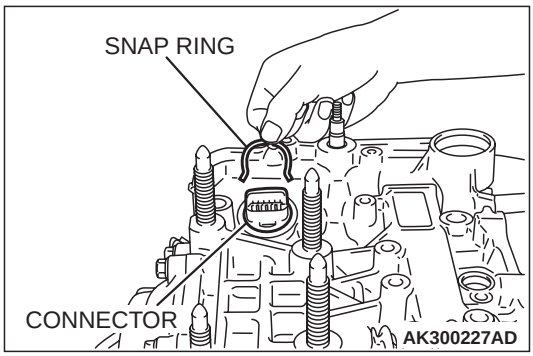
DISASSEMBLY AND ASSEMBLY

M1233001000595

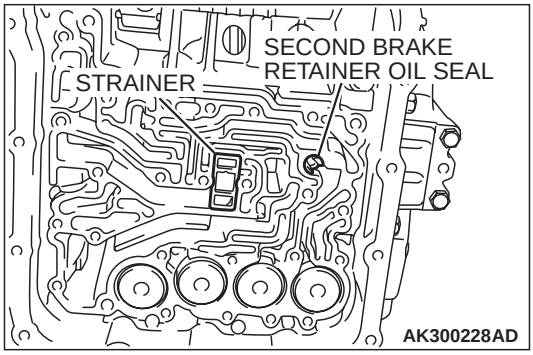


1. TORQUE CONVERTER
2. ROLL STOPPER BRACKET
3. HARNESS BRACKET
4. CONTROL CABLE SUPPORT BRACKET
5. OIL DIPSTICK
6. EYE BOLT
7. OIL COOLER FEED TUBE
8. AIR BREATHER
9. INPUT SHAFT SPEED SENSOR
10. O-RING
11. OUTPUT SHAFT SPEED SENSOR
12. O-RING
13. MANUAL CONTROL LEVER
14. PARK/NEUTRAL POSITION SWITCH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

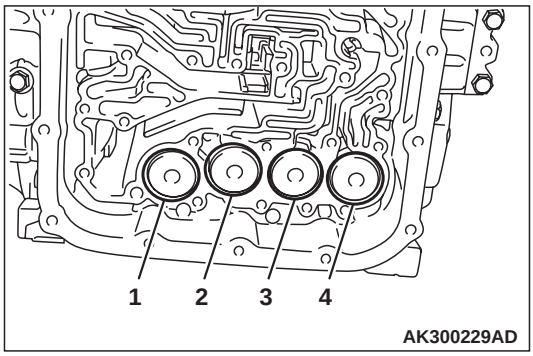
TSB Revision



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

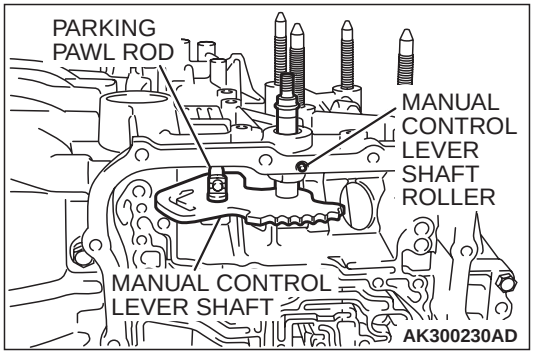


16.Remove the strainer and the second brake retainer oil seal.



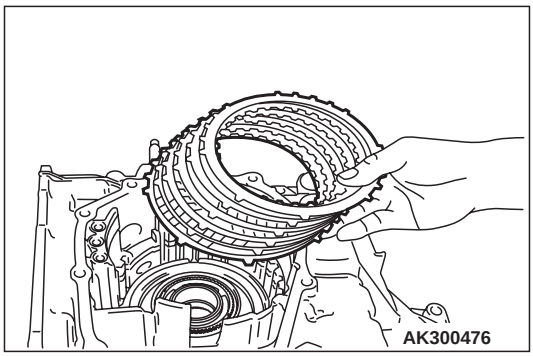
17.Remove each accumulator piston and spring.

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



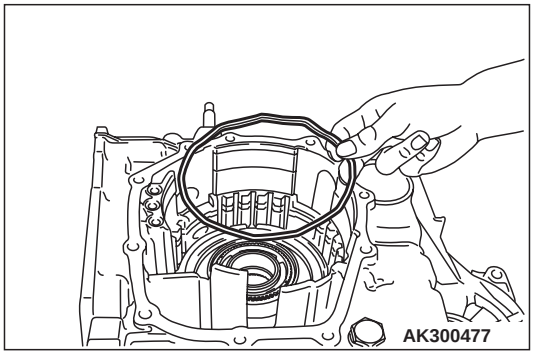
18.Remove the manual control lever shaft roller.

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

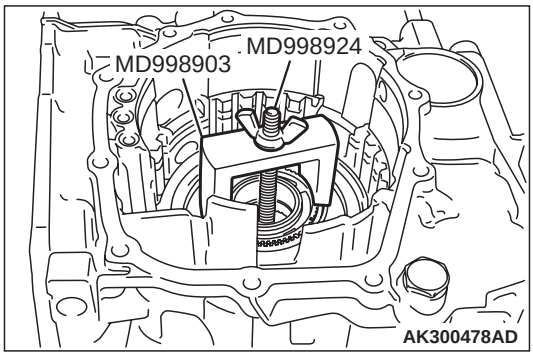


50.Remove the brake plates (five pieces), brake discs (six pieces) and pressure plate.

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

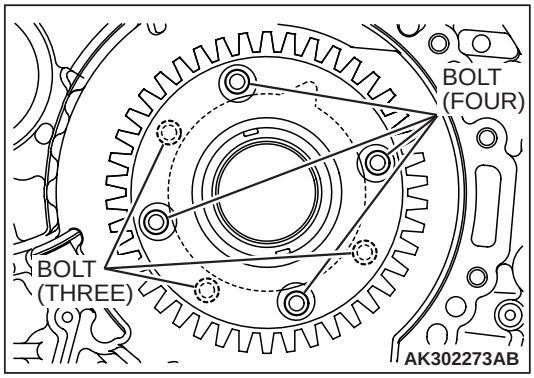


51.Remove the wave spring.

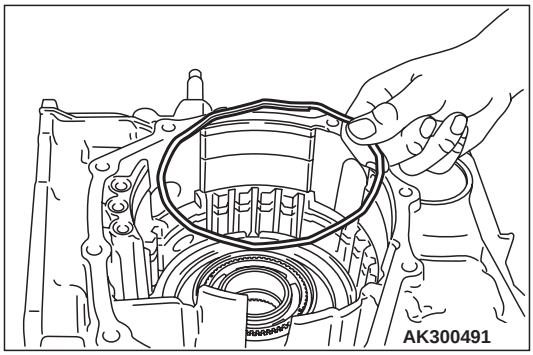


52.Remove the one-way clutch inner race and low-reverse brake piston as follows:

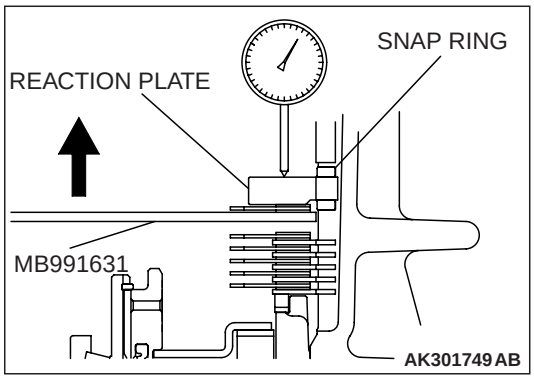
(1) Using special tools MD998903 and MD998924, compress the one-way clutch inner race.
(2) Remove the snap ring.
(3) Remove the special tools.
(4) Remove the one-way clutch inner race, O-ring, spring retainer, return spring and low-reverse brake piston.



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



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

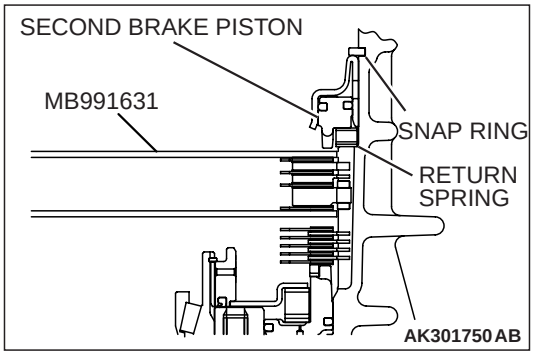


9. Install the brake discs (six pieces), brake plates (five pieces) and snap ring as shown in the illustration.

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

10. Install special tool MB991631 on the brake disc.
11. Install the reaction plate and the used snap ring.
12. Move special tool MB991631 to measure the end play of reaction plate. Then replace the snap ring installed in step 11 to adjust the end play to standard value.

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



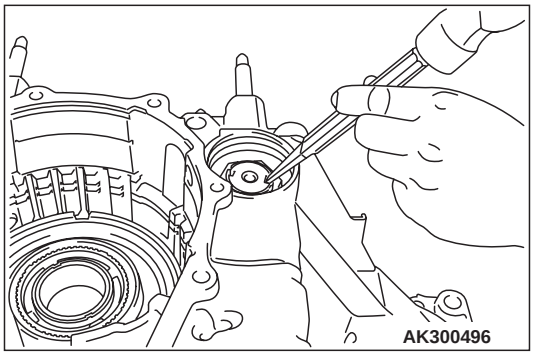
13. Install the brake discs (three pieces) and brake plates (two pieces) as shown in the illustration.

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

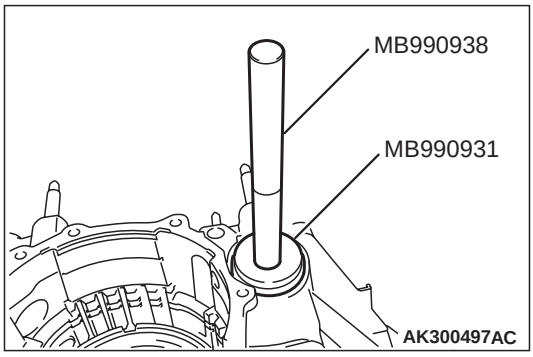
14. Place special tool MB991631 on top of the brake disc in place of the pressure plate.
15. Install the return spring, second brake piston and snap ring.

MOVEMENT AMOUNT mm (in)	THICKNESS mm (in)	ID SYMBOL
2.49 –2.53 (0.0980 – 0.0996)	2.56 (0.1008)	56
2.53 –2.57 (0.0996 – 0.1012)	2.60 (0.1024)	60
2.57 –2.61 (0.1012 – 0.1028)	2.64 (0.1039)	64
2.61 –2.65 (0.1028 – 0.1043)	2.68 (0.1055)	68
2.65 –2.69 (0.1043 – 0.1059)	2.72 (0.1071)	72
2.69 –2.73 (0.1059 – 0.1075)	2.76 (0.1087)	76

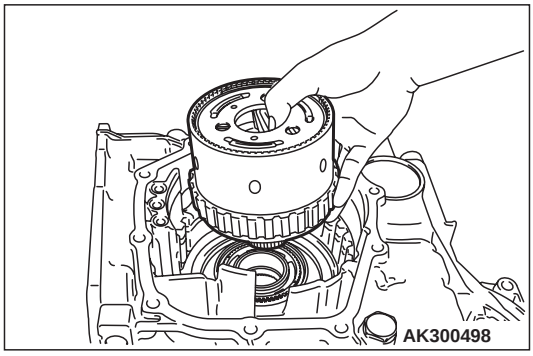
29. Repeat steps 22 to 25 again, installing each part and using the appropriate adjustment spacer determined in step 28.
30. Stake the jam nut with a punch (two places).



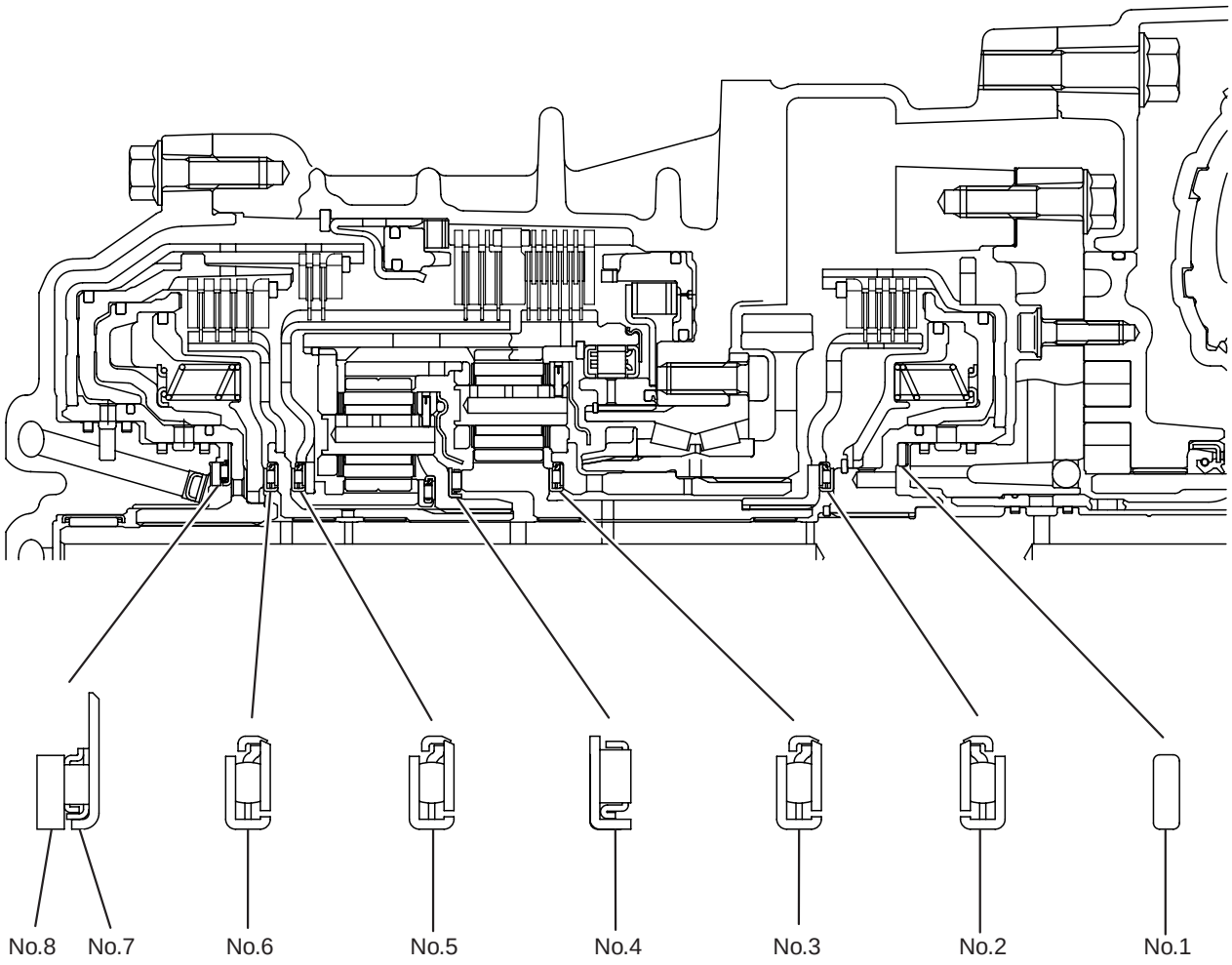
31. Use special tools MB990931 and MB990938 to install the cap as shown in the illustration.



32. Install the planetary carrier assembly.



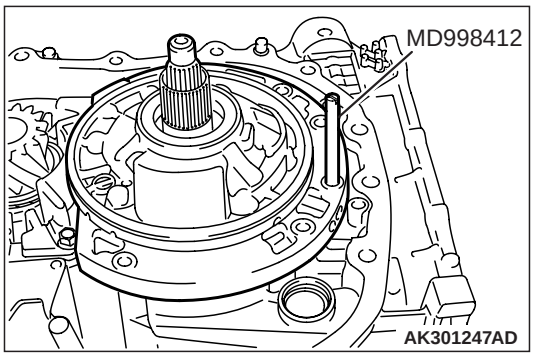
IDENTIFICATION OF THRUST BEARING, THRUST RACES, AND THRUST WASHERS



AK301755 AB

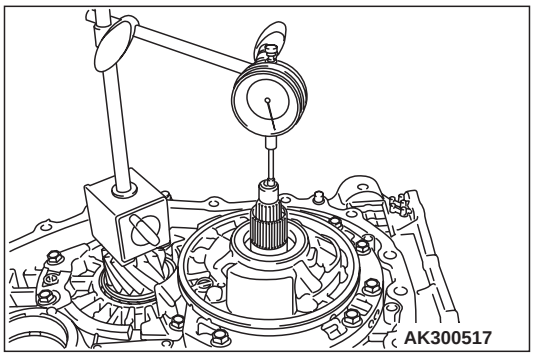
SYMBOL	OD mm (in)	ID mm (in)	THICKNESS mm (in)	SYMBOL	OD mm (in)	ID mm (in)	THICKNESS mm (in)
No. 1	59 (2.32)	47 (1.85)	1.8 (0.071)	No. 8	48.9 (1.925)	37 (1.46)	1.6 (0.063)
	59 (2.32)	47 (1.85)	2.0 (0.079)		48.9 (1.925)	37 (1.46)	1.7 (0.067)
	59 (2.32)	47 (1.85)	2.2 (0.087)		48.9 (1.925)	37 (1.46)	1.8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

TSB Revision



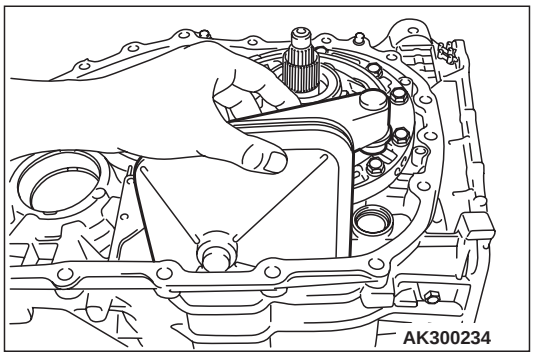
66.Install special tool MD998412 as shown.
67.Install the new oil pump gasket on the transaxle case.
68.Install the oil pump and tighten the six mounting bolts to the specified torque.

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

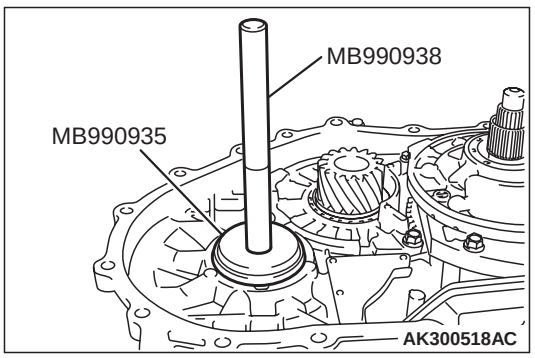


69.Make sure that the input shaft end play meets the standard value.

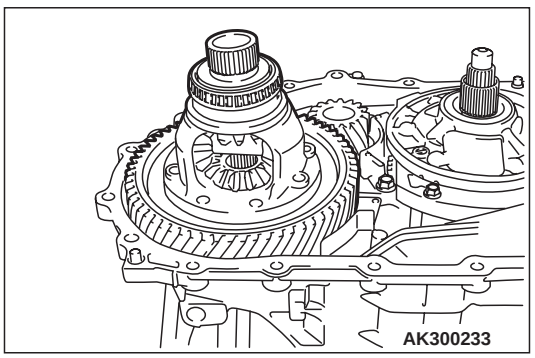
Standard value : 0.70 –1.45 mm (0.028 –0.057 inch)



70.Install the oil filter.

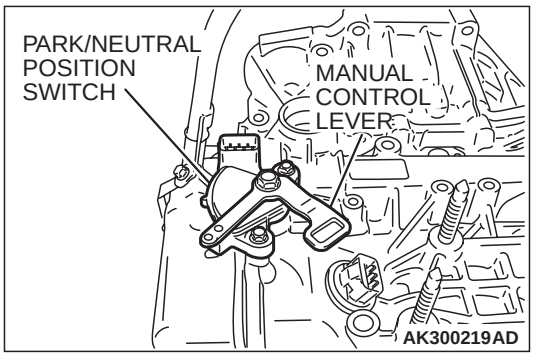


71.Use special tools MB990935 and MB990938 to tap the differential bearing outer race in the transaxle case.



72.Install the differential.

TSB Revision

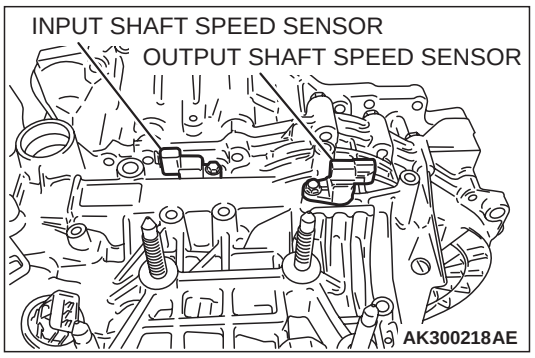


100.Install the park/neutral position switch and tighten the bolt to the specified torque.

Tightening torque: 11 ±1 N· m (97 ±9 in-lb)

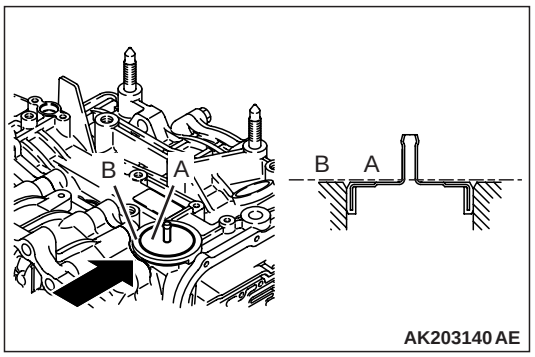
101.Install the manual control lever and tighten the nut to the specified torque.

Tightening torque: 22 ±3 N· m (16 ±2 ft-lb)



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

Tightening torque: 11 ±1 N· m (97 ±9 in-lb)



103.Press Face "A" of the air breather to be on the same plane as the Face "B" of the transaxle case as shown in the illustration.

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

Tightening torque: 24 ±3 N· m (18 ±2 ft-lb)

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

Tightening torque: 11 ±1 N· m (97 ±9 in-lb)

106.Install the oil dipstick.

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

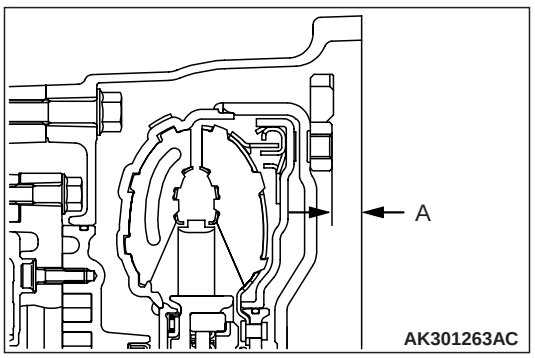
Tightening torque: 23 ±3 N· m (17 ±2 ft-lb)

108.Install the harness bracket to the specified torque.

Tightening torque: 11 ±1 N· m (97 ±9 in-lb)

109.Install the roll stopper brackets.

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



⚠ CAUTION

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

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

Reference value:
Approximately 12.2 mm (0.48 inch)

TSB Revision

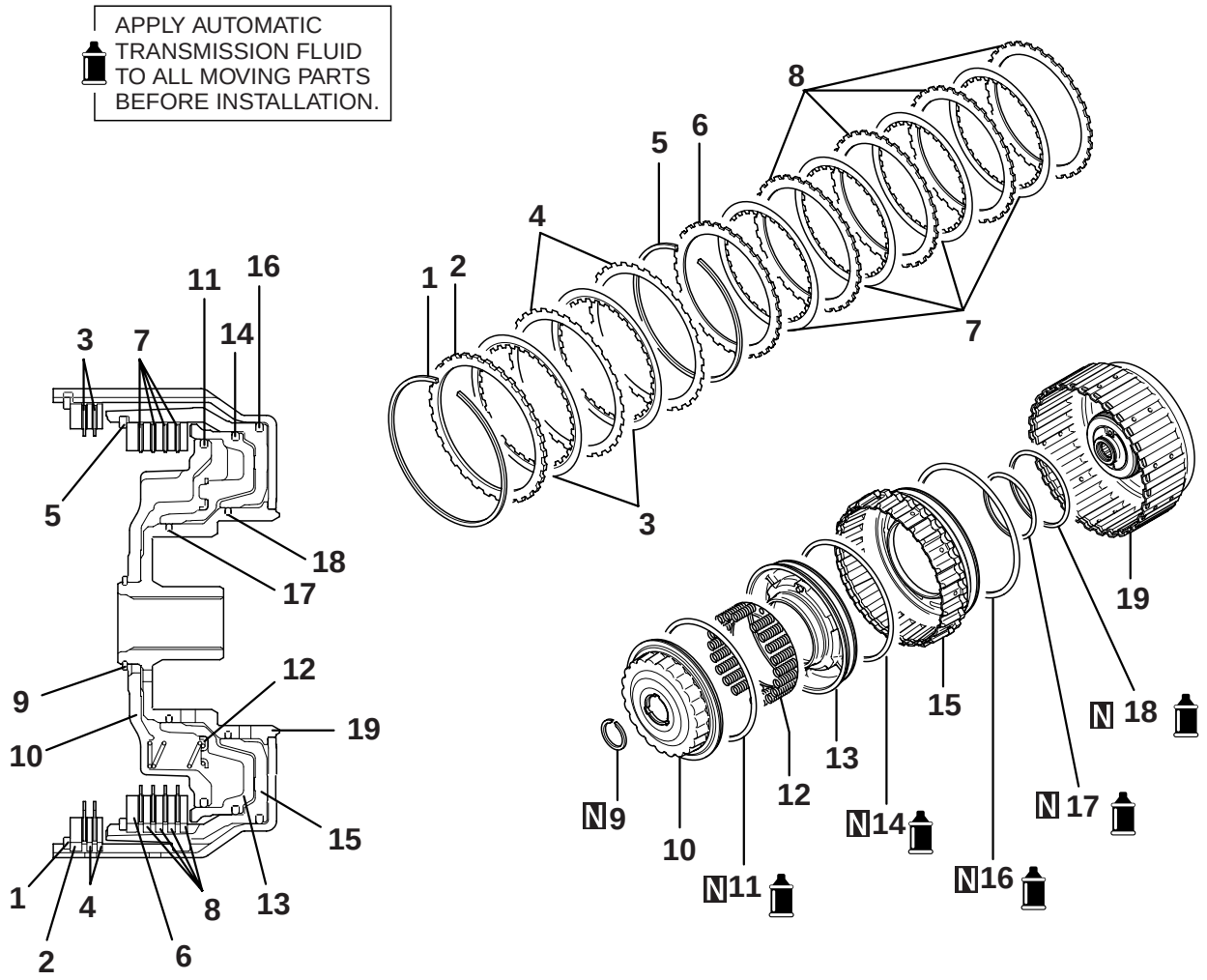
REVERSE AND OVERDRIVE CLUTCH

DISASSEMBLY AND ASSEMBLY

M1233024800105

NUMBER OF CLUTCH DISCS AND PLATES

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



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DISASSEMBLY STEPS

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

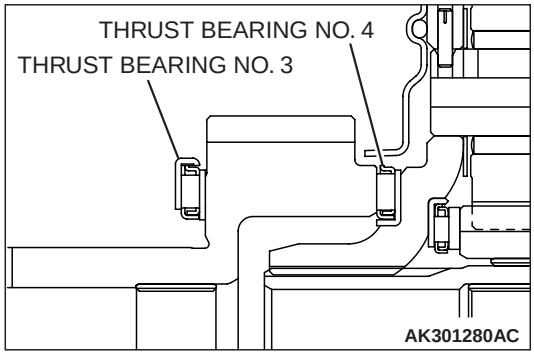
DISASSEMBLY STEPS

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

TSB Revision

ASSEMBLY SERVICE POINTS

>>A<< THRUST BEARING NUMBER 3 AND THRUST BEARING NUMBER 4 INSTALLATION

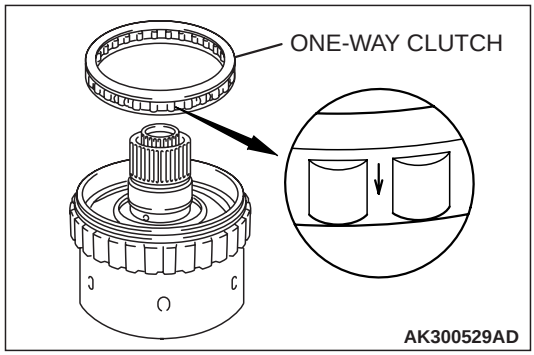


⚠ CAUTION

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

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

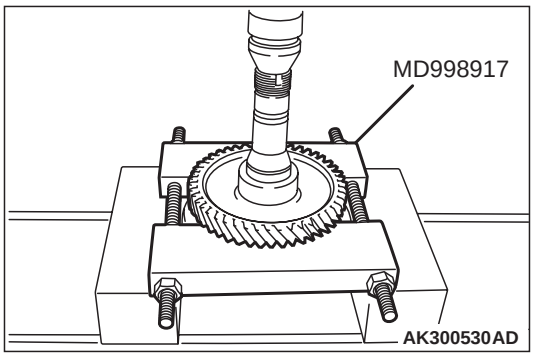
>>B<< ONE-WAY CLUTCH INSTALLATION



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

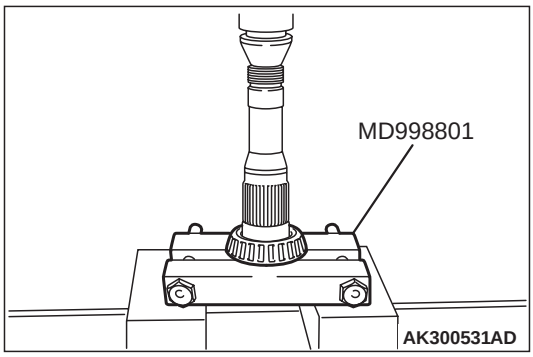
DISASSEMBLY SERVICE POINTS

<<A>> TRANSFER DRIVEN GEAR REMOVAL



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

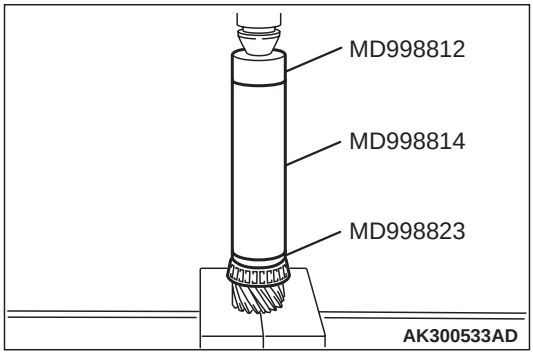
<<B>> TAPER ROLLER BEARING REMOVAL



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

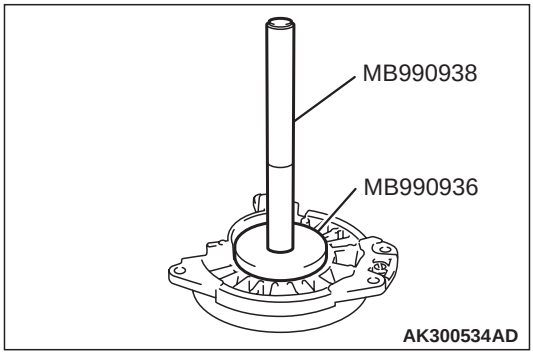
ASSEMBLY SERVICE POINTS

>>A<< TAPER ROLLER BEARING INSTALLATION

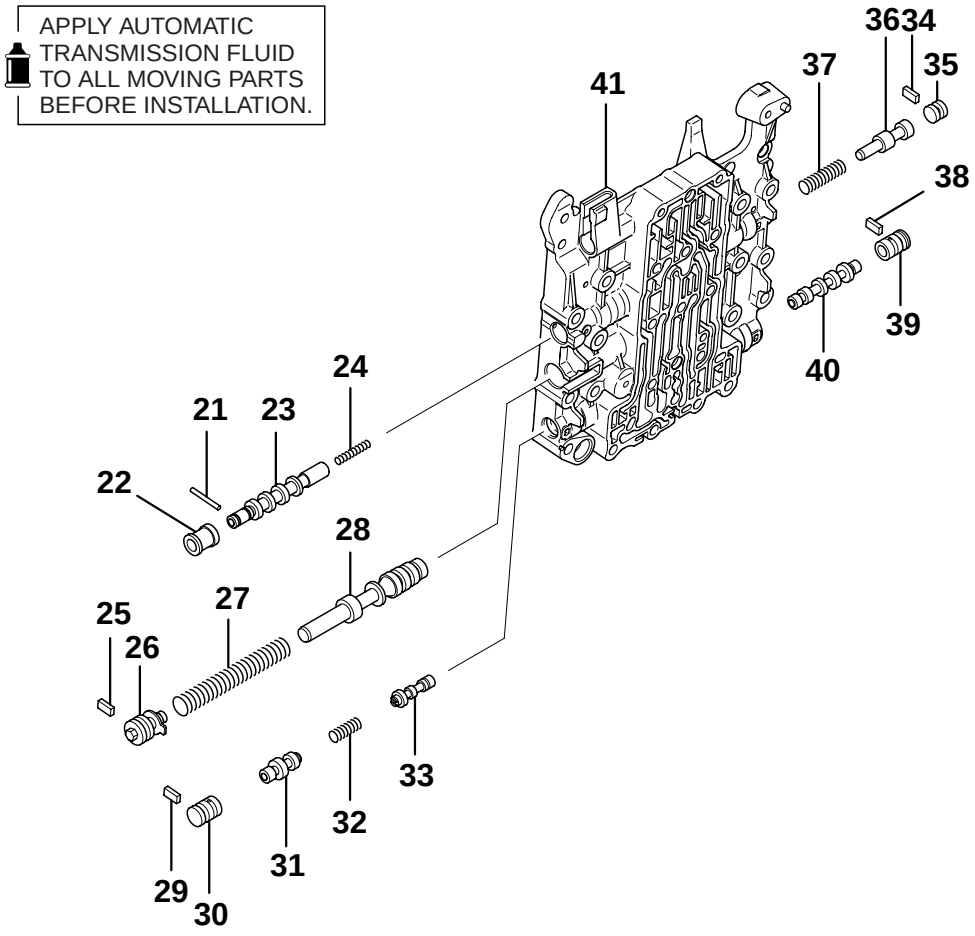


1. Set the output shaft on the press support stand.
2. Using special tools MD998823, MD998812 and MD998814, press in the taper roller bearing.

>>B<< OUTER RACE INSTALLATION



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



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DISASSEMBLY STEPS

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

DISASSEMBLY STEPS

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

TSB Revision