GENERAL DESCRIPTION

M1233000100588

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

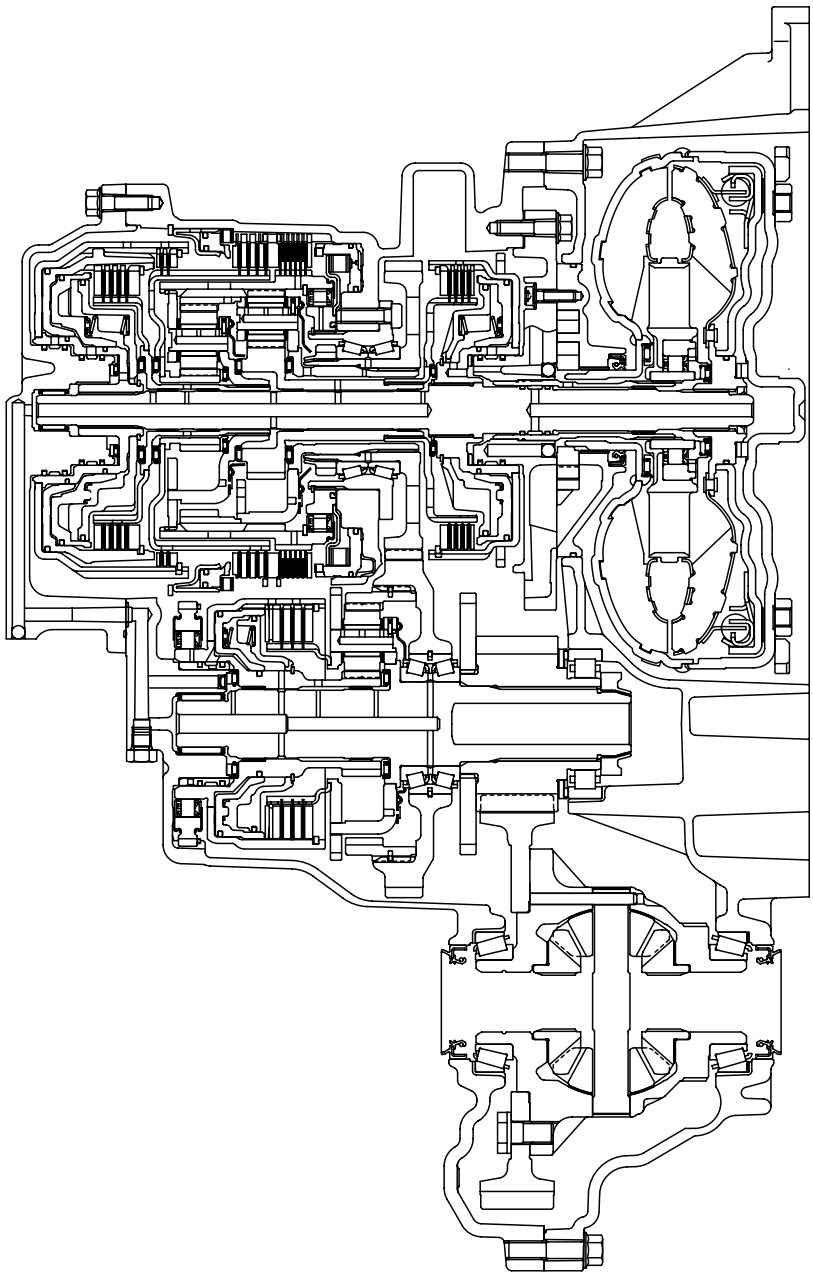
The torque converter employs a 3 element, 1 step, 2 phase lock-up clutch.

The gear train is made up of 4 multi-plate clutches, 2 multi-plate brakes, 2 planetary gears, band type brake and 2 one-way clutch 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; each kind OD valve, which carry out the retention of the oil pressure through the lines; and finally the valve body, which houses all the valves.

SECTIONAL VIEW

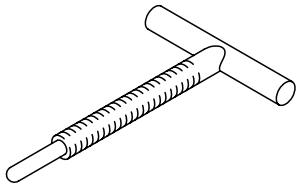
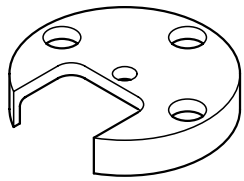
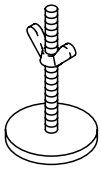
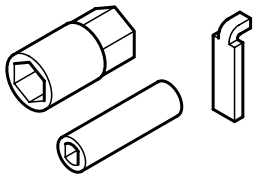
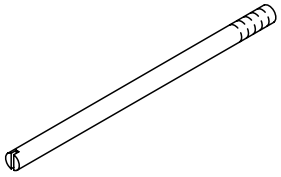
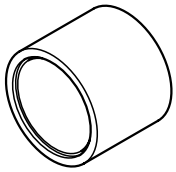
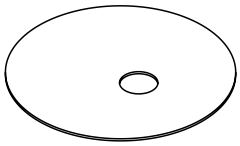


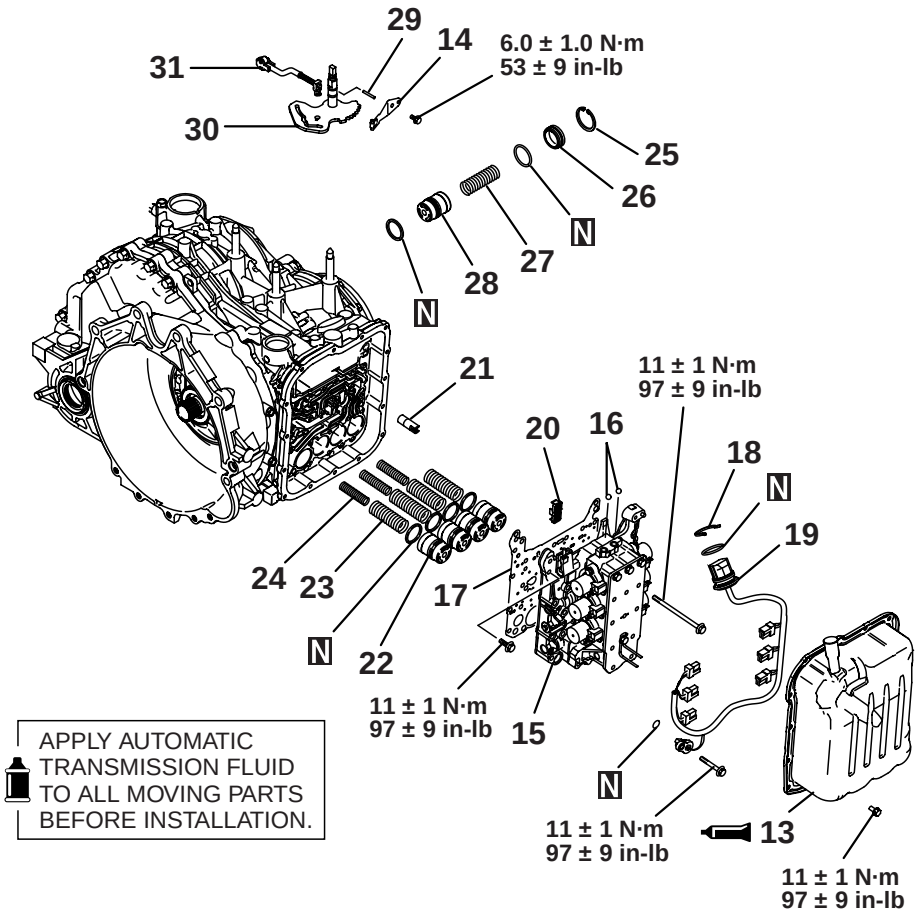
AK403256

TSB Revision

SPECIAL TOOLS

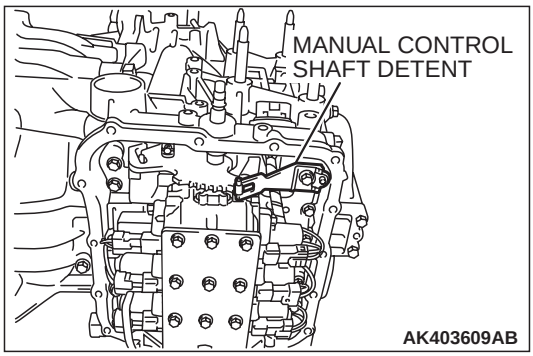
M1233000600505

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
	MD998333 Oil pump remover	MD998333-01	Removal of oil pump
	MD999577 Spring compressor	MD999577	Removal and installation of one-way clutch inner race snap ring
	MD998924 Spring compressor retainer	MD998924-01	Use with spring compressor
	MB991633 Reduction brake set	MB991633-01	Adjustment of reduction brake piston
	MD998412 Guide	MD998412	Installation of transfer drive gear and oil pump
	MB991445 Bushing remover and installer base	–	Installation of differential taper roller bearing outer race
	MB991632 Clearance dummy plate	MB991632-01	Measurement of reaction plate low-reverse brake and second brake end play

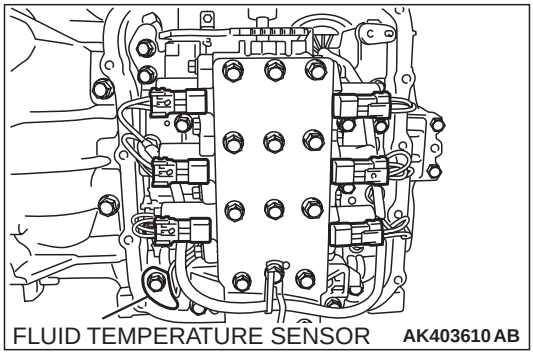


AK403264AB

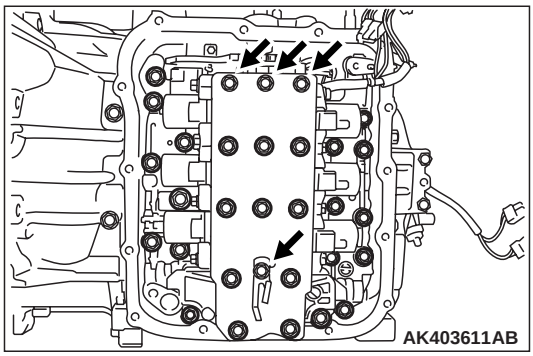
13. VALVE BODY COVER
14. MANUAL CONTROL SHAFT DETENT
15. VALVE BODY
16. STEEL BALL
17. GASKET
18. SNAP RING
19. SOLENOID VALVE HARNESS
20. STRAINER
21. SOLENOID BRAKE RETAINER OIL SEAL
22. ACCUMULATOR PISTON
23. ACCUMULATOR SPRING
24. ACCUMULATOR SPRING
25. SNAP RING
26. ACCUMULATOR COVER
27. ACCUMULATOR SPRING
28. ACCUMULATOR PISTON
29. MANUAL CONTROL LEVER SHAFT ROLLER
30. MANUAL CONTROL LEVER SHAFT
31. PARKING PAWL ROD



11.Remove the manual control shaft detent.



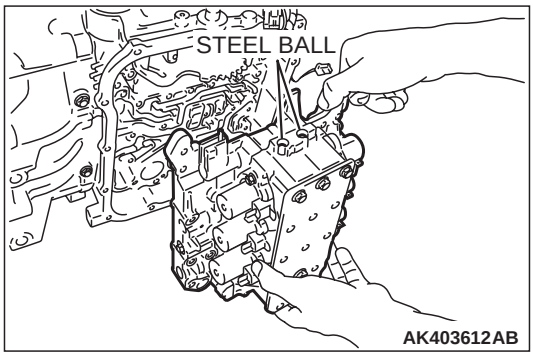
12.Disconnect the solenoid valve harness from the valve body by disconnecting the fluid temperature sensor and all the connectors.



⚠ CAUTION

- **Make sure that the manual control lever and the park/neutral position switch are removed. See step 7.**
- **Do not remove the bolts (four pieces) shown in the illustration.**

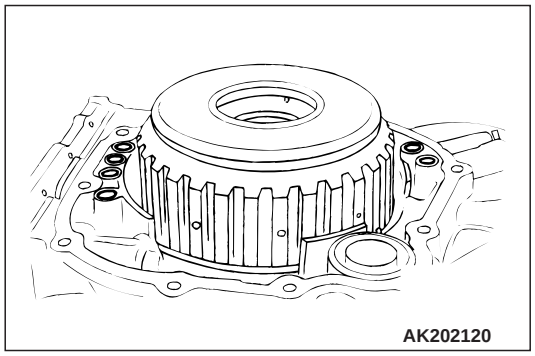
13.Remove the valve body mounting bolts (twenty seven pieces).



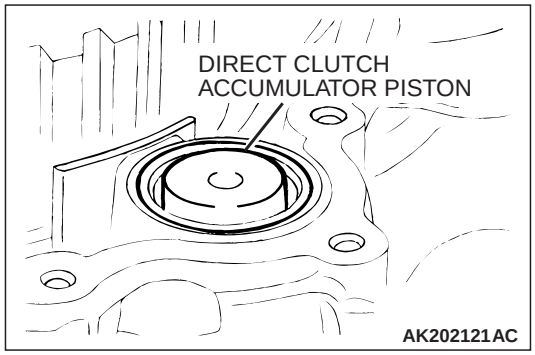
⚠ CAUTION

Do not lose the two steel balls.

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

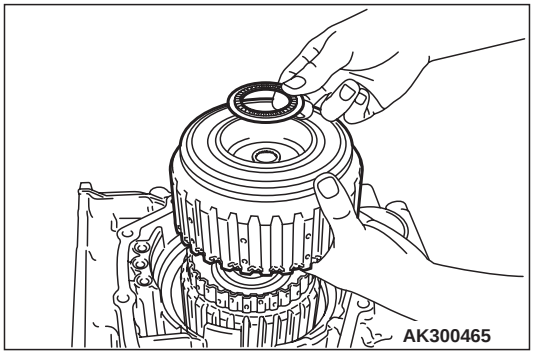

AK202120

48.Remove the O-rings (six pieces).

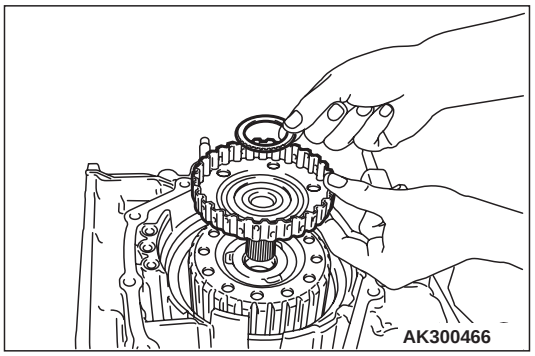


AK202121AC

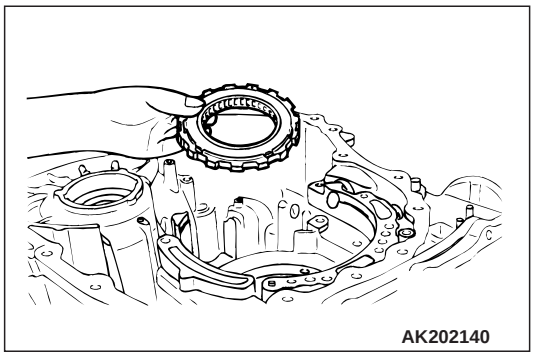
49.Remove the direct clutch accumulator piston and spring after removing the O-ring.


AK300465

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


AK300466

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

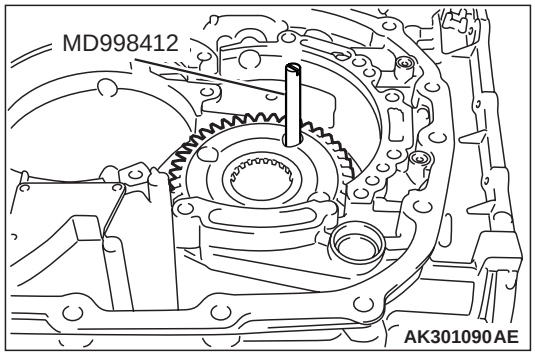

AK202140

67.Remove the one-way clutch.
68.Remove the seal rings (two pieces).
69.Remove the needle bearing.
70.Remove the differential bearing outer race from the transaxle case.

ASSEMBLY

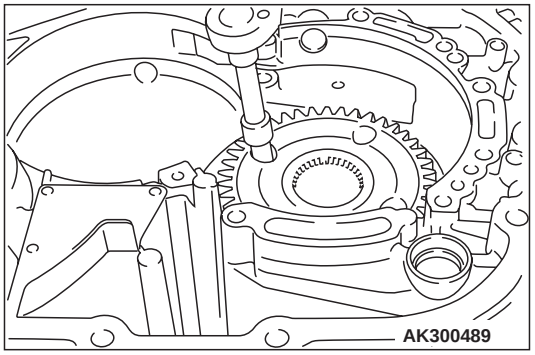
⚠ CAUTION

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



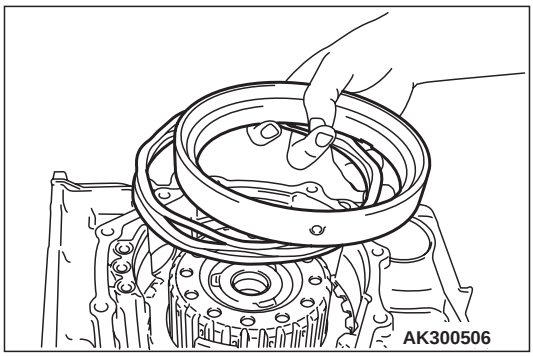
AK301090AE

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

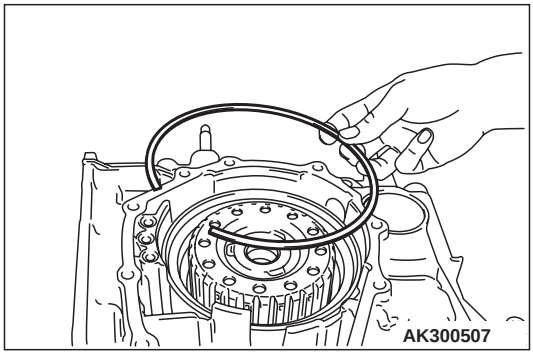

AK300489

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

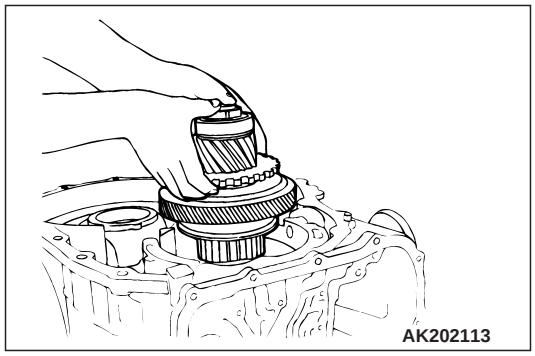
Tightening torque:
34 ±2 N· m (25 ±1 ft-lb)



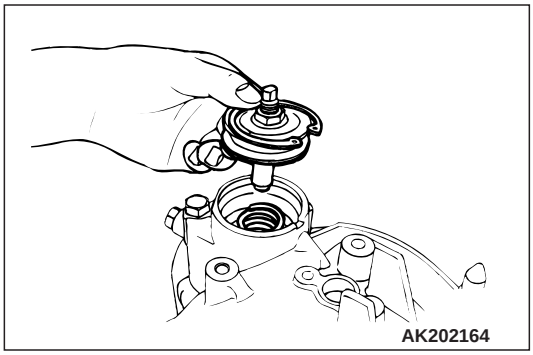
33.Install the return spring and second brake piston.



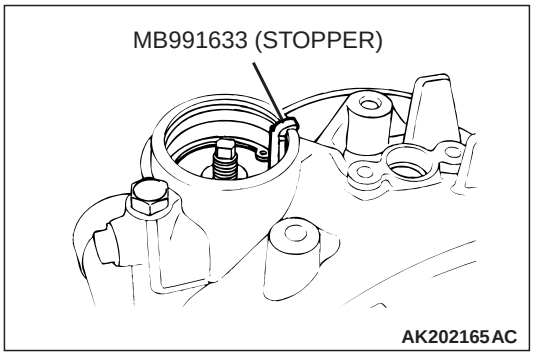
34.Install the snap ring.


AK202113

50.Install the direct planetary carrier assembly.

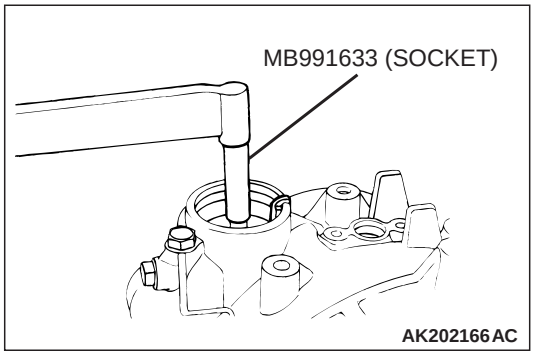

AK202164

51.Install the reduction brake spring and piston in position in the transmission case, then install the snap ring.



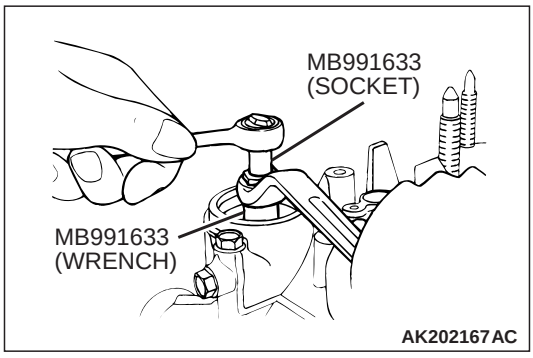
AK202165AC

52.Adjust the reduction brake piston using the following procedure:
(1) Remove the nut from the reduction brake piston.
(2) Install the stopper of the special tool to hold the reduction brake piston against rotation.



AK202166AC

(3) Using a torque wrench fitted with the socket of the special tool, tighten the adjusting rod to 10 N· m (89 in-lb), then loosen it. Repeat this operation twice. Tighten the adjusting rod to 5 N· m (43in-lb), then turn it back 5-1/2 (180 degrees) to 5-3/4 (270 degrees) turns.



AK202167AC

(4) Install the nut on the adjusting rod and tighten the nut to 19 ±3 N· m (14 ±2 ft-lb) using the wrench of the special tool.

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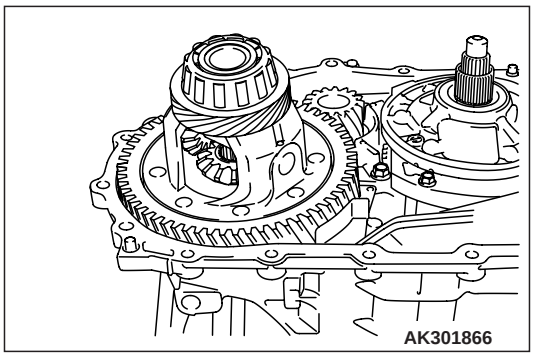
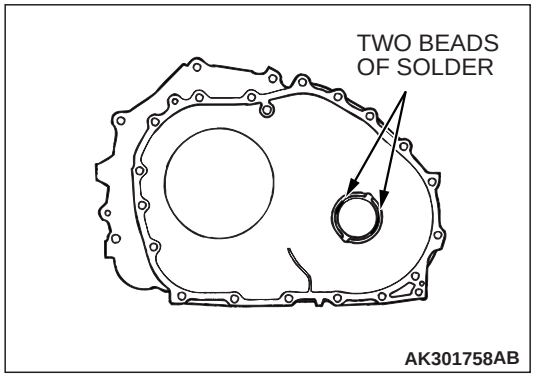
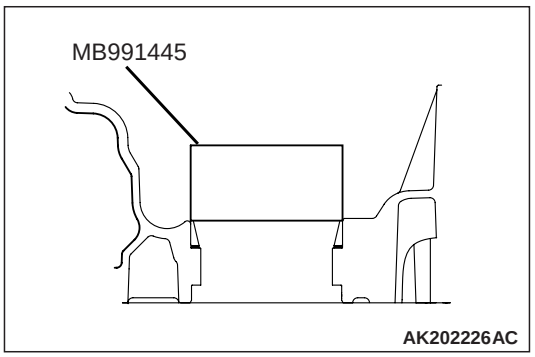

AK301866

74.Install the differential.



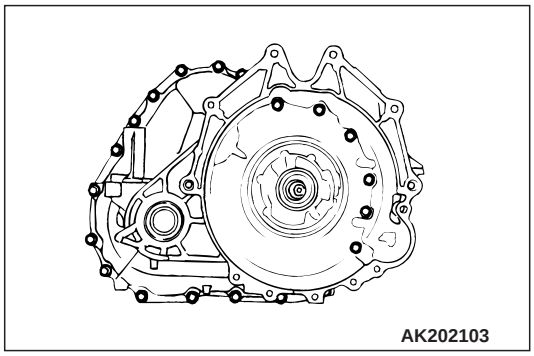
AK301758AB

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



AK202226AC

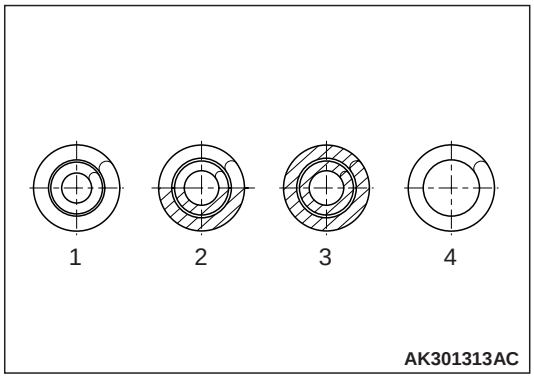
76.Use special tools MB991445 to press the differential bearing outer race into the torque converter housing.


AK202103

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

Tightening torque: 48 ±6 N·m (35 ±4 ft-lb)

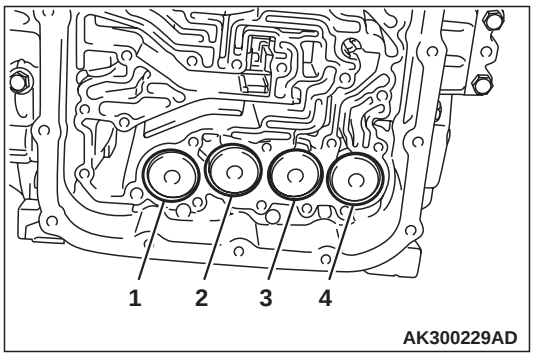
78.Loosen all the bolts, and remove the torque converter housing. Then remove the outer race and the crushed solders.

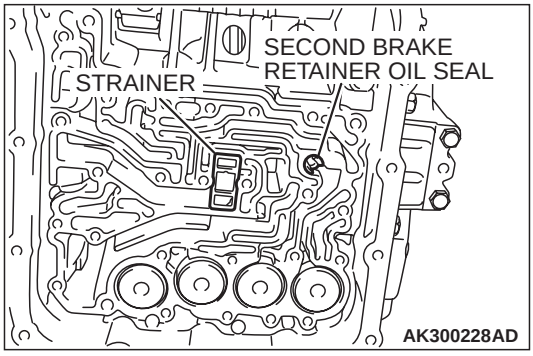


90.Identify the accumulator spring and insert it and the accumulator piston into each hole of the transaxle case.

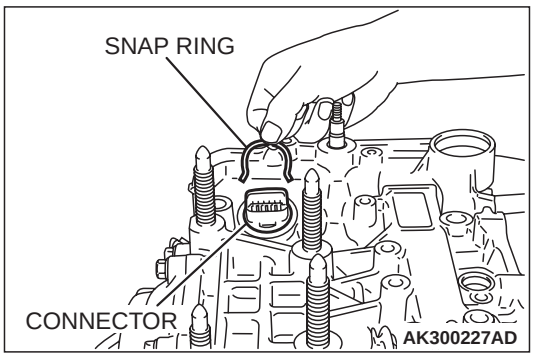
NOTE: Accumulator springs are identified as shown in the illustration.

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





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



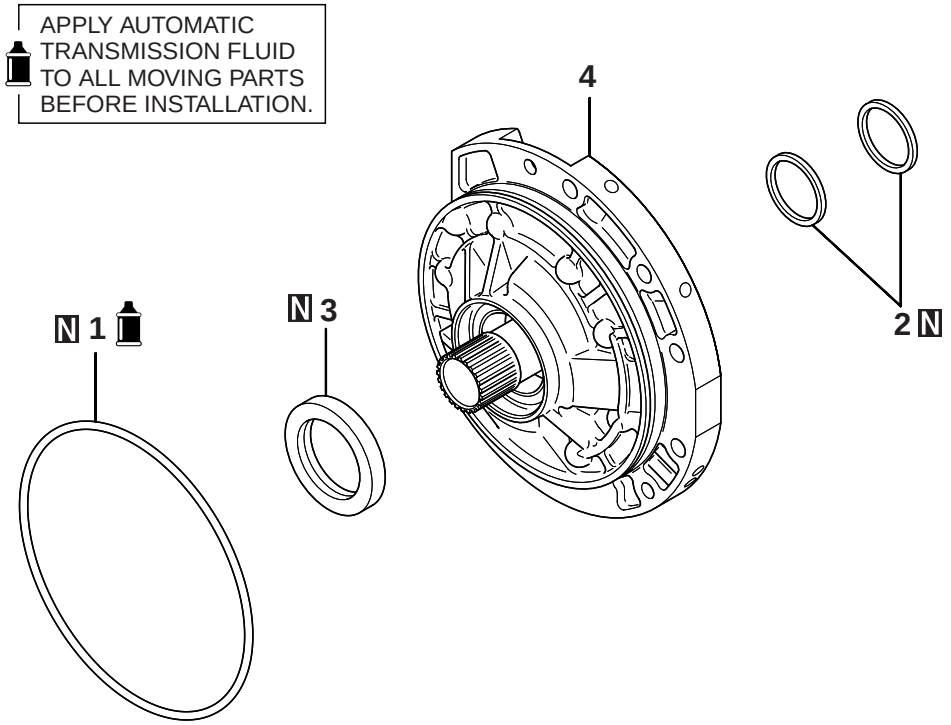
92.Insert a new O-ring to the groove of the solenoid valve harness connector.

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

OIL PUMP

DISASSEMBLY AND ASSEMBLY

M1233001300206



AK301599 AB

DISASSEMBLY STEPS

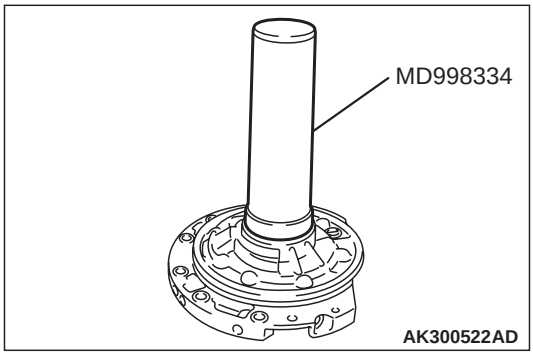
>>**B**<< 1. O-RING
2. SEAL RING

DISASSEMBLY STEPS

>>**A**<< 3. OIL SEAL
4. OIL PUMP ASSEMBLY

Required Special Tool:

- MD998334: Oil Seal Installer



AK300522AD

ASSEMBLY SERVICE POINTS

>>A<< OIL SEAL INSTALLATION

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

>>B<< O-RING INSTALLATION

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

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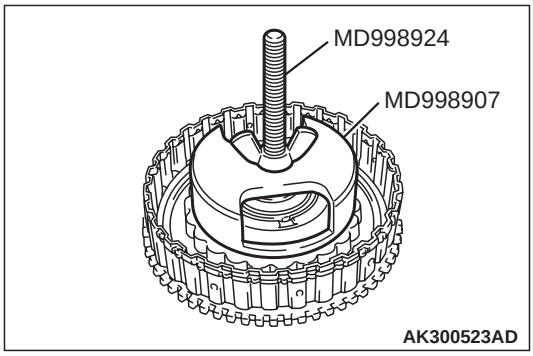
DISASSEMBLY SERVICE POINT

<<A>> SNAP RING REMOVAL



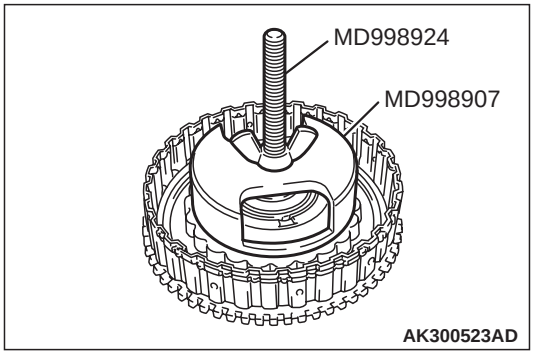
1. Set special tools MD998907 and MD998924 as shown in the illustration.
2. Compress the return spring and remove the snap ring.

ASSEMBLY SERVICE POINTS

>>A<< D-RING INSTALLATION

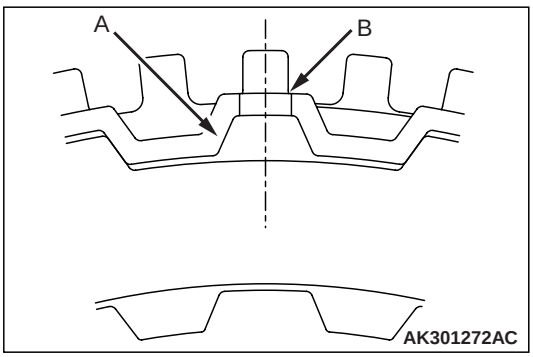
1. Install a D-ring in the groove in the underdrive clutch retainer and piston, and in the groove in the outside of the spring retainer. Be careful not to twist or damage the D-rings.
2. Apply ATF or petroleum jelly (Vaseline) to the D-rings.

>>B<< SNAP RING INSTALLATION



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

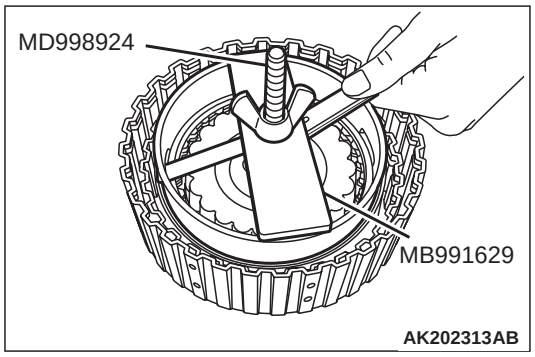
>>C<< CLUTCH PLATE/CLUTCH DISC/CLUTCH REACTION PLATE INSTALLATION



⚠ CAUTION

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

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



>>E<< SNAP RING INSTALLATION

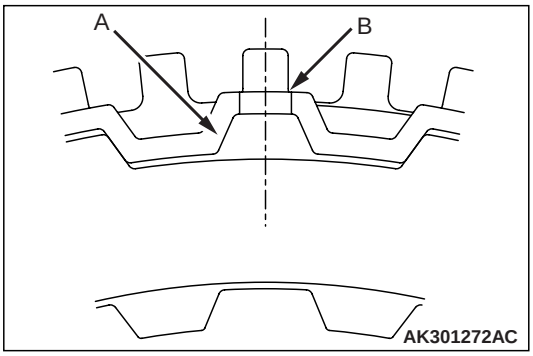
1. Install the snap ring into the groove in the reverse clutch piston.
2. Set special tools MB991629 and MD998924 as shown in the illustration, and compress the clutch element.
3. Check that the clearance between the snap ring and the clutch reaction plate is within the standard value. If not within the standard value, select a snap ring to achieve the standard value clearance.

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

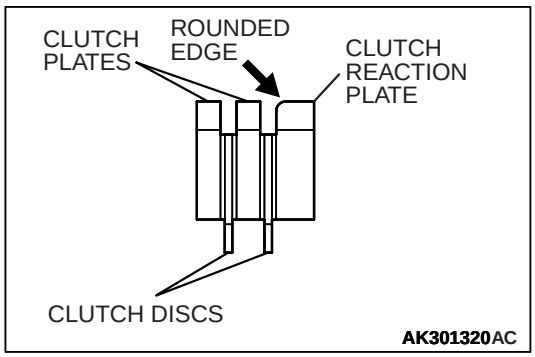
>>F<< CLUTCH PLATE/CLUTCH DISC/CLUTCH REACTION PLATE INSTALLATION

⚠ CAUTION

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

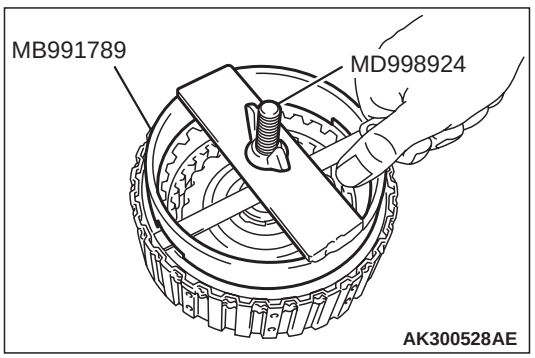


1. Assemble two clutch discs and two clutch plates, one on top of the other, inside the reverse clutch retainer. Assemble both clutch plates so that the places with no teeth (marked "A") are aligned with the holes in the retainer (marked "B").



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

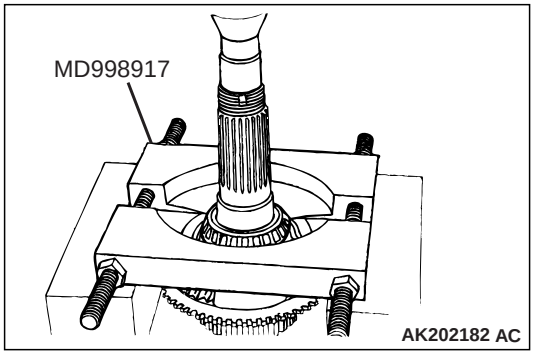
>>G<< SNAP RING INSTALLATION



1. Install the snap ring into the groove of reverse clutch retainer.
2. Set special tools MB991789 and MD998924 as shown in the illustration, and compress the clutch element.
3. Check that the clearance between the snap ring and the clutch reaction plate is within the standard value. If not within the standard value, select a snap ring to achieve the standard value clearance.

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

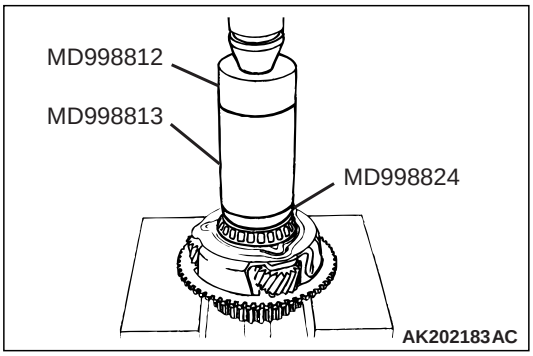
<<D>> TAPER ROLLER BEARING REMOVAL



1. Support the transfer driven gear as shown in the illustration.
2. Using special tool MD998917 to remove the taper roller bearing.

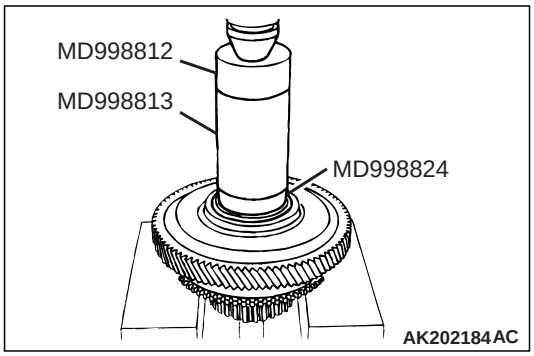
ASSEMBLY SERVICE POINTS

>>A<< TAPER ROLLER BEARING INSTALLATION



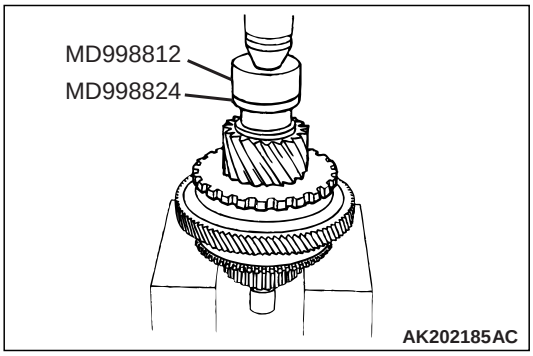
1. Set the transfer driven gear as shown in the illustration.
2. Using special tools MD998812, MD998813 and MD998824, press in the taper roller bearing.

>>B<< TAPER ROLLER BEARING INSTALLATION



1. Set the transfer driven gear as shown in the illustration.
2. Using special tools MD998812, MD998813 and MD998824, press in the taper roller bearing.

>>C<< OUTPUT GEAR/PARKING GEAR INSTALLATION



1. Using special tools MD998812 and MD998824, press in the parking gear.

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

M1233023100578

ITEM		SPECIFICATIONS
Transaxle	Roll stopper bracket	70 ±10 N· m (52 ±7 ft-lb)
	Control cable support bracket	23 ±3 N· m (17 ±2 ft-lb)
	Eye bolt	24 ±3 N· m (18 ±2 ft-lb)
	Oil cooler feed tube	11 ±1 N· m (97 ±9 in-lb)
	Input shaft speed sensor	11 ±1 N· m (97 ±9 in-lb)
	Output shaft speed sensor	11 ±1 N· m (97 ±9 in-lb)
	Manual control lever	22 ±3 N· m (16 ±2 ft-lb)
	Park/neutral position switch (PNP switch)	11 ±1 N· m (97 ±9 in-lb)
	Sealing cap	5.0 ±1.0 N· m (44 ±9 in-lb)
	Valve body cover	11 ±1 N· m (97 ±9 in-lb)
	Manual control shaft detente	6.0 ±1.0 N· m (53 ±9 in-lb)
	Valve body mounting bolt	11 ±1 N· m (97 ±9 in-lb)
	Fluid temperature sensor	11 ±1 N· m (97 ±9 in-lb)
	Torque converter housing	48 ±6 N· m (35 ±4 ft-lb)
	Oil pump	29 ±2 N· m (21 ±1 ft-lb)
	Rear cover	23 ±3 N· m (17 ±2 ft-lb)
	Transfer drive gear	34 ±2 N· m (25 ±1 ft-lb)
	Anchor plug	98 ±15 N· m (72 ±11 ft-lb)
Components	Direct planetary carrier lock nut	170 ±10 N· m (125 ±7 ft-lb)
	Differential drive gear	135 ±5 N· m (100 ±3 ft-lb)
	Solenoid valve support	6.0 ±1.0 N· m (53 ±9 in-lb)
	Valve body	11 ±1 N· m (97 ±9 in-lb)
	Plate	6.0 ±1.0 N· m (53 ±9 in-lb)

GENERAL SPECIFICATIONS

M1233000200596

ITEM		SPECIFICATIONS
Transaxle model		F5A5A
Type		Electronically controlled 5-speed full-automatic
Torque converter	Type	3-element with torque converter clutch
	Stall torque ratio	1.7
Gear ratio	1st	3.789
	2nd	2.162
	3rd	1.421
	4th	1.000
	5th	0.686
	Reverse	3.117
Final gear ratio		3.325

TSB Revision