GROUP 22C

MANUAL TRANSMISSION OVERHAUL <W5M51>

CONTENTS

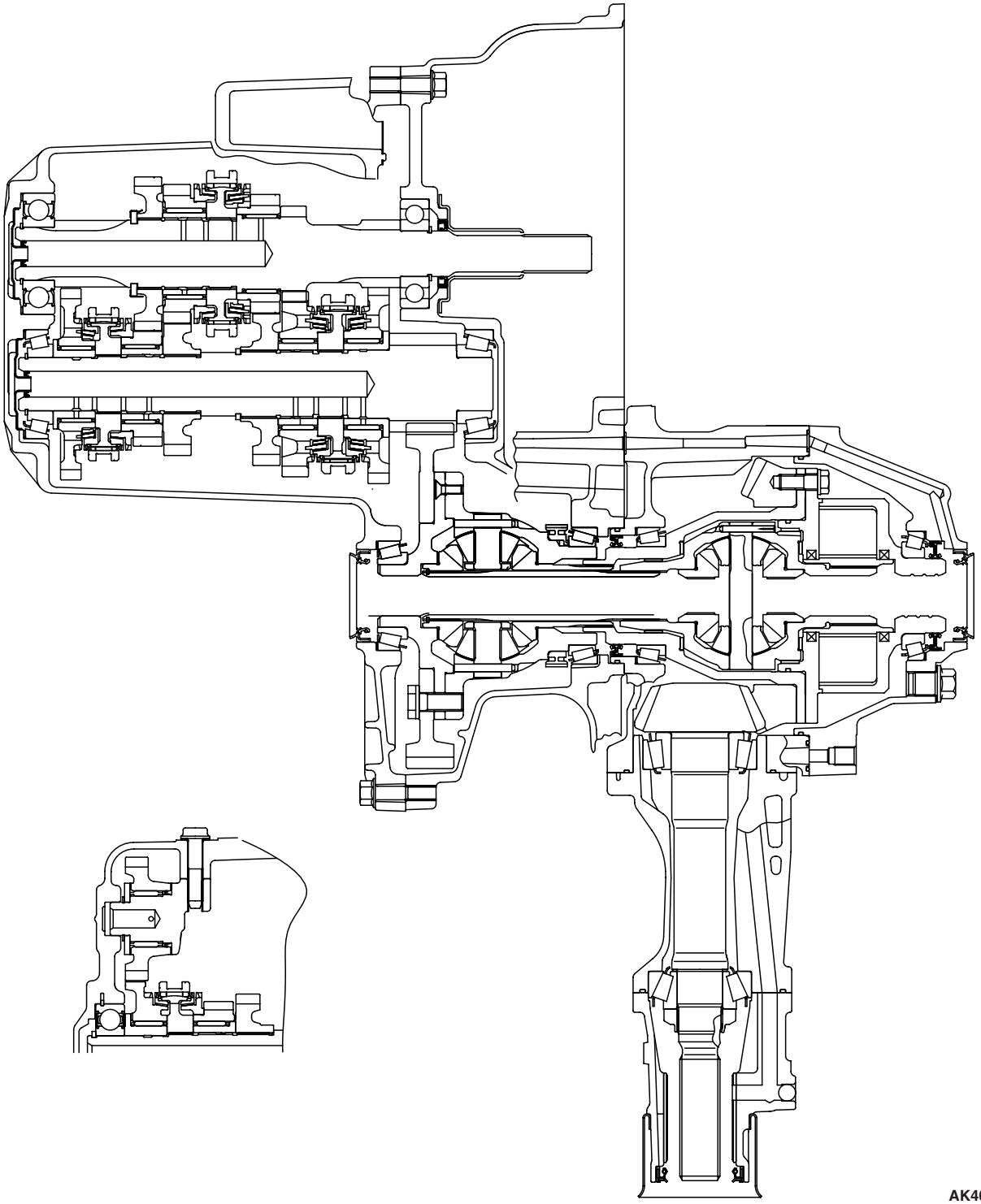
GENERAL INFORMATION

M1222000100205

MANUAL TRANSMISSION MODELS

Transmission model	Combined engine	Vehicle model
W5M51-2-X4B	4G63-D4-TC	CU2W

SECTIONAL VIEW



AK400078

GENERAL SPECIFICATIONS

M1222000200279

TRANSMISSION MODEL TABLE

Transmission model	Speedometer gear ratio	Final gear ratio	Vehicle model	Engine model
W5M51-2-X4B	27/36	4.529	CU2W	4G63-D4-TC

GEAR RATIO TABLE

Item	W5M51
1st	3.333
2nd	2.105
3rd	1.407
4th	1.031
5th	0.720
Reverse	3.416
Transfer gear ratio	0.3023

SERVICE SPECIFICATIONS

M1222000300180

Item	Standard value	Minimum limit
Input shaft end play mm	0.05 – 0.17	–
Input shaft front bearing end play mm	0 – 0.12	–
Input shaft rear bearing end play mm	0 – 0.12	–
Input shaft 5th speed gear end play mm	0 – 0.09	–
Output shaft preload mm	0.13 – 0.18	–
Output shaft rear bearing end play mm	0 – 0.09	–
Output shaft 3rd speed gear end play mm	0 – 0.09	–
Backlash between centre differential gear and pinion mm	0.025 – 0.150	–
Centre differential case preload mm	0.05 – 0.11	–
Synchronizer ring back surface to gear clearance mm	–	0.5

SNAP RING, SPACER AND THRUST PLATE FOR ADJUSTMENT

M1222012000346

SPACER (FOR ADJUSTMENT OF INPUT SHAFT END PLAY)

Thickness mm	Identification symbol	Thickness mm	Identification symbol
0.98	98	1.43	43
1.07	07	1.52	52
1.16	16	1.61	61
1.25	25	1.70	70
1.34	34	1.79	79

SNAP RING (FOR ADJUSTMENT OF INPUT SHAFT FRONT BEARING END PLAY)

Thickness mm	Identification colour	Thickness mm	Identification colour
1.43	Green (2)	1.59	Yellow (2)
1.51	White (2)		

SNAP RING (FOR ADJUSTMENT OF INPUT SHAFT REAR BEARING END PLAY)

Thickness mm	Identification colour	Thickness mm	Identification colour
1.44	None	1.58	Brown
1.51	Blue		

THRUST PLATE (FOR ADJUSTMENT OF INPUT SHAFT 5TH SPEED GEAR END PLAY)

Thickness mm	Identification symbol	Thickness mm	Identification symbol
3.82	0	3.98	6
3.86	2	4.02	7
3.90	3	4.06	8
3.94	5	4.10	9

SPACER (FOR ADJUSTMENT OF OUTPUT SHAFT PRELOAD)

Thickness mm	Identification symbol	Thickness mm	Identification symbol
0.86	86	1.19	L
0.89	89	1.22	G
0.92	92	1.25	M
0.95	95	1.28	N
0.98	98	1.31	E
1.01	01	1.34	O
1.04	04	1.37	P
1.07	07	1.40	None
1.10	J	1.43	Q
1.13	D	1.46	R
1.16	K		

SNAP RING (FOR ADJUSTMENT OF OUTPUT SHAFT REAR BEARING END PLAY)

Thickness mm	Identification colour	Thickness mm	Identification colour
1.36	Yellow	1.55	White
1.40	Green	1.58	Brown
1.44	None	1.63	Orange
1.48	Black	1.68	Blue
1.51	Blue		

SNAP RING (FOR ADJUSTMENT OF OUTPUT SHAFT 3RD SPEED GEAR END PLAY)

Thickness mm	Identification colour	Thickness mm	Identification colour
2.81	None	2.97	Green
2.85	Blue	3.01	Black
2.89	Brown	3.05	White
2.93	Yellow	3.09	Orange

SPACER (FOR ADJUSTMENT OF CENTRE DIFFERENTIAL CASE PRELOAD)

Thickness mm	Identification symbol	Thickness mm	Identification symbol
0.74	74	1.04	04
0.77	77	1.07	07
0.80	80	1.10	J
0.83	83	1.13	D
0.86	86	1.16	K
0.89	89	1.19	L
0.92	92	1.22	G
0.95	95	1.25	M
0.98	98	1.28	N
1.01	01	1.31	E

SPACER (FOR ADJUSTMENT OF BACKLASH BETWEEN CENTRE DIFFERENTIAL SIDE GEAR AND PINION)

Thickness mm	Identification symbol	Thickness mm	Identification symbol
0.6	–	0.9	–
0.7	–	1.0	–
0.8	–	1.1	–

TORQUE SPECIFICATIONS

M1222012100495

Item	Specifications
Transfer-clutch housing mounting bolt	69 ± 9 N·m
Roll stopper bracket mounting bolt	70 ± 10 N·m
Shift cable bracket mounting bolt	18 ± 3 N·m
Select lever mounting bolt	18 ± 3 N·m
Vehicle speed sensor mounting bolt	3.9 ± 1.0 N·m
Back-up lamp switch	32 ± 2 N·m
Poppet spring	32 ± 2 N·m
Interlock plate bolt	30 ± 3 N·m
Control housing mounting bolt	18 ± 3 N·m
Under cover mounting bolt	6.9 ± 0.9 N·m
Reverse idler gear shaft mounting bolt	48 ± 5 N·m
Clutch housing-transmission case mounting bolt	44 ± 5 N·m
Select lever mounting nut	11 ± 1 N·m
Stopper bracket mounting bolt	21.7 ± 0.3 N·m
Clutch release bearing retainer mounting bolt	9.8 ± 2.0 N·m
Center differential drive gear mounting bolt	133 ± 4 N·m
Center differential flange mounting bolt	3.9 ± 1.0 N·m
Transfer cover mounting bolt	23 ± 3 N·m

SEALANTS

M1222000500203

Item	Specified sealant
Clutch housing-transmission case mating surface	Mitsubishi Genuine sealant part No. MD997740 or equivalent
Control housing-transmission case mating surface	
Under cover-transmission case mating surface	
Air breather	3M SUPER WEATHERSTRIP No. 8001 or equivalent
Centre differential drive gear bolt	3M STUD Locking No. 4170 or equivalent

FORM-IN-PLACE GASKET (FIPG)

This transmission 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.

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 (in less than 10 minutes after application). Do not allow FIPG to spread beyond the sealing areas during installation. Avoid operating the transmission 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

M1222000400295

TRANSMISSION

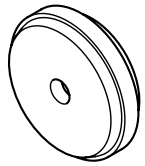
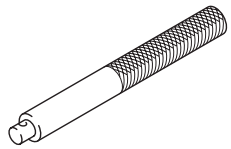
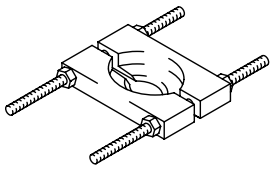
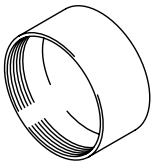
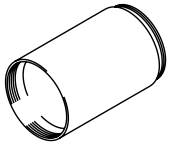
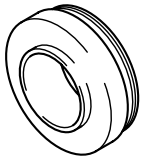
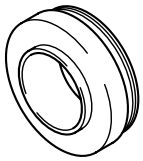
Item	Specified sealant
Control shaft oil seal lip gear oil	Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4
Driveshaft oil seal lip gear oil	
Each O-ring	
Select lever shoe	Mitsubishi part No. 0101011 or equivalent
Input shaft oil seal lip gear oil	

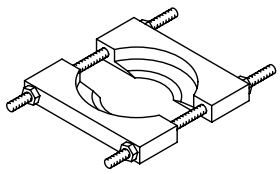
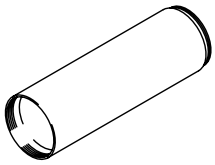
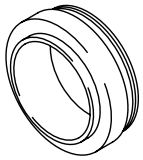
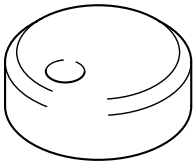
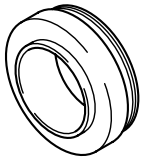
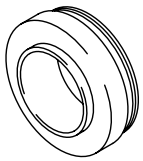
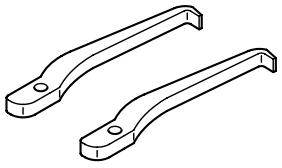
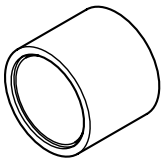
TRANSFER

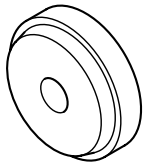
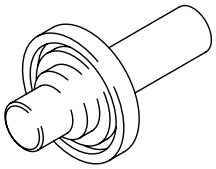
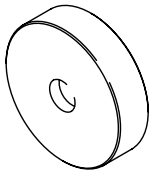
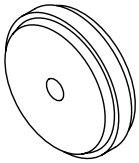
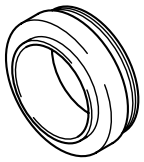
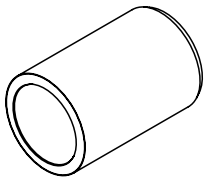
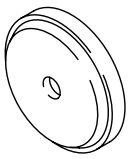
Item	Specified sealant
Each O-ring	Hypoid gear oil API classification GL-5 SAE 90
Each oil seal	

SPECIAL TOOLS

M1222000600352

Tool	Number	Name	Use
	MB990935	Installer adapter	• Installation of output shaft taper roller bearing outer race • Installation of centre differential rear taper roller bearing outer race
	MB990938	Handle	Use with Installer adapter
	MD998801	Bearing remover	Installation and removal of gears, bearings and sleeves
	MD998812	Installer cap	Use with Installer and Installer adapter
	MD998813	Installer-100	Use with Installer cap and Installer adapter
	MD998818	Installer adapter (38)	Installation of input shaft front bearing
	MD998825	Installer adapter (52)	Installation of 1st speed gear sleeve, 3rd-4th speed synchronizer hub, 4th speed gear sleeve, 5th speed gear and thrust plate stopper
	MD998819	Installer adapter (40)	• Installation of input shaft rear bearing • Installation of output shaft taper roller bearing

Tool	Number	Name	Use
	MD998917	Bearing remover	Installation and removal of gears, bearing and sleeves
	MD998814	Installer-200	Use with Installer cap and Installer adapter
	MD998824	Installer adapter (50)	• Installation of 1st speed gear sleeve • Installation of 1st-2nd speed synchronizer hub • Installation of 2nd speed gear sleeve • Installation of 3rd speed gear
	MD998364	Camshaft oil seal installer	Installation of gear, bearing and sleeve
	MD998821	Installer adapter (44)	• Installation of 4th speed gear • Installation of 5th speed gear sleeve • Installation of 5th-reverse speed synchronizer hub
	MD998820	Installer adapter (42)	Installation of reverse gear bearing sleeve
	MD999566	Claw	Removal of taper roller bearing outer race
	MB991445	Bushing remover and installer base	Installation of differential front taper roller bearing outer race

Tool	Number	Name	Use
	MB990928	Installer adapter	Installation of input shaft oil seal
	MD998800	Oil seal installer	• Installation of differential oil seal • Installation of transfer oil seal
	MB990930	Installer adapter	Removal of centre differential front taper roller bearing
	MB990937	Installer adapter	• Installation of centre differential front taper roller bearing • Installation of transfer oil seal
	MD998823	Installer adapter (48)	Installation of centre differential rear taper roller bearing
	MD999506	Crankshaft installer	Installation of transfer oil seal
	MB990933	Installer adapter	Installation of transfer oil seal

TRANSMISSION

DISASSEMBLY AND REASSEMBLY

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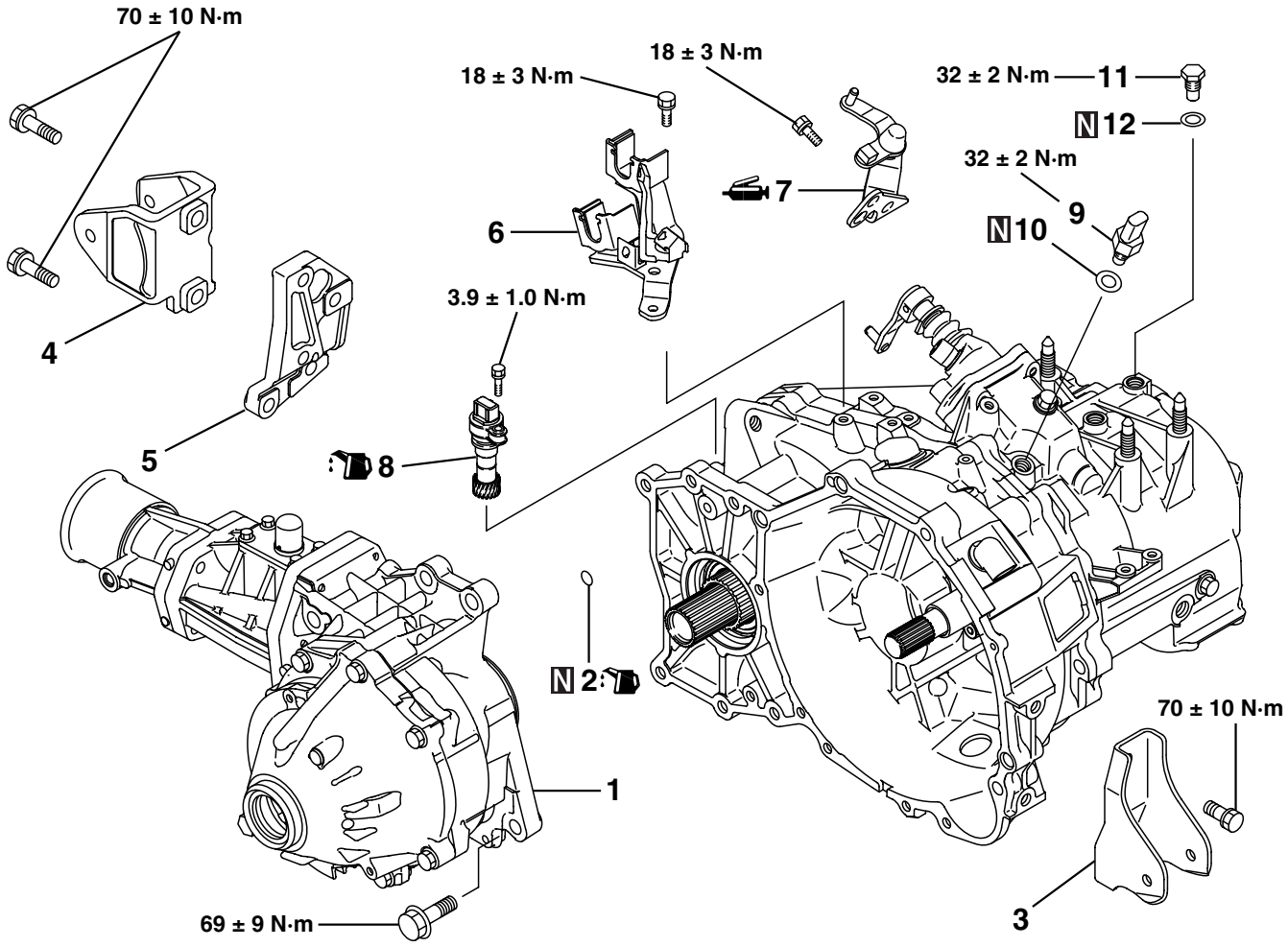


AK400079AB

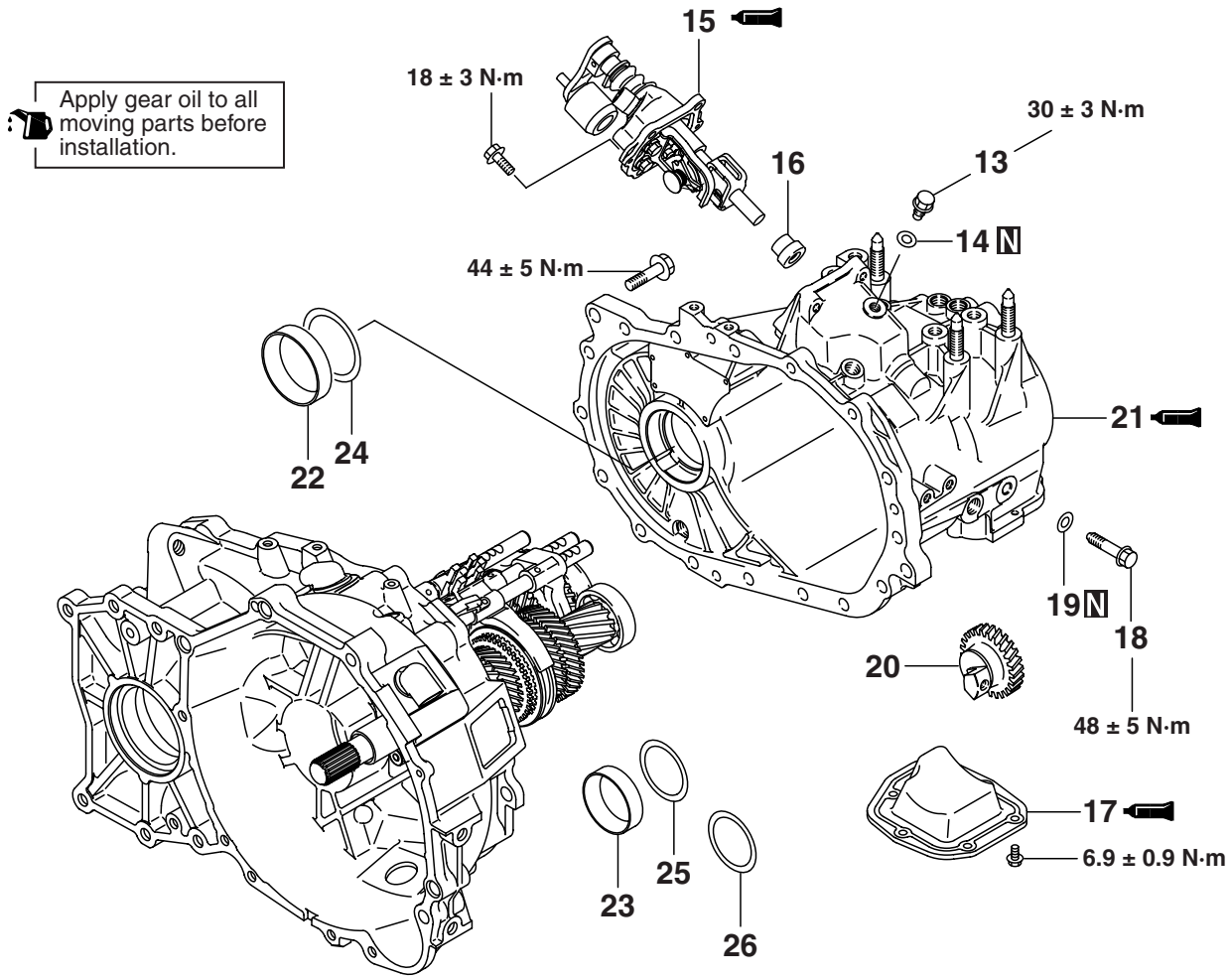
Disassembly steps

1. Transfer
2. O-ring
3. Roll stopper bracket, front
4 Roll stopper bracket, rear
5 Roll stopper bracket adapter
6. Shift cable bracket

>>H<< 7. Select lever

Disassembly steps (Continued)

8. Vehicle speed sensor
9. Back-up lamp switch
10. Gasket
11. Poppet
12. Gasket



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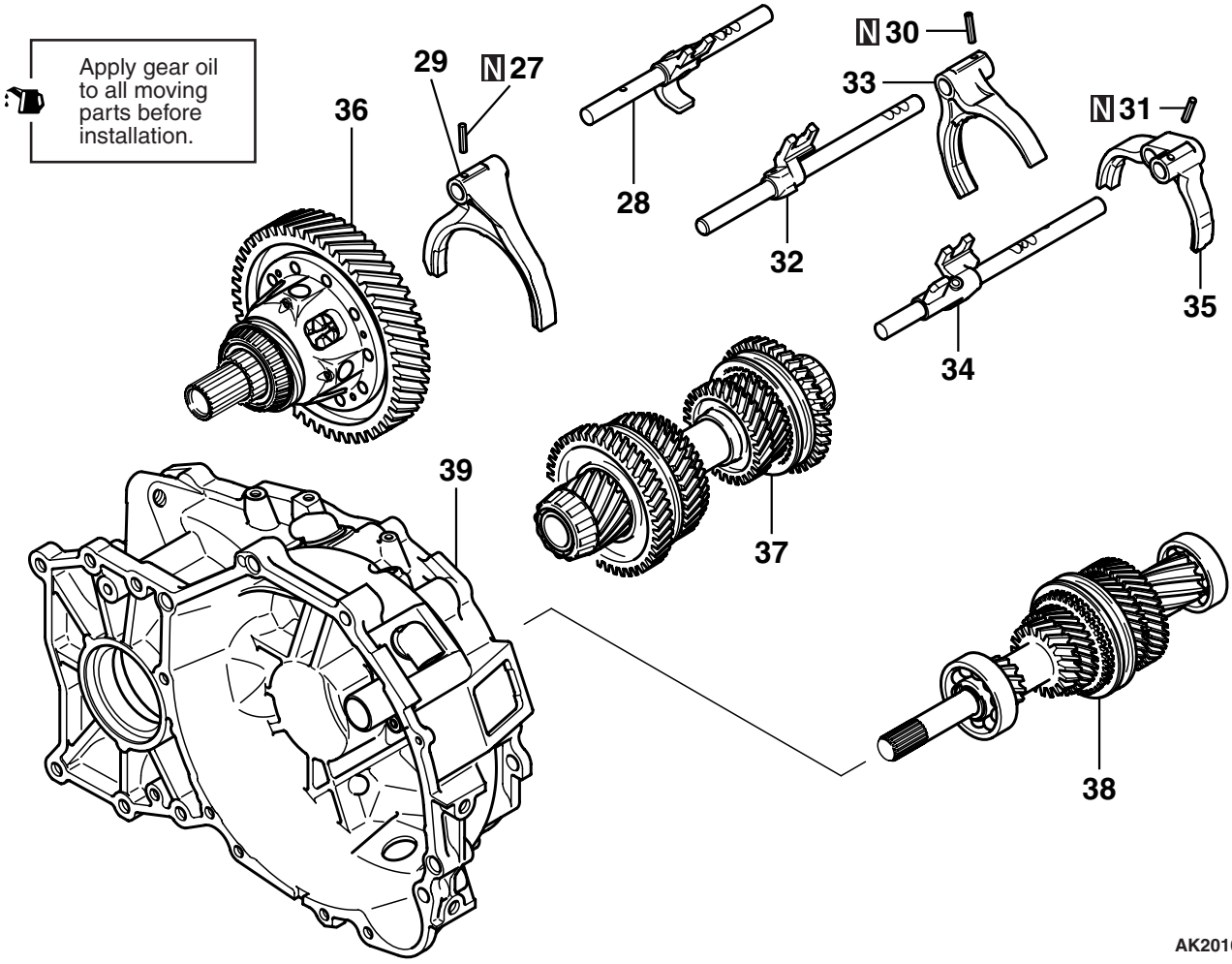
Disassembly steps

13. Interlock plate bolt
14. Gasket
>>G<< 15. Control housing
16. Neutral return spring
>>F<< 17. Under cover
18. Reverse idler gear shaft bolt
19. Gasket
20. Reverse idler gear

Disassembly steps (Continued)

>>E<< 21. Transmission case
>>D<< 22. Outer race
>>D<< 23. Outer race
>>D<< 24. Spacer
>>D<< 25. Spacer
>>D<< 26. Spacer



Disassembly steps

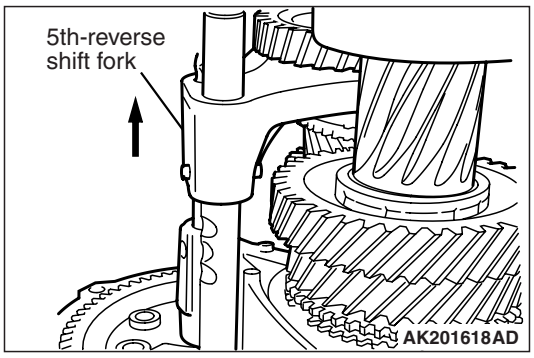
	>>C<<	27.	Spring pin
		28.	1st-2nd speed shift rail
		29.	1st-2nd speed shift fork
	>>C<<	30.	Spring pin
<<A>>	>>C<<	31.	Spring pin
<<B>>	>>B<<	32.	3rd-4th speed shift rail
<<B>>	>>B<<	33.	3rd-4th speed shift fork
<<B>>	>>B<<	34.	5th-reverse speed shift rail

Disassembly steps (Continued)

<<B>>	>>B<<	35.	5th-reverse shift fork
<<C>>	>>A<<	36.	Centre differential
<<C>>	>>A<<	37.	Output shaft
<<C>>	>>A<<	38.	Input shaft
		39.	Clutch housing

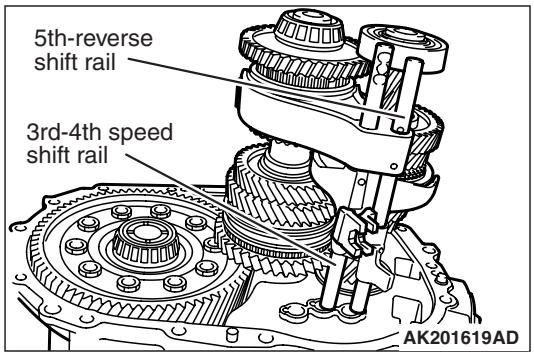
DISASSEMBLY SERVICE POINTS

<<A>> SPRING PIN REMOVAL



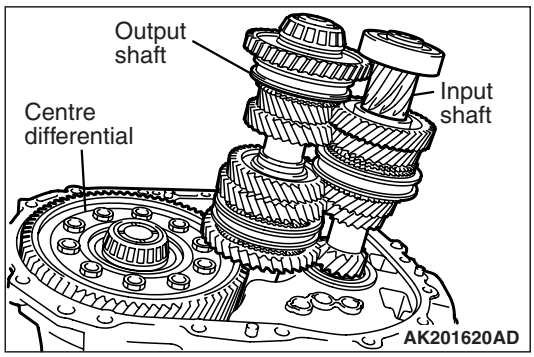
1. Shift the 5th-reverse shift fork in the direction shown in the illustration.
2. Using a pin punch, remove the spring pin from the shift fork and rail.

<<B>> 3RD-4TH SPEED SHIFT RAIL/3RD-4TH SPEED SHIFT FORK/5TH-REVERSE SPEED SHIFT RAIL/5TH-REVERSE SPEED SHIFT FORK REMOVAL



1. Pull out the shift rails from the shift rail holes in the clutch housing.
2. Remove the shift rails together with the shift forks.

<<C>> CENTRE DIFFERENTIAL/OUTPUT SHAFT/INPUT SHAFT REMOVAL



Remove the input and output shafts together.

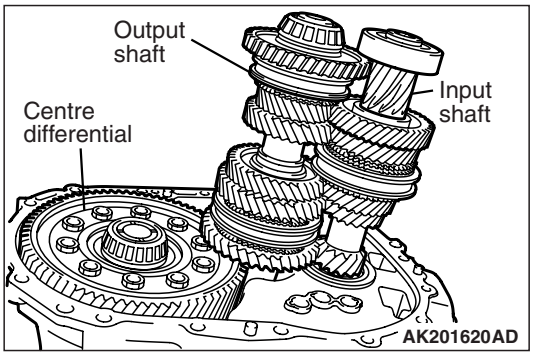
ADJUSTMENT BEFORE REASSEMBLY

SPACER SELECTION FOR ADJUSTMENT OF INPUT SHAFT END PLAY/OUTPUT SHAFT PRELOAD/CENTER DIFFERENTIAL PRELOAD

<Measurement using a solder>

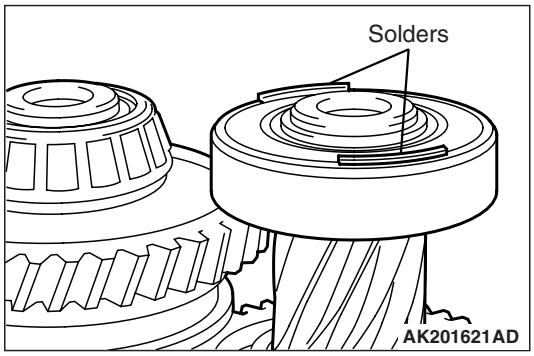
⚠ CAUTION

- **If soft solder is not available, select the spacer in accordance with Plastigage method.**
- **If the spacer appropriate for the standard value cannot be selected using soft solder, select the spacer in accordance with Plastigage method.**

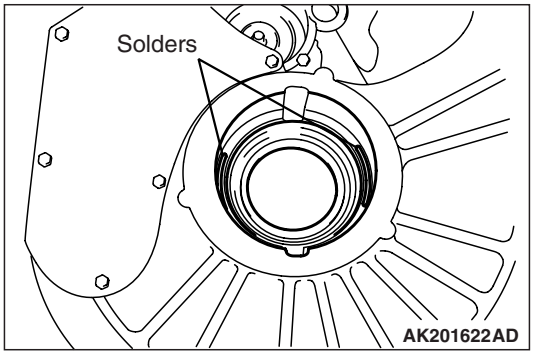


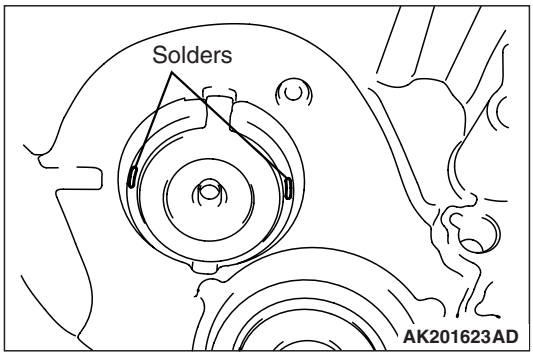
1. Install the input shaft, output shaft and centre differential as a set to the clutch housing.

   NOTE: If necessary, replace the input shaft, output shaft, centre differential case and/or bearings before carrying out these adjustments.

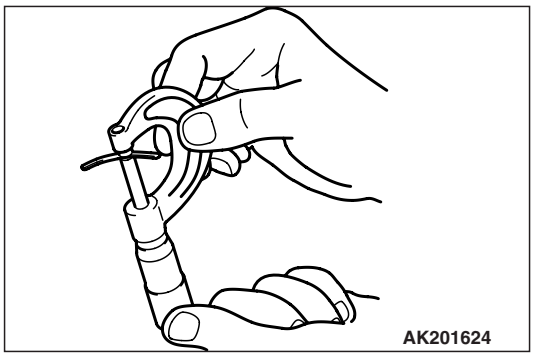


2. Put solders (1.0 mm diameter, about 10 mm long) on the input shaft rear bearing at the positions shown in the illustration.





3. Put solders (1.0 mm diameter, about 10 mm long) on the transmission case at the positions shown in the illustration.
4. Install the bearing outer races of the centre differential and output shaft.
5. Install the transmission case and tighten the bolts to the specified torque of 44 ± 5 N·m
6. Remove the transmission case.
7. Remove the outer races and, and then take out crushed solders.
8. If the solders have not crushed, use thicker solders (1.6 mm diameter, about 10 mm long) and repeat steps 4 to 7.



9. Measure the thickness of the crushed solder with a micrometer and select spacers that will provide the standard end play/preload value.
   - **Input shaft end play**

Spacer thickness: (T – 0.05) to (T – 0.17)
T: The crushed solder thickness
Standard value: 0.05 – 0.17 mm

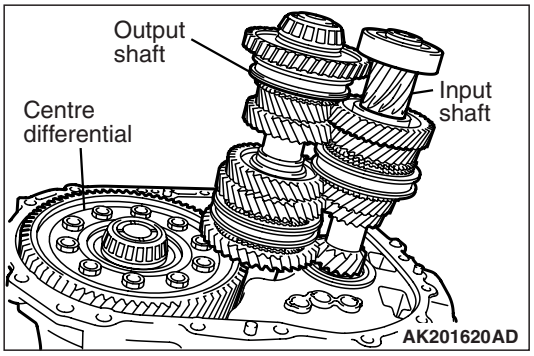
   - **Output shaft preload**

Spacer thickness: (T – 0.13) to (T – 0.18)
T: The crushed solder thickness
Standard value: 0.13 – 0.18 mm

   - **Center differential case preload**

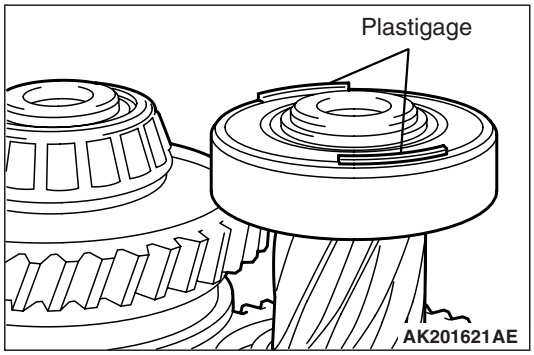
Spacer thickness: (T – 0.05) to (T – 0.11)
T: The crushed solder thickness
Standard value: 0.05 – 0.11 mm

<Measurement using Plastigage>

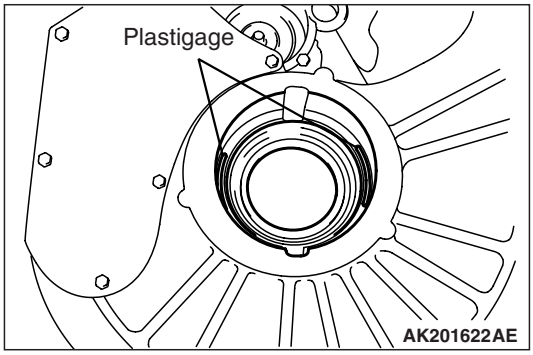


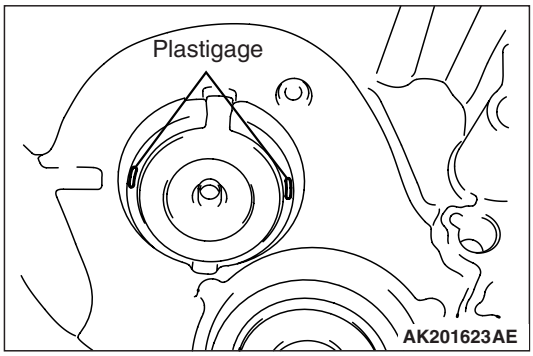
1. Install the input shaft, output shaft and centre differential as a set to the clutch housing.

   NOTE: If necessary, replace the input shaft, output shaft, centre differential case and/or bearings before carrying out these adjustments.

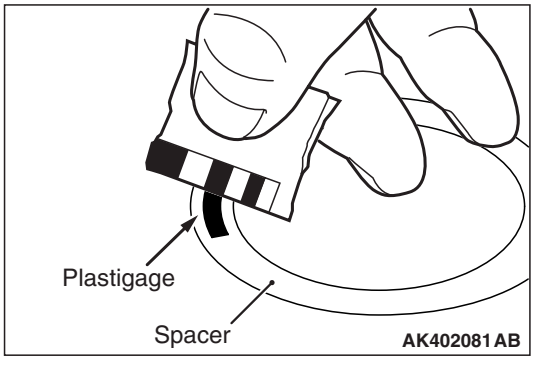


2. Put plastigage (about 10 mm long) on the input shaft rear bearing at the positions shown in the illustration.





3. Put plastigage (about 10 mm long) on the transmission case at the positions shown in the illustration.
4. Install the adjusting spacer having the minimum thickness.
5. Install the bearing outer races of the centre differential and output shaft.
6. Install the transmission case and tighten the bolts to the specified torque of 44 ± 5 N·m.
7. Remove the transmission case.
8. Remove the outer races and, and then take out crushed plastigage.
9. If the Plastigages have not crushed, replace the spacer with a thicker one and repeat steps 5 to 8.



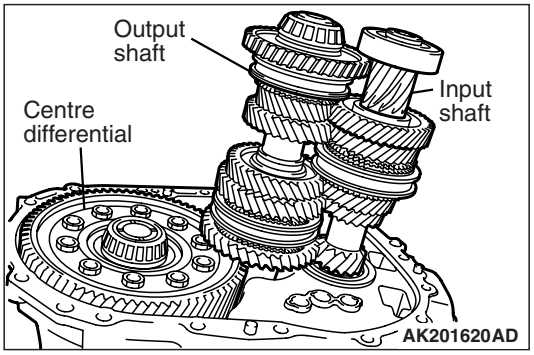
10. Measure the width of the crushed plastigage at its widest part using a scale printed on the plastigage package.

Standard value:

- **Input shaft end play: 0.05 - 0.17 mm**
- **Output shaft preload: 0.13 - 0.18 mm**
- **Center differential case preload: 0.05 - 0.11 mm**

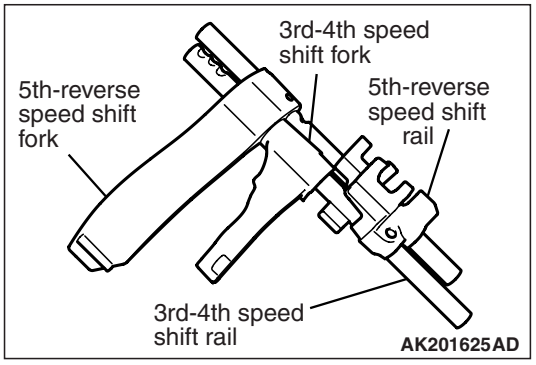
REASSEMBLY SERVICE POINTS

>>A<< INPUT SHAFT/OUTPUT SHAFT/CENTRE DIFFERENTIAL INSTALLATION

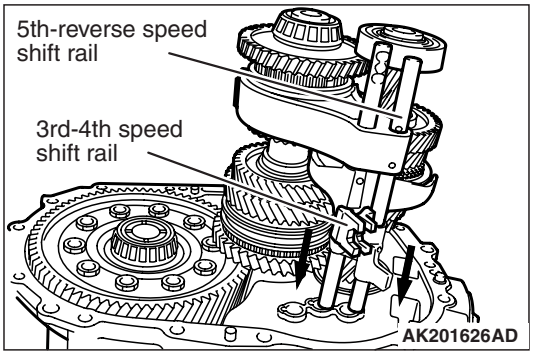


Install the input shaft, output shaft and centre differential as a set.

>>B<< 5TH-REVERSE SPEED SHIFT FORK/5TH-REVERSE SPEED SHIFT RAIL/3RD-4TH SPEED SHIFT FORK/3RD-4TH SPEED SHIFT RAIL INSTALLATION



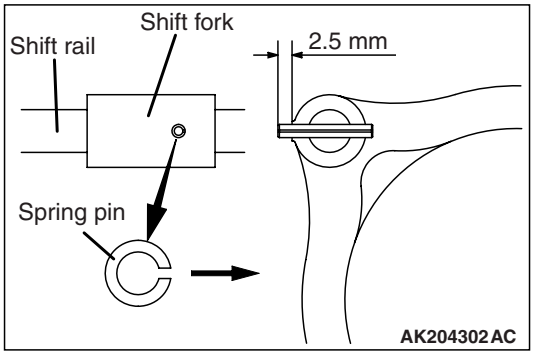
1. Assemble the 3rd-4th speed shift rail and fork, and 5th-reverse speed shift rail and fork.



2. Fit each shift fork in the groove of synchronizer sleeve and install the shift fork and rail assembly.
3. Insert the 3rd-4th speed shift rail and 5th speed-reverse shift rail into the rail hole in the clutch housing.

>>C<< SPRING PIN INSTALLATION

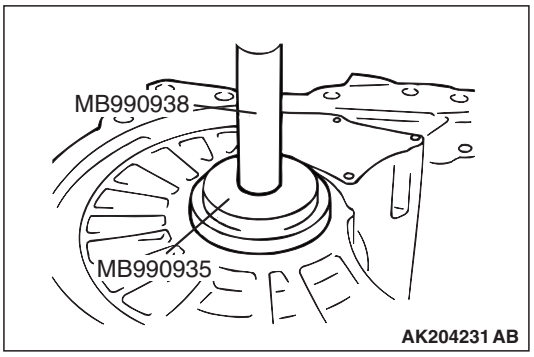
1. Align the pin holes in the shift rail and shift fork.



2. Insert the new spring pin. Push it in so that the slit and centre axis of the rail are aligned.

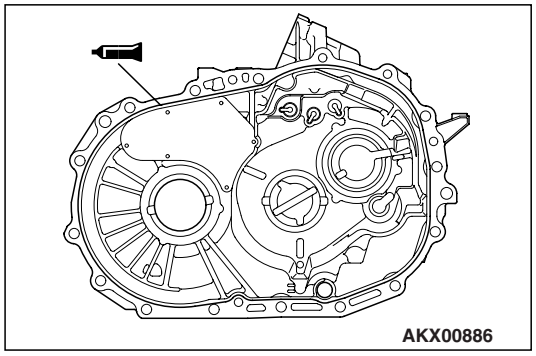
>>D<< SPACER AND OUTER RACE INSTALLATION

1. Install the spacer selected in the section "ADJUSTMENT BEFORE REASSEMBLY."



2. Using special tools, press install the outer race into the transmission case.
- Installer adapter (MB990935)
- Handle (MB990938)

>>E<< TRANSMISSION CASE INSTALLATION



⚠ CAUTION

Squeeze out the sealant uniformly, while making sure that it is not broken or excessively applied.

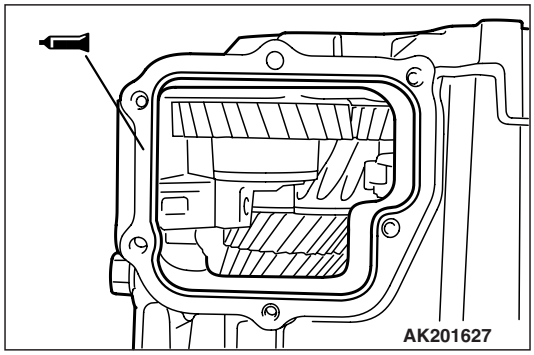
1. Apply a 2 mm diameter bead of sealant to the illustrated position of the transmission case.

   Specified sealant:
   Mitsubishi genuine sealant Part No. MD997740 or equivalent

   NOTE: Be sure to install the transmission case while the sealant is wet (within 15 minutes).
2. Install the transmission case.
3. Tighten the transmission case mounting bolts to the specified torque of 44 ± 5 N·m.

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

>>F<< UNDER COVER INSTALLATION



⚠ CAUTION

Squeeze out the sealant uniformly, while making sure that it is not broken or excessively applied.

1. Apply a 2 mm diameter bead of sealant to the illustrated position of the transmission case.

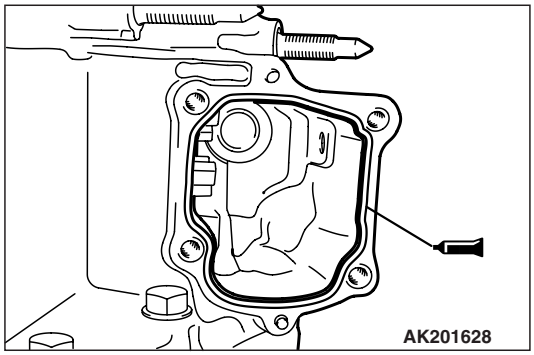
   Specified sealant:
   Mitsubishi genuine sealant Part No. MD997740 or equivalent

   NOTE: Be sure to install the case quickly while the sealant is wet (within 15 minutes).

2. Install the under cover to the transmission case and tighten the bolts to specified torque of 6.9 ± 5 N·m.

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

>>G<< CONTROL HOUSING INSTALLATION



⚠ CAUTION

Squeeze out the sealant uniformly, while making sure that it is not broken or excessively applied.

1. Apply a 0.2 mm diameter bead of sealant to the illustrated position of the transmission case.

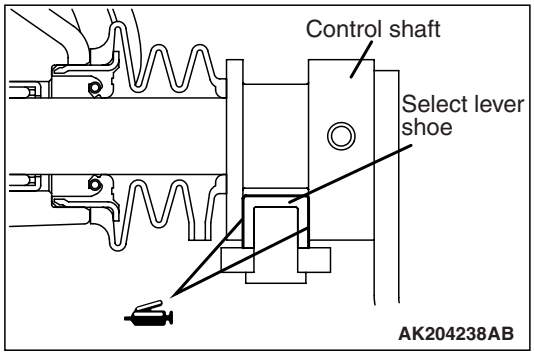
   Specified sealant:
   Mitsubishi genuine sealant Part No. MD997740 or equivalent

   NOTE: Be sure to install the case quickly while the sealant is wet (within 15 minutes).

2. Install the control housing to the transmission case and tighten the bolts to specified torque of 18 ± 3 N·m.

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

>>H<< SELECT LEVER INSTALLATION

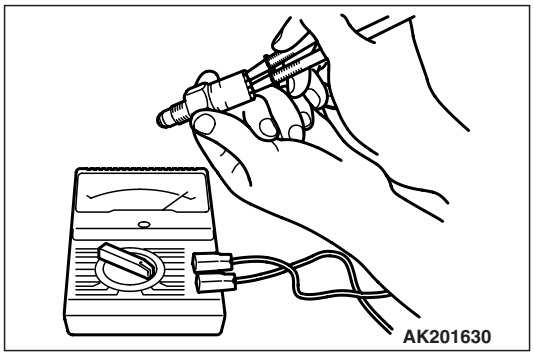


1. Apply grease (Mitsubishi Part number 0101011 or equivalent) to the control shaft sliding portion of the select lever shoe.
2. Install the select lever and tighten the bolts to specified torque of 18 ± 3 N·m.

INSPECTION

M1222001100316

BACK-UP LAMP SWITCH



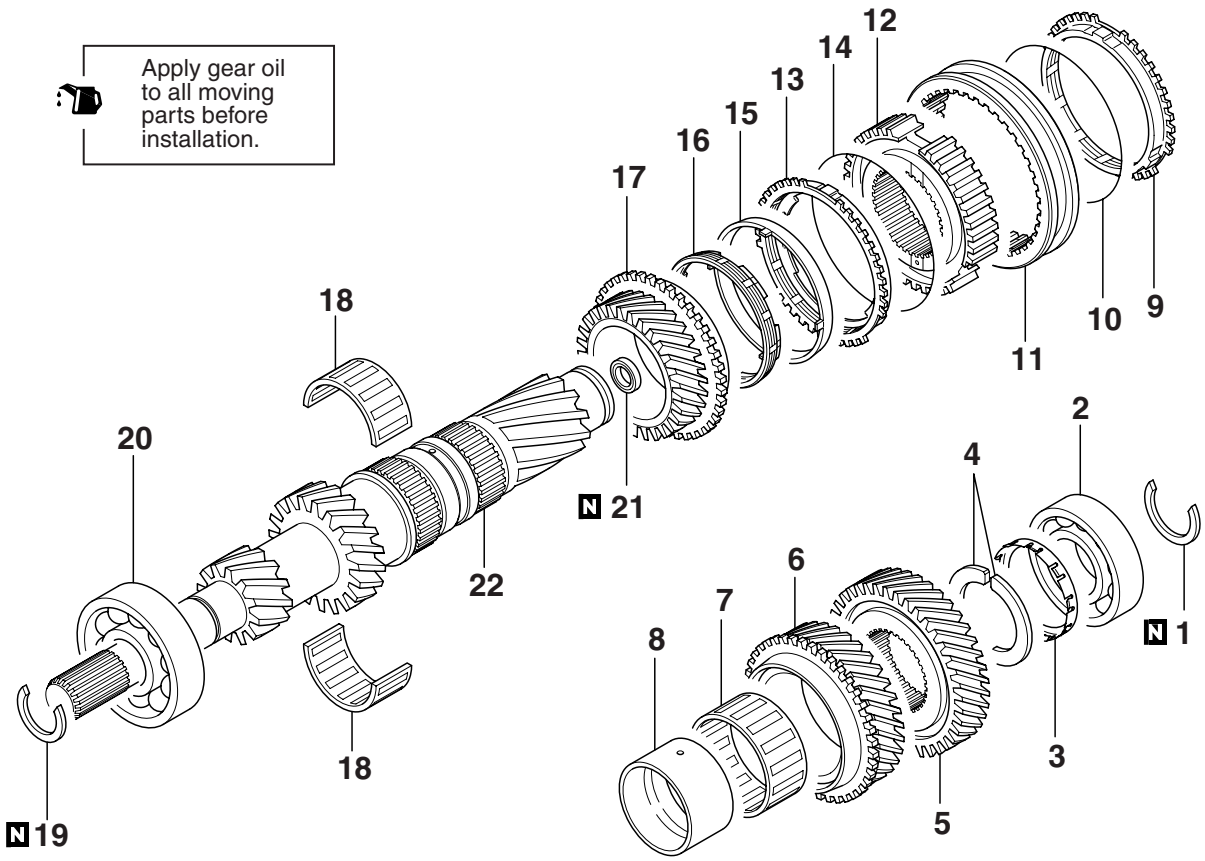
Check for continuity between terminals.

Switch condition	Continuity
Pressed	Open
Released	Conductive

INPUT SHAFT

DISASSEMBLY AND REASSEMBLY

M1222001600355



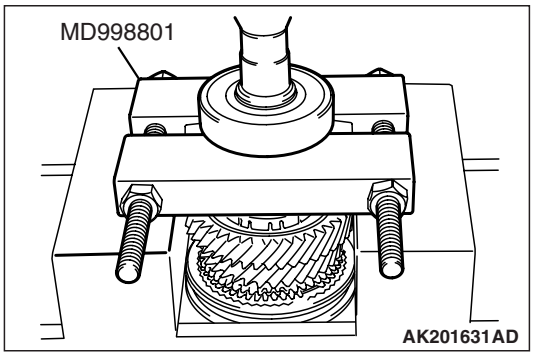
AKX00877AC

			Disassembly steps
	>>L<<	1.	Snap ring
<<A>>	>>K<<	2.	Ball bearing
<<B>>	>>J<<	3.	Thrust plate stopper
	>>I<<	4.	Thrust plate
<<C>>	>>H<<	5.	5th speed gear
		6.	4th speed gear
		7.	Needle roller bearing
<<D>>	>>G<<	8.	4th speed gear sleeve
		9.	Synchronizer ring
	>>D<<	10.	Synchronizer spring
	>>F<<	11.	Synchronizer sleeve

			Disassembly steps (Continued)
	>>E<<	12.	3rd-4th speed synchronizer hub
		13.	Outer synchronizer ring
	>>D<<	14.	Synchronizer spring
		15.	Synchronizer cone
		16.	Inner synchronizer ring
		17.	3rd speed gear
		18.	Needle roller bearing
	>>C<<	19.	Snap ring
<<E>>	>>B<<	20.	Ball bearing
	>>A<<	21.	Oil seal
		22.	Input shaft

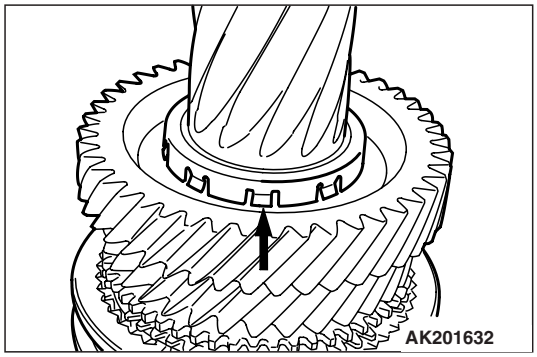
DISASSEMBLY SERVICE POINTS

<<A>> BALL BEARING REMOVAL



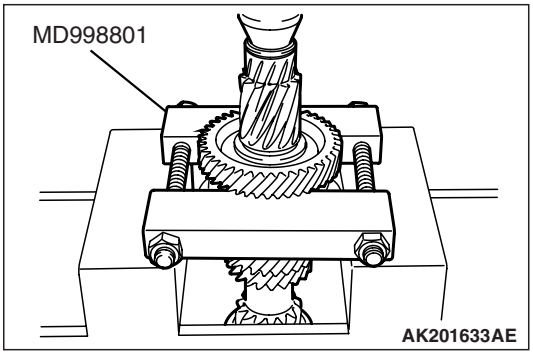
1. Using special tool Bearing remover (MD998801), support the ball bearing, and then set them on the press.
2. Push down on the input shaft with the press and extract the ball bearing.

<<B>> THRUST PLATE STOPPER REMOVAL



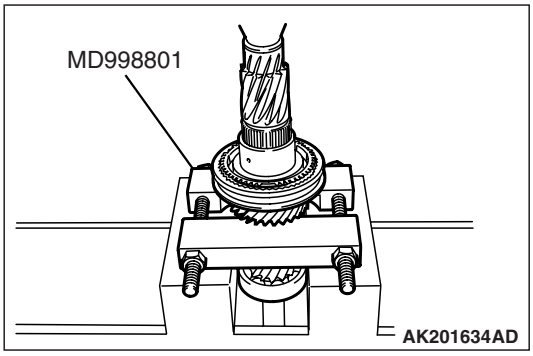
Using a screwdriver, pry up the position shown in the illustration and remove the thrust plate stopper.

<<C>> 5TH SPEED GEAR REMOVAL



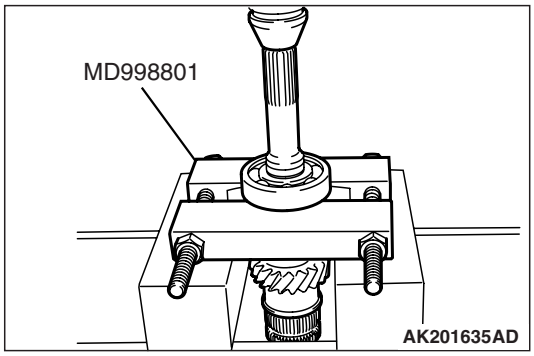
1. Using special tool Bearing remover (MD998801), support the 5th speed gear, and then set them on the press.
2. Push down on the input shaft with the press and take off the 5th speed gear.

<<D>> 4TH SPEED GEAR SLEEVE REMOVAL



1. Using special tool Bearing remover (MD998801), support the 3rd speed gear, and then set them on the press.
2. Push down on the input shaft with the press and remove the 4th speed gear sleeve.

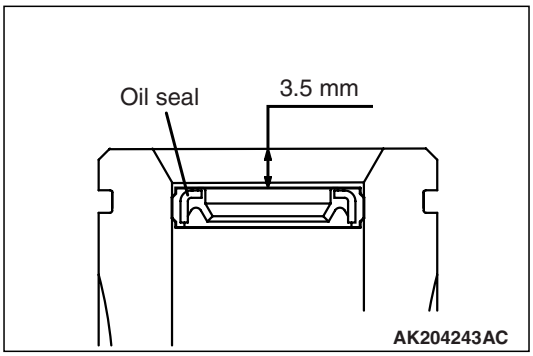
<<E>> BALL BEARING REMOVAL



1. Using special tool Bearing remover (MD998801), support the ball bearing, and then set them on the press.
2. Push down on the input shaft with the press and extract the ball bearing.

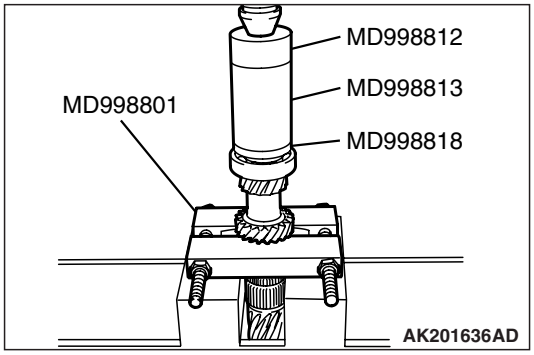
REASSEMBLY SERVICE POINTS

>>A<< OIL SEAL INSTALLATION



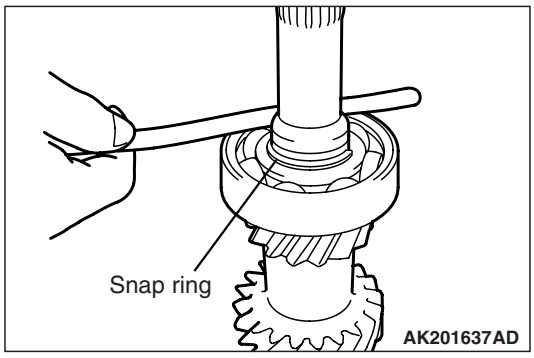
Install the oil seal into the illustrated position of the input shaft.

>>B<< BALL BEARING INSTALLATION



1. Using special tool Bearing remover (MD998801), support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Using special tools, press install the bearing with the press.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998818)

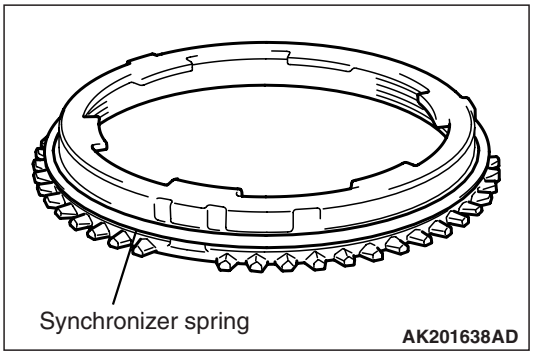
>>C<< SNAP RING INSTALLATION

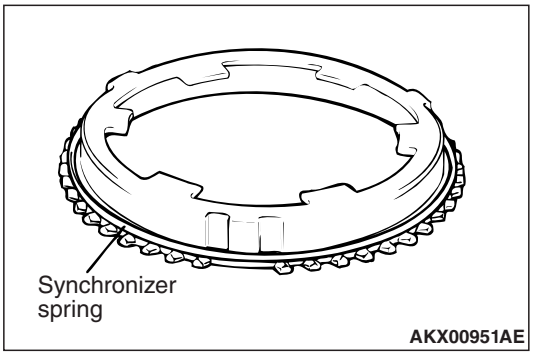


1. Install the thickest snap ring that can be fitted in the snap ring groove of input shaft.
2. Make sure that the front bearing end play meets the standard value.

   Standard value: 0 – 0.12 mm

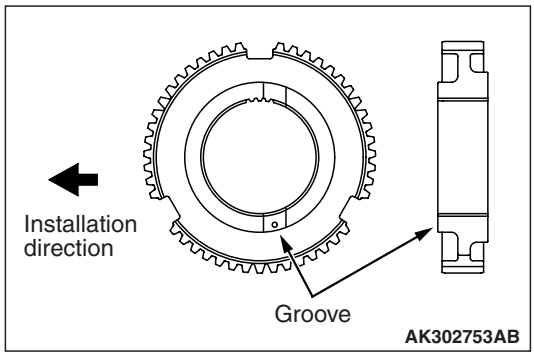
>>D<< SYNCHRONIZER SPRING INSTALLATION

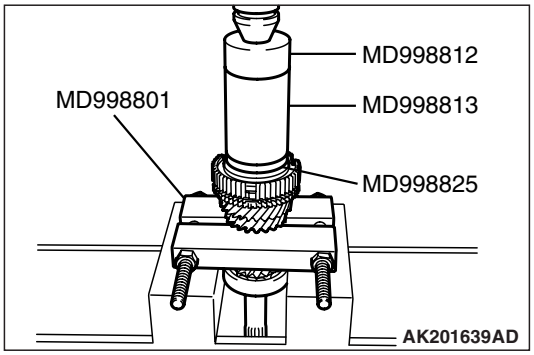




Install the synchronizer spring to the illustrated position of the synchronizer ring and outer synchronizer ring.

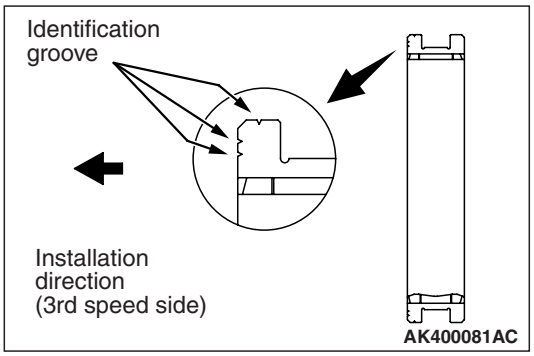
>>E<< 3RD-4TH SPEED SYNCHRONIZER HUB INSTALLATION



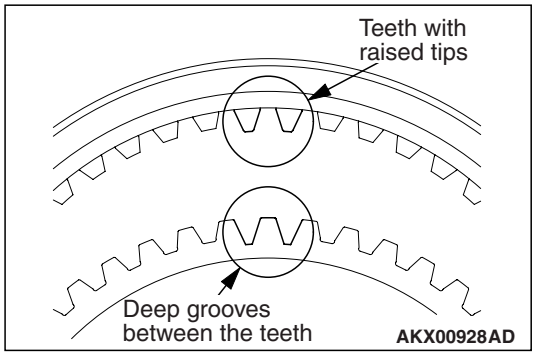


1. Using special tool Bearing remover (MD998801), support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Make sure that the inner synchronizer ring has been perfectly matched to the 3rd speed gear cone.
3. Check the installation direction of the 3rd-4th speed synchronizer hub, and put it on the input shaft.
4. Using special tools, press install the 3rd-4th speed synchronizer hub with the press.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998825)
5. Make sure that the outer synchronizer ring can rotate freely.

>>F<< SYNCHRONIZER SLEEVE INSTALLATION

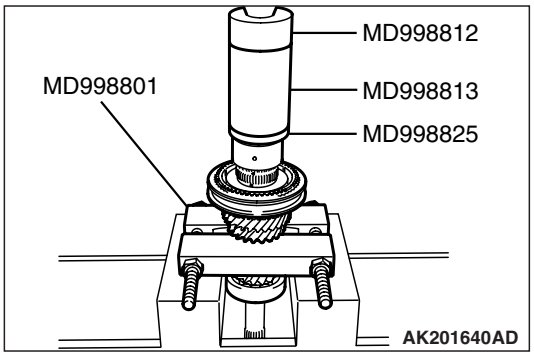


1. Check the installation direction of the synchronizer sleeve, and install it onto the 3rd-4th speed synchronizer hub.



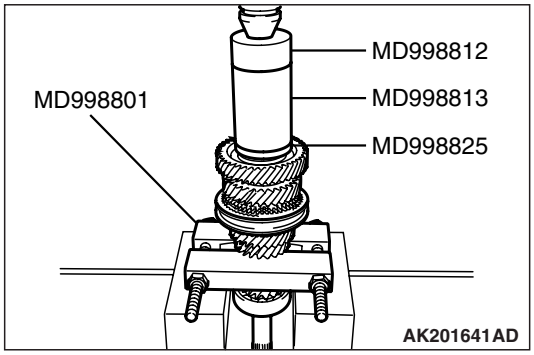
2. Install the synchronizer sleeve so that the areas with teeth that have raised tips (three areas total) are aligned with the areas on the synchronizer hub that have deep grooves between the teeth (three areas total).

>>G<< 4TH SPEED GEAR SLEEVE INSTALLATION



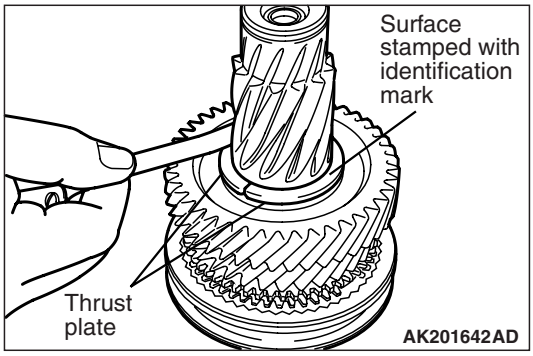
1. Using special tool Bearing remover (MD998801), support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Using special tools, press install the 4th speed gear sleeve with the press.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998825)

>>H<< 5TH SPEED GEAR INSTALLATION



1. Using special tool Bearing remover (MD998801), support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Using special tools, press install the 5th speed gear in the input shaft.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998825)

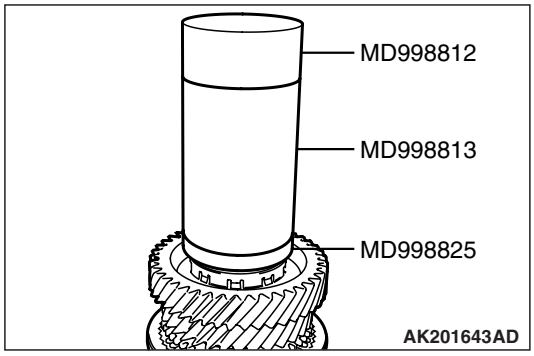
>>I<< THRUST PLATE INSTALLATION



1. Install the thickest thrust plates that can be fitted in the groove of input shaft. Install the thrust plate so the surface stamped with the identification mark is facing up.
2. Make sure that the 5th speed gear end play meets the standard value.

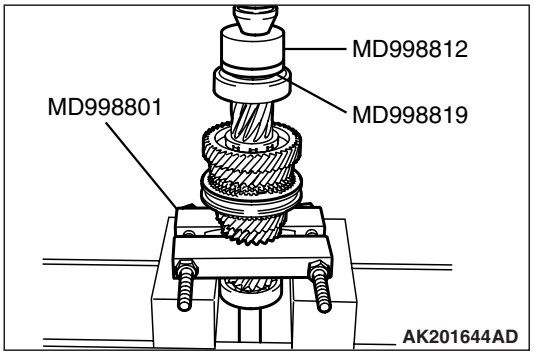
   Standard value: 0 – 0.09 mm

>>J<< THRUST PLATE STOPPER INSTALLATION



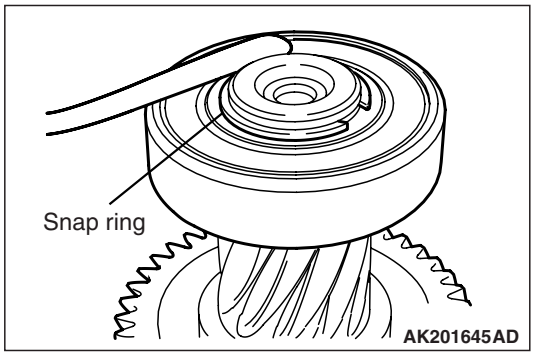
Install the thrust plate stopper by pressing special tools by hand. Make sure that it is not tilted.
- Installer cap (MD998812)
- Installer-100 (MD998813)
- Installer adapter (MD998825)

>>K<< BALL BEARING INSTALLATION



1. Using special tool Bearing remover (MD998801), support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Using special tools, press install the ball bearing in the input shaft.
   - Installer cap (MD998812)
   - Installer adapter (MD998819)

>>L<< SNAP RING INSTALLATION



1. Install the thickest snap ring that can be fitted in the groove of input shaft.

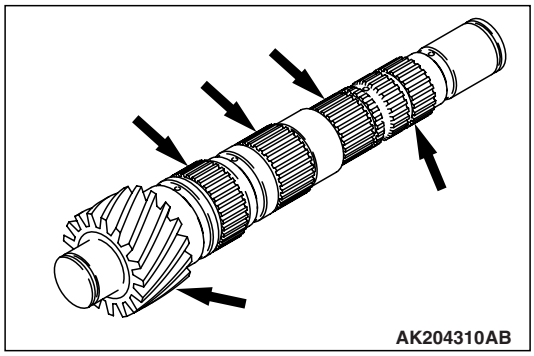
2. Make sure that the rear bearing end play meets the standard value.

Standard value: 0 – 0.12 mm

INSPECTION

M1222002300153

OUTPUT SHAFT

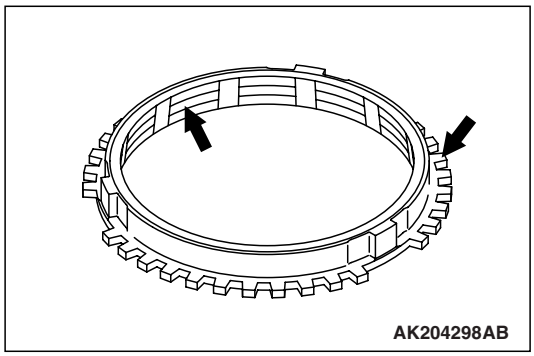


1. Check the splines for damage and wear.
2. Check that the helical gear teeth surfaces are not damaged or worn.

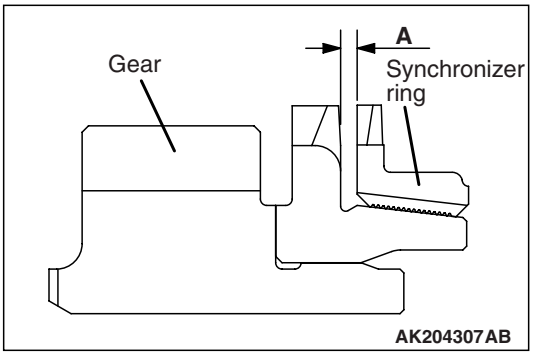
NEEDLE ROLLER BEARING

1. Combine the needle roller bearing with the bearing sleeve and gear, and check that it rotates smoothly without noise or play.
2. Check the needle roller bearing cage for deformation.

SYNCHRONIZER RING <FOR 5TH SPEED>



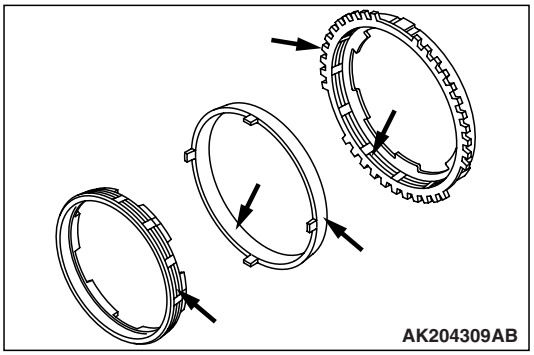
1. Check if the clutch gear teeth are damaged.
2. Check internal surface for damage, wear and broken threads.



3. Force the synchronizer ring toward the clutch gear and check clearance "A." If "A" is less than the limit, replace the synchronizer ring.

Minimum limit: 0.5 mm

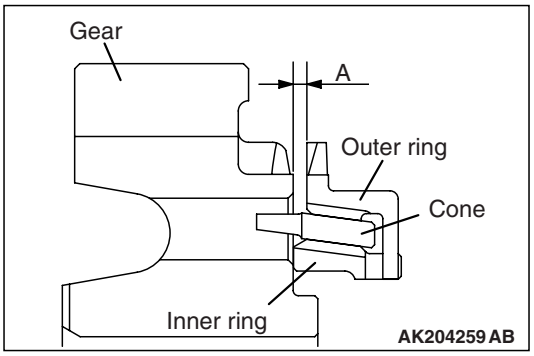
OUTER SYNCHRONIZER RING/INNER SYNCHRONIZER RING/SYNCHRONIZER CONE <FOR REVERSE>



⚠ CAUTION

When replacing, replace the outer ring, inner ring and cone as a set.

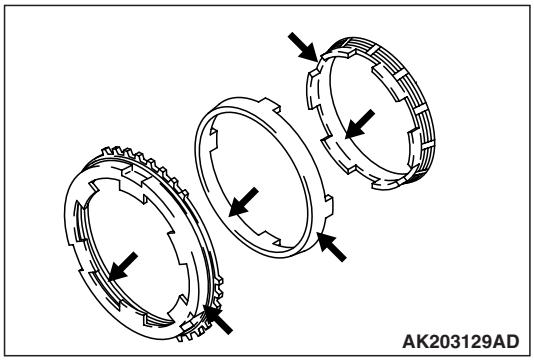
1. Check that the clutch gear tooth surfaces and cone surfaces are not damaged or broken.



2. Install the outer ring, inner ring and cone, force them toward the gear, and check clearance "A." If "A" is less than the limit, replace them as a set.

Minimum limit: 0.5 mm

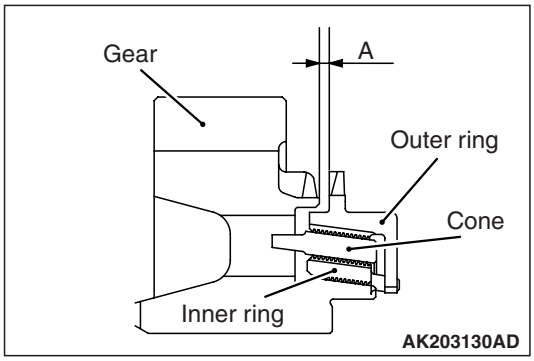
OUTER SYNCHRONIZER RING/INNER SYNCHRONIZER RING/SYNCHRONIZER CONE <FOR 1ST SPEED AND 2ND SPEED>



⚠ CAUTION

When replacing, replace the outer ring, inner ring and cone as a set.

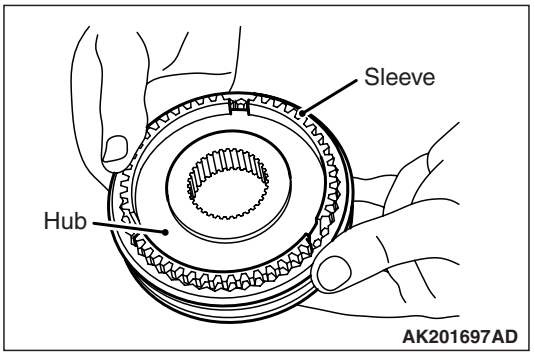
1. Check that the clutch gear tooth surfaces and cone surfaces are not damaged or broken.



2. Install the outer ring, inner ring and cone, force them toward the gear, and check clearance "A." If "A" is less than the limit, replace them as a set.

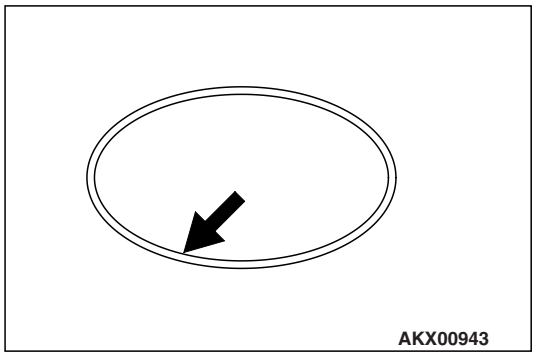
   Minimum limit: 0.5 mm

SYNCHRONIZER SLEEVE AND HUB



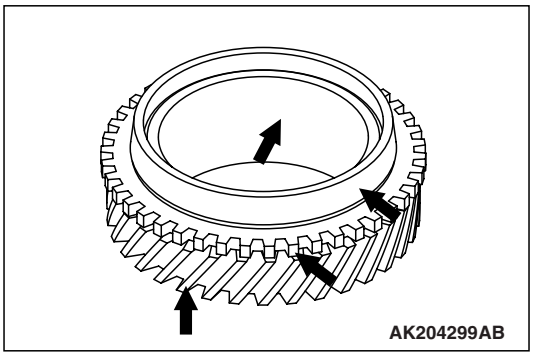
1. Combine the synchronizer sleeve and hub, and check that they slide smoothly.
2. Check that the sleeve is free from damage at its inside splines ends.

SYNCHRONIZER SPRING



Check that the spring is not sagging, deformed or broken.

SPEED GEARS

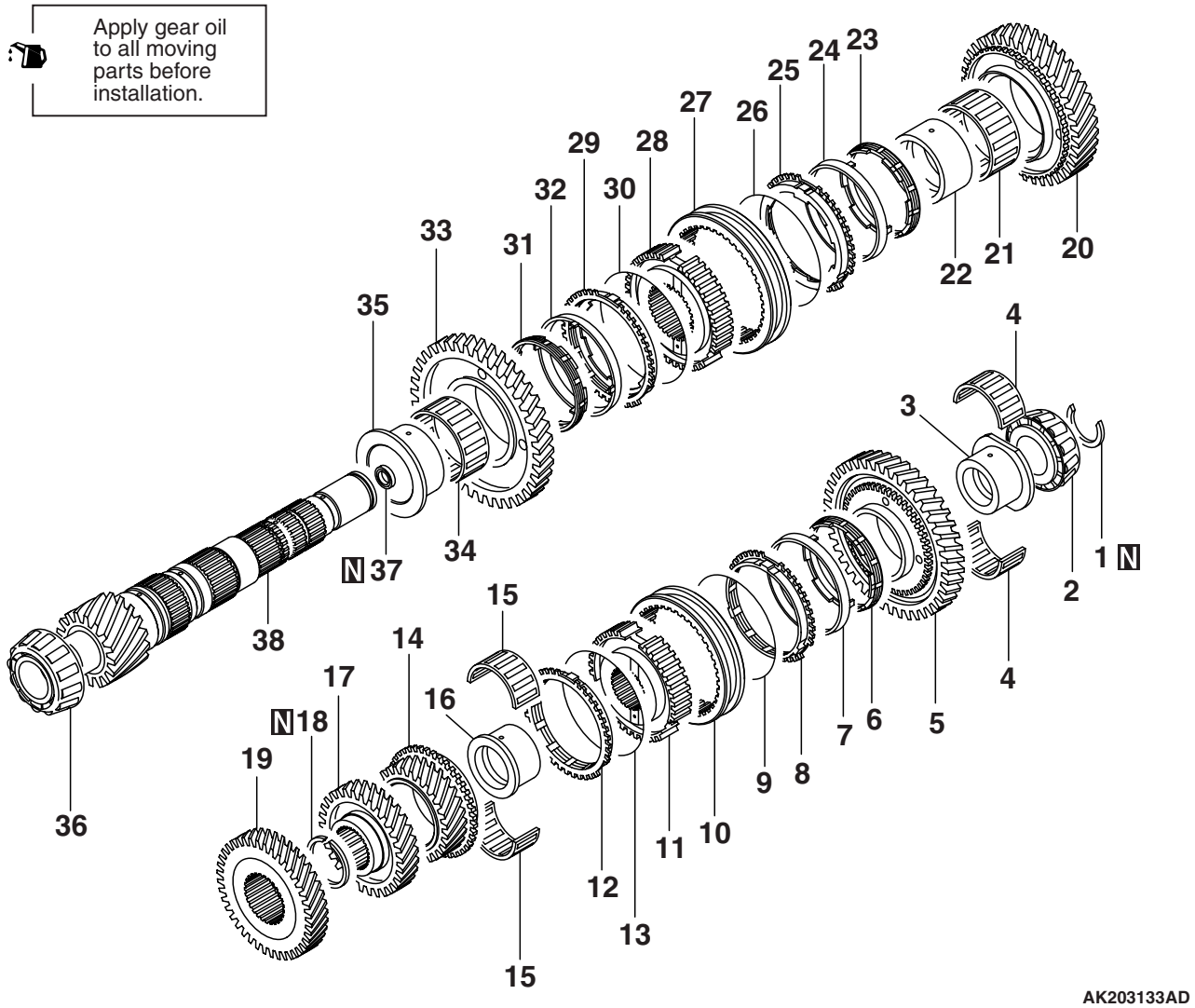


1. Check that the helical and clutch gear tooth surfaces are not damaged or worn.
2. Check that the synchronizer cone surfaces are not roughened, damaged or worn.
3. Check that the gear inside diameter and front and rear surfaces are not damaged or worn.

OUTPUT SHAFT

DISASSEMBLY AND REASSEMBLY

M1222002200479



AK203133AD

			Disassembly steps
	>>Q<<	1.	Snap ring
<<A>>	>>P<<	2.	Taper roller bearing
<<B>>	>>O<<	3.	Reverse gear sleeve
		4.	Needle roller bearing
		5.	Reverse gear
		6.	Inner synchronizer ring
		7.	Synchronizer cone
		8.	Outer synchronizer ring
	>>L<<	9.	Synchronizer spring
	>>N<<	10.	Synchronizer sleeve
<<C>>	>>M<<	11.	5th speed-reverse synchronizer hub
		12.	Synchronizer ring
	>>L<<	13.	Synchronizer spring
		14.	5th speed gear
		15.	Needle roller bearing
	>>K<<	16.	5th speed gear sleeve
	>>J<<	17.	4th speed gear

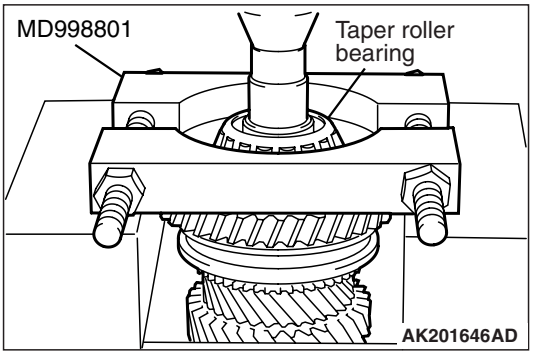
			Disassembly steps (Continued)
	>>I<<	18.	Snap ring
<<D>>	>>H<<	19.	3rd speed gear
		20.	2nd speed gear
		21.	Needle roller bearing
<<E>>	>>G<<	22.	2nd speed gear sleeve
		23.	Inner synchronizer ring
		24.	Synchronizer cone
		25.	Outer synchronizer ring
	>>D<<	26.	Synchronizer spring
	>>F<<	27.	Synchronizer sleeve
	>>E<<	28.	1st-2nd speed synchronizer hub
		29.	Outer synchronizer ring
	>>D<<	30.	Synchronizer spring
		31.	Inner synchronizer ring
		32.	Synchronizer cone
		33.	1st speed gear
		34.	Needle roller bearing
<<F>>	>>C<<	35.	1st speed gear sleeve

Disassembly steps (Continued)

<<G>> >>B<< 36. Taper roller bearing
>>A<< 37. Oil seal
38. Output shaft

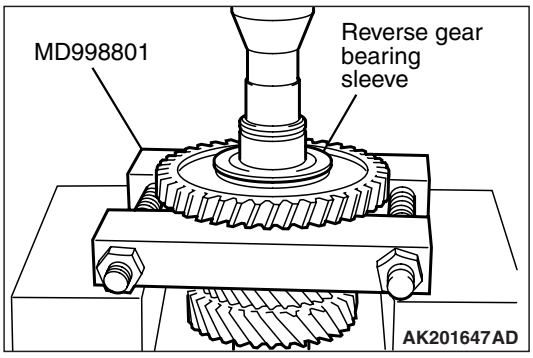
DISASSEMBLY SERVICE POINTS

<<A>> TAPER ROLLER BEARING REMOVAL



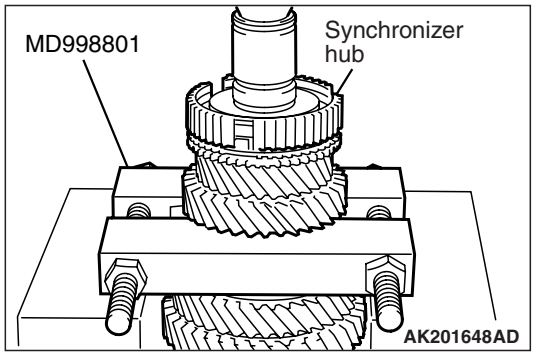
1. Using special tool Bearing remover (MD998801), support the taper roller bearing, and then set them on the press.
2. Push down on the output shaft with the press, and take out the taper roller bearing.

<<B>> REVERSE GEAR BEARING SLEEVE REMOVAL



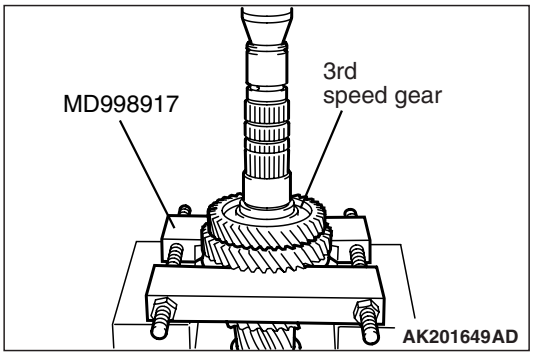
1. Using special tool Bearing remover (MD998801), support the reverse gear, and then set them on the press.
2. Push down on the output shaft with the press and remove the reverse gear bearing sleeve.

<<C>> 5TH SPEED-REVERSE SYNCHRONIZER HUB REMOVAL



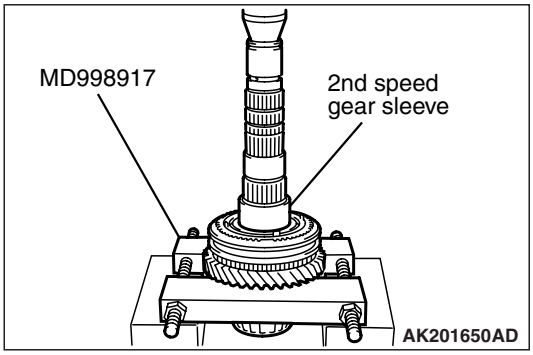
1. Using special tool Bearing remover (MD998801), support the 4th speed gear, and then set them on the press.
2. Push down on the output shaft with the press and remove the 5th speed-reverse synchronizer hub.

<<D>> 3RD SPEED GEAR REMOVAL



1. Using special tool Bearing remover (MD998917), support the 2nd speed gear, and then set them on the press.
2. Push down on the output shaft with the press and remove the 3rd speed gear.

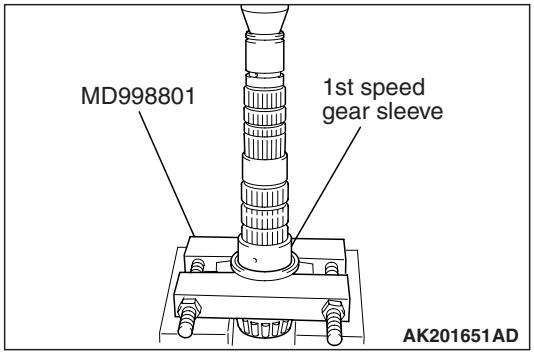
<<E>> 2ND SPEED GEAR SLEEVE REMOVAL



1. Using special tool Bearing remover (MD998917), support the 1st speed gear, and then set them on the press.

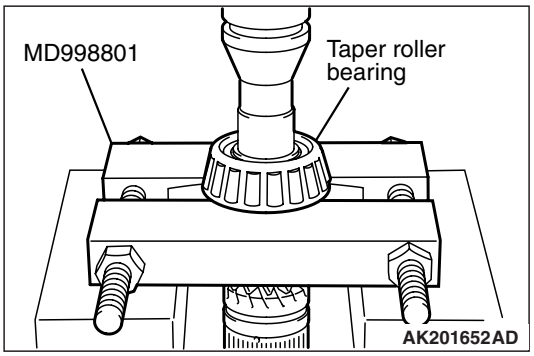
2. Push down on the output shaft with the press and remove the 2nd speed gear sleeve.

<<F>> 1ST SPEED GEAR SLEEVE REMOVAL



1. Using special tool Bearing remover (MD998801), support the 1st speed gear sleeve, and then set them on the press.
2. Push down on the output shaft with the press and remove the 1st speed gear sleeve.

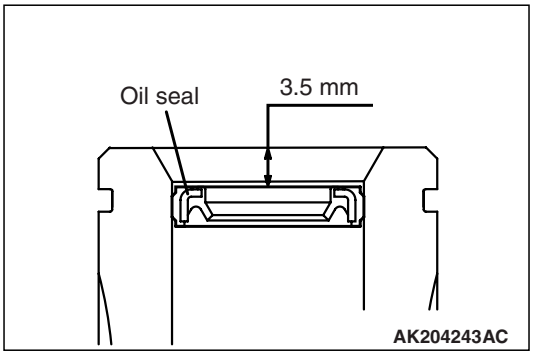
<<G>> TAPER ROLLER BEARING REMOVAL



1. Using special tool Bearing remover (MD998801), support the taper roller bearing, and then set them on the press.
2. Push down on the output shaft with the press and remove the taper roller bearing.

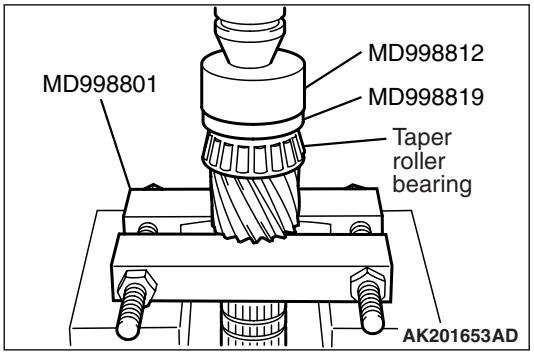
REASSEMBLY SERVICE POINTS

>>A<< OIL SEAL INSTALLATION



Make sure that the oil seal is pressed into the position shown in the illustration.

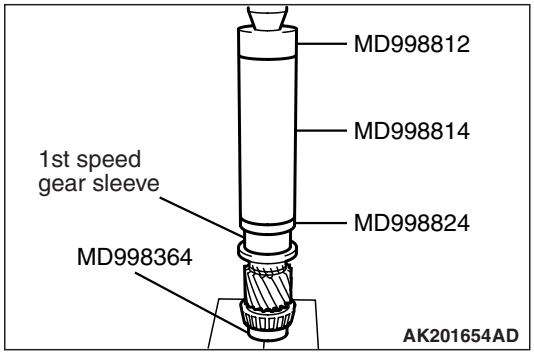
>>B<< TAPER ROLLER BEARING INSTALLATION



1. Using Bearing remover (MD998801), support the output shaft gear, and then set them on the press.
2. Using special tools, press install the taper roller bearing with the press.
   - Installer cap (MD998812)
   - Installer adapter (MD998819)

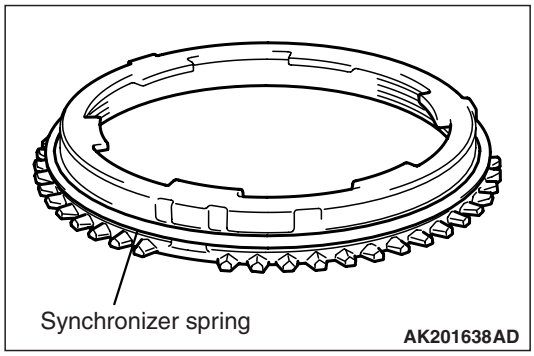
>>C<<1ST SPEED GEAR SLEEVE INSTALLATION

1. Set the output shaft on the press support stand.



2. Using special tools, press install the 1st speed gear sleeve with the press.
   - Installer cap (MD998812)
   - Installer-200 (MD998814)
   - Installer adapter (MD998824)
   - Camshaft oil seal installer (MD998364)

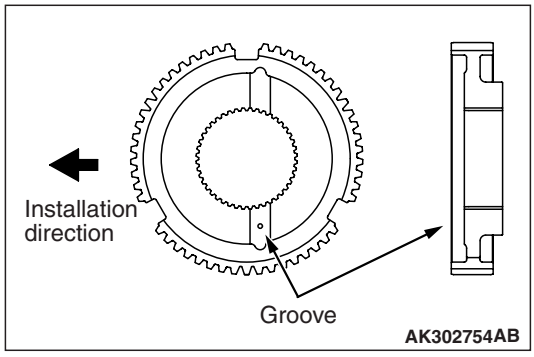
>>D<< SYNCHRONIZER SPRING INSTALLATION



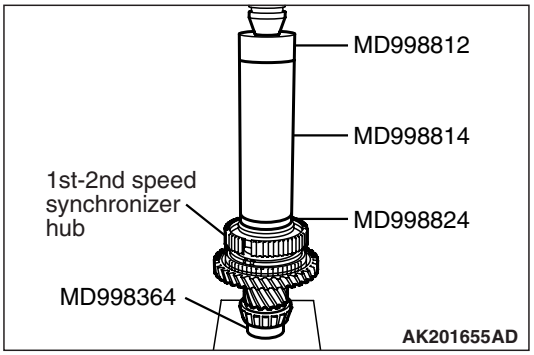
Install the synchronizer spring to the illustrated position of the outer synchronizer ring.

>>E<< 1ST-2ND SPEED SYNCHRONIZER HUB INSTALLATION

1. Set the output shaft on the press support stand.

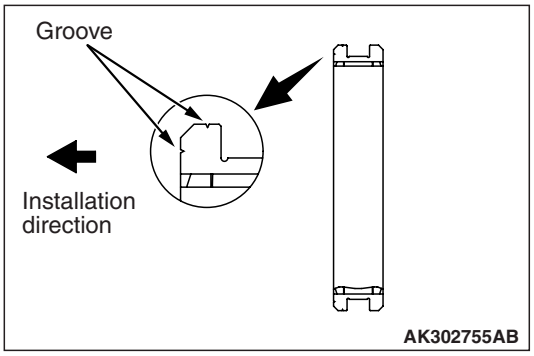


2. Check that the 1st-2nd speed synchronizer hub is in the correct installation direction, and put it on the output shaft.

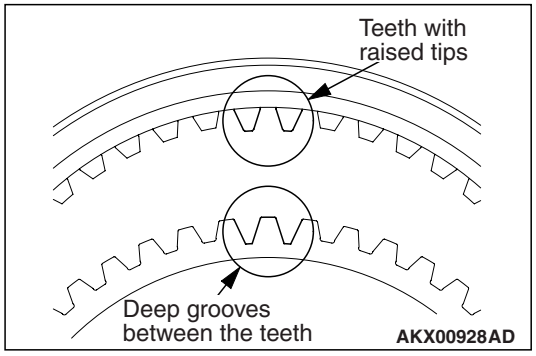


3. Using special tools, press install the 1st-2nd speed synchronizer hub with the press.
   - Installer cap (MD998812)
   - Installer-200 (MD998814)
   - Installer adapter (MD998824)
   - Camshaft oil seal installer (MD998364)
4. Make sure that the outer synchronizer ring on the 1st speed gear side can rotate freely.

>>F<< SYNCHRONIZER SLEEVE INSTALLATION



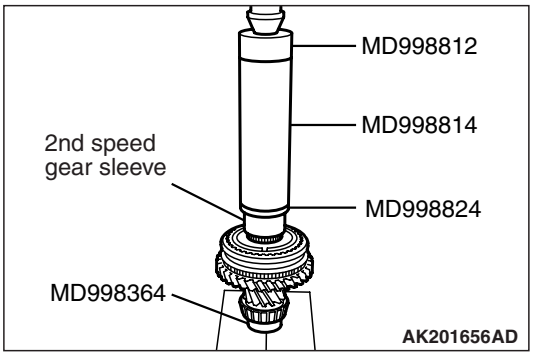
1. Check that the synchronizer sleeve is in the correct direction for installation, and install it on the 1st-2nd speed synchronizer hub.



2. Install the synchronizer sleeve so that the areas with teeth that have raised tips (three areas total) are aligned with the areas on the synchronizer hub that have deep grooves between the teeth (three areas total).

>>G<< 2ND SPEED GEAR SLEEVE INSTALLATION

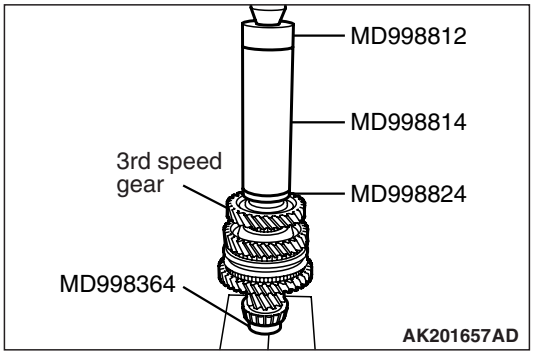
1. Set the output shaft on the press support stand.



2. Using special tools, press install the 2nd speed sleeve onto the output shaft.
   - Installer cap (MD998812)
   - Installer-200 (MD998814)
   - Installer adapter (MD998824)
   - Camshaft oil seal installer (MD998364)

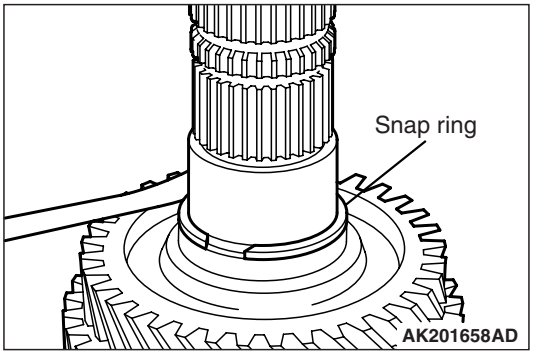
>>H<< 3RD SPEED GEAR INSTALLATION

1. Check that the 2nd speed gear and the outer synchronizer ring have been properly installed. Also, make sure the claws on the synchronizer cone (four places) are correctly fitted into the holes in the 2nd speed gear (four places).



2. Using special tools, press install the 3rd speed gear onto the output shaft.
   - Installer cap (MD998812)
   - Installer-200 (MD998814)
   - Installer adapter (MD998824)
   - Camshaft oil seal installer (MD998364)
3. Make sure that the 2nd speed gear and the outer synchronizer ring can rotate freely.

>>I<< SNAP RING INSTALLATION

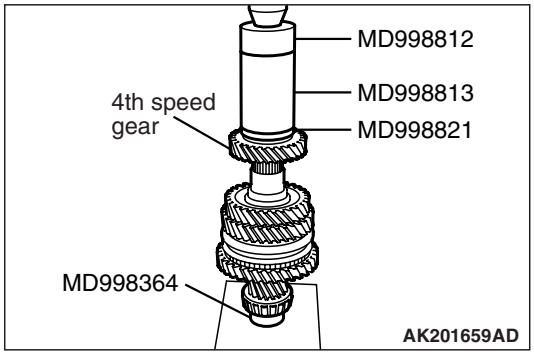


1. Install the thickest snap ring that can be fitted in the groove of output shaft.
2. Make sure that the 3rd speed gear end play meets the standard value.

   Standard value: 0 – 0.09 mm

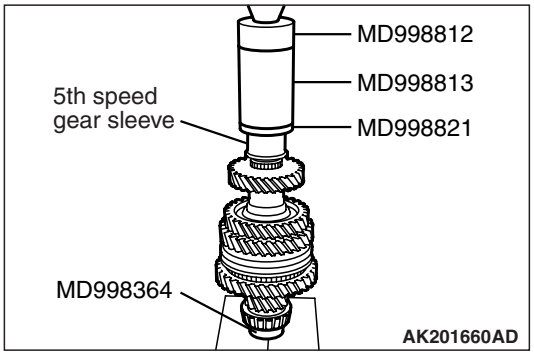
>>J<< 4TH SPEED GEAR INSTALLATION

1. Set the output shaft on the press support stand.



2. Using special tools, press install the 4th speed gear onto the output shaft.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998821)
   - Camshaft oil seal installer (MD998364)

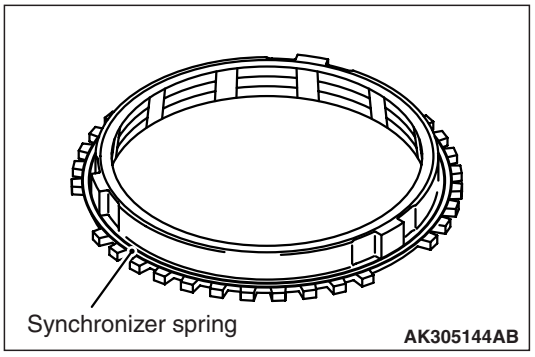
>>K<< 5TH SPEED GEAR SLEEVE INSTALLATION



Using special tools, press install the 5th speed gear sleeve onto the output shaft.

- Installer cap (MD998812)
- Installer-100 (MD998813)
- Installer adapter (MD998821)
- Camshaft oil seal installer (MD998364)

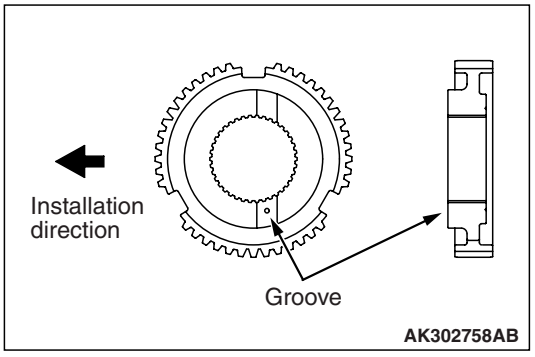
>>L<< SYNCHRONIZER SPRING INSTALLATION



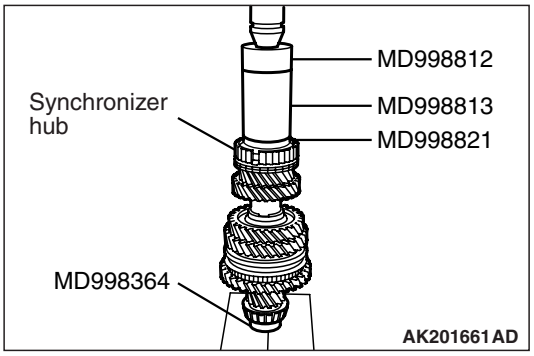
Install the synchronizer spring to the illustrated position of the synchronizer ring.

>>M<< 5TH SPEED-REVERSE SYNCHRONIZER HUB INSTALLATION

1. Set the output shaft on the press support stand.
2. Make sure that the synchronizer ring is fitted correctly on the cone of the 5th speed gear.

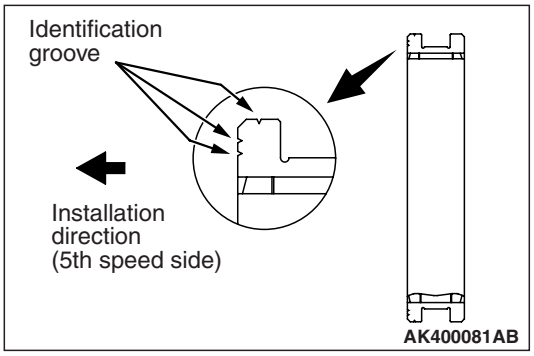


3. Check that the 5th speed-reverse synchronizer hub is oriented correctly for installation, and fit it on the output shaft.

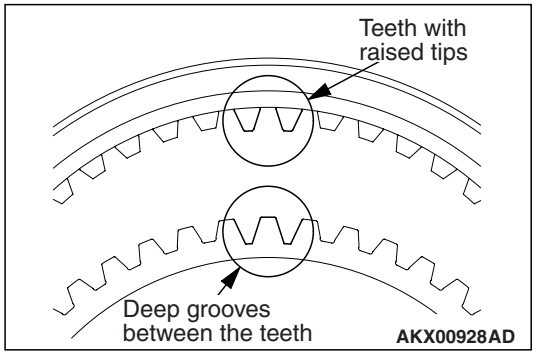


4. Using special tools, press install the 5th speed-reverse synchronizer hub with the press.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998821)
   - Camshaft oil seal installer (MD998364)
5. Make sure that the synchronizer ring on the 5th speed gear side can rotate freely.

>>N<< SYNCHRONIZER SLEEVE INSTALLATION

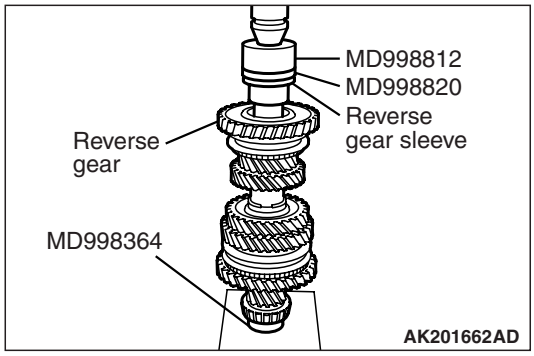


1. Check that the synchronizer sleeve is in the correct direction for installation, and install it on the 5th speed-reverse synchronizer hub.



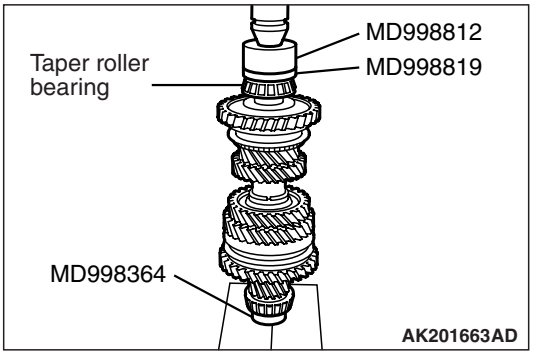
2. Install the synchronizer sleeve so that the areas with teeth that have raised tips (three areas total) are aligned with the areas on the synchronizer hub that have deep grooves between the teeth (three areas total).

>>O<< REVERSE GEAR BEARING SLEEVE INSTALLATION



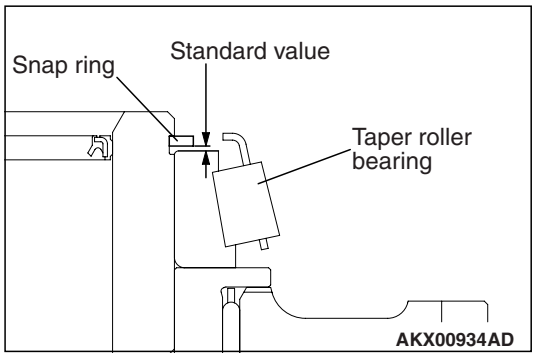
1. Make sure the synchronizer ring, reverse gear and needle roller bearing have been correctly installed.
2. Using special tools, press fit the reverse gear sleeve. Make sure that the reverse gear and the synchronizer ring can rotate freely during the pressing process.
   - Installer cap (MD998812)
   - Installer adapter (MD998820)
   - Camshaft oil seal installer (MD998364)

>>P<< TAPER ROLLER BEARING INSTALLATION



Using special tools, press install the taper roller bearing.
- Installer cap (MD998812)
- Installer adapter (MD998819)
- Camshaft oil seal installer (MD998364)

>>Q<< SNAP RING INSTALLATION



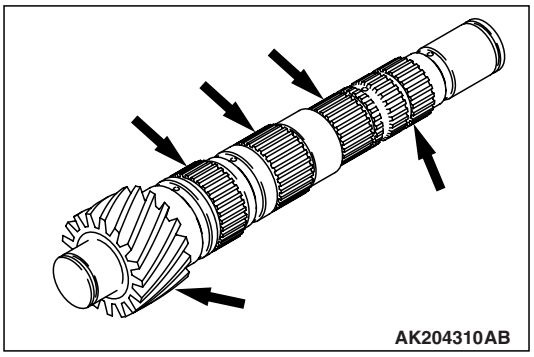
1. Install the thickest snap ring that can be fitted in the groove of output shaft.
2. Make sure that the rear bearing end play meets the standard value.

   Standard value: 0 – 0.09 mm

INSPECTION

M1222002300153

OUTPUT SHAFT

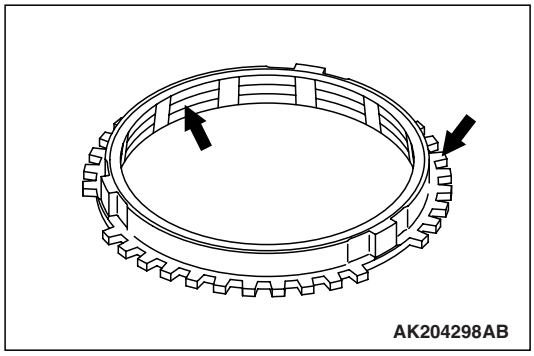


1. Check the splines for damage and wear.
2. Check that the helical gear teeth surfaces are not damaged or worn.

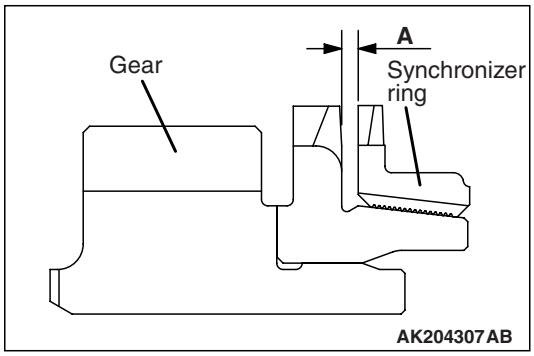
NEEDLE ROLLER BEARING

1. Combine the needle roller bearing with the bearing sleeve and gear, and check that it rotates smoothly without noise or play.
2. Check the needle roller bearing cage for deformation.

SYNCHRONIZER RING <FOR 5TH SPEED>



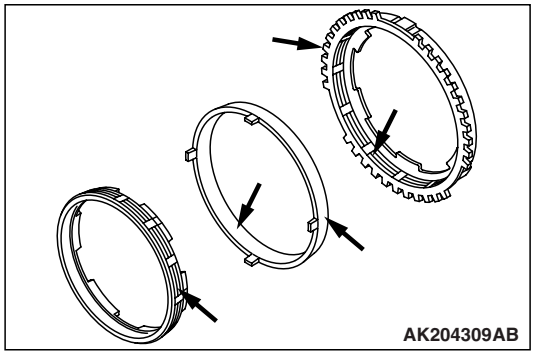
1. Check if the clutch gear teeth are damaged.
2. Check internal surface for damage, wear and broken threads.



3. Force the synchronizer ring toward the clutch gear and check clearance "A." If "A" is less than the limit, replace the synchronizer ring.

Minimum limit: 0.5 mm

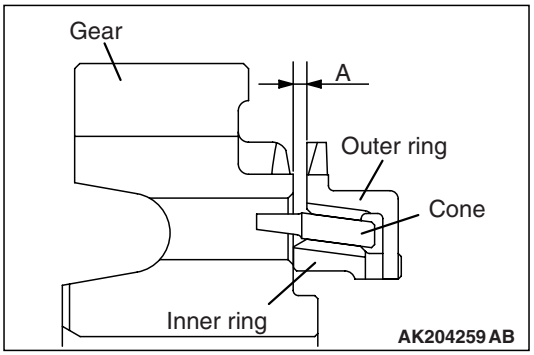
OUTER SYNCHRONIZER RING/INNER SYNCHRONIZER RING/SYNCHRONIZER CONE <FOR REVERSE>



⚠ CAUTION

When replacing, replace the outer ring, inner ring and cone as a set.

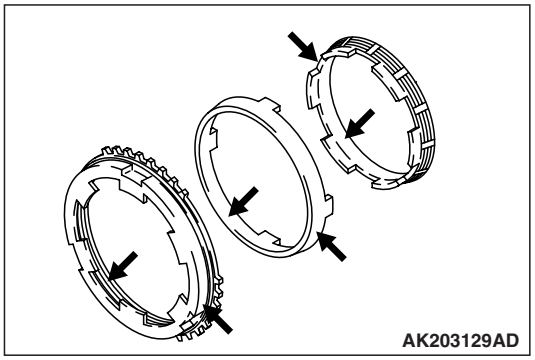
1. Check that the clutch gear tooth surfaces and cone surfaces are not damaged or broken.



2. Install the outer ring, inner ring and cone, force them toward the gear, and check clearance "A." If "A" is less than the limit, replace them as a set.

Minimum limit: 0.5 mm

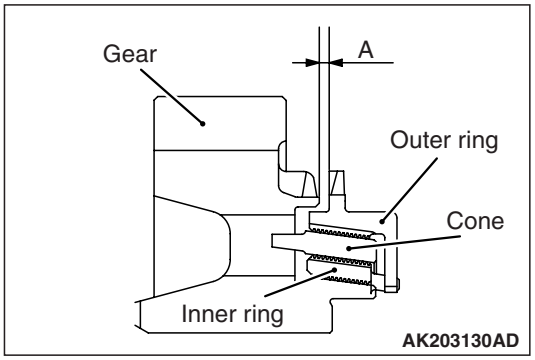
OUTER SYNCHRONIZER RING/INNER SYNCHRONIZER RING/SYNCHRONIZER CONE <FOR 1ST SPEED AND 2ND SPEED>



⚠ CAUTION

When replacing, replace the outer ring, inner ring and cone as a set.

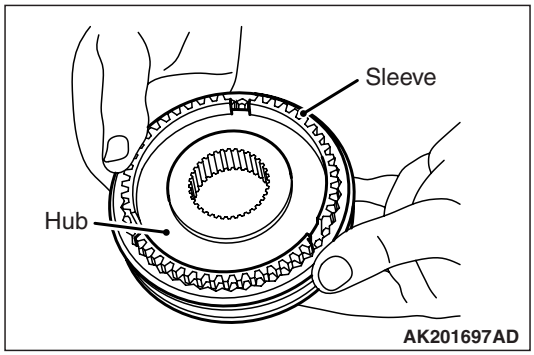
1. Check that the clutch gear tooth surfaces and cone surfaces are not damaged or broken.



2. Install the outer ring, inner ring and cone, force them toward the gear, and check clearance "A." If "A" is less than the limit, replace them as a set.

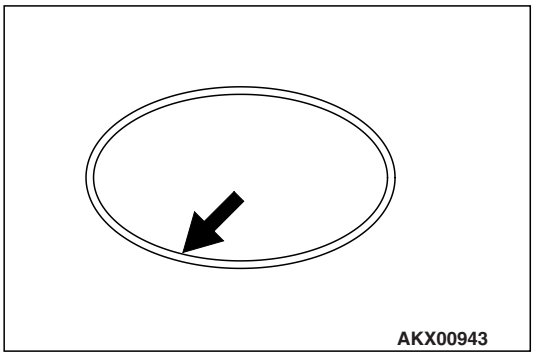
Minimum limit: 0.5 mm

SYNCHRONIZER SLEEVE AND HUB



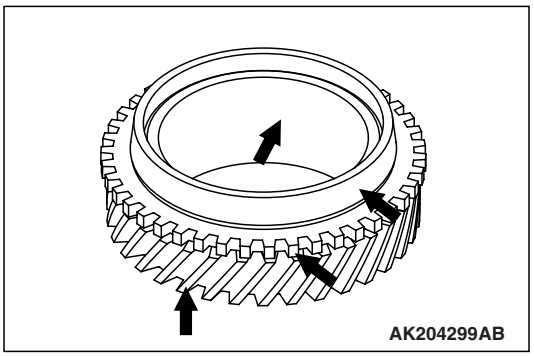
1. Combine the synchronizer sleeve and hub, and check that they slide smoothly.
2. Check that the sleeve is free from damage at its inside splines ends.

SYNCHRONIZER SPRING



Check that the spring is not sagging, deformed or broken.

SPEED GEARS

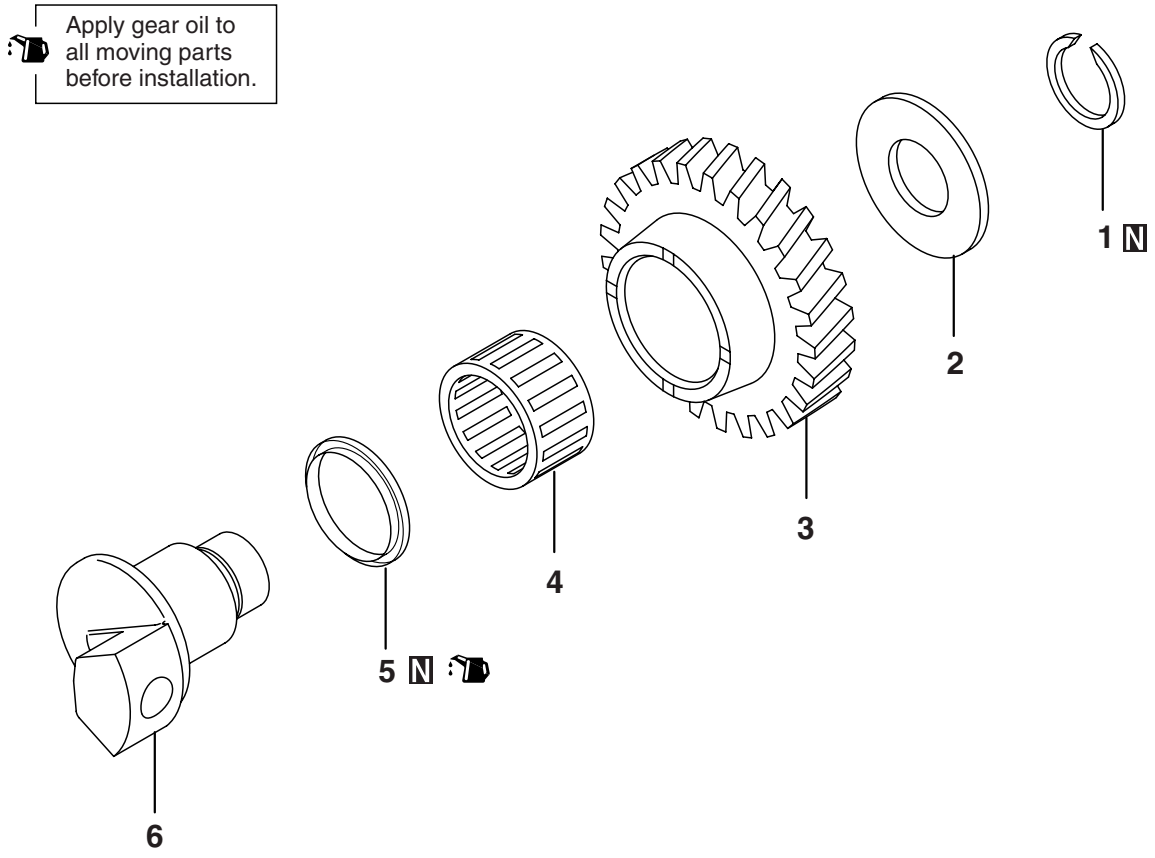


1. Check that the helical and clutch gear tooth surfaces are not damaged or worn.
2. Check that the synchronizer cone surfaces are not roughened, damaged or worn.
3. Check that the gear inside diameter and front and rear surfaces are not damaged or worn.

REVERSE IDLER GEAR

DISASSEMBLY AND REASSEMBLY

M1222012500136



AK302745AC

Disassembly steps

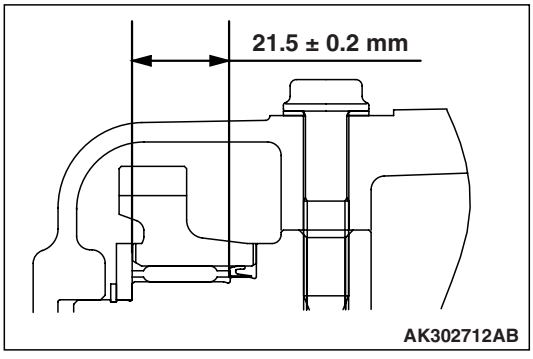
1. Snap ring
2. Thrust washer
3. Reverse idler gear
4. Needle roller bearing

>>A<< 5. Friction damper

6. Reverse idler gear shaft

REASSEMBLY SERVICE POINT

>>A<< FRICTION DAMPER INSTALLATION

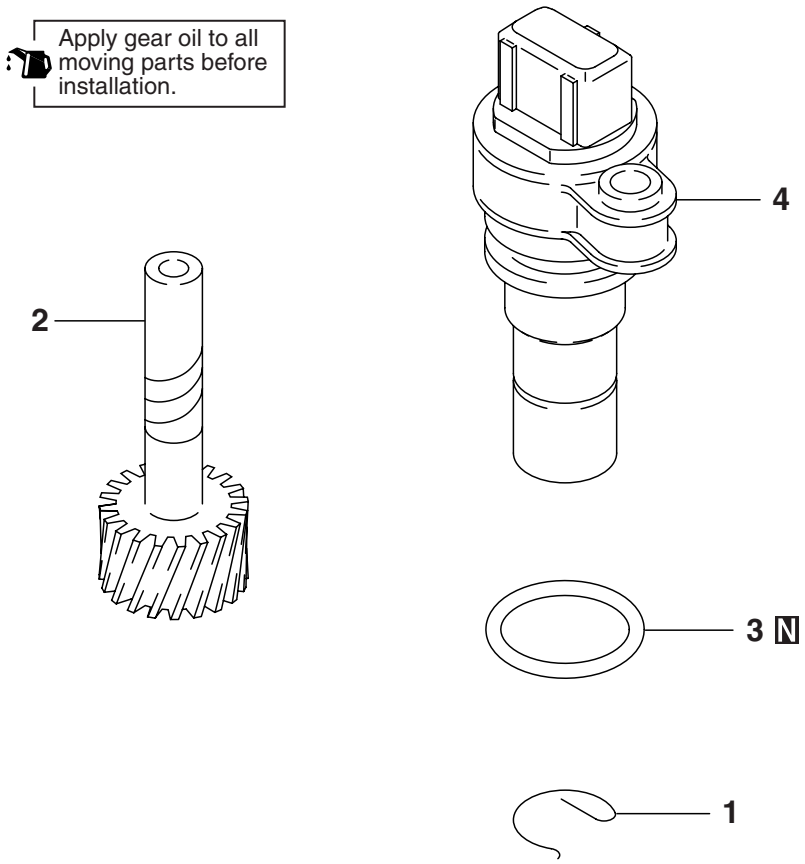


After apply gear oil to the outside and inside circumferences of the friction damper, install it using the special tool in position as shown in Fig.

VEHICLE SPEED SENSOR

DISASSEMBLY AND REASSEMBLY

M1222007000038



AK204397AB

Disassembly steps

1. E-clip
2. Speed sensor gear

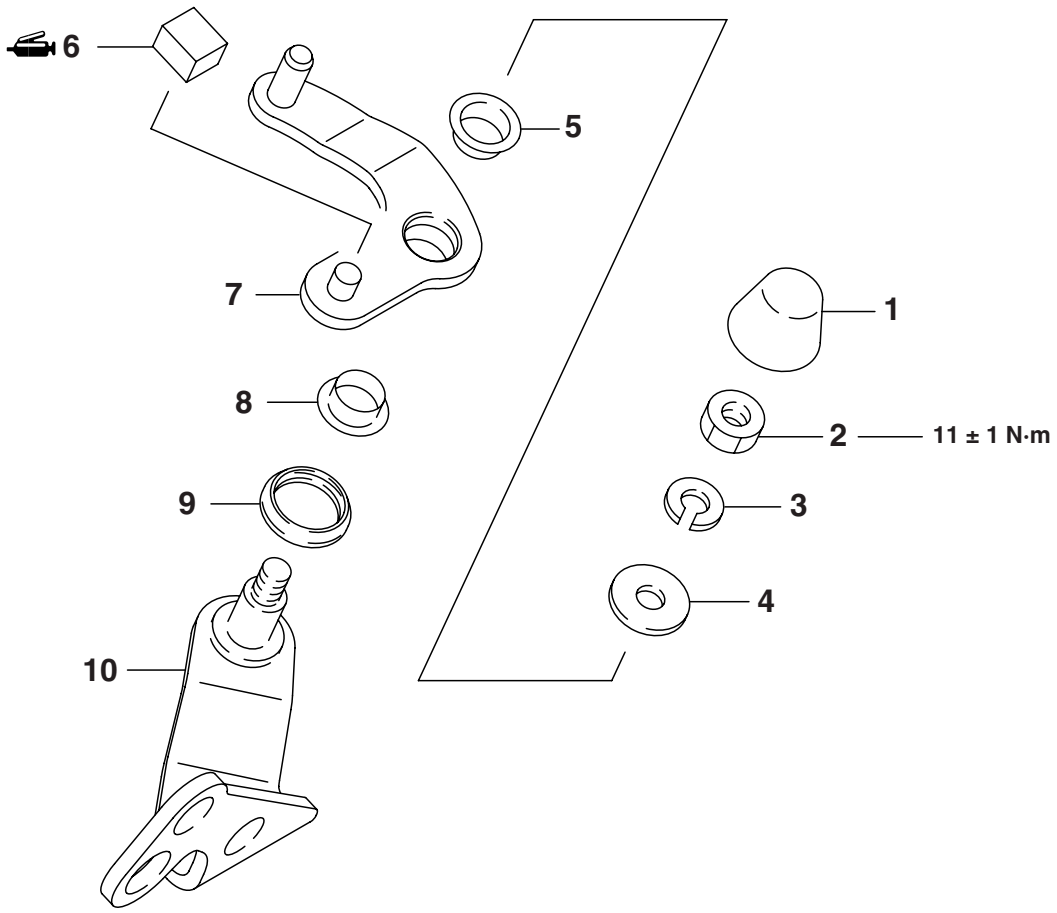
Disassembly steps (Continued)

3. O-ring
4. Speed sensor

SELECT LEVER

DISASSEMBLY AND REASSEMBLY

M1222012800115



AK204398AB

Disassembly steps

1. Dust cover
2. Nut
3. Spring washer
4. Washer

>>A<< 5. Select lever bushing

6. Select lever shoe
7. Select lever

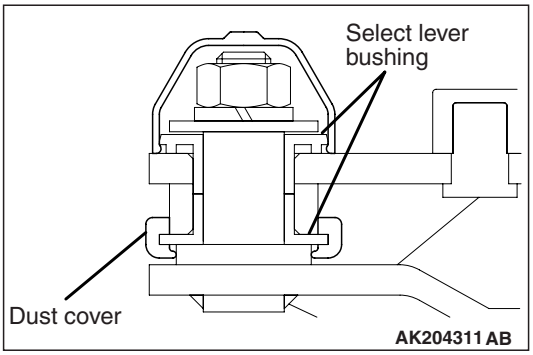
>>A<< 8. Select lever bushing

>>A<< 9. Dust cover

10. Select lever shaft

REASSEMBLY SERVICE POINT

>>A<< DUST COVER AND SELECT LEVER BUSHING INSTALLATION

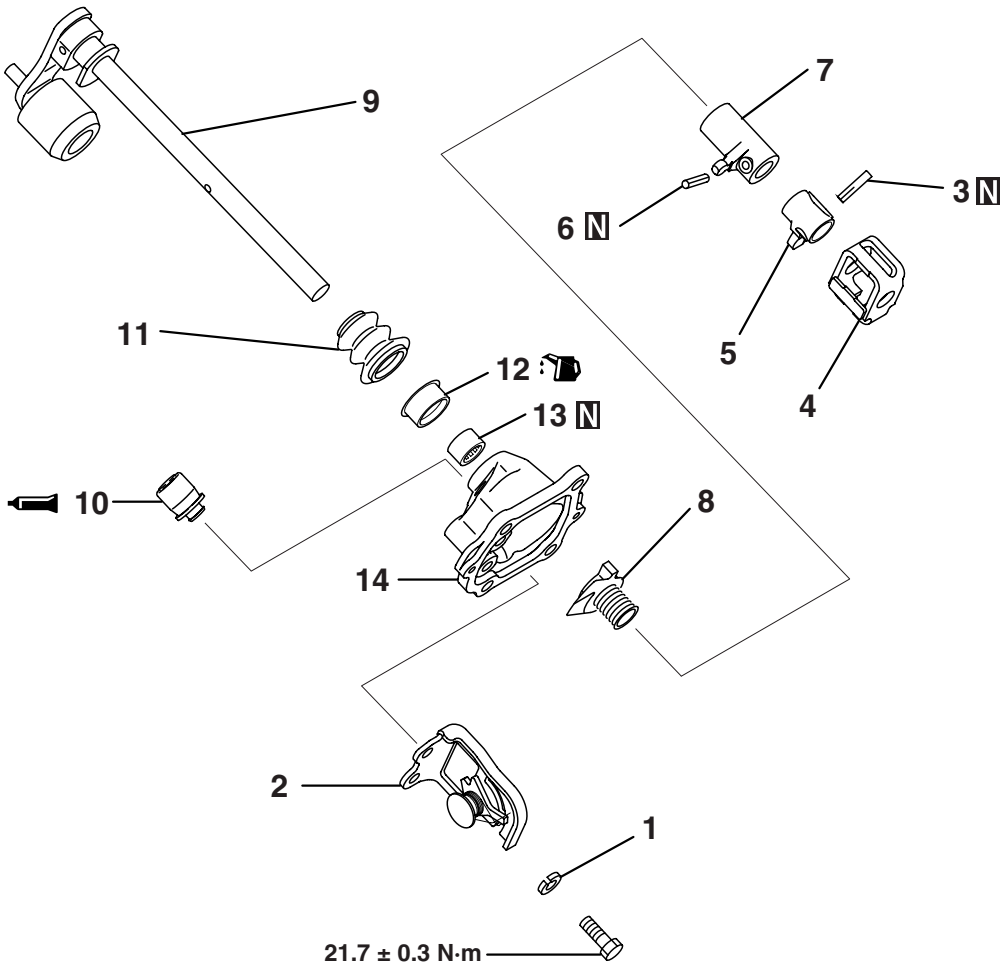


Make sure the dust cover and select lever bushing installation direction is correct, and distinguished parts are correctly assembled. Refer to the figure at left.

CONTROL HOUSING

DISASSEMBLY AND REASSEMBLY

M1222013100357

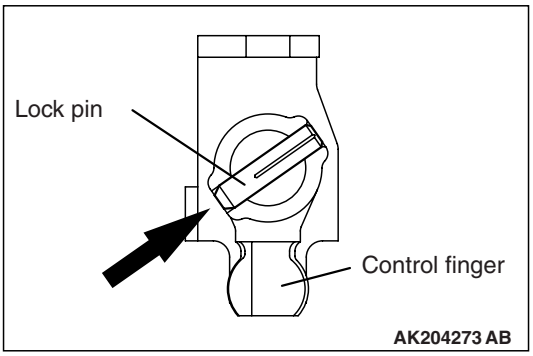


AK403619AC

			Disassembly steps
		1.	Spring washer
		2.	Stopper bracket
<<A>>	>>E<<	3	Lock pin
		4.	Interlock plate
		5.	Control finger
	>>D<<	6.	Spring pin
		7.	Stopper body
		8.	Neutral return spring
		9.	Control shaft
	>>C<<	10.	Air breather
		11.	Control shaft boot
	>>B<<	12.	Oil seal
	>>A<<	13.	Needle bearing
		14.	Control housing

DISASSEMBLY SERVICE POINT

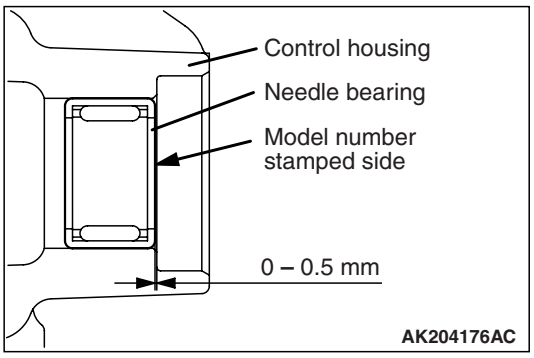
<<A>> LOCK PIN REMOVAL



Drive out the lock pin from the direction shown.

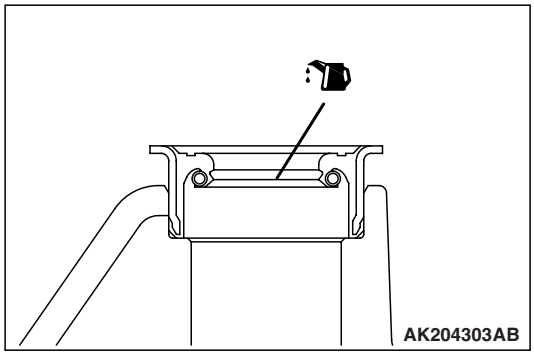
REASSEMBLY SERVICE POINTS

>>A<< NEEDLE BEARING INSTALLATION



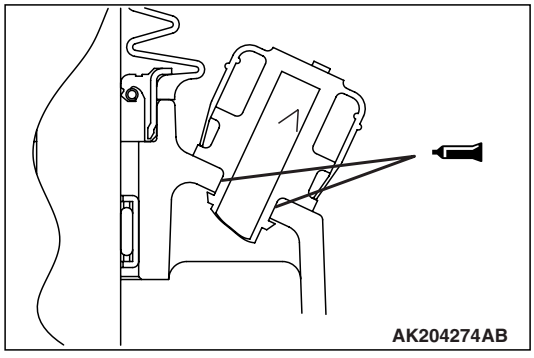
Press fit the needle bearing into the control housing side as shown.
Make sure that the side with the model number stamped on it faces the end of the control housing as shown.

>>B<< OIL SEAL INSTALLATION



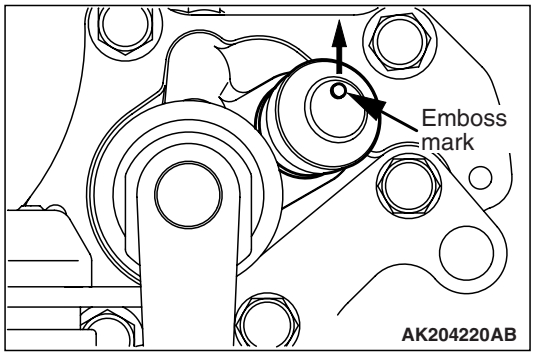
Apply gear oil (DiaQueen NEW MULTI GEAR OIL API classification GL-3, SAE 75W-80 or Gear oil API classification GL-4, SAE 75W-85W/75W-90) to the oil seal lip area.

>>C<< AIR BREATHER INSTALLATION



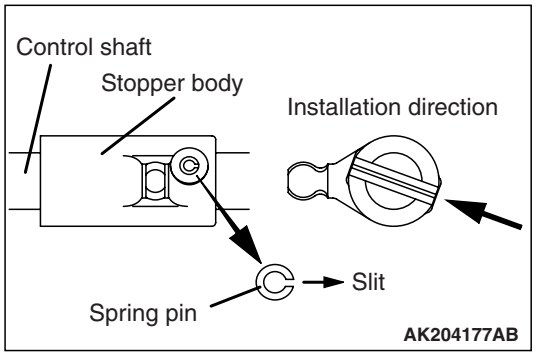
1. Apply sealant to the inserting portion of air breather.

   Specified sealant:
   3M SUPER WEATHERSTRIP No.8001 or equivalent



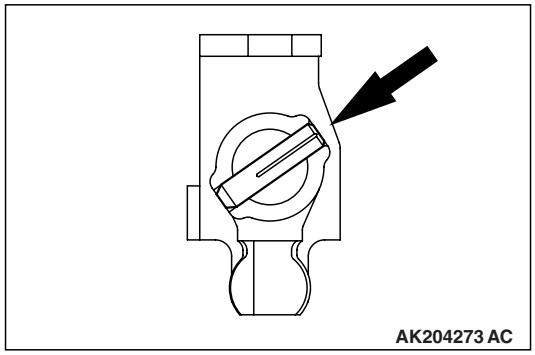
2. Install the air breather so that the emboss mark is in the direction shown in the figure.

>>D<< SPRING PIN INSTALLATION



Drive in the spring pin so that the slit is in the direction shown in the figure.

>>E<< LOCK PIN INSTALLATION

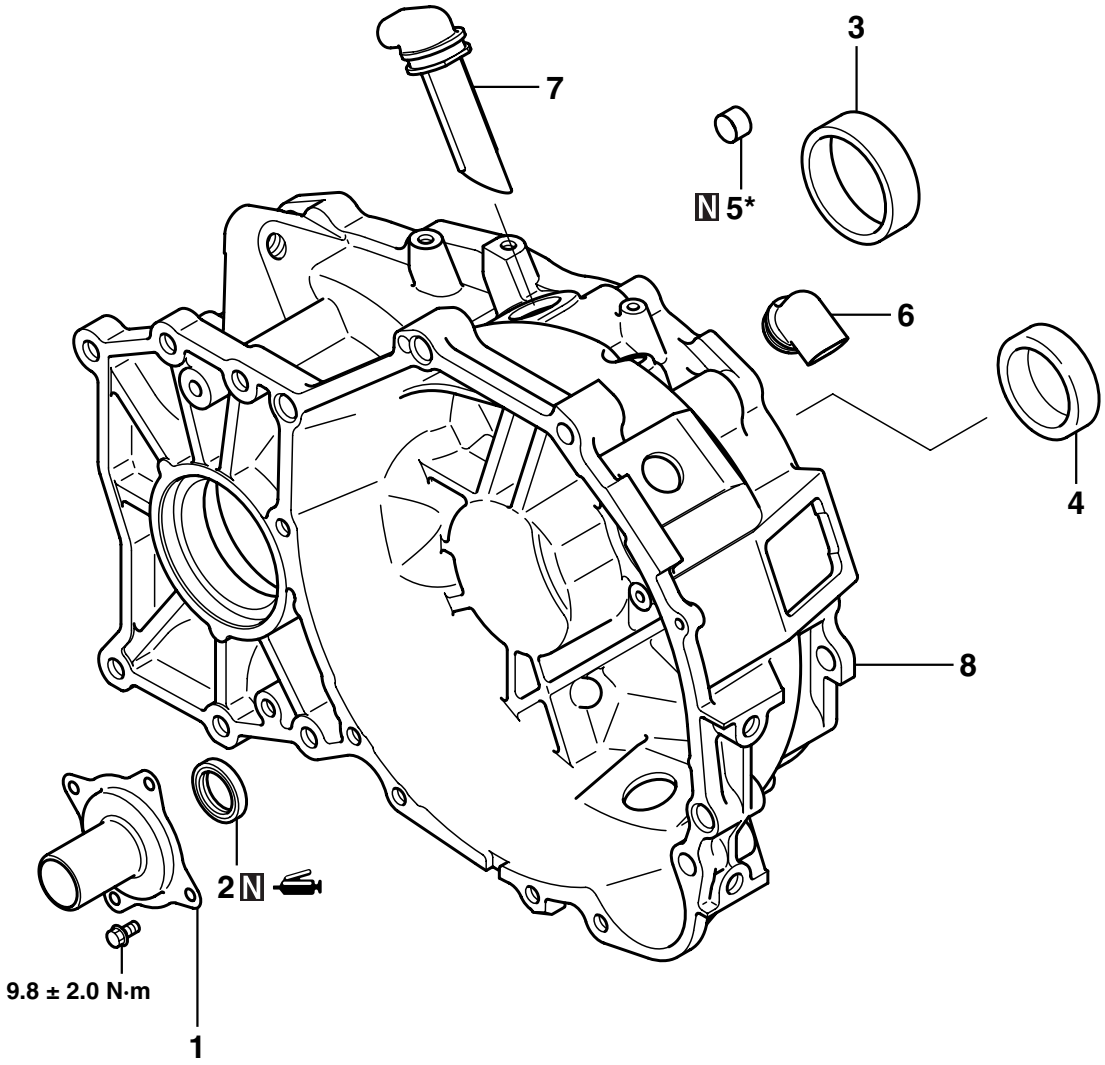


Drive the lock pin in from the direction shown in the figure.

CLUTCH HOUSING

DISASSEMBLY AND REASSEMBLY

M1222003700433



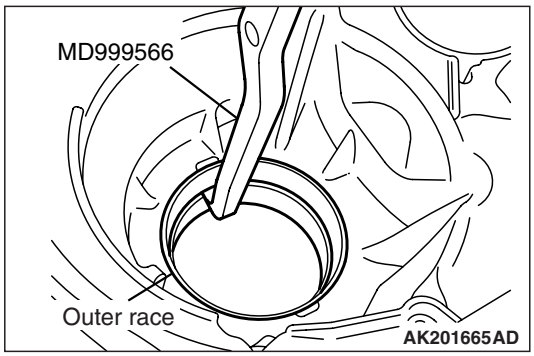
			Disassembly steps
		1.	Clutch release bearing retainer
	>>**E**<<	2.	Oil seal
<<**A**>>	>>**D**<<	3.	Outer race
<<**B**>>	>>**C**<<	4.	Outer race
	>>**B**<<	5.	Bushing*
	>>**A**<<	6.	Cover-A

			Disassembly steps (Continued)
>>**A**<<		7.	Cover-B
		8.	Clutch housing

*NOTE: *Refer to the bushing installation procedures only when replacing the clutch housing.*

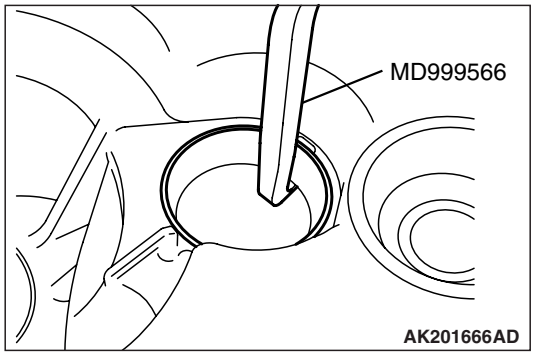
DISASSEMBLY SERVICE POINTS

<<A>> OUTER RACE REMOVAL



Using special tool Claw (MD999566), remove the outer race from the clutch housing.

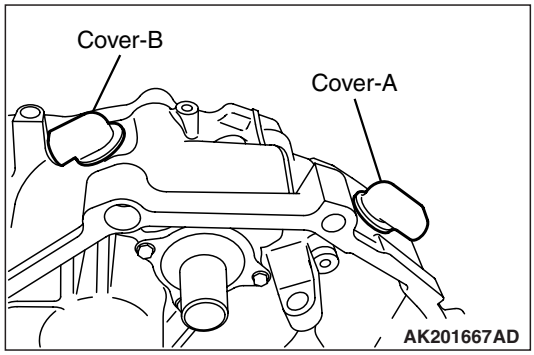
<<B>> OUTER RACE REMOVAL



Using special tool Claw (MD999566), remove the outer race from the clutch housing.

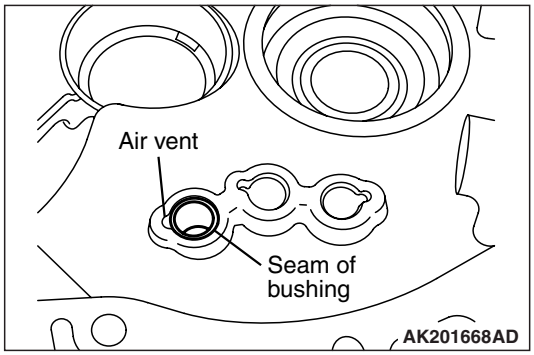
REASSEMBLY SERVICE POINTS

>>A<< COVER-B/COVER-A INSTALLATION

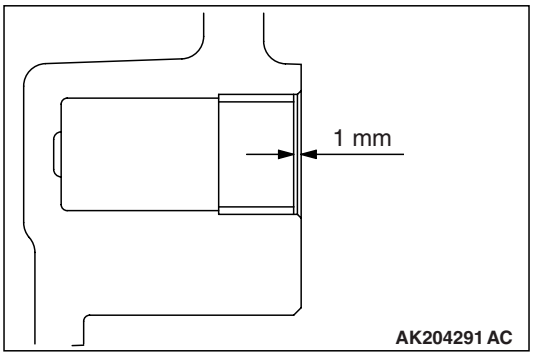


Install the covers directed as shown in the illustration.

>>B<< BUSHING INSTALLATION

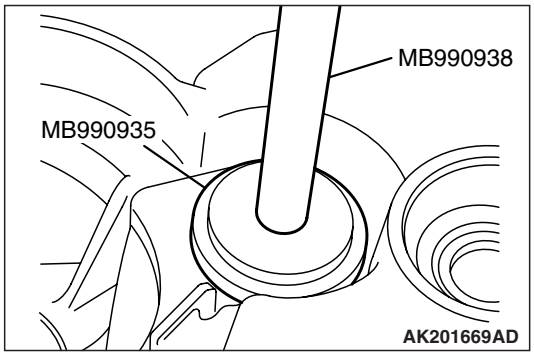


1. Press fit the bushing so the seam is away from the air vent.



2. Be sure the bushing is fully seated as shown. It must be 1 mm below the housing surface.

>>C<< OUTER RACE INSTALLATION

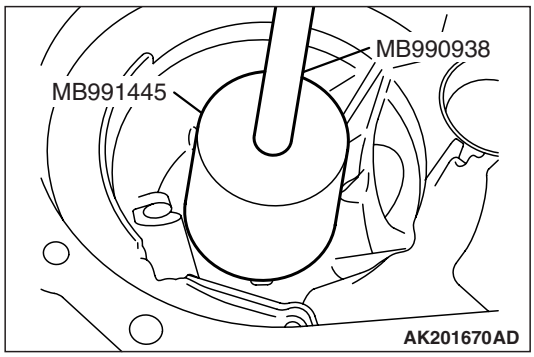


Using special tools, press fit the outer race into the clutch housing.

- Handle (MB990938)
- Installer adapter (MB990935)

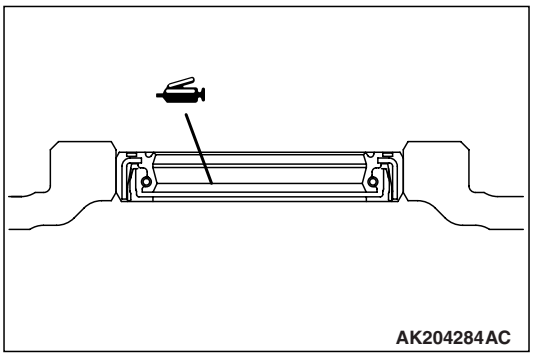
>>D<< OUTER RACE INSTALLATION

1. Check the installation direction of the outer race.



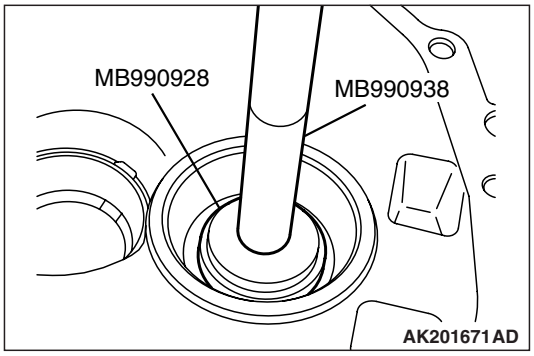
2. Using special tools, press fit the outer race into the clutch housing.
   - Handle (MB990938)
   - Bushing remover and installer base (MB991445)

>>E<< OIL SEAL INSTALLATION



1. Pack grease in the oil seal lip area.

   Specified grease:
   Mitsubishi Part No. 0101011 or equivalent

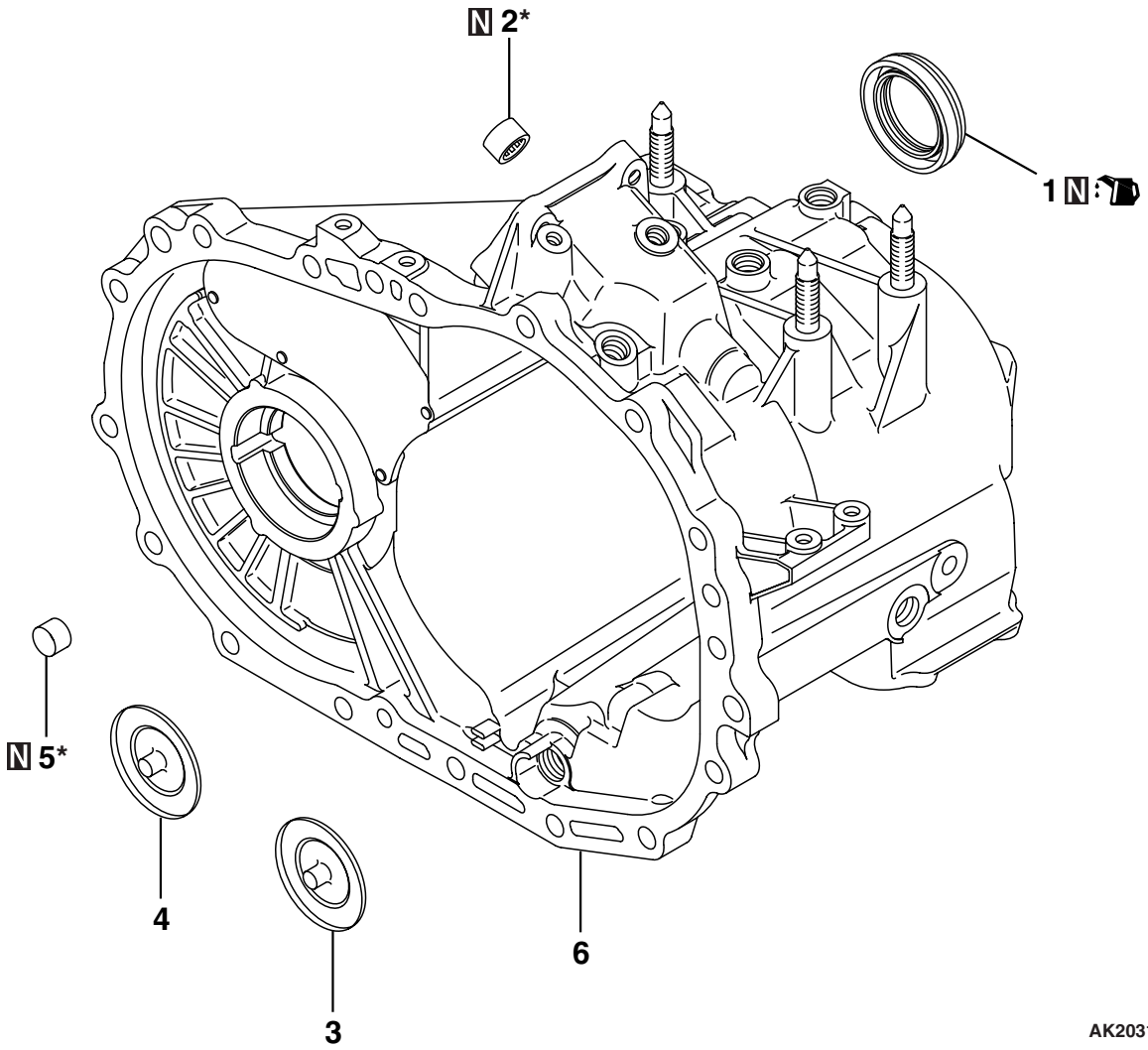


2. Using special tools, press fit the oil seal into the clutch housing.
   - Handle (MB990938)
   - Installer adapter (MB990928)

TRANSMISSION CASE

DISASSEMBLY AND REASSEMBLY

M1222013400240



AK203131AD

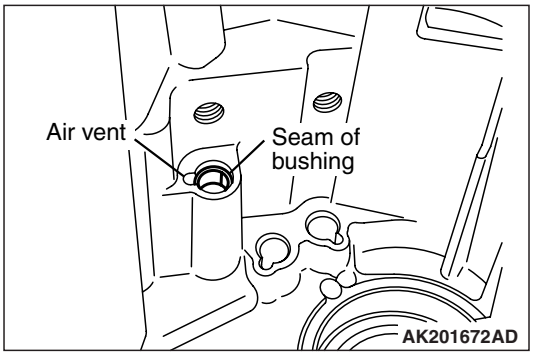
Disassembly steps

>>**D**<< 1. Oil seal
>>**C**<< 2. Needle bearing*
>>**B**<< 3 Oil guide
>>**B**<< 4. Oil guide
>>**A**<< 5. Bushing*
6. Transmission

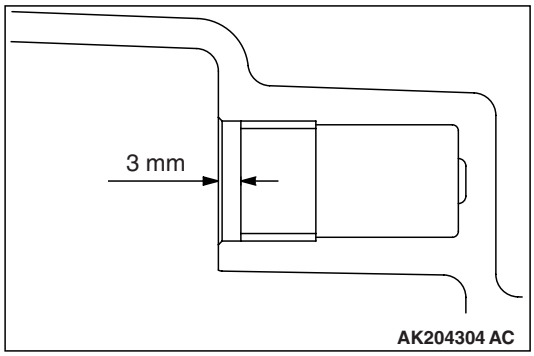
*NOTE: *Refer to the needle bearing and bushing installation procedures only when replacing the transmission case.*

REASSEMBLY SERVICE POINTS

>>A<< BUSHING INSTALLATION

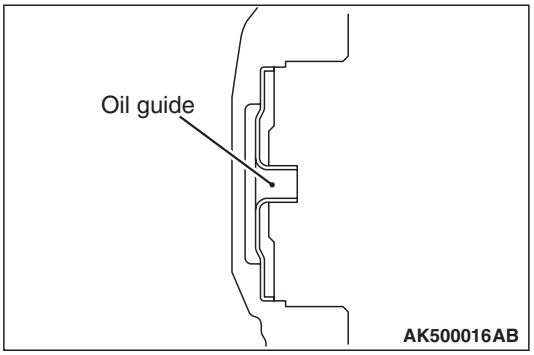


1. Press fit the bushing so the seam is away from the air vent.



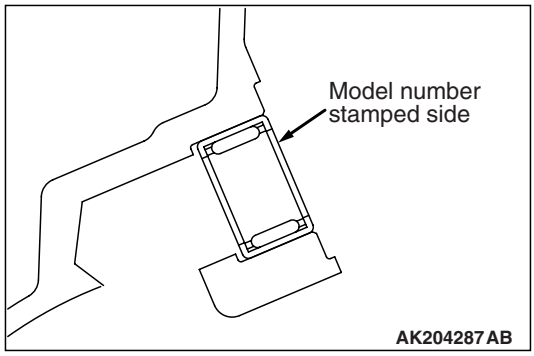
2. Be sure the bushing is fully seated as shown. It must be 3 mm below the housing surface.

>>B<< OIL GUIDE INSTALLATION



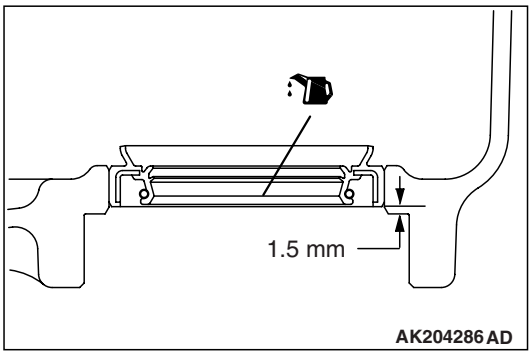
Evenly press the oil guide so it is fully seated and not at an angle.

>>C<< NEEDLE BEARING INSTALLATION

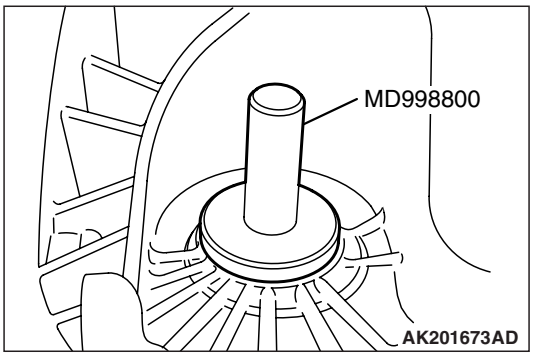


1. Check the installation direction of the needle bearing.
2. Press fit the needle bearing until it is flush with the case.

>>D<< OIL SEAL INSTALLATION



1. Apply gear oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4).

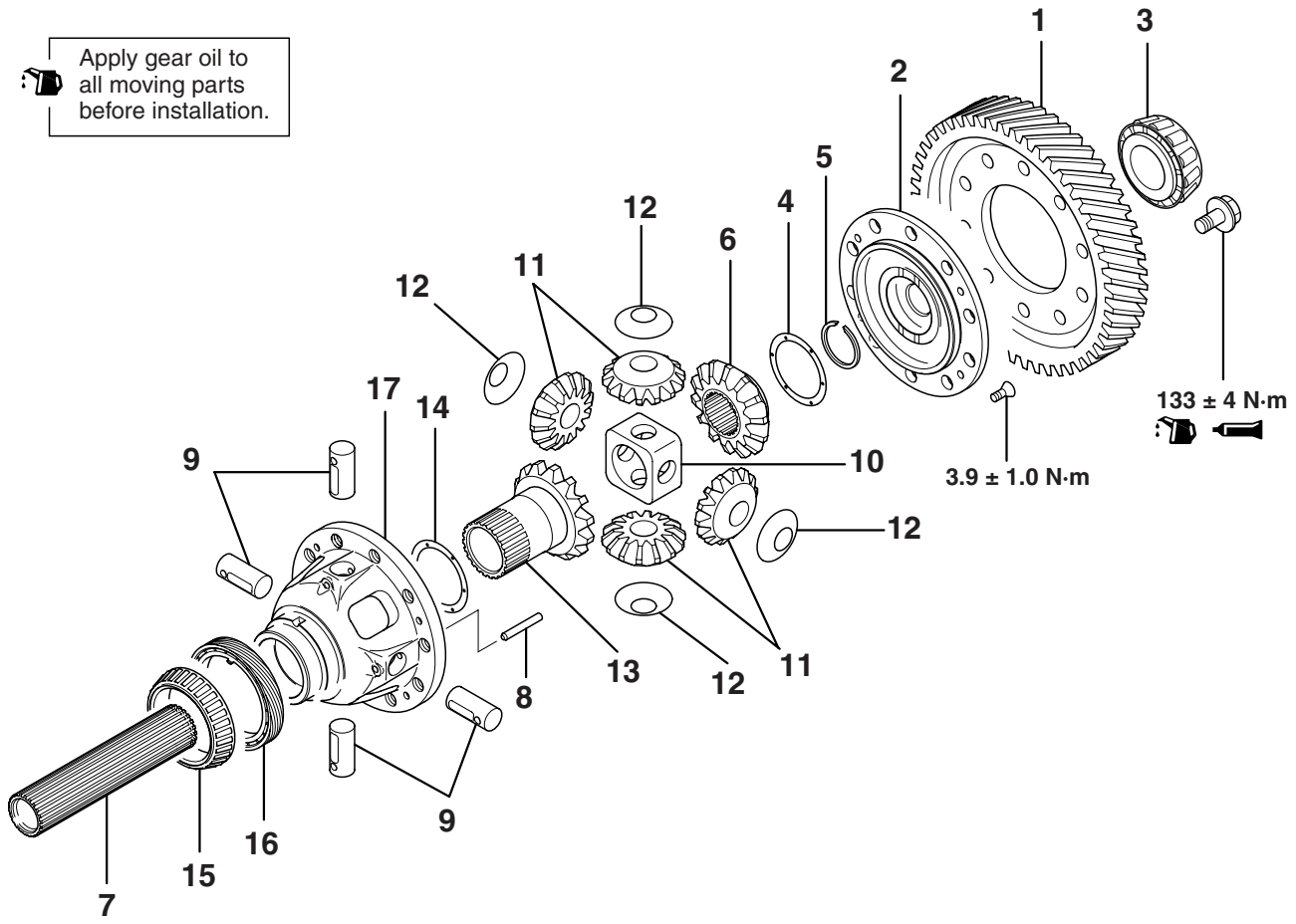


2. Using special tool Differential oil seal installer (MD998800), press fit the oil seal into the transmission case.

CENTRE DIFFERENTIAL

DISASSEMBLY AND REASSEMBLY

M1222002800200



AK302821AB

Disassembly steps

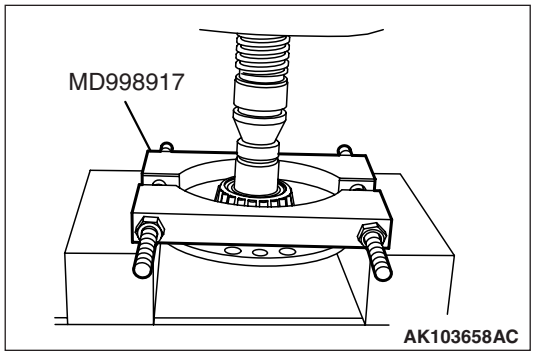
	>>**D**<<	1.	Centre differential drive gear
	>>**C**<<	2.	Centre differential flange
<<**A**>>	>>**B**<<	3.	Tapered roller bearing
	>>**C**<<	4.	Spacer
	>>**C**<<	5.	Snap ring
	>>**C**<<	6.	Side gear
	>>**C**<<	7.	Front output shaft
	>>**C**<<	8.	Lock pin
	>>**C**<<	9.	Pinion shaft
	>>**C**<<	10.	Pinion shaft holder

Disassembly steps (Continued)

	>>**C**<<	11.	Pinions
	>>**C**<<	12.	Washers
	>>**C**<<	13.	Side gear
	>>**C**<<	14.	Spacer
<<**B**>>	>>**A**<<	15.	Tapered roller bearing
		16.	Speedometer driven gear
		17.	Differential case

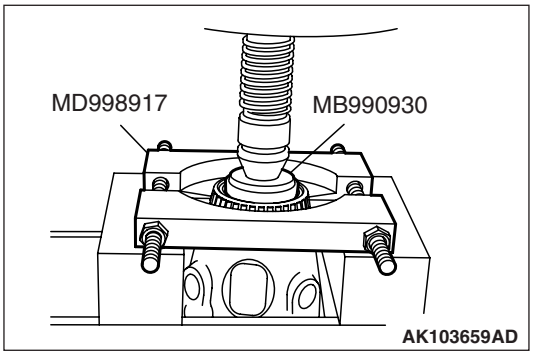
DISASSEMBLY SERVICE POINTS

<<A>> TAPERED ROLLER BEARING REMOVAL



1. Support the tapered roller bearing with special tool Bearing remover (MD998917), and then set them on the press.
2. Push down on the differential case with the press to remove the bearing.

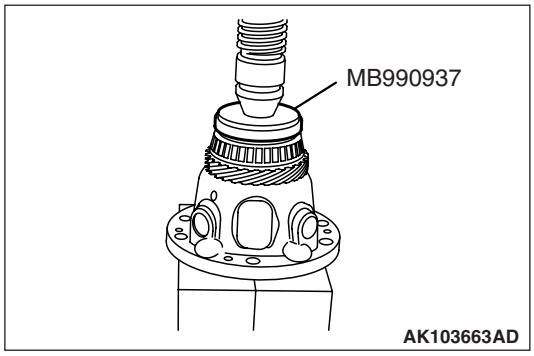
<<B>> TAPER ROLLER BEARING REMOVAL



1. Support the taper roller bearing with special tools, and then set them on the press.
   - Bearing remover (MD998917)
   - Installer adapter (MB990930)
2. Push down on the differential case with the press to remove the bearing.

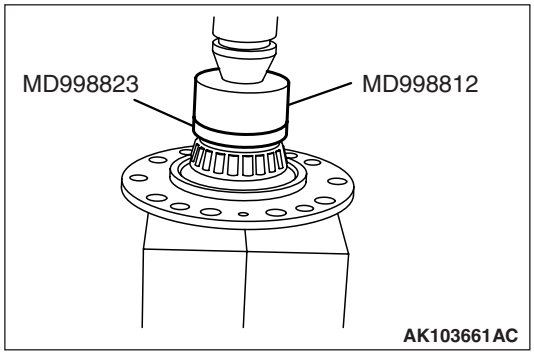
REASSEMBLY SERVICE POINTS

>>A<< TAPERED ROLLER BEARING INSTALLATION



Using special tool Installer adapter (MB990937), press install the taper roller bearing.

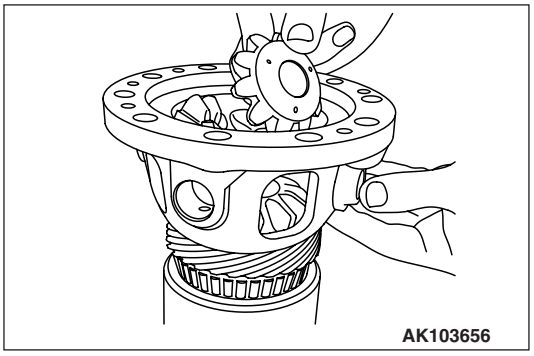
>>B<< TAPERED ROLLER BEARING INSTALLATION



Using special tools, press install the taper roller bearing.

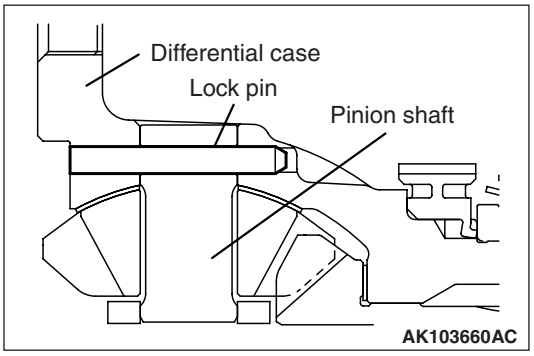
- Installer cap (MD998812)
- Installer adapter (MD998823)

>>C<< SPACER/SIDE GEAR/WASHER/PINION AND PINION SHAFT/PINION SHAFT HOLDER/LOCK PIN/FRONT OUTPUT SHAFT/SNAP RING/CENTRE DIFFERENTIAL FLANGE INSTALLATION


AK103656

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

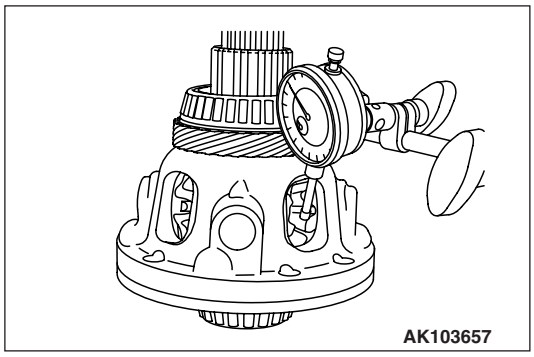
   NOTE: When a new side gear is to be installed, use a medium thickness spacer [0.9 to 1.0 mm].
2. Place the washers on the back of the pinions, and simultaneously mesh the four pieces with the side gears. Place them into position while rotating them. Then, install the pinion shaft holder.
3. Insert the pinion shaft.



AK103660AC

4. Install the lock pin so that it will be oriented in the direction shown.
5. Install the front output shaft on the side gear, and install the snap ring.
6. Mount a spacer on the back surface of the side gear, and then install the side gear in the differential case.

   NOTE: When a new side gear is to be installed, use a medium thickness spacer [0.9 to 1.0 mm].
7. Install the centre differential flange by aligning the matching marks, and temporarily tighten the four machine screws.

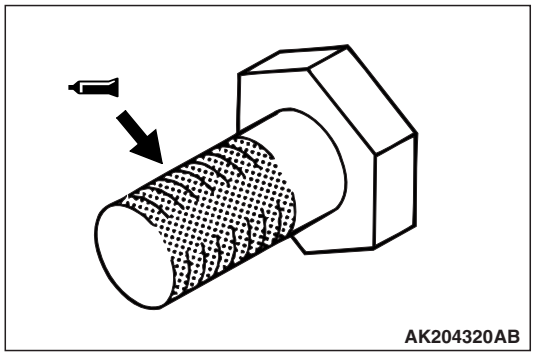

AK103657

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

   Standard value: 0.025 – 0.150 mm
9. If the backlash is out of the standard value, select a spacer and re-measure the backlash.

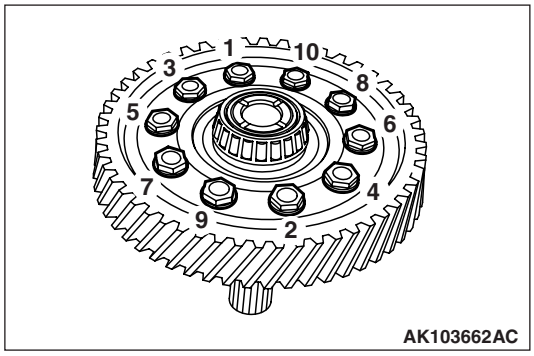
   NOTE: Adjust until the backlash on both sides are equal.

>>D<< CENTER DIFFERENTIAL DRIVE GEAR INSTALLATION


AK204320AB

1. Apply sealant to the entire threaded portion of the bolt.

   Specified sealant:
   3M STUD Locking No.4170 or equivalent



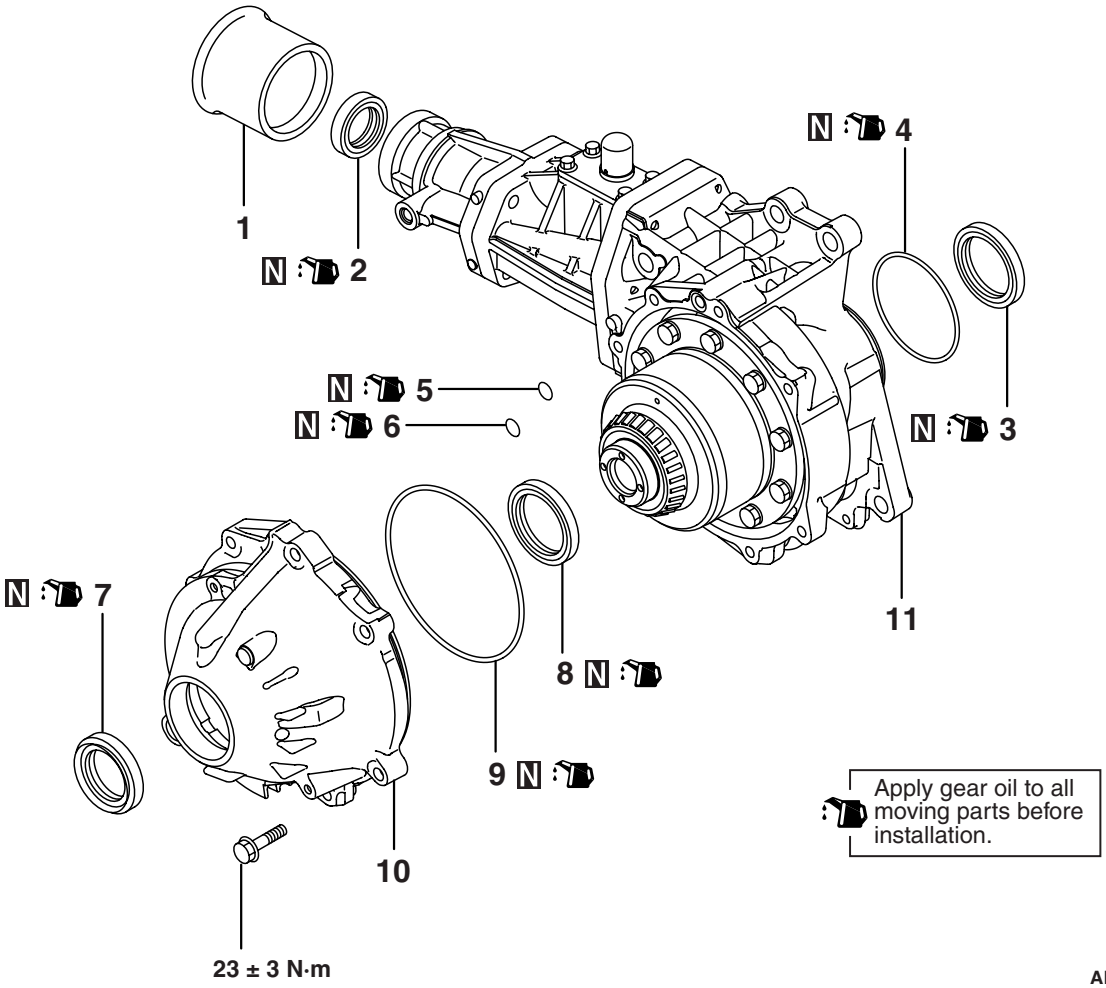
AK103662AC

2. Tighten to the specified torque of 133 ± 4 N·m in the illustrated sequence.

TRANSFER

DISASSEMBLY AND REASSEMBLY

M1222004000136



AK204413AB

Disassembly steps

	1.	Dust seal guide
>>**E**<<	2.	Oil seal
>>**D**<<	3.	Oil seal
>>**A**<<	4.	O-ring
>>**A**<<	5.	O-ring
>>**A**<<	6.	O-ring

Disassembly steps (Continued)

>>**C**<<	7.	Oil seal
>>**B**<<	8.	Oil seal
>>**A**<<	9.	O-ring
	10.	Transfer cover
	11.	Transfer

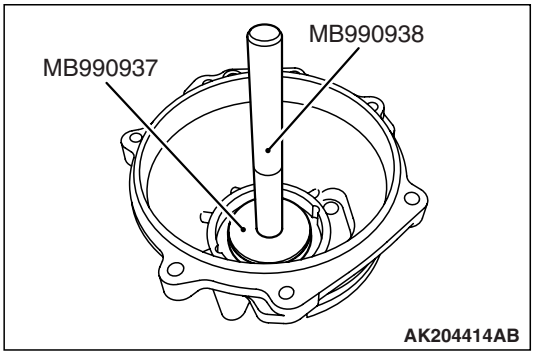
REASSEMBLY SERVICE POINTS

>>A<< O-RING INSTALLATION

Install a O-ring to the transfer, and apply gear oil (Hypoid gear oil API classification GL-5 SAE 90) to the O-ring.

>>B<< OIL SEAL INSTALLATION

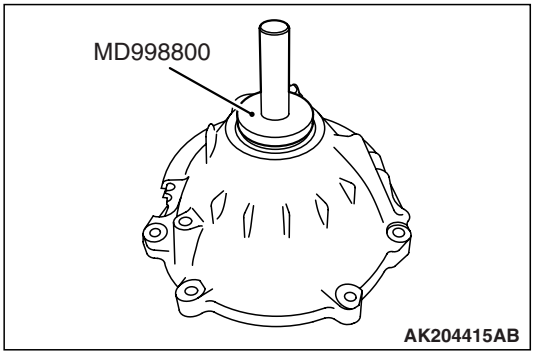
1. Apply gear oil (Hypoid gear oil API classification GL-5 SAE 90).



2. Using special tools, press fit the oil seal into the transfer cover.
   - Installer adapter (MB990937)
   - Handle (MB990938)

>>C<< OIL SEAL INSTALLATION

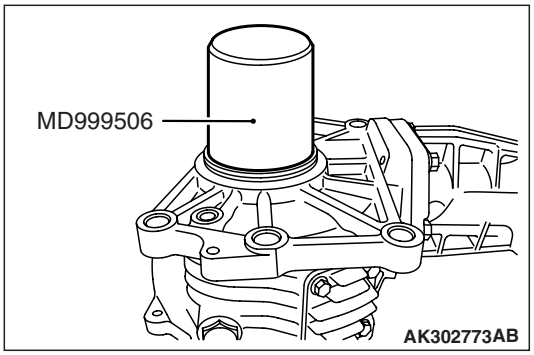
1. Apply gear oil (Hypoid gear oil API classification GL-5 SAE 90).



2. Using special tool oil seal installer (MD998800), press fit the oil seal into the transfer cover.

>>D<< OIL SEAL INSTALLATION

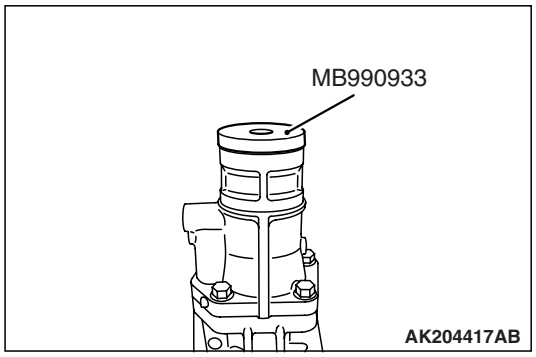
1. Apply gear oil (Hypoid gear oil API classification GL-5 SAE 90).



2. Using special tool Crankshaft installer (MD999506), press fit the oil seal into the transfer.

>>E<< OIL SEAL INSTALLATION

1. Apply gear oil (Hypoid gear oil API classification GL-5 SAE 90).



2. Using special tool installer adapter (MB990933), press fit the oil seal into the transfer.

NOTES