GROUP 22B

MANUAL TRANSMISSION OVERHAUL <F5M42,W5M42>

CONTENTS

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GENERAL INFORMATION

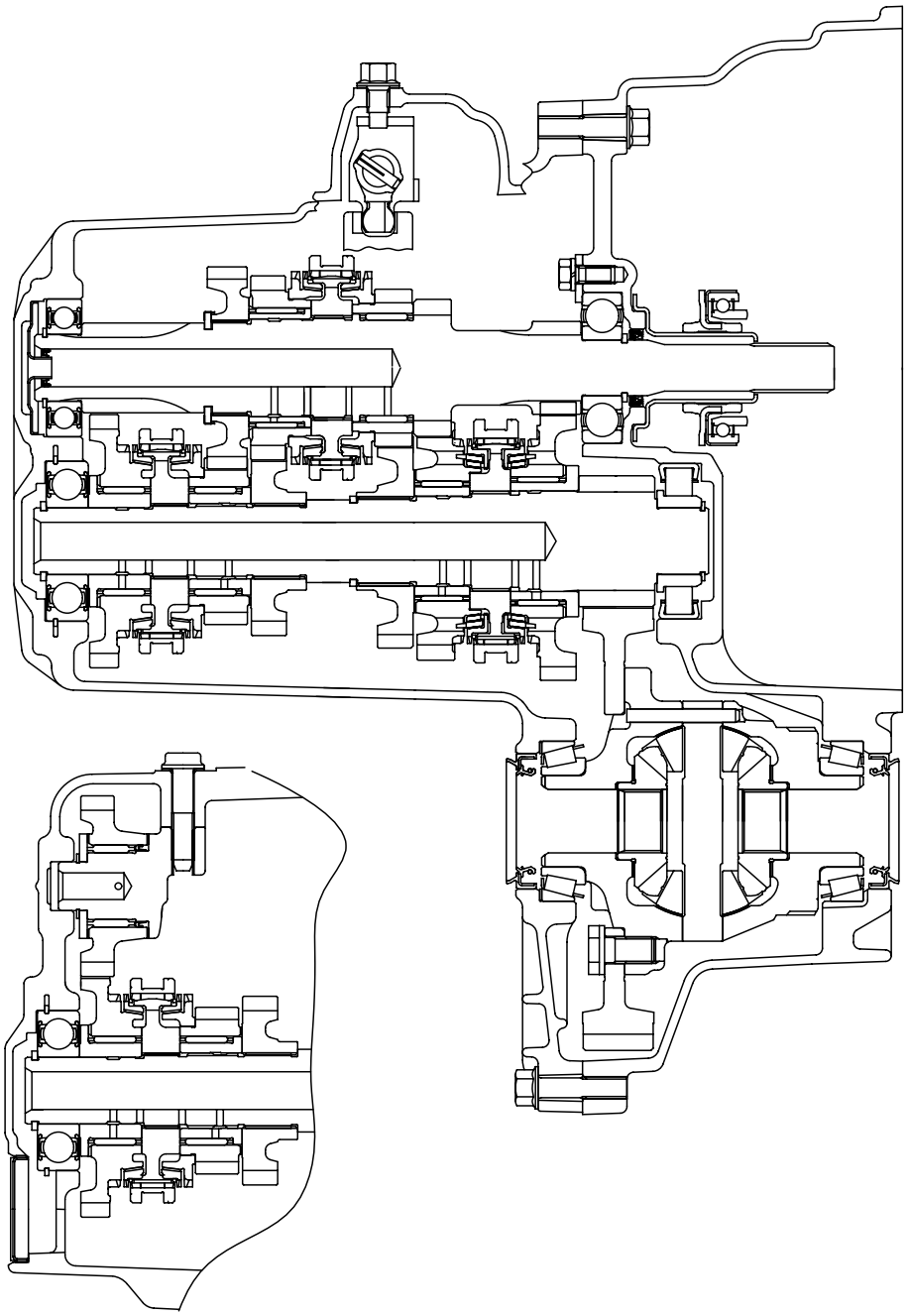
M1222000100584

MANUAL TRANSMISSION MODELS

Transmission model	Combined engine	Vehicle model
F5M42-2-Y4B3	4G63-D4-MPI	CU2W
W5M42-1-Z4B1	4G63-D4-MPI	CU2W
W5M42-1-V4B1	4G69-S4-MIVEC	CU5W

SECTIONAL VIEW

<F5M42>



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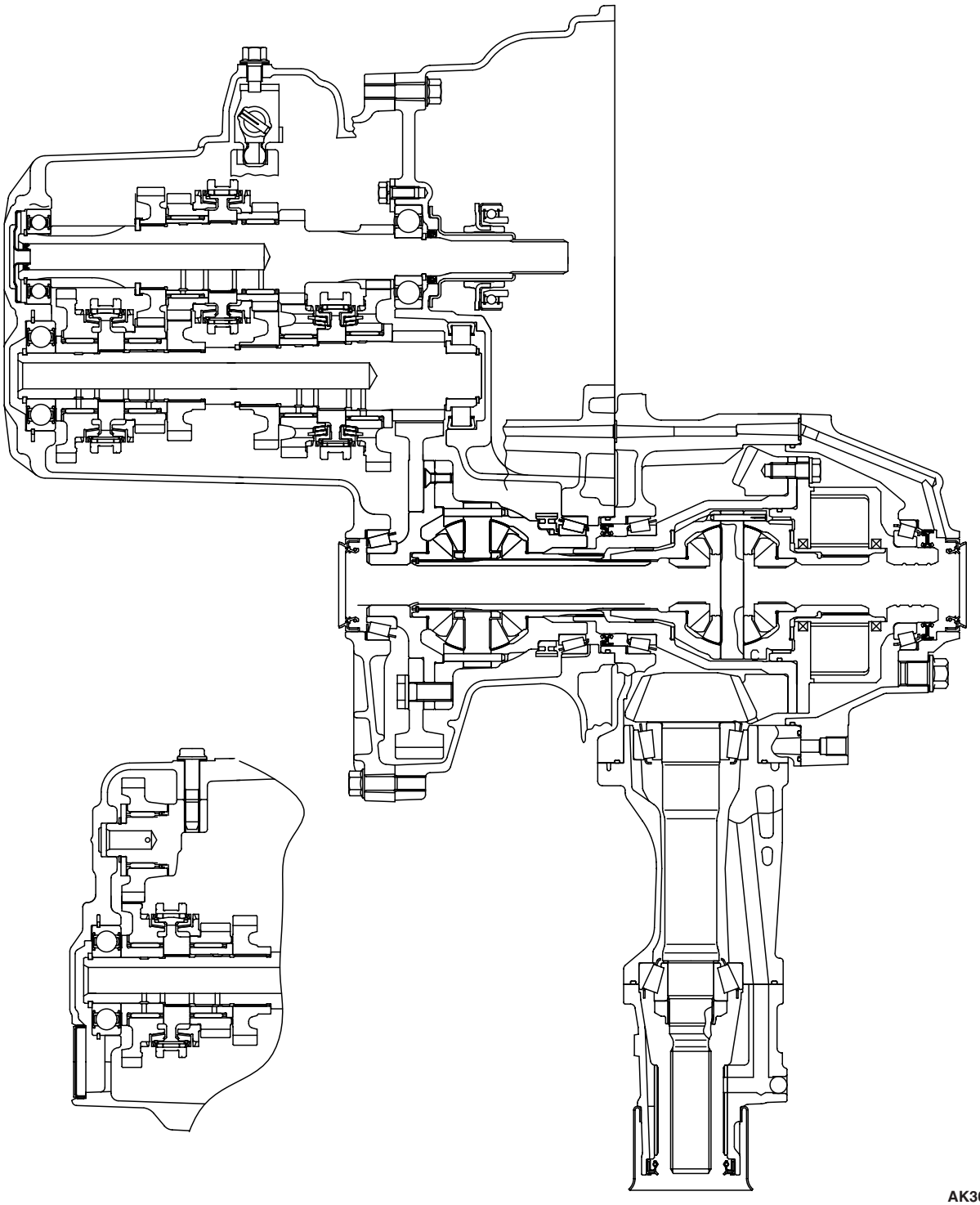
<W5M42>



AK302711

GENERAL SPECIFICATIONS

M1222000200699

TRANSMISSION MODEL TABLE

Transmission model	Speedomerter gear ratio	Final gear ratio	Vehicle model	Engine model	Transfer gear ratio
F5M42-2-Y4B3	27/36	4.625	CU2W	4G63-D4-MPI	–
W5M42-1-Z4B1	27/36	4.687	CU2W	4G63-D4-MPI	0.3018
W5M42-1-V4B1	27/36	4.352	CU5W	4G69-S4-MIVEC	0.3018

GEAR RATIO TABLE

	F5M42-2-Y4B3	W5M42-1-Z4B1	W5M42-1-V4B1
1st	3.583		
2nd	1.947		
3rd	1.379		
4th	1.030		
5th	0.820		
Reverse	3.363		

SERVICE SPECIFICATIONS

M1222000300481

Item	Standard value	Minimum limit
Differential case preload mm	0.05 – 0.11	–
Input shaft front bearing end play mm	0 – 0.12	–
Input shaft 5th speed gear end play mm	0 – 0.09	–
Input shaft rear bearing end play mm	0 – 0.12	–
Synchronizer ring back surface to gear clearance mm	–	0.5
Output shaft front bearing end play mm	0 – 0.12	–
Output shaft 3rd speed gear end play mm	0 – 0.09	–
Output shaft rear bearing end play mm	0 – 0.09	–
Backlash between differential gear and pinion mm <F5M42>	0.025 – 0.150	–
Backlash between center differential gear and pinion mm <W5M42>	0.025 – 0.150	–

SNAP RING, SPACER AND THRUST PLATE FOR ADJUSTMENT

M1222012000584

SPACER (FOR ADJUSTMENT OF DIFFERENTIAL CASE PRELOAD) <F5M42>

Thickness mm	Identification symbol	Thickness mm	Identification symbol
0.71	71	1.01	01
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		

SPACER (FOR ADJUSTMENT OF CENTER DIFFERENTIAL CASE PRELOAD) <W5M42>

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

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

Thickness mm	Identification colour	Thickness mm	Identification colour
2.24	None	2.38	Brown
2.31	Blue		

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

Thickness mm	Identification symbol	Thickness mm	Identification symbol
2.82	0	2.98	6
2.86	2	3.02	7
2.90	3	3.06	8
2.94	5	3.10	9

SNAP RING (FOR ADJUSTMENT OF INPUT SHAFT REAR BEARING END PLAY AND OUTPUT 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 OUTPUT SHAFT 3RD SPEED GEAR END PLAY)

Thickness mm	Identification colour	Thickness mm	Identification colour
2.81	Green	2.97	Orange
2.85	White	3.01	Red
2.89	Yellow	3.05	Pink
2.93	Black	3.09	Blue

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

Thickness mm	Identification colour	Thickness mm	Identification colour
2.31	Black (2)	2.55	Yellow
2.35	None	2.59	Black
2.39	Blue	2.63	Orange
2.43	Brown	2.67	Blue
2.47	Green	2.71	Brown
2.51	White		

SPACER (FOR ADJUSTMENT OF BACKLASH BETWEEN DIFFERENTIAL SIDE GEAR AND PINION) <F5M42>

Thickness mm	Identification symbol	Thickness mm	Identification symbol
0.76 – 0.84	–	1.06 – 1.14	–
0.81 – 0.89	–	1.11 – 1.19	–
0.86– 0.94	–	1.16 – 1.24	–
0.91 – 0.99	–	1.21 – 1.29	–
0.96 – 1.04	–	1.26 – 1.34	–
1.01 – 1.09	–		

SPACER (FOR ADJUSTMENT OF BACKLASH BETWEEN CENTER DIFFERENTIAL SIDE GEAR AND PINION) <W5M42>

Thickness mm	Identification symbol	Thickness mm	Identification symbol
0.48 – 0.55	–	0.74 – 0.81	–
0.56 – 0.65	–	0.82 – 0.89	–
0.66 – 0.73	–		

TORQUE SPECIFICATIONS

M1222012100484

Item	Specifications
Transfer - clutch housing mounting bolt <W5M42>	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
Harness bracket bolt	18 ± 3 N·m
Harness bracket bolt <Except 2.4L model>	3.9 ± 1.0 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
Front bearing retainer mounting bolt	18 ± 3 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 ± 0.2 N·m
Differential drive gear mounting bolt	133 ± 4 N·m
Center differential drive gear mounting bolt	133 ± 4 N·m
Center differential flange to differential case mounting bolt	3.9 ± 1.0 N·m
Transfer cover mounting bolt <W5M42>	23 ± 3 N·m

SEALANTS AND ADHESIVES

M1222000500106

Item	Specified sealant
Clutch housing-transmissin case mating surface	MITSUBISHI Genuine sealant part No. MD997740 or equivalent
Under cover-transmissin case mating surface	
Control housing-transmissin case mating surface	
Air breather	3M SUPER WEATHERSTRIP No.8001 or equivalent
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 surface 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

M1222000400284

TRANSMISSION

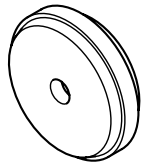
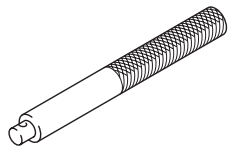
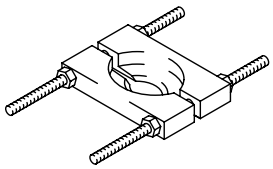
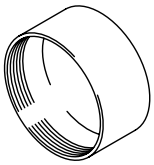
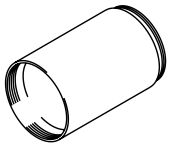
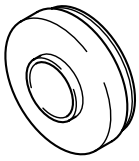
Item	Specified lubricant
Each O-ring	Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4
Each oil seal	
Select lever shoe	MITSUBISHI part No.0101011 or equivalent
Input shaft front oil seal	

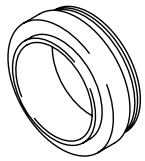
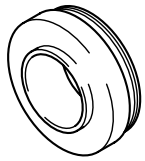
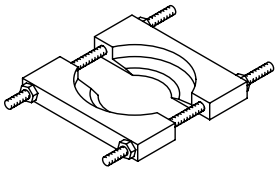
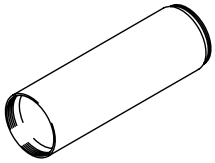
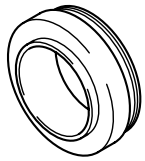
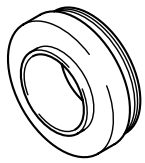
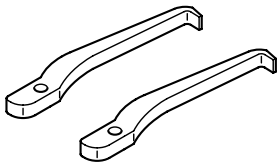
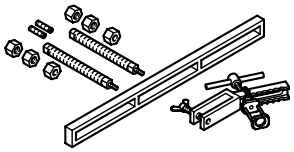
TRANSFER

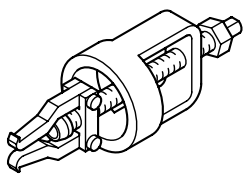
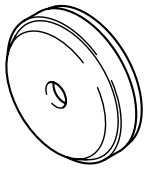
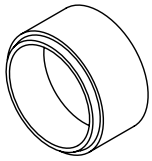
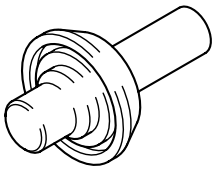
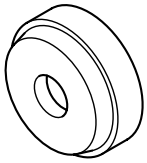
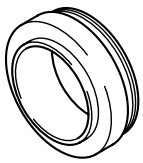
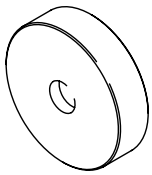
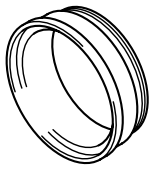
Item	Specified lubricant
Each O-ring	Hypoid gear oil API classification GL-5 SAE 90
Each oil seal	

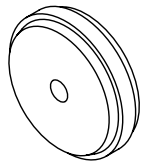
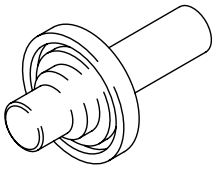
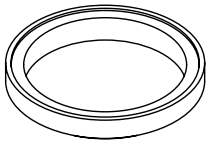
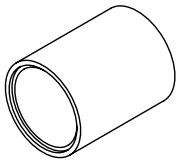
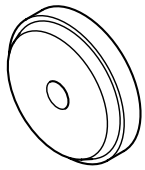
SPECIAL TOOLS

M1222000600341

Tool	Number	Name	Use
	MB990935	Installer adapter	• Installation of differential case taper roller bearing outer race <F5M42> • Installation of center differential case rear taper roller bearing outer race <W5M42>
	MB990938	Handle	Use with Installer adapter
	MB990927	Installer adapter	Installation of sealing cap
	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
	MD998816	Installer adapter (30)	Installation of input shaft front bearing
	MD998825	Installer adapter (52)	• Installation of 1st-2nd speed synchronizer hub • Installation of 3rd-4th speed synchronizer hub • Installation of 1st speed gear sleeve

Tool	Number	Name	Use
	MD998824	Installer adapter (50)	• Installation of 4th speed gear sleeve • Installation of 5th speed gear and thrust plate stopper
	MD998818	Installer adapter (38)	• Installation of input shaft rear bearing, roller bearing inner race • Installation of reverse gear sleeve and output shaft rear ball bearing • Installation of output shaft rear ball bearing
	MD998917	Bearing remover	Installation and removal of gears, bearing and sleeves
	MD998814	Installer-200	Use with Installer cap and Installer adapter
	MD998822	Installer adapter (46)	Installation of 2nd speed gear sleeve and 3rd speed gear
	MD998819	Installer adapter (40)	• Installation of 5th-reverse speed synchronizer hub • Installation of 4th speed gear and 5th speed gear sleeve
	MD999566	Claw	Removal of taper roller bearing outer race
	MD998772	Valve spring compressor	Removal of output shaft front roller bearing outer race

Tool	Number	Name	Use
	MD998346	Bearing outer race remover	Removal of output shaft front roller bearing outer race
	MB990934	Installer adapter	Installation of output shaft front roller bearing outer race
	MB991550	Bearing outer race installer	Installation of center differential case front taper roller bearing outer race <W5M42>
	MD998325	Differential oil seal installer	Installation of differential oil seal
	MB990926	Installer adapter	Installation of clutch housing input shaft oil seal
	MD998823	Installer adapter (48)	• Installation of differential case taper roller bearing <F5M42> • Installation of center differential case rear taper roller bearing <W5M42>
	MB990930	Installer adapter	Removal of center differential case front taper roller bearing bearing <W5M42>
	MD998830	Installer adapter (66)	Installation of center differential case front taper roller bearing <W5M42>

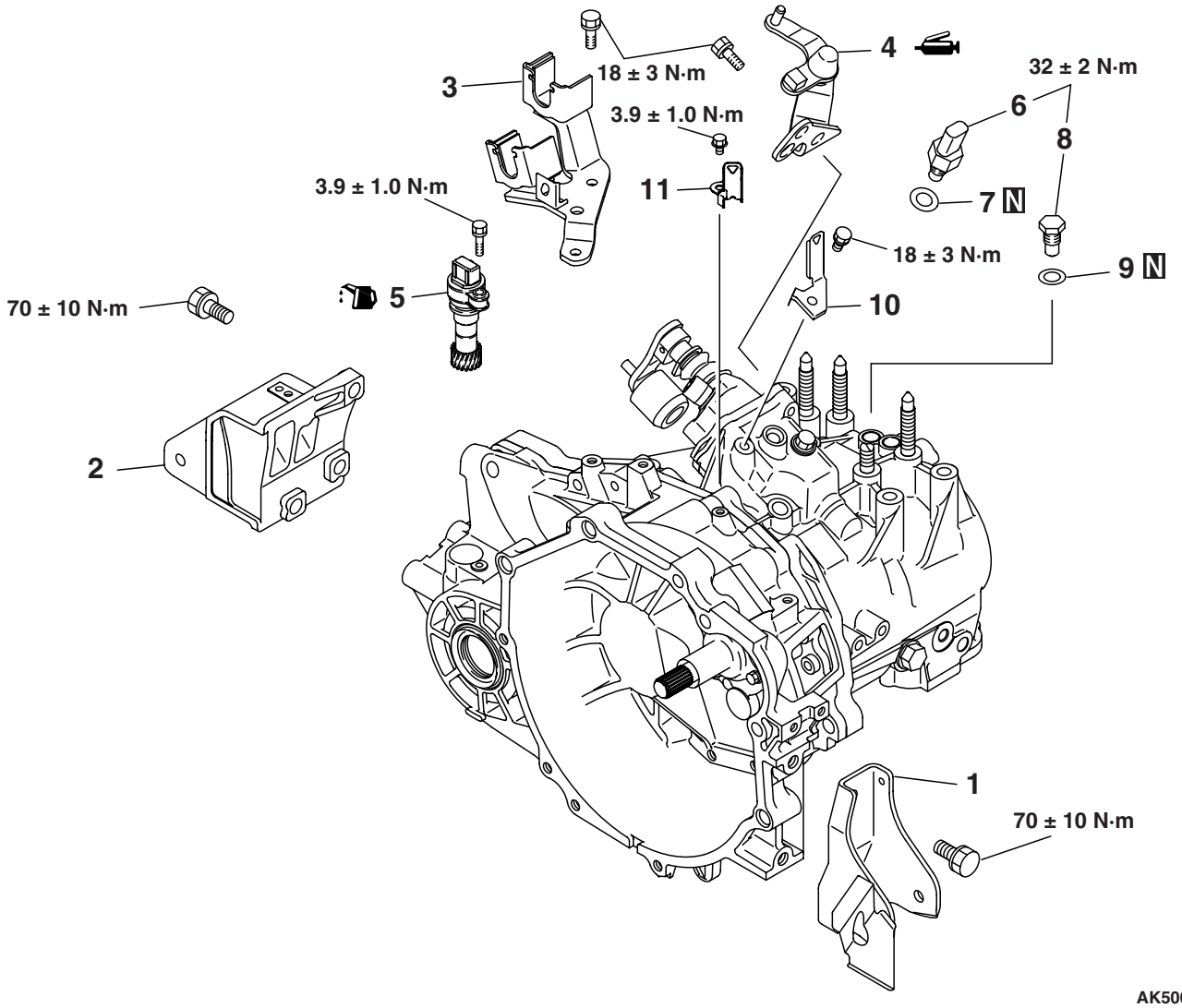
Tool	Number	Name	Use
	MB990937	Installer adapter	Installation of transfer oil seal <W5M42>
	MD998800	Oil seal adapter	Installation of transfer oil seal <W5M42>
	MB990887	Ring	Installation of transfer oil seal <W5M42>
	MB990891	Bushing remover installer base	Using with ring
	MB990933	Installer adapter	Installation of transfer oil seal <W5M42>

TRANSMISSION

DISASSEMBLY AND REASSEMBLY

M1222001000449

<F5M42>

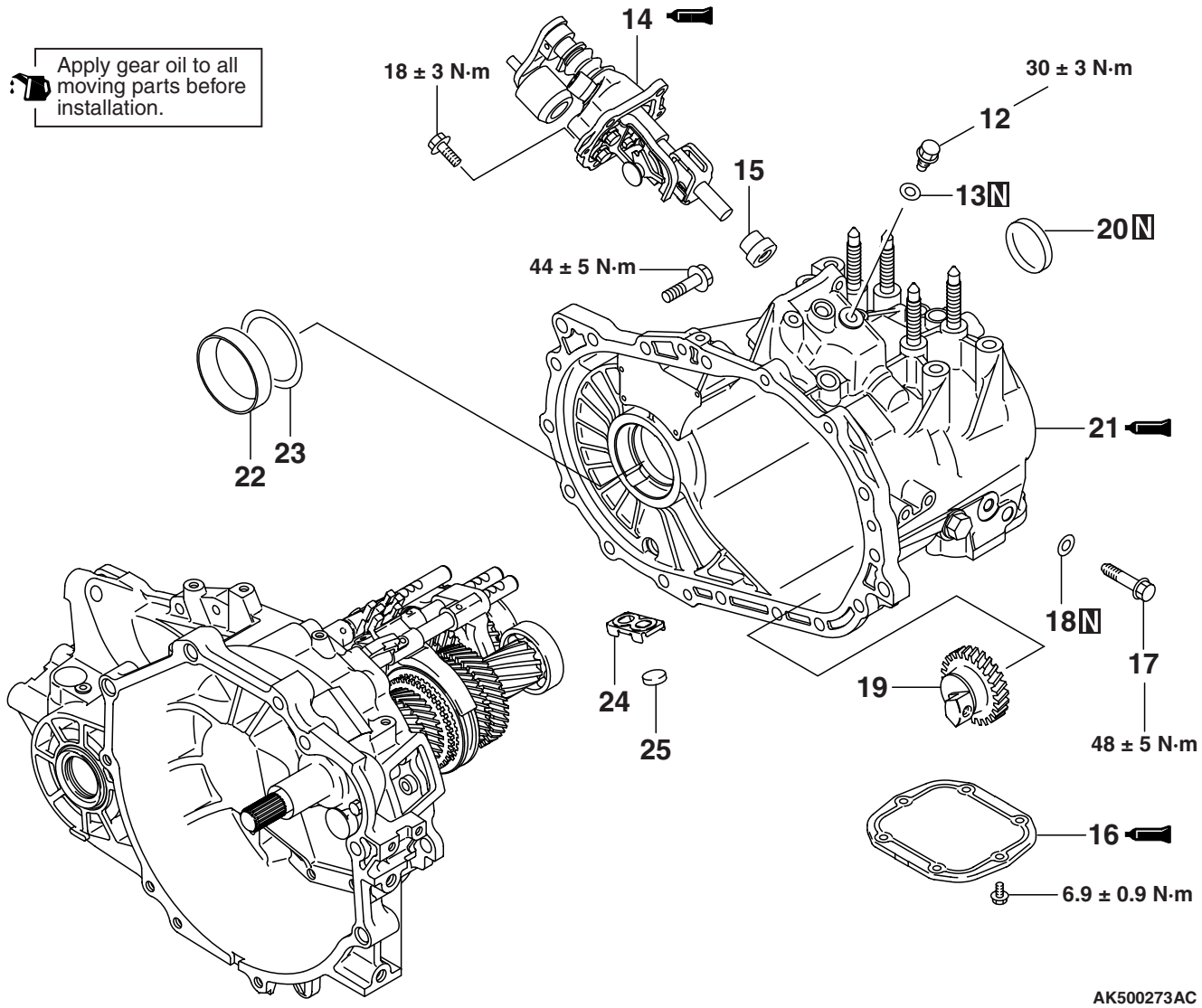


Disassembly steps

1. Roll stopper bracket, front
2. Roll stopper bracket, rear
3. Shift cable bracket
>>J<< 4. Select lever
>>I<< 5. Vehicle speed sensor
6. Backup lamp switch
7. Gasket

Disassembly steps (Continued)

8. Poppet spring
9. Gasket
10. Corrugate clamp bracket
11. Corrugate clamp bracket

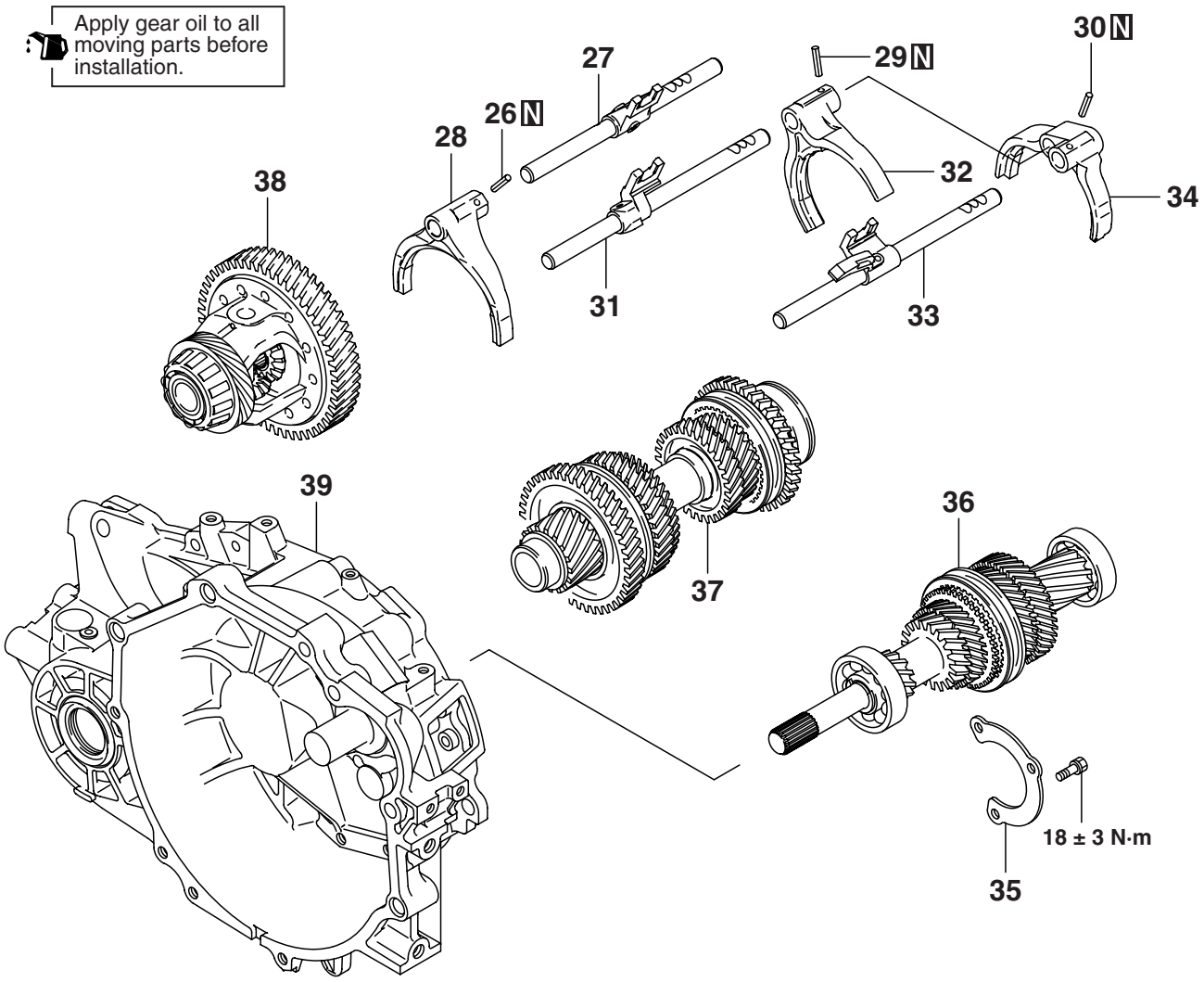


Disassembly steps

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

Disassembly steps (Continued)

<<A>> >>F<< 20. Sealing cap
<<B>> >>E<< 21. Transmission case
>>D<< 22. Outer race
>>D<< 23. Spacer
24. Magnet holder
25. Magnet



AK204219AB

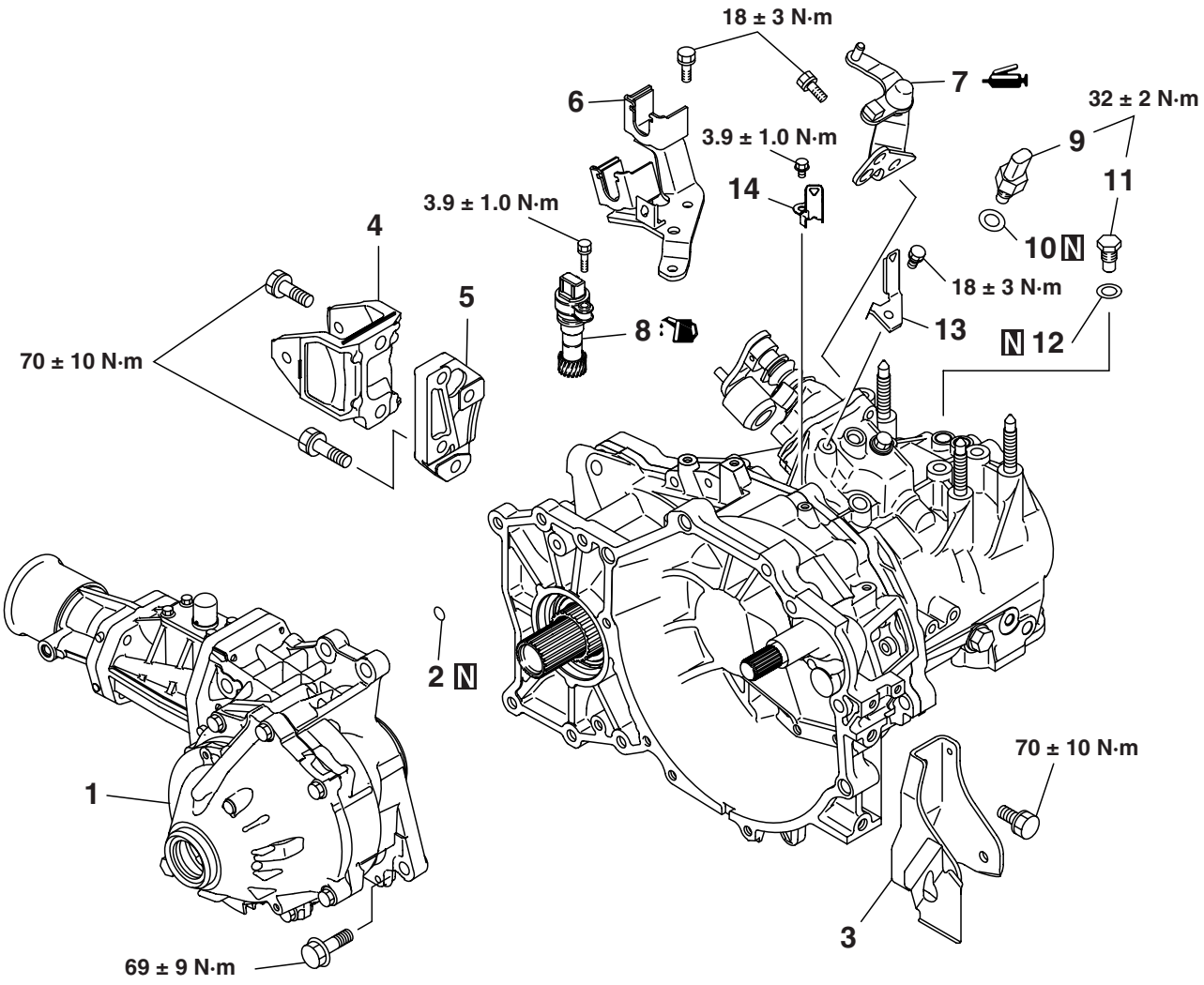
Disassembly steps

	>>C<<	26.	Spring pin
		27.	1st-2nd speed shift rail
		28.	1st-2nd speed shift fork
	>>C<<	29.	Spring pin
	>>C<<	30.	Spring pin
<<C>>	>>B<<	31.	3rd-4th speed shift rail
<<C>>	>>B<<	32.	3rd-4th speed shift fork
<<C>>	>>B<<	33.	5th speed-reverse shift rail

Disassembly steps (Continued)

<<C>>	>>B<<	34.	5th speed-reverse shift fork
		35.	Front bearing retainer
<<D>>	>>A<<	36.	Input shaft
<<D>>	>>A<<	37.	Output shaft
		38.	Differential
		39.	Clutch housing

<W5M42>



AK500545AB

Disassembly steps

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

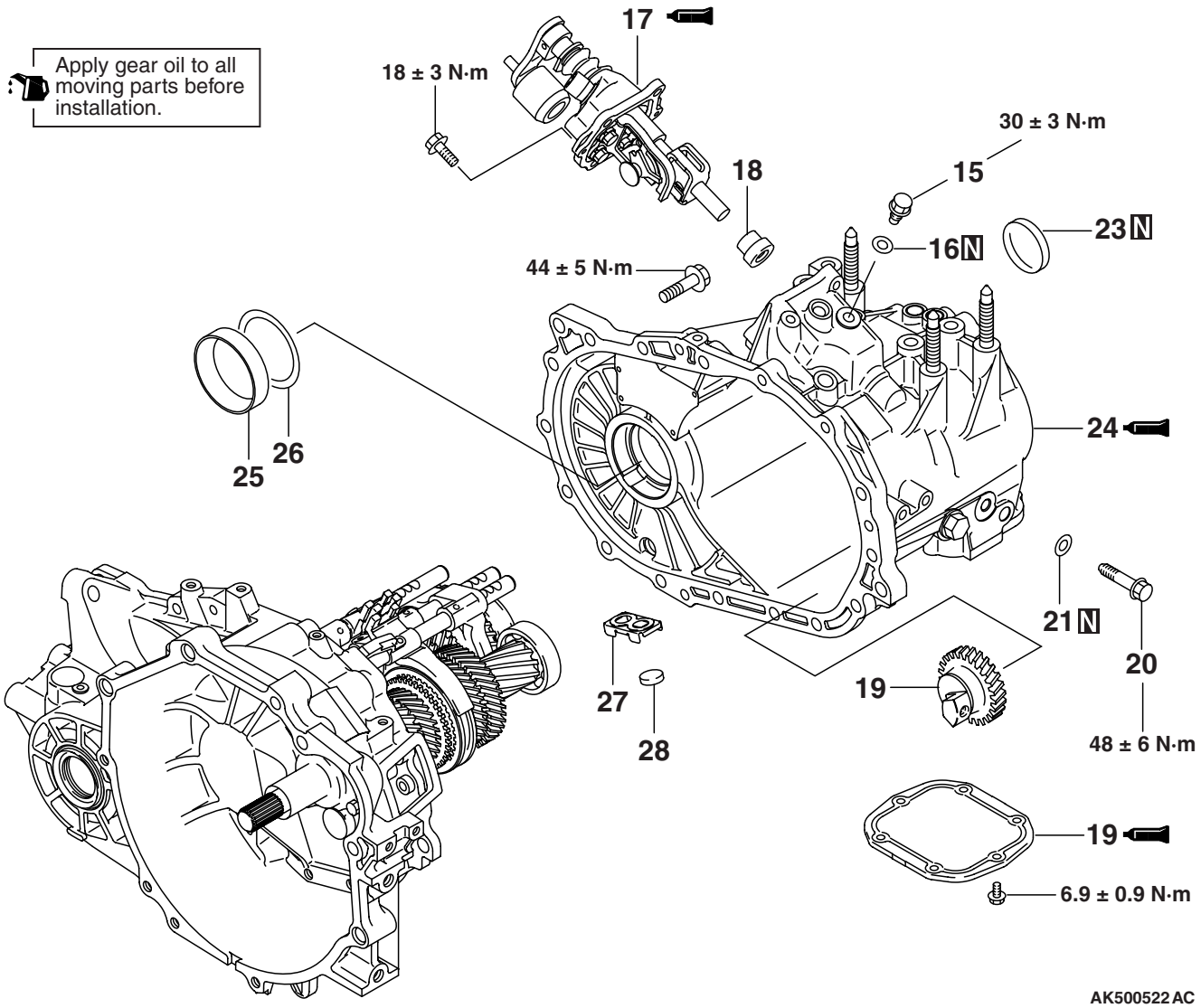
>>J<< 7. Select lever

>>I<< 8. Vehicle speed sensor

9. Back-up lamp switch

Disassembly steps (Continued)

10. Gasket
11. Poppet spring
12. Gasket
13. Corrugate clamp bracket
14. Corrugate clamp bracket <2.0 L models>

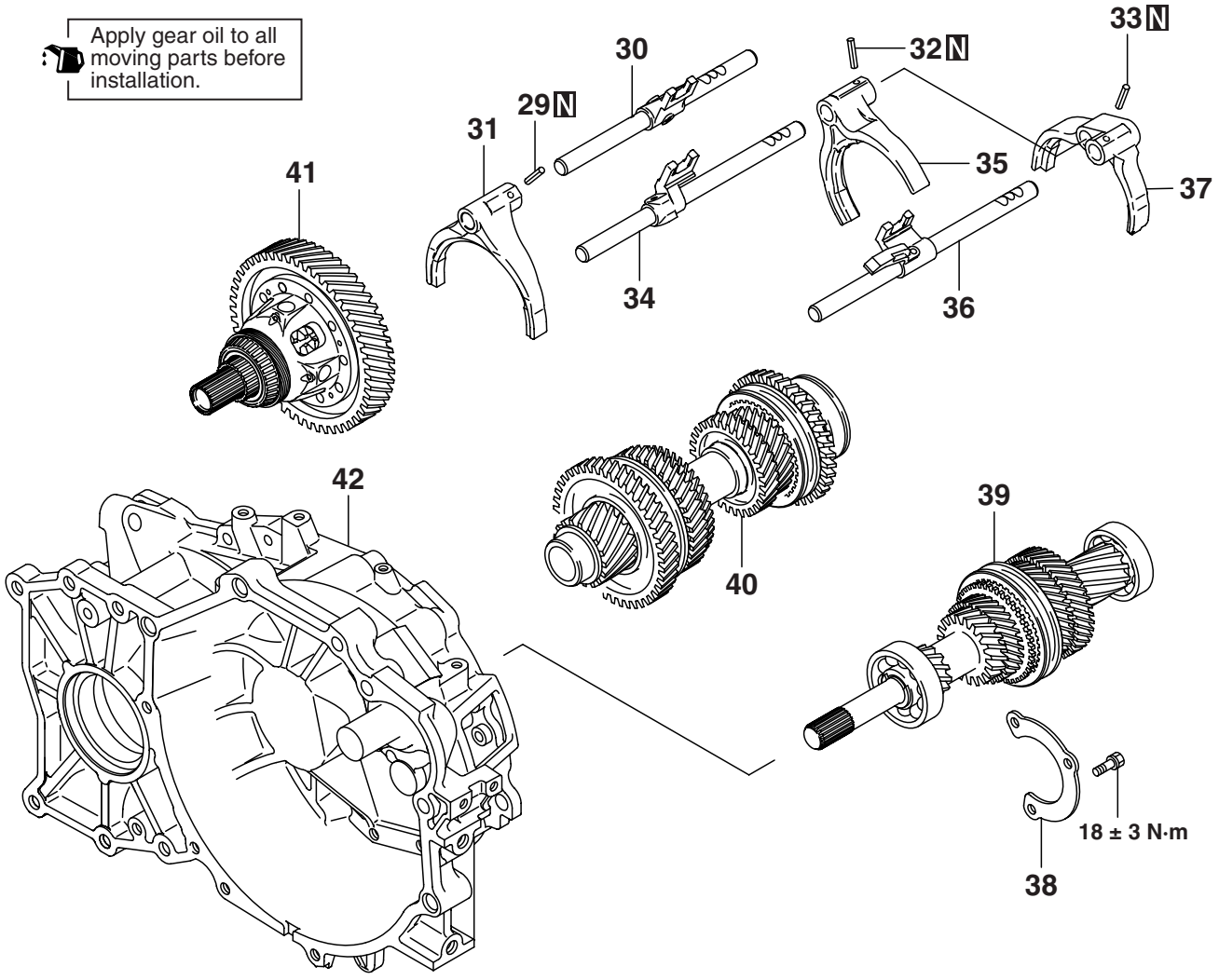


Disassembly steps

15. Interlock plate bolt
16. Gasket
>>H<< 17. Control housing
18. Neutral return spring
>>G<< 19. Under cover
20. Reverse idler gear shaft bolt
21. Gasket
22. Reverse idler gear assembly

Disassembly steps (Continued)

<<A>> >>F<< 23. Sealing cap
<<B>> >>E<< 24. Transmission case
>>D<< 25. Outer race
>>D<< 26. Spacer
27. Magnet holder
28. Magnet



AK204189AB

Disassembly steps

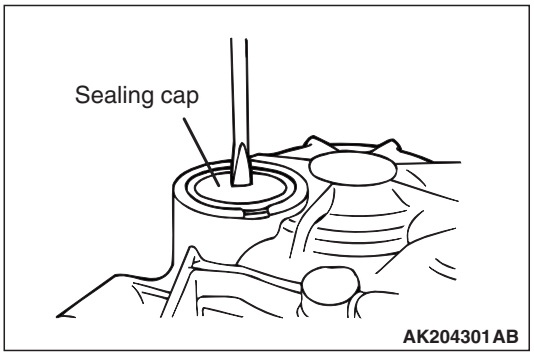
	>>C<<	29.	Spring pin
		30.	1st-2nd speed shift rail
		31.	1st-2nd speed shift fork
	>>C<<	32.	Spring pin
	>>C<<	33.	Spring pin
<<C>>	>>B<<	34.	3rd-4th speed shift rail
<<C>>	>>B<<	35.	3rd-4th speed shift fork

Disassembly steps (Continued)

<<C>>	>>B<<	36.	5th speed-reverse shift rail
<<C>>	>>B<<	37.	5th speed-reverse shift fork
		38.	Front bearing retainer
<<D>>	>>A<<	39.	Input shaft
<<D>>	>>A<<	40.	Output shaft
		41.	Differential
		42.	Clutch housing

DISASSEMBLY SERVICE POINTS

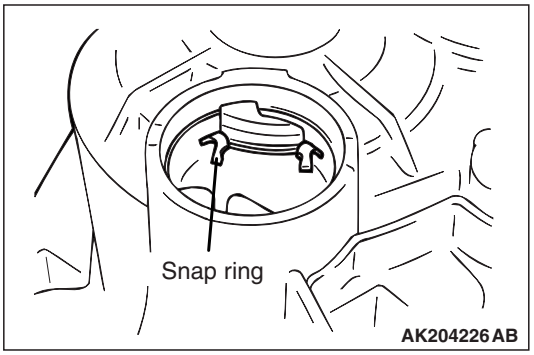
<<A>> SEALING CAP REMOVAL



1. Drive a screwdriver into the center of the sealing cap.
2. Bend the screwdriver back to remove the sealing cap.

<<B>> TRANSMISSION CASE REMOVAL

1. Remove all sixteen bolts securing the transmission case to the clutch housing.



2. Use snap ring pliers to expand the indicated snap ring. The snap ring will release the grooved ball bearing, and the output shaft assembly will fall under its own weight.

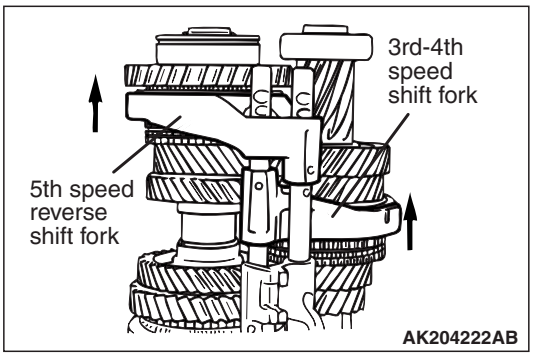
⚠ CAUTION

Do not use a scraper or chisel to remove the transmission case.

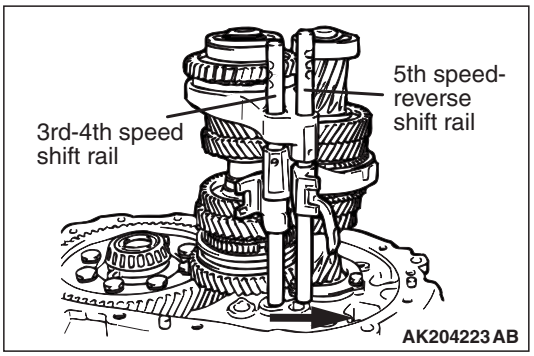
3. Remove the transmission case from the clutch housing by gently prying on opposite sides at the same time.

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

1. Shift the 3rd-4th speed shift fork and 5th speed-reverse shift fork in the direction shown.

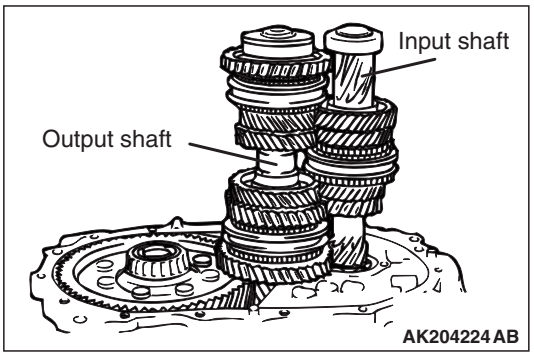


2. Pull up on the 3rd-4th speed shift rail and 5th speed-reverse shift rail and take them out of the hole in the clutch housing.



3. Slide the 3rd-4th speed shift rail and 5th speed-reverse shift rail in the direction shown and remove them together with the shift forks.

<<D>> INPUT SHAFT AND OUTPUT SHAFT REMOVAL



Remove the input and output shafts together.

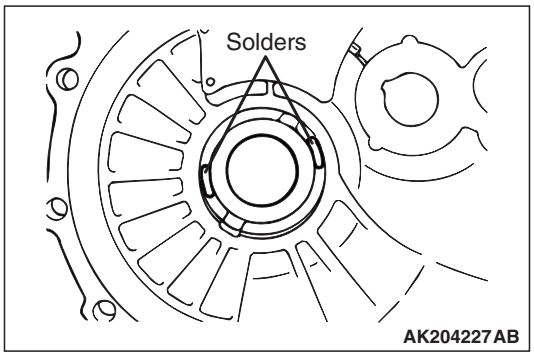
ADJUSTMENT BEFORE REASSEMBLY

SPACER SELECTION FOR DIFFERENTIAL CASE PRERELOAD ADJUSTMENT

<Measurement using a solder>

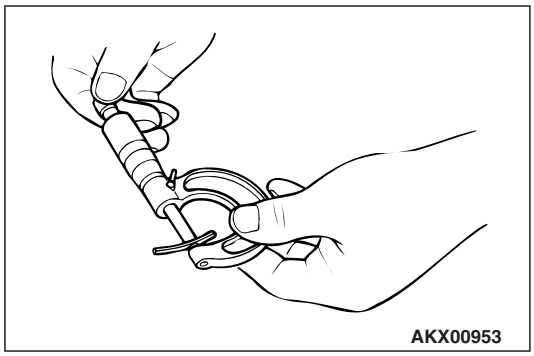
⚠ CAUTION

- **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. Put solders (1.0 mm diameter, about 10 mm long) in the illustrated positions of the transmission case.
2. Install the taper bearing outer race and differential assembly into the transmission case.

   NOTE: If necessary, replace the differential case and taper bearing before carrying out these adjustments.
3. Install the clutch housing and tighten the bolts to the specified torque of 44 ± 5 N·m.
4. Remove the clutch housing, and then remove the differential assembly.
5. Remove the outer race and take out crushed solders.
6. If the solders have not crushed, use thicker solders (1.6 mm diameter, about 10 mm long) and repeat steps 2 to 5.

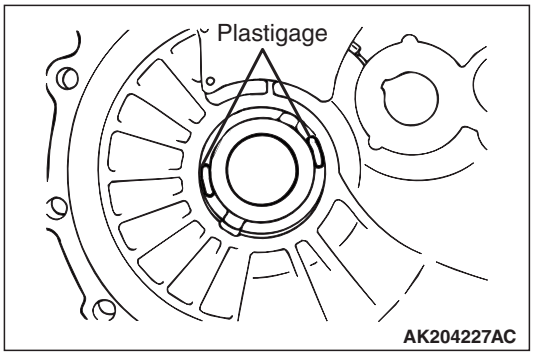


7. Measure the thickness of the crushed solder with a micrometer and select a spacer that will provide the standard preload value.

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

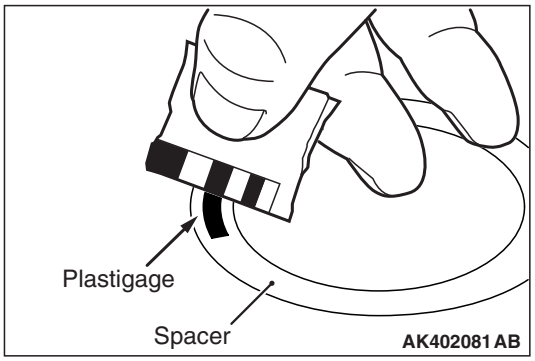
   Standard value: 0.05 – 0.11 mm preload

<Measurement using Plastigage>



1. Put plastigage (about 10 mm long) in the illustrated positions of the transmission case.
2. Install the adjusting spacer having the minimum thickness.
3. Install the taper bearing outer race and differential assembly into the transmission case.

   NOTE: If necessary, replace the differential case and taper bearing before carrying out these adjustments.
4. Install the clutch housing and tighten the bolts to the specified torque of 44 ± 5 N·m.
5. Remove the clutch housing, and then remove the differential assembly.
6. Remove the outer race and take out crushed plastigage.
7. If the plastigages have not crushed, replace the spacer with a thicker one and repeat steps 3 to 6.

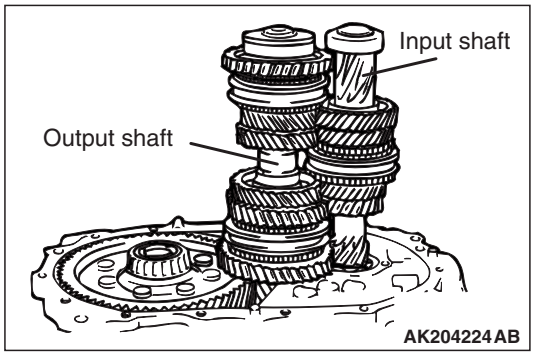


8. Measure the width of the crushed plastigage at its widest part using a scale printed on the plastigage package.

   Standard value: 0.05 – 0.11 mm preload

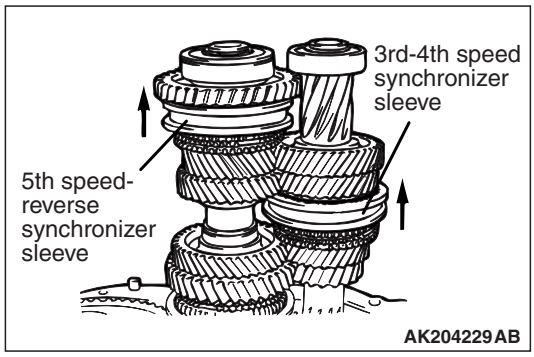
REASSEMBLY SERVICE POINTS

>>A<< OUTPUT SHAFT/INPUT SHAFT INSTALLATION

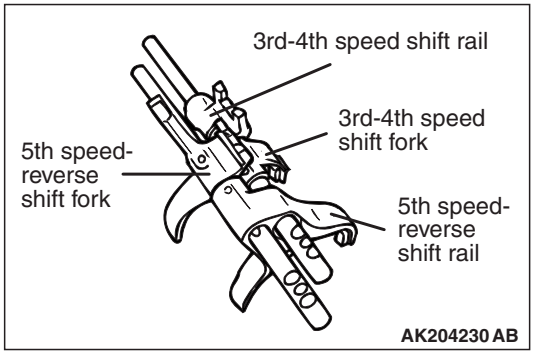


Install the input and output shafts together.

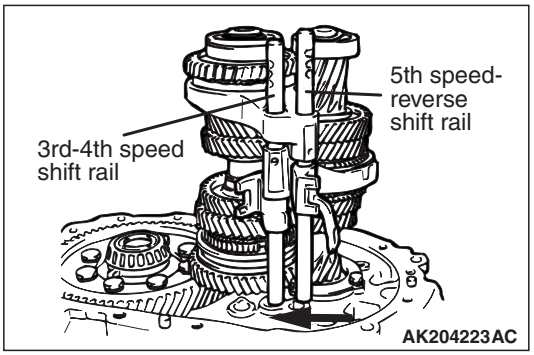
>>B<< 5TH SPEED-REVERSE SHIFT FORK/5TH SPEED-REVERSE SHIFT RAIL/3RD-4TH SPEED SHIFT FORK/3RD-4TH SPEED SHIFT RAIL INSTALLATION



1. Shift the 3rd-4th speed synchronizer sleeve and 5th speed-reverse synchronizer sleeve in the direction shown.



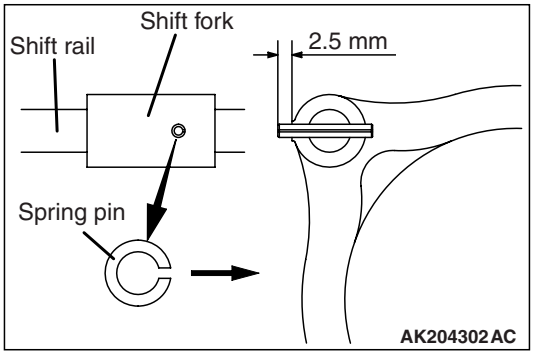
2. Assemble the 3rd-4th speed shift rail and fork, and the 5th speed-reverse shift rail and fork.



3. While fitting each shift fork in the groove of synchronizer sleeve, slide the shift rails in the direction shown and install.
4. 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

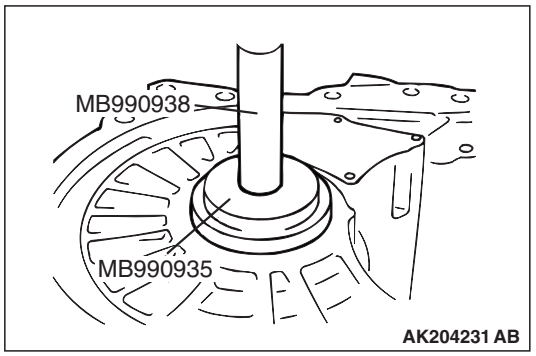
1. Align the pin holes in the shift rail and shift fork.



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

>>D<< SPACER AND OUTER RACE INSTALLATION

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

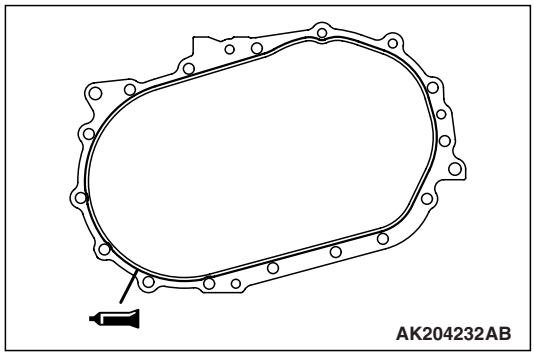


2. Using special tools, press the outer race into the transmission case.
   - Installer adapter (MB990935)
   - Handle (MB990938)

>>E<< TRANSMISSION CASE INSTALLATION

⚠ CAUTION

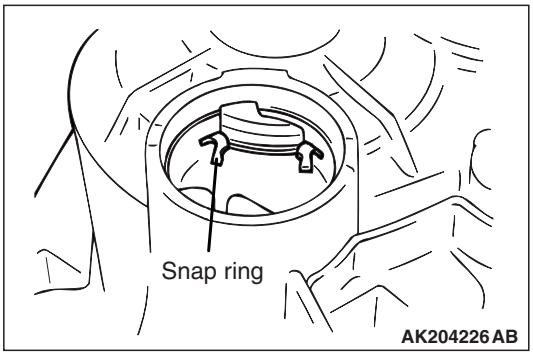
Squeeze sealant evenly onto the transmission housing. Do not leave gaps or excess amounts, otherwise oil leaks are likely.



1. Apply a 2 mm diameter bead of sealant as illustrated onto the transmission case.

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

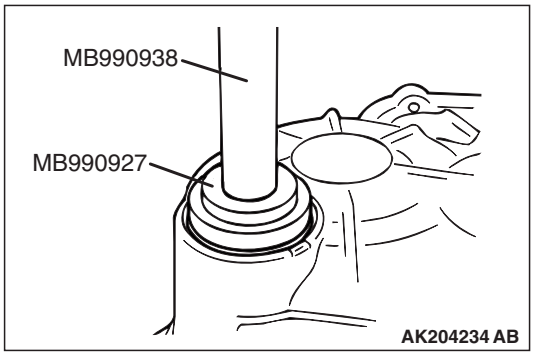
   NOTE: Be sure to install the transmission case onto the transmission housing while the sealant is still wet (within 15 minutes).



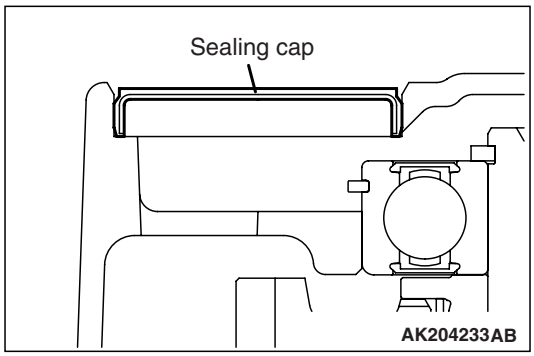
2. Align the transmission case and expand the snap ring. After the case is on far enough for the snap ring to ride on the bearing, release the snap ring. Push down on the transmission case, twisting it from side to side until the case contacts the housing.
3. Tighten the transmission case mounting bolts to the specified torque of 44 ± 5 N·m.
4. Place the transmission upside down and let the snap ring fit in the groove by the output shaft's own weight.

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

>>F<< SEALING CAP INSTALLATION



1. Using special tools, press install the sealing cap onto the case.
   - Installer adapter (MB990927)
   - Handle (MB990938)

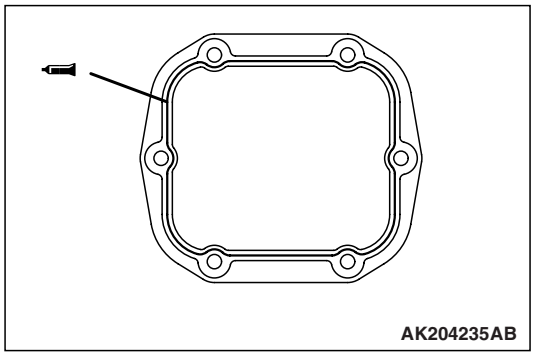


2. Evenly press the sealing cap so it is fully seated and not at an angle.

>>G<< UNDER COVER INSTALLATION

⚠ CAUTION

Squeeze sealant onto the case. Do not leave gaps or excess amounts, otherwise oil leaks are likely.



1. Apply a 2 mm diameter bead of sealant as illustrated onto the under cover.

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

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

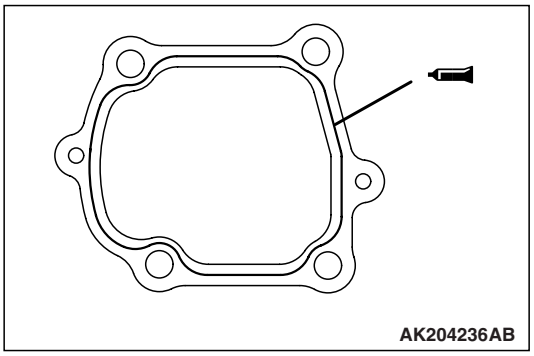
2. Install the under cover to the transmission case and tighten the bolts to specified torque of 6.9 ± 0.9 N·m.

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

>>H<< CONTROL HOUSING INSTALLATION

⚠ CAUTION

Squeeze sealant onto the case. Do not leave gaps or excess amounts, otherwise oil leaks are likely.


AK204236AB

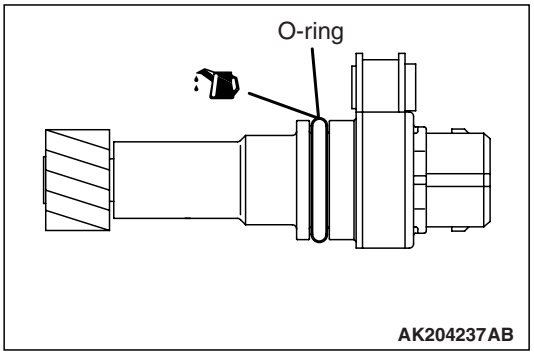
1. Apply a 0.2 mm diameter bead of sealant as illustrated onto the control housing.

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

   NOTE: Be sure to install the housing to the case quickly while the sealant is still 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 the oil for approximately one hour.

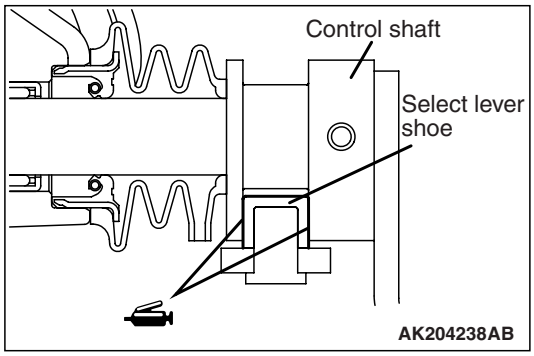
>>I<< VEHICLE SPEED SENSOR INSTALLATION



AK204237AB

1. Apply gear oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4) to the O-ring of the vehicle speed sensor. Install into the transmission housing.
2. Tighten the bolt to specified torque of 3.9 ± 1.0 N·m.

>>J<< SELECT LEVER INSTALLATION



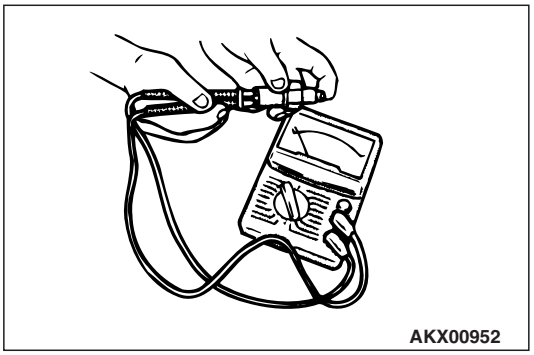
AK204238AB

1. Apply grease (Mitsubishi Genuine 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

M1222001100297

BACK-UP LMAP SWITCH


AKX00952

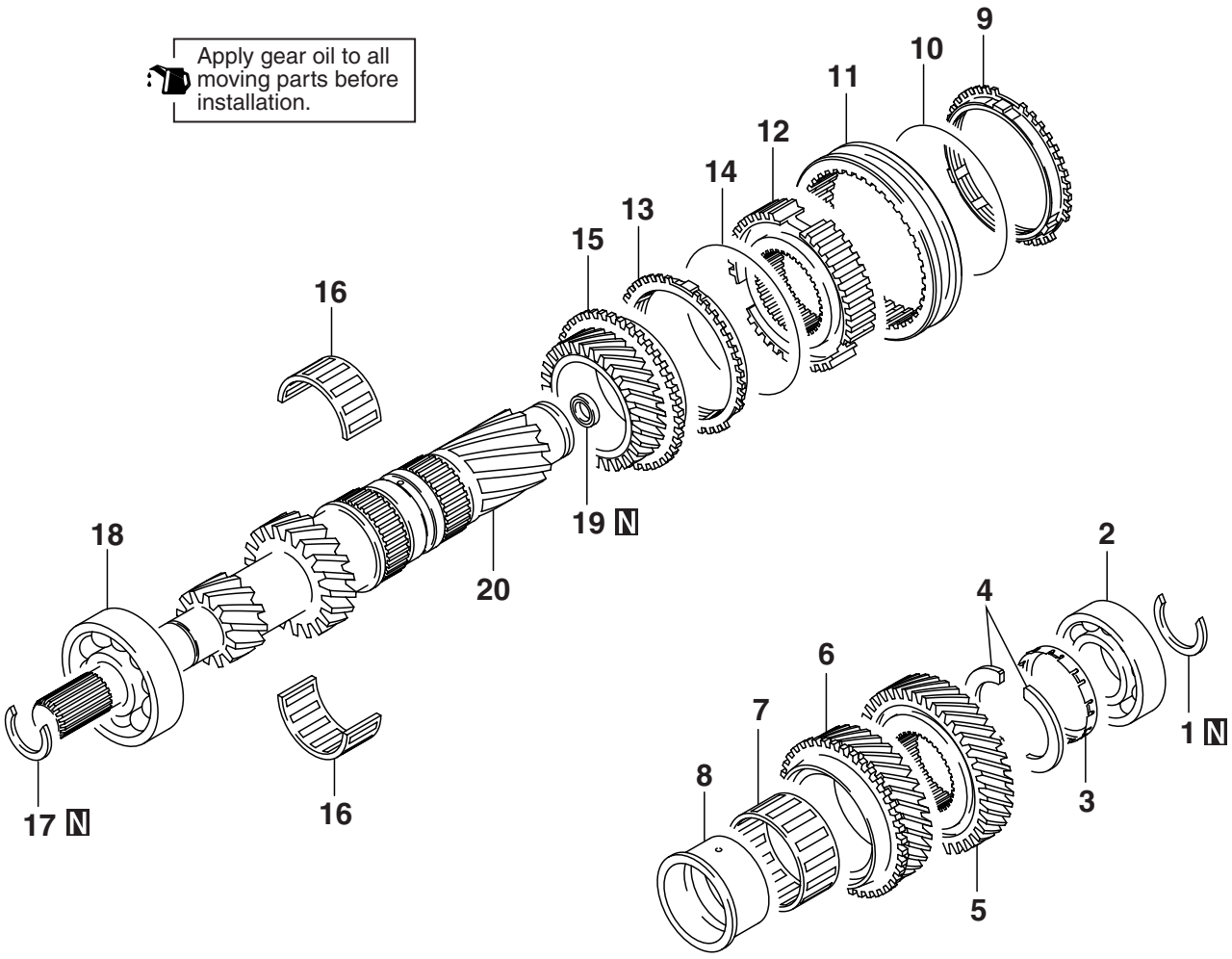
Check for continuity between terminals.

Switch condition	Continuity
Pressed	Open
Released	Conductive

INPUT SHAFT

DISASSEMBLY AND REASSEMBLY

M1222001600333



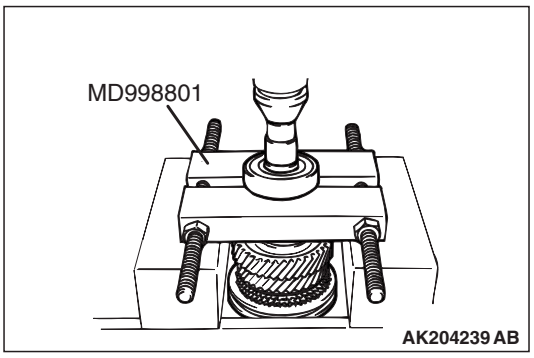
AK204391AB

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

			Disassembly steps (Continued)
	>>G<<	11.	Synchronizer sleeve
	>>F<<	12.	3rd-4th speed synchronizer hub
	>>E<<	13.	Synchronizer ring
	>>D<<	14.	Synchronizer spring
		15.	3rd speed gear
		16.	Needle roller bearing
	>>C<<	17.	Snap ring
<<E>>	>>B<<	18.	Ball bearing
	>>A<<	19.	Oil seal
		20.	Input shaft

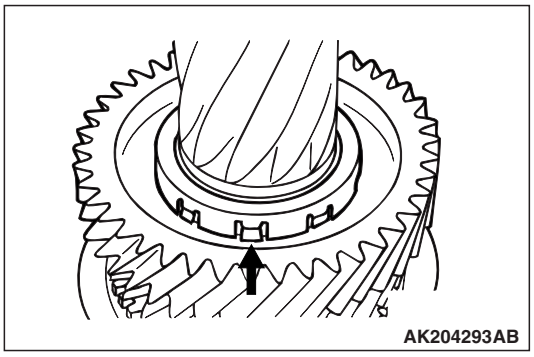
DISASSEMBLY SERVICE POINTS

<<A>> BALL BEARING REMOVAL



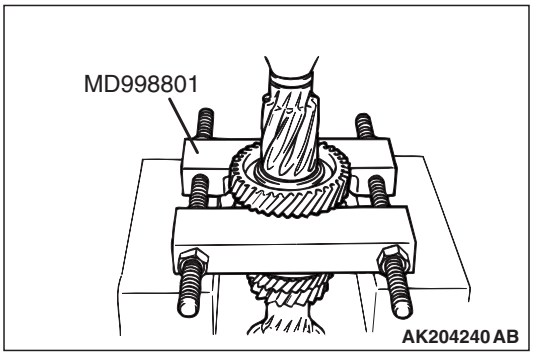
1. Using special tool Bearing remover (MD998801), support the ball bearing, and then set them on the press.
2. Push down on the input shaft with the press and remove the ball bearing.

<<B>> THRUST PLATE STOPPER REMOVAL



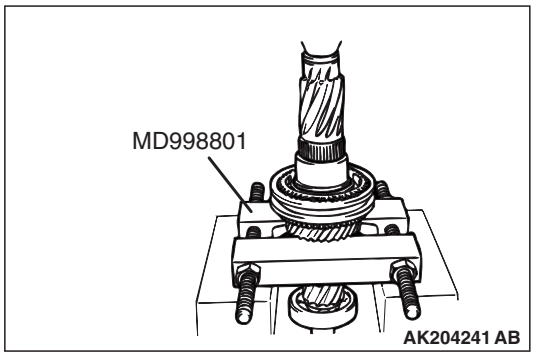
Using a screwdriver, pry up at the position shown in the illustration and remove the thrust plate stopper.

<<C>> 5TH SPEED GEAR REMOVAL



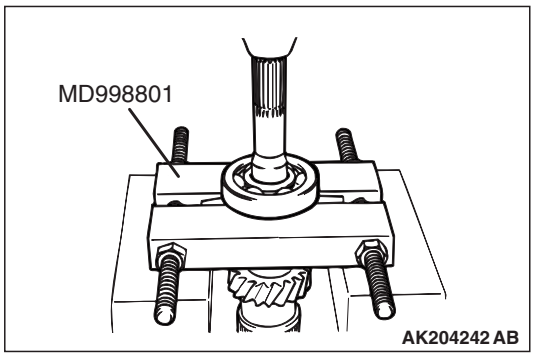
1. Using special tool Bearing remover (MD998801), support the 5th speed gear, and then set them on the press.
2. Push down on the input shaft with the press and remove the 5th speed gear.

<<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.

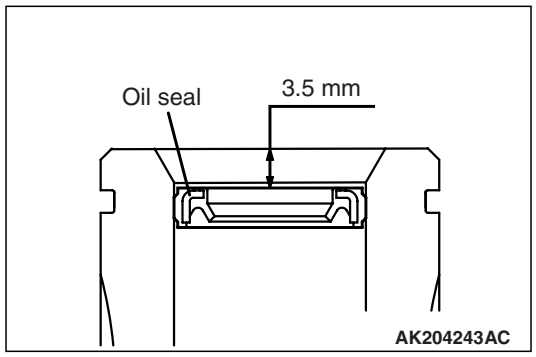
<<E>> BALL BEARING REMOVAL



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 remove the ball bearing.

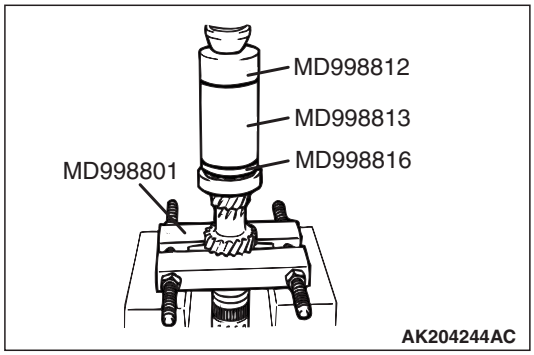
REASSEMBLY SERVICE POINTS

>>A<< OIL SEAL INSTALLATION



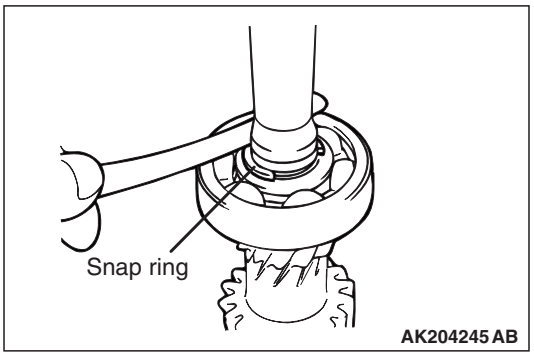
Install the oil seal into the end of the input shaft as shown.

>>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 ball bearing with the press.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998816)

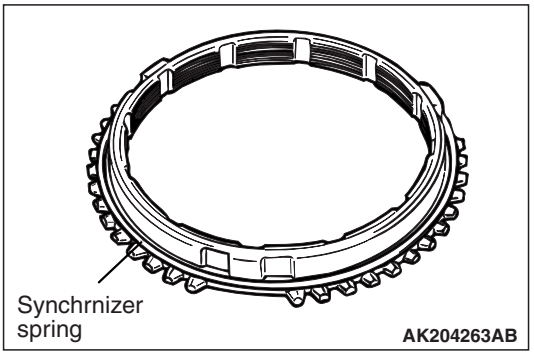
>>C<< SNAP RING INSTALLATION



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

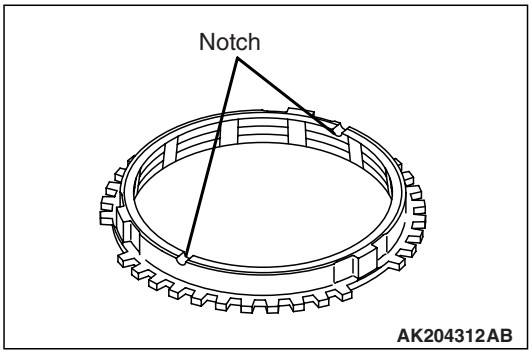


Install the synchronizer spring onto the synchronizer ring as shown.

>>E<< SYNCHRONIZER RING INSTALLATION

⚠ CAUTION

There are 3rd speed and 4th speed synchronizer rings, if the wrong one is installed it will effect the shift feeling.

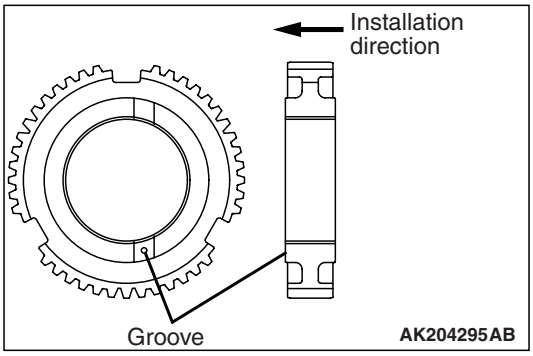


1. Ascertain whether or not there are identification notches on the synchronizer ring.

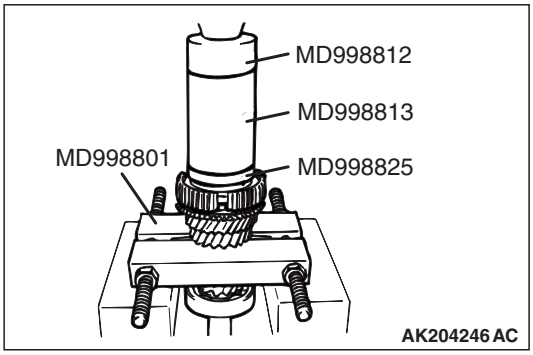
   Two notches: 3rd speed synchronizer ring

   No notches: 4th speed synchronizer ring
2. Install the synchronizer ring so that it completely fits over the machined cone of the gear.

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

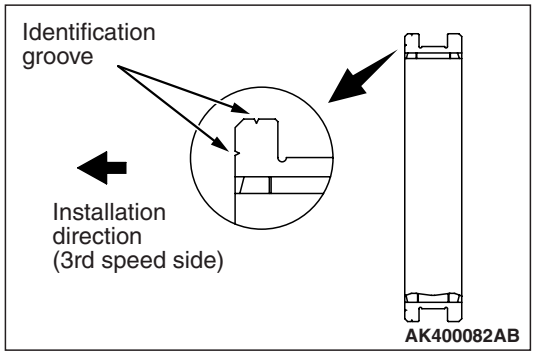


1. Using special tool Bearing remover (MD998801), support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Make sure that the synchronizer ring has been perfectly matched to the 3rd speed gear cone.
3. Check the installation direction of the 3rd-4th speed synchronizer hub, and put it on the input shaft.

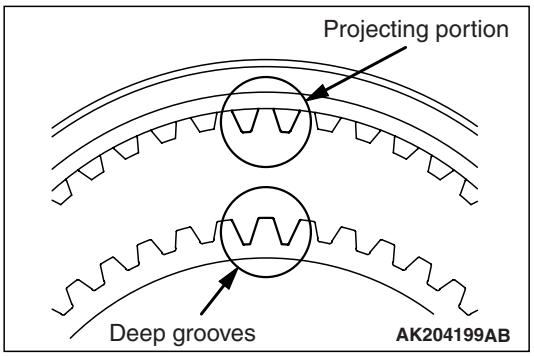


4. Using special tools, press install the 3rd-4th speed synchronizer hub with the press.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998825)
5. Make sure that the synchronizer ring can rotate freely.

>>G<< SYNCHRONIZER SLEEVE INSTALLATION

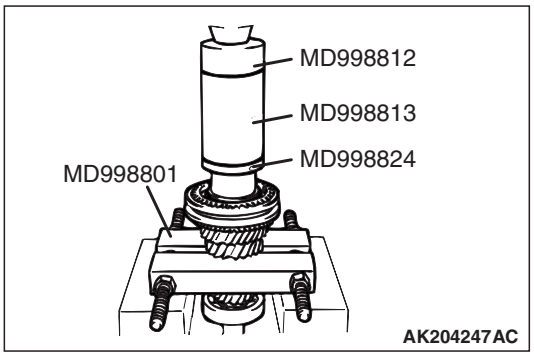


1. Check the installation direction of the synchronizer sleeve, and install it onto the 3rd-4th speed synchronizer hub.



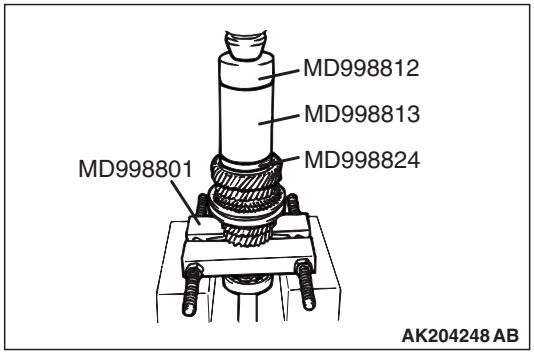
2. Install the synchronizer sleeve so that the areas with teeth that have raised tips (three areas total) are aligned with the areas on the synchronizer hub that have deep grooves between the teeth (three areas total).

>>H<< 4TH SPEED GEAR SLEEVE INSTALLATION



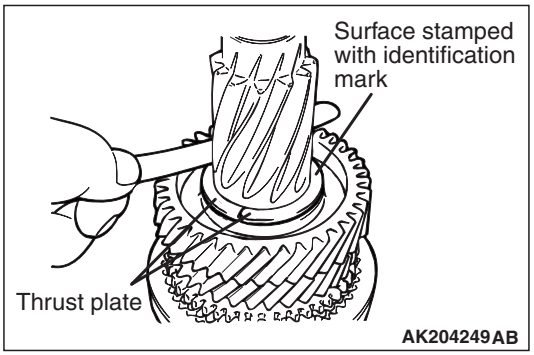
1. Using special tool Bearing remover (MD998801), support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Using special tools, install the 4th speed gear sleeve with the press.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998824)

>>I<< 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, install the 5th speed gear onto the input shaft with the press.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998824)

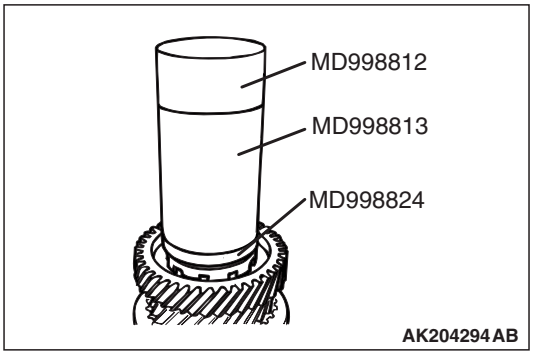
>>J<< THRUST PLATE INSTALLATION



1. Install the thickest thrust plates that can be fitted in the groove of the 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

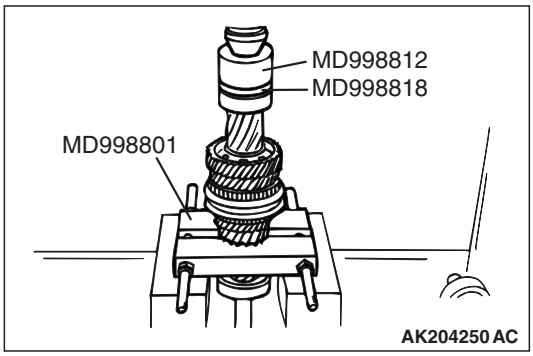
>>K<< THRUST PLATE STOPPER INSTALLATION



Install the thrust plate stopper by pressing special tools, by hand. Make sure that it is not tilted.

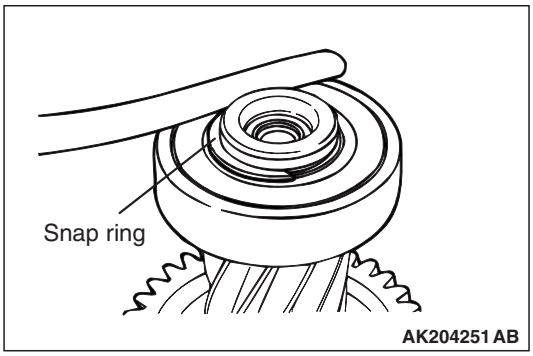
- Installer cap (MD998812)
- Installer-100 (MD998813)
- Installer adapter (MD998824)

>>L<< 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, install the ball bearing onto the input shaft with the press.
   - Installer cap (MD998812)
   - Installer adapter (MD998818)

>>M<< SNAP RING INSTALLATION



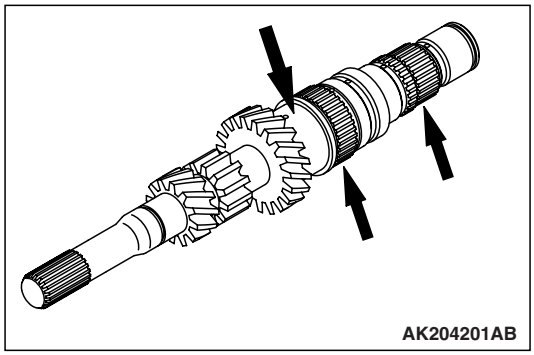
1. Install the thickest snap ring that can be fitted in the groove of the input shaft.
2. Make sure that the rear bearing end play meets the standard value.

   Standard value: 0 – 0.12 mm

INSPECTION

M1222001700095

INPUT SHAFT

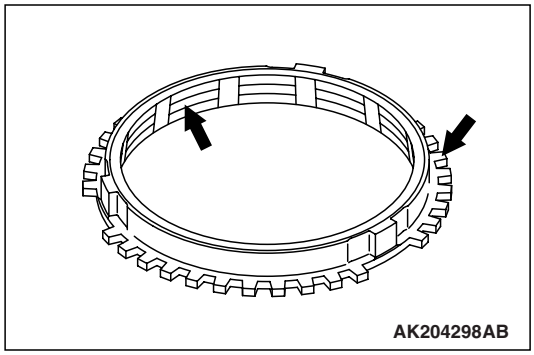


1. Check the outside diameter of the needle bearing mounting portion for damage, abnormal wear and seizure.
2. Check the splines for damage and wear.
3. Check that the helical gear teeth surfaces are not damaged or worn.

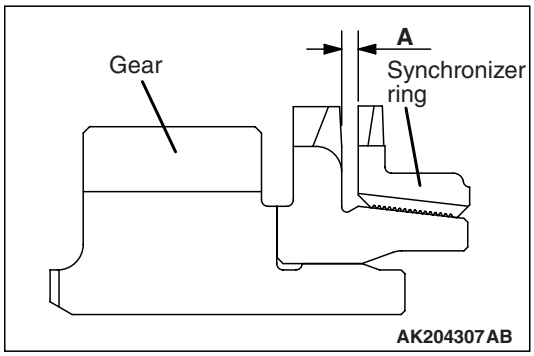
NEEDLE ROLLER BEARING

1. Combine the needle roller bearing with the input shaft or 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



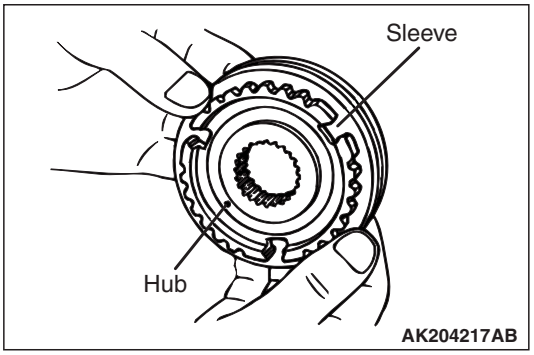
1. Check the clutch gear teeth for damage and broken.
2. Check internal surface for damage, wear and broken threads.



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

SYNCHRONIZER SLEEVE AND HUB

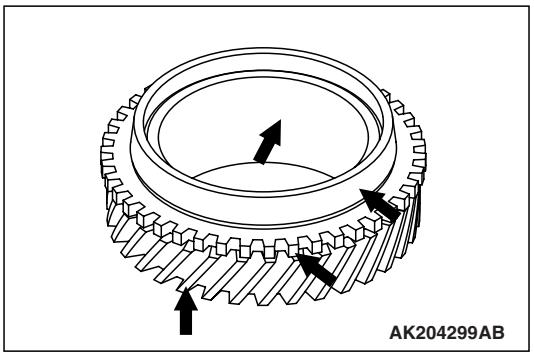


1. Combine the synchronizer sleeve and hub, and check that they slide smoothly.
2. Check that the sleeve is free from damage at its inside splines ends.

SYNCHRONIZER SPRING

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

SPEED GEARS

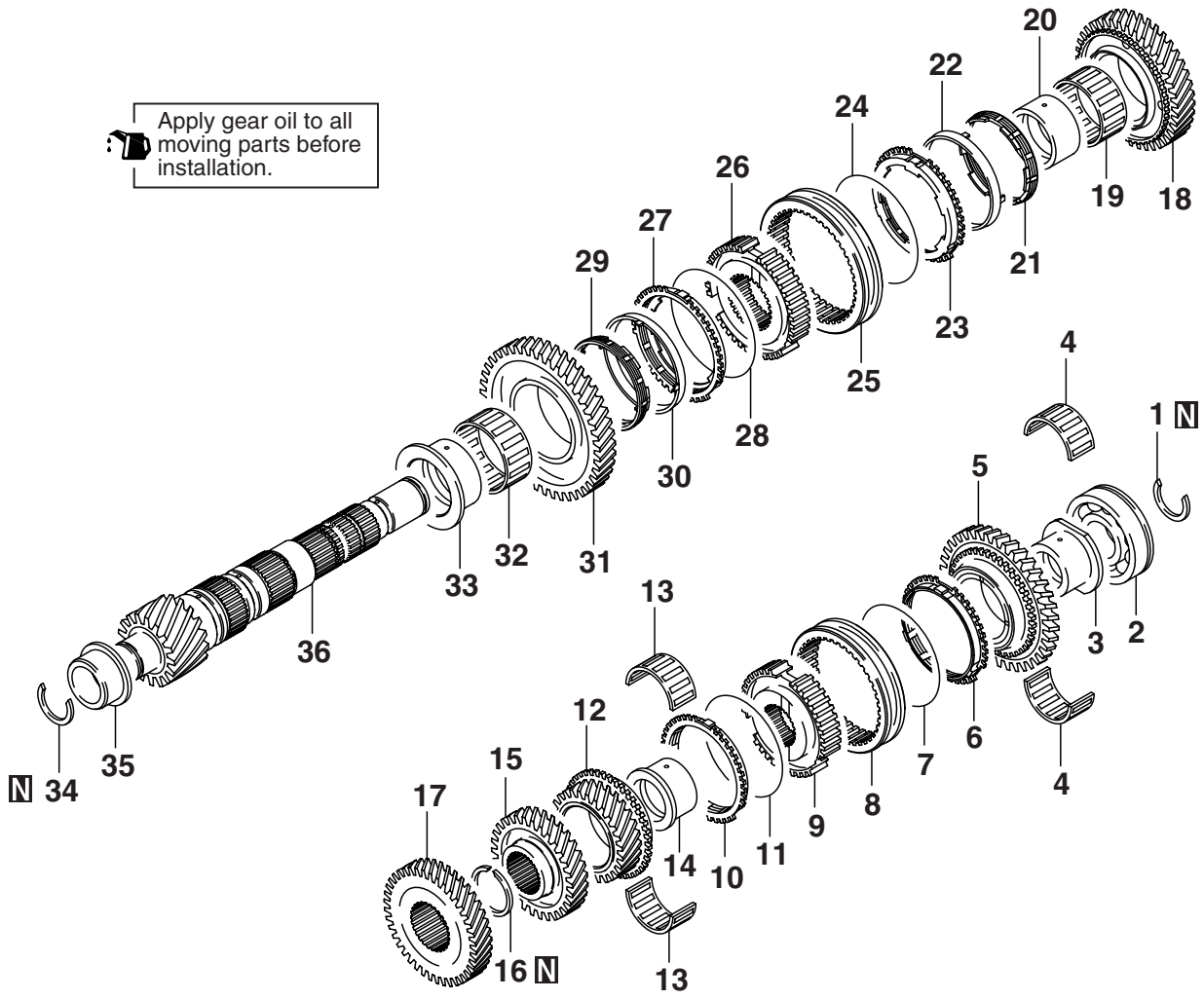


1. Check that the helical and clutch gear tooth surfaces are not damaged or worn.
2. Check that the synchronizer cone surfaces are not roughened, damaged or worn.
3. Check that the gear inside diameter and front and rear surfaces are not damaged and worn.

OUTPUT SHAFT

DISASSEMBLY AND REASSEMBLY

M1222002200350



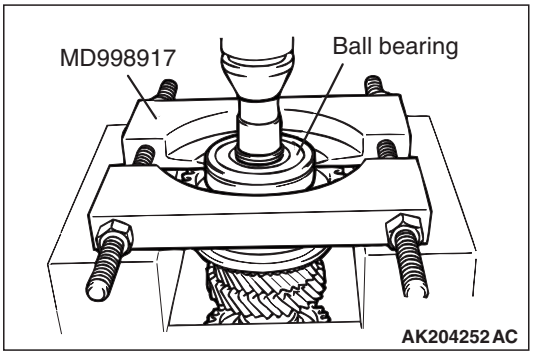
AK204392AB

			Disassembly steps
	>>R<<	1.	Snap ring
<<A>>	>>Q<<	2.	Ball bearing
<<B>>	>>P<<	3.	Reverse gear sleeve
		4.	Needle roller bearing
		5.	Reverse gear
	>>M<<	6.	Synchronizer ring
	>>L<<	7.	Synchronizer spring
	>>O<<	8.	Synchronizer sleeve
<<C>>	>>N<<	9.	5th speed-reverse synchronizer hub
	>>M<<	10.	Synchronizer ring
	>>L<<	11.	Synchronizer spring
		12.	5th speed gear
		13.	Needle roller bearing
	>>K<<	14.	5th speed gear sleeve
	>>J<<	15.	4th speed gear
	>>I<<	16.	Snap ring
<<D>>	>>H<<	17.	3rd speed gear
		18.	2nd speed gear

			Disassembly steps (Continued)
		19.	Needle roller bearing
<<E>>	>>G<<	20.	2nd speed gear sleeve
		21.	Inner synchronizer ring
		22.	Synchronizer cone
		23.	Outer synchronizer ring
	>>D<<	24.	Synchronizer spring
	>>F<<	25.	Synchronizer sleeve
	>>E<<	26.	1st-2nd speed synchronizer hub
		27.	Outer synchronizer ring
	>>D<<	28.	Synchronizer spring
		29.	Inner synchronizer ring
		30.	Synchronizer cone
		31.	1st speed gear
		32.	Needle roller bearing
<<F>>	>>C<<	33.	1st speed gear sleeve
	>>B<<	34.	Snap ring
<<G>>	>>A<<	35.	Roller bearing inner race
		36.	Output shaft

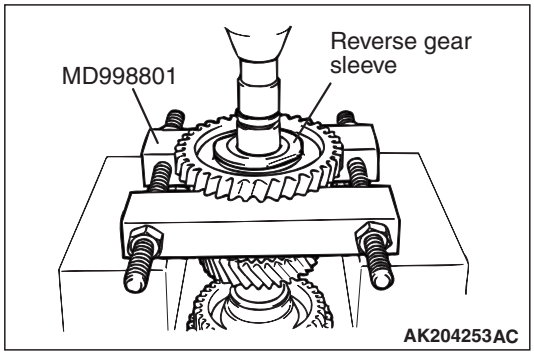
DISASSEMBLY SERVICE POINTS

<<A>> BALL BEARING REMOVAL



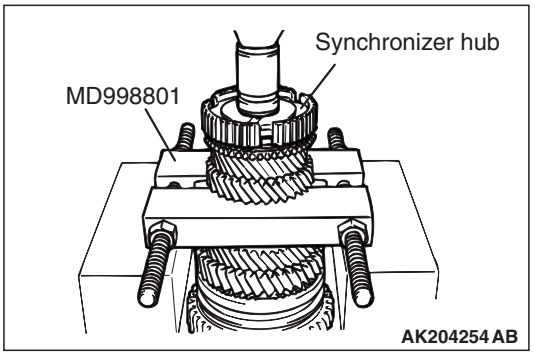
1. Using special tool Bearing remover (MD998917), support the ball bearing, and then set them on the press.
2. Push down on the output shaft with the press, and remove the ball bearing.

<<B>> REVERSE GEAR SLEEVE REMOVAL



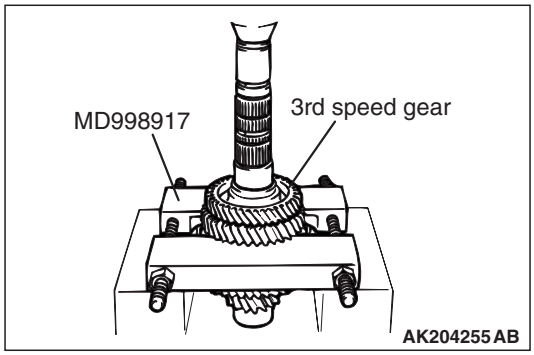
1. Using special tool Bearing remover (MD998801), support the reverse gear, and then set them on the press.
2. Push down on the output shaft with the press and remove the reverse gear sleeve.

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



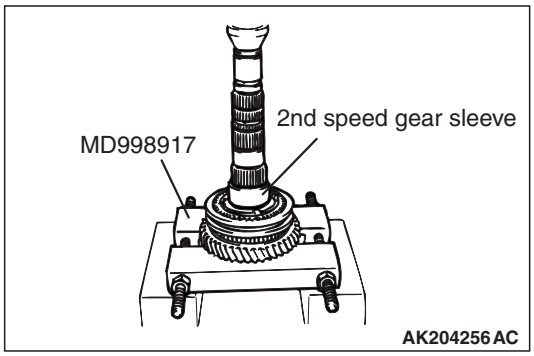
1. Using special tool Bearing remover (MD998801), support the 4th speed gear, and then set them on the press.
2. Push down on the output shaft with the press and remove the 5th speed-reverse synchronizer hub.

<<D>> 3RD SPEED GEAR REMOVAL



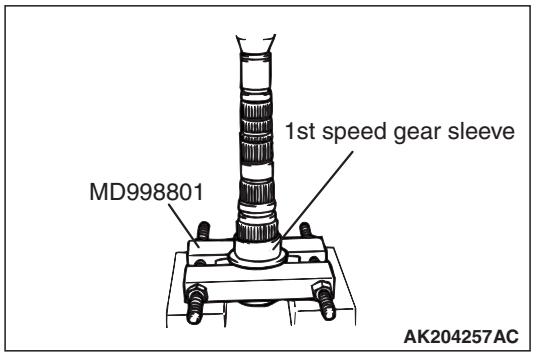
1. Using special tool Bearing remover (MD998917), support the 2nd speed gear, and then set them on the press.
2. Push down on the output shaft with the press and remove the 3rd speed gear.

<<E>> 2ND SPEED GEAR SLEEVE REMOVAL



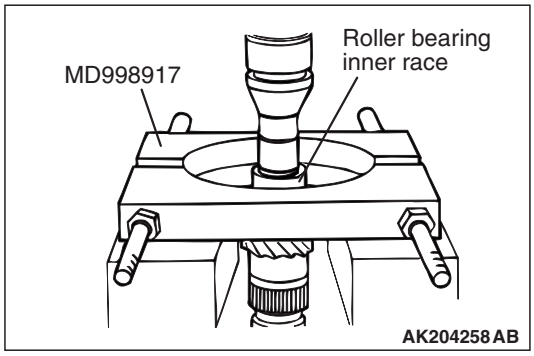
1. Using special tool Bearing remover (MD998917), support the 1st speed gear, and then set them on the press.
2. Push down on the output shaft with the press and remove the 2nd speed gear sleeve.

<<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.

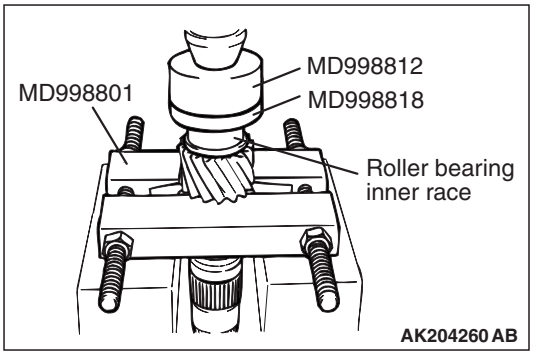
<<G>> ROLLER BEARING INNER RACE REMOVAL



1. Using special tool Bearing remover (MD998917), support the roller bearing inner race, and then set them on the press.
2. Push down on the output shaft with the press and remove the roller bearing inner race.

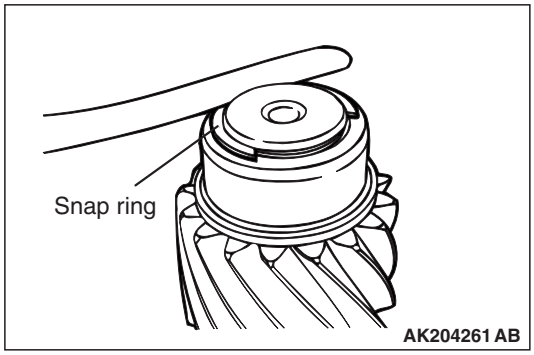
REASSEMBLY SERVICE POINTS

>>A<< ROLLER BEARING INNER RACE INSTALLATION



1. Using special tool Bearing remover (MD998801), support the output shaft gear, and then set them on the press.
2. Using special tools, install the roller bearing inner race with the press.
   - Installer cap (MD998812)
   - Installer adapter (MD998818)

>>B<< SNAP RING INSTALLATION

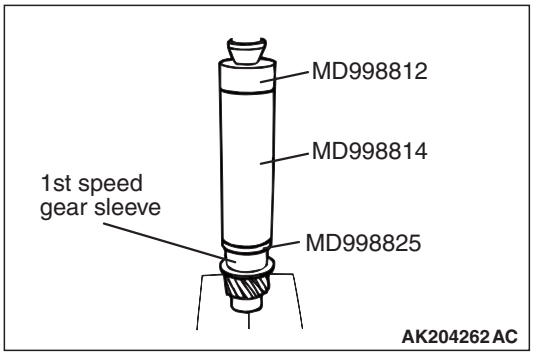


1. Install the thickest snap ring that can be fitted in the groove of output shaft.
2. Make sure that the front bearing inner race end play meets the standard value.

   Standard value: 0 – 0.12 mm

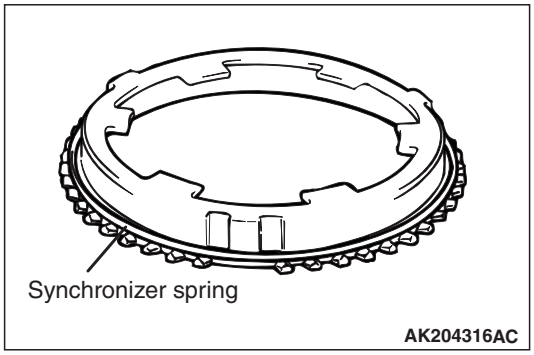
>>C<< 1ST SPEED GEAR SLEEVE INSTALLATION

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



2. Using special tools, install the 1st speed gear sleeve with the press.
   - Installer cap (MD998812)
   - Installer-200 (MD998814)
   - Installer adapter (MD998825)

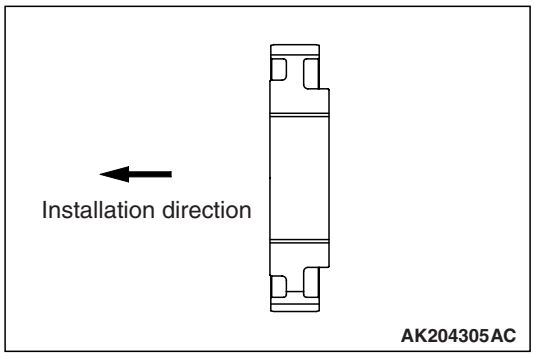
>>D<< SYNCHRONIZER SPRING INSTALLATION



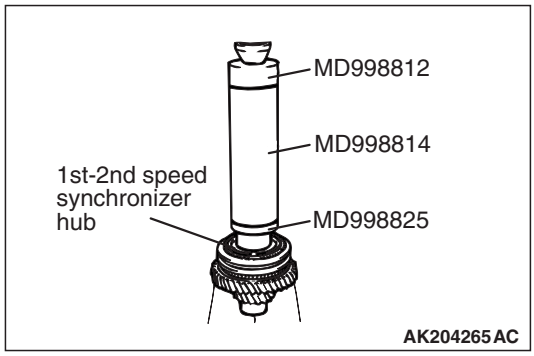
Install the synchronizer spring onto the outer synchronizer ring
as shown.

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

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

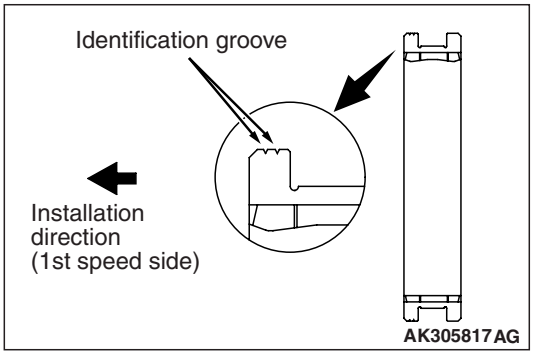


2. Check that the 1st-2nd speed synchronizer hub is in the correct installation direction, and put it on the output shaft.

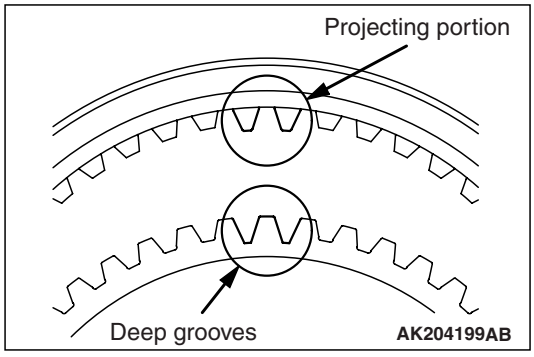


3. Using special tools, install the 1st-2nd speed synchronizer hub with the press.
   - Installer cap (MD998812)
   - Installer-200 (MD998814)
   - Installer adapter (MD998825)
4. Make sure that the outer synchronizer ring on the 1st speed gear side can rotate freely.

>>F<< SYNCHRONIZER SLEEVE INSTALLATION



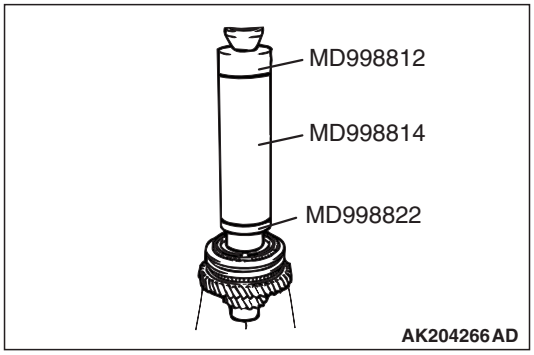
1. Check that the synchronizer sleeve is in the correct direction for installation, and install it on the 1st-2nd speed synchronizer hub.



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

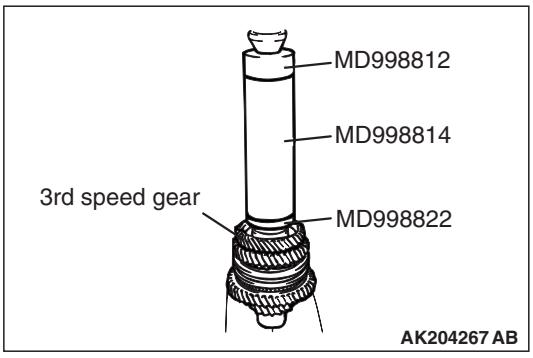
1. Set the output shaft on the press support stand.



2. Using special tools, install the 2nd speed sleeve onto the output shaft with the press.
- Installer cap (MD998812)
- Installer-200 (MD998814)
- Installer adapter (MD998822)

>>H<< 3RD SPEED GEAR INSTALLATION

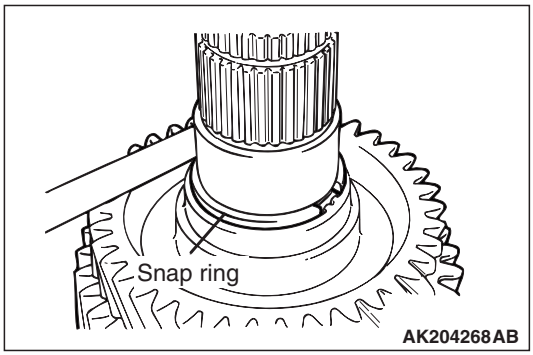
1. Check that the 2nd speed gear and the outer synchronizer ring have been properly installed. Also, make sure the claws on the synchronizer cone (four places) are correctly fitted into the holes in the 2nd speed gear (four places).



2. Using special tools, install the 3rd speed gear onto the output shaft with the press.
- Installer cap (MD998812)
- Installer-200 (MD998814)
- Installer adapter (MD998822)

3. Make sure that the 2nd speed gear and the outer synchronizer ring can rotate freely.

>>I<< SNAP RING INSTALLATION

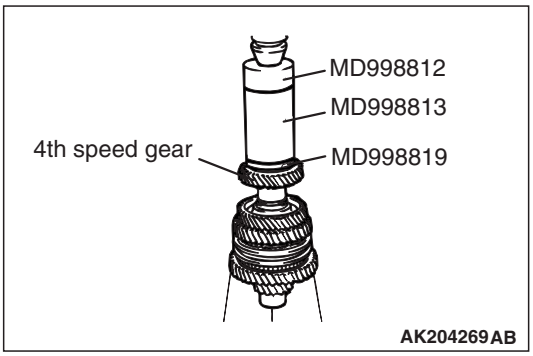


1. Install the thickest snap ring that can be fitted in the groove of output shaft.
2. Make sure that the 3rd speed gear end play meets the standard value.

Standard value: 0 – 0.09 mm

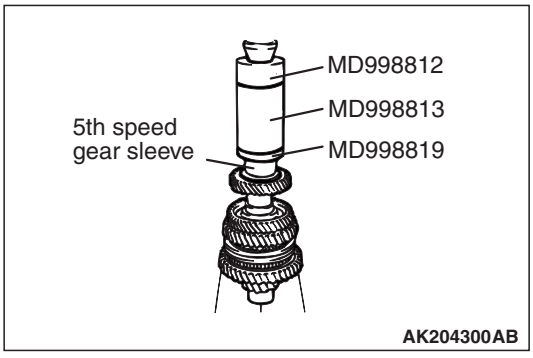
>>J<< 4TH SPEED GEAR INSTALLATION

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



2. Using special tools, install the 4th speed gear onto the output shaft with the press.
- Installer cap (MD998812)
- Installer-100 (MD998813)
- Installer adapter (MD998819)

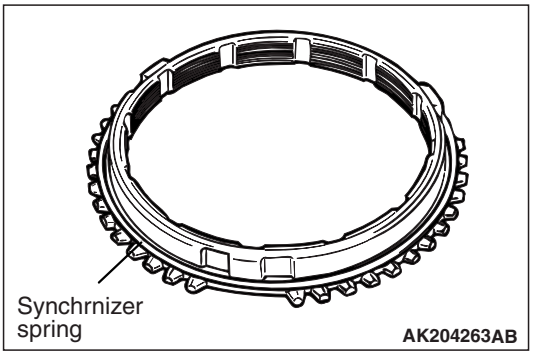
>>K<< 5TH SPEED GEAR SLEEVE INSTALLATION



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

- Installer cap (MD998812)
- Installer-100 (MD998813)
- Installer adapter (MD998819)

>>L<< SYNCHRONIZER SPRING INSTALLATION

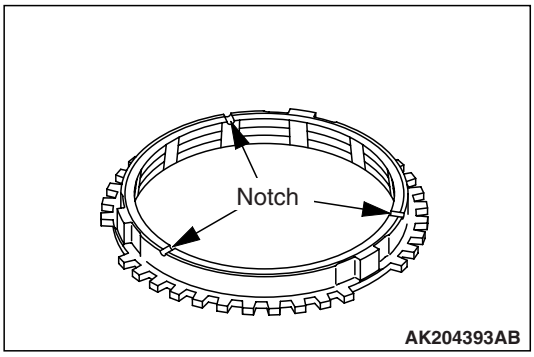


Install the synchronizer spring onto the synchronizer ring as shown.

>>M<< SYNCHRONIZER RING INSTALLATION

⚠ CAUTION

There is a 5th speed synchronizer ring and a reverse synchronizer ring. Be careful not to confuse the two when installing, as a mistake can effect the shift feeling.



1. Check for the presence of identification notches on the synchronizer ring.

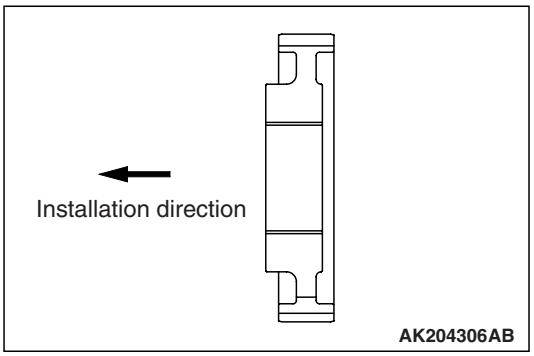
   No notches: 5th speed synchronizer ring

   Three notches: Reverse synchronizer ring

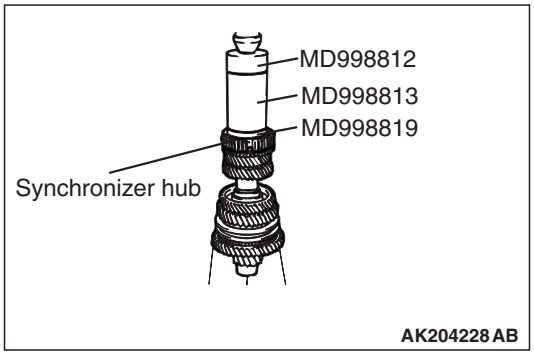
2. Install the synchronizer ring so that it fits completely over the machined cone of the gear.

>>N<< 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.

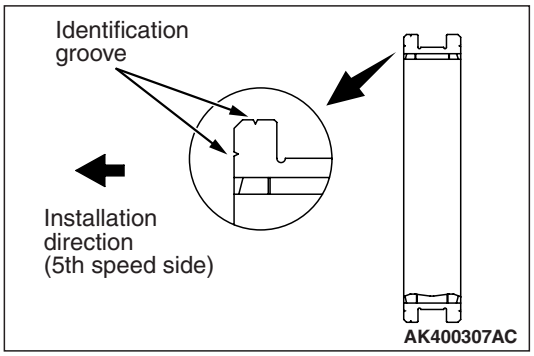


3. Check that the 5th speed-reverse synchronizer hub is oriented correctly for installation, and fit it on the output shaft.

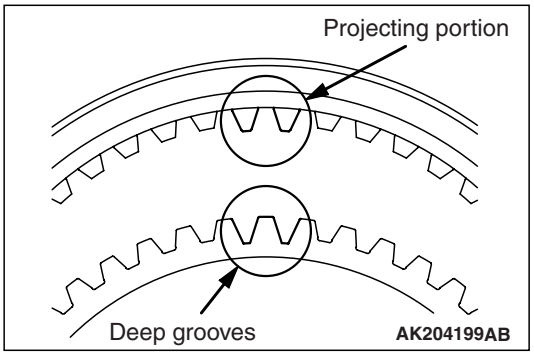


4. Using special tools, press install the 5th speed-reverse synchronizer hub with the press.
   - Installer cap (MD998812)
   - Installer-100 (MD998813)
   - Installer adapter (MD998819)
5. Make sure that the synchronizer ring on the 5th speed gear side can rotate freely.

>>O<< SYNCHRONIZER SLEEVE INSTALLATION



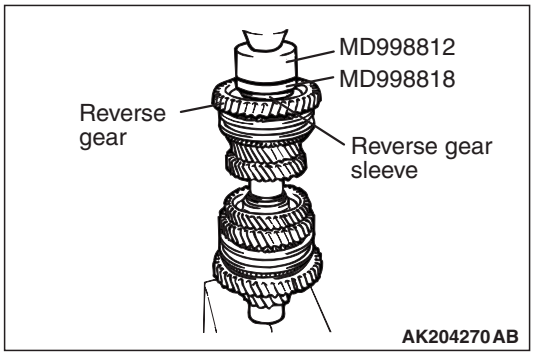
1. Check that the synchronizer sleeve is in the correct direction for installation, and install it on the 5th speed-Reverse synchronizer hub.



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).

>>P<< REVERSE GEAR SLEEVE INSTALLATION

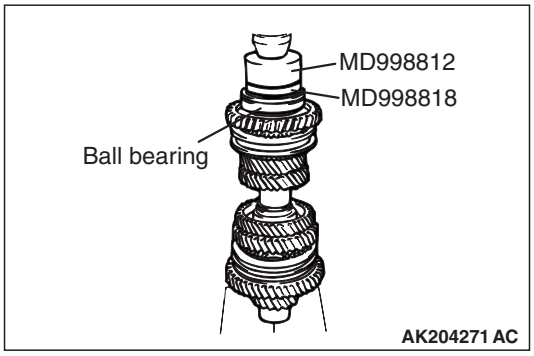
1. Make sure the synchronizer ring, reverse gear and needle roller bearing have been correctly installed.



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 (MD998818)

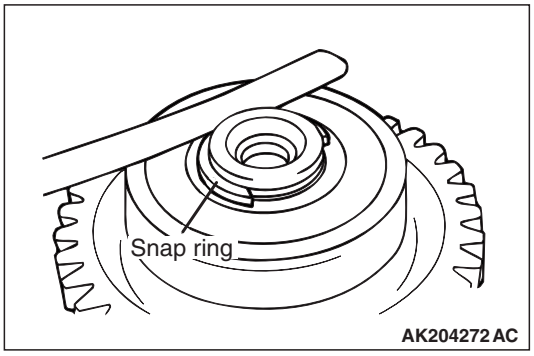
>>Q<< BALL BEARING INSTALLATION

1. Check the installation direction of the ball bearing.



2. Using special tools, install the ball bearing with the press.
   - Installer cap (MD998812)
   - Installer adapter (MD998818)

>>R<< SNAP RING INSTALLATION



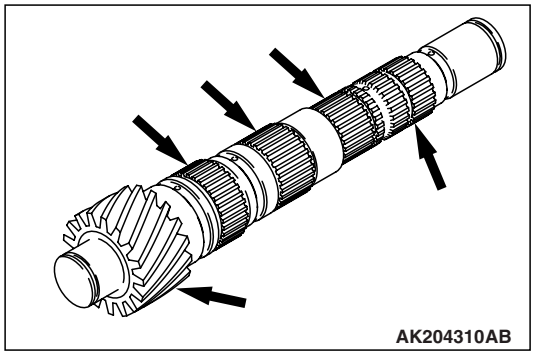
1. Install the thickest snap ring that can be fitted in the groove of output shaft.
2. Make sure that the rear bearing end play meets the standard value.

   Standard value: 0 – 0.09 mm

INSPECTION

M1222002300131

OUTPUT SHAFT

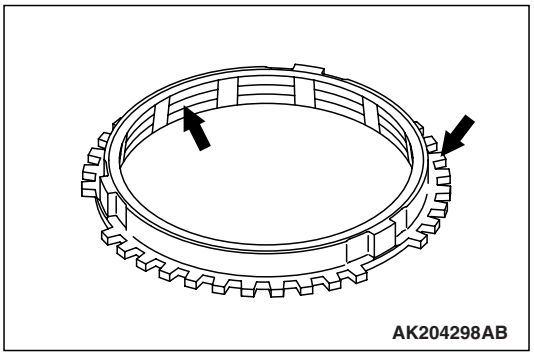


1. Check the splines for damage and wear.
2. Check that the helical gear teeth surfaces are not damaged or worn.

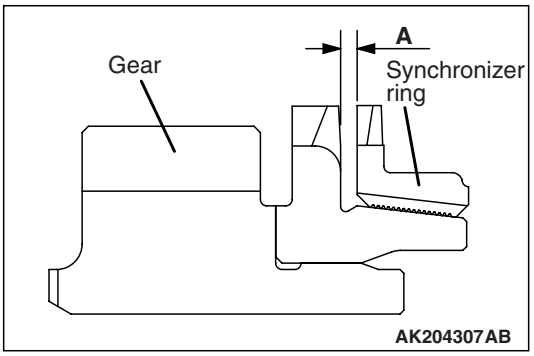
NEEDLE ROLLER BEARING

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



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



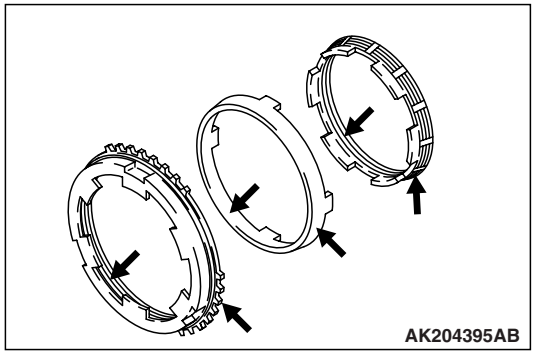
3. Force the synchronizer ring toward the clutch gear and check clearance "A". If "A" is less than the limit, replace the synchronizer ring.

Minimum limit: 0.5 mm

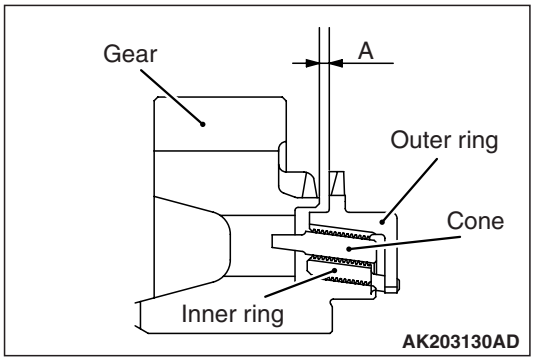
OUTER SYNCHRONIZER RING/INNER SYNCHRONIZER RING/SYNCHRONIZER CONE <FOR 1ST, 2ND SPEED>

⚠ CAUTION

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



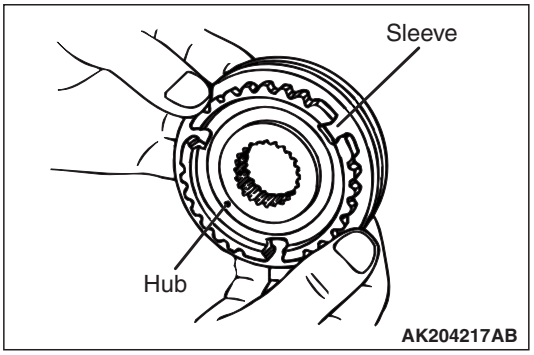
1. Check that the clutch gear tooth surfaces and cone surfaces are not damaged or broken.



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.

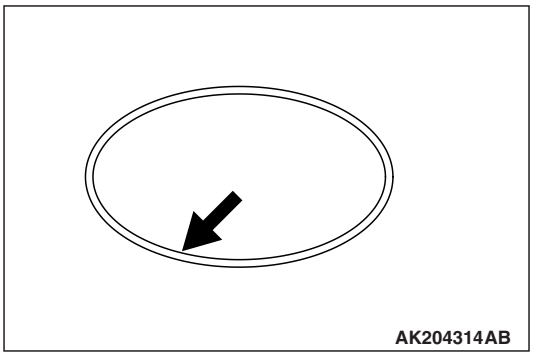
   Minimum limit: 0.5 mm

SYNCHRONIZER SLEEVE AND HUB



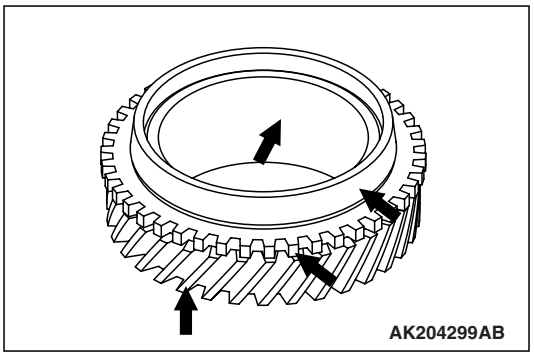
1. Combine the synchronizer sleeve and hub, and check that they slide smoothly.
2. Check that the sleeve is free from damage at its inside splines ends.

SYNCHRONIZER SPRING



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

SPEED GEARS

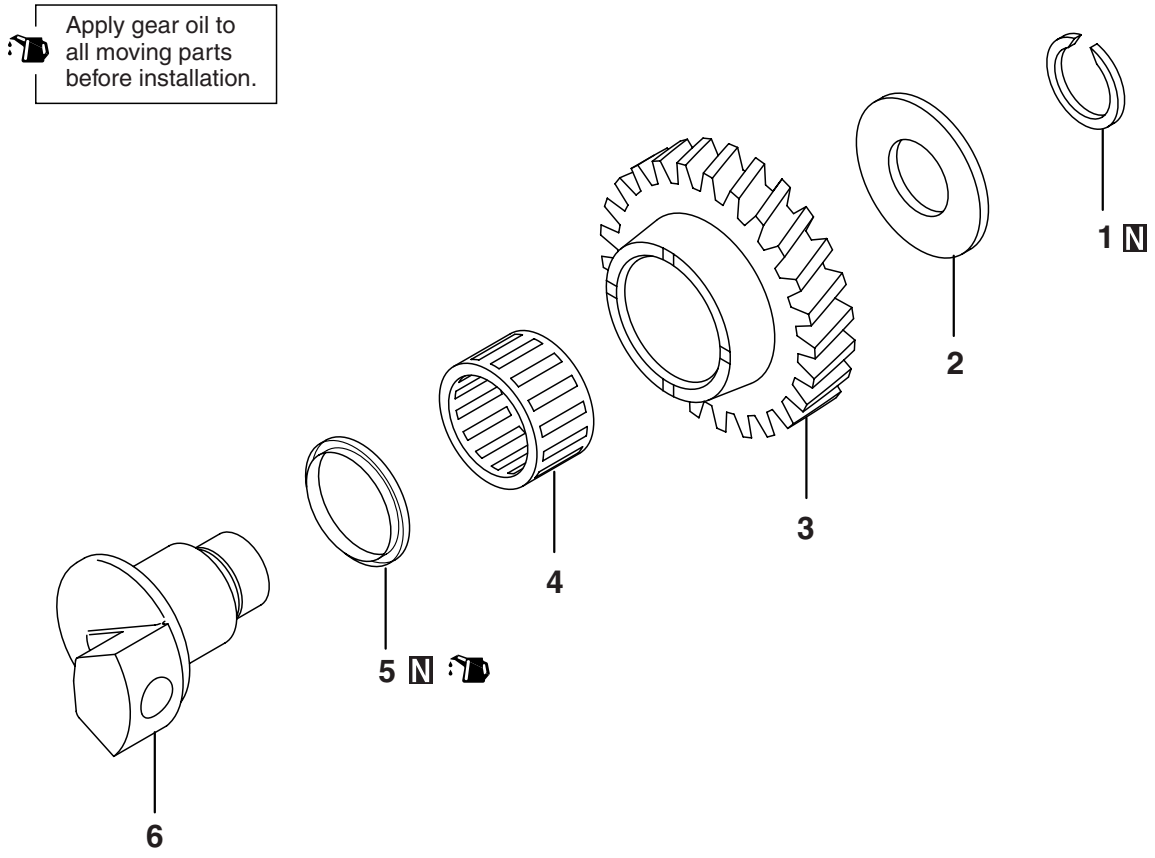


1. Check that the helical and clutch gear tooth surfaces are not damaged or worn.
2. Check that the synchronizer cone surfaces are not roughened, damaged or worn.
3. Check that the gear inside diameter and front and rear surfaces are not damaged and worn.

REVERSE IDLER GEAR

DISASSEMBLY AND REASSEMBLY

M1222012500136



AK302745AC

Disassembly steps

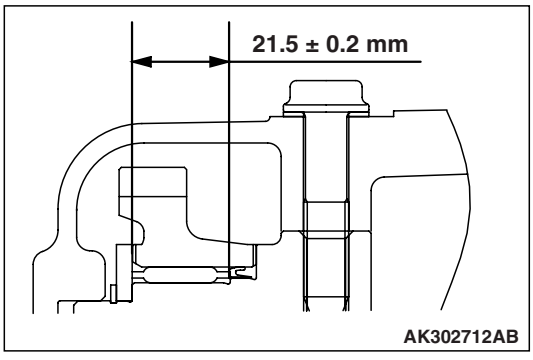
1. Snap ring
2. Thrust washer
3. Reverse idler gear
4. Needle roller bearing

>>A<< 5. Friction damper

6. Reverse idler gear shaft

REASSEMBLY SERVICE POINT

>>A<< FRICTION DAMPER INSTALLATION

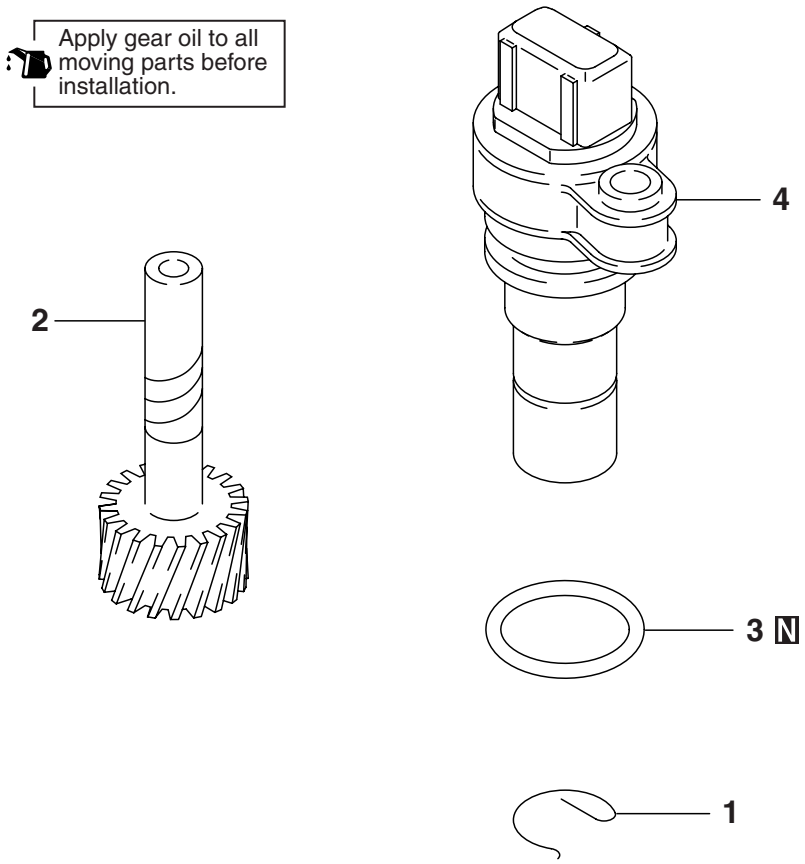


After apply gear oil to the outside and inside circumferences of the friction damper, install it using the special tool in position as shown in Fig.

VEHICLE SPEED SENSOR

DISASSEMBLY AND REASSEMBLY

M1222007000038



AK204397AB

Disassembly steps

1. E-clip
2. Speed sensor gear

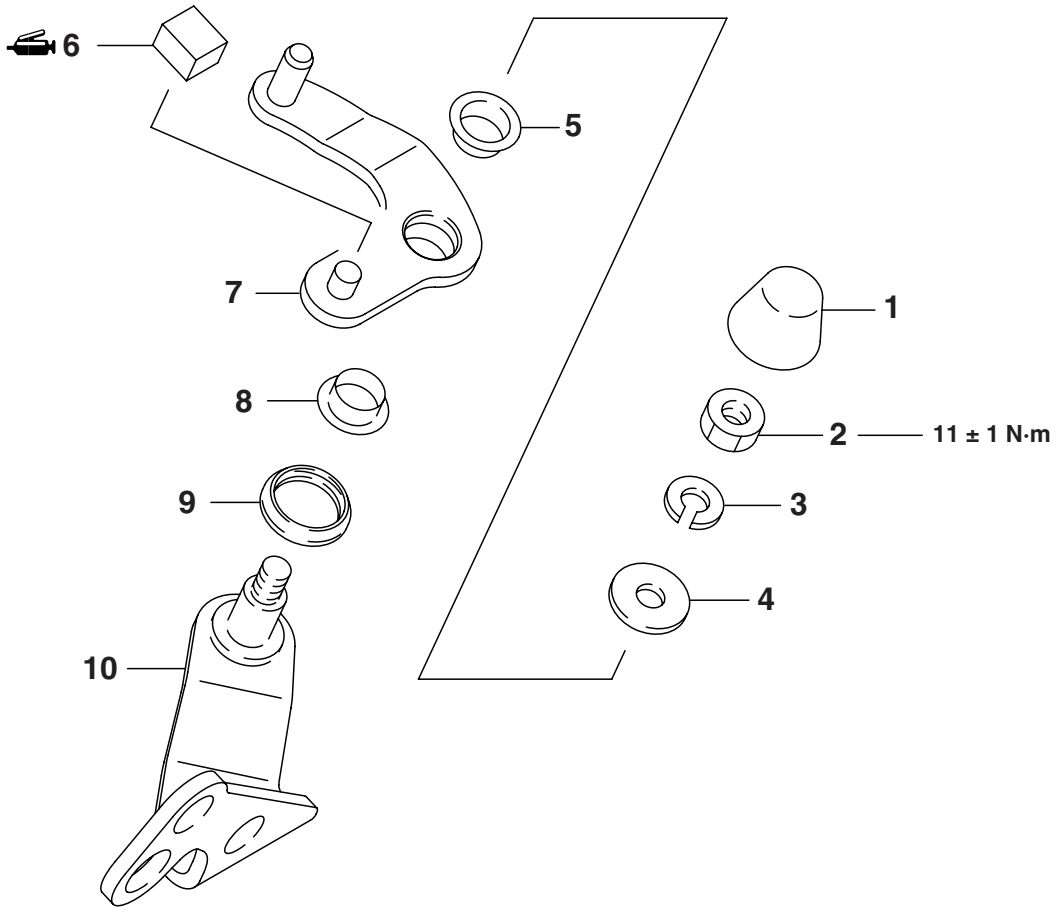
Disassembly steps (Continued)

3. O-ring
4. Speed sensor

SELECT LEVER

DISASSEMBLY AND REASSEMBLY

M1222012800074



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

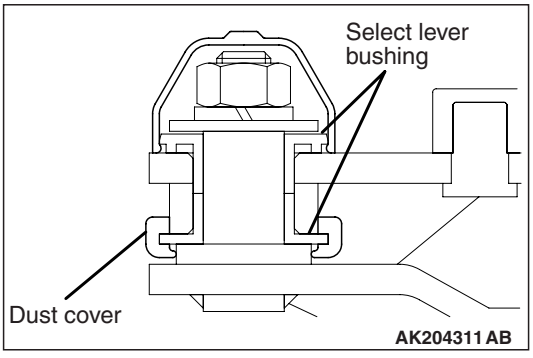
>>A<< 8. Select lever bushing

>>A<< 9. Dust cover

10. Select lever shaft

REASSEMBLY SERVICE POINT

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

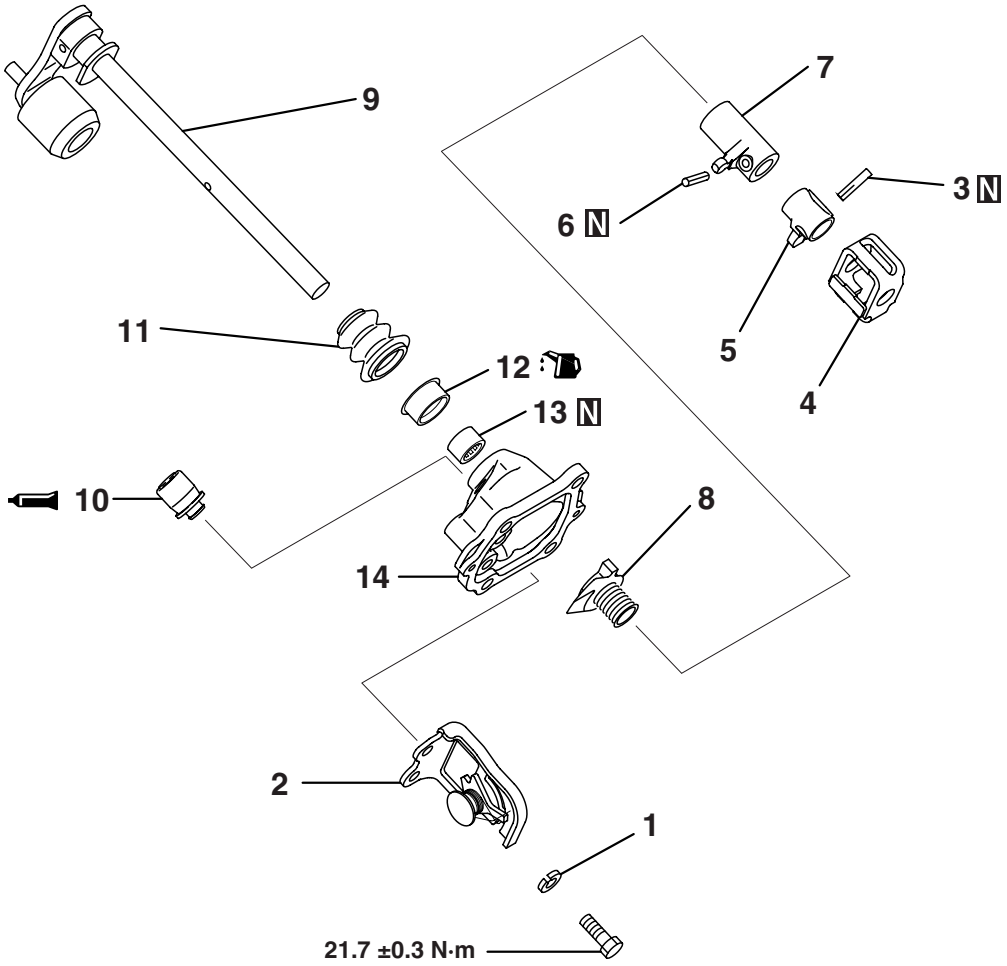


Make sure the dust cover and select lever bushing installation direction is correct, and the distinguished parts are correctly assembled as shown.

CONTROL HOUSING

DISASSEMBLY AND REASSEMBLY

M1222013100335

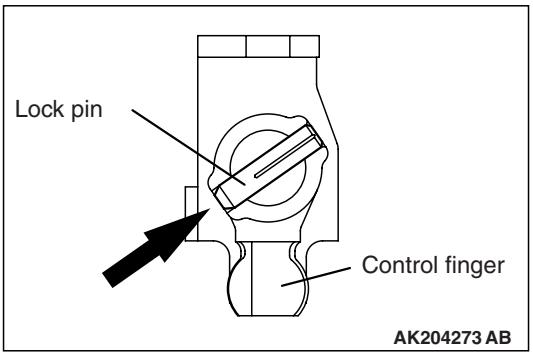


AK403619AB

			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

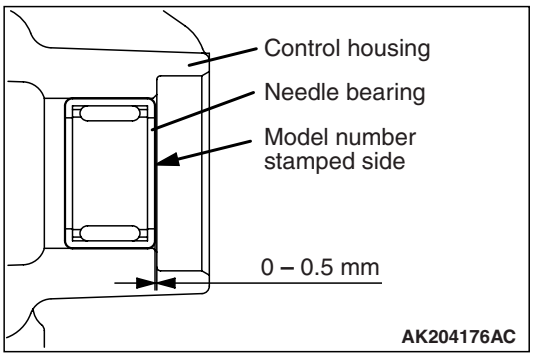
<<A>> LOCK PIN REMOVAL



Drive out the lock pin from the direction shown.

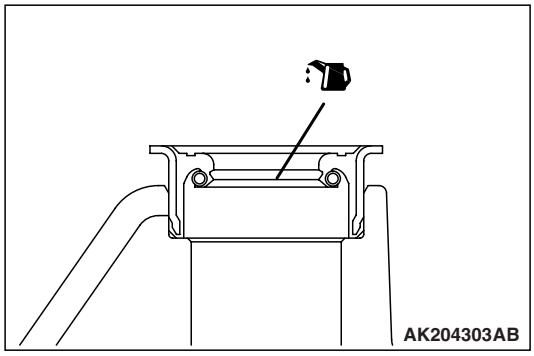
REASSEMBLY SERVICE POINTS

>>A<< NEEDLE BEARING INSTALLATION



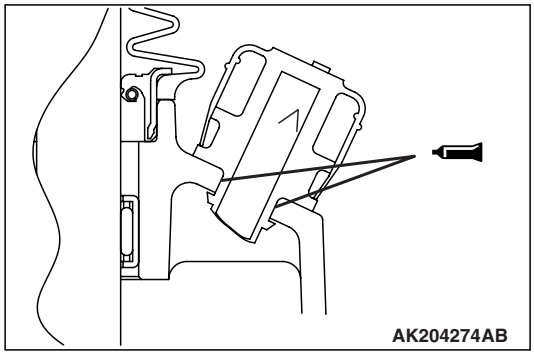
Press fit the needle bearing into the control housing side as shown.
Make sure that the side with the model number stamped on it faces the end of the control housing as shown.

>>B<< OIL SEAL INSTALLATION



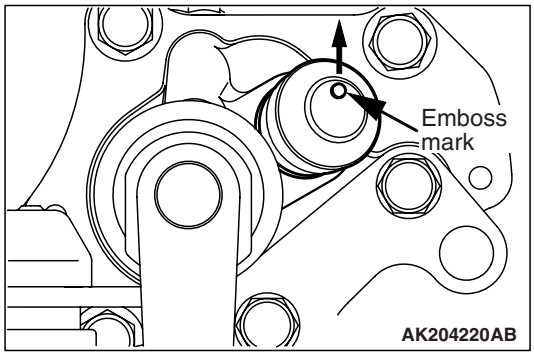
Apply gear oil (DiaQueen NEW MULTI GEAR OIL API classification GL-3, SAE 75W-80 or Gear oil API classification GL-4, SAE 75W-85W/75W-90) to the oil seal lip area.

>>C<< AIR BREATHER INSTALLATION



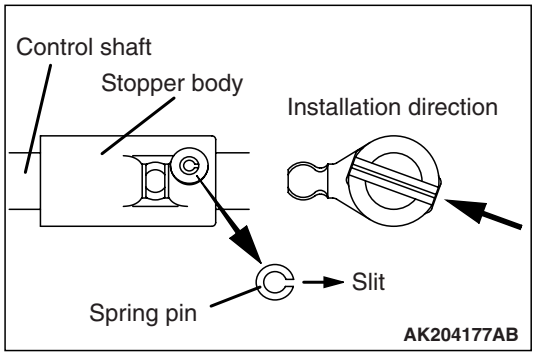
1. Apply sealant to the inserting portion of air breather.

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



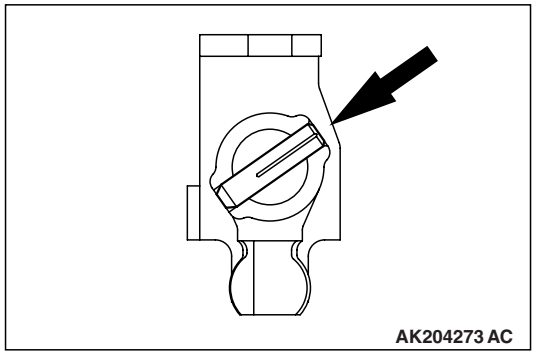
2. Install the air breather so that the emboss mark is in the direction shown in the figure.

>>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

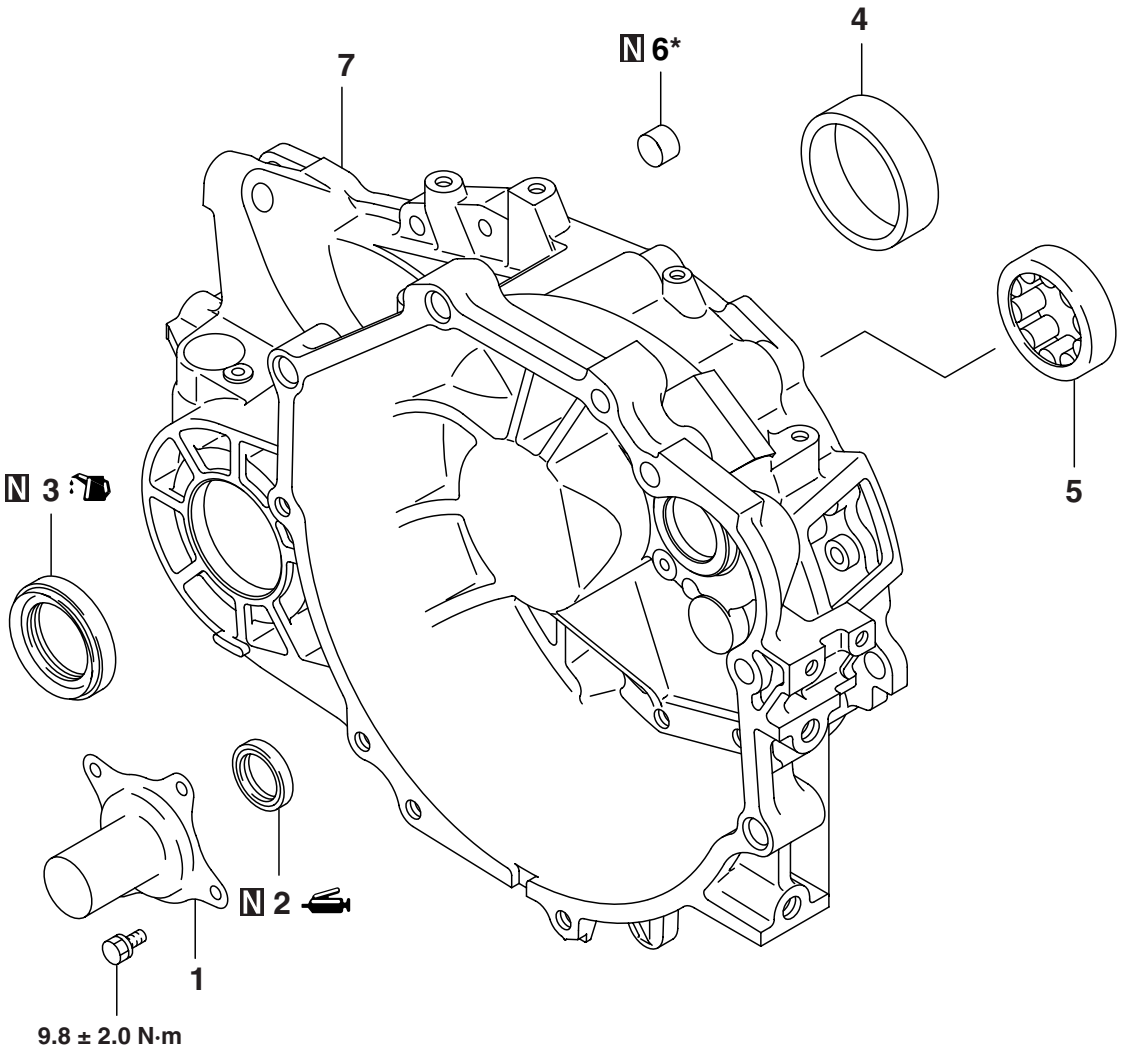


Drive the lock pin in from the direction shown in the figure.

CLUTCH HOUSING

DISASSEMBLY AND REASSEMBLY

M1222003700422



AK204400AD

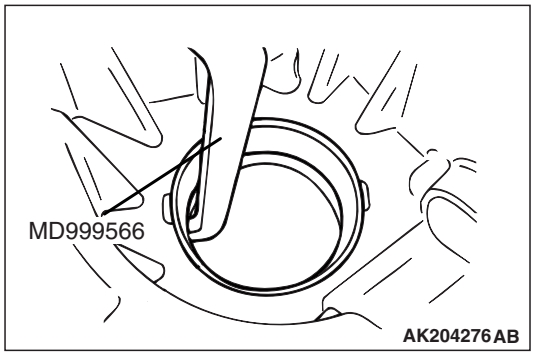
			Disassembly steps
		1.	Clutch release bearing retainer
	>>**E**<<	2.	Oil seal
	>>**D**<<	3	Oil seal <F5M42>
<<**A**>>	>>**C**<<	4.	Outer race
<<**B**>>	>>**B**<<	5.	Outer race

			Disassembly steps (Continued)
	>>**A**<<	6.	Bushing
		7.	Clutch housing

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

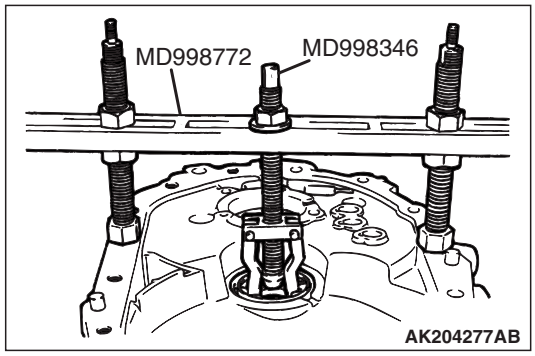
DISASSEMBLY SERVICE POINTS

<<A>> OUTER RACE REMOVAL



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

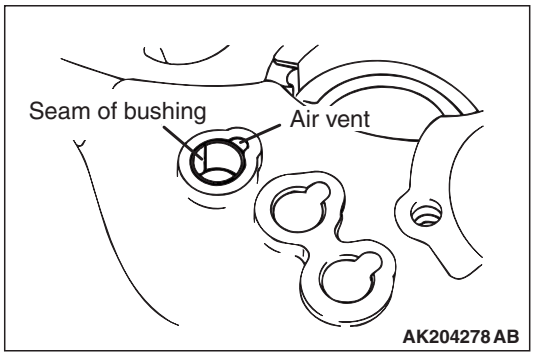
<<B>> OUTER RACE REMOVAL



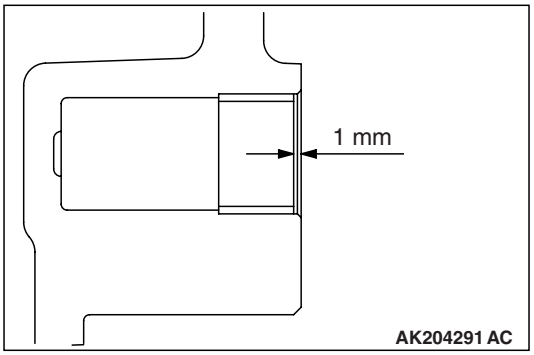
1. Set special tools as indicated in the figure.
   - Valve spring compressor (MD998772)
   - Bearing outer race remover (MD998346)
2. Turn the nut on special tool Bearing outer race remover (MD998346) to pull up on the tool and take out the outer race.

REASSEMBLY SERVICE POINTS

>>A<< BUSHING INSTALLATION

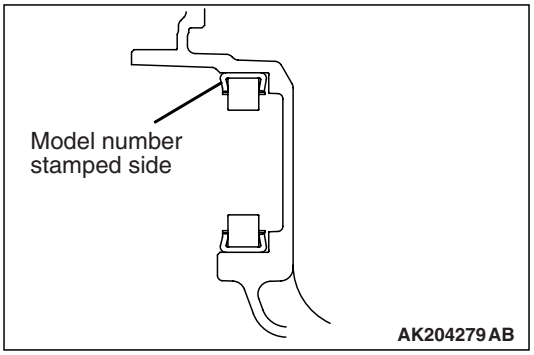


1. Press fit the bushing so the seam is away from the air vent.



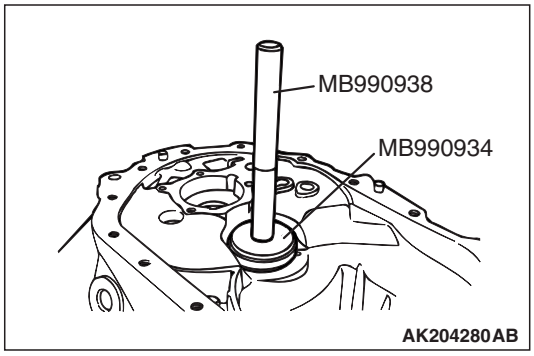
2. Be sure the bushing is fully seated as shown. It must be 1 mm below the housing surface.

>>B<< OUTER RACE INSTALLATION



1. Check the installation direction of the outer race.

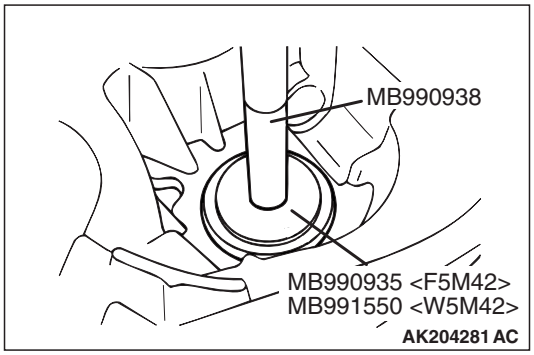
   Install the outer race so the side with the model number stamping can be seen.



2. Using special tools, press fit the outer race into the clutch housing.
   - Handle (MB990938)
   - Installer adapter (MB990934)

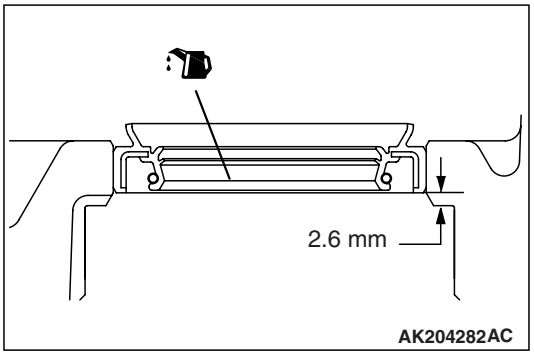
>>C<< OUTER RACE INSTALLATION

1. Check the installation direction of the outer race.

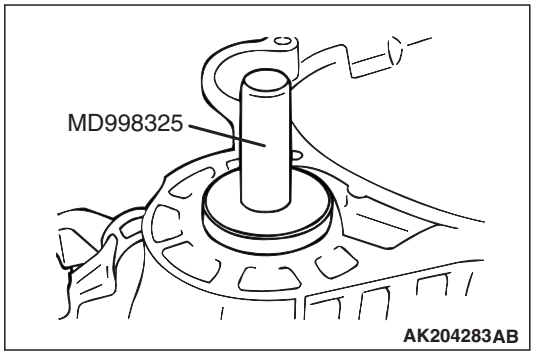


2. Using special tools, press fit the outer race into the clutch housing.
   - Handle (MB990938)
   - Installer adapter (MB990935)
   - Bearing outer race installer (MB991550)

>>D<<OIL SEAL INSTALLATION

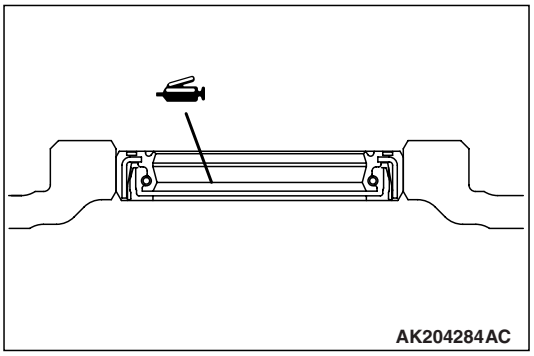


1. Apply gear oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4) to the oil seal lip.



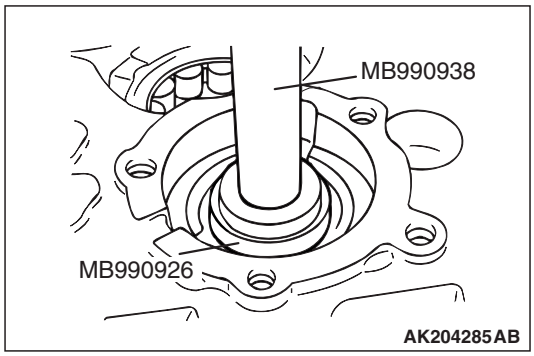
2. Using special tool Differential oil seal installer (MD998325), press fit the oil seal into the clutch housing.

>>E<< OIL SEAL INSTALLATION



1. Apply specified grease to the oil seal lip.

   Specified grease:
   Mitsubishi Part number 0101011 or equivalent

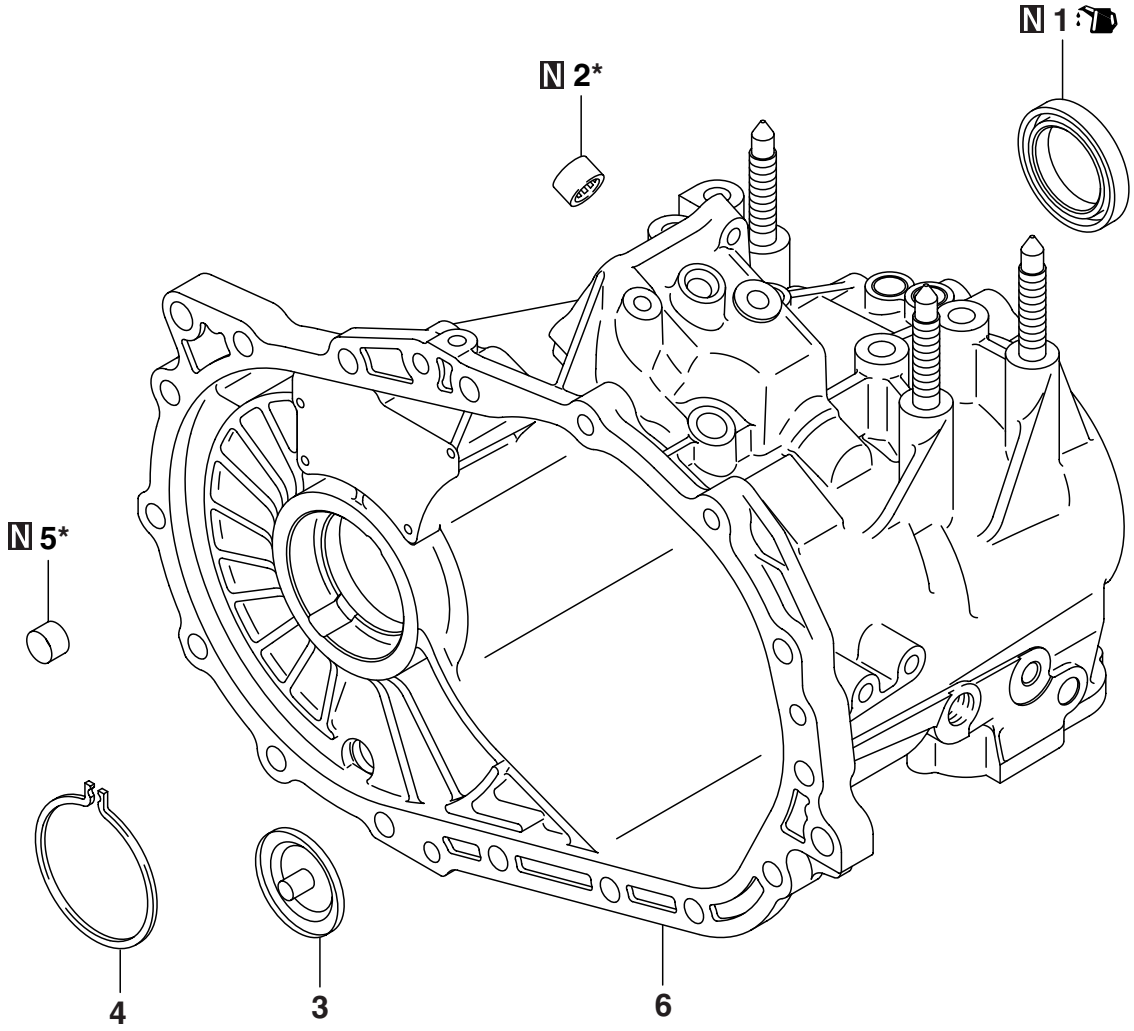


2. Using special tools, press fit the oil seal into the clutch housing.
   - Handle (MB990938)
   - Installer adapter (MB990926)

TRANSMISSION CASE

DISASSEMBLY AND REASSEMBLY

M1222013400358



AK204407AC

Disassembly steps

>>**D**<< 1. Oil seal
>>**C**<< 2. Needle bearing
>>**B**<< 3. Oil guide
4. Snap ring

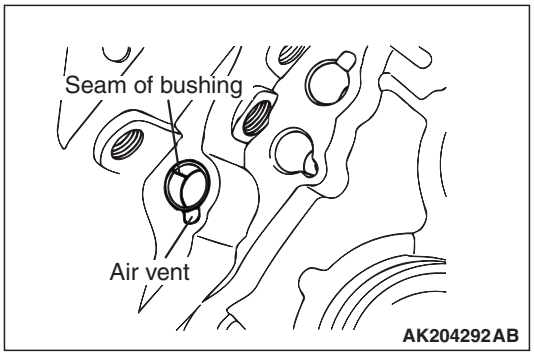
Disassembly steps (Continued)

>>**A**<< 5. Bushing
6. Transmission case

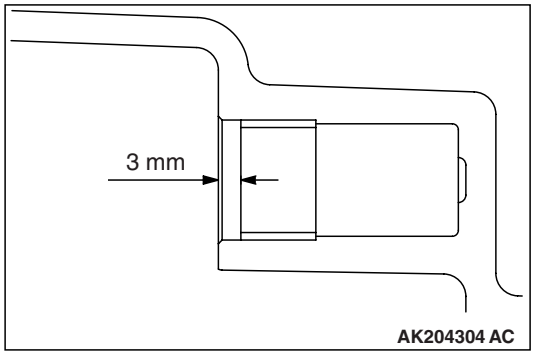
*NOTE: * Refer to the needle bearing and bushing installation procedures only when replacing the transmission case.*

REASSEMBLY SERVICE POINTS

>>A<< BUSHING INSTALLATION

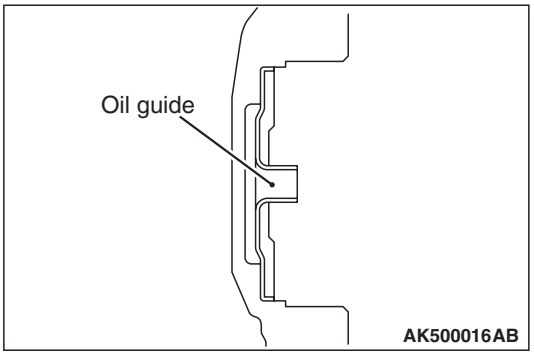


1. Press fit the bushing so the seam is away from the air vent.



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

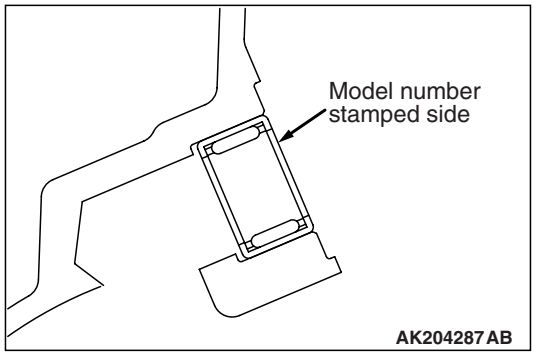
>>B<< OIL GUIDE INSTALLATION



1. Evenly press the oil guide so it is fully seated and at an angle.

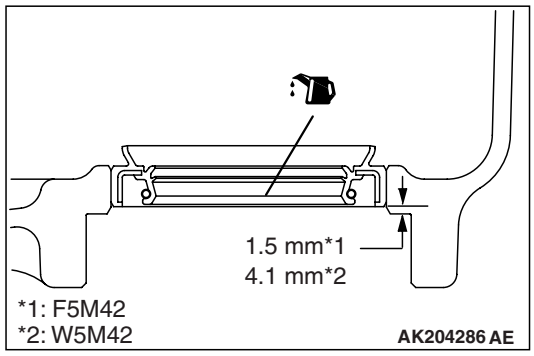
>>C<< NEEDLE BEARING INSTALLATION

1. Check the installation direction of the needle bearing.

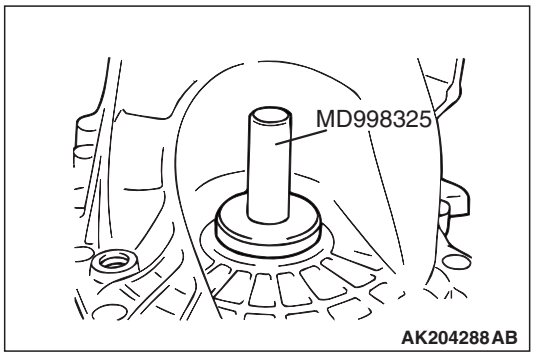


2. Press fit the needle bearing until it is flush with the case.

>>D<<OIL SEAL INSTALLATION



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



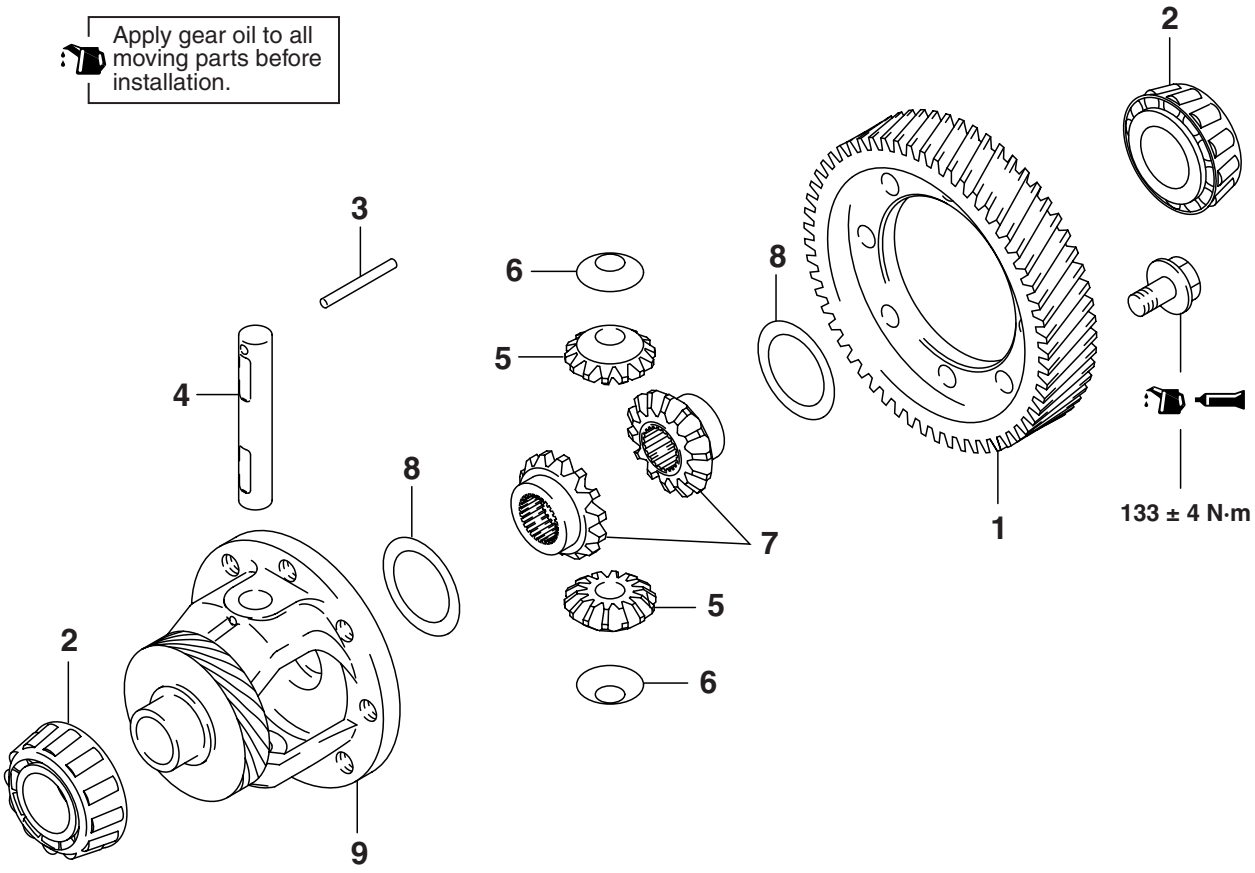
2. Using special tool Differential oil seal installer (MD998325), press fit the oil seal into the transmission case.

DIFFERENTIAL

DISASSEMBLY AND REASSEMBLY

M1222002500339

<F5M42>

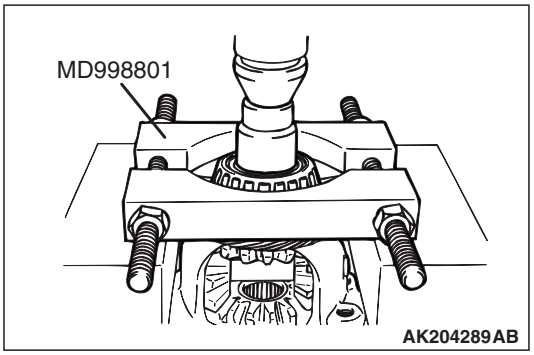


AK204408AD

			Disassembly steps
	>>**D**<<	1.	Differential drive gear
<<**A**>>	>>**C**<<	2.	Taper roller bearing
	>>**B**<<	3.	Lock pin
	>>**A**<<	4.	Pinion shaft
	>>**A**<<	5.	Pinion

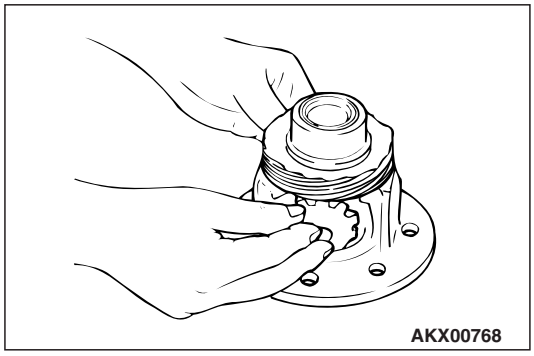
			Disassembly steps (Continued)
>>**A**<<	6.	Washer
>>**A**<<	7.	Side gear
>>**A**<<	8.	Spacer
	9.	Differential case

DISASSEMBLY SERVICE POINT
<<A>> TAPER ROLLER BEARING REMOVAL



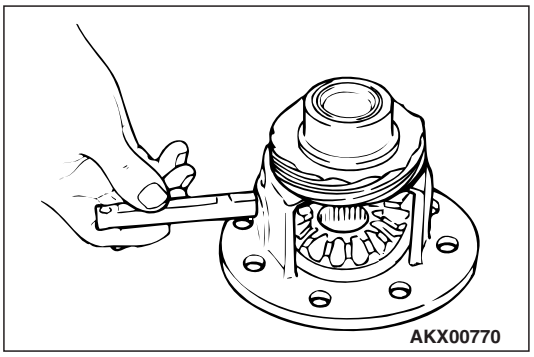
1. Using special tool Bearing remover (MD998801), support the taper roller bearing, and then set them on the press.
2. Push down on the differential case with the press and remove the bearing.

REASSEMBLY SERVICE POINTS
>>A<< SPACER/SIDE GEAR/WASHER/PINION/PINION SHAFT INSTALLATION

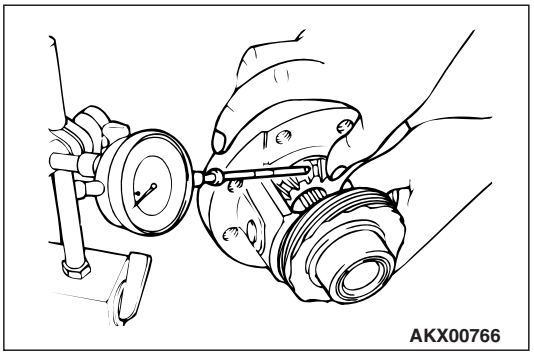


1. After a spacer has been mounted on the back surface of the side gear, install the side gear in the differential case.

   NOTE: When a new side gear is to be installed, mount a medium thickness spacer (1.11 – 1.19 mm).
2. Set the washer on the back of each pinion, and put both pinions simultaneously in mesh with the side gears. While rotating them, install them in position.



3. Insert the pinion shaft.

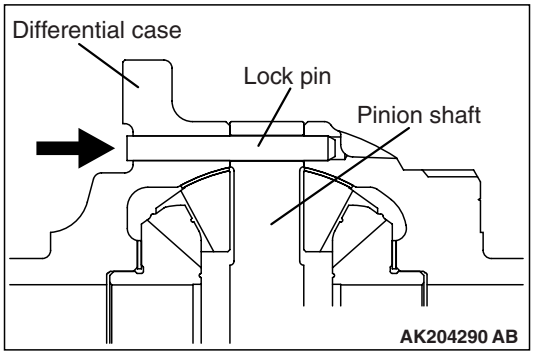


4. Measure the backlash between the side gear and pinion.

   Standard value: 0.025 – 0.150 mm
5. If the backlash is out of specification, select a spacer that should get the back lash with in the standard value and re-measure the backlash.

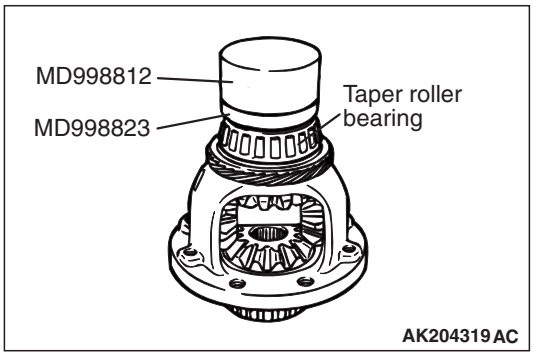
   NOTE: Repeat until the backlash on both sides are equal.

>>B<< LOCK PIN INSTALLATION



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

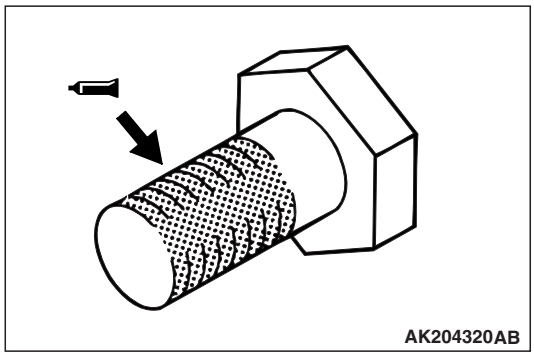
>>C<< TAPER ROLLER BEARING INSTALLATION



Using special tools, install the taper roller bearing with the press.

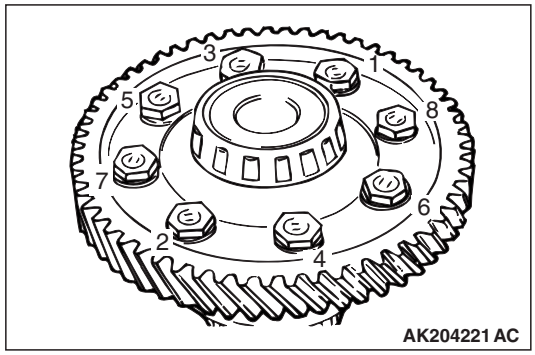
- Installer cap (MD998812)
- Installer adapter (MD998823)

>>D<< DIFFERENTIAL DRIVE GEAR INSTALLATION



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

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



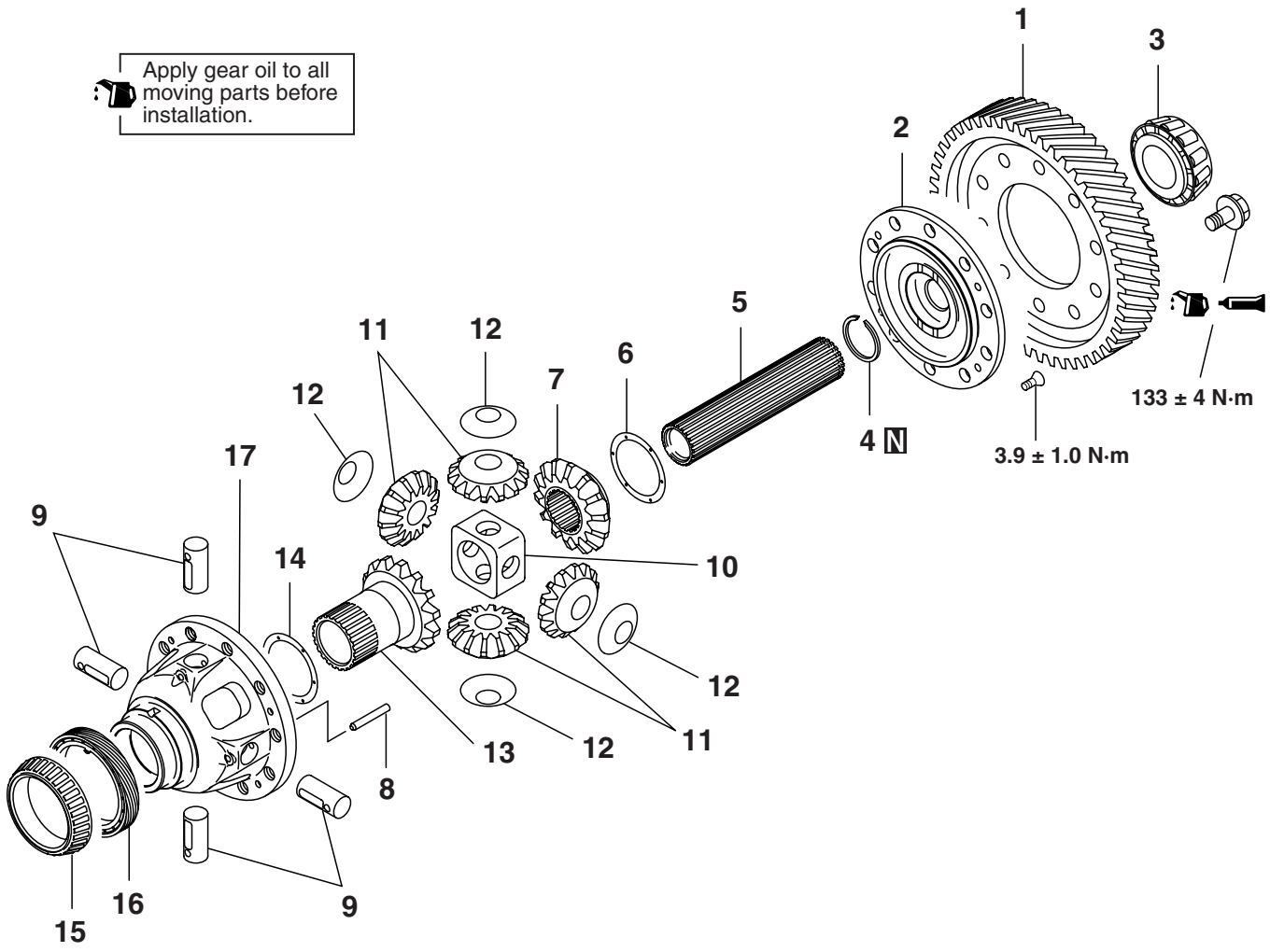
2. Tighten to the specified torque of 133 ± 4 N·m in the illustrated sequence.

CENTRE DIFFERENTIAL

DISASSEMBLY AND REASSEMBLY

M1222002800192

<W5M42>



AK602561AC

Disassembly steps

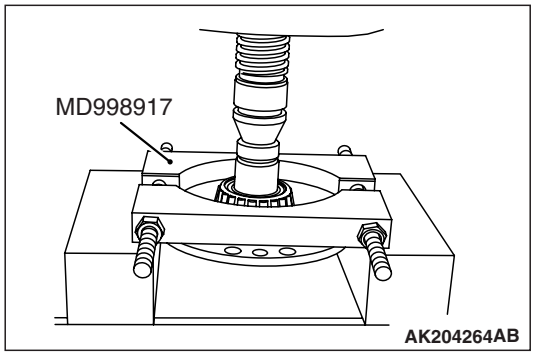
	>>D<<	1.	Center differential drive gear
	>>C<<	2.	Center differential flange
<<A>>	>>B<<	3.	Taper roller bearing
	>>C<<	4.	Snap ring
	>>C<<	5.	Front output shaft
	>>C<<	6.	Spacer
	>>C<<	7.	Side gear
	>>C<<	8.	Lock pin
	>>C<<	9.	Pinion shaft

Disassembly steps (Continued)

	>>C<<	10.	Pinion shaft holder
	>>C<<	11.	Pinions
	>>C<<	12.	Washers
	>>C<<	13.	Side gear
	>>C<<	14.	Spacer
<<B>>	>>A<<	15.	Taper roller bearing
		16.	Speed meter drive gear
		17.	Differential case

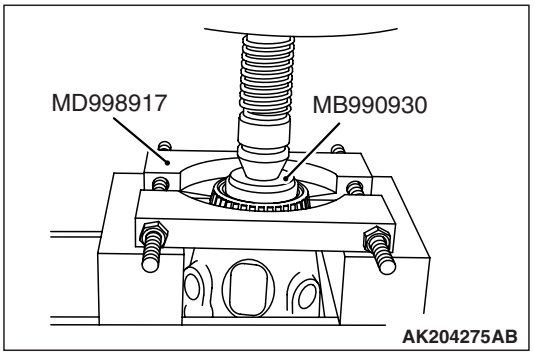
DISASSEMBLY SERVICE POINTS

<<A>> TAPER ROLLER BEARING REMOVAL



1. Support the taper 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.

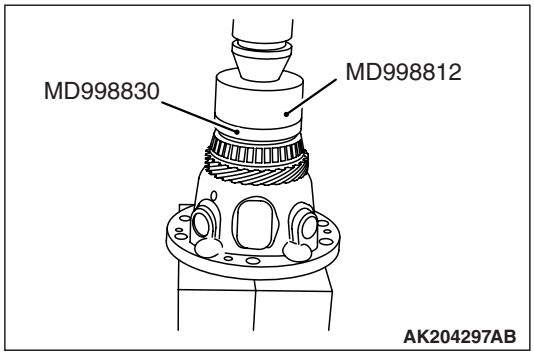
<<B>> TAPER ROLLER BEARING REMOVAL



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.

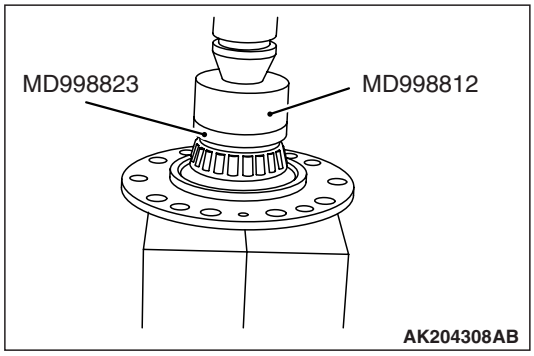
REASSEMBLY SERVICE POINTS

>>A<< TAPER ROLLER BEARING INSTALLATION



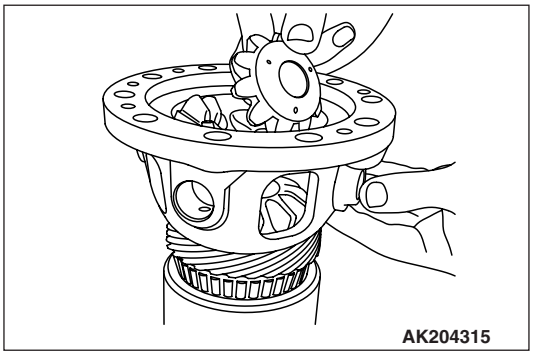
Using special tools, install the taper roller bearing with the press.
- Installer cap (MD998812)
- Installer adapter (MD998830)

>>B<< TAPER ROLLER BEARING INSTALLATION



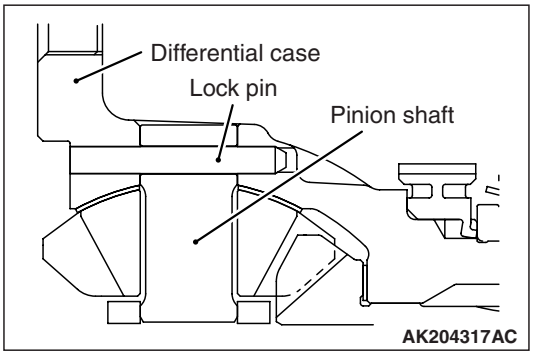
Using special tools, install the taper roller bearing with the press.
- Installer cap (MD998812)
- Installer adapter (MD998823)

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


AK204315

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

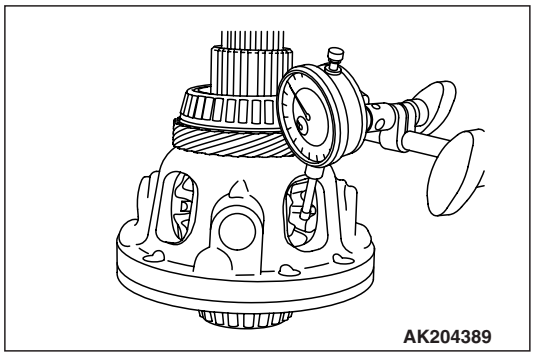
   NOTE: When a new side gear is to be installed, use a medium thickness spacer (0.66 to 0.73 mm).
2. Place the washers on the back of the pinions, and simultaneously mesh the four pieces with the side gears. Place them into position while rotating them. Then, install the pinion shaft holder.
3. Insert the pinion shaft.



AK204317AC

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.
7. Install the center differential flange by aligning the matching marks, and temporarily tighten the four machine screws.

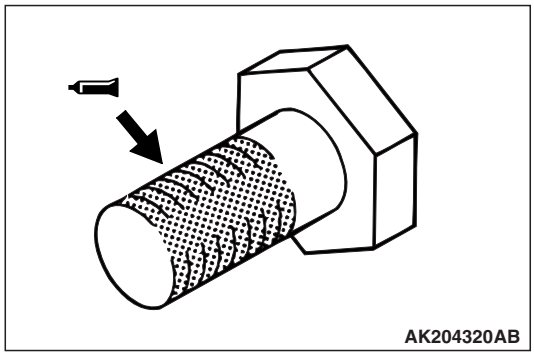

AK204389

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.

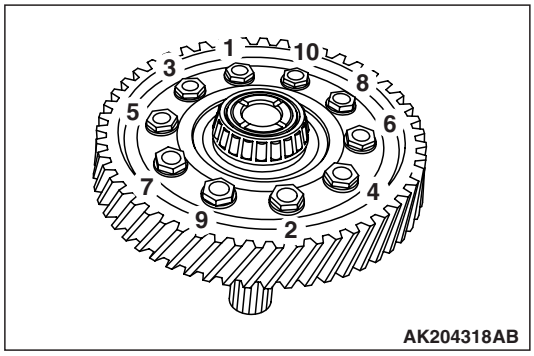
   NOTE: Adjust until the backlash on both sides are equal.

>>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



AK204318AB

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

TRANSFER

DISASSEMBLY AND REASSEMBLY

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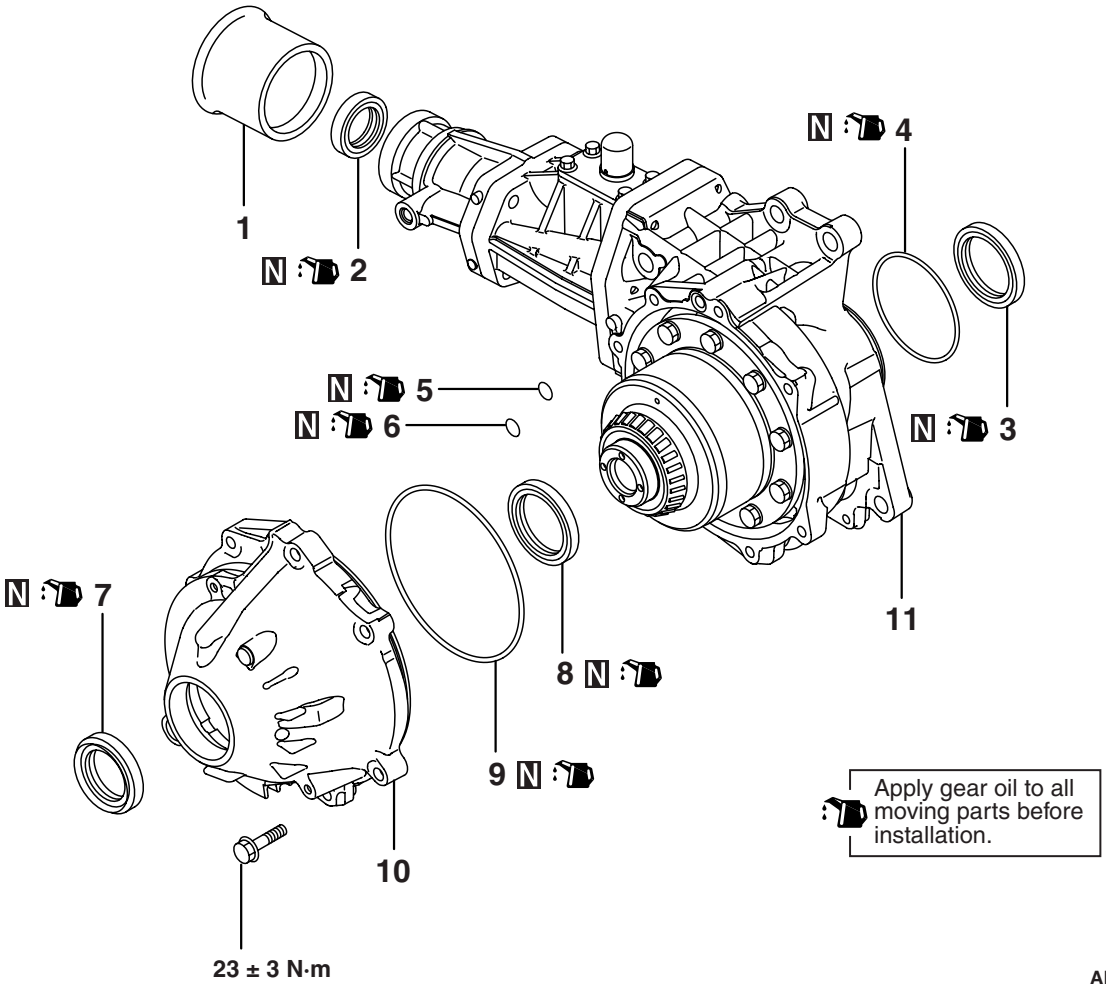


AK204413AB

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

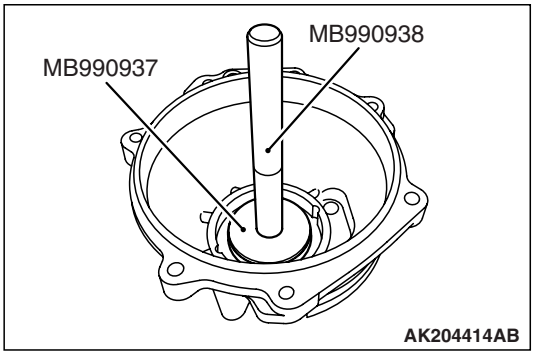
REASSEMBLY SERVICE POINTS

>>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

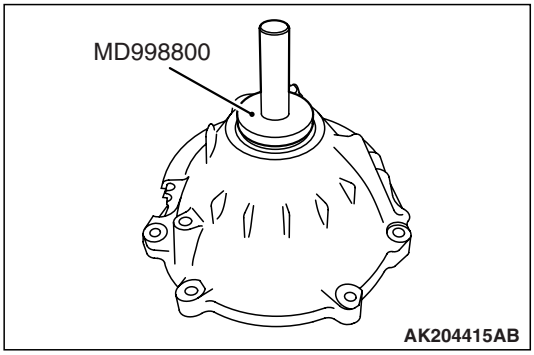
1. Apply gear oil (Hypoid gear oil API classification GL-5 SAE 90).



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

>>C<< OIL SEAL INSTALLATION

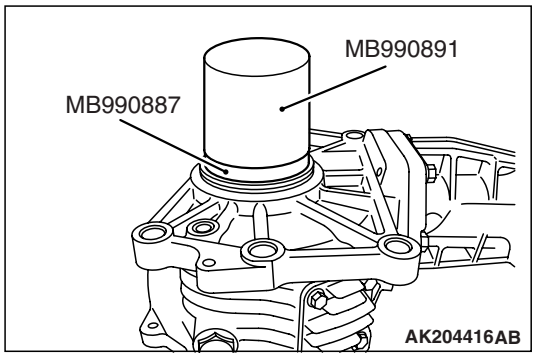
1. Apply gear oil (Hypoid gear oil API classification GL-5 SAE 90).



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

>>D<< OIL SEAL INSTALLATION

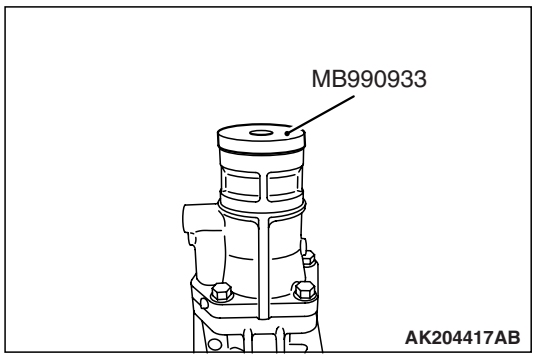
1. Apply gear oil (Hypoid gear oil API classification GL-5 SAE 90).



2. Using special tools, press fit the oil seal into the transfer.
   - Ring (MB990887)
   - Bushing remover installer base (MB990891)

>>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