

GROUP 22C

MANUAL TRANSAXLE OVERHAUL <W6MAA>

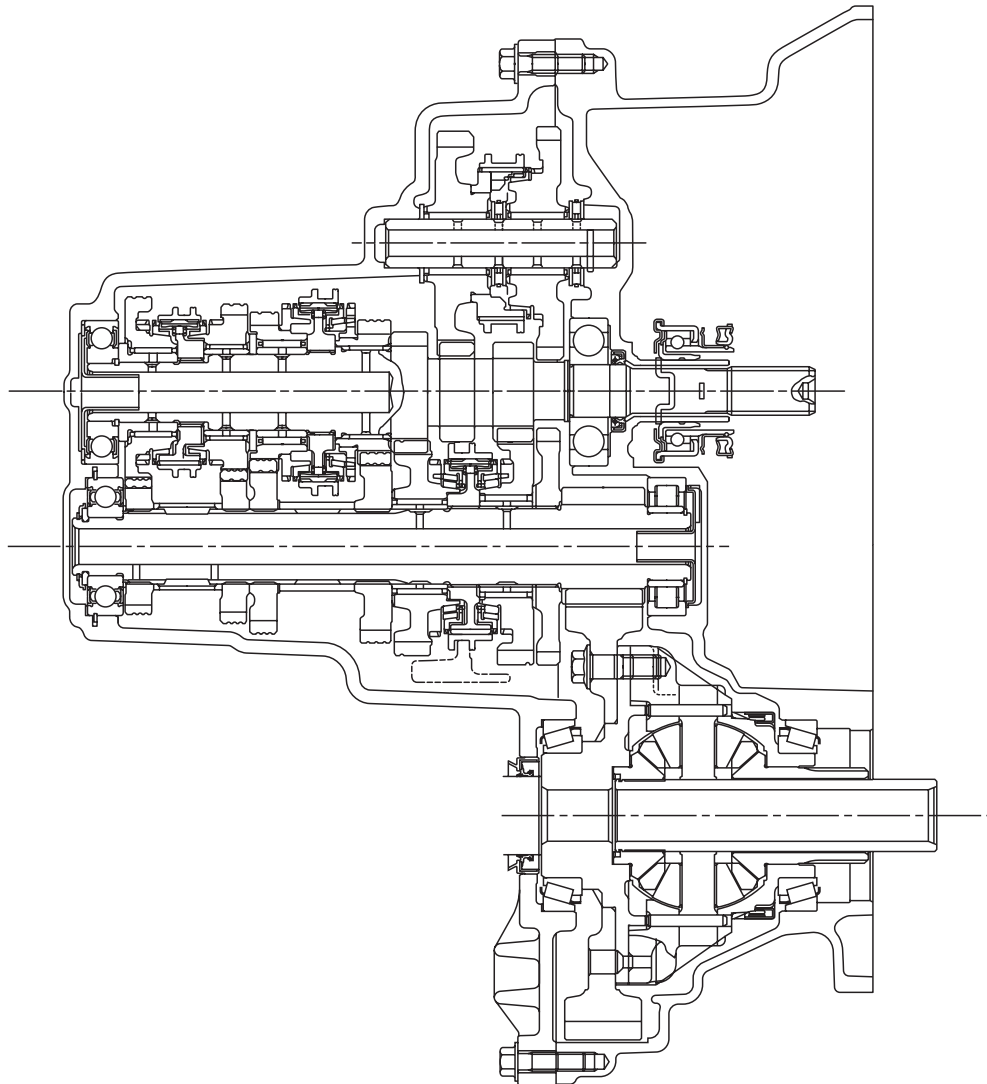
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GENERAL DESCRIPTION

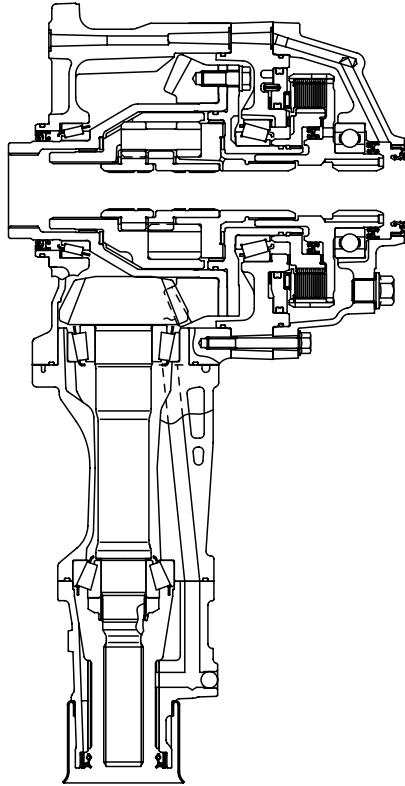
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TRANSMISSION SECTIONAL VIEW



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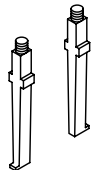
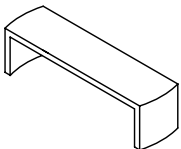
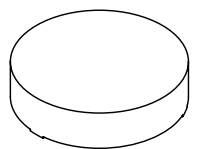
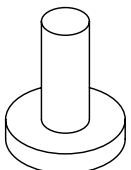
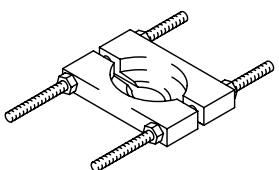
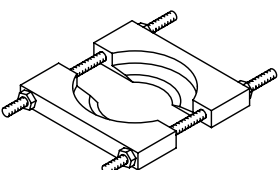
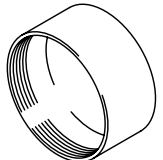
TRANSFER SECTIONAL VIEW

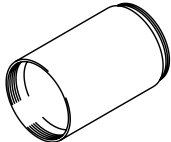
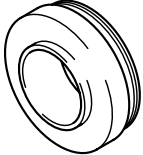
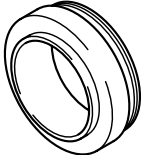
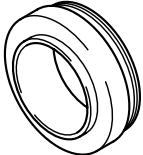
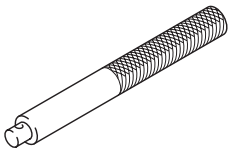
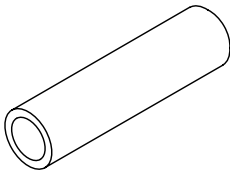


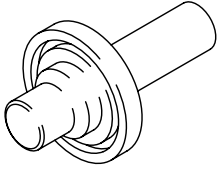
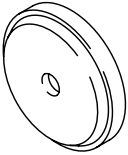
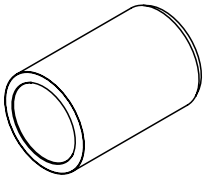
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SPECIAL TOOLS

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TOOL	TOOL NUMBER AND NAME	SUPERSESSSION	APPLICATION
 MB990810	MB990810 Side bearing puller	—	Use with claws
	MB991967 Claws	—	Removal of differential side bearing outer race
	MB991968 Bridge	—	Removal of differential side bearing outer race
	MB991969 Measurement adapter	—	Measurement of differential side bearing preload
	MB991966 Bearing outer race installer	—	Installation of differential side bearing outer race
	MD998801 Bearing remover	General service tool	Installation and removal of a gear, bearing, and sleeve
	MD998917 Bearing remover	General service tool	Installation and removal of a gear, bearing, and sleeve
	MD998812 Installer cap	General service tool	Use with installer and installer adapter

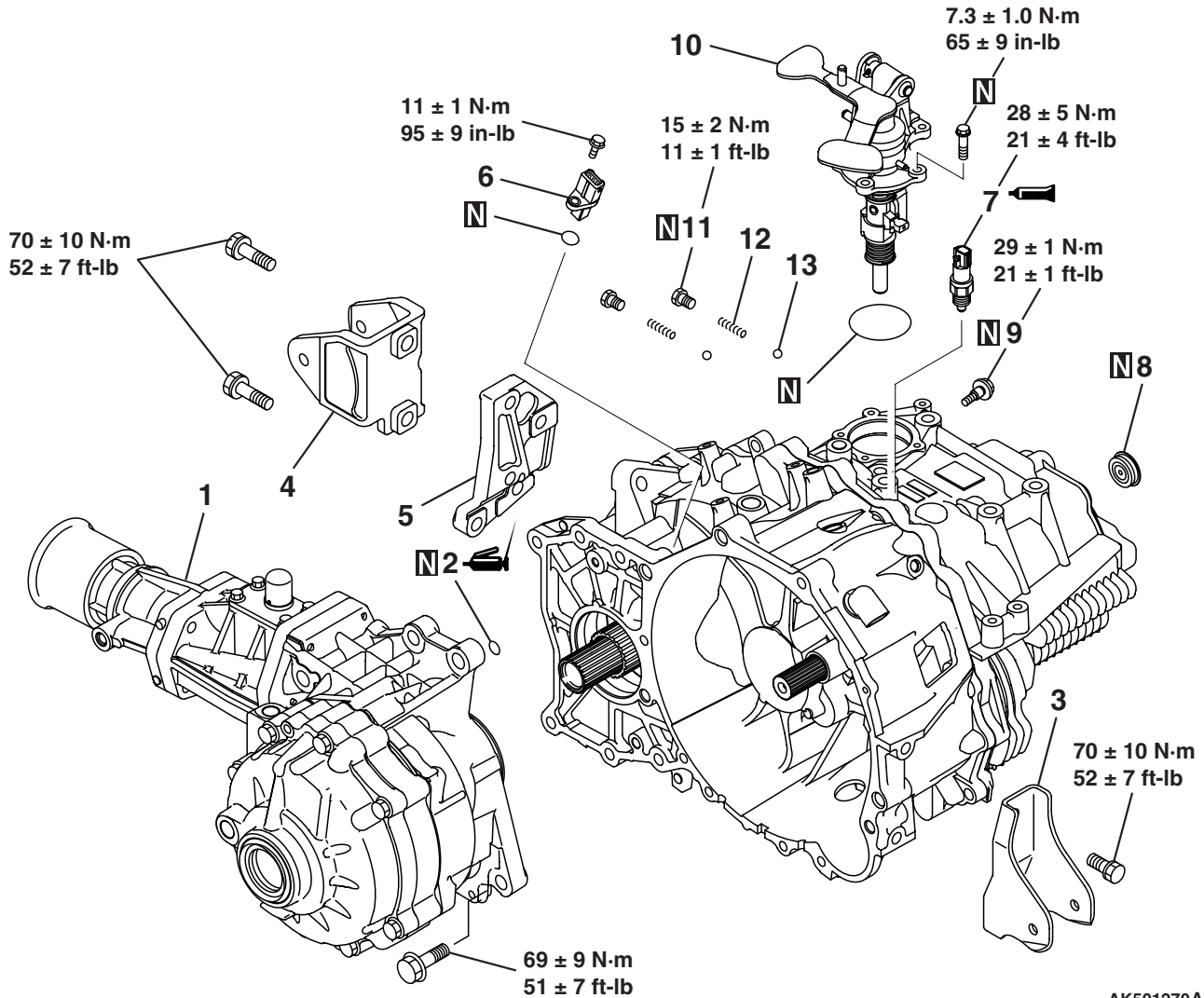
TOOL	TOOL NUMBER AND NAME	SUPERSESION	APPLICATION
	MD998813 Installer 100	General service tool	Use with installer cap and installer adapter
	MD998818 Installer adapter (38)	MD998818	Installation of input shaft rear bearing and roller bearing inner race
	MD998823 Installer adapter (48)	General service tool	Installation of 3rd-4th synchronizer assembly
	MD998822 Installer adapter (46)	—	Installation of 1st gear sleeve and 1st-2nd synchronizer hub
	MB990938 Handle	MB990938-01	Use with installer adapter
	MD998323 Bearing installer	—	Installation of input shaft oil seal

TOOL	TOOL NUMBER AND NAME	SUPERSESSSION	APPLICATION
	MD998800 Oil seal installer	General service tool	Installation of differential oil seal and transfer oil seal
	MB990936 Installer adapter	MB990936-01 or General service tool	Installation of center differential taper roller bearing and transfer oil seal
	MD999506 Crankshaft installer	—	Installation of transfer oil seal

TRANSAXLE

DISASSEMBLY AND ASSEMBLY

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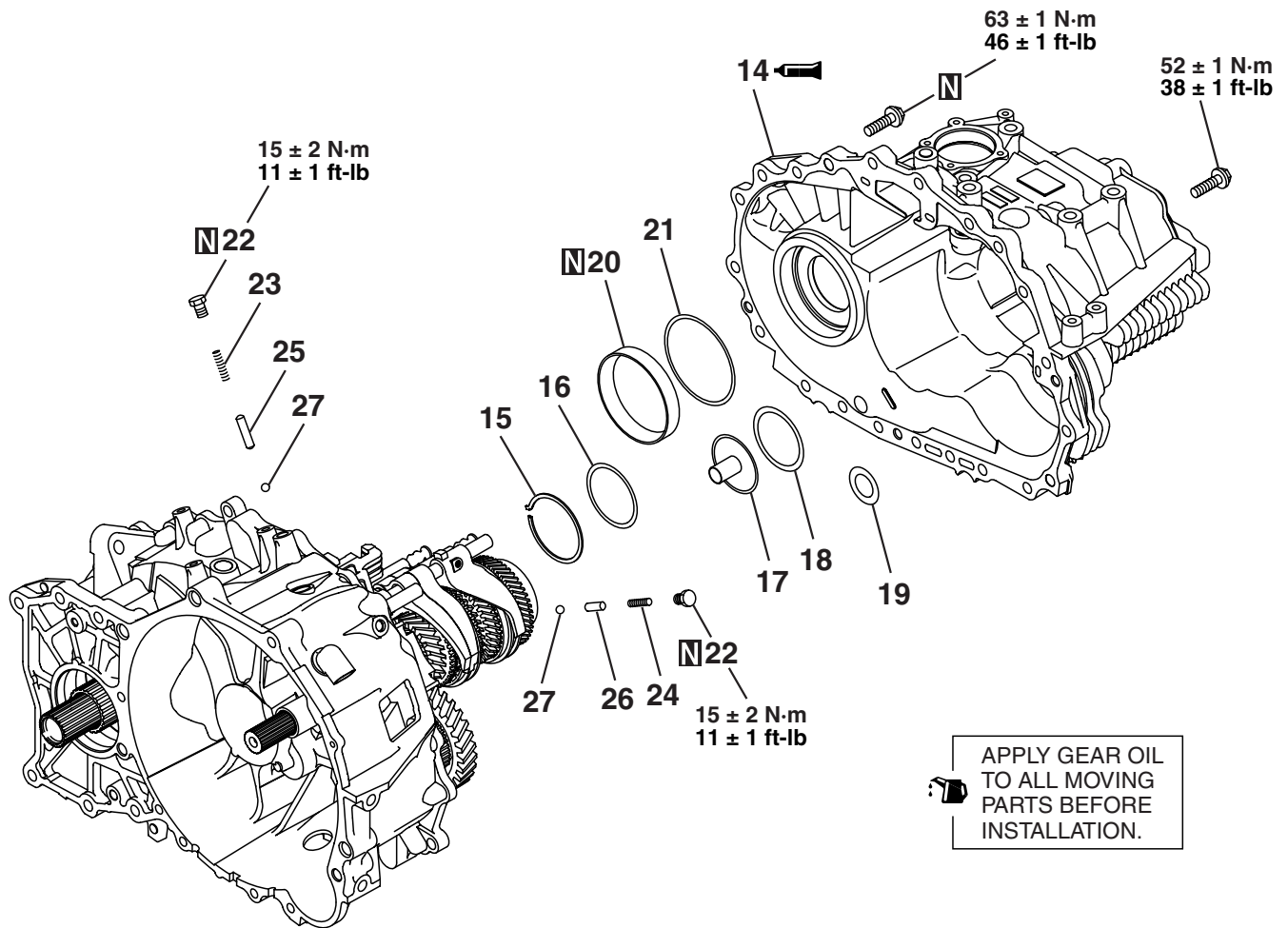
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DISASSEMBLY STEPS

1. TRANSFER
2. O-RING
3. FRONT ROLL STOPPER BRACKET
4. REAR ROLL STOPPER BRACKET
5. ROLL STOPPER BRACKET ADAPTER
6. VEHICLE SPEED SENSOR

DISASSEMBLY STEPS

- >>P<< 7. BACKUP LIGHT SWITCH
8. BORE PLUG
9. STOPPER BOLT
- >>O<< 10. CONTROL ASSEMBLY
11. SHIFT CHECK PLUG
12. SHIFT CHECK SPRING
13. CHECK BALL



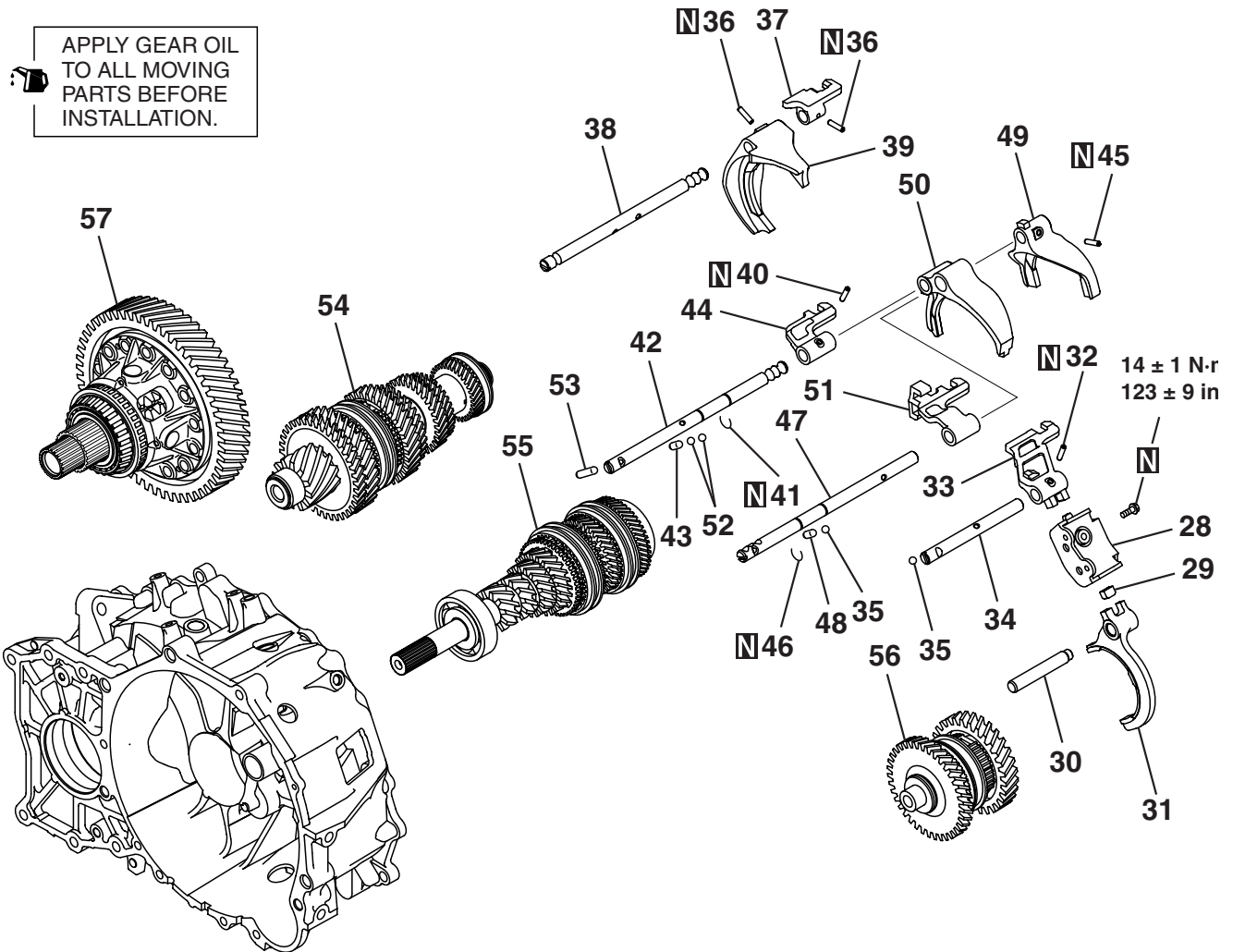
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DISASSEMBLY STEPS

- >>N<< 14. TRANSAXLE CASE
- 15. SNAP RING
- >>M<< 16. MAIN SHAFT REAR BEARING ADJUSTMENT SHIM
- 17. OIL CHANNEL
- >>M<< 18. INPUT SHAFT REAR BEARING ADJUSTMENT SHIM
- >>M<< 19. REVERSE IDLER GEAR ADJUSTMENT SHIM

DISASSEMBLY STEPS

- <<A>> >>L<< 20. DIFFERENTIAL SIDE BEARING OUTER RACE
- >>K<< 21. DIFFERENTIAL SIDE BEARING ADJUSTMENT SHIM
- >>J<< 22. SHIFT CHECK PLUG
- >>J<< 23. 5TH-6TH SHIFT CHECK SPRING
- >>J<< 24. SHIFT CHECK SPRING
- >>J<< 25. SHIFT CHECK SLEEVE
- >>J<< 26. REVERSE SHIFT CHECK SLEEVE
- >>J<< 27. CHECK BALL



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DISASSEMBLY STEPS

28. REVERSE LEVER ASSEMBLY
29. SHIFTER CAP
30. REVERSE FORK ROD
31. REVERSE SHIFT FORK
32. RETAINING PIN
33. REVERSE BRACKET
34. REVERSE BRACKET FORK ROD
35. INTERLOCK BALL
36. RETAINING PIN
37. 1ST-2ND BRACKET
38. 1ST-2ND FORK ROD
39. 1ST-2ND SHIFT FORK
40. RETAINING PIN
41. C-RING
42. 3RD-4TH FORK ROD
43. INTERLOCK PIN
44. 3RD-4TH BRACKET
45. RETAINING PIN
46. C-RING
47. 5TH-6TH FORK ROD
48. INTERLOCK PIN
49. 5TH-6TH SHIFT FORK

DISASSEMBLY STEPS

50. 3RD-4TH SHIFT FORK
51. 5TH-6TH BRACKET
52. INTERLOCK BALL
53. SHIFT CHECK SLEEVE
54. MAIN SHAFT ASSEMBLY
55. INPUT SHAFT ASSEMBLY
56. REVERSE IDLER GEAR ASSEMBLY
57. CENTER DIFFERENTIAL

ASSEMBLY STEPS

57. CENTER DIFFERENTIAL
- >>A<< 56. REVERSE IDLER GEAR ASSEMBLY
- >>A<< 55. INPUT SHAFT ASSEMBLY
- >>A<< 54. MAIN SHAFT ASSEMBLY
- >>B<< 38. 1ST-2ND FORK ROD
37. 1ST-2ND BRACKET
36. RETAINING PIN
- >>B<< 39. 1ST-2ND SHIFT FORK
- >>C<< 53. SHIFT CHECK SLEEVE
- >>D<< 42. 3RD-4TH FORK ROD
- >>D<< 43. INTERLOCK PIN

ASSEMBLY STEPS (Continued)

- >>D<< 44. 3RD-4TH BRACKET
- >>D<< 50. 3RD-4TH SHIFT FORK
- >>D<< 41. C-RING
- >>D<< 40. RETAINING PIN
- >>E<< 52. INTERLOCK BALL
- >>F<< 47. 5TH-6TH FORK ROD
- >>F<< 48. INTERLOCK PIN
- >>F<< 51. 5TH-6TH BRACKET
- >>F<< 49. 5TH-6TH SHIFT FORK
- >>F<< 46. C-RING
- >>F<< 45. RETAINING PIN

ASSEMBLY STEPS (Continued)

- >>G<< 35. INTERLOCK BALL
- >>H<< 34. REVERSE BRACKET FORK ROD
- >>H<< 33. REVERSE BRACKET
- 32. RETAINING PIN
- 31. REVERSE SHIFT FORK
- 30. REVERSE FORK ROD
- >>I<< 28. REVERSE LEVER ASSEMBLY
- 29. SHIFTER CAP

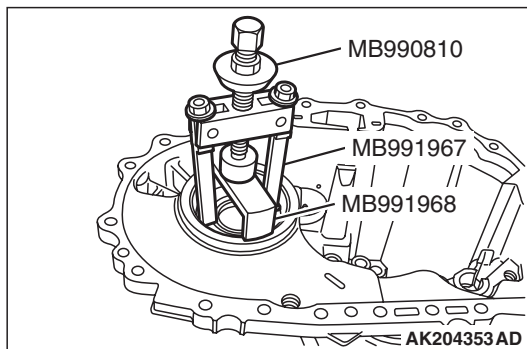
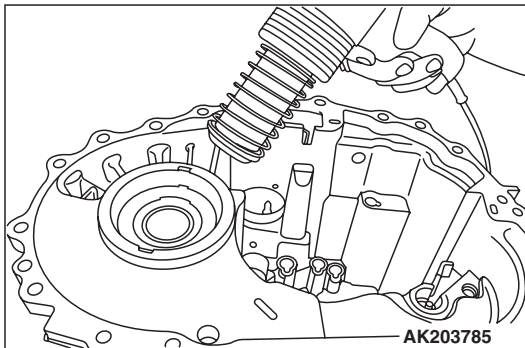
Required Special Tools:

- MB990810: Side bearing puller
- MB991966: Bearing outer race installer
- MB991967: Claw
- MB991968: Bridge
- MB991969: Adjustment adapter

DISASSEMBLY SERVICE POINT**<<A>> DIFFERENTIAL SIDE BEARING OUTER RACE REMOVAL**

1. Heat the transaxle case to about 100°C (212°F).

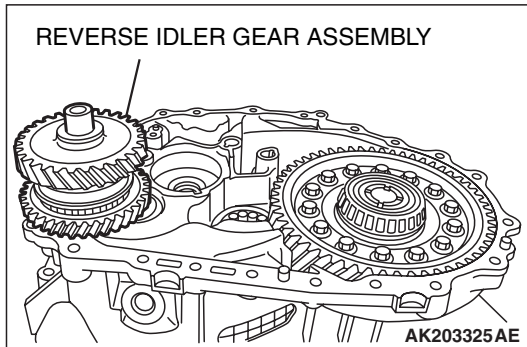
NOTE: Maximum temperature: 120°C (248°F).



2. Using special tools MB990810, MB991967 and MB991968, remove the differential side bearing outer race.

ASSEMBLY SERVICE POINTS

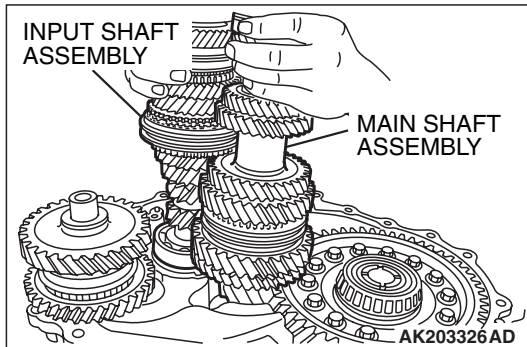
>>A<< REVERSE IDLER GEAR ASSEMBLY/INPUT SHAFT ASSEMBLY/MAIN SHAFT ASSEMBLY INSTALLATION



1. Place the reverse idler gear assembly at the installation location without actually inserting it into the clutch housing.

⚠ CAUTION

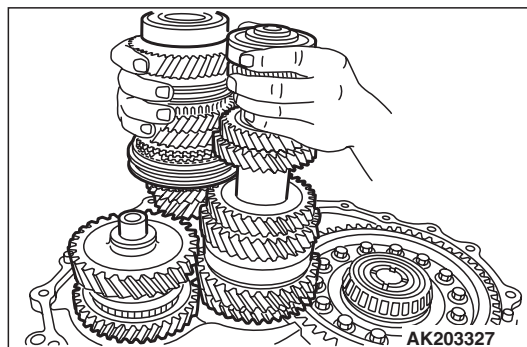
Be careful not to scratch the input shaft oil seal. (Protect it from scratches by wrapping vinyl tape around the splined portion of the input shaft assembly.)



2. Insert the input shaft assembly and then the main shaft assembly into the clutch housing, leaving some space between each assembly and the housing.

⚠ CAUTION

Make sure to fit the lock pin at the end of the reverse idler gear assembly into the groove in the clutch housing.



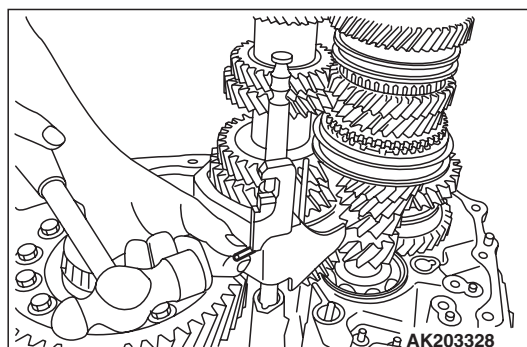
3. Move the reverse idler gear assembly so that its parts fit into the spaces between the housing and the partially inserted shaft assemblies, and then insert the three assemblies together into the clutch housing.

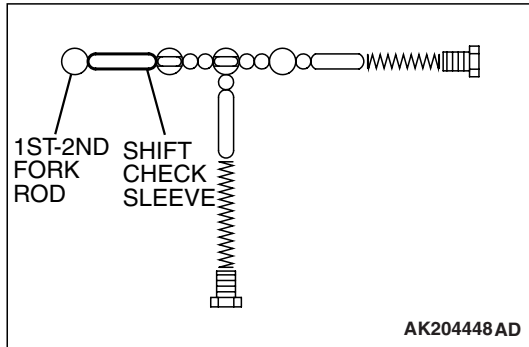
>>B<< 1ST-2ND FORK ROD/1ST-2ND SHIFT FORK INSTALLATION

⚠ CAUTION

- The retaining pin is not reusable.
- When installing the retaining pin, insert an Allen wrench into the hole on the other side of the fork rod to keep the fork from slipping down.

Install the 1st-2nd fork rod in the clutch housing and then install the 1st-2nd shift fork on the fork rod by hammering in the retaining pin.





>>C<< SHIFT CHECK SLEEVE INSTALLATION

⚠ CAUTION

The transmission assembly contains parts that resemble shift check sleeves. Make sure not to mistakenly install a similar part instead of the shift check sleeve (length: 36.25 mm).

Install the shift check sleeve.

>>D<< 3RD-4TH FORK ROD/INTER LOCK PIN/3RD-4TH BRACKET/3RD-4TH SHIFT FORK/C-RING/RETAINING PIN INSTALLATION

⚠ CAUTION

Apply Vaseline to the interlock pin and be careful not to drop it during installation.

1. Install the interlock pin on the 3rd-4th fork rod.
2. Install the 3rd-4th bracket, 3rd-4th shift fork, and 3rd-4th fork rod.

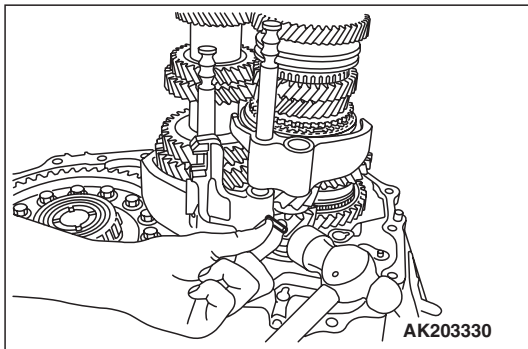
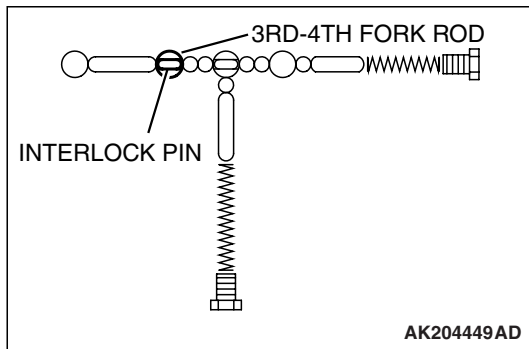
⚠ CAUTION

The C-ring is not reusable.

3. Install the C-ring on the 3rd-4th shift fork

⚠ CAUTION

- The retaining pin is not reusable.
 - When installing the retaining pin, insert an Allen wrench into the hole on the other side of the fork rod to keep the fork from slipping down.
4. Hammer the retaining pin into the 3rd-4th bracket.

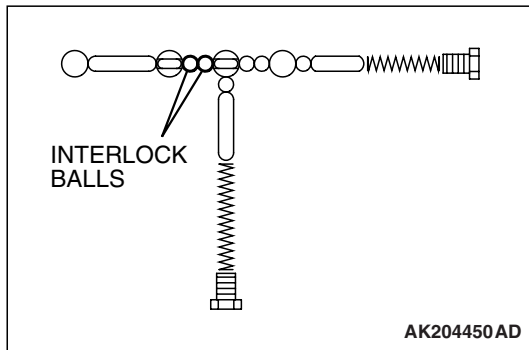


>>E<< INTERLOCK BALL INSTALLATION

CAUTION

Make sure that the interlock balls do not fall out of their locations.

Install the two interlock balls.



>>F<< 5TH-6TH FORK ROD/INTER LOCK PIN/5TH-6TH BRACKET/5TH-6TH SHIFT FORK/C-RING/RETAINING PIN INSTALLATION

CAUTION

Apply Vaseline to the interlock pin and be careful not to drop it during installation.

1. Install the interlock pin in the 5th-6th fork rod.

CAUTION

Install the 5th-6th fork rod with its three grooves facing the 5th-6th shift check parts.

2. Install the 5th-6th bracket, 5th-6th shift fork, and 5th-6th fork rod.

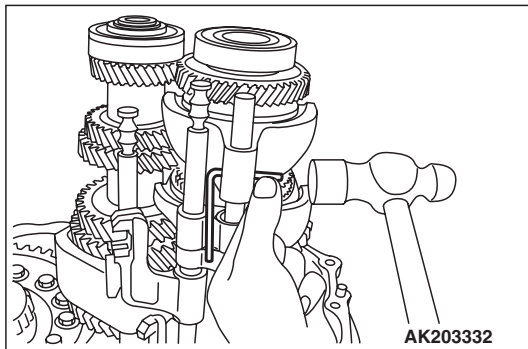
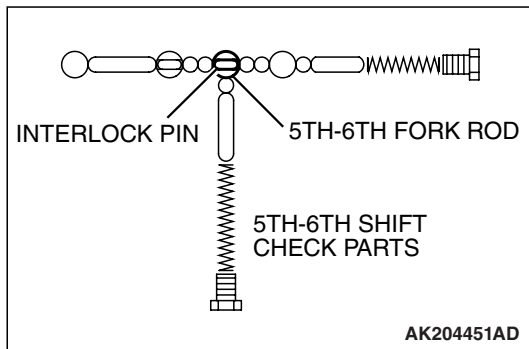
CAUTION

The C-ring is not reusable.

3. Install the C-ring on the 5th-6th bracket.

CAUTION

- The retaining pin is not reusable.
 - When installing the retaining pin, insert an Allen wrench into the hole on the other side of the fork rod to keep the fork from slipping down.
4. Hammer the retaining pin into the 5th-6th shift fork.

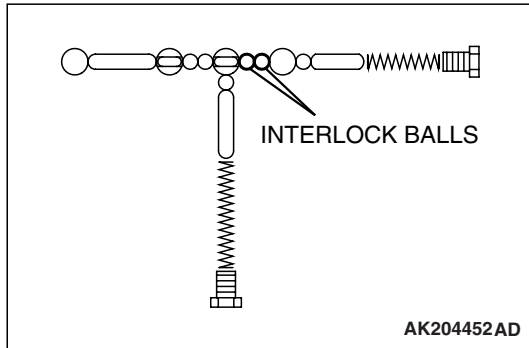


>>G<< INTERLOCK BALL INSTALLATION

⚠ CAUTION

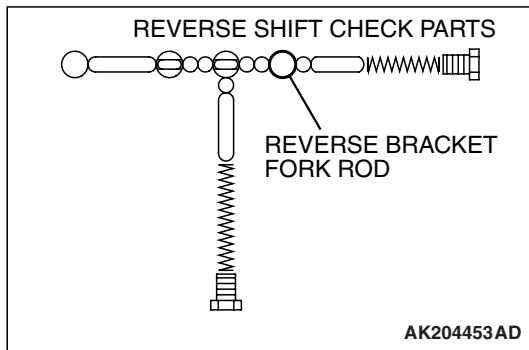
Make sure that the interlock steel balls do not fall out of their locations.

Install the two interlock steel balls.

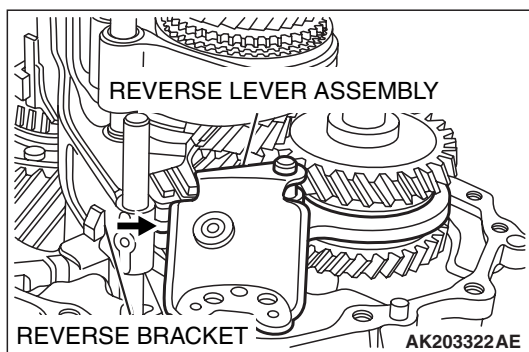
>>H<< REVERSE BRACKET FORK
ROD/REVERSE BRACKET INSTALLATION**⚠ CAUTION**

Install the reverse bracket fork rod with its two grooves facing the reverse shift check parts.

Install the reverse bracket fork rod and reverse bracket.

>>I<< REVERSE LEVER ASSEMBLY
INSTALLATION

1. Install the shifter cap on the cam of the reverse lever assembly, and then install the reverse shift fork.
2. Raise the reverse shift fork and fit its cam in the reverse bracket.

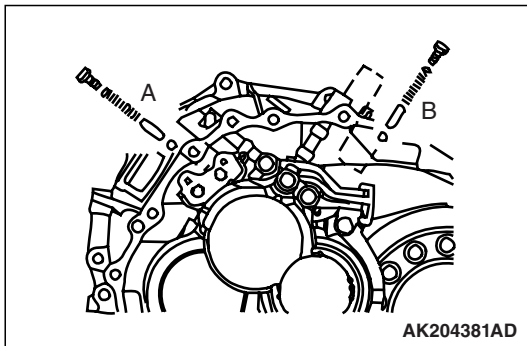


>>J<<CHECK BALL/SHIFT CHECK SLEEVE/SHIFT CHECK SPRING/SHIFT CHECK PLUG INSTALLATION

CAUTION

- The check balls are not reusable.
- Confirm the lengths of the shift check sleeves and check springs before installing them. (A: short, B: long)
- Be careful not to let the check balls drop into the air breathing grooves in the clutch housing.

Install the two shift check sleeves, two check balls, two check springs and two check ball plugs into position.



>>K<< DIFFERENTIAL SIDE BEARING ADJUSTMENT SHIM INSTALLATION

CAUTION

Do not use more than two shims.

Install the appropriate adjustment shims that will provide the differential side bearing with a preload within the standard value range.

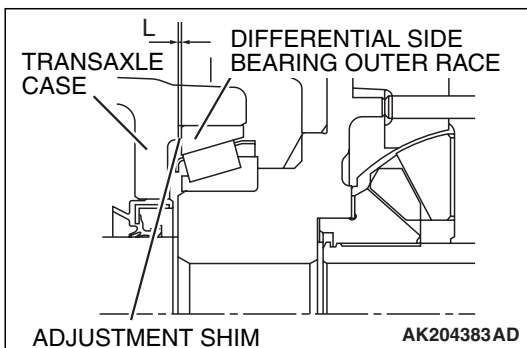
Standard value: 0.15 –0.21 mm (0.0059 –0.0083 inch)

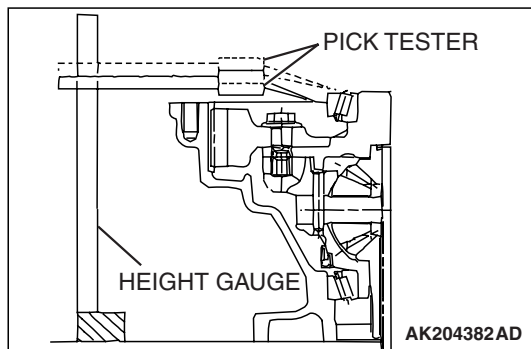
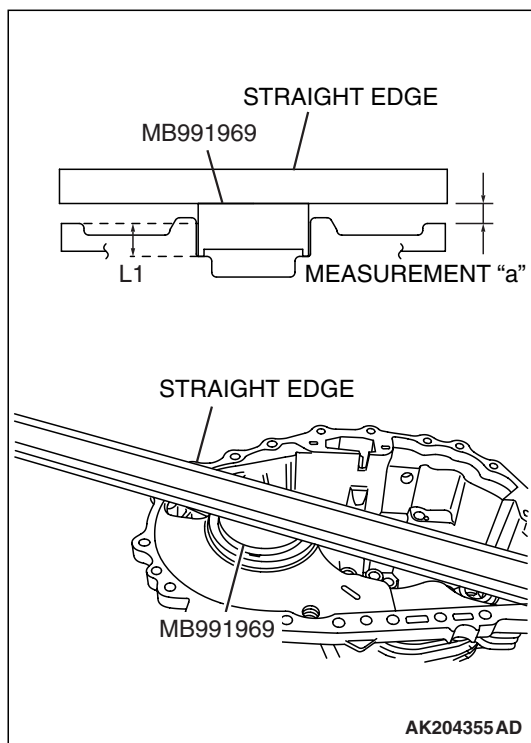
1. Selecting appropriate shims

- (1) Measure the distance between the end surface and the adjustment shim fitting surface on the transaxle case (L1). Next, measure the distance between the clutch housing end surface and the differential side bearing end surface (L2).
- (2) Use the following equation to calculate the clearance L between the transaxle case and the differential side bearing outer race:

$$L = L1 - L2$$

- (3) Select an adjustment shim (or a set of adjustment shims) with a thickness of L plus 0.15 mm (0.0059 inch) to 0.21 mm (0.0078 inch) (standard value range).





2. Measuring distances L1 and L2

- (1) Install the adjustment adapter (special tool: MB991969) into the differential side rear bearing hole in the transaxle case. Use the following equation to calculate the distance L1 (see the illustration above):

$$L1 = 25.00 \text{ mm (0.9843 inch) (height of MB991969) - measurement "a"}$$

- (2) Attach the outer race onto the differential side bearing on the final gear side, and rotate the final gear set five or more times by hand while holding the outer race down lightly to keep it from tilting.

NOTE: Rotating the final gear in this way will help the bearing rollers to seat completely against their races.

⚠ CAUTION

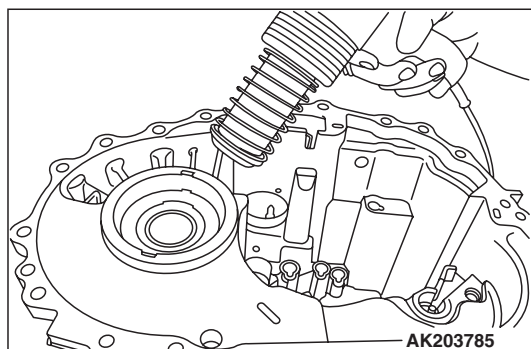
Before making the following measurement, make sure to confirm that the outer race is level by measuring the height of the outer race surface at three different points.

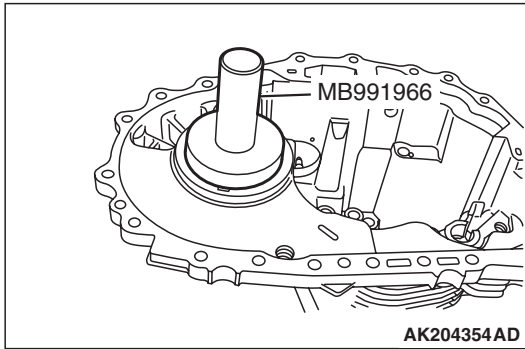
- (3) Use a dial gauge to measure the distance between the differential side bearing outer race and the transaxle mounting surface of the clutch housing (L2).

>>L<< DIFFERENTIAL SIDE BEARING OUTER RACE INSTALLATION

1. Heat the transaxle case to about 100°C (212°F).

NOTE: Maximum temperature: 120°C (248°F).





2. Using special tool MB991966, install the differential side bearing outer race.

>>M<< ADJUSTMENT SHIM INSTALLATION (SHIM SELECTION FOR INPUT SHAFT END PLAY/MAIN SHAFT END PLAY/REVERSE IDLER GEAR END PLAY)

CAUTION

Use only one shim each for the main shaft rear bearing, input shaft rear bearing and reverse idler gear.

Install the selected shims into the relevant locations.

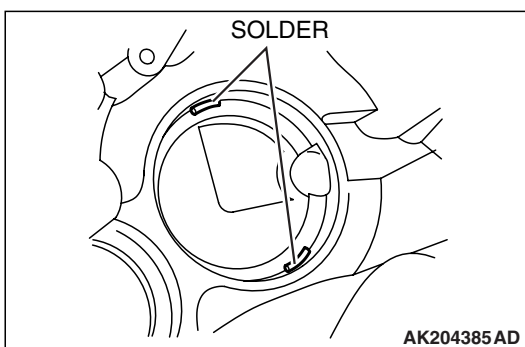
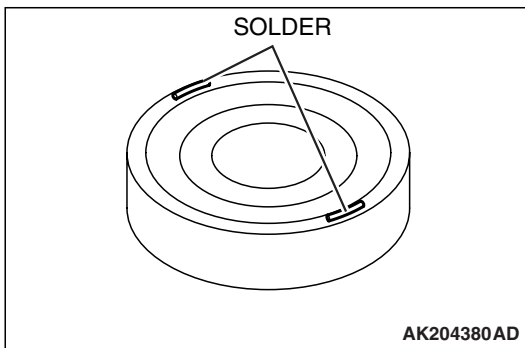
NOTE: Refer to the following shim thickness determination procedure to select a shim for each location.

<Measurement using a solder>

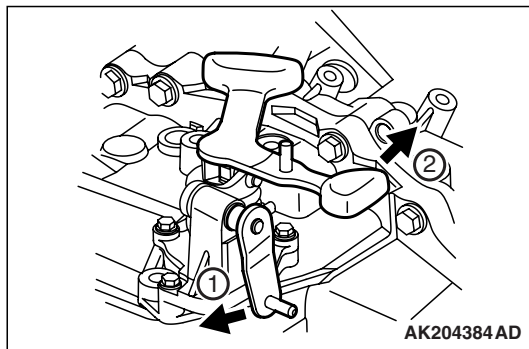
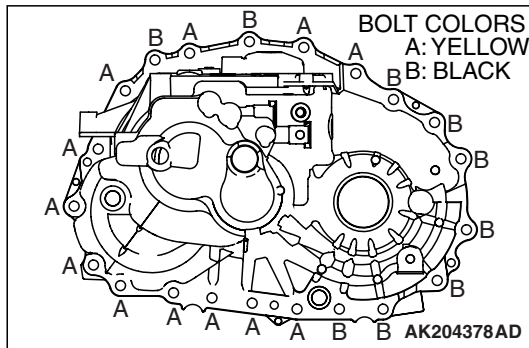
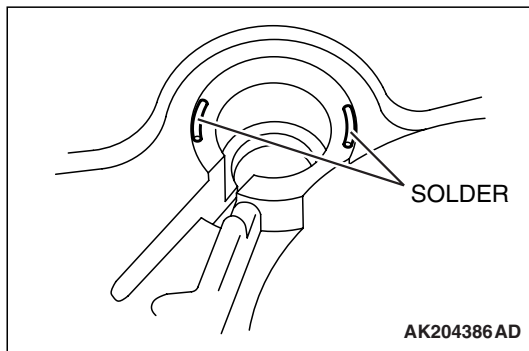
CAUTION

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

1. Put solders [1.0 mm (0.039 in) diameter, about 10 mm (0.39 in) long] on the input shaft rear bearing as indicated in the illustration.



2. Put solders [1.0 mm (0.039 in) diameter, about 10 mm (0.39 in) long] on the main shaft rear bearing fitting surface in the transaxle case as indicated in the illustration.



3. Put solders [1.0 mm (0.039 in) diameter, about 10 mm (0.39 in) long] on the surface of the reverse idler gear mounting boss in the transaxle case as indicated in the illustration and then install the shim having the minimum thickness.
4. Install the snap ring temporarily in the main shaft rear bearing location in the transaxle case.
5. Expand the snap ring in the main shaft rear bearing location through the bore plug mounting hole, and place the transaxle case over the clutch housing.

⚠ CAUTION

In the following step, use the same transaxle case bolts that were removed during disassembly.

6. Install and tighten the transaxle case bolts to the specified torque.

Tightening torque: $63 \pm 1 \text{ N} \cdot \text{m}$ ($46 \pm 1 \text{ ft-lb}$)

⚠ CAUTION

In the following steps, make sure to use the same O-rings that were removed during disassembly.

7. Install the control assembly and tighten its bolts to the specified torque.

Tightening torque: $7.3 \pm 1.0 \text{ N} \cdot \text{m}$ ($65 \pm 9 \text{ in-lb}$)

8. With the gear shifted into 2nd gear, raise the main shaft and install the snap ring tightly on the main shaft rear bearing.

NOTE: Refer to CONTROL ASSEMBLY INSTALLATION for the method for shifting the gear into 2nd.

9. Return the control assembly to the neutral position and remove its mounting bolts. Remove the control assembly.
10. Remove the transaxle case.
11. Remove the snap ring from the main shaft rear bearing, remove the transaxle case, and then take out crushed solders.
- **Input shaft and mainshaft**
If the solders have not crushed, use thicker solders (1.6 mm diameter, about 10 mm long) and repeat steps 4 to 10.
- **Reverse idler gear**
If the solders have not crushed, use thicker shim and repeat steps 4 to 10.
12. Measure the thickness of the crushed solder with a micrometer.

• Input shaft and mainshaft

Select a shim that will provide the standard value.

Input shaft and mainshaft end play

- **Shim thickness: (T – 0 mm) to [T – 0.06 mm (0.0024 inch)]**

T: The crushed solder thickness

Standard value: 0 – 0.06 mm (0 – 0.0024 inch)

- **Reverse idler gear**

Based on the sum of the crushed thickness and the thickness of the shim used during measurement, select the thickness of the shim to obtain the standard clearance.

Reverse idler gear end play

- **Shim thickness:** $[T_1 + T_2 - 0.04 \text{ mm (0.0016 inch) to } [T_1 + T_2 - 0.10 \text{ mm (0.0039 inch)}]$

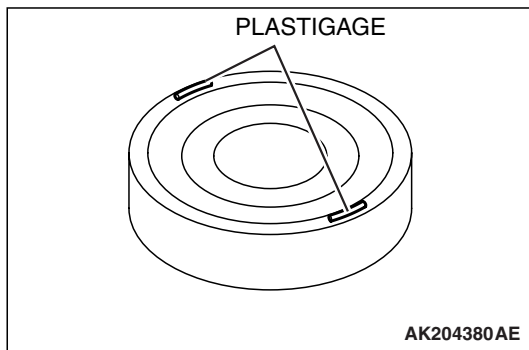
T₁: The crushed solder thickness

T₂: Used shim thickness

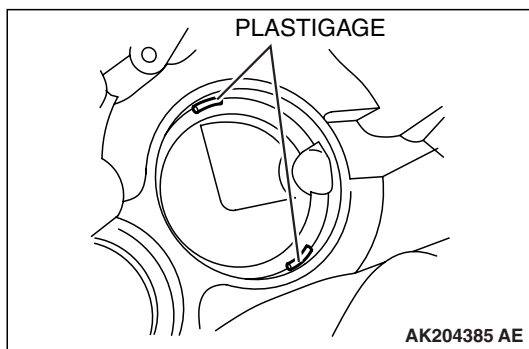
Standard value: 0.04 –0.10 mm (0.0016 –0.0039 inch)

<Measurement using a plastigage>

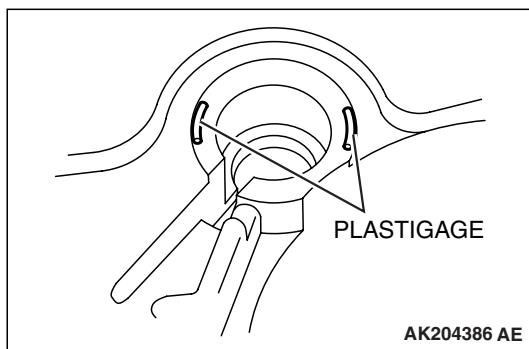
1. Put plastigage [about 10 mm (0.39 in) diameter, about 10 mm (0.39 in) long] on the input shaft rear bearing as indicated in the illustration.

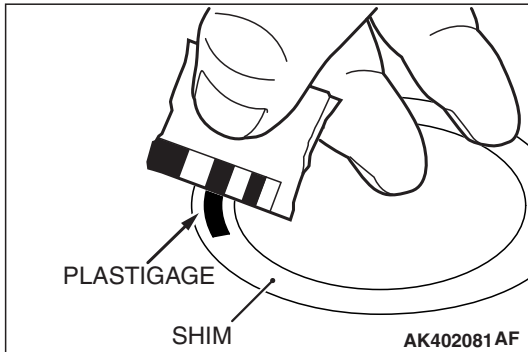
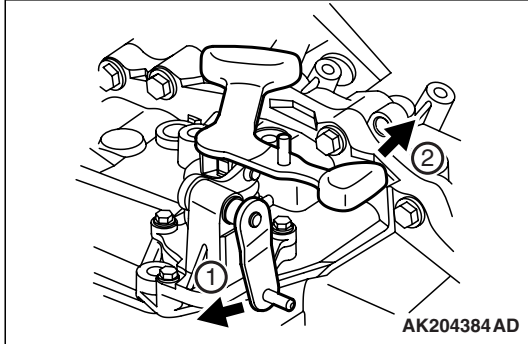
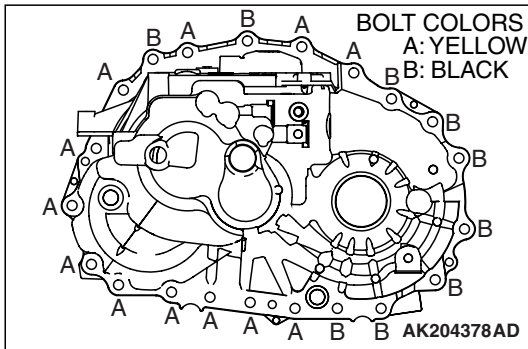


2. Put plastigage [about 10 mm (0.39 in) diameter, about 10 mm (0.39 in) long] on the main shaft rear bearing fitting surface in the transaxle case as indicated in the illustration.



3. Put plastigage [about 10 mm (0.39 in) diameter, about 10 mm (0.39 in) long] on the surface of the reverse idler gear mounting boss in the transaxle case as indicated in the illustration and then install the shim having the minimum thickness.
4. Install the snap ring temporarily in the main shaft rear bearing location in the transaxle case.
5. Expand the snap ring in the main shaft rear bearing location through the bore plug mounting hole, and place the transaxle case over the clutch housing.



**⚠ CAUTION**

In the following step, use the same transaxle case bolts that were removed during disassembly.

6. Install and tighten the transaxle case bolts to the specified torque.

Tightening torque: $63 \pm 1 \text{ N} \cdot \text{m}$ ($46 \pm 1 \text{ ft-lb}$)

⚠ CAUTION

In the following steps, make sure to use the same O-rings that were removed during disassembly.

7. Install the control assembly and tighten its bolts to the specified torque.

Tightening torque: $7.3 \pm 1.0 \text{ N} \cdot \text{m}$ ($65 \pm 9 \text{ in-lb}$)

8. With the gear shifted into 2nd gear, raise the main shaft and install the snap ring tightly on the main shaft rear bearing.

NOTE: Refer to CONTROL ASSEMBLY INSTALLATION for the method for shifting the gear into 2nd.

9. Return the control assembly to the neutral position and remove its mounting bolts. Remove the control assembly.
10. Remove the transaxle case.
11. Remove the snap ring from the main shaft rear bearing, remove the transaxle case, and then take out crushed plastigage.
12. If the plastigage have not crushed, replace the shim with a thicker one and repeat steps 4 to 11.
13. Measure the shim width of the crushed plastigage at its widest part using a scale printed on the plastigage package.

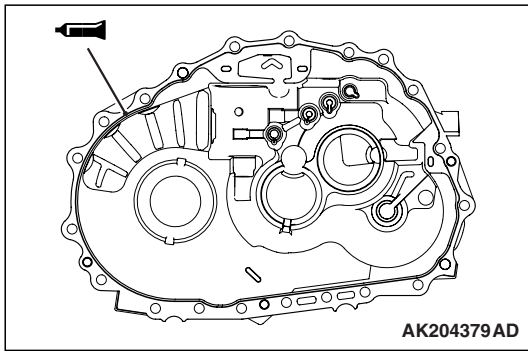
Standard value

- Input shaft end play: 0 mm –0.06 mm (0 –0.0024 inch)
- Mainshaft end play: 0 mm –0.06 mm (0 –0.0024 inch)
- Reverse idler gear end play: 0.04 –0.10 mm (0.0016 –0.0039 inch)

>>N<< TRANSAXLE CASE INSTALLATION**⚠ CAUTION**

The snap ring is not reusable.

1. Install the snap ring temporarily in the main shaft rear bearing location in the transaxle case.



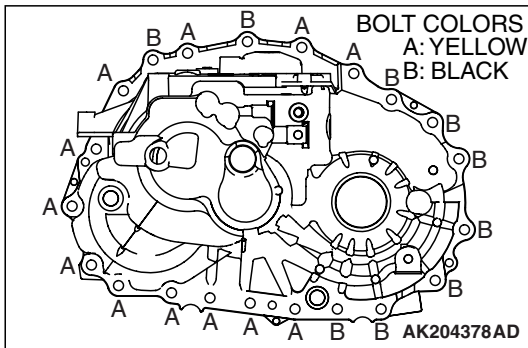
2. Apply sealant (Mitsubishi genuine sealant part No. MD997740 or equivalent) as indicated in the above illustration.
3. Expand the snap ring in the main shaft rear bearing location through the bore plug mounting hole and place the transaxle case over the clutch housing.

CAUTION

Bolts (B) are not reusable.

4. Tighten all the bolts to the specified torque.

Tightening torque: 63 ± 1 N·m (46 ± 1 ft-lb)



>>O<< CONTROL ASSEMBLY INSTALLATION

CAUTION

The O-ring is not reusable.

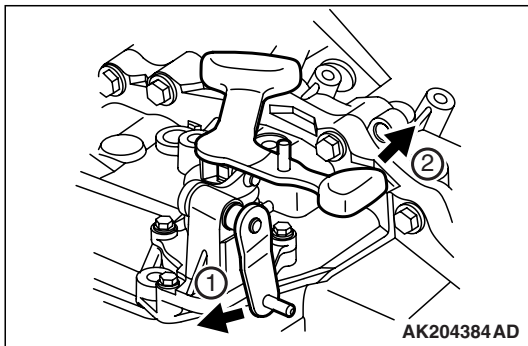
1. Install the control assembly and tighten the bolts to the specified torque.

Tightening torque: 7.3 ± 1.0 N·m (65 ± 9 in-lb)

2. With the gear shifted into 2nd, raise the main shaft and install the snap ring tightly on the main shaft rear bearing.

NOTE:

To shift the gear into 2nd, move the lever in the order of the numbers indicated in the illustration.



>>P<< BACKUP LIGHT SWITCH INSTALLATION

1. Apply sealant (Mitsubishi genuine sealant part No. MD997740 or equivalent) to the threads on the backup light switch.
2. Install the backup light switch on the transaxle case.

INSPECTION

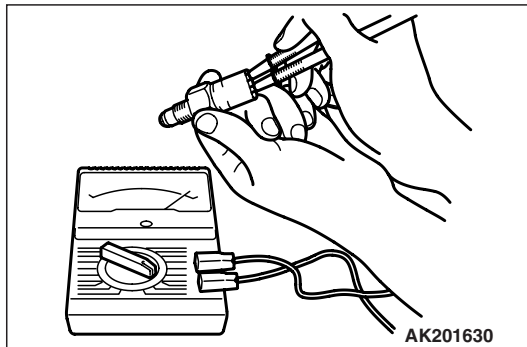
M1222001100327

BACKUP LIGHT SWITCH

1. Check the backup light switch for proper continuity between the terminals.

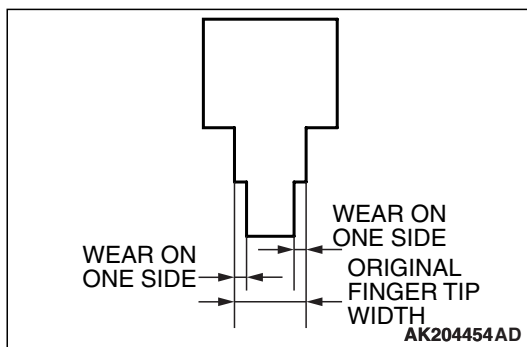
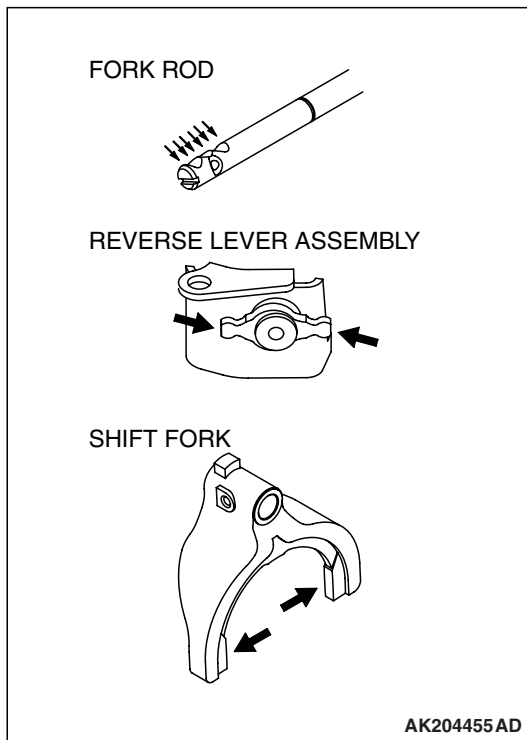
SWITCH CONDITION	CONTINUITY
Pressed	Conductive
Released	Open

2. Replace the backup light switch if the continuity is not as indicated above.



FORK ROD / REVERSE LEVER ASSEMBLY / SHIFT FORK

1. Inspect contacting and rubbing surfaces for excessive wear, damage, bend, or other defects. Replace if necessary. (Parts with slight contact marks need not be replaced.)



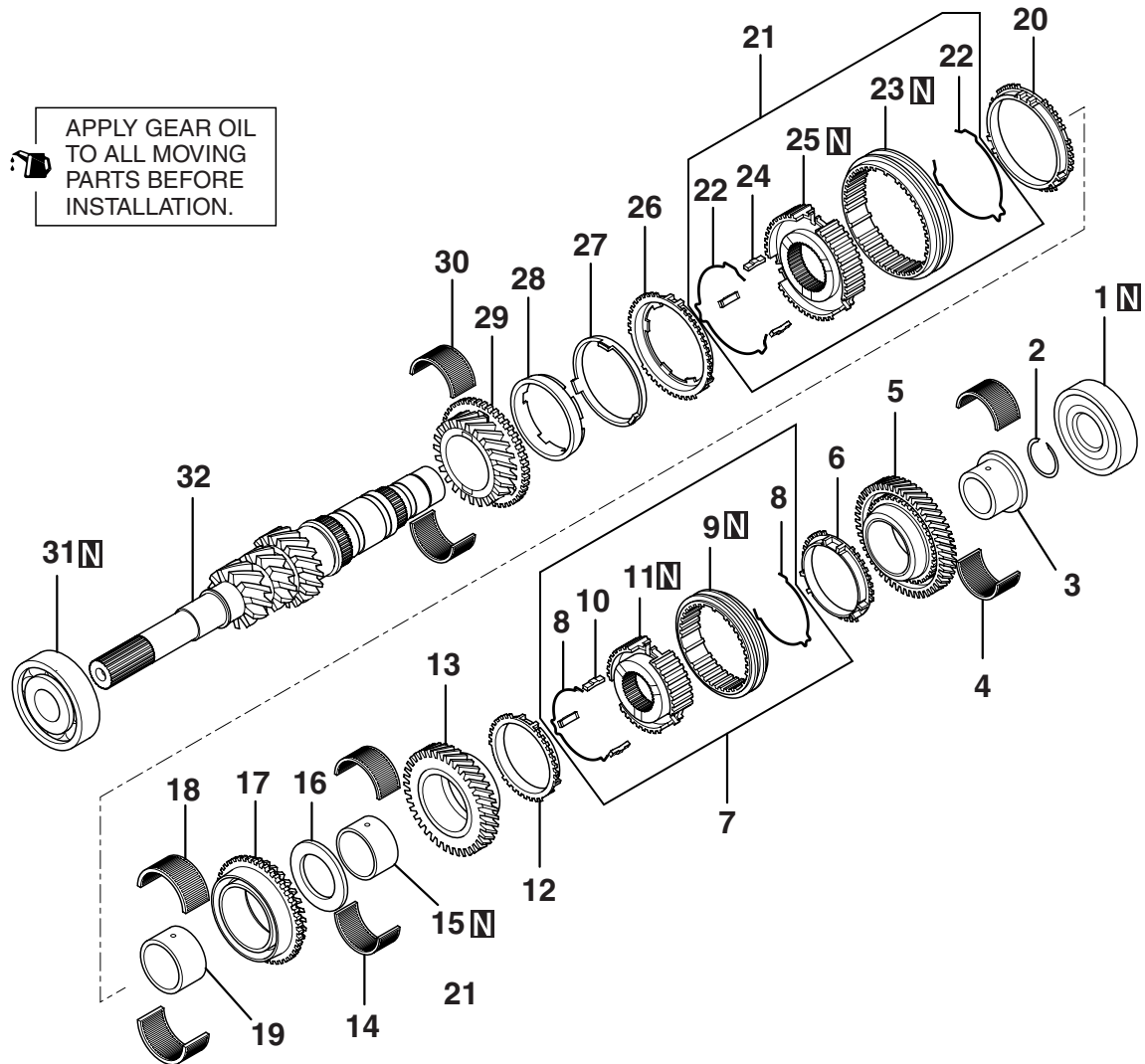
2. Check if the width of each shift fork finger tip (which rubs against the coupling sleeve) is greater than the limit.

ITEM	LIMIT FOR WEAR ON ONE SIDE mm (in)	ORIGINAL FINGER TIP WIDTH mm (in)
1st-2nd shift fork	0.2 (0.0079)	7.80 –7.93 (0.3071 –0.3122)
3rd-4th shift fork	0.2(0.0079)	7.80 –7.93 (0.3071 –0.3122)
5th-6th shift fork	0.2(0.0079)	6.10 –6.23 (0.2402 –0.2453)
Reverse shift fork	0.2(0.0079)	12.80 –12.93 (0.5039 –0.5091)

INPUT SHAFT

DISASSEMBLY AND ASSEMBLY

M1222001600270



AK204089AD

DISASSEMBLY STEPS

- | | | |
|-------|-------|----------------------------------|
| <<A>> | >>K<< | 1. INPUT SHAFT REAR BEARING |
| | >>J<< | 2. SNAP RING |
| <> | >>I<< | 3. 6TH GEAR SLEEVE |
| <> | | 4. NEEDLE ROLLER BEARING |
| <> | | 5. 6TH GEAR |
| | | 6. SYNCHRONIZER RING |
| <<C>> | >>H<< | 7. 5TH-6TH SYNCHRONIZER ASSEMBLY |
| | >>G<< | 8. SYNCHRONIZER SPRING |
| | >>G<< | 9. SYNCHRONIZER SLEEVE |
| | >>G<< | 10. SYNCHRONIZER KEY |
| | >>G<< | 11. 5TH-6TH SYNCHRONIZER HUB |
| <<C>> | | 12. SYNCHRONIZER RING |
| <<C>> | | 13. 5TH GEAR |
| | | 14. NEEDLE ROLLER BEARING |
| <<D>> | >>F<< | 15. 5TH GEAR SLEEVE |
| <<D>> | >>E<< | 16. THRUST WASHER |

DISASSEMBLY STEPS

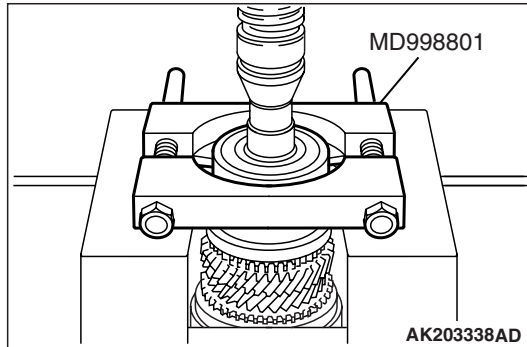
- | | | |
|-------|-------|-----------------------------------|
| <<D>> | | 17. 4TH GEAR |
| <<D>> | | 18. NEEDLE ROLLER BEARING |
| <<D>> | >>D<< | 19. 4TH GEAR SLEEVE |
| <<D>> | | 20. SYNCHRONIZER RING |
| <<D>> | >>C<< | 21. 3RD-4TH SYNCHRONIZER ASSEMBLY |
| | >>B<< | 22. SYNCHRONIZER SPRING |
| | >>B<< | 23. SYNCHRONIZER SLEEVE |
| | >>B<< | 24. SYNCHRONIZER KEY |
| | >>B<< | 25. 3RD-4TH SYNCHRONIZER HUB |
| <<D>> | | 26. SYNCHRONIZER OUTER RING |
| <<D>> | | 27. SYNCHRONIZER CONE |
| <<D>> | | 28. SYNCHRONIZER INNER RING |
| <<D>> | | 29. 3RD GEAR |
| <<E>> | >>A<< | 30. NEEDLE ROLLER BEARING |
| | | 31. BALL BEARING |
| | | 32. INPUT SHAFT |

Required Special Tools:

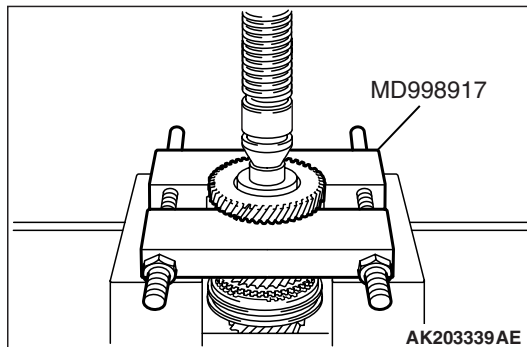
- MD998801: Bearing remover
- MD998812: Installer cap
- MD998813: Installer 100
- MD998817: Bearing remover
- MD998818: Installer adapter
- MD998822: Installer adapter
- MD998823: Installer adapter

DISASSEMBLY SERVICE POINTS**<<A>> INPUT SHAFT REAR BEARING REMOVAL**

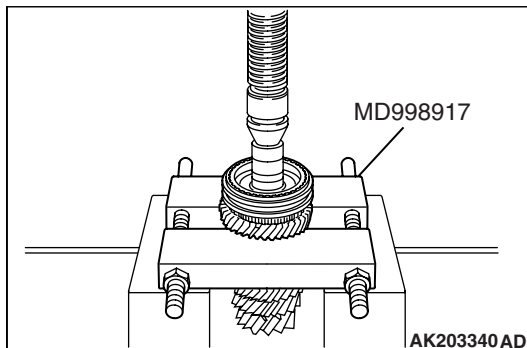
Using special tool MD998801, support the input shaft rear bearing and remove the bearing.

**<> 6TH GEAR SLEEVE / NEEDLE BEARING / 6TH GEAR REMOVAL**

Using special tool MD998917, support the 6th gear and remove the 6th gear sleeve, needle bearing, and 6th gear.

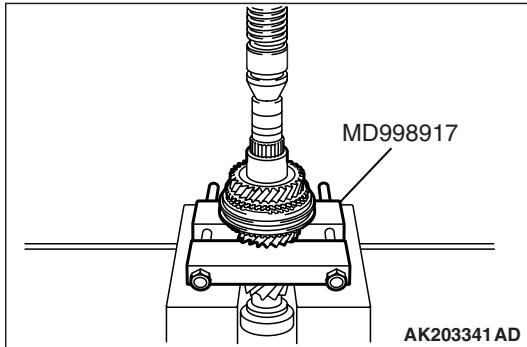
**<<C>> 5TH-6TH SYNCHRONIZER ASSEMBLY / SYNCHRONIZER RING / 5TH GEAR REMOVAL**

Using special tool MD998917, support the 5th gear and remove the 5th-6th synchronizer assembly, synchronizer ring, and 5th gear.



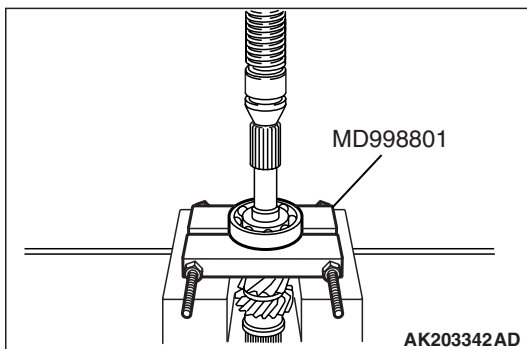
<<D>> 5TH GEAR SLEEVE / THRUST WASHER / 4TH GEAR / NEEDLE BEARING / 4TH GEAR SLEEVE / 3RD-4TH SYNCHRONIZER ASSEMBLY / SYNCHRONIZER OUTER RING / SYNCHRONIZER CONE / SYNCHRONIZER INNER RING / 3RD GEAR REMOVAL

Using special tool MD998917, support the 3rd gear and remove the 5th gear sleeve, thrust washer, 4th gear, needle bearing, 4th gear sleeve, 3rd-4th synchronizer assembly, synchronizer outer ring, synchronizer cone, synchronizer inner ring, and 3rd gear.



<<E>> BALL BEARING REMOVAL

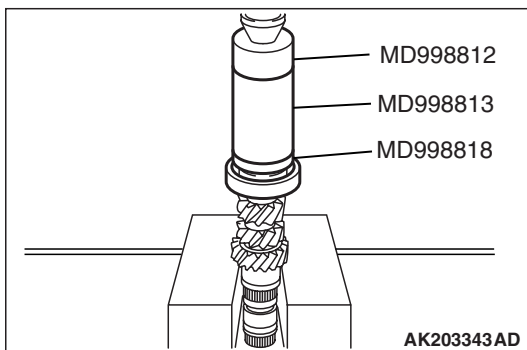
Using special tool MD998801, support the ball bearing and remove the bearing.



ASSEMBLY SERVICE POINTS

>>A<< BALL BEARING INSTALLATION

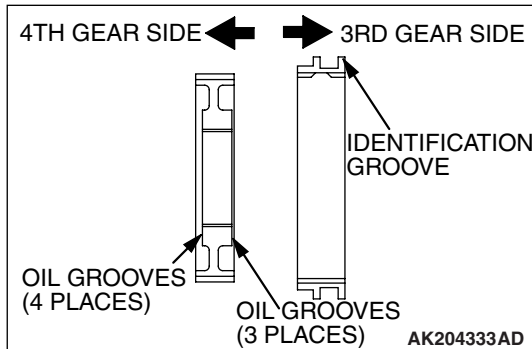
Using special tools MD998812, MD998813 and MD998818, install the ball bearing.



>>B<< 3RD-4TH SYNCHRONIZER HUB /
SYNCHRONIZER KEY / SYNCHRONIZER SLEEVE
/ SYNCHRONIZER SPRING INSTALLATION**⚠ CAUTION**

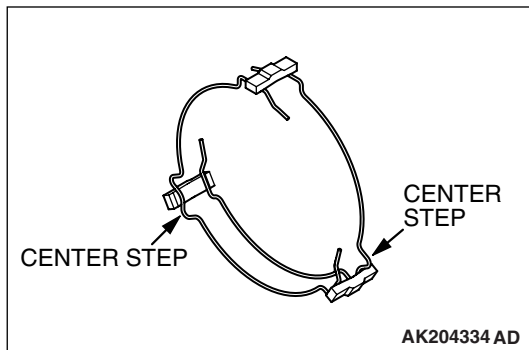
The synchronizer hub is not reusable.

1. Assemble the 3rd-4th synchronizer hub and synchronizer sleeve together as shown in the illustration.

**⚠ CAUTION**

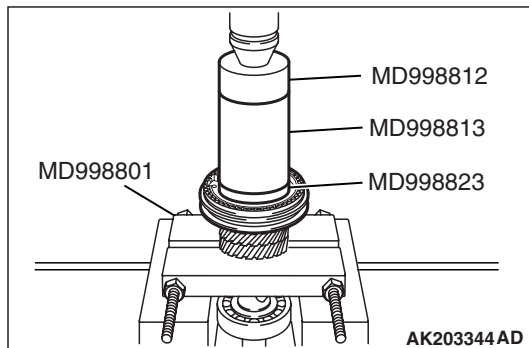
Install the synchronizer springs on the synchronizer keys so that the center steps on both springs are not positioned on the same key.

2. Install the synchronizer keys and synchronizer springs as shown in the illustration.

>>C<< 3RD-4TH SYNCHRONIZER ASSEMBLY
INSTALLATION**⚠ CAUTION**

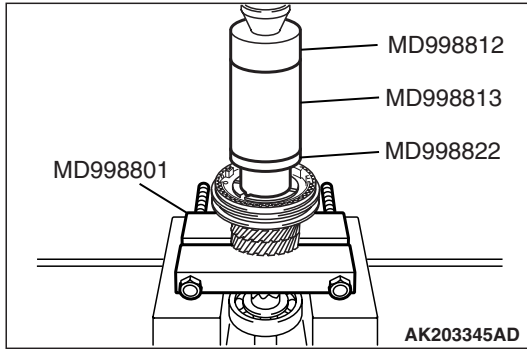
When press fitting the synchronizer assembly onto the main shaft, make sure that the synchronizer rings do not get caught in the hub.

Using special tools MD998801, MD998812, MD998813 and MD998823, install the 3rd-4th synchronizer assembly.



>>D<< 4TH GEAR SLEEVE INSTALLATION

Using special tools MD998801, MD998812, MD998813 and MD998822, install the 4th gear sleeve.



>>E<< THRUST WASHER INSTALLATION

CAUTION

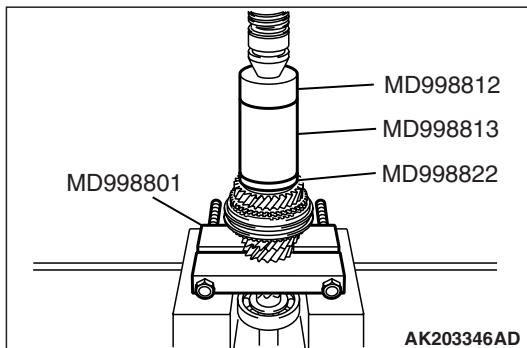
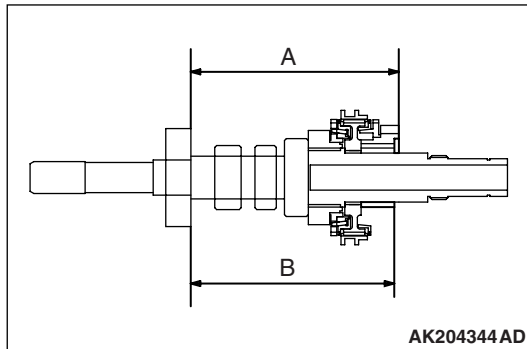
Do not use more than one thrust washer.

1. Select a washer that allows distance A in the illustration to fall within the standard value range.

Standard value: 167.6 – 167.7 mm (6.5984 – 6.6024 inch)

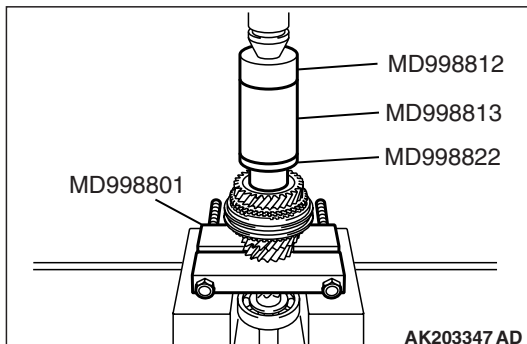
Selecting appropriate washer

- a. Use a dial gauge to measure the distance between the 4th bearing sleeve and the front bearing (distance B in the illustration).
 - b. Select a washer that allows distance A to fall within the standard value range when the thickness of the washer is added to the distance B measurement.
2. Using special tools MD998801, MD998812, MD998813 and MD998822, install the thrust washer.



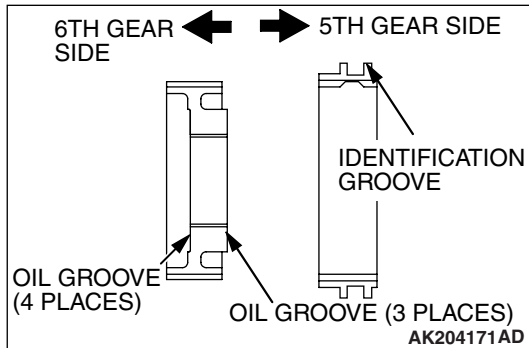
>>F<< 5TH GEAR SLEEVE INSTALLATION

Using special tools MD998801, MD998812, MD998813 and MD998822, install the 5th gear sleeve.

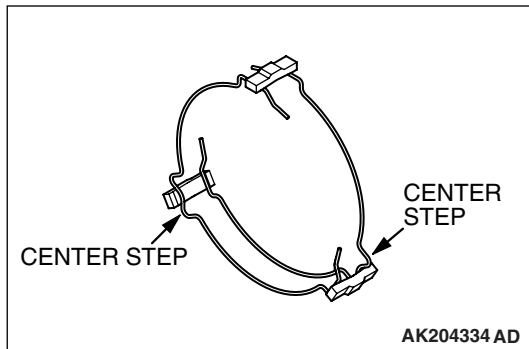


>>G<< 5TH-6TH SYNCHRONIZER HUB /
SYNCHRONIZER KEYS / SYNCHRONIZER
SLEEVE INSTALLATION**⚠ CAUTION****The synchronizer hub is not reusable.**

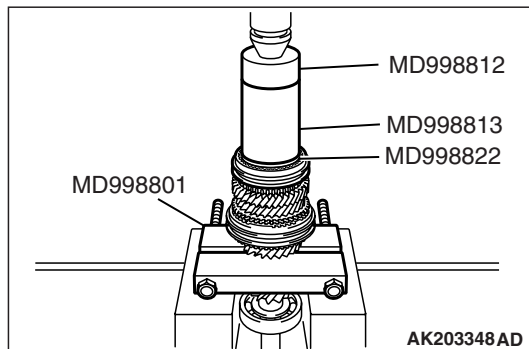
1. Assemble the 5th-6th synchronizer hub and synchronizer sleeve together as shown in the illustration.



2. Install the synchronizer keys and synchronizer springs as shown in the illustration.

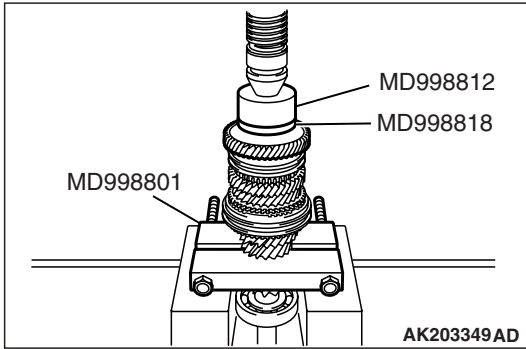
>>H<< 5TH-6TH SYNCHRONIZER ASSEMBLY
INSTALLATION**⚠ CAUTION****When press fitting the synchronizer assembly onto the main shaft, make sure that the synchronizer rings do not get caught in the hub.**

Using special tools MD998801, MD998812, MD998813 and MD998822, install the 5th-6th synchronizer assembly.



>>I<< 6TH GEAR SLEEVE INSTALLATION

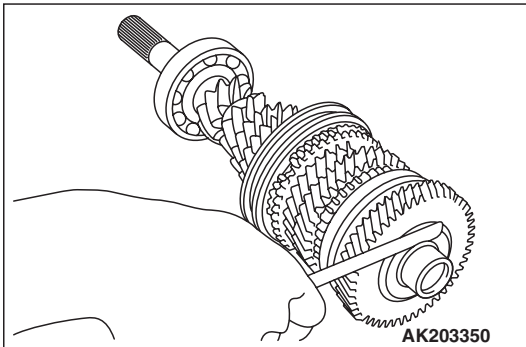
Using special tools MD998801, MD998812 and MD998818, install the 6th gear sleeve.



>>J<< SNAP RING INSTALLATION

Select a snap ring that allows the clearance between the snap ring and snap ring groove to fall within the standard value range.

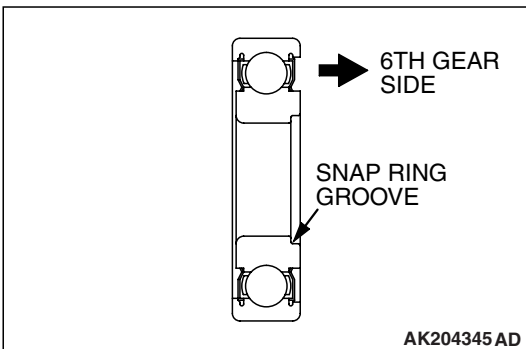
Standard value: 0 – 0.1 mm (0 – 0.0039 inch)



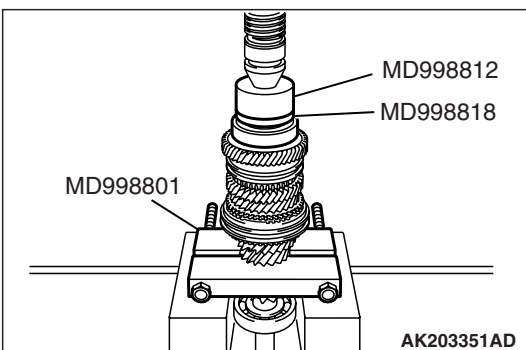
>>K<< INPUT SHAFT REAR BEARING INSTALLATION

⚠ CAUTION

Install the input shaft rear bearing with its snap ring groove facing the side shown in the illustration.



Using special tools MD998801, MD998812 and MD998818, press fit the input shaft rear bearing onto the input shaft.

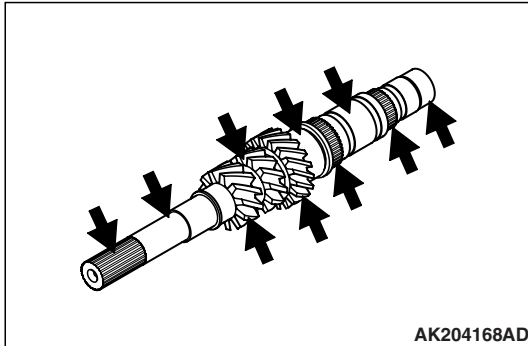


INPUT SHAFT INSPECTION

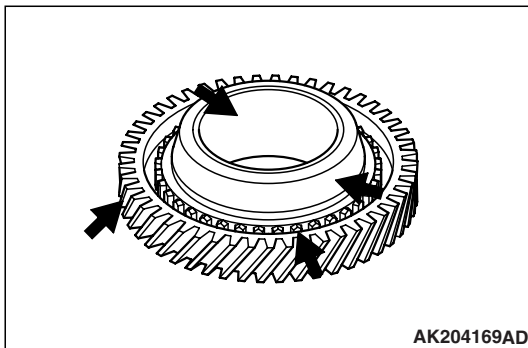
M1222001700192

INPUT SHAFT

Check the input shaft for damage, flaking, dents, uneven wear, bend, and other defects.

**SPEED GEARS**

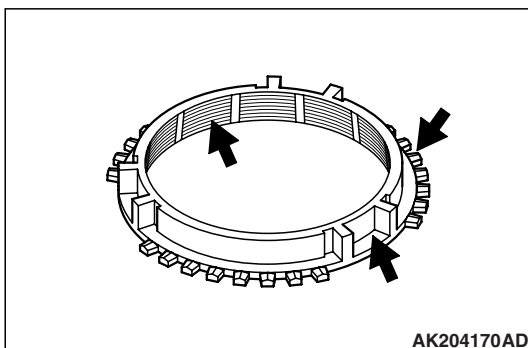
1. Check the helical gear teeth and clutch gear teeth of each speed gear for damage and excessive wear.
2. Check the synchronizer cone surface of each speed gear for roughness, damage, and excessive wear (3rd gear excepted).
3. Check the inside surface and front and back sides of each speed gear for damage and excessive wear.

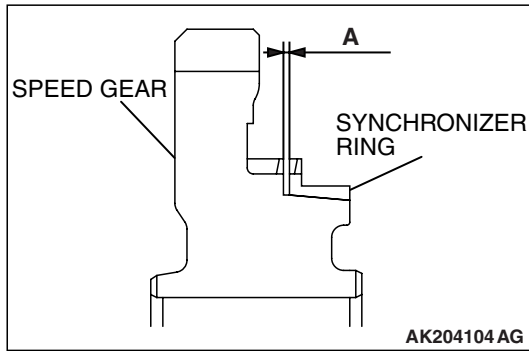
**NEEDLE ROLLER BEARINGS**

1. Combine each needle roller bearing with the input shaft, corresponding sleeve, and gear. Rotate the assembly, checking for smooth rotation, looseness, and noise.
2. Check the retainer for deformation.

SINGLE CONE SYNCHRONIZER RING

1. Check the clutch gear on the synchronizer ring for damaged and missing teeth.
2. Check the synchronizer ring inner cone surface for damage or wear. Also check that the inside ridges are intact.
3. Check the synchronizer key contact surfaces of the synchronizer ring for damage, and excessive wear.

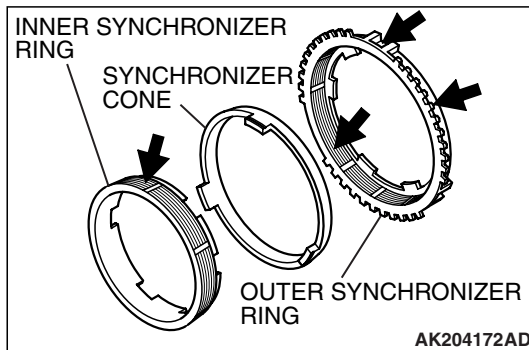




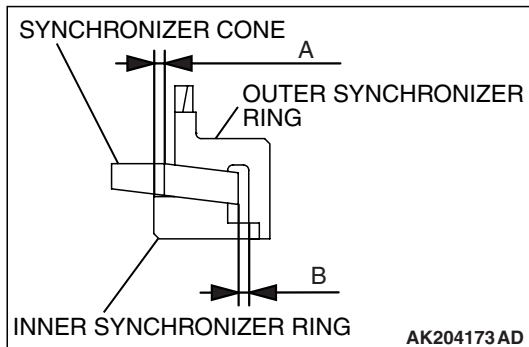
4. Press the synchronizer ring against the cone of the adjacent speed gear, and check clearance A. Replace the synchronizer ring if the clearance is below the limit.

Limit: 0.7 mm (0.0276 inch)

DOUBLE CONE SYNCHRONIZER RING



1. Check the clutch gear on the outer synchronizer ring for damaged and missing teeth.
2. Check the contact surfaces between each synchronizer ring and synchronizer cone for damage and wear. Also check that the cone ridges are intact.
3. Check the synchronizer key contact surfaces of the outer synchronizer ring for damage and excessive wear.

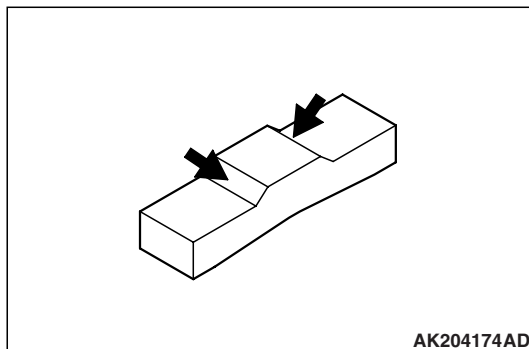


4. Combine the synchronizer rings and synchronizer cone, and check clearances A and B shown in the illustration. Replace them if either of the clearances is greater than the limit.

Limit: 0.2 mm (0.0079 inch)

SYNCHRONIZER KEYS

Check the synchronizer hub contact surfaces of each synchronizer key for damage and excessive wear.



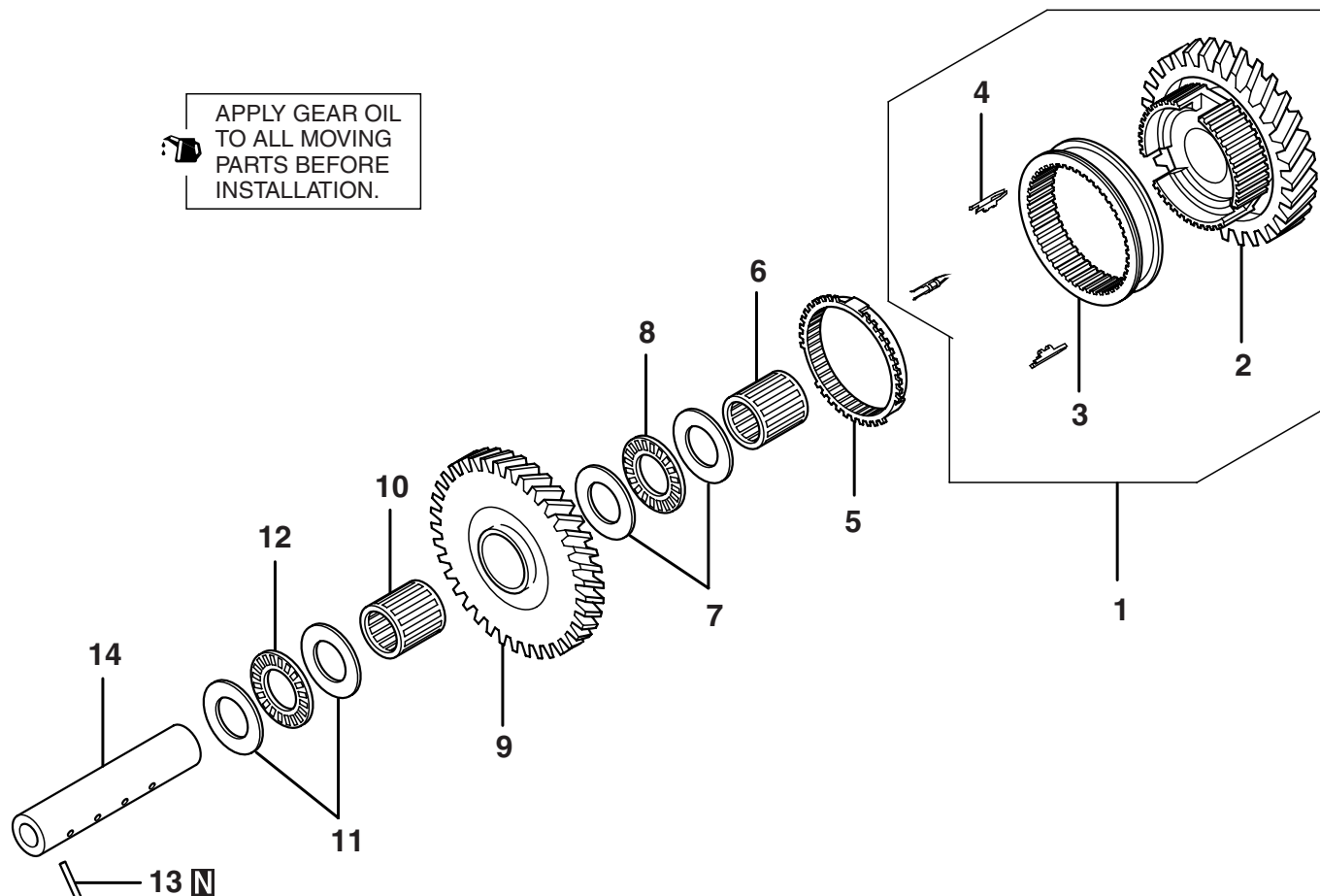
SYNCHRONIZER SPRINGS

Check the synchronizer springs for loss of tension, deformation, and breakage.

REVERSE IDLER GEAR

DISASSEMBLY AND ASSEMBLY

M1222012500170



AK204079AD

DISASSEMBLY STEPS

1. REAR REVERSE IDLER GEAR ASSEMBLY
 2. REAR REVERSE IDLER GEAR
 <<A>> >>B<< 3. REVERSE IDLER GEAR SLEEVE
 >>A<< 4. INSERT SPRING
 5. SYNCHRONIZER RING
 6. NEEDLE BEARING
 7. WASHER

DISASSEMBLY STEPS

8. THRUST BEARING
 9. FRONT REVERSE IDLER GEAR
 10. NEEDLE BEARING
 11. WASHER
 12. THRUST BEARING
 13. PIN
 14. REVERSE IDLER GEAR SHAFT

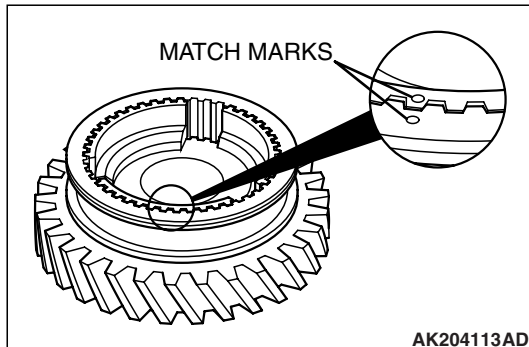
DISASSEMBLY SERVICE POINT

<<A>> REVERSE IDLER GEAR SLEEVE REMOVAL

CAUTION

Meshing problems may occur if the original spline engagement phase is changed during assembly.

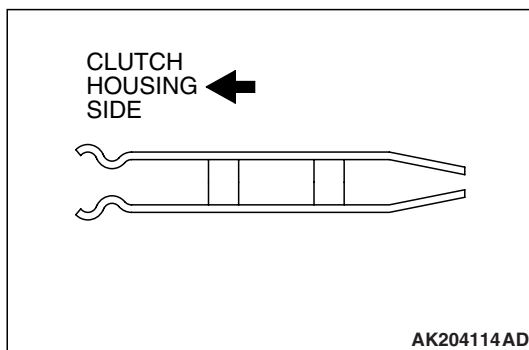
Make match marks on the reverse idler gear sleeve and reverse idler gear hub.



ASSEMBLY SERVICE POINTS

>>A<< INSERT SPRING INSTALLATION

Install each insert spring on the reverse idler gear sleeve, making sure to insert it in the right direction.

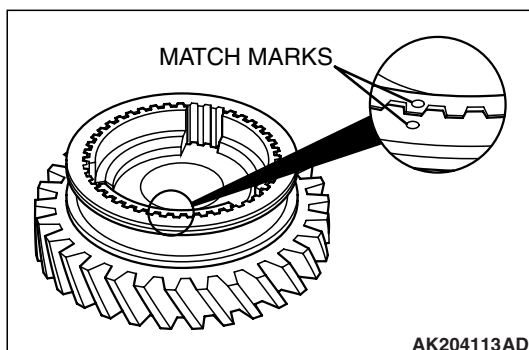


>>B<< REVERSE IDLER GEAR SLEEVE INSTALLATION

CAUTION

Meshing problems may occur if the spline engagement phase is changed during assembly.

Align the match marks when engaging the splines.

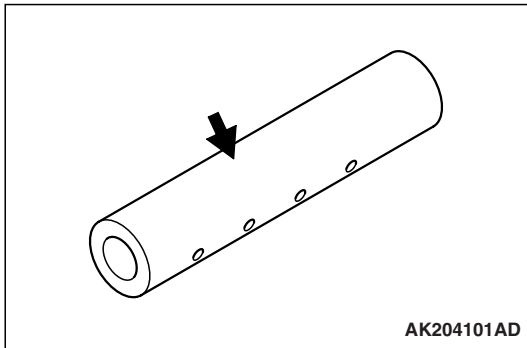


INSPECTION

M1222012400054

REVERSE IDLER SHAFT

Check the reverse idler shaft for damage, flaking, dents, uneven wear, bend, and other defects.

**THRUST BEARING**

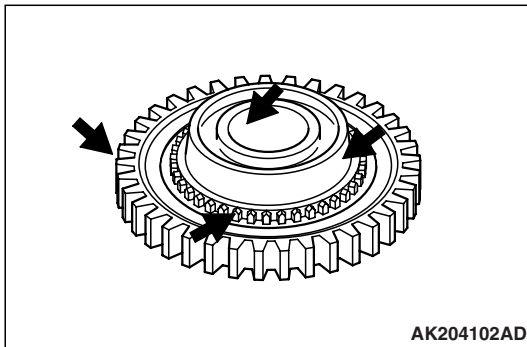
1. Check the thrust bearing for smooth rotation, without looseness or noise, when rotated together with the washers.
2. Check the retainer for deformation.

NEEDLE BEARING

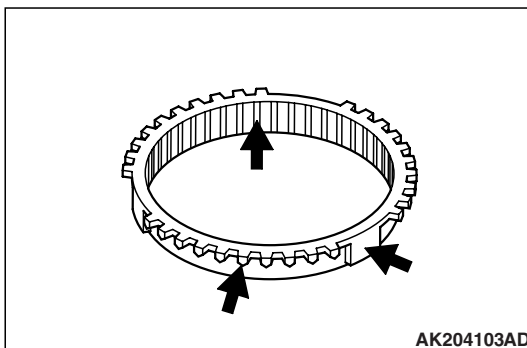
1. Check the needle bearing for smooth rotation, without looseness or noise, when rotated together with the reverse idler gear and shaft.
2. Check the retainer for deformation.

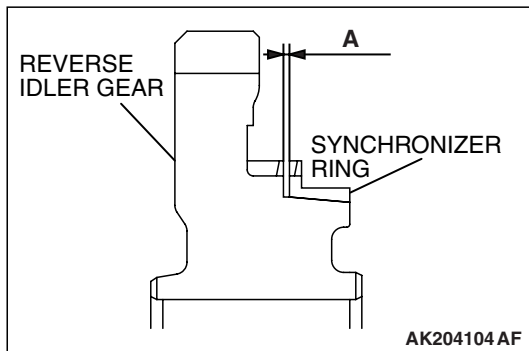
FRONT REVERSE IDLER GEAR

1. Check the helical gear teeth and clutch gear teeth of the reverse idler gear for damage and excessive wear.
2. Check the synchronizer cone surface of the reverse idler gear for roughness, damage and excessive wear.
3. Check the inside surface and front and back sides of the reverse idler gear for damage and excessive wear.

**SYNCHRONIZER RING**

1. Check the clutch gear on the synchronizer ring for damaged and missing teeth.
2. Check the inner surface of the synchronizer ring cone for damage and excessive wear. Also check that the inside ridges are intact.
3. Check the synchronizer key contact surface of the synchronizer ring for damage and excessive wear.



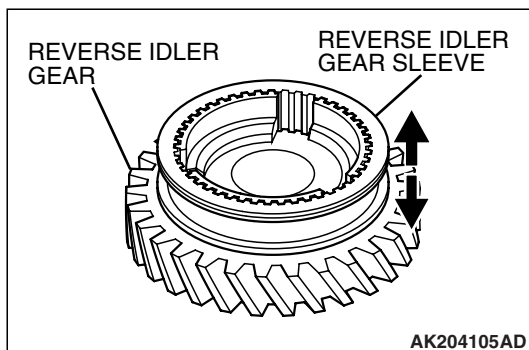
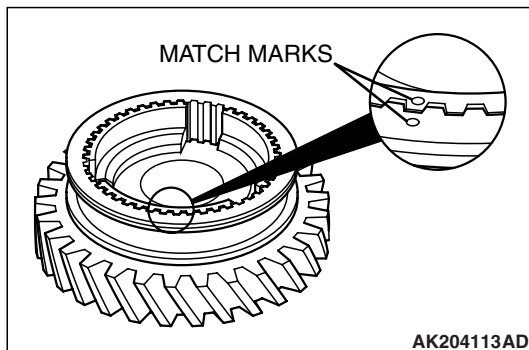


4. Press the synchronizer ring against the cone of the reverse idler gear and check clearance A. Replace the synchronizer ring if the clearance is less than the limit.

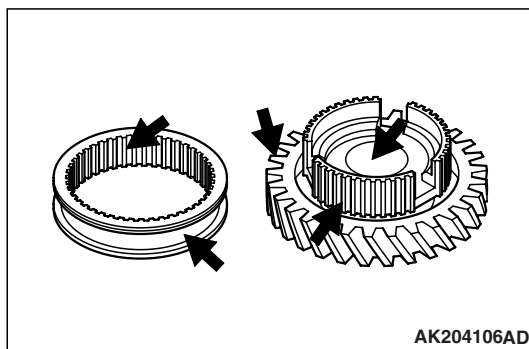
Limit: 0.7 mm (0.0276 inch)

⚠ CAUTION

When assembling the reverse idler gear sleeve and reverse idler gear sleeve, align the match marks that were made during disassembly.



Check that the reverse idler gear sleeve slides smoothly on the reverse idler gear hub when they are combined.

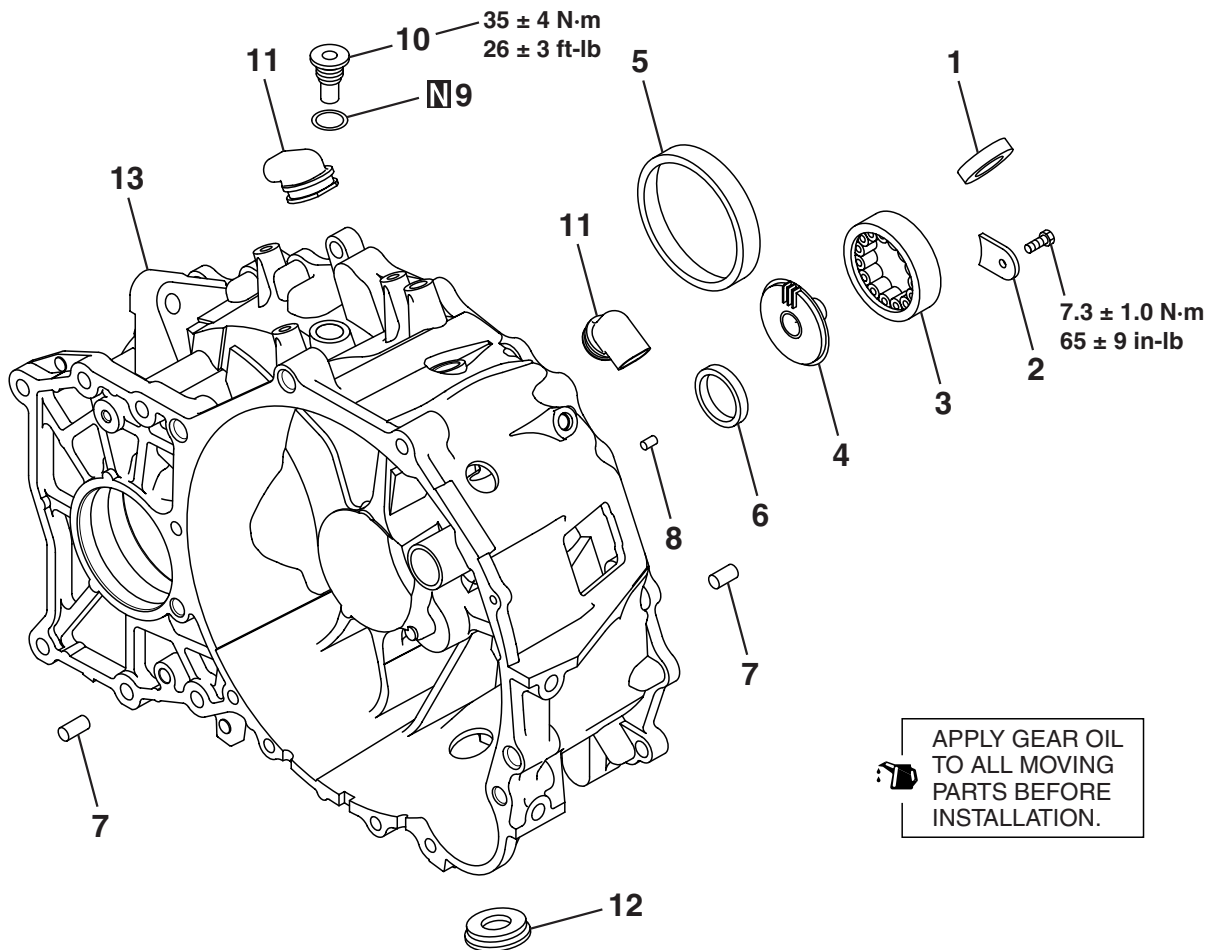


Check the front and back ends of the inner splines of the reverse idler gear sleeve for damage.
Check the helical gear teeth and clutch gear teeth of the reverse idler gear for damage and excessive wear.
Check the front, back, and inner surfaces of the reverse idler gear for damage and excessive wear.

CLUTCH HOUSING

DISASSEMBLY AND ASSEMBLY

M1222003700239



AK204363AD

DISASSEMBLY STEPS

1. MAGNET
- >>C<< 2. MAIN SHAFT BEARING
RETAINER
3. MAIN SHAFT FRONT BEARING
- >>B<< 4. OIL CHANNEL
- <<A>> >>D<< 5. DIFFERENTIAL SIDE BEARING
OUTER RACE
- >>A<< 6. INPUT SHAFT OIL SEAL

DISASSEMBLY STEPS

7. DOWEL PIN
8. KNOCK PIN
9. DRAIN PLUG GASKET
10. DRAIN PLUG
11. COVER A
12. MAINTENANCE HOLE COVER
13. CLUTCH HOUSING

Required Special Tools:

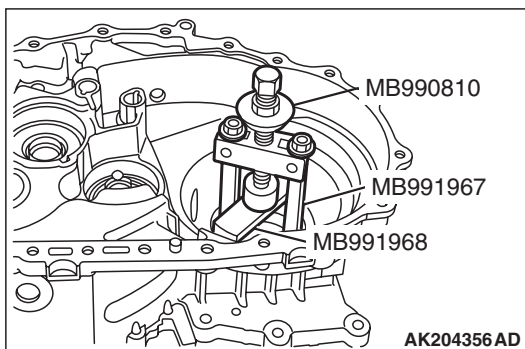
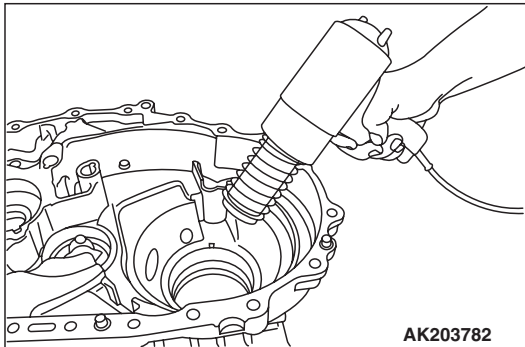
- MB998810: Side bearing puller
- MB991966: Bearing outer race installer
- MB991967: Crow
- MB991968: Bridge
- MD998323: Bearing installer

DISASSEMBLY SERVICE POINT

<<A>> DIFFERENTIAL SIDE BEARING OUTER RACE REMOVAL

1. Heat the clutch housing to about 100 °C (212°F)

NOTE: maximum temperature: 120 °C (248°F).



2. Using special tools MB990810, MB991967 and MB991968, remove the differential side bearing outer race.

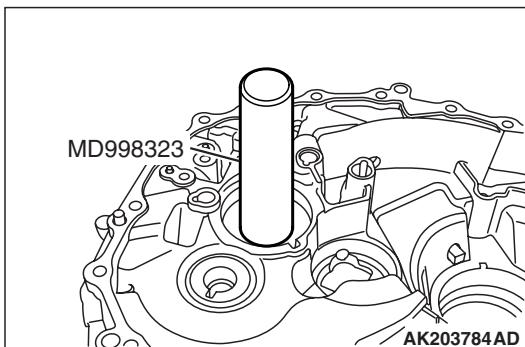
ASSEMBLY SERVICE POINTS

>>A<< INPUT SHAFT OIL SEAL INSTALLATION

CAUTION

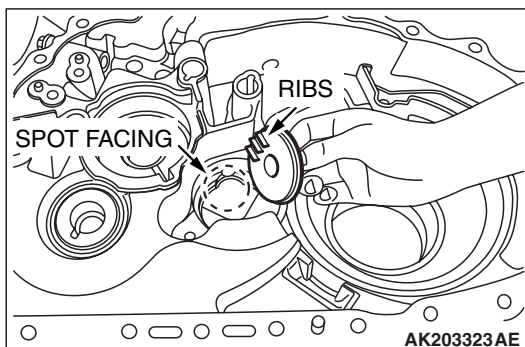
The oil seal is not reusable.

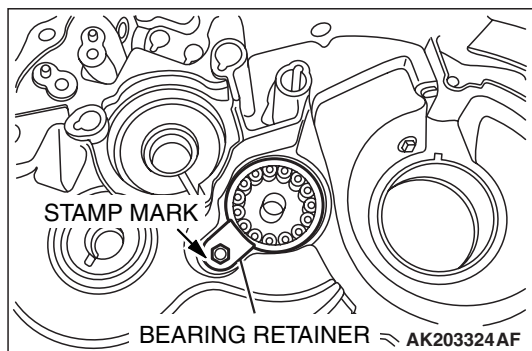
Using special tool MD998323, hammer the input shaft oil seal into the clutch housing.



>>B<< OIL CHANNEL INSTALLATION

Install the oil channel so that the ribs located on the channel's main shaft side are fitted into the spot faced portion on the clutch housing.



**>>C<< BEARING RETAINER INSTALLATION**

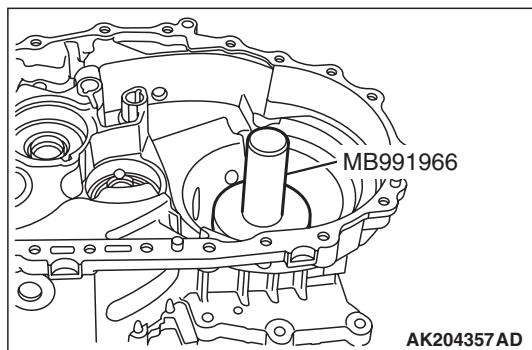
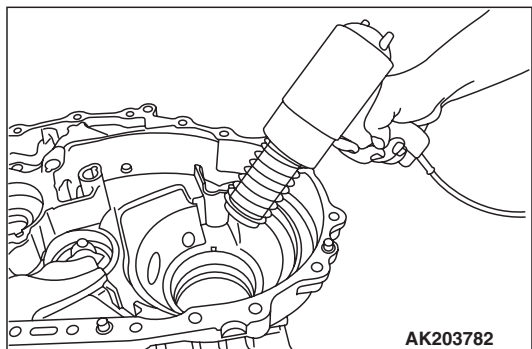
Install the bearing retainer so that the stamp mark is visible, and tighten the mounting bolt to the specified torque.

Tightening torque: 7.3 ± 1.0 N·m (65 ± 9 in-lb)

>>D<< DIFFERENTIAL SIDE BEARING OUTER RACE INSTALLATION

1. Heat the clutch housing to about 100 °C (212°F)

NOTE: maximum temperature: 120 °C (248°F).

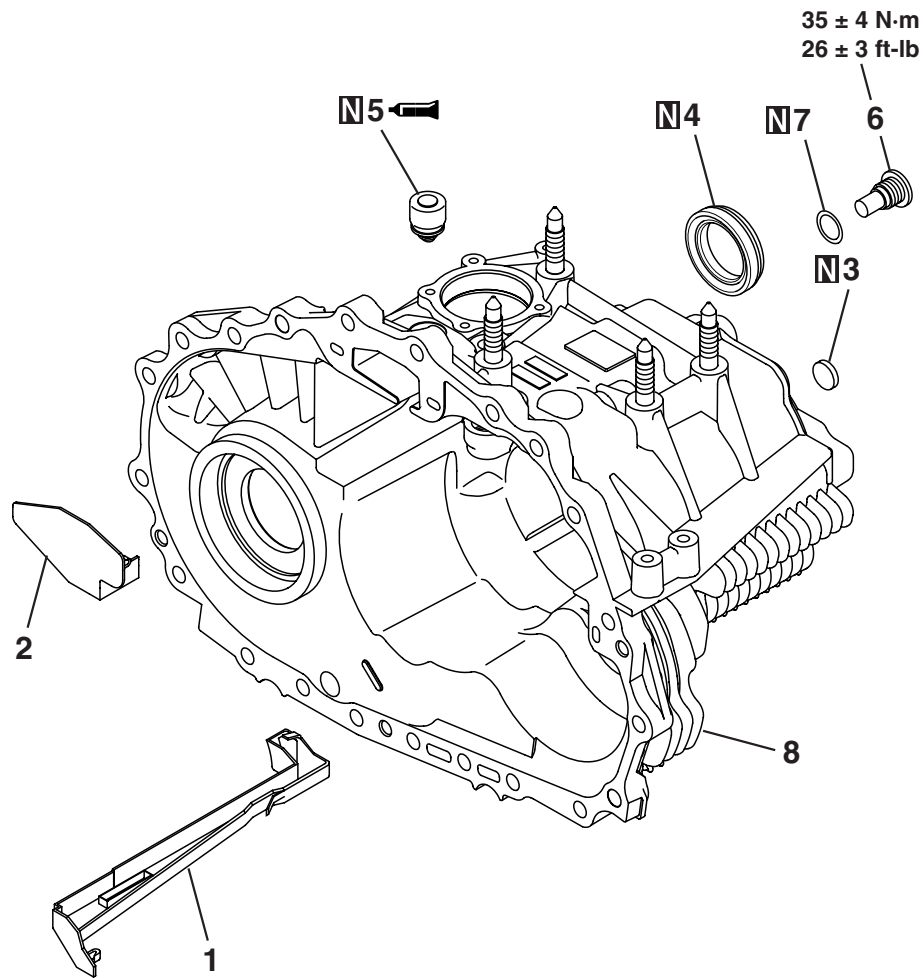


2. Using special tool MB991966, install the differential side bearing outer race in the clutch housing.

TRANSMISSION CASE

DISASSEMBLY AND ASSEMBLY

M1222013400176



AK401689 AB

DISASSEMBLY STEPS

- >>C<< 1. OIL GUTTER
>>C<< 2. BAFFLE PLATE
3. WELCH PLUG
>>B<< 4. DIFFERENTIAL OIL SEAL

DISASSEMBLY STEPS

- >>A<< 5. AIR BREATHER
6. FILLER PLUG
7. DRAIN PLUG GASKET
8. TRANSAXLE CASE

Required Special Tool:

- MD998800: Oil seal installer

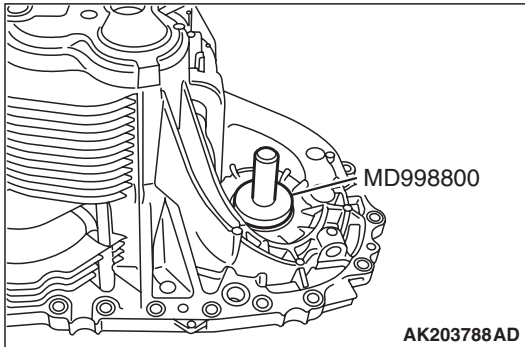
ASSEMBLY SERVICE POINTS**>>A<< AIR BREATHER INSTALLATION**

1. Apply adhesive (3M™AAD Part No.8001 or equivalent) to the entire air breather fitting surface of the transaxle case.
2. Install the air breather on the transaxle case.

>>B<< DIFFERENTIAL OIL SEAL INSTALLATION**⚠ CAUTION**

The oil seal is not reusable.

Using special tool MD998800, install the differential oil seal into the transaxle case.

**>>C<< BAFFLE PLATE / OIL GUTTER
INSTALLATION****⚠ CAUTION**

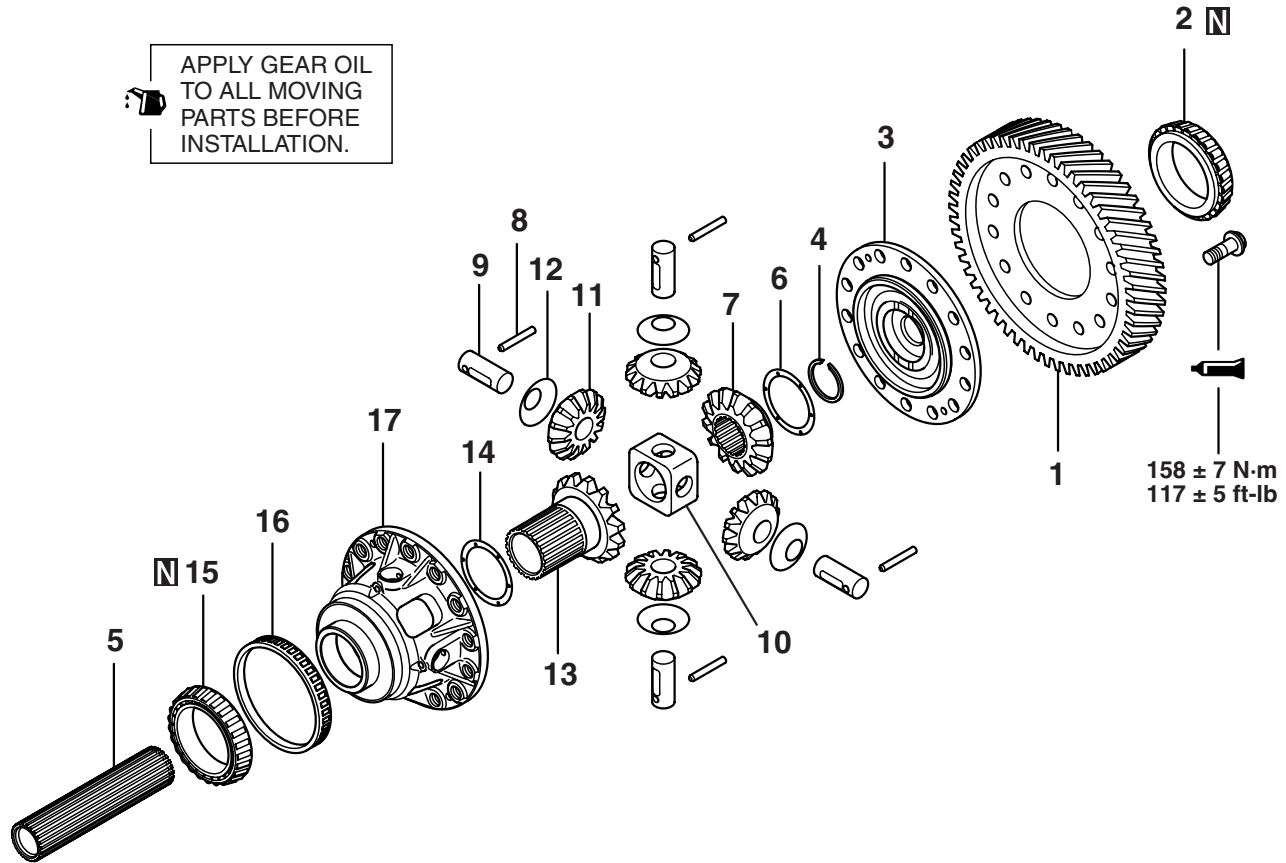
Apply Vaseline to the claws of the baffle plate and oil gutter to prevent both parts from falling off.

Install the baffle plate and oil gutter on the transaxle case.

CENTER DIFFERENTIAL

DISASSEMBLY AND ASSEMBLY

M1222002800095



AK204087AD

DISASSEMBLY STEPS

- >>D<< 1. CENTER DIFFERENTIAL DRIVE GEAR
- <<A>> >>C<< 2. TAPER ROLLER BEARING
- >>B<< 3. CENTER DIFFERENTIAL FLANGE
- >>B<< 4. SNAP RING
- >>B<< 5. FRONT OUTPUT SHAFT
- >>B<< 6. SPACER
- >>B<< 7. SIDE GEAR
- >>B<< 8. LOCK PIN

DISASSEMBLY STEPS

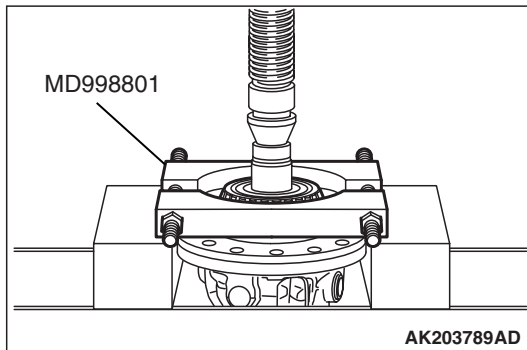
- >>B<< 9. PINION SHAFT
- >>B<< 10. PINION SHAFT HOLDER
- >>B<< 11. PINION
- >>B<< 12. WASHER
- >>B<< 13. SIDE GEAR
- >>B<< 14. SPACER
- <> >>A<< 15. TAPER ROLLER BEARING
16. SPEEDOMETER DRIVE GEAR
17. DIFFERENTIAL CASE

Required Special Tools:

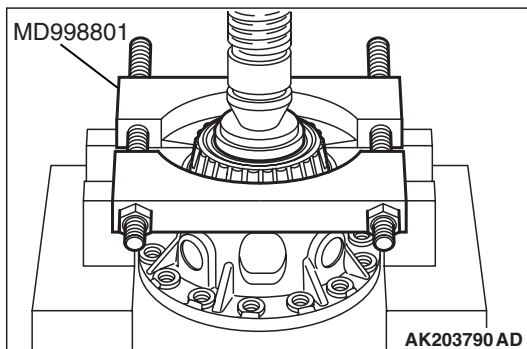
- MB990936: Installer adapter
- MD998801: Bearing remover

DISASSEMBLY SERVICE POINTS**<<A>> TAPER ROLLER BEARING REMOVAL**

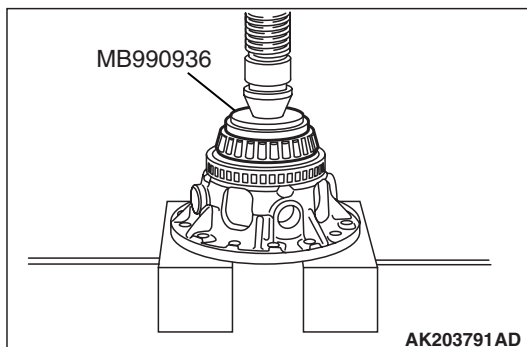
Using special tool MD998801, remove the taper roller bearing.

**<> TAPER ROLLER BEARING REMOVAL**

Using special tool MD998801, remove the taper roller bearing.

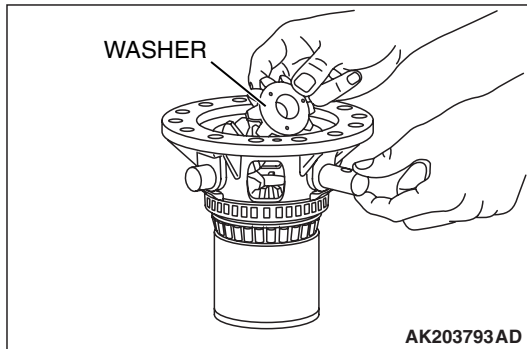
**ASSEMBLY SERVICE POINTS****>>A<< TAPER ROLLER BEARING INSTALLATION**

Using special tool MB990936, install the taper roller bearing.

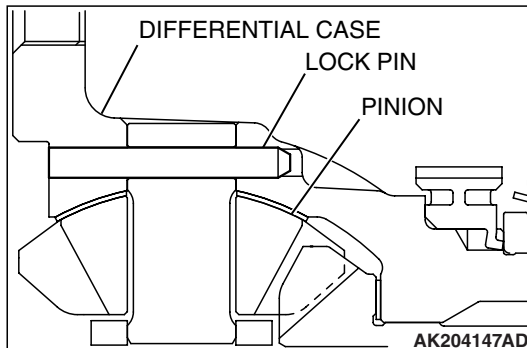
**>>B<< SPACER / SIDE GEAR / WASHER / PINION / PINION SHAFT HOLDER / PINION SHAFT / LOCK PIN / FRONT OUTPUT SHAFT / SNAP RING / CENTER DIFFERENTIAL FLANGE INSTALLATION**

1. Install the spacer on each side gear, then install the side gears into the center differential case.

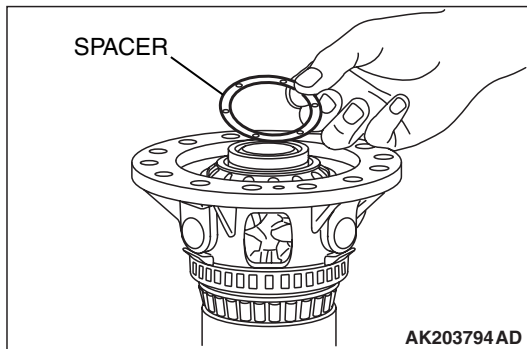
NOTE: When installing new side gears, use spacers of a medium thickness (0.66 –0.73 mm) (0.0260 –0.0287 inch).



2. Install a washer on the backside of each pinion. Simultaneously engage all four pinions with the side gears, and install them into position while rotating, then install the pinion shaft holder.
3. Insert the pinion shafts into the pinions.



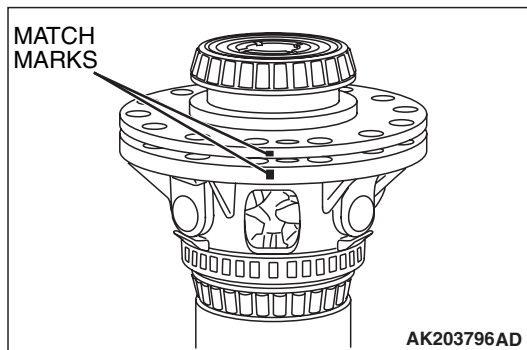
4. Install the lock pins as indicated in the illustration.



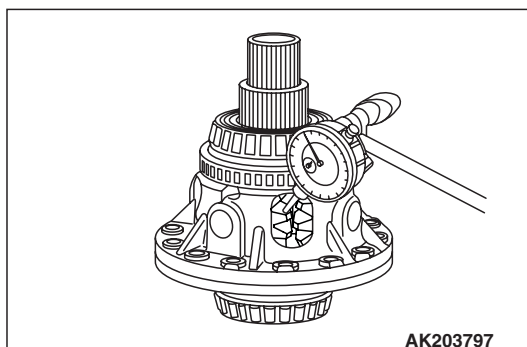
5. Insert the front output shaft into each side gear, then install the snap ring.

6. Install the spacer on each side gear. Next, install the side gears into the center differential case.

NOTE: When installing new side gears, use spacers of a medium thickness (0.66 –0.73 mm) (0.0260 –0.0287 inch).



7. Install the center differential flange on the differential case while aligning the match marks. Secure it temporarily in place using machine screws in four places.



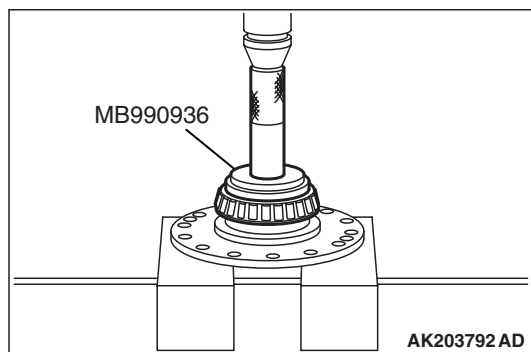
8. Measure the backlash between the side gears and pinions.
Standard value: 0.025 –0.150 mm (0.0010 –0.0059 inch)

9. If the backlash does not fall within the standard value range, select other appropriate spacers, replace the existing spacers with them, and measure the backlash once again.

NOTE: Adjust the backlash on each side so that it is equal to the backlash on the other side.

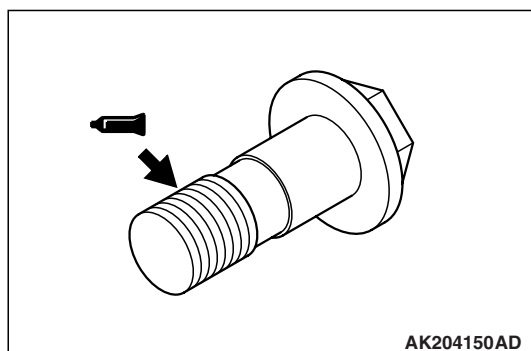
>>C<< TAPER ROLLER BEARING INSTALLATION

Using special tool MB9900936, install the taper roller bearing.



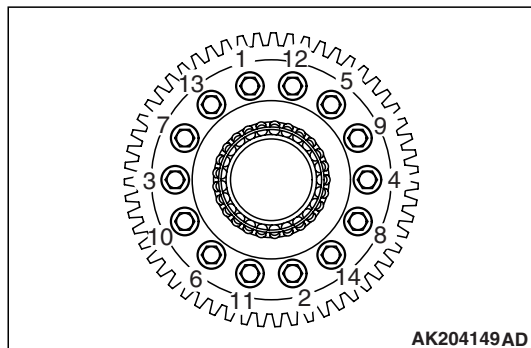
>>D<< CENTER DIFFERENTIAL DRIVE GEAR INSTALLATION

1. Apply sealant (3M™AAD Part No.8730 or 8731 or equivalent) to the entire threaded part on the bolts.



2. Tighten bolts to the specified torque in the order indicated in the illustration.

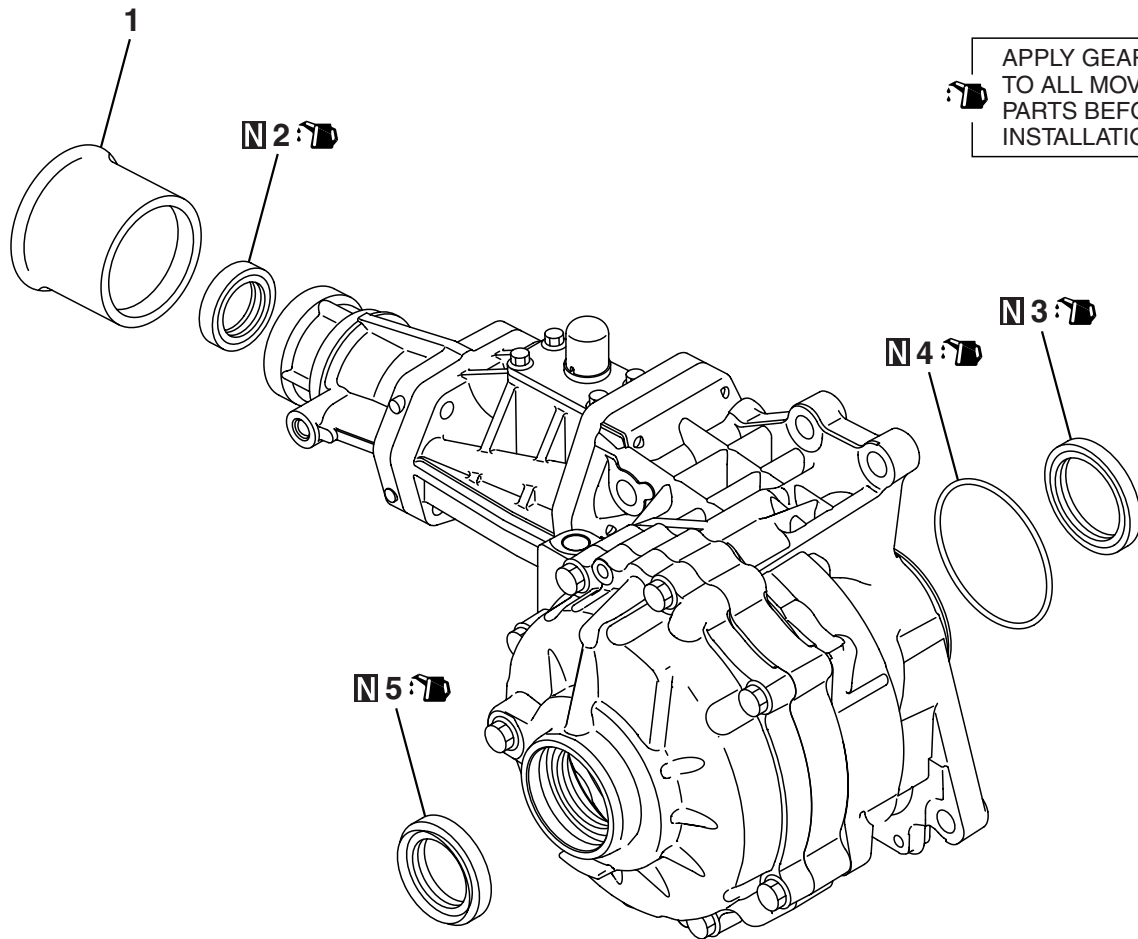
Tightening torque: 158 ± 7 N·m (117 ± 5 ft-lb)



TRANSFER

DISASSEMBLY AND ASSEMBLY

M1222004000158



APPLY GEAR OIL
TO ALL MOVING
PARTS BEFORE
INSTALLATION.

AK402153AB

DISASSEMBLY STEPS

- 1. DUST SEAL GUIDE
- >>D<< 2. OIL SEAL
- >>C<< 3. OIL SEAL

DISASSEMBLY STEPS

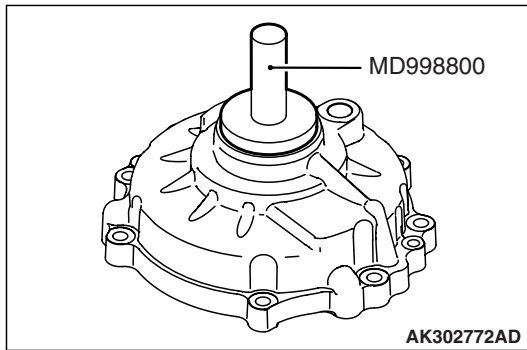
- >>B<< 4. O-RING
- >>A<< 5. OIL SEAL

Required Special Tools:

- MD998800: Oil Seal Installer
- MD999506: Crankshaft Installer
- MB990936: Installer Adapter

ASSEMBLY SERVICE POINTS**>>A<< OIL SEAL INSTALLATION**

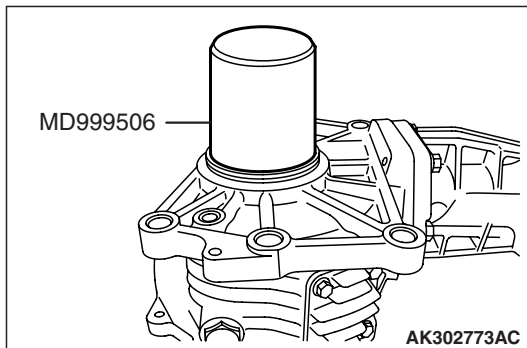
1. Apply gear oil (Hypoid gear oil API classification GL-5 SAE 90).
2. Using special tool MD998800, press fit the oil seal into the transfer cover.

**>>B<< O-RING INSTALLATION**

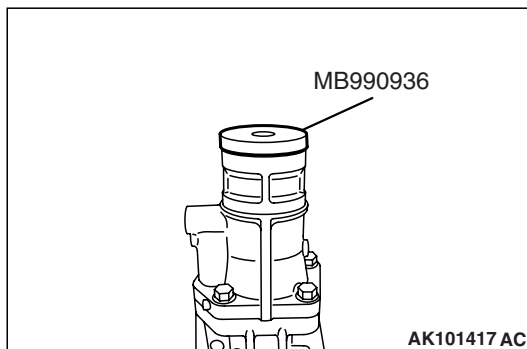
Install a O-ring to the transfer, and apply gear oil (Hypoid gear oil API classification GL-5 SAE 90) to the O-ring.

>>C<< OIL SEAL INSTALLATION

1. Apply gear oil (Hypoid gear oil API classification GL-5 SAE 90).
2. Using special tool MD999506, press fit the oil seal into the transfer.

**>>D<< OIL SEAL INSTALLATION**

1. Apply gear oil (Hypoid gear oil API classification GL-5 SAE 90).
2. Using special tool MB990936, press fit the oil seal into the transfer.



SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

M1222013900104

ITEM	SPECIFICATION
Transfer bolts	69 ± 9 N· m (51 ± 7 ft-lb)
Roll stopper bracket bolts	70 ± 10 N· m (52 ± 7 ft-lb)
Vehicle speed sensor bolts	11 ± 1 N· m (95 ± 9 in-lb)
Backup light switch	28 ± 5 N· m (21 ± 4 ft-lb)
Control assembly	7.3 ± 1.0 N· m (65 ± 9 in-lb)
Stopper bolts	29 ± 1 N· m (21 ± 1 ft-lb)
Shift check plugs	15 ± 2 N· m (11 ± 1 ft-lb)
Transaxle case bolts (with sealant)	63 ± 1 N· m (46 ± 1 ft-lb)
Transaxle case bolts	52 ± 1 N· m (38 ± 1 ft-lb)
Shift check plugs	15 ± 2 N· m (11 ± 1 ft-lb)
Reverse lever assembly	14 ± 1 N· m (123 ± 9 in-lb)
Main shaft bearing retainer bolts	7.3 ± 1.0 N· m (65 ± 9 in-lb)
Drain plugs	35 ± 4 N· m (26 ± 3 ft-lb)
Filler plugs	35 ± 4 N· m (26 ± 3 ft-lb)
Differential drive gear bolts	158 ± 7 N· m (117 ± 5 ft-lb)

GENERAL SPECIFICATIONS

M1222000200309

ITEM	SPECIFICATION
Model	W6MAA-1-GFNF
Applicable engine	4G63
Type	6-speed transaxle floor shift
Gear ratio	1st 2.909
	2nd 1.944
	3rd 1.434
	4th 1.100
	5th 0.868
	6th 0.693
	Reverse 2.707
Final reduction ratio	4.583
Speedometer gear ratio (driven/drive)	Not applicable

SERVICE SPECIFICATIONS

M1222000300232

ITEM	STANDARD VALUE	MINIMUM LIMIT
Differential side bearing preload mm (in)	0.15 –0.21 (0.0059 –0.0083)	–
Input shaft end play mm (in)	0 –0.06 (0 –0.0024)	–
Main shaft end play mm (in)	0 –0.06 (0 –0.0024)	–
Reverse idler gear end play mm (in)	0.04 –0.10 (0.0016 –0.0039)	–
Distance between input shaft front bearing and thrust washer mm (in)	167.6 –167.7 (6.5984 –6.6024)	–
Input shaft 6th gear bushing end play mm (in)	0 –0.1 (0 –0.0039)	–
Wear on one side of shift fork pawl mm (in)	–	0.2 (0.0079)
Clearance between synchronizer ring and gear mm (in)	–	0.7 (0.0276)
Clearance between synchronizer ring and synchronizer cone mm (in)	–	0.2 (0.0079)
Backlash between differential side gear and pinion mm (in)	0.025 –0.150 (0.0010 –0.0059)	–

SEALANTS AND ADHESIVES

M1222000500236

ITEM	SPECIFIED SEALANT
Clutch housing and transaxle case contact surface	Mitsubishi genuine sealant part No. MD997740 or equivalent
Backup light switch	
Air breather	3M™AAD Part No.8001 or equivalent
Differential drive gear bolt	3M™AAD Part No.8730 or 8731 or equivalent

LUBRICANTS

M1222000400206

ITEM	SPECIFIED SEALANT
Transfer oil seal lip	Hypoid gear oil API classification GL –5 SAE 90
O-rings	

ADJUSTING SNAP RINGS AND SPACERS

M1222012000368

Adjustment shims (for differential side bearing preload adjustment)

THICKNESS mm (in)	THICKNESS mm (in)	THICKNESS mm (in)	THICKNESS mm (in)
0.48 (0.019)	0.60 (0.024)	0.72 (0.028)	0.84 (0.033)
0.52 (0.020)	0.64 (0.025)	0.76 (0.030)	0.88 (0.035)
0.56 (0.022)	0.68 (0.027)	0.80 (0.031)	0.92 (0.036)

Adjustment shims (for input shaft end play adjustment)

THICKNESS mm (in)	THICKNESS mm (in)	THICKNESS mm (in)	THICKNESS mm (in)
0.44 (0.017)	0.72 (0.028)	1.00 (0.039)	1.28 (0.050)
0.48 (0.019)	0.76 (0.030)	1.04 (0.041)	1.32 (0.052)
0.52 (0.020)	0.80 (0.031)	1.08 (0.043)	1.36 (0.054)
0.56 (0.022)	0.84 (0.033)	1.12 (0.044)	1.40 (0.055)
0.60 (0.024)	0.88 (0.035)	1.16 (0.046)	1.44 (0.057)
0.64 (0.025)	0.92 (0.036)	1.20 (0.047)	1.48 (0.058)
0.68 (0.027)	0.96 (0.038)	1.24 (0.049)	1.52 (0.060)

Adjustment shims (for main shaft end play adjustment)

THICKNESS mm (in)	THICKNESS mm (in)	THICKNESS mm (in)	THICKNESS mm (in)
0.44 (0.017)	0.64 (0.025)	0.84 (0.033)	1.04 (0.041)
0.48 (0.019)	0.68 (0.027)	0.88 (0.035)	1.08 (0.043)
0.52 (0.020)	0.72 (0.028)	0.92 (0.036)	
0.56 (0.022)	0.76 (0.030)	0.96 (0.038)	
0.60 (0.024)	0.80 (0.031)	1.00 (0.039)	

Adjustment shims (for reverse idler gear end play adjustment)

THICKNESS mm (in)	THICKNESS mm (in)	THICKNESS mm (in)	THICKNESS mm (in)
1.76 (0.069)	2.00 (0.079)	2.24 (0.088)	2.48 (0.098)
1.80 (0.071)	2.04 (0.080)	2.28 (0.090)	2.52 (0.099)
1.84 (0.072)	2.08 (0.082)	2.32 (0.091)	2.56 (0.101)
1.88 (0.074)	2.12 (0.083)	2.36 (0.093)	2.60 (0.102)
1.92 (0.076)	2.16 (0.085)	2.40 (0.094)	2.64 (0.104)
1.96 (0.077)	2.20 (0.087)	2.44 (0.096)	

Thrust washers (for adjustment of distance between input shaft front bearing and thrust washer)

THICKNESS mm (in)	THICKNESS mm (in)
3.84 (0.151)	4.02 (0.158)
3.90 (0.154)	4.08 (0.161)
3.96 (0.156)	4.14 (0.163)

Snap rings (for input shaft 6th gear bushing end play adjustment)

THICKNESS mm (in)	THICKNESS mm (in)	THICKNESS mm (in)	THICKNESS mm (in)
1.71 (0.067)	1.86 (0.073)	2.01 (0.079)	2.16 (0.085)
1.76 (0.069)	1.91 (0.075)	2.06 (0.081)	2.21 (0.087)
1.81 (0.071)	1.96 (0.077)	2.11 (0.083)	2.26 (0.089)

NOTES