REAR AXLE

Click on the applicable bookmark to selected the required model year

REAR AXLE

CONTENTS

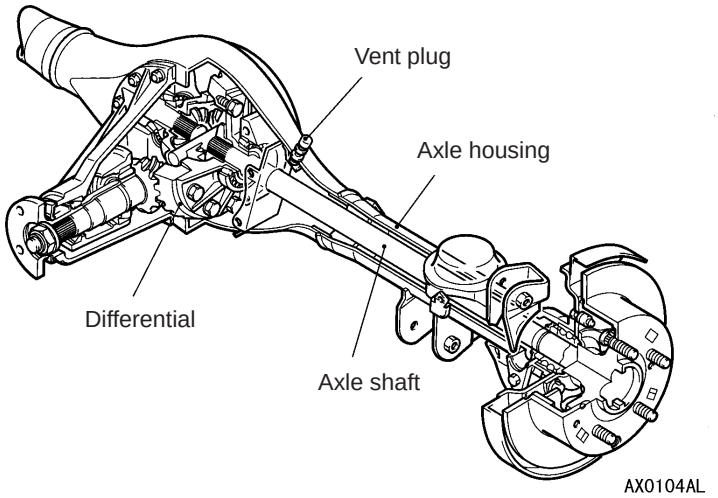
GENERAL INFORMATION

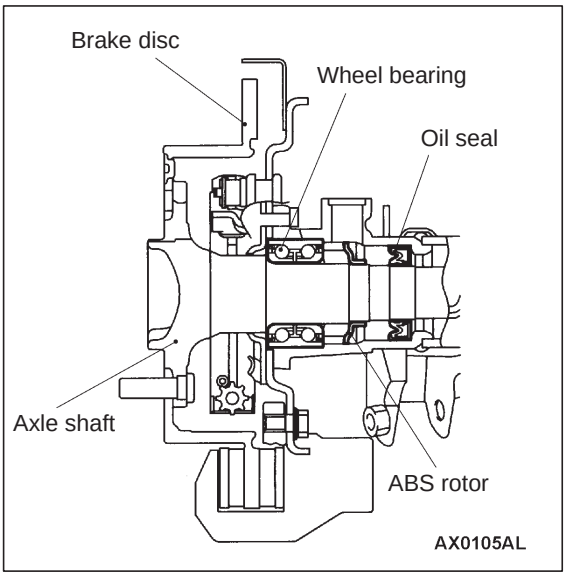
The rear axle is a banjo-type semi-floating type and provides the following characteristics:

- The rear wheel bearing is of an anti-mud enhanced type.
- In order to improve driveability at muddy road, helical LSD are available as optional equipment.
- For vehicles with ABS, the ABS rotor is press-fitted to the axle shaft.
- In order to improve stream-crossing performance, a vent plug is fitted to the upper part of the axle housing.

Item		Conventional differential	Helical LSD
Drive gear type		Hypoid gear	Hypoid gear
Reduction ratio		4.875	4.875
Limited slip differential type		–	Torque sensitive type
Differential gear type (Type × quantity)	Side gear	Straight bevel gear × 2	Helical gear × 2
	Pinion gear	Straight bevel gear × 2	Long pinion × 4, Short pinion × 4
Number of teeth	Drive gear	39	39
	Drive pinion	8	8
	Side gear	14	14
	Pinion gear	10	10
Bearing (O.D. × I.D.) mm	Side	80.0 × 45.2	80.0 × 45.2
	Front	68.3 × 30.2	68.3 × 30.2
	Rear	76.2 × 36.5	76.2 × 36.5

CONSTRUCTION DIAGRAM





SERVICE SPECIFICATIONS

Items			Standard value	Limit
Rear axle total backlash mm			–	4.2
Wheel bearing axial play mm			–	0.025
Final drive gear backlash mm			0.08 – 0.13	–
Drive gear runout mm			–	0.05
Differential gear backlash mm			0.01 – 0.25	0.2
Drive pinion turning torque Nm	Without oil seal	When replacing with a new bearing (with rust-prevention oil)	0.59 – 0.88	–
		When using a new bearing or when reusing (gear oil application)	0.39 – 0.49	–
	With oil seal	When replacing with a new bearing (with rust-prevention oil)	0.83 – 1.13	–
		When using a new bearing or when reusing (gear oil application)	0.64 – 0.74	–

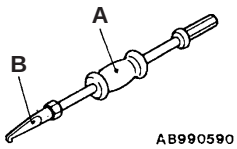
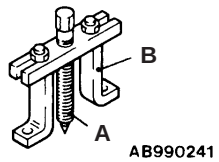
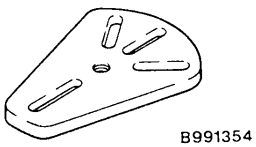
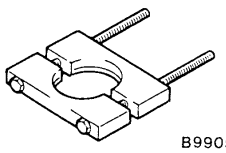
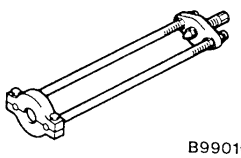
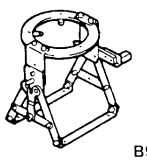
LUBRICANTS

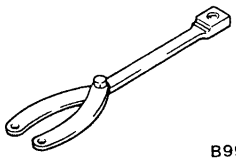
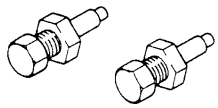
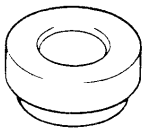
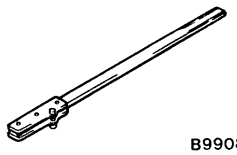
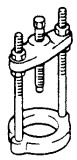
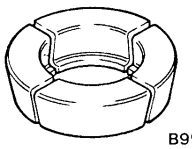
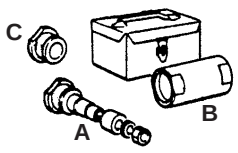
Items	Specified lubricant	Quantity
Gear oil	Hypoid gear oil API classification GL-5 or higher SAE viscosity No. 90, 80W	Approx. 1.7 ℓ

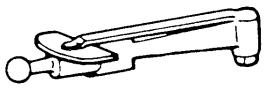
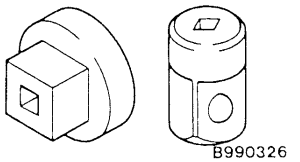
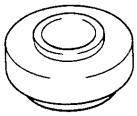
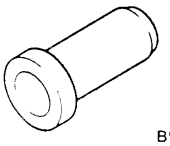
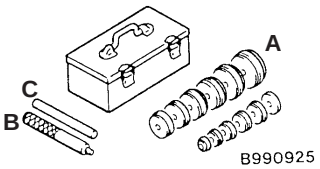
SEALANTS AND ADHESIVES

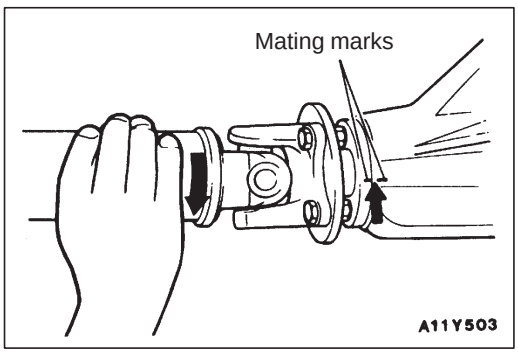
Items	Specified sealants and adhesives	Specified sealants and adhesives
Bearing case	3M ATD Part No. 8661 or equivalent	Semi-drying sealant
Axle housing (Differential carrier installation surface)		
Drive gear threaded holes	3M Stud Locking 4170 or equivalent	Anaerobic sealant

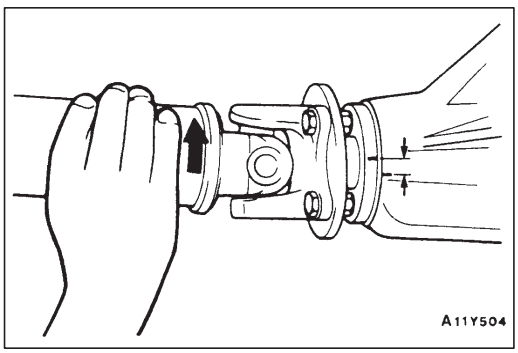
SPECIAL TOOLS

Tool	Number	Name	Use
	MB990590 A: MB990211 B: MB990212	Rear axle shaft oil seal remover A: Slide hammer B: Adapter	● Axle shaft removal ● Axle housing oil seal removal
	MB990241 A: MB990242 B: MB990244	Axle shaft puller A: Puller shaft B: Puller bar	Axle shaft removal
	MB991354	Puller body	
	MB990560	Rear axle shaft bearing remover	Rotor removal
	MB991284	Axle shaft bearing puller set	Axle shaft wheel bearing removal
	MB990909	Working base	Differential carrier fixing

Tool	Number	Name	Use
 B991367	MB991367	Special spanner	Side bearing nut removal and installation
 B991385	MB991385	Pin	
 B990810	MB990810	Side bearing puller	• Side bearing inner race removal • Companion flange removal
 B990811	MB990811	Side bearing cup	Side bearing inner race removal
 B990850	MB990850	End yoke holder	• Self-locking nut removal • Drive pinion turning torque adjustment
 B990339	MB990339	Bearing puller	Drive pinion rear bearing inner race removal
 B990374	MB990648	Bearing remover	
	MB991171 A: MB990819 B: MB991170 C: MB991169	Drive pinion setting gauge set A: Drive pinion gauge B: Cylinder gauge C: Drive pinion gauge attachment	Drive pinion height adjustment

Tool	Number	Name	Use
	MB990685	Torque wrench	Drive pinion turning torque adjustment
 B990326	MB990326	Preload socket	
 B990802	MB990802	Bearing installer	● Drive pinion rear bearing inner race press-fitting ● Side bearing inner race press-fitting
 B990727	MB990727	Oil seal installer	Drive pinion oil seal press-fitting
 B990925	MB991171 A: MB990926 to MB990937 B: MB990938 C: MB990939	Bearing and oil seal installer set A: Installer adapter B: Bar C: Brass bar	● Oil seal press-fitting ● Bearing inner and outer race removal and press-fitting For the details of installer, refer to GROUP 26 – Special Tool.



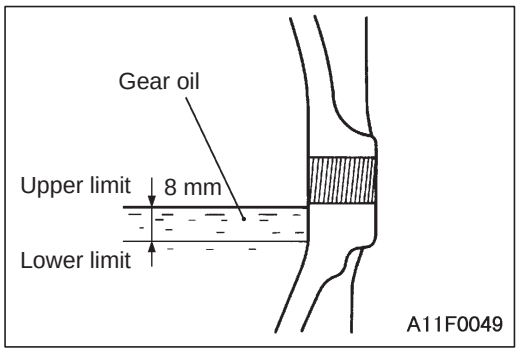


ON-VEHICLE SERVICE

REAR AXLE TOTAL BACKLASH CHECK

1. Place the transmission shift lever and the transfer shift lever in the neutral position, apply the parking brake and then jack up the vehicle.
2. Manually turn the propeller shaft clockwise as far as it will go and make mating marks on the companion flange dust cover and the differential carrier.
3. Manually turn the propeller shaft anti-clockwise as far as it will go and measure the movement of the mating marks.

   Limit: 4.2 mm
4. If the backlash exceeds the limit, remove the differential carrier assembly, and then carry out the following checks.
   Final drive gear backlash (Refer to P.27-16.)
   Differential gear backlash (Refer to P.27-16.)



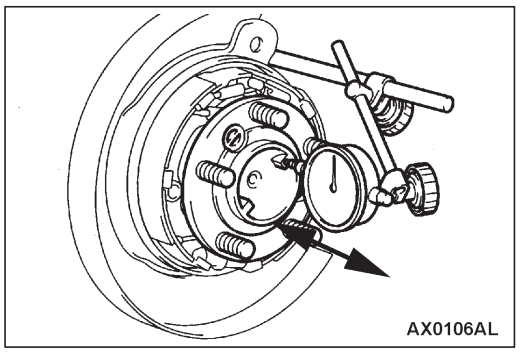
GEAR OIL LEVEL CHECK

1. Remove the filler plug.
2. Check that the gear oil level is between the upper limit (the bottom of a filler plug) and the lower limit.
3. If the gear oil level is not between the upper limit and the lower limit, add the specified gear oil until the gear oil level reaches the bottom of the filler plug.

   Specified gear oil:

   Hypoid gear oil API classification GL-5 or higher SAE viscosity No. 90, 80W
4. Install the filler plug, and then tighten it to the specified torque.

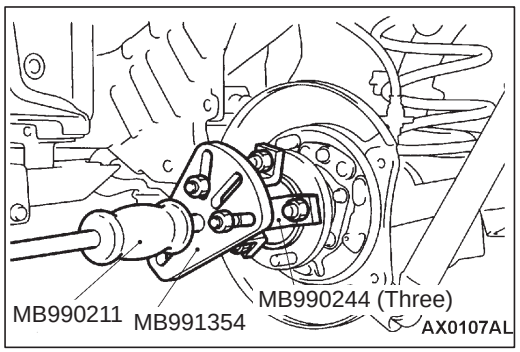
   Tightening torque: 49 Nm



WHEEL BEARING AXIAL PLAY CHECK

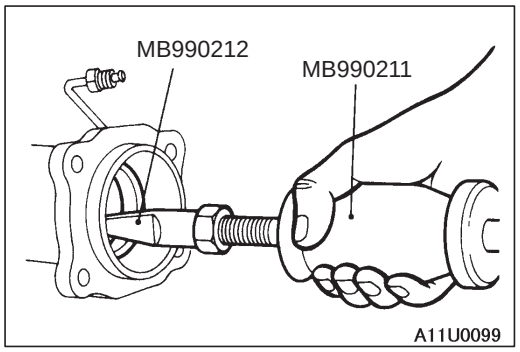
1. Place a dial gauge against the axle shaft as shown in the illustration, and then move the axle shaft in the axial direction and check the axial play.

   Limit: 0.025 mm
2. If the axial play exceeds the limit, check the backing plate to axle housing tightening torque. If it is correct, replace the bearing.

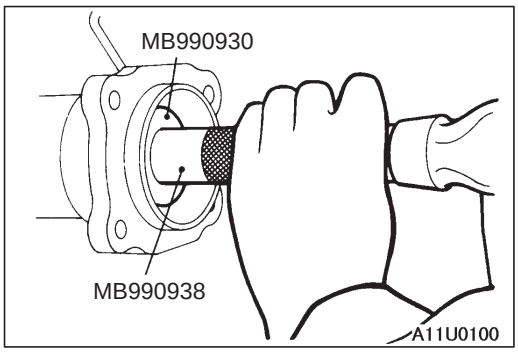


AXLE HOUSING OIL SEAL REPLACEMENT

1. Use the special tools to remove the axle shaft assembly. (Refer to P.27-11.)



2. Use the special tools to remove the oil seal.
3. Apply multipurpose grease to the oil seal contact surface of the axle housing.



4. Use the special tools to install a new oil seal in position.
5. Apply multipurpose grease to the lip section of the oil seal.
6. Install the axle shaft assembly. (Refer to P.27-11.)

AXLE ASSEMBLY

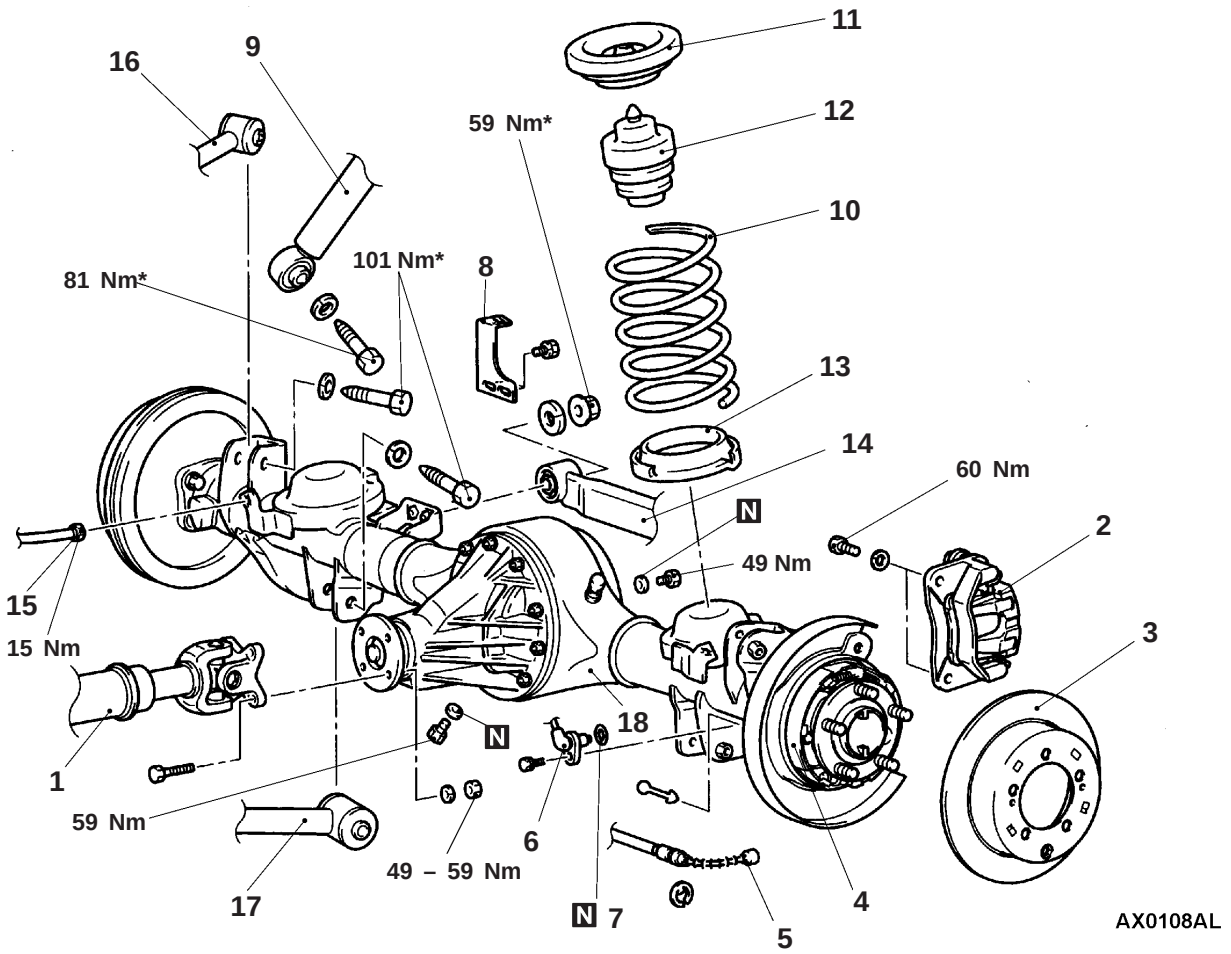
REMOVAL AND INSTALLATION

Caution

1. **To prevent bushings from breakage, the parts indicated by * should be temporarily tightened, and then fully tightened with the vehicle on the ground in the unladen condition.**
2. **Be careful not to strike the pole piece at the tip of the wheel speed sensor against the other parts when removing and installing the wheel speed sensor.**

Pre-removal Operation
- Brake Fluid Draining (Refer to GROUP 35A – On-vehicle Service.)
- Differential Gear Oil Draining

Post-installation Operation
- Brake Fluid Filling and Air Bleeding (Refer to GROUP 35A – On-vehicle Service.)
- Parking Brake Lever Stroke Adjustment (Refer to GROUP 36 – On-vehicle Service.)
- Differential Gear Oil Filling (Refer to P.27-7.)



Removal steps

◀A▶ 1. Rear propeller shaft connection
2. Caliper assembly
3. Brake disc
4. Parking brake shoe assembly (Refer to GROUP 36 – Parking Brake Drum.)
5. Parking brake cable connection
6. Wheel speed sensor <Vehicles with ABS>
7. O-ring <Vehicles with ABS>
8. Spring support
◀B▶ 9. Shock absorber connection
10. Coil spring (Refer to GROUP 34 – Rear Suspension Assembly.)
11. Silencer sheet
12. Bump stopper
13. Lower spring pad
◀C▶ 14. Lateral rod connection
15. Rear brake pipe and hose connection
16. Upper arm connection
17. Lower arm connection
◀D▶ 18. Axle assembly

REMOVAL SERVICE POINTS

◀A▶ REAR PROPELLER SHAFT DISCONNECTION

Make mating marks on the companion flange and the flange yoke, and then disconnect the propeller shaft from the companion flange.

Caution
Use a wire, etc. to suspend the propeller shaft from the body to prevent it from falling.

◀B▶ SHOCK ABSORBER DISCONNECTION

Support the axle housing with a jack before removing the shock absorber lower mounting nut.

◀C▶ LATERAL ROD DISCONNECTION

Disconnect the lateral rod from the axle assembly, and then use a wire, etc. to suspend the lateral rod to prevent it from falling.

◀D▶ AXLE ASSEMBLY REMOVAL

Take out the axle assembly toward the rear of vehicle.

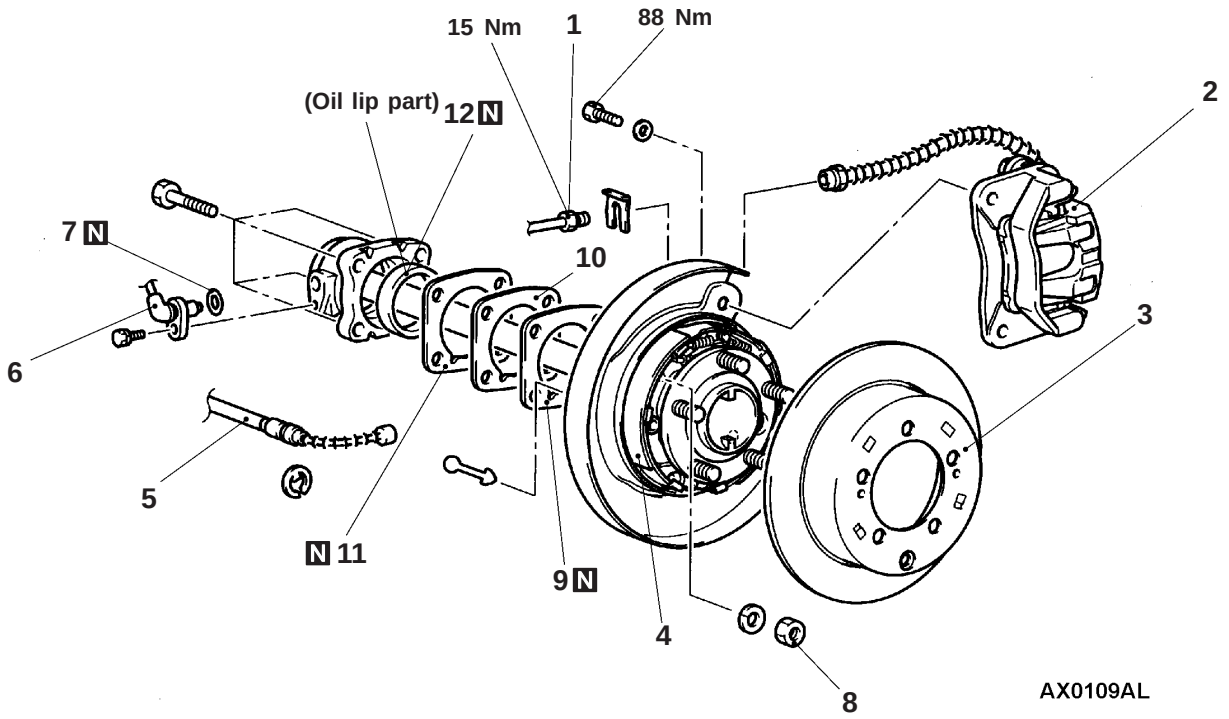
Caution
Take out the axle assembly carefully and slowly. The axle assembly is heavy and unstable and may fall.

AXLE SHAFT

REMOVAL AND INSTALLATION

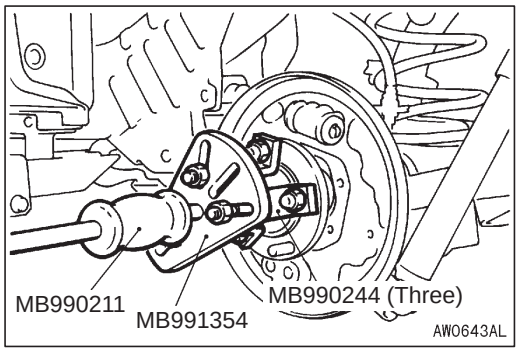
Pre-removal Operation
Brake Fluid Draining (Refer to GROUP 35A – On-vehicle Service.)

Post-installation Operation
- Brake Fluid Filling and Air Bleeding (Refer to GROUP 35A – On-vehicle Service.)
- Parking Brake Lever Stroke Adjustment (Refer to GROUP 36 – On-vehicle Service.)



Removal steps

1. Brake tube
2. Caliper assembly
3. Brake disc
4. Parking brake shoe (Refer to Group 36 – Parking brake drum.)
5. Parking brake cable connection
6. Wheel speed sensor <Vehicles with ABS>
7. O-ring <Vehicles with ABS>
- ◀A▶ 8. Axle shaft assembly
- ▶B◀ 9. Packing(s)
- ▶B◀ 10. Shim(s)
- ▶B◀ 11. Packing(s)
- ◀B▶ ▶A◀ 12. Oil seal

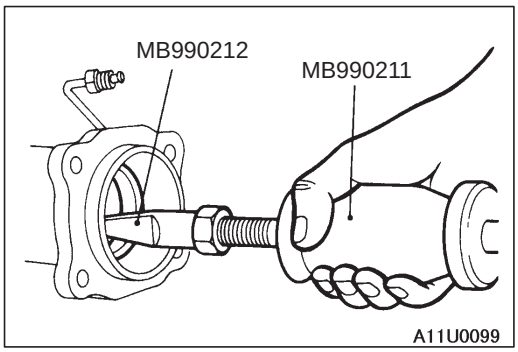


REMOVAL SERVICE POINTS

◀A▶ AXLE SHAFT ASSEMBLY REMOVAL

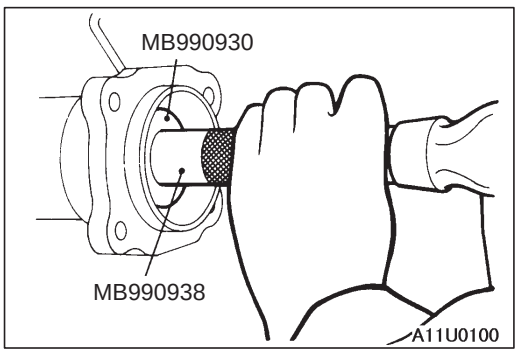
Use the special tools to remove the axle shaft assembly.

Caution
Be careful not to damage the oil seal when pulling the axle shaft.



◀B▶ OIL SEAL REMOVAL

Use the special tools to remove the oil seal.



INSTALLATION SERVICE POINTS

▶A◀ OIL SEAL INSTALLATION

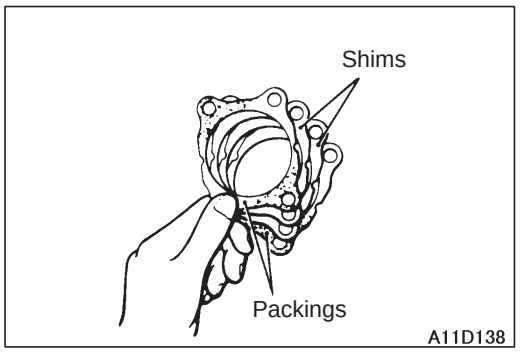
Use the special tools to tap in the oil seal.

▶B◀ PACKING/SHIM INSTALLATION

1. When only removing and reinstalling the axle shaft, the same thickness and number of shims as before should be used.
2. When replacing the axle shaft or the wheel bearing, select the packing(s) and shim(s) to adjust the bearing outer retainer tightening condition by the following procedure.
   (1) Insert the axle shaft assembly into the axle housing without packing(s) and shim(s). Temporarily tighten the installation nuts to half of specified torque (until the bearing outer race contacts the axle housing) evenly in diagonal order in two steps.
   (2) Use a thickness gauge to measure the clearance between the axle housing and the backing plate, and then select the packing(s) and shim(s) according to the following table.

   NOTE
   New packing is 0.27 mm to 0.33 mm in thickness, and new shim is 0.3 mm in thickness.

Clearance mm	Number of packing	Number of shim
0.2	0	0
0.2 – 0.5	1	0
0.5 – 0.75	2	0
0.75 – 1.0	2	1
1.0 – 1.25	2	2

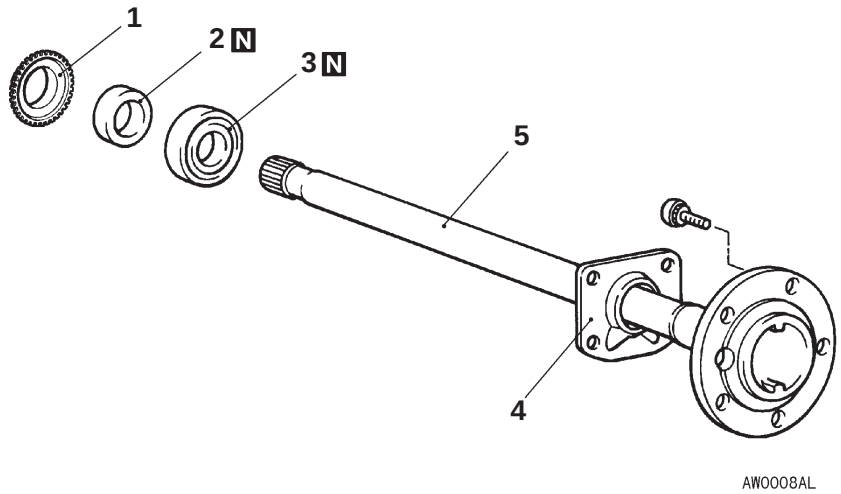


(3) If using the shim(s), sandwich the shim(s) between the packings as shown in the illustration.

3. Install the axle shaft assembly. Tighten the nuts in a diagonal order to the specified torque.

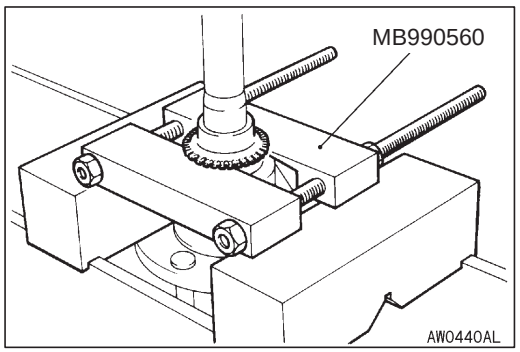
Tightening torque: 29 Nm

DISASSEMBLY AND REASSEMBLY



Disassembly steps

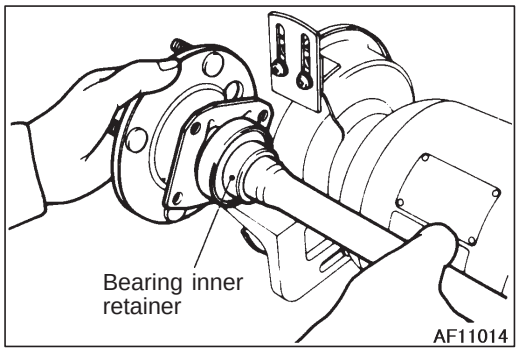
◀A▶ 1. ABS rotor <Vehicles with ABS>
◀B▶ ▶A◀ 2. Bearing inner retainer
◀C▶ ▶A◀ 3. Wheel bearing
▶A◀ 4. Bearing outer retainer
5. Axle shaft



DISASSEMBLY SERVICE POINTS

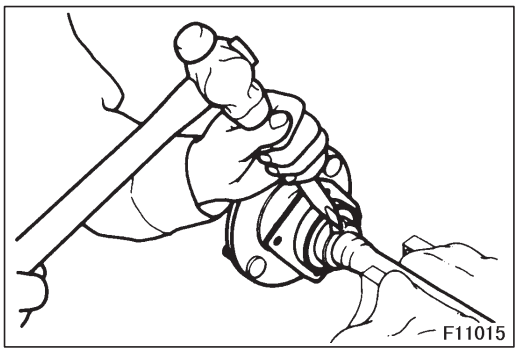
◀A▶ ABS ROTOR REMOVAL

Use the special tool to press out the ABS rotor.



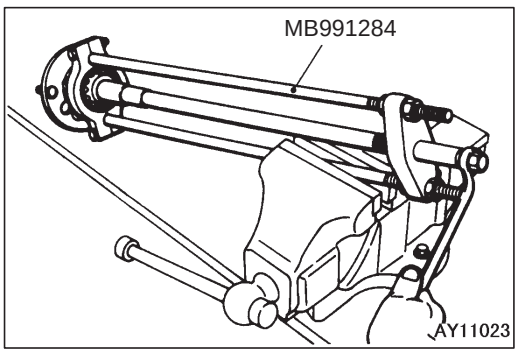
◀B▶ BEARING INNER RETAINER REMOVAL

1. Use a grinder to shave off a part of the bearing inner retainer until its thickness becomes 1 to 1.5 mm.



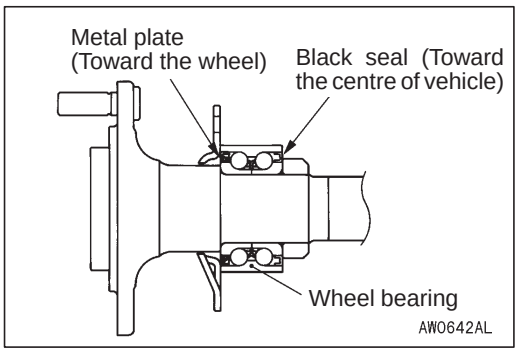
2. Use a chisel to cut the shaven part of the bearing inner retainer, and then remove the bearing inner retainer.

Caution
Be careful not to damage the axle shaft.



◀C▶ WHEEL BEARING REMOVAL

Use the special tool to remove the wheel bearing.



REASSEMBLY SERVICE POINT

▶A◀ BEARING OUTER RETAINER/WHEEL BEARING/ BEARING INNER RETAINER INSTALLATION

1. Install the bearing outer retainer, wheel bearing and the bearing inner retainer to the axle shaft in that order, as shown in the illustration.
2. Press-fit the bearing inner retainer to the axle shaft.

Caution
Install the wheel bearing as shown in the illustration.

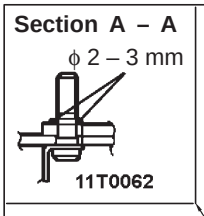
DIFFERENTIAL CARRIER

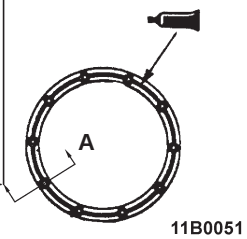
REMOVAL AND INSTALLATION

Pre-removal Operation
- Differential Gear Oil Draining
- Axle Shaft Removal (Refer to P.27-11.)
- Brake Fluid Draining (Refer to GROUP 35A – On-vehicle Service.)

Post-installation Operation
- Brake Fluid Filling and Air Bleeding (Refer to GROUP 35A – On-vehicle Service.)
- Axle Shaft Installation (Refer to P.27-11.)
- Differential Gear Oil Filling (Refer to P.27-7.)

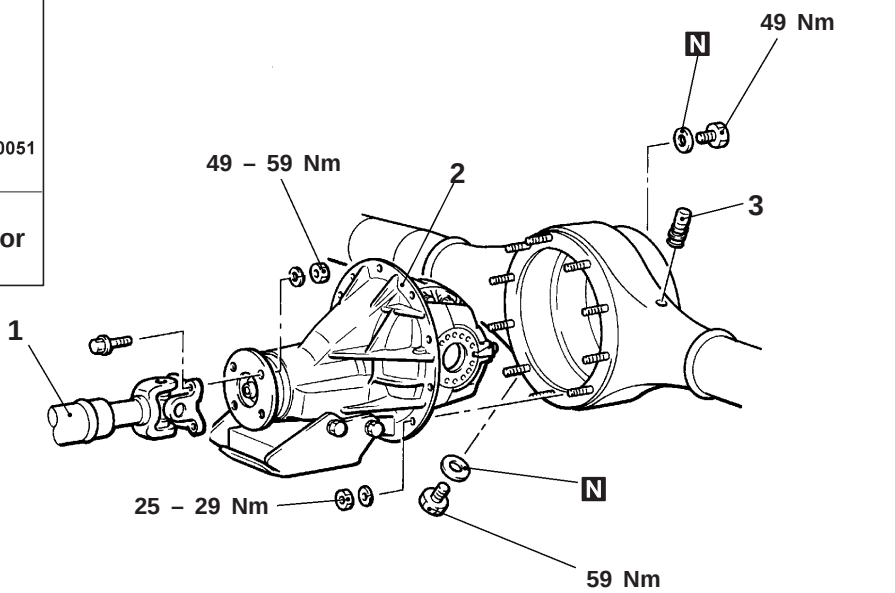
Section A – A





Flange surface of axle housing

Sealant:
3M ATD Part No. 8661 or equivalent



AW0714AL

Removal steps

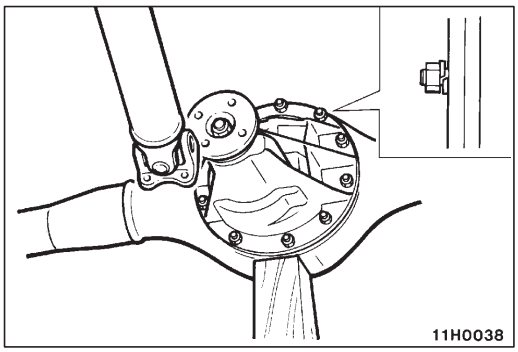
◀A▶ ▶A◀ ◀B▶
1. Rear propeller shaft connection
2. Differential carrier assembly
3. Vent plug

REMOVAL SERVICE POINTS

◀A▶ REAR PROPELLER SHAFT DISCONNECTION

Make mating marks on the companion flange and the flange yoke, and then disconnect the propeller shaft from the companion flange.

Caution
Use a wire, etc. to suspend the propeller shaft from the body to prevent it from falling.



◀B▶ DIFFERENTIAL CARRIER REMOVAL

Loosen the differential carrier mounting nuts to the end of each stud bolt, and then strike the lower part of differential carrier with a piece of timber several times to separate the differential carrier from the axle housing.

Caution

1. **Do not remove the differential carrier mounting nuts so that the differential carrier will not fall when separating it from the axle housing.**
2. **Do not strike the companion flange.**

INSTALLATION SERVICE POINT

▶A◀ REAR PROPELLER SHAFT CONNECTION

Connect the propeller shaft so that the mating marks on the flange yoke and the companion flange of differential carrier are aligned.

INSPECTION BEFORE DISASSEMBLY

For the inspection procedure except for the standard values below, refer to GROUP 26 – Inspection Before Disassembly.

FINAL DRIVE GEAR BACKLASH

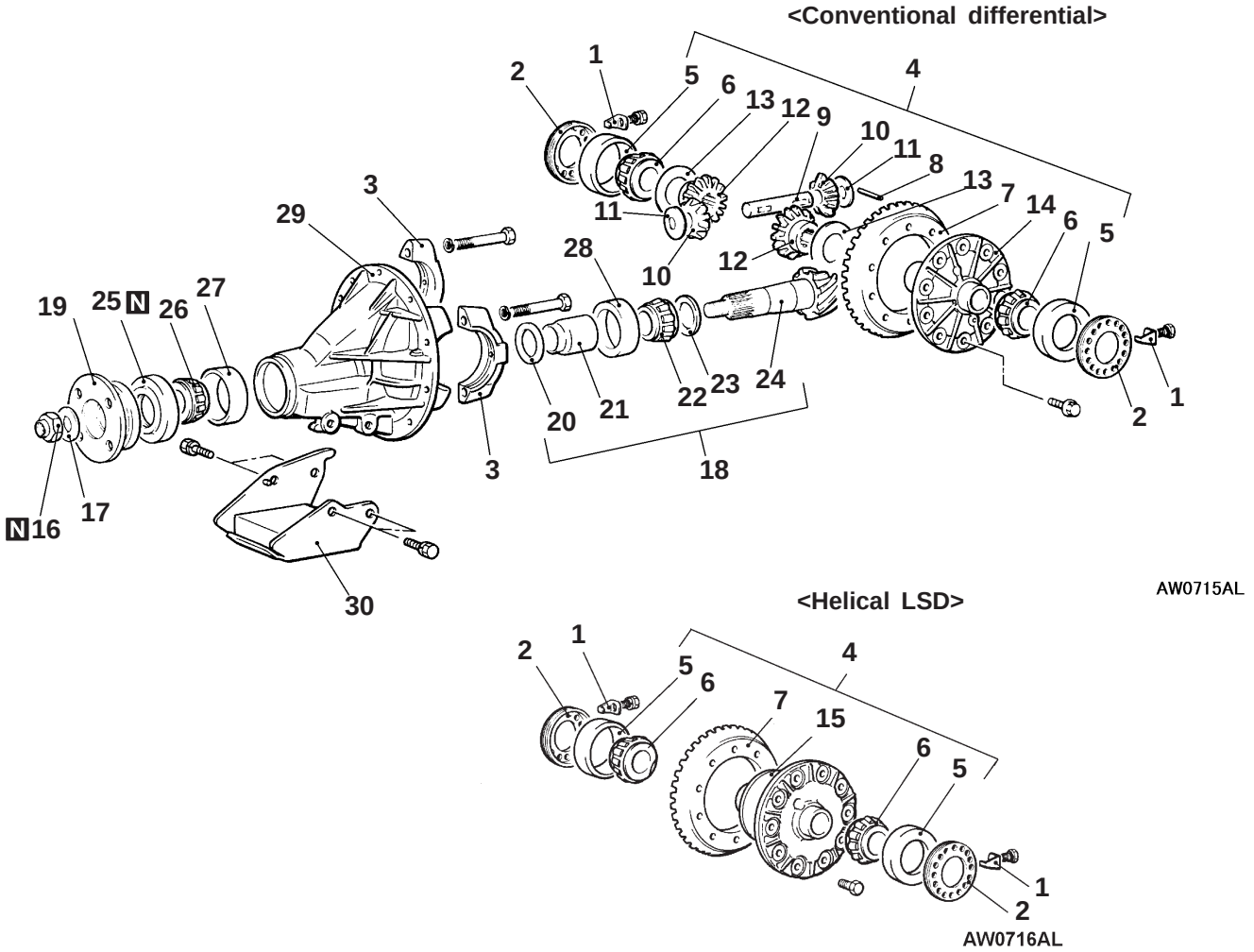
Standard value: 0.08 – 0.13 mm

DIFFERENTIAL GEAR BACKLASH

Standard value: 0.01 – 0.25 mm

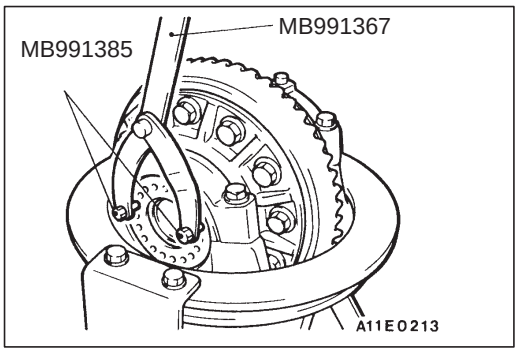
DISASSEMBLY

Caution
Do not disassemble the limited slip differential case assembly (helical gear type), because it is not possible to assemble.



Disassembly steps

- Inspection before disassembly (Refer to P.27-17.)
1. Locking plate
◀A▶ 2. Side bearing nut
3. Bearing cap
◀B▶ 4. Differential case assembly
5. Side bearing outer race
◀C▶ 6. Side bearing inner race
◀D▶ 7. Drive gear
8. Lock pin
9. Pinion shaft
10. Pinion gear
11. Pinion washer
12. Side gear
13. Side gear spacer
14. Differential case
15. Limited slip differential case assembly
◀E▶ 16. Self-locking nut
17. Washer
◀F▶ 18. Drive pinion assembly
◀F▶ 19. Companion flange
20. Drive pinion front shim (for drive pinion turning torque adjustment)
21. Drive pinion spacer
◀G▶ 22. Drive pinion rear bearing inner race
23. Drive pinion rear shim (for drive pinion height adjustment)
24. Drive pinion
◀H▶ 25. Oil seal
◀H▶ 26. Drive pinion front bearing inner race
◀H▶ 27. Drive pinion front bearing outer race
◀I▶ 28. Drive pinion rear bearing outer race
29. Differential carrier
30. Dynamic damper

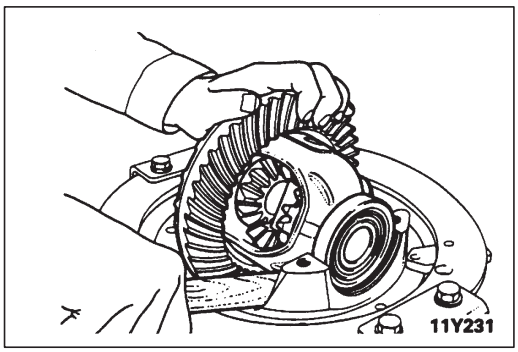


DISASSEMBLY SERVICE POINTS

◀A▶ SIDE BEARING NUT REMOVAL

Use the special tools to remove the side bearing nuts.

NOTE
Keep the right and left side bearing nuts separate, so that they will not be confused when assembling.

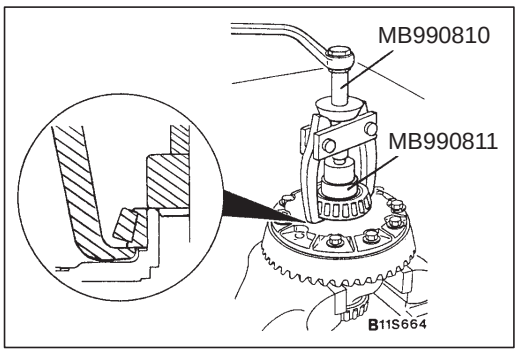


◀B▶ DIFFERENTIAL CASE ASSEMBLY REMOVAL

Use the handle of hammer to pry up the differential case assembly.

Caution
Remove the differential case assembly, slowly and carefully so that the side bearing outer races are not dropped.

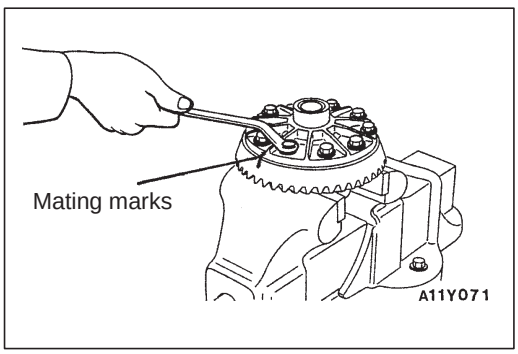
NOTE
Keep the right and left side bearing outer races separate, so that they will not be confused when assembling.



◀C▶ SIDE BEARING INNER RACE REMOVAL

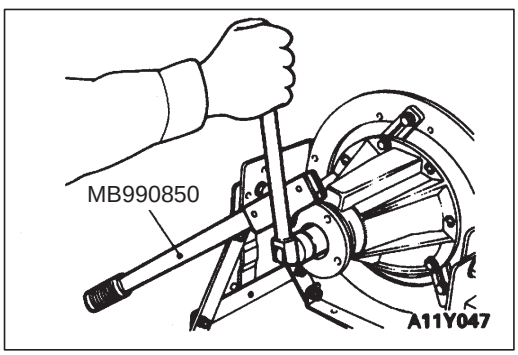
Use the special tools to pull out the side bearing inner race.

NOTE
Position the two prongs of the special tool under the bottom of the side bearing inner race through the two notches in the differential case.



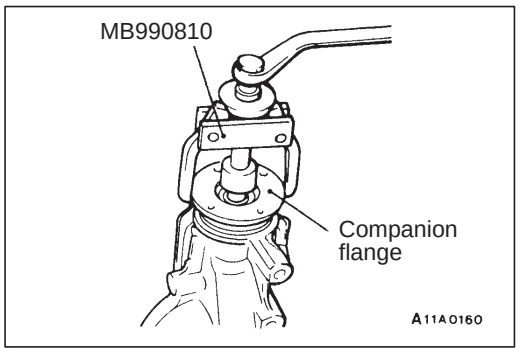
◀D▶ DRIVE GEAR REMOVAL

1. Make the mating marks to the differential case and the drive gear in order to position the drive gear correctly when assembling it.
2. Loosen the drive gear attaching bolts in diagonal sequence to remove the drive gear.



◀E▶ SELF-LOCKING NUT REMOVAL

Use the special tool to hold the companion flange, and then remove the self-locking nut.

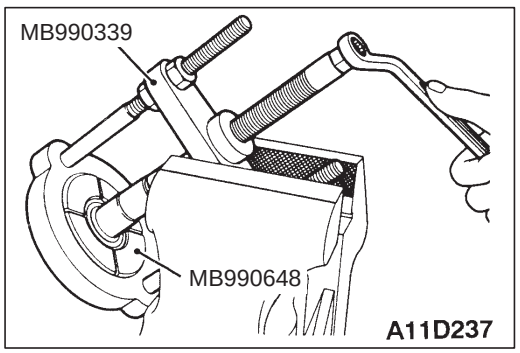


◀F▶ DRIVE PINION ASSEMBLY/COMPANION FLANGE REMOVAL

1. Make the mating marks on the drive pinion and the companion flange in order to position the companion flange correctly when assembling it.

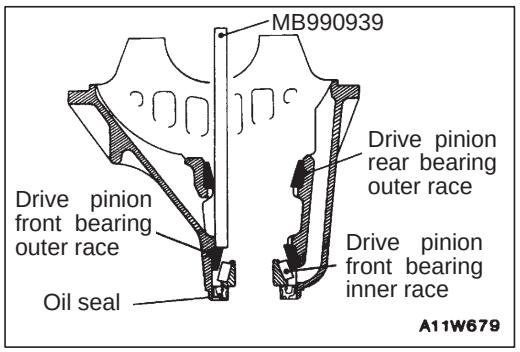
   Caution
   Do not make mating mark on the surface that contacts with the propeller shaft.

2. Use the special tool to remove the companion flange.



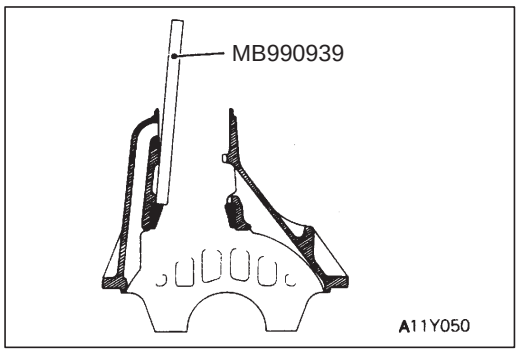
◀G▶ DRIVE PINION REAR BEARING INNER RACE REMOVAL

Use the special tools to remove the drive pinion rear bearing inner race.



◀H▶ OIL SEAL/DRIVE PINION FRONT BEARING INNER RACE/DRIVE PINION FRONT BEARING OUTER RACE REMOVAL

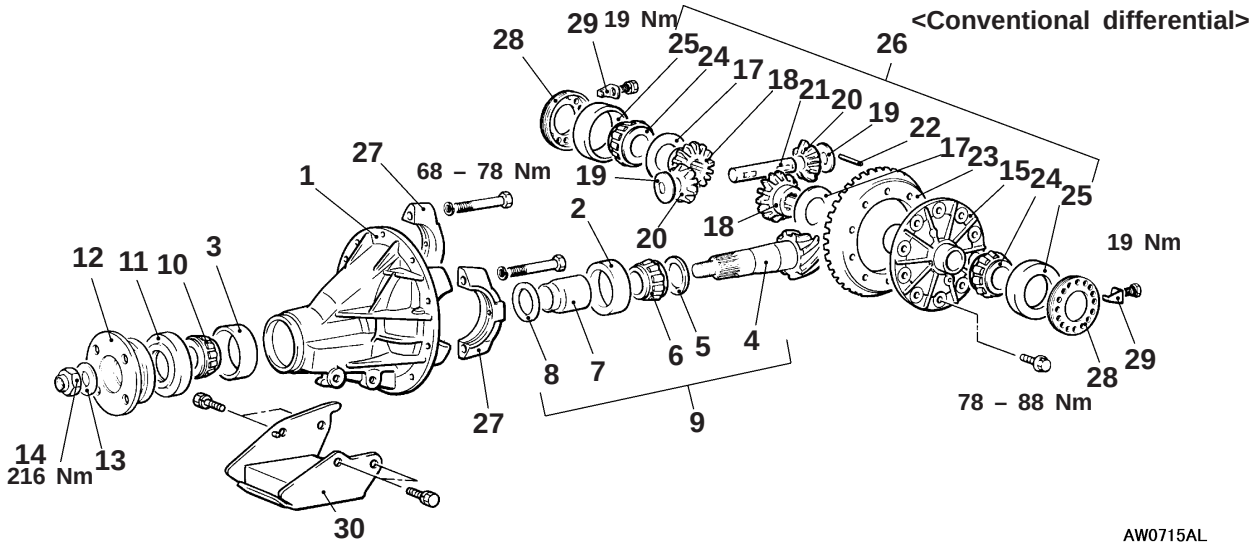
Use the special tool to remove the drive pinion front bearing outer race, drive pinion front bearing inner race and oil seal.

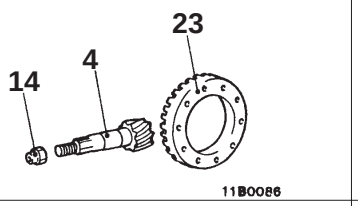


◀I▶ DRIVE PINION REAR BEARING OUTER RACE REMOVAL

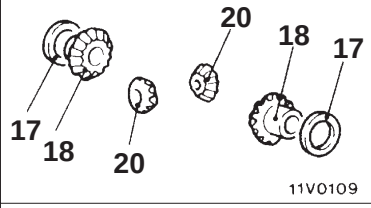
Use the special tool to remove the drive pinion rear bearing outer race.

REASSEMBLY



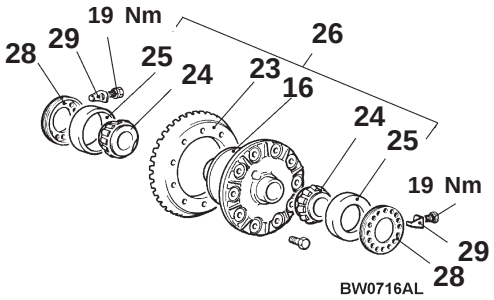


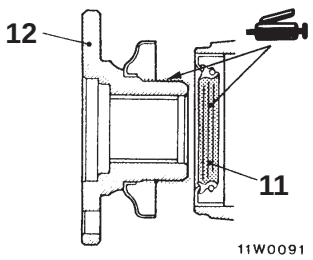
Differential gear set

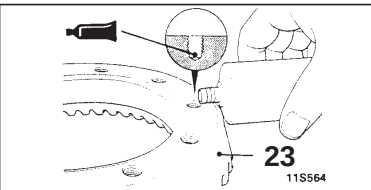


Final drive gear set

<Helical LSD>



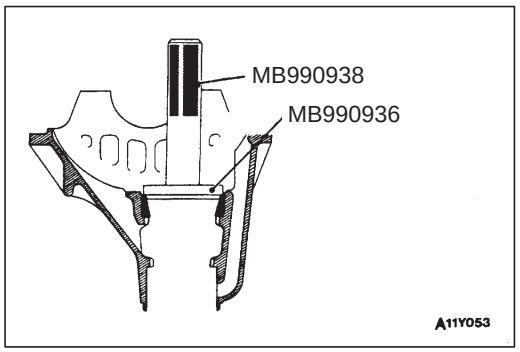




Adhesive: 3M Stud Locking 4170 or equivalent

Reassembly steps

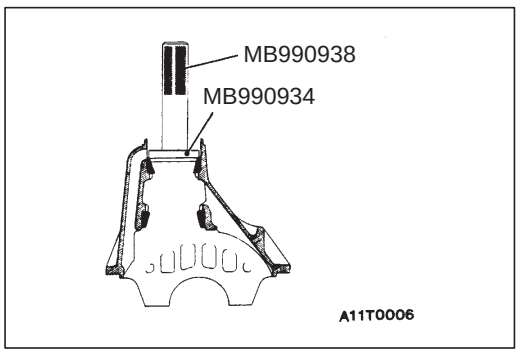
1. Differential carrier
- ▶A◀ 2. Drive pinion rear bearing outer race
- ▶B◀ 3. Drive pinion front bearing outer race
- ▶C◀ ● Drive pinion height adjustment
4. Drive pinion
5. Drive pinion rear shim (for drive pinion height adjustment)
6. Drive pinion rear bearing inner race
7. Drive pinion spacer
- ▶D◀ ● Drive pinion turning torque adjustment
8. Drive pinion front shim (for drive pinion turning torque adjustment)
9. Drive pinion assembly
10. Drive pinion front bearing inner race
11. Oil seal
12. Companion flange
13. Washer
14. Self-locking nut
15. Differential case
16. Limited slip differential case assembly
- ▶E◀ ● Differential gear backlash adjustment
17. Side gear spacer
18. Side gear
19. Pinion washer
20. Pinion gear
21. Pinion shaft
22. Lock pin
- ▶F◀ 23. Drive gear
- ▶G◀ 24. Side bearing inner race
25. Side bearing outer race
26. Differential case assembly
- ▶H◀ 27. Bearing cap
- ▶I◀ ● Drive gear backlash adjustment
28. Side bearing nut
29. Locking plate
30. Dynamic damper



REASSEMBLY SERVICE POINTS

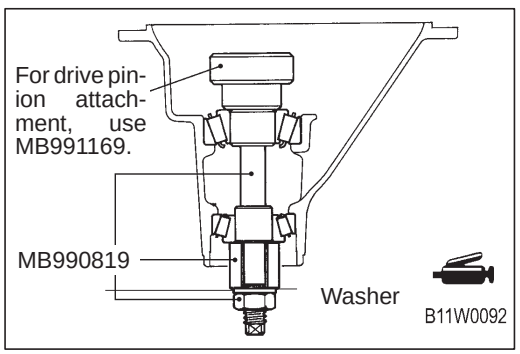
▶A◀ DRIVE PINION REAR BEARING OUTER RACE PRESS-FITTING

Use the special tools to tap in the drive pinion rear bearing outer race.



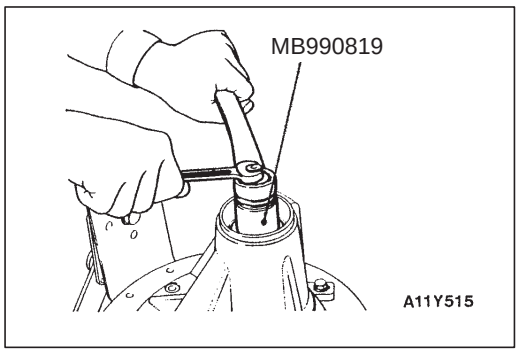
▶B◀ DRIVE PINION FRONT BEARING OUTER RACE PRESS-FITTING

Use the special tools to tap in the drive pinion front bearing outer race.



▶C◀ DRIVE PINION HEIGHT ADJUSTMENT

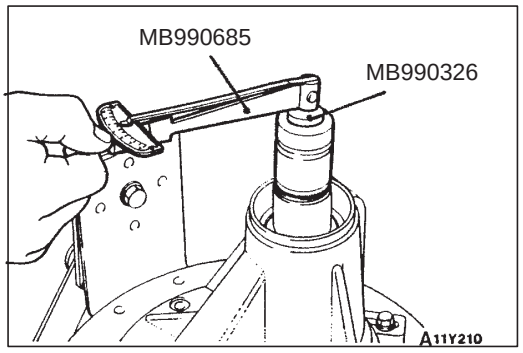
Adjust the drive pinion height by the following procedures:
1. Apply multipurpose grease to the washer of special tool.
2. Install the special tools and drive pinion front and rear bearing inner races to the differential carrier in the sequence shown in the illustration.

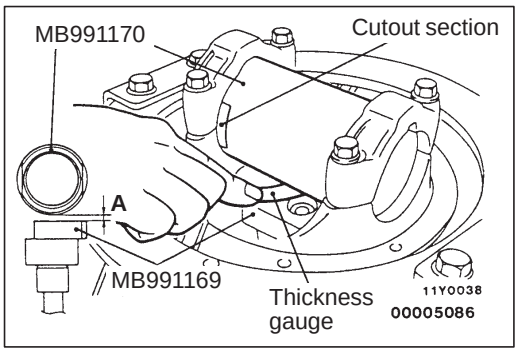


3. Gradually tighten the nut of the special tool while checking the drive pinion turning torque until the standard value of drive pinion turning torque (without oil seal) is obtained.

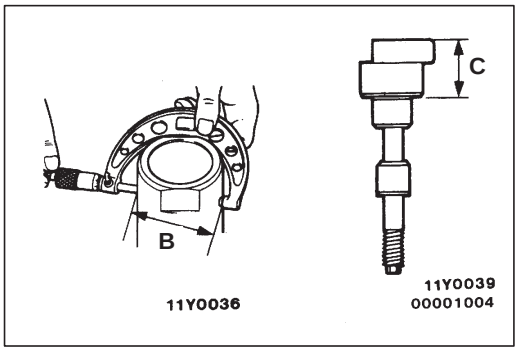
Standard value:

Bearing	Bearing lubrication	Turning torque Nm
New	None (with anti-rust agent)	0.59 – 0.88
New or reusing	Gear oil applied	0.39 – 0.49

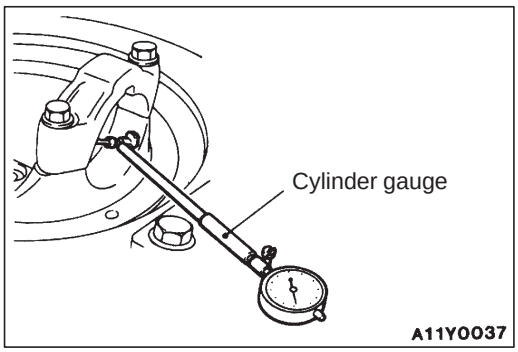




4. Clean the side bearing seat thoroughly.
5. Set the special tool on the side bearing seats, and position the cutout section as shown in the illustration. Then confirm that the special tool contacts with the side bearing seats completely.
6. Use a thickness gauge to measure the clearance (A) between the special tools.

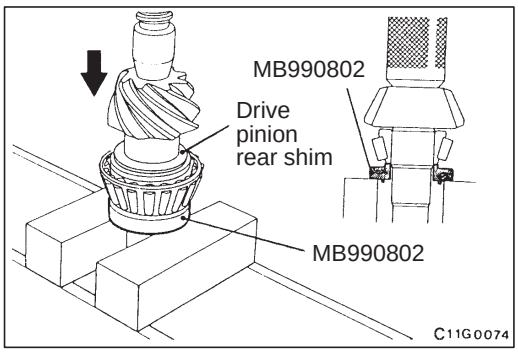


7. Remove special tools MB990720, MB990858, MB991169 and MB991170.
8. Use a micrometer to measure dimensions (B) and (C) of the special tools.



9. Install the bearing cap, and then use a cylinder gauge and the micrometer to measure the inside diameter (D) of the bearing cap as shown in the illustration.
10. Calculate the thickness (F) of the drive pinion rear shim from the following equation, and select the shim that is closest in thickness to this value.

    F = A + B + C – 1/2 D – 100



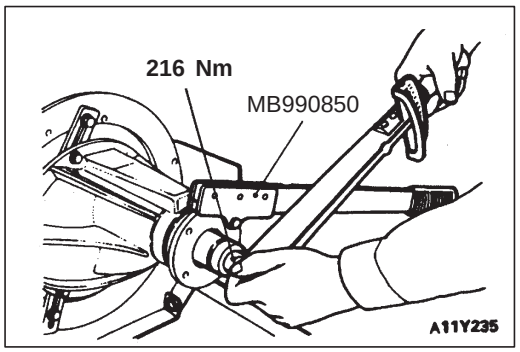
11. Fit the selected drive pinion rear shim(s) to the drive pinion, and press-fit the drive pinion rear bearing inner race by using the special tool.

▶D◀ DRIVE PINION TURNING TORQUE ADJUSTMENT

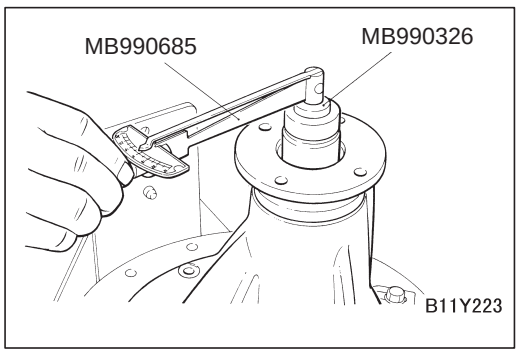
Adjust the drive pinion turning torque by using the following procedure:

1. Insert the drive pinion into the differential carrier, and then install the drive pinion spacer, the drive pinion front shim, the drive pinion front bearing inner race, and the companion flange in that order.

   NOTE
   Do not install the oil seal.



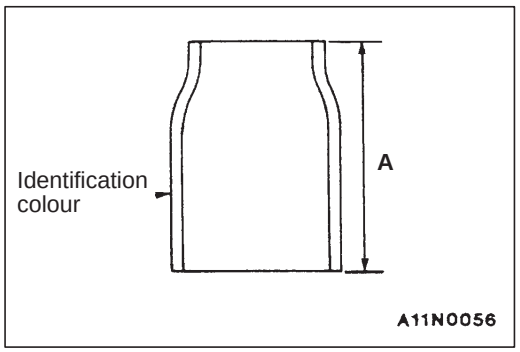
2. Use the special tool to hold the companion flange, and then tighten the companion flange self-locking nut to the specified torque.



3. Use the special tool to measure the drive pinion turning torque (without the oil seal).

Standard value:

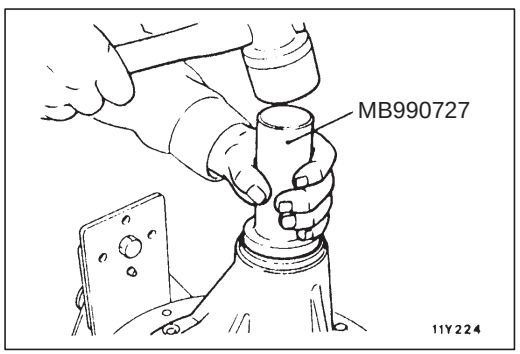
Bearing	Bearing lubrication	Turning torque Nm
New	None (with anti-rust agent)	0.59 – 0.88
New or reusing	Gear oil applied	0.39 – 0.49



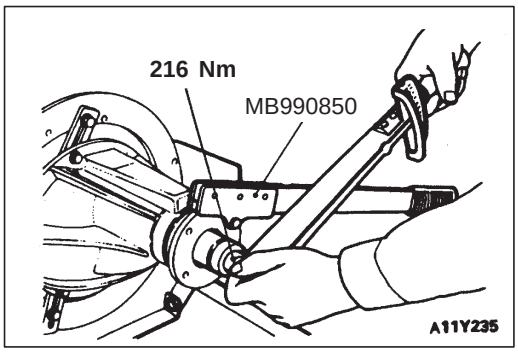
4. If the drive pinion turning torque is not within the standard value, adjust the turning torque by replacing the drive pinion front shim(s) or the drive pinion spacer.

NOTE
When selecting the drive pinion front shims, if the number of shims is large, reduce the number of shims to a minimum by selecting the drive pinion spacer.
Select either of the following drive pinion spacers.

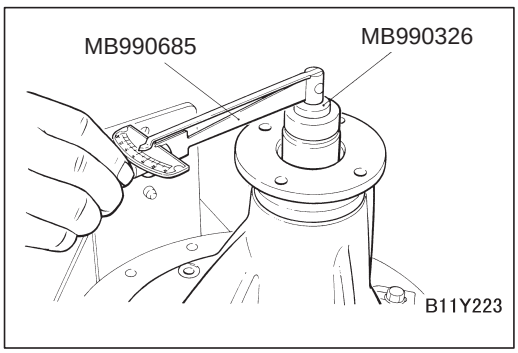
Height (A) of drive pinion spacer mm	Identification colour
56.67	–
57.01	White



5. Remove the companion flange and drive pinion once again. Insert the drive pinion front bearing inner race into the differential carrier, and then use the special tool to tap in the oil seal into the differential carrier.



6. Install the drive pinion assembly and the companion flange with mating marks properly aligned. Install the new self-locking nut, then use the special tool to hold the companion flange, and tighten the self-locking nut to the specified torque.

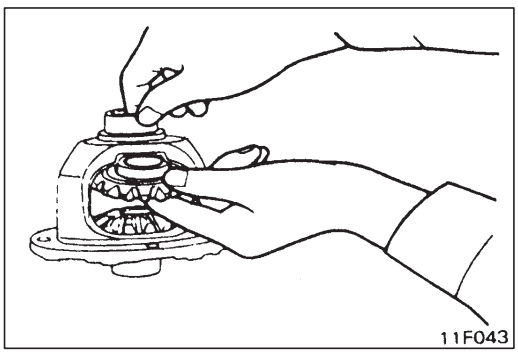


7. Use the special tool to check that the drive pinion turning torque (with the oil seal) is within the standard value.

   Standard value:

Bearing	Bearing lubrication	Turning torque Nm
New	None (with anti-rust agent)	0.83 – 1.13
New or reusing	Gear oil applied	0.64 – 0.74

8. If the drive pinion turning torque is not within the standard value, check the tightening torque of the companion flange self-locking nut and the oil seal installation condition.

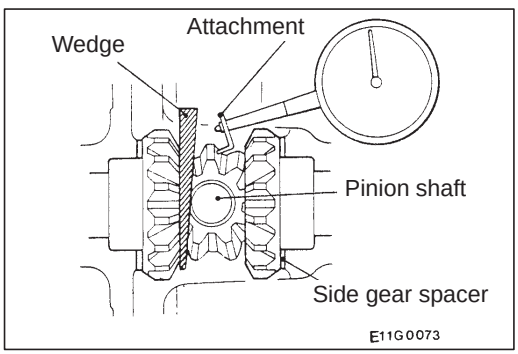


▶E◀ DIFFERENTIAL GEAR BACKLASH ADJUSTMENT

Adjust the differential gear backlash by the following procedures:

1. Assemble the side gears, side gear spacers, pinion gears and pinion washers into the differential case.
2. Temporarily install the pinion shaft.

   NOTE
   Do not drive in the lock pin yet.



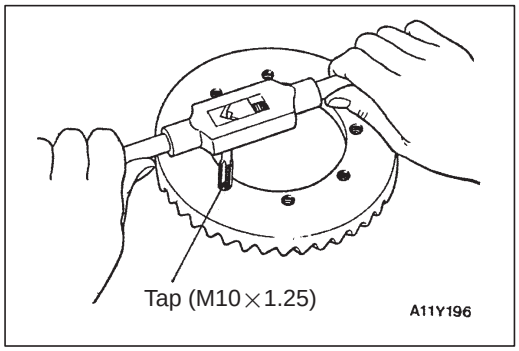
3. Insert a wooden wedge between the side gear and the pinion shaft to lock the side gear.
4. Measure the differential gear backlash with a dial indicator on the pinion gear.

   NOTE
   The measurement should be made for both pinion gears individually.

   Standard value: 0.01 – 0.25 mm

   Limit: 0.2 mm

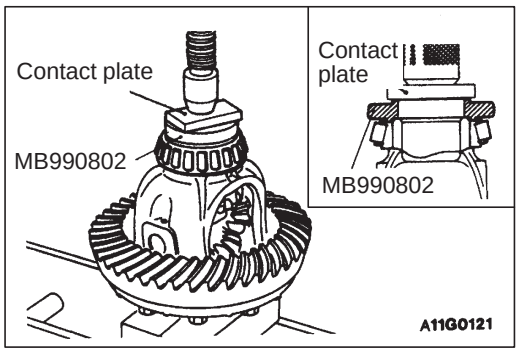
5. If the differential gear backlash exceeds the limit, adjust the backlash by replacing the side gear spacers.
6. If adjustment is not possible, replace the side gears and pinion gears as a set.
7. After adjustment, check that the backlash does not exceed the limit and the differential gear turns smoothly.



▶F◀ DRIVE GEAR INSTALLATION

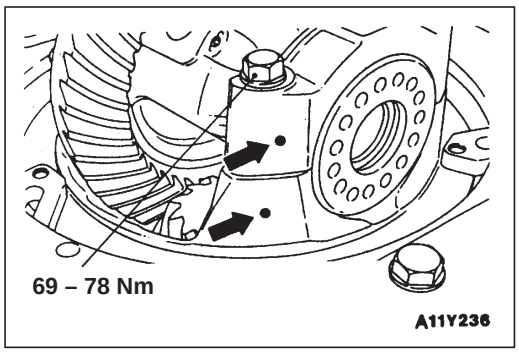
1. Clean the drive gear attaching bolts.
2. Remove the adhesive adhered to the threaded holes of the drive gear by using a tap, and then clean the threaded holes by applying compressed air.
3. Install the drive gear onto the differential case with the mating marks properly aligned.

   Tightening torque: 78 – 88 Nm



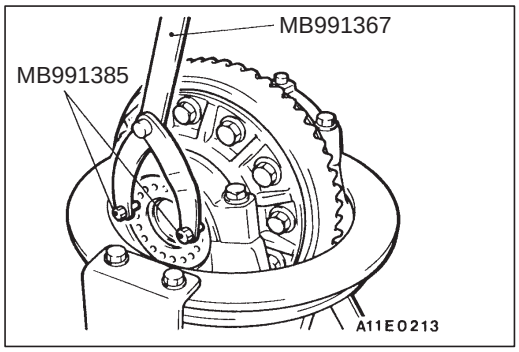
▶G◀ SIDE BEARING INNER RACE INSTALLATION

Use the special tool to press-fit the side bearing inner races into the differential case.



▶H◀ BEARING CAP INSTALLATION

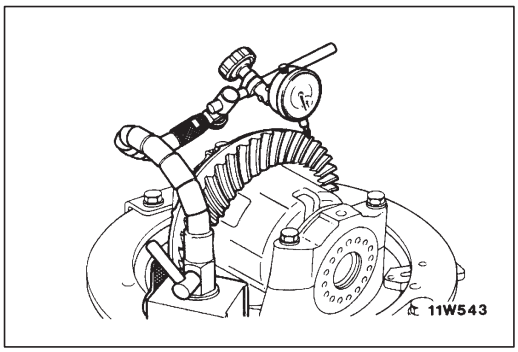
Install the bearing caps with the mating marks properly aligned, and then tighten the bearing caps installation bolts to the specified torque.



▶I◀ DRIVE GEAR BACKLASH ADJUSTMENT

Adjust the drive gear backlash by the following procedures:

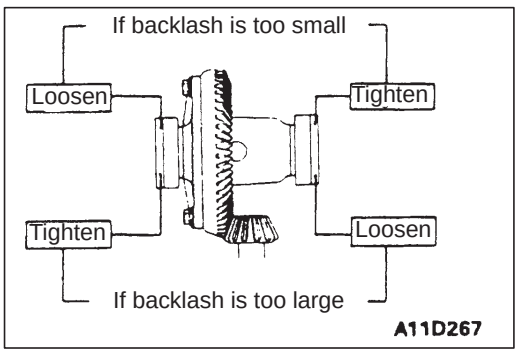
1. Use the special tools to tighten the side bearing nut to the position where a preload will start to be applied to the side bearing.



2. With the drive pinion locked in place, measure the drive gear backlash with a dial indicator on the drive gear.

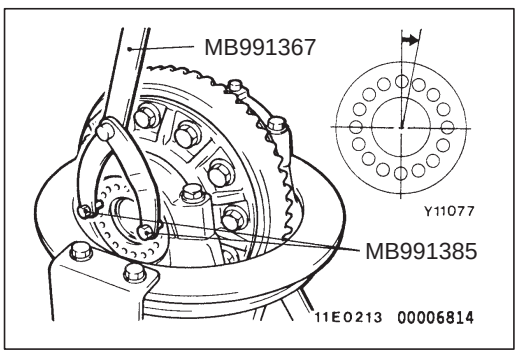
   NOTE
   Measure at four points or more on the circumference of the drive gear.

   Standard value: 0.08 – 0.13 mm

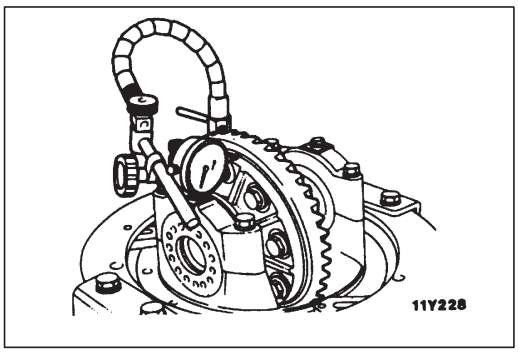


3. If the drive gear backlash is not within the standard value, use the special tools (MB991367 and MB991385) to tighten or loosen the side bearing nuts as shown in the illustration, in order to adjust the backlash.

   NOTE
   First loosen the side bearing nut, then tighten the side bearing nut the same amount as when it was loosened.



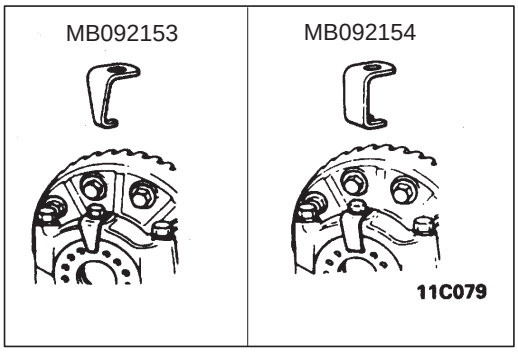
4. Use the special tools to turn down both right and left side bearing nuts on half the distance between centres of two neighboring holes, in order to apply the preload to the side bearing.



5. Measure the drive gear runout at the shoulder on the reverse side of the drive gear.

   Limit: 0.05 mm

6. If the drive gear runout exceeds the limit, reinstall by changing the phase of the drive gear and differential case, and remeasure.
7. If adjustment is not possible, replace the differential case or limited slip differential case, or replace the drive gear and drive pinion as a set.



8. Select either of the lock plates, and then install it.
9. Check the drive gear tooth contact. If poor contact is evident, adjust the drive gear tooth contact. (Refer to GROUP 26 – Differential carrier.)

GROUP 27
REAR AXLE

GENERAL

OUTLINE OF CHANGE

- The rear differential reduction gear ratio has been changed due to the introduction of 2000-mL engine.
- A rear stabilizer bracket has been added to the rear axle housing due to the introduction of the rear stabilizer bar. Because of this, the service procedure has been added. <5-door models>

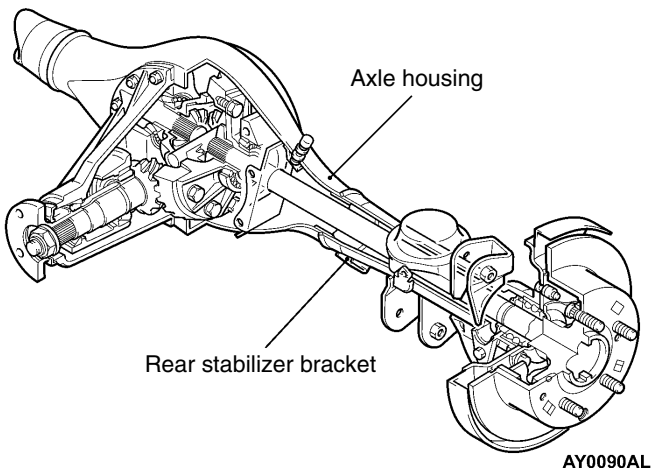
GENERAL INFORMATION

REAR DIFFERENTIAL

Item		New	Old
Reduction ratio		4.636*1, 4.900*2	4.875
Number of teeth	Drive gear	51*1, 49*2	39
	Drive pinion	11*1, 10*2	8

NOTE
*1: M/T
*2: A/T

CONSTRUCTION DIAGRAM



AXLE ASSEMBLY<5-DOOR MODELS>

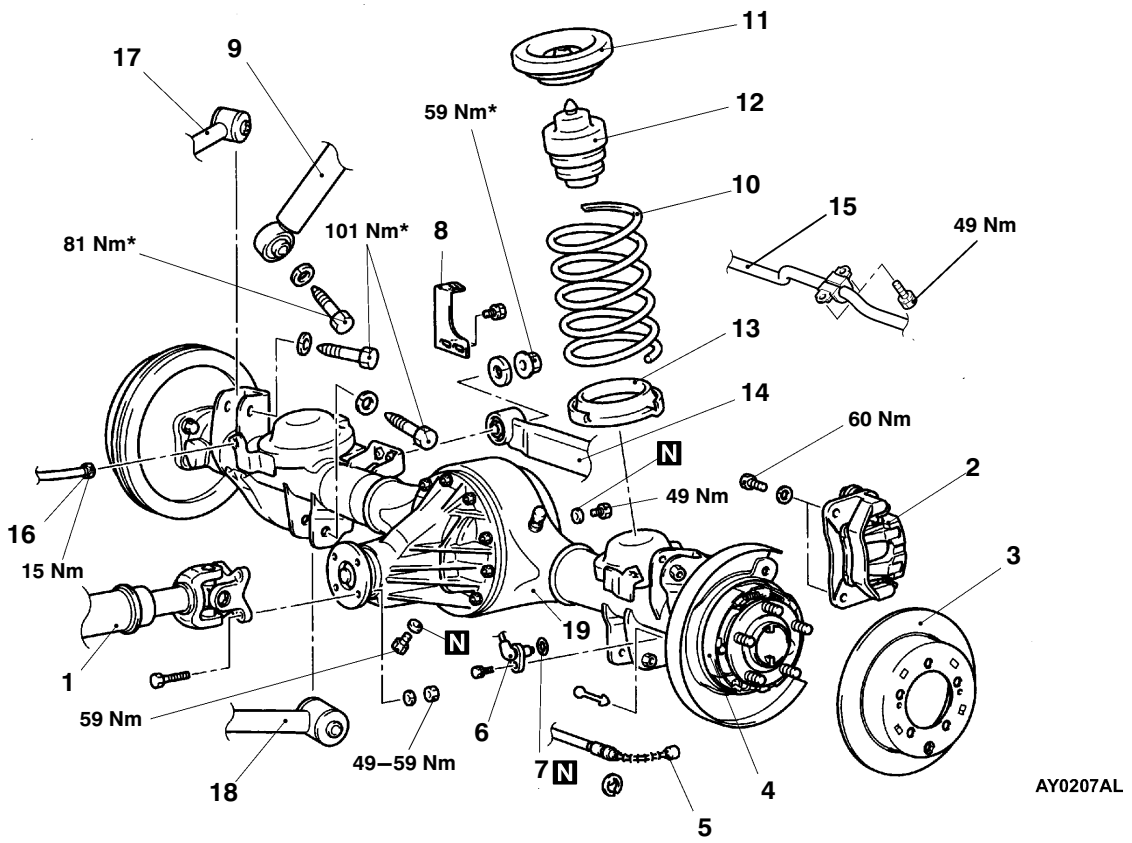
REMOVAL AND INSTALLATION

Caution

1. **To prevent bushings from breakage, the parts indicated by * should be temporarily tightened, and then fully tightened with the vehicle on the ground in the unladen condition.**
2. **Be careful not to strike the pole piece at the tip of the wheel speed sensor against the other parts when removing and installing the wheel speed sensor.**

Pre-removal Operation
- Brake Fluid Draining (Refer to GROUP 35A – On-vehicle Service.)
- Differential Gear Oil Draining

Post-installation Operation
- Brake Fluid Filling and Air Bleeding (Refer to GROUP 35A – On-vehicle Service.)
- Parking Brake Lever Stroke Adjustment (Refer to GROUP 36 – On-vehicle Service.)
- Differential Gear Oil Filling



Removal steps

◀A▶
1. Rear propeller shaft connection
2. Caliper assembly
3. Brake disc
4. Parking brake shoe assembly (Refer to GROUP 36 – Parking Brake Drum.)
5. Parking brake cable connection
6. Wheel speed sensor <Vehicles with ABS>
7. O-ring <Vehicles with ABS>
8. Spring support <Vehicles without ABS>

◀B▶
9. Shock absorber connection
10. Coil spring (Refer to GROUP 34 – Rear Suspension Assembly.)
11. Silencer sheet
12. Bump stopper
13. Lower spring pad

◀C▶
14. Lateral rod connection
15. Rear stabilizer bar connection (Refer to GROUP 34 – Rear stabilizer.)
16. Rear brake pipe and hose connection
17. Upper arm connection
18. Lower arm connection

◀D▶
19. Axle assembly

NOTE
The removal service points are the same as before.

REAR AXLE

CONTENTS

GENERAL

OUTLINE OF CHANGE

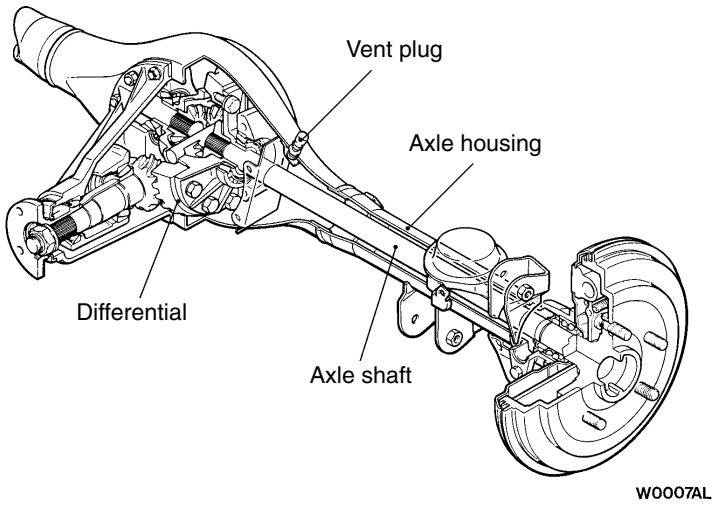
The service procedures have been established due to the addition of vehicles with 1800-MPI engine. The other service procedures are the same as before.

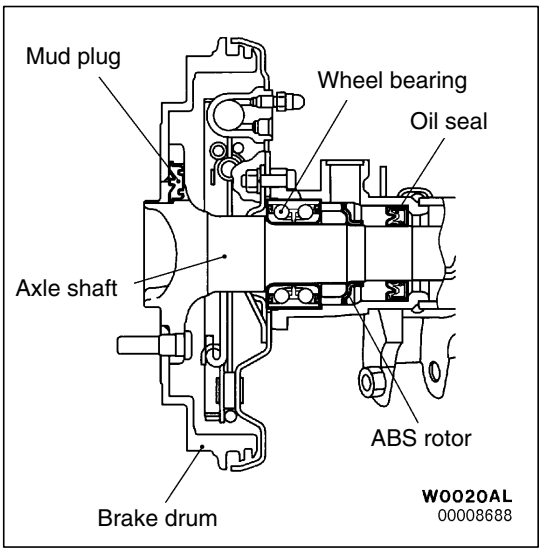
GENERAL INFORMATION

Item		1800-MPI
Reduction ratio		4.636*1, 5.111*2
Number of teeth	Drive gear	51*1, 46*2
	Drive pinion	11*1, 9*2
Bearing (O.D. × I.D.) mm	Side	73.4 × 41.3
	Front	64.3 × 30.2
	Rear	76.2 × 36.5

NOTE
*1: M/T
*2: A/T

CONSTRUCTION DIAGRAM





AXLE ASSEMBLY <1800-MPI>

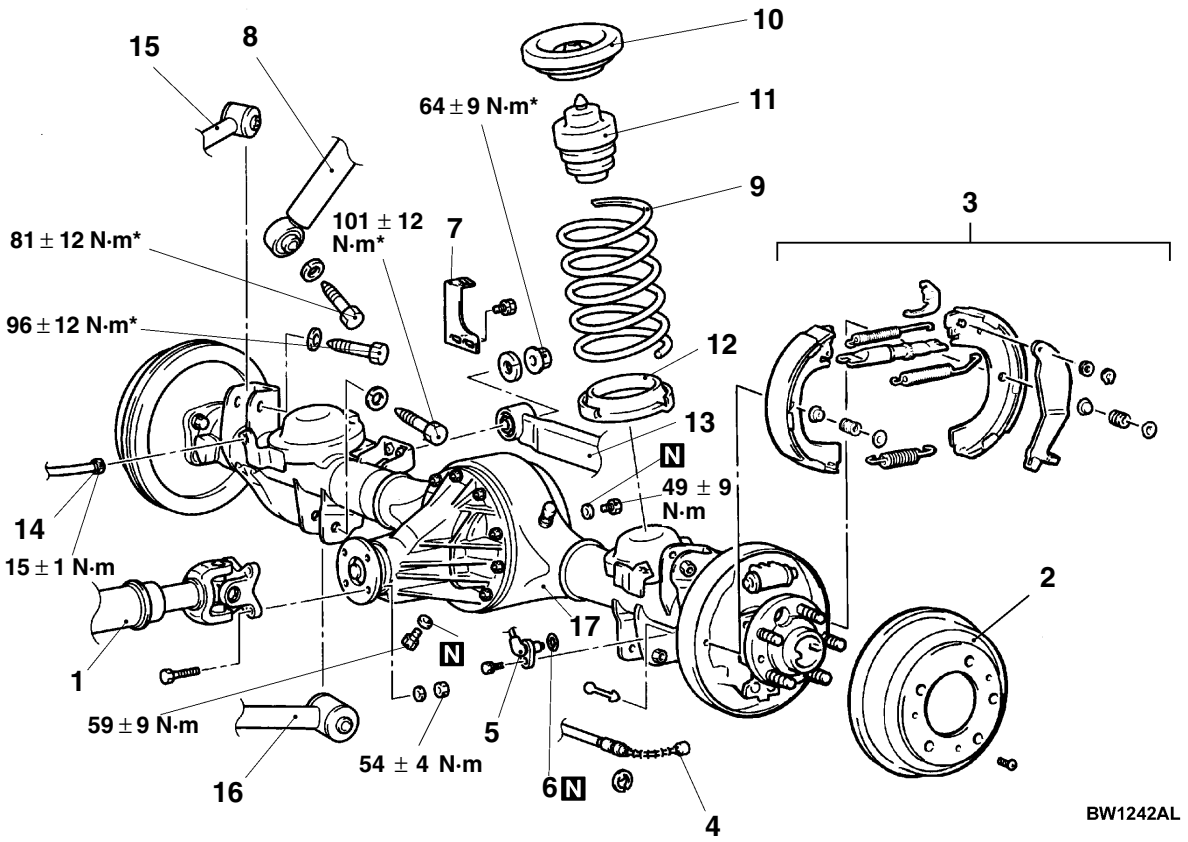
REMOVAL AND INSTALLATION

Caution

1. **To prevent bushings from breakage, the parts indicated by * should be temporarily tightened, and then fully tightened with the vehicle on the ground in the unladen condition.**
2. **Be careful not to strike the pole piece at the tip of the wheel speed sensor against the other parts when removing and installing the wheel speed sensor.**

Pre-removal Operation
- Brake Fluid Draining
- Differential Gear Oil Draining

Post-installation Operation
- Brake Fluid Filling and Air Bleeding
- Parking Brake Lever Stroke Adjustment(Refer to GROUP36 – On Vehicle Service.)
- Differential Gear Oil Filling



Removal steps

◀A▶
1. Rear propeller shaft connection
2. Brake drum
3. Shoe and lining assembly (Refer to GROUP 35A – Rear Drum Brake.)
4. Parking brake cable connection
5. Wheel speed sensor<Vehicles with ABS>
6. O-ring<Vehicles with ABS>
7. Load sensing proportioning valve spring support<Vehicles without ABS>

◀B▶
8. Shock absorber connection
9. Coil spring
10. Silencer sheet
11. Bump stopper
12. Lower spring pad

◀C▶
13. Lateral rod connection
14. Rear brake pipe and hose connection
15. Upper arm connection
16. Lower arm connection

◀D▶
17. Axle assembly

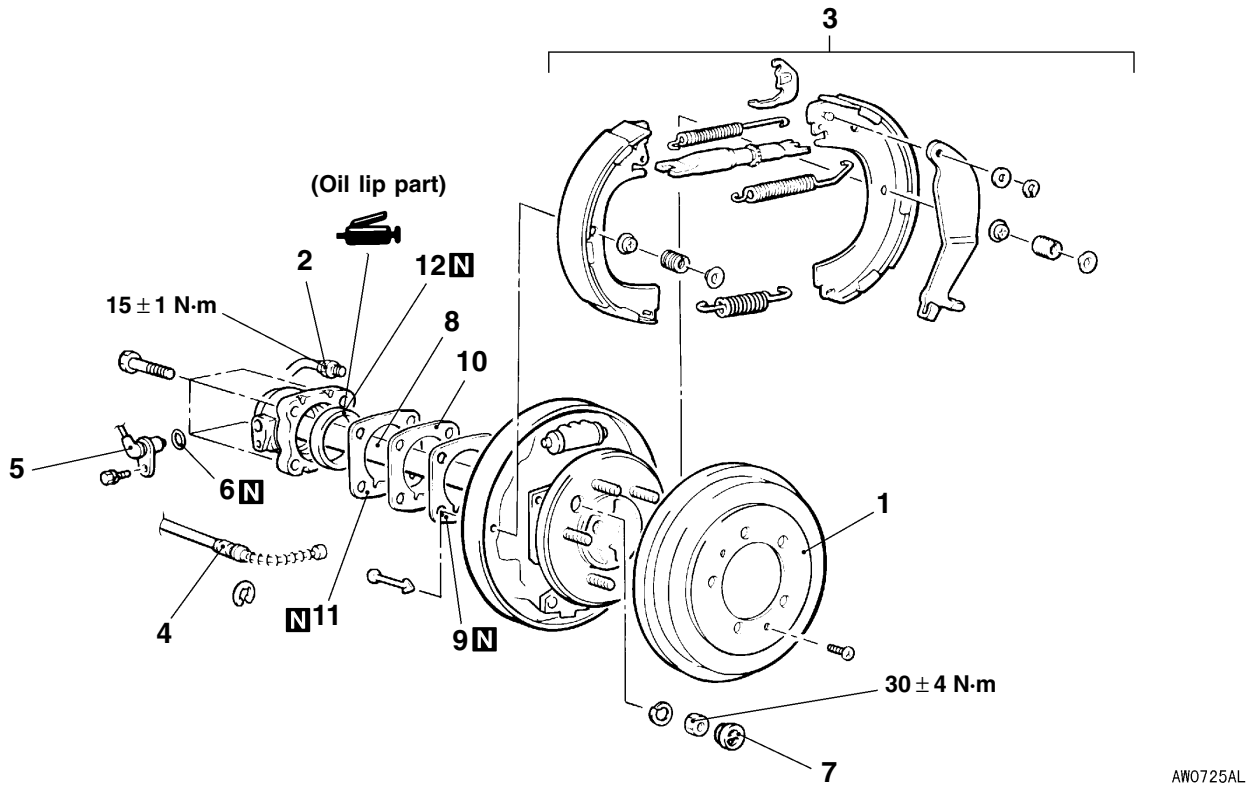
NOTE
Removal service points are the same as before.

AXLE SHAFT <1800-MPI>

REMOVAL AND INSTALLATION

Pre-removal Operation
Brake Fluid Draining

Post-installation Operation
- Brake Fluid Filling and Air Bleeding
- Parking Brake Lever Stroke Adjustment



Removal steps

1. Brake drum
2. Rear brake pipe connection
3. Shoe and lining assembly (Refer to GROUP 35A – Rear Drum Brake.)
4. Parking brake cable connection
5. Wheel speed sensor<Vehicles with ABS>
6. O-ring<Vehicles with ABS>
7. Plug

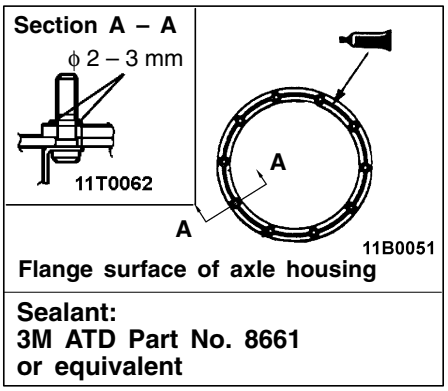
◀A▶ 8. Axle shaft assembly
▶B◀ 9. Packing(s)
▶B◀ 10. Shim(s)
▶B◀ 11. Packing(s)
◀B▶ ▶A◀ 12. Oil seal

NOTE
Removal and installation service points are the same as before.

DIFFERENTIAL CARRIER <1800-MPI>

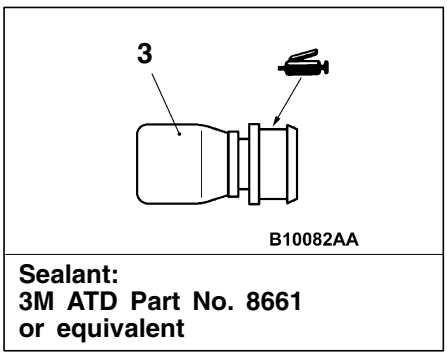
REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Differential Gear Oil Draining and Refilling
- Axle Shaft Removal and Installation (Refer to P.27-4.)
- Brake Fluid Draining, Refilling and Air Bleeding

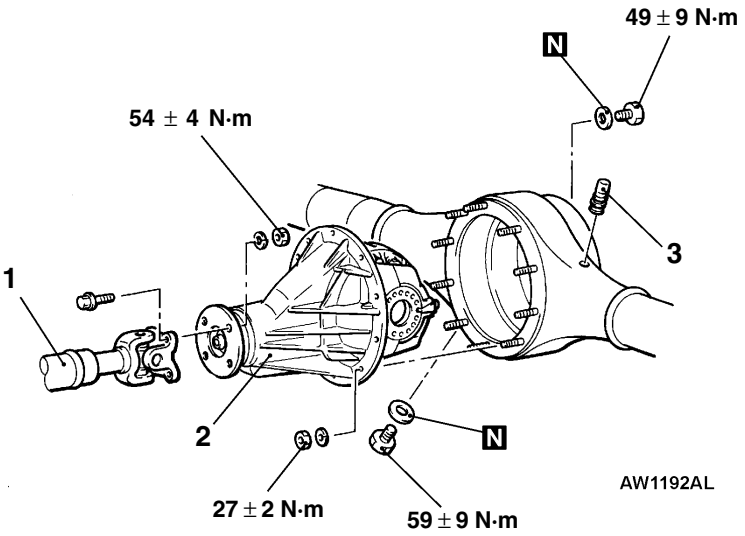


Flange surface of axle housing

Sealant:
3M ATD Part No. 8661
or equivalent



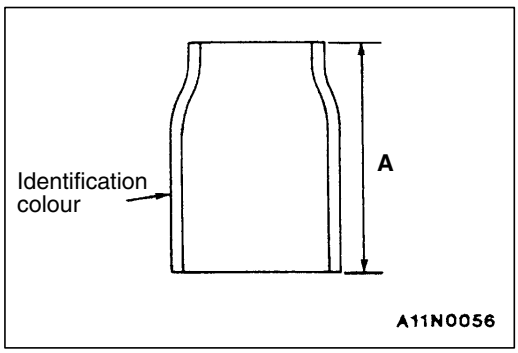
Sealant:
3M ATD Part No. 8661
or equivalent



Removal steps

◀A▶ ▶A◀ ◀B▶
1. Rear propeller shaft connection
2. Differential carrier assembly
3. Vent plug

NOTE
Removal and installation service points are the same as before.



DISASSEMBLY AND REASSEMBLY

REASSEMBLY SERVICE POINTS

Service procedures except following are the same as before.

▶C◀ DRIVE PINION HEIGHT ADJUSTMENT

If the drive pinion turning torque is not within the standard value, adjust the turning torque by replacing the drive pinion front shim(s) or the drive pinion spacer.

NOTE
When selecting the drive pinion front shims, if the number of shims is large, reduce the number of shims to a minimum by selecting the drive pinion spacer.
Select either of the following drive pinion spacers.

Height (A) of drive pinion spacer mm	Identification colour
46.67	White
47.01	–