REAR AXLE

CONTENTS

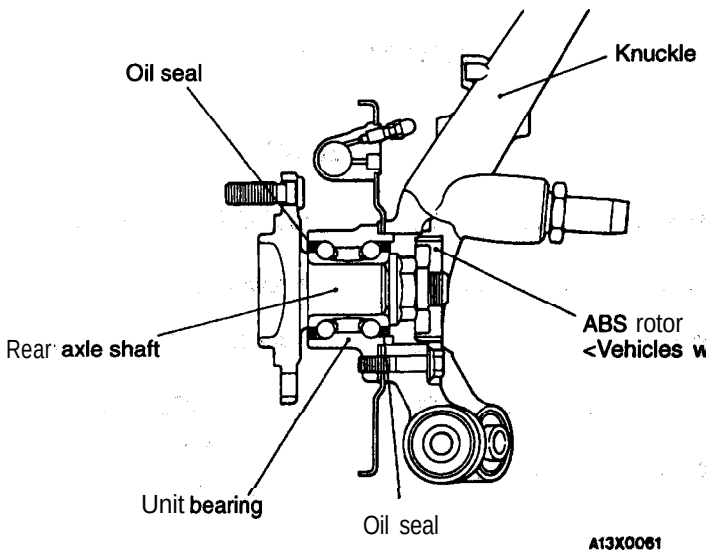
27109000062

REAR AXLE <FWD>

27100010064

GENERAL INFORMATION

The rear axle consists of a knuckle, rear hub, unit bearing and axle shaft. The unit bearing is press-fitted to the rear axle shaft and bolted to the knuckle. Also, the unit bearing utilizes the same type of double row angular contact ball bearing as does the front axle. On, vehicles with ABS, a ABS rotor for detecting the vehicle speed is located on the rear axle shaft, and a speed sensor is located on the knuckle.



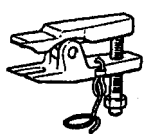
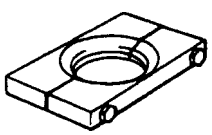
SERVICE SPECIFICATIONS

27100030077

Items	Limit
Wheel bearing end play mm (in.)	0.05 (.002)
Wheel bearing rotary-sliding resistance N (lbs.)	18 (3.9)

SPECIAL TOOLS

27100060069

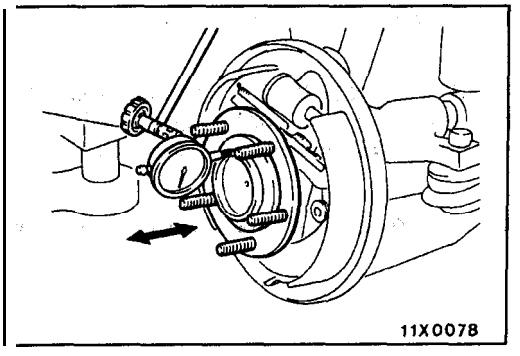
Tool	Tool number and name	Supersession	Application
	MB991113 Steering linkage puller	MB991113-01	Toe' control arm ball joint and knuckle removal'
	MB991248 Inner shaft remover	–	ABS rotor removal (Vehicles with ABS)

TSB Revision

TROUBLESHOOTING

27100070048

Symptom	Probable cause	Remedy
Abnormal sound	Loose wheel nuts	Tighten
	Damaged or worn wheel bearings	Replace
	Bent *or* distorted brake discs	



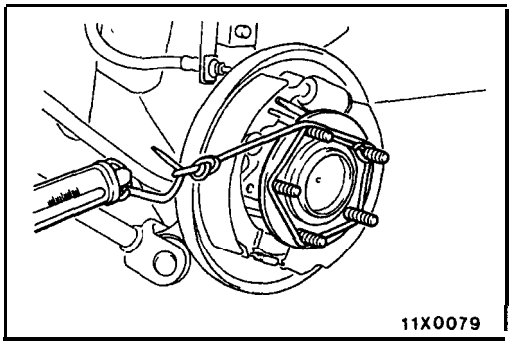
ON-VEHICLE SERVICE

27100090044

WHEEL BEARING END PLAY CHECK

1. Release the parking brake:
2. Remove the brake drum.
3. For vehicles with rear disc brake, remove the caliper assembly and the brake disc.
4. Check the bearing's end play
   Place a dial gauge against the hub surface; then move the hub in the axial direction and check whether or not there is end play.

   Limit: 0.05 mm (.002 in.)
5. If the play exceeds the limit value, replace the rear hub assembly.



REAR HUB ROTARY-SLIDING RESISTANCE CHECK

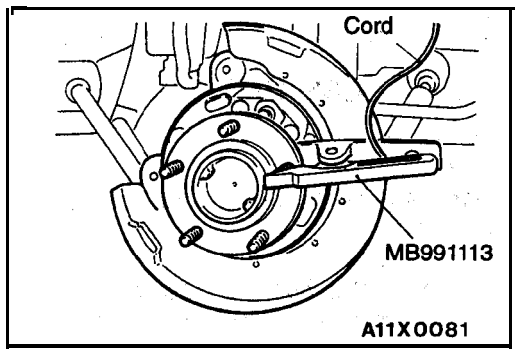
27100110061

1. Release the parking brake.
2. Remove the brake drum.
3. For vehicles with rear disc brake, remove the caliper assembly and the brake disc.
4. After turning the hub a few times to seat the bearing, wind a rope around the hub bolt and turn the hub by pulling at a 90° angle with a spring scale. Measure to determine whether or not the rotary-sliding resistance of the rear hub is at the limit value.

   Limit: 18 N (3.9 lbs.) or less
5. If the rotary-sliding resistance exceeds the limit value, replace the rear hub assembly.

HUB BOLT REPLACEMENT 27100100051

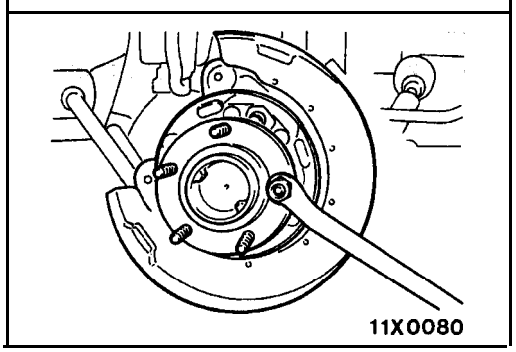
1. Remove the caliper assembly and support it with wire so that it does not fall.
2. Remove the brake drum and- brake disc.
3. For vehicles with disc brakes;' remove the shoe and lining assembly.



4. Pull the hub bolt out using the special tool.

NOTE
For vehicles with drum brakes, the hub bolts should be removed near the retainer spring installation position in order to maintain enough clearance for removal.

Caution
Be sure to tie the cord of the special tool to a nearby part.



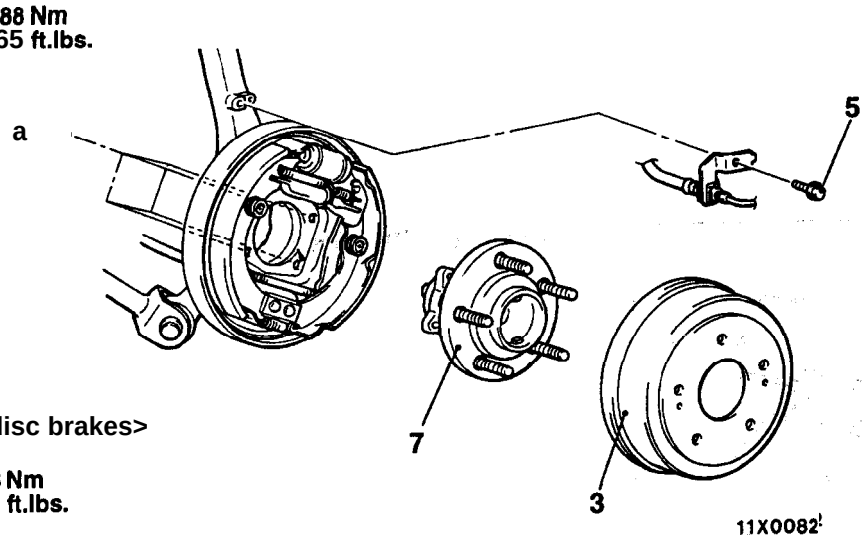
5. Use the wheel nuts to securely install the new hub bolts, while being careful of the serrations of the hub bolts and hub.

REAR HUB ASSEMBLY

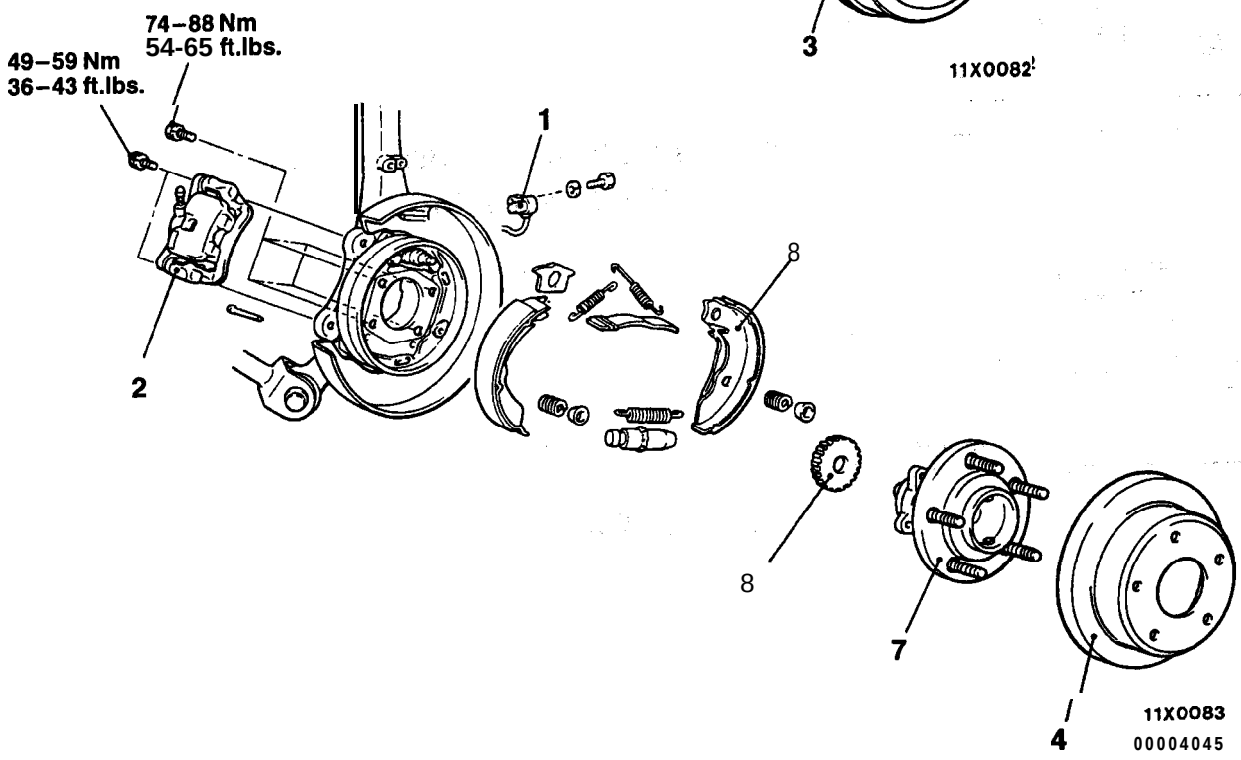
27100200072

REMOVAL AND INSTALLATION

<Vehicles with drum brakes>



<Vehicles with disc brakes>



Removal steps

1. Rear wheel speed sensor <Vehicles with ABS> (Refer to GROUP 35B – Wheel Speed Sensor.)
◀A▶ 2. Caliper assembly
3. Brake drum
4. Brake disc
5. Clip mounting bolt
6. Shoe and lining assembly (Refer to GROUP 36 – Parking Brake <Drum-in-disc brakes>.)
7. Rear hub assembly
◀B▶ ▶A◀ 8. ABS rotor<Vehicles with ABS>

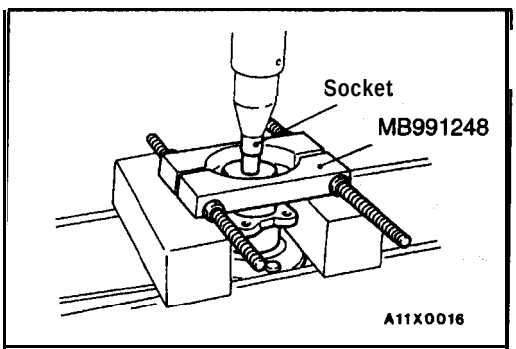
Caution
The rear hub assembly should not be disassembled.

TSB Revision

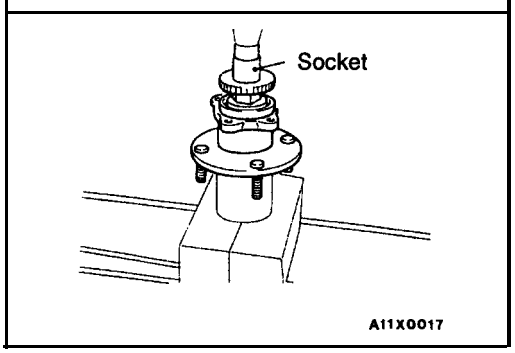
REMOVAL SERVICE POINTS

◀A▶ CALIPER ASSEMBLY REMOVAL

Remove the caliper assembly and suspend it.



◀B▶ ABS ROTOR REMOVAL



INSTALLATION SERVICE POINT

▶A◀ ABS ROTOR INSTALLATION

INSPECTION

27100210105

- Check the oil seal for crack or damage.
- Check the ABS rotor for chipped teeth.

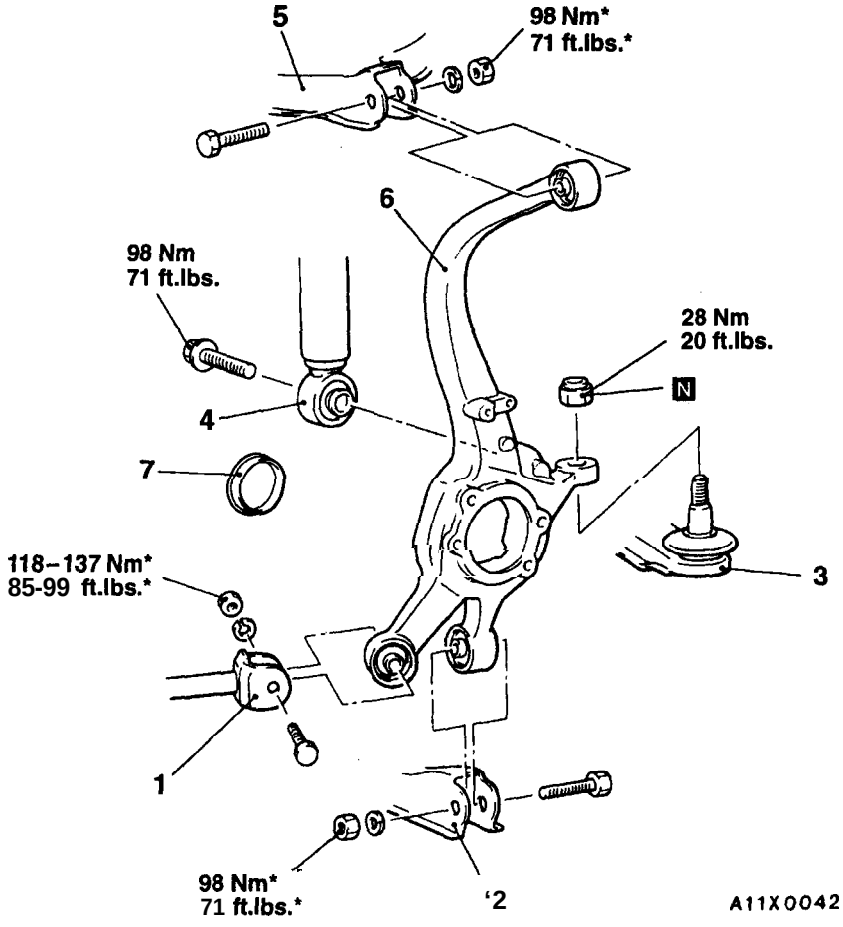
TSB Revision

KNUCKLE

27100300055

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Rear Wheel Speed sensor Removal and Installation <Vehicles with ABS>
- Rear Hub Assembly Removal and Installation (Refer to P. 27-5.)

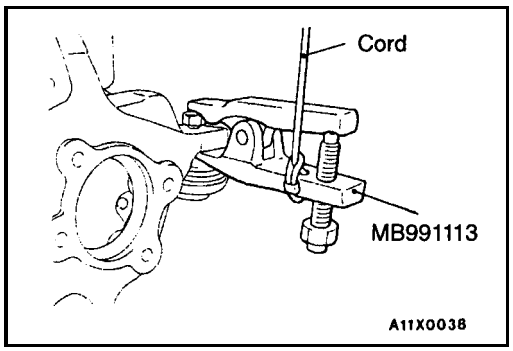


Removal steps

1. Trailing arm connection
2. Lower arm connection
◀A▶ 3. Toe control arm ball joint and knuckle connection
4. Shock absorber connection
5. Upper arm connection
6. Knuckle
7. Hub cap <Vehicles without ABS>

Caution
- **: Indicates parts which should be temporarily tightened, and then fully tightened with the vehicle on the ground in the unladen condition.**

TSB Revision



REMOVAL SERVICE POINT

◀A▶ TOE CONTROL ARM BALL JOINT AND KNUCKLE DISCONNECTION

Caution

1. Use the special tool to loosen the tie rod end mounting nut. Only loosen the nut; do not remove it from the ball joint.
2. Suppot the special tool with a cord, etc. to prevent it from coming off.

TSB Revision

REAR AXLE <AWD>

27100010071

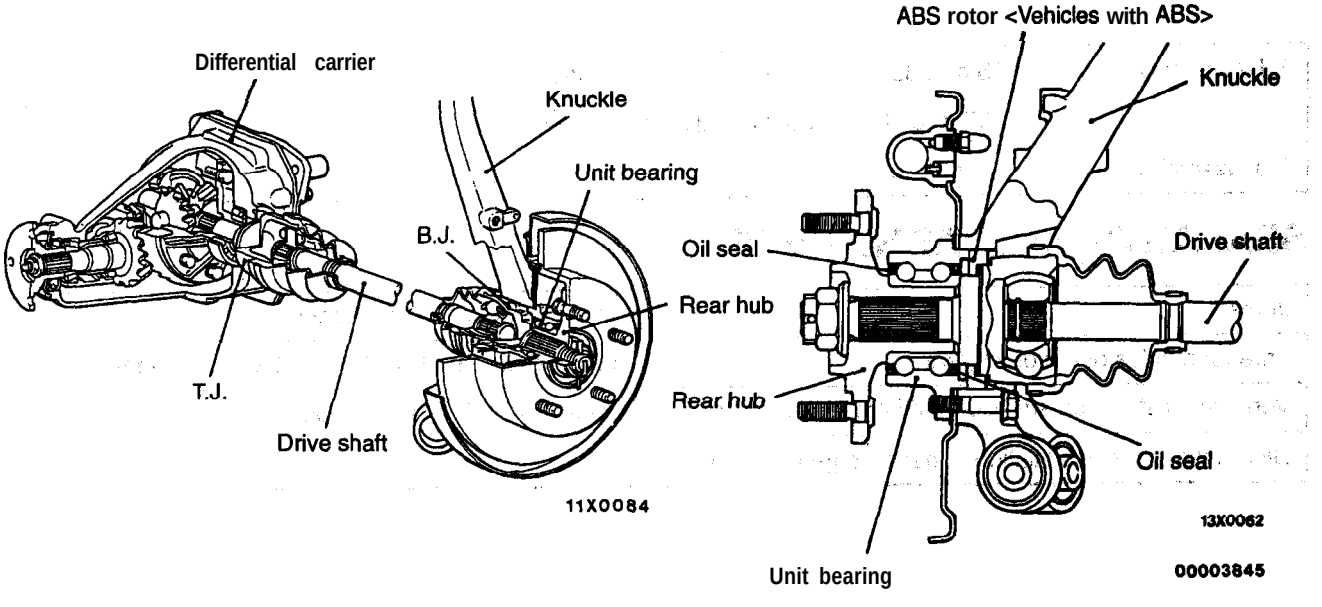
GENERAL INFORMATION

In the rear axle structure, the unit bearing is press-fitted to the rear hub and bolted to the knuckle. Also, the unit bearing utilizes a double row angular contact ball bearing. The drive shaft has a T.J. on the differential side and a B.J. constant-velocity joint on the wheel side. In vehicles with ABS, a ABS rotor for detecting the vehicle speed is located on the outer ring of the drive shaft B.J., and a speed sensor is located on the knuckle.
The differential carrier provides elastic support by, means of a bushing. In addition, the VCU-type LSD has been adopted in some models.

Items		Conventional differential <A/T>	Conventional differential <M/T>	Limited slip differential (VCU type) <M/T>	Limited slip differential (VCU type) <A/T>
Reduction gear type		Hypoid gear	Hypoid gear	Hypoid gear	Hypoid gear
Reduction ratio		3.545	3.307	3.545	3.307
Differential gear type (Type×number of gears)	Side gear	Straight bevel gear×2	Straight bevel gear×2	Straight bevel gear×2*	Straight bevel gear×2*
	Pinion gear	Straight bevel gear×2	Straight bevel gear×2	Straight bevel gear×4	Straight bevel gear×4
Number of teeth	Drive gear	39	43	39	43
	Drive pinion	11	13	11	13
	Side gear	14	14	16	16
	Pinion gear	10	10	10	10
Bearing size (outside diameter×inside diameter) mm (in.)	Side	72 × 35 (2.83 × 1.38)	72 × 35 (2.83 × 1.38)	72 × 35 (2.83 × 1.38)	72 × 35 (2.83 × 1.38)
	Front	62 × 25 (2.44 × .98)	62 × 25 (2.44 × .98)	62 × 25 (2.44 × .98)	62 × 25 (2.44 × .98)
	Rear	72 × 35 (2.83 × 1.38)	72 × 35 (2.83 × 1.38)	72 × 35 (2.83 × 1.38)	72 × 35 (2.83 × 1.38)

NOTE
*: Denotes the gear (L.H.) which is in a single body with the viscous coupling.

CONSTRUCTION DIAGRAM



TSB Revision

SERVICE SPECIFICATIONS

27100030084

Items			Standard value	Limit
Setting of T.J. boot length mm (in.)		Conventional differential	79 ± 3 (3.11 ± .12)	–
		Limited slip differential	84 ± 3 (3.31 ± .12)	–
Drive gear backlash mm (in.)			0.11 – 0.16 (.0043 – .0063)	–
Differential gear backlash mm (in.)		Conventional differential	0 – 0.076 (0 – .0030)	0.2 (.008)
		Limited slip differential	0.03 – 0.09 (.001 – .004)	–
Drive pinion turning torque Nm (in.lbs.)	Without oil seal	New bearing	0.9 – 1.2 (8 – 10)*1	–
		New/reused bearing	0.4 – 0.5 (3 – 4)*2	–
	With oil seal	New bearing	1.0 – 1.3 (9 – 11)*1	–
		New/reused bearing	0.5 – 0.6 (4 – 5)*2	–
Rear axle total backlash mm (in.)			–	5 (.2)
Wheel bearing end play mm (in.)			–	0.05 (.002)
Wheel bearing breakaway torque Nm (in.lbs.)			–	1.0 (9) or less
Drive gear runout mm (in.)			–	0.05 (.002)

NOTE
*1: When replacing with a new bearing (with rust-prevention oil)
*2: When using a new bearing or when reusing (gear oil application)

LUBRICANTS

27100040032

Items	Quantity	Specified lubricant
Rear differential gear oil	0.85 dm^3 (.85 qt.)	API classification GL-5 or higher Over –23°C (–10°F) SAE 90, 85W–90, 80W–90 From –34°C (–30°F) to –23°C (–10°F) SAE 80W, 80W–90 Under –34°C (–30°F) SAE 75W
T.J. assembly	95 g (3.35 oz.) <Conventional differential>	Repair kit grease
	105 g (3.70 oz.) <Limited slip differential>	
B.J. assembly	75 g (2.65 oz.)	

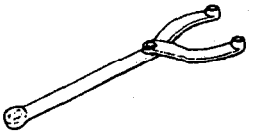
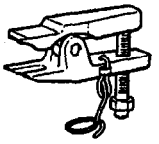
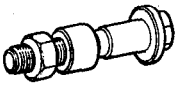
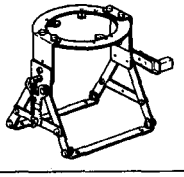
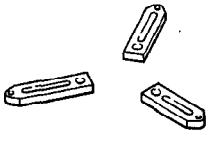
SEALANTS AND ADHESIVES

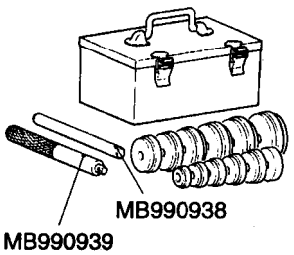
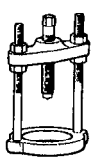
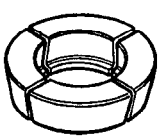
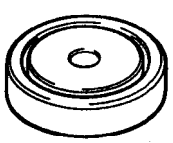
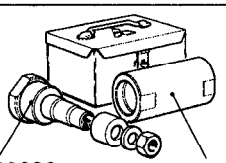
27100050035

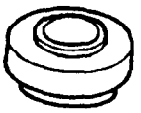
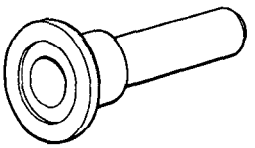
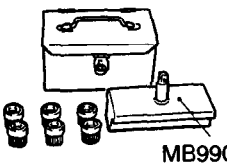
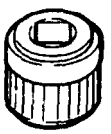
Items	Specified sealants and adhesives
Threaded holes of the drive gear	3M Stud Locking Part No. 4170 or equivalent
Vent plug installation surface (to differential carrior)	3M ATD Part No. '8663 or equivalent
Differential cover installation surface (to gear carrier)	

SPECIAL TOOLS

27100060076

Tool	Tool number and name	Supersession	Application
	MB990767 End yoke holder	MB990767-01	Hub holding
	MB991113 Steering linkage puller	MB991113-01	Toe control arm ball joint and knuckle disconnection
	MB990998 Front hub remover and installer	MB990998-01	• Wheel bearing breakaway torque check • Wheel bearing provisiona holding
	MB990326 Preload socket	General service tool	• Breakaway torque of the wheel bearing measurement • Wheel bearing provisional holding
	MB991460 Plug	General service tool	Prevention of entry of foreign objects into the differential carrier
	MB990909 Working base	General service tool	Differential carrier supporting
	MB991116 Working base adapter	General service tool	

Tool	Tool number and name	Supersession	Application
	MB990925 Bearing and oil seal installer set	General service tool	• Drive pinion rear bearing outer race press-fitting MB990935, MB990938 • Drive pinion front bearing outer race press-fitting MB990932, MB990938 • Differential side oil.. sea press-fitting MB990938 (Use in conjuction with MB991115) • Tooth contact of drive gear measurement • Driving-out the oil seal, drive pinion front bearing and drive pinion rear bearing outer race MB990939
	MB990810 Side bearing puller	General service tool	• Side bearing inner race removal • Companion flange removal
	MB990850 End yoke holder	MB990757-01	Companion flange removal and installation
	MB990339 Bearing puller	General service tool	Drive pinion rear bearing inner race removal
	MB990374 Pinion bearing	MIT30173	
	MB991115 Oil seal installer	–	Differential side oil seal press-fitting (Use in conjuction with MB990938)
	MB990835 Drive pinion setting gauge set	General service tool	Drive pinion height measurement

Tool	Tool number and name	Supersession	Application
	MB990728 Bearing installer	MB990802-01	• Drive pinion rear bearing inner race press-fitting • Side bearing inner race press-fitting
	MB990031 or MB990699 Drive pinion oil seal installer	MB990031-01	Drive pinion oil seal press-fitting
 MB990989	MB990988 Side gear holding tool set	MB990988	Limited slip differential gear backlash inspection
	MB991357 Side gear holding tool	–	

TROUBLESHOOTING

27200070010

AXLE SHAFT

Symptom	Probable cause	Remedy
Noise while wheels are rotating	Brake drag	Replace
	Bent axle shaft	
	Worn or scarred axle shaft bearing	
Grease leakage	Worn or damaged oil seal	
	Malfunction of bearing seal	

DRIVE SHAFT

Symptom	Probable cause	Remedy
Noise	Wear, play or seizure of ball joint	Replace
	Excessive drive shaft spline looseness	

DIFFERENTIAL (LIMITED SLIP DIFFERENTIAL)

Symptom	Probable cause	Remedy
Abnormal noise during driving or gear changing*1	Excessive drive gear backlash	Adjust
	Insufficient drive pinion preload	
	Excessive differential gear backlash	Adjust or replace
	Worn spline of a side gear	Replace
	Loose companion flange self-locking nut	Retighten or replace
Abnormal noise when cornering	Damaged differential gears	Replace
	Damaged pinion shaft	
	Insufficient gear oil quantity	Replenish
Gear noise*2	Improper drive gear tooth contact adjustment	Adjust or replace
	Incorrect drive gear backlash	Adjust
	Improper drive pinion preload adjustment	

NOTE

- *1: In addition to a malfunction of the differential carrier components, abnormal noise can also be caused by the universal joint of the propeller shaft, the axle shafts, the wheel bearings, etc. Before disassembling any parts, take all possibilities into consideration and confirm the source of the noise.
- *2: Noise from the engine, muffler vibration, transaxle, propeller shaft, wheel bearings, tires, body, etc., is easily mistaken as being caused by malfunctions in the differential carrier components. Be extremely careful and attentive when performing the driving test, etc.

  Test methods to confirm the source of the abnormal noise include: coasting, acceleration, constant speed driving, raising the rear wheels on a jack, etc. Use the method most appropriate to the circumstances.

TSB Revision

Symptom	Probable cause	Remedy
Gear noise**	Damaged, broken, and/or seized tooth surfaces of the drive gear and drive pinion	Replace
	Damaged, broken, and/or seized drive pinion bearings	
	Damaged, broken, and/or seized side bearings	
	Damaged differential case	
	Inferior gear oil	
	Insufficient gear oil quantity	Replenish
Gear oil leakage	Worn or damaged front oil seal, or an improperly installed oil seal	Replace,
	Damaged gasket	
	Loose companion flange self-locking nut	Retighten or replace
	Loose filler or drain plug	Retighten or apply adhesive
	Clogged or damaged vent plug	Clean or replace
Seizure*3	Insufficient drive gear backlash	Adjust
	Excessive drive pinion preload	
	Excessive side bearing preload	
	Insufficient differential gear backlash	
	Excessive clutch plate preload	
	Inferior gear oil	Replace
	Insufficient gear oil quantity	Replenish
Breakdown*4	Incorrect drive gear backlash	Adjust
	Insufficient drive pinion preload	
	Insufficient side bearing preload	
	Excessive differential gear backlash	
	Loose drive gear clamping bolts	Retighten
The limited slip differential does not function (on snow, mud, ice, etc.)	The limited slip device is damaged	Disassemble, check the functioning and replace the damaged parts

NOTE

*2: Noise from the engine, muffler vibration, transaxle, propeller shaft, wheel bearings, tires, body, etc., is easily mistaken as being caused by malfunctions in the differential carrier components. Be extremely careful and attentive when performing the driving test, etc.
Test methods to confirm the source of the abnormal noise include: coasting, acceleration, constant speed driving, raising the rear wheels on a -jack, etc. Use the method most appropriate to the circumstances.

*3: In the event of seizure, disassemble and replace the parts involved, and also be sure to check all components for any irregularities and repair or replace as necessary.

*4 In addition to disassembling and replacing the failed parts, be sure to check all components for irregularities and repair or replace as necessary.

TSB Revision

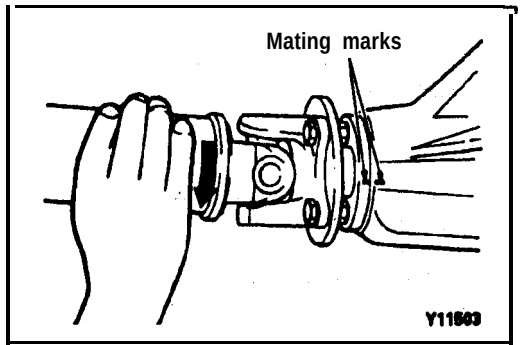
ON-VEHICLE SERVICE

27100120033

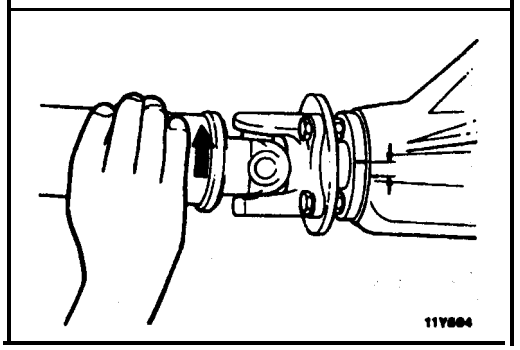
REAR AXLE TOTAL BACKLASH CHECK

If the vehicle vibrates and produces a booming sound due to an imbalance of the driving system, measure the rear axle total backlash by the following procedures to see if the differential carrier assembly requires removal.

1. Place the gearshift lever in the neutral position, apply the parking brake and jack up the vehicle.



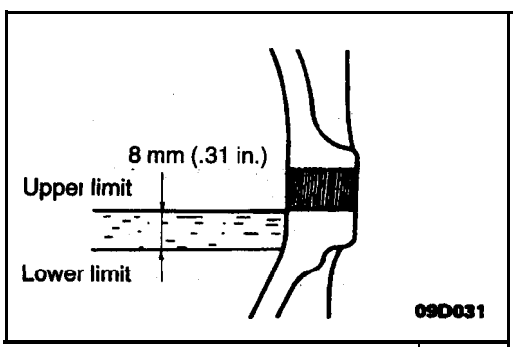
2. Manually turn the propeller. shaft clockwise as far as it will go and make mating marks on the companion flange dust cover and the differential carrier.



3. Manually turn the propeller shaft counterclockwise as far as it will go and measure the movement of the mating! marks.

   Limit: 5 mm (.2 in.)

4. If the backlash exceeds' the limit, remove the differential carrier assembly (Refer to P.27-29.) and adjust the backlash (Refer to P.27-31.).



GEAR OIL LEVEL CHECK

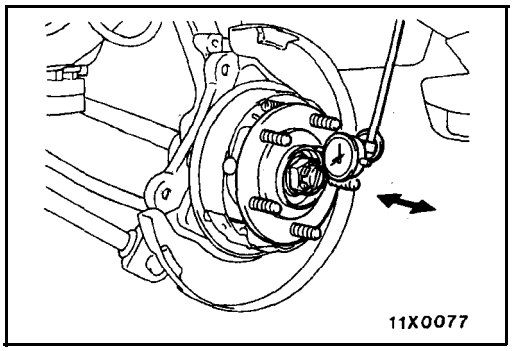
27200120036

1. Remove the filler plug, and check, the oil level.
2. The oil level is sufficient if it reaches the filler plug hole.

Specified gear oil:
API classification GL-5 or higher [0.8 dm³ (.85 qt.)]

NOTE
Over –23°C (–10°F): SAE 90, 85W-90, 80W-90
From –34°C (–30°F) to –23°C (–10°F): SAE 80W, 80W-90
Under –34°C (–30°F): SAE 75W

TSB Revision



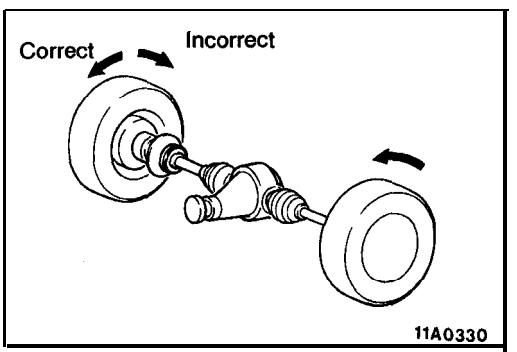
WHEEL BEARING END PLAY CHECK 27100090051

1. Jack up the vehicle and remove the rear wheel.
2. Release the parking brake.
3. Remove the caliper assembly and the brake disc or brake drum.
4. Set a dial gauge as shown in the illustration, and then move the hub in the axial direction and measure the play.

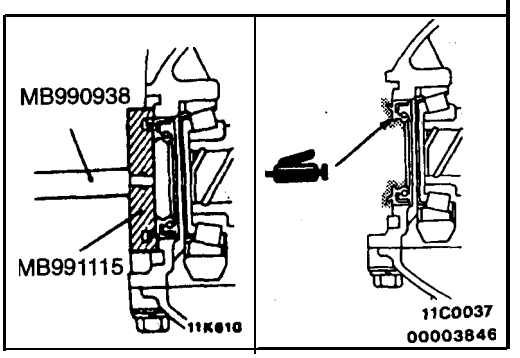
   Limit value: 0.05 mm (.002 in.)
5. If the play exceeds the limit value, replace the rear hub assembly.

LIMITED SLIP DIFFERENTIAL CONDITION CHECK (VCU TYPE) 27300100019

1. Place the shift lever in the neutral position and block the front wheels with chocks.
2. Release the parking brake lever fully.
3. Jack up the rear wheels and apply rigid racks to the specified positions of the side sills.
4. Disconnect the propeller shaft from the differential.



5. While turning one wheel slowly and make sure that the opposite wheel turns in the same direction.
6. If the opposite wheel turns in reverse, disassemble the limited slip differential with VCU and replace the VCU.



DIFFERENTIAL CARRIER OIL SEAL REPLACEMENT 27200120022

1. Remove the drive shaft. (Refer to P.27-21.)
2. Remove the oil seal of the differential carrier.
3. Use the special tool to tap on a new oil seal as far as the end of the differential carrier.
4. Apply multipurpose grease to the lip section of the oil seal and to the oil seal contact surface of the drive shaft.
5. Replace the circlip on the drive shaft with a new one, and then install the drive shaft onto the differential carrier.
6. Check the wheel alignment. (Refer to **GROUP 34 –** On-vehicle Service.)

HUB BOLT REPLACEMENT 27100100068

Refer to P.27-4.

REAR HUB ASSEMBLY

27100200089

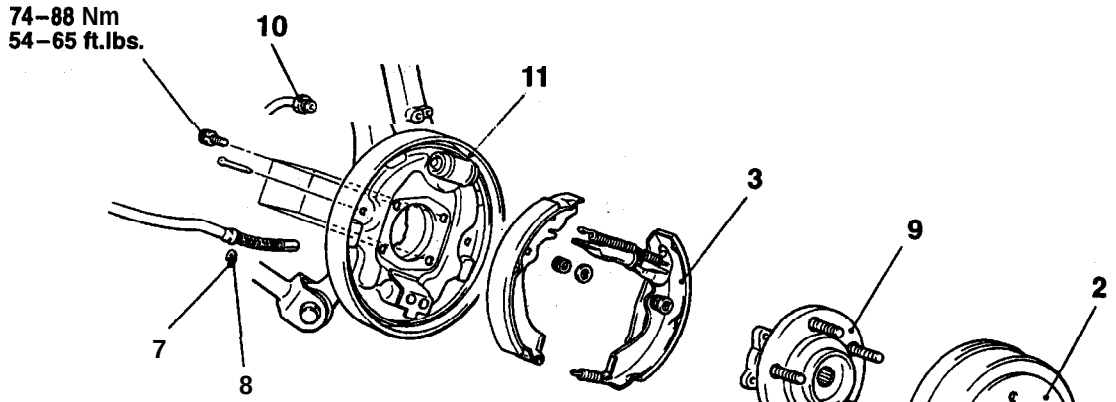
REMOVAL AND INSTALLATION

Pre-removal Operation
- Drive Shaft Removal (Refer to P.27-21.)

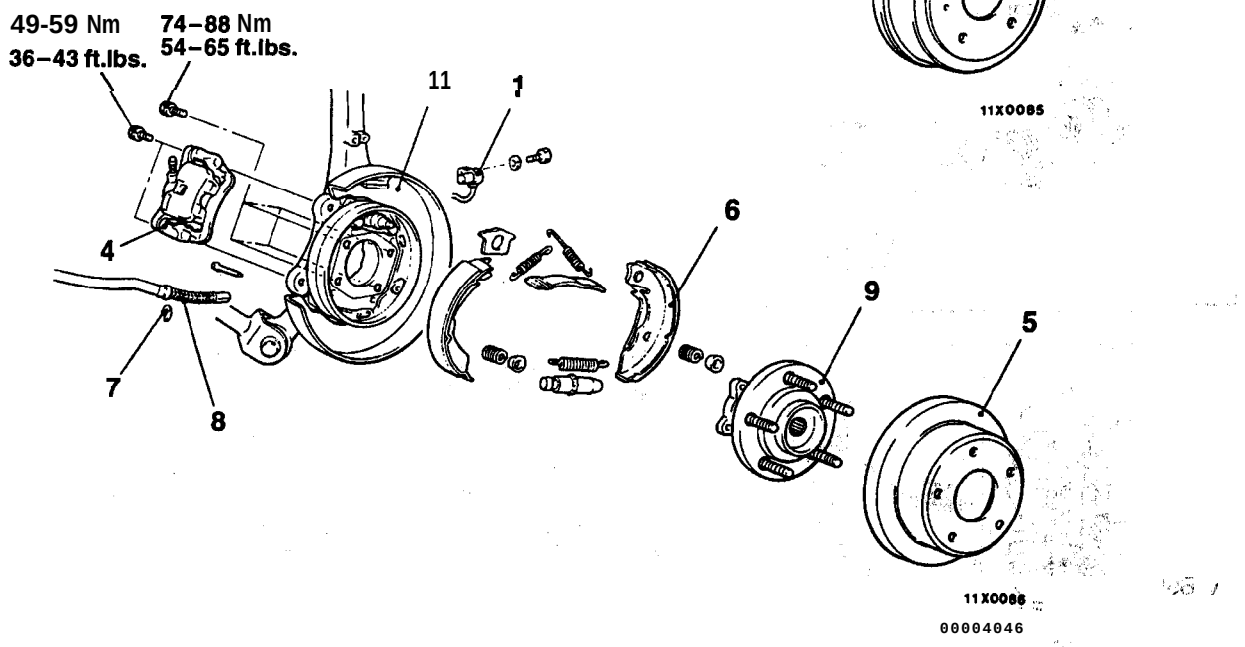
1

Post-installation Operation
- Brake Line Bleeding <Vehicles with drum brakes> (Refer to GROUP 35A – On-vehicle Service.)
- Drive Shaft Installation (Refer to P.27-21.)

<Vehicles with drum brakes>



<Vehicles with disc brakes>



Removal steps

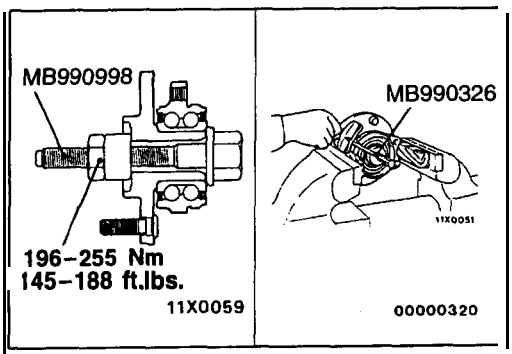
1. **Rear wheel speed sensor** <Vehicles with ABS> (Refer to GROUP 35C – Wheel Speed Sensor.)
2. Brake drum
3. Shoe and lever assembly
4. Caliper assembly (Refer to P.27-5.)
5. Brake disc
6. Shoe and lining assembly (Refer to **GROUP 36 – Parking Brake** <Drum-in-disc brakes>.)
7. Clip
8. Parking brake **cable**
9. Rear hub **assembly**
10. Brake pipe connection
11. Dust seal

Caution
The rear hub assembly should not be disassembled.

TSB Revision

INSPECTION 27100210112

- Check the oil seal for crack or damage.
- Check the rear hub spline for wear or damage.

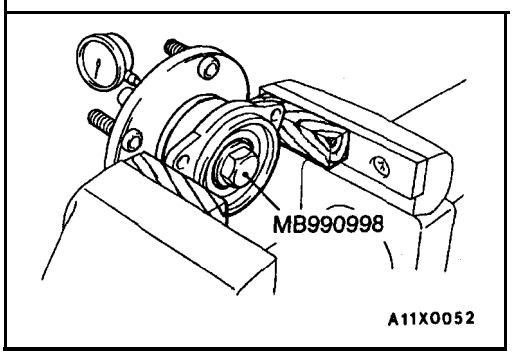


WHEEL BEARING BREAKAWAY TORQUE CHECK

(1) Tighten the special tool to the front hub assembly at the specified torque [196–255 Nm (145-188 ft.lbs.)].
(2) Use the special tool to measure the hub rotation starting torque.

Limit: 1.0 Nm (9 in.lbs.) or less

(3) The hub rotation starting torque should be within the limit value range, and there should be no engagement or feeling of roughness.



WHEEL BEARING END PLAY CHECK 27100090068

(1) Using the special tool to measure the play in the hub axial direction.

Limit: 0.05 mm (.002 in.)

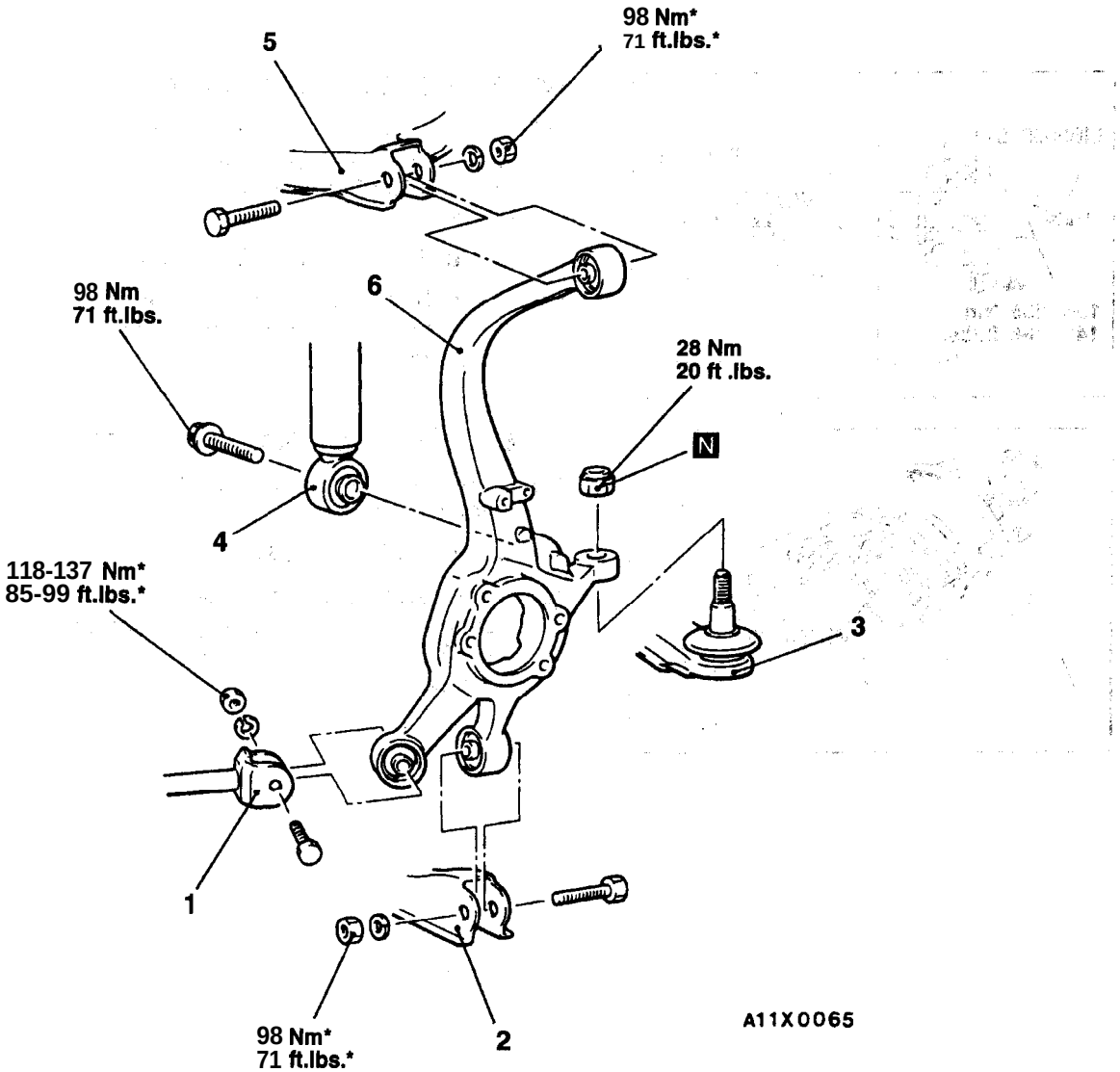
(2) If the limit value of wheel bearing end play cannot be obtained within the specified tightening torque range of 196-255 Nm (145-188 ft.lbs.), replace the front hub assembly.

KNUCKLE

27100300062

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Rear Wheel Speed Sensor Removal and Installation <Vehicles with ABS>
- Rear Hub Assembly Removal and installation (Refer to P.27-18.)



Removal steps

1. **Trailing arm connection**
2. **Lower arm connection**
3. **Toe control arm ball joint and knuckle connection (Refer to P.27-7.)**
4. **Shock absorber connection**
5. Upper arm connection
6. Knuckle

Caution
*: Indicates parts which should be **temporarily** tightened, and then **fully** tightened **with** the veh **ide** on the ground in the unladen condition.

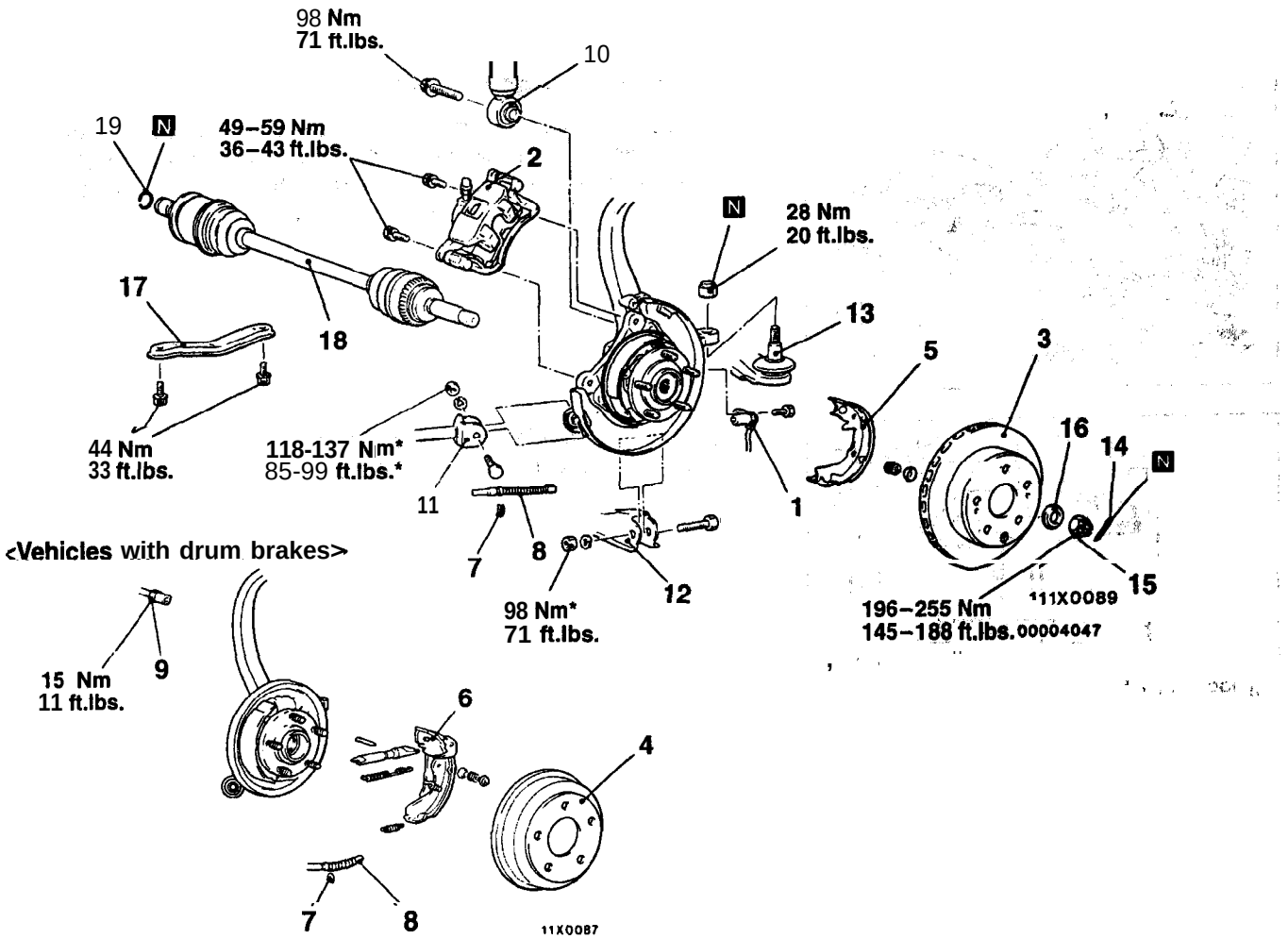
TSB Revision

DRIVE SHAFT

27100330023

REMOVAL AND INSTALLATION

Post-installation Operation
- Brake Line Bleeding <Vehicles with drum brakes> (Refer to GROUP 35A – On-vehicle Service.)
- Parking Brake Adjustment (Refer to GROUP 36 – On-vehicle Service.)



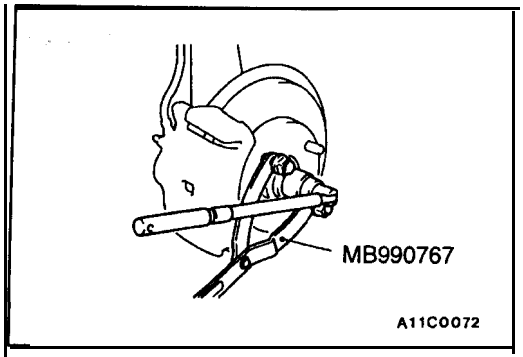
Removal steps

1. Rear wheel speed sensor <Vehicles with ABS>
2. Caliper assembly (Refer to P.27-5.)
3. Brake disc
4. Brake drum
5. Shoe and lining assembly (Refer to GROUP 36 – Parking Brake <Drum-in-disc brakes>.)
6. Shoe and lever assembly
7. Clip
8. Parking brake cable
9. Brake pipe connection
10. Shock absorber connection
11. Trailing arm connection
12. Lower arm connection
13. Toe control arm ball joint and knuckle connection (Refer to P.27-7.)
14. Cottor pin
15. ◀A▶ ▶B◀ Drive shaft nut
16. Washer
17. Differential mount support
18. ◀B▶ ▶A◀ Drive shaft
19. Circlip

Caution

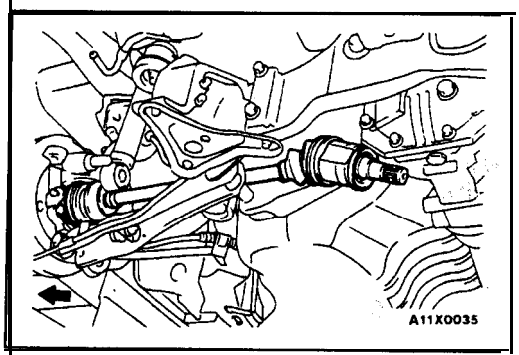
1. For vehicles with ABS, be careful not to damage the drive shaft rotor.
2. ● : Indicates parts which should be temporarily tightened, and then fully tightened with the vehicle on the ground in the unladen condition.

TSB Revision



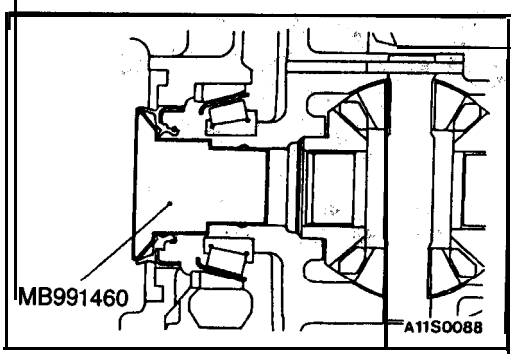
REMOVAL SERVICE POINTS

◀A▶ DRIVE SHAFT NUT REMOVAL

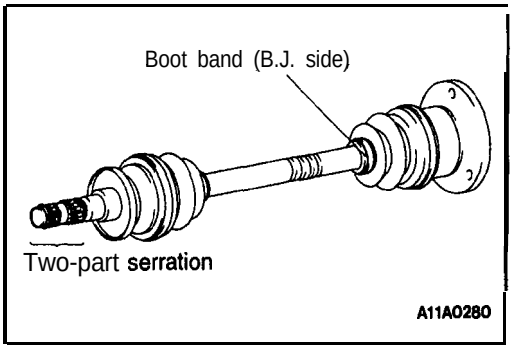


◀B▶ DRIVE SHAFT REMOVAL

(1) Push the lower part of the knuckle to the outside of the vehicle, and then separate the drive shaft from the differential carrier. At fhis time, use a tire lever or similar to separate the drive shaft connection.



(2) Use the special tool as a cover not to let foreign objects get into the differential carrier.



INSTALLATION SERVICE POINTS

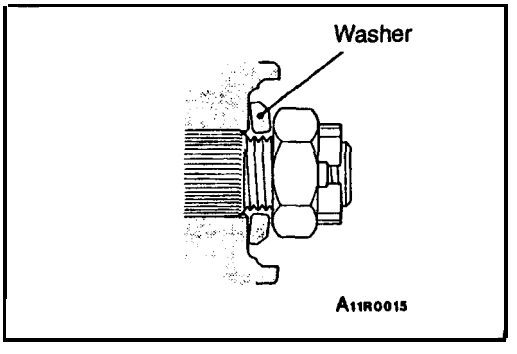
▶A◀ DRIVE SHAFT INSTALLATION

Caution

1. **Be cautious to ensure that the differential carrier oil seal is not damaged by the drive shaft spline.**
2. **The right drive shaft for models equipped with the LSD having a VCU has a two-part serration. Install each on the correct side carefully.**

NOTE
The left and right drive shafts can also be distinguished from each other by the identification color of" boat' band (B.J. side).

Item	Drive shaft (L.H.)	Drive shaft (R.H.)
Boot band (B.J. side) identification color	Green	Orange



▶B◀ DRIVE SHAFT NUT INSTALLATION

(1) Install the washer and drive shaft nut in the specified direction.
(2) Use the special tool (MB990767) to tighten the drive shaft nut.
(3) If the position of the cotter pin holes does not match, tighten the nut up to 255 Nm (188 ft.lbs.) in maximum.
(4) Install the cotter pin in the first matching holes and bend it securely.

Caution
Before securely tightening the drive shaft nuts, make sure there is no load on the wheel bearings.

INSPECTION

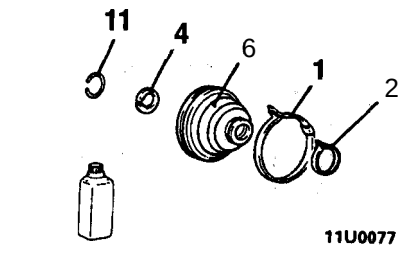
27100340026

- Check the drive shaft boots for damage or deterioration,
- Check the ball joints (B.J. and T.J.) for excessive play or check operation.
- Check the drive shaft spline for wear or damage.

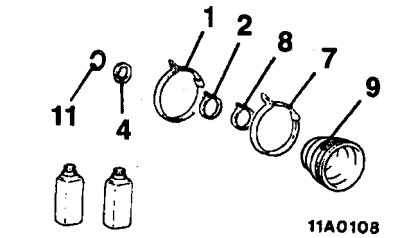
TSB Revision

DISASSEMBLY AND REASSEMBLY

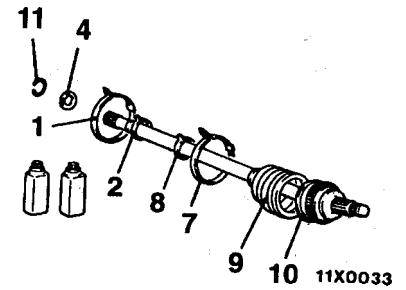
27100350029



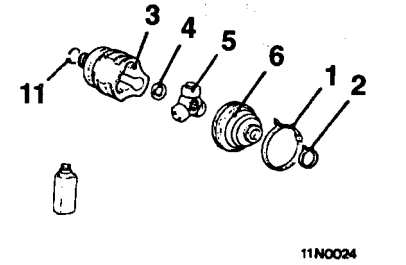
T.J. boot repair kit



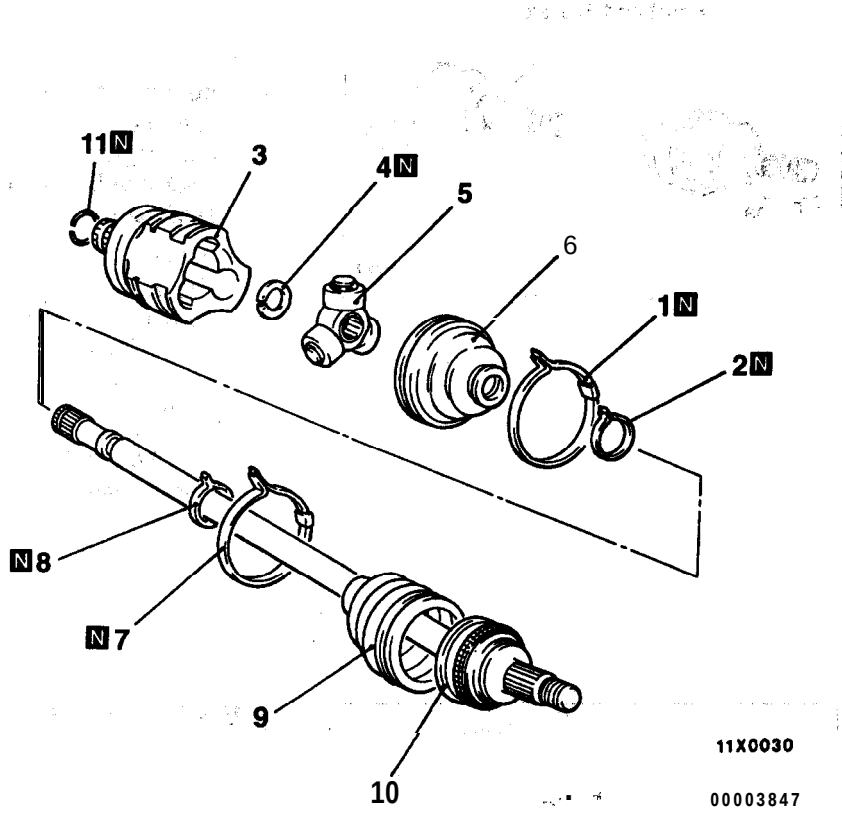
B.J. boot repair kit



J. repair kit



J. repair kit



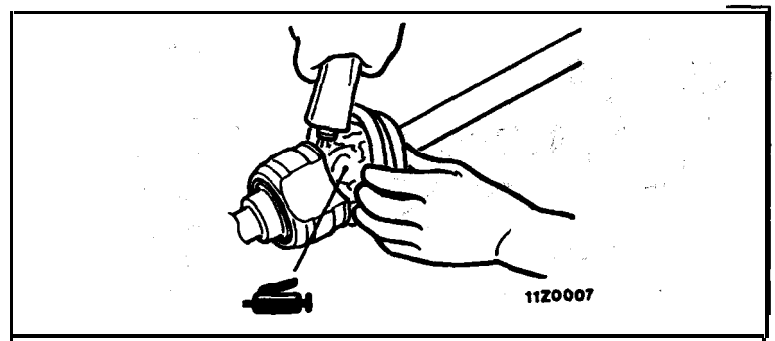
Disassembly steps

- ▶D◀ 1. T.J. boot band (large)
- ▶D◀ 2. T.J. boot band (small)
- ▶C◀ 3. T.J. case
- ◀A▶ 4. Snap ring
- ◀A▶ ▶C◀ 5. Spider assembly
- ◀B▶ ▶C◀ **6.** T.J. boot
- ▶B◀ **7.** B.J. boot band (large)
- ▶B◀ 8. B.J. boot band (small)
- ◀B▶ ▶A◀ **9.** B.J. boot
- 10. B.J. assembly
- 11. Circlip

Caution
Do not disassemble the B.J. assembly.

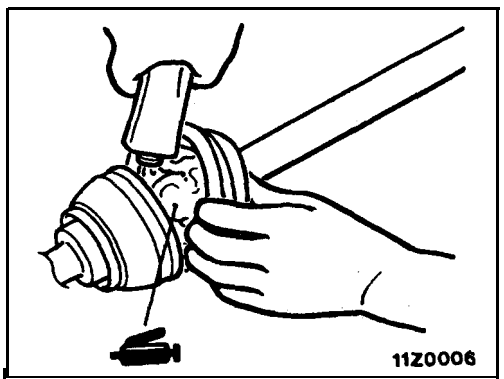
TSB Revision

LUBRICATION POINTS



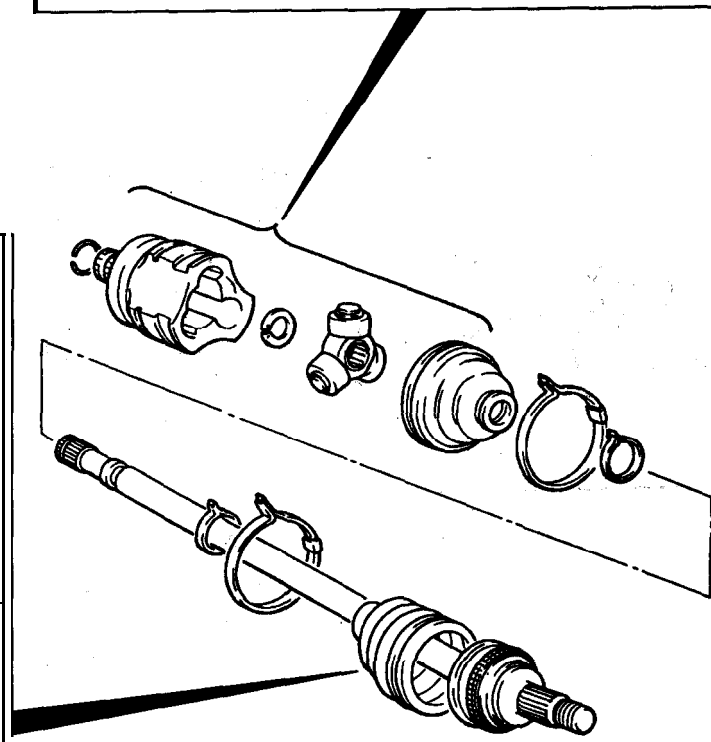
Grease: Repair kit grease
<Conventional differential> 95 g (3.35 oz.)
<Limited slip differential> 105 g (3.70 oz.)

Caution
The drive shaft joint uses special grease.
Do not mix old and new or different types of grease.



Grease:
Repair kit grease 75 g (2.66 oz.)

Caution
The drive shaft joint uses special grease. Do not mix old and new or different types of grease.



11X0030

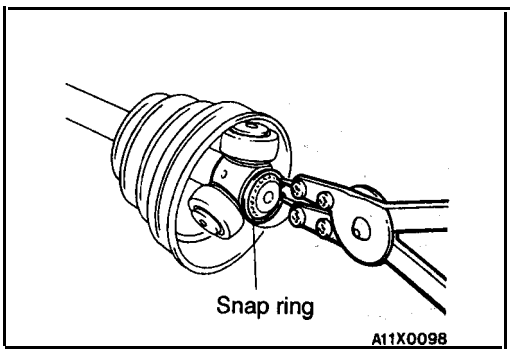
00003848

DISASSEMBLY SERVICE POINTS

◀A▶ SNAP RING/SPIDER ASSEMBLY REMOVAL

(1) Wipe out the grease in the T.J. case. ,

TSB Revision

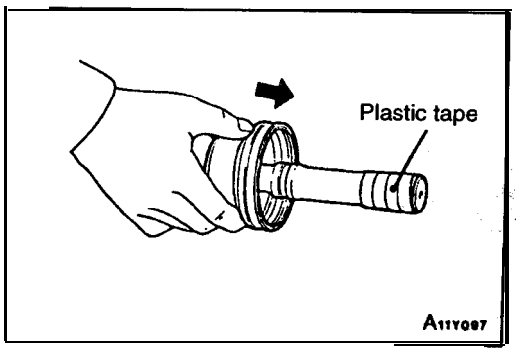


(2) Remove the snap ring with the snap ring pliers and then remove the spider assembly.

Caution
Do not disassemble the spider assembly.

(3) In case foreign objects such as water or dust is mixed in the grease, be sure to wash the spider assembly.

Caution
In case of having washed the spider assembly, when assembling it, make sure to push enough grease between the spider axle and the roller so that grease may not run out.



◀B▶ T.J. BOOT/B.J. BOOT REMOVAL

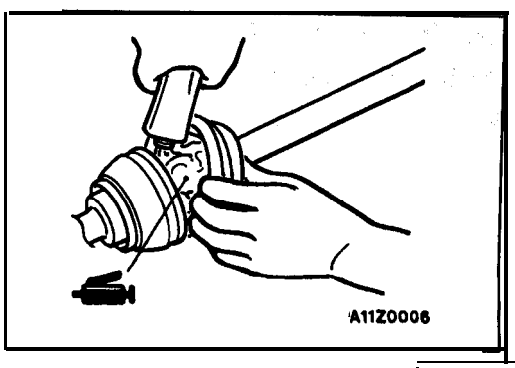
(1) Wipe the grease off of the spline portion.
(2) Remove the T.J. boot and B.J. boot.

N O T E
If the boots are reused, wrap plastic tape around the drive shaft spline so that the boots are not damaged when they are removed.

REASSEMBLY SERVICE POINTS

▶A◀ B.J. BOOT INSTALLATION

(1) Wrap plastic tape around the drive shaft spline.
(2) Insert the drive shaft in' B.J. boot.



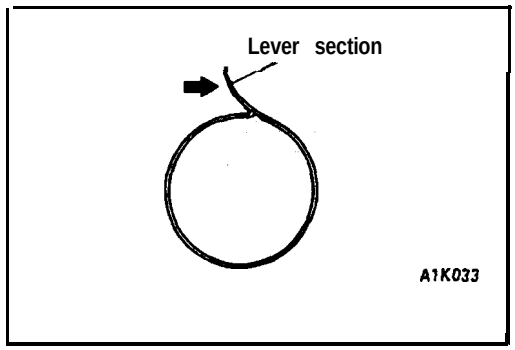
(3) Fill the inside of the B.J. and B.J. boot with the specified grease.

Specified grease: Repair kit grease [75 g (2.66 oz.)]

NOTE
The grease in the repair kit should be divided in half for use, respectively, at the joint and inside the boot.

Caution
The drive shaft joint uses special grease. Do not mix old and new or different types of grease.

TSB Revision

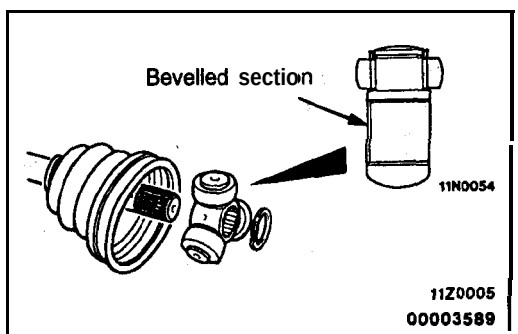


▶B◀ B.J. BOOT BAND (SMALL)/B.J. BOOT BAND (LARGE) INSTALLATION

Be careful that the drive shaft should be. straight when tightening the B.J. boot bands.

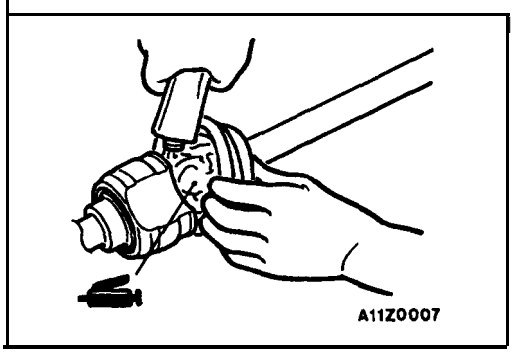
Caution
Always check the identification numbers stamped on the boot band levers. Never confuse the 'bands;

Items	Identification number
B.J. boot band (large)	20 – 110 # BJ 87
B.J. boot band (small)	20 – 83 # BJ 82



▶C◀ T.J. BOOT/SPIDER ASSEMBLY/T.J. CASE INSTALLATION

(1) Insert the drive shaft in T.J. boot.
(2) Install the spider assembly to the shaft from the direction , of the spline bevelled section.

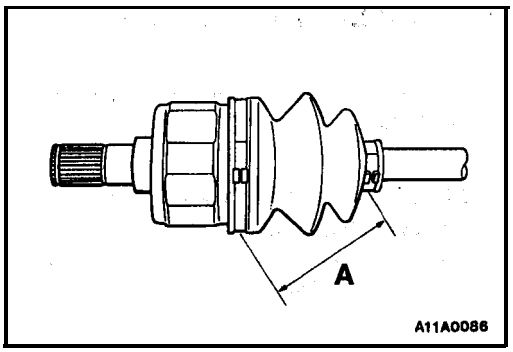


(3) After applying specified grease to the T.J. case, insert the drive shaft and apply grease one more time.

Specified grease:
Repair kit grease
<Conventional differential> 95 g (3.35 oz.)
<Limited slip differential> 105 g (3.70 oz.)

NOTE
The grease in the repair kit should be divided in half for use, respectively, at the joint and inside the boot.

Caution
The drive shaft joint use special grease. Do not mix old and new or different types of grease.



▶D◀ T.J. BOOT BAND (SMALL)/T.J. BOOT BAND (LARGE)

INSTALLATION

Set the T.J. boot bands at the specified distance in order to adjust the amount of air inside the T.J. boot, and then tighten the, T.J. boot bands securely.

Standard value (A):
<Conventional differential> 79 ± 3 mm (3.11± .12 in.)
<Limited slip differential> 84 ± 3 mm (3.31± .12 in.)

Caution
Always check the identification numbers stamped on the boot band levers. Never confuse the bands.

Items	Identification number
T.J. boot band (large)	20 – 98 # BJ 82
T.J. boot band (small)	20 – 83 # BJ 82

INSPECTION

27100360022

- Check the drive Shaft for damage, bending or corrosion.
- Check the drive shaft spline part for wear or damage.
- Check for entry of water and/or foreign material into B.J.
- Check the spider assembly for roller rotation, wear or corrosion.
- Check the groove inside T.J. case for wear or corrosion.
- Check the boots for deterioration, damage or cracking.

TSB Revision

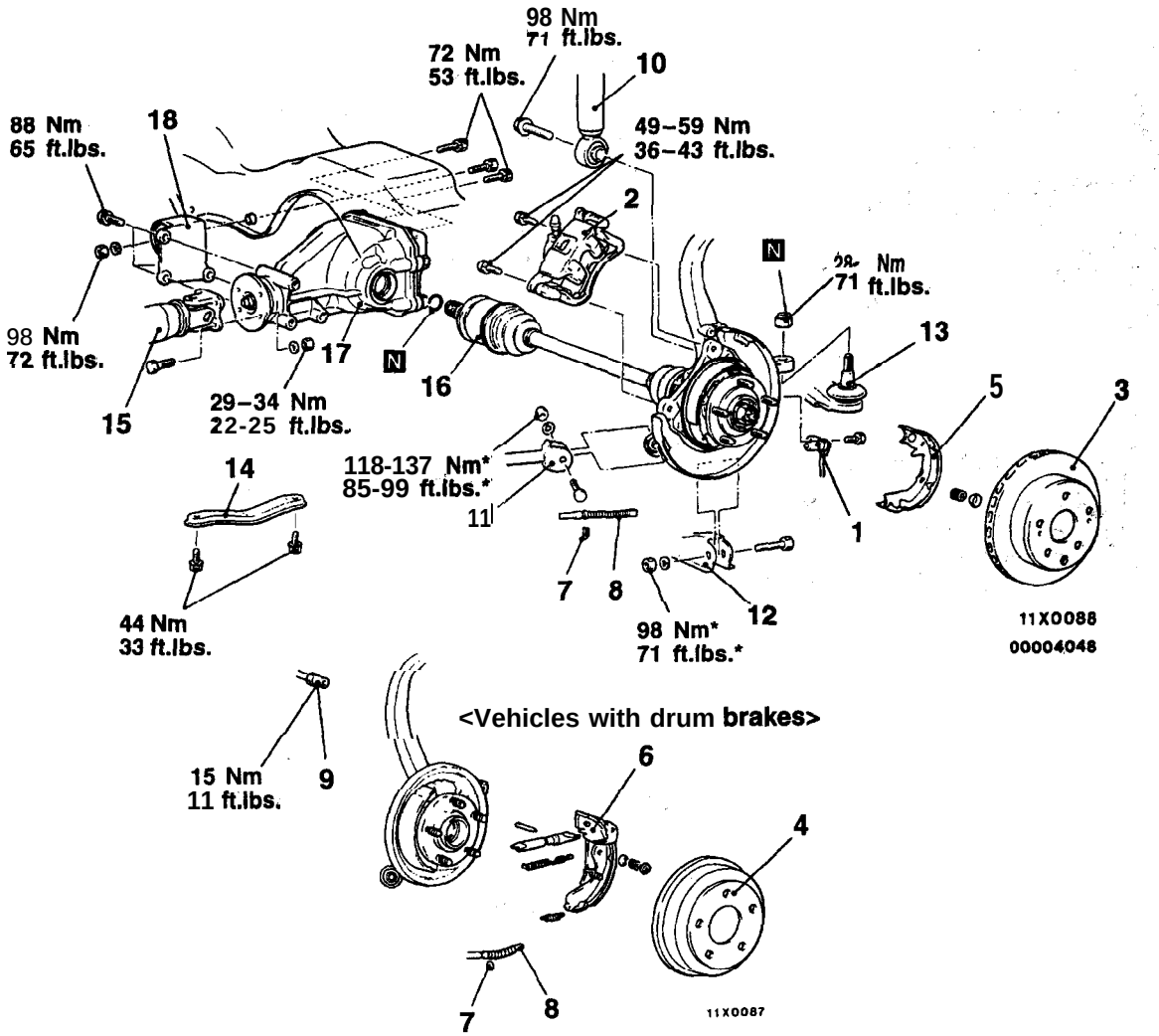
DIFFERENTIAL CARRIER

27200200044

REMOVAL AND INSTALLATION

Pre-removal Operation
- Brake Fluid Draining <Vehicles with drum brakes>
- Differential Gear Oil Draining

Post-installation Operation
- Differential Gear Oil Filling (Refer to P.27-16.)
- Brake Line Bleeding <Vehicles with drum brakes> (Refer to GROUP 35A–On-vehicle Service.)
- Parking Brake Adjustment (Refer to GROUP 36–On-vehicle Service.)



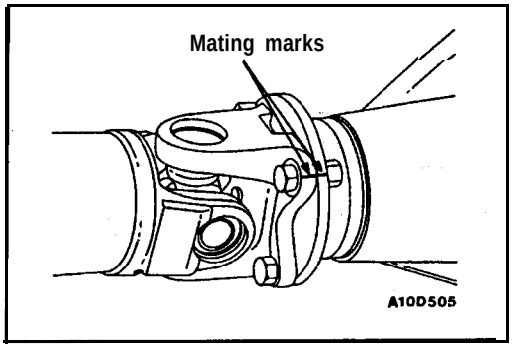
Removal steps

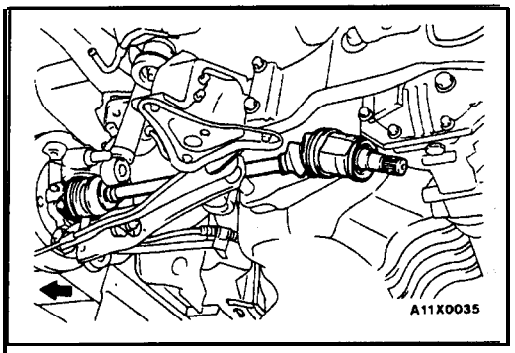
1. Rear wheel speed sensor <Vehicles with ABS>
2. Caliper assembly (Refer to P.27-5.)
3. Brake disc
4. Brake drum
5. Shoe and lining assembly (Refer to GROUP 36 – Parking Brake <Drum-in-disc brakes>.)
6. Shoe and lever assembly
7. Clip
8. Parking brake cable
9. Brake pipe connection
10. Shock absorber connection
11. Trailing arm connection
12. Lower arm connection
13. Toe control arm ball joint and knucle connection (Refer to P.27-7.)
14. Differential mount support
15. Propeller shaft connection
16. Drive shaft connection
17. Differential carrier
18. Differential mount bracket assembly

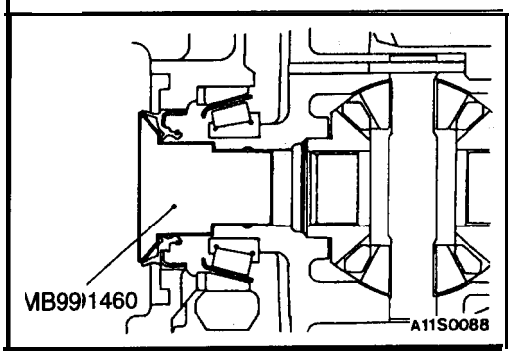
◀A▶ ▶B◀ ◀B▶ ▶A◀ ◀C▶

Caution
*: Indicates parts which should be temporarily tightened, and then fully tightened with the vehicle on the ground in the unladen condition.

TSB Revision







REMOVAL SERVICE POINTS

◀A▶ PROPELLER SHAFT DISCONNECTION

(1) Make mating marks on the differential companion flange and flange yoke, and then separate the differential carrier assembly and the propeller shaft;
(2) Suspend the propeller shaft from the body with wire, etc, so that there are no-sharp bends.

Caution
Be careful that there are no sharp bends in the propeller shaft, as they may damage the Löbro joint.

◀B▶ DRIVE SHAFT DISCONNECTION

(1) Push the lower part of the knuckle to the outside of the vehicle, and then separate the drive shaft from the differential carrier. At this time, use a tire lever or similar to separate the drive shaft connection,
(2) Support the separated drive shaft with wire or similar so as not to damage the joint.

(3) Use the special tool as a cover not to let foreign objects get into the differential carrier.

◀C▶ DIFFERENTIAL CARRIER REMOVAL

Support the differential carrier with a jack. Then remove the connecting bolt between it and the rear crossmember and remove the differential carrier.

INSTALLATION SERVICE POINTS

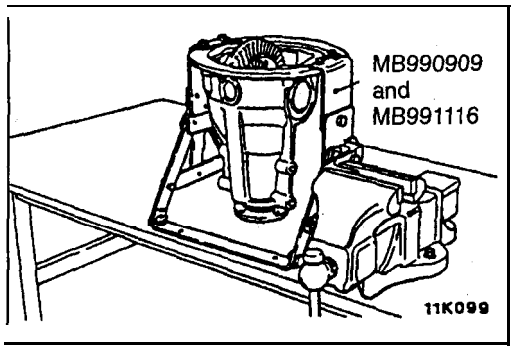
▶A◀ DRIVE SHAFT CONNECTION

Caution
Do not damage the differential carrier 'oil seal.

▶B◀ PROPELLER SHAFT CONNECTION

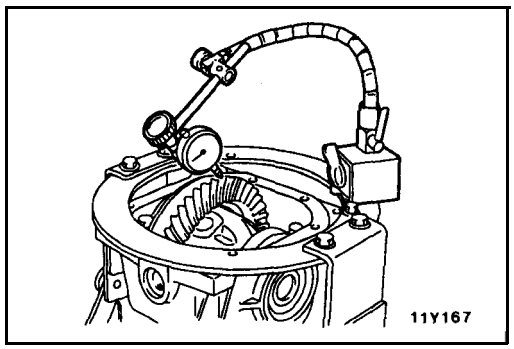
Connect the propeller shaft so' that the mating marks on the differential companion flange and the flange yoke are aligned.

TSB Revision



INSPECTION BEFORE DISASSEMBLY 27200290034

Hold the special tool in a vice, and attach the differential carrier to the special tool.



DRIVE GEAR BACKLASH CHECK

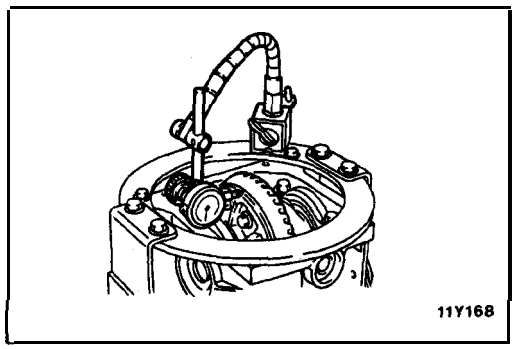
(1) With the drive pinion locked in place, measure the **drive** gear backlash with a dial indicator on the drive gear.

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

Standard value: 0.11 – 0.16 mm (.0043–.0063 in.)

(2) If the backlash is outside the standard value, adjust using the side bearing spacer.

NOTE
After adjustment, inspect the contact of the drive gear.



DRIVE GEAR RUNOUT CHECK

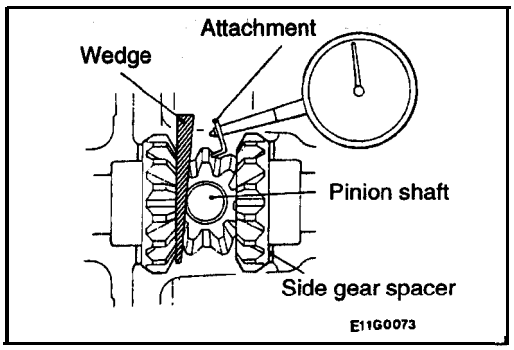
(1) Measure the drive gear runout at the shoulder on the reverse side of the drive gear.

Limit: 0.05 mm (.002 in.)

(2) If the runout exceeds the limit value, check that there is no foreign material between the reverse side of the drive gear and the differential case, or that there is no looseness in the drive gear mounting bolt.

(3) If step (2) is normal, change the assembly position of the drive gear and differential case, and then take another measurement.

NOTE
If adjustment is impossible, replace the differential case or the drive gear and drive pinion as a set.



DIFFERENTIAL GEAR BACKLASH CHECK <Conventional differential>

(1) While locking the side gear with the wedge, measure the differential gear backlash with a dial indicator on the pinion gear.

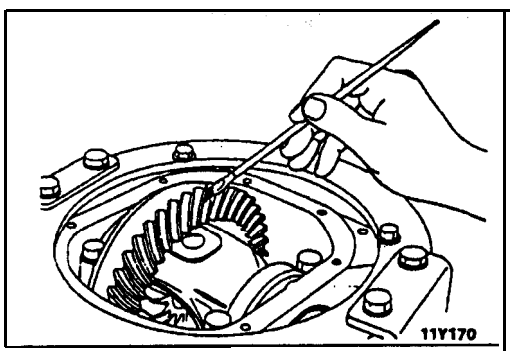
NOTE
(1) The measurement should be made for both pinion gears individually.
(2) Refer to P.27-46 for measurement of the limited slip differential gear backlash.

Standard value: 0 – 0.076 mm (0–.0030 In.)

Limit: 0.2 mm (.008 in.)

(2) If the differential gear backlash exceeds the limit, adjust the backlash by installing thicker side gear spacers.

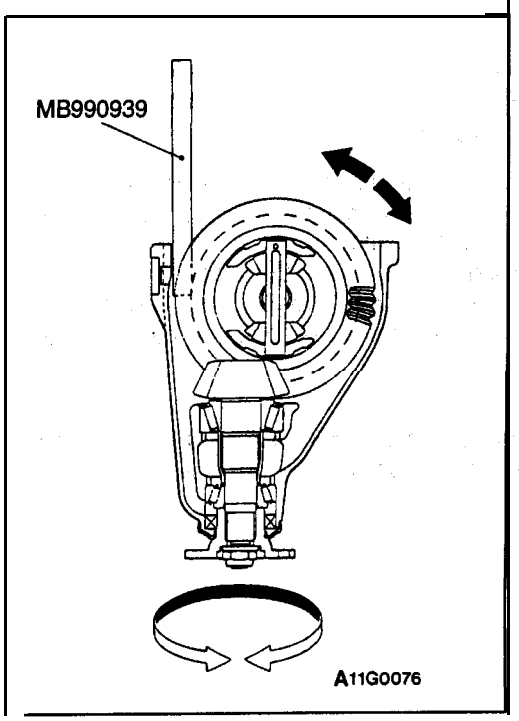
NOTE
If adjustment is impossible, replace the side gear and pinion gear as a set.



DRIVE GEAR TOOTH CONTACT CHECK

Check the drive gear tooth contact by following the steps below.

(1) Apply a thin, uniform coat of machine blue to both surfaces of the drive gear teeth.

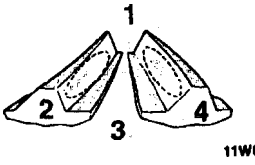
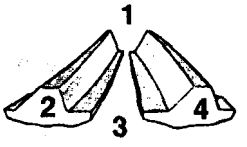
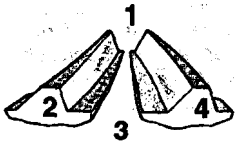
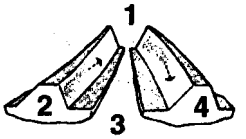
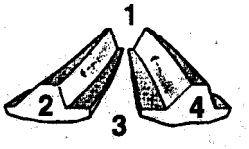


(2) Insert a special tool between the differential carrier and the differential case, and then rotate the companion flange by hand (once in the normal direction, and then once in the reverse direction) while applying a load to the drive gear, so that the revolution torque [approximately 2.5 – 3.0 Nm (22-27 in.lbs.)] is applied to the drive pinion.

Caution
If the drive gear is rotated too much, the tooth contact pattern will become unclear and difficult to check.

(3) Check the tooth contact condition of, the drive gear and drive pinion.

TSB Revision

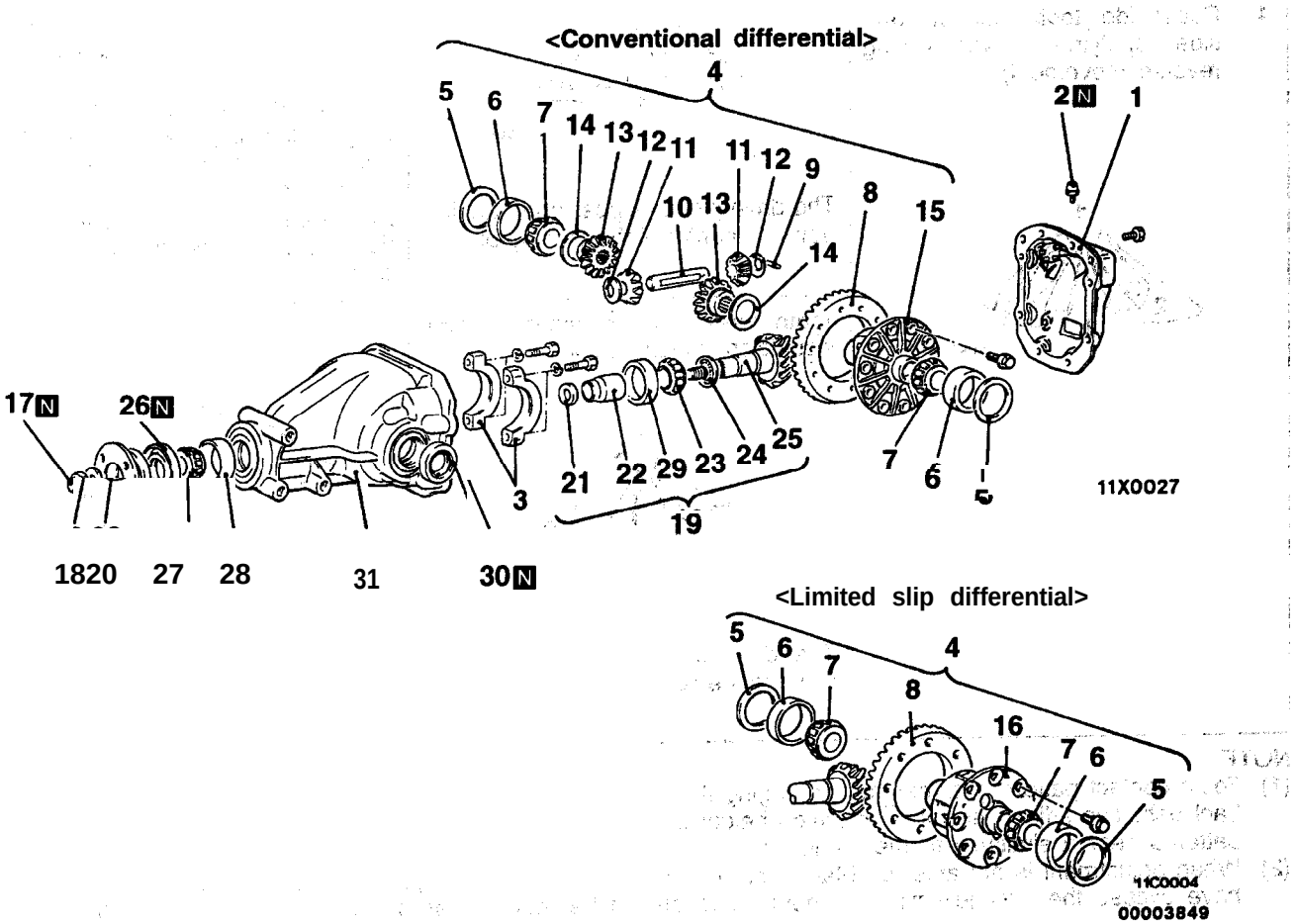
Standard tooth contact pattern	Problem	Solution
1 Narrow tooth side 2 Drive-side tooth surface (the side applying power during forward movement) 3 Wide tooth side 4 Coast-side tooth surface (the side applying power during reverse movement)  11W0115	Tooth contact pattern resulting from excessive pinion height  11W0116 The drive pinion is positioned too far from the center of the drive gear.	 11W0118 Increase the thickness of the pinion height adjusting shim, and position the drive pinion closer to the center of the drive gear. Also, for backlash adjustment, position the drive gear farther from the drive pinion.
	Tooth contact pattern resulting from insufficient pinion height  11W0117 The drive pinion is positioned too close to the center of the drive gear.	 11W0119 Decrease the thickness of the pinion height adjusting Shim, and position the drive pinion farther from the center of the drive gear. Also, for backlash adjustment, position the drive gear closer to the drive pinion.

NOTE
(1) Tooth contact pattern is a method for judging the result of the adjustment of drive pinion height and drive gear backlash. The adjustment of drive pinion height and drive gear backlash should be repeated until tooth contact patterns bear a similarity to the standard tooth contact pattern.
(2) When adjustment is not able to obtain a correct pattern, it may be judged that the drive gear and drive pinion have exceed their usage limits and both gears should be replaced as a set.

DISASSEMBLY

27200220033

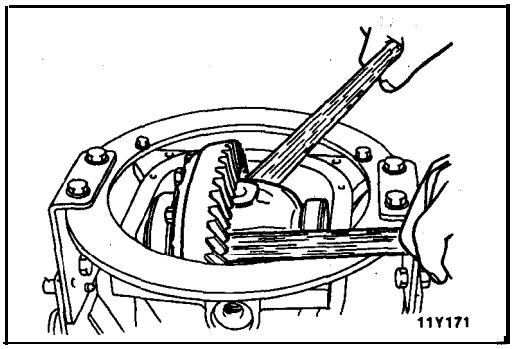
Pre-disassembly Inspections
- Drive Gear Backlash Check (Refer to P.27-31.)
- Drive Gear Runout Check (Refer to P.27-31.)
- Differential Gear Backlash Check (Refer to P.27-32.)
- Drive Gear Tooth Contact Check (Refer to P.27-32.)



Disassembly steps
- Inspection before disassembly (Refer to P.27-31.)

1. Differential cover assembly
2. Vent plug
3. Bearing cap
◀A▶ 4. Differential case assembly
5. Side bearing spacer
6. Side bearing outer race
◀B▶ 7. Side bearing inner race
◀C▶ 8. Drive gear
◀D▶ 9. Lock pin
<Conventional differential>
10. Pinion shaft
<Conventional differential>
11. Pinion gear
<Conventional differential>
12. Pinion washer
<Conventional differential>
13. Side gear
<Conventional differentials
14. Side gear spacer
<Conventional differential>
15. Differential case
<Conventional differential>
16. Limited slip differential case assembly (Refer to P.27-46.)
◀E▶ 17. Self-locking nut
18. Washer
◀F▶ 19. Drive pinion assembly
20. Companion flange
21. Drive pinion front shim (for preload adjustment)
22. Drive pinion spacer
◀G▶ 23. Drive pinion rear bearing inner race
24. Drive pinion rear shim (for pinion height adjustment)
25. Drive pinion
◀H▶ 26. Oil seal
◀H▶ 27. Drive pinion front bearing inner race
◀H▶ 28. Drive pinion front bearing outer race
◀I▶ 29. Drive pinion rear bearing outer race
30. Oil seal
31. Gear carrier

TSB Revision

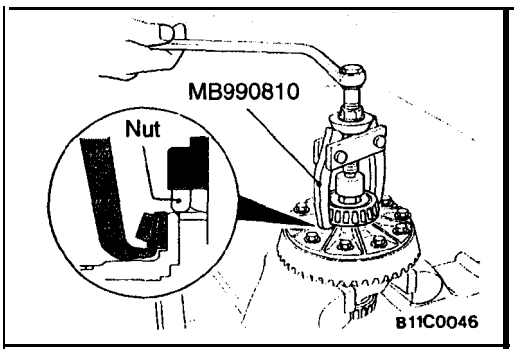


DISASSEMBLY SERVICE POINTS

◀A▶ DIFFERENTIAL CASE ASSEMBLY REMOVAL

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

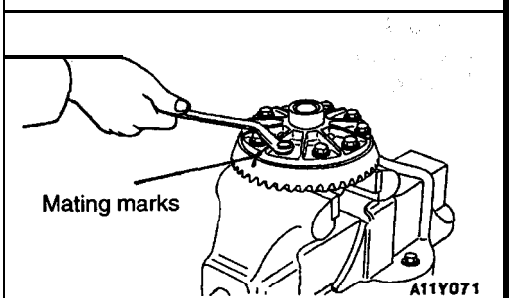
NOTE
Keep the right and left side bearings separate, so that they do not become mixed at the time of reassembly.



◀B▶ SIDE BEARING INNER RACE REMOVAL

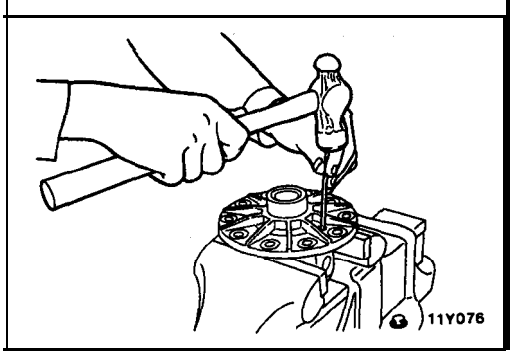
Place the nut on top of the differential case, and then use the special tool to remove the side bearing inner race.

NOTE
Attach the prongs of the special tool to the inner 'race of the side bearing through the openings in the differential case.

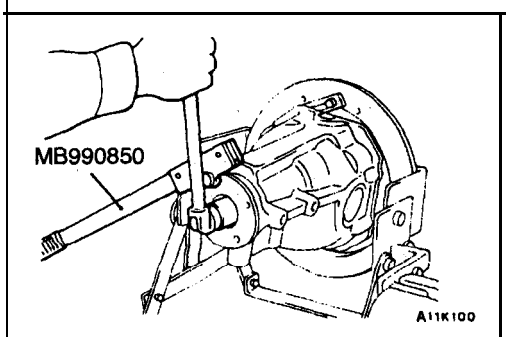


◀C▶ DRIVE GEAR REMOVAL

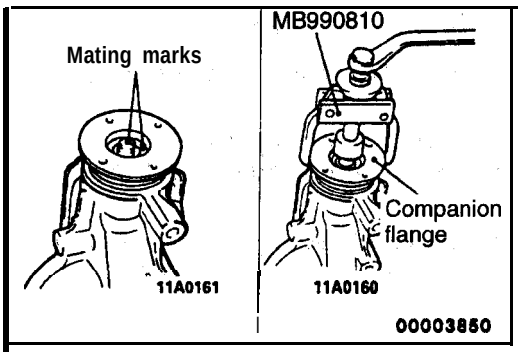
(1) Make the mating marks to the differential case and the drive gear.
(2) Loosen the drive gear attaching bolts in diagonal sequence to remove the drive gear.

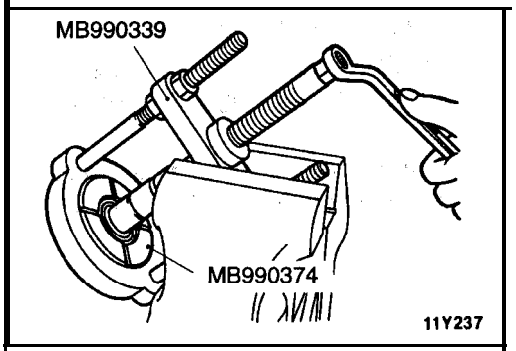


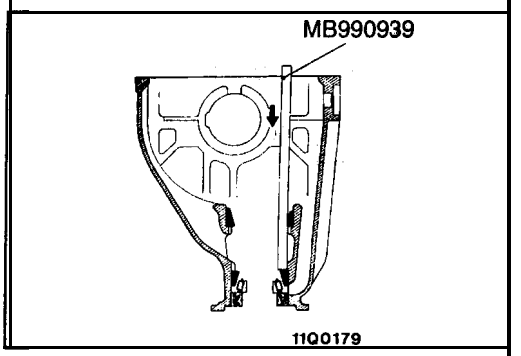
◀D▶ LOCK PIN REMOVAL <Conventional differential>

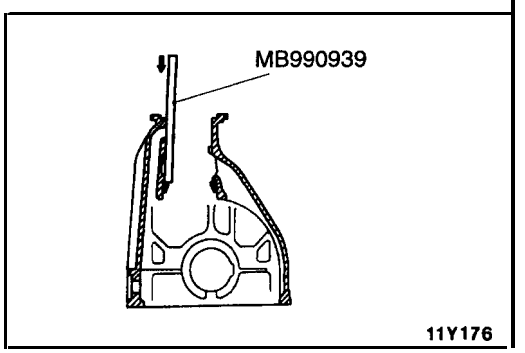


◀E▶ SELF-LOCKING NUT REMOVAL









◀F▶ DRIVE PINION ASSEMBLY REMOVAL

(1) Make the mating marks to the drive pinion and companion flange.

Caution
Mating marks should not be made to the contact surfaces of companion flange and propeller shaft.

(2) Drive out the drive pinion together with the drive pinion spacer and drive pinion front shims.

◀G▶ DRIVE PINION REAR BEARING INNER RACE REMOVAL

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

◀I▶ DRIVE PINION REAR BEARING OUTER RACE REMOVAL

INSPECTION

27200250049

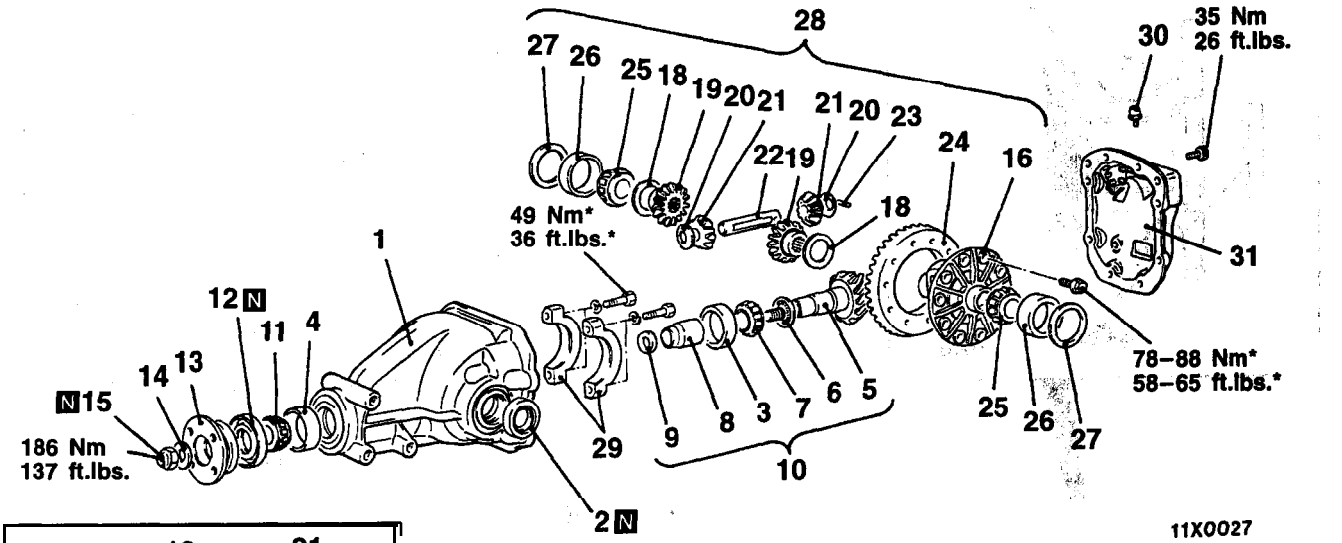
- Check the companion flange for wear or damage.
- Check the bearings for wear or discoloration.
- Check the gear carrier for cracks.
- Check the drive pinion and drive gear for wear or cracks.
- Check the side gears, pinion gears and pinion shaft for wear or damage.
- Check the side gear spline for wear or damage

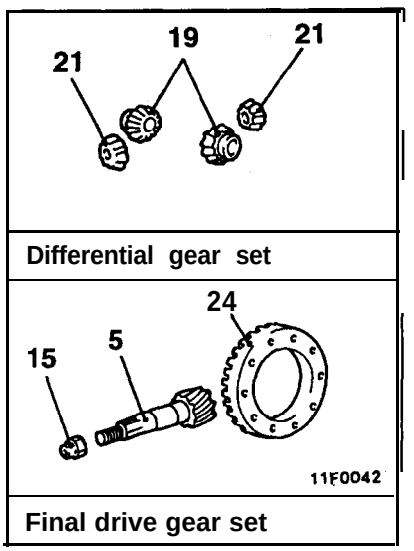
TSB Revision

REASSEMBLY

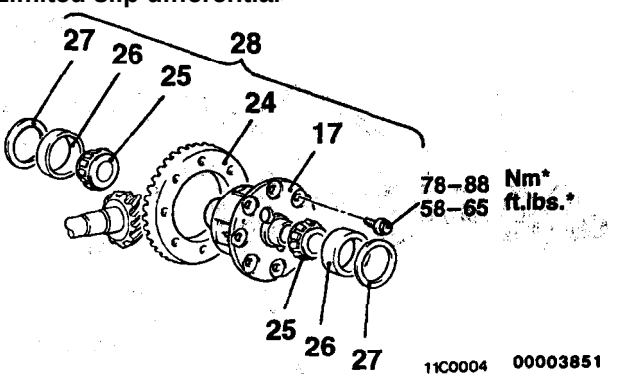
27200230036

<Conventional differential>





<Limited slip differential>

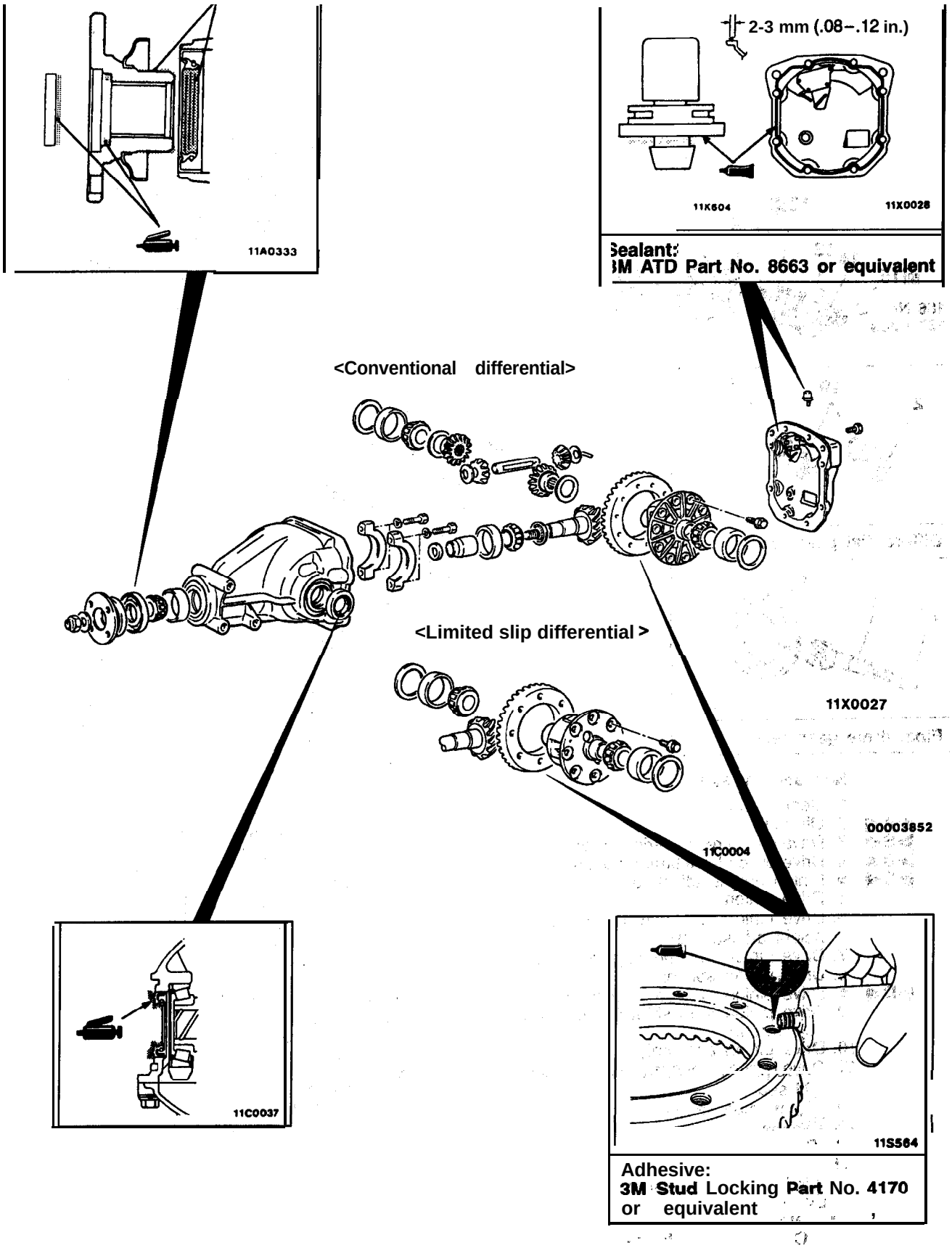


Reassembly steps

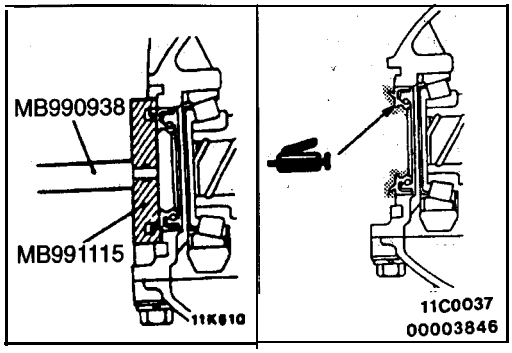
1. Gear carrier
▶A◀ 2. Oil seal
▶B◀ 3. Drive pinion rear bearing outer race
▶B◀ 4. Drive pinion front bearing outer race
▶C◀ • Pinion height adjustment
5. Drive pinion
6. Drive pinion rear shim (for pinion height adjustment)
7. Drive pinion rear bearing inner race
6. Drive pinion spacer
▶D◀ • Drive pinion preload adjustment
9. Drive pinion front shim (for preload adjustment)
10. Drive pinion assembly
11. Drive pinion front bearing inner race
12. Oil seal
13. Companion flange
14. Washer
15. Self-locking nut
16. Differential case
17. Limited slip differential case assembly (Refer to P.27-46.)
▶E◀ • Differential gear backlash adjustment <Conventional differential>
18. Side gear spacer <Conventional differential>
19. Side gear <Conventional differential>
20. Pinion washer <Conventional differential>
21. Pinion gear <Conventional differential>
22. Pinion shaft <Conventional differential>
▶F◀ 23. Lock pin <Conventional differential>
▶G◀ 24. Drive gear
▶H◀ 25. Side bearing inner race
26. Side bearing outer race
▶I◀ • Drive gear backlash adjustment
27. Side bearing spacer
28. Differential case assembly
29. Bearing cap
30. Vent plug
31. Differential cover assembly

NOTE
● : Tightening torque with gear oil applied

TSB Revision



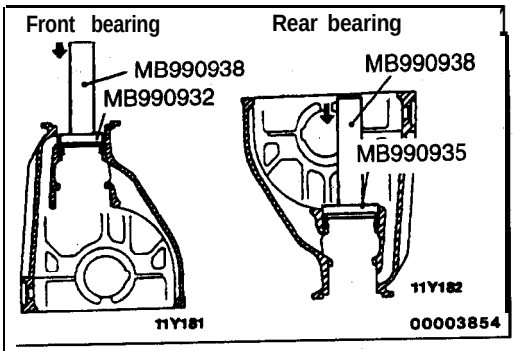
TSB Revision



REASSEMBLY SERVICE POINTS

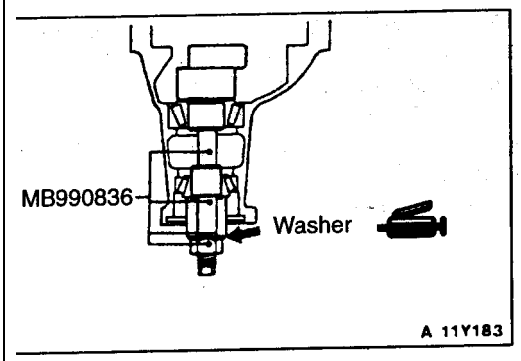
▶A◀ OIL SEAL PRESS FITTING

(1) With the special tool, press fit the oil seal until it is. flush with the end of the gear carrier.
(2) Apply multipurpose grease to the oil seal lip.



▶B◀ DRIVE PINION REAR BEARING OUTER RACE/DRIVE PINION FRONT BEARING OUTER RACE INSTALLATION

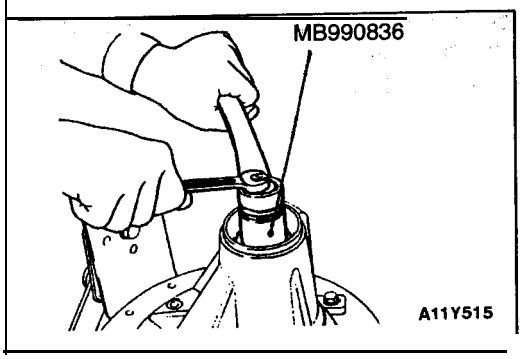
Caution
Be careful not to press in the' quter race at an angle.



▶C◀ PINION HEIGHT ADJUSTMENT

Adjust the drive pinion height by the following procedures:
(1) Apply a thin coat of the multipurpose grease to the mating face of the washer of the special tool.
(2) 'Install special tools and drive pinion front and rear bearing, inner. races on the gear carrier in the sequence shown in the illustration.

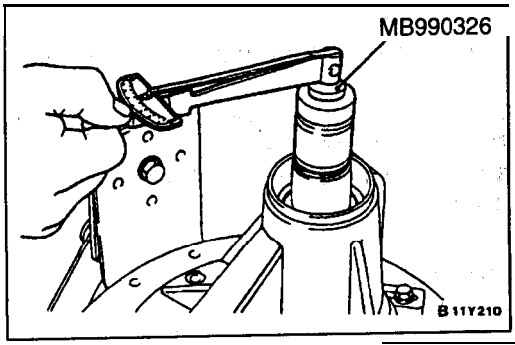
NOTE
Apply a thin coat of the multipurpose grease to the mating face of the washer of the special tool.



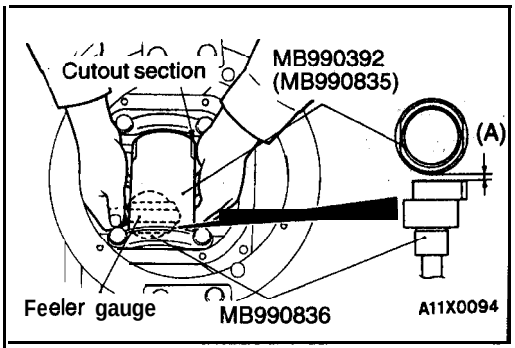
(3) Gradually'tighten the nut of the special tool while checking' the drive pinion turning torque until the standard value, of drive pinion turning torque is obtained.

Standard value:'

Bearing classification	Bearing lubrication	Rotation torque (starting friction torque) Nm (in.lbs.)
New	None (with rust-preventiop oil)	0.9 – 1.2 (8–10)
New/reused	Gear oil--application	0.4 – 0.5 (3–4)

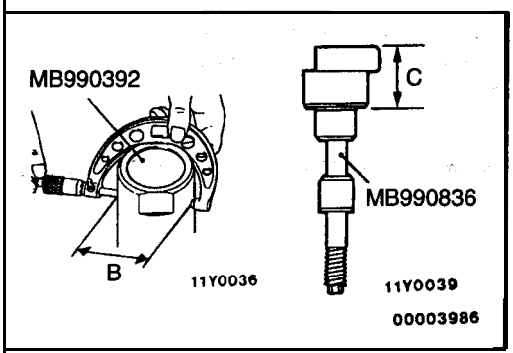


NOTE
Because the special tool cannot be turned one turn, turn it 'several times within the range that it can be turned; then, after fitting to the bearing, measure the rotation torque.

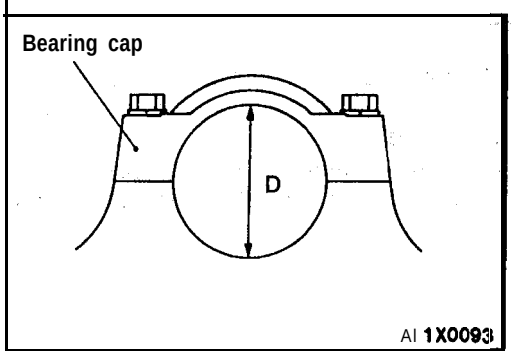


(4) Clean the side bearing seat thoroughly.
(5) Position. the special tool in the side bearing. seat of the gear carrier, and then install the bearing cap.

NOTE
When positioning the special tool', be sure that the cutout sections of the special 'tool are in the. position shown in the illustration.
And check that the special tool is in close contact with the side bearing seat.

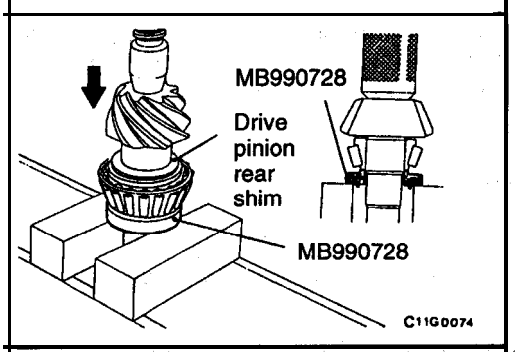


(6) Use a feeler gauge to measure the clearance (A) between the special tools.
(7) Remove the special tools (MB990392 and MB990836).
(8) Use a micrometer to measure the dimensions'(B) and (C) of the special tools.

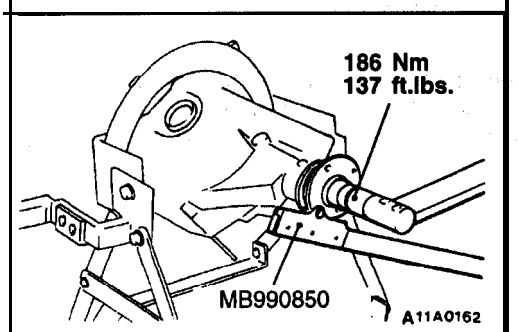


(9) Install. the. bearing cap, and then use a cylinder gage and the micrometer to measure the inside diameter D of the bearing cap as shown in the illustration.
(10) Calculate the thickness (E) of the drive pinion rear shim from the following equation, and select the shim that is' closest in thickness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

$E = A + B + C - 1/2\ D - 86.00$ mm (3.39 in.)



(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.

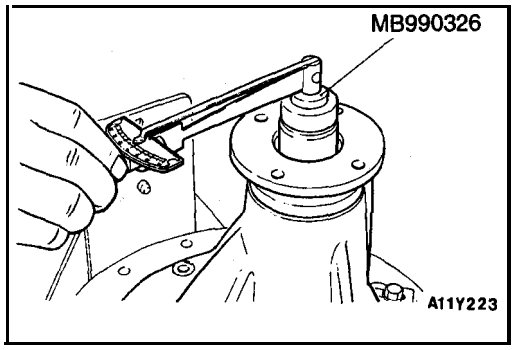


▶D◀ DRIVE PINION PRELOAD ADJUSTMENT

Adjust the drive pinion turning torque by using the, following procedures:
(1) Fit the drive pinion front shim(s) between the drive pinion spacer and the drive pinion front bearing inner race.
(2) Tighten the companion flange to the specified 'torque, by using the special tools.

NOTE
Do not install the oil seal.

TSB Revision



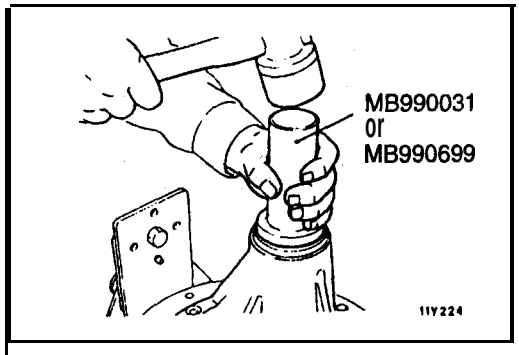
(3) Measure the drive pinion turning torque (without the oil seal) by using the special tools.

Standard value:

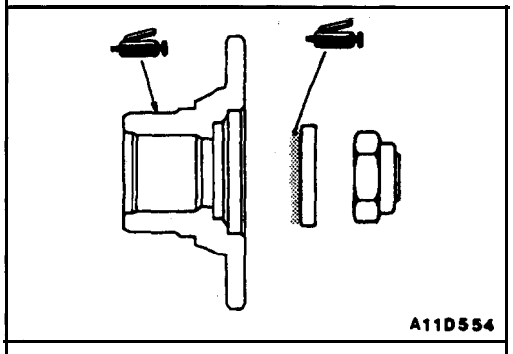
Bearing classification	Bearing lubrication	Rotation torque (starting friction torque) Nm (in.lbs.)
New	None (with rust-prevention oil)	0.9 – 1.2 (8–10)
New/reused	Gear oil application	0.4 – 0.5 (3-4)

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

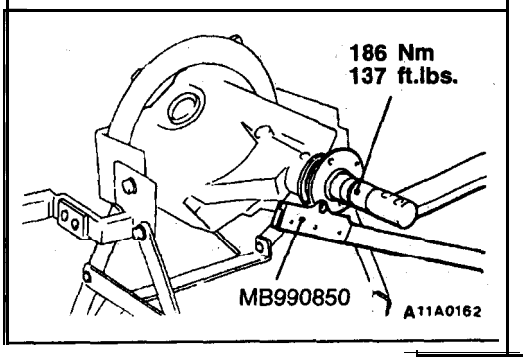
NOTE
When selecting the drive pinion front shims, if the number of shims is large, reduce the number of shims to a minimum by selecting the drive pinion spacers.



(5) Remove the companion flange and drive pinion once again. Drive the oil seal into the gear carrier front lip by using the special tool. Apply multipurpose grease to the oil seal lip.

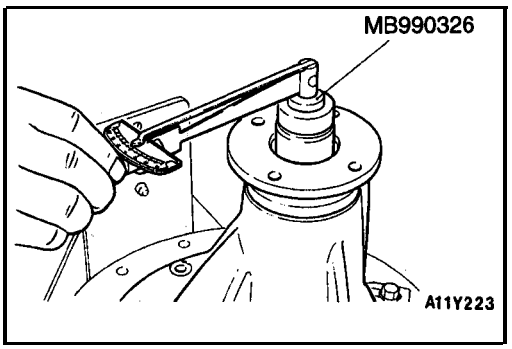


(6) Apply a thin coat of multipurpose grease to the companion flange contacting surface of the washer and oil seal contacting surface before installing drive pinion assembly.



(7) Install the drive pinion assembly and companion flange with mating marks properly aligned, and tighten the companion flange self-locking nut to the specified torque by using the special tools.

TSB Revision

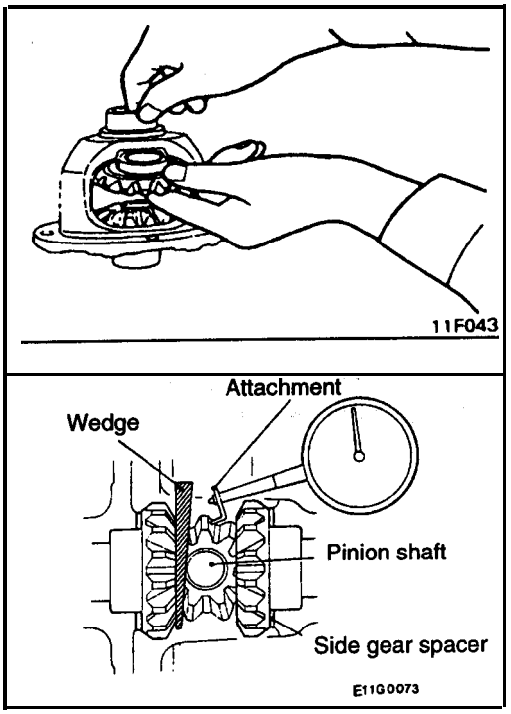


(8) Measure the drive pinion turning torque (with oil seal) by using the special tools to verify that the drive pinion turning torque complies with the standard value.

Standard value:

Bearing classification	Bearing lubrication	Rotation torque (starting friction torque) Nm (in.lbs.)
New	None (with rust-prevention oil)	1.0 – 1.3 (9–11)
New/reused	Gear oil application	0.5 – 0.8 (4-5)

If there is a deviation from the standard value, check whether or not there is incorrect tightening torque of the companion flange tightening self-lock nut, or incorrect fitting of the oil seal.



▶E◀ DIFFERENTIAL GEAR BACKLASH ADJUSTMENT <Conventional differential>

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) While locking the side gear with the wedge, measure the differential gear backlash with a dial indicator on the pinion gear.

NOTE
(1) The measurement should be made for both pinion gears individually.
(2) Refer to P.27-45 for measurement of the limited slip differential gear backlash.

Standard value: 0 – 0.076 mm (0–.0030 in.)

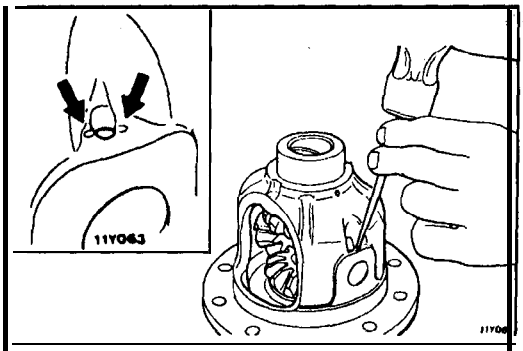
Limit: 0.2 mm (.008 in.)

(4) If the differential gear backlash exceeds the limit, adjust the backlash by installing thicker side gear spacers.

(5) Measure the differential gear backlash once again, and confirm that it is within the limit.

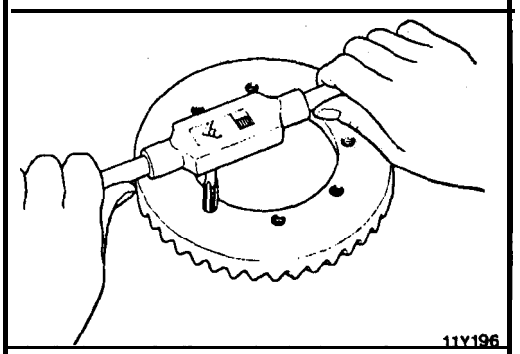
NOTE
1. After adjustment, check that the backlash is less than the limit and differential "gear rotates smoothly.
2. When adjustment is impossible,' replace the side gear and the pinion gear as a set.

TSB Revision



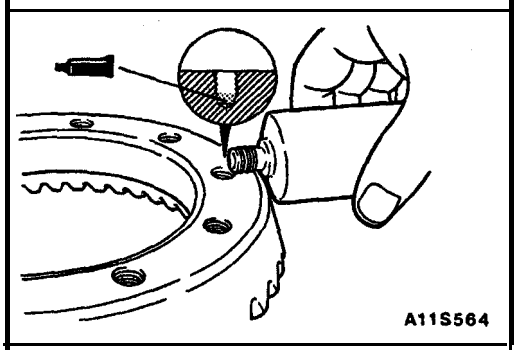
▶F◀ LOCK PIN INSTALLATION
<Conventional differential>

(1) Align the pinion shaft lock pin hole with the 'differential case lock pin hole, and drive in the lock pin.
(2) Stake the lock pin with a punch at, two points.



▶G◀ DRIVE GEAR INSTALLATION

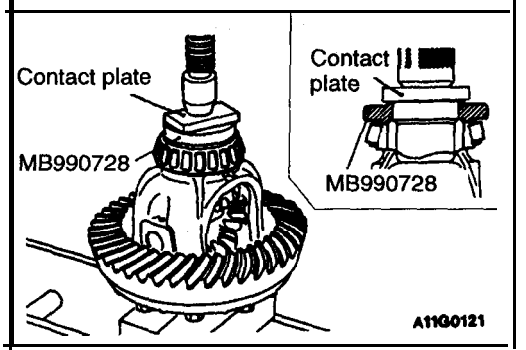
(1) Clean the drive gear attaching bolts.
(2) Remove the adhesive adhering to the threaded holes of the drive gear by turning M10 × 1.25 tap, and then clean the threaded holes by applying compressed air.



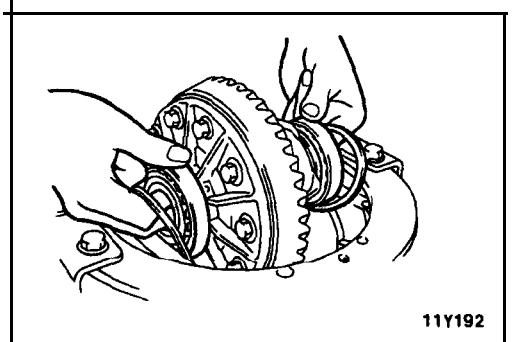
(3) Apply the specified adhesive to the threaded holes of the drive gear.

Specified adhesive:
3M Stud Locking Part No. 4170' or equivalent

(4) Install the drive gear onto the differential case with the mating marks properly aligned: Tighten the. bolts to the specified torque [80 – 90 Nm (58-65 ft.lbs.)] in a diagonal sequence.



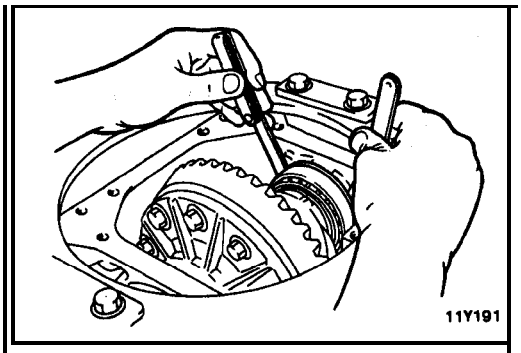
▶H◀ SIDE BEARING INNER RACE PRESS-FITTING



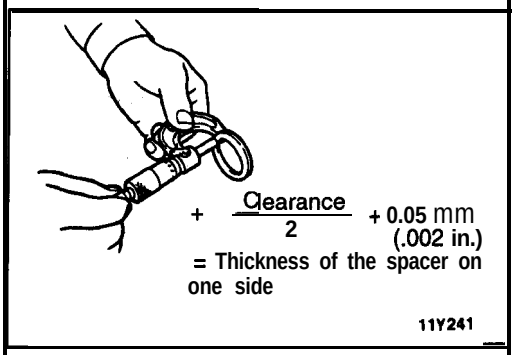
▶I◀ DRIVE GEAR BACKLASH ADJUSTMENT'

Adjust the drive gear backlash by the following procedures:
(1) Install the side bearing spacers,' which are thinner than those removed, to the side bearing outer races,, and then mount the differential case assembly into the gear carrier.

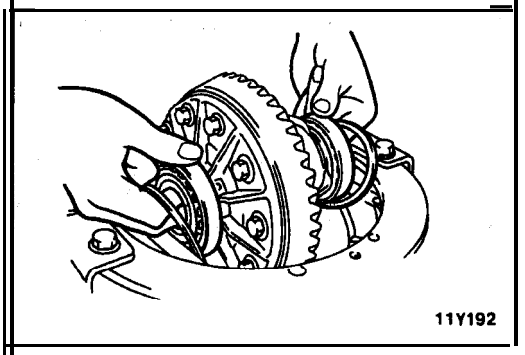
NOTE
Select side bearing spacers with the same thickness for' both the drive pinion side and the drive gear side.



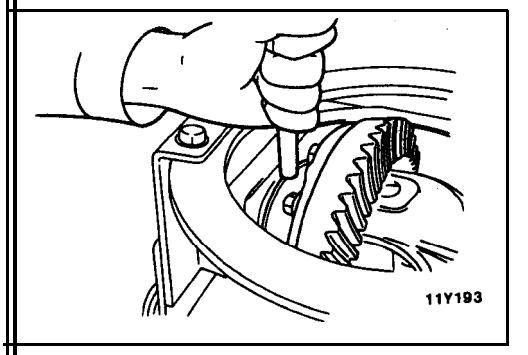
(2) Push the differential case to 'one side, and measure the clearance between the gear carrier and the side bearing.



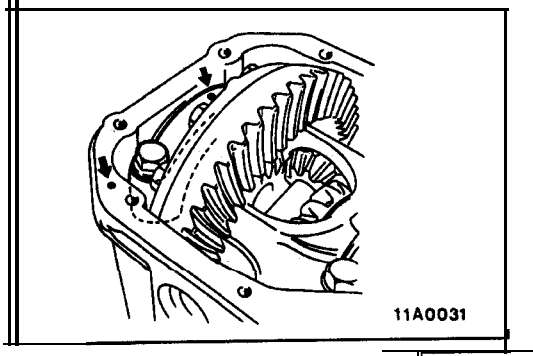
(3) Measure the thickness of the side bearing spacers on one side, select two pairs of spacers which correspond to that thickness plus one half of the clearance plus 0.05 mm, and then install one pair each to the drive pinion side and the drive gear side.



(4) Install the side bearing spacers and differential case assembly, as shown in the illustration;' to the gear carrier.

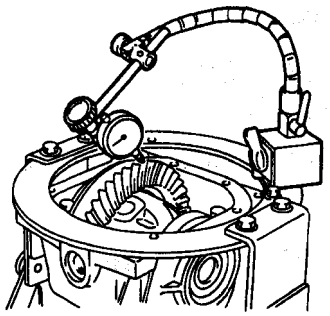


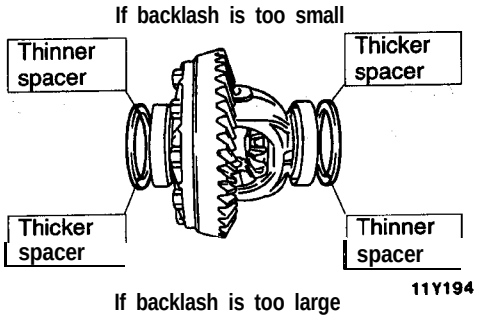
(5) Tap the side bearing spacers with a brass bar to fit them to the side bearing outer race.

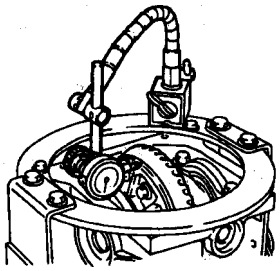


(6) Align the mating marks on the gear carrier and the bearing': cap, and then tighten the bearing cap.

TSB Revision


11Y167




11Y168

(7) 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: 0.11 – 0.16 mm (.004–.006 In.)

(8) Change the side bearing spacers as illustrated, and then adjust the drive gear backlash between the drive gear and the drive pinion.

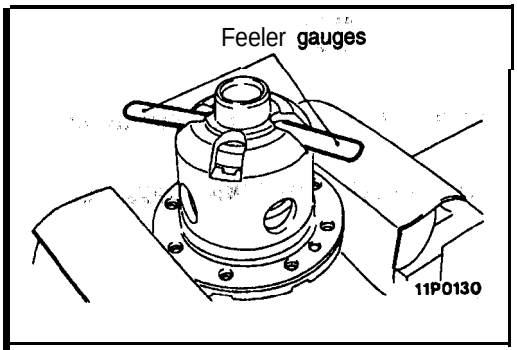
NOTE
When increasing the number of side bearing spacers, use the same number for each, and as few as possible.

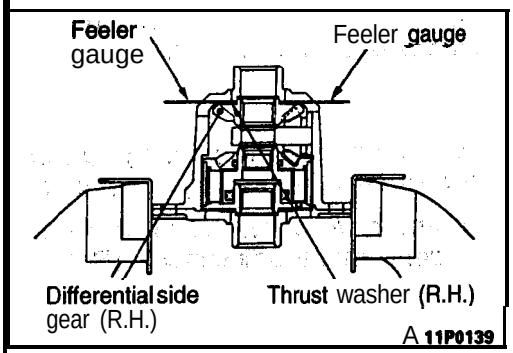
(9) Check the drive gear and drive pinion for tooth contact; If poor contact is evident, make adjustment. (Refer to P.27-32.)

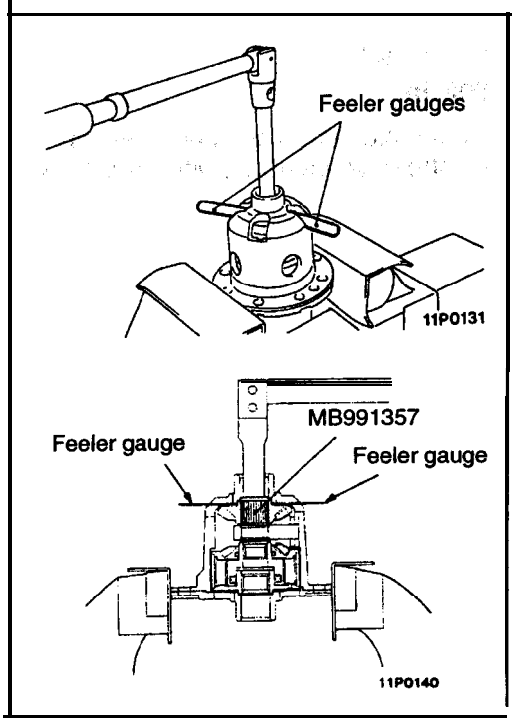
(lO) Measure the drive gear runout at the shoulder on the reverse side of the drive gear.

Limit: 0.05 mm (.002 in.)

(11) If the drive gear runout exceeds the limit, reinstall by changing the phase of the drive gear and differential case, and remeasure.







LSD CASE ASSEMBLY

27300160017

INSPECTION BEFORE DISASSEMBLY

DIFFERENTIAL GEAR BACKLASH CHECK

(1) Hold the limited slip differential case assembly in a vice with the differential side gear (R.H.) up.

Caution
When the limited slip differential case is held in a vice, do not tighten excessively.

(2) Install two 0.03 mm (.001 ih.) feeler gauges diagonally between the differential case (B) and the thrust washer (R.H.).

Caution
Do not insert the feeler gauge in the oil groove provided in the differential case (B).

(3) Insert the special tool in the splined portion of the differential' side gear (R.H.) and make sure that the side gear (R.H.) turns.

(4) Replace the feeler gauges with 0.09 mm (.004 in.) feeler: "gauges.

(5) Insert the special tool in the splined portion of the differential side gear (R.H.) and make sure that the side gear' (R.H.) does not turn.

Standard value: Differential gear backlash
0.03–0.09 mm (.001–.004 in.)

NOTE
The differential gear backlash is normal if the side gear clearance in the direction of thrust is within the standard value.

(6) If the side gear clearance in the direction of thrust is not within the standard value, remove the differential case (A) and adjust by means of thrust washer (L.H.).

Thrust washer (L.H.)	
Part No.	Thickness mm (in.)
MB569243	0.8 (.032)
	0.9 (.035)
	1.0 (.039)
	1.1 (.043)
	1.15 (.045)
	1.2 (.047)
	1.25 (.049)
	1.3
	1.35 (.051)/.053)
	1.4 (.055)
	1.5 (.059)

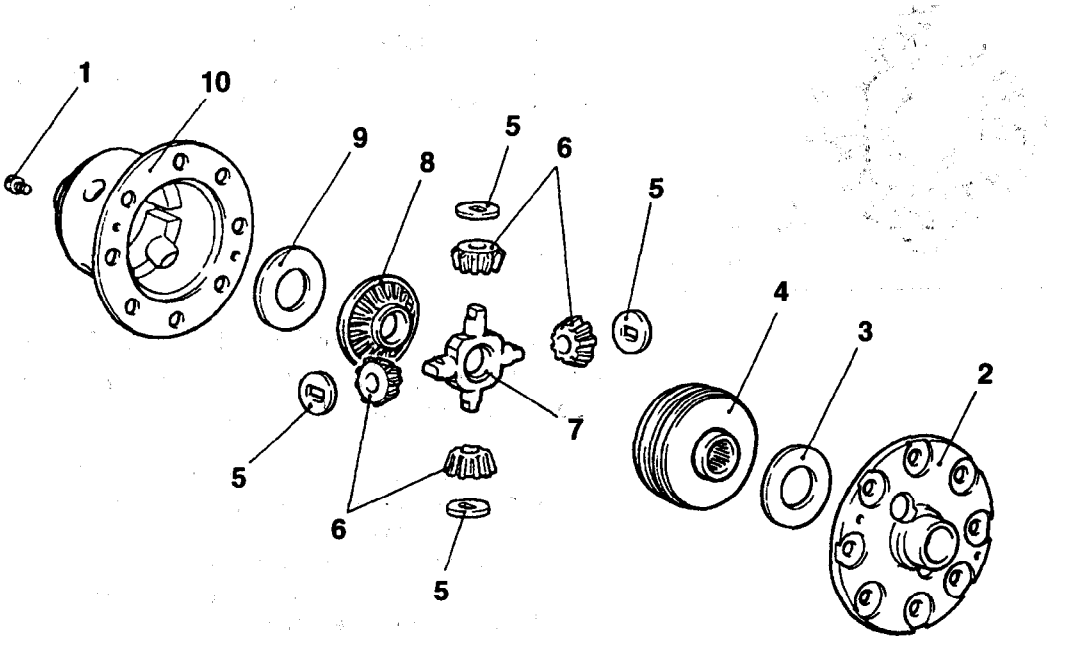
TSB Revision

Thrust washer (R.H.) [Reference]	
Part No.	Thickness mm (in.)
MB569528	0.8 (.032)

NOTE
The thrust washers (L.H.) are available in a kit. Select one appropriate thrust washer from among 11 washers.

DISASSEMBLY AND REASSEMBLY

27300140011



11P0127

Disassembly steps

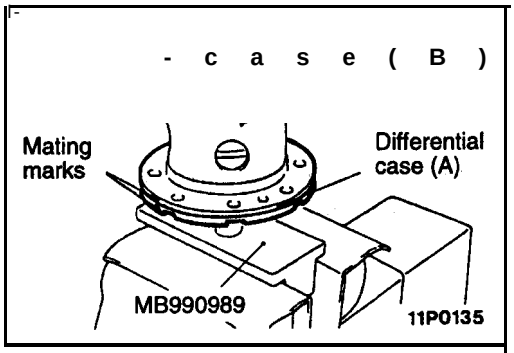
- Inspection before disassembly , (Refer to P.27-46.)
- .. Screw
- ▶A◀ 2. Differential case (A)
- ◀A▶ ▶C◀ 3. Thrust washer (L.H.)
- 4. Viscous coupling (with differential side gear: L.H.)
- ▶B◀ 5. Pinion mate washer
- ▶B◀ 6. Differential pinion mate
- 7. Differential pinion shaft
- 8. Differential side gear (R.H.)
- ◀A▶ 9. Thrust washer (R.H.)
- ▶A◀ 10. Differential case (B)

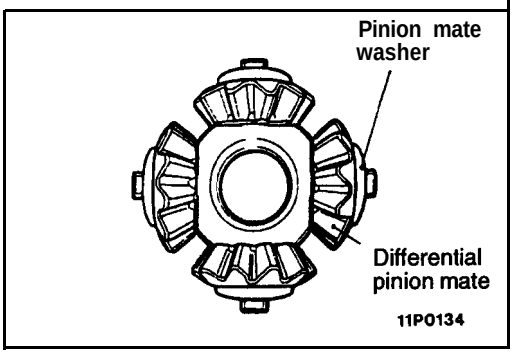
NOTE
LSD: Limited slip differential

DISASSEMBLY SERVICE POINT

◀A▶ THRUST WASHER (L.H.)/THRUST WASHER (R.H.) REMOVAL

The thrust washer (L.H.) differs from the thrust washer (R.H.) in thickness.
Keep them separately from each other for reference in assembly.





REASSEMBLY SERVICE POINTS

▶A◀ DIFFERENTIAL CASE (B)/DIFFERENTIAL CASE (A) INSTALLATION

Install the differential cases (A) and (B) with their mating marks in alignment.

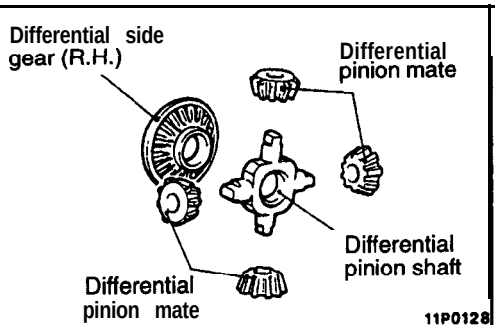
▶B◀ DIFFERENTIAL PINION MATE/PINION MATE WASHER INSTALLATION

Attach the differential pinion mate to the pinion shaft with the pinion washers directed as shown, then assemble them into the differential case (B).

▶C◀ THRUST WASHER (L.H.) SELECTION

When the differential side gear and pinion mate gear have been replaced, select the thrust washer (L.H.) by the following procedure.

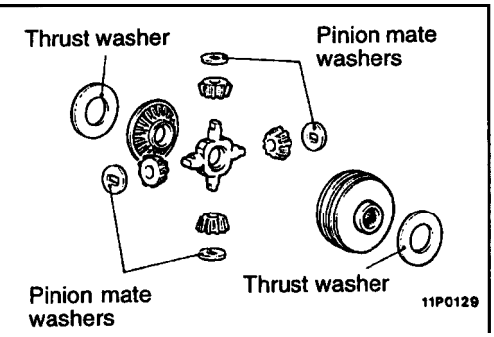
(1) Wash the differential side gear and pinion mate gear with unleaded gasoline and degrease.
(2) Assemble the thrust washers so far used, without confusing the R.H. part with the L.H. part and together with each gear, VCU, pinion mate washer and pinion shaft, to the differential cases (A) and (B), and loosely tighten the screws.
(3) Check the differential backlash, and select a thrust washer (L.H.) to obtain its standard value. (Refer to **P.27-46.)**



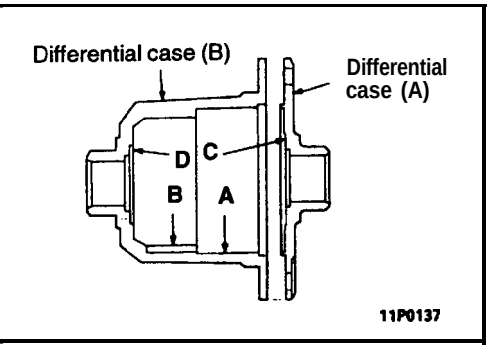
INSPECTION

27300150014

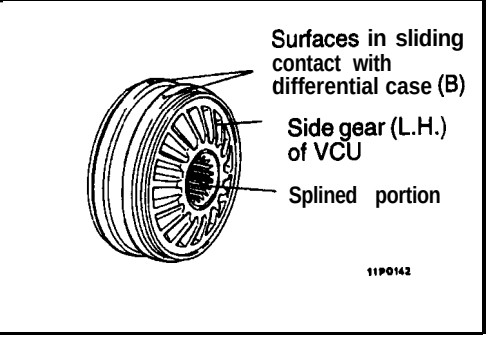
(1) Check each gear and the differential pinion shaft for wear and damage.
(2) Check the splined portion of the differential side gear (R.H.) for damage and shoulder.



(3) Check the sliding surfaces of the thrust washer and pinion mate washer for wear, seizure and damage.



(4) Check the sliding surfaces of the differential cases (A) and (B) for wear, seizure and damage.
A. Surface in sliding contact with VCU
B. Surface in sliding contact with pinion mate washer
C. Surface in sliding contact with thrust washer
D. Surface in sliding contact with thrust washer



(5) Check the spline of VCU for damage and shoulder and check the surface in sliding contact with the differential case (B).
(6) Check the side gear (L.H.) of VCU for wear and damage.

TSB Revision

NOTES