SERVICE MANUAL

DATSUN 240Z
MODEL S30 SERIES



NISSAN

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION RA

REAR AXLE & REAR SUSPENSION

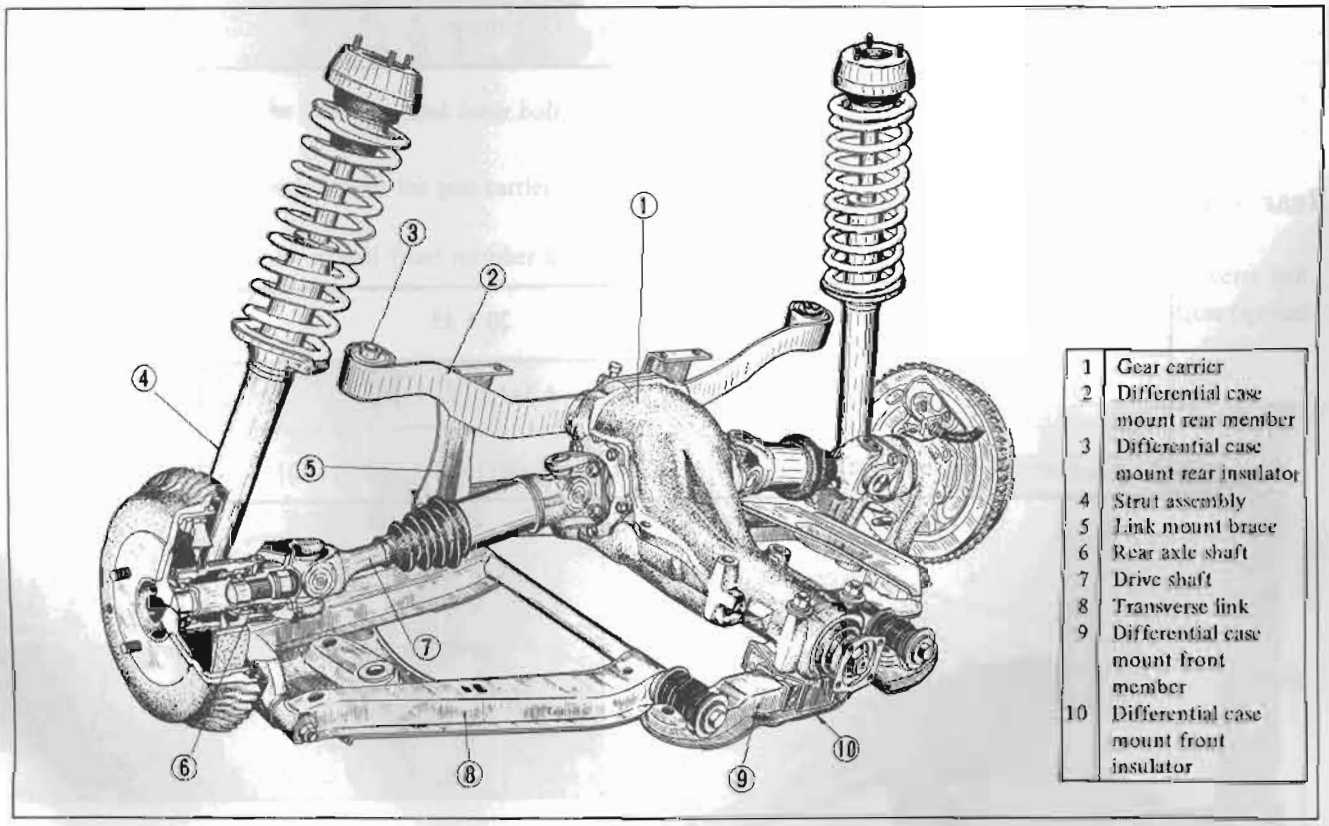
RA

REAR AXLE AND REAR SUSPENSION ..... RA- 1

REAR AXLE AND REAR SUSPENSION

CONTENTS

DESCRIPTION ..... RA- 2
Specifications ..... RA- 2
Rear wheel alignment ..... RA- 2
REAR SUSPENSION ASSEMBLY ..... RA- 3
Removal ..... RA- 3
Disassembly ..... RA- 3
Inspection ..... RA- 4
Reinstallation ..... RA- 4
STRUT AND COIL SPRING ..... RA- 5
Removal ..... RA- 5
Reinstallation ..... RA- 6
TRANSVERSE LINK ..... RA- 6
Removal ..... RA- 6
Inspection ..... RA- 7
Reinstallation ..... RA- 7
GEAR CARRIER ..... RA- 7
Removal ..... RA- 7
Reinstallation ..... RA- 8
WHEEL BEARING, OIL SEAL AND REAR AXLE SHAFT ..... RA- 8
Removal ..... RA- 8
Inspection ..... RA- 9
Reinstallation ..... RA- 9
Instructions for assembly of rear wheel bearing ..... RA- 9
DRIVE SHAFT RA-10
Removal RA-11
Disassembly RA-11
Inspection RA-11
Reassembly RA-11
SERVICE DATA AND SPECIFICATIONS RA-12
TROUBLE DIAGNOSES AND CORRECTIONS RA-14



1	Gear carrier
2	Differential case mount rear member
3	Differential case mount rear insulator
4	Strut assembly
5	Link mount brace
6	Rear axle shaft
7	Drive shaft
8	Transverse link
9	Differential case mount front member
10	Differential case mount front insulator

Fig. RA-1 Rear axle and rear suspension assembly

DESCRIPTION

The rear suspension is a strut type independent suspension. Primarily, rear wheel is supported with the strut and transverse link, the gear carrier is aligned independently and separately from the suspension, and the gear carrier is installed on the body directly with rubber insulators. Thus, three major rear suspension elements providing the left wheel, right wheel, and gear carrier, are separated, and very high suspension performance is obtained.

As for the construction, the rear axle housing is brazed on the lower end of the strut which self-contains a shock absorber, and the lower side is connected to the transverse link through rubber bushing. On the intermediate position of the strut, the body is suspended with coil spring, the upper end is installed on the body through rubber cushion, and the transverse link is also installed on the body directly with rubber cushion.

A horizontal leaf spring is connected to the rear end of the gear carrier, and the gear carrier is installed on the body at three positions (both ends of the leaf spring and front end of the gear carrier) through rubber cushions. Driving power is transmitted to the rear axle shaft with the freely extensible drive shaft through side flanges on both ends of the gear carrier. The rear axle shaft is supported with two ball bearings in the axle housing.

Specifications

Type of suspension	Strut (independent suspension)
Type of drive shaft	Ball spline
Type of shock absorber	Hydraulic cylindrical multi-motion
Spring	Coil spring

Rear wheel alignment (without load)

Camber	minutes	20 ± 45
Tread	mm (in)	1,344.5 (52.93)
Toe-in	mm (in)	[2.4 (3/32) (out) to 11.1 (7/16) (in)]

REAR SUSPENSION ASSEMBLY

Removal

1. Remove the strut assemblies from both sides. (See the paragraphs for strut and coil spring removals.)

2. Remove the main muffler. (Refer to section FE Engine control, Fuel & Exhaust system.)

3. Separate the propeller shaft from the final drive.

4. Loosen the transverse link inner bolts (indicated by arrows) (for front, rear, left and right).

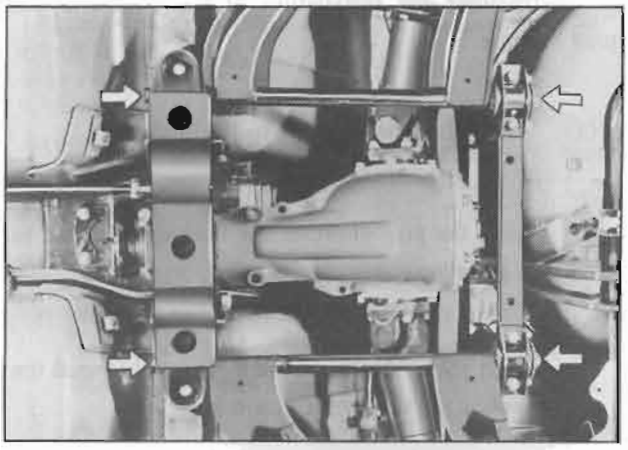


Fig. RA-2 Removing the transverse link inner bolts

5. Apply a jack to the lower end of the gear carrier.

6. Remove the differential mount front member installation bolts (indicated by arrows).

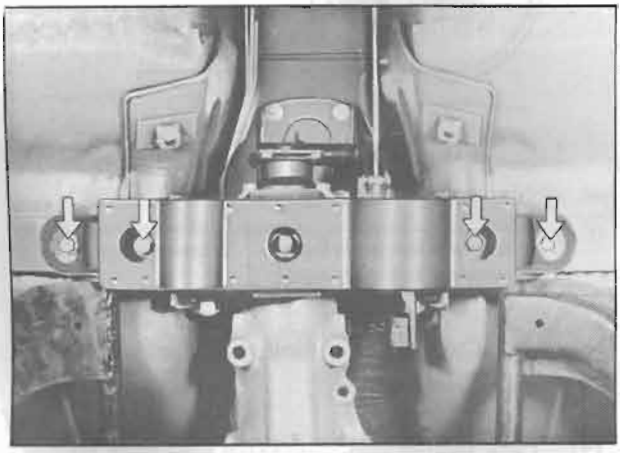


Fig. RA-3 Removing the differential mount front member

7. Remove the link mount brace installation bolt (1) and differential mount rear insulator installation bolt (2). (For both sides)

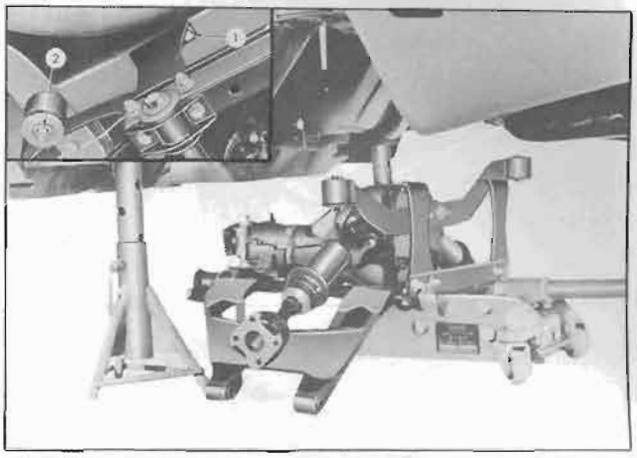


Fig. RA-4 Removing the rear axle and suspension assembly

8. Lower the jack slowly, and remove the rear suspension assembly slowly.

Disassembly

1. Remove the link mount rear bracket, and remove the transverse link. (For both sides)

2. Remove the drive shaft installation bolt (in the gear carrier side), and separate the drive shaft from the gear carrier. (For both sides.)

3. Remove the inner bushing from the transverse link.

4. Remove the outer bushing from the transverse link by the use of rear transverse link bushing replacer (special tool ST38800000).

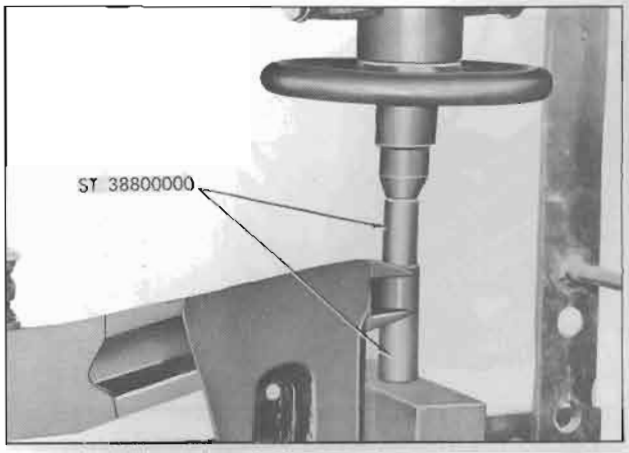


Fig. RA-5 Removing the transverse link outer bushing

5. Remove the differential mount rear member and differential mount front insulator from the gear carrier.

6. Remove the differential mount rear insulator from the differential mount rear member by the use of drift set (special tool ST33260000).

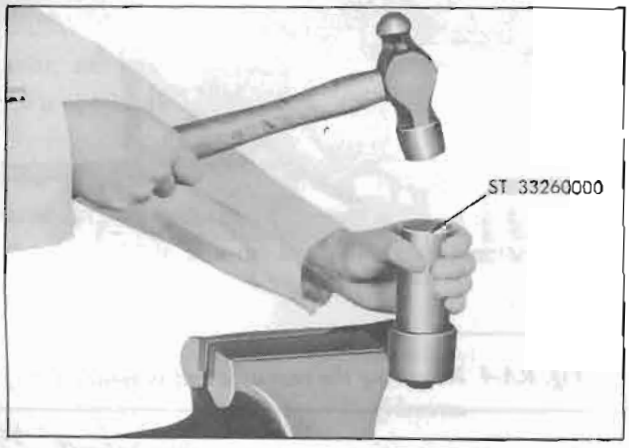


Fig. RA-6 Removing the differential mount rear insulator

Inspection

1. Check the suspension system components such as differential mount front and rear members, transverse link, etc. for crack, deformation, and damage. Replace as required.

2. Replace the differential mount front insulator with a new one, if the dimension "A" (Figure RA-7) is 9 mm (0.3543 in) or greater, 2 mm (0.0787 in) or smaller. (unloaded)

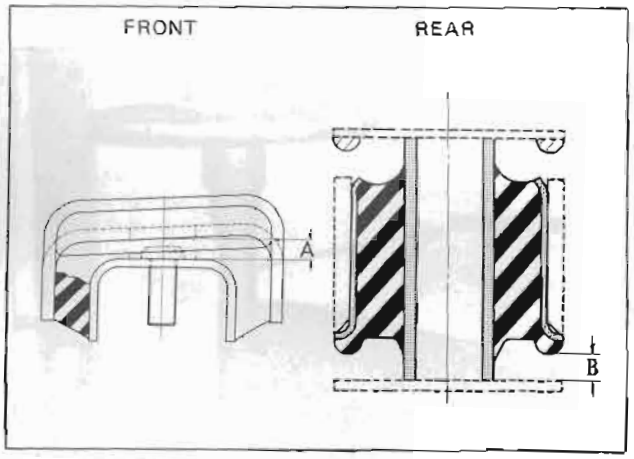


Fig. RA-7 Sectional view of the differential mount insulator

3. Replace the differential mount rear insulator with a new one, if the dimension "B" (Figure RA-7) is less than 5 mm (0.1969 in). (unloaded)

4. Check other rubber parts (transverse link inner bushing and outer bushing, etc.) for crack, deformation and damage. Replace as required.

Reinstallation

1. Reinstall and reassemble the rear suspension assembly in reverse sequence of removal and disassembly.

2. Instructions for installation of the transverse link inner bushing

(1) Apply the inner bushing to the link shaft.

(2) Align the projection on the bushing (directed to the axis direction) horizontally.

(3) Align the center of bushing (directed toward the axis direction) to the center of bracket.

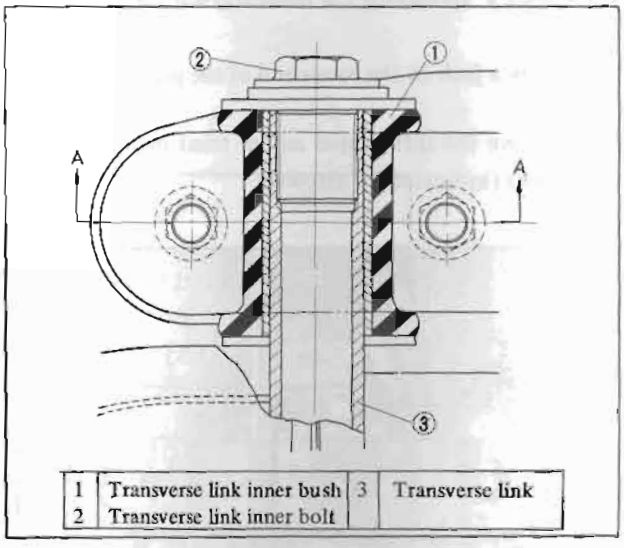


Fig. RA-8 Cross sectional view of the transverse link inner bushing (1)

(4) First, tighten bolts supported toward the vertical direction (differential mount front member or link mount rear bracket).

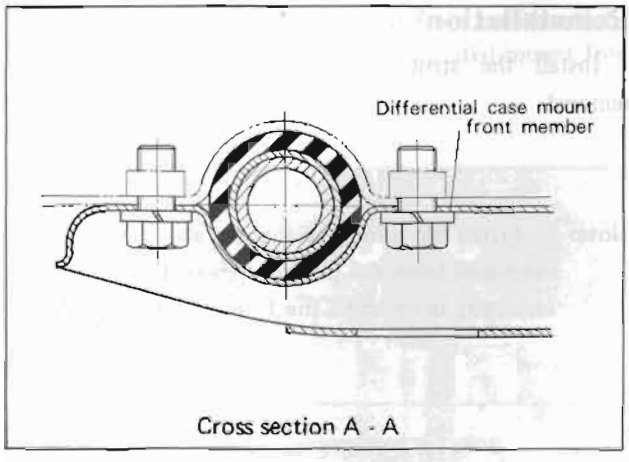


Fig. RA-9 Cross sectional view of the transverse link inner bushing (II)

(5) Temporarily tighten the transverse link inner bolts.

Note: a. Tighten the transverse link inner bolts and outer self-lock nuts after installing wheels and placing the vehicle on ground under the standard load. (See RA-2 Rear wheel alignment)
b. Install the differential carrier front insulator carefully with the arrow towards front.

STRUT AND COIL SPRING

Removal

1. Choke the front wheels.

2. Loosen the wheel nuts, jack up the vehicle, and support the body with a stand.

3. Remove the wheel nuts and remove the wheels.

4. Disconnect the brake line connector (body side) ① and side brake linkage ②. (Figure RA-10)

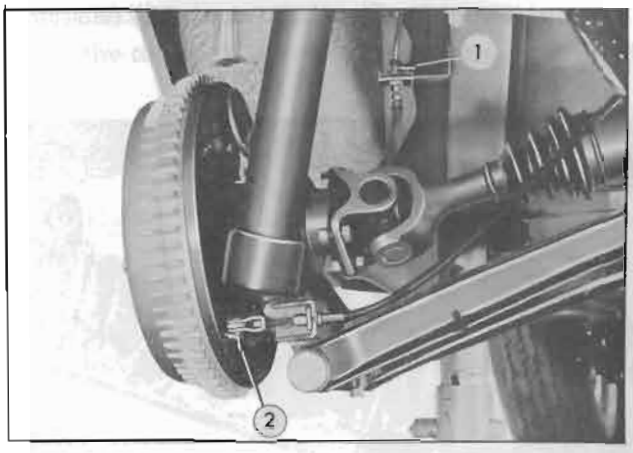


Fig. RA-10 Removing the brake hose and side brake linkage

5. Remove the transverse link outer self-lock nuts ② and lock bolt ① from the lower end of the bearing housing.

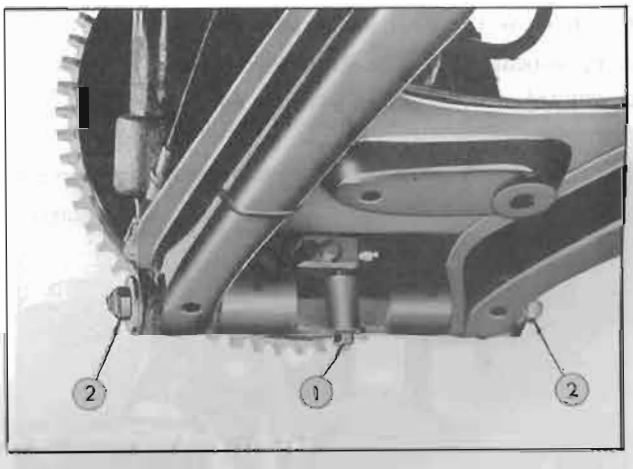


Fig. RA-11 Removing the lock bolt and self-lock nuts

6. Withdraw the spindle, and separate the transverse link from the strut assembly.



Fig. RA-12 Removing the spindle

7. Disconnect the drive shaft (wheel side) (indicated by arrows).

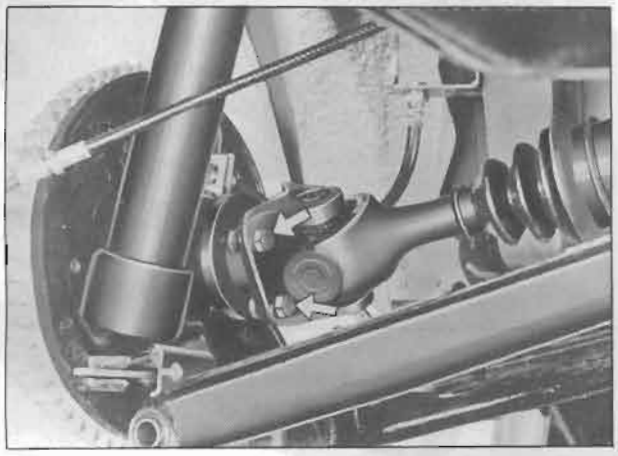


Fig. RA-13 Removing the drive shaft

8. Remove the strut installation nuts (from the rider's compartment side). The strut assembly can be removed downward.



Fig. RA-14 Removing the strut assembly

Note: When removing the strut assembly, apply a jack to the lower end of the strut, and remove it gradually.

9. For the removal and reinstallation of the spring, disassembly of the strut, inspection and adjustment, the instructions for the front strut assembly apply.

Refer to section "FA-Front Axle and Front Suspension."

Reinstallation

Install the strut assembly in reverse sequence of removal.

Note: a. Install the spindle so that the shorter side (when measured from the position where the lock bolt is installed) is faced to the front side of the vehicle.

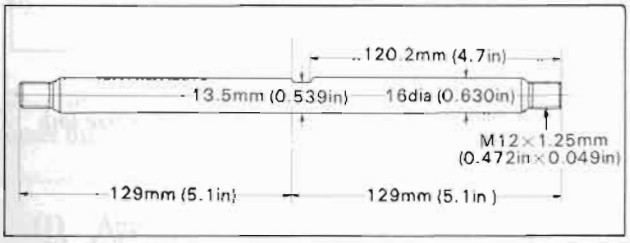


Fig. RA-15 The spindle

b. Tighten the transverse link outer self-lock nut completely after installing wheels and placing the vehicle under the standard load

c. When installing the spring, make sure that the spring is correctly seated on the spring seat.

TRANSVERSE LINK

Removal

1. Choke the front wheels.

2. Loosen the wheel nuts, jack up the vehicle, and support the body with a stand.

3. Remove the wheel nuts, and remove the wheel.

4. Separate the transverse link from the strut. (Refer to the paragraph for strut and coil spring.)

5. Apply a jack beneath the gear carrier, and support it.

6. Loosen the transverse link inner bolts ① (for both front and rear). (Figure RA-16)

7. Remove the differential mount front insulator installation nut ②. (Figure RA-16)

8. Remove the differential mount front member installation nuts ③ , and remove the differential mount front member ④.

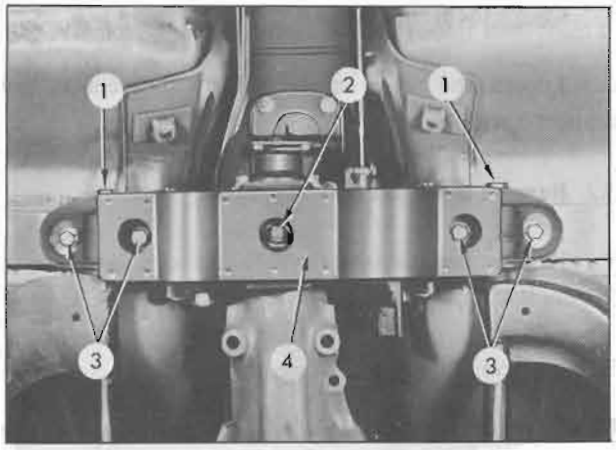


Fig. RA-16 Remving the differential mount front member

9. Remove the link mount rear bracket (indicated by arrows). The transverse link can be removed.

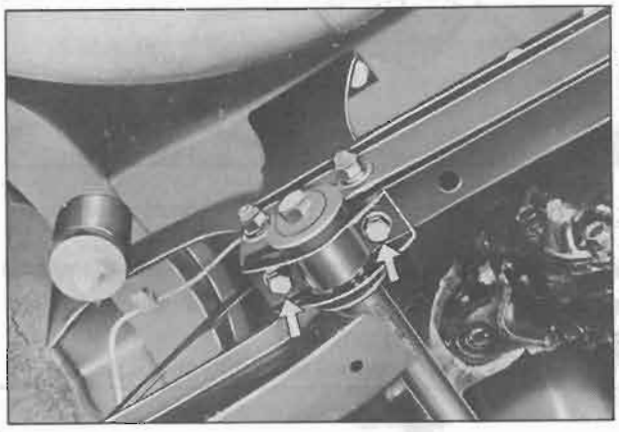


Fig. RA-17 Removing the transverse link

10. Withdraw the inner bushing and outer bushing from the transverse link. (Refer to the paragraph for rear suspension assembly.)

Inspection

1. Check the transverse link differential mount front member for crack, deformation, and damage. Replace as required.

2. Check the rubber bushing for decline, wear, or other defective condition, and replace as required.

Reinstallation

1. Install the transverse link in reverse sequence of removal.

2. For the installation, refer to the precautions for installation of rear suspension assembly (page RA-4).

GEAR CARRIER

Removal

1. Choke the front wheels.

2. Jack up the vehicle, and support the body with a stand.

3. Remove the main muffler. (Refer to section FE Engine control, Fuel and Exhaust system.)

4. Separate the propeller shaft from the gear carrier.

5. Loosen the front side transverse link inner bolts ①. (Figure RA-18)

6. Remove the drive shaft installation bolts (gear carrier side) ②, and separate the drive shaft from the gear carrier.

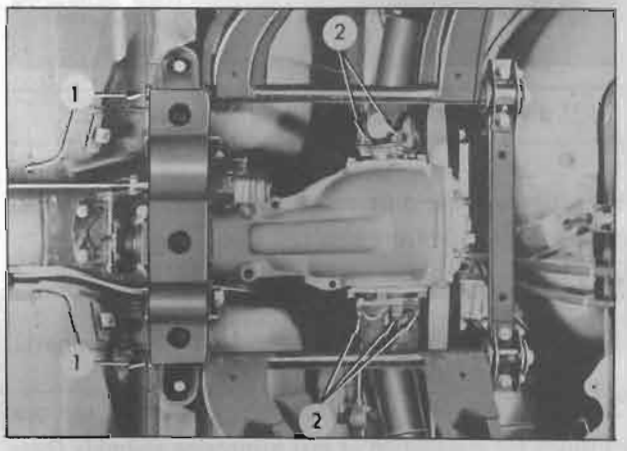


Fig. RA-18 Separating the drive shaft

7. Apply a jack beneath the gear carrier and support it.

8. Remove the differential mount rear member installation nut (indicated by arrows).

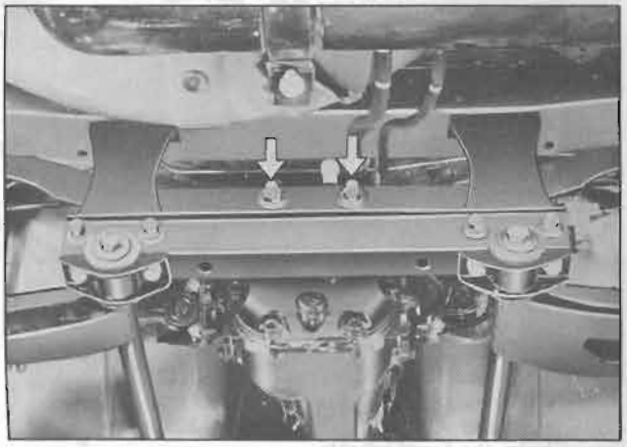


Fig. RA-19 Removing the differential mount rear member

9. Remove the differential mount front member installation bolts (indicated by arrows), lower the jack slowly, and remove the gear carrier.

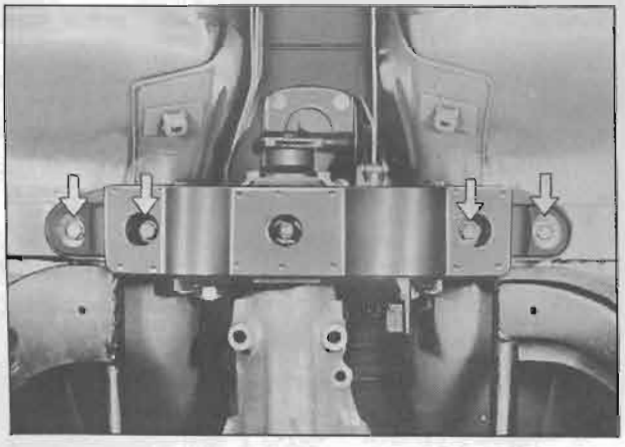


Fig. RA-20 Removing the differential mount front member

10. Remove the differential mount front member and differential mount front insulator from the gear carrier.

Reinstallation

1. Install the gear carrier in reverse sequence of removal.

2. When installing the gear carrier, refer to the precautions for installation of rear suspension assembly (page RA-4).

WHEEL BEARING, OIL SEAL, AND REAR AXLE SHAFT

Removal

1. Choke the front wheels.

2. Loosen the wheel nuts, jack up the vehicle, and support it with stand.

3. Remove the wheel nuts and wheel.

4. Remove the drive shaft installation bolts (wheel side). (Figure RA-13).

5. Remove the rear wheel bearing lock nut.

Note: Do not release caulking when removing the rear wheel bearing lock nut.

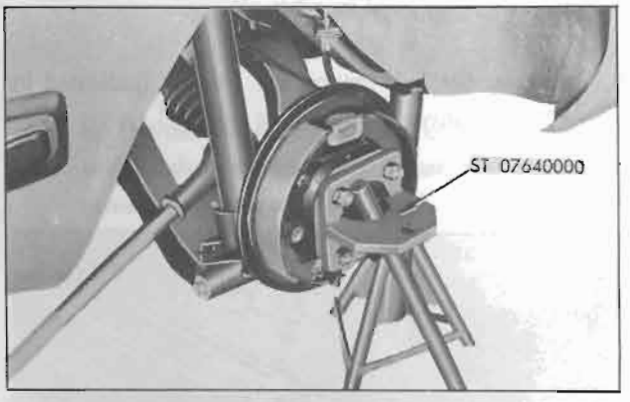


Fig. RA-21 Removing the rear wheel bearing lock nut

6. Remove the rear axle shaft by the use of rear axle stand (special tool ST07640000) and sliding hammer (special tool ST36230000).

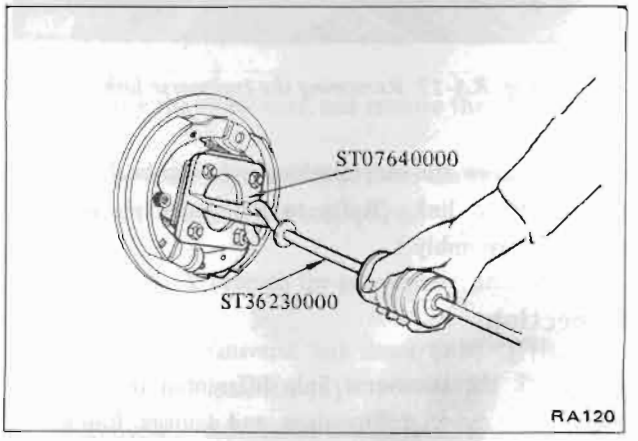


Fig. RA-22 Removing the rear axle shaft

7. Remove the distance piece, companion flange and bearing washer.

8. Remove the inner rear wheel bearing and oil seal.

9. Remove the rear wheel bearing (outer side) from the rear axle shaft.

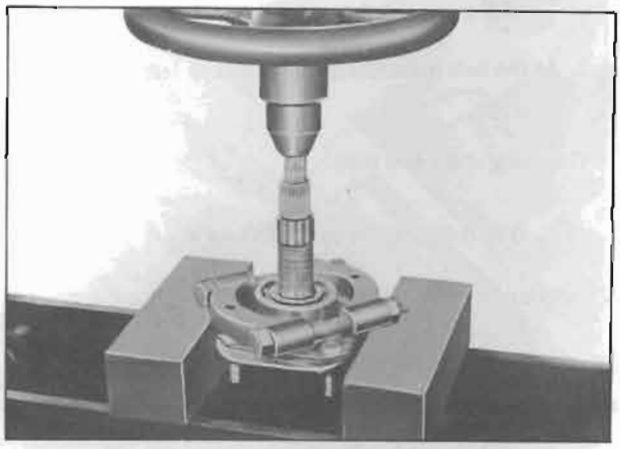


Fig. RA-23 Removing the rear wheel bearing (outer side)

Inspection

1. Check the wheel bearing for end play, and the rolling surface for flaking, wear, seizure, and oil seal for crack, deformation.

Replace the wheel bearing as required.

2. Check the rear axle shaft for crack and seizure.

Replace the rear axle shaft and wheel bearing, as required.

3. Check the lip of oil seal for damage and wear.

Reinstallation

Install the wheel bearing, oil seal and rear axle shaft in reverse sequence of removal.

Instructions for assembly of rear wheel bearing

1. The outer bearing is provided with a seal in one side. Apply the outer bearing to the rear axle shaft so that the side to which the seal is attached is faced to the wheel. (See Figure RA-25)

2. Relationship between the rear bearing housing and distance piece is shown in Figure RA-24

Mark "A", "B", or "C" is stamped on the housing. Select a distance piece having a mark coincided with the mark on the housing.

When a distance piece is reused, make sure that both ends are not collapsed or deformed.

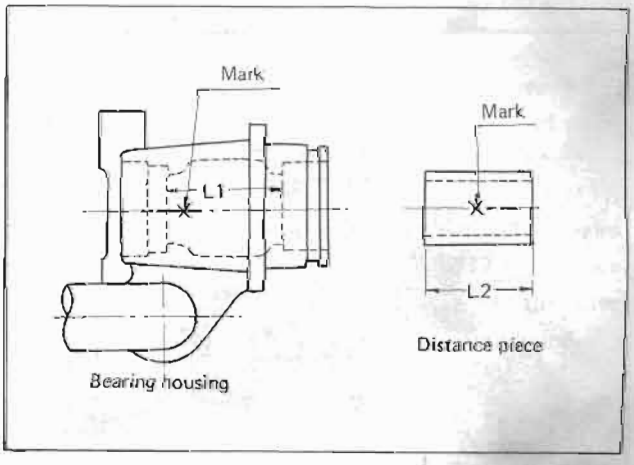


Fig. RA-24 The rear bearing housing and distance piece

Rear bearing housing		Distance piece	
Mark	Size mm (in)	Mark	Size mm (in)
A	52.63 (2.072) or more but less than 52.73 (2.076)	A	52.60 (2.070) or more but less than 62.66 (2.467)
B	52.53 (2.068) or more but less than 52.63 (2.072)	B	52.50 (2.067) or more but less than 52.56 (2.069)
C	52.43 (2.064) or more but less than 52.53 (2.068)	C	52.40 (2.063) or more but less than 52.46 (2.065)

3. For the wheel bearing grease, use multipurpose grease (MIL G2108 or G10924).

Fill the portions indicated by asterisk (*) in Figure RA-25

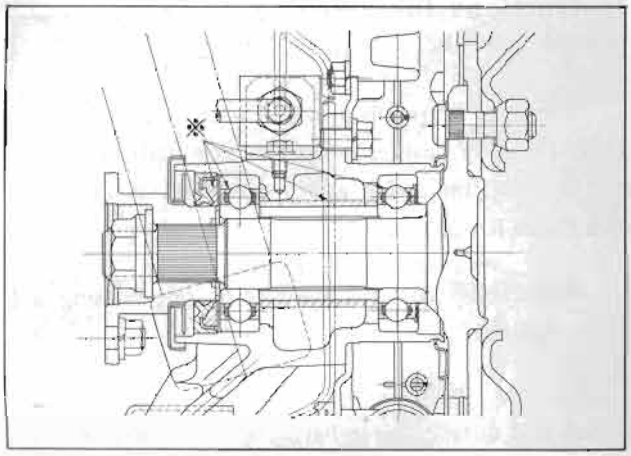


Fig. RA-25 Lubrication chart of rear axle

4. Tighten the wheel bearing lock nut, and measure the preload and rear axle shaft end play. Readjust as required.

Wheel bearing preload:

4.5 kg-cm (3.9 in-lb)

At the hub bolt 790 gr (28.7 oz) or less

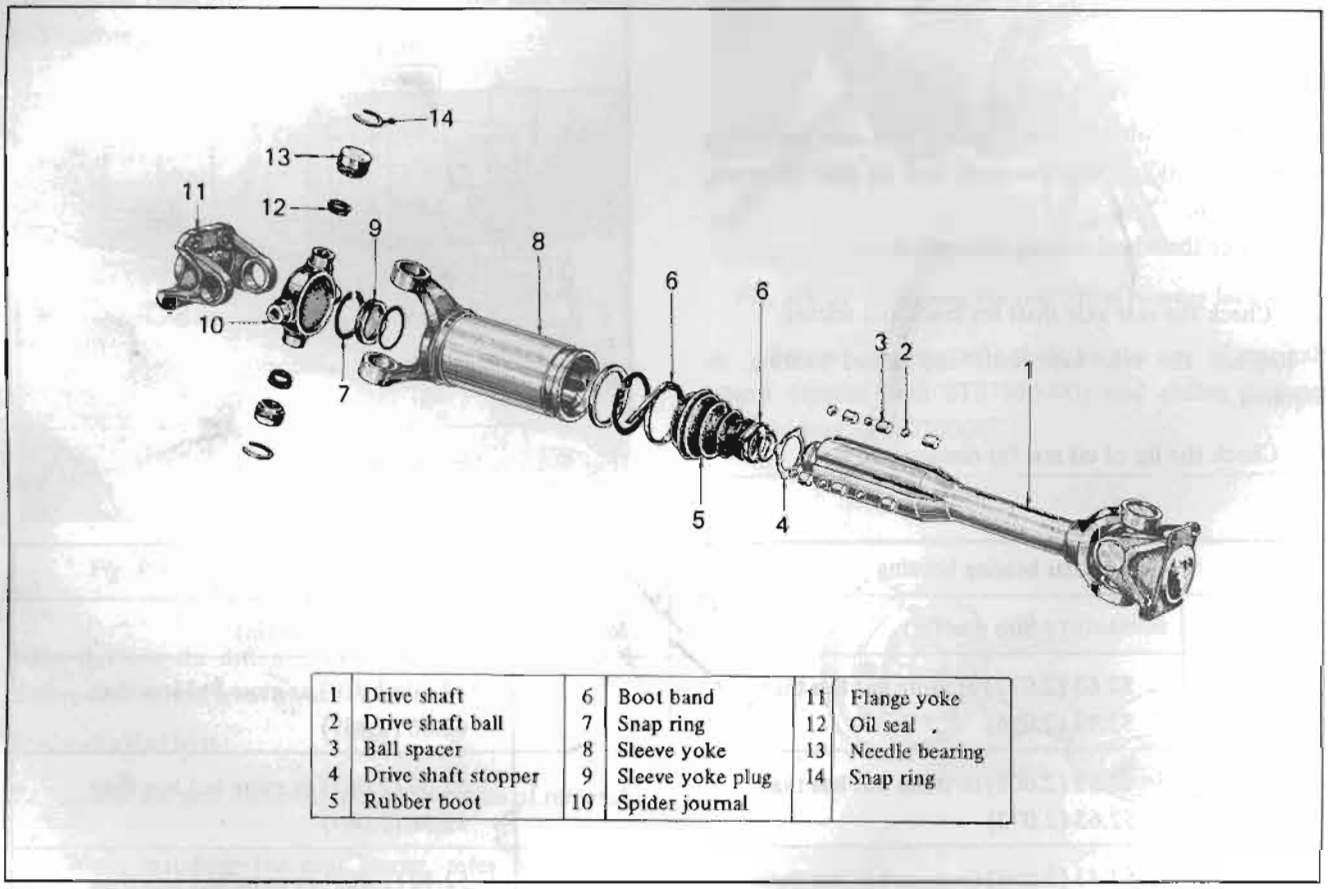
Rear axle shaft end play:

0 to 0.15 mm (0 to 0.0057 in)

5. Securely caulk the wheel nuts after tightening.

6. When fitting the wheel side wheel bearing, use rear axle shaft outer bearing drift (special tool ST37780000)

DRIVE SHAFT



1	Drive shaft	6	Boot band	11	Flange yoke
2	Drive shaft ball	7	Snap ring	12	Oil seal
3	Ball spacer	8	Sleeve yoke	13	Needle bearing
4	Drive shaft stopper	9	Sleeve yoke plug	14	Snap ring
5	Rubber boot	10	Spider journal		

Fig. RA-26 Drive shaft components

Removal

Remove the drive shaft universal joint yoke flange bolts from both sides. (indicated by arrows)

Note: Handle the drive shaft carefully because it is easily damaged.

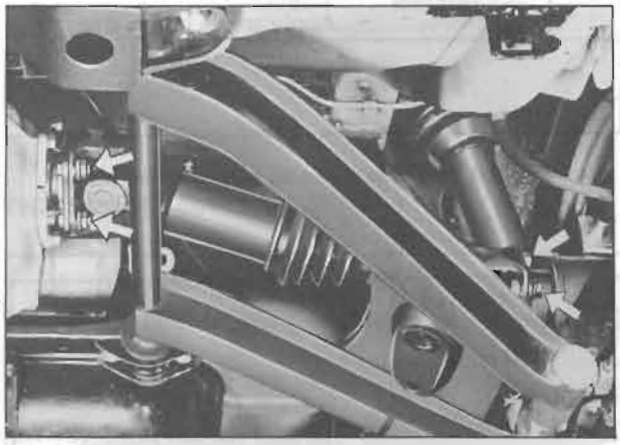


Fig. RA-27 Removing the drive shaft

Disassembly

The drive shaft should be disassembled only when lubricating the ball spline.

The lubrication is required every 50,000 km (30,000 miles).

1. Remove the universal joint spider from the differential side. Refer to the paragraph covering the propeller shaft.

2. Remove the snap ring from the sleeve yoke plug and remove the plug. Use drive shaft snap ring plier (special tool ST38300000).

Depress the drive shaft and remove the snap ring from the stopper.

Remove the stopper. Disconnect the boot and separate the drive shaft carefully so as not to lose the balls and spacers.

Inspection

1. Replace the boot and O-ring of the sleeve yoke plug, if damaged.

2. Check the drive shaft for straightness, crack, damage, wear or distortion.

Replace the drive shaft assembly as required.

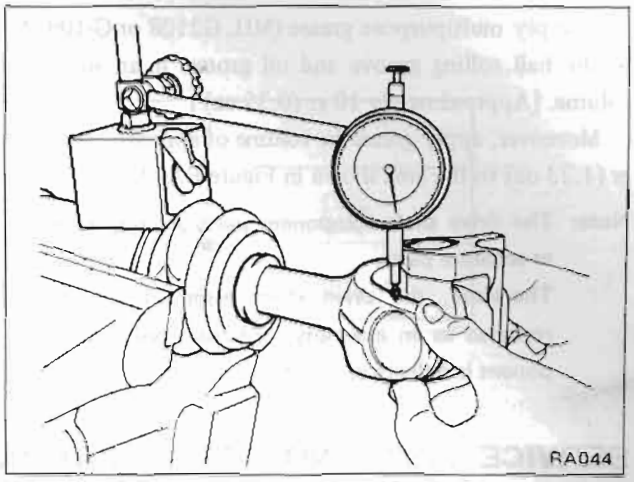


Fig. RA-28 Measuring drive shaft play

3. Check the steel balls and sleeve yoke for damage, wear or distortion.

Replace the drive shaft assembly as required.

4. Replace the universal joint in accordance with the instructions described in the paragraph covering the propeller shaft if faulty condition is detected.

5. Thoroughly remove grease from the sleeve yoke, drive shaft ball rolling groove and oil groove, and clean them. (Multipurpose grease MIL G2108, G10924)

6. Measure the drive shaft play as shown in the Figure RA-28. If the play exceeds 0.1 mm (0.0039 in), replace the drive shaft assembly. Be sure to measure the drive shaft play with the drive shaft compressed completley.

Reassembly

Reassemble the drive shaft in reverse sequence of disassembly regarding the following matters:

1. Correctly align the yokes, and make sure that the steel balls and spacers are installed in the correct order.

2. Selecting a suitable snap ring, adjust the axial play of the universal joint to within 0.02 mm (0.0008 in). Snap rings having four different thicknesses are available.

3. Apply multipurpose grease (MIL G2108 or G-10924) to the ball rolling groove and oil groove in an adequate volume. [Approximately 10 gr (0.35 oz)]

Moreover, apply grease in volume of approximately 35 gr (1.23 oz) to the area shown in Figure RA-29.

Note: The drive shaft component parts are not available as separate parts.
Therefore, the drive shaft assembly should be replaced as an assembly, although only one component is defective.

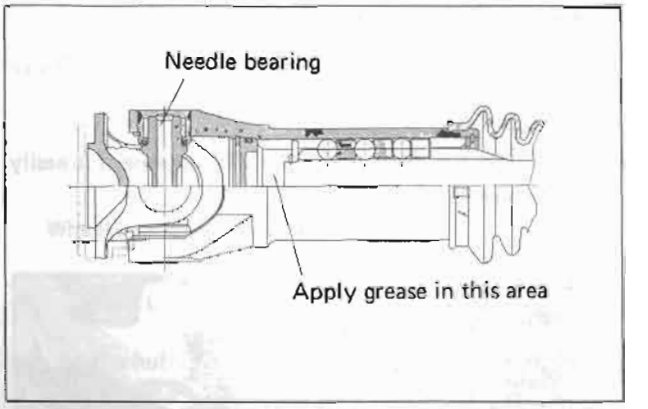


Fig. RA-29 Cross-sectional view of drive shaft

SERVICE DATA AND SPECIFICATIONS

SPECIFICATIONS FOR SPRING

Spring wire diameter	11.4 mm (0.449 in)
Spring coil diameter	100 mm (3.94 in)
Number of coils	10.65
Free height	369 mm (14.5 in)
Height when installed	215 mm (8.4 in)
Normal load	288 kg (635 lb)
Spring constant	1.85 kg/mm (103.6 lb/in)

SPECIFICATIONS FOR STRUT

Outer diameter	50.8 mm (2.000 in)
Piston rod diameter	24.945 to 24.975 mm (0.982 to 0.983 in)
Piston cylinder bore	32.020 to 32.060 mm (1.261 to 1.262 in)
Damping force at v = 0.3 m/s	
Expanding/Contracting (Except Europe)	100 kg (220 lb)/20 kg (44 lb)
Expanding/Contracting (Europe)	100 kg (220 lb)/50 kg (110 lb)
Piston rod	
Bend limit	0.1 mm (0.0039 in)
Wear limit	0.05 mm (0.0020 in)
Piston cylinder	
Bend limit	0.2 mm (0.0079 in)
Wear limit	0.1 mm (0.0039 in)
Strut oil manufacturer	NISSEKI shock absorber oil A-1
Volume of strut oil	320 cc (19.5 cu in)

REAR WHEEL ALIGNMENT (without load)

Camber	minutes	20' ± 45'
Tread	mm (in)	1,344.5 (52.93)
Toe-in	mm (in)	[2.4 (3/32) (out) to 11.1 (7/16) (in)]

TIGHTENING TORQUE

Drive shaft installation bolts (both wheel and gear carrier sides)	5 to 6 kg-m (36.2 to 43.4 ft-lb)
Strut installation nut	1.6 to 2.1 kg-m (11.6 to 15.2 ft-lb)
Strut rod self-lock nut	7.5 to 9.5 kg-m (54.2 to 68.7 ft-lb)
Packing gland	6.0 to 6.5 kg-m (43.4 to 47.0 ft-lb)
Rear axle bearing lock nut	25 to 33 kg-m (181 to 239 ft-lb)
Brake disc installation bolt	2.7 to 3.7 kg-m (19.5 to 26.8 ft-lb)
Brake hose (line) clamp nut	0.54 to 0.74 kg-m (3.9 to 5.4 ft-lb)
Wheel nut	8 to 9 kg-m (57.8 to 65.1 ft-lb)
Bearing housing spindle lock bolt	1.0 to 1.2 kg-m (7.2 to 8.7 ft-lb)
Transverse link outer self-lock nut	7.5 to 9.5 kg-m (54.2 to 68.7 ft-lb)
Transverse link inner bolt	14 to 16 kg-m (101 to 116 ft-lb)
Rear link mount bracket installation bolt	3.2 to 4.3 kg-m (23.1 to 31.1 ft-lb)
Front differential mount member installation bolt	3.2 to 4.3 kg-m (23.1 to 31.1 ft-lb)
Front differential mount member and front differential mount insulator installation nut	3.2 to 4.3 kg-m (23.1 to 31.1 ft-lb)
Gear carrier and differential mount front insulator installation nut	6.0 to 8.0 kg-m (43.4 to 57.8 ft-lb)
Belt fitting self-lock nut	11.3 to 13.8 kg-m (82 to 100 ft-lb)
Belt fitting bracket installation bolt	3.2 to 4.3 kg-m (23.1 to 31.1 ft-lb)
Rear differential mount member installation nut	7.5 to 9.5 kg-m (54.2 to 68.7 ft-lb)
Rear differential mount insulator installation nut	7.5 to 9.5 kg-m (54.2 to 68.7 ft-lb)

Transverse link mounting brace installation bolt	3.2 to 4.3 kg-m (23.1 to 31.1 ft-lb)
Propeller shaft and differential companion flange installation nut	2.5 to 3.2 kg-m (18 to 23 ft-lb)

TROUBLE DIAGNOSES AND CORRECTIONS

Troubles	Possible causes	Corrective action
Noise (Unusual sound) It is difficult to definitely identify noise (unusual sound) of the rear axle from other noises (unusual sounds) generated from the differential carrier and propeller shaft. However, when unusual sound occurs, make sure that it comes from the rear axle.	1) Loose joint	Retighten.
	2) Unbalanced tires	Adjust.
	3) Insufficient lubrication, improper adjustment, worn, or damaged wheel bearing	Lubricate, adjust, or replace.
	4) Damaged transverse link rubber bushing	Replace.
	5) Defective shock absorber (in strut)	Replace.
	6) Damaged differential mount insulator	Replace.
	7) Damaged universal joint	Replace.
	8) Worn or seized drive shaft ball spline	Replace.
	9) Broken coil spring	Replace.
Unstable running This trouble is also related to the front suspension. When diagnosing trouble, refer to the paragraph covering the front suspension, also.	1) Loose wheel nut(s)	Retighten.
	2) Damaged transverse link bushing	Replace.
	3) Reduced shock absorber damping force	Replace.
	4) Seized or damaged drive shaft ball spline	Replace.
	5) Weakened spring	Replace.
Oil Leaking	1) Damaged drive shaft dust cover	Disassemble, clean, and reassemble, or replace the dust cover with a new one.
	2) Worn or damaged rear axle shaft grease seal	Replace.

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