

REAR AXLE & REAR SUSPENSION

SECTION **RA**

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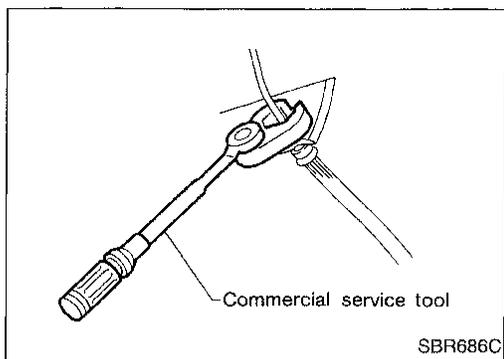
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PRECAUTIONS AND PREPARATION



Precautions

- When installing rubber parts, final tightening must be carried out under unladen condition* with tires on ground.
- *: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.
- Use flare nut wrench when removing or installing brake tubes.
- When installing suspension components, check wheel alignment and adjust if necessary.
- Always torque brake lines when installing.

Commercial Service Tools

Tool name	Description
<ul style="list-style-type: none"> ① Flare nut crowfoot ② Torque wrench 	<div style="text-align: center;"> </div> <p style="text-align: center;">NT360</p> <p style="text-align: center;">a: 10 mm (0.39 in)</p>

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

Use the chart below to help you find the cause of the problem. If necessary, repair or replace these parts.

Symptom		Possible cause and SUSPECTED PARTS	Reference page														
			RA-4	RA-13	RA-11	—	—	RA-10	RA-6	RA-5	NVH in FA section	NVH in FA section	NVH in FA section	NVH in FA section	NVH in BR section	NVH in ST section	
			Improper Installation, Looseness	Shock Absorber Deformation, Damage or Deflection	Bushing or Mounting Deterioration	Parts Interference	Spring Fatigue	Suspension Looseness	Incorrect Wheel Alignment	Wheel Bearing Damage	DRIVESHAFT	FRONT AXLE AND FRONT SUSPENSION	TIRES	ROAD WHEEL	BRAKES	STEERING	
Noise	REAR AXLE AND REAR SUSPENSION	Noise	X	X	X	X	X	X			X	X	X	X	X	X	
		Shake	X	X	X	X		X			X	X	X	X	X	X	
		Vibration	X	X	X	X	X				X	X	X				X
		Shimmy	X	X	X	X			X			X	X	X	X	X	X
		Judder	X	X	X							X	X	X	X	X	X
		Poor Quality Ride or Handling	X	X	X	X	X		X	X			X	X	X		

X: Applicable

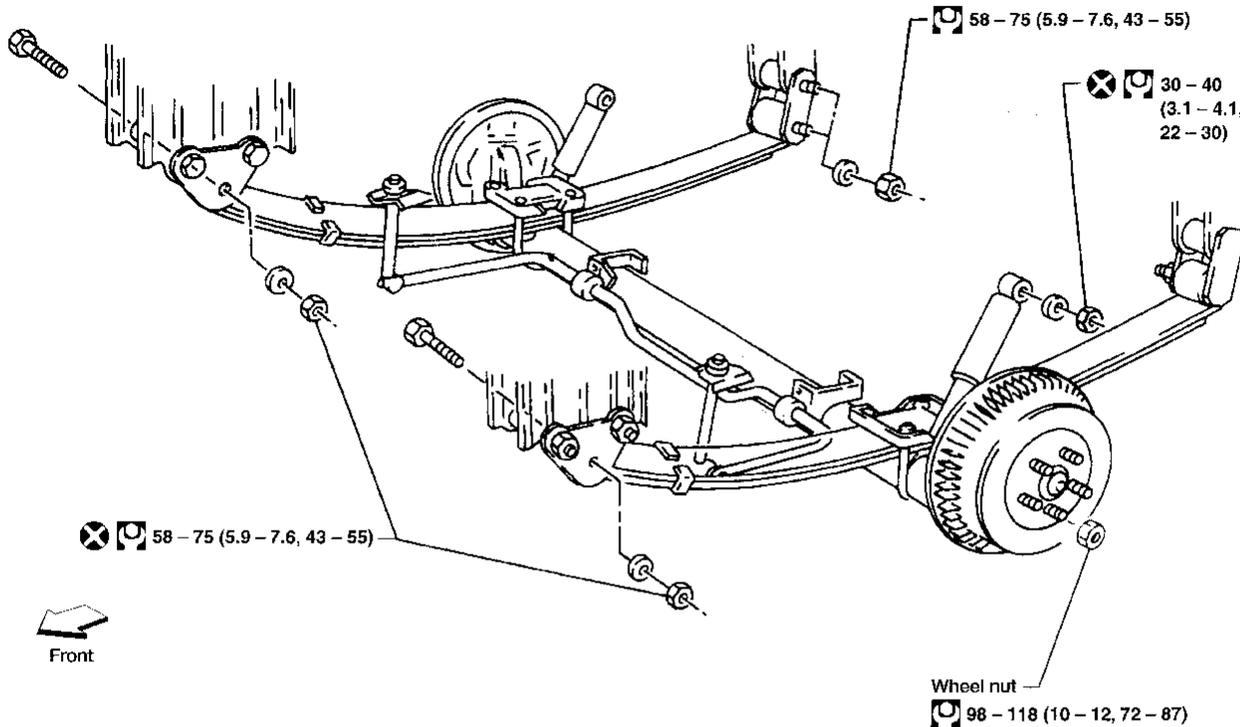
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REAR SUSPENSION SYSTEM

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When installing rubber parts, final tightening must be carried out under unladen condition* with tires on ground.

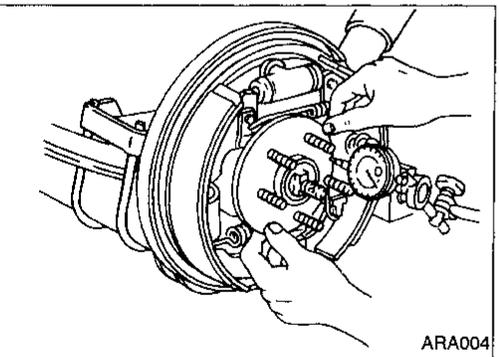
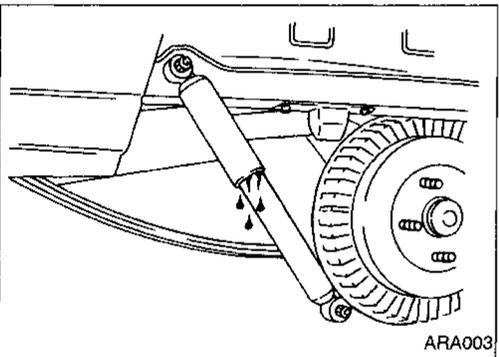
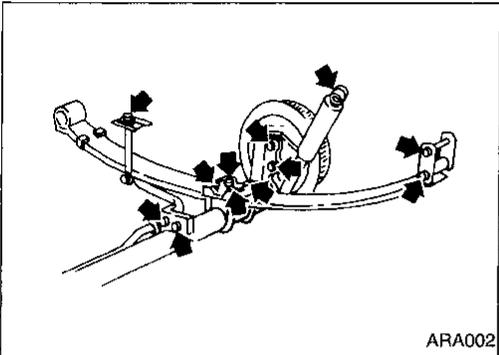
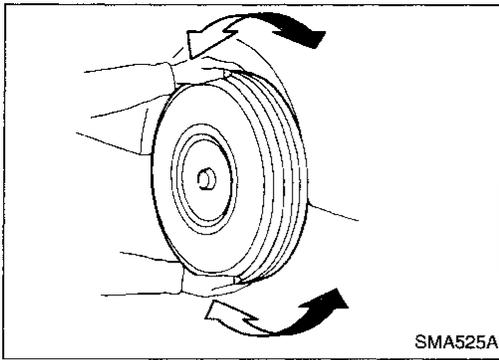
* Fuel, radiator coolant and engine oil full.
Spare tire, jack, hand tools and mats in designated positions.



: N·m (kg-m, ft-lb)

: Always replace

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Rear Axle and Rear Suspension Parts

Check axle and suspension parts for excessive play, wear or damage.

- Shake each rear wheel to check for excessive play.

- Retighten all nuts and bolts to the specified torque.

Tightening torque:

Refer to RA-10.

- Make sure that all cotter pins are inserted.

- Check shock absorber for oil leakage and damage.
- Check shock absorber bushing for damage and excessive wear.
- Check wheelarch height. Refer to FA section ("Front Axle and Front Suspension Parts", "ON-VEHICLE SERVICE").

Rear Wheel Hub Bearing

- Check axial end play.

Axial end play:

0.05 mm (0.0020 in) or less

- Check that wheel hub bearing operates smoothly.
- Check tightening torque of wheel bearing lock nut.
 \square : **196 - 284 N·m (20 - 29 kg·m, 145 - 210 ft·lb)**
- If axial end play is not within specification, or wheel hub bearing does not turn smoothly, replace wheel hub bearing. Refer to RA-7.

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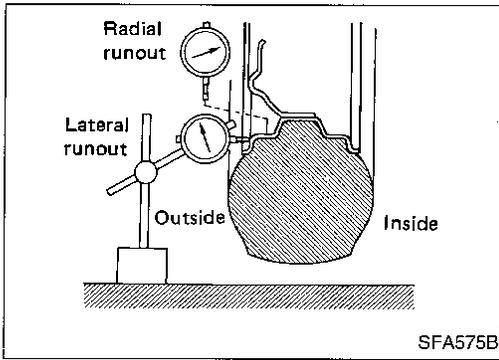
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Rear Wheel Alignment

PRELIMINARY INSPECTION

Make the following checks. Adjust, repair or replace if necessary.

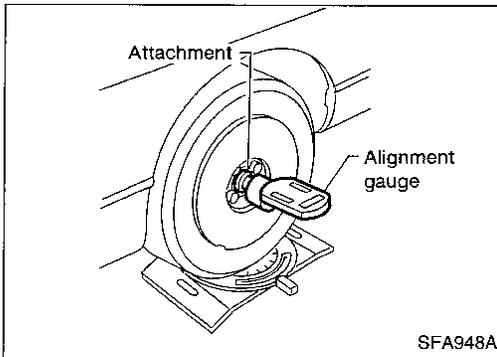
- Check tires for wear and for proper inflation.
- Check wheel hub bearings for excessive play.
- Check wheel runout.

Wheel runout:

Refer to FA section ("Inspection and Adjustment", "SDS").

- Check that rear shock absorber works properly.
- Check rear axle and rear suspension parts for excessive play.
- Check vehicle posture (unladen*).

*: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.



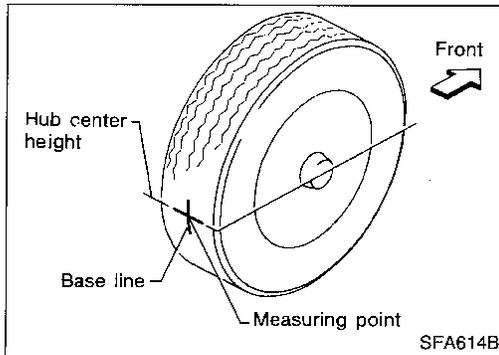
CAMBER

Camber is preset at factory and cannot be adjusted.

Camber:

Refer to SDS, RA-16.

- If the camber is not within specification, inspect and replace any damaged or worn rear suspension parts.



TOE-IN

Toe-in is preset at factory and cannot be adjusted.

Measure toe-in using the following procedure. If out of specification, inspect and replace any damaged or worn rear suspension parts.

WARNING:

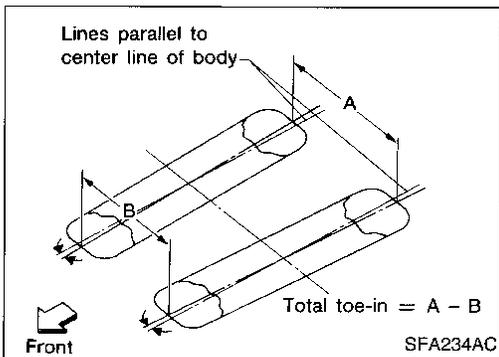
- Always perform the following procedure on a flat surface.
- Make sure that no one is in front of the vehicle before pushing it.

1. Bounce rear of vehicle up and down to stabilize the posture.
2. Push the vehicle straight ahead about 5 m (16 ft).
3. Put a mark on base line of the tread (rear side) of both rear tires at the same height as hub center. This mark is a measuring point.
4. Measure distance "A" (rear side).
5. Push the vehicle slowly ahead to rotate the wheels 180 degrees (1/2 turn).

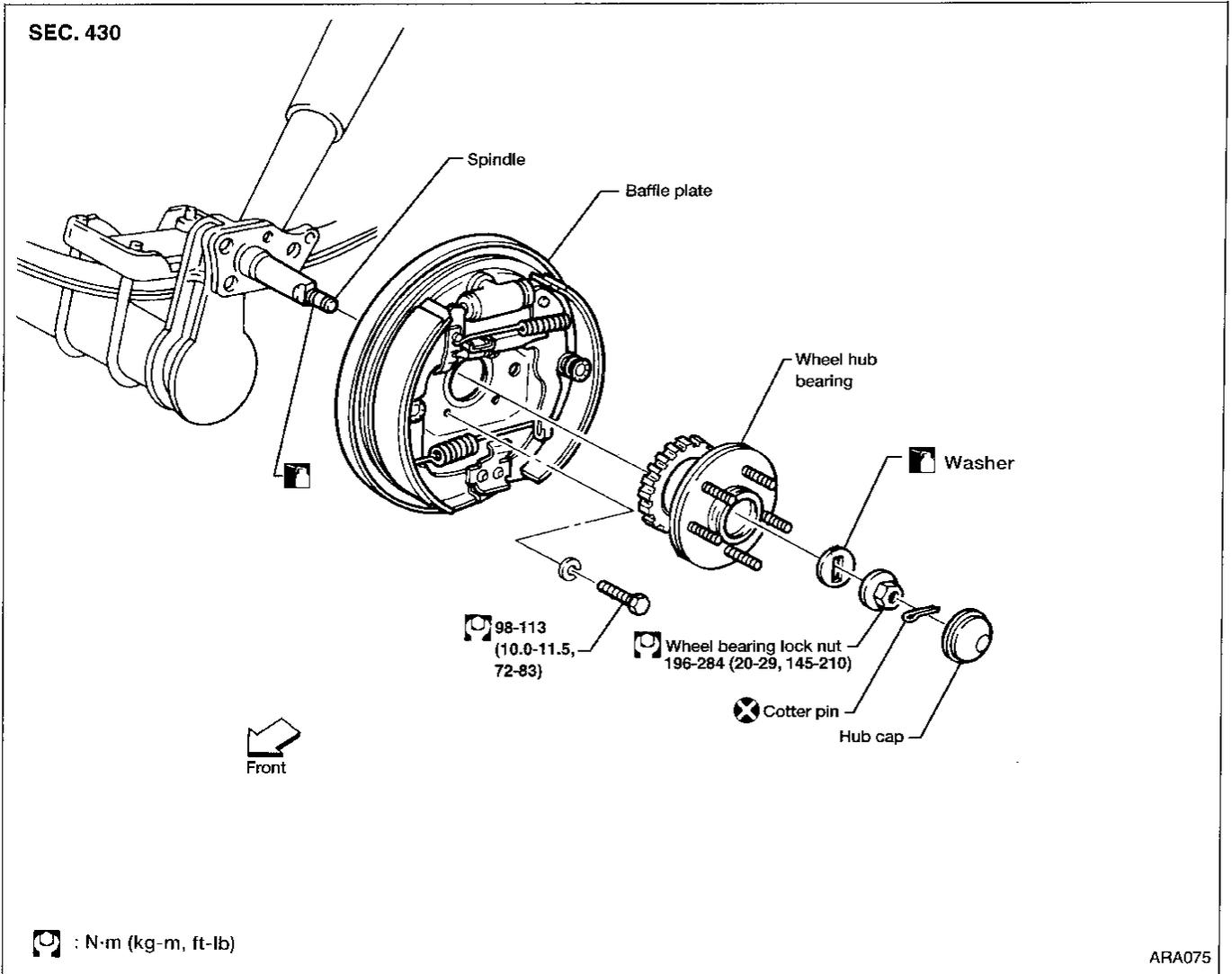
- If the wheels have rotated more than 180 degrees (1/2 turn), try the above procedure again from the beginning. Never push vehicle backward.

6. Measure distance "B" (front side).

Total toe-in: Refer to SDS, RA-16.



Wheel Hub



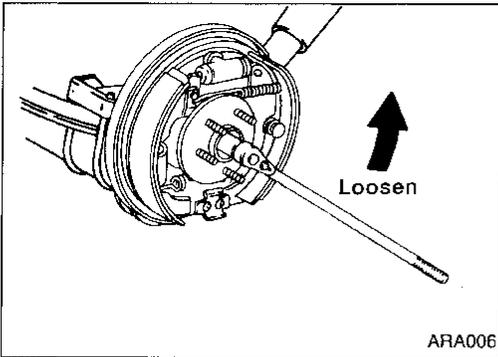
REMOVAL

CAUTION:

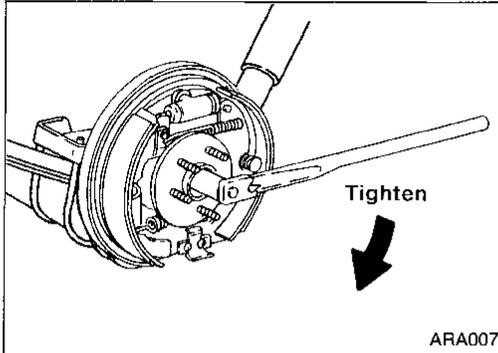
- Before removing the wheel hub bearing, disconnect the ABS wheel sensor from the assembly. Then move it away from the hub. Failure to do so may result in damage to the sensor wires and the sensor becoming inoperative.
- Wheel hub bearing does not require maintenance. If any of the following occurs, replace wheel hub bearing.
 - (1) Growling noise is emitted from wheel hub bearing during operation.
 - (2) Wheel hub bearing drags or turns roughly. This occurs when turning hub by hand after bearing lock nut is tightened to specified torque.
 - (3) Rear sensor rotor is damaged.

REAR AXLE

Wheel Hub (Cont'd)

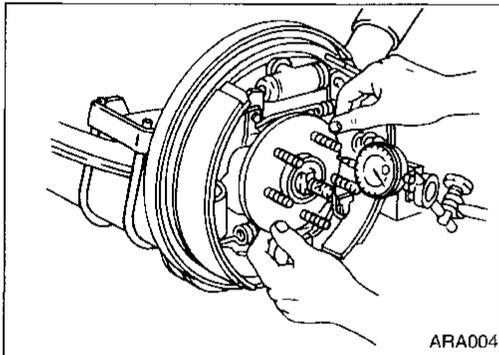


1. Remove brake drum.
2. Remove wheel bearing lock nut.
3. Remove wheel hub bearing assembly.



INSTALLATION

1. Install wheel hub bearing assembly.
2. Tighten wheel bearing lock nut.
Before tightening, apply oil to threaded portion of rear spindle and both sides of plain washer.
⚙️: 196 - 284 N·m (20 - 29 kg-m, 145 - 210 ft-lb)
3. Check that wheel bearing operates smoothly.

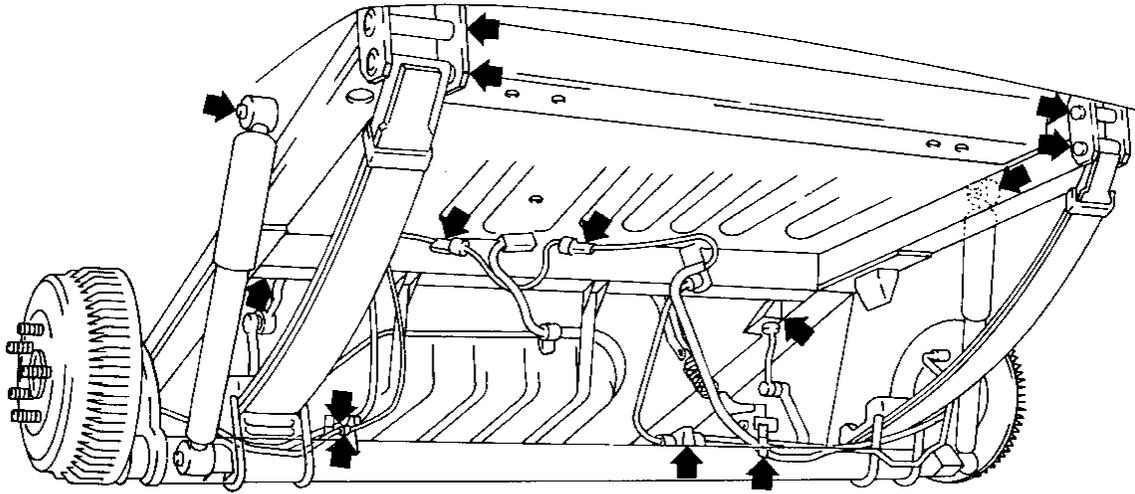


4. Check wheel hub bearing axial end play.
Axial end play:
0.05 mm (0.0020 in) or less

REAR SUSPENSION AND AXLE

Removal and Installation

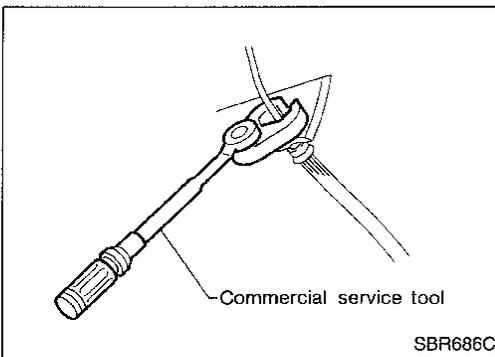
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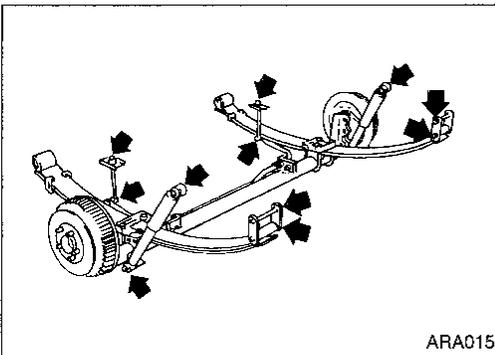
CAUTION:

- Before removing the rear suspension assembly, disconnect the ABS wheel sensors from the assembly. Failure to do so may result in damaged sensor wires and the sensor becoming inoperative.
- Drain brake fluid before disconnecting brake lines.



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1. Support axle and suspension components with a suitable jack and block.
2. Disconnect brake hydraulic lines and parking brake cables at back plates.
3. Remove LSV spring bracket.
4. Remove upper end nuts of shock absorbers.
5. Remove stabilizer bar from body.
6. Remove leaf spring from body.



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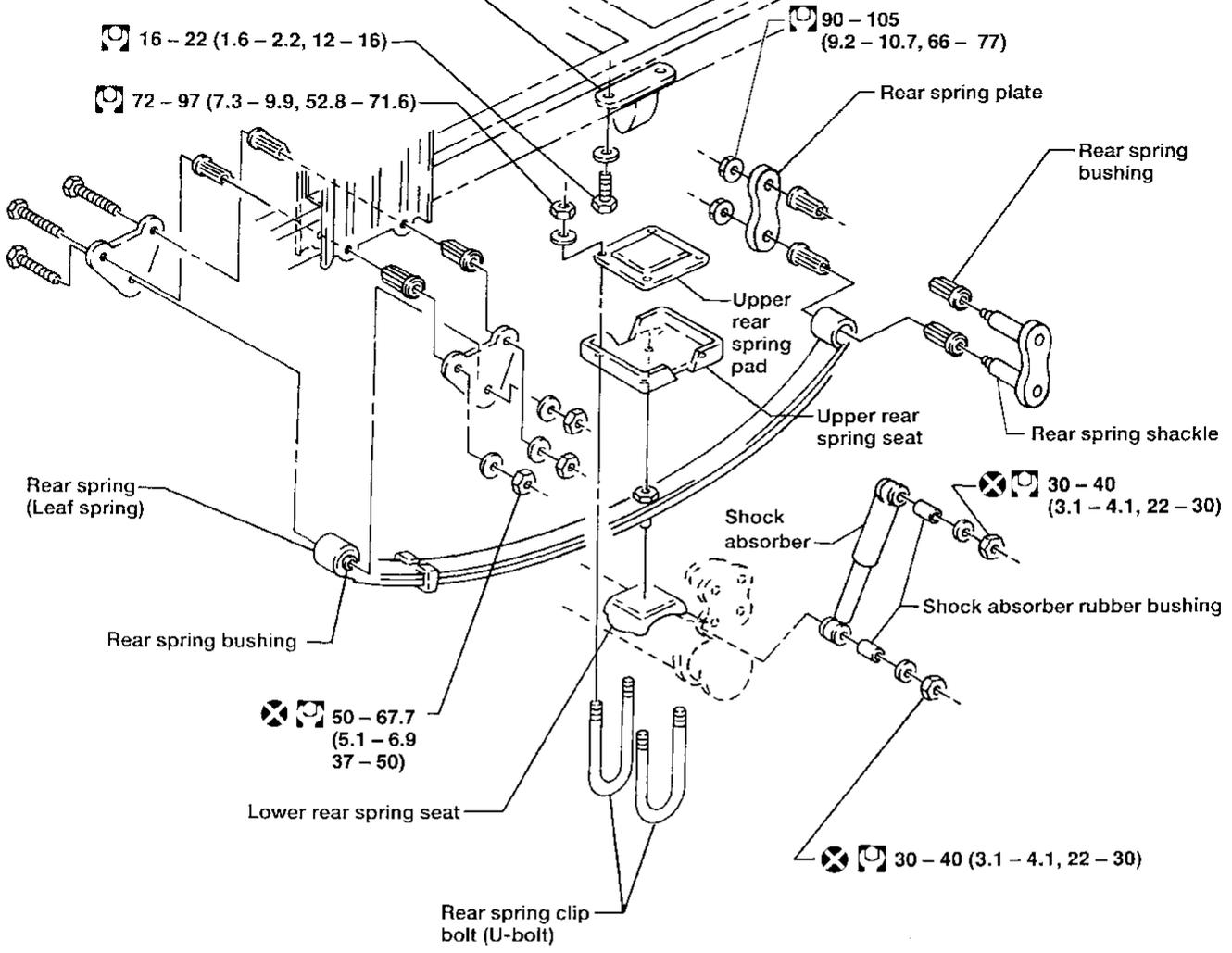
- Final tightening for rubber parts must be carried out under unladen condition* with tires on ground.

*: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.

REAR SUSPENSION

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Damper
* Make sure of front mark.



Front (Left side shown)

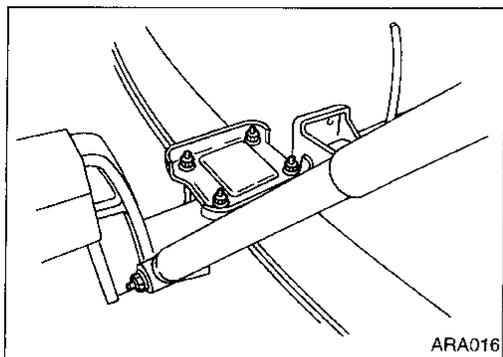
⊗ : Always replace

⊞ : N·m (kg·m, ft·lb)

When installing rubber parts, final tightening must be carried out under unladen condition* with tires on ground.
* Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.

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REAR SUSPENSION



Leaf Spring

REMOVAL

1. Disconnect shock absorber lower end, and remove U-bolts.

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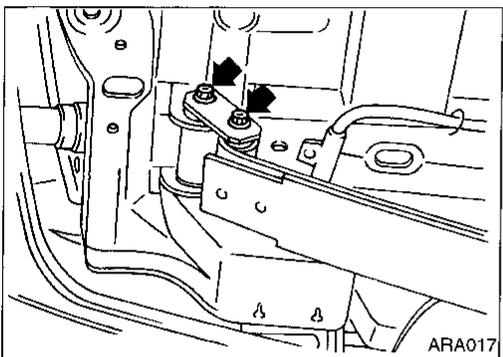
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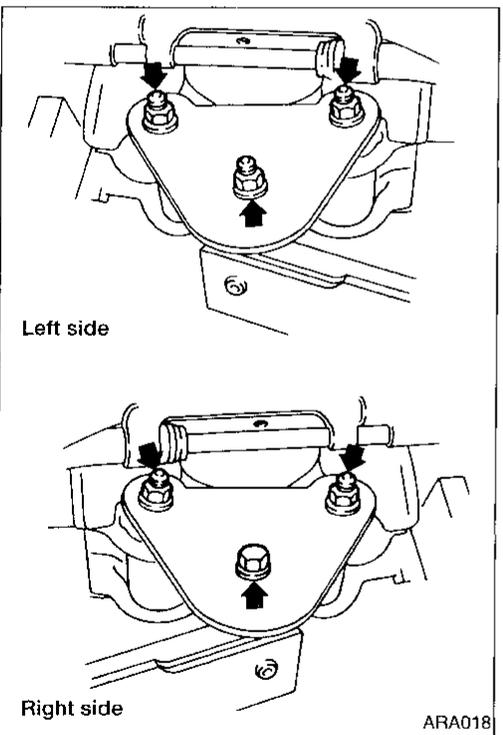
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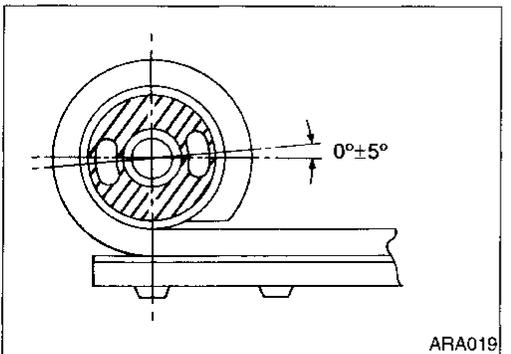


2. Disconnect spring shackle.



3. Loosen upper pin nuts.

4. Disconnect front eye bolt.



INSPECTION

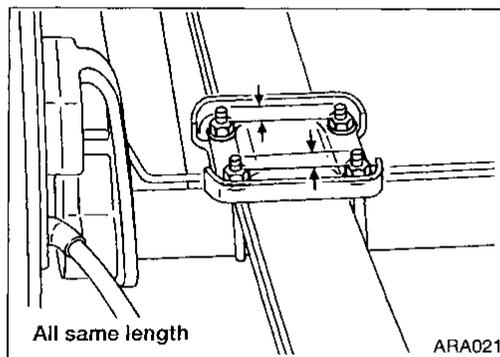
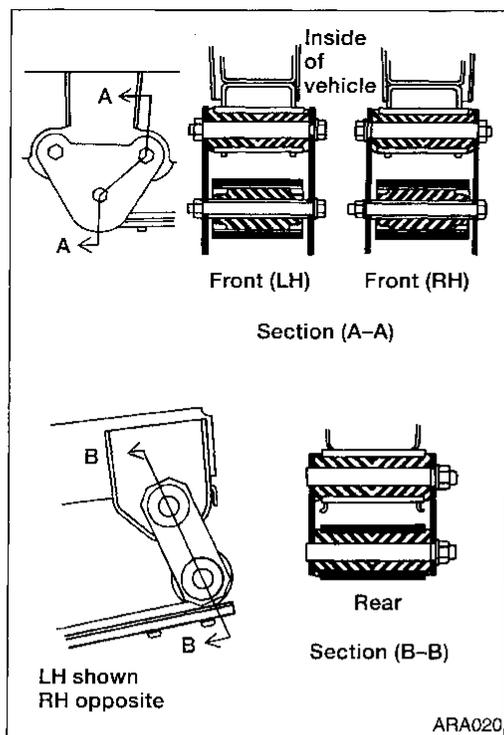
- Check leaf spring for cracks. Replace if necessary.
- Check front spring plates, front eye bolt, upper pins, shackle, U-bolts and spring seat for wear, cracks, straightness and damage. Replace if necessary.
- Check rubber bushings for deformation and cracks. Replace if necessary.
- When installing front eye bushing, make sure that it is positioned as shown at left.

REAR SUSPENSION

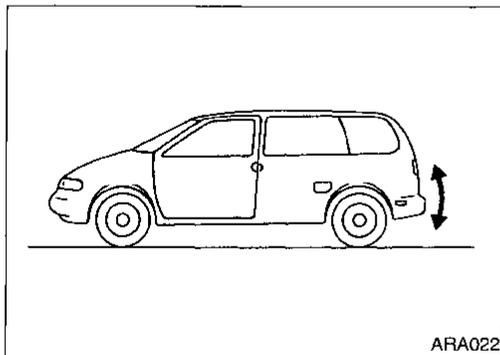
Leaf Spring (Cont'd)

INSTALLATION

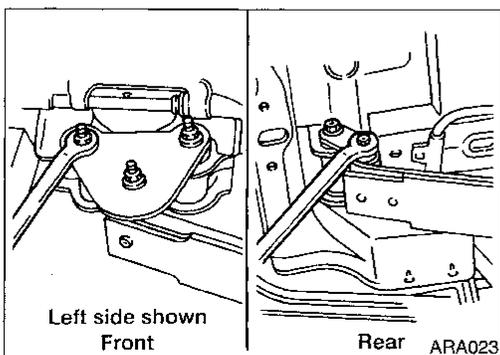
1. Apply soapsuds to rubber bushing.
 2. Install rubber bushing, spring shackle and front eye bolt, and finger tighten the nuts.
- **When installing the nuts, they must be positioned as shown.**



3. Install leaf spring assembly aligning spring center bolt with the hole in lower seat.
 4. Install upper seat and pad on top of leaf spring assembly aligning the hole in upper seat with spring center bolt.
 5. Tighten U-bolt mounting nuts diagonally.
 6. Install shock absorber, and finger tighten the nut.
- **Tighten U-bolts so that the lengths of all U-bolts on upper spring seat are the same.**
☞: 72 - 97 N·m
(7.3 - 9.9 kg-m, 53 - 72 ft-lb)



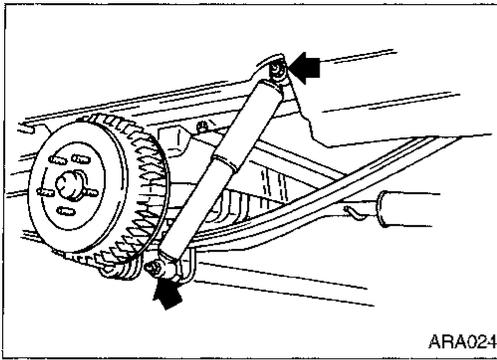
7. Remove stands and bounce the vehicle to stabilize suspension. (Unladen)



8. Tighten spring shackle nuts, front eye bolt nuts and upper pin nuts and shock absorber nuts. Refer to RA-10.
- **When installing rubber parts, final tightening must be carried out under unladen condition* with tires on ground.**

*: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.

REAR SUSPENSION



Shock Absorber

REMOVAL AND INSTALLATION

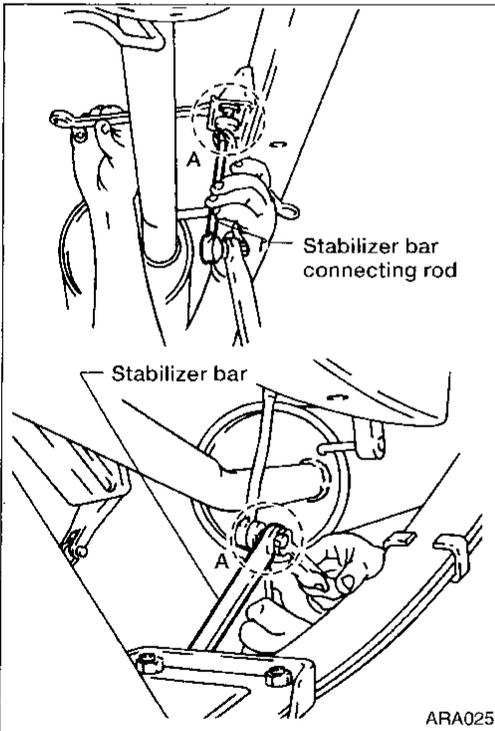
- Remove shock absorber by disconnecting upper and lower end.

WARNING:

Do not heat. Shock absorbers are gas charged.

INSPECTION

- Check both compression and extension for smooth operation through a full stroke.
- If oil leakage, cracks or deformation occurs, replace shock absorber assembly.
- If rubber bushings are cracked or deformed, replace rubber bushings.



Stabilizer Bar

REMOVAL AND INSTALLATION

- When removing and installing stabilizer bar, fix portion A.

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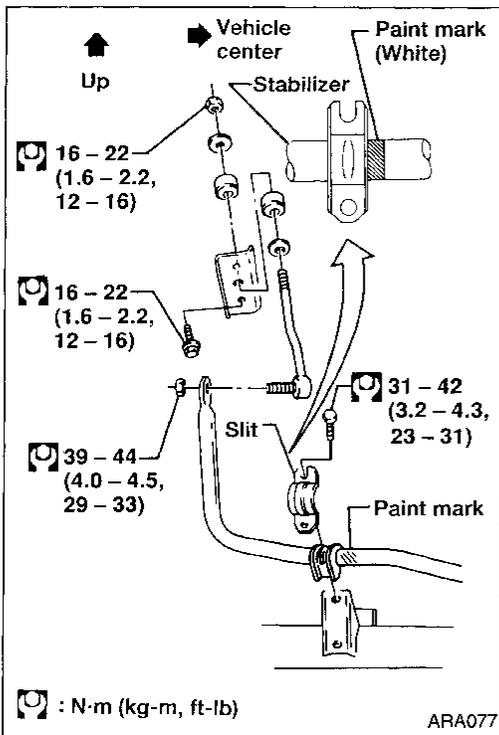
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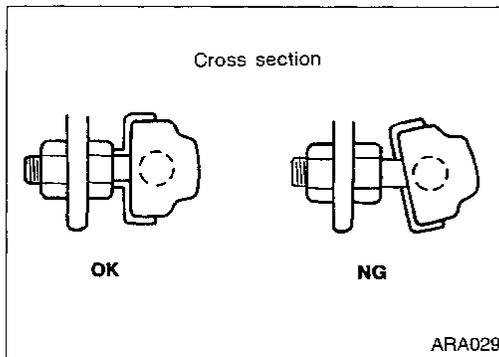
REAR SUSPENSION

Stabilizer Bar (Cont'd)

- When installing stabilizer, it must be positioned as shown.

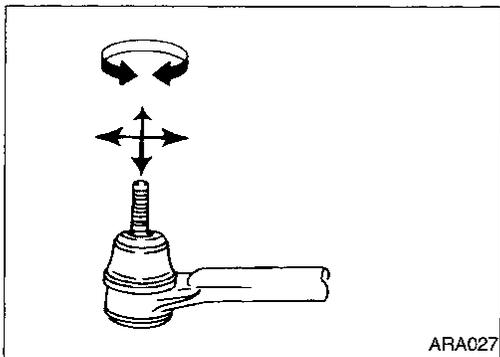


- Install stabilizer bar with ball joint socket properly placed.



INSPECTION

- Check stabilizer bar and stabilizer connecting rod for deformation and cracks. Replace if necessary.
- Check rubber bushings for deterioration and cracks. Replace if necessary.
- Check that ball joint can rotate in all directions. If movement is not smooth and free, replace stabilizer connecting rod.
- Check ball joint dust boot for damage. Replace stabilizer connecting rod if necessary.
- Use care not to damage ball joint dust boot.

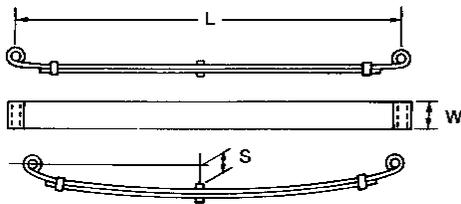


SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

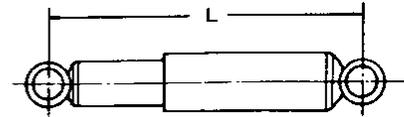
LEAF SPRING AND SHOCK ABSORBER

Suspension type	Standard suspension	Handling suspension (option)
Leaf spring		
Spring length*1 x width (L x W) mm (in)	1,320 x 88.9 (51.97 x 3.500)	
Spring thickness (number of leaves) mm (in)	Tapered leaf profile (2 Leaves)	
Free camber*2 "S" mm (in)	183.0 (7.20)	194.0 (7.64)
Spring constant N/mm (kg/mm, lb/in)	30.4 (3.1, 174)	27.5 (2.8, 157)
Shock absorber		
Shock absorber type	Non-adjustable (Twin tube type)	
Maximum length "L" mm (in)	462.0 (18.19)	
Damping force [at 0.3 m (1.0 ft)/sec.] N (kg, lb)		
Expansion	1,010 - 1,363 (103 - 139, 227 - 306)	1,108 - 1,481 (113 - 151, 249 - 333)
Compression	382 - 579 (39 - 59, 86 - 130)	402 - 598 (41 - 61, 90 - 135)



*1 Spring length is measured when main leaf is flat

*2 Free camber is measured when spring is unloaded



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STABILIZER BAR

Suspension type	Handling suspension (option)
Stabilizer diameter mm (in)	20 (0.79) (Solid)
Identification color	White

SERVICE DATA AND SPECIFICATIONS (SDS)

Inspection and Adjustment

WHEEL ALIGNMENT (Unladen*)

Applied model	All	
Camber	Minimum	-15' (-0.25°)
	Nominal	0° (0°)
Degree minute (Decimal degree)	Maximum	15' (0.25°)
	Minimum	-4 (-0.16)
Total Toe-in	Nominal	0 (0)
Distance (A-B) mm (in)	Maximum	4 (0.16)
	Minimum	-22' (-0.36°)
Angle (left plus right) Degree minute (Decimal degree)	Nominal	0° (0°)
	Maximum	22' (0.36°)

WHEEL BEARING

Wheel bearing axial end play mm (in)	0.05 (0.0020) or less
Wheel bearing lock nut tightening torque N·m (kg-m, ft-lb)	196 - 284 (20 - 29, 145 - 210)

* Fuel, radiator coolant and engine oil full.

Spare tire, jack, hand tools and mats in designated positions.