

REAR AXLE & REAR SUSPENSION

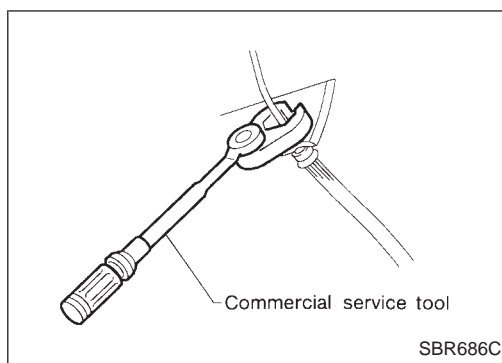
SECTION **RA**

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PRECAUTIONS AND PREPARATION

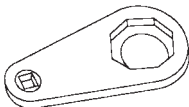


Precautions

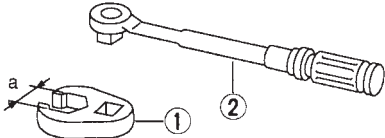
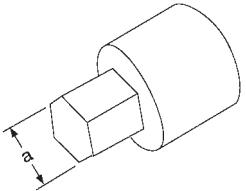
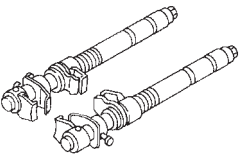
- When installing rubber parts, final tightening must be carried out under unladen condition* with tires on ground.
- *: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.
- After installing removed suspension parts, check wheel alignment and adjust if necessary.
- Do not jack up at the parallel links.
- Use flare nut wrench when removing or installing brake tubes.
- Always torque brake lines when installing.

Special Service Tool

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description	
ST35490000 (J26083) Gland packing wrench		Removing and installing gland packing
	NT158	

Commercial Service Tools

Tool name	Description	
① Flare nut crowfoot ② Torque wrench		Removing and installing brake tubes
	NT360	a: 10 mm (0.39 in)
Hexagon socket		Removing and installing strut damper
	ARA079	a: 17 mm (0.67 in)
Spring compressor		Removing and installing coil spring
	NT717	

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

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

REAR AXLE AND REAR SUSPENSION

Reference page		RA-4, 10	RA-13	RA-5	RA-5	RA-5	RA-5	NVH in FA section	NVH in FA section	NVH in FA section	NVH in FA section	NVH in ST section	NVH in BR section	RA-6	RA-5	RA-5
Possible cause and SUSPECTED PARTS		Improper installation, looseness	Shock absorber deformation, damage or deflection	Bushing or mounting deterioration	Parts interference	Spring fatigue	Suspension looseness	DRIVE SHAFT	FRONT AXLE AND FRONT SUSPENSION	TIRE	ROAD WHEEL	STEERING	BRAKE	Incorrect wheel alignment	Stabilizer bar fatigue	Wheel bearing damage
Symptom	Noise	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							
	Shimmy	X	X	X	X				X	X	X	X	X	X		
	Judder	X	X	X					X	X	X	X	X			
	Poor quality ride or handling	X	X	X	X	X			X	X	X			X	X	X

X: Applicable

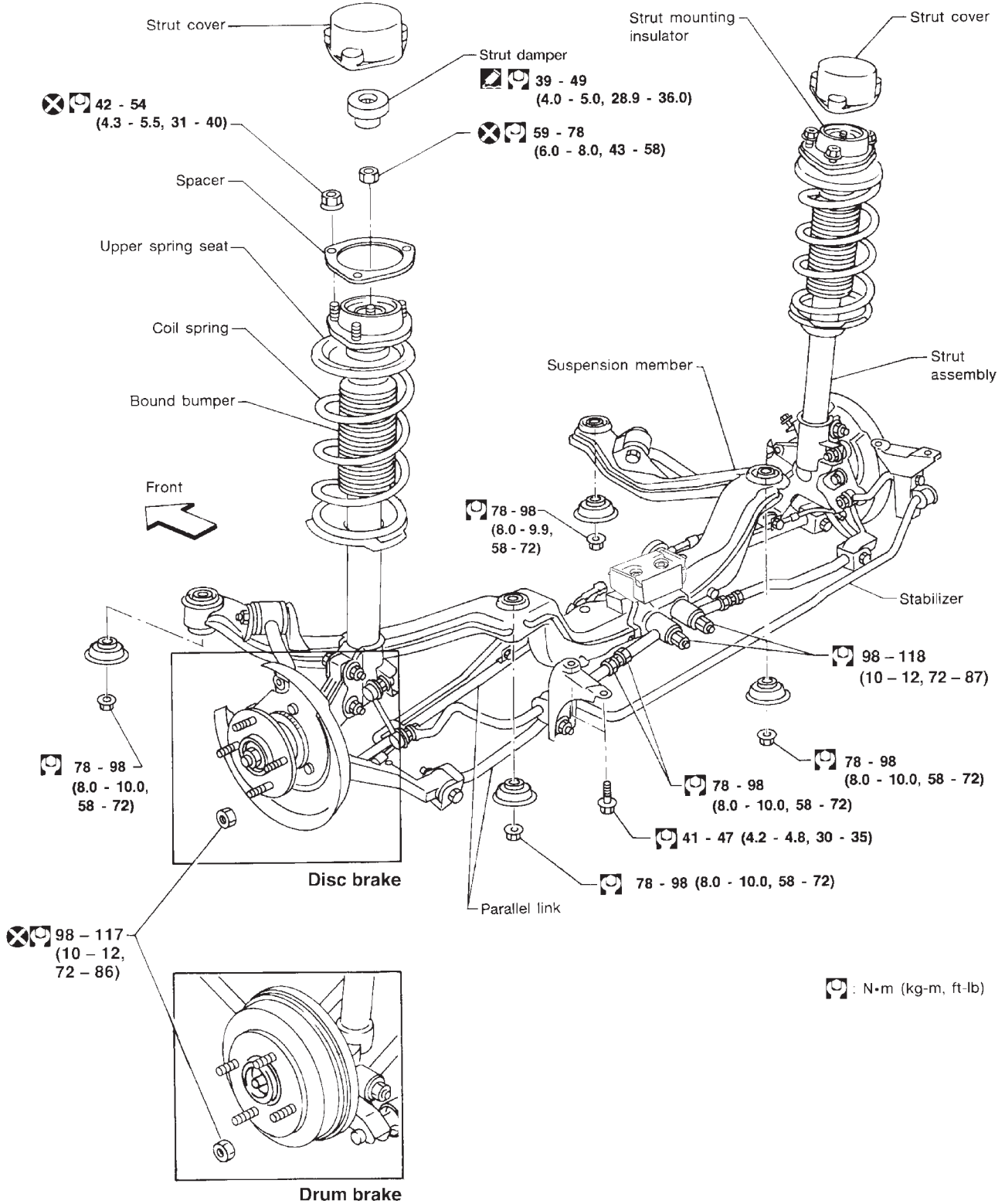
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REAR SUSPENSION SYSTEM

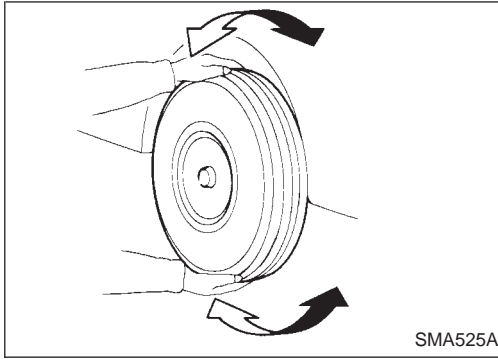
SEC. 431

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.



ON-VEHICLE SERVICE

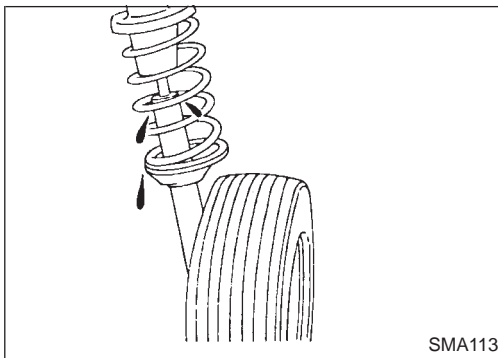
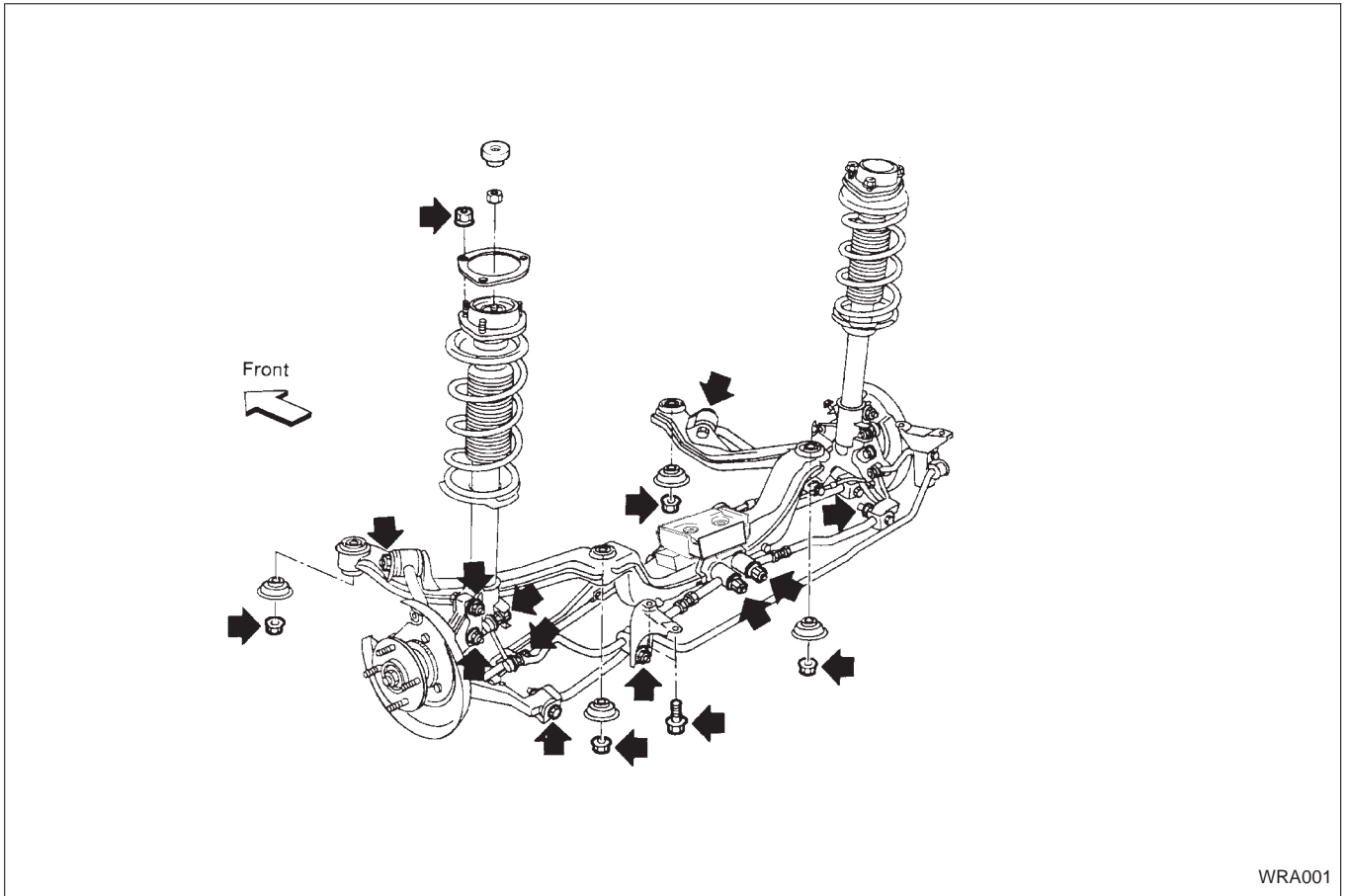


Rear Axle and Rear Suspension Parts

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

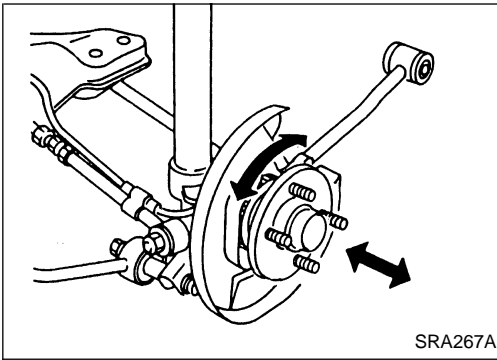
- Shake each rear wheel to check excessive play.

- Retighten all nuts and bolts to the specified torque.
Tightening torque: Refer to RA-10.



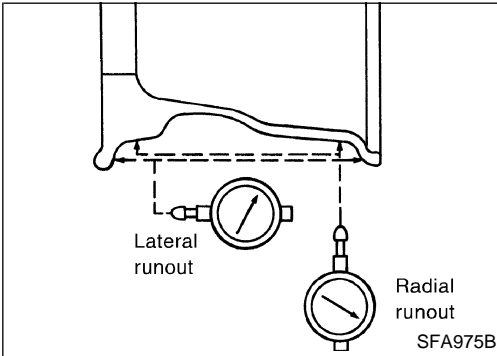
- Check strut (shock absorber) for oil leakage and damage.
- Check wheelarch height. Refer to FA section ("Front Axle and Front Suspension Parts", "ON-VEHICLE SERVICE").

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Rear Wheel Bearing

- Check axial end play.
Axial end play:
0.05 mm (0.0020 in) or less
- Check that wheel bearings operate smoothly.
- Check tightening torque of wheel bearing lock nut.
ⓘ: 187 - 255 N·m
(19 - 26 kg-m, 138 - 188 ft-lb)
- If axial end play is not within specification or wheel bearing does not turn smoothly, replace wheel bearing assembly. Refer to RA-8.



Rear Wheel Alignment

Aluminum Wheels

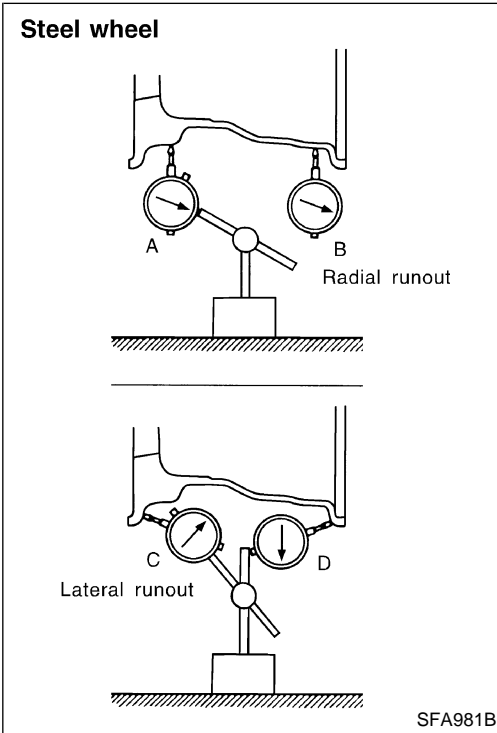
1. Check tires for wear and improper inflation.
2. Check wheels for deformation, cracks and other damage. If deformed, remove wheel and check runout.

Wheel runout:

Radial runout limit 0.3 mm (0.012 in)

Lateral runout limit 0.3 mm (0.012 in)

3. Check rear wheel bearings for looseness.
4. Check rear suspension for looseness.
5. Check that rear shocks work properly.
6. Check vehicle posture (unladen).



Steel Wheels

1. Remove tire from steel wheel and mount wheel on a tire balance machine.
2. Set two dial indicators as shown in the illustration.
3. Set each dial indicator to zero.
4. Rotate wheel, and check dial indicators at several points around the circumference of the wheel.
5. Calculate runout at each point as shown below.
Radial runout = $(A+B)/2$
Lateral runout = $(C+D)/2$
6. Select maximum positive runout value and the maximum negative value.

Add the two values to determine total runout.

In case a positive or negative value is not available, use the maximum value (negative or positive) for total runout.

If the total runout value exceeds the limit, replace steel wheel.

If the total runout value exceeds the limit, replace steel wheel.

Radial runout limit 0.5 mm (0.020 in)

Lateral runout limit 0.8 mm (0.031 in)

- Check that rear strut (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.

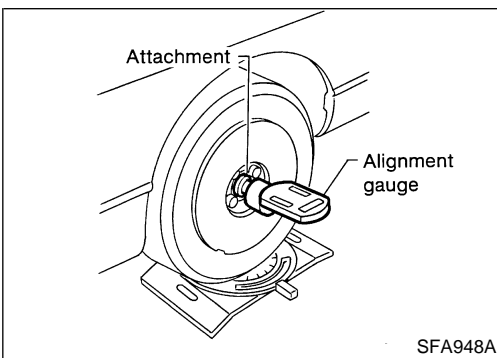
CAMBER

Camber is preset at factory and cannot be adjusted.

Camber:

Refer to SDS, RA-15.

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



ON-VEHICLE SERVICE

Rear Wheel Alignment (Cont'd)

TOE-IN

WARNING:

- Always perform 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 of 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).

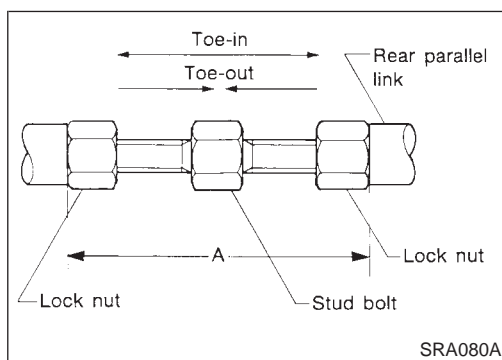
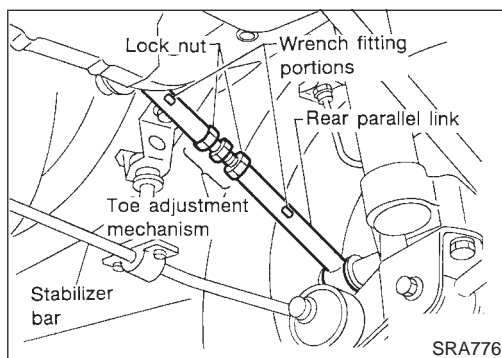
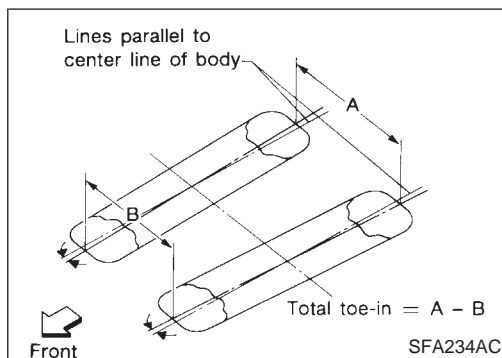
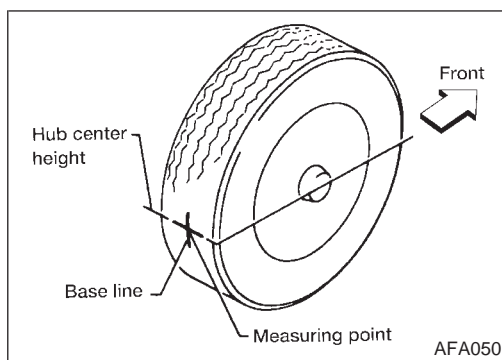
- If the wheels have rotated more than 180 degrees (1/2 turn), try the above procedure again from the beginning. Never push vehicle backward.

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

Total toe-in (A - B):

Refer to SDS, RA-15.

7. Adjust toe-in by varying the lengths of rear parallel links.



- Adjust left and right rear parallel links to the same length "A".
- Tighten lock nut while holding rear parallel link with wrench to prevent bushing from twisting.

Standard length "A":

50 - 55 mm (1.97 - 2.17 in)

⚙️: 78 - 98 N·m (8.0 - 10.0 kg·m, 58 - 72 ft·lb)

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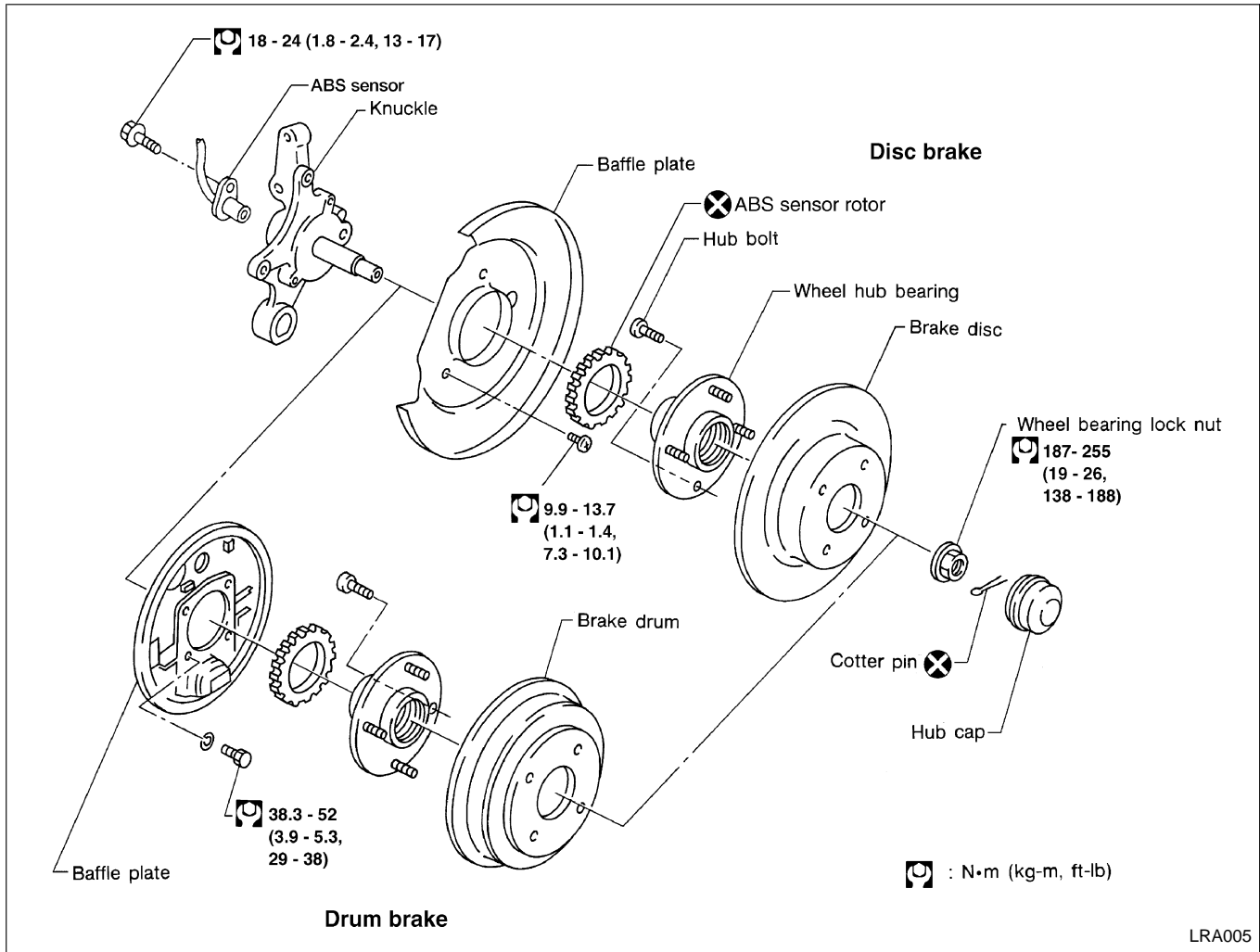
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REAR AXLE

Wheel Hub



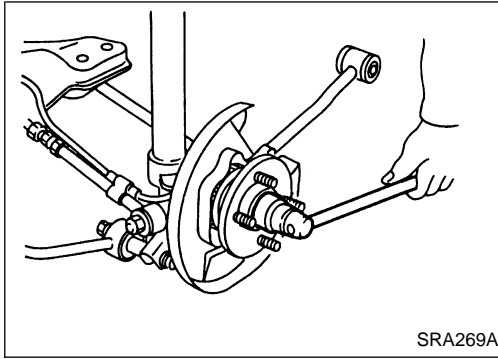
REMOVAL

CAUTION:

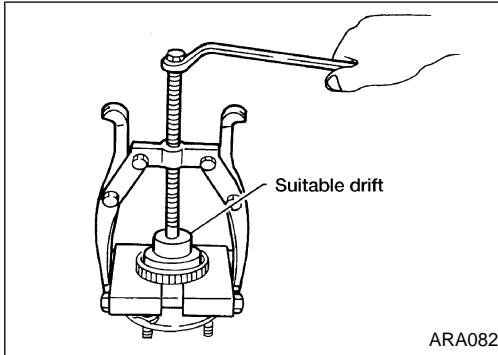
- Before removing the rear wheel hub assembly, disconnect the ABS wheel sensor from the assembly. Move it away from the hub assembly. Failure to do so may result in damaged sensor wires and the sensor becoming inoperative.
- Wheel hub bearing does not require maintenance. If any of the following occurs, replace wheel hub bearing assembly.
 - (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) Wheel hub bearing is removed from knuckle spindle.

REAR AXLE

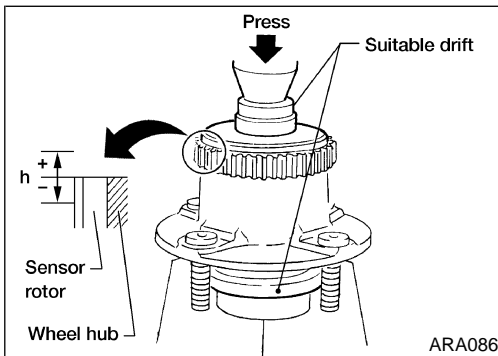
Wheel Hub (Cont'd)



1. Remove brake caliper assembly.
2. Remove wheel bearing lock nut.
3. Remove brake rotor (models with disc brake) or brake drum (models with drum brakes).
4. Remove wheel hub bearing from spindle.
 - Brake hose does not need to be disconnected from brake caliper.
 - Be careful not to depress brake pedal, or caliper piston will pop out.
 - Make sure brake hose is not twisted.

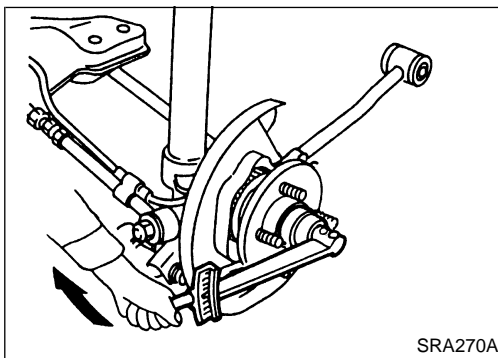


5. Remove the sensor rotor using suitable puller, drift and bearing replacer.

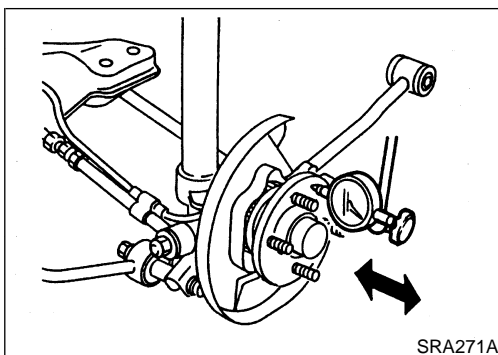


INSTALLATION

1. Install the sensor rotor. Use suitable drift and press.
 - Always replace sensor rotor with new one.
2. Pay attention to the dimension of rear sensor rotor as shown in figure.
 $h: \pm 0.3 \text{ mm } (\pm 0.012 \text{ in})$



3. Install wheel hub bearing.
4. Tighten wheel bearing lock nut.
Before tightening, apply oil to threaded portion of rear spindle.
: 187 - 255 N·m
(19 - 26 kg-m, 138 - 188 ft-lb)
5. Check that wheel bearings operate smoothly.

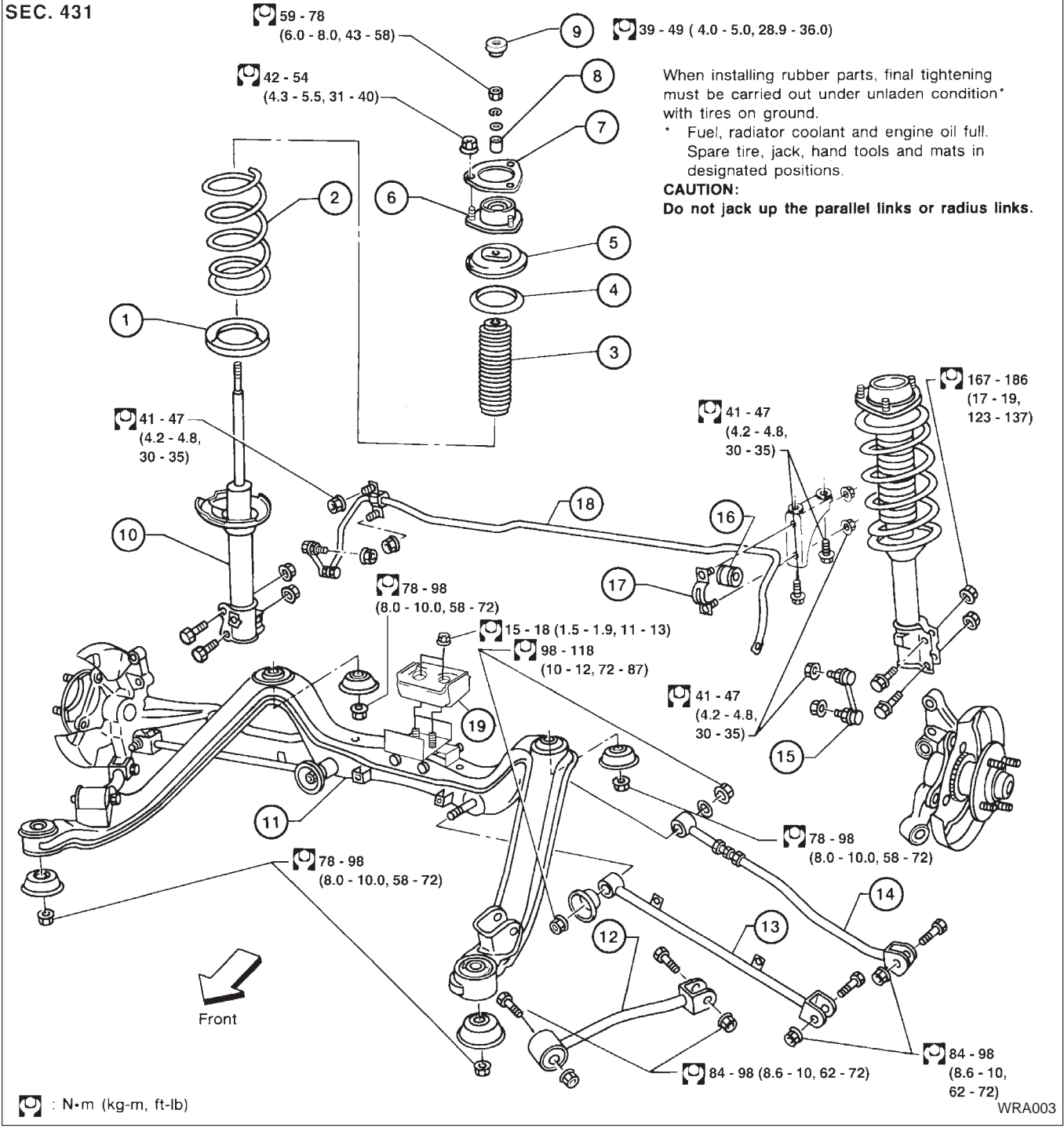


6. Check wheel bearing axial end play.
Axial end play:
0.05 mm (0.0020 in) or less

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REAR SUSPENSION

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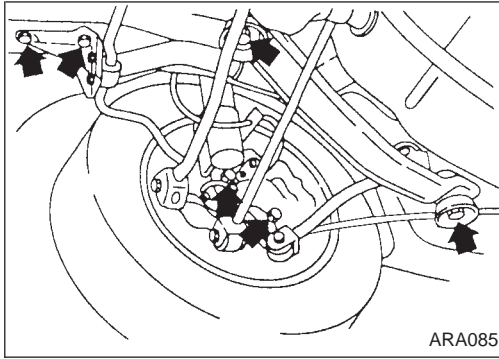


When installing rubber parts, final tightening must be carried out under unladen condition* with tires on ground.
 * Fuel, radiator coolant and engine oil full.
 Spare tire, jack, hand tools and mats in designated positions.

CAUTION:
 Do not jack up the parallel links or radius links.

- | | | |
|--------------------------------|-------------------------|-----------------------|
| ① Lower spring rubber seat | ⑦ Spacer | ⑬ Front parallel link |
| ② Coil spring | ⑧ Strut mounting collar | ⑭ Rear parallel link |
| ③ Bound bumper with dust cover | ⑨ Strut damper | ⑮ Connecting rod |
| ④ Upper spring rubber seat | ⑩ Strut assembly | ⑯ Bushing |
| ⑤ Upper spring seat | ⑪ Suspension member | ⑰ Clamp |
| ⑥ Strut mounting insulator | ⑫ Radius link | ⑱ Stabilizer bar |
| | | ⑲ Dynamic damper |

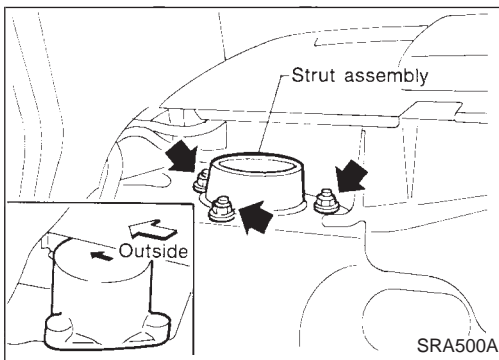
REAR SUSPENSION



Removal and Installation

CAUTION:

- Do not jack up at the parallel links or radius links.
 - Before removing the rear suspension assembly, disconnect the ABS wheel sensor from the assembly. Failure to do so may result in damaged sensor wires and the sensor becoming inoperative.
1. Disconnect brake hydraulic line and parking brake cable at equalizer. (Models with rear drum brake.)
 - Drain brake fluid before disconnecting brake lines.
 2. Disconnect parking brake cable from caliper and remove brake caliper and rotor. (Models with rear disc brake.)
 - Suspend caliper assembly with wire so as not to stretch brake hose.
 - Brake hose need not be disconnected from brake caliper.
 - Be careful not to depress brake pedal, or caliper piston will pop out.
 - Make sure brake hose is not twisted.
 3. Remove parking brake cable fixing bolts. (Models with rear drum brake.)
 4. Remove stabilizer fixing bolts and suspension member fixing bolts.
 5. Remove rear seat. Refer to BT-37 section ("Rear Seat", "SEAT").
 6. Remove rear parcel shelf. Refer to BT-21 section ("Side and Floor Trim", "INTERIOR TRIM").



7. Remove strut securing nuts (upper side). Then pull out strut assembly.

WARNING:

- Do not remove piston rod lock nut on vehicle.

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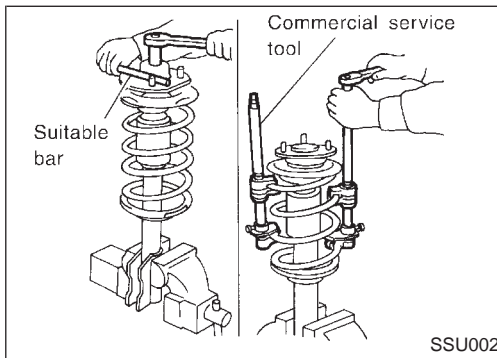
REAR SUSPENSION

Coil Spring and Strut Assembly

REMOVAL AND INSTALLATION

CAUTION:

- Before removing the rear strut (shock absorber) assembly, disconnect the ABS wheel sensor from the assembly. Failure to do so may result in damaged sensor wires and the sensor becoming inoperative.
- Do not remove piston rod lock nut.
 1. Remove brake hose bracket.
 2. Remove stabilizer bar connecting rod.
 3. Remove strut (shock absorber) fixing bolts (lower side) and nuts (upper side).



DISASSEMBLY

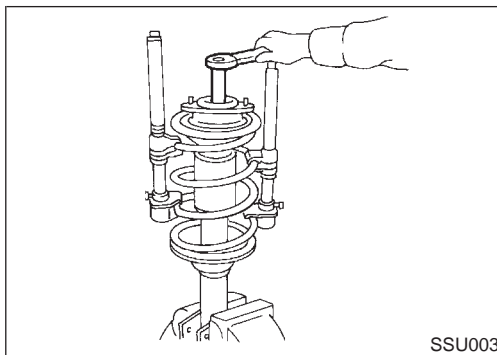
1. Set strut assembly in vise, then remove strut damper with hexagon socket (17 mm (0.67 in)) and **loosen** piston rod lock nut.

WARNING:

- Do not remove piston rod lock nut at this time.
2. Compress spring with Tool so that the strut mounting insulator can be turned by hand.

WARNING:

Make sure that the pawls of the two spring compressors are firmly hooked on the spring. The spring compressors must be tightened alternately so as not to tilt the spring.



3. Remove piston rod lock nut.

REAR SUSPENSION

Coil Spring and Strut Assembly (Cont'd) INSPECTION

Strut assembly

- Check both compression and extension for smooth operation through a full stroke.
- Check for oil leakage on welded or gland packing portions.
- Check piston rod for cracks, deformation and other damage. Replace if necessary.

Upper rubber seat and bushing

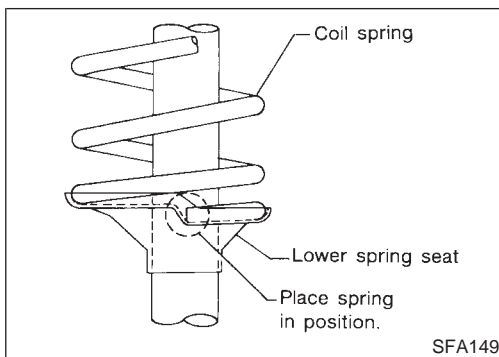
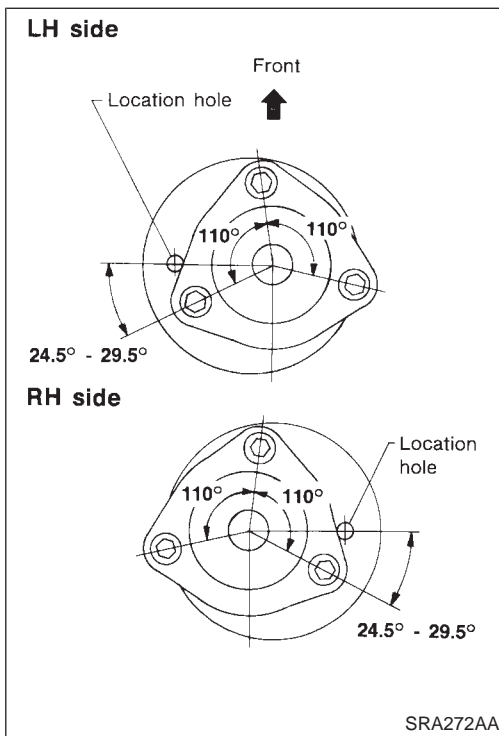
- Check rubber parts for deterioration and cracks. Replace if necessary.

Strut mounting insulator

- Check cemented rubber-to-metal portion for melting and cracks.
- Check rubber parts for deterioration. Replace if necessary.

Coil spring

- Check for cracks, deformation and other damage. Replace if necessary.

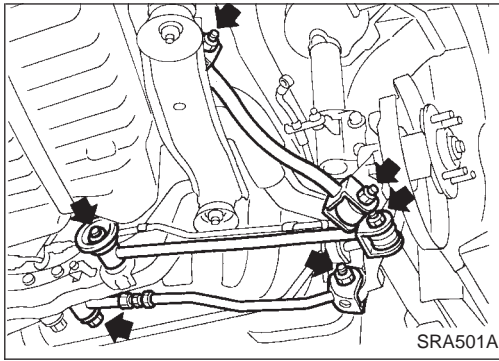


ASSEMBLY

1. Locate upper spring seat as shown.

2. After placing coil spring in position on lower spring seat, tighten lock nut. Then gradually release spring compressor. Install strut damper.

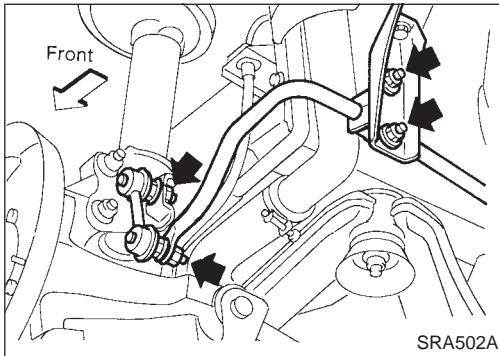
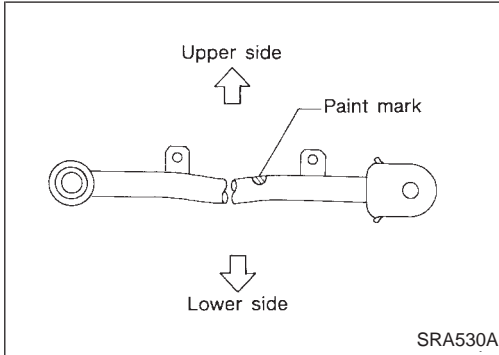
REAR SUSPENSION



Parallel Link, Radius Link and Stabilizer Bar REMOVAL AND INSTALLATION

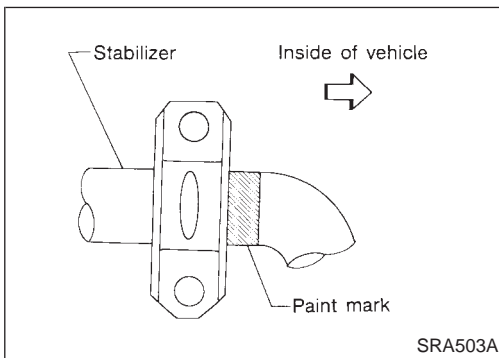
Parallel link and radius link

- Remove parallel link and radius link.
- **Models without ABS** —
- When installing front parallel link, make sure that paint mark faces in the correct direction.
- During installation, final tightening must be carried out at curb weight with tires on the ground.
- After installation, check wheel alignment. Refer to RA-15.
- **Check parallel link for cracks, deformation and other damage. Replace if necessary.**
- **Check radius link for cracks, deformation and other damage. Replace if necessary.**

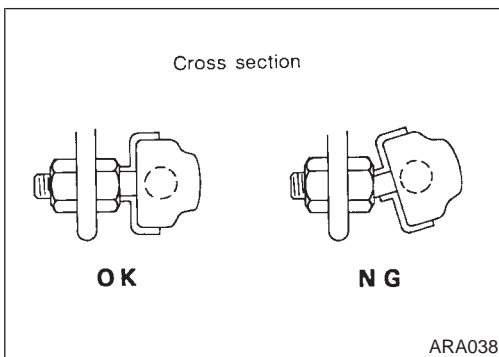


Stabilizer bar

- Remove stabilizer bar.



- When installing stabilizer, align paint marks with inside edge of clamps.



- Install stabilizer bar with ball joint socket properly placed.

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

Suspension type	Independent struts and parallel link, radius link with coil spring
Shock absorber type	Double-acting hydraulic
Stabilizer	Standard equipment

Inspection and Adjustment

WHEEL ALIGNMENT (Unladen*)

Camber	Minimum	-2°00' (-2.00°)
	Nominal	-1°15' (-1.25°)
	Maximum	-0°30' (-0.50°)
Total toe-in	Minimum	1 (0.04)
	Nominal	2 (0.08)
	Maximum	3 (0.12)
Distance (A - B) mm (in)	Minimum	6' (0.10°)
	Nominal	12' (0.20°)
	Maximum	18' (0.30°)

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

WHEEL BEARING

Applied model	All
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)	187 - 255 (19 - 26, 138 - 188)

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