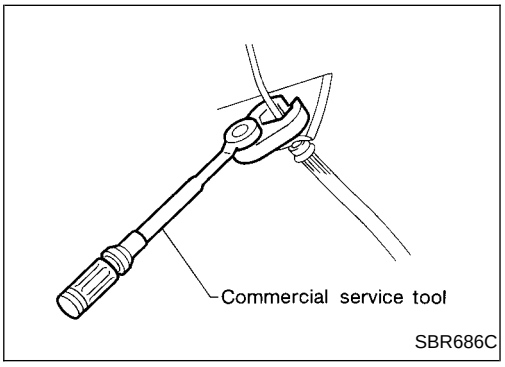
REAR AXLE & REAR SUSPENSION

SECTION RA

CONTENTS

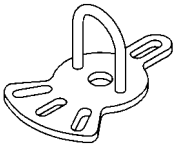
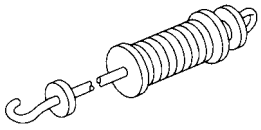
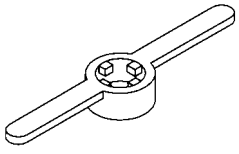
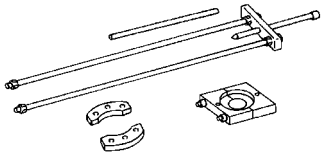
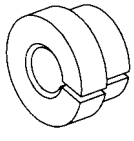


Precautions

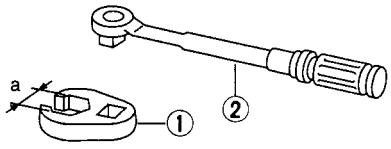
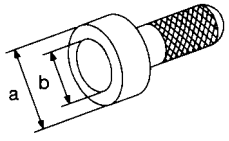
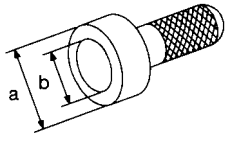
- **When installing rubber parts, final tightening must be carried out under unladen condition* with tires on ground.**
  ***: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.**
- **Use flare nut wrench when removing and installing brake tubes.**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

Special Service Tools

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	
KV40101000 (J25604-01) Axle stand	 NT159	Removing rear axle shaft
ST36230000 (J25840-A) Sliding hammer	 NT126	Removing rear axle shaft
ST38020000 (—) Bearing lock nut wrench	 NT160	Removing wheel bearing lock nut
KV40106500 (J25852-B) Rear axle shaft bearing puller	 NT683	Removing wheel bearing and ABS sensor rotor
ST37840000 (—) Rear axle shaft guide	 NT162	Installing rear axle shaft

Commercial Service Tools

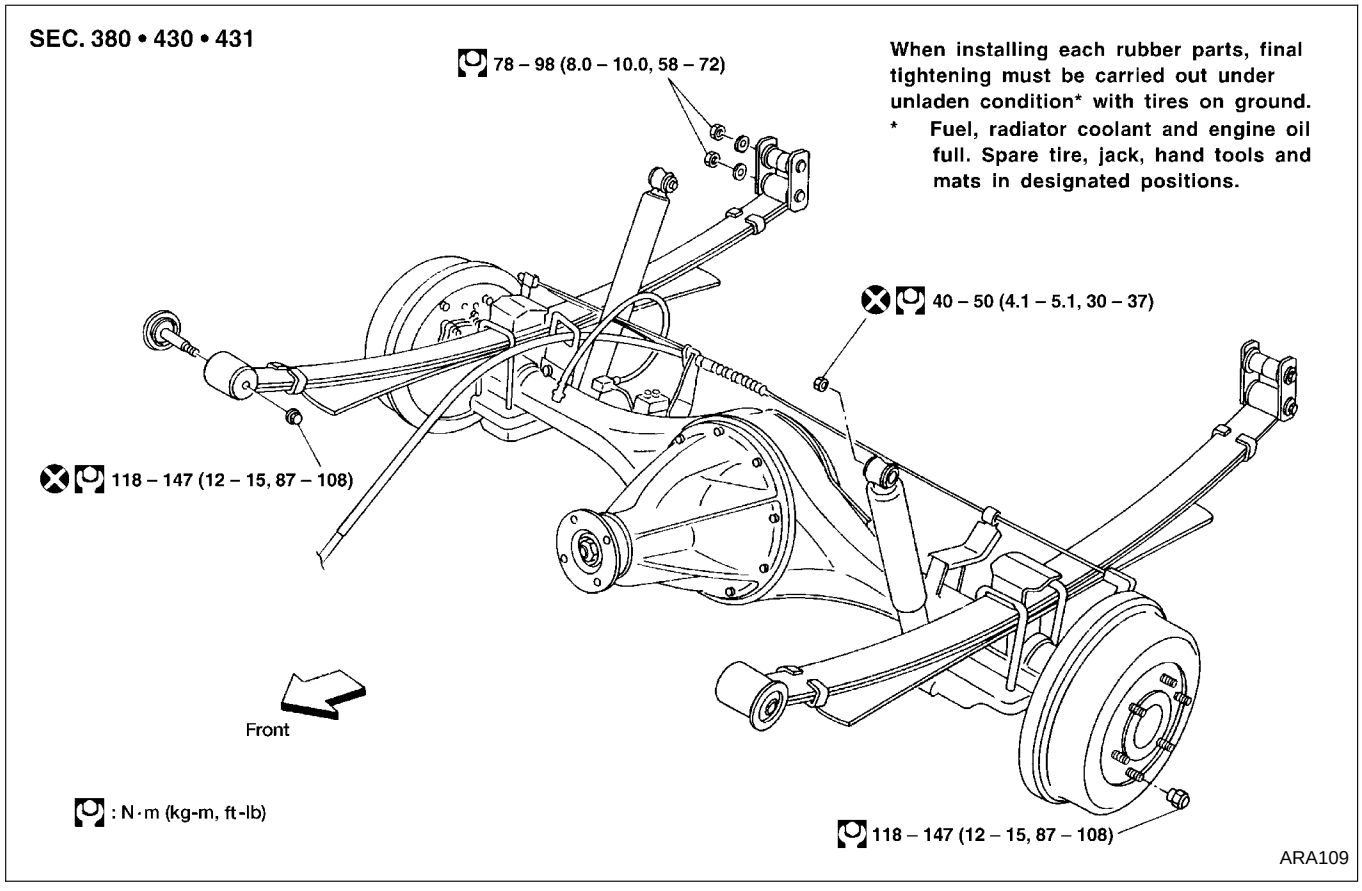
Tool name	Description	
①Flare nut crowfoot ②Torque wrench	 NT360	Removing and installing each brake piping **a: 10 mm (0.39 in)**
Bearing cage oil seal drift	 NT115	Installing oil seal **a: 74 mm (2.91 in) dia.** **b: 68 mm (2.68 in) dia.**
Rear axle oil seal drift	 NT115	Installing oil seal **a: 54.5 mm (2.15 in.)** **b: 34.5 mm (1.36 in.)**

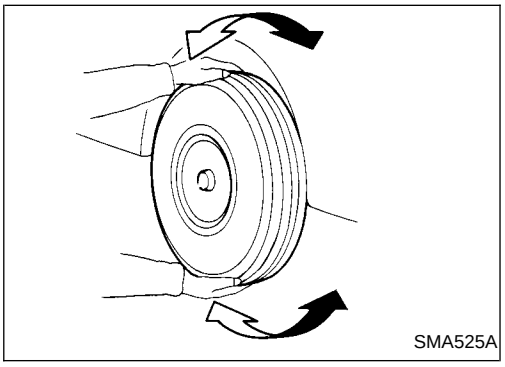
NVH Troubleshooting Chart

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

Reference page			RA-5	RA-14	—	—	—	RA-13	RA-6	NVH in PD section	NVH in PD section	NVH in FA section	NVH in FA section	NVH in FA section	NVH in FA section	NVH in BR section	NVH in ST section
Possible cause and SUSPECTED PARTS			Improper installation, Looseness	Shock absorber deformation, damage or deflection	Bushing or mounting deterioration	Parts interference	Spring fatigue	Suspension looseness	Wheel bearing damage	PROPELLER SHAFT	DIFFERENTIAL	DRIVE SHAFT	FRONT AXLE AND FRONT SUSPENSION	TIRES	ROAD WHEEL	BRAKES	STEERING
Symptom	REAR AXLE AND REAR SUSPEN-SION	Noise	X	X	X	X	X	X		X	X	X	X	X	X	X	X
		Shake	X	X	X	X		X		X		X	X	X	X	X	X
		Vibration	X	X	X	X	X			X		X	X	X			X
		Shimmy	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 : Applicable

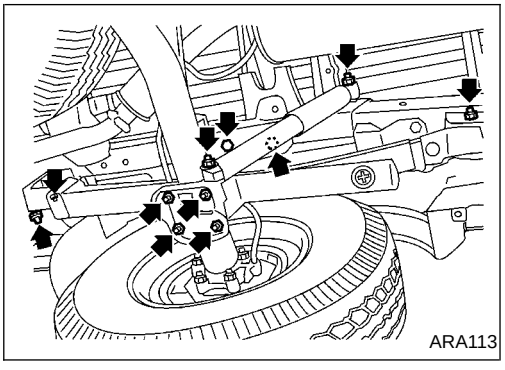

SEC. 380 • 430 • 431
78 – 98 (8.0 – 10.0, 58 – 72)
When installing each rubber parts, final tightening must be carried out under unladen condition* with tires on ground.
* Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.
40 – 50 (4.1 – 5.1, 30 – 37)
118 – 147 (12 – 15, 87 – 108)
Front
: N·m (kg-m, ft-lb)
118 – 147 (12 – 15, 87 – 108)
ARA109


SMA525A

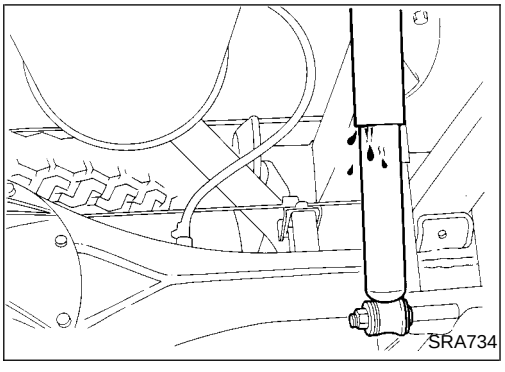
Rear Axle and Rear Suspension Parts

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

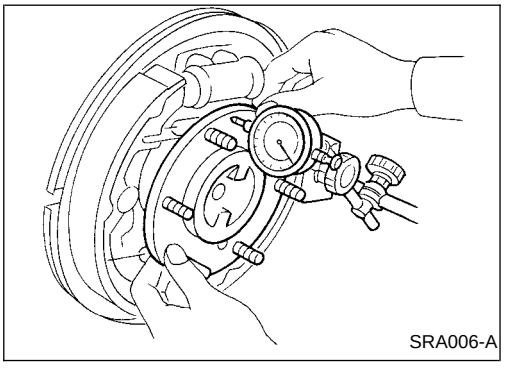
- Shake each rear wheel to check for excessive play.


ARA113

- Retighten all nuts and bolts to the specified torque.
  : Refer to REAR SUSPENSION, RA-13.


SRA734

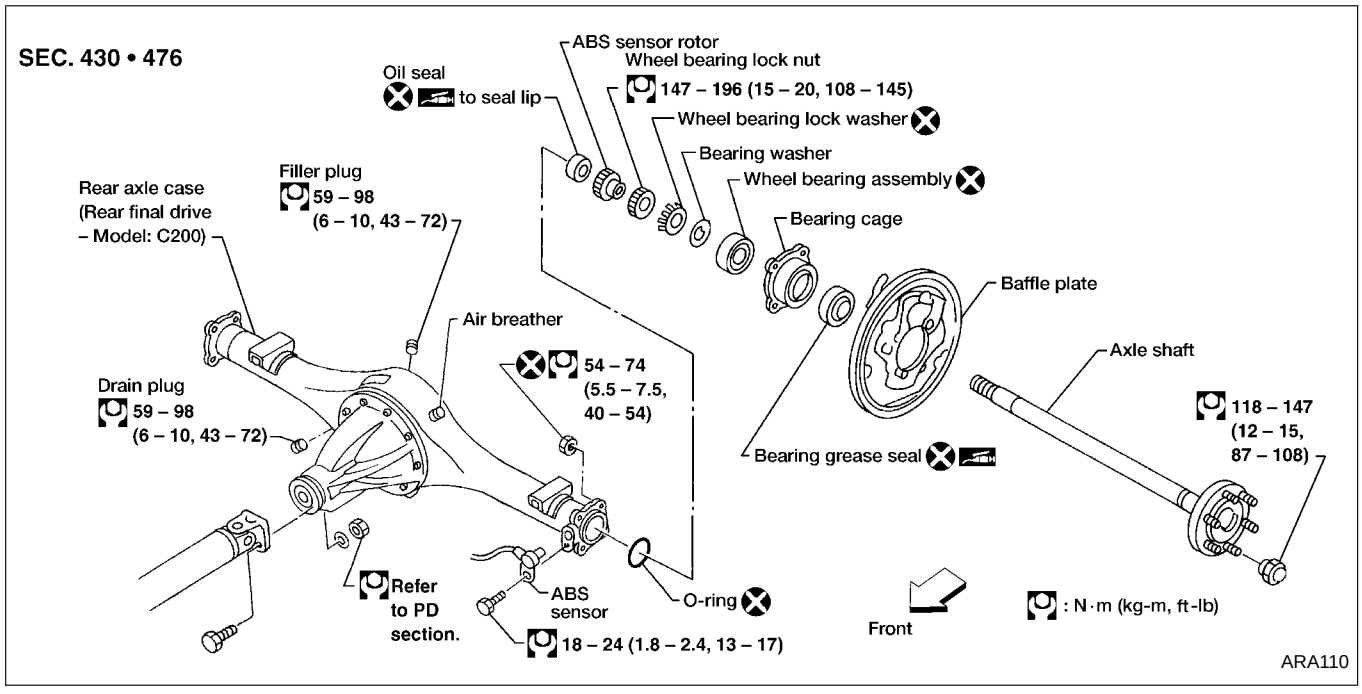
- Check shock absorber for oil leakage and other damage.
- Check shock absorber bushing for excessive wear and other damage.


SRA006-A

Rear Wheel Bearing

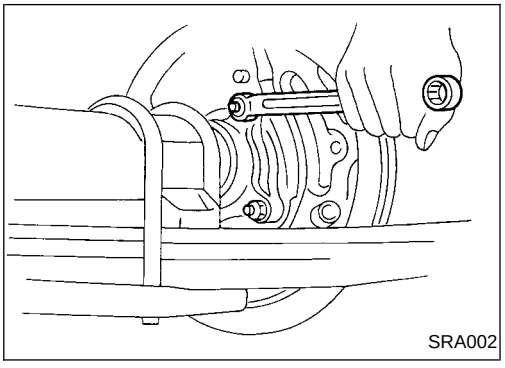
- Check that wheel bearings operate smoothly.
- Check axial end play.
  Axial end play:
  Refer to SDS, RA-16.

Components

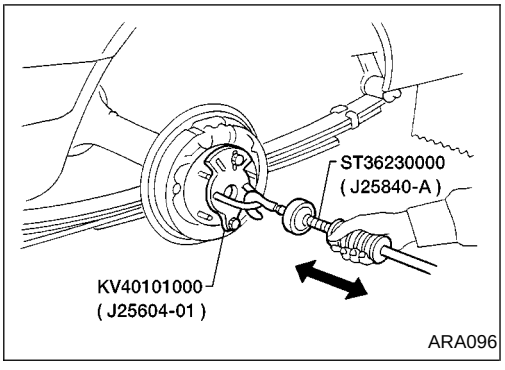

SEC. 430 • 476
ABS sensor rotor
Wheel bearing lock nut
147 – 196 (15 – 20, 108 – 145)
Oil seal
to seal lip
Wheel bearing lock washer
Bearing washer
Wheel bearing assembly
Bearing cage
Filler plug
59 – 98
(6 – 10, 43 – 72)
Rear axle case
(Rear final drive
– Model: C200)
Baffle plate
Air breather
54 – 74
(5.5 – 7.5,
40 – 54)
Axle shaft
Drain plug
59 – 98
(6 – 10, 43 – 72)
118 – 147
(12 – 15,
87 – 108)
Bearing grease seal
Refer
to PD
section.
ABS
sensor
O-ring
18 – 24 (1.8 – 2.4, 13 – 17)
Front
: N·m (kg-m, ft-lb)
ARA110

Removal

- **Before removing the rear axle, disconnect the ABS wheel sensor from the assembly. Then move it away from the axle. Failure to do so may result in damage to the sensor wires and the sensor becoming inoperative.**
- **Wheel bearing does not require maintenance.**
- If growling noise is emitted from wheel bearing during operation, replace wheel bearing assembly.
- If the wheel bearing assembly is removed, it must be replaced. The old assembly must not be re-used.


SRA002

1. Disconnect parking brake cable and brake tube.
2. Remove nuts securing wheel bearing cage with baffle plate.



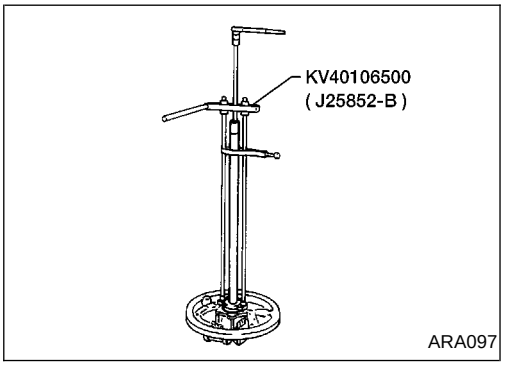
ARA096

3. Draw out axle shaft with Tool.

When drawing out axle shaft, be careful not to damage oil seal.

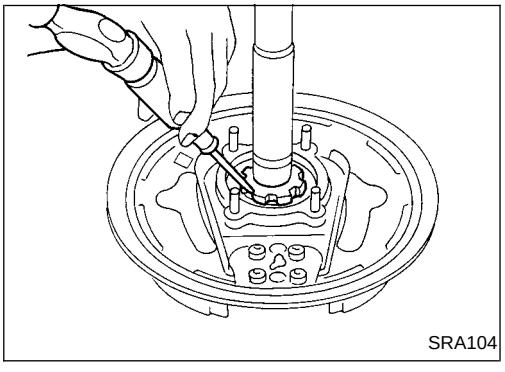
4. Remove O-ring.
5. Remove oil seal.

Do not reuse oil seal once it is removed.
Always install new one.



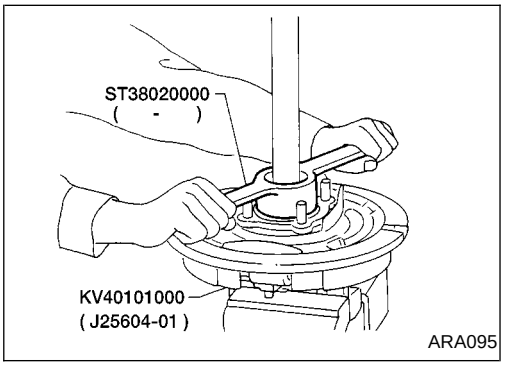
ARA097

6. Remove ABS sensor rotor.

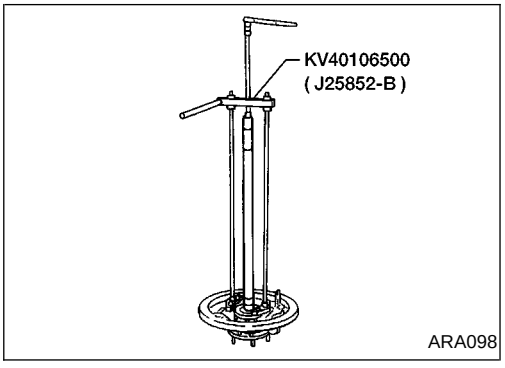

SRA104

7. Unbend lock washer with a screwdriver.

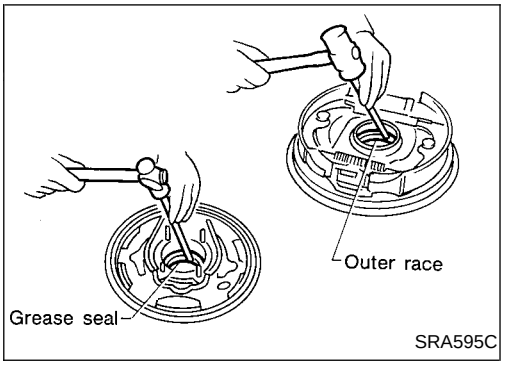
Removal (Cont'd)



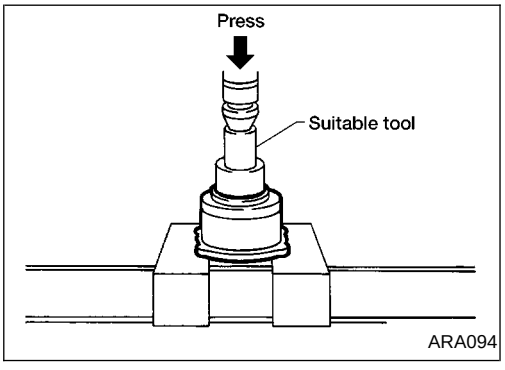
8. Remove bearing lock nut with Tool.



9. Remove wheel bearing together with bearing cage and baffle plate from axle shaft.



10. Remove grease seal in bearing cage with suitable bar.



11. Remove wheel bearing assembly.

Inspection

AXLE SHAFT

- Check axle shaft for straightness, cracks, damage, wear and distortion. Replace if necessary.

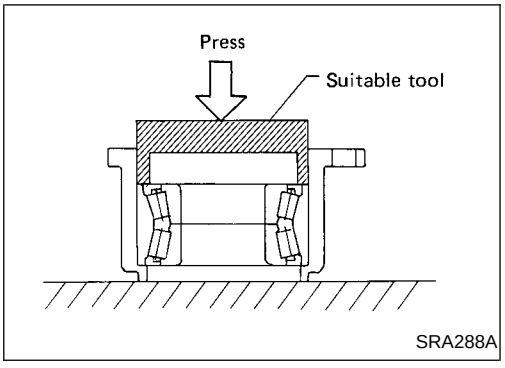
WHEEL BEARING

- Make sure wheel bearing rolls freely and is free from noise, cracks, pitting and wear.

AXLE CASE

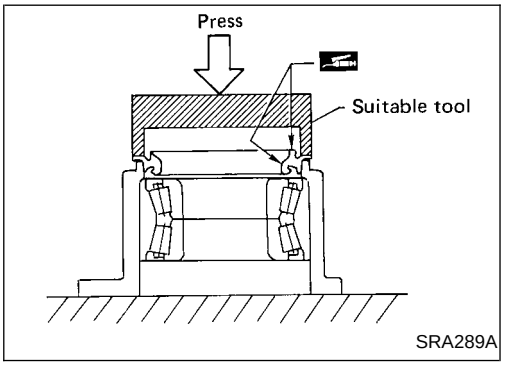
- Check axle case for yield, deformation and cracks. Replace if necessary.

Installation



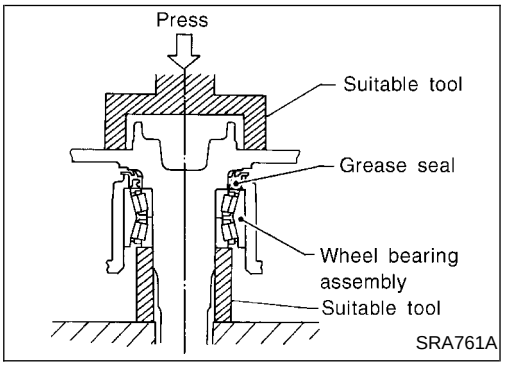
1. Press new wheel bearing until it bottoms end face of bearing cage.
   Maximum load P:
   78 kN (8 ton, 8.8 US ton, 7.9 Imp ton)

Always press outer race of wheel bearing during installation.



2. Press new grease seal until it bottoms end face of bearing cage.

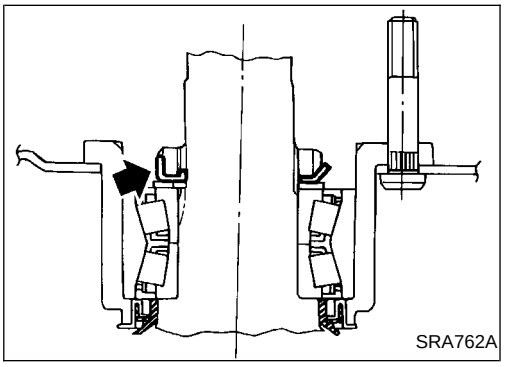
After installing new grease seal, coat sealing lip with multi-purpose grease.



3. Press axle shaft into inner race of wheel bearing.
   Maximum load P:
   47.1 kN (4.8 ton, 5.3 US ton, 4.72 Imp ton)

Be careful not to damage or deform grease seal.

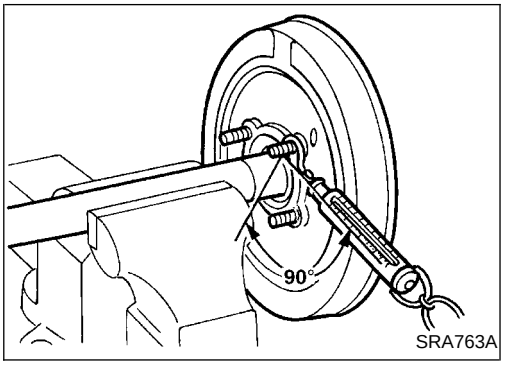
Installation (Cont'd)



4. Install plain washer and a new wheel bearing lock washer.
5. Tighten wheel bearing lock nut to specified torque.

: 147 - 196 N·m (15 - 20 kg-m, 108 - 145 ft-lb)

Fit wheel bearing lock washer lip in wheel bearing lock nut groove correctly by tightening lock nut. Be sure to bend it up.

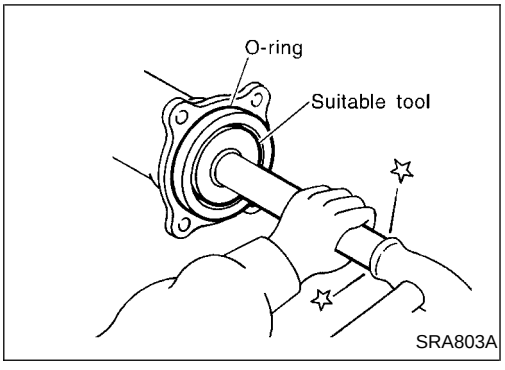


6. Check wheel bearing preload.

a. Turn bearing cage (with respect to axle shaft) two or three times. It must turn smoothly.

b. Attach spring gauge to bearing cage bolt (as shown at left) and pull it at a speed of 10 rpm to measure preload.

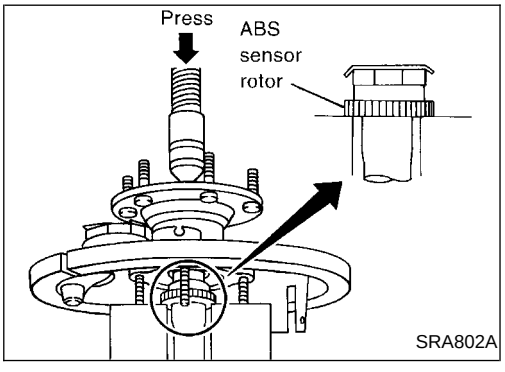
Spring gauge indication:
6.9 - 48.1 N (0.7 - 4.9 kg, 1.5 - 10.8 lb)



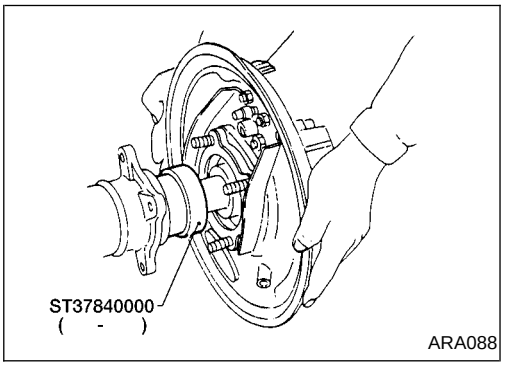
7. Install new oil seal to rear axle housing using a suitable tool.

After installing new oil seal, coat sealing lip with multi-purpose grease.

8. Install new O-ring to rear axle housing.



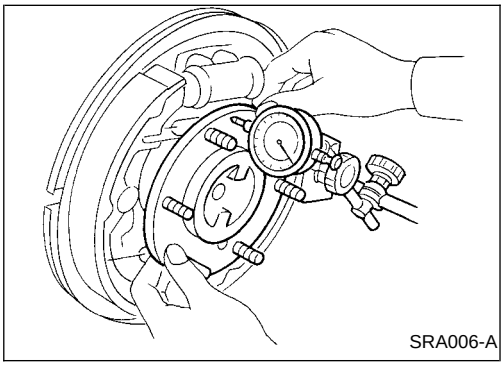
9. Press ABS sensor rotor onto axle shaft until it contacts wheel bearing lock nut.



10. Position axle shafts in rear axle housing with Tool as a guide.

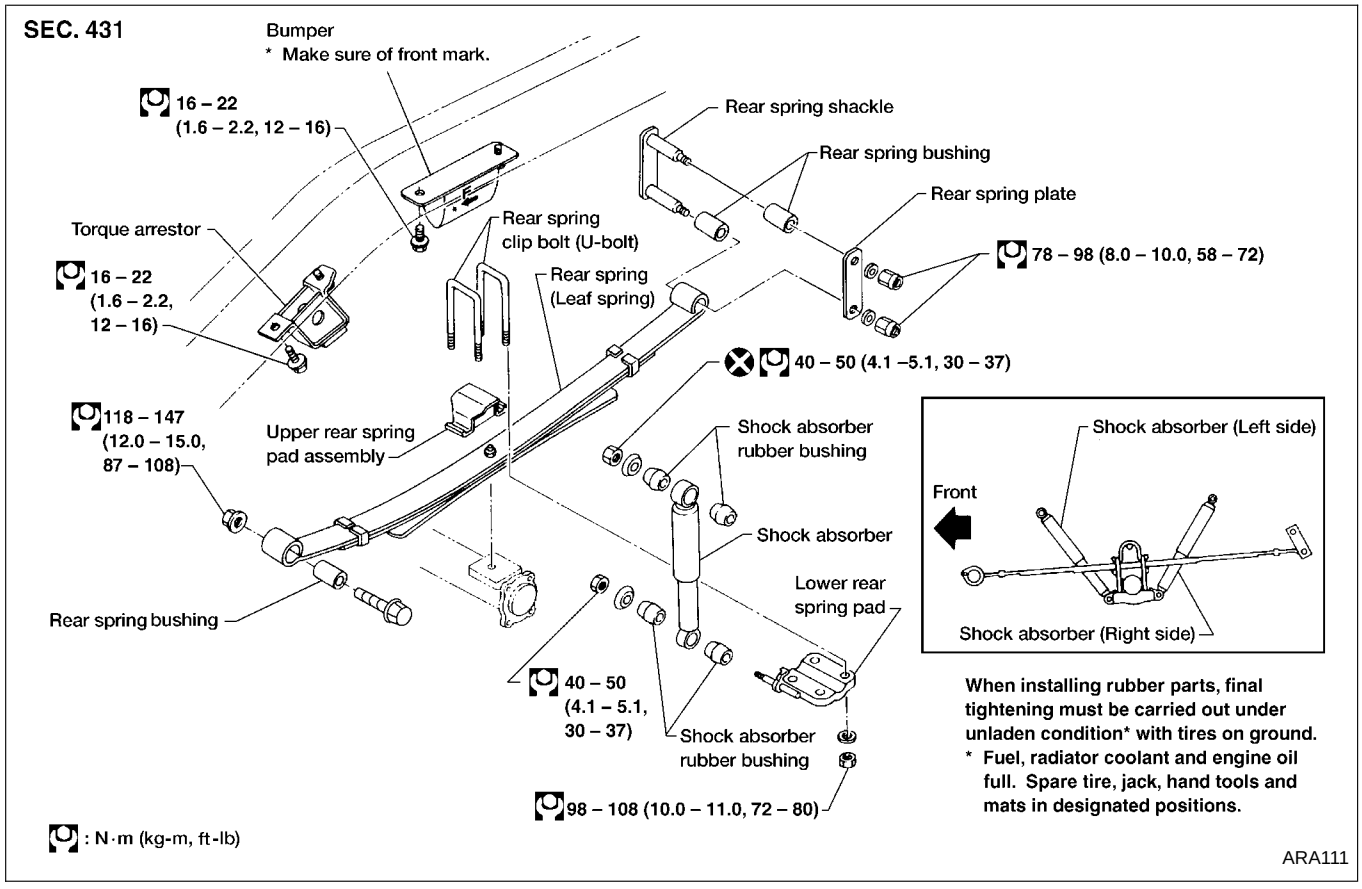
Be careful not to damage oil seal.

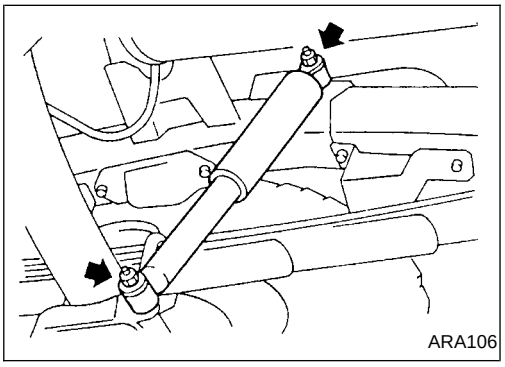
Installation (Cont'd)


SRA006-A

11. Check axial end play.
a. Check that wheel bearings operate smoothly.
b. Check axial end play.

Axial end play:
0 mm (0 in)


SEC. 431
Bumper
* Make sure of front mark.
16 – 22 (1.6 – 2.2, 12 – 16)
Rear spring shackle
Rear spring bushing
Rear spring plate
Torque arrestor
Rear spring clip bolt (U-bolt)
78 – 98 (8.0 – 10.0, 58 – 72)
16 – 22 (1.6 – 2.2, 12 – 16)
Rear spring (Leaf spring)
40 – 50 (4.1 –5.1, 30 – 37)
118 – 147 (12.0 – 15.0, 87 – 108)
Upper rear spring pad assembly
Shock absorber rubber bushing
Shock absorber
Lower rear spring pad
Rear spring bushing
40 – 50 (4.1 – 5.1, 30 – 37)
Shock absorber rubber bushing
98 – 108 (10.0 – 11.0, 72 – 80)
: N·m (kg-m, ft-lb)
Front
Shock absorber (Left side)
Shock absorber (Right side)
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.
ARA111


ARA106

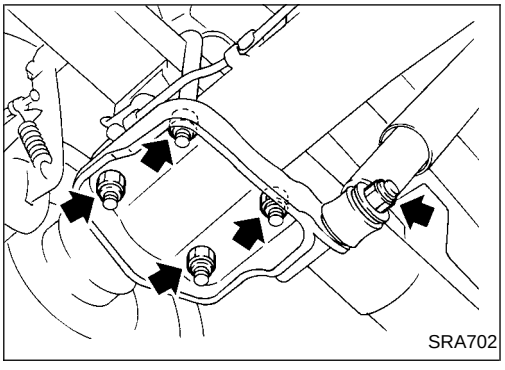
Shock Absorber

REMOVAL AND INSTALLATION

- Remove shock absorber by disconnecting upper and lower end.

INSPECTION

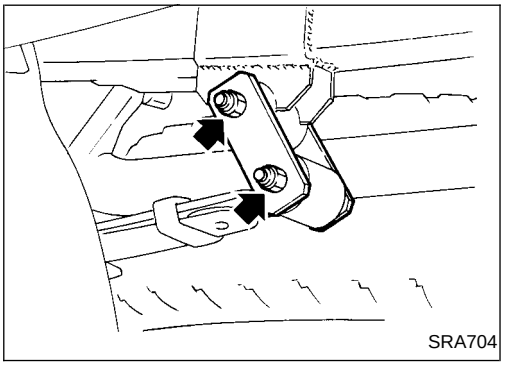
- If oil leakage, cracks and deformation occurs, replace shock absorber assembly.
- If rubber bushings are cracked and deformed, replace rubber bushings.


SRA702

Leaf Spring

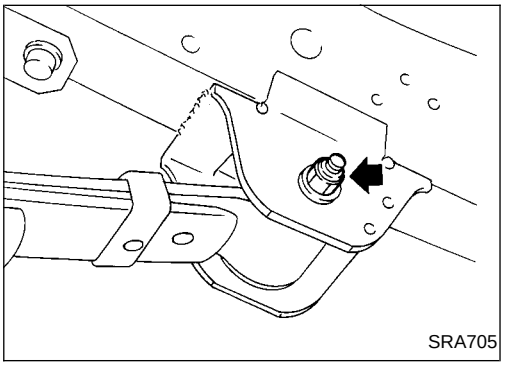
REMOVAL AND INSTALLATION

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

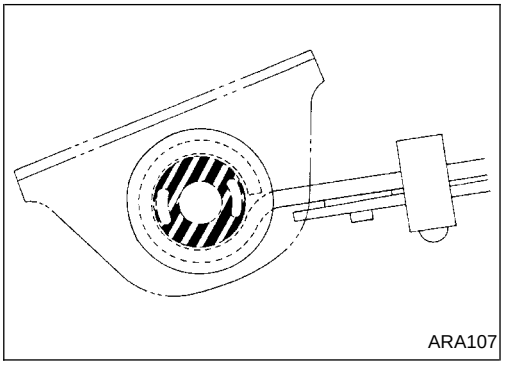

SRA704

2. Disconnect spring shackle.

Leaf Spring (Cont'd)

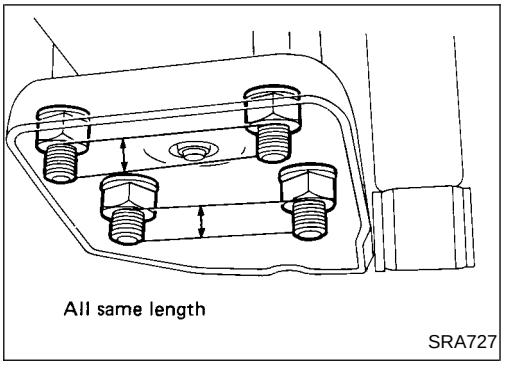

SRA705

3. Disconnect front pin.


ARA107

INSPECTION

- Check leaf spring for cracks. Replace if necessary.
- Check front bracket and pin, shackle, U-bolts and spring pad for wear, cracks, straightness and damaged threads. Replace if necessary.
- Check all bushings for deformation and cracks. Replace if necessary.
  (Rear spring front bushing)
  Make sure that front bushing is properly installed.



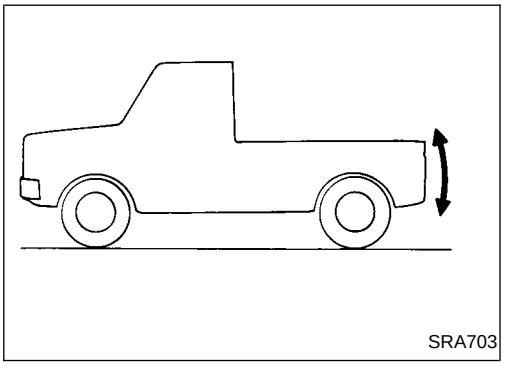
SRA727

INSTALLATION

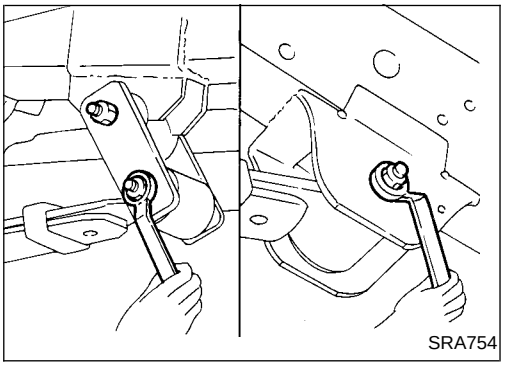
1. Apply soapsuds to rubber bushing.
2. Install spring shackle and front pin, and finger tighten the nuts.
3. Install spring pad and nuts under leaf spring or axle case.
4. Tighten U-bolt mounting nuts diagonally.

Tighten U-bolts so that the lengths of all U-bolts under spring pad are the same.

5. Install shock absorber, and finger tighten the nuts.


SRA703

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


SRA754

7. Tighten spring shackle nuts, front pin nuts and shock absorber nuts.

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

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

General Specifications

Suspension type	Rigid axle with semi-elliptic leaf spring
Shock absorber type	Double-acting hydraulic

Inspection and Adjustment

WHEEL BEARING

Total end play mm (in)	0 (0)
Wheel bearing preload at bearing cage bolt N (kg, lb)	6.9 - 48.1 (0.7 - 4.9, 1.5 - 10.8)