REAR AXLE & REAR SUSPENSION

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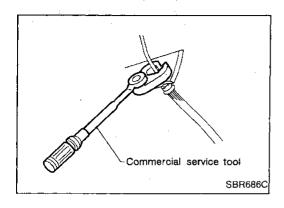






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PRECAUTIONS AND PREPARATION



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 lines.
- After installing removed suspension parts, check wheel alignment and adjust if necessary.
- Always torque brake lines when installing.
- Do not jack up at the lower arm.

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		
ST35652000 (—) Shock absorber attachment			Fixing strut assembly
ST30031000 (J22912-01) Bearing puller	NT145	a a de la constantina della co	Removing inner race of wheel bearing
	NT412		a: 50 mm (1.97 in) dia.
ST38280000 (—) Arm bushing remover			Removing and installing rear axle housing bushing
IM23600800	NT157	φ	Measure rear wheel alignment
(—) Attachment	NT148	ball	a: Screw M24 x 1.5 b: 35 mm (1.38 in) dia. c: 65 mm (2.56 in) dia. d: 56 mm (2.20 in) e: 12 mm (0.47 in)
ST29020001 (24319-01) Pitman arm puller			Removing lower ball joint
	NT694	S a	a: 34 mm (1.34 in) b: 6.5 mm (0.256 in) c: 61.5 mm (2.421 in)

PRECAUTIONS AND PREPARATION

Commercial Service Tools

Tool name	Description		
 Flare nut crowfoot Torque wrench		Removing and installing each brake piping	_ G1
	NT223		M
Rear wheel bearing drift		Installing wheel bearing	— En
	NT065	a: 76 mm (2.99 in) dia. b: 68.5 mm (2.697 in) dia.	LO
Rear drive shaft plug seal drift		Installing rear drive shaft plug seal	EC
	NT065	a: 78 mm (3,07 in) dia. b: 72 mm (2.83 in) dia.	FE
Rear axle housing ball		Removing ball joint	- At
joint drift	NT164	a: 28 mm (1.10 in) dia. b: 20 mm (0.79 in) dia. c: 43 mm (1.69 in) dia. d: 40 mm (1.57 in) dia.	PD
Rear axle housing ball		Installing ball joint	- FA
joint drift	NT164	a: 43 mm (1.69 in) dia. b: 33 mm (1.30 in) dia. c: 40 mm (1.57 in) dia. d: 30 mm (1.18 in) dia.	RA
Spring compressor		Removing and installing coil spring	– BR
			ST
	NT717		RS

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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.

Reference	e page			RA-17		RA-6					RA-5, 19	RA-7	RA-25	RA-9	NVH in PD section	NVH in PD section	NVH in FA section	Refer to REAR AXLE AND REAR SUSPENSION in this cahr.	NVH in FA section	NVH in FA section	Refer to DRIVE SHAFT in this chart.	NVH in BR section	NVH in ST section
Possible c	cause and SU	SPECTED PARTS	Excessive joint angle	Joint sliding resistance	Imbalance	Improper installation, looseness	Shock absorber deformation, damage or deflection	Bushing or mounting deterioration	Parts interference	Spring fatigue	Suspension looseness	Incorrect wheel alignment	Stabilizer bar fatigue	Wheel bearing damage	PROPELLER SHAFT	DIFFERENTIAL	FRONT AXLE AND FRONT SUSPENSION	REAR AXLE AND REAR SUSPENSION	TIRES	ROAD WHEEL	DRIVE SHAFT	BRAKES	STEERING
	DRIVE	Noise, Vibration	Х	Х											X	X	Х	X	Х	Х		X	Х
	SHAFT	Shake	Х		Х										Х		Х	Х	Х	Х		Х	
	Noise				Х	Х	Х	Х	Х	Х				Х	Х	х		X	X	Х	Х	X	
Symptom REAR		Shake				Х		Х	Х		Х		_	-	x	_	Х		Х	Х	Х	Х	X
) · p · · · · · ·	AXLE AND REAR	Vibration				Х	\rightarrow	\rightarrow	Х	Х	\perp				X	_	х	_	<u> </u>		Х		Х
	SUSPEN-	Shimmy				X	_	_	Х	\perp	\downarrow	×	\perp	\perp	\downarrow	_	Х		X	X		Х	X
SION		Judder		_		Х	-	Х			\dashv			_	\perp	_	X	_	X	Х	_	Х	<u> </u>
X: Applicab	1-	Poor quality ride or handling				Х	Х	Х	Х	Х		Х	X	Х			Х		Х	Х			

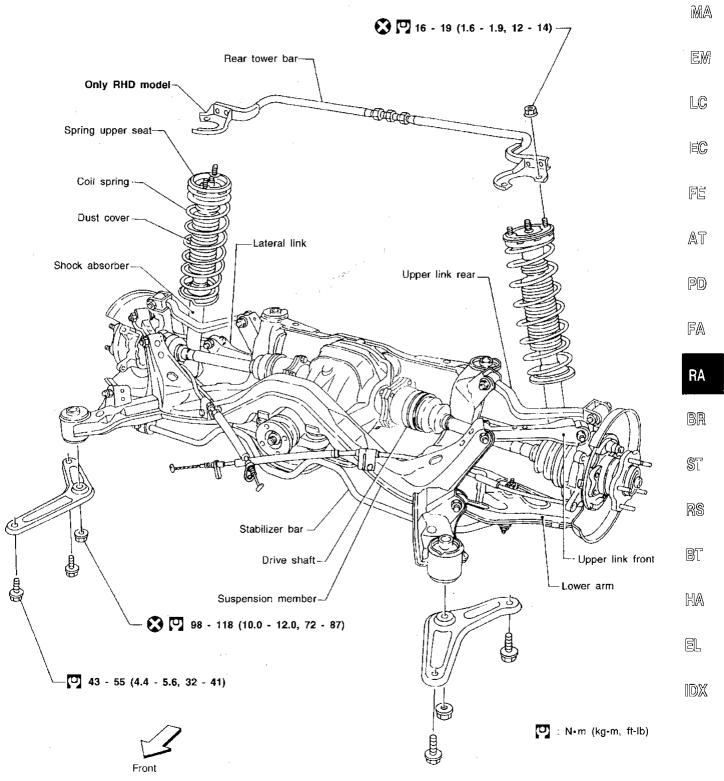
X: Applicable

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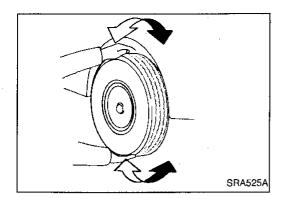
When installing rubber parts, final tightening must be carried out under unladen condition* with tires on ground.

* Fuel, radiator coolant and engine oil full.

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



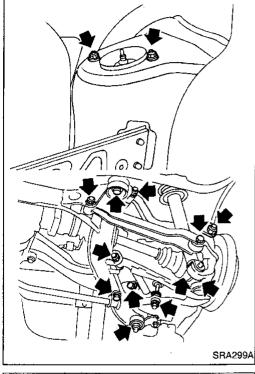
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Rear Axle and Rear Suspension Parts

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

Shake each rear wheel to check for excessive play.

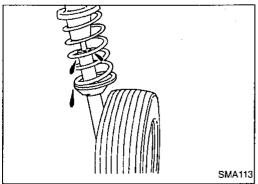


• Retighten all nuts and bolts to the specified torque.

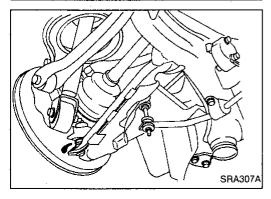
Tightening torque:

Refer to drawing in REAR SUSPENSION (RA-19).

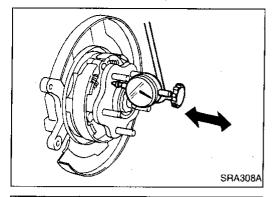
Make sure that cotter pin is inserted.

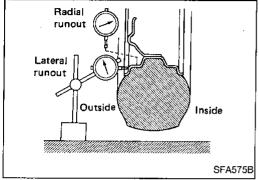


- Check shock absorber for oil leakage or other damage.
- Check wheelarch height. Refer to Front Axle and Front Suspension Parts of ON-VEHICLE SERVICE in FA section.



 Check suspension ball joint for grease leakage and ball joint dust cover for cracks or other damage.





Rear Wheel Bearing

- Check wheel bearings for smooth operation.
- Check axial end play.

Axial end play:

0.05 mm (0.0020 in) or less

If axial end play is not within specification or wheel bearing does not turn smoothly, replace wheel bearing assembly.

Refer to Wheel Hub and Axle Housing in REAR AXLE (RA-10).

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Rear Wheel Alignment

Before checking rear wheel alignment, be sure to make a preliminary inspection.

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PRELIMINARY INSPECTION

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

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

Refer to SDS in FA section.

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- Check that rear shock absorber works properly.
- Check rear axle and rear suspension parts for excessive play.
- Check vehicle posture (Unladen).
 ("Unladen": Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.)

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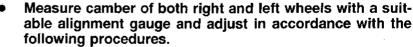




Alignment

SRA096A

gauge



If camber is not within specification, adjust by turning the adjusting



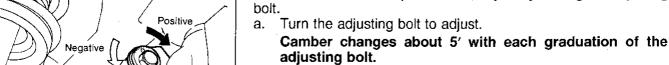
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Camber:

Refer to SDS (RA-26).

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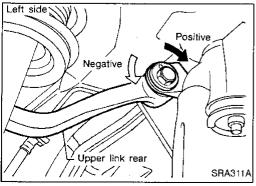
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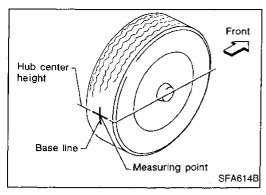
b. Tighten to the specified torque.

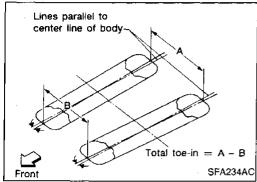
[0]: 69 - 88 N·m (7.0 - 9.0 kg-m, 51 - 65 ft-lb)

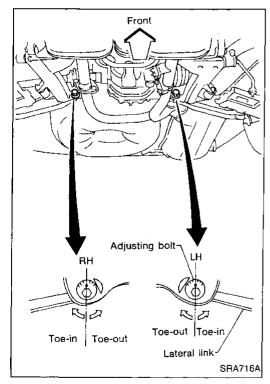


Attachment

RA-7







Rear Wheel Alignment (Cont'd)

TOE-IN

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

- Always perform following procedure on a flat surface.
- Make sure that no person is in front of the vehicle before pushing it.
- 1. Bounce rear of vehicle up and down to stabilize the posture.
- Push the vehicle straight ahead about 5 m (16 ft).
- Put a mark on base line of the tread (rear side) of both 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:

Refer to SDS (RA-26).

7. Adjust toe-in by turning adjusting bolts.

Toe changes about 1.5 mm (0.059 in) [One side] with each graduation of the adjusting bolt.

8. Tighten to the specified torque.

(C): 69 - 88 N·m

(7.0 - 9.0 kg-m, 51 - 65 ft-lb)

Drive Shaft

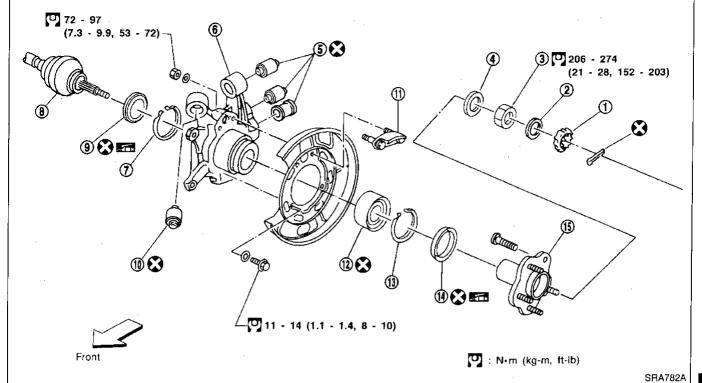
Check boot and drive shaft for cracks, wear, damage or grease leakage.

Wheel Hub and Axle Housing



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.



- 1 Adjusting cap
- (2) Insulator
- Wheel bearing lock nut 3
- Washer
- Bushing

- **6** Axle housing
- 7 Snap ring
- Drive shaft
- Grease seal
- Bushing

- 1 Anchor block
- 12 Wheel bearing
- Snap ring
- Grease seal (14)
- Wheel hub

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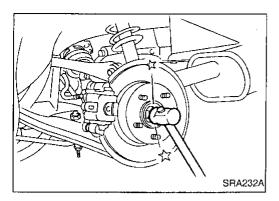
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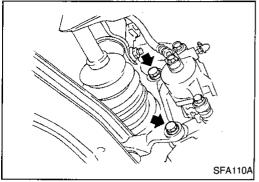


Wheel Hub and Axle Housing (Cont'd) REMOVAL

Remove wheel bearing lock nut.

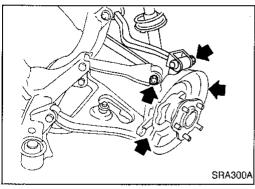
 Separate drive shaft from axle housing by lightly tapping it. If it is hard to remove use puller.

When removing drive shaft, cover boots with shop towel to prevent them from being damaged.

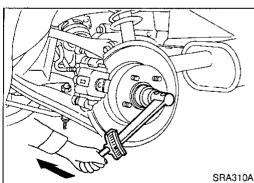


Remove brake caliper assembly and rotor.

Brake line need not be disconnected from brake caliper. Be careful not to depress brake pedal, or piston will pop out. Do not pull or twist brake hose.



Remove axle housing.

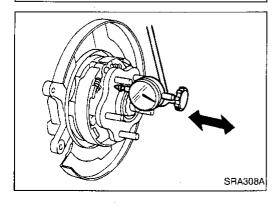


INSTALLATION

Install axle housing with wheel hub.

 Tighten wheel bearing lock nut.
 Before tightening, apply oil to threaded portion of rear spindle and both sides of plain washer.

(21 - 28 kg-m, 152 - 203 ft-lb)



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

 Make sure that wheel bearings operate smoothly.
- Check toe-in Refer to ON-VEHICLE SERVICE (RA-8).

Wheel Hub and Axle Housing (Cont'd) **DISASSEMBLY**

CAUTION:

Wheel bearing

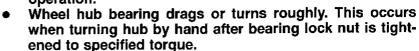
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SRA110A

SFA950A

Wheel bearing does not require maintenance. If any of the following symptoms are noted, replace wheel bearing assembly.

Growling noise is emitted from wheel bearing during



After wheel bearing is removed from hub.

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Remove wheel hub from axle housing using a suitable tool.

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Remove inner race from hub using a bearing replacer/ puller.











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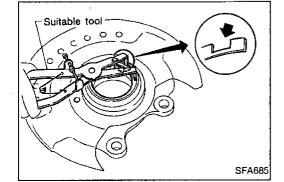












Suitable tool-

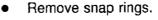
ST30031000

(J22912-01)

(Sliding hammer)

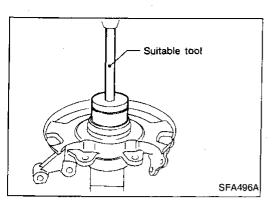
Remove grease seals from axle housing.





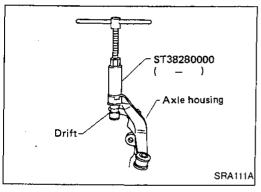


Wheel Hub and Axle Housing (Cont'd) Press out bearing outer race.



CAUTION:

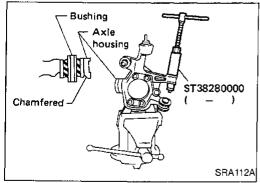
Do not reuse old inner race although it is of the same brand as the bearing assembly.



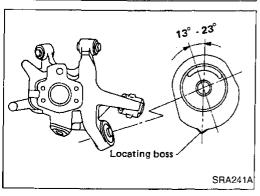
Axle housing

 Attach a drift on outer shell of bushing as shown in figure at left, remove bushing using arm bushing remover.

When placing axle housing in a vise, use wooden blocks or copper plates as pads.



- Ensure axle housing bore is free from scratches or deformities before pressing bushing into it.
- Attach bushing to chamfered bore end of axle housing and press it until it is flush with end face of axle housing.



 When installing shock absorber bushing, make sure that it is positioned as shown.

Wheel Hub and Axle Housing (Cont'd) **INSPECTION**

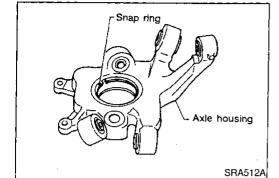
Wheel hub and axle housing

- Check wheel hub and axle housing for cracks by using a magnetic exploration or dyeing test.
- Check wheel bearing for damage, seizure, rust or rough opera-
- Check rubber bushing for wear or other damage.
- Check snap ring for wear or cracks.

Replace if necessary.







ASSEMBLY

Install snap ring into groove of axle housing.







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Press new wheel bearing assembly into axle housing. Press only on outer race of wheel bearing assembly.

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Maximum load P: 29 kN (3 ton, 3.3 US ton, 3.0 Imp ton)



CAUTION:

- Do not press inner race of wheel bearing assembly.
- Do not apply oil or grease to mating surfaces of wheel bearing outer race and axle housing.
- Before pressing, check for correct bearing grease seal



orientation, as inner and outer seals are different.



Install snap ring.



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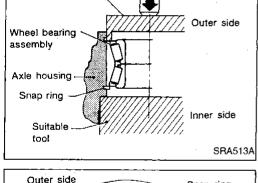
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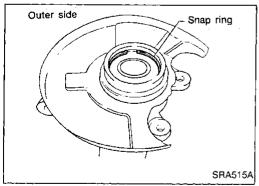
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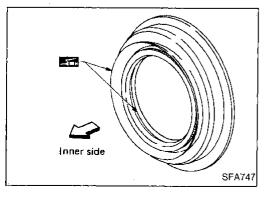






Suitable tool

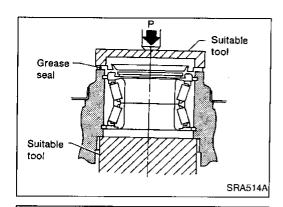


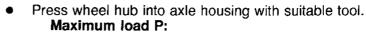


Pack grease seal lip with multi-purpose grease.

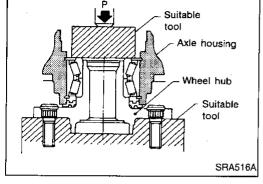
Wheel Hub and Axle Housing (Cont'd)

• Install outer grease seal.

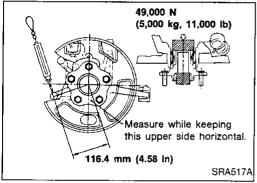




29 kN (3 ton, 3.3 US ton, 3.0 lmp ton) Be careful not to damage grease seal.



Be careful not to damage grease seal.



With wheel hub pressed into axle housing, apply 49,000 N (5,000 kg, 11,000 lb) to wheel hub and rotate both clockwise and counterclockwise 10 times to minimize resistance.

Attach spring scale in the position shown at left and pull at a rate of 10 rpm to measure rotating torque.

Load:

49,000 N (5,000 kg, 11,000 lb)

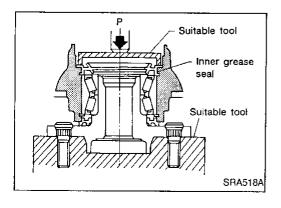
Rotating torque:

0.2 - 2.4 N·m (2.3 - 24.3 kg-cm, 2.0 - 21.1 in-lb)

Spring scale reading:

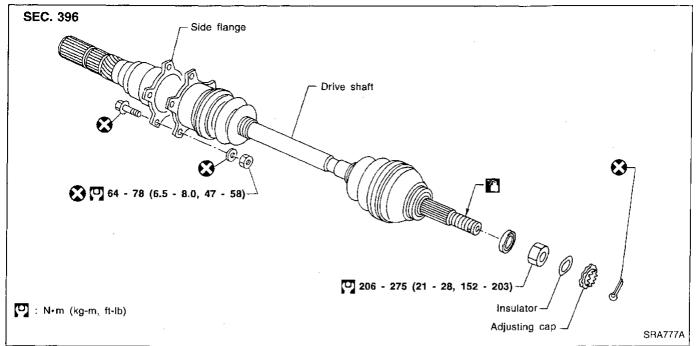
2.0 - 20.6 N (0.2 - 2.1 kg, 0.4 - 4.6 lb)

If measured value is outside specifications, replace wheel bearing. Also make sure axial play does not exist in wheel hub when a 49,000 N (5,000 kg, 11,000 lb) load is applied.



Install inner grease seal.

Drive Shaft



REMOVAL

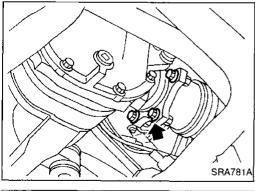
Final drive side

Before removing the drive shaft assembly, disconnect the ABS wheel sensor to prevent the damage of the sensor.

Cover boots with shop towel so as not to damage them

when removing drive shaft.

Remove side flange mounting bolt and separate shaft.



Wheel side

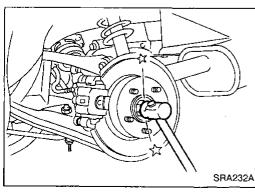
Remove drive shaft by lightly tapping it with a copper hammer. If it is hard to remove, use a puller.

To avoid damaging threads of drive shaft, install a nut while removing drive shaft.



- Insert drive shaft from wheel hub and temporarily tighten wheel bearing lock nut.
- Tighten side flange mounting bolts to specified torque.
- Tighten wheel bearing lock nut to specified torque.





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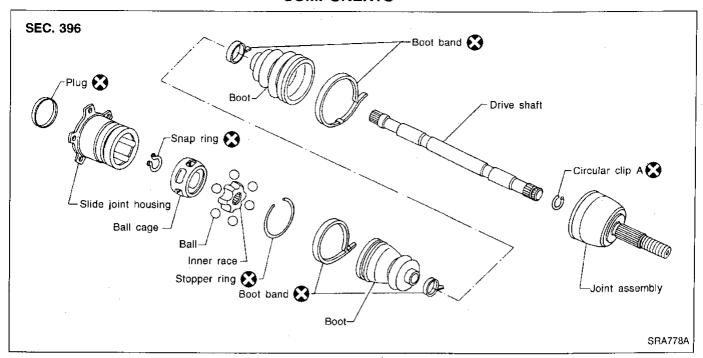
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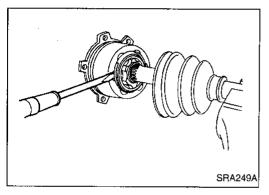
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Drive Shaft (Cont'd) COMPONENTS

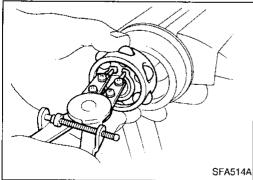




DISASSEMBLY

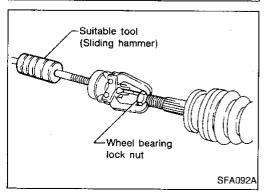
Final drive side

- 1. Remove boot bands.
- 2. Put matching marks on slide joint housing and inner race, before separating joint assembly.
- 3. Remove stopper ring with a screwdriver, and pull out slide joint housing.



- 4. Put matching marks on inner race and drive shaft.
- 5. Remove snap ring, then remove ball cage, inner race and balls as a unit.
- 6. Draw out boot.

Cover drive shaft serration with tape to prevent damage to the boot.



Wheel side

CAUTION:

The joint on the wheel side cannot be disassembled.

- 1. Before separating joint assembly, put matching marks on drive shaft and joint assembly.
- 2. Separate joint assembly with a suitable tool.

Be careful not to damage threads on drive shaft.

- 3. Remove boot bands.
- 4. Draw out boot.

Drive Shaft (Cont'd)

INSPECTION

Thoroughly clean all parts in cleaning solvent, and dry with compressed air. Check parts for evidence of deformation or other damage.

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Drive shaft

Replace drive shaft if it is twisted or cracked.

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Check boot for fatigue, cracks, or wear. Replace boot with new boot bands.

Joint assembly (Final drive side)

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Replace any parts of double offset joint which show signs of scorching, rust, wear or excessive play.

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Check serration for deformation. Replace if necessary. Check slide joint housing for any damage. Replace if neces-

IEE.

Joint assembly (Wheel side)

Replace joint assembly if it is deformed or damaged.

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sary.

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After drive shaft has been assembled, ensure that it moves smoothly over its entire range without binding.

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Use NISSAN GENUINE GREASE or equivalent after every overhaul.

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Wheel side

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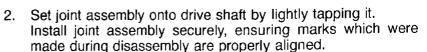
Install boot and new small boot band on drive shaft.

Cover drive shaft serration with tape so as not to damage boot during installation.

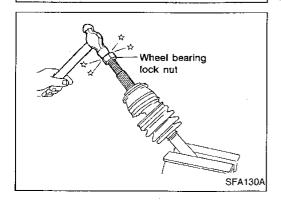
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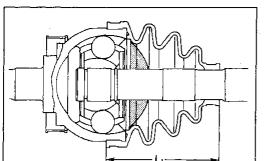


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∠ Tape

Drive Shaft (Cont'd)



SFA456B

3. Pack drive shaft with specified amount of grease.

Specified amount of grease:

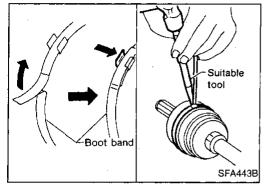
113 - 123 g (3.99 - 4.34 oz)

 Make sure that boot is properly installed on the drive shaft groove.

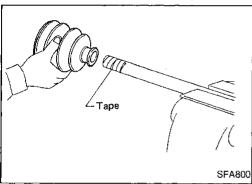
Set boot so that it does not swell and deform when its length is "L₁".

Length "L₁":

96 - 98 mm (3.78 - 3.86 in)



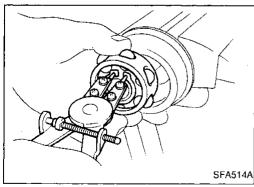
5. Lock new larger and smaller boot bands securely with a suitable tool.



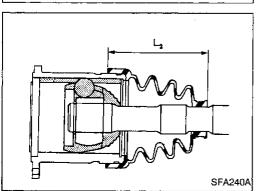
Final drive side

1. Install boot and new small boot band on drive shaft.

Cover drive shaft serration with tape so as not to damage boot during installation.



- Install ball cage, inner race and balls as a unit, making sure the marks which were made during disassembly are properly aligned.
- 3. Install new snap ring.



4. Pack drive shaft with specified amount of grease.

Specified amount of grease:

165 - 175 g (5.82 - 6.17 oz)

5. Install slide joint housing, then install new stopper ring.

6. Make sure that boot is properly installed on the drive shaft groove.

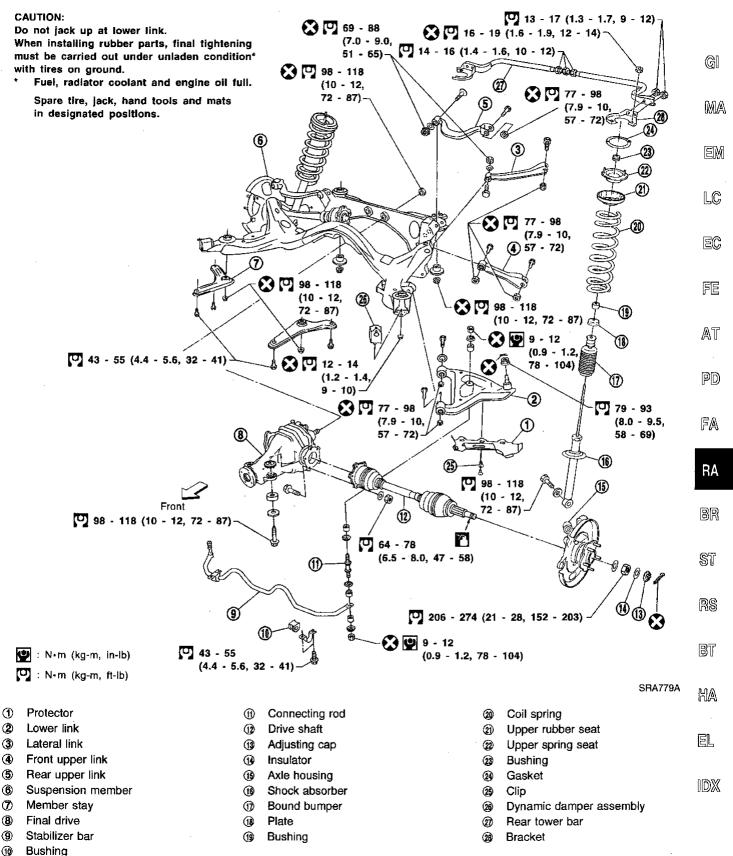
Set boot so that it does not swell and deform when its length is " L_2 ".

Length "L2":

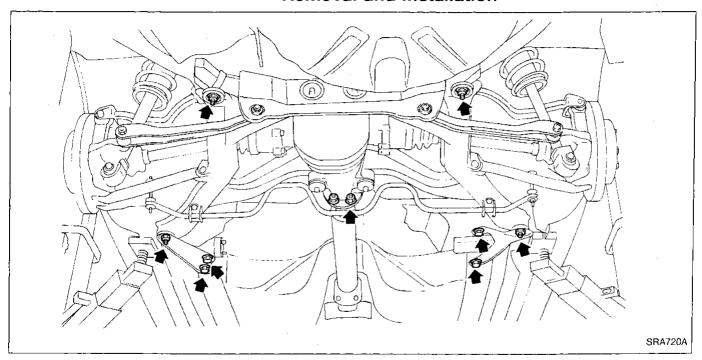
93 - 95 mm (3.66 - 3.74 in)

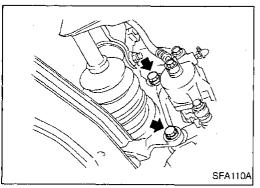
 Lock new larger and smaller boot bands securely with a suitable tool.

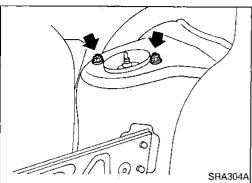
SEC. 380-396-430-431

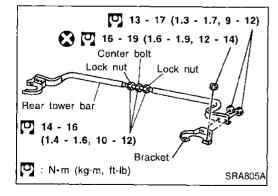


Removal and Installation









CAUTION:

Before removing the rear suspension assembly, disconnect the ABS wheel sensor from the assembly. Then move it away from the rear suspension assembly.

Failure to do so may result in the sensor wires being damaged and the sensor becoming inoperative.

- Remove exhaust tube.
- Disconnect propeller shaft rear end.
- Disconnect hand brake wire front end.
- Remove brake caliper assembly.

Brake line need not be disconnected from brake caliper. Be careful not to depress brake pedal, or piston will pop out. Do not pull or twist brake hose.

Remove upper end nuts of shock absorber.

Do not remove piston rod lock nut.

 Remove suspension member fixing nuts. Then draw out rear axle and rear suspension assembly.

- To install the rear tower bar, proceed as follows:
- Install the left and right brackets to the top of their corresponding shock absorbers.
- 2. Install the tower bar to the left and right brackets.
- 3. Adjust the tower bar position by tightening the center bolt to the specified torque. This will extend the tower bar length. (Center bolt may rotate about one full turn.)
- 4. Tighten the lock nut.

Coil Spring and Shock Absorber

REMOVAL

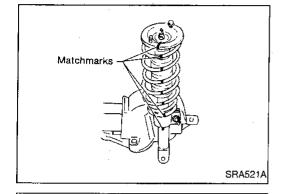
Remove shock absorber upper and lower fixing nuts.

Do not remove piston rod lock nut on vehicle.

(GII

MA





Suitable

Commercial service too!

DISASSEMBLY

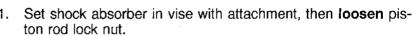
Put matchmarks on coil spring and shock absorber.

LC.

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PD)

WARNING:

Do not remove piston rod lock nut at this time.

FA

Compress spring with tool so that the shock absorber upper spring seat can be turned by hand.

RA

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.

Remove piston rod lock nut.

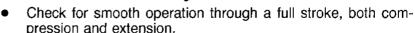
BR

INSPECTION

SRA806A

Shock absorber assembly

ST



RS

Check for oil leakage occurring on welded or gland packing portions.

37

Check piston rod for cracks, deformation or other damage. Replace if necessary.

MA

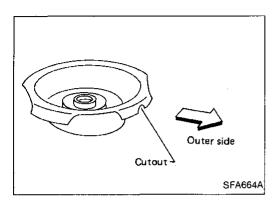
Upper rubber seat and bushing Check rubber parts for deterioration or cracks. Replace if necessary.

EL

Coil spring

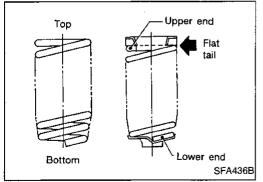
Check for cracks, deformation or other damage. Replace if necessary.

> **RA-21** 1031

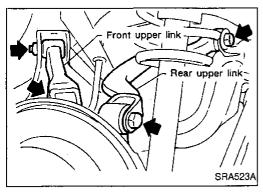


Coil Spring and Shock Absorber (Cont'd) ASSEMBLY

 Install upper spring seat with its cutout facing the outer side of vehicle.

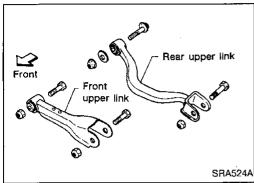


- When installing coil springs, be careful not to reverse top and bottom direction. (Top end is flat.)
- When installing coil spring on shock absorber, it must be positioned as shown in figure at left.

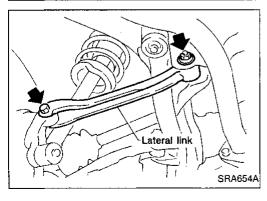


Multi-link and Lower Ball Joint REMOVAL AND INSTALLATION

Remove upper link.



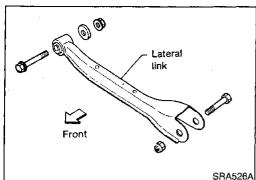
Install upper link.



Remove lateral link.

Multi-link and Lower Ball Joint (Cont'd)

Install lateral link.



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Remove lower arm with Tool.

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Install lower arm.

PD

FA

RA

BR

Before removing, put matchmarks on adjusting bolt.

ST RS

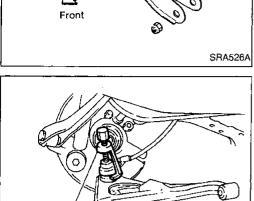
When installing, final tightening must be done under unladen condition with tires on ground.

BT

MA

EL

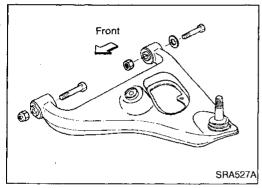
MCII

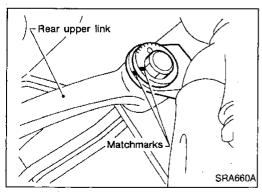


Lower arm

SRA783A

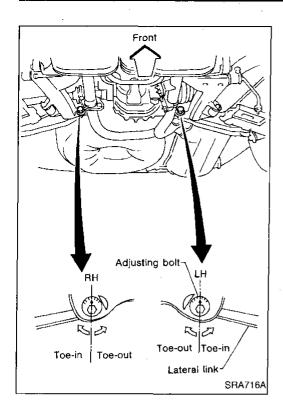
ST29020001 (24319-01)





Multi-link and Lower Ball Joint (Cont'd)

 After installation, check wheel alignment. Refer to Rear Wheel Alignment in ON-VEHICLE SERVICE (RA-7).



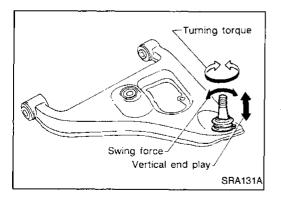
INSPECTION

Rear suspension member

Replace suspension member assembly if cracked or deformed or if any part (insulator, for example) is damaged.

Upper, lower and lateral links

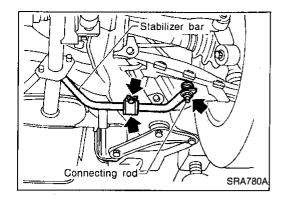
Replace upper, lower or lateral link as required if cracked or deformed or if bushing is damaged.



Suspension lower ball joint

- Measure swing force, turning torque and vertical end play in axial direction. (Use same measurement procedures as that of FA section.)
- If ball stud is worn, play in axial direction is excessive, or joint is hard to swing, replace lower arm.

Ball joint specifications	Swing force	7.8 - 78.4 N (0.8 - 8.0 kg, 1.8 - 17.6 lb)					
	Turning torque	0.5 - 4.9 N·m (5 - 50 kg-cm, 4.3 - 43.4 in-lb)					
	Vertical end play	0 mm (0 in)					



Stabilizer Bar

REMOVAL

Remove connecting rod and clamp.



MA

INSPECTION

Check stabilizer bar for deformation or cracks. Replace if nec-

Check rubber bushings for deterioration or cracks. Replace if

necessary.



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When installing connecting rod, make sure direction is correct (as shown at left).

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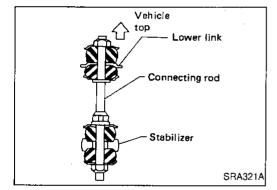
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RA-25 1035



SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

Suspension type	Independent multi-link with coil spring
Shock absorber type	Double-acting hydraulic
Stabilizer	Standard equipment

Inspection and Adjustment

WHEEL ALIGNMENT (Unladen*)

Camb	er ·	Minimum	-0°15′ (-0.25°)
	Degree minute	Nominal	-0°45′ (-0.75°)
	(Decimal degree)	Maximum	-1°15′ (-1.25°)
Total toe-in		Minimum	0 (0)
C	Distance (A – B) mm (in)	Nominal	2.5 (0.098)
		Maximum	5 (0.20)
Angle (left plus right)		Minimum	0′ (0.00°)
	Degree minute	Nominal	14′ (0.23°)
	(Decimal degree)	Maximum	28′ (0.47°)

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

WHEEL RUNOUT (Radial and lateral)

Wheel type		Radial runout	Lateral runout
Aluminum wheel	mm (in)	0.3 (0.01)	2) or less

LOWER BALL JOINT

Swing force (Measuring point: c stud)	otter pin hole of ball N (kg, lb)	
Turning torque	N·m (kg-cm, in-lb)	0.5 - 4.9 (5 - 50, 4.3 - 43.4)
Vertical end play	mm (in)	0 (0)

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)	206 - 274 (21 - 28, 152 - 203)

DRIVE SHAFT

•	
	DS90
	ZF100
	Nissan genuine grease or equivalent
·g (oz)	
	165 - 175 (5.82 - 6.17)
	113 - 123 (3.99 - 4.34)
mm (in)	
	93 - 95 (3.66 - 3.74)
	96 - 98 (3.78 - 3.86)
	:

