REAR AXLE & REAR SUSPENSION

SECTION RA

CONTENTS

PRECAUTIONS AND PREPARATION 2
- Precautions 2
- Special Service Tools 2
- Commercial Service Tools 3

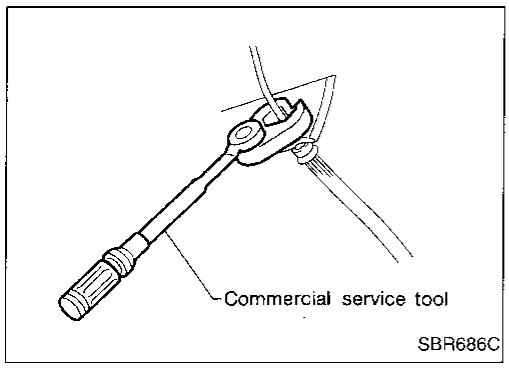
REAR SUSPENSION SYSTEM 4

ON-VEHICLE SERVICE 5
- Rear Axle and Rear Suspension Parts 5
- Rear Wheel Bearing 5
- Rear Wheel Alignment 5
- Drive Shaft 7

REAR AXLE 8
- Wheel Hub and Axle Housing 8
- Drive Shaft 12

REAR SUSPENSION 18
- Removal and Installation 19
- Coil Spring and Shock Absorber 20
- Multi-link and Lower Ball Joint 21
- Stabilizer Bar 22

SERVICE DATA AND SPECIFICATIONS (SDS) 23
- General Specifications 23
- Inspection and Adjustment 24

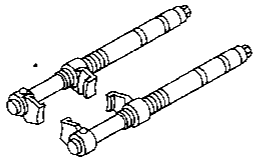
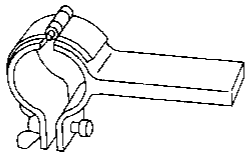
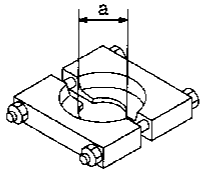
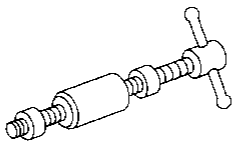


Precautions

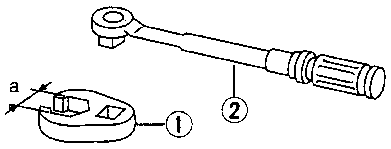
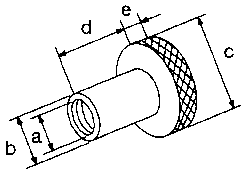
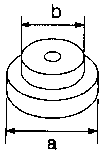
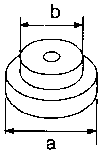
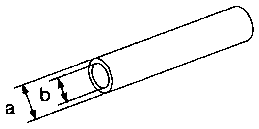
- **When installing rubber parts, final tightening must be carried out under unladen condition* with tires on ground.**
  ***: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.**
- **Use flare nut wrench when removing or installing brake tubes.**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

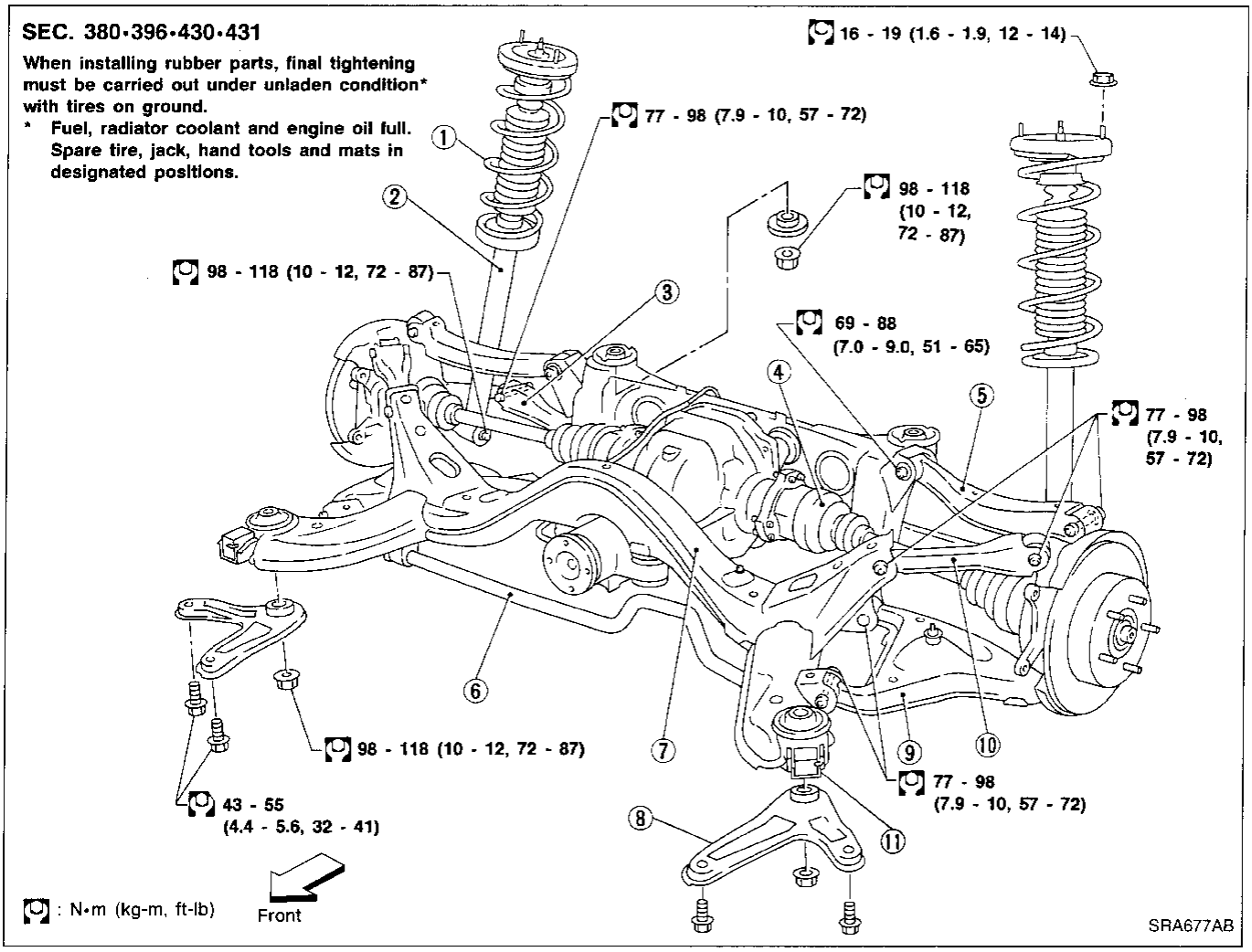
Special Service Tools

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

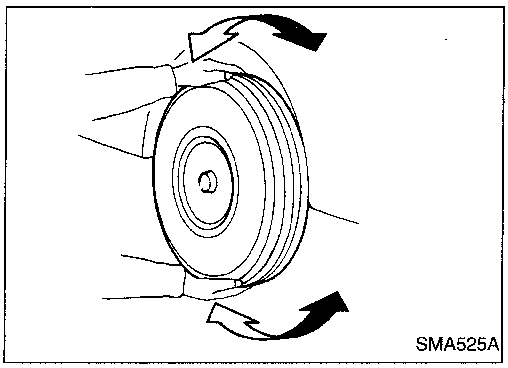
Tool number (Kent-Moore No.) Tool name	Description	
HT71780000 (—) Spring compressor	 NT144	Removing and installing coil spring
ST35652000 (—) Shock absorber attachment	 NT145	Fixing shock absorber
ST30031000 (J22912-01) Bearing puller	 NT412	Removing inner race of wheel bearing **a: 50 mm (1.97 in) dia.**
ST38280000 (—) Arm bushing remover	 NT157	Removing and installing bushing of rear axle housing

Commercial Service Tools

Tool name	Description	
① Flare nut crows foot ② Torque wrench	 NT360	Removing and installing brake piping **a: 10 mm (0.39 in)**
Attachment Wheel alignment	 NT148	Measure rear wheel alignment **a: Screw M24 x 1.5 pitch** **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)**
Rear wheel hub drift	 NT073	Installing wheel bearing **a: 49 mm (1.93 in) dia.** **b: 41 mm (1.61 in) dia.**
Wheel bearing drift	 NT073	Removing rear wheel hub **a: 40 mm (1.57 in) dia.** **b: 26 mm (1.02 in) dia.**
Rear drive shaft plug seal drift	 NT065	Installing rear drive shaft plug seal **a: 85 mm (3.35 in) dia.** **b: 67 mm (2.64 in) dia.**



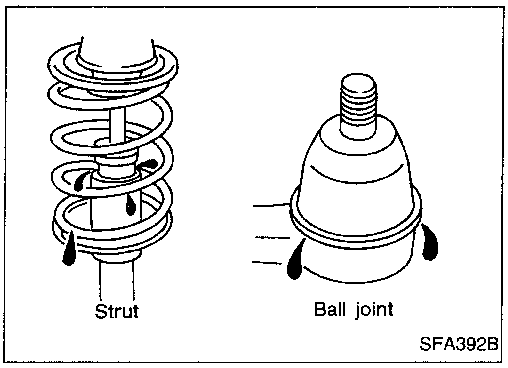
① Coil spring
② Shock absorber
③ Lateral link
④ Drive shaft
⑤ Rear upper link
⑥ Stabilizer bar
⑦ Suspension member
⑧ Member stay
⑨ Lower arm
⑩ Front upper link
⑪ Dynamic damper assembly


SMA525A

Rear Axle and Rear Suspension Parts

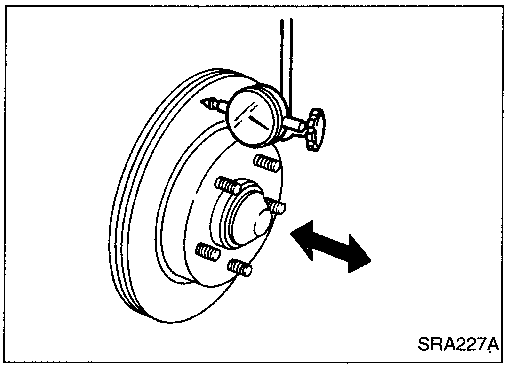
Check axle and suspension parts for excessive play, wear or damage.

- Shake each rear wheel.
- Retighten all nuts and bolts to the specified torque.
  Tightening torque:
  Refer to REAR SUSPENSION (RA-18).
- Make sure that cotter pins are inserted.



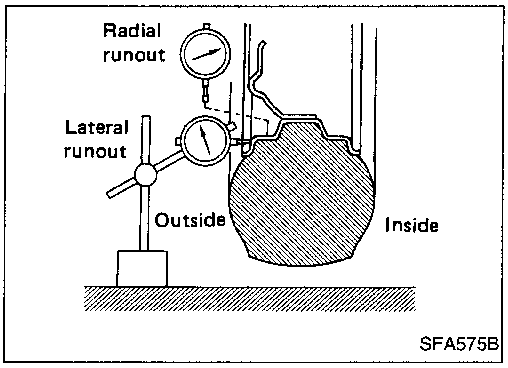
SFA392B

- Check shock absorber for oil leakage or other damage.
- Check wheelarch height. Refer to FA section ("Front Axle and Front Suspension Parts", "ON-VEHICLE SERVICE").
- Check suspension ball joint for grease leakage and ball joint dust cover for cracks or other damage.
  If ball joint dust cover is cracked or damaged, replace lower arm.


SRA227A

Rear Wheel Bearing

- Check tightening torque of wheel bearing lock nut.
  : 206 - 275 N·m
  (21 - 28 kg-m, 152 - 203 ft-lb)
- Check that wheel bearings operate smoothly.
- 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 REAR AXLE — Wheel Hub and Axle Housing (RA-8).



SFA575B

Rear Wheel Alignment

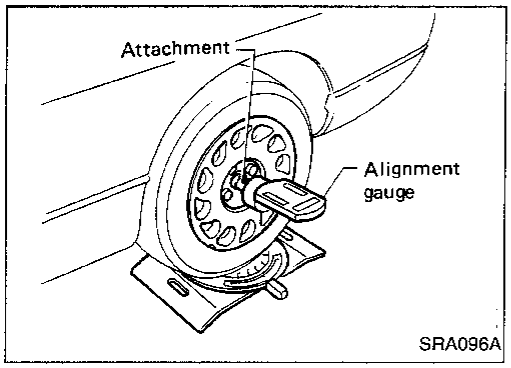
Before checking rear wheel alignment, be sure to make a preliminary inspection.

PRELIMINARY INSPECTION

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

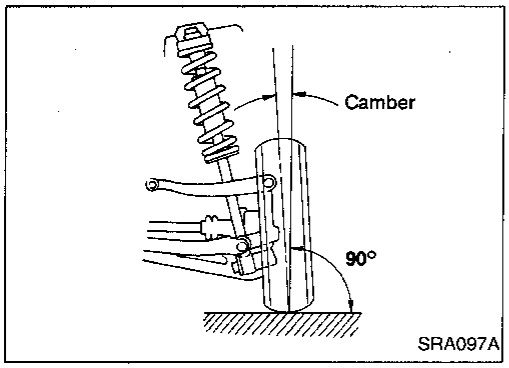
- Check tires for wear and for proper inflation.
- Check rear wheel bearings for excessive play.
- Check wheel runout.
  Wheel runout:
  Refer to FA section ("Inspection and Adjustment", "SDS").
- Check that rear shock absorber works properly.
- Check rear axle and rear suspension parts for excessive play.
- Check vehicle posture (Unladen*).
  *: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.

Rear Wheel Alignment (Cont'd)

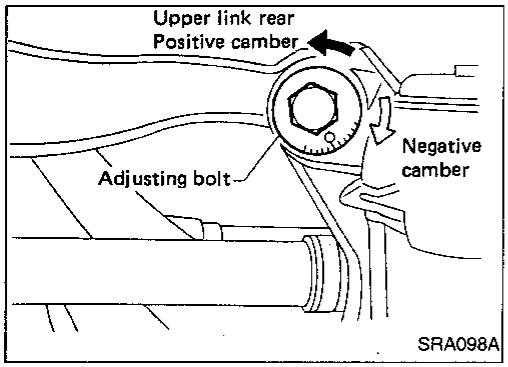


CAMBER

Measure camber of both right and left wheels with a suitable alignment gauge and adjust in accordance with the following procedures.



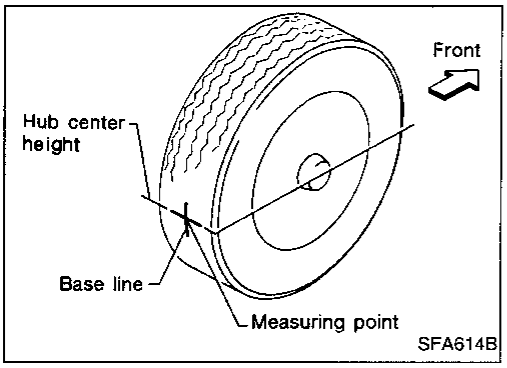
Camber:
Refer to SDS (RA-24).



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

(1) Turn the adjusting bolt to adjust.
Camber changes about 4′ with each graduation of the adjusting bolt.

(2) Tighten to the specified torque.
: 69 - 88 N·m
(7.0 - 9.0 kg-m, 51 - 65 ft-lb)



TOE-IN

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

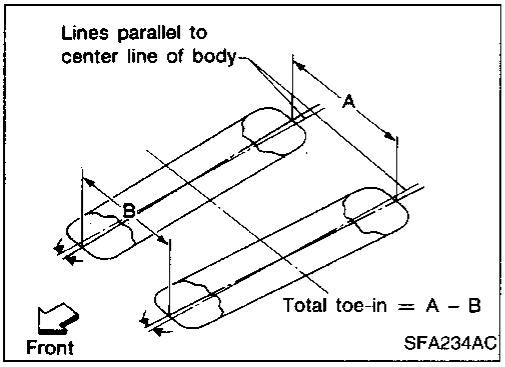
WARNING:

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

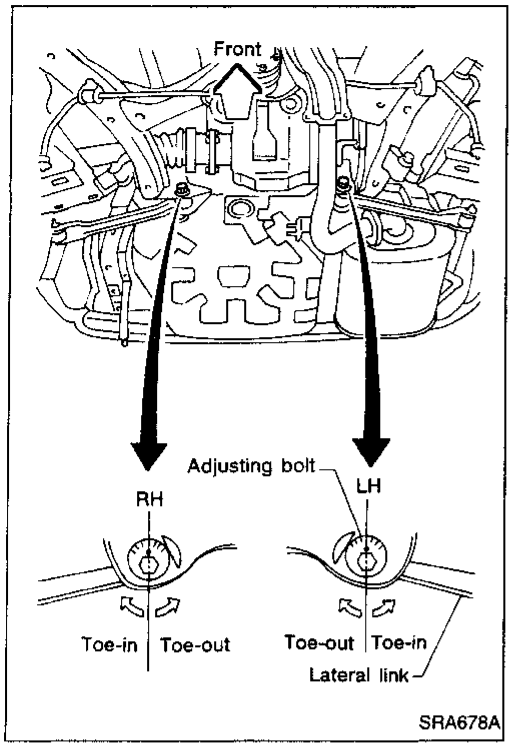
1. Bounce rear of vehicle up and down to stabilize the posture.
2. Push the vehicle straight ahead about 5 m (16 ft).
3. Put a mark on base line of the tread (rear side) of both tires at the same height of hub center. This mark is a measuring point.
4. Measure distance "A" (rear side).
5. Push the vehicle 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-24).



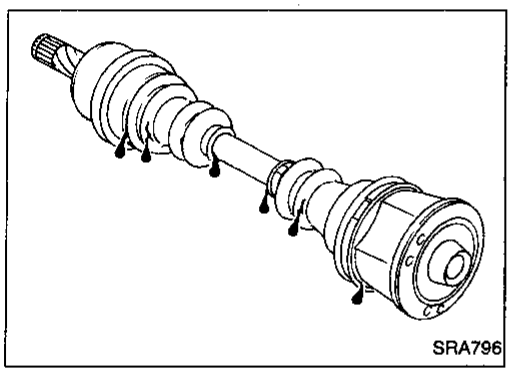
Rear Wheel Alignment (Cont'd)



7. Loosen adjusting bolt fixing nuts.
8. Adjust toe-in by turning adjusting bolts.

Toe changes about 1.3 mm (0.051 in) [One side] with each graduation of the adjusting bolt.

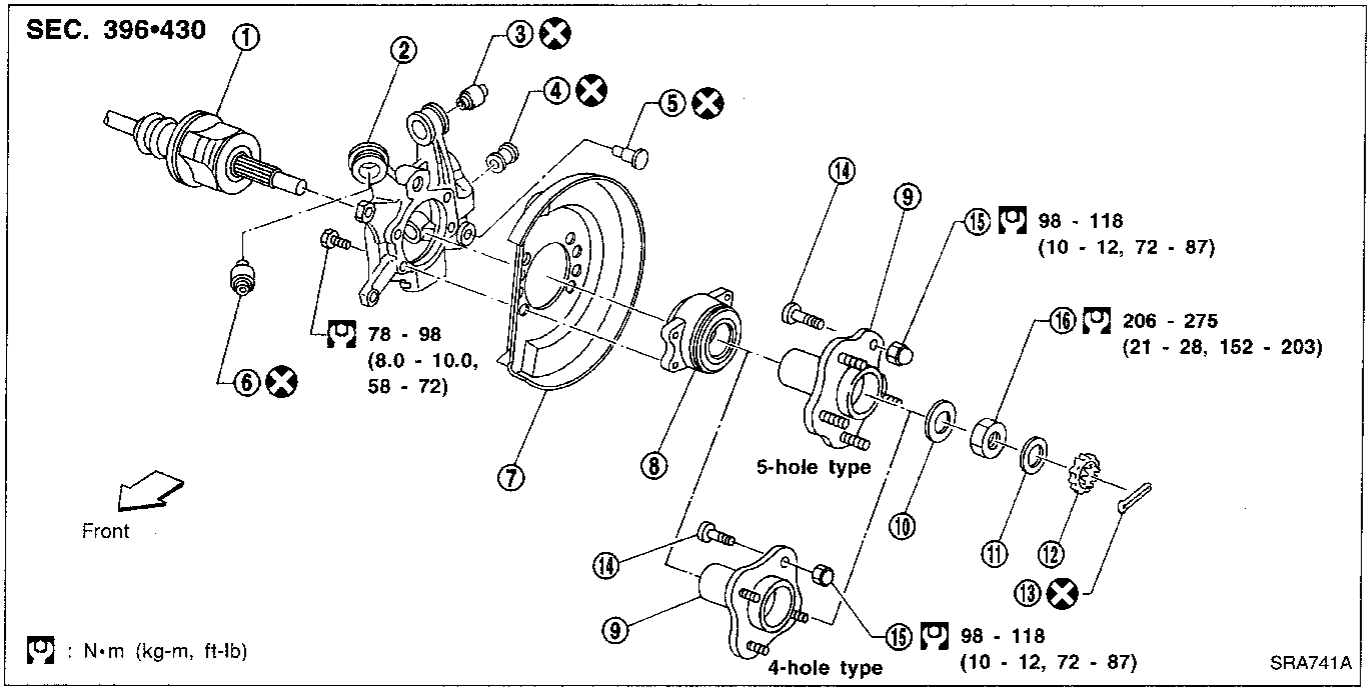
9. Tighten to the specified torque.
   : 69 - 88 N·m
   (7.0 - 9.0 kg-m, 51 - 65 ft-lb)



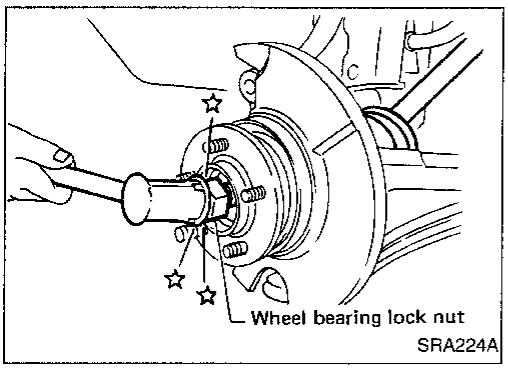
Drive Shaft

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

Wheel Hub and Axle Housing



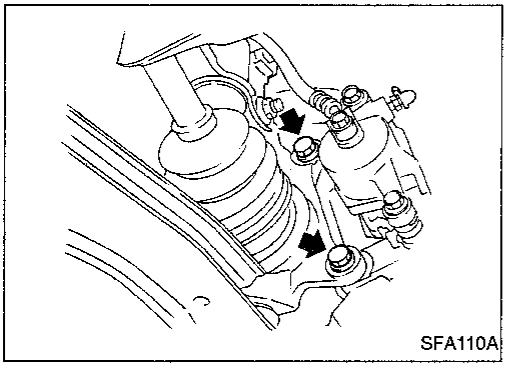
① Drive shaft
② Axle housing
③ Bushing
④ Bushing
⑤ Shock absorber pin
⑥ Bushing
⑦ Baffle plate
⑧ Wheel bearing with flange
⑨ Wheel hub
⑩ Plain washer
⑪ Insulator
⑫ Adjusting cap
⑬ Cotter pin
⑭ Hub bolt
⑮ Wheel nut
⑯ Wheel bearing lock nut



REMOVAL

1. Remove wheel bearing lock nut.
2. Separate drive shaft from axle housing by lightly tapping it. If it is hard to remove, use a puller.

Cover boots with shop towel so as not to damage them when removing drive shaft.

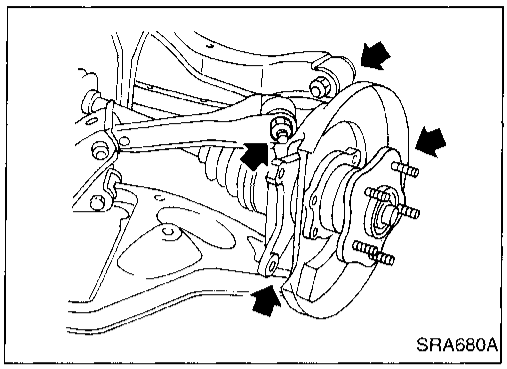


3. Remove brake caliper assembly and rotor.

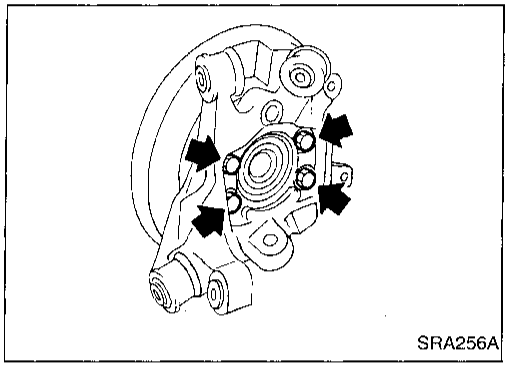
Brake hose need not be disconnected from brake caliper. In this case, suspend caliper assembly with wire so as not to stretch brake hose. Be careful not to depress brake pedal, or caliper piston will pop out.

Make sure brake hose is not twisted.

Wheel Hub and Axle Housing (Cont'd)

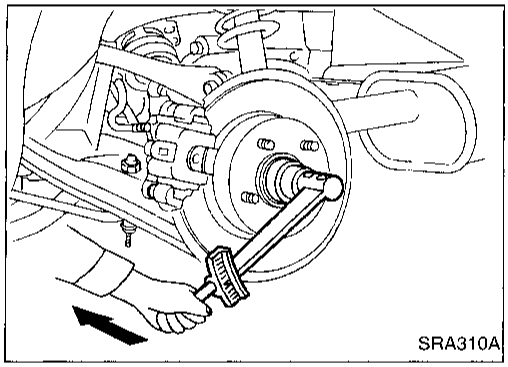

SRA680A

4. Remove axle housing.

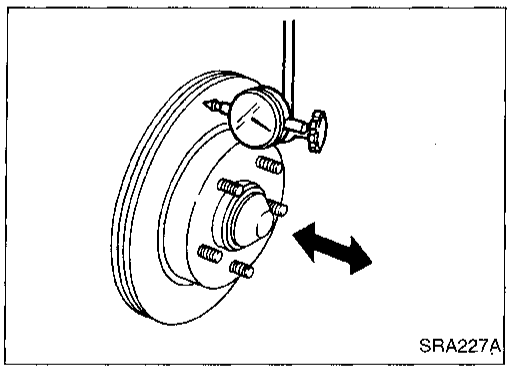

SRA256A

5. Remove wheel bearing with flange, and wheel hub from axle housing.

INSTALLATION

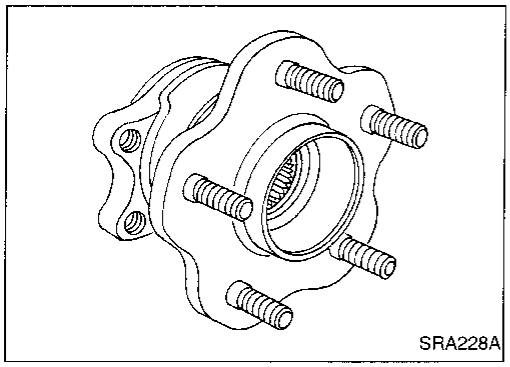

SRA310A

1. Install axle housing with wheel hub.
2. Tighten wheel bearing lock nut.
   Before tightening, apply oil to threaded portion of rear spindle and both sides of plain washer.
   : 206 - 275 N·m
   (21 - 28 kg-m, 152 - 203 ft-lb)


SRA227A

3. Check wheel bearing axial end play.
   Axial end play:
   0.05 mm (0.0020 in) or less
4. Make sure that wheel bearings operate smoothly.

Wheel Hub and Axle Housing (Cont'd)



DISASSEMBLY

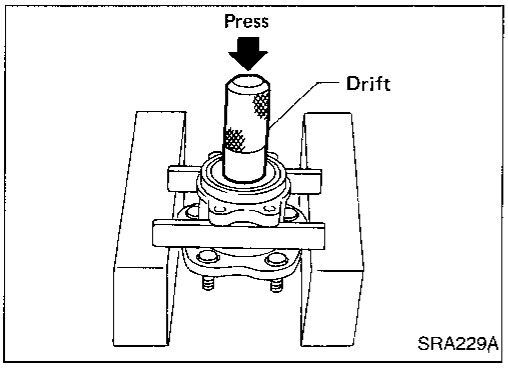
CAUTION:

Wheel bearing with flange does not require maintenance. If any of the following symptoms are noted, replace wheel bearing assembly (including flange, and inner and outer seals).

- Growling noise is emitted from wheel bearing during operation.
- Wheel hub bearing drags or turns roughly. This occurs when turning hub by hand after bearing lock nut is tightened to specified torque.
- After wheel bearing is removed from hub.

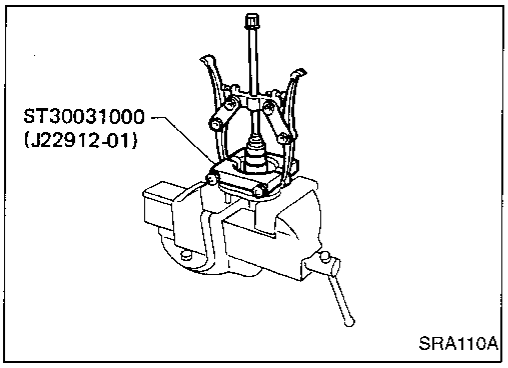
Wheel hub

Remove wheel bearing (with flange) and wheel hub as one unit from axle housing before disassembling.



Wheel bearing

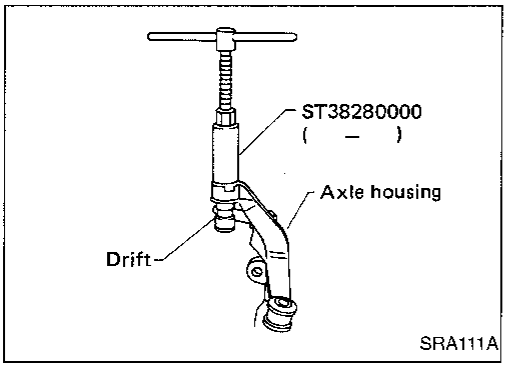
1. Using a press and drift as shown in figure at left, press wheel bearing out.
2. Discard old wheel bearing assembly. Replace with a new one.



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

CAUTION:

- **Do not reuse old inner race although it is of the same brand as the bearing assembly.**
- **Do not replace grease seals as single parts.**

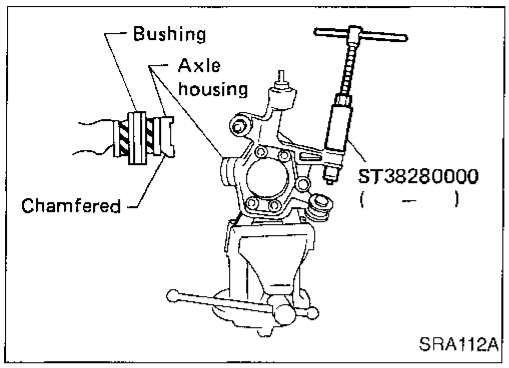


Axle housing

1. 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.

Wheel Hub and Axle Housing (Cont'd)

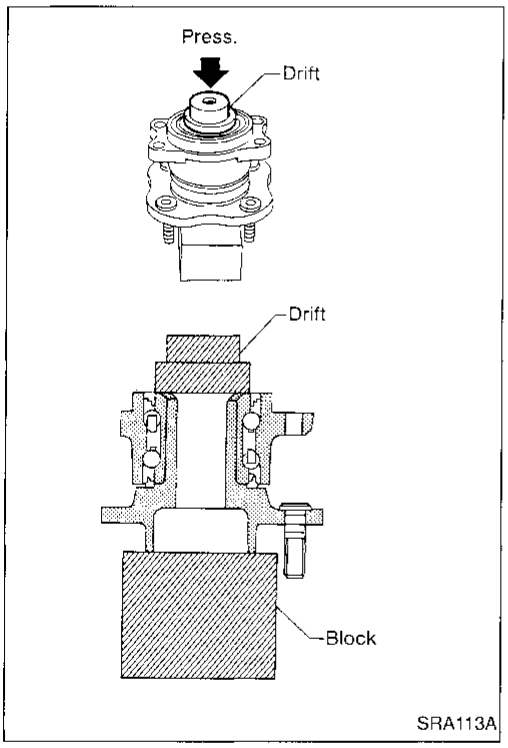


2. Ensure axle housing bore is free from scratches or deformities before pressing bushing into it.
3. Attach bushing to chamfered bore end of axle housing. Then press it until it is flush with end face of axle housing.

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 operation.
- Check rubber bushing for wear or other damage. Replace if necessary.

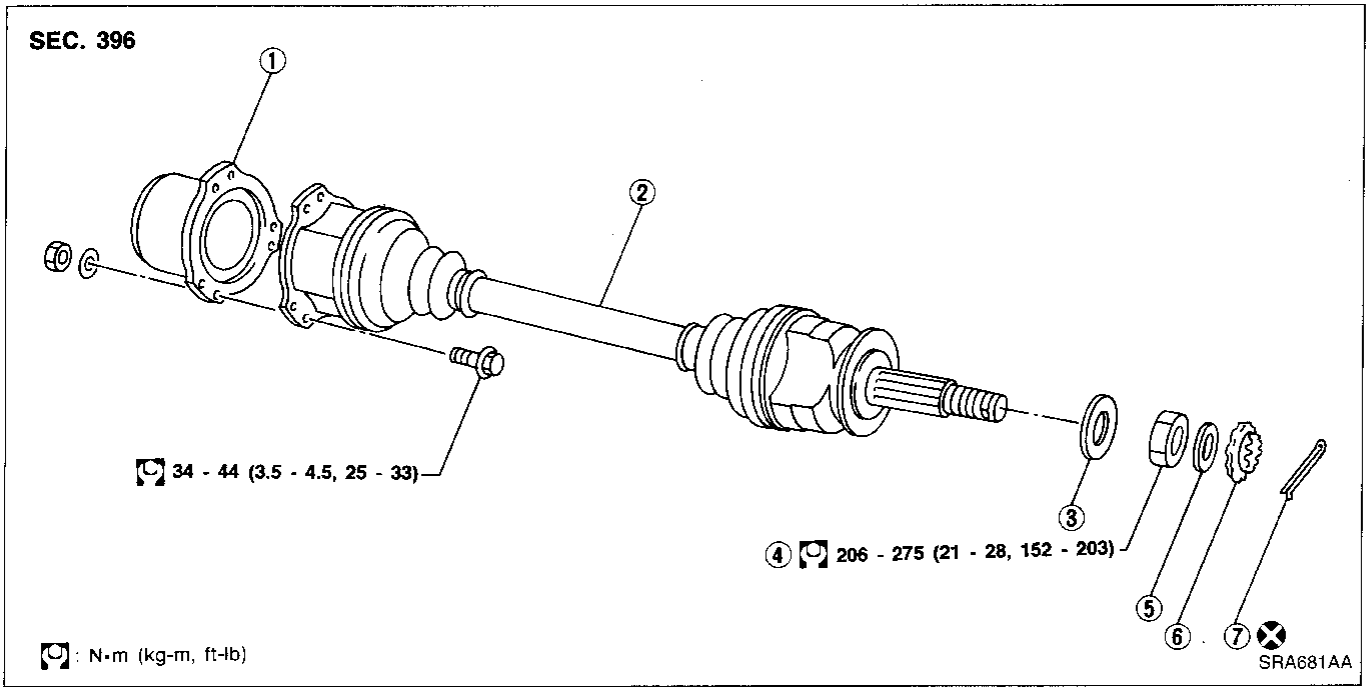


ASSEMBLY

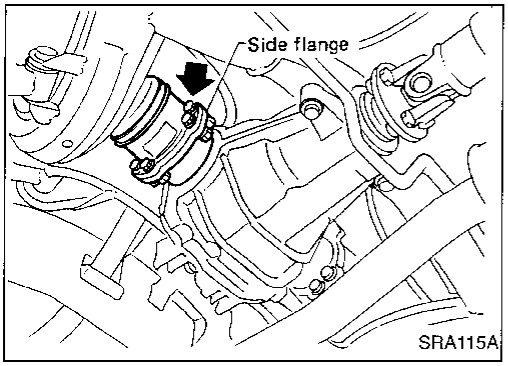
Place hub on a block. Attach a drift to inner race of wheel bearing and press it into hub as shown in figure at left.

Be careful not to damage grease seal.

Drive Shaft



① Side flange
② Drive shaft
③ Plain washer
④ Wheel bearing lock nut
⑤ Insulator
⑥ Adjusting cap
⑦ Cotter pin

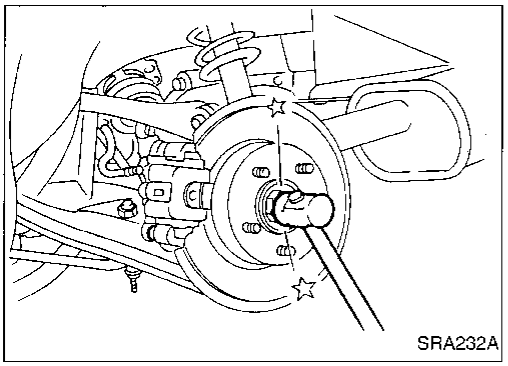


REMOVAL

Cover boots with shop towel so as not to damage them when removing drive shaft.

Final drive side

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.

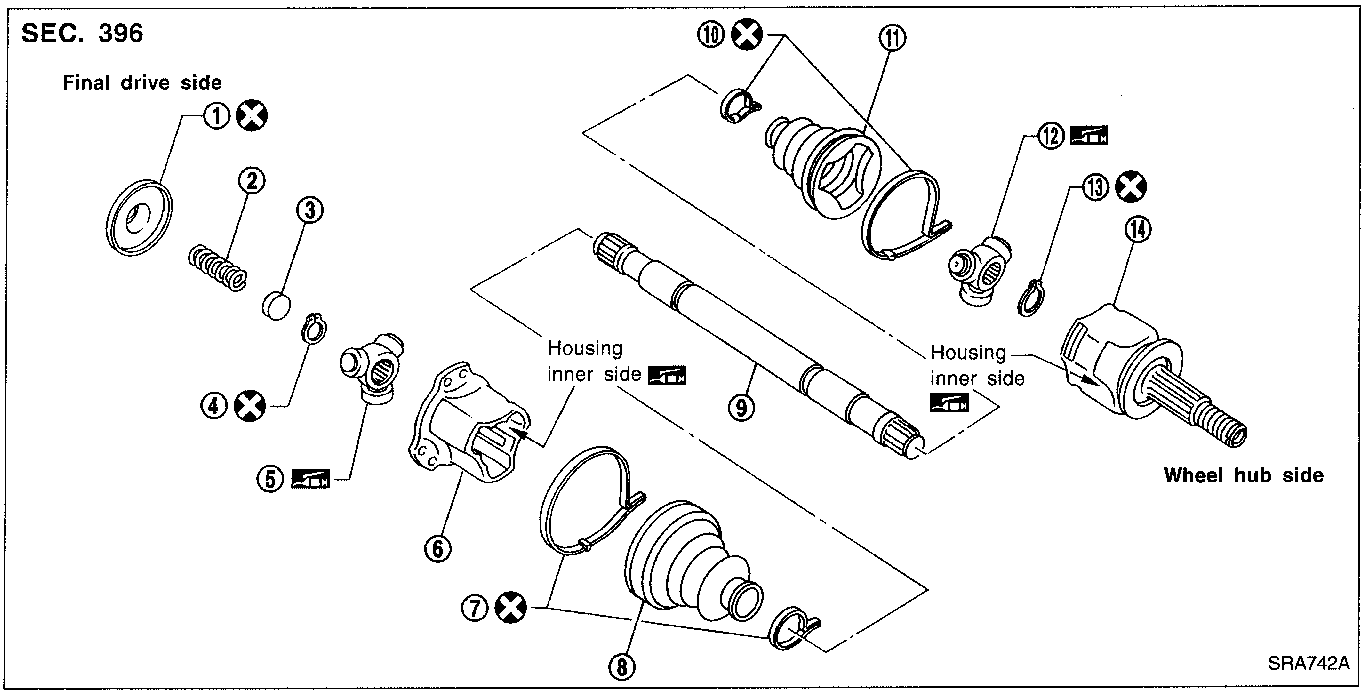
To avoid damaging threads of drive shaft, install a nut while removing drive shaft.

INSTALLATION

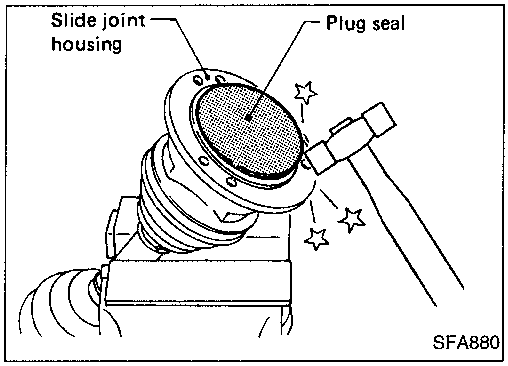
1. Insert drive shaft from wheel hub and temporarily tighten wheel bearing lock nut.
2. Tighten side flange mounting bolts to specified torque.
3. Tighten wheel bearing lock nut to specified torque.

Drive Shaft (Cont'd)

COMPONENTS



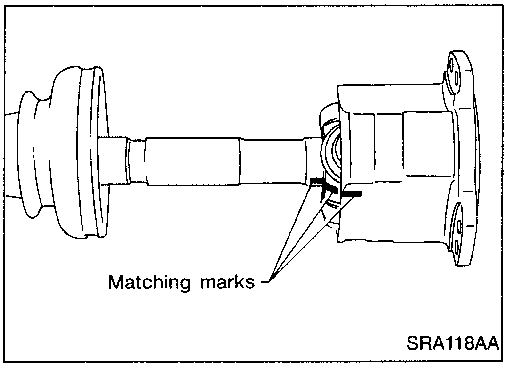
① Plug seal
② Spring
③ Spring cap
④ Snap ring
⑤ Spider assembly
⑥ Slide joint housing
⑦ Boot band
⑧ Boot
⑨ Drive shaft
⑩ Boot band
⑪ Boot
⑫ Spider assembly
⑬ Snap ring
⑭ Housing with shaft



DISASSEMBLY

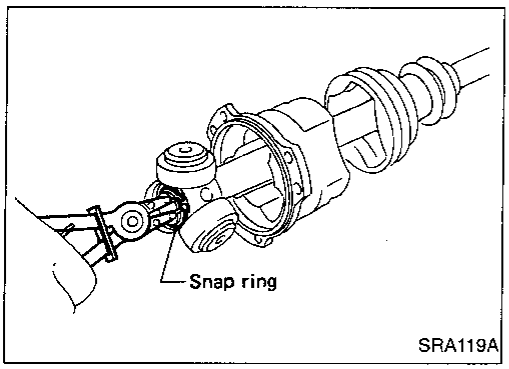
Final drive side

1. Remove plug seal from slide joint housing by lightly tapping around slide joint housing.



2. Remove boot bands.
3. Put matching marks on slide joint housing and drive shaft before separating joint assembly.
4. Put matching marks on spider assembly and drive shaft.

Drive Shaft (Cont'd)

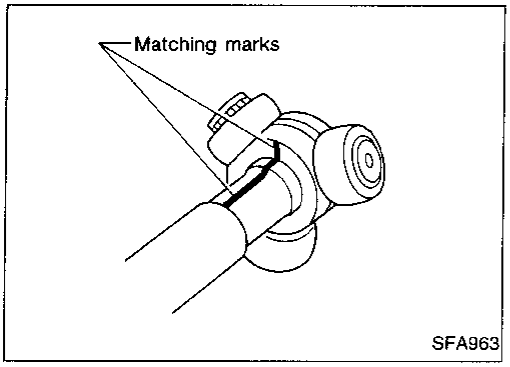


5. Remove snap ring, then remove spider assembly.

CAUTION:
Do not disassemble spider assembly.

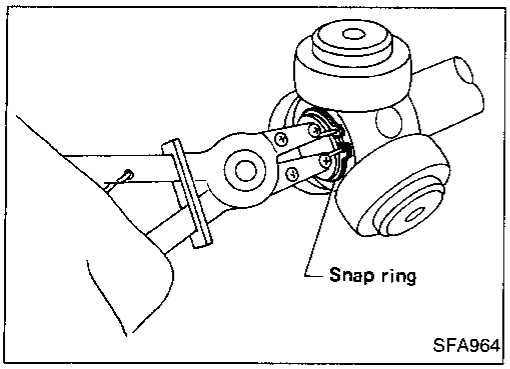
6. Draw out slide joint housing.
7. Draw out boot.

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



Wheel side

1. Remove boot bands.
2. Put matching marks on housing together with shaft and drive shaft before separating joint assembly.
3. Put matching marks on spider assembly and drive shaft.



4. Remove snap ring, then remove spider assembly.

CAUTION:
Do not disassemble spider assembly.

5. Draw out boot.

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

INSPECTION

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

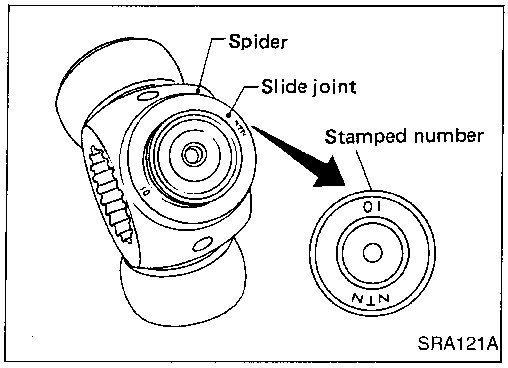
Drive shaft

Replace drive shaft if it is twisted or cracked.

Boot

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

Drive Shaft (Cont'd)



Joint assembly

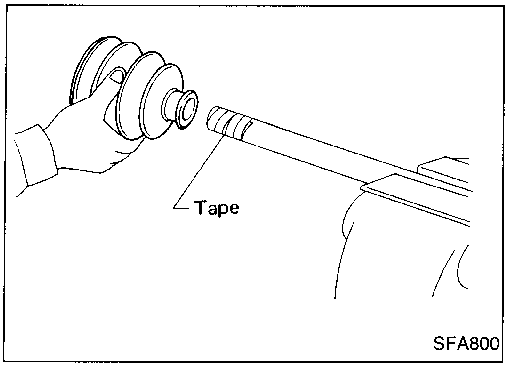
- Check spider assembly for bearing, roller and washer damage. Replace spider assembly if necessary.
- Check housing for any damage. Replace housing set and spider assembly, if necessary.
- When replacing only spider assembly, select a new spider assembly from among those listed in table below. Ensure the number stamped on sliding joint is the same as that stamped on new part.

Housing alone cannot be replaced. It must be replaced together with spider assembly.

Stamped number	Part No.
00	39720 10V10
01	39720 10V11
02	39720 10V12

ASSEMBLY

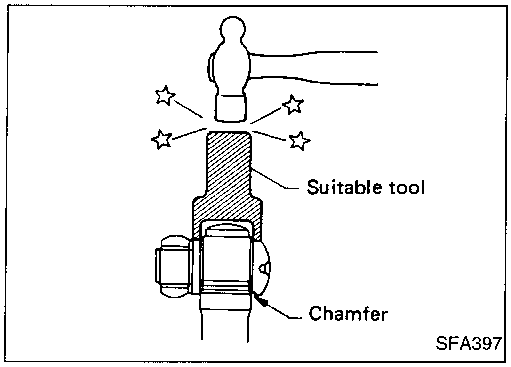
- **After drive shaft has been assembled, ensure it moves smoothly over its entire range without binding.**
- **Use NISSAN GENUINE GREASE or equivalent after every overhaul.**



Wheel side

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

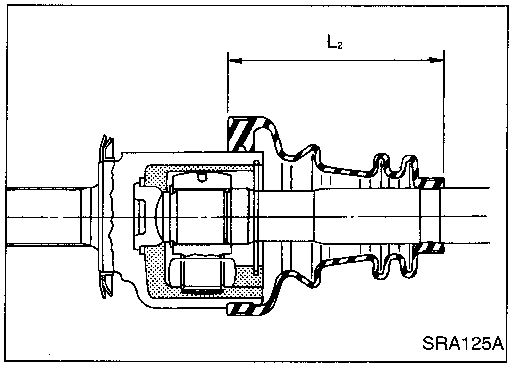
Cover drive shaft serration with tape to prevent damage to boot during installation.



2. Install spider assembly securely, making sure marks are properly aligned.

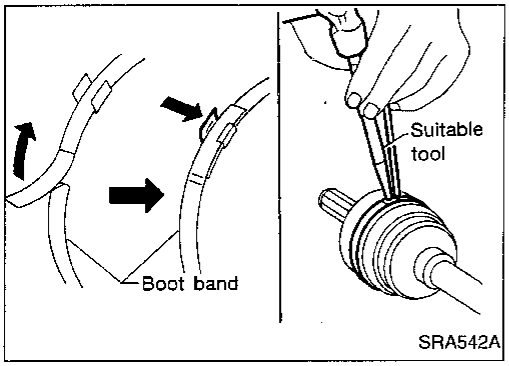
Press-fit with spider assembly serration chamfer facing shaft.

3. Install new snap ring.



4. Pack drive shaft with specified amount of grease.
   Specified amount of grease:
   115 - 125 g (4.06 - 4.41 oz)
5. Install housing with shaft.
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 "L_2":
   95 - 97 mm (3.74 - 3.82 in)

Drive Shaft (Cont'd)

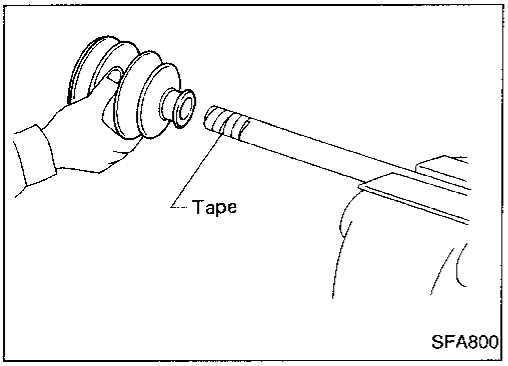


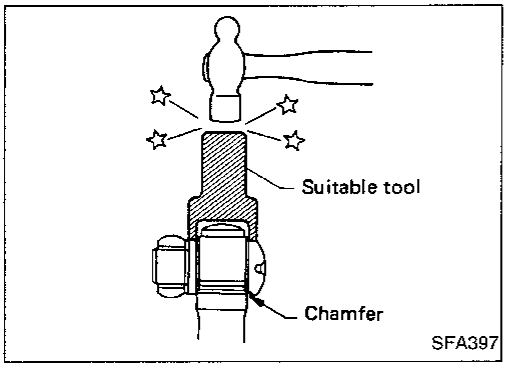
7. Lock new larger and smaller boot bands securely with a suitable tool.

Final drive side

1. Install new small boot band, boot and slide joint housing to drive shaft.

Cover drive shaft serration with tape to prevent damage to boot during installation.

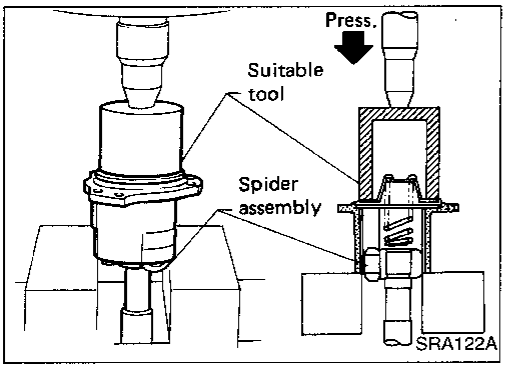




2. Install spider assembly securely, making sure marks are properly aligned.

Press-fit with spider assembly serration chamfer facing shaft.

3. Install new snap ring.

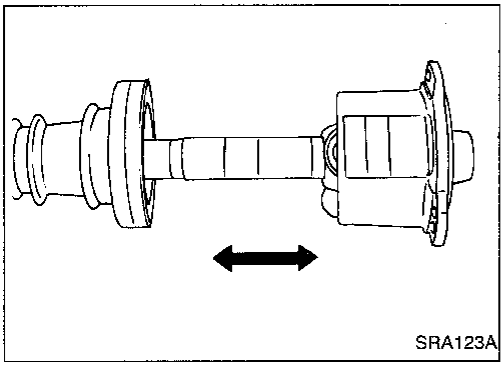


4. Install coil spring, spring cap and new plug seal to slide joint housing. Press plug seal.

Apply sealant to mating surface of plug seal.

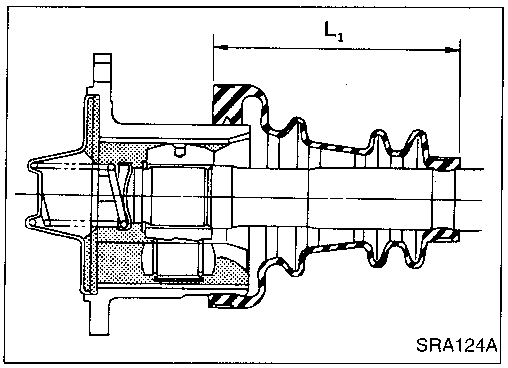
CAUTION:

a. When pressing plug seal into place, hold it horizontally. This prevents spring inside it from tilting or falling down.

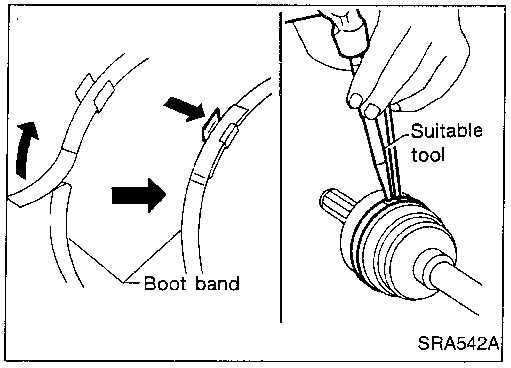


b. Move shaft in axial direction to ensure that spring is installed properly. If shaft drags or if spring is not properly installed, replace plug seal with a new one.

Drive Shaft (Cont'd)



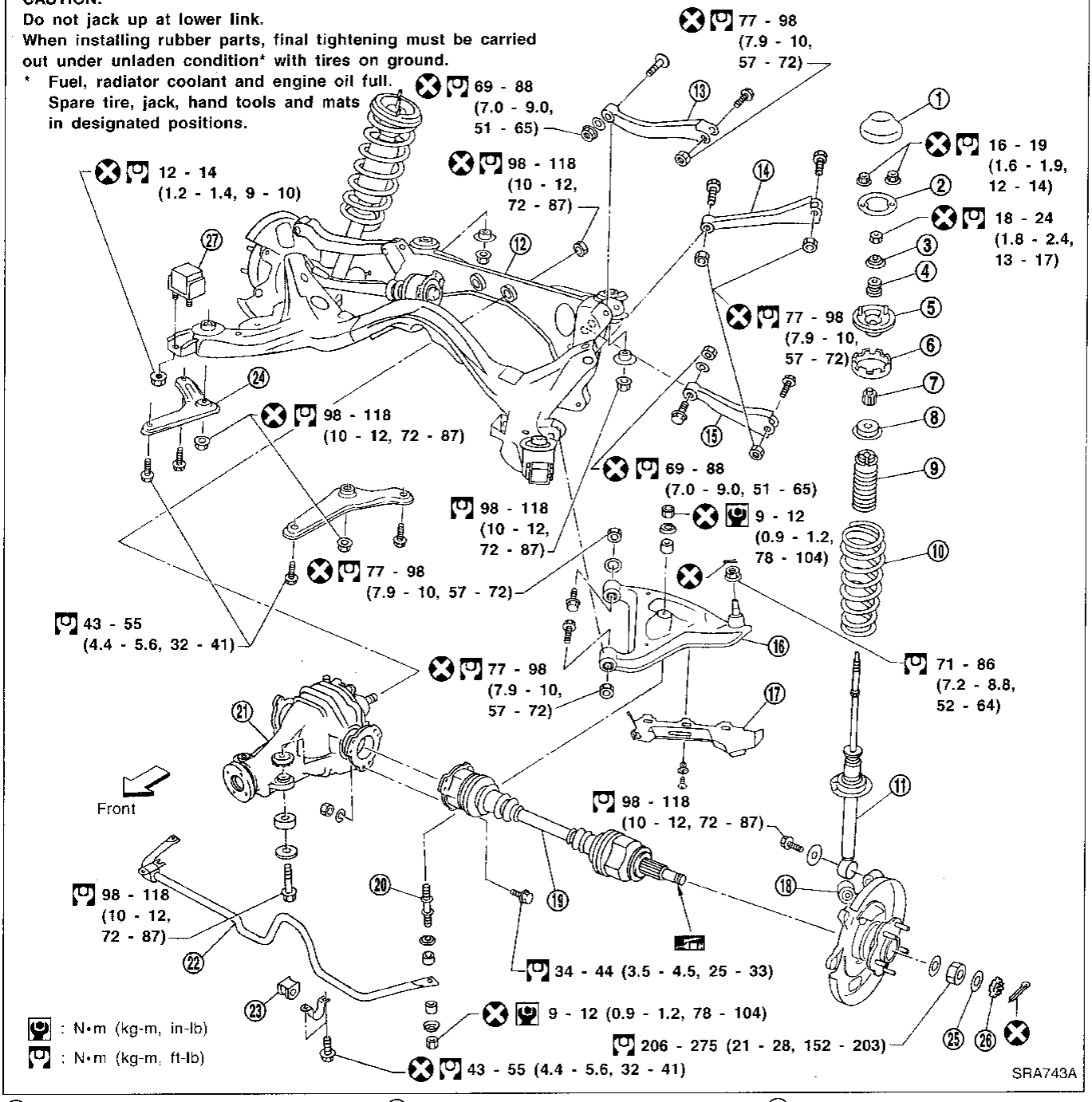
5. Pack drive shaft with specified amount of grease.
   Specified amount of grease:
   102 - 107 g (3.60 - 3.77 oz)
6. Make sure that boot is properly installed on the drive shaft groove.
   Set boot so that it does not swell and deform when its length is "L_1".
   Length "L_1":
   95 - 97 mm (3.74 - 3.82 in)



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

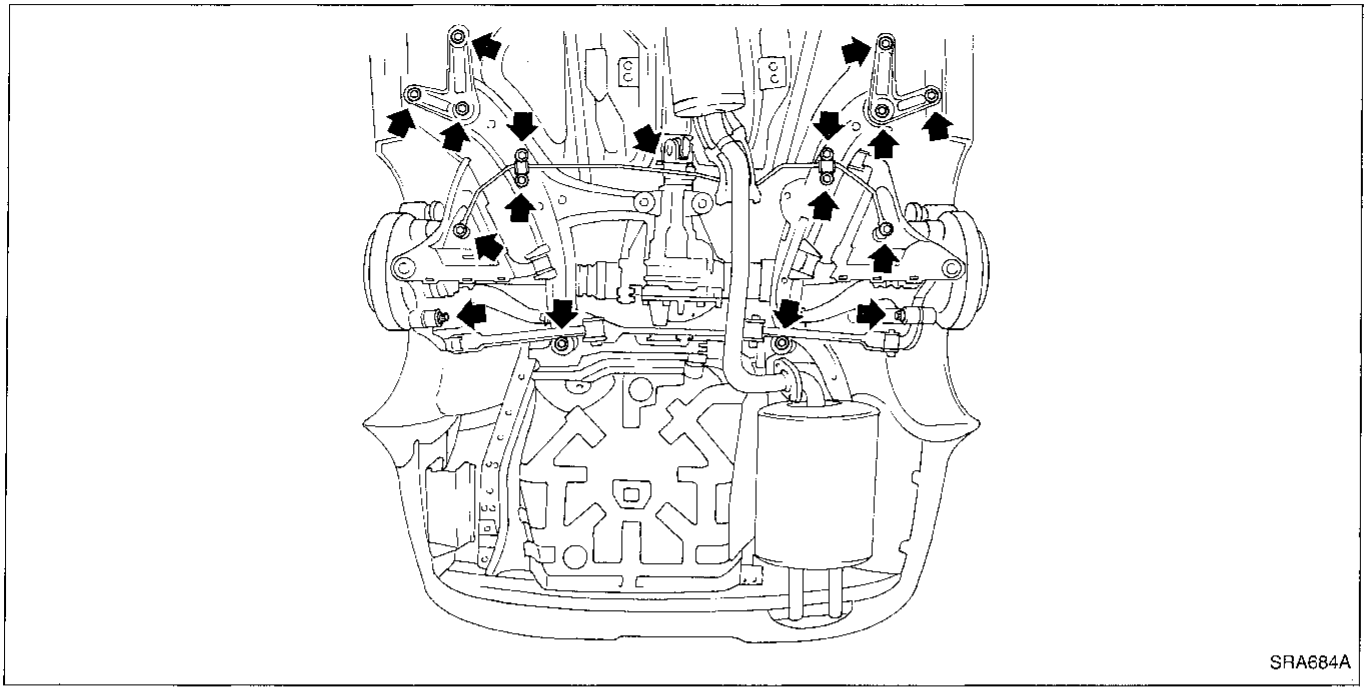
SEC. 380•396•430•431

CAUTION:
Do not jack up at lower link.
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.



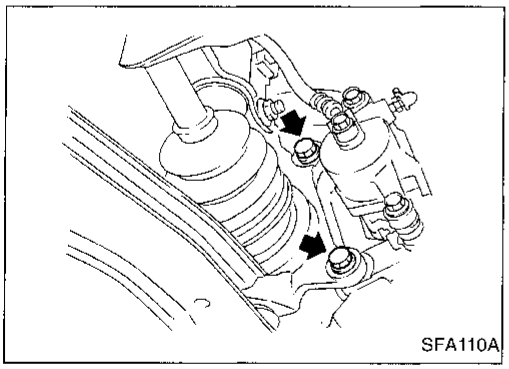
1. Cap
2. Gasket
3. Upper plate
4. Bushing
5. Shock absorber mounting bracket
6. Upper rubber seat
7. Bushing
8. Plate
9. Bumper rubber with dust cover
10. Coil spring
11. Shock absorber
12. Suspension member
13. Rear upper link
14. Front upper link
15. Lateral link
16. Lower arm
17. Protector
18. Axle housing
19. Drive shaft
20. Connecting rod
21. Final drive
22. Stabilizer bar
23. Bushing
24. Member stay
25. Insulator
26. Adjusting cap
27. Dynamic damper assembly

Removal and Installation



CAUTION:
Before removing the rear suspension assembly, disconnect the ABS sensor from the assembly. Then move it away from the rear suspension assembly. Failure to do so may result in damages to the sensor wires and the sensor becoming inoperative.

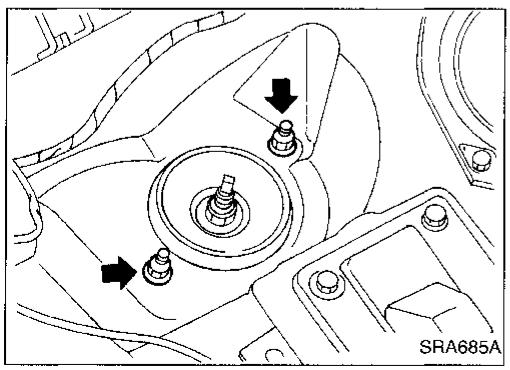
1. Remove exhaust tube.
2. Disconnect propeller shaft rear end.
3. Disconnect hand brake wire front end.



4. Remove brake caliper assembly.

Brake hose need not be disconnected from brake caliper. In this case, suspend caliper assembly with wire so as not to stretch brake hose. Be careful not to depress brake pedal, or piston will pop out.

Make sure brake hose is not twisted.



5. Remove rear parcel shelf. Refer to BT section.
6. Remove upper end nuts of shock absorber.

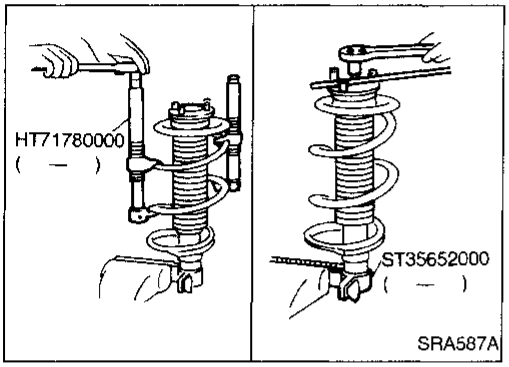
Do not remove piston rod lock nut on vehicle.

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

Coil Spring and Shock Absorber

REMOVAL

Remove shock absorber upper and lower fixing nuts.
Do not remove piston rod lock nut on vehicle.

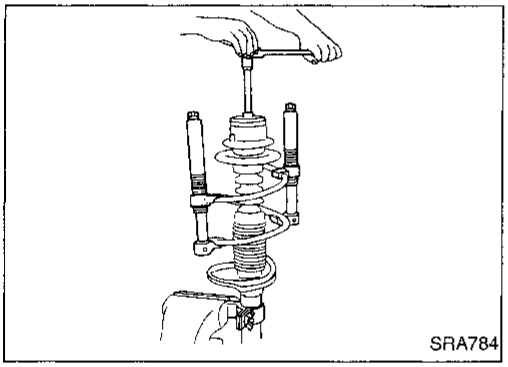


DISASSEMBLY

1. Set shock absorber on vise with attachment, then **loosen** piston rod lock nut.

WARNING:
Do not remove piston rod lock nut at this time.

2. Compress spring with Tool so that the shock absorber mounting bracket can be turned by hand.



3. Remove piston rod lock nut.

INSPECTION

Shock absorber assembly

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

Upper rubber seat and bushing

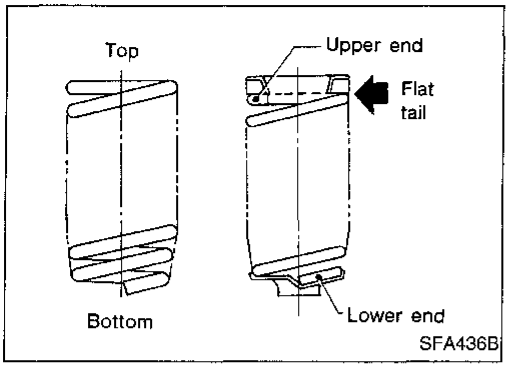
Check rubber parts for deterioration or cracks.
Replace if necessary.

Coil spring

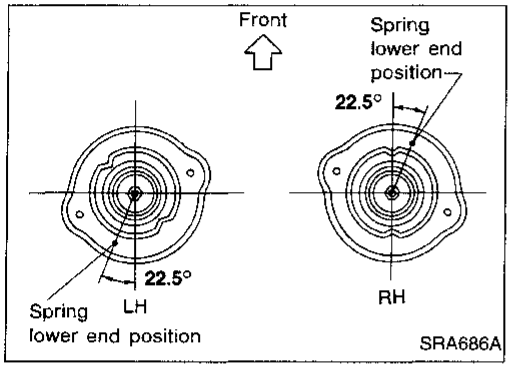
Check for cracks, deformation or other damage. Replace if necessary.

Coil Spring and Shock Absorber (Cont'd)

ASSEMBLY



- When installing coil spring on shock absorber, it must be positioned as shown in figure at left.



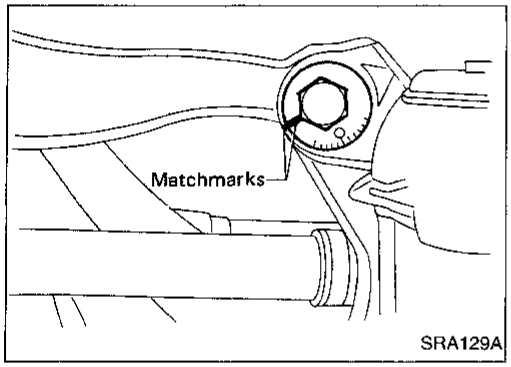
- When installing shock absorber mounting bracket, make sure that it is positioned as shown.

Multi-link and Lower Ball Joint

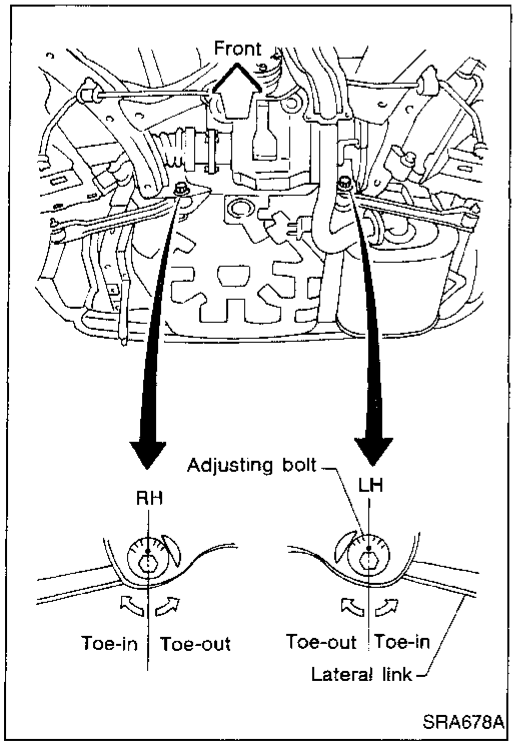
REMOVAL AND INSTALLATION

- Refer to "Removal and Installation" of REAR SUSPENSION (RA-19).

Before removing, put matchmarks on adjusting pin.



- When installing, final tightening must be done at curb weight with tires on ground.
- After installation, check wheel alignment.
  Refer to "Rear Wheel Alignment" of ON-VEHICLE SERVICE (RA-5).



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

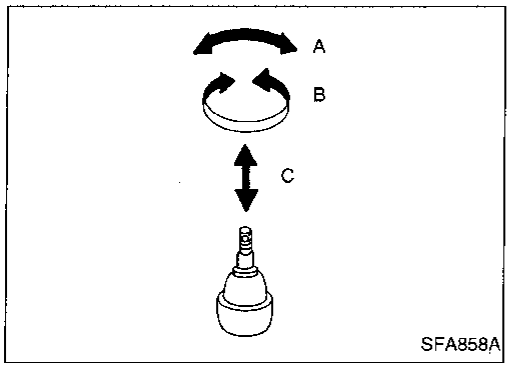
INSPECTION

Rear suspension member

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

Upper and lower links

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



Lower ball joint

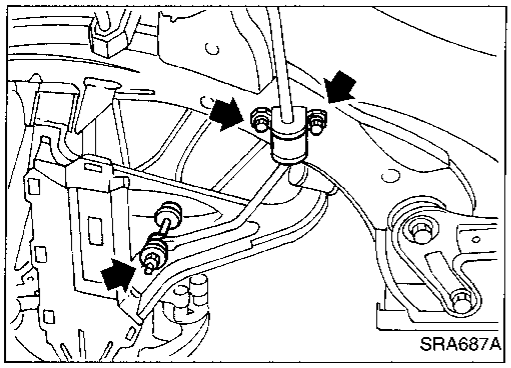
Check ball joint for excessive play. Replace transverse link assembly if any of the following exists:

- Ball stud is worn.
- Joint is hard to swing.
- Play in axial direction is excessive.

Before checking, turn ball joint at least 10 revolutions so that ball joint is properly broken in.

Swinging force "A":
(measuring point: cotter pin hole of ball stud)
7.8 - 54.9 N (0.8 - 5.6 kg, 1.8 - 12.3 lb)
Turning torque "B":
0.5 - 3.4 N·m (5 - 35 kg-cm, 4.3 - 30.4 in-lb)
Vertical end play "C":
0 mm (0 in)

- Check dust cover for damage. Replace it and cover clamp if necessary.



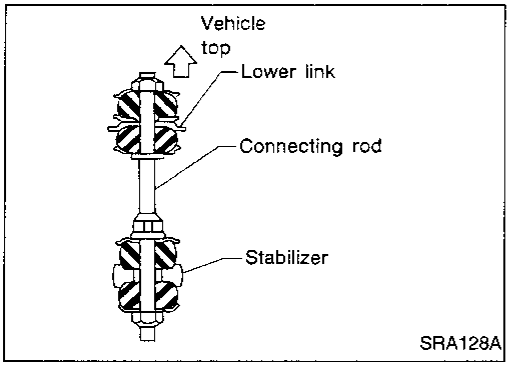
Stabilizer Bar

REMOVAL

- Remove connecting rod and clamp.

INSPECTION

- Check stabilizer bar for deformation or cracks. Replace if necessary.
- Check rubber bushings for deterioration or cracks. Replace if necessary.



INSTALLATION

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

General Specifications

COIL SPRING

Applied model		All
Wire diameter	mm (in)	11.8 (0.465)
Coil outer diameter	mm (in)	
Large		125.6 (4.94)
Small		114.4 (4.50)
Free length	mm (in)	350 (13.78)
Identification color		White x 1

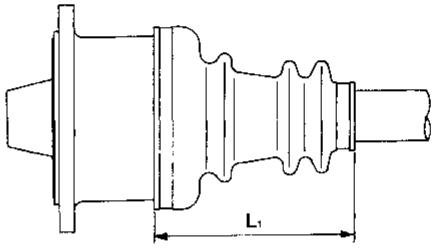
SHOCK ABSORBER

Applied model	195/60 R15 tire	205/55 R16 tire
Piston rod diameter mm (in)	12.5 (0.492)	12.2 (0.480)

DRIVE SHAFT

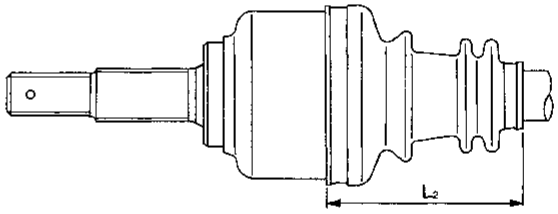
Joint type	
Final drive side	TS82F
Wheel side	TS82C
Grease name	
Final drive side	Nissan genuine grease or equivalent
Wheel side	Nissan genuine grease or equivalent
Specified amount of grease g (oz)	
Final drive side	102 - 107 (3.60 - 3.77)
Wheel side	115 - 125 (4.06 - 4.41)
Boot length mm (in)	
Final drive side (L_1)	95 - 97 (3.74 - 3.82)
Wheel side (L_2)	

Final drive side



SRA133A

Wheel side



SRA543A

REAR STABILIZER BAR

Applied model	195/60 R15 tire	205/55 R16 tire
Stabilizer diameter mm (in)	—	15.9 (0.626)
Identification color	—	Blue

Inspection and Adjustment

WHEEL ALIGNMENT (Unladen*)

Camber	Minimum	−1°40′ (−1.67°)
Degree minute (Decimal degree)	Nominal	−1°10′ (−1.17°)
	Maximum	−0°40′ (−0.67°)
Total toe-in	Minimum	0 (0)
Distance (A−B) mm (in)	Nominal	2.5 (0.098)
	Maximum	5.0 (0.197)
Angle (left plus right)	Minimum	0′ (0.00°)
Degree minute (Decimal degree)	Nominal	14′ (0.23°)
	Maximum	28′ (0.47°)

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

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 - 273 (21 - 28, 152 - 203)

LOWER BALL JOINT

Swinging force "A" (Measuring point: cotter pin hole of ball stud) N (kg, lb)	7.8 - 54.9 (0.8 - 5.6, 1.8 - 12.3)
Turning torque "B" N·m (kg-cm, in-lb)	0.5 - 3.4 (5 - 35, 4.3 - 30.4)
Vertical end play "C" mm (in)	0 (0)