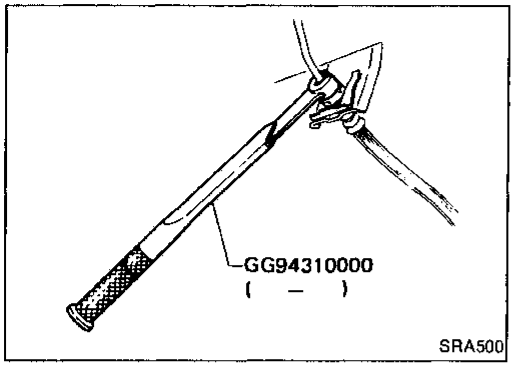
REAR AXLE & REAR SUSPENSION

SECTION RA

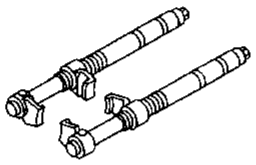
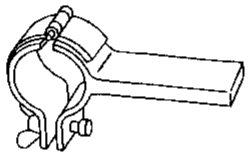
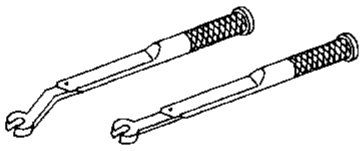
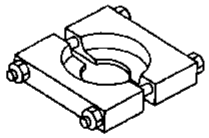
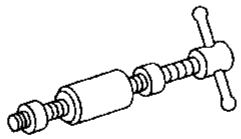
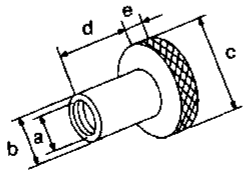
CONTENTS



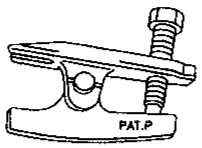
Precautions

- **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 or installing brake tubes.**
- **When removing each suspension part, check wheel alignment and adjust if necessary.**
- **Do not jack up at the lower arm.**

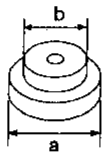
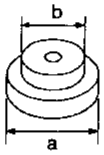
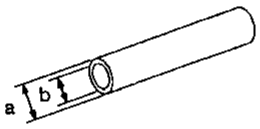
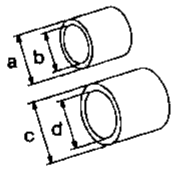
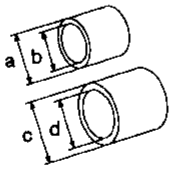
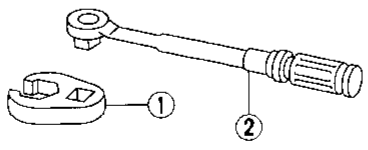
Special Service Tools

Tool number (Kent-Moore No.) Tool name	Description	
HT71780000 (—) Spring compressor	 NT144	Removing and installing coil spring
ST35652000 (—) Shock absorber attachment	 NT145	Fixing strut assembly
GG94310000 (—) Flare nut torque wrench	 NT064	Removing and installing brake piping
ST30031000 (J22912-01) Bearing puller	 NT071	Removing inner race of wheel bearing
ST38280000 (—) Arm bushing remover	 NT157	Removing and installing rear axle housing bushing
IM23600800 (—) Attachment	 NT148	Measure rear wheel alignment **a: Screw M24 x 1.5** **b: 35 (1.38) dia.** **c: 65 (2.56) dia.** **d: 56 (2.20)** **e: 12 (0.47)** Unit: mm (in)

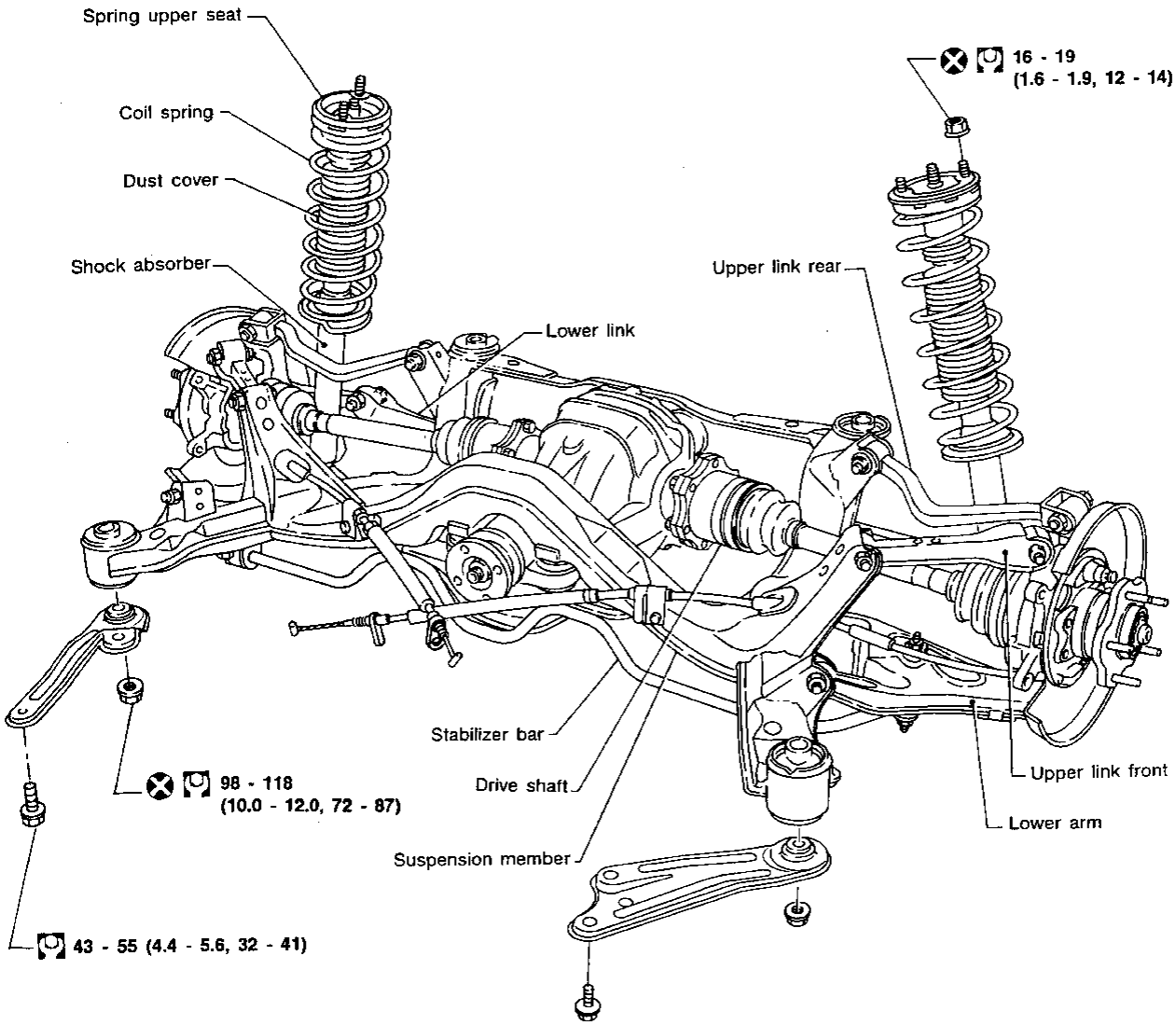
Special Service Tools (Cont'd)

Tool number (Kent-Moore No.) Tool name	Description	
HT72520000 (J25730-A) Ball joint remover	 NT146	Removing tie-rod outer end and lower ball joint

Commercial Service Tools

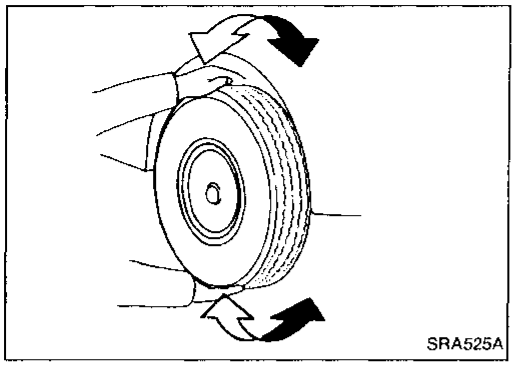
Tool name	Description	
Rear wheel hub drift	 NT073	Installing wheel bearing **a: 49 (1.93) dia.** **b: 41 (1.61) dia.** Unit: mm (in)
Wheel bearing drift	 NT073	Removing rear wheel hub **a: 40 (1.57) dia.** **b: 26 (1.02) dia.** Unit: mm (in)
Rear drive shaft plug seal drift	 NT065	Installing rear drive shaft plug seal **a: 85 (3.35) dia.** **b: 67 (2.64) dia.** Unit: mm (in)
Rear axle housing ball joint drift	 NT164	Removing ball joint **a: 28 (1.10) dia.** **b: 20 (0.79) dia.** **c: 43 (1.69) dia.** **d: 40 (1.57) dia.** Unit: mm (in)
Rear axle housing ball joint drift	 NT164	Installing ball joint **a: 43 (1.69) dia.** **b: 33 (1.30) dia.** **c: 40 (1.57) dia.** **d: 30 (1.18) dia.** Unit: mm (in)
① Flare nut crows foot ② Torque wrench	 NT223	

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.
For models equipped with SUPER HICAS system, refer to "SUPER HICAS".
For models equipped with ACTIVE SUSPENSION system, refer to "FULL-ACTIVE SUSPENSION" in FA section.



: N•m (kg-m, ft-lb)

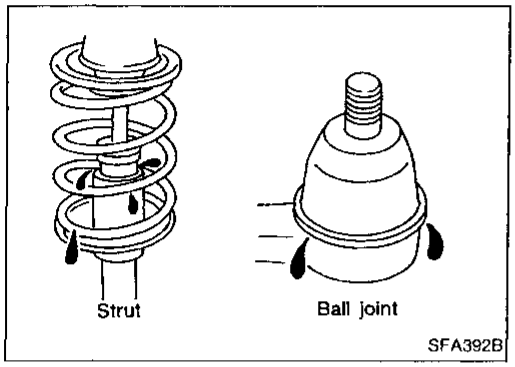
SRA381A


SRA525A

Rear Axle and Rear Suspension Parts

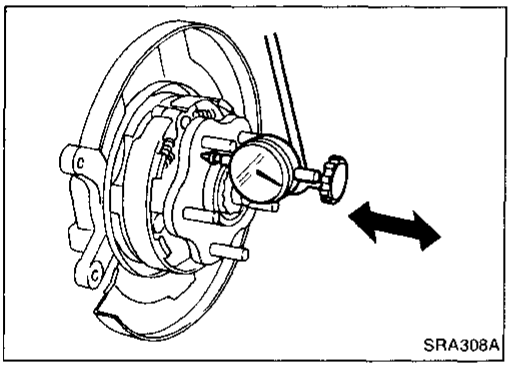
Check axle and suspension parts for looseness, wear or damage.

- 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-15).
- Make sure that cotter pin is inserted.



SFA392B

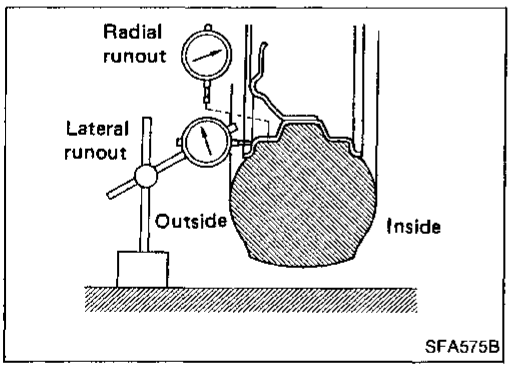
- Check shock absorber for oil leakage or other damage.
- Check wheelarch height. Refer to "Front Axle and Front Suspension Parts" in FA section.
- Check suspension ball joint for grease leakage and ball joint dust cover for cracks or other damage.


SRA308A

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 REAR AXLE — Wheel Hub and Axle Housing.



SFA575B

Rear Wheel Alignment

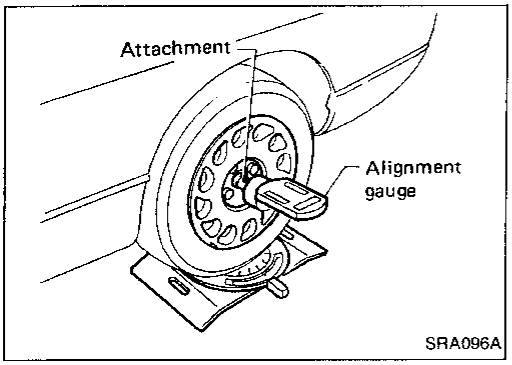
Before checking rear wheel alignment, be sure to make a preliminary inspection.

PRELIMINARY INSPECTION

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

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

Rear Wheel Alignment (Cont'd)

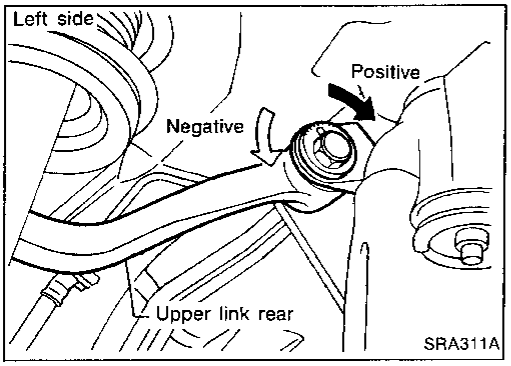


CAMBER

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

  Camber:

  Refer to "Inspection and Adjustment" in SDS (RA-22).



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

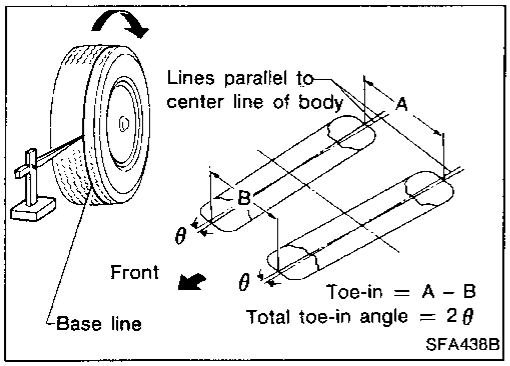
(1) Turn the adjusting bolt to adjust.

Camber changes about 5′ 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

1. Draw a base line across the tread.

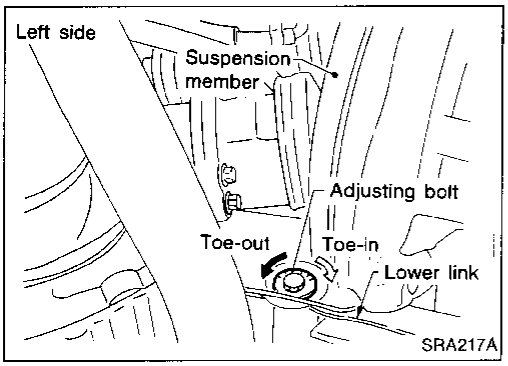
After lowering rear of vehicle, move it up and down to eliminate friction.

2. Measure toe-in.

Measure distance "A" and "B" at the same height as hub center.

Toe-in:

Refer to "Inspection and Adjustment" in SDS (RA-22).



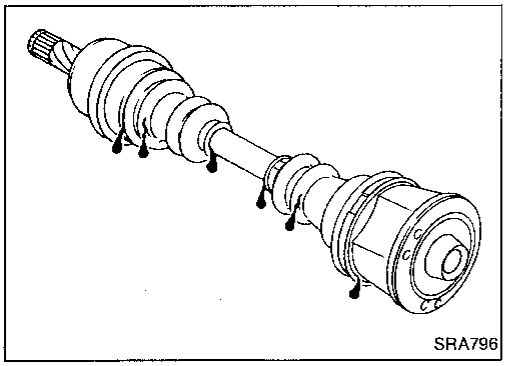
3. Adjust toe-in by turning adjusting bolts. For models equipped with SUPER HICAS system, refer to SUPER HICAS in ST section.

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

4. Tighten to the specified torque.

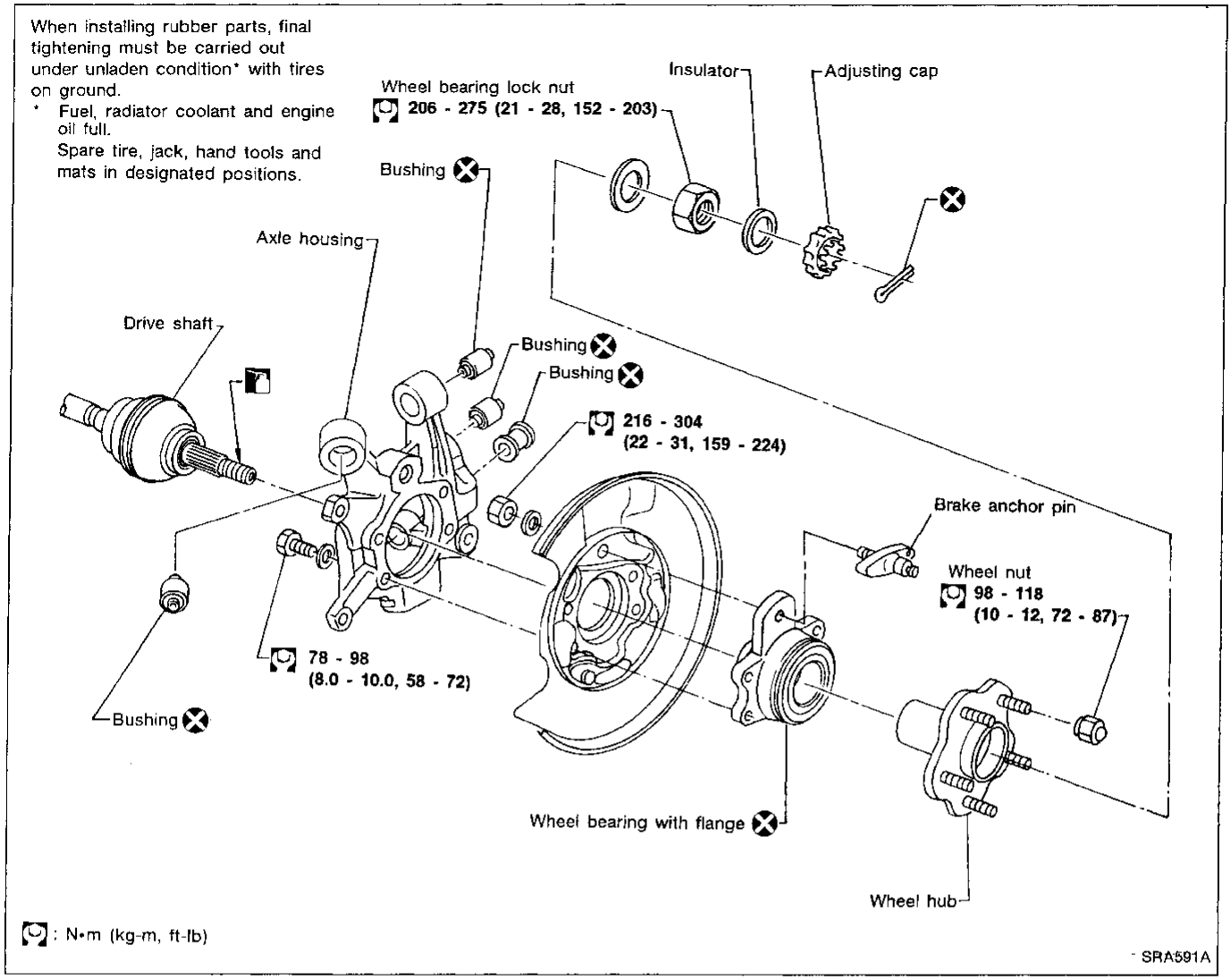
: 69 - 88 N·m

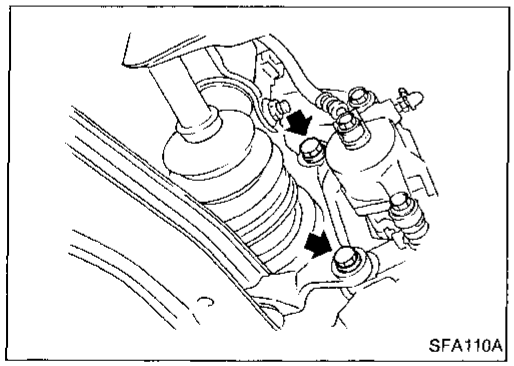
(7.0 - 9.0 kg-m, 51 - 65 ft-lb)

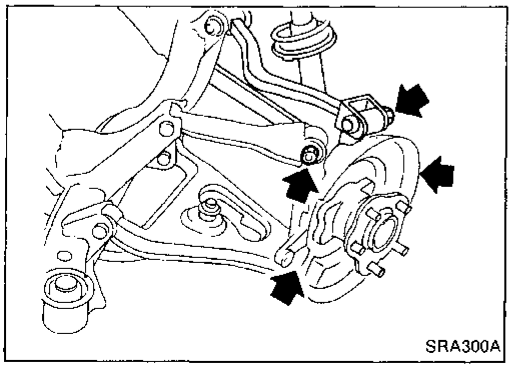


Drive Shaft

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







Removal

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

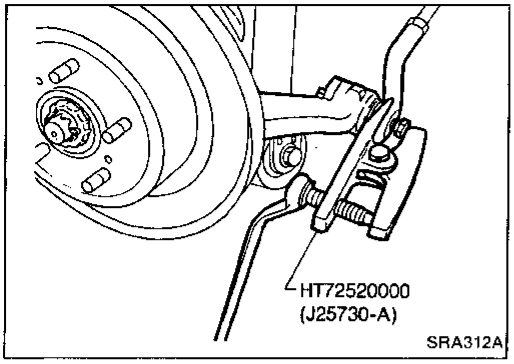
When removing drive shaft, cover boots with shop towel to prevent them from being damaged.

- 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.

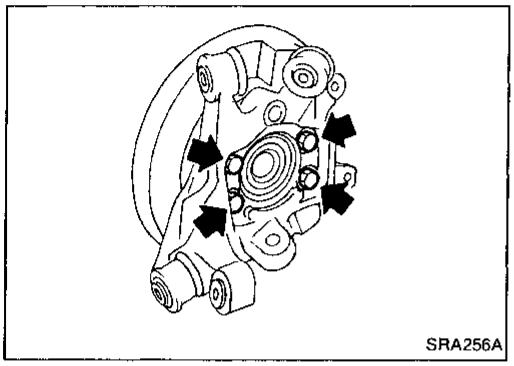
- Remove axle housing. For models equipped with SUPER HICAS system, refer to SUPER HICAS in ST section.

Removal (Cont'd)

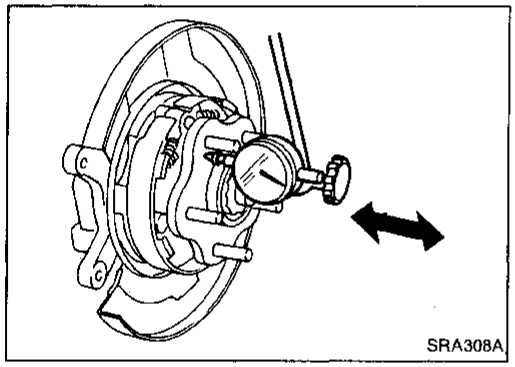


- Disconnect ball joint with Tool.

Do not remove nut completely while using Tool.



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



Wheel Hub and Axle Housing

INSTALLATION

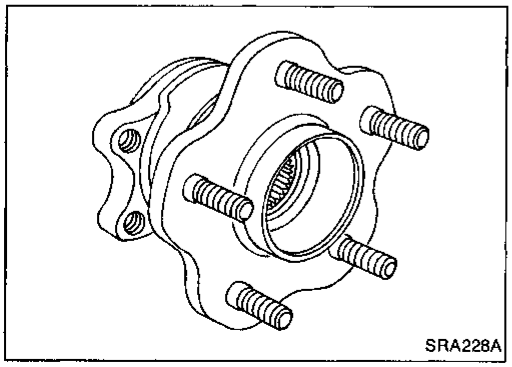
- Install axle housing with wheel hub.
- Tighten wheel bearing lock nut.
  : 206 - 275 N·m
  (21 - 28 kg-m, 152 - 203 ft-lb)
- Check wheel bearing axial end play.
  Axial end play: 0.05 mm (0.0020 in) or less
- Make sure that wheel bearings operate smoothly.
- Check toe-in — Refer to ON-VEHICLE SERVICE (RA-6).

DISASSEMBLY

CAUTION:

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

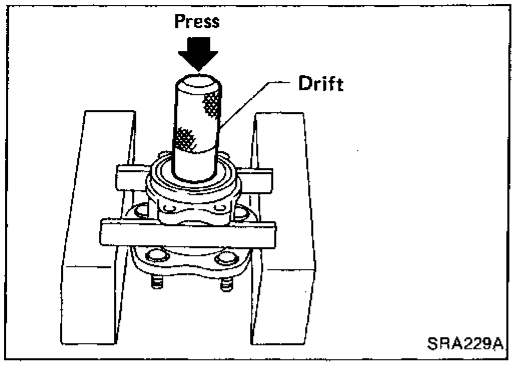
- **Growling noise is emitted from wheel bearing during operation.**
- **Wheel bearing drags or turns roughly when hub is turned with your hand after bearing lock nut is tightened to specified torque.**
- **After wheel bearing is removed from hub.**



Wheel hub

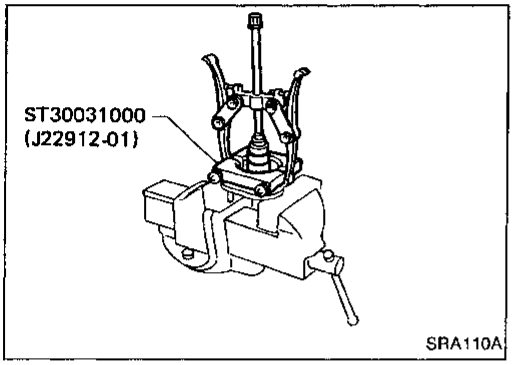
Remove wheel bearing (with flange) and wheel hub as one unit from axle housing before disassembling.

Wheel Hub and Axle Housing (Cont'd)



Wheel bearing

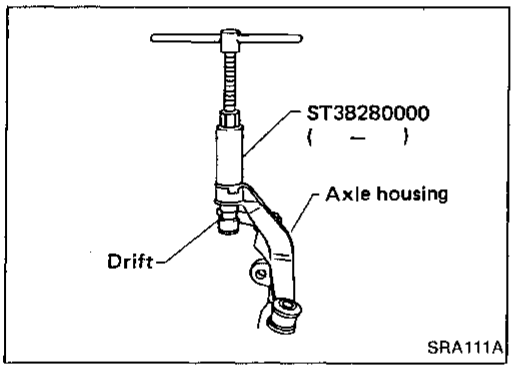
- Using a press and drift as shown in figure at left, press wheel bearing out.
- Discard old wheel bearing assembly. Replace with a new one.



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

CAUTION:

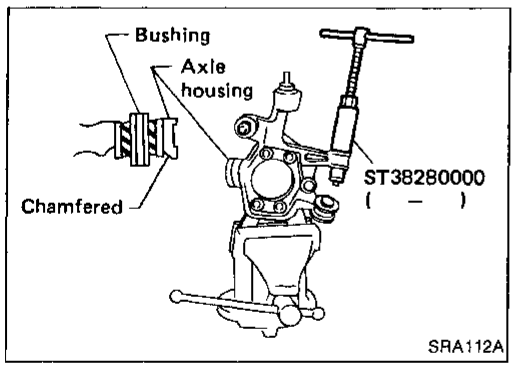
- **Do not reuse old inner race although it is of the same brand as the bearing assembly.**
- **Do not replace grease seals as single parts.**



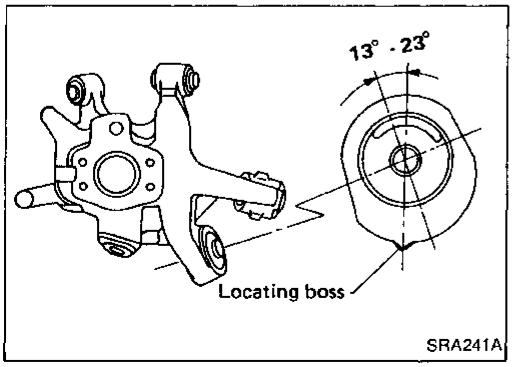
Axle housing

- 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.

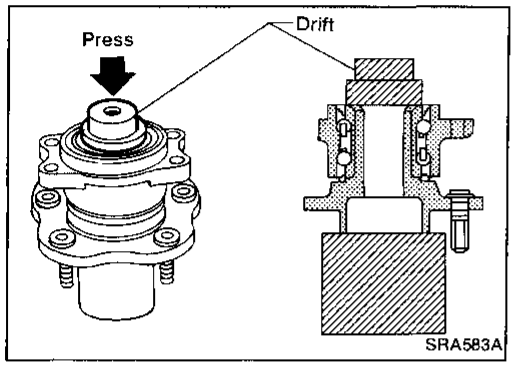
Wheel Hub and Axle Housing (Cont'd)

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 operation.
- Check rubber bushing for wear or other damage.

Replace if necessary.

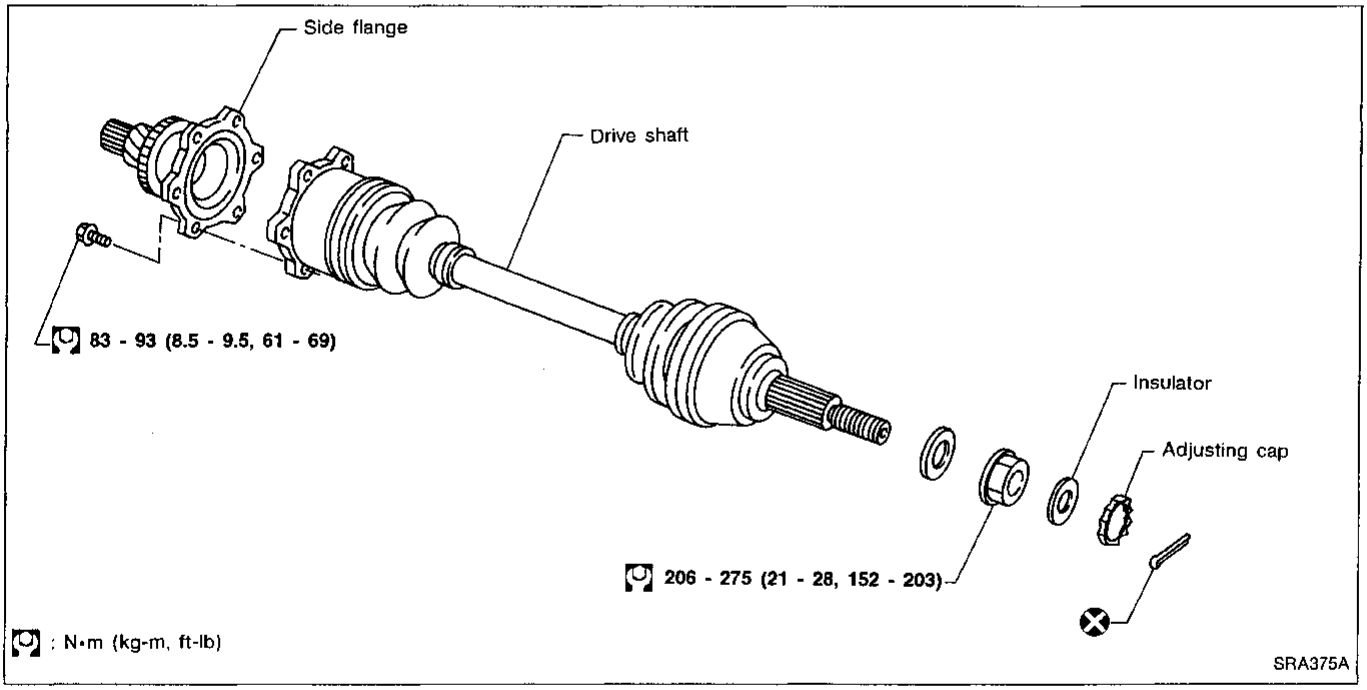


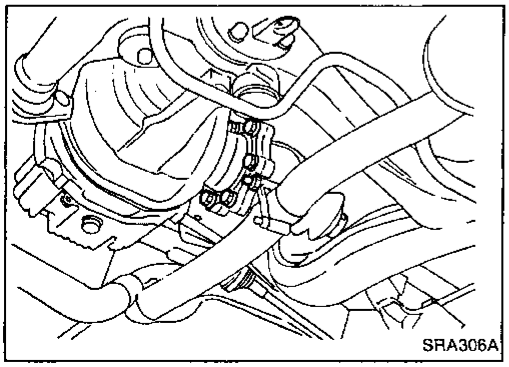
ASSEMBLY

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





REMOVAL

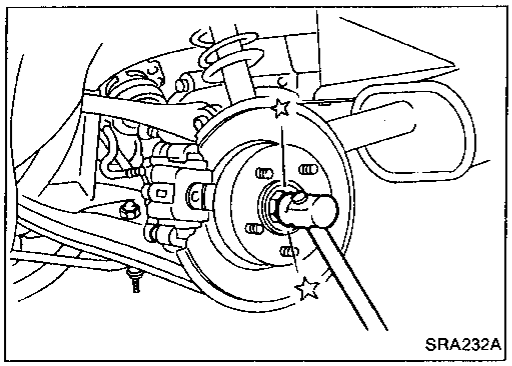
Before removing the drive shaft assembly, disconnect the ABS wheel sensor to prevent the sensor from being damaged. Refer to TRACTION CONTROL SYSTEM in BR section.

When removing drive shaft, cover boots with shop towel to prevent damage to them.

Final drive side

Remove side flange mounting bolt and separate shaft.

Drive Shaft (Cont'd)


SRA232A

Wheel side

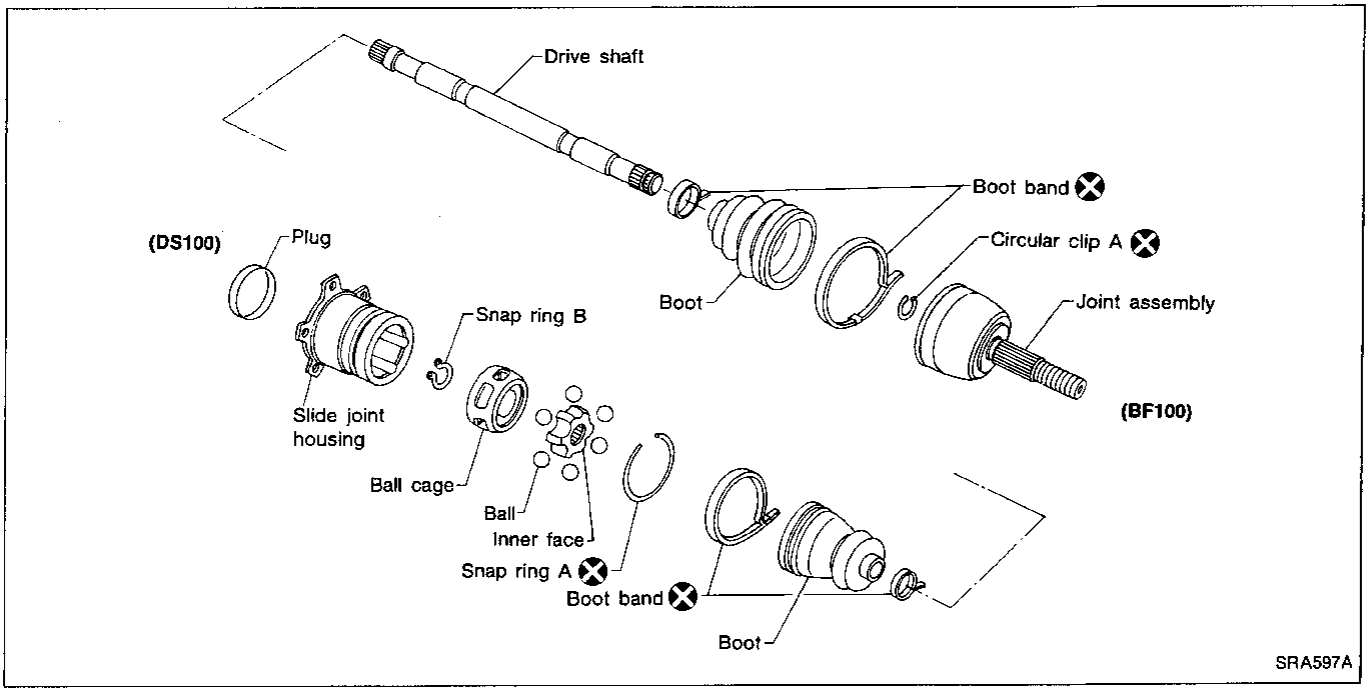
Remove drive shaft by lightly tapping it with a copper hammer. If it is hard to remove, use puller.

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

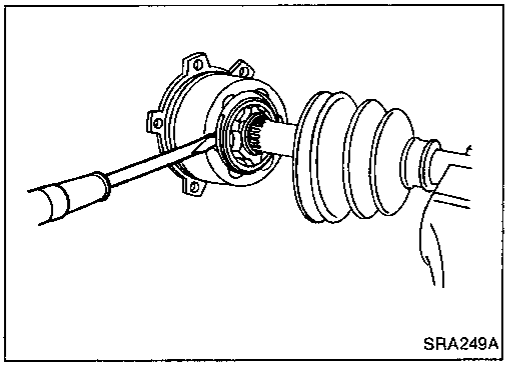
INSTALLATION

- 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. Refer to REAR AXLE — Wheel Hub and Axle Housing (RA-8).

COMPONENTS



SRA597A

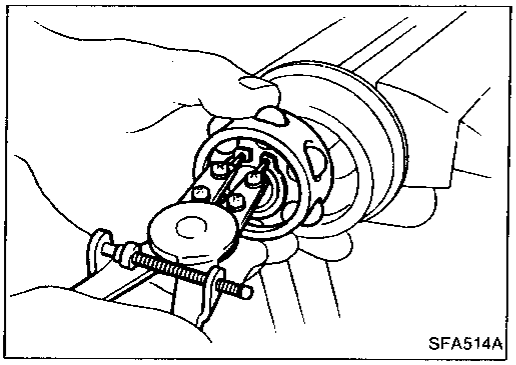

SRA249A

DISASSEMBLY

Final drive side

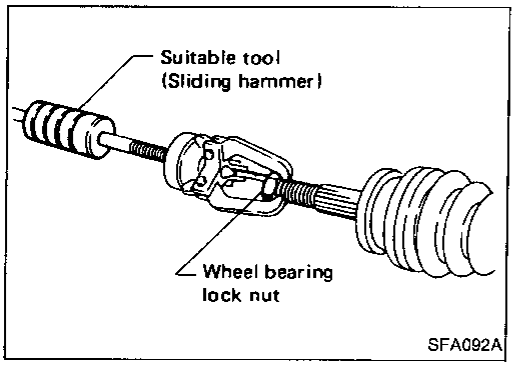
1. Remove boot bands.
2. Put matchmarks on slide joint housing and inner race, before separating joint assembly.
3. Pry off snap ring "A" with a screwdriver, and pull out slide joint housing.

Drive Shaft (Cont'd)


SFA514A

4. Put matchmarks on inner race and drive shaft.
5. Pry off snap ring "B", then remove ball cage, inner race and balls as a unit.
6. Draw out boot.

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



SFA092A

Wheel side

CAUTION:

The joint on the wheel side cannot be disassembled.

- Before separating joint assembly, put matchmarks on drive shaft and joint assembly.
- Separate joint assembly with suitable tool.,

Be careful not to damage threads on drive shaft.

- Remove boot bands.

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.

Joint assembly (Final drive side)

- Replace any parts of double offset joint which show signs of scorching, rust, wear or excessive play.
- Check serration for deformation. Replace if necessary.
- Check slide joint housing for any damage. Replace if necessary.

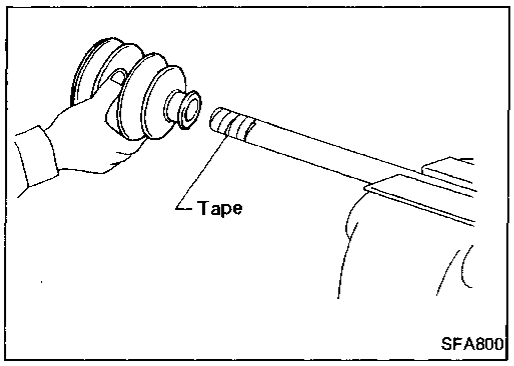
Joint assembly (Wheel side)

Replace joint assembly if it is deformed or damaged.

ASSEMBLY

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

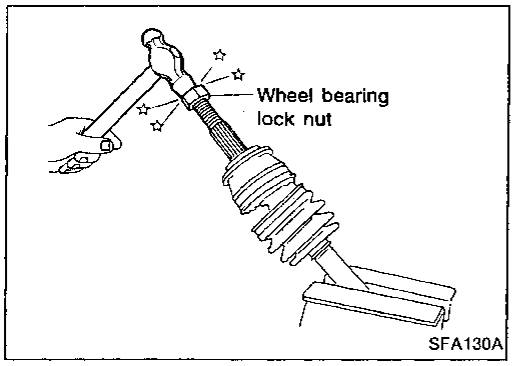
Drive Shaft (Cont'd)



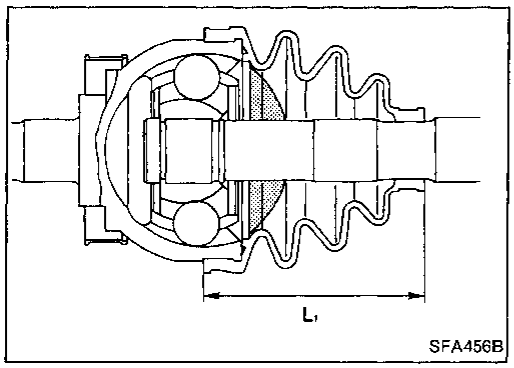
Wheel side

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.



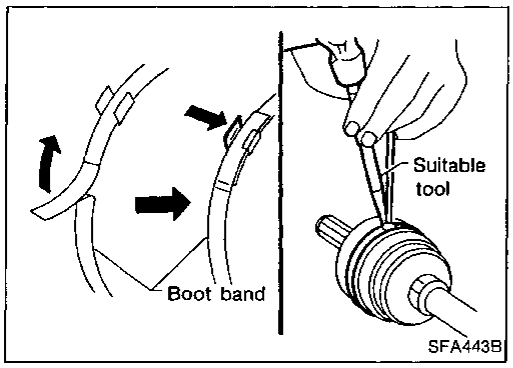
2. Set joint assembly onto drive shaft by lightly tapping it. Install joint assembly securely, ensuring marks which were made during disassembly are properly aligned.



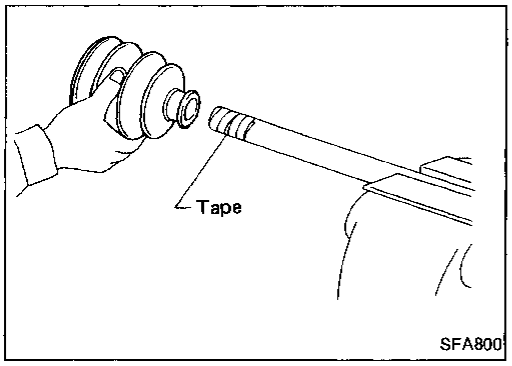
3. Pack drive shaft with specified amount of grease.
   Specified amount of grease:
   170 - 190 g (6.00 - 6.70 oz)
4. Set boot so that it does not swell and deform when its length is "L_1".

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

Length "L_1":
101 - 103 mm (3.98 - 4.06 in)



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

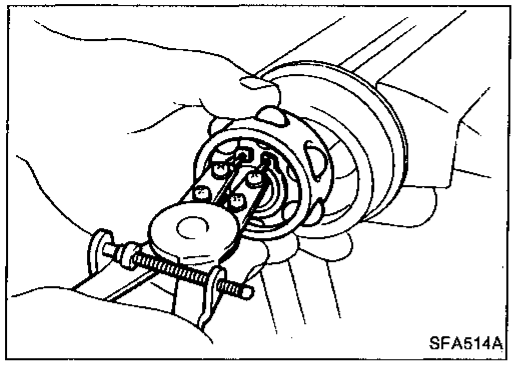


Final drive side

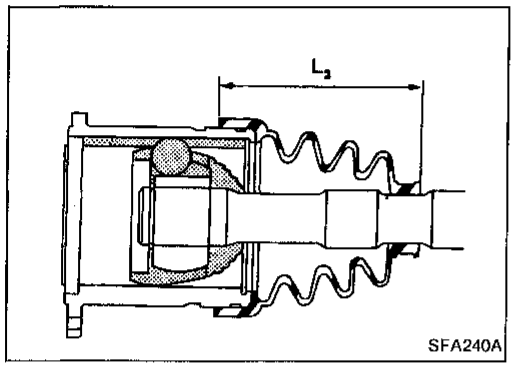
1. Install boot and new small boot band on drive shaft.

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

Drive Shaft (Cont'd)


SFA514A

2. Securely 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 "B".

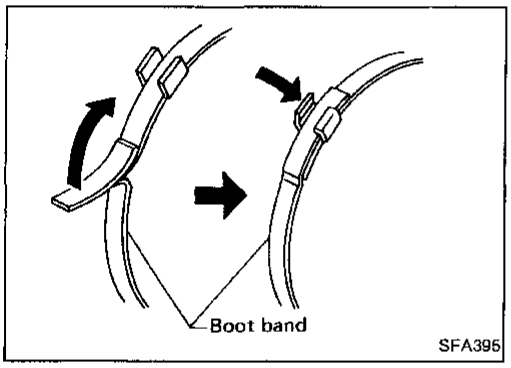


SFA240A

4. Pack drive shaft with specified amount of grease.
   Specified amount of grease:
   180 - 200 g (6.35 - 7.05 oz)
5. Install slide joint housing, then install new snap ring "A".
6. Set boot so that it does not swell and deform when its length is "L_2".

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

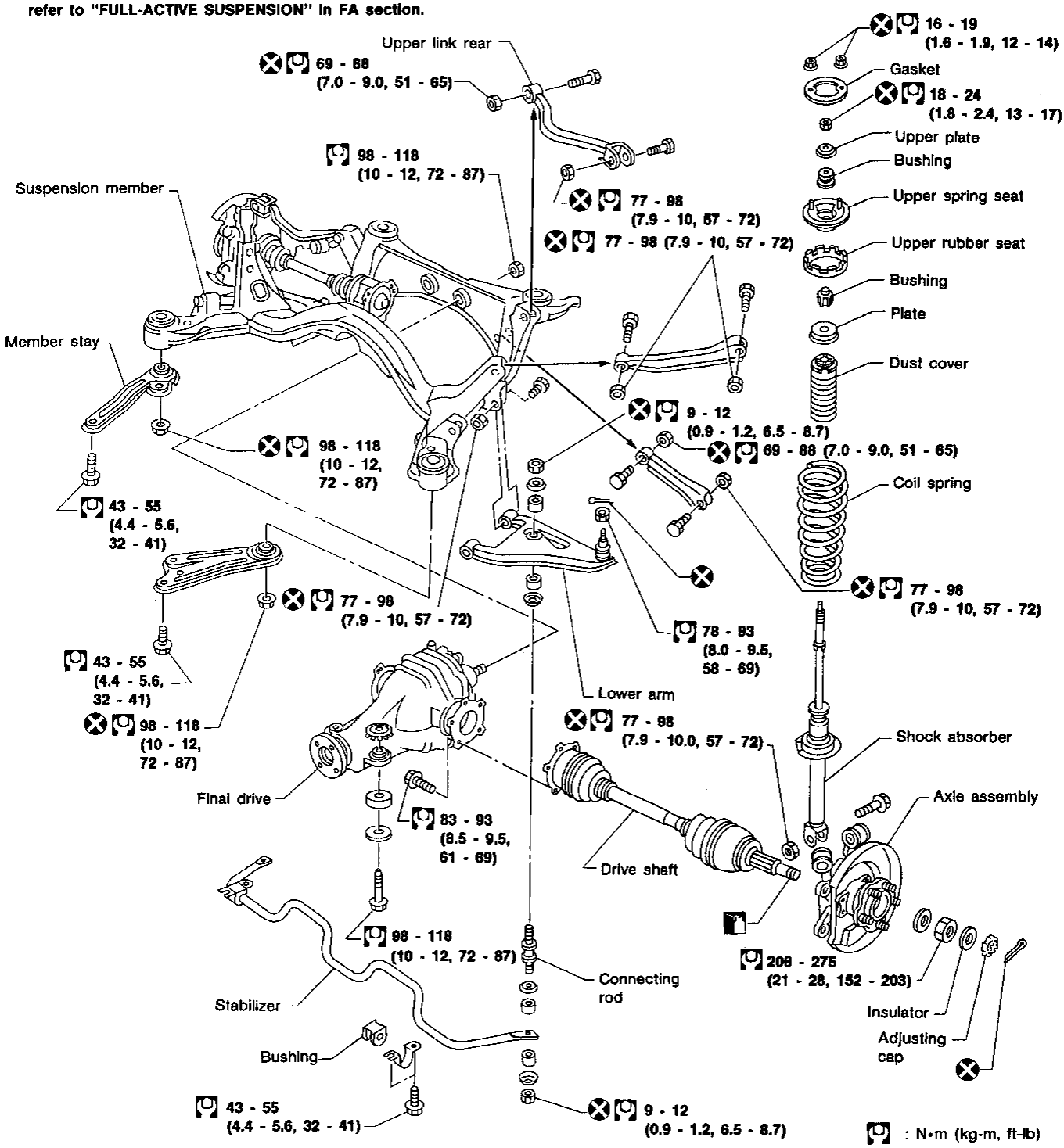
Length "L_2":
102.5 - 104.5 mm (4.04 - 4.11 in)



SFA395

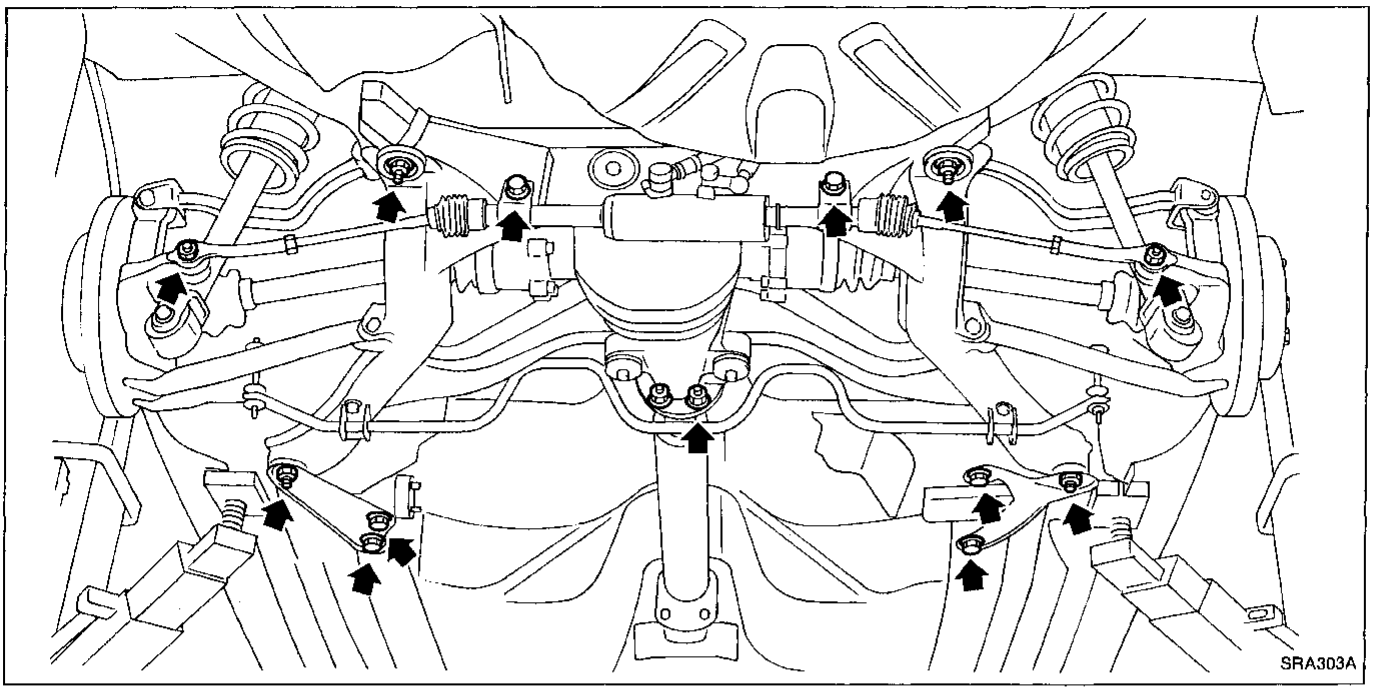
7. Lock new larger and smaller boot bands securely with a suitable tool.

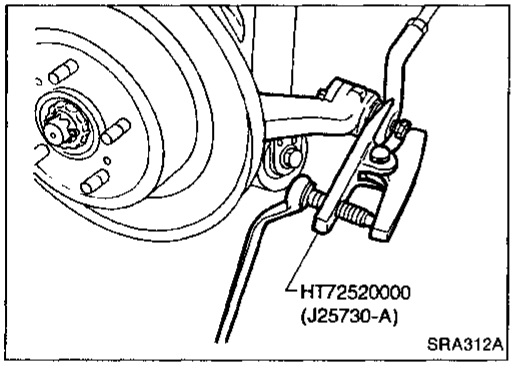
CAUTION:
Do not jack up at lower arm.
When installing rubber parts, final tightening must be carried out under unladen condition* with tires on ground.
*** Fuel, radiator coolant and engine oil full.**
Spare tire, jack, hand tools and mats in designated positions.
For models equipped with SUPER HICAS system, refer to "SUPER HICAS" in ST section.
For models equipped with FULL-ACTIVE SUSPENSION system, refer to "FULL-ACTIVE SUSPENSION" in FA section.



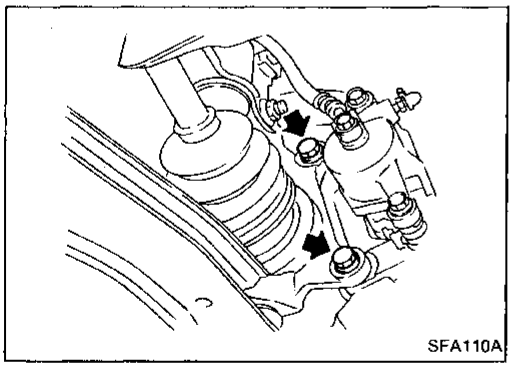
SRA616A

Removal and Installation





- Remove exhaust tube.
- Disconnect propeller shaft rear end.
- Disconnect hand brake wire front end.
- For models equipped with SUPER HICAS system, refer to SUPER HICAS in ST section.
- Use Tool to disconnect ball joints (SUPER HICAS).



- 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.

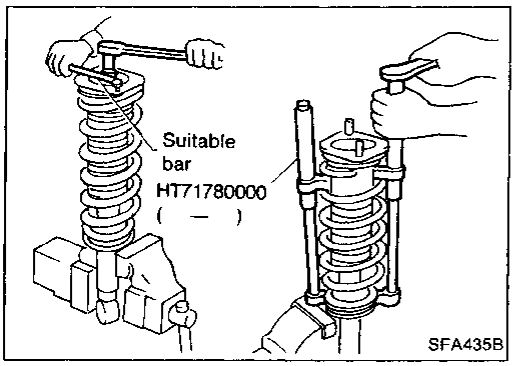
Coil Spring and Shock Absorber

REMOVAL

Remove shock absorber upper and lower fixing nuts.

Do not remove piston rod lock nut on vehicle.

Coil Spring and Shock Absorber (Cont'd)

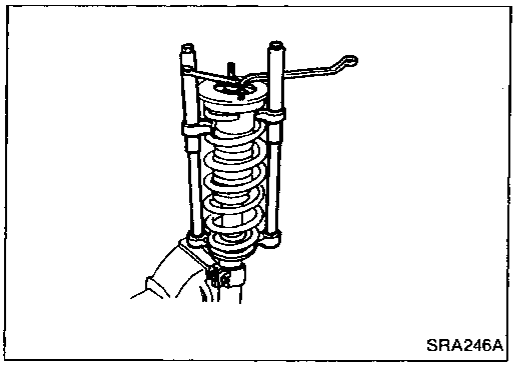


DISASSEMBLY

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

Do not remove piston rod lock nut.

2. Compress spring with Tool so that the strut upper spring seat can be turned by hand.



3. Remove piston rod lock nut.

INSPECTION

Shock absorber assembly

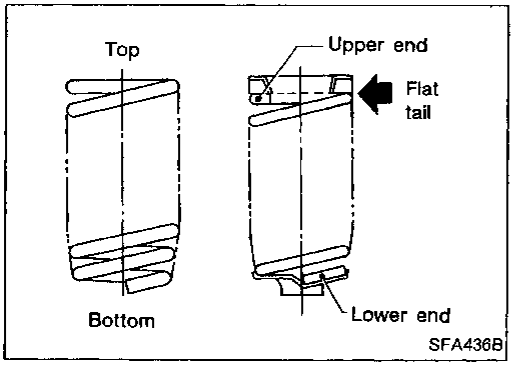
- Check for smooth operation through a full stroke, both compression and extension.
- Check for oil leakage occurring on welded or gland packing portions.
- Check piston rod for cracks, deformation or other damage. Replace if necessary.

Upper rubber seat and bushing

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

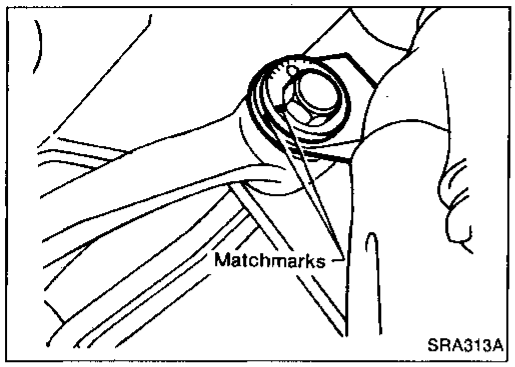
Coil spring

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



ASSEMBLY

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



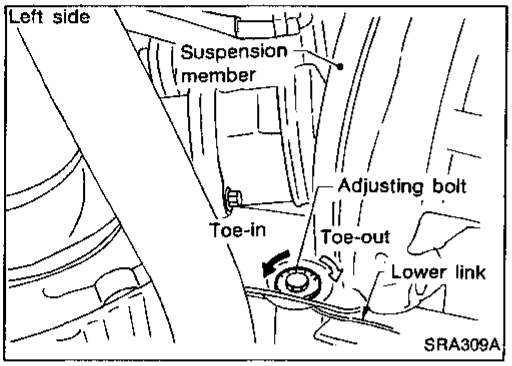
Multi-link and Lower Ball Joint

REMOVAL AND INSTALLATION

- Refer to Removal and Installation (RA-16).

Before removing, put matchmarks on adjusting bolt.

- When installing, final tightening must be done under unladen condition with tires on ground.
- After installation, check wheel alignment. Refer to Rear Wheel Alignment in ON-VEHICLE SERVICE (RA-5).



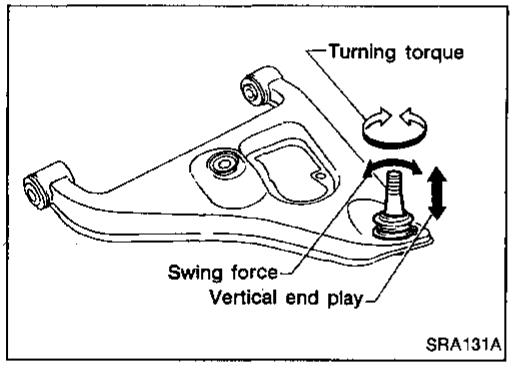
INSPECTION

Rear suspension member

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

Upper and lower links

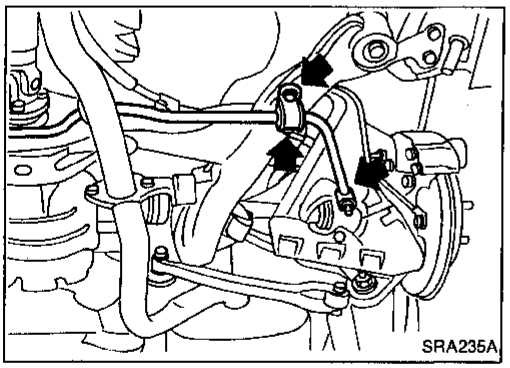
Replace upper or lower link as required if cracked or deformed or if bushing is damaged.



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.

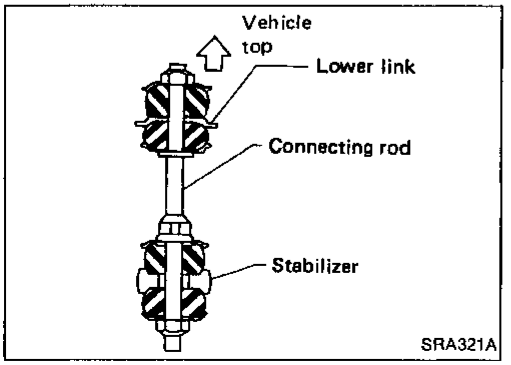
Ball joint specifications	Swing force	7.8 - 54.9 N (0.8 - 5.6 kg, 1.8 - 12.3 lb)
	Turning torque	0.5 - 3.4 N·m (5 - 35 kg-cm, 4.3 - 30.4 in-lb)
	Vertical end play	0 mm (0 in)



Stabilizer Bar

REMOVAL

Remove connecting rod and clamp.

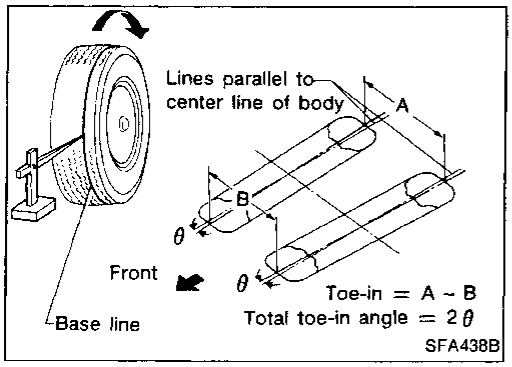


INSPECTION

- 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).



Rear Wheel Alignment

TOE-IN

1. Draw a base line across the tread.

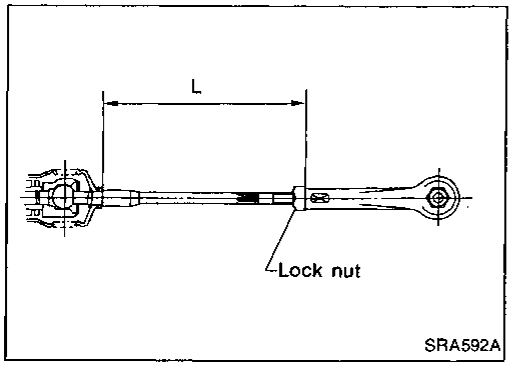
After lowering rear of vehicle, move it up and down to eliminate friction.

2. Measure toe-in.

Measure distance "A" and "B" at the same height as hub center.

Toe-in:

Refer to "Inspection and Adjustment" in SDS (RA-22).



3. Adjust toe-in by varying length of power cylinder lower links.
(1) Loosen lock nuts.
(2) Adjust toe-in by turning lower links forward or backward.

Make sure both lower links are the same length.

Standard length "L":

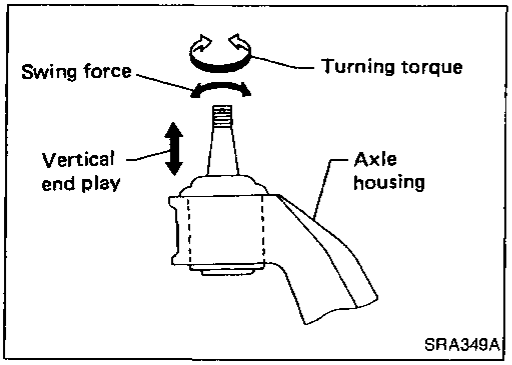
185.5 mm (7.30 in)

(3) Tighten lock nuts to the specified torque.

: 37 - 46 N·m

(3.8 - 4.7 kg-m, 27 - 34 ft-lb)

- Refer to ON-VEHICLE SERVICE for other procedures.



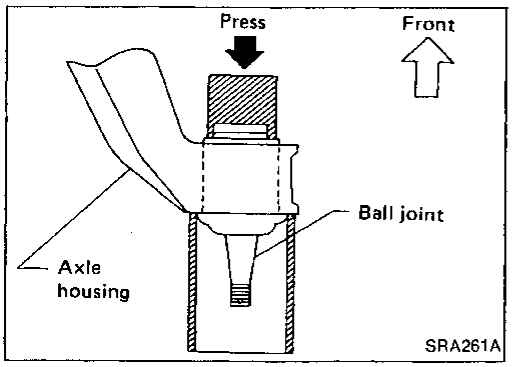
Rear Axle Housing Lower Ball Joint

INSPECTION

- Measure swing force, turning torque and vertical end play in axial direction.
- If ball stud is worn, play in axial direction is excessive, or joint is hard to swing, replace ball joint.

Ball joint specifications	Swing force*	6.9 - 68.6 N (0.7 - 7.0 kg, 1.5 - 15.4 lb)
	Turning torque	0.3 - 2.9 N·m (3 - 30 kg-cm, 2.6 - 26.0 in-lb)
	Vertical end play	0 mm (0 in)

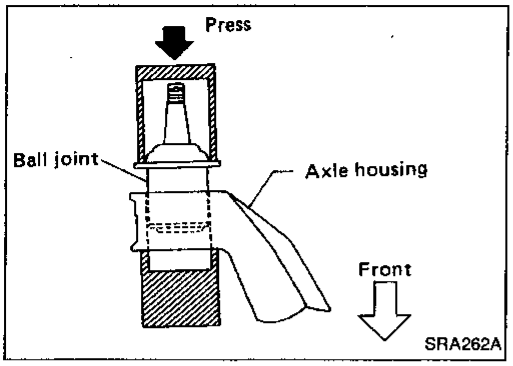
*Measuring point: Cotter pin hole of ball stud.



REMOVAL

- Remove ball joint snap ring.
- Press out ball joint from axle housing.

Rear Axle Housing Lower Ball Joint (Cont'd)



ASSEMBLY

- Press new ball joint assembly into axle housing.
- Install snap ring into groove of ball joint.
- Refer to REAR AXLE — "Wheel Hub and Axle Housing" for other procedures (RA-8).
- Refer to ST section for power cylinder and SUPER HICAS — Trouble Diagnoses in ST section.

General Specifications

COIL SPRING

Applied model	Conventional suspension	Active suspension
Identification color	Purple x 2, White x 1	Green x 1, Pink x 1

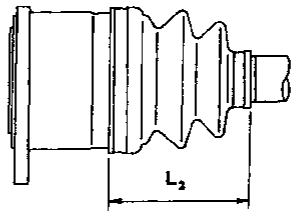
SHOCK ABSORBER

Applied model		Conventional suspension	Active suspension
Piston rod diameter	mm (in)	12.5 (0.492)	25 (0.98)

DRIVE SHAFT

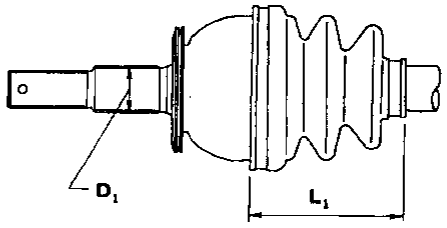
Applied model	All
Joint type	
Final drive side	DS100
Wheel side	BF100
Diameter mm (in)	
Wheel side D_1	33 (1.30)
Grease	
Quality	Nissan genuine grease or equivalent
Specified amount of grease g (oz)	
Final drive side	180 - 200 (6.35 - 7.05)
Wheel side	170 - 190 (6.00 - 6.70)
Boot length mm (in)	
Final drive side (L_2)	102.5 - 104.5 (4.04 - 4.11)
Wheel side (L_1)	101 - 103 (3.98 - 4.06)

Final drive side



SRA598A

Wheel drive side



SRA599A

REAR STABILIZER BAR

Applied model	Conventional suspension	Active suspension
Stabilizer diameter mm (in)		
Outer	15.9 (0.626)	20 (0.79)
Inner	12.3 (0.484)	15.4 (0.606)

Inspection and Adjustment

WHEEL ALIGNMENT (Unladen*1)

Applied model	Conventional suspension	Active suspension	
		Engine running*2	Reference (Engine stopped*3)
Camber degree	–1°35′ to –0°35′	–2°00′ to –1°00′	–1°50′ to –0°50′
Toe-in			
A – B mm (in)	0 - 4 (0 - 0.16)		
Total angle 2θ degree	0′ - 22″		

*1 Fuel, radiator coolant and engine oil full.
Spare tire, jack, hand tools and mats in designated positions.
*2 Unladen, engine running and height control switch in normal (N) position.
*3 ● The data obtained when engine is stopped are reference values.
For standard values, use the data obtained by running engine.
● Conditions when engine is stopped:
Unladen, full-active fluid temperature 60 ± 4°C (140 ± 7.2°F).
Ignition switch "OFF" after driver gets out of the vehicle.
● For alignment measurement, wait at least 3 minutes after engine has stopped.

WHEEL BEARING

Wheel bearing axial end play limit mm (in)	0.05 (0.0020)
Wheel bearing lock nut Tightening torque N·m (kg-m, ft-lb)	206 - 275 (21 - 28, 152 - 203)

LOWER BALL JOINT

Swing force (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 N·m (kg-cm, in-lb)	0.5 - 3.4 (5 - 35, 4.3 - 30.4)
Vertical end play mm (in)	0 (0)

LOWER LINK BALL JOINT (SUPER HICAS)

Swing force (at cotter pin hole) N (kg, lb)	6.9 - 68.6 (0.7 - 7.0, 1.5 - 15.4)
Turning torque N·m (kg-cm, in-lb)	0.3 - 2.9 (3 - 30, 2.6 - 26.0)
Vertical end play mm (in)	0 (0)