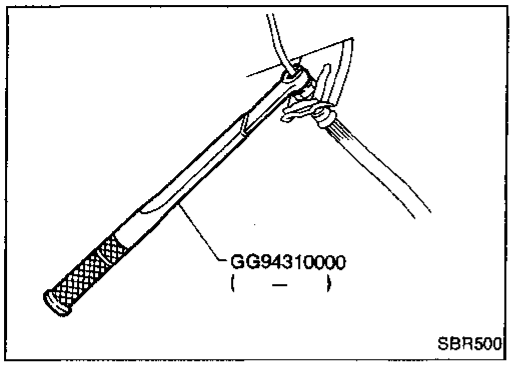
FRONT AXLE & FRONT SUSPENSION

SECTION FA

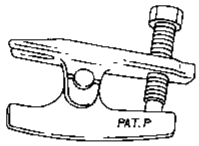
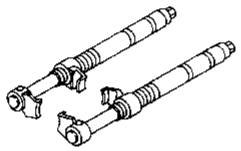
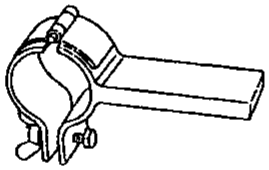
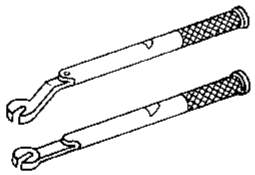
CONTENTS



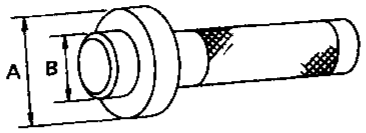
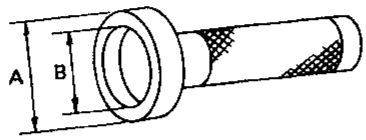
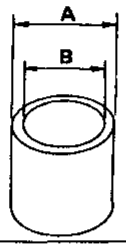
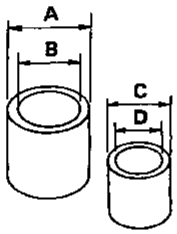
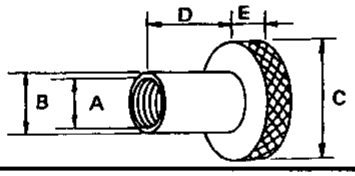
Precautions

- **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.**
- **When removing each suspension part, check wheel alignment and adjust if necessary.**
- **Use Tool when removing or installing brake tubes.**

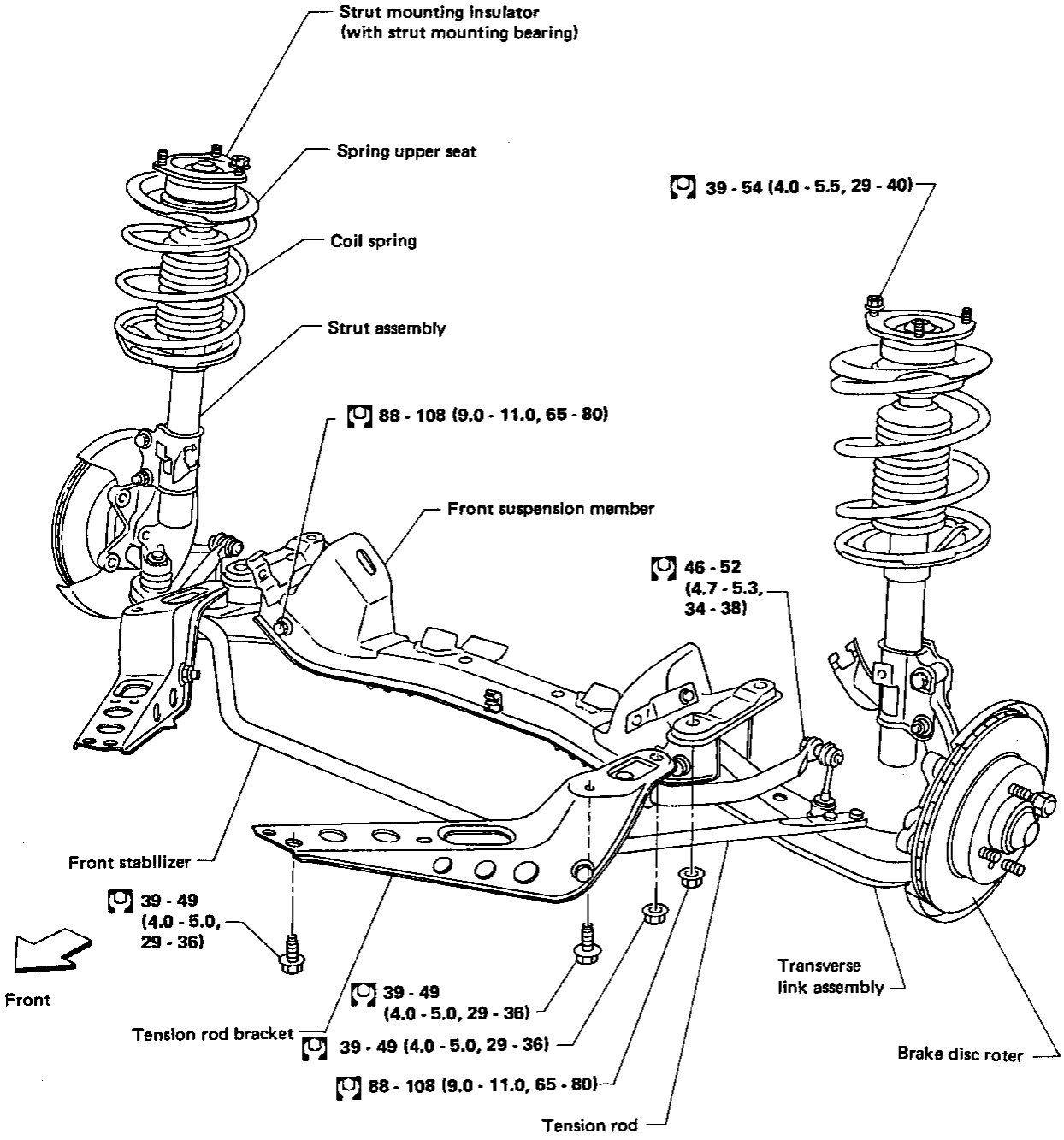
Special Service Tools

Tool number (Kent-Moore No.) Tool name	Description	
HT72520000 (J25730-A) Ball joint remover		Removing tie-rod outer end and lower ball joint
HT71780000 (—) Spring compressor		Removing and installing coil spring
ST35652000 (—) Strut attachment		Fixing strut assembly
GG94310000 (—) Flare nut torque wrench		Removing and installing brake piping

Commercial Service Tools

Tool name	Description	
Wheel bearing drift		Removing wheel bearing **A: 45 mm (1.77 in) dia.** **B: 30 mm (1.18 in) dia.**
Wheel bearing drift		Installing wheel bearing **A: 68 mm (2.68 in) dia.** **B: 60 mm (2.36 in) dia.**
Baffle plate drift		Installing baffle plate **A: 88 mm (3.46 in) dia.** **B: 68 mm (2.68 in) dia.**
Tension rod bushing drift		Removing and installing tension rod bushing **A: 75 mm (2.95 in) dia.** **B: 66 mm (2.60 in) dia.** **C: 62 mm (2.44 in) dia.** **D: 25 - 55 mm (0.98 - 2.17 in) dia.**
Attachment Wheel alignment		Measure wheel alignment **A: Screw M22 x 1.5** **B: 35 (1.38) dia.** **C: 65 (2.56) dia.** **D: 56 (2.20)** **E: 12 (0.47)** Unit: mm (in)

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.**



: N·m (kg-m, ft-lb)

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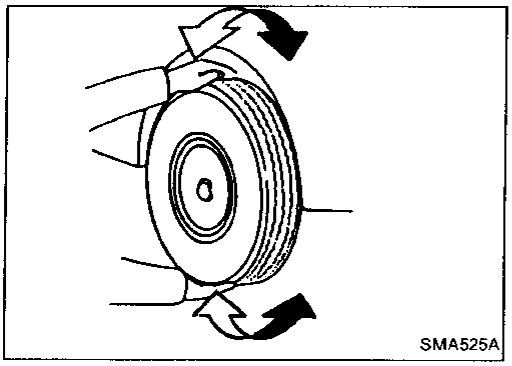
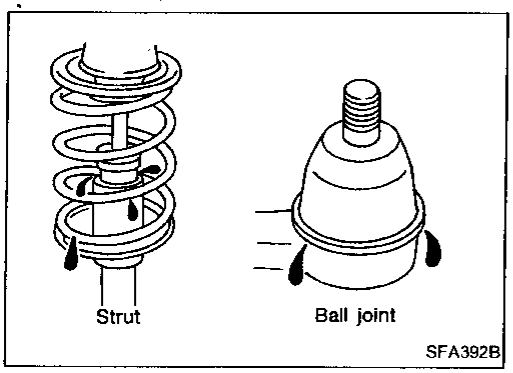

SMA525A

Front Axle and Front Suspension Parts

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

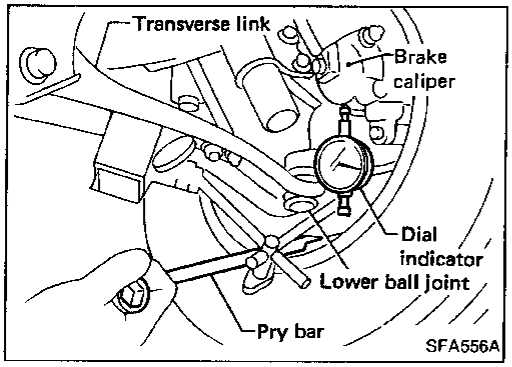
- Shake each front wheel to check for excessive play.
- Retighten all axle and suspensions nuts and bolts to the specified torque.

  Tightening torque: Refer to FRONT SUSPENSION.
- Make sure that cotter pins are inserted.



SFA392B

- Check strut (shock absorber) for oil leakage or other damage.
- Check suspension ball joint for grease leakage and ball joint dust cover for cracks or other damage.

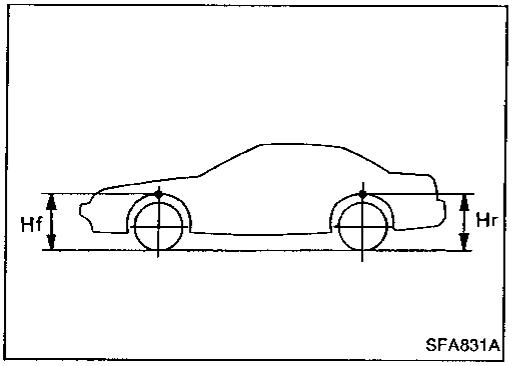


SFA556A

- Check suspension ball joint end play.

(1) Jack up front of vehicle and set the stands.
(2) Clamp dial indicator onto transverse link and place indicator tip on lower edge of brake caliper.
(3) Make sure front wheels are straight and brake pedal is depressed.
(4) Place a pry bar between transverse link and inner rim of road wheel.
(5) While raising and releasing pry bar, observe maximum dial indicator value.

  Vertical end play: 0 mm (0 in)
(6) If ball joint movement is beyond specifications, remove and recheck it.

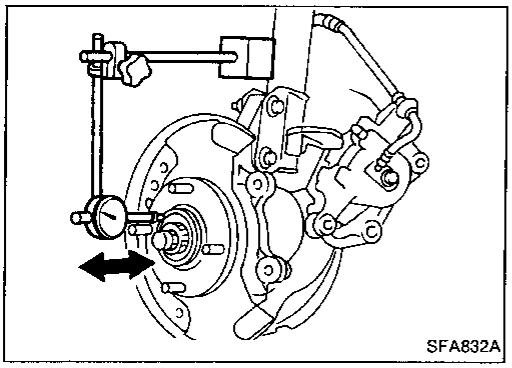


SFA831A

- Check spring height from the top of the wheelarch to the ground.

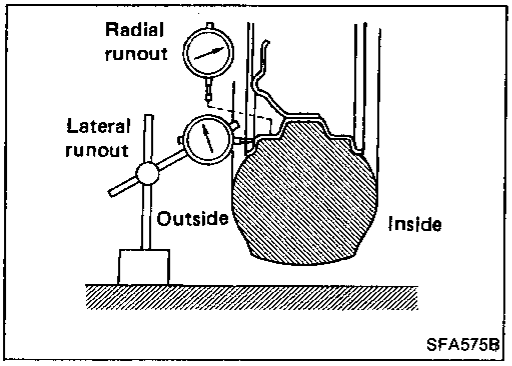
(1) Vehicle must be unladen*, parked on a level surface, and tires checked for proper inflation and wear (tread wear indicator must not be showing).
  *: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.
(2) Bounce the vehicle up and down several times before measuring.

  Wheelarch height: Front (Hf): 694 mm (27.32 in)
  Rear (Hr): 670 mm (26.38 in)
(3) Spring height is not adjustable. If out of specification, check for worn springs or suspension parts.


SFA832A

Front Wheel Bearing

- Check that wheel bearings operate smoothly.
- Check axial end play.
  Axial end play: 0.03 mm (0.0012 in) or less
- If axial end play is not within specification or wheel bearing does not turn smoothly, replace wheel bearing assembly.
  Refer to FRONT AXLE — Wheel Hub and Knuckle.



SFA575B

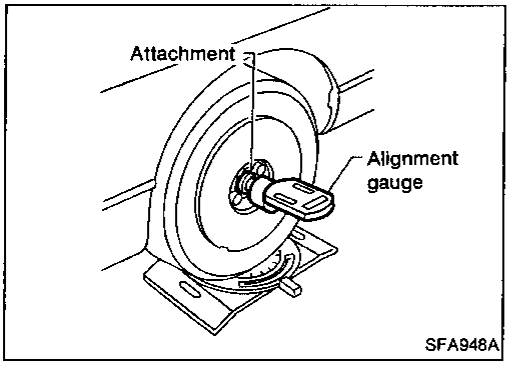
Front Wheel Alignment

Before checking front wheel alignment, be sure to make a preliminary inspection (Unladen*).

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

PRELIMINARY INSPECTION

1. Check tires for wear and improper inflation.
2. Check wheel runout.
   Wheel runout: Refer to S.D.S.
3. Check front wheel bearings for looseness.
4. Check front suspension for looseness.
5. Check steering linkage for looseness.
6. Check that front shock absorbers work properly by using the standard bounce test.
7. Check vehicle posture (Unladen).

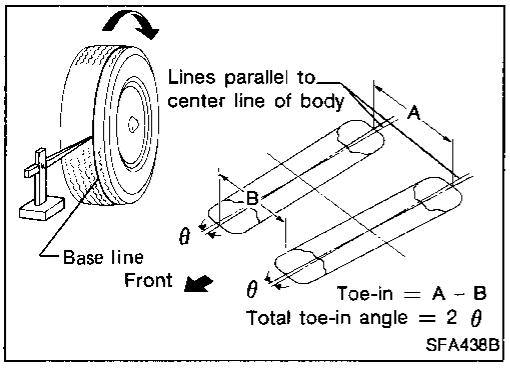


SFA948A

CAMBER, CASTER AND KINGPIN INCLINATION

Camber, caster and kingpin inclination are preset at factory and cannot be adjusted.

1. Measure camber, caster and kingpin inclination of both right and left wheels with a suitable alignment gauge.
   Camber, Caster and Kingpin inclination: Refer to S.D.S.
2. If camber, caster and kingpin inclination are not within specification, inspect and replace any damaged or worn front suspension parts.

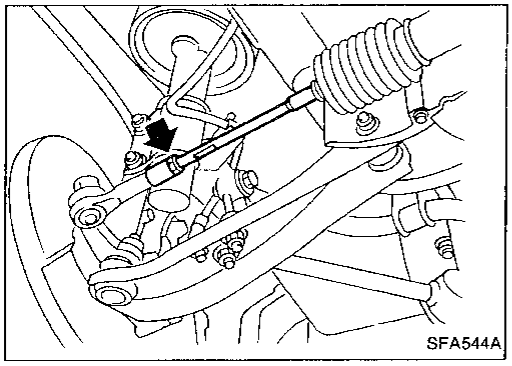


SFA438B

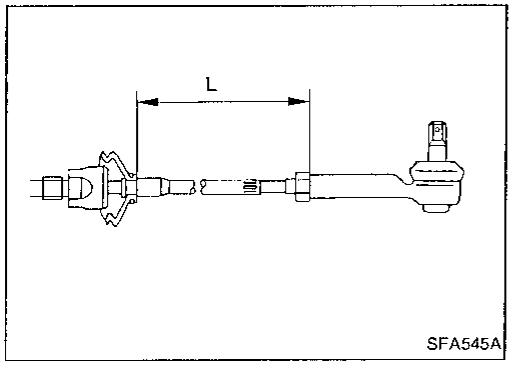
TOE-IN

1. Draw a base line across the tread.
- After lowering front of vehicle, move it up and down to eliminate friction, and set steering wheel in straight-ahead position.
2. Measure toe-in.
   Measure distance "A" and "B" at same height as hub center.
   Toe-in: Refer to S.D.S.

Front Wheel Alignment (Cont'd)

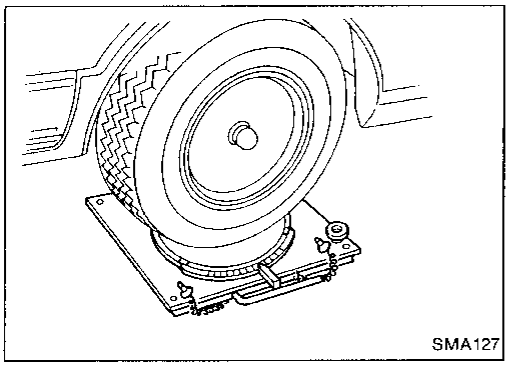


3. Adjust toe-in by varying length of steering tie-rods.
(1) Loosen lock nuts.
(2) Adjust toe-in by turning forward and reverse tie-rod.

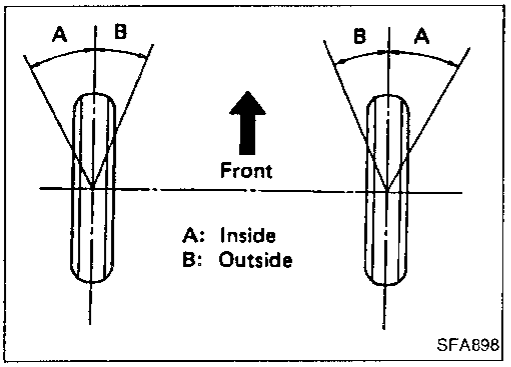


Make sure both tie-rods are the same length.
Standard length "L":
Refer to ST section.
(3) Tighten lock nuts to specified torque.
Lock nut tightening torque:
Refer to ST section.

FRONT WHEEL TURNING ANGLE



1. Set wheels in straight-ahead position and then move vehicle forward until front wheels rest on turning radius gauge properly.



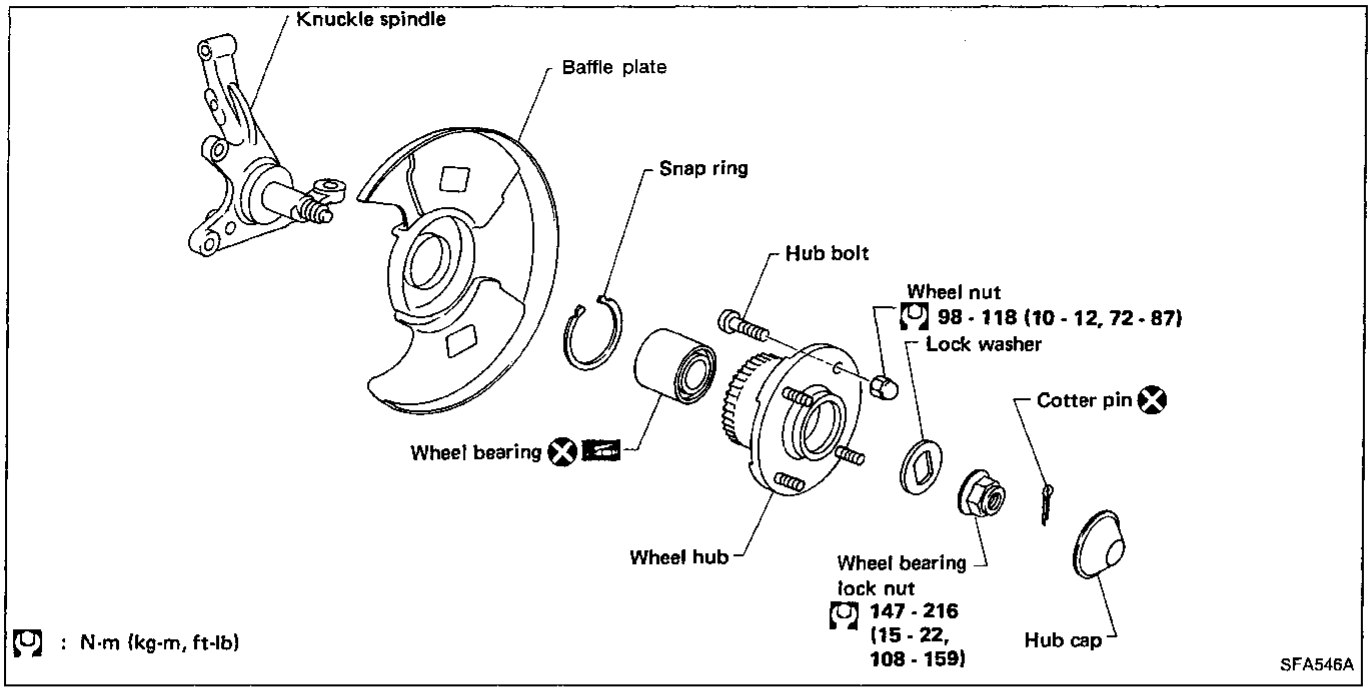
2. Rotate fully steering wheel to the right or left; measure turning angle.

Wheel turning angle:

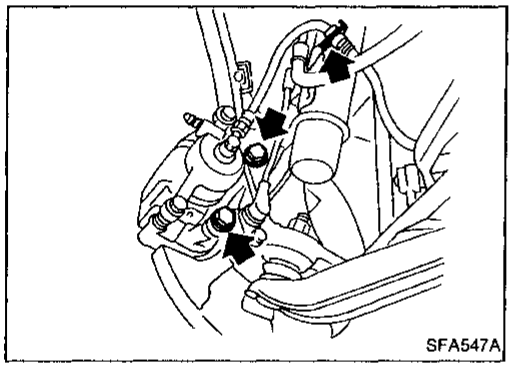
Full turns	Inside wheel: A	39° - 43°
	Outside wheel: B	33°

- **On power steering models, wheel turning force (at circumference of steering wheel) of 98 to 147 N (10 to 15 kg, 22 to 33 lb) with engine at idle.**

Wheel Hub and Knuckle



SFA546A

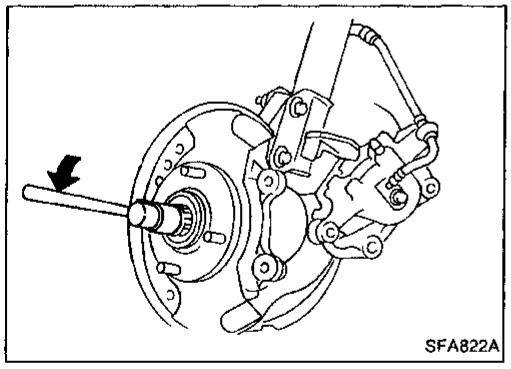


REMOVAL

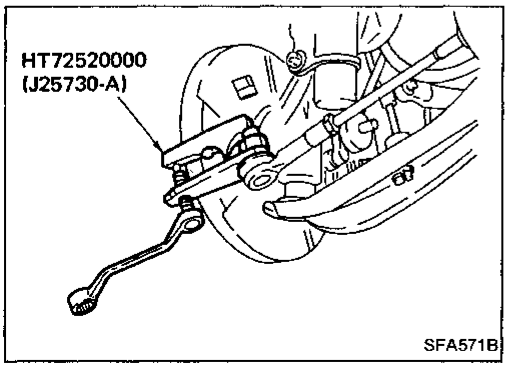
- Remove brake caliper assembly.

Brake hose need not be disconnected from brake caliper. Be careful not to depress brake pedal, or piston will pop out. Make sure brake hose is not twisted.

- Remove brake rotor.

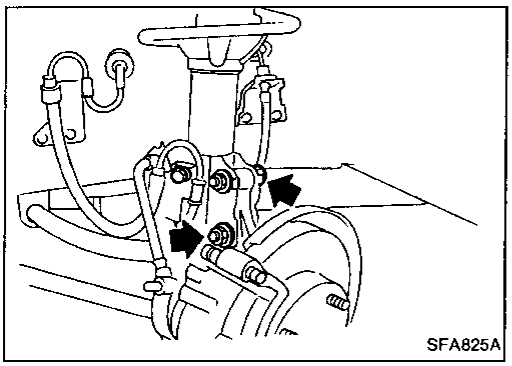


- Remove wheel bearing lock nut. Remove wheel hub from spindle.

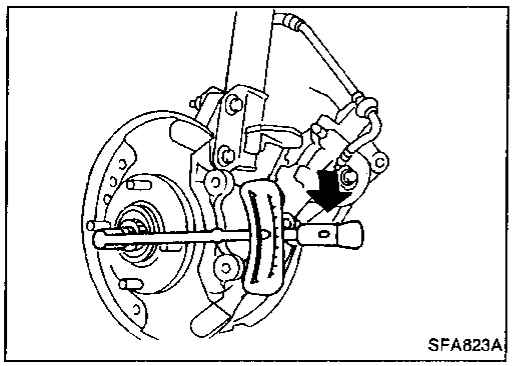


- Remove tie-rod ball joint and lower ball joint.

Wheel Hub and Knuckle (Cont'd)

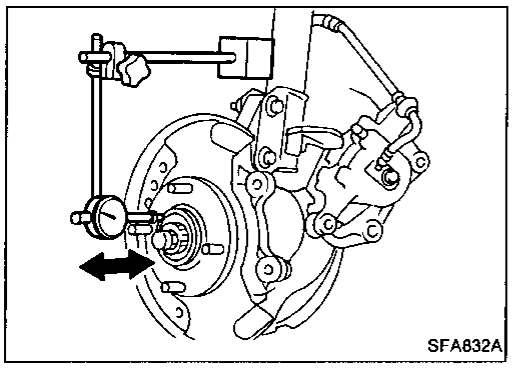


- Disconnect knuckle from strut.

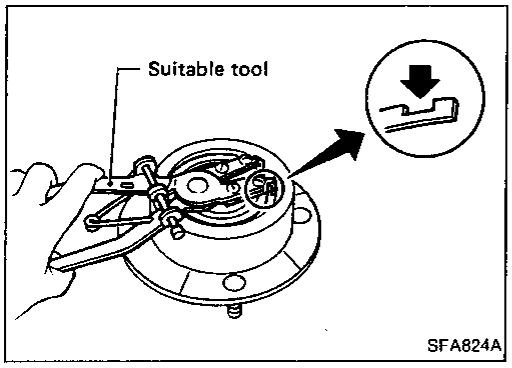


INSTALLATION

- Install wheel hub.
- Tighten wheel bearing lock nut.
  : 147 - 216 N·m
  (15 - 22 kg-m, 108 - 159 ft-lb)



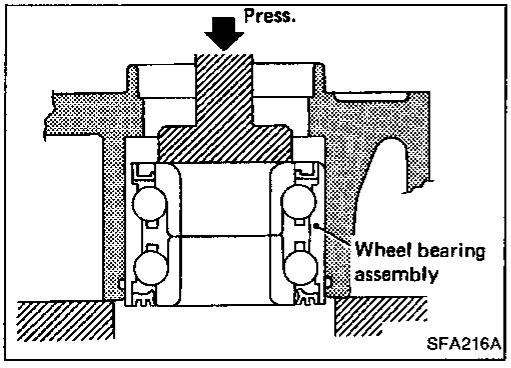
- Check wheel bearing axial end play.
  Axial end play: 0.03 mm (0.0012 in) or less



DISASSEMBLY

CAUTION:
When removing wheel bearing from wheel hub, replace wheel bearing assembly (outer race, inner races and grease seal) with a new one.

- Remove circular clip with suitable tool.



- Press out wheel bearing assembly from wheel hub.

Wheel Hub and Knuckle (Cont'd)

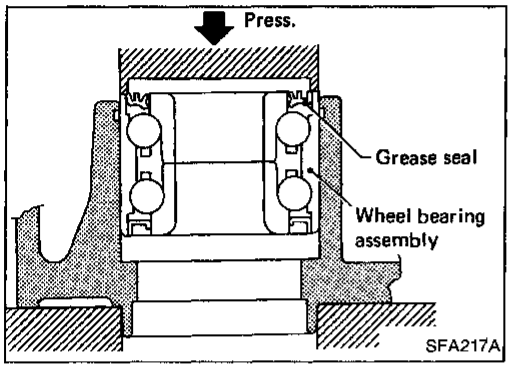
INSPECTION

Wheel hub

Check wheel hub for any cracks by using a magnetic exploration or dyeing test.

Circular clip

Check circular clip for wear or cracks.
Replace if necessary.

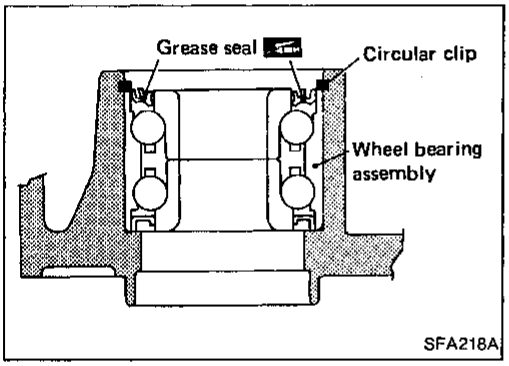


ASSEMBLY

1. Press new wheel bearing assembly into wheel hub from inside of wheel hub.
   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 wheel hub.**
  Be careful not to damage grease seal.



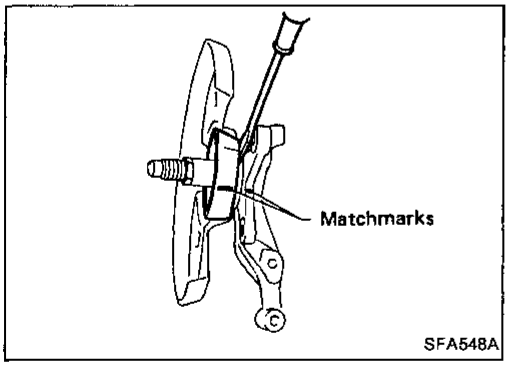
2. Install circular clip into groove of wheel hub.
3. Apply multi-purpose grease to sealing lip.

Baffle Plate

REMOVAL

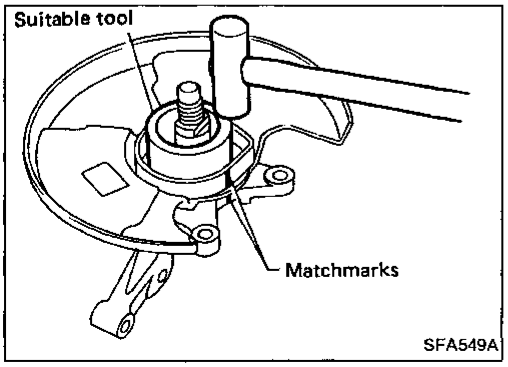
- Mark matchmarks on baffle plate before removing.
- If baffle plate raplacement requires removal of knuckle spindle, separate it equally using a screwdriver.

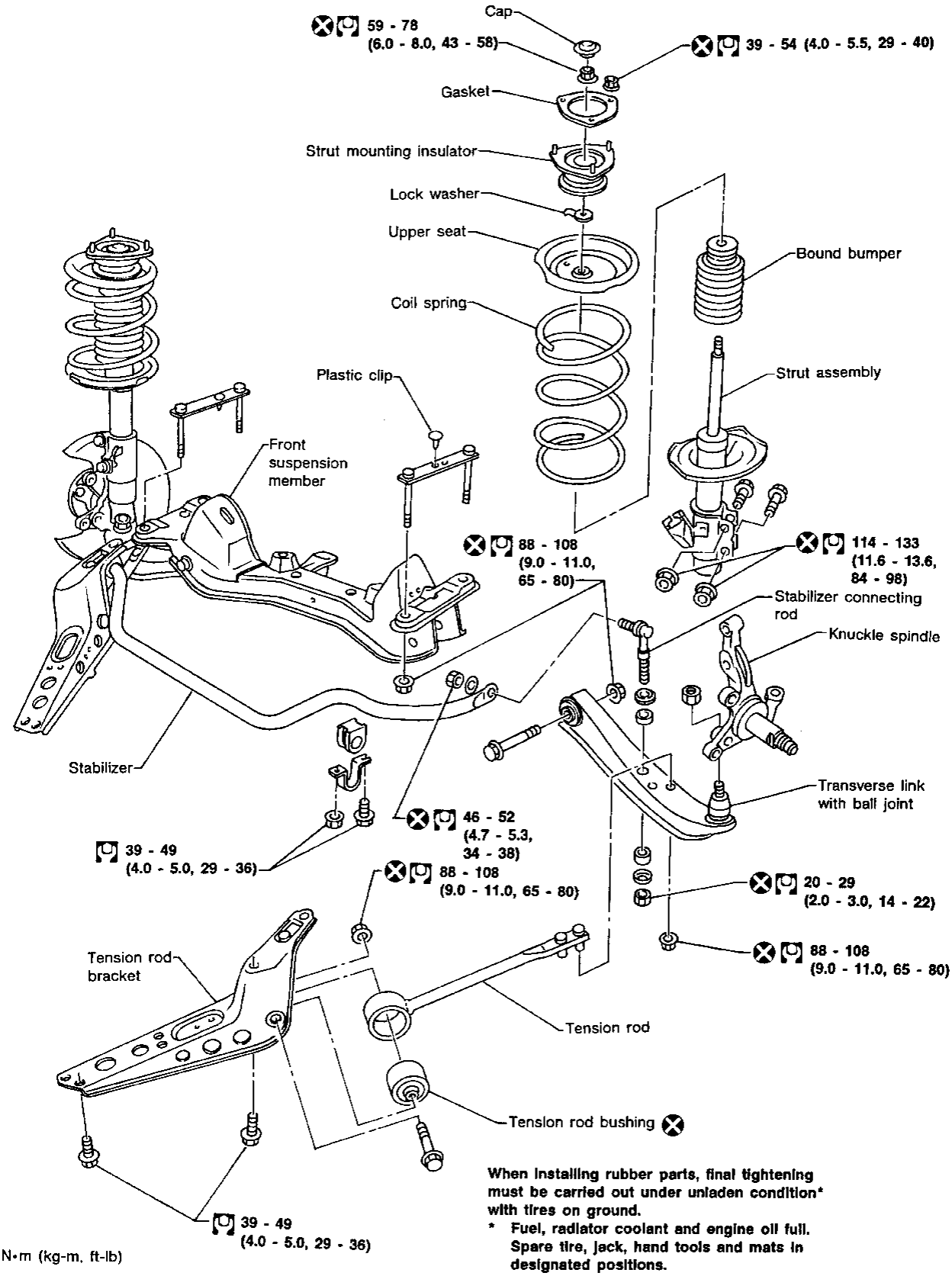
Be careful not to scratch knuckle spindle.



INSTALLATION

Align matchmarks previously marked on baffle plate and install baffle plate by lightly tapping with a copper hammer and suitable tool.



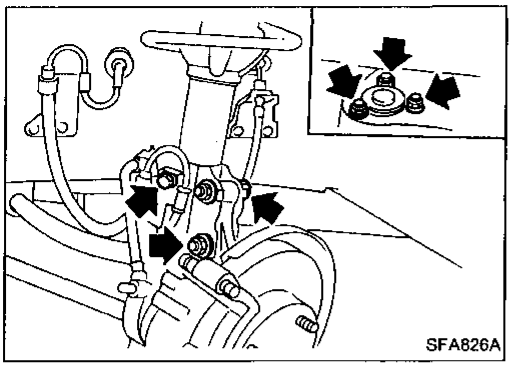


: N·m (kg-m, ft-lb)

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.**

SFA550A

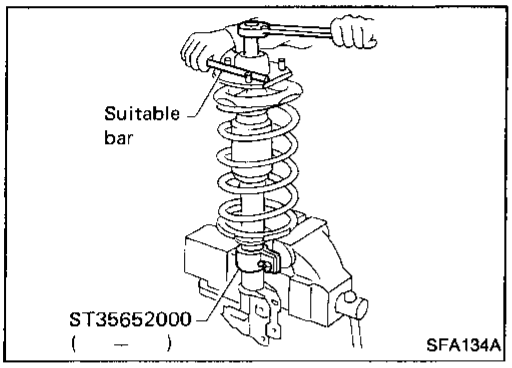


Coil Spring and Strut Assembly

REMOVAL

Remove strut assembly fixing bolts and nuts (to hoodledge).

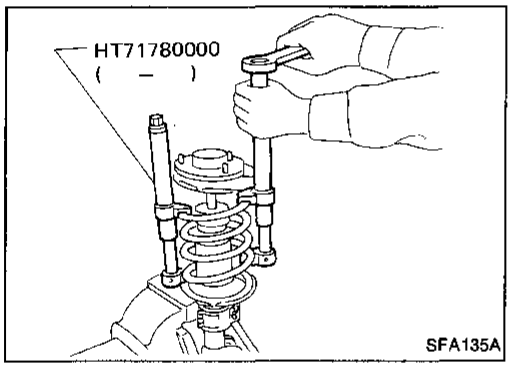
Do not remove piston rod lock nut on vehicle.



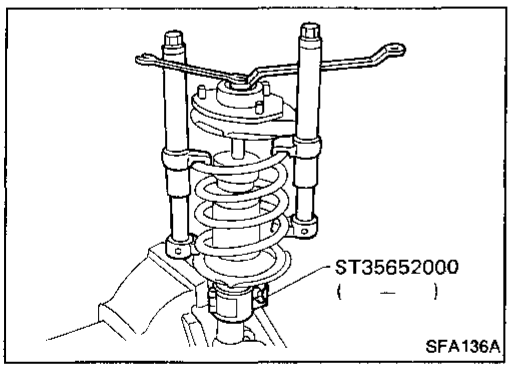
DISASSEMBLY

1. Set strut assembly on vise with Tool, then loosen piston rod lock nut.

Do not remove piston rod lock nut.



2. Compress spring with a Tool so that strut mounting insulator can be turned by hand.



3. Remove piston rod lock nut.

INSPECTION

Strut assembly

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

Coil Spring and Strut Assembly (Cont'd)

Strut mounting insulator

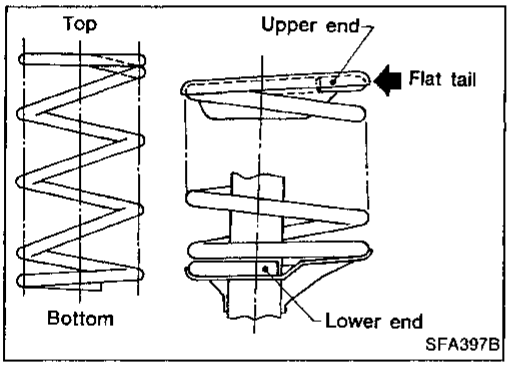
- Check cemented rubber-to-metal portion for separation or cracks. Check rubber parts for deterioration.
- Check thrust bearing parts for abnormal noise or excessive rattle in axial direction.
  Replace if necessary.

Lock washer

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

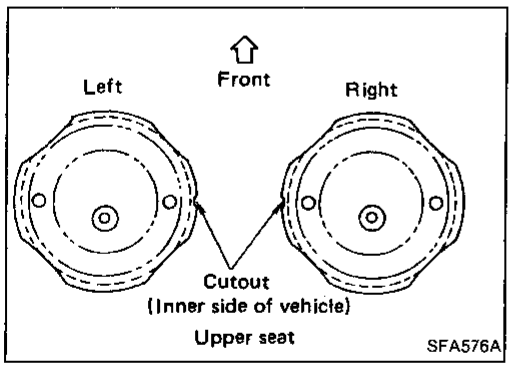
Coil spring

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

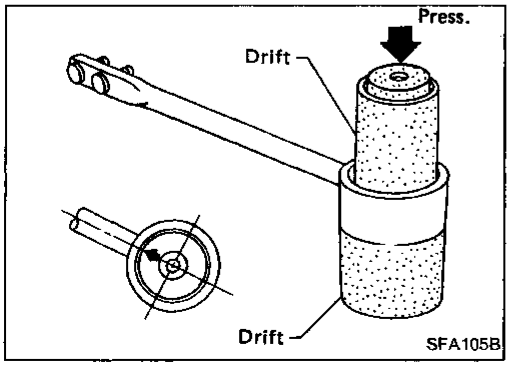


ASSEMBLY

- 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.



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

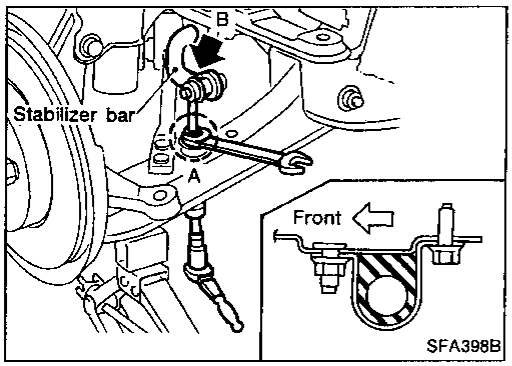


Tension Rod and Stabilizer Bar

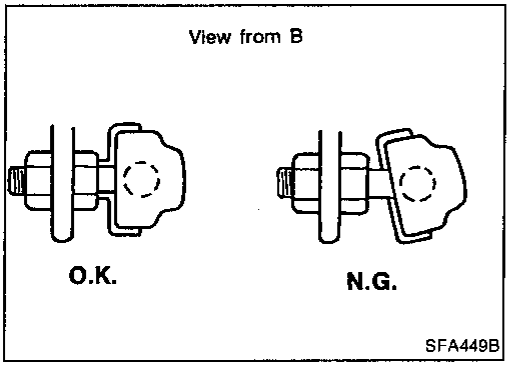
REMOVAL AND INSTALLATION

- Remove tension rod and stabilizer bar.
- When removing tension rod bushing, place one drift on lower side of bushing and the other on upper side, as shown at left, and press bushing out.
- Place arrow mark on bushing facing tension rod before installing bushing.

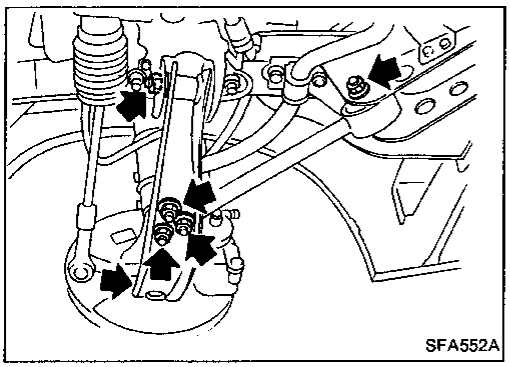
Tension Rod and Stabilizer Bar (Cont'd)



- Install stabilizer rear side bushings, then install front side bushings.
  When installing stabilizer bar clamp, make sure direction is correct (as shown at left).
- When removing and installing stabilizer bar, fix portion A.



- Install stabilizer bar with ball joint socket properly placed.



Transverse Link and Lower Ball Joint

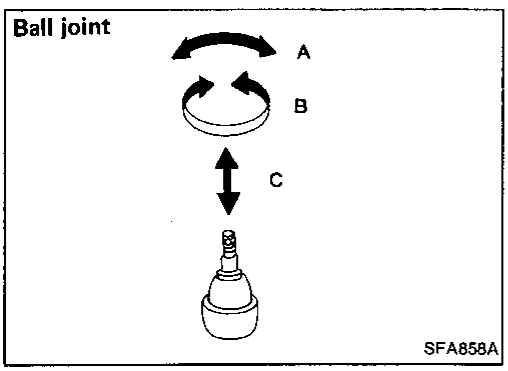
REMOVAL AND INSTALLATION

- Remove stabilizer, tension rod, ball joint and transverse link assembly.
- During installation, final tightening must be carried out at curb weight with tires on ground.
- After installation, check wheel alignment.
  Refer to "Front Wheel Alignment" of ON-VEHICLE SERVICE.

INSPECTION

Transverse link

- Check transverse link for damage, cracks or deformation. Replace it if necessary.
- Check rubber bushing for damage, cracks and deformation. Replace transverse link if necessary.



Lower ball joint

- Check ball joint for play. If ball stud is worn, play in axial direction is excessive or joint is hard to swing, replace lower ball joint.
  Before checking, turn ball joint at least 10 revolutions so that ball joint is properly broken in.
  Swinging force "A": Refer to S.D.S.
  (measuring point: cotter pin hole of ball stud)
  Turning torque "B": Refer to S.D.S.
  Vertical end play "C": Refer to S.D.S.
- Check dust cover for damage. Replace it if necessary.

General Specifications

COIL SPRING

Applied model		Convertible	Coupe	Hatchback	
		Without HICAS			With HICAS
Wire diameter	mm (in)	13.4 (0.528)			13.3 (0.524)
Coil outer diameter	mm (in)	170.4 (6.71)			170.3 (6.70)
Free length	mm (in)	356 (14.02)	350 (13.78)		336 (13.23)
Identification color		White x 1	Yellow x 1, Light green x 1		Yellow x 1, Orange x 1

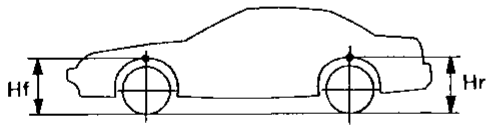
STRUT

Applied model		Convertible	Coupe	Hatchback	
		Without HICAS			With HICAS
Piston rod diameter	mm (in)	20.0 (0.787)			

FRONT STABILIZER BAR

	Convertible	Coupe & Hatchback
Stabilizer diameter mm (in)	24 (0.94)	25 (0.98)
Identification color	White	Orange

WHEEL ALIGNMENT (Unladen*)



SFA831A

Applied model		All
Front (Hf)	mm (in)	694 (27.32)
Rear (Hr)	mm (in)	670 (26.38)

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

Inspection and Adjustment

WHEEL ALIGNMENT (Unladen*1)

Camber	degree	–1°30′ to 0°
Caster	degree	6°00′ - 7°30′
Toe-in		
A – B	mm (in)	0.3 - 2.3 (0.012 - 0.091)
Total angle 2θ	degree	2′ - 13′
Kingpin inclination	degree	12°30′ - 14°00′
Front wheel turning angle		
Full turn*2 inside/outside	degree	39° - 43°/33°

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

*2: On power steering models, wheel turning force (at circumference of steering wheel) of 98 to 147 N (10 to 15 kg, 22 to 33 lb) with engine at idle.

WHEEL BEARING

Wheel bearing axial end play mm (in)	0.03 (0.0012) or less
Wheel bearing lock nut	
Tightening torque N·m (kg-m, ft-lb)	147 - 216 (15 - 22, 108 - 159)

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)	0.49 - 3.43 (5.0 - 35, 4.3 - 30.4)
Vertical end play "C" mm (in)	0 (0)

WHEEL RUNOUT (Radial and lateral)

Wheel type	Radial runout	Lateral runout
Aluminum wheel mm (in)	0.3 (0.012) or less	
Steel wheel mm (in)	0.5 (0.020) or less	0.8 (0.031) or less