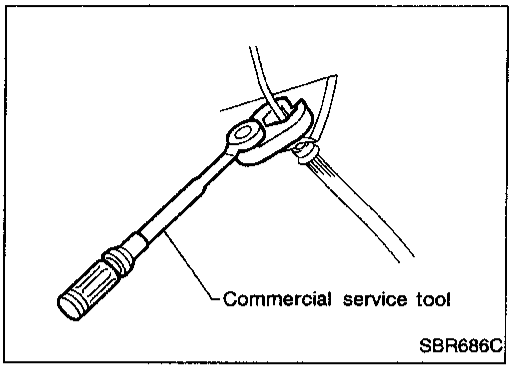
# FRONT AXLE & FRONT SUSPENSION

# SECTION FA



## CONTENTS

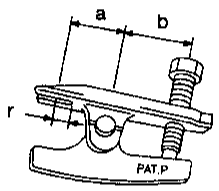
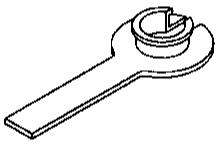



## Precautions

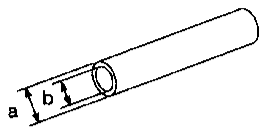
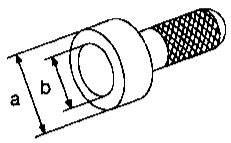
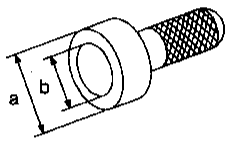
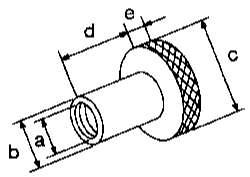
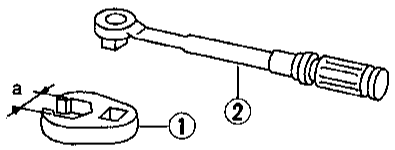
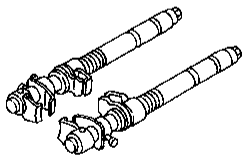
- **When installing rubber parts, final tightening must be carried out under unladen condition* with tires on ground.**
  ***: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.**
- **When installing suspension components, check wheel alignment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

## Special Service Tools

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

| Tool number<br>(Kent-Moore No.)<br>Tool name | Description | |
|---|---|---|
| HT72520000<br>(J25730-B)<br>Ball joint remover |  <br>NT546 | Removing tie-rod and lower ball joint<br><br>a: 33 mm (1.30 in)<br>b: 50 mm (1.97 in)<br>r: R11.5 mm (0.453 in) |
| KV38106700<br>(J34296-1)<br>KV38106800<br>(J34297-1)<br>Differential side oil seal protector |  <br>NT147 | Installing drive shaft<br><br>LH: KV38106700<br>RH: KV38106800 |

## Commercial Service Tools

| Tool name | Description | |
|---|---|---|
| Front wheel hub drift |  NT065 | Removing wheel hub<br>**a: 42 mm (1.65 in) dia.**<br>**b: 33 mm (1.30 in) dia.** |
| Front wheel bearing outer race drift |  NT115 | Removing and installing wheel bearing outer race<br>**a: 76 mm (2.99 in) dia.**<br>**b: 72 mm (2.83 in) dia.** |
| Grease seal drift |  NT115 | Installing outer grease seal<br>**a: 81 mm (3.19 in) dia.**<br>**b: 76 mm (2.99 in) dia.** |
| Attachment<br>Wheel alignment |  NT148 | Measuring wheel alignment<br>**a: Screw M22 x 1.5**<br>**b: 35 (1.38) dia.**<br>**c: 65 (2.56) dia.**<br>**d: 56 (2.20)**<br>**e: 12 (0.47)**<br>Unit: mm (in) |
| ① Flare nut crowfoot<br>② Torque wrench |  NT360 | Removing and installing brake tubes<br>**a: 10 mm (0.39 in)** |
| Spring compressor |  NT717 | Removing and installing coil spring |

## NVH Troubleshooting Chart

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

| Reference page | | | — | FA-18 | FA-6 | FA-22 | FA-6 | FA-6 | FA-6, SDS FA-27 | FA-6 | FA-7, SDS FA-27 | FA-6 | FA-7 | SDS in MA section | FA-7, SDS FA-27 | — | — | — | Wheels and Tires in GI section | NVH in RA section | See TIRES in this chart. | See ROAD WHEEL in this chart. | NVH in ST section | NVH in BR section | See DRIVESHAFT in this chart. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Possible cause and SUSPECTED PARTS | | | Excessive joint angle | Joint sliding resistance | Improper installation, looseness | Shock absorber deformation, Damage or deflection | Bushing or mounting deterioration | Parts interference | Spring fatigue | Suspension looseness | Incorrect wheel alignment | Stabilizer bar fatigue | Wheel bearing damage, looseness | Imbalance | Out-of-round | Incorrect air pressure | Uneven tire wear | Deformation or damage | Non-uniformity | Incorrect tire size | REAR AXLE AND REAR SUSPENSION | TIRES | ROAD WHEEL | STEERING | BRAKES | DRIVESHAFT |
| Symptom | DRIVESHAFT | Noise, Vibration | X | X | | | | | | | | | | | | | | | | | X | X | X | X | X | |
| | | Shake | X | | | | | | | | | | | X | | | | | | | X | X | X | X | X | |
| | FRONT AXLE AND FRONT SUSPENSION | Noise | | | X | X | X | X | X | X | | | | | | | | | | | X | X | | X | X | X |
| | | Shake | | | X | X | X | X | | X | | | | | | | | | | | X | X | X | X | X | X |
| | | Vibration | | | X | X | X | X | X | | | | | | | | | | | | X | X | | X | | X |
| | | Shimmy | | | X | X | X | X | | | X | | | | | | | | | | X | X | X | X | X | |
| | | Judder | | | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| | | Poor quality Ride or handling | | | X | X | X | X | X | | X | X | X | | | | | | | | X | X | X | | | |
| | TIRES | Noise | | | X | | | | | | | | | X | X | X | X | X | X | | X | | X | X | X | X |
| | | Shake | | | X | | | | | | | | | X | X | X | X | X | | X | X | | X | X | X | X |
| | | Vibration | | | | | | | | | | | | | | X | | | | X | X | | | X | | X |
| | | Shimmy | | | X | | | | | | | | | X | X | X | X | X | X | X | X | | X | X | X | |
| | | Judder | | | X | | | | | | | | | X | X | X | X | X | | X | X | | X | X | X | |
| | | Poor quality Ride or handling | | | X | | | | | | | | | X | X | X | X | X | | X | X | | X | | | |
| | ROAD WHEEL | Noise | | | X | | | | | | | | | X | X | | | X | | | X | X | | X | X | X |
| | | Shake | | | X | | | | | | | | | X | X | | | X | | | X | X | | X | X | X |
| | | Shimmy, judder | | | X | | | | | | | | | X | X | | | X | | | X | X | | X | X | |
| | | Poor quality Ride or handling | | | X | | | | | | | | | X | X | | | X | | | X | X | | | | |

X : Applicable

## Components

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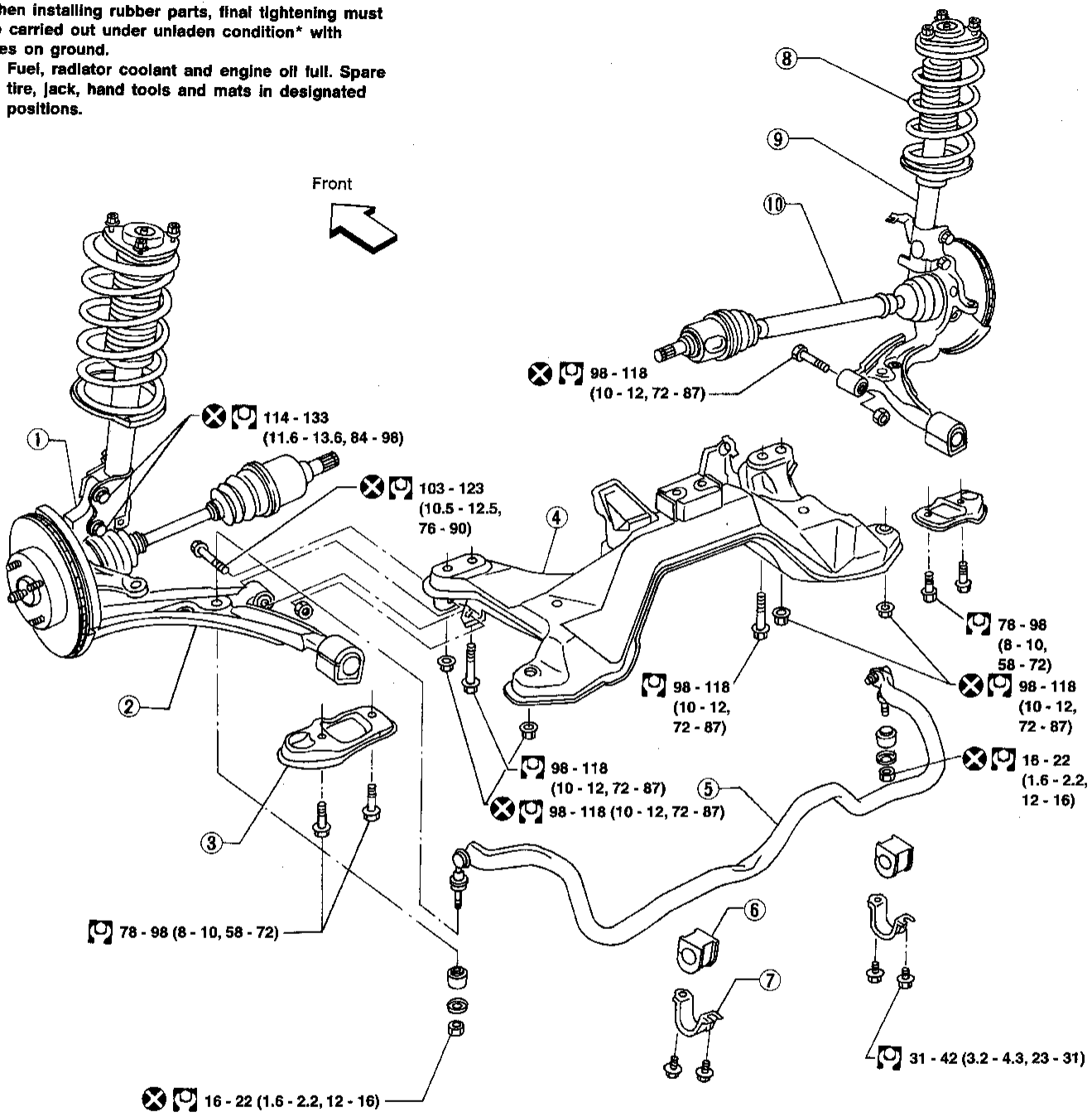
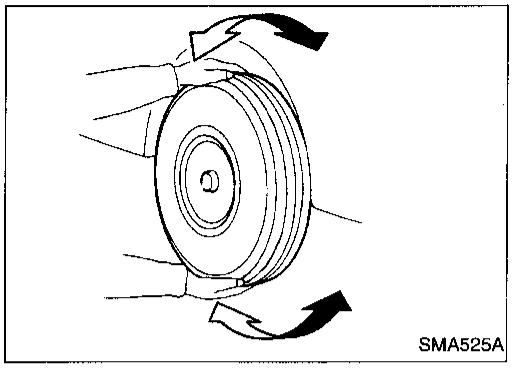
**When installing rubber parts, final tightening must be carried out under unladen condition* with tires on ground.**

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




① Knuckle assembly
② Transverse link
③ Compression rod clamp
④ Front suspension member
⑤ Stabilizer bar
⑥ Bushing
⑦ Bracket
⑧ Coil spring
⑨ Strut assembly
⑩ Drive shaft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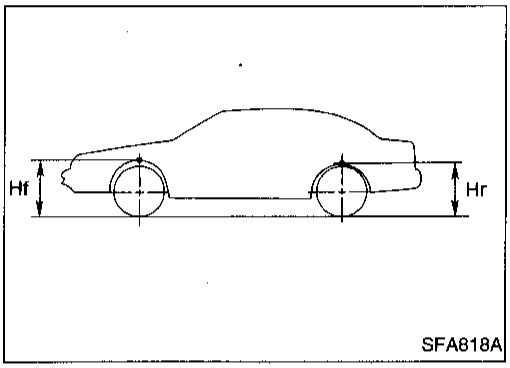
## Front Axle and Front Suspension Parts

- Check front axle and front suspension parts for excessive play, cracks, wear or other damage.

a. Shake each front wheel to check for excessive play.
b. Make sure that cotter pin is inserted.

- If looseness is noted, check wheel bearing axial end play, then ball joint for play.

c. Retighten all nuts and bolts to the specified torque.
**Tightening torque:**
**Refer to FA-21.**



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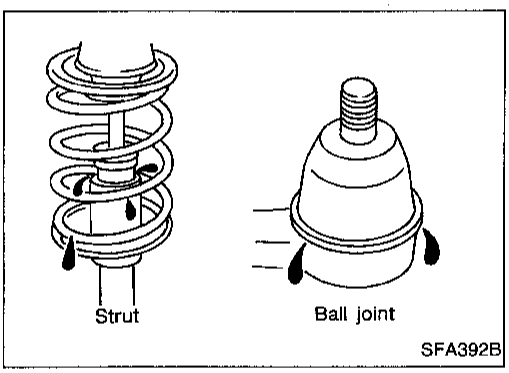
- Check spring height from top of wheelarch to ground using the following procedure.

a. Park vehicle on a level surface with vehicle unladen* .
*: Fuel, radiator coolant and engine oil full. Spare tire, jack, hand tools and mats in designated positions.
b. Check tires for proper inflation and wear (tread wear indicator must not be showing).
c. Bounce vehicle up and down several times and measure dimensions Hf and Hr. Refer to SDS, FA-27.
Spring height is not adjustable. If out of specification, check for worn springs or suspension parts.



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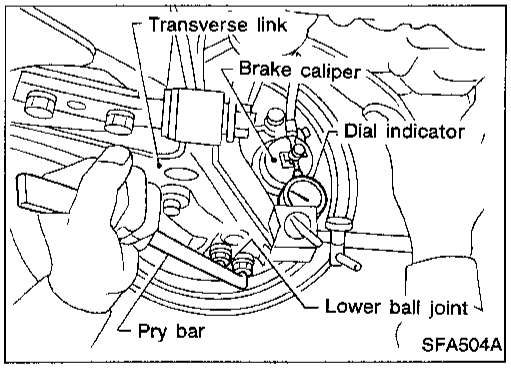
- Check strut for oil leakage or other damage.
- Check suspension ball joint for grease leakage and ball joint dust cover for cracks or other damage.
If ball joint dust cover is cracked or damaged, replace transverse link.



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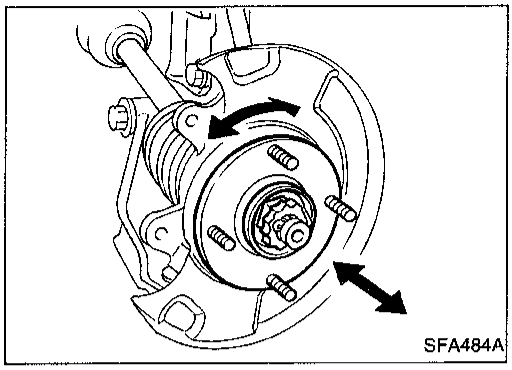
- Check suspension ball joint end play.

a. Jack up front of vehicle and set the stands.
b. Clamp dial indicator onto transverse link and place indicator tip on lower edge of brake caliper.
c. Make sure front wheels are straight and brake pedal is depressed.
d. Place a pry bar between transverse link and inner rim of road wheel.
e. While raising and releasing pry bar, observe maximum dial indicator value.
**Vertical end play:**
**0 mm (0 in)**
If ball joint vertical end play exists, remove transverse link and recheck the ball joint. Refer to FA-24.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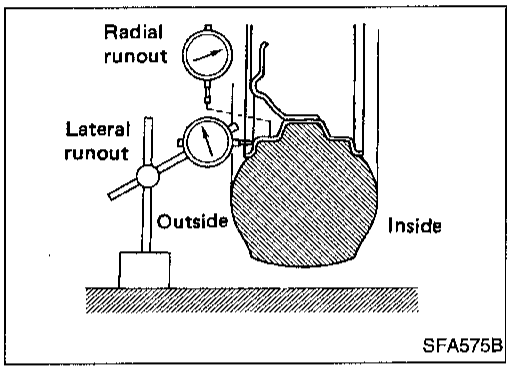
## Front Wheel Bearing

- Check that wheel bearings operate smoothly.
- Check axial end play.
  **Axial end play:**
  **0.05 mm (0.0020 in) or less**
- If out of specification or wheel bearing does not turn smoothly, replace wheel bearing assembly.
  Refer to FA-9.



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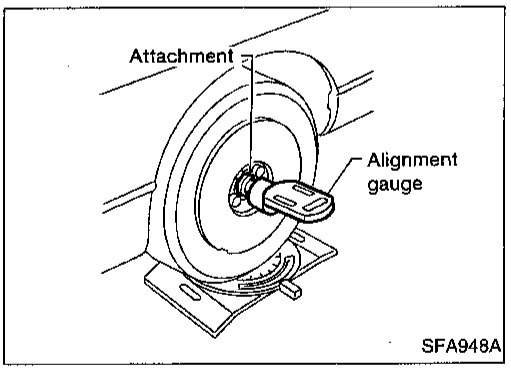
## Front Wheel Alignment

Before checking front wheel alignment, be sure to make a preliminary inspection with vehicle 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 SDS, FA-27.**
3. Check front wheel bearings for looseness.
4. Check front suspension for looseness.
5. Check steering linkage for looseness.
6. Check that front struts work properly by using the standard bounce test.
7. Check vehicle posture (unladen).



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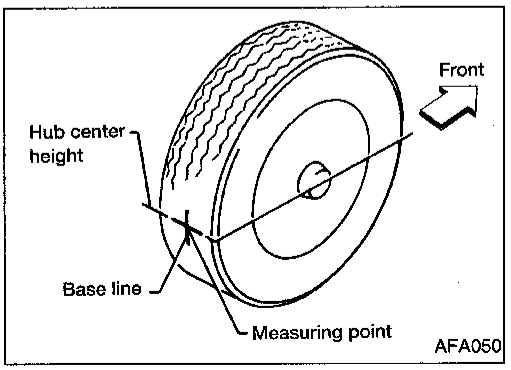
### CAMBER, CASTER AND KINGPIN INCLINATION

- **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 SDS, FA-27.**
2. If camber, caster and kingpin inclination are not within specification, inspect front suspension parts. Replace any damaged or worn out parts.



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### TOE-IN

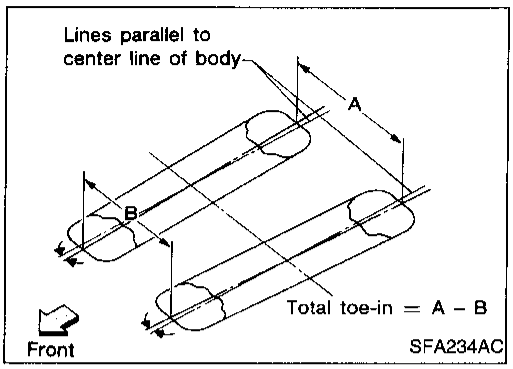
- **Measure toe-in using the following procedure.**

**WARNING:**

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

1. Bounce front 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 tread (rear side) of both front tires at the same height as hub center. These are measuring points.

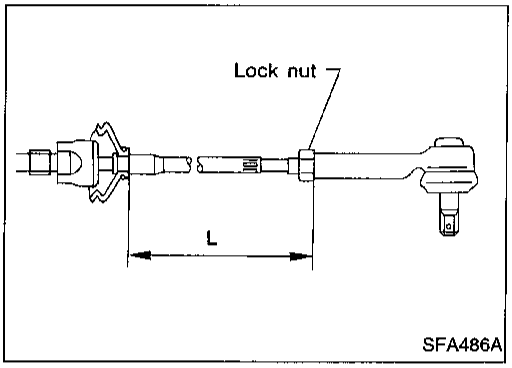
## Front Wheel Alignment (Cont'd)




4. Measure distance "A" (rear side).
5. Push the vehicle slowly ahead to rotate the wheels 180 degrees (1/2 turn).

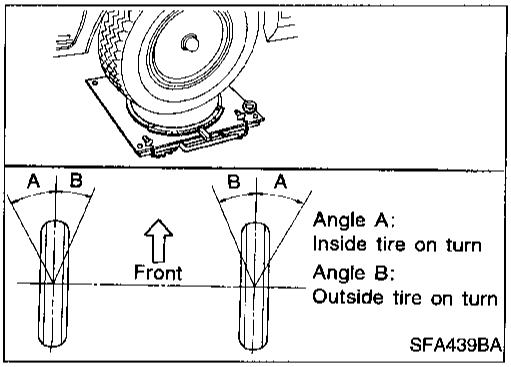
- **If the wheels have rotated more than 180 degrees (1/2 turn), try the above procedure again from the beginning. Never push vehicle backward.**

6. Measure distance "B" (front side).
   **Total toe-in:**
   **Refer to SDS, FA-27.**




7. Adjust toe-in by varying the length of steering tie-rods.

a. Loosen lock nuts.
b. Adjust toe-in by screwing tie-rods in or out.
   **Standard length "L":**
   **Refer to ST section ("General Specifications", "SDS").**
c. Tighten lock nuts to specified torque.
   **: 37 - 46 N·m (3.8 - 4.7 kg-m, 27 - 34 ft-lb)**

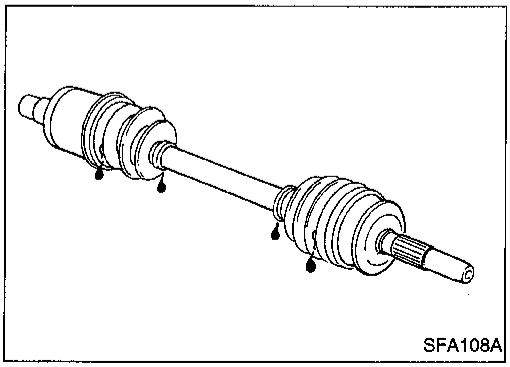



### FRONT WHEEL TURNING ANGLE

1. Set wheels in straight-ahead position. Move vehicle forward until front wheels rest on turning radius gauge.
2. Rotate steering wheel all the way right and left; measure turning angle.

- On power steering models, turn steering wheel to full lock and apply force (at circumference of steering wheel) of 98 to 147 N (10 to 15 kg, 22 to 33 lb) with engine at idle.
- **Do not hold the steering wheel at full lock for more than 15 seconds.**

**Wheel turning angle (Full turn):**
**Refer to SDS, FA-27.**




## Drive Shaft

**Check for grease leakage and other damage.**

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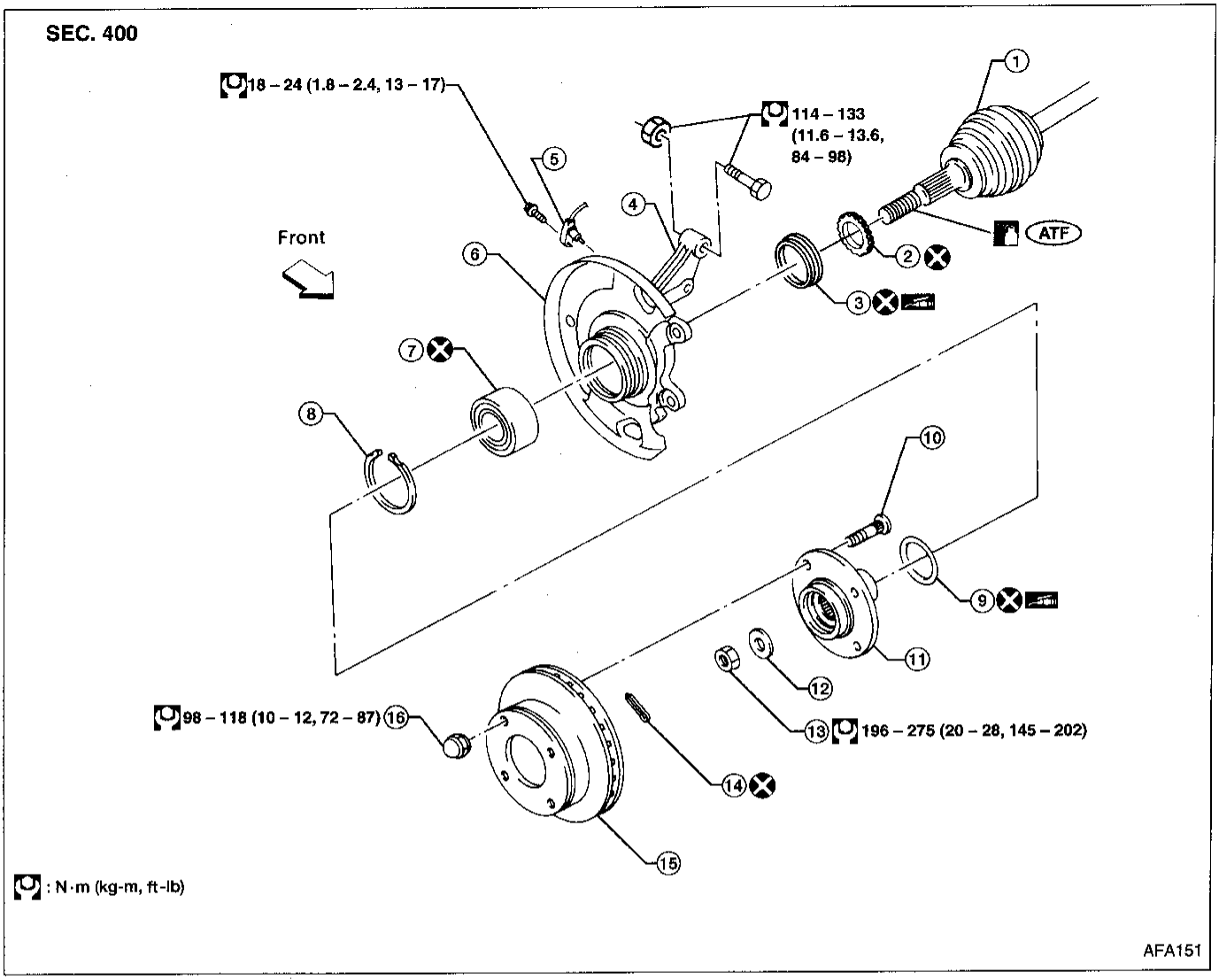



① Drive shaft
② ABS sensor rotor
③ Inner grease seal
④ Knuckle
⑤ ABS sensor
⑥ Baffle plate
⑦ Wheel bearing assembly
⑧ Snap ring
⑨ Outer grease seal
⑩ Wheel bolt
⑪ Wheel hub
⑫ Plain washer
⑬ Wheel bearing lock nut
⑭ Cotter pin
⑮ Disc rotor
⑯ Wheel nut

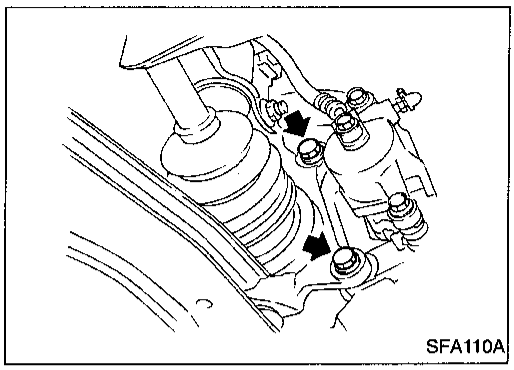
## Wheel Hub and Knuckle

### REMOVAL

**CAUTION:**
**Before removing front axle assembly, disconnect the ABS wheel sensor from the assembly. Move it away from the front axle assembly area.**
**Failure to do so may result in damage to sensor wires and the sensor becoming inoperative.**

1. Remove wheel bearing lock nut.

## Wheel Hub and Knuckle (Cont'd)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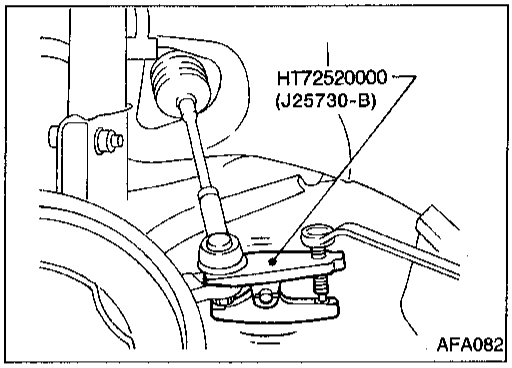
2. Remove brake caliper assembly and rotor.
- **Brake hose need not be disconnected from brake caliper.**
  **Suspend brake caliper with wire so as not to stretch brake hose.**
- **Be careful not to depress brake pedal, or caliper piston will pop out.**
- **Make sure brake hose is not twisted.**



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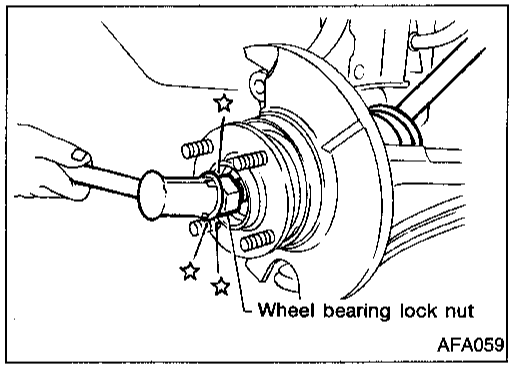
3. Separate tie-rod from knuckle with Tool.
- **Install stud nut on stud bolt to prevent damage to stud bolt.**



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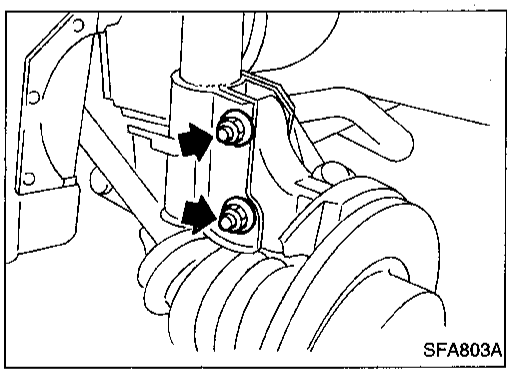
4. Separate drive shaft from knuckle by lightly tapping it. If it is hard to remove, use a puller.
- **When removing drive shaft, cover boots with a shop towel to prevent damage to them.**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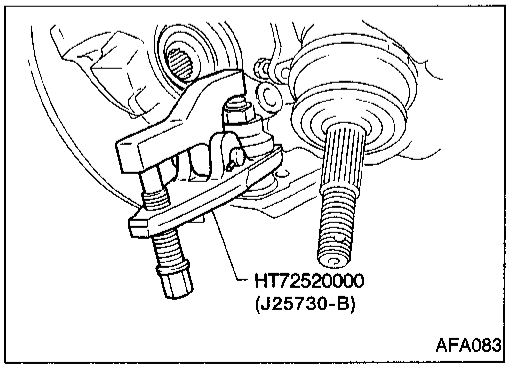
5. Remove strut lower mounting bolts.



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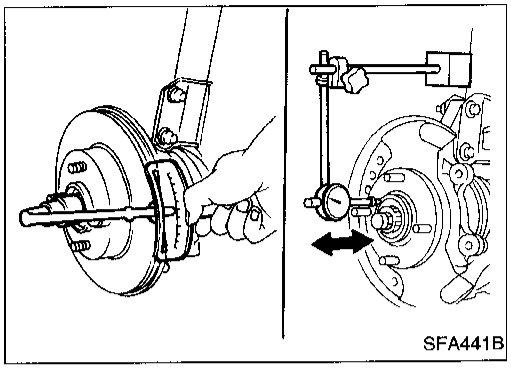
6. Loosen lower ball joint tightening nut.
7. Separate knuckle from lower ball joint stud with Tool.
8. Remove knuckle from transverse link.

## Wheel Hub and Knuckle (Cont'd)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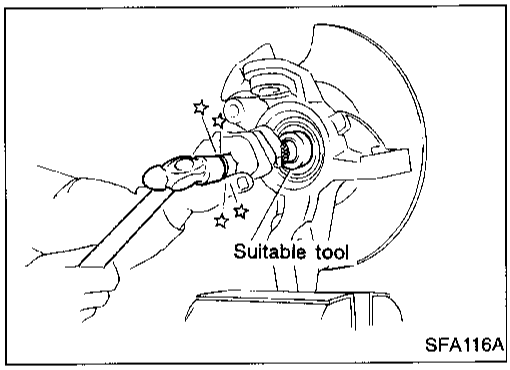
### INSTALLATION

1. Install knuckle with wheel hub.
- Replace strut lower mounting nuts.
- **When installing knuckle to strut, be sure to hold bolts while tightening nuts.**
  **: 114 - 133 N·m**
  **(11.6 - 13.6 kg-m, 84 - 98 ft-lb)**
- **Apply oil to threaded portion of drive shaft and both sides of plain washer.**
2. Tighten wheel bearing lock nut.
   **: 196 - 275 N·m**
   **(20 - 28 kg-m, 145 - 202 ft-lb)**
3. Check wheel bearing axial end play.
   **Axial end play:**
   **0.05 mm (0.0020 in) or less**



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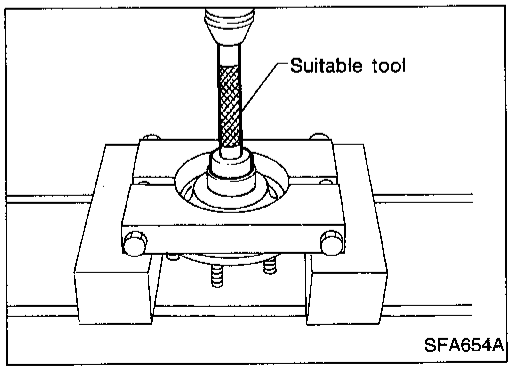
### DISASSEMBLY

**CAUTION:**
- **When removing wheel hub or wheel bearing from knuckle, replace wheel bearing assembly (outer race, inner race and grease seals) with a new one.**
- **Wheel bearing does not require maintenance. If any of the following symptoms are noted, replace wheel bearing assembly.**
- Growling noise is emitted from wheel bearing during operation.
- Wheel bearing drags or turns roughly. This occurs when turning hub by hand after bearing lock nut is tightened to specified torque.

#### Wheel hub

Press out wheel hub with inner race (outside) from knuckle with a suitable tool.



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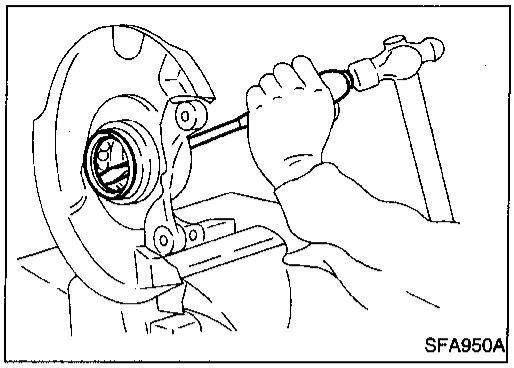
#### Wheel bearing

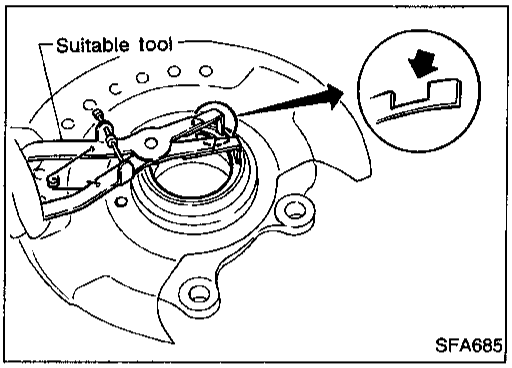
- **When replacing wheel bearing, replace wheel bearing assembly (including inner and outer races).**

1. Remove bearing inner race, (outside) then remove outer grease seal.

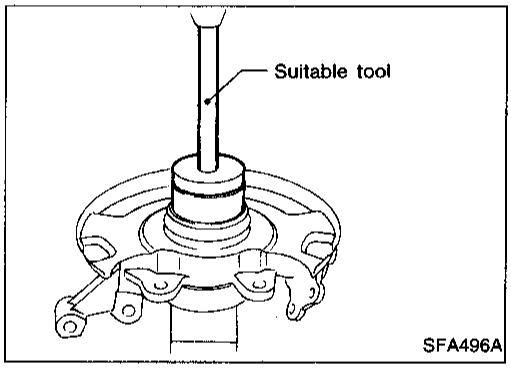
## Wheel Hub and Knuckle (Cont'd)




2. Remove inner grease seal from knuckle.




3. Remove snap ring.




4. Press out bearing outer race.

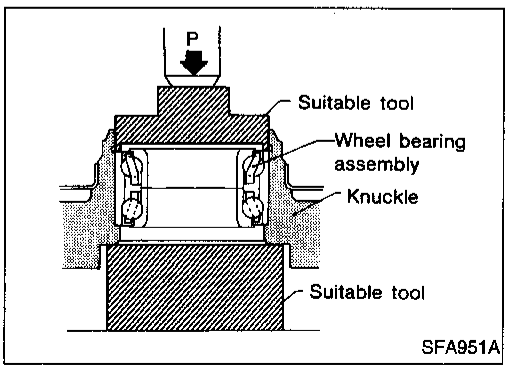
### INSPECTION

#### Wheel hub and knuckle

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

#### Snap ring

Check snap ring for wear or cracks. Replace if necessary.




### ASSEMBLY

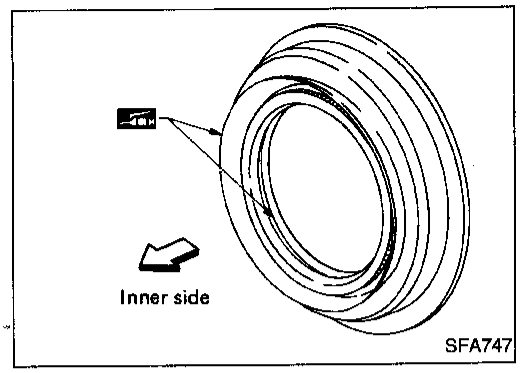
1. Press new wheel bearing assembly into knuckle.
   **Maximum load P:**
   **29 kN (3 ton, 3.3 US ton, 3.0 Imp ton)**

**CAUTION:**

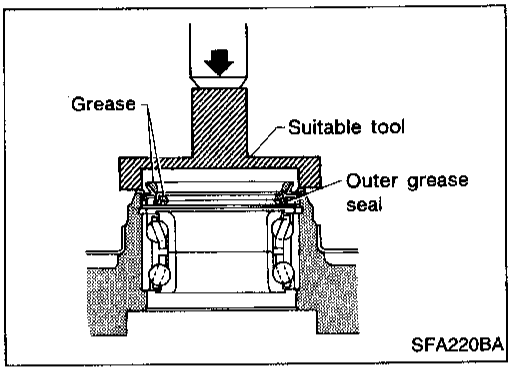
- **Do not press on inner race of wheel bearing assembly.**
- **Do not apply oil or grease to mating surfaces of wheel bearing outer race and knuckle.**

2. Install snap ring into groove of knuckle.

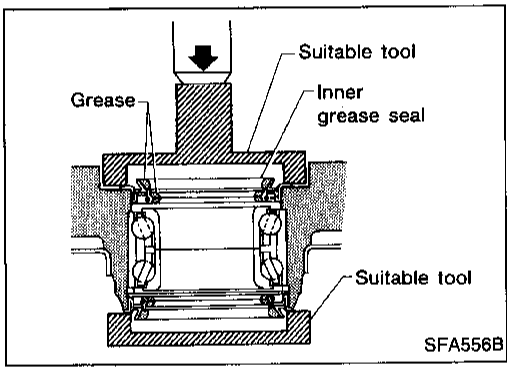
## Wheel Hub and Knuckle (Cont'd)



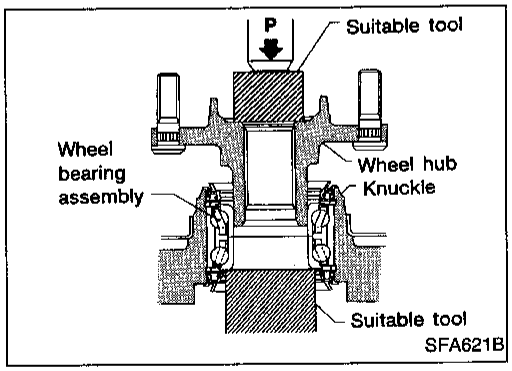

3. Pack grease seal lip with multi-purpose grease.



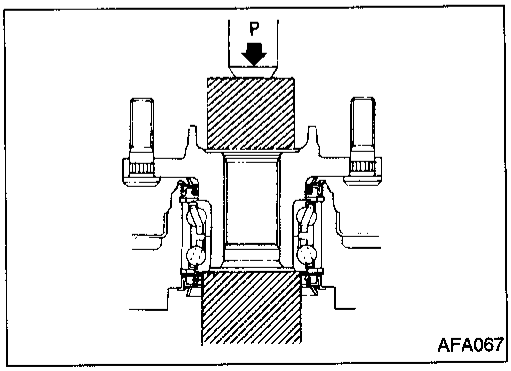

4. Install outer grease seal.
   **Maximum load P:**
   **10 kN (1 ton, 1.1 US ton, 1.0 Imp ton)**




5. Install inner grease seal.
   **Maximum load P:**
   **10 kN (1 ton, 1.1 US ton, 1.0 Imp ton)**

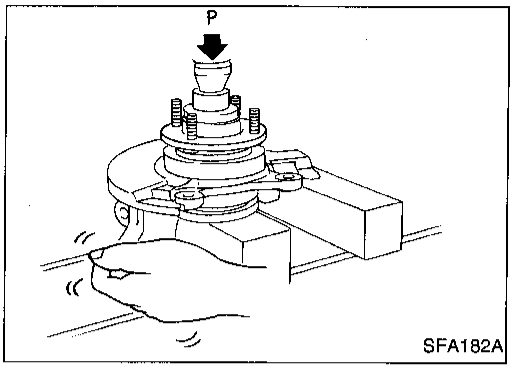



6. Press wheel hub into knuckle.
   **Maximum load P:**
   **29 kN (3 ton, 3.3 US ton, 3.0 Imp ton)**
   - **Be careful not to damage grease seal.**




7. Check bearing operation.
   a. Add load P with press.
      **Load P:**
      **34.3 - 49.0 kN**
      **(3.5 - 5.0 ton, 3.9 - 5.5 US ton, 3.44 - 4.92 Imp ton)**

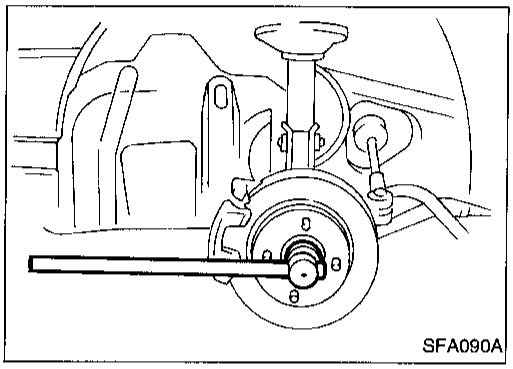
## Wheel Hub and Knuckle (Cont'd)




b. Spin knuckle several turns in both directions.
c. Make sure that wheel bearing operates smoothly.

## Drive Shaft

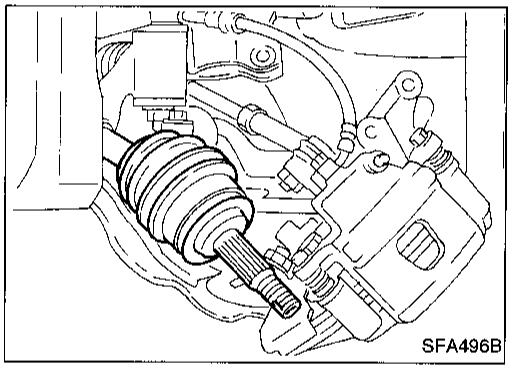
### REMOVAL




1. Remove wheel bearing lock nut.

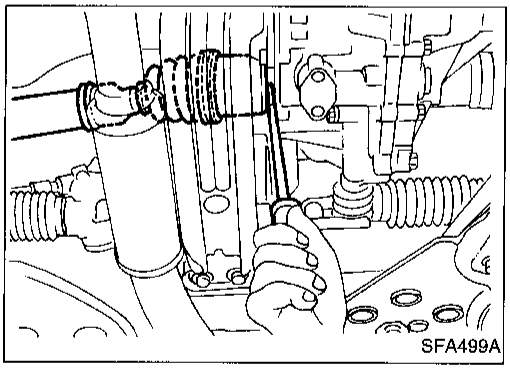
- **Tie-rod does not need to be disconnected from knuckle.**
- **Suspend knuckle with wire so as not to stretch brake hose.**
- **Do not pull or twist brake hose.**

2. Remove clip and separate brake hose from strut.
3. Remove strut lower mounting bolts.

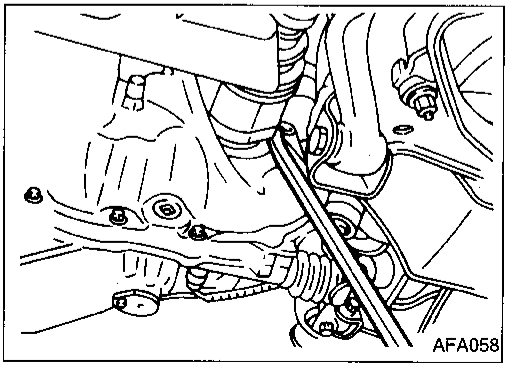



4. Separate drive shaft from knuckle by lightly tapping it. If it is hard to remove, use a puller.

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




5. Remove right drive shaft from transaxle.
- Pry drive shaft from transaxle as shown.

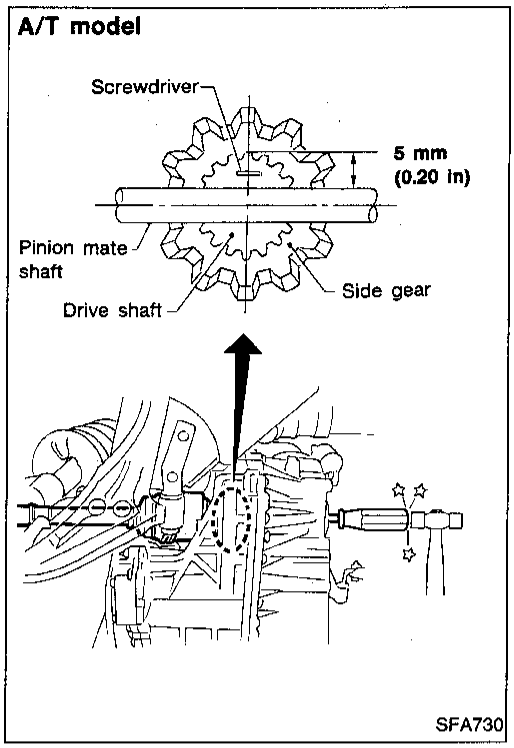



6. Remove left drive shaft from transaxle.

**— For M/T models —**

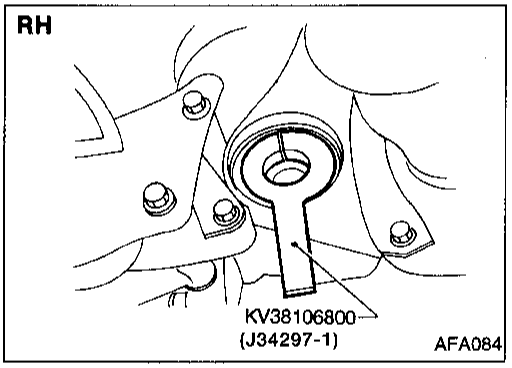
- Pry drive shaft from transaxle as shown.

## Drive Shaft (Cont'd)




**— For A/T models —**

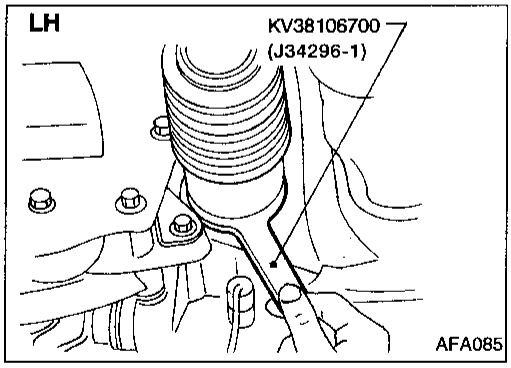
- Insert screwdriver into transaxle opening for right drive shaft and strike with a hammer.
- **Be careful not to damage pinion mate shaft and side gear.**




### INSTALLATION

#### Transaxle side

1. Drive a new oil seal to transaxle. Refer to MT or AT section ("Differential Side Oil Seal Replacement", "ON-VEHICLE SERVICE").
2. Set Tool along the inner circumference of oil seal (transaxle side).




3. Insert drive shaft into transaxle. Be sure to properly align the serrations and then withdraw Tool.
4. Push drive shaft, then press-fit circular clip on the drive shaft into circular clip groove of side gear.
5. After its insertion, try to pull the slide joint out of the transaxle by hand. If it pulls out, the circular clip is not properly meshed with the side gear.

#### Wheel side

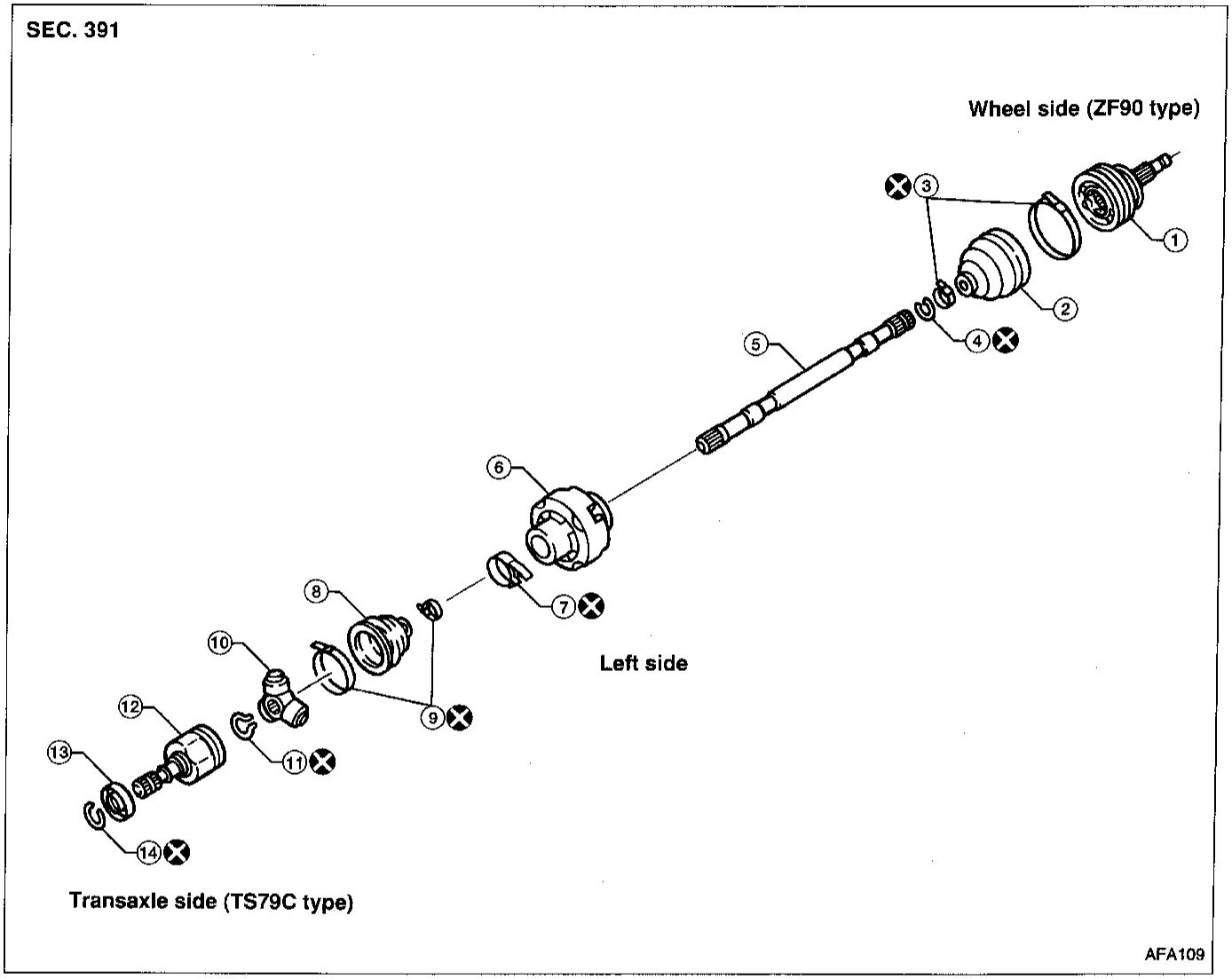
1. Install drive shaft into knuckle.
2. Tighten wheel bearing lock nut. Refer to FA-9.

## Drive Shaft (Cont'd)

### COMPONENTS

**CAUTION:**

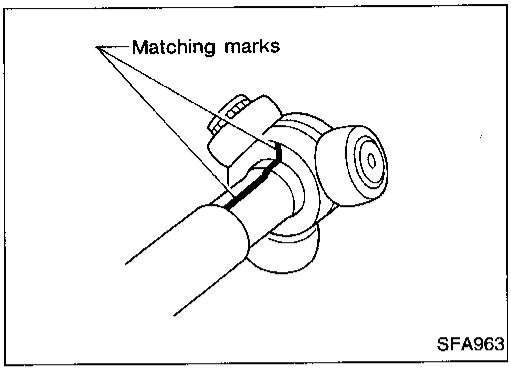
- **Circular clips should be properly meshed with differential side gear (transaxle side) and with joint assembly (wheel side). Make sure they will not come out.**
- **Be careful not to damage boots. Use suitable protector or cloth during removal and installation.**




① Joint assembly
② Boot
③ Boot band
④ Circular clip
⑤ Drive shaft
⑥ Dynamic damper
⑦ Dynamic damper band
⑧ Boot
⑨ Boot band
⑩ Spider assembly
⑪ Snap ring
⑫ Slide joint housing
⑬ Dust shield
⑭ Circular clip

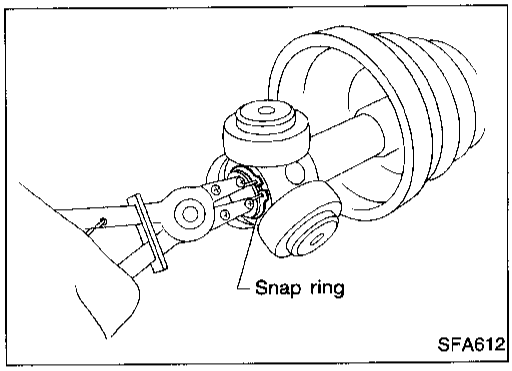
## Drive Shaft (Cont'd)

### DISASSEMBLY




#### Transaxle side (TS79C type)

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

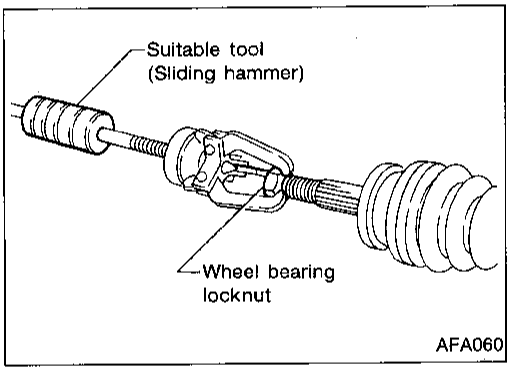



4. Remove snap ring, then remove spider assembly.

**CAUTION:**
**Do not disassemble spider assembly.**

5. Draw out boot.

- **Cover drive shaft serrations with tape to prevent damage to the boot.**




#### Wheel side

**CAUTION:**
**The joint on the wheel side cannot be disassembled.**

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

- **Be careful not to damage threads on drive shaft.**

3. Remove boot bands.

## Drive Shaft (Cont'd)

### INSPECTION

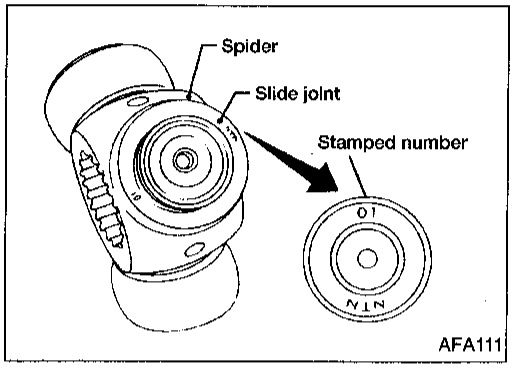
Thoroughly clean all parts in cleaning solvent, then dry with compressed air. Check parts for evidence of deformation and other damage.

#### Drive shaft

Replace drive shaft if it is twisted or cracked.

#### Boot

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




#### Joint assembly (Transaxle side)

#### TS79C type

- Check spider assembly for needle bearing and washer damage. Replace if necessary.
- Check roller surfaces for scratches, wear and other damage. Replace if necessary.
- Check serration for deformation. Replace if necessary.
- Check slide joint housing for any damage. Replace if necessary.
- When replacing only spider assembly, select a new spider assembly from among those listed in table below. Ensure that the number stamped on slide 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. |
|---|---|
| 01 | 39720-61E01 |
| 02 | 39720-61E02 |
| 03 | 39720-61E03 |
| 04 | 39720-61E04 |
| 05 | 39720-61E05 |
| 06 | 39720-61E06 |
| 07 | 39720-61E07 |

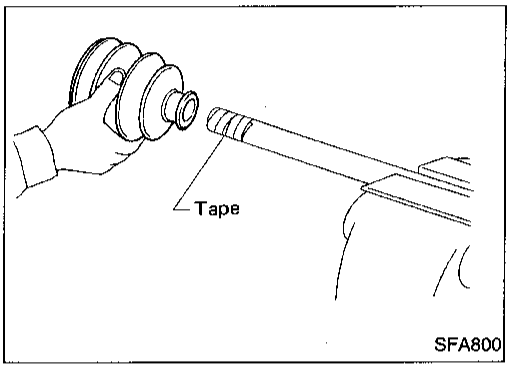
#### Joint assembly (Wheel side)

Replace joint assembly if it is deformed or damaged.

## Drive Shaft (Cont'd)

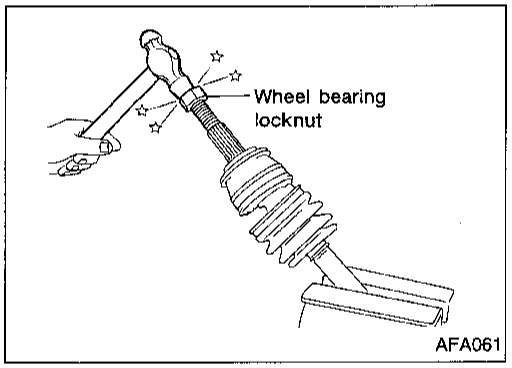
### ASSEMBLY

- **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.**

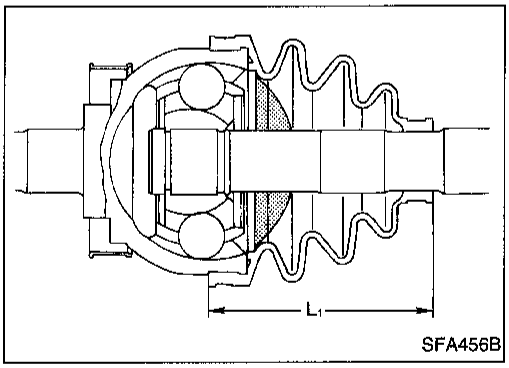



**Wheel side**

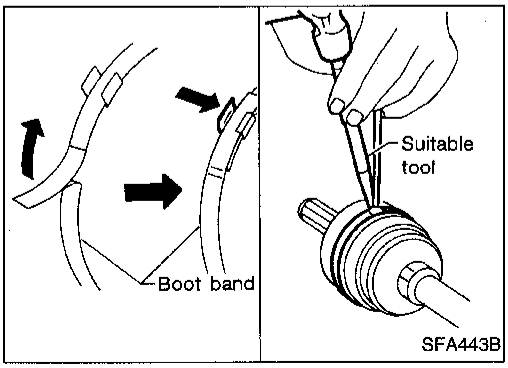
1. Install boot and new small boot band on drive shaft.
- **Cover drive shaft serration with tape to prevent damage to boot during installation.**




2. Set joint assembly onto drive shaft by lightly tapping it.
- **Ensure that marks which were made during disassembly are properly aligned.**

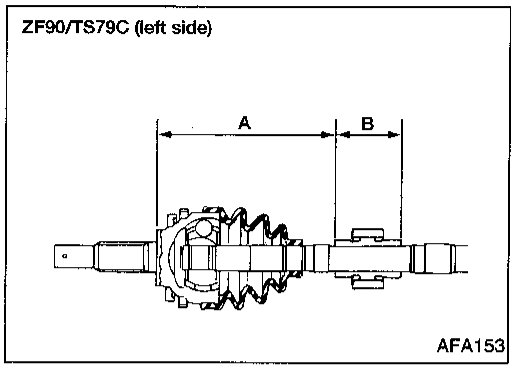



3. Pack drive shaft with specified amount of grease.
   **Specified amount of grease:**
   **115 - 125 g (4.06 - 4.41 oz)**
4. Make sure that boot is properly installed on the drive shaft groove.
   Set boot so that it does not swell and deform when its length is "$L_1$".
   **Length "$L_1$":**
   **96 - 98 mm (3.78 - 3.86 in)**




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

## Drive Shaft (Cont'd)




### Dynamic damper

1. Use a new damper band when reinstalling.
2. Install dynamic damper from stationary-joint side while holding it securely:

**Length:**

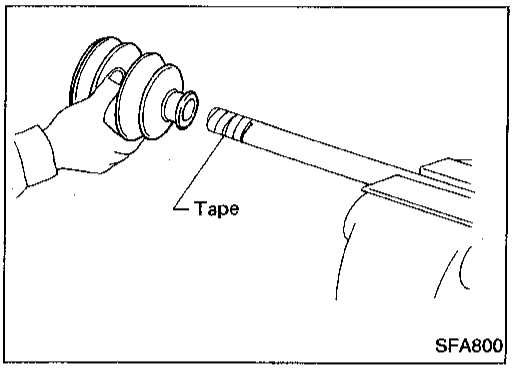
Unit: mm (in)

| | ZF90/TS79C |
|---|---|
| "A" | 175.3 - 185.3 (6.90 - 7.30) |
| "B" | 58 (2.28) |

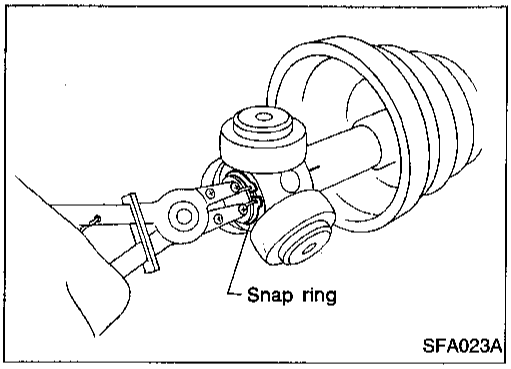
### Transaxle side (TS79C type)

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

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

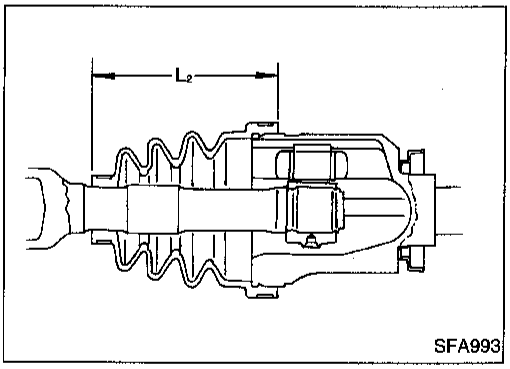



2. Install spider assembly securely, making sure the matching marks which were made during disassembly are properly aligned.
3. Install new snap ring.

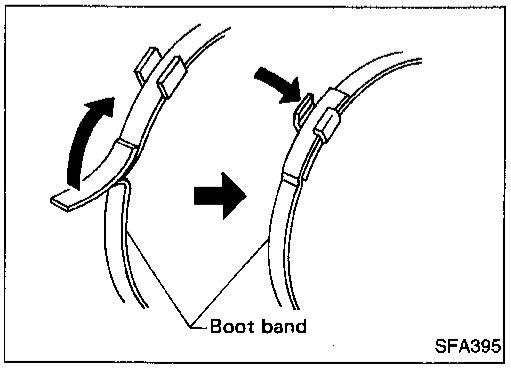



4. Pack drive shaft with specified amount of grease.
   **Specified amount of grease:**
   **155 - 165 g (5.47 - 5.82 oz)**
5. Install slide joint housing.
6. Set boot so that it does not swell and deform when its length is "$L_2$".
   **Length "$L_2$":**
   **101.5 - 103.5 mm (4.00 - 4.07 in)**

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




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

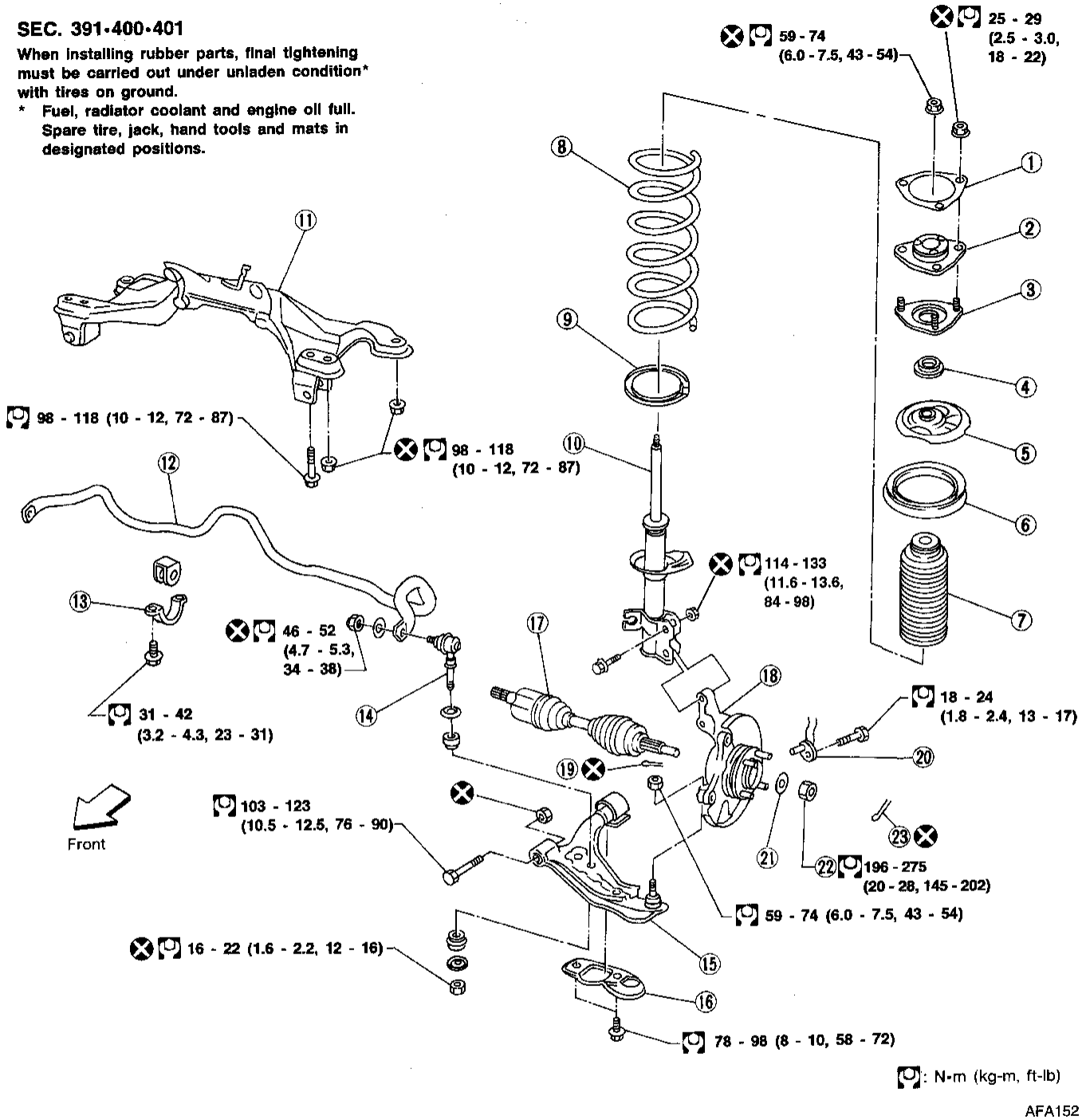


## Components

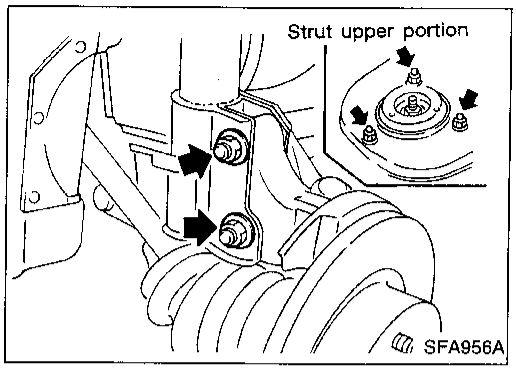
**SEC. 391•400•401**

**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 Spacer
② Strut mounting insulator
③ Strut mounting insulator bracket
④ Thrust bearing
⑤ Upper spring seat
⑥ Upper spring rubber seat
⑦ Bumper rubber
⑧ Coil spring
⑨ Lower spring rubber seat
⑩ Strut assembly
⑪ Suspension member
⑫ Stabilizer bar
⑬ Stabilizer clamp
⑭ Connecting rod
⑮ Transverse link
⑯ Compression rod clamp
⑰ Drive shaft
⑱ Knuckle
⑲ Cotter pin
⑳ ABS sensor
㉑ Plain washer
㉒ Wheel bearing lock nut
㉓ Cotter pin



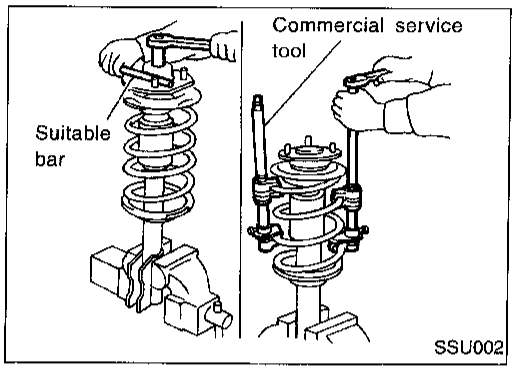

## Coil Spring and Strut Assembly

### REMOVAL AND INSTALLATION

- Remove strut assembly fixing bolts and nuts (to hood ledge).

**WARNING:**

**Do not remove piston rod lock nut on vehicle.**




### DISASSEMBLY

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

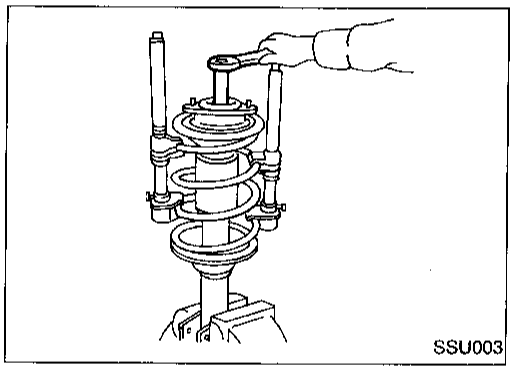
**WARNING:**

**Do not remove piston rod lock nut at this time.**

2. Compress spring with tool so that the strut mounting insulator can be turned by hand.

**WARNING:**

**Make sure that the pawls of the two spring compressors are firmly hooked on the spring. The spring compressors must be tightened alternately so as not to tilt the spring.**




3. Remove piston rod lock nut.

### INSPECTION

#### Strut assembly

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

#### Strut mounting insulator

- Check cemented rubber-to-metal portion for separation and cracks.
- Check rubber parts for deterioration.

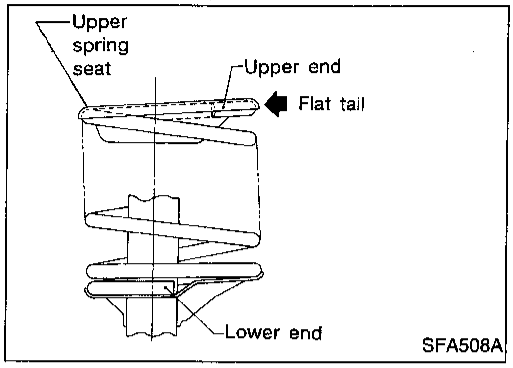
#### Thrust bearing

- Check thrust bearing parts for abnormal noise or excessive rattle in axial direction.
- Replace if necessary.

#### Coil spring and insulator

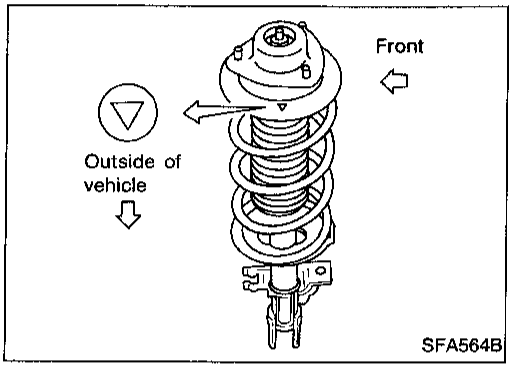
- Check for cracks, deformation and other damage. Replace if necessary.

## Coil Spring and Strut Assembly (Cont'd)




### ASSEMBLY

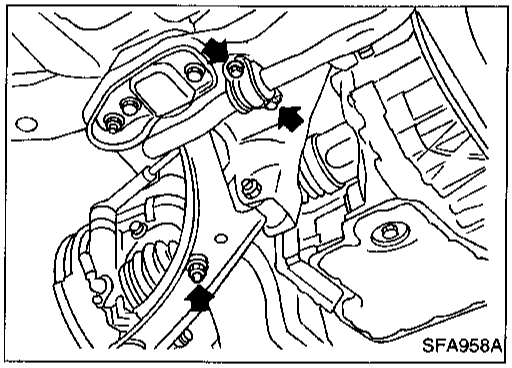
- When installing coil spring on strut, it must be positioned as shown in the figure at left.



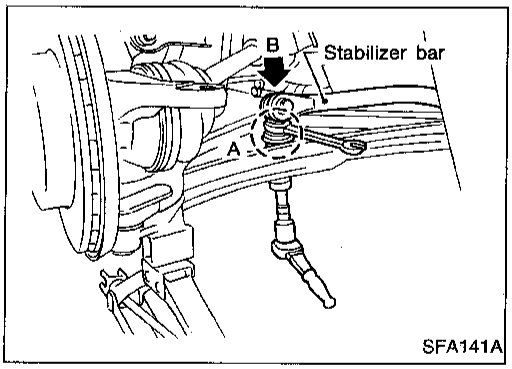

- Install upper spring seat with alignment mark facing the outer side of vehicle, in line with strut-to-knuckle attachment points.
- **Replace strut lower mounting nuts**
- **When installing strut to knuckle, be sure to hold bolts and tighten nuts.**
  **: 114 - 133 N·m (11.6 - 13.6 kgm, 84 - 98 ft lb)**

## Stabilizer Bar

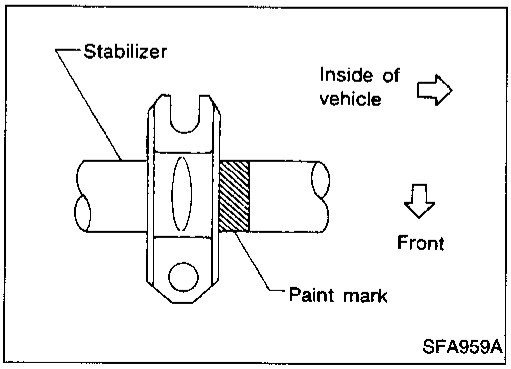
### REMOVAL AND INSTALLATION




- Remove stabilizer bar.

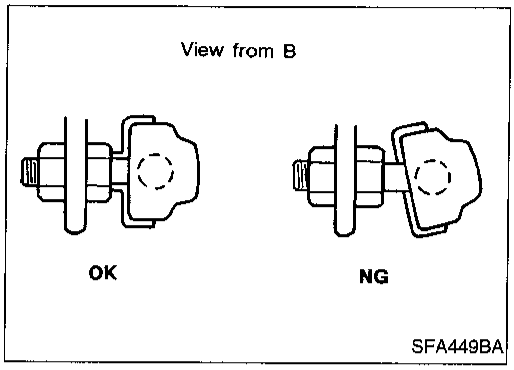



- When removing or installing stabilizer bar, secure portion A with wrench as shown.

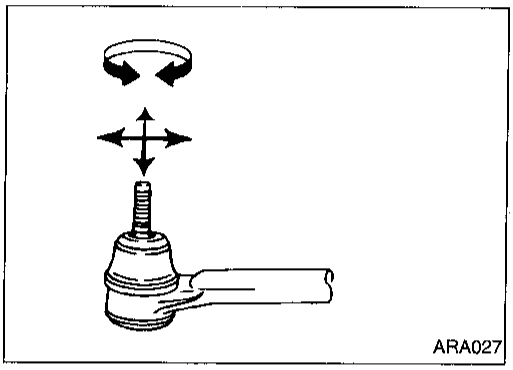



- When installing stabilizer, make sure the paint mark and clamp are in the correct positions.

## Stabilizer Bar (Cont'd)




- Install stabilizer bar with ball joint socket properly placed.



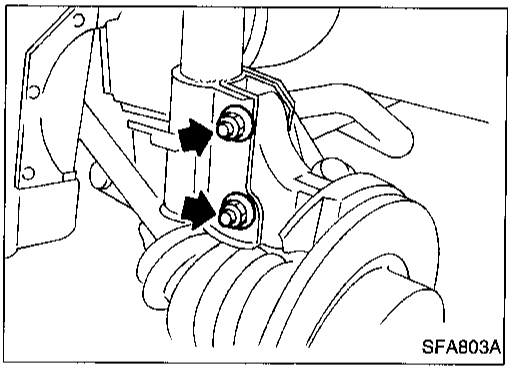

### INSPECTION

- Check stabilizer for deformation or cracks. Replace if necessary.
- Check rubber bushings for deterioration or cracks. Replace if necessary.
- Check ball joint rotation in all directions. If movement is not smooth and free, replace stabilizer bar link.

## Transverse Link and Lower Ball Joint

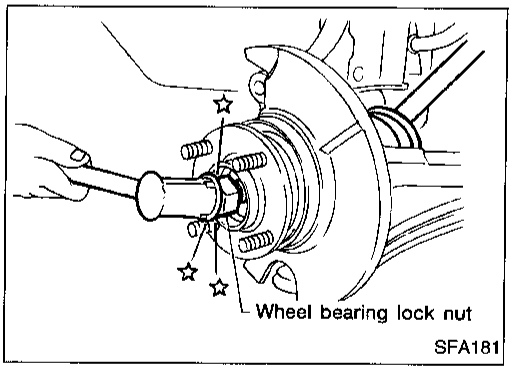
### REMOVAL AND INSTALLATION

1. Remove wheel bearing lock nut.
2. Remove strut lower mounting bolts.

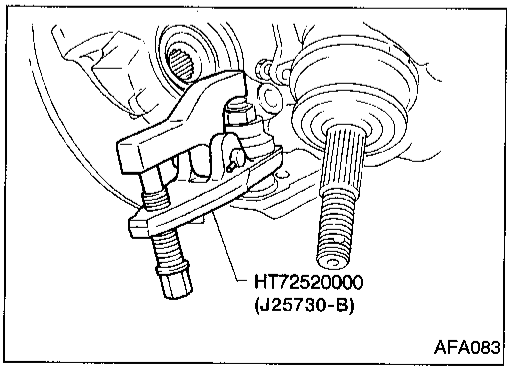



3. Separate drive shaft from knuckle by lightly tapping it. If it is hard to remove, use a puller.

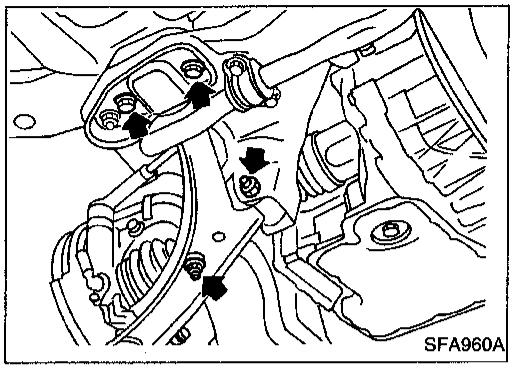
- **Cover boots with shop towel to prevent damage to them when removing drive shaft.**




4. Separate lower ball joint stud from knuckle with Tool.



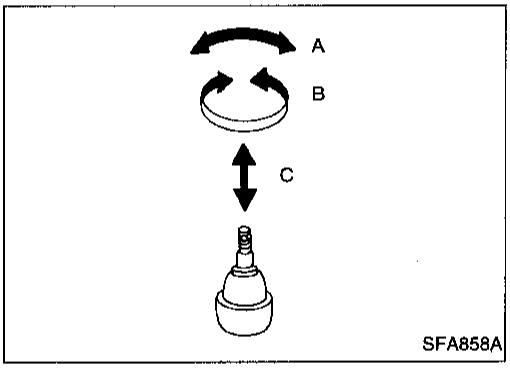
## Transverse Link and Lower Ball Joint (Cont'd)




5. Remove bolts and nuts as shown at left.
6. During installation, final tightening must be carried out at curb weight with tires on the ground.
   **Tightening torque:**
   **Refer to FA-21.**
7. After installation, check wheel alignment. Refer to FA-7.

### INSPECTION

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




- Check ball joint for 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 - 57.9 N (0.8 - 5.9 kg, 1.8 - 13.0 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.

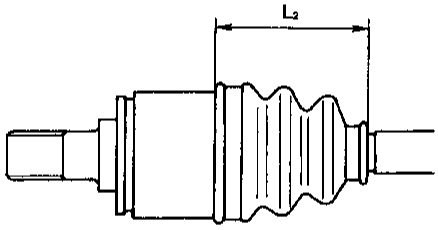
## General Specifications

| | |
|---|---|
| Suspension type | Strut type independent suspension |
| Strut type | Double-acting hydraulic |
| Stabilizer bar | Optional equipment |

## DRIVE SHAFT

| | |
|---|---|
| Joint type | |
| Transaxle side | TS79C |
| Wheel side | ZF90 |
| Applied grease | |
| Quality | Nissan genuine grease or equivalent |
| Capacity g (oz) | |
| Transaxle side | 155 - 165 (5.47 - 5.82) |
| Wheel side | 115 - 125 (4.06 - 4.41) |
| Boot length mm (in) | |
| Transaxle side "$L_2$" | 101.5 - 103.5 (4.00 - 4.07) |
| Wheel side "$L_1$" | 96 - 98 (3.78 - 3.86) |

**Transaxle side**

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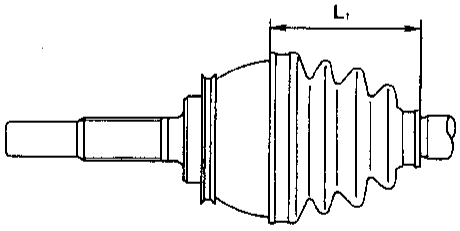
**Wheel side**

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# Inspection and Adjustment

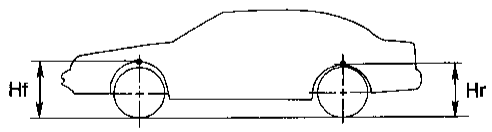
## WHEEL ALIGNMENT (Unladen*1)

| Applied model | | | Manual steering | Power steering |
|---|---|---|---|---|
| Camber | Degree minute (Decimal degree) | Minimum | −1°20′ (−1.33°) | |
| | | Nominal | −0°35′ (−0.58°) | |
| | | Maximum | 0°10′ (0.17°) | |
| | | Left and right difference | 1°00′ (1.00°) | |
| Caster | Degree minute (Decimal degree) | Minimum | 0°40′ (0.67°) | |
| | | Nominal | 1°25′ (1.42°) | |
| | | Maximum | 2°10′ (2.17°) | |
| | | Left and right difference | 1°00′ (1.00°) | |
| Kingpin inclination | Degree minute (Decimal degree) | Minimum | 14°00′ (14.00°) | |
| | | Nominal | 14°45′ (14.75°) | |
| | | Maximum | 15°30′ (15.50°) | |
| Total toe-in | | Minimum | 0 (0) | |
| Distance (A - B) | mm (in) | Nominal | 2 (0.08) | |
| | | Maximum | 4 (0.16) | |
| Angle (left plus right) | Degree minute (Decimal degree) | Minimum | 0′ (0°) | |
| | | Nominal | 12′ (0.20°) | |
| | | Maximum | 24′ (0.40°) | |
| Wheel turning angle | | | | |
| Full turn*2 Inside | Degree minute (Decimal degree) | Minimum | 38°00′ (38.00°) | 34°00′ (34.00°) |
| | | Nominal | 41°00′ (41.00°) | 37°00′ (37.00°) |
| | | Maximum | 42°00′ (42.00°) | 38°00′ (38.00°) |
| Outside | Degree minute (Decimal degree) | Nominal | 34°00′ (34.00°) | 31°00′ (31.00°) |

*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 idle.

## WHEELARCH HEIGHT (Unladen*)

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| Applied model | 155SR13 | 175/70R13 | 175/65/R14 |
|---|---|---|---|
| Front (Hf) mm (in) | 659 (25.94) | | 666 (26.22) |
| Rear (Hr) mm (in) | 640 (25.20) | 642 (25.28) | 648 (25.51) |

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

## LOWER BALL JOINT

| | |
|---|---|
| Swinging force "A" N (kg, lb) | |
| At cotter pin hole | 7.8 - 57.9 (0.8 - 5.9, 1.8 - 13.0) |
| 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) |

## WHEEL RUNOUT

Unit: mm (in)

| Wheel type | Aluminum | Steel wheel |
|---|---|---|
| Maximum radial runout limit | 0.3 (0.012) | 0.5 (0.020) |
| Maximum lateral runout limit | 0.3 (0.012) | 0.8 (0.031) |

## WHEEL BEARING

| | |
|---|---|
| Axial end play mm (in) | Less than 0.05 (0.0020) |
| Lock nut tightening torque N·m (kg-m, ft-lb) | 196 - 275 (20 - 28, 145 - 202) |
| Preload N·m (kg-cm, in-lb) | 1.4 (14.2, 12.3) |
| At hub bolt N (kg, lb) | 27.8 (2.8, 6.3) |