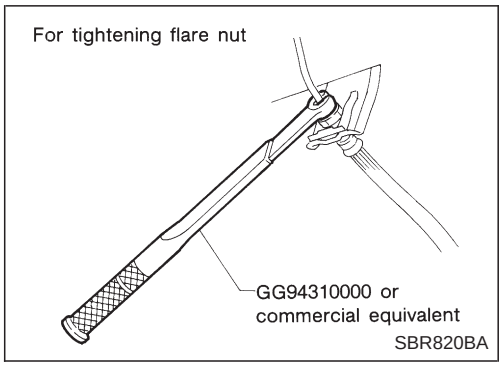
FRONT AXLE & FRONT SUSPENSION

SECTION FA

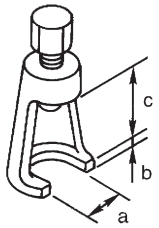
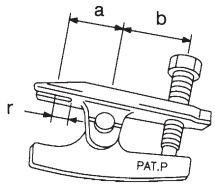
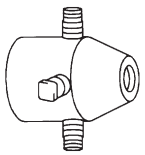
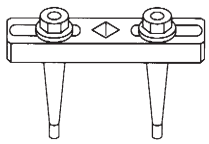
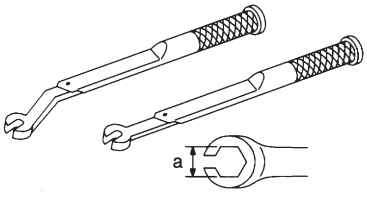
CONTENTS



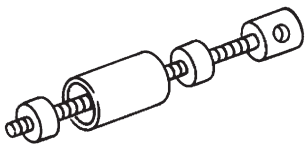
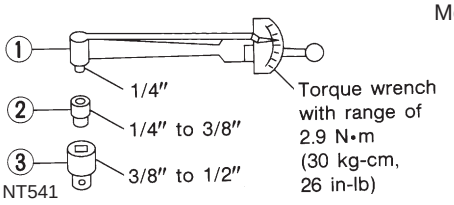
Precautions

- **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.**
- **Use flare nut wrench when removing or installing brake tubes.**
- **After installing removed suspension parts, check wheel alignment and adjust if necessary.**
- **Always torque brake lines when installing.**

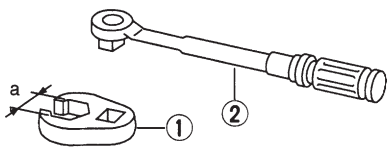
Special Service Tools

Tool number Tool name	Description		Unit application	
			2WD	4WD
ST29020001 Gear arm puller	 NT694	Removing ball joint for knuckle spindle **a: 34 mm (1.34 in)** **b: 6.5 mm (0.256 in)** **c: 61.5 mm (2.421 in)**	X	X
HT72520000 Ball joint remover	 NT546	Removing tie-rod outer end **a: 33 mm (1.30 in)** **b: 50 mm (1.97 in)** **r: R11.5 mm (0.45 in)**	X	X
KV401021S0 Bearing race drift	 NT153	Installing wheel bearing outer race	X	X
KV40105400 Wheel bearing lock nut wrench	 NT154	Removing or installing wheel bearing lock nut	—	X
GG94310000 Flare nut torque wrench	 NT406	Removing and installing brake piping **a: 10 mm (0.39 in)**	X	X

Special Service Tools (Cont'd)

Tool number Tool name	Description	Unit application	
		2WD	4WD
KV40106800 Lower link bush puller	 NT685 Removing or installing lower link bush	X	X
ST3127S000 ① GG91030000 Torque wrench ② HT62940000 Socket adapter ③ HT62900000 Socket adapter	 NT541 Measuring turning torque	X	X

Commercial Service Tools

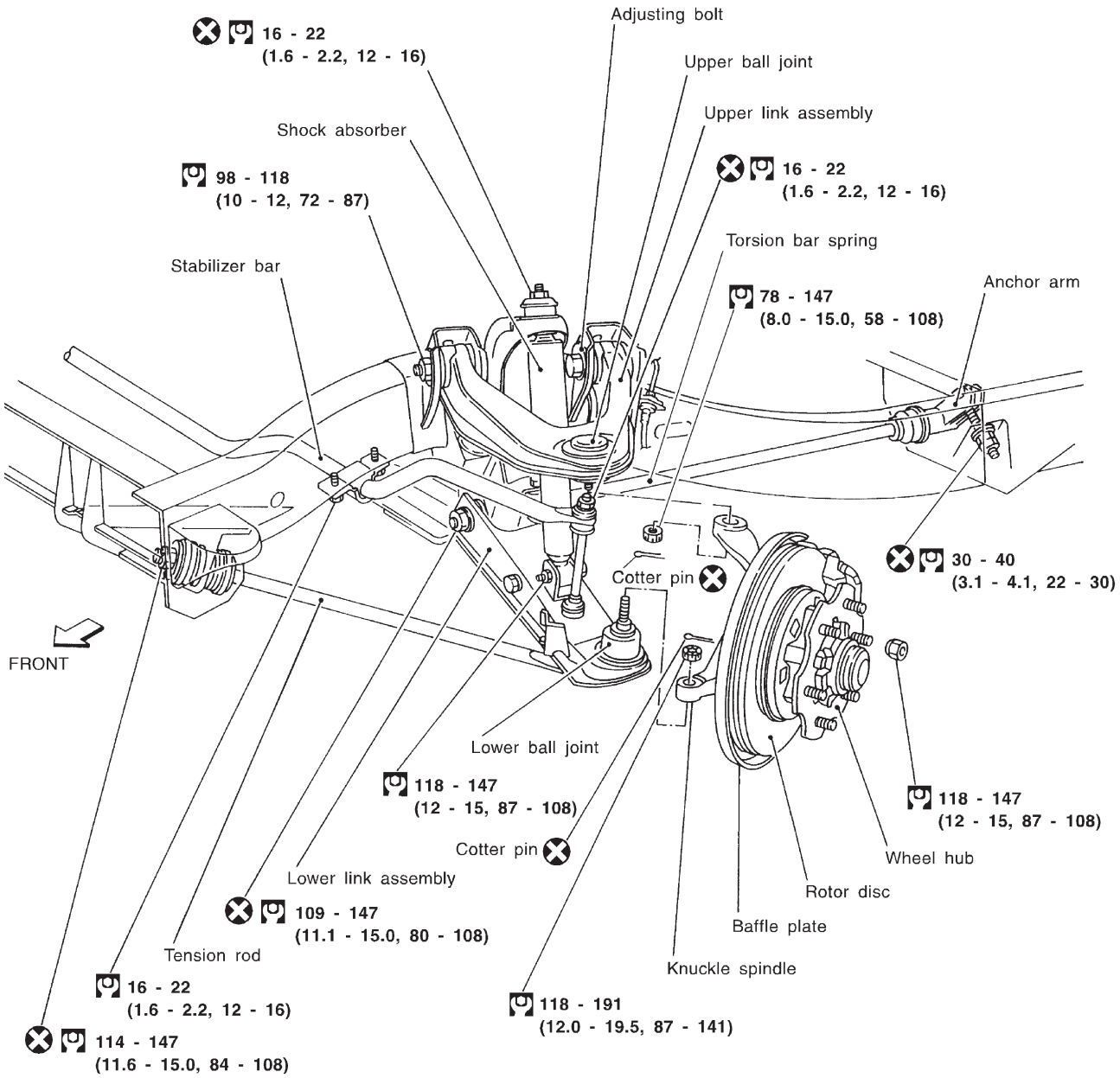
Tool name	Description
① Flare nut crowfoot ② Torque wrench	 NT360 Removing and installing each brake piping **a: 10 mm (0.39 in)**

2WD

SEC. 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.**



: N•m (kg-m, ft-lb)

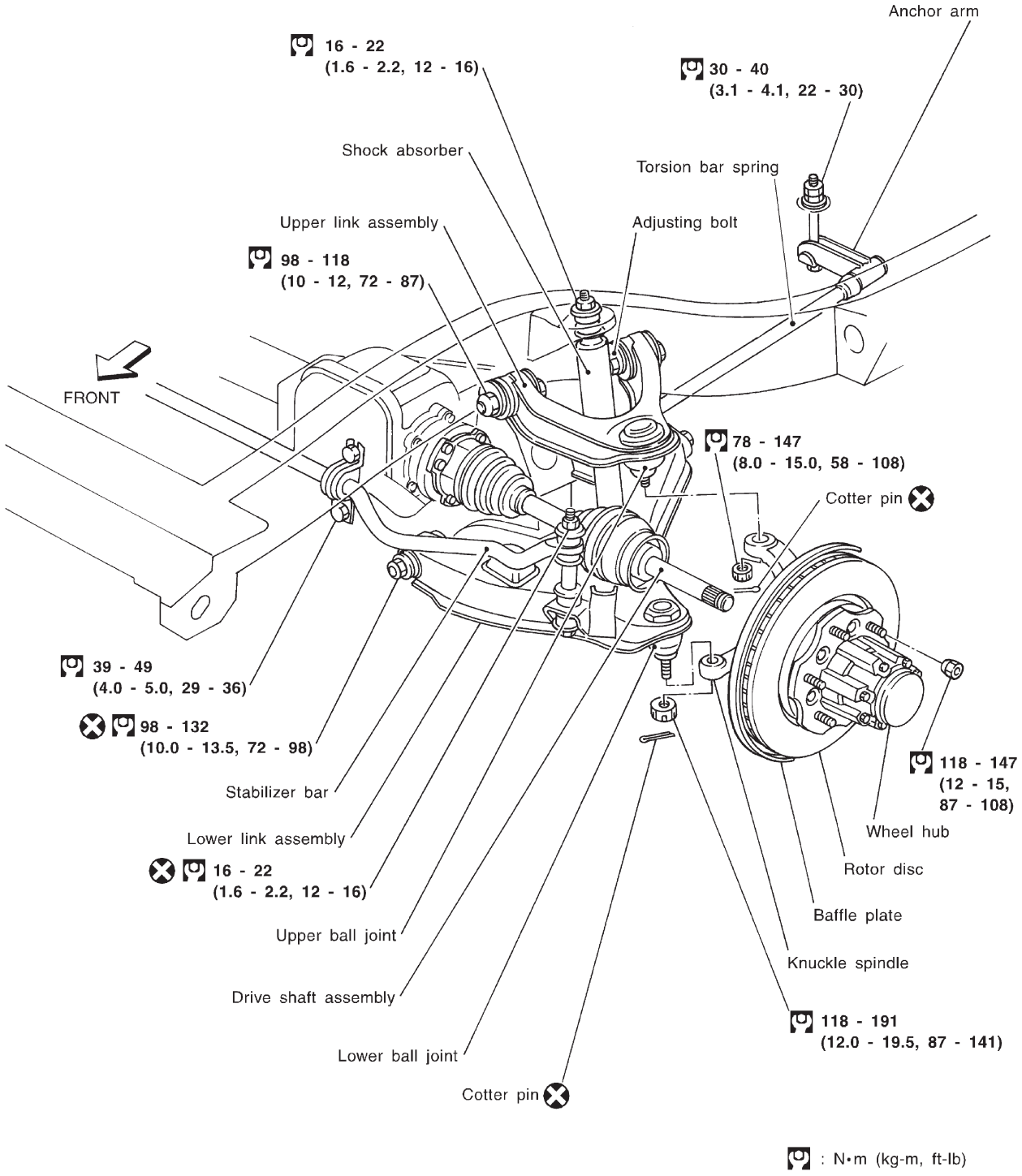
SFA811B

4WD

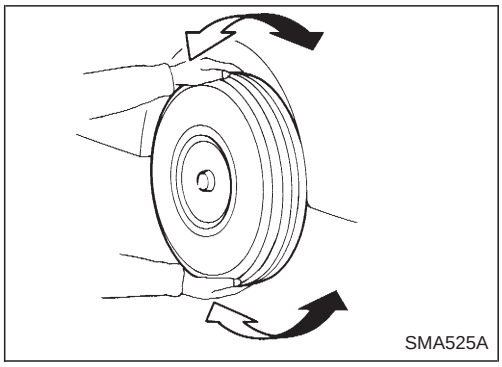
SEC. 391•400•401

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.**



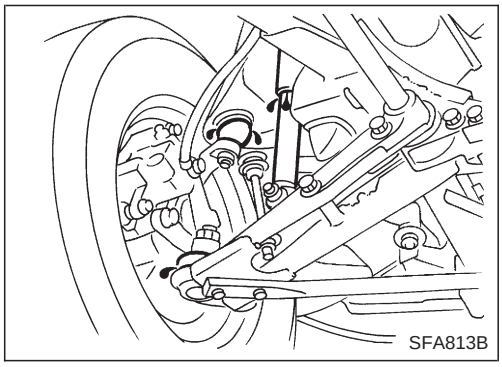
SFA812B

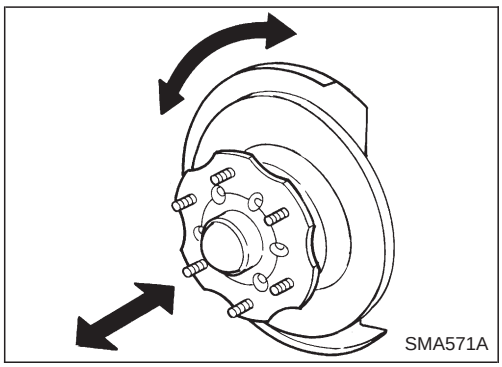

SMA525A

Front Axle and Front Suspension Parts

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

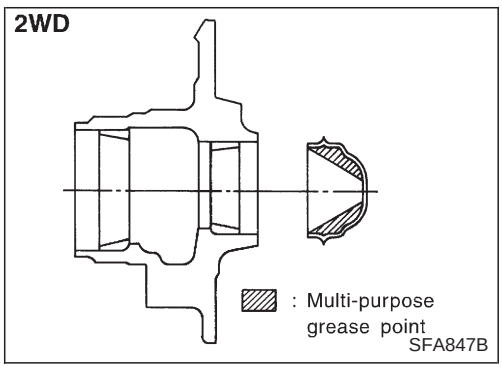
- Shake each front wheel to check for excessive play.
  If looseness is noted, adjust wheel bearing end play, then check ball joint end play.
- Make sure that the cotter pin is inserted.
- Retighten all nuts and bolts to the specified torque.
  : Refer to ''FRONT SUSPENSION'', FA-26.
- Check front axle and front suspension parts for wear, cracks or other damage.
- Check shock absorber for oil leakage and other damage.
- Check suspension ball joint for grease leakage and ball joint dust cover for cracks and other damage.


SFA813B


SMA571A

Front Wheel Bearing

- Check that wheel bearings operate smoothly.
- Check axial end play.
  Axial end play: 0 mm (0 in)
- Adjust wheel bearing preload if there is any axial end play or wheel bearing does not turn smoothly.



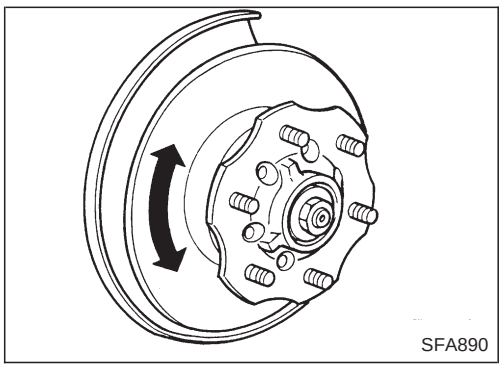
SFA847B

PRELOAD ADJUSTMENT (2WD)

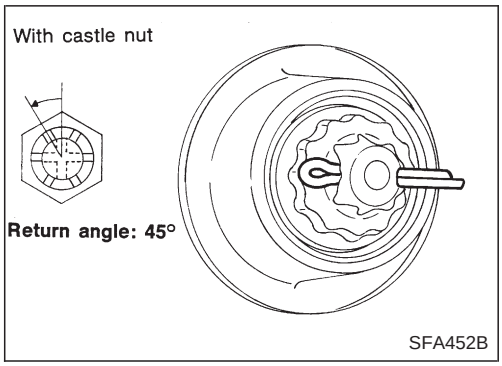
Adjust wheel bearing preload after wheel bearing has been replaced or front axle has been reassembled.

1. Before adjustment, thoroughly clean all parts to prevent dirt entry.
2. Apply multi-purpose grease sparingly to the following parts:
- Rubbing surface of spindle
- Contact surface between lock washer and outer wheel bearing
- Hub cap (as shown at left)
- Grease seal lip

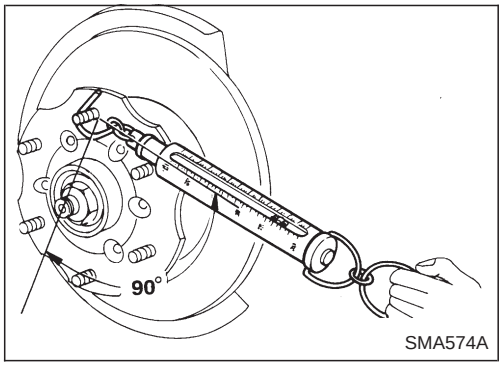
3. Tighten wheel bearing lock nut to the specified torque.
   : 34 - 39 N·m (3.5 - 4.0 kg-m, 25 - 29 ft-lb)
4. Turn wheel hub several times in both directions to seat wheel bearing correctly.
5. Again tighten wheel bearing lock nut to the specified torque.
   : 34 - 39 N·m (3.5 - 4.0 kg-m, 25 - 29 ft-lb)


SFA890

Front Wheel Bearing (Cont'd)

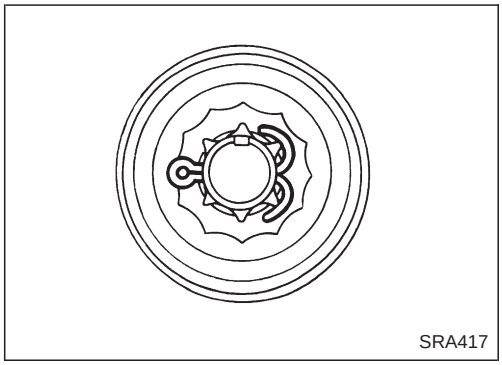


6. Turn wheel bearing lock nut back 45 degrees.
7. Fit adjusting cap and new cotter pin. Align cotter pin slot by loosening nut 15 degrees or less.



8. Measure wheel bearing preload and axial end play.
   Axial end play: 0 mm (0 in)
   Wheel bearing preload
   (As measured at wheel hub bolt):
   New grease seal
   9.8 - 28.4 N (1.0 - 2.9 kg, 2.2 - 6.4 lb)
   Used grease seal
   9.8 - 23.5 N (1.0 - 2.4 kg, 2.2 - 5.3 lb)

Repeat above procedures until correct bearing preload is obtained.



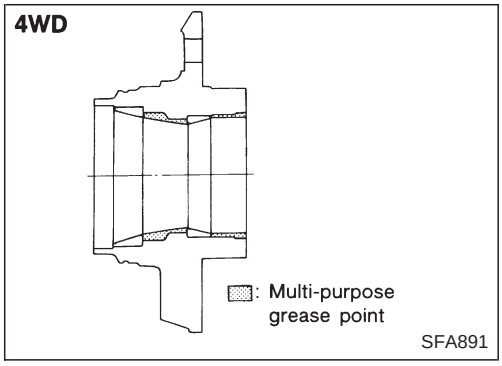
9. Spread cotter pin.
10. Install hub cap.

PRELOAD ADJUSTMENT (4WD)

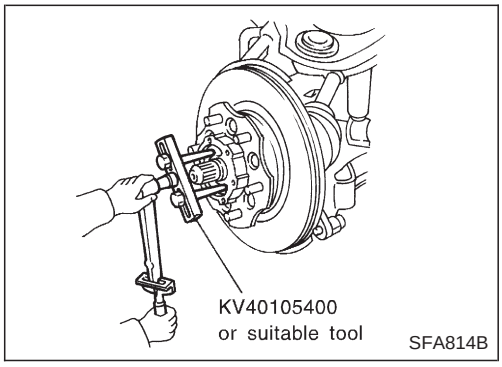
Adjust wheel bearing preload after wheel bearing has been replaced or front axle has been reassembled.

Adjust wheel bearing preload as follows:

1. Before adjustment, thoroughly clean all parts to prevent dirt entry.

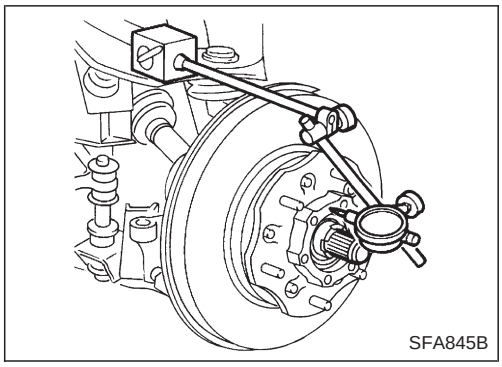


2. Apply multi-purpose grease sparingly to the following parts:
- Threaded portion of spindle
- Contact surface between wheel bearing washer and outer wheel bearing
- Grease seal lip
- Wheel hub (as shown at left)

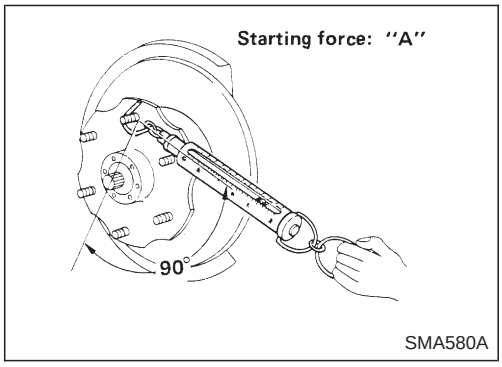


3. Tighten wheel bearing lock nut with Tool.
   : 78 - 98 N·m (8 - 10 kg-m, 58 - 72 ft-lb)
4. Turn wheel hub several times in both directions.
5. Loosen wheel bearing lock nut so that torque becomes 0 N·m (0 kg-m, 0 ft-lb).
6. Retighten wheel bearing lock nut with Tool.
   : 0.5 - 1.5 N·m (0.05 - 0.15 kg-m, 4.3 - 13.0 in-lb)

Front Wheel Bearing (Cont'd)

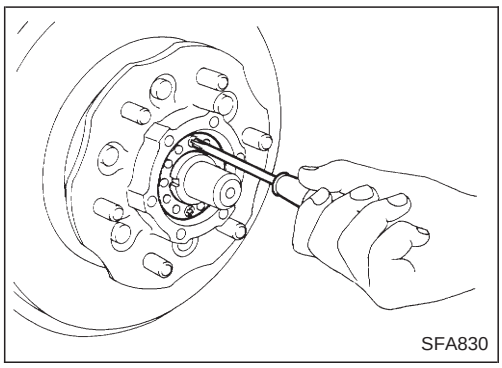

SFA845B

7. Turn wheel hub several times in both directions.
8. Retighten wheel bearing lock nut with Tool.
   : 0.5 - 1.5 N·m (0.05 - 0.15 kg-m, 4.3 - 13.0 in-lb)
9. Measure wheel bearing axial end play.
   Axial end play: 0 mm (0 in)



SMA580A

10. Measure starting force "A" at wheel hub bolt.


SFA830

11. Install lock washer by tightening the lock nut within 15 to 30 degrees.
12. Turn wheel hub several times in both directions to seat wheel bearing correctly.
13. Measure starting force "B" at wheel hub bolt. Refer to step 10.
14. Wheel bearing preload "C" can be calculated as shown below.

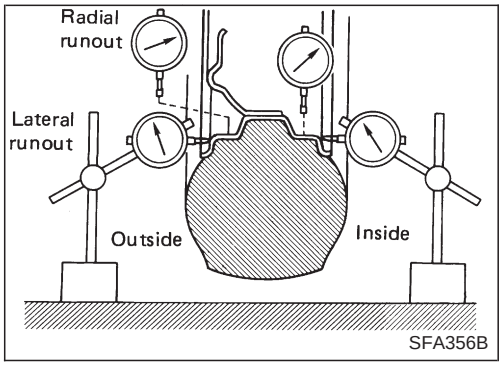
    C = B − A

    Wheel bearing preload "C":
    7.06 - 20.99 N (0.72 - 2.14 kg, 1.59 - 4.72 lb)
15. Repeat steps 3 through 14 until correct axial end play and wheel bearing preload are obtained.
16. Install free-running hub.

Front Wheel Alignment

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

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

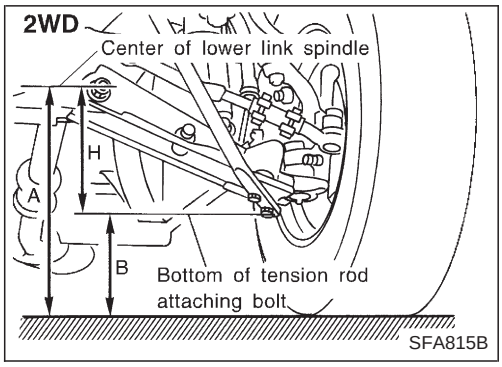


SFA356B

PRELIMINARY INSPECTION

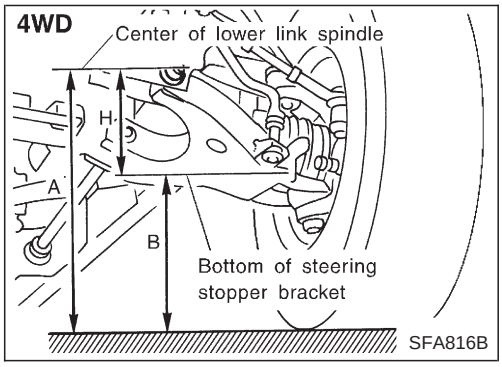
1. Check tires for wear and proper inflation.
2. Check outside and inside wheel runout.
   Wheel runout average
   [(Outside runout value + Inside runout value) x 0.5]:
   Refer to SDS, FA-35.
3. Check front wheel bearings for looseness.
4. Check front suspension for looseness.
5. Check steering linkage for looseness.
6. Check that front shock absorbers work properly by using the standard bounce test.

Front Wheel Alignment (Cont'd)



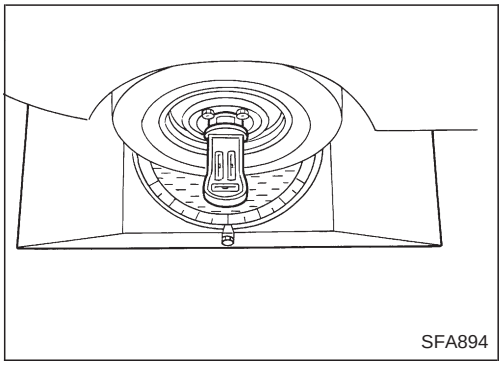
7. Measure vehicle height (Unladen): H = A − B mm (in)
   Refer to SDS, FA-36.

a. Exercise the front suspension by bouncing the front of the vehicle 4 or 5 times to ensure that the vehicle is in a neutral height attitude.
b. Measure wheel alignment.
   Refer to SDS, FA-36.
c. If wheel alignment is not as specified, adjust vehicle posture.
   Refer to SDS, FA-36.
d. Adjust wheel alignment.
   Refer to SDS, FA-36.

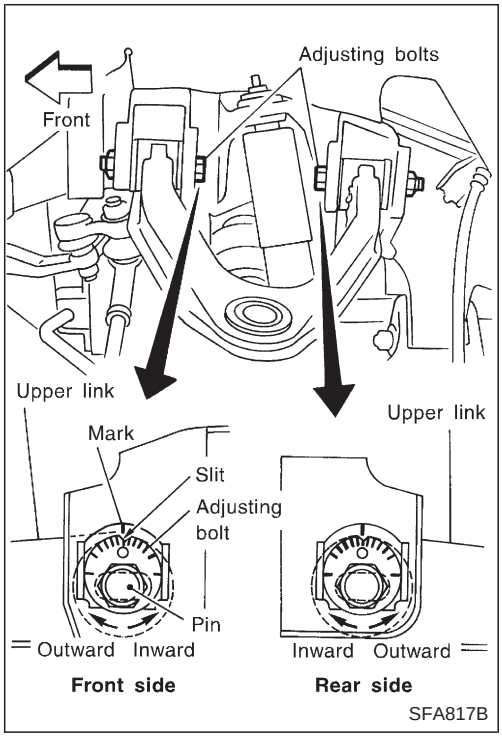


CAMBER, CASTER AND KINGPIN INCLINATION

Before checking camber, caster or kingpin inclination, move vehicle up and down on turning radius gauge to minimize friction. Ensure that the vehicle is in correct posture.

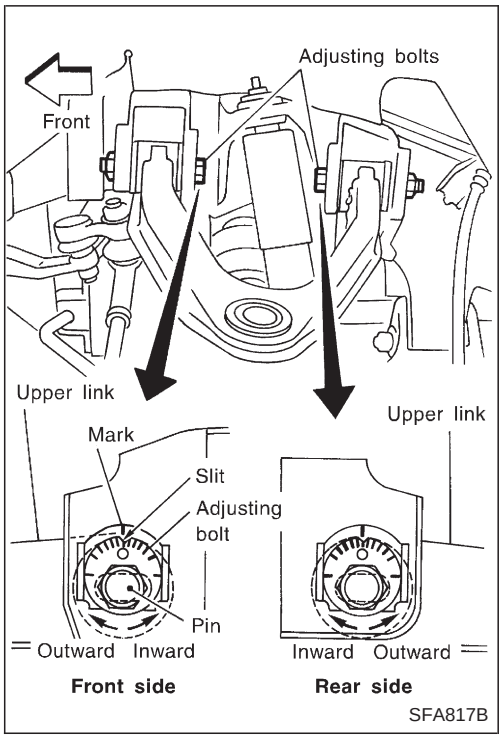


- Measure camber, caster and kingpin inclination of both right and left wheels with a suitable alignment gauge and adjust in accordance with the following procedures.
  Camber, Caster and Kingpin inclination:
  Refer to SDS, FA-36.



- In the following two cases, temporarily tighten the adjusting bolts while aligning the matching marks with the slits as shown in the figure at the left and measure the camber, caster and kingpin inclination:
  (1) When replacing the upper link or other suspension parts with new ones
  (2) When matching marks were not painted on adjusting bolts before suspension disassembly procedures
- If matching marks were already painted during suspension disassembly, align the matching marks with the slits, then temporarily tighten the adjusting bolts. Measure the camber, caster and kingpin inclination.

Front Wheel Alignment (Cont'd)



ADJUSTMENT

1. Both camber and caster angles are adjusted by adjusting bolts.
- If the kingpin inclination is outside specifications, check the front suspension parts for wear or damage. Replace faulty parts with new ones.
2. From the measured value, read the coordinate (or: graduation) at the intersecting point in the graph.

a. If the coordinate (or: graduation) at the intersecting point is positive, move the pin outward by turning the corresponding adjusting bolt by the indicated graduation.

b. If the coordinate (or: graduation) at the intersecting point is negative, move the pin inward by turning the corresponding adjusting bolt by the indicated graduation.
After properly moving the pin(s), tighten the front and rear adjusting bolts to specifications.

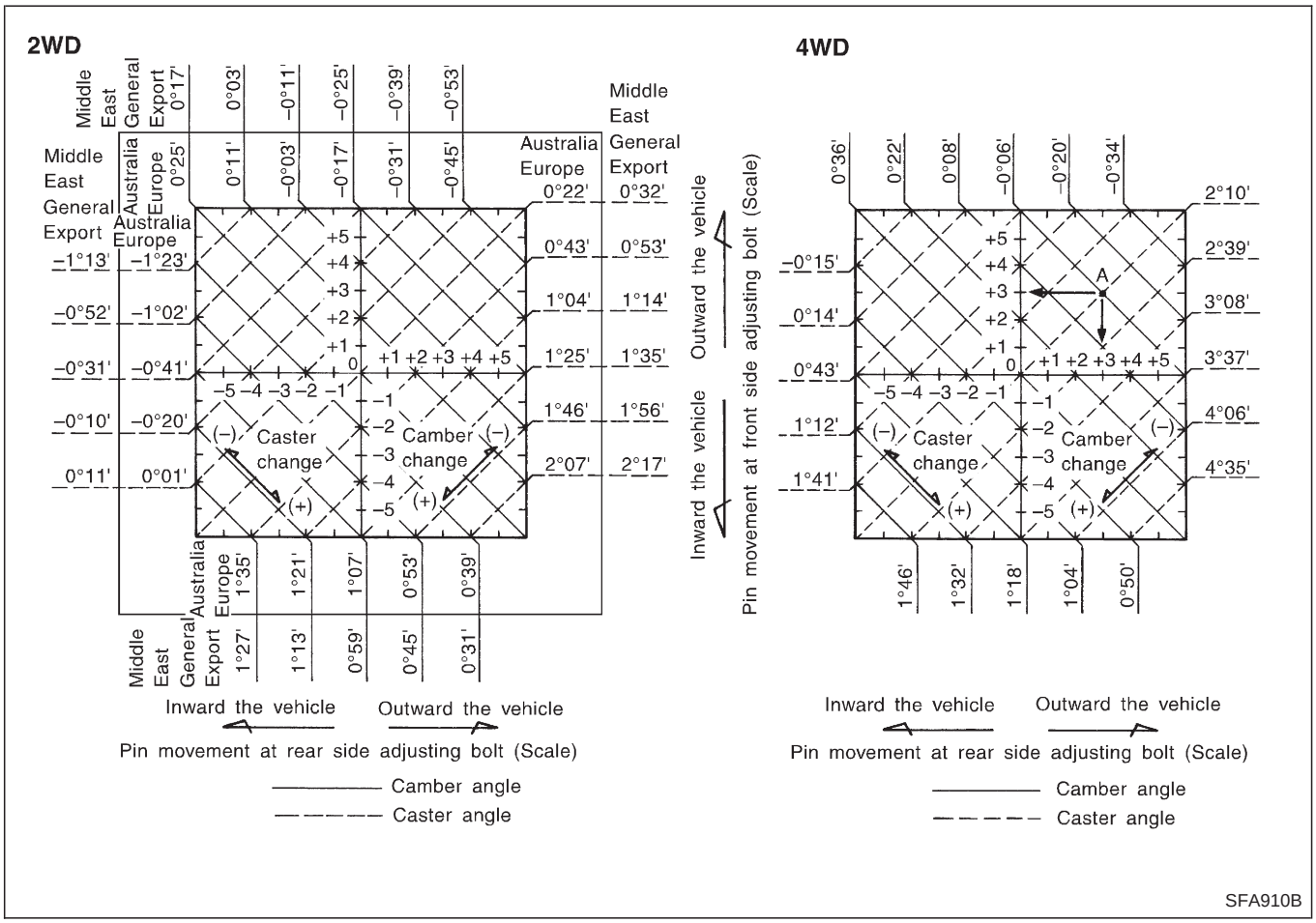
3. Re-measure to ensure that the camber and caster are within specified tolerances.

[Example]

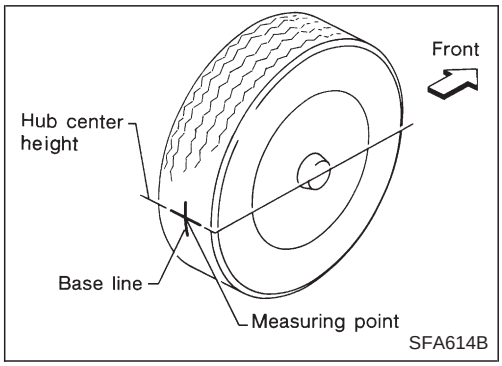
a. Measured values corresponding with the two values indicated below: (See chart for 4WD model.)
Camber angle: −0°06′ (−0.10°)
Caster angle: 2°10′ (2.17°)

b. Apply the above two values to the graph and determine point "A".

c. The coordinate (or: graduation) indicates that both the front and rear adjusting bolts must be turned outward by 3 graduations.
Turn the adjusting bolts by the amount corresponding with the 3 graduations.



Front Wheel Alignment (Cont'd)



TOE-IN

Measure toe-in using the following procedure.
WARNING:

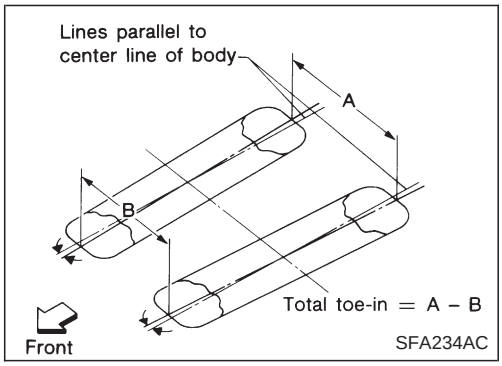
- **Always perform the following procedure on a flat surface.**
- **Make sure that no one is in front of the vehicle before pushing it.**

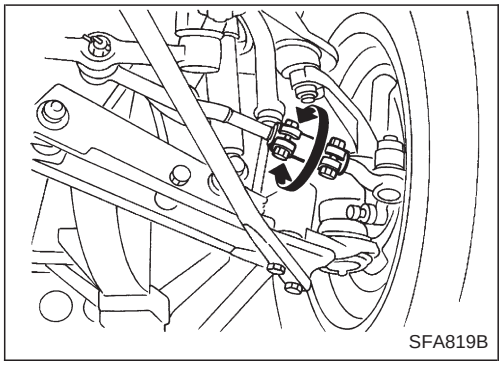
1. Bounce front of vehicle up and down to stabilize the posture.
2. Push the vehicle straight ahead about 5 m (16 ft).
3. Put a mark on base line of the tread (rear side) of both tires at the same height of hub center. This mark is a measuring point.
4. Measure distance ''A'' (rear side).
5. Push the vehicle slowly ahead to rotate the wheels 180 degrees (1/2 turn).

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

6. Measure distance ''B'' (front side).

Total toe-in:
Refer to SDS, FA-36.



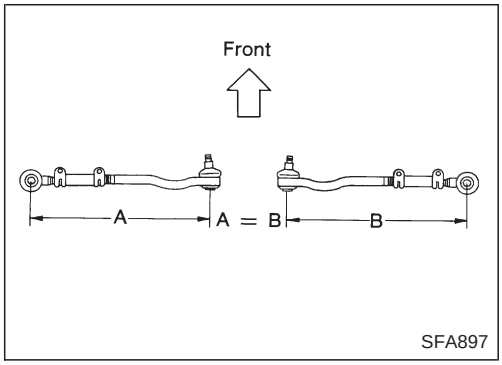


7. Adjust toe-in by varying the length of both steering tie-rods.

a. Loosen clamp bolts or lock nuts.
b. Adjust toe-in by turning both the left and right tie-rod tubes equal amounts.

Make sure that the tie-rod bars are screwed into the tie-rod tube more than 35 mm (1.38 in).
Make sure that the tie-rods are the same length.

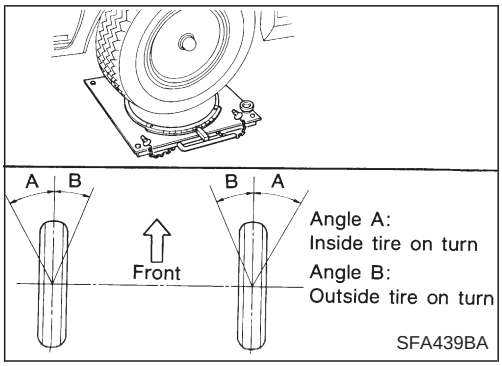
Standard length (A = B):
2WD
343.9 mm (13.54 in)
4WD
297.6 mm (11.72 in)



c. Tighten clamp bolts or lock nuts, then torque them.

Front Wheel Alignment (Cont'd)

FRONT WHEEL TURNING ANGLE



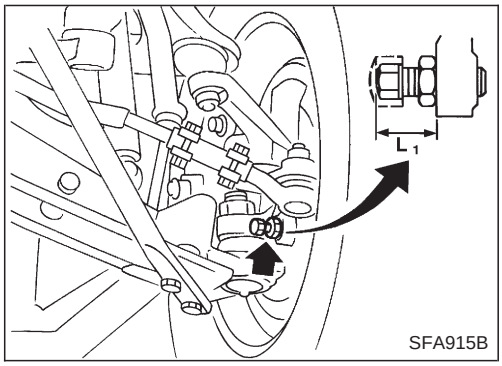
1. Set wheels in straight-ahead position. Then move vehicle forward until front wheels rest properly on turning radius gauge.
2. Rotate steering wheel all the way right and left; measure turning angle.

- 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.**

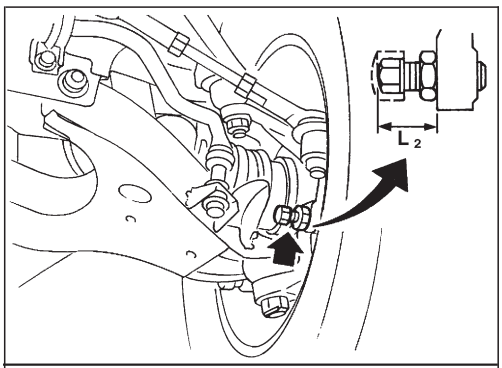
Wheel turning angle (Full turn):
Refer to SDS, FA-36.

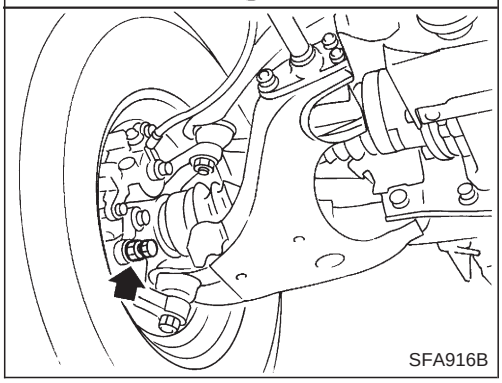
3. Adjust stopper bolt if necessary.

Standard length "L_1" (2WD):
20 mm (0.79 in)
Stopper bolt lock nut:
: 39 - 49 N·m (4.0 - 5.0 kg-m, 29 - 36 ft-lb)



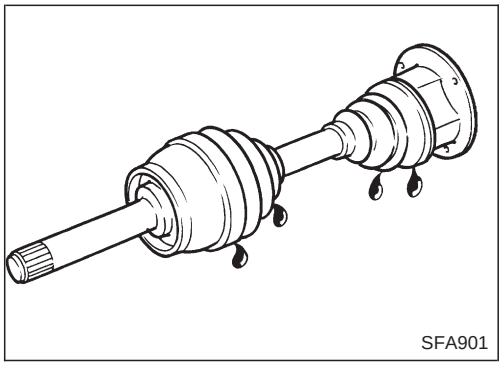
Standard length "L_2" (4WD):
26.5 mm (1.043 in)
Stopper bolt lock nut:
: 76 - 98 N·m (7.8 - 10.0 kg-m, 56 - 72 ft-lb)



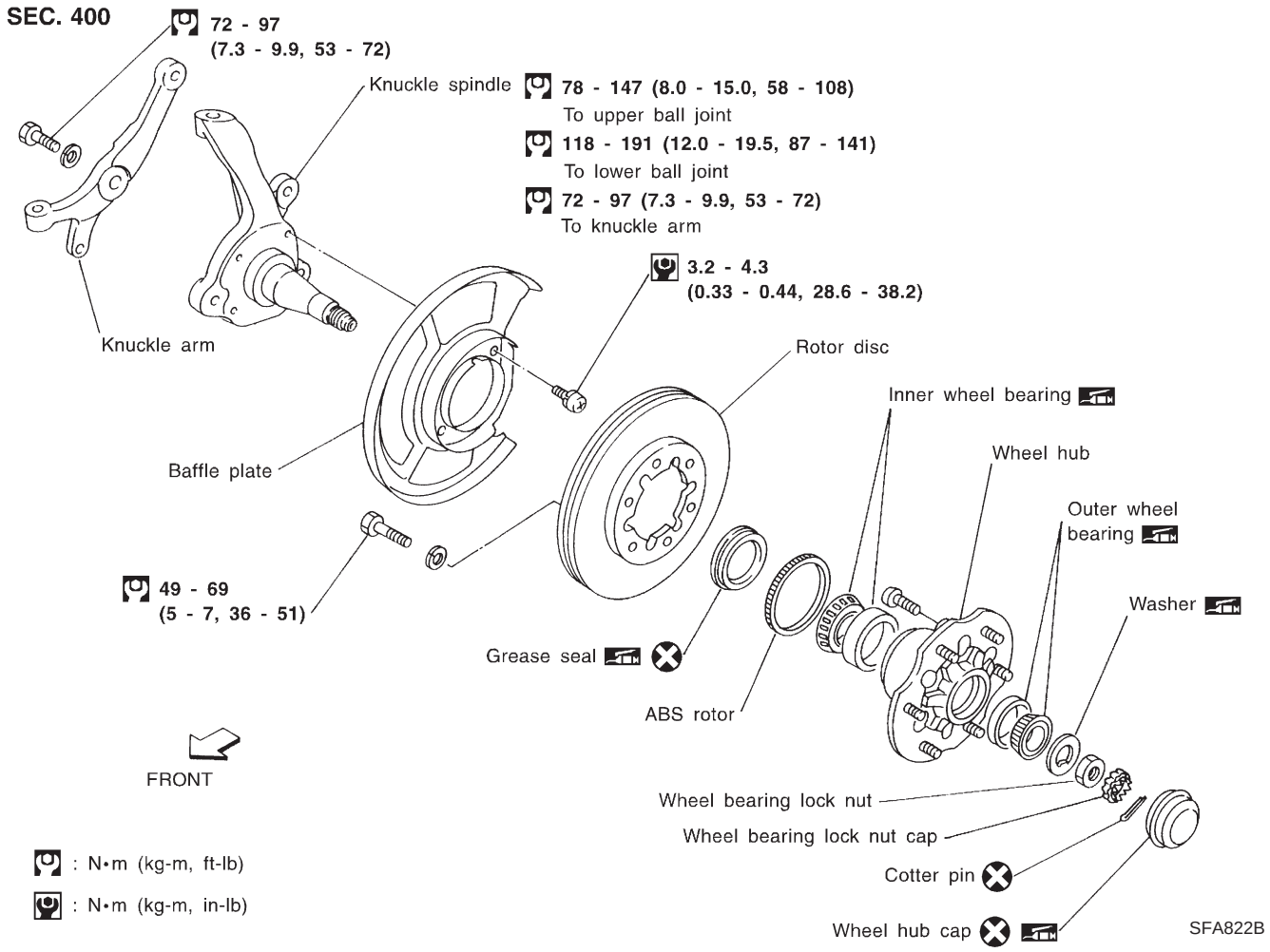


Drive Shaft

- Check for grease leakage and damage.

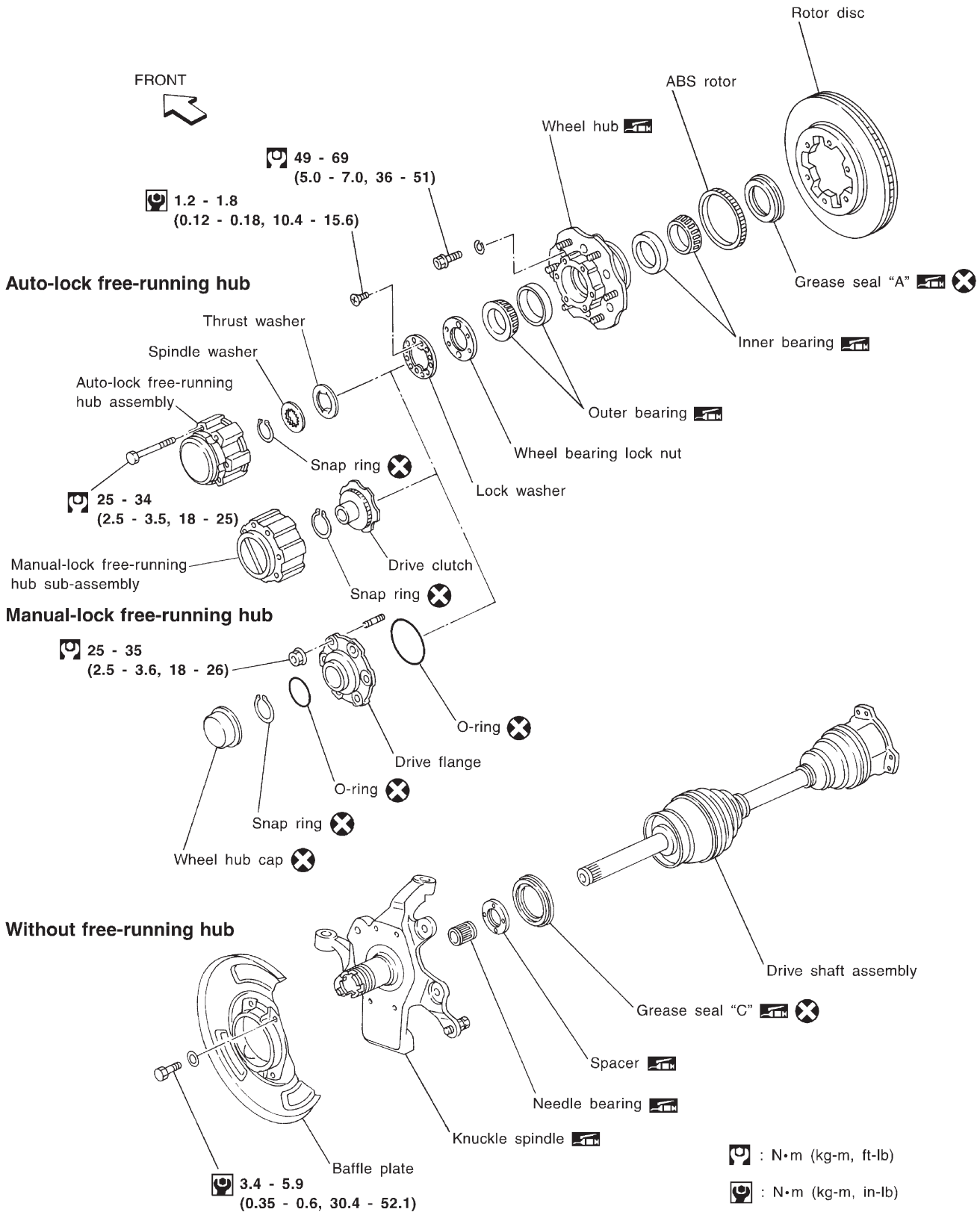


2WD


SEC. 400
72 - 97
(7.3 - 9.9, 53 - 72)
Knuckle spindle
78 - 147 (8.0 - 15.0, 58 - 108)
To upper ball joint
118 - 191 (12.0 - 19.5, 87 - 141)
To lower ball joint
72 - 97 (7.3 - 9.9, 53 - 72)
To knuckle arm
3.2 - 4.3
(0.33 - 0.44, 28.6 - 38.2)
Knuckle arm
Rotor disc
Inner wheel bearing
Wheel hub
Outer wheel bearing
Baffle plate
Washer
49 - 69
(5 - 7, 36 - 51)
Grease seal
ABS rotor
FRONT
Wheel bearing lock nut
Wheel bearing lock nut cap
Cotter pin
Wheel hub cap
: N•m (kg-m, ft-lb)
: N•m (kg-m, in-lb)
SFA822B

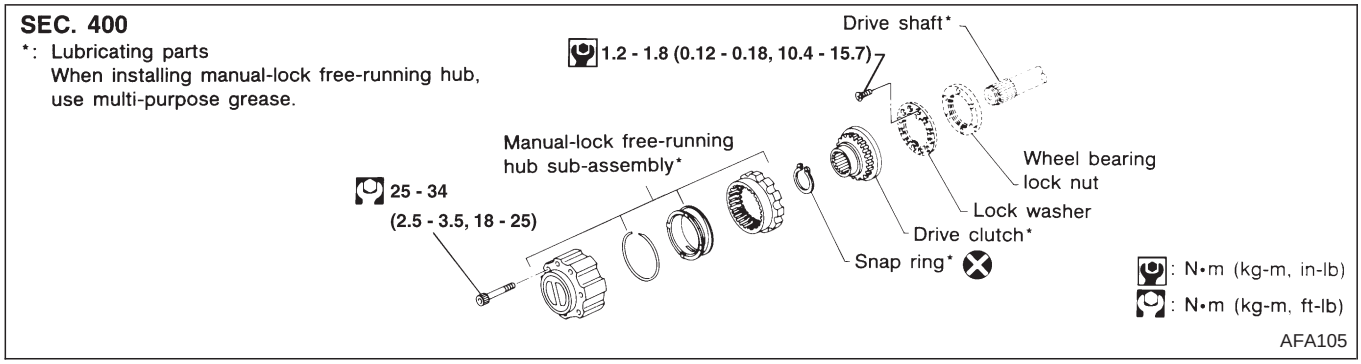
4WD

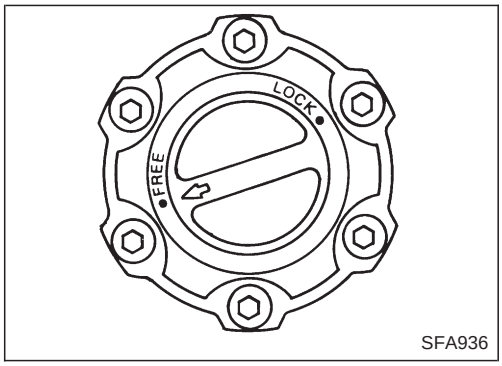
SEC. 391•400

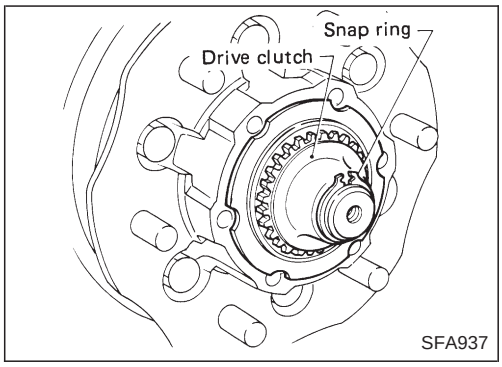


SFA919B

Manual-lock Free-running Hub — 4WD —







REMOVAL AND INSTALLATION

1. Set knob of manual-lock free-running hub in the FREE position.
2. Remove manual-lock free-running hub.
3. Remove snap ring and then draw out drive clutch.
4. When installing manual-lock free-running hub, make sure the hub is in the FREE position.

Apply multi-purpose grease to the parts shown in the above illustration.

5. Check operation of manual-lock free-running hub after installation.

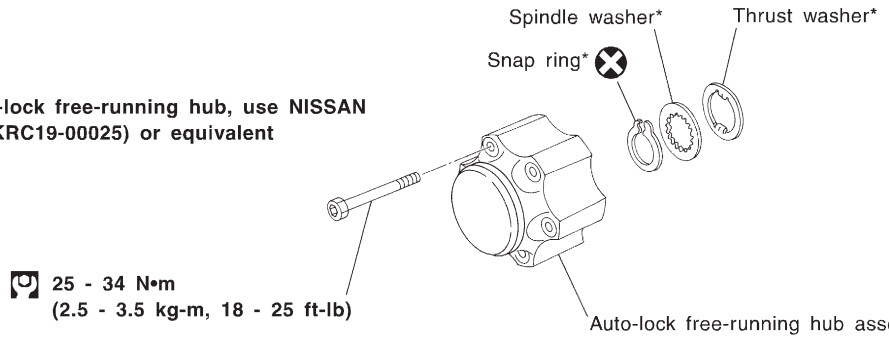
INSPECTION

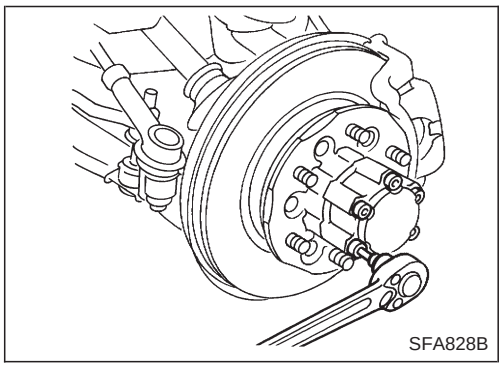
- Check that the knob moves smoothly and freely.
- Check that the clutch moves smoothly in the body.

Auto-lock Free-running Hub — 4WD —

SEC. 400

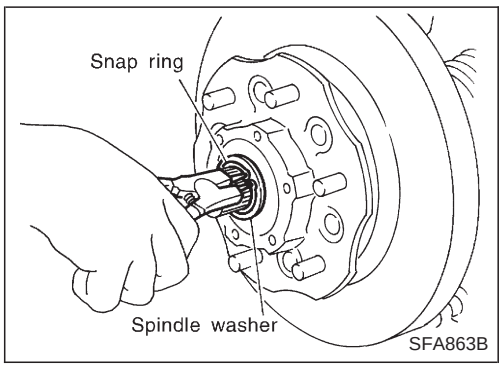
* : Lubricating parts
When installing auto-lock free-running hub, use NISSAN GENUINE GREASE (KRC19-00025) or equivalent grease.




SFA828B

Removal

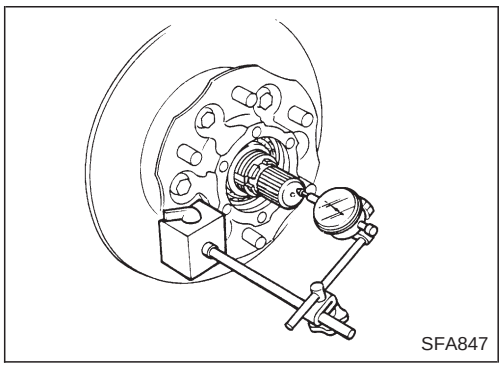
1. Set the auto-lock free-running hub in the FREE condition.
2. Remove auto-lock free-running hub assembly.



SFA863B

3. Remove snap ring.
4. Remove spindle washer and thrust washer.
5. After installing auto-lock free-running hub, check operation of it.

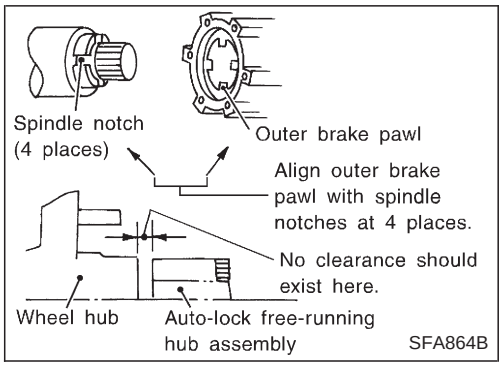
When installing it, apply recommended grease to drive shaft end.


SFA847

Installation

1. When installing hub's mating parts (such as thrust washer and spindle washer) on drive shaft, select suitable snap ring so that end play between drive shaft and its mating parts is within specifications.
   Axial end play:
   0.45 mm (0.0177 in) or less
   Snap ring size:
   Refer to SDS.

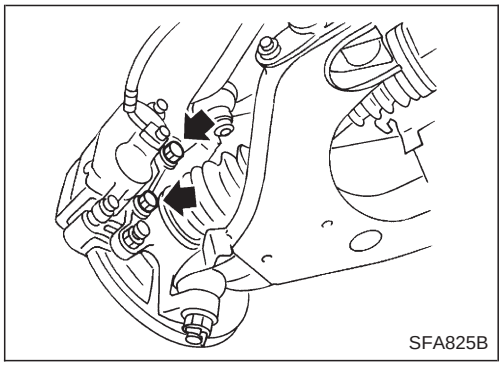
Installation (Cont'd)



2. Install auto-lock free-running hub assembly to wheel hub.
- When installing auto-lock free-running hub assembly, be sure to align outer brake pawl with notch in spindle.
- After inserting auto-lock free-running hub assembly into bore in wheel hub, make sure there is no clearance between hub assembly and wheel hub.

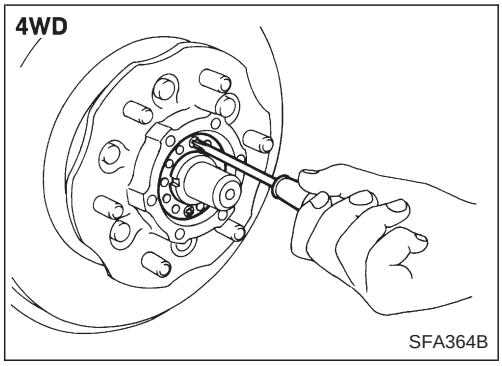
Wheel Hub and Rotor Disc

REMOVAL AND INSTALLATION

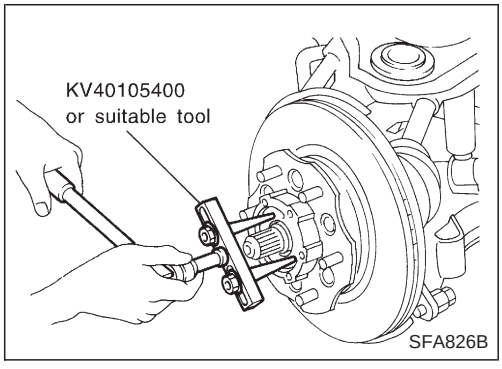


1. Remove free-running hub assembly. — 4WD —
   Refer to ''Auto-lock Free-running Hub — 4WD —'', FA-15, or ''Manual-lock Free-running Hub — 4WD —'', FA-14.
2. Remove brake caliper assembly without disconnecting hydraulic line.

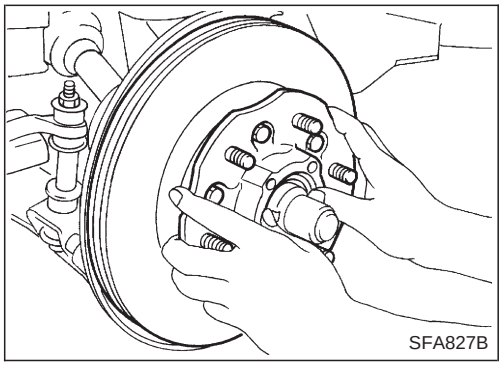
Be careful not to depress brake pedal, or piston will pop out.
Make sure brake hose is not twisted.



3. Remove lock washer. — 4WD —



4. Remove wheel bearing lock nut.
   2WD: With suitable tool
   4WD: With Tool



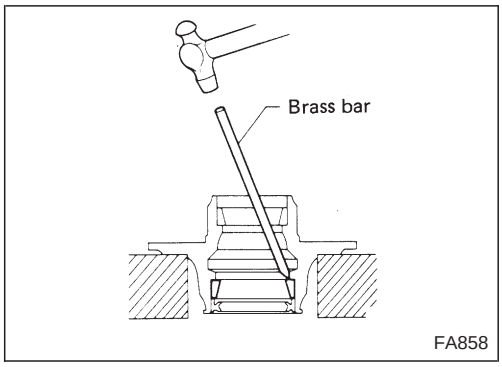
5. Remove wheel hub and wheel bearing.

Be careful not to drop outer bearing.

6. After installing wheel hub and wheel bearing, adjust wheel bearing preload.
   Refer to ''PRELOAD ADJUSTMENT'', ''Front Wheel Bearing'', ''ON-VEHICLE SERVICE'', FA-5.

Wheel Hub and Rotor Disc (Cont'd)

DISASSEMBLY



- Remove bearing outer races with suitable brass bar.

INSPECTION

Thoroughly clean wheel bearings and wheel hub.

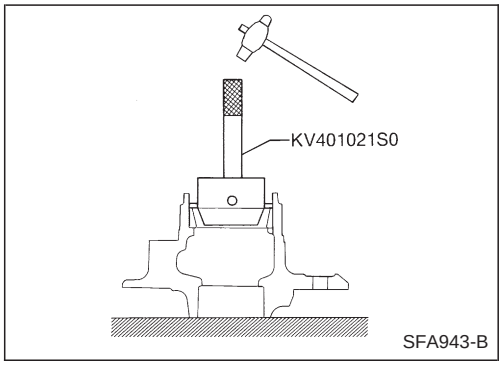
Wheel bearings

- Make sure wheel bearings roll freely and are free from noise, cracks, pitting and wear.

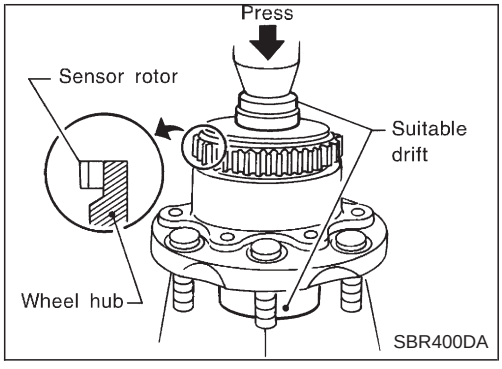
Wheel hub

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

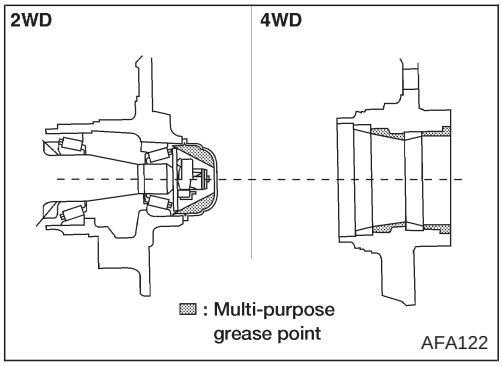
ASSEMBLY



1. Install bearing outer race with Tool until it seats in hub.

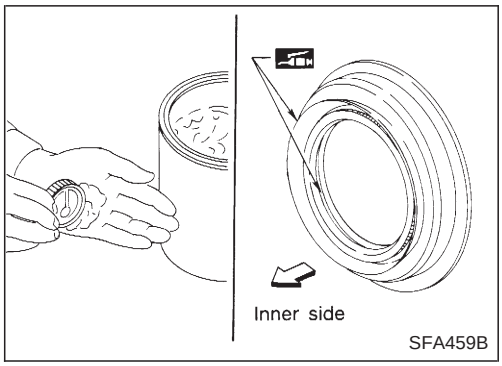


2. Install the sensor rotor using suitable drift and press. (Models with ABS)
   Always replace sensor rotor with new one.
   Pay attention to the direction of front sensor rotor as shown in figure.



3. Pack multi-purpose grease in wheel hub and hub cap.

Wheel Hub and Rotor Disc (Cont'd)

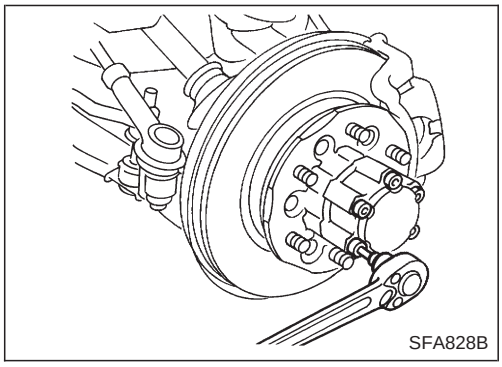


4. Apply multi-purpose grease to each bearing cone.
5. Pack grease seal lip with multi-purpose grease, then install it into wheel hub with suitable drift.

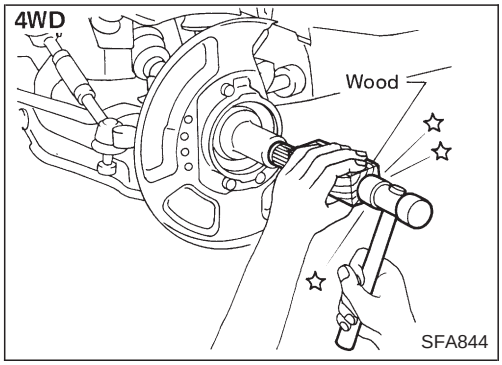
Knuckle Spindle

REMOVAL

1. Remove free-running hub assembly. — 4WD —
   Refer to ''Auto-lock Free-running Hub — 4WD —'', FA-15, or ''Manual-lock Free-running Hub — 4WD —'', FA-14.
2. Remove wheel hub and rotor disc.
   Refer to ''Wheel Hub and Rotor Disc'', FA-16.

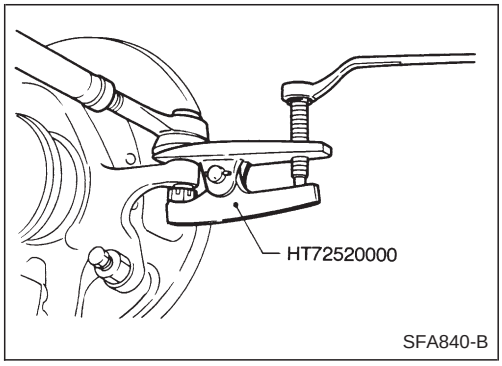


3. Separate drive shaft from knuckle spindle by slightly tapping drive shaft end. — 4WD —



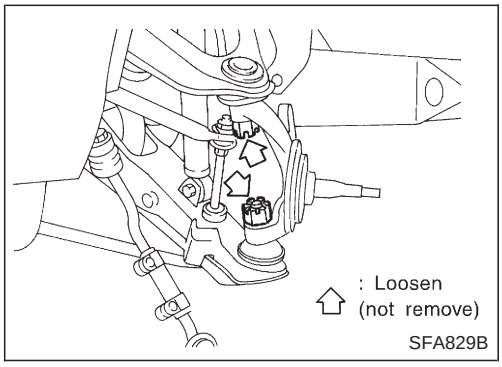
4. Separate tie-rod from knuckle spindle with Tool.

Install stud nut conversely on stud bolt so as not to damage stud bolt.

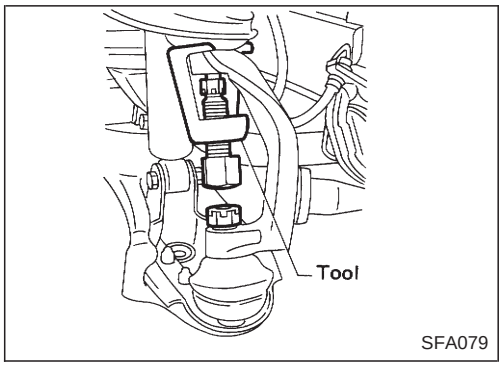


5. Separate knuckle spindle from ball joints.

a. Loosen (do not remove) upper and lower ball joint tightening nuts.



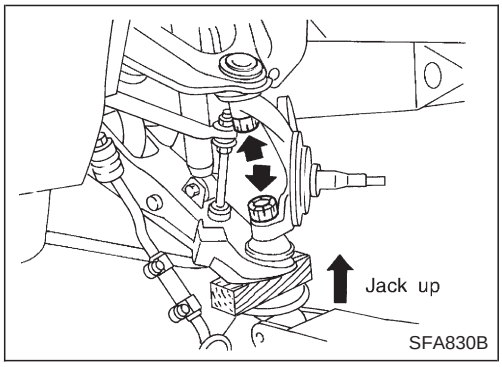
Knuckle Spindle (Cont'd)



b. Separate knuckle spindle from upper and lower ball joint studs with Tool.

During above operation, never remove ball joint nuts which are loosened in step (a) above.

Tool:
2WD
ST29020001
4WD
HT72520000



c. Remove ball joint tightening nuts.

Support lower link with jack.

d. Remove knuckle spindle from upper and lower links.

INSPECTION

Knuckle spindle

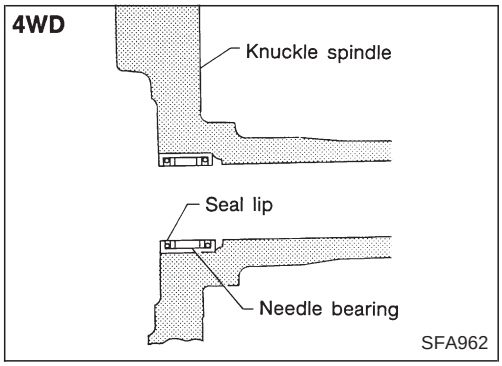
- Check knuckle spindle for deformation, cracks and other damage by using a magnetic exploration or dyeing test.

Bearing spacer — 2WD —

- Check bearing spacer for damage.

Needle bearing — 4WD —

- Check needle bearing for wear, scratches, pitting, flaking and burn marks.

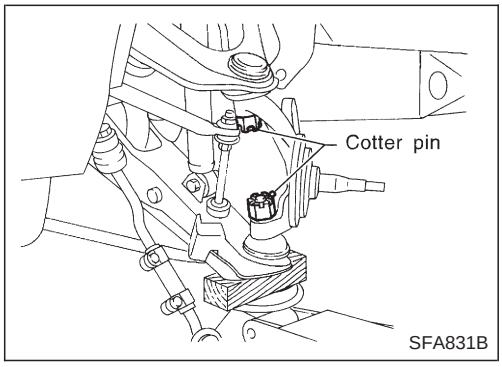


INSTALLATION

1. Install needle bearing into knuckle spindle. — 4WD —

Make sure that needle bearing is facing in the proper direction.

Apply multi-purpose grease.



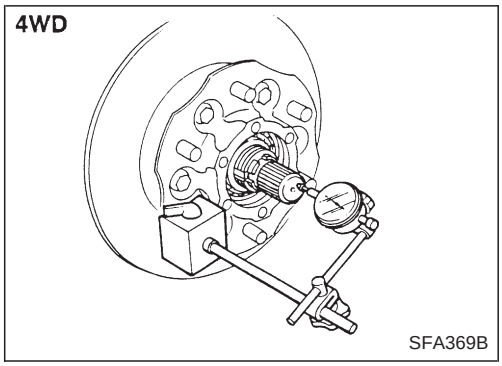
2. Install knuckle spindle to upper and lower ball joints with lower link jacked up.

CAUTION:

Make sure that oil and grease do not come into contact with tapered areas of ball joint, knuckle spindle and threads of ball joint.

3. Connect tie-rod to knuckle spindle.

Knuckle Spindle (Cont'd)

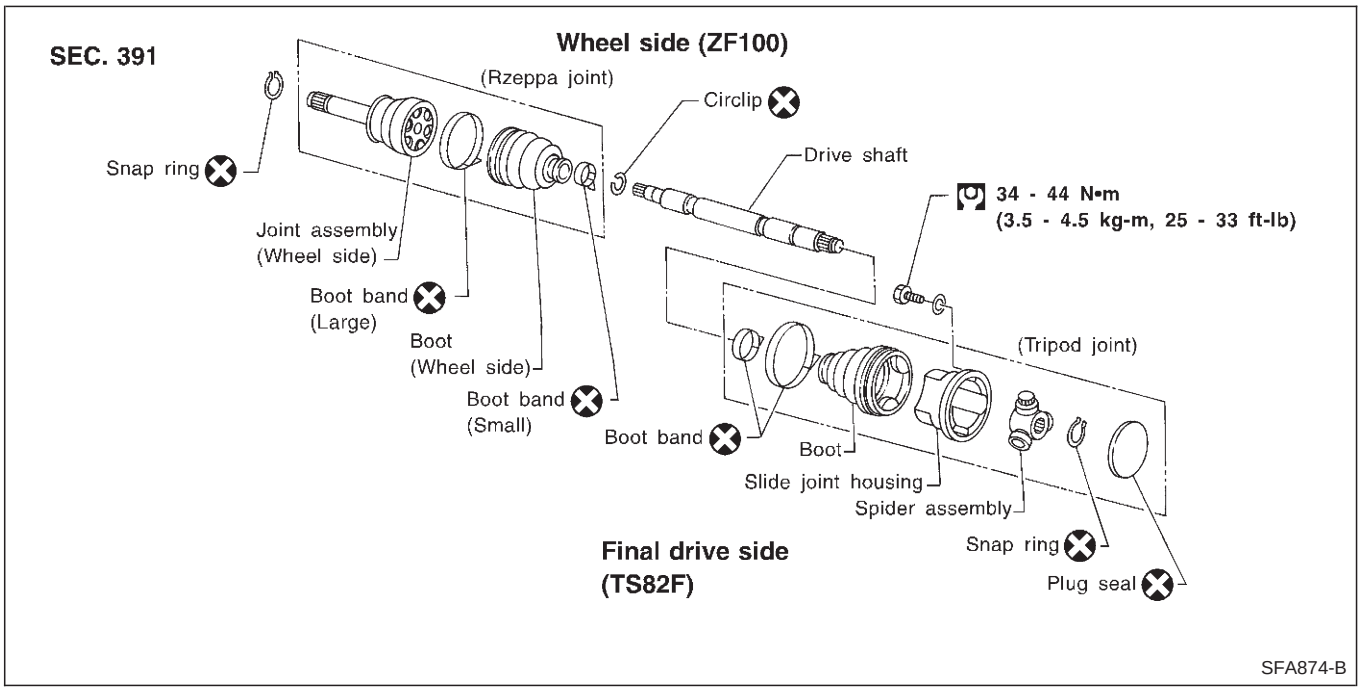


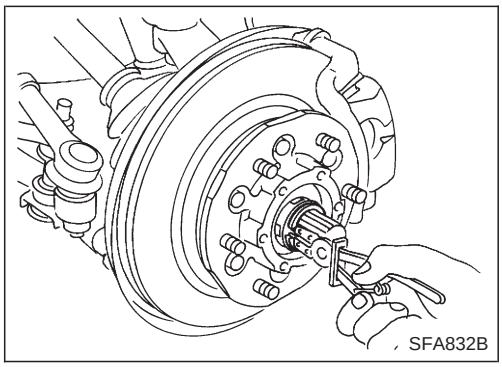
4. After installing knuckle spindle, adjust wheel bearing preload. Refer to ''PRELOAD ADJUSTMENT'', ''Front Wheel Bearing'', ''ON-VEHICLE SERVICE'', FA-5.
5. After installing drive shaft, check drive shaft axial end play.

Do not reuse snap ring once it has been removed.

Refer to ''Drive Shaft — 4WD —'', FA-21.

Drive Shaft — 4WD —

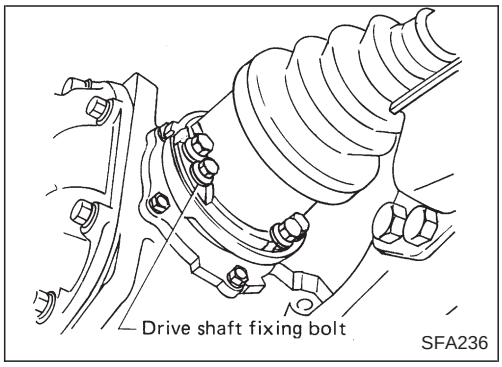




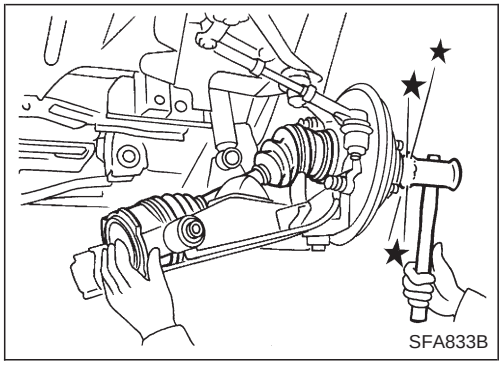
REMOVAL

1. Remove free-running hub or drive flange and snap ring. Refer to ''Auto-lock Free-running Hub — 4WD —'', FA-15, or ''Manual-lock Free-running Hub — 4WD —'', FA-14.
2. Remove torsion bar spring. Refer to ''Torsion Bar Spring'', ''FRONT SUSPENSION'', FA-28.
3. Remove shock absorber lower fixing bolt.
4. Remove lower link, fixing bolts.

Support lower link with jack.



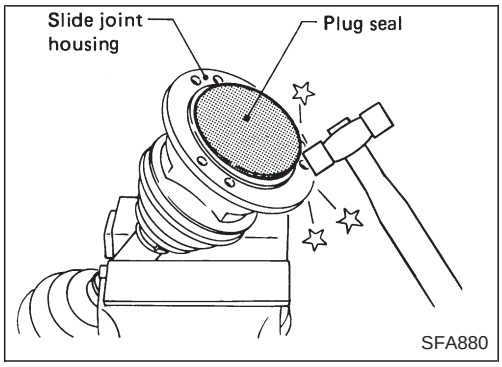
5. Remove bolts fixing drive shaft to final drive.



6. Remove drive shaft from knuckle spindle by slightly tapping end of drive shaft.

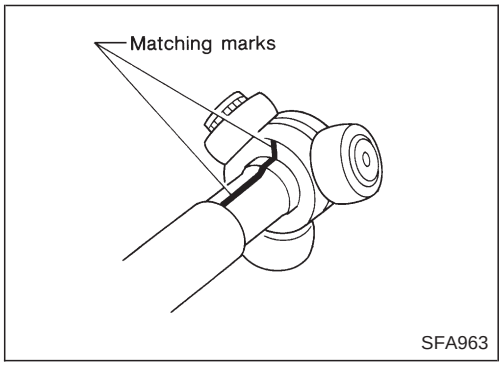
Drive Shaft — 4WD — (Cont'd)

DISASSEMBLY

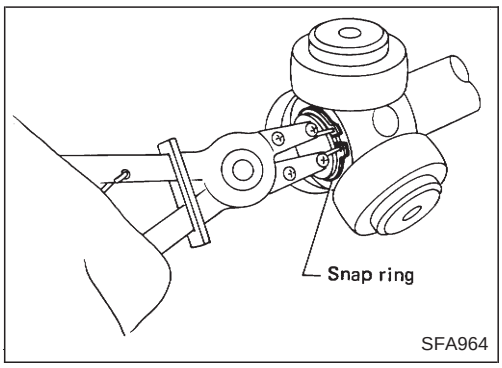


Final drive side (TS82F)

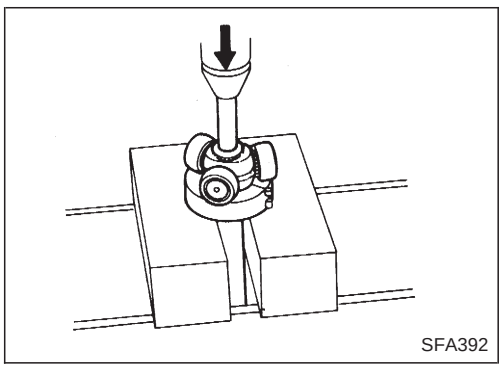
1. Remove plug seal from slide joint housing by lightly tapping around slide joint housing.
2. Remove boot bands.



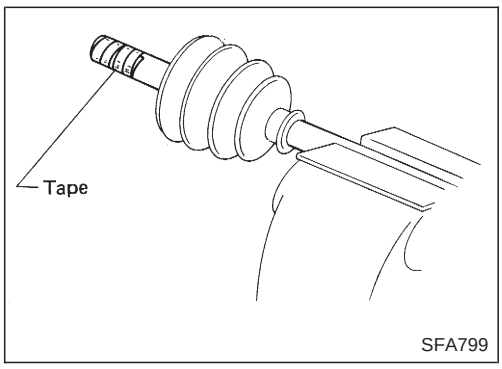
3. Move boot and slide joint housing toward wheel side, and put matching marks.



4. Remove snap ring.



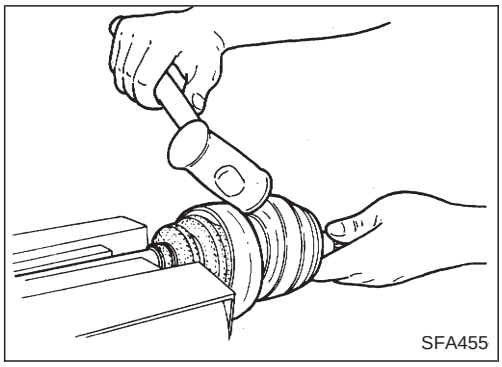
5. Detach spider assembly with press.



6. Draw out boot.

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

Drive Shaft — 4WD — (Cont'd)


SFA455

Wheel side (ZF100)

CAUTION:

The joint on the wheel side cannot be disassembled.

- Before separating joint assembly, put matching marks 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 and wear. Replace boot with new boot bands.

Joint assembly (Final drive side)

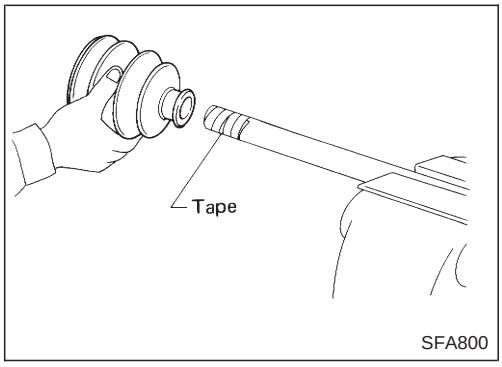
- Replace any parts of double offset joint which show signs of scorching, rust, wear or excessive play.
- Check serration for deformation. Replace if necessary.
- Check slide joint housing for any damage. Replace if necessary.

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.**



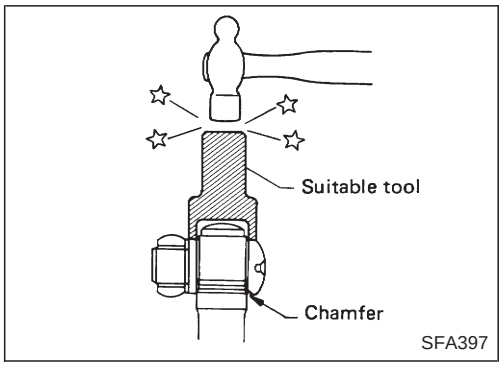
SFA800

Final drive side (TS82F)

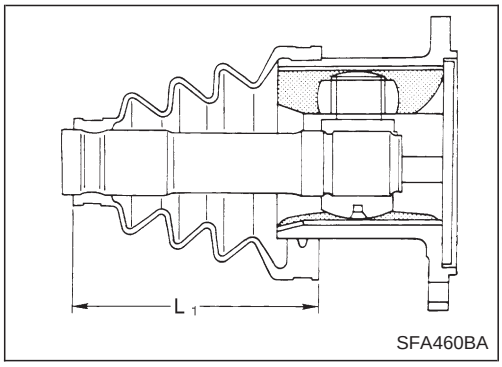
1. Install new small boot band, boot and side joint housing to drive shaft.

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

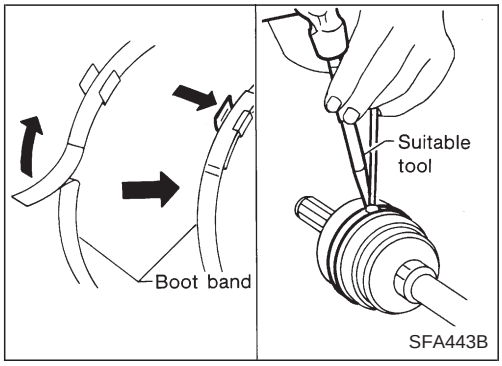
Drive Shaft — 4WD — (Cont'd)



2. Install spider assembly securely, making sure marks are properly aligned.
- **Press-fit with spider assembly serration chamfer facing shaft.**
3. Install new snap ring.



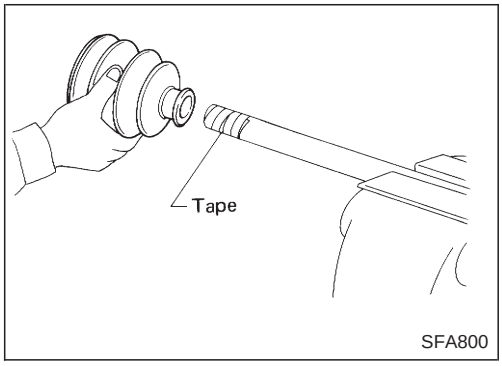
4. Pack with grease.
   Specified amount of grease:
   95 - 105 g (3.35 - 3.70 oz)
5. Make sure that the boot is properly installed on the drive shaft groove. Set the boot so that it does not swell or deform when its length is "L_1".
   Length "L_1": 95 - 97 mm (3.74 - 3.82 in)



6. Lock new large boot band securely with a suitable tool, then lock new small boot band.
7. Install new plug seal to slide joint housing by lightly tapping it.

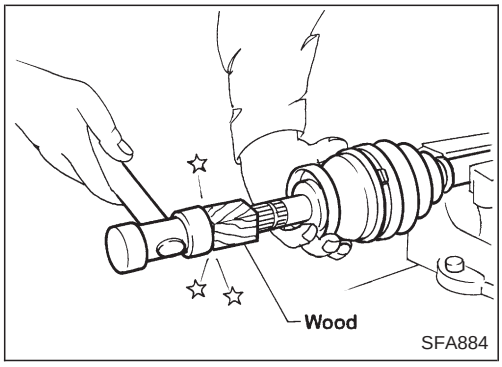
Apply sealant to mating surface of plug seal.

Wheel side (ZF100)



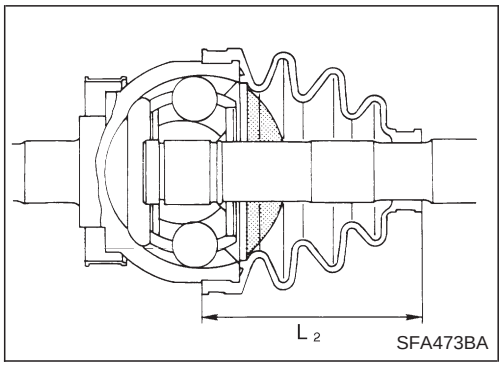
1. Install new small boot band and boot on drive shaft.

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



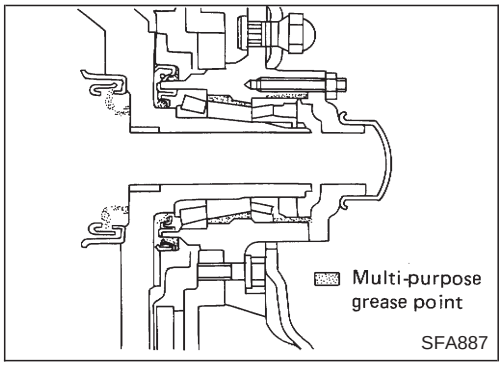
2. Set joint assembly onto drive shaft by lightly tapping it.
   Install joint assembly securely, ensuring that marks which were made during disassembly are properly aligned.

Drive Shaft — 4WD — (Cont'd)

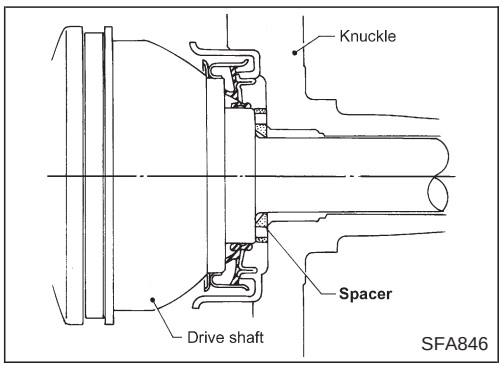


3. Pack drive shaft with specified amount of grease.
   Specified amount of grease:
   135 - 145 g (4.76 - 5.11 oz)
4. Make sure that the boot is properly installed on the drive shaft groove. Set the boot so that it does not swell or deform when its length is "L_2".
   Length "L_2": 96 - 98 mm (3.78 - 3.86 in)
5. Lock new large boot band securely with a suitable tool.
6. Lock new small boot band.

INSTALLATION



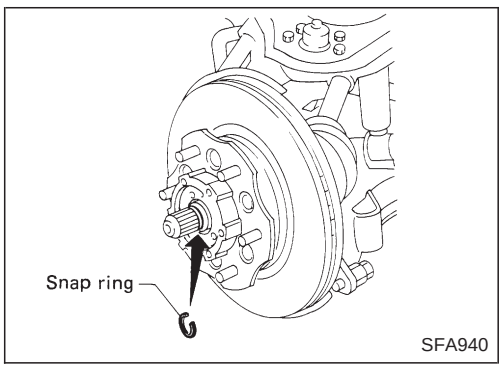
1. Apply multi-purpose grease.



2. Install bearing spacer onto drive shaft.

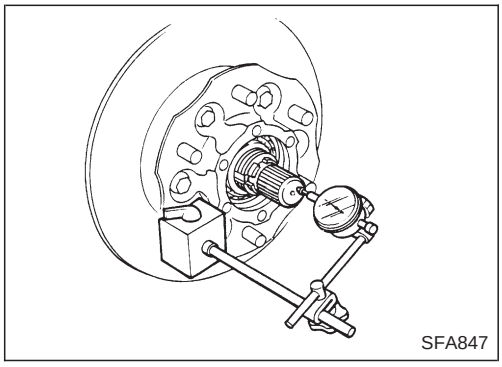
Make sure that the bearing spacer is facing in the proper direction.

3. After installing wheel hub and wheel bearing, adjust wheel bearing preload. Refer to "PRELOAD ADJUSTMENT", "Front Wheel Bearing", "ON-VEHICLE SERVICE", FA-6.



4. When installing drive shaft, adjust drive shaft axial end play by selecting a suitable snap ring.

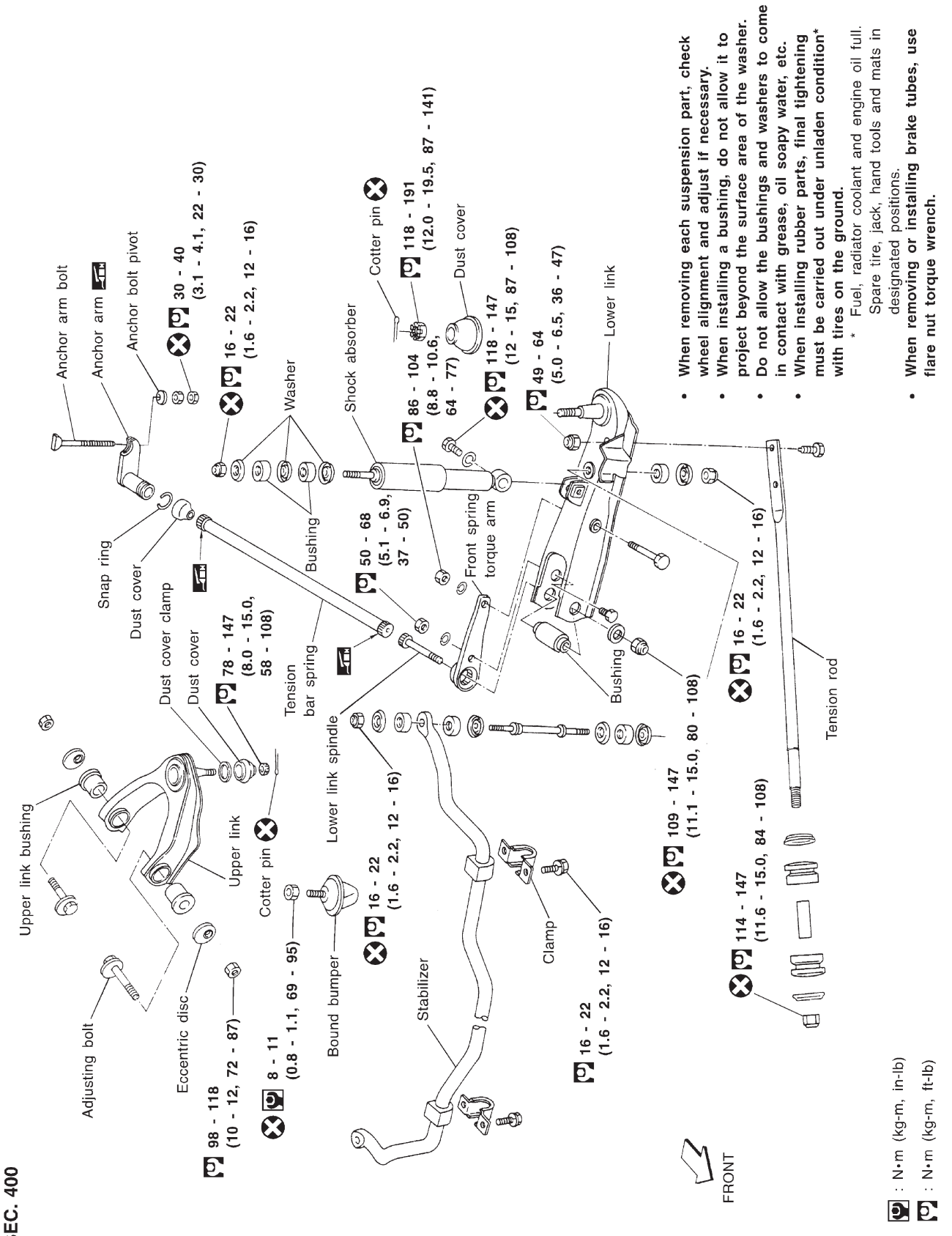
a. Temporarily install new snap ring on drive shaft in the same thickness as it was installed before removal.



b. Set dial gauge on drive shaft end.
c. Measure axial end play of drive shaft.
   Axial end play:
   0.45 mm (0.0177 in) or less
d. If axial end play is not within the specified limit, select another snap ring.

1.1 mm (0.043 in)	**1.3 mm (0.051 in)**
1.5 mm (0.059 in)	**1.7 mm (0.067 in)**
1.9 mm (0.075 in)	**2.1 mm (0.083 in)**
2.3 mm (0.091 in)	

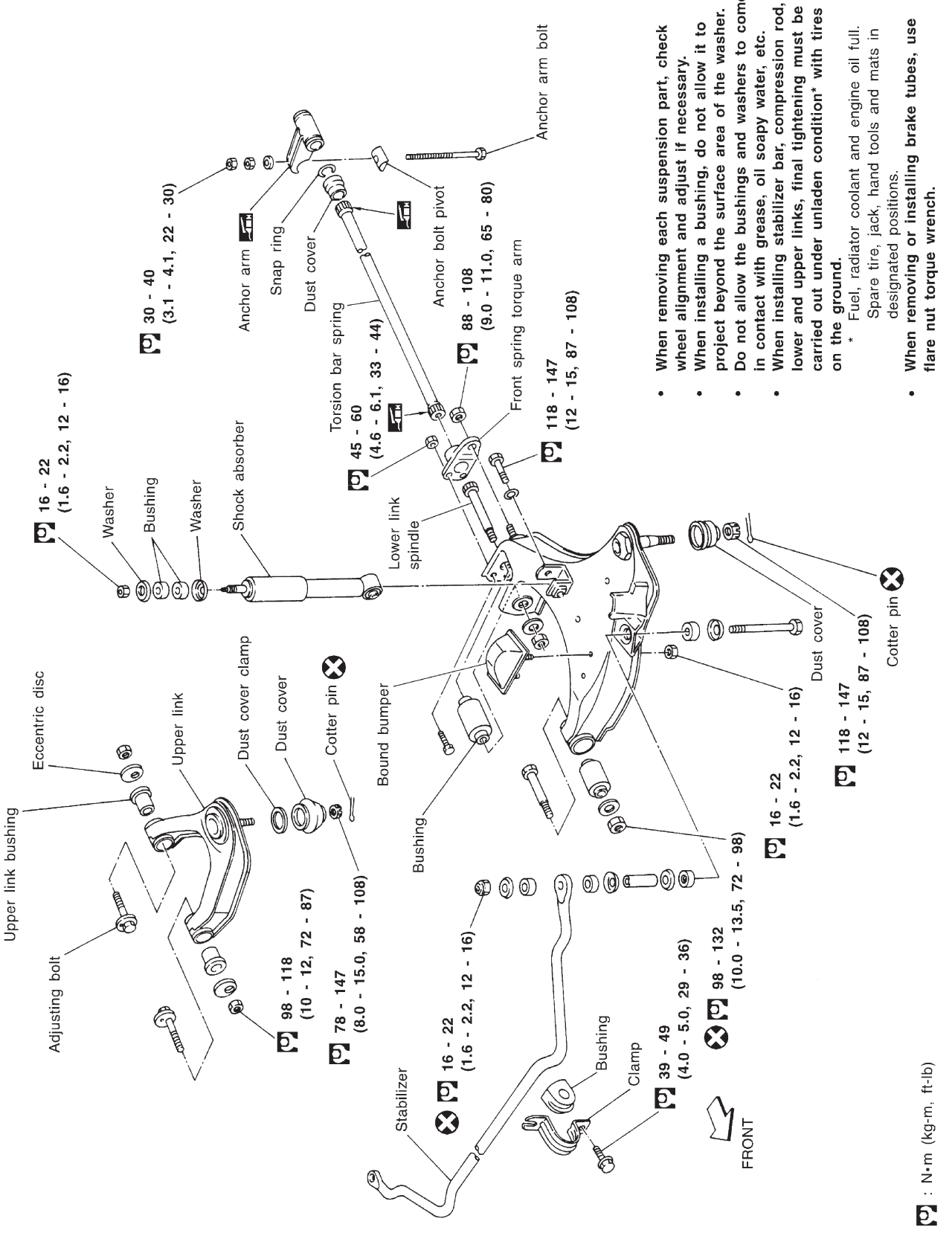
2WD



SEC. 400

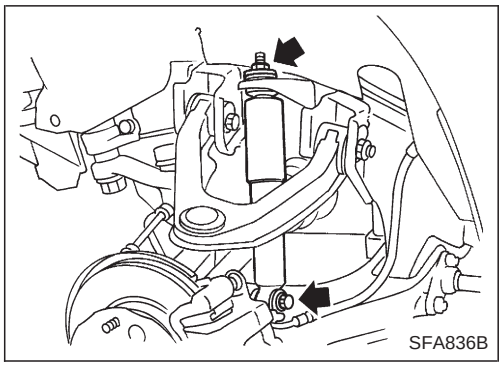
SFA917B

4WD



SEC. 401

SFA835BA


SFA836B

Shock Absorber

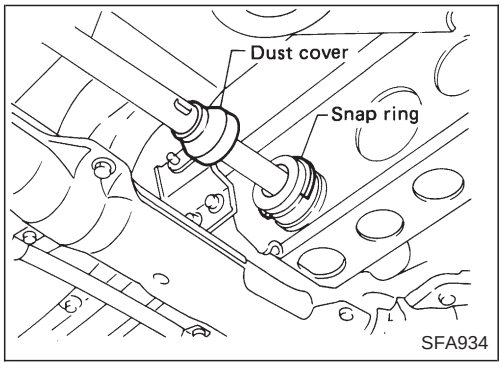
REMOVAL AND INSTALLATION

1. Support lower link with jack.
2. Remove bolt and nut that hold shock absorber.

INSPECTION

Except for nonmetallic parts, clean all parts with suitable solvent and dry with compressed air.
Use compressed air to blow dirt and dust off of nonmetallic parts.

- Check for oil leakage and cracks. Replace if necessary.
- Check piston rod for cracks, deformation and other damage. Replace if necessary.
- Check rubber parts for wear, cracks, damage and deformation. Replace if necessary.



SFA934

Torsion Bar Spring

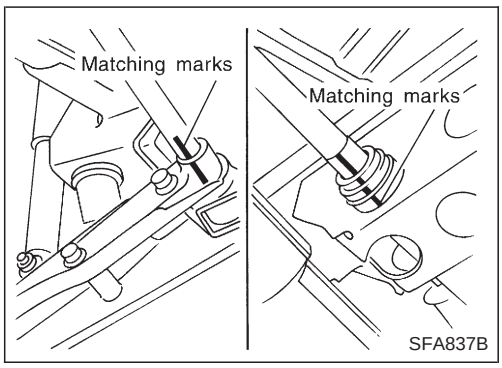
REMOVAL

1. Move dust cover.
2. Paint matching marks on the torsion bar spring and the corresponding arm.

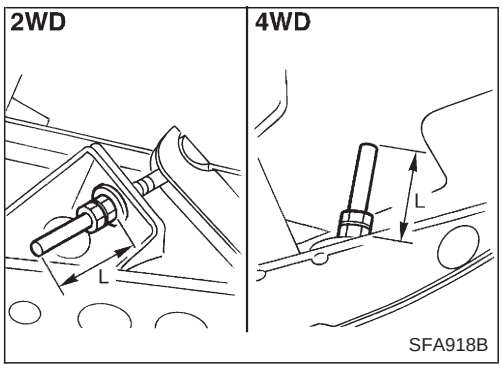
Always use paint to place the matching mark; do not scribe the affected parts.

3. Measure anchor bolt protrusion ''L'' and remove the lock nut and adjusting nut.

Before removing the nuts, ensure that twisting force is eliminated from the torsion bar springs.

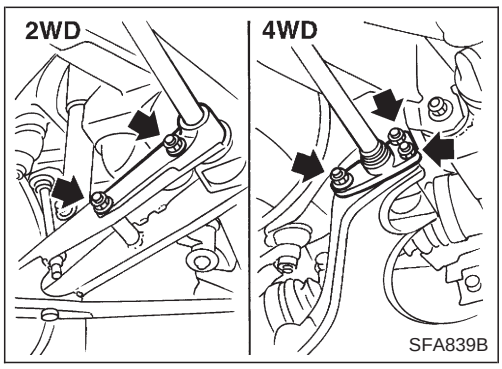


SFA837B



SFA918B

4. Detach snap ring from anchor arm.
- Pull out anchor arm rearward, then withdraw torsion bar spring rearward. — 2WD —
- Remove torque arm. — 2WD —
- Remove torque arm fixing nuts, then withdraw torsion bar spring forward with torque arm. — 4WD —

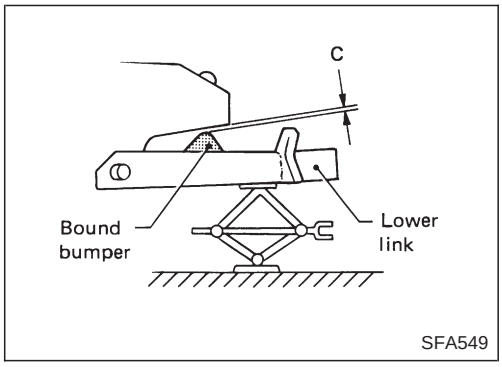


SFA839B

Torsion Bar Spring (Cont'd)

INSPECTION

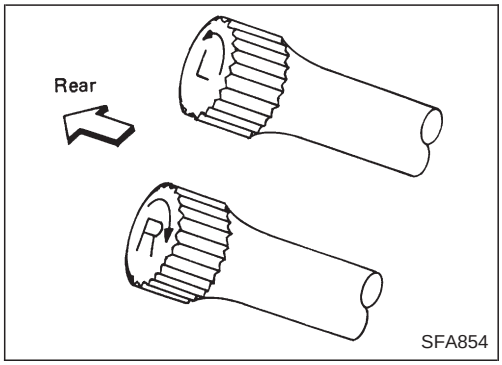
- Check torsion bar spring for wear, twist, bend and other damage.
- Check serrations of each part for cracks, wear, twist and other damage.
- Check dust cover for cracks.



INSTALLATION AND ADJUSTMENT

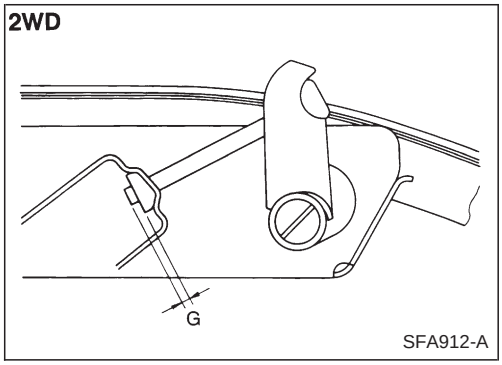
Adjustment of anchor arm adjusting nut is in tightening direction only.
Do not adjust by loosening anchor arm adjusting nut.

1. Install torque arm to lower link. — 2WD —
2. Coat multi-purpose grease on the serration of torsion bar spring.
3. Place lower link in the position where bound bumper clearance "C" is 0.
   Clearance "C": 0 mm (0 in)

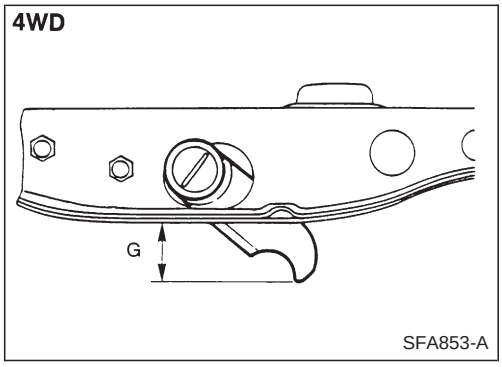


4. Install torsion bar spring. — 2WD —
   Install torsion bar spring with torque arm. — 4WD —

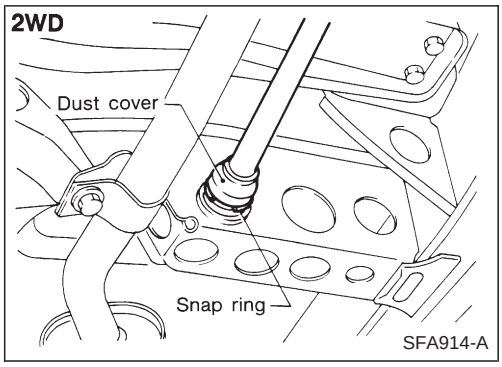
Be sure to install right and left torsion bar springs correctly.



5. While aligning the anchor arm with the matching mark, install the anchor arm to the torsion bar spring.
   If a new torsion bar spring or anchor arm is installed, adjust anchor arm length to the dimension indicated in the figure at the left.
   Standard length "G":
   2WD
   6 - 18 mm (0.24 - 0.71 in)
   4WD
   22 - 36 mm (0.87 - 1.42 in)



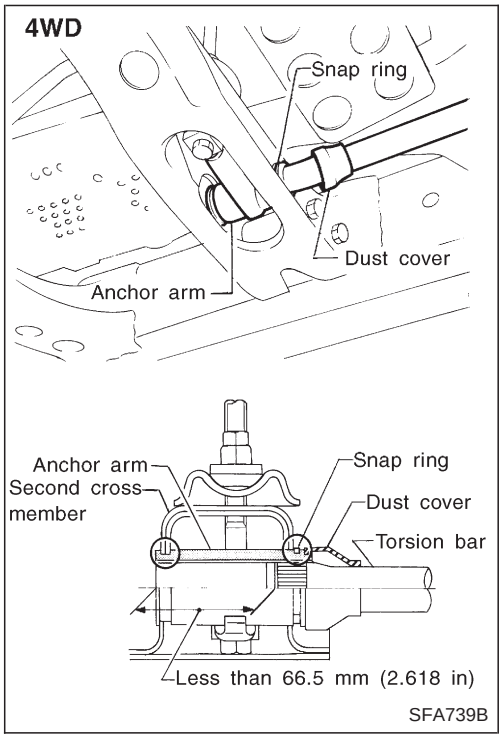
Torsion Bar Spring (Cont'd)



6. Install snap ring to anchor arm and dust cover.

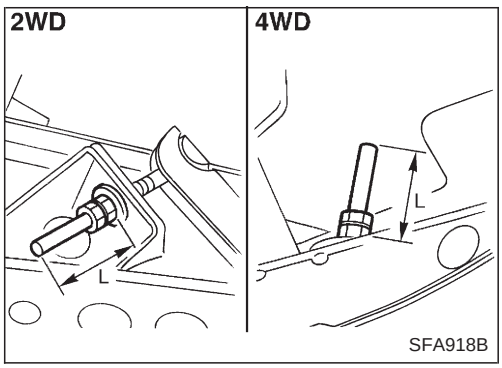
— 2WD —

Make sure that the snap ring is properly installed on the anchor arm groove.

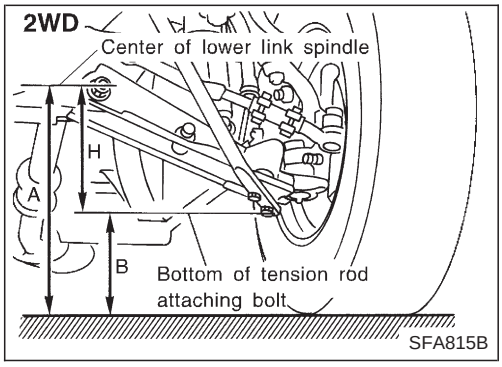


— 4WD —

Make sure that the snap ring and anchor arm are properly installed.



7. Tighten the adjusting nut so the torsion bar length corresponds with dimension ''L'' previously measured during torsion bar removal. Tighten the lock nut to specifications.
   If a new torsion bar spring or anchor arm is installed, tighten the adjusting nut to the dimension indicated in the figure at the left, then tighten the lock nut to specifications.
   Standard length ''L'':
   2WD
   46 mm (1.81 in)
   4WD
   70 mm (2.76 in)

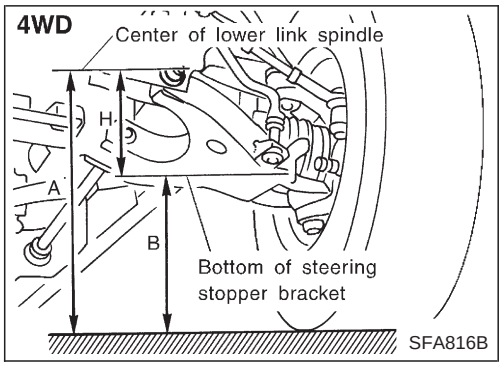


8. Bounce vehicle with tires on ground (Unladen) to eliminate friction of suspension.
9. Measure vehicle posture ''H''.

a. Exercise the front suspension by bouncing the front of the vehicle 4 or 5 times to ensure that the vehicle is in a neutral height attitude.

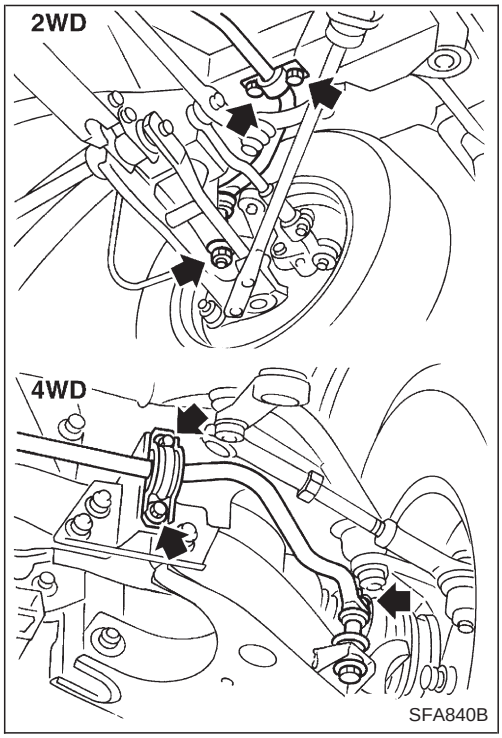
b. Measure vehicle posture ... Dimension ''H''.
   H = A − B mm (in) ''Unladen''
   Refer to ''WHEEL ALIGNMENT (Unladen)'', ''SDS'', FA-36.

Torsion Bar Spring (Cont'd)



10. If height of the vehicle is not within allowable limit, adjust vehicle posture.
    Refer to ''WHEEL ALIGNMENT (Unladen)'', ''SDS'', FA-36.
11. Check wheel alignment if necessary.
    Refer to ''WHEEL ALIGNMENT (Unladen)'', ''SDS'', FA-36.

Stabilizer Bar

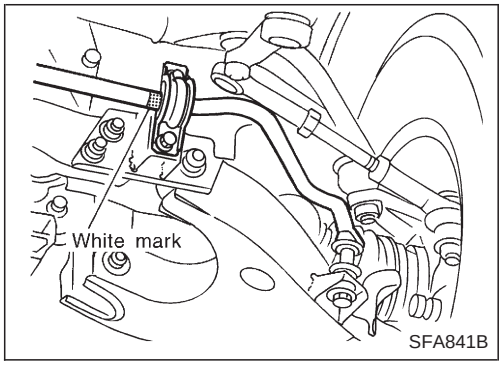


REMOVAL

- Remove stabilizer bar connecting bolts and clamp bolts.

INSPECTION

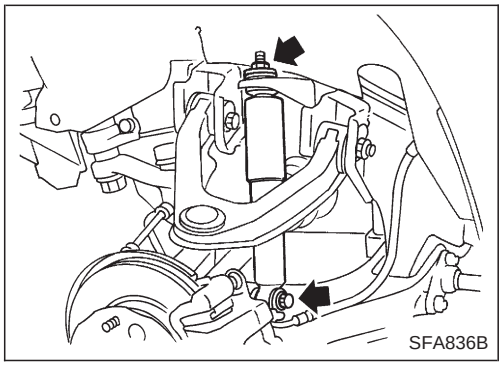
- Check stabilizer bar for twist and deformation.
  Replace if necessary.
- Check rubber bushing for cracks, wear and deterioration.
  Replace if necessary.



INSTALLATION

- Install bushing outside of white mark painted on stabilizer.

Upper Link

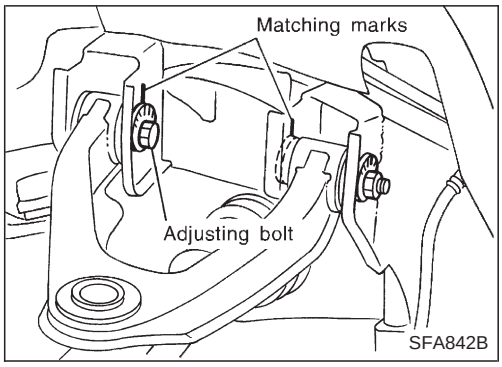


REMOVAL

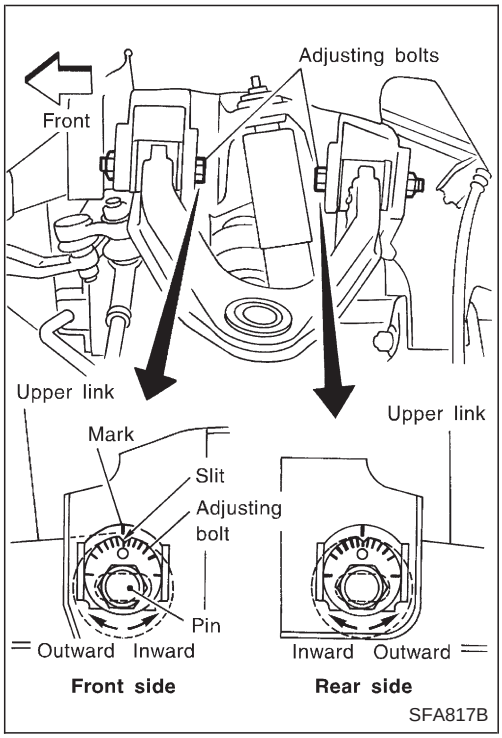
1. Remove shock absorber. Refer to ''Shock Absorber'', FA-28.
2. Separate upper ball joint stud from knuckle spindle.

Support lower link with jack.
Refer to ''Knuckle Spindle'', ''FRONT AXLE'', FA-18.

Upper Link (Cont'd)

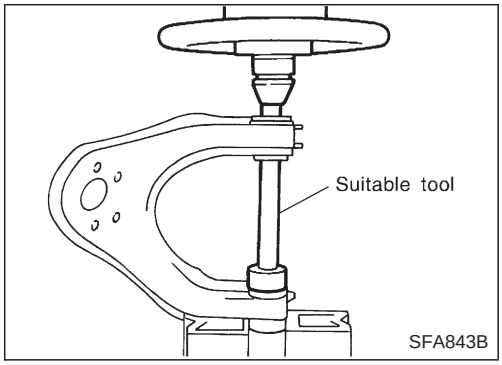


3. Put matching marks on adjusting bolts and remove adjusting bolts.



INSTALLATION

1. While aligning the adjusting bolts with the matching marks, install the upper link.
   If a new upper link or any other suspension part is installed, align the matching mark with the slit as indicated in the figure at the left, then install the upper link.
   Refer to ''Front Wheel Alignment'', ''ON-VEHICLE SERVICE'', FA-7.
2. Install shock absorber.
3. Tighten adjusting bolts under unladen condition with tires on ground.
4. After installing, check wheel alignment. Adjust if necessary. Refer to FA-7.

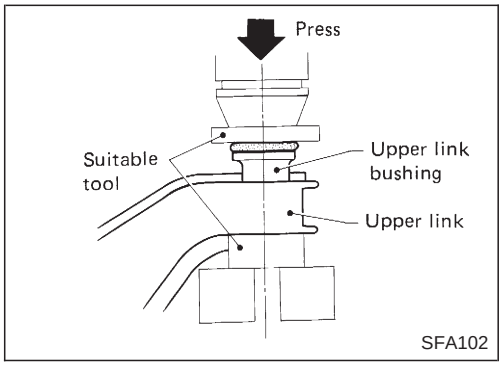


DISASSEMBLY

- Press out upper link bushings.

INSPECTION

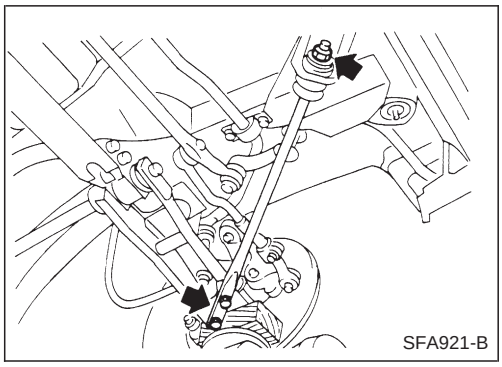
- Check adjusting bolts and rubber bushings for damage. Replace if necessary.
- Check upper link for deformation and cracks. Replace if necessary.



ASSEMBLY

1. Apply soapsuds to rubber bushing.
2. Press upper link bushing.

Press bushing so that the flange of bushing securely contacts the end surface of the upper link collar.

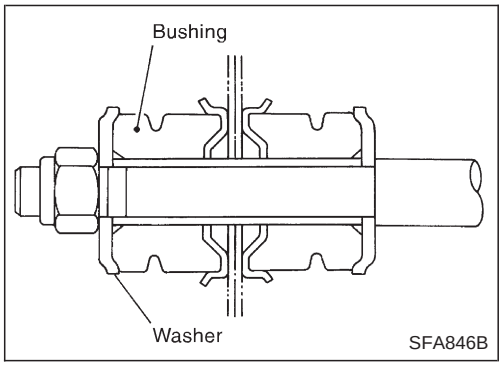

SFA921-B

Tension Rod

REMOVAL AND INSTALLATION

1. Remove fixing nuts on lower link and frame.

Support lower link with jack.



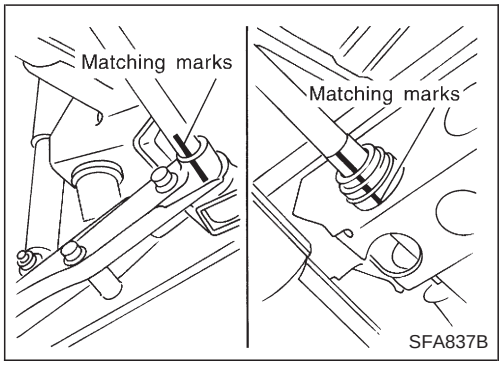
SFA846B

2. Install tension rod.

Make sure that the bushings and washers are installed properly.

INSPECTION

- Check tension rod for deformation and cracks. Replace if necessary.
- Check rubber bushings for damage. Replace if necessary.



SFA837B

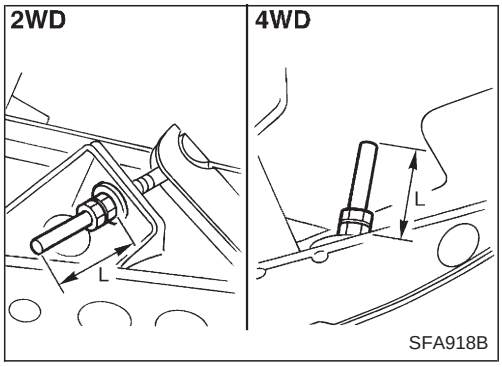
Lower Link

REMOVAL AND INSTALLATION

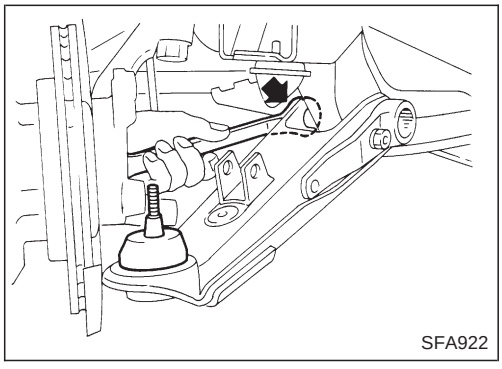
1. Remove torsion bar spring. Refer to ‘‘REMOVAL’’, ‘‘Torsion Bar Spring’’, FA-28.

Make matching marks and measure dimension ‘‘L’’ when loosening adjusting nut until there is no tension on torsion bar spring.

2. Remove shock absorber lower fixing bolt.
3. Remove stabilizer bar connecting bolt.
4. Remove drive shaft. — 4WD —
   Refer to ‘‘Drive Shaft —4WD —’’, ‘‘FRONT AXLE’’, FA-21.
5. Separate lower link ball joint from knuckle spindle.
   Refer to ‘‘Knuckle Spindle’’, ‘‘FRONT AXLE’’, FA-18.

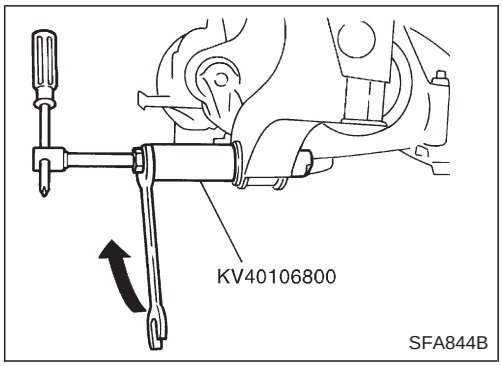


SFA918B


SFA922

6. Remove front lower link fixing nut.

Lower Link (Cont'd)



7. Remove bushing of lower link spindle from frame with Tool.
8. After installing lower link, adjust wheel alignment and vehicle height. Refer to ''Front Wheel Alignment'', ''ON-VEHICLE SERVICE'', FA-7.

INSPECTION

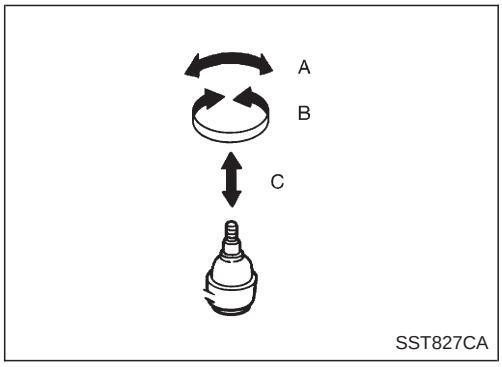
Lower link and lower link spindle

- Check for deformation and cracks. Replace if necessary.

Lower link bushing

- Check for distortion and damage. Replace if necessary.

Upper Ball Joint and Lower Ball Joint



REMOVAL AND INSTALLATION

- Separate knuckle spindle from upper and lower links. Refer to ''Knuckle Spindle'', ''FRONT AXLE'', FA-18.

INSPECTION

- Check joints for play. If ball is worn and play in axial direction is excessive or joint is hard to swing, replace as a upper link or lower link.

  Swinging force (Measure point: Cotter pin hole) ''A'':
  Upper link
  16.7 - 79.4 N (1.7 - 8.1 kg, 3.7 - 17.9 lb)
  Lower link
  2WD 13.7 - 166.7 N (1.4 - 17 kg, 3.1 - 37.5 lb)
  4WD 0 - 67.7 N (0 - 6.9 kg, 0 - 15.2 lb)
  Rotating torque ''B'':
  Upper link
  1.0 - 4.9 N·m (10 - 50 kg-cm, 8.7 - 43.4 in-lb)
  Lower link
  2WD 1.0 - 3.9 N·m (10 - 40 kg-cm, 8.7 - 34.7 in-lb)
  4WD 0 - 4.9 N·m (0 - 50 kg-cm, 0 - 43 in-lb)
  Axial end play ''C'':
  Upper link
  0 mm (0 in)
  Lower link
  2WD 0.1 - 1.0 mm (0.004 - 0.039 in)
  4WD 0.2 mm (0.008 in) or less

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

General Specifications

Suspension type	Independent double wishbone torsion bar spring
Shock absorber type	Double-acting hydraulic
Stabilizer	Standard or optional equipment

Inspection and Adjustment

WHEEL BEARING

2WD

Wheel bearing axial end play mm (in)	0 (0)
Wheel bearing lock nut	
Tightening torque N·m (kg-m, ft-lb)	34 - 39 (3.5 - 4.0, 25 - 29)
Return angle degree	45° - 60°
Wheel bearing starting torque	
At wheel hub bolt With new grease seal N (kg, lb)	9.8 - 28.4 (1.0 - 2.9, 2.2 - 6.4)
With used grease seal N (kg, lb)	9.8 - 23.5 (1.0 - 2.4, 2.2 - 5.3)

4WD

Wheel bearing lock nut	
Tightening torque N·m (kg-m, ft-lb)	78 - 98 (8 - 10, 58 - 72)
Retightening torque after loosening wheel bearing lock nut N·m (kg-m, ft-lb)	0.5 - 1.5 (0.05 - 0.15, 0.4 - 1.1)
Axial end play mm (in)	0 (0)
Starting force at wheel hub bolt N (kg, lb)	A
Turning angle degree	15° - 30°
Starting force at wheel hub bolt N (kg, lb)	B
Wheel bearing preload at wheel hub bolt N (kg, lb)	
B − A	7.06 - 20.99 (0.72 - 2.14, 1.59 - 4.72)

WHEEL RUNOUT AVERAGE*

Wheel type	Steel		
	5J-14	5.5K-15	6J-16
Radial runout limit mm (in)	0.5 (0.020)	0.8 (0.031)	1.2 (0.047)
Lateral runout limit mm (in)	0.8 (0.031)	0.8 (0.031)	1.2 (0.047)

* Wheel runout average = (Outside runout value + Inside runout value) x 0.5

UPPER BALL JOINT

Swinging force "A" (Measuring point: cotter pin hole of ball stud) N (kg, lb)	16.7 - 79.4 (1.7 - 8.1, 3.7 - 17.9)
Turning torque "B" N·m (kg-cm, in-lb)	1.0 - 4.9 (10 - 50, 8.7 - 43.4)
Vertical end play "C" mm (in)	0 (0)

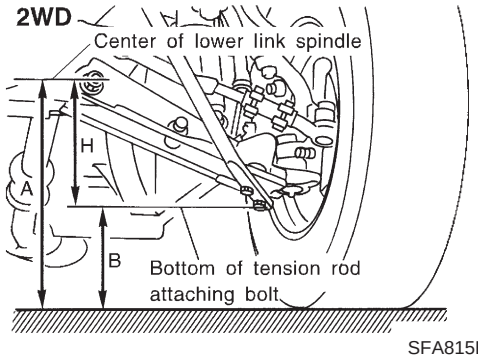
LOWER BALL JOINT

Applied model	2WD	4WD
Swinging force "A" (Measuring point: cotter pin hole of ball stud) N (kg, lb)	13.7 - 166.7 (1.4 - 17, 3.1 - 37.5)	0 - 67.7 (0 - 6.9, 0 - 15.2)
Turning torque "B" N·m (kg-cm, in-lb)	1.0 - 3.9 (10 - 40, 8.7 - 34.7)	0 - 4.9 (0 - 50, 0 - 43)
Vertical end play "C" mm (in)	0.1 - 1.0 (0.004 - 0.039)	0.2 (0.008 in) or less

WHEEL ALIGNMENT (Unladen*1)

2WD

Camber	Degree minute (Decimal degree)	Minimum		−0°05′ (−0.08°)
		Nominal		0°25′ (0.42°)
		Maximum		0°55′ (0.92°)
		Left and right difference		45′ (0.75°) or less
Caster	Degree minute (Decimal degree)	Minimum		−0°08′ (−0.13°)
		Nominal		0°22′ (0.37°)
		Maximum		0°52′ (0.87°)
		Left and right difference		45′ (0.75°) or less
Kingpin inclination	Degree minute (Decimal degree)	Minimum		8°35′ (8.58°)
		Nominal		9°05′ (9.08°)
		Maximum		9°35′ (9.58°)
Total toe-in Distance (A − B) mm (in)		Radial tire	Minimum	2 (0.08)
			Nominal	3 (0.12)
			Maximum	4 (0.16)
		Bias tire	Minimum	4 (0.16)
			Nominal	5 (0.20)
			Maximum	6 (0.24)
Angle (left plus right)	Degree minute (Decimal degree)	Radial tire	Minimum	10′ (0.17°)
			Nominal	15′ (0.25°)
			Maximum	20′ (0.33°)
		Bias tire	Minimum	20′ (0.33°)
			Nominal	25′ (0.42°)
			Maximum	30′ (0.50°)
Wheel turning angle Full turn*2 Inside	Degree minute (Decimal degree)	Minimum		36°00′ (36.00°)
		Nominal		38°00′ (38.00°)
		Maximum		38°00′ (38.00°)
Outside	Degree minute (Decimal degree)	Minimum		32°36′ (32.60°)
		Nominal		34°36′ (34.60°)
		Maximum		34°36′ (34.60°)
Vehicle posture				
Lower arm pivot height (H)	mm (in)			111 - 115 (4.37 - 4.53)



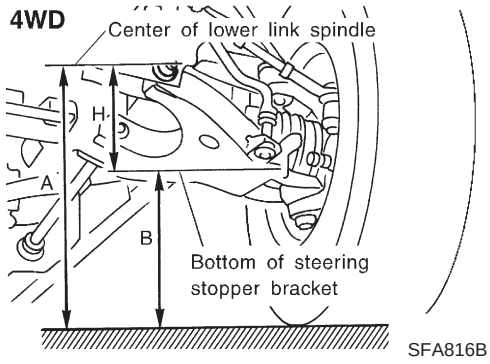
SFA815B

*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.

4WD

Camber	Degree minute (Decimal degree)	Minimum		0°06′ (0.10°)
		Nominal		0°36′ (0.60°)
		Maximum		1°06′ (1.10°)
		Left and right difference		45′ (0.75°) or less
Caster	Degree minute (Decimal degree)	Minimum		1°40′ (1.67°)
		Nominal		2°10′ (2.17°)
		Maximum		2°40′ (2.67°)
		Left and right difference		45′ (0.75°) or less
Kingpin inclination	Degree minute (Decimal degree)	Minimum		10°18′ (10.30°)
		Nominal		10°48′ (10.80°)
		Maximum		11°18′ (11.30°)
Total toe-in Distance (A − B) mm (in)		Radial tire	Minimum	3 (0.12)
			Nominal	4 (0.16)
			Maximum	5 (0.20)
		Bias tire	Minimum	4 (0.16)
			Nominal	5 (0.20)
			Maximum	6 (0.24)
Total toe-in Angle (left plus right)	Degree minute (Decimal degree)	Radial tire	Minimum	15′ (0.25°)
			Nominal	20′ (0.33°)
			Maximum	25′ (0.42°)
		Bias tire	Minimum	20′ (0.33°)
			Nominal	25′ (0.42°)
			Maximum	30′ (0.50°)
Wheel turning angle Full turn*2	Inside Degree minute (Decimal degree)	Minimum		33°06′ (33.10°)
		Nominal		35°06′ (35.10°)
		Maximum		35°06′ (35.10°)
	Outside Degree minute (Decimal degree)	Minimum		31°12′ (31.20°)
		Nominal		33°12′ (33.20°)
		Maximum		33°12′ (33.20°)
Vehicle posture				
Lower arm pivot height (H)	mm (in)			45.5 - 49.5 (1.791 - 1.949)



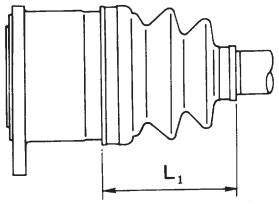
*2: On power steering models, wheel turning force (at circumference of steering wheel) of 98 to 147 N (10 to 15 kg, 22 to 33 lb) with engine idle.

Inspection and Adjustment (Cont'd)

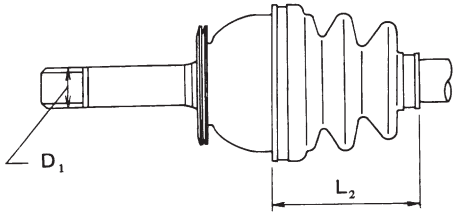
DRIVE SHAFT (4WD)

Drive shaft joint type	
Final drive side	TS82F
Wheel side	ZF100
Fixed joint axial end play limit mm (in)	1 (0.04)
Diameter mm (in)	
Wheel side (D_1)	29.0 (1.142)
Grease	
Quality	Nissan genuine grease or equivalent
Capacity g (oz)	
Final drive side	95 - 105 (3.35 - 3.70)
Wheel side	135 - 145 (4.76 - 5.11)
Boot length mm (in)	
Final drive side (L_1)	95 - 97 (3.74 - 3.82)
Wheel side (L_2)	96 - 98 (3.78 - 3.86)

Final drive side



Wheel side



SFA877A

Drive shaft axial end play

Drive shaft axial end play mm (in)	0.45 (0.0177) or less

Drive shaft end snap ring

Thickness mm (in)	Part No.
1.1 (0.043)	39253-88G10
1.3 (0.051)	39253-88G11
1.5 (0.059)	39253-88G12
1.7 (0.067)	39253-88G13
1.9 (0.075)	39253-88G14
2.1 (0.083)	39253-88G15
2.3 (0.091)	39253-88G16