SECTION FSU
FRONT SUSPENSION

CONTENTS

PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000006749808

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- **When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.**

Precaution

INFOID:0000000006749809

- When installing the rubber bushings, the final tightening must be done under unladen condition and with the tires on level ground. Oil will shorten the life of the rubber bushings, so wipe off any spilled oil immediately.
- Unladen condition means the fuel tank, engine coolant and lubricants are at the full specification. The spare tire, jack, hand tools, and mats are in their designated positions.
- After installing suspension components, check the wheel alignment.
- Lock nuts are not reusable. Always use new lock nuts for installation. New lock nuts are pre-oiled, do not apply any additional lubrication.

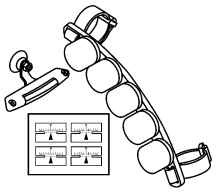
PREPARATION

PREPARATION

Special Service Tool

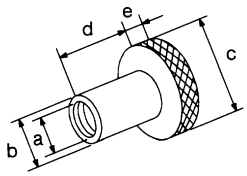
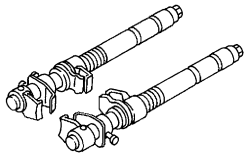
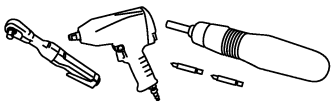
INFOID:0000000006749810

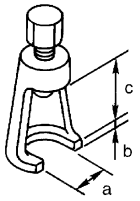
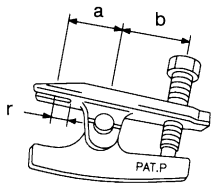
The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
— (J-49286-1) Drift and pull gauge set  AWEIA0156ZZ	Measuring drift and pull

Commercial Service Tool

INFOID:0000000006749811

Tool name	Description
Attachment wheel alignment  NT148	Measure wheel alignment **a: Screw M24 x 1.5 pitch** **b: 35 mm (1.38 in) dia.** **c: 65 mm (2.56 in) dia.** **d: 56 mm (2.20 in)** **e: 12 mm (0.47 in)**
Spring compressor  NT717	Removing and installing coil spring
Power tool  PIIB1407E	Loosening nuts, screws and bolts

Tool name	Description
Gear arm puller  NT694	Removing ball joint for steering knuckle **a: 34 mm (1.34 in)** **b: 6.5 mm (0.256 in)** **c: 61.5 mm (2.421 in)**
Ball joint remover  NT546	Removing tie-rod outer end **a: 33 mm (1.30 in)** **b: 50 mm (1.97 in)** **r: 11.5 mm (0.453 in)**

SYMPTOM DIAGNOSIS

NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:0000000006749812

Use the chart below to help you find the cause of the symptom. Repair or replace parts as necessary.

Reference page		FSU-6, "On-Vehicle Inspection and Service"	FSU-8, "Front Wheel Alignment"	FSU-6, "On-Vehicle Inspection and Service"	FSU-6, "On-Vehicle Inspection and Service"	FSU-24, "Spring Free Height"	FSU-6, "On-Vehicle Inspection and Service"	FSU-8, "Front Wheel Alignment"	FSU-8, "Front Wheel Alignment"	DLN-5, "NVH Troubleshooting Chart" (3S1355) DLN-18, "NVH Troubleshooting Chart" (3S1415)	FAX-4, "NVH Troubleshooting Chart"	WT-61, "NVH Troubleshooting Chart"	WT-61, "NVH Troubleshooting Chart"	BR-6, "NVH Troubleshooting Chart"	ST-5, "NVH Troubleshooting Chart"
Possible Cause and SUSPECTED PARTS		Improper installation, looseness	Shock absorber deformation	Bushing or mounting deterioration	Parts interference	Spring fatigue	Suspension looseness	Incorrect wheel alignment	Stabilizer bar fatigue	PROPELLER SHAFT	WHEEL HUB	TIRES	ROAD WHEEL	BRAKES	STEERING
Symptom	Noise	×	×	×	×	×	×			×	×	×	×	×	×
	Shake	×	×	×	×		×			×	×	×	×	×	×
	Vibration	×	×	×	×	×				×	×	×			×
	Shimmy	×	×	×	×			×			×	×	×	×	×
	Shudder	×	×	×							×	×	×	×	×
	Poor quality ride or handling	×	×	×	×	×		×	×		×	×	×		

x: Applicable

PERIODIC MAINTENANCE

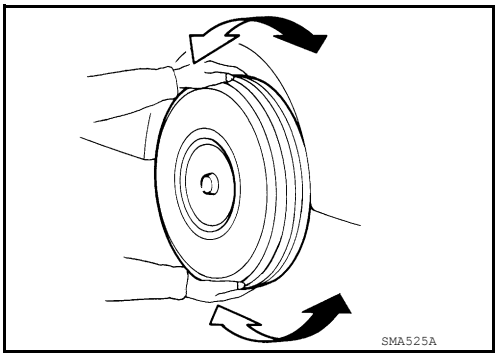
FRONT SUSPENSION ASSEMBLY

On-Vehicle Inspection and Service

INFOID:0000000006749816

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

- Shake each front wheel to check for excessive play.
  If looseness is noted, inspect wheel bearing end play, then check ball joint end play. Refer to FAX-8, "Wheel Bearing" and FSU-25, "Ball Joint".
- Make sure that the cotter pins are inserted.



STEERING STOPPER BOLT CAP

Check the steering stopper bolt cap for cracks or excessive wear.

SHOCK ABSORBER

Check shock absorber for oil leakage, deformation, cracks or damage.

UPPER AND LOWER BALL JOINT

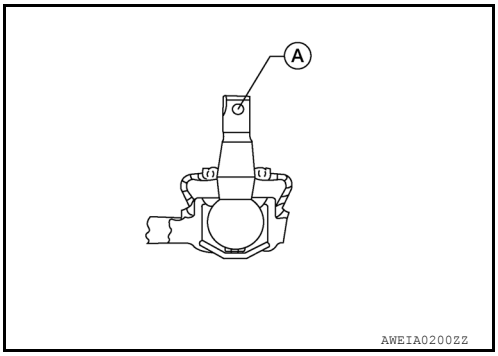
- Check suspension ball joint for grease leakage and ball joint dust cover for cracks and other damage.
- Check the ball joint for excessive play. Replace the upper or lower link assembly if any of the following exists:

- Ball joint stud is worn.
- Ball joint is hard to swing.
- Ball joint play in axial directions or end play is excessive.

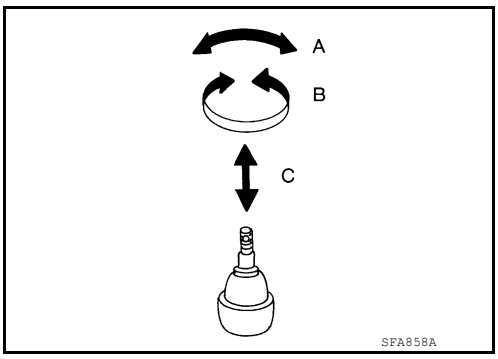
- Check the ball joint play.

NOTE:

- Before checking the axial forces and end play, turn the lower ball joint at least 10 revolutions so that the ball joint is properly broken in.
- Measure the ball joint swinging force at the cotter pin hole (A) for upper ball joint and the lower ball joint as shown.



Swinging force (A)	
Upper ball joint	**: Refer to FSU-25, "Ball Joint".**
Lower ball joint	**: Refer to FSU-25, "Ball Joint".**
Turning torque (B)	**: Refer to FSU-25, "Ball Joint".**
Vertical end play (C)	**: Refer to FSU-25, "Ball Joint".**



KNUCKLE

- Check for deformity, cracks, wear and damage.
- Make sure the mounting conditions (looseness, backlash) are within specification. Refer to FSU-11, "Exploded View".

FRONT WHEEL ALIGNMENT INSPECTION AND ADJUSTMENT

Front Wheel Alignment

INFOID:0000000006749814

PRELIMINARY INSPECTION

WARNING:
Always adjust the alignment with the vehicle on a flat surface.
NOTE:
If alignment is out of specification, inspect and replace any damaged or worn suspension parts before making any adjustments.

1. Check and adjust the wheel alignment with the vehicle under unladen conditions. “Unladen conditions” means that the fuel, coolant, and lubricant are full; and that the spare tire, jack, hand tools and mats are in their designated positions.
2. Check the tires for incorrect air pressure and excessive wear.
3. Check the wheels for run out and damage. Refer to WT-62, "Inspection".
4. Check the wheel bearing axial end play. Refer to FAX-5, "On-Vehicle Inspection and Service".
5. Check the shock absorbers for leaks or damage.
6. Check each mounting point of the suspension components for any excessive looseness or damage.
7. Check each link, arm, and the rear suspension member for any damage.
8. Check the vehicle height. Refer to FSU-25, "Wheelarch Height (Unladen*1)".

GENERAL INFORMATION AND RECOMMENDATIONS

1. A Four-Wheel Thrust Alignment should be performed.
   - This type of alignment is recommended for any NISSAN vehicle.
   - The four-wheel “thrust” process helps ensure that the vehicle is properly aligned and the steering wheel is centered.
   - The alignment machine itself should be capable of accepting any NISSAN vehicle.
   - The alignment machine should be checked to ensure that it is level.
2. Make sure the alignment machine is properly calibrated.
   - Your alignment machine should be regularly calibrated in order to give correct information.
   - Check with the manufacturer of your specific alignment machine for their recommended Service/Calibration Schedule.

THE ALIGNMENT PROCESS

IMPORTANT: Use only the alignment specifications listed in this Service Manual. Refer to FSU-24, "Wheel Alignment (Unladen*1)".

1. When displaying the alignment settings, many alignment machines use “indicators”: (Green/red, plus or minus, Go/No Go). **Do NOT use these indicators.**
   - The alignment specifications programmed into your alignment machine that operate these indicators may not be correct.
   - This may result in an ERROR.
2. Most camera-type alignment machines are equipped with both "Rolling Compensation" method and optional "Jacking Compensation" method to "compensate" the alignment targets or head units. "Rolling Compensation" is the preferred method.
   - If using the "Rolling Compensation" method, after installing the alignment targets or head units, push or pull on the rear wheel to move the vehicle. Do not push or pull the vehicle body.
   - If using the "Jacking Compensation" method, after installing the alignment targets or head units, raise the vehicle and rotate the wheels 1/2 turn both ways.
     NOTE:
     Do not use the "Rolling Compensation" method if you are using sensor-type alignment equipment.
   - Follow all instructions for the alignment machine you are using for more information.

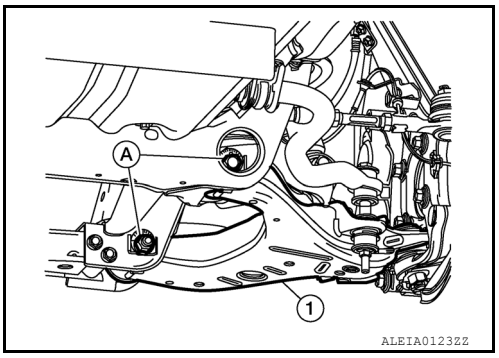
CAMBER AND CASTER

1. Measure camber and caster of both the right and left wheels with a suitable alignment gauge and adjust as necessary to specification.

Camber and caster : Refer to FSU-24, "Wheel Alignment (Unladen*1)".

NOTE:
Some vehicles may be equipped with straight (non-adjustable) lower link bolts and washers. In order to adjust camber and caster on these vehicles, first replace the lower link bolts and washers with adjustable (cam) bolts and washers.

2. If outside of the specified value, adjust camber and caster using the cam bolts (A) in the front lower link (1).
CAUTION:
After adjusting the camber and caster, check the toe-in.
NOTE:
Camber changes about 3' (0.05°) with each graduation of one cam bolt (A). Refer to table below for examples of lower link cam bolt (A) effect on camber and caster.



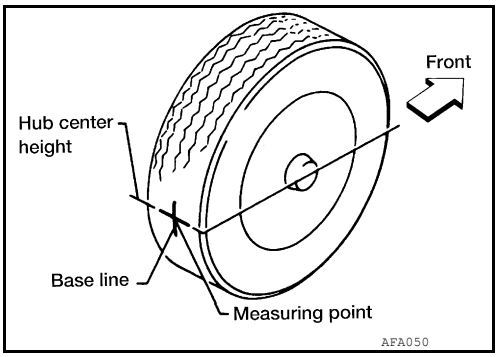
Rear cam bolt	1 In	1 Out	1 In	1 Out	0	0	1 In	1 Out
Front cam bolt	1 Out	1 In	1 In	1 Out	1 In	1 Out	0	0
Camber Degree minute (Decimal degree)	0 (0)	0 (0)	8' (0.13°)	- 8' (-0.13°)	4' (0.07°)	- 4' (-0.07°)	4' (0.07°)	- 4' (-0.07°)
Caster Degree minute (Decimal degree)	- 13' (-0.22°)	13' (0.22°)	0 (0)	0 (0)	7' (0.12°)	- 7' (-0.12°)	- 7' (-0.12°)	7' (0.12°)

3. Tighten the cam bolt nuts to specification. Refer to FSU-14, "Exploded View".

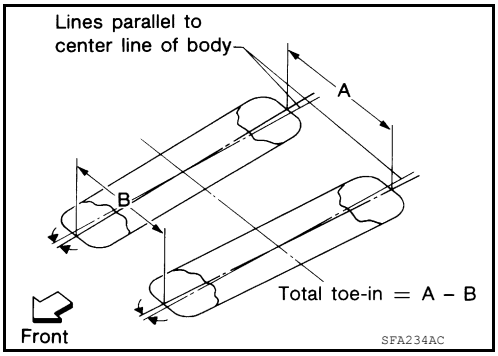
TOE-IN

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

1. Bounce the front of vehicle up and down to stabilize the vehicle height (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 front tires at the same height as hub center as shown. These marks are measuring points.



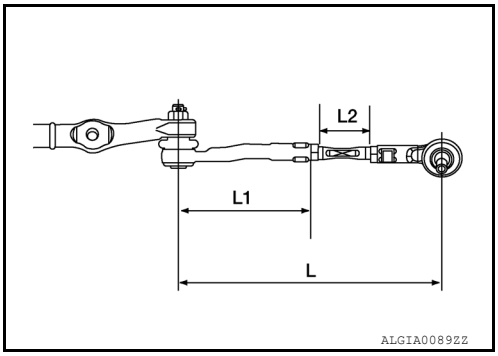
4. Measure the distance (A) on the rear side of the front tires as shown.
5. Push the vehicle slowly ahead to rotate the wheels 180° (1/2 a turn).
   CAUTION:
   If the wheels have rotated more than 180° (1/2 turn), start this procedure again from the beginning. Do not push the vehicle backward.
6. Measure the distance (B) on the front side of the front tires at the same marks as shown. Total toe-in is calculated as (A – B).



Total toe-in : Refer to FSU-24, "Wheel Alignment (Unladen*1)".

7. Adjust the toe-in by varying the length of the steering outer socket.

a. Loosen the outer tie-rod lock nuts.
b. Adjust the toe-in by screwing the outer tie-rods in or out.



Standard length (L) : Refer to ST-39, "Steering Linkage".
Inner socket length (L1) : Refer to ST-39, "Steering Linkage".
Possible amount of adjustment (L2) : Refer to ST-39, "Steering Linkage".

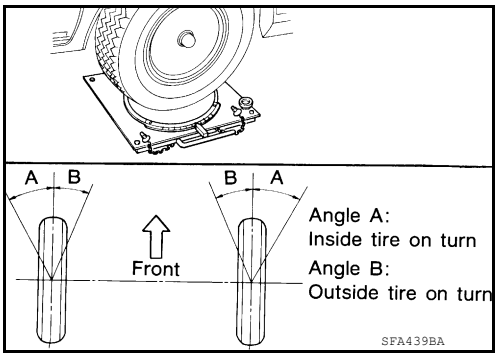
c. Tighten the outer tie-rod lock nuts to specification.

Lock nut : Refer to ST-19, "Exploded View - Steering Linkage".

FRONT WHEEL TURNING ANGLE

NOTE:
Check front wheel turning angle after the toe-in inspection.

1. Place front wheels on turning radius gauges in straight ahead position and rear wheels on stands so that vehicle can be level. Check the maximum inner and outer wheel turning angles for LH and RH road wheels.
2. Start engine and run at idle, turn steering wheel all the way right and left, measure the turning angle.



Wheel turning angle (full turn) : Refer to FSU-24, "Wheel Alignment (Unladen*1)".

- Any turning angles are not adjustable. If any of steering angles are out of the specification, check if the following parts are worn or damaged:
  - Steering gear
  - Steering column
  - Steering linkage
  - Front suspension components

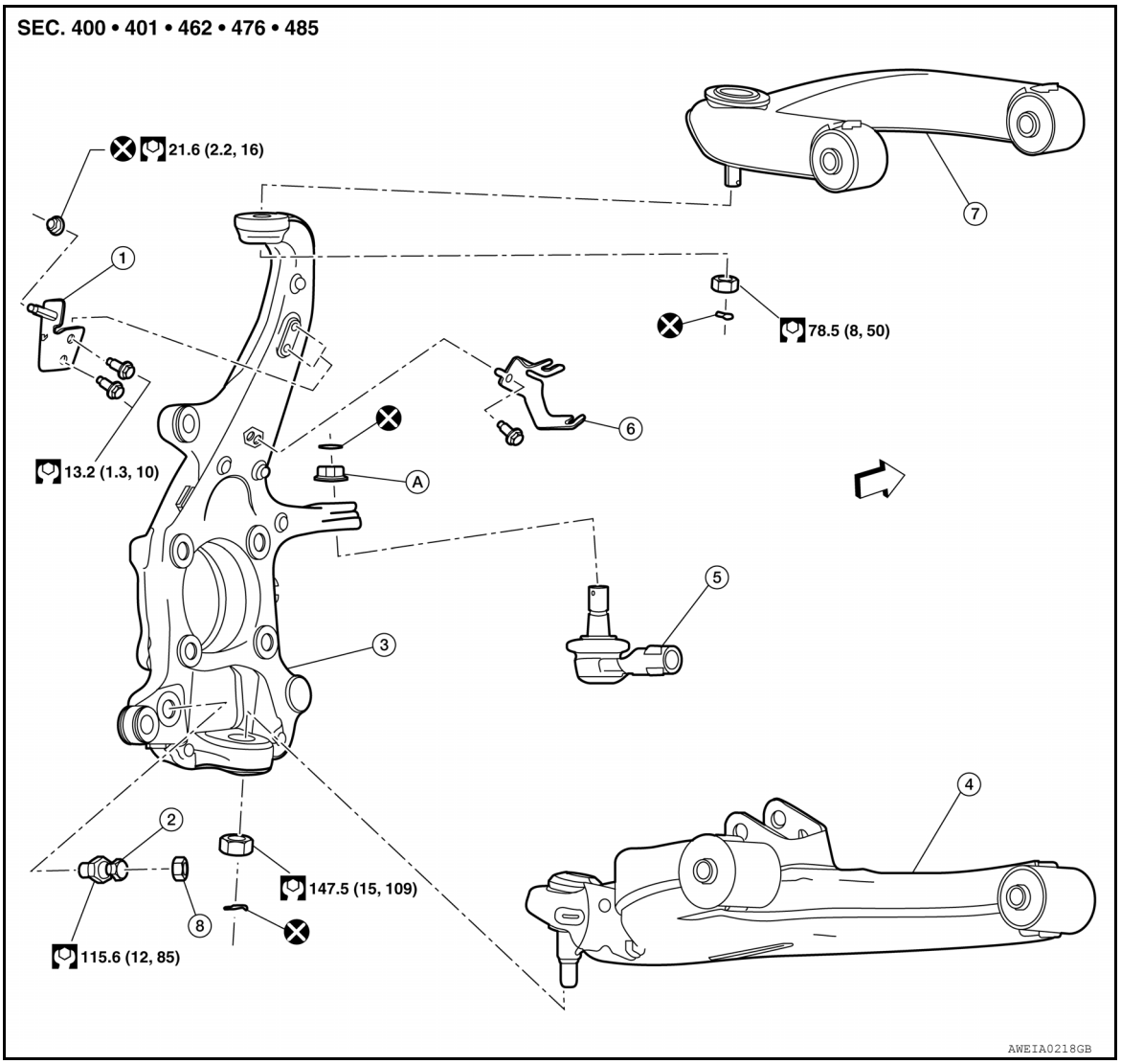
  If found that they are worn or damaged, replace them with new ones.

REMOVAL AND INSTALLATION

KNUCKLE

Exploded View

INFOID:0000000007081865



1. Brake hose bracket
2. Steering stopper bolt
3. Steering knuckle
4. Lower link
5. Outer socket
6. Wheel sensor wiring harness bracket
7. Upper link
8. Steering stopper bolt cap
A. Refer to ST-19, "Exploded View - Steering Linkage".

⇦ Front

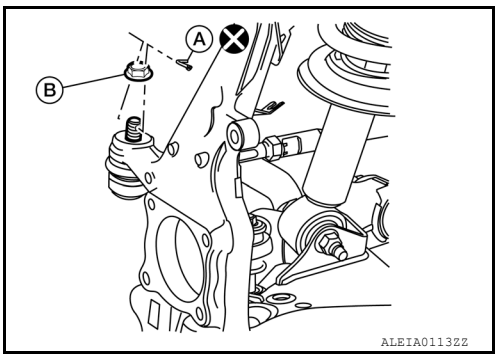
Removal and Installation

INFOID:0000000006749818

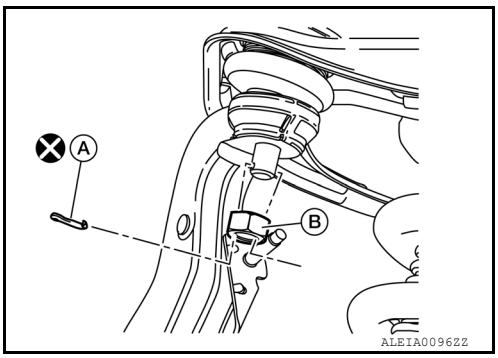
REMOVAL

1. Remove wheel hub and bearing assembly. Refer to FAX-6, "Removal and Installation".
   - Disconnect wheel sensor harness connector. Do not remove wheel sensor from wheel hub and bearing assembly for this procedure.

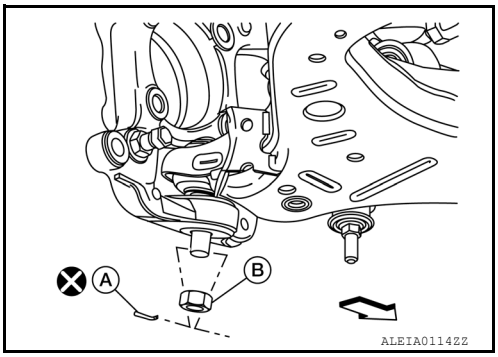
2. Remove the cotter pin (A) and nut (B) from the outer socket and discard the cotter pin. Separate the outer socket from the steering knuckle using suitable tool.
   CAUTION:
   - **Be careful not to damage the outer joint boot.**



3. Remove cotter pin (A) and nut (B) from upper link ball joint and discard the cotter pin. Separate the upper link ball joint from the steering knuckle using suitable tool.
   CAUTION:
   - **Be careful not to damage the upper link ball joint boot.**



4. Remove the cotter pin (A) and nut (B) from the lower link ball joint and discard the cotter pin. Separate the lower link ball joint from steering knuckle using suitable tool.
   ⇦: Vehicle front
   CAUTION:
   - **Be careful not to damage the lower link ball joint boot.**



5. Remove steering knuckle from vehicle. Transfer the following components if necessary.
   - Wheel sensor bracket
   - Brake hose bracket
   - Steering stopper bolt

INSPECTION AFTER REMOVAL

Check for deformity, cracks and damage on each part; replace if necessary.

- Perform ball joint inspection. Refer to FSU-6, "On-Vehicle Inspection and Service".

INSTALLATION

Installation is in the reverse order of removal.

- Refer to FSU-11, "Exploded View" for tightening torques.
  CAUTION:
  Use a new cotter pin for installation of lock nut.
- After installation, check that the front wheel alignment is within specification. Refer to FSU-8, "Front Wheel Alignment".

UPPER BALL JOINT AND LOWER BALL JOINT

Removal and Installation

INFOID:0000000006749819

The ball joints are part of the upper and lower links. Refer to FSU-16, "Removal and Installation" (upper link), FSU-14, "Removal and Installation" (lower link).

LOWER LINK

Exploded View

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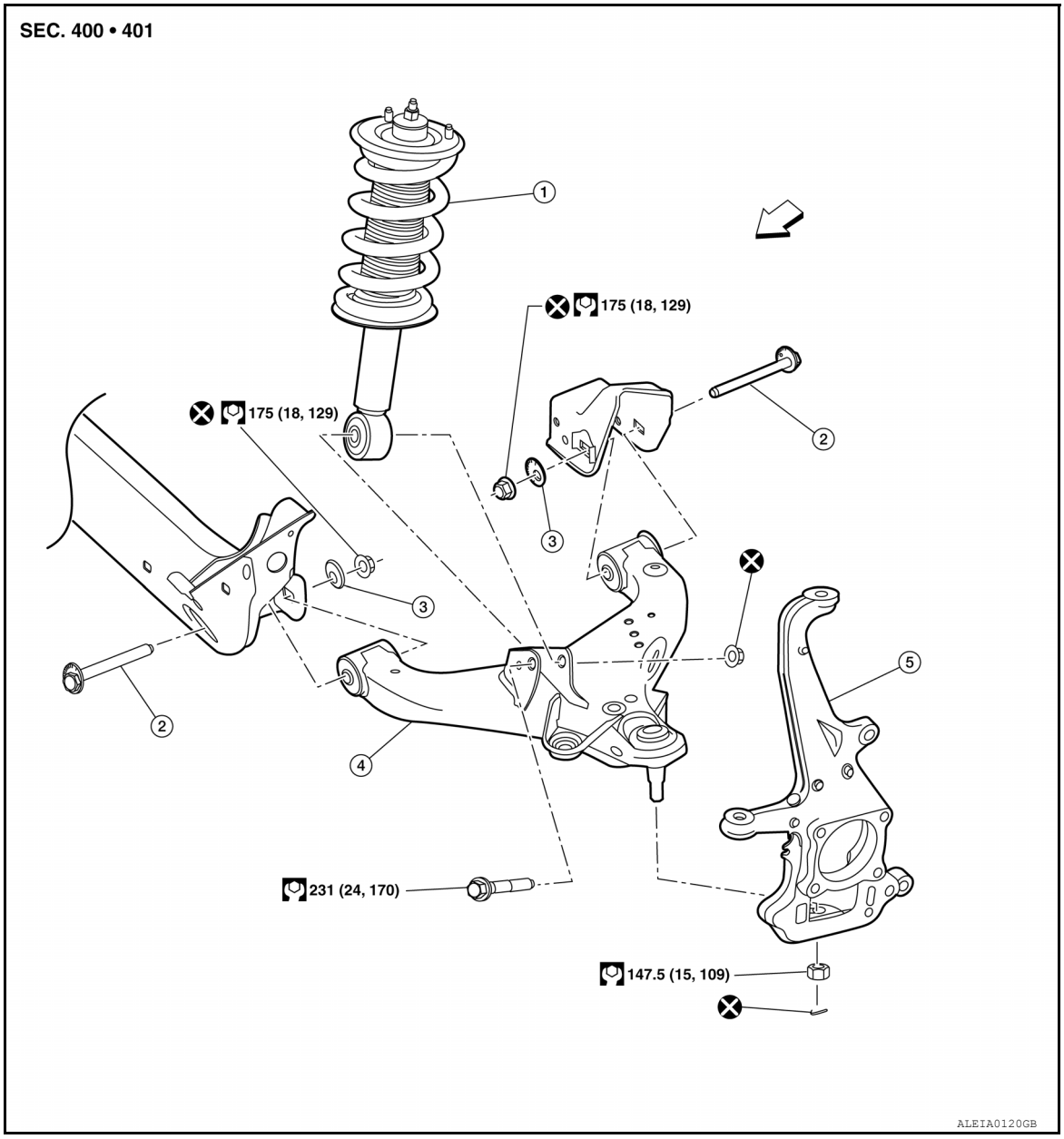


1. Shock assembly
2. Eccentric cam bolt
3. Eccentric disc
4. Lower link
5. Steering knuckle
⇦ Front

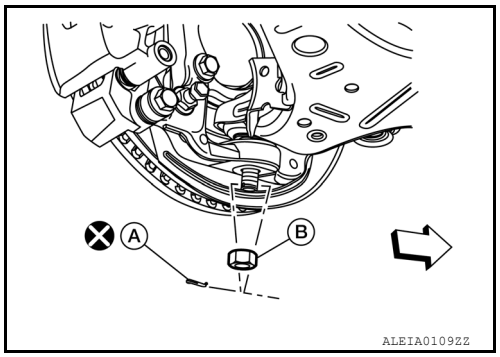
Removal and Installation

INFOID:0000000006749820

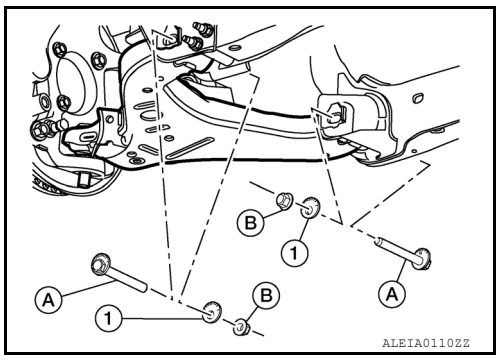
REMOVAL

1. Remove the wheel and tire assembly using power tool. Refer to WT-63, "Adjustment".
2. Remove lower shock absorber bolt.
3. Loosen the stabilizer bar connecting rod bolt and nut on the opposing side of the vehicle that is not being serviced.
4. Remove stabilizer bar connecting rod from the lower link that is to be replaced. Refer to FSU-18, "Removal and Installation".

5. Support the knuckle and upper link using a suitable jack.
6. Remove the cotter pin (A) and nut (B) from the lower link ball joint and discard the cotter pin. Separate the lower link ball joint from steering knuckle using suitable tool.
   ⇦ : Vehicle front



7. Remove lower link bolts (A), nuts (B), and eccentric discs (1), then the lower link.
8. Remove the bound bumper as necessary.



INSPECTION AFTER REMOVAL

Lower Link
Check for deformation and cracks. Replace if necessary.

Lower Link Bushing
Check for distortion and damage. Replace if necessary.

INSTALLATION

Installation is in the reverse order of removal.
- Tighten all nuts and bolts to specification. Refer to FSU-14, "Exploded View".
- After installation, check that the front wheel alignment is within specification. Refer to FSU-8, "Front Wheel Alignment".

UPPER LINK

Exploded View

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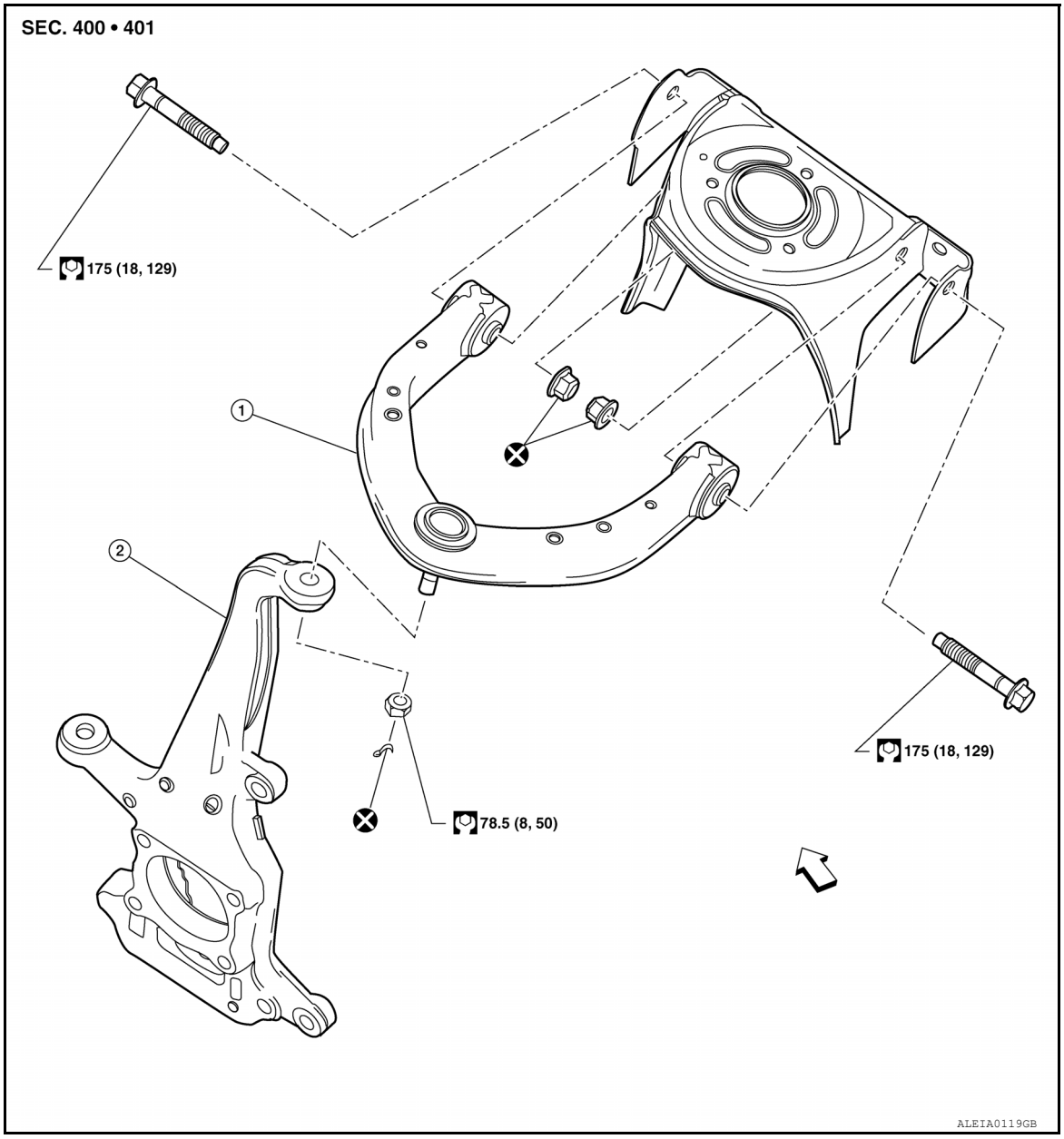


1. Upper link
2. Steering knuckle
⇦ Front

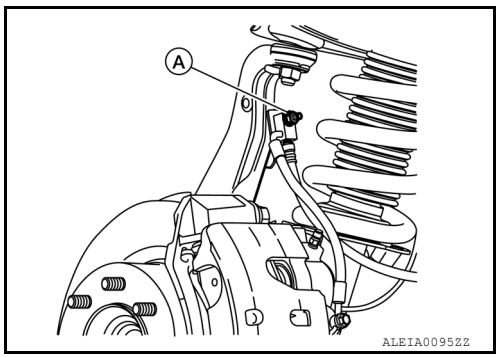
Removal and Installation

INFOID:0000000006749821

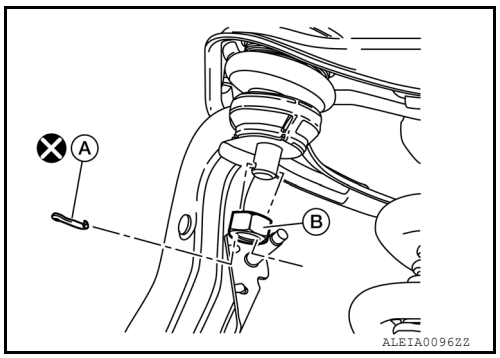
REMOVAL

1. Remove the wheel and tire assembly using power tool. Refer to WT-63, "Adjustment".
2. Remove the upper fender protector to access upper link. Refer to EXT-33, "Removal and Installation".

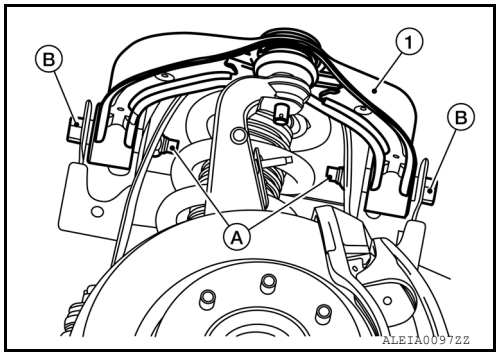
3. Remove and discard the nut (A); position the brake hose aside.



4. Remove cotter pin (A) and nut (B) from upper link ball joint. Discard the cotter pin (A).
5. Support the knuckle and lower link using a suitable jack.
6. Separate upper link ball joint stud from steering knuckle using suitable tool.



7. Remove upper link nuts (A), bolts (B), and the upper link (1).



INSPECTION AFTER REMOVAL

Upper Link

Check for deformation and cracks. Replace if necessary.

Upper Link Ball Joint

Check for distortion and damage. Replace if necessary.

INSTALLATION

Installation is in the reverse order of removal.

- Tighten all nuts and bolts to specification. Refer to FSU-16, "Exploded View".

CAUTION:

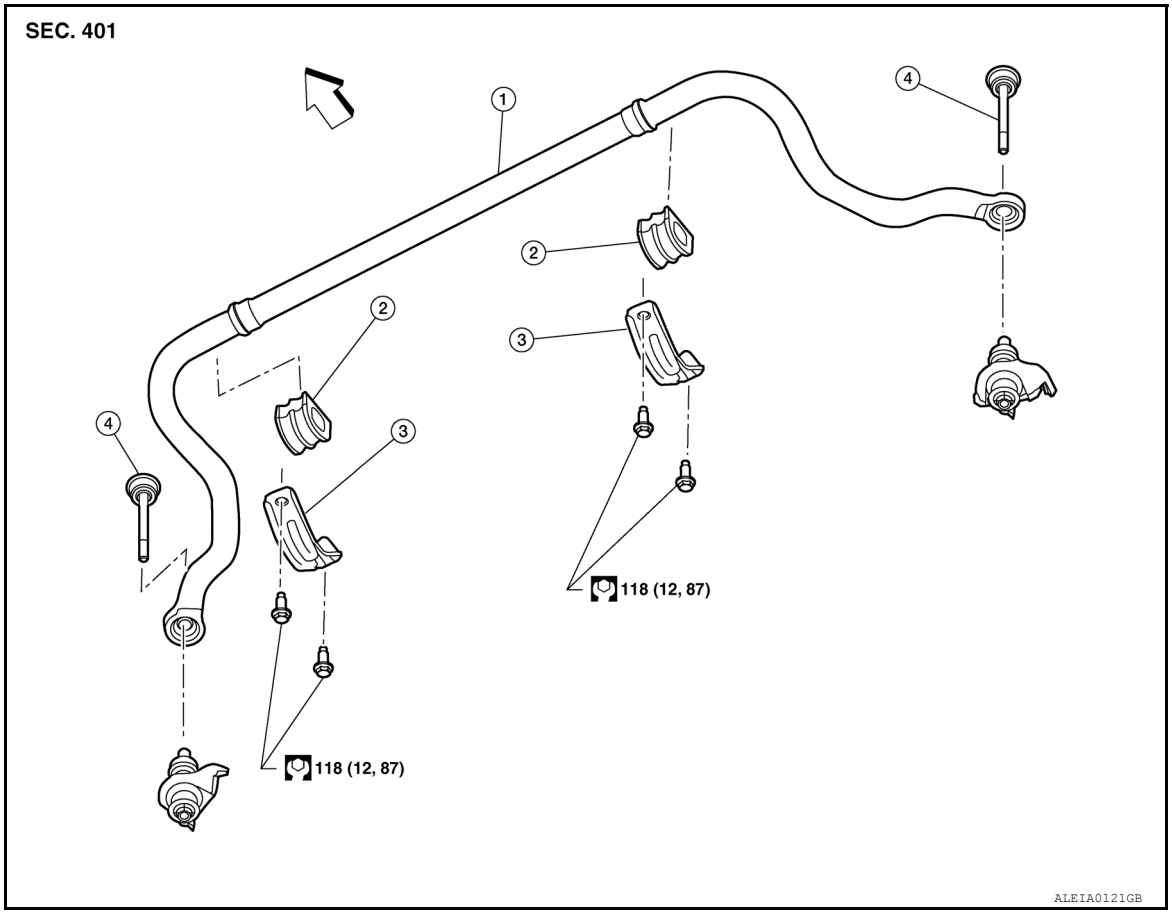
Use a new cotter pin for installation of upper link ball joint nut.

Use a new lock nut for installation of brake hose bolt to bracket.

STABILIZER BAR

Exploded View

INFOID:0000000007093842



1. Stabilizer bar
2. Stabilizer bar bushing
3. Stabilizer bar bracket
4. Stabilizer bar connecting rod assembly
⇦ Front

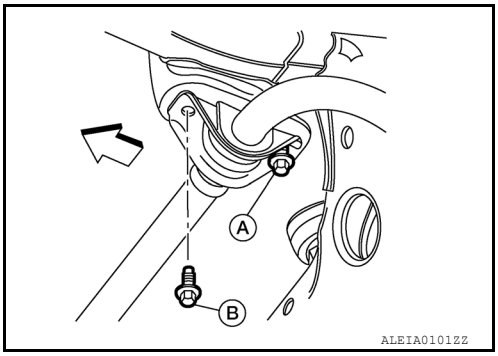
Removal and Installation

INFOID:0000000006749822

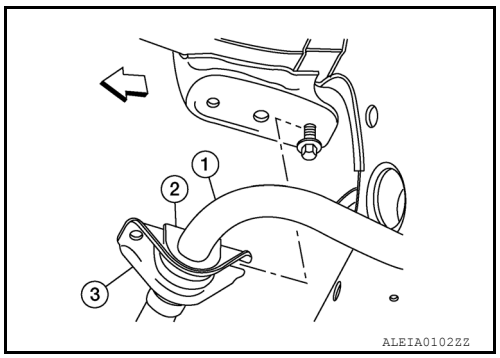
STABILIZER BAR

Removal

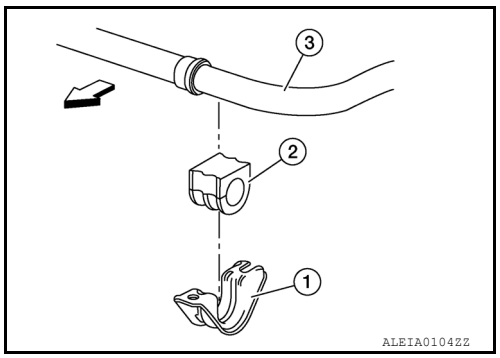
1. Remove front under cover using power tool. Refer to EXT-38, "Exploded View".
2. Remove the stabilizer bar connecting rods. Refer to stabilizer bar connecting rod removal and installation.
3. Loosen the rear stabilizer bracket bolts (A) and remove the front stabilizer bracket bolts (B). The stabilizer bar will rest on the rear bolts.
   ⇦ : Vehicle front



4. Slide the stabilizer bar (1), stabilizer bushings (2), and stabilizer bar brackets (3) forward as an assembly to remove it from the vehicle.
   ⇦ : Vehicle front



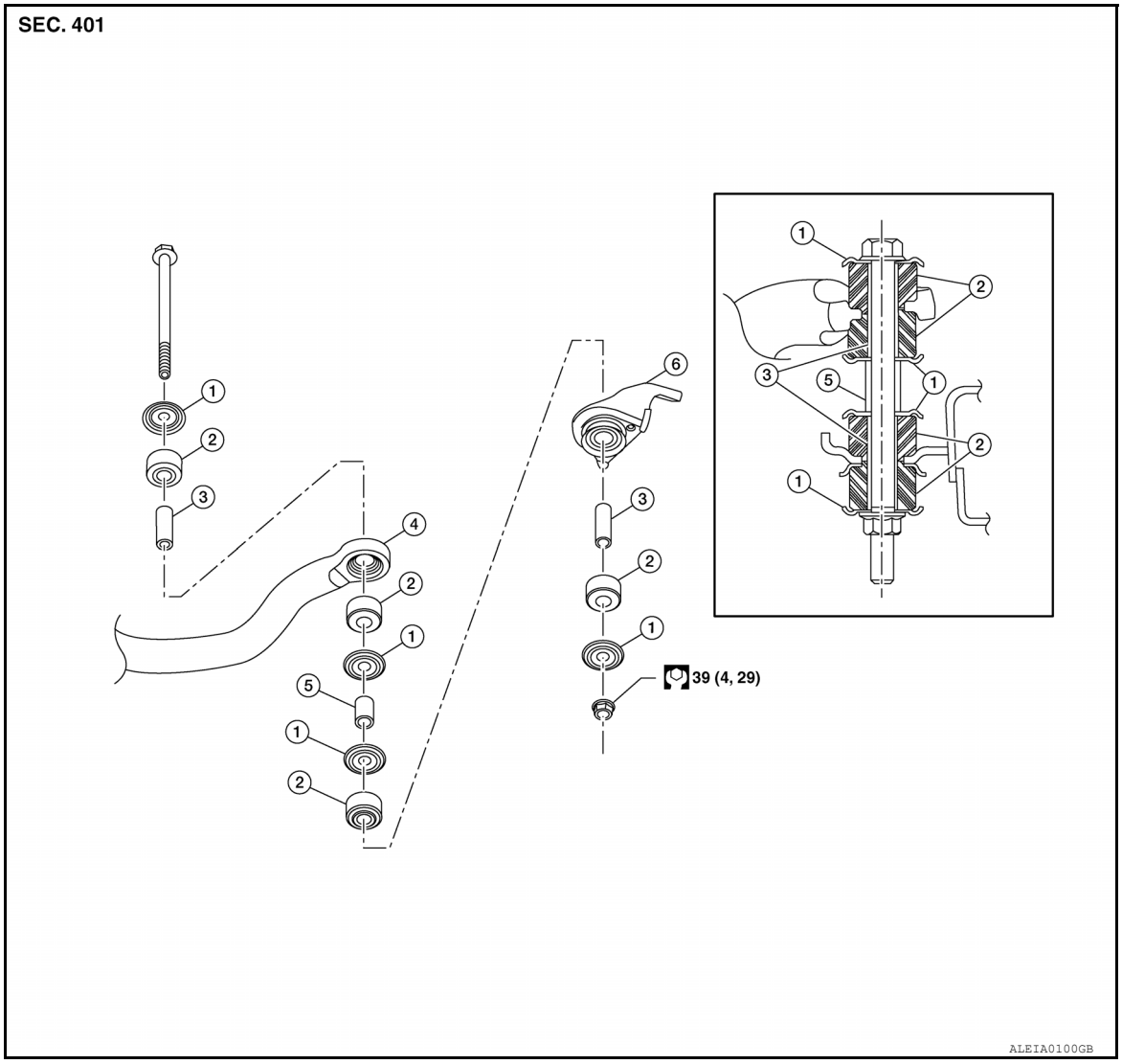
5. Remove the stabilizer bar bracket (1) and stabilizer bar bushing (2) from each end of the stabilizer bar (3).
   ⇦ : Vehicle front



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

Installation
Installation is in the reverse order of removal.
- Tighten all nuts and bolts to specification. Refer to FSU-18, "Exploded View". Refer to stabilizer bar connecting rod removal and installation.

STABILIZER BAR CONNECTING ROD



1. Washer
2. Bushing
3. Collar-Outer
4. Stabilizer bar
5. Collar-inner
6. Lower link

Removal

1. Remove the connecting rod nut and bolt.
2. Remove the washers, bushings inner and outer collars.

Installation

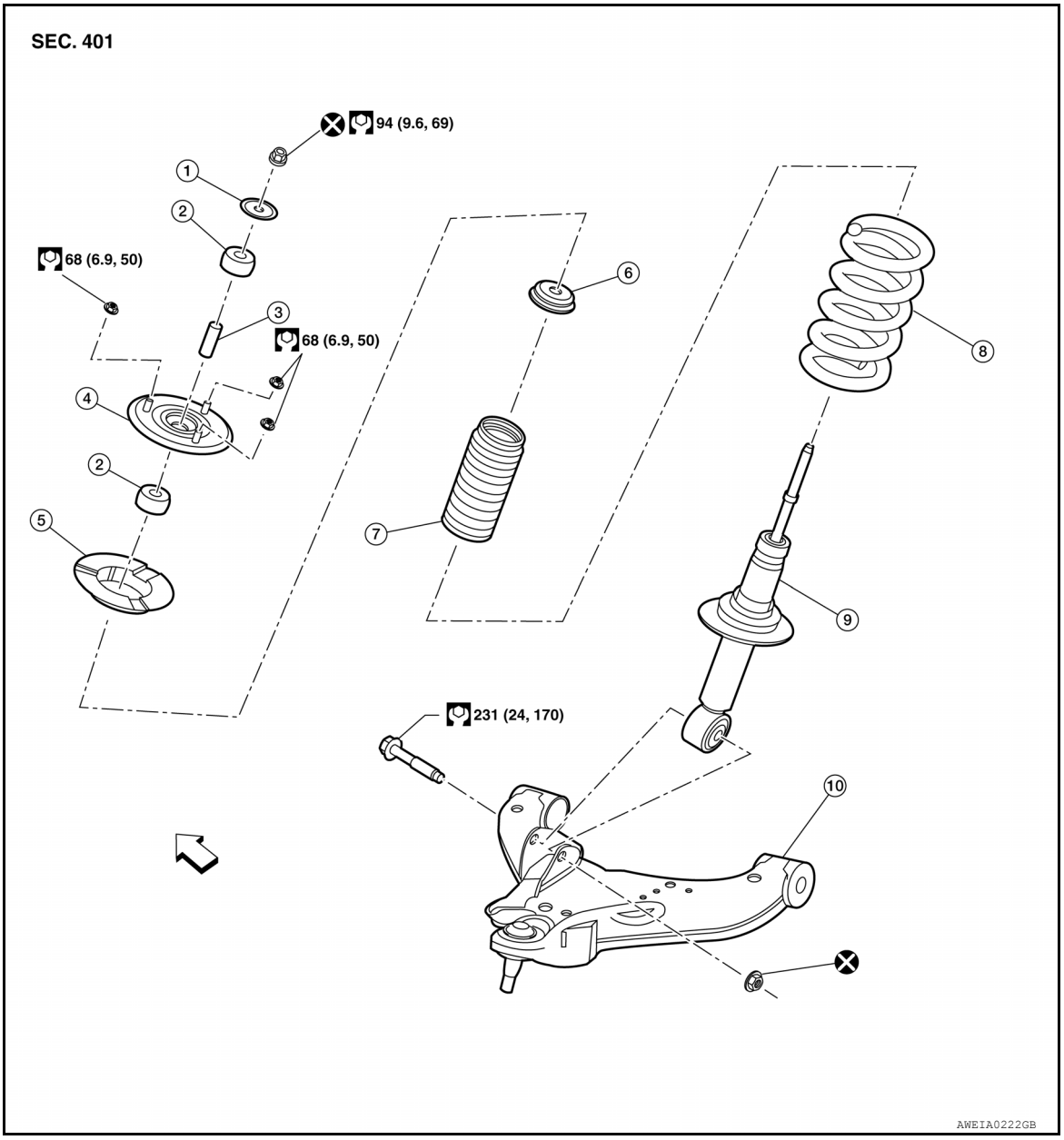
Installation is in the reverse order of removal.

- Tighten the nut and bolt to specification.

COIL SPRING AND SHOCK ABSORBER

Exploded View

INFOID:0000000007093843



1. Outer washer	2. Bushing	3. Distance tube
4. Bracket assembly	5. Upper spring seat	6. Bound bumper cover
7. Dust cover	8. Spring	9. Shock
10. Lower link	⇦ Front	

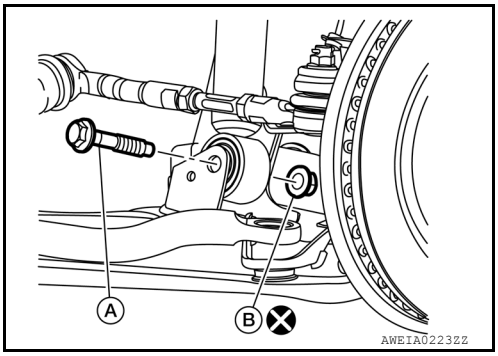
Removal and Installation

INFOID:0000000006749823

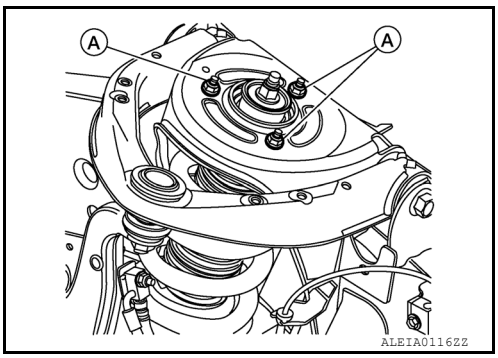
REMOVAL

1. Remove the wheel and tire assembly using power tool. Refer to WT-63, "Adjustment".
2. Remove the stabilizer bar connecting rods and position the stabilizer bar downward to gain access to the shock absorber lower bolt. Refer to FSU-18, "Removal and Installation".
3. Support the knuckle and the lower link using a suitable jack.

4. Remove the shock absorber lower bolt (A) and nut (B).
CAUTION:
Do not reuse the shock absorber lower nut.



5. Remove the three shock absorber upper nuts (A).
6. Remove the coil spring and shock absorber assembly from the vehicle.
CAUTION:
Use care around the wheel sensor wiring harness and brake hose during the removal of the coil spring and shock absorber assembly.



INSTALLATION

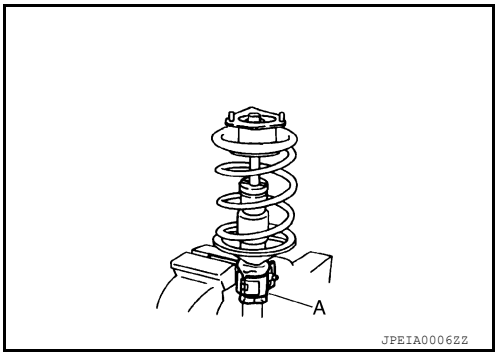
Installation is in the reverse order of removal.
- The lower seat step in the shock absorber assembly faces inside of vehicle.
- Tighten all nuts and bolts to specification. Refer to FSU-21, "Exploded View".

Disassembly and Assembly

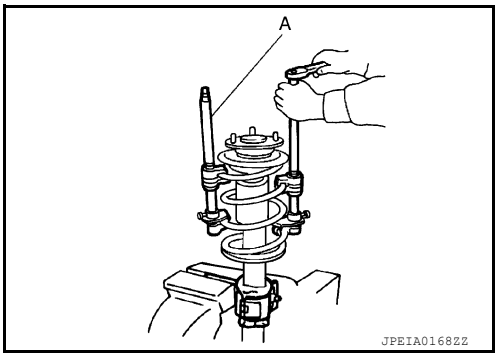
INFOID:0000000006749825

DISASSEMBLY

1. Set the shock absorber in a vise (A), then loosen (without removing) the piston rod lock nut as shown.
CAUTION:
Do not remove piston rod lock nut at this time.



2. Compress the spring using tool (A) until the shock absorber mounting insulator can be turned by hand.
WARNING:
Make sure that the pawls of the two tools are firmly hooked on the spring. The spring compressors must be tightened alternately and evenly so as not to tilt the spring.
3. Remove the piston rod lock nut.
- Discard the piston rod lock nut, use a new nut for assembly.



INSPECTION AFTER DISASSEMBLY

Shock Absorber Assembly
- Check for smooth operation through a full stroke, both compression and extension.

- Check for oil leakage on welded or gland packing portions.
- Check piston rod for cracks, deformation or other damage and replace if necessary.

Mounting Insulator and Rubber Parts

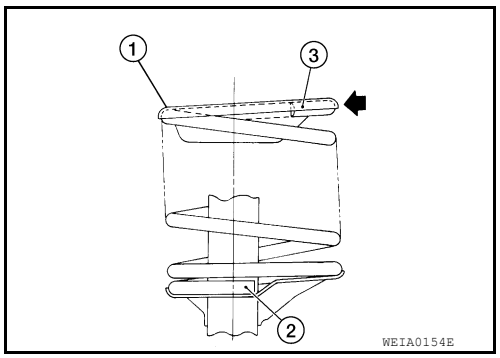
Check cemented rubber-to-metal portion for separation or cracks. Check rubber parts for deterioration and replace if necessary.

Coil Spring

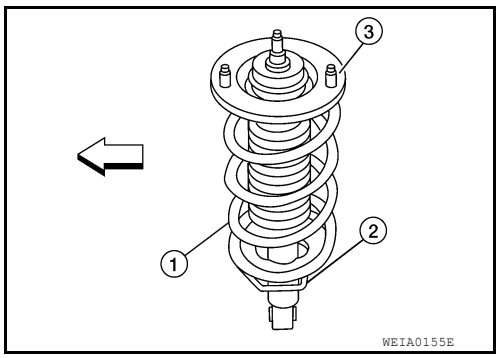
- Check for cracks, deformation or other damage and replace if necessary.
- Check the free spring height. Refer to FSU-24, "Spring Free Height".

ASSEMBLY

1. When installing coil spring on shock absorber, the lower end (2) and upper end (3) must be positioned as shown.
   - Shock absorber mounting insulator (1)
   - ⬅ : Flat tail



2. Install upper spring insulator (3) with studs located in line with lower shock mount and in lower seat step (2). The lower seat step (2) in the shock absorber assembly (1) faces inside of vehicle.
   - ⇦: Front
3. Tighten the new piston rod lock nut to specification. Refer to FSU-21, "Exploded View".
   CAUTION:
   Do not reuse the piston rod lock nut.

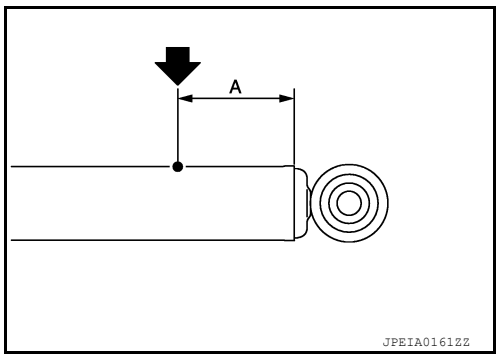


Disposal

INFOID:0000000006749824

1. Set shock absorber horizontally with the piston rod fully extended.
2. Drill 2 – 3 mm (0.08 – 0.12 in) hole at the position (●) from top as shown in the figure to release gas gradually.
   CAUTION:
   - **Wear eye protection (safety glasses).**
   - **Wear gloves.**
   - **Be careful with metal chips or oil blown out by the compressed gas.**

   NOTE:
   - Drill vertically in this direction (⬅).
   - Directly to the outer tube avoiding brackets.
   - The gas is clear, colorless, odorless, and harmless.



A : 20 – 30 mm (0.79 – 1.18 in)

3. Position the drilled hole downward and drain oil by moving the piston rod several times.
   CAUTION:
   Dispose of drained oil according to the law and local regulations.

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification (Front)

INFOID:0000000006749826

Suspension type	Independent double wishbone coil over shock
Shock absorber type	Double-acting hydraulic
Stabilizer	Standard equipment

Spring Free Height

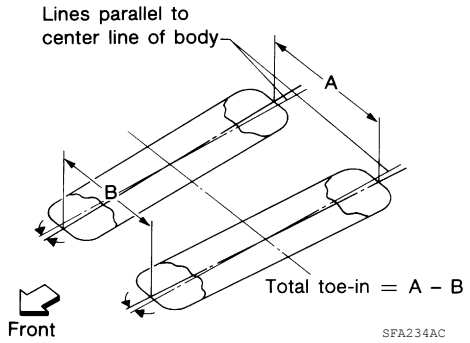
INFOID:0000000007095193

Free height	326 mm (12.83 in)

Wheel Alignment (Unladen*1)

INFOID:0000000006749827

Vehicle type		NV1500/2500	NV3500	Passenger van
Camber Degree minute (decimal degree)	Minimum	-0° 30′ (-0.50°)	-0° 30′ (-0.50°)	-0° 30′ (-0.50°)
	Nominal	0° 00′ (0.00°)	0° 00′ (0.00°)	0° 00′ (0.00°)
	Maximum	0° 30′ (0.50°)	0° 30′ (0.50°)	0° 30′ (0.50°)
	Cross camber	0° 45′ (0.75°) or less	0° 45′ (0.75°) or less	0° 45′ (0.75°) or less
Caster Degree minute (decimal degree)	Minimum	5° 40′ (5.67°)	5° 25′ (5.42°)	5° 40′ (5.67°)
	Nominal	6° 10′ (6.17°)	5° 55′ (5.92°)	6° 10′ (6.17°)
	Maximum	6° 40′ (6.67°)	6° 25′ (6.42°)	6° 40′ (6.67°)
	Cross caster	0° 45′ (0.75°) or less	0° 45′ (0.75°) or less	0° 45′ (0.75°) or less
Kingpin inclination (reference only) Degree minute (decimal degree)		8° 55′ (8.92°)	8° 55′ (8.92°)	8° 55′ (8.92°)



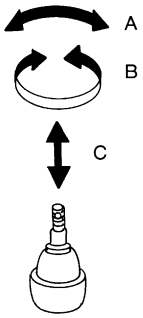
Toe-in	Total toe-in	Minimum	5.0 mm (0.20 in)	5.2 mm (0.20 in)	5.0 mm (0.20 in)
		Nominal	6.0 mm (0.24 in)	6.2 mm (0.24 in)	6.0 mm (0.24 in)
		Maximum	7.0 mm (0.28 in)	7.2 mm (0.28 in)	7.0 mm (0.28 in)
	Angle (left or right) Degree minute (decimal degree)	Minimum	0° 11′ (0.18°)	0° 11′ (0.18°)	0° 11′ (0.18°)
		Nominal	0° 13′ (0.22°)	0° 13′ (0.22°)	0° 13′ (0.22°)
		Maximum	0° 15′ (0.25°)	0° 15′ (0.25°)	0° 15′ (0.25°)
Wheel turning angle (full turn)	Inside Degree minute (decimal degree)		35° 30′– 39° 30′ *2 (35.50°– 39.50°)	35° 30′– 39° 30′ *2 (35.50°– 39.50°)	35° 30′– 39° 30′ *2 (35.50°– 39.50°)
	Outside Degree minute (decimal degree)		35° 30′ (35.50°)	35° 30′ (35.50°)	35° 30′ (35.50°)

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

*2: Target value 38° 31′ (38.52°)

Ball Joint

INFOID:0000000006749828



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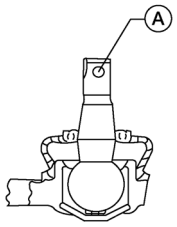

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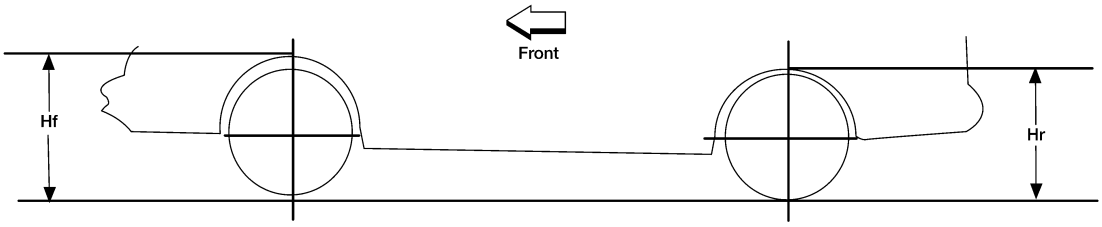
Swinging force (A)	Upper ball joint	7.6 – 74.2 N (0.78 – 7.57 kg-f, 1.71 – 16.68 lb-f) *1
	Lower ball joint	6.2 – 80 N (0.63 – 8.2 kg-f, 1.39 – 18.0 lb-f) *1
Turning torque (B)	Upper ball joint	1.0 - 6.5 N·m (0.10 - 0.66 kg-m, 9 - 58 in-lb)
	Lower ball joint	1.8 - 12 N·m (0.18 - 1.2 kg-m, 16 - 106 in-lb)
Vertical end play (C)		0 mm (0 in)

*1 Measure at cotter pin hole

Wheelarch Height (Unladen*1)

INFOID:0000000006749829

Unit: mm (in)



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Vehicle type	NV1500/2500	NV3500	Passenger van
Tire Size	245/70R17	245/75R17	245/70R17
Front wheel arch height (Hf)	888 (35.0)	900 (35.4)	888 (35.0)
Rear wheel arch height (Hr)	922 (36.3)	947 (37.3)	922 (36.3)

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