

SECTION **FSU**
FRONT SUSPENSION

A
B
C
D
F
G
H
I
J
K
L
M
N
O
P

FSU

CONTENTS

PRECAUTION	2	Exploded View	11
PRECAUTIONS	2	Removal and Installation	11
Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"	2	FRONT STABILIZER	13
Precaution for Procedure without Cowl Top Cover.....	2	Exploded View	13
Precautions for Suspension	2	Removal and Installation	13
SYMPTOM DIAGNOSIS	3	STEERING KNUCKLE	15
NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING	3	Exploded View	15
NVH Troubleshooting Chart	3	Removal and Installation	15
PREPARATION	4	UNIT REMOVAL AND INSTALLATION	16
PREPARATION	4	FRONT SUSPENSION MEMBER	16
Special Service Tool	4	Exploded View	16
Commercial Service Tool	4	Removal and Installation	16
PERIODIC MAINTENANCE	5	Inspection	16
FRONT SUSPENSION ASSEMBLY	5	UNIT DISASSEMBLY AND ASSEMBLY ...	17
Inspection and Adjustment	5	FRONT COIL SPRING AND STRUT	17
REMOVAL AND INSTALLATION	8	Exploded View	17
FRONT COIL SPRING AND STRUT	8	Disassembly and Assembly	17
Exploded View	8	Inspection	20
Removal and Installation	8	SERVICE DATA AND SPECIFICATIONS (SDS)	21
Disposal	9	SERVICE DATA AND SPECIFICATIONS (SDS)	21
TRANSVERSE LINK	11	Wheel Alignment	21
		Ball Joint	22
		Wheelarch Height	22

PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

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

INFOID:000000011152997

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. 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

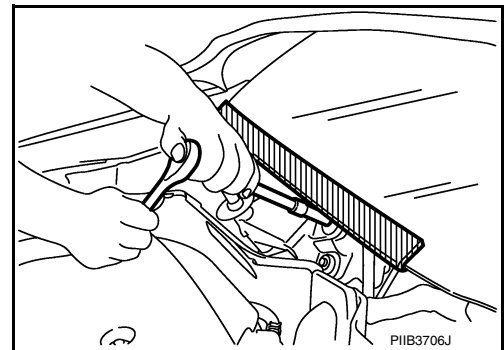
WARNING:

- 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 three minutes before performing any service.

Precaution for Procedure without Cowl Top Cover

INFOID:000000011152998

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc to prevent damage to windshield.



Precautions for Suspension

INFOID:000000011152999

- When installing rubber bushings, the final tightening must be carried out under unladen conditions with tires on ground. Spilled oil might shorten the life of rubber bushings. Be sure to wipe off any spilled oil.
- Unladen conditions mean that fuel, engine coolant and lubricant are full. Spare tire, jack, hand tools and mats are in designated positions.
- After servicing suspension parts, be sure to check wheel alignment.
- Self-lock nuts are not reusable. Always use new ones when installing. Since new self-lock nuts are pre-oiled, tighten as they are.

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:000000011153000

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

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P



Symptom		Possible cause and SUSPECTED PARTS													Reference page		
		Improper installation, looseness	Shock absorber deformation, damage or deflection	Bushing or mounting deterioration	Parts interference	Spring fatigue	Suspension looseness	Incorrect wheel alignment	Stabilizer bar fatigue	PROPELLER SHAFT (4WD)	DIFFERENTIAL (4WD)	FRONT AXLE	ROAD WHEEL AND TIRE	DRIVE SHAFT		BRAKE	STEERING
Noise	FRONT SUSPENSION	x	x	x	x	x	x			x	x	x	x	x	x	x	FSU-8, FSU-11, FSU-13, FSU-16
		x	x	x	x		x			x		x	x	x	x	x	FSU-5, "Inspection and Adjustment"
		x	x	x	x	x											—
		x	x	x	x												—
		x	x	x	x												—
		x	x	x	x												—
Shake	FRONT SUSPENSION	x	x	x	x	x	x			x		x	x	x	x	x	FSU-8, FSU-11, FSU-13, FSU-16
		x	x	x	x		x			x		x	x	x	x	x	FSU-5, "Inspection and Adjustment"
		x	x	x	x	x											—
		x	x	x	x												—
		x	x	x	x												—
		x	x	x	x												—
Vibration	FRONT SUSPENSION	x	x	x	x	x											FSU-8, FSU-11, FSU-13, FSU-16
		x	x	x	x		x			x		x	x	x	x	x	FSU-5, "Inspection and Adjustment"
		x	x	x	x	x											—
		x	x	x	x												—
		x	x	x	x												—
		x	x	x	x												—
Shimmy	FRONT SUSPENSION	x	x	x	x												FSU-8, FSU-11, FSU-13, FSU-16
		x	x	x	x												FSU-5, "Inspection and Adjustment"
		x	x	x	x	x											—
		x	x	x	x												—
		x	x	x	x												—
		x	x	x	x												—
Shudder	FRONT SUSPENSION	x	x	x	x												FSU-8, FSU-11, FSU-13, FSU-16
		x	x	x	x												FSU-5, "Inspection and Adjustment"
		x	x	x	x	x											—
		x	x	x	x												—
		x	x	x	x												—
		x	x	x	x												—
Poor quality ride or handling	FRONT SUSPENSION	x	x	x	x	x			x	x		x	x				FSU-8, FSU-11, FSU-13, FSU-16
		x	x	x	x												FSU-5, "Inspection and Adjustment"
		x	x	x	x	x											—
		x	x	x	x												—
		x	x	x	x												—
		x	x	x	x												—
Noise	FRONT SUSPENSION	x	x	x	x	x											FSU-8, FSU-11, FSU-13, FSU-16
		x	x	x	x												FSU-5, "Inspection and Adjustment"
		x	x	x	x	x											—
		x	x	x	x												—
		x	x	x	x												—
		x	x	x	x												—
Shake	FRONT SUSPENSION	x	x	x	x	x											FSU-8, FSU-11, FSU-13, FSU-16
		x	x	x	x												FSU-5, "Inspection and Adjustment"
		x	x	x	x	x											—
		x	x	x	x												—
		x	x	x	x												—
		x	x	x	x												—
Vibration	FRONT SUSPENSION	x	x	x	x	x											FSU-8, FSU-11, FSU-13, FSU-16
		x	x	x	x												FSU-5, "Inspection and Adjustment"
		x	x	x	x	x											—
		x	x	x	x												—
		x	x	x	x												—
		x	x	x	x												—
Shimmy	FRONT SUSPENSION	x	x	x	x												FSU-8, FSU-11, FSU-13, FSU-16
		x	x	x	x												FSU-5, "Inspection and Adjustment"
		x	x	x	x	x											—
		x	x	x	x												—
		x	x	x	x												—
		x	x	x	x												—
Shudder	FRONT SUSPENSION	x	x	x	x												FSU-8, FSU-11, FSU-13, FSU-16
		x	x	x	x												FSU-5, "Inspection and Adjustment"
		x	x	x	x	x											—
		x	x	x	x												—
		x	x	x	x												—
		x	x	x	x												—
Poor quality ride or handling	FRONT SUSPENSION	x	x	x	x	x			x	x		x	x				FSU-8, FSU-11, FSU-13, FSU-16
		x	x	x	x												FSU-5, "Inspection and Adjustment"
		x	x	x	x	x											—
		x	x	x	x												—
		x	x	x	x												—
		x	x	x	x												—

x: Applicable

PREPARATION

< PREPARATION >

PREPARATION

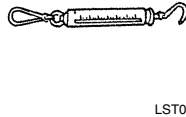
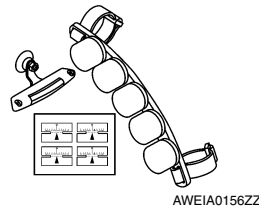
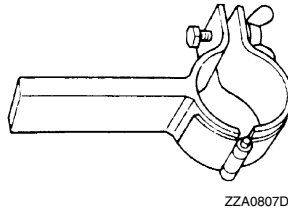
PREPARATION

Special Service Tool

INFOID:000000011153001

The actual shape of the tools may differ from those illustrated here.

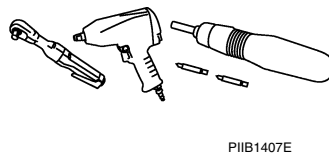
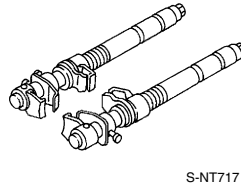
Tool number (TechMate No.) Tool name	Description
ST35652000 (—) Strut attachment	Disassembling and assembling strut
— (J-49286) Drift and Pull gauge	Measuring drift and pull
— (J-44372) Pull gauge	Measuring ball joint swinging force



Commercial Service Tool

INFOID:000000011153002

Tool name	Description
Spring compressor	Removing and installing coil spring
Power tool	Loosening nuts, screws and bolts



FRONT SUSPENSION ASSEMBLY

< PERIODIC MAINTENANCE >

PERIODIC MAINTENANCE

FRONT SUSPENSION ASSEMBLY

Inspection and Adjustment

INFOID:0000000011153003

INSPECTION

Make sure the mounting conditions (looseness, back lash) of each component and component conditions (wear, damage) are normal.

LOWER BALL JOINT END PLAY

1. Set front wheels in a straight-ahead position. Do not depress brake pedal.
2. Place an iron bar or similar tool between upper link and steering knuckle.
3. Measure axial end play by prying it up and down. Refer to [FSU-22, "Ball Joint"](#).

CAUTION:

Be careful not to damage ball joint boot. Do not damage the installation position by applying excessive force.

SHOCK ABSORBER

Check for oil leakage, damage and replace if malfunction is detected.

WHEEL ALIGNMENT

Description

Measure wheel alignment under unladen conditions.

NOTE:

"Unladen conditions" means that fuel, engine coolant, and lubricant are full. Spare tire, jack, hand tools and mats are in designated positions.

General Information and Recommendations

- 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 rack itself should be capable of accepting any NISSAN vehicle.
- The rack should be checked to ensure that it is level.
- Make sure the machine is properly calibrated.
- Your alignment equipment should be regularly calibrated in order to give correct information.
- Check with the manufacturer of your specific equipment for their recommended Service/Calibration Schedule.

Preliminary Check

Check the following:

1. Tires for improper air pressure and wear.
2. Road wheels for runout. Refer to [WT-57, "Inspection"](#).
3. Wheel bearing axial end play. Refer to [FAX-31, "Wheel Bearing"](#).
4. Transverse link ball joint axial end play. Refer to [FSU-11, "Removal and Installation"](#).
5. Shock absorber operation.
6. Each mounting part of axle and suspension for looseness and deformation.
7. Each of suspension member, shock absorber, upper link and transverse link for cracks, deformation and other damage.
8. Vehicle height (posture).

Alignment Process

IMPORTANT:

Use only the alignment specifications listed in this Service Manual.

- When displaying the alignment settings, many alignment machines use "indicators" **Do not use these indicators.**: (Green/red, plus or minus, Go/No Go).
- The alignment specifications programmed into your machine that operate these indicators may not be correct.

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P

FSU

FRONT SUSPENSION ASSEMBLY

< PERIODIC MAINTENANCE >

- This may result in an ERROR.
- 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're using for more information.

CAMBER, CASTER AND KINGPIN INCLINATION ANGLES INSPECTION

CAUTION:

Camber, caster, kingpin inclination angles cannot be adjusted.

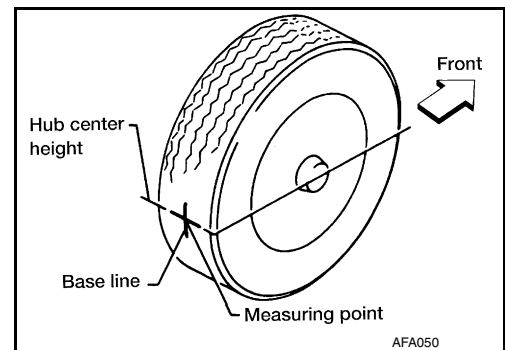
Before inspection, set the front wheels onto a turning radius gauge. Set the rear wheels onto a pad that has the same height so the vehicle will remain horizontal.

TOTAL TOE-IN INSPECTION

Measure the total toe-in using the following procedure.

WARNING:

- **Always perform the following procedure on a flat surface.**
 - **Make sure that no person is in front of vehicle before pushing it.**
1. Bounce the front of vehicle up and down to stabilize the vehicle height (posture).
 2. Push on the rear wheel to move 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. These are measuring points.

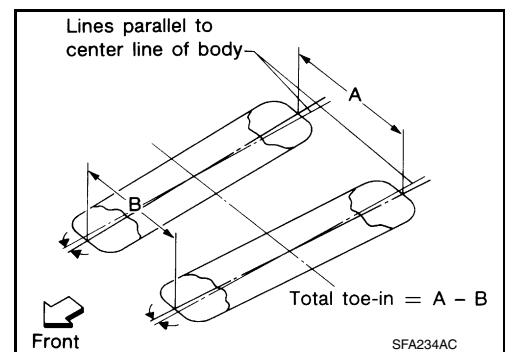


4. Measure the distance (A) from the rear side.
5. Push on the rear wheel to move the vehicle slowly ahead and to rotate the wheels 180 degrees (1/2 turn).

CAUTION:

If the wheels have rotated more than 180 degrees (1/2 turn), try the above procedure again from the beginning. Do not push vehicle backward.

6. Measure the distance (B) from the front side.



7. Use the formula below to calculate total toe-in.

Total toe-in formula : **A - B**

Total toe-in specification : **Refer to [FSU-21, "Wheel Alignment"](#).**

TOE-IN ADJUSTMENT

FRONT SUSPENSION ASSEMBLY

< PERIODIC MAINTENANCE >

1. Loosen the inner socket locknut (A).

CAUTION:

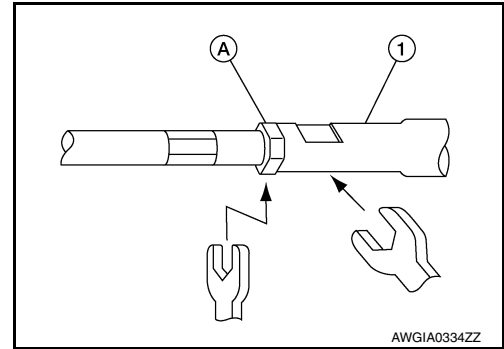
To prevent damage, hold outer socket (1) across flats using suitable tool while loosening inner socket lock nut.

2. Adjust the toe using the inner socket.

CAUTION:

Always evenly adjust toe using LH and RH inner sockets alternately and adjust the total toe-in to the standard.

Total toe-in : Refer to [FSU-21, "Wheel Alignment"](#).



3. Tighten the inner socket locknut. Refer to [ST-49, "Exploded View"](#).

CAUTION:

- To prevent damage, hold outer socket across flats using suitable tool while tightening inner socket lock nut.

- Inspect to make sure no boot deformation has occurred during toe-in adjustment. Adjust boot as necessary.

4. After toe-in adjustment, adjust neutral position of steering angle sensor. Refer to [BRC-60, "Work Procedure"](#).

A
B
C
D
FSU
F
G
H
I
J
K
L
M
N
O
P

FRONT COIL SPRING AND STRUT

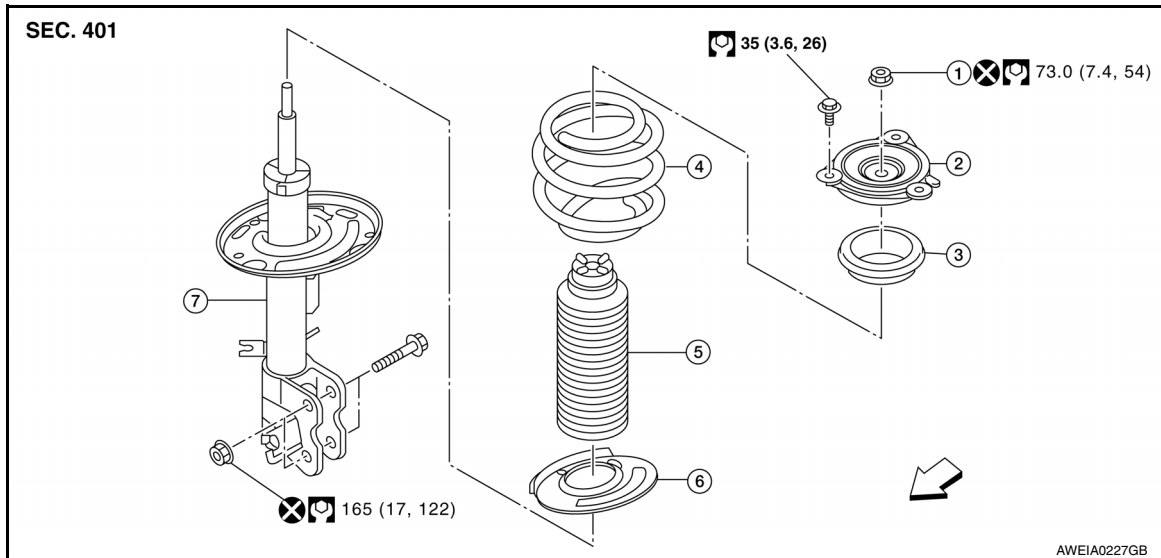
< REMOVAL AND INSTALLATION >

REMOVAL AND INSTALLATION

FRONT COIL SPRING AND STRUT

Exploded View

INFOID:000000011153004



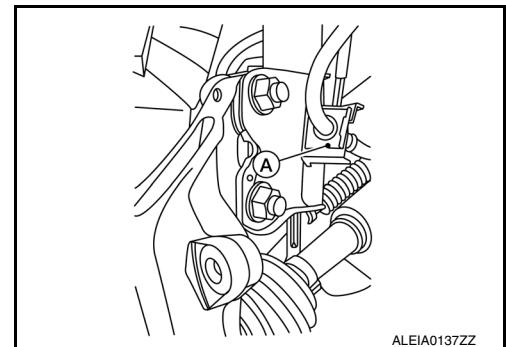
- | | | |
|------------------------|--------------------------|------------------------|
| 1. Piston rod lock nut | 2. Strut mount insulator | 3. Strut mount bearing |
| 4. Coil spring | 5. Bound bumper | 6. Lower rubber seat |
| 7. Strut | ↔ Front | |

Removal and Installation

INFOID:000000011153005

REMOVAL

1. Remove the wiper arm covers and the wiper arms. Refer to [WW-62, "Removal and Installation"](#).
2. Remove the cowl top finisher assembly. Refer to [EXT-25, "Exploded View"](#).
3. Remove the front coil spring and strut mounting insulator covers.
4. Remove the upper front coil spring and strut mounting insulator bolts using power tool.
5. Remove the front wheels and tires using power tool. Refer to [WT-66, "Road Wheel"](#).
6. Remove the wheel sensor harness from the front coil spring and strut.
7. Remove the brake hose lock plate (A).

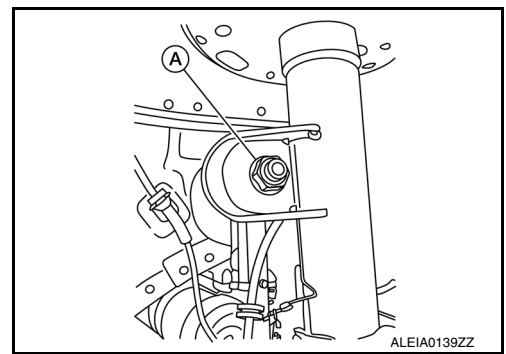


ALEIA0137ZZ

FRONT COIL SPRING AND STRUT

< REMOVAL AND INSTALLATION >

- Remove the stabilizer connecting rod nut (A) from the front coil spring and strut. Position the stabilizer connecting rod aside. Refer to [FSU-13. "Exploded View"](#).



- Remove the lower strut nuts and bolts with power tool.
- Remove the front coil spring and strut.

INSTALLATION

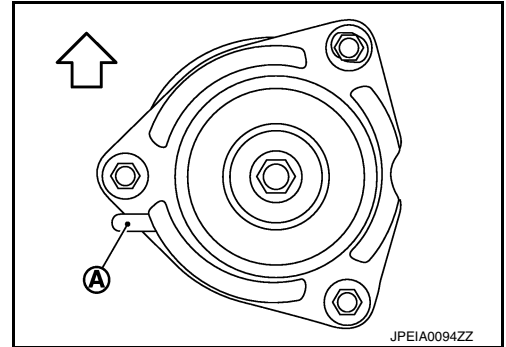
Installation is in the reverse order of removal,

CAUTION:

Do not reuse lower strut nuts.

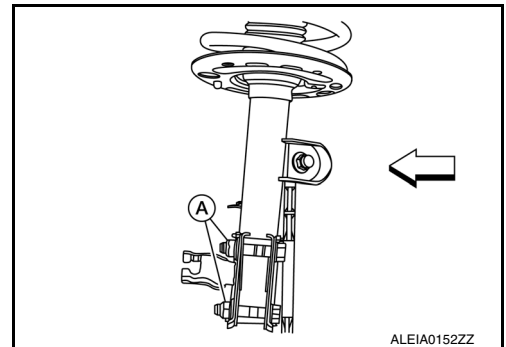
- Be sure tab (A) on strut mount insulator is positioned as shown.

⇐ : Front



- Be sure the lower strut nuts (A) are positioned as shown.

⇐ : Front



- Check the wheel alignment. Refer to [FSU-5. "Inspection and Adjustment"](#).
- Adjust the neutral position of the steering angle sensor. Refer to [BRC-190. "Work Procedure"](#).

Disposal

INFOID:000000011153006

- Set strut assembly horizontally with the piston rod fully extended.

FRONT COIL SPRING AND STRUT

< REMOVAL AND INSTALLATION >

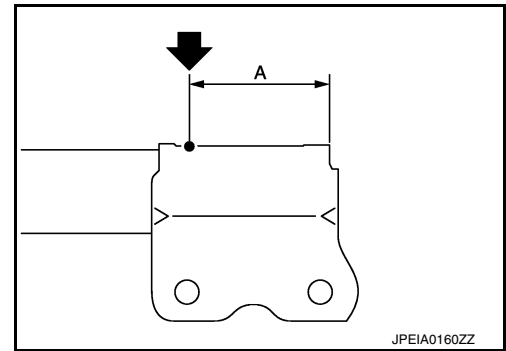
2. Drill 2 – 3 mm (0.08 – 0.12 in) hole at the position (●) from top as shown to release gas gradually.

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.

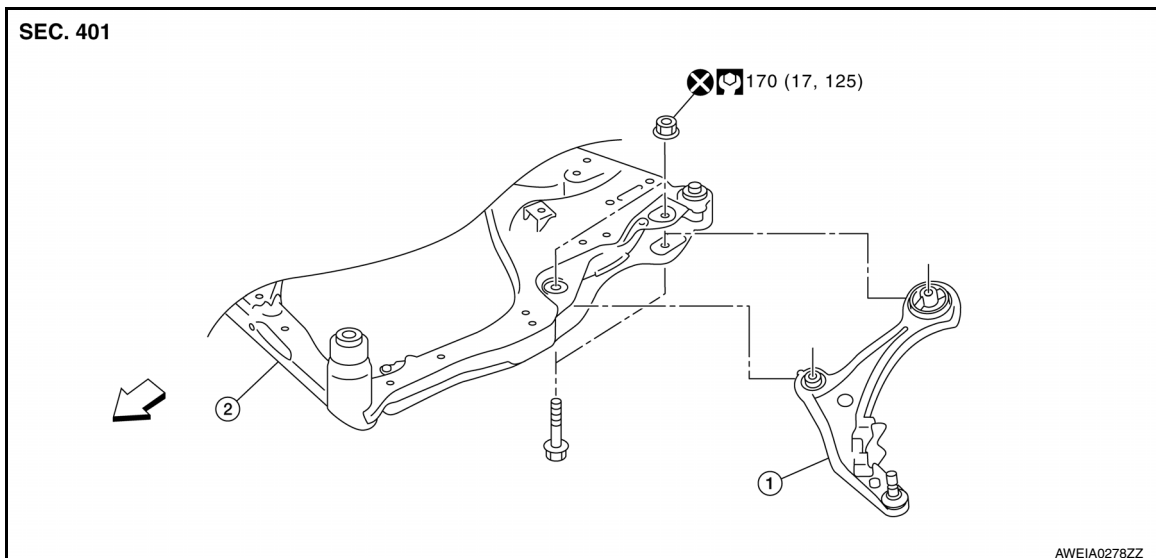
TRANSVERSE LINK

< REMOVAL AND INSTALLATION >

TRANSVERSE LINK

Exploded View

INFOID:000000011153007



1. Transverse link

2. Front suspension member

← Front

Removal and Installation

INFOID:000000011153008

REMOVAL

1. Remove front wheels and tires using power tool. Refer to [WT-66, "Road Wheel"](#).
2. Remove brake caliper torque member bolts, leaving brake hose attached, reposition the caliper aside with wire. Refer to [BR-36, "BRAKE CALIPER ASSEMBLY : Removal and Installation"](#).
CAUTION:
Do not depress brake pedal while brake caliper is removed.
3. Put alignment marks on disc rotor and rear wheel hub and bearing assembly, then remove disc rotor.
CAUTION:
 - Put alignment marks on the wheel hub and bearing assembly and the disc rotor before removing the disc rotor.
 - Do not drop the disc rotor.
4. Remove speed sensor.
5. Disengage the drive shaft from wheel hub and bearing assembly. Refer to [FAX-15, "Exploded View \(LH\)"](#) and [FAX-17, "Exploded View \(RH\)"](#).
6. Separate the outer socket from the knuckle. Refer to [FSU-16, "Exploded View"](#).
7. Remove the strut from the knuckle using power tool. Refer to [FSU-16, "Exploded View"](#).
8. Remove transverse link from steering knuckle.
9. Remove the steering knuckle and hub.
10. Remove transverse link nuts and bolts.
11. Remove transverse link from suspension member.

INSPECTION AFTER REMOVAL

Ball Joint Inspection

Manually move the ball joint to confirm it moves smoothly with no binding.

Swing Torque Inspection

1. Move the ball joint at least ten times by hand to check for smooth movement.

TRANSVERSE LINK

< REMOVAL AND INSTALLATION >

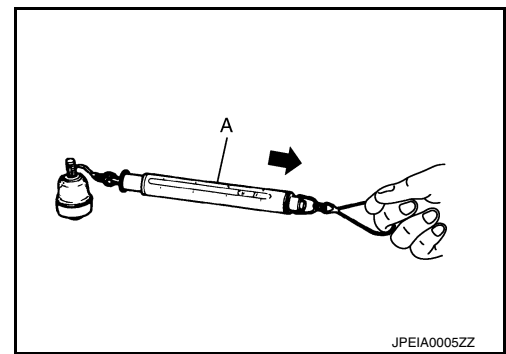
- Hook Tool (A) on the ball joint at the pinch bolt location. Confirm measurement value is within specifications when the ball joint begins moving.

Tool number : - (J-44372)

Swing torque :Refer to [FSU-22, "Ball Joint"](#).

Spring balance measurement :Refer to [FSU-22, "Ball Joint"](#).

- If the swing torque exceeds the standard range, replace the transverse link.



Axial End Play Inspection

- Move the ball joint at least ten times by hand to check for smooth movement.
- Move the tip of ball joint in the axial direction to check for looseness.

Axial end play :Refer to [FSU-22, "Ball Joint"](#).

- If the axial end play exceeds the standard value, replace the transverse link.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Do not reuse transverse link nuts.

- Perform final tightening of bolts and nuts at the front suspension member, under unladen conditions with tires on level ground.
- Check wheel alignment. Refer to [FSU-5, "Inspection and Adjustment"](#).
- Adjust neutral position of steering angle sensor. Refer to [BRC-190, "Work Procedure"](#).

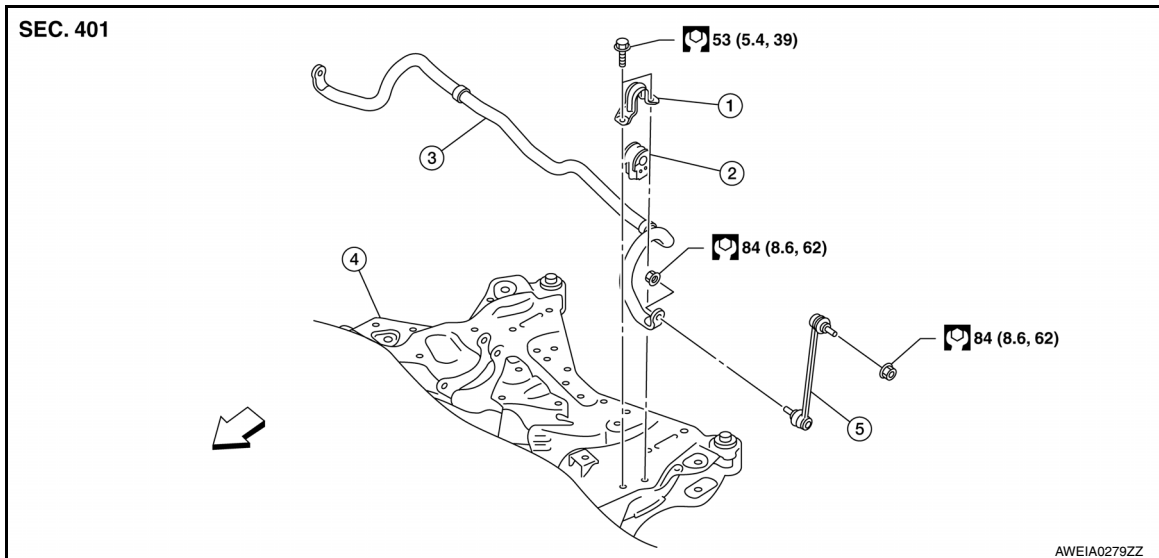
FRONT STABILIZER

< REMOVAL AND INSTALLATION >

FRONT STABILIZER

Exploded View

INFOID:0000000011153009



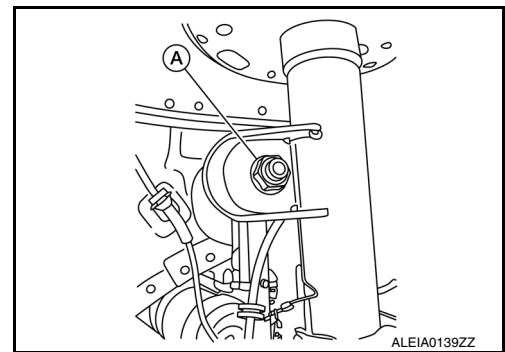
- | | | |
|----------------------------|------------------------------|-------------------|
| 1. Stabilizer clamp | 2. Stabilizer bushing | 3. Stabilizer bar |
| 4. Front suspension member | 5. Stabilizer connecting rod | ⇨ Front |

Removal and Installation

INFOID:0000000011153010

REMOVAL

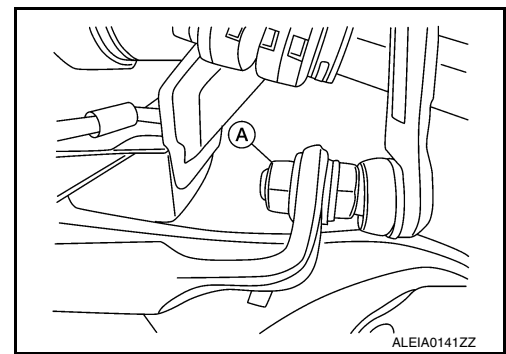
1. Remove both front wheels and tires using power tool. Refer to [WT-58, "Adjustment"](#).
2. Remove the heat insulator (4WD models).
3. Remove the rear propeller shaft (4WD models). Refer to [DLN-102, "Exploded View"](#).
4. Disconnect the LH outer socket from steering knuckle. Refer to [ST-58, "Exploded View"](#).
5. Remove the front exhaust tube. Refer to [EX-5, "Exploded View"](#).
6. Remove the engine rear mount bracket (2WD models).
7. Disconnect the steering column from the steering gear. Refer to [ST-47, "Exploded View"](#).
8. Remove the steering gear bolts. Refer to [ST-58, "Exploded View"](#).
9. Position the steering gear forward.
10. Disconnect the RH outer socket from the steering knuckle. Refer to [ST-58, "Exploded View"](#).
11. Remove the stabilizer connecting rod nut (A) from the front coil spring and strut.



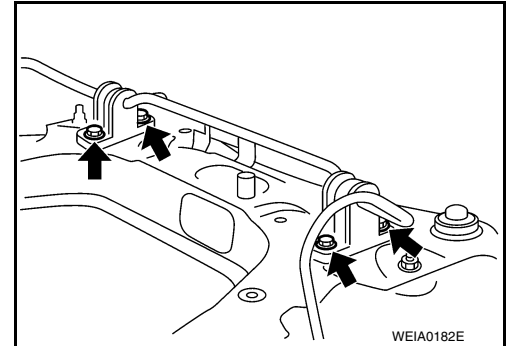
FRONT STABILIZER

< REMOVAL AND INSTALLATION >

12. Remove the stabilizer connecting rod nut (A) from the stabilizer bar and remove the stabilizer connecting rod.



13. Remove the bolts (←) from the stabilizer clamp, and then remove the stabilizer clamp and the stabilizer bushing from the front suspension member.

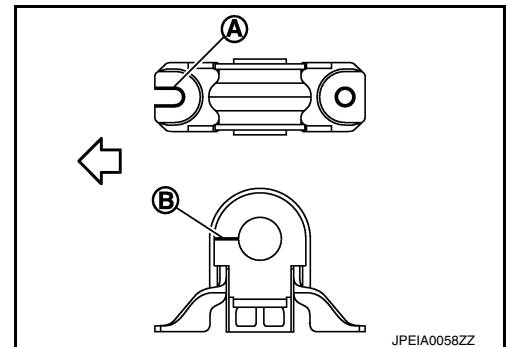


14. Remove the stabilizer bar from the LH side of vehicle.

INSTALLATION

Installation is in the reverse order of removal.

- Install the stabilizer clamp so that the notch (A) is facing the front of the vehicle (←).
- Install the stabilizer bushing so that the slit (B) is facing the front of the vehicle (←).



- Check the wheel alignment. Refer to [FSU-5, "Inspection and Adjustment"](#).
- Adjust the neutral position of the steering angle sensor. Refer to [BRC-190, "Work Procedure"](#).

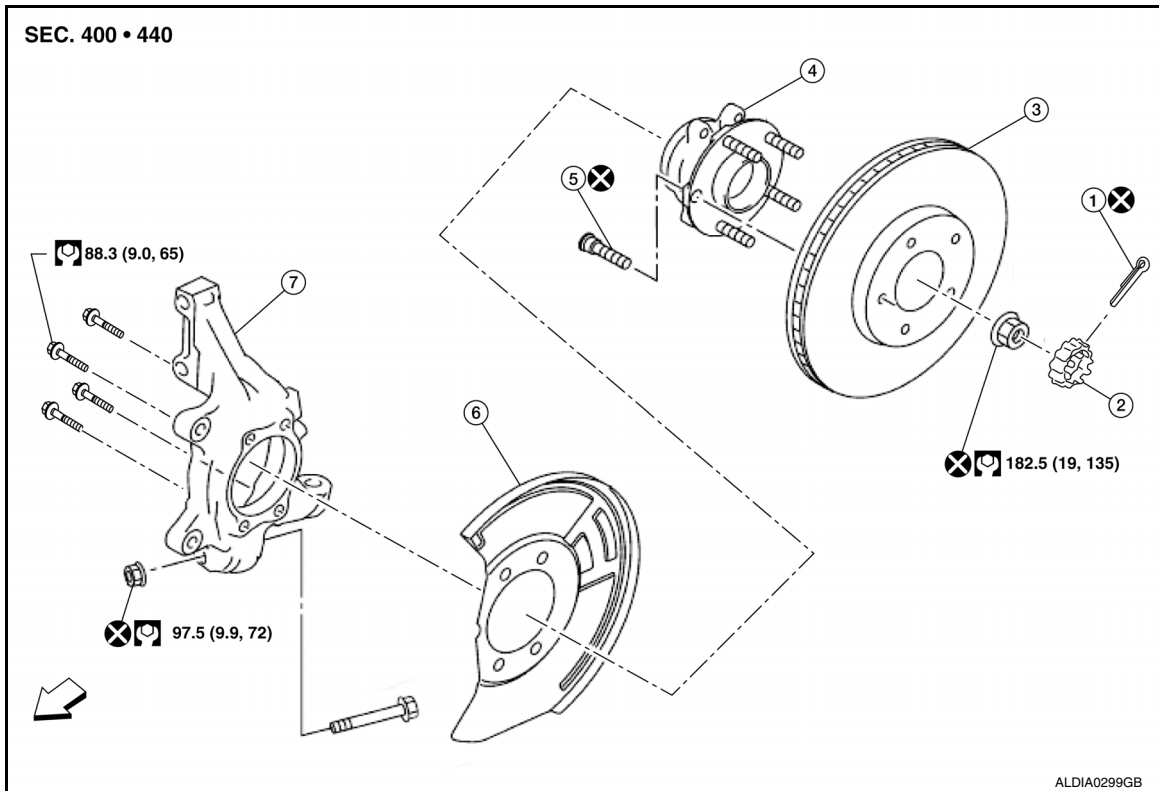
STEERING KNUCKLE

< REMOVAL AND INSTALLATION >

STEERING KNUCKLE

Exploded View

INFOID:000000011153011



- | | | |
|--------------------------|-----------------|---------------------|
| 1. Cotter pin | 2. Nut retainer | 3. Disc brake rotor |
| 4. Wheel hub and bearing | 5. Wheel stud | 6. Splash guard |
| 7. Steering knuckle | ⇐ Front | |

Removal and Installation

INFOID:000000011153012

REMOVAL

1. Remove the wheel hub and bearing. Refer to [FAX-8, "Exploded View"](#).
2. Separate the outer socket from the steering knuckle. Refer to [ST-58, "Exploded View"](#).
3. Remove the steering knuckle lower pinch bolt and separate the transverse link from the steering knuckle.
4. Remove the lower strut nuts and bolts and remove the steering knuckle. Refer to [FSU-8, "Exploded View"](#).

INSPECTION AFTER REMOVAL

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

Ball Joint Inspection

- Check for boot breakage, axial looseness, and torque of transverse link ball joint and repair as necessary.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Do not reuse the lower strut nuts.
- Do not reuse the wheel hub lock nut.
- Do not reuse the cotter pin.
- Check the wheel alignment. Refer to [FSU-5, "Inspection and Adjustment"](#).
- Adjust the neutral position of the steering angle sensor. Refer to [BRC-190, "Work Procedure"](#).

FRONT SUSPENSION MEMBER

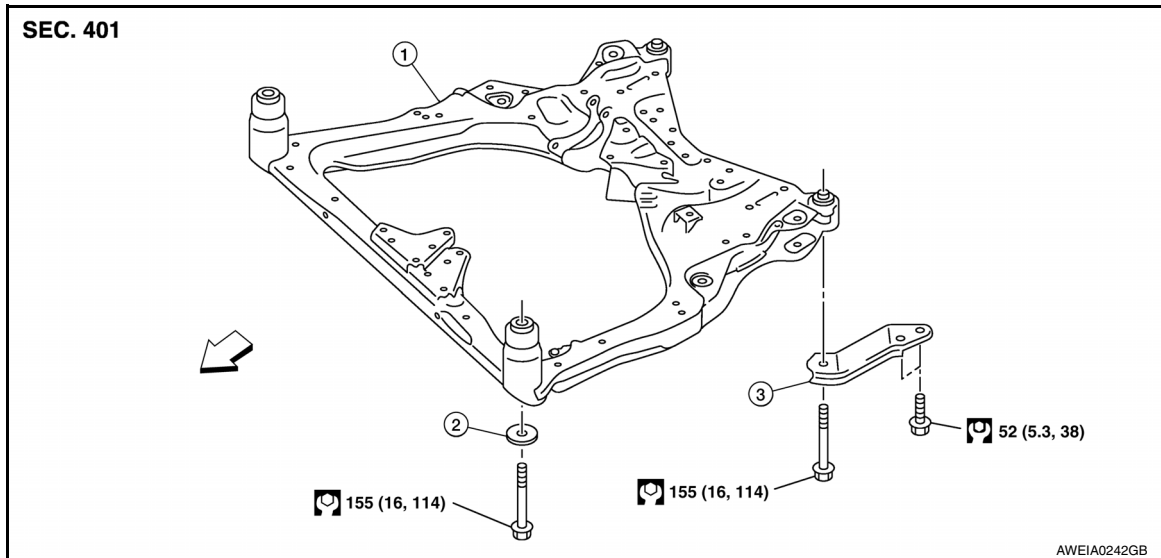
< UNIT REMOVAL AND INSTALLATION >

UNIT REMOVAL AND INSTALLATION

FRONT SUSPENSION MEMBER

Exploded View

INFOID:0000000011153013



1. Front suspension member 2. Rebound stopper 3. Front suspension member stay
- ⇐ Front

Removal and Installation

INFOID:0000000011153014

REMOVAL

1. Remove the front wheels and tires using power tool. Refer to [WT-58, "Adjustment"](#).
2. Remove the engine and transmission with the front suspension member. Lift the engine and transmission off the suspension member. Refer to [EM-103, "2WD : Removal and Installation"](#) (2WD) or [EM-108, "4WD : Removal and Installation"](#) (4WD).

NOTE:

The engine, transmission, and suspension member must be removed as an assembly.

3. Remove the steering knuckles. Refer to [FSU-15, "Removal and Installation"](#).
4. Remove the transverse links. Refer to [FSU-11, "Removal and Installation"](#).
5. Remove the stabilizer bar. Refer to [FSU-13, "Removal and Installation"](#).
6. Remove the steering gear and hydraulic lines. Refer to [ST-58, "Exploded View"](#) (2WD) or [ST-60, "Removal and Installation - 4WD"](#) (4WD).
7. Inspect the components. Refer to [FSU-5, "Inspection and Adjustment"](#).

INSTALLATION

Installation is in the reverse order of removal.

Inspection

INFOID:0000000011153015

INSPECTION AFTER REMOVAL

Check the front suspension member for significant deformation, cracks, or damages. Replace it if necessary.

INSPECTION AFTER INSTALLATION

1. Check wheel sensor harness for proper connection. Refer to [BRC-258, "Exploded View - Front Wheel Sensor"](#).
2. Check wheel alignment. Refer to [FSU-5, "Inspection and Adjustment"](#).
3. Adjust the neutral position of the steering angle sensor. Refer to [BRC-190, "Work Procedure"](#).

FRONT COIL SPRING AND STRUT

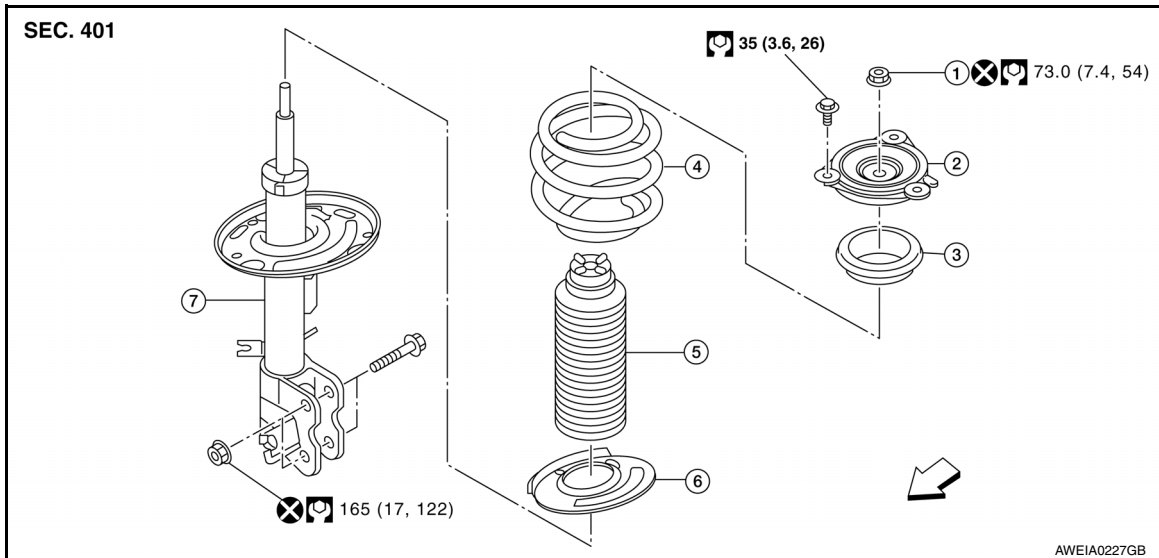
< UNIT DISASSEMBLY AND ASSEMBLY >

UNIT DISASSEMBLY AND ASSEMBLY

FRONT COIL SPRING AND STRUT

Exploded View

INFOID:0000000011561336



- | | | |
|------------------------|--------------------------|------------------------|
| 1. Piston rod lock nut | 2. Strut mount insulator | 3. Strut mount bearing |
| 4. Coil spring | 5. Bound bumper | 6. Lower rubber seat |
| 7. Strut | ↔ Front | |

Disassembly and Assembly

INFOID:0000000011153016

DISASSEMBLY

CAUTION:

Do not damage the piston rod when removing components from the front coil spring and strut.

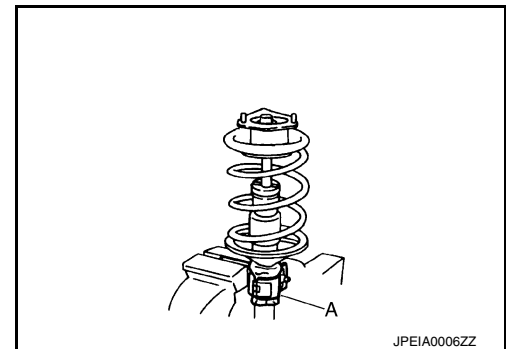
1. Install Tool (A) to the front coil spring and strut.

CAUTION:

When installing Tool (A), wrap a shop cloth around the front coil spring and strut to protect the parts from damage.

Tool number : ST35652000 (-)

2. Secure Tool (A) in a vise.



3. Install a suitable tool to strut rod.
4. Slightly loosen the piston rod lock nut.

WARNING:

Do not remove the piston rod lock nut completely. If it is removed completely, the coil spring can jump out and may cause serious damage or injury.

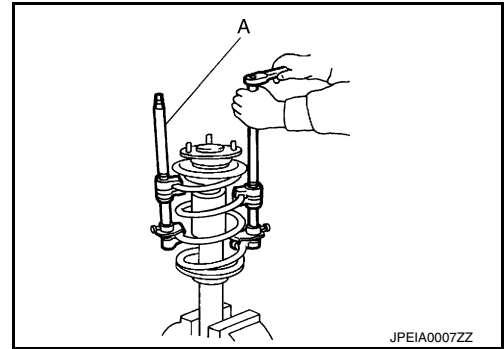
FRONT COIL SPRING AND STRUT

< UNIT DISASSEMBLY AND ASSEMBLY >

5. Compress the coil spring using a suitable tool (A).

WARNING:

Make sure that the pawls of the suitable tool are firmly hooked on the coil spring. The suitable tool must be tightened alternately so as to not tilt the coil spring.



6. Make sure the coil spring is free between the strut mount insulator and the lower rubber seat.
7. Hold the piston rod and remove the piston rod lock nut.
8. Remove the strut mount insulator, the strut mount bearing, and the bound bumper from the strut.
9. Gradually release the suitable tool and remove the coil spring.

CAUTION:

Release the suitable tool while making sure the position of the suitable tool on the coil spring does not move.

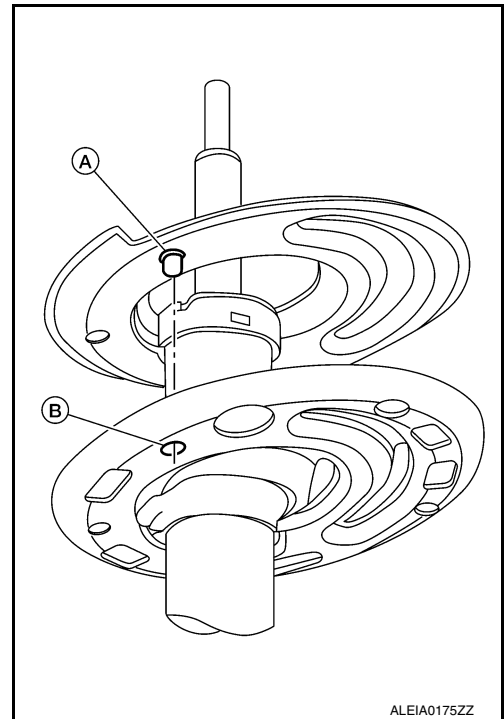
10. Remove the lower rubber seat.
11. Inspect the components. Refer to [FSU-20, "Inspection"](#).

ASSEMBLY

CAUTION:

Do not damage the piston rod when installing components to the front coil spring and strut.

1. Install the lower rubber seat to the strut. Make sure that the pin (A) on the lower rubber seat is positioned into the hole (B) on the strut.



2. Compress the coil spring using a suitable tool.

WARNING:

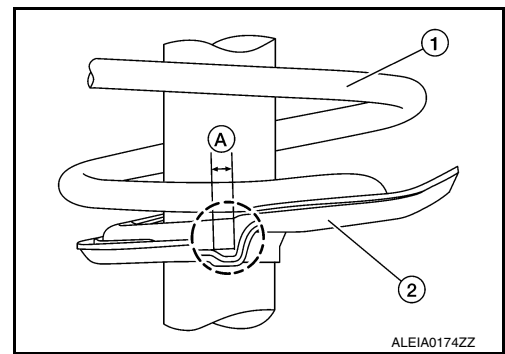
Make sure that the pawls of the suitable tool are firmly hooked on the coil spring. The suitable tool must be tightened alternately so as to not tilt the coil spring.

FRONT COIL SPRING AND STRUT

< UNIT DISASSEMBLY AND ASSEMBLY >

- Align the lower end of the coil spring (1) with the lower rubber seat (2) as shown.

Maximum Gap (A) : 5 mm (0.2 in)



- Connect the bound bumper to the strut mount bearing.

CAUTION:

- Be sure to install the bound bumper to the strut mount bearing securely.
- When installing the bound bumper, use soapy water. Do not use machine oil or other lubricants.

- Install the strut mount bearing and the strut mount insulator.

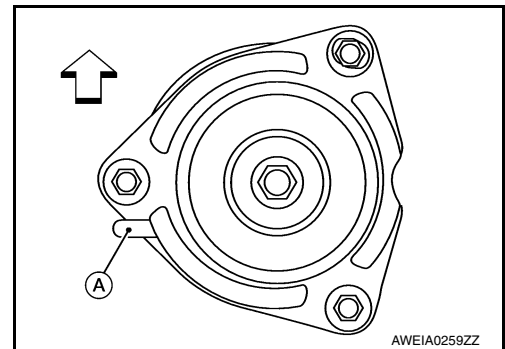
- Temporarily install the piston rod lock nut.

CAUTION:

Do not reuse the piston rod lock nut.

- Be sure that the tab (A) on the strut mount insulator is positioned on the outboard side of the vehicle.

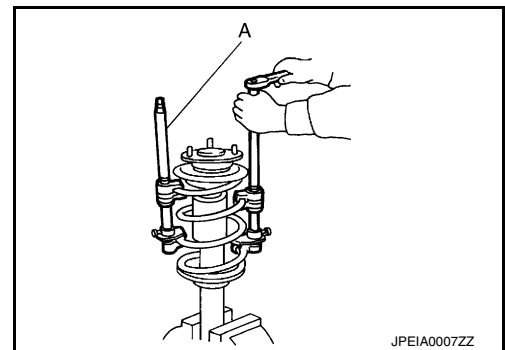
↩ :Front



- Gradually release the suitable tool (A) and remove the suitable tool from the coil spring.

CAUTION:

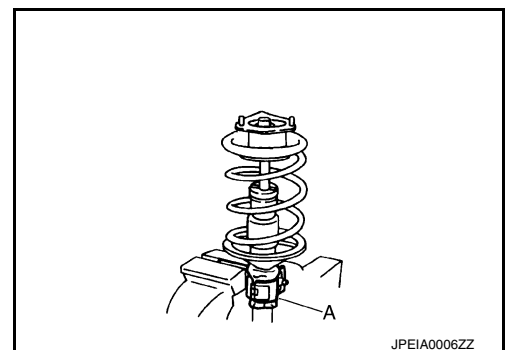
Release the suitable tool while making sure the position of the suitable tool on the coil spring does not move.



- Tighten the piston rod lock nut to the specified torque. Refer to [FSU-8, "Exploded View"](#).

- Remove Tool (A) from the vise.

- Remove Tool (A) from the front coil spring and strut.



- After replacing the strut, always follow the disposal procedure to discard the old strut. Refer to [FSU-9, "Disposal"](#).

FRONT COIL SPRING AND STRUT

< UNIT DISASSEMBLY AND ASSEMBLY >

Inspection

INFOID:000000011153017

INSPECTION AFTER DISASSEMBLY

Strut

- Check strut for deformation, cracks, and damage, and replace if necessary.
- Check piston rod for damage, uneven wear, and distortion, and replace if necessary.
- Check welded and sealed areas for oil leakage, and replace if necessary.

Insulator and Rubber Parts

Check strut mount insulator for cracks, rubber parts for wear and replace if necessary.

Coil Spring

Check for cracks, wear, and damage and replace if necessary.

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

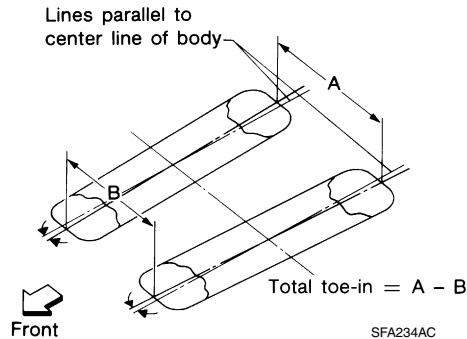
SERVICE DATA AND SPECIFICATIONS (SDS)

Wheel Alignment

INFOID:0000000011153018

UNITED STATES and MEXICO

Item		Standard	
		(LH) side	(RH) side
Measurement wheel			
Camber Degree minute (Decimal degree)	Minimum	-1° 00' (-1.00°)	-1° 15' (-1.25°)
	Nominal	-0° 15' (-0.25°)	-0° 30' (-0.50°)
	Maximum	0° 30' (0.50°)	0° 15' (0.25°)
	Left and right difference*1	-0° 15' ± 0° 33' (0.25° ± 0.55°)	
Caster Degree minute (Decimal degree)	Minimum	3° 55' (3.92°)	
	Nominal	4° 40' (4.67°)	
	Maximum	5° 25' (5.42°)	
	Left and right difference*1	0.30' (0.50°) Maximum	
Kingpin inclination Degree minute (Decimal degree)	Minimum	11° 55' (11.92°)	12° 10' (12.17°)
	Nominal	12° 40' (12.67°)	12° 55' (12.92°)
	Maximum	13° 25' (13.42°)	13° 40' (13.67°)



Total toe-in	Distance (A - B)	Minimum	Out 0.6 mm (Out 0.024 in)
		Nominal	In 1.4 mm (In 0.055 in)
		Maximum	In 3.4 mm (In 0.134 in)
	Angle (left and right) Degree minute (Decimal degree)	Minimum	Out 0° 3' 36" (Out 0.06°)
		Nominal	In 0° 6' 14" (In 0.10°)
		Maximum	In 0° 15' 36" (In 0.26°)

Measure value under unladen conditions (Fuel, engine coolant and lubricant are full. Spare tire, jack, hand tools and mats are in designated positions).

*1: The (RH) camber angle shall be $-0^{\circ} 15' \pm 0^{\circ} 33'$ ($0.25^{\circ} \pm 0.55^{\circ}$) with respect to the (LH) camber angle.

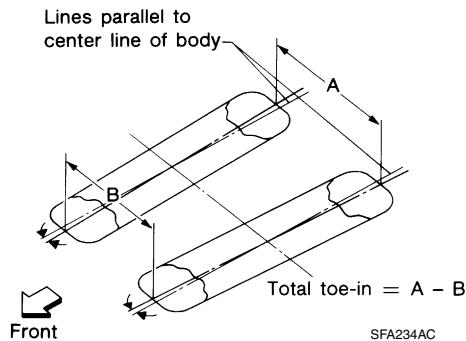
CANADA

Item		Standard	
		(LH) side	(RH) side
Measurement wheel			
Camber Degree minute (Decimal degree)	Minimum	-1° 00' (-1.00°)	-1° 15' (-1.25°)
	Nominal	-0° 15' (-0.25°)	-0° 30' (-0.50°)
	Maximum	0° 30' (0.50°)	0° 15' (0.25°)
	Left and right difference*1	-0° 15' ± 0° 33' (0.25° ± 0.55°)	

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

Item		Standard	
Caster Degree minute (Decimal degree)	Minimum	4° 00' (4.00°)	
	Nominal	4° 45' (4.75°)	
	Maximum	5° 30' (5.50°)	
	Left and right difference* ¹	0.30' (0.50°) Maximum	
Kingpin inclination Degree minute (Decimal degree)	Minimum	11° 55' (11.92°)	12° 10' (12.17°)
	Nominal	12° 40' (12.67°)	12° 55' (12.92°)
	Maximum	13° 25' (13.42°)	13° 40' (13.67°)



Total toe-in	Distance (A - B)	Minimum	Out 0.6 mm (Out 0.024 in)
		Nominal	In 1.4 mm (In 0.055 in)
		Maximum	In 3.4 mm (In 0.134 in)
	Angle (left and right) Degree minute (Decimal degree)	Minimum	Out 0° 3' 36" (Out 0.06°)
		Nominal	In 0° 6' 14" (In 0.10°)
		Maximum	In 0° 15' 36" (In 0.26°)

Measure value under unladen conditions. (Fuel, engine coolant and lubricant are full. Spare tire, jack, hand tools and mats are in designated positions).

*1: The (RH) camber angle shall be $-0^{\circ} 15' \pm 0^{\circ} 33'$ ($0.25^{\circ} \pm 0.55^{\circ}$) with respect to the (LH) camber angle.

Ball Joint

INFOID:0000000011153019

Item		Standard
Swing torque	Transverse link	0.5 – 4.9 N·m (0.05 – 0.50 kg·m, 4 – 43 in·lb)
Measurement on spring balance	Transverse link	11.1 – 108.9 N (1.13 – 11.11 kg, 2.50 – 24.48 lb)
Axial end play		0 mm (0 in)

Wheelarch Height

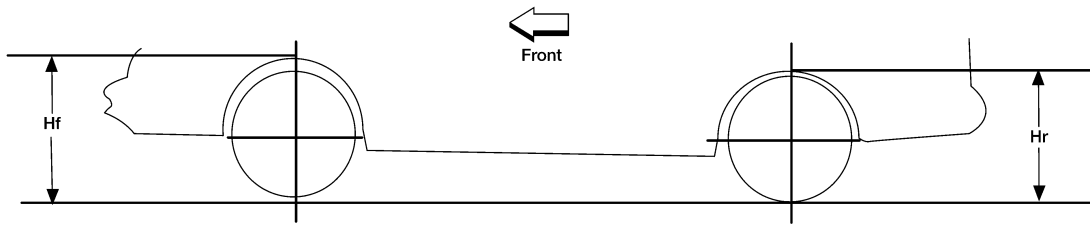
INFOID:0000000011153020

UNITED STATES

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

Unit: mm (in)



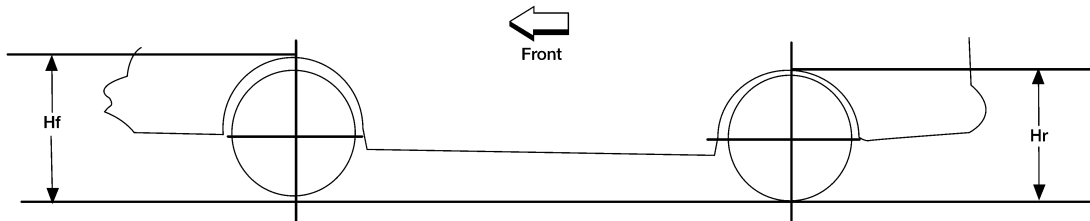
LEIA0085E

Axle type	2WD			4WD	
Wheel size	235/65R18		235/55R20	235/65R18	235/55R20
Grade	S, SV	SL	Platinum	S, SV	SL, Platinum
Front (Hf)	823 (32.40)	823 (32.40)	821 (32.32)	822 (32.36)	822 (32.36)
Rear (Hr)	828 (32.60)	827 (32.56)	825 (32.48)	827 (32.56)	826 (32.52)

Measure value under unladen conditions. (Fuel, engine coolant and lubricant are full. Spare tire, jack, hand tools and mats are in designated positions).

CANADA

Unit: mm (in)



LEIA0085E

Axle type	2WD		4WD			
Wheel size	235/65R18			235/55R20		
Grade	S	SL	S	SV	SL	Platinum
Front (Hf)	823 (32.40)					822 (32.36)
Rear (Hr)	829 (32.64)	828 (32.60)			827 (32.56)	

Measure value under unladen* conditions. (Fuel, engine coolant and lubricant are full. Spare tire, jack, hand tools and mats are in designated positions).

MEXICO

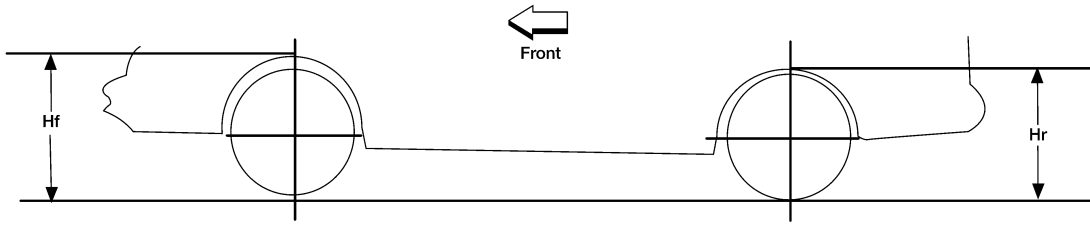
A
B
C
D
F
G
H
I
J
K
L
M
N
O
P

FSU

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

Unit: mm (in)



LEIA0085E

Axle type	2WD		4WD	
Wheel size	235/65R18		235/55R20	
Grade	Sense	Advance	Exclusive	Exclusive 4WD
Front (Hf)	823 (32.40)		821 (32.32)	
Rear (Hr)	828 (32.60)		826 (32.52)	825 (32.48)

Measure value under unladen* conditions. (Fuel, engine coolant and lubricant are full. Spare tire, jack, hand tools and mats are in designated positions).