

SECTION **FSU**
FRONT SUSPENSION

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FSU

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PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

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

INFOID:000000009010475

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 "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that 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 "SRS AIR BAG".
- Never 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:

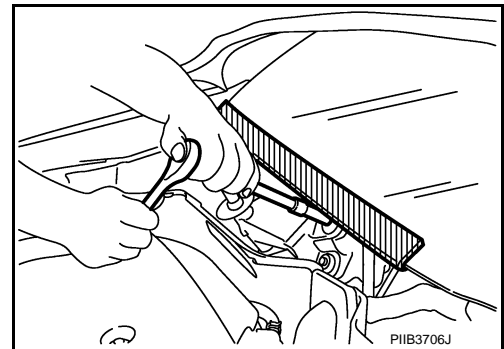
Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never 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 for Procedure without Cowl Top Cover

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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

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- 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.

PRECAUTIONS

< PRECAUTION >

Precautions for Removing of Battery Terminal

INFOID:000000009864309

- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.

NOTE:

ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.

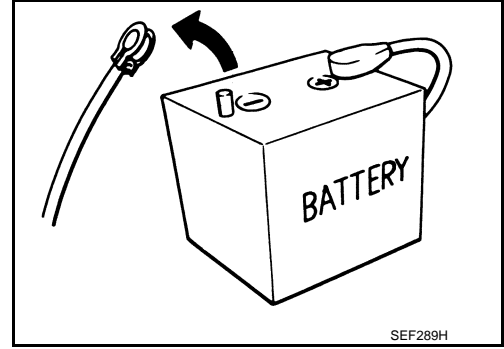
NOTE:

If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.

NOTE:

The removal of 12V battery may cause a DTC detection error.



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PREPARATION

< PREPARATION >

PREPARATION

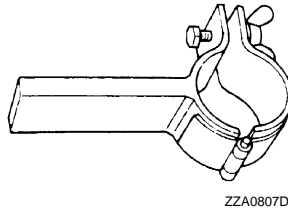
PREPARATION

Special Service Tools

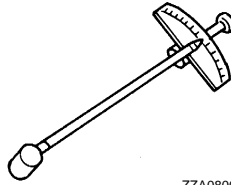
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The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
ST35652000 (-) Shock absorber attachment	Disassembling and assembling shock absorber
ST3127S000 (J-25765-A) Preload gauge	Measuring rotating torque of ball joint



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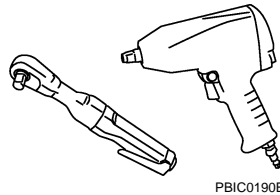


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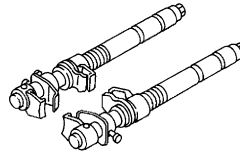
Commercial Service Tools

INFOID:000000009010479

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



PBIC0190E



S-NT717

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:000000009010480

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

Symptom		Possible cause and SUSPECTED PARTS														Reference			
		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	DIFFERENTIAL (AWD)	FRONT AXLE AND FRONT SUSPENSION	TIRE	ROAD WHEEL	DRIVE SHAFT (AWD)		BRAKE	STEERING	
Noise	FRONT SUSPENSION	x	x	x	x	x	x	x			x	x	x	x	x	x	x	FSU-10, FSU-15, FSU-18	
		x	x	x	x		x			x		x	x	x	x	x	x	FSU-13	
		x	x	x	x	x						x	x					—	
		x	x	x	x													—	
		x	x	x														—	
		x	x	x															FSU-10, FSU-15, FSU-18
Shake	FRONT SUSPENSION																	FSU-7	
																		FSU-20	
																		NVH in DLN section.	
																		NVH in DLN section.	
																			NVH in FAX and FSU sections.
																			NVH in WT section.
Vibration	FRONT SUSPENSION																	NVH in WT section.	
																		NVH in FAX section.	
																		NVH in BR section.	
																			NVH in ST section.
Shimmy	FRONT SUSPENSION																		
Judder	FRONT SUSPENSION																		
Poor quality ride or handling	FRONT SUSPENSION																		

x: Applicable

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FRONT SUSPENSION ASSEMBLY

< PERIODIC MAINTENANCE >

PERIODIC MAINTENANCE

FRONT SUSPENSION ASSEMBLY

Inspection

INFOID:000000009010481

COMPONENT PART

Check the mounting conditions (looseness, backlash) of each component and component conditions (wear, damage) are normal.

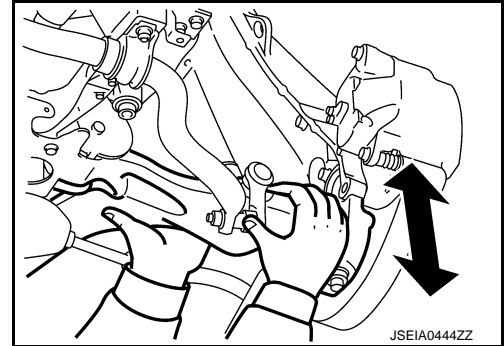
Ball Joint Axial End Play

1. Set front wheels in a straight-ahead position.
2. Move axle side of lower link and upper link in the axial direction by hand. Check there is no end play.

Axial end play : Refer to [FSU-21. "Ball Joint"](#).

CAUTION:

- Never depress brake pedal when measuring.
- Never perform with tires on level ground.
- Be careful not to damage ball joint boot. Never damage the installation position by applying excessive force.



Shock absorber

Check for oil leakage, damage. Replace it if necessary.

WHEEL ALIGNMENT

< PERIODIC MAINTENANCE >

WHEEL ALIGNMENT

Inspection

INFOID:000000009010482

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.

PRELIMINARY CHECK

Check the following:

- Tires for improper air pressure and wear. Refer to [WT-68, "Tire Air Pressure"](#).
- Road wheels for runout.
- Wheel bearing axial end play. Refer to [FAX-6, "Inspection"](#) (2WD), [FAX-15, "Inspection"](#) (AWD).
- Lower link and upper link ball joint axial end play. Refer to [FSU-6, "Inspection"](#).
- Shock absorber operation.
- Each mounting part of axle and suspension for looseness and deformation.
- Lower link for cracks, deformation and other damage.
- Vehicle height (posture).

GENERAL INFORMATION AND RECOMMENDATIONS

- A four-wheel thrust alignment should be performed.
- This type of alignment is recommended for any NISSAN/INFINITI 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/INFINITI 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.

ALIGNMENT PROCESS

IMPORTANT:

Use only the alignment specifications listed in this Service Manual.

- When displaying the alignment settings, many alignment machines use "indicators": (Green/red, plus or minus, Go/No Go). **Never use these indicators.**
- The alignment specifications programmed into your machine that operate these indicators may not be correct.
- 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 on 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.

Adjustment

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CAMBER, CASTER

WHEEL ALIGNMENT

< PERIODIC MAINTENANCE >

- Adjust with the front/rear side adjusting bolts (1) on the lower link (2).

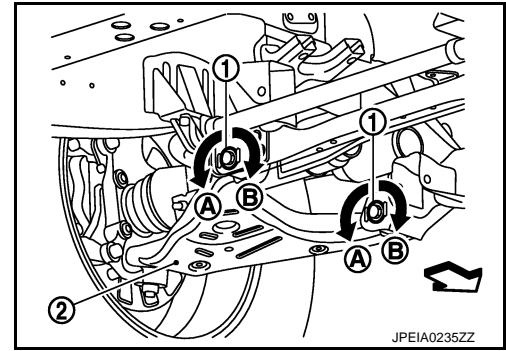
↔ : Vehicle front

- See the following table for the amount of cam bolt scale movement and the variation of camber and caster.

CAUTION:

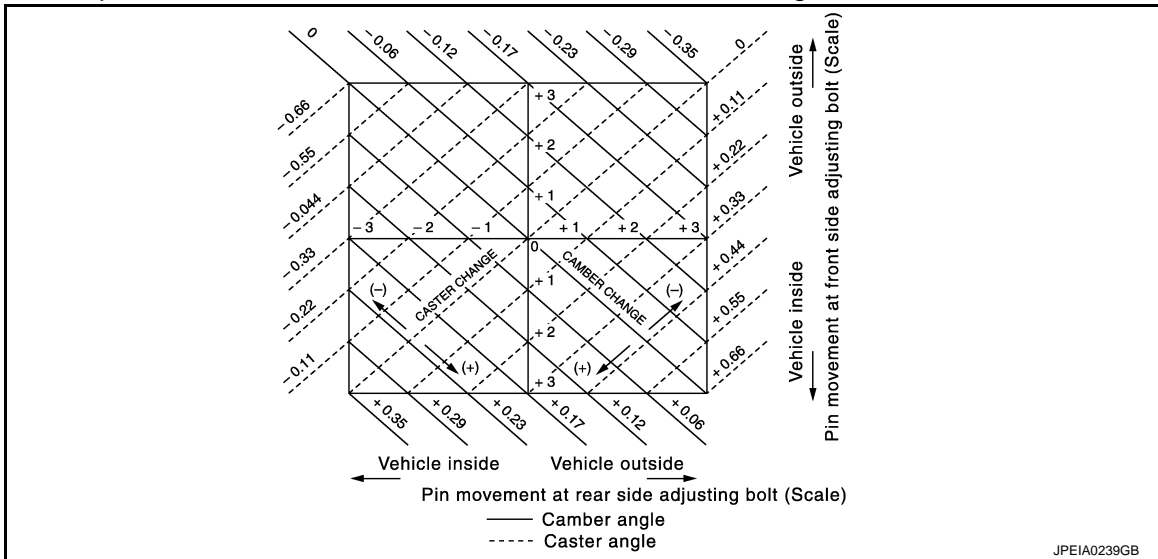
Align the adjusting bolt cutout with the stamp of lower link bracket.

A : Vehicle outside
B : Vehicle inside



Amount of cam bolt scale movement	Front	1 segment on vehicle outside	1 segment on vehicle inside	1 segment on vehicle inside	1 segment on vehicle outside	1 segment on vehicle inside	1 segment on vehicle outside	Amount of movement 0	Amount of movement 0
	Rear	1 segment on vehicle inside	1 segment on vehicle outside	1 segment on vehicle inside	1 segment on vehicle outside	Amount of movement 0	Amount of movement 0	1 segment on vehicle inside	1 segment on vehicle outside
Camber angle		0'	0'	+7'	-7'	+3'	-3'	+3'	-3'
Caster angle		-14'	+14'	0'	0'	+7'	-7'	-7'	+7'

- Note the following, and adjust as shown in the figure.
 - Obtain the point at the intersection of the measured values on the figure.



- Read the coordinate (scale) of the intersection point.
- Move the front/rear side adjusting bolts by each scale.
 - If the coordinate (scale) of the intersection point is positive, move the adjusting bolt to the vehicle inside.
 - If the coordinate (scale) of the intersection point is negative, move the adjusting bolt to the vehicle outside.
- Measure the camber and caster again. Check that the standard is within the proper range.

CAUTION:

 - Always adjust the angle difference between left and right cambers within 33'.
 - Always adjust the angle difference between left and right casters within 45'.

Camber, caster : Refer to [FSU-21, "Wheel Alignment"](#).

TOE-IN

- Loosen the steering outer socket, and then adjust the length using steering inner socket.

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

WHEEL ALIGNMENT

< PERIODIC MAINTENANCE >

CAUTION:

- Always evenly adjust both toe-in alternately and adjust the difference between the left and right to the standard.
- Always fix the steering inner socket when tightening the steering outer socket.
- After toe-in adjustment, adjust neutral position of steering angle sensor. Refer to [BRC-62, "Work Procedure"](#).

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FRONT COIL SPRING AND SHOCK ABSORBER

< REMOVAL AND INSTALLATION >

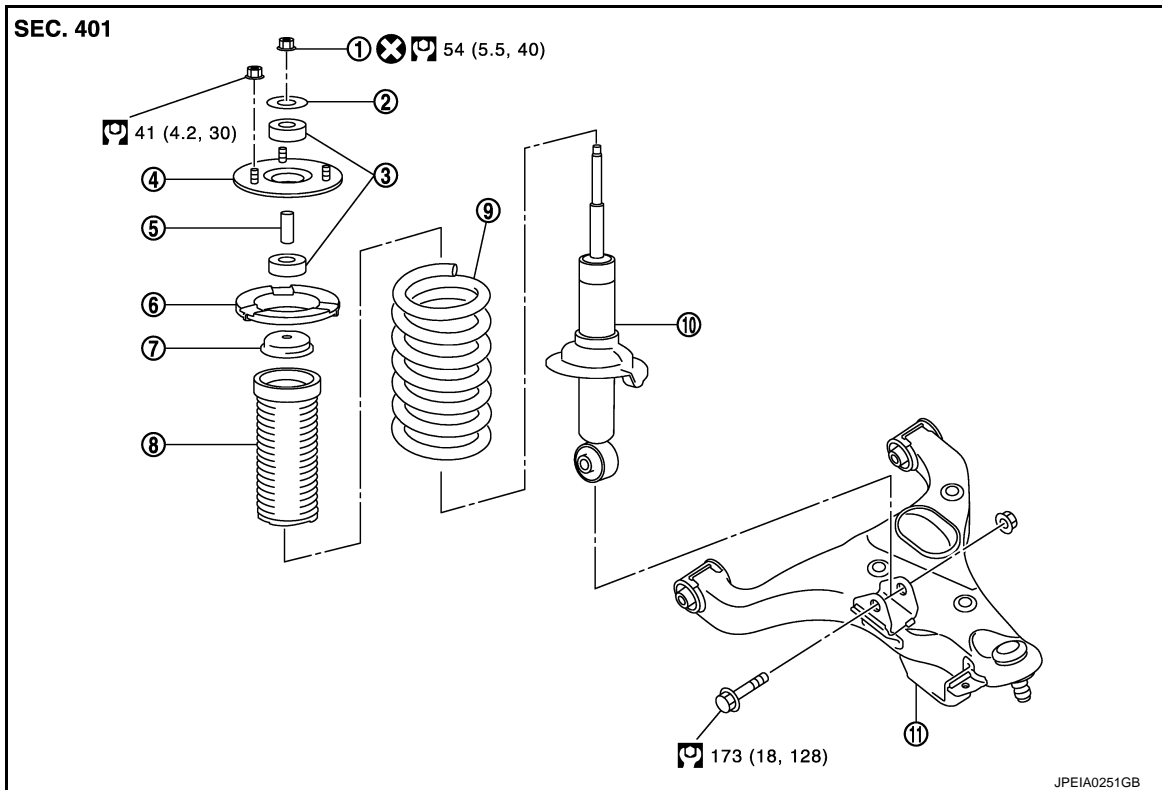
REMOVAL AND INSTALLATION

FRONT COIL SPRING AND SHOCK ABSORBER

Exploded View

INFOID:000000009010484

WITHOUT HBMC



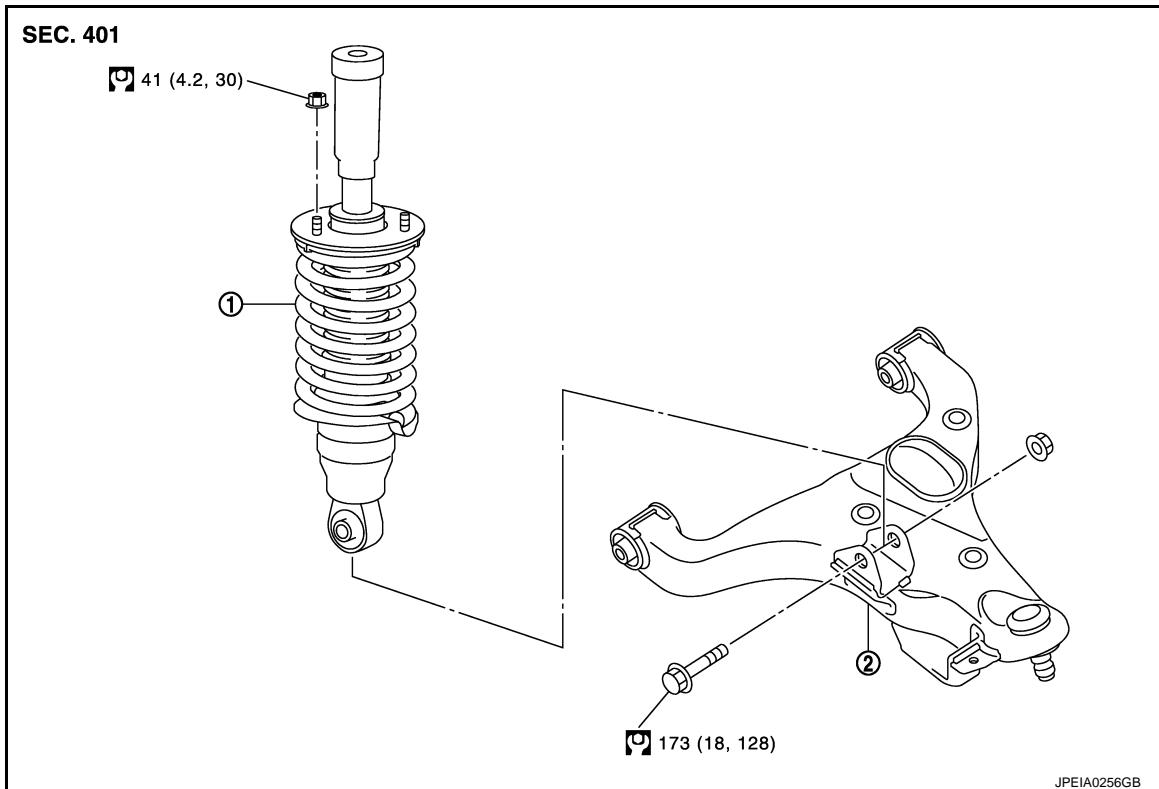
- | | | |
|------------------------------------|----------------|----------------|
| 1. Piston rod lock nut | 2. Washer | 3. Bushing |
| 4. Shock absorber mounting bracket | 5. Tube | 6. Rubber seat |
| 7. Bound bumper cover | 8. Dust cover | 9. Coil spring |
| 10. Shock absorber | 11. Lower link | |

Refer to [GI-4. "Components"](#) for symbols in the figure.

WITH HBMC

FRONT COIL SPRING AND SHOCK ABSORBER

< REMOVAL AND INSTALLATION >



1. Shock absorber assembly
2. Lower link

Refer to [GI-4, "Components"](#) for symbols in the figure.

CAUTION:

The shock absorber assembly cannot be disassembled.

Removal and Installation

INFOID:000000009010485

REMOVAL

1. Reduce system pressure. (With HBMC) Refer to [SCS-18, "Work Procedure"](#).
CAUTION:
Inadvertent piping removal causes fluid to splatter.
2. Remove tires with power tool. Refer to [WT-63, "Removal and Installation"](#).
3. Remove brake hose bracket from steering knuckle. Refer to [BR-23, "FRONT : Removal and Installation"](#).
4. Remove caliper assembly mounting bolts. Hang caliper assembly in a place where it will not interfere with work. Refer to [BR-37, "BRAKE CALIPER ASSEMBLY : Removal and Installation"](#).
CAUTION:
Never depress brake pedal while brake caliper is removed.
5. Remove disc rotor. Refer to [FAX-7, "Removal and Installation"](#) (2WD), [FAX-17, "Removal and Installation"](#) (AWD).
6. Remove wheel sensor and harness connector. Refer to [BRC-143, "FRONT WHEEL SENSOR : Removal and Installation"](#).
CAUTION:
Never pull on wheel sensor harness.
7. Remove steering outer socket from steering knuckle. Refer to [ST-42, "Removal and Installation"](#).
8. Remove height sensor from upper link (right side). Refer to [EXL-134, "Removal and Installation"](#).
9. Set suitable jack under lower link.
10. Remove stabilizer connecting rod from lower link. (Without HBMC) Refer to [FSU-20, "Removal and Installation"](#).
11. Separate upper link from steering knuckle. Refer to [FSU-18, "Removal and Installation"](#).

FRONT COIL SPRING AND SHOCK ABSORBER

< REMOVAL AND INSTALLATION >

12. Separate drive shaft from steering knuckle. (AWD) Refer to [FAX-21, "Removal and Installation"](#).
13. Remove front tube assembly A and front tube assembly B from shock absorber. (With HBMC) Refer to [SCS-32, "FRONT TUBE ASSEMBLY : Removal and Installation"](#).
14. Remove shock absorber.
15. Perform inspection after removal. (With HBMC) Refer to [FSU-13, "Inspection and Adjustment"](#).

INSTALLATION

Note the following, and install in the reverse order of removal.

- Never tap on the ball joint cap of the stabilizer connecting rod with a hammer or a similar item when inserting the stabilizer connecting rod into the lower link. (Without HBMC)
- Perform final tightening of bolts and nuts at the shock absorber lower side (rubber bushing), under unladen conditions with tires on level ground.
- Perform inspection after installation. Refer to [FSU-13, "Inspection and Adjustment"](#).
- Perform adjustment after installation. (With HBMC) Refer to [FSU-13, "Inspection and Adjustment"](#).
- After replacing the shock absorber, always follow the disposal procedure to discard the shock absorber. Refer to [FSU-14, "Disposal"](#).

Disassembly and Assembly

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CAUTION:

The shock absorber assembly cannot be disassembled. (With HBMC)

DISASSEMBLY (WITHOUT HBMC)

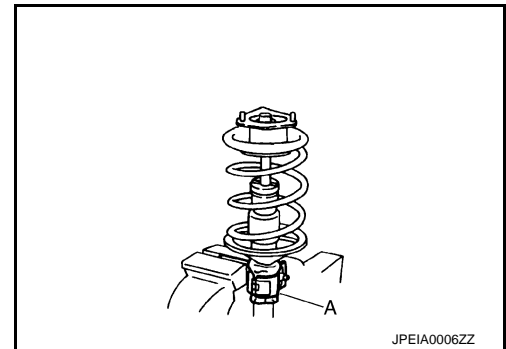
CAUTION:

Never damage shock absorber piston rod when removing components from shock absorber.

1. Install shock absorber attachment [SST: ST35652000 (-)] (A) to shock absorber and secure it in a vise.

CAUTION:

When installing the shock absorber attachment to shock absorber, wrap a shop cloth around shock absorber to protect it from damage.



2. Using a spring compressor (commercial service tool) (A), compress coil spring between rubber seat and shock absorber until coil spring with a spring compressor is free.

CAUTION:

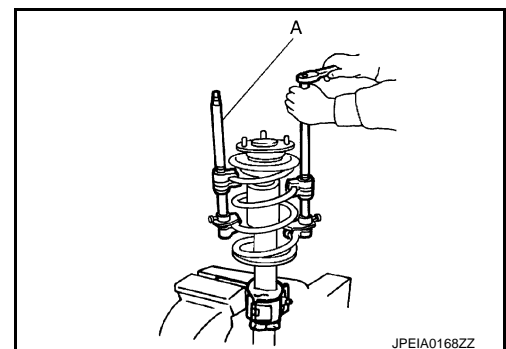
Be sure a spring compressor is securely attached coil spring. Compress coil spring

3. Check coil spring with a spring compressor between rubber seat and shock absorber is free. And then remove piston rod lock nut while securing the piston rod tip so that piston rod does not turn.
4. Remove washer, bushings, shock absorber mounting bracket, tube, rubber seat, bound bumper cover, dust cover from shock absorber.
5. After removing coil spring with a spring compressor (commercial service tool), then gradually release a spring compressor.

CAUTION:

Loosen while making sure coil spring attachment position does not move.

6. Remove the shock absorber attachment [SST: ST35652000 (-)] from shock absorber.
7. Perform inspection after disassembly. Refer to [FSU-13, "Inspection and Adjustment"](#).



ASSEMBLY (WITHOUT HBMC)

1. Install shock absorber attachment [SST: ST35652000 (-)] to shock absorber and secure it in a vise.

CAUTION:

FRONT COIL SPRING AND SHOCK ABSORBER

< REMOVAL AND INSTALLATION >

When installing the shock absorber attachment to shock absorber, wrap a shop cloth around shock absorber to protect it from damage.

- Compress coil spring using a spring compressor (commercial service tool), and install it onto shock absorber.

CAUTION:

- Be sure a spring compressor is securely attached to coil spring. Compress coil spring.
- Set coil spring so that its paint marks face downward.

- Apply soapy water to dust cover.

CAUTION:

Never use machine oil.

- Install dust cover, bound bumper cover, rubber seat, bushings, tube, shock absorber mounting bracket, and washer to shock absorber.

- Install the shock absorber mounting bracket (1) as shown in the figure.

Angle (a) : 90°

A : Shock absorber mounting bracket bolt

- Check that the lower end of the coil spring (B) is positioned at the spring lower seat of the shock absorber.

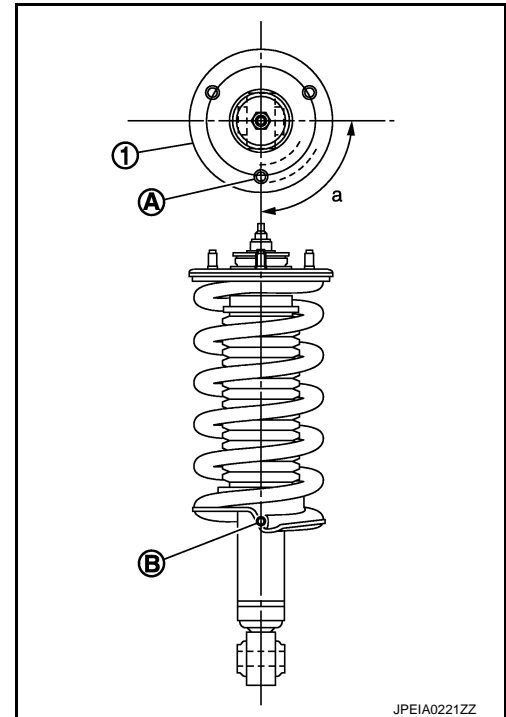
- Secure piston rod tip so that piston rod does not turn, then tighten piston rod lock nut to the specified torque.

- Gradually release a spring compressor (commercial service tool), and remove coil spring.

CAUTION:

Loosen while making sure coil spring attachment position does not move.

- Remove the shock absorber attachment [SST: ST35652000 (-)] from shock absorber.



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Inspection and Adjustment

INSPECTION AFTER REMOVAL (WITH HBMC)

Shock Absorber assembly

Check shock absorber assembly for oil leakage or other malfunctions. Replace it if necessary.

INSPECTION AFTER DISASSEMBLY (WITHOUT HBMC)

Shock Absorber

Check the following items, and replace the part if necessary.

- Shock absorber for deformation, cracks or damage.
- Piston rod for damage, uneven wear or distortion.
- Oil leakage.

Shock Absorber Mounting Bracket and Rubber Parts Inspection

Check shock absorber mounting bracket for cracks and rubber parts for wear. Replace it if necessary.

Coil Spring

Check coil spring for cracks, wear or damage. Replace it if necessary.

INSPECTION AFTER INSTALLATION

- Check wheel sensor harness for proper connection. Refer to [BRC-143, "FRONT WHEEL SENSOR : Exploded View"](#).
- Check wheel alignment. Refer to [FSU-7, "Inspection"](#).

FRONT COIL SPRING AND SHOCK ABSORBER

< REMOVAL AND INSTALLATION >

3. Adjust neutral position of steering angle sensor. Refer to [BRC-62, "Work Procedure"](#).

ADJUSTMENT AFTER INSTALLATION (WITH HBMC)

Bleed air from the HBMC. Refer to [SCS-18, "Work Procedure"](#).

Disposal

INFOID:000000009010488

WITHOUT HBMC

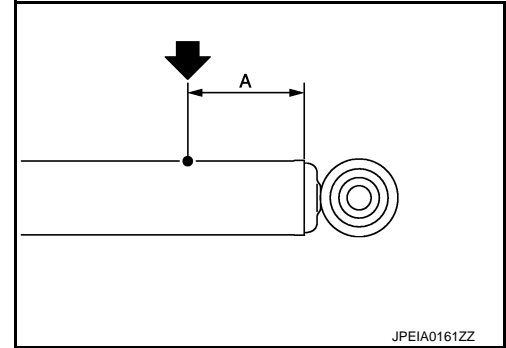
1. Set shock absorber horizontally with the piston rod fully extended.
2. Drill 2 – 3 mm (0.08 – 0.12 in) hole at the position (●) from top as shown in the figure to release gas gradually.

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.

WITH HBMC

NOTE:

Releasing gas is not required.

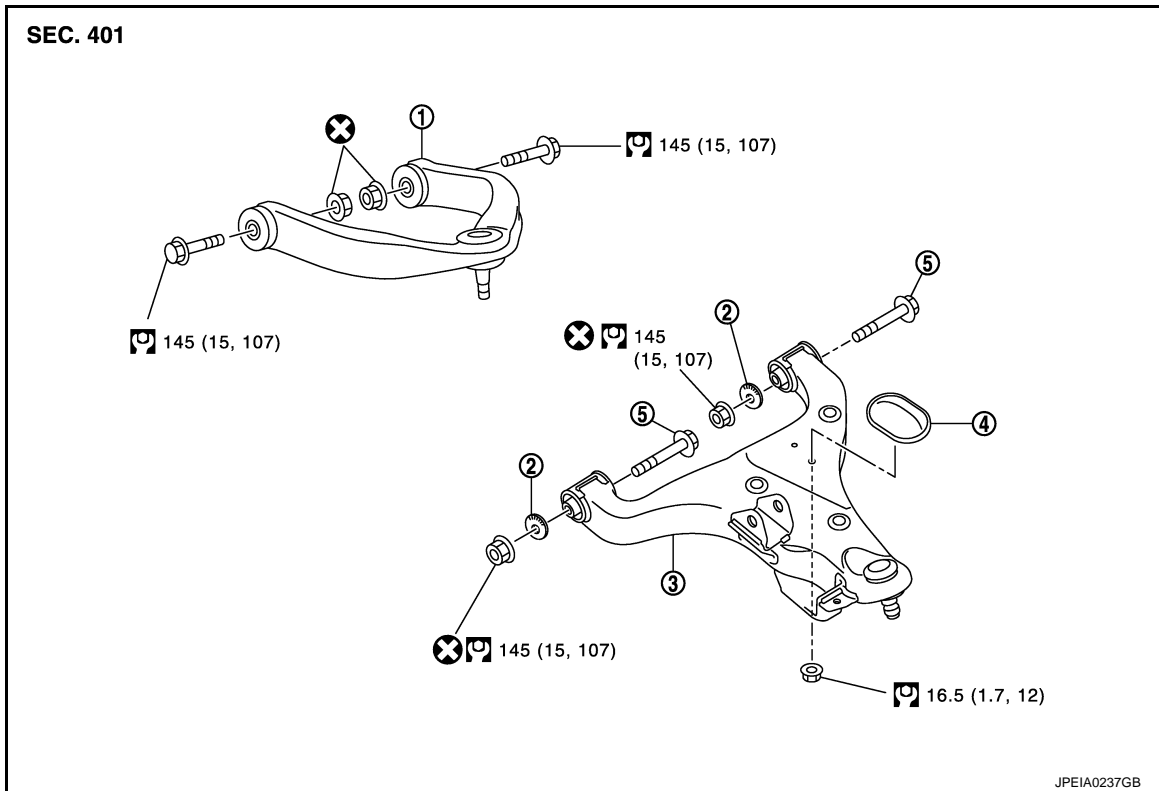
LOWER LINK

< REMOVAL AND INSTALLATION >

LOWER LINK

Exploded View

INFOID:000000009010489



- | | | |
|----------------|-------------------|---------------|
| 1. Upper link | 2. Eccentric disc | 3. Lower link |
| 4. Bump rubber | 5. Adjusting bolt | |

Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation

INFOID:000000009010490

REMOVAL

1. Remove tires with power tool. Refer to [WT-63, "Removal and Installation"](#).
2. Remove brake hose bracket from steering knuckle. Refer to [BR-23, "FRONT : Removal and Installation"](#).
3. Remove caliper assembly mounting bolts. Hang caliper assembly in a place where it will not interfere with work. Refer to [BR-37, "BRAKE CALIPER ASSEMBLY : Removal and Installation"](#).
CAUTION:
Never depress brake pedal while brake caliper is removed.
4. Remove disc rotor. Refer to [FAX-7, "Removal and Installation"](#) (2WD), [FAX-17, "Removal and Installation"](#) (AWD).
5. Remove wheel sensor and harness connector. Refer to [BRC-143, "FRONT WHEEL SENSOR : Removal and Installation"](#).
CAUTION:
Never pull on wheel sensor harness.
6. Remove steering outer socket from steering knuckle. Refer to [ST-42, "Removal and Installation"](#).
7. Remove height sensor from upper link (right side). Refer to [EXL-134, "Removal and Installation"](#).
8. Set suitable jack under lower link.
9. Remove stabilizer connecting rod from lower link. (Without HBMC) Refer to [FSU-20, "Removal and Installation"](#).
10. Remove shock absorber mounting bolt from lower link.
11. Separate upper link from steering knuckle. Refer to [FSU-18, "Removal and Installation"](#).

LOWER LINK

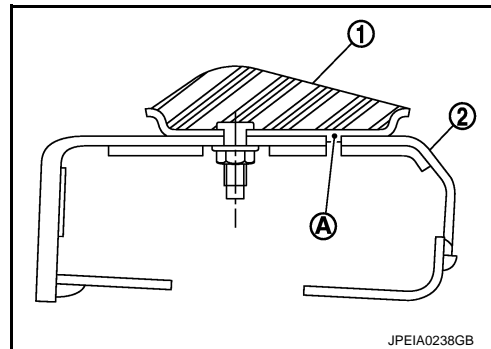
< REMOVAL AND INSTALLATION >

12. Separate drive shaft from steering knuckle. (AWD) Refer to [FAX-21, "Removal and Installation"](#).
13. Remove lower link from steering knuckle. Refer to [FAX-7, "Removal and Installation"](#) (2WD), [FAX-17, "Removal and Installation"](#) (AWD).
14. Remove protector A. (With HBMC) Refer to [SCS-32, "FRONT TUBE ASSEMBLY : Removal and Installation"](#).
15. Remove bracket. (With HBMC) Refer to [SCS-32, "FRONT TUBE ASSEMBLY : Removal and Installation"](#).
16. Remove adjusting bolts, nuts, eccentric discs, stopper rubber, and lower link from vehicle.
17. Remove bump rubber from lower link.
18. Perform inspection after removal. Refer to [FSU-16, "Inspection"](#).

INSTALLATION

Note the following, and install in the reverse order of removal.

- Protrusion (A) of bumper rubber (1) shall be installed securely to hole of lower link (2).
- Never tap on the ball joint cap of the stabilizer connecting rod with a hammer or a similar item when inserting the stabilizer connecting rod into the lower link. (Without HBMC)
- Perform final tightening of bolts and nuts at the front suspension member installation and shock absorber lower side (rubber bushing), under unladen conditions with tires on level ground.
- Perform inspection after installation. Refer to [FSU-16, "Inspection"](#).



INFOID:000000009010491

Inspection

INSPECTION AFTER REMOVAL

Appearance

Check the following items, and replace the part if necessary.

- Lower link and bushing for deformation, cracks or damage.
- Ball joint boot for cracks or other damage, and also for grease leakage.

Ball Joint Inspection

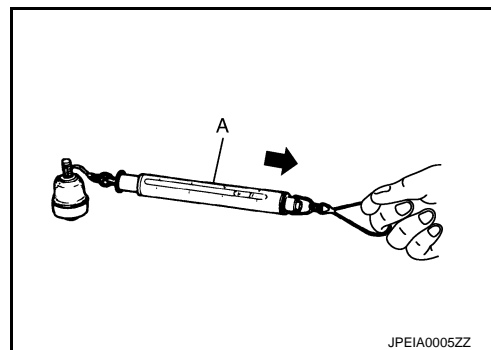
Manually move ball stud to confirm it moves smoothly with no binding.

Swing Torque Inspection

1. Move the ball joint at least ten times by hand to check for smooth movement.
2. Hook a spring balance (A) at groove. Confirm spring balance measurement value is within specifications when ball stud begins moving.

Swing torque : Refer to [FSU-21, "Ball Joint"](#).

- If swing torque exceeds standard range, replace lower link assembly.



Rotating Torque Inspection

1. Move the ball joint at least ten times by hand to check for smooth movement.
2. Check that rotating torque is within specifications.

Rotating torque : Refer to [FSU-21, "Ball Joint"](#).

- If rotating torque exceeds standard range, replace lower link assembly.

Axial End Play Inspection

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

LOWER LINK

< REMOVAL AND INSTALLATION >

2. Move tip of ball stud in axial direction to check for looseness.

Axial end play : Refer to [FSU-21, "Ball Joint"](#).

- If axial end play exceeds standard range, replace lower link assembly.

INSPECTION AFTER INSTALLATION

1. Check wheel sensor harness for proper connection. Refer to [BRC-143, "FRONT WHEEL SENSOR : Exploded View"](#).
2. Check wheel alignment. Refer to [FSU-7, "Inspection"](#).
3. Adjust neutral position of steering angle sensor. Refer to [BRC-62, "Work Procedure"](#).

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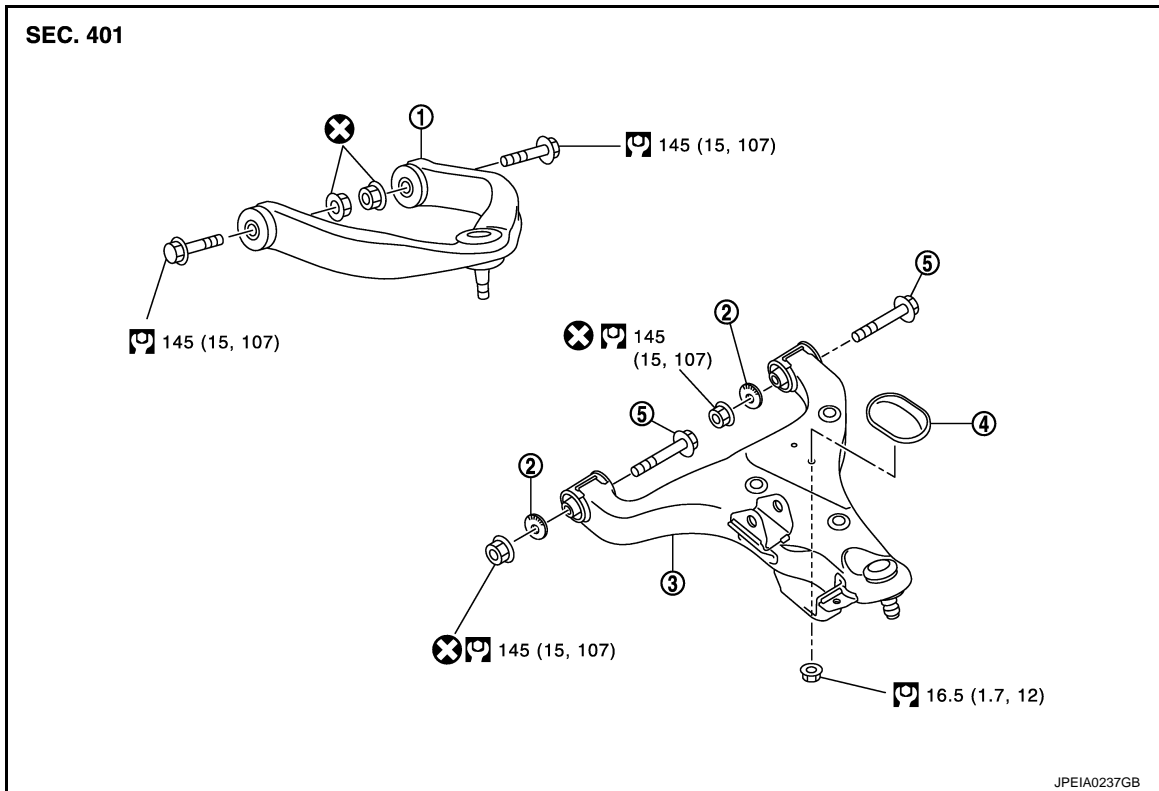
UPPER LINK

< REMOVAL AND INSTALLATION >

UPPER LINK

Exploded View

INFOID:000000009010492



- | | | |
|----------------|-------------------|---------------|
| 1. Upper link | 2. Eccentric disc | 3. Lower link |
| 4. Bump rubber | 5. Adjusting bolt | |

Refer to [GI-4. "Components"](#) for symbols in the figure.

Removal and Installation

INFOID:000000009010493

REMOVAL

1. Remove tires with power tool. Refer to [WT-63. "Removal and Installation"](#).
2. Remove brake hose bracket from steering knuckle. Refer to [BR-23. "FRONT : Removal and Installation"](#).
3. Remove caliper assembly mounting bolts. Hang caliper assembly in a place where it will not interfere with work. Refer to [BR-37. "BRAKE CALIPER ASSEMBLY : Removal and Installation"](#).
CAUTION:
Never depress brake pedal while brake caliper is removed.
4. Remove disc rotor. Refer to [FAX-7. "Removal and Installation"](#) (2WD), [FAX-17. "Removal and Installation"](#) (AWD).
5. Remove wheel sensor and harness connector. Refer to [BRC-143. "FRONT WHEEL SENSOR : Removal and Installation"](#).
CAUTION:
Never pull on wheel sensor harness.
6. Remove height sensor from upper link (right side). Refer to [EXL-134. "Removal and Installation"](#).
7. Set suitable jack under lower link.
8. Separate upper link from steering knuckle. Refer to [FAX-7. "Removal and Installation"](#) (2WD), [FAX-17. "Removal and Installation"](#) (AWD).
9. Remove upper link mounting bolts, nuts, and upper link from vehicle.
10. Perform inspection after removal. Refer to [FSU-19. "Inspection"](#).

UPPER LINK

< REMOVAL AND INSTALLATION >

INSTALLATION

Note the following, and install in the reverse order of removal.

- Perform final tightening of bolts and nuts at the vehicle installation position (rubber bushing), under unladen conditions with tires on level ground.
- Perform inspection after installation. Refer to [FSU-19, "Inspection"](#).

Inspection

INFOID:000000009010494

INSPECTION AFTER REMOVAL

Appearance

Check the following items, and replace the part if necessary.

- Upper link and bushing for deformation, cracks or damage.
- Ball joint boot for cracks or other damage, and also for grease leakage.

Ball Joint Inspection

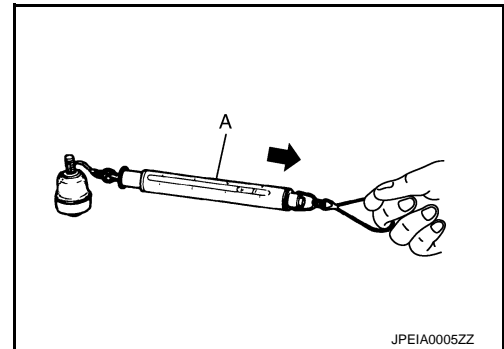
Manually move ball stud to confirm it moves smoothly with no binding.

Swing Torque Inspection

1. Move the ball joint at least ten times by hand to check for smooth movement.
2. Hook a spring balance (A) at cotter pin mounting hole. Confirm spring balance measurement value is within specifications when ball stud begins moving.

Swing torque : Refer to [FSU-21, "Ball Joint"](#).

- If swing torque exceeds standard range, replace upper link assembly.

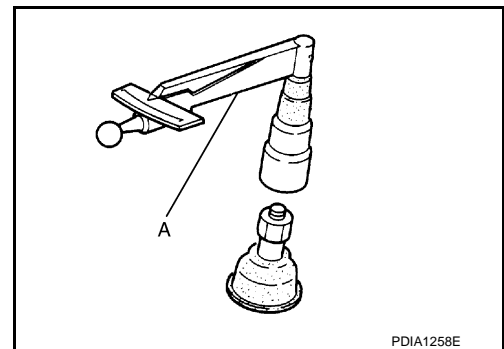


Rotating Torque Inspection

1. Move the ball joint at least ten times by hand to check for smooth movement.
2. Attach mounting nut to ball stud. Check that rotating torque is within specifications with a preload gauge [SST: 3127S000 (J-25765-A)] (A).

Rotating torque : Refer to [FSU-21, "Ball Joint"](#).

- If rotating torque exceeds standard range, replace lower link assembly.



Axial End Play Inspection

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

Axial end play : Refer to [FSU-21, "Ball Joint"](#).

- If axial end play exceeds standard range, replace upper link assembly.

INSPECTION AFTER INSTALLATION

1. Check wheel sensor harness for proper connection. Refer to [BRC-143, "FRONT WHEEL SENSOR : Exploded View"](#).
2. Check wheel alignment. Refer to [FSU-7, "Inspection"](#).
3. Adjust neutral position of steering angle sensor. Refer to [BRC-62, "Work Procedure"](#).

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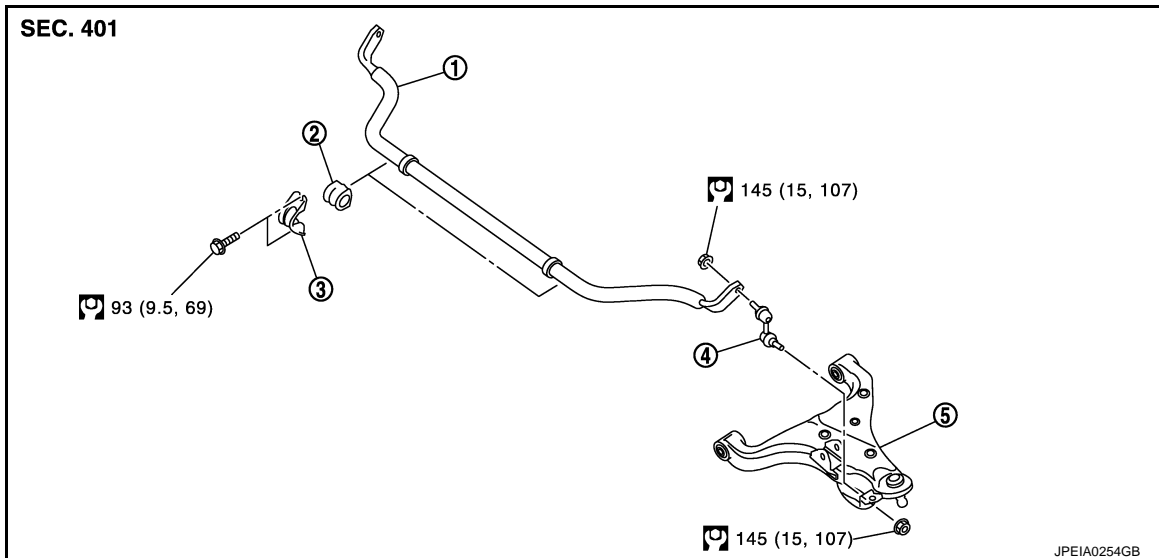
FRONT STABILIZER

< REMOVAL AND INSTALLATION >

FRONT STABILIZER

Exploded View

INFOID:000000009010495



- | | | |
|------------------------------|-----------------------|---------------------|
| 1. Stabilizer bar | 2. Stabilizer bushing | 3. Stabilizer clamp |
| 4. Stabilizer connecting rod | 5. Lower link | |

Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation

INFOID:000000009010496

REMOVAL

1. Remove stabilizer connecting rod.
CAUTION:
Apply a matching mark to identify the installation position.
2. Remove stabilizer clamps and stabilizer bushing.
3. Remove stabilizer bar.
4. Perform inspection after removal. Refer to [FSU-20, "Inspection"](#).

INSTALLATION

Note the following, and install in the reverse order of removal.

- Check the matching mark when installing.
- Install stabilizer bushing that slit becomes vehicle rear side.
- Tighten the mounting nut to the specified torque while holding a hexagonal part of stabilizer connecting rod side.

Inspection

INFOID:000000009010497

INSPECTION AFTER REMOVAL

Check stabilizer bar, stabilizer connecting rod, stabilizer bushing and stabilizer clamp for deformation, cracks or damage. Replace it 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:000000009010498

Item		Standard	
		Left side	Right side
Measurement wheel			
Camber Degree minute (Decimal degree)	Minimum	-0°45' (-0.75°)	-0°55' (-0.91°)
	Nominal	0° 00' (0.00°)	-0°10' (-0.17°)
	Maximum	0° 45' (0.75°)	0° 35' (0.58°)
	Left and right difference	0° 33' (0.55°) or less	
Caster Degree minute (Decimal degree)	Minimum	2° 20' (2.34°)	2° 40' (2.67°)
	Nominal	3° 05' (3.08°)	3° 25' (3.42°)
	Maximum	3° 50' (3.83°)	4° 10' (4.16°)
	Left and right difference	0° 45' (0.75°) or less	
Kingpin inclination Degree minute (Decimal degree)	Minimum	—	—
	Nominal	13° 20' (13.33°)*1	13° 25' (13.42°)*1
	Maximum	—	—
Toe-in	Total toe-in Distance	Minimum	In 0.4 mm (In 0.015 in)
		Nominal	In 2.4 mm (In 0.094 in)
		Maximum	In 4.4 mm (In 0.173 in)
	Total toe-angle Degree minute (Decimal degree)	Minimum	In 0° 01' 48" (In 0.03°)
		Nominal	In 0° 10' 12" (In 0.17°)
		Maximum	In 0° 18' 00" (In 0.30°)

Measure value under unladen*2 conditions.

*1: The minimum value and maximum value is the same as the nominal value.

*2: Fuel, engine coolant and lubricant are full. Spare tire, jack, hand tools and mats are in designated positions.

Ball Joint

INFOID:000000009010499

Item		Standard	
Swing torque	Lower link	0.5 – 6.4 N·m (0.06 – 0.65 kg·m, 5 – 56 in-lb)	
	Upper link	0.5 – 4.9 N·m (0.06 – 0.49 kg·m, 5 – 43 in-lb)	
Measurement on spring balance (groove position)		Lower link	11.4 – 145.4 N (1.17 – 14.83 kg, 2.57 – 32.68 lb)
Measurement on spring balance (cotter pin hole position)		Upper link	8.1 – 79.0 N (0.83 – 8.05 kg, 1.83 – 17.75 lb)
Rotating torque	Lower link	0.5 – 6.4 N·m (0.06 – 0.65 kg·m, 5 – 56 in-lb)	
	Upper link	0.5 – 4.9 N·m (0.06 – 0.49 kg·m, 5 – 43 in-lb)	
Axial end play		0 mm (0 in)	

Wheel Height

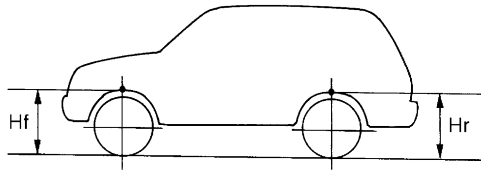
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Item	Standard
Front (Hf)	903 mm (35.55 in)

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

Item	Standard
Rear (Hr)	890 mm (35.04 in)



SFA746B

Measure value under unladen* conditions.

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