

SECTION **FSU**
FRONT SUSPENSION

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C
D
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G
H
I
J
K
L
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CONTENTS

PRECAUTION	2	REMOVAL AND INSTALLATION	12
PRECAUTIONS	2	FRONT COIL SPRING AND STRUT	12
Precaution for Technicians Using Medical Electric.....	2	Exploded View	12
Point to Be Checked Before Starting Maintenance		Removal and Installation	12
Work	2	Disassembly and Assembly	13
Precaution for Supplemental Restraint System		Inspection	15
(SRS) "AIR BAG" and "SEAT BELT PRE-TEN-		Disposal	15
SIONER"	2	TRANSVERSE LINK	16
Precaution for Procedure without Cowl Top Cover.....	3	Exploded View	16
High Voltage Precautions	3	Removal and Installation	16
Precaution for Removing 12V Battery	5	Inspection	16
Precautions for Suspension	6	FRONT STABILIZER	18
PREPARATION	7	Exploded View	18
PREPARATION	7	Removal and Installation	18
Special Service Tools	7	Inspection	20
Commercial Service Tools	7	FRONT SUSPENSION MEMBER	21
SYMPTOM DIAGNOSIS	9	Exploded View	21
NOISE, VIBRATION AND HARSHNESS		Removal and Installation	21
(NVH) TROUBLESHOOTING	9	Inspection	26
NVH Troubleshooting Chart	9	SERVICE DATA AND SPECIFICATIONS	
PERIODIC MAINTENANCE	10	(SDS)	27
FRONT SUSPENSION ASSEMBLY	10	SERVICE DATA AND SPECIFICATIONS	
Inspection	10	(SDS)	27
WHEEL ALIGNMENT	11	Wheel Alignment	27
Inspection	11	Ball Joint	27
		Wheelarch Height	27

PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

Precaution for Technicians Using Medical Electric

INFOID:000000007073083

OPERATION PROHIBITION

WARNING:

- Parts with strong magnet is used in this vehicle.
- Technicians using a medical electric device such as pacemaker must never perform operation on the vehicle, as magnetic field can affect the device function by approaching to such parts.

NORMAL CHARGE PRECAUTION

WARNING:

- If a technician uses a medical electric device such as an implantable cardiac pacemaker or an implantable cardioverter defibrillator, the possible effects on the devices must be checked with the device manufacturer before starting the charge operation.
- As radiated electromagnetic wave generated by on board charger at normal charge operation may effect medical electric devices, a technician using a medical electric device such as implantable cardiac pacemaker or an implantable cardioverter defibrillator must not enter the vehicle compartment (including luggage room) during normal charge operation.

Precaution at telematics system operation

WARNING:

- If a technician uses implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), avoid the device implanted part from approaching within approximately 220 mm (8.66 in) from interior/exterior antenna.
- The electromagnetic wave of TCU might affect the function of the implantable cardiac pacemaker or the implantable cardioverter defibrillator (ICD), when using the service, etc.
- If a technician uses other medical electric devices than implantable cardiac pacemaker or implantable cardioverter defibrillator(ICD), the electromagnetic wave of TCU might affect the function of the device. The possible effects on the devices must be checked with the device manufacturer before TCU use.

Precaution at intelligent key system operation

WARNING:

- If a technician uses implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), avoid the device implanted part from approaching within approximately 220 mm (8.66 in) from interior/exterior antenna.
- The electromagnetic wave of intelligent key might affect the function of the implantable cardiac pacemaker or the implantable cardioverter defibrillator (ICD), at door operation, at each request switch operation, or at engine starting.
- If a technician uses other medical electric devices than implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), the electromagnetic wave of intelligent key might affect the function of the device. The possible effects on the devices must be checked with the device manufacturer before intelligent key use.

Point to Be Checked Before Starting Maintenance Work

INFOID:000000007080018

The high voltage system may starts automatically. It is required to check that the timer air conditioner and timer charge (during EVSE connection) are not set before starting maintenance work.

NOTE:

If the timer air conditioner or timer charge (during EVSE connection) is set, the high voltage system starts automatically even when the power switch is in OFF state.

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

INFOID:000000007009694

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

PRECAUTIONS

< PRECAUTION >

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 "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:

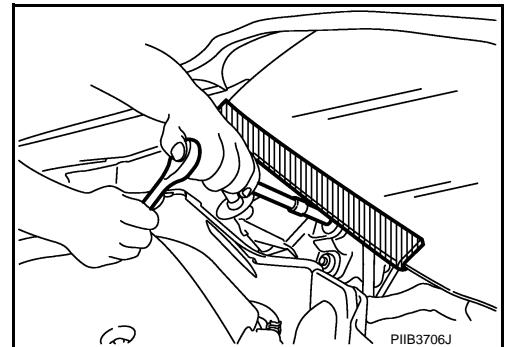
Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the power switch ON, 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 power switch OFF, disconnect the 12V battery, and wait at least 3 minutes before performing any service.

Precaution for Procedure without Cowl Top Cover

INFOID:000000007009695

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



High Voltage Precautions

INFOID:000000007009736

WARNING:

- Because hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.
- Be sure to remove the service plug in order to shut off the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.
- Be sure to put the removed service plug in your pocket and carry it with you so that another person does not accidentally connect it while work is in progress.
- Be sure to wear insulating protective equipment consisting of glove, shoes and face shield before beginning work on the high voltage system.
- Clearly identify the persons responsible for high voltage work and ensure that other persons do not touch the vehicle. When not working, cover high voltage parts with an insulating cover sheet or similar item to prevent other persons from contacting them.

CAUTION:

There is the possibility of a malfunction occurring if the vehicle is changed to READY status while the service plug is removed. Therefore do not change the vehicle to READY status unless instructed to do so in the Service Manual.

PRECAUTIONS

< PRECAUTION >

HIGH VOLTAGE HARNESS AND EQUIPMENT IDENTIFICATION

The colors of the high voltage harnesses and connectors are all orange. Orange "High Voltage" labels are applied to the Li-ion battery and other high voltage devices. Do not carelessly touch these harnesses and parts.

HANDLING OF HIGH VOLTAGE HARNESS AND TERMINALS

Immediately insulate disconnected high voltage connectors and terminals with insulating tape.

REGULATIONS ON WORKERS WITH MEDICAL ELECTRONICS

WARNING:

The vehicle contains parts that contain powerful magnets. If a person who is wearing a pacemaker or other medical device is close to these parts, the medical device may be affected by the magnets. Such persons must not perform work on the vehicle.

PROHIBITED ITEMS TO CARRY DURING THE WORK

Because this vehicle uses components that contain high voltage and powerful magnetism, do not carry any metal products which may cause short circuits, or any magnetic media (cash cards, prepaid cards, etc.) which may be damaged on your person when working.

POSTING A SIGN OF "DANGER! HIGH VOLTAGE AREA. KEEP OUT"

PRECAUTIONS

< PRECAUTION >

To call the attention of other workers, indicate "High voltage work in progress. Do not touch!" on vehicles where work is being performed on the high voltage systems.

Person in charge: _____

DO NOT TOUCH!

REPAIR IN PROGRESS.

HIGH VOLTAGE

DANGER:

DANGER:

HIGH VOLTAGE

REPAIR IN PROGRESS.

DO NOT TOUCH!

Person in charge: _____

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Precaution for Removing 12V Battery

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When removing the 12V battery, turn ON/OFF the power switch and check that the charging status indicator does not blink. The 12V battery must be removed within one hour after checking the indicator lamp.

NOTE:

- The automatic 12V battery charge control may start even when the power switch is in OFF state.

PRECAUTIONS

< PRECAUTION >

- The automatic 12V battery charge control does not start within approximately one hour when the power switch is turned ON/OFF.

Precautions for Suspension

INFOID:000000006832473

- 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.
- The tightening surface must be kept free from oil/grease.
- When jacking up the vehicle with a floor jack, never hang the jack on the torque rod.

PREPARATION

< PREPARATION >

PREPARATION

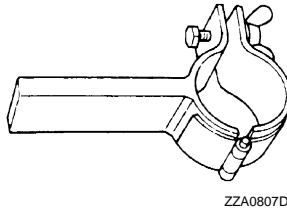
PREPARATION

Special Service Tools

INFOID:000000006832474

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

Tool number (Kent-More No.) Tool name	Description
ST35652000 (—) Strut attachment	Disassembling and assembling strut

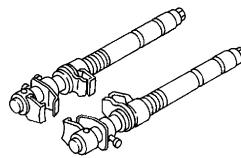


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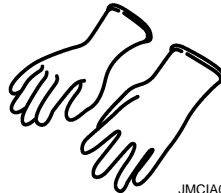
Commercial Service Tools

INFOID:000000006832475

Tool name	Description
Spring compressor	Removing and installing coil spring
Insulated gloves [Guaranteed insulation performance for 1000V/300A]	Removing and installing high voltage components
Insulated safety shoes	Removing and installing high voltage components
Safety glasses [ANSI Z87.1]	<ul style="list-style-type: none"> • Removing and installing high voltage components • To protect face from the spatter on the work to electric line



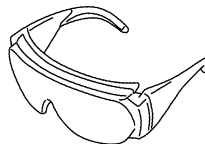
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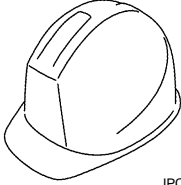
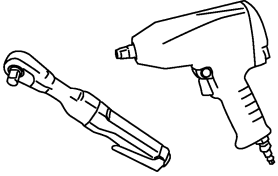
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PREPARATION

< PREPARATION >

Tool name	Description
<p data-bbox="154 199 324 226">Insulated helmet</p>  <p data-bbox="885 415 971 436">JPCIA0013ZZ</p>	<p data-bbox="1055 199 1477 256">Removing and installing high voltage components</p>
<p data-bbox="154 451 267 478">Power tool</p>  <p data-bbox="885 667 971 688">PBIC0190E</p>	<p data-bbox="1055 451 1307 478">Loosening bolts and nuts</p>

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:000000006832476

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

Symptom		Possible cause and SUSPECTED PARTS	Reference page													
			FSU-12, FSU-16, FSU-18, FSU-21	FSU-15	—	—	FSU-15	FSU-12, FSU-16, FSU-18, FSU-21	FSU-11	FSU-18	NVH in FAX and FSU sections	NVH in WT section	NVH in WT section	NVH in FAX section	NVH in BR section	NVH in ST section
Noise	FRONT SUSPENSION	Improper installation, looseness	x	x	x	x	x	x			x	x	x	x	x	x
		Shock absorber deformation, damage or deflection	x	x	x	x		x			x	x	x	x	x	x
		Bushing or mounting deterioration	x	x	x	x	x									
		Parts interference	x	x	x	x										
		Spring fatigue	x	x	x	x										
		Suspension looseness	x	x	x	x										
Shake	FRONT SUSPENSION	Incorrect wheel alignment														
		Stabilizer bar fatigue														
		FRONT AXLE AND FRONT SUSPENSION														
		TIRE														
		ROAD WHEEL														
		DRIVE SHAFT														
Vibration	FRONT SUSPENSION	BRAKE														
		STEERING														
		Improper installation, looseness	x	x	x	x	x			x	x	x	x	x	x	
		Shock absorber deformation, damage or deflection	x	x	x	x		x			x	x	x	x	x	
		Bushing or mounting deterioration	x	x	x	x										
		Parts interference	x	x	x	x										
Shimmy	FRONT SUSPENSION	Spring fatigue	x	x	x	x										
		Suspension looseness	x	x	x	x										
		Incorrect wheel alignment														
		Stabilizer bar fatigue														
		FRONT AXLE AND FRONT SUSPENSION														
		TIRE														
Judder	FRONT SUSPENSION	ROAD WHEEL														
		DRIVE SHAFT														
		BRAKE														
		STEERING														
		Improper installation, looseness	x	x	x	x	x			x	x	x	x	x		
		Shock absorber deformation, damage or deflection	x	x	x	x		x			x	x	x	x		
Poor quality ride or handling	FRONT SUSPENSION	Bushing or mounting deterioration	x	x	x	x										
		Parts interference	x	x	x	x										
		Spring fatigue	x	x	x	x										
		Suspension looseness	x	x	x	x										
		Incorrect wheel alignment														
		Stabilizer bar fatigue														

x: Applicable

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FRONT SUSPENSION ASSEMBLY

< PERIODIC MAINTENANCE >

PERIODIC MAINTENANCE

FRONT SUSPENSION ASSEMBLY

Inspection

INFOID:000000006832496

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. Measure axial end play by prying it up/down with iron bar or equivalent between transverse link and steering knuckle.

Axial end play : Refer to [FSU-27, "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.

STRUT ASSEMBLY

Check for oil leakage, damage, and replace if necessary.

WHEEL ALIGNMENT

< PERIODIC MAINTENANCE >

WHEEL ALIGNMENT

Inspection

INFOID:000000006832497

DESCRIPTION

CAUTION:

- The adjustment mechanisms of camber, caster, and kingpin inclination angles are not included.
- If camber, caster, or kingpin inclination angle is outside the standard, check front suspension parts for wear and damage. Replace suspect parts if a malfunction is detected.
- Kingpin inclination angle is reference value, no inspection is required.

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-50, "Tire Air Pressure"](#).
- Road wheels for runout.
- Wheel bearing axial end play. Refer to [FAX-7, "Inspection"](#).
- Transverse link ball joint axial end play.
- Strut operation.
- Each mounting part of axle and suspension for looseness and deformation.
- Each of suspension member, strut assembly and transverse 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.
- Check 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.
- Some newer alignment machines are equipped with an optional “Rolling Compensation” method to “compensate” the sensors (alignment targets or head units). **Never use this “Rolling Compensation” method.**
- Use the “Jacking Compensation Method”. After installing the alignment targets or head units, raise the vehicle and rotate the wheels 1/2 turn both ways.
- See Instructions in the alignment machine you're using for more information on this.

FRONT COIL SPRING AND STRUT

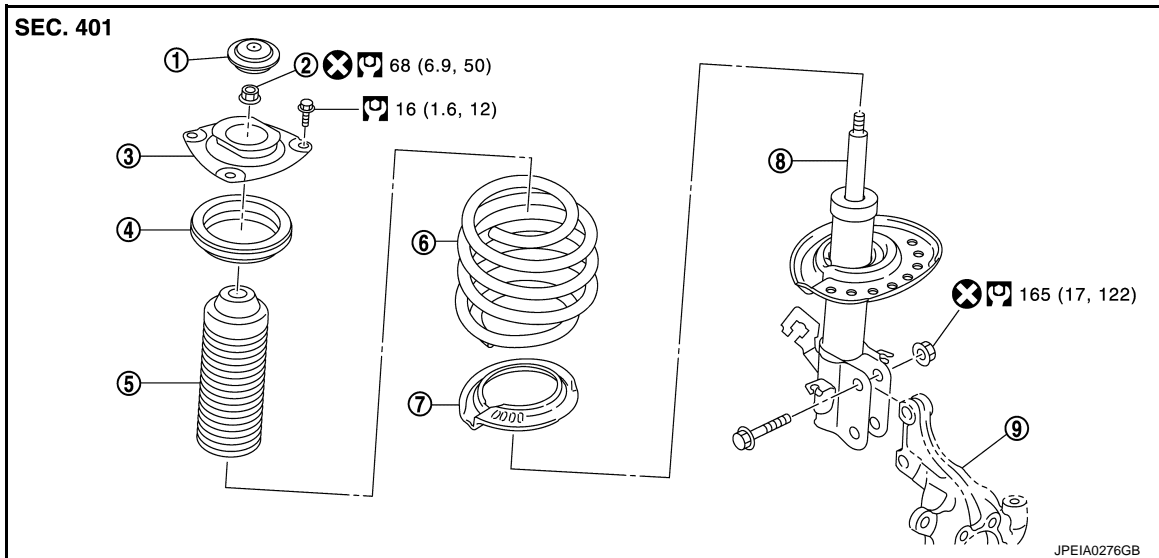
< REMOVAL AND INSTALLATION >

REMOVAL AND INSTALLATION

FRONT COIL SPRING AND STRUT

Exploded View

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- | | | |
|----------------------|------------------------|-----------------------|
| 1. Cap | 2. Piston rod lock nut | 3. Mounting insulator |
| 4. Mounting bearing | 5. Bound bumper | 6. Coil spring |
| 7. Lower rubber seat | 8. Strut | 9. Steering knuckle |

: N-m (kg-m, ft-lb)

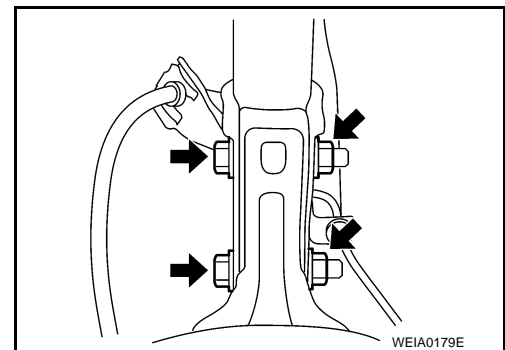
: Always replace after every disassembly.

Removal and Installation

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REMOVAL

1. Remove tires with power tool. Refer to [WT-45, "Exploded View"](#).
2. Remove lock plate from strut assembly. Refer to [BR-214, "FRONT : Exploded View"](#).
3. Remove wheel sensor. Refer to [BRC-148, "FRONT WHEEL SENSOR : Removal and Installation"](#).
4. Remove stabilizer connecting rod from strut assembly. Refer to [FSU-18, "Removal and Installation"](#).
5. Remove strut mounting bolts and nuts from steering knuckle with power tool.
6. Remove cowl top cover. Refer to [EXT-17, "Removal and Installation"](#).
7. Remove mounting bolt of mounting insulator, and then remove strut assembly.



INSTALLATION

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

FRONT COIL SPRING AND STRUT

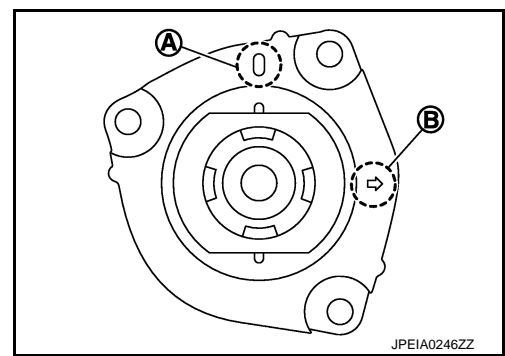
< REMOVAL AND INSTALLATION >

- Install strut assembly with the identification mark (A) of mounting insulator faced forward of the vehicle and the arrow (B) faced outside.

NOTE:

The identification mark "0" shows the right mounting insulator and "1" shows left.

- Never reuse strut mounting nut.
- Perform final tightening of fixing parts at the vehicle installation position (rubber bushing), under unladen conditions with tires on level ground.
- Perform inspection after installation. Refer to [FSU-15, "Inspection"](#).
- After replacing the strut absorber, always follow the disposal procedure to discard the strut absorber. Refer to [FSU-15, "Disposal"](#).



Disassembly and Assembly

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DISASSEMBLY

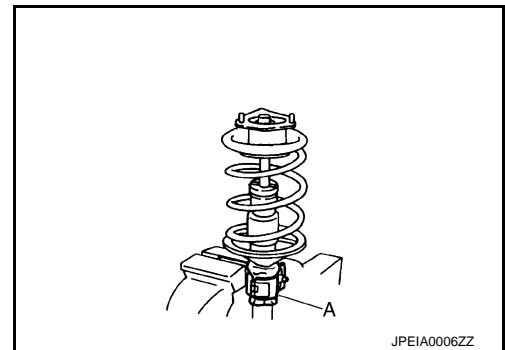
CAUTION:

Never damage strut assembly piston rod when removing components from strut assembly.

1. Remove the cap.
2. Install strut attachment (A) [SST: ST35652000 (—)] to strut assembly and secure it in a vise.

CAUTION:

When installing the strut attachment to strut assembly, wrap a shop cloth around strut to protect from damage.

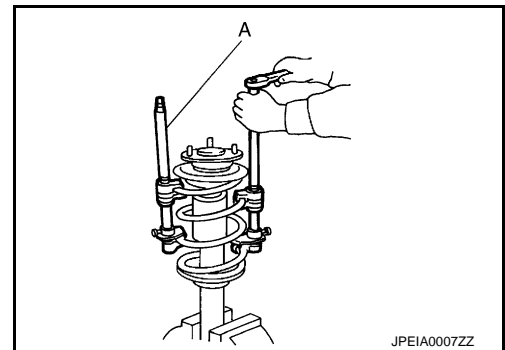


3. Using a spring compressor (A) (commercial service tool), compress coil spring between spring upper seat and lower seat (strut assembly) until coil spring with a spring compressor is free.

CAUTION:

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

4. Check coil spring with a spring compressor between spring upper seat and lower seat (strut assembly) is free. And then remove piston rod lock nut while securing the piston rod tip so that piston rod does not turn.



5. Remove mounting insulator, mounting bearing, and bound bumper from strut.
6. After removing coil spring with a spring compressor, then gradually release a spring compressor.

CAUTION:

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

7. Remove lower rubber seat.
8. Perform inspection after disassembly. Refer to [FSU-15, "Inspection"](#).

ASSEMBLY

CAUTION:

Never damage strut assembly piston rod when installing components from strut assembly.

1. Install strut attachment [SST: ST35652000 (—)] to strut and secure it in a vise.

CAUTION:

When installing the strut attachment to strut assembly, wrap a shop cloth around strut to protect from damage.

2. Install lower rubber seat.

FRONT COIL SPRING AND STRUT

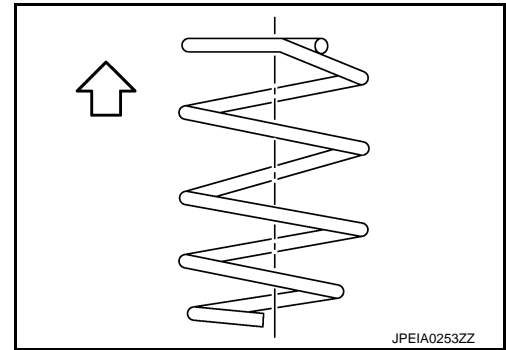
< REMOVAL AND INSTALLATION >

3. Compress coil spring using a spring compressor (commercial service tool), and install it onto strut assembly.

CAUTION:

- Be sure a compressor is securely attached to coil spring. Compress coil spring.
- Be careful with the vertical direction of the coil spring.

← : Upper side



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

4. Apply soapy water to bound bumper.

CAUTION:

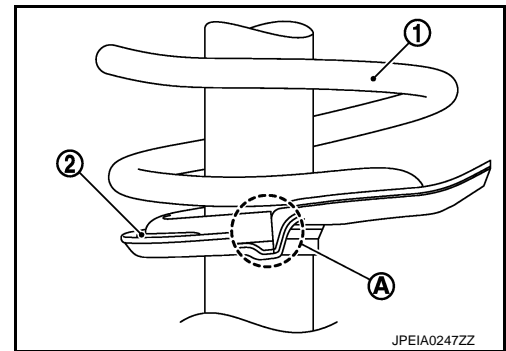
Never use machine oil.

5. Insert bound bumper into mounting insulator.

6. Install mounting bearing.

CAUTION:

Never apply oils, such as grease, when installing the mounting bearing.



7. Check the location of identification mark (A) of the mounting insulator and install it with the arrow (B) faced outside of the vehicle to the strut.

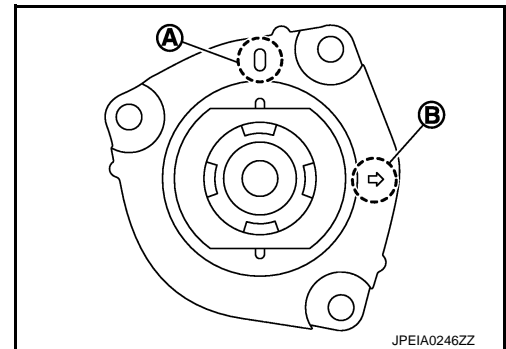
NOTE:

The identification mark "0" shows right mounting insulator and "1" shows left.

8. Secure piston rod tip so that piston rod does not turn, then tighten piston rod lock nut with specified torque.

CAUTION:

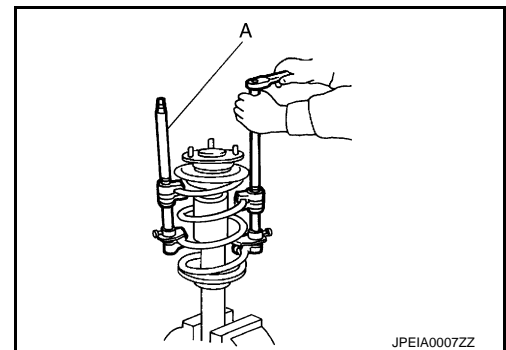
Never reuse piston rod lock nut.



9. Gradually release a spring compressor (A), and remove coil spring.

CAUTION:

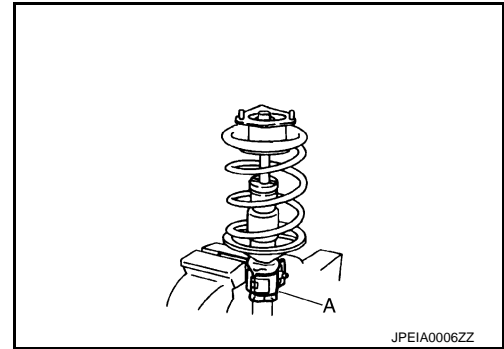
Loosen while making sure coil spring attachment position does not move.



FRONT COIL SPRING AND STRUT

< REMOVAL AND INSTALLATION >

10. Remove the strut attachment (A) from strut assembly.
11. Install the cap.



INFOID:000000006832482

Inspection

INSPECTION AFTER DISASSEMBLY

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

Strut

- Strut for deformation, cracks or damage
- Piston rod for damage, uneven wear or distortion
- Oil leakage

Strut Mounting Insulator and bound bumper

Check strut mounting insulator and bound bumper for cracks, wear or damage.

Coil Spring

Check coil spring for cracks, wear or damage.

INSPECTION AFTER INSTALLATION

1. Check wheel sensor harness for proper connector. Refer to [BRC-148, "FRONT WHEEL SENSOR : Exploded View"](#).
2. Check wheel alignment. Refer to [FSU-11, "Inspection"](#).
3. Adjust neutral position of steering angle sensor. Refer to [BRC-59, "Work Procedure"](#).

Disposal

INFOID:000000006832483

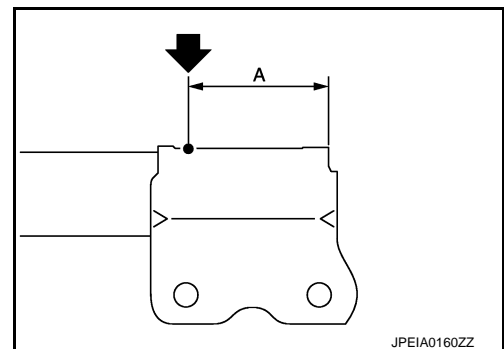
1. Set strut assembly horizontally to the ground with the piston rod fully extracted.
2. Drill 2 – 3 mm (0.08 – 0.12 in) dia. hole at the position (●) from top as shown in the figure to release gas gradually.

CAUTION:

- **Wear eye protection (safety glass).**
- **Wear gloves.**
- **Be careful with metal chips or oil blown out by the compressed gas.**

NOTE:

- Drill vertically in the direction show by arrow.
- 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.

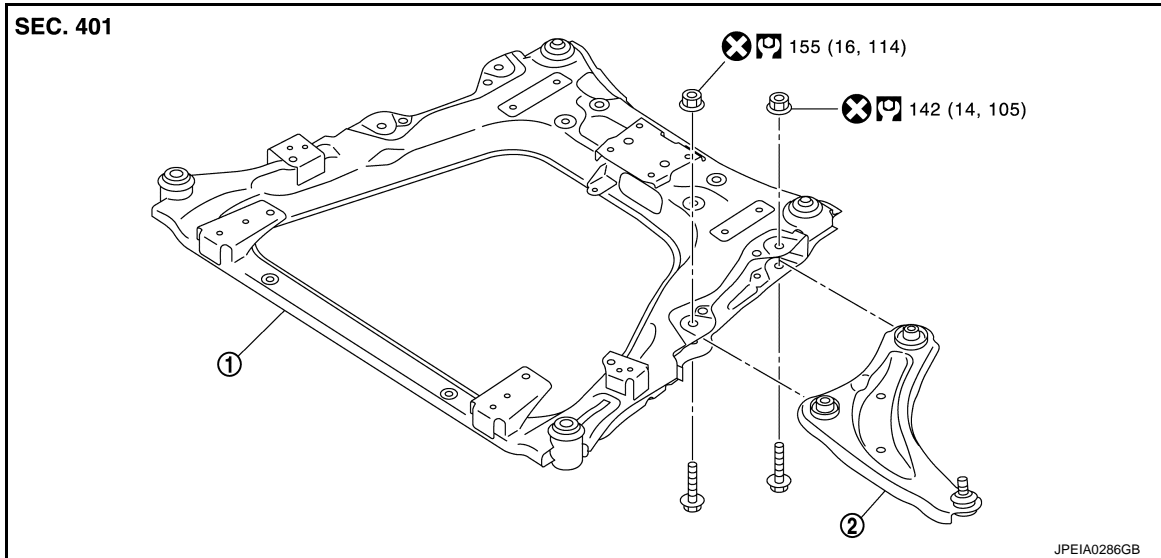
TRANSVERSE LINK

< REMOVAL AND INSTALLATION >

TRANSVERSE LINK

Exploded View

INFOID:000000006832484



1. Front suspension member 2. Transverse link

⊗: Always replace after every disassembly.

Ⓜ: N·m (kg·m, ft·lb)

Removal and Installation

INFOID:000000006832485

REMOVAL

1. Remove tires with power tool. Refer to [WT-45, "Exploded View"](#).
2. Separate stabilizer connecting rod from strut assembly. Refer to [FSU-18, "Removal and Installation"](#).
3. Separate steering outer socket from steering knuckle. Refer to [ST-16, "Removal and Installation"](#).
4. Remove transverse link from steering knuckle with power tool. Refer to [FAX-9, "Removal and Installation"](#).
5. Remove transverse link from suspension member with power tool.

NOTE:

To remove transverse link mounting nut, move stabilizer bar.

INSTALLATION

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

- Never reuse transverse link mounting nut.
- Perform final tightening of fixing parts at the vehicle installation position (rubber bushing), under unladen conditions with tires on level ground.
- Perform inspection after installation. Refer to [FSU-16, "Inspection"](#).

Inspection

INFOID:000000006832486

INSPECTION AFTER REMOVAL

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

Transverse Link

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

Swing Torque

1. Manually move ball stud to confirm it moves smoothly with no binding.
2. Move ball stud at least ten times by hand to check for smooth movement.

TRANSVERSE LINK

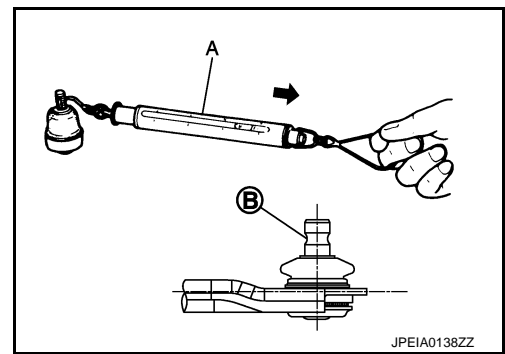
< REMOVAL AND INSTALLATION >

- Hook a spring balance (A) at cutout on ball stud (B). Confirm spring balance measurement value is within specifications when ball stud begins moving.

Swing torque : Refer to [FSU-27, "Ball Joint"](#).

Measurement on spring balance : Refer to [FSU-27, "Ball Joint"](#).

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



Axial End Play

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

Axial end play : Refer to [FSU-27, "Ball Joint"](#).

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

INSPECTION AFTER INSTALLATION

- Check wheel alignment. Refer to [FSU-11, "Inspection"](#).
- Adjust neutral position of steering angle sensor. Refer to [BRC-59, "Work Procedure"](#).

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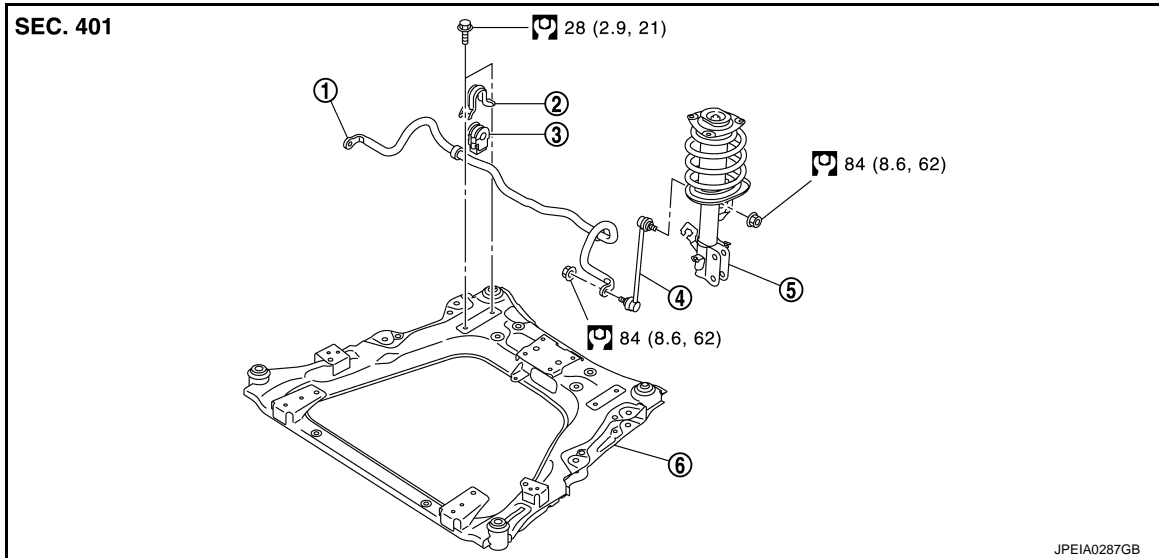
FRONT STABILIZER

< REMOVAL AND INSTALLATION >

FRONT STABILIZER

Exploded View

INFOID:000000006832487



- | | | |
|------------------------------|---------------------|----------------------------|
| 1. Stabilizer bar | 2. Stabilizer clamp | 3. Stabilizer bushing |
| 4. Stabilizer connecting rod | 5. Strut assembly | 6. Front suspension member |

: N·m (kg·m, ft·lb)

Removal and Installation

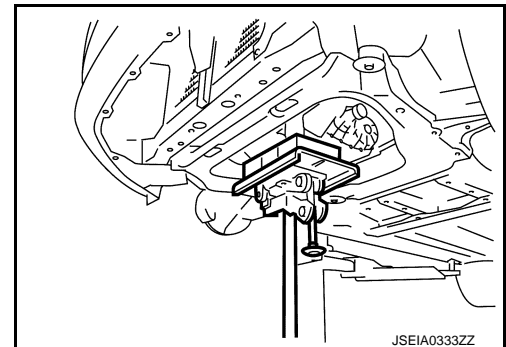
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REMOVAL

1. Remove tires with power tool. Refer to [WT-45, "Exploded View"](#).
2. Separate intermediate shaft from steering gear assembly. Refer to [ST-13, "Removal and Installation"](#).
3. Remove front under cover. Refer to [EXT-21, "FRONT UNDER COVER : Removal and Installation"](#).
4. Remove battery under cover (front). Refer to [EVB-136, "Removal and Installation"](#).
5. Remove fender protector. Refer to [EXT-19, "FENDER PROTECTOR : Removal and Installation"](#).
6. Remove stabilizer connecting rod.
7. Separate steering outer socket from steering knuckle. Refer to [ST-16, "Removal and Installation"](#).
8. Separate transverse link from steering knuckle with power tool. Refer to [FAX-9, "Exploded View"](#).
9. Set suitable jack under reduction gear and traction motor.

CAUTION:

- Never damage the reduction gear and traction motor with a jack.
- Check the stable condition when using a jack.

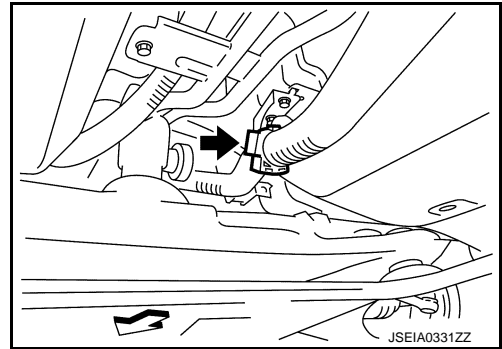


FRONT STABILIZER

< REMOVAL AND INSTALLATION >

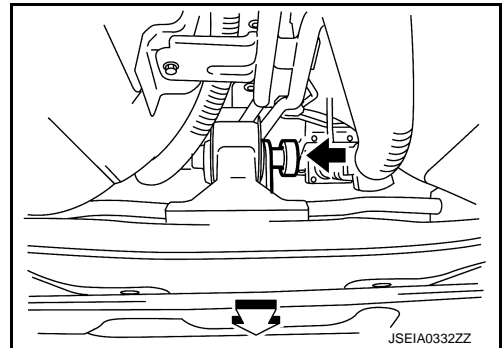
10. Separate high voltage harness clip from bracket.

↶ : Vehicle front



11. Remove motor mounting rear mounting bolt. Refer to [TMS-123, "Removal and Installation"](#).

↶ : Vehicle front



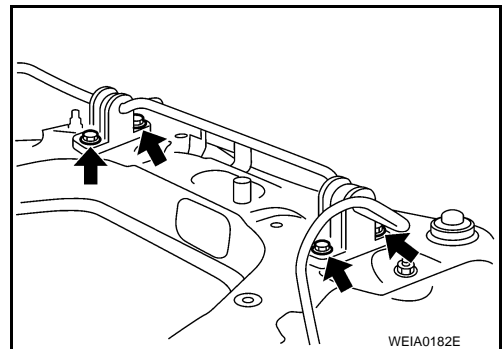
12. Remove motor mounting (LH and RH) mounting bolts from front suspension member. Refer to [TMS-123, "Removal and Installation"](#).
13. Remove member stay and rebound stopper with power tool. Refer to [FSU-21, "Exploded View"](#).
14. Remove suspension member mounting bolts, washer, and rebound stopper rubber with power tool. Refer to [FSU-21, "Exploded View"](#).

15. Remove front suspension member from vehicle body.

CAUTION:

Check the stable condition when using a jack.

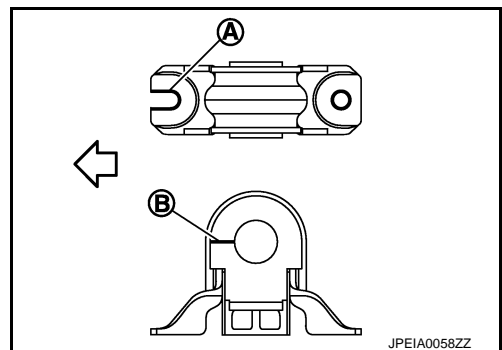
16. Remove mounting bolts (↔) of stabilizer clamp, and then remove stabilizer clamp and stabilizer bushing from front suspension member with power tool.
17. Remove stabilizer bar.
18. Perform inspection after removal. Refer to [FSU-20, "Inspection"](#).



INSTALLATION

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

- Install stabilizer clamp and stabilizer bush with notch (A) and slit (B) faced forward of the vehicle (↶).



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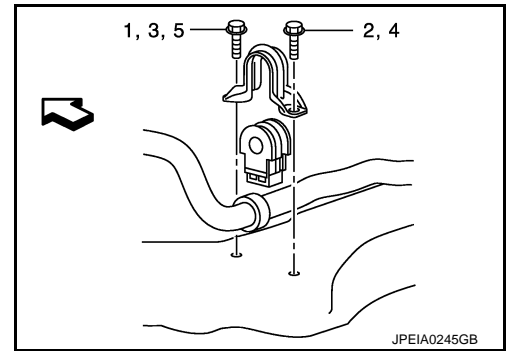
FRONT STABILIZER

< REMOVAL AND INSTALLATION >

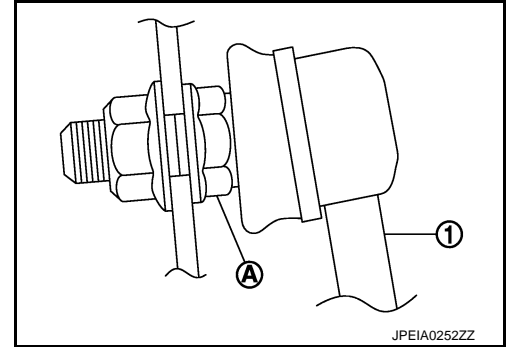
- To install stabilizer clamp mounting bolt, follow the tightening method and the numerical order shown below:

Manual tightening : 1
Temporary tightening : 2 → 3
Final tightening (Specified torque) : 4 → 5

← : Vehicle front



- To install stabilizer connecting rod (1), tighten the mounting nut with the hexagonal part (A) on the stabilizer connecting rod side fixed.
- Perform final tightening of fixing parts at the vehicle installation position (rubber bushing), under unladen conditions with tires on level ground.
- Perform inspection after installation. Refer to [FSU-16. "Inspection"](#).



Inspection

INSPECTION AFTER REMOVAL

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

INSPECTION AFTER INSTALLATION

- Check wheel alignment. Refer to [FSU-11. "Inspection"](#).
- Adjust neutral position of steering angle sensor. Refer to [BRC-59. "Work Procedure"](#).

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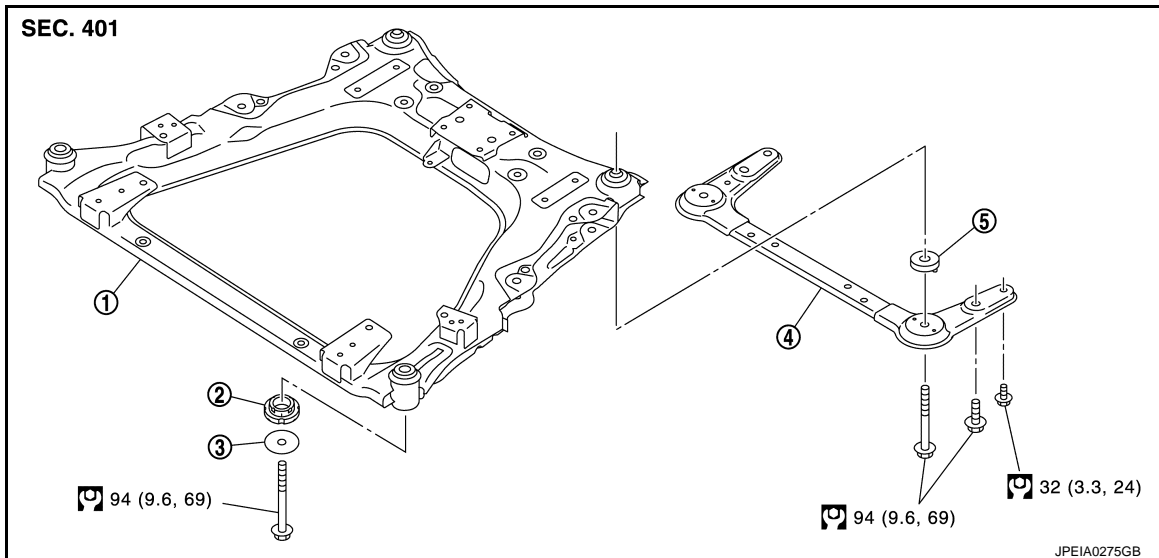
FRONT SUSPENSION MEMBER

< REMOVAL AND INSTALLATION >

FRONT SUSPENSION MEMBER

Exploded View

INFOID:000000006832490



- | | | |
|----------------------------|---------------------------|--------------|
| 1. Front suspension member | 2. Rebound stopper rubber | 3. Insulator |
| 4. Member stay | 5. Rebound stopper | |

: N·m (kg-m, ft-lb)

Removal and Installation

INFOID:000000006832491

WARNING:

- Because hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.
- Be sure to remove the service plug in order to shut off the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.
- Be sure to put the removed service plug in your pocket and carry it with you so that another person does not accidentally connect it while work is in progress.
- Be sure to wear insulating protective equipment consisting of glove, shoes and glasses/face shield before beginning work on the high voltage system.
- Clearly identify the persons responsible for high voltage work and ensure that other persons do not touch the vehicle. When not working, cover high voltage parts with an insulating cover sheet or similar item to prevent other persons from contacting them.
- Refer to [FSU-3, "High Voltage Precautions"](#).

CAUTION:

There is the possibility of a malfunction occurring if the vehicle is changed to READY status while the service plug is removed. Therefore do not change the vehicle to READY status unless instructed to do so in the Service Manual.

REMOVAL

WARNING:

Shut off high voltage circuit. Refer to [FSU-3, "High Voltage Precautions"](#).

1. Check voltage in high voltage circuit. (Check that condenser are discharged.)
 - a. Remove Li-ion battery under cover.

WARNING:



Be sure to put on insulating protective gear before beginning work on the high voltage system.

FRONT SUSPENSION MEMBER

< REMOVAL AND INSTALLATION >



- b. Disconnect high voltage connector from front side of Li-ion battery.

DANGER:

 Touching high voltage components without using the appropriate protective equipment will cause electrocution.



- c. Measure voltage between high voltage harness terminals.

DANGER:

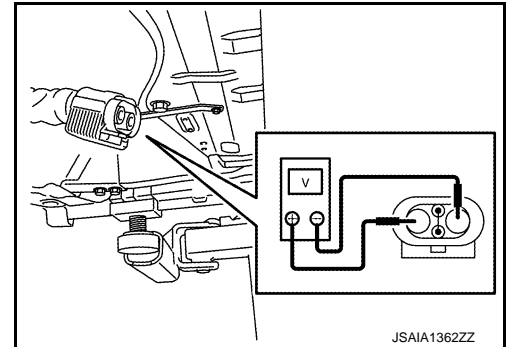
 Touching high voltage components without using the appropriate protective equipment will cause electrocution.



Standard : 5 V or less

CAUTION:

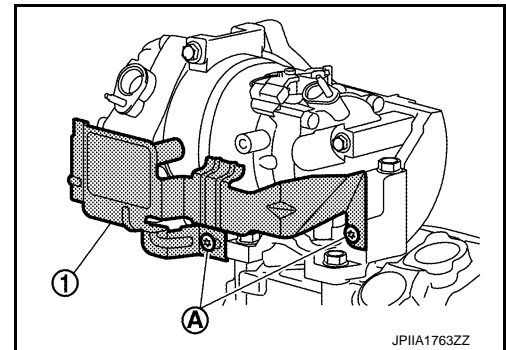
For voltage measurements, use a tester which can measure to 500V or higher.



2. Remove 12V battery. Refer to [PG-104. "Removal and Installation"](#).
3. Remove front under cover. Refer to [EXT-21. "FRONT UNDER COVER : Removal and Installation"](#).
4. Remove battery under cover (front). Refer to [EVB-136. "Removal and Installation"](#).
5. Remove traction motor inverter. Refer to [TMS-115. "Removal and Installation"](#).
6. Remove the mounting bolts (A), then remove the compressor stay (1).

WARNING:

 Be sure to put on insulating protective gear before beginning work on the high voltage system.



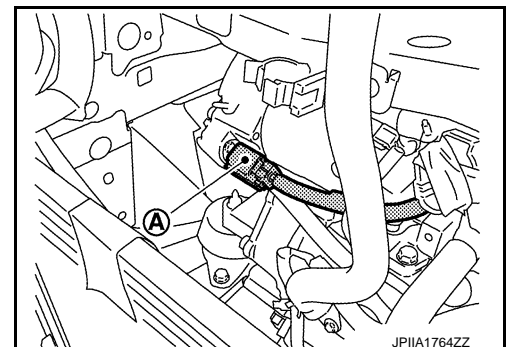
7. Disconnect the high voltage harness connector (A) from electric compressor.

WARNING:

 Be sure to put on insulating protective gear before beginning work on the high voltage system.



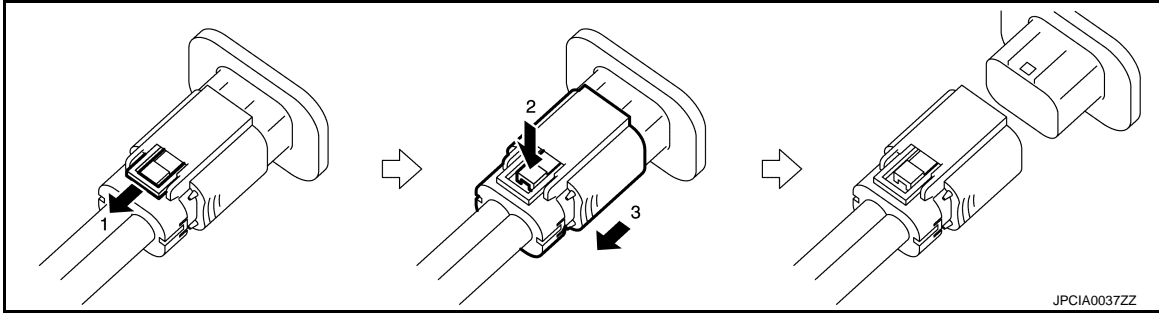
• Protect the terminals of disconnected high voltage harness connector with insulation tape so that they are not exposed.



FRONT SUSPENSION MEMBER

< REMOVAL AND INSTALLATION >

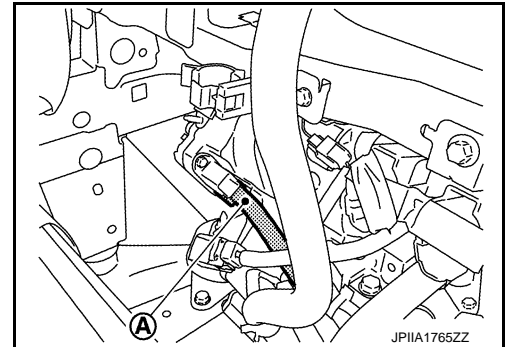
- Follow the procedure below and disconnect the high voltage harness connector.



8. Disconnect the low voltage harness connector (A) from electric compressor.

WARNING:

 Be sure to put on insulating protective gear before beginning work on the high voltage system.



9. Remove electric compressor (1). Hang electric compressor not to interfere with work.

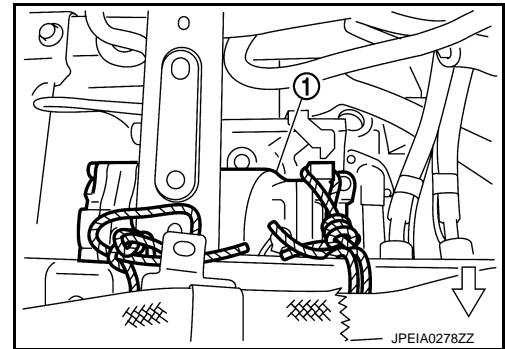
WARNING:

 Be sure to put on insulating protective gear before beginning work on the high voltage system.



CAUTION:

Never apply excessive stress to high-pressure flexible hose and low-pressure flexible hose.



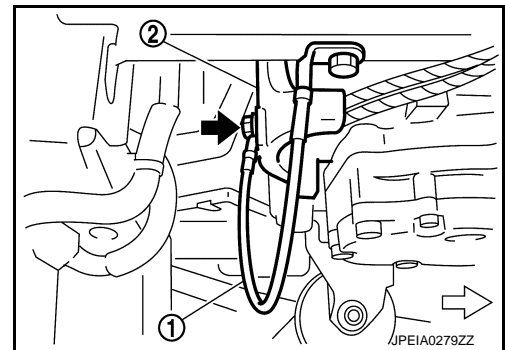
 : Vehicle front

10. Remove ground cable (1) from compressor bracket (2).

 : Vehicle front

WARNING:

 Be sure to put on insulating protective gear before beginning work on the high voltage system.



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FRONT SUSPENSION MEMBER

< REMOVAL AND INSTALLATION >

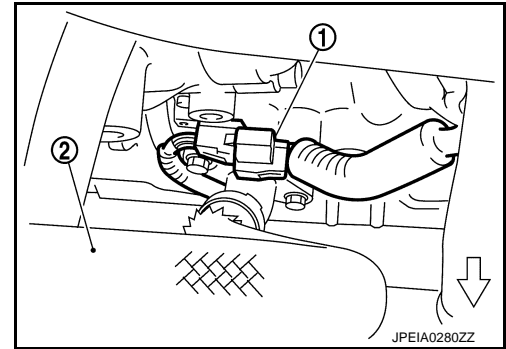
11. Remove traction motor harness connector (1).

2 : Water hose (lower side)

← : Vehicle front

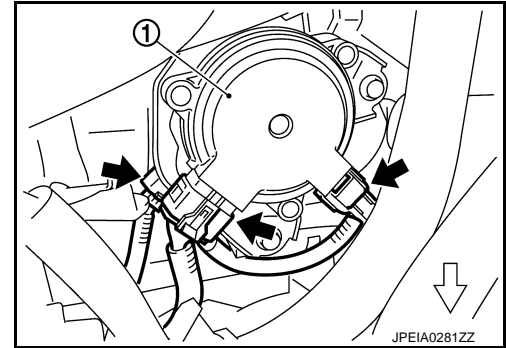
WARNING:

 Be sure to put on insulating protective gear before beginning work on the high voltage system.



12. Remove low voltage harness connectors from parking actuator (1).

← : Vehicle front



13. Remove water hose (upper side) (1) from traction motor.

← : Vehicle front

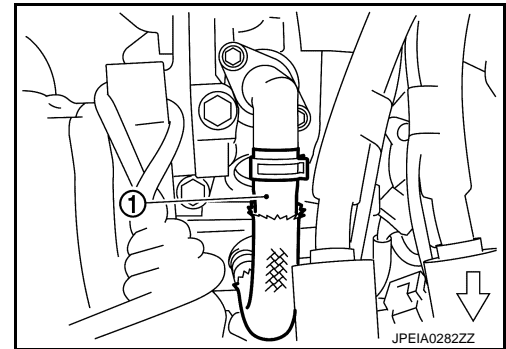
WARNING:

 Be sure to put on insulating protective gear before beginning work on the high voltage system.



CAUTION:

- Take care that coolant does not contact the high voltage harness connectors.
- If coolant contacts a high voltage harness connector, immediately use an air blow and fully remove the liquid.



14. Remove water hose (lower side) (1) from traction motor.

← : Vehicle front

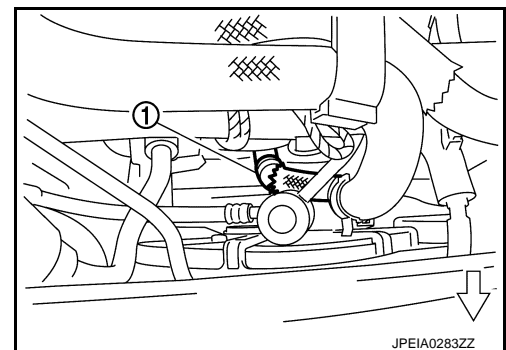
WARNING:

 Be sure to put on insulating protective gear before beginning work on the high voltage system.



CAUTION:

- Take care that coolant does not contact the high voltage harness connectors.
- If coolant contacts a high voltage harness connector, immediately use an air blow and fully remove the liquid.



15. Remove tires with power tool. Refer to [WT-45, "Exploded View"](#).

FRONT SUSPENSION MEMBER

< REMOVAL AND INSTALLATION >

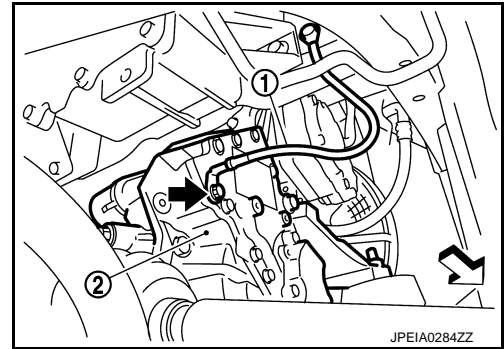
16. Remove ground cable (1) from traction motor (2).

← : Vehicle front

WARNING:



Be sure to put on insulating protective gear before beginning work on the high voltage system.



17. Remove drive shaft.

- Left side: Refer to [FAX-19, "LEFT SIDE : Removal and Installation"](#).
- Right side: Refer to [FAX-20, "RIGHT SIDE : Removal and Installation"](#).

18. Separate stabilizer connecting rod from strut assembly. Refer to [FSU-18, "Removal and Installation"](#).

19. Separate intermediate shaft from steering gear assembly. Refer to [ST-16, "Removal and Installation"](#).

20. Set suitable jack under front suspension member.

CAUTION:

- **Never damage the front suspension member with a jack.**
- **Check the stable condition when using a jack.**

21. Remove member stay and rebound stopper with power tool.

22. Remove suspension member mounting bolts, insulator, and rebound stopper rubber with power tool.

23. Gradually lower the jack to remove front suspension member from vehicle body.

CAUTION:

Operate while checking that jack supporting status is stable.

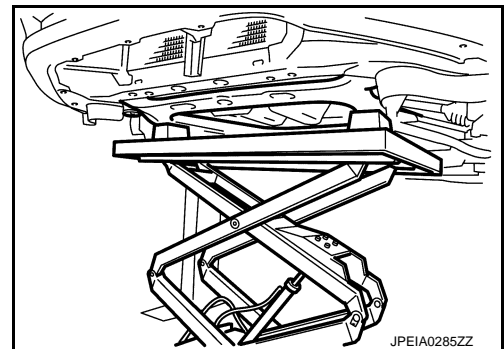
NOTE:

Remove it with each component parts.

24. Remove the following parts from front suspension member.

- Reduction gear: Refer to [TM-17, "Removal and Installation"](#).
- Traction motor: Refer to [TMS-123, "Removal and Installation"](#).
- Steering gear assembly: Refer to [ST-16, "Removal and Installation"](#).
- Stabilizer bar: Refer to [FSU-18, "Removal and Installation"](#).
- Transverse link: Refer to [FSU-16, "Removal and Installation"](#).

25. Perform inspection after removal. Refer to [FSU-16, "Inspection"](#).



INSTALLATION

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

WARNING:



Be sure to put on insulating protective gear before beginning work on the high voltage system.



CAUTION:

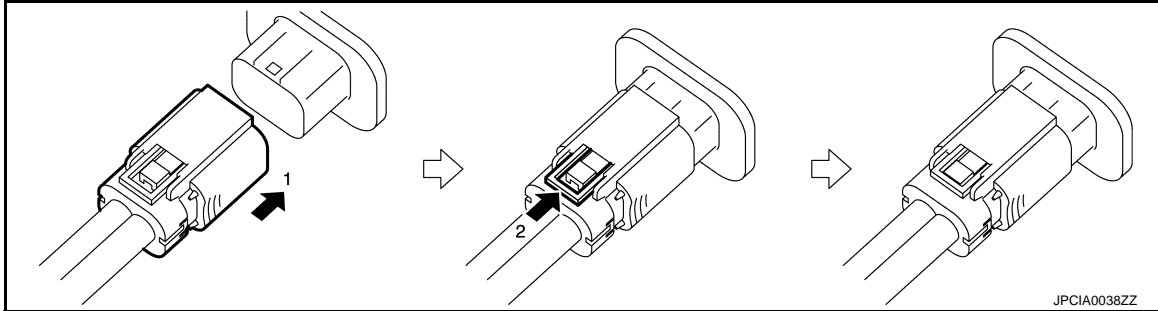
Be sure to reinstall high voltage harness clips in their original positions. If a clip is damaged, replace it with a new clip before installing.

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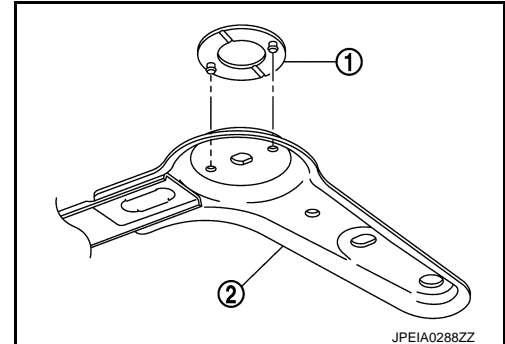
FRONT SUSPENSION MEMBER

< REMOVAL AND INSTALLATION >

- Follow the procedure below and connect the high voltage harness connector.



- To install rebound stopper (1), insert it with the protrusion aligned with the hole of member stay (2).

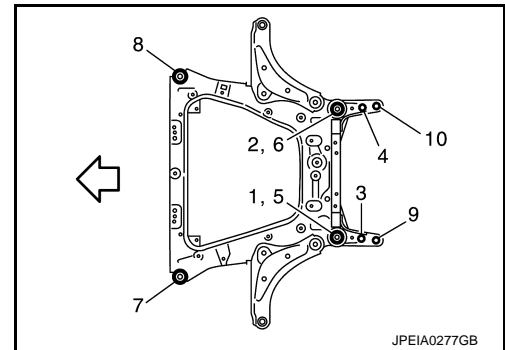


- To install member stay and mounting bolts of front suspension member, temporarily tighten the bolts before tightening to the specified torque, referring to the tightening method and the numerical order shown below:

Temporary tightening : 1 → 2

Final tightening
(Specified torque) : 3 → 4 → 5 → 6 → 7 → 8 → 9 → 10

⇐ : Vehicle front



- Perform final tightening of fixing parts at the vehicle installation position (rubber bushing), under unladen conditions with tires on level ground.
- Perform inspection after installation. Refer to [FSU-16. "Inspection"](#).

Inspection

INFOID:000000006832492

INSPECTION AFTER REMOVAL

Check front suspension member for cracks, wear or damage. Replace it if necessary.

INSPECTION AFTER INSTALLATION

- When all parts are installed, be sure to check equipotential of traction motor, electric compressor, and traction motor inverter.
 - Traction motor: Refer to [TMS-127. "Inspection"](#).
 - Electric compressor: Refer to [HA-49. "Inspection"](#).
 - Traction motor inverter: Refer to [TMS-121. "Inspection"](#).
- Check wheel alignment. Refer to [FSU-11. "Inspection"](#).
- Adjust neutral position of steering angle sensor. Refer to [BRC-59. "Work Procedure"](#).

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Wheel Alignment

INFOID:000000006832493

Item		Standard	
Camber Degree minute (Decimal degree)	Minimum	-1° 10' (-1.16°)	
	Nominal	-0° 25' (-0.42°)	
	Maximum	0° 20' (0.33°)	
	Left and right difference*1	-0° 45' (-0.75°) - 0° 45' (0.75°)	
Caster Degree minute (Decimal degree)	Minimum	4° 05' (4.09°)	
	Nominal	4° 50' (4.83°)	
	Maximum	5° 35' (5.58°)	
	Left and right difference*1	-0° 45' (-0.75°) - 0° 45' (0.75°)	
Kingpin inclination Degree minute (Decimal degree)	Minimum	11° 10' (11.17°)	
	Nominal	11° 55' (11.92°)	
	Maximum	12° 40' (12.66°)	
Toe-in	Total toe-in Distance	Minimum	In 1 mm (0.04 in)
		Nominal	In 2 mm (0.08 in)
		Maximum	In 3 mm (0.12 in)
	Toe angle (left wheel or right wheel) Degree minute (Decimal degree)	Minimum	In 0° 02' 46" (0.046°)
		Nominal	In 0° 05' 28" (0.091°)
		Maximum	In 0° 08' 09" (0.136°)

Measure value under unladen*2 conditions.

*1: A difference when assuming the left side a standard.

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

Ball Joint

INFOID:000000006832494

Item	Standard
Swing torque	0.5 – 4.9 N·m (0.06 – 0.49 kg-m, 5 – 43 in-lb)
Measurement on spring balance	15.4 – 150.8 N (1.6 – 15.3 kg, 3.5 – 33.8 lb)
Axial end play	0 mm (0 in)

Wheelarch Height

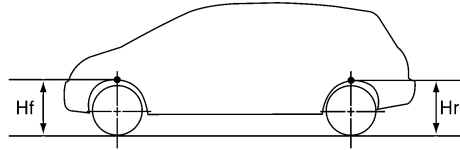
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Item	Standard
Front (Hf)	707 mm (27.83 in)

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

Item	Standard
Rear (Hr)	708 mm (27.87 in)



WEIA0030E

Measure value under unladen* conditions.

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