SECTION FSU
FRONT SUSPENSION

CONTENTS

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:0000000005514306

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

Reference page			FSU-9, FSU-12, FSU-14, FSU-16	FSU-11	—	—	—	FSU-9, FSU-12, FSU-14, FSU-16	FSU-8	FSU-15	NVH in DLN section	NVH in DLN section	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
Possible cause and SUSPECTED PARTS			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 (AWD)	DIFFERENTIAL (AWD)	FRONT AXLE AND FRONT SUSPENSION	TIRE	ROAD WHEEL	DRIVE SHAFT	BRAKE	STEERING
Symptom	FRONT SUSPENSION	Noise	×	×	×	×	×	×			×	×	×	×	×	×	×	×
		Shake	×	×	×	×		×			×		×	×	×	×	×	×
		Vibration	×	×	×	×	×				×		×	×		×		×
		Shimmy	×	×	×	×			×				×	×	×		×	×
		Judder	×	×	×								×	×	×		×	×
		Poor quality ride or handling	×	×	×	×	×		×	×			×	×	×			

×: Applicable

PRECAUTION

PRECAUTIONS

FOR USA AND CANADA

FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000005565519

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted.
Information necessary to service the system safely is included in the “SRS AIR BAG” and “SEAT BELT” 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 “SRS AIR BAG”.**
- **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 Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.**

FOR USA AND CANADA : Precaution Necessary for Steering Wheel Rotation after Battery Disconnect

INFOID:0000000005565535

NOTE:

- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

For vehicle with steering lock unit, if the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.
If turning the steering wheel is required with the battery disconnected or discharged, follow the operation procedure below before starting the repair operation.

OPERATION PROCEDURE

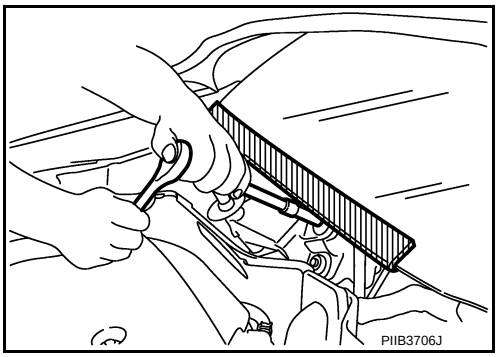
1. Connect both battery cables.
   NOTE:
   Supply power using jumper cables if battery is discharged.
2. Turn the push-button ignition switch to ACC position.
   (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.

5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)
6. Perform self-diagnosis check of all control units using CONSULT-III.

FOR USA AND CANADA : Precaution for Procedure without Cowl Top Cover

INFOID:0000000005565574

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



FOR USA AND CANADA : Precautions for Suspension

INFOID:0000000005514310

- 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.

FOR MEXICO

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

INFOID:0000000005565518

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:

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

FOR MEXICO : Precaution Necessary for Steering Wheel Rotation after Battery Dis-

connect

INFOID:0000000005565536

NOTE:
- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

For vehicle with steering lock unit, if the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.
If turning the steering wheel is required with the battery disconnected or discharged, follow the operation procedure below before starting the repair operation.

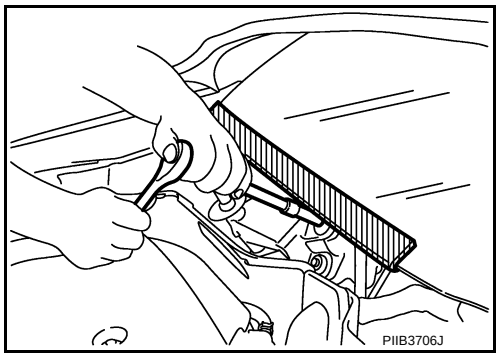
OPERATION PROCEDURE

1. Connect both battery cables.
   NOTE:
   Supply power using jumper cables if battery is discharged.
2. Turn the push-button ignition switch to ACC position.
   (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)
6. Perform self-diagnosis check of all control units using CONSULT-III.

FOR MEXICO : Precaution for Procedure without Cowl Top Cover

INFOID:0000000005565575

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



FOR MEXICO : Precautions for Suspension

INFOID:0000000005514314

- 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.

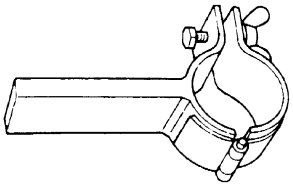
PREPARATION

PREPARATION

Special Service Tool

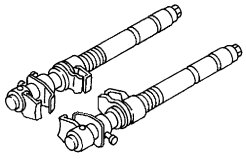
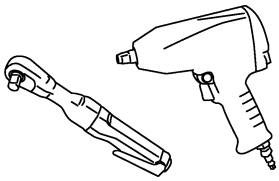
INFOID:0000000005514315

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  ZZA0807D	Disassembling and assembling strut

Commercial Service Tool

INFOID:0000000005514316

Tool name	Description
Spring compressor  S-NT717	Removing and installing coil spring
Power tool  PBIC0190E	Loosening bolts and nuts

PERIODIC MAINTENANCE

FRONT SUSPENSION ASSEMBLY

Inspection

INFOID:0000000005514317

MOUNTING INSPECTION

Make sure 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-19, "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

Inspection

INFOID:0000000005514318

DESCRIPTION

CAUTION:

- **Camber, caster, kingpin inclination angles cannot be adjusted.**
- **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.
- Road wheels for runout. Refer to WT-55, "Inspection".
- Wheel bearing axial end play. Refer to FAX-8, "Inspection" (2WD), FAX-35, "Inspection" (AWD).
- Transverse link ball joint axial end play. Refer to FSU-12, "Inspection".
- Strut operation.
- Each mounting part of axle and suspension for looseness and deformation.
- Each of suspension member, shock absorber, upper link 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.
- 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.

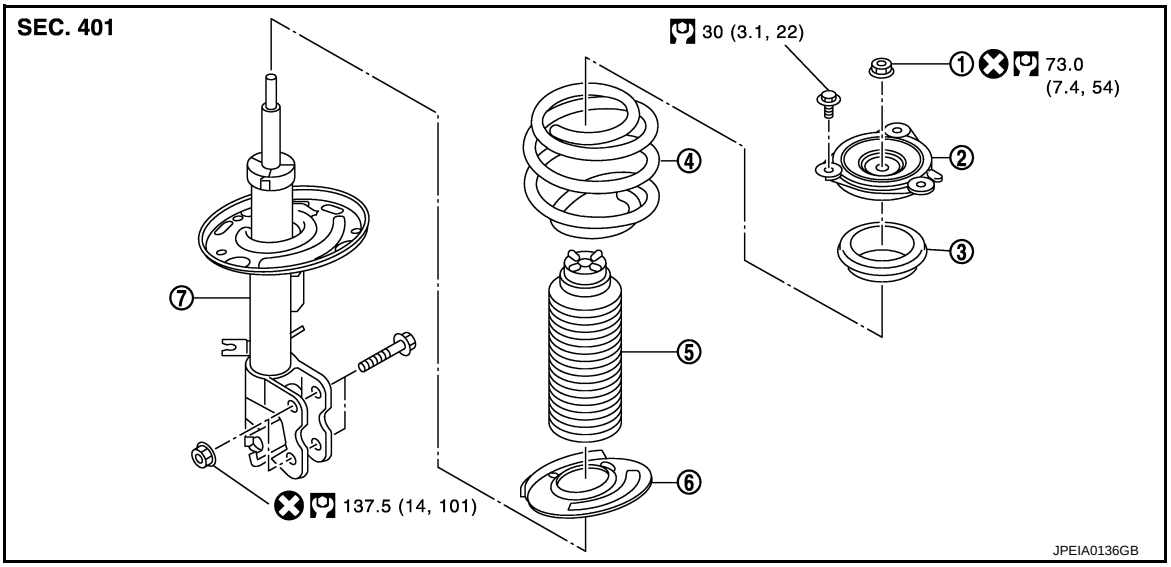
- When displaying the alignment settings, many alignment machines use “indicators”: (Green/red, plus or minus, Go/No Go). **Never use these indicators.**
  - The alignment specifications programmed into your machine that operate these indicators may not be correct.
  - This may result in an ERROR.
-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

REMOVAL AND INSTALLATION

FRONT COIL SPRING AND STRUT

Exploded View

INFOID:0000000005514319



1. Piston rod lock nut
2. Strut mounting insulator
3. Strut mounting bearing
4. Coil spring
5. Bound bumper
6. Lower rubber seat
7. Strut

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000005514320

REMOVAL

1. Remove tires with power tool.
2. Remove lock plate. Refer to BR-22, "FRONT : Exploded View".
3. Remove wheel sensor. Refer to BRC-110, "FRONT WHEEL SENSOR : Exploded View".
4. Remove stabilizer connecting rod from strut assembly. Refer to FSU-14, "Exploded View".
5. Remove strut assembly from steering knuckle.
6. Remove cowl top cover. Refer to EXT-21, "Exploded View".
7. Remove mounting bolts of strut mounting insulator with power tool, and then remove strut assembly.

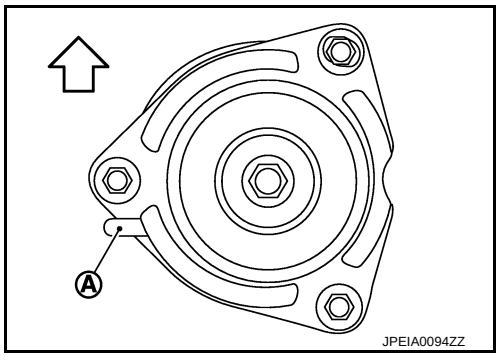
INSTALLATION

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

- Become it in projection (A) an illustration to the body outside.

⇦ : Vehicle front

- Perform final tightening of bolts and nuts, under unladen conditions with tires on level ground.



Disassembly and Assembly

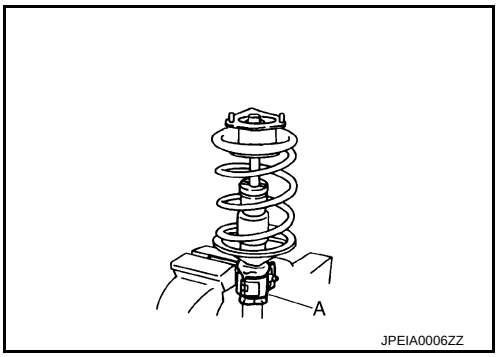
INFOID:0000000005514321

DISASSEMBLY

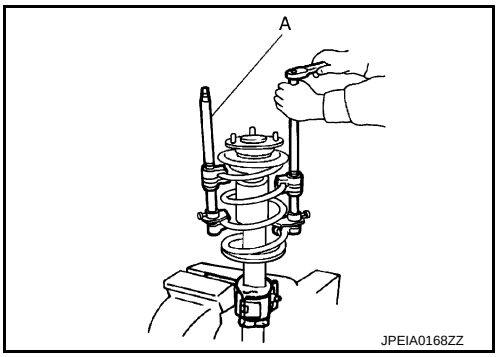
CAUTION:

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

1. 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.



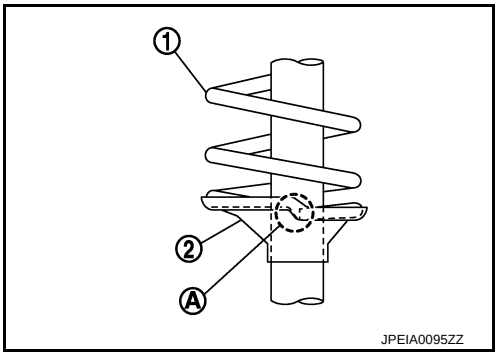
2. Using a spring compressor (A) (commercial service tool), compress coil spring between strut mounting bearing and lower rubber seat (on strut assembly) until coil spring with a spring compressor is free.
   CAUTION:
   Be sure a spring compressor is securely attached to coil spring. Compress coil spring.
3. Make sure coil spring with a spring compressor between strut mounting bearing and lower rubber 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.
4. Remove strut mounting insulator and strut mounting bearing, and bound bumper from strut.



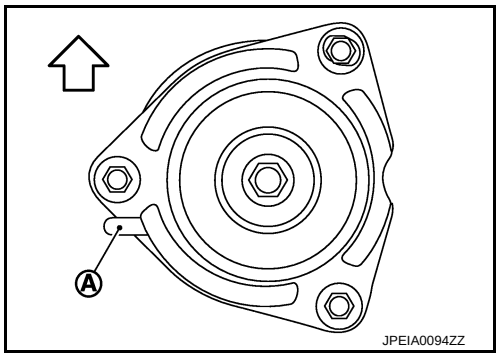
5. After removing coil spring with a spring compressor, then gradually release a spring compressor.
   CAUTION:
   Loosen while making sure coil spring attachment position does not move.
6. Remove lower rubber seat from strut.
7. Remove the strut attachment [SST: ST35652000 (—)] from strut.

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.
3. Install bound bumper onto strut mounting insulator.
4. Compress coil spring using a spring compressor (commercial service tool), and install it onto strut assembly.
   CAUTION:
   - **Face tube side of coil spring (1) downward. Align the lower end (A) to lower rubber seat (2).**
   - **Be sure a compressor is securely attached to coil spring. Compress coil spring.**
   - **Set coil spring so that its paint marks are aligned with the positions of 1.25 turns and 2.25 turns from the bottom end of the coil spring.**



5. Install strut mounting bearing and strut mounting insulator with bound bumper to strut.
   - Installation position of strut mounting insulator is shown in the figure.



   A : Projection
   ⇦ : Vehicle front

6. 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.
7. Gradually release a spring compressor, and remove coil spring.
   CAUTION:
   Loosen while making sure coil spring attachment position does not move.
8. Remove the strut attachment from strut assembly.

Inspection

INFOID:0000000005514322

INSPECTION AFTER DISASSEMBLY

Strut

Check the following items, and replace the parts if necessary.
- Strut for deformation, cracks or damage
- Piston rod for damage, uneven wear or distortion
- Oil leakage

Strut Mounting Insulator and Rubber Parts Inspection

Check strut mounting insulator 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

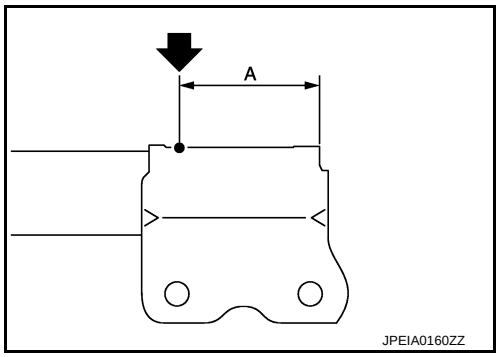
1. Check wheel sensor harness for proper connector. Refer to BRC-110, "FRONT WHEEL SENSOR : Exploded View".
2. Check wheel alignment. Refer to FSU-8, "Inspection".
3. Adjust neutral position of steering angle sensor. Refer to BRC-9, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

Disposal

INFOID:0000000005514323

1. Set strut assembly 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.

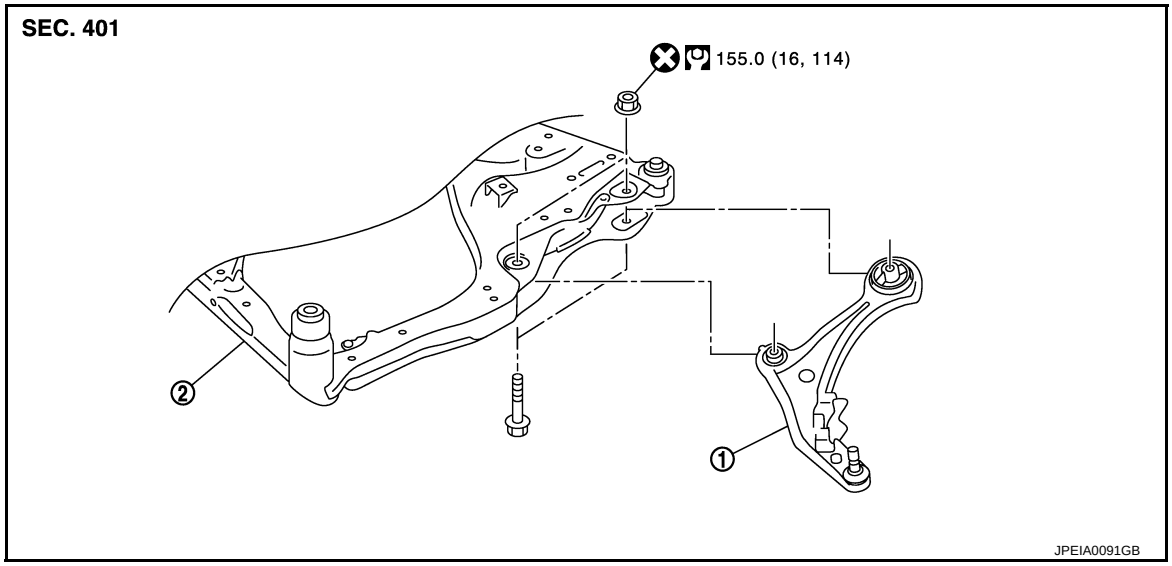


   A : 20 – 30 mm (0.79 – 1.18 in)
3. Position the drilled hole downward and drain oil by moving the piston rod several times.
   CAUTION:
   Dispose of drained oil according to the law and local regulations.

TRANSVERSE LINK

Exploded View

INFOID:0000000005514324



1. Transverse link
2. Front suspension member

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000005514325

REMOVAL

1. Remove tires with power tool.
2. Remove drive shaft of wheel side from wheel hub and bearing assembly. Refer to FAX-17, "Exploded View" (2WD), FAX-44, "Exploded View" (AWD).
3. Remove transverse link from steering knuckle.
4. Remove transverse link from suspension member.

INSTALLATION

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

- Perform final tightening of bolts and nuts at the front suspension member, under unladen conditions with tires on level ground.

Inspection

INFOID:0000000005514326

INSPECTION AFTER REMOVAL

Appearance

Check the following items, and replace the part it necassery.

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

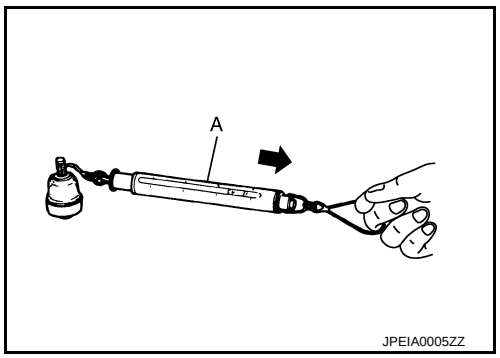
Ball Joint Inspection

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

Swing Torque Inspection

1. Move ball stud 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-19, "Ball Joint".**

Spring balance measurement **:Refer to FSU-19, "Ball Joint".**

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

Axial End Play Inspection

1. Move ball stud 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-19, "Ball Joint".**

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

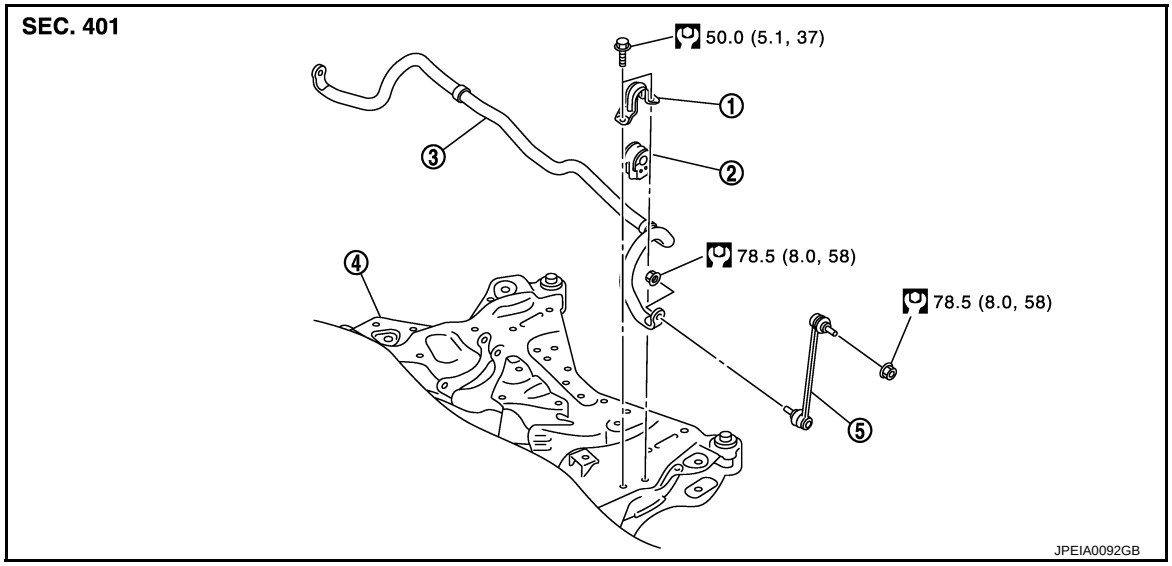
INSPECTION AFTER INSTALLATION

1. Check wheel alignment. Refer to FSU-8, "Inspection".
2. Adjust neutral position of steering angle sensor. Refer to BRC-9, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

FRONT STABILIZER

Exploded View

INFOID:0000000005514327



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

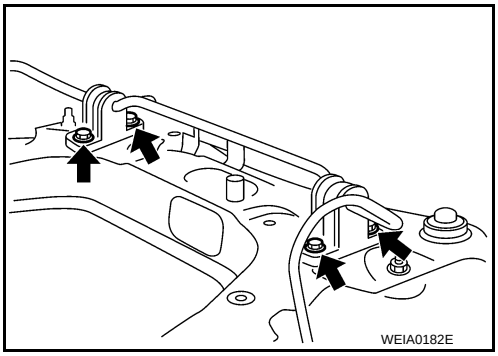
Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000005514328

REMOVAL

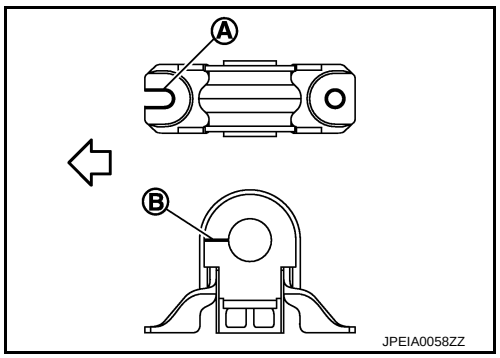
1. Remove tires power tool.
2. Remove front exhaust tube. Refer to EX-5, "Exploded View".
3. Remove rear propeller shaft from transfer. (AWD models) Refer to DLN-83, "Exploded View".
4. Remove lock plate. Refer to BR-22, "FRONT : Exploded View".
5. Remove wheel sensor harness from strut assembly. Refer to BRC-110, "FRONT WHEEL SENSOR : Exploded View".
6. Disconnect power steering solenoid valve harness connector. Refer to ST-28, "Removal and Installation".
7. Remove steering outer socket from steering knuckle. Refer to ST-26, "Exploded View".
8. Remove stabilizer connecting rod.
9. Remove mounting bolts (⬅) of stabilizer clamp, and then remove stabilizer clamp and stabilizer bushing from front suspension member.
10. Remove stabilizer bar.



INSTALLATION

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

- Install stabilizer clamp that notch (A) becomes vehicle front side (⇦).
- Install stabilizer bushing that slit (B) becomes vehicle front side (⇦).



Inspection

INFOID:0000000005514329

INSPECTION AFTER REMOVAL

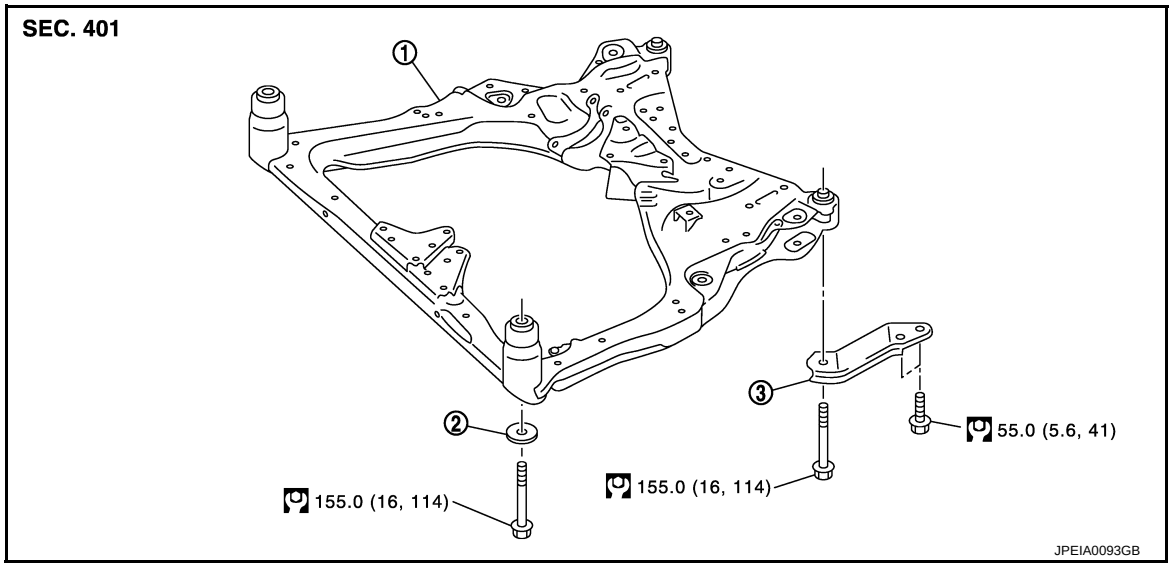
Check stabilizer bar, stabilizer connecting rod, stabilizer bushing and stabilizer clamp for deformation, cracks or damage. Replace it if necessary.

UNIT REMOVAL AND INSTALLATION

FRONT SUSPENSION MEMBER

Exploded View

INFOID:0000000005514330



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

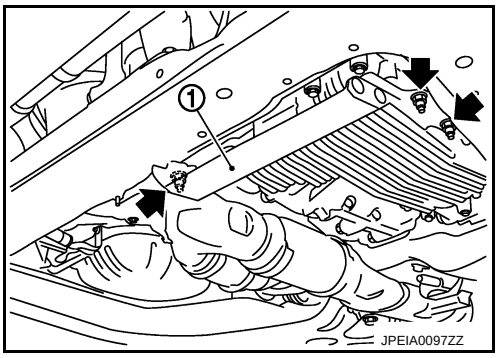
Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000005514331

REMOVAL

1. Remove tires with power tool.
2. Remove air guide mounting nuts (⬅) and air guide (1).
3. At first, remove the engine and the transaxle assembly with front suspension member downward. Then separate the engine, transaxle and drive shaft. Refer to EM-72, "2WD : Exploded View" (2WD), EM-81, "AWD : Exploded View" (AWD).
4. Remove the following parts.
   - Steering knuckle and wheel hub and bearing assembly: refer to FAX-10, "Exploded View" (2WD), FAX-37, "Exploded View".
   - Steering gear assembly and hydraulic line: refer to ST-26, "Exploded View" and ST-44, "Exploded View".
   - Stabilizer bar: refer to FSU-14, "Exploded View".
   - Transverse link: refer to FSU-12, "Exploded View".



INSTALLATION

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

- Perform final tightening of installation position between front suspension member and transverse links (rubber bushing) under unladen condition with tires on level ground.

Inspection

INFOID:0000000005514332

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-110, "FRONT WHEEL SENSOR : Exploded View".

2. Check wheel alignment. Refer to FSU-8, "Inspection".
3. Adjust the neutral position of the steering angle sensor. Refer to BRC-9, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Wheel Alignment

INFOID:0000000005514337

FOR USA AND MEXICO MODELS

Item			Standard	
Measurement wheel			Left side	Right side
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° 48′ (–0.80°) - 0° 18′ (0.30°)	
Caster Degree minute (Decimal degree)		Minimum	3° 55′ (3.92°)	4° 15′ (4.25°)
		Nominal	4° 40′ (4.67°)	5° 00′ (5.00°)
		Maximum	5° 25′ (5.41°)	5° 45′ (5.75°)
		Left and right difference*1	–0° 18′ (–0.30°) - 0° 48′ (0.80°)	
Kingpin inclination Degree minute (Decimal degree)		Minimum	12° 00′ (12.00°)	
		Nominal	12° 45′ (12.75°)	
		Maximum	13° 30′ (13.50°)	
Toe-in	Total toe-in Distance	Minimum	In 0.5 mm (0.020 in)	
		Nominal	In 1.5 mm (0.059 in)	
		Maximum	In 2.5 mm (0.098 in)	
	Toe angle (left wheel or right wheel) Degree minute (Decimal degree)	Minimum	In 0° 01′ (0.02°)	
		Nominal	In 0° 03′ (0.05°)	
		Maximum	In 0° 05′ (0.08°)	

Measure value under unladen*2 conditions.

*1: A difference when you assumed the right side a standard (right side – left side = difference).

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

FOR CANADA MODELS

Item		Standard	
Measurement wheel		Left side	Right side
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° 48′ (–0.80°) - 0° 18′ (0.30°)	
Caster Degree minute (Decimal degree)	Minimum	3° 55′ (3.92°)	4° 10′ (4.17°)
	Nominal	4° 40′ (4.67°)	4° 55′ (4.92°)
	Maximum	5° 25′ (5.41°)	5° 40′ (5.66°)
	Left and right difference*1	–0° 18′ (–0.30°) - 0° 48′ (0.80°)	
Kingpin inclination Degree minute (Decimal degree)	Minimum	11° 55′ (11.92°)	
	Nominal	12° 40′ (12.67°)	
	Maximum	13° 25′ (13.41°)	

Item			Standard
Toe-in	Total toe-in Distance	Minimum	In 0.5 mm (0.020 in)
		Nominal	In 1.5 mm (0.059 in)
		Maximum	In 2.5 mm (0.098 in)
	Toe angle (left wheel or right wheel) Degree minute (Decimal degree)	Minimum	In 0° 01′ (0.02°)
		Nominal	In 0° 03′ (0.05°)
		Maximum	In 0° 05′ (0.08°)

Measure value under unladen*2 conditions.

*1: A difference when you assumed the right side a standard (right side – left side = difference).

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

Ball Joint

INFOID:0000000005514338

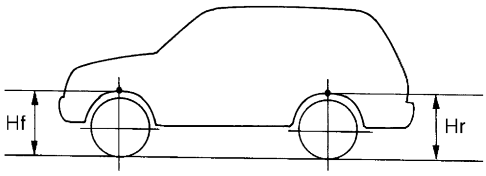
Item		Standard
Swing torque	Transverse link	0.5 – 4.9 N·m (0.06 – 0.49 kg-m, 5 – 43 in-lb)
Measurement on spring balance	Transverse link	11.1 – 108.9 N (1.2 – 11.1 kg, 3 – 24 lb)
Axial end play		0 mm (0 in)

Wheelarch Height

INFOID:0000000005514339

FOR USA MODELS

Item	Standard					
Axle	2WD			AWD		
Tire size	235/65R18		235/55R20	235/65R18		235/55R20
Grade	S	SL	LE	S	SL	LE
Front (Hr)	846 mm (33.31 in)		845 mm (33.27 in)	846 mm (33.31 in)	845 mm (33.27 in)	
Rear (Hr)	859 mm (33.82 in)	858 mm (33.78 in)		858 mm (33.78 in)		857 mm (33.74 in)



SFA746B

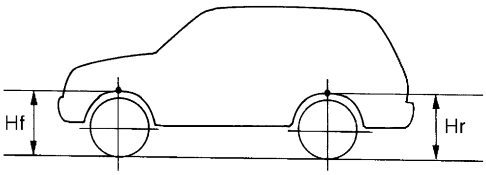
Measure value under unladen* conditions.

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

FOR CANADA MODELS

Item	Standard		
Tire size	235/65R18		235/55R20
Grade	S	SL	LE
Front (Hr)	845 mm (33.27 in)		846 mm (33.31 in)

Item	Standard		
Tire size	235/65R18		235/55R20
Grade	S	SL	LE
Rear (Hr)	858 mm (33.78 in)	857 mm (33.74 in)	



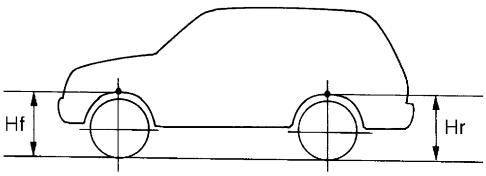
SFA746B

Measure value under unladen* conditions.

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

FOR MEXICO MODELS

Item	Standard		
Axle	2WD		AWD
Tire size	235/65R18		
Grade	S	SL	LE
Front (Hr)	846 mm (33.31 in)		845 mm (33.27 in)
Rear (Hr)	859 mm (33.82 in)	858 mm (33.78 in)	857 mm (33.74 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.