

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:000000008718338

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

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

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

WARNING:

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

General Precautions

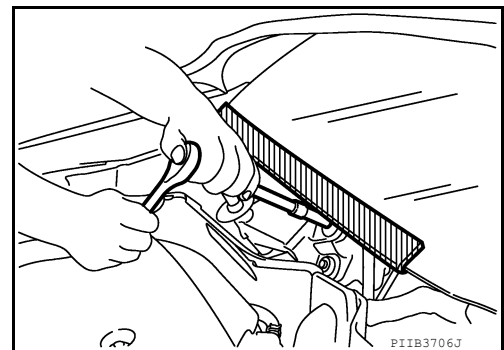
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- When installing rubber bushings, the final tightening must be carried out under unladen conditions with tires on ground. Oil might shorten the life of rubber bushings. Be sure to wipe off any spilled oil.
- Unladen conditions mean that fuel, engine 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.

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.

PRECAUTIONS

< PRECAUTION >

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NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

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

Reference page		FSU-19, "Exploded View"	—	—	—	—	FSU-19, "Exploded View"	FSU-7, "Inspection and Adjustment"	—	WT-49, "NVH Troubleshooting Chart"	WT-49, "NVH Troubleshooting Chart"	FAX-3, "NVH Troubleshooting Chart"	BR-6, "NVH Troubleshooting Chart"	ST-29, "NVH Troubleshooting Chart"
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	TIRES	ROAD WHEEL	DRIVE SHAFT AND WHEEL HUB	BRAKES	STEERING
Symptom	Noise	x	x	x	x	x	x			x	x	x	x	x
	Shake	x	x	x	x		x			x	x	x	x	x
	Vibration	x	x	x	x	x				x		x		x
	Shimmy	x	x	x	x			x		x	x		x	x
	Shudder	x	x	x						x	x		x	x
	Poor quality ride or handling	x	x	x	x	x		x	x	x	x			

x: Applicable

PREPARATION

< PREPARATION >

PREPARATION

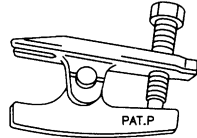
PREPARATION

Special Service Tool

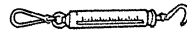
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The actual shapes of the Kent-Moore tools may differ from those of special service tools illustrated here.

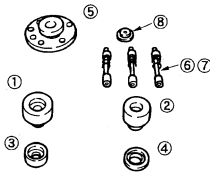
Tool number (Kent-Moore No.) Tool name	Description
HT7252000 (J-25730-A) Ball joint remover	Removing lower ball joint
— (J-44372) Spring gauge	Measuring steering wheel turning force and ball joint swinging force
KV991040S1 (—) CCK gauge attachment <ol style="list-style-type: none"> 1. KV99104020 Adapter A 2. KV99104030 Adapter B 3. KV99104040 Adapter C 4. KV99104050 Adapter D 5. KV99104060 Plate 6. KV99104070 Guide bolt 7. KV99104080 Spring 8. KV99104090 Center plate 	Measuring wheel alignment
ST35652000 (—) Strut attachment	Disassembling and assembling strut
KV101J0010 (J-47242) Engine support table	Front suspension member removal



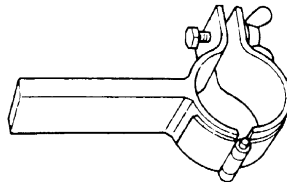
S-NT146



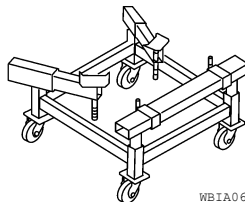
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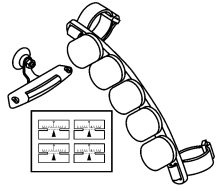
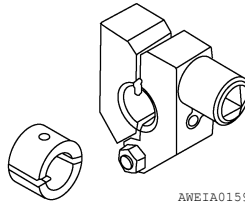


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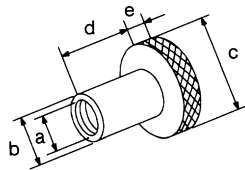
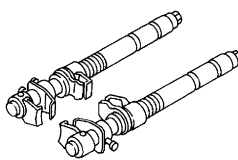
PREPARATION

< PREPARATION >

Tool number (Kent-Moore No.) Tool name	Description
<p>— (J-49286) Drift and Pull gauge</p>  <p style="text-align: right; font-size: small;">AWEIA01562Z</p>	Measuring drift and pull
<p>— (J-49029) Strut rod clamp</p>  <p style="text-align: right; font-size: small;">AWEIA01592Z</p>	Securing strut rod

Commercial Service Tool

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Tool name	Description
<p>Power tool</p>  <p style="text-align: right; font-size: x-small;">PIIB1407E</p>	Loosening nuts, screws and bolts
<p>Attachment wheel alignment a: screw M24 x 1.5 pitch b: 35 mm (1.38 in) dia. c: 65 mm (2.56 in) dia. d: 56 mm (2.20 in) dia. e: 12 mm (0.47 in) dia.</p>  <p style="text-align: right; font-size: x-small;">NT148</p>	Measure wheel alignment
<p>Spring compressor</p>  <p style="text-align: right; font-size: x-small;">NT717</p>	Removing and installing coil spring

FRONT SUSPENSION ASSEMBLY

< PERIODIC MAINTENANCE >

PERIODIC MAINTENANCE

FRONT SUSPENSION ASSEMBLY

Inspection and Adjustment

INFOID:000000007989294

INSPECTION

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

LOWER BALL JOINT END PLAY

1. Set front wheels in a straight-ahead position. Do not depress brake pedal.
2. Place an iron bar or similar tool between upper link and steering knuckle.
3. Measure axial end play by prying it up and down. Refer to [FSU-26, "Ball Joint"](#).

CAUTION:

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

SHOCK ABSORBER

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

WHEEL ALIGNMENT

Description

Measure wheel alignment under unladen conditions.

NOTE:

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

General Information and Recommendations

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

Preliminary Check

Check the following:

1. Tires for improper air pressure and wear.
2. Road wheels for runout. Refer to [WT-57, "Road Wheel"](#).
3. Wheel bearing axial end play. Refer to [FAX-27, "Wheel Bearing"](#).
4. Transverse link ball joint axial end play. Refer to [FSU-11, "Removal and Installation"](#).
5. Shock absorber operation.
6. Each mounting part of axle and suspension for looseness and deformation.
7. Each of suspension member, shock absorber, upper link and transverse link for cracks, deformation and other damage.
8. Vehicle height (posture).

Alignment Process

IMPORTANT:

Use only the alignment specifications listed in this Service Manual.

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

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FRONT SUSPENSION ASSEMBLY

< PERIODIC MAINTENANCE >

- This may result in an ERROR.
- Most camera-type alignment machines are equipped with both "Rolling Compensation" method and optional "Jacking Compensation" method to "compensate" the alignment targets or head units. "Rolling Compensation" is the preferred method.
- If using the "Rolling Compensation" method, after installing the alignment targets or head units, push or pull on the rear wheel to move the vehicle. Do not push or pull the vehicle body.
- If using the "Jacking Compensation" method, after installing the alignment targets or head units, raise the vehicle and rotate the wheels 1/2 turn both ways.

NOTE:

- Do not use the "Rolling Compensation" method if you are using sensor-type alignment equipment.
- Follow all instructions for the alignment machine you are using for more information.

ADJUSTMENT

Camber, Caster and Kingpin Inclination Angles

CAUTION:

Camber, caster, kingpin inclination angles cannot be adjusted.

FRONT COIL SPRING AND STRUT

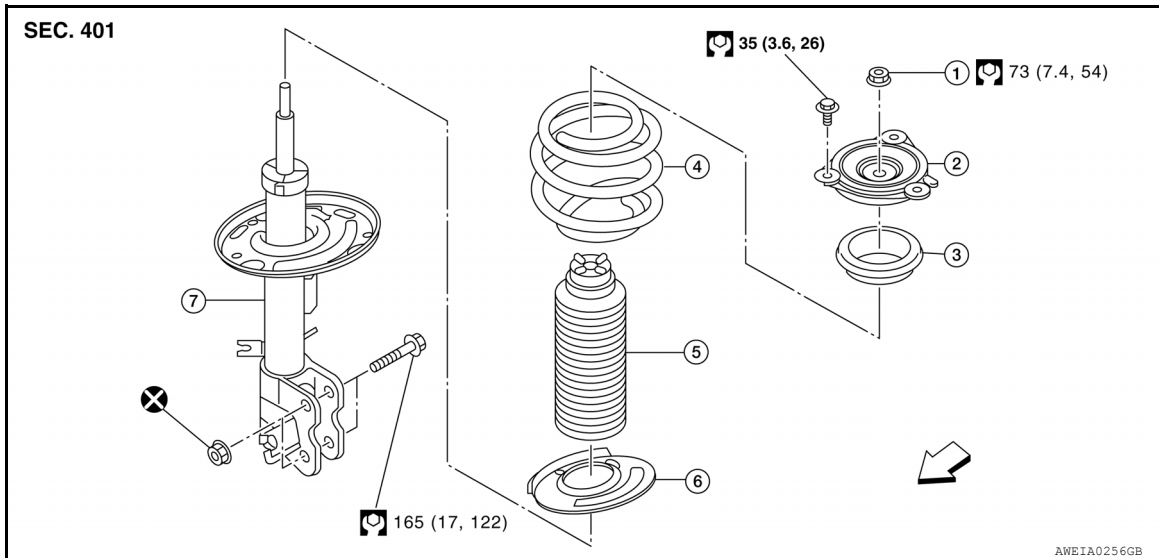
< REMOVAL AND INSTALLATION >

REMOVAL AND INSTALLATION

FRONT COIL SPRING AND STRUT

Exploded View

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- | | | |
|------------------------|-----------------------------|---------------------------|
| 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 | ⇐ Front | |

Removal and Installation

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REMOVAL

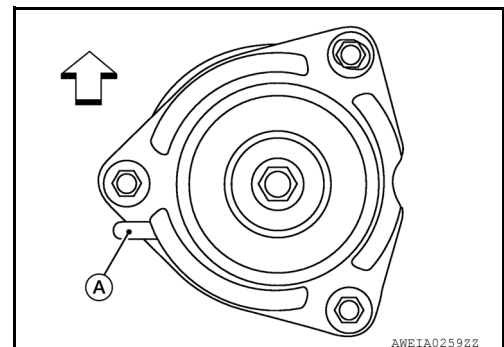
1. Remove front wheel and tire using power tool. Refer to [WT-50. "Inspection"](#).
2. Remove brake hose lock plate and brake hose from front coil spring and strut.
3. Remove stabilizer bar connecting rod end from front coil spring and strut. Refer to [FSU-19. "Exploded View"](#).
4. Remove wheel sensor harness from front coil spring and strut.
5. Remove front coil spring and strut to steering knuckle bolts.
6. Remove bolts on strut tower.
7. Remove front coil spring and strut from vehicle.
 - To disassemble the front coil spring and strut, refer to [FSU-22. "Disassembly and Assembly"](#).

INSTALLATION

Installation is in the reverse order of removal.

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

- (A) :Tab
⇐ :Front



- Check wheel alignment. Refer to [FSU-7. "Inspection and Adjustment"](#).

FRONT COIL SPRING AND STRUT

< REMOVAL AND INSTALLATION >

- Adjust neutral position of steering angle sensor. Refer to [BRC-57. "Work Procedure"](#).

Disposal

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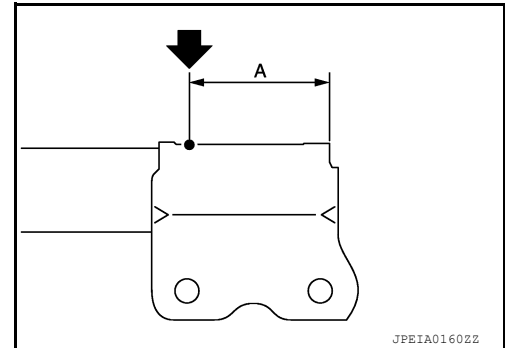
1. Set strut assembly horizontally with the piston rod fully extended.
2. Drill 2 – 3 mm (0.08 – 0.12 in) hole at the position (●) from top as shown in the figure to release gas gradually.

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.

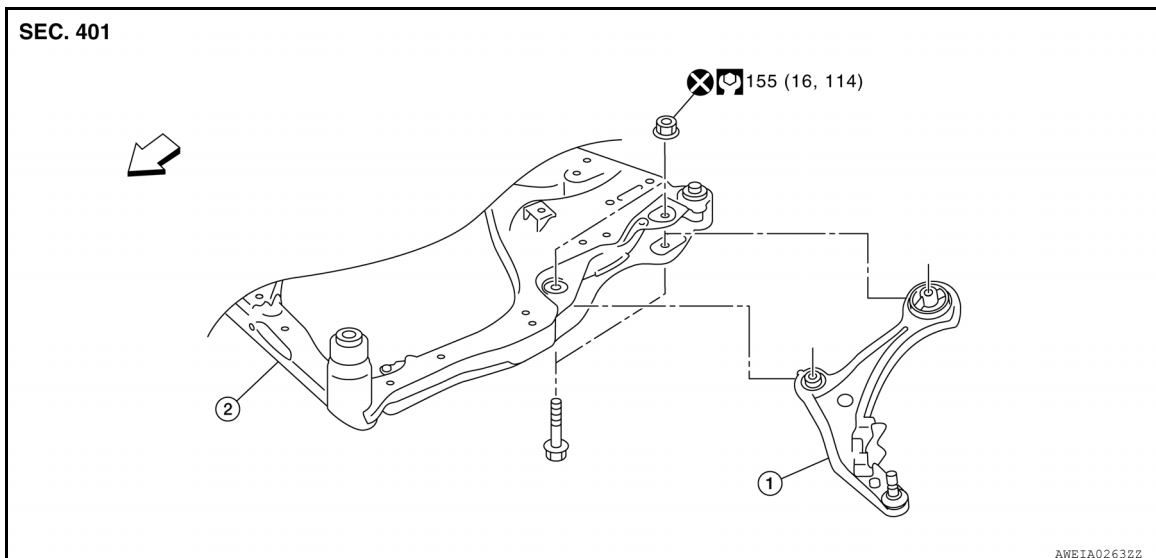
TRANSVERSE LINK

< REMOVAL AND INSTALLATION >

TRANSVERSE LINK

Exploded View

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1. Transverse link

2. Front suspension member

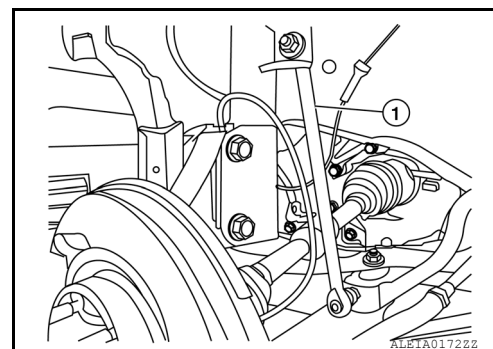
← Front

Removal and Installation

INFOID:000000007989297

REMOVAL

1. Remove front wheel and tire using power tool. Refer to [WT-52. "Adjustment"](#).
2. Remove brake caliper torque member bolts, leaving brake hose attached, position the caliper aside with wire. Refer to [BR-34. "BRAKE CALIPER ASSEMBLY : Exploded View"](#).
CAUTION:
 - Do not depress brake pedal while brake caliper is removed.
 - Do not twist or stretch the brake hose.
3. Put alignment marks on disc rotor and rear wheel hub and bearing assembly, then remove disc rotor.
4. Remove wheel sensor and wheel sensor harness from strut. Refer to [BRC-119. "Exploded View - Front Wheel Sensor"](#).
5. Remove the stabilizer connecting rod (1). Refer to [FSU-14. "Removal and Installation"](#).

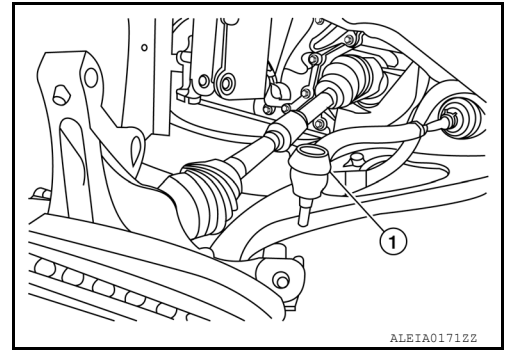


6. Disengage the drive shaft from wheel hub and bearing assembly. Refer to [FAX-11. "Removal and Installation \(Left Side\)"](#) (LH Side), [FAX-13. "Removal and Installation \(Right Side\)"](#) (RH Side).

TRANSVERSE LINK

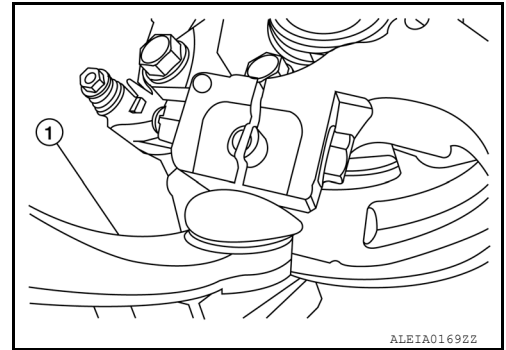
< REMOVAL AND INSTALLATION >

7. Separate the outer socket from the knuckle (1). Refer to [ST-36](#), "[Exploded View](#)".



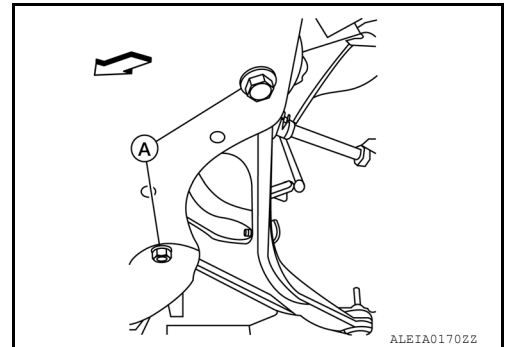
8. Remove the strut from the knuckle using power tool.
9. Remove transverse link bolt and nut. Using Tool, separate transverse link (1) from steering knuckle.

Tool number : HT7252000 (J-25730-A)



10. Remove the steering knuckle and hub.
11. Remove transverse link bolts (A) and the transverse link from suspension member.

⇐ :Front



INSPECTION AFTER REMOVAL

Ball Joint Inspection

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

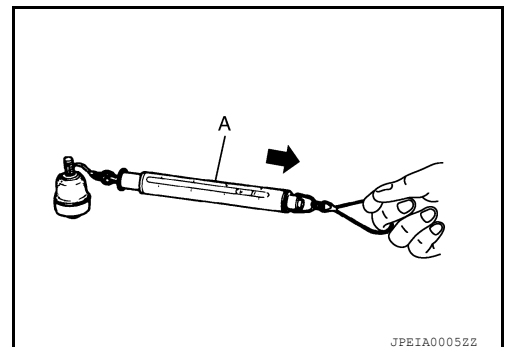
Swing Torque Inspection

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

Swing torque :Refer to [FSU-26](#), "[Ball Joint](#)".

Spring balance measurement :Refer to [FSU-26](#), "[Ball Joint](#)".

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



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.

TRANSVERSE LINK

< REMOVAL AND INSTALLATION >

Axial end play :Refer to [FSU-26, "Ball Joint"](#).

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

INSTALLATION

Installation is 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.
- Check wheel alignment. Refer to [FSU-7, "Inspection and Adjustment"](#).
- Adjust neutral position of steering angle sensor. Refer to [BRC-57, "Work Procedure"](#).

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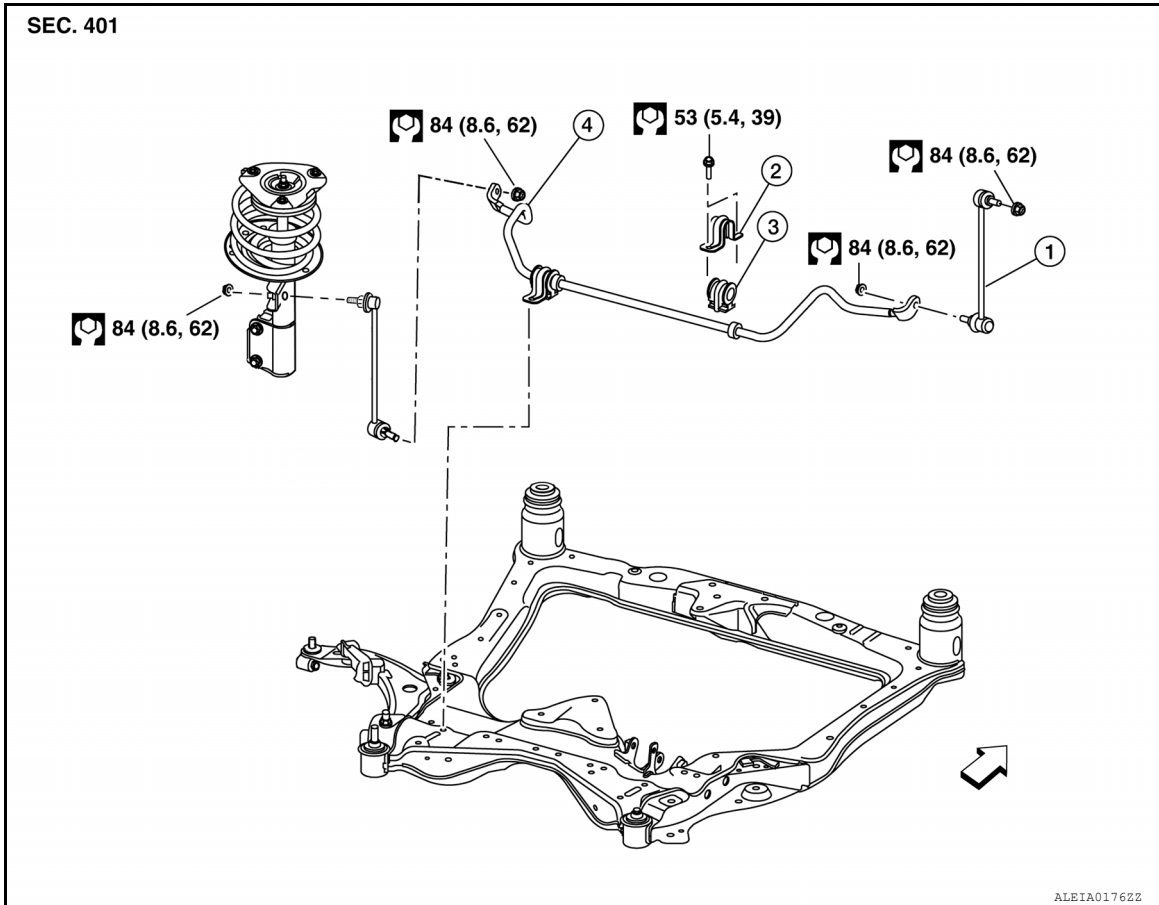
FRONT STABILIZER

< REMOVAL AND INSTALLATION >

FRONT STABILIZER

Exploded View

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- 1. Stabilizer connecting rod
 - 2. Stabilizer clamp
 - 3. Stabilizer bushing
 - 4. Stabilizer bar
- ← Front

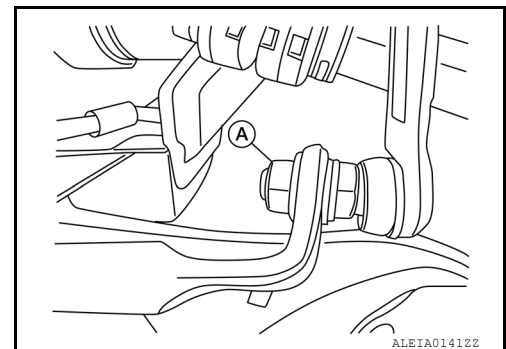
Removal and Installation

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Removal

1. Remove the front wheels and tires using power tool. Refer to [WT-57, "Road Wheel"](#).
2. Remove each stabilizer connecting rod nut (A) at the stabilizer bar.

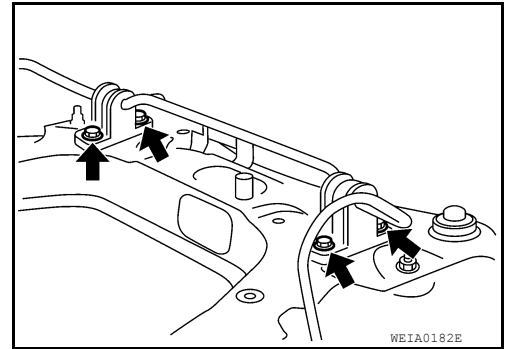


3. Separate the outer sockets from each knuckle. Refer to [ST-36, "Exploded View"](#).
4. Disconnect the oxygen sensor harness connector.
5. Remove the front exhaust tube. Refer to [EX-5, "Exploded View"](#).

FRONT STABILIZER

< REMOVAL AND INSTALLATION >

6. Position the steering gear aside. Refer to [ST-36, "Exploded View"](#).
 - Disconnect the steering gear from steering column.
 - Remove the steering gear support bracket on the right side.
 - Remove the steering gear bolts.
7. Remove bolts (←) from each stabilizer clamp.



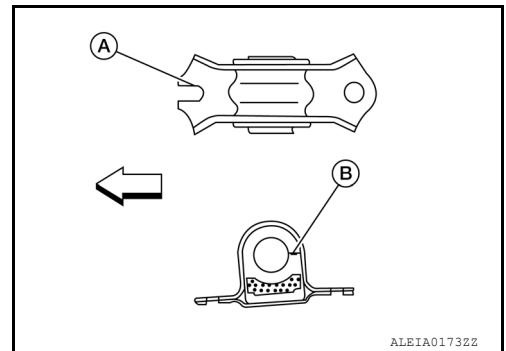
8. Remove stabilizer clamps and stabilizer bushings from front suspension member.
9. Remove stabilizer from the vehicle.

Installation

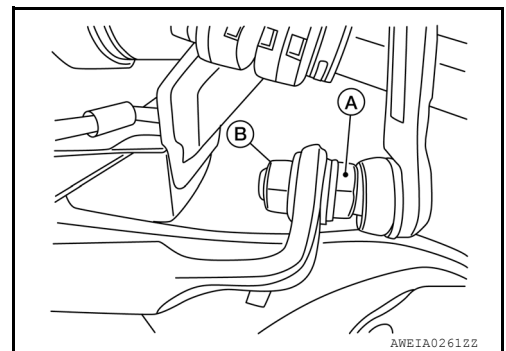
Installation is in the reverse order of removal.

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

← :Front



- While holding the stabilizer connecting rod (A), install the stabilizer connecting rod nut (B) and tighten to specification.



- Check toe in measurement. Refer to [FSU-7, "Inspection and Adjustment"](#).
- Adjust neutral position of steering angle sensor. Refer to [BRC-57, "Work Procedure"](#).

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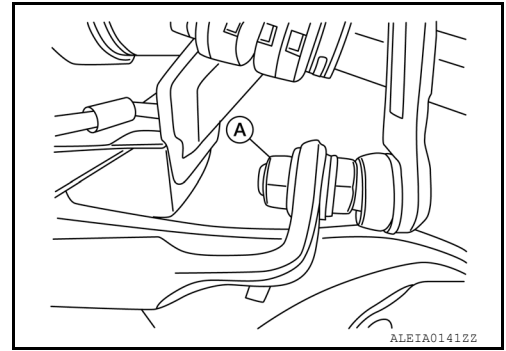
Removal

1. Remove the wheels and tires using power tool. Refer to [WT-57, "Road Wheel"](#).

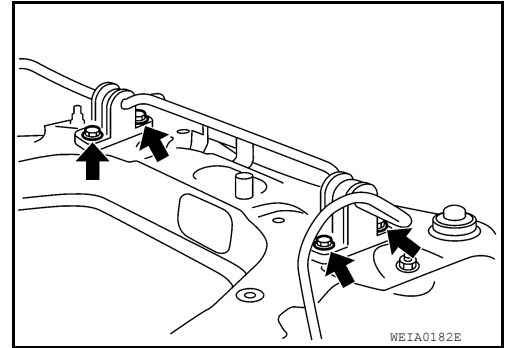
FRONT STABILIZER

< REMOVAL AND INSTALLATION >

2. Remove each stabilizer connecting rod nut (A) at the stabilizer bar.



3. Remove power steering gear. Refer to [ST-36, "Exploded View"](#).
4. Remove front exhaust tube. Refer to [EX-10, "Exploded View"](#).
5. Remove bolts (←) of stabilizer clamp, and then remove stabilizer clamp and stabilizer bushing from front suspension member.



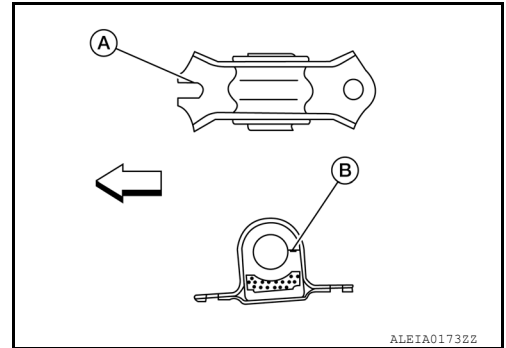
6. Remove stabilizer from the vehicle.

Installation

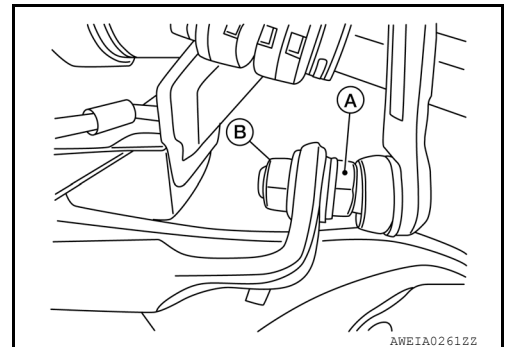
Installation is in the reverse order of removal.

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

← :Front



- While holding the stabilizer connecting rod (A), install the stabilizer connecting rod nut (B) and tighten to specification.



- Check toe in measurement. Refer to [FSU-7, "Inspection and Adjustment"](#).
- Adjust neutral position of steering angle sensor. Refer to [BRC-57, "Work Procedure"](#).

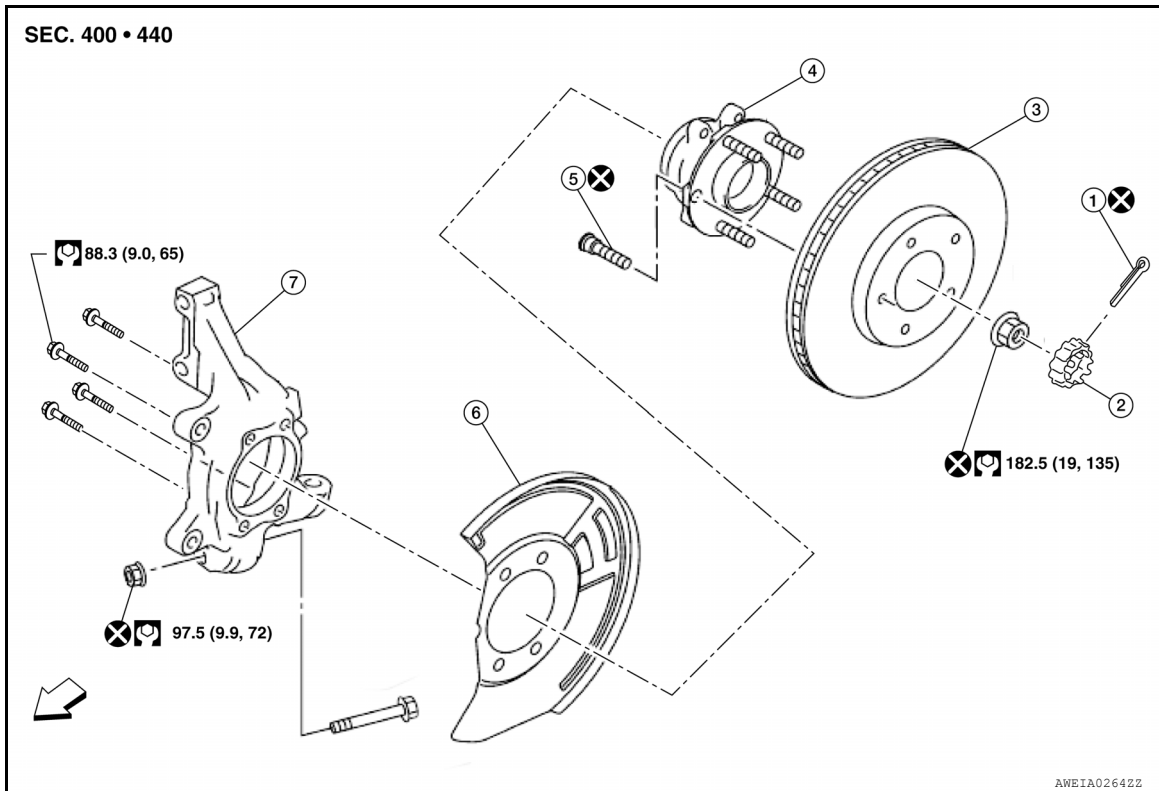
STEERING KNUCKLE

< REMOVAL AND INSTALLATION >

STEERING KNUCKLE

Exploded View

INFOID:000000008722773



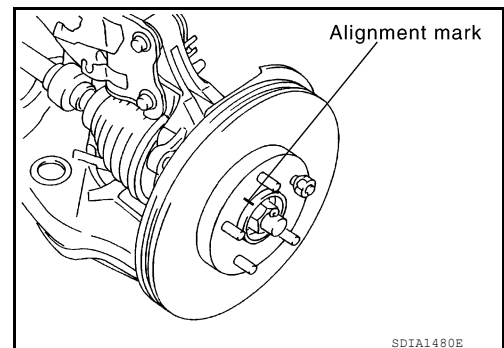
- | | | |
|-----------------------------------|-------------------|-----------------|
| 1. Cotter pin | 2. Nut retainer | 3. Rotor |
| 4. Wheel hub and bearing assembly | 5. Wheel hub bolt | 6. Splash guard |
| 7. Steering knuckle | ⇐ Front | |

Removal and Installation

INFOID:000000007989299

REMOVAL

1. Remove front wheel and tire using power tool. Refer to [WT-52. "Adjustment"](#).
2. Remove brake caliper using power tool, leaving brake caliper hydraulic hose attached. Position brake caliper aside with wire. Refer to [BR-34. "BRAKE CALIPER ASSEMBLY : Exploded View"](#).
CAUTION:
 - Do not depress brake pedal while brake caliper is removed.
 - Do not twist or stretch the brake hose.
3. Put alignment marks on disc rotor and wheel hub and bearing assembly, then remove disc rotor.



SDIA1480E

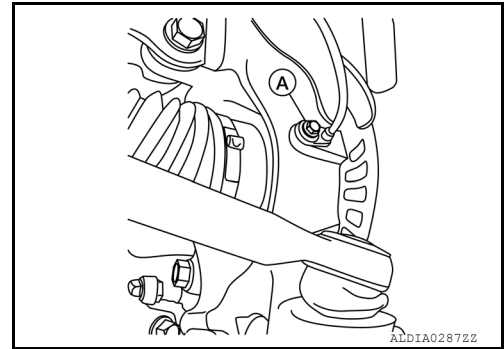
STEERING KNUCKLE

< REMOVAL AND INSTALLATION >

4. Remove wheel sensor bolt (A) and wheel sensor from steering knuckle. Refer to [BRC-119, "Removal and Installation - Front Wheel Sensor"](#).

CAUTION:

Do not pull on wheel sensor harness.



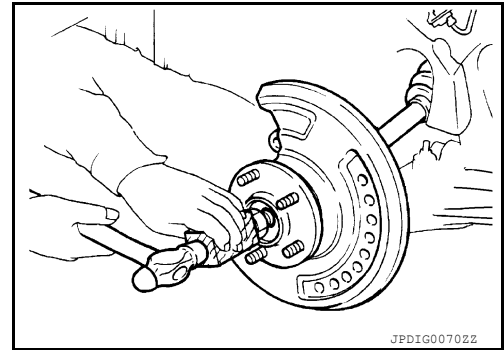
5. Remove and discard cotter pin, then loosen lock nut from drive shaft using power tool.
6. Using a piece of wood and a hammer, tap on the lock nut to disengage drive shaft from wheel hub.

CAUTION:

- Do not place drive shaft joint to an extreme angle. Also be careful not to overextend slide joint.
- Do not allow drive shaft to hang down without support.

NOTE:

Use suitable puller if drive shaft cannot be separated from wheel hub and bearing assembly.



7. Remove wheel hub and bearing assembly bolts.
8. Remove splash guard and wheel hub and bearing assembly from steering knuckle.
9. Remove the outer socket from steering knuckle. Refer to [ST-36, "Exploded View"](#).
10. Remove the front strut bolt at steering knuckle. Refer to [FSU-9, "Exploded View"](#).
11. Remove transverse link bolt and nut. Using Tool, separate transverse link from steering knuckle.

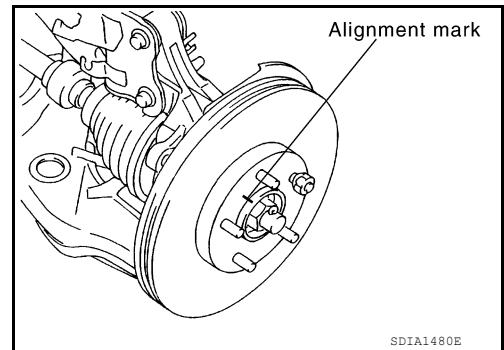
Tool number : HT7252000 (J-25730-A)

12. Remove steering knuckle.

INSTALLATION

Installation is in the reverse order of removal.

- Check wheel alignment. Refer to [FSU-7, "Inspection and Adjustment"](#).
- When installing wheel hub and bearing assembly to steering knuckle, align cutout in sensor rotor cover with wheel sensor mounting hole in steering knuckle.
- Align the marks made on the rotor and front wheel hub during disassembly.
- Do not use a power tool to tighten the wheel hub lock nut.
- Do not reuse the cotter pin.
- Adjust neutral position of steering angle sensor. Refer to [BRC-57, "Work Procedure"](#).



FRONT SUSPENSION ASSEMBLY

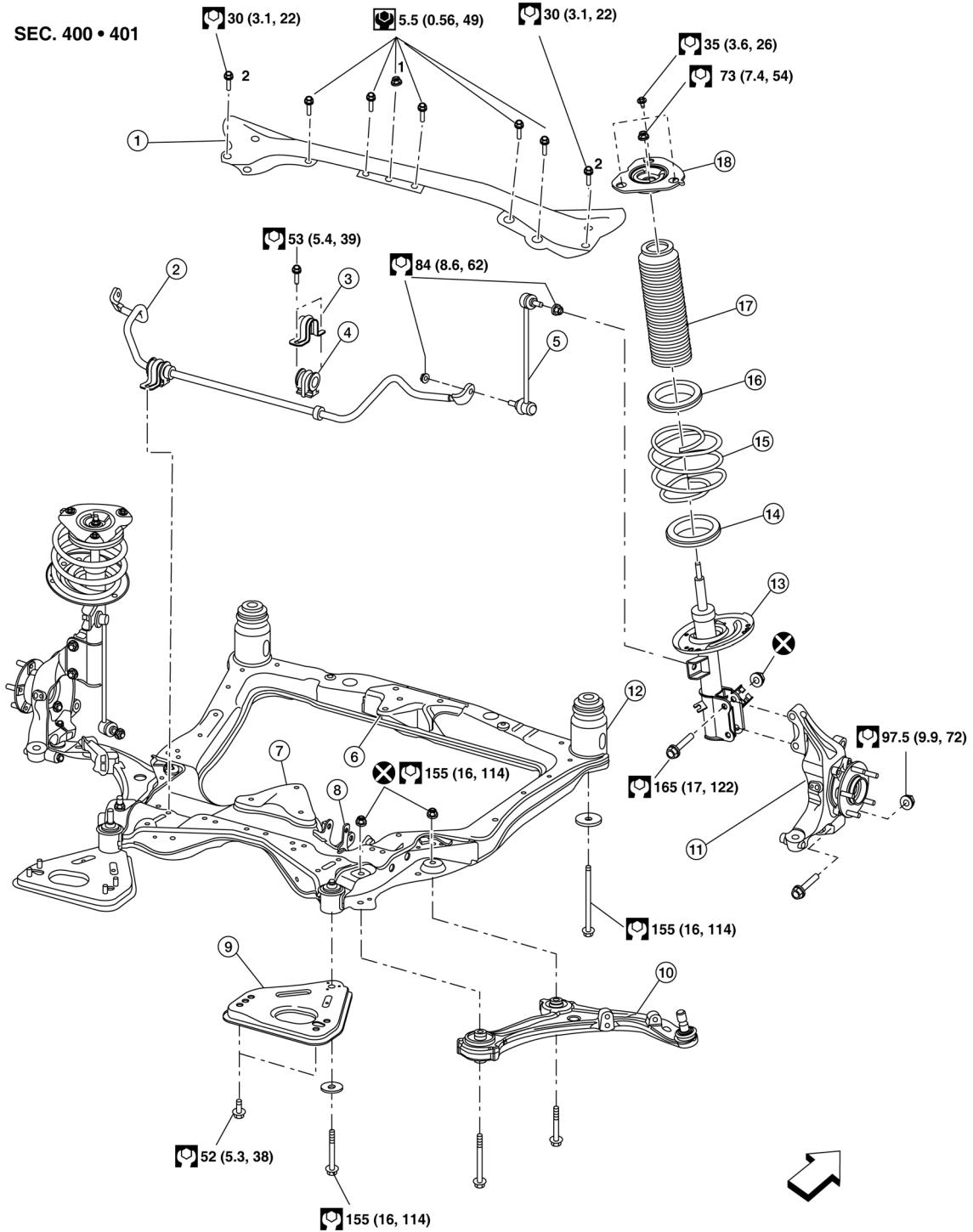
< UNIT REMOVAL AND INSTALLATION >

UNIT REMOVAL AND INSTALLATION

FRONT SUSPENSION ASSEMBLY

Exploded View

INFOID:000000007989300



A
B
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FRONT SUSPENSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

- | | | |
|------------------------------|-------------------------|---------------------------------|
| 1. Strut tower bar | 2. Stabilizer bar | 3. Stabilizer clamp |
| 4. Stabilizer bushing | 5. Connecting rod | 6. VQ35DE front mount bracket |
| 7. VQ35DE rear mount bracket | 8. QR25DE mount bracket | 9. Front suspension member stay |
| 10. Transverse link | 11. Steering knuckle | 12. Front suspension member |
| 13. Strut | 14. Lower rubber seat | 15. Coil spring |
| 16. Upper rubber seat | 17. Dust cover | 18. Strut mount insulator |

⇐ Front

Removal and Installation

INFOID:000000007989301

QR25DE ENGINE

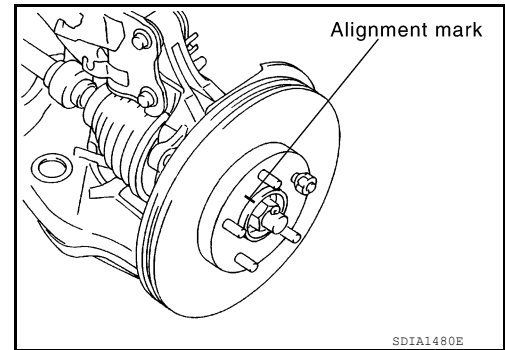
Removal

1. Remove front wheels and tires using power tool. Refer to [WT-52, "Adjustment"](#).
2. Remove each brake caliper using power tool, leaving brake caliper hydraulic hose attached. Position each brake caliper aside with wire. Refer to [BR-34, "BRAKE CALIPER ASSEMBLY : Exploded View"](#).

CAUTION:

- Do not depress brake pedal while brake caliper is removed.
- Do not twist or stretch the brake hose.

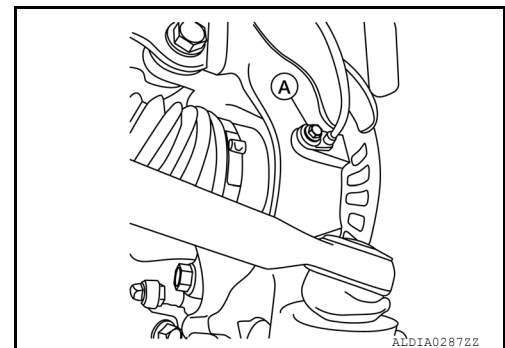
3. Put alignment marks on each disc rotor and each wheel hub and bearing assembly.
4. Remove each disc rotor.



5. Remove each wheel sensor bolt (A) and each wheel sensor from each steering knuckle. Refer to [BRC-119, "Removal and Installation - Front Wheel Sensor"](#).

CAUTION:

Do not pull on wheel sensor harness.



6. Remove stabilizer connecting rods from stabilizer bar.
7. Remove front exhaust tube. Refer to [EX-5, "Exploded View"](#).
8. Remove steering gear bolts. Remove steering gear from suspension member and support the steering gear with wire. Refer to [ST-36, "Exploded View"](#).
9. Remove engine side under cover. Refer to [EM-28, "Exploded View"](#).
10. Remove engine under cover. Refer to [EM-28, "Exploded View"](#).
11. Remove transverse link bolts and nuts. Using Tool, separate each transverse link from steering knuckles.

Tool number : HT7252000 (J-25730-A)

12. Remove rear engine mount torque rod bolt and rear torque rod insulator bracket, then remove support bracket. Refer to [EM-83, "Exploded View"](#).
13. Position the power steering lines aside and remove the power steering line clips.

FRONT SUSPENSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

14. Set Tool under suspension member, and remove suspension member bolts. Slowly lower Tool to remove suspension member from vehicle

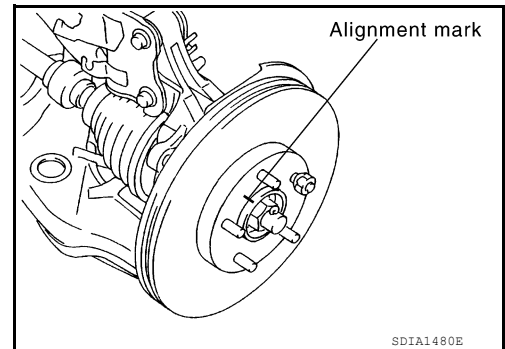
Tool number : KV101J0010 (J-47242)

15. If replacing suspension member, remove the following components from the suspension member.
- transverse links.
 - stabilizer bar.
 - front suspension member stays.

Installation

Installation is in the reverse order of removal.

- When installing wheel hub and bearing assembly to steering knuckle, align cutout in sensor rotor cover with wheel sensor mounting hole in steering knuckle.
- Do not reuse the cotter pin.
- Align the marks made on the rotor and front wheel hub during disassembly.
- Perform final tightening of each part under unladen conditions with tires on ground. Refer to [FSU-19, "Exploded View"](#).
- Check wheel alignment. Refer to [FSU-7, "Inspection and Adjustment"](#).
- Adjust neutral position of steering angle sensor. Refer to [BRC-57, "Work Procedure"](#).



VQ35DE ENGINE

Removal

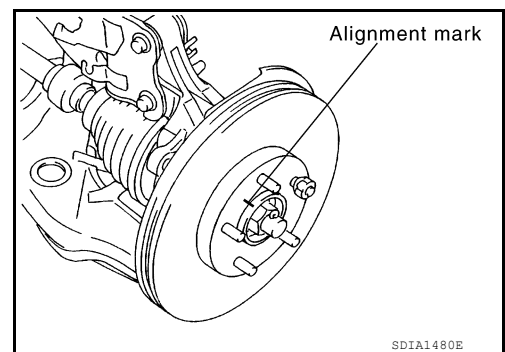
Engine, transmission and suspension member must be removed as an assembly. Refer to [EM-220, "Removal and Installation"](#).

Once removed as an assembly, lift engine and transmission off of suspension member.

Installation

Installation is in the reverse order of removal.

- When installing wheel hub and bearing assembly to steering knuckle, align cutout in sensor rotor cover with wheel sensor mounting hole in steering knuckle.
- Do not reuse the cotter pin.
- Align the marks made on the rotor and front wheel hub during disassembly.
- Perform final tightening of each part under unladen conditions with tires on ground. Refer to [FSU-19, "Exploded View"](#).
- Check wheel alignment. Refer to [FSU-7, "Inspection and Adjustment"](#).
- Adjust neutral position of steering angle sensor. Refer to [BRC-57, "Work Procedure"](#).



FRONT COIL SPRING AND STRUT

< UNIT DISASSEMBLY AND ASSEMBLY >

UNIT DISASSEMBLY AND ASSEMBLY

FRONT COIL SPRING AND STRUT

Disassembly and Assembly

INFOID:000000007989302

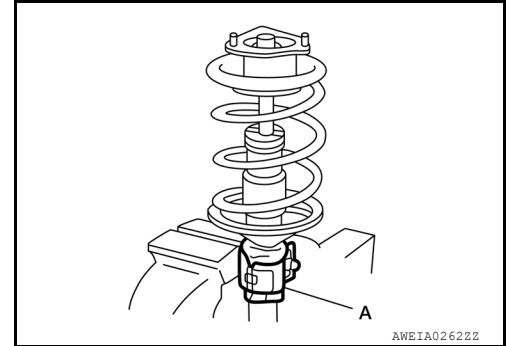
DISASSEMBLY

1. Install Tool (A) to strut and secure it in a vise.

Tool number (A) : ST35652000 (—)

CAUTION:

When installing Tool, wrap a shop cloth around strut to protect it from damage.



2. Install Tool to strut rod.

Tool number : — (J-49029)

3. Slightly loosen piston rod lock nut.

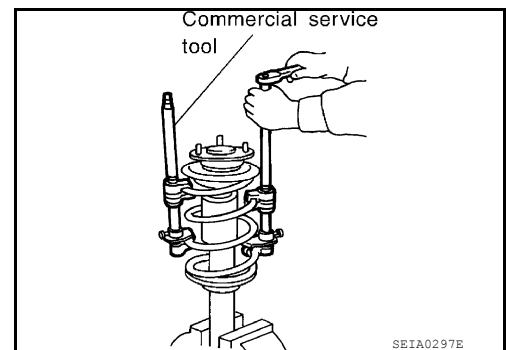
WARNING:

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

4. Compress coil spring using a commercially available spring compressor.

WARNING:

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



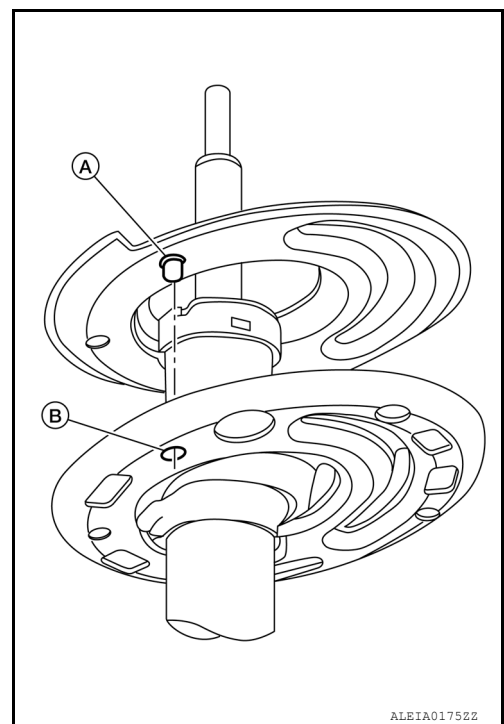
5. Making sure coil spring is free between upper and lower seats, then remove piston rod lock nut.
6. Remove small parts on strut.
 - Remove strut spacer, strut mount insulator, strut mounting insulator bracket thrust bearing, spring upper seat, and upper rubber seat. Then remove coil spring.
7. Remove bound bumper from spring upper seat.
8. Gradually release spring compressor (commercial service tool), and remove coil spring.

ASSEMBLY

FRONT COIL SPRING AND STRUT

< UNIT DISASSEMBLY AND ASSEMBLY >

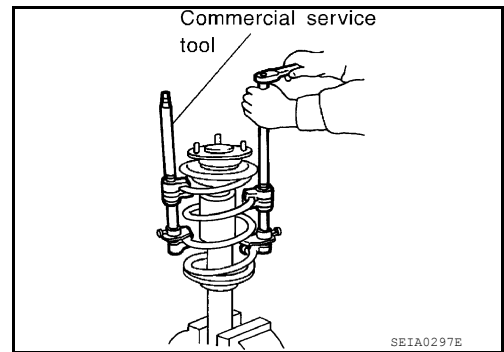
1. Install the lower rubber seat to the strut. Make sure that the pin (A) on the lower rubber seat is positioned into the hole (B) on the strut.



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

WARNING:

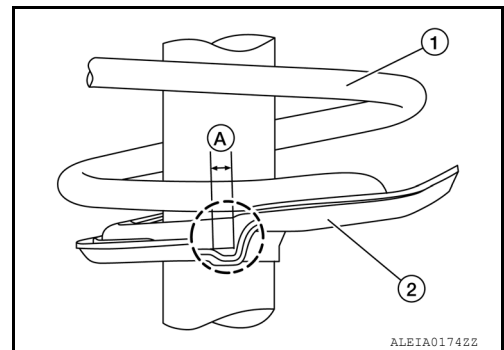
Be sure spring compressor is securely attached to coil spring. Compress coil spring.



CAUTION:

Face tube side of coil spring (1) downward. Align lower end to spring seat (2).

Maximum Gap (A) : 5 mm (0.20 in)



3. Connect bound bumper to spring upper seat.

CAUTION:

- Be sure to install bound bumper to spring upper seat securely.
- When installing bound bumper, use soapy water. Do not use machine oil or other lubricants.

4. Install small parts to the strut.

- Connect upper rubber seat, spring upper seats, thrust bearing, strut mount insulator, and strut spacer. Temporarily install piston rod lock nut.

CAUTION:

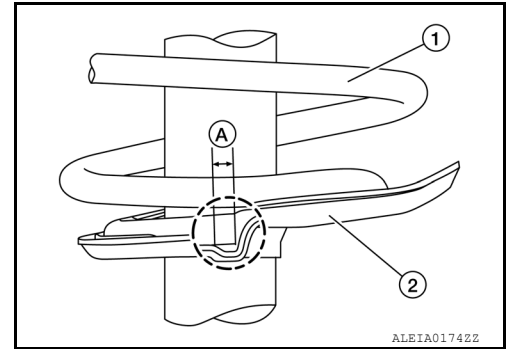
Do not reuse piston rod lock nut.

FRONT COIL SPRING AND STRUT

< UNIT DISASSEMBLY AND ASSEMBLY >

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

(A) :Tab
⇐ :Front



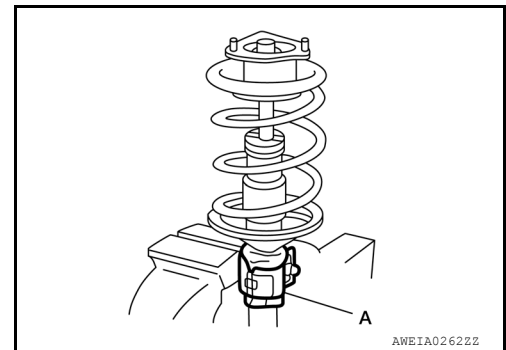
6. Be sure coil spring is properly set in lower rubber seat. Gradually release spring compressor.

CAUTION:

Be sure upper rubber seat is properly aligned to spring upper seat and coil spring.

7. Tighten piston rod lock nut to the specified torque. Refer to [FSU-19. "Exploded View"](#).
8. Remove Tool (A) from strut.

Tool number (A) : ST35652000 (—)



9. Remove Tool from strut rod.

Tool number : — (J-49029)

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

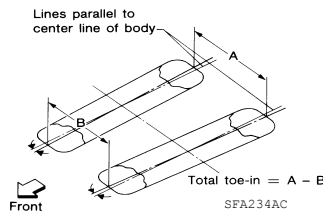
SERVICE DATA AND SPECIFICATIONS (SDS)

Wheel Alignment (Unladen*1)

INFOID:000000007989304

UNITED STATES

Engine type		QR25DE		VQ35DE
Tire size		215/60R16	215/55R17	235/45R18
Camber *2 Degree minute (Decimal degree)	(LH)	Minimum	-1° 05' (-1.08°)	
		Nominal	-0° 20' (-0.33°)	
		Maximum	0° 25' (0.42°)	
	(RH)	Minimum	-1° 20' (-1.33°)	
		Nominal	-0° 35' (-0.58°)	
		Maximum	0° 10' (0.17°)	
Caster *3 Degree minute (Decimal degree)	Minimum	4° 10' (4.17°)	4° 15' (4.25°)	
	Nominal	4° 55' (4.92°)	5° 00' (5.00°)	
	Maximum	5° 40' (5.67°)	5° 45' (5.75°)	
Kingpin inclination Degree minute (Decimal degree)	(LH)	Minimum	13° 35' (13.58°)	13° 40' (13.67°)
		Nominal	14° 20' (14.33°)	14° 25' (14.42°)
		Maximum	15° 05' (15.08°)	15° 10' (15.17°)
	(RH)	Minimum	13° 50' (13.83°)	13° 55' (13.92°)
		Nominal	14° 35' (14.58°)	14° 40' (14.67°)
		Maximum	15° 20' (15.33°)	15° 25' (15.42°)



Total toe-in	Distance (A - B)	Minimum	Out 1.7 mm (Out 0.07 in)
		Nominal	In 0.3 mm (In 0.01 in)
		Maximum	In 2.3 mm (In 0.09 in)
	Angle (LH and RH) Degree minute (Decimal degree)	Minimum	Out 0° 05' 38" (Out 0.094°)
		Nominal	In 0° 03' 57" (In 0.066°)
		Maximum	In 0° 13' 33" (In 0.226°)
Wheel turning angle	Refer to ST-46, "Steering Angle" .		

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

*2: The RH camber angle shall be $-0° 15' \pm 0° 33'$ ($-0.25° \pm 0.55°$) with respect to the LH camber angle.

*3: For the caster angle, the difference between right and left against the ground surface shall be $\pm 0° 30'$ ($\pm 0.50°$) maximum.

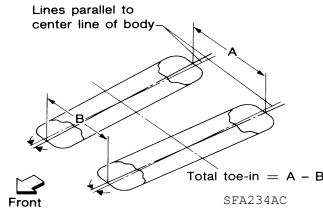
CANADA

Engine type		QR25DE		VQ35DE
Tire size		215/60R16	215/55R17	235/45R18

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

Camber *2 Degree minute (Decimal degree)	(LH)	Minimum	-1° 05' (-1.08°)	
		Nominal	-0° 20' (-0.33°)	
		Maximum	0° 25' (0.42°)	
	(RH)	Minimum	-1° 20' (-1.33°)	
		Nominal	-0° 35' (-0.58°)	
		Maximum	0° 10' (0.17°)	
Caster *3 Degree minute (Decimal degree)	Minimum	4° 10' (4.17°)		
	Nominal	4° 55' (4.92°)		
	Maximum	5° 40' (5.67°)		
Kingpin inclination Degree minute (Decimal degree)	(LH)	Minimum	13° 35' (13.58°)	13° 40' (13.67°)
		Nominal	14° 20' (14.33°)	14° 25' (14.42°)
		Maximum	15° 05' (15.08°)	15° 10' (15.17°)
	(RH)	Minimum	13° 50' (13.83°)	13° 55' (13.92°)
		Nominal	14° 35' (14.58°)	14° 40' (14.67°)
		Maximum	15° 20' (15.33°)	15° 25' (15.42°)



Total toe-in	Distance (A - B)	Minimum	Out 1.7 mm (Out 0.07 in)	
		Nominal	In 0.3 mm (In 0.01 in)	
		Maximum	In 2.3 mm (In 0.09 in)	
	Angle (LH and RH) Degree minute (Decimal degree)	Minimum	Out 0° 05' 38" (Out 0.094°)	
		Nominal	In 0° 03' 57" (In 0.066°)	
		Maximum	In 0° 13' 33" (In 0.226°)	
Wheel turning angle		Refer to ST-46, "Steering Angle" .		

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

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

*3: For the caster angle, the difference between right and left against the ground surface shall be $\pm 0^{\circ} 30'$ ($\pm 0.50^{\circ}$) maximum.

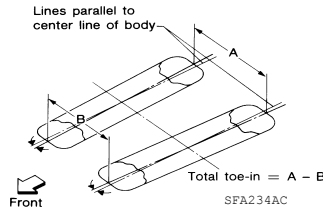
MEXICO

Engine type		QR25DE		VQ35DE
Tire size		215/60R16	215/55R17	235/45R18
Camber *2 Degree minute (Decimal degree)	(LH)	Minimum	-1° 00' (-1.00°)	
		Nominal	-0° 15' (-0.25°)	
		Maximum	0° 30' (0.50°)	
	(RH)	Minimum	-1° 15' (-1.25°)	
		Nominal	-0° 30' (-0.50°)	
		Maximum	0° 15' (0.25°)	
Caster *3 Degree minute (Decimal degree)	Minimum	3° 50' (3.83°)	3° 55' (3.92°)	
	Nominal	4° 35' (4.58°)	4° 40' (4.67°)	
	Maximum	5° 20' (5.33°)	5° 25' (5.42°)	

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

Kingpin inclination Degree minute (Decimal degree)	(LH)	Minimum	13° 20' (13.33°)	13° 25' (13.42°)
		Nominal	14° 05' (14.08°)	14° 10' (14.17°)
		Maximum	14° 50' (14.83°)	14° 55' (14.92°)
	(RH)	Minimum	13° 40' (13.67°)	
		Nominal	14° 25' (14.42°)	
		Maximum	15° 10' (15.17°)	



Total toe-in	Distance (A - B)	Minimum	Out 1.4 mm (Out 0.06 in)
		Nominal	In 0.6 mm (In 0.02 in)
		Maximum	In 2.6 mm (In 0.10 in)
	Angle (LH and RH) Degree minute (Decimal degree)	Minimum	Out 0° 03' 36" (Out 0.060°)
		Nominal	In 0° 06' 00" (In 0.100°)
		Maximum	In 0° 15' 36" (In 0.260°)
Wheel turning angle	Refer to ST-46, "Steering Angle" .		

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

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

*3: For the caster angle, the difference between right and left against the ground surface shall be $\pm 0^{\circ} 30'$ ($\pm 0.50^{\circ}$) maximum.

Ball Joint

INFOID:000000007989305

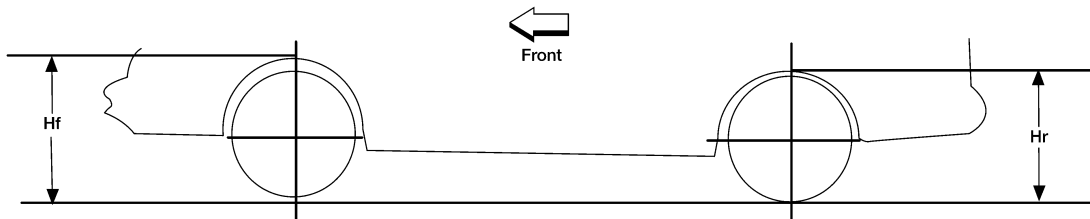
Swing torque	0.50 - 3.4 N·m (0.06 - 0.34 kg·m, 5 - 30 in·lb)
Measurement on spring balance (cotter pinhole position)	7.94 - 53.97 N (0.81 - 5.50 kg, 1.79 - 12.2 lb)
Axial endplay	0.1 mm (0.004 in) or less

Wheelarch Height (Unladen*¹)

INFOID:000000008723729

UNITED STATES

Unit: mm (in)



LEIA0085E

Engine	QR25DE		VQ35DE
Tire size	215/60R16	215/55R17	235/45R18
Front (Hf)	708 (27.87)	711 (27.99)	714 (28.11)
Rear (Hr)	706 (27.80)	709 (27.91)	711 (27.99)

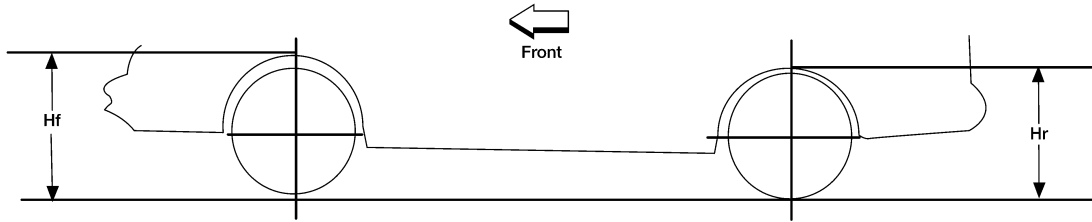
*1: Fuel, engine coolant, and lubricants are full. Spare tire, jack, hand tools, and mats are in designated positions.

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

CANADA

Unit: mm (in)



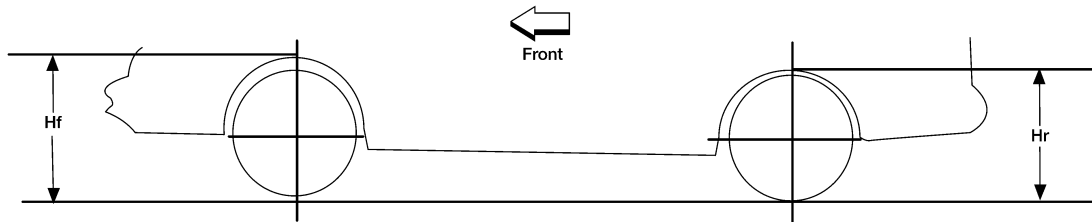
LEIA0085E

Engine	QR25DE		VQ35DE
Tire size	215/60R16	215/55R17	235/45R18
Front (Hf)	707 (27.83)	710 (27.95)	715 (28.15)
Rear (Hr)	706 (27.80)	710 (27.95)	712 (28.03)

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

MEXICO

Unit: mm (in)



LEIA0085E

Grade	2.5SL	2.5SV	2.5SL	3.5SL
Engine	QR25DE			VQ35DE
Tire size	215/60R16	215/55R17	215/55R17	235/45R18
Front (Hf)	717 (28.23)	721 (28.39)	719 (28.31)	724 (28.50)
Rear (Hr)	726 (28.58)	729 (28.70)	729 (28.70)	730 (28.74)

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