

SECTION **ST**
STEERING SYSTEM

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PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

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

INFOID:000000012426129

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

WARNING:

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

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

WARNING:

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

Service Notice or Precautions for Steering System

INFOID:000000012426130

- In case of removing steering gear, make the final tightening with grounded and unloaded vehicle condition, and then check wheel alignment.
- Observe the following precautions when disassembling.
 - Before disassembly, thoroughly clean the outside of the unit.
 - Disassembly should be done in a clean work area. It is important to prevent the internal parts from becoming contaminated by dirt or other foreign matter.
 - For easier and proper assembly, place disassembled parts in order on a parts rack.
 - Use nylon cloth or paper towels to clean the parts; common shop rags can leave lint that might interfere with their operation.
 - Do not reuse non-reusable parts.
 - Before assembling, apply the specified grease to the directed parts.
- During quick steering, rasping noise may be heard from around the steering wheel. This is not a malfunction. The noise is an operating noise of the EPS system under normal conditions. If the rasping noise occurs during slow steering, this may not be an operating noise of the system. In this case, it is necessary to find out the location of the noise and repair, if necessary.
- Do not repeat static steering. (Motor and EPS control unit could be heated.)

PREPARATION

< PREPARATION >

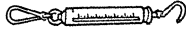
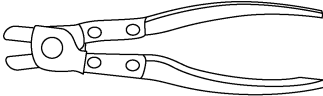
PREPARATION

PREPARATION

Special Service Tools

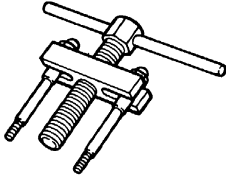
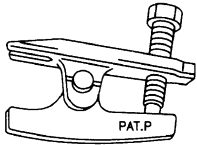
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The actual shape of the tools may differ from those illustrated here.

Tool number (TechMate No.) Tool name	Description
— (J-44372) Pull gauge  LST024	Measuring steering wheel turning force, rack sliding force and ball joint swinging force
KV40107300 (J-51751) Boot band crimping tool  ALDIA0586ZZ	Installing boot bands (large diameter)

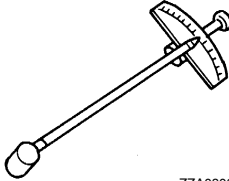

Commercial Service Tools

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Tool name	Description
Steering wheel puller  ZZA0819D	Removing steering wheel
Ball joint remover  PAT.P NT146	Removing ball joint

PREPARATION

< PREPARATION >

Tool name	Description
Preload gauge  ZZA0806D	Inspecting steering column rotating torque, pinion rotating torque and ball joint rotating torque
Power tool  PIIB1407E	Loosening nuts, screws and bolts

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 find the cause of the symptom. If necessary, repair or replace these parts.

Reference			SI-9	SI-9	SI-9	SI-6	SI-6	—	SI-6	SI-8	SI-8	SI-9	DLN-98	DLN-111	FSU-5	FAX-6	WT-62	FAX-44	BR-6		
Possible cause and SUSPECTED PARTS			Outer/inner socket ball joint swinging torque	Outer/inner socket ball joint rotating torque	Outer/inner socket ball joint end play	Steering wheel play	Improper steering wheel	Improper installation or looseness of tilt lock lever	Mounting looseness	Steering column deformation or damage	Improper installation or looseness of steering column	Steering linkage looseness	PROPELLER SHAFT (AWD)	DIFFERENTIAL (AWD)	SUSPENSION	AXLE	WHEEL AND TIRE	DRIVE SHAFT	BRAKE		
Symptom	Steering	Noise	x	x	x	x				x	x		x	x	x	x	x	x	x	x	
		Shake					x	x	x				x		x	x	x	x	x	x	x
		Vibration					x	x	x	x	x		x		x	x			x		
		Shimmy					x			x			x			x	x	x			x
		Shudder							x	x			x			x	x	x			x

x: Applicable

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STEERING WHEEL

< BASIC INSPECTION >

BASIC INSPECTION

STEERING WHEEL

Inspection

INFOID:000000012426134

STEERING WHEEL AXIAL END PLAY

1. Check installation conditions of steering gear, front suspension, axle and steering column.
2. Check if movement exists when steering wheel is moved up and down, to the left and right and to the axial direction.

Steering wheel axial end play : Refer to [ST-25, "Steering Wheel"](#).

3. Check the following items when steering wheel axial end play is out of the standard.
 - Check the steering column condition. Refer to [ST-14, "Inspection"](#).
 - Check steering gear condition for looseness. Refer to [ST-21, "Exploded View"](#).

STEERING WHEEL PLAY

1. Turn steering wheel so that front wheels come to the straight-ahead position.
2. Start engine and lightly turn steering wheel to the left and right until front wheels start to move.
3. Measure steering wheel movement on the outer circumference.

Steering wheel play : Refer to [ST-25, "Steering Wheel"](#).

4. Check the following items when steering wheel play is out of the standard.
 - Check backlash for each joint of steering column.
 - Check installation condition of steering gear.

NEUTRAL POSITION STEERING WHEEL

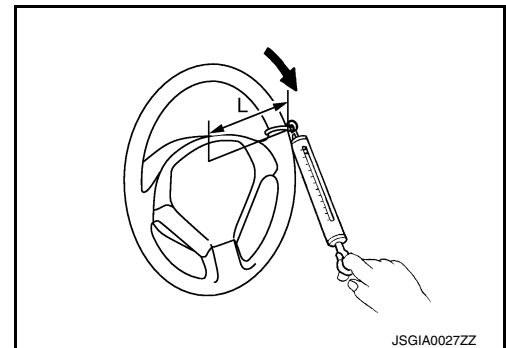
1. Make sure that steering gear, steering column and steering wheel are installed in the correct position.
2. Perform neutral position inspection after wheel alignment. Refer to [FSU-7, "Inspection"](#).
3. Set vehicle to the straight-ahead position and confirm steering wheel is in the neutral position.
4. Loosen outer socket lock nut and turn inner socket to left and right equally to make fine adjustments if steering wheel is not in the neutral position.

STEERING WHEEL TURNING FORCE

1. Park vehicle on a level and dry surface, set parking brake.
2. Tires need to be inflated normal pressure. Refer to [WT-82, "Tire Air Pressure"](#).
3. Start engine.
4. Check steering wheel turning force, using Tool, when steering wheel has been turned 360° from neutral position.

Tool number : — (J-44372)

Steering wheel turning force : Refer to [ST-25, "Steering Wheel"](#).



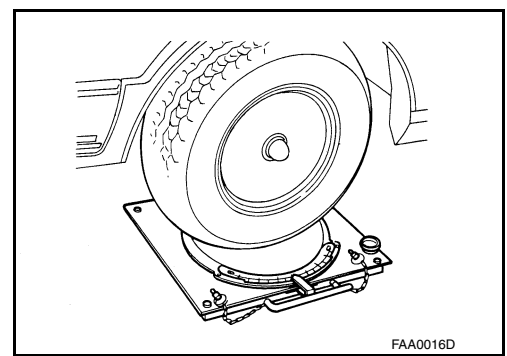
FRONT WHEEL TURNING ANGLE

1. Check front wheel turning angle after toe-in inspection. Refer to [FSU-7, "Inspection"](#).

STEERING WHEEL

< BASIC INSPECTION >

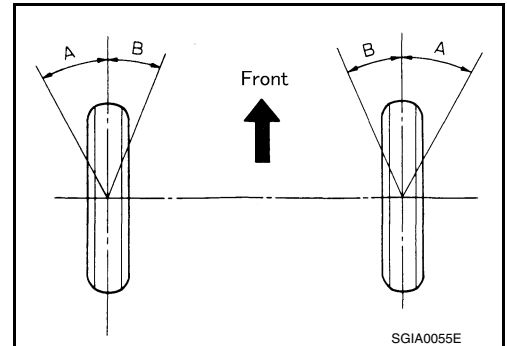
- Place front wheels on turning radius gauges and rear wheels on stands, so that vehicle can be level.
- Check the maximum inner and outer wheel turning angles for LH and RH road wheels.



- With the engine at idle, turn steering wheel from full left stop to full right stop and measure the turning angles.

Inner wheel (Angle: A) : Refer to [ST-25, "Steering Angle"](#).

Outer wheel (Angle: B) : Refer to [ST-25, "Steering Angle"](#).



- Check the following items when turning angle is outside of the standard.

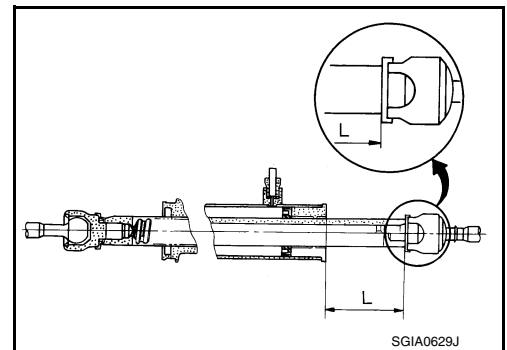
- Check the neutral position of the rack stroke (L).

Rack stroke in neutral position (L) : Refer to [ST-26, "Steering Gear"](#).

- Check steering gear, steering column and front suspension components for wear or damage if any of the turning angles are different from the specified value. Replace components if any conditions are outside of the standard.

NOTE:

Steering angles are not adjustable.



STEERING COLUMN

< BASIC INSPECTION >

STEERING COLUMN

Inspection

INFOID:000000012426135

HOLE COVER SEAL, HOLE COVER AND LOWER SHAFT

Check each part of hole cover seal, hole cover and steering column and lower shaft for damage or other malfunctions. Replace if necessary.

STEERING COLUMN

- Check each part of steering column for damage or other malfunctions. Replace entire steering column if any parts are damaged.
- Measure the steering column length (with the steering wheel and airbag module installed) if vehicle has been involved in a minor collision. Replace steering column if outside the specifications.

Steering column length (with steering wheel and air bag module installed) : Refer to [ST-25, "Steering Column"](#).

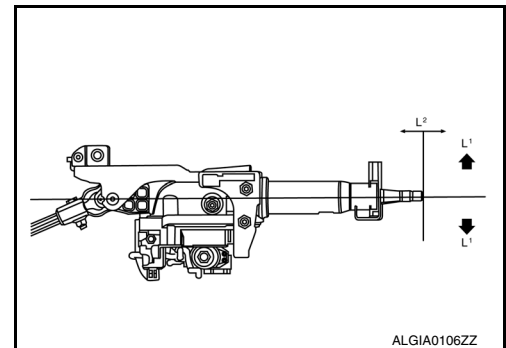
- Measure steering column rotating torque using suitable tool. Replace steering column if outside the standard.

Rotating torque : Refer to [ST-25, "Steering Column"](#).

- Check tilt and telescopic mechanism operating range (L^1), (L^2) as shown.

Tilt operating range (L^1) : Refer to [ST-25, "Steering Column"](#).

Telescopic operating range (L^2) : Refer to [ST-25, "Steering Column"](#).



STEERING GEAR AND LINKAGE

< BASIC INSPECTION >

STEERING GEAR AND LINKAGE

Inspection

INFOID:000000012426136

STEERING GEAR

- Check boot for cracks, and replace it if an abnormal condition is detected.
- Check gear housing for damage and scratches (inner wall). Replace if there are any abnormal conditions.

OUTER SOCKET AND INNER SOCKET

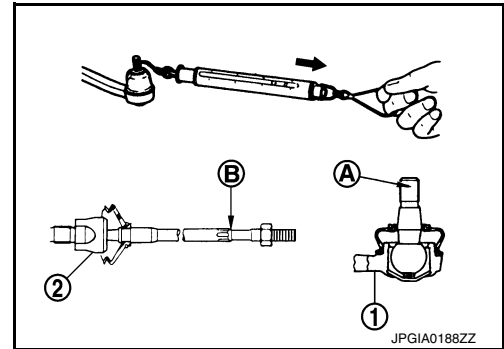
- Ball joint swinging torque
- Hook Tool at the measuring point and pull Tool. Make sure that Tool reads the specified value when ball stud and inner socket start to move. Replace outer socket or steering gear (inner socket) if they are outside the standard.

Measuring point of outer socket (1) : Ball stud upper side (A)

Measuring point of inner socket (2) : Point (B)

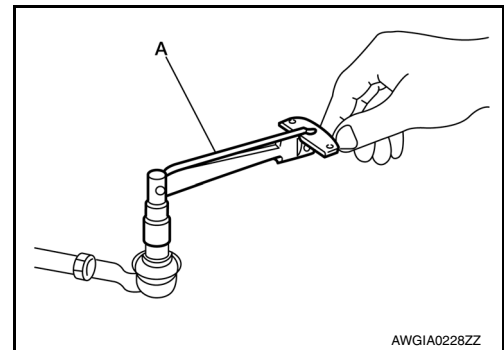
Tool number : — (J-44372)

Swinging torque : Refer to [ST-26, "Steering Gear"](#).



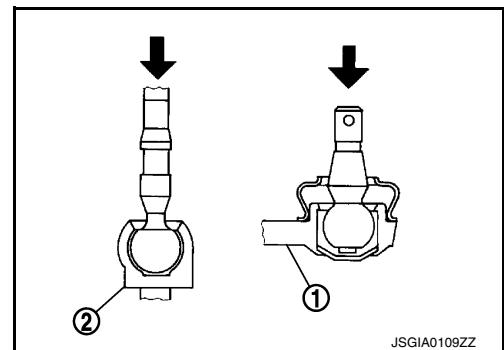
- Ball joint rotating torque
- Make sure that the reading is within the following specified range using suitable tool (A). Replace outer socket if the reading is outside the specification.

Rotating torque : Refer to [ST-26, "Steering Gear"](#)



- Ball joint axial end play
- Apply an axial load of 490 N (50 kg, 111 lb) to ball stud. Measuring the amount of stud movement using a dial gauge, make sure that the value is within specification. Replace outer socket (A) and inner socket (B) if the measured value is outside specification.

Axial end play : Refer to [ST-26, "Steering Gear"](#).



RACK SLIDING FORCE

1. Set the front wheels and tires to the straight-ahead position.
2. Remove the column hole cover. Refer to [ST-12, "Exploded View"](#).
3. Remove the joint retaining bolt and separate the steering column joint from the steering gear pinion shaft. Refer to [ST-12, "Exploded View"](#).

CAUTION:

With the steering linkage disconnected, the spiral cable may snap by turning the steering wheel beyond the limited number of turns. Secure the steering wheel.

4. Remove the lower cover seal. Refer to [ST-12, "Exploded View"](#).

STEERING GEAR AND LINKAGE

< BASIC INSPECTION >

- Loosen the outer socket nuts and separate outer sockets from the steering knuckles using suitable tool.
CAUTION:
Leave the outer socket nuts half threaded on the outer socket to prevent damage to threads and to prevent the suitable tool from coming off suddenly.

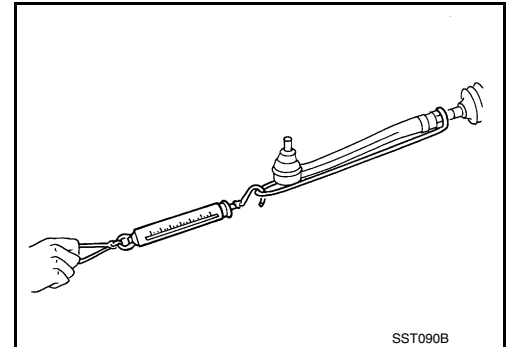
- Remove outer socket nuts and separate the outer sockets from the steering knuckles.

- Hook Tool at the measuring point and pull outer socket slowly to move it from neutral position to ± 11.5 mm (± 0.453 in) at a speed of 3.5 mm (0.138 in) per second. Make sure rack sliding force is within specified range.

Tool number : — (J-44372)

Rack sliding force : Refer to [ST-26, "Steering Gear"](#).

- Replace steering gear if rack sliding force is not within specified range.



STEERING WHEEL

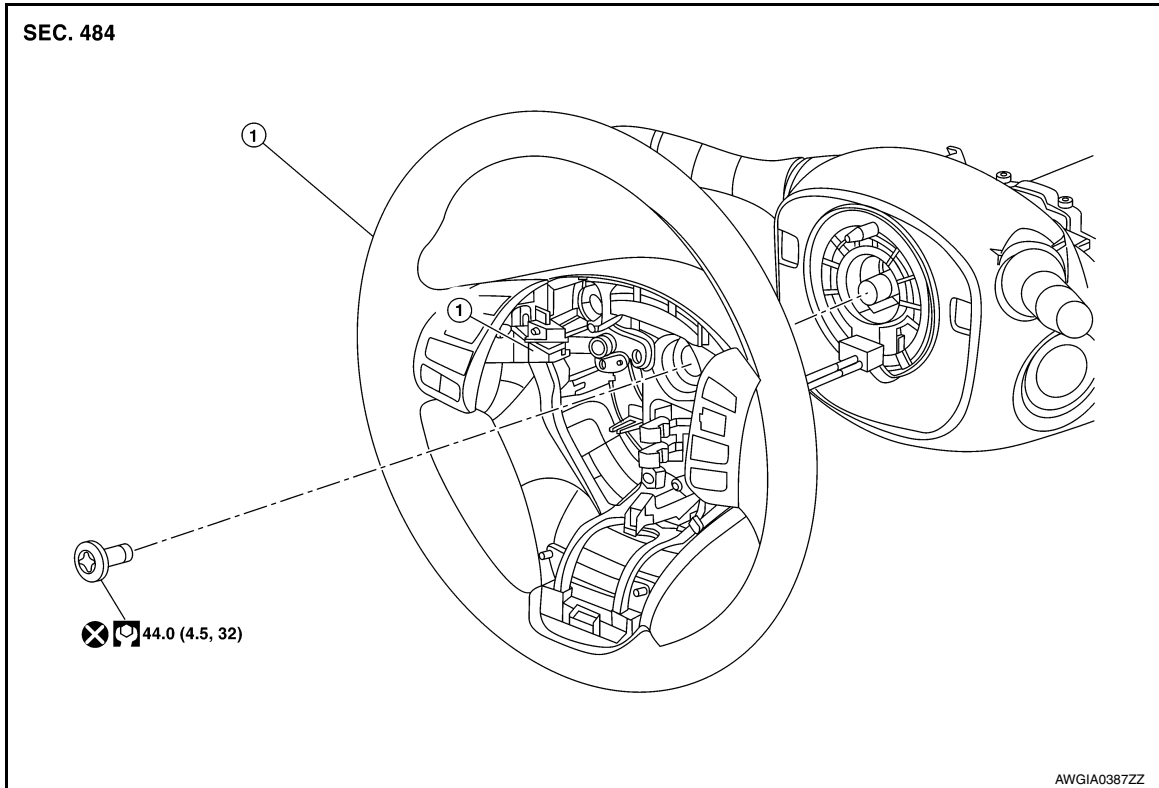
< REMOVAL AND INSTALLATION >

REMOVAL AND INSTALLATION

STEERING WHEEL

Exploded View

INFOID:0000000012426137



1. Steering wheel

Removal and Installation

INFOID:0000000012426138

REMOVAL

1. Set the front wheels and tires in the straight-ahead position.
2. Remove driver air bag module. Refer to [SR-12. "Removal and Installation"](#).
3. Remove steering wheel bolt.
4. Disconnect harness connector for steering wheel switches.
5. Remove steering wheel using suitable tool.

CAUTION:

Place a piece of tape across the spiral cable so it will not be rotated out of position.

NOTE:

Put paint marks on the steering wheel and the column shaft head for supporting accurate positioning during the installation procedure.

6. Inspect steering wheel near the puller holes for damage. Replace as necessary.

INSTALLATION

Installation is in the reverse order of removal.

- Align spiral cable correctly before installing steering wheel. Make sure that the spiral cable is in the neutral position. Refer to [SR-15. "Removal and Installation"](#).
- Adjust the neutral position of the steering angle sensor. Refer to [BRC-72. "Description"](#).
- Tighten steering wheel center bolt to specification.

CAUTION:

The spiral cable may snap due to steering operation if the spiral cable is not installed in the correct position.

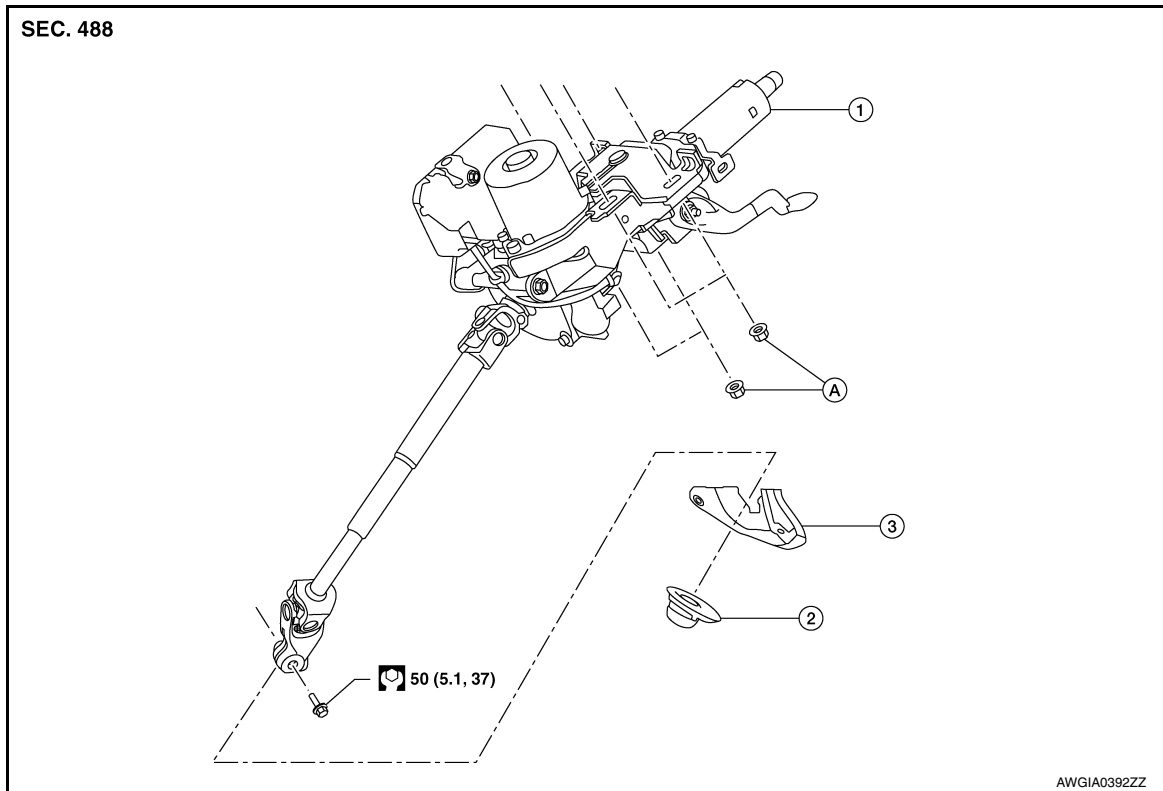
STEERING COLUMN

< REMOVAL AND INSTALLATION >

STEERING COLUMN

Exploded View

INFOID:000000012426139



1. Steering column
 2. Lower cover seal
 3. Column hole cover
- A. Refer to INSTALLATION

Removal and Installation

INFOID:000000012426140

CAUTION:

- Any time the ignition switch has been disconnected, removed or installed, the keys must be re-registered in the BCM.
- Do not cause impact to the steering column during removal and installation.

REMOVAL

1. Set front wheels and tires in the straight-ahead position.
2. Place the tilt to the highest level.
3. Remove instrument lower panel LH. Refer to [IP-23, "Removal and Installation"](#).
4. Remove the knee protector. Refer to [IP-14, "Exploded View"](#).
5. Remove steering wheel. Refer to [ST-11, "Removal and Installation"](#).
6. Remove steering column covers. Refer to [IP-18, "Removal and Installation"](#).
7. Disconnect the harness connector from the combination switch.
8. Disconnect the harness connector from the spiral cable.
9. Disconnect the harness connector from the steering angle sensor.
10. Disconnect the harness connector from the ignition switch.
11. Disconnect the harness connector from the key switch.
12. Disconnect the harness connector from the NATS antenna amp.
13. For models without intelligent key system, perform the following steps to separate key interlock cable from steering lock unit:

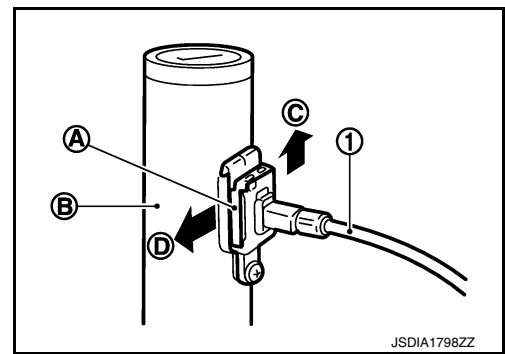
STEERING COLUMN

< REMOVAL AND INSTALLATION >

- a. Lift clip (A) in the direction of the arrow (←C) and remove in the direction of the arrow (←D).

- (1) :Key interlock cable
(B) :Steering lock unit

- b. Disconnect the key interlock cable from the steering lock unit.



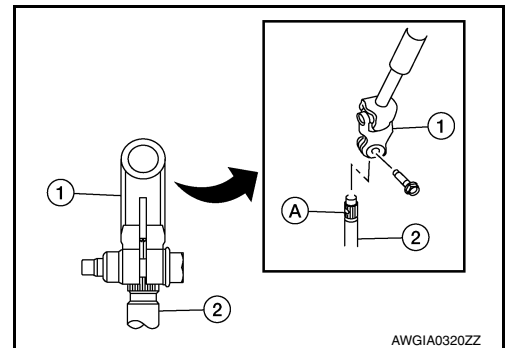
14. Remove column hole cover.
15. Remove the pinch bolt and separate the steering column from the steering gear pinion shaft.
CAUTION:
Do not move the steering gear during removal and installation of the steering column.
16. Remove nuts and remove steering column.
17. If necessary, remove combination switch. Refer to [EXL-125. "Removal and Installation"](#) (WITH INTELLIGENT KEY SYSTEM), [EXL-258. "Removal and Installation"](#) (WITHOUT INTELLIGENT KEY SYSTEM).
18. For models without intelligent key system, if necessary, remove steering lock unit from steering column. Refer to [DLK-401. "Removal and Installation"](#).

INSTALLATION

Installation is in the reverse order of removal.

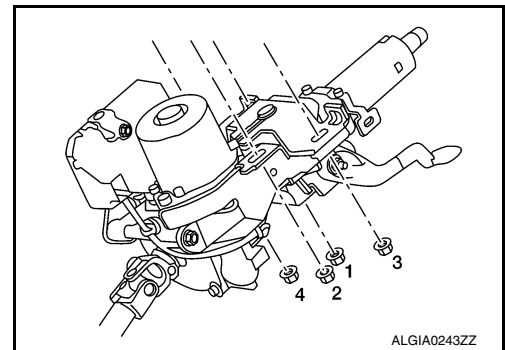
CAUTION:

- When connecting the steering column yoke (1) to the steering gear pinion shaft (2), be sure that groove (A) lines up with the pinch bolt hole.
- Install the pinch bolt in the direction shown and be sure it is securely seated in groove (A), then tighten to specification.



- When installing the steering column, finger-tighten all of the lower bracket nuts, then tighten them to specification in the sequence as shown. Do not apply undue stress to the steering column.
- Replace the steering column if it has been dropped or sustained an impact.

Nuts 1 - 4 : 16.7 N·m (1.7 kg-m, 12 ft-lb)



- After installation, turn steering wheel to make sure it moves smoothly while turning to the left and right stops. Make sure the number of turns is the same from the straight-forward position to left and right stops. Make sure that the steering wheel is in a neutral position when driving straight ahead.
- After installing the steering column, check the tilt mechanism for proper operation.
- Adjust the neutral position of the steering angle sensor. Refer to [BRC-72. "Description"](#).
- For initialization and registration of Intelligent Keys, refer to CONSULT Immobilizer mode and follow the on-screen instructions.

STEERING COLUMN

< REMOVAL AND INSTALLATION >

Inspection

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INSPECTION AFTER REMOVAL

Check each part of steering column for damage or other malfunctions. Replace if there are any abnormal conditions. Refer to [ST-8, "Inspection"](#).

INSPECTION AFTER INSTALLATION

Check the steering wheel play, neutral position steering wheel, steering wheel turning force, and front wheel turning angle. Refer to [ST-6, "Inspection"](#).

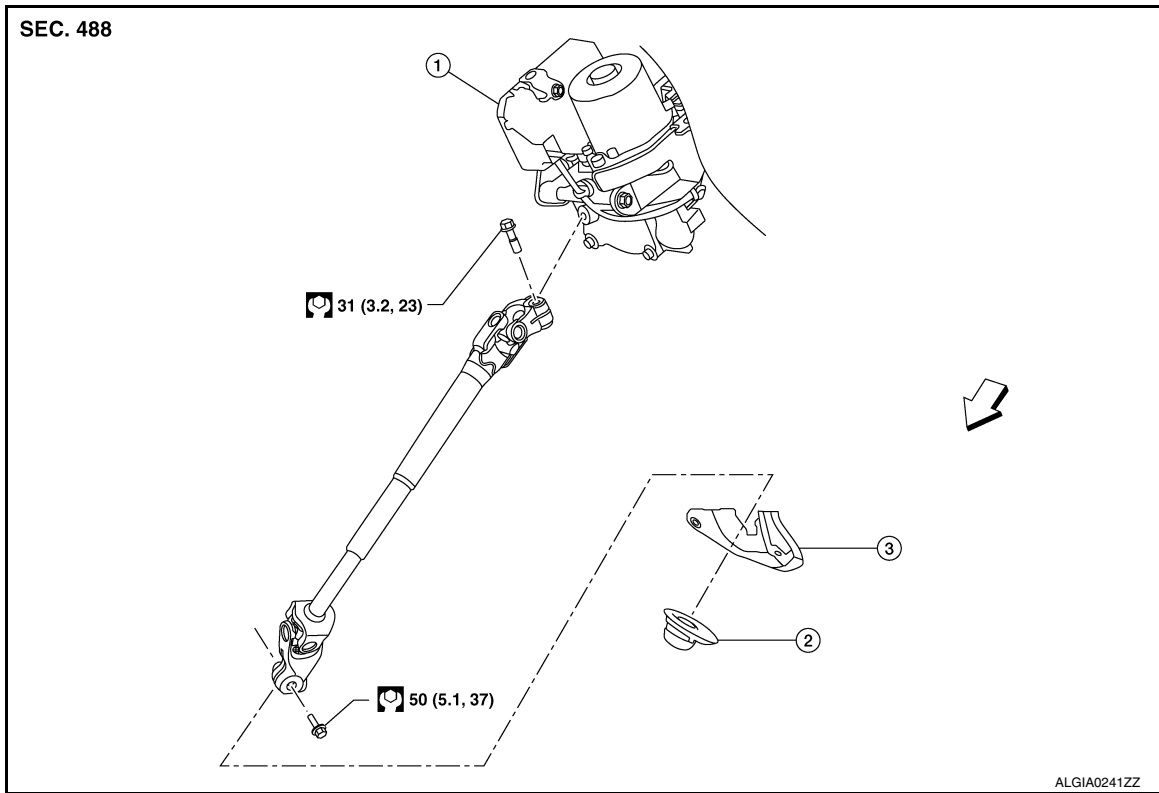
LOWER JOINT

< REMOVAL AND INSTALLATION >

LOWER JOINT

Exploded View

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1. Steering column

2. Lower cover seal

3. Column hole cover

← Front

Removal and Installation

INFOID:000000012590484

CAUTION:

- Do not cause impact to the steering column during lower joint removal and installation.
- Do not move the steering gear during removal and installation of the lower joint.

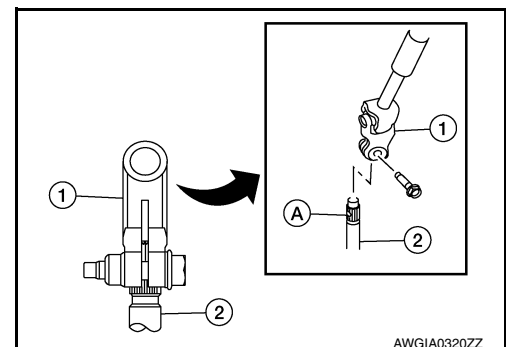
REMOVAL

1. Set the front wheels and tires in straight-ahead position.
- CAUTION:**
Secure the steering wheel with string so that it will not be rotated out of position and damage the spiral cable.
2. Place the tilt to the highest level.
3. Remove the column hole cover.
4. Remove the pinch bolt from the lower joint (1) at the steering gear (2).

A. Steering gear pinion shaft pinch bolt groove

CAUTION:

Do not separate the lower joint from the steering gear at this time.



LOWER JOINT

< REMOVAL AND INSTALLATION >

5. Release the string and rotate the steering wheel 180 degrees.

CAUTION:

Note which direction the steering wheel is rotated in step 5 and rotate in the opposite direction during reassembly to prevent damage to the spiral cable.

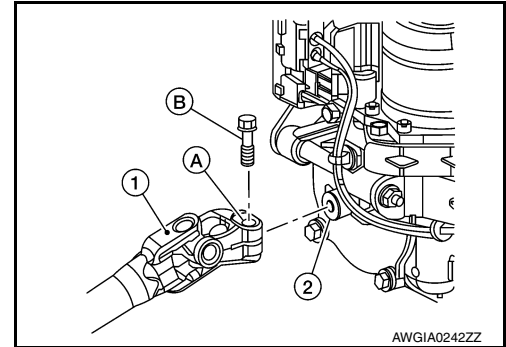
6. Secure the steering wheel with string.

CAUTION:

Secure the steering wheel with string so that it will not be rotated out of position and damage the spiral cable.

7. Remove the pinch bolt (B) and separate the lower joint (1) from the steering column shaft (2).

A. Lower joint upper pinch bolt hole



8. Separate the lower joint from the steering gear.

9. Remove the lower joint from vehicle.

INSTALLATION

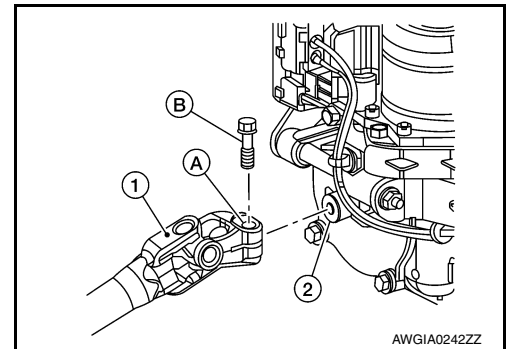
1. Install the lower joint onto steering column shaft.

CAUTION:

• **When connecting the lower joint (1) to the steering column shaft (2), be sure that the pinch bolt hole (A) lines up with the groove on the steering column shaft.**

2. Install the lower joint upper pinch bolt (B) finger tight in the direction shown. Be sure it is securely seated in the lower joint upper pinch bolt hole (A), then tighten to specification. Refer to [ST-15, "Exploded View"](#).

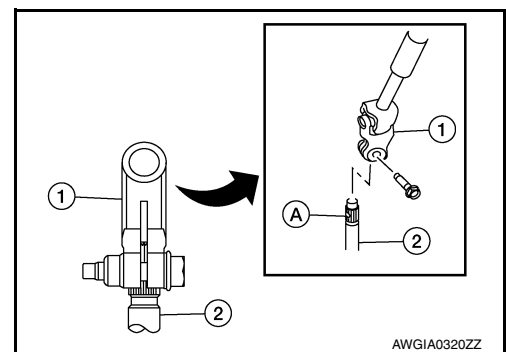
B. Lower joint upper pinch bolt



3. Install the lower joint onto the steering gear pinion shaft.

CAUTION:

• **When connecting the lower joint (1) to the steering gear pinion shaft (2), be sure that the groove (A) lines up with the joint pinch bolt hole.**



4. Remove the string securing the steering wheel and rotate the steering wheel 180 degrees.

CAUTION:

Rotate the steering wheel 180 degrees in the opposite direction from which it was rotated during removal. This is necessary to prevent damage to the spiral cable.

5. Install the pinch bolt finger tight in the direction shown. Be sure it is securely seated in the lower joint lower pinch bolt hole, then tighten to specification. Refer to [ST-15, "Exploded View"](#).

Install remaining components in the reverse order of removal.

LOWER JOINT

< REMOVAL AND INSTALLATION >

- After installation, turn the steering wheel to make sure it moves smoothly while turning to the left and right stops. Make sure the number of turns is the same from the straight-forward position to left and right stops. Make sure that the steering wheel is in a neutral position when driving straight ahead.
- Adjust the neutral position of the steering angle sensor. Refer to [BRC-72. "Description"](#).

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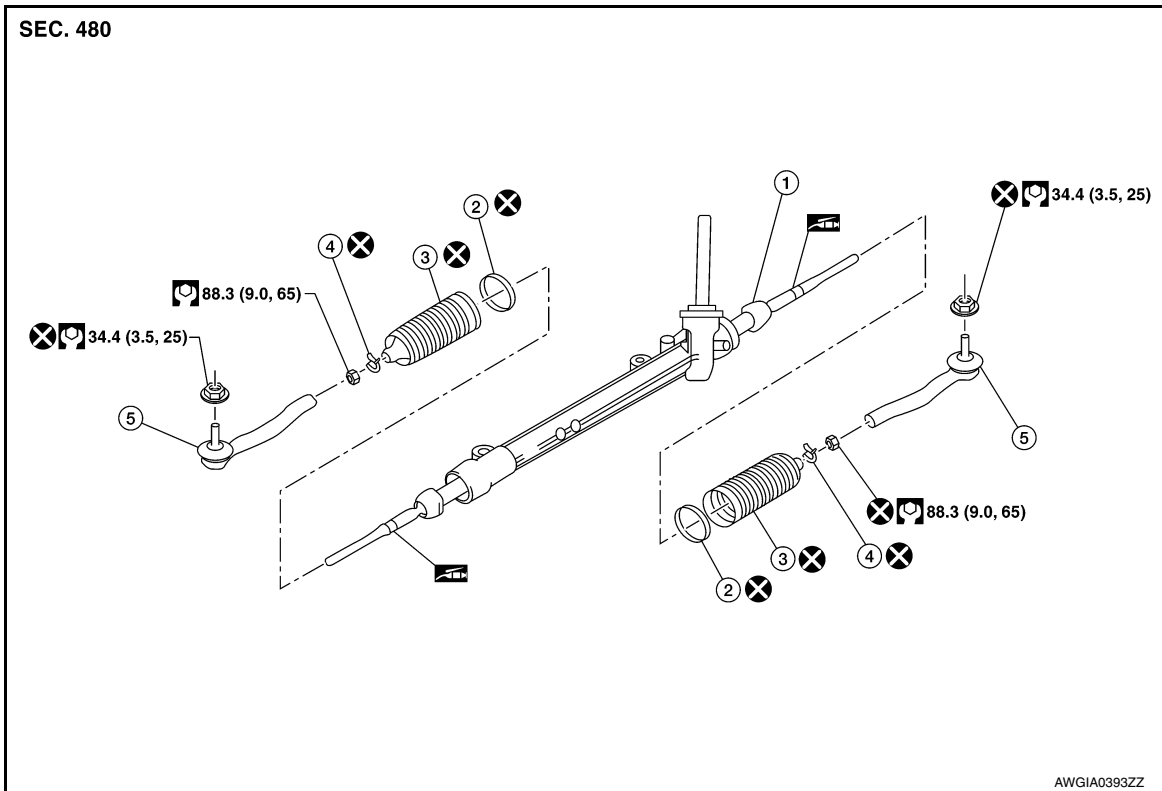
STEERING GEAR AND LINKAGE

< REMOVAL AND INSTALLATION >

STEERING GEAR AND LINKAGE

Exploded View

INFOID:000000012777027



- 1. Steering gear
- 2. Large boot clamp
- 3. Boot
- 4. Small boot clamp
- 5. Outer socket

Removal and Installation - Outer socket

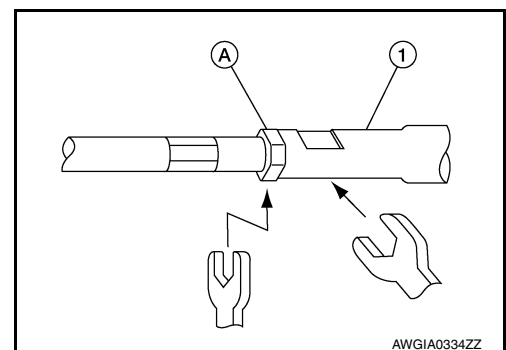
INFOID:000000012777028

REMOVAL

1. Remove front wheel and tire using a power tool.
2. Loosen inner socket lock nut (A).

CAUTION:

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



3. Loosen outer socket nut and separate outer socket from steering knuckle using suitable tool.

CAUTION:

Leave the outer socket nut half threaded on the outer socket to prevent damage to threads and to prevent the suitable tool from coming off suddenly.

4. Remove outer socket nut and outer socket.

INSTALLATION

STEERING GEAR AND LINKAGE

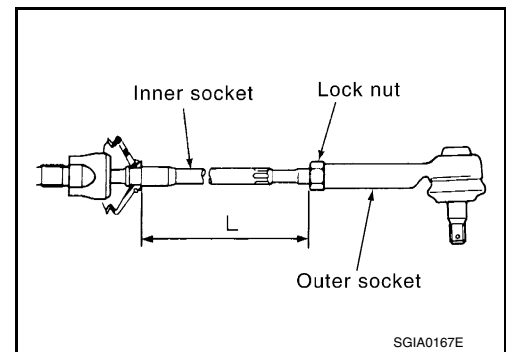
< REMOVAL AND INSTALLATION >

1. Install outer socket to inner socket.
2. Adjust inner socket to standard length (L), and then tighten inner socket lock nut to specified torque. Refer to [ST-18, "Exploded View"](#). Check length of inner socket (L) again after tightening inner socket lock nut. Make sure that the length is to specification.

Inner socket length (L) : Refer to [ST-26, "Steering Gear"](#).

CAUTION:

- To prevent damage, hold outer socket across flats using suitable tool while tightening inner socket lock nut.
- Adjust toe-in after this procedure. The length achieved after toe-in adjustment is not necessarily the above value.
- Inspect to make sure no boot deformation has occurred during toe-in adjustment. Adjust boot as necessary.



3. Install outer socket to steering knuckle.
4. Install outer socket nut to outer socket. Refer to [ST-18, "Exploded View"](#).
5. Install front wheel and tire. Refer to [MA-33, "WHEELS : Adjustment"](#).
6. Check wheel alignment. Refer to [FSU-27, "Wheel Alignment \(Unladen*1\)"](#).
7. Adjust the neutral position of the steering angle sensor. Refer to [BRC-72, "Description"](#).

Removal and Installation - Boot

INFOID:000000012777029

REMOVAL

1. Remove outer socket. Refer to [ST-18, "Removal and Installation - Outer socket"](#).
2. Remove inner socket lock nut.
3. Remove small boot clamp and large boot clamp.

CAUTION:

Do not reuse boot clamps.

4. Remove boot.

INSTALLATION

1. Install large end of boot onto steering gear housing.
2. Apply silicone grease between the inner socket and small end of boot. Refer to [ST-18, "Exploded View"](#).
3. Install small end of boot to inner socket boot mounting groove.

CAUTION:

To prevent boot deformation or damage during toe-in adjustment, apply silicone grease between the inner socket and small end of boot.

STEERING GEAR AND LINKAGE

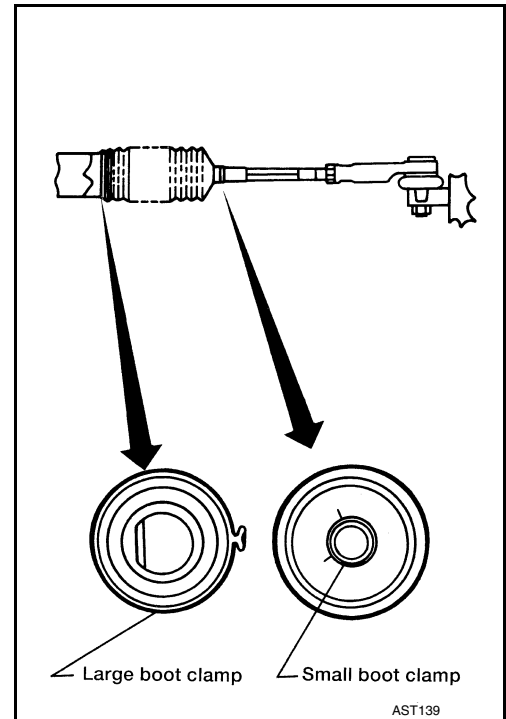
< REMOVAL AND INSTALLATION >

4. Install small boot clamp.
5. Install large boot clamp using Tool.

CAUTION:

Do not reuse boot clamps.

Tool number : KV40107300 (J-51751)



6. Partially thread the inner socket lock nut on the inner socket.
7. Install the outer socket. Refer to [ST-18. "Removal and Installation - Outer socket"](#).
8. Check wheel alignment. Refer to [FSU-27. "Wheel Alignment \(Unladen*¹\)"](#).
9. Adjust the neutral position of the steering angle sensor. Refer to [BRC-72. "Description"](#).

STEERING GEAR AND LINKAGE

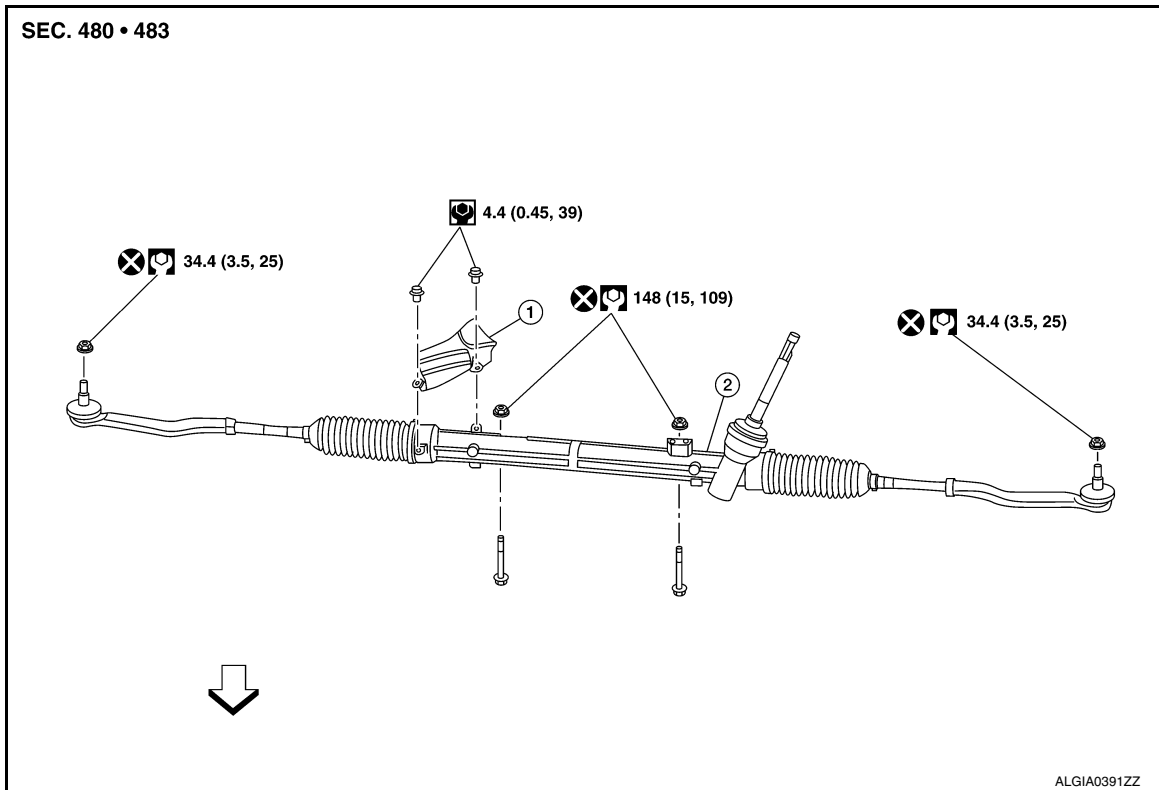
< UNIT REMOVAL AND INSTALLATION >

UNIT REMOVAL AND INSTALLATION

STEERING GEAR AND LINKAGE

Exploded View

INFOID:0000000012426142



1. Heat insulator

2. Steering gear

← Front

Removal and Installation

INFOID:0000000012426143

REMOVAL

1. Set the front wheels and tires to the straight-ahead position.
2. Remove the column hole cover. Refer to [ST-12, "Exploded View"](#).
3. Remove the pinch bolt and separate the steering column joint from the steering gear pinion shaft. Refer to [ST-12, "Exploded View"](#).
CAUTION:
With the steering linkage disconnected, the spiral cable may snap by turning the steering wheel beyond the limited number of turns. Secure the steering wheel during removal of the steering gear.
4. Remove the lower cover seal. Refer to [ST-12, "Exploded View"](#).
5. Remove front wheels and tires using a power tool.
6. Loosen the outer socket nuts and separate outer sockets from the steering knuckles using suitable tool.
CAUTION:
Leave the outer socket nuts half threaded on the outer sockets to prevent damage to threads and to prevent suitable tool from coming off suddenly.
7. Remove outer socket nuts and separate the outer sockets from the steering knuckles.
8. Remove the nuts and separate the stabilizer connecting rods from the stabilizer bar. Refer to [FSU-15, "Exploded View"](#).
9. Disconnect the harness connector for oxygen sensor 2. Refer to [EX-5, "Exploded View"](#)
10. Remove the front exhaust tube. Refer to [EX-5, "Exploded View"](#).

STEERING GEAR AND LINKAGE

< UNIT REMOVAL AND INSTALLATION >

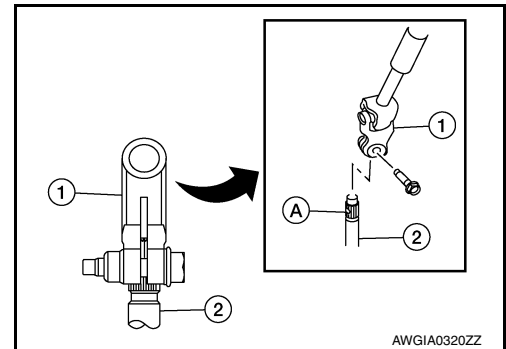
11. Remove the center exhaust tube. Refer to [EX-5, "Exploded View"](#).
12. Remove the lower torque rod. Refer to [EM-86, "Exploded View"](#).
13. Remove front suspension member stay and support the front suspension using a suitable jack. Refer to [FSU-21, "Exploded View"](#).
14. Remove bolts and nuts, then remove the steering gear.
CAUTION:
Do not reuse steering gear nuts.
15. Remove the steering gear heat insulator (if necessary).

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Do not reuse steering gear nuts.
- With the steering linkage disconnected, the spiral cable may snap by turning the steering wheel beyond the limited number of turns. Secure the steering wheel during removal and installation of the steering gear.
- When connecting the lower joint yoke (1) to the steering gear pinion shaft (2), be sure that groove (A) lines up with the pinch bolt hole.
- Install the pinch bolt finger tight as shown, then torque to specification.
- Inspect to make sure no boot deformation has occurred during toe-in adjustment. Adjust boot as necessary.



- Check wheel alignment. Refer to [FSU-27, "Wheel Alignment \(Unladen*1\)"](#).
- Adjust the neutral position of the steering angle sensor. Refer to [BRC-72, "Description"](#).

Inspection

INFOID:000000012426144

INSPECTION AFTER INSTALLATION

- Check the steering wheel to make sure it moves smoothly while turning to the left and right stops. Make sure the number of turns is the same from the straight-forward position to left and right stops. Make sure that the steering wheel is in a neutral position when driving straight ahead.
- Check the steering wheel play, steering wheel neutral position, steering wheel turning force, and front wheel turning angle. Refer to [ST-6, "Inspection"](#).

STEERING GEAR AND LINKAGE

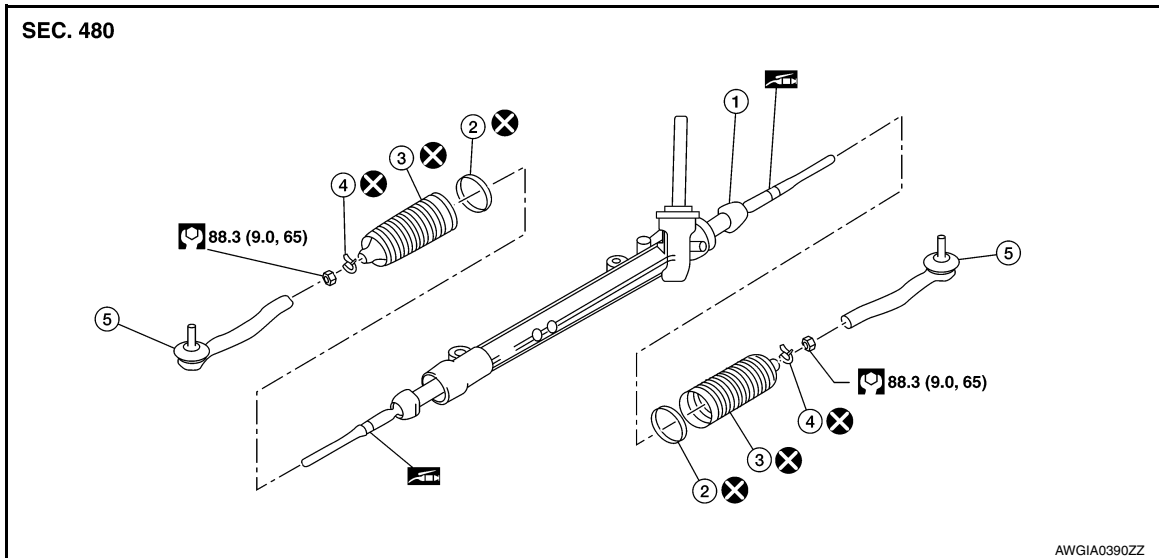
< UNIT DISASSEMBLY AND ASSEMBLY >

UNIT DISASSEMBLY AND ASSEMBLY

STEERING GEAR AND LINKAGE

Exploded View

INFOID:0000000012426145



- | | | |
|---------------------|---------------------|---------|
| 1. Steering gear | 2. Large boot clamp | 3. Boot |
| 4. Small boot clamp | 5. Outer socket | |

Disassembly and Assembly

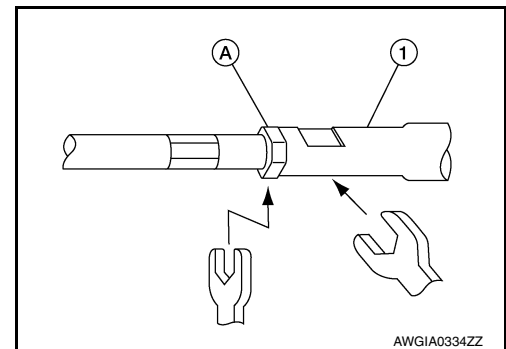
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DISASSEMBLY

1. Remove inner socket lock nut (A) and outer socket (1).

CAUTION:

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



2. Remove boot clamps and boot.

ASSEMBLY

1. Install large end of boot to steering gear housing.

CAUTION:

Do not reuse boot.

2. Apply silicone grease between the inner socket and small end of boot. Refer to [ST-18, "Exploded View"](#).
3. Install small end of boot to inner socket boot mounting groove.

CAUTION:

To prevent boot deformation or damage during toe-in adjustment, apply silicone grease between inner socket and small end of boot.

STEERING GEAR AND LINKAGE

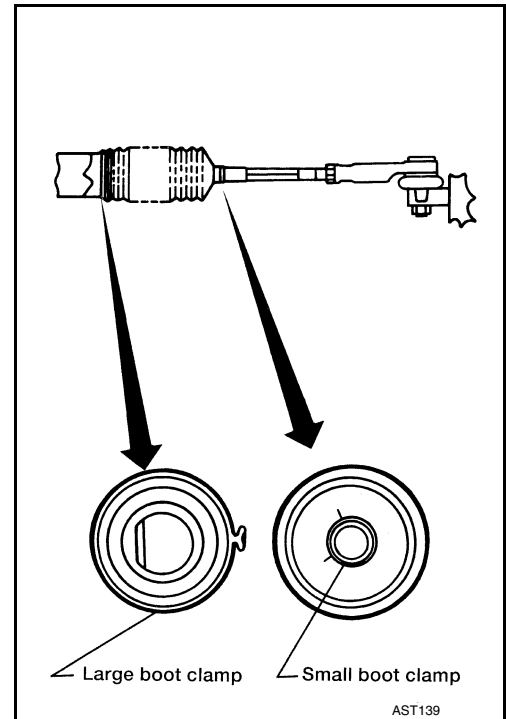
< UNIT DISASSEMBLY AND ASSEMBLY >

4. Install small boot clamp.
5. Install large boot clamp using Tool.

CAUTION:

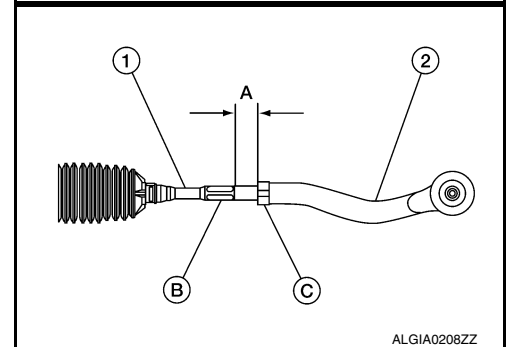
Do not reuse boot clamps.

Tool number : KV40107300 (J-51751)



6. Position the inner socket lock nut (C) on the inner socket (1) at the specified distance (A) from the inner socket flat (B). Install the outer socket (2) to the inner socket (1).

Distance (A) from inner socket flat (B) to inner socket locknut (C) : Refer to [ST-26, "Steering Gear"](#).



CAUTION:

- Adjust toe-in after this procedure. Length achieved after toe-in adjustment is not necessarily the value above.
- To prevent damage, hold outer socket across flats using suitable tool while tightening inner socket lock nut.
- Inspect to make sure no boot deformation has occurred during toe-in adjustment. Adjust boot as necessary.

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Steering Wheel

INFOID:0000000012426147

Unit: mm (in)

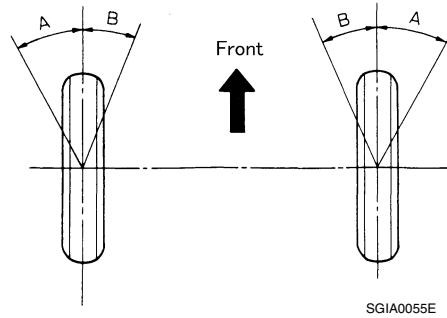
Item	Standard
Steering wheel axial end play	0 (0)
Steering wheel play	0 - 35 (0 - 1.38)
Steering wheel turning force	34 (3.5, 7.64) or less

Steering Angle

INFOID:0000000012426148

USA Production

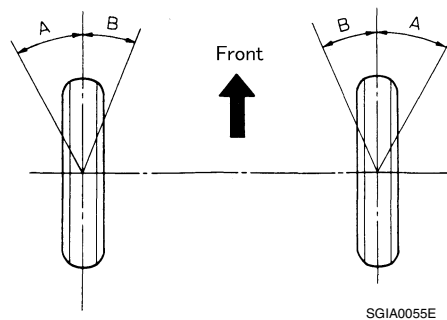
Unit: Degree minute (Decimal degree)



Inner wheel angle (A)	Minimum	33°25' (33.42°)
	Nominal	36°25' (36.42°)
	Maximum	37°25' (37.42°)
Outer wheel angle (B)	Nominal	30°45' (30.75°)

Korea Production

Unit: Degree minute (Decimal degree)



Inner wheel angle (A)	Minimum	34°00' (34.00°)
	Nominal	37°00' (37.00°)
	Maximum	38°00' (38.00°)
Outer wheel angle (B)	Nominal	31°00' (31.00°)

Steering Column

INFOID:0000000012426149

STEERING COLUMN LENGTH

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

Unit: mm (in)

Steering column length (with steering wheel installed)	Length (L)	577.2 (27.7)
	Telescopic maximum	602.2 (23.7)
	Telescopic minimum	552.2 (27.7)

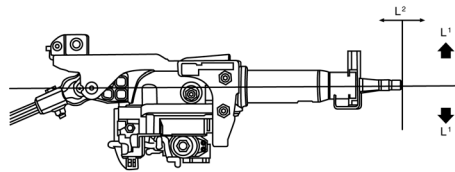
STEERING COLUMN ROTATING TORQUE

Unit: N·m (kg·m, in·lb)

Rotating torque	1.3 - 1.9 (0.13 - 0.19, 12 - 17)
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TILT MECHANISM OPERATING RANGE

Unit: mm (in)



ALGIA0106ZZ

Tilt operating range (L ¹)	44 (1.7)
Telescopic operating range (L ²)	50 (2.0)

Steering Gear

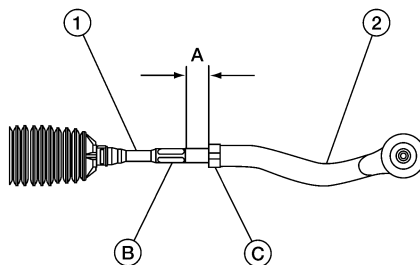
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STEERING OUTER SOCKET AND INNER SOCKET

Outer socket	Swinging torque	0.3 - 2.9 N·m (0.03 - 0.30 kg·m, 3 - 26 in·lb)
	Rotating torque	0.3 - 2.9 N·m (0.03 - 0.30 kg·m, 3 - 26 in·lb)
	Axial end play	0.4 mm (0.02 in) or less
Inner socket	Swinging torque	7.8 - 16.7 N·m (0.80 - 1.7 kg·m, 69 - 148 in·lb)
	Axial end play	0.4 mm (0.02 in) or less

INNER AND OUTER SOCKET LENGTH

Distance (A) from inner socket flat (B) to inner socket locknut (C)	A	17 mm (0.67 in)
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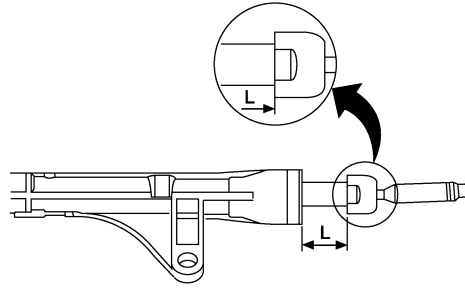


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RACK STROKE

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)



AWGIA0003GB

Rack stroke in neutral position (L)	74 mm (2.9 in)
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RACK SLIDING FORCE

Rack sliding force	105 - 165 N-f (10.7 - 16.8 kg-f, 23.6 - 37.1 lb-f)
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