

SECTION **ST**  
STEERING SYSTEM

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# NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

## SYMPTOM DIAGNOSIS

### NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

#### NVH Troubleshooting Chart

INFOID:000000001182243

#### 2WD MODELS

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

Symptom		Steering	Possible cause and SUSPECTED PARTS											Reference				
			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	AXLE and SUSPENSION		TIRES	ROAD WHEEL	DRIVE SHAFT	BRAKES
Noise	Steering	Noise	x	x	x	x			x	x	x	x	x	x	x	x	x	ST-16, "Inspection"
		Shake					x	x	x				x	x	x	x	x	ST-16, "Inspection"
		Vibration					x	x	x	x	x		x	x				ST-16, "Inspection"
		Shimmy					x		x			x	x	x				ST-7, "Inspection"
		Judder						x	x			x	x	x	x			ST-7, "Inspection"
																	—	
																		ST-13, "Exploded View"
																		ST-11, "Inspection"
																		ST-10, "Exploded View"
																		ST-13, "Exploded View"
																		NVH in FAX, RAX, FSU, RSU section
																		NVH in WT section
																		NVH in WT section
																		NVH in FAX section
																		NVH in BR section

x: Applicable

#### 4WD MODELS

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

# NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

## < SYMPTOM DIAGNOSIS >

Symptom	Steering	Possible cause and SUSPECTED PARTS																Reference								
		Noise	Shake	Vibration	Shimmy	Judder	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		DIFFERENTIAL	AXLE and SUSPENSION	TIRES	ROAD WHEEL	DRIVE SHAFT	BRAKES		
		x	x	x	x																					ST-16, "Inspection"
																										ST-16, "Inspection"
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																										ST-13, "Exploded View"
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																										ST-13, "Exploded View"
																										NVH in DLN section
																										NVH in DLN section
																										NVH in FAX, RAX, FSU, RSU section
																										NVH in WT section
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																										NVH in BR section

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# PRECAUTIONS

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## PRECAUTION

### PRECAUTIONS

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

INFOID:000000001182244

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 AIRBAG" 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 AIRBAG".
- 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.

#### Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:000000001182245

#### **NOTE:**

- This Procedure is applied only to models with Intelligent Key system and NATS (NISSAN ANTI-THEFT SYSTEM).
- Remove and install all control units after disconnecting both battery cables with the ignition knob in the "LOCK" position.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NATS, an electrically controlled steering lock mechanism is adopted on the key cylinder.

For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.

If steering wheel rotation is required when battery power is interrupted, follow the 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. Use the Intelligent Key or mechanical key to turn the ignition switch to the "ACC" position. At this time, the steering lock will be released.
3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.
5. When the repair work is completed, return the ignition switch to the "LOCK" position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
6. Perform a self-diagnosis check of all control units using CONSULT-III.

#### Service Notice or Precautions for Steering System

INFOID:000000001182246

#### **CAUTION:**

- In case of removing steering gear assembly, 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.

## PRECAUTIONS

### < PRECAUTION >

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- 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.
- Never reuse non-reusable parts.
- Before assembling, apply the specified grease to the directed parts.

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# PREPARATION

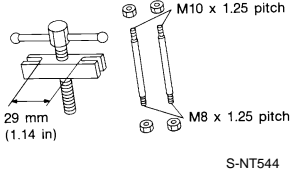
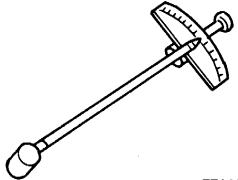
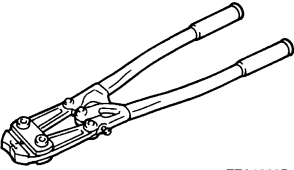
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## PREPARATION

### PREPARATION

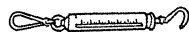
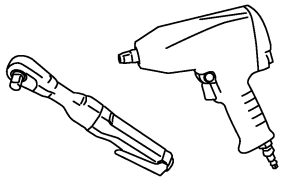
#### Special Service Tools

INFOID:000000001182247

Tool number Tool name	Description
ST27180001 Steering wheel puller  <p style="text-align: center;">S-NT544</p>	Removing steering wheel
ST3127S000 Preload gauge  <p style="text-align: center;">ZZA0806D</p>	Inspecting steering column assembly rotating torque, pinion rotating torque and ball joint rotating torque
KV40107300 Boot Band crimping tool  <p style="text-align: center;">ZZA1229D</p>	Installing boot bands (large diameter)

#### Commercial Service Tools

INFOID:000000001182248

Tool number Tool name	Description
Spring gauge  <p style="text-align: center;">LST025</p>	Inspecting steering wheel turning force and power steering gear linkage
Power tool  <p style="text-align: center;">PBIC0190E</p>	Loosening bolts and nuts

# STEERING WHEEL

< ON-VEHICLE MAINTENANCE >

## ON-VEHICLE MAINTENANCE

### STEERING WHEEL

#### Inspection

INFOID:000000001182249

#### STEERING WHEEL AXIAL END PLAY

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

##### Standard

**Steering wheel axial end play** : Refer to [ST-18, "Steering Wheel Axial End Play and Play"](#).

3. Check the following items when steering wheel axial end play is out of the standard.
  - Check the steering column assembly mounting condition. Refer to [ST-10, "Exploded View"](#).
  - Check steering gear assembly mounting condition for looseness. Refer to [ST-13, "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.

##### Standard

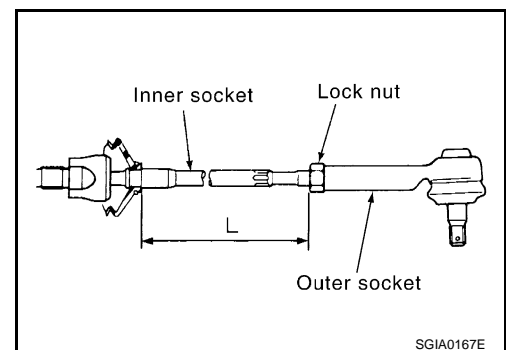
**Steering wheel play on the outer circumference** : Refer to [ST-18, "Steering Wheel Axial End Play and Play"](#).

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

#### NEUTRAL POSITION STEERING WHEEL

1. Make sure that steering gear assembly, steering column assembly and steering wheel are installed in the correct position.
2. Perform neutral position inspection after wheel alignment. Refer to [FSU-7, "Wheel Alignment 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.
5. Maximum allowable length "L" after adjusting wheel alignment.

**Inner socket length "L"** : 106 mm (4.17 in)



#### 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-4, "Tire"](#).

# STEERING WHEEL

## < ON-VEHICLE MAINTENANCE >

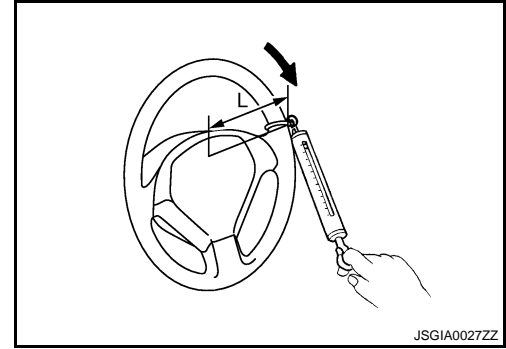
3. Start engine.
4. Check steering wheel turning force when steering wheel has been turned 540° from neutral position.

### Standard

**Steering wheel turning force** : Refer to [ST-18, "Steering Wheel Turning Force"](#).

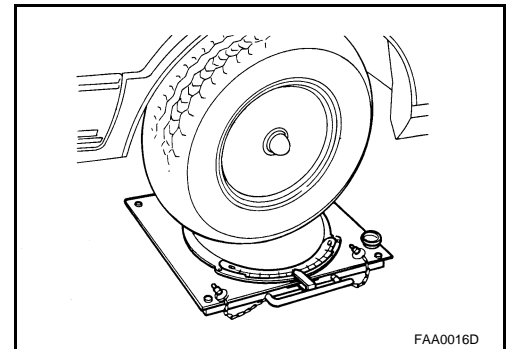
### NOTE:

Multiply the distance (L) from the hook of spring balance to the center of steering wheel by the measurement value with a spring balance.



## FRONT WHEEL TURNING ANGLE

1. Check front wheel turning angle after toe-in inspection. Refer to [FSU-7, "Wheel Alignment Inspection"](#).
2. Place front wheels on turning radius gauges and rear wheels on stands, so that vehicle can be level.
3. Check the maximum inner and outer wheel turning angles for LH and RH road wheels.

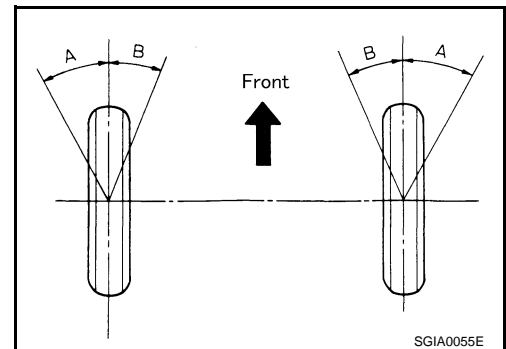


4. With the engine at idle, turn steering wheel from full left stop to full right stop and measure the turning angles.

### Standard

**Inner wheel (Angle: A)** : Refer to [ST-18, "Steering Angle"](#).

**Outer wheel (Angle: B)** : Refer to [ST-18, "Steering Angle"](#).



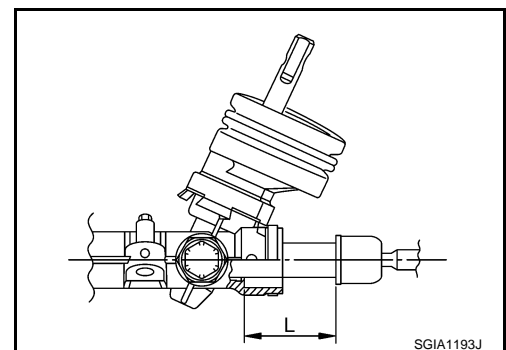
5. Check the following items when turning angle is out of the standard.

- a. Check rack stroke.

### Standard

**Rack stroke "L"** : Refer to [ST-19, "Rack Stroke"](#).

- b. Disassemble steering gear assembly to check the cause that rack stroke is outside of the standard.
  - Steering angles are not adjustable. Check steering gear assembly, steering column assembly and front suspension components for wear or damage if any of the turning angles are different from the specified value. Replace any of them, if any non-standard condition exists.





# STEERING WHEEL

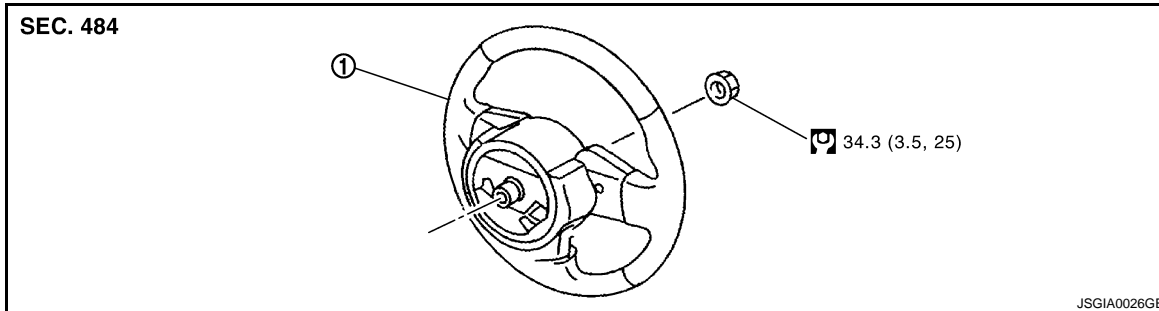
< ON-VEHICLE REPAIR >

## ON-VEHICLE REPAIR

### STEERING WHEEL

#### Exploded View

INFOID:000000001182250



1. Steering wheel

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

#### Removal and Installation

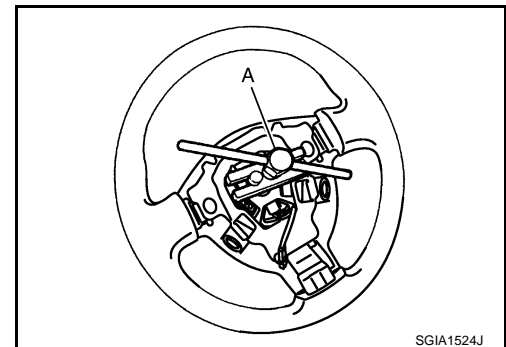
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##### REMOVAL

###### NOTE:

When reconnecting spiral cable, fix cable with a tape so that fixing case and rotating part keep aligned. This will omit neutral position alignment procedure during spiral cable installation.

1. Set vehicle to the straight-ahead position.
2. Remove driver air bag module. Refer to [SR-4, "Exploded View"](#).
3. Remove steering wheel lock nut after steering is locked.
4. Remove steering wheel with the steering wheel puller (A) (SST: ST27180001).



##### INSTALLATION

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

###### CAUTION:

**Never twist spiral cable excessively after it becomes tight. (twisting may cause the cable to be torn off.)**

###### NOTE:

Check the spiral cable neutral position after replacing or rotating spiral cable. Refer to [SR-6, "Removal and Installation"](#).

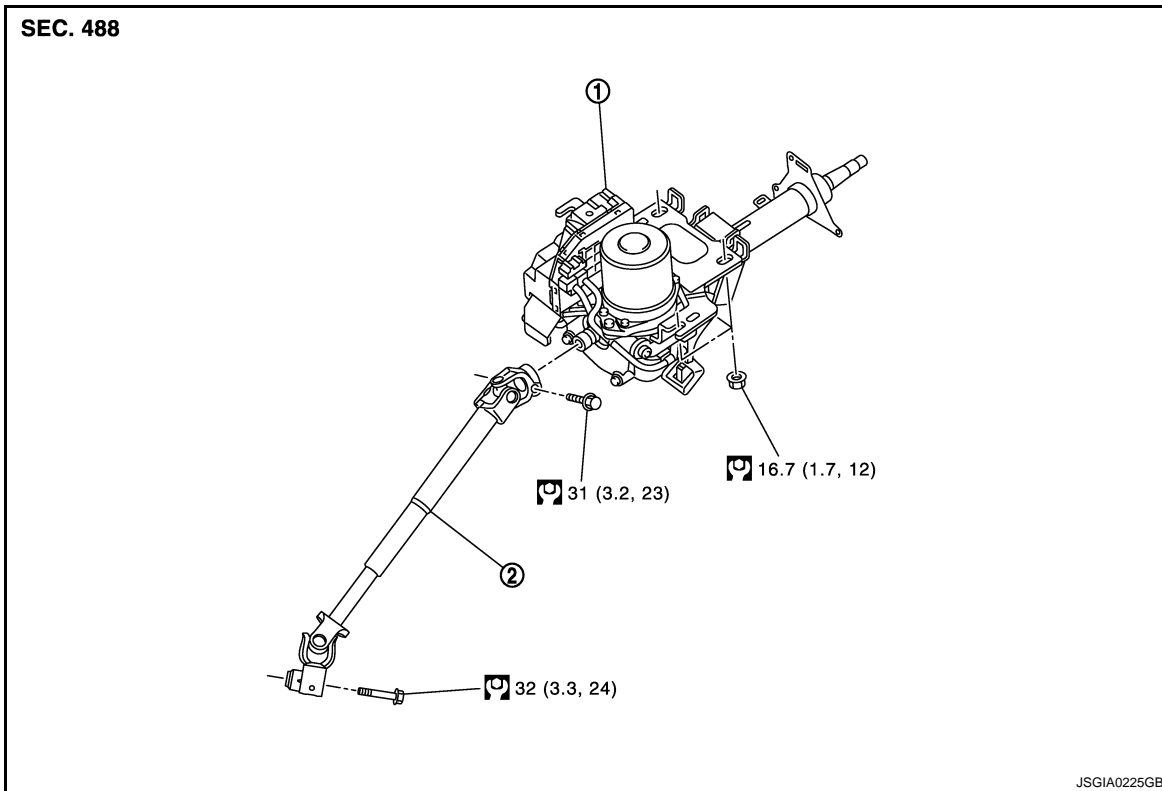
# STEERING COLUMN

< ON-VEHICLE REPAIR >

## STEERING COLUMN

### Exploded View

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1. Steering column assembly
2. Intermediate shaft

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

## Removal and Installation

INFOID:000000001182253

### REMOVAL

#### CAUTION:

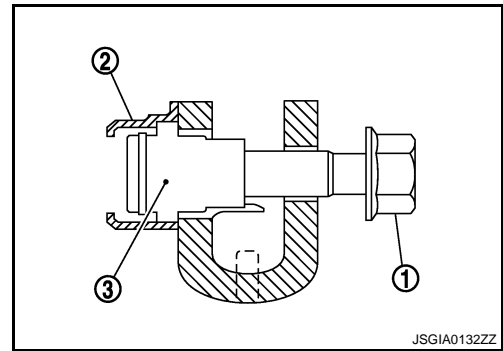
- Never impact on the axis when removing steering column assembly.
- Place a matching mark on both intermediate shaft and steering column assembly before removing intermediate shaft.
- Never repeat static steering. (Motor and EPS control unit is heated.)
- Be careful when removing steering column assembly from the vehicle because it is heavy.
- Keep steering column assembly away from magnetic sources.
- Never disassemble steering column assembly. It is not separable.

1. Set vehicle to the straight-ahead position.
2. Place the tilt to the highest level.
3. Remove steering wheel. Refer to [ST-9, "Exploded View"](#).
4. Remove steering column cover. Refer to [IP-11, "Exploded View"](#).
5. Remove spiral cable. Refer to [SR-6, "Exploded View"](#).
6. Remove combination switch. Refer to [BCS-66, "Exploded View"](#).
7. Remove instrument driver lower panel. Refer to [IP-11, "Exploded View"](#).
8. Remove combination meter. Refer to [MWI-78, "Exploded View"](#).
9. Disconnect each switch harness connectors installed to steering column assembly.
10. Remove intermediate shaft to steering column assembly with the following procedure.

# STEERING COLUMN

## < ON-VEHICLE REPAIR >

- a. Remove fixing bolt (1).
- b. Remove pressed cam nut holder (2) from intermediate shaft yoke.
- c. Remove cam nut (3).
11. Remove steering column assembly.



## INSTALLATION

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

### CAUTION:

- Never impact on the axis when removing steering column assembly.
- Place a matching mark on both intermediate shaft and steering column assembly before removing intermediate shaft.
- Never repeat static steering. (Motor and EPS control unit is heated.)
- Be careful when removing steering column assembly from the vehicle because it is heavy.
- Keep steering column assembly away from magnetic sources.
- Never disassemble steering column assembly. It is not separable.

Be careful of the following points when installing the steering column assembly.

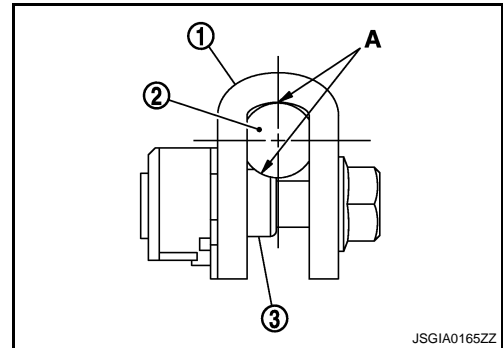
### CAUTION:

**Never reuse cam nut and fixing bolt.**

1. Check that all parts of the cam nut holder are removed.
2. Fit yoke to pinion shaft, ensuring no clearance between yoke and pinion shaft.
3. Insert cam nut fully.
4. Whilst holding cam nut in position by hand, insert bolt and tighten to specified torque. Take care to hold cam nut in correct axial position during this process.
5. After intermediate shaft fitted, make sure there is no gap (A) between the yoke (1), pinion shaft (2) and cam nut (3).

### CAUTION:

**Adjust neutral position of steering angle sensor. Refer to [BRC-77, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).**



## Inspection

INFOID:000000001182254

## INSPECTION AFTER REMOVAL

- Check each part of steering column assembly for damage or other malfunctions. Replace if there are.
- Measure steering column assembly rotating torque using a preload gauge (SST: ST3127S000). Replace steering column assembly if outside the standard.

**Standard**

**Rotating torque**

**: Refer to [ST-18, "Steering Column Operating Range"](#).**

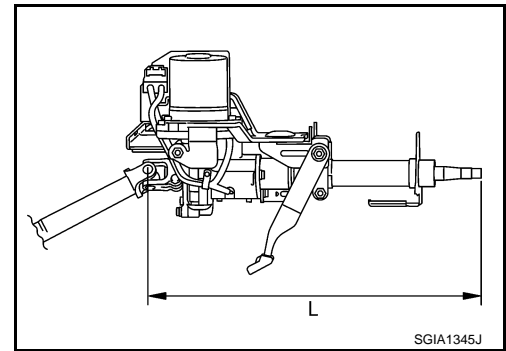
## STEERING COLUMN

### < ON-VEHICLE REPAIR >

- Measure the length “L” as shown, if vehicle has been involved in a minor collision. Replace steering column assembly (with motor, reduction gear, sensor) if outside the standard.

#### Standard

Steering column length “L” : Refer to [ST-18, "Steering Column Operating Range"](#).



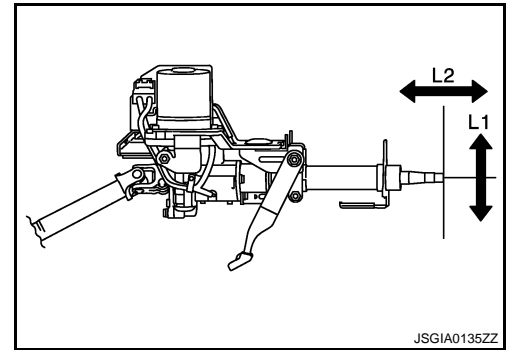
### INSPECTION AFTER INSTALLATION

- Check each part of steering column assembly for damage or other malfunctions. Replace if there are.
- Check the steering wheel play, neutral position steering wheel, steering wheel turning force, and front wheel turning angle. Refer to [ST-7, "Inspection"](#).
- Check tilt and telescopic mechanism operating range “L<sup>1</sup>”, “L<sup>2</sup>” as shown in the figure.

#### Standard

Tilt operating range “L<sup>1</sup>” : Refer to [ST-18, "Steering Column Operating Range"](#).

Telescopic operating range “L<sup>2</sup>” : Refer to [ST-18, "Steering Column Operating Range"](#).



# STEERING GEAR AND LINKAGE

< ON-VEHICLE REPAIR >

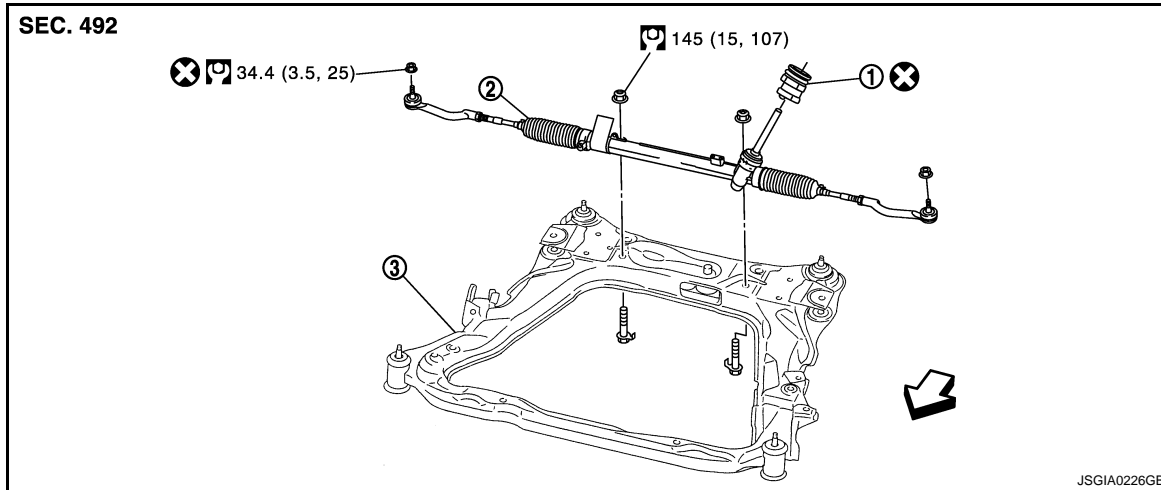
## STEERING GEAR AND LINKAGE

Exploded View

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### REMOVAL AND INSTALLATION

LHD models

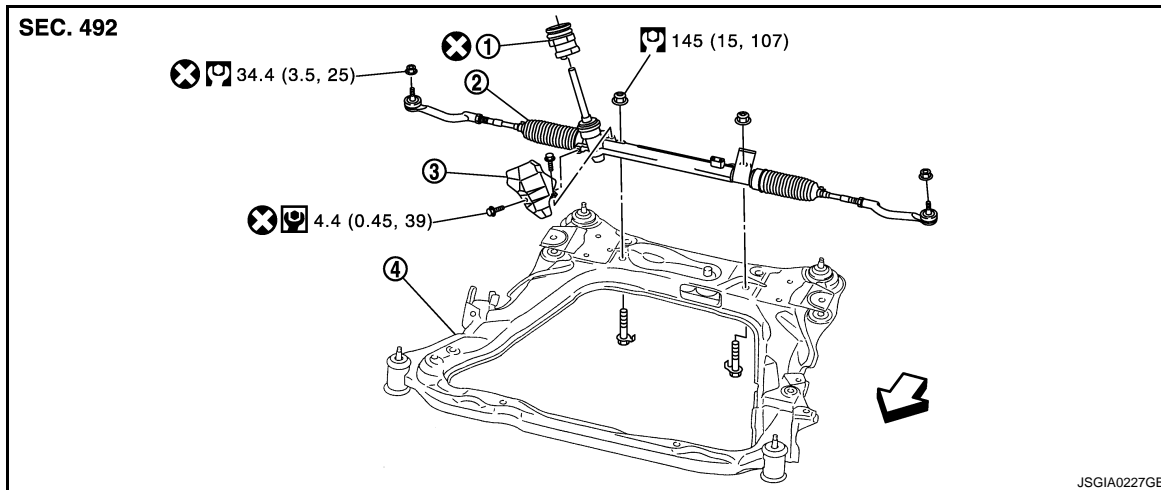


1. Steering column lower seal
2. Steering gear assembly
3. Front suspension member

←: Vehicle front

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

RHD models



1. Steering column lower seal
2. Steering gear assembly
3. Heat insulator
4. Front suspension member

←: Vehicle front

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

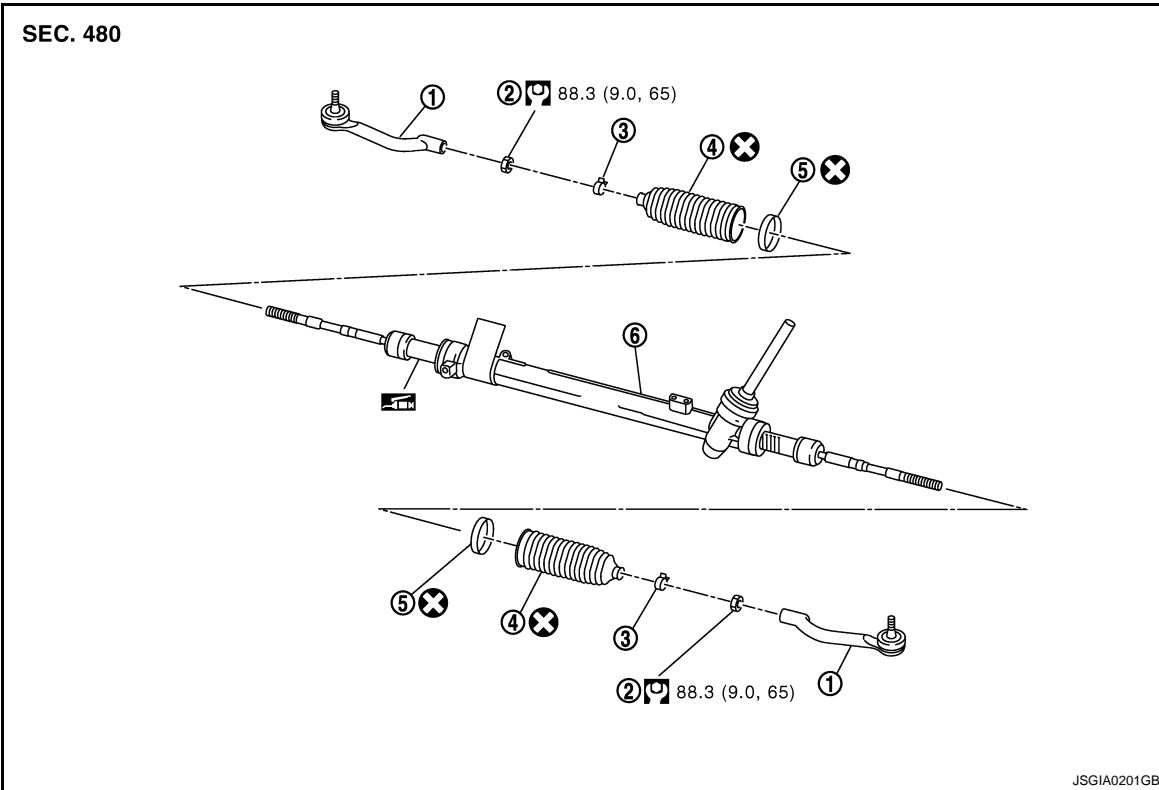
### DISASSEMBLY AND ASSEMBLY

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# STEERING GEAR AND LINKAGE

< ON-VEHICLE REPAIR >

LHD models

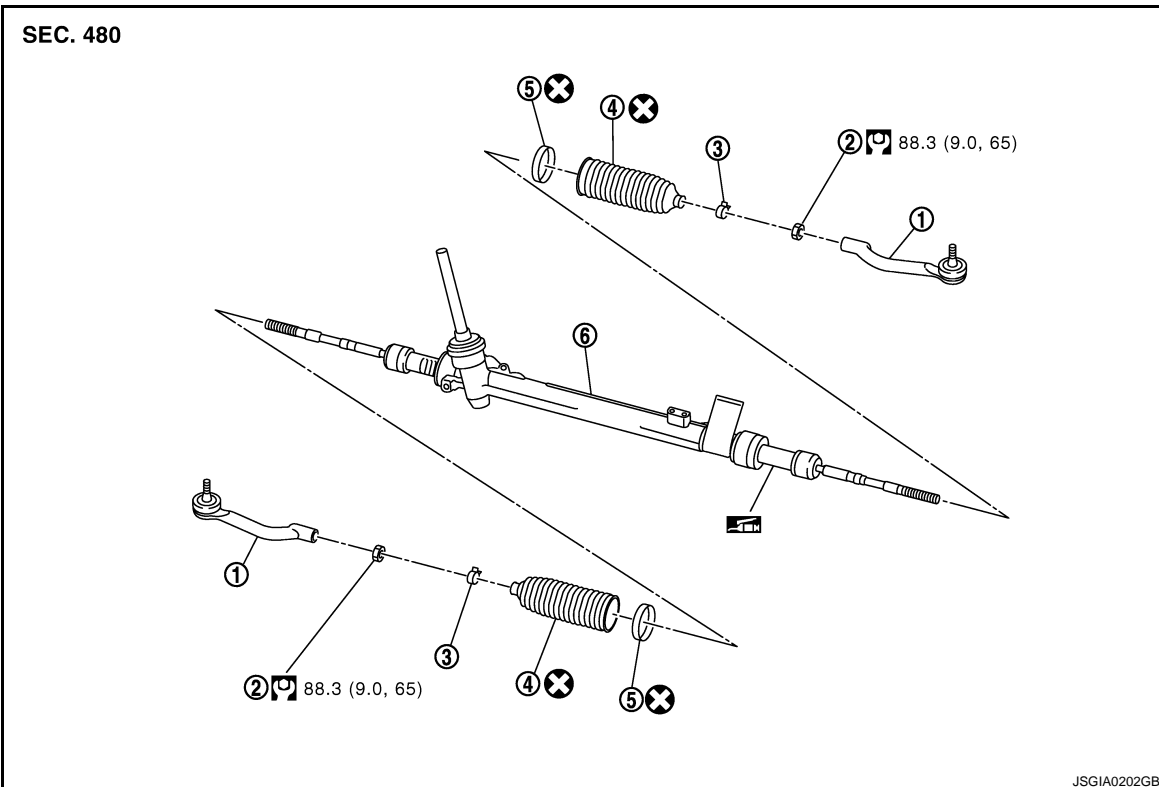


- |                 |                                |                                |
|-----------------|--------------------------------|--------------------------------|
| 1. Outer socket | 2. Outer socket lock nut       | 3. Boot clamp (small diameter) |
| 4. Boot         | 5. Boot clamp (large diameter) | 6. Gear housing assembly       |

 Apply Molywhite LSG or equivalent.

Refer to [GI-4. "Components"](#) for symbols not described on the above.

RHD models



# STEERING GEAR AND LINKAGE

## < ON-VEHICLE REPAIR >

- |                 |                                |                                |
|-----------------|--------------------------------|--------------------------------|
| 1. Outer socket | 2. Outer socket lock nut       | 3. Boot clamp (small diameter) |
| 4. Boot         | 5. Boot clamp (large diameter) | 6. Gear housing assembly       |

: Apply Molywhite LSG or equivalent.

Refer to [GI-4, "Components"](#) for symbols not described on the above.

## Removal and Installation

INFOID:000000001182256

### REMOVAL

1. Set vehicle to the straight-ahead position.
2. Remove bolt of intermediate shaft (lower side), and then remove intermediate shaft from steering gear pinion shaft.
3. Remove tires with a power tool.
4. Remove steering outer socket from steering knuckle so as not to damage ball joint boot using suitable ball joint remover.

#### **CAUTION:**

**Temporarily tighten the nut to prevent damage to threads and to prevent the ball joint remover from suddenly coming off.**

5. Remove front suspension member.
6. Remove steering gear assembly.

### INSTALLATION

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

#### **CAUTION:**

**Spiral cable may be cut if steering wheel turns while separating steering column assembly and steering gear assembly. Be sure to secure steering wheel using string to avoid turning.**

- Perform final tightening of nuts and bolts on each part under unladen conditions with tires on level ground when removing steering gear assembly. Check wheel alignment. Refer to [FSU-7, "Wheel Alignment Inspection"](#).
- Adjust neutral position of steering angle sensor after checking wheel alignment. Refer to [BRC-77, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#). (ESP models)

## Disassembly and Assembly

INFOID:000000001182257

### DISASSEMBLY

1. Loosen outer socket lock nut, and remove outer socket.
2. Remove boot clamps, and then remove boot from inner socket.

#### **CAUTION:**

**Never damage inner socket and gear housing assembly when removing boot.**

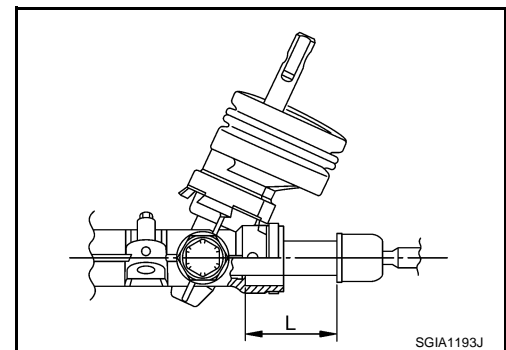
### ASSEMBLY

1. Decide on the neutral position for the rack.

**Standard**

**Rack stroke "L"**

**: Refer to [ST-19, "Rack Stroke"](#).**



2. Install boot to gear housing assembly and inner socket.

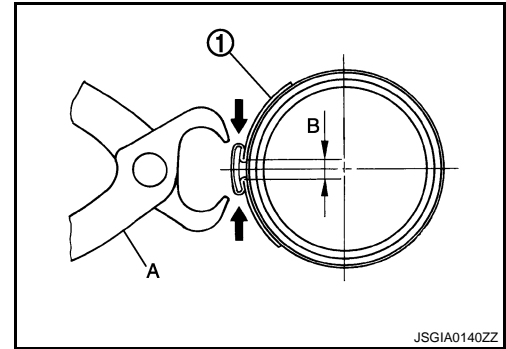
# STEERING GEAR AND LINKAGE

## < ON-VEHICLE REPAIR >

3. Install boot clamp (large diameter) (1) to boot using boot band crimping tool (A) (SST: KV40107300).

**CAUTION:**

Install large diameter side boot clamp (1) securely to boot groove, and crimp it so as to have clearance (B) of 3 mm (0.12 in) or less as shown.



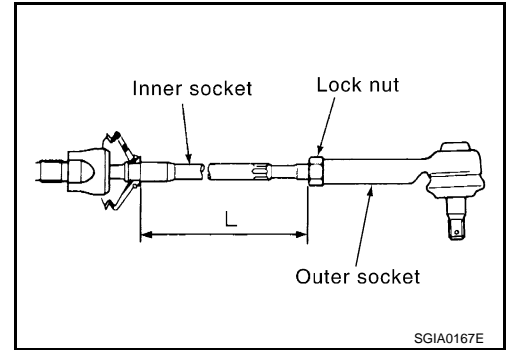
4. Install boot clamp (small diameter) to boot.
5. Adjust inner socket to standard length "L", and then tighten lock nut to the specified torque. Check length "L" again after tightening lock nut.

**Standard**

Inner socket length "L" : Refer to [ST-20, "Inner Socket Length"](#).

**CAUTION:**

Adjust toe-in after this procedure. Length achieved after toe-in adjustment is not necessarily the value above.



## Inspection

INFOID:000000001182258

### INSPECTION AFTER INSTALLATION

- Check if steering wheel turns smoothly when it is turned several times fully to the end of the left and right.
- Check the steering wheel play, neutral position steering wheel, steering wheel turning force, and front wheel turning angle. Refer to [ST-7, "Inspection"](#).

### INSPECTION AFTER DISASSEMBLY

#### Boot

- Check boot for cracks, and replace it if a malfunction is detected.

#### Gear Housing Assembly

- Check gear housing assembly for damage. Replace if damaged.

#### Outer Socket

- Check the following items and replace the component if it does not meet the standard.

#### BALL JOINT SWINGING TORQUE

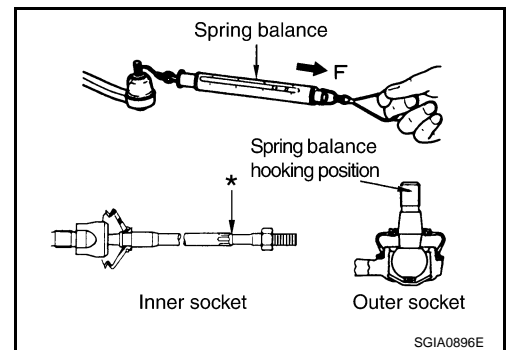
- Hook a spring balance at the point shown in the figure and pull the spring balance. Make sure that the spring balance reads the specified value when ball stud and inner socket start to move. If inner socket is outside standard, then replace complete gear.

**Standard for outer socket**

(Measuring point: Ball stud upper side)

Swinging torque : Refer to [ST-19, "Socket Swing Force and Rotating Torque"](#).

Spring balance measurement : Refer to [ST-19, "Socket Swing Force and Rotating Torque"](#).





# STEERING GEAR AND LINKAGE

< ON-VEHICLE REPAIR >

## Standard for inner socket

(Measuring point: "\*" mark shown in the figure)

Swinging torque : Refer to [ST-19, "Socket Swing Force and Rotating Torque"](#).

Spring balance measurement : Refer to [ST-19, "Socket Swing Force and Rotating Torque"](#).

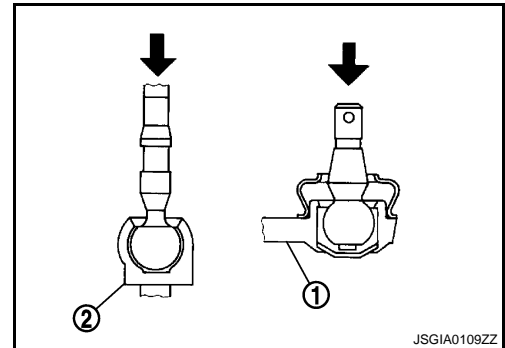
## BALL JOINT AXIAL END PLAY

- Apply an axial load of 490 N (50 kg, 110 lb) to ball stud. Using a dial gauge, measure amount of stud movement, and then make sure that the value is within the following specified range. Replace outer socket (1) and inner socket (2) if the measured value is outside the standard.

## Standard

Outer socket : Refer to [ST-20, "Socket Axial End Play"](#).

Inner socket : Refer to [ST-20, "Socket Axial End Play"](#).



A

B

C

D

E

F

ST

H

I

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K

L

M

N

O

P

# SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

## SERVICE DATA AND SPECIFICATIONS (SDS)

### SERVICE DATA AND SPECIFICATIONS (SDS)

#### General Specifications

INFOID:0000000001182259

Steering gear model	R27N
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#### Steering Wheel Axial End Play and Play

INFOID:0000000001182260

Unit: mm (in)

Item	Standard
Steering wheel axial end play	0 (0)
Steering wheel play on the outer circumference	0 - 35 (0 - 1.38)

#### Steering Wheel Turning Force

INFOID:0000000001182261

Unit: N·m (kg·m, in·lb)

Item	Standard
Steering wheel turning force	7 (0.71, 62)

#### Steering Angle

INFOID:0000000001182262

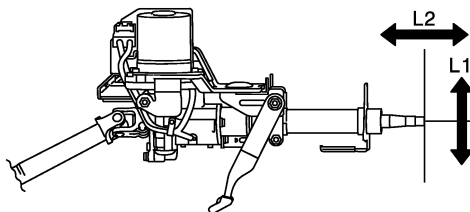
Unit: Degree minute (Decimal degree)

Item		Standard	
Tire size		215/65R16	215/60R17
Inner wheel	Minimum	36°00' (36.0°)	
	Nominal	39°00' (39.0°)	
	Maximum	40°00' (40.0°)	
Outer wheel	Nominal	33°00' (33.0°)	

#### Steering Column Operating Range

INFOID:0000000001182263

Item	Standard
Tilt operating range "L1"	40 mm (1.57 in)
Telescopic operating range "L2"	±25 mm (0.98 in)



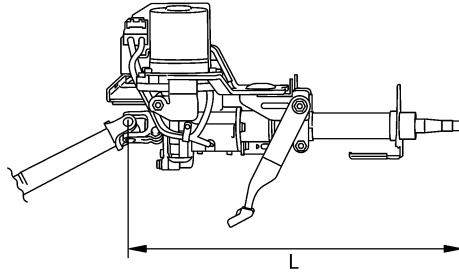
JSGIA0135ZZ

Rotating torque (When column is disconnected from steering gear)	Normal	1.6 N·m (0.16 kg·m, 14 in·lb)
	Maximum	2.5 N·m (0.26 kg·m, 22 in·lb)
Steering column length "L"		495 mm (19.49 in)

# SERVICE DATA AND SPECIFICATIONS (SDS)

## < SERVICE DATA AND SPECIFICATIONS (SDS)

Item	Standard
Adjustment stroke	±25 mm (0.98 in)



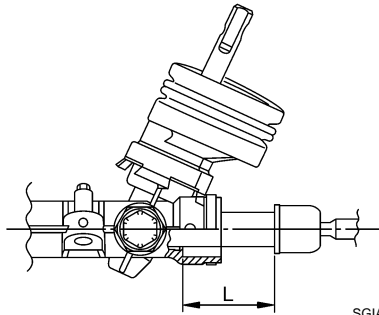
SGIA1345J

## Rack Stroke

INFOID:000000001182264

Unit: mm (in)

Item	Standard	
Tire size	215/65R16	215/60R17
Rack neutral position, dimension "L"	77.5 (3.051)	

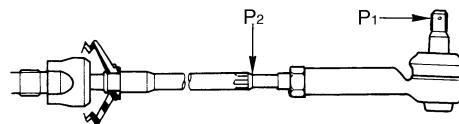


SGIA1193J

## Socket Swing Force and Rotating Torque

INFOID:000000001182265

Item	Spring balance	
Outer socket "P1"	Swinging torque	0.3 – 5.0 N·m (0.03 – 0.51 kg·m, 3.0 – 44 in-lb)
	Spring balance measurement	5.0 – 100 N (0.51 – 10 kg-f, 1.12 – 22.5 lb-f)
Inner socket "P2"	Swinging torque	0.5 – 16 N·m (0.06 – 1.6 kg·m, 5.0 – 142 in-lb)
	Spring balance measurement	4.0 – 100 N (0.41 – 6.12 kg-f, 0.90 – 22.5 lb-f)



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# SERVICE DATA AND SPECIFICATIONS (SDS)

## < SERVICE DATA AND SPECIFICATIONS (SDS)

### Socket Axial End Play

INFOID:000000001182266

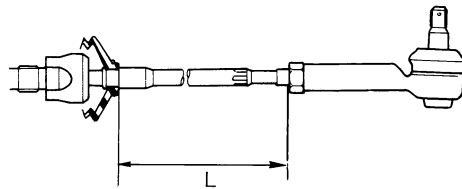
Item	Standard
Outer socket	No free play
Inner socket	No free play

### Inner Socket Length

INFOID:000000001182267

Unit: mm (in)

Item	Standard
Rack neutral position, dimension "L"	106 (4.17)



SGIA1512E