

A
B
C

SECTION PS

POWER STEERING SYSTEM

CONTENTS

<p>PRECAUTIONS 2</p> <p style="padding-left: 20px;">Precautions for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" 2</p> <p style="padding-left: 20px;">Precautions for Steering System 2</p> <p>PREPARATION 3</p> <p style="padding-left: 20px;">Special Service Tools (SST) 3</p> <p style="padding-left: 20px;">Commercial Service Tools 4</p> <p>NOISE, VIBRATION, AND HARSHNESS (NVH)</p> <p>TROUBLESHOOTING 5</p> <p style="padding-left: 20px;">NVH Troubleshooting Chart 5</p> <p>POWER STEERING FLUID 6</p> <p style="padding-left: 20px;">Checking Fluid Level 6</p> <p style="padding-left: 20px;">Checking Fluid Leakage 6</p> <p style="padding-left: 20px;">Air Bleeding Hydraulic System 6</p> <p>STEERING WHEEL 7</p> <p style="padding-left: 20px;">On-Vehicle Inspection and Service 7</p> <p style="padding-left: 40px;">CHECKING CONDITION OF INSTALLATION 7</p> <p style="padding-left: 40px;">CHECKING STEERING WHEEL PLAY 7</p> <p style="padding-left: 40px;">CHECKING NEUTRAL POSITION ON STEERING WHEEL 7</p> <p style="padding-left: 40px;">CHECKING STEERING WHEEL TURNING FORCE 7</p> <p style="padding-left: 40px;">CHECKING FRONT WHEEL TURNING ANGLE.... 7</p> <p style="padding-left: 20px;">Removal and Installation 8</p> <p style="padding-left: 40px;">REMOVAL 8</p> <p style="padding-left: 40px;">INSTALLATION 8</p> <p>STEERING COLUMN 9</p> <p style="padding-left: 20px;">Removal and Installation 9</p> <p style="padding-left: 40px;">REMOVAL 10</p> <p style="padding-left: 40px;">INSPECTION AFTER REMOVAL 11</p> <p style="padding-left: 40px;">INSTALLATION 12</p>	<p style="padding-left: 20px;">INSPECTION AFTER INSTALLATION 13</p> <p style="padding-left: 20px;">Disassembly and Assembly 13</p> <p style="padding-left: 40px;">DISASSEMBLY 14</p> <p style="padding-left: 40px;">ASSEMBLY 15</p> <p style="padding-left: 40px;">INSPECTION AFTER ASSEMBLY 15</p> <p>POWER STEERING GEAR AND LINKAGE 16</p> <p style="padding-left: 20px;">Removal and Installation 16</p> <p style="padding-left: 40px;">REMOVAL 16</p> <p style="padding-left: 40px;">INSTALLATION 17</p> <p style="padding-left: 40px;">INSPECTION AFTER INSTALLATION 18</p> <p style="padding-left: 20px;">Disassembly and Assembly 18</p> <p style="padding-left: 40px;">DISASSEMBLY 19</p> <p style="padding-left: 40px;">INSPECTION AFTER DISASSEMBLY 20</p> <p style="padding-left: 40px;">ASSEMBLY 21</p> <p>POWER STEERING OIL PUMP 23</p> <p style="padding-left: 20px;">On-Vehicle Inspection and Service 23</p> <p style="padding-left: 40px;">CHECKING RELIEF OIL PRESSURE 23</p> <p style="padding-left: 20px;">Removal and Installation 23</p> <p style="padding-left: 40px;">REMOVAL 23</p> <p style="padding-left: 40px;">INSTALLATION 23</p> <p style="padding-left: 20px;">Disassembly and Assembly 24</p> <p style="padding-left: 40px;">INSPECTION BEFORE DISASSEMBLY 24</p> <p style="padding-left: 40px;">DISASSEMBLY 24</p> <p style="padding-left: 40px;">INSPECTION AFTER DISASSEMBLY 24</p> <p style="padding-left: 40px;">ASSEMBLY 24</p> <p>HYDRAULIC LINE 25</p> <p style="padding-left: 20px;">Removal and Installation 25</p> <p>SERVICE DATA AND SPECIFICATIONS (SDS) 27</p> <p style="padding-left: 20px;">Steering Wheel 27</p> <p style="padding-left: 20px;">Steering Column 27</p> <p style="padding-left: 20px;">Steering Outer Socket and Inner Socket 28</p> <p style="padding-left: 20px;">Steering Gear 28</p> <p style="padding-left: 20px;">Oil Pump 29</p> <p style="padding-left: 20px;">Steering Fluid 29</p>
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A
B
C
D
E
F
PS
H
I
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K
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PRECAUTIONS

PRECAUTIONS

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Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

EGS000SS

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SRS 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 SRS 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 for Steering System

EGS000ST

- 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.
- Before inspection or reassembly, carefully clean all parts with a general purpose, non-flammable solvent.
- Before assembly, apply a coat of recommended Genuine NISSAN PSF or equivalent to hydraulic parts. Petroleum jelly may be applied to O-rings and seals. Do not use any grease.
- Replace all gaskets, seals and O-rings. Avoid damaging O-rings, seals and gaskets during installation. Perform functional tests whenever designated.

PREPARATION

PREPARATION

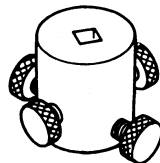
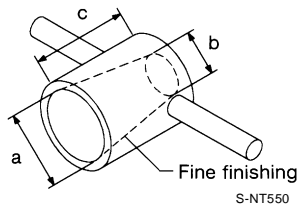
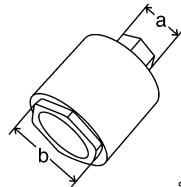
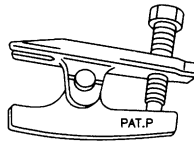
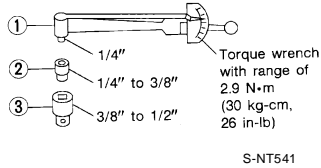
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Special Service Tools (SST)

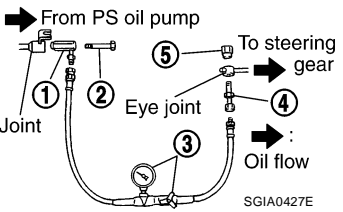
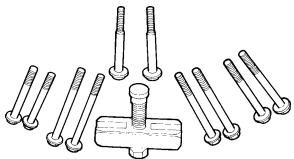
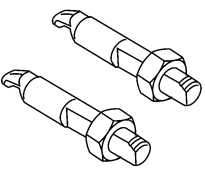
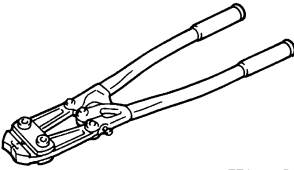
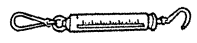
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The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
ST3127 S000 (See J-25765-A) Preload gauge 1. GG9103000 (J-25765-A) Torque wrench 2. HT62940000 (—) Socket adapter 3. HT62900000 (—) Socket adapter	Inspecting of pinion rotating torque and rotational torque for ball joint
HT72520000 (J-25730-A) Ball joint remover	Removing steering outer socket
— (J-46213) Rear cover wrench	Removing rear cover a: 21.6 mm (0.850 in) b: 34.9 mm (1.374 in)
KV48104400 (—) Teflon ring correcting tool	Installing of rack Teflon ring a: 50 mm (1.97 in) dia. b: 36 mm (1.42 in) dia. c: 100 mm (3.94 in)
KV48103400 (—) Torque adapter	Inspecting rotational torque

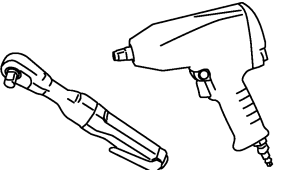


PREPARATION

Tool number (Kent-Moore No.) Tool name	Description
1. KV48105300-4 and 5295262U10 (—) Connector A and O-ring 2. KV48105300-3 and 5295262U00 (—) Eye-bolt and O-ring 3. KV48103500 (J-26357 and J-26357-10) Pressure gauge and shut-off valve 4. KV48105300-1 and 5295262U00 (—) Connector B and O-ring 5. KV48105300-2 (—) Nut	Measuring oil pump relief pressure  <p style="text-align: right; font-size: small;">SGIA0427E</p>
KV481J0010 (J-1859-A) Steering wheel puller	Removing steering wheel  <p style="text-align: right; font-size: small;">LHIA0043E</p>
KV481J0020 (J-42578) Steering wheel puller legs	Removing steering wheel  <p style="text-align: right; font-size: small;">LHIA0044E</p>
KV40107300 (—)	Crimping boot bands  <p style="text-align: right; font-size: small;">ZZA1229D</p>
— (J-44372) Spring gauge	Measuring steering wheel turning force  <p style="text-align: right; font-size: small;">LST024</p>

Commercial Service Tools

EGS00126

Tool name	Description
Power tool	Removing nuts and bolts  <p style="text-align: right; font-size: small;">PBIC0190E</p>

NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

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NVH Troubleshooting Chart

EGS000SW

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

Symptom	Possible cause and suspected parts		Reference page
	Noise	Shake	
			PS-6
		Fluid level	PS-6
		Air in hydraulic system	PS-6
		Outer socket ball joint swinging force	PS-28
		Outer socket ball joint rotating torque	PS-28
		Outer socket ball joint end play	PS-28
		Steering fluid leakage	PS-6
		Steering wheel play	PS-7
		Steering wheel turning force	PS-7
		Drive belt looseness	EM-13, "Checking Drive Belts"
		Improper steering wheel	PS-7
		Improper installation or looseness of tilt lock lever	PS-15
		Mounting rubber deterioration	PS-16
		Steering column deformation or damage	PS-11
		Improper installation or looseness of steering column	PS-13
		Steering linkage looseness	PS-16
		PROPELLER SHAFT	PR-3, "NVH Troubleshooting Chart"
		FRONT FINAL DRIVE	FFD-6, "NVH Troubleshooting Chart"
		WHEEL HUB	FAX-4, "NVH Troubleshooting Chart"
		SUSPENSION	FSU-4, "NVH Troubleshooting Chart"
		TIRES	WT-4, "NVH Troubleshooting Chart"
		ROAD WHEEL	WT-4, "NVH Troubleshooting Chart"
		DRIVE SHAFT	FAX-4, "NVH Troubleshooting Chart"
		BRAKES	BR-5, "NVH Troubleshooting Chart"

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POWER STEERING FLUID

PFP:KLF20

POWER STEERING FLUID

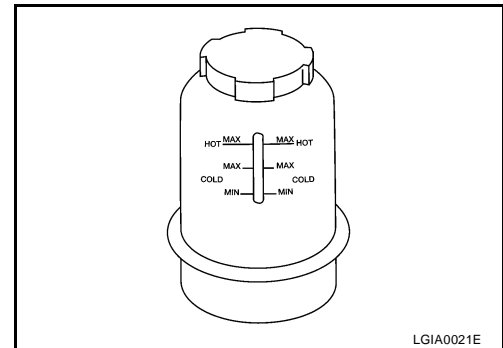
Checking Fluid Level

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Check fluid level, referring to the scale on reservoir tank.
Use HOT range for fluid temperatures of 50° – 80°C (122° – 176°F).
Use COLD range for fluid temperatures of 0° – 30°C (32° – 86°F).

CAUTION:

- Do not overfill.
- Do not reuse any used power steering fluid.
- Recommended fluid is Genuine NISSAN PSF or equivalent. Refer to [MA-11, "RECOMMENDED FLUIDS AND LUBRICANTS"](#).



Checking Fluid Leakage

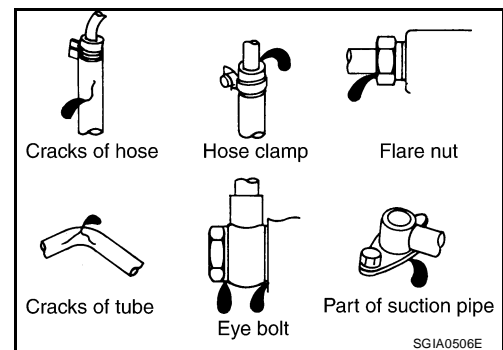
EGS000SY

Check the hydraulic piping lines for improper attachment and for leaks, cracks, damage, loose connections, chafing or deterioration.

1. Run engine until fluid temperature reaches 50° – 80°C (122° – 176°F) in reservoir tank. Keep engine speed idle.
2. Turn steering wheel right-to-left several times.
3. Hold steering wheel at each "lock" position for five seconds to check fluid leakage.

CAUTION:

Do not hold steering wheel in a locked position for more than 10 seconds. (There is the possibility that oil pump may be damaged.)



4. If fluid leakage at connections is noticed, then loosen flare nut and then retighten. Do not over tighten connector as this can damage O-ring, washer and connector.
5. If fluid leakage from oil pump is noticed, check oil pump. Refer to [PS-23, "POWER STEERING OIL PUMP"](#).
6. Check steering gear boots for accumulation of fluid indicating a leak from the steering gear.

Air Bleeding Hydraulic System

EGS000SZ

Incomplete air bleeding causes the following. When this happens, bleed air again.

- Air bubbles in reservoir tank.
- Clicking noise in oil pump.
- Excessive buzzing in oil pump.

NOTE:

When vehicle is stationary or while steering wheel is being turned slowly, some noise may be heard from oil pump or gear. This noise is normal and does not affect any system.

1. Stop engine, and then turn steering wheel fully to right and left several times.

CAUTION:

Do not allow steering fluid reservoir tank to go below the MIN level line. Check tank frequently and add fluid as needed.

2. Run engine at idle speed. Turn steering wheel fully right and then fully left, hold for about three seconds. Then check for fluid leakage.
3. Repeat step 2 several times at about three second intervals.

CAUTION:

Do not hold steering wheel in the locked position for more than 10 seconds. (There is the possibility that oil pump may be damaged.)

4. Check for air bubbles or cloudy fluid.
5. If air bubbles or cloudiness still exists, stop engine, perform steps 2 and 3 again until air bubbles or cloudiness does not exist.
6. Stop engine, check fluid level.

STEERING WHEEL

STEERING WHEEL

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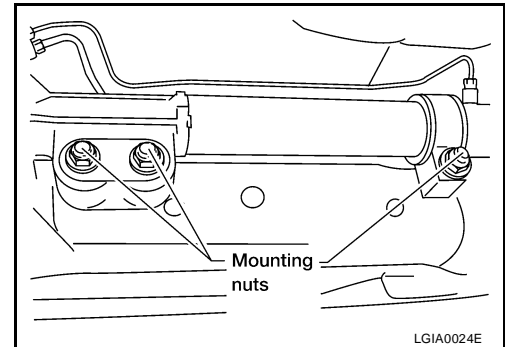
On-Vehicle Inspection and Service CHECKING CONDITION OF INSTALLATION

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

End play of the axial direction for steering wheel : 0 mm (0 in)

- Check if the mounting nuts for steering gear assembly are loose. Refer to [PS-16, "POWER STEERING GEAR AND LINKAGE"](#) .



CHECKING STEERING WHEEL PLAY

1. Turn tires straight ahead, start engine, then turn steering wheel to the left and right lightly, and measure steering wheel movement on the outer circumference when steering wheel is turned up to the point where tires start moving.

Steering wheel play on the outer circumference : 0 – 35 mm (0 – 1.38 in)

CHECKING NEUTRAL POSITION ON STEERING WHEEL

- Check neutral position on steering wheel after confirming that front wheel alignment is correct. Refer to [FSU-6, "Front Wheel Alignment"](#) .
1. Turn tires straight ahead, check if steering wheel is in the neutral position.
 2. If it is not in the neutral position, remove steering wheel and reinstall it correctly.
 3. If the neutral position cannot be attained by repositioning the steering wheel two teeth or less on steering stem, loosen tie-rod lock nuts of steering outer sockets, then adjust tie-rods by the same amount in the opposite direction.

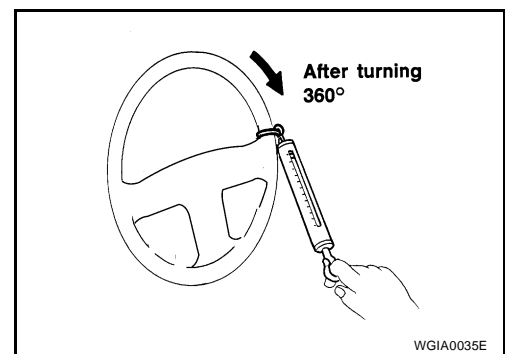
CHECKING STEERING WHEEL TURNING FORCE

1. Park vehicle on a level, dry surface and set parking brake.
2. Start engine.
3. Bring power steering fluid up to operating temperature of 60° – 80°C (140° – 176°F).
4. Tires need to be inflated to specified pressure. Refer to [WT-31, "Tire"](#) .
5. Check steering wheel turning force using Tool when steering wheel has been turned 360° from the neutral position.

Tool number : J-44372

**Steering wheel : 39 N (4 kg-f, 9 lb-f) or less
turning force**

6. If steering wheel turning force is out of specification, inspect steering column. Refer to [PS-11, "INSPECTION AFTER REMOVAL"](#) .
7. If steering column meets specification, repair steering gear. Refer to [PS-13, "Disassembly and Assembly"](#) .



CHECKING FRONT WHEEL TURNING ANGLE

When checking front wheel turning angle, refer to [FSU-19, "Wheel Alignment \(Unladen*1\)"](#)

STEERING WHEEL

EGS000T1

Removal and Installation

REMOVAL

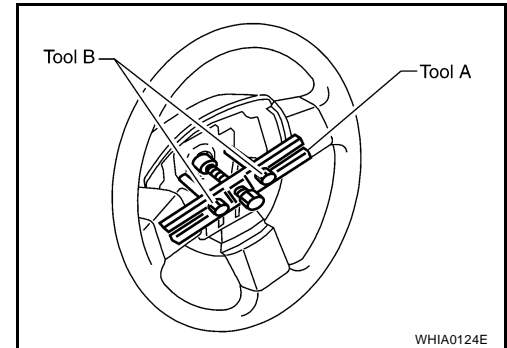
1. Set the front wheels in the straight-ahead position.
2. Remove the driver air bag module. Refer to [SRS-37, "Removal and Installation"](#) .
3. Disconnect steering wheel switches.
4. Remove the steering wheel center nut.
5. Remove the steering wheel using Tools.

Tool number **A:** KV481J0010 (J-1859-A)
 B: KV481J0020 (J-42578)

CAUTION:

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

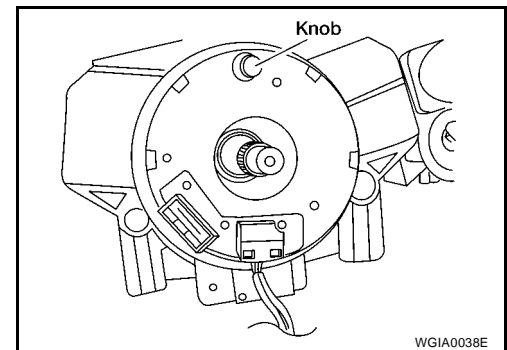
6. Inspect the steering wheel near the puller holes for damage. If damaged, replace the steering wheel.
 - Remove steering wheel rear cover and steering wheel switches, if required.



INSTALLATION

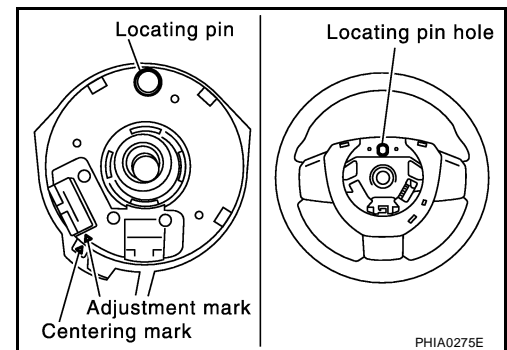
Installation is in the reverse order of removal.

- Align spiral cable correctly when installing steering wheel. Make sure that the spiral cable is in the neutral position. The neutral position is detected by turning left 2.6 revolutions from the right end position and ending with the knob at the top.
- If equipped with VDC, refer to [BRC-137, "Adjustment of Steering Angle Sensor Neutral Position"](#) for steering angle sensor adjustment.
- After the work is completed, perform self-diagnosis to make sure no malfunction is detected. Refer to [SRS-21, "SRS Operation Check"](#) .
- Tighten steering wheel center nut to specification. Refer to [PS-9, "Removal and Installation"](#) .



CAUTION:

- **The spiral cable may snap due to steering operation if the cable is not installed in the correct position.**
- **With the steering linkage disconnected, the cable may snap by turning the steering wheel beyond the limited number of turns. The spiral cable can be turned counterclockwise about 2.5 turns from the neutral position.**



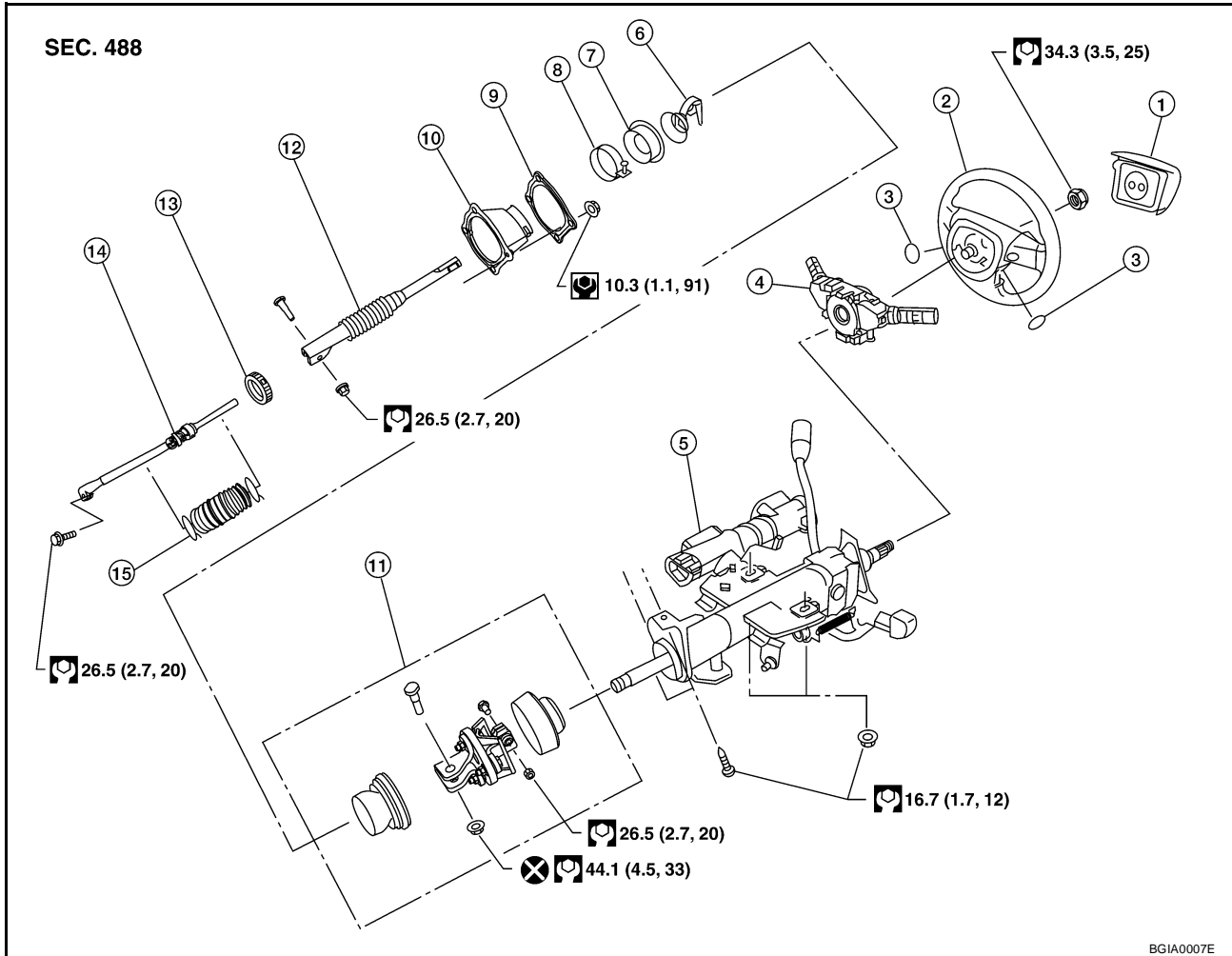
STEERING COLUMN

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STEERING COLUMN Removal and Installation

Column Shift Model

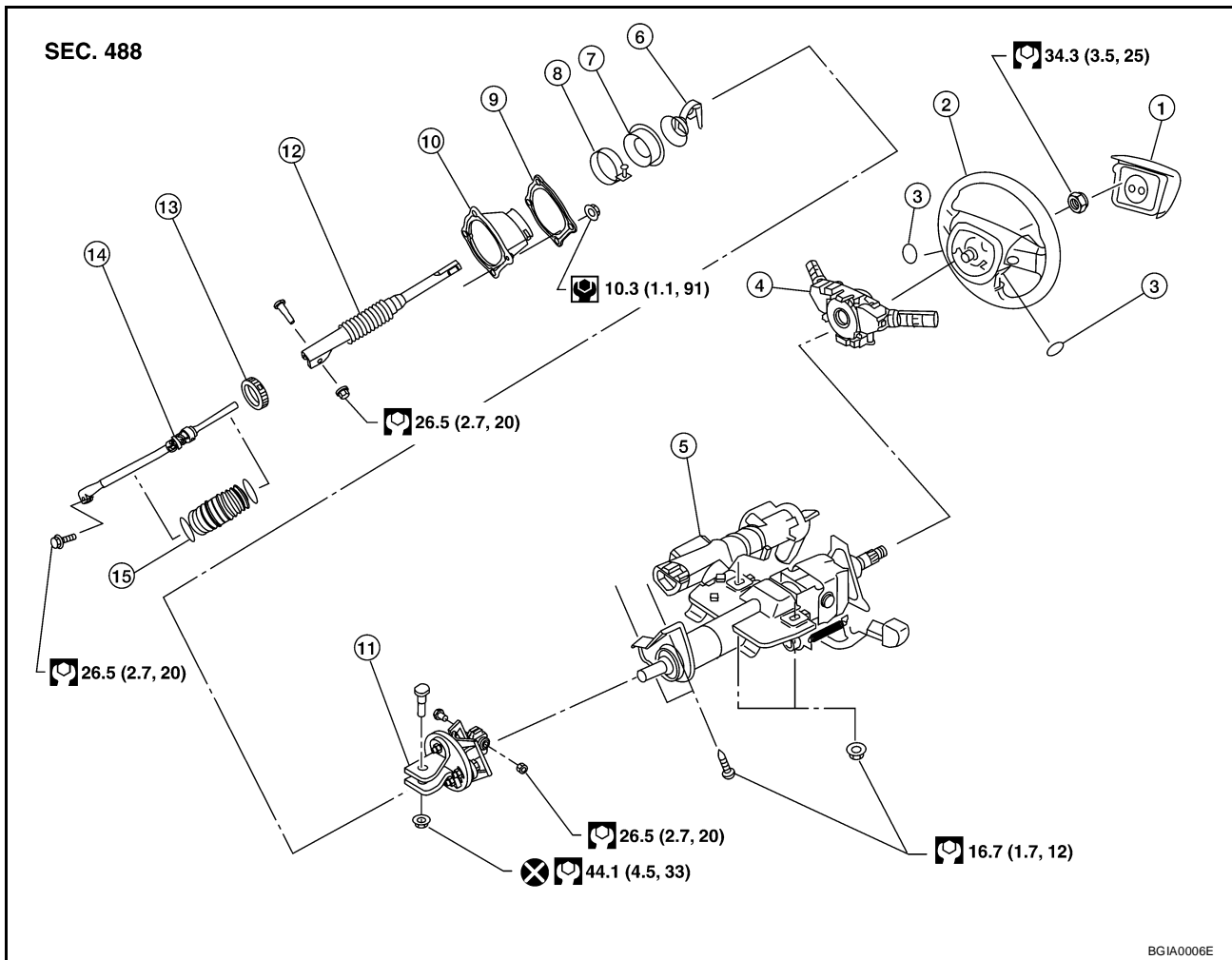


- | | | |
|--|-----------------------------|------------------------------|
| 1. Driver air bag module | 2. Steering wheel | 3. Steering wheel side cover |
| 4. Combination switch and spiral cable | 5. Steering column assembly | 6. Collar |
| 7. Hole cover seal | 8. Clamp | 9. Hole cover mounting plate |
| 10. Hole cover | 11. Upper joint | 12. Upper shaft |
| 13. Boot clamp | 14. Lower joint shaft | 15. Boot and clips (plastic) |

BGIA0007E

STEERING COLUMN

Floor Shift Model



BGIA0006E

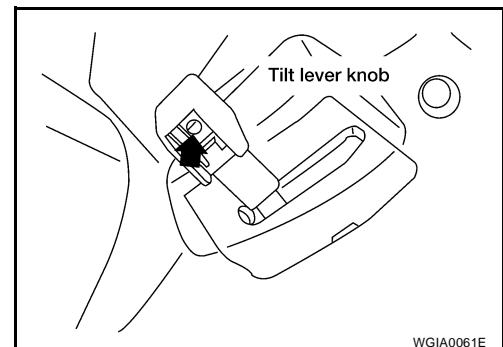
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|--|-----------------------------|------------------------------|
| 1. Driver air bag module | 2. Steering wheel | 3. Steering wheel side cover |
| 4. Combination switch and spiral cable | 5. Steering column assembly | 6. Collar |
| 7. Hole cover seal | 8. Clamp | 9. Hole cover mounting plate |
| 10. Hole cover | 11. Upper joint | 12. Upper shaft |
| 13. Boot clamp | 14. Lower joint shaft | 15. Boot and clips (plastic) |

CAUTION:

- Care must be taken not to give axial impact to steering column assembly during removal and installation.
- Care must be taken not to move steering gear during removal of steering column assembly.

REMOVAL

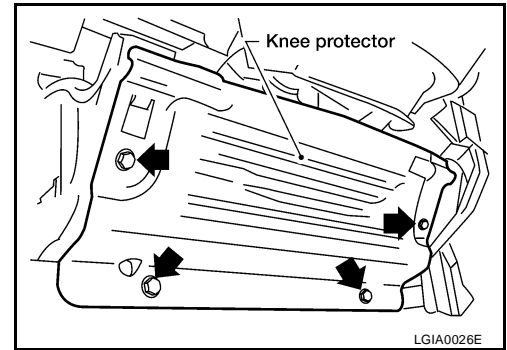
1. Remove spiral cable from steering column assembly with combination switches attached. Refer to [SRS-39, "Removal and Installation"](#).
2. Remove tilt lever knob from tilt lever by inserting a suitable tool into slot of tilt lever knob, then depress tab and withdraw tilt lever knob.



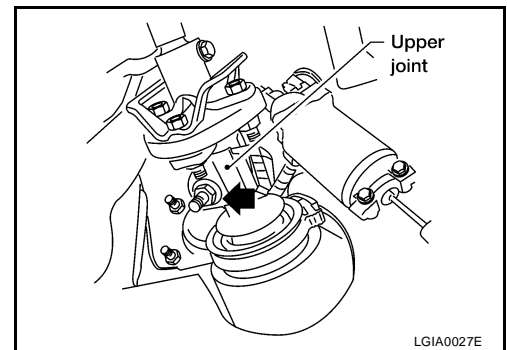
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STEERING COLUMN

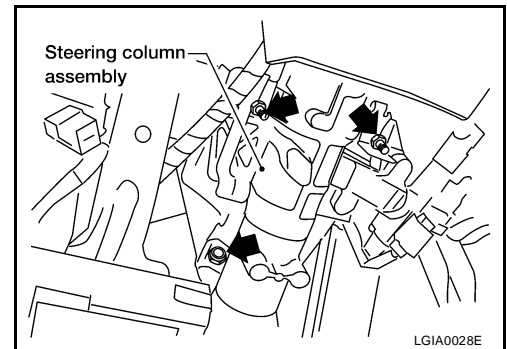
3. Remove lower driver instrument panel. Refer to [IP-13, "LOWER INSTRUMENT PANEL LH"](#) .
4. Remove steering column cover and ignition key finisher. Refer to [IP-10, "Removal and Installation"](#) .
5. Remove knee protector screws, then remove knee protector from vehicle.



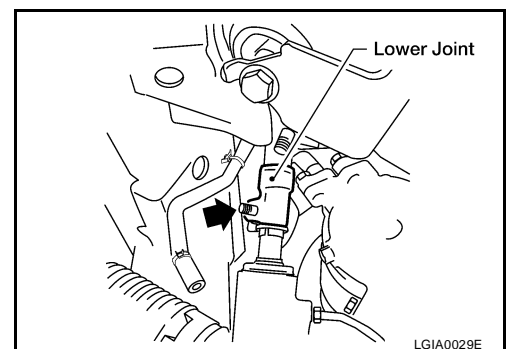
6. On models equipped with column shift, disconnect shift cable from steering column. Refer to [AT-231, "Control Device Removal and Installation"](#) .
7. Remove lock nut and bolt, then separate lower joint from upper joint.



8. Remove steering member nuts, then remove steering column assembly from steering member.



9. Remove hole cover seal and clamp.
10. Remove nuts, then remove hole cover from dash panel.
11. Raise vehicle, then remove bolt (lower side) of lower joint and remove lower joint from vehicle.



INSPECTION AFTER REMOVAL

- Check for damage to steering column jacket tube. If damage is found, replace steering column with new one.

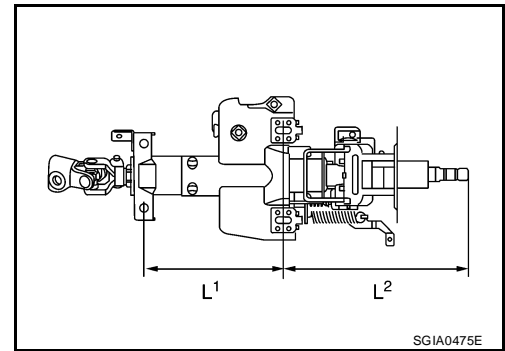
STEERING COLUMN

- If vehicle has been in a collision, check column length “L¹ ” or “L² ” as shown. If out of specification, replace steering column with new one.

Steering column length

L¹ : 158 mm (6.22 in)

L² : 262 mm (10.31 in)



- Check for proper lubrication, apply grease as necessary.

INSTALLATION

Installation is in the reverse order of removal.

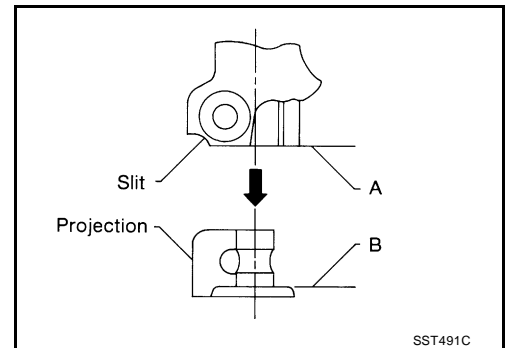
CAUTION:

When installing the steering column, finger-tighten all of the lower bracket and joint retaining bolts; then tighten them to specification. Do not apply undue stress to the steering column.

NOTE:

Align slit of the coupling joint with projection on dust cover. Insert the joint until surface "A" contacts surface "B".

- After installation, turn steering wheel to make sure it moves smoothly. Make sure the number of turns are the same from the straight-forward position to left and right locks. Make sure that the steering wheel is in a neutral position when driving straight ahead.
- When installing steering column to steering member, install nut from front side of vehicle.



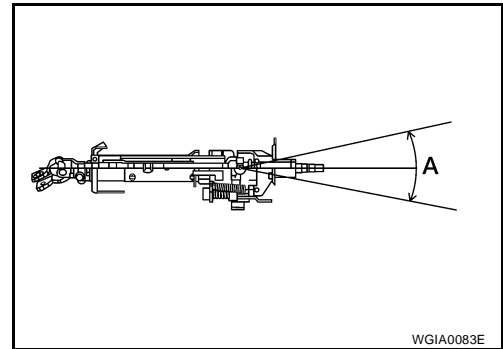
STEERING COLUMN

INSPECTION AFTER INSTALLATION

- After installing steering column to vehicle, check tilt device and its operation range is as specified.

Range "A" : 61.3 mm (2.41 in)

- Check if steering wheel operation can turn to the end of the left and right stops smoothly.

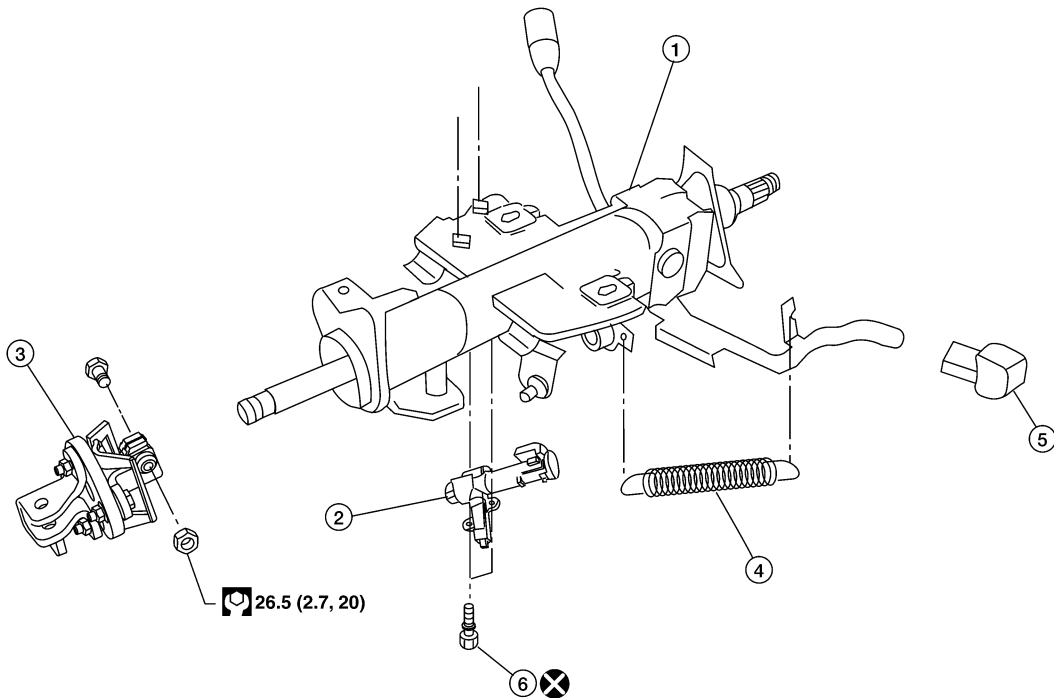


Disassembly and Assembly

EGS00073

Column Shift Model

SEC. 488



- : N·m (kg·m, ft·lb)
- : Always replace after every disassembly.

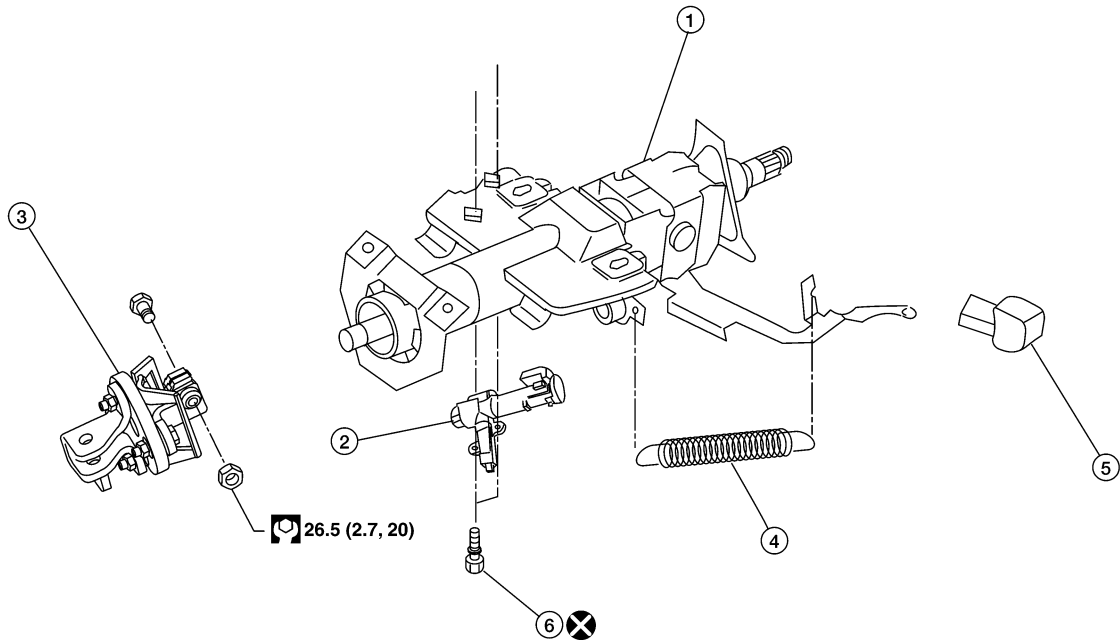
WGIA0085E

- | | | |
|-----------------------------|--------------------|---------------------|
| 1. Steering column assembly | 2. Ignition switch | 3. Upper joint |
| 4. Spring | 5. Tilt lever knob | 6. Self-shear screw |

STEERING COLUMN

Floor Shift Model

SEC. 488



: N·m (kg-m, ft-lb)



: Always replace after every disassembly.

WGIA0088E

- | | | |
|-----------------------------|--------------------|---------------------|
| 1. Steering column assembly | 2. Ignition switch | 3. Upper joint |
| 4. Spring | 5. Tilt lever knob | 6. Self-shear screw |

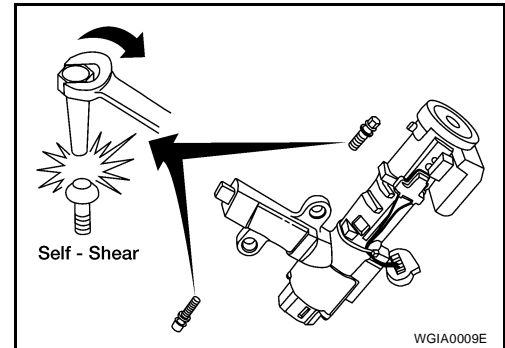
DISASSEMBLY

1. Remove spring from steering column assembly and tilt lever.
2. Remove upper joint bolt, then remove upper joint from steering column assembly.
3. Remove ignition switch tamper resistant self-shear type screws with a drill or other appropriate tool.

STEERING COLUMN

ASSEMBLY

- Assembly is in the reverse order of disassembly.
- Install new tamper resistant self-shear type screws.



INSPECTION AFTER ASSEMBLY

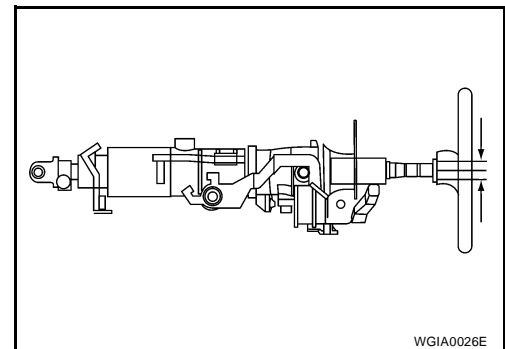
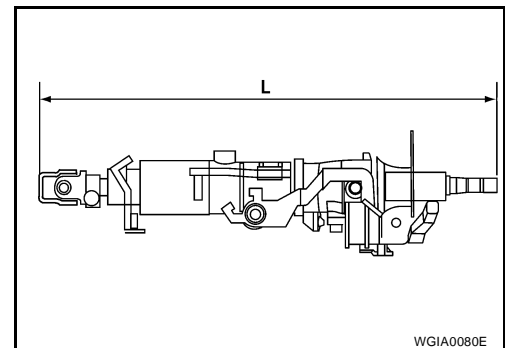
When the steering wheel does not turn smoothly, check the steering column as follows:

1. Check the column bearings for damage or unevenness. Lubricate with recommended multi-purpose grease. Replace the steering column as an assembly, if necessary.
2. Check the column tube for deformation or breakage. Replace the steering column as an assembly, if necessary.
3. If the vehicle has been involved in a collision, or if noise and rattles are heard during a turn, check the length (L) of the column. If out of specification, replace the steering column as an assembly.

Steering column length (L) : 610 mm (24.02 in)

4. Check for proper lubrication, apply grease as necessary.
5. Check for wear around the seal edges, replace as necessary.
6. Check for corrosion or pitting around the seal sliding area.
7. Replace the seal and shaft in case of seal edge wear or damage.
8. After installing the steering column, check the tilt mechanism for proper operation.

Tilt mechanism range : 3° per notch at 5 steps (Manual tilt)



CAUTION:

- Do not exert any load or impact in the axial direction immediately before or after column removal.
- After installation, check for smooth steering wheel rotation, without any catches or noise.
- Replace the column if it is depleted of grease, worn, damaged, or if any scratches or coating separation is present on the shaft seal area.
- The lower nut on the upper joint may not be reused.
- During lower joint detachment, insert a tool into the yoke groove to prevent gouging damage.

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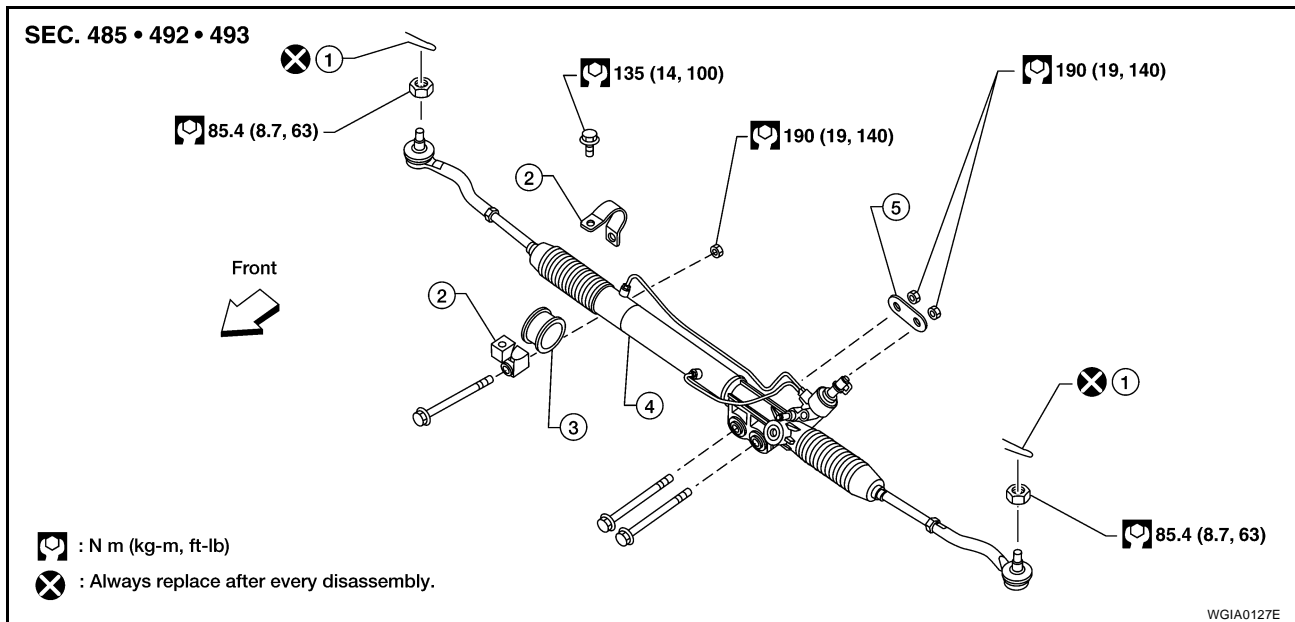
POWER STEERING GEAR AND LINKAGE

POWER STEERING GEAR AND LINKAGE

PFP:49001

Removal and Installation

EGS00074



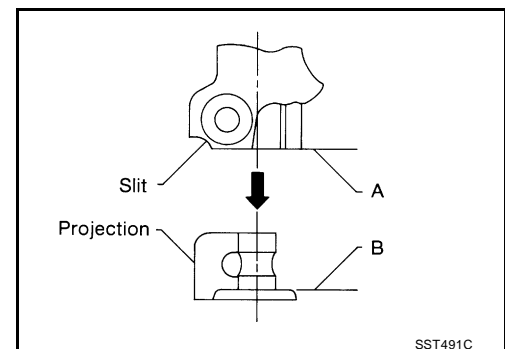
- | | | |
|---------------------------|---------------------|-----------------------|
| 1. Cotter pin | 2. Mounting bracket | 3. Mounting insulator |
| 4. Steering gear assembly | 5. Washer | |

CAUTION:

Spiral cable may snap due to steering operation if steering column is separated from steering gear assembly. Therefore secure steering wheel to avoid turning.

REMOVAL

1. Turn wheels to the straight-ahead position.
2. Remove wheel and tire from vehicle using power tool.
3. Remove undercover using power tool.
4. On 4WD model, remove front final drive, then support drive shafts with wire. Refer to [FAX-7, "Removal and Installation"](#).
5. Make sure slit of lower joint fits with the projection on rear cover cap, while checking that mark on steering gear assembly aligns with mark on rear cover cap.



6. Remove cotter pin at steering outer socket and discard, then loosen nut.

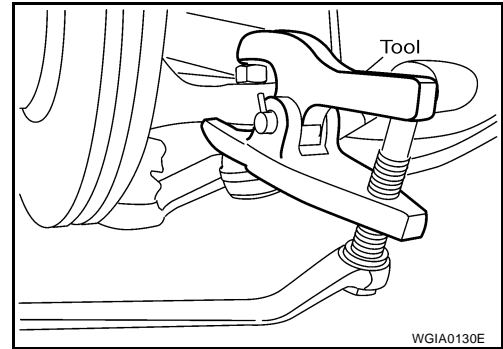
POWER STEERING GEAR AND LINKAGE

- Remove steering outer socket from steering knuckle using Tool. Be careful not to damage ball joint boot.

CAUTION:

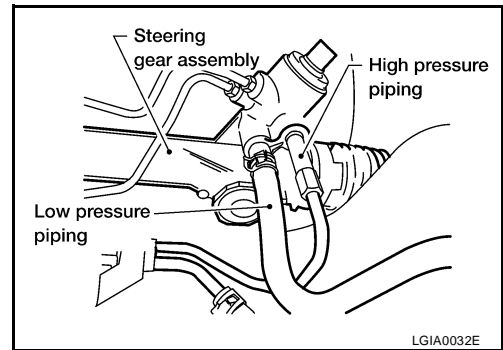
Temporarily tighten nut to prevent damage to threads and to prevent Tool from coming off.

Tool number : HT72520000 (J-25730-A)

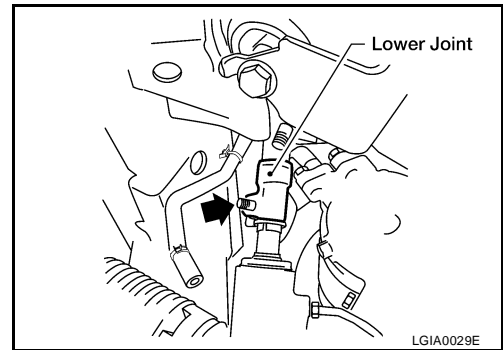


- On 2WD model, remove stabilizer bar bolts and reposition stabilizer bar. Refer to [FSU-12, "STABILIZER BAR"](#).

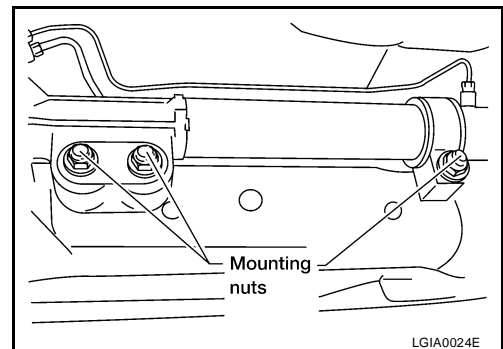
- Remove oil piping (high pressure side and low pressure side) from steering gear assembly, then drain fluid from piping.



- Remove lower joint bolt on lower shaft.



- Remove bolts and nuts of steering gear assembly using power tool, and then remove steering gear assembly from vehicle.



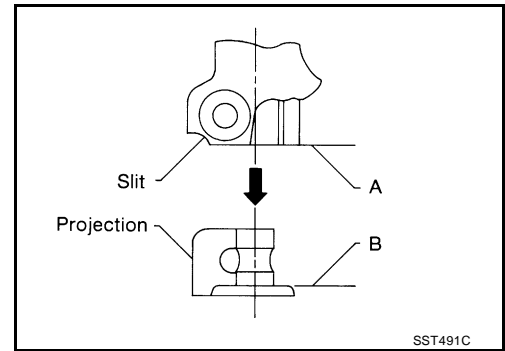
INSTALLATION

Installation is in the reverse order of removal.

- After removing/installing or replacing steering components, check wheel alignment. Refer to [FSU-6, "Front Wheel Alignment"](#).
- After adjusting wheel alignment, adjust neutral position of steering angle sensor. Refer to [BRC-137, "Adjustment of Steering Angle Sensor Neutral Position"](#).

POWER STEERING GEAR AND LINKAGE

- With steering wheel in straight ahead position, make sure slit of lower joint fits with the projection on rear cover cap, while checking that mark on steering gear assembly aligns with mark on rear cover cap



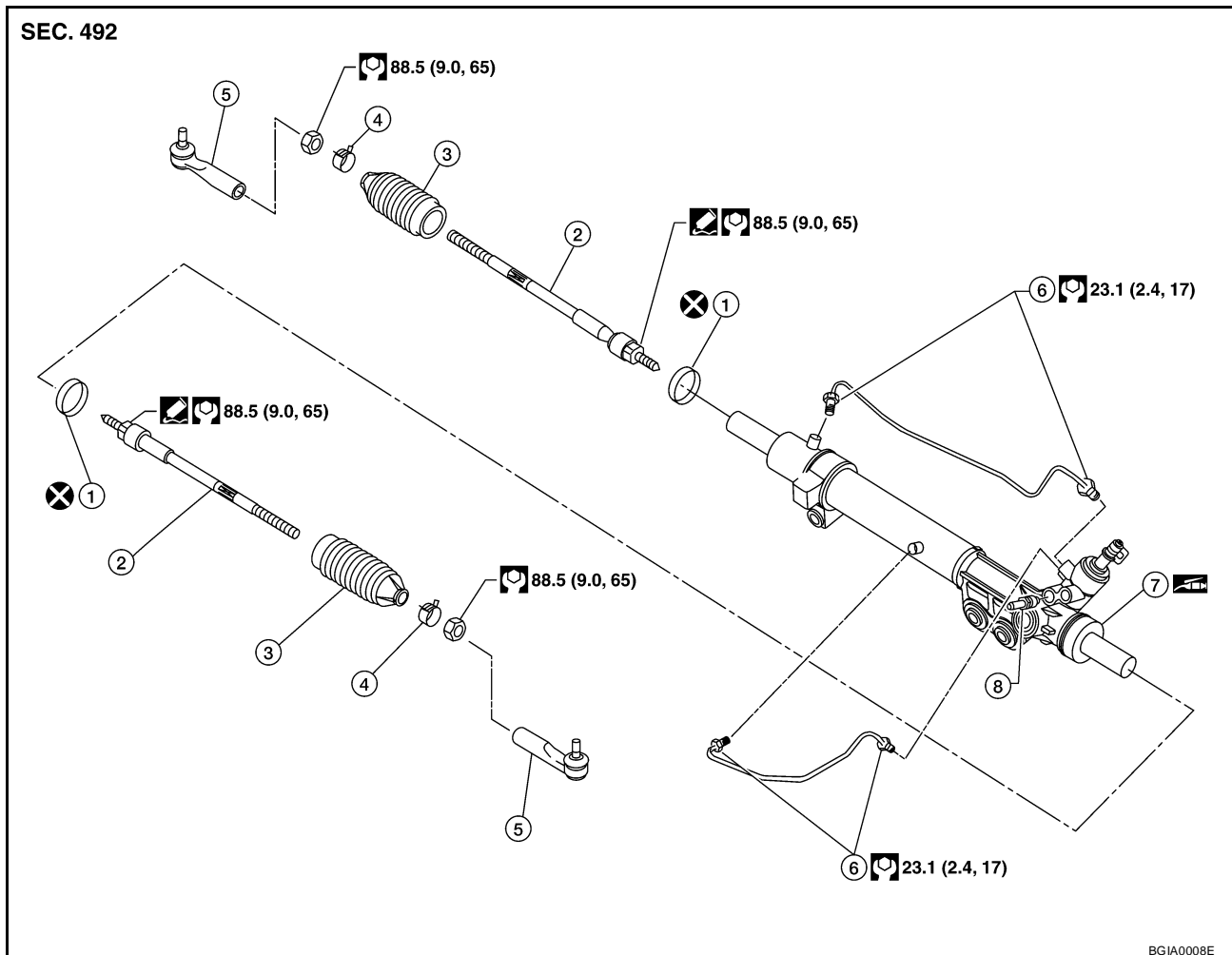
- After installation, bleed the air from the steering hydraulic system. Refer to [PS-6, "Air Bleeding Hydraulic System"](#).

INSPECTION AFTER INSTALLATION

Check if steering wheel turns smoothly when it is turned several times fully to the left and right lock positions.

Disassembly and Assembly

EGS00075



- | | | |
|--------------------------|-----------------|-------------------|
| 1. Boot clamp | 2. Inner socket | 3. Boot |
| 4. Boot clamp | 5. Outer socket | 6. Cylinder tubes |
| 7. Gear housing assembly | 8. Connector | |

POWER STEERING GEAR AND LINKAGE

CAUTION:

- Secure steering gear assembly with a vise, using copper plates or something similar to prevent it from being damaged. Do not grip cylinder with a vise. A
- Before performing disassembly, clean steering gear assembly with kerosene. Be careful not to bring any kerosene into contact with the discharge and return port connectors. B

DISASSEMBLY

1. Remove cylinder tubes from gear housing assembly. C
2. Loosen lock nuts of outer sockets, and remove outer sockets. C
3. Remove boot clamps of the small diameter side and the large diameter side, then remove boot. D

CAUTION:

When removing boots, be careful not to damage inner socket and gear housing assembly. If they are damaged, change them to avoid oil leaks. D

4. Remove inner sockets. E

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POWER STEERING GEAR AND LINKAGE

INSPECTION AFTER DISASSEMBLY

Boot

Check boot for tears, cracks and deformation. Replace if necessary.

Gear Housing Assembly

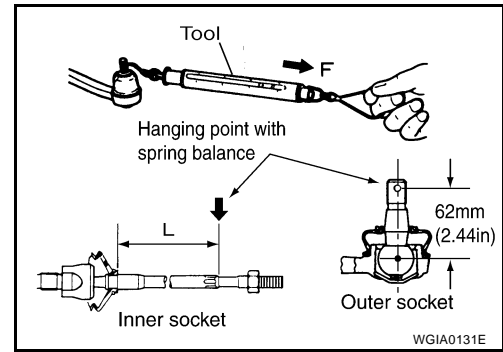
Check gear housing assembly for dents, cracks or damage. Replace as an assembly if necessary.

Outer Socket and Inner Socket

SWING TORQUE

- Measure the swing torque, using Tool. When ball stud and inner socket start moving the measured value must be within the specification. If the reading is outside the specification, replace the socket.

Tool number : — (J-44372)



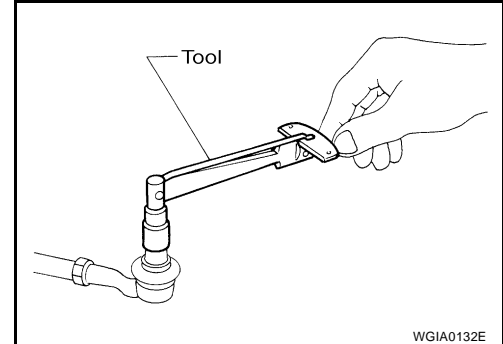
Item	Outer socket	Inner socket
Measuring point	Cotter pin hole of stud	Shown as L: 83.2 mm (3.276 in)
Swing torque	0.3 – 2.9 N·m (0.03 – 0.29 kg·m, 3 – 25 in·lb)	1.0 – 7.8 N·m (0.11 – 0.79 kg·m, 9 – 69 in·lb)
Measuring value (F)	4.84 – 46.7 N (0.50 – 4.7 kg·f, 4 - 34 lb·f)	12.1 – 93.7 N (1.3 – 9.5 kg, 9 – 69 lb)

ROTATING TORQUE

- Measure the rotating torque, using Tool. If the value is outside the specification, replace the outer sockets.

Tool number : ST3127S000 (J-25765-A)

Rotating torque : 0.3 – 2.9 N·m (0.03 – 0.29 kg·m, 3 – 25 in·lb)

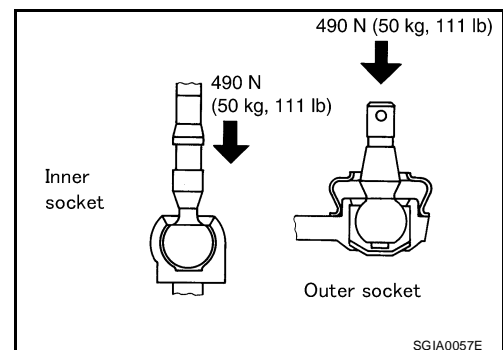


AXIAL END PLAY

- Apply a load of 490 N (50 kg·f, 110 lb·f) to the ball stud axially. Use a dial gauge to measure the amount of the movement that the stud makes. If the value is outside the specification, replace the sockets.

Outer socket : 0.5 mm (0.020 in) or less

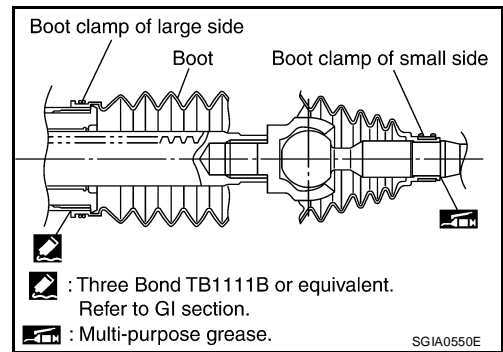
Inner socket : 0.2 mm (0.008 in) or less



POWER STEERING GEAR AND LINKAGE

ASSEMBLY

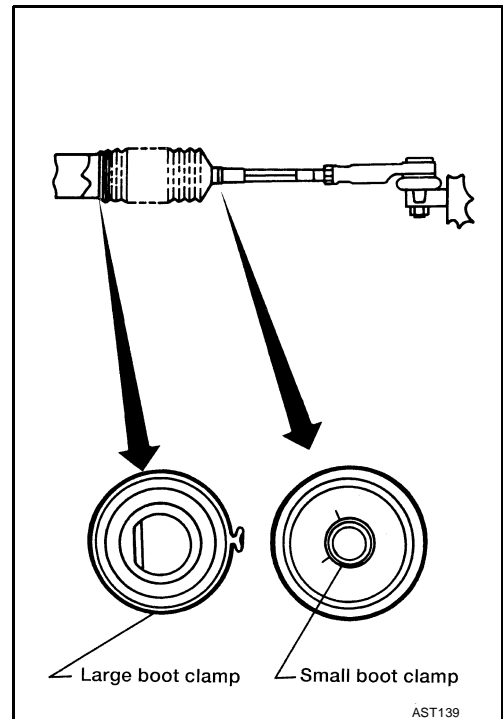
1. Install the inner sockets.
2. Install the large-diameter side of the boots to the gear housing assembly.
3. Install the small-diameter side of the boots to the groove of the inner sockets.



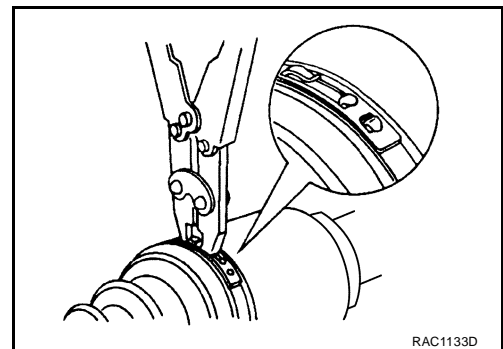
4. Install the boot clamps to the boots, as shown.

CAUTION:

Do not reuse the large-diameter boot clamps.



5. Crimp the large-diameter boot clamps, using Tool.
Tool number : KV40107300 (—)
6. Install the cylinder tubes to the gear housing assembly.
7. Install the lock nuts and outer sockets to the inner sockets.

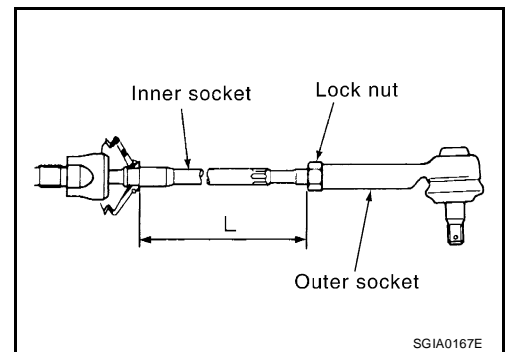


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POWER STEERING GEAR AND LINKAGE

8. Thread the outer sockets onto the inner sockets to the specified length "L", then tighten the lock nuts to the specification. Refer to [PS-18, "Disassembly and Assembly"](#) . Reconfirm that the tie-rod length "L" is within specification.

**Maximum inner socket : 115.2 mm (4.54 in)
length "L"**



POWER STEERING OIL PUMP

PFP:49110

EGS00076

POWER STEERING OIL PUMP

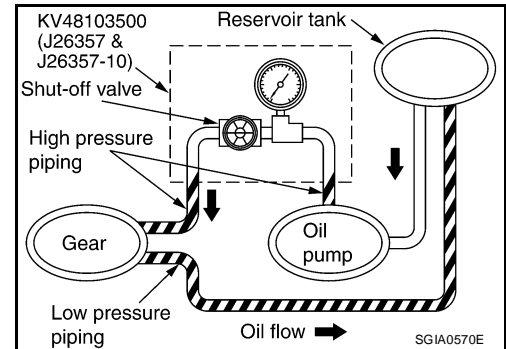
On-Vehicle Inspection and Service CHECKING RELIEF OIL PRESSURE

CAUTION:

Before starting work, confirm belt tension is proper.

1. Connect Tool between oil pump discharge connector and high pressure hose and then bleed air from the hydraulic circuit.

Tool number:		
Pressure gauge and shut-off valve		KV48103500 (J26357 and J26357-10)
Oil pump side	Connector A and O-ring	KV48105300-4 and 5295262U10 (—)
	Eye-bolt and O-ring	KV48105300-3 and 5295262U00 (—)
High pressure piping side	Connector B and O-ring	KV48105300-1 and 5295262U00 (—)
	Nut	KV48105300-2 (—)



2. Start engine. Allow engine to run until tank temperature reaches 50 – 80°C (122 – 176°F).

CAUTION:

- Warm up engine with shut-off valve fully opened. If engine is started with shut-off valve closed, fluid pressure in power steering pump increases to maximum. This will raise fluid temperature excessively.
- Be careful not to contact hose with belt when engine is started.

3. With engine at idle, close shut-off valve and read the relief oil pressure.

Relief oil pressure : 9.0 – 9.8 mPa (91.77 – 99.93 kg/cm² , 1305.34 – 1421.37 psi)

CAUTION:

Do not close shut-off valve of pressure gauge for more than 10 seconds.

4. After measurement, open shut-off valve slowly.
 - If relief oil pressure is outside the specification, disassemble and repair oil pump. Refer to [PS-18, "Disassembly and Assembly"](#) .
5. After inspection, disconnect oil pressure gauge and oil pressure gauge adapter from hydraulic circuit, connect oil pump discharge connector and high pressure hose. Add fluid and bleed air from hydraulic circuit thoroughly. Refer to [PS-6, "Air Bleeding Hydraulic System"](#) .

Removal and Installation

REMOVAL

EGS00077

1. Drain power steering fluid from reservoir tank.
2. Remove air duct assembly. Refer to [EM-15, "Removal and Installation"](#) .
3. Remove power steering reservoir tank.
4. Remove serpentine drive belt from auto tensioner and power steering pump. Refer to [EM-13, "Removal and Installation"](#) .
5. Disconnect pressure sensor electrical connector.
6. Remove high pressure and low pressure piping from power steering oil pump. Refer to [PS-25, "HYDRAULIC LINE"](#) .
7. Remove bolts, then remove power steering pump.

INSTALLATION

Installation is in the reverse order of removal. Refer to [PS-25, "HYDRAULIC LINE"](#) for tightening torque.

- After installation, bleed air. Refer to [PS-6, "Air Bleeding Hydraulic System"](#) .

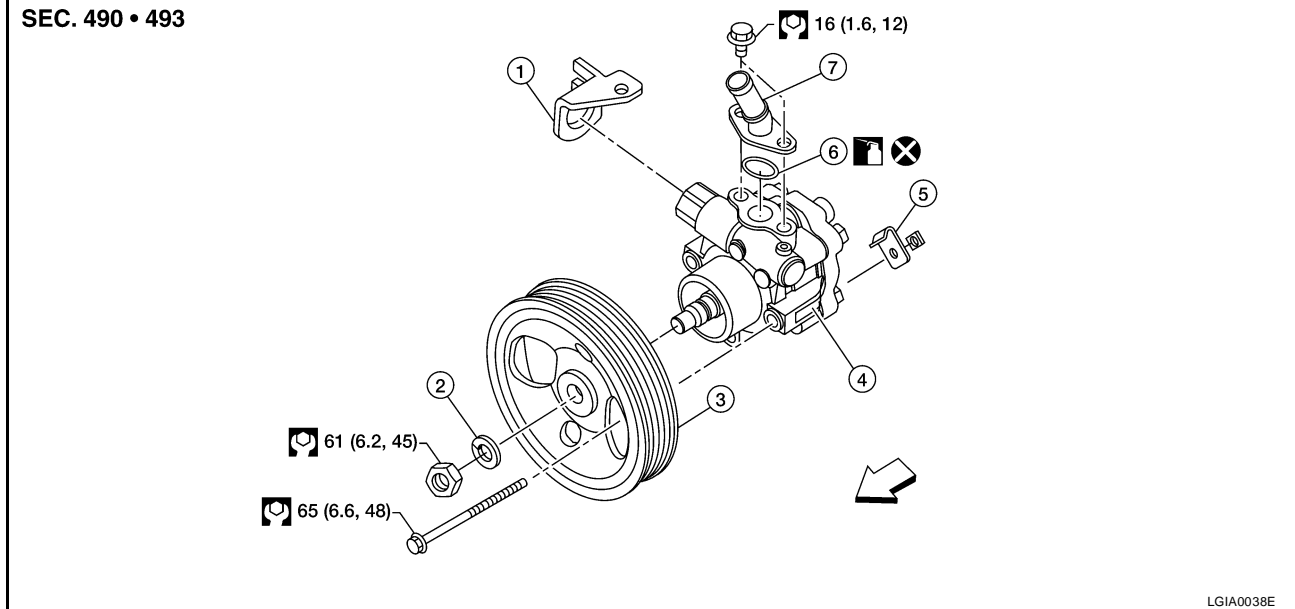
NOTE:

Belt tension is automatic and requires no adjustment.

POWER STEERING OIL PUMP

Disassembly and Assembly

EGS00078



- | | | |
|------------------------|-------------------------------|-----------|
| 1. Bracket | 2. Spring washer | 3. Pulley |
| 4. Power steering pump | 5. High pressure hose bracket | 6. O-ring |
| 7. Suction pipe | ← Front | |

INSPECTION BEFORE DISASSEMBLY

Disassemble the power steering oil pump only if the following items are found.

- Deformed or damaged pulley, bracket, connector or suction pipe.
- Oil leakage from the suction pipe or connector.

DISASSEMBLY

NOTE:

Mount the power steering oil pump in a vise as needed.

1. Remove the connector bolt, connector and copper washers.

CAUTION:

Do not reuse the copper washers.

2. Remove the suction pipe and O-ring.

CAUTION:

Do not reuse the O-ring.

3. Remove the pulley nut and pulley.
4. Remove the bracket bolts and bracket.

INSPECTION AFTER DISASSEMBLY

Body Assembly Inspection

Check the power steering oil pump body assembly for damage. If any damage is found, replace with a new power steering oil pump assembly.

ASSEMBLY

Assembly is in the reverse order of disassembly.

CAUTION:

- **Do not reuse the copper gaskets**
- **Do not reuse the O-ring. Apply a coat of Genuine Nissan PSF or equivalent to the O-ring.**

HYDRAULIC LINE

PFP:49721

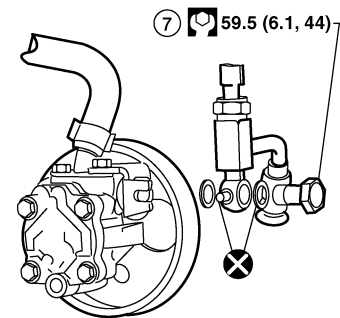
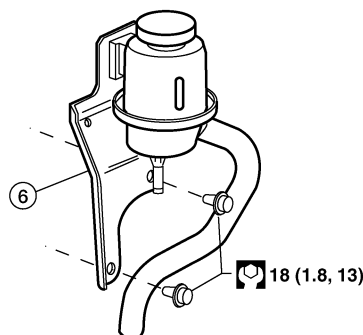
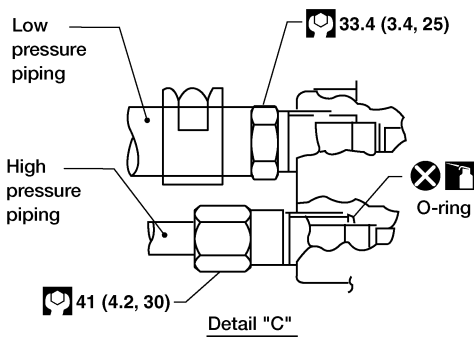
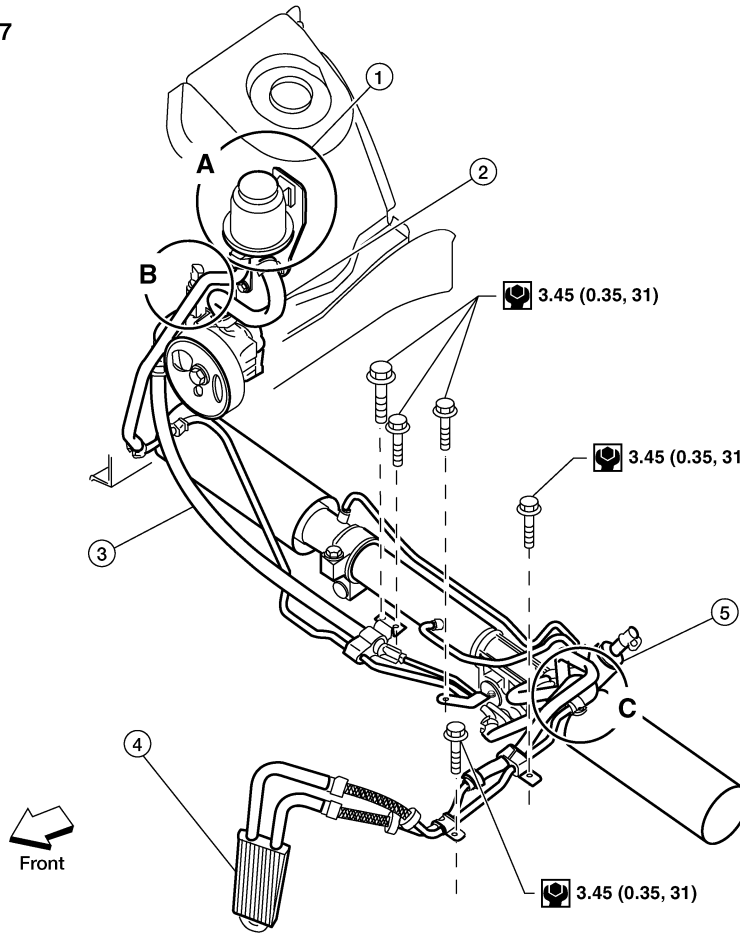
HYDRAULIC LINE

Removal and Installation

EGS00079

Refer to the following illustration for hydraulic line removal.

SEC. 490 • 492 • 497



- : Lubricate with engine oil
- : N-m (kg-m, ft-lb)
- : N-m (kg-m, in-lb)
- : Always replace after every disassembly.

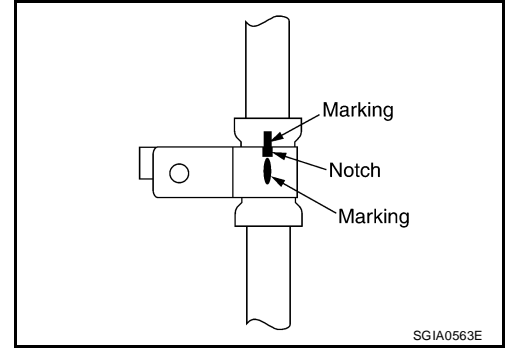
- | | | |
|-------------------|---------------------------|---------------------------|
| 1. Reservoir tank | 2. Suction hose | 3. High pressure hose |
| 4. Oil cooler | 5. Steering gear assembly | 6. Reservoir tank bracket |
| 7. Eye bolt | | |

WGIA0111E

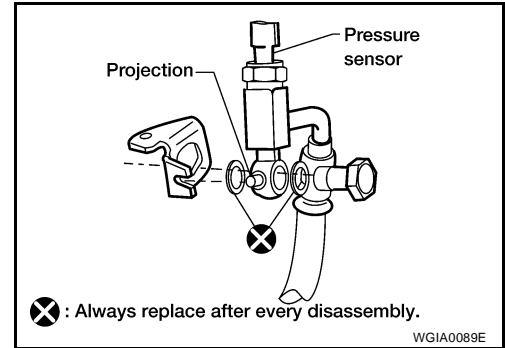
HYDRAULIC LINE

Installation is in the reverse order of removal.

- Confirm mating marks are aligned with hose and clamp, then correct if needed.



- To install eye joint, align projection of eye joint with notch of power steering pump, and attach eye joint to power steering pump properly. Tighten eye bolt by hand fully, then torque to specification.



SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

PF0:00030

Steering Wheel

EGS0007A

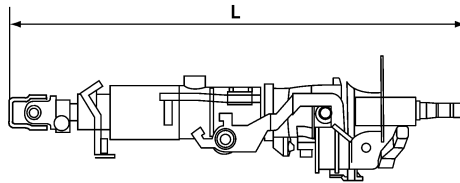
End play of the axial direction for steering wheel	0 mm (0 in)
Steering wheel play on the outer circumference	0 – 35 mm (0 – 1.38 in)
Steering wheel turning force	39 N (4 kg-f, 9 lb-f) or less

Steering Column

Inspection After Assembly

EGS0007B

Unit: mm (in)

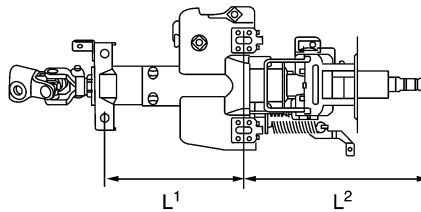


WGIA0080E

Steering column length "L"	610 (24.02)
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Inspection After Removal

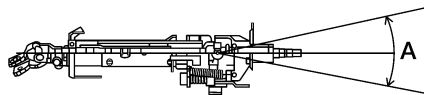
Unit: mm (in)



SGIA0475E

Steering column length "L ¹ "	158 (6.22)
Steering column length "L ² "	262 (10.31)

Inspection After Installation



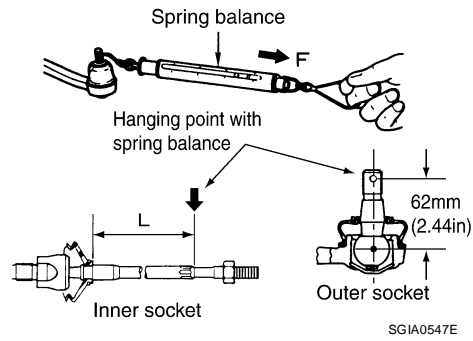
WGIA0083E

Range "A"	61.3 mm (2.41 in)
Tilt mechanism range (Manual tilt)	3° per notch at 5 steps

SERVICE DATA AND SPECIFICATIONS (SDS)

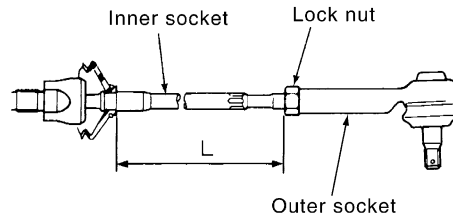
Steering Outer Socket and Inner Socket

EGS0007C



Tie-rod ball joint outer socket	Swinging torque (F)	0.3 – 2.9 N·m (0.03 – 0.29 kg·m, 3 – 25 in-lb)
	Measurement on spring balance ● Measuring point: cotter pin hole of stud	4.84 – 46.7 N (0.50 – 4.7 kg-f, 4 – 34 lb-f)
	Rotating torque	0.3 – 2.9 N·m (0.03 – 0.29 kg·m, 3 – 25 in-lb)
	Axial end play	0.5 mm (0.020 in) or less
Tie-rod ball joint inner socket	Swinging torque	1.0 – 7.8 N·m (0.11 – 0.79 kg·m, 9 – 69 in-lb)
	Measurement on spring balance ● Measuring point: L mark see above, L=83.2 mm (3.276 in).	12.1 – 93.7 N (1.3 – 9.5 kg-f, 9 – 69 lb-f)
	Axial end play	0.2 mm (0.08 in) or less

Unit: mm (in)

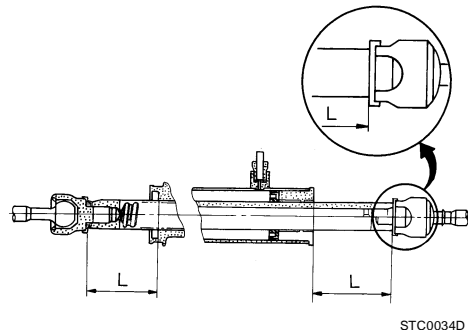


Inner socket length "L"	115.2 (4.54)
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Steering Gear

EGS0007D

Steering gear model	PR26AM
Rack neutral position, dimension "L" (rack stroke)	85.5 mm (3.36 in)



SERVICE DATA AND SPECIFICATIONS (SDS)

Steering gear model		PR26AM	
Rack sliding force	At the neutral point: Range within ± 11.5 mm (± 0.453 in) from the neutral position (in power ON)	Area average value	147 – 211 N (14.99 – 21.52 kg-f, 33.1 – 47.52 lb-f)
		Allowable variation	98 N (10 kg-f, 22 lb-f) or less
	Whole area (in power OFF)	Peak value	294 N (30.0 kg-f, 66 lb-f) or less
		Allowable variation	147 N (16 kg-f, 35 lb-f) or less

Oil Pump

EGS000TE

Relief oil pressure	9.0 – 9.8 mPa (91.77 – 99.93 kg/cm ² , 1305.34 – 1421.37 psi)
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Steering Fluid

EGS000TF

Fluid capacity	Approx. 1.0 ℓ (1-1/8 US qt, 7/8 Imp qt)
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SERVICE DATA AND SPECIFICATIONS (SDS)
