SECTION ST
STEERING SYSTEM

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PRECAUTION

PRECAUTIONS

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

INFOID:0000000014626162

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, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper repair, 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 Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery or batteries, and wait at least three minutes before performing any service.**

Service Notice or Precautions for Steering System

INFOID:0000000014626163

- 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.)

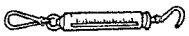
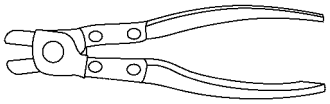
PREPARATION

PREPARATION

Special Service Tools

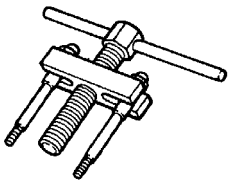
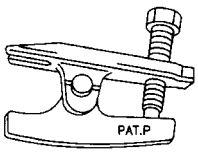
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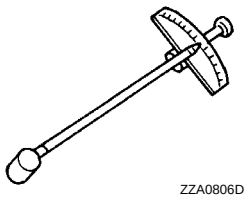
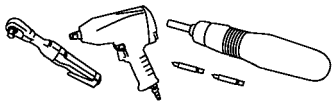
The actual shape of the tools may differ from those illustrated here.

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

INFOID:0000000014626165

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

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

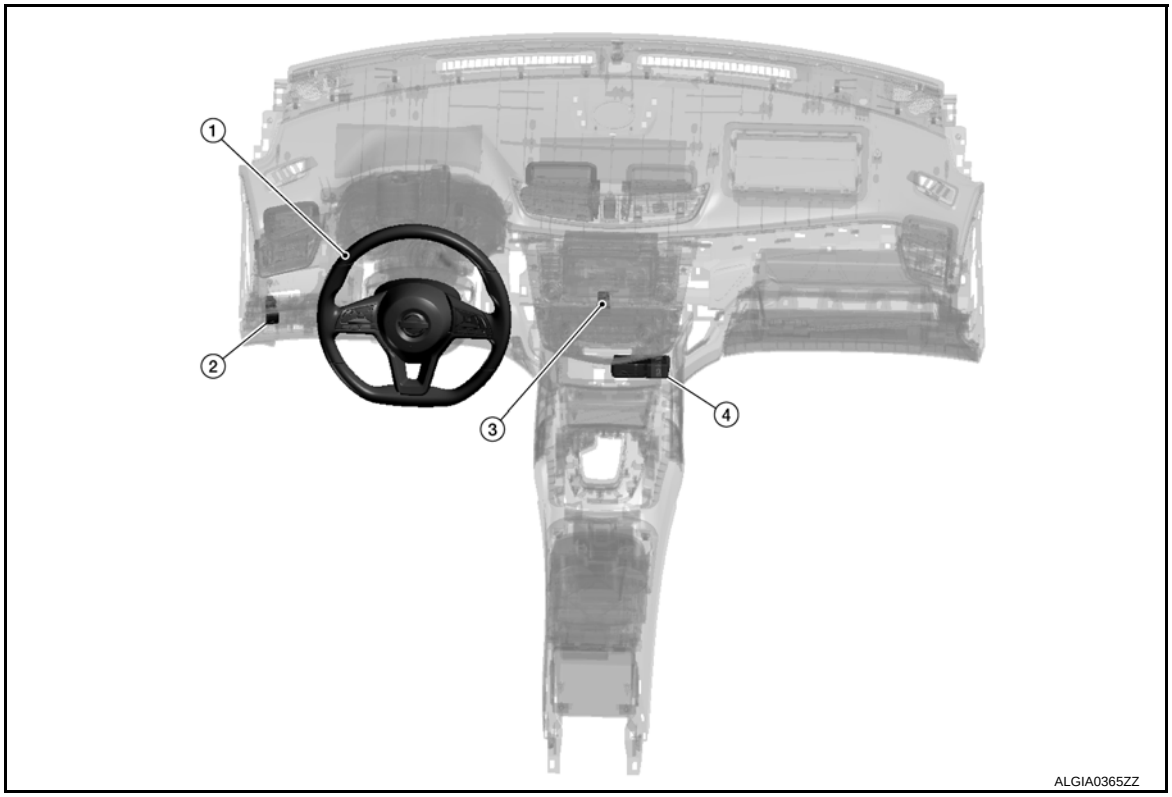
SYSTEM DESCRIPTION

COMPONENT PARTS

HEATED STEERING WHEEL SYSTEM

HEATED STEERING WHEEL SYSTEM : Component Parts Location

INFOID:0000000014906708



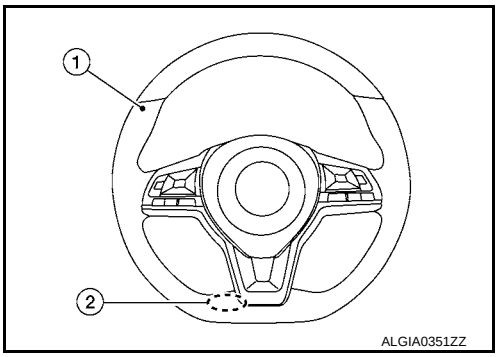
No.	Component	Function
1.	Heated steering wheel	ST-7, "HEATED STEERING WHEEL SYSTEM : Heated Steering Wheel"
2.	Heated steering wheel switch	• Steering heater function ON/OFF. • Refer to ST-37, "Exploded View" for detailed installation location.
3.	Heated steering relay	ST-7, "HEATED STEERING WHEEL SYSTEM : Heated Steering Wheel Relay"
4.	A/C auto amp.	• For the function, refer to ST-7, "HEATED STEERING WHEEL SYSTEM : A/C Auto Amp.". • Refer to HAC-8, "Component Part Location" for detailed installation location.

HEATED STEERING WHEEL SYSTEM : Heated Steering Wheel

INFOID:0000000014906709

With the power supply from the heated steering wheel relay, the heated steering wheel controls temperature through the heating element ① and thermostat ② built into the steering wheel.

- Heating element: Generates heat by energization.
  NOTE:
  Heating element is located at the back of the steering wheel leather surface.
- Thermostat: Turns ON/OFF power supply according to the specified temperature.



HEATED STEERING WHEEL SYSTEM : Heated Steering Wheel Relay

INFOID:0000000014906710

Through the control of the A/C auto amp., the heated steering wheel relay turns ON/OFF electricity to the heating element built into the steering wheel. For location, refer to ST-6, "HEATED STEERING WHEEL SYSTEM : Component Parts Location".

HEATED STEERING WHEEL SYSTEM : A/C Auto Amp.

INFOID:0000000014906711

- A/C auto amp. turns ON/OFF the heated steering wheel relay according to a signal transmitted from display control unit by CAN communication.
- The A/C auto amp. includes a timer. The heated steering wheel relay is turned OFF when the timer operating time reaches 30 minutes.

- Timer: Turns ON/OFF the heated steering wheel relay for a specified period of time

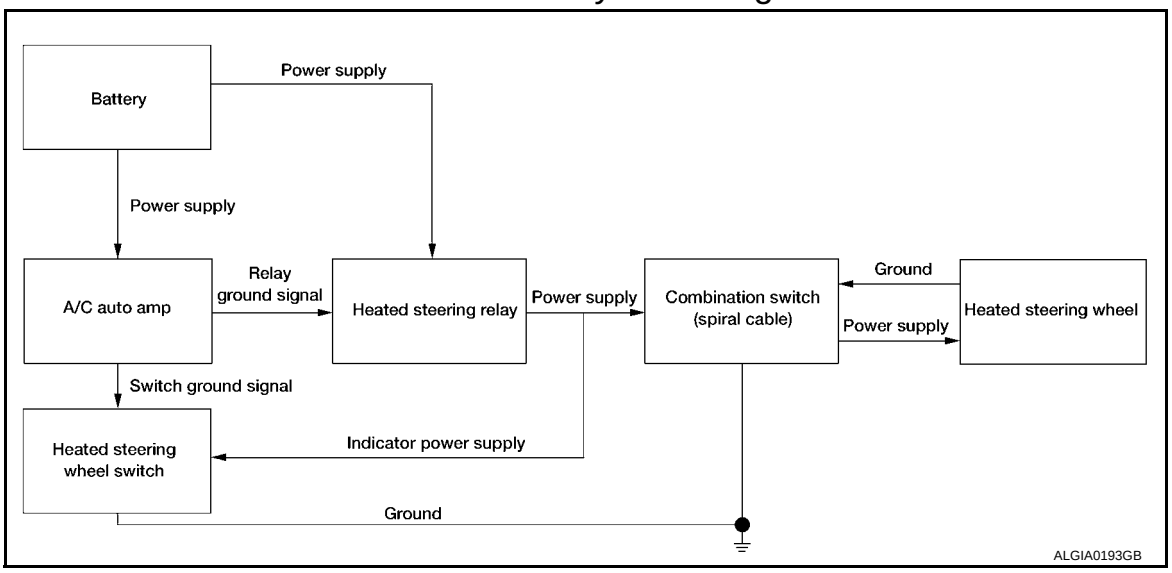
- For other information about the A/C auto amp., refer to HAC-12, "A/C Auto Amp.".

SYSTEM

HEATED STEERING WHEEL SYSTEM

HEATED STEERING WHEEL SYSTEM : System Diagram

INFOID:0000000014906712



HEATED STEERING WHEEL SYSTEM : System Description

INFOID:0000000014906713

The heated steering wheel switch controls the heated steering relay through the A/C auto amp. When the switch is turned on, the relay is energized and the heated steering system will operate. The heated steering system will turn off when the steering wheel temperature reaches approximately 30° C (86° F). Heated steering system operation can also be canceled by pressing the heated steering wheel switch again. If the surface temperature of the steering wheel is below 20° C (68° F), the system will heat the steering wheel and cycle off and on to maintain a temperature above 20° C (68° F). The indicator light will remain on as long as the system is on.

NOTE:

The A/C auto amp. is equipped with a 30-minute timer. After the heated steering wheel switch has been activated for 30 minutes, the system will automatically turn off. If the surface temperature of the steering wheel is above 20° C (68° F) when the switch is turned on, the system will not heat the steering wheel. This is not a malfunction.

ECU DIAGNOSIS INFORMATION

A/C AUTO AMP.

List of ECU Reference

INFOID:0000000014906714

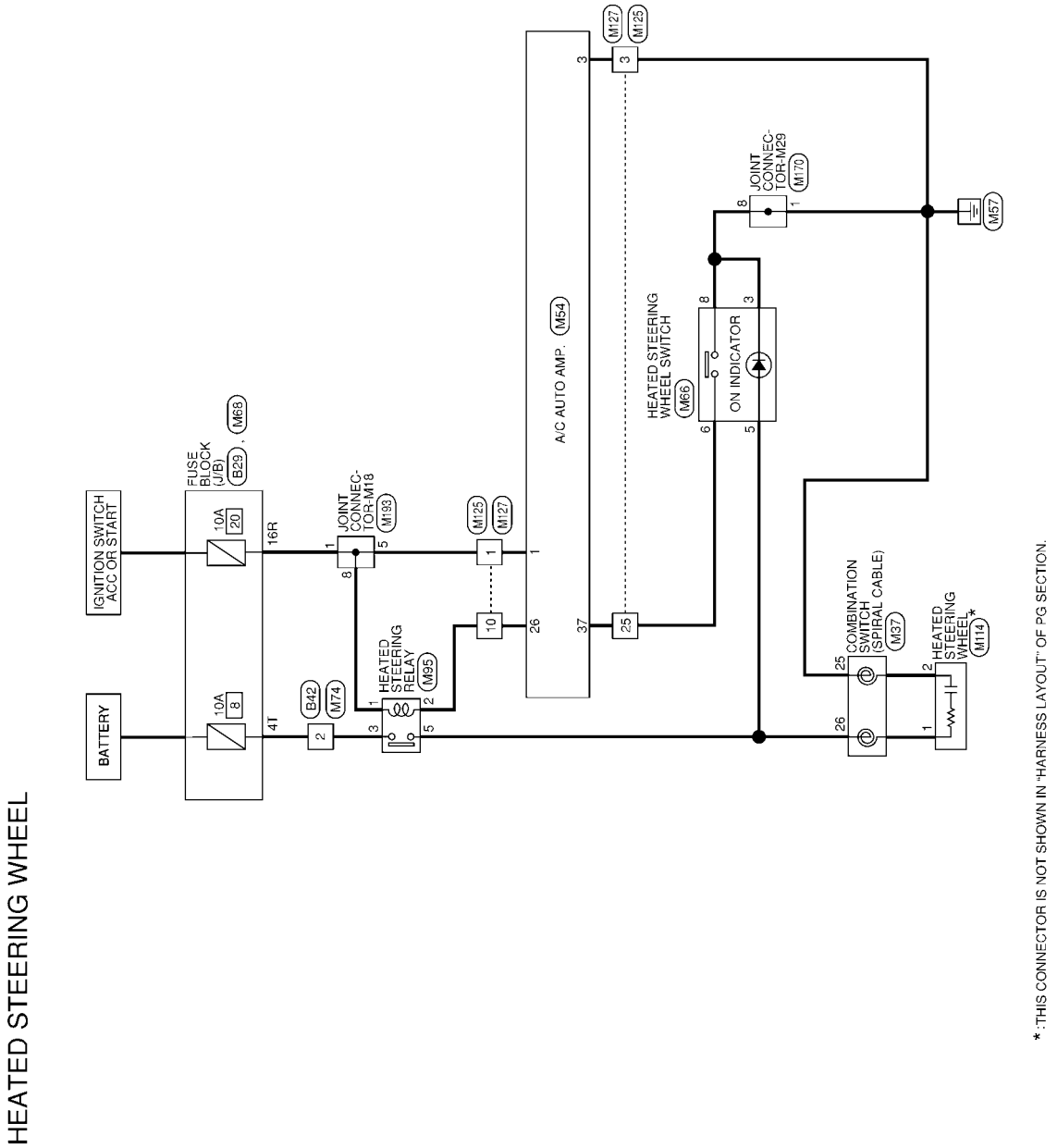
ECU	Reference
A/C auto amp.	HAC-34, "Reference Value"

WIRING DIAGRAM

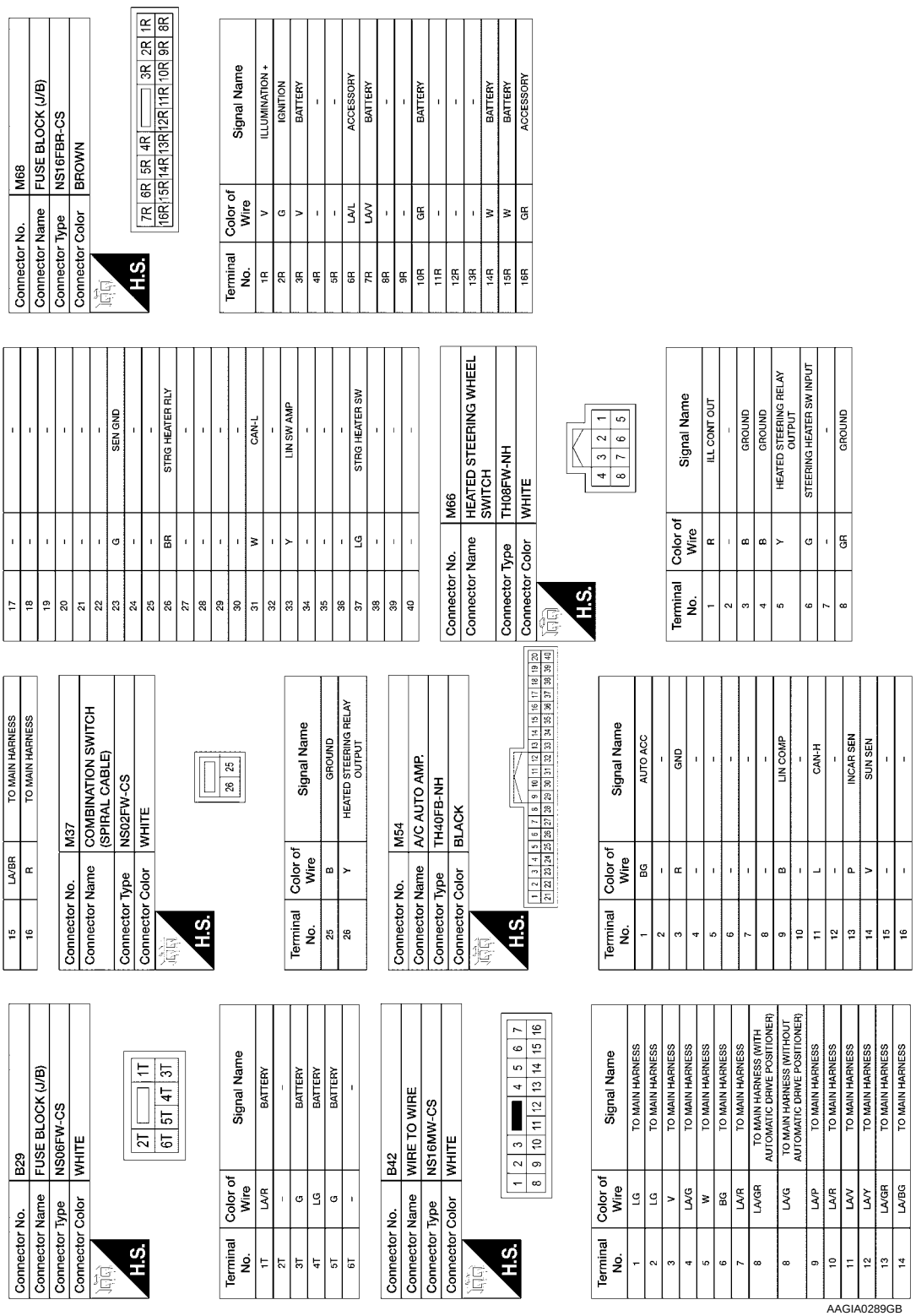
HEATED STEERING WHEEL

Wiring Diagram

INFOID:0000000014906715



HEATED STEERING WHEEL CONNECTORS



AAGIA0289GB

HEATED STEERING WHEEL CONNECTORS

Connector No.	M74
Connector Name	WIRE TO WIRE
Connector Type	NS16FW-CS
Connector Color	WHITE

H.S.

7	6	5	4		3	2	1
16	15	14	13	12	11	10	9	8

Terminal No.	Color of Wire	Signal Name
1	LG	TO BODY HARNESS
2	LG	TO BODY HARNESS
3	V	TO BODY HARNESS
4	Y	TO BODY HARNESS
5	W	TO BODY HARNESS
6	BG	TO BODY HARNESS
7	SB	TO BODY HARNESS
8	BR	TO BODY HARNESS
9	LA/G	TO BODY HARNESS
10	LA/R	TO BODY HARNESS
11	LG	TO BODY HARNESS
12	GR	TO BODY HARNESS
13	BR	TO BODY HARNESS
14	LA/L	TO BODY HARNESS
15	LA/BR	TO BODY HARNESS
16	GR	TO BODY HARNESS

Connector No.	M95
Connector Name	HEATED STEERING RELAY
Connector Type	MS02FL-M2-LC
Connector Color	BLUE

H.S.



Terminal No.	Color of Wire	Signal Name
1	W	ACCESSORY
2	BR	RELAY CONTROL
3	LG	BATTERY
5	Y	RELAY OUTPUT

Connector No.	M114
Connector Name	HEATED STEERING WHEEL
Connector Type	NS02FW-CS
Connector Color	WHITE

H.S.

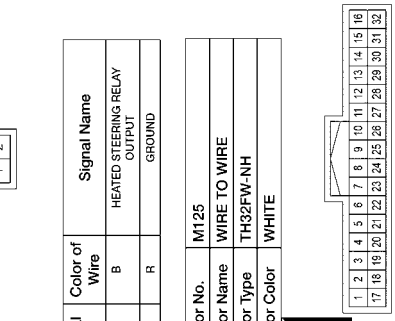


1	2

Terminal No.	Color of Wire	Signal Name
1	B	HEATED STEERING RELAY OUTPUT
2	R	GROUND

Connector No.	M125
Connector Name	WIRE TO WIRE
Connector Type	TH32FW-NH
Connector Color	WHITE

H.S.

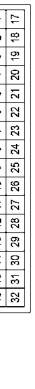


1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

Terminal No.	Color of Wire	Signal Name
1	SB	TO HVAC SUB HARNESS
2	–	TO HVAC SUB HARNESS
3	B	TO HVAC SUB HARNESS
4	–	TO HVAC SUB HARNESS
5	LG	TO HVAC SUB HARNESS
6	–	TO HVAC SUB HARNESS
7	L	TO HVAC SUB HARNESS
8	W	TO HVAC SUB HARNESS
9	R	TO HVAC SUB HARNESS
10	BR	TO HVAC SUB HARNESS
11	V	TO HVAC SUB HARNESS
12	GR	TO HVAC SUB HARNESS
13	LG	TO HVAC SUB HARNESS
14	SB	TO HVAC SUB HARNESS
15	–	TO HVAC SUB HARNESS
16	BR	TO HVAC SUB HARNESS
17	–	TO HVAC SUB HARNESS
18	BR	TO HVAC SUB HARNESS
19	G	TO HVAC SUB HARNESS
20	Y	TO HVAC SUB HARNESS
21	BG	TO HVAC SUB HARNESS
22	–	TO HVAC SUB HARNESS
23	R	TO HVAC SUB HARNESS
24	SB	TO HVAC SUB HARNESS
25	G	TO HVAC SUB HARNESS
26	BR	TO HVAC SUB HARNESS
27	LG	TO HVAC SUB HARNESS
28	W	TO HVAC SUB HARNESS
29	BG	TO HVAC SUB HARNESS
30	G	TO HVAC SUB HARNESS
31	–	TO HVAC SUB HARNESS
32	–	TO HVAC SUB HARNESS

Connector No.	M127
Connector Name	WIRE TO WIRE
Connector Type	TH32MW-NH
Connector Color	WHITE

H.S.



16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17

Terminal No.	Color of Wire	Signal Name
1	BG	TO MAIN HARNESS
2	–	TO MAIN HARNESS
3	R	TO MAIN HARNESS
4	–	TO MAIN HARNESS
5	Y	TO MAIN HARNESS
6	–	TO MAIN HARNESS
7	L	TO MAIN HARNESS
8	W	TO MAIN HARNESS
9	B	TO MAIN HARNESS
10	BR	TO MAIN HARNESS
11	L	TO MAIN HARNESS
12	R	TO MAIN HARNESS
13	L	TO MAIN HARNESS
14	BR	TO MAIN HARNESS
15	–	TO MAIN HARNESS
16	G	TO MAIN HARNESS
17	–	TO MAIN HARNESS
18	BR	TO MAIN HARNESS
19	V	TO MAIN HARNESS
20	P	TO MAIN HARNESS
21	BG	TO MAIN HARNESS
22	–	TO MAIN HARNESS
23	W	TO MAIN HARNESS
24	G	TO MAIN HARNESS
25	LG	TO MAIN HARNESS
26	BR	TO MAIN HARNESS
27	BR	TO MAIN HARNESS
28	W	TO MAIN HARNESS
29	R	TO MAIN HARNESS
30	G	TO MAIN HARNESS
31	–	TO MAIN HARNESS
32	–	TO MAIN HARNESS

Connector No.	M170
Connector Name	JOINT CONNECTOR-M29
Connector Type	SAC08JW
Connector Color	WHITE

H.S.

8	7	6	5	4	3	2	1

Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	B	GROUND
3	B	GROUND
4	B	GROUND
5	B	GROUND
6	B	GROUND
7	B	GROUND
8	B	GROUND

AAGIA0290GB

HEATED STEERING WHEEL CONNECTORS

Connector No.	M193
Connector Name	JOINT CONNECTOR-M18
Connector Type	SAC08JW
Connector Color	WHITE

H.S.

8 7 6 5 4 3 2 1

Terminal No.	Color of Wire	Signal Name
1	GR	ACCESSORY
2	GR	ACCESSORY
3	GR	ACCESSORY
4	GR	ACCESSORY
5	SB	AUTO ACC
6	GR	ACCESSORY
7	GR	ACCESSORY
8	W	ACCESSORY

AAGIA0299GB

BASIC INSPECTION

STEERING WHEEL

Inspection

INFOID:0000000014626167

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-42, "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-29, "Exploded View".
   - Check steering gear condition for looseness. Refer to ST-17, "Inspection".

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-42, "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

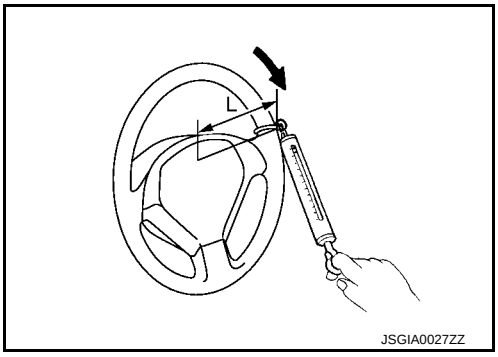
1. Make sure that steering gear, steering column and steering wheel are installed in the correct position.
2. Perform neutral position inspection after wheel alignment. Refer to FSU-7, "Inspection".
3. Set vehicle to the straight-ahead position and confirm steering wheel is in the neutral position.
4. 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-74, "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)

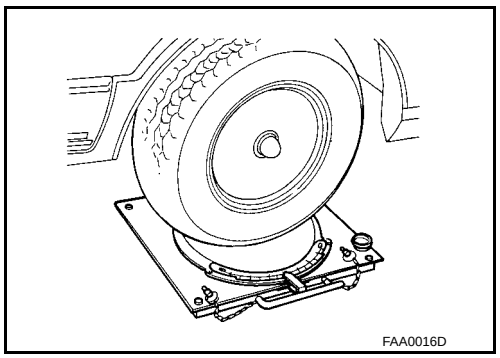
Steering wheel turning force : Refer to ST-42, "Steering Wheel".



FRONT WHEEL TURNING ANGLE

1. Check front wheel turning angle after toe-in inspection. Refer to FSU-7, "Inspection".

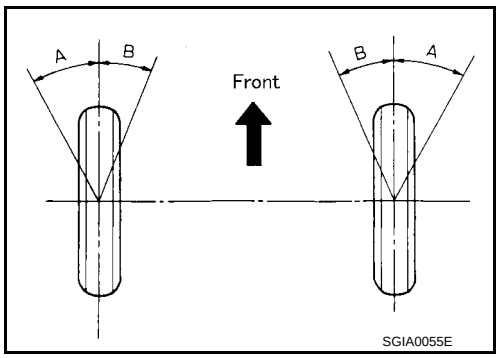
2. Place front wheels on turning radius gauges and rear wheels on stands, so that vehicle can be level.
3. Check the maximum inner and outer wheel turning angles for LH and RH road wheels.



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

Inner wheel (Angle: A) **: Refer to ST-42, "Steering Angle".**

Outer wheel (Angle: B) **: Refer to ST-42, "Steering Angle".**



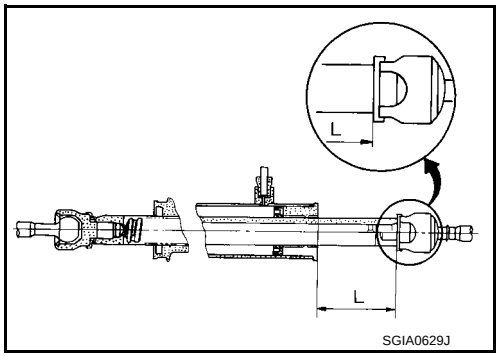
5. Check the following items when turning angle is outside of the standard.

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

Rack stroke in neutral position (L) **: Refer to ST-43, "Steering Gear".**

b. 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

Inspection

INFOID:0000000014626168

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.

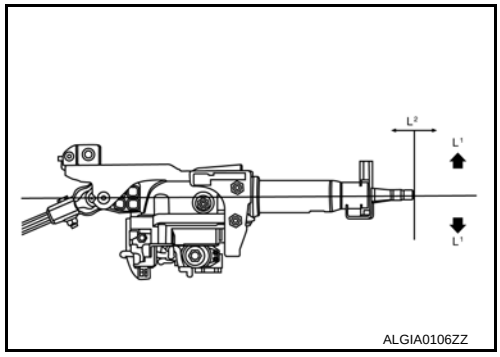
Steering column length (with steering wheel and air bag module installed)	**: Refer to ST-42, "Steering Column".**

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

Rotating torque	**: Refer to ST-42, "Steering Column".**

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

Tilt operating range (L^1)	**: Refer to ST-42, "Steering Column".**
Telescopic operating range (L^2)	**: Refer to ST-42, "Steering Column".**



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STEERING GEAR AND LINKAGE

Inspection

INFOID:0000000014626169

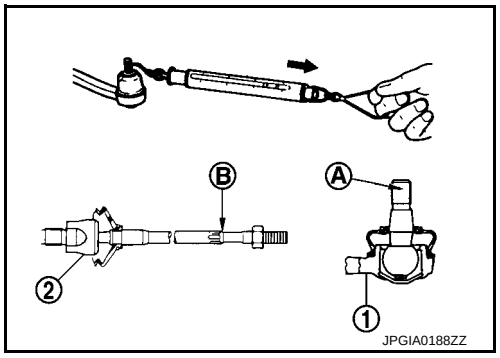
STEERING GEAR

- 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.



JPGIA0188ZZ

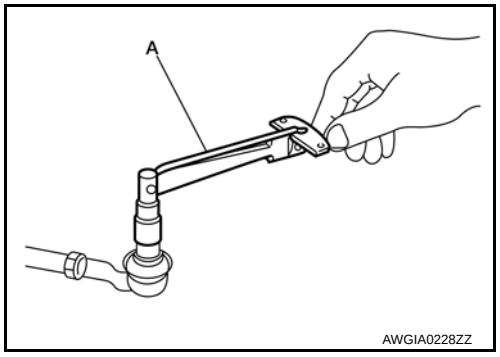
Measuring point of outer socket (1) : Ball stud upper side (A)
Measuring point of inner socket (2) : Point (B)

Tool number : — (J-44372)

Swinging torque : Refer to ST-43, "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.

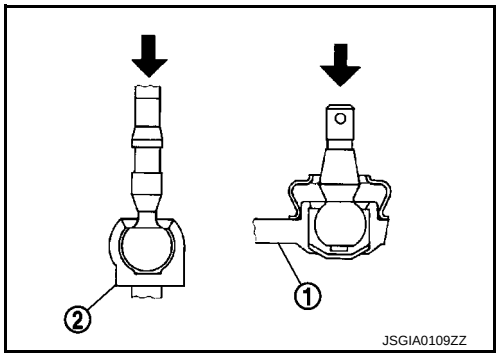


AWGIA0228ZZ

Rotating torque : Refer to ST-43, "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 (1) and inner socket (2) if the measured value is outside specification.



JSGIA0109ZZ

Axial end play : Refer to ST-43, "Steering Gear".

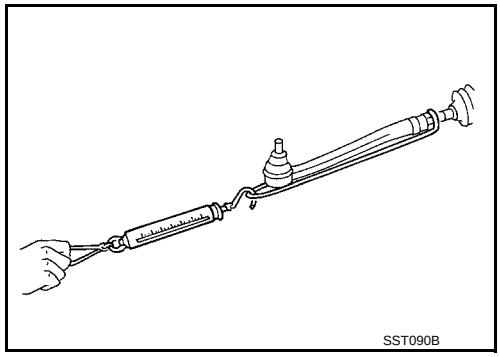
RACK SLIDING FORCE

1. Set the front wheels and tires to the straight-ahead position.
2. Remove the column hole cover. Refer to ST-29, "Exploded View".
3. Remove the joint retaining bolt and separate the steering column joint from the steering gear pinion shaft. Refer to ST-29, "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-29, "Exploded View".

5. 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.
6. Remove outer socket nuts and separate the outer sockets from the steering knuckles.
7. 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-43, "Steering Gear".



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

DTC/CIRCUIT DIAGNOSIS

POWER SUPPLY AND GROUND CIRCUIT
A/C AUTO AMP.

A/C AUTO AMP. : Diagnosis Procedure

INFOID:0000000014906716

Regarding Wiring Diagram information, refer to HAC-45, "Wiring Diagram".

1.CHECK FUSE

Check 10A fuse [No. 20, located in the fuse block (J/B)].

NOTE:

Refer to PG-112, "Terminal Arrangement".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the blown fuse after repairing the affected circuit.

2.CHECK A/C AUTO AMP. POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check voltage between A/C auto amp. harness connector and ground.

(+)		(–)	Voltage		
A/C auto amp.			Ignition switch position		
Connector	Terminal		OFF	ACC	ON
M54	1	Ground	Approx. 0 V	Approx. 0 V	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair harness or connector between A/C auto amp. and fuse block (J/B).

3.CHECK A/C AUTO AMP. GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between A/C auto amp. harness connector and ground.

A/C auto amp.		(–)	Continuity
Connector	Terminal		
M54	3	Ground	Yes

Is the inspection result normal?

YES >> Inspection End.

NO >> Repair harness or connector.

HEATED STEERING WHEEL SYSTEM

Component Function Check

INFOID:0000000014906717

1.CHECK HEATED STEERING WHEEL SYSTEM

Check operation of heated steering wheel system. Refer to ST-8, "HEATED STEERING WHEEL SYSTEM : System Description".

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to ST-20, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000014906718

Regarding Wiring Diagram information, refer to ST-10, "Wiring Diagram".

1.CHECK POWER CIRCUIT

1. Turn ignition switch OFF.
2. Remove the steering wheel. Refer to ST-27, "Removal and Installation".
3. Turn ignition switch ON.
4. Turn heated steering wheel switch ON.
5. Check voltage between heated steering wheel harness connector terminals.

Connector	Terminal		Voltage (Approx.)
	+	-	
M114	1	2	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 3.

2.CHECK HEATED STEERING WHEEL

Check heated steering wheel. Refer to ST-23, "Component Inspection (Heated Steering Wheel)".

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace heated steering wheel. Refer to ST-27, "Removal and Installation".

3.CHECK GROUND CIRCUIT

Check continuity between heated steering wheel harness connector terminal and ground.

Connector	Terminal	Ground	Continuity
M114	2		Yes

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace harness or connector.

4.CHECK HARNESS BETWEEN HEATED STEERING RELAY AND HEATED STEERING WHEEL

1. Turn ignition switch OFF.
2. Disconnect heated steering relay connector.
3. Check continuity between heated steering relay harness connector terminal and steering wheel harness connector terminal.

Heated steering relay		Heated steering wheel		Continuity
Connector	Terminal	Connector	Terminal	
M95	5	M114	1	Yes

4. Check continuity between heated steering relay harness connector terminal and ground.

Heated steering relay		Ground	Continuity
Connector	Terminal		
M95	5		No

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace harness or connector.

5. CHECK HEATED STEERING RELAY

Check heated steering relay. Refer to ST-22, "Component Inspection (Heated Steering Relay)".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace heated steering relay.

6. CHECK POWER TO HEATED STEERING RELAY

Check the following:
- Battery
- Harness for open or short between battery and 10A fuse (No. 8)
- 10A fuse (No. 8)
- Harness for open or short between 10A fuse (No. 8) and heated steering relay

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair or replace damaged parts.

7. CHECK GROUND CIRCUIT

1. Disconnect heated steering wheel switch.
2. Check continuity between heated steering wheel switch harness connector terminal and ground.

Connector	Terminal	Ground	Continuity
M66	8		Yes

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair or replace harness or connector.

8. CHECK HARNESS BETWEEN HEATED STEERING RELAY AND A/C AUTO AMP.

1. Disconnect A/C auto amp.
2. Check continuity between heated steering relay harness connector terminal and A/C auto amp. harness connector terminal.

Heated steering relay		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M95	2	M54	26	Yes

3. Check continuity between heated steering relay harness connector terminal and ground.

Heated steering relay		Ground	Continuity
Connector	Terminal		
M95	2		No

Is the inspection result normal?

YES >> GO TO 9.
NO >> Repair or replace harness or connector.

9. CHECK HARNESS BETWEEN A/C AUTO AMP. AND HEATED STEERING WHEEL SWITCH

1. Check continuity between A/C auto amp. harness connector terminal and heated steering wheel switch harness connector terminal.

A/C auto amp.		Heated steering wheel switch		Continuity
Connector	Terminal	Connector	Terminal	
M54	37	M66	6	Yes

2. Check continuity between A/C auto amp. harness connector terminal and ground.

A/C auto amp.		Ground	Continuity
Connector	Terminal		
M54	37		No

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair or replace harness or connector.

10. CHECK HEATED STEERING WHEEL SWITCH

Check heated steering wheel switch. Refer to ST-22, "Component Inspection (Heated Steering Wheel Switch)".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-120, "Removal and Installation".
NO >> Replace heated steering wheel switch. Refer to ST-37, "Removal and Installation".

Component Inspection (Heated Steering Wheel Switch)

INFOID:0000000014906719

1. CHECK HEATED STEERING WHEEL SWITCH

1. Turn ignition switch OFF.
2. Remove the heated steering wheel switch. Refer to ST-37, "Removal and Installation".
3. Check continuity between heated steering wheel switch terminals.

Terminal		Condition	Continuity
6	8	Switch pressed	Yes
		Switch released	No

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace heated steering wheel switch. Refer to ST-37, "Removal and Installation".

2. CHECK HEATED STEERING WHEEL SWITCH INDICATOR LAMP

Apply 12V direct current between heated steering wheel switch terminals and check that the indicator lamp turns ON.

Terminals		Condition	Indicator lamp status
+	–		
5	3	Apply 12V direct current between terminals	ON

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace heated steering wheel switch. Refer to ST-37, "Removal and Installation".

Component Inspection (Heated Steering Relay)

INFOID:0000000014906720

1. CHECK HEATED STEERING RELAY CONTINUITY

1. Turn ignition switch OFF.
2. Remove heated steering relay. Refer to ST-6, "HEATED STEERING WHEEL SYSTEM : Component Parts Location".
3. Apply 12V direct current between heated steering relay terminals and check continuity.

Terminal	Condition	Continuity
3 – 5	12V direct current applied between terminals 1 and 2.	Yes
	No current applied.	No

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace heated steering relay.

Component Inspection (Heated Steering Wheel)

INFOID:0000000014906721

1. CHECK HEATED STEERING WHEEL CONTINUITY

1. Turn ignition switch OFF.
2. Remove the heated steering wheel. Refer to ST-27, "Removal and Installation".
3. Check continuity between heated steering wheel connector terminals.

Terminals	Condition	Continuity
1 – 2	Surface temperature of less than 30°C (86°F)	Yes
	Surface temperature of 30°C (86°F) or more	No

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace heated steering wheel.

2. CHECK HEATED STEERING WHEEL RESISTANCE

Check resistance between heated steering wheel connector terminals.

Terminals	Condition	Resistance
1 – 2	Surface temperature of 20°C (68°F)	1.7 – 2.17 Ω

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace heated steering wheel. Refer to ST-27, "Removal and Installation".

HEATED STEERING WHEEL SWITCH INDICATOR LAMP

Component Function Check

INFOID:0000000014906722

1.CHECK HEATED STEERING WHEEL SWITCH INDICATOR LAMP

1. Turn ignition switch ON.
2. Turn heated steering wheel switch ON. Observe indicator.
3. Turn heated steering wheel switch OFF. Observe indicator.

Does heated steering wheel switch indicator lamp turn ON and then OFF?

YES >> Inspection End.
NO >> Go to ST-24, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000014906723

Regarding Wiring Diagram information, refer to ST-10, "Wiring Diagram".

1.CHECK POWER CIRCUIT

1. Turn ignition switch OFF.
2. Remove the heated steering wheel switch. Refer to ST-37, "Removal and Installation".
3. Turn ignition switch ON.
4. Check voltage between heated steering wheel switch harness connector terminals.

Connector	Terminal		Voltage (Approx.)
	+	-	
M66	6	8	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 3.

2.CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect heated steering wheel switch connector.
3. Check continuity between heated steering wheel switch harness connector terminal and ground.

Connector	Terminal	Ground	Continuity
M66	3		Yes

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair harness or connector.

3.CHECK HARNESS BETWEEN HEATED STEERING RELAY AND HEATED STEERING WHEEL SWITCH

1. Disconnect heated steering relay connector.
2. Check continuity between heated steering relay harness connector terminal and heated steering wheel switch harness connector terminal.

Heated steering relay		Heated steering wheel switch		Continuity
Connector	Terminal	Connector	Terminal	
M95	5	M66	5	Yes

3. Check continuity between heated steering relay harness connector terminal and ground.

Connector	Terminal	Ground	Continuity
M95	5		No

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair harness or connector.

4. CHECK HEATED STEERING RELAY

Check heated steering relay. Refer to ST-22, "Component Inspection (Heated Steering Relay)".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace heated steering relay.

5. CHECK BATTERY POWER

Check the following:
- Battery
- Harness for open or short between battery and 10A fuse (No. 8)
- 10A fuse (No. 8)
- Harness for open or short between 10A fuse (No. 8) and heated steering relay

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair harness or connector.

6. CHECK HARNESS BETWEEN A/C AUTO AMP. AND HEATED STEERING WHEEL SWITCH

1. Check continuity between A/C auto amp. harness connector terminal and heated steering wheel switch harness connector terminal.

A/C auto amp.		Heated steering wheel switch		Continuity
Connector	Terminal	Connector	Terminal	
M54	37	M66	6	Yes

2. Check continuity between A/C auto amp. harness connector terminal and ground.

A/C auto amp.		Ground	Continuity
Connector	Terminal		
M54	37		No

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair harness or connector.

7. CHECK HEATED STEERING WHEEL SWITCH

Check heated steering wheel switch. Refer to ST-22, "Component Inspection (Heated Steering Wheel Switch)".

Is the inspection result normal?

YES >> Replace A/C auto amp. Refer to HAC-120, "Removal and Installation"
NO >> Replace heated steering wheel switch. Refer to ST-37, "Removal and Installation".

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:0000000014626166

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

Reference			ST-17	ST-17	ST-17	ST-14	ST-14	—	ST-16	ST-16	ST-16	ST-17	DLN-104	RAX-13	FSU-5	FAX-6	WT-62	FAX-6	BR-48
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	×	×	×	×				×	×		×	×	×	×	×	×	×
		Shake					×	×	×				×		×	×	×	×	×
		Vibration					×	×	×	×	×		×		×	×		×	
		Shimmy					×		×			×			×	×	×		×
		Shudder						×	×			×			×	×	×		×

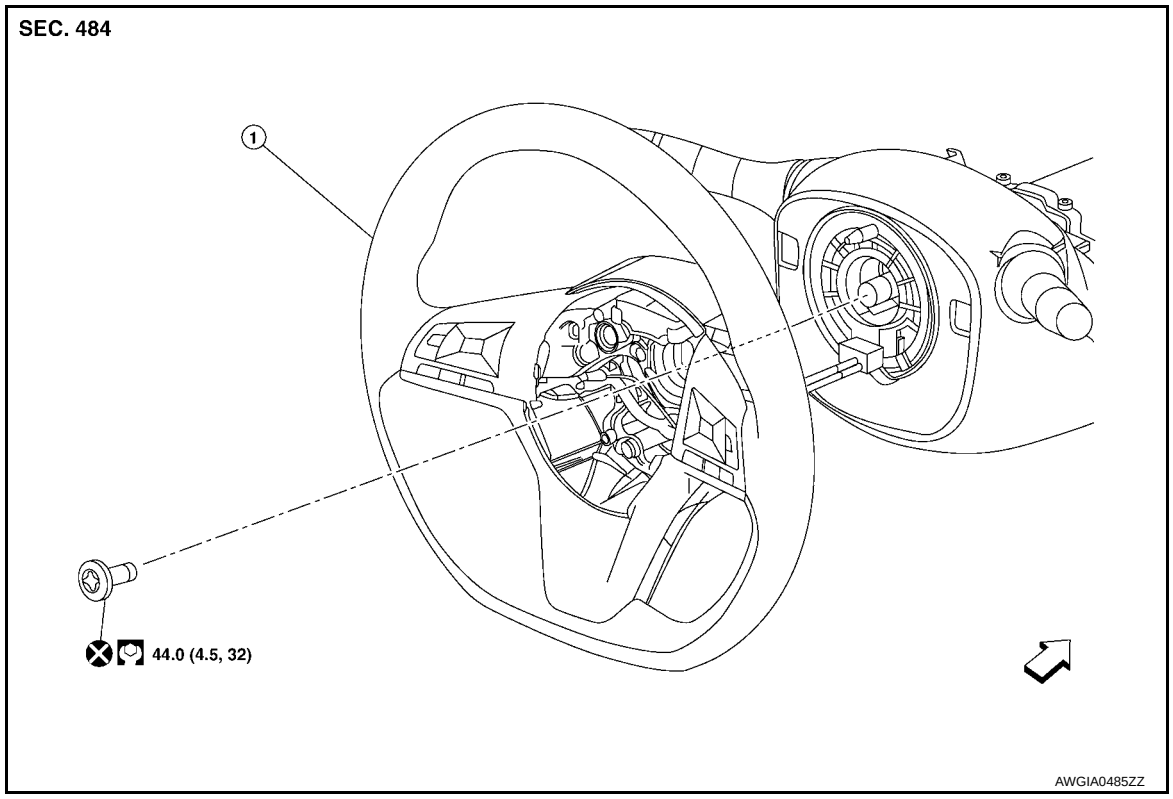
×: Applicable

REMOVAL AND INSTALLATION

STEERING WHEEL

Exploded View

INFOID:0000000014626170



1. Steering wheel ⇨ Front

Removal and Installation

INFOID:0000000014626171

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 heater (if equipped).
5. Disconnect harness connector for steering wheel switches.
6. 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.
7. 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-16, "Removal and Installation".
- Adjust the neutral position of the steering angle sensor. Refer to BRC-77, "Description".
- Tighten steering wheel center bolt to specification.

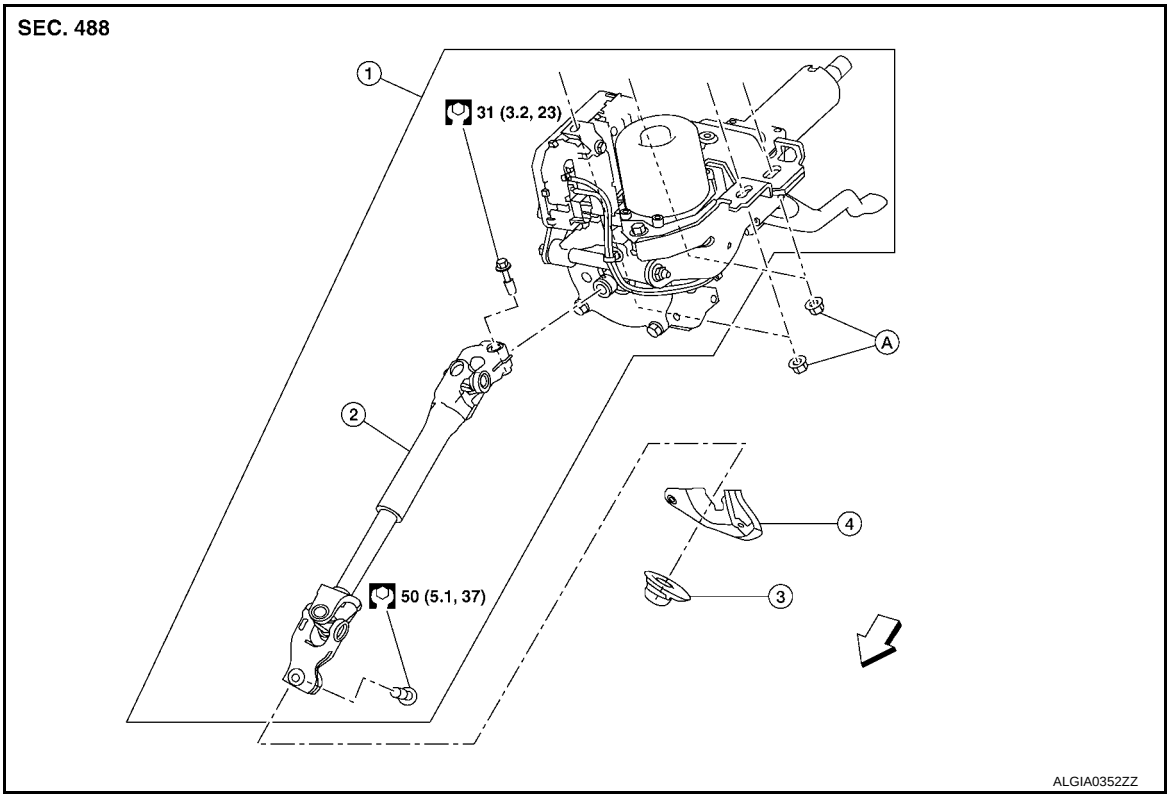
CAUTION:

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

STEERING COLUMN

Exploded View

INFOID:0000000014626172



1. Steering column
2. Lower joint
3. Lower cover seal
4. Column hole cover
A. Refer to INSTALLATION
⇦ Front

Removal and Installation

INFOID:0000000014626173

CAUTION:
Do not cause impact to the steering column during removal and installation.

REMOVAL

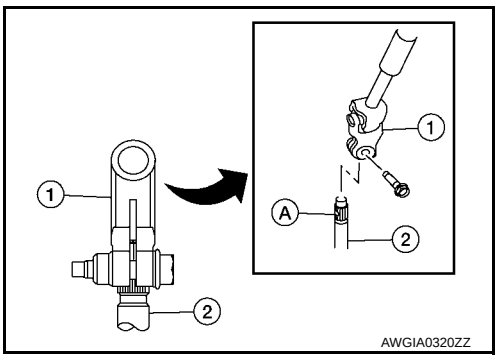
1. Set front wheels and tires in the straight-ahead position.
2. Place the tilt to the highest level.
3. Remove instrument lower panel LH. Refer to IP-22, "Removal and Installation".
4. Remove the knee protector. Refer to IP-14, "Exploded View".
5. Remove steering wheel. Refer to ST-27, "Removal and Installation"
6. Remove steering column covers. Refer to IP-17, "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. Remove column hole cover.
11. 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.
12. Remove nuts and remove steering column.
13. If necessary, remove combination switch. Refer to BCS-74, "Removal and Installation".
14. Perform inspection after removal.

INSTALLATION

Installation is in the reverse order of removal.

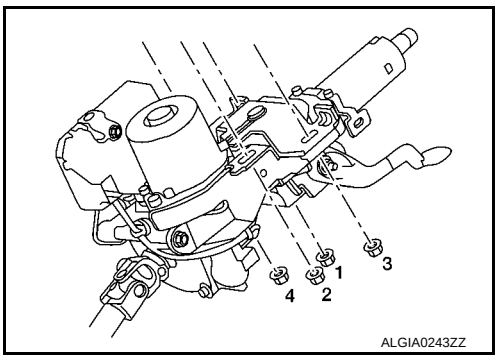
CAUTION:

- **When connecting the steering column (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-77, "Description".

Perform inspection after installation.

Inspection

INFOID:0000000014626174

INSPECTION AFTER REMOVAL

Check each part of steering column for damage or other malfunctions. Replace if there are any abnormal conditions. Refer to ST-16, "Inspection".

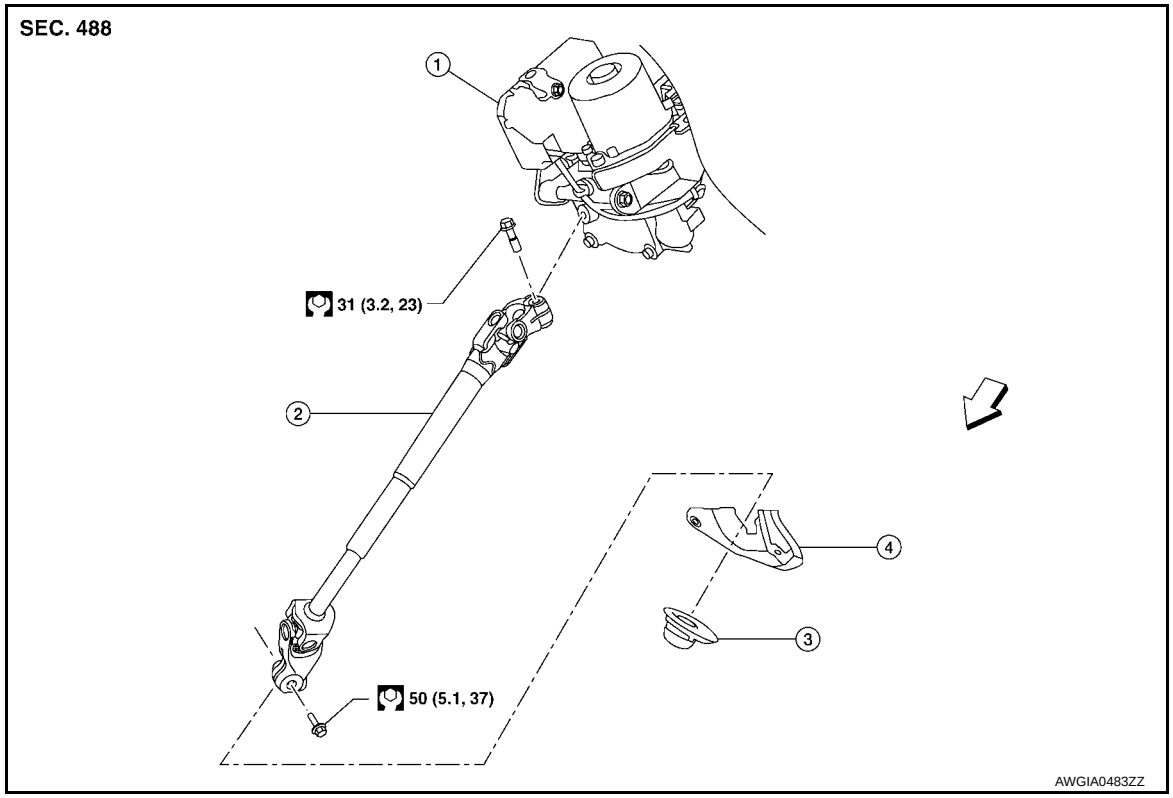
INSPECTION AFTER INSTALLATION

Check the steering wheel play, neutral position steering wheel, steering wheel turning force, and front wheel turning angle. Refer to ST-14, "Inspection".

LOWER JOINT

Exploded View

INFOID:0000000014626175



1. Steering column
2. Lower joint
3. Lower cover seal
4. Column hole cover
⇦ Front

Removal and Installation

INFOID:0000000014626176

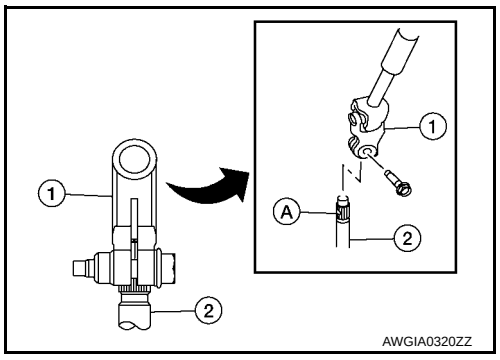
CAUTION:
- **Do not cause impact to the steering column during lower joint removal and installation.**
- **Do not move the steering gear during removal and installation of the lower joint.**

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).

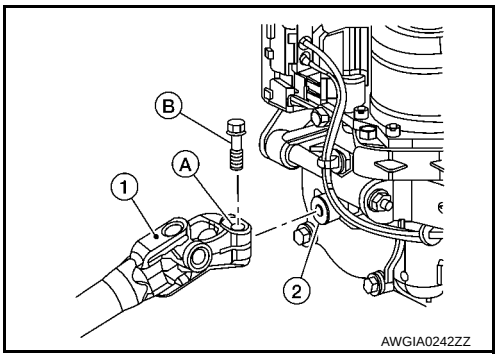
   A. Steering gear pinion shaft pinch bolt groove

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



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

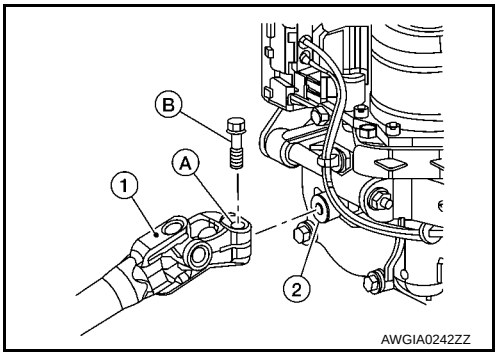


8. Separate the lower joint from the steering gear.
9. Remove the lower joint from vehicle.

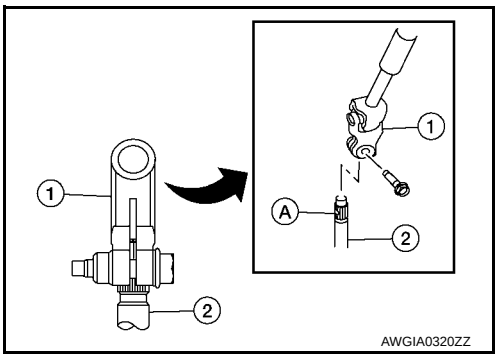
INSTALLATION

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-31, "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-31, "Exploded View".

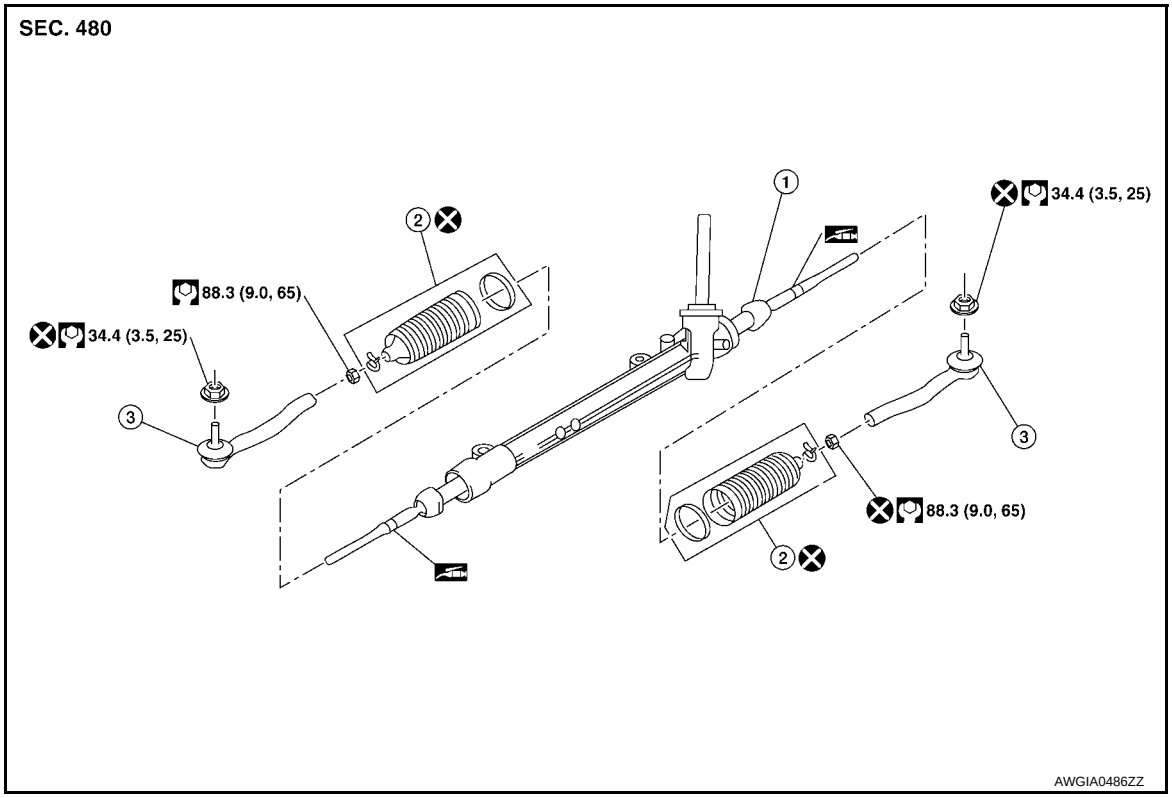
Install remaining components in the reverse order of removal.

- 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-77, "Description".

STEERING GEAR AND LINKAGE

Exploded View

INFOID:0000000014626177



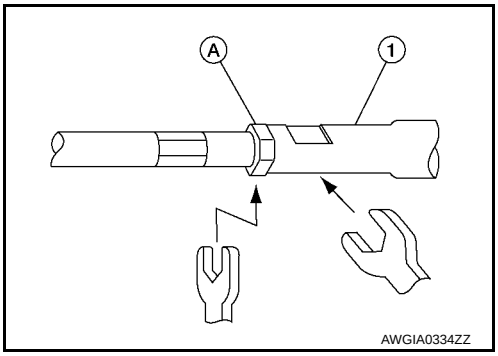
1. Steering gear
2. Boot
3. Outer socket

Removal and Installation - Outer socket

INFOID:0000000014626178

REMOVAL

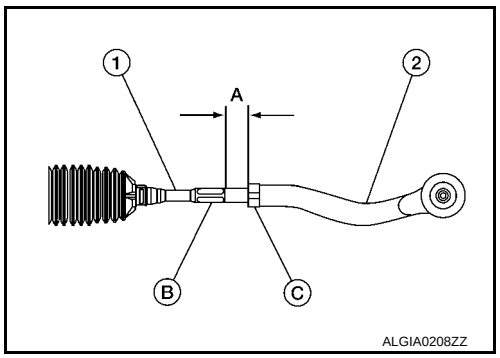
1. Remove the front wheel and tire using power tool.
2. Loosen the inner socket lock nut (A).
   CAUTION:
   To prevent damage, hold outer socket (1) across flats using suitable tool while loosening inner socket lock nut (A).



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.
   CAUTION:
   Do not reuse outer socket nut.

INSTALLATION

1. Install outer socket to inner socket.
2. 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).



(A) : Refer to ST-43, "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-34, "Exploded View".
   CAUTION:
   Do not reuse outer socket nut.
5. Install front wheel and tire. Refer to WT-67, "Removal and Installation".
6. Check wheel alignment. Refer to FSU-28, "Wheel Alignment (Unladen*1)".
7. Adjust the neutral position of the steering angle sensor. Refer to BRC-77, "Description".

Removal and Installation - Boot

INFOID:0000000014626179

REMOVAL

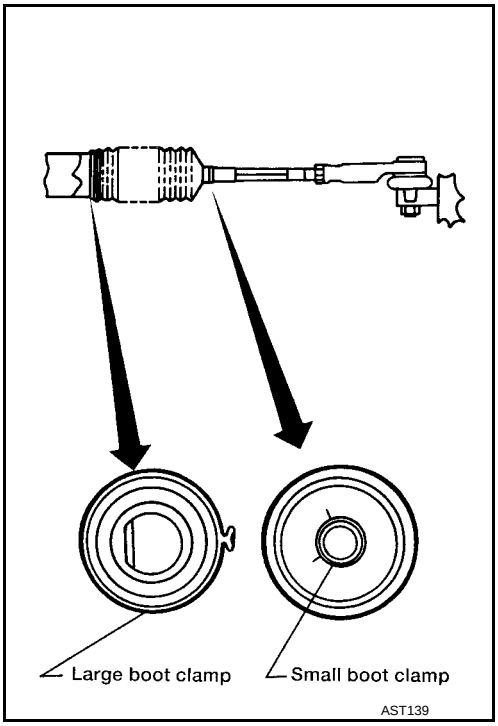
1. Remove outer socket. Refer to ST-34, "Removal and Installation - Outer socket".
2. Remove inner socket lock nut.
3. Remove small boot clamp and large boot clamp.
   CAUTION:
   Do not reuse boot clamps.
4. Remove boot.
   CAUTION:
   Do not reuse boot.

INSTALLATION

1. Install large end of boot onto steering gear housing.
   CAUTION:
   Do not reuse boot.
2. Apply silicone grease between the inner socket and small end of boot. Refer to ST-34, "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.

4. Install small boot clamp.
5. Install large boot clamp using Tool.
   CAUTION:
   Do not reuse boot clamps.

   Tool number : KV40107300 (J-51751)

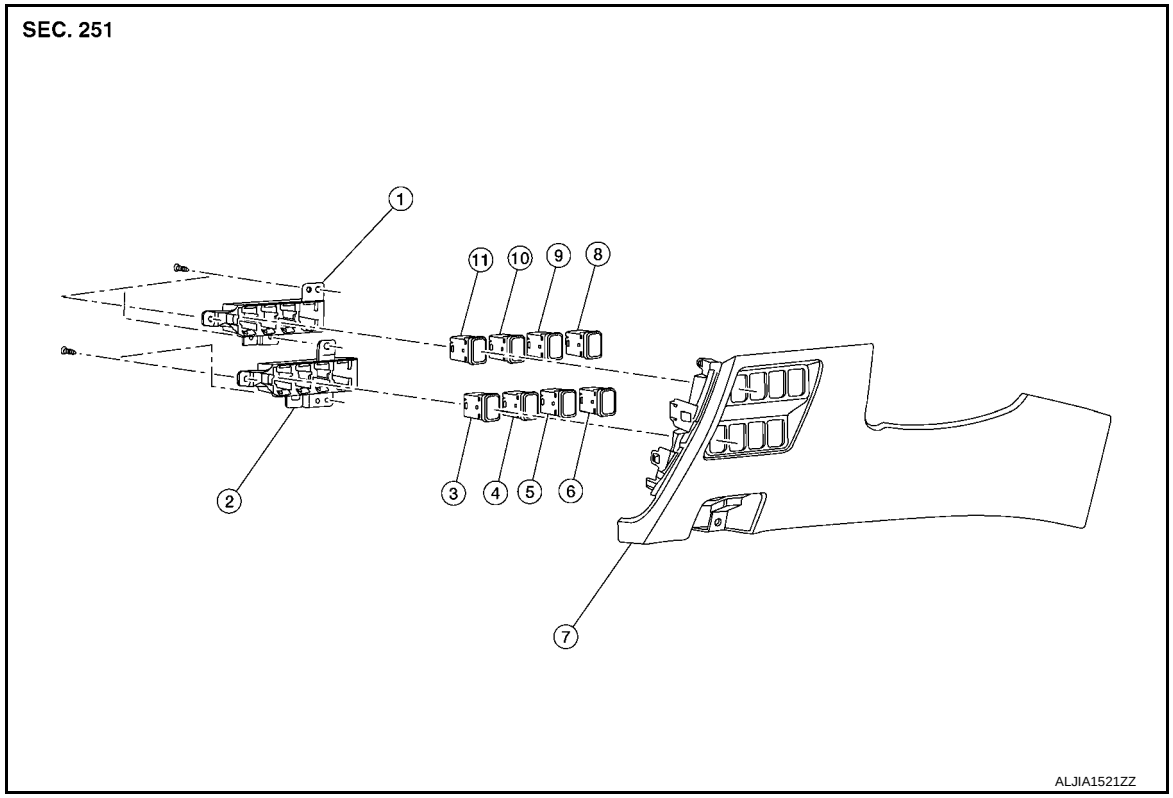


6. Partially thread the inner socket lock nut on the inner socket.
7. Install the outer socket. Refer to ST-34, "Removal and Installation - Outer socket".
8. Check wheel alignment. Refer to FSU-28, "Wheel Alignment (Unladen*1)".
9. Adjust the neutral position of the steering angle sensor. Refer to BRC-77, "Description".

HEATED STEERING WHEEL SWITCH

Exploded View

INFOID:0000000015215150



1.	Upper switch carrier	2.	Lower switch carrier	3.	Heated steering wheel switch
4.	AWD lock switch (if equipped)	5.	Sport mode switch	6.	ECO Mode switch
7.	Instrument lower panel LH	8.	Automatic back door main switch (if equipped)	9.	Automatic back door switch (if equipped)
10.	Warning systems switch	11.	VDC OFF switch		

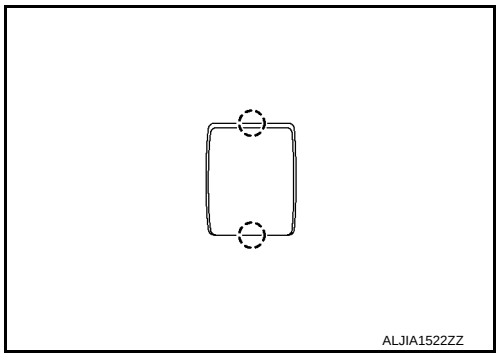
Removal and Installation

INFOID:0000000015215151

REMOVAL

1. Remove instrument lower panel LH. Refer to IP-22, "Removal and Installation".
2. Remove screws and upper switch carrier, then remove screws and lower switch carrier.
3. Release pawls using suitable tool, then remove heated steering wheel switch from the lower switch carrier.

: Pawl

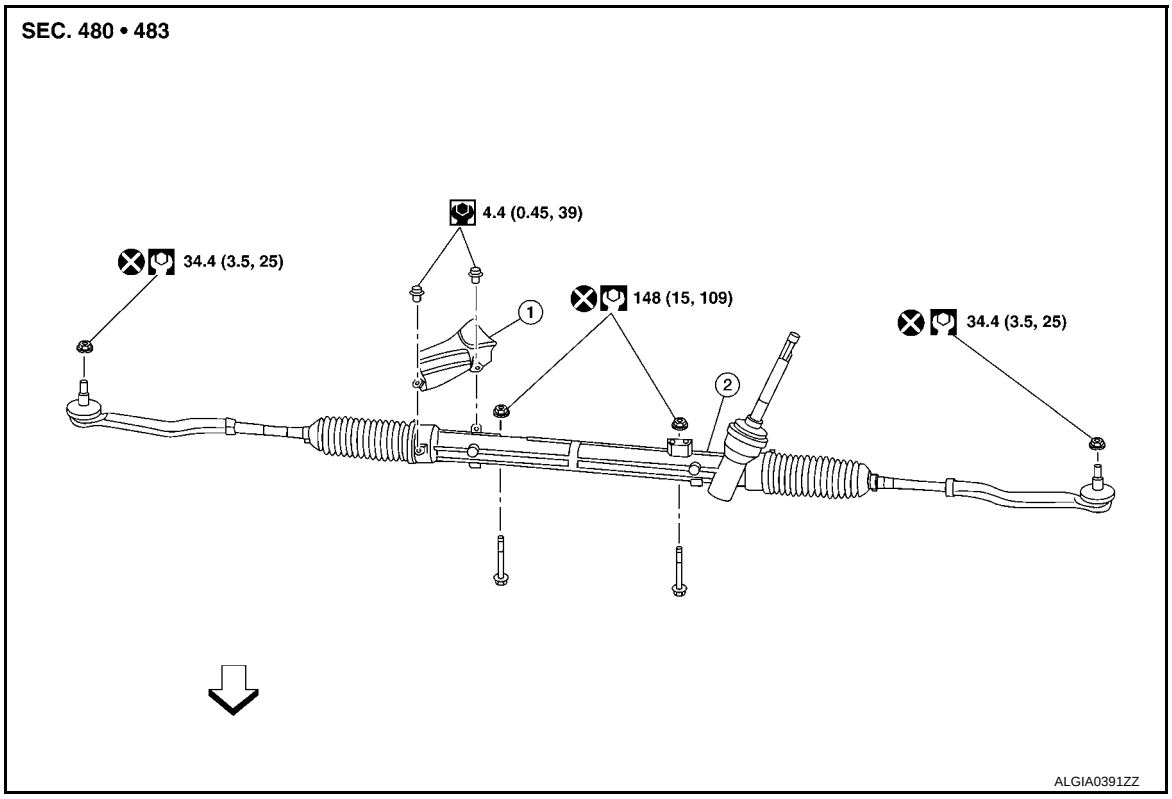


UNIT REMOVAL AND INSTALLATION

STEERING GEAR AND LINKAGE

Exploded View

INFOID:0000000014626180



1. Heat insulator
2. Steering gear
⇦ Front

Removal and Installation

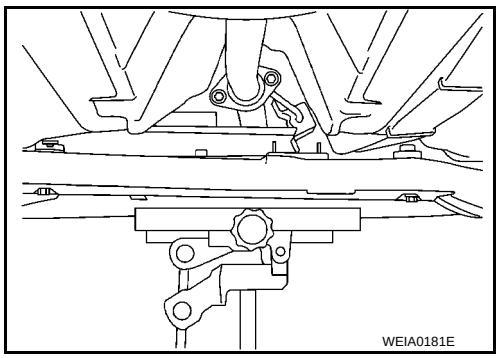
INFOID:0000000014626181

REMOVAL

1. Set the front wheels and tires to the straight-ahead position.
2. Remove the column hole cover. Refer to ST-29, "Exploded View".
3. Remove the pinch bolt and separate the steering column joint from the steering gear pinion shaft. Refer to ST-29, "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-29, "Exploded View".
5. Remove front wheels and tires using power tool.
6. Remove the engine undercover. Refer to EXT-49, "ENGINE UNDER COVER : Removal and Installation".
7. Remove engine side cover (LH/RH). Refer to EXT-40, "FENDER PROTECTOR : Removal and Installation".
8. 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.
9. Remove outer socket nuts and separate the outer sockets from the steering knuckles.
   CAUTION:

Do not reuse outer socket nuts.

10. Remove the nuts and separate the stabilizer connecting rods from the stabilizer bar. Refer to FSU-15, "Exploded View". Position the stabilizer bar aside.
11. Set suitable jack under front suspension member.
12. Disconnect the harness connector for oxygen sensor 2. Refer to EX-7, "Exploded View".
13. Remove the front exhaust mount. Refer to EX-7, "Exploded View".
14. Remove the front exhaust tube. Refer to EX-7, "Exploded View".
15. Remove the rear torque rod. Refer to EM-105, "Exploded View".
16. Remove the front suspension member rear bolts, front suspension member stay and rebound stopper.
17. Gradually lower the jack and the rear of the front suspension member.



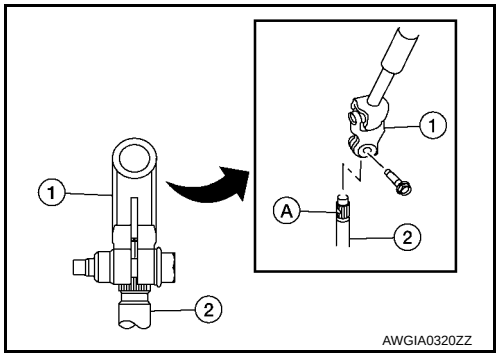
18. Remove bolts and nuts, then remove the steering gear.
    CAUTION:
    Do not reuse steering gear nuts.
19. Remove the steering gear heat insulator (if necessary).

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 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-28, "Wheel Alignment (Unladen*1)".
- Adjust the neutral position of the steering angle sensor. Refer to BRC-77, "Description".

Inspection

INFOID:0000000014626182

INSPECTION AFTER INSTALLATION

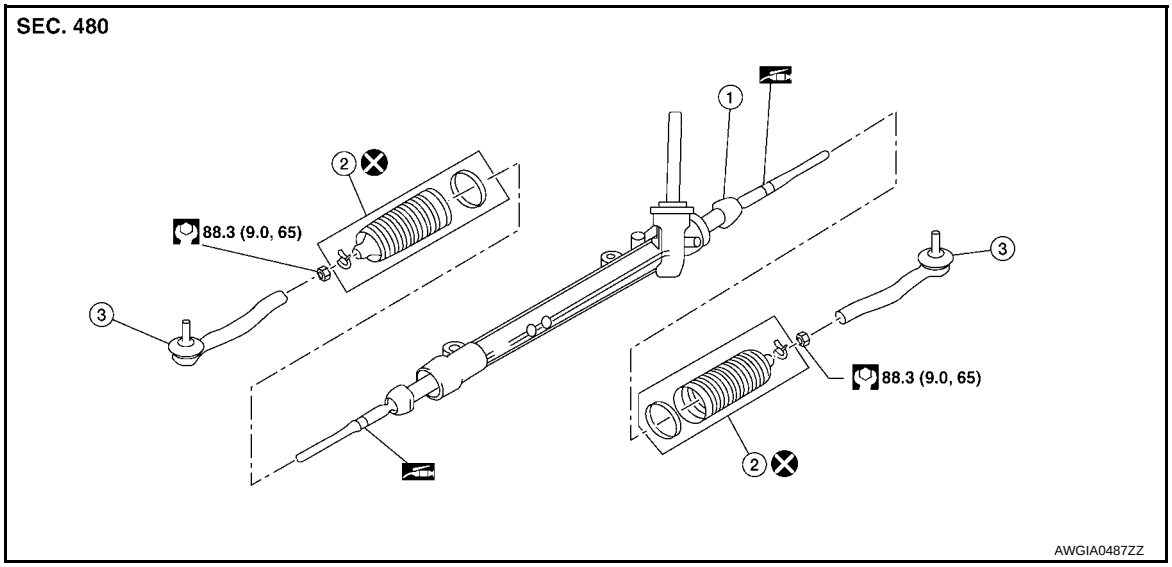
- Check the steering wheel to make sure it moves smoothly while turning to the left and right stops. Make sure the number of turns is the same from the straight-forward position to left and right stops. Make sure that the steering wheel is in a neutral position when driving straight ahead.
- Check the steering wheel play, steering wheel neutral position, steering wheel turning force, and front wheel turning angle. Refer to ST-14, "Inspection".

UNIT DISASSEMBLY AND ASSEMBLY

STEERING GEAR AND LINKAGE

Exploded View

INFOID:0000000014626183



1. Steering gear
2. Boot
3. Outer socket

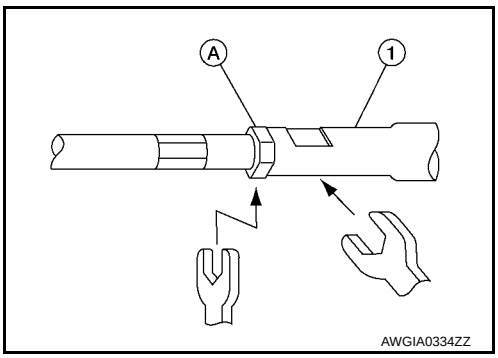
Disassembly and Assembly

INFOID:0000000014626184

DISASSEMBLY

1. Remove inner socket lock nut (A) and remove 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 small and large boot clamps and remove boot.
   CAUTION:
   - **Do not reuse boot.**
   - **Do not reuse boot clamps.**

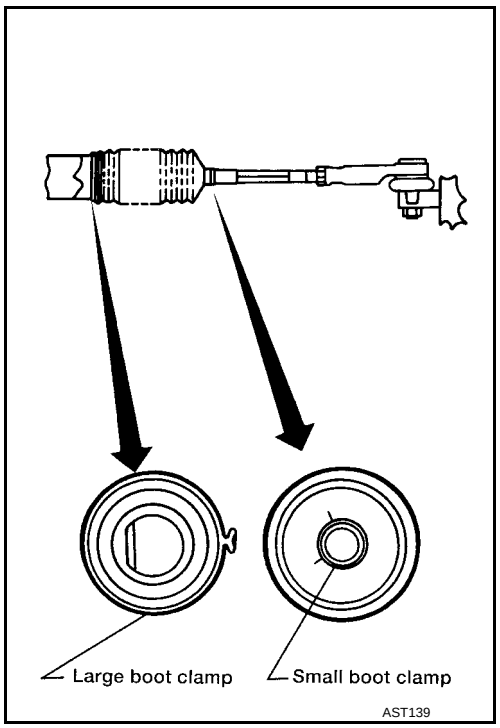
ASSEMBLY

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-40, "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.

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

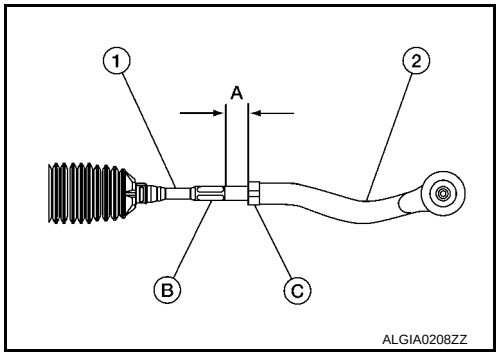
CAUTION:
Do not reuse boot clamps.

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).

(A) : Refer to ST-43, "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)

Steering Wheel

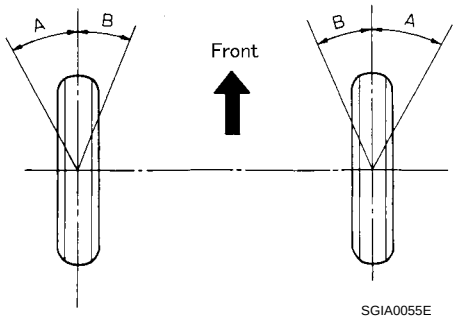
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Item	Standard
Steering wheel axial end play	0 mm (0 in)
Steering wheel play	0 - 35 mm (0 - 1.38 in)
Steering wheel turning force	34 N-f (3.5 kg-f, 7.64 lb-f) or less

Steering Angle

INFOID:0000000014626186

Unit: Degree minute (Decimal degree)



SGIA0055E

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°)

Steering Column

INFOID:0000000014626187

STEERING COLUMN LENGTH

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)

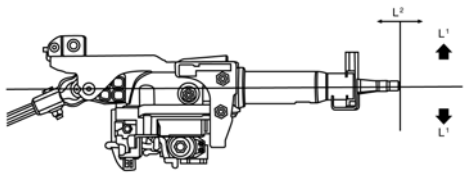
STEERING COLUMN ROTATING TORQUE

Unit: N·m (kg-m, in-lb)

Rotating torque	1.3 - 1.9 (0.13 - 0.19, 12 - 17)

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

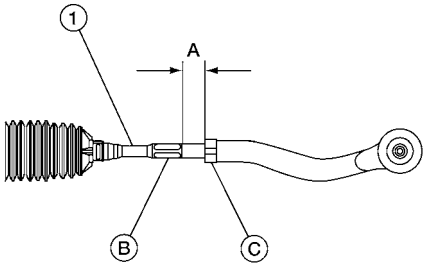
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STEERING OUTER SOCKET AND INNER SOCKET

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

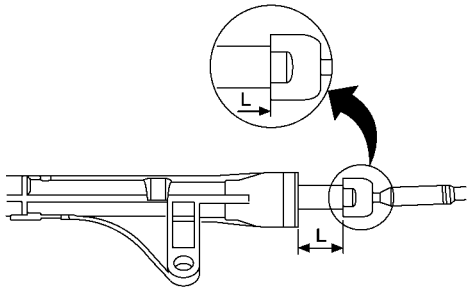
INNER AND OUTER SOCKET LENGTH

Distance (A) from inner socket (1) flat (B) to inner socket locknut (C)	17 mm (0.67 in)



AWGIA0488ZZ

RACK STROKE



AWGIA0003GB

Rack stroke in neutral position (L)	74 mm (2.9 in)

RACK SLIDING FORCE

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