

# SECTION **STC**

## STEERING CONTROL SYSTEM

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**STC**

# DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

## BASIC INSPECTION

### DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000010989935

DETAILED FLOW

#### 1. COLLECT THE INFORMATION FROM THE CUSTOMER

It is also important to clarify customer complaints before inspection. First of all, reproduce symptoms, and understand them fully. Ask customer about his/her complaints carefully. In some cases, it is necessary to check symptoms by driving vehicle with customer.

**CAUTION:**

**Customers are not professional. It is dangerous to make an easy guess like “maybe the customer means that...,” or “maybe the customer mentions this symptom”.**

>> GO TO 2.

#### 2. CHECK THE STATUS

1. Power steering fluid leakage and check the power steering fluid level. Refer to [ST-9, "Inspection"](#).
2. Check the drive belt tension. Refer to [EM-20, "Checking"](#).
3. Check the power steering gear for damages, cracks and fluid leakage. Refer to [ST-9, "Inspection"](#).
4. Check the relief oil pressure. Refer to [ST-43, "Inspection"](#).

>> GO TO 3.

#### 3. DIAGNOSIS CHART BY SYMPTOM

Perform the diagnosis by symptom. Refer to [STC-19, "Diagnosis Procedure"](#).

>> GO TO 4.

#### 4. FINAL CHECK

Check the input/output standard values for the power steering control unit.

Are the power steering control unit input/output values within standard ranges respectively?

YES >> INSPECTION END

NO >> GO TO 2.

# EPS SYSTEM

< SYSTEM DESCRIPTION >

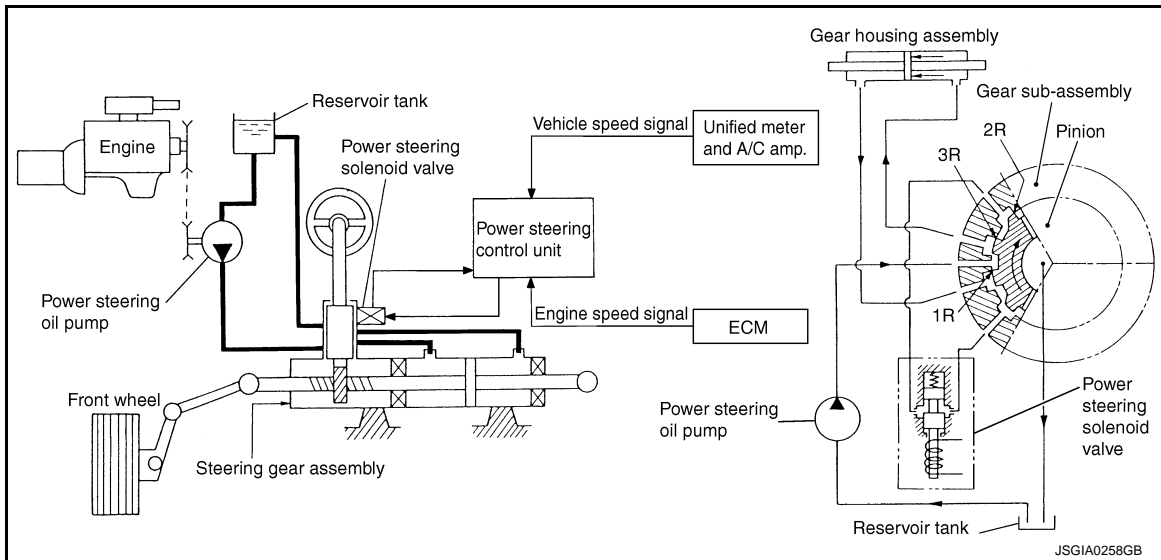
## SYSTEM DESCRIPTION

### EPS SYSTEM

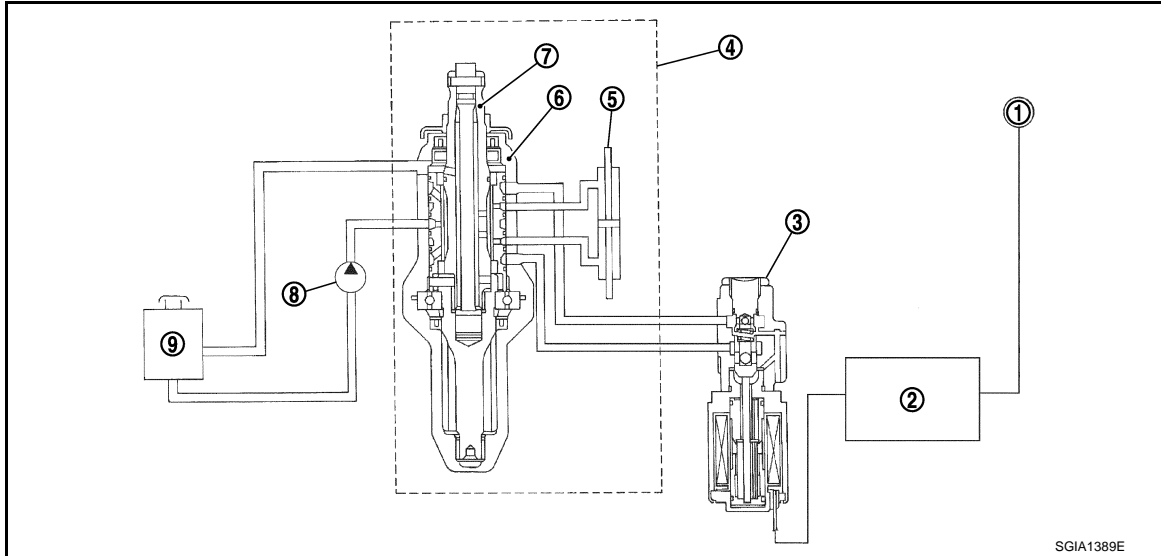
#### System Diagram

INFOID:000000010989936

#### CONTROL DIAGRAM



#### CROSS-SECTIONAL VIEW



- |                               |                                |                                  |
|-------------------------------|--------------------------------|----------------------------------|
| 1. Unified meter and A/C amp. | 2. Power steering control unit | 3. Power steering solenoid valve |
| 4. Steering gear assembly     | 5. Gear housing assembly       | 6. Gear sub-assembly             |
| 7. Pinion                     | 8. Power steering oil pump     | 9. Reservoir tank                |

#### System Description

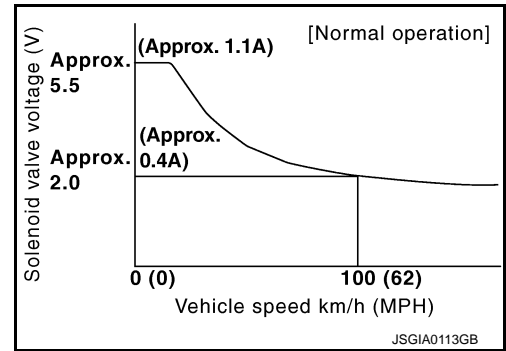
INFOID:000000010989937

- The EPS system controls the power steering solenoid valve through the power steering control unit.

# EPS SYSTEM

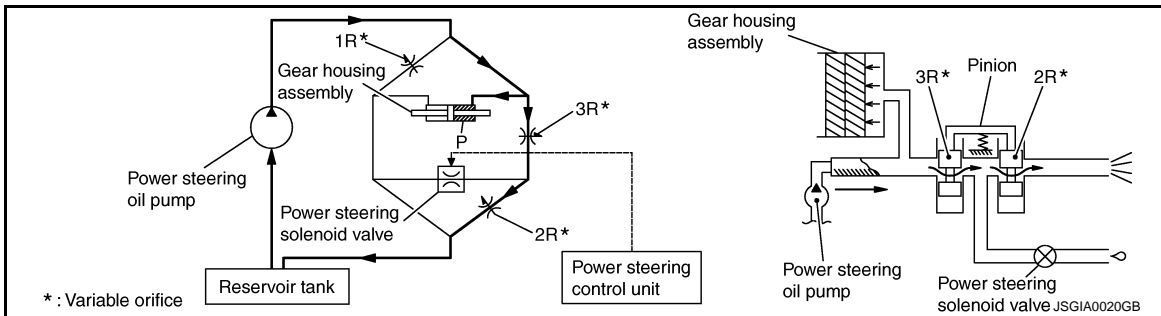
## < SYSTEM DESCRIPTION >

- The valve driving voltage to control the power steering solenoid valve varies according to the vehicle speed.



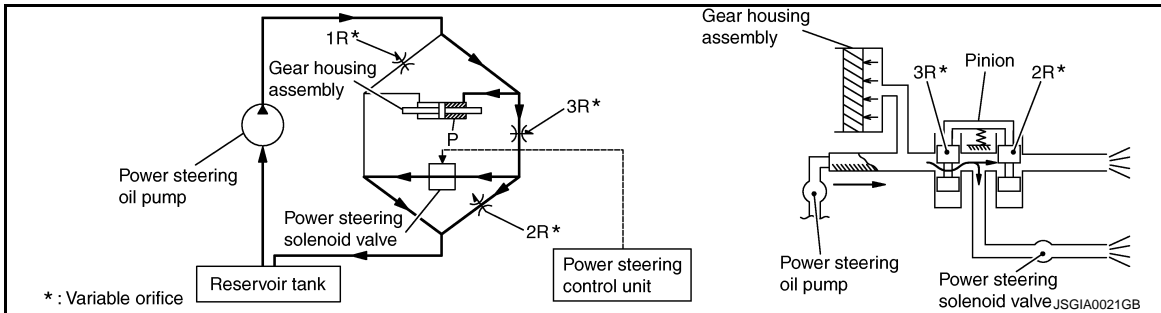
## OPERATION PRINCIPLE

During Parking (When Turning The Steering Wheel To The Right.)



- Power steering solenoid valve is closed while a vehicle is stopped.
- Pinion “1R”, “2R” and “3R” are closed depending on steering torque of steering wheel.
- Oil pressure “P” in the gear housing assembly is the sum of oil pressures occurred in “2R” and “3R”. This results in a light steering force because of high pressure.

During High-speed Operation



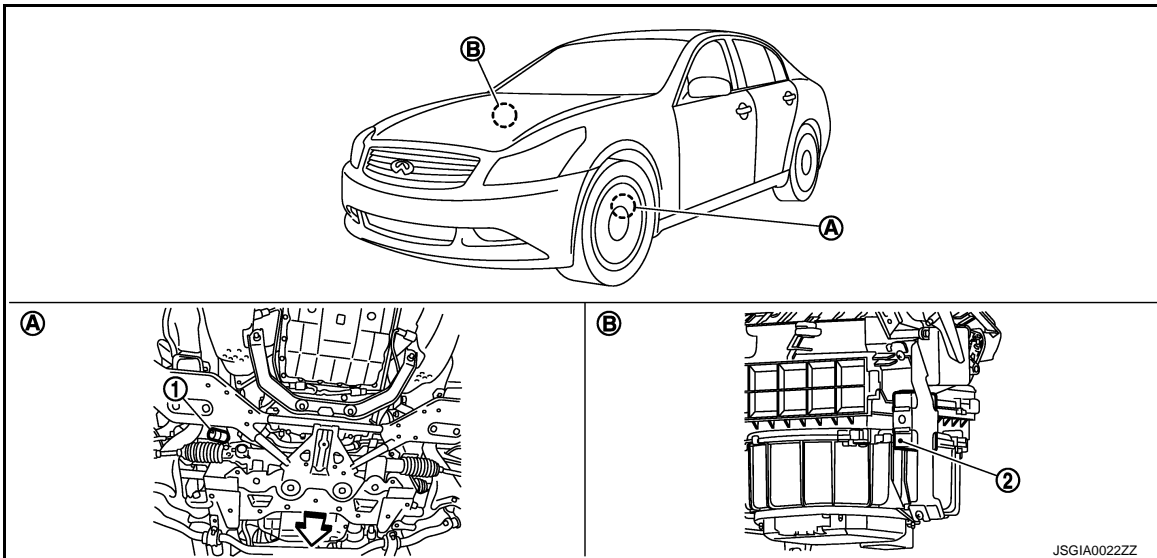
- Power steering solenoid valve is opened during high-speed operation.
- Pinion “1R”, “2R” and “3R” are closed depending on steering torque of steering wheel.
- Oil pressure “2R” does not occur because the power steering solenoid valve is on full throttle.
- Oil pressure “P” in the gear housing assembly includes only oil pressure occurred in “3R” and results in a heavy steering force.

# EPS SYSTEM

< SYSTEM DESCRIPTION >

## Component Parts Location

INFOID:000000010989938



- 1. Power steering solenoid valve
- 2. Power steering control unit
- A. Steering gear assembly
- B. Glove box assembly removed

⇐: Vehicle front

## Component Description

INFOID:000000010989939

Component parts	Reference/Function
Power steering control unit	<ul style="list-style-type: none"> <li>• Signals from various sensors control the driving voltage to the power steering solenoid valve.</li> <li>• The power steering control unit controls the driving voltage to the power steering solenoid valve for maintaining the power steering assist force when the fail-safe function is activated. (The engine speed signals control EPS system if any vehicle speed signal error is detected.)</li> </ul>
Unified meter and A/C amp.	<a href="#">STC-11. "Description"</a>
ECM	<a href="#">STC-9. "Description"</a>
Power steering solenoid valve	<a href="#">STC-7. "Description"</a>

# POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## DTC/CIRCUIT DIAGNOSIS

### POWER SUPPLY AND GROUND CIRCUIT

#### Description

INFOID:0000000010989940

Power supply to EPS system

#### Diagnosis Procedure

INFOID:0000000010989941

#### 1. CHECK POWER SUPPLY

1. Turn the ignition switch OFF.
2. Disconnect power steering control unit harness connector.
3. Check the voltage between power steering control unit harness connector and ground.

Power steering control unit		Voltage (Approx.)
Connector	Terminal	
M108	3 – Ground	0 V

4. Turn the ignition switch ON.  
**CAUTION:**  
**Never start the engine.**
5. Check the voltage between power steering control unit harness connector and ground.

Power steering control unit		Voltage (Approx.)
Connector	Terminal	
M108	3 – Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Check the following. If any items are damaged, repair or replace damaged parts.

- 10A fuses (#45) open
- Harness for short or open between ignition switch and power steering control unit harness connector No. 3 terminal.
- Ignition switch. Refer to [PCS-64, "Component Inspection"](#).

#### 2. CHECK GROUND CIRCUIT

1. Turn the ignition switch OFF.
2. Check the continuity between power steering control unit harness connector and ground.

Power steering control unit		Continuity
Connector	Terminal	
M108	6 – Ground	Existed

Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to power in harness or connectors.

#### 3. CHECK TERMINALS AND HARNESS CONNECTORS

Check the power steering control unit pin terminals for damage or loose connection with harness connector.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace damaged parts.

# POWER STEERING SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

## POWER STEERING SOLENOID VALVE

### Description

INFOID:000000010989942

Power steering solenoid valve controls the power steering oil pressure in the gear housing assembly.

### Diagnosis Procedure

INFOID:000000010989943

#### 1. CHECK POWER STEERING SOLENOID VALVE SIGNAL

1. Turn the ignition switch OFF.
2. Check the voltage between power steering control unit harness connector and ground.

Power steering control unit			Voltage (Approx.)
Connector	Terminal	Condition	
M108	1 – Ground	Vehicle speed: 0 km/h (0 MPH) (Engine is running)	4.4 – 6.6 V
		Vehicle speed: 100 km/h (62 MPH)	2.4 – 3.6 V

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

#### 2. CHECK HARNESS BETWEEN POWER STEERING SOLENOID VALVE AND POWER STEERING CONTROL UNIT

1. Turn the ignition switch OFF.
2. Disconnect power steering solenoid valve harness connector.
3. Disconnect power steering control unit harness connector.
4. Check the continuity between power steering solenoid valve harness connector and the power steering control unit harness connector.

Power steering solenoid valve		Power steering control unit		Continuity
Connector	Terminal	Connector	Terminal	
F45	1	M108	1	Existed
F45	2	M108	5	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

#### 3. CHECK POWER STEERING SOLENOID VALVE

1. Check the resistance between power steering solenoid valve connector terminals.

Power steering solenoid valve		Resistance (Approx.)
Connector	Terminal	
F45	1 – 2	4 – 6 Ω

2. Check the power steering solenoid valve connector by listening for its operation sound while applying battery voltage to power steering solenoid valve connector F45 terminals 1 (positive) and 2 (negative).

Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace gear-sub assembly. Refer to [ST-21, "2WD : Exploded View"](#) (2WD), [ST-28, "AWD : Exploded View"](#) (AWD).

#### 4. CHECK TERMINALS AND HARNESS CONNECTORS

- Check the power steering control unit pin terminals for damage or loose connection with harness connector.

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# POWER STEERING SOLENOID VALVE

## < DTC/CIRCUIT DIAGNOSIS >

- Check the power steering solenoid valve pin terminals for damage or loose connection with harness connector.

### Is the inspection result normal?

- YES >> INSPECTION END  
NO >> Repair or replace damaged parts.

## Component Inspection

INFOID:000000010989944

### 1. CHECK POWER STEERING SOLENOID VALVE

1. Turn the ignition switch OFF.
2. Disconnect power steering solenoid valve harness connector.
3. Check the resistance between power steering solenoid valve connector terminals.

Power steering solenoid valve Terminal	Resistance (Approx.)
1 - 2	4 - 6 $\Omega$

4. Check the power steering solenoid valve connector by listening for its operation sound while applying battery voltage to power steering solenoid valve connector F45 terminals 1 (positive) and 2 (negative).

### Is the inspection result normal?

- YES >> INSPECTION END  
NO >> Replace gear-sub assembly. Refer to [ST-21, "2WD : Exploded View"](#) (2WD), [ST-28, "AWD : Exploded View"](#) (AWD).



# ENGINE SPEED SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## ENGINE SPEED SIGNAL CIRCUIT

### Description

INFOID:000000010989945

ECM sends engine speed signal to power steering control unit.

### Diagnosis Procedure

INFOID:000000010989946

#### 1. PERFORM ECM SELF-DIAGNOSIS

##### With CONSULT

Perform self-diagnosis for "ENGINE".

##### Is any error system detected?

YES >> Check the error system.

NO >> GO TO 2.

#### 2. CHECK HARNESS BETWEEN ECM AND POWER STEERING CONTROL UNIT

1. Turn the ignition switch OFF.
2. Disconnect ECM harness connectors.
3. Disconnect power steering control unit harness connector.
4. Check the continuity between ECM harness connector and power steering control unit harness connector.

ECM		Power steering control unit		Continuity
Connector	Terminal	Connector	Terminal	
M107	110	M108	10	Existed

Also check harness for short to ground and short to power.

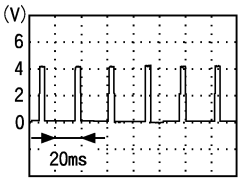
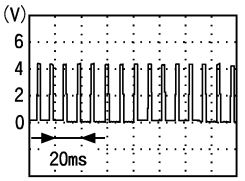
##### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

#### 3. CHECK ENGINE SPEED SIGNAL (1)

1. Turn the ignition switch OFF.
2. Connect ECM harness connectors.
3. Check the signal between ECM harness connector and ground with oscilloscope.

ECM			Value (Approx.)
Connector	Terminal	Condition	
M107	110 – Ground	Engine speed: At idle (Warm-up condition)	 <p style="text-align: right; font-size: small;">PBIA3654J</p>
		Engine speed: Approx. 2,000 rpm (Warm-up condition)	 <p style="text-align: right; font-size: small;">PBIA3655J</p>

Also check harness for short to ground and short to power.

##### Is the inspection result normal?

YES >> GO TO 4.

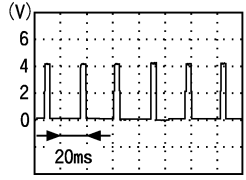
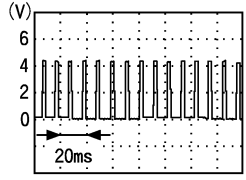
# ENGINE SPEED SIGNAL CIRCUIT

## < DTC/CIRCUIT DIAGNOSIS >

NO >> Replace ECM. Refer to [EC-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT \(ECM\) : Description"](#).

### 4. CHECK ENGINE SPEED SIGNAL (2)

1. Turn the ignition switch OFF.
2. Connect power steering control unit harness connector.
3. Check the signal between power steering control unit harness connector and ground with oscilloscope.

Power steering control unit			Value (Approx.)
Connector	Terminal	Condition	
M108	10 – Ground	Engine speed: At idle (Warm-up condition)	 <p style="text-align: right; font-size: small;">PBIA3654J</p>
		Engine speed: Approx. 2,000 rpm (Warm-up condition)	 <p style="text-align: right; font-size: small;">PBIA3655J</p>

Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace power steering control unit. Refer to [STC-21, "Exploded View"](#).

### 5. CHECK TERMINALS AND HARNESS CONNECTORS

- Check the power steering control unit pin terminals for damage or loose connection with harness connector.
- Check ECM pin terminals for damage or loose connection with harness connector.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace damaged parts.

# VEHICLE SPEED SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## VEHICLE SPEED SIGNAL CIRCUIT

### Description

INFOID:000000010989947

Unified meter and A/C amp. sends vehicle speed signal to power steering control unit.

### Diagnosis Procedure

INFOID:000000010989948

#### 1. PERFORM UNIFIED METER AND A/C AMP. SELF-DIAGNOSIS

##### With CONSULT

Perform self-diagnosis for "METER/M&A".

##### Is any error system detected?

YES >> Check the error system.

NO >> GO TO 2.

#### 2. CHECK HARNESS BETWEEN UNIFIED METER AND A/C AMP. AND POWER STEERING CONTROL UNIT

1. Turn the ignition switch OFF.
2. Disconnect unified meter and A/C amp. harness connector.
3. Disconnect power steering control unit harness connector.
4. Check the continuity between unified meter and A/C amp. harness connector and power steering control unit harness connector.

Unified meter and A/C amp.		Power steering control unit		Continuity
Connector	Terminal	Connector	Terminal	
M66	8	M108	8	Existed

Also check harness for short to ground and short to power.

##### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

#### 3. CHECK VEHICLE SPEED SIGNAL (1)

1. Turn the ignition switch OFF.
2. Connect unified meter and A/C amp. harness connector.
3. Check the unified meter and A/C amp. input/output standard values. Refer to [MWI-69, "Reference Value"](#).

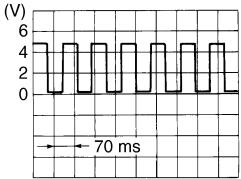
##### Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace unified meter and A/C amp. Refer to [MWI-130, "Exploded View"](#).

#### 4. CHECK VEHICLE SPEED SIGNAL (2)

1. Turn the ignition switch OFF.
2. Connect power steering control unit harness connector.
3. Check the signal between power steering control unit harness connector and ground with oscilloscope.

Power steering control unit			Value (Approx.)
Connector	Terminal	Condition	
M108	8 – Ground	Vehicle speed: 40 km/h (25 MPH) <b>CAUTION:</b> <b>Check the air pressure of tire under standard condition.</b>	 <p style="text-align: right;">SEIA0775E</p>

Also check harness for short to ground and short to power.

## VEHICLE SPEED SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

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Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace power steering control unit. Refer to [STC-21. "Exploded View"](#).

### 5. CHECK TERMINALS AND HARNESS CONNECTORS

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- Check the power steering control unit pin terminals for damage or loose connection with harness connector.
- Check the unified meter and A/C amp. pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace damaged parts.

# POWER STEERING CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

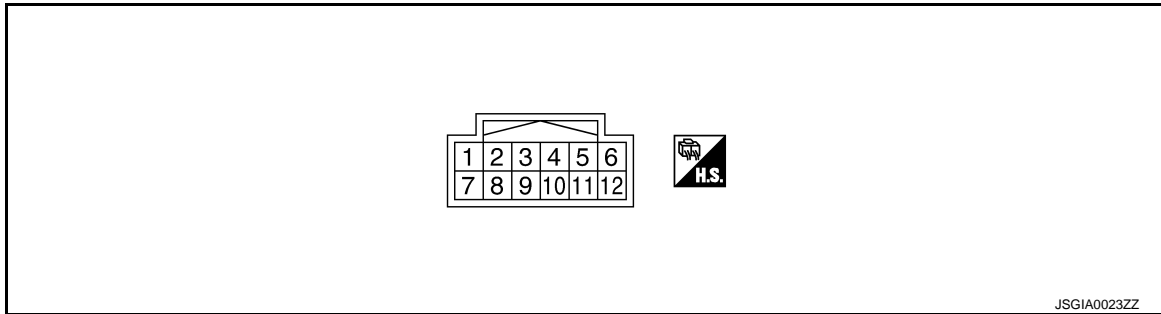
## ECU DIAGNOSIS INFORMATION

### POWER STEERING CONTROL UNIT

Reference Value

INFOID:000000010989949

#### TERMINAL LAYOUT



#### PHYSICAL VALUES

Terminal No.		Wire color	Description		Condition	Value (Approx.)
+	-		Signal name	Input/Output		
1	Ground	LG	Power steering solenoid valve voltage	Output	Vehicle speed: 0 km/h (0 MPH) (Engine is running)	4.4 – 6.6 V
					Vehicle speed: 100 km/h (62 MPH)	2.4 – 3.6 V
3	Ground	G	Ignition switch power supply	Input	Ignition switch: ON	Battery voltage
					Ignition switch: OFF	0 V
5	Ground	B	Power steering solenoid valve ground	—	Always	0 V
6	Ground	B	Ground	—	Always	0 V
8	Ground	SB	Vehicle speed signal	Input	Vehicle speed: 40 km/h (25 MPH) <b>CAUTION:</b> Check air pressure of tire under standard condition.	<p>SEIA0775E</p>
10	Ground	R	Engine speed signal	Input	Engine speed: At idle (Warm-up condition)	<p>PBIA3654J</p>
					Engine speed: Approx. 2,000 rpm (Warm-up condition)	<p>PBIA3655J</p>

**CAUTION:**

# POWER STEERING CONTROL UNIT

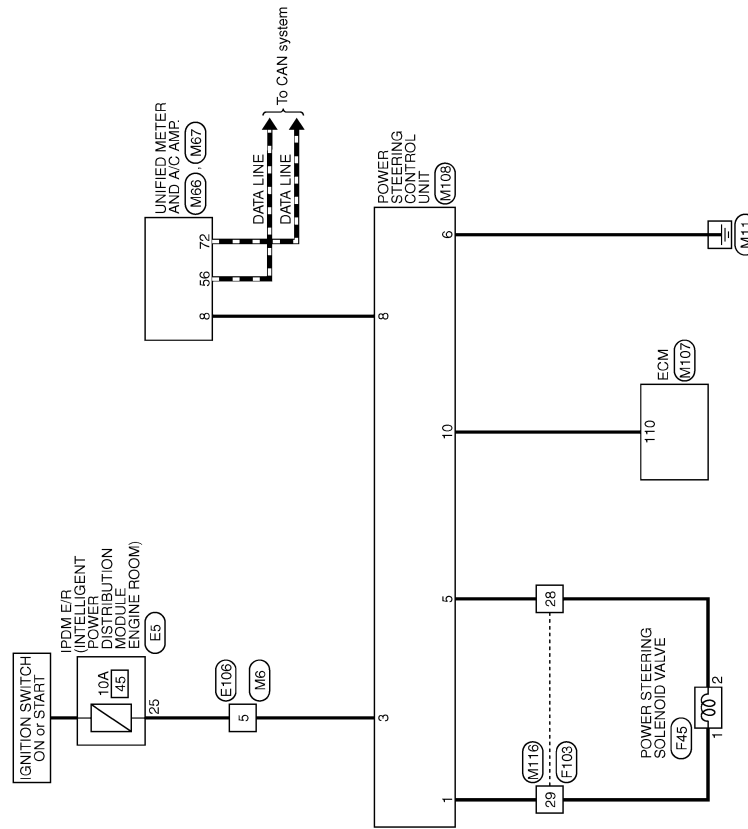
< ECU DIAGNOSIS INFORMATION >

When using circuit tester or oscilloscope to measure voltage for inspection, be sure not to forcibly extend any connector terminals.

## Wiring Diagram - ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM -

INFOID:000000010989950

### ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM



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JCGWM0455GB

# POWER STEERING CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

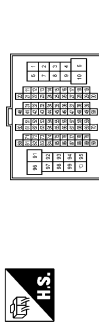
## ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM

Connector No.	E15
Connector Name	INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM
Connector Type	TH80FW-CS12-1M4-1V



Terminal No.	Color Of Wire	Signal Name [Specification]
4	V	
8	SB	
7	P	
12	B/W	
13	Y	
16	LG	
19	R	
25	G	
27	BG	
28	L	
30	GR	
36	G	

Connector No.	E108
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4



Terminal No.	Color Of Wire	Signal Name [Specification]
1	GR	
3	BG	
5	G	
6	V	
7	R	

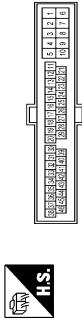
11	V	
12	R	
13	BG	
14	GR	
15	P	
16	W	
17	SB	
18	BG	
20	LG	
31	L	
32	BG	
36	SB	
37	Y	
38	R	
39	B	
41	LG	
42	G	
43	G	
44	GR	
45	BR	
46	LG	
47	V	
48	P	
49	L	
66	GR	
67	LG	
80	R	
81	P	
82	G	
84	Y	
85	W	
88	V	
91	W	
93	GR	
95	LG	
97	SB	
98	SHIELD	
99	L	
100	P	

Connector No.	E45
Connector Name	POWER STEERING SOLENOID VALVE
Connector Type	FS02FER-DOY



Terminal No.	Color Of Wire	Signal Name [Specification]
1	LG	
2	B	

Connector No.	F103
Connector Name	WIRE TO WIRE
Connector Type	TK3BFW-NS10



Terminal No.	Color Of Wire	Signal Name [Specification]
2	G	
3	W	
4	R	
5	B	
9	Y	
10	GR	
19	O	
20	Y	
28	B	
29	LG	
31	R	
33	B	
35	B	
36	P	
37	Y	
38	G	

43	P	
48	L	
49	G	
46	V	

Connector No.	M6
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4



Terminal No.	Color Of Wire	Signal Name [Specification]
1	BG	
3	R	
5	G	
6	LG	
7	W	
9	G	
11	V	
12	R	
13	GR	
14	BR	
15	W	
16	W	
17	BR	
18	P	
20	L	
31	L	
32	Y	
36	R	
37	Y	
38	R	
39	SB	
41	V	
42	LG	
43	B	
44	B	
45	BG	
46	G	
47	L	
48	P	

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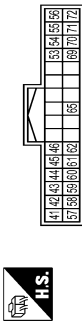
# POWER STEERING CONTROL UNIT

## < ECU DIAGNOSIS INFORMATION >

### ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM

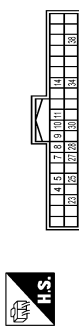
Terminal No.	Color	Wire	Signal Name [Specification]
48	Y	-	-
49	G	-	-
50	B	-	-
80	SB	-	-
81	B	-	-
82	V	-	-
83	W	-	-
84	L	-	-
85	GR	-	-
88	LG	-	-
91	W	-	-
93	Y	-	-
97	GR	-	-
98	SHIELD	-	-
100	SB	-	-

Connector No.	M67
Connector Name	UNIFIED METER AND A/C AMP.
Connector Type	TH32PW-NH



Terminal No.	Color	Wire	Signal Name [Specification]
41	BR	-	ASD POWER SUPPLY
42	BR	-	FUEL LEVEL SENSOR SIGNAL
43	BR	-	INTAKE SENSOR SIGNAL
44	LG	-	IN-VEHICLE SENSOR SIGNAL
45	V	-	AMBIENT SENSOR SIGNAL
46	Y	-	SUNLOAD SENSOR SIGNAL
53	W	-	IGNITION POWER SUPPLY
54	SB	-	BATTERY POWER SUPPLY
55	B	-	GROUND
56	L	-	CAN-H
57	LG	-	BRAKE FLUID LEVEL SWITCH
59	GR	-	INTAKE SENSOR GROUND
60	W	-	IN-VEHICLE SENSOR GROUND
62	SB	-	AMBIENT SENSOR GROUND
65	BR	-	SUNLOAD SENSOR GROUND
66	BR	-	ECU SIGNAL
69	P	-	A/C LAM SIGNAL
70	R	-	EACH DOOR MOTOR POWER SUPPLY
71	GR	-	GROUND
72	P	-	CAN-L

Connector No.	M65
Connector Name	UNIFIED METER AND A/C AMP.
Connector Type	TH40PW-NH



Terminal No.	Color	Wire	Signal Name [Specification]
4	G	-	STOP LAMP SWITCH SIGNAL
5	L	-	MANUAL MODE SHIFT UP SIGNAL
7	GR	-	COMMUNICATION SIGNAL (AMP-METER)
8	L	-	VEHICLE SPEED SIGNAL (2-PULSE)
9	SB	-	SEAT BELT TRUCKLE SWITCH SIGNAL (DRIVER SIDE)
10	W	-	MANUAL MODE SIGNAL
11	G	-	NON-MANUAL MODE SIGNAL
14	BR	-	COMMUNICATION SIGNAL (LCD-AMP)
23	Y	-	A/T SNOW SWITCH SIGNAL
25	V	-	MANUAL MODE SWITCH SIGNAL
26	LG	-	COMMUNICATION SIGNAL (AMP-SENSOR)
28	R	-	VEHICLE SPEED SIGNAL (8-PULSE)
30	Y	-	PARKING BRAKE SWITCH SIGNAL
34	Y	-	COMMUNICATION SIGNAL (AMP-LOAD)
35	P	-	BLOWER MOTOR CONTROL SIGNAL

Connector No.	M107
Connector Name	ECM
Connector Type	RH24CV-42Z-RR-LH-Z



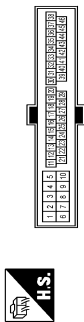
Terminal No.	Color	Wire	Signal Name [Specification]
88	R	-	ACCELERATOR PEDAL POSITION SENSOR
89	P	-	ACCELERATOR PEDAL POSITION SENSOR Z
89	W	-	SENSOR POWER SUPPLY
100	W	-	SENSOR GROUND
101	SB	-	ASD POWER SUPPLY
102	LG	-	EVAP CONTROL SYSTEM PRESSURE SENSOR
103	GR	-	SENSOR POWER SUPPLY
104	V	-	SENSOR GROUND
105	L	-	REFRIGERANT PRESSURE SENSOR
106	W	-	FUEL TANK TEMPERATURE SENSOR
107	GR	-	SENSOR POWER SUPPLY
109	Y	-	SENSOR GROUND
109	G	-	PNP SWITCH
110	R	-	ENGINE SPEED OUTPUT SIGNAL
112	V	-	SENSOR GROUND
114	P	-	CAN COMMUNICATION LINE
114	V	-	CAN COMMUNICATION LINE
117	V	-	DATA LINK CONNECTOR
121	LG	-	EVAP CANISTER VENT CONTROL VALVE
122	P	-	STOP LAMP SWITCH
123	B	-	ECM GROUND
124	B	-	ECM GROUND
125	R	-	POWER SUPPLY FOR ECM
126	BR	-	ASD POWER SUPPLY
127	B	-	ECM GROUND
128	B	-	ECM GROUND

Connector No.	M108
Connector Name	POWER STEERING CONTROL UNIT
Connector Type	TH12FW-NH



Terminal No.	Color	Wire	Signal Name [Specification]
1	LG	-	SOL
2	G	-	YCN
3	B	-	SOL GND
6	B	-	GROUND
8	SB	-	VSP
10	R	-	TACHO

Connector No.	M118
Connector Name	WIRE TO WIRE
Connector Type	TK30MW-NS10



Terminal No.	Color	Wire	Signal Name [Specification]
2	W	-	-
3	BG	-	-
4	P	-	-
5	B	-	-
9	R	-	-
10	R	-	-
19	BG	-	-
28	B	-	-
29	LG	-	-
31	W	-	-
33	B	-	-
34	B	-	-
35	L	-	-



# POWER STEERING CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

---

A  
B  
C  
D  
E  
F  
H  
I  
J  
K  
L  
M  
N  
O  
P

**STC**

ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM

30	46	-
31	47	-
32	48	-
33	49	-
34	50	-
35	51	-
36	52	-
37	53	-
38	54	-
39	55	-

Fail Safe

EPS system

JRGWC1501GB

INFOID:000000010989951

# POWER STEERING CONTROL UNIT

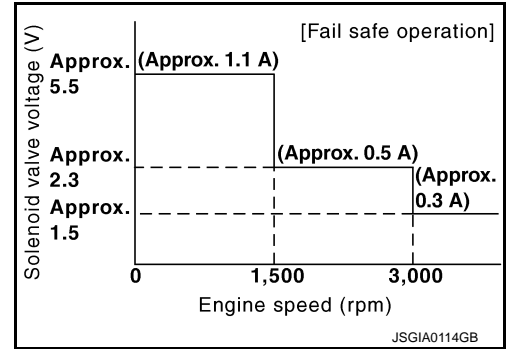
## < ECU DIAGNOSIS INFORMATION >

- EPS system enters the fail-safe mode (that allows the steering force to be controlled without impairing the drive ability) if any of the input/output values to/from EPS system (power steering control unit) deviate from the standard range.

**NOTE:**

The system enters the fail-safe mode if the engine speed remains at 1,500 rpm or more for over 10 seconds while the vehicle is stopped. This is normal.

- The fail-safe function is canceled when a vehicle speed signal of 2 km/h (1.2 MPH) or more is inputted or the key switch is turned OFF→ON. EPS system restores the normal operation at that time.



Mode	Warn- ing lamp	DTC	Detection point (malfunction part)	Error area and root cause
Fail-safe function	—	—	Vehicle speed signal input	<ul style="list-style-type: none"> <li>• Engine speed is 1,500 rpm or more and there is no vehicle speed signal input for over 10 seconds during vehicle travel.</li> <li>• Vehicle speed signal has abruptly dropped from 30 km/h (19 MPH) or more to 2 km/h (1.2 MPH) or less within 1.4 seconds.</li> </ul>

# UNBALANCE STEERING WHEEL TURNING FORCE (TORQUE VARIATION)

< SYMPTOM DIAGNOSIS >

## SYMPTOM DIAGNOSIS

### UNBALANCE STEERING WHEEL TURNING FORCE (TORQUE VARIATION)

#### Description

INFOID:0000000010989952

- Hard steering when fully turning the steering wheel.
- Light steering when driving at a high speed.

#### Diagnosis Procedure

INFOID:0000000010989953

#### 1. CHECK SYSTEM FOR POWER SUPPLY AND GROUND

Perform trouble diagnosis for power supply and ground. Refer to [STC-6, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

#### 2. CHECK SYSTEM FOR VEHICLE SPEED SIGNAL

Perform trouble diagnosis for vehicle speed signal. Refer to [STC-11, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

#### 3. CHECK SYSTEM FOR ENGINE SPEED SIGNAL

Perform trouble diagnosis for engine speed signal. Refer to [STC-9, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

#### 4. CHECK SYSTEM FOR POWER STEERING SOLENOID VALVE

Perform trouble diagnosis for power steering solenoid valve. Refer to [STC-7, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES >> Perform the symptom diagnosis for the steering system. Refer to [ST-3, "NVH Troubleshooting Chart"](#).

NO >> Repair or replace damaged parts.

A  
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STC  
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K  
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M  
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O  
P

# PRECAUTIONS

< PRECAUTION >

## PRECAUTION

### PRECAUTIONS

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

INFOID:000000010989954

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 AIR BAG" and "SEAT BELT" of this Service Manual.

#### **WARNING:**

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that 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 "SRS AIR BAG".
- Never 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:**

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

#### Precautions for Removing Battery Terminal

INFOID:000000011472380

- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.

#### **NOTE:**

ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.

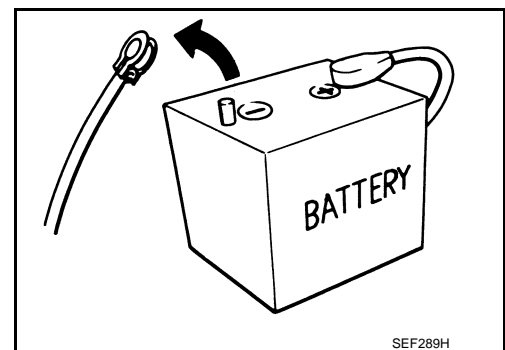
#### **NOTE:**

If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.

#### **NOTE:**

The removal of 12V battery may cause a DTC detection error.



# POWER STEERING CONTROL UNIT

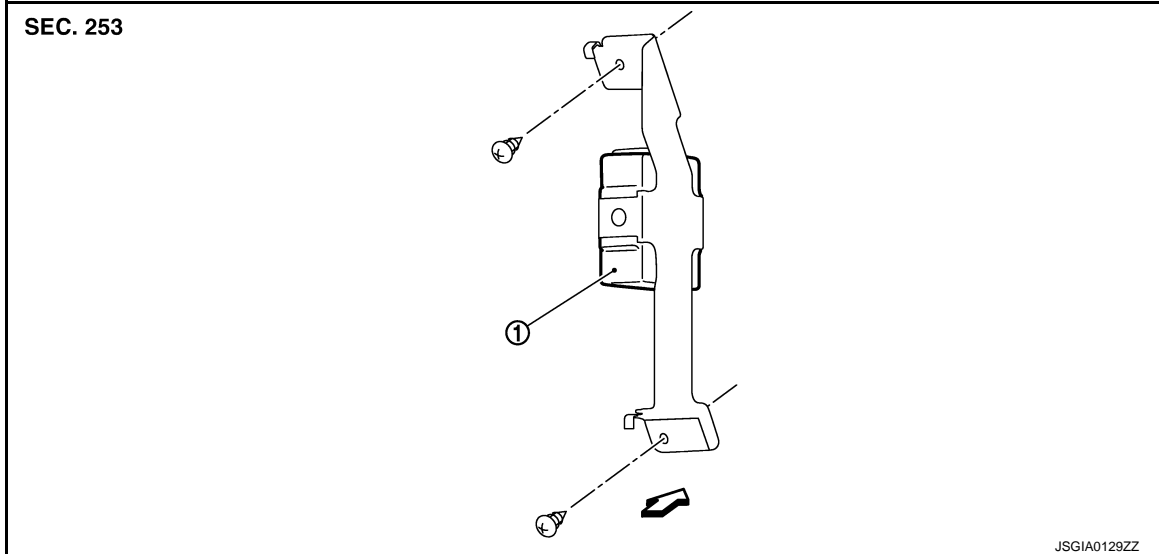
< REMOVAL AND INSTALLATION >

## REMOVAL AND INSTALLATION

### POWER STEERING CONTROL UNIT

Exploded View

INFOID:000000010989955



1. Power steering control unit

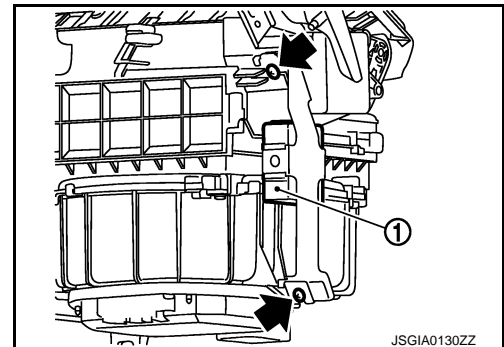
← Vehicle front

### Removal and Installation

INFOID:000000010989956

#### REMOVAL

1. Remove glove box assembly. Refer to [IP-12, "Exploded View"](#).
2. Remove power steering control unit screws.
3. Remove power steering control unit (1).
4. Disconnect power steering control unit connector.



#### INSTALLATION

Install in the reverse order of removal.

A  
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STC  
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K  
L  
M  
N  
O  
P