

# SECTION **STC**

## STEERING CONTROL SYSTEM

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

### CONTENTS

<p><b>BASIC INSPECTION</b> ..... 3</p> <p><b>DIAGNOSIS AND REPAIR WORKFLOW</b> ..... 3</p> <p style="padding-left: 20px;">Work Flow .....3</p> <p><b>SYSTEM DESCRIPTION</b> ..... 5</p> <p><b>EPS SYSTEM</b> ..... 5</p> <p style="padding-left: 20px;">System Diagram .....5</p> <p style="padding-left: 20px;">System Description .....5</p> <p style="padding-left: 20px;">Component Parts Location .....6</p> <p style="padding-left: 20px;">Component Description .....6</p> <p><b>DIAGNOSIS SYSTEM (EPS CONTROL UNIT)</b> ..... 7</p> <p style="padding-left: 20px;">CONSULT-III Function .....7</p> <p><b>DTC/CIRCUIT DIAGNOSIS</b> ..... 8</p> <p><b>C1601 BATTERY POWER SUPPLY</b> ..... 8</p> <p style="padding-left: 20px;">Description .....8</p> <p style="padding-left: 20px;">DTC Logic .....8</p> <p style="padding-left: 20px;">Diagnosis Procedure .....8</p> <p style="padding-left: 20px;">Special Repair Requirement .....9</p> <p><b>C1604 TORQUE SENSOR</b> .....10</p> <p style="padding-left: 20px;">Description ..... 10</p> <p style="padding-left: 20px;">DTC Logic ..... 10</p> <p style="padding-left: 20px;">Diagnosis Procedure ..... 10</p> <p style="padding-left: 20px;">Special Repair Requirement ..... 11</p> <p><b>C1606 EPS MOTOR</b> .....12</p> <p style="padding-left: 20px;">Description ..... 12</p> <p style="padding-left: 20px;">DTC Logic ..... 12</p> <p style="padding-left: 20px;">Diagnosis Procedure ..... 12</p> <p style="padding-left: 20px;">Component Inspection ..... 12</p> <p style="padding-left: 20px;">Special Repair Requirement ..... 13</p> <p><b>C1607, C1608 EPS CONTROL UNIT</b> .....14</p> <p style="padding-left: 20px;">Description ..... 14</p> <p style="padding-left: 20px;">DTC Logic ..... 14</p> <p style="padding-left: 20px;">Diagnosis Procedure ..... 14</p>	<p><b>C1609 VEHICLE SPEED SIGNAL</b> .....15</p> <p style="padding-left: 20px;">Description .....15</p> <p style="padding-left: 20px;">DTC Logic .....15</p> <p style="padding-left: 20px;">Diagnosis Procedure .....15</p> <p><b>C1610 ENGINE STATUS SIGNAL</b> ..... 16</p> <p style="padding-left: 20px;">Description .....16</p> <p style="padding-left: 20px;">DTC Logic .....16</p> <p style="padding-left: 20px;">Diagnosis Procedure .....16</p> <p><b>U1000 CAN COMM CIRCUIT</b> .....17</p> <p style="padding-left: 20px;">Description .....17</p> <p style="padding-left: 20px;">DTC Logic .....17</p> <p style="padding-left: 20px;">Diagnosis Procedure .....17</p> <p style="padding-left: 20px;">Special Repair Requirement .....17</p> <p><b>EPS WARNING LAMP</b> .....18</p> <p style="padding-left: 20px;">Description .....18</p> <p style="padding-left: 20px;">Component Function Check .....18</p> <p style="padding-left: 20px;">Diagnosis Procedure .....18</p> <p><b>ECU DIAGNOSIS INFORMATION</b> .....19</p> <p><b>EPS CONTROL UNIT</b> .....19</p> <p style="padding-left: 20px;">Reference Value .....19</p> <p style="padding-left: 20px;">Wiring Diagram - ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM - .....21</p> <p style="padding-left: 20px;">Fail-Safe .....23</p> <p style="padding-left: 20px;">DTC Inspection Priority Chart .....24</p> <p style="padding-left: 20px;">DTC Index .....24</p> <p><b>SYMPTOM DIAGNOSIS</b> .....25</p> <p><b>EPS WARNING LAMP DOES NOT TURN ON...25</b></p> <p style="padding-left: 20px;">Description .....25</p> <p style="padding-left: 20px;">Diagnosis Procedure .....25</p> <p><b>EPS WARNING LAMP DOES NOT TURN OFF</b> .....26</p> <p style="padding-left: 20px;">Description .....26</p> <p style="padding-left: 20px;">Diagnosis Procedure .....26</p>
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STC

<b>STEERING WHEEL TURNING FORCE IS HEAVY OR LIGHT</b> .....	<b>27</b>	<b>PRECAUTION</b> .....	<b>30</b>
Description .....	27	<b>PRECAUTIONS</b> .....	<b>30</b>
Diagnosis Procedure .....	27	Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" .....	30
<b>UNBALANCE STEERING WHEEL TURNING FORCE AND RETURN BETWEEN RIGHT AND LEFT</b> .....	<b>28</b>	Precaution Necessary for Steering Wheel Rotation after Battery Disconnect .....	30
Description .....	28	Service Notice or Precautions for EPS System .....	31
Diagnosis Procedure .....	28	<b>REMOVAL AND INSTALLATION</b> .....	<b>32</b>
<b>UNBALANCE STEERING WHEEL TURNING FORCE (TORQUE VARIATION)</b> .....	<b>29</b>	<b>EPS CONTROL UNIT</b> .....	<b>32</b>
Description .....	29	Exploded View .....	32
Diagnosis Procedure .....	29	Removal and Installation .....	32

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

## BASIC INSPECTION

### DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000005086617

#### 1.OBTAIN INFORMATION ABOUT SYMPTOM

Interview the customer to obtain as much information as possible about the conditions and environment under which the malfunction occurs.

>> GO TO 2.

#### 2.CHECK DTC

1. Check for DTC.
2. If a DTC exists, perform the following operations.
  - Records the DTCs.
  - Erase DTCs
  - Check that the root cause clarified with DTC matches to the malfunction information described by the customer.
3. Check also the related service information or others.

Do malfunction information or DTC exist?

- Malfunction information and DTC exist. >>GO TO 3.
- Malfunction information exists but no DTC. >>GO TO 4.
- No malfunction information, but DTC exists. >>GO TO 5.

#### 3.REPRODUCE THE MALFUNCTION INFORMATION

Check the malfunction described by the customer on the vehicle.  
Record the status of each signal when a symptom occurs with "Data Monitor" in CONSULT-III.  
Inspect the relation of the information and the condition when it occurs.

>> GO TO 5.

#### 4.CHECK THE MALFUNCTION

Check the malfunction described by the customer on the vehicle.  
Record the status of each signal when a symptom occurs with "Data Monitor" in CONSULT-III.  
Inspect the relation of the information and the condition when it occurs.

>> GO TO 6.

#### 5.PERFORM "DTC CONFIRMATION PROCEDURE"

Perform the "DTC conformation procedure" to the detected DTC and check that the DTC is detected again.  
Refer to [STC-24. "DTC Inspection Priority Chart"](#) when multiple DTCs are detected, and then judge the order for performing the diagnosis.

Is any DTC detected?

- YES >> GO TO 7.
- NO >> Follow [GI-6. "How to Follow Test Groups in Trouble Diagnosis"](#) to check.

#### 6.IDENTIFY MALFUNCTIONING SYSTEM WITH "SYMPTOM DIAGNOSIS"

Use the "Symptom diagnosis" from the symptom inspection result in step 4. Then identify where to start performing the diagnosis based on the possible causes and the symptoms.

>> GO TO 7.

#### 7.IDENTIFY MALFUNCTIONING PARTS WITH "COMPONENT DIAGNOSIS"

Perform the inspection with the "component diagnosis" of the applicable system.

**NOTE:**

The "component diagnosis" mainly consists of the check for an open circuit.

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

STC

## DIAGNOSIS AND REPAIR WORKFLOW

### < BASIC INSPECTION >

The circuit check in the diagnosis procedure also requires the check for a short circuit. Refer to [GI-37, "Circuit Inspection"](#) for details.

>> GO TO 8.

### 8. REPAIR OR REPLACE THE MALFUNCTIONING PARTS

---

1. Repair or replace the part detected as malfunctioning.
2. After repairing or replacing, reinstall/reconnect parts or connectors removed/disconnected in the "component diagnosis", and then erase the DTC.

>> GO TO 9.

### 9. FINAL CHECK

---

Perform the "DTC confirmation procedure" or "component Inspection" to check that the repair is correctly performed. Check that malfunctions are not reproduced when obtaining the malfunction information from the customer, referring to the symptom inspection result in step 3 or 4.

#### Is the check result normal?

- YES >> Trouble diagnosis is completed.  
NO-1 >> The DTC is reproduced. GO TO 7.  
NO-2 >> The symptom is reproduced. GO TO 6.

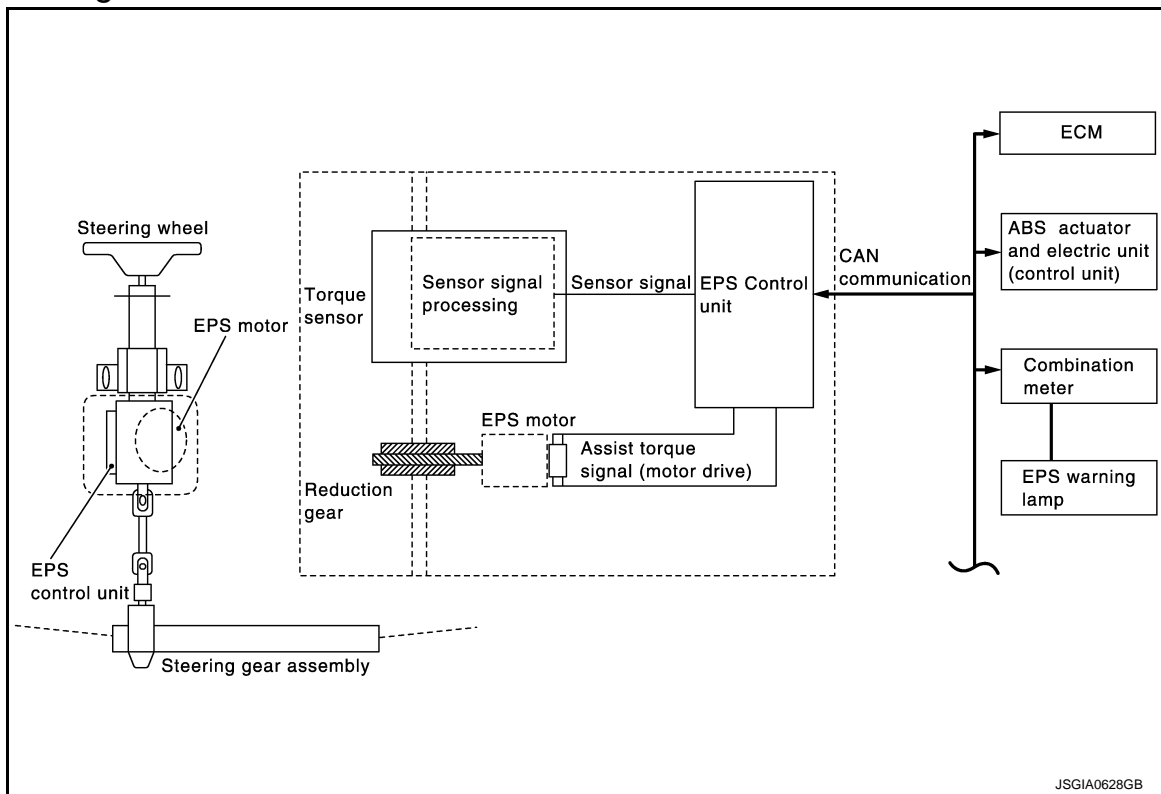
# EPS SYSTEM

< SYSTEM DESCRIPTION >

## SYSTEM DESCRIPTION

### EPS SYSTEM

#### System Diagram



#### System Description

INFOID:000000005038012

- EPS control unit performs an arithmetical operation on data, such as steering wheel turning force (sensor signal) from the torque sensor, vehicle speed signal, etc. Then it generates an optimum assist torque signal to the EPS motor according to the driving condition.
- EPS control unit decreases the output signal to EPS motor while extremely using the power steering function (e.g., full steering) consecutively for protecting EPS motor and EPS control unit (Overload protection control). While activating overload protection control, the assist torque gradually decreases, and the steering wheel turning force becomes heavy. The normal assist torque reactivates by no steering.
- In case of an error in the electrical system, the fail-safe function stops output signals to the EPS motor. Then the previous state is changed to the manual steering state.
- Self-diagnosis can be done with CONSULT-III.
- EPS control unit will decrease assistance under the following 2 conditions.
  - Extensive steering at low speed will cause the ECU and MOTOR to heat up, once temperature reaches critical point ECU will reduce current to reduce heat up. System will recover as temperature lowers (reduced or no assistance).
  - Holding steering on rack-end (full lock) for 1 second will cause the system to engage rack-end protection. This reduces assistance down to 50% in order to prevent heat up. Assistance is immediately returned to 100% when steering released or turned away from rack-end.
- Communicates the signal from each control unit via CAN communication.

Control unit	Signal status
ECM	Transmits mainly the following signals to EPS control unit via CAN communication. Engine status signal

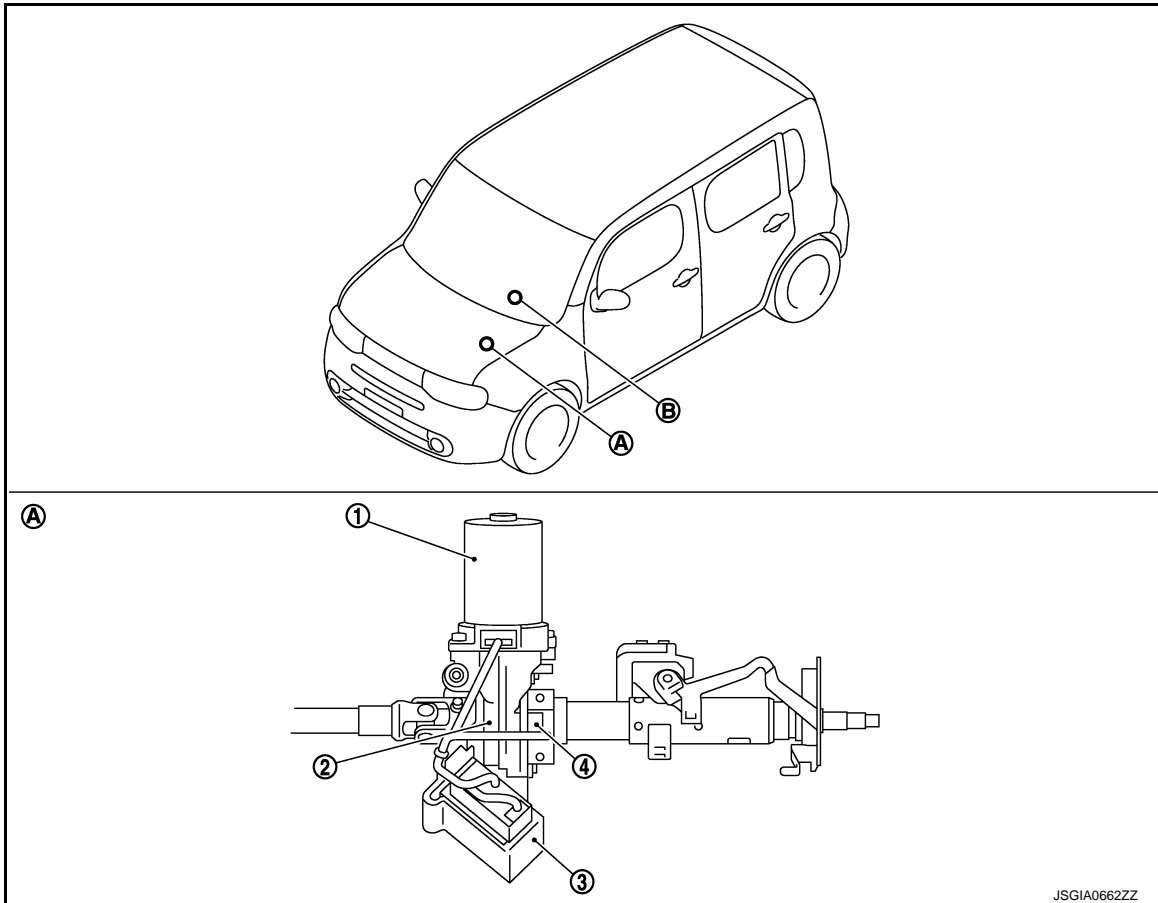
# EPS SYSTEM

## < SYSTEM DESCRIPTION >

Control unit	Signal status
ABS actuator and electric unit (control unit)	Transmits mainly the following signals to EPS control unit via CAN communication. Vehicle speed signal
Combination meter	<ul style="list-style-type: none"> <li>Transmits mainly the following signals to EPS control unit via CAN communication. Vehicle speed signal</li> <li>EPS warning lamp signal is received from the EPS control unit via CAN communication.</li> </ul>

## Component Parts Location

INFOID:000000005038013



- |                             |   |                     |
|-----------------------------|---|---------------------|
| 1. EPS motor                | 2. Reduction gear                       | 3. EPS control unit |
| 4. Torque sensor            |   |                     |
| A. Steering column assembly | B. EPS warning lamp (Combination meter) |                     |

## Component Description

INFOID:000000005038014

Components parts	Reference
EPS control unit	<a href="#">STC-14. "Description"</a>
EPS motor	<a href="#">STC-12. "Description"</a>
Torque sensor	<a href="#">STC-10. "Description"</a>
Reduction gear	Reduction gear increases the assist torque provided from EPS motor with worm gears, and outputs to the column shaft.
EPS warning lamp	<a href="#">STC-18. "Description"</a>

# DIAGNOSIS SYSTEM (EPS CONTROL UNIT)

< SYSTEM DESCRIPTION >

## DIAGNOSIS SYSTEM (EPS CONTROL UNIT)

### CONSULT-III Function

INFOID:000000005038015

#### FUNCTION

CONSULT-III can display each diagnostic item using the diagnostic test modes shown following.

Diagnostic test mode	Function
ECU identification	Steering column assembly number can be read.
Self diagnostic result	Self-diagnostic results can be read and erased quickly.
Data monitor	Input/Output data in the EPS control unit can be read.

#### ECU IDENTIFICATION

Displays the part number stored in the control unit.

#### SELF-DIAG RESULTS MODE

Display Item List

Refer to [STC-24, "DTC Index"](#).

#### CAUTION:

If "CAN COMM CIRCUIT [U1000]" is displayed with other DTCs, first perform the trouble diagnosis for CAN communication line.

#### DATA MONITOR MODE

Display Item List

Monitor item (Unit)	Remarks
BATTERY VOLT (V)	Displays the power supply voltage for EPS control unit.
TORQUE SENSOR (Nm)	Displays steering wheel turning force detected by torque sensor.
MOTOR CURRENT (A)	Displays the current value consumed by EPS motor.
MOTOR SIG (A) <sup>*1</sup>	Displays the current commanded value to EPS motor.
ASSIST TORQUE (Nm) <sup>*2</sup>	Displays assist torque being output by the electric power steering.
C/U TEMP (°C)	Displays the temperature of the EPS control unit.
ASSIST LEVEL (%) <sup>*3</sup>	Normally displays 100%. In case of an excessive stationary steering, the assist curvature gradually falls. However, it return to 100% when left standing.
VEHICLE SPEED (km/h) or (MPH) <sup>*4</sup>	Vehicle speed is displayed from vehicle speed signal via CAN communication.
WARNING LAMP (On/Off)	EPS warning lamp control status is displayed.
ENGINE STATUS (Stop/Run)	Engine speed is displayed from engine status signal via CAN communication.

\*1: Almost in accordance with the value of MOTOR SIG. It is not a malfunction though these values are not accorded when steering quickly.

\*2: A fixed value is indicated regardless of steering turning.

\*3: Normally displays 100%. In case of an excessive stationary steering, the assist curvature gradually falls. However, it returns to 100% when left standing.

\*4: It is not a malfunction, though it might not be corresponding just after ignition switch in turned ON.

# C1601 BATTERY POWER SUPPLY

< DTC/CIRCUIT DIAGNOSIS >

## DTC/CIRCUIT DIAGNOSIS

### C1601 BATTERY POWER SUPPLY

#### Description

INFOID:000000005038016

Power is supplied from the battery to EPS control unit.

#### DTC Logic

INFOID:000000005038017

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1601	BATTERY VOLT	When the EPS control unit power supply voltage is malfunctioning.	<ul style="list-style-type: none"><li>• Harness or connector</li><li>• EPS control unit</li></ul>

#### DTC CONFIRMATION PROCEDURE

##### 1. DTC REPRODUCTION PROCEDURE

###### With CONSULT-III

1. Turn the ignition switch OFF to ON.
2. Perform EPS control unit self-diagnosis.

###### Is DTC "C1601" detected?

- YES >> Proceed to diagnosis procedure. Refer to [STC-8, "Diagnosis Procedure"](#).  
NO >> INSPECTION END

#### Diagnosis Procedure

INFOID:000000005038018

##### 1. CHECK EPS CONTROL UNIT GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect EPS control unit harness connector.
3. Check continuity between EPS control unit harness connector terminal and ground.

EPS control unit		—	Continuity
Connector	Terminal		
M38	18	Ground	Existed

4. Connect EPS control unit harness connector.

###### Is the inspection result normal?

- YES >> GO TO 2.  
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

##### 2. CHECK EPS CONTROL UNIT POWER SUPPLY CIRCUIT

1. Check voltage between EPS control unit harness connector terminals and ground.

EPS control unit		—	Voltage
Connector	Terminal		
M37	4	Ground	Approx. 0 V
M38	17		Battery voltage

2. Turn ignition switch ON.  
**CAUTION:**  
**Never start the engine.**
3. Check voltage between EPS control unit harness connector terminals and ground.



# C1601 BATTERY POWER SUPPLY

## < DTC/CIRCUIT DIAGNOSIS >

EPS control unit		—	Voltage
Connector	Terminal		
M37	4	Ground	Battery voltage
M38	17		

### Is the inspection result normal?

YES >> Replace EPS control unit. Refer to [STC-32, "Exploded View"](#).

- NO >> Check the following. If any items are damaged, repair or replace damaged parts.
- 10A fuse (#2) open
  - Harness for short between 10A fuse (#2) and power steering control unit harness connector No. 4 terminal.
  - 60A fusible link (M) open
  - Harness for short between 60A fusible link (M) and power steering control unit harness connector No. 4 terminal.
  - Harness for open between ignition switch and power steering control unit harness connector No. 17 terminal.
  - Harness for open between battery and power steering control unit harness connector No. 17 terminal.
  - Battery or ignition switch.

### Special Repair Requirement

INFOID:000000005038019

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#### 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the steering column assembly. Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

# C1604 TORQUE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

## C1604 TORQUE SENSOR

### Description

INFOID:000000005038020

Torque sensor detects the steering torque, and transmit the signal to EPS control unit.

### DTC Logic

INFOID:000000005038021

### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1604	TORQUE SENSOR	When torque sensor output signal is malfunctioning.	<ul style="list-style-type: none"><li>• Harness or connector</li><li>• Torque sensor</li><li>• EPS control unit</li></ul>

### DTC CONFIRMATION PROCEDURE

#### 1. DTC REPRODUCTION PROCEDURE

##### With CONSULT-III

1. Turn the ignition switch OFF to ON.
2. Perform EPS control unit self-diagnosis.

##### Is DTC "C1604" detected?

- YES >> Proceed to diagnosis procedure. Refer to [STC-10. "Diagnosis Procedure"](#).  
NO >> INSPECTION END

### Diagnosis Procedure

INFOID:000000005038022

#### 1. CHECK TORQUE SENSOR POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF to ON.  
**CAUTION:**  
**Never start the engine.**
2. Check voltage between torque sensor harness connector terminals and ground.  
**CAUTION:**  
**Steering wheel is neutral position. (There is no steering force.)**

Torque sensor		—	Voltage
Connector	Terminal		
M327	13	Ground	Approx. 5 V

##### Is the inspection result normal?

- YES >> GO TO 2.  
NO >> Perform the trouble diagnosis for battery power supply circuit. Refer to [STC-8. "Diagnosis Procedure"](#).

#### 2. CHECK TORQUE SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between torque sensor harness connector terminal and ground.  
**CAUTION:**  
**Steering wheel is neutral position. (There is no steering force.)**

Torque sensor		—	Continuity
Connector	Terminal		
M327	15	Ground	Existed

##### Is the inspection result normal?

- YES >> GO TO 3.  
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

# C1604 TORQUE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

## 3. CHECK TORQUE SENSOR SIGNAL

1. Turn ignition switch OFF to ON.
2. Check continuity between torque sensor harness connector terminal and ground.

**CAUTION:**

**Steering wheel is neutral position. (There is no steering force.)**

Torque sensor		—	Continuity
Connector	Terminal		
M327	14	Ground	Approx. 2.5 V
	16		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Torque sensor is malfunction. Replace steering column assembly. Refer to [ST-11. "Exploded View"](#).

## 4. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect torque sensor harness connector.
3. Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.

Is the inspection result normal?

YES >> Replace EPS control unit. Refer to [STC-32. "Exploded View"](#).

NO >> Repair or replace error-detected parts.

## Special Repair Requirement

INFOID:000000005087696

### 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the steering column assembly. Refer to [BRC-8. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

# C1606 EPS MOTOR

< DTC/CIRCUIT DIAGNOSIS >

## C1606 EPS MOTOR

### Description

INFOID:000000005038024

EPS motor provides the assist torque by the control signal from EPS control unit.

### DTC Logic

INFOID:000000005038025

### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1606	EPS MOTOR	When the motor driver malfunction of EPS control unit or EPS motor malfunction is detected.	<ul style="list-style-type: none"><li>• Harness or connector</li><li>• EPS motor</li><li>• EPS control unit</li></ul>

### DTC CONFIRMATION PROCEDURE

#### 1. DTC REPRODUCTION PROCEDURE

##### With CONSULT-III

1. Turn the ignition switch OFF to ON.
2. Perform EPS control unit self-diagnosis.

##### Is DTC "C1606" detected?

- YES >> Proceed to diagnosis procedure. Refer to [STC-12. "Diagnosis Procedure"](#).  
NO >> INSPECTION END

### Diagnosis Procedure

INFOID:000000005038026

#### 1. CHECK EPS MOTOR

Check the EPS motor. Refer to [STC-12. "Component Inspection"](#).

##### Is the inspection result normal?

- YES >> GO TO 2.  
NO >> EPS motor is malfunction. Replace steering column assembly. Refer to [ST-11. "Exploded View"](#).

#### 2. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect EPS motor harness connector.
3. Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.

##### Is the inspection result normal?

- YES >> Replace EPS control unit. Refer to [STC-32. "Exploded View"](#).  
NO >> Repair or replace error-detected parts.

### Component Inspection

INFOID:000000005092738

#### 1. CHECK EPS MOTOR

1. Turn the ignition switch OFF.
2. Disconnect EPS motor harness connector.
3. Check resistance between EPS motor connector terminals.

EPS motor		Resistance (Approx.)
Terminal		
19	20	0.1 Ω or less

##### Is the inspection result normal?

- YES >> INSPECTION END  
NO >> EPS motor is malfunction. Replace steering column assembly. Refer to [ST-11. "Exploded View"](#).

# C1606 EPS MOTOR

< DTC/CIRCUIT DIAGNOSIS >

## Special Repair Requirement

INFOID:000000005092715

### 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the steering column assembly. Refer to [BRC-8. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

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A  
B  
C  
D  
E  
F  
H  
I  
J  
K  
L  
M  
N  
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**STC**

# C1607, C1608 EPS CONTROL UNIT

< DTC/CIRCUIT DIAGNOSIS >

## C1607, C1608 EPS CONTROL UNIT

### Description

INFOID:000000005038032

EPS control unit performs an arithmetical operation on data, such as steering wheel turning force (sensor signal) from the torque sensor, vehicle speed signal, etc. Then it generates an optimum assist torque signal to the EPS motor according to the driving condition.

### DTC Logic

INFOID:000000005038033

### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1607	EEPROM	When the memory (EEPROM) system malfunction is detected in EPS control unit.	EPS control unit
C1608	CONTROL UNIT	When the internal malfunction is detected in EPS control unit.	

### DTC CONFIRMATION PROCEDURE

#### 1. DTC REPRODUCTION PROCEDURE

##### Ⓟ With CONSULT-III

1. Turn the ignition switch OFF to ON.
2. Perform EPS control unit self-diagnosis.

##### Is DTC "C1607" or "C1608" detected?

- YES >> Proceed to diagnosis procedure. Refer to [STC-14, "Diagnosis Procedure"](#).  
NO >> INSPECTION END

### Diagnosis Procedure

INFOID:000000005038034

#### 1. PERFORM SELF-DIAGNOSIS

##### Ⓟ With CONSULT-III

1. Turn the ignition switch OFF to ON.
2. Erase EPS control unit self-diagnostic results.
3. Perform EPS control unit self-diagnosis.

##### Is DTC "C1607" or "C1608" detected?

- YES >> Replace EPS control unit. Refer to [STC-32, "Exploded View"](#).  
NO >> Check EPS control unit pin terminals for damage or loose connection with harness connector. If any item are damaged, repair or replace error-detected parts.

# C1609 VEHICLE SPEED SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

## C1609 VEHICLE SPEED SIGNAL

### Description

INFOID:000000005038036

EPS control unit receives the vehicle speed signal from ABS actuator and electric unit (control unit) via CAN communication line.

### DTC Logic

INFOID:000000005038037

### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1609	CAN VHCL SPEED	<ul style="list-style-type: none"><li>Malfunction is detected in vehicle speed signal that is output from ABS actuator and electric unit (control unit) via CAN communication.</li><li>ABS actuator and electric unit (control unit) input signal error is detected.</li></ul>	<ul style="list-style-type: none"><li>Harness or connector</li><li>CAN communication line</li><li>EPS control unit</li><li>ABS malfunction</li><li>- Vehicle speed signal error</li></ul>

### DTC CONFIRMATION PROCEDURE

#### 1. DTC REPRODUCTION PROCEDURE

##### With CONSULT-III

- Turn the ignition switch OFF to ON.
- Perform EPS control unit self-diagnosis.

Is DTC "C1609" detected?

- YES >> Proceed to diagnosis procedure. Refer to [STC-15, "Diagnosis Procedure"](#).  
NO >> INSPECTION END

### Diagnosis Procedure

INFOID:000000005038038

#### 1. PERFORM ABS ACTUATOR AND ELECTRICAL UNIT (CONTROL UNIT) SELF-DIAGNOSIS

##### With CONSULT-III

- Turn the ignition switch OFF to ON.
- Perform ABS actuator and electrical unit (control unit) self-diagnosis. Refer to [BRC-22, "CONSULT-III Function"](#).

Is any DTC detected?

- YES >> Check the DTC. Refer to [BRC-86, "DTC Index"](#).  
NO >> GO TO 2.

#### 2. PERFORM SELF-DIAGNOSIS

##### With CONSULT-III

Perform EPS control unit self-diagnosis.

Is DTC "C1609" detected?

- YES >> Replace EPS control unit. Refer to [STC-32, "Exploded View"](#).  
NO >> Check EPS control unit pin terminals for damage or loose connection with harness connector. If any item are damaged, repair or replace error-detected parts.

# C1610 ENGINE STATUS SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

## C1610 ENGINE STATUS SIGNAL

### Description

INFOID:000000005038040

EPS control unit receives the engine status signal from ECM via CAN communication line.

### DTC Logic

INFOID:000000005038041

### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1610	CAN ENG RPM	<ul style="list-style-type: none"><li>Malfunction is detected in engine status signal that is output from ECM via CAN communication.</li><li>ECM input signal error is detected.</li></ul>	<ul style="list-style-type: none"><li>Harness or connector</li><li>CAN communication line</li><li>EPS control unit</li><li>ECM</li><li>- Engine status signal error</li></ul>

### DTC CONFIRMATION PROCEDURE

#### 1. DTC REPRODUCTION PROCEDURE

##### With CONSULT-III

- Turn the ignition switch OFF to ON.
- Perform EPS control unit self-diagnosis.

##### Is DTC "C1610" detected?

- YES >> Proceed to diagnosis procedure. Refer to [STC-16, "Diagnosis Procedure"](#).  
NO >> INSPECTION END

### Diagnosis Procedure

INFOID:000000005038042

#### 1. PERFORM ECM SELF-DIAGNOSIS

##### With CONSULT-III

- Turn the ignition switch OFF to ON.
- Perform ECM self-diagnosis. Refer to [EC-98, "CONSULT-III Function"](#).

##### Is any DTC detected?

- YES >> Check the DTC. Refer to [EC-448, "DTC Index"](#).  
NO >> GO TO 2.

#### 2. PERFORM SELF-DIAGNOSIS

##### With CONSULT-III

Perform EPS control unit self-diagnosis.

##### Is DTC "C1610" detected?

- YES >> Replace EPS control unit. Refer to [STC-32, "Exploded View"](#).  
NO >> Check EPS control unit pin terminals for damage or loose connection with harness connector. If any item are damaged, repair or replace error-detected parts.



# U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

## U1000 CAN COMM CIRCUIT

### Description

INFOID:000000005093610

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit communicate data but selectively reads required data only.

### DTC Logic

INFOID:000000005093611

### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
U1000	CAN COMM CIRCUIT	EPS control unit is not transmitting/receiving CAN communication signal for 2 seconds or more.	<ul style="list-style-type: none"><li>CAN communication error</li><li>EPS control unit</li></ul>

### DTC CONFIRMATION PROCEDURE

#### 1. DTC REPRODUCTION PROCEDURE

##### With CONSULT-III

- Turn the ignition switch OFF to ON.
- Perform EPS control unit self-diagnosis.

Is DTC "U1000" detected?

- YES >> Proceed to diagnosis procedure. Refer to [STC-17, "Diagnosis Procedure"](#).  
NO >> INSPECTION END

### Diagnosis Procedure

INFOID:000000005093612

#### 1. PERFORM SELF-DIAGNOSIS

##### With CONSULT-III

Perform EPS control unit self-diagnosis.

Is DTC "U1000" detected?

- YES >> CAN specification chart. Refer to [LAN-23, "CAN System Specification Chart"](#).  
NO >> INSPECTION END

### Special Repair Requirement

INFOID:000000005093614

#### 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the steering column assembly. Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

# EPS WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

## EPS WARNING LAMP

### Description

INFOID:000000005086620

- Turn ON when there is a malfunction in EPS system. It indicates that fail-safe mode is engaged and enters a manual steering state (Control turning force steering wheel becomes heavy).
- Also turns ON when ignition switch is turned ON, for purpose of lamp check. Turns OFF after the engine starts, if system is normal.

### EPS WARNING LAMP INDICATION

Condition	EPS warning lamp
Ignition switch ON. (Lamp check)	ON
Engine running.	OFF
EPS system malfunction [Other diagnostic item]	OFF

#### **CAUTION:**

EPS warning lamp also turns ON due to data reception error, CAN communication error etc.

### Component Function Check

INFOID:000000005086621

#### 1. CHECK THE ILLUMINATION OF THE EPS WARNING LAMP

Check that the EPS warning lamp turns ON when ignition switch turns ON. Then, EPS warning lamp turns OFF after the engine is started.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Perform trouble diagnosis. Refer to [STC-18, "Diagnosis Procedure"](#).

### Diagnosis Procedure

INFOID:000000005086622

#### 1. PERFORM SELF-DIAGNOSIS

##### With CONSULT-III

1. Turn the ignition switch OFF to ON.
2. Perform EPS control unit self-diagnosis.

Is any DTC detected?

YES >> Check the DTC. Refer to [STC-24, "DTC Index"](#).

NO >> GO TO 2.

#### 2. CHECK EPS WARNING LAMP SIGNAL

##### With CONSULT-III

1. Turn the ignition switch ON.  
**CAUTION:**  
**Never start the engine.**
2. On "DATA MONITOR", select "WARNING LAMP".
3. Check that the EPS warning lamp is turned ON.
4. Start the engine.  
**CAUTION:**  
**Stop the vehicle.**
5. Check that the EPS warning lamp is turned OFF.

Is the inspection result normal?

YES >> Perform the trouble diagnosis for combination meter power supply circuit. Refer to [MWI-39, "COMBINATION METER : Diagnosis Procedure"](#).

NO >> Replace the EPS control unit. Refer to [STC-32, "Exploded View"](#).

# EPS CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

## ECU DIAGNOSIS INFORMATION

### EPS CONTROL UNIT

Reference Value

INFOID:000000005038048

VALUES ON THE DIAGNOSIS TOOL

#### CAUTION:

The output signal indicates the EPS control unit calculation data. The normal values will be displayed even in the event that the output circuit (harness) is open.

Monitor item	Display content	Data monitor	
		Condition	Display value
BATTERY VOLT	Power supply voltage for EPS control unit	Ignition switch: ON	
TORQUE SENSOR	Steering wheel turning force	Engine running	Steering wheel: Not steering (There is no steering force)
			Steering wheel: Right turn
			Steering wheel: Left turn
MOTOR CURRENT	Consumption current of EPS motor	Engine running	Steering wheel: Not steering (There is no steering force)
			Steering wheel: Right or left turn
MOTOR SIG	Command current to EPS motor	Engine running	Steering wheel: Not steering (There is no steering force)
			Steering wheel: Right turn
			Steering wheel: Left turn
ASSIST TORQUE	Displays assist torque being output by the EPS.	Engine running	Approx. 0 Nm <sup>*2</sup>
C/U TEMP	Displays temperature of the EPS control unit.	Ignition switch ON or engine running	Displays temperature of inside of EPS control unit (°C)
ASSIST LEVEL	Assist available level	Engine running	100 % <sup>*3</sup>
VEHICLE SPEED	Vehicle speed	Vehicle stopped	0 km/h (0 mph)
		While driving	Approximately equal to the indication on speedometer (inside of ±10%) <sup>*4</sup>
WARNING LAMP	EPS warning lamp condition	EPS warning lamp: ON	On
		EPS warning lamp: OFF	Off
ENGINE STATUS	Engine status	Engine not running	Stop
		Engine running	Run

\*1: Almost in accordance with the value of MOTOR SIG. It is not a malfunction though these values are not accorded when steering quickly.

\*2: A fixed value is indicated regardless of steering turning.

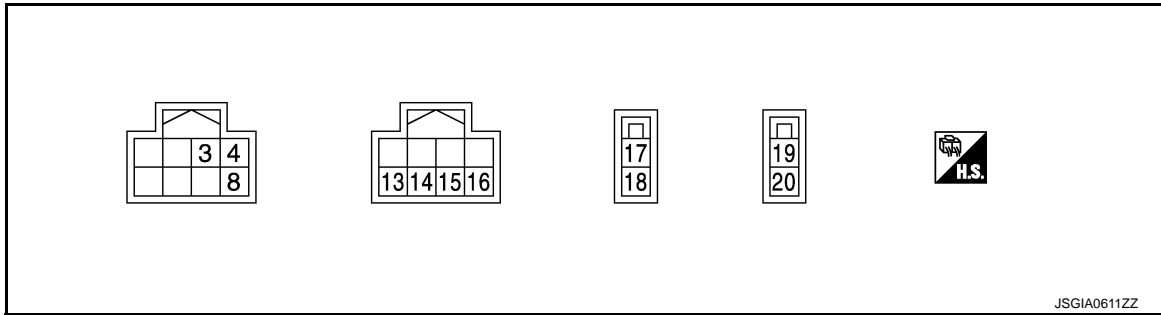
\*3: Normally displays 100%. In case of an excessive stationary steering, the assist curvature gradually falls. However, it returns to 100% when left standing.

\*4: It is not a malfunction, though it might not be corresponding just after ignition switch is turned ON.

# EPS CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

## TERMINAL LAYOUT



## PHYSICAL VALUES

Terminal No. (Wire Color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/Output			
3 (P)	Ground	CAN-L	Input/Output	—		—
4 (O)	Ground	Ignition power supply	Input	Ignition switch: ON		Battery voltage
				Ignition switch: OFF		0 V
8 (L)	Ground	CAN-H	Input/Output	—		—
13 (-)	Ground	Torque sensor power supply	Output	Ignition switch: ON		5 V
14 (-)	Ground	Torque sensor sub	Input	Ignition switch: ON	Steering wheel: Not steering (There is no steering force)	2.5 V
				Engine running	Steering wheel: steering	1.6 V – 3.4 V (The value is changed according to steering left or right)
15 (-)	Ground	Torque sensor ground	—	Always		0 V
16 (-)	Ground	Torque sensor main	Input	Ignition switch: ON	Steering wheel: Not steering (There is no steering force)	2.5 V
				Engine running	Steering wheel: steering	1.6 V – 3.4 V (The value is changed according to steering left or right)
17 (R)	Ground	Battery power supply	Input	Always		Battery voltage
18 (B)	Ground	Ground	—	Always		0 V
19 (-)	—	Motor +	—	—		—
20 (-)	—	Motor -	—	—		—

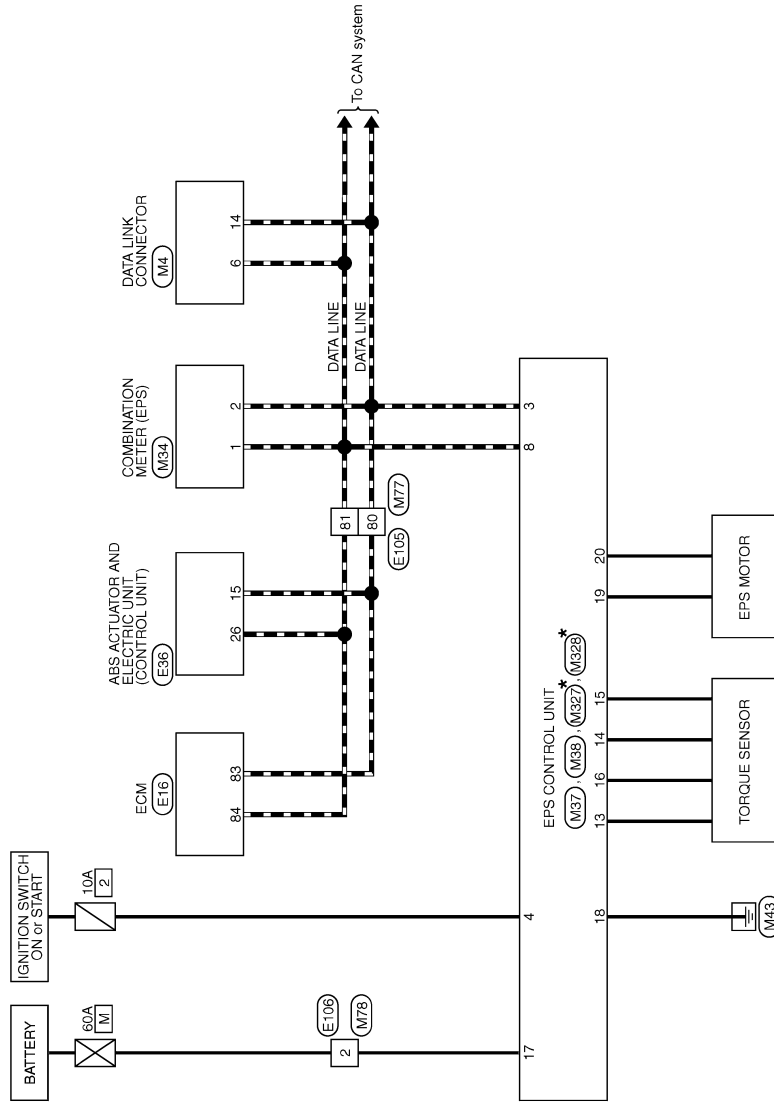
# EPS CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

## Wiring Diagram - ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM -

INFOID:000000005038049

### ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM



\*: This connector is not shown in "Harness Layout".

2009/02/27

JCGWM0223GB

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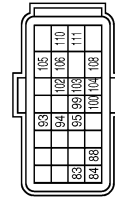
STC

# EPS CONTROL UNIT

## < ECU DIAGNOSIS INFORMATION >

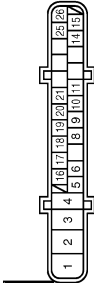
### ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM

Connector No.	E16
Connector Name	ECM
Connector Type	RH24FB-RZ8-L-RH



Terminal No.	Color of Wire	Signal Name [Specification]
83	L	CAN-L
84	P	CAN-H

Connector No.	E36
Connector Name	ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
Connector Type	BA22FB-AH4-RH



Terminal No.	Color of Wire	Signal Name [Specification]
15	P	CAN-L
26	L	CAN-H

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH60MW-CS16-TM4



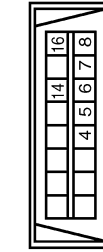
Terminal No.	Color of Wire	Signal Name [Specification]
80	P	-
81	L	-

Connector No.	E106
Connector Name	WIRE TO WIRE
Connector Type	LO2FB-MC



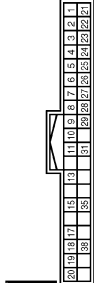
Terminal No.	Color of Wire	Signal Name [Specification]
2	R	-

Connector No.	M4
Connector Name	DATA LINK CONNECTOR
Connector Type	BD18FW



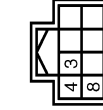
Terminal No.	Color of Wire	Signal Name [Specification]
8	L	-
14	P	-

Connector No.	M34
Connector Name	COMBINATION METER
Connector Type	TH40FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
1	L	CAN-H
2	P	CAN-L

Connector No.	M37
Connector Name	EPS CONTROL UNIT
Connector Type	TH08FB



Terminal No.	Color of Wire	Signal Name [Specification]
3	P	CAN-L
4	O	IGN
8	L	CAN-H

Connector No.	M38
Connector Name	EPS CONTROL UNIT
Connector Type	LO2FB-UH



Terminal No.	Color of Wire	Signal Name [Specification]
17	R	BAT
18	B	GND

# EPS CONTROL UNIT

## < ECU DIAGNOSIS INFORMATION >

### ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TF80FY-CS10-TM4



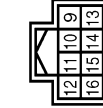
Terminal No.	Color of Wire	Signal Name [Specification]
80	P	
81	L	

Connector No.	M78
Connector Name	WIRE TO WIRE
Connector Type	L02MB-MC



Terminal No.	Color of Wire	Signal Name [Specification]
2	R	

Connector No.	M227
Connector Name	EPS CONTROL UNIT
Connector Type	TF08FGY



Terminal No.	Color of Wire	Signal Name [Specification]
13	-	TORQUE SENSOR POWER SUPPLY
14	-	TORQUE SENSOR SUB
15	-	TORQUE SENSOR GND
16	-	TORQUE SENSOR MAIN

Connector No.	M328
Connector Name	EPS CONTROL UNIT
Connector Type	L02FL



Terminal No.	Color of Wire	Signal Name [Specification]
19	-	MOTOR (+)
20	-	MOTOR (-)

JCGWM0225GB

INFOID:000000005038050

## Fail-Safe

- If any malfunction occurs in the system, and control unit detects the malfunction, EPS warning lamp on combination meter turns ON to indicate system malfunction.
- When EPS warning lamp is ON, enters into a manual steering state. (Control turning force steering wheel becomes heavy.)

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# EPS CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

## DTC Inspection Priority Chart

INFOID:000000005086619

When multiple DTCs are detected simultaneously, check one by one depending on the following priority list.

Priority	Priority order item (DTC)
1	U1000 CAN COMM CIRCUIT
2	C1601 BATTERY POWER SUPPLY
3	Other than the above

## DTC Index

INFOID:000000005038051

DTC	Items (CONSULT-III screen terms)	Reference
C1601	BATTERY VOLT	<a href="#">STC-8, "DTC Logic"</a>
C1604	TORQUE SENSOR	<a href="#">STC-10, "DTC Logic"</a>
C1606	EPS MOTOR	<a href="#">STC-12, "DTC Logic"</a>
C1607	EEPROM	<a href="#">STC-14, "DTC Logic"</a>
C1608	CONTROL UNIT	<a href="#">STC-14, "DTC Logic"</a>
C1609	CAN VHCL SPEED	<a href="#">STC-15, "DTC Logic"</a>
C1610	CAN ENG RPM	<a href="#">STC-16, "DTC Logic"</a>
U1000	CAN COMM CIRCUIT	<a href="#">STC-17, "DTC Logic"</a>



# EPS WARNING LAMP DOES NOT TURN ON

< SYMPTOM DIAGNOSIS >

## SYMPTOM DIAGNOSIS

### EPS WARNING LAMP DOES NOT TURN ON

#### Description

INFOID:000000005038052

EPS warning lamp does not turn ON when turning ignition switch ON from OFF. (Check the illumination of the EPS warning lamp.)

#### Diagnosis Procedure

INFOID:000000005038053

#### 1. CHECK EPS WARNING LAMP

Perform the trouble diagnosis of EPS warning Lamp. Refer to [STC-18, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES >> Check that there is no malfunction in each harness connector pin terminal or disconnection.
- NO >> Repair or replace the specific malfunctioning part.

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STC

# EPS WARNING LAMP DOES NOT TURN OFF

< SYMPTOM DIAGNOSIS >

---

## EPS WARNING LAMP DOES NOT TURN OFF

### Description

INFOID:000000005038054

EPS warning lamp does not turn OFF several seconds after engine started.

### Diagnosis Procedure

INFOID:000000005038055

#### 1. PERFORM SELF-DIAGNOSIS

---

##### With CONSULT-III

1. Turn the ignition switch OFF to ON.
2. Perform EPS control unit self-diagnosis.

##### Is any DTC detected?

- YES >> Check the DTC. Refer to [STC-24, "DTC Index"](#).  
NO >> GO TO 2.

#### 2. CHECK EPS WARNING LAMP

---

Perform the trouble diagnosis of EPS warning Lamp. Refer to [STC-18, "Diagnosis Procedure"](#).

##### Is the inspection result normal?

- YES >> GO TO 3.  
NO >> Repair or replace the specific malfunctioning part.

#### 3. CHECK EPS CONTROL UNIT POWER SUPPLY AND GROUND CIRCUIT

---

Perform the trouble diagnosis of EPS control unit power supply and ground. Refer to [STC-8, "Diagnosis Procedure"](#).

##### Is the inspection result normal?

- YES >> Check that there is no malfunction in each harness connector pin terminal or disconnection.  
NO >> Repair or replace the specific malfunctioning part.

# STEERING WHEEL TURNING FORCE IS HEAVY OR LIGHT

< SYMPTOM DIAGNOSIS >

## STEERING WHEEL TURNING FORCE IS HEAVY OR LIGHT

### Description

INFOID:000000005094148

Steering wheel turning force is heavy or light.

### Diagnosis Procedure

INFOID:000000005038056

#### 1. CHECK THE ILLUMINATION OF THE EPS WARNING LAMP

Check that the EPS warning lamp turns ON when ignition switch turns ON. Then, EPS warning lamp turns OFF after the engine is started.

Is the inspection result normal?

- YES >> GO TO 4.
- NO >> GO TO 2.

#### 2. PERFORM SELF-DIAGNOSIS

 **With CONSULT-III**

1. Turn the ignition switch OFF to ON.
2. Perform EPS control unit self-diagnosis.

Is any DTC detected?

- YES >> Check the DTC. Refer to [STC-24, "DTC Index"](#).
- NO >> GO TO 3.

#### 3. CHECK EPS CONTROL UNIT SIGNAL

 **With CONSULT-III**

1. Start the engine.  
**CAUTION:**  
**Stop the vehicle.**
2. Turn steering wheel from full left stop to full right stop.
3. Select "TORQUE SENSOR" of "DATA MONITOR" for EPS control unit.

Monitor item	Condition	Display value
TORQUE SENSOR	Steering wheel: Not steering (There is no steering force)	Approx. 0 Nm
	Steering wheel: Right turn	Positive value (Nm)
	Steering wheel: Left turn	Negative value (Nm)

Is the inspection result normal?

- YES >> GO TO 5.
- NO >> GO TO 4.

#### 4. CHECK EPS MOTOR

Perform the trouble diagnosis of EPS motor. Refer to [STC-12, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES >> GO TO 5.
- NO >> Repair or replace the specific malfunctioning part.

#### 5. CHECK STEERING WHEEL TURNING FORCE

Check the steering wheel turning force. Refer to [ST-7, "Inspection"](#).

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> Check the steering wheel turning force for mechanical malfunction. Refer to [ST-7, "Inspection"](#).

# UNBALANCE STEERING WHEEL TURNING FORCE AND RETURN BETWEEN RIGHT AND LEFT

< SYMPTOM DIAGNOSIS >

## UNBALANCE STEERING WHEEL TURNING FORCE AND RETURN BETWEEN RIGHT AND LEFT

### Description

INFOID:000000005094242

Unbalance steering wheel turning force and return between right and left.

### Diagnosis Procedure

INFOID:000000005038057

#### 1. CHECK THE ILLUMINATION OF THE EPS WARNING LAMP

Check that the EPS warning lamp turns ON when ignition switch turns ON. Then, EPS warning lamp turns OFF after the engine is started.

Is the inspection result normal?

- YES >> GO TO 2.
- NO >> Refer to [STC-26, "Diagnosis Procedure"](#).

#### 2. CHECK WHEEL ALIGNMENT

1. Check the wheel alignment. Refer to [FSU-7, "Inspection"](#).
2. Perform EPS control unit self-diagnosis.

Is the inspection result normal?

- YES >> GO TO 3.
- NO >> Adjustment of wheel alignment.

#### 3. CHECK EPS CONTROL UNIT SIGNAL

 With CONSULT-III

1. Start the engine.  
**CAUTION:**  
**Stop the vehicle.**
2. Turn steering wheel from full left stop to full right stop.
3. Select "TORQUE SENSOR" of "DATA MONITOR" for EPS control unit.

Monitor item	Condition	Display value
TORQUE SENSOR	Steering wheel: Not steering (There is no steering force)	Approx. 0 Nm
	Steering wheel: Right turn	Positive value (Nm)
	Steering wheel: Left turn	Negative value (Nm)

Is the inspection result normal?

- YES >> GO TO 5.
- NO >> GO TO 4.

#### 4. CHECK EPS MOTOR

Perform the trouble diagnosis of EPS motor. Refer to [STC-12, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES >> GO TO 5.
- NO >> Repair or replace the specific malfunctioning part.

#### 5. CHECK STEERING WHEEL TURNING FORCE

Check the steering wheel turning force. Refer to [ST-7, "Inspection"](#).

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> Check the steering wheel turning force for mechanical malfunction. Refer to [ST-7, "Inspection"](#).

# UNBALANCE STEERING WHEEL TURNING FORCE (TORQUE VARIATION)

< SYMPTOM DIAGNOSIS >

## UNBALANCE STEERING WHEEL TURNING FORCE (TORQUE VARIATION)

### Description

INFOID:000000005094243

Unbalance steering wheel turning force (torque variation).

### Diagnosis Procedure

INFOID:000000005038058

#### 1. CHECK THE ILLUMINATION OF THE EPS WARNING LAMP

Check that the EPS warning lamp turns ON when ignition switch turns ON. Then, EPS warning lamp turns OFF after the engine is started.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Refer to [STC-26, "Diagnosis Procedure"](#).

#### 2. CHECK STEERING COLUMN AND STEERING GEAR

Check the steering column assembly and steering gear assembly.

- Steering column assembly. Refer to [ST-11, "Exploded View"](#).
- Steering gear assembly. Refer to [ST-14, "Exploded View"](#).

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace the specific malfunctioning part.

#### 3. CHECK EPS CONTROL UNIT SIGNAL

 **With CONSULT-III**

1. Start the engine.

**CAUTION:**

**Stop the vehicle.**

2. Turn steering wheel from full left stop to full right stop.
3. Select "TORQUE SENSOR" of "DATA MONITOR" for EPS control unit.

Monitor item	Condition	Display value
TORQUE SENSOR	Steering wheel: Not steering (There is no steering force)	Approx. 0 Nm
	Steering wheel: Right turn	Positive value (Nm)
	Steering wheel: Left turn	Negative value (Nm)

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

#### 4. CHECK EPS MOTOR

Perform the trouble diagnosis of EPS motor. Refer to [STC-12, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace the specific malfunctioning part.

#### 5. CHECK STEERING WHEEL TURNING FORCE

Check the steering wheel turning force. Refer to [ST-7, "Inspection"](#).

Is the inspection result normal?

YES >> INSPECTION END

NO >> Check the steering wheel turning force for mechanical malfunction. Refer to [ST-7, "Inspection"](#).

# PRECAUTIONS

< PRECAUTION >

## PRECAUTION

### PRECAUTIONS

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

INFOID:000000005153313

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:**

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the "SRS AIR BAG".
- 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, and wait at least 3 minutes before performing any service.

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

INFOID:000000005153314

#### **NOTE:**

- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

This vehicle is equipped with a push-button ignition switch and a steering lock unit.

If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the procedure below before starting the repair operation.

#### OPERATION PROCEDURE

1. Connect both battery cables.

#### **NOTE:**

Supply power using jumper cables if battery is discharged.

2. Turn the push-button ignition switch to ACC position.  
(At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.

# PRECAUTIONS

## < PRECAUTION >

- When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)
- Perform self-diagnosis check of all control units using CONSULT-III.

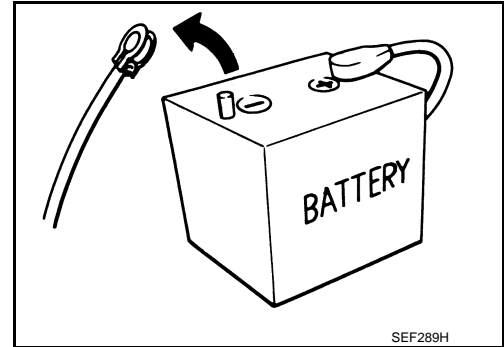
## Service Notice or Precautions for EPS System

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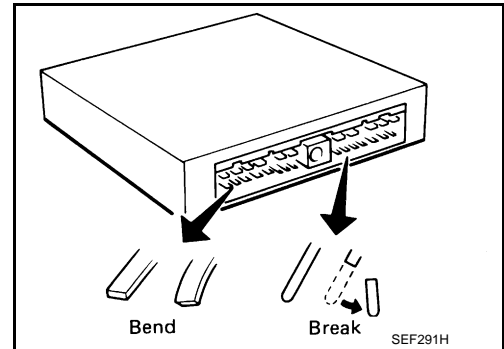
### CAUTION:

Check the following item when performing the trouble diagnosis.

- Check any possible causes by interviewing the symptom and it's condition from the customer if any malfunction, such as EPS warning lamp is turned ON, occurs.
- Check if air pressure and size of tires are proper, the specified part is used for the steering wheel, and control unit is genuine part.
- Check if the connection of steering column assembly and steering gear assembly is proper (there is not looseness of mounting bolts, damage of rods, boots or sealants, and leakage of grease, etc).
- Check if the wheel alignment is adjusted properly.
- Check if there is any damage or modification to suspension or body resulting in increased weight or altered ground clearance.
- Check if installation conditions of each link and suspension are proper.
- Check if the battery voltage is proper.
- Check connection conditions of each connector are proper.
- Before connecting or disconnecting the EPS control unit harness connector, turn ignition switch "OFF" and disconnect battery ground cable. Because battery voltage is applied to EPS control unit even if ignition switch is turned "OFF".



- When connecting or disconnecting pin connectors into or from EPS control unit, take care not to damage pin terminals (bend or break).  
When connecting pin connectors, make sure that there are no bends or breaks on EPS control unit pin terminal.



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

# EPS CONTROL UNIT

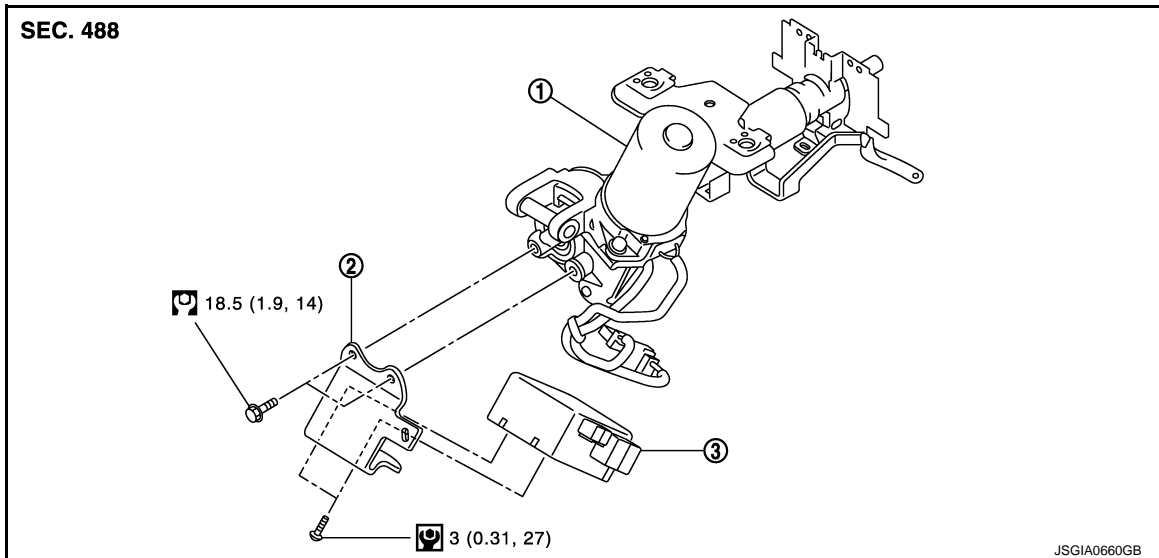
< REMOVAL AND INSTALLATION >

## REMOVAL AND INSTALLATION

### EPS CONTROL UNIT

Exploded View

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1. Steering column assembly      2. Bracket      3. EPS control unit

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

### Removal and Installation

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#### REMOVAL

##### CAUTION:

- Disconnect battery negative terminal before starting operations.
- Never shock EPS control unit, e.g. drop or hit.
- Never get EPS control unit wet with water or other liquid. Also, do not give EPS control unit a radical temperature change to avoid getting water drops.
- Never disassemble or remodel EPS control unit, EPS motor, torque sensor, harness and connectors.

1. Remove instrument lower panel LH. Refer to [IP-12. "Exploded View"](#).
2. Remove knee protector.
3. Disconnect EPS control unit connectors.

##### CAUTION:

**Hold and pull the connector housing, not pulling harness, when disconnecting connectors. Also, do not grip, collapse or apply excessive force to the connector.**

4. Remove EPS control unit from steering column assembly.

#### INSTALLATION

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

- Check that harness is not damaged when installing EPS control unit. Also, check that EPS control unit is installed without trapping harness or foreign materials.
- After installing steering column assembly, perform self-diagnosis with CONSULT-III to ensure correct operation. Refer to [STC-7. "CONSULT-III Function"](#).