SECTION STC
STEERING CONTROL SYSTEM

CONTENTS

PRECAUTION

PRECAUTIONS

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

INFOID:0000000009499763

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, 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 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 Airbag Diagnosis Sensor Unit or other Airbag 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 three minutes before performing any service.**

Service Notice and Precautions for EPS System

INFOID:0000000008969726

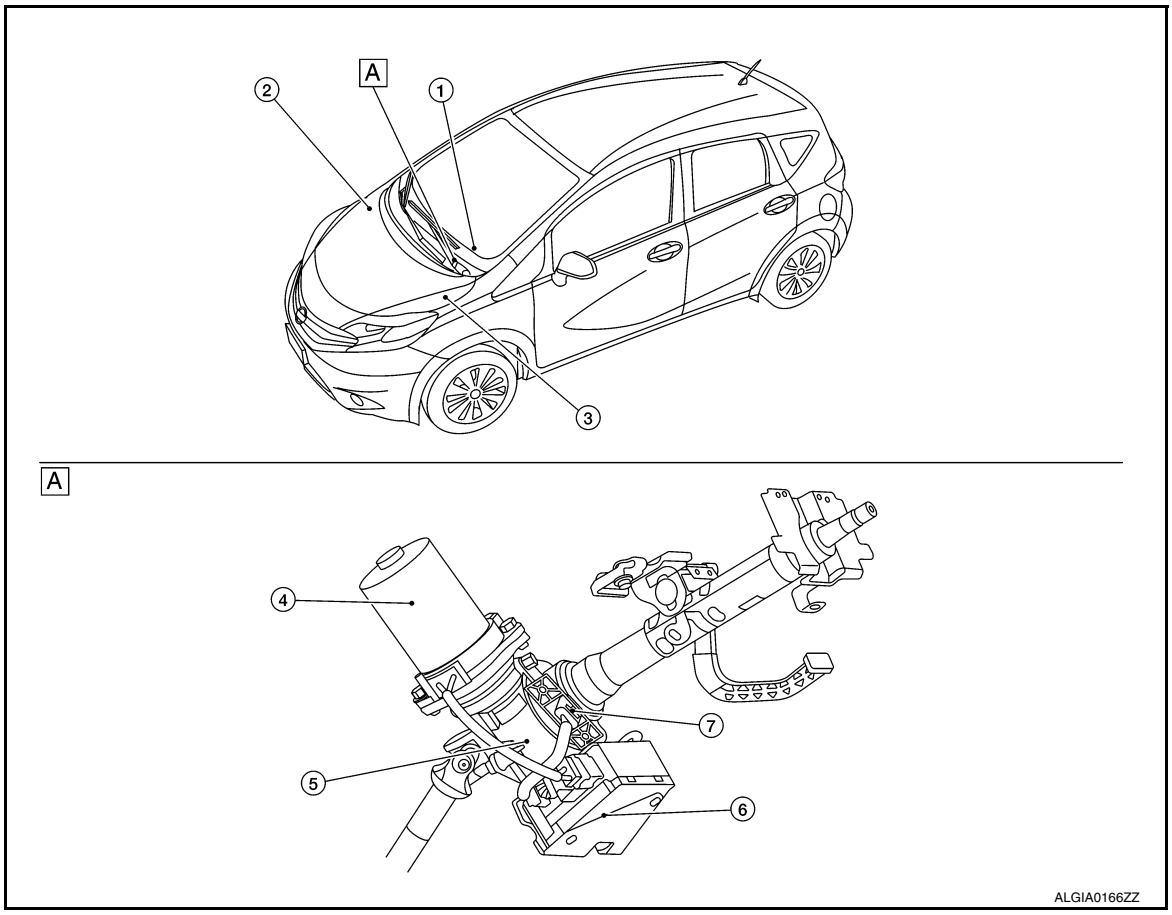
- Check the following item when performing the trouble diagnosis:
- Check for possible causes of the malfunction by interviewing the customer as to what conditions were present when the symptom occurred.
- Check if the steering wheel and the EPS control unit are genuine parts.
- Check if the air pressure and size of each tire is correct.
- Check if the installation of the links and suspension components are correct.
- Check if the tires are worn evenly, indicating the wheel alignment is correct.
- Check if the installation of the steering column and the steering gear are correct. Check for loose bolts, damaged links, cracked boots and leaking grease, etc.
- Check for damage or modification to suspension or body resulting in increased weight or altered ground clearance.
- Check if the battery voltage is proper.
- Check the EPS control unit harness to be sure the harness connectors are fully seated.
- Before connecting or disconnecting the EPS control unit harness connector, turn ignition switch “OFF” and disconnect the battery cable from the negative terminal. Battery voltage is applied to the EPS control unit even if ignition switch is turned “OFF”.

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000009667170



A. Steering column assembly

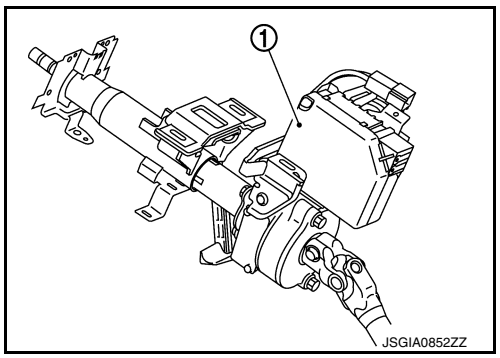
No.	Component	Function
1.	Combination meter (EPS warning lamp)	• Transmits mainly the following signal to EPS control unit via CAN communication. - Vehicle speed signal (Meter) • Turns ON the EPS warning lamp according to the signal from EPS control unit via CAN communication. • For detailed installation location, refer to MWI-5, "METER SYSTEM : Component Parts Location".
2.	ABS actuator and electric unit (control unit)	• Transmits mainly the following signal to EPS control unit via CAN communication. - Vehicle speed signal (ABS) • For detailed installation location, refer to BRC-7, "Component Parts Location".
3.	ECM	• Transmits mainly the following signals to EPS control unit via CAN communication. - Engine status signal • For detailed installation location, refer to EC-14, "ENGINE CONTROL SYSTEM : Component Parts Location".
		• Receives mainly the following signal from EPS control unit via CAN communication. - EPS torque signal

No.	Component	Function
4.	EPS motor	Refer to STC-5, "EPS Motor, Torque Sensor, Reduction Gear".
5.	Reduction gear	Refer to STC-5, "EPS Motor, Torque Sensor, Reduction Gear".
6.	EPS control unit	Refer to STC-5, "EPS Control Unit".
7.	Torque sensor	Refer to STC-5, "EPS Motor, Torque Sensor, Reduction Gear".

EPS Control Unit

INFOID:0000000009667171

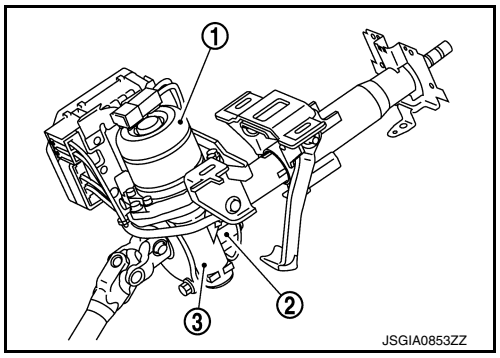
- EPS control unit (1) is installed to steering column assembly.
- EPS control unit performs an arithmetical operation on data, such as steering wheel turning force (sensor signal) from the torque sensor, vehicle speed signal, etc. Then it generates an optimum assist torque signal to the EPS motor according 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).



EPS Motor, Torque Sensor, Reduction Gear

INFOID:0000000009667172

EPS motor (1), torque sensor (2) and reduction gear (3) are installed to steering column assembly.



EPS MOTOR

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

TORQUE SENSOR

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

REDUCTION GEAR

Reduction gear increases the assist torque provided from EPS motor with worm gears, and outputs to the column shaft.

DIAGNOSIS SYSTEM (EPS CONTROL UNIT)

CONSULT Function

INFOID:0000000009667173

FUNCTION

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

Diagnostic test mode	Function
ECU identification	The part number stored in the control unit can be read.
Self diagnostic result	Self-diagnostic results and freeze frame data can be read and erased quickly.*
Data monitor	Input/Output data in the EPS control unit can be read.

*: The following diagnosis information is erased by erasing.
- DTC
- Freeze frame data (FFD)

ECU IDENTIFICATION

Displays the part number stored in the control unit.

SELF-DIAG RESULTS MODE

Refer to STC-10, "DTC Index".

When “CRNT” is displayed on self-diagnosis result.
- The system is presently malfunctioning.

When “PAST” is displayed on self-diagnosis result.
- System malfunction in the past is detected, but the system is presently normal.

FREEZE FRAME DATA (FFD)

The following vehicle status is recorded when DTC is detected and is displayed on CONSULT.

Item name	Display item
IGN COUNTER (0-39)	The number of times that ignition switch is turned ON after the DTC is detected is displayed. • When “0” is displayed: It indicates that the system is presently malfunctioning. • When except “0” is displayed: It indicates that system malfunction in the past is detected, but the system is presently normal. **NOTE:** Each time when ignition switch is turned OFF to ON, numerical number increases in 1→2→3...38→39. When the operation number of times exceeds 39, the number does not increase and “39” is displayed until self-diagnosis is erased.

DATA MONITOR MODE

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.*1
MOTOR SIG (A)	Displays the current commanded value to EPS motor.
ASSIST TORQUE (Nm)	Displays assist torque being output by the electric power steering.
C/U TEMP (°C or °F)	Displays the temperature of the EPS control unit.
ASSIST LEVEL (%)	Normally displays 100%. In case of an excessive stationary steering, the assist curvature gradually falls. However, it return to 100% when left standing.*2
VEHICLE SPEED (km/h or MPH)	Vehicle speed is displayed from vehicle speed signal via CAN communication.*3
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: Normally displays 100%. In case of an excessive stationary steering, the assist curvature gradually falls. However, it returns to 100% when left standing.
*3: It is not a malfunction, though it might not be corresponding just after ignition switch in turned ON.

ECU DIAGNOSIS INFORMATION

EPS CONTROL UNIT

Reference Value

INFOID:0000000009667174

VALUES ON THE DIAGNOSIS TOOL

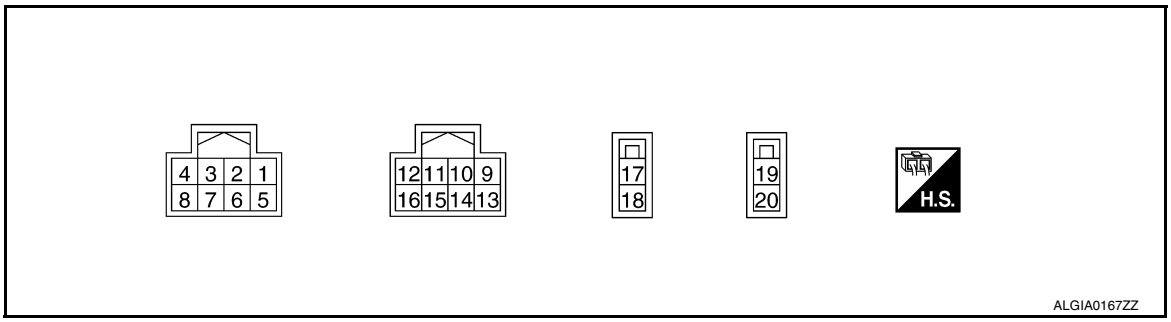
CAUTION:

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	Data monitor		
	Condition		Display value
BATTERY VOLT	Ignition switch: ON		Battery voltage
TORQUE SENSOR	Engine running	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)
MOTOR CURRENT	Engine running	Steering wheel: Not steering (There is no steering force)	Approx. 0 A
		Steering wheel: Right or left turn	Displays consumption current of EPS motor (A)*1
MOTOR SIG	Engine running	Steering wheel: Not steering (There is no steering force)	Approx. 0 A
		Steering wheel: Right turn	Positive value (A)
		Steering wheel: Left turn	Negative value (A)
ASSIST TORQUE	Engine running		Approx. 0 Nm*2
C/U TEMP	Ignition switch ON or engine running		Displays temperature of inside of EPS control unit (°C or °F)
ASSIST LEVEL	Engine running		100 %*3
VEHICLE SPEED	Vehicle stopped		0 km/h or mph
	While driving		Approximately equal to the indication on speedometer*4 (inside of ±10%)
WARNING LAMP	EPS warning lamp: ON		On
	EPS warning lamp: OFF		Off
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 in turned ON.

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire Color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/Output			
1 (P)	—	CAN-L	Input/Output	—		—
2 (L)	—	CAN-H	Input/Output	—		—
4 (Y)	Ground	Ignition power supply	Input	Ignition switch: ON		Battery voltage
				Ignition switch: OFF		0 V
13 (R)	Ground	Torque sensor power supply	Output	Ignition switch: ON		5 V
				Ignition switch: OFF		0 V
14 (Y)	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 (B)	Ground	Torque sensor ground	Input	Always		0 V
16 (W)	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 (B)	—	Motor –	—	—		—

Fail-Safe

INFOID:0000000009667175

- 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, the system enters into a manual steering state. (Steering wheel turning force becomes heavy.)
- Under abnormal vehicle speed signal conditions, vehicle speed is judged as constant.

Protection Function

INFOID:0000000009667176

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.

DTC Inspection Priority Chart

INFOID:0000000009667177

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	C1609 CAN VHCL SPEED, C1610 CAN ENG RPM
3	C1601 BATTERY VOLT
4	Other than the above

DTC Index

INFOID:0000000009667178

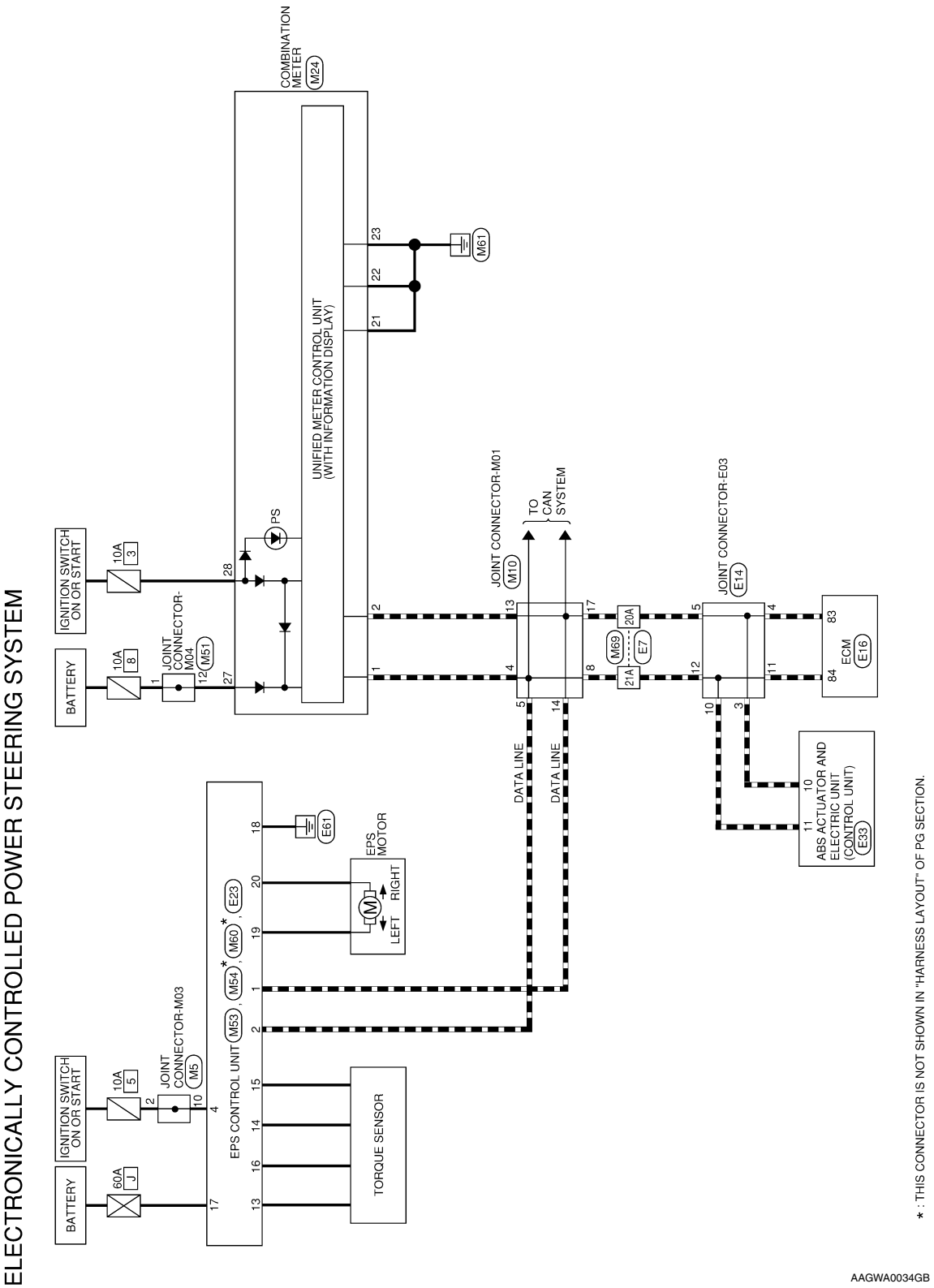
DTC	Items (CONSULT screen terms)	Reference
C1601	BATTERY VOLT	STC-18, "DTC Logic"
C1604	TORQUE SENSOR	STC-21, "DTC Logic"
C1606	EPS MOTOR	STC-23, "DTC Logic"
C1607	EEPROM	STC-25, "DTC Logic"
C1608	CONTROL UNIT	STC-25, "DTC Logic"
C1609	CAN VHCL SPEED	STC-26, "DTC Logic"
C1610	CAN ENG RPM	STC-27, "DTC Logic"
U1000	CAN COMM CIRCUIT	STC-28, "DTC Logic"

WIRING DIAGRAM

EPS SYSTEM

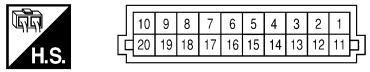
Wiring Diagram

INFOID:0000000008969734



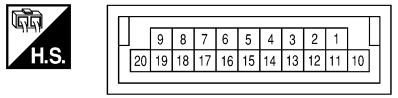
ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM CONNECTORS

Connector No.	M5
Connector Name	JOINT CONNECTOR-M03
Connector Color	BROWN



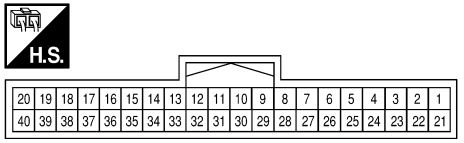
Terminal No.	Color of Wire	Signal Name
2	O	–
10	Y	–

Connector No.	M10
Connector Name	JOINT CONNECTOR-M01
Connector Color	BLUE



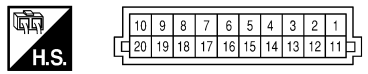
Terminal No.	Color of Wire	Signal Name
4	L	–
5	L	–
8	L	–
13	P	–
14	P	–
17	P	–

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	L	CAN-H
2	P	CAN-L
21	B	GND (ILLUMINATION)
22	B	GND (POWER)
23	B	GND (CIRCUIT)
27	R/W	BAT
28	GR	IGN

Connector No.	M51
Connector Name	JOINT CONNECTOR-M04
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
1	LG	–
12	R/W	–

Connector No.	M53
Connector Name	EPS CONTROL UNIT
Connector Color	BLACK

Terminal No.	Color of Wire	Signal Name
1	P	CAN-L
2	L	CAN-H
3	–	–
4	Y	IGN
5	–	–
6	–	–
7	–	–
8	–	–

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Connector No.	M69
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

5A	4A	3A	2A	1A
	9A	8A	7A	6A
10A				

21A	20A	19A	18A	17A	16A	15A	14A	13A	12A	11A
	30A	29A	28A	27A	26A	25A	24A	23A	22A	

41A	40A	39A	38A	37A	36A	35A	34A	33A	32A	31A
	50A	49A	48A	47A	46A	45A	44A	43A	42A	

61A	60A	59A	58A	57A	56A	55A	54A	53A	52A	51A
	70A	69A	68A	67A	66A	65A	64A	63A	62A	

81A	80A	79A	78A	77A	76A	75A	74A	73A	72A	71A
	90A	89A	88A	87A	86A	85A	84A	83A	82A	

95A	94A	93A	92A	91A
100A	99A	98A	97A	96A

Terminal No.	Color of Wire	Signal Name
20A	P	–
21A	L	–

Connector No.	M60
Connector Name	EPS CONTROL UNIT
Connector Color	BLUE

H.S.

19	20

Terminal No.	Color of Wire	Signal Name
19	R	M+
20	B	M-

Connector No.	M54
Connector Name	EPS CONTROL UNIT
Connector Color	GRAY

H.S.

12	11	10	9
16	15	14	13

Terminal No.	Color of Wire	Signal Name
9	–	–
10	–	–
11	–	–
12	–	–
13	R	TSV
14	Y	TSS
15	B	TSE (GND)
16	W	TSM

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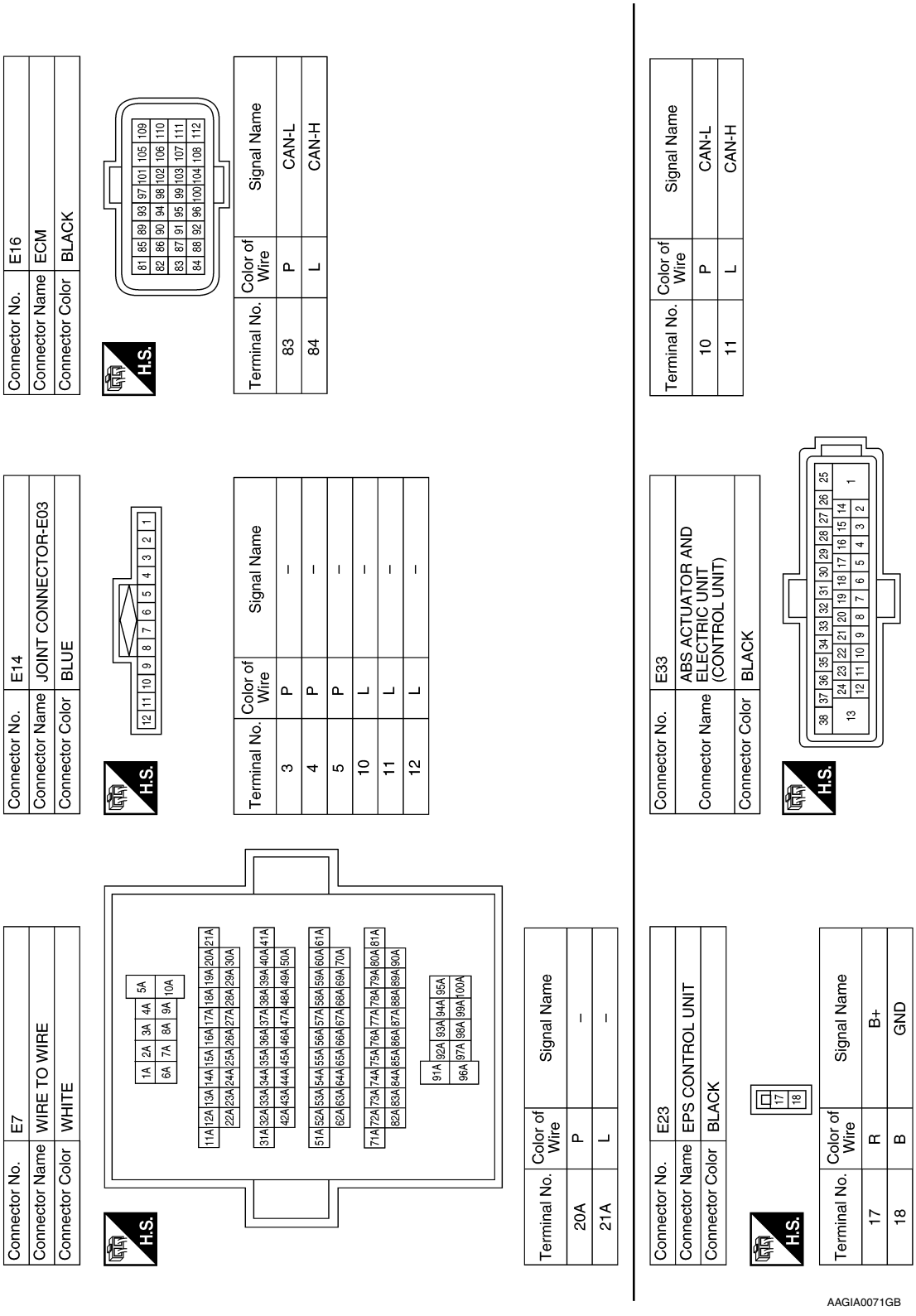

Connector No. E7
Connector Name WIRE TO WIRE
Connector Color WHITE
H.S.
1A 2A 3A 4A 5A
6A 7A 8A 9A 10A
11A 12A 13A 14A 15A 16A 17A 18A 19A 20A 21A
22A 23A 24A 25A 26A 27A 28A 29A 30A
31A 32A 33A 34A 35A 36A 37A 38A 39A 40A 41A
42A 43A 44A 45A 46A 47A 48A 49A 50A
51A 52A 53A 54A 55A 56A 57A 58A 59A 60A 61A
62A 63A 64A 65A 66A 67A 68A 69A 70A
71A 72A 73A 74A 75A 76A 77A 78A 79A 80A 81A
82A 83A 84A 85A 86A 87A 88A 89A 90A
91A 92A 93A 94A 95A
96A 97A 98A 99A 100A
Terminal No. Color of Wire Signal Name
20A P –
21A L –
Connector No. E14
Connector Name JOINT CONNECTOR-E03
Connector Color BLUE
H.S.
12 11 10 9 8 7 6 5 4 3 2 1
Terminal No. Color of Wire Signal Name
3 P –
4 P –
5 P –
10 L –
11 L –
12 L –
Connector No. E16
Connector Name ECM
Connector Color BLACK
H.S.
81 85 89 93 97 101 105 109
82 86 90 94 98 102 106 110
83 87 91 95 99 103 107 111
84 88 92 96 100 104 108 112
Terminal No. Color of Wire Signal Name
83 P CAN-L
84 L CAN-H
Connector No. E33
Connector Name ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
Connector Color BLACK
H.S.
38 37 36 35 34 33 32 31 30 29 28 27 26 25
13 24 23 22 21 20 19 18 17 16 15 14 1
12 11 10 9 8 7 6 5 4 3 2
Terminal No. Color of Wire Signal Name
10 P CAN-L
11 L CAN-H
Connector No. E23
Connector Name EPS CONTROL UNIT
Connector Color BLACK
H.S.
17 18
Terminal No. Color of Wire Signal Name
17 R B+
18 B GND
AAGIA0071GB

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000009667179

DETAILED FLOW

1.INTERVIEW FROM THE CUSTOMER

Clarify customer complaints before inspection. First of all, perform an interview utilizing STC-16, "Diagnostic Work Sheet" and reproduce symptoms to understand them fully. Ask customer about his/her complaints carefully. Check symptoms by driving vehicle with customer, if necessary.

CAUTION:

Customers are not professional. Never make assumptions like “maybe the customer means that...,” or “maybe the customer mentioned this symptom”.

>> GO TO 2.

2.CHECK SYMPTOM

Reproduce the symptom that is indicated by the customer, based on the information from the customer obtained by interview. Also check that the symptom is not caused by protection function. Refer to STC-10, "Protection Function".

CAUTION:

When the symptom is caused by normal operation, fully inspect each portion and obtain the understanding of customer that the symptom is not caused by a malfunction.

>> GO TO 3.

3.PERFORM SELF-DIAGNOSIS

With CONSULT

Perform self-diagnosis for “EPS”.

Is any DTC detected?

YES >> Record or print self-diagnosis results. GO TO 4.
NO >> GO TO 6.

4.RECHECK SYMPTOM

With CONSULT

1. Erase self-diagnostic results for “EPS”.
2. Perform DTC confirmation procedures for the malfunctioning system.

NOTE:

If some DTCs are detected at the same time, determine the order for performing the diagnosis based on STC-10, "DTC Inspection Priority Chart".

Is any DTC detected?

YES >> GO TO 5.
NO >> Check harness and connectors based on the information obtained by interview. Refer to GI-41, "Intermittent Incident".

5.REPAIR OR REPLACE MALFUNCTIONING COMPONENT

- Repair or replace malfunctioning component.
- Reconnect part or connector after repairing or replacing.
- When DTC is detected, erase self-diagnostic results for “EPS”.

>> GO TO 7.

6.IDENTIFY MALFUNCTIONING SYSTEM BY SYMPTOM DIAGNOSIS

Identify malfunctioning system based on symptom diagnosis and perform inspection.

Can the malfunctioning system be identified?

YES >> GO TO 7.
NO >> Check harness and connectors based on the information obtained by interview. Refer to GI-41, "Intermittent Incident".

7. FINAL CHECK

With CONSULT
1. Check the reference value for EPS control unit.
2. Recheck the symptom and check that symptom is not reproduced on the same conditions.

Is the symptom reproduced?

YES >> GO TO 3.
NO >> Inspection End.

Diagnostic Work Sheet

INFOID:0000000009667180

Description

- In general, customers have their own criteria for a problem. Therefore, it is important to understand the symptom and status well enough by asking the customer about his/her concerns carefully. To systemize all the information for the diagnosis, prepare the interview sheet referring to the interview points.
- In some cases, multiple conditions that appear simultaneously may cause a DTC to be detected.

Interview sheet sample

Interview sheet					
Customer name	MR/MS	Registration number		Initial year registration	
		Vehicle type		VIN	
Storage date		Engine		Mileage	km (Mile)
Symptom		☐The steering wheel position (center) is in the wrong position.			
		☐Warning lamp turns on.			
		☐Noise ☐Vibration			
		☐Others ( )			
First occurrence		☐Recently ☐Others ( )			
Frequency of occurrence		☐Always ☐Under a certain conditions of ☐Sometimes (time(s)/day)			
Climate conditions		☐Irrelevant			
	Weather	☐Fine ☐Cloud ☐Rain ☐Snow ☐Others ( )			
	Temperature	☐Hot ☐Warm ☐Cool ☐Cold ☐Temperature [Approx. °C (°F)]			
	Relative humidity	☐High ☐Moderate ☐Low			
Road conditions		☐Urban area ☐Suburb area ☐High way ☐Mountain road (uphill or down hill) ☐Rough road			
Operation conditions, etc.		☐Irrelevant ☐When engine starts ☐During idling ☐During driving ☐During acceleration ☐At constant speed driving ☐During deceleration ☐During cornering (right curve or left curve) ☐During steering			

Interview sheet					
Customer name	MR/MS	Registration number		Initial year registration	
		Vehicle type		VIN	
Storage date		Engine		Mileage	km (Mile)
Other conditions					
Memo					

DTC/CIRCUIT DIAGNOSIS

C1601 BATTERY POWER SUPPLY

DTC Logic

INFOID:0000000009667181

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1601	BATTERY VOLT	When a power supply voltage to the EPS control unit is maintained at 17.5 V or more or at less than 9V continuously for five second or more.	• Harness or connector • EPS control unit • Fuse • Power supply system • Battery

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. DTC REPRODUCTION PROCEDURE

With CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “EPS” self-diagnosis.

Is DTC “C1601” detected?

YES >> Proceed to diagnosis procedure. Refer to STC-18, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009667182

Regarding Wiring Diagram information, refer to STC-11, "Wiring Diagram".

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		
E23	18	Ground	Yes

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)

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

EPS control unit		—	Voltage
Connector	Terminal		
M53	4	Ground	Approx. 0 V

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

EPS control unit		—	Voltage
Connector	Terminal		
M53	4	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 3.

3.CHECK EPS CONTROL UNIT POWER SUPPLY CIRCUIT (2)

1. Turn ignition switch OFF.
2. Check the 10A fuse (No. 5).
3. Check the harness for open or short between EPS control unit harness connector M53 terminal 4 and the 10A fuse (No. 5).

Is the inspection result normal?

YES >> Perform the trouble diagnosis for ignition power supply circuit. Refer to PG-17, "Wiring Diagram — Ignition Power Supply —".
NO >> Repair or replace malfunctioning component.

4.CHECK EPS CONTROL UNIT POWER SUPPLY CIRCUIT (3)

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

EPS control unit		—	Voltage
Connector	Terminal		
E23	17	Ground	Battery voltage

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

EPS control unit		—	Voltage
Connector	Terminal		
E23	17	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 5.

5.CHECK EPS CONTROL UNIT POWER SUPPLY CIRCUIT (4)

1. Turn ignition switch OFF.
2. Check the 60A fusible link (J).
3. Check the harness for open or short between EPS control unit harness connector E23 terminal 17 and the 60A fusible link (J).

Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit. Refer to PG-5, "Wiring Diagram — Battery Power Supply —".

NO >> Repair or replace malfunctioning component.

6. 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-37, "Removal and Installation".
NO >> Repair or replace malfunctioning component.

C1604 TORQUE SENSOR

DTC Logic

INFOID:0000000009667183

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1604	TORQUE SENSOR	When torque sensor output signal is malfunctioning.	• Harness or connector • Torque sensor • EPS control unit

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “EPS” self-diagnosis.

Is DTC “C1604” detected?

YES >> Proceed to diagnosis procedure. Refer to STC-21, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009667184

Regarding Wiring Diagram information, refer to STC-11, "Wiring Diagram".

1.CHECK TORQUE SENSOR POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF to ON.
   CAUTION:
   Never start the engine.
2. Check voltage between EPS control unit harness connector terminal and ground.
   CAUTION:
   Steering wheel in neutral position. (There is no steering force.)

EPS control unit		—	Voltage
Connector	Terminal		
M54	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-18, "Diagnosis Procedure".

2.CHECK TORQUE SENSOR GROUND CIRCUIT

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

EPS control unit		—	Continuity
Connector	Terminal		
M54	15	Ground	Yes

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.

3. CHECK TORQUE SENSOR SIGNAL

1. Turn ignition switch OFF to ON.
2. Check voltage between EPS control unit harness connector terminal and ground.

CAUTION:
Steering wheel in neutral position. (There is no steering force.)

EPS control unit		—	Voltage
Connector	Terminal		
M54	16	Ground	Approx. 2.5 V
	14		

3. Start the engine.
4. Check voltage between EPS control unit harness connector terminal and ground while turning the steering wheel.

EPS control unit		—	Voltage
Connector	Terminal		
M54	16	Ground	1.6 V – 3.4 V (The value is changed according to steering left or right)
	14		

Is the inspection result normal?

YES >> GO TO 4.
NO >> Torque sensor is malfunctioning. Replace steering column assembly. Refer to ST-9, "Exploded View".

4. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect EPS control unit 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-37, "Removal and Installation".
NO >> Repair or replace malfunctioning component.

C1606 EPS MOTOR

DTC Logic

INFOID:0000000009667185

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.	• Harness or connector • EPS motor • EPS control unit

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “EPS” self-diagnosis.

Is DTC “C1606” detected?

YES >> Proceed to diagnosis procedure. Refer to STC-23, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009667186

1.CHECK EPS MOTOR

Check the EPS motor. Refer to STC-23, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 2.
NO >> EPS motor is malfunction. Replace steering column assembly. Refer to ST-9, "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-37, "Removal and Installation".
NO >> Repair or replace malfunctioning component.

Component Inspection

INFOID:0000000009667187

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 malfunctioning. Replace steering column assembly. Refer to ST-9, "Removal and Installation".

C1607, C1608 EPS CONTROL UNIT

DTC Logic

INFOID:0000000009667188

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.PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “EPS” self-diagnosis.

Is DTC “C1607” or “C1608” detected?

YES >> Proceed to diagnosis procedure. Refer to STC-25, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009667189

1.PERFORM SELF-DIAGNOSIS

With CONSULT

1. Turn the ignition switch OFF to ON.
2. Erase self-diagnosis results for “EPS”.
3. Perform “EPS” self-diagnosis.

Is DTC “C1607” or “C1608” detected?

YES >> Replace EPS control unit. Refer to STC-37, "Removal and Installation".
NO >> Check EPS control unit pin terminals for damage or loose connection with harness connector. If any item are damaged, repair or replace malfunctioning component.

C1609 VEHICLE SPEED SIGNAL

Description

INFOID:0000000009667190

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

DTC Logic

INFOID:0000000009667191

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1609	CAN VHCL SPEED	• Malfunction is detected in vehicle speed signal that is output from ABS actuator and electric unit (control unit) via CAN communication. • ABS actuator and electric unit (control unit) input signal error is detected.	• Harness or connector • CAN communication line • EPS control unit • ABS malfunction - Vehicle speed signal error

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “EPS” self-diagnosis.

Is DTC “C1609” detected?

YES >> Proceed to diagnosis procedure. Refer to STC-26, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009667192

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

With CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “ABS” self-diagnosis.

Is any DTC detected?

YES >> Check the DTC.
NO >> GO TO 2.

2.PERFORM SELF-DIAGNOSIS

With CONSULT

Perform “EPS” self-diagnosis.

Is DTC “C1609” detected?

YES >> Replace EPS control unit. Refer to STC-37, "Removal and Installation".
NO >> Check EPS control unit pin terminals for damage or loose connection with harness connector. If any item are damaged, repair or replace malfunctioning component.

C1610 ENGINE STATUS SIGNAL

Description

INFOID:0000000009667193

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

DTC Logic

INFOID:0000000009667194

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1610	CAN ENG RPM	• Malfunction is detected in engine status signal that is output from ECM via CAN communication. • ECM input signal error is detected.	• Harness or connector • CAN communication line • EPS control unit • ECM - Engine status signal error

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “EPS” self-diagnosis.

Is DTC “C1610” detected?

YES >> Proceed to diagnosis procedure. Refer to STC-27, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009667195

1.PERFORM ECM SELF-DIAGNOSIS

With CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “ENGINE” self-diagnosis. Refer to EC-60, "CONSULT Function".

Is any DTC detected?

YES >> Check the DTC. Refer to EC-86, "DTC Index".
NO >> GO TO 2.

2.PERFORM SELF-DIAGNOSIS

With CONSULT

Perform “EPS” self-diagnosis.

Is DTC “C1610” detected?

YES >> Replace EPS control unit. Refer to STC-37, "Removal and Installation".
NO >> Check EPS control unit pin terminals for damage or loose connection with harness connector. If any item are damaged, repair or replace malfunctioning components.

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000009667196

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:0000000009667197

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.	• CAN communication error • EPS control unit

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “EPS” self-diagnosis.

Is DTC “U1000” detected?

YES >> Proceed to diagnosis procedure. Refer to STC-28, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009667198

Proceed to LAN-15, "Trouble Diagnosis Flow Chart".

EPS WARNING LAMP

Component Function Check

INFOID:0000000009667199

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-29, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009667200

1.PERFORM SELF-DIAGNOSIS

With CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “EPS” self-diagnosis.

Is any DTC detected?

YES >> Check the DTC. Refer to STC-10, "DTC Index".
NO >> GO TO 2.

2.CHECK EPS WARNING LAMP SIGNAL

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Select “DATA MONITOR” of “EPS” and select “WARNING LAMP”.
3. Check that the EPS warning lamp is turned ON.
4. Start the engine.
   CAUTION:
   Never drive 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-42, "COMBINATION METER : Diagnosis Procedure".
NO >> Replace the EPS control unit. Refer to STC-37, "Removal and Installation".

SYMPTOM DIAGNOSIS

EPS WARNING LAMP DOES NOT TURN ON

Description

INFOID:0000000009667203

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:0000000009667204

1.CHECK EPS WARNING LAMP

Perform the trouble diagnosis of EPS warning lamp. Refer to STC-29, "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.

EPS WARNING LAMP DOES NOT TURN OFF

Description

INFOID:0000000009667205

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

Diagnosis Procedure

INFOID:0000000009667206

1.PERFORM SELF-DIAGNOSIS

With CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “EPS” self-diagnosis.

Is any DTC detected?

YES >> Check the DTC. Refer to STC-10, "DTC Index".
NO >> GO TO 2.

2.CHECK EPS WARNING LAMP

Perform the trouble diagnosis of EPS warning lamp. Refer to STC-29, "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-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.

STEERING WHEEL TURNING FORCE IS HEAVY OR LIGHT

Description

INFOID:0000000009667207

Steering wheel turning force is heavy or light.

Diagnosis Procedure

INFOID:0000000009667208

1.PERFORM SELF-DIAGNOSIS

With CONSULT

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

Is any DTC detected?

YES >> Check the DTC. Refer to STC-10, "DTC Index".
NO >> GO TO 2.

2.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 3.
NO >> Perform trouble diagnosis of EPS warning lamp. Refer to STC-29, "Diagnosis Procedure".

3.CHECK EPS CONTROL UNIT SIGNAL (1)

With CONSULT

1. Start the engine.
   CAUTION:
   Never drive the vehicle.
2. Select ASSIST LEVEL in DATA MONITOR in EPS.

Dose the item in DATA MONITOR indicate 100%?

YES >> GO TO 6.
NO >> GO TO 4.

4.CHECK EPS CONTROL UNIT SIGNAL (2)

With CONSULT

Select BATTERY VOLT in DATA MONITOR in EPS.

Dose the item in DATA MONITOR indicate 10 V or more?

YES >> GO TO 5.
NO >> Perform trouble diagnosis of EPS control unit power supply and ground. Refer to STC-18, "Diagnosis Procedure".

5.CHECK EPS CONTROL UNIT SIGNAL (3)

With CONSULT

1. Select ASSIST LEVEL in DATA MONITOR in EPS.
2. Stop the EPS system until the item in DATA MONITOR becomes 100%.
   NOTE:
   While stopping the EPS system, do not turn steering wheel.
3. Check that the symptom continues.

Dose the symptom continue?

YES >> GO TO 6.
NO >> The assist torque decreases because of protection function. This is not malfunction. Inspection End.

6.CHECK EPS CONTROL UNIT SIGNAL (4)

With CONSULT

1. Start the engine.
   CAUTION:

Never drive the vehicle.

2. Turn steering wheel from full left stop to full right stop.
3. Select TORQUE SENSOR in DATA MONITOR in EPS.

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 8.
NO >> GO TO 7.

7. CHECK EPS MOTOR

Perform the trouble diagnosis of EPS motor. Refer to STC-23, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair or replace the specific malfunctioning part.

8. CHECK STEERING WHEEL TURNING FORCE

Check the steering wheel turning force. Refer to ST-19, "Steering Wheel Turning Force".

Is the inspection result normal?

YES >> Inspection End.
NO >> Check the steering wheel turning force for mechanical malfunction. Refer to ST-19, "Steering Wheel Turning Force".

UNBALANCE STEERING WHEEL TURNING FORCE AND RETURN BETWEEN RIGHT AND LEFT

Description

INFOID:0000000009667209

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

Diagnosis Procedure

INFOID:0000000009667210

1.CHECK THE ILLUMINATION OF THE EPS WARNING LAMP

Check the EPS warning lamp while engine is running.

Does the EPS warning lamp turn OFF?

YES >> GO TO 2.
NO >> Refer to STC-29, "Diagnosis Procedure".

2.CHECK WHEEL ALIGNMENT

1. Check the wheel alignment. Refer to FSU-7, "Inspection".
2. Perform EPS self-diagnosis.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Adjustment of wheel alignment. Refer to FSU-8, "Adjustment".

3.CHECK EPS CONTROL UNIT SIGNAL

With CONSULT

1. Start the engine.
   CAUTION:
   Never drive the vehicle.
2. Turn steering wheel from full left stop to full right stop.
3. Select DATA MONITOR of EPS and select TORQUE SENSOR.
4. Perform the torque sensor inspection.

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-23, "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-19, "Steering Wheel Turning Force".

Is the inspection result normal?

YES >> Inspection End.
NO >> Check the steering wheel turning force for mechanical malfunction. Refer to ST-19, "Steering Wheel Turning Force".

UNBALANCE STEERING WHEEL TURNING FORCE (TORQUE VARIATION)

Description

INFOID:0000000009667211

Unbalance steering wheel turning force (torque variation).

Diagnosis Procedure

INFOID:0000000009667212

1.PERFORM SELF-DIAGNOSIS

With CONSULT
1. Turn the ignition switch OFF to ON.
2. Perform EPS self-diagnosis.

Is any DTC detected?

YES >> Check the DTC. Refer to STC-10, "DTC Index".
NO >> GO TO 2.

2.CHECK THE ILLUMINATION OF THE EPS WARNING LAMP

Check the EPS warning lamp while the engine is started.

Does the EPS warning lamp turn OFF?

YES >> GO TO 3.
NO >> Refer to STC-29, "Diagnosis Procedure".

3.CHECK STEERING COLUMN AND STEERING GEAR

Check the steering column assembly and steering gear assembly.
- Steering column assembly. Refer to ST-9, "Exploded View".
- Steering gear assembly. Refer to ST-14, "Exploded View".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace the specific malfunctioning part.

4.CHECK EPS CONTROL UNIT SIGNAL (1)

With CONSULT
1. Start the engine.
   CAUTION:
   Never drive the vehicle.
2. Turn steering wheel from full left stop to full right stop.
3. Select ASSIST LEVEL in DATA MONITOR in EPS.

Dose the item in DATA MONITOR maintain 100%?

YES >> GO TO 7.
NO >> GO TO 5.

5.CHECK EPS CONTROL UNIT SIGNAL (2)

With CONSULT
Select BATTERY VOLT in DATA MONITOR in EPS.

Does the item in DATA MONITOR indicate 10 V or more?

YES >> GO TO 6.
NO >> Perform trouble diagnosis of EPS control unit power supply and ground. Refer to STC-18, "Diagnosis Procedure".

6.CHECK EPS CONTROL UNIT SIGNAL (3)

With CONSULT
1. Select ASSIST LEVEL in DATA MONITOR in EPS.
2. Stop the EPS system until the item in DATA MONITOR becomes 100%.
   NOTE:
   While stopping the EPS system, do not turn steering wheel.
3. Check that the symptom continues.

Dose the symptom continue?

YES >> GO TO 7.
NO >> The assist torque decreases because of protection function. This is not malfunction. Inspection End.

7.CHECK EPS CONTROL UNIT SIGNAL (4)

With CONSULT

1. Start the engine.
   CAUTION:
   Never drive the vehicle.
2. Turn steering wheel from full left stop to full right stop.
3. Select TORQUE SENSOR in DATA MONITOR in EPS.
4. Perform the torque sensor inspection.

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 9.
NO >> GO TO 8.

8.CHECK EPS MOTOR

Perform the trouble diagnosis of EPS motor. Refer to STC-23, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 9.
NO >> Repair or replace the specific malfunctioning part.

9.CHECK STEERING WHEEL TURNING FORCE

Check the steering wheel turning force. Refer to ST-19, "Steering Wheel Turning Force".

Is the inspection result normal?

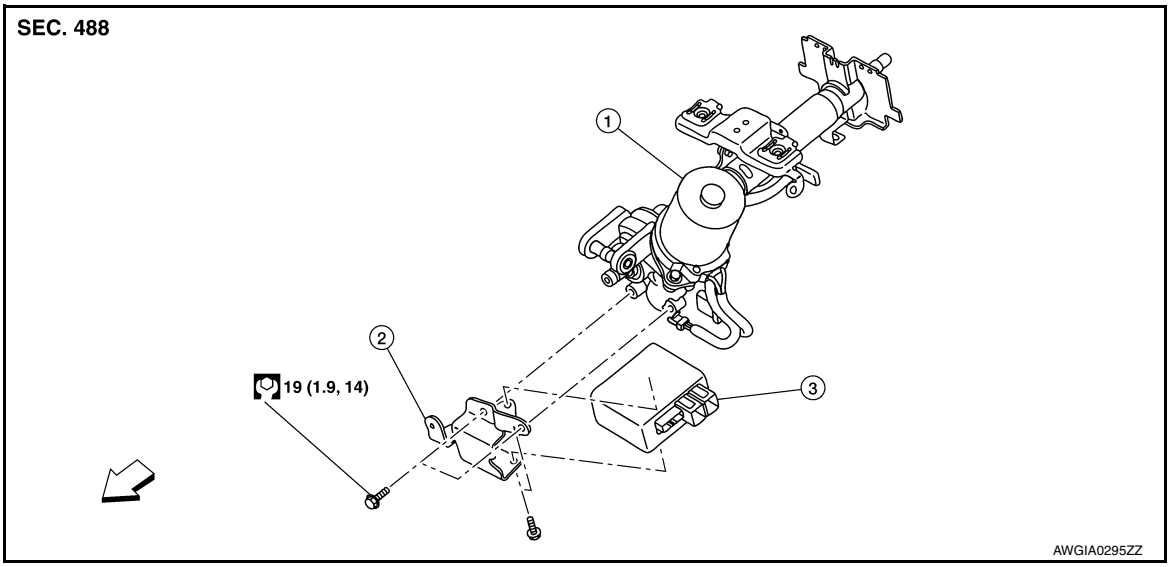
YES >> Inspection End.
NO >> Check the steering wheel turning force for mechanical malfunction. Refer to ST-19, "Steering Wheel Turning Force".

REMOVAL AND INSTALLATION

EPS CONTROL UNIT

Exploded View

INFOID:0000000008969744



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

⇦ Front

Removal and Installation

INFOID:0000000008969745

CAUTION:
- **Do not allow EPS control unit to get wet with water, moisture or any other liquid. Also, protect the EPS control unit from extreme temperatures.**
- **Do not disassemble or remodel EPS control unit, EPS motor, torque sensor, harness and connectors.**

REMOVAL

1. Disconnect the battery cable from the negative terminal. Refer to PG-67, "Removal and Installation (Battery)"
2. Remove instrument lower panel LH. Refer to IP-24, "Removal and Installation".
3. Disconnect harness connectors from EPS control unit.
   CAUTION:
   Hold and pull the connector housing, do not pull on harness when disconnecting connectors. Also, do not grip, collapse or apply excessive force to the connector.
4. Remove screws and EPS control unit from steering column.
5. Remove bolts and bracket plate from steering column if necessary.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:
- **Check that the harness connector, terminals and the EPS control unit are not visibly damaged before installing the EPS control unit.**
- **Check that the harness connector, terminals and the EPS control unit are free of foreign materials before installing.**
- **Replace the EPS control unit if it has been dropped or sustained an impact.**

After installing steering column, perform self-diagnosis with CONSULT to ensure correct operation. Refer to STC-6, "CONSULT Function".