SECTION STC
STEERING CONTROL SYSTEM

CONTENTS

PRECAUTION

PRECAUTIONS

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

INFOID:0000000005722042

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:0000000005722043

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.

For vehicle with 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 operation 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.

5. 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.)
6. Perform self-diagnosis check of all control units using CONSULT-III.

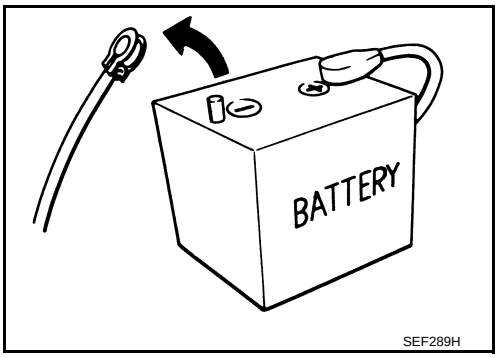
Service Notice or Precautions for EPS System

INFOID:0000000005491293

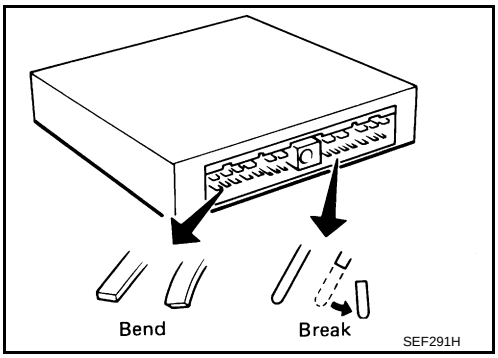
CAUTION:

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.

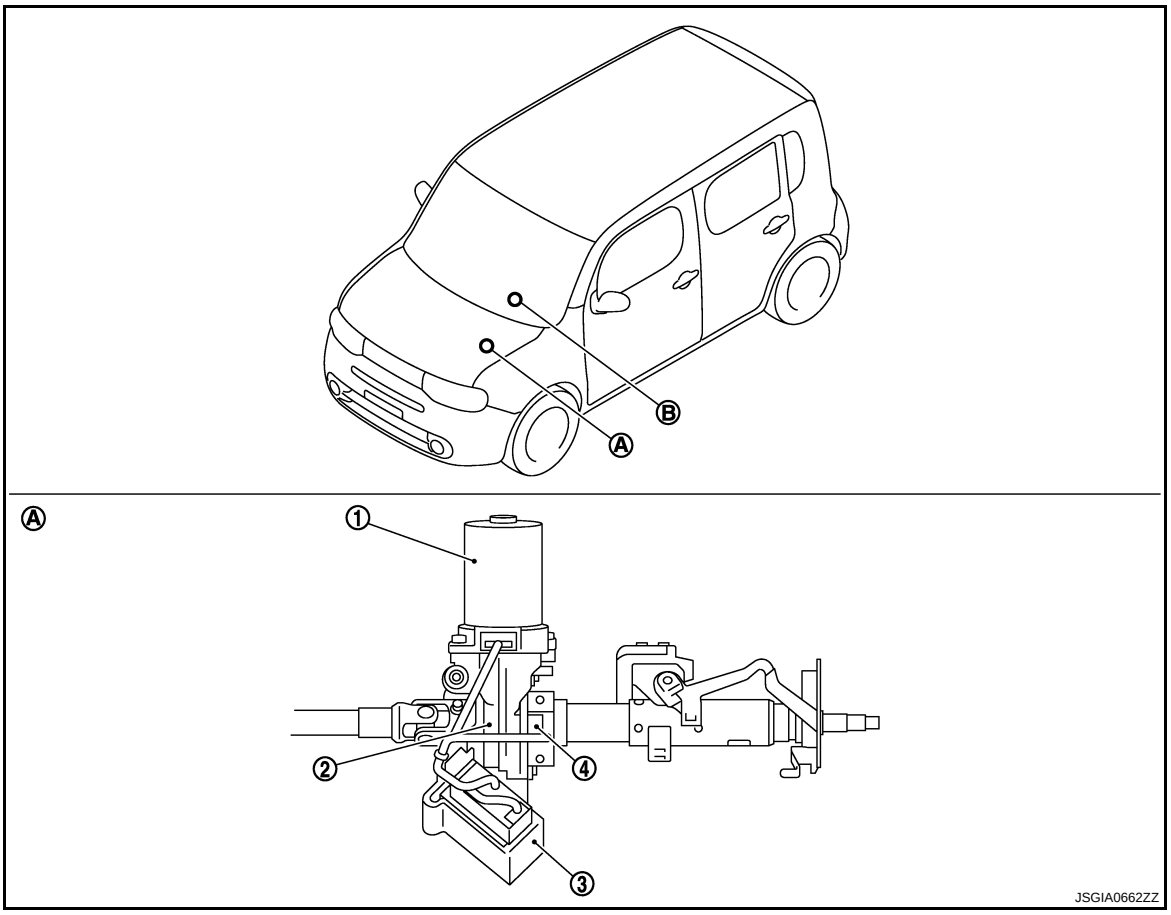


SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000005491244



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:0000000005491245

Components parts	Reference
EPS control unit	STC-5, "EPS control unit"
EPS motor	STC-6, "EPS motor"
Torque sensor	STC-6, "Torque sensor"
Reduction gear	STC-6, "Reduction gear"
EPS warning lamp	STC-6, "EPS warning lamp"

EPS control unit

INFOID:0000000005779046

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 motor

INFOID:0000000005779047

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

Torque sensor

INFOID:0000000005779048

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

Reduction gear

INFOID:0000000005779049

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

EPS warning lamp

INFOID:0000000005779050

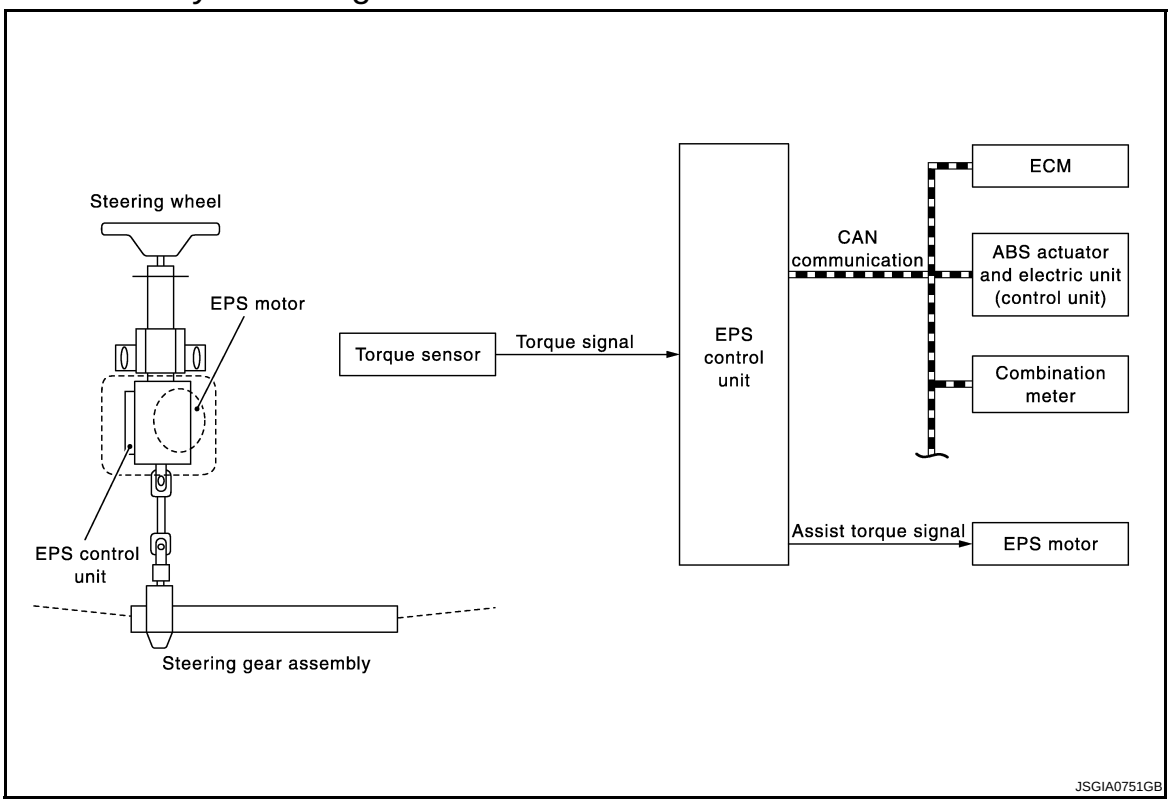
- Turn ON when there is a malfunction in EPS system. If indicates that fail-safe mode is engaged and enters a manual steering state (Control turning force steering wheel becomes heavy).
- Also turns ON when ignition switch is turned ON, for purpose of lamp check. Turns OFF after the engine starts, if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

SYSTEM

EPS SYSTEM

EPS SYSTEM : System Diagram

INFOID:0000000005491242



EPS SYSTEM : System Description

INFOID:0000000005491243

- 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

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	• Transmits mainly the following signals to EPS control unit via CAN communication. Vehicle speed signal • EPS warning lamp signal is received from the EPS control unit via CAN communication.

EPS WARNING LAMP INDICATION

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

CAUTION:

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

EPS SYSTEM : Fail-Safe

INFOID:0000000005779082

- 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.)

DIAGNOSIS SYSTEM (EPS CONTROL UNIT)

CONSULT-III Function

INFOID:0000000005491246

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-12, "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)*1	Displays the current commanded value to EPS motor.
ASSIST TORQUE (Nm)*2	Displays assist torque being output by the electric power steering.
C/U TEMP (°C)	Displays the temperature of the EPS control unit.
ASSIST LEVEL (%)*3	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)*4	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.

ECU DIAGNOSIS INFORMATION

EPS CONTROL UNIT

Reference Value

INFOID:0000000005779242

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		Battery voltage
TORQUE SENSOR	Steering wheel turning force	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	Consumption current of EPS motor	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	Command current to EPS motor	Engine running	Steering wheel: Not steering (There is no steering force)	Approx. 0 A
			Steering wheel: Right turn	Negative value (A)
			Steering wheel: Left turn	Positive value (A)
ASSIST TORQUE	Displays assist torque being output by the EPS.	Engine running		Approx. 0 Nm*2
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 % *3
VEHICLE SPEED	Vehicle speed	Vehicle stopped		0 km/h (0 mph)
		While driving		Approximately equal to the indication on speedometer (inside of ±10%)*4
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

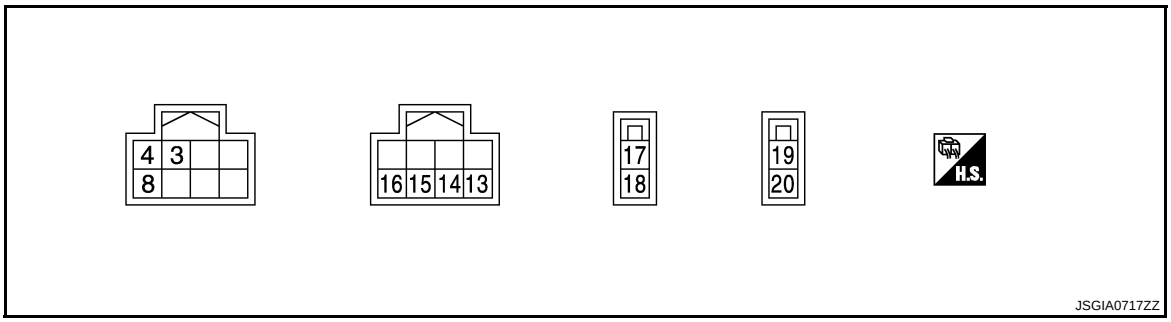
*1: Almost in accordance with the value of MOTOR SIG. It is not a malfunction though these values are not accorded when steering quickly.

*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 in turned ON.

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 –	—	—		—

Fail-Safe

INFOID:0000000005491278

- 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.)

DTC Inspection Priority Chart

INFOID:0000000005491279

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:0000000005491280

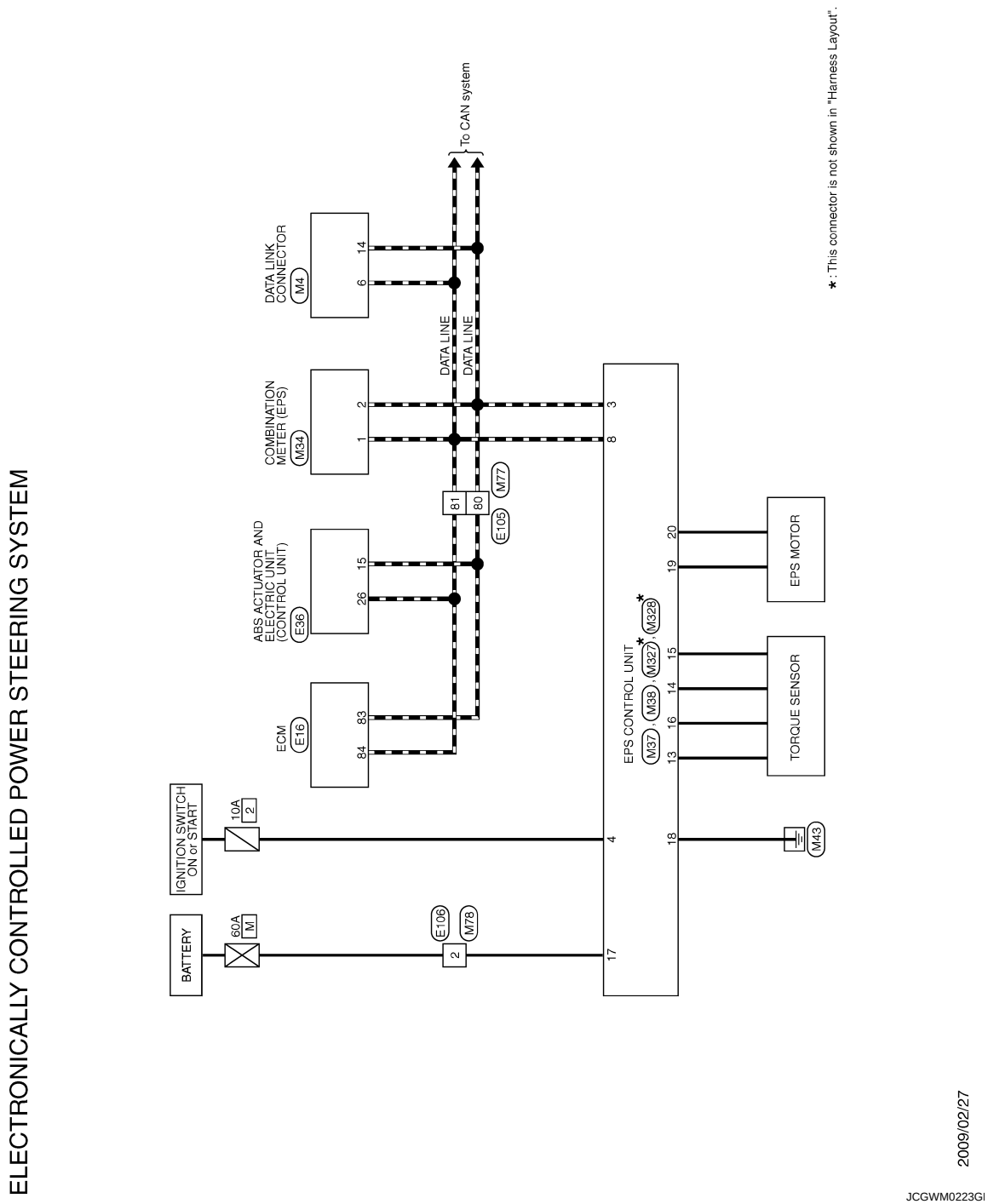
DTC	Items (CONSULT-III screen terms)	Reference
C1601	BATTERY VOLT	STC-19, "DTC Logic"
C1604	TORQUE SENSOR	STC-21, "DTC Logic"
C1606	EPS MOTOR	STC-23, "DTC Logic"
C1607	EEPROM	STC-25, "DTC Logic"
C1608	CONTROL UNIT	STC-25, "DTC Logic"
C1609	CAN VHCL SPEED	STC-26, "DTC Logic"
C1610	CAN ENG RPM	STC-27, "DTC Logic"
U1000	CAN COMM CIRCUIT	STC-28, "DTC Logic"

WIRING DIAGRAM

ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM

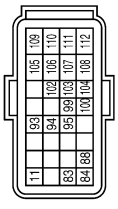
Wiring Diagram

INFOID:0000000005491277



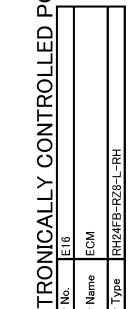
ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM

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



Terminal No.	Color of Wire	Signal Name [Specification]
83	P	CAN-L
84	L	CAN-H
88	LG	K LINE
93	L	IGNSW
94	SB	ASCDSW
95	BR	GNDA-ASCDSW
99	W	BRAKE
100	SB	BNCSW
102	O	AVCC-APS2
103	G	APS2
104	R	GNDA-APS2
105	G	VBR
106	V	AVCC-APS1
108	B	GND
110	BR	APS1
111	Y	GNDA-APS1

Connector No.	E36
Connector Name	ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
Connector Type	BAA22FB-AHZ4-RH



Terminal No.	Color of Wire	Signal Name [Specification]
1	B	GND (MTR)
2	Y	BAT (MTR)
3	L	BAT (SOL)
4	B	GND (SOL)
5	Y	DS FL
6	W	DP RL
8	O	DP RR
9	L	DP FR
10	R	DS FR
11	LG	K LINE
14	GR	CAN-L
15	P	CAN-L
16	BR	DP FL
17	G	DS RL
18	V	IGN
19	SB	DS RR
20	W	STOP LAMP SW
21	P	VDC OFF SW
25	R	CAN-H
26	L	CAN-H

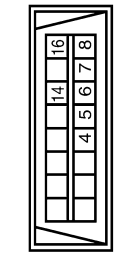
Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4

Terminal No.	Color of Wire	Signal Name [Specification]
1	V	–
2	W	–
3	SB	–
4	G	–
5	P	–
6	R	–
7	Y	–
8	O	–
9	W	–
10	SB	–
31	V	–
32	R	–
33	GR	–
34	P	–
35	Y	–
36	BR	–
39	SB	–
44	R	–
45	V	–
46	P	–
47	W	–
48	L	–
49	Y	–
50	W	–
51	BR	– [With CVT]
51	B	– [With M/T]
53	SB	–
54	W	– [With CVT]
54	O	– [With M/T]
57	LG	–
59	L	–
60	O	–
61	G	–
62	W	–
63	L	–
67	GR	– [With CVT]
67	V	– [With M/T]
69	P	–
70	SHIELD	–
71	GR	–
72	LG	–
73	P	–
74	V	–
76	Y	–
77	LG	–
78	O	–
79	G	–
80	P	–
81	L	–
82	W	–
83	BR	–
84	B	–
87	GR	–
91	W	–
92	Y	–
93	Y	–
94	R	–
95	V	–
96	LG	–
97	R	–
98	SB	–
99	G	–
100	P	–

Connector No.	E106
Connector Name	WIRE TO WIRE
Connector Type	L02FB-MC

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

Connector No.	M4
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW



Terminal No.	Color of Wire	Signal Name [Specification]
4	B	–
5	B	–
6	L	–
7	GR/R	–
8	O	–
14	P	–
16	LG/R	–

JCGWM0282G

ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM

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

H.S.

20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
40	39	38			35			32	31			28	27	26	25	24			21

Terminal No.	Color of Wire	Signal Name [Specification]
1	L	CAN-H
2	P	CAN-L
3	V	VEHICLE SPEED SIGNAL (2-PULSE)
4	L	VEHICLE SPEED SIGNAL (8-PULSE)
6	BR/Y	FUEL LEVEL SENSOR SIGNAL
7	R/G	AIR BAG SIGNAL
8	P	OVERDRIVE CONTROL SWITCH SIGNAL
9	O	SEAT BELT BUCKLE SWITCH SIGNAL (DRIVER SIDE)
10	SB	PARKING BRAKE SWITCH SIGNAL
11	G/R	BRAKE FLUID LEVEL SWITCH SIGNAL
13	B/R	ILLUMINATION CONTROL SIGNAL
15	L/Y	ACC POWER SUPPLY
17	G	WASHER LEVEL SWITCH SIGNAL
18	R/Y	SECURITY SIGNAL
19	V/W	AMBIENT SENSOR SIGNAL
20	R/W	AMBIENT SENSOR GROUND
21	B	GROUND
22	B	GROUND
23	B	GROUND
24	V	FUEL LEVEL SENSOR GROUND
25	B	VDC GROUND
27	LG	BATTERY POWER SUPPLY
28	GR	IGNITION SIGNAL
29	BR	PASSENGER SEAT BELT WARNING SIGNAL
31	R	A/C AUTO AMP. CONNECTION RECOGNITION SIGNAL
35	BR	ENGINE COOLANT TEMPERATURE SIGNAL
38	GR	ALTERNATOR SIGNAL

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

H.S.

4 3
8

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	L02FB-UH

H.S.

17
18

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

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	B/O	–

2	R	–
3	G/R	–
4	G/B	–
5	L	–
6	L	–
7	W/R	–
8	G/W	–
9	Y/L	–
10	W	–
31	GR/L	–
32	L/B	–
33	R/Y	–
34	SB	–
35	BR	–
36	G	–
39	L/R	–
44	G/O	–
45	LG/R	–
46	GR/W	–
47	BR/Y	–
48	L/O	–
49	L/W	–
50	P/L	–
51	B/W	–
53	R/L	–
54	O	–
57	GR	–
59	V	–
60	R/W	–
61	V/W	–
62	W/L	–
63	W/B	–
67	Y/R	–
69	LG	–
70	SHIELD	–
71	P/B	–
72	R/G	–
73	R	–
74	L/Y	–
76	W/G	–
77	GR/R	–
78	O	–
79	LG	–
80	P	–
81	L	–
82	GR	–
83	G/R	–
84	B	–
87	G	–
91	R	–
92	O	–
93	Y	–

94	R/B	–
95	L/W	–
96	Y	–
97	L	–
98	BR/W	–
99	W	–
100	G/R	–

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

H.S.

1 2

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

Connector No.	M327
Connector Name	EPS CONTROL UNIT
Connector Type	TH08FGY

H.S.

12 11 10 9
16 15 14 13

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

JCGWM0283GI

ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM

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

H.S.

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

JCGWM0284G

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000005779043

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 DTC for “EPS” with CONSULT-III.
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 “EPS” of 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 “EPS” of 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-12, "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.

The circuit check in the diagnosis procedure also requires the check for a short circuit. Refer to GI-38, "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.

DTC/CIRCUIT DIAGNOSIS

C1601 BATTERY POWER SUPPLY

Description

INFOID:0000000005777612

Power is supplied from the battery to EPS control unit.

DTC Logic

INFOID:0000000005777613

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

DTC CONFIRMATION PROCEDURE

1. DTC REPRODUCTION PROCEDURE

With CONSULT-III

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-19, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000005777614

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.

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

Is the inspection result normal?

YES >> GO TO 3.
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, ignition switch or alternator.

3.CHECK BATTERY VOLTAGE SIGNAL (1)

With CONSULT-III

1. Connect EPS control unit harness connector.
2. Start the engine.
   CAUTION:
   Stop the vehicle.
3. Select “EPS”, “DATA MONITOR” and “BATTERY VOLT”, and perform the battery voltage inspection.

Monitor item	Condition	Display value
BATTERY VOLT	Engine running	Battery voltage

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace EPS control unit. Refer to STC-35, "Exploded View".

4.CHECK BATTERY VOLTAGE SIGNAL (2)

With CONSULT-III

Select “BATTERY VOLT” in “DATA MONITOR” of the EPS control unit. Check battery voltage with the steering wheel fully turned leftward or rightward.

Is the value in “DATA MONITOR”“between 9 V and 17.5 V”?

YES >> Check pin terminal and connection of each harness connector for damage or loose connection.
NO >> Check battery power supply and ignition power supply. Refer to PG-6, "Wiring Diagram - BATTERY POWER SUPPLY -", PG-45, "Wiring Diagram - IGNITION POWER SUPPLY -".

Special Repair Requirement

INFOID:0000000005777615

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-9, "Special Repair Requirement".

>> END

C1604 TORQUE SENSOR

DTC Logic

INFOID:0000000005777616

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.DTC REPRODUCTION PROCEDURE

With CONSULT-III

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:0000000005777617

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-19, "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.

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-35, "Exploded View".
NO >> Repair or replace error-detected parts.

Special Repair Requirement

INFOID:0000000005779110

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-9, "Special Repair Requirement".

>> END

C1606 EPS MOTOR

DTC Logic

INFOID:0000000005777619

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.DTC REPRODUCTION PROCEDURE

With CONSULT-III

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:0000000005777620

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-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-35, "Exploded View".
NO >> Repair or replace error-detected parts.

Component Inspection

INFOID:0000000005777621

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".

Special Repair Requirement

INFOID:0000000005779111

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-9, "Special Repair Requirement".

>> END

C1607, C1608 EPS CONTROL UNIT

DTC Logic

INFOID:0000000005777623

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” 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:0000000005777624

1.PERFORM SELF-DIAGNOSIS

With CONSULT-III

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-35, "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

Description

INFOID:0000000005777625

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

DTC Logic

INFOID:0000000005777626

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.DTC REPRODUCTION PROCEDURE

With CONSULT-III

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:0000000005777627

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

With CONSULT-III

1. Turn the ignition switch OFF to ON.
2. Perform “ABS” self-diagnosis. Refer to BRC-23, "CONSULT-III Function".

Is any DTC detected?

YES >> Check the DTC. Refer to BRC-88, "DTC Index".
NO >> GO TO 2.

2.PERFORM SELF-DIAGNOSIS

With CONSULT-III

Perform “EPS” self-diagnosis.

Is DTC “C1609” detected?

YES >> Replace EPS control unit. Refer to STC-35, "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

Description

INFOID:0000000005777628

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

DTC Logic

INFOID:0000000005777629

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.DTC REPRODUCTION PROCEDURE

With CONSULT-III

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:0000000005777630

1.PERFORM ECM SELF-DIAGNOSIS

With CONSULT-III

1. Turn the ignition switch OFF to ON.
2. Perform “ENGINE” self-diagnosis. Refer to EC-100, "CONSULT-III Function".

Is any DTC detected?

YES >> Check the DTC. Refer to EC-443, "DTC Index".
NO >> GO TO 2.

2.PERFORM SELF-DIAGNOSIS

With CONSULT-III

Perform “EPS” self-diagnosis.

Is DTC “C1610” detected?

YES >> Replace EPS control unit. Refer to STC-35, "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

Description

INFOID:0000000005777631

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:0000000005777632

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.DTC REPRODUCTION PROCEDURE

With CONSULT-III

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:0000000005777633

1.PERFORM SELF-DIAGNOSIS

With CONSULT-III

Perform “EPS” 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:0000000005779121

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-9, "Special Repair Requirement".

>> END

EPS WARNING LAMP

Component Function Check

INFOID:0000000005777635

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:0000000005777636

1.PERFORM SELF-DIAGNOSIS

With CONSULT-III

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

Is any DTC detected?

YES >> Check the DTC. Refer to STC-12, "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. Select “DATA MONITOR” of “EPS” and select “WARNING LAMP” of “DATA MONITOR”
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-35, "Exploded View".

SYMPTOM DIAGNOSIS

EPS WARNING LAMP DOES NOT TURN ON

Description

INFOID:0000000005777640

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:0000000005777641

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:0000000005777642

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

Diagnosis Procedure

INFOID:0000000005777643

1.PERFORM SELF-DIAGNOSIS

With CONSULT-III

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

Is any DTC detected?

YES >> Check the DTC. Refer to STC-12, "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-19, "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:0000000005777644

Steering wheel turning force is heavy or light.

Diagnosis Procedure

INFOID:0000000005777645

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” self-diagnosis.

Is any DTC detected?

YES >> Check the DTC. Refer to STC-12, "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 “DATA MONITOR” of “EPS” and select “TORQUE SENSOR” of “DATA MONITOR”.
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-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

Description

INFOID:0000000005777646

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

Diagnosis Procedure

INFOID:0000000005777647

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-31, "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-7, "Inspection".

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 “DATA MONITOR” of “EPS” and select “TORQUE SENSOR” of “DATA MONITOR”.
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-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)

Description

INFOID:0000000005777648

Unbalance steering wheel turning force (torque variation).

Diagnosis Procedure

INFOID:0000000005777649

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-31, "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 “DATA MONITOR” of “EPS” and select “TORQUE SENSOR” of “DATA MONITOR”.
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-7, "Inspection".

Is the inspection result normal?

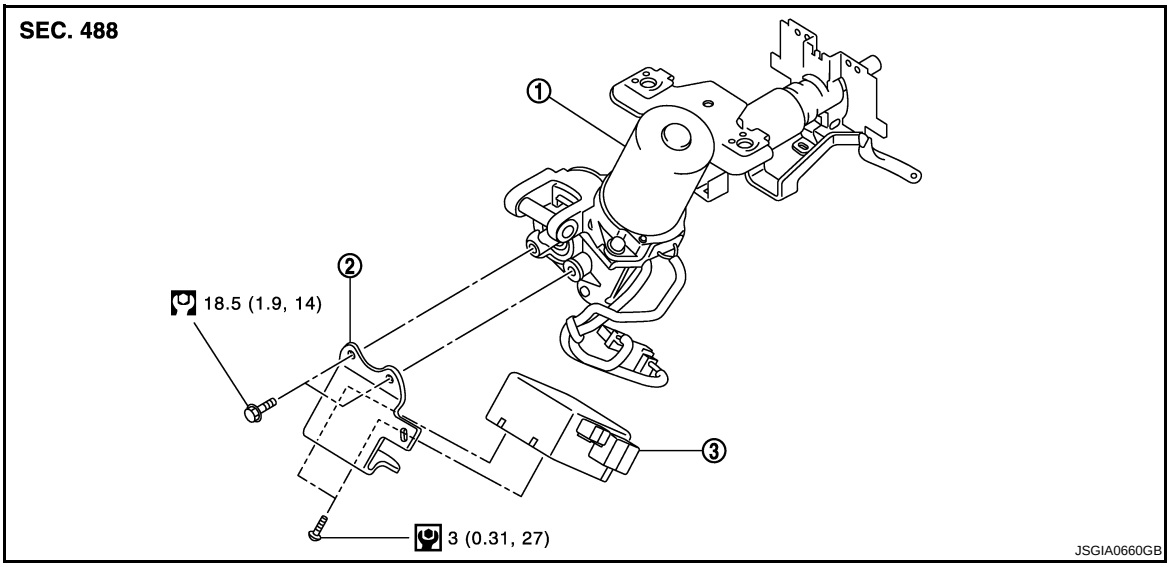
YES >> INSPECTION END
NO >> Check the steering wheel turning force for mechanical malfunction. Refer to ST-7, "Inspection".

REMOVAL AND INSTALLATION

EPS CONTROL UNIT

Exploded View

INFOID:0000000005491294



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

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000005491295

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 of foreign materials.
- After installing steering column assembly, perform self-diagnosis with CONSULT-III to ensure correct operation. Refer to STC-9, "CONSULT-III Function".