SECTION STC
STEERING CONTROL SYSTEM

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PRECAUTION

PRECAUTIONS

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

INFOID:0000000014626189

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper repair, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery or batteries, and wait at least three minutes before performing any service.**

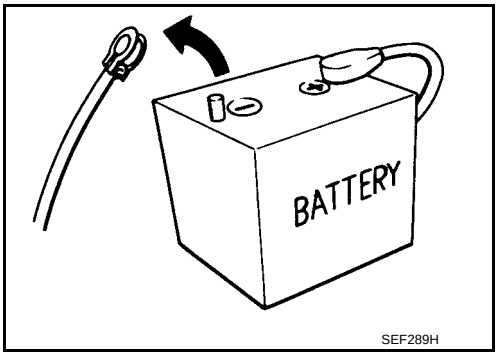
Service Notice or Precautions for EPS System

INFOID:0000000014626190

CAUTION:

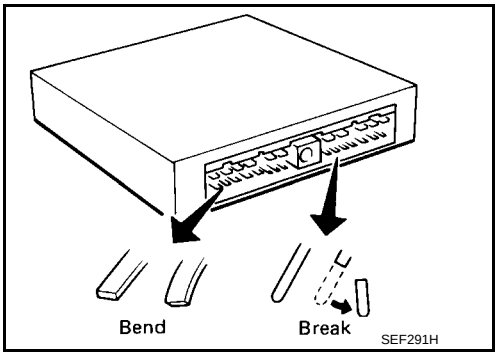
Check the following item when performing the trouble diagnosis.

- **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”.**



SEF289H

- **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.

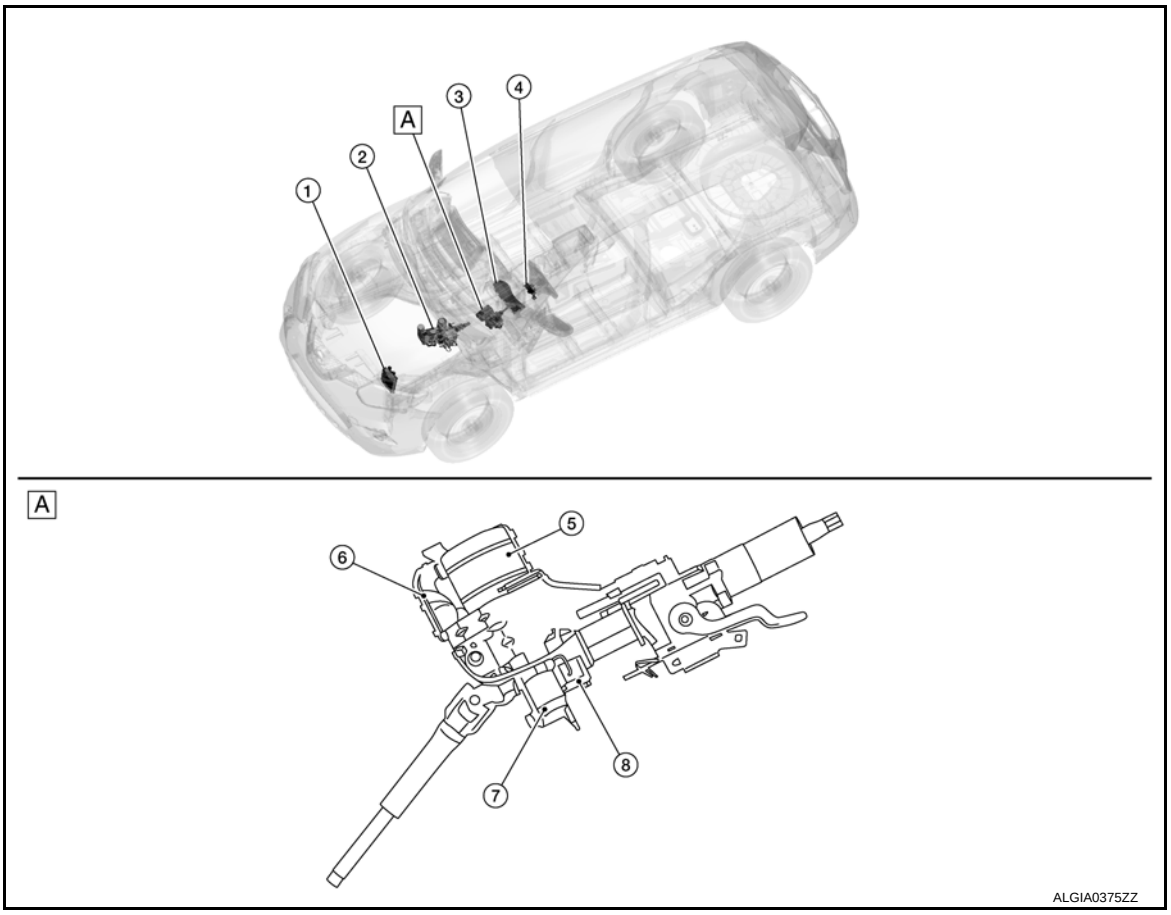


SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000014626191



A. Steering column assembly

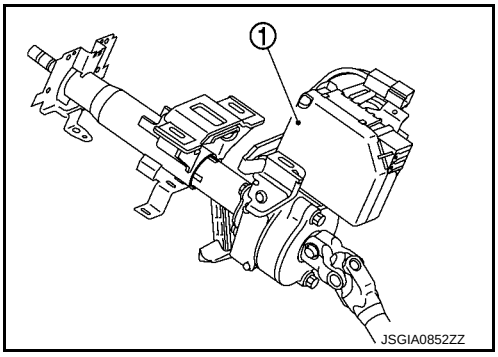
No.	Component	Function
1.	ECM	• Transmits the following signal to EPS control unit via CAN communication: - Engine status signal
2.	ABS actuator and electric unit (control unit)	• Transmits the following signal to EPS control unit via CAN communication: - Vehicle speed signal (ABS)
3.	Combination meter (EPS warning lamp)	• Transmits 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.
4.	Steering angle position sensor	• Transmits the following signal to EPS control unit via CAN communication: - Steering angle
5.	EPS motor	STC-6, "EPS Motor, Torque Sensor, Reduction Gear"
6.	EPS control unit	STC-6, "EPS Control Unit"

No.	Component	Function
7.	Reduction gear	STC-6, "EPS Motor, Torque Sensor, Reduction Gear"
8.	Torque sensor	STC-6, "EPS Motor, Torque Sensor, Reduction Gear"

EPS Control Unit

INFOID:0000000014626192

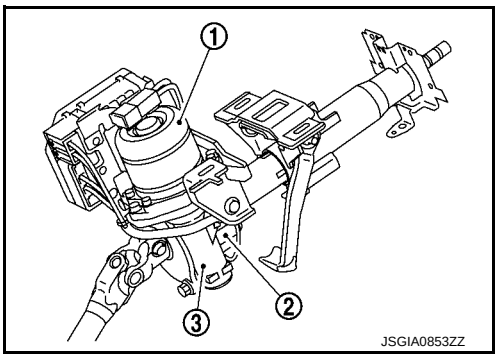
- EPS control unit (1) is installed to steering column assembly.
- EPS control unit performs an arithmetical operation on data, such as steering wheel turning force (sensor signal) from the torque sensor, vehicle speed signal, etc. Then it generates an optimum assist torque signal to the EPS motor according to the driving condition.
- EPS control unit decreases the output signal to EPS motor during continuous extreme use of the power steering function (e.g., full steering) for protection of the EPS motor and EPS control unit (Overload protection control).



EPS Motor, Torque Sensor, Reduction Gear

INFOID:0000000014626193

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



EPS MOTOR

EPS motor provides assist torque in proportion to the control signal from the EPS control unit.

TORQUE SENSOR

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

REDUCTION GEAR

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

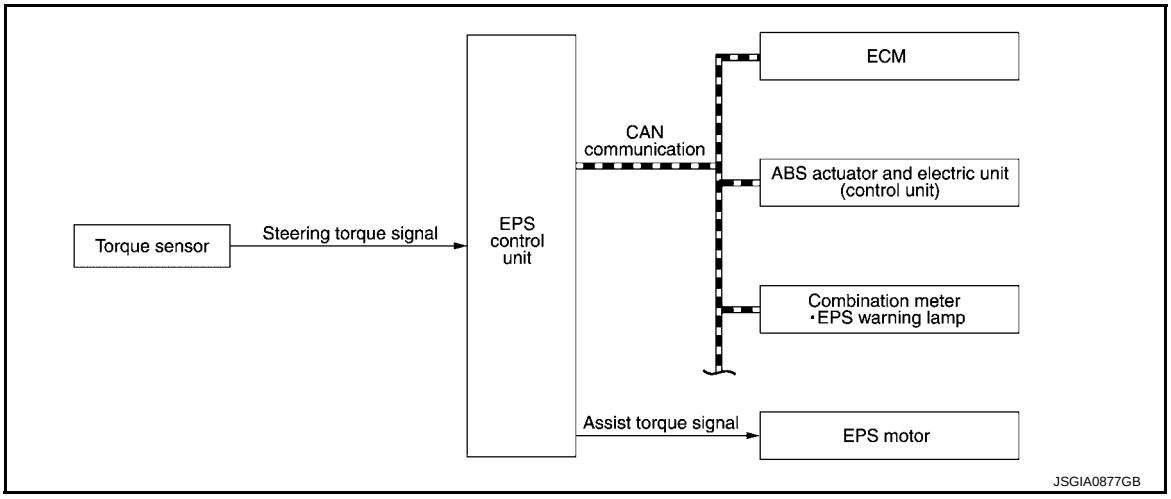
SYSTEM

EPS SYSTEM

EPS SYSTEM : System Description

INFOID:0000000014626194

SYSTEM DIAGRAM



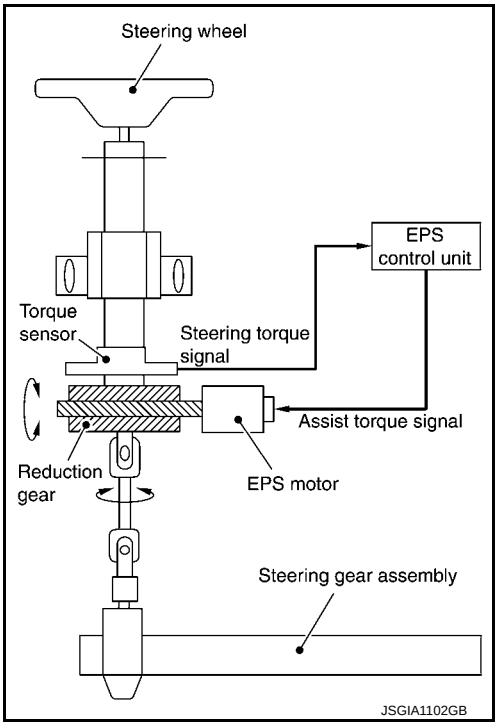
INPUT/OUTPUT SIGNAL

Communicates the signal from each control unit via CAN communication.

Control unit	Signal status
ECM	• Transmits the following signal to EPS control unit via CAN communication: - Engine status signal
ABS actuator and electric unit (control unit)	• Transmits the following signal to EPS control unit via CAN communication: - Vehicle speed signal (ABS)
Combination meter	• Transmits the following signal to EPS control unit via CAN communication: - Vehicle speed signal (Meter) • Receives the following signal from EPS control unit via CAN communication: - EPS warning lamp signal

DESCRIPTION

- 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.
- In case of an error in the electrical system, the fail-safe function stops output signals to the EPS motor. Refer to STC-8, "EPS SYSTEM : Fail-Safe".
- EPS control unit decreases the output signal to EPS motor during extreme use of the power steering function (e.g., full steering) for protection of the EPS motor and EPS control unit (Overload protection control).
- Extensive steering at low speed will cause the EPS control unit and EPS motor to heat up. Once temperature reaches the critical point, the EPS control unit will reduce current to reduce heat up. System will recover as temperature lowers (reduced or no assistance).



EPS WARNING LAMP INDICATION

- Turns ON when there is a malfunction in the EPS system. If ON, fail-safe mode is engaged and the system enters a manual steering state (turning force at 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.

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:0000000014626195

- If any malfunction occurs in the system and the control unit detects the malfunction, the EPS warning lamp in the combination meter turns ON to indicate system malfunction.
- When EPS warning lamp is ON, the system enters into a manual steering state. (turning force at steering wheel becomes heavy.)
- Under abnormal vehicle speed signal conditions, vehicle speed is judged as constant.

EPS SYSTEM : Protection Function

INFOID:0000000014626196

While overload protection control is activated, assist torque gradually decreases and the steering wheel turning force becomes heavy. Assist torque returns to normal if the steering wheel is not turned for a while.

DIAGNOSIS SYSTEM (EPS CONTROL UNIT)

CONSULT Function

INFOID:0000000014626197

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 cleared 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-13, "DTC Index".

When “CRNT” is displayed on “Self Diagnostic Result”:
- The system is presently malfunctioning.

When “PAST” is displayed on “Self Diagnostic 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 do not increase and “39” is displayed until self-diagnosis is erased.

DATA MONITOR MODE

NOTE:

The following table includes information (items) inapplicable to this vehicle: For information (items) applicable to this vehicle, refer to CONSULT display items.

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 of EPS motor 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.
HEV/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:0000000014626198

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.

NOTE:

The following table includes information (items) inapplicable to this vehicle: For information (items) applicable to this vehicle, refer to CONSULT display items.

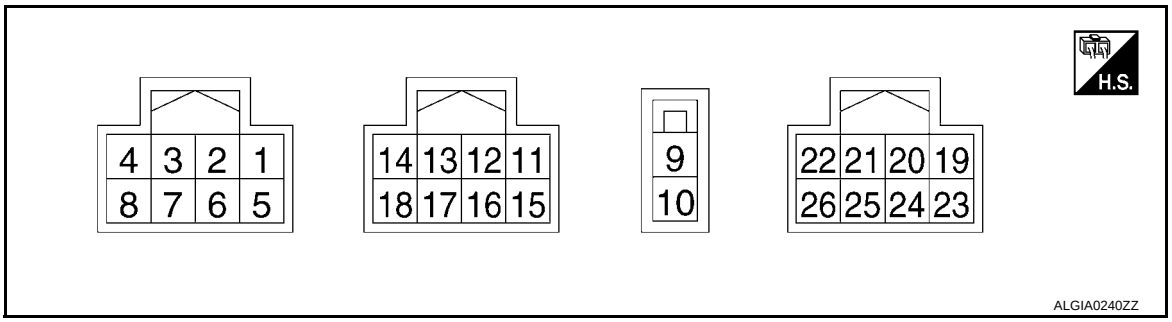
Monitor item	Data monitor		
	Condition		Display value
BATTERY VOLT	Ignition switch: ON		Battery voltage
TORQUE SENSOR	Engine running	Steering wheel: Not steering (There is no steering force)	Approx. 0 Nm
		Steering wheel: Right turn	Positive value (Nm)
		Steering wheel: Left turn	Negative value (Nm)
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	Steering wheel: Not steering (There is no steering force)	Approx. 0 Nm
		Steering wheel: Right or left turn	Displays assist torque of EPS motor (Nm)
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 %*2
VEHICLE SPEED	Vehicle stopped		0 km/h (0 mph)
	While driving		Approximately equal to the indication on speedometer*3 (inside of ±10%)
WARNING LAMP	EPS warning lamp: ON		On
	EPS warning lamp: OFF		Off
HEV/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: 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.

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire Color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/Output			
1 (R)	—	CAN low	Input/Output	—		—
2 (L)	—	CAN high	Input/Output	—		—
4 (SB)	Ground	Ignition power supply	Input	Ignition switch: ON		Battery voltage
				Ignition switch: OFF		0 V
9 (R)	Ground	Battery power supply	Input	Always		Battery voltage
10 (B)	Ground	Ground	—	Always		0 V
11 (B)	Ground	Torque sensor ground	Input	Always		0 V
12 (Y)	Ground	Torque sub sensor signal	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)
14 (R)	Ground	Torque sensor power supply	Output	Ignition switch: ON		10 V
15 (G)	Ground	Torque main sensor signal	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 (W)	Ground	Torque sensor reference voltage	Output	Ignition switch: ON		3.3 V
19 (W)	Ground	Reference signal R1	Input	Ignition switch: ON	Steering wheel: Not steering (There is no steering force)	—
				Engine running	Steering wheel: steering	—
21 (B)	Ground	Ground	—	Always		0 V

Terminal No. (Wire Color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/Output			
24 (Y)	Ground	Position signal S2 (Sine)	Input	Ignition switch: ON	Steering wheel: Not steering (There is no steering force)	—
				Engine running	Steering wheel: steering	—
26 (R)	Ground	Position signal S (Cosine)	Input	Ignition switch: ON	Steering wheel: Not steering (There is no steering force)	—
				Engine running	Steering wheel: steering	—

Fail-Safe

INFOID:0000000014626199

- If any malfunction occurs in the system and the control unit detects the malfunction, the EPS warning lamp in the combination meter turns ON to indicate system malfunction.
- When EPS warning lamp is ON, the system enters into a manual steering state. (turning force at steering wheel becomes heavy.)
- Under abnormal vehicle speed signal conditions, vehicle speed is judged as constant.

Protection Function

INFOID:0000000014626200

EPS control unit decreases the output signal to EPS motor during continuous extreme use of the power steering function (e.g., full steering) for protection of the EPS motor and EPS control unit (Overload protection control).

DTC Inspection Priority Chart

INFOID:0000000014626201

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
3	C1601 BATTERY VOLT
4	Other than the above

DTC Index

INFOID:0000000014626202

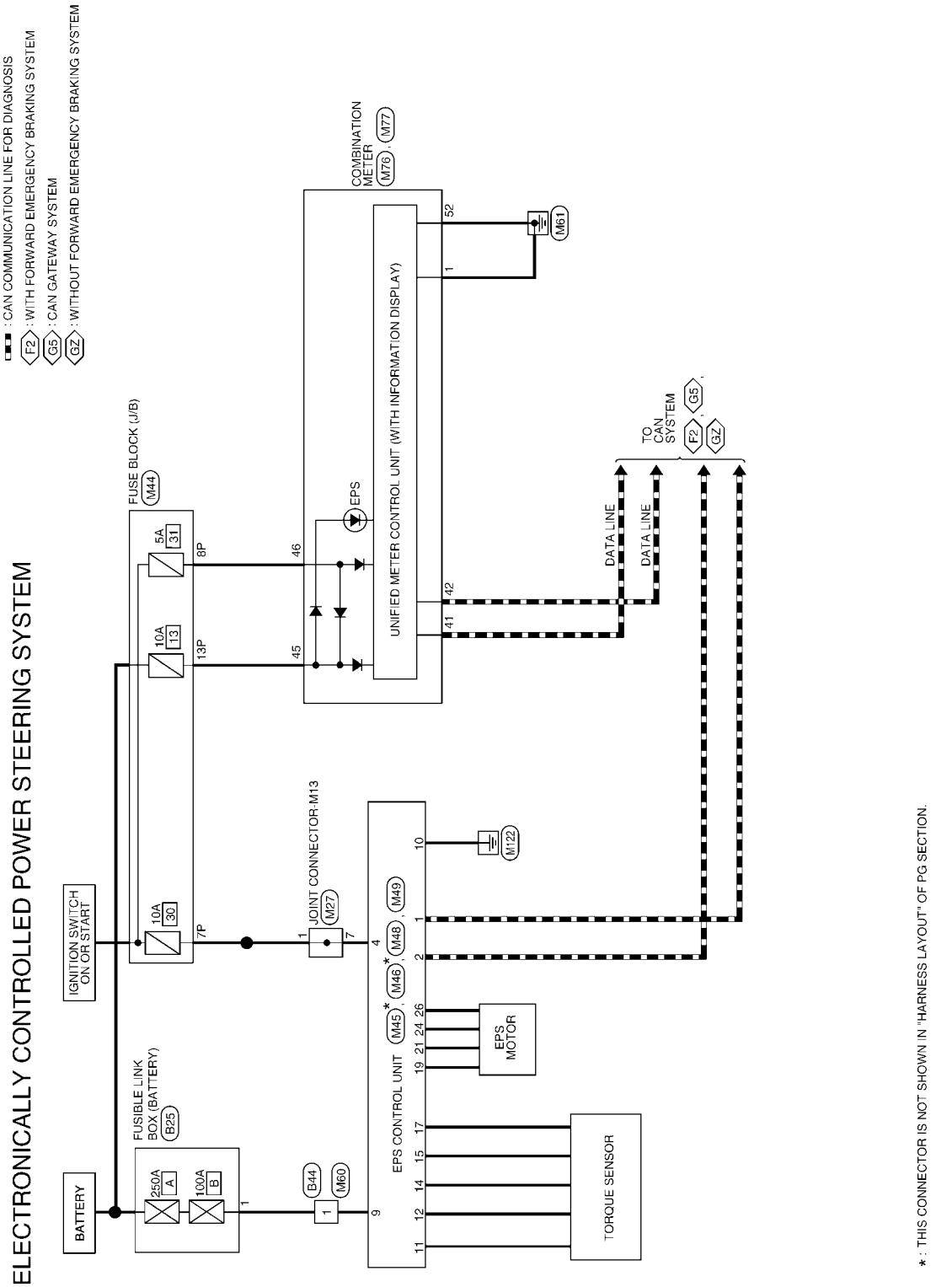
DTC	Items (CONSULT screen terms)	Reference
C1601	BATTERY VOLT	STC-18, "DTC Description"
C1602	NO TUNING SET	STC-21, "DTC Description"
C1604	TORQUE SENSOR	STC-22, "DTC Description"
C1606	EPS MOTOR	STC-24, "DTC Description"
C1607	EEPROM	STC-26, "DTC Description"
C1608	CONTROL UNIT	STC-26, "DTC Description"
C1609	CAN VHCL SPEED	STC-28, "DTC Description"
U1000	CAN COMM CIRCUIT	STC-30, "Description"

WIRING DIAGRAM

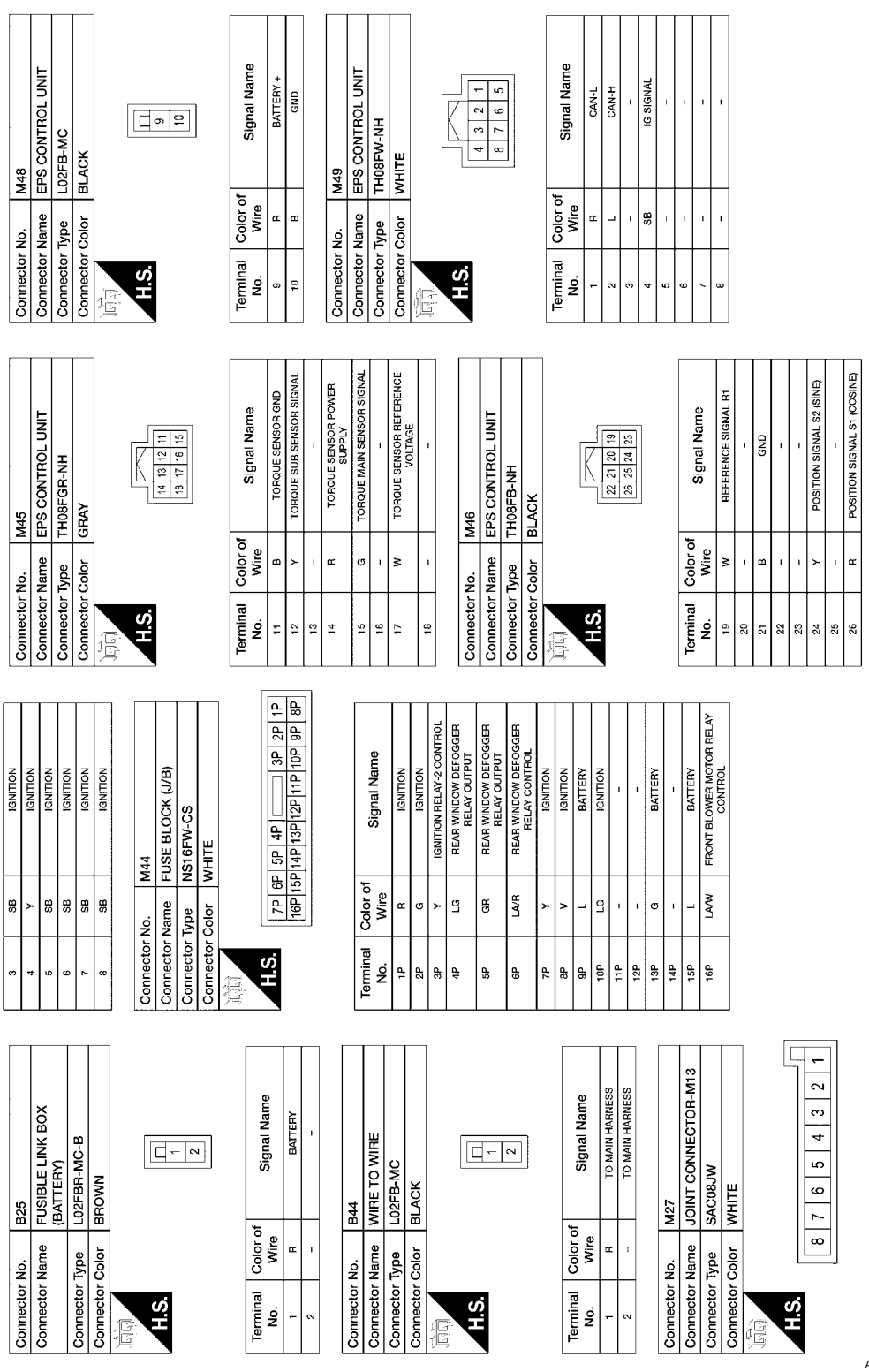
EPS SYSTEM

Wiring Diagram

INFOID:0000000014626203



ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM CONNECTORS



AAGIA0292GB

ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM CONNECTORS

Connector No.	M60
Connector Name	WIRE TO WIRE
Connector Type	L02MB-MC
Connector Color	BLACK

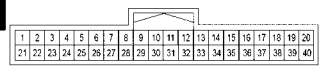




Terminal No.	Color of Wire	Signal Name
1	R	TO BODY HARNESS
2	–	TO BODY HARNESS

Connector No.	M76
Connector Name	COMBINATION METER
Connector Type	TH40FW-NH
Connector Color	WHITE



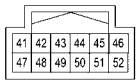


Terminal No.	Color of Wire	Signal Name
1	B	GND
2	–	–
3	–	–
4	–	–
5	–	–
6	–	–
7	BG	SECURITY
8	–	–
9	GR	ECO MODE SW
10	–	–
11	–	–
12	–	–
13	–	–
14	–	–
15	L	OUTSIDE TEMP SENSOR
16	–	–
17	BG	SATELLITE SW GND
18	SB	TRIP RESET SW
19	–	–
20	Y	OUTSIDE TEMP GND
21	L	GND (STRG SW GND)

22	Y	STRG SW A
23	GR	STRG SW B
24	BR	WASHER SW
25	V	BRAKE OIL SW
26	G	PKB SW
27	–	–
28	Y	DR BELT SW
29	R	SPORT MODE SW
30	LG	M RANGE
31	SB	NOT M RANGE
32	BG	AT SHIFT UP
33	BR	AT SHIFT DOWN
34	–	–
35	–	–
36	GR	ILL UP SW
37	V	ILL DOWN SW
38	G	8P/R OUTPUT
39	W	2P/R OUTPUT
40	–	–

Connector No.	M77
Connector Name	COMBINATION METER
Connector Type	TH12FW-NH
Connector Color	WHITE





Terminal No.	Color of Wire	Signal Name
41	L	CAN-H
42	P	CAN-L
43	R	ILL CONT OUT
44	LA/B	FUEL SENSOR GND
45	G	BAT
46	V	IGN
47	SB	M-CAN H
48	LG	M-CAN L
49	–	–
50	–	–
51	LA/L	FUEL SENSOR
52	B	G1

AAGIA0293GB

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000014626204

DETAILED FLOW

1.COLLECT THE INFORMATION FROM THE CUSTOMER

Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the diagnosis worksheet.

>> GO TO 2.

2.PERFORM THE SELF-DIAGNOSIS

Check the DTC display with the “Self Diagnostic Result”. Refer to STC-9, "CONSULT Function".

Is there any DTC displayed?

YES >> Record or print DTC and freeze frame data (FFD). GO TO 3.
NO >> GO TO 4.

3.PERFORM THE SYSTEM DIAGNOSIS

Perform the diagnosis applicable to the displayed DTC. Refer to STC-13, "DTC Index".

>> GO TO 6.

4.CHECK THE WARNING LAMP FOR ILLUMINATION

Check that the warning lamp illuminate.

Is ON/OFF timing normal?

YES >> GO TO 5.
NO >> GO TO 2.

5.PERFORM THE DIAGNOSIS BY SYMPTOM

Perform the diagnosis applicable to the symptom.

>> GO TO 6.

6.REPAIR OR REPLACE THE MALFUNCTIONING PARTS

Repair or replace the specified malfunctioning parts.

>> GO TO 7.

7.FINAL CHECK

Perform the “Self Diagnostic Result” again, and check that the malfunction is repaired completely. After checking, erase the “Self Diagnostic Result”. Refer to STC-9, "CONSULT Function".

Is no other DTC present and the repair completed?

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

DTC/CIRCUIT DIAGNOSIS

C1601 BATTERY POWER SUPPLY

DTC Description

INFOID:0000000014915949

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detected condition	
C1601	BATTERY VOLT (Battery voltage)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	EPS control unit supply voltage (terminals 9 and 4)
		Threshold	Less than 7 V or more than 18.2 V
		Diagnosis delay time	5 seconds or more

POSSIBLE CAUSE

- Harness or connector
- EPS control unit
- Fuse
- Battery power supply circuit
- Battery

FAIL-SAFE

Constant steering state

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

CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “Self Diagnostic Result” mode of “EPS”.

Is DTC “C1601” detected?

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

Diagnosis Procedure

INFOID:0000000014915950

Regarding Wiring Diagram information, refer to STC-14, "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		
M48	10	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 terminals and ground.

EPS control unit		—	Voltage (Approx.)
Connector	Terminal		
M49	4	Ground	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 (Approx.)
Connector	Terminal		
M49	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 30.
3. Check the harness for open or short between EPS control unit harness connector M49 terminal 4 and the 10A fuse 30.

Is the inspection result normal?

YES >> Perform the trouble diagnosis for ignition power supply circuit. Refer to PG-44, "Wiring Diagram - IGNITION POWER SUPPLY -".
NO >> Repair or replace malfunctioning parts.

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

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

EPS control unit		—	Voltage (Approx.)
Connector	Terminal		
M48	9	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 (Approx.)
Connector	Terminal		
M48	9	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 100A fusible link B.
3. Check the harness for open or short between EPS control unit harness connector terminal 9 and the 100A fusible link B.

Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit. Refer to PG-13, "Wiring Diagram - BATTERY POWER SUPPLY -".
NO >> Repair or replace malfunctioning parts.

6. CHECK TERMINALS AND HARNESS CONNECTORS

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

Is the inspection result normal?

YES >> EPS control unit is malfunctioning. Replace EPS control unit. Refer to STC-39, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

C1602 NO TUNING SET

DTC Description

INFOID:0000000014915951

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detected condition	
C1602	NO TUNING SET	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	-
		Threshold	Malfunction in data flash area of the EPS control unit
		Diagnosis delay time	Less than 1 second

POSSIBLE CAUSE

- EPS control unit

FAIL-SAFE

Constant steering state

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

CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “Self Diagnostic Result” mode of “EPS”.

Is DTC “C1602” detected?

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

Diagnosis Procedure

INFOID:0000000014915952

1.PERFORM SELF-DIAGNOSIS

CONSULT

1. Turn the ignition switch OFF to ON.
2. Erase “Self Diagnostic Result” mode of “EPS”.
3. Turn the ignition switch OFF and wait for at least 10 seconds.
4. Perform “Self Diagnostic Result” mode of “EPS”.

Is DTC “C1602” detected?

YES >> EPS control unit is malfunctioning. Replace EPS control unit. Refer to STC-39, "Removal and Installation".
NO >> Check pin terminal and connection of each harness connector for malfunctioning conditions.

C1604 TORQUE SENSOR

DTC Description

INFOID:0000000014915953

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detected condition	
C1604	TORQUE SENSOR	Diagnosis condition	When engine is running.
		Signal (terminal)	-
		Threshold	When torque sensor output signal is malfunctioning.
		Diagnosis delay time	Less than 1 second.

POSSIBLE CAUSE

- Harness or connector
- EPS control unit
- Torque sensor

FAIL-SAFE

Manual steering state

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

CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “Self Diagnostic Result” mode of “EPS”.

Is DTC “C1604” detected?

YES >> Proceed to diagnosis procedure. Refer to STC-22, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000014915954

Regarding Wiring Diagram information, refer to STC-14, "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 (Approx.)
Connector	Terminal		
M45	14	Ground	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		
M45	11	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 (Approx.)
Connector	Terminal		
M45	15	Ground	2.5 V
	12		

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 (Approx.)
Connector	Terminal		
M45	15	Ground	1.6 V – 3.4 V (The value is changed according to steering left or right)
	12		

Is the inspection result normal?

YES >> GO TO 4.
NO >> Torque sensor is malfunctioning. Replace steering column assembly. Refer to ST-29, "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-39, "Removal and Installation".
NO >> Repair or replace malfunctioning component.

C1606 EPS MOTOR

DTC Description

INFOID:0000000014915955

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detected condition	
C1606	EPS MOTOR	Diagnosis condition	When engine is running.
		Signal (terminal)	-
		Threshold	When the motor driver malfunction of EPS control unit or EPS motor malfunction is detected.
		Diagnosis delay time	5 seconds or more

POSSIBLE CAUSE

- Harness or connector
- EPS motor
- EPS control unit

FAIL-SAFE

Manual steering state

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

CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “Self Diagnostic Result” mode for “EPS”.

Is DTC “C1606” detected?

YES >> Proceed to diagnosis procedure. Refer to STC-24, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000014915956

1.CHECK TERMINAL AND HARNESS CONNECTORS

Check EPS control unit (steering column assembly) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

2.PERFORM SELF-DIAGNOSIS

CONSULT

1. Turn the ignition switch OFF to ON.
2. Erase “Self Diagnostic Results” mode for “EPS”.
3. Turn the ignition switch OFF, and then wait 10 seconds and more.
4. Perform “Self Diagnostic Results” mode for “EPS”.

Is DTC “C1606” detected?

YES >> EPS motor is malfunctioning. Replace steering column assembly. Refer to ST-29, "Removal and Installation".

NO >> Check EPS control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace malfunctioning parts.

C1607, C1608 EPS CONTROL UNIT

DTC Description

INFOID:0000000014915957

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detected condition	
C1607	EEPROM	Diagnosis condition	When engine is running.
		Signal (terminal)	-
		Threshold	When the memory (EEPROM) system malfunction is detected in EPS control unit
		Diagnosis delay time	Less than 1 second.

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detected condition	
C1608	CONTROL UNIT	Diagnosis condition	When engine is running.
		Signal (terminal)	-
		Threshold	When the internal malfunction is detected in EPS control unit
		Diagnosis delay time	12 seconds or more

POSSIBLE CAUSE

- EPS control unit

FAIL-SAFE

- C1607 Constant steering state
- C1608 Manual steering state

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

CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “Self Diagnostic Result” mode for “EPS”.

Is DTC “C1607” or “C1608” detected?

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

Diagnosis Procedure

INFOID:0000000014915958

1.CHECK TERMINALS AND HARNESS CONNECTORS

Check EPS control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace malfunctioning parts.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

2.PERFORM SELF-DIAGNOSIS

CONSULT

1. Erase “Self Diagnostic Result” mode for “EPS”.
2. Turn the ignition switch OFF, and then wait 10 seconds and more.
3. Perform “Self Diagnostic Result” mode for “EPS”.

Is DTC “C1607” or “C1608” detected?

YES >> EPS control unit is malfunctioning. Replace EPS control unit. Refer to STC-39, "Removal and Installation".

NO >> Check intermittent incident. Refer to GI-54, "Intermittent Incident".

C1609 VEHICLE SPEED SIGNAL

DTC Description

INFOID:0000000014915959

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detected condition	
C1609	CAN VHCL SPEED	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	Vehicle speed signal (ABS)
		Threshold	• 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.
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

- Harness or connector
  (CAN communication line)
- EPS control unit
- ABS malfunction
  (Vehicle speed signal error)

FAIL-SAFE

Constant steering state

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

CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “Self Diagnostic Result” mode for “EPS”.

Is DTC “C1609” detected?

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

Diagnosis Procedure

INFOID:0000000014915960

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

CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “Self Diagnostic Result” mode for “ABS”.

Is any DTC detected?

YES >> Check the DTC. Refer to XX-XX, "*****".
NO >> GO TO 2.

2.CHECK TERMINALS AND HARNESS CONNECTORS

Check EPS control unit pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace malfunctioning parts.

3.PERFORM SELF-DIAGNOSIS

CONSULT

Perform “Self Diagnostic Result” mode for “EPS”.

Is DTC “C1609” detected?

YES >> EPS control unit is malfunctioning. Replace EPS control unit. Refer to STC-39, "Removal and Installation".

NO >> Check intermittent incident. Refer to GI-54, "Intermittent Incident".

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000014915961

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-high line, CAN-low line) allowing a high rate of information transmission with less wiring. Each control unit communicate data but selectively reads required data only.

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detected condition	
U1000	CAN COMM CIRCUIT	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	CAN communication signal
		Threshold	EPS control unit is not transmitting/receiving CAN communication signal for 2 seconds or more.
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

- Harness or connector (CAN communication line)
- EPS control unit

FAIL-SAFE

Constant steering state

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

CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “Self Diagnostic Result” mode for “EPS”.

Is DTC “U1000” detected?

YES >> Proceed to diagnosis procedure. Refer to STC-30, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000014915962

Proceed to XX-XX, "*****".

EPS WARNING LAMP

Component Function Check

INFOID:0000000014626220

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-31, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000014626221

1.PERFORM SELF-DIAGNOSIS

CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “Self Diagnostic Result” mode of “EPS”.
3. Check DTC.

Is any DTC detected?

YES >> Check the DTC. Refer to STC-13, "DTC Index".
NO >> GO TO 2.

2.CHECK EPS WARNING LAMP SIGNAL

CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Select “WARNING LAMP” in “Data Monitor” mode of “EPS”.
3. Check that the “Data Monitor” mode is "ON".
4. Start the engine.
   CAUTION:
   Never drive the vehicle.
5. Check that the “Data Monitor” mode is "OFF".

Is the inspection result normal?

YES >> Perform the trouble diagnosis for combination meter power supply circuit. Refer to XX-XX, "*****".
NO >> EPS control unit is malfunctioning. Replace steering column assembly. Refer to STC-39, "Removal and Installation".

SYMPTOM DIAGNOSIS

EPS WARNING LAMP DOES NOT TURN ON

Description

INFOID:0000000014626222

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:0000000014626223

1.CHECK EPS WARNING LAMP

Perform the trouble diagnosis of EPS warning lamp. Refer to STC-31, "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:0000000014626224

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

Diagnosis Procedure

INFOID:0000000014626225

1.PERFORM SELF-DIAGNOSIS

CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “Self Diagnostic Result” for “EPS”.
3. Check DTC.

Is any DTC detected?

YES >> Check the DTC. Refer to STC-13, "DTC Index".
NO >> GO TO 2.

2.CHECK EPS WARNING LAMP

Perform the trouble diagnosis of EPS warning lamp. Refer to STC-31, "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-26, "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:0000000014626226

Steering wheel turning force is heavy or light.

Diagnosis Procedure

INFOID:0000000014626227

1.PERFORM SELF-DIAGNOSIS

With CONSULT

1. Turn the ignition switch OFF to ON.
2. Perform “Self Diagnostic Result” for “EPS”.
3. Check DTC.

Is any DTC detected?

YES >> Check the DTC. Refer to STC-13, "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-26, "Diagnosis Procedure".

3.CHECK EPS CONTROL UNIT SIGNAL (1)

CONSULT

1. Start the engine.
   CAUTION:
   Never drive the vehicle.
2. Select “ASSIST LEVEL” in “Data Monitor” mode of “EPS”.

Does the item in “Data Monitor” indicate “100%”?

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

4.CHECK EPS CONTROL UNIT SIGNAL (2)

CONSULT

Select “BATTERY VOLT” in “Data Monitor” mode of “EPS”.

Does the item in “Data Monitor” indicate “10.5 V” or more?

YES >> GO TO 5.
NO >> Perform trouble diagnosis of EPS control unit power supply and ground. Refer to STC-26, "Diagnosis Procedure".

5.CHECK EPS CONTROL UNIT SIGNAL (3)

CONSULT

1. Select “ASSIST LEVEL” in “Data Monitor” mode of “EPS”.
2. Stop the EPS system until the item in “Data Monitor” becomes “100%” or less.
   NOTE:
   While stopping the EPS system, do not turn steering wheel.
3. Check that the symptom continues.

Does 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)

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” mode of “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-26, "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-14, "Inspection".

Is the inspection result normal?

YES >> Inspection End.
NO >> Check the steering wheel turning force for mechanical malfunction. Refer to ST-14, "Inspection".

UNBALANCE STEERING WHEEL TURNING FORCE AND RETURN BETWEEN RIGHT AND LEFT

Description

INFOID:0000000014626228

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

Diagnosis Procedure

INFOID:0000000014626229

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-33, "Diagnosis Procedure".

2.CHECK WHEEL ALIGNMENT

1. Check the wheel alignment. Refer to FSU-8, "Adjustment".
2. Perform “Self Diagnostic Result” mode for “EPS”.

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

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” mode 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-24, "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-14, "Inspection".

Is the inspection result normal?

YES >> Inspection End.
NO >> Check the steering wheel turning force for mechanical malfunction. Refer to ST-14, "Inspection".

UNBALANCE STEERING WHEEL TURNING FORCE (TORQUE VARIATION)

Description

INFOID:0000000014626230

Unbalance steering wheel turning force (torque variation).

Diagnosis Procedure

INFOID:0000000014626231

1.PERFORM SELF-DIAGNOSIS

CONSULT
1. Turn the ignition switch OFF to ON.
2. Perform “Self Diagnostic Result” mode for “EPS”.
3. Check DTC.

Is any DTC detected?

YES >> Check the DTC. Refer to STC-13, "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-31, "Diagnosis Procedure".

3.CHECK STEERING COLUMN AND STEERING GEAR

Check the steering column assembly and steering gear assembly.
- Steering column assembly. Refer to ST-16, "Inspection".
- Steering gear assembly. Refer to ST-17, "Inspection".

Is the inspection result normal?

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

4.CHECK EPS CONTROL UNIT SIGNAL (1)

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” mode of “EPS”.

Does the item in “Data Monitor” maintain “100%”?

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

5.CHECK EPS CONTROL UNIT SIGNAL (2)

CONSULT
Select “BATTERY VOLT” in “Data Monitor” mode of “EPS”.

Does the item in “Data Monitor” indicate “10.5 V” or more?

YES >> GO TO 6.
NO >> Perform trouble diagnosis of EPS control unit power supply and ground. Refer to STC-26, "Diagnosis Procedure".

6.CHECK EPS CONTROL UNIT SIGNAL (3)

CONSULT
1. Select “ASSIST LEVEL” in “Data Monitor” mode of “EPS”.
2. Stop the EPS system until the item in “Data Monitor” becomes “100%” or less.
   NOTE:
   While stopping the EPS system, do not turn steering wheel.

3. Check that the symptom continues.

Does 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)

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” mode of “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-24, "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-14, "Inspection".

Is the inspection result normal?

YES >> Inspection End.
NO >> Check the steering wheel turning force for mechanical malfunction. Refer to ST-14, "Inspection".

REMOVAL AND INSTALLATION

EPS CONTROL UNIT

Removal and Installation

INFOID:0000000014626232

CAUTION:

Disconnect the battery negative terminal before removing the EPS control unit.

The EPS control unit is an integral part of the steering column. If the replacement of the EPS control unit is necessary, replace the steering column. Refer to ST-29, "Removal and Installation".