SECTION STC
STEERING CONTROL SYSTEM

CONTENTS

PRECAUTION

PRECAUTIONS

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

INFOID:0000000006303358

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 that would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see 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:0000000006303360

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.

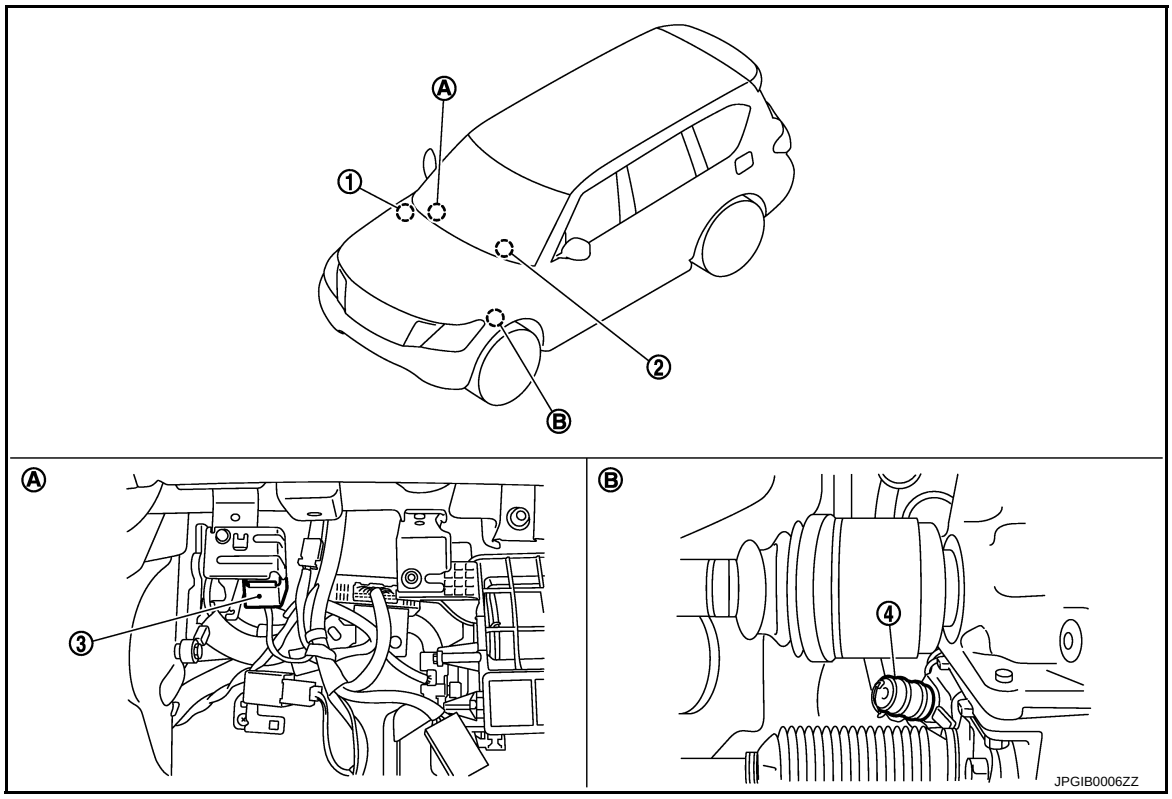
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)
6. Perform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

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000006256115



1. ECM
   Refer to EC-16, "Component Parts Location".
2. Combination meter
   Refer to MWI-6, "METER SYSTEM : Component Parts Location".
3. Power steering control unit
4. Power steering solenoid valve

A. Glove box assembly removed
B. Steering gear assembly

Component Description

INFOID:0000000006256116

Component parts	Reference/Function
Power steering control unit	STC-4, "Power Steering Control Unit"
Power steering solenoid valve	STC-4, "Power Steering Solenoid Valve"
Combination meter	Transmits vehicle speed signal to power steering control unit.
ECM	Transmits engine speed signal to power steering control unit.

Power Steering Control Unit

INFOID:0000000006256117

- Signals from various sensors control the driving voltage to the power steering solenoid valve.
- The power steering control unit controls the driving voltage to the power steering solenoid valve for maintaining the power steering assist force when the fail-safe function is activated. (The engine speed signals control EPS system if any vehicle speed signal error is detected.)

Power Steering Solenoid Valve

INFOID:0000000006256118

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

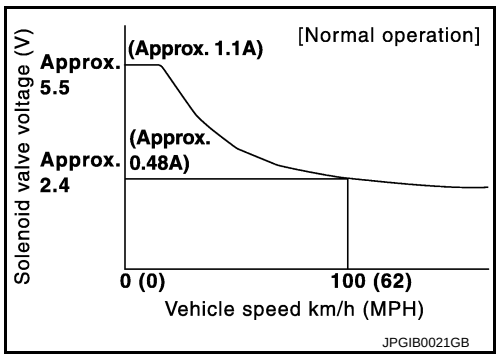
SYSTEM

EPS SYSTEM

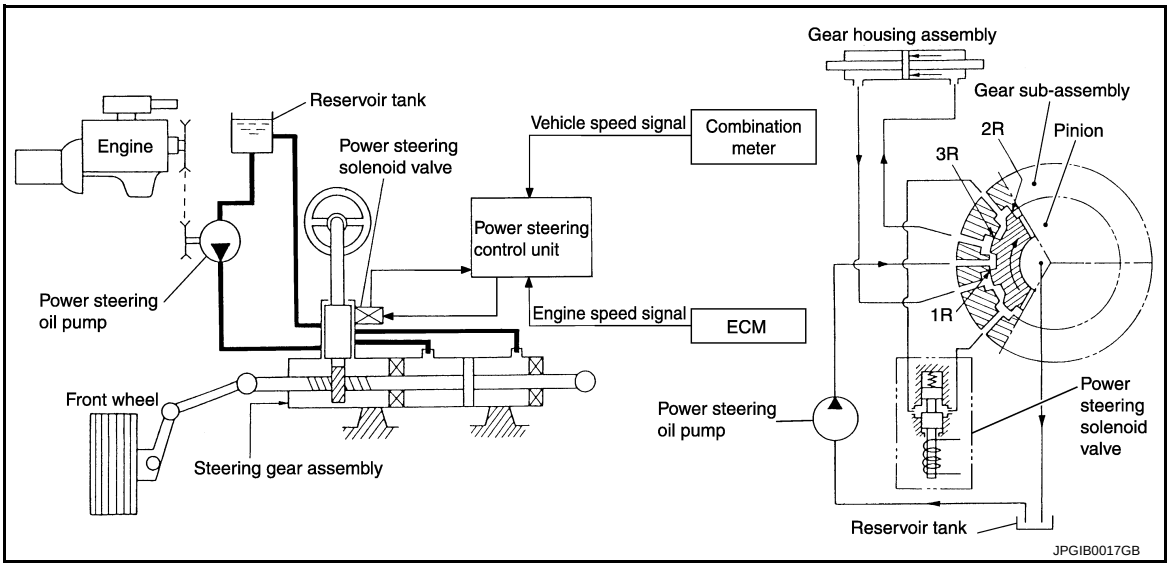
EPS SYSTEM : System Description

INFOID:0000000006256119

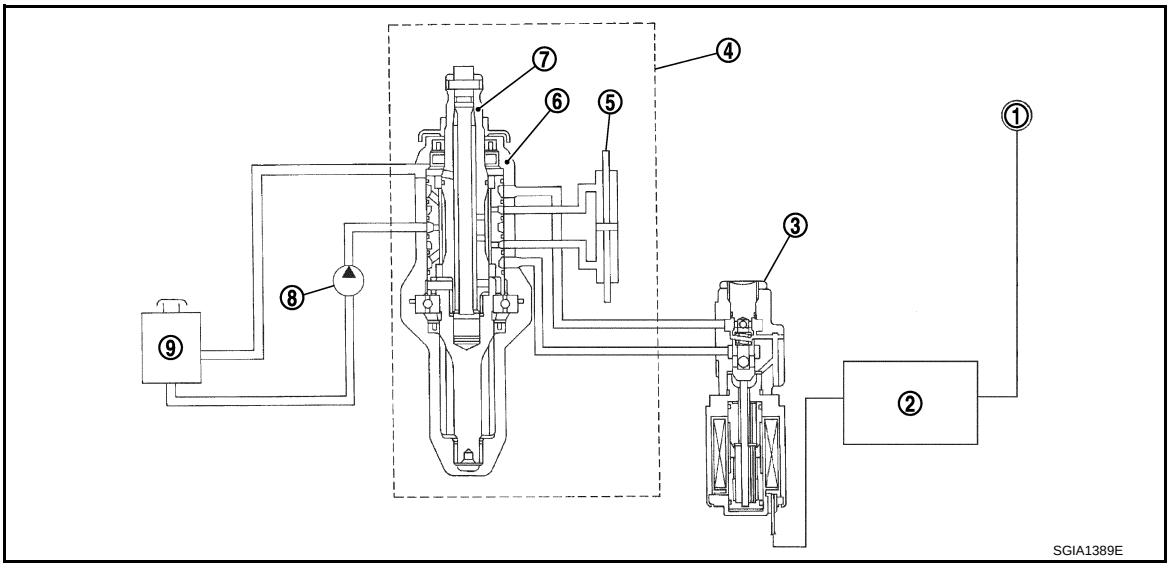
- The EPS system controls the power steering solenoid valve through the power steering control unit.
- The valve driving voltage to control the power steering solenoid valve varies according to the vehicle speed.



CONTROL DIAGRAM



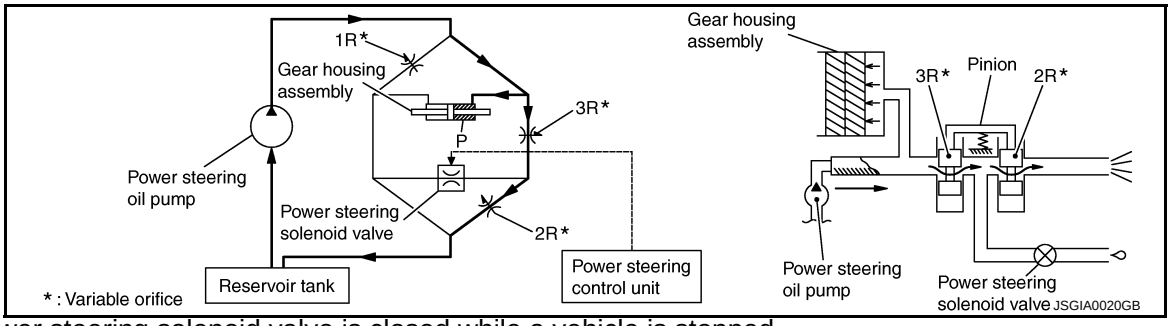
CROSS-SECTIONAL VIEW



1. Combination meter
2. Power steering control unit
3. Power steering solenoid valve
4. Steering gear assembly
5. Gear housing assembly
6. Gear sub-assembly
7. Pinion
8. Power steering oil pump
9. Reservoir tank

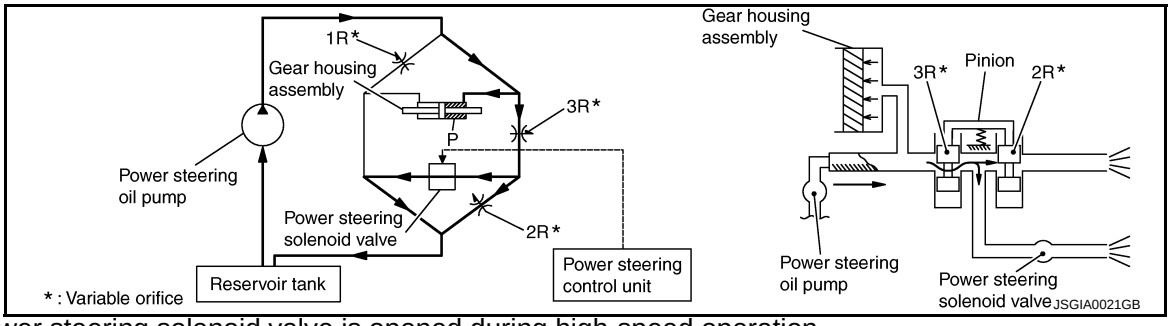
OPERATION PRINCIPLE

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



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

During High-speed Operation



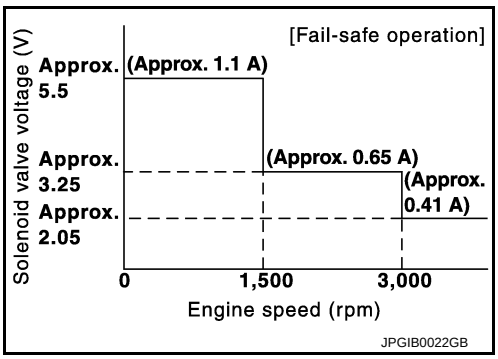
1. Power steering solenoid valve is opened during high-speed operation.
2. Pinion “1R”, “2R” and “3R” are closed depending on steering torque of steering wheel.
3. Oil pressure “2R” does not occur because the power steering solenoid valve is on full throttle.
4. Oil pressure “P” in the gear housing assembly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

EPS SYSTEM : Fail-Safe

INFOID:0000000006256120

EPS system

- EPS system enters the fail-safe mode (that allows the steering force to be controlled without impairing the drivability) if any of the input/output values to/from EPS system (power steering control unit) deviate from the standard range.
- The power steering control unit controls the driving voltage to the power steering solenoid valve for maintaining the power steering assist force when the fail-safe function is activated. (The engine speed signals control EPS system if any vehicle speed signal error is detected.)



Error area and root cause	Cancel condition
Engine speed is 1,500 rpm or more and there is no vehicle speed signal input for over 10 seconds during vehicle travel.	• When a vehicle speed signal of 2 km/h (1.2 MPH) or more is inputted. • Ignition switch is turned OFF to ON.
Vehicle speed signal has abruptly dropped from 30 km/h (19 MPH) or more to 2 km/h (1.2 MPH) or less within 1.4 seconds.	

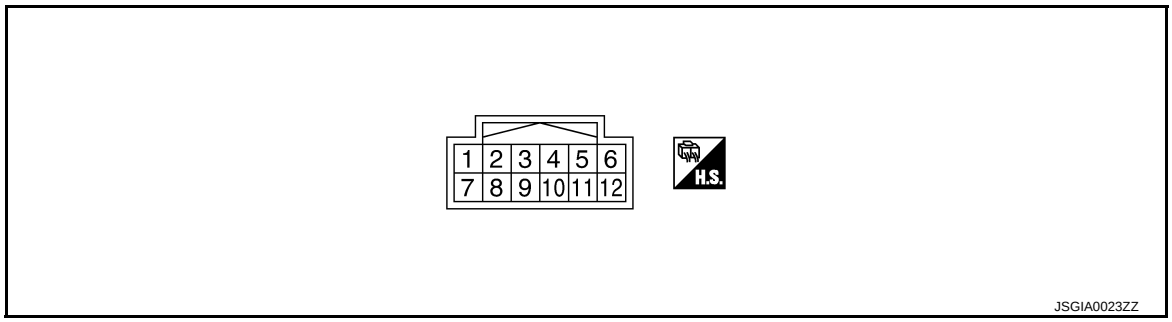
ECU DIAGNOSIS INFORMATION

POWER STEERING CONTROL UNIT

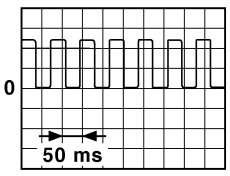
Reference Value

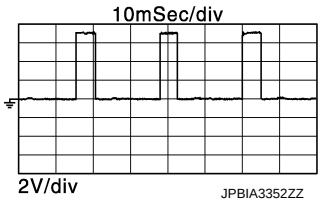
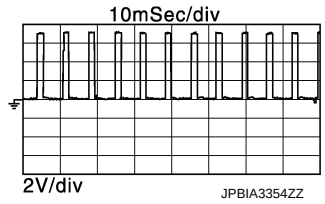
INFOID:0000000006256121

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
1 (R)	Ground	Power steering solenoid valve control voltage	Output	Vehicle speed: 0 km/h (0 MPH) (Engine is running)	4.4 – 6.6 V
				Vehicle speed: 100 km/h (62 MPH)	2.4 – 3.6 V
3 (GR)	Ground	Ignition switch power supply	Input	Ignition switch: ON	Battery voltage
				Ignition switch: OFF	0 V
5 (L)	Ground	Power steering solenoid valve ground	—	Always	0 V
6 (B)	Ground	Ground	—	Always	0 V
8 (SB)	Ground	Vehicle speed signal	Input	Vehicle speed: 40 km/h (25 MPH) **CAUTION:** **Check air pressure of tire under standard condition.**	**NOTE:** The maximum voltage varies depending on the specification (destination unit).  JSNIA0015GB

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
10 (B/SB)	Ground	Engine speed signal	Input	Engine is running • Warm-up condition • Idle speed	
				Engine is running • Warm-up condition • Engine speed: Approx. 2,000 rpm	

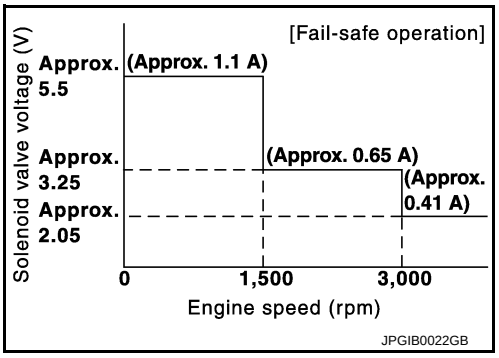
CAUTION:
When using circuit tester or oscilloscope to measure voltage for inspection, be sure not to forcibly extend any connector terminals.

Fail-Safe

INFOID:0000000006256122

EPS system

- EPS system enters the fail-safe mode (that allows the steering force to be controlled without impairing the drivability) if any of the input/output values to/from EPS system (power steering control unit) deviate from the standard range.
- The power steering control unit controls the driving voltage to the power steering solenoid valve for maintaining the power steering assist force when the fail-safe function is activated. (The engine speed signals control EPS system if any vehicle speed signal error is detected.)



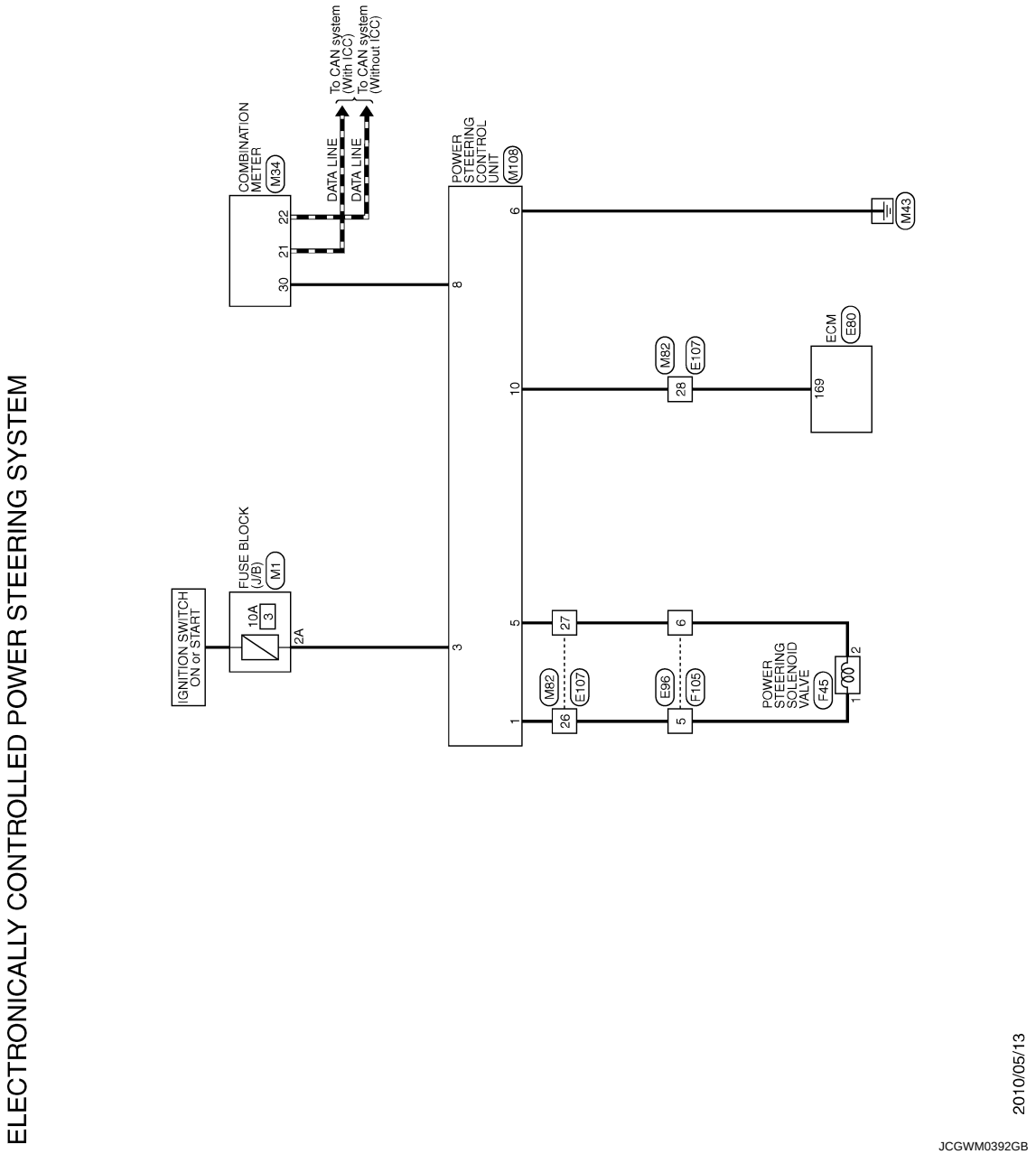
Error area and root cause	Cancel condition
Engine speed is 1,500 rpm or more and there is no vehicle speed signal input for over 10 seconds during vehicle travel.	• When a vehicle speed signal of 2 km/h (1.2 MPH) or more is inputted. • Ignition switch is turned OFF to ON.
Vehicle speed signal has abruptly dropped from 30 km/h (19 MPH) or more to 2 km/h (1.2 MPH) or less within 1.4 seconds.	

WIRING DIAGRAM

ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM

Wiring Diagram

INFOID:0000000006256123



ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM

Connector No.	E80
Connector Name	ECM
Connector Type	MAB55FB-MEB10-LH

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
111	R	FUEL INJECTOR DRIVER POWER SUPPLY
112	SB	FUEL INJECTOR DRIVER POWER SUPPLY
113	G	FUEL RETURN VALVE
114	B	ECM GROUND
115	B	ECM GROUND
120	Y	EVAP CANISTER VENT CONTROL VALVE
122	BR/W	VVEL ACTUATOR MOTOR RELAY ABORT SIGNAL (VVEL CONTROL MODULE)
123	V/R	THROTTLE CONTROL MOTOR RELAY
125	GR	FUEL PUMP CONTROL MODULE (FPCM)
126	O	ACCELERATOR PEDAL POSITION SENSOR 2
128	Y	ICC STEERING SWITCH
129	P/L	SENSOR GROUND (APP SENSOR 2)
130	R	SENSOR GROUND
131	L/W	SENSOR POWER SUPPLY
133	SB	SENSOR POWER SUPPLY
134	V/W	TF
136	W/R	ACCELERATOR PEDAL POSITION SENSOR 1
137	W/G	SENSOR POWER SUPPLY (APP SENSOR 1)
138	V	BATTERY CURRENT SENSOR
139	G	BATTERY TEMPERATURE SENSOR
140	R/Y	SENSOR GROUND
141	SB	IGNITION SWITCH
142	R/W	FUEL PUMP CONTROL MODULE (FPCM) CHECK
143	L/Y	EVAP CONTROL SYSTEM PRESSURE SENSOR
144	O/B	REFRIGERANT PRESSURE SENSOR
146	L	CAN COMMUNICATION LINE
147	G/Y	ICC BRAKE SWITCH
150	R	SENSOR GROUND
151	P	CAN COMMUNICATION LINE
156	L	POWER SUPPLY FOR ECM (BACK-UP)
158	W/B	STOP LAMP SWITCH
161	R/W	ECM COMMUNICATION LINE
163	L/G	ECM RELAY (SELF SHUT-OFF)
165	GR/R	–
166	W	ECM COMMUNICATION LINE
169	G/B	ENGINE SPEED SIGNAL OUTPUT
171	W	POWER SUPPLY FOR ECM
172	W	POWER SUPPLY FOR ECM
173	O	THROTTLE CONTROL MOTOR POWER SUPPLY
174	B	ECM GROUND
175	B	ECM GROUND

Connector No.	E96
Connector Name	WIRE TO WIRE
Connector Type	RS08MGY-PR

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	W/L	–
2	L/W	–
3	GR	–
4	B/R	–
5	R	–
6	L	–
7	W	–

Connector No.	E107
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	L	–
4	V/W	–
5	G/R	–
6	P	–
9	GR/L	–
10	Y/R	–
11	L/R	–
12	W/G	–
13	BR/Y	–
14	LG	–
15	BR/W	–
17	W/B	–
18	GR/R	–
20	W/R	–
21	B	–
22	R/L	–
23	G/R	–
24	R/W	–
25	W/L	–
26	R	–
27	L	–
28	G/B	–
37	G/Y	–
38	G/Y	–
39	O	–
40	W	–
41	R	–
42	B	–
43	Y	–
44	G	–
45	SHIELD	–
46	G/O	–
47	G/R	–
48	SHIELD	–
49	W	–
50	SHIELD	–
51	Y/R	–
52	GR	–
53	LG/B	–
54	LG/R	–
55	R/G	–
56	B/R	–
57	SB	–
60	G	–
61	B	–
62	W	–
63	R	–
64	SHIELD	–
65	L/Y	–
66	V	–
67	B/W	–
91	G/R	–
95	SB	–
96	G/R	–
97	GR/L	–
98	G/W	–
99	R/Y	–
100	L	–

Connector No.	F45
Connector Name	POWER STEERING SOLENOID VALVE
Connector Type	RH02FB

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	R	EPS SOL+
2	L	EPS SOL–

Connector No.	F105
Connector Name	WIRE TO WIRE
Connector Type	RS08FGY-PR

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	W/L	–
2	L/W	–
3	GR	–
4	B/R	–
5	R	–
6	L	–
7	W	–

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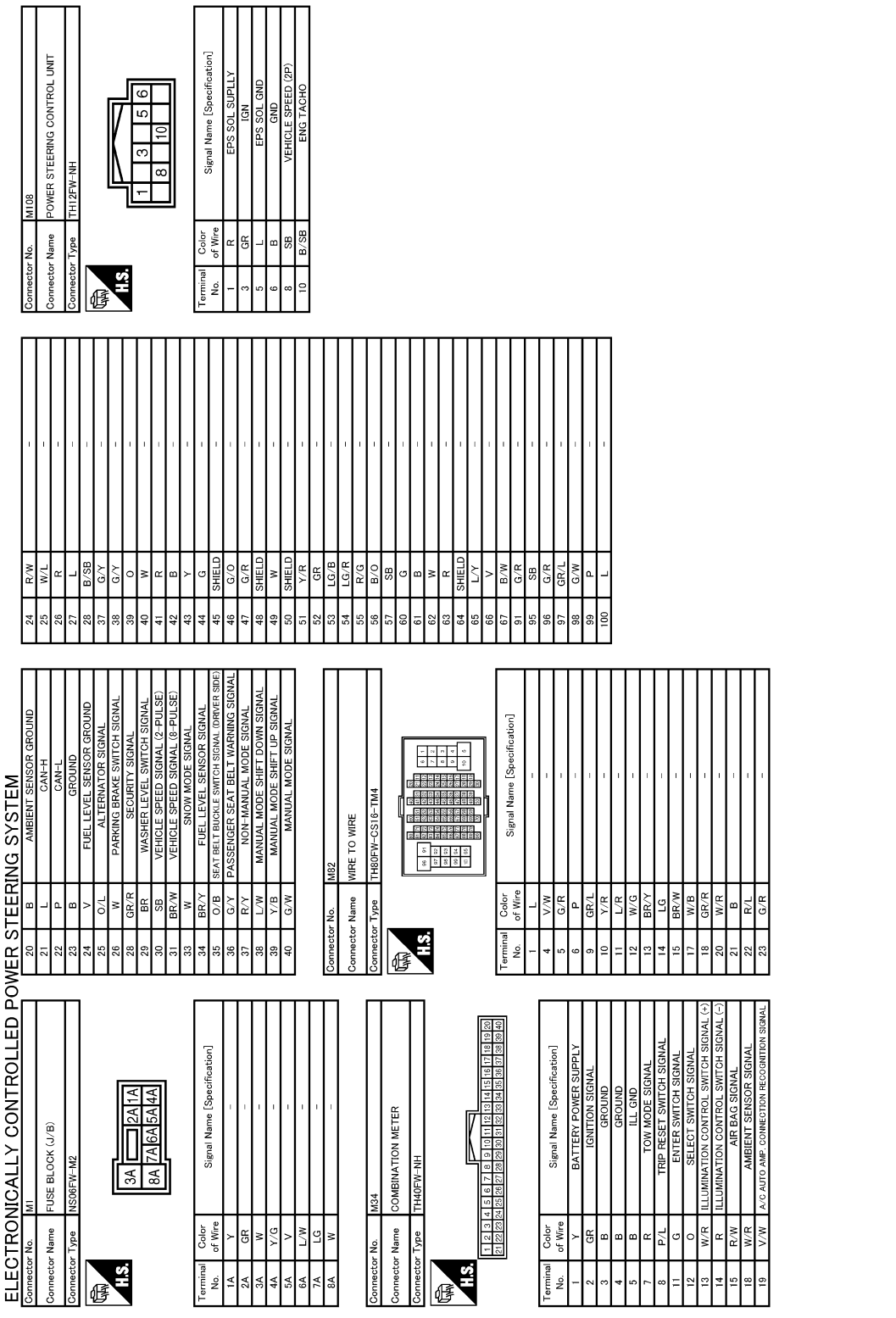

ELECTRONICALLY CONTROLLED POWER STEERING SYSTEM
Connector No. M1
Connector Name FUSE BLOCK (J/B)
Connector Type NS06FW-M2
H.S.
3A 2A 1A
8A 7A 6A 5A 4A
Terminal No. Color of Wire Signal Name [Specification]
1A Y –
2A GR –
3A W –
4A Y/G –
5A V –
6A L/W –
7A LG –
8A W –
Connector No. M34
Connector Name COMBINATION METER
Connector Type TH40FW-NH
H.S.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
Terminal No. Color of Wire Signal Name [Specification]
1 Y BATTERY POWER SUPPLY
2 GR IGNITION SIGNAL
3 B GROUND
4 B GROUND
5 B ILL GND
7 R TOW MODE SIGNAL
8 P/L TRIP RESET SWITCH SIGNAL
11 G ENTER SWITCH SIGNAL
12 O SELECT SWITCH SIGNAL
13 W/R ILLUMINATION CONTROL SWITCH SIGNAL (+)
14 R ILLUMINATION CONTROL SWITCH SIGNAL (-)
15 R/W AIR BAG SIGNAL
18 W/R AMBIENT SENSOR SIGNAL
19 V/W A/C AUTO AMP. CONNECTION RECOGNITION SIGNAL
20 B AMBIENT SENSOR GROUND
21 L CAN-H
22 P CAN-L
23 B GROUND
24 V FUEL LEVEL SENSOR GROUND
25 O/L ALTERNATOR SIGNAL
26 W PARKING BRAKE SWITCH SIGNAL
28 GR/R SECURITY SIGNAL
29 BR WASHER LEVEL SWITCH SIGNAL
30 SB VEHICLE SPEED SIGNAL (2-PULSE)
31 BR/W VEHICLE SPEED SIGNAL (8-PULSE)
33 W SNOW MODE SIGNAL
34 BR/Y FUEL LEVEL SENSOR SIGNAL
35 O/B SEAT BELT BUCKLE SWITCH SIGNAL (DRIVER SIDE)
36 G/Y PASSENGER SEAT BELT WARNING SIGNAL
37 R/Y NON-MANUAL MODE SIGNAL
38 L/W MANUAL MODE SHIFT DOWN SIGNAL
39 Y/B MANUAL MODE SHIFT UP SIGNAL
40 G/W MANUAL MODE SIGNAL
Connector No. M82
Connector Name WIRE TO WIRE
Connector Type TH80FW-CS16-TM4
H.S.
Terminal No. Color of Wire Signal Name [Specification]
1 L –
4 V/W –
5 G/R –
6 P –
9 GR/L –
10 Y/R –
11 L/R –
12 W/G –
13 BR/Y –
14 LG –
15 BR/W –
17 W/B –
18 GR/R –
20 W/R –
21 B –
22 R/L –
23 G/R –
24 R/W –
25 W/L –
26 R –
27 L –
28 B/SB –
37 G/Y –
38 G/Y –
39 O –
40 W –
41 R –
42 B –
43 Y –
44 G –
45 SHIELD –
46 G/O –
47 G/R –
48 SHIELD –
49 W –
50 SHIELD –
51 Y/R –
52 GR –
53 LG/B –
54 LG/R –
55 R/G –
56 B/O –
57 SB –
60 G –
61 B –
62 W –
63 R –
64 SHIELD –
65 L/Y –
66 V –
67 B/W –
91 G/R –
95 SB –
96 G/R –
97 GR/L –
98 G/W –
99 P –
100 L –
Connector No. M108
Connector Name POWER STEERING CONTROL UNIT
Connector Type TH12FW-NH
H.S.
1 3 5 6
8 10
Terminal No. Color of Wire Signal Name [Specification]
1 R EPS SOL SUPLLY
3 GR IGN
5 L EPS SOL GND
6 B GND
8 SB VEHICLE SPEED (2P)
10 B/SB ENG TACHO
JCGWM0394GB

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000006256124

DETAILED FLOW

1.COLLECT THE INFORMATION FROM THE CUSTOMER

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

CAUTION:

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

>> GO TO 2.

2.CHECK THE STATUS

1. Power steering fluid leakage and check the power steering fluid level. Refer to ST-30, "Inspection".
2. Check the drive belt tension. Refer to EM-20, "Checking".
3. Check the power steering gear for damages, cracks and fluid leakage. Refer to ST-46, "Inspection".
4. Check the relief oil pressure. Refer to ST-52, "Inspection".

>> GO TO 3.

3.DIAGNOSIS CHART BY SYMPTOM

Perform the diagnosis by symptom. Refer to STC-22, "Diagnosis Procedure".

>> GO TO 4.

4.FINAL CHECK

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

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

YES >> INSPECTION END
NO >> GO TO 2.

DTC/CIRCUIT DIAGNOSIS

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000006256125

1.CHECK POWER SUPPLY (1)

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

Power steering control unit		—	Voltage
Connector	Terminal		
M108	3	Ground	0 V

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

Power steering control unit		—	Voltage
Connector	Terminal		
M108	3	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 2.

2.CHECK POWER SUPPLY (2)

1. Turn the ignition switch OFF.
2. Check 10A fuse (#3).
3. Disconnect fuse block (J/B) harness connector.
4. Check the continuity between power steering control unit harness connector and fuse block (J/B) harness connector.

Power steering control unit		Fuse block (J/B)		Continuity
Connector	Terminal	Connector	Terminal	
M108	3	M1	2A	Existed

5. Check the continuity between power steering control unit harness connector and ground.

Power steering control unit		—	Continuity
Connector	Terminal		
M108	3	Ground	Not existed

Is the inspection result normal?

YES >> Perform trouble diagnosis for ignition power supply circuit. Refer to PG-89, "Wiring Diagram - IGNITION POWER SUPPLY -".
NO >> Repair or replace damaged parts.

3.CHECK GROUND CIRCUIT

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

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

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace error-detected parts.

4. CHECK TERMINALS AND HARNESS CONNECTORS

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace error-detected parts.

POWER STEERING SOLENOID VALVE

Component Function Check

INFOID:0000000006256126

1.CHECK POWER STEERING SOLENOID VALVE OPERATION

Check changes in steering force from a halt condition to high-speed driving.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Check the power steering solenoid valve. Refer to STC-16, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006256127

1.CHECK POWER STEERING SOLENOID VALVE SIGNAL

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

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

Is the inspection result normal?

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

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

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

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

5. Check the continuity between power steering control unit harness connector and ground.

Power steering control unit		—	Continuity
Connector	Terminal		
M108	1	Ground	Not existed
	5		

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace error-detected parts.

3.CHECK POWER STEERING SOLENOID VALVE

Check the power steering solenoid valve. Refer to STC-17, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace gear-sub assembly. Refer to ST-43, "Disassembly and Assembly".

4. CHECK TERMINALS AND HARNESS CONNECTORS

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

Is the inspection result normal?

YES >> Replace power steering control unit. Refer to STC-23, "Removal and Installation".
NO >> Repair or replace error-detected parts.

Component Inspection

INFOID:0000000006256128

1. CHECK POWER STEERING SOLENOID VALVE

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

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

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace gear-sub assembly. Refer to ST-43, "Disassembly and Assembly".

ENGINE SPEED SIGNAL CIRCUIT

Diagnosis Procedure

INFOID:0000000006256129

1.PERFORM ECM SELF-DIAGNOSIS

With CONSULT-III
Perform “ENGINE” self-diagnosis.

Is any DTC detected?

YES >> Check the DTC. Refer to EC-98, "DTC Index".
NO >> GO TO 2.

2.CHECK HARNESS BETWEEN ECM AND POWER STEERING CONTROL UNIT

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

ECM		Power steering control unit		Continuity
Connector	Terminal	Connector	Terminal	
E80	169	M108	10	Existed

5. Check the continuity between power steering control unit harness connector and ground.

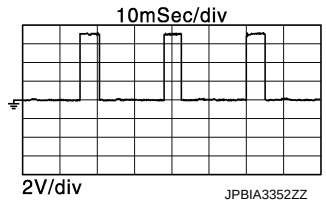
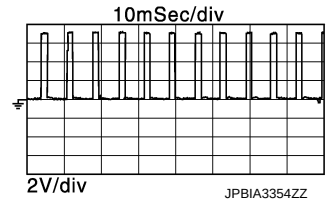
Power steering control unit		—	Continuity
Connector	Terminal		
M108	10	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace error-detected parts.

3.CHECK ENGINE SPEED SIGNAL (ECM)

1. Connect ECM harness connectors.
2. Check the signal between ECM harness connector and ground with oscilloscope.

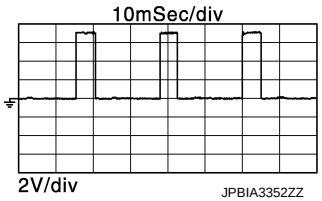
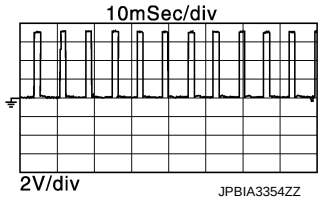
ECM		—	Condition	Voltage (Approx.)
Connector	Terminal			
E80	169	Ground	Engine is running • Warm-up condition • Idle speed	
			Engine is running • Warm-up condition • Engine speed: Approx. 2,000 rpm	

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace ECM. Refer to EC-143, "Description".

4. CHECK ENGINE SPEED SIGNAL (POWER STEERING CONTROL UNIT)

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

Power steering control unit		—	Condition	Voltage (Approx.)
Connector	Terminal			
M108	10	Ground	Engine is running • Warm-up condition • Idle speed	
			Engine is running • Warm-up condition • Engine speed: Approx. 2,000 rpm	

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace power steering control unit. Refer to STC-23, "Removal and Installation".

5. CHECK TERMINALS AND HARNESS CONNECTORS

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace error-detected parts.

VEHICLE SPEED SIGNAL CIRCUIT

Diagnosis Procedure

INFOID:0000000006256130

1.PERFORM COMBINATION METER SELF-DIAGNOSIS

With CONSULT-III

Perform “METER/M&A” self-diagnosis. Refer to MWI-30, "CONSULT-III Function".

Is any DTC detected?

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

2.CHECK HARNESS BETWEEN COMBINATION METER AND POWER STEERING CONTROL UNIT

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

Combination meter		Power steering control unit		Continuity
Connector	Terminal	Connector	Terminal	
M34	30	M108	8	Existed

5. Check the continuity between power steering control unit harness connector and ground.

Power steering control unit		—	Continuity
Connector	Terminal		
M108	8	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace error-detected parts.

3.CHECK VEHICLE SPEED SIGNAL (COMBINATION METER)

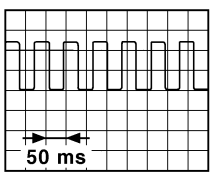
1. Connect combination meter harness connector.
2. Check the combination meter input/output standard values. Refer to MWI-35, "Reference Value".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace combination meter Refer to MWI-85, "Removal and Installation".

4.CHECK VEHICLE SPEED SIGNAL (POWER STEERING CONTROL UNIT)

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

Power steering control unit		—	Condition	Voltage (Approx.)
Connector	Terminal			
M108	8	Ground	Vehicle speed: 40 km/h (25 MPH) **CAUTION:** **Check air pressure of tire under standard condition.**	**NOTE:** The maximum voltage varies depending on the specification (destination unit).  JSNIA0015GB

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace power steering control unit. Refer to STC-23, "Removal and Installation".

5. CHECK TERMINALS AND HARNESS CONNECTORS

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace error-detected parts.

SYMPTOM DIAGNOSIS

UNBALANCE STEERING WHEEL TURNING FORCE (TORQUE VARIATION)

Description

INFOID:0000000006256131

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

Diagnosis Procedure

INFOID:0000000006256132

1.CHECK SYSTEM FOR POWER SUPPLY AND GROUND

Perform trouble diagnosis for power supply and ground. Refer to STC-14, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace error-detected parts.

2.CHECK SYSTEM FOR VEHICLE SPEED SIGNAL

Perform trouble diagnosis for vehicle speed signal. Refer to STC-20, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace error-detected parts.

3.CHECK SYSTEM FOR ENGINE SPEED SIGNAL

Perform trouble diagnosis for engine speed signal. Refer to STC-18, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace error-detected parts.

4.CHECK SYSTEM FOR POWER STEERING SOLENOID VALVE

Perform trouble diagnosis for power steering solenoid valve. Refer to STC-16, "Diagnosis Procedure".

Is the inspection result normal?

YES >> Perform the symptom diagnosis for the steering system. Refer to ST-29, "NVH Troubleshooting Chart".
NO >> Repair or replace error-detected parts.

REMOVAL AND INSTALLATION

POWER STEERING CONTROL UNIT

Removal and Installation

INFOID:0000000006256133

REMOVAL

1. Remove instrument lower cover. Refer to IP-14, "Removal and Installation".
2. Remove instrument lower panel RH. Refer to IP-14, "Removal and Installation".
3. Disconnect power steering control unit connector.
4. Remove power steering control unit.

INSTALLATION

Install in the reverse order of removal.