

# SECTION **STC**

## STEERING CONTROL SYSTEM

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**STC**

## ELECTRICALLY CONTROLLED POWER STEERING SYSTEM

PFP:28500

### Precautions

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### BEFORE DIAGNOSING THE POWER STEERING SYSTEM, ENSURE THAT

#### Vehicle Stopped

1. Power steering components (gears, oil pump, pipes, etc.) Are free from leakage, and that oil level is correct.
2. Tires are inflated to specified pressure and are of specified size, and that steering wheel is a genuine Nissan part.
3. Suspension utilizes the original design, and is free of modifications which increase vehicle weight.
4. Wheel alignment is adjusted properly.

#### Vehicle In Operation

1. Understand the trouble symptom.
2. Engine is operation properly

### Description

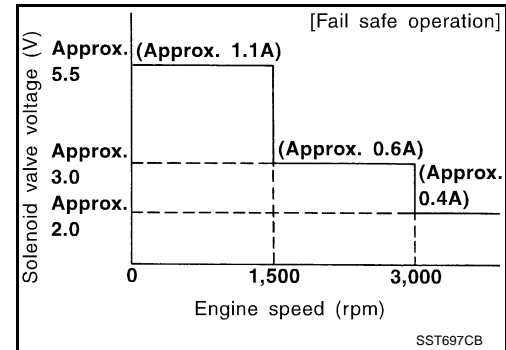
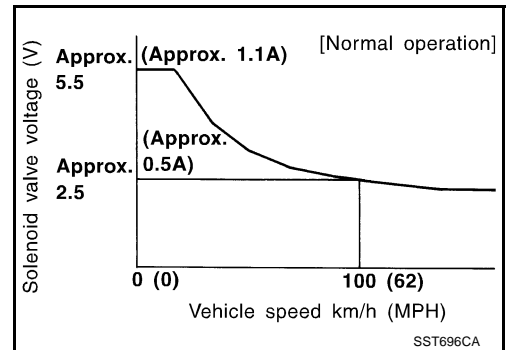
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#### SYSTEM DESCRIPTION

The power steering system is a twin orifice type, which uses a vehicle-speed sensing, electronic control design. Solenoid valve sensitivity is controlled in response to vehicle speed to achieve optimum steering effort.

#### FAIL-SAFE FUNCTION

The fail-safe function operates to regulate solenoid valve operation in response to engine speed, thereby maintaining the required steering force.



#### Fail-Safe Input Conditions

Fail-safe input conditions	Release conditions
No vehicle speed signal entered for at least 10 seconds while driving at an engine speed of greater than 1,500 rpm.	<ul style="list-style-type: none"> <li>● A vehicle speed signal of greater than 1.4 km/h (0.9 MPH) is entered,</li> <li>● Ignition switch is turned from "OFF" to "ON".</li> </ul>
A vehicle speed signal of greater than 30 km/h (19 MPH) or abruptly drops below 2 km/h (1 MPH).	

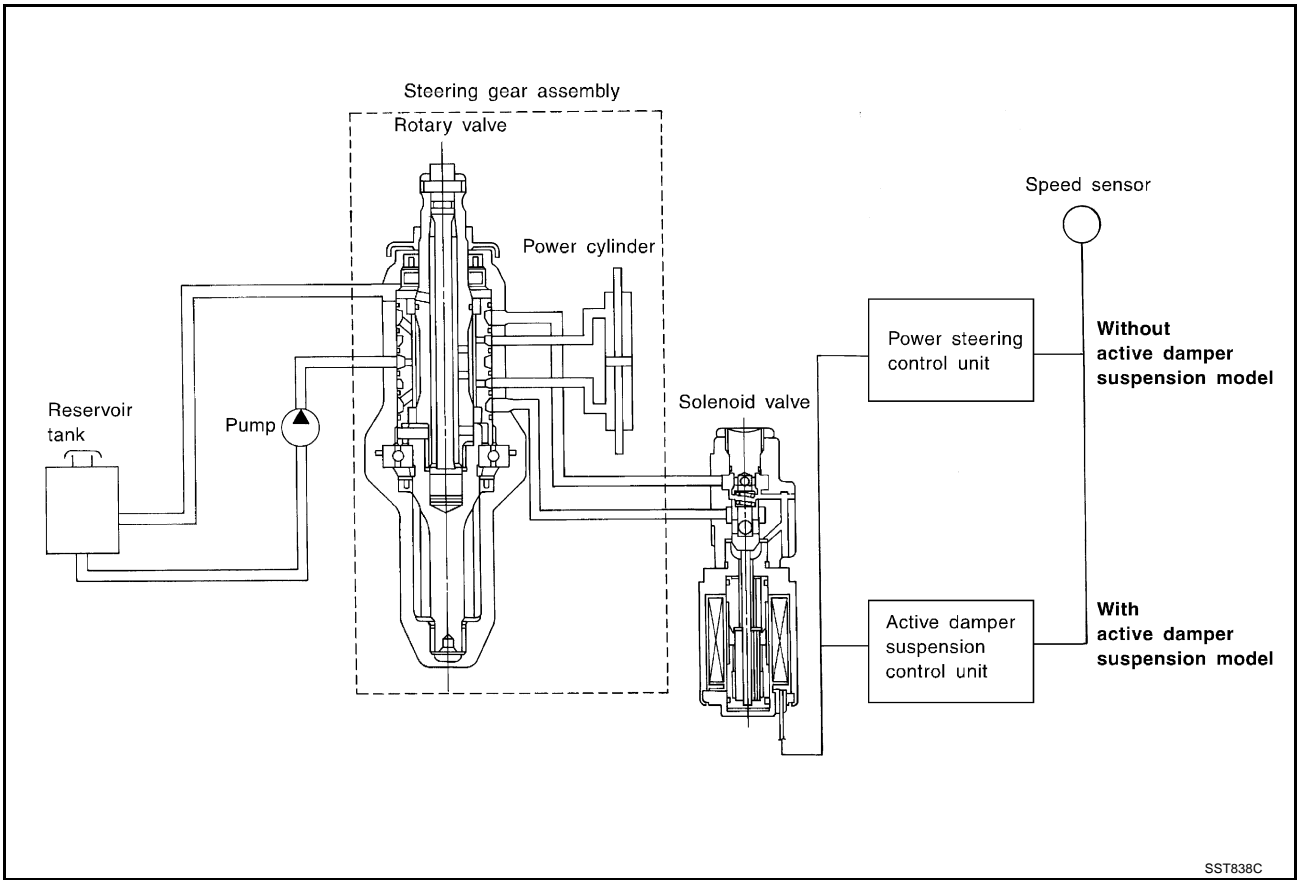
#### NOTE:

When the engine is revved up to 1,500 rpm or more for at least 10 seconds with vehicle at standstill, the fail-safe function operates; however, this is not a matter of concern. The fail-safe function can be released by driving vehicle of a speed of greater than 1.4 km/h (0.9 MPH) or by turning ignition switch from "OFF" to "ON".

# ELECTRICALLY CONTROLLED POWER STEERING SYSTEM

[EPS]

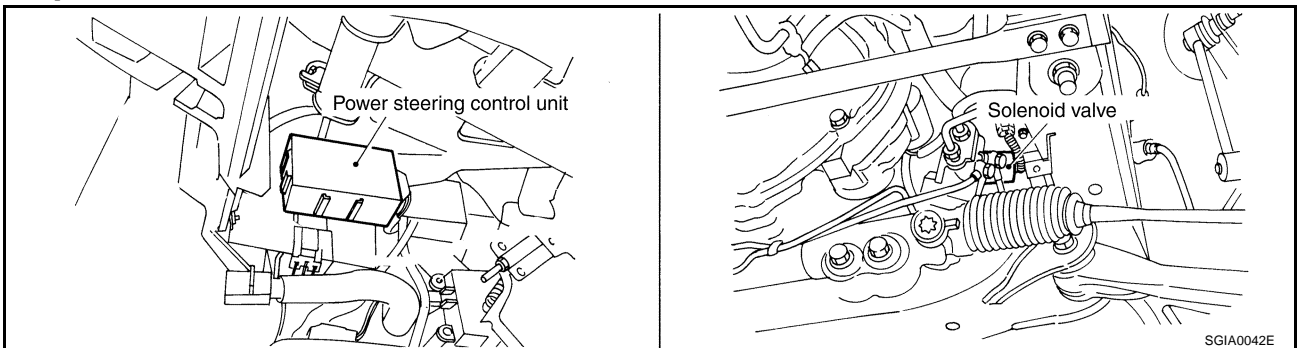
## HYDRAULIC CIRCUIT



### NOTE:

On models equipped with active damper suspension system, the solenoid valve is controlled by active damper suspension control unit, as shown in the above drawing. For "Wiring Diagrams" and "Trouble Diagnoses" of these models. Refer to [SCS-2. "TROUBLE DIAGNOSIS FOR ACTIVE DAMPER SUSPENSION"](#).

## Component Parts Location



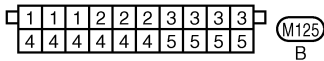
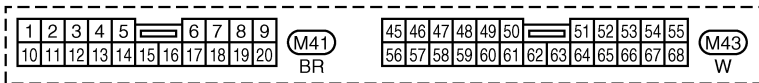
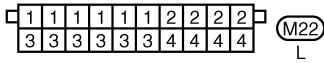
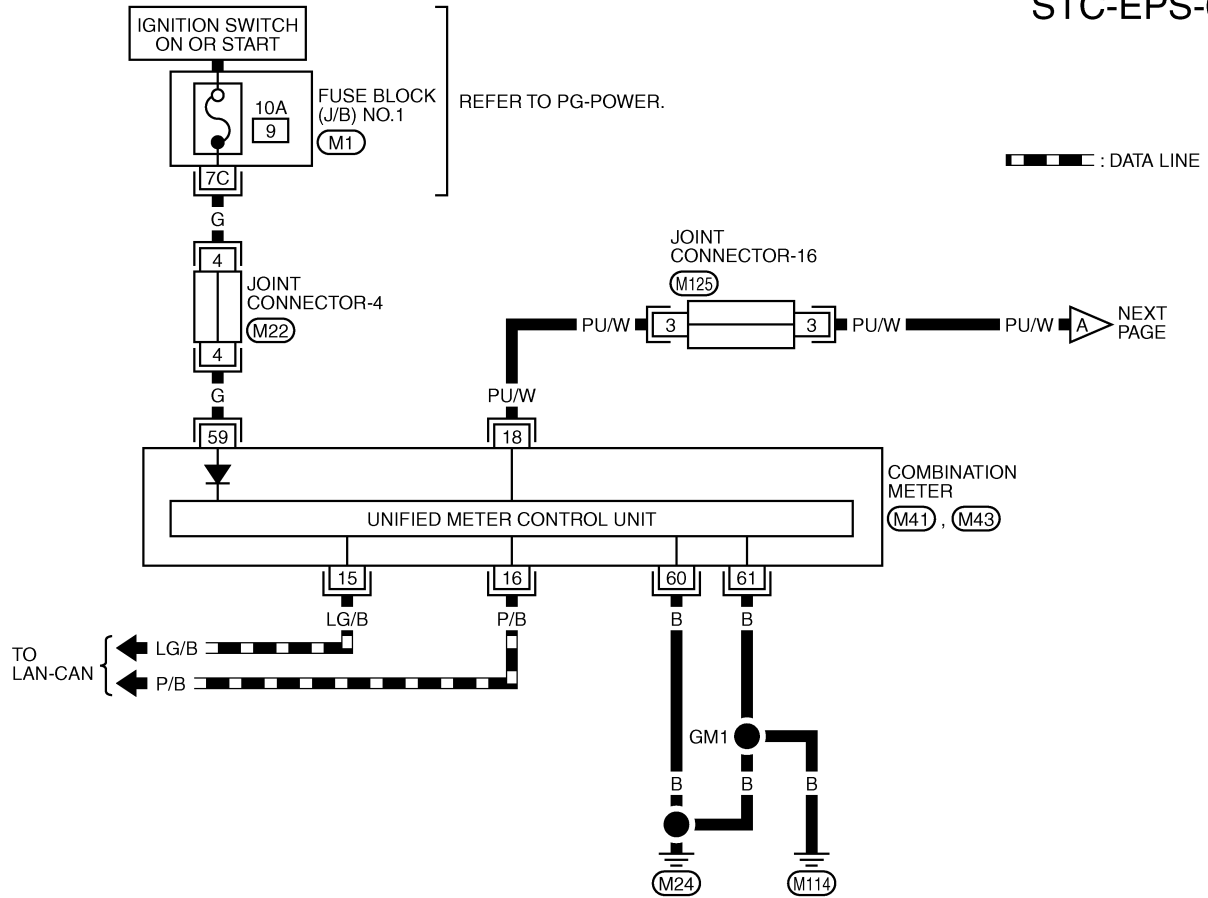
# ELECTRICALLY CONTROLLED POWER STEERING SYSTEM

[EPS]

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## Trouble Diagnosis WIRING DIAGRAM

STC-EPS-01



REFER TO THE FOLLOWING.

(M1) - FUSE BLOCK-JUNCTION BOX (J/B) NO.1

TGWM0001E

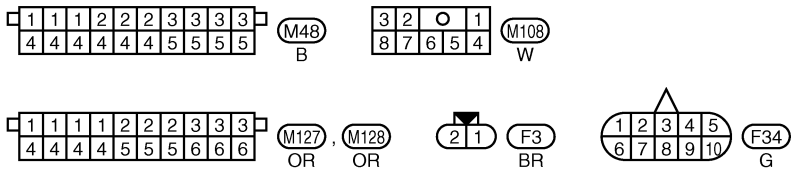
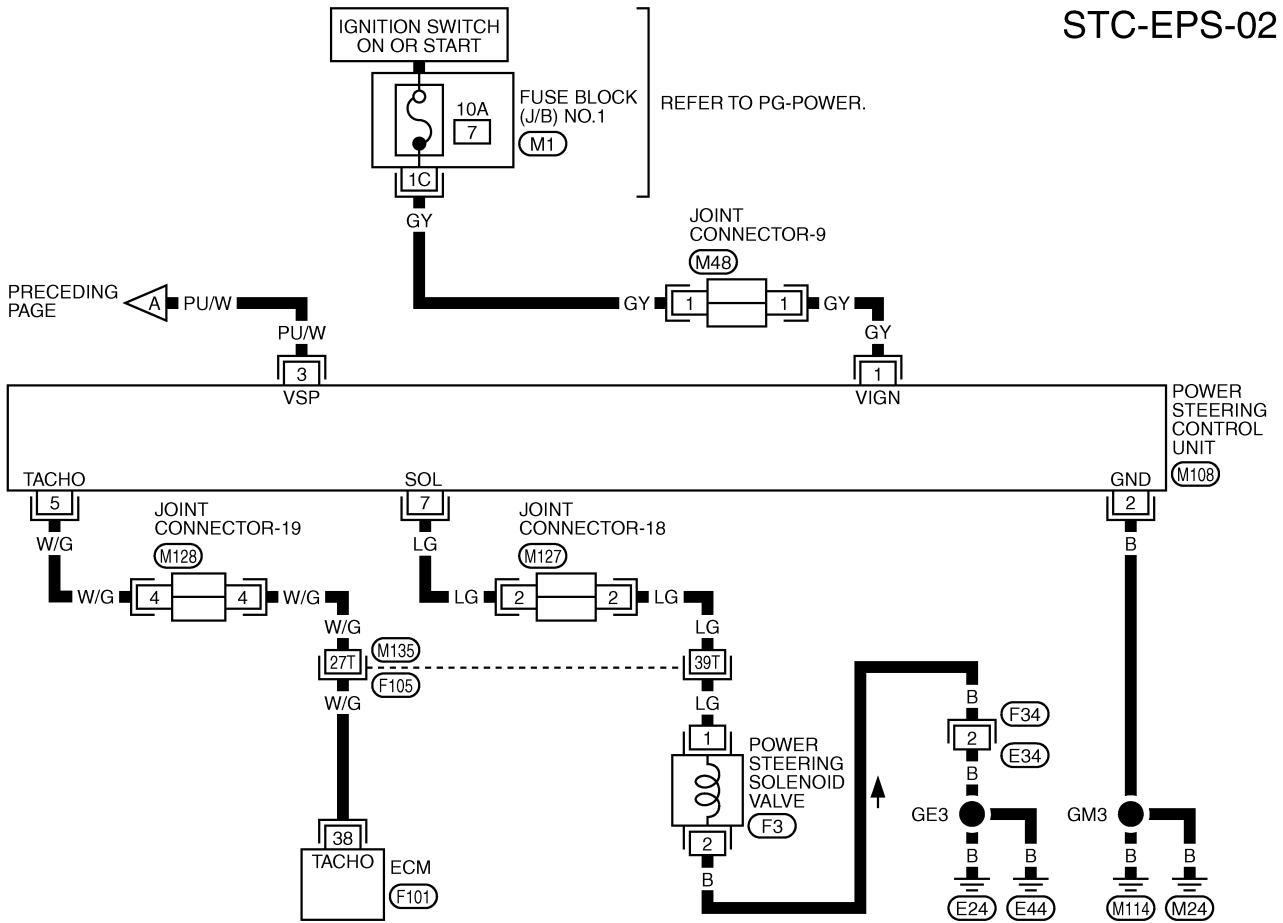
# ELECTRICALLY CONTROLLED POWER STEERING SYSTEM

[EPS]

STC-EPS-02

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STC



REFER TO THE FOLLOWING.  
 (F105) -SUPER MULTIPLE JUNCTION (SMJ)  
 (M1) -FUSE BLOCK-JUNCTION BOX (J/B) NO.1  
 (F101) -ELECTRICAL UNITS

## PRECAUTIONS FOR DIAGNOSIS

Intermittent problems may be caused by malfunctioning harness, harness connector or terminal. Move harnesses, harness connectors or terminals by hand to make sure that there is no contact malfunction. If a circuit tester for measuring voltage is used for check, be careful not to forcibly spread any connector terminals.

## INSPECTION BEFORE TROUBLE DIAGNOSIS

- Check power steering fluid level and check for any leak. Refer to [PS-6, "POWER STEERING FLUID"](#).

## DIAGNOSIS PROCEDURE

### Symptom:

- Heavy steering operation during stationary turns
- Light steering operation during high-speed driving

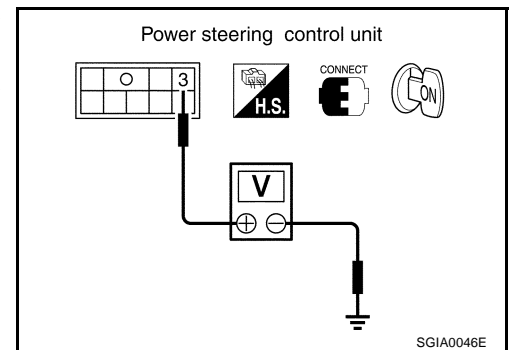
Inspection procedure

### 1. CHECK VEHICLE SPEED SIGNAL

- Start engine and gradually increase the vehicle speed from 0 to 100 km/h (0 to 62 MPH).
- Measure voltage between power steering control unit terminal 3 (PU/W) and body ground.
- Check that voltage changes from approximately 5.5V to approximately 2.5V. Refer to [STC-2, "SYSTEM DESCRIPTION"](#).

OK or NG

- OK >> GO TO 5.  
NG >> GO TO 2.



### 2. CHECK ENGINE SPEED SIGNAL

- When engine is running at idle, change the engine speed to approximately 1,600 rpm and then to approximately 3,000 rpm.
- Measure voltage between power steering control unit terminal 5 (W/G) and body ground.
- Check that voltage changes from approximately 5.5V to approximately 2.1V in steps. Refer to [STC-2, "SYSTEM DESCRIPTION"](#).

OK or NG

- OK >> GO TO 3.  
NG >> GO TO 9.

### 3. CHECK SPEEDOMETER AND VEHICLE SPEED SENSOR

- Check speedometer for proper operation.
- Check that vehicle speed sensor is not regarded as malfunction in the self-diagnosis of A/T (ECM).

OK or NG

- OK >> GO TO 4.  
NG >> ● Check meter and any malfunctioning parts.

#### CAUTION:

If rear wheels are rotated when they are off the ground, "the ABS wheel speed sensor is malfunctioning" is display on the screen.

## 4. CHECK VEHICLE SPEED SIGNAL INPUT

- With rear wheels raised, rotate them by hand.
- Measure voltage between terminals on power steering control unit.

**When the wheels are rotated slowly by hand:**

**3 (PU/W) – 2 (B) : Reading fluctuates between 0V and 5V.**

**3 (PU/W) – Body ground : Reading fluctuates between 0V and 5V.**

OK or NG

- OK >> Replace power steering control unit.
- NG >> Repair or replace harness.

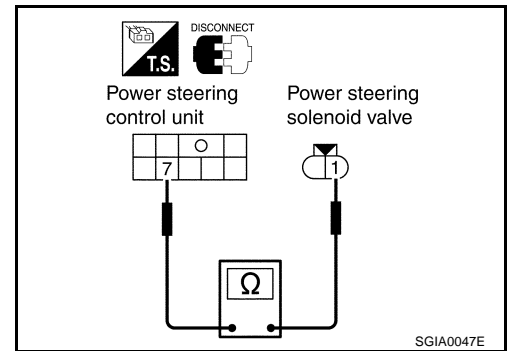
## 5. CHECK SOLENOID VALVE

- Disconnect the connectors for power steering control unit and solenoid valve.
- Check for continuity between power steering control unit terminal 7 (LG) and solenoid valve terminal 1 (GY).

**7 (LG) – 1 (GY) : Continuity should exist.**

OK or NG

- OK >> GO TO 6.
- NG >> Repair or replace harness.



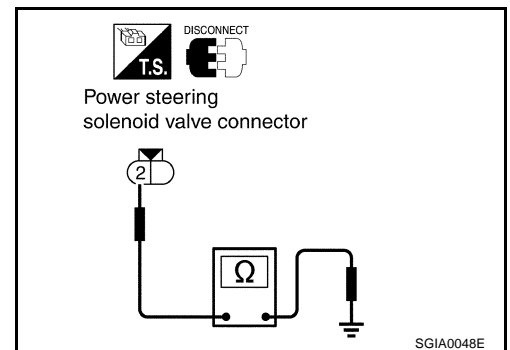
## 6. SOLENOID VALVE HARNESS INSPECTION

- Check for continuity between the solenoid valve terminal 2 (B) and body ground.

**2 (B) – Body ground : Continuity should exist.**

OK or NG

- OK >> GO TO 7.
- NG >> Repair or replace harness.



## 7. SOLENOID VALVE INSPECTION

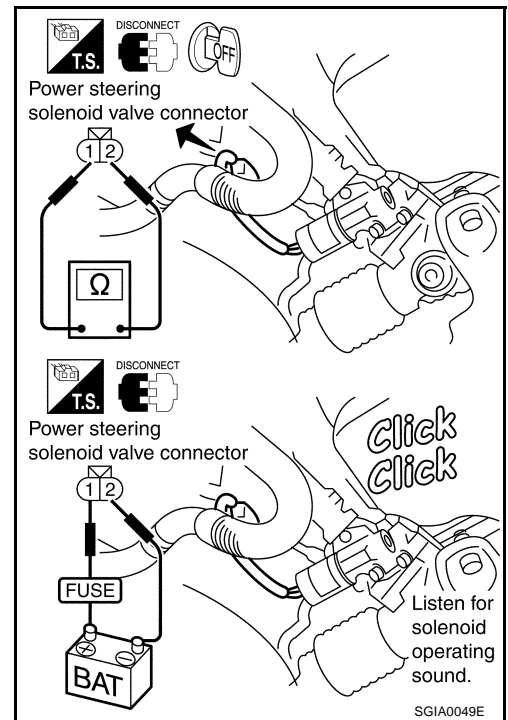
- Disconnect the solenoid valve connector.
- Check solenoid valve by listening for its operation sound while applying battery voltage to terminals 1 (LG) and 2 (B).
- Measure resistance value between the following solenoid valve terminals.

**1 (LG) - 2 (B) : Approx. 4 - 6Ω**

OK or NG

OK >> GO TO 8.

NG >> Replace solenoid valve.



## 8. STEERING WHEEL TURNING FORCE INSPECTION

Check steering wheel turning force.

OK or NG

OK >> END

NG >> Adjust steering gear assembly adjusting screw and check pump discharge pressure. Refer to [PS-23. "CHECKING HYDRAULIC SYSTEM"](#).

## 9. CHECK POWER STEERING CONTROL UNIT INPUT SIGNAL

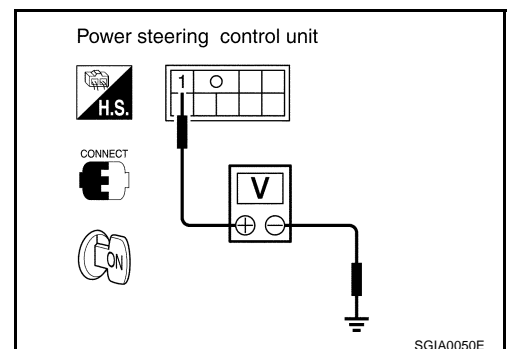
Measure the voltage between power steering control unit terminal 1 (GY) and body ground.

**1 (GY) - Body ground : Approx. 12V**

OK or NG

OK >> GO TO 10.

NG >> Repair or replace fuse or harness.





## 10. POWER STEERING CONTROL UNIT GROUND INSPECTION

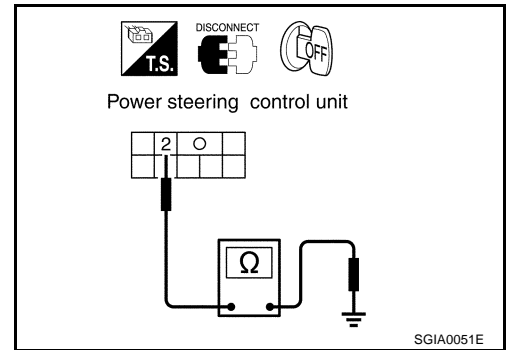
Check for continuity between the power steering control unit terminal 2 (B) and body ground.

**2 (B) - Body ground : Continuity should exist**

OK or NG

OK >> GO TO 11.

NG >> Repair or replace harness.



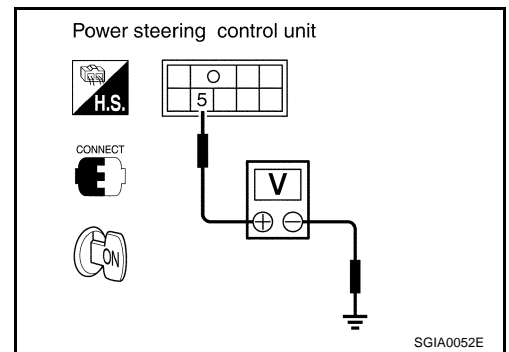
## 11. ENGINE REVOLUTION SIGNAL INSPECTION

Check power steering control unit terminal 5 (W/G),. Refer to [STC-9](#), "[Control Unit Inspection Table](#)".

OK or NG

OK >> GO TO 1.

NG >> Check harness between ECM and control unit or ECM.  
Repair or replace harness if necessary.



### Control Unit Inspection Table

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The standard values (voltage), measured with an analog tester in contact with control unit terminal, are shown below:

Inspection terminal (Power steering control unit)	Condition	Application	Standard
1	Ignition switch ON	Power	Battery voltage (approx. 12V)
2		Ground	0V
3		Vehicle speed signal	When the speed is very low, the voltage fluctuates between approximately 0V and approximately 5V or higher.
5	Engine running	Engine revolution signal	Measure the tachometer drive signal. Refer to <a href="#">EC-109</a> , " <a href="#">ECM Harness Connector Terminal Layout</a> "
7		Solenoid valve	Normal 0 km/h ((0 MPH) : Approx. 4.4 - 6.6V 100 km/h (62 MPH): Approx. 2.4 - 3.6V When the fail-safe function is activated: 0 - 1,500 rpm : Approx. 4.4 - 6.6V 1,500 - 3,000 rpm : Approx. 3.5V 3,000 rpm or more: Approx. 2.1V

