SECTION STC
STEERING CONTROL SYSTEM

CONTENTS

WITHOUT REAR ACTIVE STEER

WITH REAR ACTIVE STEER

PRECAUTIONS

PFP:00001

Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

NGS0005P

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 and SB section of this Service Manual.

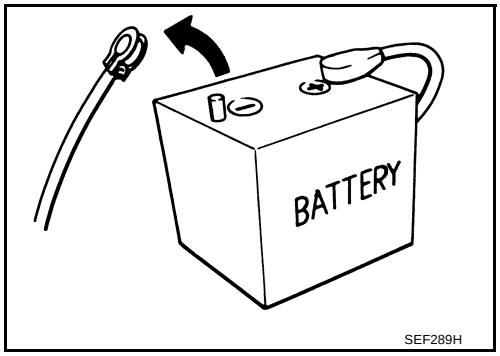
WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SRS 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

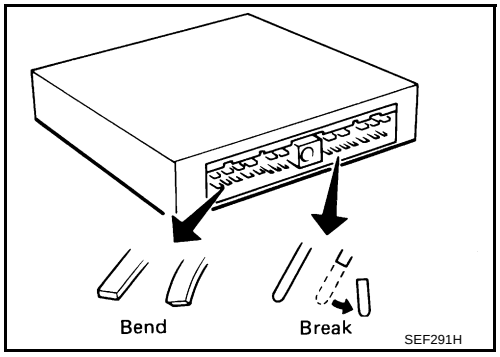
NGS0005Q

- **Before connecting or disconnecting the active damper suspension control unit harness connector, turn ignition switch “OFF” and disconnect the battery cable from the negative terminal. Battery voltage is applied to active damper suspension control unit even if ignition switch is turned “OFF”.**



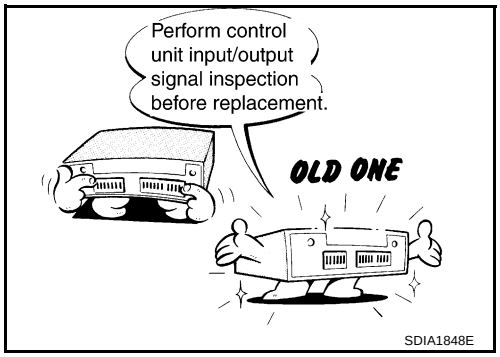
SEF289H

- **When connecting or disconnecting pin connectors into or from active damper suspension control unit, take care not to damage pin terminals (bend or break).**
  When connecting pin connectors make sure that there are not any bends or breaks on active damper suspension control unit pin terminals.



SEF291H

- **Before replacing active damper suspension control unit, perform active damper suspension control unit input/output signal inspection and make sure whether active damper suspension control unit functions properly or not. Refer to STC-12, "Active Damper Suspension Control Unit Input/Output Signal Reference Values" .**



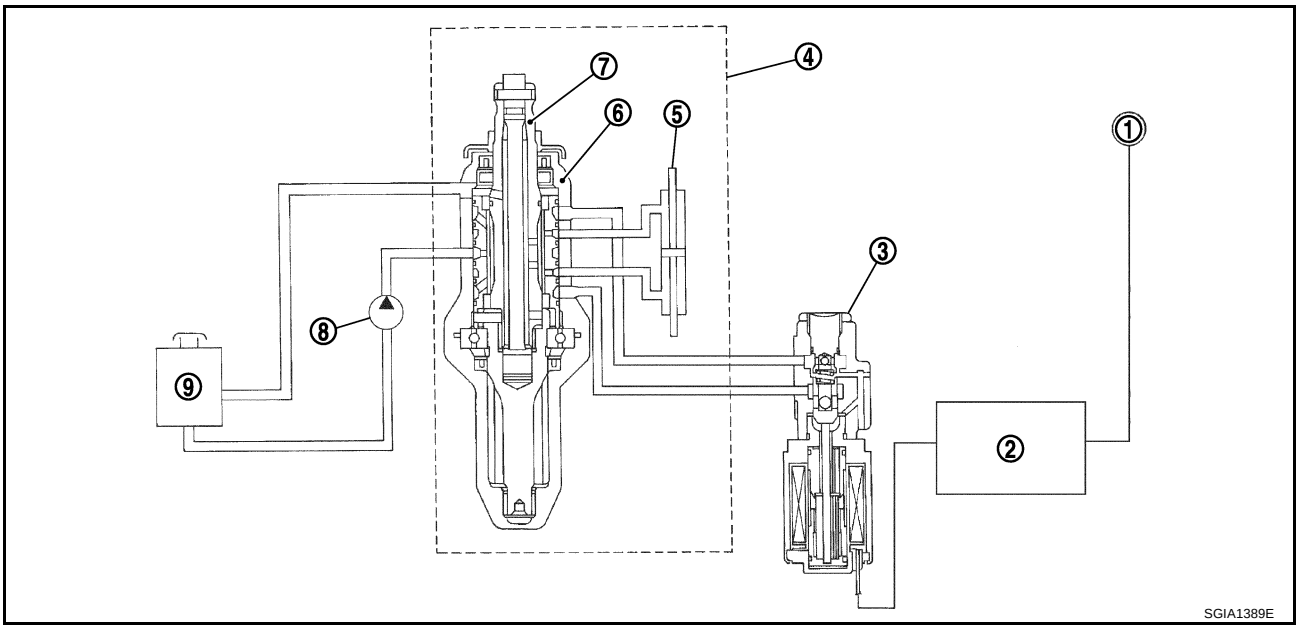
SDIA1848E

ELECTRICALLY CONTROLLED POWER STEERING SYSTEM

PFP:28500

Power Steering Control Diagram

NGS000CQ

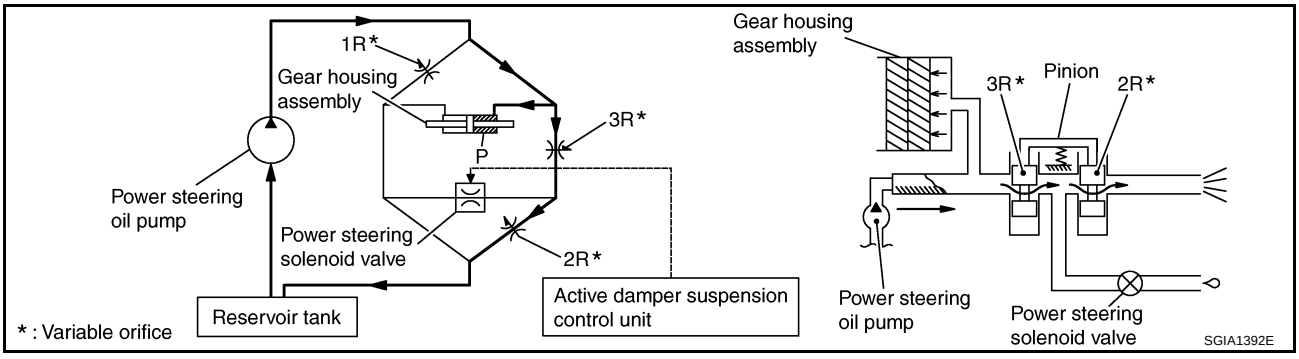


1.	Speed sensor	2.	Active damper suspension control unit	3.	Power steering solenoid valve
4.	Steering gear assembly	5.	Gear housing assembly	6.	Gear sub-assembly
7.	Pinion	8.	Power steering oil pump	9.	Reservoir tank

Operation Principle

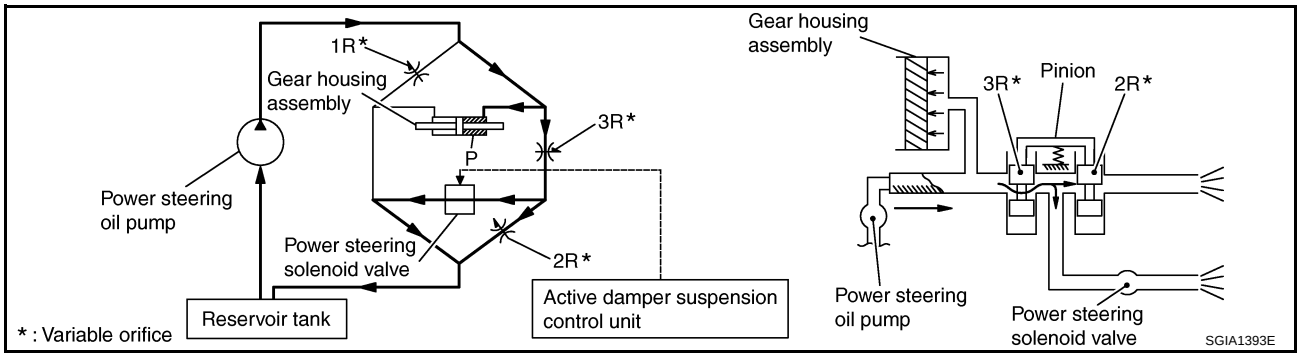
NGS000CV

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.

System Description

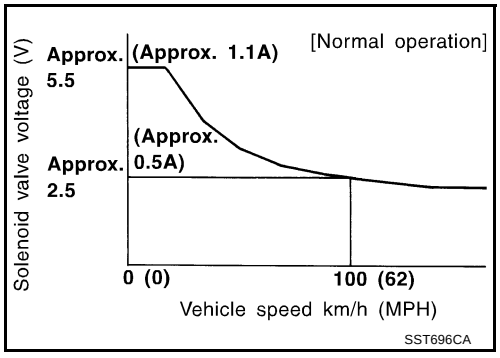
NGS0004G

DESCRIPTION

- Electrically controlled power steering system is controlled by active damper suspension control unit.
- The system controls power steering solenoid valve by changing supply current to the power steering solenoid valve depending on vehicle speed.

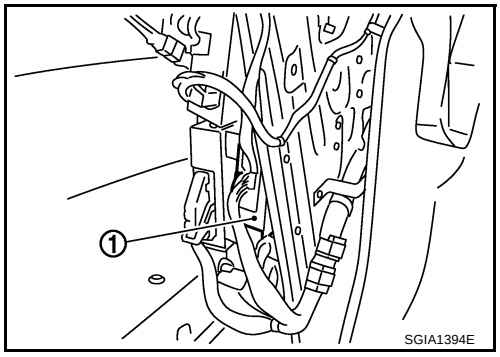
POWER STEERING SOLENOID VALVE

- Vehicle speed sensing electronically controlled power steering (that properly controls the steering force by the vehicle speed) has been adopted. When it is normal, it controls the power steering solenoid valve according to the vehicle speed as shown in the figure and makes the steering force proper.
- Power steering solenoid valve becomes full throttle when the power steering solenoid valve voltage is 2.5 V, and totally-enclosed when the voltage is 5.5 V.



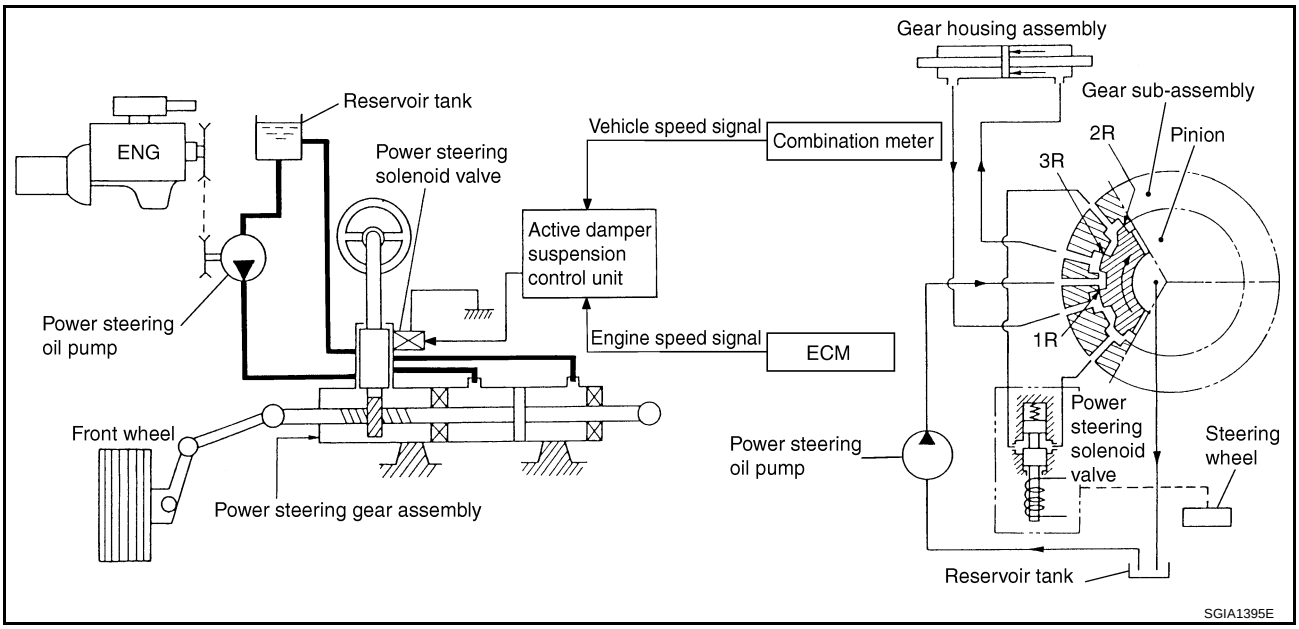
CONTROL UNIT

- The active damper suspension control unit (1) controls power steering solenoid valve.
- Self-diagnosis can be done.



System Diagram

NGS0005W



COMPONENTS FUNCTION DESCRIPTION

Component parts	Function
Active damper suspension control unit	Controls power steering solenoid valve (with fail-safe function).
Power steering solenoid valve	Controls oil pressure in gear housing assembly.
Combination meter	Combination meter sends vehicle speed signal to active damper suspension control unit.
ECM	ECM sends engine speed signal to active damper suspension control unit. (For fail-safe conditions)

TROUBLE DIAGNOSIS

PFP:00004

Fail-Safe Function

NGS00061

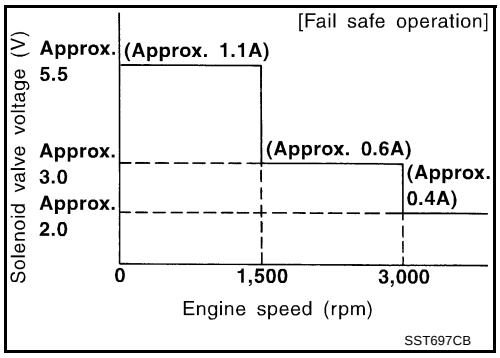
Fail-safe function starts under the vehicle conditions listed below.

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.	● A vehicle speed signal of greater than 1.4 km/h (0.9 MPH) is entered. ● Ignition switch is turned from “OFF” to “ON”.
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”.

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



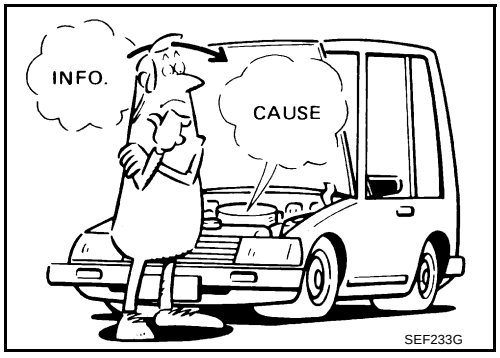
How to Perform Trouble Diagnosis

NGS00062

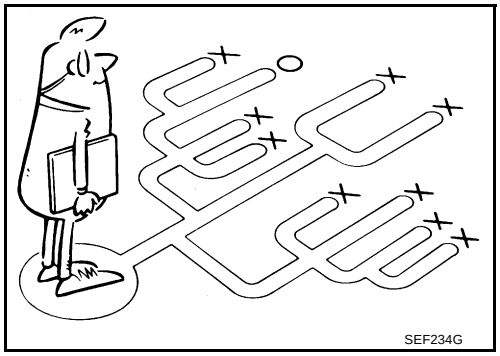
BASIC CONCEPT

- To perform trouble diagnosis, it is the most important to have understanding about vehicle systems (control and mechanism) thoroughly.
- 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 will be 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”.

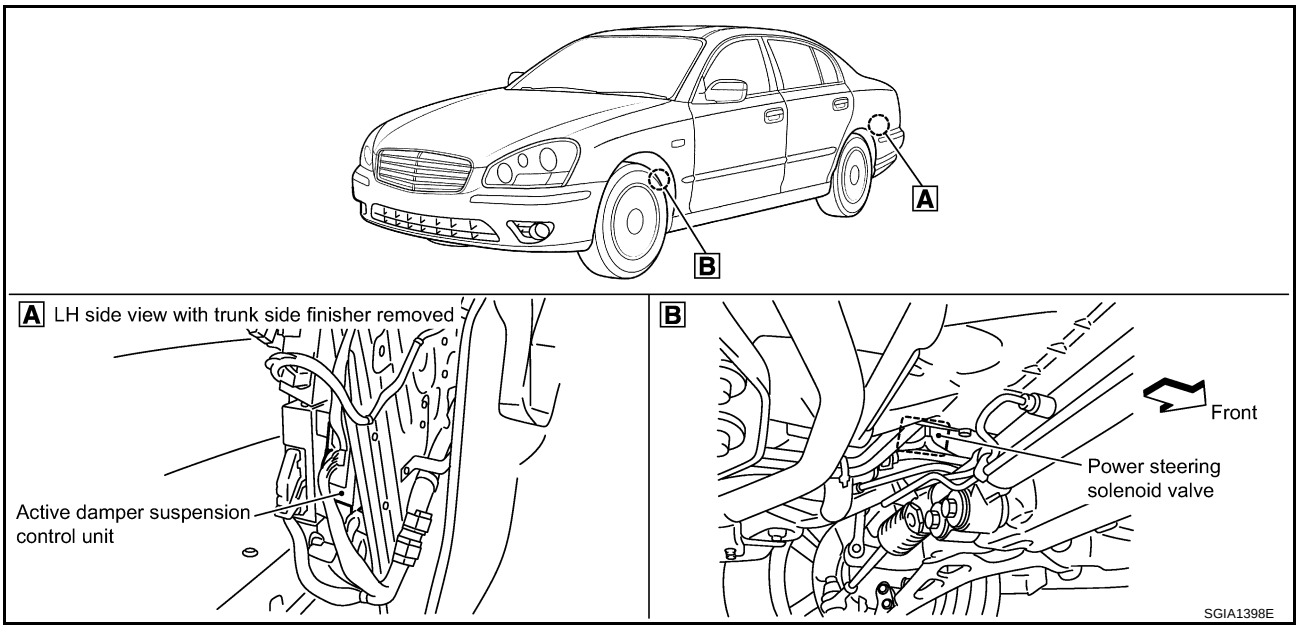


- It is essential to check symptoms right from the beginning in order to repair malfunctions completely.
  For intermittent malfunctions, reproduce symptoms based on interview with customer and past examples. Do not perform inspection on ad hoc basis. Most intermittent malfunctions are caused by poor contacts. In this case, it will be effective to shake suspected harness or connector by hand. When repairing without any symptom diagnosis, you cannot judge if malfunctions have actually been eliminated.
- After completing diagnosis, always erase diagnostic memory. Refer to STC-15, "ERASE SELF-DIAGNOSIS" .
- For intermittent malfunctions, move harness or harness connector by hand. Then check for poor contact or reproduced open circuit.



Component Parts Location

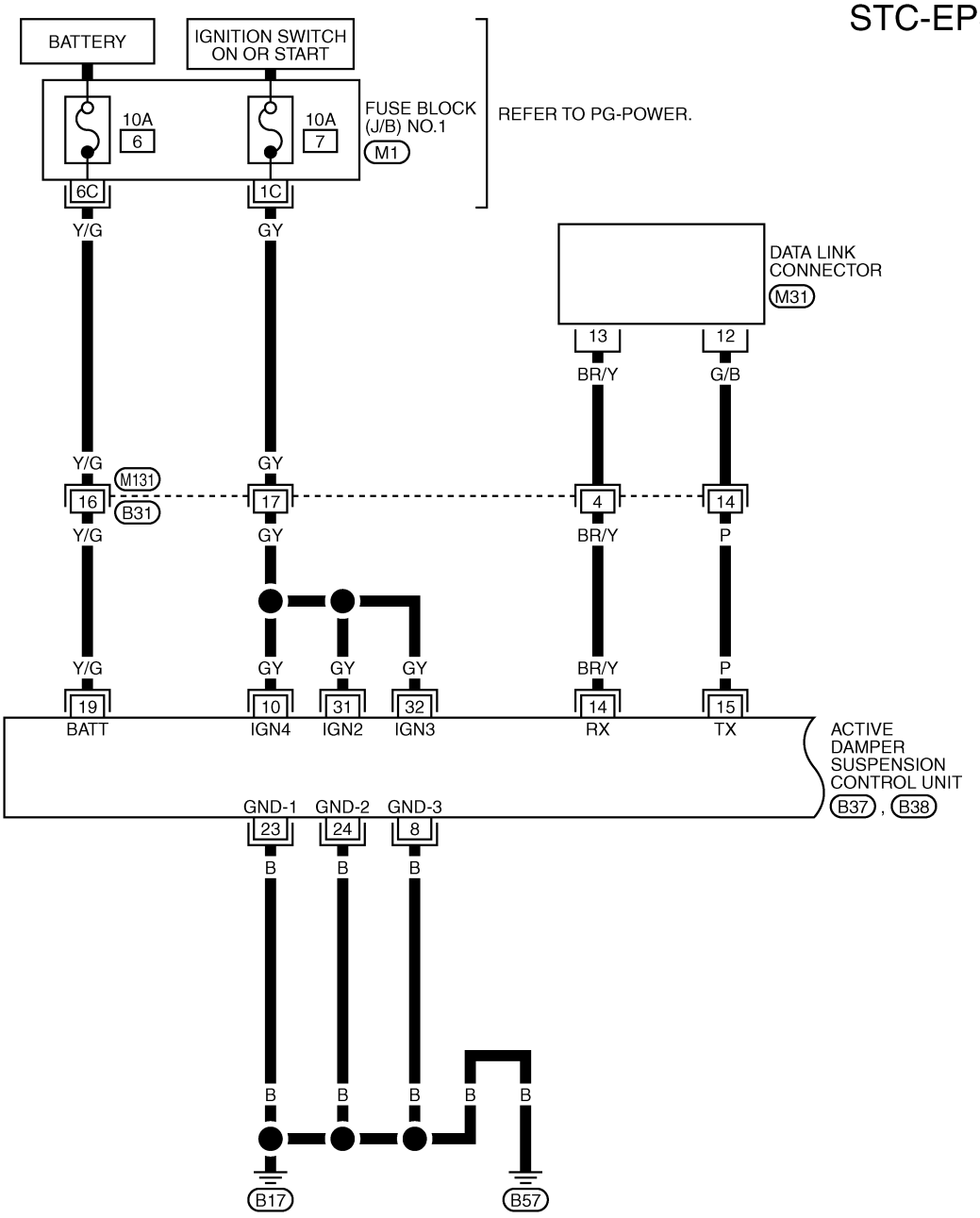
NGS0005Y

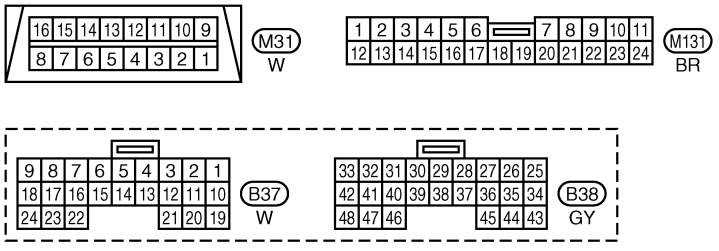


Wiring Diagram — EPS —

NGS00063

STC-EPS-01

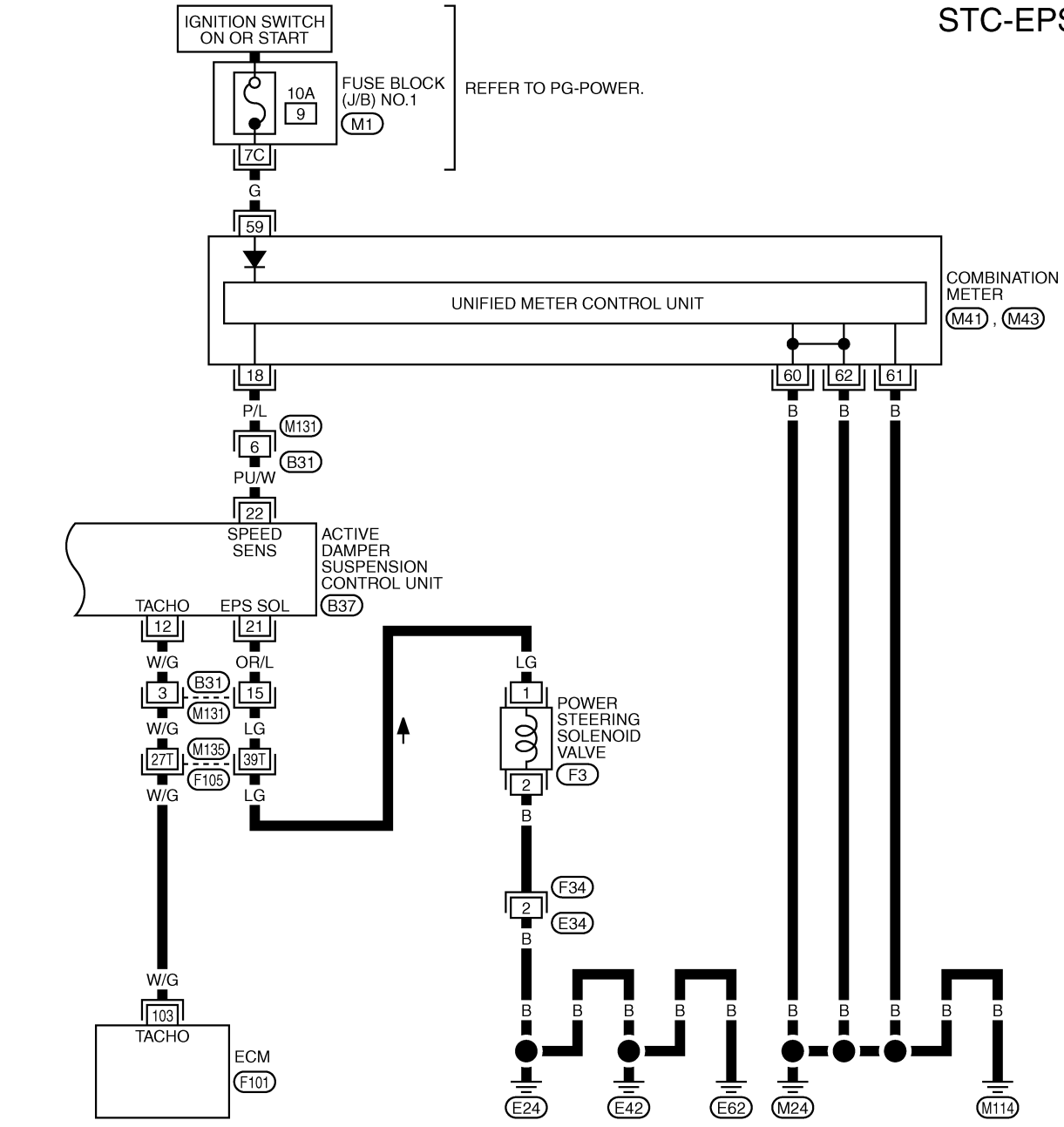


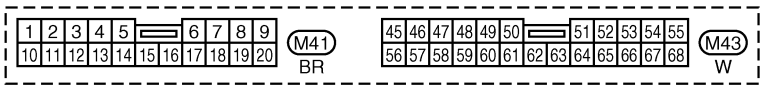


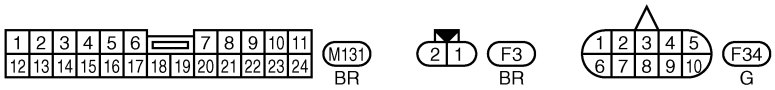
REFER TO THE FOLLOWING.
M1 -FUSE BLOCK-JUNCTION BOX (J/B) NO.1

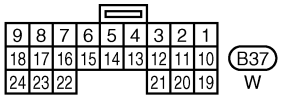
TGWM0075E

STC-EPS-02









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

TGWM0076E

Active Damper Suspension Control Unit Input/Output Signal Reference Values

NGS00064

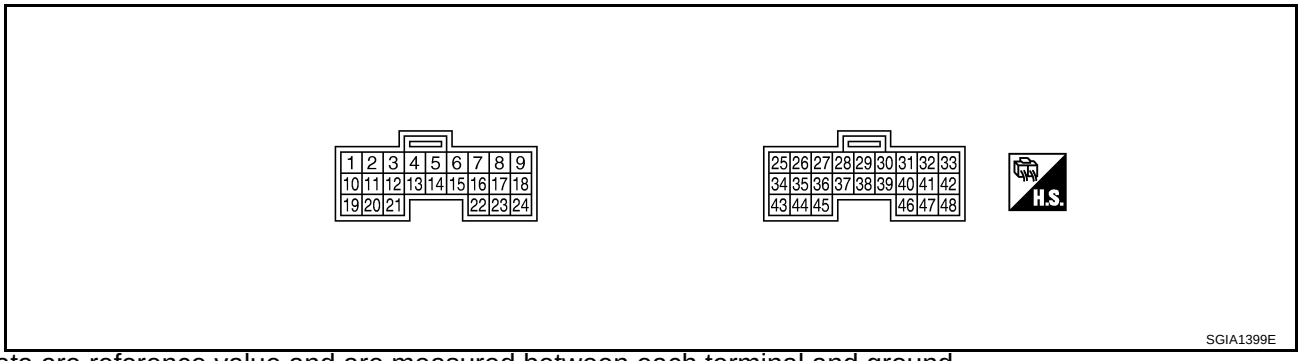
ACTIVE DAMPER SUSPENSION CONTROL UNIT INSPECTION TABLE

Specifications with CONSULT-II

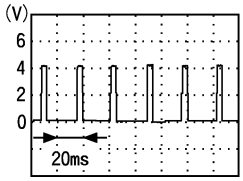
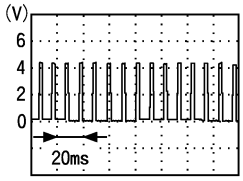
Monitor item [Unit]	Content	Condition	Display value
VHCL SPEED SE [km/h] or [mph]	Wheel speed	Vehicle stopped	0 km/h (0 MPH)
		Vehicle running **CAUTION:** **Check air pressure of tire under standard condition.**	Approximately equal to the indication on speedometer (Inside of ±10%)
POWER STR SOL [A]	Monitored value of current at power steering solenoid valve	Vehicle speed: 0 km/h (0 MPH) (Engine is running)	Approx. 1.10 A
		Vehicle speed: 100 km/h (62 MPH)	Approx. 0.54 A
ENGINE SPEED [rpm]	Engine speed	Engine stopped	0 rpm
		Engine running (Engine speed: 400 rpm or more)	Approximately equal to the indication on tachometer

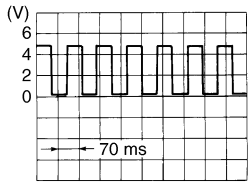
Specifications Between Active Damper Suspension Control Unit Terminals

ACTIVE DAMPER SUSPENSION CONTROL UNIT CONNECTOR LAYOUT



Data are reference value and are measured between each terminal and ground.

Terminal	Wire color	Item	Condition	Data (Approx.)
8	B	Ground	Always	0 V
10	GY	Power supply	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0 V
12	W/G	Engine speed	Engine speed: At idle (Warm-up condition)	 PBIA3654J
			Engine speed: Approx. 2,000 rpm (Warm-up condition)	 PBIA3655J
14	BR/Y	Data link connector (RX)	—	—
15	P	Data link connector (TX)	—	—

Terminal	Wire color	Item	Condition	Data (Approx.)
19	Y/G	Power supply (Memory back-up)	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	
21	OR/L	Power steering solenoid valve	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
22	PU/W	Vehicle speed	Vehicle speed: 40 km/h (25 MPH) **CAUTION:** **Check air pressure of tire under standard condition.**	 SEIA0775E
23	B	Ground	Always	0 V
24	B	Ground	Always	0 V
31	GY	Power supply	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0 V
32	GY	Power supply	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0 V

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

CONSULT-II Function (ACT D/SUS)

NGS00065

FUNCTION

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

Diagnostic test mode	Function	Reference page
Self-diagnostic results	● Self-diagnostic results can be read and erased quickly.	STC-13
Data monitor	● Input/Output data in the active damper suspension control unit can be read.	STC-14

CONSULT-II SETTING PROCEDURE

Refer to GI-36, "CONSULT-II Start Procedure" .

SELF-DIAG RESULT MODE

Operation Procedure

1. Perform “CONSULT-II Start Procedure”. Refer to GI-36, "CONSULT-II Start Procedure" .
2. With engine at idle, touch “SELF-DIAG RESULTS”.
   Display shows malfunction experienced since the last erasing operation.

NOTE:
The details for “TIME” are as follows:

- “0”: Error currently detected with active damper suspension control unit.
- Except for “0”: Error detected in the past and memorized with active damper suspension control unit. Detects frequency of driving after DTC occurs (frequency of turning ignition switch “ON/OFF”).

Display Item List

Items (CONSULT-II screen terms)	Diagnostic item is detected when...	Check item
VEHICLE SPEED SEN	● Input signal does not change for some length of while driving. ● Input signal change abruptly while driving.	STC-19, "Vehicle Speed Sensor (VEHICLE SPEED SEN)"

CAUTION:
Active damper suspension system shall be checked when having indications that are not included in the item list.

How to Erase Self-diagnostic Results

1. Perform applicable inspection of malfunctioning item and then repair or replace.
2. Start engine and select “SELF-DIAG RESULTS” mode for “ACT D/SUS” with CONSULT-II.
3. Touch “ERASE” on CONSULT-II screen to erase DTC memory.

CAUTION:
If memory cannot be erased, perform applicable diagnosis.

DATA MONITOR MODE

Operation Procedure

1. Perform “CONSULT-II Start Procedure”. Refer to GI-36, "CONSULT-II Start Procedure" .
2. Touch “DATA MONITOR”.
3. Select from “SELECT MONITOR ITEM”, screen of data monitor mode is displayed.

NOTE:
When malfunction is detected, CONSULT-II performs REAL-TIME DIAGNOSIS.
Also, any malfunction detected while in this mode will be displayed in real time.

Display Item List

Monitored item (Unit)	Remarks
VHCL SPEED SE [km/h] or [mph]	Vehicle speed calculated by combination meter.
POWER STR SOL [A]	Power steering solenoid controlling current that active damper suspension control unit outputs is displayed.
ENGINE SPEED [rpm]	Engine speed calculated by ECM.
Voltage [V]	The value measured by the voltage probe is displayed.
Frequency [Hz]	The value measured by the pulse probe is displayed.
DUTY-HI (high) [%]	
DUTY-LOW (low) [%]	
PLS WIDTH-HI [msec]	
PLS WIDTH-LOW [msec]	

Self-Diagnostic Procedure

NGS0006C

SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)

Refer to STC-13, "SELF-DIAG RESULT MODE" .

SELF-DIAGNOSTIC PROCEDURE (WITHOUT CONSULT-II)

Description

The SPORT indicator lamp in the combination meter will flicker according to the self-diagnostic results. As for the details of the SPORT indicator lamp flickering patterns, refer to STC-15, "Diagnostic Procedure" .

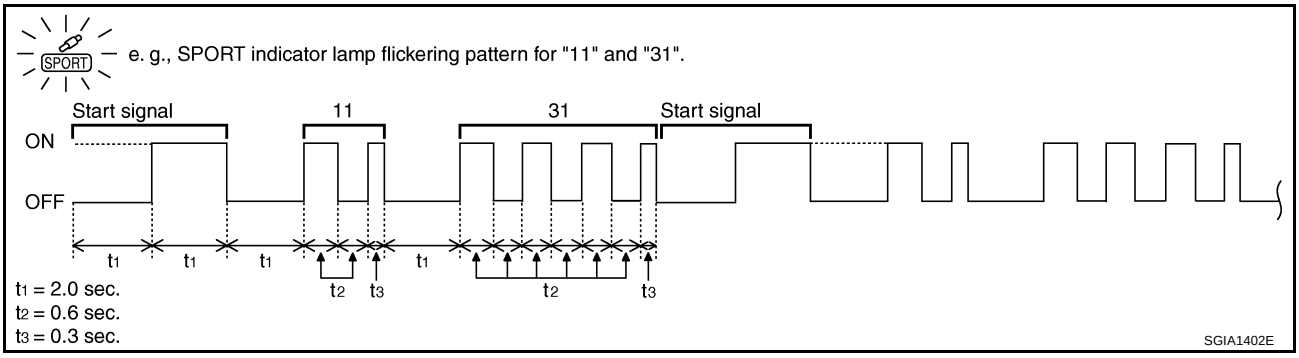
Diagnostic Procedure

1. Turn ignition switch to “OFF”.
2. Start the engine.
3. Quickly switch the active damper suspension select switch from “SPORT” to “AUTO”, and vice versa, at least 5 times within 10 seconds immediately after the engine has started.
4. Read the flickering of SPORT indicator lamp. Refer to STC-15, "Judgement Self-diagnosis" .

   NOTE:
   When the SPORT indicator lamp flashes 1/4 Hz and continues repeating it, the system is normal.
5. Perform the following procedures to enter the corresponding signals.
   - Turn steering wheel 180° in either direction from neutral.
   - Depress brake pedal.
   - Release brake pedal.
   - Move the vehicle at least 5 m (16 ft) forward.

Judgement Self-diagnosis

When a malfunction is detected, the malfunction route is indicated by flickering of the SPORT indicator lamp.



NOTE:
When the SPORT indicator lamp flashes 1/4 Hz and continues repeating it, the system is normal.

Flickering pattern	Items	Diagnostic item is detected when...	Check item
11	Vehicle speed sensor	● Input signal does not change for some length of while driving. ● Input signal change abruptly while driving.	STC-19, "Vehicle Speed Sensor (VEHICLE SPEED SEN)"
31	Engine speed signal	When the engine speed is 360 rpm or less, while driving.	STC-24, "Engine Speed Signal"
No flickering	Active damper suspension select switch	Active damper suspension select switch circuit is shorted or open.	SCS-49, "Active Damper Suspension Select Switch"

CAUTION:
Active damper suspension system shall be checked when patterns other than flickering pattern are output. Refer to SCS-24, "SELF-DIAG RESULT MODE" .

Disconnecting the Self-Diagnostic Function

Disconnect the self-diagnostic function using one of the following three methods:

- Turn the ignition switch to “OFF”.
- Drive the vehicle at speeds greater than 30 km/h (19 MPH).
- Connect CONSULT-II.

ERASE SELF-DIAGNOSIS

Clear self-diagnostic data and fail-safe data stored in memory as follows:

- While self-diagnosis is being performed, depress the brake pedal at least 5 times and shift the select switch position at least 5 times. Pedal depression and switch shifting must be done within 10 seconds during self-diagnosis.

Inspections before Trouble Diagnosis

NGS0006E

- Inspect for power steering fluid leakage and check the power steering fluid level. Refer to PS-6, "POWER STEERING FLUID" .
- Power steering components (gears, oil pump, pipes, etc.) Are free from leakage, and that oil level is correct.
- Tires are inflated to specified pressure and are of specified size, and that steering wheel is a genuine Nissan part.
- Suspension utilizes the original design, and is free of modifications which increase vehicle weight.
- Wheel alignment is adjusted properly.

Trouble Diagnosis Chart for Symptoms

NGS0006H

When SPORT indicator lamp in the combination meter cannot be switched between ON and OFF by using active damper suspension select switch. Refer to STC-14, "Self-Diagnostic Procedure" .

Symptom	Condition	Check item	Reference page
Hard steering when fully turning the steering wheel.	Vehicle stopped or while low speed driving	Vehicle speed sensor	STC-28
		Power steering solenoid valve	
Light steering when driving at a high speed.	While high speed driving	Vehicle speed sensor	STC-29
		Power steering solenoid valve	

TROUBLE DIAGNOSIS FOR SYSTEM

PFP:00000

Power Supply Circuit

NGS0006B

ACTIVE DAMPER SUSPENSION CONTROL UNIT TERMINALS AND REFERENCE VALUE

Data are reference value and are measured between each terminal and ground.

Terminal	Wire color	Item	Condition	Data (Approx.)
8	B	Ground	Always	0 V
10	GY	Power supply	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0 V
19	Y/G	Power supply (Memory back-up)	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	
23	B	Ground	Always	0 V
24	B	Ground	Always	0 V
31	GY	Power supply	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0 V
32	GY	Power supply	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0 V

CAUTION:

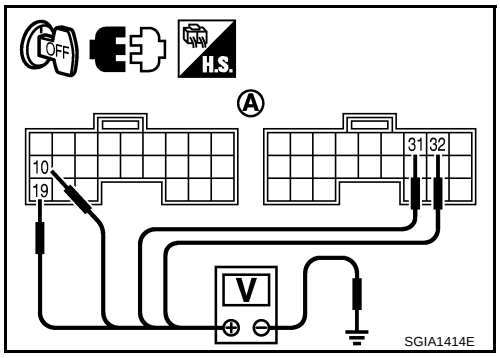
When using a circuit tester to measure voltage for inspection, be sure not to extend forcibly any connector terminals.

DIAGNOSTIC PROCEDURE

1. CHECK POWER SUPPLY

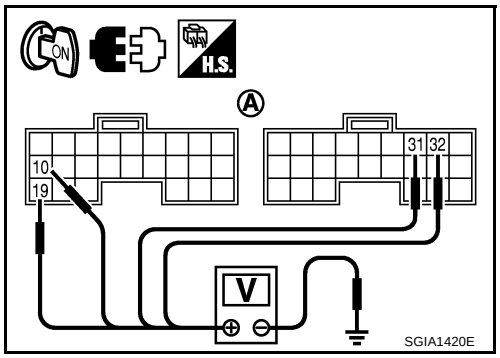
1. Turn ignition switch “OFF”.
2. Disconnect active damper suspension control unit harness connector.
3. Check voltage between active damper suspension control unit harness connector (A) terminals and ground.

Connector	Terminal	Voltage (Approx.)
B37	10 - Ground	0 V
	19 - Ground	Battery voltage
B38	31 - Ground	0 V
	32 - Ground	



4. Turn ignition switch “ON”. (Do not start engine.)
5. Check voltage between active damper suspension control unit harness connector (A) terminals and ground.

Connector	Terminal	Voltage (Approx.)
B37	10 - Ground	Battery voltage
	19 - Ground	
B38	31 - Ground	
	32 - Ground	



OK or NG

OK >> GO TO 2.

NG >> Check the following. If any items are damaged, repair or replace damaged parts.

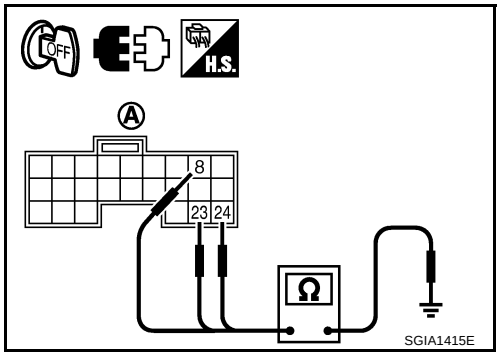
- 10A fuses [No. 6, 7 located in the fuse block (J/B) No.1]. Refer to PG-2, "POWER SUPPLY ROUTING" .
- Harness for short or open between battery and active damper suspension control unit harness connector B37 terminal 19.
- Harness for short or open between ignition switch and active damper suspension control unit harness connector B37 terminal 10, B38 terminals 31 and 32.
- Battery and ignition switch. Refer to PG-2, "POWER SUPPLY ROUTING" .

2. CHECK GROUND CIRCUIT

1. Turn ignition switch “OFF”.
2. Disconnect active damper suspension control unit harness connector.
3. Check continuity between active damper suspension control unit harness connector (A) B37 terminals 8, 23 and 24.

Continuity should exist.

Also check harness for short to power.



OK or NG

OK >> **INSPECTION END**

NG >> Repair open circuit or short to power in harness or connectors.

Vehicle Speed Sensor (VEHICLE SPEED SEN)

NGS00066

- Check the following if “VEHICLE SPEED SEN” is detected in self-diagnosis results with CONSULT-II or “flickering pattern for 11” is detected in self-diagnosis results without CONSULT-II.

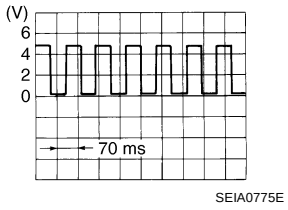
CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition	Display value
VHCL SPEED SE [km/h] or [mph]	Wheel speed	Vehicle stopped	0 km/h (0 MPH)
		Vehicle running **CAUTION:** **Check air pressure of tire under standard condition.**	Approximately equal to the indication on speedometer (Inside of ±10%)

ACTIVE DAMPER SUSPENSION CONTROL UNIT TERMINALS AND REFERENCE VALUE

Data are reference value and are measured between each terminal and ground.

Terminal	Wire color	Item	Condition	Data (Approx.)
22	PU/W	Vehicle speed	Vehicle speed: 40 km/h (25 MPH) **CAUTION:** **Check air pressure of tire under standard condition.**	 SEIA0775E

CAUTION:

When using a oscilloscope to measure voltage for inspection, be sure not to extend forcibly any connector terminal.

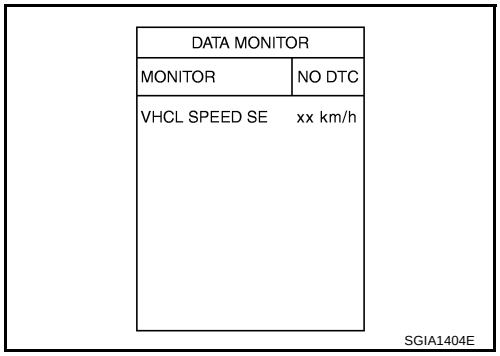
DIAGNOSTIC PROCEDURE

1. CHECK VEHICLE SPEED SENSOR

With CONSULT-II

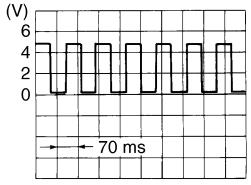
1. Start engine.
2. Select “DATA MONITOR” mode for “ACT D/SUS” with CONSULT-II.
3. Read out the value of “VHCL SPEED SE”.

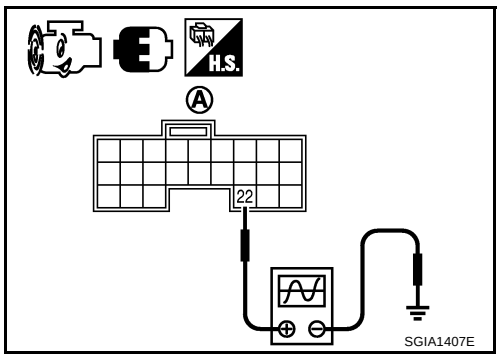
Condition	Display value
Vehicle stopped	0 km/h (0 MPH)
Vehicle running **CAUTION:** **Check air pressure of tire under standard condition.**	Approximately equal to the indication on speedometer (Inside of ±10%)



Without CONSULT-II

1. Start engine.
2. Check signal between active damper suspension control unit harness connector (A) terminal and ground with oscilloscope.

Connector	Terminal	Condition	Data (Approx.)
B37	22 - Ground	Vehicle speed: 40 km/h (25 MPH) **CAUTION:** **Check air pressure of tire under standard condition.**	

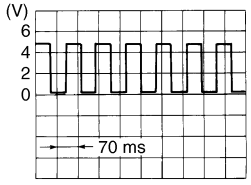


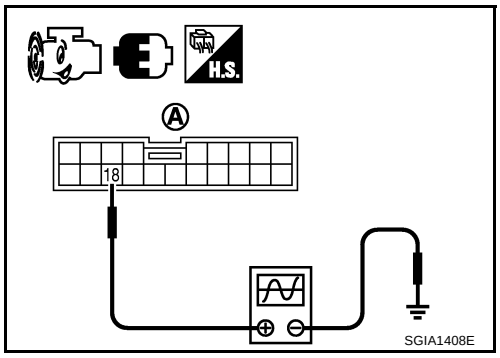
OK or NG

OK >> GO TO 4.
NG >> GO TO 2.

2. CHECK COMBINATION METER

1. Turn ignition switch “OFF”.
2. Disconnect active damper suspension control unit harness connector.
3. Check signal between combination meter harness connector terminal (A) and ground with oscilloscope.

Connector	Terminal	Condition	Data (Approx.)
M41	18 - Ground	Vehicle speed: 40 km/h (25 MPH) **CAUTION:** **Check air pressure of tire under standard condition.**	



Also check harness for short to ground and short to power.

OK or NG

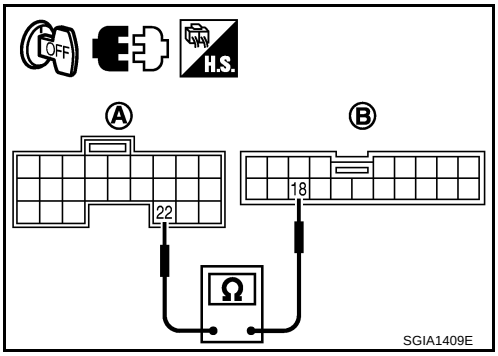
OK >> GO TO 3.
NG >> Check combination meter. Refer to DI-16, "Trouble Diagnosis" .

3. CHECK HARNESS BETWEEN ACTIVE DAMPER SUSPENSION CONTROL UNIT AND COMBINATION METER

1. Turn ignition switch “OFF”.
2. Disconnect active damper suspension control unit harness connector and the combination meter harness connector.
3. Check continuity between active damper suspension control unit harness connector (A) B37 terminal 22 and combination meter harness connector (B) M41 terminal 18.

   Continuity should exist.

   Also check harness for short to ground and short to power.



OK or NG

OK >> GO TO 4.
NG >> Repair or replace damaged parts.

4. CHECK ACTIVE DAMPER SUSPENSION CONTROL UNIT

Check active damper suspension control unit input/output signal. Refer to STC-12, "Active Damper Suspension Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 5.
NG >> Check active damper suspension control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

5. CHECK DTC

Perform the self-diagnosis, after driving a vehicle for a while.

OK or NG

OK >> **INSPECTION END**
NG >> Replace active damper suspension control unit. Refer to STC-30, "Removal and Installation" .

Power Steering Solenoid Valve

NGS00069

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition	Display value
POWER STR SOL [A]	Monitored value of current at power steering solenoid valve	Vehicle speed: 0 km/h (0 MPH) (Engine is running)	Approx. 1.10 A
		Vehicle speed: 100 km/h (62 MPH)	Approx. 0.54 A

ACTIVE DAMPER SUSPENSION CONTROL UNIT TERMINALS AND REFERENCE VALUE

Data are reference value and are measured between each terminal and ground.

Terminal	Wire color	Item	Condition	Data (Approx.)
21	OR/L	Power steering solenoid valve	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

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

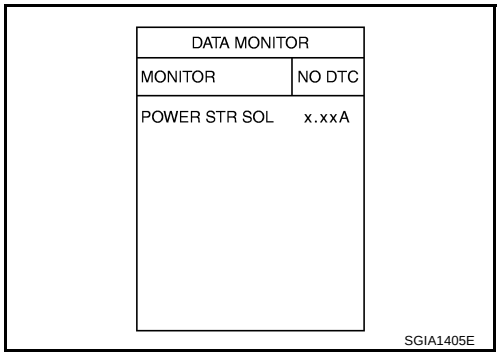
DIAGNOSTIC PROCEDURE

1. CHECK POWER STEERING SOLENOID VALVE SIGNAL

With CONSULT-II

1. Start engine.
2. Select “DATA MONITOR” mode for “ACT D/SUS” with CONSULT-II.
3. Read out the value of “POWER STR SOL”.

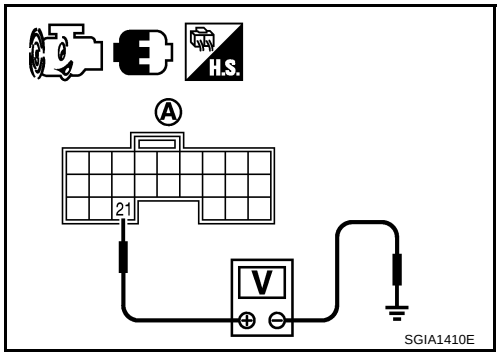
Condition	Display value
Vehicle speed: 0 km/h (0 MPH) (Engine is running)	Approx. 1.10 A
Vehicle speed: 100 km/h (62 MPH)	Approx. 0.54 A



Without CONSULT-II

1. Start engine.
2. Check signal between active damper suspension control unit harness connector (A) terminal and ground.

Connector	Terminal	Condition	Data (Approx.)
B37	21 - 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



OK or NG

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

2. CHECK POWER STEERING SOLENOID VALVE GROUND CIRCUIT

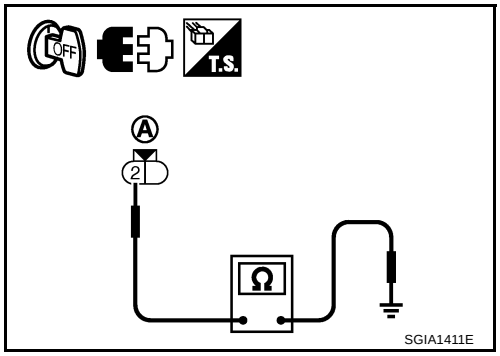
1. Turn ignition switch “OFF”.
2. Disconnect power steering solenoid valve harness connector.
3. Check continuity between power steering solenoid valve harness connector (A) F3 terminal 2 and ground.

Continuity should exist.

Also check harness for short to power.

OK or NG

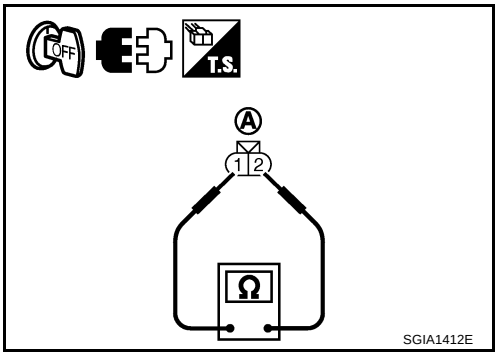
OK >> GO TO 3.
NG >> Repair or replace damaged parts.



3. CHECK POWER STEERING SOLENOID VALVE

1. Turn ignition switch “OFF”.
2. Disconnect power steering solenoid valve harness connector.
3. Check resistance between power steering solenoid valve connector (A) terminals 1 and 2.

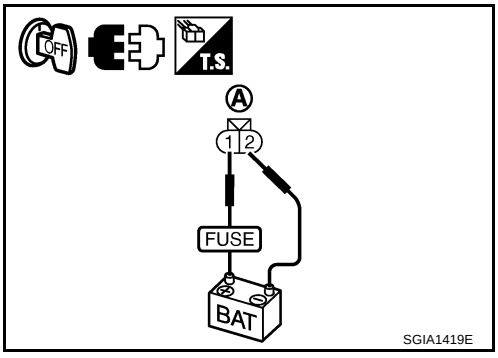
   1 - 2 : Approx. 4 - 6 Ω



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

OK or NG

OK >> GO TO 4.
NG >> Replace power steering solenoid valve. Refer to PS-17, "Disassembly and Assembly" .



4. CHECK HARNESS BETWEEN ACTIVE DAMPER SUSPENSION CONTROL UNIT AND POWER STEERING SOLENOID VALVE

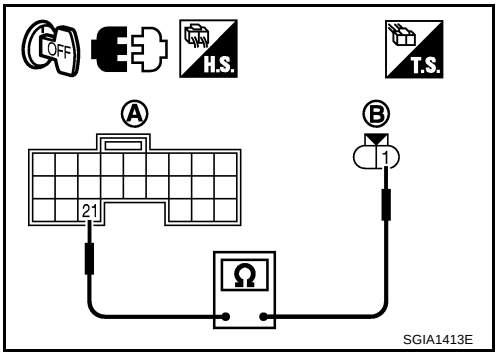
1. Turn ignition switch “OFF”.
2. Disconnect active damper suspension control unit harness connector and power steering solenoid valve harness connector.
3. Check continuity between active damper suspension control unit harness connector (A) B37 terminal 21 and power steering solenoid valve harness connector (B) F3 terminal 1.

   Continuity should exist.

   Also check harness for short to ground and short to power.

OK or NG

OK >> GO TO 5.
NG >> Repair or replace damaged parts.



5. CHECK ACTIVE DAMPER SUSPENSION CONTROL UNIT

Check active damper suspension control unit input/output signal. Refer to STC-12, "Active Damper Suspension Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 6.
NG >> Check active damper suspension control unit pin terminals for damage or loose connection with harness connector. If any item is damaged, repair or replace damaged parts.

6. STEERING WHEEL TURNING FORCE INSPECTION

Check steering wheel turning force. Refer to PS-8, "STEERING WHEEL TURNING FORCE" .

OK or NG

OK >> **INSPECTION END**

NG >> Check relief oil pressure of power steering oil pump and power steering gear. If any item is damaged, repair or replace damaged parts. Refer to PS-26, "RELIEF OIL PRESSURE" (power steering oil pump) and PS-17, "Disassembly and Assembly" (power steering gear).

Engine Speed Signal

NGS0006A

- Check the following if “flickering pattern for 31” is detected in self-diagnosis results without CONSULT-II.

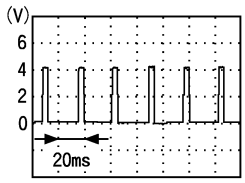
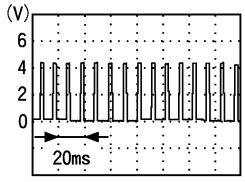
CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition	Display value
ENGINE SPEED [rpm]	Engine speed	Engine stopped	0 rpm
		Engine running (Engine speed: 400 rpm or more)	Approximately equal to the indication on tachometer

ACTIVE DAMPER SUSPENSION CONTROL UNIT TERMINALS AND REFERENCE VALUE

Data are reference value and are measured between each terminal and ground.

Terminal	Wire color	Item	Condition	Data (Approx.)
12	W/G	Engine speed	Engine speed: At idle (Warm-up condition)	 PBIA3654J
			Engine speed: Approx. 2,000 rpm (Warm-up condition)	 PBIA3655J

CAUTION:

When using a oscilloscope to measure voltage for inspection, be sure not to extend forcibly any connector terminal.

DIAGNOSTIC PROCEDURE

1. CHECK DTC WITH ECM

Perform self-diagnosis with ECM. Refer to EC-118, "SELF-DIAG RESULTS MODE" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.

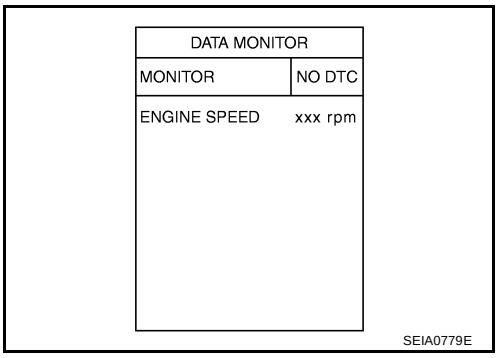
NO >> GO TO 2.

2. CHECK ENGINE SPEED SIGNAL

With CONSULT-II

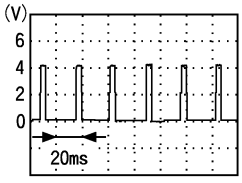
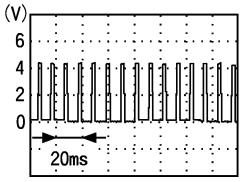
1. Start engine.
2. Select “DATA MONITOR” mode for “ACT D/SUS” with CONSULT-II.
3. Read out the value of “ENGINE SPEED”.

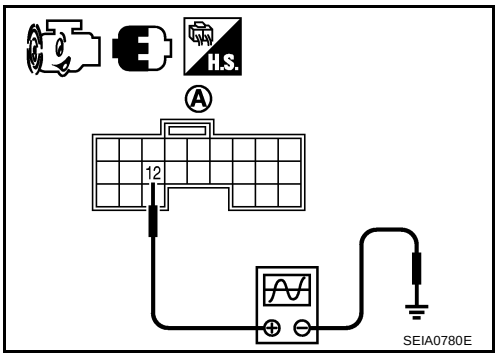
Condition	Display value
Engine stopped	0 rpm
Engine running (Engine speed: 400 rpm or more)	Approximately equal to the indication on tachometer



Without CONSULT-II

1. Start engine.
2. Check signal between active damper suspension control unit harness connector (A) terminal and ground with oscilloscope.

Connector	Terminal	Condition	Data (Approx.)
B37	12 - Ground	Engine speed: At idle (Warm-up condition)	 PBIA3654J
		Engine speed: Approx. 2,000 rpm (Warm-up condition)	 PBIA3655J



Also check harness for short to ground and short to power.

OK or NG

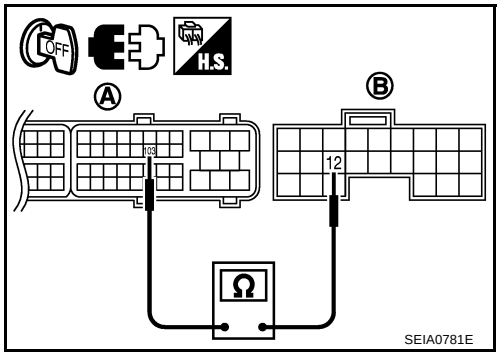
YES >> GO TO 4.
NO >> GO TO 3.

3. CHECK HARNESS BETWEEN ECM AND ACTIVE DAMPER SUSPENSION CONTROL UNIT

1. Turn ignition switch “OFF”.
2. Disconnect ECM harness connector and active damper suspension control unit harness connector.
3. Check continuity between ECM harness connector (A) F101 terminal 103 and active damper suspension control unit harness connector (B) B37 terminal 12.

   Continuity should exist.

   Also check harness for short to ground and short to power.



OK or NG

OK >> GO TO 4.
NG >> Repair or replace damaged parts.

4. CHECK ACTIVE DAMPER SUSPENSION CONTROL UNIT

Check active damper suspension control unit input/output signal. Refer to STC-12, "Active Damper Suspension Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 5.
NG >> Check active damper suspension control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

5. CHECK DTC

Perform the self-diagnosis, after driving a vehicle for a while.

OK or NG

OK >> **INSPECTION END**
NG >> Perform self-diagnosis with ECM again. Refer to EC-118, "SELF-DIAG RESULTS MODE" .

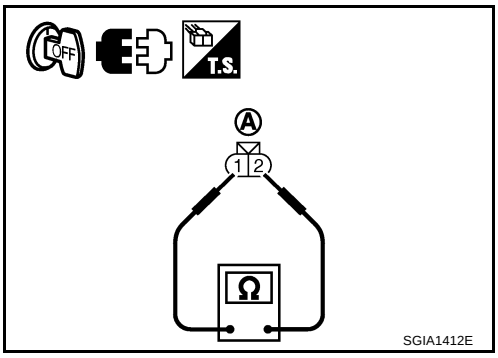
Component Inspection

NGS000CT

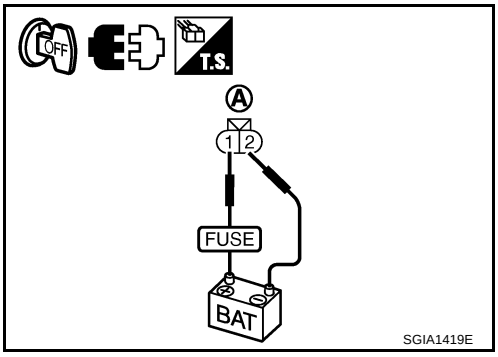
POWER STEERING SOLENOID VALVE

1. Turn ignition switch “OFF”.
2. Disconnect power steering solenoid valve harness connector.
3. Check resistance between power steering solenoid valve connector (A) terminals 1 and 2.

   1 - 2 : Approx. 4 - 6 Ω



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



TROUBLE DIAGNOSIS FOR SYMPTOMS

PFP:00007

Hard Steering When Fully Turning the Steering Wheel

NGS0006F

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to STC-13, "SELF-DIAG RESULT MODE" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.
NO >> GO TO 2.

2. CHECK SYSTEM FOR VEHICLE SPEED SENSOR

Perform trouble diagnosis for vehicle speed sensor system. Refer to STC-19, "Vehicle Speed Sensor (VEHICLE SPEED SEN)" .

OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts.

3. CHECK SYSTEM FOR POWER STEERING SOLENOID VALVE

Perform trouble diagnosis for power steering solenoid valve system. Refer to STC-21, "Power Steering Solenoid Valve" .

OK or NG

OK >> GO TO 4.
NG >> Repair or replace damaged parts.

4. CHECK ACTIVE DAMPER SUSPENSION CONTROL UNIT

Check active damper suspension control unit input/output signal. Refer to STC-12, "Active Damper Suspension Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 5.
NG >> Check active damper suspension control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

5. CHECK SYMPTOM

Check again.

OK or NG

OK >> **INSPECTION END**
NG >> Replace active damper suspension control unit. Refer to STC-30, "Removal and Installation" .

Light Steering When Driving at a High Speed

NGS0006G

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to STC-13, "SELF-DIAG RESULT MODE" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.
NO >> GO TO 2.

2. CHECK SYSTEM FOR VEHICLE SPEED SENSOR

Perform trouble diagnosis for vehicle speed sensor system. Refer to STC-19, "Vehicle Speed Sensor (VEHICLE SPEED SEN)" .

OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts.

3. CHECK SYSTEM FOR POWER STEERING SOLENOID VALVE

Perform trouble diagnosis for power steering solenoid valve system. Refer to STC-21, "Power Steering Solenoid Valve" .

OK or NG

OK >> GO TO 4.
NG >> Repair or replace damaged parts.

4. CHECK ACTIVE DAMPER SUSPENSION CONTROL UNIT

Check active damper suspension control unit input/output signal. Refer to STC-12, "Active Damper Suspension Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 5.
NG >> Check active damper suspension control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

5. CHECK SYMPTOM

Check again.

OK or NG

OK >> **INSPECTION END**
NG >> Replace active damper suspension control unit. Refer to STC-30, "Removal and Installation" .

CONTROL UNIT

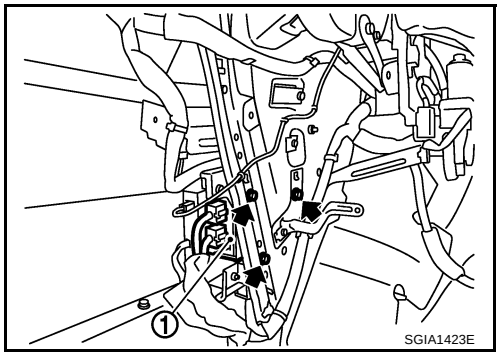
PFP:28400

Removal and Installation

NGS0005R

REMOVAL

1. Turn the ignition switch OFF and disconnect the battery cable from the negative terminal.
2. Remove the trunk side finisher. Refer to EI-60, "Removal and Installation" .
3. Disconnect the two active damper suspension control unit connectors.
4. Remove the active damper suspension control unit bolts.
5. Remove the active damper suspension control unit (1).



INSTALLATION

Note the following, and installation is the reverse order of removal.

- When installing the active damper suspension control unit, tighten bolts to the specified torque.

Active damper suspension control unit bolts : 8.3 N·m (0.85 kg-m, 73 in-lb)

PRECAUTIONS

PFP:00001

Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

NGS0006I

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 and SB section of this Service Manual.

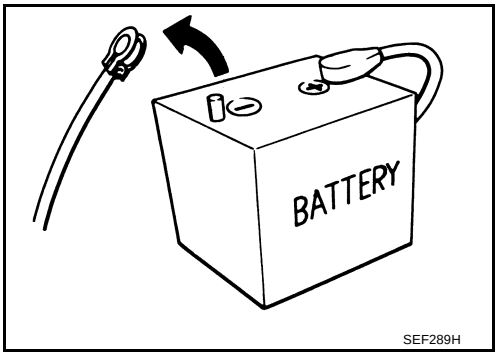
WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SRS 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.**

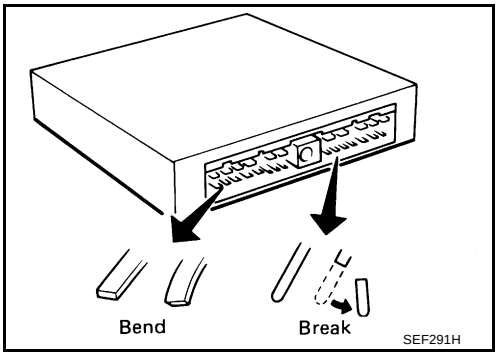
Precautions

NGS0006J

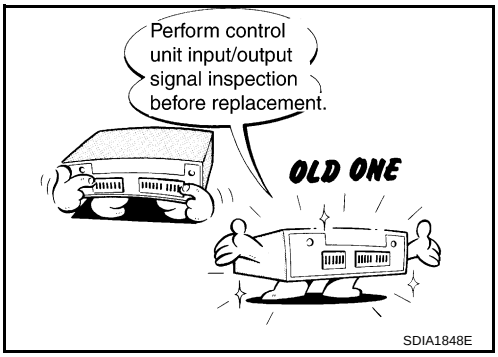
- **Before connecting or disconnecting the RAS control unit harness connector, turn ignition switch “OFF” and disconnect the battery cable from the negative terminal. Battery voltage is applied to RAS control unit even if ignition switch is turned “OFF”.**



- **When connecting or disconnecting pin connectors into or from RAS control unit, take care not to damage pin terminals (bend or break).**
  When connecting pin connectors make sure that there are not any bends or breaks on RAS control unit pin terminals.



- **Before replacing RAS control unit, perform RAS control unit input/output signal inspection and make sure whether RAS control unit functions properly or not. Refer to STC-47, "RAS Control Unit Input/Output Signal Reference Values" .**



Precautions for RAS Actuator Assembly and Rear Wheel Steering Angle Sensor Replacement

NGS000CW

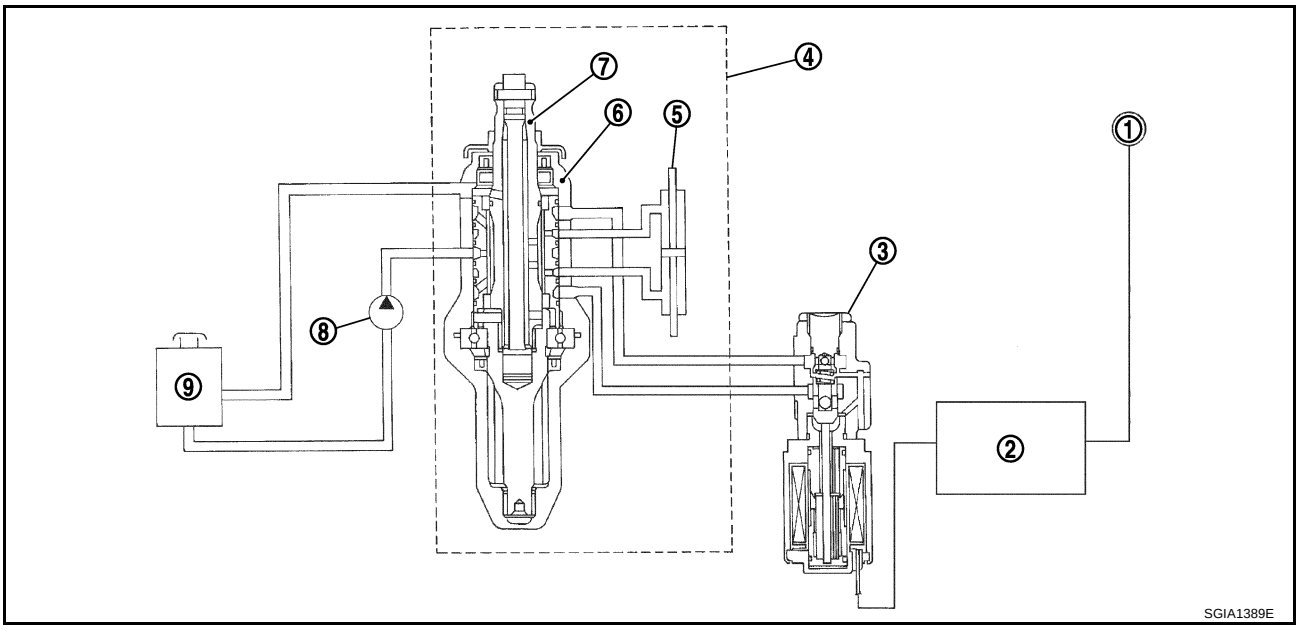
When removing the RAS motor or rear wheel steering angle sensor from the RAS actuator assembly, perform neutral position adjustment of RAS actuator assembly. Refer to STC-92, "Neutral Position" .

ELECTRICALLY CONTROLLED POWER STEERING

PFP:49810

Power Steering Control Diagram

NGS000CR

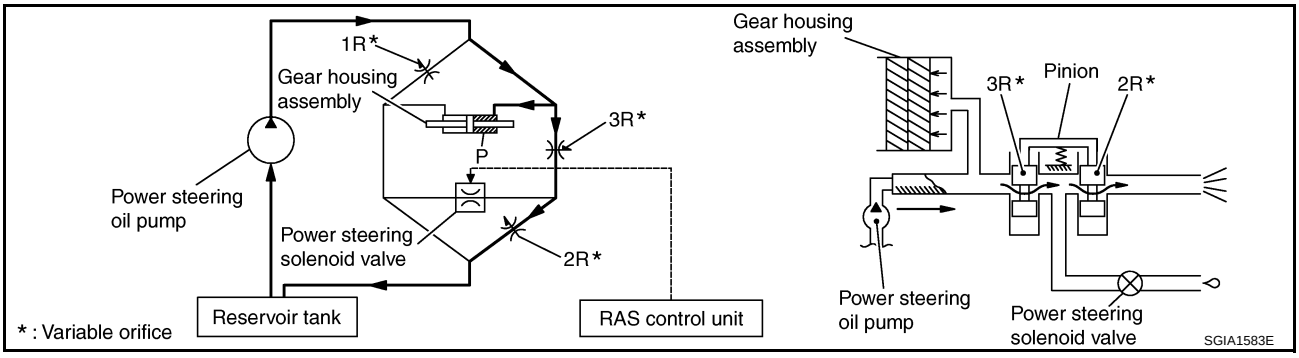


1. Speed sensor
2. RAS control unit
3. Power steering solenoid valve
4. Steering gear assembly
5. Gear housing assembly
6. Gear sub-assembly
7. Pinion
8. Power steering oil pump
9. Reservoir tank

Operation Principle

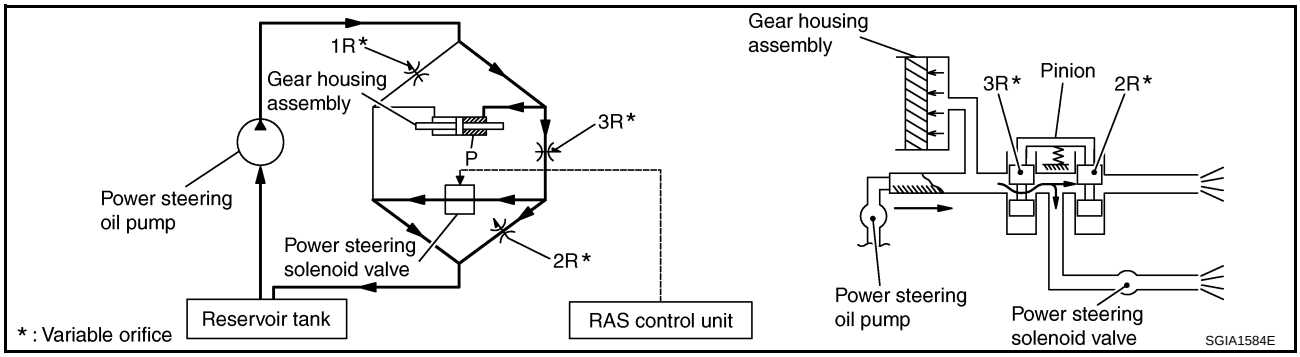
NGS000CX

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.

System Description

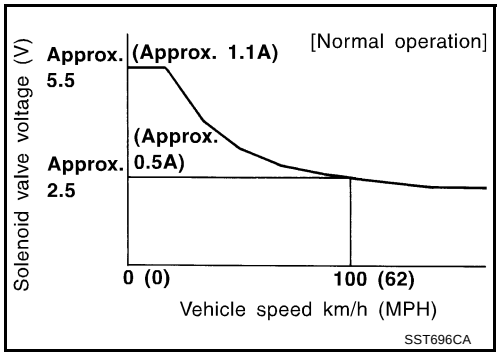
NGS000CN

DESCRIPTION

- Electrically controlled power steering system is controlled by RAS control unit.
- The system controls power steering solenoid valve by changing supply current to the power steering solenoid valve depending on vehicle speed.

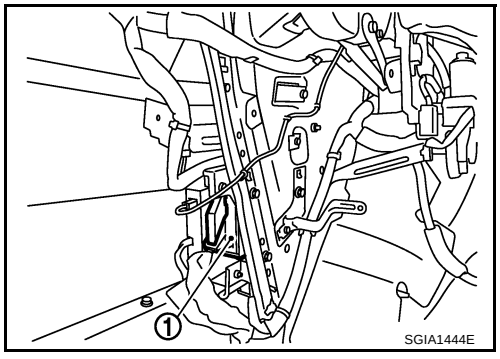
POWER STEERING SOLENOID VALVE

- Vehicle speed sensing electronically controlled power steering (that properly controls the steering force by the vehicle speed) has been adopted. When it is normal, it controls the power steering solenoid valve according to the vehicle speed as shown in the figure and makes the steering force proper.
- Power steering solenoid valve becomes full throttle when the power steering solenoid valve voltage is 2.5 V, and totally-enclosed when the voltage is 5.5 V.



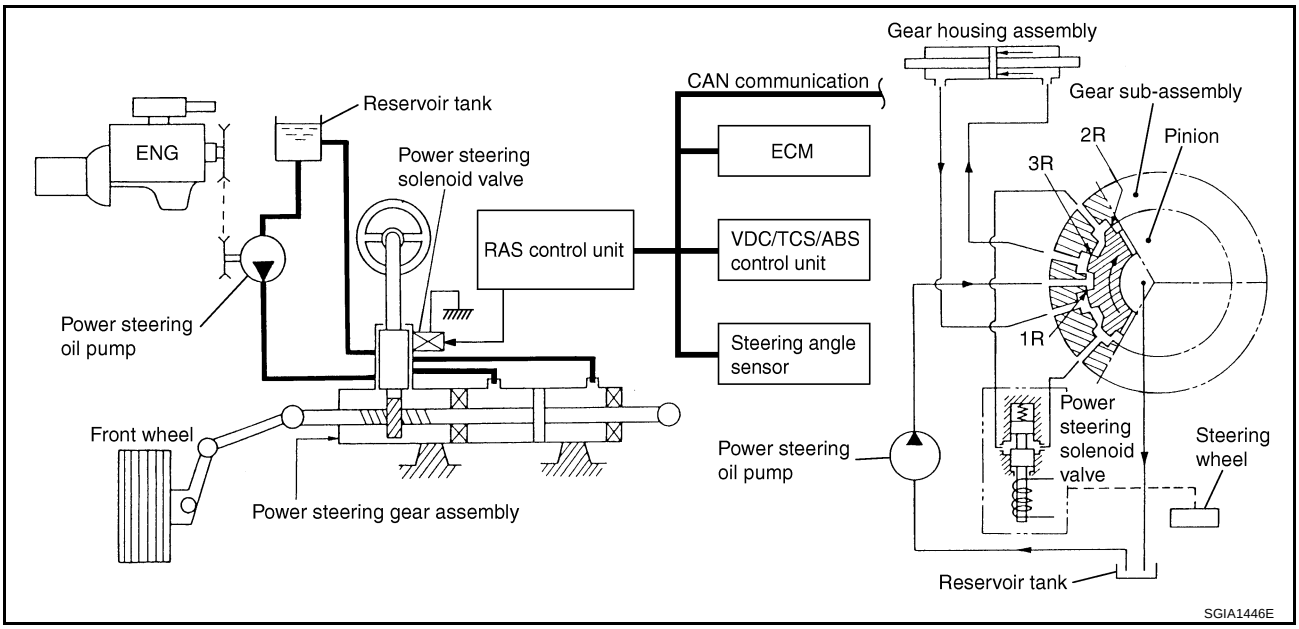
CONTROL UNIT

The RAS control unit (1) controls power steering solenoid valve.



System Diagram

NGS000CO



COMPONENTS FUNCTION DESCRIPTION

Component parts	Function
RAS control unit	Controls power steering solenoid valve (with fail-safe function).
Power steering solenoid valve	Controls oil pressure in gear housing assembly.
VDC/TCS/ABS control unit	Transmits vehicle speed signal via CAN communication to RAS control unit. (For fail-safe conditions)
ECM	Transmits engine speed signal via CAN communication to RAS control unit.

CAN Communication

NGS000CP

SYSTEM DESCRIPTION

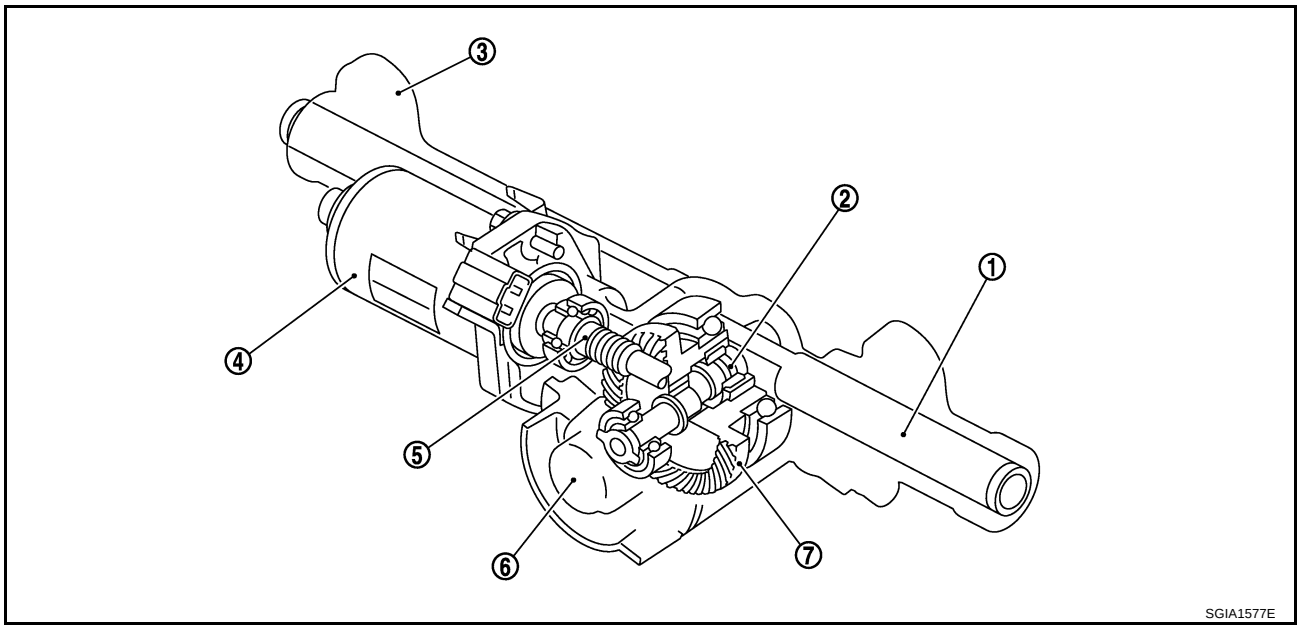
CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.
For details, refer to LAN-35, "CAN COMMUNICATION" .

REAR ACTIVE STEER SYSTEM

PFP:28505

Power Steering Control Diagram

NGS0006Z



1. Rod
2. Offset shaft
3. Gear housing assembly
4. RAS motor
5. Motor shaft
6. Rear wheel steering angle sensor
7. HRH gear

Operation Principle

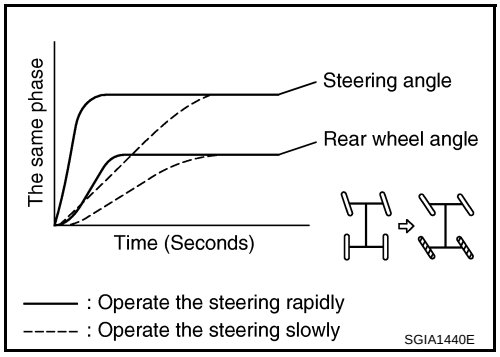
NGS000CY

OPERATION PRINCIPLE

The rear wheel angle changes as per the following:

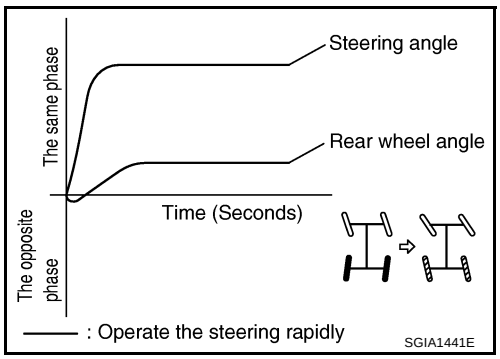
During high-speed driving

- The rear wheels turn to the same phase of front wheels regardless of the operation speed of steering wheel.

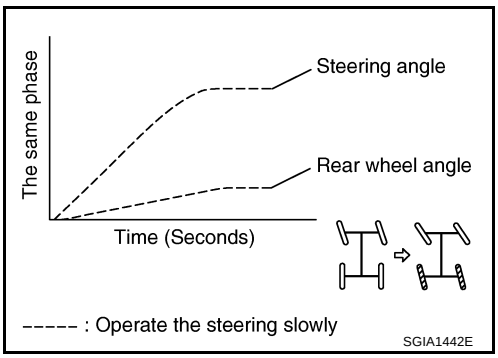


During middle- low-speed driving

- When turning the steering wheel rapidly, the rear wheels turn to the opposite phase of front wheels for a moment just after starting the steering wheel operation. And then, they turn to the same phase.



- The rear wheels turn to the same phase of front wheels when turning the steering wheel slowly.



During extremely slow-speed driving and at straight-ahead

- The rear wheels do not turn during extremely slow-speed driving regardless of the operation speed of steering wheel.
- The rear wheels do not turn at straight-ahead regardless of the vehicle speed.

System Description

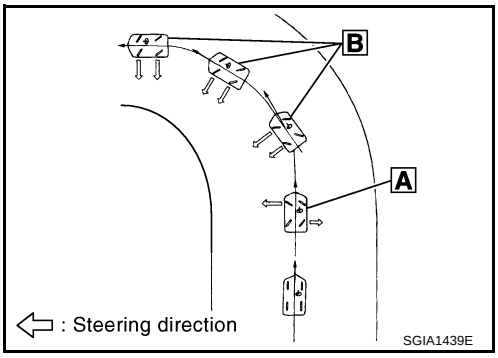
NGS00070

DESCRIPTION

- RAS control unit controls the rear active steer.
- RAS actuator assembly senses the front wheel steering angle and the vehicle speed by RAS control unit. RAS control unit controls the RAS actuator assembly according to the steering operation amount.
- Model following control is used to rear active steer.

Model Following Control

- Situation A:
  The rear wheels turn to the opposite phase of front wheels for a moment so as to improve the start-up of yaw rate (steering angle speed).
- Situation B:
  The rear wheels turn to the same phase of front wheels after securing the necessary yaw rate (steering angle speed) to cornering.



RAS ACTUATOR ASSEMBLY

- It is driven by RAS motor.
- Maintain the toe-stiffness of rear wheels against the road external force because the irreversible efficiency performance hypoid gear is used.

Irreversible Efficiency Performance

- The power from the pinion gear (motor side) is transmitted, but the pinion gear does not rotate as caused by the gear mechanical characteristics (teeth angle) even though the ring gear (tire side) starts to rotate.

STEERING ANGLE SENSOR

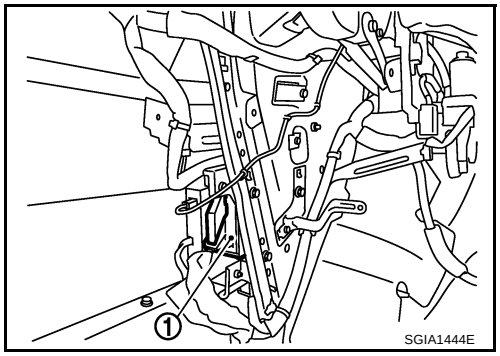
It detects the neutral position and steering angle of steering wheel.

REAR WHEEL STEERING ANGLE SENSOR

- It detects the steering angle condition of rear wheel.
- 2 systems (main sensor and sub-sensor) are adopted.

CONTROL UNIT

- Controls the RAS actuator assembly so that it will be proper that the steering angle of rear wheel is calculated by RAS control unit (1) from input signal from each sensor.
- Self-diagnosis can be done.

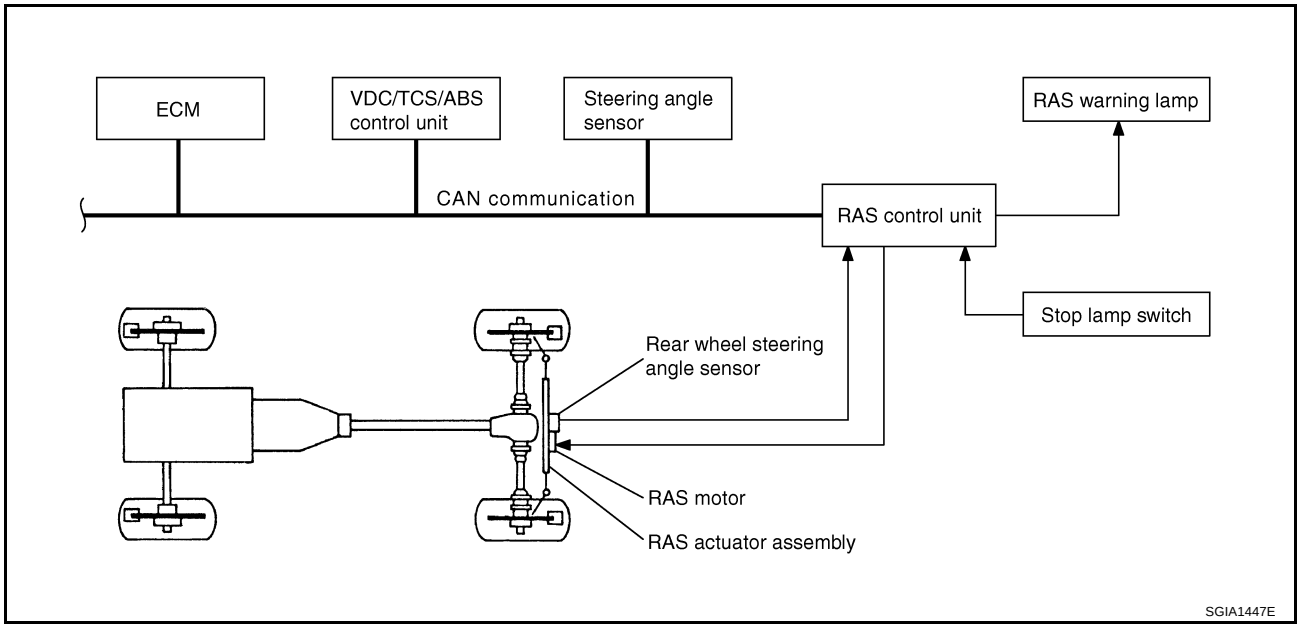


RAS WARNING LAMP

- Turns ON when there is a malfunction in rear active steer system.
- Turns ON when ignition switch is turned ON, for purpose of lamp check. Turns OFF approximately for 1 second after the engine starts if system is normal.

System Diagram

NGS00071



COMPONENTS FUNCTION DESCRIPTION

Component parts	Function
RAS control unit	Controls power steering solenoid valve and RAS actuator assembly (with fail-safe function).
Power steering solenoid valve	Controls oil pressure in gear housing assembly.
RAS actuator assembly	Moves the rear wheel angle.
Rear wheel steering angle sensor	Transmits RAS actuator assembly condition to RAS control unit.
RAS motor	Operates RAS actuator assembly.
RAS warning lamp	Illuminates if malfunction is detected in electrical system of rear active steer system.
Stop lamp switch	Detects status of brake pedal depressed.
Steering angle sensor	Transmits steering angle sensor signal via CAN communication to RAS control unit.
ECM	Transmits engine speed signal via CAN communication to RAS control unit.
VDC/TCS/ABS control unit	Transmits the following signals via CAN communication to RAS control unit. ● Vehicle speed signal ● VDC malfunction signal

CAN Communication

NGS00072

SYSTEM DESCRIPTION

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.
For details, refer to LAN-35, "CAN COMMUNICATION" .

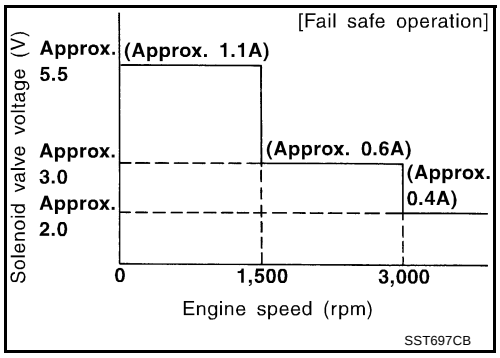
TROUBLE DIAGNOSIS

PFP:00004

Fail-Safe Function

NGS0006L

- If any malfunction occurs in rear active steer system, and control unit detects the malfunction, RAS warning lamp on combination meter turns ON to indicate system malfunction.
- Stops the rear wheel control when the RAS warning lamp is turned ON.
- The fail-safe function of vehicle speed signal operate to regulate power steering solenoid valve operation in response to engine speed, thereby maintaining the required power steering force.



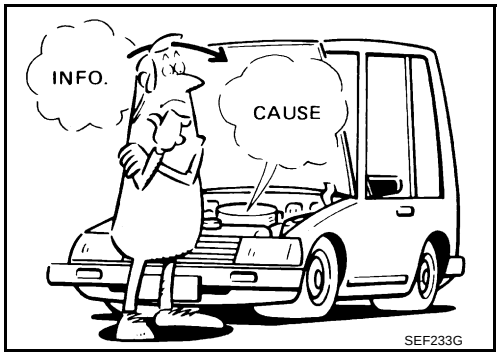
How to Perform Trouble Diagnosis

NGS0006M

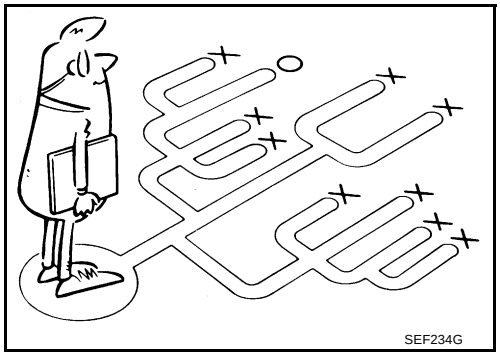
BASIC CONCEPT

- To perform trouble diagnosis, it is the most important to have understanding about vehicle systems (control and mechanism) thoroughly.
- 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 will be 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”.

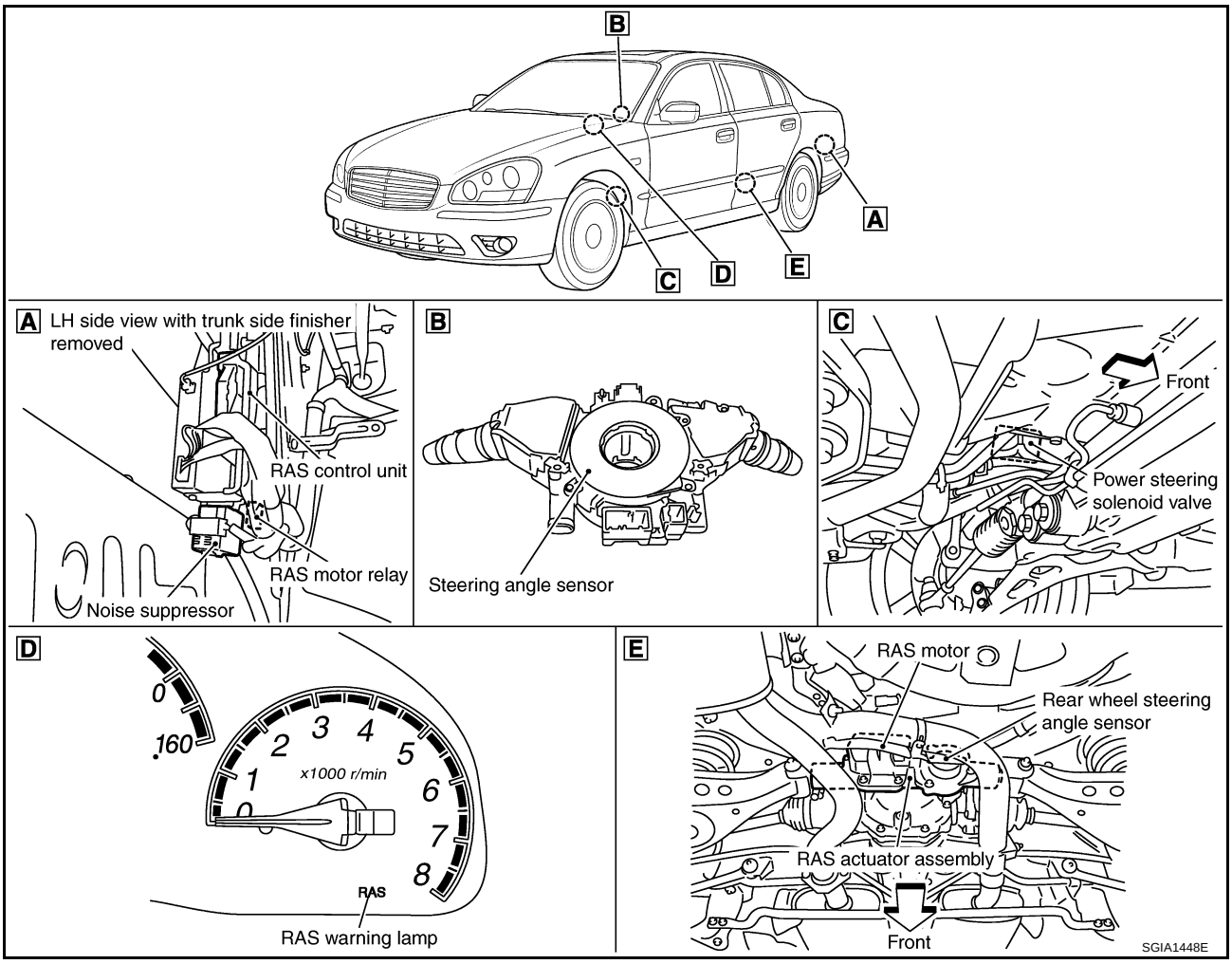


- It is essential to check symptoms right from the beginning in order to repair malfunctions completely.
  For intermittent malfunctions, reproduce symptoms based on interview with customer and past examples. Do not perform inspection on ad hoc basis. Most intermittent malfunctions are caused by poor contacts. In this case, it will be effective to shake suspected harness or connector by hand. When repairing without any symptom diagnosis, you cannot judge if malfunctions have actually been eliminated.
- After completing diagnosis, always erase diagnostic memory. Refer to STC-54, "ERASE SELF-DIAGNOSIS" .
- For intermittent malfunctions, move harness or harness connector by hand. Then check for poor contact or reproduced open circuit.



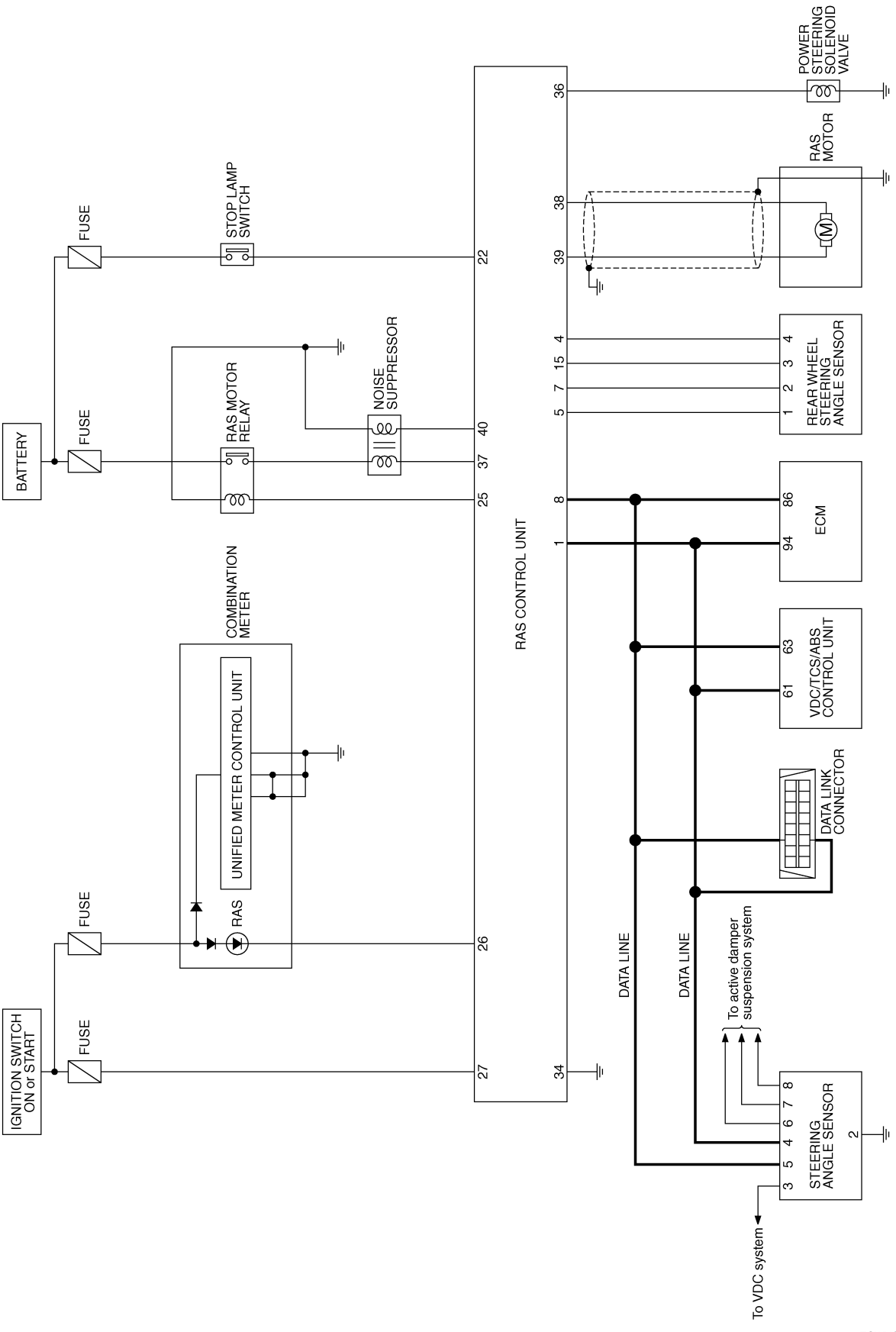
Component Parts Location

NGS0006O



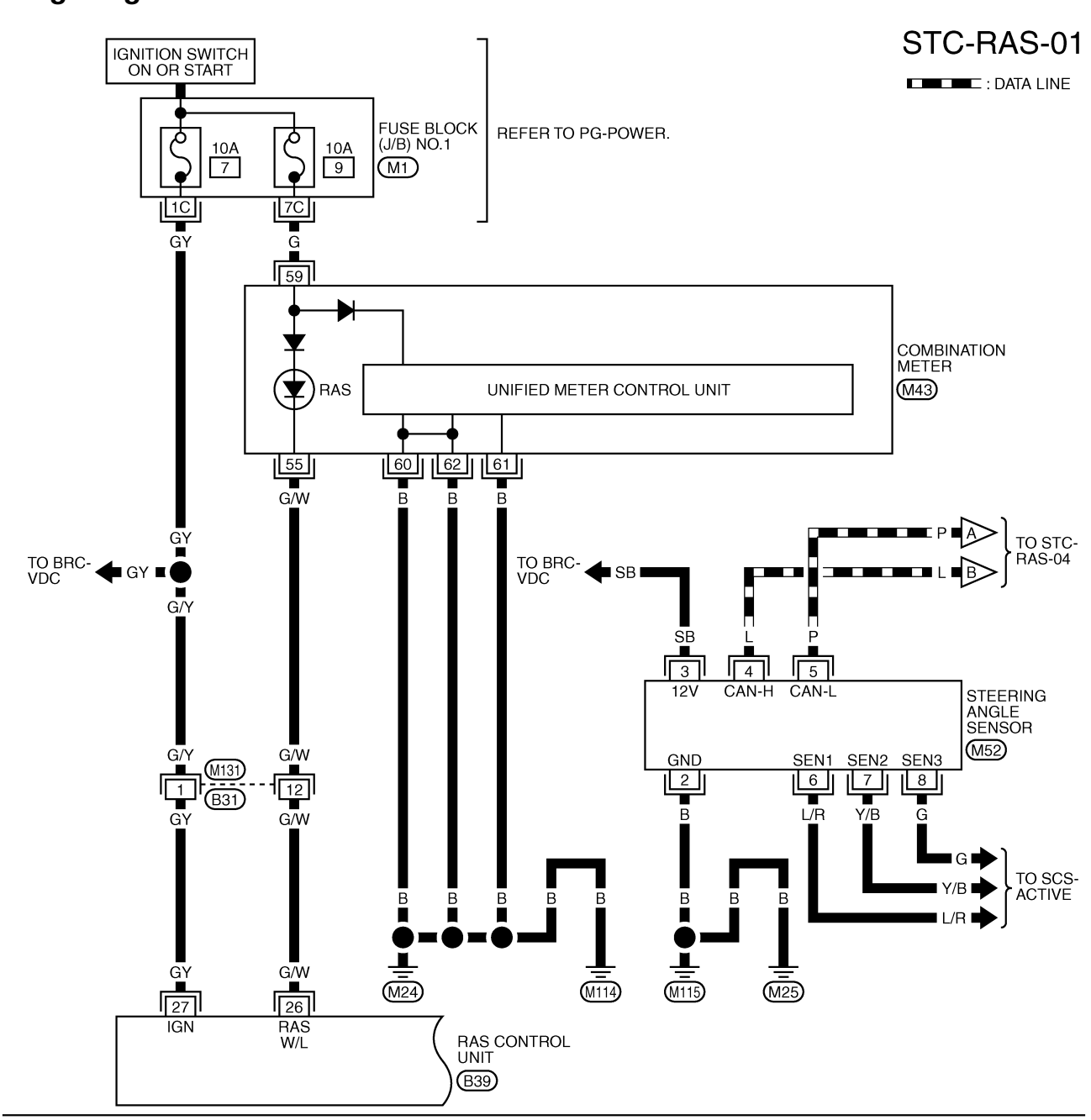
Circuit Diagram

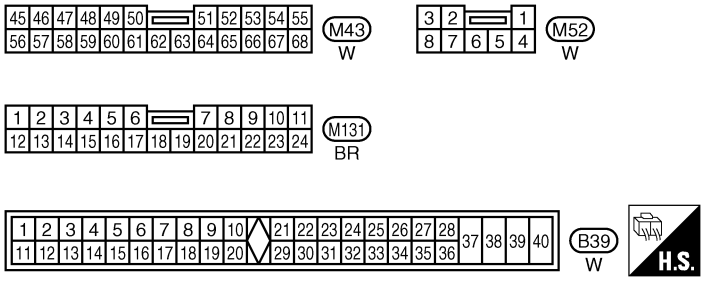
NGS00073



Wiring Diagram — RAS —

NGS0006P

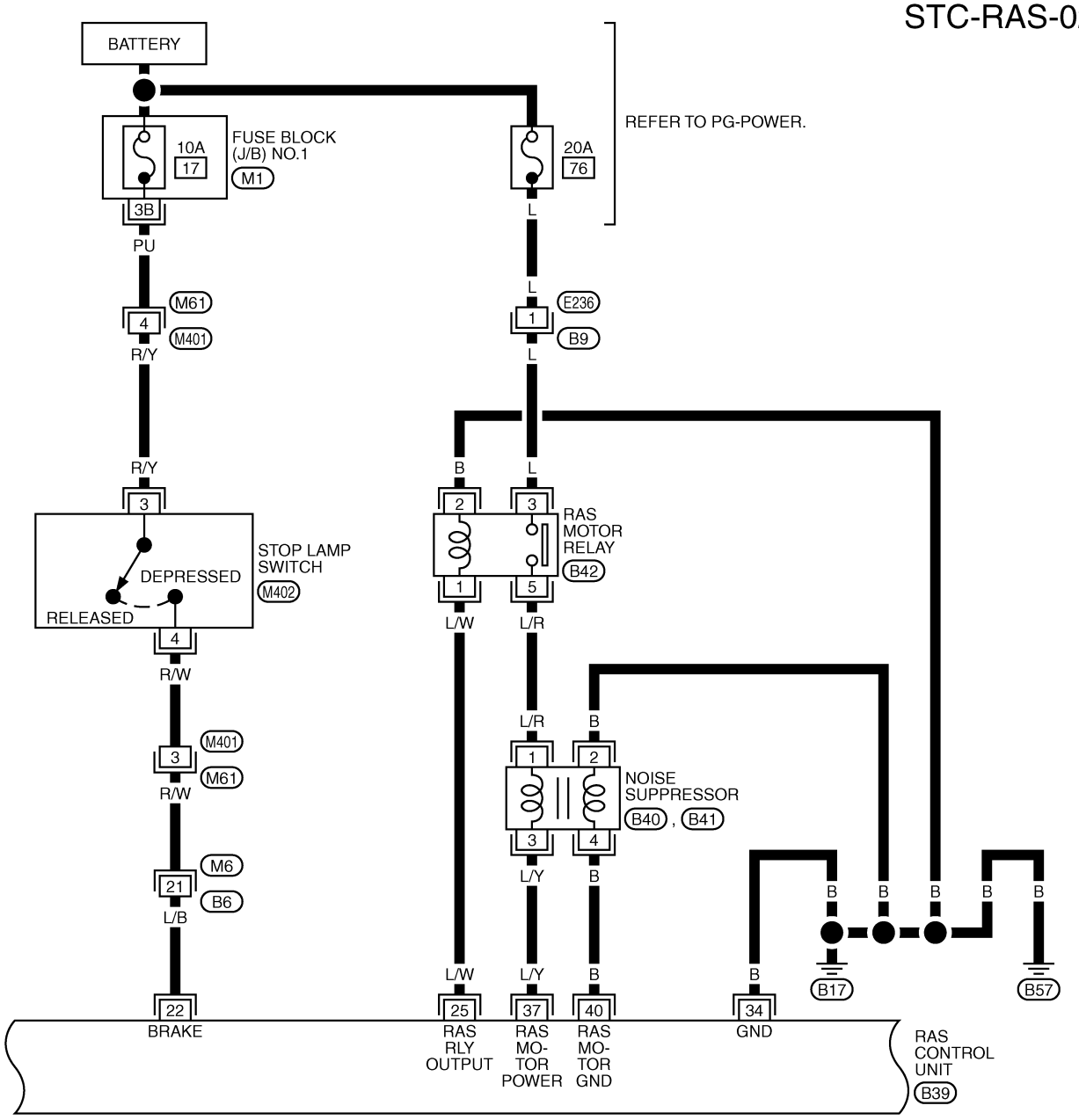


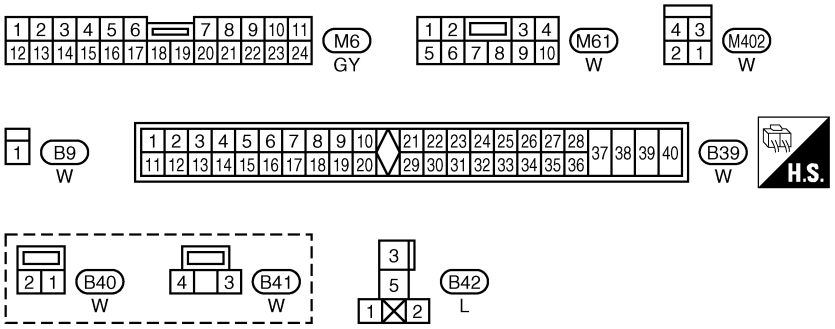


REFER TO THE FOLLOWING.
M1 -FUSE BLOCK-JUNCTION BOX (J/B) NO.1

TGWM0066E

STC-RAS-02



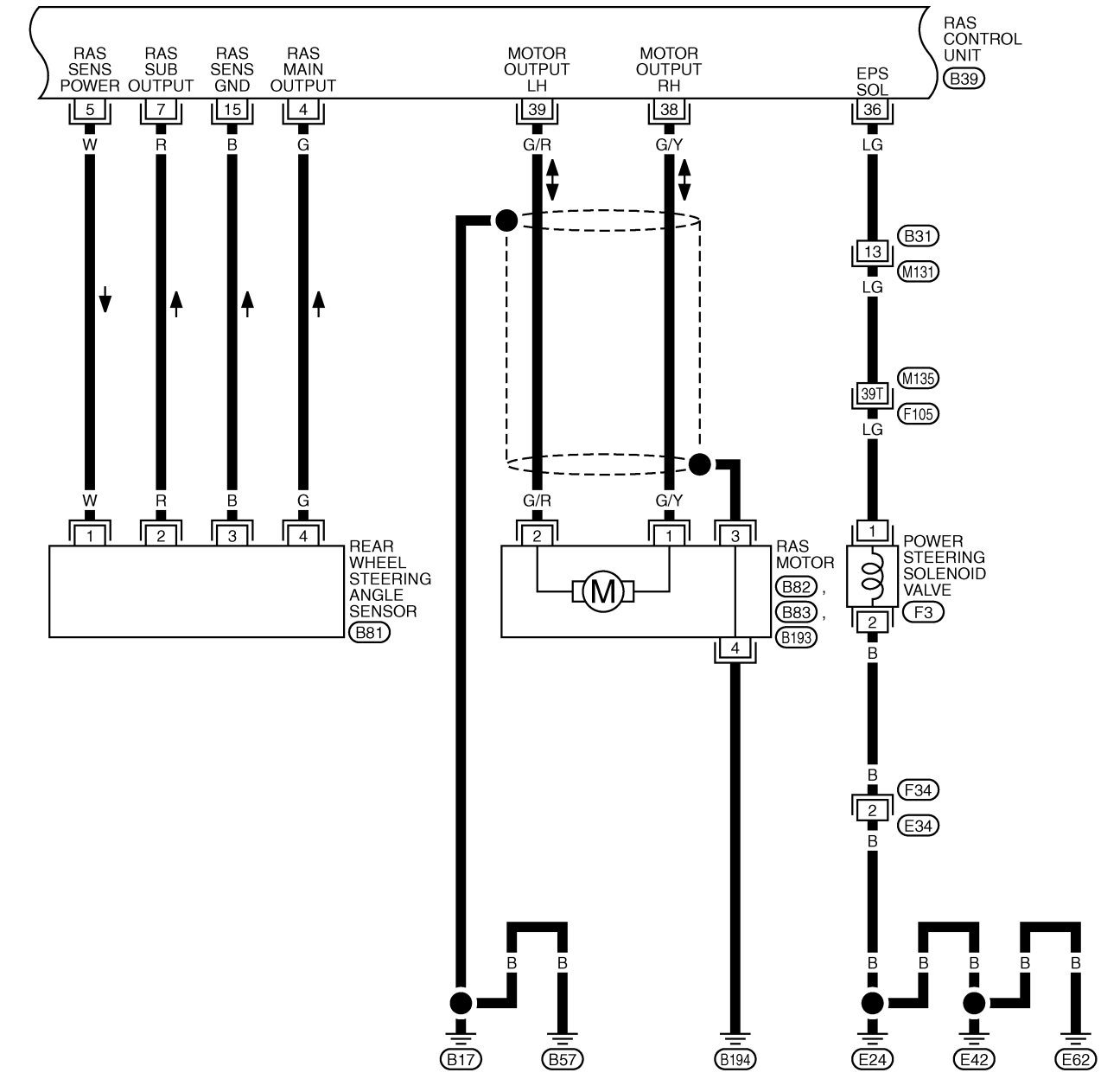


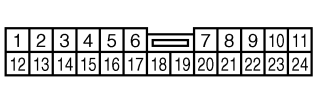
REFER TO THE FOLLOWING.

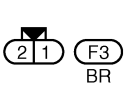
M1 -FUSE BLOCK-JUNCTION BOX (J/B) NO.1

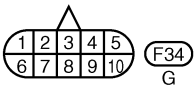
TGWM0067E

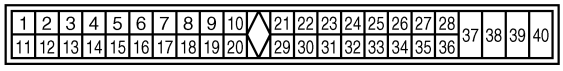
STC-RAS-03

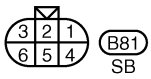




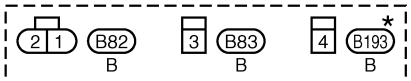








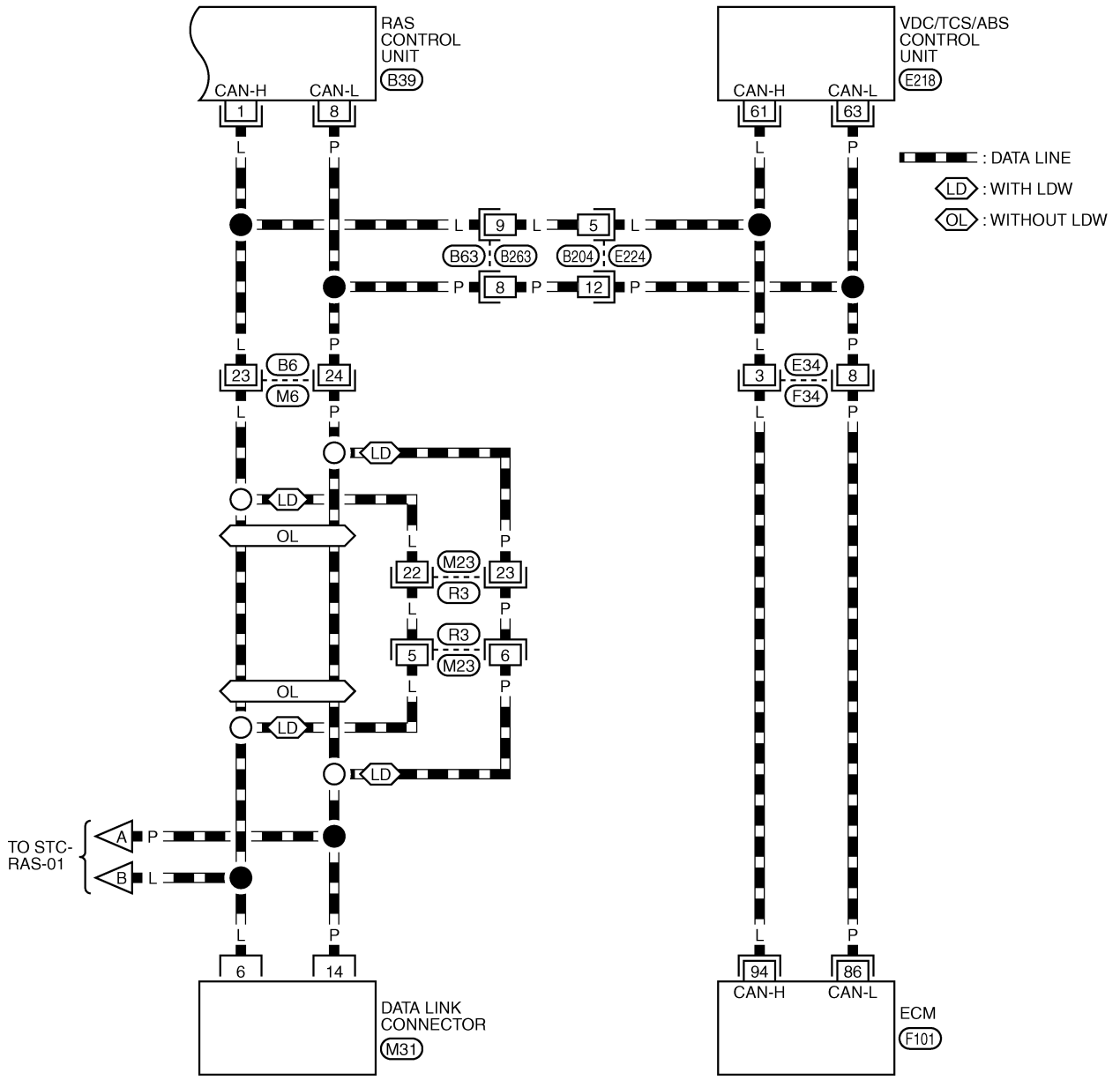
REFER TO THE FOLLOWING.
F105 -SUPER MULTIPLE JUNCTION (SMJ)

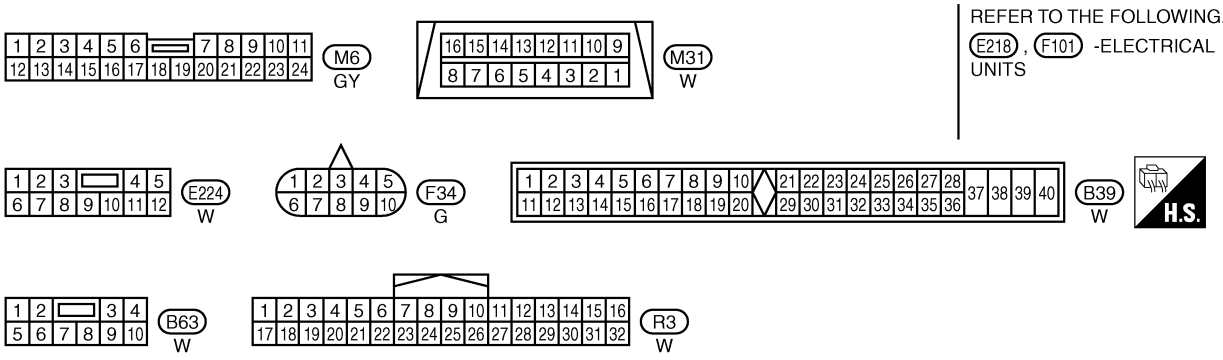


*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TGWM0069E

STC-RAS-04





TGWM0070E

RAS Control Unit Input/Output Signal Reference Values

NGS0006R

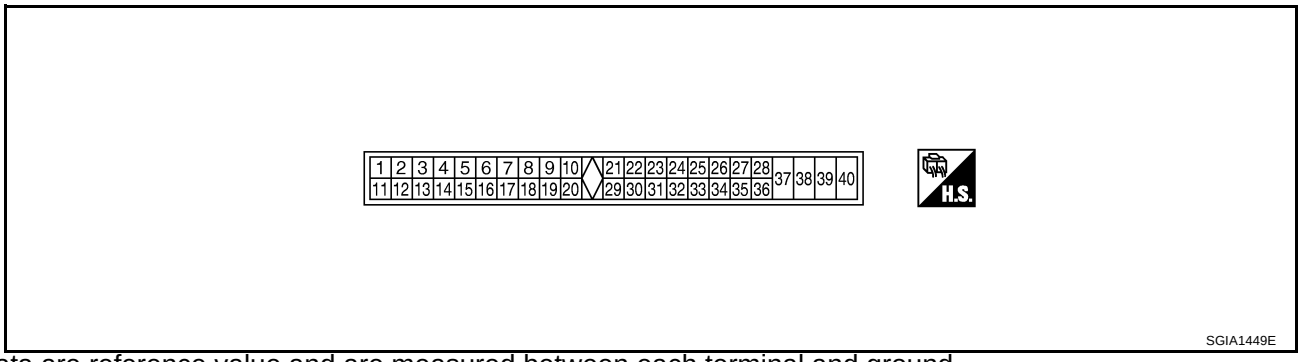
RAS CONTROL UNIT INSPECTION TABLE

Specifications with CONSULT-II

Monitor item [Unit]	Content	Condition	Display value
VHCL SPEED SE [km/h] or [mph]	Wheel speed	Vehicle stopped	0 km/h (0 MPH)
		Vehicle running **CAUTION:** **Check air pressure of tire under standard condition.**	Approximately equal to the indication on speedometer (Inside of ±10%)
STEERING ANG [°]	Steering angle detected by steering angle sensor	Steering wheel right turned	0° - R756°
		Straight-ahead	Approx. 0°
		Steering wheel left turned	0° - L756°
ENGINE SPEED [rpm]	Engine speed	Engine stopped	0 rpm
		Engine running (Engine speed: 400 rpm or more)	Approximately equal to the indication on tachometer
POWER STR SOL [A]	Monitored value of current at power steering solenoid valve	Vehicle speed: 0 km/h (0 MPH) (Engine is running)	Approx. 1.10 A
		Vehicle speed: 100 km/h (62 MPH)	Approx. 0.54 A
RR ST ANG-MAI [V]	Rear wheel steering angle (main) sensor output voltage	RAS actuator assembly turned full right	Approx. 4.4 V
		RAS actuator assembly neutral	Approx. 2.4 V
		RAS actuator assembly turned full left	Approx. 0.4 V
RR ST ANG-SUB [V]	Rear wheel steering angle (sub) sensor output voltage	RAS actuator assembly turned full right	Approx. 4.4 V
		RAS actuator assembly neutral	Approx. 2.4 V
		RAS actuator assembly turned full left	Approx. 0.4 V
RR ST ANG-VOL [V]	Rear wheel steering angle sensor input voltage	Ignition switch: ON	Approx. 5 V
		Ignition switch: OFF	0 V
C/U VOLTAGE [V]	Power supply voltage for RAS control unit	Ignition switch: ON	Battery voltage
		Ignition switch: OFF	—
MOTOR VOLTAGE [V]	Monitored value of voltage at RAS motor	Ignition switch: ON	Battery voltage
		Ignition switch: OFF	0 V
MOTOR CURRENT [A]	Monitored value of current at RAS motor	During RAS actuator assembly turning	Approx. 0 - 20 A
MTR CRNT OPE [A]	Current commanded value to RAS motor	During RAS actuator assembly turning	Approx. -20 - 20 A
RR ANGLE OPE [°]	Rear wheel steering angle detected by rear wheel steering angle sensor	RAS actuator assembly turned full right	Approx. 1°
		RAS actuator assembly neutral	Approx. 0°
		RAS actuator assembly turned full left	Approx. -1°
STOP LAMP SW [ON/OFF]	Stop lamp condition	Brake pedal: Depressed	ON
		Brake pedal: Released	OFF
HICAS RELAY [ON/OFF]	RAS motor relay condition	Ignition switch: ON	ON
		Ignition switch: OFF	OFF
FAIL SAFE [ON/OFF]	Fail-safe condition	Fail-safe condition	ON
		Normal	OFF
WARNING LAMP [ON/OFF]	RAS warning lamp condition	RAS warning lamp: ON	ON
		RAS warning lamp: OFF	OFF

Specifications Between RAS Unit Terminals

RAS CONTROL UNIT CONNECTOR LAYOUT



Data are reference value and are measured between each terminal and ground.

Terminal	Wire color	Item	Condition	Data (Approx.)
1	L	CAN-H	—	—
4	G	Rear wheel steering angle (main) sensor output voltage	RAS actuator assembly turned full right	4.4 V
			RAS actuator assembly neutral	2.4 V
			RAS actuator assembly turned full left	0.4 V
5	W	Power supply (rear wheel steering angle sensor)	Ignition switch: ON	5 V
			Ignition switch: OFF	0 V
7	R	Rear wheel steering angle (sub) sensor output voltage	RAS actuator assembly turned full right	4.4 V
			RAS actuator assembly neutral	2.4 V
			RAS actuator assembly turned full left	0.4 V
8	P	CAN-L	—	—
15	B	Ground (rear wheel steering angle sensor)	Always	0 V
22	L/B	Stop lamp switch	Brake pedal: Depressed	Battery voltage
			Brake pedal: Released	0 V
25	L/W	RAS motor relay	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0 V
26	G/W	RAS warning lamp	RAS warning lamp: ON	1.4 V or less
			RAS warning lamp: OFF	Ignition voltage: 2.8 V or more
27	GY	Ignition switch	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0 V
34	B	Ground	Always	0 V
36	LG	Power steering solenoid valve	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
37	L/Y	Power supply (RAS motor)	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0 V
38	G/Y	RAS motor output voltage (right)	While RAS motor is operating for right	Battery voltage
			While RAS motor is operating for left	0 V
39	G/R	RAS motor output voltage (left)	While RAS motor is operating for right	0 V
			While RAS motor is operating for left	Battery voltage
40	B	Ground (RAS motor)	Always	0 V

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

CONSULT-II Function (RAS/HICAS)

NGS0006S

FUNCTION

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

Diagnostic test mode	Function	Reference page
Self-diagnostic results	● Self-diagnostic results can be read and erased quickly.	STC-49
Data monitor	● Input/Output data in the RAS control unit can be read.	STC-51
CAN diagnostic support monitor	● The results of transmit/receive diagnosis of CAN communication can be read.	LAN-29
Active test	● Sends a drive signal to RAS motor to check each sensor operation.	STC-52
ECU part number	● RAS control unit part number can be read.	STC-53

CONSULT-II SETTING PROCEDURE

Refer to GI-36, "CONSULT-II Start Procedure" .

SELF-DIAG RESULT MODE

Operation Procedure

1. Perform “CONSULT-II Start Procedure”. Refer to GI-36, "CONSULT-II Start Procedure" .
2. With engine at idle, touch “SELF-DIAG RESULTS”.
   Display shows malfunction experienced since the last erasing operation.

NOTE:
The details for “TIME” are as follows:

- “0”: Error currently detected with active damper suspension control unit.
- Except for “0”: Error detected in the past and memorized with active damper suspension control unit. Detects frequency of driving after DTC occurs (frequency of turning ignition switch “ON/OFF”).

Display Item List

Items (CONSULT-II screen terms)	Diagnostic item is detected when...	Check item
CONTROL UNIT [ABNORMAL1] [C1900]	Malfunction has occurred inside RAS control unit.	STC-56, "DTC C1900, C1901, C1905, C1906, C1907, C1908, C1922, C1927, C1928 CONTROL UNIT"
CONTROL UNIT [ABNORMAL2] [C1901]	Malfunction has occurred inside RAS control unit.	STC-56, "DTC C1900, C1901, C1905, C1906, C1907, C1908, C1922, C1927, C1928 CONTROL UNIT"
MOTOR OUTPUT [REV CURRENT] [C1902]	The current flows in the opposite direction when the RAS motor current is output.	STC-57, "DTC C1902, C1903, C1904, C1910, C1913 MOTOR OUTPUT"
MOTOR OUTPUT [NO CURRENT] [C1903]	The current flows when the RAS motor current is not output.	STC-57, "DTC C1902, C1903, C1904, C1910, C1913 MOTOR OUTPUT"
MOTOR OUTPUT [OVERCURRENT] [C1904]	The excessive high current flows when the RAS motor current is output.	STC-57, "DTC C1902, C1903, C1904, C1910, C1913 MOTOR OUTPUT"
CONTROL UNIT [ABNORMAL3] [C1905]	AD converter system of RAS control unit is malfunctioning.	STC-56, "DTC C1925 AD CONVERTER"

Items (CONSULT-II screen terms)	Diagnostic item is detected when...	Check item
CONTROL UNIT [ABNORMAL5] [C1906]	Malfunction has occurred inside RAS control unit.	STC-56, "DTC C1900, C1901, C1905, C1906, C1907, C1908, C1922, C1927, C1928 CONTROL UNIT"
CONTROL UNIT [ABNORMAL4] [C1907]	Malfunction has occurred inside RAS control unit.	STC-56, "DTC C1900, C1901, C1905, C1906, C1907, C1908, C1922, C1927, C1928 CONTROL UNIT"
CONTROL UNIT [ABNORMAL7] [C1908]	Malfunction has occurred inside RAS control unit.	STC-56, "DTC C1900, C1901, C1905, C1906, C1907, C1908, C1922, C1927, C1928 CONTROL UNIT"
CONTROL UNIT [ABNORMAL6] [C1909]	Malfunction has occurred inside (ignition signal) RAS control unit.	STC-60, "DTC C1909 CONTROL UNIT"
MOTOR OUTPUT [MOTOR LOCK] [C1910]	When 17A or more current flows to the motor, the rear wheel steering angle sensor signal does not change for some time.	STC-57, "DTC C1902, C1903, C1904, C1910, C1913 MOTOR OUTPUT"
MOTOR VOLTAGE [LOW VOLTEGE] [C1911]	The RAS motor power supply voltage is lower than ignition power supply voltage with RAS motor relay ON.	STC-62, "DTC C1911, C1912 MOTOR VOLTAGE"
MOTOR VOLTAGE [BAD OBSTRCT] [C1912]	The RAS motor power supply voltage is inputting for some time with RAS motor power supply OFF by RAS control unit.	STC-62, "DTC C1911, C1912 MOTOR VOLTAGE"
MOTOR OUTPUT [ABNORML SIG] [C1913]	When the RAS motor current value is 10 A or more, actual output is excessively low and the condition continues for some time.	STC-57, "DTC C1902, C1903, C1904, C1910, C1913 MOTOR OUTPUT"
RR ST ANGLE SENSOR [ABNORML VOL] [C1914]	Higher or lower value compared to the standard voltage.	STC-67, "DTC C1914, C1915, C1916, C1917, C1918 RR ST ANGLE SENSOR"
RR ST ANGLE SENSOR [MAIN SIGNAL] [C1915]	The rear wheel steering angle sensor (main) input signal is malfunctioning for some time against the sensor power supply value.	STC-67, "DTC C1914, C1915, C1916, C1917, C1918 RR ST ANGLE SENSOR"
RR ST ANGLE SENSOR [SUB SIGNAL] [C1916]	When the main sensor input signal is 2.4 - 2.6 V, the rear wheel steering angle sensor (sub) input signal is malfunctioning for some time compared to the sensor power supply value.	STC-67, "DTC C1914, C1915, C1916, C1917, C1918 RR ST ANGLE SENSOR"
RR ST ANGLE SENSOR [OFFSET SIG1] [C1917]	An excessive difference has occurred in the input values of rear wheel steering angle sensor (main) and rear wheel steering angle sensor (sub).	STC-67, "DTC C1914, C1915, C1916, C1917, C1918 RR ST ANGLE SENSOR"
RR ST ANGLE SENSOR [OFFSET SIG2] [C1918]	An excessive difference has occurred in the input values of rear wheel steering angle sensor (main) and rear wheel steering angle sensor (sub).	STC-67, "DTC C1914, C1915, C1916, C1917, C1918 RR ST ANGLE SENSOR"
VEHICLE SPEED SEN [NO SIGNAL] [C1919]	● Malfunction is detected in vehicle speed signal that is output from VDC/TCS/ABS control unit through CAN communication. ● Improper signal is input while driving.	STC-72, "DTC C1919 VEHICLE SPEED SEN"
STEERING ANGLE SEN [NO SIGNAL] [C1920]	No steering angle signal is input for some time.	STC-72, "DTC C1920, C1923, C1924, C1926 STEERING ANGLE SEN"

Items (CONSULT-II screen terms)	Diagnostic item is detected when...	Check item
ENG REV SIGNAL [C1921]	● Malfunction is detected in engine speed signal that is output from ECM through CAN communication. ● Improper signal is input engine speed.	STC-73, "DTC C1921 ENG REV SIGNAL"
CONTROL UNIT [ABNORMAL8] [C1922]	Malfunction is detected in the memory (EEPROM) system of RAS control unit.	STC-56, "DTC C1900, C1901, C1905, C1906, C1907, C1908, C1922, C1927, C1928 CONTROL UNIT"
STEERING ANGLE SEN [NO CHANGE] [C1923]	While driving at 60 km/h (37 MPH) or more, steering angle does not change for a while.	STC-72, "DTC C1920, C1923, C1924, C1926 STEERING ANGLE SEN"
STEERING ANGLE SEN [NO NEUT STATE] [C1924]	When driving some distance, no neutral signal (ON signal) is input.	STC-72, "DTC C1920, C1923, C1924, C1926 STEERING ANGLE SEN"
AD CONVERTER [C1925]	AD converter system of RAS control unit is malfunctioning.	STC-56, "DTC C1925 AD CONVERTER"
STEERING ANGLE SEN [C1926]	● Malfunction is detected in steering angle sensor signal that is output from steering angle sensor through CAN communication. ● Improper signal is input steering angle sensor.	STC-72, "DTC C1920, C1923, C1924, C1926 STEERING ANGLE SEN"
CONTROL UNIT [ABNORMAL5] [C1927]	Malfunction has occurred inside RAS control unit.	STC-56, "DTC C1900, C1901, C1905, C1906, C1907, C1908, C1922, C1927, C1928 CONTROL UNIT"
CONTROL UNIT [ABNORMAL9] [C1928]	Malfunction has occurred inside RAS control unit.	STC-56, "DTC C1900, C1901, C1905, C1906, C1907, C1908, C1922, C1927, C1928 CONTROL UNIT"
VDC [C1929]	● Malfunction is detected in VDC malfunction signal that is output from VDC/TCS/ABS control unit through CAN communication. ● VDC/TCS/ABS control unit outputs the malfunction signal. ● Improper signal is input VDC malfunction signal.	STC-74, "DTC C1929 VDC"
CAN COMM [U1000]	Malfunction has been detected from CAN communication line.	STC-75, "DTC U1000 CAN COMM"
CONTROL UNIT (CAN) [U1010]	Malfunction is detected by RAS control unit internal malfunction.	STC-75, "DTC U1010 CONTROL UNIT (CAN)"

How to Erase Self-diagnostic Results

1. Perform applicable inspection of malfunctioning item and then repair or replace.
2. Start engine and select “SELF-DIAG RESULTS” mode for “RAS/HICAS” with CONSULT-II.
3. Touch “ERASE” on CONSULT-II screen to erase DTC memory.

CAUTION:
If memory cannot be erased, perform applicable diagnosis.

DATA MONITOR MODE

Operation Procedure

1. Perform “CONSULT-II Start Procedure”. Refer to GI-36, "CONSULT-II Start Procedure" .
2. Touch “DATA MONITOR”.
3. Select from “SELECT MONITOR ITEM”, screen of data monitor mode is displayed.

NOTE:
When malfunction is detected, CONSULT-II performs REAL-TIME DIAGNOSIS.
Also, any malfunction detected while in this mode will be displayed in real time.

Display Item List

Monitored item (Unit)	Remarks
VHCL SPEED SE [km/h] or [mph]	Vehicle speed received via CAN communication is displayed.
STEERING ANG [°]	Steering angle received via CAN communication is displayed.
ENGINE SPEED [rpm]	Engine speed received via CAN communication is displayed.
POWER STR SOL [A]	Power steering solenoid controlling current that RAS control unit outputs is displayed.
RR ST ANG-MAI [V]	Rear wheel steering angle main sensor output voltage is displayed.
RR ST ANG-SUB [V]	Rear wheel angle sub sensor output voltage is displayed.
RR ST ANG-VOL [V]	Voltage supplied from RAS control unit to rear wheel steering angle sensor is displayed.
C/U VOLTAGE [V]	Voltage supplied to RAS control unit is displayed.
MOTOR VOLTAGE [V]	Voltage supplied from RAS control unit to RAS motor is displayed.
MOTOR CURRENT [A]	RAS motor relay controlling current that RAS control unit outputs is displayed.
MTR CRNT OPE [A]	Current commanded value to RAS motor is displayed.
RR ANGLE OPE [°]	Angle commanded value to rear wheel steering angle sensor is displayed.
STOP LAMP SW [ON/OFF]	Condition of stop lamp switch ON/OFF is displayed.
HICAS RELAY [ON/OFF]	RAS motor relay ON/OFF condition is displayed.
FAIL SAFE [ON/OFF]	Fail-safe ON/OFF condition is displayed.
WARNING LAMP [ON/OFF]	RAS warning lamp operating condition is displayed.
Voltage [V]	The value measured by the voltage probe is displayed.
Frequency [Hz]	The value measured by the pulse probe is displayed.
DUTY-HI (high) [%]	
DUTY-LOW (low) [%]	
PLS WIDTH-HI [msec]	
PLS WIDTH-LOW [msec]	

ACTIVE TEST MODE

Description

Use this mode to determine and identify the details of a malfunction based on self-diagnostic results or data monitor. RAS control unit gives drive signal to RAS actuator assembly with receiving command from CONSULT-II to check operation of RAS actuator assembly.

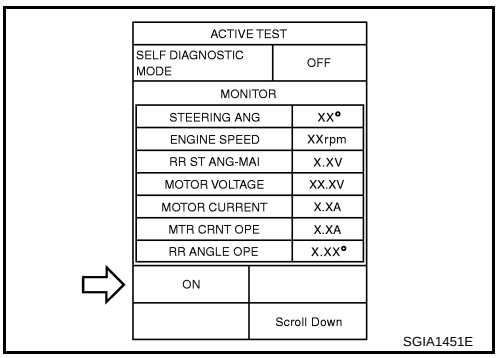
Operation Procedure

1. Perform “CONSULT-II Start Procedure”. Refer to GI-36, "CONSULT-II Start Procedure" .
2. Lift UP (when four tires are not on ground).
3. Make sure that no DTC is detected. Refer to STC-49, "SELF-DIAG RESULT MODE" .

   NOTE:
   If DTC is detected, perform “ACTIVE TEST” after check and repair. Refer to STC-49, "Display Item List" .
4. Touch “ACTIVE TEST”.
5. Select “MAIN SIGNALS” or “SELECTION FROM MENU”, and then press “START”.

   CAUTION:
   Perform while the wheel rotation stops.

6. Start “ACTIVE TEST” after pressing “ON” (⇨) in the indicator.
7. Operate with the following:
   - When turning the steering wheel right or left, the rear wheel turns in the same direction.
   - Steering wheel is not turned, the rear wheel turns left and right 5 times.



Monitored item	Active test “ON”		
STEERING ANG	0° (Neutral)	R 90°	L90°
RR ST ANG-MAI	2.4 V	Approx. 4.4 V	Approx. 0.4 V
RR ST ANG-SUB	2.4 V	Approx. 4.4 V	Approx. 0.4 V
MOTOR CURRENT	No output (Approx. 0 A)	Output (change)	

RAS CONTROL UNIT PART NUMBER MODE

Ignore the RAS control unit part number displayed in the “ECU PART NUMBER”.
Refer to parts catalog to order the RAS control unit.

Self-Diagnostic Procedure

NGS0006T

SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)

Refer to STC-49, "SELF-DIAG RESULT MODE" .

SELF-DIAGNOSTIC PROCEDURE (WITHOUT CONSULT-II)

Description

The RAS warning lamp in the combination meter will flicker according to the self-diagnostic results. As for the details of the RAS warning lamp flickering patterns, refer to STC-53, "Diagnostic Procedure" .

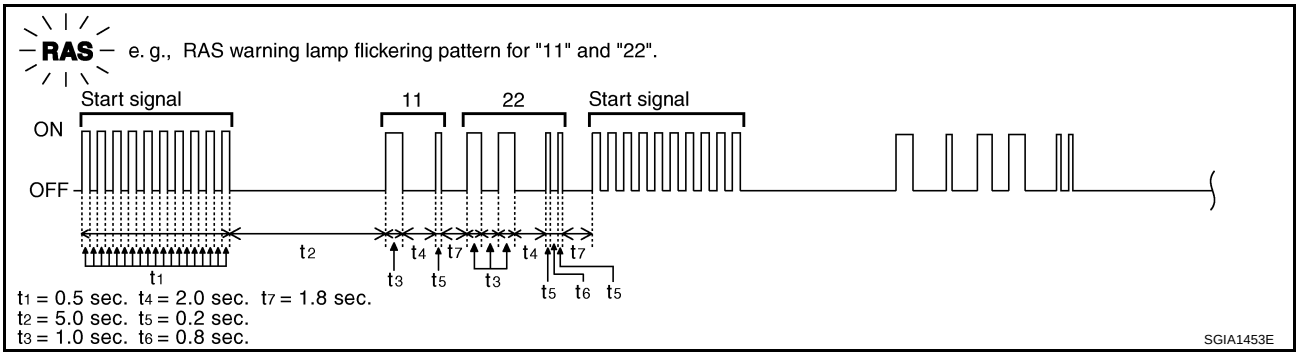
Diagnostic Procedure

1. Start engine.
2. Perform the following procedure within 10 seconds after engine start.
   - Turn steering wheel left and right at 20° or more and 5 times
   - Depress the brake pedal 5 times or more
3. Read the flickering of RAS warning lamp. Refer to STC-53, "Judgement Self-diagnosis" .

   NOTE:
   When the RAS warning lamp flashes 4 Hz and continues repeating it, the system is normal.

Judgement Self-diagnosis

When a malfunction is detected, the malfunction route is indicated by flickering of the RAS warning lamp.



NOTE:
When the RAS warning lamp flashes 4 Hz and continues repeating it, the system is normal.

Flickering pattern	Items	Diagnostic item is detected when...	Check item
11	RAS control unit	Malfunction has occurred inside RAS control unit.	STC-56, "DTC C1900, C1901, C1905, C1906, C1907, C1908, C1922, C1927, C1928 CONTROL UNIT", STC-56, "DTC C1925 AD CONVERTER" or STC-60, "DTC C1909 CONTROL UNIT"
12	Motor power supply	Battery voltage circuit malfunction of RAS motor	STC-62, "DTC C1911, C1912 MOTOR VOLTAGE"
13	Motor output	When the RAS motor current value is 10 A or more, actual output is excessively low and the condition continues for some time.	STC-57, "DTC C1902, C1903, C1904, C1910, C1913 MOTOR OUTPUT"
21	Vehicle speed signal	● Malfunction is detected in vehicle speed signal that is output from VDC/TCS/ABS control unit through CAN communication. ● Improper signal is input vehicle speed.	STC-72, "DTC C1919 VEHICLE SPEED SEN"
22	Steering angle sensor signal	● Malfunction is detected in steering angle sensor signal that is output from steering angle sensor through CAN communication. ● Improper signal is input steering angle sensor.	STC-72, "DTC C1920, C1923, C1924, C1926 STEERING ANGLE SEN"
24	Rear wheel steering angle (main)	The rear wheel steering angle sensor (main) input signal is malfunctioning for some time against the sensor power supply value.	STC-67, "DTC C1914, C1915, C1916, C1917, C1918 RR ST ANGLE SENSOR"
25	Rear wheel steering angle (sub)	When the main sensor input signal is 2.4 - 2.6 V, the rear wheel steering angle sensor (sub) input signal is malfunctioning for some time compared to the sensor power supply value.	STC-67, "DTC C1914, C1915, C1916, C1917, C1918 RR ST ANGLE SENSOR"
26	VDC	● Malfunction is detected in VDC malfunction signal that is output from VDC/TCS/ABS control unit through CAN communication. ● VDC/TCS/ABS control unit outputs the malfunction signal. ● Improper signal is input VDC malfunction signal.	STC-74, "DTC C1929 VDC"
33	Engine speed signal	● Malfunction is detected in engine speed signal that is output from ECM through CAN communication. ● Improper signal is input engine speed.	STC-73, "DTC C1921 ENG REV SIGNAL"
No flickering	Stop lamp switch	Stop lamp switch circuit is shorted or open.	STC-80, "Stop Lamp Switch"

ERASE SELF-DIAGNOSIS

- In order to make it easier to find the cause of hard-to-duplicate malfunctions, malfunction information is stored into the control unit as necessary during use by the user. This memory is not erased no matter how many times the ignition switch is turned ON and OFF.
- However, this information is erased by turning ignition switch “OFF” after performing self-diagnostics or by erasing the memory using the CONSULT-II. Refer to STC-40, "How to Perform Trouble Diagnosis" .

Inspections before Trouble Diagnosis

NGS0006N

- Inspect for power steering fluid leakage and check the power steering fluid level. Refer to PS-6, "POWER STEERING FLUID" .
- Power steering components (gears, oil pump, pipes, etc.) are free from leakage, and that oil level is correct.
- Tires are inflated to specified pressure and are of specified size, and that steering wheel is a genuine Nissan part.
- Suspension utilizes the original design, and is free of modifications which increase vehicle weight.
- Wheel alignment is adjusted properly.

Trouble Diagnosis Chart for Symptoms

NGS0006Q

If RAS warning lamp turns ON, perform self-diagnosis. Refer to STC-53, "Self-Diagnostic Procedure" .

Symptom	Condition	Check item	Reference page
RAS warning lamp does not turn ON for approx.1 second when the ignition switch is turned to ON.	Ignition switch: ON	Power supply	STC-85
		Combination meter	
		RAS control unit	
The steering force of steering wheel is not changed smoothly according to the vehicle speed.	While driving	Vehicle speed sensor	STC-87
		Stop lamp switch	
		Power steering solenoid valve	
		RAS actuator assembly	
		RAS control unit	
Hard steering when fully turning the steering wheel.	Vehicle stopped or while low speed driving	Vehicle speed sensor	STC-88
		Stop lamp switch	
		Power steering solenoid valve	
Light steering when driving at a high speed.	While high speed driving	Vehicle speed sensor	STC-89
		Power steering solenoid valve	

TROUBLE DIAGNOSIS FOR SYSTEM

PFP:00000

DTC C1900, C1901, C1905, C1906, C1907, C1908, C1922, C1927, C1928 CONTROL UNIT

NGS0008H

- Check the following if “CONTROL UNIT [ABNORMAL1] [C1900]”, “CONTROL UNIT [ABNORMAL2] [C1901]”, “CONTROL UNIT [ABNORMAL3] [C1905]”, “CONTROL UNIT [ABNORMAL5] [C1906]”, “CONTROL UNIT [ABNORMAL4] [C1907]”, “CONTROL UNIT [ABNORMAL7] [C1908]”, “CONTROL UNIT [ABNORMAL8] [C1922]”, “CONTROL UNIT [ABNORMAL5] [C1927]” or “CONTROL UNIT [ABNORMAL9] [C1928]” is detected in self-diagnosis results with CONSULT-II or “flickering pattern for 11” is detected in self-diagnosis results without CONSULT-II.

DIAGNOSTIC PROCEDURE

1. INSPECTION START

Is CONSULT-II available?

YES or NO

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

2. PERFORM SELF-DIAGNOSIS (WITH CONSULT-II)

With CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “SELF-DIAG RESULTS” mode for “RAS/HICAS” with CONSULT-II.
3. Touch “ERASE”.
4. Turn ignition switch “OFF” and wait at least 10 seconds.
5. Perform the self-diagnosis again.

Is the “CONTROL UNIT [ABNORMAL1] [C1900]”, “CONTROL UNIT [ABNORMAL2] [C1901]”, “CONTROL UNIT [ABNORMAL3] [C1905]”, “CONTROL UNIT [ABNORMAL5] [C1906]”, “CONTROL UNIT [ABNORMAL4] [C1907]”, “CONTROL UNIT [ABNORMAL7] [C1908]”, “CONTROL UNIT [ABNORMAL8] [C1922]”, “AD CONVERTER [C1925]”, “CONTROL UNIT [ABNORMAL5] [C1927]” or “CONTROL UNIT [ABNORMAL9] [C1928]” displayed?

YES >> Replace RAS control unit. Refer to STC-90, "Removal and Installation" .
NO >> **INSPECTION END**

3. PERFORM SELF-DIAGNOSIS (WITHOUT CONSULT-II)

Without CONSULT-II

1. Perform the self-diagnosis and then erase self-diagnostic results. Refer to STC-53, "SELF-DIAGNOSTIC PROCEDURE (WITHOUT CONSULT-II)" and STC-54, "ERASE SELF-DIAGNOSIS" .
2. Perform the self-diagnosis again.

Do the self-diagnostic results indicate RAS control unit?

YES >> Replace RAS control unit. Refer to STC-90, "Removal and Installation" .
NO >> **INSPECTION END**

DTC C1925 AD CONVERTER

NGS000CS

- Check the following if “AD CONVERTER [C1925]” is detected in self-diagnosis results with CONSULT-II or “flickering pattern for 11” is detected in self-diagnosis results without CONSULT-II.

Refer to STC-56, "DTC C1900, C1901, C1905, C1906, C1907, C1908, C1922, C1927, C1928 CONTROL UNIT" .

DTC C1902, C1903, C1904, C1910, C1913 MOTOR OUTPUT

NGS0008I

- Check the following if “MOTOR OUTPUT [REV CURRENT] [C1902]”, “MOTOR OUTPUT [NO CURRENT] [C1903]”, “MOTOR OUTPUT [OVERCURRENT] [C1904]”, “MOTOR OUTPUT [MOTOR LOCK] [C1910]” or “MOTOR OUTPUT [ABNORML SIG] [C1913]” is detected in self-diagnosis results with CONSULT-II or “flickering pattern for 13” is detected in self-diagnosis results without CONSULT-II.

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition	Display value
MOTOR VOLTAGE [V]	Monitored value of voltage at RAS motor	Ignition switch: ON	Battery voltage
		Ignition switch: OFF	0 V
MOTOR CURRENT [A]	Monitored value of current at RAS motor	During RAS actuator assembly turning	Approx. 0 - 20 A
MTR CRNT OPE [A]	Current commanded value to RAS motor	During RAS actuator assembly turning	Approx. -20 - 20 A

RAS CONTROL UNIT TERMINALS AND REFERENCE VALUE

Data are reference value and are measured between each terminal and ground.

Terminal	Wire color	Item	Condition	Data (Approx.)
38	G/Y	RAS motor output voltage (right)	While RAS motor is operating for right	Battery voltage
			While RAS motor is operating for left	0 V
39	G/R	RAS motor output voltage (left)	While RAS motor is operating for right	0 V
			While RAS motor is operating for left	Battery voltage

CAUTION:

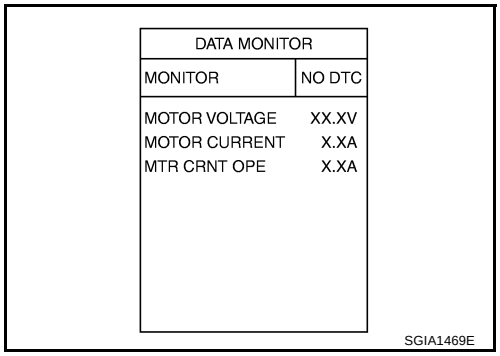
When using a circuit tester to measure voltage for inspection, be sure not to extend forcibly any connector terminals.

DIAGNOSTIC PROCEDURE

1. CHECK RAS MOTOR SIGNAL

With CONSULT-II

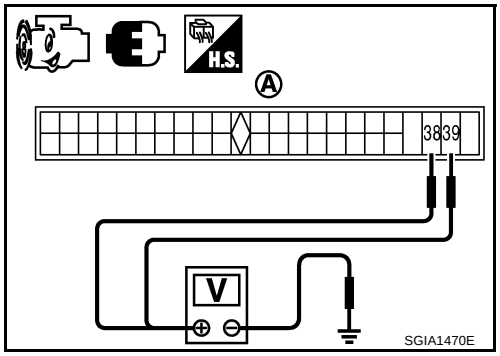
1. Start engine.
2. Select “DATA MONITOR” mode for “RAS/HICAS” with CONSULT-II.
3. Read out the value of “MOTOR VOLTAGE”, “MOTOR CURRENT” and “MTR CRNT OPE”.



Monitored item	Condition	Display value
MOTOR VOLTAGE	Ignition switch: ON	Battery voltage
	Ignition switch: OFF	0 V
MOTOR CURRENT	During RAS actuator assembly turning	Approx. 0 - 20 A
MTR CRNT OPE	During RAS actuator assembly turning	Approx. -20 - 20 A

Without CONSULT-II

1. Start engine.
2. Check voltage between RAS control unit harness connector (A) terminals and ground.



Connector	Terminal	Condition	Voltage (Approx.)
B39	38 - Ground	While RAS motor is operating for right	Battery voltage
		While RAS motor is operating for left	0 V
	39 - Ground	While RAS motor is operating for right	0 V
		While RAS motor is operating for left	Battery voltage

OK or NG

OK >> GO TO 4.
NG >> GO TO 2.

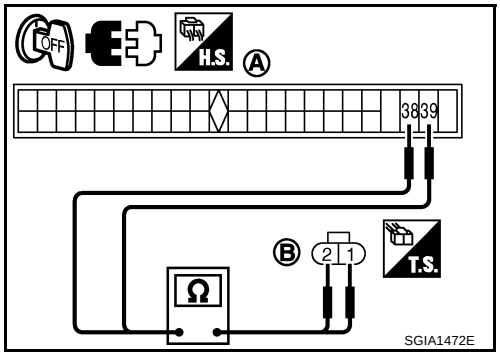
2. CHECK HARNESS BETWEEN RAS CONTROL UNIT AND RAS MOTOR

1. Turn ignition switch “OFF”.
2. Disconnect RAS control unit harness connector and RAS motor harness connector.
3. Check continuity between the following terminals.

- RAS control unit harness connector (A) B39 terminal 38 and RAS motor harness connector (B) B82 terminal 1.
- RAS control unit harness connector (A) B39 terminal 39 and RAS motor harness connector (B) B82 terminal 2.

Continuity should exist.

Also check harness for short to ground and short to power.



OK or NG

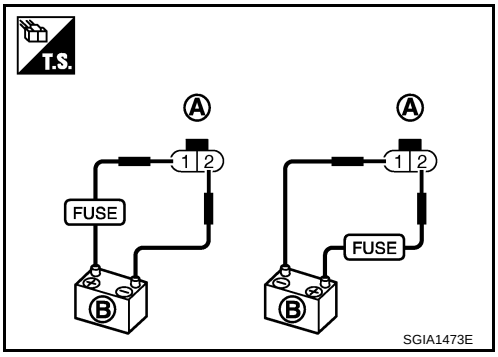
OK >> GO TO 3.
NG >> Repair or replace damaged parts.

3. CHECK RAS MOTOR

1. Turn ignition switch “OFF”.
2. Disconnect RAS motor harness connector.
3. Remove RAS motor. Refer to STC-92, "COMPONENTS" .
4. Check operation by supply 6 V (B) voltage to RAS motor connector (A) terminals 1 and 2.

CAUTION:

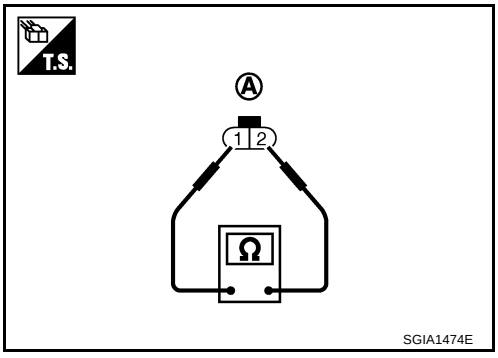
- **Never supply 12 V voltage (battery, etc.) to the RAS motor.**
- **Never operate RAS motor for more than 1 second.**
- **Be careful not to overheat the harness.**



Terminal	Actuator motor
1 (Positive) - 2 (Negative)	Clockwise rotate
2 (Positive) - 1 (Negative)	Counterclockwise rotate

5. Check continuity between RAS motor connector (A) terminals 1 and 2.

1 – 2 : Approx. 0.45 Ω



OK or NG

OK >> GO TO 4.
NG >> Replace RAS motor.

4. CHECK RAS CONTROL UNIT

Check RAS control unit input/output signal. Refer to STC-47, "RAS Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 5.
NG >> Check RAS control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

5. CHECK DTC

Perform the self-diagnosis, after driving a vehicle for a while.

OK or NG

OK >> **INSPECTION END**
NG >> Replace RAS control unit. Refer to STC-90, "Removal and Installation" .

DTC C1909 CONTROL UNIT

NGS0006X

- Check the following if “CONTROL UNIT [ABNORMAL6] [C1909]” is detected in self-diagnosis results with CONSULT-II or “flickering pattern for 11” is detected in self-diagnosis results without CONSULT-II.

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition	Display value
C/U VOLTAGE [V]	Power supply voltage for RAS control unit	Ignition switch: ON	Battery voltage
		Ignition switch: OFF	—

RAS CONTROL UNIT TERMINALS AND REFERENCE VALUE

Data are reference value and are measured between each terminal and ground.

Terminal	Wire color	Item	Condition	Data (Approx.)
27	GY	Ignition switch	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0 V
34	B	Ground	Always	0 V

CAUTION:

When using a circuit tester to measure voltage for inspection, be sure not to extend forcibly any connector terminals.

DIAGNOSTIC PROCEDURE

1. INSPECTION START

Is CONSULT-II available?

YES or NO

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

2. CHECK POWER SUPPLY SIGNAL

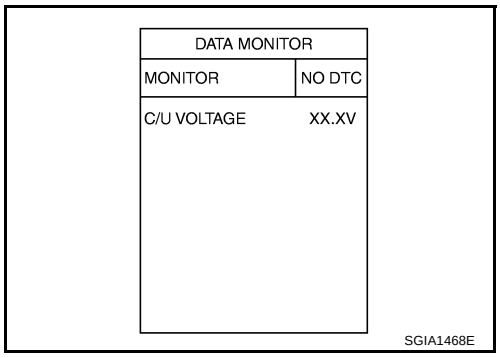
With CONSULT-II

1. Start engine.
2. Select “DATA MONITOR” mode for “RAS/HICAS” with CONSULT-II.
3. Read out the value of “C/U VOLTAGE”.

Monitored item	Condition	Display value
C/U VOLTAGE	Ignition switch: ON	Battery voltage

OK or NG

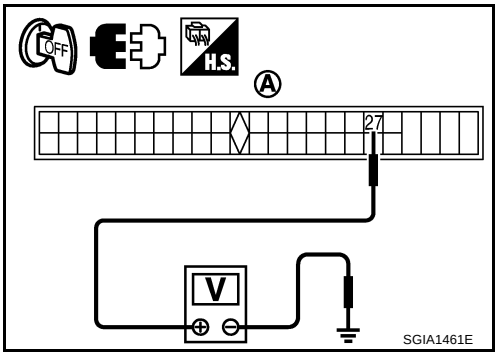
OK >> GO TO 5.
NG >> GO TO 3.



3. CHECK POWER SUPPLY

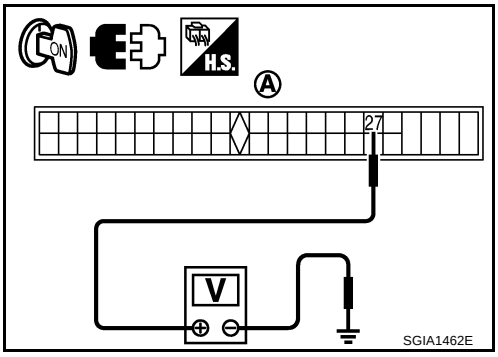
1. Turn ignition switch “OFF”.
2. Disconnect RAS control unit harness connector.
3. Check voltage between RAS control unit harness connector (A) terminal and ground.

Connector	Terminal	Voltage (Approx.)
B39	27 - Ground	0 V



4. Turn ignition switch “ON”. (Do not start engine.)
5. Check voltage between RAS control unit harness connector (A) terminal and ground.

Connector	Terminal	Voltage (Approx.)
B39	27 - Ground	Battery voltage



OK or NG

OK >> GO TO 4.
NG >> Check the following. If any items are damaged, repair or replace damaged parts.

- 10 A fuse [No. 7 located in the fuse block (J/B) No.1]. Refer to PG-2, "POWER SUPPLY ROUTING" .
- Harness for short or open between ignition switch and RAS control unit harness connector B39 terminal 27.
- Ignition switch. Refer to PG-2, "POWER SUPPLY ROUTING" .

4. CHECK GROUND CIRCUIT

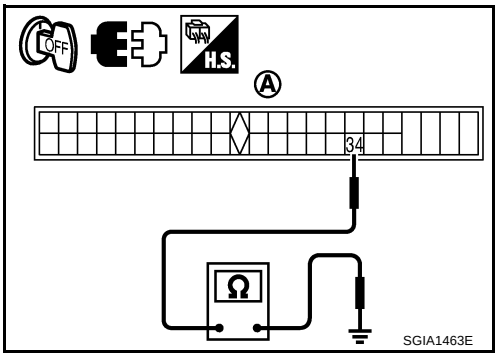
1. Turn ignition switch “OFF”.
2. Disconnect RAS control unit harness connector.
3. Check continuity between RAS control unit harness connector (A) B39 terminal 34 and ground.

Continuity should exist.

Also check harness for short to power.

OK or NG

OK >> GO TO 5.
NG >> Repair open circuit or short to power in harness or connectors.



5. CHECK RAS CONTROL UNIT

Check RAS control unit input/output signal. Refer to STC-47, "RAS Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 6.
NG >> Check RAS control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

6. CHECK DTC

Perform the self-diagnosis, after driving a vehicle for a while.

OK or NG

OK >> **INSPECTION END**
NG >> Replace RAS control unit. Refer to STC-90, "Removal and Installation" .

DTC C1911, C1912 MOTOR VOLTAGE

NGS0008J

- Check the following if “MOTOR VOLTAGE [LOW VOLTEGE] [C1911]” or “MOTOR VOLTAGE [BAD OBSTRCT] [C1912]” is detected in self-diagnosis results with CONSULT-II or “flickering pattern for 12” is detected in self-diagnosis results without CONSULT-II.

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition	Display value
C/U VOLTAGE [V]	Power supply voltage for RAS control unit	Ignition switch: ON	Battery voltage
		Ignition switch: OFF	—
MOTOR VOLTAGE [V]	Monitored value of voltage at RAS motor	Ignition switch: ON	Battery voltage
		Ignition switch: OFF	0 V
HICAS RELAY [ON/OFF]	RAS motor relay condition	Ignition switch: ON	ON
		Ignition switch: OFF	OFF

RAS CONTROL UNIT TERMINALS AND REFERENCE VALUE

Data are reference value and are measured between each terminal and ground.

Terminal	Wire color	Item	Condition	Data (Approx.)
25	L/W	RAS motor relay	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0 V
27	GY	Ignition switch	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0 V
37	L/Y	Power supply (RAS motor)	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0 V

CAUTION:

When using a circuit tester to measure voltage for inspection, be sure not to extend forcibly any connector terminals.

DIAGNOSTIC PROCEDURE

1. INSPECTION START

Is CONSULT-II available?

YES or NO

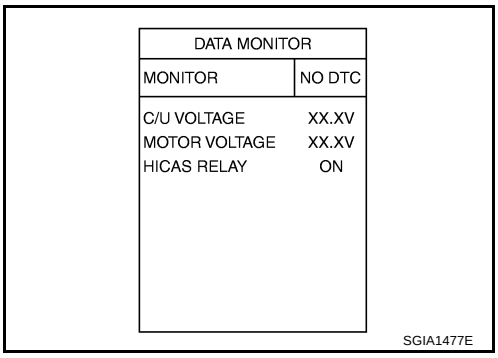
YES >> GO TO 2.
NO >> GO TO 3.

2. CHECK POWER SUPPLY SIGNAL

With CONSULT-II

1. Start engine.
2. Select “DATA MONITOR” mode for “RAS/HICAS” with CONSULT-II.
3. Read out the value of “C/U VOLTAGE”, “MOTOR VOLTAGE” and “HICAS RELAY”.

Monitored item	Condition	Display value
C/U VOLTAGE	Ignition switch: ON	Battery voltage
MOTOR VOLTAGE	Ignition switch: ON	Battery voltage
	Ignition switch: OFF	0 V
HICAS RELAY	Ignition switch: ON	ON
	Ignition switch: OFF	OFF



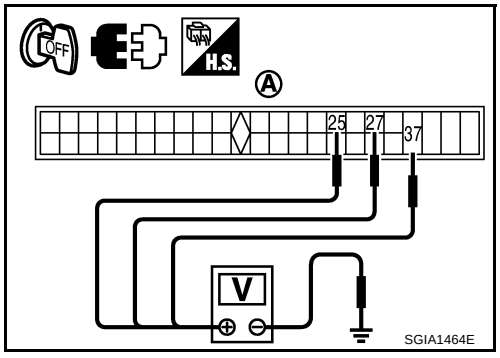
OK or NG

OK >> GO TO 7.
NG >> GO TO 3.

3. CHECK POWER SUPPLY

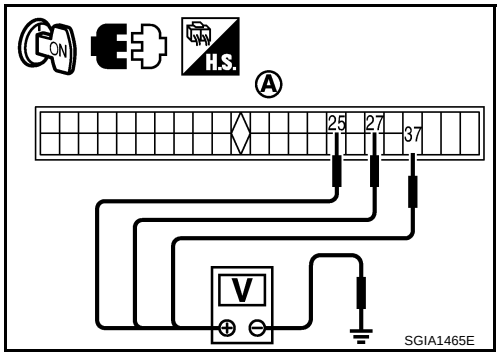
1. Turn ignition switch “OFF”.
2. Disconnect RAS control unit harness connector.
3. Check voltage between RAS control unit harness connector (A) terminals and ground.

Connector	Terminal	Voltage (Approx.)
B39	25 - Ground	0 V
	27 - Ground	
	37 - Ground	



4. Turn ignition switch “ON”. (Do not start engine.)
5. Check voltage between RAS control unit harness connector (A) terminals and ground.

Connector	Terminal	Voltage (Approx.)
B39	25 - Ground	Battery voltage
	27 - Ground	
	37 - Ground	



OK or NG

OK >> GO TO 4.

NG >> Check the following. If any items are damaged, repair or replace damaged parts.

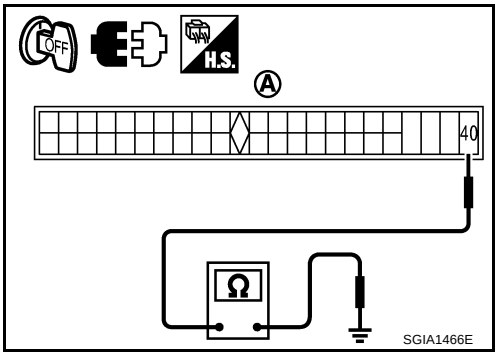
- 10 A fuse [No. 7 located in the fuse block (J/B) No.1]. Refer to PG-2, "POWER SUPPLY ROUTING" .
- 20 A fuse [No. 76 located in the fuse, fusible link and relay box]. Refer to PG-2, "POWER SUPPLY ROUTING" .
- Harness for short or open between ignition switch and RAS control unit harness connector B39 terminals 27.
- Harness for short or open between battery and RAS control unit harness connector B39 terminals 37.
- Harness for short or open between RAS control unit harness connector B39 terminal 25 and RAS motor relay harness connector B42 terminal 1.
- Harness for open circuit or short to power between RAS motor relay harness connector B42 terminal 2 and ground.
- Battery. Refer to PG-2, "POWER SUPPLY ROUTING" .

4. CHECK GROUND CIRCUIT

1. Turn ignition switch “OFF”.
2. Disconnect RAS control unit harness connector.
3. Check continuity between RAS control unit harness connector (A) B39 terminal 40 and ground.

   Continuity should exist.

   Also check harness for short to power.



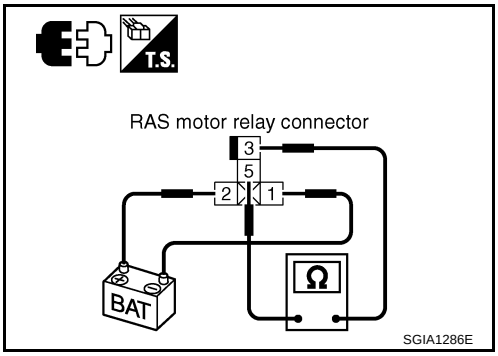
OK or NG

OK >> GO TO 5.
NG >> Check the following. If any items are damaged, repair or replace damaged parts.

- Harness open circuit or short to power between noise suppressor harness connector B41 terminal 4 and RAS control unit harness connector B39 terminal 40.
- Harness open circuit or short to power between noise suppressor harness connector B40 terminal 2 and ground.

5. CHECK RAS MOTOR RELAY

1. Turn ignition switch “OFF”.
2. Remove RAS motor relay. Refer to STC-41, "Component Parts Location" .
3. Apply 12 V direct current between RAS motor relay connector B42 terminals 1 and 2.
4. Check continuity between RAS motor relay connector B42 terminals 3 and 5.



Terminal	Condition	Continuity
3 - 5	1 2 V direct current supply between terminals 1 and 2	Yes
	OFF	No

5. Check continuity between RAS motor relay connector B42 terminals 1 and 2.

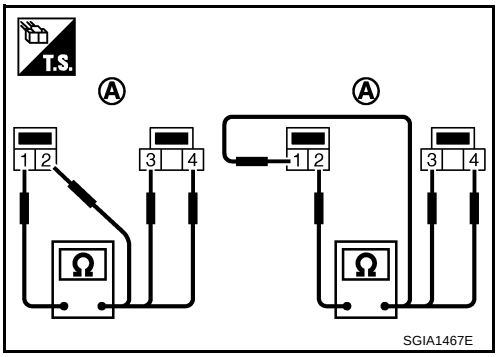
   1 – 2 : 74 Ω

OK or NG

OK >> GO TO 6.
NG >> Replace RAS motor relay.

6. CHECK NOISE SUPPRESSOR

1. Turn ignition switch “OFF”.
2. Remove noise suppressor. Refer to STC-41, "Component Parts Location" .
3. Check noise suppressor connector (A) continuity between the following terminals.



   1 – 3 : Continuity should exist.
   1 – 2 : Continuity should no exist.
   1 – 4 : Continuity should no exist.
   2 – 1 : Continuity should no exist.
   2 – 3 : Continuity should no exist.
   2 – 4 : Continuity should exist.

OK or NG

OK >> GO TO 7.
NG >> Replace RAS motor relay.

7. CHECK RAS CONTROL UNIT

Check RAS control unit input/output signal. Refer to STC-47, "RAS Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 8.
NG >> Check RAS control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

8. CHECK DTC

Perform the self-diagnosis, after driving a vehicle for a while.

OK or NG

OK >> **INSPECTION END**
NG >> Replace RAS control unit. Refer to STC-90, "Removal and Installation" .

DTC C1914, C1915, C1916, C1917, C1918 RR ST ANGLE SENSOR

NGS0008K

- Check the following if “RR ST ANGLE SENSOR [ABNORML VOL] [C1914]”, “RR ST ANGLE SENSOR [MAIN SIGNAL] [C1915]”, “RR ST ANGLE SENSOR [SUB SIGNAL] [C1916]”, “RR ST ANGLE SENSOR [OFFSET SIG1] [C1917]” or “RR ST ANGLE SENSOR [OFFSET SIG2] [C1918]” is detected in self-diagnosis results with CONSULT-II or “flickering pattern for 24 or 25” is detected in self-diagnosis results without CONSULT-II.

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition	Display value
RR ST ANG-MAI [V]	Rear wheel steering angle (main) sensor output voltage	RAS actuator assembly turned full right	Approx. 4.4 V
		RAS actuator assembly neutral	Approx. 2.4 V
		RAS actuator assembly turned full left	Approx. 0.4 V
RR ST ANG-SUB [V]	Rear wheel steering angle (sub) sensor output voltage	RAS actuator assembly turned full right	Approx. 4.4 V
		RAS actuator assembly neutral	Approx. 2.4 V
		RAS actuator assembly turned full left	Approx. 0.4 V
RR ST ANG-VOL [V]	Rear wheel steering angle sensor input voltage	Ignition switch: ON	Approx. 5 V
		Ignition switch: OFF	0 V
RR ANGLE OPE [°]	Rear wheel steering angle detected by rear wheel steering angle sensor	RAS actuator assembly turned full right	Approx. 1°
		RAS actuator assembly neutral	Approx. 0°
		RAS actuator assembly turned full left	Approx. -1°

RAS CONTROL UNIT TERMINALS AND REFERENCE VALUE

Data are reference value and are measured between each terminal and ground.

Terminal	Wire color	Item	Condition	Data (Approx.)
4	G	Rear wheel steering angle (main) sensor output voltage	RAS actuator assembly turned full right	4.4 V
			RAS actuator assembly neutral	2.4 V
			RAS actuator assembly turned full left	0.4 V
5	W	Power supply (rear wheel steering angle sensor)	Ignition switch: ON	5 V
			Ignition switch: OFF	0 V
7	R	Rear wheel steering angle (sub) sensor output voltage	RAS actuator assembly turned full right	4.4 V
			RAS actuator assembly neutral	2.4 V
			RAS actuator assembly turned full left	0.4 V
15	B	Ground (rear wheel steering angle sensor)	Always	0 V

CAUTION:

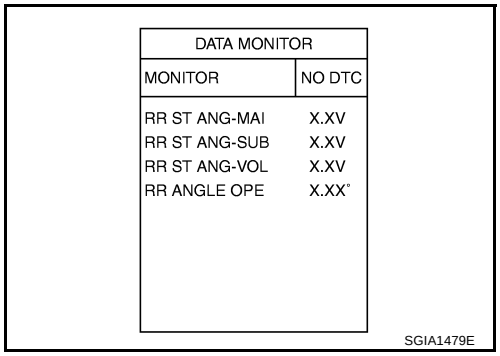
When using a circuit tester to measure voltage for inspection, be sure not to extend forcibly any connector terminals.

DIAGNOSTIC PROCEDURE

1. CHECK REAR WHEEL STEERING ANGLE SENSOR SIGNAL

With CONSULT-II

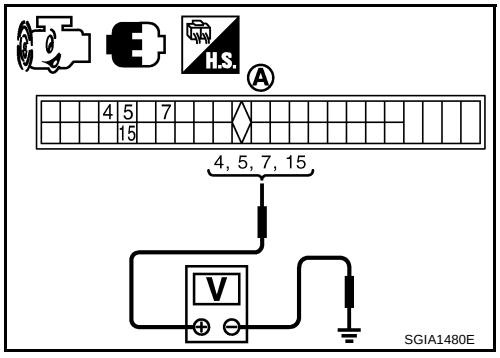
1. Start engine.
2. Select “DATA MONITOR” mode for “RAS/HICAS” with CONSULT-II.
3. Read out the value of “RR ST ANG-MAI”, “RR ST ANG-SUB”, “RR ST ANG-VOL” and “RR ANGLE OPE”.



Monitored item	Condition	Display value
RR ST ANG-MAI	RAS actuator assembly turned full right	Approx. 4.4 V
	RAS actuator assembly neutral	Approx. 2.4 V
	RAS actuator assembly turned full left	Approx. 0.4 V
RR ST ANG-SUB	RAS actuator assembly turned full right	Approx. 4.4 V
	RAS actuator assembly neutral	Approx. 2.4 V
	RAS actuator assembly turned full left	Approx. 0.4 V
RR ST ANG-VOL	Ignition switch: ON	Approx. 5 V
	Ignition switch: OFF	0 V
RR ANGLE OPE	RAS actuator assembly turned full right	Approx. 1°
	RAS actuator assembly neutral	Approx. 0°
	RAS actuator assembly turned full left	Approx. -1°

Without CONSULT-II

1. Start engine.
2. Check signal between RAS control unit harness connector (A) terminals and ground.



Connector	Terminal	Condition	Voltage (Approx.)
B39	4 - Ground	RAS actuator assembly turned full right	4.4 V
		RAS actuator assembly neutral	2.4 V
		RAS actuator assembly turned full left	0.4 V
	5 - Ground	Ignition switch: ON	5 V
		Ignition switch: OFF	0 V
	7 - Ground	RAS actuator assembly turned full right	4.4 V
		RAS actuator assembly neutral	2.4 V
		RAS actuator assembly turned full left	0.4 V
	15 - Ground	Always	0 V

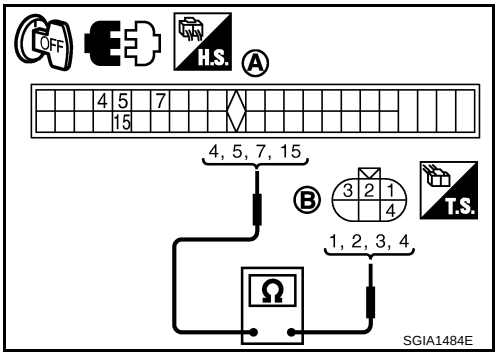
OK or NG

OK >> GO TO 6.
NG >> GO TO 2.

2. CHECK HARNESS BETWEEN RAS CONTROL UNIT AND REAR WHEEL STEERING ANGLE SENSOR

1. Turn ignition switch “OFF”.
2. Disconnect RAS control unit harness connector and rear wheel steering angle sensor harness connector.
3. Check continuity between the following terminals.

- RAS control unit harness connector (A) B39 terminal 4 and rear wheel steering angle sensor harness connector (B) B81 terminal 4.
- RAS control unit harness connector (A) B39 terminal 5 and rear wheel steering angle sensor harness connector (B) B81 terminal 1.
- RAS control unit harness connector (A) B39 terminal 7 and rear wheel steering angle sensor harness connector (B) B81 terminal 2.
- RAS control unit harness connector (A) B39 terminal 15 and rear wheel steering angle sensor harness connector (B) B81 terminal 3.



Continuity should exist.

Also check harness for short to ground and short to power.

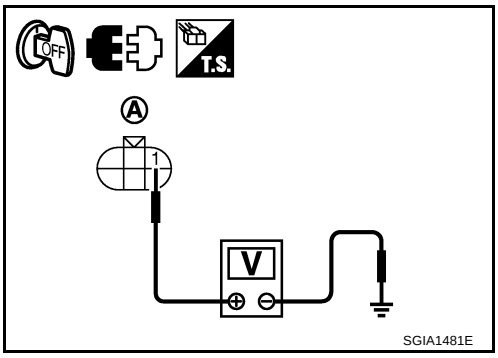
OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts.

3. CHECK REAR WHEEL STEERING SENSOR POWER SUPPLY

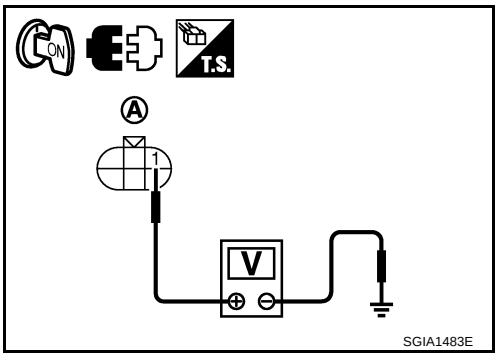
1. Turn ignition switch “OFF”.
2. Disconnect rear wheel steering sensor harness connector.
3. Check voltage between rear wheel steering sensor harness connector (A) terminal 1 and ground.

Connector	Terminal	Voltage (Approx.)
B81	1 - Ground	0 V



4. Turn ignition switch “ON”. (Do not start engine.)
5. Check voltage between rear wheel steering sensor harness connector (A) terminal 1 and ground.

Connector	Terminal	Voltage (Approx.)
B81	1 - Ground	5 V



OK or NG

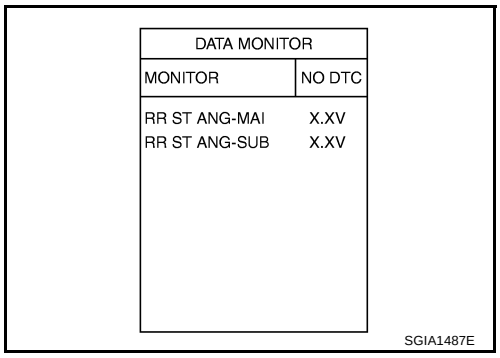
OK >> GO TO 4.
NG >> Replace RAS control unit. Refer to STC-90, "Removal and Installation" .

4. CHECK (1): REAR WHEEL STEERING ANGLE SENSOR

With CONSULT-II

1. Start engine.
2. Select “DATA MONITOR” mode for “RAS/HICAS” with CONSULT-II.
3. Read out the value of “RR ST ANG-MAI” and “RR ST ANG-SUB”.

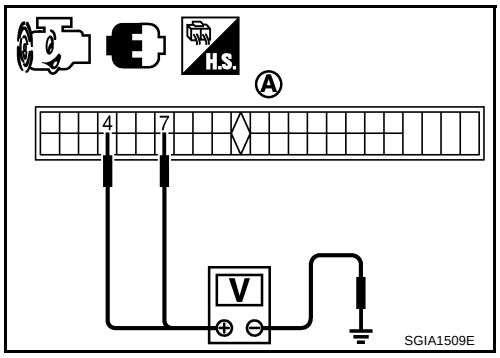
Monitored item	Condition	Display value
RR ST ANG-MAI	RAS actuator assembly neutral	Approx. 2.4 V
RR ST ANG-SUB	RAS actuator assembly neutral	Approx. 2.4 V



Without CONSULT-II

1. Start engine.
2. Check signal between RAS control unit harness connector (A) terminals and ground.

Connector	Terminal	Condition	Voltage (Approx.)
B39	4 - Ground	RAS actuator assembly neutral	2.4 V
	7 - Ground	RAS actuator assembly neutral	2.4 V



Is there approximately 1 V difference between main output and sub output?

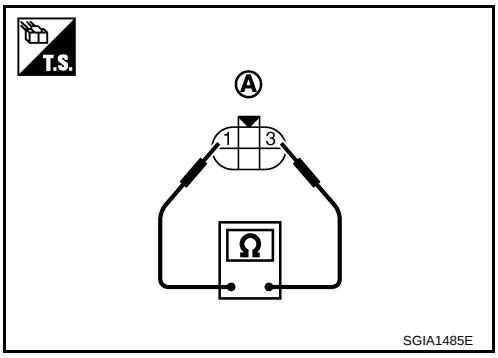
YES >> Replace rear wheel steering angle sensor. Perform the neutral position adjustment after replacing rear wheel steering angle sensor. Refer toSTC-92, "Neutral Position" .

NO >> GO TO 5.

5. CHECK (2): REAR WHEEL STEERING ANGLE SENSOR

1. Turn ignition switch “OFF”.
2. Disconnect rear wheel steering angle sensor harness connector.
3. Remove rear wheel steering angle sensor.
4. Check resistance between rear wheel steering angle sensor connector (A) B81 terminals 1 and 3.

   1 - 3 : 1 kΩ

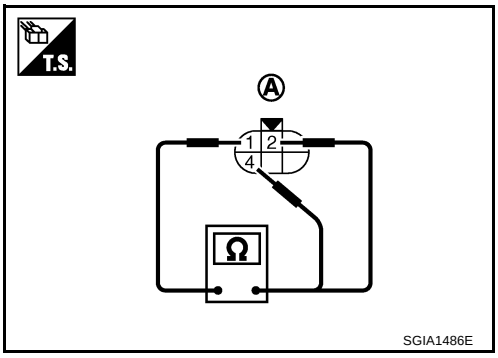


5. While turning the rear wheel steering angle sensor clockwise or counterclockwise, check rear wheel steering angle sensor connector (A) B81 terminals 1 and 2, 4.

   1 - 2 : 1.2 k – 1.5 kΩ

   1 - 4 : 1.2 k – 1.5 kΩ

6. Perform the neutral position adjustment of rear wheel steering angle sensor after checking. Refer to STC-92, "Neutral Position" .



OK or NG

OK >> GO TO 6.

NG >> Replace rear wheel steering angle sensor. Perform the neutral position adjustment after replacing rear wheel steering angle sensor. Refer toSTC-92, "Neutral Position" .

6. CHECK RAS CONTROL UNIT

Check RAS control unit input/output signal. Refer to STC-47, "RAS Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 7.

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

7. CHECK DTC

Perform the self-diagnosis, after driving a vehicle for a while.

OK or NG

OK >> **INSPECTION END**

NG >> Replace RAS control unit. Refer to STC-90, "Removal and Installation" .

DTC C1919 VEHICLE SPEED SEN

NGS0008L

- Check the following if “VEHICLE SPEED SEN [NO SIGNAL] [C1919]” is detected in self-diagnosis results with CONSULT-II or “flickering pattern for 21” is detected in self-diagnosis results without CONSULT-II.

DIAGNOSTIC PROCEDURE

1. CHECK DTC WITH VDC/TCS/ABS CONTROL UNIT

Perform self-diagnosis with VDC/TCS/ABS control unit. Refer to BRC-24, "SELF-DIAG RESULT MODE" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.
NO >> GO TO 2.

2. CHECK RAS CONTROL SYSTEM

Perform self-diagnosis with RAS control unit. Refer to STC-49, "SELF-DIAG RESULT MODE" .

Is the “CAN COMM [U1000]” or “CONTROL UNIT (CAN) [U1010]” displayed?

YES >> Perform trouble diagnosis for DTC U1000 CAN or DTC U1010 CONTROL UNIT (CAN). Refer to STC-75, "DTC U1000 CAN COMM" or STC-75, "DTC U1010 CONTROL UNIT (CAN)" .
NO >> GO TO 3.

3. CHECK RAS CONTROL UNIT

Check RAS control unit input/output signal. Refer to STC-47, "RAS Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 4.
NG >> Check RAS control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

4. CHECK DTC

Perform the self-diagnosis, after driving a vehicle for a while.

OK or NG

OK >> **INSPECTION END**
NG >> Perform self-diagnosis with VDC/TCS/ABS control unit again. Refer to BRC-24, "SELF-DIAG RESULT MODE" .

DTC C1920, C1923, C1924, C1926 STEERING ANGLE SEN

NGS0008M

- Check the following if “STEERING ANGLE SEN [NO SIGNAL] [C1920]”, “STEERING ANGLE SEN [NO CHANGE] [C1923]”, “STEERING ANGLE SEN [NO NEUT STATE] [C1924]” or “STEERING ANGLE SEN [C1926]” is detected in self-diagnosis results with CONSULT-II or “flickering pattern for 22” is detected in self-diagnosis results without CONSULT-II.

DIAGNOSTIC PROCEDURE

1. CHECK DTC WITH VDC/TCS/ABS CONTROL UNIT

Perform self-diagnosis with VDC/TCS/ABS control unit. Refer to BRC-24, "SELF-DIAG RESULT MODE" .

Is any malfunction detected by self-diagnosis (DTC C1158 ST ANG SEN)?

YES >> Check the malfunctioning system.
NO >> GO TO 2.

2. CHECK RAS CONTROL SYSTEM

Perform self-diagnosis with RAS control unit. Refer to STC-49, "SELF-DIAG RESULT MODE" .

Is the “CAN COMM [U1000]” or “CONTROL UNIT (CAN) [U1010]” displayed?

YES >> Perform trouble diagnosis for DTC U1000 CAN or DTC U1010 CONTROL UNIT (CAN). Refer to STC-75, "DTC U1000 CAN COMM" or STC-75, "DTC U1010 CONTROL UNIT (CAN)" .
NO >> GO TO 3.

3. CHECK RAS CONTROL UNIT

Check RAS control unit input/output signal. Refer to STC-47, "RAS Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 4.
NG >> Check RAS control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

4. CHECK DTC

Perform the self-diagnosis, after driving a vehicle for a while.

OK or NG

OK >> **INSPECTION END**
NG >> Replace RAS control unit. Refer to STC-90, "Removal and Installation" .

DTC C1921 ENG REV SIGNAL

NGS0006W

- Check the following if “ENG REV SIGNAL [C1921]” is detected in self-diagnosis results with CONSULT-II or “flickering pattern for 33” is detected in self-diagnosis results without CONSULT-II.

DIAGNOSTIC PROCEDURE

1. CHECK DTC WITH ECM

Perform self-diagnosis with ECM. Refer to EC-47, "ON BOARD DIAGNOSTIC (OBD) SYSTEM" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.
NO >> GO TO 2.

2. CHECK RAS CONTROL SYSTEM

Perform self-diagnosis with RAS control unit. Refer to STC-49, "SELF-DIAG RESULT MODE" .

Is the “CAN COMM [U1000]” or “CONTROL UNIT (CAN) [U1010]” displayed?

YES >> Perform trouble diagnosis for DTC U1000 CAN or DTC U1010 CONTROL UNIT (CAN). Refer to STC-75, "DTC U1000 CAN COMM" or STC-75, "DTC U1010 CONTROL UNIT (CAN)" .
NO >> GO TO 3.

3. CHECK RAS CONTROL UNIT

Check RAS control unit input/output signal. Refer to STC-47, "RAS Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 4.
NG >> Check RAS control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

4. CHECK DTC

Perform the self-diagnosis, after driving a vehicle for a while.

OK or NG

OK >> **INSPECTION END**
NG >> Perform self-diagnosis with ECM again. Refer to EC-47, "ON BOARD DIAGNOSTIC (OBD) SYSTEM" .

DTC C1929 VDC

NGS0008N

- Check the following if “VDC [C1929]” is detected in self-diagnosis results with CONSULT-II or “flickering pattern for 26” is detected in self-diagnosis results without CONSULT-II.

DIAGNOSTIC PROCEDURE

1. CHECK DTC WITH VDC/TCS/ABS CONTROL UNIT

Perform self-diagnosis with VDC/TCS/ABS control unit. Refer to BRC-24, "SELF-DIAG RESULT MODE" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.
NO >> GO TO 2.

2. CHECK RAS CONTROL SYSTEM

Perform self-diagnosis with RAS control unit. Refer to STC-49, "SELF-DIAG RESULT MODE" .

Is the “CAN COMM [U1000]” or “CONTROL UNIT (CAN) [U1010]” displayed?

YES >> Perform trouble diagnosis for DTC U1000 CAN or DTC U1010 CONTROL UNIT (CAN). Refer to STC-75, "DTC U1000 CAN COMM" or STC-75, "DTC U1010 CONTROL UNIT (CAN)" .
NO >> GO TO 3.

3. CHECK RAS CONTROL UNIT

Check RAS control unit input/output signal. Refer to STC-47, "RAS Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 4.
NG >> Check RAS control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

4. CHECK DTC

Perform the self-diagnosis, after driving a vehicle for a while.

OK or NG

OK >> **INSPECTION END**
NG >> Perform self-diagnosis with VDC/TCS/ABS control unit again. Refer to BRC-24, "SELF-DIAG RESULT MODE" .

DTC U1000 CAN COMM

NGS0008O

- Check the following if “CAN COMM [U1000]” is detected in self-diagnosis results with CONSULT-II.

DIAGNOSTIC PROCEDURE

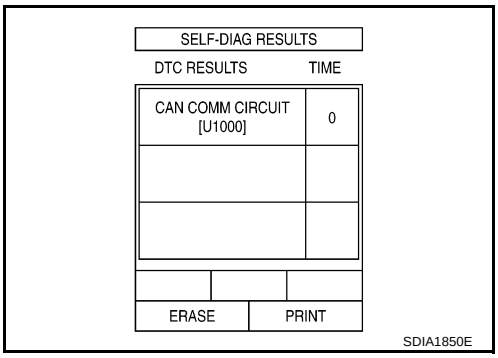
1. CHECK CAN COMMUNICATION CIRCUIT

With CONSULT-II

1. Turn ignition switch “ON” and start engine.
2. Select “SELF-DIAG RESULTS” mode for “RAS/HICAS” within CONSULT-II.
3. Perform the self-diagnosis.

Is the “CAN COMM CIRCUIT [U1000]” displayed?

YES >> Print out CONSULT-II screen and go to LAN-17, "Precautions When Using CONSULT-II" .
NO >> **INSPECTION END**



DTC U1010 CONTROL UNIT (CAN)

NGS0008P

- Check the following if “CONTROL UNIT (CAN) [U1010]” is detected in self-diagnosis results with CONSULT-II.

DIAGNOSTIC PROCEDURE

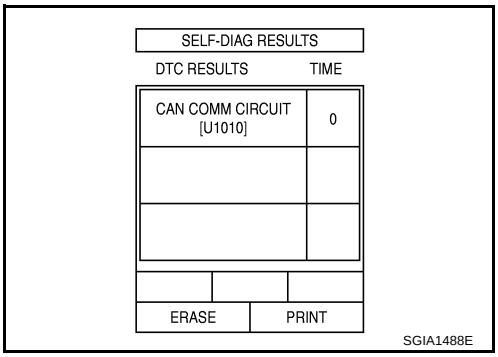
1. CHECK CAN COMMUNICATION CIRCUIT

With CONSULT-II

1. Turn ignition switch “ON” and start engine.
2. Select “SELF-DIAG RESULTS” mode for “RAS/HICAS” within CONSULT-II.
3. Perform the self-diagnosis.

Is the “CAN COMM CIRCUIT [U1010]” displayed?

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



2. PERFORM SELF-DIAGNOSIS

With CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “SELF-DIAG RESULTS” mode for “RAS/HICAS” with CONSULT-II.
3. Touch “ERASE”.
4. Turn ignition switch “OFF” and wait at least 10 seconds.
5. Perform the self-diagnosis, after driving a vehicle for a while.

Is the “U1010 CONTROL UNIT (CAN)” displayed?

YES >> Replace RAS control unit. Refer to STC-90, "Removal and Installation" .
NO >> **INSPECTION END**

RAS Actuator Assembly

NGS0008X

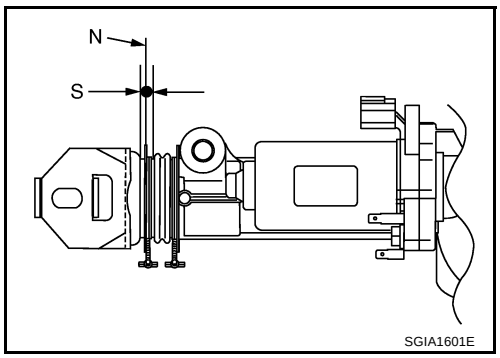
DIAGNOSTIC PROCEDURE

1. CHECK (1): RAS ACTUATOR ASSEMBLY STROKE

Perform CONSULT-II “ACTIVE TEST”, and then check the RAS actuator assembly stroke “S” when turning the steering wheel clockwise or counterclockwise by 180° or more. Refer to STC-52, "Operation Procedure" .

RAS actuator stroke “S”

: 2.8 – 3.0 mm (0.110 – 0.118 in)



OK or NG

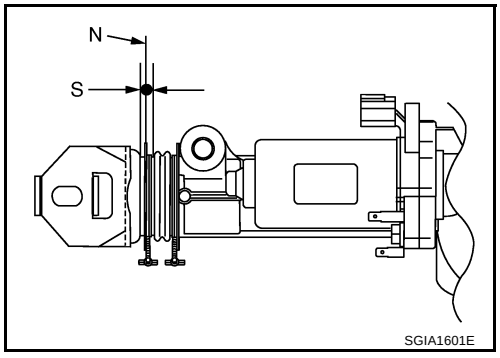
OK >> GO TO 2.
NG >> GO TO 3.

2. CHECK (2): RAS ACTUATOR ASSEMBLY STROKE

Perform CONSULT-II “ACTIVE TEST“. When turning the steering wheel in neutral position “N”, the rear wheel turns clockwise/counterclockwise periodically. At that time, check RAS actuator assembly stroke “S”. Refer to STC-52, "Operation Procedure" .

RAS actuator stroke “S”

: 2.3 – 2.5 mm (0.091 – 0.098 in)



OK or NG

OK >> **INSPECTION END**
NG >> GO TO 3.

3. CHECK RAS MOTOR

Check RAS motor. Refer to STC-82, "RAS MOTOR" .

OK or NG

OK >> GO TO 4.
NG >> Check the RAS actuator assembly stroke again after replacing.

4. CHECK REAR WHEEL STEERING ANGLE SENSOR

Check rear wheel steering angle sensor. Refer to STC-83, "REAR WHEEL STEERING ANGLE SENSOR" .

OK or NG

OK >> GO TO 5.
NG >> Rear wheel steering angle sensor malfunction. Check the stroke again after replacing.

5. CHECK (1): RAS ACTUATOR ASSEMBLY STROKE AGAIN

Check RAS actuator assembly stroke again after checking rear suspension components.

OK or NG

OK >> GO TO 6.
NG >> RAS actuator assembly is malfunctioning. Replace RAS actuator assembly.

6. CHECK RAS CONTROL UNIT

Check RAS control unit input/output signal. Refer to STC-47, "RAS Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 7.
NG >> Check RAS control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

7. CHECK (2): RAS ACTUATOR ASSEMBLY STROKE AGAIN

Check RAS actuator assembly stroke again.

OK or NG

OK >> **INSPECTION END**
NG >> Replace RAS control unit. Refer to STC-90, "Removal and Installation" .

Power Steering Solenoid Valve

NGS0006V

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition	Display value
POWER STR SOL [A]	Monitored value of current at power steering solenoid valve	Vehicle speed: 0 km/h (0 MPH) (Engine is running)	Approx. 1.10 A
		Vehicle speed: 100 km/h (62 MPH)	Approx. 0.54 A

RAS CONTROL UNIT TERMINALS AND REFERENCE VALUE

Data are reference value and are measured between each terminal and ground.

Terminal	Wire color	Item	Condition	Data (Approx.)
36	LG	Power steering solenoid valve	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

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

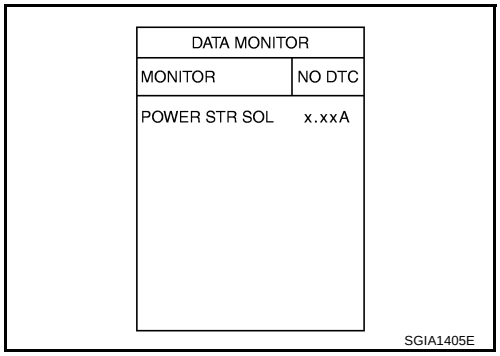
DIAGNOSTIC PROCEDURE

1. CHECK POWER STEERING SOLENOID VALVE SIGNAL

With CONSULT-II

1. Start engine.
2. Select “DATA MONITOR” mode for “RAS/HICAS” with CONSULT-II.
3. Read out the value of “POWER STR SOL”.

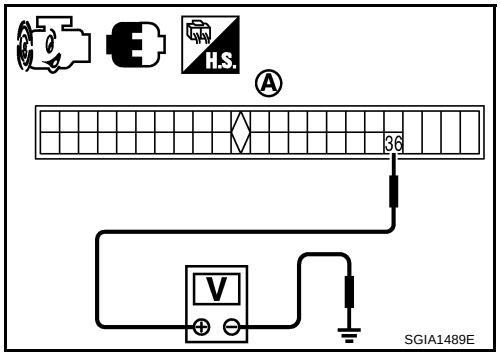
Condition	Display value
Vehicle speed: 0 km/h (0 MPH) (Engine is running)	Approx. 1.10 A
Vehicle speed: 100 km/h (62 MPH)	Approx. 0.54 A



Without CONSULT-II

1. Start engine.
2. Check signal between RAS control unit harness connector (A) terminal and ground.

Connector	Terminal	Condition	Data (Approx.)
B39	36 - 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



OK or NG

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

2. CHECK POWER STEERING SOLENOID VALVE GROUND CIRCUIT

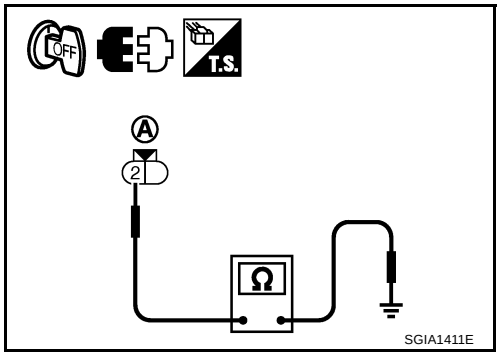
1. Turn ignition switch “OFF”.
2. Disconnect power steering solenoid valve harness connector.
3. Check continuity between power steering solenoid valve harness connector (A) F3 terminal 2 and ground.

Continuity should exist.

Also check harness for short to power.

OK or NG

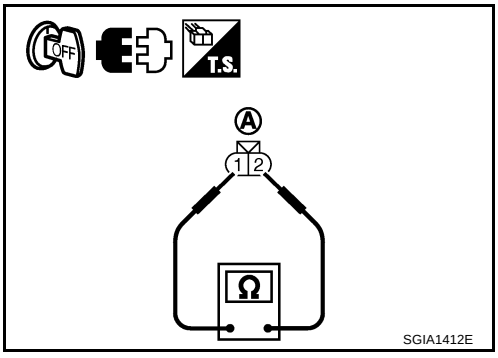
OK >> GO TO 3.
NG >> Repair or replace damaged parts.



3. CHECK POWER STEERING SOLENOID VALVE

1. Turn ignition switch “OFF”.
2. Disconnect power steering solenoid valve harness connector.
3. Check resistance between power steering solenoid valve connector (A) terminals 1 and 2.

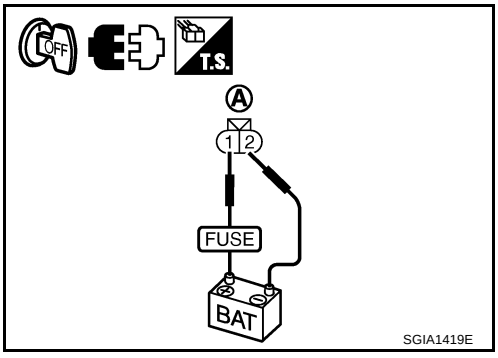
   1 - 2 : Approx. 4 - 6 Ω



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

OK or NG

OK >> GO TO 4.
NG >> Replace power steering solenoid valve. Refer to PS-17, "COMPONENT" .



4. CHECK HARNESS BETWEEN RAS CONTROL UNIT AND POWER STEERING SOLENOID VALVE

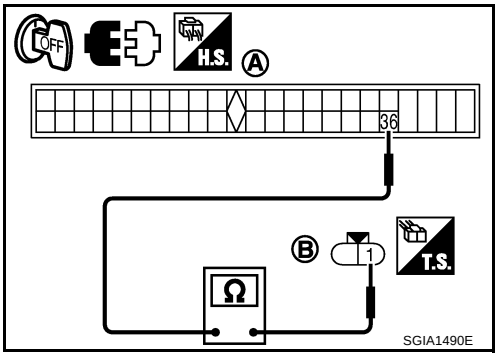
1. Turn ignition switch “OFF”.
2. Disconnect RAS control unit harness connector and power steering solenoid valve harness connector.
3. Check continuity between RAS control unit harness connector (A) B39 terminal 36 and power steering solenoid valve harness connector (B) F3 terminal 1.

   Continuity should exist.

   Also check harness for short to ground and short to power.

OK or NG

OK >> GO TO 5.
NG >> Repair or replace damaged parts.



5. CHECK RAS CONTROL UNIT

Check RAS control unit input/output signal. Refer to STC-47, "RAS Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 6.
NG >> Check RAS control unit pin terminals for damage or loose connection with harness connector. If any item is damaged, repair or replace damaged parts.

6. CHECK STEERING WHEEL TURNING FORCE

Check steering wheel turning force. Refer to PS-8, "STEERING WHEEL TURNING FORCE" .

OK or NG

OK >> **INSPECTION END**

NG >> Check relief oil pressure of power steering oil pump and power steering gear. If any item is damaged, repair or replace damaged parts. Refer to PS-26, "RELIEF OIL PRESSURE" (power steering oil pump) and PS-28, "Disassembly and Assembly" (power steering gear).

Stop Lamp Switch

NGS0008Q

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition	Display value
STOP LAMP SW [ON/OFF]	Stop lamp condition	Brake pedal: Depressed	ON
		Brake pedal: Released	OFF

RAS CONTROL UNIT TERMINALS AND REFERENCE VALUE

Data are reference value and are measured between each terminal and ground.

Terminal	Wire color	Item	Condition	Data (Approx.)
22	L/B	Stop lamp switch	Brake pedal: Depressed	Battery voltage
			Brake pedal: Released	0 V

CAUTION:

When using a circuit tester to measure voltage for inspection, be sure not to extend forcibly any connector terminal.

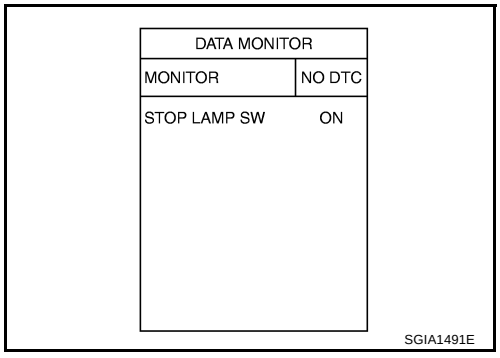
DIAGNOSTIC PROCEDURE

1. CHECK STOP LAMP SIGNAL

With CONSULT-II

1. Start engine.
2. Select “DATA MONITOR” mode for “RAS/HICAS” with CONSULT-II.
3. Read out the value of “STOP LAMP SW”.

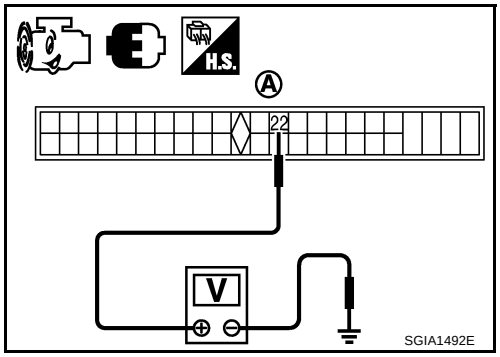
Condition	Display value
Brake pedal: Depressed	ON
Brake pedal: Released	OFF



Without CONSULT-II

1. Start engine.
2. Check signal between RAS control unit harness connector (A) terminal and ground.

Connector	Terminal	Condition	Data (Approx.)
B39	22 - Ground	Brake pedal: Depressed	Battery voltage
		Brake pedal: Released	0 V



OK or NG

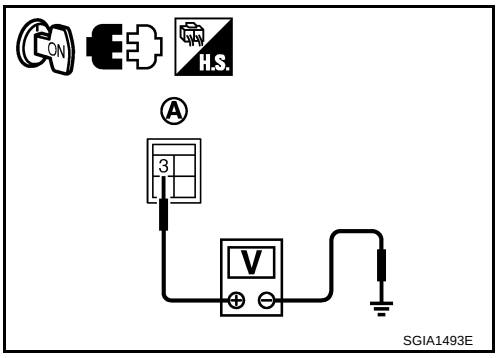
OK >> GO TO 5.

NG >> GO TO 2.

2. CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

1. Turn ignition switch “OFF”.
2. Disconnect stop lamp switch harness connector.
3. Turn ignition switch “ON”. (Do not start engine.)
4. Check voltage between stop lamp switch harness connector (A) M402 terminal 3 and ground.

Connector	Terminal	Voltage (Approx.)
M402	3 - Ground	Battery voltage



OK or NG

OK >> GO TO 3.
NG >> Check the following. If any items are damaged, repair or replace damaged parts.

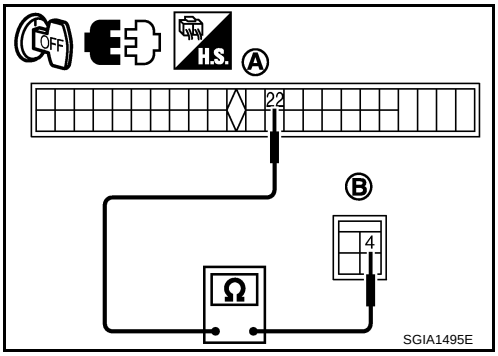
- 10A fuse [No. 17, located in the fuse block (J/B) No.1]. Refer to PG-2, "POWER SUPPLY ROUTING" .
- Harness for short or open between battery and stop lamp switch harness connector M402 terminal 3.

3. CHECK HARNESS BETWEEN RAS CONTROL UNIT AND STOP LAMP SWITCH

1. Turn ignition switch “OFF”.
2. Disconnect RAS control unit harness connector and stop lamp switch harness connector.
3. Check continuity between RAS control unit harness connector (A) B39 terminal 22 and stop lamp switch harness connector (B) M402 terminal 4.

Continuity should exist.

Also check harness for short to ground and short to power.



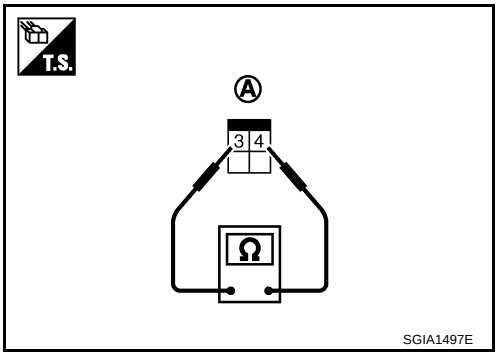
OK or NG

OK >> GO TO 4.
NG >> Repair or replace damaged parts.

4. CHECK STOP LAMP SWITCH

1. Turn ignition switch “OFF”.
2. Disconnect stop lamp switch harness connector.
3. Remove stop lamp switch.
4. Push and release stop lamp switch and check continuity between stop lamp switch connector (A) M402 terminals 3 and 4.

Terminal	Condition	Continuity
3 - 4	Push stop lamp switch	Yes
	Release stop switch	No



OK or NG

OK >> GO TO 5.
NG >> Replace back-up lamp switch.

5. CHECK RAS CONTROL UNIT

Check RAS control unit input/output signal. Refer to STC-47, "RAS Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> **INSPECTION END**

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

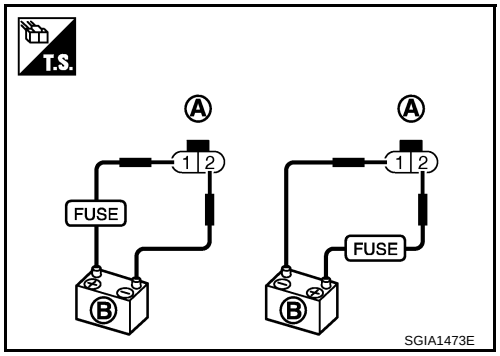
Component Inspection

NGS000CU

RAS MOTOR

1. Turn ignition switch “OFF”.
2. Disconnect RAS motor harness connector.
3. Remove RAS motor. Refer to STC-92, "COMPONENTS" .
4. Check operation by supply 6 V (B) voltage to RAS motor connector (A) terminals 1 and 2.

   CAUTION:
   - **Never supply 12 V voltage (battery, etc.) to the RAS motor.**
   - **Never operate RAS motor for more than 1 second.**
   - **Be careful not to overheat the harness.**

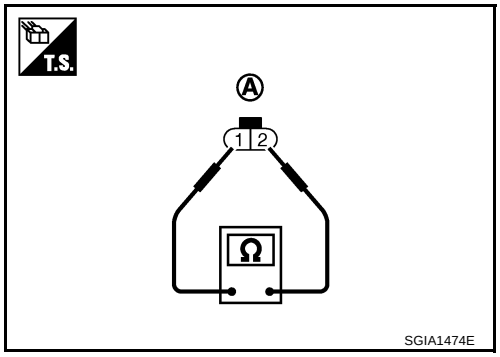


Terminal	Actuator motor
1 (Positive) - 2 (Negative)	Clockwise rotate
2 (Positive) - 1 (Negative)	Counterclockwise rotate

5. Check continuity between RAS motor connector (A) B82 terminals 1 and 2.

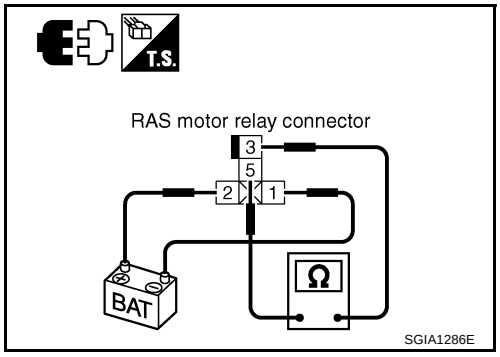
   1 – 2 : Approx. 0.45 Ω

6. If NG, replace the RAS motor.



RAS MOTOR RELAY

1. Turn ignition switch “OFF”.
2. Remove RAS motor relay. Refer to STC-41, "Component Parts Location" .
3. Apply 12 V direct current between RAS motor relay connector B42 terminals 1 and 2.
4. Check continuity between RAS motor relay connector B42 terminals 3 and 5.



Terminal	Condition	Continuity
3 - 5	1 2 V direct current supply between terminals 1 and 2	Yes
	OFF	No

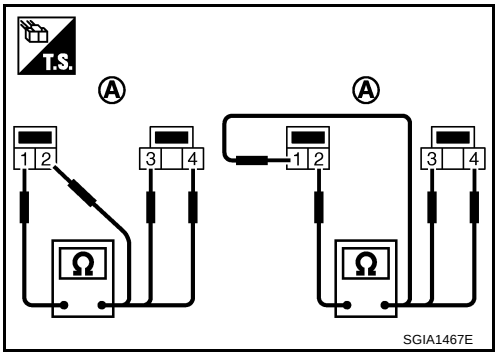
5. Check continuity between RAS motor relay connector B42 terminals 1 and 2.

   1 – 2 : 74 Ω

6. If NG, replace the RAS motor relay.

NOISE SUPPRESSOR

1. Turn ignition switch “OFF”.
2. Remove noise suppressor. Refer to STC-41, "Component Parts Location" .
3. Check noise suppressor connector (A) continuity between the following terminals.



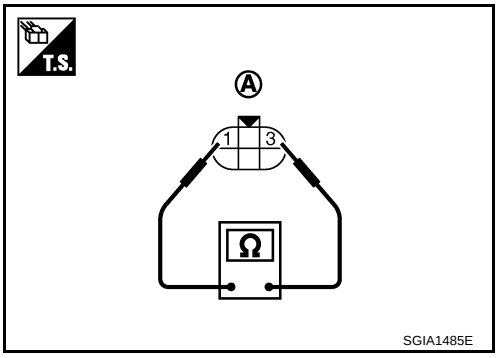
1 – 3 : Continuity should exist.
1 – 2 : Continuity should no exist.
1 – 4 : Continuity should no exist.
2 – 1 : Continuity should no exist.
2 – 3 : Continuity should no exist.
2 – 4 : Continuity should exist.

4. If NG, replace the noise suppressor.

REAR WHEEL STEERING ANGLE SENSOR

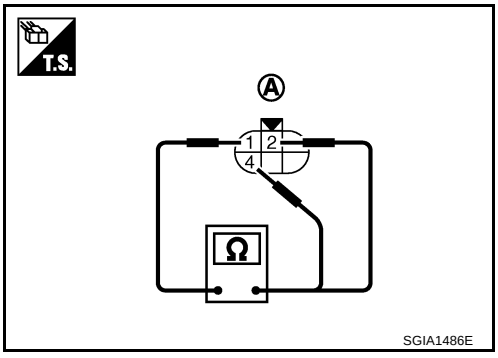
1. Turn ignition switch “OFF”.
2. Disconnect rear wheel steering angle sensor harness connector.
3. Remove rear wheel steering angle sensor.
4. Check resistance between rear wheel steering angle sensor connector (A) B81 terminals 1 and 3.

1 - 3 : 1 kΩ



5. While turning the rear wheel steering angle sensor clockwise or counterclockwise, check rear wheel steering angle sensor connector (A) B81 terminals 1 and 2, 4.

1 - 2 : 1.2 k – 1.5 kΩ
1 - 4 : 1.2 k – 1.5 kΩ

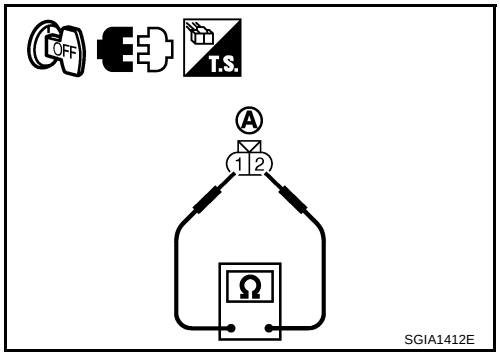


6. When replacing rear wheel steering angle sensor, perform the neutral position adjustment after replacing rear wheel steering angle sensor. Refer toSTC-92, "Neutral Position" .

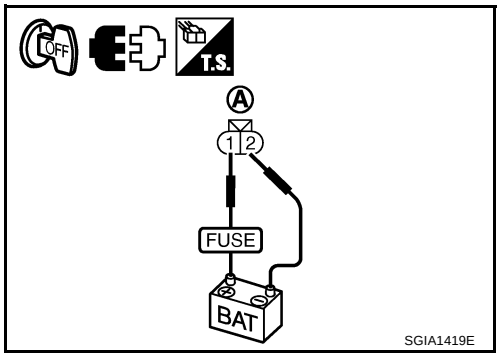
POWER STEERING SOLENOID VALVE

1. Turn ignition switch “OFF”.
2. Disconnect power steering solenoid valve harness connector.
3. Check resistance between power steering solenoid valve connector (A) terminals 1 and 2.

   1 - 2 : Approx. 4 - 6 Ω



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

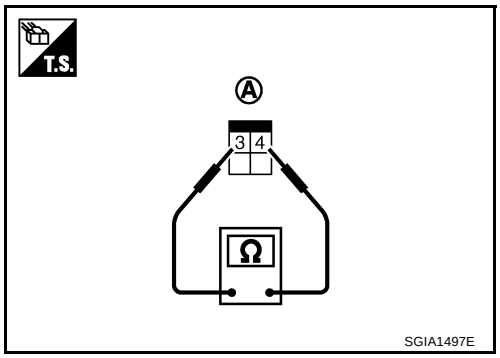


STOP LAMP SWITCH

1. Turn ignition switch “OFF”.
2. Disconnect stop lamp switch harness connector.
3. Remove stop lamp switch.
4. Push and release stop lamp switch and check continuity between stop lamp switch connector (A) M402 terminals 3 and 4.

Terminal	Condition	Continuity
3 - 4	Push stop lamp switch	Yes
	Release stop switch	No

5. If NG, replace stop lamp switch.



TROUBLE DIAGNOSIS FOR SYMPTOMS

PFP:00007

RAS Warning Lamp Does Not Turn ON for Approx. 1 Second When The Igniting Switch Is Turned to ON

NGS0008S

DIAGNOSTIC PROCEDURE

1. CHECK SYSTEM FOR POWER SUPPLY CIRCUIT

Perform trouble diagnosis for power supply circuit. Refer to STC-60, "DTC C1909 CONTROL UNIT" .

OK or NG

OK >> GO TO 2.
NG >> Repair or replace damaged parts.

2. CHECK SYSTEM FOR RAS CONTROL UNIT

Perform trouble diagnosis for RAS control unit. Refer to STC-56, "DTC C1900, C1901, C1905, C1906, C1907, C1908, C1922, C1927, C1928 CONTROL UNIT" .

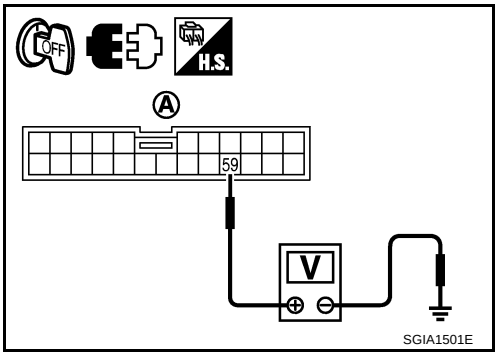
OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts.

3. CHECK COMBINATION METER POWER SUPPLY CIRCUIT

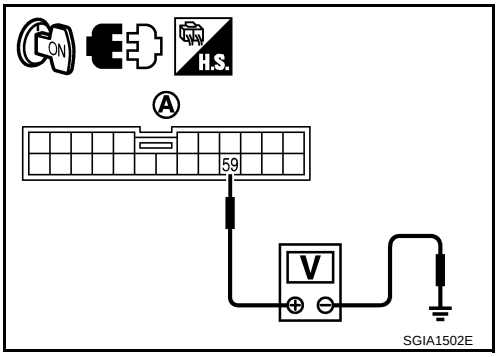
1. Turn ignition switch “OFF”.
2. Disconnect combination meter harness connector.
3. Check voltage between combination meter harness connector (A) terminal and ground.

Connector	Terminal	Voltage (Approx.)
M43	59 - Ground	0 V



4. Turn ignition switch “ON”. (Do not start engine.)
5. Check voltage between combination meter harness connector (A) terminal and ground.

Connector	Terminal	Voltage (Approx.)
M43	59 - Ground	Battery voltage



OK or NG

OK >> GO TO 4.
NG >> Check the following. If any items are damaged, repair or replace damaged parts.

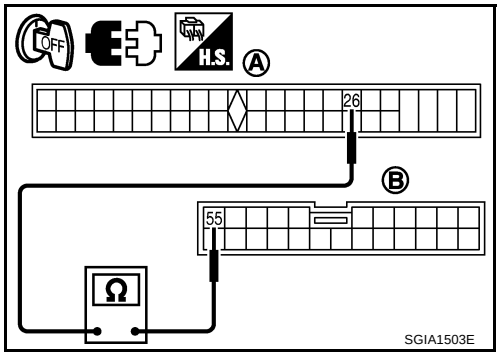
- 10A fuse [No. 9, located in the fuse block (J/B) No.1]. Refer to PG-2, "POWER SUPPLY ROUTING" .
- Harness for short or open between ignition switch and combination meter harness connector M43 terminal 59.
- Ignition switch. Refer to PG-2, "POWER SUPPLY ROUTING" .

4. CHECK HARNESS BETWEEN RAS CONTROL UNIT AND COMBINATION METER

1. Turn ignition switch “OFF”.
2. Disconnect RAS control unit harness connector and combination meter harness connector.
3. Check continuity between RAS control unit harness connector (A) B39 terminal 26 and combination meter harness connector (B) M43 terminal 55.

Continuity should exist.

Also check harness for short to power.



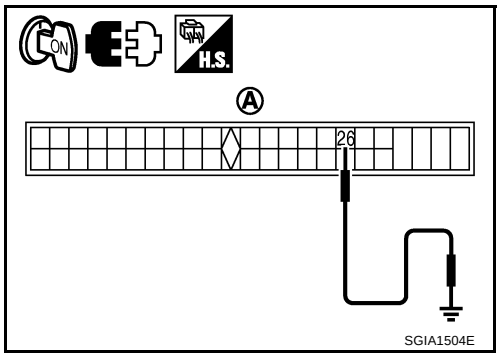
OK or NG

OK >> GO TO 5.
NG >> Repair or replace damaged parts.

5. CHECK RAS WARNING LAMP

1. Turn ignition switch “OFF”.
2. Connect combination meter harness connector.
3. Disconnect RAS control unit harness connector.
4. Turn ignition switch “ON”. (Do not start engine.)
5. Ground the following terminal using suitable wiring.

– RAS control unit harness connector (A) B39 terminal 26 and ground.



Does RAS warning lamp turn on?

OK >> GO TO 6.
NG >> Replace combination meter. Refer to DI-23, "Removal and Installation for Combination Meter" .

6. CHECK RAS CONTROL UNIT

Check RAS control unit input/output signal. Refer to STC-47, "RAS Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 7.
NG >> Check RAS control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

7. CHECK SYMPTOM

Check again.

OK or NG

OK >> **INSPECTION END**
NG >> Replace RAS control unit. Refer to STC-90, "Removal and Installation" .

The Steering Force of Steering Wheel Is Not Changed Smoothly According to the Vehicle Speed

NGS00093

SYMPTOM:

The steering force does not change smoothly according to the vehicle speed (Heavy steering force with the vehicle stopped/Light handle operation during high-speed driving).

DIAGNOSTIC PROCEDURE

1. CHECK SYSTEM FOR VEHICLE SPEED SENSOR

Perform trouble diagnosis for vehicle speed sensor system. Refer to STC-72, "DTC C1919 VEHICLE SPEED SEN" .

OK or NG

OK >> GO TO 2.
NG >> Repair or replace damaged parts.

2. CHECK SYSTEM FOR STOP LAMP SWITCH

Perform trouble diagnosis for stop lamp switch. Refer to STC-80, "Stop Lamp Switch" .

OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts.

3. CHECK SYSTEM FOR POWER STEERING SOLENOID VALVE

Perform trouble diagnosis for power steering solenoid valve system. Refer to STC-77, "Power Steering Solenoid Valve" .

OK or NG

OK >> GO TO 4.
NG >> Repair or replace damaged parts.

4. CHECK SYSTEM FOR RAS ACTUATOR ASSEMBLY

Perform trouble diagnosis for RAS actuator assembly system. Refer to STC-76, "RAS Actuator Assembly" .

OK or NG

OK >> GO TO 4.
NG >> Repair or replace damaged parts.

5. CHECK RAS CONTROL UNIT

Check RAS control unit input/output signal. Refer to STC-47, "RAS Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 6.
NG >> Check RAS control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

6. CHECK SYMPTOM

Check again.

OK or NG

OK >> **INSPECTION END**
NG >> Replace RAS control unit. Refer to STC-90, "Removal and Installation" .

Hard Steering When Fully Turning the Steering Wheel

NGS0008Y

DIAGNOSTIC PROCEDURE

1. CHECK SYSTEM FOR VEHICLE SPEED SENSOR

Perform trouble diagnosis for vehicle speed sensor system. Refer to STC-72, "DTC C1919 VEHICLE SPEED SEN" .

OK or NG

OK >> GO TO 2.
NG >> Repair or replace damaged parts.

2. CHECK SYSTEM FOR STOP LAMP SWITCH

Perform trouble diagnosis for stop lamp switch. Refer to STC-80, "Stop Lamp Switch" .

OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts.

3. CHECK SYSTEM FOR POWER STEERING SOLENOID VALVE

Perform trouble diagnosis for power steering solenoid valve system. Refer to STC-77, "Power Steering Solenoid Valve" .

OK or NG

OK >> GO TO 4.
NG >> Repair or replace damaged parts.

4. CHECK RAS CONTROL UNIT

Check RAS control unit input/output signal. Refer to STC-47, "RAS Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 5.
NG >> Check RAS control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

5. CHECK SYMPTOM

Check again.

OK or NG

OK >> **INSPECTION END**
NG >> Replace RAS control unit. Refer to STC-90, "Removal and Installation" .

Light Steering When Driving at a High Speed

NGS0008Z

DIAGNOSTIC PROCEDURE

1. CHECK SYSTEM FOR VEHICLE SPEED SENSOR

Perform trouble diagnosis for vehicle speed sensor system. Refer to STC-72, "DTC C1919 VEHICLE SPEED SEN" .

OK or NG

OK >> GO TO 2.
NG >> Repair or replace damaged parts.

2. CHECK SYSTEM FOR POWER STEERING SOLENOID VALVE

Perform trouble diagnosis for power steering solenoid valve system. Refer to STC-77, "Power Steering Solenoid Valve" .

OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts.

3. CHECK RAS CONTROL UNIT

Check RAS control unit input/output signal. Refer to STC-47, "RAS Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 4.
NG >> Check RAS control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

4. CHECK SYMPTOM

Check again.

OK or NG

OK >> **INSPECTION END**
NG >> Replace RAS control unit. Refer to STC-90, "Removal and Installation" .

CONTROL UNIT

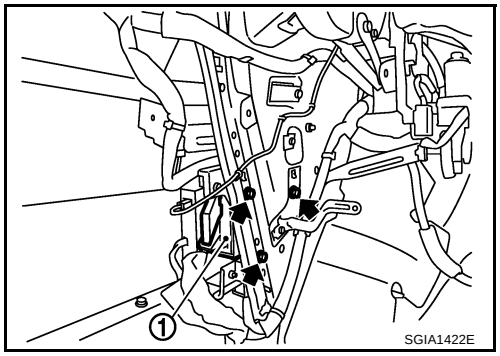
PFP:28400

Removal and Installation

NGS0006Y

REMOVAL

1. Turn the ignition switch OFF and disconnect the battery cable from the negative terminal.
2. Remove the trunk side finisher. Refer to EI-60, "Removal and Installation" .
3. Disconnect the RAS control unit connector.
4. Remove the RAS control unit bolts.
5. Remove the RAS control unit (1).



INSTALLATION

Note the following, and installation is the reverse order of removal.

- When installing the RAS control unit, tighten bolts to the specified torque.

RAS control unit bolts : 8.3 N·m (0.85 kg-m, 73 in-lb)

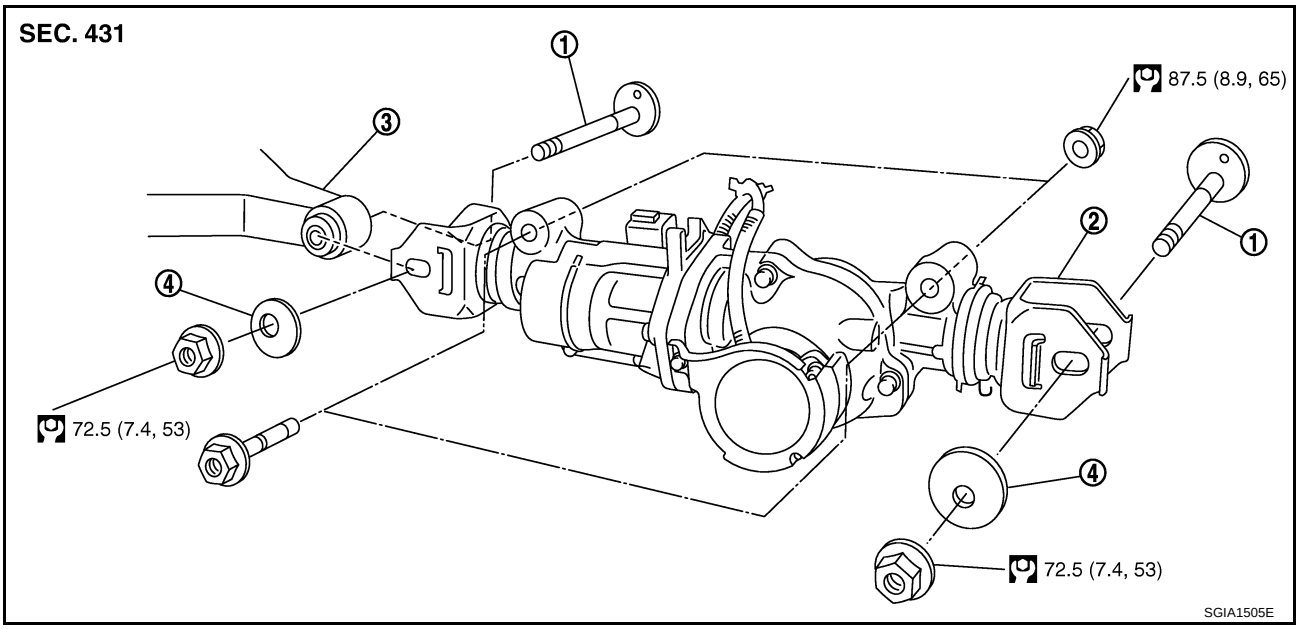
REAR ACTIVE STEER

PFP:55705

Removal and Installation

NGS0004K

COMPONENTS



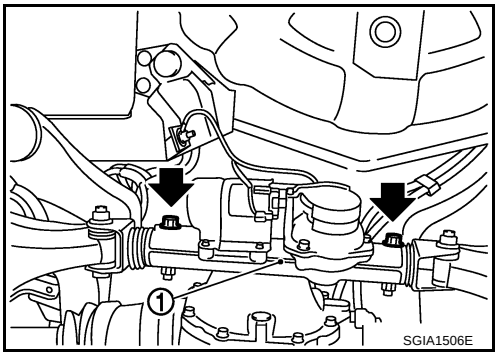
1. Adjust bolt
2. RAS actuator assembly
3. Rear lower link
4. Decenter cam

Refer to GI-9, "Components" , for the symbols in the figure.

REMOVAL

1. Remove center muffler with power tool. Refer to EX-3, "Removal and Installation" .
2. Remove coil spring. Refer to RSU-16, "Removal and Installation" .

   NOTE:
   Put the adjustment position marks of wheel alignment on the adjusting bolts and decenter cam.
3. Disconnect each harness connectors from RAS actuator assembly and rear suspension member.
4. Remove fixing bolts and nuts of RAS actuator assembly (1), and then remove RAS actuator assembly (1) from rear suspension member.



INSTALLATION

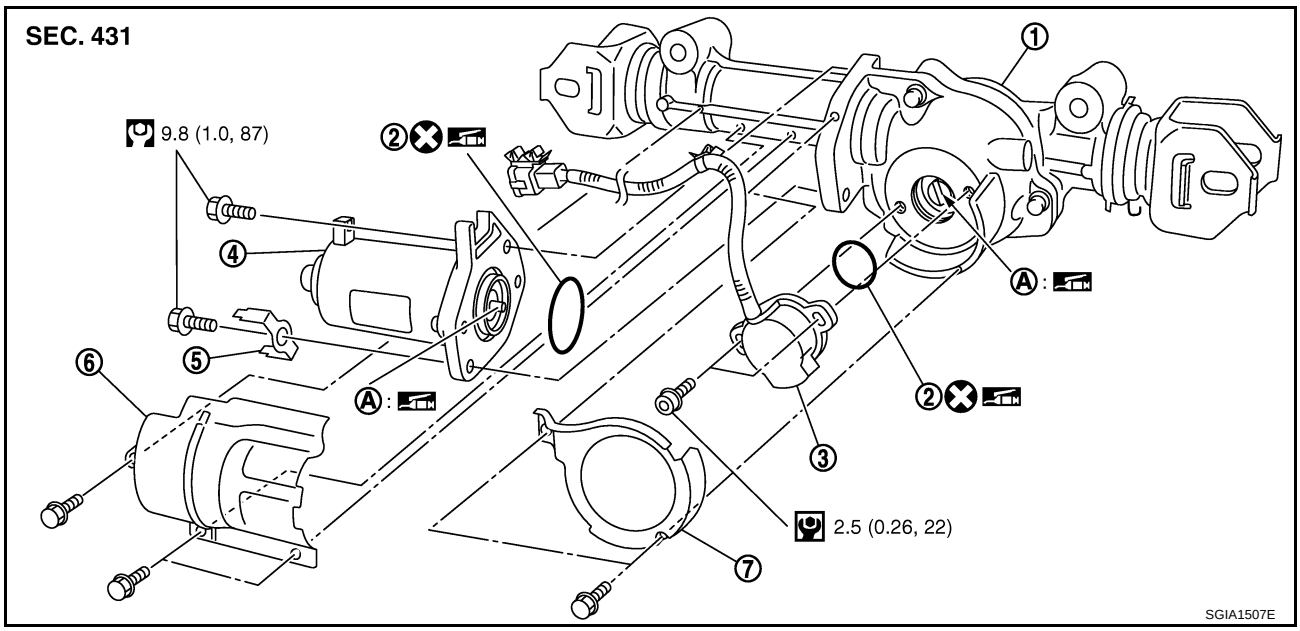
Note the following, and installation is the reverse order of removal.

- Refer to STC-91, "COMPONENTS" about each tightening torque.
- When installing RAS actuator assembly to rear suspension member, check the mounting surfaces of RAS actuator assembly and rear suspension member for oil, dirt, sand, or other foreign materials.
- Adjust rear wheel alignment. Refer to RSU-5, "Wheel Alignment Inspection" .

Disassembly and Assembly

NGS0004L

COMPONENTS



1. RAS actuator assembly
2. O-ring
3. Rear wheel steering angle sensor
4. RAS motor
5. Terminal earth
6. Cover
7. Cover

A: Shaft

Refer to GI-9, "Components" , for the symbols in the figure.

DISASSEMBLY

1. Remove RAS actuator assembly from RAS actuator covers.
2. Remove mounting bolts of RAS motor assembly, and then remove RAS motor, ground terminal, O-ring from RAS actuator assembly.
3. Remove mounting bolts of rear wheel steering angle sensor, and then remove rear wheel steering angle sensor, O-ring from RAS actuator assembly.

INSPECTION AFTER DISASSEMBLY

Check RAS actuator cover (rear wheel steering angle sensor mounting area) for crush, deformation, cracks, or other damage. Replace the RAS actuator if the malfunction is detected.

ASSEMBLY

Note the following, and assembly is the reverse order of disassembly.

- Refer to STC-92, "COMPONENTS" about each tightening torque.
- After assembling RAS actuator assembly (after removing and installing rear wheel angle sensor and RAS motor), perform the neutral position adjustment. Refer to STC-92, "Neutral Position" .

ADJUSTMENT AFTER ASSEMBLING

1. Adjust neutral position. Refer to STC-92, "Neutral Position" .
2. Adjust rear wheel alignment. Refer to RSU-5, "Wheel Alignment Inspection" .

Neutral Position

CAUTION:

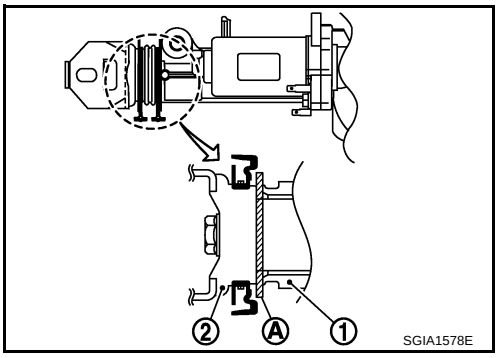
- **Perform the neutral position adjustment after installing the RAS actuator assembly to the vehicle. Before that, remove the rear lower link from the RAS actuator assembly.**
- **Disassembling the RAS actuator assembly (when removing the rear wheel steering angle sensor and RAS motor)**

1. Remove the rear lower link if RAS actuator assembly is assembled to the vehicle. Refer to STC-91, "COMPONENTS" .
2. Disconnect ground harness connector and rear wheel steering angle sensor harness connector.

3. Remove rear wheel steering angle sensor from the RAS actuator assembly.
4. Disconnect RAS motor harness connector.
5. Install the spacer (A) as per the following procedure.

a. Remove the boot band of the RAS actuator assembly.
b. Turn over the boot of the RAS actuator assembly.
c. Insert the spacer [2.9 mm (0.114 in) thick] between the rod (1) and gear housing assembly (2).

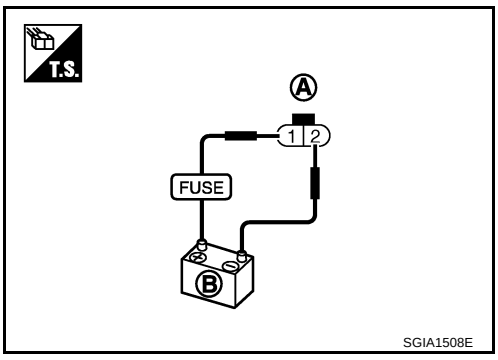
CAUTION:
Never damage the boot and boot band.



d. Supply 6 V voltage by connecting the four 1.5 V batteries in a series. Connect them to the RAS motor connector (A), and then operate the motor and adjust the neutral position by installing the spacer.

CAUTION:
Never supply 12 V voltage (battery, etc.) to the RAS motor.

NOTE:
For right stroke, connect positive probe to the RAS motor connector terminal 1. For left stroke, connect it to the terminal 2.



6. Install rear wheel steering angle sensor with O-ring to the RAS actuator assembly.

CAUTION:
- **Never reuse the O-ring.**
- **Apply grease to the O-ring.**

7. Temporarily tighten the mounting bolts in the specified torque that the rear wheel steering angle sensor can be moved by hand.
8. Connect ground harness connector and rear wheel steering angle sensor harness connector.
9. Turn ignition switch “ON”. (Do not start engine.)
10. Turn and adjust the rear wheel steering angle sensor so as to make each sensor signal of “DATA MONITOR”mode to the following standard with CONSULT-II.

Monitored item	Condition	Display value
STEERING ANG	Straight-ahead	0°
RR ST ANG-MAI	Straight-ahead	Approx. 2.4 V
RR ST ANG-SUB	Straight-ahead	Approx. 2.4 V

CAUTION:
During DATA MONITOR mode, “MONITORING ERROR” is displayed. But there is not malfunction in this procedure.

11. Tighten rear wheel steering angle sensor mounting bolts. Refer to STC-92, "COMPONENTS" .
12. Perform the self-diagnosis and then erase self-diagnostic results. Refer to STC-53, "SELF-DIAGNOSTIC PROCEDURE (WITHOUT CONSULT-II)" and STC-54, "ERASE SELF-DIAGNOSIS" .
13. Perform CONSULT-II “SELF-DIAG RESULTS” again, and then make sure that there is no malfunction. Refer to STC-49, "SELF-DIAG RESULT MODE" .