SECTION STC
STEERING CONTROL SYSTEM

CONTENTS

EPS

RAS

TILT/TELESCOPIC

PRECAUTIONS

PFP:00001

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

NGS000AM

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 for Battery Service

NGS000AN

Before disconnecting the battery, lower both the driver and passenger windows. This will prevent any interference between the window edge and the vehicle when the door is opened/closed. During normal operation, the window slightly raises and lowers automatically to prevent any window to vehicle interference. The automatic window function will not work with the battery disconnected.

Service Notice or Precautions

NGS000AO

The following abbreviations are used.

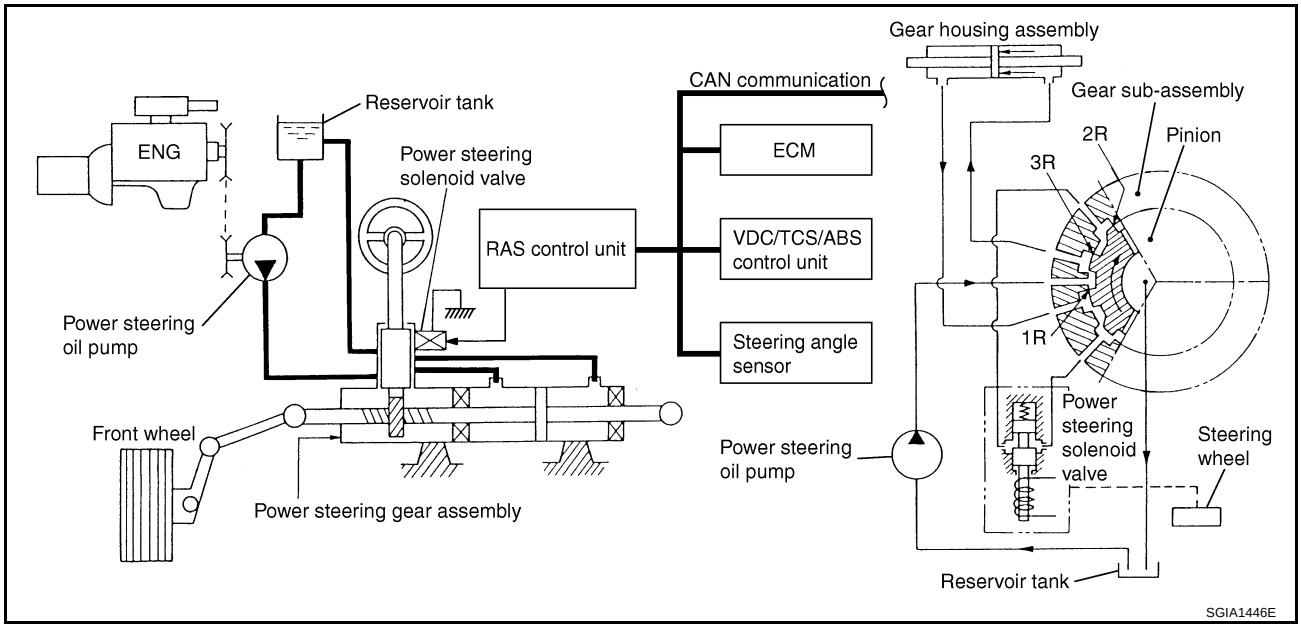
- EPS: Electronically controlled power steering
- RAS: Rear active steer

SYSTEM DESCRIPTION

PFP:00000

Components

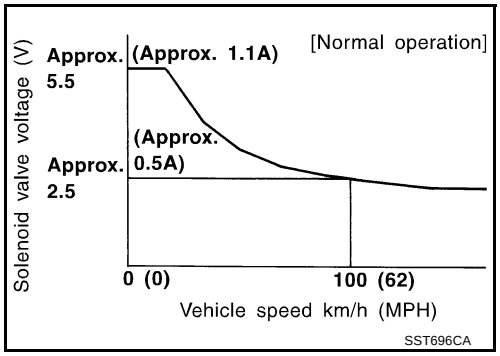
NGS000A5



EPS System Function

NGS000A6

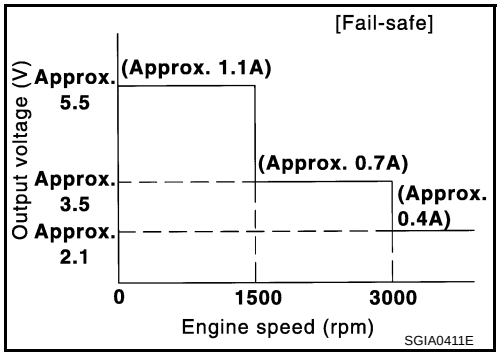
- Vehicle speed sensing electronically controlled power steering (that properly controls the steering force by the vehicle speed) has been adopted. When it is normal, it controls the power steering solenoid valve according to the vehicle speed as shown in the figure and makes the steering force proper.
- For schematic, wiring diagram and trouble diagnosis, refer to STC-14, "Schematic" , STC-15, "Wiring Diagram—RAS—" , STC-42, "Diagnosis Chart by Symptom 2" , because EPS is controlled by RAS control unit.



Fail-Safe Function

NGS000A7

When the fail-safe function operate, it controls power steering solenoid valve by the engine speed as shown in the figure and maintains the steering force.



FAIL-SAFE INPUT/CANCEL CONDITIONS

Input conditions	Cancel conditions
When vehicle runs at an engine speed of 1,500 rpm or higher and no vehicle speed signal is received for 10 seconds.	● A vehicle speed of 2 km/h (1.2 MPH) or more is input. ● Turn the ignition switch ON after turning it OFF.
The continuous vehicle speed signal 30 km/h (19 MPH) or more suddenly drops to less than 2 km/h (1.2 MPH) within 1.4 seconds.	

CAUTION:

Fail-safe function is activated when the engine runs at 1,500 rpm or higher for 10 seconds with the vehicle stopped. This is normal and the fail-safe function is automatically deactivated when a vehicle speed signal of 2 km/h (1.2 MPH) or higher is input or the ignition switch is turned OFF.

PRECAUTIONS

PFP:00001

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

NGS000AY

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 for Battery Service

NGS000AZ

Before disconnecting the battery, lower both the driver and passenger windows. This will prevent any interference between the window edge and the vehicle when the door is opened/closed. During normal operation, the window slightly raises and lowers automatically to prevent any window to vehicle interference. The automatic window function will not work with the battery disconnected.

Service Notice or Precautions

NGS000B0

The following abbreviations are used.
RAS: Rear active steer

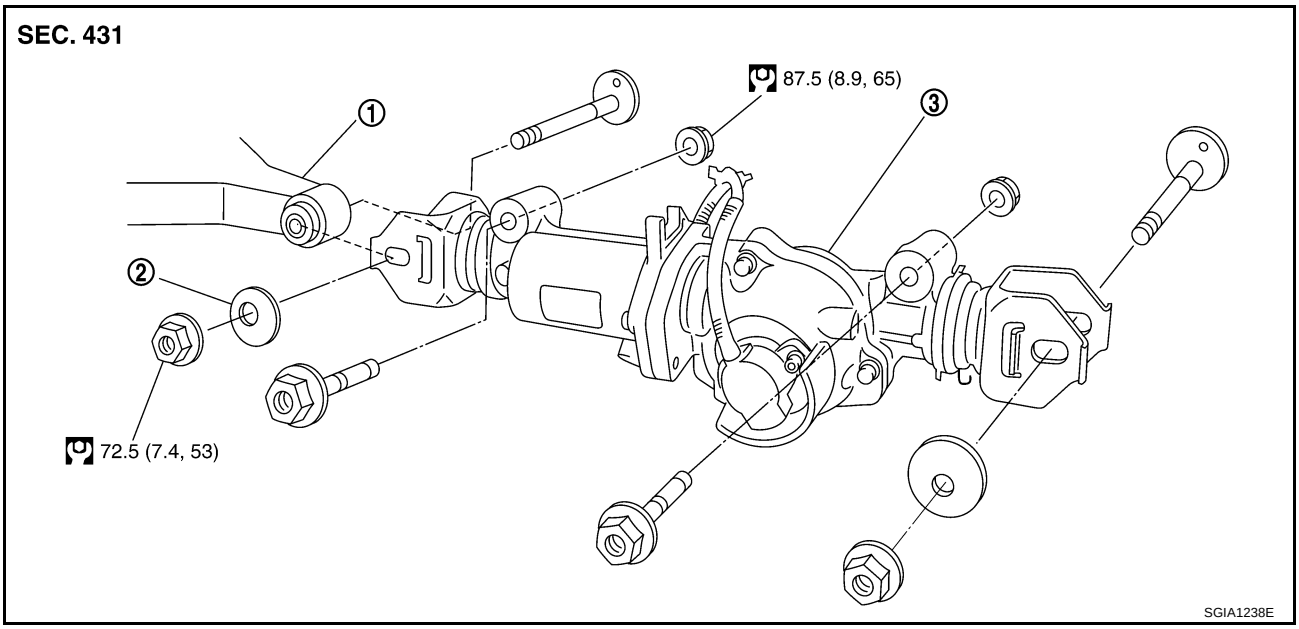
REAR ACTIVE STEER

PFP:55705

Removal and Installation

NGS00094

COMPONENTS

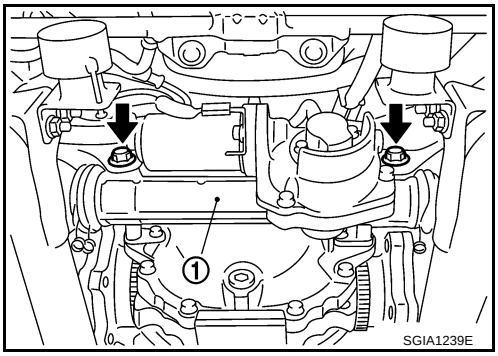


1. Rear lower link
2. Decenter cam
3. RAS actuator assembly

Refer to GI-10, "Components" , for the symbol in the figure.

REMOVAL

1. Remove coil spring. Refer to RSU-15, "Removal and Installation" .
2. Disconnect harness connector from RAS actuator assembly and rear suspension member.
3. Remove fixing bolts and nuts of RAS actuator assembly (1), and then remove RAS actuator assembly (1) from rear suspension member.



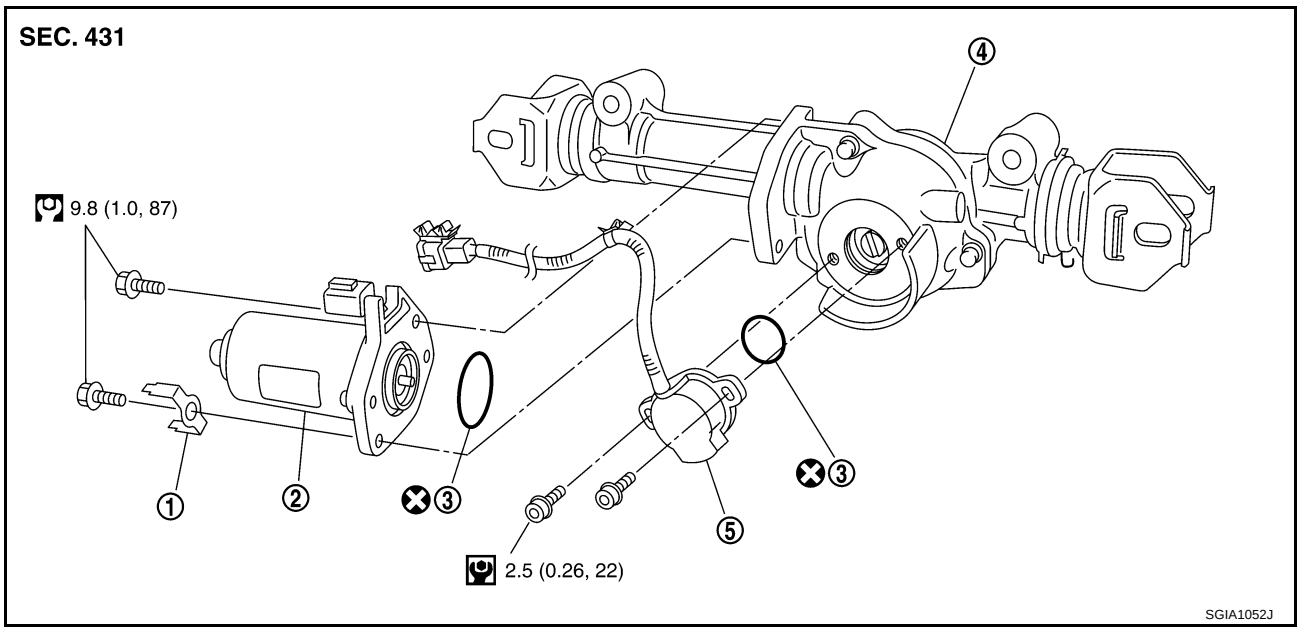
INSTALLATION

- Installation is the reverse order of removal. For tightening torque, refer to STC-7, "COMPONENTS" .
- 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.
- To perform the neutral position adjustment. Refer to STC-8, "Neutral Position Adjustment" .

Disassembly and Assembly

NGS00095

COMPONENTS



1. Ground terminal
2. RAS motor assembly
3. O-ring
4. RAS actuator
5. Rear wheel steering angle sensor

Refer to GI-10, "Components" , for the symbols in the figure.

DISASSEMBLY

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

INSPECTION AFTER DISASSEMBLY

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

ASSEMBLY

- Assembly is the reverse order of disassembly. For tightening torque, refer to STC-8, "COMPONENTS" .
- After assembling RAS actuator assembly (after removing and installing rear wheel angle sensor and RAS motor), perform the neutral position adjustment.

Neutral Position Adjustment

NGS00096

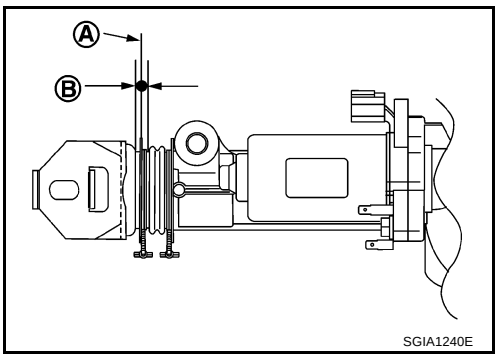
Adjust neutral position after performing the following procedure.

- Removing and installing or replacing the RAS actuator assembly
- Disassembling the RAS actuator assembly (when removing rear wheel steering angle sensor and RAS motor)

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.

1. Disconnect harness connector and remove rear wheel steering angle sensor from the RAS actuator assembly.
2. Disconnect RAS motor harness connector.
3. Turn ignition switch ON.

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



Full stroke (B) : 6.8 - 7.2 mm (0.268 - 0.283 in)

CAUTION:
Do not 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.

5. Install rear wheel steering angle sensor with O-ring to the RAS actuator assembly. Temporarily tighten the mounting bolts in the specified torque that the sensor can be moved by hand.
6. 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.

STEERING ANG (°)	L - 0, R - 0, N - 0
RR ST ANG-MAI (V)	Approx. 2.4
RR ST ANG-SUB (V)	Approx. 2.4
RR ST ANG-VOL (V)	Approx. 5.0

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

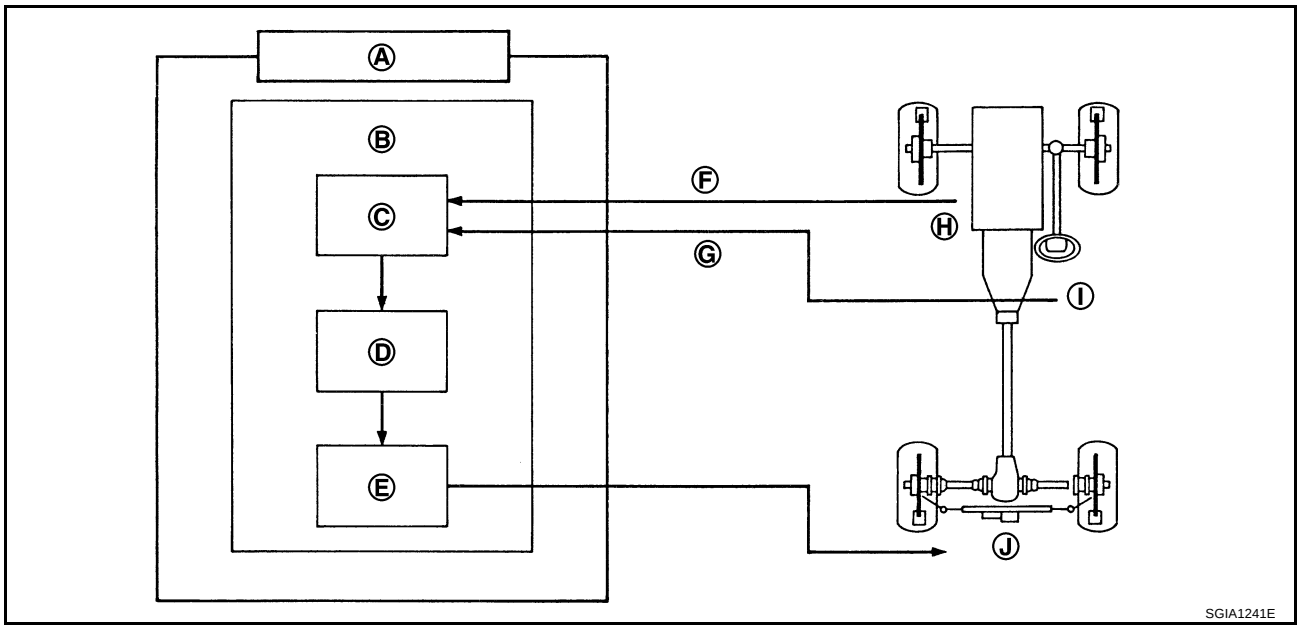
7. Tighten rear wheel steering angle sensor mounting bolts.
8. Perform “ERASE” with CONSULT-II, and then erase the error memory of rear wheel steering angle sensor. Refer to STC-24, "ERASE MEMORY" .
9. Perform CONSULT-II “SELF-DIAG RESULTS” again, and then make sure that there is no malfunction. Refer to STC-23, "Self-Diagnosis" .

SYSTEM DESCRIPTION

PFP:00000

Components

NGS00097



A. RAS control unit
B. Model following control
C. Target vehicle dynamics model
D. Rear wheel steering angle command value operation
E. Rear wheel steering angle servo
F. Vehicle speed signal (CAN)
G. Steering angle signal (CAN)
H. Vehicle speed sensor
I. Steering angle sensor
J. RAS actuator assembly

RAS Function

NGS00098

Part name	Function
RAS control unit	● Calculate the vehicle speed signal from CAN communication and the signals from steering angle sensor and rear wheel steering angle sensor by a computer, and then control the rear wheel steering angle. ● Fail-safe function is activated when the electrical system is malfunctioning. The output signal to the actuator is turned OFF during this mode. At that time, the RAS warning lamp illuminates and indicates the system is malfunctioning. ● It performs the communication control function with other control units via CAN communication. ● This enables system diagnosis with CONSULT-II.
RAS actuator	The efficiency of the rear wheel steer improves by locating the electric motor actuator into the lower link of rear suspension.
Steering angle sensor	● Measure the steering angle and send it to RAS control unit via CAN communication. ● It is shared with the steering angle sensor for VDC.
Rear wheel steering angle sensor	● It sends the rear wheel steering angle status to RAS control unit. The accuracy of rear wheel steer improves by comparing the vehicle speed signal from CAN communication with the rear wheel steering angle target value calculated from the wheel angle sensor signal, and it controls them. ● There are 2 types of rear wheel steering angle sensors (main/sub). If one of them is malfunctioning, the other operates the fail-safe mode and stops the control.
RAS warning lamp	● It turns on when the fail-safe function is operated and indicates that a RAS control malfunction has occurred. ● It turns on when ignition switch turns on and turns off after the engine is started. ● It indicates the suspect system by blinking when performing the self-diagnosis (without CONSULT-II).

Fail-Safe Function

NGS00099

In the event there is a malfunction with the electrical system, the RAS control is stopped and the fail-safe mode is activated. At that time, it indicates the malfunction by turning the RAS warning lamp ON and stops the rear wheel control.

TROUBLE DIAGNOSIS

PFP:00004

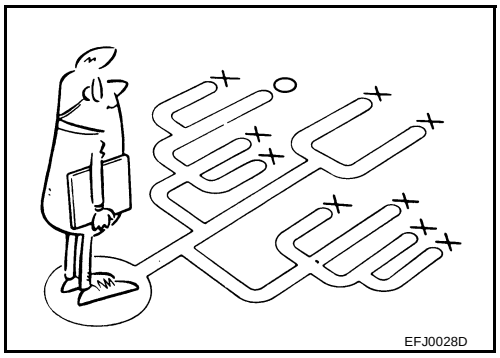
How to Perform Trouble Diagnosis

NGS0009A

BASIC CONCEPT

- The most important point to perform trouble diagnosis is to understand systems (control and mechanism) in vehicle thoroughly.
- It is also important to clarify customer complaints before inspection.
  First of all, reproduce symptom, and understand it fully.
  Ask customer about his/her complaints carefully. In some cases, they will be necessary to check symptom by driving vehicle with customer.

  CAUTION:
  Customers are not professionals. Do not assume “maybe customer means...” or “maybe customer mentioned this symptom”.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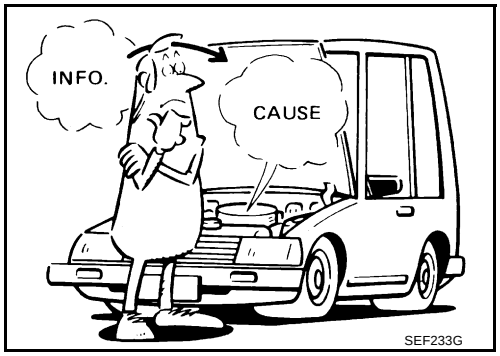
- It is essential to check symptoms right from beginning in order to repair a malfunction completely.
  For an intermittent malfunction, it is important to reproduce symptom based on interview with customer and past examples. Do not perform inspection on ad hoc basis. Most intermittent malfunctions are caused by poor contacts. In this case, it will be effective to shake suspected harness or connector by hand. When repairs are performed without any symptom check, no one can judge if malfunction has actually been eliminated.
- After diagnosis, make sure to perform “ERASE MEMORY”. Refer to STC-24, "ERASE MEMORY" .
- Always read “GI General Information” to confirm general precautions. Refer to GI-9, "HOW TO USE THIS MANUAL" .



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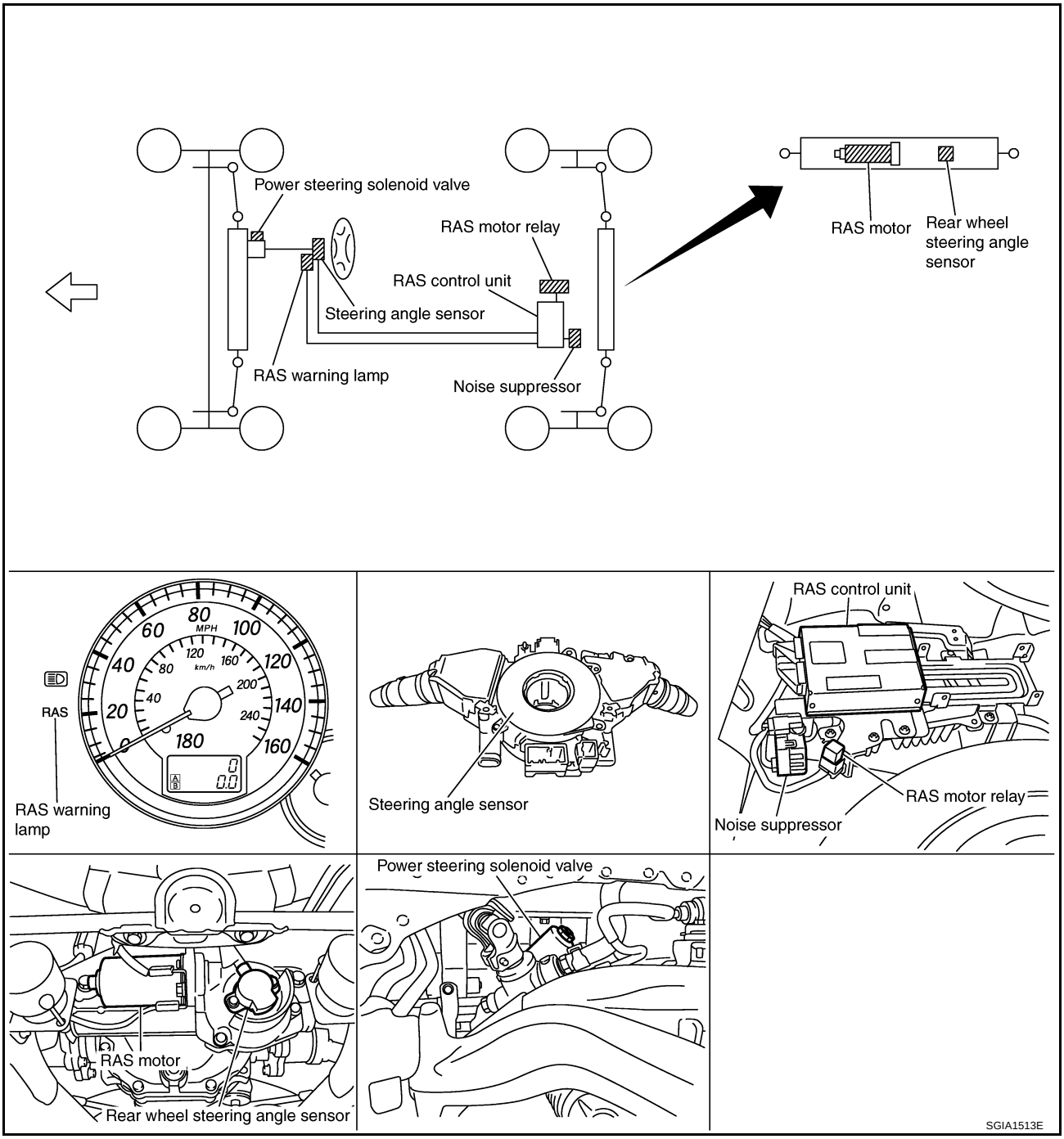
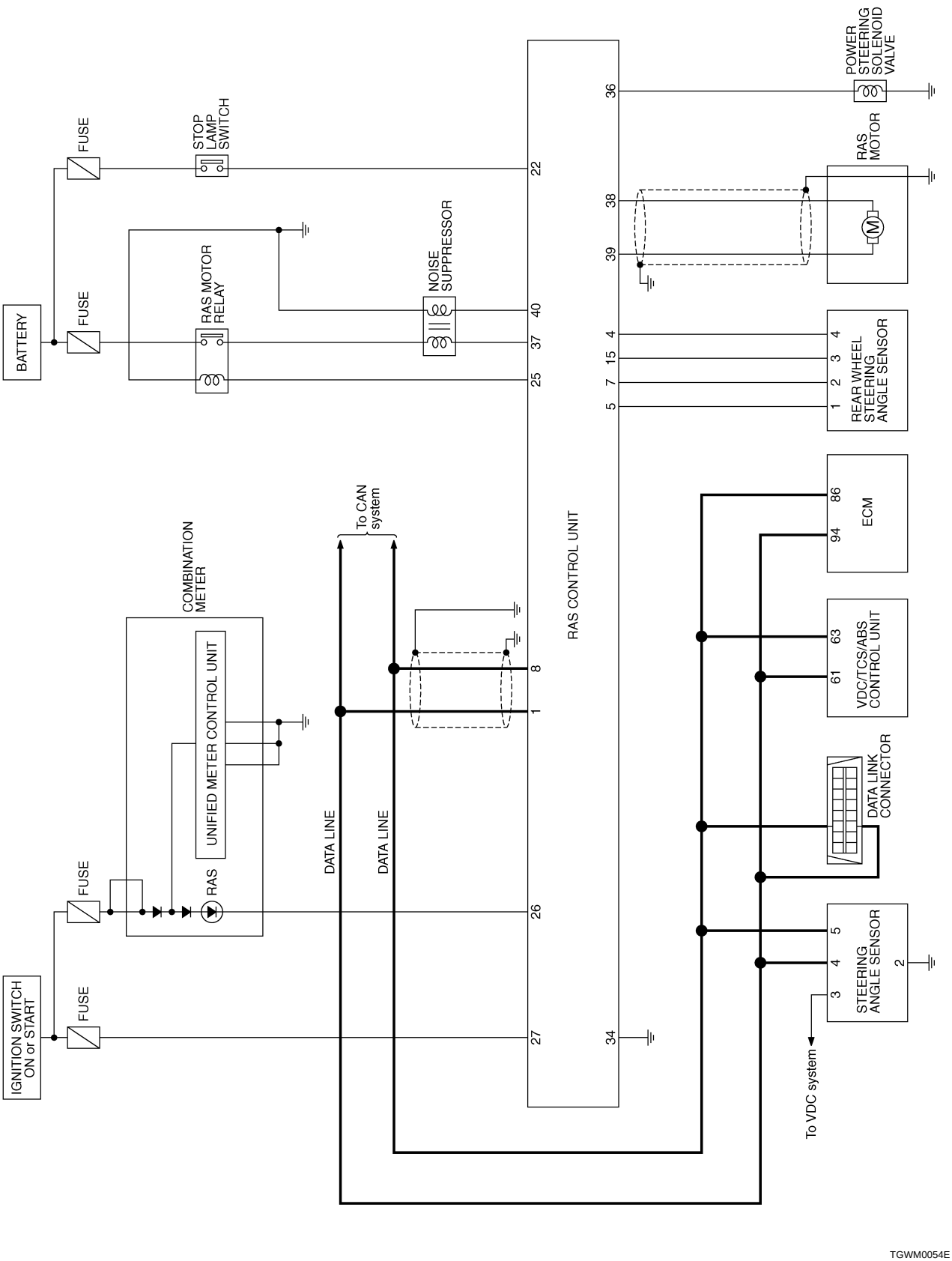
Component Parts Location

NGS0009B



Schematic

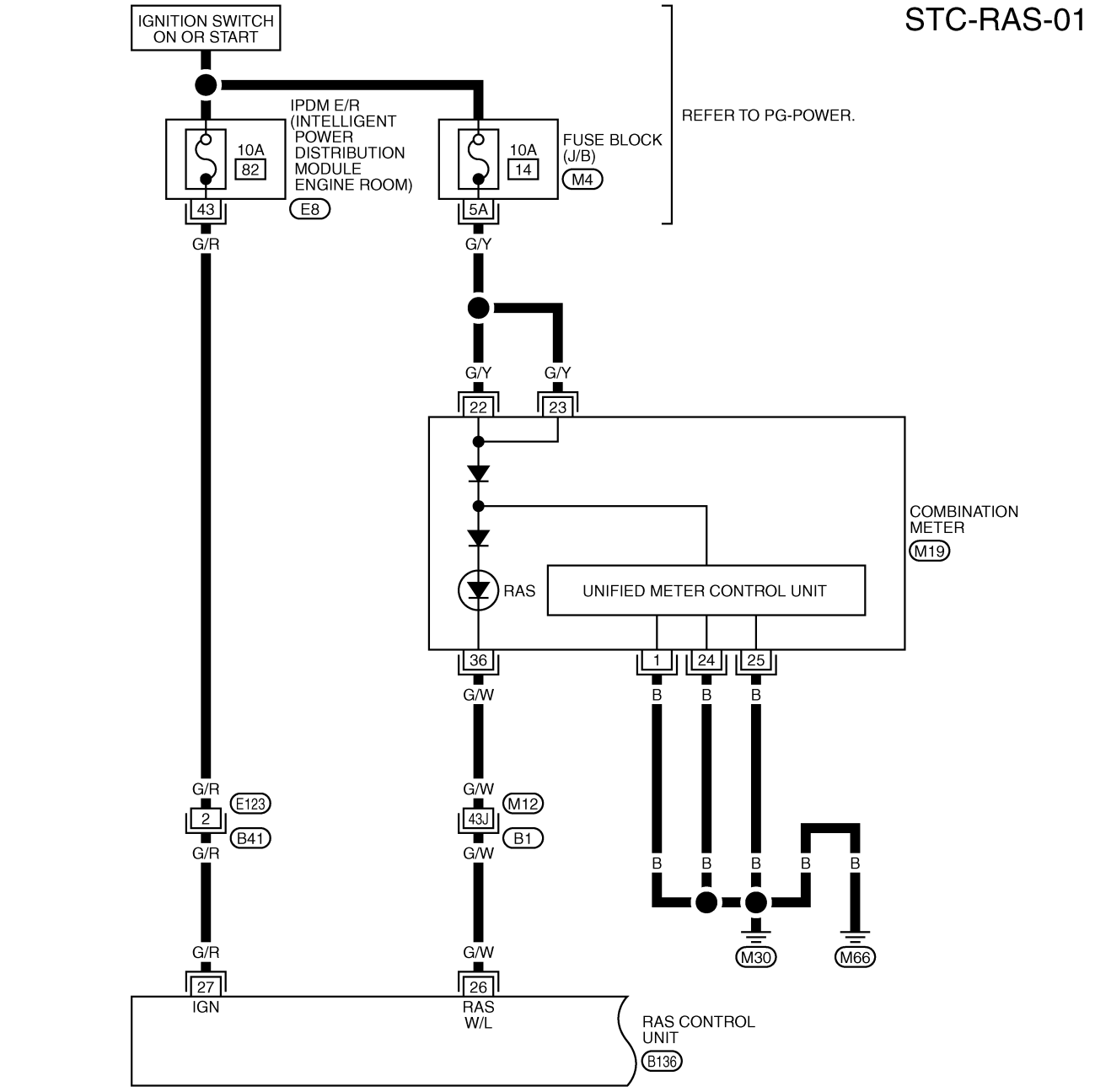
NGS0009C

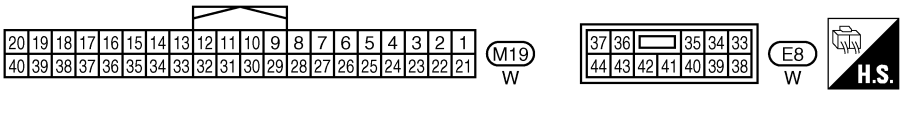


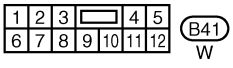
TGWM0054E

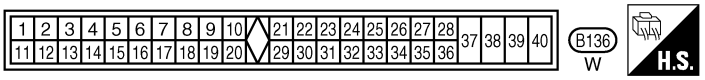
Wiring Diagram—RAS—

NGS0009D









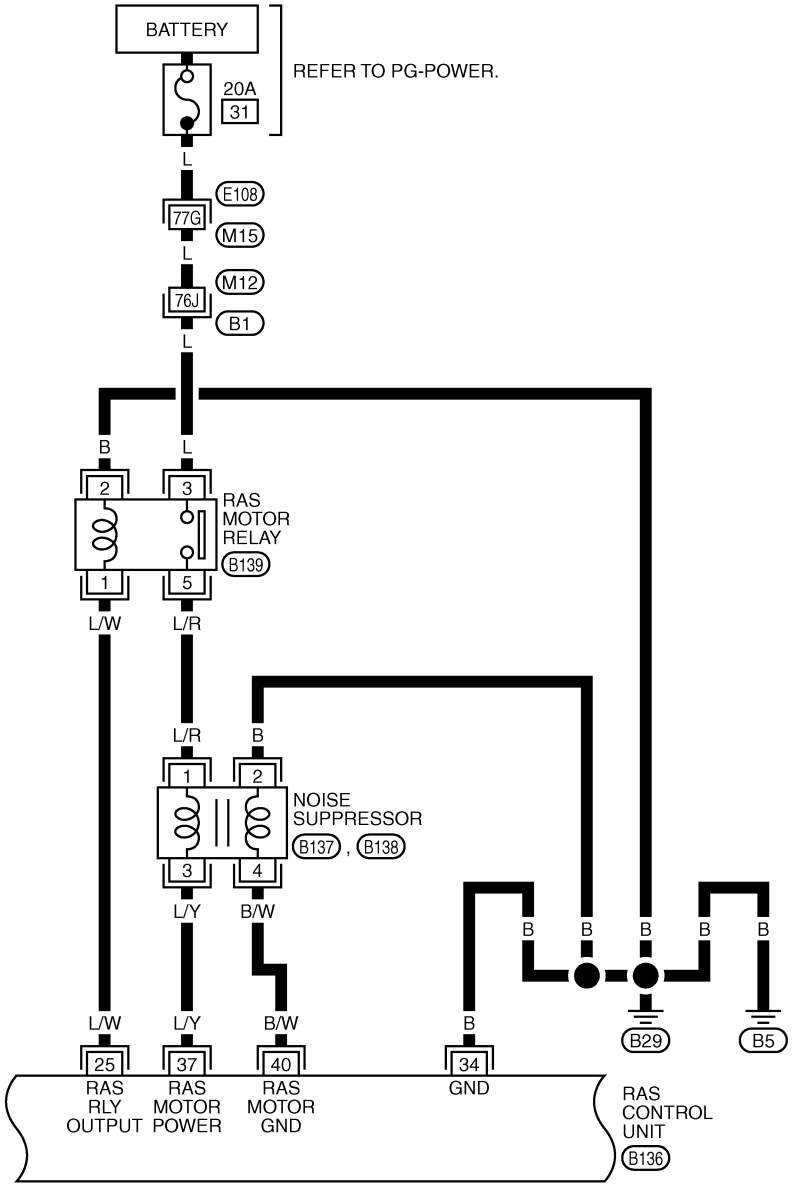
REFER TO THE FOLLOWING.

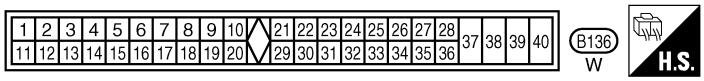
B1 -SUPER MULTIPLE JUNCTION (SMJ)

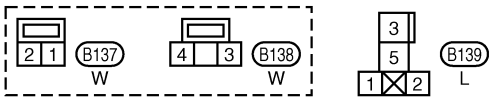
M4 -FUSE BLOCK-JUNCTION BOX (J/B)

TGWM0055E

STC-RAS-02



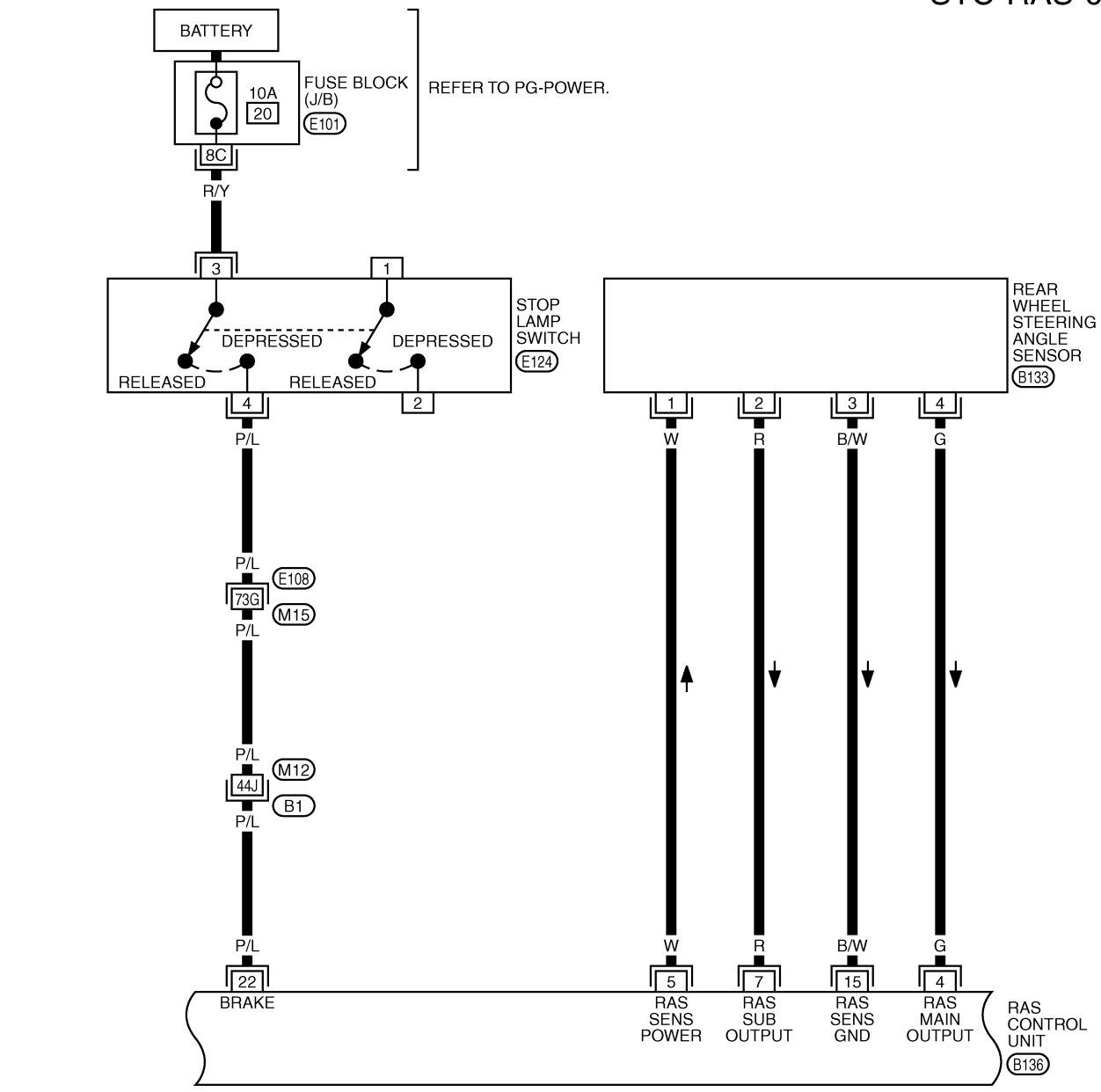


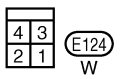


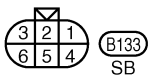
REFER TO THE FOLLOWING.
E108 , B1 -SUPER MULTIPLE JUNCTION (SMJ)

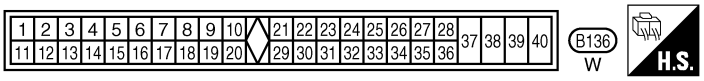
TGWM0056E

STC-RAS-03





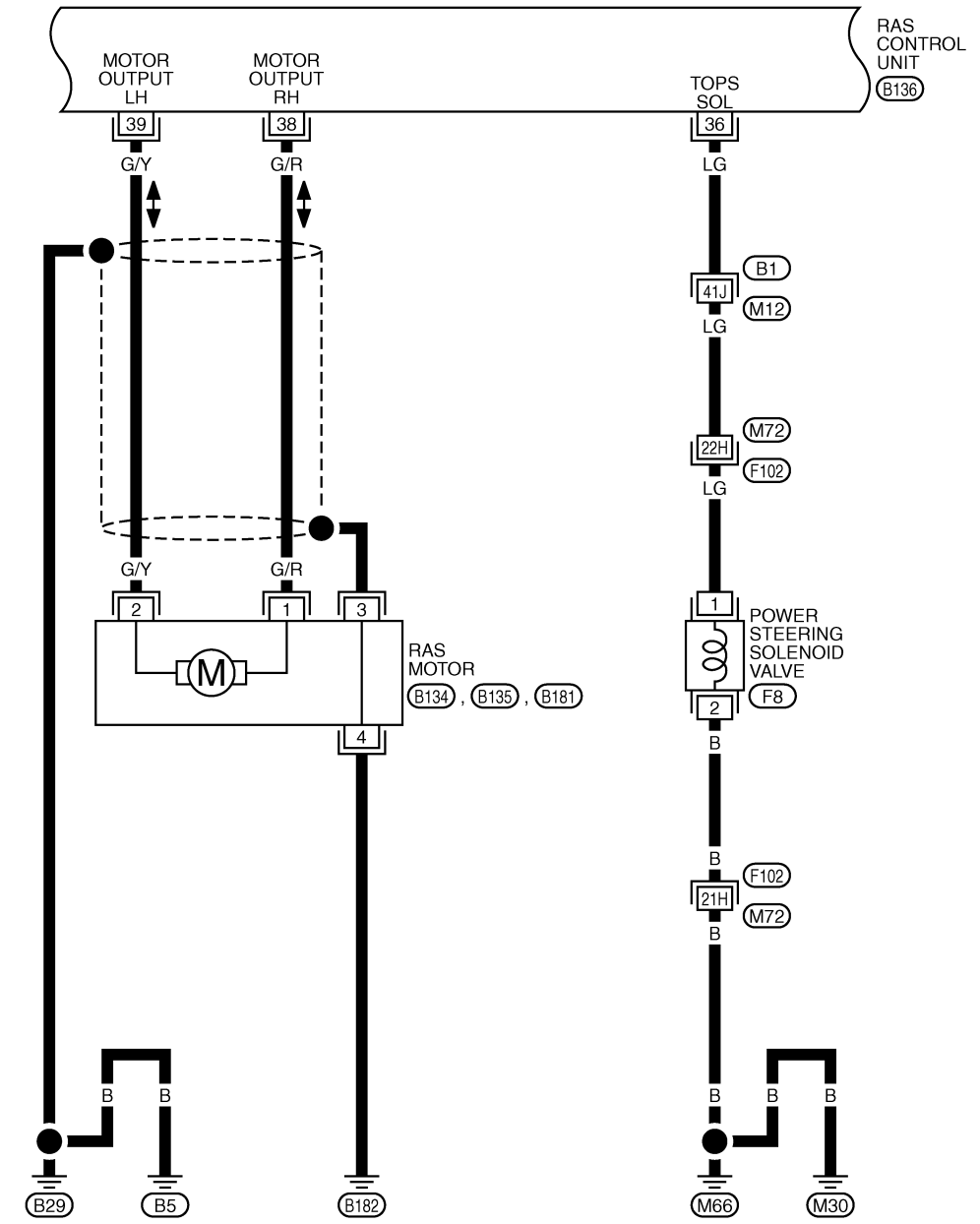


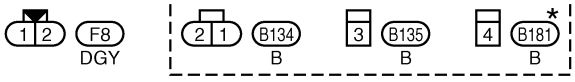


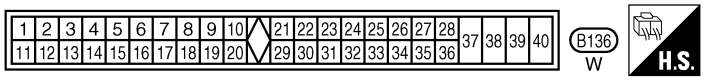
REFER TO THE FOLLOWING.
E108 , B1 -SUPER MULTIPLE JUNCTION (SMJ)
E101 -FUSE BLOCK-JUNCTION BOX (J/B)

TGWM0057E

STC-RAS-04





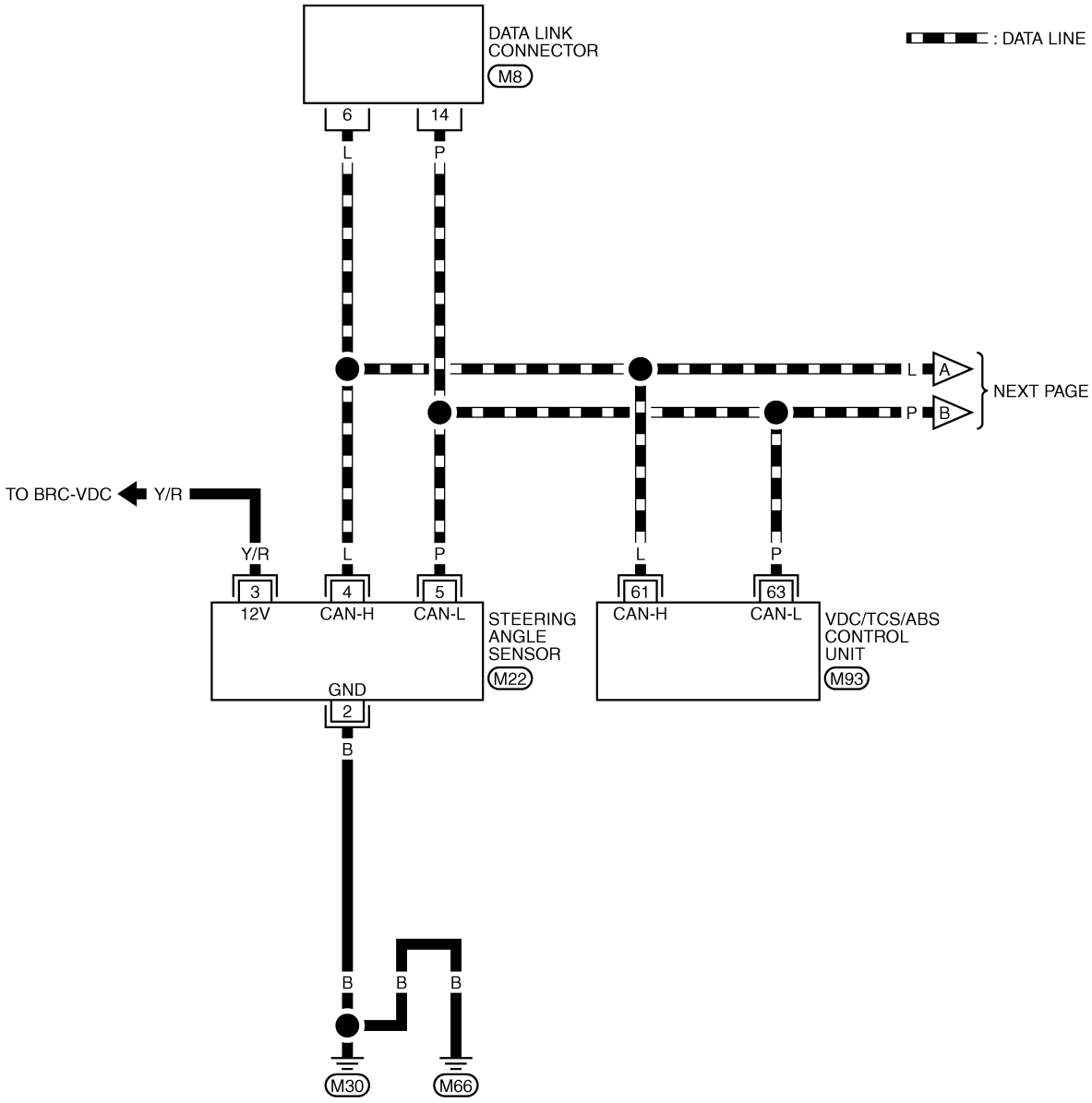


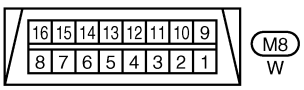
REFER TO THE FOLLOWING.
F102 , B1 -SUPER MULTIPLE JUNCTION (SMJ)

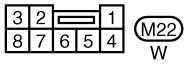
*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TGWM0058E

STC-RAS-05



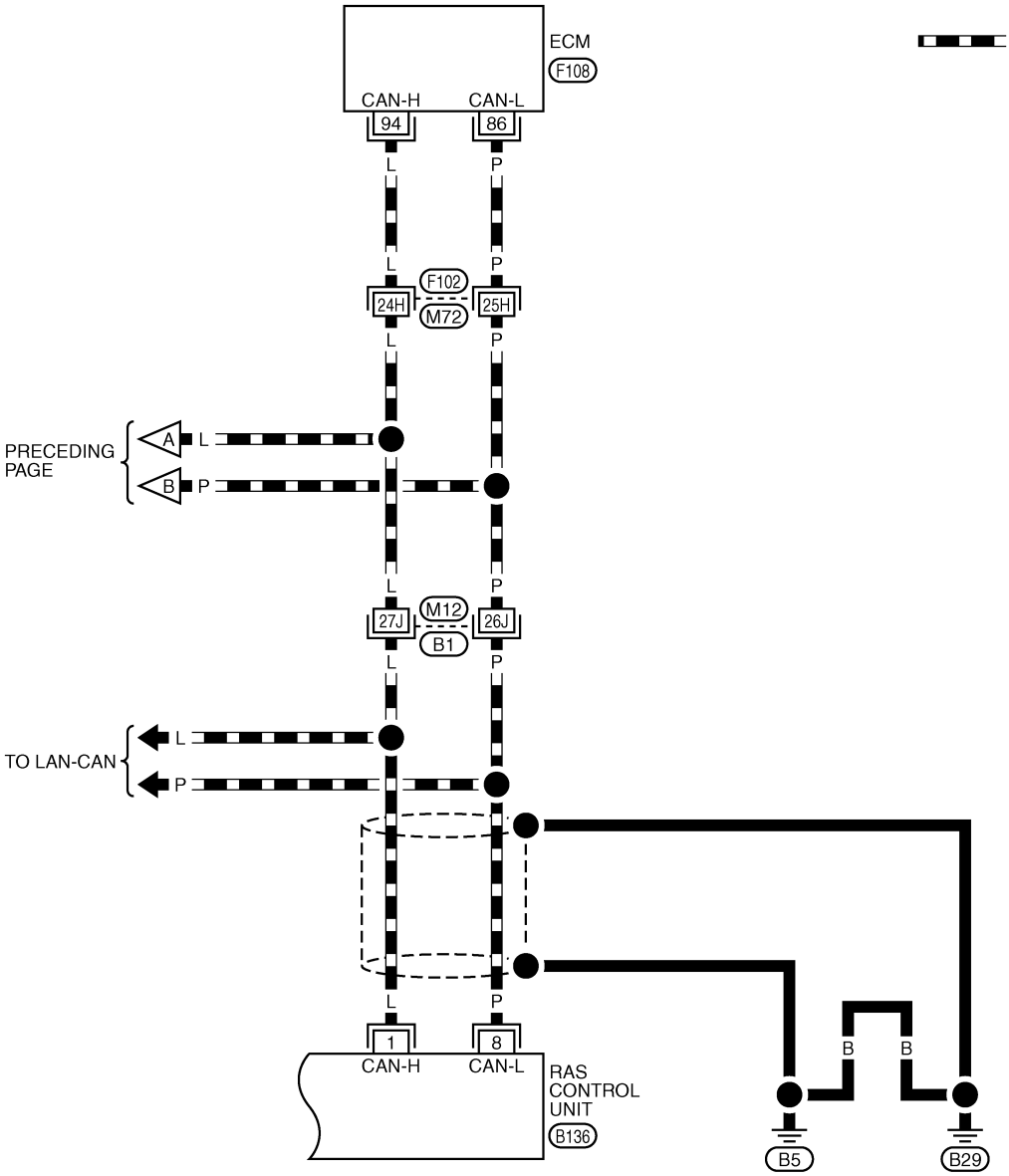


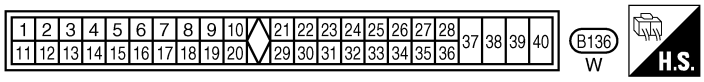


REFER TO THE FOLLOWING.
M93 -ELECTRICAL UNITS

TGWM0059E

STC-RAS-06





REFER TO THE FOLLOWING.
F102 , B1 -SUPER MULTIPLE JUNCTION (SMJ)
F108 -ELECTRICAL UNITS

TGWM0060E

Control Unit Input/Output Signal Standard

NGS0009E

CIRCUIT TESTER REFERENCE VALUE

CAUTION:

When checked using a circuit tester for voltage measurement, connector terminals should not be forcefully extended.

Terminal		Measuring point	Measuring condition		Standard
+ (wire color)	–				
1 (L)	—	CAN-H	—		
4 (G)	Ground	RAS MAIN OUTPUT	Neutral		Approx. 2.4 V
5 (W)		RAS SENS POWER	Ignition switch ON		Approx. 5 V
			Ignition switch OFF		Approx. 0 V
7 (R)		RR SUB OUTPUT	Neutral		Approx. 2.4 V
8 (P)	—	CAN-L	—		
15 (B/W)	Ground	RAS SENS GND	—		Continuity exit
22 (P/L)		BRAKE	Brake pedal depressed		Battery voltage (Approx. 12 V)
			Brake pedal not depressed		Approx. 0 V
25 (L/W)		RAS RLY OUTPUT	Ignition switch ON		Battery voltage (Approx. 12 V)
			Ignition switch OFF		Approx. 0 V
26 (G/W)		W/L	ON		Approx. 1.4 V or less
			OFF		Ignition voltage: 2.8 V or more
27 (G/R)		IGN	Ignition switch ON		Battery voltage (Approx. 12 V)
			Ignition switch OFF		Approx. 0 V
34 (B)		GND	—		Continuity exit
36 (LG)		TOPS SOL	Normal (Vehicle speed)	0 km/h (0 MPH)	Approx. 4.4 - 6.6 V
				100 km/h (62 MPH)	Approx. 2.4 - 3.6 V
			In fail-safe mode (Engine speed)	0 - 1,500 rpm	Approx. 4.4 - 6.6 V
				1,500 - 3,000 rpm	Approx. 3.5 V
				3,000 rpm or more	Approx. 2.1 V
37 (L/Y)		RAS MOTOR POWER	Ignition switch ON		Battery voltage (Approx. 12 V)
			Ignition switch OFF		Approx. 0 V
38 (W)		MOTOR OUTPUT (RH)	—		
39 (B)		MOTOR OUTPUT (LH)	—		
40 (B/W)		RAS MOTOR GND	—		Continuity exit

STANDARD BY CONSULT-II

CAUTION:

The output signal indicates the RAS control unit calculation data. The normal values will be displayed even in the event that the output circuit (harness) is open.

Monitor item	DATA MONITOR		Malfunction inspection checklist
	Condition	Reference values	
VHCL SPEED SE (km/h)	Ignition switch ON or engine running	Almost in accordance with the speedometer display. It is not a malfunction, through it might not be corresponding just after ignition switch is turned ON.	STC-34, "Inspection 4: Vehicle Speed Signal"
STEERING ANG (°)	Turning steering wheel clockwise or counterclockwise.	Displays the angle when the steering wheel turns from the neutral position	STC-34, "Inspection 5: Steering Angle Signal Malfunction"
ENGINE SPEED (rpm)	Engine running	Almost in accordance with tachometer display	STC-39, "Inspection 8: Engine Speed Signal Malfunction"
POWER STR SOL (A)	Accelerate the vehicle from 0 to 100 km/h (0 to 62 MPH)	0 km/h (0 MPH): Approx. 1.10 A 100 km/h (62 MPH): Approx. 0.54 A	STC-42, "Diagnosis Chart by Symptom 2"
RR ST ANG-MAI (V)	Perform the ACTIVE TEST and stroke the actuator (with tires off the ground)	Neutral: Approx. 2.4 V Turn steering wheel to right for full stroke: Approx. 4.4 V Turn steering wheel to left for full stroke: Approx. 0.4 V	STC-36, "Inspection 6: Rear Main Signal and Rear Sub Signal Malfunction"
RR ST ANG- SUB (V)			
RR ST ANG-VOL (V)	Ignition switch ON or engine running	Approx. 5 V	STC-36, "Inspection 6: Rear Main Signal and Rear Sub Signal Malfunction"
C/U VOLTAGE (V)		Battery voltage (Approx. 12 V)	STC-31, "Inspection 1: RAS Control Unit Malfunction"
MOTOR VOLTAGE (V)		Battery voltage (Approx. 12V)	STC-31, "Inspection 2: Motor Power Supply System"
MOTOR CURRENT (A)	Perform the ACTIVE TEST and stroke the actuator.	It is normal when there is the current output at stroke	STC-31, "Inspection 2: Motor Power Supply System"
MTR CRNT OPE (A)	Turning steering wheel clockwise or counterclockwise while ignition switch is ON or running the engine	Neutral (Steering force is zero and straight-ahead position): Approx. 0 A The value is changed according to steering left or right	STC-33, "Inspection 3: RAS Motor Output Malfunction"
RR ANGLE OPE (°)	Rear wheel steering angle detected by rear wheel steering angle sensor		Approx. 1°
			Approx. 0°
			Approx. - 1°
STOP LAMP SW	Depressing or releasing brake pedal	Brake pedal depressed: ON	STC-40, "Inspection 10: Stop Lamp Switch Harness"
		Brake pedal not depressed: OFF	
HICAS RELAY	Ignition switch ON or engine running	Ignition switch ON: ON	STC-31, "Inspection 2: Motor Power Supply System"
FAIL SAFE		Not activated	Self-diagnosis and suspect system inspection on DATA MONITOR
WARNING LAMP (ON/OFF)		RAS warning lamp ON: ON RAS warning lamp OFF: OFF	Warning lamp circuit inspection

CONSULT-II Function (RAS)

NGS0009F

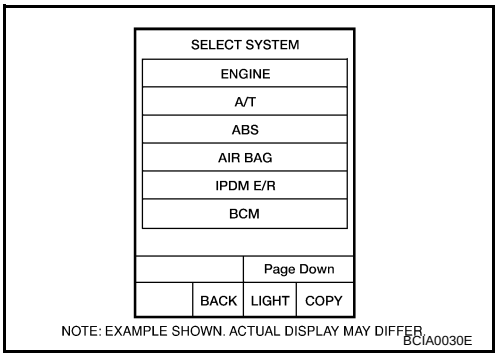
CONSULT-II MAIN FUNCTION

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

Mode	Function	Reference
SELF-DIAG RESULTS	Receives self-diagnosis results from RAS control unit and indicates DTCs.	STC-23, "Self-Diagnosis"
DATA MONITOR	Receives input/output signals from RAS control unit and indicates and stores them to facilitate locating cause of malfunctions.	STC-25, "Data Monitor"
CAN DIAG SUPPORT MNTR	Monitors transmitting/receiving status of CAN communication.	STC-27, "CAN Communication"
ACTIVE TEST	Sends command to RAS actuator to change output signals and check operation of output system.	STC-26, "Active Test"
ECU PART NUMBER	Displays RAS control unit part number.	STC-26, "Control Unit Part Number"

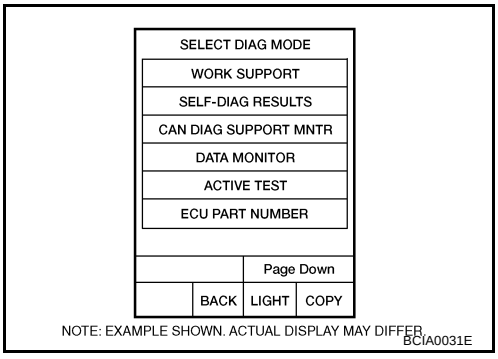
CONSULT-II BASIC OPERATION PROCEDURE

1. Touch “RAS/HICAS” in the “SELECT SYSTEM” screen.



NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER.
BCIA0030E

2. Select the required diagnostic location from the “SELECT DIAG MODE” screen.



NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER.
BCIA0031E

Self-Diagnosis

NGS0009G

OPERATION PROCEDURE

1. Turn ignition switch OFF.
2. Connect CONSULT-II and CONSULT-II CONVERTER to data link connector.
3. Turn ignition switch ON.
4. Touch “START (NISSAN BASED VHCL)” “RAS/HICAS” “SELF-DIAG RESULTS”.
   - If RAS/HICAS is not displayed, print the “SELECT SYSTEM” screen. Then refer to LAN-3, "Precautions When Using CONSULT-II" .

   NOTE:
   Just after starting engine, or turning ignition switch ON, it may not be displayed even if “START (NISSAN BASED VHCL)” is touched. In this case, reconnect CONSULT-II and CONSULT-II CONVERTER.
5. The self-diagnostic results are displayed. (Touch “PRINT” to print out the self-diagnostic results if necessary.) Check RAS warning lamp if “NO FAILURE” is displayed.
6. Perform the appropriate inspection from the display item list, and repair or replace the malfunctioning component. Refer to STC-24, "DISPLAY ITEM LIST" .

ERASE MEMORY

1. Turn ignition switch OFF.
2. Start engine, and touch “START (NISSAN BASED VHCL)” “RAS/HICAS” “SELF-DIAG RESULTS” and “ERASE” in this order to erase the diagnostic memory.

   CAUTION:
   If memory cannot be erased, repeat step 1, 2.
3. Perform self-diagnosis again, and make sure that DTC memory is erased.

DISPLAY ITEM LIST

CAUTION:
When malfunctions are detected in several systems, including the “CAN COMM [U1000]” and “CONTROL_UNIT (CAN) [U1010]”, inspect the CAN communication system.

DTC code	Diagnostic item	Diagnostic item is detected when...	Check items
C1923	STEERING_ANGLE_SEN [NO_CHANGE] (· a)	While driving at 60 km/h (37 MPH) or more, steering angle does not change for a while.	Inspection 5 STC-34
C1924	STEERING_ANGLE_SEN [NO_NEUT_STATE] (· b)	When driving some distance, no neutral signal (ON signal) is input.	Inspection 5 STC-34
C1915	RR_ST_ANGLE_SENSOR [MAIN_SIGNAL] (· a)	The main sensor input signal is malfunctioning for some time against the sensor power supply value.	Inspection 6 STC-36
C1916	RR_ST_ANGLE_SENSOR [SUB_SIGNAL] (· b)	When the main sensor input signal is 2.4 - 2.6 V, the sub sensor input signal is malfunctioning for some time compared to the sensor power supply value.	Inspection 6 STC-36
C1917, C1918	RR_ST_ANGLE_SENSOR [OFFSET_SIG1,2] (· c)	An excessive difference has occurred in the input values of main sensor and sub sensor.	Inspection 6 STC-36
C1914	RR_ST_ANGLE_SENSOR [ABNORMAL_VOL] (· d)	Higher or lower value compared to the standard voltage.	Inspection 6 STC-36
C1921	MOTOR_OUTPUT	No engine speed is input for a certain time.	Inspection 8 STC-39
C1911	MOTOR_VOLTAGE [LOW_VOLTAGE] (· a)	The motor power supply voltage is lower than ignition power supply voltage with RAS motor relay ON.	Inspection 2 STC-31
C1912	MOTOR_VOLTAGE [BAD_OBSTRCT] (· b)	The motor power supply voltage is inputting for some time with motor power supply OFF by RAS control unit.	Inspection 2 STC-31
C1913	MOTOR_OUTPUT [ABNORMAL_SIG] (· a)	When the motor current value is 10A or more, actual output is excessively low and the condition continues for some time.	Inspection 3 STC-33
C1902	MOTOR_OUTPUT [REV_CURRENT] (· c)	The current flows in the opposite direction when the motor current is output.	Inspection 3 STC-33
C1903	MOTOR_OUTPUT [NO_CURRENT] (· d)	The current flows when the motor current is not output.	Inspection 3 STC-33
C1904	MOTOR_OUTPUT [OVERCURRENT] (· e)	The excessive high current flows when the motor current is output.	Inspection 3 STC-33
C1910	MOTOR_OUTPUT [MOTOR_LOCK] (· b)	When 17 A or more current flows to the motor, the rear wheel steering angle sensor signal does not change for some time.	Inspection 3 STC-33

DTC code	Diagnostic item	Diagnostic item is detected when...	Check items
C1919	VEHICLE_SPEED_SEN [NO_SIGNAL]	No vehicle speed signal is input for some time.	Inspection 4 STC-34
C1900	CONTROL_UNIT [ABNORMAL1 - 9]	Control unit malfunction	Inspection 1 STC-31
C1901			
C1905			
C1906			
C1907			
C1908			
C1909			
C1922			
C1928			
C1920	STEERING_ANGLE_SEN [NO_SIGNAL]	No steering angle signal is input for some time.	Inspection 5 STC-34
C1926	STEERING_ANGLE_SEN	● An unexpected signal is input. ● Steering angle sensor outputs the malfunction signal.	Inspection 5 STC-34
C1929	VDC	ABS actuator and electric unit (control unit) outputs the malfunction signal.	Inspection 7 STC-38
U1000	CAN COMM	Malfunction is detected in CAN communication.	Inspection 9 STC-39
U1010	CONTROL_UNIT (CAN)	Malfunction is detected by RAS control unit internal malfunction.	Inspection 9 STC-39

Data Monitor

NGS0009H

OPERATION PROCEDURE

1. Touch “START (NISSAN BASED VHCL)” “RAS/HICAS” “DATA MONITOR”.
   - If RAS/HICAS is not displayed, print the “SELECT SYSTEM” screen. Then refer to LAN-3, "Precautions When Using CONSULT-II" .

   NOTE:
   Just after starting engine, or turning ignition switch ON, it may not be displayed even if “START (NISSAN BASED VHCL)” is touched. In this case, reconnect CONSULT-II and CONSULT-II CONVERTER.
2. Return to the monitor item selection screen, and touch any of “ALL SIGNALS”, “SELECTION FROM MENU”.
3. Touch “START”.
4. “DATA MONITOR” screen is displayed.

DISPLAY ITEM LIST

Item (Display or Unit)	Remarks
VHCL SPEED SE (km/h)	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.
MOTOR CRNT OPE (A)	Current commanded value to RAS motor is displayed.
RR ANG 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.
FAILSAFE (ON/OFF)	Fail-safe ON/OFF condition is displayed.
WARNING LAMP (ON/OFF)	RAS warning lamp operating condition is displayed.

Active Test

NGS0009I

OPERATION PROCEDURE

1. Touch “START (NISSAN BASED VHCL)” “RAS/HICAS” “ACTIVE TEST”.
   - If RAS/HICAS is not displayed, print the “SELECT SYSTEM” screen. Then refer to LAN-3, "Precautions When Using CONSULT-II" .

     NOTE:
     Just after starting engine, or turning ignition switch ON, it may not be displayed even if “START (NISSAN BASED VHCL)” is touched. In this case, reconnect CONSULT-II and CONSULT-II CONVERTER.
2. When turning the steering wheel right or left, the rear wheel turns in the same direction. If the steering wheel is not turned, the rear wheel turns left and right 5 times.

STEERING ANG	RR ST ANG_MAI	RR ST ANG_SUB	MOTOR CURRENT
0° (Neutral)	2.4 V	2.4 V	No output (Approx. 0 A)
R 90°	Approx. 4.4 V	Approx. 4.4 V	Output (change)
L 90°	Approx. 0.4 V	Approx. 0.4 V	

Control Unit Part Number

NGS0009J

OPERATION PROCEDURE

1. Touch “START (NISSAN BASED VHCL)” “RAS/HICAS” “ECU PART NUMBER”.
   - If RAS/HICAS is not displayed, print the “SELECT SYSTEM” screen. Then refer to LAN-3, "Precautions When Using CONSULT-II" .

     NOTE:
     Just after starting engine, or turning ignition switch ON, it may not be displayed even if “START (NISSAN BASED VHCL)” is touched. In this case, reconnect CONSULT-II and CONSULT-II CONVERTER.
2. The part number described on RAS control unit sticker is displayed.

Diagnosis Procedure With Self-Diagnosis Function (Without CONSULT-II)

NGS0009K

DESCRIPTION

If a malfunction is detected in the system, the RAS warning lamp turns on and indicates the malfunction. At that time, fail-safe activates, and then stops the function.

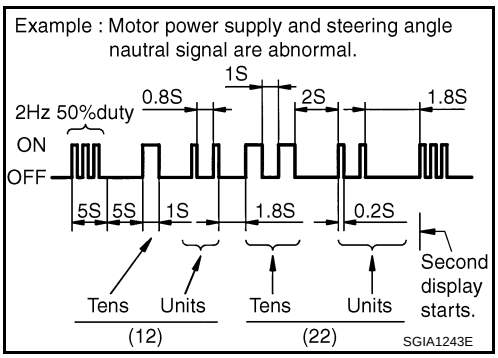
SELF-DIAGNOSIS PROCEDURE

1. Start engine.
2. Turn steering wheel left and right at 20° or more and 5 times or more within 10 seconds. And then depress the service brake 5 times or more.
3. RAS warning lamp blinks (displays normal/malfunction).

SELF-DIAGNOSIS DISPLAY

RAS warning lamp blinks and displays the self-diagnostic results.

- Only DTCs are displayed as the pattern shown in the figure, and then repeat the display.
- If all items are normal, RAS warning lamp blinks at 4 Hz cycle.



SELF-DIAGNOSIS DISPLAY ITEMS

DTC (warning lamp blinks)	Diagnosis item	Inspection item
11	RAS control unit	STC-31, "Inspection 1: RAS Control Unit Malfunction"
12	Motor power supply	STC-31, "Inspection 2: Motor Power Supply System"
13	Motor output	STC-33, "Inspection 3: RAS Motor Output Malfunction"
21	Vehicle speed signal	STC-34, "Inspection 4: Vehicle Speed Signal"
22	Steering angle signal	STC-34, "Inspection 5: Steering Angle Signal Malfunction"
24	Rear wheel steering angle (main)	STC-36, "Inspection 6: Rear Main Signal and Rear Sub Signal Malfunction"
25	Rear wheel steering angle (sub)	STC-36, "Inspection 6: Rear Main Signal and Rear Sub Signal Malfunction"
26	VDC	STC-38, "Inspection 7: VDC Malfunction"
33	Engine speed signal	STC-39, "Inspection 8: Engine Speed Signal Malfunction"

HOW TO ERASE SELF-DIAGNOSIS

If there is the history data for when the fail-safe has activated in the past, erase the memory with CONSULT-II. Refer to STC-24, "ERASE MEMORY" .

CAN Communication

NGS0009L

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. Refer to LAN-26, "CAN Communication Unit" .

For Fast and Accurate Trouble Diagnosis

NGS0009M

Check the following items with the vehicle stopped

- Is air pressure and size of tires proper?
- Is the specified part used for the steering wheel?
- Is control unit a genuine part?
- Are there any fluid leakage from steering gear assembly, power steering oil pump, and hydraulic pipes, etc? Refer to PS-7, "POWER STEERING FLUID" .
- Is the fluid level proper? Refer to PS-7, "POWER STEERING FLUID" .
- Is the wheel alignment is adjusted properly? Refer to FSU-20, "SERVICE DATA AND SPECIFICATIONS (SDS)" .
- Are there any damage or modification to suspension or body resulting in increased weight or altered ground clearance?
- Check each link installation condition of suspension and axle.
- Is the battery voltage proper?
- Check each connector connection condition.

Check the following items while driving the vehicle

- Conditions when the error occurred (5W 1H).
- Is the engine is normal?

Basic Inspection

NGS0009N

BASIC INSPECTION 1: POWER SUPPLY CIRCUIT TERMINAL LOOSENESS AND BATTERY

Check battery terminals for looseness on both positive and negative ones and ground connection. Also make sure that battery voltage does not drop.

BASIC INSPECTION 2: RAS WARNING LAMP INSPECTION

1. Make sure RAS warning lamp turns on when ignition switch is turned ON.
   - If it does not turn on, refer to STC-29, "Trouble Diagnosis Chart" .
2. Make sure that RAS warning lamp turns off when the engine is started after ignition switch is turned ON. If it does not turn off, perform self-diagnosis. Refer to STC-23, "Self-Diagnosis" .
3. Always erase DTC memory after completing self-diagnosis. Refer to STC-24, "ERASE MEMORY" .

BASIC INSPECTION 3: RAS CONTROL UNIT POWER SUPPLY CIRCUIT AND GROUND CIRCUIT INSPECTION

1. CHECK RAS CONTROL UNIT CONNECTOR

Turn ignition switch OFF, disconnect RAS control unit harness connector, and check terminal for deformation, disconnection, looseness, etc.

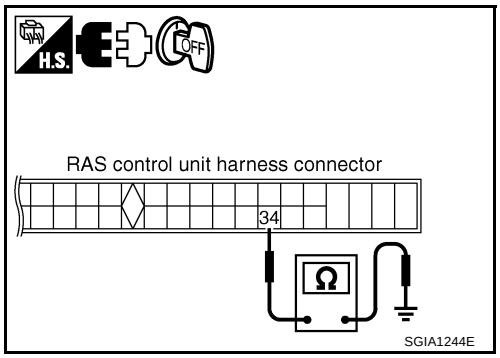
OK or NG

OK >> GO TO 2.
NG >> Poor connection of connector terminal. Repair or replace the terminal.

2. CHECK RAS CONTROL UNIT GROUND CIRCUIT

1. Disconnect RAS control unit harness connector B136, and then check continuity between RAS control unit harness connector B136 and ground.

   Terminal 34 – Ground : Continuity



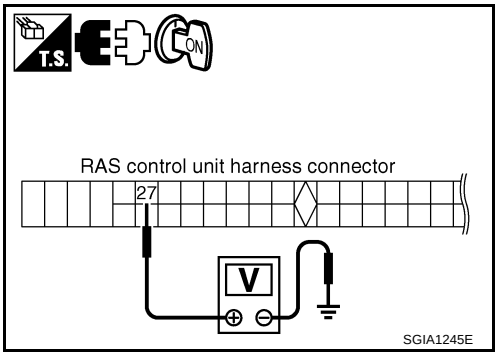
OK or NG

OK >> GO TO 3.
NG >> Ground circuit open or shorted. Repair or replace any inoperative parts.

3. CHECK RAS CONTROL UNIT POWER SUPPLY CIRCUIT

Turn ignition switch ON, and then check voltage between RAS control unit harness connector B136 and ground.

Terminal 27 – Ground : Battery voltage (Approx. 12 V)



OK or NG

OK >> Power supply and ground circuit are normal.
NG >> Power supply circuit open or shorted. Repair or replace any inoperative parts.

Trouble Diagnosis Chart
SELF-DIAGNOSIS

NGS0009O

Item			Reference
Self-diagnosis function		CONSULT-II	
DTC (warning lamp blinks)	Diagnosis item	Diagnosis item	
11	Control unit	CONTROL_UNIT [ABNORMAL 1 - 9]	STC-31
12	Motor power supply	MOTOR_VOLTAGE [LOW_VOLTAGE] (· a)	STC-31
		MOTOR_VOLTAGE [BAD_OBSTRCT] (· b)	
13	Motor output	MOTOR_OUTPUT [ABNORMAL_SIG] (· a)	STC-33
		MOTOR_OUTPUT [REV_CURRENT] (· c)	
		MOTOR_OUTPUT [NO_CURRENT] (· d)	
		MOTOR_OUTPUT [OVERCURRENT] (· e)	
		MOTOR_OUTPUT [MOTOR_LOCK] (· b)	
21	Vehicle speed signal	VEHICLE_SPEED_SEN [NO_SIGNAL]	STC-34
22	Steering angle signal	STEERING_ANGLE_SEN [NO_CHANGE] (· a)	STC-34
		STEERING_ANGLE_SEN [NO_NEUT_STATE] (· b)	
		STEERING_ANGLE_SEN [NO_SIGNAL]	
		STEERING_ANGLE_SEN	
24	Rear wheel steering angle (main)	RR_ST_ANGLE_SENSOR [MAIN_SIGNAL] (· a)	STC-36
		RR_ST_ANGLE_SENSOR [ABNORMAL_VOL] (· d)	
		RR_ST_ANGLE_SENSOR [OFFSET_SIG 1, 2] (· c)	
25	Rear wheel steering angle (sub)	RR_ST_ANGLE_SENSOR [SUB_SIGNAL] (· b)	
		RR_ST_ANGLE_SENSOR [ABNORMAL_VOL] (· d)	
		RR_ST_ANGLE_SENSOR [OFFSET_SIG 1, 2] (· c)	
26	VDC	VDC	STC-38
27	Engine speed signal	MOTOR_OUTPUT	STC-39
—		CAN COMM [U1000]	STC-39
—		CONTROL_UNIT (CAN) [U1010]	

DIAGNOSIS CHART BY SYMPTOM

Symptom	Reference
It is not entering the self-diagnosis mode.	STC-28, "BASIC INSPECTION 3: RAS CONTROL UNIT POWER SUPPLY CIRCUIT AND GROUND CIRCUIT INSPECTION"
	STC-40, "Inspection 10: Stop Lamp Switch Harness"
	STC-40, "Inspection 11: RAS Warning Lamp Harness"
RAS warning lamp does not turn on with ignition switch ON.	STC-28, "BASIC INSPECTION 3: RAS CONTROL UNIT POWER SUPPLY CIRCUIT AND GROUND CIRCUIT INSPECTION"
	STC-40, "Inspection 11: RAS Warning Lamp Harness"
RAS warning lamp turns on with ignition switch ON. It does not turn off even if the engine is started.	STC-28, "Basic Inspection"
	● STC-23, "Self-Diagnosis" ● STC-26, "Diagnosis Procedure With Self-Diagnosis Function (Without CONSULT-II)"
RAS warning lamp may turn on after the engine is started.	STC-23, "Self-Diagnosis"
The steering force does not change smoothly according to the vehicle speed.	STC-42, "Diagnosis Chart by Symptom 2"
Noise	● STC-23, "Self-Diagnosis" ● STC-26, "Diagnosis Procedure With Self-Diagnosis Function (Without CONSULT-II)"
	STC-8, "INSPECTION AFTER DISASSEMBLY"
Malfunction other than above	STC-42, "Diagnosis Chart by Symptom 1"

Inspection 1: RAS Control Unit Malfunction

NGS0009P

1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

With CONSULT-II

Self-diagnostic results
CONTROL_UNIT [ABNORMAL1 - 9]

Without CONSULT-II

DTC (warning lamp blinks)
11

Is above displayed on self-diagnosis display?

YES >> Replace RAS control unit. Perform self-diagnosis again after replacing.
NO >> INSPECTION END

Inspection 2: Motor Power Supply System

NGS0009Q

1. CHECK RAS CONTROL UNIT CONNECTOR

1. Turn ignition switch OFF, disconnect RAS control unit harness connector and motor connector, and check terminal for deformation, disconnection, looseness, etc.
2. Reconnect harness connector securely, and perform self-diagnosis.

With CONSULT-II

Self-diagnosis results
MOTOR_VOLTAGE [LOW_VOLTAGE] (· a)
MOTOR_VOLTAGE [BAD_OBSTRCT] (· b)

Without CONSULT-II

DTC (warning lamp blinks)
12

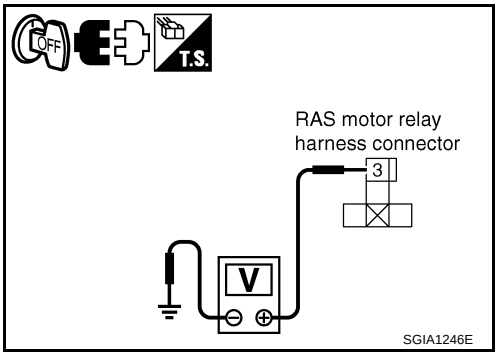
Is above displayed on self-diagnosis display?

YES >> GO TO 2.
NO >> Connector terminal connection is loose, damaged, open, or shorted. Repair or replace the terminal.

2. CHECK RAS MOTOR RELAY BATTERY CIRCUIT

1. Turn ignition switch OFF, and disconnect RAS motor relay harness connector B139.
2. Check voltage between RAS motor relay harness connector B126 and ground.

Terminal 3 – Ground : Battery voltage (Approx. 12 V)



OK or NG

OK >> GO TO 3.
NG >> RAS motor relay power supply circuit open or shorted. Repair or replace power supply circuit and fuse.

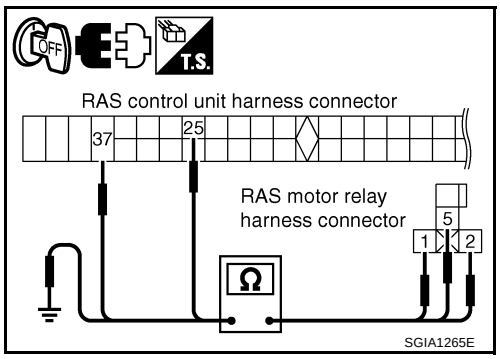
3. CHECK RAS MOTOR RELAY HARNESS

1. Disconnect RAS motor relay harness connector B139 and RAS control unit harness connector B136.
2. Check continuity between RAS motor relay harness connector B139 and RAS control unit harness connector B136.

   Terminal 5 – 37 : Continuity exist.
   Terminal 1 – 25 : Continuity exist.

3. Check continuity between RAS motor relay harness connector B139 and ground.

   2 – Ground : Continuity exist.



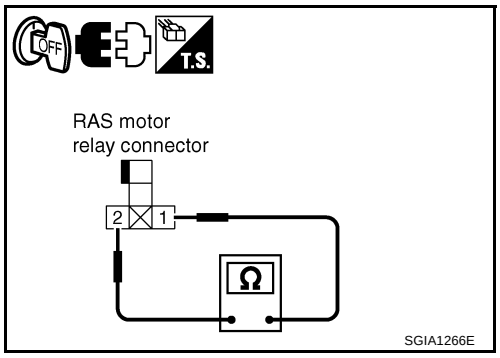
OK or NG

OK >> GO TO 4.
NG >> RAS motor relay harness open or shorted. Repair or replace applicable malfunctioning harness.

4. CHECK RAS MOTOR RELAY RESISTANCE

Check the resistance between RAS motor relay connector.

Terminal 1 – 2 : Approx. 74 Ω



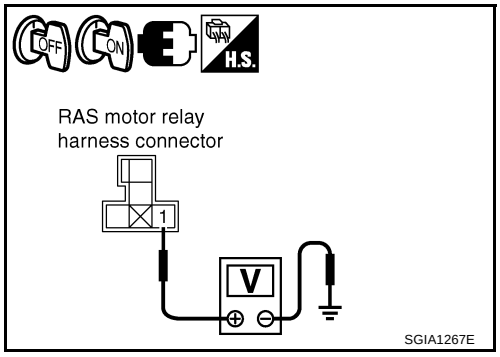
OK or NG

OK >> GO TO 5.
NG >> RAS motor relay malfunction (replacement)

5. CHECK RAS CONTROL UNIT OUTPUT SIGNAL

1. Connect RAS control unit harness connector B136 and RAS motor relay harness connector B139.
2. Check voltage between RAS motor relay harness connector B139 and ground.

   1 – Ground
   Ignition switch ON : Battery voltage (Approx. 12 V)
   Ignition switch OFF : Approx. 0V



OK or NG

OK >> Check RAS motor relay separately from other parts. Refer to STC-45, "RAS MOTOR RELAY" .
NG >> RAS control unit malfunction (replacement)

Inspection 3: RAS Motor Output Malfunction

NGS0009R

1. CHECK RAS CONTROL UNIT CONNECTOR

1. Turn ignition switch OFF, disconnect RAS control unit harness connector and RAS motor harness connector, and check terminal for deformation, disconnection, looseness, etc.
2. Reconnect harness connector securely, and perform self-diagnosis.

With CONSULT-II

Self-diagnosis results
MOTOR_OUTPUT [ABNORMAL_SIG] (· a)
MOTOR_OUTPUT [REV_CURRENT] (· c)
MOTOR_OUTPUT [NO_CURRENT] (· d)
MOTOR_OUTPUT [OVERCURRENT] (· e)
MOTOR_OUTPUT [MOTOR_LOCK] (· b)

Without CONSULT-II

DTC (warning lamp blinks)
13

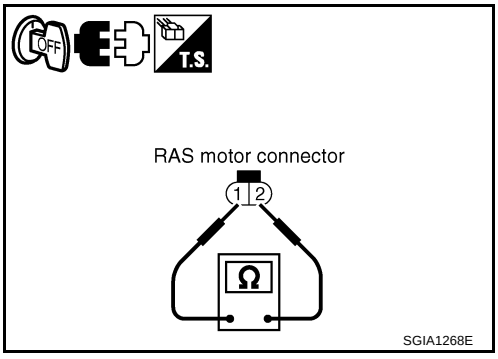
Is above displayed on self-diagnosis display?

YES >> GO TO 2.
NG >> Connector terminal connection is loose, damaged, open, or shorted. Repair or replace the terminal.

2. CHECK RAS MOTOR RESISTANCE

1. Turn ignition switch OFF, and disconnect RAS motor harness connector B134.
2. Check the resistance RAS motor connector.

Terminal 1 – 2 : Approx. 0.6 Ω



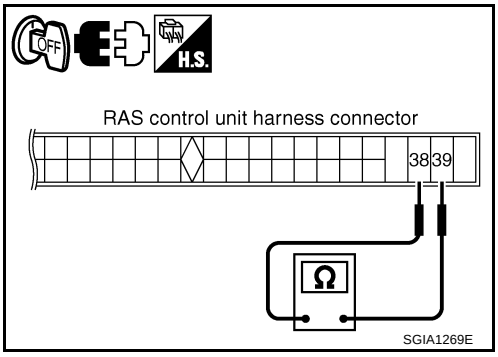
OK or NG

OK >> GO TO 3.
NG >> RAS motor malfunction. Replace RAS motor.

3. CHECK RAS MOTOR HARNESS

1. Connect RAS motor harness connector B134.
2. Disconnect RAS control unit harness connector B136.
3. Check continuity RAS control unit harness connector B136.

Terminal 38 – 39 : Continuity exist.



OK or NG

OK >> RAS control unit malfunction. Replace RAS control unit.
NG >> Harness between RAS motor and RAS control unit open or shorted. Repair or replace harness.

Inspection 4: Vehicle Speed Signal

NGS0009S

1. CHECK VDC/TCS/ABS CONTROL UNIT

Perform self-diagnosis with VDC/TCS/ABS control unit. Refer to BRC-26, "DESCRIPTION" .

Is any malfunction detected by self-diagnosis?

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

2. CHECK RAS CONTROL UNIT CONNECTOR

1. Turn ignition switch OFF, disconnect RAS control unit harness connector, and check terminal for deformation, disconnection, looseness, etc.
2. Reconnect harness connector securely, and perform self-diagnosis.

With CONSULT-II

Self-diagnosis results
VEHICLE_SPEED_SEN [NO_SIGNAL]

Without CONSULT-II

DTC (warning lamp blinks)
21

Is above displayed on self-diagnosis display?

YES >> RAS control unit malfunction. Replace RAS control unit.
NO >> Connector terminal connection is loose, damaged, open, or shorted. Repair or replace the terminal.

Inspection 5: Steering Angle Signal Malfunction

NGS0009T

1. CHECK CONNECTOR

1. Turn ignition switch OFF, disconnect RAS control unit harness connector and steering angle sensor harness connector, and check terminal for deformation, disconnection, looseness, etc.
2. Reconnect harness connector securely, and perform self-diagnosis.

With CONSULT-II

Self-diagnosis results
STEERING_ANGLE_SEN [NO_CHANGE] (· a)
STEERING_ANGLE_SEN [NO_NEUT_STATE] (· b)
STEERING_ANGLE_SEN [NO_SIGNAL]
STEERING_ANGLE_SEN

Without CONSULT-II

DTC (warning lamp blinks)
22

Is above displayed on self-diagnosis display?

YES >> GO TO 2.
NO >> Connector terminal connection is loose, damaged, open, or shorted. Repair or replace the terminal.

2. ADJUST NEUTRAL POSITION OF STEERING ANGLE SENSOR

Adjust the steering angle sensor neutral position, and then perform self-diagnosis again. Refer to BRC-6, "Adjustment of Steering Angle Sensor Neutral Position" .

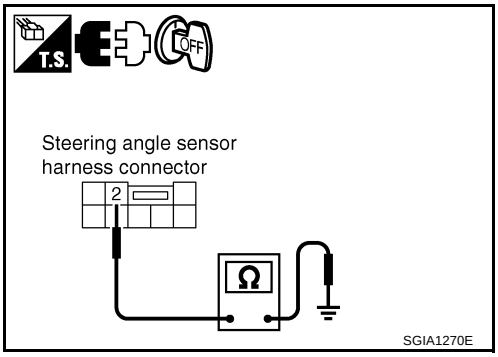
Is the result of self-diagnosis normal?

OK >> Inappropriate neutral position adjustment of steering angle sensor.
NG >> GO TO 3.

3. CHECK STEERING ANGLE SENSOR POWER SUPPLY AND GROUND CIRCUIT

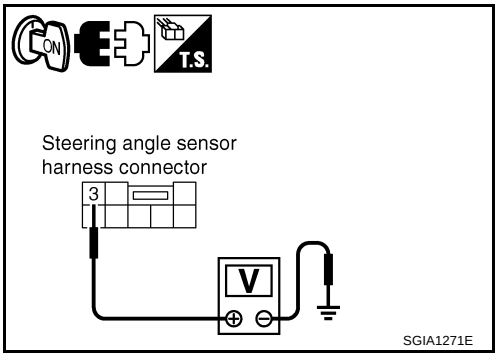
1. Turn ignition switch OFF, and disconnect steering angle sensor harness connector M22.
2. Check continuity steering angle sensor harness connector M22 and ground.

Steering angle sensor	Ground	Continuity
Terminal 2	—	Yes



3. Turn ignition switch ON, and then check voltage steering angle sensor harness connector M22 and ground.

Steering angle sensor	Ground	Continuity
Terminal 3	—	Battery voltage (approx. 12V)



OK or NG

OK >> GO TO 4.
NG >> Steering angle sensor power supply and ground circuit open or shorted. Repair or replace the applicable malfunctioning circuit.

4. DATA MONITOR

1. Connect steering angle sensor harness connector.
2. Select ”DATA MONITOR“ on “STEERING ANG” mode, and then check the steering angle.

Steering condition	DATA MONITOR
Straight-ahead position	– 3.5 - +3.5°
Turn wheel to the right by 90°	Approx. R 90°
Turn wheel to the left by 90°	Approx. R 90°

OK or NG

OK >> RAS control unit malfunction. Replace RAS control unit.
NG >> Replace steering angle sensor and adjust neutral position of steering angle sensor. Refer to BRC-6, "Adjustment of Steering Angle Sensor Neutral Position" .

Inspection 6: Rear Main Signal and Rear Sub Signal Malfunction

NGS0009U

1. CHECK RAS CONTROL UNIT CONNECTOR

1. Turn ignition switch OFF, disconnect RAS control unit harness connector and rear wheel steering angle sensor harness connector, and check terminal for deformation, disconnection, looseness, etc.
2. Reconnect harness connector securely, and perform self-diagnosis.

With CONSULT-II

Self-diagnosis results
RR_ST_ANGLE_SENSOR [MAIN_SIGNAL] (· a)
RR_ST_ANGLE_SENSOR [SUB_SIGNAL] (· b)
RR_ST_ANGLE_SENSOR [OFFSET_SIG 1, 2] (· c)
RR_ST_ANGLE_SENSOR [ABNORMAL_VOL] (· d)

Without CONSULT-II

DTC (warning lamp blinks)
24
25

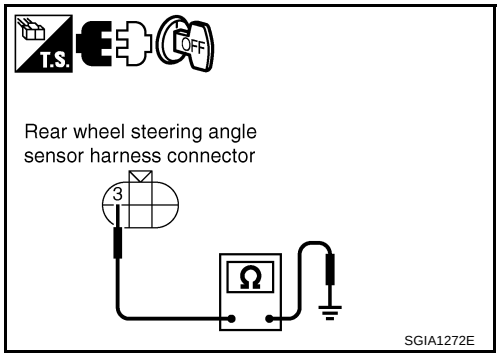
Is above displayed on self-diagnosis display?

YES >> GO TO 2.
NO >> Connector terminal connection is loose, damaged, open, or shorted. Repair or replace the terminal.

2. CHECK (1): REAR WHEEL STEERING ANGLE SENSOR POWER SUPPLY AND GROUND CIRCUIT

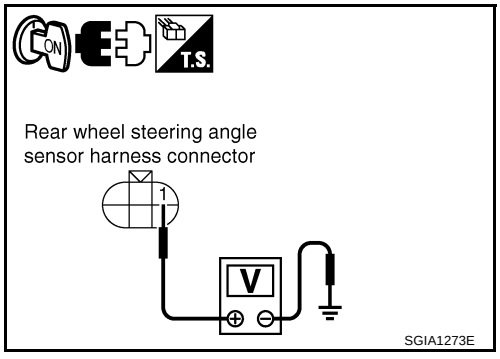
1. Turn ignition switch OFF, and disconnect rear wheel steering angle sensor harness connector B133.
2. Check continuity rear wheel steering angle sensor harness connector B133 and ground.

Terminal 3 – Ground : Continuity exist.



3. Turn ignition switch ON, and then check voltage rear wheel steering angle sensor harness connector B133 and ground.

Terminal 1 – Ground : Approx. 5 V

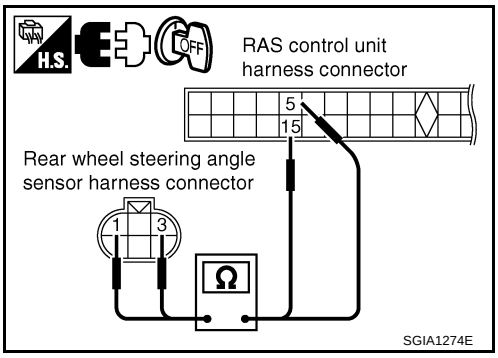


OK or NG

OK >> GO TO 4.
NG >> GO TO 3.

3. CHECK (2): REAR WHEEL STEERING ANGLE SENSOR POWER SUPPLY AND GROUND CIRCUIT

1. Turn ignition switch OFF, disconnect rear wheel steering angle sensor harness connector B133 and RAS control unit harness connector B136.
2. Check continuity each harness connector of rear wheel steering angle sensor harness connector B133 and RAS control unit harness connector B136.



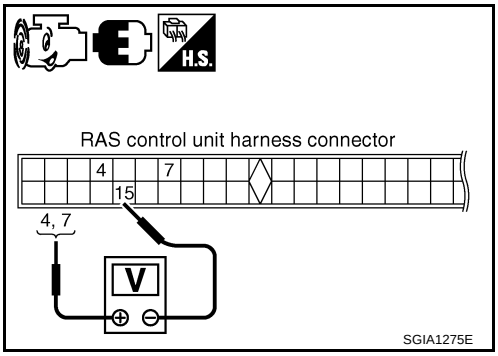
Rear wheel steering angle sensor	RAS control unit	Continuity
Terminal 1	Terminal 5	Yes
Terminal 3	Terminal 15	Yes

OK or NG

OK >> RAS control unit malfunction. Replace RAS control unit.
NG >> Harness between rear wheel steering angle sensor and RAS control unit open or shorted. Repair or replace harness.

4. CHECK REAR WHEEL STEERING ANGLE SENSOR OUTPUT SIGNAL

1. Connect rear wheel steering angle sensor harness connector B133.
2. Check voltage RAS control unit harness connector B136 when starting the engine and turning the steering wheel from neutral position clockwise/counterclockwise by 180°.



Steering condition	Rear wheel steering angle sensor	
	Rear main output Terminal 4 (+) - 15 (-)	Rear sub output Terminal 7 (+) - 15 (-)
Straight-ahead (neutral position)	Approx. 2.4 V	Approx. 2.4 V
Turn wheel to the right by 180°	Approx. 4.4 V	Approx. 4.4 V
Turn wheel to the left by 180°	Approx. 0.4 V	Approx. 0.4 V

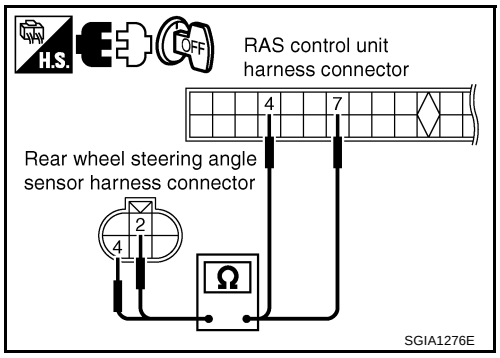
CAUTION:
There is approximately 1 V or more difference between main output and sub output at straight-ahead position, inspection results are "NG".

OK or NG

OK >> RAS control unit malfunction. Replace RAS control unit.
NG >> GO TO 5.

5. CHECK REAR WHEEL STEERING ANGLE SENSOR OUTPUT SIGNAL CIRCUIT

1. Turn ignition switch OFF, disconnect rear wheel steering angle sensor harness connector B133 and RAS control unit harness connector B136.
2. Check continuity between each harness connector of rear wheel steering angle sensor harness connector B133 and RAS control unit harness connector B136.



Rear wheel steering angle sensor	RAS C/U	Continuity
Terminal 2	Terminal 7	Yes
Terminal 4	Terminal 4	Yes

OK or NG

OK >> Rear wheel steering angle sensor malfunction. Replace rear wheel steering angle sensor.
NG >> Harness between rear wheel steering angle sensor and RAS control unit open or shorted. Repair or replace harness.

Inspection 7: VDC Malfunction

NGS0009V

1. CHECK RAS CONTROL UNIT CONNECTOR

1. Turn ignition switch OFF, disconnect RAS control unit harness connector and rear wheel steering angle sensor harness connector, and check terminal for deformation, disconnection, looseness, etc.
2. Reconnect harness connector securely, and perform self-diagnosis.

With CONSULT-II

Self-diagnosis results
VDC

Without CONSULT-II

DTC (warning lamp blinks)
26

Is above displayed on self-diagnosis display?

YES >> GO TO 2.
NO >> Connector terminal connection is loose, damaged, open, or shorted. Repair or replace the terminal.

2. CHECK SELF-DIAGNOSTIC RESULTS

Perform VDC self-diagnosis. Refer to BRC-26, "Self-Diagnosis" .

OK or NG

OK >> RAS control unit malfunction. Replace RAS control unit.
NG >> Repair or replace indicated part. After that, perform RAS self-diagnosis again to make sure that there is no malfunction.

Inspection 8: Engine Speed Signal Malfunction

NGS0009W

1. CHECK SPEEDOMETER

Start the engine, and then check the combination meter (tachometer) operation.

Does it operate normally?

YES >> GO TO 2.
NO >> Combination meter. Refer to DI-4, "COMBINATION METERS" .

2. CHECK RAS CONTROL UNIT CONNECTOR

1. Turn ignition switch OFF, disconnect RAS control unit harness connector, and check terminal for deformation, disconnection, looseness, etc.
2. Reconnect harness connector securely, and perform self-diagnosis.

With CONSULT-II

Self-diagnostic results
MOTOR_OUTPUT

Without CONSULT-II

DTC (warning lamp blinks)
27

Is above displayed on self-diagnosis display?

YES >> RAS control unit malfunction. Replace RAS control unit.
NO >> Connector terminal connection is loose, damaged, open, or shorted. Repair or replace the terminal.

Inspection 9: CAN Communication System Malfunction

NGS0009X

1. CHECK RAS CONTROL UNIT CONNECTOR

1. Turn ignition switch OFF, disconnect RAS control unit harness connector and rear wheel steering angle sensor harness connector, and check terminal for deformation, disconnection, looseness, etc.
2. Reconnect harness connector securely, and perform CONSULT-II self-diagnosis.

Self-diagnostic results
CAN COMM [U1000]
CONTROL_UNIT (CAN) [U1010]

Is above displayed on self-diagnosis display?

YES >>
- If “CAN COMM [U1000]” is displayed, print out self–diagnosis. And then, GO TO LAN-3, "Precautions When Using CONSULT-II" .
- Replace RAS control unit if “CONTROL_UNIT (CAN) [U1010]” is displayed.

NO >> Connector terminal connection is loose, damaged, open, or shorted. Repair or replace the terminal.

Inspection 10: Stop Lamp Switch Harness

NGS0009Y

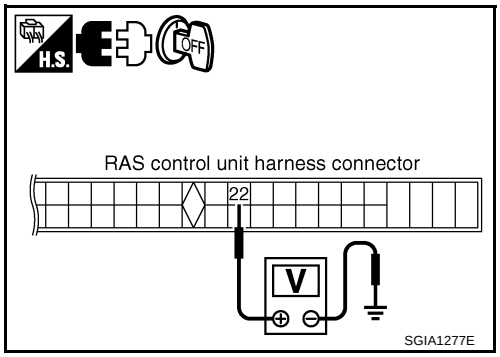
1. CHECK STOP LAMP SWITCH SIGNAL

With CONSULT-II
Select “STOP LAMP SW” on DATA MONITOR, and then check the stop lamp switch.

Measuring condition	Data monitor
Brake pedal depressed	ON
Brake pedal released	OFF

Without CONSULT-II

1. Turn ignition switch OFF, disconnect RAS control unit harness connector B136.
2. Operate brake pedal, and then check voltage between RAS control unit harness connector B136 and ground.



RAS C/U	Ground	Measuring condition	Voltage
Terminal 22	—	Brake pedal depressed	Battery voltage (approx. 12 V)
		Brake pedal released	Approx. 0 V

OK or NG

OK >> Stop lamp switch harness is normal.
NG >> Stop lamp switch harness malfunction. Repair circuit.

Inspection 11: RAS Warning Lamp Harness

NGS0009Z

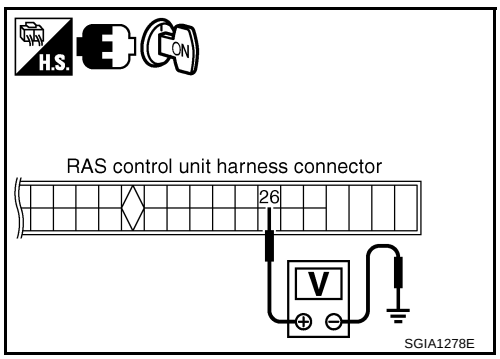
1. CHECK RAS WARNING LAMP SIGNAL

Turn ignition switch ON, and then check voltage between RAS control unit harness connector B136 and ground.

RAS C/U	Ground	Voltage	
Terminal26	—	Warning lamp OFF	: Approx. 2.8 V or more
		Warning lamp ON	: Approx. 1.4 V or less

OK or NG

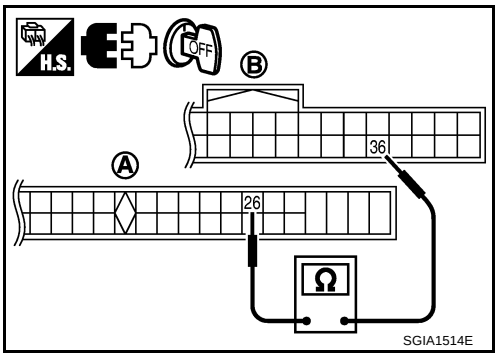
OK >> Perform self-diagnosis. Refer to STC-23, "Self-Diagnosis" .
NG >> GO TO 2.



2. CHECK RAS WARNING LAMP HARNESS

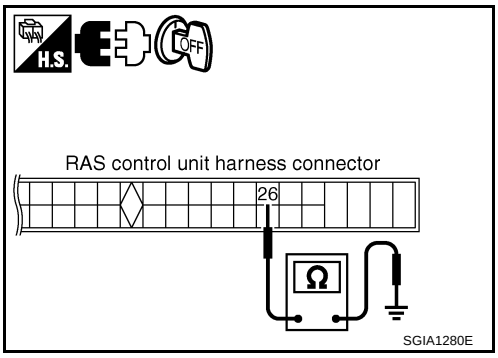
1. Turn ignition switch OFF, disconnect RAS control unit harness connector B136 and combination meter harness connector M19.
2. Check continuity between RAS control unit harness connector (A) B136 and combination meter harness connector (B) M19.

Terminal 26 – 36 : Continuity exist.



3. Check continuity between RAS control unit harness connector B136 and ground.

Terminal 26 – Ground : Continuity not exist.



OK or NG

OK >> GO TO combination meter power supply circuit.
NG >> Harness between RAS control unit and combination meter open or shorted. Repair or replace harness.

Diagnosis Chart by Symptom 1

NGS000A0

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform RAS self-diagnosis.

- With CONSULT-II: STC-23, "Self-Diagnosis"
- Without CONSULT-II: STC-26, "Diagnosis Procedure With Self-Diagnosis Function (Without CONSULT-II)"

Are malfunctioning items displayed in self-diagnosis results?

YES >> Repair or replace any malfunctioning items.
NO >> GO TO 2.

2. CHECK RAS STATIC/DYNAMIC CHARACTERISTICS

Check RAS static/dynamic characteristics. Refer to STC-44, "Check RAS Static/Dynamic Characteristics" .

Is the malfunction corrected?

YES >> INSPECTION END
NO >> Perform the following check, and then check the symptom again.

- Adjust neutral position of steering angle sensor. Refer to BRC-6, "Adjustment of Steering Angle Sensor Neutral Position" .
- Steering angle sensor mounting condition. Refer to BRC-63, "STEERING ANGLE SENSOR" .

Diagnosis Chart by Symptom 2

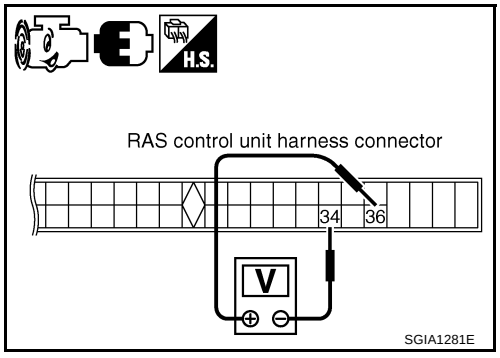
NGS000A1

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)

1. CHECK (1): POWER STEERING SOLENOID VALVE SIGNAL

1. Start engine.
2. Change the vehicle speed from 0 to 100 km/h (0 to 62 MPH) slowly, and then check voltage RAS control unit harness connector B136.

Terminal 36 – 34 : The voltage has changed from approximately 4.4 - 6.6 V to approximately 2.4 - 3.6 V.



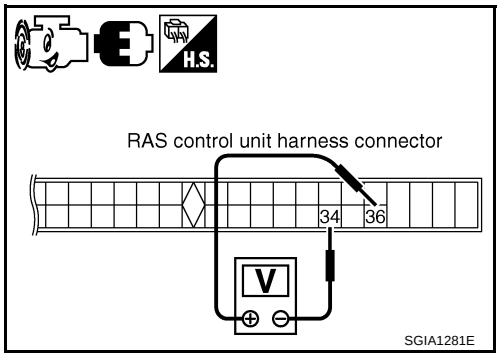
OK or NG

OK >> GO TO 2.
NG >> GO TO 7.

2. CHECK (2): POWER STEERING SOLENOID VALVE SIGNAL

1. Activate fail-safe function by running engine speed at 1,500 rpm or higher for 10 seconds with the vehicle stopped.
2. Change the engine speed to the idling speed, approx. 1,600 rpm, and approximately 3,000 rpm slowly, and then check voltage RAS control unit harness connector B127.

Terminal 36 – 34 : The voltage is changed from approximately 5.5 V to approximately 2.1 V step-by-step.



OK or NG

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

3. CHECK POWER STEERING SOLENOID VALVE CONNECTOR

Turn ignition switch OFF, disconnect power steering solenoid valve harness connector, and check terminal for deformation, disconnection, looseness, etc.

OK or NG

OK >> GO TO 4.
NG >> Harness or connector open or shorted. Repair or replace any inoperative parts.

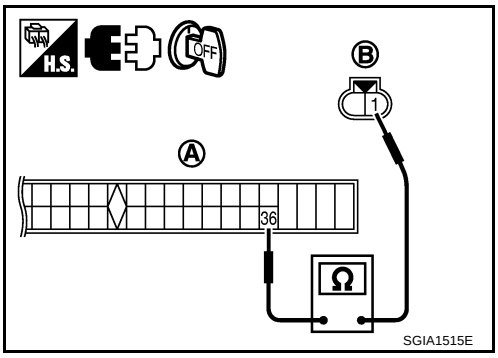
4. CHECK POWER STEERING SOLENOID VALVE POWER SUPPLY CIRCUIT

Check continuity between RAS control unit harness connector (A) B136 and power steering solenoid valve harness connector (B) F8.

RAS C/U	Power steering solenoid valve	Continuity
Terminal 36	Terminal 1	Yes

OK or NG

OK >> GO TO 5.
NG >> Open or short in harness. Repair or replace any inoperative parts.



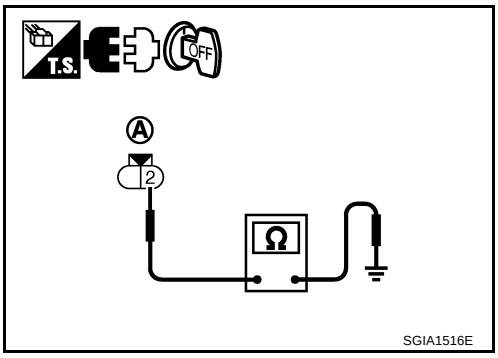
5. CHECK POWER STEERING SOLENOID VALVE GROUND CIRCUIT

Check continuity between power steering solenoid valve harness connector (A) F8 and ground.

Terminal 2 – Ground : Continuity exist.

OK or NG

OK >> GO TO 6.
NG >> Open or short in harness. Repair or replace any inoperative parts.



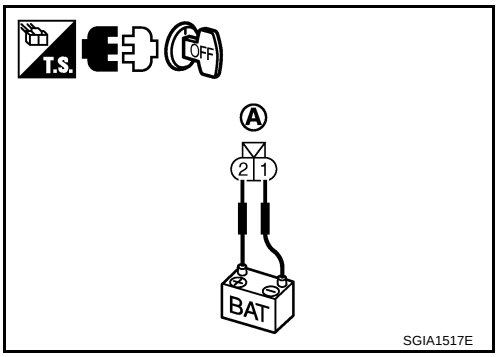
6. CHECK POWER STEERING SOLENOID VALVE

Apply voltage power steering solenoid valve connector F8 (A) and then make sure that the operating sound (clicking sound) is heard.

Terminal 1 (+) - 2 (-) : Operating sound is heard.

OK or NG

OK >> Perform steering turning torque inspection. Refer to PS-9, "CHECKING STEERING WHEEL TURNING FORCE" .
NG >> Power steering solenoid valve is inoperating. Replace it.



7. CHECK SELF-DIAGNOSIS RESULTS

Perform RAS self-diagnosis.

- With CONSULT-II: STC-23, "Self-Diagnosis"
- Without CONSULT-II: STC-26, "Diagnosis Procedure With Self-Diagnosis Function (Without CONSULT-II)"

Are malfunctioning items displayed in self-diagnosis results?

YES >> Repair or replace any malfunctioning items.
NO >> RAS control unit malfunction. Replace it.

Check RAS Static/Dynamic Characteristics

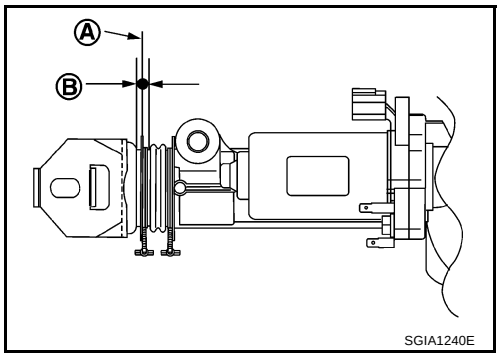
NGS000A2

1. CHECK (1): RAS ACTUATOR STROKE

Perform CONSULT-II “ACTIVE TEST”, and then check the actuator stroke when turning the steering wheel clockwise or counterclockwise by 180° or more.

Neutral position (A)

Actuator stroke (B) : 2.8 - 3.0 mm (0.110 - 0.118 in)



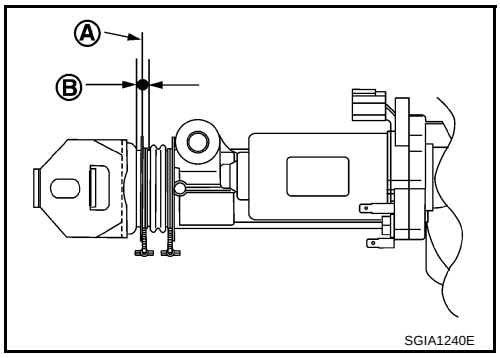
OK or NG

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

2. CHECK (2): RAS ACTUATOR STROKE

Perform CONSULT-II “ACTIVE TEST“. When turning the steering wheel in neutral position (A), the rear wheel turns clockwise/counterclockwise periodically. At that time, check actuator stroke (B).

Actuator stroke (B) : 2.3 - 2.5 mm (0.091 - 0.098 in)



OK or NG

OK >> RAS static/dynamic characteristics inspection is completed.
NG >> GO TO 3.

3. CHECK RAS MOTOR

Check RAS motor itself separated from other parts. Refer to STC-45, "RAS MOTOR" .

OK or NG

OK >> GO TO 4.
NG >> RAS motor malfunction. Check the stroke again after replacing.

4. CHECK REAR WHEEL STEERING ANGLE SENSOR

Check rear wheel steering angle sensor separated from other parts. Refer to STC-45, "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 RAS CONTROL UNIT

Replace RAS control unit. Check the symptom of malfunction again.

Is the malfunction corrected?

YES >> RAS control unit malfunction
NO >> GO TO 6.

6. REPLACE RAS ACTUATOR ASSEMBLY

Replace RAS actuator assembly. Check the symptom of malfunction again.

Is the malfunction corrected?

YES >> RAS actuator malfunction
NO >> Check rear suspension components. Refer to RSU-7, "Components" .

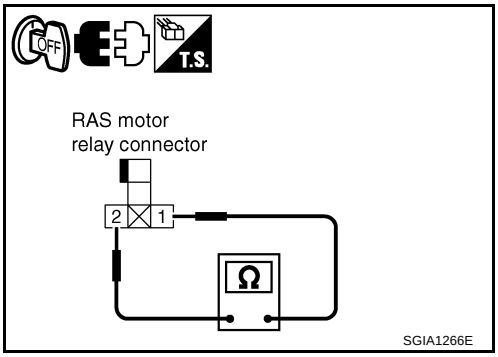
Component Parts Inspection

NGS000A3

RAS MOTOR RELAY

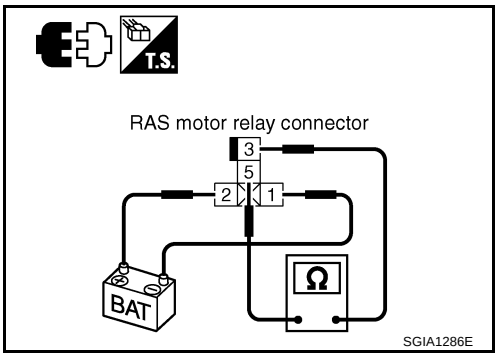
1. Check the resistance between RAS motor relay connector.

Terminal 1 – 2 : Approx. 74 Ω



2. When applying or not supplying approximately 12 V between RAS motor relay connector, check continuity RAS motor relay connector.

Terminal 3 – 5 : When applying 12 V voltage: Continuity exist.
: When not applying 12 V voltage: Continuity not exist.



RAS MOTOR

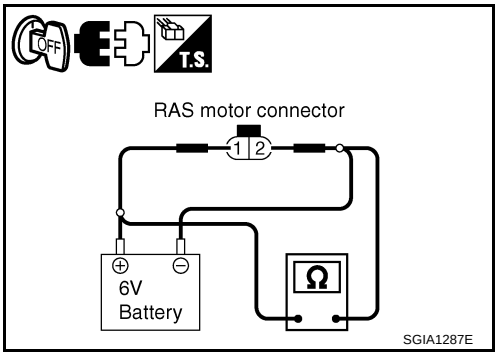
1. Check the resistance RAS motor connector.

Terminal 1 – 2 : Approx. 0.6 Ω

2. Remove RAS motor from RAS actuator, and then turn the motor by 6 V battery.

If it is normal, it turns.

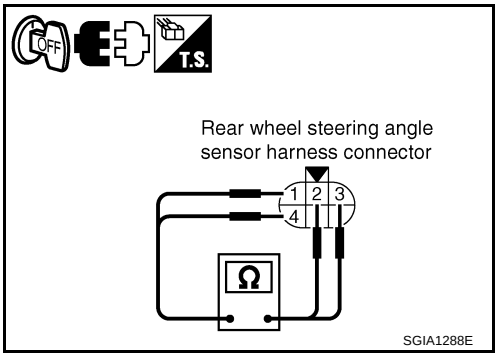
CAUTION:
Do not apply 12 V (battery voltage) to the RAS motor terminal because RAS motor might be damaged.



REAR WHEEL STEERING ANGLE SENSOR

1. Disconnect rear wheel steering angle sensor harness connector B133.
2. Check resistance of rear wheel steering angle sensor side connectors.

Terminal 2 – 3
Terminal 4 – 3 **: Approx. 1kΩ**
Terminal 1 – 3 : Approx. 1.25 kΩ



PRECAUTIONS

PFP:00001

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

NGS000B2

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 for Battery Service

NGS000B3

Before disconnecting the battery, lower both the driver and passenger windows. This will prevent any interference between the window edge and the vehicle when the door is opened/closed. During normal operation, the window slightly raises and lowers automatically to prevent any window to vehicle interference. The automatic window function will not work with the battery disconnected.

TILT & TELESCOPIC SYSTEM

PFP:48805

System Description

NGS0001J

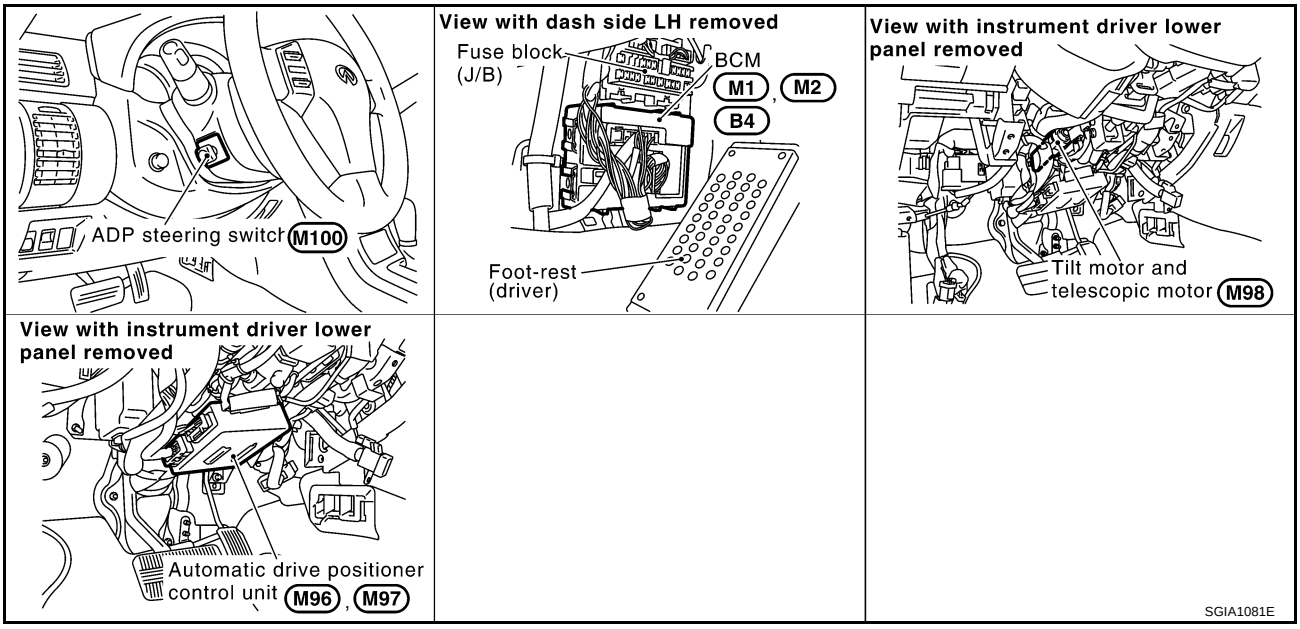
OPERATION

Steering wheel position can be adjusted with the ADP steering switch.

NOTE:
Steering wheel position can be manually operated with the ignition switch OFF.

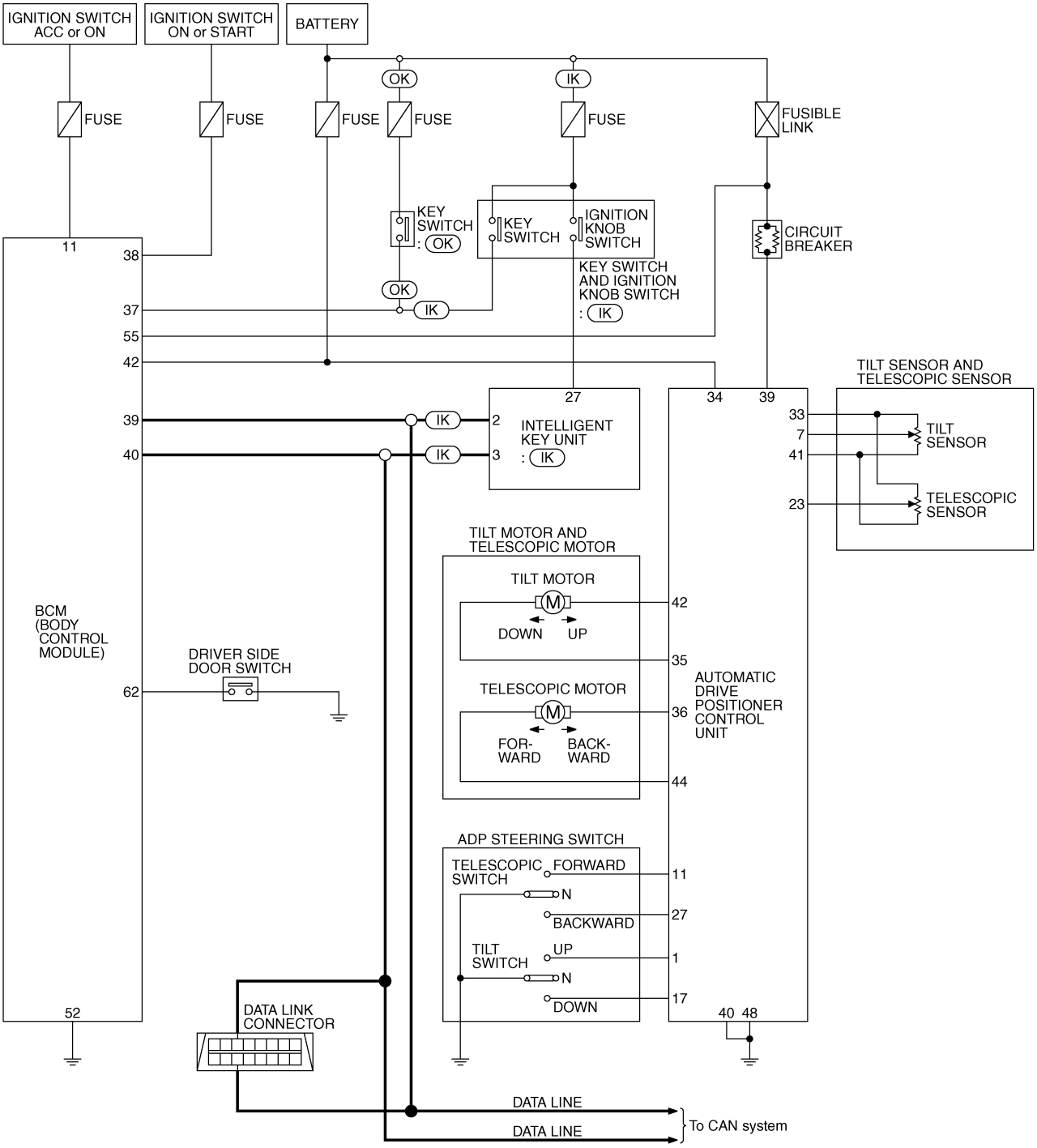
Component Parts and Harness Connector Location

NGS0001K



Schematic

NGS000AJ



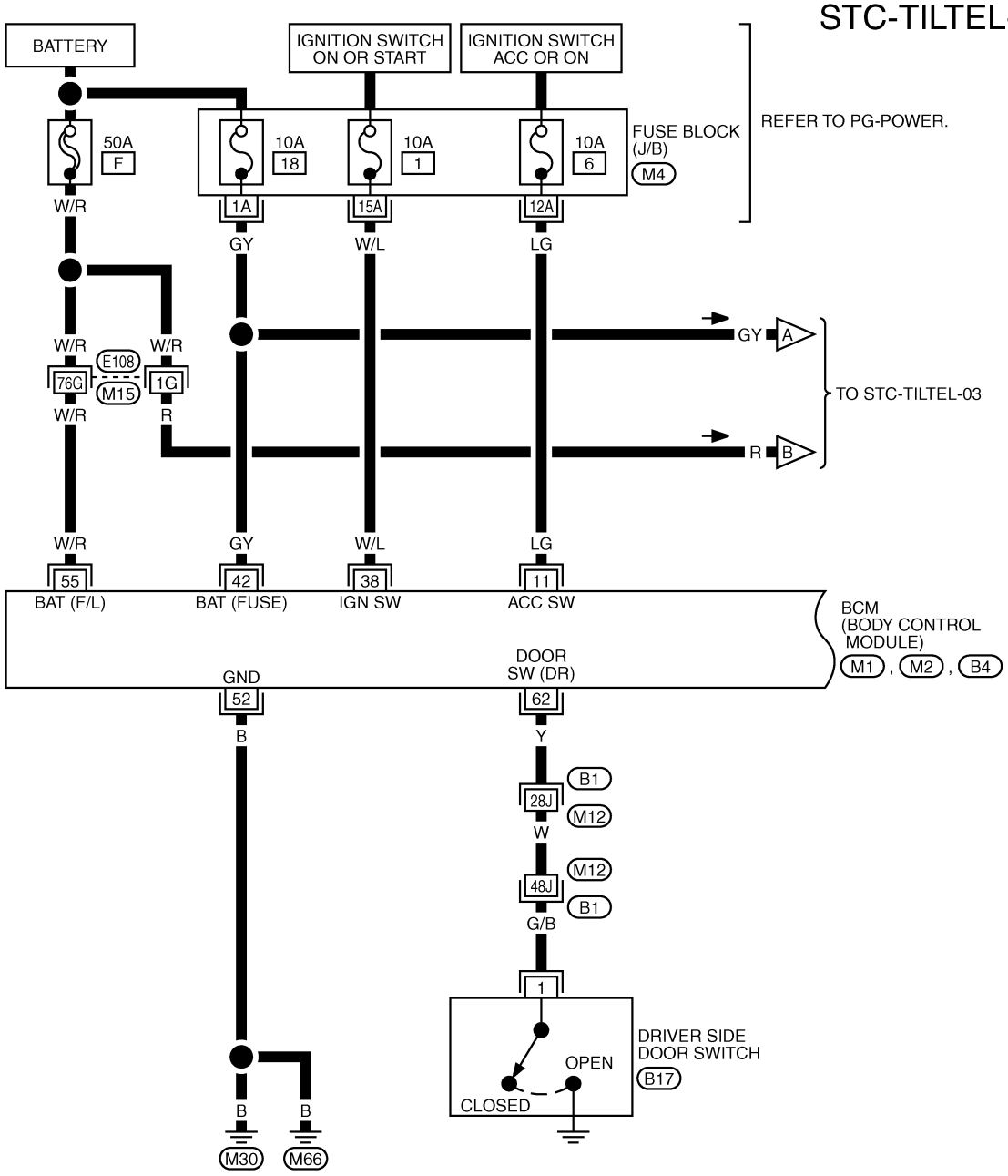
IK : With Intelligent Key
OK : Without Intelligent Key

TGWM0050E

Wiring Diagram—TILTEL—

NGS0001L

STC-TILTEL-01

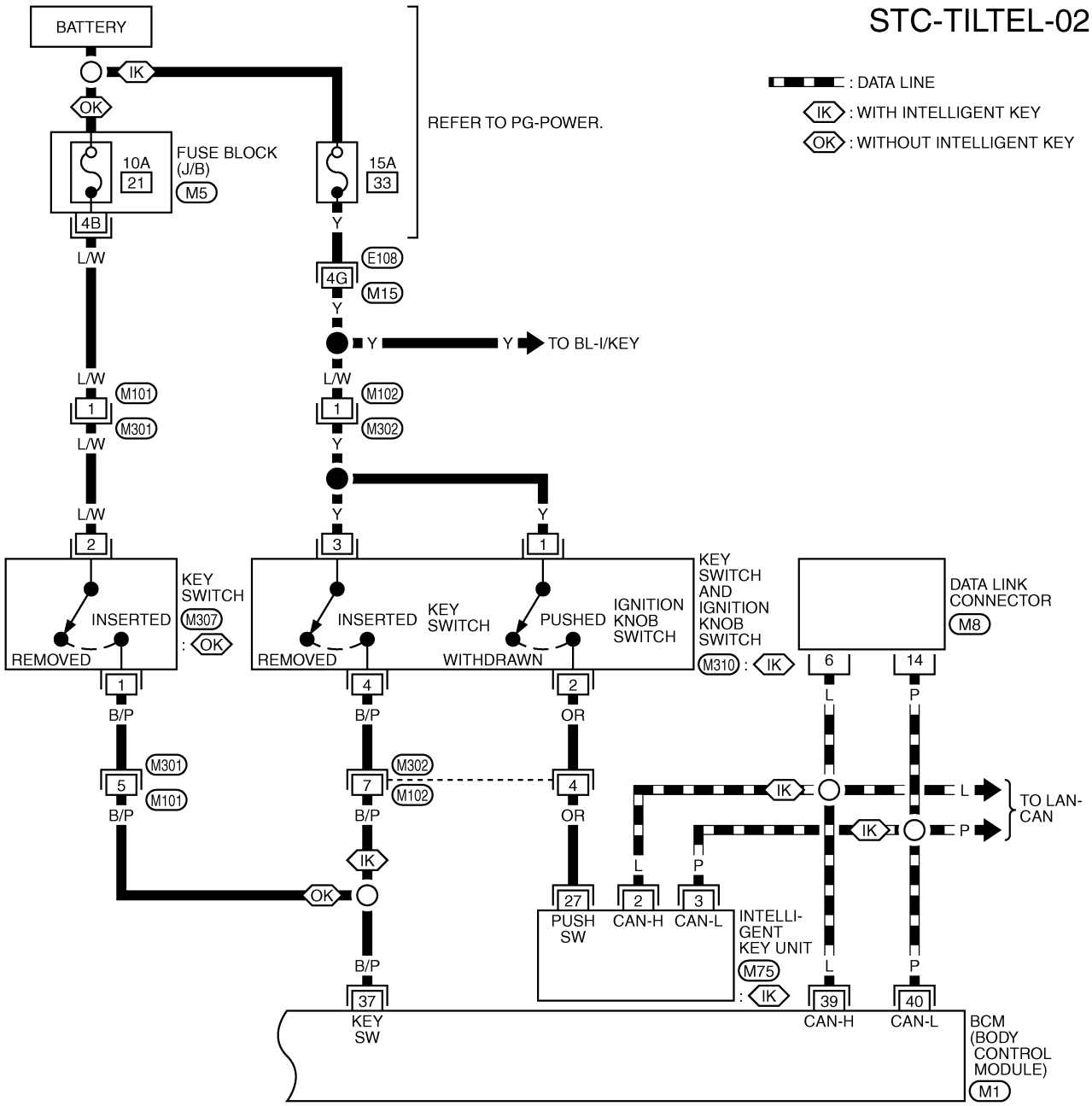


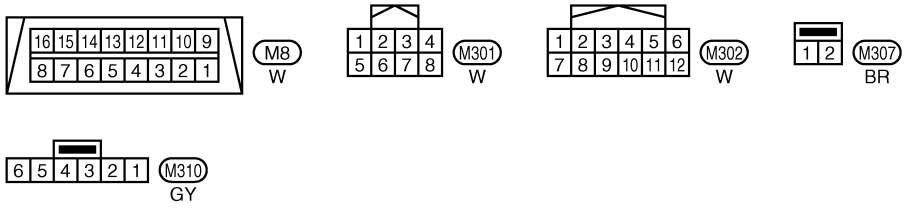
1
2
3 B17 W

REFER TO THE FOLLOWING.
E108, B1 -SUPER MULTIPLE JUNCTION (SMJ)
M4 -FUSE BLOCK-JUNCTION BOX (J/B)
M1, M2, B4 -ELECTRICAL UNITS

TGWM0051E

STC-TILTEL-02





REFER TO THE FOLLOWING.

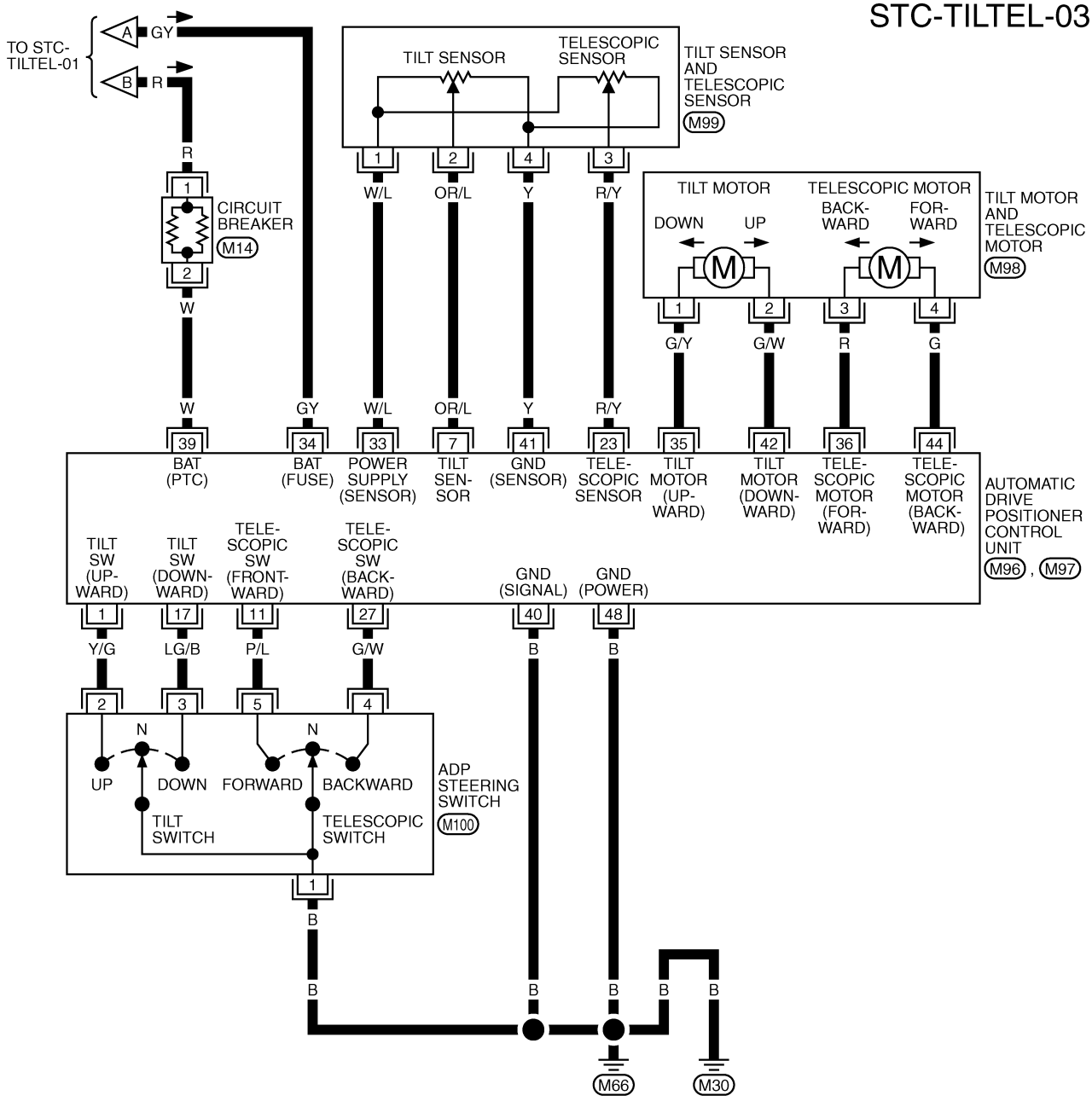
E108 -SUPER MULTIPLE JUNCTION (SMJ)

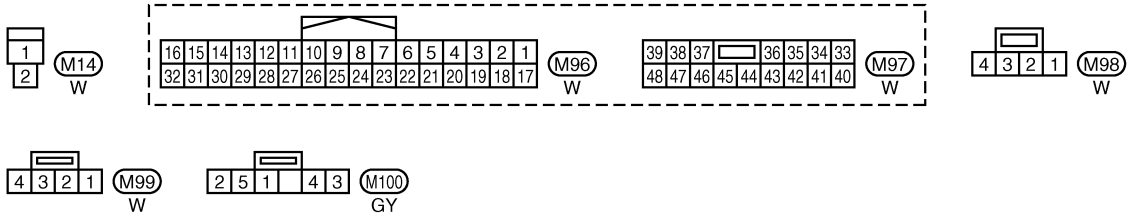
M5 -FUSE BLOCK-JUNCTION BOX (J/B)

M1, M75 -ELECTRICAL UNITS

TGWM0052E

STC-TILTEL-03





TGWM0053E

Terminals and Reference Values for Automatic Drive Positioner Control Unit

NGS0001M

TERMINAL	WIRE COLOR	ITEM	CONDITION	VOLTAGE (V) (Approx.)
1	Y/G	Tilt switch UP signal	Tilt switch turned to upward	0
			Other than above	5
7	OR/L	Tilt sensor signal	Tilt position, top	2
			Tilt position, bottom	4
11	P/L	Telescopic switch Front signal	Telescopic switch turned to forward	0
			Other than above	5
17	LG/B	Tilt switch DOWN signal	Tilt switch turned to downward	0
			Other than above	5
23	R/Y	Telescopic sensor input	Telescopic position, top	1
			Telescopic position, bottom	4
27	G/W	Telescopic switch Back signal	Telescopic switch turned to backward	0
			Other than above	5
33	W/L	Sensor power supply	–	5
34	G/Y	Power source (Fuse)	–	Battery voltage
35	G/Y	Tilt motor UP signal	Tilt switch turned to upward	Battery voltage
			Other than above	0
36	R	Telescopic motor FORWARD signal	Telescopic switch turned to forward	Battery voltage
			Other than above	0
39	W	Battery power supply	–	Battery voltage
40	B	Ground (Signal)	–	0
41	Y	Sensor ground	–	0
42	G/W	Tilt motor Down signal	Tilt switch turned to downward	Battery voltage
			Other than above	0
44	G	Telescopic motor back signal	Telescopic switch turned to back ward	Battery voltage
			Other than above	0
48	B	Ground (Power)	–	0

Preliminary Check

NGS0001N

POWER SUPPLY AND GROUND CIRCUIT INSPECTION

1. CHECK FUSE

Check if any of the following fuses in the Automatic drive Positioner control unit are blown.

Unit	Terminal No.	Voltage (V)
Automatic drive Positioner control unit	34	Approx. 12

OK or NG

OK >> GO TO 2.
NG >> If fuse is blown, be sure to eliminate cause of malfunction before installing new fuse. Refer to PG-3, "POWER SUPPLY ROUTING CIRCUIT" .

2. CHECK POWER SUPPLY CIRCUIT (AUTOMATIC DRIVE POSITIONER CONTROL UNIT)

1. Disconnect Automatic drive Positioner control unit connector.
2. Turn ignition switch ON.
3. Check voltage between Automatic drive Positioner control unit harness connector M96, M97 terminal 39, 34 and ground.

Terminals			Power source	Condition	Voltage (V)
(+)		(–)			
Connector	Terminal				
M96, M97	39, 34	Ground	BAT power supply	Ignition switch OFF	Battery voltage

OK or NG

OK >> GO TO 3.
NG >> Repair or replace harness. Check harness for open or short between Automatic drive Positioner control unit and fuse.

3. CHECK GROUND CIRCUIT (AUTOMATIC DRIVE POSITIONER CONTROL UNIT)

1. Turn ignition switch OFF.
2. Check continuity between Automatic drive Positioner control unit harness connector M96, M97 terminal 40, 48 and ground.

Terminals			Condition	Continuity
(+)		(–)		
Connector	Terminal			
M96, M97	40	Ground	Ignition switch OFF	Yes
	48	Ground	Ignition switch OFF	Yes

OK or NG

OK >> Preliminary check is OK.
NG >> Repair or replace Automatic drive Positioner control unit ground harness.

Symptom 1: Telescopic System does not Operate

NGS0001O

1. CHECK STEERING WHEEL TELESCOPIC MECHANISM

Check the following.

- Operation malfunction caused by steering wheel telescopic mechanism deformation or pinched harness or other foreign materials.
- Operation malfunction and interference with other parts by poor installation.

OK or NG

OK >> GO TO 2.
NG >> Repair the malfunctioning part and check again.

2. CHECK TELESCOPIC SWITCH INPUT/OUTPUT

1. Disconnect ADP steering switch connector.
2. Turn ignition switch ON.
3. Check voltage between ADP steering switch harness connector M100 terminals 4, 5 and ground.

Terminals			Voltage (V)
(+)		(–)	
Connector	Terminal		
M100	4	Ground	Approx. 5V
	5	Ground	Approx. 5V

OK or NG

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

3. CHECK ADP STEERING SWITCH GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between ADP steering switch harness connector M100 terminal 1 and ground.

1 – Ground : Continuity should exist.

OK or NG

OK >> GO TO 4.
NG >> Replace or replace harness.

4. CHECK TELESCOPIC SWITCH

Check continuity between ADP steering switch connector terminals 4, 5 and 1.

Terminals	ADP steering switch operation	Continuity
4 – 1	Backward position	Yes
	Neutral or forward position	No
5 – 1	Forward position	Yes
	Neutral or backward position	No

OK or NG

OK >> GO TO 6.
NG >> Replace ADP steering switch.

5. CHECK HARNESS CONTINUITY

1. Disconnect Automatic drive Positioner control unit connector.
2. Check continuity between Automatic drive Positioner control unit harness connector M96, M97 terminals 11, 27 and ADP steering switch harness connector M100 terminals 4, 5.
3. Check continuity between Automatic drive Positioner control unit harness connector M96, M97 terminals 11, 27 and ground.

Terminals				Continuity
(+)		(–)		
Connector	Terminal	Connector	Terminal	
M96, M97	11	M100	5	Yes
	27		4	Yes
	11	Ground		No
	27	Ground		No

OK or NG

OK >> Replace Automatic drive Positioner control unit.
NG >> Repair or replace harness.

6. CHECK AUTOMATIC DRIVE POISONER CONTROL UNIT OUTPUT SIGNAL

1. Disconnect tilt motor and telescopic motor connector.
2. Check voltage between tilt motor and telescopic motor harness connector M98 terminals 3, 4 and ground.

Terminals			Condition	Voltage
(+)		(–)		
Connector	Terminal			
M98	3	Ground	Telescopic switch (FORWARD operation)	Battery voltage
	4	Ground	Telescopic switch (BACKWARD operation)	Battery voltage
	3, 4	Ground	Telescopic switch OFF	0V

OK or NG

OK >> Replace tilt motor and telescopic motor.
NG >> GO TO 7.

7. CHECK TELESCOPIC MOTOR CIRCUIT

1. Disconnect Automatic drive Positioner control unit and tilt motor and telescopic motor connectors.
2. Check continuity between Automatic drive Positioner control unit harness connector M96, M97 terminals 36, 44 and tilt motor and telescopic motor harness connector M98 terminals 3, 4.
3. Check continuity between Automatic drive Positioner control unit harness connector M96, M97 terminals 36, 44 and ground.

Terminals				Continuity
(+)		(–)		
Connector	Terminal	Connector	Terminal	
M96, M97	36	M98	3	Yes
	44		4	Yes
	36	Ground		No
	44			No

OK or NG

OK >> Replace automatic drive positioner control unit.
NG >> Repair or replace harness.

Symptom 2: Tilt System does not Operate

NGS0001P

1. CHECK STEERING WHEEL TILT MECHANISM

Check the following.

- Operation malfunction caused by steering wheel tilt mechanism deformation or pinched harness or other foreign materials.
- Operation malfunction and interference with other parts by poor installation.

OK or NG

OK >> GO TO 2.
NG >> Repair the malfunctioning part and check again.

2. CHECK TILT SWITCH INPUT/OUTPUT

1. Disconnect ADP steering switch connector.
2. Turn ignition switch ON.
3. Check voltage between ADP steering switch harness connector M100 terminals 2, 3 and body ground.

Terminals			Voltage (V)
(+)		(–)	
Connector	Terminal		
M100	2	Ground	Approx. 5V
	3	Ground	Approx. 5V

OK or NG

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

3. CHECK ADP STEERING SWITCH GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between ADP steering switch harness connector M100 terminal 1 and body ground.

1 – Ground : Continuity should exist.

OK or NG

OK >> GO TO 4.
NG >> Repair or replace harness.

4. CHECK TILT SWITCH

Check continuity between ADP steering switch connector terminals 2, 3 and 1.

Terminals	ADPSteering switch operation	Continuity
2 – 1	Tilt up position	Yes
	Neutral or tilt down position	No
3 – 1	Tilt down position	Yes
	Neutral or tilt up position	No

OK or NG

OK >> GO TO 6.
NG >> Replace ADP steering switch.

5. CHECK HARNESS CONTINUITY

1. Disconnect Automatic drive Positioner control unit connector.
2. Check continuity between Automatic drive Positioner control unit harness connector M96, M97 terminals 17, 1 and ADP steering switch harness connector M100 terminals 3, 2.
3. Check continuity between Automatic drive Positioner control unit harness connector M96, M97 terminals 17, 1 and ground.

Terminals				Continuity
(+)		(–)		
Connector	Terminal	Connector	Terminal	
M96, M97	1	M100	2	Yes
	17		3	Yes
	1	Ground		No
	17	Ground		No

OK or NG

OK >> Replace Automatic drive Positioner control unit.
NG >> Repair or replace harness.

6. CHECK AUTOMATIC DRIVE POSITIONER CONTROL UNIT OUTPUT SIGNAL

1. Disconnect tilt motor and telescopic motor connector.
2. Check voltage between tilt motor and telescopic motor harness connector M98 terminals 1, 2 and ground.

Terminals			Condition	Voltage
(+)		(–)		
Connector	Terminal			
M98	1	Ground	Tilt switch (UP operation)	Battery voltage
	2	Ground	Tilt switch (DOWN operation)	Battery voltage
	1, 2	Ground	Tilt switch OFF	0V

OK or NG

OK >> Replace tilt motor and telescopic motor.
NG >> GO TO 7.

7. CHECK TILT MOTOR CIRCUIT

1. Disconnect Automatic drive Positioner control unit and tilt motor and telescopic motor connectors.
2. Check continuity between Automatic drive Positioner control unit harness connector M96, M97 terminals 35, 42 and tilt motor and telescopic motor harness connector M98 terminals 1, 2.
3. Check continuity between Automatic drive Positioner control unit harness connector M96, M97 terminals 35, 42 and body ground.

Terminals				Continuity
(+)		(–)		
Connector	Terminal	Connector	Terminal	
M96, M97	35	M98	1	Yes
	42		2	Yes
	35	Ground		No
	42	Ground		No

OK or NG

OK >> Replace automatic drive positioner control unit.
NG >> Repair or replace harness.