

SECTION **BRC**

BRAKE CONTROL SYSTEM

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BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000003707853

PRECAUTIONS FOR DIAGNOSIS

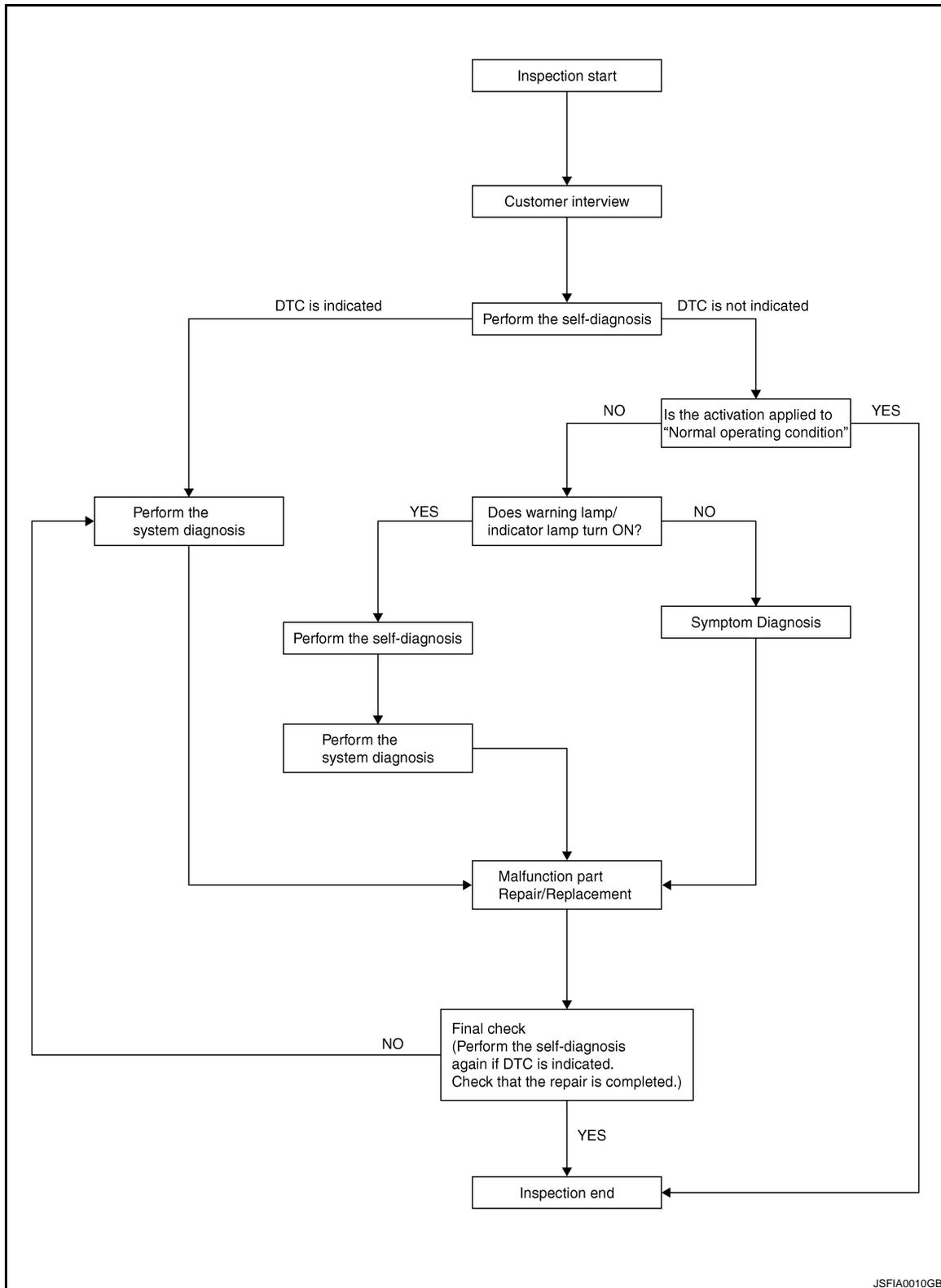
If steering angle sensor, steering system parts, suspension system parts, ABS actuator and electric unit (control unit) or tires have been replaced, or if wheel alignment has been adjusted, be sure to adjust neutral position of steering angle sensor before driving. Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[VDC/TCS/ABS]

OVERALL SEQUENCE



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DETAILED FLOW

1. COLLECT THE INFORMATION FROM THE CUSTOMER

Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the diagnosis worksheet. Refer to [BRC-7, "Diagnostic Work Sheet"](#).

>> GO TO 2

DIAGNOSIS AND REPAIR WORKFLOW

[VDC/TCS/ABS]

< BASIC INSPECTION >

2. PERFORM THE SELF-DIAGNOSIS

Check the DTC display with the self-diagnosis function. Refer to [BRC-23, "CONSULT-III Function \(ABS\)"](#).

Is there any DTC displayed?

YES >> GO TO 3

NO >> GO TO 4

3. PERFORM THE SYSTEM DIAGNOSIS

Perform the diagnosis applicable to the displayed DTC. Refer to [BRC-97, "DTC No. Index"](#).

>> GO TO 7

4. CHECK THE SYMPTOM THAT IS NOT CONSIDERED A SYSTEM MALFUNCTION

Check that the symptom is a normal operation that is not considered a system malfunction. Refer to [BRC-106, "Description"](#).

Is the symptom a normal operation?

YES >> Inspection End

NO >> GO TO 5

5. CHECK THE WARNING LAMP AND INDICATOR LAMP FOR ILLUMINATION

Check that the warning lamp and indicator lamp illuminate.

- ABS warning lamp: Refer to [BRC-80, "Description"](#).
- Brake warning lamp: Refer to [BRC-81, "Description"](#).
- VDC OFF indicator lamp: Refer to [BRC-82, "Description"](#).
- SLIP indicator lamp: Refer to [BRC-83, "Description"](#).

Is ON/OFF timing normal?

YES >> GO TO 6

NO >> GO TO 2

6. PERFORM THE DIAGNOSIS BY SYMPTOM

Perform the diagnosis applicable to the symptom.

>> GO TO 7

7. REPAIR OR REPLACE THE MALFUNCTIONING PARTS

Repair or replace the specified malfunctioning parts.

>> GO TO 8

8. FINAL CHECK

Perform the self-diagnosis again, and check that the malfunction is repaired completely. After checking, erase the self-diagnosis memory. Refer to [BRC-23, "CONSULT-III Function \(ABS\)"](#).

Is no other DTC present and the repair completed?

YES >> Inspection End

NO >> GO TO 3

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[VDC/TCS/ABS]

Diagnostic Work Sheet

INFOID:000000003707854

| | | | |
|---------------------------|---|---|---|
| Customer name MR/MS | Model & Year | VIN | |
| Engine # | Trans. | Mileage | |
| Incident Date | Manuf. Date | In Service Date | |
| Symptoms | <input type="checkbox"/> Noise and vibration (from engine compartment) <input type="checkbox"/> Noise and vibration (from axle) | <input type="checkbox"/> Warning / Indicator activate | <input type="checkbox"/> Firm pedal operation Large stroke pedal operation |
| | <input type="checkbox"/> TCS does not work (Rear wheels slip when accelerating) | <input type="checkbox"/> ABS does not work (Wheels lock when braking) | <input type="checkbox"/> Lack of sense of acceleration |
| Engine conditions | <input type="checkbox"/> When starting <input type="checkbox"/> After starting | | |
| Road conditions | <input type="checkbox"/> Low friction road (<input type="checkbox"/> Snow <input type="checkbox"/> Gravel <input type="checkbox"/> Other) <input type="checkbox"/> Bumps / potholes | | |
| Driving conditions | <input type="checkbox"/> Full-acceleration <input type="checkbox"/> High speed cornering <input type="checkbox"/> Vehicle speed: Greater than 10 km/h (6 MPH) <input type="checkbox"/> Vehicle speed: 10 km/h (6 MPH) or less <input type="checkbox"/> Vehicle is stopped | | |
| Applying brake conditions | <input type="checkbox"/> Suddenly <input type="checkbox"/> Gradually | | |
| Other conditions | <input type="checkbox"/> Operation of electrical equipment <input type="checkbox"/> Shift change <input type="checkbox"/> Other descriptions | | |

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INSPECTION AND ADJUSTMENT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Description

INFOID:000000003707855

After replacing the ABS actuator and electric unit (control unit), perform the following procedures:

- Neutral position adjustment for the steering angle sensor
- Calibration of the decel G sensor

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement

INFOID:000000003707856

1. PERFORM THE NEUTRAL POSITION ADJUSTMENT FOR THE STEERING ANGLE SENSOR

Perform the neutral position adjustment for the steering angle sensor.

>> Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#), GO TO 2

2. PERFORM CALIBRATION OF THE DECEL G SENSOR

Perform calibration of the decel G sensor.

>> Refer to [BRC-9, "CALIBRATION OF DECEL G SENSOR : Special Repair Requirement"](#).

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description

INFOID:000000003707857

Refer to the table below to determine if adjustment of steering angle sensor neutral position is required.

x: Required –: Not required

| Situation | Adjustment of steering angle sensor neutral position |
|---|--|
| Removing/Installing ABS actuator and electric unit (control unit) | — |
| Replacing ABS actuator and electric unit (control unit) | x |
| Removing/Installing steering angle sensor | x |
| Replacing steering angle sensor | x |
| Removing/Installing steering components | x |
| Replacing steering components | x |
| Removing/Installing suspension components | x |
| Replacing suspension components | x |
| Change tires to new ones | — |
| Tire rotation | — |
| Adjusting wheel alignment | x |
| Battery disconnection | x |

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement

INFOID:000000003707858

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

CAUTION:

To adjust neutral position of steering angle sensor, make sure to use CONSULT-III (Adjustment cannot be done without CONSULT-III)

1. ALIGN THE VEHICLE STATUS

Stop vehicle with front wheels in straight-ahead position.

>> GO TO 2

2. PERFORM THE NEUTRAL POSITION ADJUSTMENT FOR THE STEERING ANGLE SENSOR

1. On the CONSULT-III screen, touch "WORK SUPPORT" and "ST ANGLE SENSOR ADJUSTMENT" in order.
2. Touch "START".
CAUTION:
Do not touch steering wheel while adjusting steering angle sensor.
3. After approximately 10 seconds, touch "END".
NOTE:
After approximately 60 seconds, it ends automatically.
4. Turn ignition switch OFF, then turn it ON again.
CAUTION:
Be sure to perform above operation.

>> GO TO 3

3. CHECK DATA MONITOR

1. Run vehicle with front wheels in straight-ahead position, then stop.
2. Select "DATA MONITOR". Then make sure "STR ANGLE SIG" is within $0 \pm 2.5^\circ$.

Is the steering angle within the specified range?

YES >> GO TO 4

NO >> Perform the neutral position adjustment for the steering angle sensor again, GO TO 1

4. ERASE THE SELF-DIAGNOSIS MEMORY

- Erase the self-diagnosis memory of the ABS actuator and electric unit (control unit) and ECM.
- ABS actuator and electric unit (control unit): Refer to [BRC-23, "CONSULT-III Function \(ABS\)"](#).
 - ECM: Refer to [EC-69, "CONSULT-III Function \(ENGINE\)"](#).

Are the memories erased?

YES >> Inspection End

NO >> Check the items indicated by the self-diagnosis.

CALIBRATION OF DECEL G SENSOR

CALIBRATION OF DECEL G SENSOR : Description

INFOID:000000003707859

Refer to the table below to determine if calibration of the decel G sensor is required.

x: Required –: Not required

| Situation | Calibration of decel G sensor |
|---|-------------------------------|
| Removing/Installing ABS actuator and electric unit (control unit) | — |
| Replacing ABS actuator and electric unit (control unit) | x |
| Removing/Installing steering angle sensor | x |
| Replacing steering angle sensor | x |
| Removing/Installing steering components | x |
| Replacing steering components | x |
| Removing/Installing suspension components | x |
| Replacing suspension components | x |
| Change tires to new ones | — |
| Tire rotation | — |
| Adjusting wheel alignment | x |

CALIBRATION OF DECEL G SENSOR : Special Repair Requirement

INFOID:000000003707860

CALIBRATION OF DECEL G SENSOR

CAUTION:

INSPECTION AND ADJUSTMENT

[VDC/TCS/ABS]

< BASIC INSPECTION >

To calibrate the decel G sensor, make sure to use CONSULT-III
(Calibration cannot be done without CONSULT-III)

1. ALIGN THE VEHICLE STATUS

Stop vehicle with front wheels in straight-ahead position.

>> GO TO 2

2. PERFORM CALIBRATION OF DECEL G SENSOR

1. On the CONSULT-III screen, touch "WORK SUPPORT" and "DECEL G SEN CALIBRATION" in order.
2. Touch "START".
3. After approximately 10 seconds, touch "END".

NOTE:

After approximately 60 seconds, it ends automatically.

4. Turn ignition switch OFF, then turn it ON again.

CAUTION:

Be sure to perform above operation.

>> GO TO 3

3. CHECK DATA MONITOR

1. Run vehicle with front wheels in straight-ahead position, then stop.
2. Select "DATA MONITOR". Then make sure "DECEL G SEN" is within $\pm 0.08G$.

Is the inspection result normal?

YES >> GO TO 4

NO >> Perform calibration of decel G sensor again, GO TO 1

4. ERASE THE SELF-DIAGNOSIS MEMORY

Erase the self-diagnosis memory of the ABS actuator and electric unit (control unit) and ECM.

- ABS actuator and electric unit (control unit): Refer to [BRC-23, "CONSULT-III Function \(ABS\)"](#).
- ECM: Refer to [EC-69, "CONSULT-III Function \(ENGINE\)"](#).

Are the memories erased?

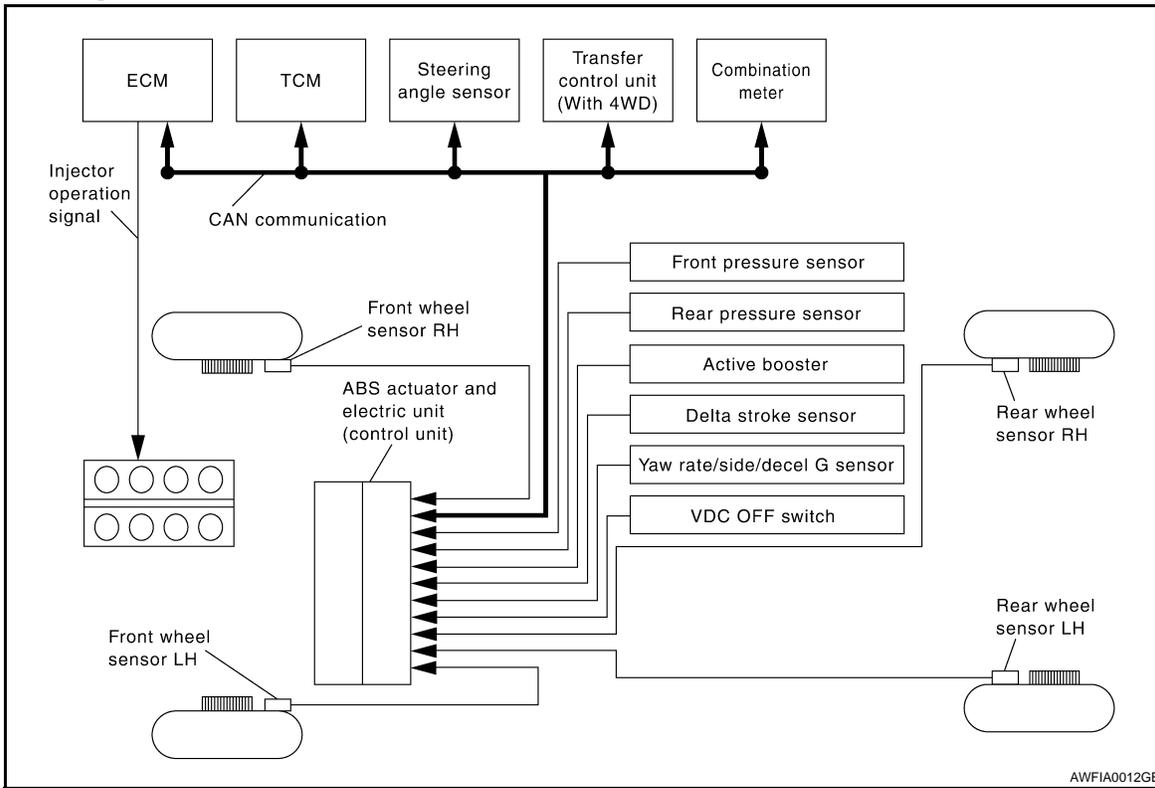
YES >> Inspection End

NO >> Check the items indicated by the self-diagnosis.

FUNCTION DIAGNOSIS

VDC

System Diagram



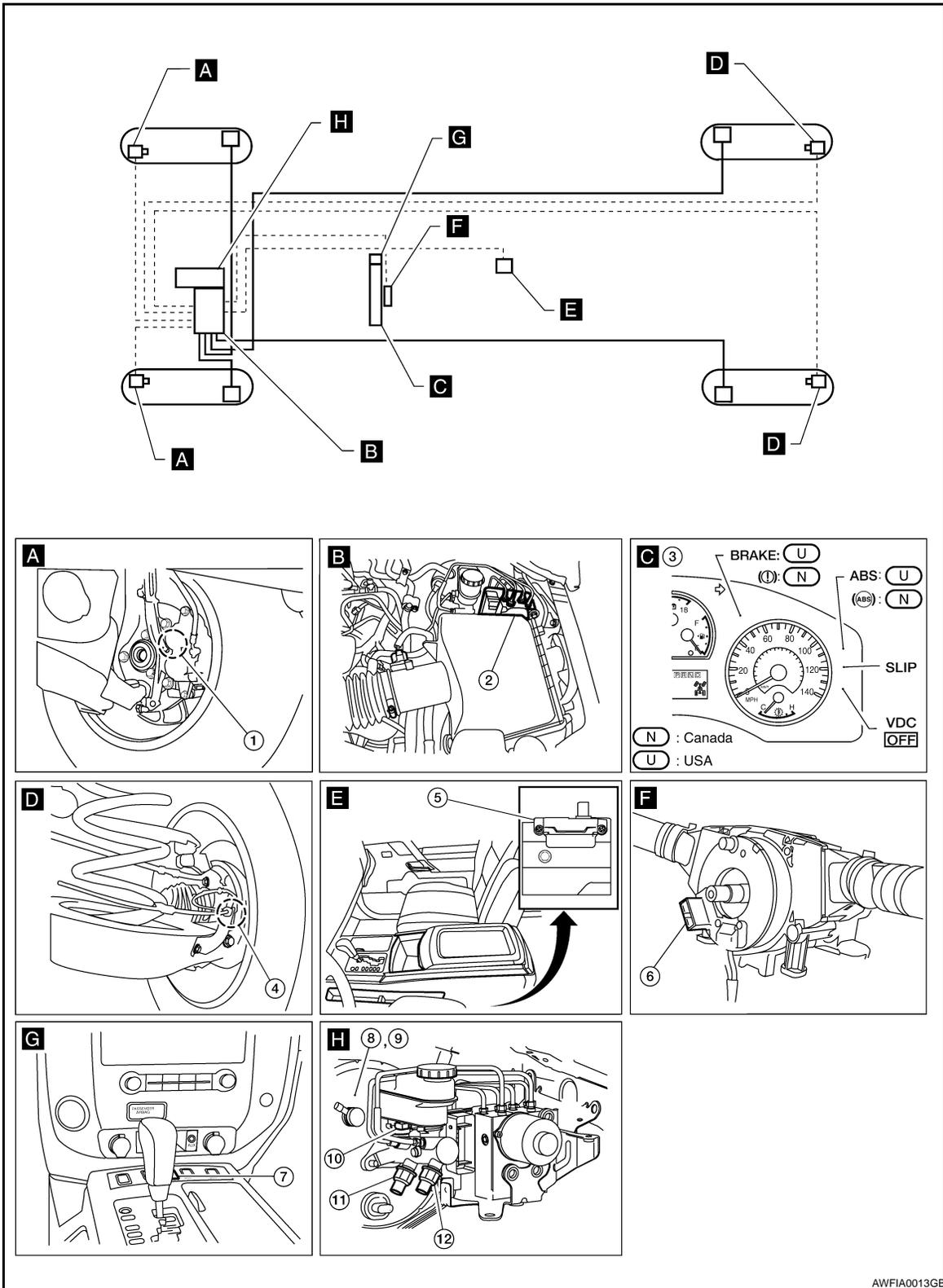
System Description

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- Vehicle Dynamics Control system detects driver's steering operation amount and brake pedal travel from steering angle sensor and pressure sensors. Using information from yaw rate/side/decel G sensor and wheel sensor, VDC judges driving condition (conditions of under steer and over steer) to improve vehicle driving stability by controlling brake application to 4 wheels and engine output.
- During VDC operation, it informs driver of system operation by flashing SLIP indicator lamp.
- Electrical system diagnosis by CONSULT-III is available.

Component Parts Location

INFOID:000000003707863



- | | | | |
|--|---|---|---|
| 1. Front wheel sensor LH E18 RH E117 | 2. ABS actuator and electric unit (control unit) E125 | 3. Combination meter M24 | A |
| 4. Rear wheel sensor LH C11 RH C10 | 5. Yaw rate/side/decel G sensor M108 | 6. Steering angle sensor M17 (view with steering wheel removed) | B |
| 7. VDC OFF switch M253 | 8. Active booster E49 | 9. Delta stroke sensor E114 | C |
| 10. Brake fluid level switch E21 | 11. Front pressure sensor E31 | 12. Rear pressure sensor E32 | D |

Component Description

INFOID:000000003707864

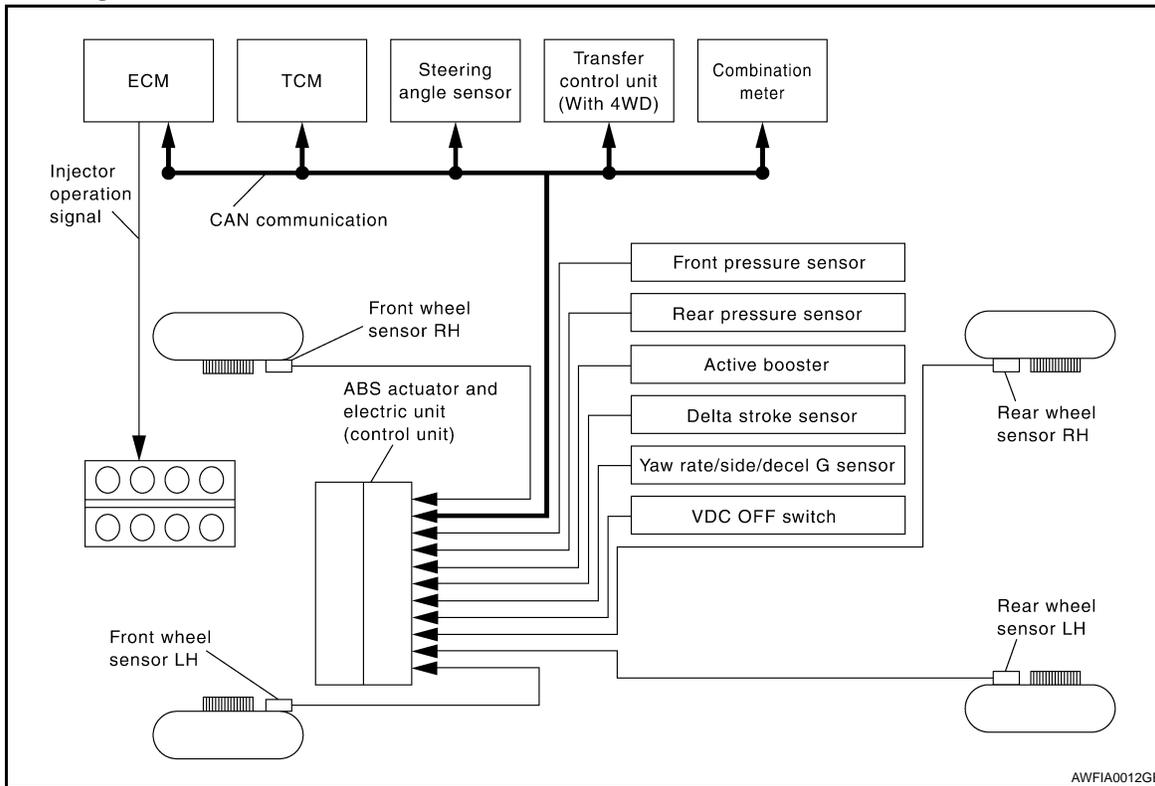
| Component parts | | Reference |
|---|--|---------------------------------------|
| ABS actuator and electric unit (control unit) | Pump | BRC-37, "Description" |
| | Motor | |
| | Actuator relay | BRC-55, "Description" |
| | Solenoid valve | BRC-47, "Description" |
| | VDC switch-over valve (CV1, CV2, SV1, SV2) | BRC-69, "Description" |
| Wheel sensor | BRC-28, "Description" | |
| Yaw rate/side/decel G sensor | BRC-39, "Description" | |
| Steering angle sensor | BRC-60, "Description" | |
| VDC OFF switch | BRC-78, "Description" | |
| ABS warning lamp | BRC-80, "Description" | |
| Brake warning lamp | BRC-81, "Description" | |
| VDC OFF indicator lamp | BRC-82, "Description" | |
| SLIP indicator lamp | BRC-83, "Description" | |
| Front pressure sensor | BRC-57, "Description" | |
| Rear pressure sensor | | |
| Active booster | BRC-72, "Description" | |
| Delta stroke sensor | BRC-75, "Description" | |

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TCS

System Diagram

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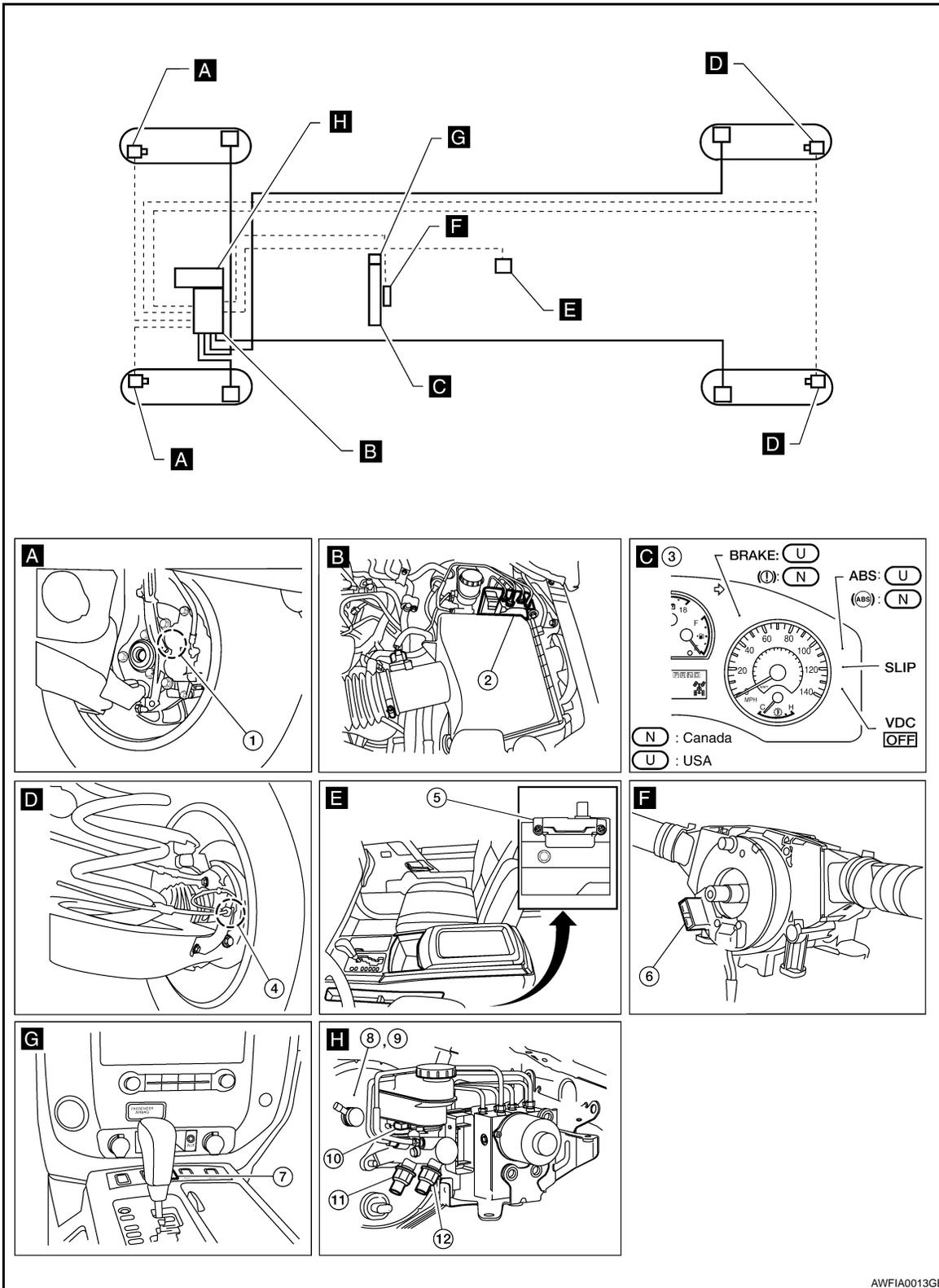
System Description

INFOID:000000003707866

- Traction Control System is a function that electronically controls engine torque, brake fluid pressure and A/T gear position to ensure the optimum slippage ratio at drive wheels by computing wheel speed signals from 4 wheel sensors. When ABS actuator and electric unit (control unit) detects a spin at drive wheels (rear wheels), it compares wheel speed signals from all 4 wheels. At this time, LH and RH rear brake fluid pressure are controlled, while fuel being cut to engine and throttle valve being closed to reduce engine torque by the control unit. Further more, throttle position is continuously controlled to ensure the optimum engine torque at all times.
- During TCS operation, it informs driver of system operation by flashing SLIP indicator lamp.
- Electrical system diagnosis by CONSULT-III is available.

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| 1. Front wheel sensor LH E18 RH E117 | 2. ABS actuator and electric unit (control unit) E125 | 3. Combination meter M24 |
| 4. Rear wheel sensor LH C11 RH C10 | 5. Yaw rate/side/decel G sensor M108 | 6. Steering angle sensor M17 (view with steering wheel removed) |
| 7. VDC OFF switch M253 | 8. Active booster E49 | 9. Delta stroke sensor E114 |
| 10. Brake fluid level switch E21 | 11. Front pressure sensor E31 | 12. Rear pressure sensor E32 |

Component Description

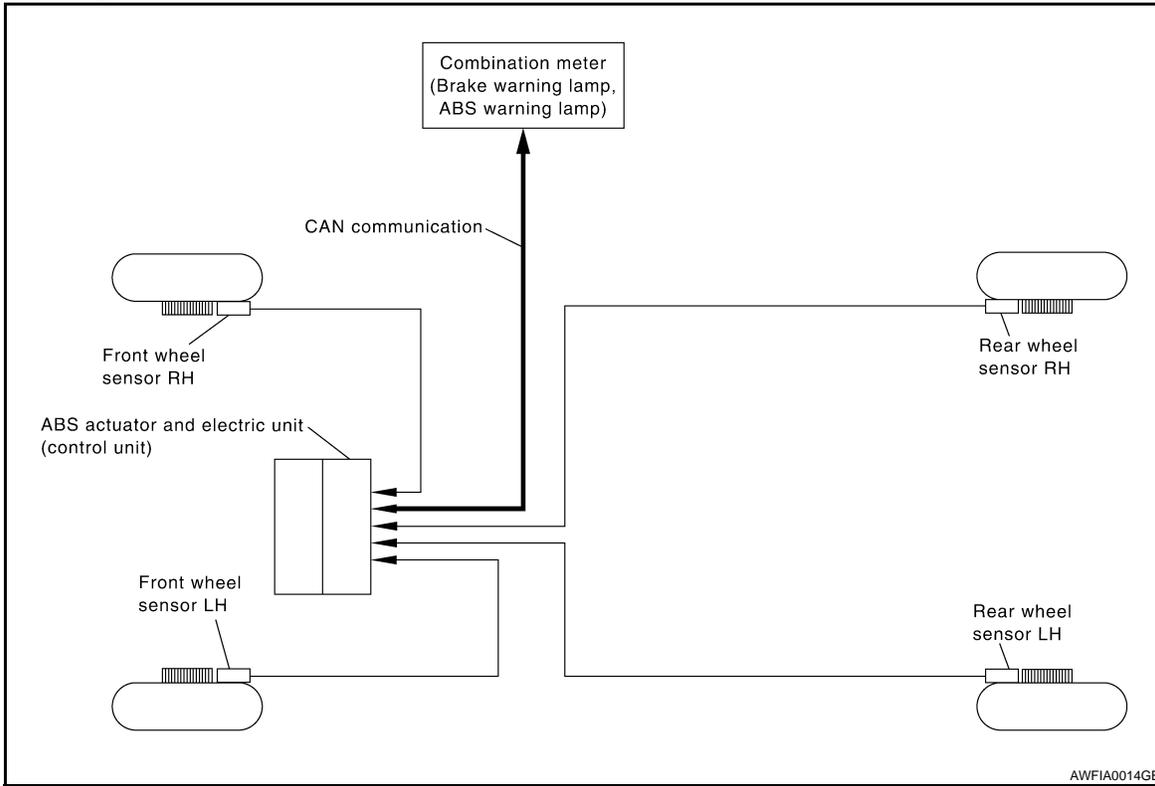
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| Component parts | Reference | |
|---|--|---------------------------------------|
| ABS actuator and electric unit (control unit) | Pump | BRC-37, "Description" |
| | Motor | |
| | Actuator relay | BRC-55, "Description" |
| | Solenoid valve | BRC-47, "Description" |
| | VDC switch-over valve (CV1, CV2, SV1, SV2) | BRC-69, "Description" |
| Wheel sensor | BRC-28, "Description" | |
| Yaw rate/side/decel G sensor | BRC-39, "Description" | |
| Steering angle sensor | BRC-60, "Description" | |
| VDC OFF switch | BRC-78, "Description" | |
| ABS warning lamp | BRC-80, "Description" | |
| Brake warning lamp | BRC-81, "Description" | |
| VDC OFF indicator lamp | BRC-82, "Description" | |
| SLIP indicator lamp | BRC-83, "Description" | |
| Front pressure sensor | BRC-57, "Description" | |
| Rear pressure sensor | | |
| Active booster | BRC-72, "Description" | |
| Delta stroke sensor | BRC-75, "Description" | |

ABS

System Diagram

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System Description

INFOID:000000003707870

- Anti-Lock Braking System is a function that detects wheel revolution while braking, electronically controls braking force, and prevents wheel locking during sudden braking. It improves handling stability and maneuverability for avoiding obstacles.
- Electrical system diagnosis by CONSULT-III is available.

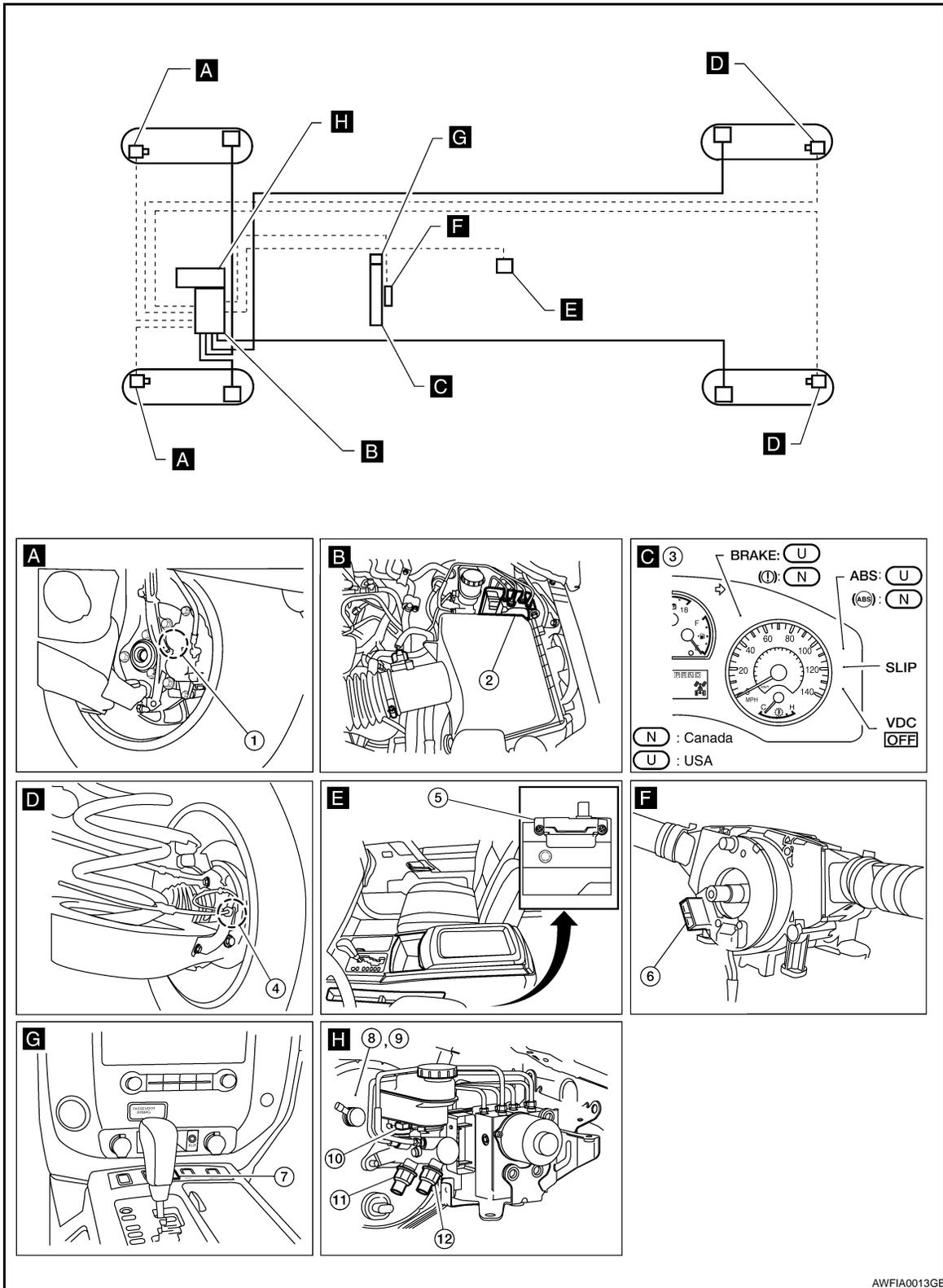
ABS

< FUNCTION DIAGNOSIS >

[VDC/TCS/ABS]

Component Parts Location

INFOID:000000004113206



ABS

< FUNCTION DIAGNOSIS >

[VDC/TCS/ABS]

- | | | | |
|--|---|---|---|
| 1. Front wheel sensor LH E18 RH E117 | 2. ABS actuator and electric unit (control unit) E125 | 3. Combination meter M24 | A |
| 4. Rear wheel sensor LH C11 RH C10 | 5. Yaw rate/side/decel G sensor M108 | 6. Steering angle sensor M17 (view with steering wheel removed) | B |
| 7. VDC OFF switch M253 | 8. Active booster E49 | 9. Delta stroke sensor E114 | C |
| 10. Brake fluid level switch E21 | 11. Front pressure sensor E31 | 12. Rear pressure sensor E32 | D |

Component Description

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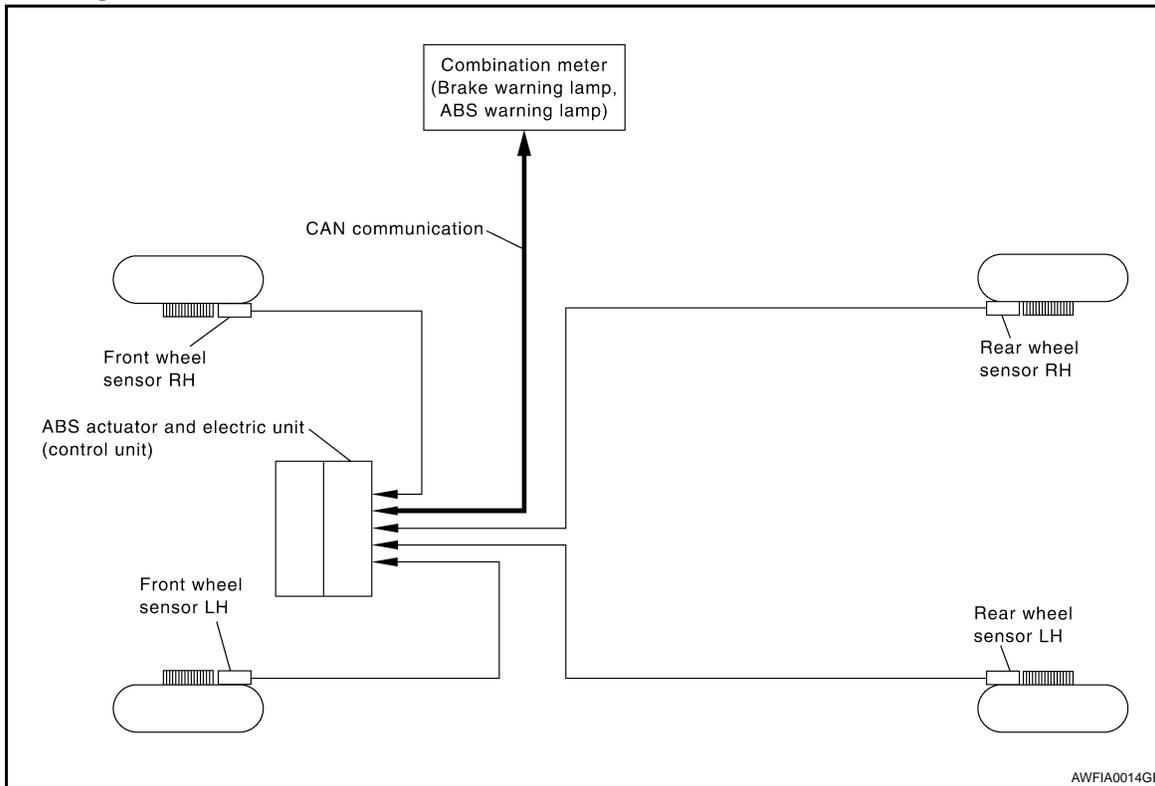
| Component parts | Reference |
|---|----------------|
| ABS actuator and electric unit (control unit) | Pump |
| | Motor |
| | Actuator relay |
| | Solenoid valve |
| Wheel sensor | |
| ABS warning lamp | |
| Brake warning lamp | |

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System Diagram

INFOID:000000003707873



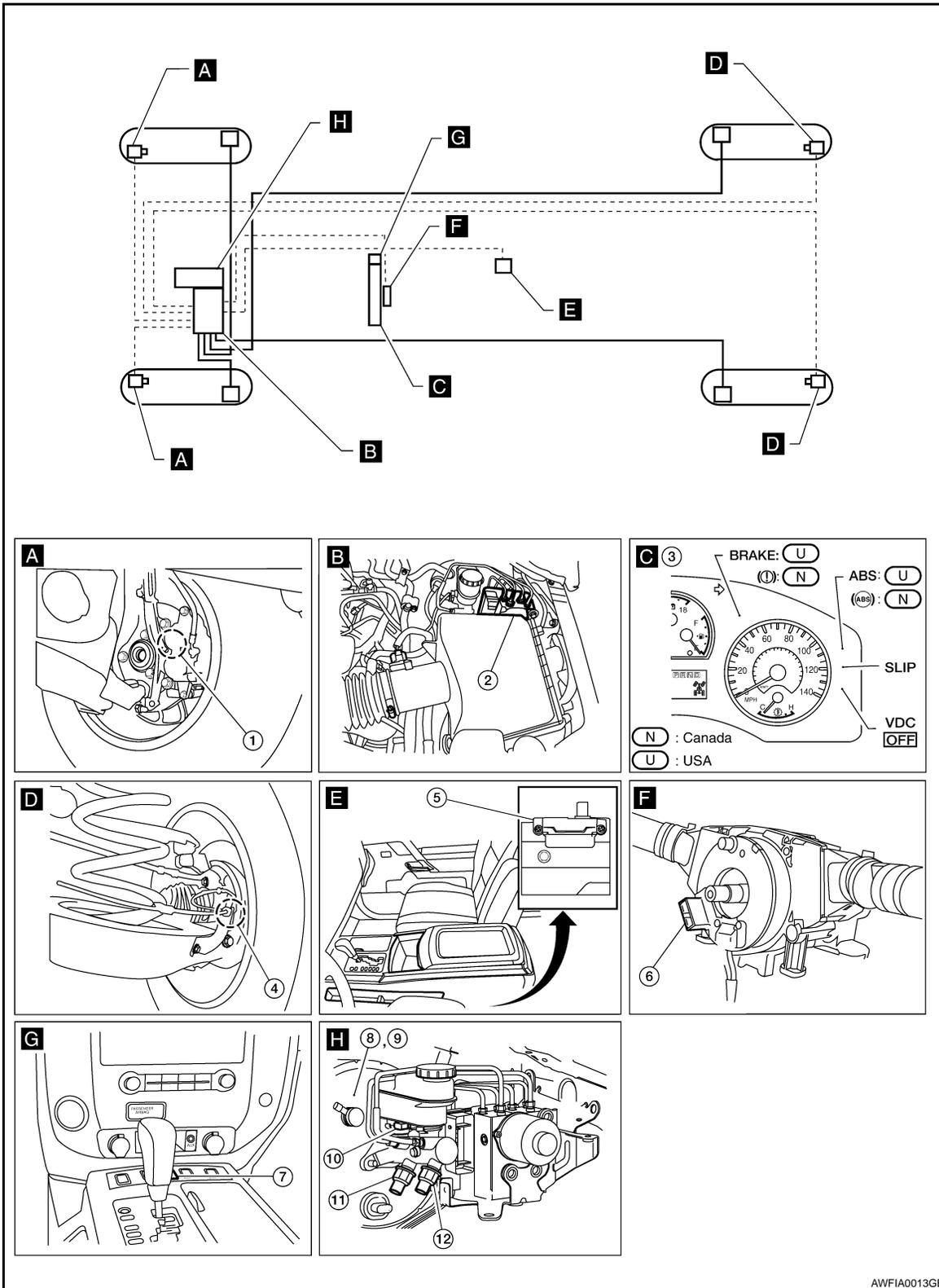
System Description

INFOID:000000003707874

- Electric Brake force Distribution is a following function. ABS actuator and electric unit (control unit) detects subtle slippages between the front and rear wheels during braking. Then it electronically controls the rear braking force (brake fluid pressure) to reduce rear wheel slippage. Accordingly, it improves vehicle stability.
- Electrical system diagnosis by CONSULT-III is available.

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< FUNCTION DIAGNOSIS >

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|--|---|---|
| 1. Front wheel sensor LH E18 RH E117 | 2. ABS actuator and electric unit (control unit) E125 | 3. Combination meter M24 |
| 4. Rear wheel sensor LH C11 RH C10 | 5. Yaw rate/side/decel G sensor M108 | 6. Steering angle sensor M17 (view with steering wheel removed) |
| 7. VDC OFF switch M253 | 8. Active booster E49 | 9. Delta stroke sensor E114 |
| 10. Brake fluid level switch E21 | 11. Front pressure sensor E31 | 12. Rear pressure sensor E32 |

Component Description

INFOID:000000003707876

| Component parts | | Reference |
|---|----------------|---------------------------------------|
| ABS actuator and electric unit (control unit) | Pump | BRC-37, "Description" |
| | Motor | |
| | Actuator relay | BRC-55, "Description" |
| | Solenoid valve | BRC-47, "Description" |
| Wheel sensor | | BRC-28, "Description" |
| ABS warning lamp | | BRC-80, "Description" |
| Brake warning lamp | | BRC-81, "Description" |

DIAGNOSIS SYSTEM [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

< FUNCTION DIAGNOSIS >

[VDC/TCS/ABS]

DIAGNOSIS SYSTEM [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

CONSULT-III Function (ABS)

INFOID:000000003707877

FUNCTION

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

| Diagnostic test mode | Function |
|--------------------------|--|
| Work support | Supports inspections and adjustments. Commands are transmitted to the ABS actuator and electric unit (control unit) for setting the status suitable for required operation, input/output signals are received from the ABS actuator and electric unit (control unit) and received data is displayed. |
| Data monitor | Displays ABS actuator and electric unit (control unit) input/output data in real time. |
| Active test | Operation of electrical loads can be checked by sending drive signals to them. |
| Self-diagnostic result | Displays ABS actuator and electric unit (control unit) self-diagnosis results. |
| CAN diag support monitor | The result of transmit/receive diagnosis of CAN communication can be read. |
| ECU identification | ABS actuator and electric unit (control unit) part number can be read. |

SELF-DIAGNOSTIC RESULT MODE

Operation Procedure

- Before performing the self-diagnosis, start engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute.

How to Erase Self-diagnostic Result

- After erasing DTC memory, start engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute as the final inspection, and make sure that the ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp and brake warning lamp turn OFF.

CAUTION:

If memory cannot be erased, perform applicable diagnosis.

NOTE:

- When the wheel sensor malfunctions, after inspecting the wheel sensor system, the ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp and brake warning lamp will not turn OFF even when the system is normal unless the vehicle is driving at approximately 30 km/h (19 MPH) or more for approximately 1 minute.
- Brake warning lamp will turn ON in case of parking brake operation (when switch is ON) or of brake fluid level switch operation (when brake fluid is insufficient).
- VDC OFF switch should not stay "ON" position.

Display Item List

Refer to [BRC-97, "DTC No. Index"](#).

DATA MONITOR MODE

Display Item List

| Item (Unit) | Data monitor item selection | | | Remarks |
|--------------------------|-----------------------------|--------------|---------------------|--|
| | ECU INPUT SIGNALS | MAIN SIGNALS | SELECTION FROM MENU | |
| GEAR | × | × | × | Gear position judged by PNP switch signal is displayed. |
| FR RH SENSOR (km/h, MPH) | × | × | × | Wheel speed calculated by front RH wheel sensor signal is displayed. |
| FR LH SENSOR (km/h, MPH) | × | × | × | Wheel speed calculated by front LH wheel sensor signal is displayed. |
| RR RH SENSOR (km/h, MPH) | × | × | × | Wheel speed calculated by rear RH wheel sensor signal is displayed. |

DIAGNOSIS SYSTEM [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

< FUNCTION DIAGNOSIS >

[VDC/TCS/ABS]

| Item (Unit) | Data monitor item selection | | | Remarks |
|--------------------------------------|-----------------------------|--------------|---------------------|---|
| | ECU INPUT SIGNALS | MAIN SIGNALS | SELECTION FROM MENU | |
| RR LH SENSOR (km/h, MPH) | × | × | × | Wheel speed calculated by rear LH wheel sensor signal is displayed. |
| BATTERY VOLT (V) | × | × | × | Voltage supplied to ABS actuator and electric unit (control unit) is displayed. |
| N POSI SIG | - | - | × | Shift position judged by PNP switch signal. |
| P POSI SIG | - | - | × | Shift position judged by PNP switch signal. |
| ACCEL POS SIG (%) | × | - | × | Throttle valve open/close status judged by CAN communication signal is displayed. |
| ENGINE SPEED (rpm) | × | × | × | Engine speed judged by CAN communication signal is displayed. |
| STR ANGLE SIG (deg) | × | - | × | Steering angle detected by steering angle sensor is displayed. |
| YAW RATE SEN (d/s) | × | × | × | Yaw rate detected by yaw rate sensor is displayed. |
| SIDE G-SENSOR (m/s ²) | × | - | × | Transverse acceleration detected by side G-sensor is displayed. |
| STOP LAMP SW (On/Off) | × | × | × | Stop lamp switch (On/Off) status is displayed. |
| OFF SW (On/Off) | × | × | × | VDC OFF switch (On/Off) status is displayed. |
| ABS WARN LAMP (On/Off) | - | × | × | ABS warning lamp (On/Off) status is displayed. |
| SLIP LAMP (On/Off) | - | × | × | SLIP indicator lamp (On/Off) status is displayed. |
| FR LH IN SOL (On/Off) | - | × | × | Front LH IN ABS solenoid (On/Off) status is displayed. |
| FR LH OUT SOL (On/Off) | - | × | × | Front LH OUT ABS solenoid (On/Off) status is displayed. |
| RR RH IN SOL (On/Off) | - | × | × | Rear RH IN ABS solenoid (On/Off) status is displayed. |
| RR RH OUT SOL (On/Off) | - | × | × | Rear RH OUT ABS solenoid (On/Off) status is displayed. |
| FR RH IN SOL (On/Off) | - | × | × | Front RH IN ABS solenoid (On/Off) status is displayed. |
| FR RH OUT SOL (On/Off) | - | × | × | Front RH OUT ABS solenoid (On/Off) status is displayed. |
| RR LH IN SOL (On/Off) | - | × | × | Rear LH IN ABS solenoid (On/Off) status is displayed. |
| RR LH OUT SOL (On/Off) | - | × | × | Rear LH OUT ABS solenoid (On/Off) status is displayed. |
| OFF LAMP (On/Off) | - | × | × | VDC OFF Lamp (On/Off) status is displayed. |
| MOTOR RELAY (On/Off) | - | × | × | ABS motor relay signal (On/Off) status is displayed. |
| ACTUATOR RLY (On/Off) | - | × | × | ABS actuator relay signal (On/Off) status is displayed. |
| CV1 (On/Off) | - | - | × | Front side switch-over solenoid valve (cut valve) (On/Off) status is displayed. |
| CV2 (On/Off) | - | - | × | Rear side switch-over solenoid valve (cut-valve) (On/Off) status is displayed. |

DIAGNOSIS SYSTEM [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

< FUNCTION DIAGNOSIS >

[VDC/TCS/ABS]

| Item (Unit) | Data monitor item selection | | | Remarks | |
|--------------------------|-----------------------------|--------------|---------------------|---|------------|
| | ECU INPUT SIGNALS | MAIN SIGNALS | SELECTION FROM MENU | | |
| SV1 (On/Off) | - | - | × | Front side switch-over solenoid valve (suction valve) (On/Off) status is displayed. | A |
| SV2 (On/Off) | - | - | × | Rear side switch-over solenoid valve (suction valve) (On/Off) status is displayed. | B |
| VDC FAIL SIG (On/Off) | - | - | × | VDC fail signal (On/Off) status is displayed. | C |
| TCS FAIL SIG (On/Off) | - | - | × | TCS fail signal (On/Off) status is displayed. | D |
| ABS FAIL SIG (On/Off) | - | - | × | ABS fail signal (On/Off) status is displayed. | E |
| EBD FAIL SIG (On/Off) | - | - | × | EBD fail signal (On/Off) status is displayed. | E |
| FLUID LEV SW (On/Off) | × | - | × | Brake fluid level switch (On/Off) status is displayed. | BRC |
| EBD SIGNAL (On/Off) | - | - | × | EBD operation (On/Off) status is displayed. | F |
| ABS SIGNAL (On/Off) | - | - | × | ABS operation (On/Off) status is displayed. | G |
| TCS SIGNAL (On/Off) | - | - | × | TCS operation (On/Off) status is displayed. | H |
| VDC SIGNAL (On/Off) | - | - | × | VDC operation (On/Off) status is displayed. | I |
| EBD WARN LAMP | - | - | × | Brake warning lamp (On/Off) status is displayed. | I |
| SLCT LVR POSI | × | × | × | Shift position judged by PNP switch signal. | J |
| R POSI SIG | - | - | × | Shift position judged by PNP switch signal. | J |
| 2WD/4WD | - | - | × | It recognizes on software whether it is 2WD and whether it is in 4WD state. | K |
| BST OPER SIG | - | - | × | Active booster operation (On/Off) status is displayed. | K |
| PRESS SENSOR (bar) | × | - | × | Brake pressure detected by pressure sensor is displayed. | L |
| CRANKING SIG | - | - | × | The input state of the key SW START position signal is displayed. | L |
| PRESS SEN2 | - | - | × | Brake pressure detected by pressure sensor is displayed. | M |
| DELTA S SEN | - | - | × | The amount of stroke sensor movements in the active booster detected by DELTA S SEN is displayed. | M |
| RELEASE SW NO | - | - | × | Release switch signal (On/Off) status is displayed. "On" indicates that the brake pedal is depressed. "Off" indicates that the brake pedal is released. | N |
| RELEASE SW NC | - | - | × | Release switch signal (On/Off) status is displayed. "Off" indicates that the brake pedal is depressed. "On" indicates that the brake pedal is released. | O |
| OHB FAIL | - | - | × | OHB fail status is displayed. | P |
| HBA FAIL | - | - | × | HBA fail status is displayed. | P |
| OHB SIG | - | - | × | OHB operation (On/Off) status is displayed. | P |
| HBA SIG | - | - | × | HBA operation (On/Off) status is displayed. | P |
| STP OFF RLY | - | - | × | Stop lamp relay signal (On/Off) status is displayed. | P |

×: Applicable

-: Not applicable

DIAGNOSIS SYSTEM [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

< FUNCTION DIAGNOSIS >

[VDC/TCS/ABS]

ACTIVE TEST MODE

CAUTION:

- Do not perform active test while driving vehicle.
- Make sure to completely bleed air from brake system.
- The active test cannot be performed with the ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp or brake warning lamp on.
- ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp and brake warning lamp are on during active test.

NOTE:

- When active test is performed while depressing the pedal, the pedal depression amount will change. This is normal. (Only solenoid valve and ABS motor.)
- "TEST IS STOPPED" is displayed 10 seconds after operation start.
- After "TEST IS STOPPED" is displayed, to perform test again, touch BACK.

Test Item

SOLENOID VALVE

- When performing an active test of the ABS function, select "MAIN SIGNALS" for each test item.
- For ABS solenoid valve, touch "Up", "Keep", and "Down" on the display screen. For ABS solenoid valve (ACT), touch "Up", "ACT UP", "ACT KEEP" and confirm that solenoid valves operate as shown in the table below.

| Operation | | ABS solenoid valve | | | ABS solenoid valve (ACT) | | |
|--------------------------|---------------------------------------|--------------------|------|------|--------------------------|--------|----------|
| | | Up | Keep | Down | Up | ACT UP | ACT KEEP |
| FR RH SOL | FR RH IN SOL | Off | On | On | — | — | — |
| | FR RH OUT SOL | Off | Off | On* | — | — | — |
| FR LH SOL | FR LH IN SOL | Off | On | On | — | — | — |
| | FR LH OUT SOL | Off | Off | On* | — | — | — |
| RR RH SOL | RR RH IN SOL | Off | On | On | — | — | — |
| | RR RH OUT SOL | Off | Off | On* | — | — | — |
| RR LH SOL | RR LH IN SOL | Off | On | On | — | — | — |
| | RR LH OUT SOL | Off | Off | On* | — | — | — |
| FR RH ABS SOLENOID (ACT) | FR RH IN SOL | — | — | — | Off | Off | Off |
| | FR RH OUT SOL | — | — | — | Off | Off | Off |
| | CV1 | — | — | — | Off | On | On |
| | SV1 | — | — | — | Off | On* | Off |
| FR LH ABS SOLENOID (ACT) | FR LH IN SOL | — | — | — | Off | Off | Off |
| | FR LH OUT SOL | — | — | — | Off | Off | Off |
| | CV1 | — | — | — | Off | On | On |
| | SV1 | — | — | — | Off | On* | Off |
| RR RH ABS SOLENOID (ACT) | RR RH IN SOL | — | — | — | Off | Off | Off |
| | RR RH OUT SOL | — | — | — | Off | Off | Off |
| | CV2 | — | — | — | Off | On | On |
| | SV2 | — | — | — | Off | On* | Off |
| RR LH ABS SOLENOID (ACT) | RR LH IN SOL | — | — | — | Off | Off | Off |
| | RR LH OUT SOL | — | — | — | Off | Off | Off |
| | CV2 | — | — | — | Off | On | On |
| | SV2 | — | — | — | Off | On* | Off |
| REAR SOL | This item is not used for this model. | | | | | | |

*: On for 1 to 2 seconds after the touch, and then Off

ABS MOTOR

- Touch "On" and "Off" on screen. Make sure motor relay and actuator relay operates as shown in table below.

DIAGNOSIS SYSTEM [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

< FUNCTION DIAGNOSIS >

[VDC/TCS/ABS]

| Operation | On | Off |
|--------------|----|-----|
| MOTOR RELAY | On | Off |
| ACTUATOR RLY | On | On |

BOOSTER DRIVE

- Touch “Up” and “Down” on the screen. Check that booster drive operates as shown in table below.

CAUTION:

Perform active test subject to the conditions below.

- **Do not operate brake pedal during active test.**
- **Make sure the engine revolution is over 500 rpm.**
- **Make sure the vehicle is not moving.**

| Operation | Up | Down |
|--------------|------------|-------|
| PRESS SENSOR | 50 ± 5 bar | 0 bar |
| PRESS SEN2 | 50 ± 5 bar | 0 bar |
| STOP LAMP SW | On | Off |
| BST OPER SIG | On | Off |
| STP OFF RLY | Off | Off |

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C1101, C1102, C1103, C1104 WHEEL SENSOR-1

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

COMPONENT DIAGNOSIS

C1101, C1102, C1103, C1104 WHEEL SENSOR-1

Description

INFOID:000000003707878

When the sensor rotor rotates, the magnetic field changes. It converts the magnetic field changes to current signals (rectangular wave) and transmits them to the ABS actuator and electric unit (control unit).

DTC Logic

INFOID:000000003707879

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|----------------|---|---|
| C1101 | RR RH SENSOR-1 | Circuit of rear RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | <ul style="list-style-type: none">• Harness or connector• Wheel sensor• ABS actuator and electric unit (control unit) |
| C1102 | RR LH SENSOR-1 | Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| C1103 | FR RH SENSOR-1 | Circuit of front RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| C1104 | FR LH SENSOR-1 | Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |

DTC CONFIRMATION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| Self-diagnosis results |
|------------------------|
| RR RH SENSOR-1 |
| RR LH SENSOR-1 |
| FR RH SENSOR-1 |
| FR LH SENSOR-1 |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-28. "Diagnosis Procedure"](#).
NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707880

CAUTION:

Do not check between wheel sensor terminals.

INSPECTION PROCEDURE

1. CONNECTOR INSPECTION

Disconnect the ABS actuator and electric unit (control unit) connector E125 and wheel sensor of malfunctioning code.

Check the terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

- YES >> GO TO 2
NO >> Repair or replace as necessary.

2. CHECK WHEEL SENSOR OUTPUT SIGNAL

1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter.
2. Turn on the ABS active wheel sensor tester power switch.

NOTE:

The green POWER indicator should illuminate. If the POWER indicator does not illuminate, replace the battery in the ABS active wheel sensor tester before proceeding.

C1101, C1102, C1103, C1104 WHEEL SENSOR-1

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

- Spin the wheel of the vehicle by hand and observe the red SENSOR indicator on the ABS active wheel sensor tester. The red SENSOR indicator should flash on and off to indicate an output signal.

NOTE:

If the red SENSOR indicator illuminates but does not flash, reverse the polarity of the tester leads and retest.

Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3

NO >> Replace the wheel sensor. Refer to [BRC-110, "Removal and Installation"](#).

3.CHECK TIRES

Check for inflation pressure, wear and size of each tire.

Are tire pressure and size correct and is tire wear within specifications?

YES >> GO TO 4

NO >> Adjust tire pressure or replace tire(s).

4.CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to [FAX-5, "On-Vehicle Inspection and Service"](#) (front) or [RAX-5, "On-Vehicle Inspection and Service"](#) (rear).

Is the inspection result normal?

YES >> GO TO 5

NO >> Repair or replace as necessary. Refer to [FAX-6, "Removal and Installation"](#) (front) or [RAX-7, "Removal and Installation"](#) (rear).

5.CHECK WIRING HARNESS FOR SHORT CIRCUIT

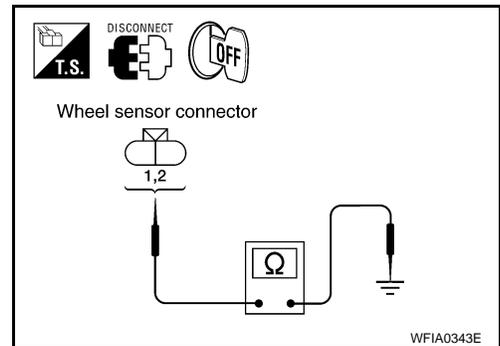
- Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunction code No.
- Check continuity between wheel sensor harness connector terminals and ground.

Continuity should not exist.

Is the inspection result normal?

YES >> GO TO 6

NO >> Repair the circuit.



6.CHECK WIRING HARNESS FOR OPEN CIRCUIT

- Check continuity between ABS actuator and electric unit (control unit) harness connector E125 and the malfunctioning wheel sensor harness connector E18, E117, C10, or C11.

| Wheel sensor | ABS actuator and electric unit (control unit) | | Wheel sensor | | Continuity |
|--------------|---|----------|--------------|----------|------------|
| | Connector | Terminal | Connector | Terminal | |
| Front LH | E125 | 45 | E18 | 1 | Yes |
| | | 46 | | 2 | |
| Front RH | | 34 | E117 | 1 | |
| | | 33 | | 2 | |
| Rear LH | | 37 | C11 | 2 | |
| | | 36 | | 1 | |
| Rear RH | | 42 | C10 | 2 | |
| | | 43 | | 1 | |

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to [BRC-112, "Removal and Installation"](#).

NO >> Repair the circuit.

C1101, C1102, C1103, C1104 WHEEL SENSOR-1

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

INFOID:000000003707881

Component Inspection

1. CHECK DATA MONITOR

On "DATA MONITOR", select "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR", and "RR RH SENSOR", and check the vehicle speed.

| Wheel sensor | Vehicle speed (DATA MONITOR) |
|--------------|--|
| FR LH SENSOR | Nearly matches the speedometer display ($\pm 10\%$ or less) |
| FR RH SENSOR | |
| RR LH SENSOR | |
| RR RH SENSOR | |

Is the inspection result normal?

YES >> Inspection End

NO >> Go to diagnosis procedure. Refer to [BRC-28, "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:000000003707882

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

>> GO TO 2

2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-9, "CALIBRATION OF DECEL G SENSOR : Description"](#).

>> END

C1105, C1106, C1107, C1108 WHEEL SENSOR-2

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

C1105, C1106, C1107, C1108 WHEEL SENSOR-2

Description

INFOID:000000003707883

When the sensor rotor rotates, the magnetic field changes. It converts the magnetic field changes to current signals (rectangular wave) and transmits them to the ABS actuator and electric unit (control unit).

DTC Logic

INFOID:000000003707884

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|----------------|--|---|
| C1105 | RR RH SENSOR-2 | When the circuit in the rear RH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | <ul style="list-style-type: none">• Harness or connector• Wheel sensor• ABS actuator and electric unit (control unit) |
| C1106 | RR LH SENSOR-2 | When the circuit in the rear LH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | |
| C1107 | FR RH SENSOR-2 | When the circuit in the front RH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | |
| C1108 | FR LH SENSOR-2 | When the circuit in the front LH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | |

DTC CONFIRMATION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| Self-diagnosis results |
|------------------------|
| RR RH SENSOR-2 |
| RR LH SENSOR-2 |
| FR RH SENSOR-2 |
| FR LH SENSOR-2 |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-31. "Diagnosis Procedure"](#).
NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707885

CAUTION:

Do not check between wheel sensor terminals.

INSPECTION PROCEDURE

1. CONNECTOR INSPECTION

Disconnect the ABS actuator and electric unit (control unit) connector E125 and wheel sensor of malfunctioning code.

Check the terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

- YES >> GO TO 2
NO >> Repair or replace as necessary.

C1105, C1106, C1107, C1108 WHEEL SENSOR-2

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

2. CHECK WHEEL SENSOR OUTPUT SIGNAL

1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter.
2. Turn on the ABS active wheel sensor tester power switch.

NOTE:

The green POWER indicator should illuminate. If the POWER indicator does not illuminate, replace the battery in the ABS active wheel sensor tester before proceeding.

3. Spin the wheel of the vehicle by hand and observe the red SENSOR indicator on the ABS active wheel sensor tester. The red SENSOR indicator should flash on and off to indicate an output signal.

NOTE:

If the red SENSOR indicator illuminates but does not flash, reverse the polarity of the tester leads and retest.

Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3

NO >> Replace the wheel sensor. Refer to [BRC-110. "Removal and Installation"](#).

3. CHECK TIRES

Check for inflation pressure, wear and size of each tire.

Are tire pressure and size correct and is tire wear within specifications?

YES >> GO TO 4

NO >> Adjust tire pressure or replace tire(s).

4. CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to [FAX-5. "On-Vehicle Inspection and Service"](#) (front) or [RAX-5. "On-Vehicle Inspection and Service"](#) (rear).

Is the inspection result normal?

YES >> GO TO 5

NO >> Repair or replace as necessary. Refer to [FAX-6. "Removal and Installation"](#) (front) or [RAX-7. "Removal and Installation"](#) (rear).

5. CHECK WIRING HARNESS FOR SHORT CIRCUIT

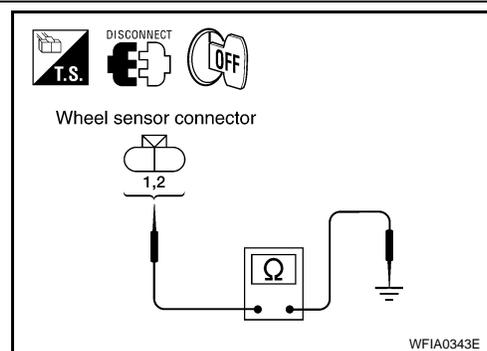
1. Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunction code No.
2. Check continuity between wheel sensor harness connector terminals and ground.

Continuity should not exist.

Is the inspection result normal?

YES >> GO TO 6

NO >> Repair the circuit.



6. CHECK WIRING HARNESS FOR OPEN CIRCUIT

1. Check continuity between ABS actuator and electric unit (control unit) harness connector E125 and the malfunctioning wheel sensor harness connector E18, E117, C10, or C11.

C1105, C1106, C1107, C1108 WHEEL SENSOR-2

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

| Wheel sensor | ABS actuator and electric unit (control unit) | | Wheel sensor | | Continuity |
|--------------|---|----------|--------------|----------|------------|
| | Connector | Terminal | Connector | Terminal | |
| Front LH | E125 | 45 | E18 | 1 | Yes |
| | | 46 | | 2 | |
| Front RH | | 34 | E117 | 1 | |
| | | 33 | | 2 | |
| Rear LH | | 37 | C11 | 2 | |
| | | 36 | | 1 | |
| Rear RH | | 42 | C10 | 2 | |
| | | 43 | | 1 | |

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to [BRC-112. "Removal and Installation"](#).

NO >> Repair the circuit.

Component Inspection

INFOID:000000003707886

1. CHECK DATA MONITOR

On "DATA MONITOR", select "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR", and "RR RH SENSOR", and check the vehicle speed.

| Wheel sensor | Vehicle speed (DATA MONITOR) |
|--------------|--|
| FR LH SENSOR | Nearly matches the speedometer display ($\pm 10\%$ or less) |
| FR RH SENSOR | |
| RR LH SENSOR | |
| RR RH SENSOR | |

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to [BRC-31. "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:000000003707887

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

>> GO TO 2

2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-9. "CALIBRATION OF DECEL G SENSOR : Description"](#).

>> END

C1109 POWER AND GROUND SYSTEM

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

C1109 POWER AND GROUND SYSTEM

Description

INFOID:000000003707888

Supplies electric power to the ABS actuator and electric unit (control unit).

DTC Logic

INFOID:000000003707889

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|----------------------------|---|---|
| C1109 | BATTERY VOLTAGE [ABNORMAL] | When the ABS actuator and electric unit (control unit) power supply voltage is lower than normal. | <ul style="list-style-type: none"> • Harness or connector • ABS actuator and electric unit (control unit) |

DTC CONFIRMATION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| Self-diagnosis results |
|----------------------------|
| BATTERY VOLTAGE [ABNORMAL] |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-34, "Diagnosis Procedure"](#).
 NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707890

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
4. Reconnect connectors and then perform the self-diagnosis. Refer to [BRC-23, "CONSULT-III Function \(ABS\)"](#).

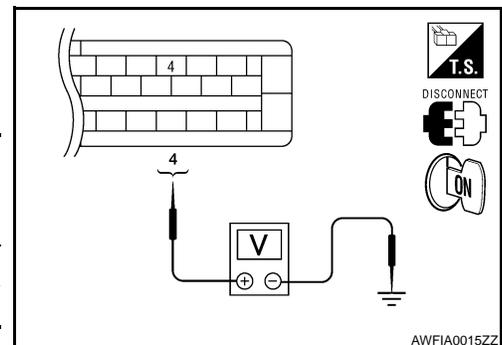
Is any item indicated on the self-diagnosis display?

- YES >> GO TO 2
 NO >> Poor connection of connector terminal. Repair or replace connector.

2. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SUPPLY CIRCUIT AND GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Turn ignition switch ON or OFF and check voltage between ABS actuator and electric unit (control unit) harness connector terminal and ground.

| ABS actuator and electric unit (control unit) | | — | Condition | Voltage |
|---|----------|--------|----------------------|-----------------|
| Connector | Terminal | | | |
| E125 | 4 | Ground | Ignition switch: ON | Battery voltage |
| | | | Ignition switch: OFF | Approx. 0V |



4. Turn ignition switch OFF.

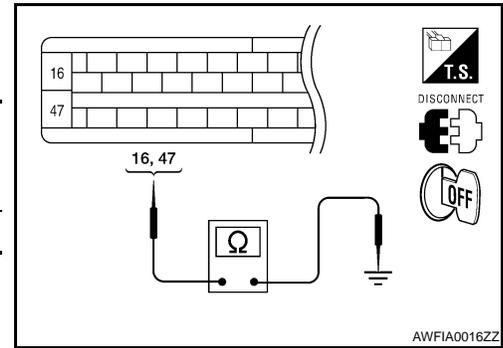
C1109 POWER AND GROUND SYSTEM

[VDC/TCS/ABS]

< COMPONENT DIAGNOSIS >

5. Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

| ABS actuator and electric unit (control unit) | | — | Continuity |
|--|----------|--------|------------|
| Connector | Terminal | | |
| E125 | 16, 47 | Ground | Yes |



Is the inspection result normal?

- YES >> Check battery for terminal looseness, low voltage, etc. If any malfunction is found, repair malfunctioning parts.
 NO >> Repair or replace malfunctioning components.

Special Repair Requirement

INFOID:000000003707891

BRC

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

>> GO TO 2

2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-9. "CALIBRATION OF DECEL G SENSOR : Description"](#).

>> END

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C1110, C1170 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

C1110, C1170 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

DTC Logic

INFOID:000000003707892

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|--------------------|---|---|
| C1110 | CONTROLLER FAILURE | When there is an internal malfunction in the ABS actuator and electric unit (control unit). | • ABS actuator and electric unit (control unit) |
| C1170 | VARIANT CODING | In a case where VARIANT CODING is different. | |

DTC CONFIRMATION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| |
|------------------------|
| Self-diagnosis results |
| CONTROLLER FAILURE |
| VARIANT CODING |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-36, "Diagnosis Procedure"](#).
- NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707893

INSPECTION PROCEDURE

1. REPLACE ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

- >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-112, "Removal and Installation"](#).

Special Repair Requirement

INFOID:000000003707894

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

- >> GO TO 2

2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-9, "CALIBRATION OF DECEL G SENSOR : Description"](#).

- >> END

C1111 ABS MOTOR, MOTOR RELAY SYSTEM

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

C1111 ABS MOTOR, MOTOR RELAY SYSTEM

Description

INFOID:000000003707895

PUMP

The pump returns the brake fluid stored in the reservoir to the master cylinder by reducing the pressure.

MOTOR

The motor drives the pump according to the signals transmitted by the ABS actuator and electric unit (control unit).

DTC Logic

INFOID:000000003707896

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|--------------|--|--|
| C1111 | PUMP MOTOR | During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for actuator motor relay is open. | <ul style="list-style-type: none">• Harness or connector• ABS actuator and electric unit (control unit) |
| | | During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground. | |

DTC CONFIRMATION PROCEDURE

1.CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| Self-diagnosis results |
|------------------------|
| PUMP MOTOR |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-37, "Diagnosis Procedure"](#).
NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707897

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminal for deformation, disconnect, looseness, and so on. If any malfunction is found, repair or replace terminal.
4. Reconnect connectors and then perform the self-diagnosis. Refer to [BRC-23, "CONSULT-III Function \(ABS\)"](#).

Is any item indicated on the self-diagnosis display?

- YES >> GO TO 2
NO >> Poor connection of connector terminal. Repair or replace connector.

2.CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

C1111 ABS MOTOR, MOTOR RELAY SYSTEM

[VDC/TCS/ABS]

< COMPONENT DIAGNOSIS >

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between the ABS actuator and electric unit (control unit) harness connector terminal and ground.

| ABS actuator and electric unit (control unit) | | — | Voltage |
|---|----------|--------|-----------------|
| Connector | Terminal | | |
| E125 | 1 | Ground | Battery voltage |

Is the inspection result normal?

- YES >> GO TO 3
 NO >> Repair or replace malfunctioning components.

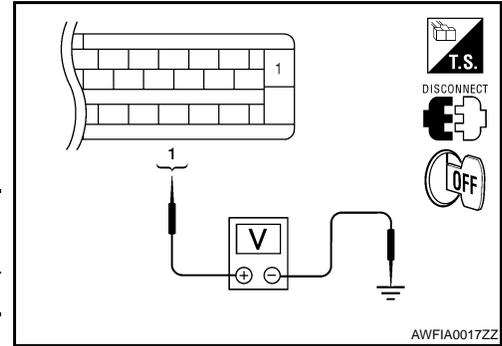
3.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

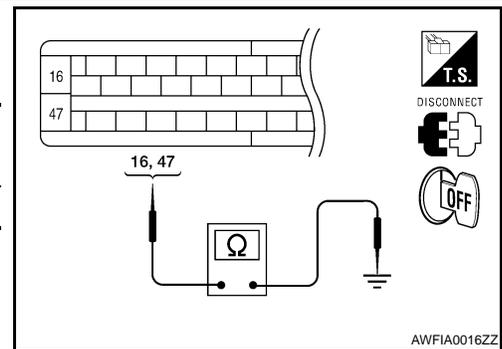
| ABS actuator and electric unit (control unit) | | — | Continuity |
|---|----------|--------|------------|
| Connector | Terminal | | |
| E125 | 16, 47 | Ground | Yes |

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit).
 Refer to [BRC-112, "Removal and Installation"](#).
 NO >> Repair or replace malfunctioning components.



AWFIA0017ZZ



AWFIA0016ZZ

INFOID:000000003707898

Component Inspection

1.CHECK ACTIVE TEST

1. On "ACTIVE TEST", select "ABS MOTOR".
2. Touch ON and OFF on screen. Make sure motor relay and actuator relay operates as shown in table below.

| Operation | ON | OFF |
|--------------|----|-----|
| MOTOR RELAY | ON | OFF |
| ACTUATOR RLY | ON | ON |

Is the inspection result normal?

- YES >> Inspection End
 NO >> Go to diagnosis procedure. Refer to [BRC-37, "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:000000003707899

1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

>> GO TO 2

2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-9, "CALIBRATION OF DECEL G SENSOR : Description"](#).

>> END

C1113, C1145, C1146 YAW RATE/SIDE/DECEL G SENSOR

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

C1113, C1145, C1146 YAW RATE/SIDE/DECEL G SENSOR

Description

INFOID:000000003707900

The yaw rate/side/decel G sensor detects the yaw rate/side/decel G affecting the vehicle, and transmits the data to the ABS actuator and electric unit (control unit) as an analog voltage signal.

DTC Logic

INFOID:000000003707901

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|--------------------|--|---|
| C1113 | G-SENSOR | Longitudinal G-sensor is malfunctioning, or signal line of longitudinal G-sensor is open or shorted. | • Harness or connector • ABS actuator and electric unit (control unit) • Yaw rate/side/decel G sensor |
| C1145 | YAW RATE SENSOR | Yaw rate sensor is malfunctioning, or the yaw rate sensor signal line is open or shorted. | |
| C1146 | SIDE G-SEN CIRCUIT | Side G sensor is malfunctioning, or circuit of side G sensor is open or shorted. | |

DTC CONFIRMATION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| |
|------------------------|
| Self-diagnosis results |
| G-SENSOR |
| YAW RATE SENSOR |
| SIDE G-SEN CIRCUIT |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-39. "Diagnosis Procedure"](#).
NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707902

CAUTION:

- Sudden turns (such as spin turns, acceleration turns), drifting, etc. when VDC function is OFF may cause the yaw rate/side/decel G sensor system to indicate a malfunction. This is not a malfunction if normal operation can be resumed after restarting the engine.
- If vehicle is on turn table at entrance to parking garage, or on other moving surface, VDC OFF indicator lamp may illuminate and CONSULT-III self-diagnosis may indicate yaw rate sensor system malfunction. However, in this case there is no malfunction in yaw rate sensor system. Take vehicle off of turn table or other moving surface, and start engine. Results will return to normal.

INSPECTION PROCEDURE

1. CONNECTOR INSPECTION

Disconnect the ABS actuator and electric unit (control unit) connector E125 and yaw rate/side/decel G sensor connector M108.

Check the terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

- YES >> GO TO 2
NO >> Repair or replace as necessary.

2. YAW RATE/SIDE/DECEL G SENSOR HARNESS INSPECTION

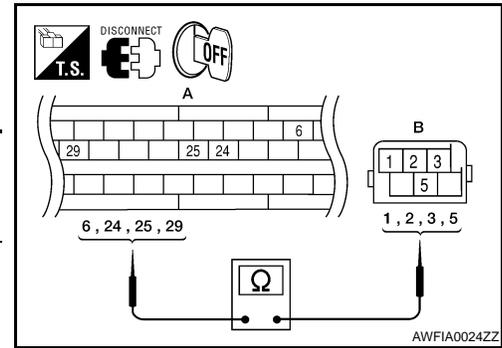
C1113, C1145, C1146 YAW RATE/SIDE/DECEL G SENSOR

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

Check continuity between the ABS actuator and electric unit (control unit) connector E125 (A) and the yaw rate/side/decel G sensor connector M108 (B).

| ABS actuator and electric unit (control unit) | | Yaw rate/side/decel G sensor | | Continuity |
|---|----------|------------------------------|----------|------------|
| Connector | Terminal | Connector | Terminal | |
| A: E125 | 6 | B: M108 | 3 | Yes |
| | 24 | | 5 | |
| | 25 | | 1 | |
| | 29 | | 2 | |



Is the inspection result normal?

- YES >> GO TO 3
- NO >> Repair or replace as necessary.

3. YAW RATE/SIDE/DECEL G SENSOR INSPECTION

1. Connect the yaw rate/side/decel G sensor connector M108 and ABS actuator and electric unit (control unit) connector E125.
2. Use "DATA MONITOR" to check if the yaw rate/side/decel G sensor signals are normal.

| Vehicle condition | YAW RATE SEN (DATA MONITOR) | SIDE G-SENSOR (DATA MONITOR) | DECEL G-SEN (DATA MONITOR) |
|-------------------|-----------------------------|------------------------------|----------------------------|
| Stopped | -4 to +4 deg/s | -1.1 to +1.1 m/s | -0.11 G to +0.11 G |
| Turning right | Negative value | Negative value | - |
| Turning left | Positive value | Positive value | - |
| Speed up | - | - | Negative value |
| Speed down | - | - | Positive value |

Is the inspection result normal?

- YES >> Replace the ABS actuator and electric unit (control unit). Refer to [BRC-112, "Removal and Installation"](#).
- NO >> Replace the yaw rate/side/decel G sensor. Refer to [BRC-115, "Removal and Installation"](#).

Component Inspection

INFOID:000000003707903

1. CHECK DATA MONITOR

Select "YAW RATE SEN", "SIDE G-SENSOR", "DECEL G-SEN" in "DATA MONITOR" and check yaw rate/side/decel G sensor signal.

| Vehicle condition | YAW RATE SEN (DATA MONITOR) | SIDE G-SENSOR (DATA MONITOR) | DECEL G-SEN (DATA MONITOR) |
|-------------------|-----------------------------|------------------------------|----------------------------|
| Stopped | -4 to +4 deg/s | -1.1 to +1.1 m/s | -0.11 G to +0.11 G |
| Turning right | Negative value | Negative value | - |
| Turning left | Positive value | Positive value | - |
| Speed up | - | - | Negative value |
| Speed down | - | - | Positive value |

Is the inspection result normal?

- YES >> Inspection End
- NO >> Go to diagnosis procedure. Refer to [BRC-39, "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:000000003707904

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

C1113, C1145, C1146 YAW RATE/SIDE/DECEL G SENSOR

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

A

>> GO TO 2

B

2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-9, "CALIBRATION OF DECEL G SENSOR : Description"](#).

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>> END

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C1115 WHEEL SENSOR

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

C1115 WHEEL SENSOR

Description

INFOID:000000003707905

When the sensor rotor rotates, the magnetic field changes. It converts the magnetic field changes to current signals (rectangular wave) and transmits them to the ABS actuator and electric unit (control unit).

DTC Logic

INFOID:000000003707906

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|---------------------------------|---|---|
| C1115 | ABS SENSOR [ABNORMAL SIGNAL] | When wheel sensor input signal is malfunctioning. | <ul style="list-style-type: none">• Harness or connector• Wheel sensor• ABS actuator and electric unit (control unit) |

DTC CONFIRMATION PROCEDURE

1.CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| Self-diagnosis results |
|------------------------------|
| ABS SENSOR [ABNORMAL SIGNAL] |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-42. "Diagnosis Procedure"](#).
NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707907

CAUTION:

Do not check between wheel sensor terminals.

INSPECTION PROCEDURE

1.CONNECTOR INSPECTION

Disconnect the ABS actuator and electric unit (control unit) connector E125 and wheel sensor of malfunctioning code.

Check the terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

- YES >> GO TO 2
NO >> Repair or replace as necessary.

2.CHECK WHEEL SENSOR OUTPUT SIGNAL

1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter.
2. Turn on the ABS active wheel sensor tester power switch.

NOTE:

The green POWER indicator should illuminate. If the POWER indicator does not illuminate, replace the battery in the ABS active wheel sensor tester before proceeding.

3. Spin the wheel of the vehicle by hand and observe the red SENSOR indicator on the ABS active wheel sensor tester. The red SENSOR indicator should flash on and off to indicate an output signal.

NOTE:

If the red SENSOR indicator illuminates but does not flash, reverse the polarity of the tester leads and retest.

Does the ABS active wheel sensor tester detect a signal?

- YES >> GO TO 3
NO >> Replace the wheel sensor. Refer to [BRC-110. "Removal and Installation"](#).

3.CHECK TIRES

C1115 WHEEL SENSOR

[VDC/TCS/ABS]

< COMPONENT DIAGNOSIS >

Check for inflation pressure, wear and size of each tire.

Are tire pressure and size correct and is tire wear within specifications?

- YES >> GO TO 4
- NO >> Adjust tire pressure or replace tire(s).

4.CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to [FAX-5, "On-Vehicle Inspection and Service"](#) (front) or [RAX-5, "On-Vehicle Inspection and Service"](#) (rear).

Is the inspection result normal?

- YES >> GO TO 5
- NO >> Repair or replace as necessary. Refer to [FAX-6, "Removal and Installation"](#) (front) or [RAX-7, "Removal and Installation"](#) (rear).

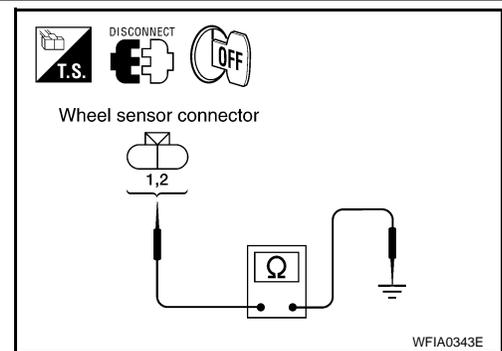
5.CHECK WIRING HARNESS FOR SHORT CIRCUIT

1. Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunction code No.
2. Check continuity between wheel sensor harness connector terminals and ground.

Continuity should not exist.

Is the inspection result normal?

- YES >> GO TO 6
- NO >> Repair the circuit.



6.CHECK WIRING HARNESS FOR OPEN CIRCUIT

1. Check continuity between ABS actuator and electric unit (control unit) harness connector E125 and the malfunctioning wheel sensor harness connector E18, E117, C10, or C11.

| Wheel sensor | ABS actuator and electric unit (control unit) | | Wheel sensor | | Continuity |
|--------------|---|----------|--------------|----------|------------|
| | Connector | Terminal | Connector | Terminal | |
| Front LH | E125 | 45 | E18 | 1 | Yes |
| | | 46 | | 2 | |
| Front RH | | 34 | E117 | 1 | |
| | | 33 | | 2 | |
| Rear LH | | 37 | C11 | 2 | |
| | | 36 | | 1 | |
| Rear RH | | 42 | C10 | 2 | |
| | | 43 | | 1 | |

Is the inspection result normal?

- YES >> Replace the ABS actuator and electric unit (control unit). Refer to [BRC-112, "Removal and Installation"](#).
- NO >> Repair the circuit.

Component Inspection

INFOID:000000003707908

1.CHECK DATA MONITOR

On "DATA MONITOR", select "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR", and "RR RH SENSOR", and check the vehicle speed.

| | |
|--------------|------------------------------|
| Wheel sensor | Vehicle speed (DATA MONITOR) |
|--------------|------------------------------|

C1115 WHEEL SENSOR

[VDC/TCS/ABS]

< COMPONENT DIAGNOSIS >

| | |
|--------------|--|
| FR LH SENSOR | Nearly matches the speedometer display ($\pm 10\%$ or less) |
| FR RH SENSOR | |
| RR LH SENSOR | |
| RR RH SENSOR | |

Is the inspection result normal?

YES >> Inspection End

NO >> Go to diagnosis procedure. Refer to [BRC-42. "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:000000003707909

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

>> GO TO 2

2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-9. "CALIBRATION OF DECEL G SENSOR : Description"](#).

>> END

C1116 STOP LAMP SWITCH

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

C1116 STOP LAMP SWITCH

Description

INFOID:000000003707910

The stop lamp switch transmits the stop lamp switch signal (ON/OFF) to the ABS actuator and electric unit (control unit).

DTC Logic

INFOID:000000003707911

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|--------------|--|---|
| C1116 | STOP LAMP SW | When stop lamp switch circuit is open. | <ul style="list-style-type: none">• Harness or connector• Stop lamp switch• ABS actuator and electric unit (control unit) |

DTC CONFIRMATION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| Self-diagnosis results |
|------------------------|
| STOP LAMP SW |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-45. "Diagnosis Procedure"](#).
NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707912

INSPECTION PROCEDURE

1. CONNECTOR INSPECTION

1. Disconnect the ABS actuator and electric unit (control unit) connector E125 and stop lamp switch connector E38.
2. Check the terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

- YES >> GO TO 2
NO >> Repair or replace as necessary.

2. STOP LAMP SWITCH INSPECTION

Check the voltage between the ABS actuator and electric unit (control unit) harness connector E125 terminal 41 and body ground.

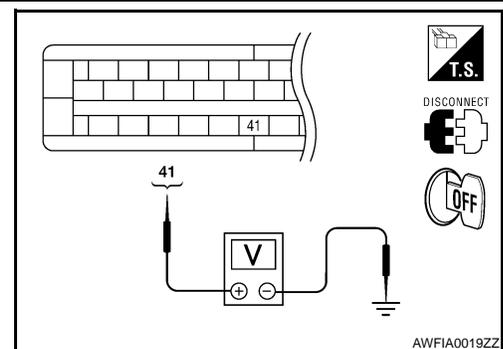
Brake pedal depressed : Battery voltage (approx. 12V)

Brake pedal not depressed : Approx. 0V

Is the inspection result normal?

- YES >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to [BRC-112. "Removal and Installation"](#).
NO >> GO TO 3

3. STOP LAMP RELAY CIRCUIT INSPECTION



C1116 STOP LAMP SWITCH

[VDC/TCS/ABS]

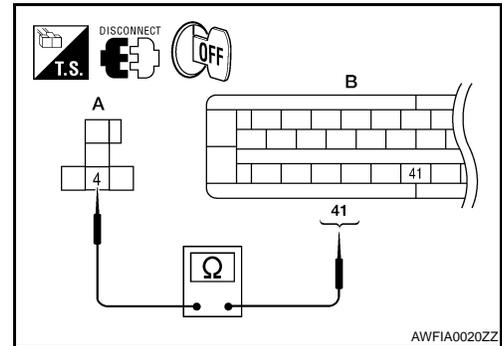
< COMPONENT DIAGNOSIS >

1. Disconnect the stop lamp relay harness connector E12.
2. Check the continuity between the ABS actuator and electric unit (control unit) harness connector E125 (B) terminal 41 and stop lamp relay harness connector E12 (A) terminal 4.

Continuity should exist.

Is the inspection result normal?

- YES >> Refer to [EXL-4, "Work Flow"](#).
NO >> Repair or replace malfunctioning components.



Special Repair Requirement

INFOID:000000003707913

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

>> GO TO 2

2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-9, "CALIBRATION OF DECEL G SENSOR : Description"](#).

>> END

C1120, C1122, C1124, C1126 IN ABS SOL

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

C1120, C1122, C1124, C1126 IN ABS SOL

Description

INFOID:000000003707914

The solenoid valve increases, holds or decreases the fluid pressure of each brake caliper according to the signals transmitted by the ABS actuator and electric unit (control unit).

DTC Logic

INFOID:000000003707915

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|------------------|---|---|
| C1120 | FR LH IN ABS SOL | When the control unit detects a malfunction in the front LH inlet solenoid circuit. | • ABS actuator and electric unit (control unit) |
| C1122 | FR RH IN ABS SOL | When the control unit detects a malfunction in the front RH inlet solenoid circuit. | |
| C1124 | RR LH IN ABS SOL | When the control unit detects a malfunction in the rear LH inlet solenoid circuit. | |
| C1126 | RR RH IN ABS SOL | When the control unit detects a malfunction in the rear RH inlet solenoid circuit. | |

DTC CONFIRMATION PROCEDURE

1.CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| Self-diagnosis results |
|------------------------|
| FR LH IN ABS SOL |
| FR RH IN ABS SOL |
| RR LH IN ABS SOL |
| RR RH IN ABS SOL |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-47. "Diagnosis Procedure"](#).
NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707916

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
4. Reconnect connectors and then perform the self-diagnosis. Refer to [BRC-23. "CONSULT-III Function \(ABS\)"](#).

Is any item indicated on the self-diagnosis display?

- YES >> GO TO 2
NO >> Poor connection of connector terminal. Repair or replace connector.

2.CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

C1120, C1122, C1124, C1126 IN ABS SOL

[VDC/TCS/ABS]

< COMPONENT DIAGNOSIS >

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between ABS actuator and electric unit (control unit) harness connector terminal and ground.

| ABS actuator and electric unit (control unit) | | — | Voltage |
|---|----------|--------|-----------------|
| Connector | Terminal | | |
| E125 | 32 | Ground | Battery voltage |

Is the inspection result normal?

- YES >> GO TO 3
 NO >> Repair or replace malfunctioning components.

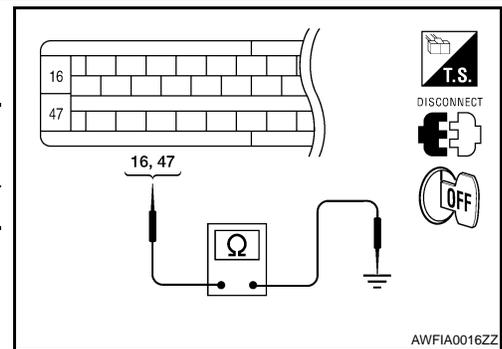
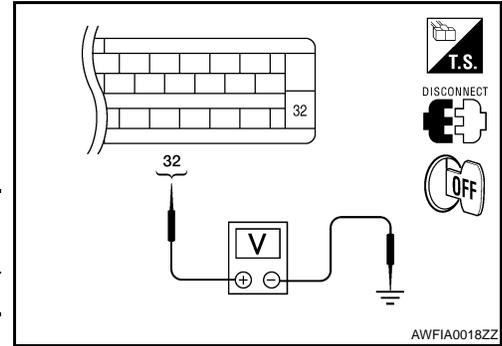
3.CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

| ABS actuator and electric unit (control unit) | | — | Continuity |
|---|----------|--------|------------|
| Connector | Terminal | | |
| E125 | 16, 47 | Ground | Yes |

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit).
 Refer to [BRC-112, "Removal and Installation"](#).
 NO >> Repair or replace malfunctioning components.



Component Inspection

INFOID:000000003707917

1.CHECK ACTIVE TEST

1. Select each test menu item on "ACTIVE TEST".
2. On the display, touch "UP", "KEEP", and "DOWN", and check that the system operates as shown in the table below.

| Operation | | ABS solenoid valve | | | ABS solenoid valve (ACT) | | |
|--|---------------|--------------------|------|------|--------------------------|--------------|----------------|
| | | UP | KEEP | DOWN | UP | ACTUA-TOR UP | ACTUA-TOR KEEP |
| FR RH SOL FR RH ABS SOLE- NOID (ACT) | FR RH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | FR RH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |
| FR LH SOL FR LH ABS SOLE- NOID (ACT) | FR LH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | FR LH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |
| RR RH SOL RR RH ABS SOLE- NOID (ACT) | RR RH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | RR RH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |
| RR LH SOL RR LH ABS SOLE- NOID (ACT) | RR LH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | RR LH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |
| REAR SOL | RR RH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | RR RH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |
| | RR LH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | RR LH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |

*: ON for 1 to 2 seconds after the touch, and then OFF

Is the inspection result normal?

- YES >> Inspection End

C1120, C1122, C1124, C1126 IN ABS SOL

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

NO >> Go to diagnosis procedure. Refer to [BRC-47. "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:000000003707918

1.AJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

>> GO TO 2

2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-9. "CALIBRATION OF DECEL G SENSOR : Description"](#).

>> END

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BRC

C1121, C1123, C1125, C1127 OUT ABS SOL

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

C1121, C1123, C1125, C1127 OUT ABS SOL

Description

INFOID:000000003707919

The solenoid valve increases, holds or decreases the fluid pressure of each brake caliper according to the signals transmitted by the ABS actuator and electric unit (control unit).

DTC Logic

INFOID:000000003707920

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|-------------------|--|---|
| C1121 | FR LH OUT ABS SOL | When the control unit detects a malfunction in the front LH outlet solenoid circuit. | • ABS actuator and electric unit (control unit) |
| C1123 | FR RH OUT ABS SOL | When the control unit detects a malfunction in the front RH outlet solenoid circuit. | |
| C1125 | RR LH OUT ABS SOL | When the control unit detects a malfunction in the rear LH outlet solenoid circuit. | |
| C1127 | RR RH OUT ABS SOL | When the control unit detects a malfunction in the rear RH outlet solenoid circuit. | |

DTC CONFIRMATION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| |
|------------------------|
| Self-diagnosis results |
| FR LH OUT ABS SOL |
| FR RH OUT ABS SOL |
| RR LH OUT ABS SOL |
| RR RH OUT ABS SOL |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-50. "Diagnosis Procedure"](#).
NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707921

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
4. Reconnect connectors and then perform the self-diagnosis. Refer to [BRC-23. "CONSULT-III Function \(ABS\)"](#).

Is any item indicated on the self-diagnosis display?

- YES >> GO TO 2
NO >> Poor connection of connector terminal. Repair or replace connector.

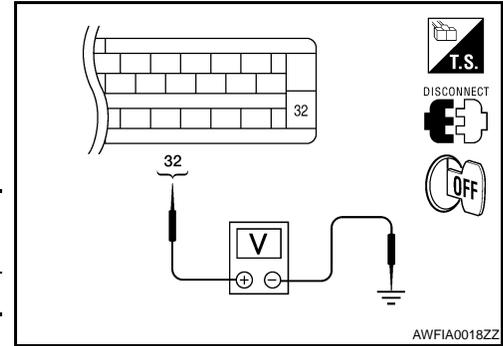
2. CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

C1121, C1123, C1125, C1127 OUT ABS SOL

[VDC/TCS/ABS]

< COMPONENT DIAGNOSIS >

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between ABS actuator and electric unit (control unit) harness connector terminal and ground.



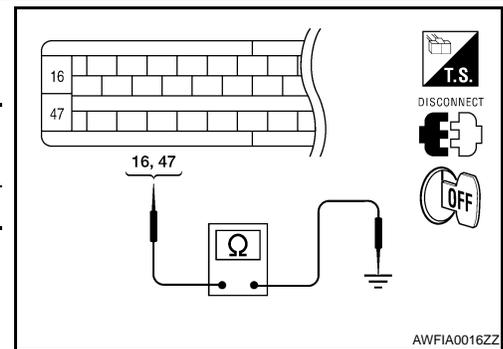
| ABS actuator and electric unit (control unit) | | — | Voltage |
|---|----------|--------|-----------------|
| Connector | Terminal | | |
| E125 | 32 | Ground | Battery voltage |

Is the inspection result normal?

- YES >> GO TO 3
 NO >> Repair or replace malfunctioning components.

3.CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.



| ABS actuator and electric unit (control unit) | | — | Continuity |
|---|----------|--------|------------|
| Connector | Terminal | | |
| E125 | 16, 47 | Ground | Yes |

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit).
 Refer to **BRC-112, "Removal and Installation"**.
 NO >> Repair or replace malfunctioning components.

Component Inspection

INFOID:000000003707922

1.CHECK ACTIVE TEST

1. Select each test menu item on "ACTIVE TEST".
2. On the display, touch "UP", "KEEP", and "DOWN", and check that the system operates as shown in the table below.

| Operation | | ABS solenoid valve | | | ABS solenoid valve (ACT) | | |
|--|---------------|--------------------|------|------|--------------------------|--------------|----------------|
| | | UP | KEEP | DOWN | UP | ACTUA-TOR UP | ACTUA-TOR KEEP |
| FR RH SOL FR RH ABS SOLE- NOID (ACT) | FR RH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | FR RH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |
| FR LH SOL FR LH ABS SOLE- NOID (ACT) | FR LH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | FR LH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |
| RR RH SOL RR RH ABS SOLE- NOID (ACT) | RR RH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | RR RH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |
| RR LH SOL RR LH ABS SOLE- NOID (ACT) | RR LH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | RR LH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |
| REAR SOL | RR RH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | RR RH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |
| | RR LH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | RR LH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |

*: ON for 1 to 2 seconds after the touch, and then OFF

Is the inspection result normal?

- YES >> Inspection End

C1121, C1123, C1125, C1127 OUT ABS SOL

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

NO >> Go to diagnosis procedure. Refer to [BRC-50. "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:000000003707923

1.AJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

>> GO TO 2

2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-9. "CALIBRATION OF DECEL G SENSOR : Description"](#).

>> END

C1130, C1131, C1132, C1133, C1136 ENGINE SIGNAL

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

C1130, C1131, C1132, C1133, C1136 ENGINE SIGNAL

Description

INFOID:000000003707924

ABS actuator and electric unit (control unit) and ECM exchange the engine signal with CAN communication line.

DTC Logic

INFOID:000000003707925

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|-----------------|---|---|
| C1130 | ENGINE SIGNAL 1 | Based on the signal from ECM, ABS actuator and electric unit (control unit) judges that engine fuel cut system is malfunctioning. | <ul style="list-style-type: none">• Harness or connector• ABS actuator and electric unit (control unit)• ECM• CAN communication line |
| C1131 | ENGINE SIGNAL 2 | | |
| C1132 | ENGINE SIGNAL 3 | | |
| C1133 | ENGINE SIGNAL 4 | | |
| C1136 | ENGINE SIGNAL 6 | | |

DTC CONFIRMATION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| Self-diagnosis results |
|------------------------|
| ENGINE SIGNAL 1 |
| ENGINE SIGNAL 2 |
| ENGINE SIGNAL 3 |
| ENGINE SIGNAL 4 |
| ENGINE SIGNAL 6 |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-53, "Diagnosis Procedure"](#).
NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707926

INSPECTION PROCEDURE

1. CHECK ENGINE SYSTEM

1. Perform ECM self-diagnosis. Repair or replace items indicated, then perform ECM self-diagnosis again. Refer to [EC-69, "CONSULT-III Function \(ENGINE\)"](#).
2. Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to [BRC-23, "CONSULT-III Function \(ABS\)"](#).

Is any item indicated on the self-diagnosis display?

- YES >> Repair or replace the affected part.
NO >> Inspection End

Special Repair Requirement

INFOID:000000003707927

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

>> GO TO 2

C1130, C1131, C1132, C1133, C1136 ENGINE SIGNAL

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit).
Refer to [BRC-9, "CALIBRATION OF DECEL G SENSOR : Description"](#).

>> END

C1140 ACTUATOR RLY

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

C1140 ACTUATOR RLY

Description

INFOID:000000003707928

Activates or deactivates each solenoid valve according to the signals transmitted by the ABS actuator and electric unit (control unit).

DTC Logic

INFOID:000000003707929

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|--------------|--|---|
| C1140 | ACTUATOR RLY | ABS actuator relay or circuit malfunction. | <ul style="list-style-type: none"> Harness or connector ABS actuator and electric unit (control unit) |

DTC CONFIRMATION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| Self-diagnosis results |
|------------------------|
| ACTUATOR RLY |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-55. "Diagnosis Procedure"](#).
 NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707930

INSPECTION PROCEDURE

1. CHECK CONNECTOR

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connectors and then perform the self-diagnosis. Refer to [BRC-23. "CONSULT-III Function \(ABS\)"](#).

Is any item indicated on the self-diagnosis display?

- YES >> GO TO 2
 NO >> Poor connection of connector terminal. Repair or replace connector.

2. CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

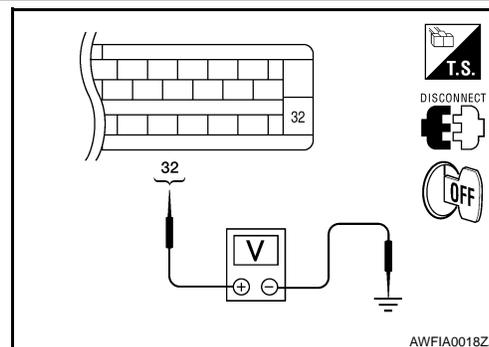
- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check voltage between ABS actuator and electric unit (control unit) harness connector terminal and ground.

| ABS actuator and electric unit (control unit) | | — | Voltage |
|---|----------|--------|-----------------|
| Connector | Terminal | | |
| E125 | 32 | Ground | Battery voltage |

Is the inspection result normal?

- YES >> GO TO 3
 NO >> Repair or replace malfunctioning components.

3. CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACUATOR RELAY GROUND CIRCUIT



C1140 ACTUATOR RLY

[VDC/TCS/ABS]

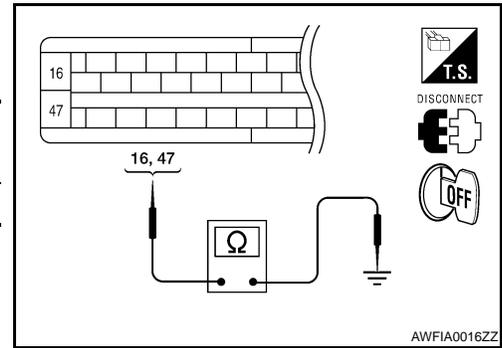
< COMPONENT DIAGNOSIS >

Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

| ABS actuator and electric unit (control unit) | | — | Continuity |
|---|----------|--------|------------|
| Connector | Terminal | | |
| E125 | 16, 47 | Ground | Yes |

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit).
Refer to [BRC-112. "Removal and Installation"](#).
- NO >> Repair or replace malfunctioning components.



INFOID:000000003707931

Component Inspection

1. CHECK ACTIVE TEST

- On "ACTIVE TEST", select "ABS MOTOR".
- Touch ON and OFF on screen. Make sure motor relay and actuator relay operates as shown in table below.

| Operation | ON | OFF |
|--------------|----|-----|
| MOTOR RELAY | ON | OFF |
| ACTUATOR RLY | ON | ON |

Is the inspection result normal?

- YES >> Inspection End
- NO >> Go to diagnosis procedure. Refer to [BRC-55. "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:000000003707932

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

>> GO TO 2

2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-9. "CALIBRATION OF DECEL G SENSOR : Description"](#).

>> END

C1142 PRESS SENSOR

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

C1142 PRESS SENSOR

Description

INFOID:000000003707933

The front and rear pressure sensors convert the brake fluid pressure to an electric signal and transmit it to the ABS actuator and electric unit (control unit).

DTC Logic

INFOID:000000003707934

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|-------------------|---|--|
| C1142 | PRESS SEN CIRCUIT | Pressure sensor signal line is open or shorted, or pressure sensor is malfunctioning. | <ul style="list-style-type: none"> • Harness or connector • Pressure sensor • ABS actuator and electric unit (control unit) |

DTC CONFIRMATION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| |
|------------------------|
| Self-diagnosis results |
| PRESS SEN CIRCUIT |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-57, "Diagnosis Procedure"](#).
 NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707935

FRONT PRESSURE SENSOR INSPECTION PROCEDURE

1. CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the front pressure sensor connector E31 and ABS actuator and electric unit (control unit) connector E125 and inspect the terminals for deformation, disconnection, looseness, or damage.

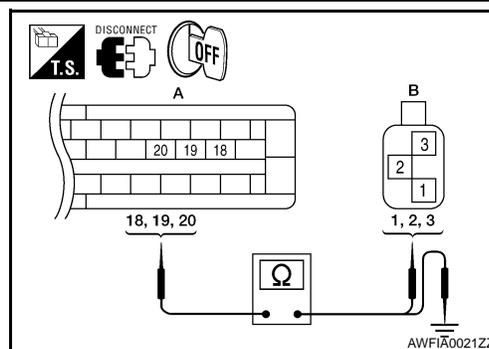
Is the inspection result normal?

- YES >> GO TO 2
 NO >> Repair connector.

2. FRONT PRESSURE SENSOR CIRCUIT INSPECTION

1. Measure the continuity between the ABS actuator and electric unit (control unit) harness connector E125 (A) and front pressure sensor harness connector E31 (B).

| ABS actuator and electric unit (control unit) | | Front pressure sensor | | Continuity |
|---|----------|-----------------------|----------|------------|
| Connector | Terminal | Connector | Terminal | |
| A: E125 | 18 | B: E31 | 3 | Yes |
| | 19 | | 1 | |
| | 20 | | 2 | |



2. Measure the continuity between the ABS actuator and electric unit (control unit) harness connector E125 (A) and body ground.

C1142 PRESS SENSOR

[VDC/TCS/ABS]

< COMPONENT DIAGNOSIS >

| ABS actuator and electric unit (control unit) | | — | Continuity |
|---|----------|--------|------------|
| Connector | Terminal | | |
| A: E125 | 18 | Ground | No |
| | 19 | | |
| | 20 | | |

Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace harness or connector.

3.FRONT PRESSURE SENSOR INSPECTION

1. Reconnect the front pressure sensor and ABS actuator and electric unit (control unit) connectors.
2. Use "DATA MONITOR" to check if the status of "PRESS SENSOR" is normal.

| Condition | PRESS SENSOR (DATA MONITOR) |
|---|-----------------------------|
| With ignition switch turned ON and brake pedal released. | Approx. 0 bar |
| With ignition switch turned ON and brake pedal depressed. | Positive value |

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the front pressure sensor.

REAR PRESSURE SENSOR INSPECTION PROCEDURE

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the rear pressure sensor connector E32 and ABS actuator and electric unit (control unit) connector E125 and inspect the terminals for deformation, disconnection, looseness, or damage.

Is the inspection result normal?

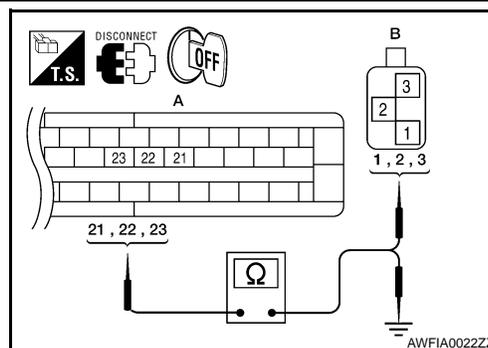
YES >> GO TO 2

NO >> Repair connector.

2.REAR PRESSURE SENSOR CIRCUIT INSPECTION

1. Measure the continuity between the ABS actuator and electric unit (control unit) harness connector E125 (A) and rear pressure sensor harness connector E32 (B).

| ABS actuator and electric unit (control unit) | | Rear pressure sensor | | Continuity |
|---|----------|----------------------|----------|------------|
| Connector | Terminal | Connector | Terminal | |
| A: E125 | 21 | B: E32 | 1 | Yes |
| | 22 | | 3 | |
| | 23 | | 2 | |



2. Measure the continuity between the ABS actuator and electric unit (control unit) harness connector E125 (A) and body ground.

| ABS actuator and electric unit (control unit) | | — | Continuity |
|---|----------|--------|------------|
| Connector | Terminal | | |
| A: E125 | 21 | Ground | No |
| | 22 | | |
| | 23 | | |

C1142 PRESS SENSOR

[VDC/TCS/ABS]

< COMPONENT DIAGNOSIS >

Is the inspection result normal?

- YES >> GO TO 3
NO >> Repair or replace harness or connector.

3. REAR PRESSURE SENSOR INSPECTION

1. Reconnect the rear pressure sensor and ABS actuator and electric unit (control unit) connectors.
2. Use "DATA MONITOR" to check if the status of "PRESS SEN2" is normal.

| Condition | PRESS SEN2 (DATA MONITOR) |
|---|------------------------------|
| With ignition switch turned ON and brake pedal released. | Approx. 0 bar |
| With ignition switch turned ON and brake pedal depressed. | Positive value |

Is the inspection result normal?

- YES >> Inspection End.
NO >> Replace the rear pressure sensor.

Component Inspection

INFOID:000000003707936

BRC

1. CHECK DATA MONITOR

On "DATA MONITOR", select "PRESS SENSOR" and "PRESS SEN2" and check the brake fluid pressure.

| Condition | PRESS SENSOR and PRESS SEN2 (DATA MONITOR) |
|---|--|
| With ignition switch turned ON and brake pedal released. | Approx. 0 bar |
| With ignition switch turned ON and brake pedal depressed. | Positive value |

Is the inspection result normal?

- YES >> Inspection End
NO >> Go to diagnosis procedure. Refer to [BRC-57, "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:000000003707937

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

>> GO TO 2

2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-9, "CALIBRATION OF DECEL G SENSOR : Description"](#).

>> END

C1143, C1144 STEERING ANGLE SENSOR

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

C1143, C1144 STEERING ANGLE SENSOR

Description

INFOID:000000003707938

The steering angle sensor detects the rotation amount, angular velocity and direction of the steering wheel, and transmits the data to the ABS actuator and electric unit (control unit) via CAN communication.

DTC Logic

INFOID:000000003707939

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|--------------------|--|--|
| C1143 | ST ANG SEN CIRCUIT | Neutral position of steering angle sensor is dislocated, or the steering angle sensor is malfunctioning. | <ul style="list-style-type: none">• Harness or connector• Steering angle sensor• ABS actuator and electric unit (control unit) |
| C1144 | ST ANG SEN SIGNAL | Neutral position of steering angle sensor is not finished. | |

DTC CONFIRMATION PROCEDURE

1.CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| |
|------------------------|
| Self-diagnosis results |
| ST ANG SEN CIRCUIT |
| ST ANG SEN SIGNAL |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-60, "Diagnosis Procedure"](#).
NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707940

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Disconnect steering angle sensor connector.
4. Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
5. Reconnect connectors and then perform the self-diagnosis. Refer to [BRC-23, "CONSULT-III Function \(ABS\)"](#).

Is any item indicated on the self-diagnosis display?

- YES >> GO TO 2
NO >> Poor connection of connector terminal. Repair or replace connector.

2.CHECK STEERING ANGLE SENSOR HARNESS

1. Turn ignition switch OFF.
2. Disconnect steering angle sensor connector.

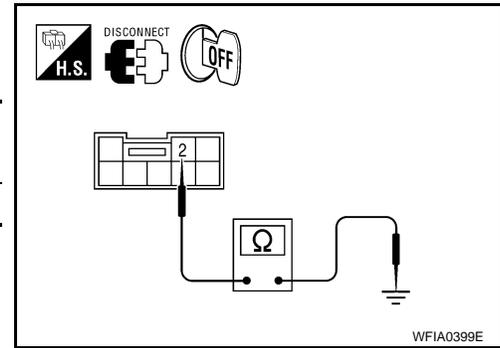
C1143, C1144 STEERING ANGLE SENSOR

[VDC/TCS/ABS]

< COMPONENT DIAGNOSIS >

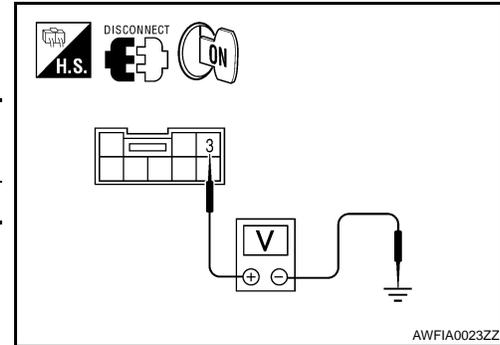
3. Check continuity between steering angle sensor harness connector terminal and ground.

| Steering angle sensor | | — | Continuity |
|-----------------------|----------|--------|------------|
| Connector | Terminal | | |
| M17 | 2 | Ground | Yes |



4. Turn ignition switch ON.
5. Check voltage between steering angle sensor harness connector terminal and ground.

| Steering angle sensor | | — | Voltage |
|-----------------------|----------|--------|-----------------|
| Connector | Terminal | | |
| M17 | 3 | Ground | Battery voltage |



Is the inspection result normal?

- YES >> GO TO 3
 NO >> Repair or replace malfunctioning components.

3.CHECK DATA MONITOR

1. Connect the steering angle sensor connector and ABS actuator and electric unit (control unit) connector.
2. Select "STR ANGLE SIG" in "DATA MONITOR" and check steering angle sensor signal.

| Steering condition | STR ANGLE SIG (DATA MONITOR) |
|--------------------|------------------------------|
| Driving straight | 0±2.5 ° |
| Turn 90 ° to left | Approx. +90 ° |
| Turn 90 ° to right | Approx. -90 ° |

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-112. "Removal and Installation"](#).
 NO >> Replace steering angle sensor and adjust neutral position of steering angle sensor. Refer to [BRC-114. "Removal and Installation"](#).

Component Inspection

INFOID:000000003707941

1.CHECK DATA MONITOR

Select "STR ANGLE SIG" in "DATA MONITOR" and check steering angle sensor signal.

| Steering condition | STR ANGLE SIG (DATA MONITOR) |
|--------------------|------------------------------|
| Driving straight | 0±2.5 ° |
| Turn 90 ° to left | Approx. +90 ° |
| Turn 90 ° to right | Approx. -90 ° |

Is the inspection result normal?

- YES >> Inspection End
 NO >> Go to diagnosis procedure. Refer to [BRC-60. "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:000000003707942

1.AJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

C1143, C1144 STEERING ANGLE SENSOR

[VDC/TCS/ABS]

< COMPONENT DIAGNOSIS >

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

>> GO TO 2

2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-9, "CALIBRATION OF DECEL G SENSOR : Description"](#).

>> END

C1155 BRAKE FLUID LEVEL SWITCH

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

C1155 BRAKE FLUID LEVEL SWITCH

Description

INFOID:000000003707943

The brake fluid level switch converts the brake fluid level to an electric signal and transmits it to the ABS actuator and electric unit (control unit).

DTC Logic

INFOID:000000003707944

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|--------------------|---|---|
| C1155 | BR FLUID LEVEL LOW | Brake fluid level is low or communication line between the ABS actuator and electric unit (control unit) and brake fluid level switch is open or shorted. | <ul style="list-style-type: none"> • Harness or connector • Brake fluid level switch • Brake fluid level |

DTC CONFIRMATION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| Self-diagnosis results |
|------------------------|
| BR FLUID LEVEL LOW |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-63. "Diagnosis Procedure"](#).
 NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707945

INSPECTION PROCEDURE

1. CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector E125 and brake fluid level switch connector E21.
2. Check the terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

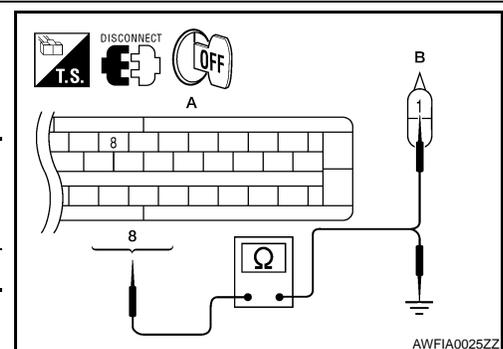
- YES >> GO TO 2
 NO >> Repair or replace as necessary.

2. CHECK HARNESS BETWEEN BRAKE FLUID LEVEL SWITCH AND ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

1. Check continuity between ABS actuator and electric unit (control unit) harness connector E125 (A) and brake fluid level switch harness connector E21 (B).

| ABS actuator and electric unit (control unit) | | Brake fluid level switch | | Continuity |
|---|----------|--------------------------|----------|------------|
| Connector | Terminal | Connector | Terminal | |
| A: E125 | 8 | B: E21 | 1 | Yes |

2. Check continuity between ABS actuator and electric unit (control unit) harness connector E125 (A) and ground.



| ABS actuator and electric unit (control unit) | | — | Continuity |
|---|----------|--------|------------|
| Connector | Terminal | | |
| A: E125 | 8 | Ground | No |

Is the inspection result normal?

C1155 BRAKE FLUID LEVEL SWITCH

[VDC/TCS/ABS]

< COMPONENT DIAGNOSIS >

- YES >> GO TO 3
- NO >> Repair or replace malfunctioning components.

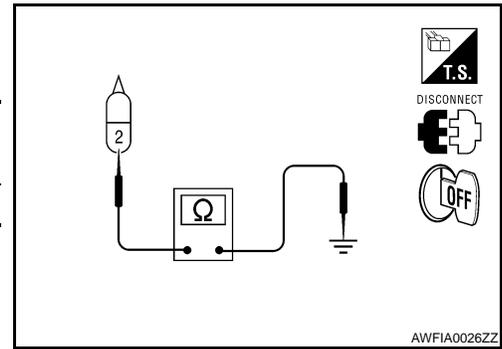
3.CHECK BRAKE FLUID LEVEL SWITCH GROUND

Check continuity between brake fluid level switch harness connector E21 and ground.

| Brake fluid level switch | | — | Continuity |
|--------------------------|----------|--------|------------|
| Connector | Terminal | | |
| E21 | 2 | Ground | Yes |

Is the inspection result normal?

- YES >> GO TO 4
- NO >> Repair or replace malfunctioning components.



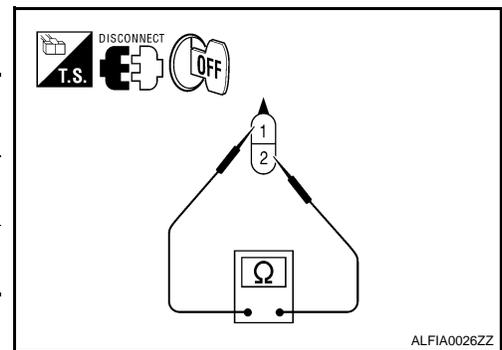
4.CHECK BRAKE FLUID LEVEL SWITCH

Check continuity between brake fluid level switch terminals.

| Brake fluid level switch | | Condition | Continuity |
|--------------------------|--|-----------|------------|
| Terminal | | | |
| 1 - 2 | When brake fluid is full in the reservoir tank. | No | |
| | When brake fluid is empty in the reservoir tank. | Yes | |

Is the inspection result normal?

- YES >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to [BRC-112, "Removal and Installation"](#).
- NO >> Replace brake fluid level switch.



Component Inspection

INFOID:000000003707946

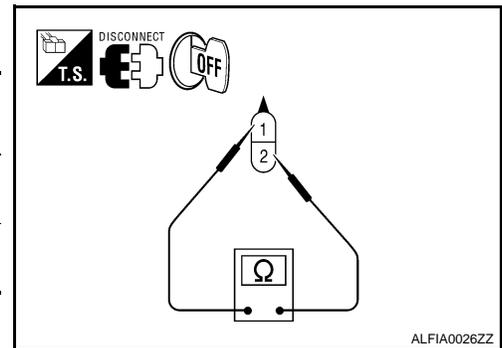
1.CHECK BRAKE FLUID LEVEL SWITCH

1. Turn ignition switch OFF.
2. Disconnect brake fluid level switch connector.
3. Check continuity between brake fluid level switch terminals.

| Brake fluid level switch | | Condition | Continuity |
|--------------------------|--|-----------|------------|
| Terminal | | | |
| 1 - 2 | When brake fluid is full in the reservoir tank. | No | |
| | When brake fluid is empty in the reservoir tank. | Yes | |

Is the inspection result normal?

- YES >> Inspection End
- NO >> Replace brake fluid level switch.



Special Repair Requirement

INFOID:000000003707947

1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

C1155 BRAKE FLUID LEVEL SWITCH

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

>> GO TO 2

2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit).
Refer to [BRC-9. "CALIBRATION OF DECEL G SENSOR : Description"](#).

>> END

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C1156 ST ANG SEN COM CIR

Description

INFOID:000000003707948

The steering angle sensor is connected to the ABS actuator and electric unit (control unit) in addition to CAN lines. 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.

DTC Logic

INFOID:000000003707949

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|--------------------|---|--|
| C1156 | ST ANG SEN COM CIR | When steering angle sensor is not transmitting CAN communication signal to the ABS actuator and electric unit (control unit). | <ul style="list-style-type: none"> Harness or connector CAN communication line Steering angle sensor ABS actuator and electric unit (control unit) |

DTC CONFIRMATION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| |
|------------------------|
| Self-diagnosis results |
| ST ANG SEN COM CIR |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-66, "Diagnosis Procedure"](#).
 NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707950

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E125, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connector and perform self-diagnosis.

| |
|------------------------|
| Self-diagnosis results |
| CAN COMM CIRCUIT |
| ST ANG SEN COM CIR |

Is above displayed on the self-diagnosis display?

- YES >> Refer to [LAN-14, "Trouble Diagnosis Flow Chart"](#).
 NO >> Inspection End

C1160 DECEL G SEN SET

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

C1160 DECEL G SEN SET

Description

INFOID:000000003707951

The yaw rate/side/decel G sensor detects the yaw rate/side/decel G affecting the vehicle, and transmits the data to the ABS actuator and electric unit (control unit) as an analog voltage signal.

DTC Logic

INFOID:000000003707952

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|-----------------|--|---|
| C1160 | DECEL G SEN SET | ABS decel G sensor adjustment is incomplete. | <ul style="list-style-type: none">Decel G sensor calibrationYaw rate/side/decel G sensorABS actuator and electric unit (control unit) |

DTC CONFIRMATION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| |
|------------------------|
| Self-diagnosis results |
| DECEL G SEN SET |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-67, "Diagnosis Procedure"](#).
NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707953

INSPECTION PROCEDURE

1. PERFORM SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis.

| |
|------------------------|
| Self-diagnosis results |
| DECEL G SEN SET |

Do self-diagnosis results indicate anything other than shown above?

- YES >> Perform repair or replacement for the item indicated.
NO >> Perform calibration of decel G sensor. Refer to [BRC-9, "CALIBRATION OF DECEL G SENSOR : Description"](#). GO TO 2

2. PERFORM SELF-DIAGNOSIS AGAIN

- Turn the ignition switch to OFF and then to ON and erase self-diagnosis results.
- Perform ABS actuator and electric unit (control unit) self-diagnosis again.

Are any self-diagnosis results displayed?

- YES >> Replace yaw rate/side/decel G sensor. Refer to [BRC-115, "Removal and Installation"](#).
NO >> Inspection End

C1163 ST ANGLE SEN SAFE

Description

INFOID:000000003707954

The steering angle sensor detects the rotation amount, angular velocity and direction of the steering wheel, and transmits the data to the ABS actuator and electric unit (control unit) via CAN communication.

DTC Logic

INFOID:000000003707955

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|------------------|---|---|
| C1163 | ST ANGL SEN SAFE | When steering angle sensor is in safe mode. | <ul style="list-style-type: none"> Adjust steering angle sensor neutral position |

DTC CONFIRMATION PROCEDURE

1.CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| |
|------------------------|
| Self-diagnosis results |
| ST ANGL SEN SAFE |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-68, "Diagnosis Procedure"](#).
- NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707956

INSPECTION PROCEDURE

1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Adjust steering angle sensor neutral position. Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

>> GO TO 2

2.INDICATOR LAMP CHECK

Check that VDC OFF indicator lamp is off.

Is VDC OFF indicator lamp off?

- YES >> Inspection End
- NO >> Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to [BRC-23, "CONSULT-III Function \(ABS\)"](#).

C1164, C1165, C1166, C1167 CV/SV SYSTEM

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

C1164, C1165, C1166, C1167 CV/SV SYSTEM

Description

INFOID:000000003707957

CV1, CV2 (CUT VALVE)

The cut valve shuts off the normal brake fluid path from the master cylinder, when VDC/TCS is activated.

SV1, SV2 (SUCTION VALVE)

The suction valve supplies the brake fluid from the master cylinder to the pump, when VDC/TCS is activated.

DTC Logic

INFOID:000000003707958

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|--------------|--|--|
| C1164 | CV1 | VDC switch-over solenoid valve (CV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground. | <ul style="list-style-type: none">• Harness or connector• ABS actuator and electric unit (control unit) |
| C1165 | CV2 | VDC switch-over solenoid valve (CV2) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground. | |
| C1166 | SV1 | VDC switch-over solenoid valve (SV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground. | |
| C1167 | SV2 | VDC switch-over solenoid valve (SV2) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground. | |

DTC CONFIRMATION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| Self-diagnosis results |
|------------------------|
| CV1 |
| CV2 |
| SV1 |
| SV2 |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-69. "Diagnosis Procedure"](#).
NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707959

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
4. Reconnect connectors and then perform the self-diagnosis. Refer to [BRC-23. "CONSULT-III Function \(ABS\)"](#).

Is any item indicated on the self-diagnosis display?

- YES >> GO TO 2
NO >> Poor connection of connector terminal. Repair or replace connector.

C1164, C1165, C1166, C1167 CV/SV SYSTEM

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

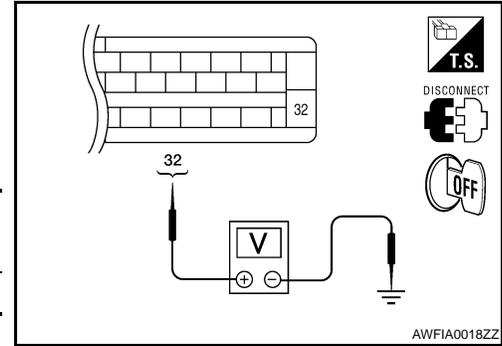
2. CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between ABS actuator and electric unit (control unit) harness connector terminal and ground.

| ABS actuator and electric unit (control unit) | | — | Voltage |
|---|----------|--------|-----------------|
| Connector | Terminal | | |
| E125 | 32 | Ground | Battery voltage |

Is the inspection result normal?

- YES >> GO TO 3
 NO >> Repair or replace malfunctioning components.



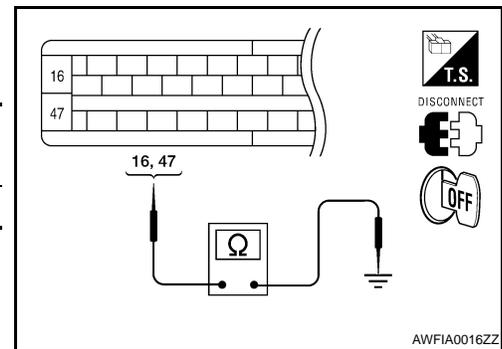
3. CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

| ABS actuator and electric unit (control unit) | | — | Continuity |
|---|----------|--------|------------|
| Connector | Terminal | | |
| E125 | 16, 47 | Ground | Yes |

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit).
 Refer to [BRC-112, "Removal and Installation"](#).
 NO >> Repair or replace malfunctioning components.



Component Inspection

INFOID:000000003707960

1. CHECK ACTIVE TEST

1. Select each test menu item on "ACTIVE TEST".
2. On the display, touch "UP", "ACT UP", and "ACT KEEP", and check that the system operates as shown in the table below.

| Operation | | ABS solenoid valve | | | ABS solenoid valve (ACT) | | |
|--|---------------|--------------------|------|------|--------------------------|--------------|----------------|
| | | UP | KEEP | DOWN | UP | ACTUA-TOR UP | ACTUA-TOR KEEP |
| FR RH SOL FR RH ABS SOLE- NOID (ACT) | FR RH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | FR RH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |
| FR LH SOL FR LH ABS SOLE- NOID (ACT) | FR LH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | FR LH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |
| RR RH SOL RR RH ABS SOLE- NOID (ACT) | RR RH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | RR RH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |
| RR LH SOL RR LH ABS SOLE- NOID (ACT) | RR LH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | RR LH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |
| REAR SOL | RR RH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | RR RH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |
| | RR LH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| | RR LH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |

*: ON for 1 to 2 seconds after the touch, and then OFF

C1164, C1165, C1166, C1167 CV/SV SYSTEM

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

Is the inspection result normal?

YES >> Inspection End

NO >> Go to diagnosis procedure. Refer to [BRC-69. "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:000000003707961

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

>> GO TO 2

2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-9. "CALIBRATION OF DECEL G SENSOR : Description"](#).

>> END

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BRC

C1178, C1181, C1184, C1189 ABS ACTIVE BOOSTER

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

C1178, C1181, C1184, C1189 ABS ACTIVE BOOSTER

Description

INFOID:000000003707962

The active brake booster consists of a vacuum booster, an active booster control group and a delta stroke sensor. If a brake booster system malfunction occurs due to loss of vacuum, the delta stroke sensor will signal the ABS actuator and electric unit (control unit) that a booster malfunction has occurred. The active booster then applies supplemental force to the master cylinder relative to the amount of force exerted on the brake pedal.

DTC Logic

INFOID:000000003707963

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|--------------------------------|--|---|
| C1178 | ABS ACTIVE BOOSTER SV NG | Active booster solenoid is malfunctioning, or signal line of active booster servo is open or shorted. | <ul style="list-style-type: none">• Harness or connector• Active booster• ABS actuator and electric unit (control unit) |
| C1181 | ABS ACTIVE BOOSTER RESPONSE NG | Active booster response is malfunctioning, or signal line of active booster response is open or shorted. | |
| C1184 | ABS BRAKE RELEASE SW NG | Brake release switch is malfunctioning, or signal line of brake release switch is open or shorted. | |
| C1189 | ABS BRAKE BOOSTER DEFECT | Brake booster is defective or malfunctioning. | |

DTC CONFIRMATION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| |
|--------------------------------|
| Self-diagnosis results |
| ABS ACTIVE BOOSTER SV NG |
| ABS ACTIVE BOOSTER RESPONSE NG |
| ABS BRAKE RELEASE SW NG |
| ABS BRAKE BOOSTER DEFECT |

Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to [BRC-72. "Diagnosis Procedure"](#).

NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707964

INSPECTION PROCEDURE

1. CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the active booster connector E49 and ABS actuator and electric unit (control unit) connector E125 and inspect the terminals for deformation, disconnection, looseness, or damage.

Is the inspection result normal?

YES >> GO TO 2

NO >> Repair connector.

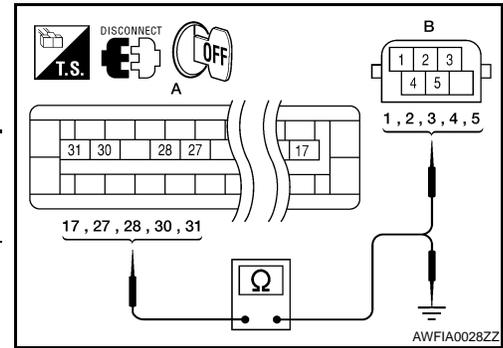
2. ACTIVE BOOSTER CIRCUIT INSPECTION

C1178, C1181, C1184, C1189 ABS ACTIVE BOOSTER

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

1. Measure the continuity between ABS actuator and electric unit (control unit) harness connector E125 (A) and active booster harness connector E49 (B).



| ABS actuator and electric unit (control unit) | | Active booster | | Continuity |
|---|----------|----------------|----------|------------|
| Connector | Terminal | Connector | Terminal | |
| A: E125 | 17 | B: E49 | 3 | Yes |
| | 27 | | 1 | |
| | 28 | | 5 | |
| | 30 | | 2 | |
| | 31 | | 4 | |

2. Measure the continuity between ABS actuator and electric unit (control unit) harness connector E125 (A) and body ground.

| ABS actuator and electric unit (control unit) | | — | Continuity |
|---|----------|--------|------------|
| Connector | Terminal | | |
| A: E125 | 17 | Ground | No |
| | 27 | | |
| | 28 | | |
| | 30 | | |
| | 31 | | |

Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace harness or connector.

3.ACTIVE BOOSTER INSPECTION

1. Reconnect the active booster and ABS actuator and electric unit (control unit) connectors.
2. Use "DATA MONITOR" to check if the status of "RELEASE SWITCH NO" and "RELEASE SWITCH NC" is normal.

| Condition | RELEASE SWITCH NO (DATA MONITOR) | RELEASE SWITCH NC (DATA MONITOR) |
|--------------------------------|----------------------------------|----------------------------------|
| When brake pedal is depressed. | ON | OFF |
| When brake pedal is released. | OFF | ON |

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to [BRC-112. "Removal and Installation"](#).

NO >> Replace the active booster. Refer to [BR-25. "Removal and Installation"](#).

Component Inspection

INFOID:000000003707965

1.CHECK DATA MONITOR

Use "DATA MONITOR" to check if the status of "RELEASE SWITCH NO" and "RELEASE SWITCH NC" is normal.

| Condition | RELEASE SWITCH NO (DATA MONITOR) | RELEASE SWITCH NC (DATA MONITOR) |
|--------------------------------|----------------------------------|----------------------------------|
| When brake pedal is depressed. | ON | OFF |
| When brake pedal is released. | OFF | ON |

C1178, C1181, C1184, C1189 ABS ACTIVE BOOSTER

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

Is the inspection result normal?

YES >> Inspection End

NO >> Go to diagnosis procedure. Refer to [BRC-72. "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:000000003707966

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

>> GO TO 2

2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-9. "CALIBRATION OF DECEL G SENSOR : Description"](#).

>> END

C1179 ABS DELTA S SEN NG

Description

INFOID:000000003707967

The active brake booster consists of a vacuum booster, an active booster control group and a delta stroke sensor. If a brake booster system malfunction occurs due to loss of vacuum, the delta stroke sensor will signal the ABS actuator and electric unit (control unit) that a booster malfunction has occurred. The active booster then applies supplemental force to the master cylinder relative to the amount of force exerted on the brake pedal.

DTC Logic

INFOID:000000003707968

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|--------------------|--|--|
| C1179 | ABS DELTA S SEN NG | Delta stroke sensor is malfunctioning, or signal line of delta stroke sensor is open or shorted. | <ul style="list-style-type: none"> • Harness or connector • Delta stroke sensor • ABS actuator and electric unit (control unit) |

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DTC CONFIRMATION PROCEDURE

1.CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

| |
|------------------------|
| Self-diagnosis results |
| ABS DELTA S SEN NG |

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-75. "Diagnosis Procedure"](#).
- NO >> Inspection End

Diagnosis Procedure

INFOID:000000003707969

INSPECTION PROCEDURE

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the delta stroke sensor connector E114 and ABS actuator and electric unit (control unit) connector E125 and inspect the terminals for deformation, disconnection, looseness, or damage.

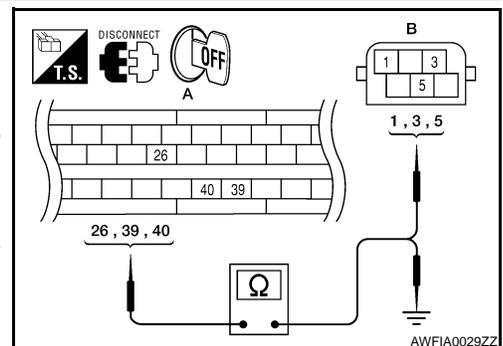
Is the inspection result normal?

- YES >> GO TO 2
- NO >> Repair connector.

2.DELTA STROKE SENSOR CIRCUIT INSPECTION

1. Measure the continuity between ABS actuator and electric unit (control unit) harness connector E125 (A) and delta stroke sensor harness connector E114 (B).

| ABS actuator and electric unit (control unit) | | Delta stroke sensor | | Continuity |
|---|----------|---------------------|----------|------------|
| Connector | Terminal | Connector | Terminal | |
| A: E125 | 26 | B: E114 | 1 | Yes |
| | 39 | | 3 | |
| | 40 | | 5 | |



2. Measure the continuity between ABS actuator and electric unit (control unit) harness connector E125 (A) and body ground.

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< COMPONENT DIAGNOSIS >

| | | | |
|---|----------|--------|------------|
| ABS actuator and electric unit (control unit) | | — | Continuity |
| Connector | Terminal | | |
| A: E125 | 26 | Ground | No |
| | 39 | | |
| | 40 | | |

Is the inspection result normal?

- YES >> GO TO 3
- NO >> Repair or replace harness or connector.

3.DELTA STROKE SENSOR INSPECTION

1. Reconnect the delta stroke sensor and ABS actuator and electric unit (control unit) connectors.
2. Use "DATA MONITOR" to check if the status of "DELTA S SEN" is normal.

| Condition | DELTA S SEN (DATA MONITOR) |
|--------------------------------|----------------------------|
| When brake pedal is depressed. | 1.05–1.80 mm |
| When brake pedal is released. | 0.00 mm (+0.6/-0.4) |

Is the inspection result normal?

- YES >> Replace the ABS actuator and electric unit (control unit). Refer to [BRC-112. "Removal and Installation"](#).
- NO >> Replace the delta stroke sensor.

Component Inspection

INFOID:000000003707970

1.CHECK DATA MONITOR

Use "DATA MONITOR" to check if the status of "DELTA S SEN" is normal.

| Condition | DELTA S SEN (DATA MONITOR) |
|--------------------------------|----------------------------|
| When brake pedal is depressed. | 1.05–1.80 mm |
| When brake pedal is released. | 0.00 mm (+0.6/-0.4) |

Is the inspection result normal?

- YES >> Inspection End
- NO >> Go to diagnosis procedure. Refer to [BRC-75. "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:000000003707971

1.AJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

>> GO TO 2

2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-9. "CALIBRATION OF DECEL G SENSOR : Description"](#).

>> END

U1000 CAN COMM CIRCUIT

Description

INFOID:000000003707972

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.

DTC Logic

INFOID:000000003707973

DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|-------|------------------|---|---|
| U1000 | CAN COMM CIRCUIT | When ABS actuator and electric unit (control unit) is not transmitting or receiving CAN communication signal for 2 seconds or more. | <ul style="list-style-type: none"> • CAN communication line • ABS actuator and electric unit (control unit) |

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Diagnosis Procedure

INFOID:000000003707974

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn ignition switch OFF, disconnect the ABS actuator and electric unit (control unit) connector, and check the terminals for deformation, disconnection, looseness, and so on. If there is a malfunction, repair or replace the terminal.
2. Reconnect connector and perform self-diagnosis.

Is "CAN COMM CIRCUIT" displayed in self-diagnosis display items?

- YES >> Print out the self-diagnostic results, and refer to [LAN-14, "Trouble Diagnosis Flow Chart"](#).
 NO >> Connector terminal is loose, damaged, open, or shorted.

Special Repair Requirement

INFOID:000000003707975

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

>> GO TO 2

2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-9, "CALIBRATION OF DECEL G SENSOR : Description"](#).

>> END

VDC OFF SWITCH

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

VDC OFF SWITCH

Description

INFOID:000000003707976

VDC OFF switch can deactivate (turn OFF) the VDC/TCS function by pressing the VDC OFF switch.

Component Function Check

INFOID:000000003707977

1.CHECK VDC OFF SWITCH OPERATION

Turn ON/OFF the VDC OFF switch and check that the VDC OFF indicator lamp in the combination meter turns ON/OFF correctly.

| Condition | VDC OFF indicator lamp illumination status |
|---------------------|--|
| VDC OFF switch: ON | ON |
| VDC OFF switch: OFF | OFF |

Is the inspection result normal?

YES >> Inspection End

NO >> Go to diagnosis procedure. Refer to [BRC-78. "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000003707978

1.CHECK VDC OFF SWITCH

Perform the VDC OFF switch component inspection. Refer to [BRC-79. "Component Inspection"](#).

Is the inspection result normal?

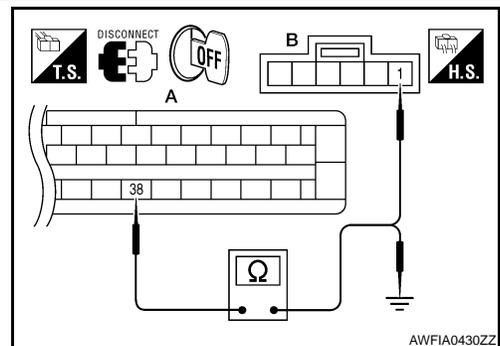
YES >> GO TO 2

NO >> Replace VDC OFF switch.

2.CHECK VDC OFF SWITCH HARNESS

1. Disconnect ABS actuator and electric unit (control unit) connector.
2. Check continuity between ABS actuator and electric unit (control unit) connector E125 (A) terminal 38 and VDC OFF switch connector M253 (B) terminal 1.

| ABS actuator and electric unit (control unit) | | VDC OFF switch | | Continuity |
|---|----------|----------------|----------|------------|
| Connector | Terminal | Connector | Terminal | |
| A: E125 | 38 | B: M253 | 1 | Yes |



3. Check continuity between ABS actuator and electric unit (control unit) connector E125 (A) terminal 38 and ground.

| ABS actuator and electric unit (control unit) | | — | Continuity |
|---|----------|--------|------------|
| Connector | Terminal | | |
| A: E125 | 38 | Ground | No |

Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace harness.

3.CHECK VDC OFF SWITCH GROUND

VDC OFF SWITCH

[VDC/TCS/ABS]

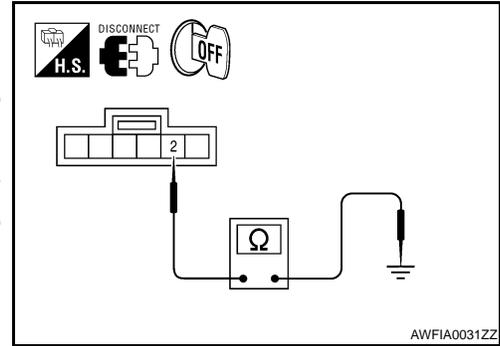
< COMPONENT DIAGNOSIS >

Check continuity between VDC OFF switch connector M253 terminal 2 and ground.

| VDC OFF switch | | — | Continuity |
|----------------|----------|--------|------------|
| Connector | Terminal | | |
| M253 | 2 | Ground | Yes |

Is the inspection result normal?

- YES >> GO TO 4
- NO >> Repair or replace harness.



4.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to [MWI-26, "Diagnosis Description"](#).

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-112, "Removal and Installation"](#).
- NO >> Replace combination meter. Refer to [MWI-105, "Removal and Installation"](#).

Component Inspection

INFOID:000000003707979

INSPECTION PROCEDURE

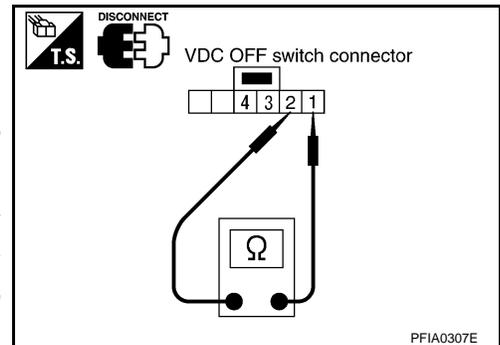
1.CHECK VDC OFF SWITCH

1. Turn ignition switch OFF.
2. Disconnect VDC OFF switch connector.
3. Check continuity between VDC OFF switch terminals.

| VDC OFF switch | Condition | Continuity |
|----------------|----------------------------------|------------|
| Terminal | | |
| 1 - 2 | When VDC OFF switch is pressed. | Yes |
| | When VDC OFF switch is released. | No |

Is the inspection result normal?

- YES >> Inspection End
- NO >> Replace VDC OFF switch.



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ABS WARNING LAMP

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

ABS WARNING LAMP

Description

INFOID:000000003707980

×: ON –: OFF

| Condition | ABS warning lamp |
|--|------------------|
| Ignition switch OFF | – |
| For 2 seconds after turning ON ignition switch | × |
| 2 seconds later after turning ON ignition switch | – |
| ABS function is malfunctioning. | × |
| EBD function is malfunctioning. | × |

Component Function Check

INFOID:000000003707981

1.CHECK ABS WARNING LAMP OPERATION

Check that the lamp illuminates for approximately 2 seconds after the ignition switch is turned ON.

Is the inspection result normal?

YES >> Inspection End

NO >> Go to diagnosis procedure. Refer to [BRC-80, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000003707982

1.CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to [BRC-23, "CONSULT-III Function \(ABS\)"](#).

Is the inspection result normal?

YES >> GO TO 2

NO >> Check items displayed by self-diagnosis.

2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to [MWI-26, "Diagnosis Description"](#).

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-112, "Removal and Installation"](#).

NO >> Replace combination meter. Refer to [MWI-105, "Removal and Installation"](#).

BRAKE WARNING LAMP

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

BRAKE WARNING LAMP

Description

INFOID:000000003707983

×: ON –: OFF

| Condition | Brake warning lamp (Note 1) |
|---------------------------------|-----------------------------|
| Ignition switch OFF | – |
| Ignition switch ON | × (Note 2) |
| EBD function is malfunctioning. | × |

NOTE:

- 1: Brake warning lamp will turn on in case of parking brake operation (when switch is ON) or of brake fluid level switch operation (when brake fluid is insufficient).
- 2: After starting engine, brake warning lamp is turned off.

Component Function Check

INFOID:000000003707984

1. BRAKE WARNING LAMP OPERATION CHECK

Check that the lamp illuminates after the ignition switch is turned ON, and turns OFF after the engine is started.

Is the inspection result normal?

YES >> Inspection End

NO >> Go to diagnosis procedure. Refer to [BRC-81, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000003707985

1. CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis.

Is the inspection result normal?

YES >> GO TO 2

NO >> Check items displayed by self-diagnosis.

2. CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to [MWI-26, "Diagnosis Description"](#).

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-112, "Removal and Installation"](#).

NO >> Replace combination meter. Refer to [MWI-105, "Removal and Installation"](#).

VDC OFF INDICATOR LAMP

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

VDC OFF INDICATOR LAMP

Description

INFOID:000000003707986

×: ON –: OFF

| Condition | VDC OFF indicator lamp |
|--|------------------------|
| Ignition switch OFF | – |
| For 2 seconds after turning ON ignition switch | × |
| 2 seconds later after turning ON ignition switch | – |
| VDC OFF switch turned ON. (VDC function is OFF.) | × |
| VDC/TCS function is malfunctioning. | × |
| ABS function is malfunctioning. | × |
| EBD function is malfunctioning. | × |

Component Function Check

INFOID:000000003707987

1.VDC OFF INDICATOR LAMP OPERATION CHECK 1

Check that the lamp illuminates for approximately 2 seconds after the ignition switch is turned ON.

Is the inspection result normal?

YES >> GO TO 2

NO >> Go to diagnosis procedure. Refer to [BRC-82, "Diagnosis Procedure"](#).

2.VDC OFF INDICATOR LAMP OPERATION CHECK 2

Check that the VDC OFF indicator lamp in the combination meter turns ON/OFF correctly when operating the VDC OFF switch.

Is the inspection result normal?

YES >> Inspection End

NO >> Check VDC OFF switch. Refer to [BRC-78, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000003707988

1.CHECK VDC OFF SWITCH

Check that the VDC OFF indicator lamp in the combination meter turns ON/OFF correctly when operating the VDC OFF switch.

Is the inspection result normal?

YES >> GO TO 2

NO >> Check VDC OFF switch. Refer to [BRC-78, "Diagnosis Procedure"](#).

2.CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to [BRC-23, "CONSULT-III Function \(ABS\)"](#).

Is the inspection result normal?

YES >> GO TO 3

NO >> Check items displayed by self-diagnosis.

3.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to [MWI-26, "Diagnosis Description"](#).

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-112, "Removal and Installation"](#).

NO >> Replace combination meter. Refer to [MWI-105, "Removal and Installation"](#).

SLIP INDICATOR LAMP

< COMPONENT DIAGNOSIS >

[VDC/TCS/ABS]

SLIP INDICATOR LAMP

Description

INFOID:000000003707989

×: ON –: OFF

| Condition | SLIP indicator lamp |
|--|---------------------|
| Ignition switch OFF | – |
| For 2 seconds after turning ON ignition switch | × |
| 2 seconds later after turning ON ignition switch | – |
| VDC/TCS function is malfunctioning. | × |
| ABS function is malfunctioning. | × |
| EBD function is malfunctioning. | × |

Component Function Check

INFOID:000000003707990

1.CHECK SLIP INDICATOR LAMP OPERATION

Check that the lamp illuminates for approximately 2 seconds after the ignition switch is turned ON.

Is the inspection result normal?

YES >> Inspection End

NO >> Go to diagnosis procedure. Refer to [BRC-83. "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000003707991

1.CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to [BRC-23. "CONSULT-III Function \(ABS\)"](#).

Is the inspection result normal?

YES >> GO TO 2

NO >> Check items displayed by self-diagnosis.

2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to [MWI-26. "Diagnosis Description"](#).

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-112. "Removal and Installation"](#).

NO >> Replace combination meter. Refer to [MWI-105. "Removal and Installation"](#).

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS >

[VDC/TCS/ABS]

ECU DIAGNOSIS

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Reference Value

INFOID:000000003707992

VALUES ON THE DIAGNOSIS TOOL

CAUTION:

The display shows the control unit calculation data, so a normal value might be displayed even in the event the output circuit (harness) is open or short-circuited.

CONSULT-III MONITOR ITEM

| Monitor item | Display content | Data monitor | |
|---------------|--|---|-------------------------------------|
| | | Condition | Reference value in normal operation |
| FR LH SENSOR | Wheel speed | 0 [km/h (MPH)] | Vehicle stopped |
| | | Nearly matches the speed meter display (± 10% or less) | Vehicle running (Note 1) |
| FR RH SENSOR | Wheel speed | 0 [km/h (MPH)] | Vehicle stopped |
| | | Nearly matches the speed meter display (± 10% or less) | Vehicle running (Note 1) |
| RR LH SENSOR | Wheel speed | 0 [km/h (MPH)] | Vehicle stopped |
| | | Nearly matches the speed meter display (± 10% or less) | Vehicle running (Note 1) |
| RR RH SENSOR | Wheel speed | 0 [km/h (MPH)] | Vehicle stopped |
| | | Nearly matches the speed meter display (± 10% or less) | Vehicle running (Note 1) |
| STOP LAMP SW | Stop lamp switch signal status | When brake pedal is depressed | ON |
| | | When brake pedal is released | OFF |
| BATTERY VOLT | Battery voltage supplied to the ABS actuator and electric unit (control unit) | Ignition switch ON | 10 – 16 V |
| GEAR | Gear position determined by TCM | 1st gear | 1 |
| | | 2nd gear | 2 |
| | | 3rd gear | 3 |
| | | 4th gear | 4 |
| | | 5th gear | 5 |
| SLCT LVR POSI | A/T selector lever position | P position | P |
| | | R position | R |
| | | N position | N |
| | | D position | D |
| OFF SW | VDC OFF switch ON/OFF | VDC OFF switch ON (When VDC OFF indicator lamp is ON) | ON |
| | | VDC OFF switch OFF (When VDC OFF indicator lamp is OFF) | OFF |
| YAW RATE SEN | Yaw rate detected by yaw rate/side/decel G sensor | When vehicle is stopped | Approx. 0 d/s |
| | | When vehicle turning | -75 to 75 d/s |
| ACCEL POS SIG | Throttle actuator opening/closing is displayed (linked with accelerator pedal) | Accelerator pedal not depressed (ignition switch is ON) | 0 % |
| | | Accelerator pedal depressed (ignition switch is ON) | 0 - 100 % |

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS >

[VDC/TCS/ABS]

| Monitor item | Display content | Data monitor | | |
|---------------|--|--|--|-----|
| | | Condition | Reference value in normal operation | |
| SIDE G-SENSOR | Transverse G detected by side G sensor | Vehicle stopped | Approx. 0 m/s ² | A |
| | | Vehicle turning right | Negative value (m/s ²) | B |
| | | Vehicle turning left | Positive value (m/s ²) | C |
| STR ANGLE SIG | Steering angle detected by steering angle sensor | Straight-ahead | Approx. 0±2.5° | D |
| | | Steering wheel turned | -720 to +720° | D |
| PRESS SENSOR | Brake fluid pressure detected by front pressure sensor | With ignition switch turned ON and brake pedal released | Approx. 0 bar | E |
| | | With ignition switch turned ON and brake pedal depressed | -40 to 300 bar | E |
| ENGINE SPEED | With engine running | With engine stopped | 0 rpm | BRC |
| | | Engine running | Almost in accordance with tachometer display | |
| FLUID LEV SW | Brake fluid level switch signal status | When brake fluid level switch ON | ON | G |
| | | When brake fluid level switch OFF | OFF | G |
| FR RH IN SOL | Operation status of each solenoid valve | Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode) | ON | H |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | OFF | I |
| FR RH OUT SOL | Operation status of each solenoid valve | Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode) | ON | J |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | OFF | K |
| FR LH IN SOL | Operation status of each solenoid valve | Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode) | ON | L |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | OFF | M |
| FR LH OUT SOL | Operation status of each solenoid valve | Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode) | ON | N |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | OFF | O |
| RR RH IN SOL | Operation status of each solenoid valve | Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode) | ON | P |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | OFF | P |

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS >

[VDC/TCS/ABS]

| Monitor item | Display content | Data monitor | |
|-----------------------|---|--|-------------------------------------|
| | | Condition | Reference value in normal operation |
| RR RH OUT SOL | Operation status of each solenoid valve | Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode) | ON |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | OFF |
| RR LH IN SOL | Operation status of each solenoid valve | Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode) | ON |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | OFF |
| RR LH OUT SOL | Operation status of each solenoid valve | Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode) | ON |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | OFF |
| MOTOR RELAY | Motor and motor relay operation | When the motor relay and motor are operating | ON |
| | | When the motor relay and motor are not operating | OFF |
| ACTUATOR RLY | Actuator relay operation | When the actuator relay is operating | ON |
| | | When the actuator relay is not operating | OFF |
| ABS WARN LAMP | ABS warning lamp (Note 3) | When ABS warning lamp is ON | ON |
| | | When ABS warning lamp is OFF | OFF |
| OFF LAMP | VDC OFF indicator lamp (Note 3) | When VDC OFF indicator lamp is ON | ON |
| | | When VDC OFF indicator lamp is OFF | OFF |
| SLIP LAMP | SLIP indicator lamp (Note 3) | When SLIP indicator lamp is ON | ON |
| | | When SLIP indicator lamp is OFF | OFF |
| 4WD FAIL REQ (Note 2) | Transfer control unit fail-safe signal | When transfer control unit is in fail-safe mode | ON |
| | | When transfer control unit is normal | OFF |
| BST OPER SIG | Not applied but displayed | — | OFF |
| EBD SIGNAL | EBD operation | EBD is active | ON |
| | | EBD is inactive | OFF |
| ABS SIGNAL | ABS operation | ABS is active | ON |
| | | ABS is inactive | OFF |
| TCS SIGNAL | TCS operation | TCS is active | ON |
| | | TCS is inactive | OFF |
| VDC SIGNAL | VDC operation | VDC is active | ON |
| | | VDC is inactive | OFF |
| EBD FAIL SIG | EBD fail-safe signal | In EBD fail-safe | ON |
| | | EBD is normal | OFF |
| ABS FAIL SIG | ABS fail-safe signal | In ABS fail-safe | ON |
| | | ABS is normal | OFF |

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS >

[VDC/TCS/ABS]

| Monitor item | Display content | Data monitor | |
|---------------|---|---|-------------------------------------|
| | | Condition | Reference value in normal operation |
| TCS FAIL SIG | TCS fail-safe signal | In TCS fail-safe | ON |
| | | TCS is normal | OFF |
| VDC FAIL SIG | VDC fail-safe signal | In VDC fail-safe | ON |
| | | VDC is normal | OFF |
| CRANKING SIG | Crank operation | Crank is active | ON |
| | | Crank is inactive | OFF |
| CV1 | VDC switch-over valve | When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (when in fail-safe mode) | ON |
| | | When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON) | OFF |
| CV2 | VDC switch-over valve | When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (when in fail-safe mode) | ON |
| | | When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON) | OFF |
| SV1 | VDC switch-over valve | When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (when in fail-safe mode) | ON |
| | | When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON) | OFF |
| SV2 | VDC switch-over valve | When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (when in fail-safe mode) | ON |
| | | When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON) | OFF |
| DECEL G-SEN | Longitudinal acceleration detected by Decel G-Sensor | Vehicle stopped | Approx. 0 G |
| | | Vehicle running | -1.7 to 1.7 G |
| EBD WARN LAMP | EBD warning lamp (Note 3) | When EBD warning lamp is ON | ON |
| | | When EBD warning lamp is OFF | OFF |
| N POSI SIG | PNP switch signal ON/OFF condition | A/T shift position = N position | ON |
| | | A/T shift position = other than N position | OFF |
| P POSI SIG | PNP switch signal ON/OFF condition | A/T shift position = P position | ON |
| | | A/T shift position = other than P position | OFF |
| R POSI SIG | PNP switch signal ON/OFF condition | A/T shift position = R position | ON |
| | | A/T shift position = other than R position | OFF |
| 2WD/4WD | Drive axle | 2WD model | 2WD |
| | | 4WD model | 4WD |
| PRESS SEN2 | Brake fluid pressure detected by rear pressure sensor | With ignition switch turned ON and brake pedal released | Approx. 0 bar |
| | | With ignition switch turned ON and brake pedal depressed | -40 to 300 bar |

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ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS >

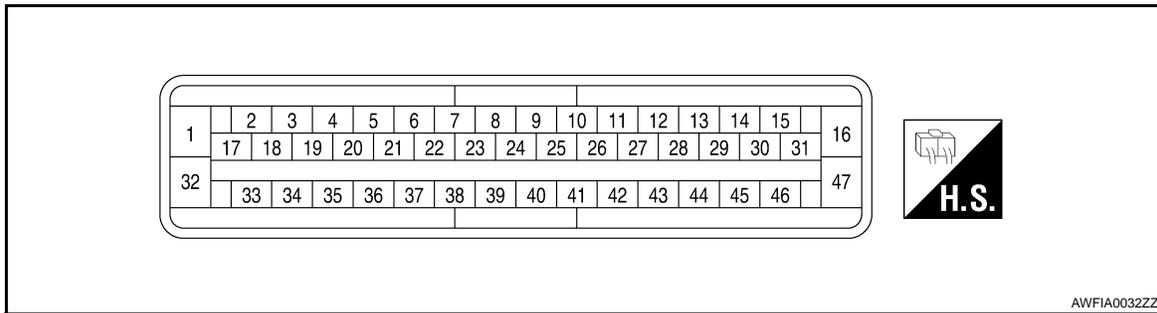
[VDC/TCS/ABS]

| Monitor item | Display content | Data monitor | |
|-------------------|---------------------------------------|-------------------------------|-------------------------------------|
| | | Condition | Reference value in normal operation |
| DELTA S SEN | Value detected by delta stroke sensor | When brake pedal is depressed | 1.05 - 1.80 mm |
| | | When brake pedal is released | 0.00 mm (+0.6/-0.4) |
| RELEASE SWITCH NO | Active booster signal status | When brake pedal is depressed | ON |
| | | When brake pedal is released | OFF |
| RELEASE SWITCH NC | Active booster signal status | When brake pedal is depressed | OFF |
| | | When brake pedal is released | ON |

NOTE:

- 1: Confirm tire pressure is normal.
- 2: Only 4WD models.
- 3: On and off timing for warning lamp and indicator lamp.
- ABS warning lamp: Refer to [BRC-80, "Description"](#).
- Brake warning lamp: Refer to [BRC-81, "Description"](#).
- VDC OFF indicator lamp: Refer to [BRC-82, "Description"](#).
- SLIP indicator lamp: Refer to [BRC-83, "Description"](#).

TERMINAL LAYOUT



ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

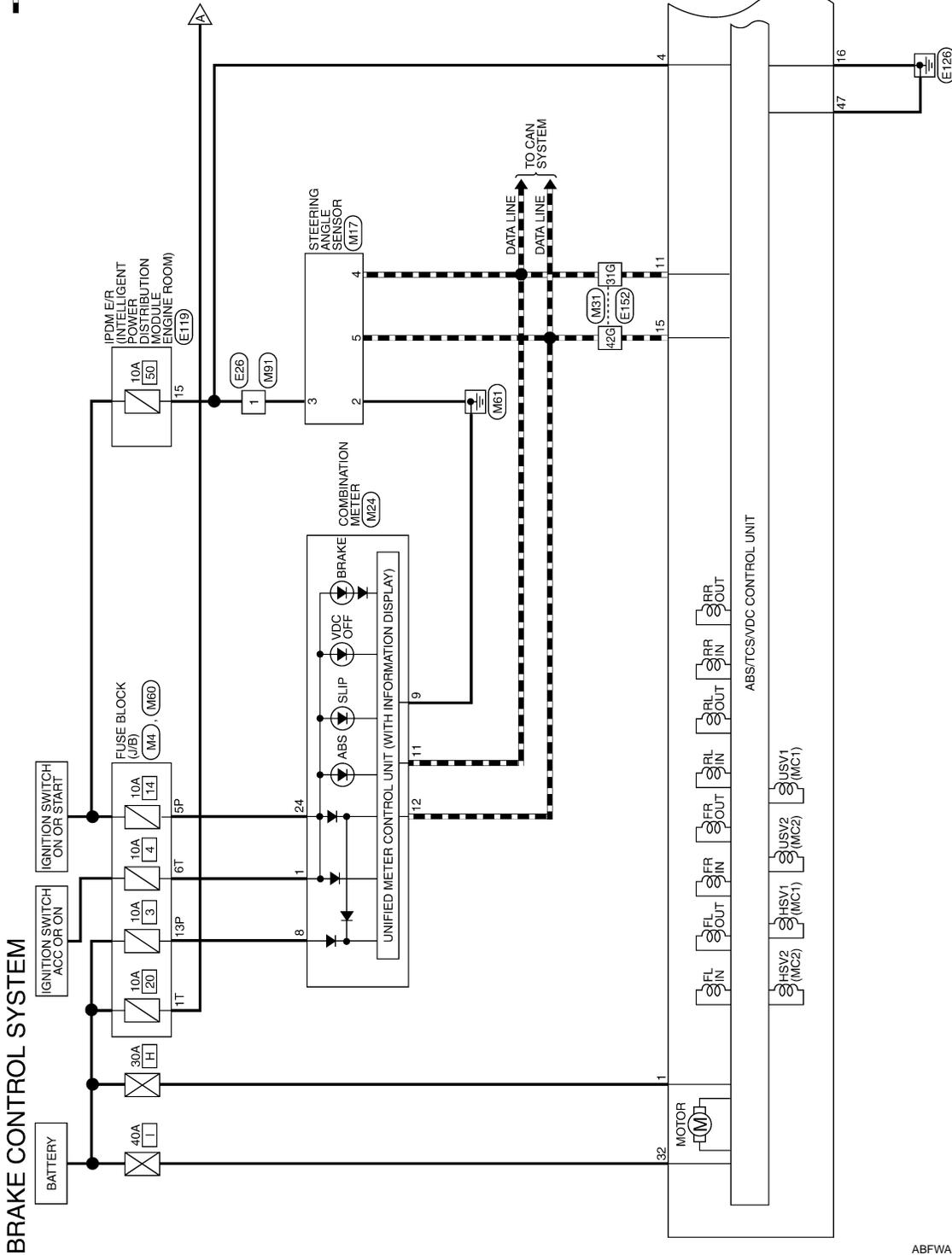
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[VDC/TCS/ABS]

Wiring Diagram

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--- : DATA LINE



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ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

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[VDC/TCS/ABS]

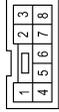
BRAKE CONTROL SYSTEM CONNECTORS

| | |
|-----------------|------------------|
| Connector No. | M4 |
| Connector Name | FUSE BLOCK (J/B) |
| Connector Color | WHITE |



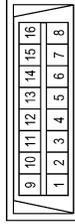
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 5P | O/L | - |
| 13P | P | - |

| | |
|-----------------|-----------------------|
| Connector No. | M17 |
| Connector Name | STEERING ANGLE SENSOR |
| Connector Color | WHITE |



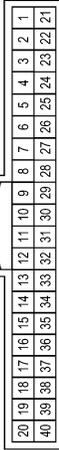
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 2 | B | GND |
| 3 | G/W | POWER |
| 4 | L | CAN-H |
| 5 | P | CAN-L |

| | |
|-----------------|---------------------|
| Connector No. | M22 |
| Connector Name | DATA LINK CONNECTOR |
| Connector Color | WHITE |



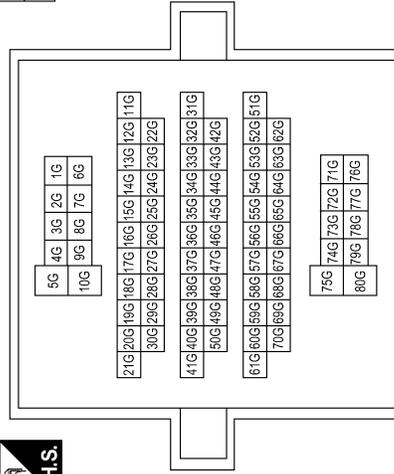
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 7 | G/W | K-LINE |

| | |
|-----------------|-------------------|
| Connector No. | M24 |
| Connector Name | COMBINATION METER |
| Connector Color | WHITE |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------------|
| 1 | O | ACCESSORY |
| 8 | Y/R | BATTERY (TYPE A*) |
| 8 | P | BATTERY (TYPE B*) |
| 9 | B | GND |
| 11 | L | CAN-H |
| 12 | P | CAN-L |
| 24 | O/L | RUN/START |

| | |
|-----------------|--------------|
| Connector No. | M31 |
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 11G | G/W | - |
| 31G | L | - |
| 42G | P | - |
| 46G | R/Y | - |

* : REFER TO HARNESS LAYOUT OF PG SECTION FOR DEFINITION OF TYPE A AND TYPE B.

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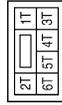
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ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS >

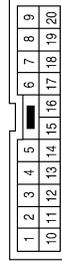
[VDC/TCS/ABS]

| | |
|-----------------|------------------|
| Connector No. | M60 |
| Connector Name | FUSE BLOCK (J/B) |
| Connector Color | WHITE |



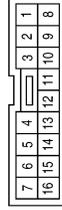
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1T | R/Y | - |
| 6T | O | - |

| | |
|-----------------|--------------|
| Connector No. | M63 |
| Connector Name | WIRE TO WIRE |
| Connector Color | BROWN |



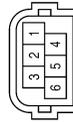
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 3 | R/W | - |
| 16 | B | - |

| | |
|-----------------|--------------|
| Connector No. | M91 |
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1 | GW | - |
| 2 | R/W | - |
| 3 | Y/R | - |
| 4 | G/R | - |
| 5 | GW | - |
| 6 | P | - |

| | |
|-----------------|------------------------------|
| Connector No. | M108 |
| Connector Name | YAW RATE/SIDE/DECEL G SENSOR |
| Connector Color | BLACK |



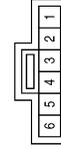
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1 | G/R | CAN-L |
| 2 | G/W | CAN-H |
| 3 | Y/R | CLU_P |
| 5 | P | CLU_GND |

| | |
|-----------------|--------------|
| Connector No. | M251 |
| Connector Name | WIRE TO WIRE |
| Connector Color | BROWN |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 3 | R/W | - |
| 16 | B | - |

| | |
|-----------------|----------------|
| Connector No. | M253 |
| Connector Name | VDC OFF SWITCH |
| Connector Color | GRAY |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1 | R/W | - |
| 2 | B | - |

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ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS >

[VDC/TCS/ABS]

| | |
|-----------------|--------------------------|
| Connector No. | E21 |
| Connector Name | BRAKE FLUID LEVEL SWITCH |
| Connector Color | GRAY |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1 | P/B | - |
| 2 | B | - |

| | |
|-----------------|-----------------------|
| Connector No. | E18 |
| Connector Name | FRONT WHEEL SENSOR LH |
| Connector Color | GRAY |



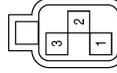
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1 | G/O | - |
| 2 | BR/W | - |

| | |
|-----------------|-----------------|
| Connector No. | E12 |
| Connector Name | STOP LAMP RELAY |
| Connector Color | BLACK |



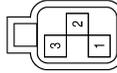
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1 | R/Y | - |
| 2 | L/W | - |
| 3 | R/G | - |
| 4 | R/B | - |
| 5 | - | - |

| | |
|-----------------|----------------------|
| Connector No. | E32 |
| Connector Name | REAR PRESSURE SENSOR |
| Connector Color | GRAY |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1 | R/G | GND |
| 2 | W/O | SIG |
| 3 | W/L | POWER |

| | |
|-----------------|-----------------------|
| Connector No. | E31 |
| Connector Name | FRONT PRESSURE SENSOR |
| Connector Color | GRAY |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1 | SB | GND |
| 2 | R/L | SIG |
| 3 | LG | POWER |

| | |
|-----------------|--------------|
| Connector No. | E26 |
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1 | LG/B | - |
| 2 | R/W | - |
| 3 | Y/R | - |
| 4 | G/R | - |
| 5 | G/W | - |
| 6 | P | - |

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ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS >

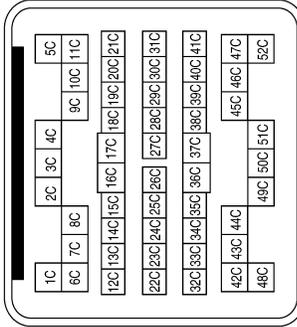
[VDC/TCS/ABS]

| | |
|-----------------|------------------|
| Connector No. | E38 |
| Connector Name | STOP LAMP SWITCH |
| Connector Color | GRAY |



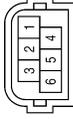
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1 | R/Y | - |
| 2 | R/G | - |

| | |
|-----------------|--------------|
| Connector No. | E41 |
| Connector Name | WIRE TO WIRE |
| Connector Color | GRAY |



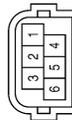
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 12C | L | - |
| 13C | P | - |
| 30C | G/Y | - |
| 31C | V | - |

| | |
|-----------------|----------------|
| Connector No. | E49 |
| Connector Name | ACTIVE BOOSTER |
| Connector Color | BLACK |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1 | L/B | - |
| 2 | LG/R | - |
| 3 | W/R | - |
| 4 | W/G | - |
| 5 | Y/B | - |

| | |
|-----------------|---------------------|
| Connector No. | E114 |
| Connector Name | DELTA STROKE SENSOR |
| Connector Color | BLACK |



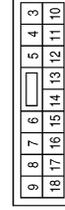
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1 | W/V | DELS_PWR |
| 3 | G/B | DELS_GND |
| 5 | R/Y | DELS_SIG |

| | |
|-----------------|-----------------------|
| Connector No. | E117 |
| Connector Name | FRONT WHEEL SENSOR RH |
| Connector Color | GRAY |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1 | B/R | - |
| 2 | BR | - |

| | |
|-----------------|--|
| Connector No. | E119 |
| Connector Name | IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) |
| Connector Color | WHITE |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|----------------|
| 15 | LG/B | ABS IGN SUPPLY |

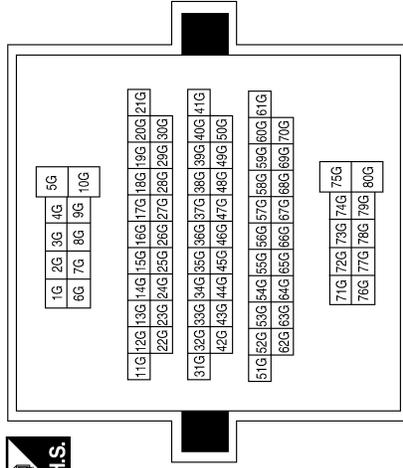
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ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS >

[VDC/TCS/ABS]

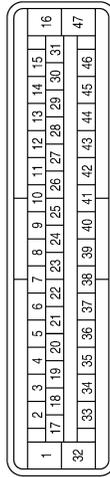
| | |
|-----------------|--------------|
| Connector No. | E152 |
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 11G | G/W | - |
| 31G | L | - |
| 42G | P | - |
| 46G | R/Y | - |

| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|------------------|
| 19 | SB | PS1_GND |
| 20 | R/L | PS1_SIGNAL |
| 21 | R/G | PS2_GND |
| 22 | W/L | PS2_SUPPLY |
| 23 | W/O | PS2_SIGNAL |
| 24 | P | CLUSTER_GND |
| 25 | G/R | CAN2_L |
| 26 | W/V | DEL_S_SUPPLY |
| 27 | L/B | BST_NO |
| 28 | Y/B | BST_SIG |
| 29 | G/W | CAN2_H |
| 30 | LG/R | BST_NC |
| 31 | W/G | BST_GND |
| 32 | B/Y | VALVE_ECU_SUPPLY |
| 33 | BR | WSS_FR_SIG |
| 34 | B/R | WSS_FR_PWR |
| 35 | L/W | BRL_OUT |
| 36 | L | WSS_RL_PWR |
| 37 | P | WSS_RL_SIG |
| 38 | R/W | VDC_OFF_SW |
| 39 | G/B | DEL_S_GND |
| 40 | R/Y | DEL-S_SIGNAL |
| 41 | R/B | BLS |
| 42 | V | WSS_RR_SIG |
| 43 | G/Y | WSS_RR_PWR |
| 44 | - | - |
| 45 | G/O | WSS_FL_PWR |
| 46 | BR/W | WSS_FL_SIG |
| 47 | B | MOTOR_GND |

| | |
|-----------------|---|
| Connector No. | E125 |
| Connector Name | ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) |
| Connector Color | BLACK |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|----------------|
| 1 | Y | MOTOR_SUPPLY |
| 2 | G/W | DIAG_K |
| 3 | - | - |
| 4 | LG/B | IGN |
| 5 | - | - |
| 6 | Y/R | CLUSTER_SUPPLY |
| 7 | - | - |
| 8 | P/B | FLUID_LEVEL_SW |
| 9 | - | - |
| 10 | - | - |
| 11 | L | CAN-H |
| 12 | - | - |
| 13 | - | - |
| 14 | - | - |
| 15 | P | CAN-L |
| 16 | B | VALVE_ECU_GND |
| 17 | W/R | BST_SUPPLY |
| 18 | LG | PS1_SUPPLY |

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ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS >

[VDC/TCS/ABS]

| | |
|-----------------|----------------------|
| Connector No. | C11 |
| Connector Name | REAR WHEEL SENSOR LH |
| Connector Color | BROWN |



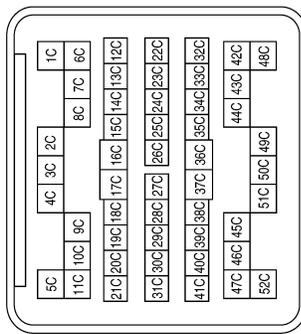
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1 | L | - |
| 2 | P | - |

| | |
|-----------------|----------------------|
| Connector No. | C10 |
| Connector Name | REAR WHEEL SENSOR RH |
| Connector Color | BROWN |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1 | G/Y | - |
| 2 | V | - |

| | |
|-----------------|--------------|
| Connector No. | C1 |
| Connector Name | WIRE TO WIRE |
| Connector Color | GRAY |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 12C | L | - |
| 13C | P | - |
| 30C | G/Y | - |
| 31C | V | - |

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INFOID:000000003707994

Fail-Safe

CAUTION:

If the Fail-Safe function is activated, perform Self Diagnosis for ABS/TCS/VDC system.

ABS/EBD SYSTEM

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS >

[VDC/TCS/ABS]

In case of an electrical malfunction with the ABS, the ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp will turn on. In case of an electrical malfunction with the EBD system, the BRAKE warning lamp, ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp will turn on. The system will revert to one of the following conditions of the Fail-Safe function.

1. For ABS malfunction, only the EBD is operative and the condition of the vehicle is the same condition of vehicles without ABS/TCS/VDC system.
2. For EBD malfunction, the EBD and ABS become inoperative, and the condition of the vehicle is the same as the condition of vehicles without ABS/TCS/VDC or EBD system.

VDC/TCS SYSTEM

In case of TCS/VDC system malfunction, the VDC OFF indicator lamp and SLIP indicator lamp are turned on and the condition of the vehicle is the same as the condition of vehicles without TCS/VDC system. In case of an electrical malfunction with the TCS/VDC system, the ABS control continues to operate normally without TCS/VDC control.

DTC No. Index

INFOID:000000003707995

| DTC | Items (CONSULT screen terms) | Reference |
|-------|------------------------------|---------------------------------------|
| C1101 | RR RH SENSOR-1 | BRC-28, "Description" |
| C1102 | RR LH SENSOR-1 | |
| C1103 | FR RH SENSOR-1 | |
| C1104 | FR LH SENSOR-1 | |
| C1105 | RR RH SENSOR-2 | BRC-31, "Description" |
| C1106 | RR LH SENSOR-2 | |
| C1107 | FR RH SENSOR-2 | |
| C1108 | FR LH SENSOR-2 | |
| C1109 | BATTERY VOLTAGE [ABNORMAL] | BRC-34, "Description" |
| C1110 | CONTROLLER FAILURE | BRC-36, "DTC Logic" |
| C1111 | PUMP MOTOR | BRC-37, "Description" |
| C1113 | G-SENSOR | BRC-39, "Description" |
| C1115 | ABS SENSOR [ABNORMAL SIGNAL] | BRC-42, "Description" |
| C1116 | STOP LAMP SW | BRC-45, "Description" |
| C1120 | FR LH IN ABS SOL | BRC-47, "Description" |
| C1121 | FR LH OUT ABS SOL | BRC-50, "Description" |
| C1122 | FR RH IN ABS SOL | BRC-47, "Description" |
| C1123 | FR RH OUT ABS SOL | BRC-50, "Description" |
| C1124 | RR LH IN ABS SOL | BRC-47, "Description" |
| C1125 | RR LH OUT ABS SOL | BRC-50, "Description" |
| C1126 | RR RH IN ABS SOL | BRC-47, "Description" |
| C1127 | RR RH OUT ABS SOL | BRC-50, "Description" |
| C1130 | ENGINE SIGNAL 1 | BRC-53, "Description" |
| C1131 | ENGINE SIGNAL 2 | |
| C1132 | ENGINE SIGNAL 3 | |
| C1133 | ENGINE SIGNAL 4 | |
| C1136 | ENGINE SIGNAL 6 | |
| C1140 | ACTUATOR RLY | BRC-55, "Description" |
| C1142 | PRESS SEN CIRCUIT | BRC-57, "Description" |
| C1143 | ST ANG SEN CIRCUIT | BRC-60, "Description" |
| C1144 | ST ANG SEN SIGNAL | |

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS >

[VDC/TCS/ABS]

| DTC | Items (CONSULT screen terms) | Reference |
|-------|--------------------------------|---------------------------------------|
| C1145 | YAW RATE SENSOR | BRC-39, "Description" |
| C1146 | SIDE G-SEN CIRCUIT | |
| C1155 | BR FLUID LEVEL LOW | BRC-63, "Description" |
| C1156 | ST ANG SEN COM CIR | BRC-66, "Description" |
| C1160 | DECEL G SEN SET | BRC-67, "Description" |
| C1163 | ST ANGL SEN SAFE | BRC-68, "Description" |
| C1164 | CV1 | BRC-69, "Description" |
| C1165 | CV2 | |
| C1166 | SV1 | |
| C1167 | SV2 | |
| C1170 | VARIANT CODING | BRC-36, "DTC Logic" |
| C1178 | ABS ACTIVE BOOSTER SV NG | BRC-72, "Description" |
| C1179 | ABS DELTA S SEN NG | BRC-75, "Description" |
| C1181 | ABS ACTIVE BOOSTER RESPONSE NG | BRC-72, "Description" |
| C1184 | ABS BRAKE RELEASE SW NG | |
| C1189 | ABS BRAKE BOOSTER DEFECT | |
| U1000 | CAN COMM CIRCUIT | BRC-77, "Description" |

SYMPTOM DIAGNOSIS

VDC/TCS/ABS

Symptom Table

INFOID:000000003707996

If ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp turn ON, perform self-diagnosis.

| Symptom | Check item | Reference |
|--|--|--|
| Excessive ABS function operation frequency | Brake force distribution | BRC-100. "Diagnosis Procedure" |
| | Looseness of front and rear axle | |
| | Wheel sensor and rotor system | |
| Unexpected pedal reaction | Brake pedal stroke | BRC-101. "Diagnosis Procedure" |
| | Make sure the braking force is sufficient when the ABS is not operating. | |
| The braking distance is long | Check stopping distance when the ABS is not operating. | BRC-102. "Diagnosis Procedure" |
| ABS function does not operate (Note 1) | ABS actuator and electric unit (control unit) | BRC-103. "Diagnosis Procedure" |
| Pedal vibration or ABS operation sound occurs (Note 2) | Brake pedal | BRC-104. "Diagnosis Procedure" |
| | ABS actuator and electric unit (control unit) | |
| Vehicle jerks during VDC/TCS/ABS control | ABS actuator and electric unit (control unit) | BRC-105. "Diagnosis Procedure" |
| | TCM | |
| | ECM | |

NOTE:

- 1: The ABS does not operate when the speed is 10 km/h (6 MPH) or less.
- 2: Under the following conditions, ABS is activated and vibration is felt when brake pedal is lightly depressed. However, this is normal.
 - When shifting gears
 - When driving on slippery road
 - During cornering at high speed
 - When passing over bumps or grooves [at approximately 50 mm (1.97 in) or more]
 - When pulling away just after starting engine [at approximately 10 km/h (6 MPH) or higher]

EXCESSIVE ABS FUNCTION OPERATION FREQUENCY

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

EXCESSIVE ABS FUNCTION OPERATION FREQUENCY

Diagnosis Procedure

INFOID:000000003707997

1.CHECK START

Check front and rear brake force distribution using a brake tester.

Is the inspection result normal?

YES >> GO TO 2

NO >> Check brake system.

2.CHECK FRONT AND REAR AXLE

Make sure that there is no excessive play in the front and rear axles. Refer to front: [FAX-5. "On-Vehicle Inspection and Service"](#), Rear: [RAX-5. "On-Vehicle Inspection and Service"](#).

Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

3.CHECK WHEEL SENSOR AND SENSOR ROTOR

Check the following.

- Wheel sensor installation for damage.
- Sensor rotor installation for damage.
- Wheel sensor connector connection.
- Wheel sensor harness inspection.

Is the inspection result normal?

YES >> GO TO 4

NO >> • Replace wheel sensor or sensor rotor. Refer to [BRC-110. "Removal and Installation"](#).
• Repair harness.

4.CHECK ABS WARNING LAMP DISPLAY

Make sure that the ABS warning lamp is turned off after the ignition switch is turned ON or when driving.

Is the ABS warning lamp illuminated?

YES >> Perform self-diagnosis. Refer to [BRC-23. "CONSULT-III Function \(ABS\)"](#).

NO >> Normal

UNEXPECTED PEDAL REACTION

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

UNEXPECTED PEDAL REACTION

Diagnosis Procedure

INFOID:000000003707998

1.CHECK BRAKE PEDAL STROKE

Check brake pedal stroke. Refer to [BR-14, "Inspection and Adjustment"](#).

Is the stroke too large?

- YES >> • Bleed air from brake tube and hose. Refer to [BR-16, "Bleeding Brake System"](#).
• Check brake pedal, brake booster, and master cylinder for mount play, looseness, brake system fluid leakage, etc. Refer to [BR-14, "Inspection and Adjustment"](#) (brake pedal), [BR-11, "On Board Inspection"](#) (master cylinder), [BR-9, "Inspection"](#) (brake booster).

NO >> GO TO 2

2.CHECK FUNCTION

Disconnect ABS actuator and electric unit (control unit) connector to deactivate ABS. Check if braking force is normal in this condition. Connect connector after inspection.

Is the inspection result normal?

- YES >> Normal
NO >> Check brake system.

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THE BRAKING DISTANCE IS LONG

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

THE BRAKING DISTANCE IS LONG

Diagnosis Procedure

INFOID:000000003707999

CAUTION:

The stopping distance on slippery road surfaces might be longer with the ABS operating than when the ABS is not operating.

1.CHECK FUNCTION

Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector to deactivate ABS. In this condition, check stopping distance. After inspection, connect connector.

Is the inspection result normal?

YES >> Normal

NO >> Check brake system.

ABS FUNCTION DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

ABS FUNCTION DOES NOT OPERATE

Diagnosis Procedure

INFOID:000000003708000

CAUTION:

ABS does not operate when speed is 10 km/h (6 MPH) or lower.

1.CHECK ABS WARNING LAMP DISPLAY

Make sure that the ABS warning lamp turns OFF after ignition switch is turned ON or when driving.

Is the inspection result normal?

YES >> Normal

NO >> Perform self-diagnosis. Refer to [BRC-23, "CONSULT-III Function \(ABS\)"](#).

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PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

Diagnosis Procedure

INFOID:000000003708001

CAUTION:

Under the following conditions, ABS is activated and vibration is felt when brake pedal is lightly depressed. However, this is normal.

- When shifting gears
- When driving on slippery road
- During cornering at high speed
- When passing over bumps or grooves [at approximately 50 mm (1.97 in) or more]
- When pulling away just after starting engine [at approximately 10 km/h (6 MPH) or higher]

1. SYMPTOM CHECK 1

Check that there are pedal vibrations when the engine is started.

Do vibrations occur?

- YES >> GO TO 2
- NO >> Inspect the brake pedal.

2. SYMPTOM CHECK 2

Check that there are ABS operation noises when the engine is started.

Do the operation noises occur?

- YES >> GO TO 3
- NO >> Perform self -diagnosis. Refer to [BRC-23. "CONSULT-III Function \(ABS\)"](#).

3. SYMPTOM CHECK 3

Check symptoms when electrical component (headlamps, etc.) switches are operated.

Do symptoms occur?

- YES >> Check if there is a radio, antenna, antenna lead wire, or wiring close to the control unit. If there is, move it farther away.
- NO >> Normal

VEHICLE JERKS DURING VDC/TCS/ABS CONTROL

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

VEHICLE JERKS DURING VDC/TCS/ABS CONTROL

Diagnosis Procedure

INFOID:000000003708002

1. SYMPTOM CHECK

Check if the vehicle jerks during VDC/TCS/ABS control.

Is the inspection result normal?

- YES >> Normal.
- NO >> GO TO 2

2. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis of ABS actuator and electric unit (control unit). Refer to [BRC-23, "CONSULT-III Function \(ABS\)"](#).

Are self-diagnosis results indicated?

- YES >> Check corresponding items, make repairs, and perform ABS actuator and electric unit (control unit) self-diagnosis.
- NO >> GO TO 3

3. CHECK CONNECTOR

- Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector and check terminal for deformation, disconnection, looseness, etc.
- Securely connect connectors and perform ABS actuator and electric unit (control unit) self-diagnosis.

Are self-diagnosis results indicated?

- YES >> If poor contact, damage, open or short circuit of connector terminal is found, repair or replace.
- NO >> GO TO 4

4. CHECK ECM AND TCM SELF-DIAGNOSIS RESULTS

Perform ECM and TCM self-diagnosis.

Are self-diagnosis results indicated?

- YES >> Check the corresponding items.
 - ECM: Refer to [EC-69, "CONSULT-III Function \(ENGINE\)"](#).
 - TCM: Refer to [TM-33, "CONSULT-III Function \(TRANSMISSION\)"](#).
- NO >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-112, "Removal and Installation"](#).

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NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

NORMAL OPERATING CONDITION

Description

INFOID:000000003708003

| Symptom | Result |
|--|---|
| Slight vibrations are felt on the brake pedal and the operation noises occur, when VDC, TCS or ABS is activated. | This is a normal condition due to the VDC, TCS or ABS activation. |
| Stopping distance is longer than that of vehicles without ABS when the vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads. | |
| The brake pedal moves and generates noises, when TCS or VDC is activated due to rapid acceleration or sharp turn. | |
| The brake pedal vibrates and motor operation noises occur from the engine room, after the engine starts and just after the vehicle starts. | This is normal, and it is caused by the ABS operation check. |
| Depending on the road conditions, the driver may experience a sluggish feel. | This is normal, because TCS places the highest priority on the optimum traction (stability). |
| TCS may activate momentarily if wheel speed changes when driving over location where friction coefficient varies, when downshifting, or when fully depressing accelerator pedal. | |
| The ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp may turn ON when the vehicle is subject to strong shaking or large vibration, such as when the vehicle is rotating on a turntable or located on a ship while the engine is running. | In this case, restart the engine on a normal road. If the normal condition is restored, there is no malfunction. At that time, erase the self-diagnosis memory. |
| VDC may not operate normally or the ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp may illuminate, when running on a special road that is extremely slanted (e.g. bank in a circuit course). | |
| A malfunction may occur in the yaw rate/side/decel G sensor system, when the vehicle turns sharply, such as during a spin turn, axle turn, or drift driving, while the VDC function is off (VDC OFF indicator lamp illuminated). | |
| The vehicle speed will not increase even though the accelerator pedal is depressed, when inspecting the speedometer on a 2-wheel chassis dynamometer. | Normal (Deactivate the VDC/TCS function before performing an inspection on a chassis dynamometer.) |
| VDC OFF indicator lamp and SLIP indicator lamp may simultaneously turn on when low tire pressure warning lamp turns on. | This is not a VDC system error but results from characteristic change of tire. |

PRECAUTION

PRECAUTIONS

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

INFOID:000000003708004

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 SR and SB section of this Service Manual.

WARNING:

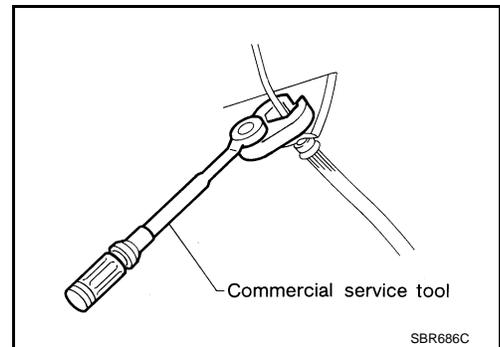
- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation 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 SR section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

Precaution for Brake System

INFOID:000000003708005

CAUTION:

- Always use recommended brake fluid. Refer to [MA-10, "Fluids and Lubricants"](#).
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted areas; it may cause paint damage. If brake fluid is splashed on painted areas, wash it away with water immediately.
- To clean or wash all parts of master cylinder and disc brake caliper, use clean brake fluid.
- Never use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use flare nut wrench when removing and installing brake tube.
- If a brake fluid leak is found, the part must be disassembled without fail. Then it has to be replaced with a new one if a defect exists.
- Turn the ignition switch OFF and remove the connector of the ABS actuator and electric unit (control unit) or the battery terminal before performing the work.
- Always torque brake lines when installing.
- Burnish the brake contact surfaces after refinishing or replacing rotors, after replacing pads, or if a soft pedal occurs at very low mileage.



Refer to [BR-29, "Brake Burnishing Procedure"](#) (front disc brake) or [BR-34, "Brake Burnishing Procedure"](#) (rear disc brake).

WARNING:

- Clean brake pads and shoes with a waste cloth, then wipe with a dust collector.

Precaution for Brake Control

INFOID:000000003708006

- During ABS operation, the brake pedal may vibrate lightly and a mechanical noise may be heard. This is normal.
- Just after starting vehicle, the brake pedal may vibrate or a motor operating noise may be heard from engine compartment. This is a normal status of operation check.
- Stopping distance may be longer than that of vehicles without ABS when vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.

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PRECAUTIONS

[VDC/TCS/ABS]

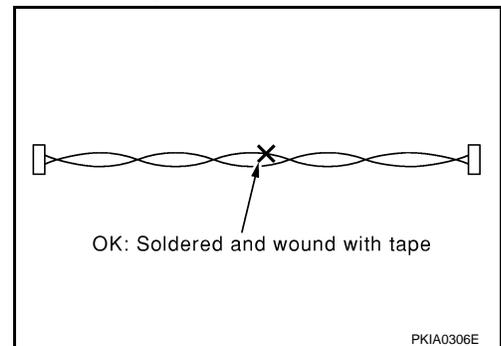
< PRECAUTION >

- When an error is indicated by ABS or another warning lamp, collect all necessary information from customer (what symptoms are present under what conditions) and check for simple causes before starting diagnosis. Besides electrical system inspection, check booster operation, brake fluid level, and fluid leaks.
- If incorrect tire sizes or types are installed on the vehicle or brake pads are not Genuine NISSAN parts, stopping distance or steering stability may deteriorate.
- If there is a radio, antenna or related wiring near control module, ABS function may have a malfunction or error.
- If aftermarket parts (car stereo, CD player, etc.) have been installed, check for incidents such as harness pinches, open circuits or improper wiring.
- If the following components are replaced with non-genuine components or modified, the VDC OFF indicator lamp and SLIP indicator lamp may turn on or the VDC system may not operate properly. Components related to suspension (shock absorbers, struts, springs, bushings, etc.), tires, wheels (exclude specified size), components related to brake system (pads, rotors, calipers, etc.), components related to engine (muffler, ECM, etc.), components related to body reinforcement (roll bar, tower bar, etc.).
- Driving with broken or excessively worn suspension components, tires or brake system components may cause the VDC OFF indicator lamp and the SLIP indicator lamp to turn on, and the VDC system may not operate properly.
- When the TCS or VDC is activated by sudden acceleration or sudden turn, some noise may occur. The noise is a result of the normal operation of the TCS and VDC.
- When driving on roads which have extreme slopes (such as mountainous roads) or high banks (such as sharp curves on a freeway), the VDC may not operate normally, or the VDC warning lamp and the SLIP indicator lamp may turn on. This is not a problem if normal operation can be resumed after restarting the engine.
- Sudden turns (such as spin turns, acceleration turns), drifting, etc. with VDC turned off may cause the yaw rate/side/decel G sensor to indicate a problem. This is not a problem if normal operation can be resumed after restarting the engine.

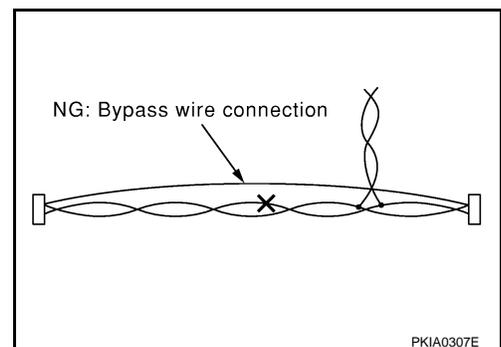
Precaution for CAN System

INFOID:000000003708007

- Do not apply voltage of 7.0V or higher to terminal to be measured.
- Maximum open terminal voltage of tester in use must be less than 7.0V.
- Before checking harnesses, turn ignition switch OFF and disconnect battery negative cable.
- Area to be repaired must be soldered and wrapped with tape. Make sure that fraying of twisted wire is within 110 mm (4.33 in).



- Do not make a bypass connection to repaired area. (If the circuit is bypassed, characteristics of twisted wire will be lost.)



PREPARATION

< PREPARATION >

[VDC/TCS/ABS]

PREPARATION

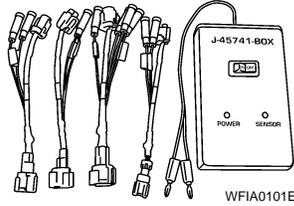
PREPARATION

Special Service Tool

INFOID:000000003708008

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

| Tool number (Kent-Moore No.) Tool name | Description |
|---|--|
| KV991J0080 (J-45741) ABS active wheel sensor tester | Checking operation of ABS active wheel sensors |

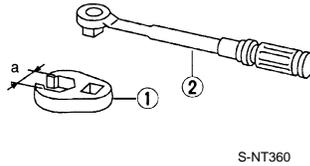


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Commercial Service Tool

INFOID:000000003708009

| Tool name | Description |
|---|--|
| 1. Flare nut crowfoot 2. Torque wrench | Removing and installing brake piping a: 10 mm (0.39 in)/12 mm (0.47 in) |



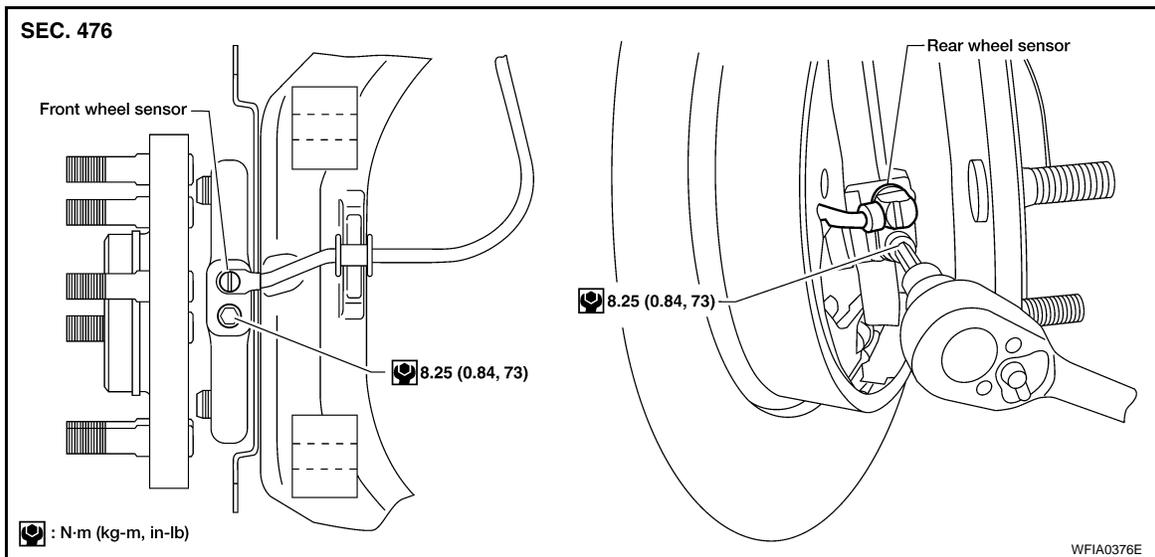
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REMOVAL AND INSTALLATION

WHEEL SENSORS

Removal and Installation

INFOID:000000003708010



REMOVAL

1. Remove wheel sensor bolt.
 - When removing the front wheel sensor, first remove the disc rotor to gain access to the front wheel sensor bolt. Refer to [BR-35. "Removal and Installation of Brake Caliper and Disc Rotor"](#).
 - When removing the rear wheel sensor, first remove the rear hub and bearing assembly to gain access to the rear wheel sensor bolt. Refer to [RAX-7. "Removal and Installation"](#).
2. Pull out the sensor, being careful to turn it as little as possible.

CAUTION:

 - **Do not pull on the sensor harness.**
3. Disconnect wheel sensor harness electrical connector, then remove harness from attaching points.

INSTALLATION

Installation is in the reverse order of removal. Tighten wheel sensor bolt to specification.

CAUTION:

- **Inspect wheel sensor O-ring, replace sensor assembly if damaged.**
- **Before installing wheel sensor, make sure no foreign materials (such as iron fragments) are adhered to the pick-up part of the sensor, to the inside of the sensor hole or on the rotor mating surface.**
- **Apply a coat of suitable grease to the wheel sensor O-ring and hole. Refer to [GI-15. "Recommended Chemical Products and Sealants"](#).**

SENSOR ROTOR

< REMOVAL AND INSTALLATION >

[VDC/TCS/ABS]

SENSOR ROTOR

Removal and Installation

INFOID:000000003708011

NOTE:

The wheel sensor rotors are built into the wheel hubs and are not removable. If damaged, replace wheel hub and bearing assembly. Refer to [FAX-6, "Removal and Installation"](#) (front), [RAX-7, "Removal and Installation"](#) (rear).

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ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

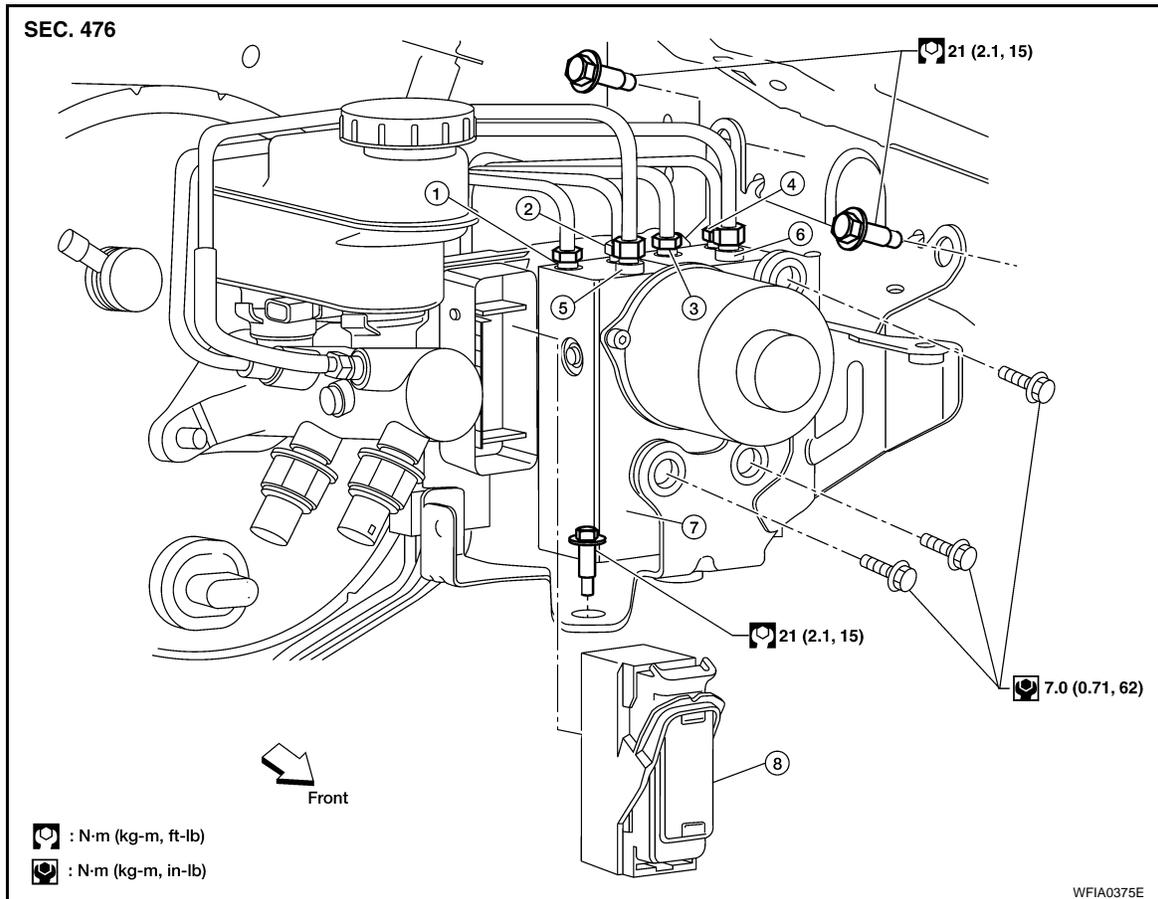
< REMOVAL AND INSTALLATION >

[VDC/TCS/ABS]

ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

Removal and Installation

INFOID:000000004095783



- | | | |
|--|---|---|
| 1. To rear left caliper 13 N·m (1.3 kg-m, 10 ft-lb) | 2. To rear right caliper 13 N·m (1.3 kg-m, 10 ft-lb) | 3. To front left caliper 13 N·m (1.3 kg-m, 10 ft-lb) |
| 4. To front right caliper 13 N·m (1.3 kg-m, 10 ft-lb) | 5. From the master cylinder secondary side 18.2 N·m (1.9 kg-m, 13 ft-lb) | 6. From the master cylinder primary side 18.2 N·m (1.9 kg-m, 13 ft-lb) |
| 7. ABS actuator and electric unit (control unit) | 8. Actuator harness connector | |

REMOVAL

1. Disconnect the battery negative terminal.
2. Remove the cowl top extension. Refer to [EXT-17, "Removal and Installation"](#).
3. Drain the brake fluid. Refer to [BR-16, "Drain and Refill"](#).
4. Disconnect the actuator harness connector from the ABS actuator and electric unit (control unit).

CAUTION:

- To remove the brake tubes, use a flare nut wrench to prevent the flare nuts and brake tubes from being damaged.
- Be careful not to splash brake fluid on painted areas; it may cause paint damage. If brake fluid is splashed on painted areas, wash it away with water immediately.

5. Disconnect the brake tubes.
6. Remove the three bolts and remove the ABS actuator and electric unit (control unit).

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- To install, use a flare nut crowfoot and torque wrench (commercial service tools).

ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

< REMOVAL AND INSTALLATION >

[VDC/TCS/ABS]

- Always tighten brake tubes to specification when installing.
- Never reuse drained brake fluid.
- After installation of the ABS actuator and electric unit (control unit), perform the following.
- Refill brake system with new brake fluid. Then bleed the air from the system. Refer to [BR-16, "Bleeding Brake System"](#).
- Adjust the steering angle sensor. Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).
- Calibrate the decel G sensor. Refer to [BRC-9, "CALIBRATION OF DECEL G SENSOR : Special Repair Requirement"](#).

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STEERING ANGLE SENSOR

[VDC/TCS/ABS]

< REMOVAL AND INSTALLATION >

STEERING ANGLE SENSOR

Removal and Installation

INFOID:000000003708013

REMOVAL

1. Remove spiral cable. Refer to [SR-6, "Removal and Installation"](#).
2. Remove the screws and remove the steering angle sensor.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

After installation of the spiral cable, adjust steering angle sensor. Refer to [BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

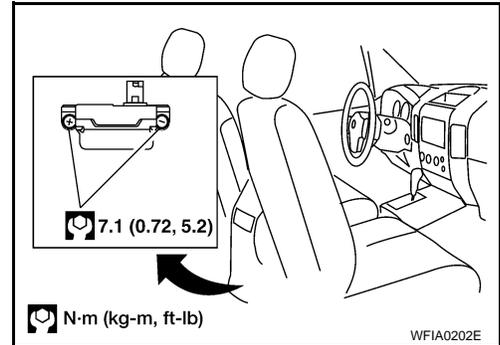
G SENSOR

Removal and Installation

INFOID:000000003708014

REMOVAL

1. Remove center console. Refer to [IP-19. "Removal and Installation"](#).
2. Remove yaw rate/side/decel G sensor attaching nuts.
 - CAUTION:**
 - Do not use power tools to remove or install yaw rate/side/decel G sensor.
 - Do not drop or strike the yaw rate/side/decel G sensor.
3. Disconnect harness connector and remove the yaw rate/side/decel G sensor.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Do not drop or strike the yaw rate/side/decel G sensor.
- After installation, calibrate the yaw rate/side/decel G sensor. Refer to [BRC-9. "CALIBRATION OF DECEL G SENSOR : Special Repair Requirement"](#).

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