

SECTION **BRC**

BRAKE CONTROL SYSTEM

A
B
C
D
E

CONTENTS

VDC/TCS/ABS		
BASIC INSPECTION	4	
DIAGNOSIS AND REPAIR WORKFLOW	4	
Work Flow	4	
Diagnostic Work Sheet	5	
INSPECTION AND ADJUSTMENT	6	
ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT	6	
ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Description	6	
ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement	6	
ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION	6	
ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description	6	
ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement	6	
SYSTEM DESCRIPTION	8	
VDC	8	
System Diagram	8	
Hydraulic Circuit Diagram	9	
System Description	9	
Component Parts Location	10	
Component Description	11	
TCS	12	
System Diagram	12	
System Description	12	
Component Parts Location	13	
Component Description	14	
ABS	15	
System Diagram	15	
System Description	15	
Component Parts Location	16	
Component Description	17	
EBD	18	
System Diagram	18	
System Description	18	
Component Parts Location	19	
Component Description	20	
DIAGNOSIS SYSTEM [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]	21	
CONSULT Function (ABS)	21	
DTC/CIRCUIT DIAGNOSIS	26	
C1101, C1102, C1103, C1104 WHEEL SENSOR	26	
DTC Logic	26	
Diagnosis Procedure	26	
C1105, C1106, C1107, C1108 WHEEL SENSOR	30	
DTC Logic	30	
Diagnosis Procedure	30	
C1109 BATTERY VOLTAGE [ABNORMAL] ...	32	
Description	32	
DTC Logic	32	
Diagnosis Procedure	32	
Special Repair Requirement	33	
C1110, C1153, C1170 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)	34	
DTC Logic	34	
Diagnosis Procedure	34	
Special Repair Requirement	34	
C1111 PUMP MOTOR	35	
Description	35	
DTC Logic	35	
Diagnosis Procedure	35	

BRC

G
H
I
J
K
L
M
N
O
P

Component Inspection	36	Diagnosis Procedure	56
Special Repair Requirement	36	Component Inspection	58
C1114 MAIN RELAY	37	Special Repair Requirement	58
Description	37	C1147, C1148, C1149, C1150 USV/HSV LINE..	59
DTC Logic	37	Description	59
Diagnosis Procedure	37	DTC Logic	59
Component Inspection	38	Diagnosis Procedure	59
Special Repair Requirement	38	Component Inspection	60
C1115 ABS SENSOR [ABNORMAL SIGNAL]..	39	Special Repair Requirement	61
Description	39	C1154 PNP SWITCH	62
DTC Logic	39	Description	62
Diagnosis Procedure	39	DTC Logic	62
Component Inspection	40	Diagnosis Procedure	62
Special Repair Requirement	41	Special Repair Requirement	62
C1116 STOP LAMP SW	42	C1155 BR FLUID LEVEL LOW	64
Description	42	Description	64
DTC Logic	42	DTC Logic	64
Diagnosis Procedure	42	Diagnosis Procedure	64
Special Repair Requirement	43	Component Inspection	65
C1120, C1122, C1124, C1126 IN ABS SOL	44	C1156 ST ANG SEN COM CIR	66
Description	44	Description	66
DTC Logic	44	DTC Logic	66
Diagnosis Procedure	44	Diagnosis Procedure	66
Component Inspection	45	U1000 CAN COMM CIRCUIT	67
Special Repair Requirement	46	Description	67
C1121, C1123, C1125, C1127 OUT ABS SOL..	47	DTC Logic	67
Description	47	Diagnosis Procedure	67
DTC Logic	47	PARKING BRAKE SWITCH	68
Diagnosis Procedure	47	Description	68
Component Inspection	48	Component Function Check	68
Special Repair Requirement	49	Diagnosis Procedure	68
C1130, C1131, C1132, C1133, C1136 EN- GINE SIGNAL	50	Component Inspection	69
Description	50	VDC OFF SWITCH	70
DTC Logic	50	Description	70
Diagnosis Procedure	50	Component Function Check	70
C1142 PRESS SEN CIRCUIT	51	Diagnosis Procedure	70
Description	51	Component Inspection	71
DTC Logic	51	ABS WARNING LAMP	72
Diagnosis Procedure	51	Description	72
Component Inspection	52	Component Function Check	72
Special Repair Requirement	52	Diagnosis Procedure	72
C1143, C1144 STEERING ANGLE SENSOR ...	54	Special Repair Requirement	72
Description	54	BRAKE WARNING LAMP	73
DTC Logic	54	Description	73
Diagnosis Procedure	54	Component Function Check	73
Component Inspection	55	Diagnosis Procedure	73
Special Repair Requirement	55	Special Repair Requirement	74
C1145, C1146 YAW RATE/SIDE/DECEL G SENSOR	56	VDC OFF INDICATOR LAMP	75
Description	56	Description	75
DTC Logic	56	Component Function Check	75
		Diagnosis Procedure	75

Special Repair Requirement	76	Diagnosis Procedure	97	
SLIP INDICATOR LAMP	77	NORMAL OPERATING CONDITION	98	A
Description	77	Description	98	
Component Function Check	77	PRECAUTION	99	B
Diagnosis Procedure	77	PRECAUTIONS	99	
Special Repair Requirement	77	Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"	99	C
ECU DIAGNOSIS INFORMATION	78	Precaution for Brake System	99	
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)	78	Precaution for Brake Control	100	D
Reference Value	78	PREPARATION	101	
Fail-Safe	81	Special Service Tool	101	E
DTC No. Index	82	Commercial Service Tool	101	
WIRING DIAGRAM	83	PREPARATION	101	
BRAKE CONTROL SYSTEM	83	Special Service Tool	101	
Wiring Diagram	83	Commercial Service Tool	101	BRC
SYMPTOM DIAGNOSIS	91	REMOVAL AND INSTALLATION	102	
VDC/TCS/ABS	91	WHEEL SENSORS	102	G
Symptom Table	91	Exploded View - Front Wheel Sensor	102	
EXCESSIVE ABS FUNCTION OPERATION FREQUENCY	92	Removal and Installation - Front Wheel Sensor	102	
Diagnosis Procedure	92	Exploded View - Rear Wheel Sensor	103	H
UNEXPECTED PEDAL REACTION	93	Removal and Installation - Rear Wheel Sensor	103	
Diagnosis Procedure	93	SENSOR ROTOR	105	I
THE BRAKING DISTANCE IS LONG	94	Removal and Installation - Front Sensor Rotor	105	
Diagnosis Procedure	94	Removal and Installation - Rear Sensor Rotor	105	
ABS FUNCTION DOES NOT OPERATE	95	ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)	106	J
Diagnosis Procedure	95	Exploded View	106	
PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS	96	Removal and Installation	106	K
Diagnosis Procedure	96	YAW RATE/SIDE/DECEL G SENSOR	108	
VEHICLE JERKS DURING VDC/TCS/ABS CONTROL	97	Exploded View	108	L
		Removal and Installation	108	
		STEERING ANGLE SENSOR	109	M
		Exploded View	109	
		Removal and Installation	109	N
				O
				P

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

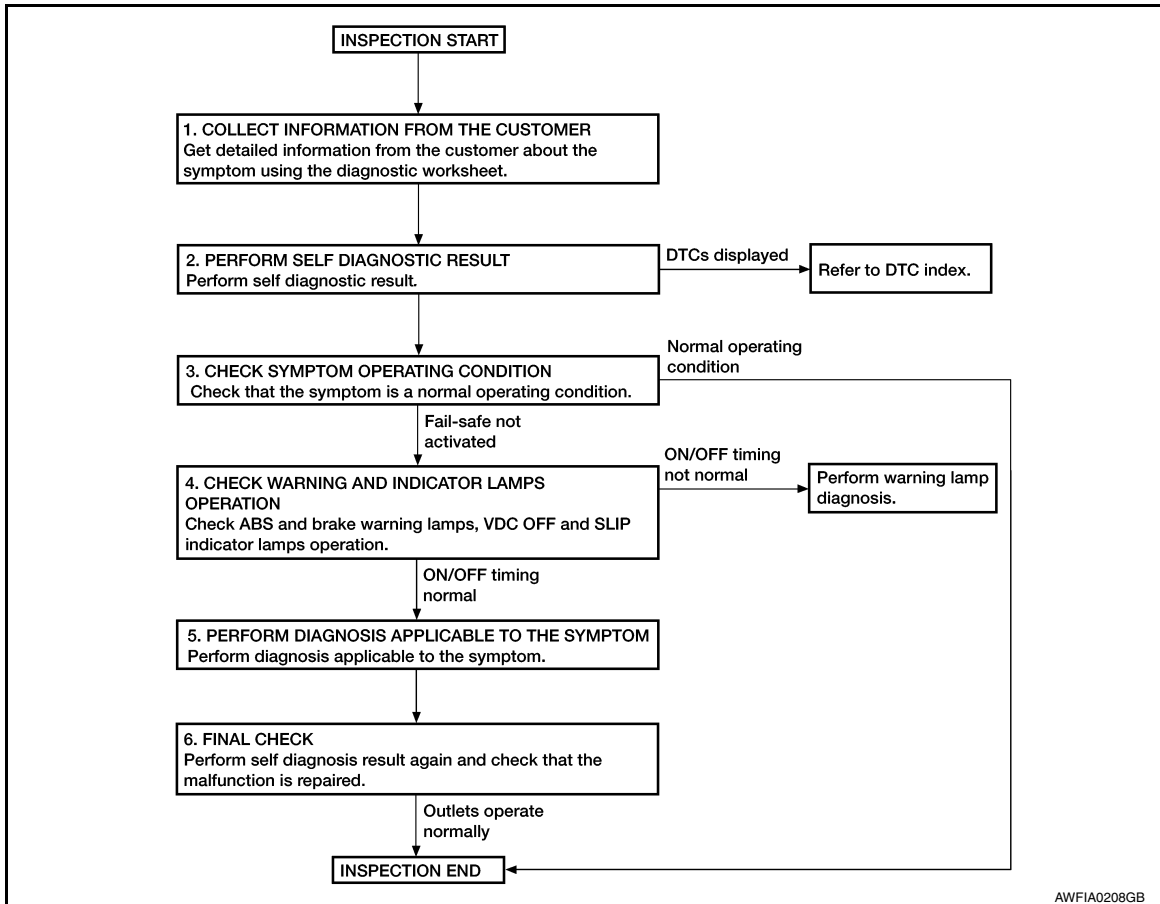
Work Flow

INFOID:000000010049014

PRECAUTIONS FOR DIAGNOSIS

If steering angle sensor, steering system parts, suspension system parts, ABS actuator and electric unit (control unit) or if wheel alignment has been adjusted, be sure to adjust neutral position of steering angle sensor before driving. Refer to [BRC-6, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

OVERALL SEQUENCE



1. COLLECT INFORMATION FROM THE CUSTOMER

Get 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-5, "Diagnostic Work Sheet"](#).

>> GO TO 2.

2. PERFORM SELF DIAGNOSTIC RESULT

Perform self diagnostic result. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

Are any DTCs displayed?

YES >> Refer to [BRC-82, "DTC No. Index"](#).

NO >> GO TO 3.

3. CHECK SYMPTOM OPERATING CONDITION

Check that the symptom is a normal operating condition. Refer to [BRC-98, "Description"](#).

Is the symptom a normal operating condition?

YES >> Inspection End.

DIAGNOSIS AND REPAIR WORKFLOW

[VDC/TCS/ABS]

< BASIC INSPECTION >

NO >> GO TO 4.

4. CHECK WARNING AND INDICATOR LAMPS OPERATION

Check warning and indicator lamps operation.

- ABS warning lamp: Refer to [BRC-72, "Description"](#).
- Brake warning lamp: Refer to [BRC-73, "Description"](#).
- VDC OFF indicator lamp: Refer to [BRC-75, "Description"](#).
- SLIP indicator lamp: Refer to [BRC-77, "Description"](#).

Is ON/OFF timing normal?

YES >> GO TO 5.

NO >> Perform warning lamp diagnosis. Refer to [BRC-72, "Component Function Check"](#) (ABS warning lamp), [BRC-73, "Component Function Check"](#) (brake warning lamp), [BRC-75, "Component Function Check"](#) (VDC OFF indicator lamp) or [BRC-77, "Component Function Check"](#) (SLIP indicator lamp).

5. PERFORM DIAGNOSIS APPLICABLE TO THE SYMPTOM

Perform diagnosis applicable to the symptom. Refer to [BRC-91, "Symptom Table"](#).

>> GO TO 6.

6. FINAL CHECK

Perform self diagnostic result again, and check that the malfunction is repaired. After checking, erase the self diagnosis memory. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

>> Inspection End.

Diagnostic Work Sheet

INFOID:000000010049015

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"/> TCS dose not work (Drive wheels slip when accelerating)	<input type="checkbox"/> ABS dose not work (Wheels lock when braking)
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	

AWFIA1029GB

INSPECTION AND ADJUSTMENT

< BASIC INSPECTION >

[VDC/TCS/ABS]

INSPECTION AND ADJUSTMENT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Description

INFOID:000000010049016

After replacing the ABS actuator and electric unit (control unit), perform the neutral position adjustment for the steering angle sensor.

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement

INFOID:000000010049017

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

Perform the neutral position adjustment for the steering angle sensor.

>> Refer to [BRC-6, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description"](#).

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description

INFOID:000000010049018

When performing work that applies to the list below, make sure to adjust neutral position of steering angle sensor before operating vehicle.

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

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement

INFOID:000000010049019

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

CAUTION:

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

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 screen, touch "WORK SUPPORT", then "ST ANGLE SENSOR ADJUSTMENT".
2. Touch "START".

INSPECTION AND ADJUSTMENT

< BASIC INSPECTION >

[VDC/TCS/ABS]

CAUTION:

Do not touch steering wheel while adjusting steering angle sensor.

3. After approximately 10 seconds, touch "END".

NOTE:

After approximately 60 seconds, the adjustment 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 memories of the ABS actuator and electric unit (control unit) and ECM.

- ABS actuator and electric unit (control unit): Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).
- ECM: Refer to [EC-138, "CONSULT Function"](#).

Are the memories erased?

YES >> Inspection End.

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

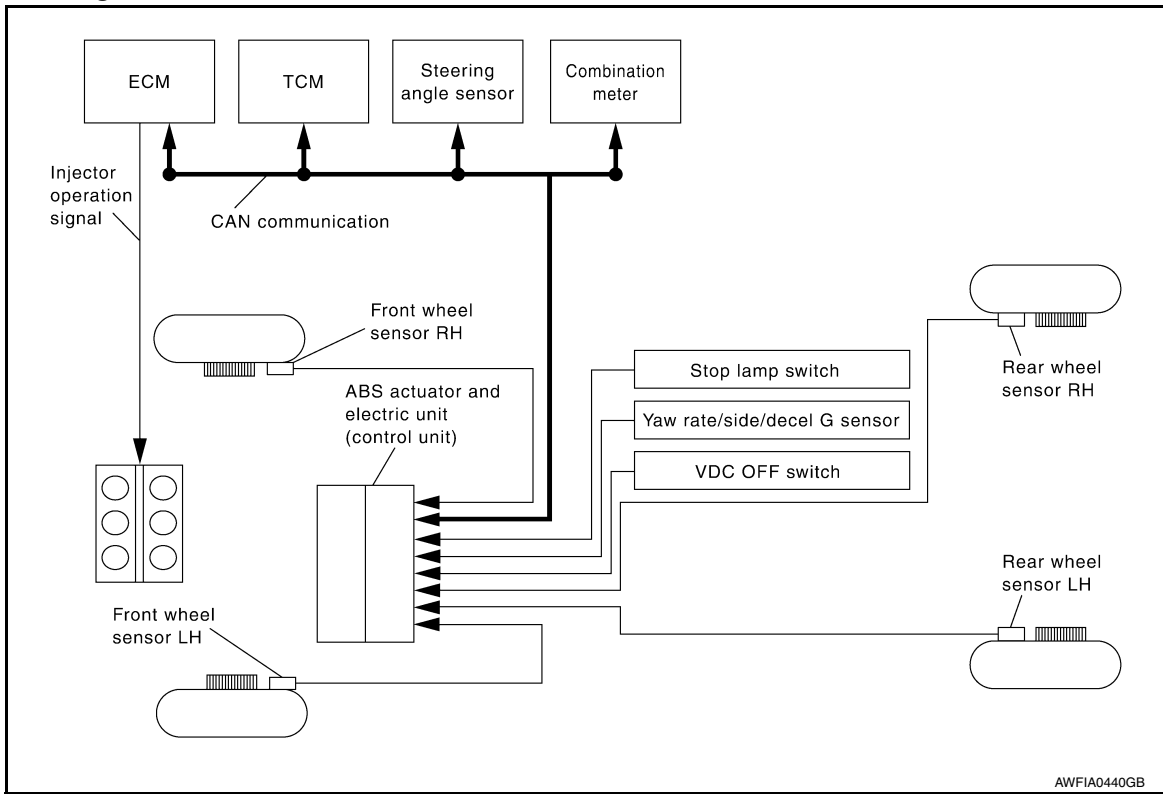
A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

SYSTEM DESCRIPTION

VDC

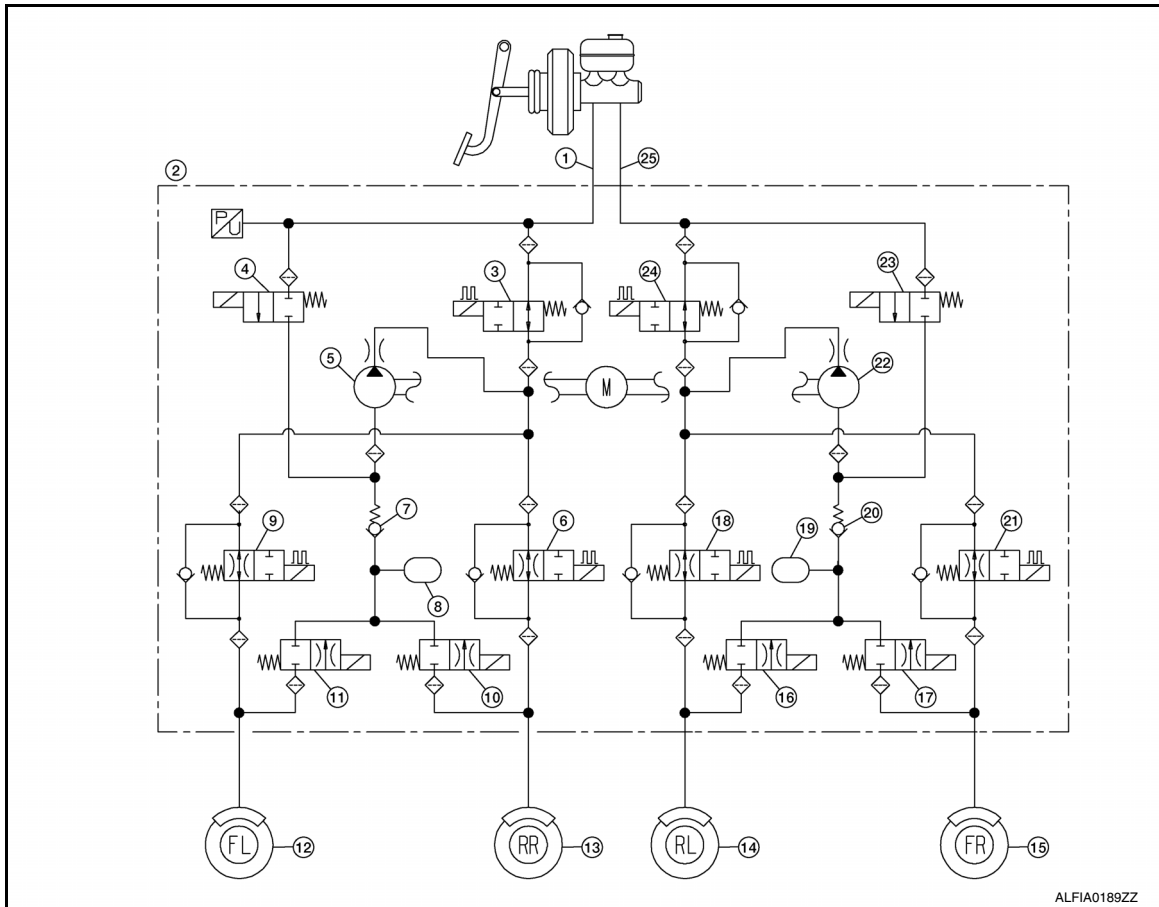
System Diagram

INFOID:000000010049020



Hydraulic Circuit Diagram

INFOID:0000000110049021

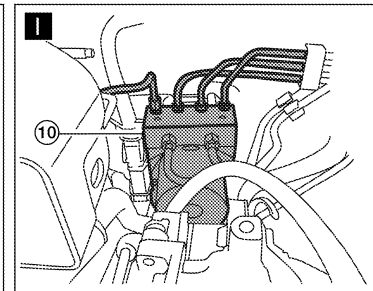
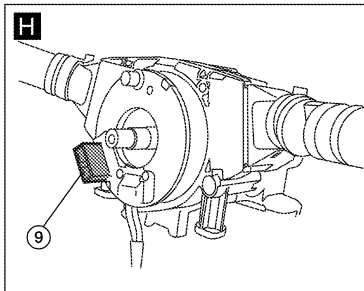
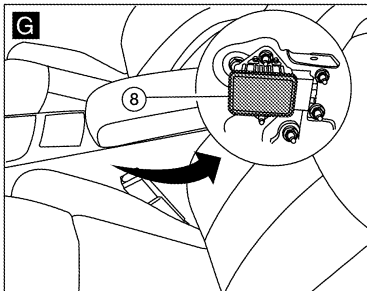
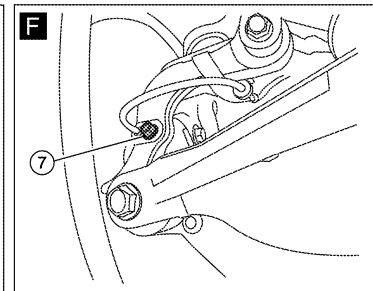
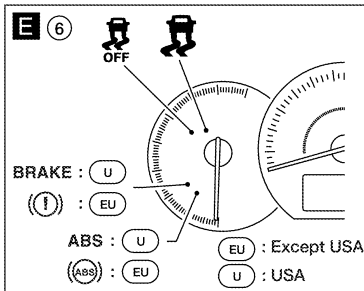
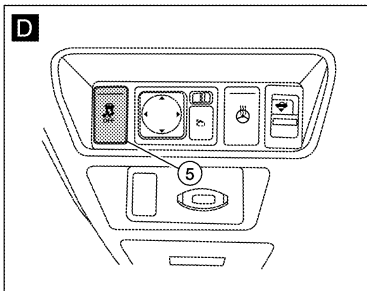
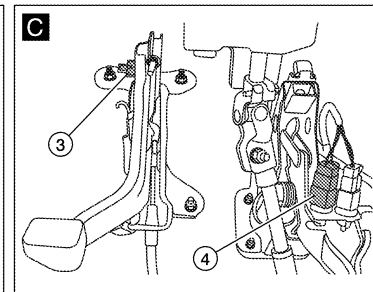
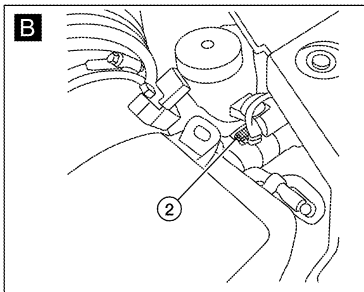
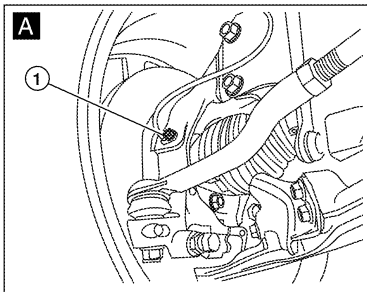
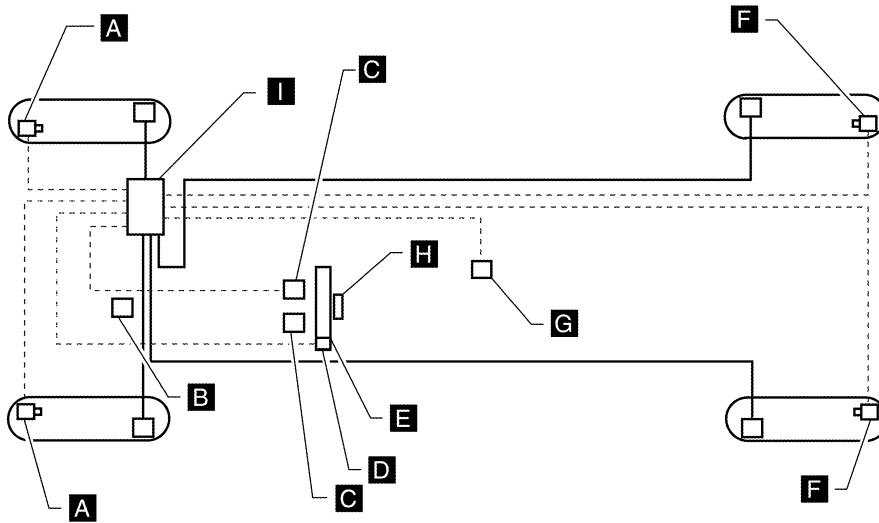


- | | | |
|--|---|---|
| 1. Primary side | 2. VDC/TCS/ABS actuator | 3. Primary side VDC switch-over valve 1 (USV1) |
| 4. Primary side VDC switch-over valve 1 (HSV1) | 5. Primary side pump | 6. Rear right inlet solenoid valve |
| 7. Primary side inlet valve | 8. Primary side damper | 9. Front left inlet solenoid valve |
| 10. Rear right outlet solenoid valve | 11. Front left outlet solenoid valve | 12. Front left caliper |
| 13. Rear right caliper | 14. Rear left caliper | 15. Front right caliper |
| 16. Rear left outlet solenoid valve | 17. Front right outlet solenoid valve | 18. Rear left inlet solenoid valve |
| 19. Secondary side damper | 20. Secondary side inlet valve | 21. Front right inlet solenoid valve |
| 22. Secondary side pump | 23. Secondary side VDC switch-over valve 2 (HSV2) | 24. Secondary side VDC switch-over valve 2 (USV2) |
| 25. Secondary side | | |

System Description

INFOID:0000000110049022

- Vehicle dynamic control system detects driver's steering operation amount from the steering angle sensor. Using input information from the yaw rate/side/decel G sensor and wheel speed sensors, the VDC system judges driving conditions (conditions of understeer and oversteer) and controls engine output and brake application to improve vehicle driving stability.
- During VDC operation, it informs driver of system operation by flashing SLIP indicator lamp.
- Electrical system diagnosis by CONSULT is available.



AWFIA0942GB

- | | | |
|---|---------------------------------|-----------------------------|
| 1. Front wheel sensor LH E19
Front wheel sensor RH E41 | 2. Brake fluid level switch E24 | 3. Parking brake switch E35 |
| 4. Stop lamp switch E38 | 5. VDC OFF switch M72 | 6. Combination meter M24 |

VDC

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

- | | | |
|---|-------------------------------------|---|
| 7. Rear wheel sensor LH C1
Rear wheel sensor RH C2 | 8. Yaw rate/side/decel G sensor M55 | 9. Steering angle sensor M53 (view with steering wheel removed) |
| 10. ABS actuator and electric unit (control unit) E26 | | |

A

B

Component Description

INFOID:000000010049024

C

Component parts		Reference
ABS actuator and electric unit (control unit)	Pump	BRC-35. "Description"
	Motor	
	Actuator relay (Main relay)	BRC-37. "Description"
	Solenoid valve	BRC-44. "Description"
	Pressure sensor	BRC-51. "Description"
	VDC switch-over valve (HSV1, HSV2, USV1, USV2)	BRC-59. "Description"
Wheel sensor	BRC-39. "Description"	
Stop lamp switch	BRC-42. "Description"	
Steering angle sensor	BRC-54. "Description"	
Yaw rate/side/G sensor	BRC-56. "Description"	
Brake fluid level switch	BRC-64. "Description"	
Parking brake switch	BRC-68. "Description"	
VDC OFF switch	BRC-70. "Description"	
ABS warning lamp	BRC-72. "Description"	
Brake warning lamp	BRC-73. "Description"	
VDC OFF indicator lamp	BRC-75. "Description"	
Slip indicator lamp	BRC-77. "Description"	

D

E

BRC

G

H

I

J

K

L

M

N

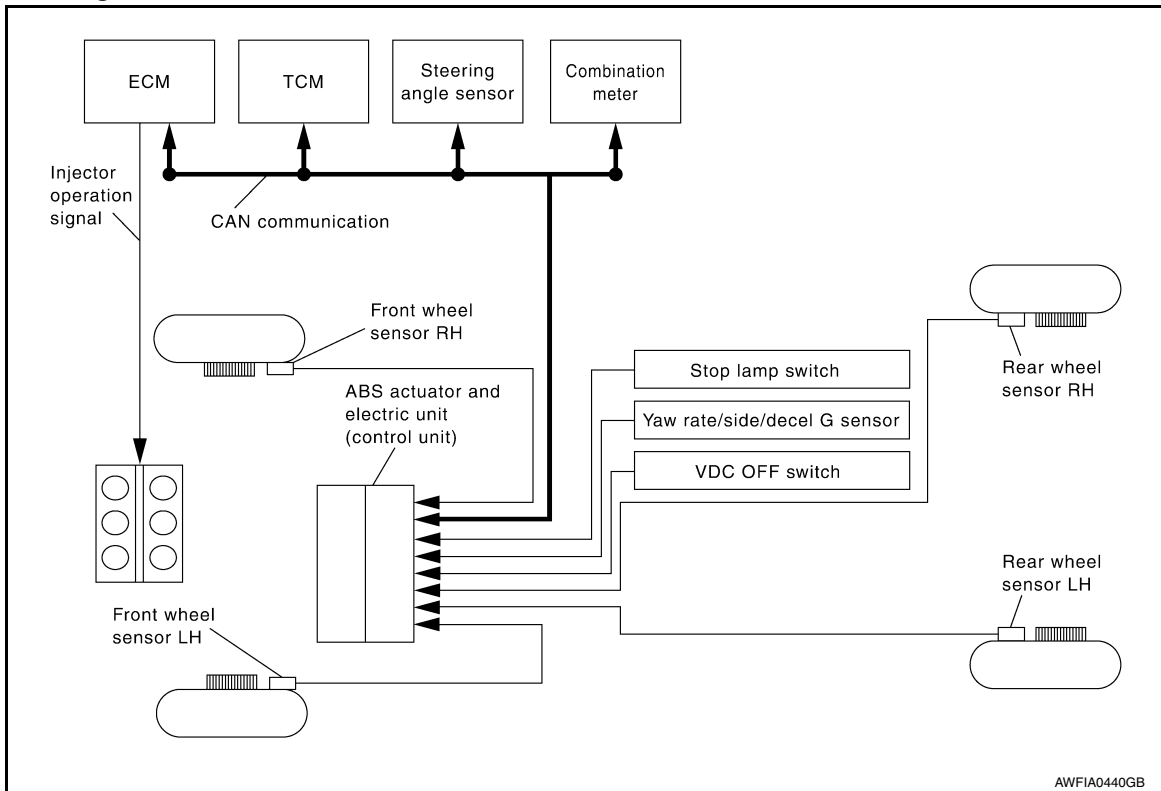
O

P

TCS

System Diagram

INFOID:000000010049025



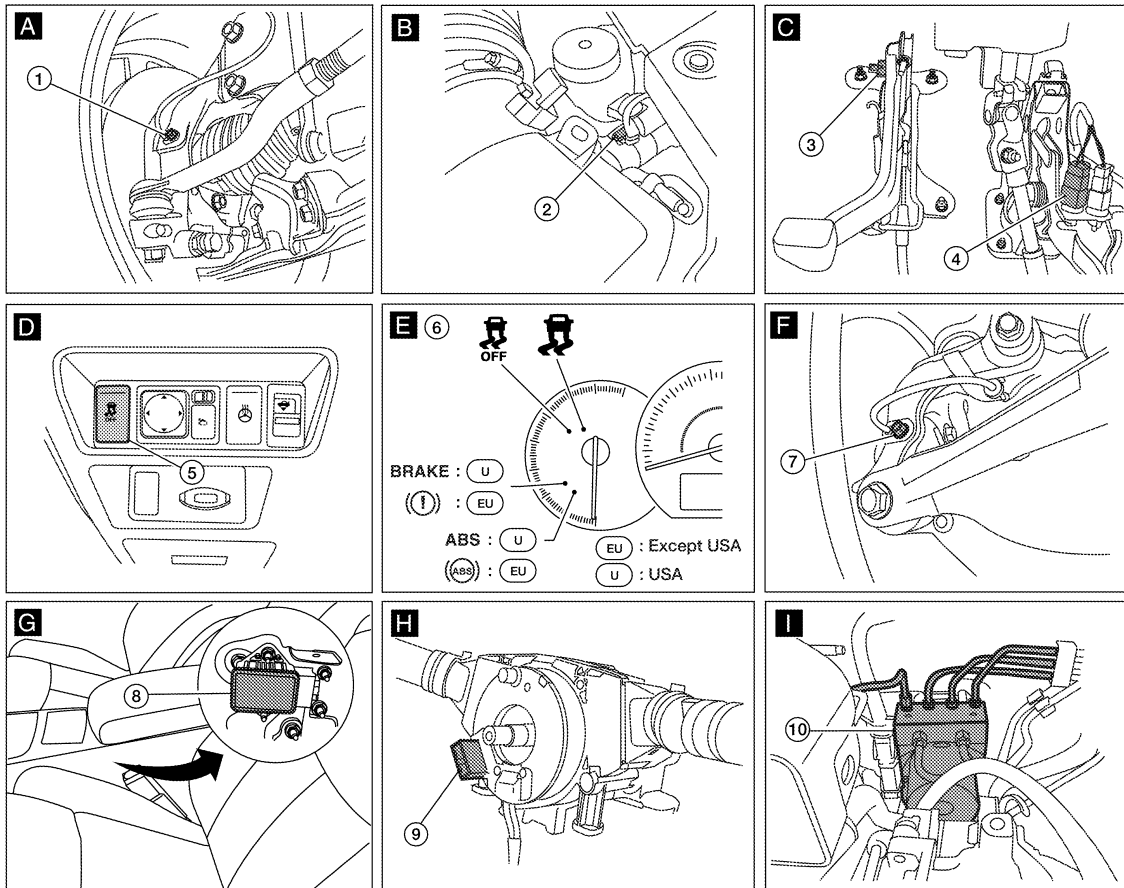
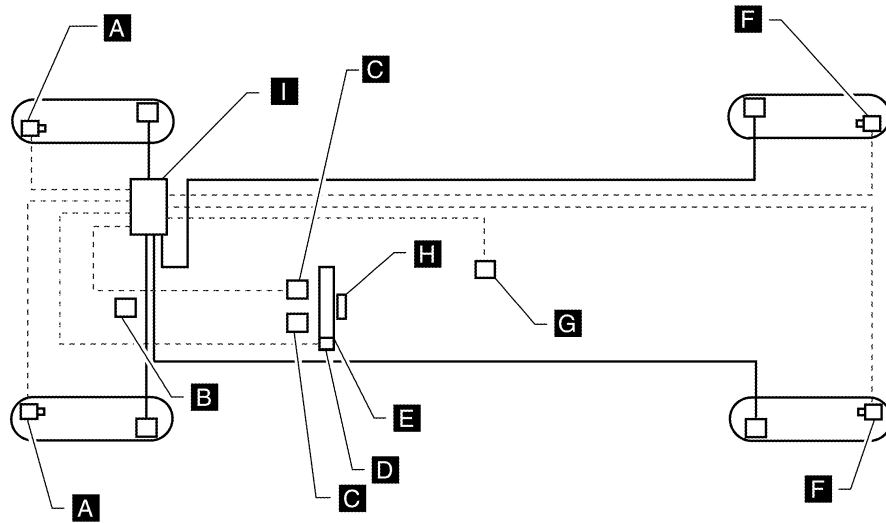
System Description

INFOID:000000010049026

- Traction Control System is a function that electronically controls engine torque and brake fluid pressure 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, it compares wheel speed signals from all 4 wheels. At this time, LH and RH front 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 is available.

Component Parts Location

INFOID:0000000110049027



- | | | |
|---|---------------------------------|-----------------------------|
| 1. Front wheel sensor LH E19
Front wheel sensor RH E41 | 2. Brake fluid level switch E24 | 3. Parking brake switch E35 |
| 4. Stop lamp switch E38 | 5. VDC OFF switch M72 | 6. Combination meter M24 |

AWFIA0942GB

A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

TCS

[VDC/TCS/ABS]

< SYSTEM DESCRIPTION >

- | | | |
|---|-------------------------------------|---|
| 7. Rear wheel sensor LH C1
Rear wheel sensor RH C2 | 8. Yaw rate/side/decel G sensor M55 | 9. Steering angle sensor M53 (view with steering wheel removed) |
| 10. ABS actuator and electric unit (control unit) E26 | | |

Component Description

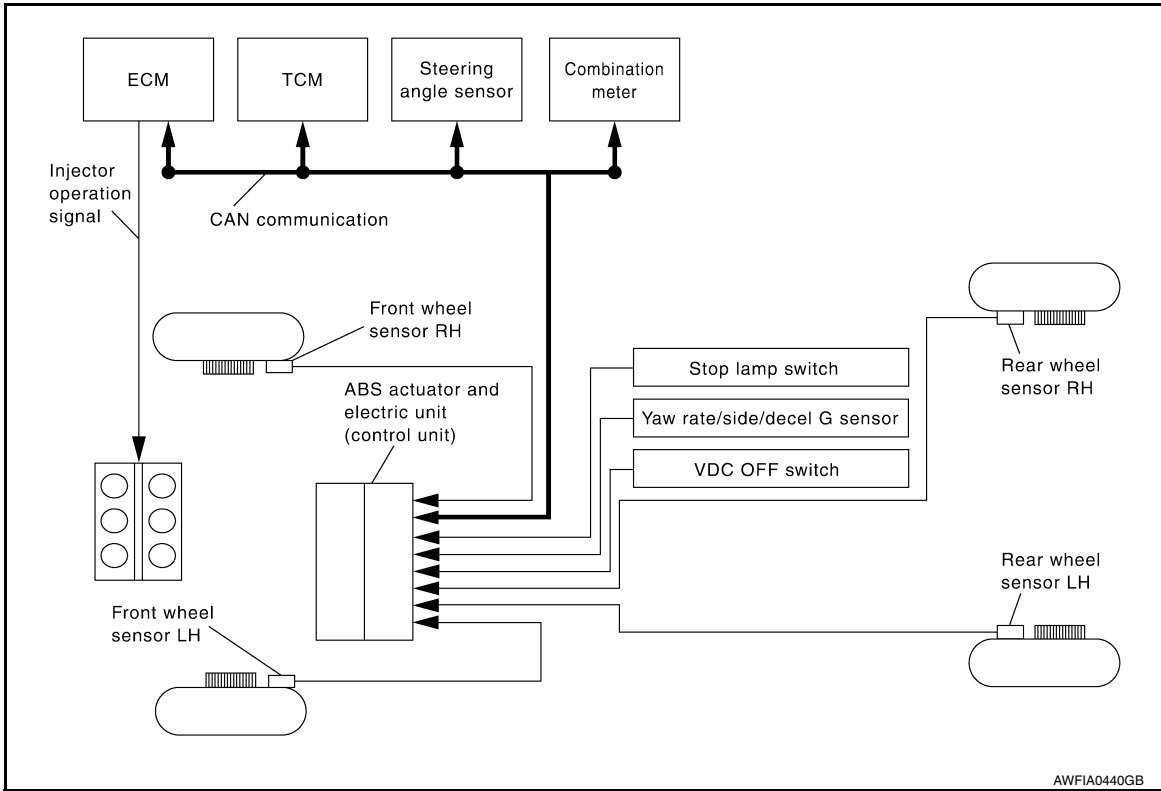
INFOID:000000010049028

Component parts		Reference
ABS actuator and electric unit (control unit)	Pump	BRC-35. "Description"
	Motor	
	Actuator relay (Main relay)	BRC-37. "Description"
	Solenoid valve	BRC-44. "Description"
	Pressure sensor	BRC-51. "Description"
	VDC switch-over valve (HSV1, HSV2, USV1, USV2)	BRC-59. "Description"
Wheel sensor	BRC-39. "Description"	
Stop lamp switch	BRC-42. "Description"	
Steering angle sensor	BRC-54. "Description"	
Yaw rate/side/G sensor	BRC-56. "Description"	
Brake fluid level switch	BRC-64. "Description"	
Parking brake switch	BRC-68. "Description"	
VDC OFF switch	BRC-70. "Description"	
ABS warning lamp	BRC-72. "Description"	
Brake warning lamp	BRC-73. "Description"	
VDC OFF indicator lamp	BRC-75. "Description"	
Slip indicator lamp	BRC-77. "Description"	

ABS

System Diagram

INFOID:000000010049029



A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

System Description

INFOID:000000010049030

- 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 is available.

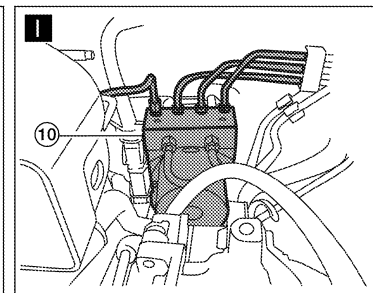
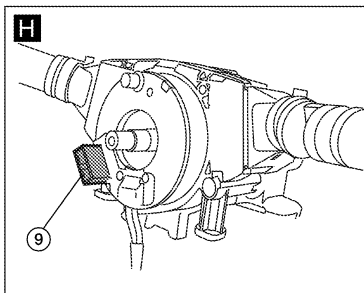
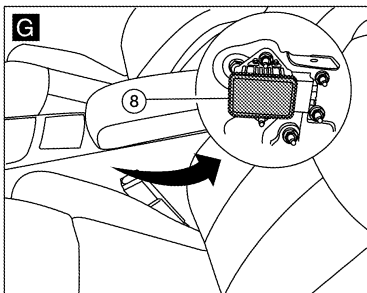
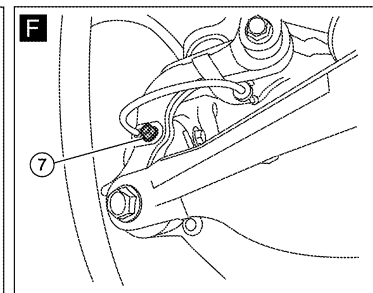
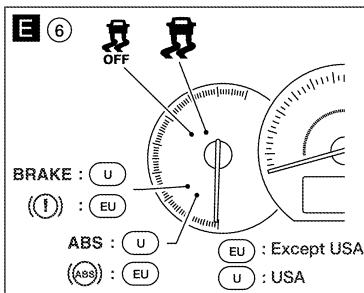
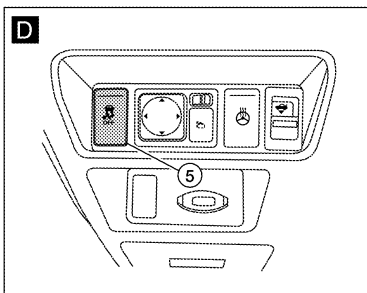
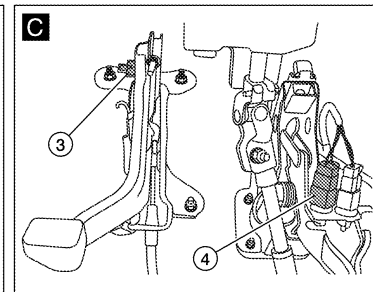
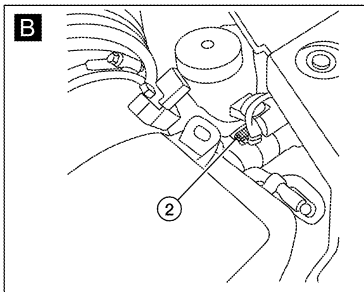
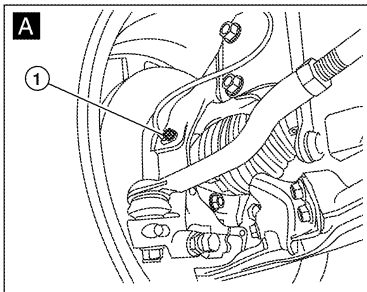
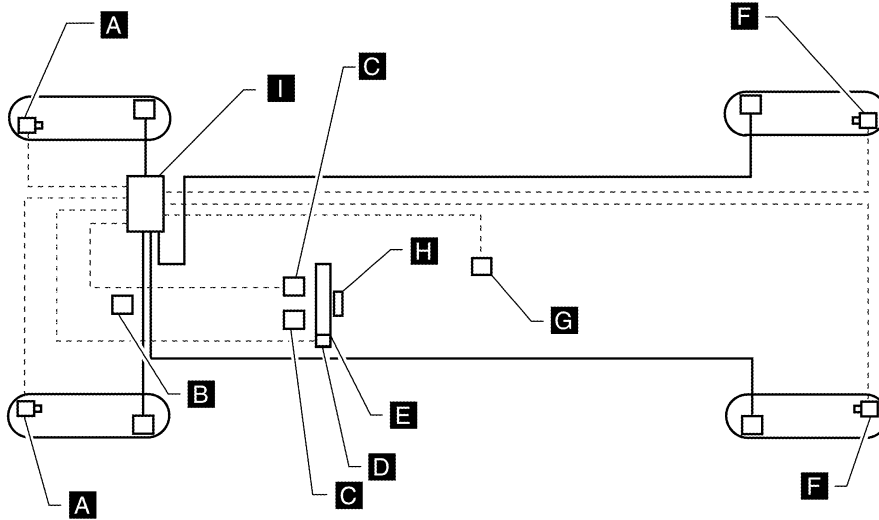
ABS

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

Component Parts Location

INFOID:000000010049031



AWFIA0942GB

- 1. Front wheel sensor LH E19
Front wheel sensor RH E41
- 4. Stop lamp switch E38

- 2. Brake fluid level switch E24
- 5. VDC OFF switch M72

- 3. Parking brake switch E35
- 6. Combination meter M24

ABS

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

- | | | |
|---|-------------------------------------|---|
| 7. Rear wheel sensor LH C1
Rear wheel sensor RH C2 | 8. Yaw rate/side/decel G sensor M55 | 9. Steering angle sensor M53 (view with steering wheel removed) |
| 10. ABS actuator and electric unit (control unit) E26 | | |

A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

Component Description

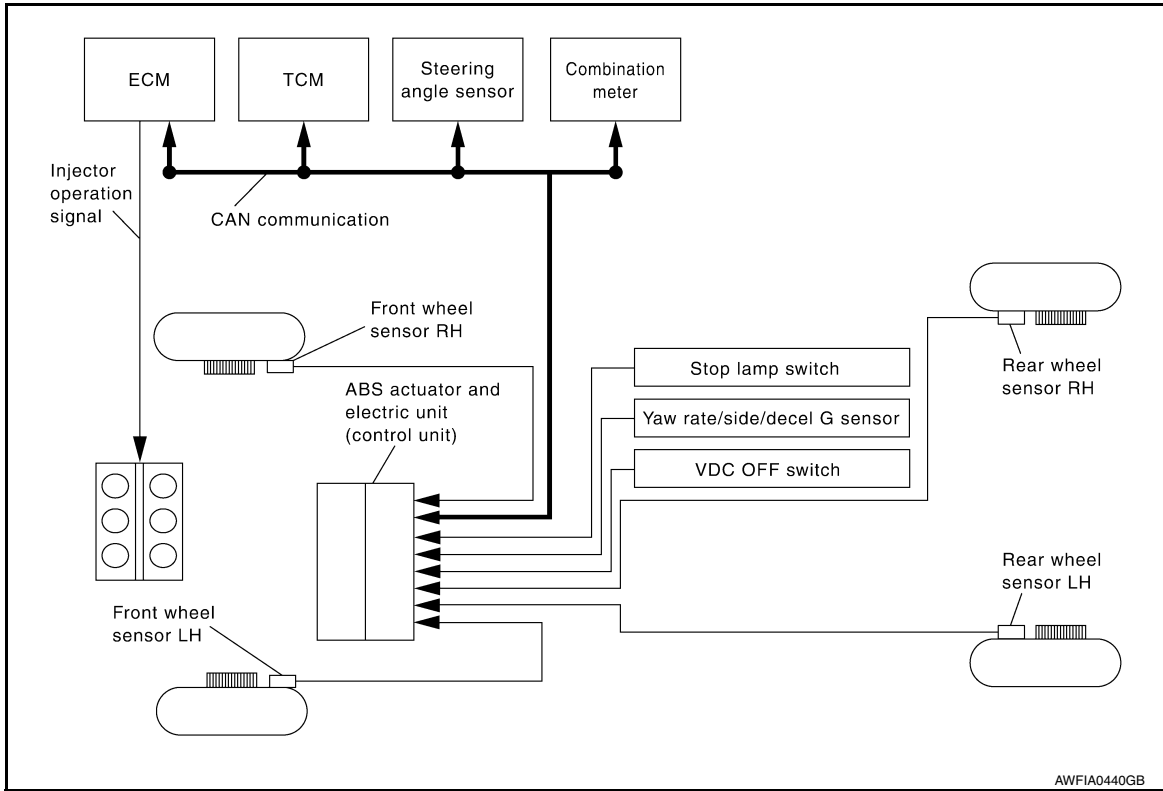
INFOID:000000010049032

Component parts	Reference	
ABS actuator and electric unit (control unit)	Pump	BRC-35. "Description"
	Motor	
	Actuator relay (Main relay)	BRC-37. "Description"
	Solenoid valve	BRC-44. "Description"
	Pressure sensor	BRC-51. "Description"
	VDC switch-over valve (HSV1, HSV2, USV1, USV2)	BRC-59. "Description"
Wheel sensor	BRC-39. "Description"	
Stop lamp switch	BRC-42. "Description"	
Steering angle sensor	BRC-54. "Description"	
Yaw rate/side/G sensor	BRC-56. "Description"	
Brake fluid level switch	BRC-64. "Description"	
Parking brake switch	BRC-68. "Description"	
VDC OFF switch	BRC-70. "Description"	
ABS warning lamp	BRC-72. "Description"	
Brake warning lamp	BRC-73. "Description"	
VDC OFF indicator lamp	BRC-75. "Description"	
Slip indicator lamp	BRC-77. "Description"	

EBD

System Diagram

INFOID:000000010049033

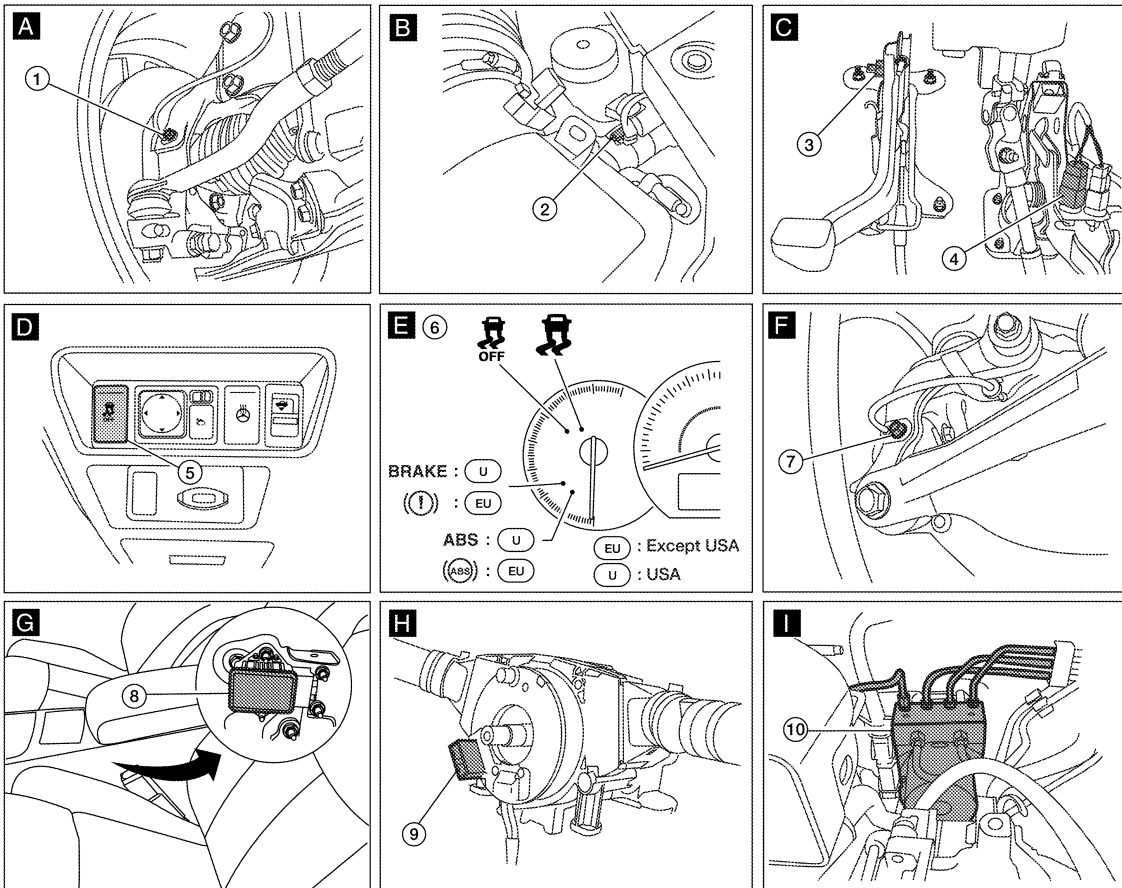
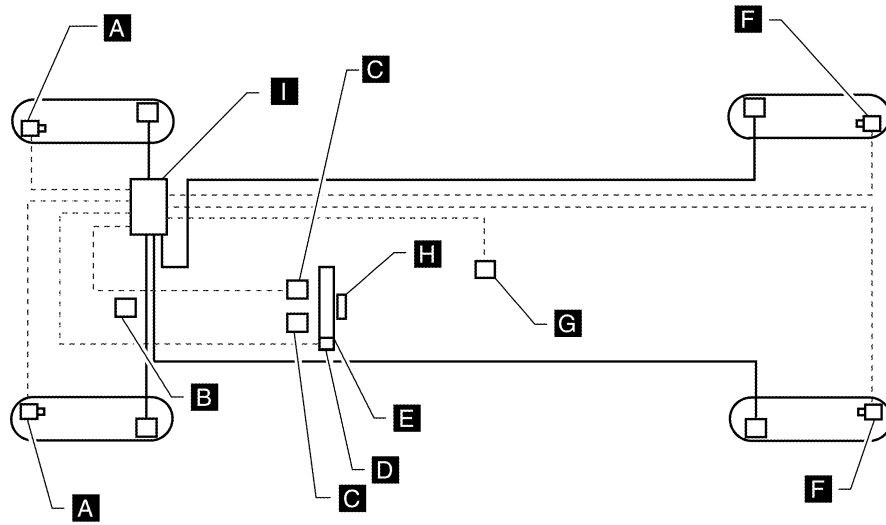


System Description

INFOID:000000010049034

Electric Brake force Distribution functions as follows:

- 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 is available.



- | | | |
|---|---------------------------------|-----------------------------|
| 1. Front wheel sensor LH E19
Front wheel sensor RH E41 | 2. Brake fluid level switch E24 | 3. Parking brake switch E35 |
| 4. Stop lamp switch E38 | 5. VDC OFF switch M72 | 6. Combination meter M24 |

AWFIA0942GB

A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

< SYSTEM DESCRIPTION >

- 7. Rear wheel sensor LH C1 8. Yaw rate/side/decel G sensor M55 9. Steering angle sensor M53 (view with steering wheel removed)
- Rear wheel sensor RH C2
- 10. ABS actuator and electric unit (control unit) E26

Component Description

INFOID:000000010049036

Component parts		Reference
ABS actuator and electric unit (control unit)	Pump	BRC-35. "Description"
	Motor	
	Actuator relay (Main relay)	BRC-37. "Description"
	Solenoid valve	BRC-44. "Description"
	Pressure sensor	BRC-51. "Description"
	VDC switch-over valve (HSV1, HSV2, USV1, USV2)	BRC-59. "Description"
Wheel sensor	BRC-39. "Description"	
Stop lamp switch	BRC-42. "Description"	
Steering angle sensor	BRC-54. "Description"	
Yaw rate/side/G sensor	BRC-56. "Description"	
Brake fluid level switch	BRC-64. "Description"	
Parking brake switch	BRC-68. "Description"	
VDC OFF switch	BRC-70. "Description"	
ABS warning lamp	BRC-72. "Description"	
Brake warning lamp	BRC-73. "Description"	
VDC OFF indicator lamp	BRC-75. "Description"	
Slip indicator lamp	BRC-77. "Description"	

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

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

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

CONSULT Function (ABS)

INFOID:000000010049037

FUNCTION

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

Diagnostic test mode	Function
ECU Identification	ABS actuator and electric unit (control unit) part number can be read.
Self Diagnostic Result	Displays ABS actuator and electric unit (control unit) self-diagnosis results.
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.
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.
CAN Diag Support Monitor	The result of transmit/receive diagnosis of CAN communication 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-Diagnosis Results

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, 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 in "ON" position.

Display Item List

Refer to [BRC-82, "DTC No. Index"](#).

DATA MONITOR

Display Item List

Item (Unit)	Data monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
FR LH SENSOR (km/h, mph)	×	×	×	Wheel speed (km/h, mph) calculated by front LH wheel sensor signal is displayed.
FR RH SENSOR (km/h, mph)	×	×	×	Wheel speed (km/h, mph) calculated by front RH wheel sensor signal is displayed.
RR LH SENSOR (km/h, mph)	×	×	×	Wheel speed (km/h, mph) calculated by rear LH wheel sensor signal is displayed.
RR RH SENSOR (km/h, mph)	×	×	×	Wheel speed (km/h, mph) calculated by rear RH wheel sensor signal is displayed.

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

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

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.
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.
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.
EBD WARN LAMP (On/Off)	—	—	×	EBD warning lamp (On/Off) status is displayed.
STOP LAMP SW (On/Off)	×	×	×	Stop lamp switch (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.
ABS WARN LAMP (On/Off)	—	×	×	ABS warning lamp (On/Off) status is displayed.
OFF LAMP (On/Off)	—	×	×	VDC OFF lamp (On/Off) status is displayed.
SLIP LAMP (On/Off)	—	×	×	SLIP indicator lamp (On/Off) status is displayed.
BATTERY VOLT (V)	×	×	×	Voltage (V) supplied to ABS actuator and electric unit (control unit) is displayed.
GEAR (1, 2, 3, 4, 5, 6)	×	×	×	Gear position (1, 2, 3, 4, 5, 6) while in manual mode determined by TCM is displayed.
SLCT LVR POSI (N/P, R, N/P, D)	×	×	×	Selector lever position judged by PNP switch signal.
YAW RATE SEN (d/s)	×	×	×	Yaw rate (d/s) detected by yaw rate sensor is displayed.
ACCEL POS SIG (%)	×	—	×	Throttle valve open/close (%) status judged by CAN communication signal is displayed.
SIDE G-SENSOR (m/s ²)	×	—	×	Lateral acceleration (m/s ²) detected by side G sensor is displayed.
STR ANGLE SIG (deg)	×	—	×	Steering angle (deg) detected by steering angle sensor is displayed.
PRESS SENSOR (bar)	×	—	×	Brake fluid pressure detected by pressure sensor is displayed.
EBD SIGNAL (On/Off)	—	—	×	EBD operation (On/Off) status is displayed.
ABS SIGNAL (On/Off)	—	—	×	ABS operation (On/Off) status is displayed.
TCS SIGNAL (On/Off)	—	—	×	TCS operation (On/Off) status is displayed.
VDC SIGNAL (On/Off)	—	—	×	VDC operation (On/Off) status is displayed.

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

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

EBD FAIL SIG (On/Off)	—	—	×	EBD fail signal (On/Off) status is displayed.	A
ABS FAIL SIG (On/Off)	—	—	×	ABS fail signal (On/Off) status is displayed.	B
TCS FAIL SIG (On/Off)	—	—	×	TCS fail signal (On/Off) status is displayed.	C
VDC FAIL SIG (On/Off)	—	—	×	VDC fail signal (On/Off) status is displayed.	C
CRANKING SIG (On/Off)	—	—	×	Cranking condition (On/Off) status is displayed.	D
FLUID LEV SW (On/Off)	×	—	×	Brake fluid level switch (On/Off) status is displayed.	D
PARK BRAKE SW (On/Off)	×	—	×	Parking brake switch (On/Off) status is displayed.	E
USV[FL-RR] (On/Off)	—	—	×	Primary side USV solenoid valve (On/Off) status is displayed.	BRC
USV[FR-RL] (On/Off)	—	—	×	Secondary side USV solenoid valve (On/Off) status is displayed.	BRC
HSV[FL-RR] (On/Off)	—	—	×	Primary side HSV solenoid valve (On/Off) status is displayed.	G
HSV[FR-RL] (On/Off)	—	—	×	Secondary side HSV solenoid valve (On/Off) status is displayed.	G
V/R OUTPUT (On/Off)	—	—	×	Valve relay operation signal (On/Off) status is displayed.	H
M/R OUTPUT (On/Off)	—	—	×	Motor relay operation signal (On/Off) status is displayed.	I
ENGINE RPM (tr/min)	×	—	×	Engine speed judged by CAN communication signal is displayed.	I

×: Applicable

—: Not applicable

ACTIVE TEST

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 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.

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

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

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*	—	—	—
	USV[FL-RR]	Off	Off	On*	—	—	—
	USV[FR-RL]	Off	Off	On*	—	—	—
	HSV[FL-RR]	Off	Off	On*	—	—	—
	HSV[FR-RL]	Off	Off	On*	—	—	—
FR LH SOL	FR LH IN SOL	Off	On	On	—	—	—
	FR LH OUT SOL	Off	Off	On*	—	—	—
	USV[FL-RR]	Off	Off	On*	—	—	—
	USV[FR-RL]	Off	Off	On*	—	—	—
	HSV[FL-RR]	Off	Off	On*	—	—	—
	HSV[FR-RL]	Off	Off	On*	—	—	—
RR RH SOL	RR RH IN SOL	Off	On	On	—	—	—
	RR RH OUT SOL	Off	Off	On*	—	—	—
	USV[FL-RR]	Off	Off	On*	—	—	—
	USV[FR-RL]	Off	Off	On*	—	—	—
	HSV[FL-RR]	Off	Off	On*	—	—	—
	HSV[FR-RL]	Off	Off	On*	—	—	—
RR LH SOL	RR LH IN SOL	Off	On	On	—	—	—
	RR LH OUT SOL	Off	Off	On*	—	—	—
	USV[FL-RR]	Off	Off	On*	—	—	—
	USV[FR-RL]	Off	Off	On*	—	—	—
	HSV[FL-RR]	Off	Off	On*	—	—	—
	HSV[FR-RL]	Off	Off	On*	—	—	—
FR RH ABS SOLENOID (ACT)	FR RH IN SOL	—	—	—	Off	Off	Off
	FR RH OUT SOL	—	—	—	Off	Off	Off
	USV[FL-RR]	—	—	—	Off	Off	Off
	USV[FR-RL]	—	—	—	Off	On	On
	HSV[FL-RR]	—	—	—	Off	Off	Off
	HSV[FR-RL]	—	—	—	Off	On*	Off
FR LH ABS SOLENOID (ACT)	FR LH IN SOL	—	—	—	Off	Off	Off
	FR LH OUT SOL	—	—	—	Off	Off	Off
	USV[FL-RR]	—	—	—	Off	Off	Off
	USV[FR-RL]	—	—	—	Off	On	On
	HSV[FL-RR]	—	—	—	Off	Off	Off
	HSV[FR-RL]	—	—	—	Off	On*	Off
RR RH ABS SOLENOID (ACT)	RR RH IN SOL	—	—	—	Off	Off	Off
	RR RH OUT SOL	—	—	—	Off	Off	Off
	USV[FL-RR]	—	—	—	Off	Off	Off
	USV[FR-RL]	—	—	—	Off	On	On
	HSV[FL-RR]	—	—	—	Off	Off	Off
	HSV[FR-RL]	—	—	—	Off	On*	Off

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

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

Operation		ABS solenoid valve			ABS solenoid valve (ACT)		
		Up	Keep	Down	Up	ACT UP	ACT KEEP
RR LH ABS SOLENOID (ACT)	RR LH IN SOL	—	—	—	Off	Off	Off
	RR LH OUT SOL	—	—	—	Off	Off	Off
	USV[FL-RR]	—	—	—	Off	Off	Off
	USV[FR-RL]	—	—	—	Off	On	On
	HSV[FL-RR]	—	—	—	Off	Off	Off
	HSV[FR-RL]	—	—	—	Off	On*	Off

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

ABS MOTOR

- Touch “On” and “Off” on screen. Make sure motor relay, actuator relay, V/R output and M/R output operate as shown in table below.

Operation	On	Off
MOTOR RELAY	On	Off
ACTUATOR RLY	On	On
V/R OUTPUT	On	On
M/R OUTPUT	On	Off

WORK SUPPORT

Conditions	Description
ST ANGLE SENSOR ADJUSTMENT	Steering angle sensor neutral position adjustment can be performed. Refer to BRC-6, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement" .

C1101, C1102, C1103, C1104 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

DTC/CIRCUIT DIAGNOSIS

C1101, C1102, C1103, C1104 WHEEL SENSOR

DTC Logic

INFOID:0000000010062762

DTC DETECTION LOGIC

DTC	Display Item	Malfunction detected condition	Possible causes
C1101	RR RH SENSOR-1	<ul style="list-style-type: none">When power supply voltage of rear wheel sensor RH is low.When an open or shorted circuit is detected in rear wheel sensor RH circuit.	<ul style="list-style-type: none">Harness or connectorWheel sensorABS actuator and electric unit (control unit)
C1102	RR LH SENSOR-1	<ul style="list-style-type: none">When power supply voltage of rear wheel sensor LH is low.When an open or shorted circuit is detected in rear wheel sensor LH circuit.	
C1103	FR RH SENSOR-1	<ul style="list-style-type: none">When power supply voltage of front wheel sensor RH is low.When an open or shorted circuit is detected in front wheel sensor RH circuit.	
C1104	FR LH SENSOR-1	<ul style="list-style-type: none">When power supply voltage of front wheel sensor LH is low.When an open or shorted circuit is detected in front wheel sensor LH circuit.	

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

Ⓜ With CONSULT.

- Start engine and drive vehicle at approximately 21 km/h (13 MPH) or more for approximately 5 minutes.
- Perform self diagnostic result.

Is DTC C1101, C1102, C1103 or C1104 detected?

YES >> Proceed to diagnosis procedure. Refer to [BRC-26, "Diagnosis Procedure"](#).

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000010062763

Regarding Wiring Diagram information, refer to [BRC-83, "Wiring Diagram"](#).

CAUTION:

Do not check between wheel sensor terminals.

1. CONFIRM DTC

Ⓜ With CONSULT

- Perform self-diagnostic result of ABS and record all active DTCs.
- Clear all DTCs.
- Perform DTC confirmation procedure. Refer to [BRC-26, "DTC Logic"](#).

Does DTC C1101, C1102, C1103 or C1104 reset?

YES >> GO TO 2.

NO >> Refer to [GI-41, "Intermittent Incident"](#).

2. INSPECT WHEEL SENSOR

Inspect the suspect wheel sensor for damage or deformation.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace as necessary.

C1101, C1102, C1103, C1104 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

3. HARNESS AND CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector E26 and wheel sensor connector of suspect wheel.
2. Check harness, connectors and terminals for corrosion, deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace as necessary.

4. 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 5.

NO >> Replace the wheel sensor. Refer to [BRC-102, "Removal and Installation - Front Wheel Sensor"](#) or [BRC-103, "Removal and Installation - Rear Wheel Sensor"](#).

5. CHECK WIRING HARNESS FOR SHORT TO VOLTAGE

1. Turn ignition switch ON.
2. Check voltage between wheel sensor harness connector terminals of suspect wheel and ground.

Wheel Sensor			Ground	Voltage
Wheel	Connector	Terminal		
Front LH	E19	1	—	0V
		2		
Front RH	E41	1		
		2		
Rear LH	C1	1		
		2		
Rear RH	C2	1		
		2		

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair the circuit.

6. CHECK WIRING HARNESS FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Check continuity between wheel sensor harness connector terminals of suspect wheel and ground.

Wheel Sensor			Ground	Continuity
Wheel	Connector	Terminal		

C1101, C1102, C1103, C1104 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Wheel	Connector	Terminal	Continuity	Result
Front LH	E19	1	—	No
		2		
Front RH	E41	1		
		2		
Rear LH	C1	1		
		2		
Rear RH	C2	1		
		2		

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair the circuit.

7. CHECK WIRING HARNESS FOR SHORT BETWEEN CIRCUITS

Check continuity between wheel sensor harness connector terminals of suspect wheel.

Wheel Sensor		(+)	(-)	Continuity
Wheel	Connector	Terminal	Terminal	
Front LH	E19	1	2	No
Front RH	E41			
Rear LH	C1			
Rear RH	C2			

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair the circuit.

8. CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 and wheel sensor connector of wheel with DTC.

Wheel sensor	ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
	Connector	Terminal	Connector	Terminal	
Front LH	E26	5	E19	2	Yes
		16		1	
Front RH		10	E41	2	
		9		1	
Rear LH		17	C1	2	
		6		1	
Rear RH		19	C2	2	
		8		1	

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair the circuit.

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

1. Turn ignition switch ON.
2. Check voltage between ABS actuator and electric unit (control unit) harness connector E26 terminal and ground.

C1101, C1102, C1103, C1104 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

ABS actuator and electric unit (control unit)		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
E26	18	—	Ignition switch ON	Battery voltage
			Ignition switch OFF	0V

Is the inspection result normal?

YES >> GO TO 10.

NO >> Check the following:

- 10A fuse No. 36 located in the IPDM E/R
- Harness between ABS actuator and electric unit (control unit) and IPDM E/R

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

1. Turn ignition switch OFF.
2. Check continuity between ABS actuator and electric unit (control unit) connector E26 terminals and ground.

ABS actuator and electric unit (control unit)		—	Continuity
Connector	Terminal		
E26	1	Ground	Yes
	4		

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace malfunctioning components.

11. CHECK WHEEL SENSOR INPUT VOLTAGE

1. Connect ABS actuator and electric unit (control unit) connector E26.
2. Turn ignition switch ON.
3. Check voltage between suspect wheel sensor harness connector terminals.

Wheel Sensor		(+)	(-)	Voltage (Approx.)
Wheel	Connector	Terminal	Terminal	
Front LH	E19	1	2	Battery voltage
Front RH	E41			
Rear LH	C1			
Rear RH	C2			

Is the inspection result normal?

YES >> Replace wheel sensor. Refer to [BRC-102, "Removal and Installation - Front Wheel Sensor"](#) or [BRC-103, "Removal and Installation - Rear Wheel Sensor"](#). Then, GO TO 12.

NO >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-106, "Removal and Installation"](#).

12. CONFIRM REPAIR

Ⓜ With CONSULT

1. Clear all DTCs.
2. Perform DTC confirmation procedure. Refer to [BRC-26, "DTC Logic"](#).

Does DTC C1101, C1102, C1103 or C1104 reset?

YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-106, "Removal and Installation"](#).

NO >> Inspection End.

C1105, C1106, C1107, C1108 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1105, C1106, C1107, C1108 WHEEL SENSOR

DTC Logic

INFOID:000000010062765

DTC DETECTION LOGIC

DTC	Display Item	Malfunction detected condition	Possible causes
C1105	RR RH SENSOR-2	<ul style="list-style-type: none">When distance between rear wheel sensor RH and rear wheel sensor RH rotor is large.When installation of rear wheel sensor RH or rear wheel sensor RH rotor is not normal.	<ul style="list-style-type: none">Wheel sensorABS actuator and electric unit (control unit)Sensor rotor
C1106	RR LH SENSOR-2	<ul style="list-style-type: none">When distance between rear wheel sensor LH and rear wheel sensor LH rotor is large.When installation of rear wheel sensor LH or rear wheel sensor LH rotor is not normal.	
C1107	FR RH SENSOR-2	<ul style="list-style-type: none">When distance between front wheel sensor RH and front wheel sensor RH rotor is large.When installation of front wheel sensor RH or front wheel sensor RH rotor is not normal.	
C1108	FR LH SENSOR-2	<ul style="list-style-type: none">When distance between front wheel sensor LH and front wheel sensor LH rotor is large.When installation of front wheel sensor LH or front wheel sensor LH rotor is not normal.	

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

Ⓜ With CONSULT.

- Start engine and drive vehicle at approximately 21 km/h (13 MPH) or more for approximately 5 minutes.
- Perform self diagnostic result.

Is DTC C1105, C1106, C1107 or C1108 detected?

YES >> Proceed to diagnosis procedure. Refer to [BRC-30, "Diagnosis Procedure"](#).

NO >> Inspection End.

Diagnosis Procedure

INFOID:000000010062766

Regarding Wiring Diagram information, refer to [BRC-83, "Wiring Diagram"](#).

CAUTION:

Do not check between wheel sensor terminals.

1. CONFIRM DTC

Ⓜ With CONSULT

- Perform self-diagnostic result of ABS and record all active DTCs.
- Clear all DTCs.
- Perform DTC confirmation procedure. Refer to [BRC-30, "DTC Logic"](#).

Does DTC C1105, C1106, C1107 or C1108 reset?

YES >> GO TO 2.

NO >> Refer to [GI-41, "Intermittent Incident"](#).

2. CHECK TIRE PRESSURE AND TIRE WEAR

Check tires for excessive wear and proper inflation. Refer to [WT-58, "Inspection"](#).

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace as necessary.

3. CHECK WHEEL SENSOR

C1105, C1106, C1107, C1108 WHEEL SENSOR

[VDC/TCS/ABS]

< DTC/CIRCUIT DIAGNOSIS >

Check wheel sensor for the following:

- Proper installation
- Physical damage
- Contamination

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace as necessary.

4.CHECK SENSOR ROTOR

Check sensor rotor for the following:

- Contamination
- Physical damage (missing teeth, cracks, etc.)
- Foreign material
- Looseness

Is the inspection result normal?

YES >> Replace the wheel sensor. Refer to [BRC-102, "Removal and Installation - Front Wheel Sensor"](#) or [BRC-103, "Removal and Installation - Rear Wheel Sensor"](#). Then, GO TO 5.

NO >> Repair or replace as necessary.

5.CONFIRM REPAIR

Ⓜ With CONSULT

1. Clear all DTCs.

2. Perform DTC confirmation procedure. Refer to [BRC-30, "DTC Logic"](#).

Does DTC C1105, C1106, C1107 or C1108 reset?

YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-106, "Removal and Installation"](#).

NO >> Inspection End.

A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

C1109 BATTERY VOLTAGE [ABNORMAL]

[VDC/TCS/ABS]

< DTC/CIRCUIT DIAGNOSIS >

C1109 BATTERY VOLTAGE [ABNORMAL]

Description

INFOID:000000010049048

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

DTC Logic

INFOID:000000010049049

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-32, "Diagnosis Procedure"](#).

NO >> Inspection End.

Diagnosis Procedure

INFOID:000000010049050

Regarding Wiring Diagram information, refer to [BRC-83, "Wiring Diagram"](#).

1. CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

Is any item displayed on the self-diagnosis display?

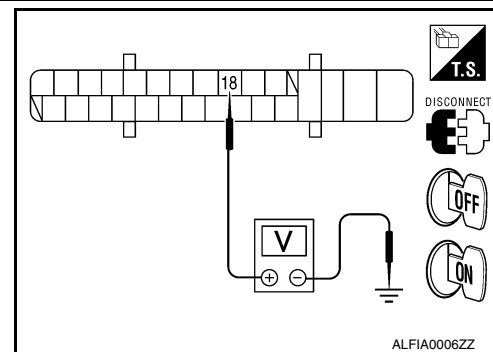
YES >> GO TO 2

NO >> Poor connection of connector terminals. 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. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 18 and ground.

ABS actuator and electric unit (control unit)		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
E26	18	—	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0V



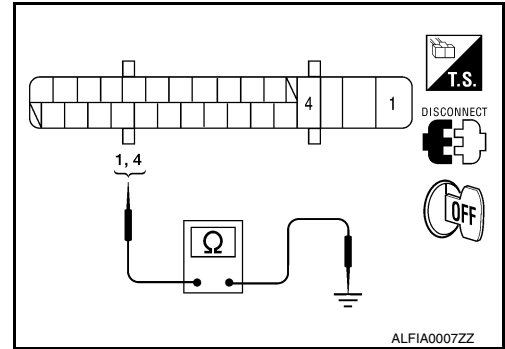
C1109 BATTERY VOLTAGE [ABNORMAL]

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

4. Turn ignition switch OFF.
5. Check continuity between ABS actuator and electric unit (control unit) connector E26 terminals 1, 4 and ground.

ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal		
E26	1	—	Yes
	4		



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:000000010049051

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-6, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

A
B
C
D
E
G
H
I
J
K
L
M
N
O
P

BRC

C1110, C1153, C1170 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

DTC Logic

INFOID:000000010049052

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)
C1153	EMERGENCY BRAKE	When ABS actuator and electric unit (control unit) is malfunctioning. (Pressure increase is too much or too little)	
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
EMERGENCY BRAKE
VARIANT CODING

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:000000010049053

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

CAUTION:

Replace ABS actuator and electric unit (control unit) when self-diagnostic result shows items other than that applicable.

- >> Replace ABS actuator and electric unit (control unit).

Special Repair Requirement

INFOID:000000010049054

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-6, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

- >> END

C1111 PUMP MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1111 PUMP MOTOR

Description

INFOID:0000000010049055

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:0000000010049056

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1111	PUMP MOTOR	During actuator motor 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 actuator motor 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-35, "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000010049057

Regarding Wiring Diagram information, refer to [BRC-83, "Wiring Diagram"](#).

1. CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

Is any item indicated on the self-diagnosis display?

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

2. CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

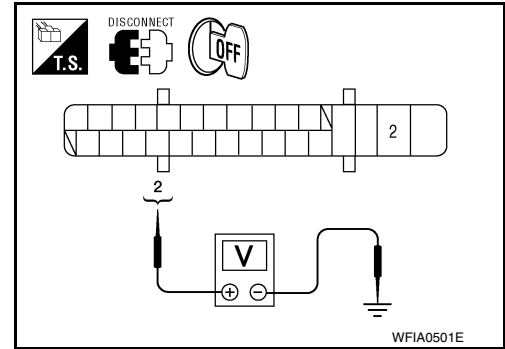
C1111 PUMP MOTOR

[VDC/TCS/ABS]

< DTC/CIRCUIT 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) connector E26 terminal 2 and ground.

ABS actuator and electric unit (control unit)		Ground	Voltage (Approx.)
Connector	Terminal		
E26	2	—	Battery voltage



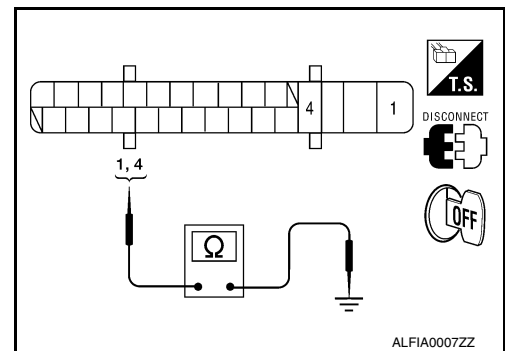
Is the inspection result normal?

- 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) connector E26 terminals 1, 4 and ground.

ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal		
E26	1	—	Yes
	4		



Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit).
 Refer to [BRC-106, "Removal and Installation"](#).
 NO >> Repair or replace malfunctioning components.

Component Inspection

INFOID:000000010049058

1. CHECK ACTIVE TEST

1. On "ACTIVE TEST", select "ABS MOTOR".
2. Touch "On" and "Off" on screen. Make sure motor relay, actuator relay, V/R output and M/R output operate as shown in table below.

Operation	On	Off
MOTOR RELAY	On	Off
ACTUATOR RLY	On	On
V/R OUTPUT	On	On
M/R OUTPUT	On	Off

Is the inspection result normal?

- YES >> Inspection End.
 NO >> Go to diagnosis procedure. Refer to [BRC-35, "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:000000010049059

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-6, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

C1114 MAIN RELAY

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1114 MAIN RELAY

Description

INFOID:000000010049060

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

DTC Logic

INFOID:000000010049061

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1114	MAIN RELAY	During actuator relay OFF, when the actuator relay turns ON, or when the control line for the relay is shorted to the ground.	<ul style="list-style-type: none"> • Harness or connector • ABS actuator and electric unit (control unit)
		During actuator relay ON, when the actuator relay turns ON, or when the control line for the relay is open.	

DTC CONFIRMATION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results
MAIN RELAY

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:000000010049062

Regarding Wiring Diagram information, refer to [BRC-83, "Wiring Diagram"](#).

1. CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

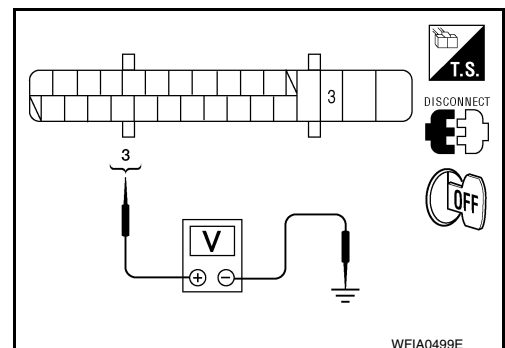
Is any item indicated on the self-diagnosis display?

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

2. CHECK SOLENOID 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) connector E26 terminal 3 and ground.

ABS actuator and electric unit (control unit)		Ground	Voltage (Approx.)
Connector	Terminal		
E26	3	—	Battery voltage



C1114 MAIN RELAY

[VDC/TCS/ABS]

< DTC/CIRCUIT DIAGNOSIS >

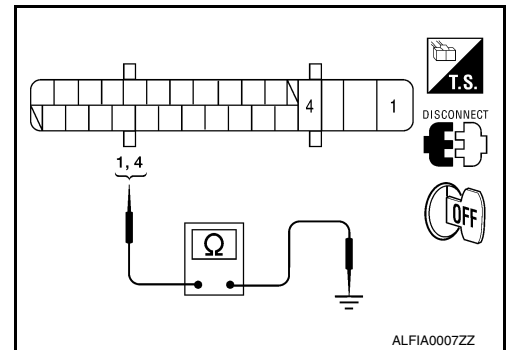
Is the inspection result normal?

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

3. CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminals 1, 4 and ground.

ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal		
E26	1	—	Yes
	4		



Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-106, "Removal and Installation"](#).
- NO >> Repair or replace malfunctioning components.

Component Inspection

INFOID:0000000110049063

1. CHECK ACTIVE TEST

1. On "ACTIVE TEST", select "ABS MOTOR".
2. Touch "On" and "Off" on screen. Make sure motor relay, actuator relay, V/R output and M/R output operate as shown in table below.

Operation	On	Off
MOTOR RELAY	On	Off
ACTUATOR RLY	On	On
V/R OUTPUT	On	On
M/R OUTPUT	On	Off

Is the inspection result normal?

- YES >> Inspection End.
- NO >> Go to diagnosis procedure. Refer to [BRC-35, "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:0000000110049064

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-6, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

C1115 ABS SENSOR [ABNORMAL SIGNAL]

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1115 ABS SENSOR [ABNORMAL SIGNAL]

Description

INFOID:000000010049065

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:000000010049066

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-39. "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:000000010049067

Regarding Wiring Diagram information, refer to [BRC-83. "Wiring Diagram"](#).

CAUTION:

Do not check between wheel sensor terminals.

1. CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor of malfunctioning code.
2. Check 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-102. "Removal and Installation - Front Wheel Sensor"](#).

C1115 ABS SENSOR [ABNORMAL SIGNAL]

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

3. CHECK TIRES

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

Is the inspection result normal?

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, "Inspection"](#) (front) or [RAX-5, "On-vehicle Service"](#) (rear).

Is the inspection result normal?

YES >> GO TO 5

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

5. CHECK WIRING HARNESS FOR SHORT CIRCUIT

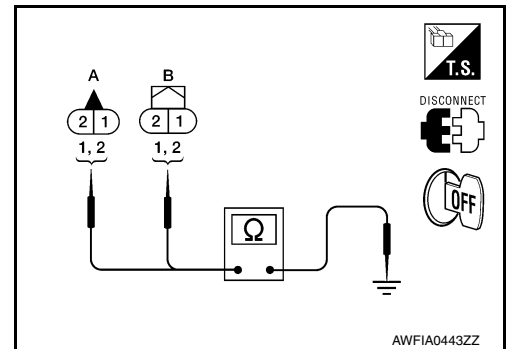
1. Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor of malfunctioning code.
2. Check continuity between front wheel sensor connector terminals (A), rear wheel sensor connector terminals (B) and ground.

: 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) connector and the malfunctioning wheel sensor connector.

Wheel sensor	ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
	Connector	Terminal	Connector	Terminal	
Front LH	E26	16	E19	1	Yes
		5		2	
Front RH		9	E41	1	
		10		2	
Rear LH		6	C1	1	
		17		2	
Rear RH		8	C2	1	
		19		2	

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to [BRC-106, "Removal and Installation"](#).

NO >> Repair the circuit.

Component Inspection

INFOID:000000010049068

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 ABS SENSOR [ABNORMAL SIGNAL]

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

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

A

B

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to [BRC-26. "Diagnosis Procedure"](#).

C

Special Repair Requirement

INFOID:000000010049069

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

D

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-6. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

E

>> END

BRC

G

H

I

J

K

L

M

N

O

P

C1116 STOP LAMP SW

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1116 STOP LAMP SW

Description

INFOID:000000010049070

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

DTC Logic

INFOID:000000010049071

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 SWITCH

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:000000010049072

Regarding Wiring Diagram information, refer to [BRC-83. "Wiring Diagram"](#).

1. CONNECTOR INSPECTION

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

Is the inspection result normal?

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

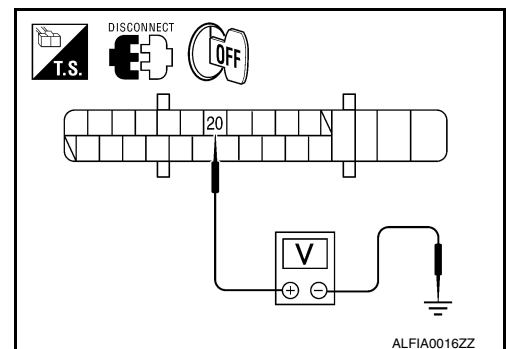
2. CHECK STOP LAMP SWITCH CIRCUIT

1. Connect stop lamp switch connector.
2. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 20 and ground.

ABS actuator and electric unit (control unit)		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
E26	20	—	Brake pedal depressed	Battery voltage
			Brake pedal released	0V

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-106. "Removal and Installation"](#).
 NO >> GO TO 3



C1116 STOP LAMP SW

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

3. CHECK STOP LAMP SWITCH CIRCUIT FOR OPEN

Check continuity between ABS actuator and electric unit (control unit) connector E26 (A) terminal 20 and stop lamp switch connector E38 (B) terminal 4.

ABS actuator and electric unit (control unit)		stop lamp switch		Continuity
Connector	Terminal	Connector	Terminal	
E26 (A)	20	E38 (B)	4	Yes

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace as necessary.

4. CHECK STOP LAMP SWITCH CIRCUIT FOR SHORT

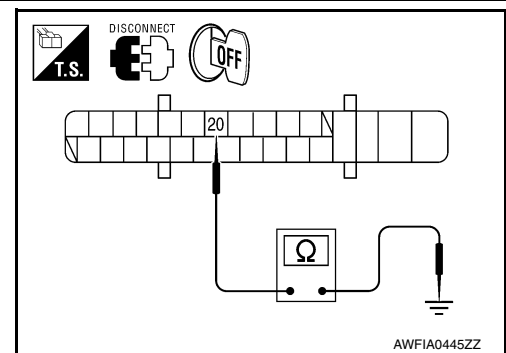
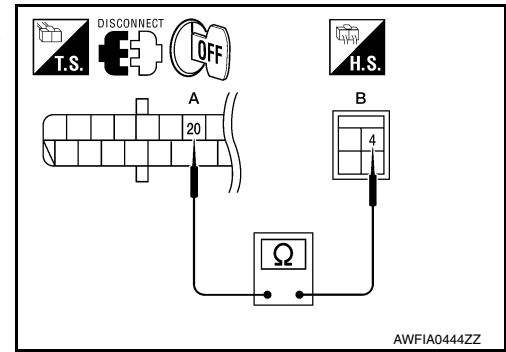
Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 20 and ground.

ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal		
E26	20	—	No

Is the inspection result normal?

YES >> Replace stop lamp switch.

NO >> Repair harness or connectors.



Special Repair Requirement

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-6. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

C1120, C1122, C1124, C1126 IN ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1120, C1122, C1124, C1126 IN ABS SOL

Description

INFOID:000000010049074

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:000000010049075

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-44. "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:000000010049076

Regarding Wiring Diagram information, refer to [BRC-83. "Wiring Diagram"](#).

1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to [BRC-21. "CONSULT Function \(ABS\)"](#).

Is any item indicated on the self-diagnosis display?

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

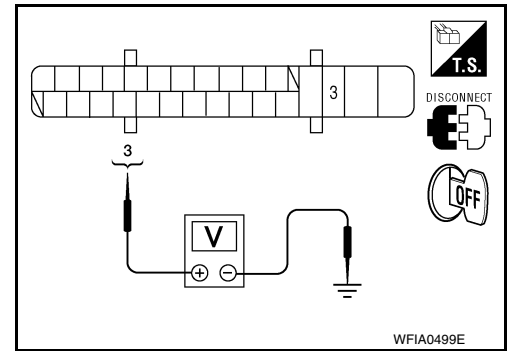
2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

C1120, C1122, C1124, C1126 IN ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

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) connector E26 terminal 3 and ground.



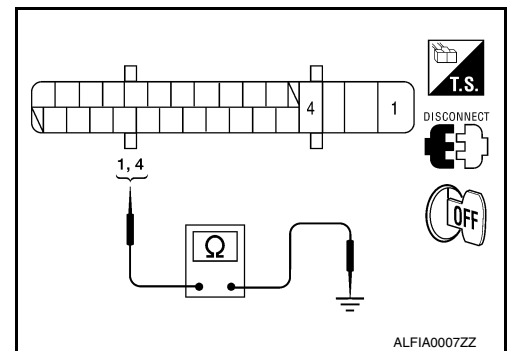
ABS actuator and electric unit (control unit)		Ground	Voltage (Approx.)
Connector	Terminal		
E26	3	—	Battery voltage

Is the inspection result normal?

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

3. CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminals 1, 4 and ground.



ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal		
E26	1	—	Yes
	4		

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit).
 Refer to [BRC-106. "Removal and Installation"](#).
 NO >> Repair or replace malfunctioning components.

Component Inspection

INFOID:000000010049077

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		
		Up	Keep	Down
FR RH SOL	FR RH IN SOL	Off	On	On
	FR RH OUT SOL	Off	Off	On*
	USV[FL-RR]	Off	Off	On*
	USV[FR-RL]	Off	Off	On*
	HSV[FL-RR]	Off	Off	On*
	HSV[FR-RL]	Off	Off	On*
FR LH SOL	FR LH IN SOL	Off	On	On
	FR LH OUT SOL	Off	Off	On*
	USV[FL-RR]	Off	Off	On*
	USV[FR-RL]	Off	Off	On*
	HSV[FL-RR]	Off	Off	On*
	HSV[FR-RL]	Off	Off	On*

C1120, C1122, C1124, C1126 IN ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Operation		ABS solenoid valve		
		Up	Keep	Down
RR RH SOL	RR RH IN SOL	Off	On	On
	RR RH OUT SOL	Off	Off	On*
	USV[FL-RR]	Off	Off	On*
	USV[FR-RL]	Off	Off	On*
	HSV[FL-RR]	Off	Off	On*
	HSV[FR-RL]	Off	Off	On*
RR LH SOL	RR LH IN SOL	Off	On	On
	RR LH OUT SOL	Off	Off	On*
	USV[FL-RR]	Off	Off	On*
	USV[FR-RL]	Off	Off	On*
	HSV[FL-RR]	Off	Off	On*
	HSV[FR-RL]	Off	Off	On*

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to [BRC-44, "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:000000010049078

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-6, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1121, C1123, C1125, C1127 OUT ABS SOL

Description

INFOID:000000010049079

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:000000010049080

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-47. "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:000000010049081

Regarding Wiring Diagram information, refer to [BRC-83. "Wiring Diagram"](#).

1. CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to [BRC-21. "CONSULT Function \(ABS\)"](#).

Is any item indicated on the self-diagnosis display?

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

2. CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

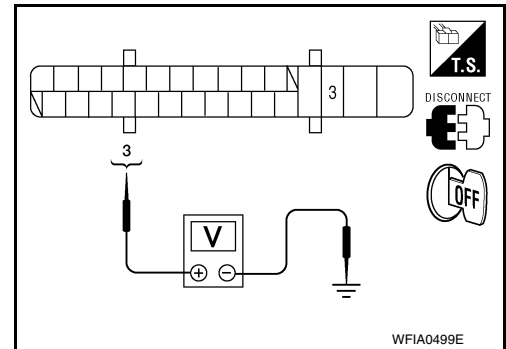
C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

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) connector E26 terminal 3 and ground.

ABS actuator and electric unit (control unit)		Ground	Voltage (Approx.)
Connector	Terminal		
E26	3	—	Battery voltage



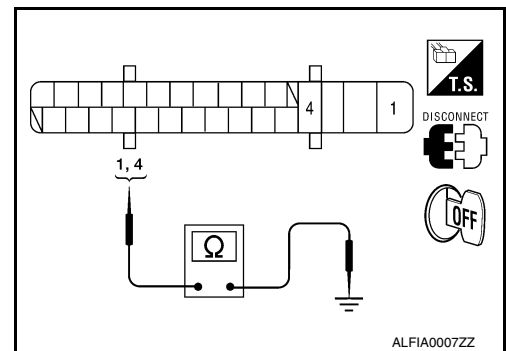
Is the inspection result normal?

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

3. CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminals 1, 4 and ground.

ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal		
E26	1	—	Yes
	4		



Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit).
 Refer to [BRC-106. "Removal and Installation"](#).
 NO >> Repair or replace malfunctioning components.

Component Inspection

INFOID:000000010049082

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		
		Up	Keep	Down
FR RH SOL	FR RH IN SOL	Off	On	On
	FR RH OUT SOL	Off	Off	On*
	USV[FL-RR]	Off	Off	On*
	USV[FR-RL]	Off	Off	On*
	HSV[FL-RR]	Off	Off	On*
	HSV[FR-RL]	Off	Off	On*
FR LH SOL	FR LH IN SOL	Off	On	On
	FR LH OUT SOL	Off	Off	On*
	USV[FL-RR]	Off	Off	On*
	USV[FR-RL]	Off	Off	On*
	HSV[FL-RR]	Off	Off	On*
	HSV[FR-RL]	Off	Off	On*

C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Operation		ABS solenoid valve		
		Up	Keep	Down
RR RH SOL	RR RH IN SOL	Off	On	On
	RR RH OUT SOL	Off	Off	On*
	USV[FL-RR]	Off	Off	On*
	USV[FR-RL]	Off	Off	On*
	HSV[FL-RR]	Off	Off	On*
	HSV[FR-RL]	Off	Off	On*
RR LH SOL	RR LH IN SOL	Off	On	On
	RR LH OUT SOL	Off	Off	On*
	USV[FL-RR]	Off	Off	On*
	USV[FR-RL]	Off	Off	On*
	HSV[FL-RR]	Off	Off	On*
	HSV[FR-RL]	Off	Off	On*

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to [BRC-44, "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:0000000010049083

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-6, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

C1130, C1131, C1132, C1133, C1136 ENGINE SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1130, C1131, C1132, C1133, C1136 ENGINE SIGNAL

Description

INFOID:000000010049084

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

DTC Logic

INFOID:000000010049085

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1130	ENGINE SIGNAL 1	Major engine components are 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-50, "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:000000010049086

1. CHECK ENGINE SYSTEM

1. Perform ECM self-diagnosis. Repair or replace items indicated, then perform ECM self-diagnosis again. Refer to [EC-138, "CONSULT Function"](#).
2. Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

Is any item indicated on the self-diagnosis display?

- YES >> Repair or replace malfunctioning components.
NO >> Inspection End.

C1142 PRESS SEN CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1142 PRESS SEN CIRCUIT

Description

INFOID:000000010049087

The pressure sensor converts the brake fluid pressure to an electric signal and transmits it to the ABS actuator and electric unit (control unit). (The pressure sensor is integrated in the ABS actuator and electric unit (control unit).)

DTC Logic

INFOID:000000010049088

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• 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
PRESS SEN CIRCUIT

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-51, "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:000000010049089

Regarding Wiring Diagram information, refer to [BRC-83, "Wiring Diagram"](#).

1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector and stop lamp switch connector.
3. Check terminals for deformation, disconnection, looseness and damage. If any malfunction is found, repair or replace terminals.
4. Reconnect connectors securely.
5. Start engine.
6. Pump brake pedal carefully several times, and perform self-diagnosis.

Is the inspection result normal?

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

2.CHECK STOP LAMP SWITCH

C1142 PRESS SEN CIRCUIT

[VDC/TCS/ABS]

< DTC/CIRCUIT DIAGNOSIS >

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch connector.
3. Check continuity between stop lamp switch terminals 3 and 4.

Stop lamp switch terminals	Condition	Continuity
3 - 4	Brake pedal depressed	Yes
	Brake pedal released	No

Is the inspection result normal?

- YES >> GO TO 3
 NO >> Replace stop lamp switch.

3.CHECK STOP LAMP SWITCH CIRCUIT

1. Disconnect ABS actuator and electric unit (control unit) connector.
2. Connect stop lamp switch connector.
3. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 20 and ground.

ABS actuator and electric unit (control unit)		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
E26	20	—	Brake pedal depressed	Battery voltage
			Brake pedal released	0V

Is the inspection result normal?

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

4.CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
PRESS SEN CIRCUIT

Is above displayed on the self-diagnosis display?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-106. "Removal and Installation"](#).
 NO >> Inspection End.

Component Inspection

INFOID:000000010049090

1.CHECK DATA MONITOR

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

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.	- 40 to 300 bar

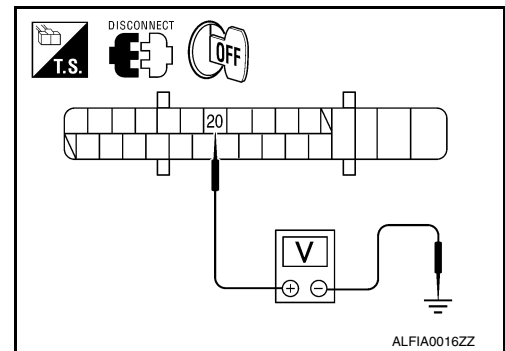
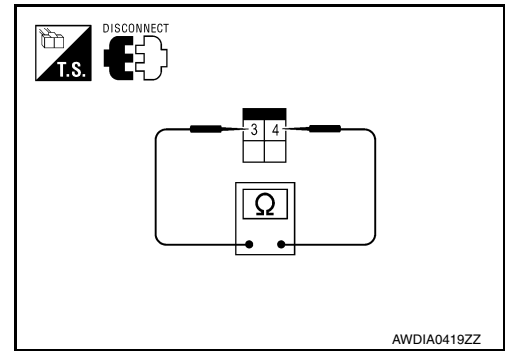
Is the inspection result normal?

- YES >> Inspection End.
 NO >> Go to diagnosis procedure. Refer to [BRC-51. "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:000000010049091

1.AJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION



C1142 PRESS SEN CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-6, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

A
B
C
D
E
G
H
I
J
K
L
M
N
O
P

BRC

C1143, C1144 STEERING ANGLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1143, C1144 STEERING ANGLE SENSOR

Description

INFOID:000000010049092

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:000000010049093

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-54, "Diagnosis Procedure"](#).
 NO >> Inspection End.

Diagnosis Procedure

INFOID:000000010049094

Regarding Wiring Diagram information, refer to [BRC-83, "Wiring Diagram"](#).

1. CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

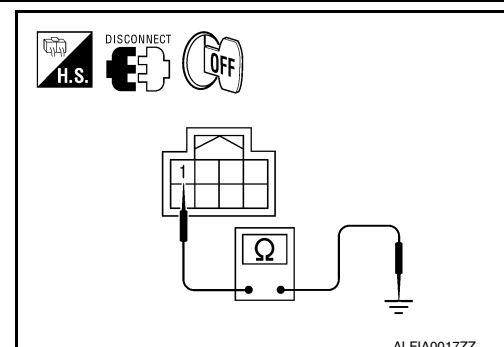
Is any item displayed on the self-diagnosis display?

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

2. CHECK STEERING ANGLE SENSOR HARNESS

1. Check CAN communication system. Refer to [LAN-15, "Trouble Diagnosis Flow Chart"](#).
2. Turn ignition switch OFF.
3. Disconnect steering angle sensor connector.
4. Check continuity between steering angle sensor harness connector M53 terminal 1 and ground.

Steering angle sensor		Ground	Continuity
Connector	Terminal		
M53	1	—	Yes

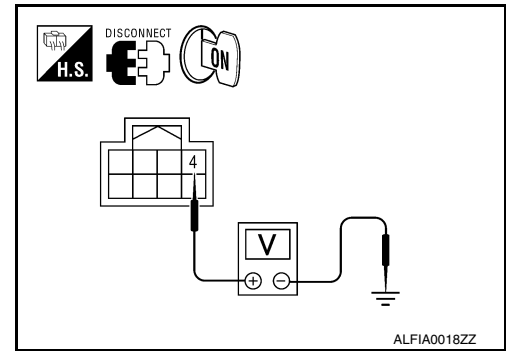


C1143, C1144 STEERING ANGLE SENSOR

[VDC/TCS/ABS]

< DTC/CIRCUIT DIAGNOSIS >

5. Turn ignition switch ON.
6. Check voltage between steering angle sensor connector M53 terminal 4 and ground.



Steering angle sensor		Ground	Voltage (Approx.)
Connector	Terminal		
M53	4	—	Battery voltage

Is the inspection result normal?

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

3.CHECK DATA MONITOR

1. Turn ignition switch OFF.
2. Connect steering angle sensor connector and ABS actuator and electric unit (control unit) connector.
3. Perform the steering angle sensor component inspection. Refer to [BRC-55. "Component Inspection"](#).

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-106. "Removal and Installation"](#).
 NO >> Replace steering angle sensor. Refer to [BRC-109. "Removal and Installation"](#).

Component Inspection

INFOID:0000000110049095

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	$\pm 2.5^\circ$
Turn 90° to right	Approx. +90°
Turn 90° to left	Approx. -90°

Is the inspection result normal?

- YES >> Inspection End.
 NO >> Go to diagnosis procedure. Refer to [BRC-54. "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:0000000110049096

1.AJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-6. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

C1145, C1146 YAW RATE/SIDE/DECEL G SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1145, C1146 YAW RATE/SIDE/DECEL G SENSOR

Description

INFOID:000000010049097

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:000000010049098

DTC DETECTION LOGIC

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

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-56, "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:000000010049099

Regarding Wiring Diagram information, refer to [BRC-83, "Wiring Diagram"](#).

CAUTION:

- Sudden turns (such as spin turns, acceleration turns), drifting, etc., when VDC function is off (VDC OFF switch "ON") may cause yaw rate/side/decel G sensor system to indicate a malfunction. However, this is not a malfunction if normal operation can be resumed after restarting engine. Then erase memory of self-diagnosis.
- If vehicle is on turn-table at entrance to parking garage, or on other moving surfaces, SLIP indicator lamp may illuminate and CONSULT 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 surfaces, and start engine. Results will return to normal. Also, after doing spin turns or acceleration turns with VDC function off (VDC OFF switch "ON"), the results will return to a normal condition by re-starting vehicle.

1. CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect yaw rate/side/decel G sensor connector and ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connectors and perform self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

Is any item displayed on the self-diagnosis display?

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

C1145, C1146 YAW RATE/SIDE/DECCEL G SENSOR

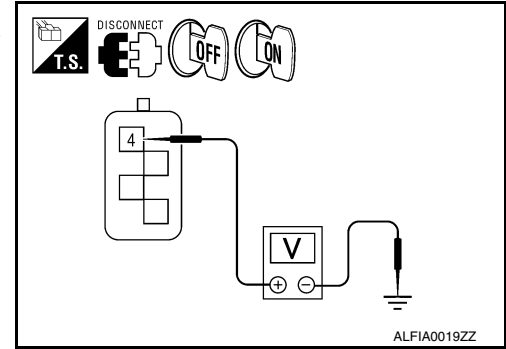
< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

2. CHECK YAW RATE/SIDE/DECCEL G SENSOR POWER SUPPLY CIRCUIT

1. Turn ignition switch ON, then OFF.
2. Check voltage between yaw rate/side/deccl G sensor connector M55 terminal 4 and ground.

Yaw rate/side/deccl G sensor		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
M55	4	—	Ignition switch: ON	Battery voltage
			Ignition switch: OFF	0V



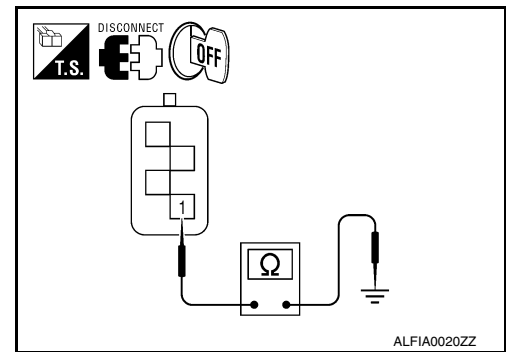
Is the inspection result normal?

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

3. CHECK YAW RATE/SIDE/DECCEL G SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check resistance between yaw rate/side/deccl G sensor connector M55 terminal 1 and ground.

Yaw rate/side/deccl G sensor		Ground	Continuity
Connector	Terminal		
M55	1	—	Yes



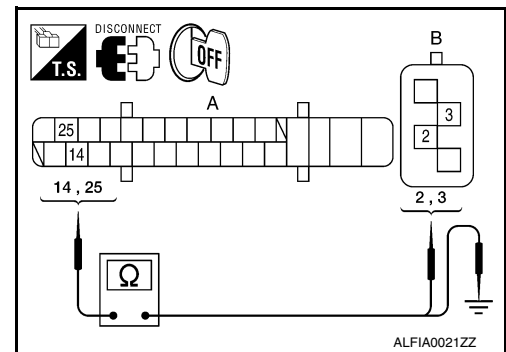
Is the inspection result normal?

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

4. CHECK YAW RATE/SIDE/DECCEL G SENSOR HARNESS

1. Check continuity between ABS actuator and electric unit (control unit) connector E26 (A) terminals 14 and 25 and yaw rate/side/deccl G sensor harness connector M55 (B) terminals 2 and 3.

ABS actuator and electric unit (control unit)		Yaw rate/side/deccl G sensor		Continuity
Connector	Terminal	Connector	Terminal	
E26 (A)	14	M55 (B)	2	Yes
	25		3	



2. Check continuity between ABS actuator and electric unit (control unit) connector E26 (A) terminals 14, 25 and ground.

ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal		
E26 (A)	14	—	No
	25		

Is the inspection result normal?

- YES >> GO TO 5
 NO >> Repair or replace malfunctioning components.

5. CHECK DATA MONITOR

1. Connect yaw rate/side/deccl G sensor and ABS actuator and electric unit (control unit) connectors.

A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

C1145, C1146 YAW RATE/SIDE/DECEL G SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

2. Perform the yaw rate/side/decel G sensor component inspection. Refer to [BRC-58. "Component Inspection"](#).

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-106. "Removal and Installation"](#).

NO >> Replace yaw rate/side/decel G sensor. Refer to [BRC-108. "Removal and Installation"](#).

Component Inspection

INFOID:0000000010049100

1. CHECK DATA MONITOR

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

Vehicle condition	YAW RATE SEN (DATA MONITOR)	SIDE G-SENSOR (DATA MONITOR)
Stopped	Approx. 0 d/s	Approx. 0 m/s ²
Turning right	Negative value	Negative value
Turning left	Positive value	Positive value

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to [BRC-56. "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:0000000010049101

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-6. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

C1147, C1148, C1149, C1150 USV/HSV LINE

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1147, C1148, C1149, C1150 USV/HSV LINE

Description

INFOID:0000000010049102

USV1, USV2 (CUT VALVE)

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

HSV1, HSV2 (SUCTION VALVE)

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

DTC Logic

INFOID:0000000010049103

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1147	USV LINE[FL-RR]	VDC switch-over solenoid valve (USV1) 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)
C1148	USV LINE[FR-RL]	VDC switch-over solenoid valve (USV2) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	
C1149	HSV LINE[FL-RR]	VDC switch-over solenoid valve (HSV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	
C1150	HSV LINE[FR-RL]	VDC switch-over solenoid valve (HSV2) 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
USV LINE[FL-RR]
USV LINE[FR-RL]
HSV LINE[FL-RR]
HSV LINE[FR-RL]

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-59. "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000010049104

Regarding Wiring Diagram information, refer to [BRC-83. "Wiring Diagram"](#).

1. CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to [BRC-21. "CONSULT Function \(ABS\)"](#).

Is any item indicated on the self-diagnosis display?

- YES >> GO TO 2

C1147, C1148, C1149, C1150 USV/HSV LINE

< DTC/CIRCUIT DIAGNOSIS >

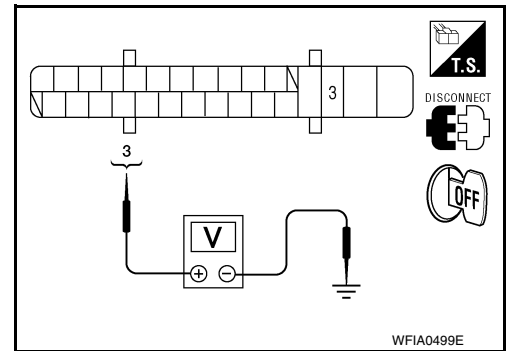
[VDC/TCS/ABS]

NO >> Poor connection of connector terminals. Repair or replace connector.

2. CHECK SOLENOID 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) connector E26 terminal 3 and ground.

ABS actuator and electric unit (control unit)		Ground	Voltage (Approx.)
Connector	Terminal		
E26	3	—	Battery voltage



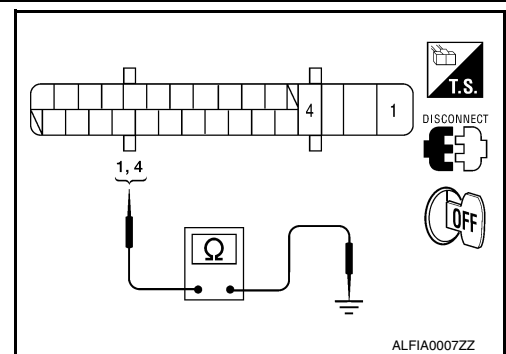
Is the inspection result normal?

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

3. CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminals 1, 4 and ground.

ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal		
E26	1	—	Yes
	4		



Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit).
 Refer to [BRC-106. "Removal and Installation"](#).
 NO >> Repair or replace malfunctioning components.

Component Inspection

INFOID:000000010049105

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 (ACT)		
		Up	ACT UP	ACT KEEP
FR RH ABS SOLENOID (ACT)	FR RH IN SOL	Off	Off	Off
	FR RH OUT SOL	Off	Off	Off
	USV[FL-RR]	Off	Off	Off
	USV[FR-RL]	Off	On	On
	HSV[FL-RR]	Off	Off	Off
	HSV[FR-RL]	Off	On*	Off
FR LH ABS SOLENOID (ACT)	FR LH IN SOL	Off	Off	Off
	FR LH OUT SOL	Off	Off	Off
	USV[FL-RR]	Off	Off	Off
	USV[FR-RL]	Off	On	On
	HSV[FL-RR]	Off	Off	Off
	HSV[FR-RL]	Off	On*	Off

C1147, C1148, C1149, C1150 USV/HSV LINE

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Operation		ABS solenoid valve (ACT)		
		Up	ACT UP	ACT KEEP
RR RH ABS SOLENOID (ACT)	RR RH IN SOL	Off	Off	Off
	RR RH OUT SOL	Off	Off	Off
	USV[FL-RR]	Off	Off	Off
	USV[FR-RL]	Off	On	On
	HSV[FL-RR]	Off	Off	Off
	HSV[FR-RL]	Off	On*	Off
RR LH ABS SOLENOID (ACT)	RR LH IN SOL	Off	Off	Off
	RR LH OUT SOL	Off	Off	Off
	USV[FL-RR]	Off	Off	Off
	USV[FR-RL]	Off	On	On
	HSV[FL-RR]	Off	Off	Off
	HSV[FR-RL]	Off	On*	Off

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to [BRC-59. "Diagnosis Procedure"](#).

Special Repair Requirement

INFOID:0000000010049106

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-6. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

C1154 PNP SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1154 PNP SWITCH

Description

INFOID:000000010049107

The transmission range switch signal is transmitted to the ABS actuator and electric unit (control unit) using the CAN communication lines.

DTC Logic

INFOID:000000010049108

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1154	PNP POS SIG	Transmission range switch signal or communication line between the ABS actuator and electric unit (control unit) and TCM is open or shorted.	<ul style="list-style-type: none">• Harness or connector• Transmission range switch

DTC CONFIRMATION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results
PNP POS SIG

Is above displayed on the self-diagnosis display?

- YES >> Proceed to diagnosis procedure. Refer to [BRC-62, "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:000000010049109

1. CHECK DATA MONITOR

Select "SLCT LVR POSI" in "Data Monitor" and check transmission range switch signal.

Selector lever position	SLCT LVR POSI (Data monitor)
P position	P
R position	R
N position	N
D position	D

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-106, "Removal and Installation"](#).
NO >> GO TO 2

2. CHECK TRANSMISSION RANGE SWITCH

Perform transmission range switch inspection. Refer to [TM-51, "Component Inspection \(Transmission Range Switch\)"](#).

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-106, "Removal and Installation"](#).
NO >> Repair or replace malfunctioning components.

Special Repair Requirement

INFOID:000000010049110

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

C1154 PNP SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-6, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

A
B
C
D
E
G
H
I
J
K
L
M
N
O
P

BRC

C1155 BR FLUID LEVEL LOW

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1155 BR FLUID LEVEL LOW

Description

INFOID:000000010049111

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:000000010049112

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

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-64, "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:000000010049113

Regarding Wiring Diagram information, refer to [BRC-83, "Wiring Diagram"](#).

CAUTION:

Check brake fluid level in brake reservoir tank before starting inspection.

1. CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect brake fluid level switch connector and combination meter connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

Is any item displayed on the self-diagnosis display?

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

2. CHECK BRAKE FLUID LEVEL SWITCH

Perform the brake fluid level switch component inspection. Refer to [BRC-65, "Component Inspection"](#).

Is the inspection result normal?

- YES >> GO TO 3
NO >> Replace brake fluid level switch. Refer to [BR-24, "Exploded View"](#).

3. CHECK BRAKE FLUID LEVEL SWITCH HARNESS

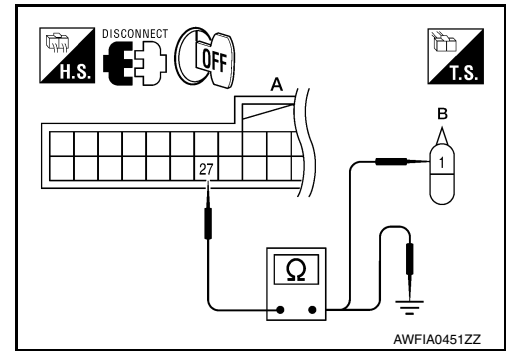
C1155 BR FLUID LEVEL LOW

[VDC/TCS/ABS]

< DTC/CIRCUIT DIAGNOSIS >

1. Disconnect combination meter connector.
2. Check continuity between combination meter connector M24 (A) terminal 27 and brake fluid level switch connector E24 (B) terminal 1.

Combination meter		Brake fluid level switch		Continuity
Connector	Terminal	Connector	Terminal	
M24 (A)	27	E24 (B)	1	Yes



3. Check continuity between combination meter connector M24 (A) terminal 27 and ground.

Combination meter		Ground	Continuity
Connector	Terminal		
M24 (A)	27	—	No

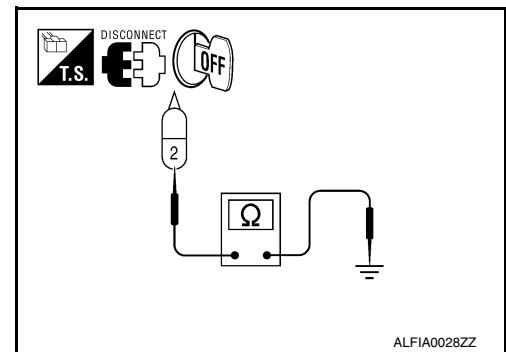
Is the inspection result normal?

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

4. CHECK BRAKE FLUID LEVEL SWITCH GROUND CIRCUIT

Check continuity between brake fluid level switch connector E24 terminal 2 and ground.

Brake fluid level switch		Ground	Continuity
Connector	Terminal		
E24	2	—	Yes



Is the inspection result normal?

- YES >> Inspection End.
 NO >> • Repair or replace malfunctioning components.
 • Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

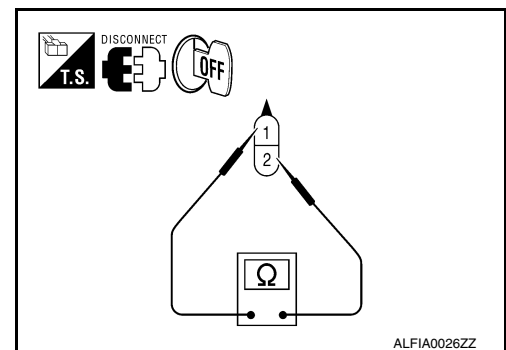
Component Inspection

INFOID:000000010049114

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 1 and 2.

Brake fluid level switch terminals	Condition	Continuity
1—2	Brake fluid reservoir full	No
	Brake fluid reservoir empty	Yes



Is the inspection result normal?

- YES >> Inspection End.
 NO >> Replace brake fluid level switch. Refer to [BR-24, "Exploded View"](#).

A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

C1156 ST ANG SEN COM CIR

Description

INFOID:000000010049115

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:000000010049116

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:000000010049117

1. CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

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

Is above displayed on the self-diagnosis display?

- YES >> Refer to [LAN-15, "Trouble Diagnosis Flow Chart"](#).
 NO >> Inspection End.

U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000010049118

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:0000000010049119

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 lineABS actuator and electric unit (control unit)

BRC

Diagnosis Procedure

INFOID:0000000010049120

1. CHECK CONNECTOR

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- Reconnect connector and perform self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

Self-diagnosis results
CAN COMM CIRCUIT

Is above displayed on the self-diagnosis display?

- YES >> Refer to [LAN-15, "Trouble Diagnosis Flow Chart"](#).
NO >> Inspection End.

PARKING BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

PARKING BRAKE SWITCH

Description

INFOID:000000010049121

The parking brake switch converts the status of the parking brake pedal to an electric signal and transmits it to the combination meter. The combination meter, through CAN communication, transmits the signal to the ABS actuator and electric unit (control unit).

Component Function Check

INFOID:000000010049122

1. CHECK PARKING BRAKE SWITCH OPERATION

Operate the parking brake and check that the brake warning lamp in the combination meter turns on/off correctly.

Condition	Brake warning lamp illumination
Parking brake engaged	ON
Parking brake not engaged	OFF

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to [BRC-68, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000010049123

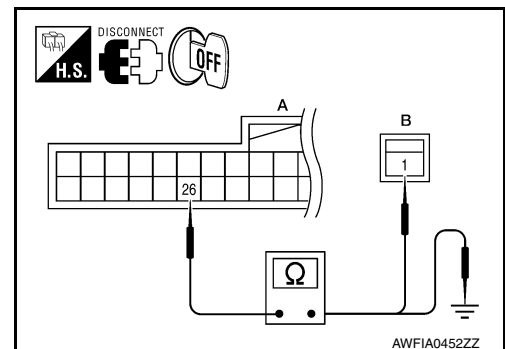
Regarding Wiring Diagram information, refer to [BRC-83, "Wiring Diagram"](#).

1. CHECK PARKING BRAKE SWITCH CIRCUIT

- Disconnect combination meter connector and parking brake switch connector.
- Check continuity between combination meter connector M24 (A) terminal 26 and parking brake switch connector E35 (B) terminal 1.

Combination meter		Parking brake switch		Continuity
Connector	Terminal	Connector	Terminal	
M24 (A)	26	E35 (B)	1	Yes

- Check continuity between combination meter harness connector M24 (A) terminal 26 and ground.



Combination meter		Ground	Continuity
Connector	Terminal		
M24 (A)	26	—	No

Is the inspection result normal?

YES >> GO TO 2

NO >> Repair harness or connector.

2. CHECK PARKING BRAKE SWITCH

Perform parking brake switch component inspection. Refer to [BRC-69, "Component Inspection"](#).

Is the inspection result normal?

YES >> Check parking brake switch case ground condition.

NO >> Replace parking brake switch.

PARKING BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Component Inspection

INFOID:000000010049124

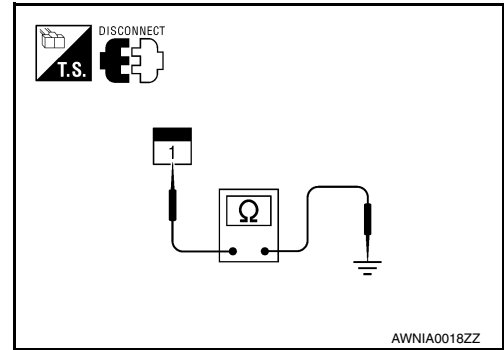
1. CHECK PARKING BRAKE SWITCH

1. Turn ignition switch OFF.
2. Disconnect parking brake switch connector.
3. Check continuity between parking brake switch terminal 1 and ground.

Component	Terminal	Condition	Continuity
Parking brake switch	1	Parking brake depressed	Yes
		Parking brake released	No

Is the inspection result normal?

- YES >> Inspection End.
NO >> Replace parking brake switch.



A
B
C
D
E
G
H
I
J
K
L
M
N
O
P

BRC

VDC OFF SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

VDC OFF SWITCH

Description

INFOID:0000000110049125

VDC OFF switch deactivates (turn OFF) the VDC/TCS function when the VDC OFF switch is pressed.

Component Function Check

INFOID:0000000110049126

1.CHECK VDC OFF SWITCH OPERATION

Operate 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
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-70. "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:0000000110049127

Regarding Wiring Diagram information, refer to [BRC-83. "Wiring Diagram"](#).

1.CHECK VDC OFF SWITCH

Perform VDC OFF switch component inspection. Refer to [BRC-71. "Component Inspection"](#).

Is the inspection result normal?

YES >> GO TO 2

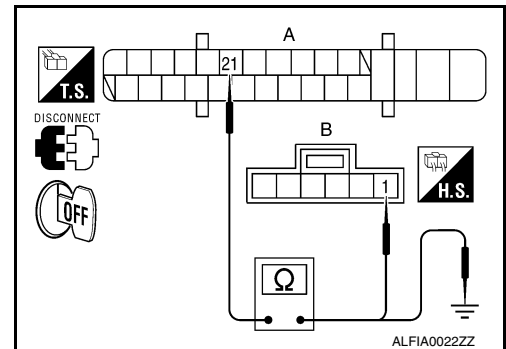
NO >> Replace VDC OFF switch.

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 E26 (A) terminal 21 and VDC OFF switch connector M72 (B) terminal 1.

ABS actuator and electric unit (control unit)		VDC OFF switch		Continuity
Connector	Terminal	Connector	Terminal	
E26 (A)	21	M72 (B)	1	Yes

3. Check continuity between ABS actuator and electric unit (control unit) connector E26 (A) terminal 21 and ground.



ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal		
E26 (A)	21	—	No

Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

3.CHECK VDC OFF SWITCH GROUND

VDC OFF SWITCH

[VDC/TCS/ABS]

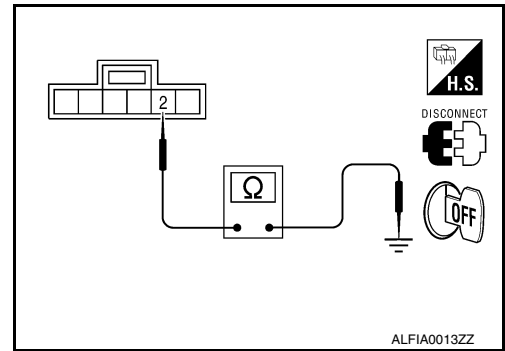
< DTC/CIRCUIT DIAGNOSIS >

Check continuity between VDC OFF switch connector M72 terminal 2 and ground.

VDC OFF switch		Ground	Continuity
Connector	Terminal		
M72	2	—	Yes

Is the inspection result normal?

- YES >> Inspection End.
- NO >> Repair or replace malfunctioning components.



INFOID:000000010049128

Component Inspection

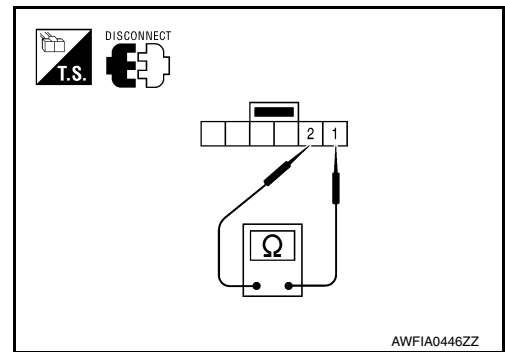
1. CHECK VDC OFF SWITCH

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

VDC OFF switch terminals	Condition	Continuity
1 - 2	VDC OFF switch is pressed ON	Yes
	VDC OFF switch is pressed OFF	No

Is the inspection result normal?

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



A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

ABS WARNING LAMP

Description

INFOID:0000000010049129

x: ON –: OFF

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

Component Function Check

INFOID:0000000010049130

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-72. "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:0000000010049131

1. CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to [BRC-21. "CONSULT Function \(ABS\)"](#).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Check items displayed by self-diagnosis. Refer to [BRC-21. "CONSULT Function \(ABS\)"](#).

2. CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to [MWI-4. "Work Flow"](#).

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-106. "Removal and Installation"](#).

NO >> Replace combination meter. Refer to [MWI-122. "Removal and Installation"](#).

Special Repair Requirement

INFOID:0000000010049132

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-6. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

BRAKE WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

BRAKE WARNING LAMP

Description

INFOID:000000010049133

×: 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:000000010049134

1. BRAKE WARNING LAMP OPERATION CHECK 1

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 >> GO TO 2

NO >> Go to diagnosis procedure. Refer to [BRC-73, "Diagnosis Procedure"](#).

2. BRAKE WARNING LAMP OPERATION CHECK 2

Check that the brake warning lamp in the combination meter turns on/off correctly when operating the parking brake.

Is the inspection result normal?

YES >> Inspection End.

NO >> Check parking brake switch. Refer to [MWI-44, "Description"](#).

Diagnosis Procedure

INFOID:000000010049135

1. CHECK PARKING BRAKE SWITCH

Check that the brake warning lamp in the combination meter turns on/off correctly when operating the parking brake.

Is the inspection result normal?

YES >> GO TO 2

NO >> Check parking brake switch. Refer to [MWI-44, "Description"](#).

2. CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

Is the inspection result normal?

YES >> GO TO 3

NO >> Check items displayed by self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

3. CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to [MWI-4, "Work Flow"](#).

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-106, "Removal and Installation"](#).

NO >> Replace combination meter. Refer to [MWI-122, "Removal and Installation"](#).

BRAKE WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Special Repair Requirement

INFOID:000000010049136

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-6. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

VDC OFF INDICATOR LAMP

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

VDC OFF INDICATOR LAMP

Description

INFOID:000000010049137

x: ON –: OFF

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

Component Function Check

INFOID:000000010049138

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-75. "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-70. "Description"](#).

Diagnosis Procedure

INFOID:000000010049139

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-70. "Diagnosis Procedure"](#).

2.CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to [BRC-21. "CONSULT Function \(ABS\)"](#).

Is the inspection result normal?

YES >> GO TO 3

NO >> Check items displayed by self-diagnosis. Refer to [BRC-21. "CONSULT Function \(ABS\)"](#).

3.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to [MWI-4. "Work Flow"](#).

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-106. "Removal and Installation"](#).

NO >> Replace combination meter. Refer to [MWI-122. "Removal and Installation"](#).

VDC OFF INDICATOR LAMP

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Special Repair Requirement

INFOID:000000010049140

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-6. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

SLIP INDICATOR LAMP

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

SLIP INDICATOR LAMP

Description

INFOID:000000010049141

x: ON –: OFF

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

Component Function Check

INFOID:000000010049142

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-77, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000010049143

1.CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

Is the inspection result normal?

YES >> GO TO 2

NO >> Check items displayed by self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to [MWI-4, "Work Flow"](#).

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-106, "Removal and Installation"](#).

NO >> Replace combination meter. Refer to [MWI-122, "Removal and Installation"](#).

Special Repair Requirement

INFOID:000000010049144

1.AJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to [BRC-6, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

>> END

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

ECU DIAGNOSIS INFORMATION

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Reference Value

INFOID:0000000010049145

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.

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)
FR LH IN SOL	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) 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
FR LH OUT SOL	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) 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
FR RH IN SOL	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) 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
FR RH OUT SOL	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) 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 all solenoid valves	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) 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

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

Monitor item	Display content	Data monitor	
		Condition	Reference value in normal operation
RR LH OUT SOL	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) 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 RH IN SOL	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) 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 RH OUT SOL	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) 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
EBD WARN LAMP	EBD warning lamp (Note 2)	When EBD warning lamp is ON	On
		When EBD warning lamp is OFF	Off
STOP LAMP SW	Brake pedal operation	When brake pedal is depressed	On
		When brake pedal is not depressed	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 2)	When ABS warning lamp is ON	On
		When ABS warning lamp is OFF	Off
OFF LAMP	VDC OFF indicator lamp (Note 2)	When VDC OFF indicator lamp is ON	On
		When VDC OFF indicator lamp is OFF	Off
SLIP LAMP	SLIP indicator lamp (Note 2)	When SLIP indicator lamp is ON	On
		When SLIP indicator lamp is OFF	Off
BATTERY VOLT	Battery voltage supplied to the ABS actuator and electric unit (control unit)	Ignition switch ON	10 – 16 V
GEAR	Manual mode gear position determined by TCM	1st gear 2nd gear 3rd gear 4th gear 5th gear 6th gear	1 2 3 4 5 6
SLCT LVR POSI	CVT shift position	P position R position N position D position	N/P R N/P D
YAW RATE SEN	Yaw rate detected by yaw rate/side G sensor	When vehicle stop	Approx. 0 d/s
		When vehicle turning	-75 to 75 d/s

A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

Monitor item	Display content	Data monitor	
		Condition	Reference value in normal operation
ACCEL POS SIG	Throttle actuator opening/closing is displayed (linked with accelerator pedal)	Accelerator pedal not depressed (ignition switch is ON)	0 %
		Depress accelerator pedal (ignition switch is ON)	0 - 100 %
SIDE G-SENSOR	Transverse G detected by side G sensor	Vehicle stopped	Approx. 0 m/s ²
		Vehicle turning right	Negative value (m/s ²)
		Vehicle turning left	Positive value (m/s ²)
STR ANGLE SIG	Steering angle detected by steering angle sensor	Straight-ahead	Approx. 0°
		Steering wheel turned	-720 to 720°
PRESS SENSOR	Brake fluid pressure detected by 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
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
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
FLUID LEV SW	Brake fluid level switch	When brake fluid level switch ON	On
		When brake fluid level switch OFF	Off
PARK BRAKE SW	Parking brake switch	Parking brake switch is active	On
		Parking brake switch is inactive	Off
USV[FL-RR]	VDC switch-over valve	When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT) 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

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

Monitor item	Display content	Data monitor	
		Condition	Reference value in normal operation
USV[FR-RL]	VDC switch-over valve	When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT) 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
HSV[FL-RR]	VDC switch-over valve	When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT) 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
HSV[FR-RL]	VDC switch-over valve	When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT) 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
V/R OUTPUT	Solenoid valve relay activated	When the solenoid valve relay is active (when ignition switch OFF)	On
		When the solenoid valve relay is not active (in the fail-safe mode)	Off
M/R OUTPUT	Actuator motor and motor relay activated	When the actuator motor and motor relay are active ("ACTIVE TEST" with CONSULT)	On
		When the actuator motor and motor relay are inactive	Off
ENGINE RPM	With engine running	With engine stopped	0 rpm
		Engine running	Almost in accordance with tachometer display

Note 1: Confirm tire pressure is normal.

Note 2: On and off timing for warning lamp and indicator lamp. Refer to [BRC-9, "System Description"](#).

Fail-Safe

INFOID:000000010049146

CAUTION:

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

ABS, EBD SYSTEM

In case of an electrical malfunction with the ABS, ABS warning lamp and SLIP indicator lamp will turn on. In case of an electrical malfunction with the EBD system, brake warning lamp, ABS warning lamp and SLIP indicator lamp will turn on. The system will revert to one of the following conditions of the fail-safe function.

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

VDC / TCS

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

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

DTC No. Index

INFOID:000000010049147

DTC	Items (CONSULT screen terms)	Reference
C1101	RR RH SENSOR-1	BRC-26, "DTC Logic"
C1102	RR LH SENSOR-1	
C1103	FR RH SENSOR-1	
C1104	FR LH SENSOR-1	
C1105	RR RH SENSOR-2	BRC-30, "DTC Logic"
C1106	RR LH SENSOR-2	
C1107	FR RH SENSOR-2	
C1108	FR LH SENSOR- 2	
C1109	BATTERY VOLTAGE [ABNORMAL]	BRC-32, "Description"
C1110	CONTROLLER FAILURE	BRC-34, "DTC Logic"
C1111	PUMP MOTOR	BRC-35, "Description"
C1114	MAIN RELAY	BRC-37, "Description"
C1115	ABS SENSOR [ABNORMAL SIGNAL]	BRC-39, "Description"
C1116	STOP LAMP SW	BRC-42, "Description"
C1120	FR LH IN ABS SOL	BRC-44, "Description"
C1122	FR RH IN ABS SOL	
C1124	RR LH IN ABS SOL	
C1126	RR RH IN ABS SOL	
C1121	FR LH OUT ABS SOL	BRC-47, "Description"
C1123	FR RH OUT ABS SOL	
C1125	RR LH OUT ABS SOL	
C1127	RR RH OUT ABS SOL	
C1130	ENGINE SIGNAL 1	BRC-50, "Description"
C1131	ENGINE SIGNAL 2	
C1132	ENGINE SIGNAL 3	
C1133	ENGINE SIGNAL 4	
C1136	ENGINE SIGNAL 6	
C1142	PRESS SEN CIRCUIT	
C1143	ST ANG SEN CIRCUIT	BRC-54, "Description"
C1144	ST ANG SEN SIGNAL	
C1145	YAW RATE SENSOR	BRC-56, "Description"
C1146	SIDE G-SEN CIRCUIT	
C1147	USV LINE [FL-RR]	BRC-59, "Description"
C1148	USV LINE [FR-RL]	
C1149	HSV LINE [FL-RR]	
C1150	HSV LINE [FR-RL]	
C1153	EMERGENCY BRAKE	BRC-34, "DTC Logic"
C1154	PNP POS SIG	BRC-62, "Description"
C1155	BR FLUID LEVEL LOW	BRC-64, "Description"
C1156	ST ANG SEN COM CIR	BRC-66, "Description"
C1170	VARIANT CODING	BRC-34, "DTC Logic"
U1000	CAN COMM CIRCUIT	BRC-67, "Description"

BRAKE CONTROL SYSTEM

< WIRING DIAGRAM >

[VDC/TCS/ABS]

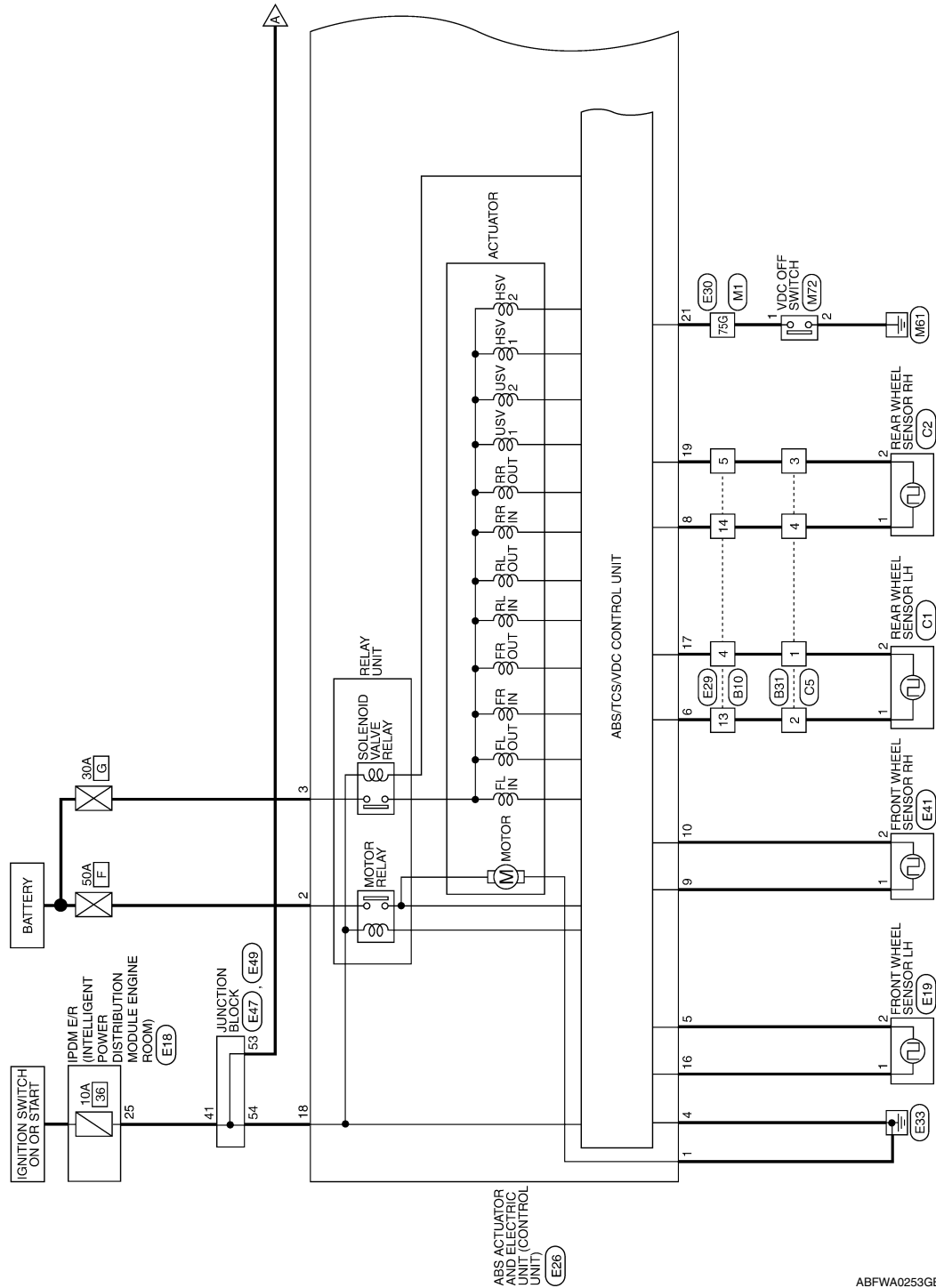
WIRING DIAGRAM

BRAKE CONTROL SYSTEM

Wiring Diagram

INFOID:0000000010049148

BRAKE CONTROL SYSTEM



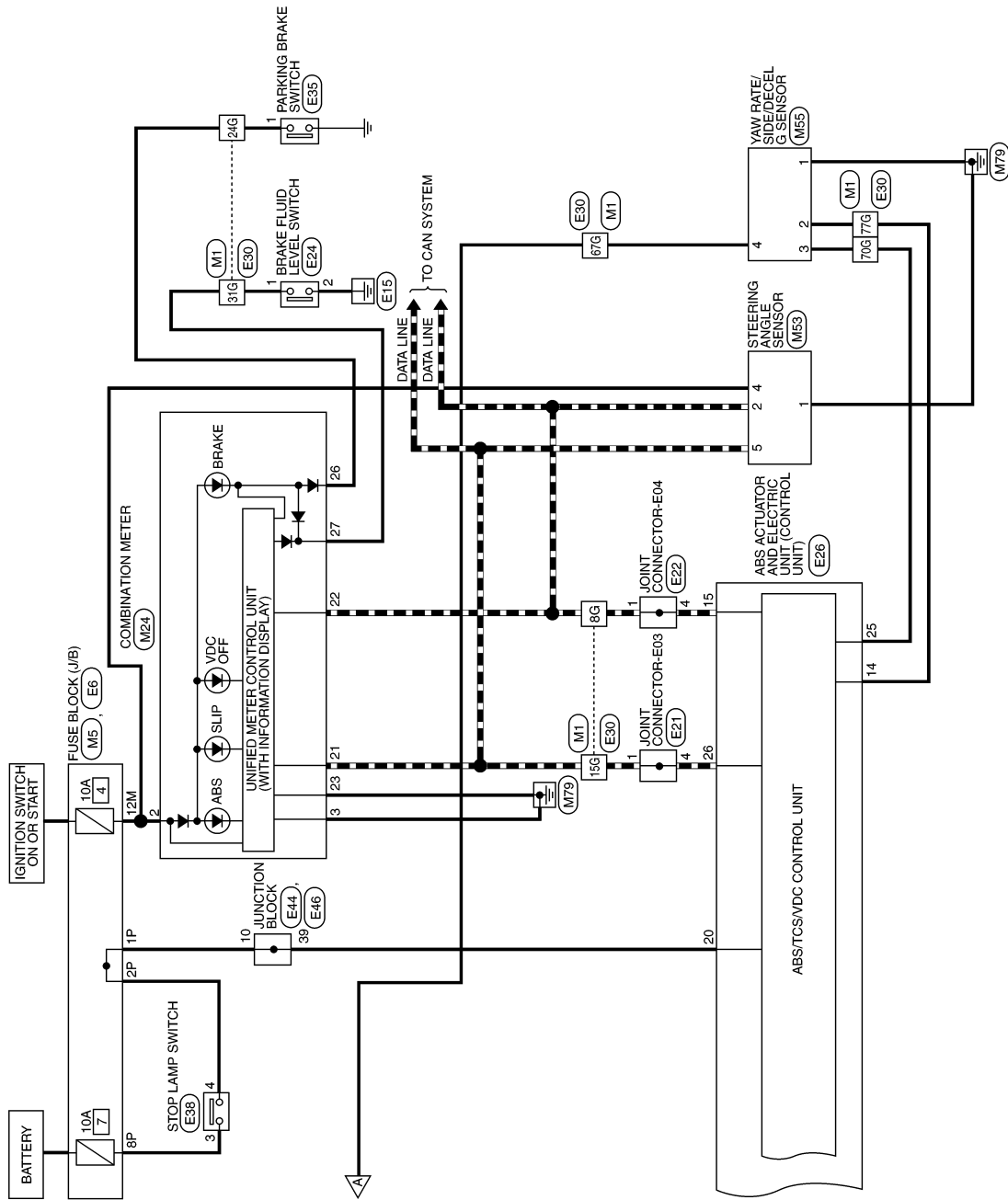
ABFWA0253GB

A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

BRAKE CONTROL SYSTEM

< WIRING DIAGRAM >

[VDC/TCS/ABS]



ABFWA0364GB

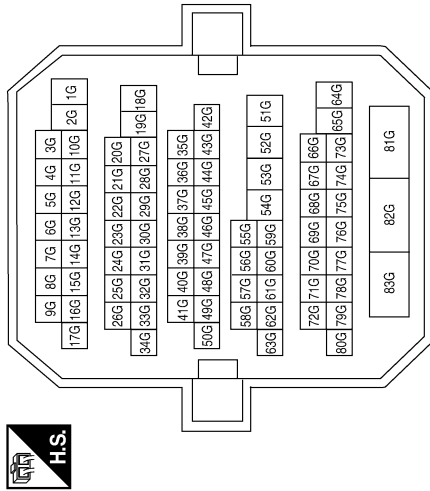
BRAKE CONTROL SYSTEM

< WIRING DIAGRAM >

[VDC/TCS/ABS]

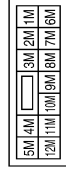
BRAKE CONTROL SYSTEM CONNECTORS

Connector No.	M1
Connector Name	WIRE TO WIRE
Connector Color	WHITE



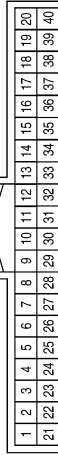
Terminal No.	Color of Wire	Signal Name
8G	P	-
15G	L	-
24G	G/R	-
31G	V	-
67G	GR	-
70G	Y	-
75G	SB	-
77G	Y/B	-

Connector No.	M5
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



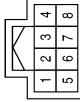
Terminal No.	Color of Wire	Signal Name
12M	O	-

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE



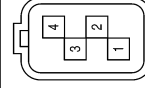
Terminal No.	Color of Wire	Signal Name
2	O	IGN
3	B	GND (POWER)
21	L	CAN-H
22	P	CAN-L
23	B	GND (CIRCUIT)
26	G/R	PKB
27	V	BRAKE OIL IN

Connector No.	M53
Connector Name	STEERING ANGLE SENSOR
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	B	-
2	P	-
4	O	-
5	L	-

Connector No.	M55
Connector Name	YAW RATE/SIDE/DECEL G SENSOR
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	B	-
2	Y/B	-
3	Y	-
4	GR	-

ABFIA0602GB

A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

BRAKE CONTROL SYSTEM

< WIRING DIAGRAM >

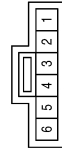
[VDC/TCS/ABS]

Connector No.	E6
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1P	SB	-
2P	LG	-
8P	R	-

Connector No.	M72
Connector Name	VDC OFF SWITCH
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
1	SB	-
2	B	-

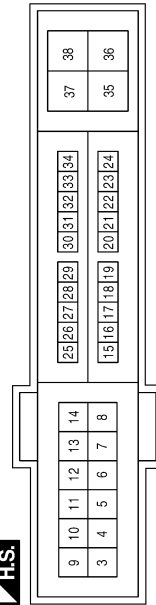
Connector No.	E19
Connector Name	FRONT WHEEL SENSOR LH
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
1	W	-
2	V	-

Terminal No.	25
Color of Wire	GR
Signal Name	ABS ECU

Connector No.	E18
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



ABFIA0603GB

BRAKE CONTROL SYSTEM

[VDC/TCS/ABS]

< WIRING DIAGRAM >

Connector No.	E21
Connector Name	JOINT CONNECTOR-E03
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	L	-
4	L	-

Connector No.	E22
Connector Name	JOINT CONNECTOR-E04
Connector Color	WHITE



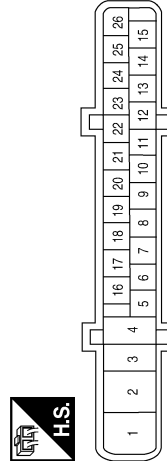
Terminal No.	Color of Wire	Signal Name
1	P	-
4	P	-

Connector No.	E24
Connector Name	BRAKE FLUID LEVEL SWITCH
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
1	V	-
2	BY	-

Connector No.	E26
Connector Name	ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	B	MGND
2	G	UB (MR)

Terminal No.	Color of Wire	Signal Name
3	R	UB (VR)
4	B	GND
5	V	DS FL
6	G	DP RL
7	-	-
8	L	DP RR
9	B	DP FR
10	LG	DS FR
11	-	-
12	-	-
13	-	-
14	O	CAN-M2
15	P	CAN-L

Terminal No.	Color of Wire	Signal Name
16	W	DP FL
17	O	DS RL
18	GR	UZ
19	BR	DS RR
20	SB	BLS
21	R	VDC OFF SW
22	-	-
23	-	-
24	-	-
25	B	CAN-P2
26	L	CAN-H

ABFIA0400GB

A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

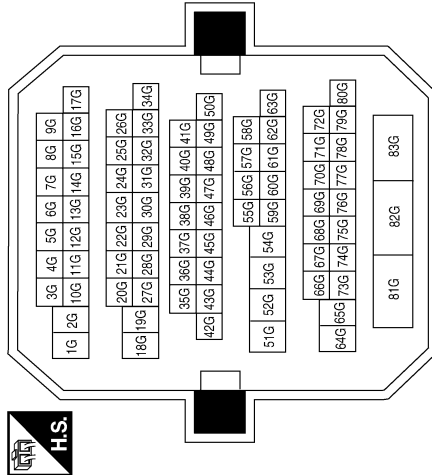
BRAKE CONTROL SYSTEM

< WIRING DIAGRAM >

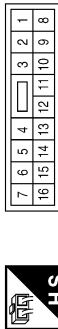
[VDC/TCS/ABS]

Terminal No.	Color of Wire	Signal Name
8G	P	-
15G	L	-
24G	P	-
31G	V	-
67G	W	-
70G	B	-
75G	R	-
77G	O	-

Connector No.	E30
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Connector No.	E29
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
4	O	-
5	BR	-
13	G	-
14	L	-

Connector No.	E41
Connector Name	FRONT WHEEL SENSOR RH
Connector Color	GRAY



Connector No.	E38
Connector Name	STOP LAMP SWITCH
Connector Color	WHITE



Connector No.	E35
Connector Name	PARKING BRAKE SWITCH
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	B	-
2	LG	-

Terminal No.	Color of Wire	Signal Name
3	R	-
4	LG	-

Terminal No.	Color of Wire	Signal Name
1	P	-

ABFIA0604GB

BRAKE CONTROL SYSTEM

< WIRING DIAGRAM >

[VDC/TCS/ABS]

Connector No.	E47
Connector Name	JUNCTION BLOCK
Connector Color	WHITE

42	41
46	45 44 43



Terminal No.	41	Color of Wire	GR	Signal Name	-
--------------	----	---------------	----	-------------	---

Connector No.	E46
Connector Name	JUNCTION BLOCK
Connector Color	WHITE

31	30	29	28	27	26	25
40	39	38	37	36	35	34 33 32



Terminal No.	39	Color of Wire	SB	Signal Name	-
--------------	----	---------------	----	-------------	---

Connector No.	E44
Connector Name	JUNCTION BLOCK
Connector Color	BROWN

5	4	3	2	1
12	11	10	9	8 7 6



Terminal No.	10	Color of Wire	SB	Signal Name	-
--------------	----	---------------	----	-------------	---

Connector No.	C2
Connector Name	REAR WHEEL SENSOR RH
Connector Color	GRAY

1	2
---	---



Terminal No.	1	Color of Wire	LG	Signal Name	-
	2		BR		-

Connector No.	C1
Connector Name	REAR WHEEL SENSOR LH
Connector Color	BLACK

1	2
---	---



Terminal No.	1	Color of Wire	G	Signal Name	-
	2		O		-

Connector No.	E49
Connector Name	JUNCTION BLOCK
Connector Color	BROWN

54	53	52	51
----	----	----	----



Terminal No.	53	Color of Wire	W	Signal Name	-
	54		GR		-

A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

BRAKE CONTROL SYSTEM

< WIRING DIAGRAM >

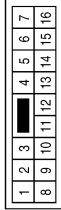
[VDC/TCS/ABS]

Connector No.	B31
Connector Name	WIRE TO WIRE
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
1	O	-
2	G	-
3	BR	-
4	LG	-

Connector No.	B10
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
4	O	-
5	BR	-
13	G	-
14	LG	-

Connector No.	C5
Connector Name	WIRE TO WIRE
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
1	O	-
2	G	-
3	BR	-
4	LG	-

ABFIA0403GB

SYMPTOM DIAGNOSIS

VDC/TCS/ABS

Symptom Table

INFOID:0000000010049149

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

Symptom	Check item	Reference
Excessive ABS function operation frequency	Brake force distribution	BRC-92, "Diagnosis Procedure"
	Looseness of front and rear axle	
	Wheel sensor and rotor system	
Unexpected pedal reaction	Brake pedal stroke	BRC-93, "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-94, "Diagnosis Procedure"
ABS function does not operate (Note 1)	ABS actuator and electric unit (control unit)	BRC-95, "Diagnosis Procedure"
Pedal vibration or ABS operation sound occurs (Note 2)	Brake pedal	BRC-96, "Diagnosis Procedure"
	ABS actuator and electric unit (control unit)	
Vehicle jerks during VDC/TCS/ABS control	ABS actuator and electric unit (control unit)	BRC-97, "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 (just place a foot on it). 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:000000010049150

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. "Inspection"](#), rear: [RAX-5. "On-vehicle 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-102. "Removal and Installation - Front Wheel Sensor"](#) or [BRC-103. "Removal and Installation - Rear Wheel Sensor"](#).
• 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 inspection result normal?

YES >> Inspection End.

NO >> Perform self-diagnosis. Refer to [BRC-21. "CONSULT Function \(ABS\)"](#).

UNEXPECTED PEDAL REACTION

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

UNEXPECTED PEDAL REACTION

Diagnosis Procedure

INFOID:000000010049151

1.CHECK BRAKE PEDAL STROKE

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

Is the stroke too big?

- 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 brake pedal [BR-14, "Inspection and Adjustment"](#), brake booster [BR-9, "Inspection"](#) and master cylinder [BR-11, "Inspection"](#).

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 >> GO TO 3

NO >> Check brake system.

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-102, "Removal and Installation - Front Wheel Sensor"](#) or [BRC-103, "Removal and Installation - Rear Wheel Sensor"](#).
• 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 inspection result normal?

YES >> Inspection End.

NO >> Perform self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

THE BRAKING DISTANCE IS LONG

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

THE BRAKING DISTANCE IS LONG

Diagnosis Procedure

INFOID:000000010049152

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 >> GO TO 2

NO >> Check brake system.

2. 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 3

NO >> • Replace wheel sensor or sensor rotor. Refer to [BRC-102. "Removal and Installation - Front Wheel Sensor"](#) or [BRC-103. "Removal and Installation - Rear Wheel Sensor"](#).
• Repair harness.

3. 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 inspection result normal?

YES >> Inspection End.

NO >> Perform self-diagnosis. Refer to [BRC-21. "CONSULT Function \(ABS\)"](#).

ABS FUNCTION DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

ABS FUNCTION DOES NOT OPERATE

Diagnosis Procedure

INFOID:000000010049153

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 >> GO TO 2

NO >> Perform self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)".](#)

2.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 3

NO >> • Replace wheel sensor or sensor rotor. Refer to [BRC-102, "Removal and Installation - Front Wheel Sensor"](#) or [BRC-103, "Removal and Installation - Rear Wheel Sensor"](#).
• Repair harness.

3.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 inspection result normal?

YES >> Inspection End.

NO >> Perform self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)".](#)

A
B
C
D
E
G
H
I
J
K
L
M
N
O
P

BRC

PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

Diagnosis Procedure

INFOID:000000010049154

CAUTION:

Under the following conditions, ABS is activated and vibration is felt when brake pedal is lightly depressed (just place a foot on it). 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 if there is pedal vibration or operation sound when the engine is started.

Do symptoms occur?

YES >> GO TO 2

NO >> Perform self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

2. SYMPTOM CHECK 2

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 >> GO TO 3

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-102, "Removal and Installation - Front Wheel Sensor"](#) or [BRC-103, "Removal and Installation - Rear Wheel Sensor"](#).
• 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 inspection result normal?

YES >> Inspection End.

NO >> Perform self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

VEHICLE JERKS DURING VDC/TCS/ABS CONTROL

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

VEHICLE JERKS DURING VDC/TCS/ABS CONTROL

Diagnosis Procedure

INFOID:000000010049155

1. SYMPTOM CHECK

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

Is the inspection result normal?

YES >> Inspection End.

NO >> GO TO 2

2. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnostic of ABS actuator and electric unit (control unit). Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

Are self-diagnosis results indicated?

YES >> Check corresponding items, make repairs, and perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to [BRC-21, "CONSULT Function \(ABS\)"](#).

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 connector 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 CVT SELF-DIAGNOSIS RESULTS

Perform ECM and CVT self-diagnosis.

Are self-diagnosis results indicated?

YES >> Check the corresponding items.

- ECM: Refer to [EC-138, "CONSULT Function"](#).
- CVT: Refer to [TM-38, "CONSULT Function"](#).

NO >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-106, "Removal and Installation"](#).

A
B
C
D
E
G
H
I
J
K
L
M
N
O
P

BRC

NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

NORMAL OPERATING CONDITION

Description

INFOID:000000010049156

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 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 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.)
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:000000009466771

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.

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

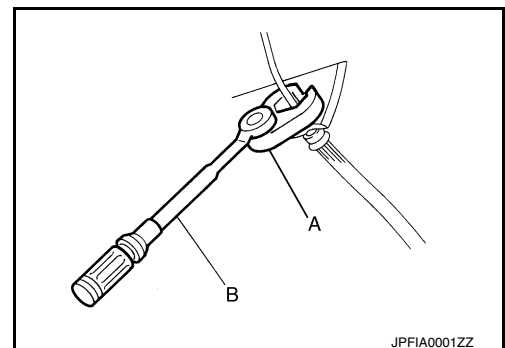
WARNING:

- When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

Precaution for Brake System

INFOID:000000009466772

- Always use recommended brake fluid. Refer to [MA-15. "FOR USA AND CANADA : Fluids and Lubricants"](#) (for United States and Canada) or [MA-16. "FOR MEXICO : Fluids and Lubricants"](#) (for Mexico).
- Do not reuse drained brake fluid.
- Do not spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface.
- Always confirm the specified tightening torque when installing the brake pipes.
- After pressing the brake pedal more deeply or harder than normal driving, such as air bleeding, check each item of brake pedal. Adjust brake pedal if it is outside the standard value.
- Do not use mineral oils such as gasoline or light oil to clean. They may damage rubber parts and cause improper operation.
- Always loosen the brake tube flare nut with a flare nut wrench.
- Tighten the brake tube flare nut to the specified torque with a crow-foot (A) and torque wrench (B).
- Always connect the battery terminal when moving the vehicle.
- Turn the ignition switch OFF and disconnect the ABS actuator and electric unit (control unit) harness connector or the battery negative terminal before performing the work.
- Check that no brake fluid leakage is present after replacing the parts.



WARNING:

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

A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

PRECAUTIONS

< PRECAUTION >

[VDC/TCS/ABS]

Precaution for Brake Control

INFOID:000000009466773

- Just after starting vehicle with ignition switch ON, brake pedal may vibrate or motor operating noise may be heard from engine compartment. This is normal condition.
- 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 diagnostic servicing. Besides electrical system inspection, check brake booster operation, brake fluid level, and oil leaks.
- If tire size and type are used in an improper combination, or brake pads are not Genuine NISSAN parts, stopping distance or steering stability may deteriorate.
- ABS might be out of order or malfunctions by putting a radio (wiring inclusive), an antenna and a lead-in wire near the control unit.
- If aftermarket parts (car stereo, CD player, etc.) have been installed, check for incidents such as harness pinches, open circuits, and improper wiring.
- VDC system may not operate normally or a VDC OFF indicator lamp or SLIP indicator lamp may light.
- When replacing the following parts with parts other than genuine parts or making modifications: Suspension-related parts (shock absorber, spring, bushing, etc.), tires, wheels (other than specified sizes), brake-related parts (pad, rotor, caliper, etc.), engine-related parts (muffler, ECM, etc.) and body reinforcement-related parts (roll bar, tower bar, etc.).
- When driving with worn or deteriorated suspension, tires and brake-related parts.

PREPARATION

< PREPARATION >

[VDC/TCS/ABS]

PREPARATION

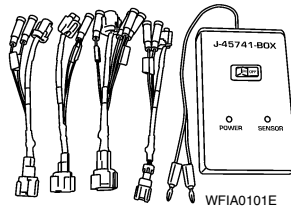
PREPARATION

Special Service Tool

INFOID:000000009466774

The actual shapes of the tools may differ from those illustrated here.

Tool number (TechMate No.) Tool name	Description
— (J-45741) ABS active wheel sensor tester	Checking operation of ABS active wheel sensor

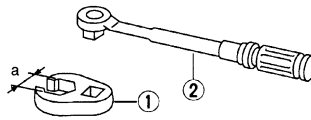


WFIA0101E

Commercial Service Tool

INFOID:000000009466775

Tool name	Description
1. Flare nut crowfoot 2. Torque wrench	Removing and installing brake piping a: 10mm (0.39 in)/12mm (0.47 in)
Power tool	Loosening nuts, screws and bolts



S-NT360



PIIB1407E

A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

WHEEL SENSORS

< REMOVAL AND INSTALLATION >

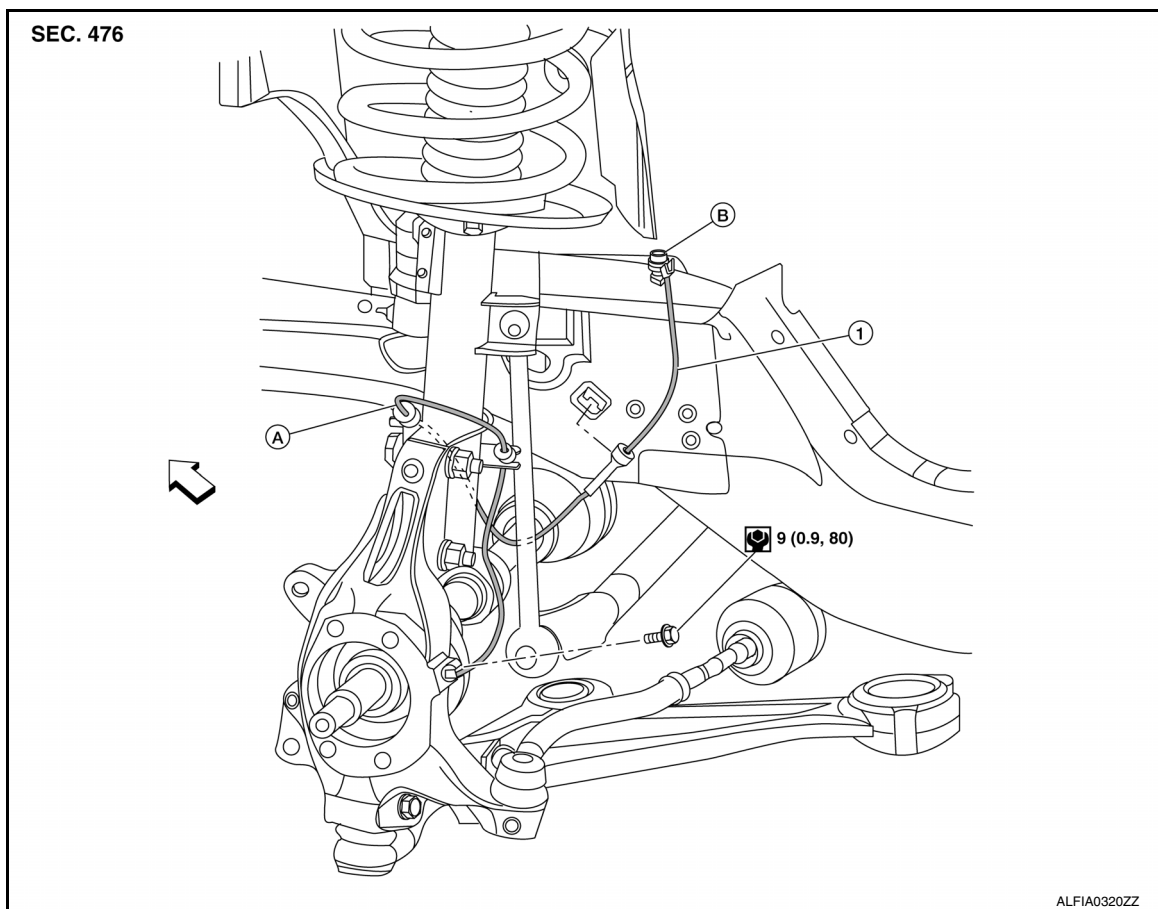
[VDC/TCS/ABS]

REMOVAL AND INSTALLATION

WHEEL SENSORS

Exploded View - Front Wheel Sensor

INFOID:000000009466776



1. Front wheel sensor

A. Color line (slant line)

B. Front wheel sensor harness connector

⇐ Front

Removal and Installation - Front Wheel Sensor

INFOID:000000009466777

CAUTION:

- Be careful not to damage wheel sensor edge and sensor rotor teeth.
- When pulling out the wheel sensor, be careful to turn it as little as possible. Do not pull on the wheel sensor harness.
- Check if foreign objects such as iron fragments are adhered to the pick-up part of the sensor or to the inside of the hole for the wheel sensor, or if a foreign object is caught in the surface of the mating surface for the wheel sensor. Repair as necessary and then install the wheel sensor.

REMOVAL

1. Remove the front wheel and tire using power tools. Refer to [WT-60, "Adjustment"](#).
2. Partially remove front wheel fender protector and reposition out of the way. Refer to [EXT-24, "Removal and Installation"](#).
3. Disconnect the harness connector from the front wheel sensor.
4. Remove the front wheel sensor harness from the brackets.
5. Remove the front wheel sensor bolt and front wheel sensor from the front wheel hub and bearing assembly.

INSTALLATION

WHEEL SENSORS

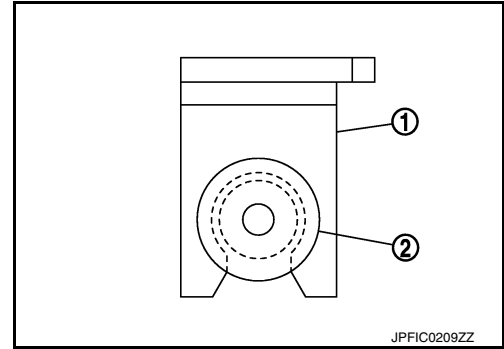
[VDC/TCS/ABS]

< REMOVAL AND INSTALLATION >

Installation is in the reverse order of removal.

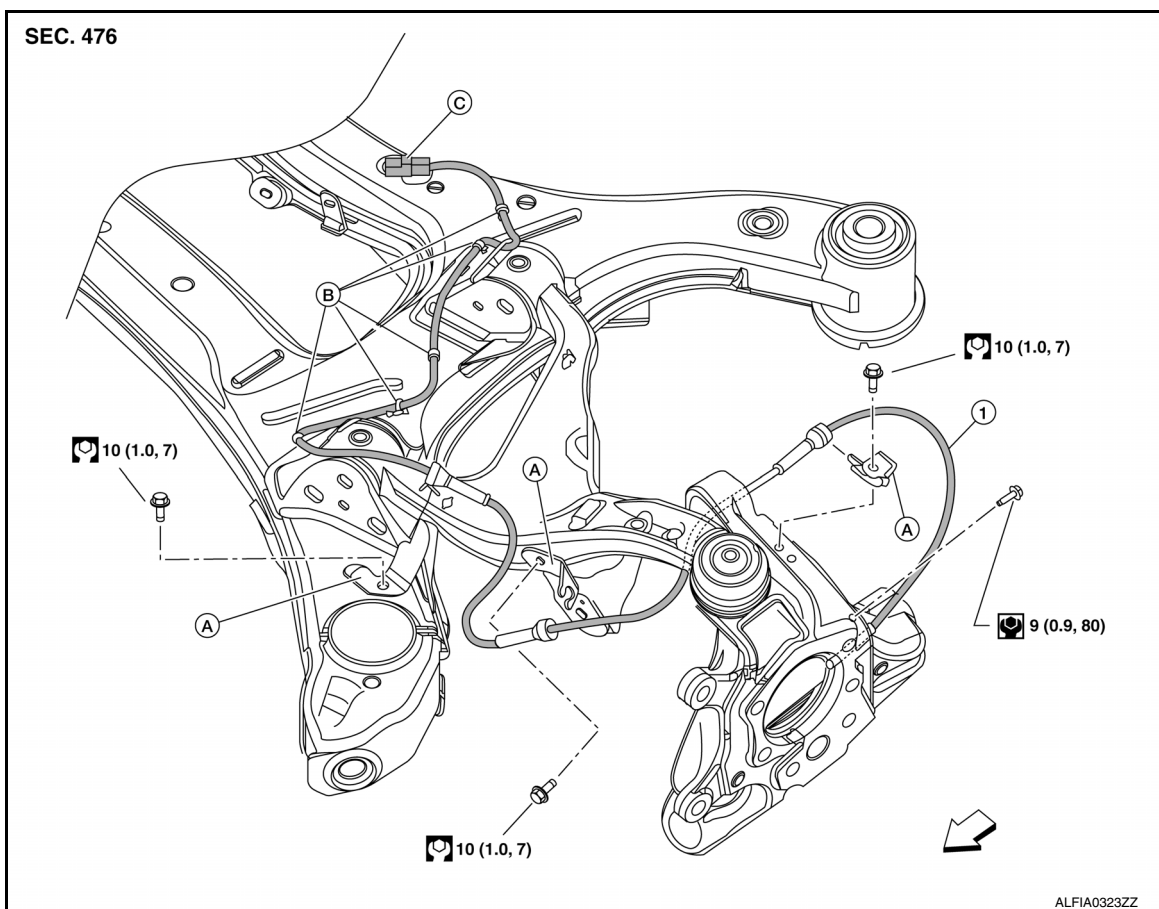
CAUTION:

Do not twist rear wheel sensor harness when installing rear wheel sensor. Check that grommet (2) is fully inserted to bracket (1). Check that rear wheel sensor harness is not twisted after installation.



Exploded View - Rear Wheel Sensor

INFOID:000000009466778



BRC

G
H
I
J
K
L
M
N

1. Rear wheel sensor A. Rear wheel sensor bracket B. Clip
C. Rear wheel sensor harness connector ← Front

Removal and Installation - Rear Wheel Sensor

INFOID:000000009466779

CAUTION:

- Be careful not to damage wheel sensor edge and sensor rotor teeth.
- When removing the front or rear wheel hub, first remove the wheel sensor from the wheel hub. Failure to do so may result in damage to the wheel sensor wires making the sensor inoperative.
- Pull out the wheel sensor, being careful to turn it as little as possible. Do not pull on the wheel sensor harness.
- Before installation, check if foreign objects such as iron fragments are adhered to the pick-up part of the sensor or to the inside of the hole in the wheel hub for the wheel sensor, or if a foreign object is

P

WHEEL SENSORS

< REMOVAL AND INSTALLATION >

[VDC/TCS/ABS]

caught in the surface of the mating surface for the sensor rotor. Clean as necessary and then install the wheel sensor.

REMOVAL

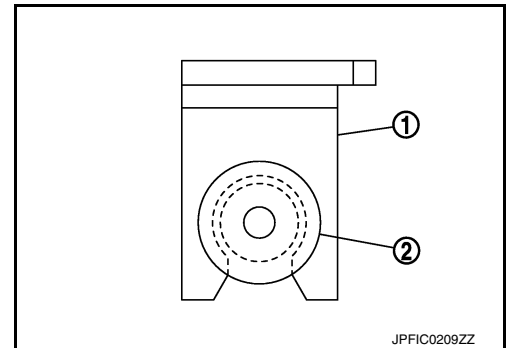
1. Remove the rear wheel and tire using power tools. Refer to [WT-60, "Adjustment"](#).
2. Remove the rear stabilizer bar clamps and bushings. Position the stabilizer bar out of the way. Refer to [RSU-15, "Exploded View"](#).
3. Disconnect the harness connector from the rear wheel sensor.
4. Remove the rear wheel sensor harness from the brackets.
5. Remove the rear wheel sensor bolt and rear wheel sensor from the rear wheel hub and bearing assembly.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Do not twist rear wheel sensor harness when installing rear wheel sensor. Check that grommet (2) is fully inserted to bracket (1). Check that rear wheel sensor harness is not twisted after installation.



SENSOR ROTOR

< REMOVAL AND INSTALLATION >

[VDC/TCS/ABS]

SENSOR ROTOR

Removal and Installation - Front Sensor Rotor

INFOID:000000009466780

The front wheel sensor rotor is an integral part of the wheel hub and bearing assembly and cannot be disassembled. Refer to [FAX-7, "Removal and Installation"](#).

Removal and Installation - Rear Sensor Rotor

INFOID:000000009466781

The rear wheel sensor rotor is an integral part of the wheel hub and bearing assembly and cannot be disassembled. Refer to [RAX-6, "Removal and Installation"](#).

- A
- B
- C
- D
- E
- G
- H
- I
- J
- K
- L
- M
- N
- O
- P

BRC

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

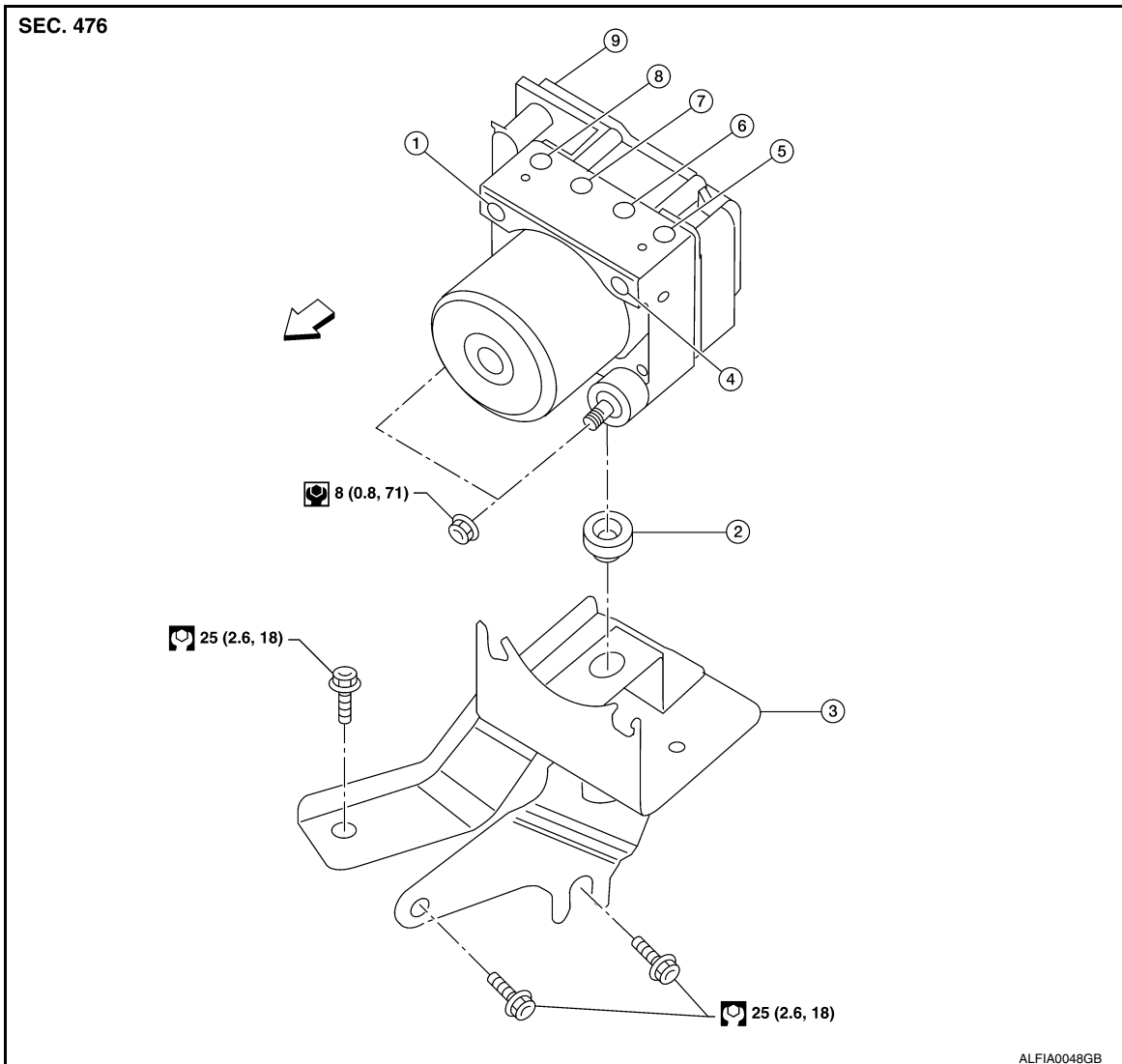
< REMOVAL AND INSTALLATION >

[VDC/TCS/ABS]

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Exploded View

INFOID:000000009466782



- | | | |
|--|------------------------------|--|
| 1. From master cylinder secondary side | 2. Grommet | 3. ABS actuator and electric unit (control unit) bracket |
| 4. From master cylinder primary side | 5. To front LH brake caliper | 6. To rear RH brake caliper |
| 7. To rear LH brake caliper | 8. To front RH brake caliper | 9. ABS actuator and electric unit (control unit) |

⇐ Front

Removal and Installation

INFOID:000000009466783

CAUTION:

- Before removal, disconnect the battery negative terminal.
- To disconnect the brake tubes, use a flare nut wrench to prevent the flare nuts and brake tubes from being damaged. To connect the brake tubes, use a flare nut torque wrench to tighten to the specified torque.
- Do not drop the ABS actuator and electric unit (control unit).
- Do not remove and install the ABS actuator and electric unit (control unit) by holding it by the harness.
- After installation, bleed the air from the brake lines. Refer to [BR-16, "Bleeding Brake System"](#).

NOTE:

Revision: August 2013

BRC-106

2014 Maxima NAM

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< REMOVAL AND INSTALLATION >

[VDC/TCS/ABS]

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

REMOVAL

1. Disconnect the battery negative terminal. Refer to [PG-67, "Removal and Installation \(Battery\)"](#).
2. Remove the front wiper arms. Refer to [WW-78, "FRONT WIPER ARMS : Removal and Installation"](#).
3. Remove the cowl top and RH cowl top extension. Refer to [EXT-21, "Removal and Installation"](#).
4. Disconnect the wiper washer hose.
5. Remove the strut tower bar. Refer to [FSU-13, "Exploded View"](#).
6. Disconnect the ABS actuator and electric unit (control unit) connector.
7. Loosen the brake tube flare nuts, then disconnect the brake tubes from the ABS actuator and electric unit (control unit).
8. Remove the ABS actuator and electric unit (control unit) nuts.
9. Remove the ABS actuator and electric unit (control unit).
10. Remove the ABS actuator and electric unit (control unit) bracket as necessary.

INSTALLATION

Installation is in the reverse order of removal.

- Bleed brake system, check and adjust brake fluid level as necessary. Refer to [BR-16, "Bleeding Brake System"](#).

CAUTION:

Do not reuse brake fluid.

CAUTION:

Perform the neutral position adjustment for the steering angle sensor. Refer to [BRC-6, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).

A
B
C
D
E
BRC
G
H
I
J
K
L
M
N
O
P

YAW RATE/SIDE/DECEL G SENSOR

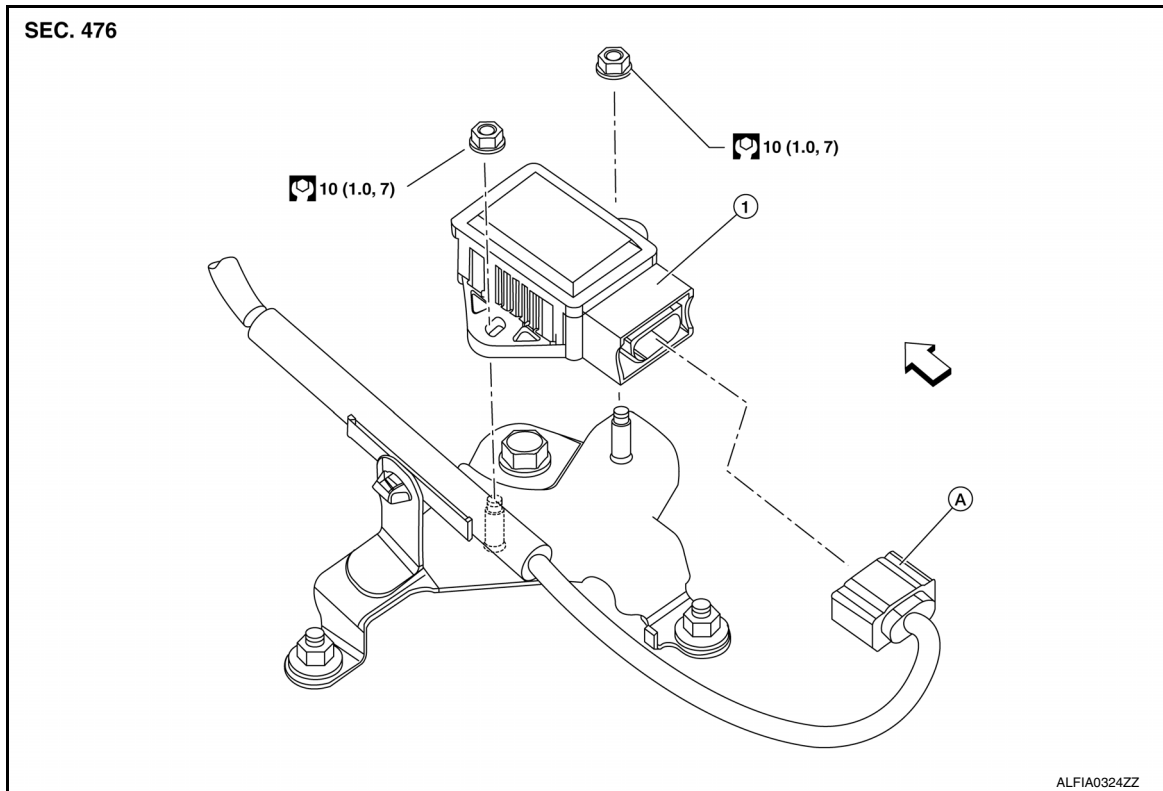
< REMOVAL AND INSTALLATION >

[VDC/TCS/ABS]

YAW RATE/SIDE/DECEL G SENSOR

Exploded View

INFOID:000000009466784



1. Yaw rate/side/decel G sensor

A. Yaw rate/side/decel G sensor harness connector

↔ Front

Removal and Installation

INFOID:000000009466785

CAUTION:

- Do not drop or strike the yaw rate/side/decel G sensor to prevent damage.
- Do not use power tool to remove the yaw rate/side/decel G sensor to prevent damage.

REMOVAL

1. Remove the center console. Refer to [IP-14, "Removal and Installation"](#).
2. Disconnect the harness connector from the yaw rate/side/decel G sensor.
3. Remove the yaw rate/side/decel G sensor nuts.
4. Remove the yaw rate/side/decel G sensor.

INSTALLATION

Installation is in the reverse order of removal.

STEERING ANGLE SENSOR

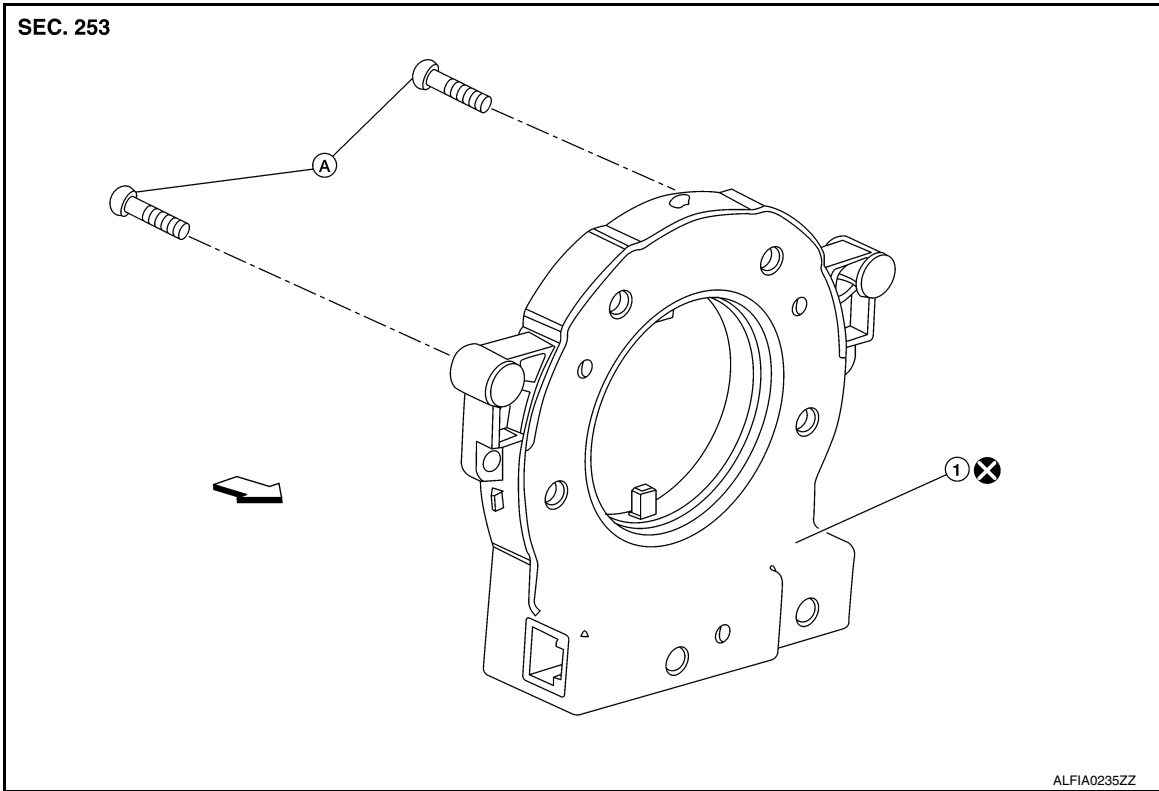
< REMOVAL AND INSTALLATION >

[VDC/TCS/ABS]

STEERING ANGLE SENSOR

Exploded View

INFOID:000000009466786



1. Steering angle sensor

A. Screw

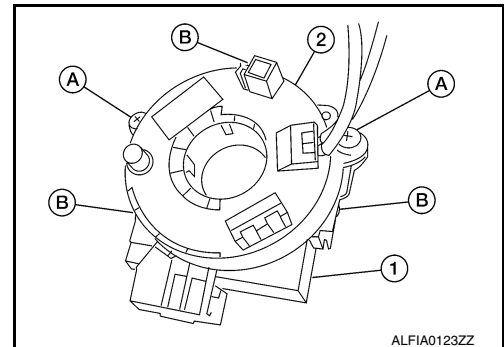
← Front

Removal and Installation

INFOID:000000009466787

REMOVAL

1. Remove the spiral cable. Refer to [SR-15, "Removal and Installation"](#).
2. Remove the screws (A) and release the clips (B) to remove the steering angle sensor (1) from the spiral cable (2).



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Perform the neutral position adjustment for the steering angle sensor. Refer to [BRC-6, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"](#).