SECTION BRAKE CONTROL SYSTEM

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CONTENTS

VDC/TCS/ABS

BASIC INSPECTION4
DIAGNOSIS AND REPAIR WORKFLOW
ADDITIONAL SERVICE WHEN REPLACING ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
ADJUSTMENT OF STEERING ANGLE SEN- SOR NEUTRAL POSITION
SYSTEM DESCRIPTION11
VDC11System Diagram11System Description11Component Parts Location12Component Description13
TCS14System Diagram14System Description14Component Parts Location15Component Description16
ABS17System Diagram17System Description17Component Parts Location18Component Description19
EBD

Component Parts Location21 Component Description22	BR
DIAGNOSIS SYSTEM [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]23 CONSULT-III Function	G
DTC/CIRCUIT DIAGNOSIS28	Н
C1101, C1102, C1103, C1104 WHEEL SEN-	
SOR28Description28DTC Logic28Diagnosis Procedure28	l J
Special Repair Requirement	J
C1105, C1106, C1107, C1108 WHEEL SEN- SOR	K
Diagnosis Procedure	L
C1109 POWER AND GROUND SYSTEM	M
C1110, C1153, C1170 ABS ACTUATOR AND	
ELECTRIC UNIT (CONTROL UNIT)	0
C1111 ABS MOTOR, MOTOR RELAY SYS-	Ρ
TEM39Description39DTC Logic39Diagnosis Procedure39Special Repair Requirement40	

C1115 WHEEL SENSOR	
Description	
DTC Logic Diagnosis Procedure	
Special Repair Requirement	
	40
C1116 STOP LAMP SWITCH	46
Description	46
DTC Logic	
Diagnosis Procedure	
Component Inspection	
Special Repair Requirement	49
C1120, C1122, C1124, C1126 IN ABS SOL	51
Description	51
DTC Logic	
Diagnosis Procedure	
Special Repair Requirement	52
C1121, C1123, C1125, C1127 OUT ABS SOL	53
Description	
DTC Logic	
Diagnosis Procedure	
Special Repair Requirement	
C1130 ENGINE SIGNAL	
Description	
DTC Logic	
Diagnosis Procedure	55
	~~
Special Repair Requirement	55
Special Repair Requirement C1140 ACTUATOR RELAY SYSTEM Description	56 56
Special Repair Requirement C1140 ACTUATOR RELAY SYSTEM Description DTC Logic	56 56 56
Special Repair Requirement C1140 ACTUATOR RELAY SYSTEM Description DTC Logic Diagnosis Procedure	56 56 56 56
Special Repair Requirement C1140 ACTUATOR RELAY SYSTEM Description DTC Logic	56 56 56 56
Special Repair Requirement C1140 ACTUATOR RELAY SYSTEM Description DTC Logic Diagnosis Procedure Special Repair Requirement	56 56 56 56 57
Special Repair Requirement C1140 ACTUATOR RELAY SYSTEM Description DTC Logic Diagnosis Procedure Special Repair Requirement C1142 PRESS SENSOR	56 56 56 56 57 58
Special Repair Requirement C1140 ACTUATOR RELAY SYSTEM Description DTC Logic Diagnosis Procedure Special Repair Requirement C1142 PRESS SENSOR Description	56 56 56 57 58 58
Special Repair Requirement	56 56 56 57 58 58 58
Special Repair Requirement C1140 ACTUATOR RELAY SYSTEM Description DTC Logic Diagnosis Procedure Special Repair Requirement C1142 PRESS SENSOR Description	56 56 56 57 58 58 58 58
Special Repair Requirement	 56 56 56 57 58 58 58 58 58 59
Special Repair Requirement C1140 ACTUATOR RELAY SYSTEM Description DTC Logic Diagnosis Procedure Special Repair Requirement C1142 PRESS SENSOR Description DTC Logic DTC Logic Diagnosis Procedure Special Repair Requirement C1143 STEERING ANGLE SENSOR	 56 56 56 57 58 58 58 58 59 60
Special Repair Requirement	 56 56 56 57 58 58 58 58 59 60 60
Special Repair Requirement	 56 56 56 57 58 58 58 58 59 60 60 60
Special Repair Requirement	 56 56 56 57 58 58 58 59 60 60 60 60
Special Repair Requirement	 56 56 56 57 58 58 58 59 60 60 60 60
Special Repair Requirement	 56 56 56 57 58 58 58 59 60 60 60 61
Special Repair Requirement	 56 56 56 57 58 58 58 59 60 60 60 60 61 62
Special Repair Requirement	 56 56 56 57 58 58 58 58 59 60 60 60 60 60 60 61 62 62
Special Repair Requirement	 56 56 56 57 58 58 58 58 59 60 60 60 60 60 61 62 62 62 62
Special Repair Requirement	 56 56 56 57 58 58 58 58 58 59 60 60 60 60 61 62
Special Repair Requirement	 56 56 56 57 58 58 58 58 58 59 60 60 60 60 61 62
Special Repair Requirement	 56 56 56 57 58 58 58 58 59 60 60 60 60 60 61 62
Special Repair Requirement	 56 56 56 57 58 58 58 58 58 59 60 60 60 60 61 62 63
Special Repair Requirement	 56 56 56 57 58 58 58 59 60 60 60 60 61 62 62 62 62 62 63 63 63
Special Repair Requirement	 56 56 56 57 58 58 58 58 59 60 60 60 60 60 61 62 63 63 63 63
Special Repair Requirement	 56 56 56 57 58 58 58 58 59 60 60 60 60 60 61 62 63 63 63 63

C1155 BRAKE FLUID LEVEL SWITCH 66 Description
DTC Logic
Diagnosis Procedure
Component Inspection68 Special Repair Requirement68
C1164, C1165 CV SYSTEM 69
Description69
DTC Logic 69
Diagnosis Procedure69 Special Repair Requirement70
C1166, C1167 SV SYSTEM
Description71 DTC Logic71
Diagnosis Procedure
Special Repair Requirement
U1000 CAN COMM CIRCUIT
Description
DTC Logic73 Diagnosis Procedure73
Special Repair Requirement
U1002 SYSTEM COMM (CAN)
Description
DTC Logic74
Diagnosis Procedure74
Special Repair Requirement75
POWER SUPPLY AND GROUND CIRCUIT 76 Description 76
Description76 Diagnosis Procedure76
Description
Description
Description
Description76Diagnosis Procedure76PARKING BRAKE SWITCH78Description78Diagnosis Procedure78Component Inspection78
Description76Diagnosis Procedure76PARKING BRAKE SWITCH78Description78Diagnosis Procedure78Component Inspection78VDC OFF SWITCH80
Description76Diagnosis Procedure76PARKING BRAKE SWITCH78Description78Diagnosis Procedure78Component Inspection78VDC OFF SWITCH80Description80
Description76Diagnosis Procedure76PARKING BRAKE SWITCH78Description78Diagnosis Procedure78Component Inspection78VDC OFF SWITCH80Description80Diagnosis Procedure80
Description76Diagnosis Procedure76PARKING BRAKE SWITCH78Description78Diagnosis Procedure78Component Inspection78VDC OFF SWITCH80Description80
Description76Diagnosis Procedure76PARKING BRAKE SWITCH78Description78Diagnosis Procedure78Component Inspection78VDC OFF SWITCH80Description80Diagnosis Procedure80Component Inspection81Special Repair Requirement81ABS WARNING LAMP82
Description76Diagnosis Procedure76PARKING BRAKE SWITCH78Description78Diagnosis Procedure78Component Inspection78VDC OFF SWITCH80Description80Diagnosis Procedure80Component Inspection80Diagnosis Procedure80Component Inspection81Special Repair Requirement81ABS WARNING LAMP82Description82
Description76Diagnosis Procedure76PARKING BRAKE SWITCH78Description78Diagnosis Procedure78Component Inspection78VDC OFF SWITCH80Description80Diagnosis Procedure80Description80Description81Special Repair Requirement81ABS WARNING LAMP82Component Function Check82
Description76Diagnosis Procedure76PARKING BRAKE SWITCH78Description78Diagnosis Procedure78Component Inspection78VDC OFF SWITCH80Description80Diagnosis Procedure80Component Inspection80Diagnosis Procedure80Component Inspection81Special Repair Requirement81ABS WARNING LAMP82Description82
Description76Diagnosis Procedure76PARKING BRAKE SWITCH78Description78Diagnosis Procedure78Component Inspection78VDC OFF SWITCH80Description80Diagnosis Procedure80Component Inspection81Special Repair Requirement81ABS WARNING LAMP82Diagnosis Procedure82Description82Component Function Check82Diagnosis Procedure82BRAKE WARNING LAMP83
Description76Diagnosis Procedure76PARKING BRAKE SWITCH78Description78Diagnosis Procedure78Component Inspection78VDC OFF SWITCH80Description80Diagnosis Procedure80Component Inspection81Special Repair Requirement81ABS WARNING LAMP82Diagnosis Procedure82Diagnosis Procedure82Description82Description82Description82Description82Description82Description82Description82Description82Description82Description82Description83Description83
Description76Diagnosis Procedure76PARKING BRAKE SWITCH78Description78Diagnosis Procedure78Component Inspection78VDC OFF SWITCH80Description80Diagnosis Procedure80Component Inspection81Special Repair Requirement81ABS WARNING LAMP82Description82Component Function Check82Diagnosis Procedure82Component Function Check82Description82Component Function Check82Description82Component Function Check83Description83Component Function Check83Description83Component Function Check83Component Function Check83
Description76Diagnosis Procedure76PARKING BRAKE SWITCH78Description78Diagnosis Procedure78Component Inspection78VDC OFF SWITCH80Description80Diagnosis Procedure80Component Inspection81Special Repair Requirement81ABS WARNING LAMP82Description82Component Function Check82Diagnosis Procedure82Component Function Check82Description82Component Function Check83Description83Description83Description83Description83Description83Description83Description83Description83Description83Description83Description83Description83Description83Diagnosis Procedure83Diagnosis Procedure83
Description76Diagnosis Procedure76PARKING BRAKE SWITCH78Description78Diagnosis Procedure78Component Inspection78VDC OFF SWITCH80Description80Diagnosis Procedure80Component Inspection81Special Repair Requirement81ABS WARNING LAMP82Description82Component Function Check82Diagnosis Procedure82Special Repair Requirement82Description82Component Function Check82Diagnosis Procedure83Description83Component Function Check83Description83Description83Special Repair Requirement83Description83Component Function Check83Description83Special Repair Requirement83Special Repair Requirement83Special Repair Requirement83Special Repair Requirement83
Description76Diagnosis Procedure76PARKING BRAKE SWITCH78Description78Diagnosis Procedure78Component Inspection78VDC OFF SWITCH80Description80Diagnosis Procedure80Component Inspection81Special Repair Requirement81ABS WARNING LAMP82Description82Component Function Check82Diagnosis Procedure82Special Repair Requirement82Special Repair Requirement83Description83Component Function Check83Description83Component Function Check83Description83Component Function Check83Description83Component Function Check83Diagnosis Procedure83Special Repair Requirement83VDC OFF INDICATOR LAMP83
Description76Diagnosis Procedure76PARKING BRAKE SWITCH78Description78Diagnosis Procedure78Component Inspection78VDC OFF SWITCH80Description80Diagnosis Procedure80Component Inspection81Special Repair Requirement81ABS WARNING LAMP82Description82Component Function Check82Diagnosis Procedure82Special Repair Requirement82Description82Component Function Check82Diagnosis Procedure83Description83Component Function Check83Description83Description83Special Repair Requirement83Description83Component Function Check83Description83Special Repair Requirement83Special Repair Requirement83Special Repair Requirement83Special Repair Requirement83

Diagnosis Procedure85 Special Repair Requirement85
VDC WARNING LAMP 86 Description 86 Component Function Check 86 Diagnosis Procedure 86 Special Repair Requirement 86
ECU DIAGNOSIS INFORMATION87
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
SYMPTOM DIAGNOSIS98
EXCESSIVE ABS FUNCTION OPERATION FREQUENCY
Diagnosis Procedure
THE BRAKING DISTANCE IS LONG100 Diagnosis Procedure100
ABS FUNCTION DOES NOT OPERATE 101 Diagnosis Procedure
PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS
VEHICLE JERKS DURING VDC/TCS/ABS CONTROL
NORMAL OPERATING CONDITION104 Description
PRECAUTION105
PRECAUTIONS

Precaution for Brake Control106 Precautions for Harness Repair106	A
PREPARATION108	
PREPARATION	В
REMOVAL AND INSTALLATION 109	С
WHEEL SENSOR 109	
FRONT WHEEL SENSOR	D
REAR WHEEL SENSOR 110 REAR WHEEL SENSOR : Exploded View 110 REAR WHEEL SENSOR : Removal and Installation 110	BR
SENSOR ROTOR111	C
FRONT SENSOR ROTOR	G
REAR SENSOR ROTOR	Ι
REAR SENSOR ROTOR : Disassembly and As- sembly111	J
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)	K
Adjustment113	L
YAW RATE/SIDE G SENSOR 114 Exploded View 114 Removal and Installation 114	Μ
STEERING ANGLE SENSOR115Exploded View115Removal and Installation115Adjustment115	Ν
VDC OFF SWITCH	0

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BASIC INSPECTION DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000006507891

PRECAUTIONS FOR DIAGNOSIS

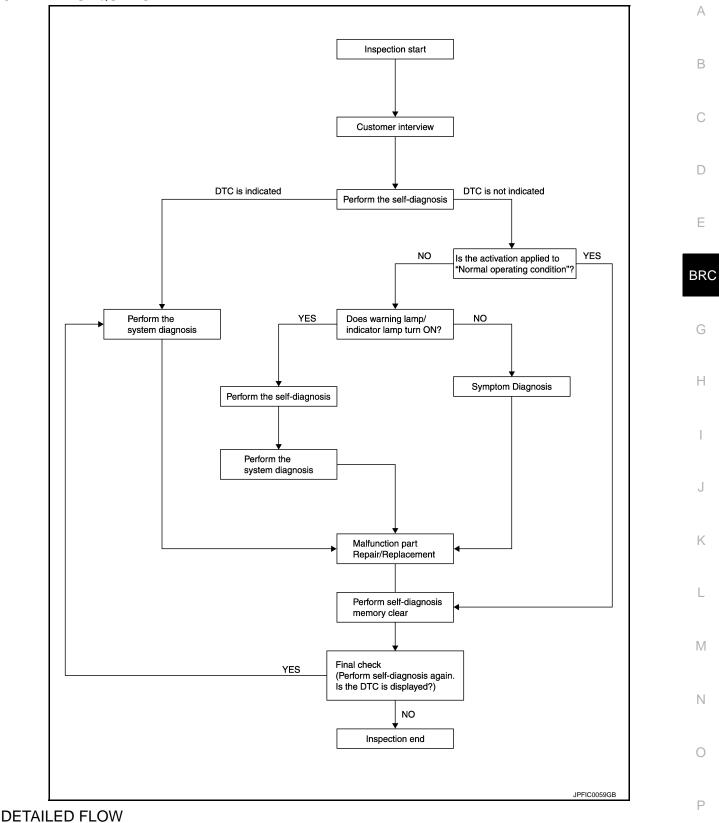
If steering angle sensor, steering system parts, suspension system parts, ABS actuator and electric unit (control unit) or tires have been replaced, or if wheel alignment has been adjusted, be sure to adjust neutral position of steering angle sensor before driving. Refer to <u>BRC-9</u>, "<u>Description</u>".

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[VDC/TCS/ABS]





1.COLLECT THE INFORMATION FROM THE CUSTOMER

Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the diagnosis work sheet. Refer to <u>BRC-7</u>, "<u>Diagnostic Work Sheet</u>".

>> GO TO 2.

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

2.PERFORM THE SELF-DIAGNOSIS

Perform self-diagnosis for "ABS" with CONSULT-III.

Is there any DTC displayed?

YES >> GO TO 3.

NO >> GO TO 4.

3. PERFORM THE SYSTEM DIAGNOSIS

Perform the diagnosis applicable to the displayed DTC for "ABS" with CONSULT-III. Refer to <u>BRC-97, "DTC</u> <u>Index"</u>.

>> GO TO 7.

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

Check that the symptom is a normal operation that is not considered a system malfunction. Refer to <u>BRC-104.</u> "Description".

Is the symptom a normal operation?

YES >> INSPECTION END

NO >> GO TO 5.

5. Check the warning lamp and indicator lamp for illumination

Check that the warning lamp and indicator lamp illuminate.

- ABS warning lamp: refer to <u>BRC-82, "Description"</u>.
- Brake warning lamp: refer to <u>BRC-83, "Description"</u>.
- VDC OFF indicator lamp: refer to <u>BRC-85. "Description"</u>.
- VDC warning lamp: refer to <u>BRC-86, "Description"</u>.

Is ON/OFF timing normal?

YES >> GO TO 6.

NO >> GO TO 2.

6.PERFORM THE DIAGNOSIS BY SYMPTOM

Perform the diagnosis applicable to the symptom for "ABS" with CONSULT-III.

>> GO TO 7.

7.REPAIR OR REPLACE THE MALFUNCTIONING PARTS

Repair or replace the specified malfunctioning parts.

>> GO TO 8.

8.MEMORY CLEAR

Perform self-diagnosis memory clear for "ABS" with CONSULT-III.

>> GO TO 9.

9.FINAL CHECK

Perform the self-diagnosis again, and check that the malfunction is repaired completely.

Is no other DTC present and the repair completed?

YES >> INSPECTION END

NO >> GO TO 3.

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

Diagnostic Work Sheet

INFOID:000000006507892

[VDC/TCS/ABS]

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

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ADDITIONAL SERVICE WHEN REPLACING ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< BASIC INSPECTION >

[VDC/TCS/ABS]

ADDITIONAL SERVICE WHEN REPLACING ABS ACTUATOR AND ELEC-TRIC UNIT (CONTROL UNIT)

Description

INFOID:000000006507893

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

Special Repair Requirement

INFOID:000000006507894

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

Perform the neutral position adjustment for the steering angle sensor.

>> Refer to <u>BRC-9</u>, "Special Repair Requirement".

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION < BASIC INSPECTION > [VDC/TCS/ABS]

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Description

INFOID:000000006507895

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

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)	×
Removing/Installing steering angle sensor	×
Replacing steering angle sensor	×
Removing/Installing steering components	×
Replacing steering components	×
Removing/Installing suspension components	×
Replacing suspension components	×
Removing/Installing tire	_
Change tires to new ones	_
Tire rotation	_
Adjusting wheel alignment	X
CAUTION: To adjust neutral position of steering angle sensor, Adjustment cannot be done without CONSULT-III.)	NEUTRAL POSITION make sure to use CONSULT-III.
CAUTION: To adjust neutral position of steering angle sensor, Adjustment cannot be done without CONSULT-III.) ALIGN THE VEHICLE STATUS Stop vehicle with front wheels in straight-ahead position	make sure to use CONSULT-III.
CAUTION: To adjust neutral position of steering angle sensor, Adjustment cannot be done without CONSULT-III.) ALIGN THE VEHICLE STATUS Stop vehicle with front wheels in straight-ahead position >> GO TO 2.	make sure to use CONSULT-III.
CAUTION: To adjust neutral position of steering angle sensor, Adjustment cannot be done without CONSULT-III.) ALIGN THE VEHICLE STATUS Stop vehicle with front wheels in straight-ahead position	make sure to use CONSULT-III.
CAUTION: To adjust neutral position of steering angle sensor, Adjustment cannot be done without CONSULT-III.) ALIGN THE VEHICLE STATUS Stop vehicle with front wheels in straight-ahead position >> GO TO 2. 2. PERFORM THE NEUTRAL POSITION ADJUSTMEN 1. Select "ABS", "WORK SUPPORT" and "ST ANGLE 2. Select "START". CAUTION: Never touch steering wheel while adjusting steered	make sure to use CONSULT-III. N. NT FOR THE STEERING ANGLE SENSOR SENSOR ADJUSTMENT" in order with CONSULT-III.
CAUTION: To adjust neutral position of steering angle sensor, Adjustment cannot be done without CONSULT-III.) ALIGN THE VEHICLE STATUS Stop vehicle with front wheels in straight-ahead position >> GO TO 2. 2.PERFORM THE NEUTRAL POSITION ADJUSTMENT Select "ABS", "WORK SUPPORT" and "ST ANGLE 2. Select "START". CAUTION:	make sure to use CONSULT-III. N. NT FOR THE STEERING ANGLE SENSOR SENSOR ADJUSTMENT" in order with CONSULT-III.
CAUTION: To adjust neutral position of steering angle sensor, Adjustment cannot be done without CONSULT-III.) ALIGN THE VEHICLE STATUS Stop vehicle with front wheels in straight-ahead position >> GO TO 2. 2.PERFORM THE NEUTRAL POSITION ADJUSTMEN Select "ABS", "WORK SUPPORT" and "ST ANGLE Select "START". CAUTION: Never touch steering wheel while adjusting steels After approximately 10 seconds, select "END". NOTE: After approximately 60 seconds, it ends automatica Turn the ignition switch OFF, then turn it ON again. CAUTION:	make sure to use CONSULT-III. n. NT FOR THE STEERING ANGLE SENSOR SENSOR ADJUSTMENT" in order with CONSULT-III. ering angle sensor.
CAUTION: To adjust neutral position of steering angle sensor, Adjustment cannot be done without CONSULT-III.) ALIGN THE VEHICLE STATUS Stop vehicle with front wheels in straight-ahead position >> GO TO 2. PERFORM THE NEUTRAL POSITION ADJUSTMENT Select "ABS", "WORK SUPPORT" and "ST ANGLE Select "START". CAUTION: Never touch steering wheel while adjusting steels. After approximately 10 seconds, select "END". NOTE: After approximately 60 seconds, it ends automatical. Turn the ignition switch OFF, then turn it ON again.	make sure to use CONSULT-III. n. NT FOR THE STEERING ANGLE SENSOR SENSOR ADJUSTMENT" in order with CONSULT-III. ering angle sensor.
CAUTION: To adjust neutral position of steering angle sensor, Adjustment cannot be done without CONSULT-III.) .ALIGN THE VEHICLE STATUS Stop vehicle with front wheels in straight-ahead position >> GO TO 2. 2.PERFORM THE NEUTRAL POSITION ADJUSTMENT Select "ABS", "WORK SUPPORT" and "ST ANGLE Select "START". CAUTION: Never touch steering wheel while adjusting steels. After approximately 10 seconds, select "END". NOTE: After approximately 60 seconds, it ends automatica. Turn the ignition switch OFF, then turn it ON again. CAUTION: Be sure to perform above operation.	make sure to use CONSULT-III. n. NT FOR THE STEERING ANGLE SENSOR SENSOR ADJUSTMENT" in order with CONSULT-III. ering angle sensor.
CAUTION: To adjust neutral position of steering angle sensor, Adjustment cannot be done without CONSULT-III.) ALIGN THE VEHICLE STATUS Stop vehicle with front wheels in straight-ahead position >> GO TO 2. 2.PERFORM THE NEUTRAL POSITION ADJUSTMEN Select "ABS", "WORK SUPPORT" and "ST ANGLE Select "START". CAUTION: Never touch steering wheel while adjusting steels After approximately 10 seconds, select "END". NOTE: After approximately 60 seconds, it ends automatica Turn the ignition switch OFF, then turn it ON again. CAUTION:	make sure to use CONSULT-III. n. NT FOR THE STEERING ANGLE SENSOR SENSOR ADJUSTMENT" in order with CONSULT-III. ering angle sensor.

2. Select "ABS", DATA MONITOR" and "STR ANGLE SIG" in order with CONSULT-III, and check steering angle sensor signal.

STR ANGLE SIG $: 0\pm 2.5^{\circ}$

Is the steering angle within the specified range?

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

< BASIC INSPECTION >

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

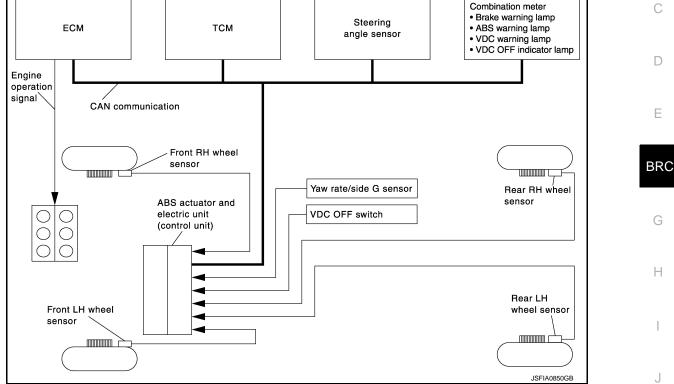
Erase the self-diagnosis memories for "ABS" with CONSULT-III. Refer to <u>BRC-23, "CONSULT-III Function"</u>. <u>Are the memories erased?</u>

YES >> INSPECTION END

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

System Diagram





System Description

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

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INFOID:000000006507898

[VDC/TCS/ABS]

INFOID:000000006507897

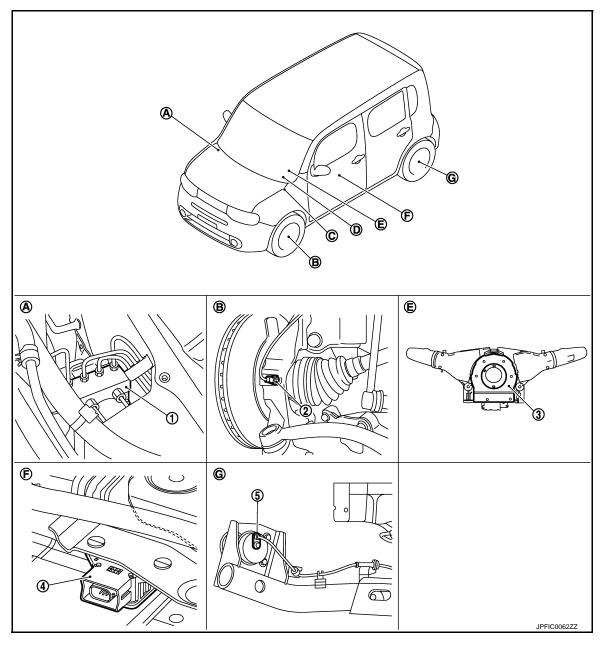
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Component Parts Location

INFOID:000000006507899

[VDC/TCS/ABS]



- 1. ABS actuator and electric unit (con- 2. trol unit)
- 4. Yaw rate/side G sensor
- A. Engine room right side
- D. ABS warning lamp, brake warning E. lamp, VDC OFF indicator lamp, VDC warning lamp: <u>MWI-6, "METER</u> <u>SYSTEM : System Description"</u>
- G. Rear axle

- Front wheel sensor
- 5. Rear wheel sensor
- B. Steering knuckle
 - Back of spiral cable assembly
- 3. Steering angle sensor
- C. VDC OFF switch: <u>IP-12</u>, "Exploded <u>View"</u>
- F. Under front (left side) seat

VDC

< SYSTEM DESCRIPTION >

Component Description

INFOID:000000006507900

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[VDC/TCS/ABS]

Component parts		Reference	
	Pump	RRC 20 "Description"	В
	Motor	BRC-39, "Description"	
	Actuator relay (main relay)	BRC-56, "Description"	
ABS actuator and electric unit (control unit)	Solenoid valve	BRC-51, "Description"	
	Pressure sensor	BRC-58, "Description"	
	VDC switch-over valve (CV1, CV2)	BRC-69, "Description"	D
	VDC switch-over valve (SV1, SV2)	BRC-71, "Description"	
Wheel sensor		BRC-28, "Description"	
Yaw rate/side G sensor		BRC-63, "Description"	—— E
Steering angle sensor		BRC-60, "Description"	
VDC OFF switch		BRC-80, "Description"	BR
ABS warning lamp		BRC-82, "Description"	
Brake warning lamp		BRC-83, "Description"	
VDC OFF indicator lamp		BRC-85, "Description"	G
VDC warning lamp		BRC-86, "Description"	

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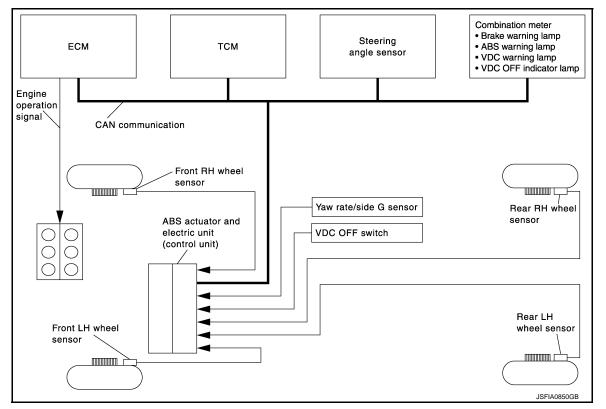
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TCS

System Diagram

INFOID:000000006954919

[VDC/TCS/ABS]



System Description

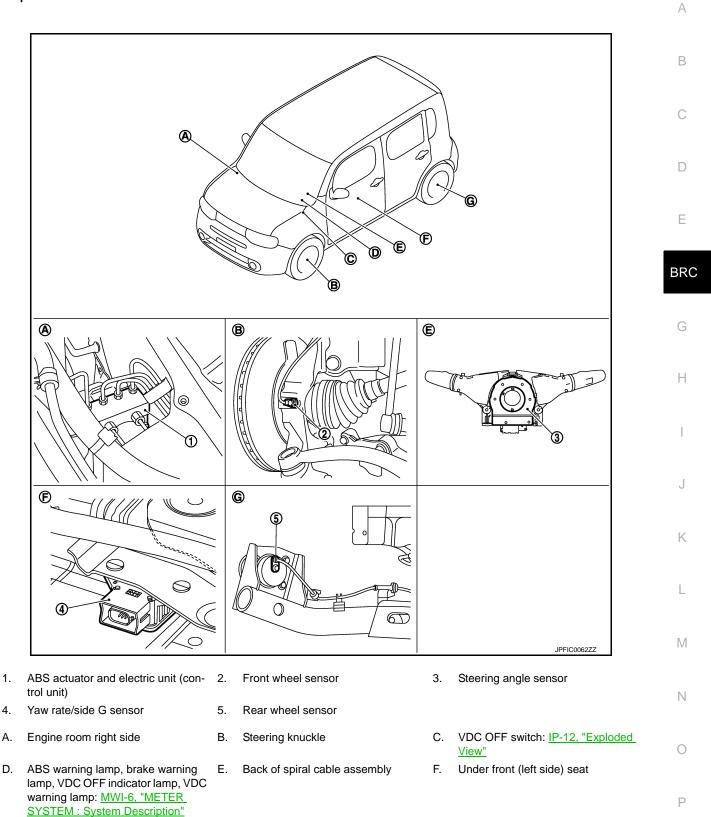
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- Traction Control System is a function that electronically controls engine torque, brake fluid pressure and A/T gear position to ensure the optimum slippage ratio at drive wheels by computing wheel speed signals from 4 wheel sensors. When ABS actuator and electric unit (control unit) detects a spin at drive wheels (rear wheels), it compares wheel speed signals from all 4 wheels. At this time, LH and RH rear brake fluid pre sure 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, TCS informs driver of system operation by flashing VDC warning lamp.
- Electrical system diagnosis by CONSULT-III is available.

Component Parts Location

[VDC/TCS/ABS]

INFOID:000000006954920



TCS

Rear axle

G.

Component Description

INFOID:000000006954921

[VDC/TCS/ABS]

Component parts		Reference
	Pump	
	Motor	BRC-39, "Description"
	Actuator relay (main relay)	BRC-56, "Description"
ABS actuator and electric unit (control unit)	Solenoid valve	BRC-51, "Description"
	Pressure sensor	BRC-58, "Description"
	VDC switch-over valve (CV1, CV2)	BRC-69, "Description"
	VDC switch-over valve (SV1, SV2)	BRC-71, "Description"
Wheel sensor		BRC-28, "Description"
Yaw rate/side G sensor		BRC-63, "Description"
Steering angle sensor		BRC-60, "Description"
VDC OFF switch		BRC-80, "Description"
ABS warning lamp		BRC-82, "Description"
Brake warning lamp		BRC-83, "Description"
VDC OFF indicator lamp		BRC-85, "Description"
VDC warning lamp		BRC-86, "Description"

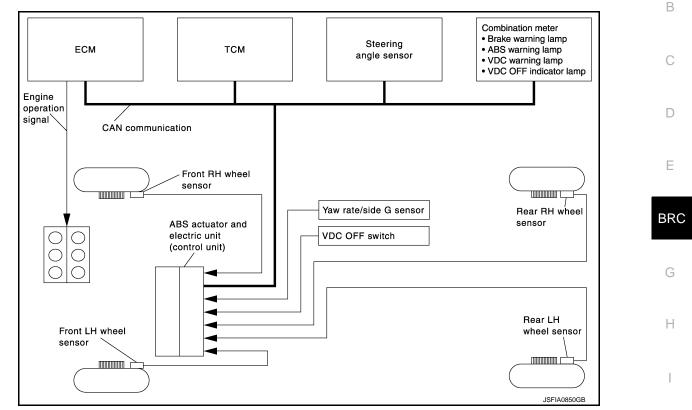
TCS

ABS

System Diagram

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ABS

System Description

INFOID:000000006507906

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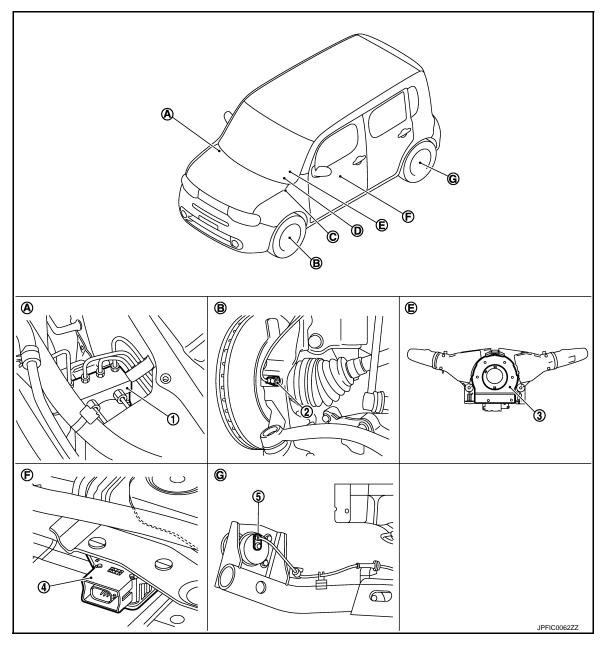
- Anti-Lock Braking System detects wheel revolution while braking, electronically controls braking force, and prevents wheel locking during sudden braking. It improves handling stability and maneuverability for avoid-ing obstacles.
- Electrical system diagnosis by CONSULT-III is available.

Component Parts Location

INFOID:000000006954923

[VDC/TCS/ABS]

ABS



- 1. ABS actuator and electric unit (con- 2. trol unit)
- 4. Yaw rate/side G sensor
- A. Engine room right side
- D. ABS warning lamp, brake warning E. lamp, VDC OFF indicator lamp, VDC warning lamp: <u>MWI-6, "METER</u> <u>SYSTEM : System Description"</u>
- G. Rear axle

- Front wheel sensor
- 5. Rear wheel sensor
- B. Steering knuckle
 - Back of spiral cable assembly
- 3. Steering angle sensor
- C. VDC OFF switch: <u>IP-12</u>, "Exploded <u>View"</u>
- F. Under front (left side) seat

Component Description

INFOID:000000006954924

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[VDC/TCS/ABS]

Component parts		Reference	
	Pump	BRC-39, "Description"	В
	Motor	BRC-39, Description	
	Actuator relay (main relay)	BRC-56, "Description"	0
ABS actuator and electric unit (control unit)	Solenoid valve	BRC-51, "Description"	
	Pressure sensor	BRC-58, "Description"	
	VDC switch-over valve (CV1, CV2)	BRC-69, "Description"	D
	VDC switch-over valve (SV1, SV2)	BRC-71, "Description"	
Wheel sensor		BRC-28, "Description"	
Yaw rate/side G sensor		BRC-63, "Description"	— E
Steering angle sensor		BRC-60, "Description"	
VDC OFF switch		BRC-80, "Description"	BR
ABS warning lamp		BRC-82, "Description"	
Brake warning lamp		BRC-83, "Description"	
VDC OFF indicator lamp		BRC-85, "Description"	G
VDC warning lamp		BRC-86, "Description"	

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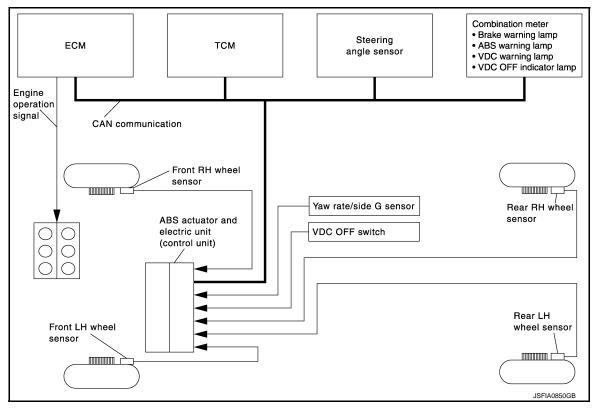
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System Diagram

INFOID:000000006954927



System Description

INFOID:000000006507910

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

Revision: 2011 December

Component Parts Location

INFOID:000000006954928 А

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Back of spiral cable assembly

BRC-21

- View"
- F. Under front (left side) seat

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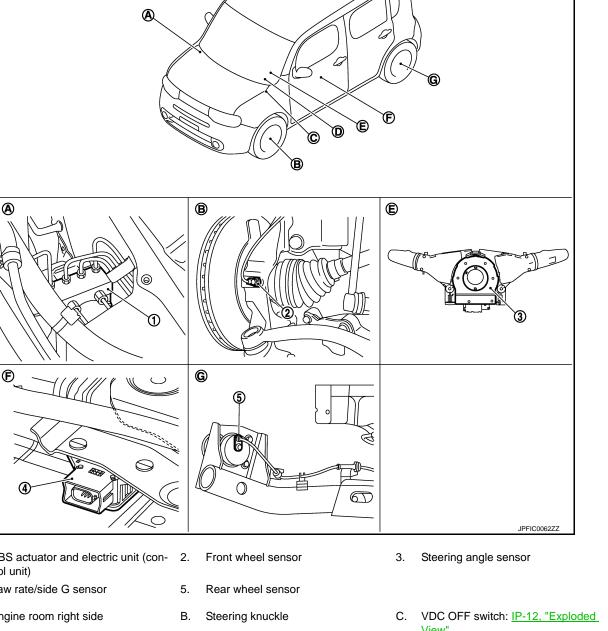
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- 1 Ē G 5 4 6 \bigcirc ABS actuator and electric unit (con- 2. 1. Front wheel sensor
- trol unit)
- 4. Yaw rate/side G sensor
- Α. Engine room right side
- Ε. D. ABS warning lamp, brake warning lamp, VDC OFF indicator lamp, VDC warning lamp: MWI-6, "METER SYSTEM : System Description"
- G. Rear axle





Component Description

INFOID:000000006954929

[VDC/TCS/ABS]

Component	Component parts	
	Pump	BRC-39, "Description"
	Motor	BRC-39, Description
	Actuator relay (main relay)	BRC-56, "Description"
ABS actuator and electric unit (control unit)	Solenoid valve	BRC-51, "Description"
	Pressure sensor	BRC-58, "Description"
	VDC switch-over valve (CV1, CV2)	BRC-69, "Description"
	VDC switch-over valve (SV1, SV2)	BRC-71, "Description"
Wheel sensor		BRC-28, "Description"
Yaw rate/side G sensor		BRC-63, "Description"
Steering angle sensor		BRC-60, "Description"
VDC OFF switch		BRC-80, "Description"
ABS warning lamp		BRC-82, "Description"
Brake warning lamp		BRC-83, "Description"
VDC OFF indicator lamp		BRC-85, "Description"
VDC warning lamp		BRC-86, "Description"

EBD

Revision: 2011 December

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

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

CONSULT-III Function

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FUNCTION

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

Diagnostic test mode	Function	
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT-III.	D
Self diagnostic result	Self-diagnostic results can be read and erased quickly.	
Data monitor	Input/Output data in the ABS actuator and electric unit (control unit) can be read.	_
Active test	CONSULT-III drives some actuators apart from ABS actuator and electric unit (control unit) and also shifts some parameters in a specified range.	
ECU identification	ABS actuator and electric unit (control unit) part number can be read.	BRC
ECU identification	ABS actuator and electric unit (control unit) part number can be read.	-

WORK SUPPORT

Item	Description	G
ST ANGLE SENSOR ADJUSTMENT	Adjusts the neutral position of the steering angle sensor.	

SELF DIAGNOSTIC RESULT

Operation Procedure

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

Display Item List Refer to <u>BRC-97, "DTC Index"</u>.

How to Erase Self-diagnosis Results

After erasing DTC memory for "ABS" with CONSULT-III, start the engine and drive the 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 warning 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, ABS warning lamp, VDC warning lamp and brake warning lamp will not turn OFF even when the system is normal unless the vehicle is driven 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 in case of brake fluid level switch operation (when brake fluid is insufficient).
- VDC OFF switch should not stay "ON" position.

DATA MONITOR MODE

Display Item List

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< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

- ×: Applicable ▼: Optional item

	SELECT M	ONITOR ITEM	
Monitor item (Unit)	ECU INPUT SIGNALS	MAIN SIGNALS	Remarks
FR LH SENSOR [km/h (MPH)]	×	×	
FR RH SENSOR [km/h (MPH)]	×	×	Wheel speed
RR LH SENSOR [km/h (MPH)]	×	×	Wheel speed
RR RH SENSOR [km/h (MPH)]	×	×	
BATTERY VOLT (V)	×	×	Battery voltage supplied to the ABS actuator and electric unit (control unit)
STOP LAMP SW (On/Off)	×	×	Stop lamp switch signal status
OFF SW (On/Off)	×	×	VDC OFF switch
GEAR	×	×	Gear position determined by TCM
SLCT LVR POSI	×	×	Sift lever position determined by TCM
YAW RATE SEN (d/s)	×	×	Yaw rate detected by yaw rate/side G sensor
FR RH IN SOL (On/Off) (Note)	•	×	
FR RH OUT SOL (On/Off) (Note)	•	×	
FR LH IN SOL (On/Off) (Note)	•	×	
FR LH OUT SOL (On/Off) (Note)	•	×	Operation status of each colonaid value
RR RH IN SOL (On/Off) (Note)	•	×	Operation status of each solenoid valve
RR RH OUT SOL (On/Off) (Note)	•	×	
RR LH IN SOL (On/Off) (Note)	•	×	
RR LH OUT SOL (On/Off) (Note)	•	×	
MOTOR RELAY (On/Off)	•	×	Motor and motor relay operation
ACTUATOR RLY (On/Off) (Note)	▼	×	Actuator relay operation
ABS WARN LAMP (On/Off)	•	×	ABS warning lamp
OFF LAMP (On/Off)	•	×	VDC OFF indicator lamp
SLIP/VDC LAMP (On/Off)	•	×	VDC warning lamp
PRESS SENSOR (bar)	×	▼	Brake fluid pressure detected by pressure sensor
ACCEL POS SIG (%)	×	▼	Throttle actuator opening/closing is displayed (Linked with accelerator pedal)
SIDE G-SENSOR (m/s ²)	×	▼	Transverse G detected by yaw rate/side G sensor

Revision: 2011 December

BRC-24

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

	SELECT MONITOR ITEM			-
Monitor item (Unit)	ECU INPUT SIGNALS	MAIN SIGNALS	Remarks	1
STR ANGLE SIG (°)	×	•	Steering angle detected by steering angle sensor	-
ENGINE RPM [tr/min (rpm)]	×	•	Engine speed	
FLUID LEV SW (On/Off)	×	•	Brake fluid level switch signal status	- (
EBD WARN LAMP (On/Off)	▼	•	Brake warning lamp	-
CV1 (On/Off)	▼	•		_
CV2 (On/Off)	•	•		I
SV1 (On/Off)	▼	•	VDC switch-over valve	В
SV2 (On/Off)	▼	•		
EBD SIGNAL (On/Off)	▼	•	EBD operation	_
ABS SIGNAL (On/Off)	•	•	ABS operation	_
TCS SIGNAL (On/Off)	•	•	TCS operation	_
VDC SIGNAL (On/Off)	•	•	VDC operation	_
EBD FAIL SIG (On/Off)	•	•	EBD fail-safe signal	_
ABS FAIL SIG (On/Off)	•	•	ABS fail-safe signal	_
TCS FAIL SIG (On/Off)	•	•	TCS fail-safe signal	_
VDC FAIL SIG (On/Off)	•	•	VDC fail-safe signal	
CRANKING SIG (On/Off)	•	•	Crank operation	_
PARK BRAKE SW (On/Off)	×	▼	Parking brake switch signal status	-
V/R OUTPUT (On/Off)	▼	▼	Solenoid valve relay activated	
M/R OUTPUT (On/Off)	▼	•	Actuator motor and motor relay activated	_

NOTE:

A brief moment of On/Off condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

ACTIVE TEST MODE

CAUTION:

- Never perform active test while driving vehicle.
- Make sure to completely bleed air from brake system.
- The active test cannot be started when ABS warning lamp, VDC warning lamp and brake warning lamp are ON.
- ABS warning lamp, VDC warning lamp and brake warning lamp are ON during active test. NOTE:

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< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

- 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" in "ABS" with CONSULT-III is displayed 10 seconds after operation start.
- After "TEST IS STOPPED" in "ABS" with CONSULT-III is displayed, to perform test again.

Test Item

ABS SOLENOID VALVE

 Select "Up", "Keep" and "Down" of "ACTIVE TEST" in "ABS" with CONSULT-III. Then use screen monitor to check that solenoid valve operates as shown in the table below.

Test item	Diaplay itam		Display (Note)	
iest item	Display item	Up	Кеер	Down
	FR RH IN SOL	Off	On	On
FR RH SOL	FR RH OUT SOL	Off	Off	On*
FR RH SUL	CV2	Off	Off	Off
	SV2	Off	Off	Off
	FR LH IN SOL	Off	On	On
FR LH SOL	FR LH OUT SOL	Off	Off	On*
FR LH SOL	CV1	Off	Off	Off
	SV1	Off	Off	Off
	RR RH IN SOL	Off	On	On
RR RH SOL	RR RH OUT SOL	Off	Off	On*
	CV1	Off	Off	Off
	SV1	Off	Off	Off
	RR LH IN SOL	Off	On	On
	RR LH OUT SOL	Off	Off	On*
RR LH SOL	CV2	Off	Off	Off
	SV2	Off	Off	Off

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

NOTE:

A brief moment of On/Off condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

ABS SOLENOID VALVE (ACT)

Select "Up", "ACT UP" and "ACT KEEP" of "ACTIVE TEST" in "ABS" with CONSULT-III. Then use screen
monitor to check that solenoid valve operates as shown in the table below.

Test item	Dianlay itam	Display (Note)		
rest item	Display item	Up	ACT UP	ACT KEEP
	FR RH IN SOL	Off	Off	Off
FR RH ABS SOLENOID	FR RH OUT SOL	Off	Off	Off
(ACT)	CV2	Off	On	On
	SV2	Off	On*	Off
	FR LH IN SOL	Off	Off	Off
FR LH ABS SOLENOID (ACT)	FR LH OUT SOL	Off	Off	Off
	CV1	Off	On	On
	SV1	Off	On*	Off

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

Test item	Display item	Display (Note)			٥
iest item		Up	ACT UP	ACT KEEP	A
	RR RH IN SOL	Off	Off	Off	-
RR RH ABS SOLENOID	RR RH OUT SOL	Off	Off	Off	В
(ACT)	CV1	Off	On	On	-
	SV1	Off	On*	Off	-
	RR LH IN SOL	Off	Off	Off	С
RR LH ABS SOLENOID	RR LH OUT SOL	Off	Off	Off	-
(ACT)	CV2	Off	On	On	D
	SV2	Off	On*	Off	-

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

NOTE:

A brief moment of On/Off condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

ABS MOTOR

 Select "On" and "Off" of "ACTIVE TEST" in "ABS" with CONSULT-III. Make sure motor relay and actuator relay operates as shown in table below.

Test item	Display item	Display	
restitem	Display lient	On	Off
ABS MOTOR	MOTOR RELAY	On	Off
ABS MOTOR	ACTUATOR RLY (Note)	On	On

NOTE:

A brief moment of On/Off condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

ECU IDENTIFICATION

ABS actuator and electric unit (control unit) part number can be read.

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< DTC/CIRCUIT DIAGNOSIS >

DTC/CIRCUIT DIAGNOSIS C1101, C1102, C1103, C1104 WHEEL SENSOR

Description

INFOID:000000006507914

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:000000006507915

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1101	RR RH SENSOR-1	Circuit of rear RH wheel sensor is open. Or when the sensor power voltage is outside the standard.	
C1102	RR LH SENSOR-1	Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard.	 Harness or connector Wheel sensor ABS actuator and electric unit
C1103	FR RH SENSOR-1	Circuit of front RH wheel sensor is open. Or when the sensor power voltage is outside the standard.	 Absolution and electric unit (control unit) Sensor rotor
C1104	FR LH SENSOR-1	Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard.	

DTC CONFIRMATION PROCEDURE

1.DTC REPRODUCTION PROCEDURE

1. Start the engine and drive the vehicle at 30 km/h (19 MPH) or more for approximately 1 minute.

2. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1101", "C1102", "C1103" or "C1104" detected?

- YES >> Proceed to diagnosis procedure. Refer to <u>BRC-28, "Diagnosis Procedure"</u>.
- NO >> INSPECTION END

Diagnosis Procedure

CAUTION:

Never check between wheel sensor harness connector terminals.

1.CHECK WHEEL SENSOR

- 1. Turn the ignition switch OFF.
- 2. Check wheel sensor for damage.

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

2.REPLACE WHEEL SENSOR (1)

- 1. Replace wheel sensor.
- Front: Refer to BRC-109, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear: Refer to BRC-110, "REAR WHEEL SENSOR : Removal and Installation".
- 2. Erase Self-diagnosis result for "ABS".
- 3. Turn the ignition switch OFF, and wait 10 seconds or more.
- 4. Stat the engine.
- 5. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
- 6. Stop the vehicle.
- 7. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1101", "C1102", "C1103" or "C1104" detected?

YES >> GO TO 3.

NO >> INSPECTION END

3.CHECK CONNECTOR

INFOID:000000006507916

[VDC/TCS/ABS]

C1101, C1102, C1103, C1104 WHEEL SENSOR

	C1101, C1102, 0	C1103, C1104 W	HEEL SENSOR	
< DTC/CIRCUIT DIA	GNOSIS >			[VDC/TCS/ABS]
	switch OFF. itor and electric unit (c sor harness connector			ction or looseness.
s the inspection resul				
YES >> GO TO 5. NO >> Repair or		d parte, coouroly look t	the connector and CC	
1. PERFORM SELF-I	replace error-detected	a parts, securely lock		0104.
	osis result for "ABS" wi switch OFF, and wait 1			
. Stat the engine.				
Drive the vehicle Stop the vehicle.	at approx. 30 km/h (19	9 MPH) or more for ap	prox. 1 minute.	
	nosis for "ABS" with C	ONSULT-III.		
	<u>02", "C1103" or "C110</u>	4" detected?		
YES >> GO TO 5. NO >> INSPECT				-
CHECK TERMINA				
Turn the ignition s				
 Disconnect ABS a and electric unit (Disconnect whee 	actuator and electric u control unit) pin termin	hals for damage or loo nector and check eac	se connection with ha	en check ABS actuator rness connector. rminals for damage or
the inspection resul				
YES >> GO TO 7.				
•	replace error-detected	d parts and GO TO 6.		
PERFORM SELF-I	DIAGNOSIS (2)			
	uator and electric unit		connector.	
	ensor harness connect osis result for "ABS".	l01.		
Turn the ignition s	switch OFF, and wait 1	0 seconds or more.		
Stat the engine. Drive the vehicle	at approx. 30 km/h (19	9 MPH) or more for ap	prox. 1 minute.	
Stop the vehicle.		· · ·	F	
-	nosis for "ABS" with C			
<u>/ES >> GO TO 7.</u>	<u>02", "C1103" or "C110</u>	4" detected?		
NO >> INSPECT				
.CHECK WHEEL S	ENSOR HARNESS			
Turn the ignition s	witch OFF.			<u> </u>
Disconnect ABS a	actuator and electric u		ess connector.	
	l sensor harness conn between ABS actuato		ntrol unit) harness con	nector and wheel sen-
	ector. (Check continuit			I LH, or center harness
-	,	nhy circuit		
	or and terminal for power sup ectric unit (control unit)		l sensor	
Connector	Terminal	Connector	Terminal	Continuity
	9	E39 (Front RH)		
500	16	E22 (Front LH)		
E36	8	B41 (Rear RH)	- 1	Existed
	_		4	

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B44 (Rear LH)

C1101, C1102, C1103, C1104 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

Management connector and terminal for signal size

[VDC/TCS/ABS]

ABS actuator and ele	ectric unit (control unit)	Wheel sensor		Continuity	
Connector	Terminal	Connector	Terminal		
	10	E39 (Front RH)			
E36	5	E22 (Front LH)		Existed	
E30	19	B41 (Rear RH)	2	Existed	
	17	B44 (Rear LH)			

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace error-detected parts and GO TO 8.

8.PERFORM SELF-DIAGNOSIS (3)

- 1. Connect ABS actuator and electric unit (control unit) harness connector.
- 2. Connect wheel sensor harness connector.
- 3. Erase Self-diagnosis result for "ABS".
- 4. Turn the ignition switch OFF, and wait 10 seconds or more.
- 5. Stat the engine.
- 6. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
- 7. Stop the vehicle.
- 8. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1101", "C1102", "C1103" or "C1104" detected?

YES >> GO TO 9.

NO >> INSPECTION END

9.REPLACE WHEEL SENSOR (2)

- 1. Replace wheel sensor.
- Front: Refer to <u>BRC-109</u>, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear: Refer to <u>BRC-110</u>, "REAR WHEEL SENSOR : Removal and Installation".
- 2. Erase Self-diagnosis result for "ABS" with CONSULT-III.
- 3. Turn the ignition switch OFF, and wait 10 seconds or more.
- 4. Stat the engine.
- 5. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
- 6. Stop the vehicle.
- 7. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1101", "C1102", "C1103" or "C1104" detected?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u>. NO >> INSPECTION END

Special Repair Requirement

INFOID:000000006507917

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) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-9</u>, "Special Repair Requirement"

>> END

< DTC/CIRCUIT DIAGNOSIS >

C1105, C1106, C1107, C1108 WHEEL SENSOR

Description

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

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DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause	D
C1105	RR RH SENSOR-2	When the circuit in the rear RH wheel sensor is short-cir- cuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.	 Harness or connector Wheel sensor ABS actuator and electric unit (control unit) Sensor rotor 	Е
C1106	RR LH SENSOR-2	When the circuit in the rear LH wheel sensor is short-cir- cuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.		BRC
C1107	FR RH SENSOR-2	When the circuit in the front RH wheel sensor is short-cir- cuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.		G
C1108	FR LH SENSOR-2	When the circuit in the front LH wheel sensor is short-cir- cuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.		Η

DTC CONFIRMATION PROCEDURE

1.DTC REPRODUCTION PROCEDURE

1.	Start the engine and drive the vehicle at 30 km/h (19 MPH) or more for approximately 1 minute.	J
2.	Perform self-diagnosis for "ABS" with CONSULT-III.	
ls	DTC "C1105", "C1106", "C1107", or "C1108" detected?	
v	ES Dropped to diagnosis procedure. Defer to DDC 31 "Diagnosis Droppdure"	K

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-31, "Diagnosis Procedure"</u>

NO >> INSPECTION END

Diagnosis Procedure

CAUTION:

Never check between wheel sensor harness connector terminals.

1.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SUPPLY SYSTEM

Check ABS actuator and electric unit (control unit) power supply system. Refer to <u>BRC-76, "Diagnosis Proce-</u> dure".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

2.CHECK TIRE

- 1. Turn the ignition switch OFF.
- Check tire air pressure, wear and size. Refer to <u>WT-53, "Tire Air Pressure"</u>.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Adjust air pressure or replace tire and GO TO 3.

3.CHECK DATA MONITOR (1)

1. Erase Self-diagnosis result for "ABS" with CONSULT-III.

2. Turn the ignition switch OFF, and wait 10 seconds or more.

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[VDC/TCS/ABS]

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

- 3. Stat the engine.
- 4. Select "ABŠ" and "DATA MONITOR", check "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR" and "RR RH SENSOR" with CONSULT-III.

NOTE:

Set the "DATA MONITOR" recording speed to "10 msec".

5. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 30 km/h (19 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

YES >> GO TO 4.

NO >> GO TO 5.

- **4.**PERFORM SELF-DIAGNOSIS (1)
- 1. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
- 2. Stop the vehicle.
- 3. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1105", "C1106", "C1107" or "C1108" detected?

YES >> GO TO 5.

NO >> INSPECTION END

5.CHECK WHEEL SENSOR

- 1. Turn the ignition switch OFF.
- 2. Check wheel sensor for damage.
- 3. Remove dust and foreign matter adhered to the sensor rotor with a vacuum dust collector through the wheel sensor mounting hole.
 - CAUTION:

Install wheel sensor with no backlash and float, and tighten the mounting bolt to the specified torque.

- Front: Refer to BRC-109, "FRONT WHEEL SENSOR : Exploded View".
- Rear: Refer to <u>BRC-110, "REAR WHEEL SENSOR : Exploded View"</u>.

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 6.

6.REPLACE WHEEL SENSOR (1)

- 1. Replace wheel sensor.
- Front: Refer to BRC-109, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear: Refer to BRC-110, "REAR WHEEL SENSOR : Removal and Installation".
- 2. Erase Self-diagnosis result for "ABS" with CONSULT-III.
- 3. Turn the ignition switch OFF, and wait 10 seconds or more.
- 4. Stat the engine.
- 5. Select "ABS" and "DATA MONITOR", check "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR" and "RR RH SENSOR" with CONSULT-III.

NOTE:

Set the "DATA MONITOR" recording speed to "10 msec".

6. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 30 km/h (19 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

YES >> GO TO 7.

NO >> GO TO 19.

7. PERFORM SELF-DIAGNOSIS (2)

BWith CONSULT-III.

- 1. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
- 2. Stop the vehicle.
- 3. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1105", "C1106", "C1107" or "C1108" detected?

YES >> GO TO 19.

[VDC/TCS/ABS] < DTC/CIRCUIT DIAGNOSIS > >> INSPECTION END А Turn the ignition switch OFF. Check ABS actuator and electric unit (control unit) harness connector for disconnection or looseness. Check wheel sensor harness connector for disconnection or looseness. Is the inspection result normal? >> Repair or replace error-detected parts, securely lock the connector, and GO TO 9. **9.**CHECK DATA MONITOR (2) Erase Self-diagnosis result for "ABS" with CONSULT-III. Turn the ignition switch OFF, and wait 10 seconds or more. 4. Select "ABS" and "DATA MONITOR", check "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR" F and "RR RH SENSOR" with CONSULT-III. Set the "DATA MONITOR" recording speed to "10 msec". BRC Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor. Regarding the deference at 30 km/h (19 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively? 10.PERFORM SELF-DIAGNOSIS (3) Н Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Perform self-diagnosis for "ABS" with CONSULT-III. Is DTC "C1105", "C1106", "C1107" or "C1108" detected? >> INSPECTION END Turn the ignition switch OFF. Κ Disconnect ABS actuator and electric unit (control unit) harness connector and then check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector. Disconnect wheel sensor harness connector and check each wheel sensor pin terminals for damage or loose connection with harness connector. Is the inspection result normal? M >> Repair or replace error-detected parts and GO TO 12. 12. CHECK DATA MONITOR (3) Connect ABS actuator and electric unit (control unit) harness connector. Ν Connect wheel sensor harness connector. Erase Self-diagnosis result for "ABS" with CONSULT-III. Turn the ignition switch OFF, and wait 10 seconds or more. Select "ABS" and "DATA MONITOR", check "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR" and "RR RH SENSOR" with CONSULT-III. Ρ

- Set the "DATA MONITOR" recording speed to "10 msec".
- 7. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 30 km/h (19 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

Stat the engine.

NOTE:

NO

1.

2.

3.

YES

NO

1.

2.

3.

YES

NO

1.

2.

3.

YES

NO

1.

2.

3

YES

NO

1.

4.

5.

6

8. CHECK CONNECTOR

>> GO TO 11.

>> GO TO 10.

>> GO TO 11.

>> GO TO 11.

>> GO TO 14.

Stop the vehicle.

11.CHECK TERMINAL

Stat the engine.

NOTE:

< DTC/CIRCUIT DIAGNOSIS >

13. PERFORM SELF-DIAGNOSIS (4)

- 1. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
- 2. Stop the vehicle.
- 3. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1105", "C1106", "C1107" or "C1108" detected?

YES >> GO TO 14.

NO >> INSPECTION END

14.CHECK WHEEL SENSOR HARNESS

- 1. Turn the ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) harness connector.
- 3. Disconnect wheel sensor harness connector.
- 4. Check continuity between ABS actuator and electric unit (control unit) harness connector and the ground.

ABS actuator and electric unit (control unit)				Continuity	
Connector	Terminal	Connector	Terminal	- Continuity	
	9, 10	E36	1, 4	Not existed	
E36	16, 5				
E30	8, 19				
	6, 17				

Is the inspection result normal?

YES >> GO TO 15.

- NO >> Repair or replace error-detected parts and GO TO 15.
- **15.**CHECK DATA MONITOR (4)
- 1. Connect ABS actuator and electric unit (control unit) harness connector.
- 2. Connect wheel sensor harness connector.
- 3. Erase Self-diagnosis result for "ABS" with CONSULT-III.
- 4. Turn the ignition switch OFF, and wait 10 seconds or more.
- 5. Stat the engine.
- Select "ABS" and "DATA MONITOR", check "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR" and "RR RH SENSOR" with CONSULT-III. NOTE:

Set the "DATA MONITOR" recording speed to "10 msec".

7. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 30 km/h (19 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

- YES >> GO TO 16.
- NO >> GO TO 17.

16.PERFORM SELF-DIAGNOSIS (5)

- 1. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
- 2. Stop the vehicle.
- 3. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1105", "C1106", "C1107" or "C1108" detected?

YES >> GO TO 17.

- NO >> INSPECTION END
- **17.**REPLACE WHEEL SENSOR (2)

1. Replace wheel sensor.

- Front: Refer to BRC-109, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear: Refer to <u>BRC-110</u>, "REAR WHEEL SENSOR : Removal and Installation".
- 2. Erase Self-diagnosis result for "ABS" with CONSULT-III.
- 3. Turn the ignition switch OFF, and wait 10 seconds or more.
- 4. Stat the engine.

< DTC/CIRCUIT DIAGNOSIS > [VDC/TCS/ABS]
 Select "ABS" and "DATA MONITOR", check "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR" and "RR RH SENSOR" with CONSULT-III. NOTE:
Set the "DATA MONITOR" recording speed to "10 msec". 6. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.
Regarding the deference at 30 km/h (19 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?
YES >> GO TO 18. NO >> GO TO 19.
18. PERFORM SELF-DIAGNOSIS (6)
 Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Stop the vehicle.
3. Perform self-diagnosis for "ABS" with CONSULT-III.
<u>Is DTC "C1105", "C1106", "C1107" or "C1108" detected?</u> YES >> GO TO 19.
NO >> INSPECTION END
19. REPLACE SENSOR ROTOR
 Replace sensor rotor. Front: Refer to <u>BRC-111, "FRONT SENSOR ROTOR : Removal and Installation"</u>. Rear: Refer to <u>BRC-111, "REAR SENSOR ROTOR : Removal and Installation"</u>.
 Erase Self-diagnosis result for "ABS" with CONSULT-III. Turn the ignition switch OFF, and wait 10 seconds or more.
 Stat the engine. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
 Stop the vehicle. Perform self-diagnosis for "ABS" with CONSULT-III.
Is DTC "C1105", "C1106", "C1107" or "C1108" detected?
YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u> . NO >> INSPECTION END
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 actua- tor and electric unit (control unit) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-</u> 9, "Special Repair Requirement"
>> END

< DTC/CIRCUIT DIAGNOSIS >

C1109 POWER AND GROUND SYSTEM

Description

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

DTC Logic

INFOID:000000006507923

INFOID:000000006507922

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.	 Harness or connector ABS actuator and electric unit (control unit) Fuse

DTC CONFIRMATION PROCEDURE

1.DTC REPRODUCTION PROCEDURE

1. Turn the ignition switch ON.

2. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1109" detected?

- YES >> Proceed to diagnosis procedure. Refer to <u>BRC-36, "Diagnosis Procedure"</u>.
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006507924

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

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

ABS actuator and ele	ectric unit (control unit)		Voltage
Connector	Terminal		
E36	18	Ground	Approx. 0 V

4. Turn the ignition switch ON.

CAUTION:

Never start the engine.

5. Check the voltage between ABS actuator and electric unit (control unit) harness connector and ground.

ABS actuator and electric unit (control unit)			Voltage
Connector	Terminal		vollage
E36	18	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

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

1. Turn the ignition switch OFF.

- 2. Disconnect IPDM E/R harness connector.
- Check continuity between ABS actuator and electric unit (control unit) harness connector and IPDM E/R harness connector.

C1109 POWER AND GROUND SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

ABS actuator and elec	stric unit (control unit)	וחסו	M E/R	
Connector	Terminal	Connector	Terminal	Continuity
E36	18	E15	60	Existed
IGNITION NO >> Repair or CHECK ABS ACTU	ne trouble diagnosis for <u>POWER SUPPLY</u> -" replace error-detected JATOR AND ELECTR	d parts. IC UNIT (CONTROL		
		d electric unit (control	unit) harness connecto	or and ground.
ABS actuator and electric			Continuity	
Connector	Terminal			
E36	1 4	Ground	Existed	
4.CHECK TERMINAL 1. Check ABS actuat ness connector.	tor and electric unit (c pin terminals for dama	ONNECTORS	als for damage or loos on with harness conne	
	BS actuator and elected replace error-detected		Refer to <u>BRC-112, "Ex</u>	<u>kploded View"</u> .
Special Repair Re	equirement			INFOID:00000000650792
1. ADJUSTMENT OF	STEERING ANGLE	SENSOR NEUTRAL F	POSITION	
	ontrol unit) or steering		ngle sensor, when rep noving steering angle	
>> END				

C1110, C1153, C1170 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) < DTC/CIRCUIT DIAGNOSIS > [VDC/TCS/ABS]

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

DTC Logic

INFOID:000000006507926

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).	
C1153	EMERGENCY BRAKE	When ABS actuator and electric unit (control unit) is mal- functioning. (Pressure increase is too much or too little)	ABS actuator and electric unit (control unit)
C1170	VARIANT CODING	In a case where VARIANT CODING is different.	

DTC CONFIRMATION PROCEDURE

1.DTC REPRODUCTION PROCEDURE

1. Turn the ignition switch ON.

2. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1110", "C1153" or "C1170" detected?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-38</u>, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

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 those applicable.

>> Replace ABS actuator and electric unit (control unit). Refer to BRC-112, "Exploded View".

Special Repair Requirement

INFOID:000000006507928

INFOID:000000006507927

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) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-9, "Special Repair Requirement"</u>

C1111 ABS MOTOR, MOTOR RELAY SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

C1111 ABS MOTOR, MOTOR RELAY SYSTEM

Description

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).

MOTOR RELAY

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

DTC Logic

INFOID:000000006507930

DTC DETECTION LOGIC

C1111 PUMP MOTOR During the actuator motor operating with ON, when the actuator motor relay is open. During the actuator motor operating with OFF, when the control line for actuator motor relay is open. Harness or connector ABS actuator and electric unit (control unit) For CONFIRMATION PROCEDURE During the actuator motor operating with OFF, when the control line for relay is shorted to ground. C CONFIRMATION PROCEDURE Turn the ignition switch ON. Perform self-diagnosis for "ABS" with CONSULT-III. DIC "C1111" detected? ES >> Proceed to diagnosis procedure. Refer to BRC-39, "Diagnosis Procedure". > INSPECTION END agnosis Procedure Meromoscoscoscoscoscoscoscoscoscoscoscoscosco					
C1111 PUMP MOTOR actuator motor rulesy is open. + Harness or connector C1111 PUMP MOTOR During the actuator motor operating with OFF, when the control line for actuator motor rulesy open. + Harness or connector C1111 During the actuator motor rulesy is open. - Harness or connector + ABS actuator and electric unit (control unit) C1111 CONFIRMATION PROCEDURE - Control unit) - Control unit) - Control unit) C1111 detuator motor rulesy is open. - Connector + ABS actuator and electric unit (control unit) C1111 detuator motor rulesy open. - Control unit) - Control unit) - Control unit) C1111 detuator motor relay is open. - Control unit) - Control unit) - Control unit) C1111 detuator and electric unit CONSULT-III. - Control unit) - Control unit) - Control unit) - Control unit) C11111 detected? - Control unit) - Control unit)<	DTC	Display item	Malfunc	tion detected condition	Possible cause
During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground. (control unit) C CONFIRMATION PROCEDURE If the control line for relay is shorted to ground. (control unit) Turn the ignition switch ON. Perform self-diagnosis for "ABS" with CONSULT-III. If the control unit) If the control unit) DTC "C1111" detected? If the control unit is procedure. Refer to BRC-39, "Diagnosis Procedure". If the control unit is proceedure. Agnosis Proceed to diagnosis procedure. Refer to BRC-39, "Diagnosis Procedure". If the ispectron END agnosis Procedure If the ispectron END agnosis Procedure If the ispectron and electric unit (control unit) harness connector. Check the 40A fuse (F). Check voltage between the ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) If the inspection result normal? ES >> GO TO 2. G round Battery voltage CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND			actuator motor turns	OFF, or when the control line for ac-	
DTC REPRODUCTION PROCEDURE Turn the ignition switch ON. Perform self-diagnosis for "ABS" with CONSULT-III. DTC "C1111" detected? ES >> Proceed to diagnosis procedure. Refer to BRC-39, "Diagnosis Procedure". O >> INSPECTION END agnosis Procedure wrancocconcentration CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY Turn the ignition switch OFF. Disconnect ABS actuator and electric unit (control unit) harness connector. Check the 40A fuse (F). Check voltage between the ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Voltage	CIIII		actuator motor turns		
Turn the ignition switch ON. Perform self-diagnosis for "ABS" with CONSULT-III. DTC "C1111" detected? ES >> Proceed to diagnosis procedure. Refer to BRC-39, "Diagnosis Procedure". O >> INSPECTION END agnosis Procedure	отс со	NFIRMATION PROCE	EDURE		
Perform self-diagnosis for "ABS" with CONSULT-III. DTC "C1111" detected? ES >> Proceed to diagnosis procedure. Refer to <u>BRC-39</u> , "Diagnosis Procedure". O >> INSPECTION END agnosis Procedure CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY Turn the ignition switch OFF. Disconnect ABS actuator and electric unit (control unit) harness connector. Check the 40A fuse (F). Check voltage between the ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Voltage E36 2 Ground Battery voltage the inspection result normal? ES >> GO TO 2. O >> Repair or replace error-detected parts. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND	1 .DTC F	REPRODUCTION PROC	EDURE		
DTC "C1111" deced? ES >> Proceed to diagnosis procedure. Refer to BRC-39, "Diagnosis Procedure". O >> INSPECTION END agnosis Procedure					
ES >> Proceed to diagnosis procedure. Refer to BRC-39, "Diagnosis Procedure". O >> INSPECTION END agnosis Procedure wrotocommercedure CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY Turn the ignition switch OFF. Disconnect ABS actuator and electric unit (control unit) harness connector. Check the 40A fuse (F). Check voltage between the ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Voltage		U	BS" with CONSULT	-111.	
O >> INSPECTION END agnosis Procedure INFORMATION CONTRELAY POWER SUPPLY CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY Information switch OFF. Disconnect ABS actuator and electric unit (control unit) harness connector. Check the 40A fuse (F). Check the 40A fuse (F). Check voltage between the ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Voltage E36 2 Ground Battery voltage the inspection result normal? ES >> GO TO 2. O O >> Repair or replace error-detected parts. CONTROL UNIT) GROUND			n na a shuna Dafan t		leane II
Agnosis Procedure INFORMEMENTION AND MOTOR RELAY POWER SUPPLY CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY Information switch OFF. Disconnect ABS actuator and electric unit (control unit) harness connector. Check the 40A fuse (F). Check voltage between the ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Voltage			procedure. Refer to	D BRC-39, "Diagnosis Proced	<u>ure"</u> .
CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY Turn the ignition switch OFF. Disconnect ABS actuator and electric unit (control unit) harness connector. Check the 40A fuse (F). Check voltage between the ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) Onnector Terminal Ground Battery voltage the inspection result normal? ES >> GO TO 2. O >> Repair or replace error-detected parts. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND					
Turn the ignition switch OFF. Disconnect ABS actuator and electric unit (control unit) harness connector. Check the 40A fuse (F). Check voltage between the ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Voltage E36 2 Ground Battery voltage the inspection result normal? ES >> GO TO 2. O >> Repair or replace error-detected parts. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND	Jayilo				INFOID:000000006507931
Disconnect ABS actuator and electric unit (control unit) harness connector. Check the 40A fuse (F). Check voltage between the ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) - Voltage Connector Terminal - Voltage E36 2 Ground Battery voltage the inspection result normal? ES >> GO TO 2. O >> Repair or replace error-detected parts. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND	.CHEC	K ABS MOTOR AND M	OTOR RELAY POW	VER SUPPLY	
Check the 40A fuse (F). Check voltage between the ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Voltage ABS actuator and electric unit (control unit) — Voltage Connector Terminal — Voltage E36 2 Ground Battery voltage the inspection result normal? ES >> GO TO 2. O >> Repair or replace error-detected parts. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND	. Turn	the ignition switch OFF.			
Check voltage between the ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Voltage Connector Terminal — Voltage E36 2 Ground Battery voltage the inspection result normal? ES >> GO TO 2. O >> Repair or replace error-detected parts. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND			d electric unit (contro	ol unit) harness connector.	
ABS actuator and electric unit (control unit) Voltage Connector Terminal Voltage E36 2 Ground Battery voltage the inspection result normal? ES >> GO TO 2. O >> Repair or replace error-detected parts. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND			BS actuator and ele	ectric unit (control unit) harne	ss connector and ground
Connector Terminal Voltage E36 2 Ground Battery voltage the inspection result normal? ES >> GO TO 2. O >> Repair or replace error-detected parts. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND	. 01100	in voltage between the r			
Connector Terminal E36 2 Ground Battery voltage the inspection result normal? ES >> GO TO 2. O >> Repair or replace error-detected parts. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND	ABS act	uator and electric unit (control	unit)	Vale	
the inspection result normal? ES >> GO TO 2. O >> Repair or replace error-detected parts. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND	Con	nector Terminal		Voltage	
ES >> GO TO 2. O >> Repair or replace error-detected parts. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND	E	36 2	Ground	Battery voltage	
O >> Repair or replace error-detected parts. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND	s the ins	pection result normal?			
CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND	-				
			•		
eck continuity between ABS actuator and electric unit (control unit) harness connector and ground.	.CHEC	K ABS ACTUATOR AN	D ELECTRIC UNIT	(CONTROL UNIT) GROUND	
	heck co	ntinuity between ABS a	ctuator and electric	unit (control unit) harness cor	nnector and ground.

INFOID:000000006507929

В

А

C1111 ABS MOTOR, MOTOR RELAY SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

ABS actuator and ele	ectric unit (control unit)		Continuity	
Connector	Terminal		Continuity	
E36	1	Ground	Existed	
E30	4	Cround	LXISTED	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

 $\mathbf{3}$. CHECK TERMINALS AND HARNESS CONNECTORS

Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-112, "Exploded View".
- NO >> Repair or replace error-detected parts.

Special Repair Requirement

INFOID:000000006507932

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) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-</u> <u>9, "Special Repair Requirement"</u>

C1115 WHEEL SENSOR

Description

INFOID:000000006507933

А

С

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

DTC Logic

INFOID:000000006507934

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause	D
C1115	ABS SENSOR [ABNORMAL SIGNAL]	When wheel sensor input signal is malfunctioning.	 Harness or connector Wheel sensor ABS actuator and electric unit (control unit) Sensor rotor 	E
DTC CC	NFIRMATION PROCE	DURE		BRC
1. DTC F	REPRODUCTION PROCE	EDURE		Bitto
		vehicle at 30 km/h (19 MPH) or more for appro	eximately 1 minute.	G
	orm self-diagnosis for "AB C1115" detected?	S [°] with CONSULT-III.		0
		procedure. Refer to <u>BRC-41, "Diagnosis Proce</u>	dure".	
	>> INSPECTION END			Н
Diagno	sis Procedure		INFOID:00000006507935	
CAUTIO	N:			
For whe	el sensor, never check b			
1. CHEC	CK ABS ACTUATOR AND	ELECTRIC UNIT (CONTROL UNIT) POWER	SUPPLY SYSTEM	J
	BS actuator and electric u	nit (control unit) power supply system. Refer to	BRC-76, "Diagnosis Proce-	
<u>dure"</u> . Is the ins	pection result normal?			К
	>> GO TO 2.			1.4
-	>> Repair or replace erro	r-detected parts.		
2.снес				L
	the ignition switch OFF.	and size. Refer to <u>WT-53, "Tire Air Pressure"</u> .		
	spection result normal?	, 110 0120. 10001 to <u>111 00, 1110 / 111 1000010</u> .		Μ
-	>> GO TO 5.			
~	•	replace tire and GO TO 3.		Ν
	CK DATA MONITOR (1)			
		"ABS" with CONSULT-III. Ind wait 10 seconds or more.		0
3. Stat	the engine.			
	"RR RH SENSOR" with C	NITOR", check "FR LH SENSOR", "FR RH SI ONSULT-III.	ENSOR, RR LH SENSOR	
NOT		arding anode to "10 mago"		Р
		ording speed to "10 msec". f both normal wheel sensors and error-detectir	ng wheel sensor.	
<u>Regardin</u>	ig the deference at 30 ki	m/h (19 MPH) between the wheel speed det	ected by the error detecting	
	ensor and the maximum/n nin 5%, respectively?	ninimum wheel speed detected by the normal	wheel sensors, is the differ-	
	>> GO TO 4.			

C1115 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

NO >> GO TO 5.

4.PERFORM SELF-DIAGNOSIS (1)

1. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.

- 2. Stop the vehicle.
- 3. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1115" detected?

YES >> GO TO 5.

NO >> INSPECTION END

5.CHECK WHEEL SENSOR

- 1. Turn the ignition switch OFF.
- 2. Check wheel sensor for damage.
- 3. Remove dust and foreign matter adhered to the sensor rotor with a vacuum dust collector through the wheel sensor mounting hole.

CAUTION:

Install wheel sensor with no backlash and float, and tighten the mounting bolt to the specified torque.

• Front: Refer to <u>BRC-109, "FRONT WHEEL SENSOR : Exploded View"</u>.

• Rear: Refer to BRC-110, "REAR WHEEL SENSOR : Exploded View".

Is the inspection result normal?

- YES >> GO TO 8.
- NO >> GO TO 6.

6.REPLACE WHEEL SENSOR (1)

- 1. Replace wheel sensor.
- Front: Refer to BRC-109, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear: Refer to BRC-110, "REAR WHEEL SENSOR : Removal and Installation".
- 2. Erase Self-diagnosis result for "ABS" with CONSULT-III.
- 3. Turn the ignition switch OFF, and wait 10 seconds or more.
- 4. Stat the engine.
- Select "ABS" and "DATA MONITOR", check "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR" and "RR RH SENSOR" with CONSULT-III.
 NOTE:
 - Set the "DATA MONITOR" recording speed to "10 msec".
- 6. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 30 km/h (19 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

YES >> GO TO 7.

NO >> GO TO 19.

/.PERFORM SELF-DIAGNOSIS (2)

1. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.

- 2. Stop the vehicle.
- 3. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1115" detected?

YES >> GO TO 19.

NO >> INSPECTION END

8.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Check ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.
- 3. Check wheel sensor harness connector for disconnection or looseness.

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace error-detected parts, securely lock the connector, and GO TO 9.

9.CHECK DATA MONITOR (2)

C1115 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS > [VDC/TCS/ABS]	
 Erase Self-diagnosis result for "ABS" with CONSULT-III. Turn the ignition switch OFF, and wait 10 seconds or more. Stat the engine 	A
 Stat the engine. Select "ABS" and "DATA MONITOR", check "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR" and "RR RH SENSOR" with CONSULT-III. NOTE: 	В
Set the "DATA MONITOR" recording speed to "10 msec". 5. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.	
Regarding the deference at 30 km/h (19 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the differ-	С
ence within 5%, respectively? YES >> GO TO 10.	D
NO >> GO TO 11.	
10.PERFORM SELF-DIAGNOSIS (3)	Е
 Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Stop the vehicle. 	
 Perform self-diagnosis for "ABS" with CONSULT-III. <u>Is DTC "C1115" detected?</u> 	BRC
YES >> GO TO 11.	
NO >> INSPECTION END	G
11.check terminal	0
 Turn the ignition switch OFF. Disconnect ABS actuator and electric unit (control unit) harness connector and then check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector. Disconnect wheel sensor harness connector and check each wheel sensor pin terminals for damage or 	Η
loose connection with harness connector. <u>Is the inspection result normal?</u>	
YES >> GO TO 14.	
NO >> Repair or replace error-detected parts and GO TO 12.	J
12.CHECK DATA MONITOR (3)	
 Connect ABS actuator and electric unit (control unit) harness connector. Connect wheel sensor harness connector. Erase Self-diagnosis result for "ABS" with CONSULT-III. Turn the ignition switch OFF, and wait 10 seconds or more. 	К
 Stat the engine. Select "ABS" and "DATA MONITOR", check "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR" and "RR RH SENSOR" with CONSULT-III. NOTE: 	L
Set the "DATA MONITOR" recording speed to "10 msec". 7. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.	M
Regarding the deference at 30 km/h (19 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?	Ν
YES >> GO TO 13. NO >> GO TO 14.	0
13. PERFORM SELF-DIAGNOSIS (4)	0
 Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Stop the vehicle. Perform self-diagnosis for "ABS" with CONSULT-III. 	Ρ
Is DTC "C1115" detected?	
YES >> GO TO 14. NO >> INSPECTION END	
14.CHECK WHEEL SENSOR HARNESS	
1. Turn the ignition switch OFF.	

C1115 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

- 2. Disconnect ABS actuator and electric unit (control unit) harness connector.
- 3. Disconnect wheel sensor harness connector.

Measurement connector and terminal for power supply circuit

4. Check continuity between ABS actuator and electric unit (control unit) harness connector and wheel sensor harness connector. (Check continuity when steering wheel is steered to RH and LH, or center harness in wheel housing is moved.)

ABS actuator and ele	ctric unit (control unit)	Wheel s	ensor	Continuity
Connector	Terminal	Connector	Terminal	Continuity
	9	E39 (Front RH)		
E36	16	E22 (Front LH)	1	Existed
E30	8	B41 (Rear RH)	I	Existed
-	6	B44 (Rear LH)	-	
Measurement connecto	r and terminal for signal circ	uit		
ABS actuator and ele	ctric unit (control unit)	Wheel s	ensor	Continuity
Connector	Terminal	Connector	Terminal	Continuity
	10	E39 (Front RH)		
E36	5	E22 (Front LH)	2	Eviated
	19	B41 (Rear RH)	Z	Existed
	17	B44 (Rear LH)		

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

ABS actuator and electric unit (control unit)				Continuity
Connector	Terminal	Connector	Terminal	Continuity
	9, 10	- E36 1, 4		
F20	16, 5		4 4	Not existed
E36	8, 19		Not existed	
-	6, 17			

Is the inspection result normal?

YES >> GO TO 15.

NO >> Repair or replace error-detected parts and GO TO 15.

- **15.**CHECK DATA MONITOR (4)
- 1. Connect ABS actuator and electric unit (control unit) harness connector.
- 2. Connect wheel sensor harness connector.
- 3. Erase Self-diagnosis result for "ABS" with CONSULT-III.
- 4. Turn the ignition switch OFF, and wait 10 seconds or more.
- 5. Stat the engine.
- Select "ABS" and "DATA MONITOR", check "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR" and "RR RH SENSOR" with CONSULT-III.
 NOTE:

Set the "DATA MONITOR" recording speed to "10 msec".

7. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 30 km/h (19 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

YES >> GO TO 16. NO >> GO TO 17.

16.PERFORM SELF-DIAGNOSIS (5)

- 1. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
- 2. Stop the vehicle.
- 3. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1115" detected?

7. REPLACE WHEEL SENSOR (2) • Replace wheel sensor. Front: Refer to BRC-109, "FRONT WHEEL SENSOR : Removal and Installation". Rear: Refer to BRC-110, "REAR WHEEL SENSOR : Removal and Installation". • Rear: Refer to BRC-101, "REAR WHEEL SENSOR : Removal and Installation". • Turn the ignition switch OFF, and wait 10 seconds or more. • Stat the engine. • Select "ABS" and "DATA MONITOR", check "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR" and "RR RH SENSOR" with CONSULT-III. NOTE: • Set the "DATA MONITOR" recording speed to "10 msec". • Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensors. is the differ- ince within 5%, respectively? YES > GO TO 18. NO > GO TO 19. 8. PERFORM SELF-DIAGNOSIS (6) • Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. • Stop the vehicle. • Perform self-diagnosis for "ABS" with CONSULT-III. SDTC "C1113" detected? YES > GO TO 19. NO >> INSPECTION END 90, REPLACE SENSOR ROTOR Removal and Installation". Replace sensor rotor. • From: Refer to BRC-111. "FRONT SENSOR ROTOR : Removal and Installation". Rese: Refer to BRC-111. "REAR SENSOR ROTOR : Removal and Installation". Rese: Refer to BRC-111. "REAR SENS	< DTC/CIRCUIT DIAGNOSIS >	[VDC/TCS/ABS]
17.REPLACE WHEEL SENSOR (2) • Replace wheel sensor. Front: Refer to BC-109. "FRONT WHEEL SENSOR : Removal and Installation". Rear: Refer to BRC-101. "REAR WHEEL SENSOR : Removal and Installation". • Rear: Refer to BRC-101. "REAR WHEEL SENSOR : Removal and Installation". • Turn the ignition switch OFF, and wait 10 seconds or more. • Stat the engine. • Select "ABS" and "DATA MONITOR", check "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR" and "RR RH SENSOR" with CONSULT-III. NOTE: • Setten "DATA MONITOR" recording speed to "10 msec". • Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor. Regarding the deference at 30 km/h (19 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the differ- ince within 5%, respectively? YES ⇒ GO TO 18. NO ⇒ GO TO 19. 8.PERFORM SELF-DIAGNOSIS (6) • Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. • Stop the vehicle. • Perform self-diagnosis for "ABS" with CONSULT-III. SDTC 'C1115" detected? YES ⇒ GO TO 19. NO ⇒ INSPECTION END 19.REPLACE SENSOR ROTOR Replace sensor rotor. From: Refer to BRC-111. "FRAR SENSOR ROTOR : Removal and Installation". Rear: Refer to BRC-111. "REAR SENSOR ROTOR : Removal and Installation". Rear: Refer to		
Front: Refer to BRC-110, "TEAR WHEEL SENSOR : Removal and Installation". Rear: Refer to BRC-110, "REAR WHEEL SENSOR : Removal and Installation". Erase Self-diagnosis result for "ABS" with CONSULT-III. Turn the ignition switch OFF, and wait 10 seconds or more. Select "ABS" and "DATA MONITOR", check "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR" and "RR RH SENSOR" with CONSULT-III. NOTE: Set the "DATA MONITOR" recording speed to "10 msec". Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor. tegarding the deference at 30 km/h (19 MPH) between the wheel speed detected by the error detecting the sensor and the maximum/ininimum wheel speed detected by the normal wheel sensors, is the differ- nce within 5%, respectively? YES >> GO TO 18. NO >> GO TO 19. 8 .PERFORM SELF-DIAGNOSIS (6) Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Stop the vehicle. Perform self-diagnosis for "ABS" with CONSULT-III. DTC "CITII5" detected? YES >> GO TO 19. NO >> INSPECTION END 9 .REPLACE SENSOR ROTOR Replace sensor rotor. Front: Refer to <u>BRC-111, "FRAR SENSOR ROTOR : Removal and Installation"</u> . Rear: Refer to <u>BRC-111, "FRAR SENSOR ROTOR : Removal and Installation"</u> . Rear: Refer to <u>BRC-111, "FRAR SENSOR ROTOR : Removal and Installation"</u> . Stat the engine. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Stat the engine. Turn the ignition switch OFF, and wait 10 seconds or more. Stat the engine. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Stat the engine. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Stat the engine. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Stat the engine. Drive the vehicle. Perform self-diagnosis for "ABS" with CONSULT-III. <u>Stop the vehicle</u> . Drive the vehicle. Drive the vehicle. Drive the vehicle. Drive the vehicle. Drive the vehicle. Stop the vehicle. Drive the vehicle. Drive Th		
 Select "ABŠ" and "DATA MONITOR", check "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR" and "RR RH SENSOR" with CONSULT-III. NOTE: Set the "DATA MONITOR" recording speed to "10 msec". Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor. Legarding the deference at 30 km/h (19 MPH) between the wheel speed detected by the error detecting the deterence at 30 km/h (19 MPH) between the wheel speed detected by the error detecting the sensor and the maximum/minimum wheel speed detected by the normal wheel sensors. is the differnce within 5%, respectively? YES >> GO TO 18. NO >> GO TO 18. NO >> GO TO 19. B.PERFORM SELF-DIAGNOSIS (6) Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Stop the vehicle. Perform self-diagnosis for "ABS" with CONSULT-III. SDTC "C1115" detected? YES >> GO TO 19. NO >> INSPECTION END 9.REPLACE SENSOR ROTOR Replace sensor rotor. Front: Refer to BRC-111. "FRONT SENSOR ROTOR : Removal and Installation". Rear: Refer to BRC-111. "REAR SENSOR ROTOR : Removal and Installation". Erase Self-diagnosis result for "ABS". Turn the ignition switch OFF, and wait 10 seconds or more. Stat the engine. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Stop the vehicle. Perform self-diagnosis for "ABS" with CONSULT-III. SDTC "C1115" detected? YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112. "Exploded View"</u>. NO >> INSPECTION END Special Repair Requirement ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION Ways perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actua-or and electric unit (control unit) or steering angle sensor. Refer to <u>BRC-110 END</u> 	 Front: Refer to <u>BRC-109. "FRONT WHEEL SENSOR : Removal and Installation</u> Rear: Refer to <u>BRC-110. "REAR WHEEL SENSOR : Removal and Installation</u>". Erase Self-diagnosis result for "ABS" with CONSULT-III. Turn the ignition switch OFF, and wait 10 seconds or more. 	
 Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor. eqarding the deference at 30 km/h (19 MPH) between the wheel speed detected by the error detecting beel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively? YES >> GO TO 18. NO >> GO TO 19. 8. PERFORM SELF-DIAGNOSIS (6) Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Stop the vehicle. Perform self-diagnosis for "ABS" with CONSULT-III. DTC "C1115" detected? YES >> GO TO 19. 9. REPLACE SENSOR ROTOR Replace sensor rotor. Front: Refer to BRC-111. "FRONT SENSOR ROTOR : Removal and Installation". Rear: Refer to BRC-111. "REAR SENSOR ROTOR : Removal and Installation". Erase Self-diagnosis for "ABS". Turn the ignition switch OFF, and wait 10 seconds or more. Stat the engine. Drive the vehicle. Perform self-diagnosis for "ABS" with CONSULT-III. DTC "C1115" detected? YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-112. "Exploded View". NO >> INSPECTION END Perform self-diagnosis for "ABS" with CONSULT-III. DTC "C1115" detected? YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-112. "Exploded View". NO >> INSPECTION END Pecial Repair Requirement ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION 	 Select "ABS" and "DATA MONITOR", check "FR LH SENSOR", "FR RH SEI and "RR RH SENSOR" with CONSULT-III. NOTE: 	NSOR", "RR LH SENSOR"
YES >> GO TO 18. NO >> GO TO 19. B .PERFORM SELF-DIAGNOSIS (6)	6. Read a value (wheel speed) of both normal wheel sensors and error-detecting Regarding the deference at 30 km/h (19 MPH) between the wheel speed detection	cted by the error detecting
 Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Stop the vehicle. Perform self-diagnosis for "ABS" with CONSULT-III. <u>a DTC "C1115" detected?</u> YES >> GO TO 19. NO >> INSPECTION END 9. REPLACE SENSOR ROTOR Replace sensor rotor. Front: Refer to <u>BRC-111, "FRONT SENSOR ROTOR : Removal and Installation"</u>. Rear: Refer to <u>BRC-111, "REAR SENSOR ROTOR : Removal and Installation"</u>. Erase Self-diagnosis result for "ABS". Turn the ignition switch OFF, and wait 10 seconds or more. Stat the engine. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Stop the vehicle. Perform self-diagnosis for "ABS" with CONSULT-III. a DTC "C1115" detected? YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u>. NO >> INSPECTION END Special Repair Requirement ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION Jaways perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit) or steering angle sensor. Refer to <u>BRC-112, "Exploded View"</u>. 	YES >> GO TO 18. NO >> GO TO 19.	
 Stop the vehicle. Perform self-diagnosis for "ABS" with CONSULT-III. <u>a DTC "C1115" detected?</u> YES >> GO TO 19. NO >> INSPECTION END 19. REPLACE SENSOR ROTOR Replace sensor rotor. Front: Refer to <u>BRC-111, "FRONT SENSOR ROTOR : Removal and Installation"</u>. Rear: Refer to <u>BRC-111, "REAR SENSOR ROTOR : Removal and Installation"</u>. Erase Self-diagnosis result for "ABS". Turn the ignition switch OFF, and wait 10 seconds or more. Stat the engine. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Stop the vehicle. Perform self-diagnosis for "ABS" with CONSULT-III. <u>s DTC "C1115" detected?</u> YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u>. NO >> INSPECTION END Special Repair Requirement <i>Monocommentation</i> ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION Noways perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit) steering angle sensor. Refer to <u>BRC-112</u> or <u>BRC-112</u> .		
 Replace sensor rotor. Front: Refer to <u>BRC-111, "FRONT SENSOR ROTOR : Removal and Installation"</u>. Rear: Refer to <u>BRC-111, "REAR SENSOR ROTOR : Removal and Installation"</u>. Erase Self-diagnosis result for "ABS". Turn the ignition switch OFF, and wait 10 seconds or more. Stat the engine. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Stop the vehicle. Perform self-diagnosis for "ABS" with CONSULT-III. <u>a DTC "C1115" detected?</u> YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u>. NO >> INSPECTION END Special Repair Requirement ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION 	 Stop the vehicle. Perform self-diagnosis for "ABS" with CONSULT-III. <u>b DTC "C1115" detected?</u> YES >> GO TO 19. NO >> INSPECTION END 	
 Stat the engine. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Stop the vehicle. Perform self-diagnosis for "ABS" with CONSULT-III. <u>s DTC "C1115" detected?</u> YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u>. NO >> INSPECTION END Special Repair Requirement 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) steering angle sensor. Refer to <u>BRC-112, "Exploded View"</u>. 	 Replace sensor rotor. Front: Refer to <u>BRC-111, "FRONT SENSOR ROTOR : Removal and Installation</u> Rear: Refer to <u>BRC-111, "REAR SENSOR ROTOR : Removal and Installation</u>" Erase Self-diagnosis result for "ABS". 	
YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u> . NO >> INSPECTION END Special Repair Requirement ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION Invertice and electric unit (control unit) or steering angle sensor, when replacing the ABS actua- br and electric unit (control unit) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-</u>	 Stat the engine. Drive the vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute. Stop the vehicle. 	
ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actua- or and electric unit (control unit) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-</u>		2, "Exploded View".
Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actua- or and electric unit (control unit) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-</u>	Special Repair Requirement	INFOID:00000006507936
or and electric unit (control unit) or steering angle sensor and removing steering angle sensor. Refer to BRC-	1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION	

>> END

Ρ

C1116 STOP LAMP SWITCH

Description

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

DTC Logic

INFOID:000000006507938

INFOID:000000006507937

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1116	STOP LAMP SW	When a stop lamp switch signal is not input where the brake pedal is depressed.	 Harness or connector Stop lamp switch ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

1.DTC REPRODUCTION PROCEDURE

1. Turn the ignition switch ON.

2. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1116" detected?

- YES >> Proceed to diagnosis procedure. Refer to <u>BRC-46, "Diagnosis Procedure"</u>.
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006507939

NOTE:

DTC "C1116" may be detected when the brake pedal and the accelerator pedal are simultaneously depressed for 1 minute or more while driving the vehicle. This is not a malfunction.

1.INTERVIEW FROM THE CUSTOMER

Check if the brake pedal and the accelerator pedal are simultaneously depressed for 1 minute or more while driving the vehicle.

Is there such a history?

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

2. PERFORM SELF-DIAGNOSIS

- 1. Erase Self-diagnosis result for "ABS" with CONSULT-III.
- 2. Turn the ignition switch OFF, and wait 10 seconds or more.
- 3. Start the engine.

Never start the vehicle.

- 4. Depress the brake pedal several times.
- 5. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1116" detected?

YES >> GO TO 3.

NO >> INSPECTION END

3.STOP LAMP FOR ILLUMINATION

Depress brake pedal and check that stop lamp turns ON.

Does stop lamp turn ON?

YES >> GO TO 5.

NO >> Check stop lamp system. Refer to <u>BCS-67, "Wiring Diagram - BCM -"</u> (WITH INTELLIGENT KEY SYSTEM), <u>BCS-133, "Wiring Diagram - BCM -"</u> (WITHOUT INTELLIGENT KEY SYSTEM). GO TO 4.

< DTC/CIRCUIT DIAGNOSIS >

4.CHECK DATA MONITOR (1)	Δ
1. Erase Self-diagnosis result for "ABS" with CONSULT-III.	A
2. Turn the ignition switch OFF, and wait 10 seconds or more.	
3. Start the engine.	В
Never start the vehicle.	
4. Select "ABS", "DATA MONITOR" and "STOP LAMP SW" according to this order with CONSULT-III. Check	
that data monitor displays "On" or "Off" when brake pedal is depress or release. Refer to <u>BRC-87. "Refer-</u>	С
 <u>ence Value</u>". Select "ABS", "DATA MONITOR" and "pressure sensor" according to this order. Check that data monitor 	
displays "5 bar" or less when brake pedal is depress. Refer to <u>BRC-87, "Reference Value"</u> .	D
Is the inspection result normal?	D
YES >> INSPECTION END	
NO >> GO TO 5.	Е
5. CHECK STOP LAMP SWITCH CLEARANCE	
1. Turn the ignition switch OFF.	BRC
2. Check stop lamp switch clearance. Refer to <u>BR-7, "Inspection and Adjustment"</u> .	DRC
Is the inspection result normal?	
YES >> GO TO 7. NO >> Adjust stop lamp switch clearance. Refer to <u>BR-7. "Inspection and Adjustment"</u> . GO TO 6.	G
6.CHECK DATA MONITOR (2)	
1. Erase Self-diagnosis result for "ABS" with CONSULT-III.	Н
 Turn the ignition switch OFF, and wait 10 seconds or more. Start the engine. 	
CAUTION:	
Never start the vehicle.	
4. Select "ABS", "DATA MONITOR" and "STOP LAMP SW" according to this order with CONSULT-III. Check that data monitor displays "On" or "Off" when brake pedal is depress or release. Refer to <u>BRC-87</u> , "Refer-	
ence Value".	J
5. Select "ABS", "DATA MONITOR" and "pressure sensor" according to this order. Check that data monitor	0
displays "5 bar" or less when brake pedal is depress. Refer to <u>BRC-87, "Reference Value"</u> .	
Is the inspection result normal?	Κ
YES >> INSPECTION END	
NO >> GO TO 7.	
7.CHECK STOP LAMP SWITCH	L
Check stop lamp switch. Refer to BRC-49, "Component Inspection".	
Is the inspection result normal?	Μ
YES >> GO TO 9.	IVI
NO >> Replace stop lamp switch. Refer to <u>BR-17, "Exploded View"</u> . GO TO 8.	
8. CHECK DATA MONITOR (3)	Ν
1. Erase Self-diagnosis result for "ABS" with CONSULT-III.	
 Turn the ignition switch OFF, and wait 10 seconds or more. Start the angine 	
3. Start the engine. CAUTION:	0
Never start the vehicle.	
4. Select "ABS", "DATA MONITOR" and "STOP LAMP SW" according to this order with CONSULT-III. Check	
that data monitor displays "On" or "Off" when brake pedal is depress or release. Refer to <u>BRC-87. "Refer-</u>	Р
 <u>ence Value</u>". Select "ABS", "DATA MONITOR" and "pressure sensor" according to this order. Check that data monitor 	
displays "5 bar" or less when brake pedal is depress. Refer to <u>BRC-87, "Reference Value"</u> .	
Is the inspection result normal?	
YES >> INSPECTION END	
NO >> GO TO 9.	

< DTC/CIRCUIT DIAGNOSIS >

9. CHECK CONNECTOR AND TERMINAL

- 1. Turn the ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) harness connector.
- 3. Check ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.
- 4. Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.
- 5. Disconnect stop lamp switch harness connector.
- 6. Check stop lamp switch harness connector for disconnection or looseness.
- 7. Check stop lamp switch pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace error-detected parts. GO TO 10.

10.CHECK DATA MONITOR (4)

- 1. Connect ABS actuator and electric unit (control unit) harness connector.
- 2. Connect stop lamp switch harness connector.
- 3. Erase Self-diagnosis result for "ABS" with CONSULT-III.
- 4. Turn the ignition switch OFF, and wait 10 seconds or more.
- 5. Start the engine. CAUTION:

Never start the vehicle.

- 6. Select "ABS", "DATA MONITOR" and "STOP LAMP SW" according to this order with CONSULT-III. Check that data monitor displays "On" or "Off" when brake pedal is depress or release. Refer to <u>BRC-87</u>, "<u>Reference Value</u>".
- 7. Select "ABS", "DATA MONITOR" and "pressure sensor" according to this order. Check that data monitor displays "5 bar" or less when brake pedal is depress. Refer to <u>BRC-87, "Reference Value"</u>.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 11.

11.CHECK STOP LAMP SWITCH CIRCUIT (1)

1. Turn the ignition switch OFF.

- 2. Disconnect ABS actuator and electric unit (control unit) harness connector.
- 3. Check voltage between ABS actuator and electric unit (control unit) harness connector and ground.

ABS actuator and electric unit (control unit)			Condition	Voltaga	
Connector	Terminal	—	Condition	Voltage	
E36	20	Ground	Brake pedal depressed	Battery voltage	
230	20 Ground	Brake pedal not depressed	Approx. 0 V		

4. Turn the ignition switch ON.

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

ABS actuator and electric unit (control unit)			Condition	Voltage
Connector	Terminal	—	Condition	voltage
E36	20 Ground	Ground	Brake pedal depressed	Battery voltage
		Ground	Brake pedal not depressed	Approx. 0 V

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u>.
- NO >> Repair or replace error-detected parts. GO TO 12.

12.CHECK STOP LAMP SWITCH CIRCUIT (2)

- 1. Turn the ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- 3. Check continuity between ABS actuator and electric unit (control unit) harness connector and stop lamp switch harness connector.

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

ABS actuator and electric unit (control unit)		Stop lamp switch		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
E36	20	E114 ^{*1}	2	Existed	
E30	20	E115 ^{*2}	_ 2	Existed	
*1: With M/T *2: With CVT . Check continuity	/ between ABS actuator a	nd electric unit	: (control unit) harnes	s connector and the ground	
ABS actuator and ele	ectric unit (control unit)			-	
Connector	Terminal	—	Continuity		
E36	20	Ground	Not existed	-	
s the inspection resi	ult normal?				
	ABS actuator and electric			12, "Exploded View".	
	or replace error-detected p	oarts. GO TO 1	3.		
13.CHECK DATA I					
2. Connect stop lar	ctuator and electric unit (composition of the second composition of th	ctor.			
	nosis result for "ABS" with switch OFF, and wait 10				
5. Start the engine.					
CAUTION: Never start the	vohiolo				
		OP LAMP SW"	according to this ord	er with CONSULT-III. Chec	
that data monito	or displays "On" or "Off" wh				
ence Value".			•		
	DATA MONITOR" and "pre	essure sensor"			
7. Select "ABS", "D	DATA MONITOR" and "pre or less when brake pedal		according to this or	der. Check that data monito	
7. Select "ABS", "E displays "5 bar"	or less when brake pedal		according to this or	der. Check that data monito	
7. Select "ABS", "E displays "5 bar" <u>s the inspection rest</u> YES >> INSPEC	or less when brake pedal <u>ult normal?</u> CTION END	is depress. Re	according to this ord fer to <u>BRC-87, "Refe</u>	der. Check that data monito rence Value".	
 Select "ABS", "E displays "5 bar" <u>s the inspection res</u> YES >> INSPEC NO >> Replace 	or less when brake pedal <u>ult normal?</u> CTION END ABS actuator and electric	is depress. Re	according to this ord fer to <u>BRC-87, "Refe</u>	der. Check that data monito rence Value".	
7. Select "ABS", "E displays "5 bar" <u>s the inspection rest</u> YES >> INSPEC	or less when brake pedal <u>ult normal?</u> CTION END ABS actuator and electric	is depress. Re	according to this ord fer to <u>BRC-87, "Refe</u>	der. Check that data monito rence Value".	
 Select "ABS", "E displays "5 bar" <u>s the inspection res</u> YES >> INSPEC NO >> Replace Component Insp 	or less when brake pedal <u>ult normal?</u> TION END ABS actuator and electric Dection	is depress. Re	according to this ord fer to <u>BRC-87, "Refe</u>	der. Check that data monito <u>rence Value"</u> . 1 <u>2. "Exploded View"</u> .	
 7. Select "ABS", "E displays "5 bar" <u>s the inspection resi</u> YES >> INSPEC NO >> Replace COMPONENT INSP 1.CHECK STOP LA 	or less when brake pedal ult normal? TION END ABS actuator and electric Dection	is depress. Re	according to this ord fer to <u>BRC-87, "Refe</u>	der. Check that data monito <u>rence Value"</u> . 1 <u>2. "Exploded View"</u> .	
 7. Select "ABS", "E displays "5 bar" <u>s the inspection results</u> YES >> INSPEC NO >> Replace COMPONENT INSP 1.CHECK STOP LA I. Turn the ignition 	or less when brake pedal ult normal? TION END ABS actuator and electric Dection	is depress. Re c unit (control u	according to this ord fer to <u>BRC-87, "Refe</u>	der. Check that data monito <u>rence Value"</u> . 1 <u>2. "Exploded View"</u> .	
 7. Select "ABS", "E displays "5 bar" <u>s the inspection resu</u> YES >> INSPEC NO >> Replace COMPONENT INSP CHECK STOP LA I. Turn the ignition 2. Disconnect stop 	or less when brake pedal ult normal? TION END ABS actuator and electric Dection AMP SWITCH	is depress. Re c unit (control u nector.	according to this ord fer to <u>BRC-87. "Refe</u> unit). Refer to <u>BRC-1</u>	der. Check that data monito <u>rence Value"</u> . 1 <u>2. "Exploded View"</u> .	
 7. Select "ABS", "E displays "5 bar" <u>s the inspection resp</u> YES >> INSPEC NO >> Replace Component Insp 1.CHECK STOP LA 1. Turn the ignition 2. Disconnect stop 3. Check continuity 	or less when brake pedal ult normal? TION END ABS actuator and electric Dection AMP SWITCH switch OFF. lamp switch harness con	is depress. Re c unit (control u nector.	according to this ord fer to <u>BRC-87. "Refe</u> unit). Refer to <u>BRC-1</u>	der. Check that data monito <u>rence Value"</u> . 1 <u>2. "Exploded View"</u> .	
 7. Select "ABS", "E displays "5 bar" <u>s the inspection reservent</u> YES >> INSPEC NO >> Replace COMPONENT INSP 1. CHECK STOP LA I. Turn the ignition 2. Disconnect stop 3. Check continuity 	or less when brake pedal ult normal? TION END ABS actuator and electric Dection AMP SWITCH switch OFF. lamp switch harness con	is depress. Re c unit (control u nector. h harness con	according to this ord fer to <u>BRC-87. "Refe</u> unit). Refer to <u>BRC-1</u>	der. Check that data monito <u>rence Value"</u> . 1 <u>2. "Exploded View"</u> .	
 7. Select "ABS", "E displays "5 bar" <u>s the inspection resp</u> YES >> INSPEC NO >> Replace Component Insp 1.CHECK STOP LA 1. Turn the ignition 2. Disconnect stop 3. Check continuity 	or less when brake pedal <u>ult normal?</u> CTION END ABS actuator and electric Dection AMP SWITCH switch OFF. lamp switch harness con between stop lamp switc Condition	is depress. Re c unit (control u nector. h harness con	according to this ord fer to <u>BRC-87. "Refe</u> unit). Refer to <u>BRC-11</u> nector terminals.	der. Check that data monito <u>rence Value"</u> . 1 <u>2. "Exploded View"</u> .	
 7. Select "ABS", "E displays "5 bar" <u>s the inspection reservent</u> YES >> INSPEC NO >> Replace COMPONENT INSP 1. CHECK STOP LA I. Turn the ignition 2. Disconnect stop 3. Check continuity 	or less when brake pedal <u>ult normal?</u> CTION END ABS actuator and electric Dection AMP SWITCH switch OFF. lamp switch harness con between stop lamp switch Release stop lamp switch	is depress. Re c unit (control u nector. ch harness con	according to this ord fer to <u>BRC-87. "Refe</u> unit). Refer to <u>BRC-11</u> nector terminals.	der. Check that data monito <u>rence Value"</u> . 1 <u>2. "Exploded View"</u> .	
 7. Select "ABS", "E displays "5 bar" <u>s the inspection reservent</u> YES >> INSPEC NO >> Replace COMPONENT INSP 1. CHECK STOP LA I. Turn the ignition 2. Disconnect stop 3. Check continuity 	or less when brake pedal <u>ult normal?</u> CTION END ABS actuator and electric Dection AMP SWITCH switch OFF. lamp switch harness con between stop lamp switc Condition	is depress. Re c unit (control u nector. ch harness con	according to this ord fer to <u>BRC-87, "Refe</u> unit). Refer to <u>BRC-1</u> nector terminals.	der. Check that data monito <u>rence Value"</u> . 1 <u>2. "Exploded View"</u> .	
 7. Select "ABS", "E displays "5 bar" <u>s the inspection respection respection respection respection respective</u> YES >> INSPEC NO >> Replace Component Insp 1.CHECK STOP LA I. Turn the ignition 2. Disconnect stop 3. Check continuity Stop lamp switch Terminal 	or less when brake pedal <u>ult normal?</u> CTION END ABS actuator and electric Dection AMP SWITCH switch OFF. lamp switch harness con between stop lamp switch (When brake pedal is depresented)	is depress. Re c unit (control u nector. ch harness con	according to this ord fer to <u>BRC-87. "Refe</u> unit). Refer to <u>BRC-11</u> nector terminals.	der. Check that data monito <u>rence Value"</u> . 1 <u>2. "Exploded View"</u> .	
 7. Select "ABS", "E displays "5 bar" <u>s the inspection respection respection respection respection respective</u> YES >> INSPEC NO >> Replace Component Insp 1.CHECK STOP LA I. Turn the ignition 2. Disconnect stop 3. Check continuity Stop lamp switch Terminal 	or less when brake pedal <u>ult normal?</u> CTION END ABS actuator and electric Dection AMP SWITCH switch OFF. lamp switch harness con between stop lamp switch (When brake pedal is depre- Push stop lamp switch (When brake pedal is relea	is depress. Re c unit (control u nector. ch harness con	according to this ord fer to <u>BRC-87, "Refe</u> unit). Refer to <u>BRC-1</u> nector terminals.	der. Check that data monito <u>rence Value"</u> . 1 <u>2. "Exploded View"</u> .	
 Select "ABS", "E displays "5 bar" <u>s the inspection reservent</u> YES >> INSPEC NO >> Replace COMPONENT INSP CHECK STOP LA Turn the ignition Disconnect stop Check continuity Stop lamp switch Terminal 1 - 2 <u>s the inspection reservent</u> YES >> INSPEC 	or less when brake pedal <u>ult normal?</u> CTION END ABS actuator and electric Dection AMP SWITCH switch OFF. lamp switch harness con between stop lamp switch (When brake pedal is depresent Push stop lamp switch (When brake pedal is relea <u>ult normal?</u> CTION END	is depress. Re c unit (control u nector. h harness con c essed.) sed.)	according to this ord fer to <u>BRC-87. "Refe</u> unit). Refer to <u>BRC-11</u> nector terminals.	der. Check that data monito <u>rence Value"</u> . 1 <u>2. "Exploded View"</u> .	
 Select "ABS", "E displays "5 bar" <u>s the inspection reservent</u> YES >> INSPEC NO >> Replace COMPONENT INSP CHECK STOP LA Turn the ignition Disconnect stop Check continuity Stop lamp switch Terminal 1 - 2 <u>s the inspection reservent</u> YES >> INSPEC 	or less when brake pedal <u>ult normal?</u> CTION END ABS actuator and electric Dection AMP SWITCH switch OFF. lamp switch harness con between stop lamp switch (When brake pedal is depresent Push stop lamp switch (When brake pedal is relea <u>ult normal?</u>	is depress. Re c unit (control u nector. h harness con c essed.) sed.)	according to this ord fer to <u>BRC-87. "Refe</u> unit). Refer to <u>BRC-11</u> nector terminals.	der. Check that data monito <u>rence Value"</u> . 1 <u>2. "Exploded View"</u> .	
 Select "ABS", "E displays "5 bar" <u>s the inspection reservent</u> YES >> INSPEC NO >> Replace COMPONENT INSP CHECK STOP LA Turn the ignition Disconnect stop Check continuity Stop lamp switch Terminal 1 - 2 <u>s the inspection reservent</u> YES >> INSPEC 	or less when brake pedal <u>ult normal?</u> CTION END ABS actuator and electric Dection AMP SWITCH switch OFF. lamp switch harness con between stop lamp switch (When brake pedal is depre- Push stop lamp switch (When brake pedal is relea <u>ult normal?</u> CTION END e stop lamp switch. Refer t	is depress. Re c unit (control u nector. h harness con c essed.) sed.)	according to this ord fer to <u>BRC-87. "Refe</u> unit). Refer to <u>BRC-11</u> nector terminals.	der. Check that data monito <u>rence Value"</u> . 1 <u>2. "Exploded View"</u> .	
 Select "ABS", "Edisplays "5 bar" <u>s the inspection reservent</u> YES >> INSPEC NO >> Replace COMPONENT INSP CHECK STOP LA Turn the ignition Disconnect stop Check continuity Stop lamp switch Terminal 1-2 <u>s the inspection reservent</u> YES >> INSPEC NO >> Replace 	or less when brake pedal <u>ult normal?</u> CTION END ABS actuator and electric Dection AMP SWITCH switch OFF. lamp switch harness con between stop lamp switch (When brake pedal is depre- Push stop lamp switch (When brake pedal is relea <u>ult normal?</u> CTION END e stop lamp switch. Refer t	is depress. Re c unit (control u nector. ch harness con co essed.) sed.) N	according to this ord fer to <u>BRC-87. "Refe</u> unit). Refer to <u>BRC-11</u> nector terminals.	der. Check that data monito rence Value". 12. "Exploded View". INFOID:000000065079	

< DTC/CIRCUIT DIAGNOSIS >

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-9</u>, "Special Repair Requirement"

C1120, C1122, C1124, C1126 IN ABS SOL

Description

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

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DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause	D	
C1120	FR LH IN ABS SOL	When the control unit detects a malfunction in the front LH inlet solenoid circuit.			
C1122	FR RH IN ABS SOL	When the control unit detects a malfunction in the front RH inlet solenoid circuit.• Harness or connector • ABS actuator and electric un (control unit)When the control unit detects a malfunction in the rear LH inlet solenoid circuit.• Harness or connector • ABS actuator and electric un (control unit)When the control unit detects a malfunction in the rear RH inlet solenoid circuit.• Harness or connector • ABS actuator and electric un (control unit)		E	
C1124	RR LH IN ABS SOL			BRC	
C1126	RR RH IN ABS SOL				
DTC CO	NFIRMATION PROCEI	DURE		G	
1.DTC REPRODUCTION PROCEDURE					
	 Turn the ignition switch ON. Perform self-diagnosis for "ABS" with CONSULT-III. 				

<u>Is DTC "C1120", "C1122", "C1124" or "C1126" detected?</u>

	ed to diagnosis procedure. Refer to <u>BRC-51, "Diagnosis Procedure"</u> . CTION END
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Diagnosis Procedure

1.CHECK SOLENOID POWER SUPPLY

- 1. Turn the ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) harness connector.
- 3. Check the 30 A fuse (K).
- 4. Check voltage between ABS actuator and electric unit (control unit) harness connector and ground.

ABS actuator and electric unit (control unit)				Voltage
Connector Terminal			voltage	
E36		3	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

2. CHECK SOLENOID GROUND

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

ABS actuator and ele	ectric unit (control unit)			
Connector Terminal			Continuity	
	1	Oraciand	Eviete d	
E36	4	Ground	Existed	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

[VDC/TCS/ABS]

3.CHECK TERMINALS AND HARNESS CONNECTORS

Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u>. NO >> Repair or replace error-detected parts.

Special Repair Requirement

INFOID:000000006507945

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) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-9, "Special Repair Requirement"</u>

C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

C1121, C1123, C1125, C1127 OUT ABS SOL

Description

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:000000006507947

INFOID:000000006507948

INFOID:000000006507946

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DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause	D		
C1121	FR LH OUT ABS SOL	When the control unit detects a malfunction in the front LH outlet solenoid circuit.				
C1123	FR RH OUT ABS SOL	When the control unit detects a malfunction in the front RH outlet solenoid circuit.	 Harness or connector ABS actuator and electric unit 	E		
C1125	RR LH OUT ABS SOL	When the control unit detects a malfunction in the rear LH outlet solenoid circuit.	(control unit)	BRC		
C1127	RR RH OUT ABS SOL	When the control unit detects a malfunction in the rear RH outlet solenoid circuit.				
DTC CONFIRMATION PROCEDURE						
1. DTC F	1.DTC REPRODUCTION PROCEDURE					

1.	Turn the ignition switch ON.
----	------------------------------

Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1121", "C1123", "C1125 " or "C1127" detected?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-53, "Diagnosis Procedure"</u>.

NO >> INSPECTION END

Diagnosis Procedure

1.CHECK SOLENOID POWER SUPPLY

- 1. Turn the ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) harness connector.

3. Check the 30 A fuse (K).

4. Check voltage between ABS actuator and electric unit (control unit) harness connector and ground.

ABS actuator and ele	ectric unit (control unit)		Voltage
Connector Terminal			voltage
E36	3	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

2. CHECK SOLENOID GROUND

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

ABS actuator and electric unit (control unit) Connector Terminal			Continuity
			Continuity
E36	1	Ground	Existed
E30	4	Ground	LNSIEG

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

[VDC/TCS/ABS]

3.CHECK TERMINALS AND HARNESS CONNECTORS

Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u>. NO >> Repair or replace error-detected parts.

Special Repair Requirement

INFOID:000000006507949

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) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-9, "Special Repair Requirement"</u>

C1130 ENGINE SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

C1130 ENGINE SIGNAL

Description

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

DTC Logic

INFOID:000000006507951

INFOID:000000006507950

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause D)
C1130	ENGINE SIGNAL 1	Major engine components are malfunctioning.	 Harness or connector ABS actuator and electric unit (control unit) ECM CAN communication line 	
DTC CC	NFIRMATION PROCE	DURE	BR	RC
1 .DTC	REPRODUCTION PROCE	EDURE		
2. Perfe	the ignition switch ON. orm self-diagnosis for "AB C1130" detected?	S" with CONSULT-III.	G	3
	>> Proceed to diagnosis p >> INSPECTION END	procedure. Refer to <u>BRC-55, "Diagnosis Proce</u>	dure". H	-
Diagno	sis Procedure		INFOID:00000006507952	
1.PFRF	ORM ECM SELF-DIAGN	OSIS		
	self-diagnosis for "ENGIN			
	TC detected?		J	J
YES		to <u>EC-117, "CONSULT-III Function"</u> (Except fo	r California), <u>EC-602, "CON-</u>	
NO	SULT-III Function" (Fo >> GO TO 2.	r California).	K	\langle
2.perf	ORM ABS ACTUATOR A	ND ELECTRIC UNIT (CONTROL UNIT) SELF	-DIAGNOSIS	
		r "ABS" with CONSULT-III.	L	
	the ignition switch OFF. the engine. Drive the veh	icle for a while		
4. Mak	e sure that malfunction inc	dicator lamp (MIL) turns OFF.	D.A.	Л
-	the engine. Perform self- <u>C1130" detected?</u>	diagnosis for "ABS" with CONSULT-III.	M	/1
YES	>> Replace ABS actuator >> Check ABS actuator a	and electric unit (control unit). Refer to <u>BRC-1</u> and electric unit (control unit) harness connec harness connector. If any items and damage	tor terminals for damage or \mathbb{N}	1
Specia	l Repair Requiremer	nt	INFOID:000000006507953)
1.adju	STMENT OF STEERING	ANGLE SENSOR NEUTRAL POSITION	~	_
tor and e		n adjustment for the steering angle sensor, wh r steering angle sensor and removing steering		-

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C1140 ACTUATOR RELAY SYSTEM

Description

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

DTC Logic

INFOID:000000006507955

INFOID:00000006507956

INFOID:000000006507954

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1140	ACTUATOR RLY	When the control unit detects a malfunction in the actua- tor relay system.	 Harness or connector ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

1.DTC REPRODUCTION PROCEDURE

1. Turn the ignition switch ON.

2. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1140" detected?

- YES >> Proceed to diagnosis procedure. Refer to <u>BRC-56, "Diagnosis Procedure"</u>.
- NO >> INSPECTION END

Diagnosis Procedure

1. CHECK ACTUATOR RELAY POWER SUPPLY

1. Turn the ignition switch OFF.

2. Disconnect ABS actuator and electric unit (control unit) harness connector.

3. Check the 30 A fuse (K).

4. Check voltage between ABS actuator and electric unit (control unit) harness connector and ground.

ABS actuator and ele	ectric unit (control unit)		Voltage	
Connector	Terminal		vollage	
E36	3	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

2.CHECK ACTUATOR RELAY GROUND

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

ABS actuator and ele	ctric unit (control unit)	- Continuity	
Connector	Terminal		Continuity
E36	1	Ground	Existed
230	4	Ground	LAISted

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

3.CHECK TERMINALS AND HARNESS CONNECTORS

Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

C1140 ACTUATOR RELAY SYSTEM

< DTC/CIRCUIT DIAGNOSIS > [VDC/TCS/ABS	3]
YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112. "Exploded View"</u> . NO >> Repair or replace error-detected parts.	А
Special Repair Requirement	7957
1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION	В
Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actu tor and electric unit (control unit) or steering angle sensor and removing steering angle sensor. Refer to <u>BR(9, "Special Repair Requirement"</u>	
>> END	D
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C1142 PRESS SENSOR

Description

INFOID:000000006507958

INFOID:000000006507959

[VDC/TCS/ABS]

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

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1142	PRESS SEN CIRCUIT	Pressure sensor signal line is open or shorted, or pres- sure sensor is malfunctioning.	 Harness or connector Stop lamp switch ABS actuator and electric unit (control unit) Brake system

DTC CONFIRMATION PROCEDURE

1.DTC REPRODUCTION PROCEDURE

1. Turn the ignition switch ON.

2. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1142" detected?

- YES >> Proceed to diagnosis procedure. Refer to <u>BRC-58, "Diagnosis Procedure"</u>.
- NO >> INSPECTION ĔND

Diagnosis Procedure

1.CHECK STOP LAMP SWITCH

Check stop lamp switch system. Refer to BRC-46, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

2. CHECK BRAKE SYSTEM

- 1. Check brake fluid leakage: refer to <u>BR-10, "Inspection"</u>.
- 2. Check brake piping: refer to <u>BR-22, "FRONT : Inspection"</u> (front), <u>BR-24, "REAR : Inspection"</u> (rear).
- 3. Check brake pedal: refer to BR-7, "Inspection and Adjustment".
- 4. Check master cylinder: refer to <u>BR-12</u>, "Inspection".
- 5. Check brake booster: refer to <u>BR-13, "Inspection"</u>.
- 6. Check front disc brake: refer to <u>BR-38</u>, "BRAKE CALIPER ASSEMBLY : Inspection".
- 7. Check rear drum brake: refer to <u>BR-41, "Inspection and Adjustment"</u>.

Is the inspection result normal?

- YES >> GO TO 3.
- NO >> Repair or replace error-detected parts.

3. PERFORM SELF-DIAGNOSIS

Perform self-diagnosis for "ABS" with CONSULT-III.

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112. "Exploded View"</u>.
- NO >> Check ABS actuator and electric unit (control unit) harness connector terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace error-detected parts.

INFOID:000000006507960

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) or steering angle sensor and removing steering angle sensor. Refer to BRC-9. "Special Repair Requirement"

>> END

INFOID:000000006507961

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C1143 STEERING ANGLE SENSOR

Description

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:000000006507963

INFOID:00000006507962

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1143	ST ANG SEN CIRCUIT	Steering angle sensor is malfunctioning.	 Harness or connector Steering angle sensor ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

1.DTC REPRODUCTION PROCEDURE

1. Turn the ignition switch ON.

2. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1143" detected?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-60, "Diagnosis Procedure"</u>.

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK STEERING ANGLE SENSOR POWER SUPPLY

1. Turn the ignition switch OFF.

2. Disconnect steering angle sensor harness connector.

3. Check the voltage between steering angle sensor harness connector and ground.

Steering a	ngle sensor		
Connector	Terminal		vollage
M30	4	Ground	Approx. 0 V

4. Turn the ignition switch ON.

CAUTION:

Never start the engine.

5. Check the voltage between steering angle sensor harness connector and ground.

Steering a	ngle sensor	— Voltage	
Connector	Terminal		vollage
M30	4	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

2.CHECK STEERING ANGLE SENSOR CIRCUIT

1. Turn the ignition switch OFF.

2. Disconnect IPDM E/R harness connector.

3. Check continuity between steering angle sensor harness connector and IPDM E/R harness connector.

INFOID:000000006507964

C1143 STEERING ANGLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Steering ang	le sensor		IPDM E/R	- Continuity
Connector	Terminal	Connector	Terminal	Continuity
M30	4	E15	60	Existed
the inspection resu	Ilt normal?			
<u>IGNITIOI</u>	N POWER SUPP r replace error-de	<u>LY -"</u> tected parts.	power supply circuit. R	efer to <u>PG-44, "Wiring Diagram -</u>
heck continuity betw	ween steering ang	gle sensor harne	ess connector and grou	ind.
Steering ang	le sensor			
Connector	Terminal		Continuity	
M30	1	Ground	Existed	
the inspection resu	Ilt normal?	· ·		
YES >> GO TO 4				
•	r replace error-de	tected parts.		
CHECK DATA LIN				
		T". Refer to <u>LAN</u>	<u> 1-40, "Diagnosis Proce</u>	<u>dure"</u> .
the inspection resu				
YES >> GO TO 5 NO >> Repair or		tected parts. Re	fer to BRC-106. "Preca	autions for Harness Repair".
CHECK TERMINA	•	•		<u> </u>
				on with harness connector.
. Check IPDM E/R	pin terminals for	damage or loos	se connection with harr	
the inspection resu	<u>ilt normal?</u>			
	ABS actuator and r replace error-de		ontrol unit). Refer to <u>BF</u>	C-112, "Exploded View".
pecial Repair R	lequirement			INFOID:00000006507965
.ADJUSTMENT OF	F STEERING AN		NEUTRAL POSITION	
	control unit) or ste			r, when replacing the ABS actua- ring angle sensor. Refer to <u>BRC-</u>
>> END				

C1144 INCOMPLETE STEERING ANGLE SENSOR ADJUSTMENT

< DTC/CIRCUIT DIAGNOSIS >

C1144 INCOMPLETE STEERING ANGLE SENSOR ADJUSTMENT

Description

INFOID:000000006507966

[VDC/TCS/ABS]

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:000000006507967

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1144	ST ANG SEN SIGNAL	Neutral position of steering angle sensor is not finished.	 Harness or connector Steering angle sensor ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

1.DTC REPRODUCTION PROCEDURE

- 1. Turn the ignition switch ON.
- Select "ABS", "WORK SUPPORT" and "ST ANG SEN ADJUSTMENT" in order with CONSULT-III, and perform adjust the neutral position of steering angle sensor.
- 3. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1144" detected?

- YES >> Proceed to diagnosis procedure. Refer to <u>BRC-62, "Diagnosis Procedure"</u>.
- NO >> INSPECTION END

Diagnosis Procedure

1.CHECK STEERING ANGLE SENSOR

Check steering angle sensor. Refer to <u>BRC-60, "Diagnosis Procedure"</u>.

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-112. "Exploded View".

NO >> Repair or replace error-detected parts.

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) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-9, "Special Repair Requirement"</u>

>> END

INFOID-00000006507968

INFOID:000000006507969

C1145, C1146 YAW RATE/SIDE G SENSOR

< DTC/CIRCUIT DIAGNOSIS >

C1145, C1146 YAW RATE/SIDE G SENSOR

Description

The yaw rate/side G sensor detects the yaw rate/side 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:000000006507971

INFOID:000000006507970

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause	D
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 	
C1146	SIDE G-SEN CIRCUIT	Side G sensor is malfunctioning, or circuit of side G sensor is open or shorted.	(control unit)Yaw rate/side G sensor	E

DTC CONFIRMATION PROCEDURE

1.DTC REPRODUCTION PROCEDURE

1. Turn the ignition switch ON.

2. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1145" or "C1146" detected?

- YES >> Proceed to diagnosis procedure. Refer to <u>BRC-63, "Diagnosis Procedure"</u>.
- NO >> INSPECTION END

Diagnosis Procedure

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 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 surface, VDC OFF indicator lamp may illuminate and CONSULT-III self-diagnosis may indicate yaw rate sensor system malfunction. However, in this case there is no malfunction in yaw rate sensor system. Take vehicle off of turn-table or other moving surface, and start the engine. Results will return to normal.

INSPECTION PROCEDURE

1.CHECK YAW RATE/SIDE G SENSOR POWER SUPPLY

- 1. Turn the ignition switch OFF.
- 2. Disconnect yaw rate/side G sensor harness connector.
- 3. Check voltage between yaw rate/side G sensor harness connector and ground.

Yaw rate/side G sensor			Valtaga	
Connector	Terminal		Voltage	
B38	4	Ground	Approx. 0 V	

4. Turn the ignition switch ON. CAUTION:

Never start the engine.

5. Check voltage between yaw rate/side G sensor harness connector and ground.

Yaw rate/si	de G sensor		Voltage
Connector	Terminal		vollage
B38	4	Ground	Battery voltage

Is the inspection result normal?

BRC-63

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- INFOID:000000006507972

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C1145, C1146 YAW RATE/SIDE G SENSOR

< DTC/CIRCUIT DIAGNOSIS >

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

2.CHECK YAW RATE/SIDE G SENSOR CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.

3. Check continuity between yaw rate/side G sensor harness connector and IPDM E/R harness connector.

Yaw rate/si	Yaw rate/side G sensor		IPDM E/R		
Connector	Terminal	Connector	Terminal	Continuity	
B38	4	E15	60	Existed	

Is the inspection result normal?

YES >> Perform the trouble diagnosis for ignition power supply circuit. Refer to <u>PG-44, "Wiring Diagram -</u> <u>IGNITION POWER SUPPLY -"</u>.

NO >> Repair or replace error-detected parts.

 ${f 3.}$ CHECK YAW RATE/SIDE G SENSOR GROUND

Check continuity between yaw rate/side G sensor harness connector and ground.

Yaw rate/sid	de G sensor		Continuity
Connector	Terminal		Continuity
B38	1	Ground	Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

4.CHECK YAW RATE/SIDE G SENSOR CIRCUIT

Check continuity between yaw rate/side G sensor harness connector and ABS actuator electric unit (control unit) harness connector.

Yaw rate/si	de G sensor	ABS actuator elect	ric unit (control unit)	Continuity
Connector	Terminal	Connector	Terminal	Continuity
B38	2	E36	14	Existed
630	3	L30	25	Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

5.CHECK TERMINALS AND HARNESS CONNECTORS

1. Check yaw rate/side G sensor pin terminals for damage or loose connection with harness connector.

2. Check IPDM E/R pin terminals for damage or loose connection with harness connector.

 Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

6.REPLACE YAW RATE/SIDE G SENSOR

- 1. Replace yaw rate/side G sensor. Refer to <u>BRC-114, "Exploded View"</u>.
- 2. Erase self-diagnosis results for "ABS" with CONSULT-III.
- 3. Turn the ignition switch OFF.
- 4. Turn the ignition switch ON. CAUTION:

Never start the engine.

5. Perform self-diagnosis for "ABS" with CONSULT-III.

C1145, C1146 YAW RATE/SIDE G SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Is DTC "C1145" or "C1146" detected? A YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-112, "Exploded View". A NO >> INSPECTION END B Special Repair Requirement INFOLD-0000000507973 B 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION B Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit) or steering angle sensor and removing steering angle sensor. Refer to BRC-9, "Special Repair Requirement" C

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C1155 BRAKE FLUID LEVEL SWITCH

Description

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:000000006507975

INFOID:000000006507976

INFOID:000000006507974

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.	 Harness or connector Brake fluid Brake fluid level switch Combination meter

DTC CONFIRMATION PROCEDURE

1.DTC REPRODUCTION PROCEDURE

1. Turn the ignition switch ON.

2. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1155" detected?

- YES >> Proceed to diagnosis procedure. Refer to <u>BRC-66, "Diagnosis Procedure"</u>.
- NO >> INSPECTION END

Diagnosis Procedure

1.CHECK BRAKE FLUID LEVEL

- 1. Turn the ignition switch OFF.
- 2. Check brake fluid level. Refer to <u>BR-10, "Inspection"</u>.

Is the inspection result normal?

- YES >> GO TO 2.
- NO >> Refill brake fluid. Refer to <u>BR-10, "Refilling"</u>.
- **2.** PERFORM SELF-DIAGNOSIS (1)

1. Erase Self-diagnosis result for "ABS" with CONSULT-III.

- 2. Turn the ignition switch OFF, and wait 10 seconds or more.
- 3. Turn the ignition switch ON. CAUTION:

Never start the engine.

4. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1155" detected?

YES >> INSPECTION END

3.CHECK BRAKE FLUID LEVEL SWITCH

Check brake fluids level switch. Refer to <u>BRC-68, "Component Inspection"</u>.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace reservoir tank. Refer to <u>BR-25, "Exploded View"</u>. GO TO 4.

4.PERFORM SELF-DIAGNOSIS (2)

- 1. Erase Self-diagnosis result for "ABS" with CONSULT-III.
- 2. Turn the ignition switch OFF, and wait 10 seconds or more.
- 3. Turn the ignition switch ON.
 - CAUTION: Never start the engine.

[VDC/TCS/ABS]

C1155 BRAKE FLUID LEVEL SWITCH [VDC/TCS/ABS] < DTC/CIRCUIT DIAGNOSIS > Perform self-diagnosis for "ABS" with CONSULT-III. 4. А Is DTC "C1155" detected? YES >> INSPECTION END NO >> GO TO 5. В ${f 5}.$ CHECK CONNECTOR AND TERMINAL 1. Turn the ignition switch OFF. 2. Disconnect brake fluid level switch harness connector. 3. Check brake fluid level switch harness connector for disconnection or looseness. 4 Check brake fluid level switch pin terminals for damage or loose connection with harness connector. 5. Disconnect combination meter harness connector. Check combination meter harness connector for disconnection or looseness. D 7. Check combination meter pin terminals for damage or loose connection with harness connector. Is the inspection result normal? Е YES >> GO TO 7. NO >> Repair or replace error-detected parts. GO TO 6. **O.**PERFORM SELF-DIAGNOSIS (3) BRC 1. Connect brake fluid level switch harness connector. Connect combination meter harness connector. 3. Erase Self-diagnosis result for "ABS" with CONSULT-III. 4. Turn the ignition switch OFF, and wait 10 seconds or more. 5. Turn the ignition switch ON. **CAUTION:** Never start the engine. Н 6. Perform self-diagnosis for "ABS" with CONSULT-III. Is DTC "C1155" detected? YES >> INSPECTION END NO >> GO TO 7. 7.CHECK BRAKE FLUID LEVEL SWITCH HARNESS 1. Turn the ignition switch OFF. 2. Disconnect brake fluid level switch harness connector. 3. Disconnect combination meter harness connector. 4. Check continuity between brake fluid level switch harness connector and combination meter harness con-Κ nector. Brake fluid level switch Combination meter L Continuity Connector Terminal Connector Terminal E37 1 M34 11 Fxisted M Check continuity between brake fluid level switch harness connector and ground. 5. Ν

Brake fluid	level switch		Continuity
Connector	Terminal		Continuity
E37	1	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace error-detected parts. GO TO 8.

Ö.CHECK BRAKE FLUID LEVEL SWITCH GROUND

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

Brake fluid	level switch		Continuity
Connector Terminal		_	Continuity
E37	2	Ground	Existed

C1155 BRAKE FLUID LEVEL SWITCH

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace error-detected parts. GO TO 9.

9.CHECK COMBINATION METER

Check combination meter. Refer to <u>MWI-30, "CONSULT-III Function (METER/M&A)"</u>.

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u>.
- NO >> Repair or replace combination meter. Refer to MWI-97, "Exploded View".

Component Inspection

INFOID:000000006507977

1. CHECK BRAKE FLUID LEVEL SWITCH

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

Brake fluid level switch	Condition	Continuity
Terminal	Condition	Continuity
1 – 2	When brake fluid is full in the reservoir tank.	Not existed
1 - 2	When brake fluid is empty in the reservoir tank.	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace reservoir tank. Refer to <u>BR-25</u>, "Exploded View".

Special Repair Requirement

INFOID:000000006507978

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) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-9</u>, "Special Repair Requirement"

C1164, C1165 CV SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

C1164, C1165 CV SYSTEM

Description

INFOID:000000006507979

The cut valve shuts off the normal brake fluid path from the master cylinder, w	hen VDC/TCS is activated.
DTC Logic	INFOID:00000006507980

DTC DETECTION LOGIC

Intrastitution switch ON. Image: Second Se	DTC	Display item	Malfund	ction detected condition	Possible cause			
C1165 CV 2 VDC switch-over solenoid valve (C/2) on the secondary is de is open circul or shorted, or the control line is open or shorted to the power supply or the ground. (control unit) C1165 CV 2 vide is open circul or shorted, or the control line is open or shorted to the power supply or the ground. (control unit) C1165 CV 2 vide is open circul or shorted, or the control line is open or shorted to the power supply or the ground. (control unit) C1165 CV 2 vide is open circular shorted, or the control line is open or shorted to the power supply or the ground. (control unit) DTC CONFIRMATION PROCEDURE Turn the ignition switch ON. Perform self-diagnosis procedure. Refer to BRC-69, "Diagnosis Procedure". . NO >> INSPECTION END . . Diagnosis Procedure	C1164	CV 1	side is open circuit o	side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground. • Harness or connector				
2. Perform self-diagnosis for "ABS" with CONSULT-III. s DTC "C1164" or "C1165" detected? YES >> Proceed to diagnosis procedure. Refer to BRC-69. "Diagnosis Procedure". NO >> INSPECTION END Diagnosis Procedure ************************************	C1165	CV 2	side is open circuit o	/DC switch-over solenoid valve (CV2) on the secondary (control unit) side is open circuit or shorted, or the control line is open				
Image: Turn the ignition switch ON. 2. Perform self-diagnosis for "ABS" with CONSULT-III. <u>s DTC "C1164" or "C1165" detected?</u> YES >> Proceed to diagnosis procedure. Refer to <u>BRC-69. "Diagnosis Procedure"</u> . NO >> INSPECTION END Diagnosis Procedure wroecococcere .CHECK ACTUATOR RELAY POWER SUPPLY CIRCUIT . 1. CHECK ACTUATOR RELAY POWER SUPPLY CIRCUIT . 2. Disconnect ABS actuator and electric unit (control unit) harness connector. . 3. Check the voltage between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit)	отс сс	ONFIRMATION PRO	OCEDURE					
2. Perform self-diagnosis for "ABS" with CONSULT-III. s DTC "C1164" or "C1165" detected? YES >> Proceed to diagnosis procedure. Refer to BRC-69. "Diagnosis Procedure". NO >> INSPECTION END Diagnosis Procedure Diagnosis Procedure Achteck ACTUATOR RELAY POWER SUPPLY CIRCUIT 1. Turn the ignition switch ON. Disconnect ABS actuator and electric unit (control unit) harness connector. 3. Check the 30 A fuse (K). Concector 4. Check the voltage between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Connector Terminal E36 3 Ground Sthe inspection result normal? YES YES >> GO TO 2. NO >> Repair or replace damaged parts. 2.CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY GROUND CIRCUIT Check the continuity between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Connector Terminal 2.CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY GROUND CIRCUIT Check the continuity between ABS actuator and electric u	1. DTC	REPRODUCTION P	ROCEDURE					
s DTC "C1164" or "C1165" detected? YES >> Proceed to diagnosis procedure. Refer to BRC-69. "Diagnosis Procedure". NO >> INSPECTION END Diagnosis Procedure Monocommentation of the second se				-111.				
NO >> INSPECTION END Diagnosis Procedure Insert and electric unit (control unit) 1. CHECK ACTUATOR RELAY POWER SUPPLY CIRCUIT Insert and electric unit (control unit) harness connector. 2. Disconnect ABS actuator and electric unit (control unit) harness connector. Insert and electric unit (control unit) harness connector. 3. Check the 30 A fuse (K). Insert and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) Insert voltage <u>Connector</u> Terminal <u>Connector</u> Terminal <u>Connector</u> Terminal <u>Connector</u> Terminal <u>Voltage</u> Sthe inspection result normal? YES > GO TO 2. NO >> Repair or replace damaged parts. 2.CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY GROUND CIRCUIT Check the continuity between ABS actuator and electric unit (control unit) harness connector and ground. <u>ABS actuator and electric unit (control unit)</u> <u>Continuity</u> <u>Connector</u> Terminal <u>Continuity</u> <u>E36</u> <u>1</u> Ground Existed		•						
1. CHECK ACTUATOR RELAY POWER SUPPLY CIRCUIT 1. Turn the ignition switch ON. 2. Disconnect ABS actuator and electric unit (control unit) harness connector. 3. Check the 30 A fuse (K). 4. Check the voltage between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit)				o <u>BRC-69, "Diagnosis Proced</u>	ure".			
1. Turn the ignition switch ON. 2. Disconnect ABS actuator and electric unit (control unit) harness connector. 3. Check the 30 A fuse (K). 4. Check the voltage between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Voltage Connector Terminal — Voltage E36 3 Ground Battery voltage s the inspection result normal? YES >> GO TO 2. NO NO >> Repair or replace damaged parts. 2 Centeck the continuity between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Continuity Contector YES >> GO TO 2. NO >> Repair or replace damaged parts. 2 C-CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY GROUND CIRCUIT Check the continuity between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Continuity E36 1 Ground Existed	Diagno	sis Procedure			INFOID:000000065079			
1. Turn the ignition switch ON. 2. Disconnect ABS actuator and electric unit (control unit) harness connector. 3. Check the 30 A fuse (K). 4. Check the voltage between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Voltage Connector Terminal — Voltage E36 3 Ground Battery voltage s the inspection result normal? YES >> GO TO 2. NO NO >> Repair or replace damaged parts. 2 Centeck the continuity between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Continuity Contector YES >> GO TO 2. NO >> Repair or replace damaged parts. 2 C-CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY GROUND CIRCUIT Check the continuity between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Continuity E36 1 Ground Existed								
2. Disconnect ABS actuator and electric unit (control unit) harness connector. 3. Check the 30 A fuse (K). 4. Check the voltage between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit)								
3. Check the 30 A fuse (K). 4. Check the voltage between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit)	I. IUIII	0						
ABS actuator and electric unit (control unit) - Voltage E36 3 Ground Battery voltage s the inspection result normal? YES >> GO TO 2. NO >> Repair or replace damaged parts. 2.CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY GROUND CIRCUIT Check the continuity between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) - Continuity E36 1 Ground Existed		onnect ABS actuator	and electric unit (contr	ol unit) harness connector.				
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	2. Disc 3. Che	ck the 30 A fuse (K).	·					
ConnectorTerminalCE363GroundBattery voltages the inspection result normal?YES>> GO TO 2.NO>> Repair or replace damaged parts.2.CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY GROUND CIRCUITCheck the continuity between ABS actuator and electric unit (control unit) harness connector and ground.ABS actuator and electric unit (control unit)—ConnectorTerminalE361GroundExisted	2. Disc 3. Che	ck the 30 A fuse (K).	·		ss connector and ground.			
s the inspection result normal? YES >> GO TO 2. NO >> Repair or replace damaged parts. 2.CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY GROUND CIRCUIT Check the continuity between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Connector Terminal 1 Ground E36 1 4 Ground	2. Disc 3. Che 1. Che	ck the 30 A fuse (K). ck the voltage betwe	en ABS actuator and el	ectric unit (control unit) harne	ss connector and ground.			
YES >> GO TO 2. NO >> Repair or replace damaged parts. 2.CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY GROUND CIRCUIT Check the continuity between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Continuity Connector Terminal — Continuity E36 1 Ground Existed	2. Disc 3. Che 4. Che ABS act	ck the 30 A fuse (K). ck the voltage betwe	en ABS actuator and ele	ectric unit (control unit) harne	ss connector and ground.			
NO >> Repair or replace damaged parts. 2.CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY GROUND CIRCUIT Check the continuity between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Connector Terminal 1 Ground E36 1 4 Ground	2. Disc 3. Che 4. Che ABS act Cor	ck the 30 A fuse (K). ck the voltage betwe tuator and electric unit (cc nnector Terr	en ABS actuator and ele	ectric unit (control unit) harne	ss connector and ground.			
2.CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY GROUND CIRCUIT Check the continuity between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) — Continuity Connector Terminal — Continuity E36 1 Ground Existed	2. Disc 3. Che 4. Che ABS act Cor	ck the 30 A fuse (K). ck the voltage betwe tuator and electric unit (cc nnector Tern E36	en ABS actuator and ele ntrol unit) ninal 3 Ground	ectric unit (control unit) harne	ss connector and ground.			
Check the continuity between ABS actuator and electric unit (control unit) harness connector and ground. ABS actuator and electric unit (control unit) ABS actuator and electric unit (control unit) Continuity Connector Terminal Continuity E36 1 Ground Existed	2. Disc 3. Che 4. Che ABS act Cor 1 s the ins YES	ck the 30 A fuse (K). ck the voltage betwe tuator and electric unit (cc nnector Tern E36 Spection result norma >> GO TO 2.	en ABS actuator and ele ntrol unit) ninal 3 Ground 1?	ectric unit (control unit) harne	ss connector and ground.			
ABS actuator and electric unit (control unit)	2. Disc 3. Che 4. Che ABS act Cor I s the ins YES NO	ck the 30 A fuse (K). ck the voltage betwe tuator and electric unit (cc nector Tern E36 C spection result norma >> GO TO 2. >> Repair or replace	en ABS actuator and ele ntrol unit) ninal Ground 1/? e damaged parts.	ectric unit (control unit) harne Voltage Battery voltage				
Connector Terminal Continuity E36 1 Ground Existed	2. Disc 3. Cher 4. Cher ABS act Cor I s the ins YES NO 2.CHEC	ck the 30 A fuse (K). ck the voltage betwe tuator and electric unit (co nector Tern E36 Concernant >> GO TO 2. >> Repair or replace CK SOLENOID, VDC	en ABS actuator and ele ntrol unit) ninal Ground 1/2 e damaged parts. SWITCH-OVER VALVI	ectric unit (control unit) harne Voltage Battery voltage E AND ACTUATOR RELAY G	ROUND CIRCUIT			
Connector Terminal Continuity E36 1 Ground Existed	2. Disc 3. Cher 4. Cher ABS act Cor I s the ins YES NO 2.CHEC	ck the 30 A fuse (K). ck the voltage betwe tuator and electric unit (co nector Tern E36 Concernant >> GO TO 2. >> Repair or replace CK SOLENOID, VDC	en ABS actuator and ele ntrol unit) ninal Ground 1/2 e damaged parts. SWITCH-OVER VALVI	ectric unit (control unit) harne Voltage Battery voltage E AND ACTUATOR RELAY G	ROUND CIRCUIT			
E36 Ground Existed	2. Disc 3. Cher 4. Cher ABS act Cor 1 <u>s the ins</u> YES NO 2.CHEC Check th	ck the 30 A fuse (K). ck the voltage betwe tuator and electric unit (cc nnector Tern E36 Spection result norma >> GO TO 2. >> Repair or replace CK SOLENOID, VDC ne continuity betweer	en ABS actuator and ele ntrol unit) ninal 3 Ground 1? 4 4 4 5 WITCH-OVER VALVI 5 ABS actuator and elec	E AND ACTUATOR RELAY G	ROUND CIRCUIT			
4	2. Disc 3. Chea 4. Chea ABS act Cor 1 <u>s the ins</u> YES NO 2.CHEC Check th ABS act	ck the 30 A fuse (K). ck the voltage betwe tuator and electric unit (cc nnector Tern E36 3 spection result norma >> GO TO 2. >> Repair or replace CK SOLENOID, VDC ne continuity between	en ABS actuator and ele introl unit) ninal 3 Ground al? a damaged parts. SWITCH-OVER VALVI a ABS actuator and elect introl unit)	E AND ACTUATOR RELAY G	ROUND CIRCUIT			
s the inspection result normal?	2. Disc 3. Chea 4. Chea ABS act Cor 1 s the ins YES NO 2.CHEC Check th ABS act Cor	ck the 30 A fuse (K). ck the voltage betwe tuator and electric unit (cc nector Term E36 Spection result norma >> GO TO 2. >> Repair or replace CK SOLENOID, VDC the continuity between tuator and electric unit (cc nector Term	en ABS actuator and ele ntrol unit) ninal 3 Ground al? e damaged parts. SWITCH-OVER VALVI a ABS actuator and elector ontrol unit) ninal	ectric unit (control unit) harne Voltage Battery voltage E AND ACTUATOR RELAY G tric unit (control unit) harness Continuity	ROUND CIRCUIT			
S THE THOUELEDUIT TESTIL HUTHAL!	2. Disc 3. Chea 4. Chea ABS act Cor 1 s the ins YES NO 2.CHEC Check th ABS act Cor	ck the 30 A fuse (K). ck the voltage betwe tuator and electric unit (cc nector Term E36 3 Spection result norma >> GO TO 2. >> Repair or replace CK SOLENOID, VDC ne continuity between tuator and electric unit (cc nector Term E36	en ABS actuator and ele introl unit) ninal 3 Ground 1 2 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5	ectric unit (control unit) harne Voltage Battery voltage E AND ACTUATOR RELAY G tric unit (control unit) harness Continuity	ROUND CIRCUIT			
NO >> Repair or replace damaged parts.	2. Disc 3. Chea 4. Chea ABS act Cor 1 <u>s the ins</u> YES NO 2.CHEC Check th ABS act Cor 1 <u>s the ins</u> YES	ck the 30 A fuse (K). ck the voltage betwe tuator and electric unit (cc nector Term E36 3 Spection result norma >> GO TO 2. >> Repair or replace CK SOLENOID, VDC ne continuity between tuator and electric unit (cc nector Term E36 3 Spection result norma >> GO TO 3.	en ABS actuator and ele introl unit) ninal Ground Control unit) ABS actuator and elect introl unit) ninal Ground ABS actuator and elect introl unit) Ground ABS actuator and elect introl unit) I Ground ABS actuator and elect I I I I I I I I I I I I I	ectric unit (control unit) harne Voltage Battery voltage E AND ACTUATOR RELAY G tric unit (control unit) harness Continuity	ROUND CIRCUIT			

3. CHECK TERMINALS AND HARNESS CONNECTORS

Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.

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Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u>.

NO >> Repair or replace error-detected parts.

Special Repair Requirement

INFOID:000000006507982

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) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-</u> <u>9</u>, "Special Repair Requirement"

C1166, C1167 SV SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

C1166, C1167 SV SYSTEM

Description

INFOID:000000006507983

The suction valve supplies the brake fluid from the master cylinder to the pump, when VDC/TCS	S is activated.
DTC Logic	INFOID:000000006507984

DTC DETECTION LOGIC

DTC	Disp	olay item	Malfunc	tion detected condition	Possible cause		
C1166	SV 1	sic	 VDC switch-over solenoid valve (SV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground. Harness or connector ABS actuator and electric unit 				
C1167	SV 2	sic	de is open circuit or	enoid valve (SV2) on the secondary shorted, or the control line is open ver supply or the ground.	(control unit)	E	
DTC CC	NFIRMAT	ION PROCEDU	RE		В	BRC	
1. DTC I	REPRODUC	TION PROCEDU	JRE				
2. Perfo Is DTC "(YES	C1166" or "(gnosis for "ABS" v <u>C1167" detected?</u> I to diagnosis proc		-III. o <u>BRC-71, "Diagnosis Procec</u>		G	
Diagno	sis Proce	edure			INFOID:00000006507985		
1. CHEC	СК АСТИАТ	OR RELAY POW	ER SUPPLY C	IRCUIT			
 Disc Cheo 	ck the 30 A	actuator and electure (K).	Υ.	ol unit) harness connector.		J	
4. Cheo	ck the voltag	ge between ABS a	actuator and ele	ectric unit (control unit) harne	•	K	
ABS act	uator and elec	tric unit (control unit)					
Cor	nector	Terminal	1 —	Voltage			
E	Ξ 36	3	Ground	Battery voltage		L	
YES NO	•	2. or replace damage	•			M	
				E AND ACTUATOR RELAY (Ν	
Check th	e continuity	between ABS ac	tuator and elec	tric unit (control unit) harness	s connector and ground.	IN	
ABS act	uator and elec	tric unit (control unit)					
Cor	nector	Terminal		Continuity		0	
E	=36	1 4	Ground	Existed		Ρ	
YES NO				ORS			

Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.

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Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u>.

NO >> Repair or replace error-detected parts.

Special Repair Requirement

INFOID:000000006507986

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) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-</u> <u>9. "Special Repair Requirement"</u>

< DTC/CIRCUIT DIAGNOSIS >

U1000 CAN COMM CIRCUIT

Description

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

DTC Logic

INFOID:000000006507988

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause	E
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.	 CAN communication line ABS actuator and electric unit (control unit) 	BRC
DTC CC	NFIRMATION PROCE	DURE		
1. DTC I	REPRODUCTION PROC	EDURE		G
	the ignition switch ON.			
	orm self-diagnosis for "Al U1000" detected?	BS" with CONSULT-III.		Н
-		procedure. Refer to <u>BRC-73, "Diagnosis Proced</u>	lure".	
	>> INSPECTION ĔND			
Diagno	sis Procedure		INFOID:00000006507989	1
1.PERF	ORM ABS ACTUATOR	AND ELECTRIC UNIT (CONTROL UNIT)		
	self-diagnosis for "ABS"			J
	U1000" detected?			
	>> Proceed to diagnosis > INSPECTION END	procedure. Refer to LAN-13, "Trouble Diagnosis	Flow Chart".	Κ
Specia	l Repair Requireme	nt	INFOID:00000006507990	L
1.adju	STMENT OF STEERING	GANGLE SENSOR NEUTRAL POSITION		
tor and e		on adjustment for the steering angle sensor, whe or steering angle sensor and removing steering a		Μ
	>> END			Ν
				0

INFOID:000000006507987

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U1002 SYSTEM COMM (CAN)

Description

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

DTC Logic

INFOID:000000006954852

INFOID:000000006954853

DTC DETECTION LOGIC

DTC	DTC Display item Malfunction detected condition		Possible cause
U1002	SYSTEM COMM	When ABS actuator and electric unit (control unit) is not transmitting or receiving CAN communication signal for 2 seconds or less.	 CAN communication line ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

1.DTC REPRODUCTION PROCEDURE

1. Turn the ignition switch ON.

2. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "U1002" detected?

- YES >> Proceed to diagnosis procedure. Refer to <u>BRC-74, "Diagnosis Procedure"</u>.
- NO >> INSPECTION ĔND

Diagnosis Procedure

CAUTION:

- Never apply 7.0 V or more to the measurement terminal.
- Use a tester with open terminal voltage of 7.0 V or less.
- Turn the ignition switch OFF and disconnect the battery cable from the negative terminal when checking the harness.

1.CHECK CAN DIAGNOSIS SUPPORT MONITOR

- 1. Select "ABS" and "CAN Diagnosis Support Monitor" in order with CONSULT-III.
- 2. Check malfunction history between each control unit connected to ABS actuator and electric unit (control unit).

Check the result of "PAST"?

All items are "OK">>Check intermittent incident. Refer to GI-41, "Intermittent Incident".

"TRANSMIT DIAG" is other than "OK">>GO TO 2.

A control unit other than ABS actuator and electric unit (control unit) is anything other than "OK">>GO TO 3.

2. CHECK TRANSMITTING SIDE UNIT

Check the ABS actuator and electric unit (control unit) harness connector terminals No. 15 and 26 for damage or loose connection.

Is the inspection result normal?

- YES >> Erase self-diagnosis results. Then perform self-diagnosis for "ABS" with CONSULT-III.
- NO >> Recheck terminals for damage or loose connection. Refer to <u>BRC-106. "Precautions for Harness</u> <u>Repair"</u>.
- 3.CHECK APPLICABLE CONTROL UNIT

Check terminals of each CAN communication line harness connector for damage or loose connection. Is the inspection result normal?

YES >> Erase self-diagnosis results. Then perform self-diagnosis for applicable control unit with CON-SULT-III.

BRC-74

INFOID:000000006954851

U1002 SYSTEM COMM (CAN)

< DTC/CIRCUIT DIAGNOSIS >	[VDC/TCS/ABS]
NO >> Recheck terminals for damage or loose connection. Refer to <u>BRC-106. "I</u> <u>Repair"</u> .	Precautions for Harness
Special Repair Requirement	INFOID:00000006954854
1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION	I
Always perform the neutral position adjustment for the steering angle sensor, when retor and electric unit (control unit). Refer to <u>BRC-9</u> , "Special Repair Requirement".	eplacing the ABS actua-
>> END	
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POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

POWER SUPPLY AND GROUND CIRCUIT

Description

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

Diagnosis Procedure

INFOID:000000006507992

INFOID:00000006507991

1.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) IGNITION POWER SUPPLY

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

ABS actuator and ele	ectric unit (control unit)		Voltage
Connector	Terminal		vollage
E36	18	Ground	Approx. 0 V

4. Turn the ignition switch ON. CAUTION:

Never start the engine.

5. Check the voltage between ABS actuator and electric unit (control unit) harness connector and ground.

ABS actuator and ele	ectric unit (control unit)		Voltage
Connector	Terminal		voltage
E36	18	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

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

- 1. Check the 10A fuse (57).
- 2. Disconnect IPDM E/R harness connector.
- 3. Check the continuity between ABS actuator and electric unit (control unit) harness connector and IPDM E/ R harness connector.

ABS actuator and electric unit (control unit)		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E36	18	E15	60	Existed

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

ConnectorTerminalContributyE3618GroundNo existed	ABS actuator and ele	ctric unit (control unit)		Continuity	
E36 18 Ground No existed	Connector	Terminal		Continuity	
	E36	18	Ground	No existed	

Is the inspection result normal?

YES >> Perform the trouble diagnosis for ignition power supply circuit. Refer to <u>PG-44</u>, "Wiring Diagram - <u>IGNITION POWER SUPPLY -"</u>.

NO >> Repair or replace error-detected parts.

${f 3.}$ CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SUPPLY

1. Turn the ignition switch OFF.

2. Check the voltage between ABS actuator and electric unit (control unit) harness connector and ground.

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

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ABS actuator and ele	ectric unit (control unit)		Voltage	
Connector	Terminal		vollage	
F41	2	Ground	Battery voltage	
L41	3	Ground	Ballery vollage	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

4.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND

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

-					
	ABS actuator and ele	nd electric unit (control unit)		Continuity	
_	Connector	Terminal		Continuity	
_	F41	1	Ground	Existed	
		4	Giouna	LAISIGU	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

5. CHECK TERMINALS AND HARNESS CONNECTORS

1.	Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with har-	F
	ness connector.	
~		

2. Check IPDM E/R pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u>.
- NO >> Repair or replace error-detected parts.

PARKING BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

PARKING BRAKE SWITCH

Description

Operate the parking brake lever, and brake warning lamp in the combination meter turns ON/OFF correctly.

Diagnosis Procedure

INFOID:000000006507994

1. CHECK PARKING BRAKE SWITCH CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect parking brake switch harness connector.
- 3. Disconnect combination meter harness connector.
- Check continuity between parking brake switch harness connector and combination meter harness connector.

Parking brake switch		Combination meter		Continuity
Connector	Terminal	Connector	Terminal	Continuity
M11	1	M34	10	Existed

5. Check continuity between parking brake switch harness connector and ground.

Parking b	ake switch	_	Continuity	
Connector	Terminal		Continuity	
M11	1	Ground	Not existed	

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

2. CHECK PARKING BRAKE SWITCH

Check the parking brake switch. Refer to <u>BRC-78, "Component Inspection"</u>.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace parking brake switch. Refer to <u>PB-4, "Exploded View"</u>.

 $\mathbf{3}$. CHECK TERMINALS AND HARNESS CONNECTORS

1. Check parking brake switch pin terminals for damage or loose connection with harness connector.

2. Check combination meter pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

4.CHECK PARKING BRAKE SWITCH SIGNAL

Select "ABS", "DATA MONITOR" and "PARK BRAKE SW" in order with CONSULT-III, and perform the parking brake switch inspection.

Condition	PARK BRAKE SW (DATA MONITOR)
Parking brake lever is active	On
Parking brake lever is inactive	Off

Is the inspection result normal?

YES >> INSPECTION END

NO >> Check combination meter.

Component Inspection

1.CHECK PARKING BRAKE SWITCH

INFOID:00000006507995

INFOID:000000006507993

PARKING BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

- 1. Turn the ignition switch OFF.
- 2. Disconnect parking brake switch harness connector.

3. Check continuity between parking brake switch harness connector.

Parking brake switch		Condition	Continuity
Terminal		When the parking brake switch is operated.	Existed
1	Ground	When the parking brake switch is not operated.	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace parking brake switch. Refer to <u>PB-4, "Exploded View"</u>.

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VDC OFF SWITCH

< DTC/CIRCUIT DIAGNOSIS >

VDC OFF SWITCH

Description

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

Diagnosis Procedure

INFOID:000000006507997

INFOID:00000006507996

1. CHECK VDC OFF SWITCH CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) harness connector.
- 3. Disconnect VDC OFF switch harness connector.
- 4. Check the continuity between VDC OFF switch harness connector and ABS actuator and electric unit (control unit) harness connector.

ABS actuator and ele	ectric unit (control unit)	VDC OF	FF switch	Continuity
Connector	Terminal	Connector	Terminal	Continuity
E36	21	M5	1	Existed

5. Check the continuity between VDC OFF switch harness connector and ground.

VDC OFF switch			Continuity
Connector	Terminal		Continuity
M5	1	Ground	Not existed
UND -	2	Ground	Existed

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

2. CHECK VDC OFF SWITCH

Check VDC OFF switch. Refer to <u>BRC-81, "Component Inspection"</u>.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace VDC OFF switch. Refer to <u>BRC-116</u>, "Removal and Installation".

$\mathbf{3}$. CHECK TERMINALS AND HARNESS CONNECTORS

1. Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.

2. Check VDC OFF switch pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

4.CHECK VDC OFF SWITCH SIGNAL

Select "ABS", "DATA MONITOR" and "OFF SW" in order with CONSULT-III, and perform the VDC OFF switch inspection.

Condition	OFF SW (DATA MONITOR)
Press the VDC OFF switch when VDC OFF indicator lamp is OFF.	On
Press the VDC OFF switch when VDC OFF indicator lamp is ON.	Off

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u>.

BRC-80

VDC OFF SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Component	Inspection		INFOID:000000006507998	٨
1. CHECK VD	C OFF SWITCH			A
2. Disconnec	nition switch OFF. It VDC OFF switch harness connector continuity between VDC OFF switch			В
VDC OFF switch Terminal	- Condition	Continuity		С
	When VDC OFF switch is hold pressed.	Existed		D
1 – 2	When releasing VDC OFF switch.	Not existed		D
YES >> IN	on result normal? SPECTION END oplace VDC OFF switch. Refer to <u>BRC</u>	C-116, "Removal and Installation".		E
Special Rep	pair Requirement		INFOID:000000006507999	BR
1.ADJUSTME	ENT OF STEERING ANGLE SENSOF	R NEUTRAL POSITION		
Always perform tor and electric	n the neutral position adjustment for t	he steering angle sensor, when replacing ensor and removing steering angle senso		G
>> EN	ID			Η
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				J
				K
				L
				M
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ABS WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

ABS WARNING LAMP

Description

INFOID:000000006508000

[VDC/TCS/ABS]

×: ON –: OFF

Condition ABS warning lamp	
Ignition switch OFF	-
For 1 second after turning ignition switch ON	×
1 second later after turning ignition switch ON	_
ABS function is malfunctioning.	×
EBD function is malfunctioning.	×

Component Function Check

INFOID:000000006508001

INFOID-000000006508002

1.CHECK ABS WARNING LAMP OPERATION

Check that the lamp illuminates for approximately 1 second after the ignition switch is turned ON.

Never start the engine.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to diagnosis procedure. Refer to <u>BRC-82, "Diagnosis Procedure"</u>.

Diagnosis Procedure

1.PERFORM SELF-DIAGNOSIS

Perform self-diagnosis for "ABS" with CONSULT-III.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Check item displayed by self-diagnosis.

2. CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to <u>MWI-29</u>, "Diagnosis Description".

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u>.
- NO >> Repair or replace error-detected parts.

Special Repair Requirement

INFOID:000000006508003

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) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-</u> <u>9, "Special Repair Requirement"</u>

>> END

BRAKE WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

BRAKE WARNING LAMP

Description

[VDC/TCS/ABS]

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	×: ON –: OFF B
Condition	Brake warning lamp (Note 1)
Ignition switch OFF	-
For 1 second after turning ignition switch ON	× (Note 2)
1 second later after turning ignition switch ON	× (Note 2)
ABS function is malfunctioning.	- D
EBD function is malfunctioning.	×
 NOTE: 1: Brake warning lamp will turn on in case of parking brake oper (when brake fluid is insufficient). 2: After starting the engine, brake warning lamp is turned off. 	ration (when switch is ON) or of brake fluid level switch operation \square
Component Function Check	INFOID:000000006508005
	INFOL2.00000000508005
1. BRAKE WARNING LAMP OPERATION CHECK 1	
Check that the lamp illuminates for approximately 1 sec CAUTION: Never start the engine.	cond after the ignition switch is turned ON.
<u>Is the inspection result normal?</u>	Н
YES >> GO TO 2. NO >> Proceed to diagnosis procedure. Refer to B	RC-83 "Diagnosis Procedure"
2. BRAKE WARNING LAMP OPERATION CHECK 2	
Check that the brake warning lamp in the combination n	notor turns ON/OEE correctly when operating the park
ing brake pedal. NOTE:	
Brake warning lamp will turn on in case of parking brak switch operation (when brake fluid is insufficient).	e operation (when switch is ON) or of brake fluid level
Is the inspection result normal?	K
YES >> INSPECTION END	70 "Component Increation"
NO >> Check parking brake switch. Refer to <u>BRC-</u>	
Diagnosis Procedure	INFOID:00000006508006
1. PERFORM SELF-DIAGNOSIS	M
Perform self-diagnosis for "ABS" with CONSULT-III.	
Is the inspection result normal?	Ν
YES >> GO TO 2.	IN
NO >> Check item displayed by self-diagnosis.	
2.CHECK COMBINATION METER	0
Check if the indication and operation of combination metion".	eter are normal. Refer to <u>MWI-29, "Diagnosis Descrip-</u>
Is the inspection result normal?	Р
YES >> Replace ABS actuator and electric unit (cor NO >> Repair or replace error-detected parts.	ntrol unit). Refer to <u>BRC-112, "Exploded View"</u> .
Special Repair Requirement	INFOID:00000006508007
1.ADJUSTMENT OF STEERING ANGLE SENSOR N	EUTRAL POSITION

BRAKE WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-9</u>, "Special Repair Requirement"

>> END

VDC OFF INDICATOR LAMP

< DTC/CIRCUIT DIAGNOSIS >

VDC OFF INDICATOR LAMP

Description

[VDC/TCS/ABS]

INFOID:000000006508008

А

Condition	×: ON -: OFF
Ignition switch OFF	
For 1 second after turning ignition switch ON	
1 second later after turning ignition switch ON	^
VDC OFF switch turned ON. (VDC function is OFF.)	
VDC/TCS function is malfunctioning.	×
ABS function is malfunctioning.	×
EBD function is malfunctioning.	×
	^
Component Function Check	INFOID:000000006508009
1.VDC OFF INDICATOR LAMP OPERATION CHEC	CK 1
Check that the lamp illuminates for approximately 1 s	
CAUTION:	
Never start the engine.	
Is the inspection result normal?	
YES >> GO TO 2. NO >> Proceed to diagnosis procedure. Refer to	PRC 85 "Diagnosis Procedure"
2.VDC OFF INDICATOR LAMP OPERATION CHEC	-
Check that the VDC OFF indicator lamp in the combi VDC OFF switch.	nation meter turns ON/OFF correctly when operating the
Is the inspection result normal?	
YES >> INSPECTION END	
NO >> Check VDC OFF switch. Refer to <u>BRC-8</u>	1. "Component Inspection".
Diagnosis Procedure	INFOID:00000006508010
1.PERFORM SELF-DIAGNOSIS	
Perform self-diagnosis for "ABS" with CONSULT-III.	
Is the inspection result normal?	
YES >> GO TO 2.	
NO >> Check items displayed self-diagnosis.	
2. CHECK COMBINATION METER	
· · · · ·	meter are normal. Refer to MWI-29, "Diagnosis Descrip-
<u>tion"</u> .	
Is the inspection result normal?	
YES >> Replace ABS actuator and electric unit (or NO >> Repair or replace error-detected parts.	control unit). Refer to <u>BRC-112, "Exploded View"</u> .
Special Depair Dequirement	
Special Repair Requirement	INFOID:00000006508011

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-9. "Special Repair Requirement"</u>

< DTC/CIRCUIT DIAGNOSIS >

VDC WARNING LAMP

Description

INFOID:000000006508012

[VDC/TCS/ABS]

×: ON ∆: Blink -	-: OFF
------------------	--------

Condition	VDC warning lamp
Ignition switch OFF	-
For 1 second after turning ignition switch ON	×
1 second later after turning ignition switch ON	-
VDC/TCS is activated while driving	Δ
VDC/TCS function is malfunctioning.	×
ABS function is malfunctioning.	×
EBD function is malfunctioning.	×

Component Function Check

INFOID:000000006508013

INFOID:000000006508014

1.CHECK VDC WARNING LAMP OPERATION

Check that the lamp illuminates for approximately 1 second after the ignition switch is turned ON. CAUTION:

Never start the engine.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to diagnosis procedure. Refer to <u>BRC-86, "Diagnosis Procedure"</u>.

Diagnosis Procedure

1.PERFORM SELF-DIAGNOSIS

Perform self-diagnosis for "ABS" with CONSULT-III.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Check items displayed by self-diagnosis.

2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to <u>MWI-29</u>, "Diagnosis Description".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u>.

NO >> Repair or replace error-detected parts.

Special Repair Requirement

INFOID:000000006508015

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) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-9. "Special Repair Requirement"</u>

>> END

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) [VDC/TCS/ABS]

< ECU DIAGNOSIS INFORMATION >

ECU DIAGNOSIS INFORMATION

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Reference Value

INFOID:000000006508016 В

А

С

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.

		Data monitor	
Monitor item Display content		Condition	Reference value in normal operation
		Vehicle stopped	0 [km/h (MPH)]
FR LH SENSOR	Wheel speed	Vehicle running (Note 1)	Nearly matches the speedometer dis- play (± 10% or less)
		Vehicle stopped	0 [km/h (MPH)]
FR RH SENSOR	Wheel speed	Vehicle running (Note 1)	Nearly matches the speedometer dis- play (± 1% or less)
		Vehicle stopped	0 [km/h (MPH)]
RR LH SENSOR	Wheel speed	Vehicle running (Note 1)	Nearly matches the speedometer dis- play (± 10% or less)
		Vehicle stopped	0 [km/h (MPH)]
RR RH SENSOR Wheel speed	Wheel speed	Vehicle running (Note 1)	Nearly matches the speedometer dis- play (± 10% or less)
BATTERY VOLT	Battery voltage supplied to the ABS actuator and electric unit (control unit)	Ignition switch ON	10 – 16 V
STOP LAMP SW	Stop lamp switch signal status	When brake pedal is depressed	On
		When brake pedal is not depressed	Off
OFF SW	VDC OFF switch ON/OFF	VDC OFF switch ON (When VDC OFF indicator lamp is ON)	On
		VDC OFF switch OFF (When VDC OFF indicator lamp is OF)	Off
		1st gear	0
	Gear position determined by TCM	2nd gear	1
		3rd gear	2
		4th gear	3
GEAR		5th gear	4
		6th gear	5
		7th gear	6
		8th gear	7
		Other	0
SLCT LVR POSI	Sift lever position determined by TCM	Ignition switch ON	P, R, N, D
		Vehicle stopped	Approx. 0 d/s
YAW RATE SEN	Yaw rate detected by yaw rate/side G sensor	Turning right	Negative value
		Turning left	Positive value

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

		Data monitor	
Monitor item	Display content	Condition	Reference value in normal operation
		Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT-III)	On
FR RH IN SOL (Note 2)	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
FR RH OUT SOL		Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT-III)	On
(Note 2)	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
FR LH IN SOL		Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT-III)	On
(Note 2)	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
FR LH OUT SOL		Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT-III)	On
(Note 2)	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
		Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT-III)	On
RR RH IN SOL (Note 2)	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
RR RH OUT SOL (Note 2)	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT-III)	On
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
		Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT-III)	On
RR LH IN SOL (Note 2)	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
		Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT-III)	On
RR LH OUT SOL (Note 2)	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
	Motor and motor relay operation	When the motor relay and motor are operating	On
MOTOR RELAY		When the motor relay and motor are not operating	Off
ACTUATOR RLY	Actuator relay operation	When the actuator relay is operating	On
(Note 2)	Actuator relay operation	When the actuator relay is not operating	Off
ABS WARN LAMP	ABS warning lamp	When ABS warning lamp is ON	On
	(Note 3)	When ABS warning lamp is OFF	Off
OFF LAMP	VDC OFF indicator lamp	When VDC OFF indicator lamp is ON	On
	(Note 3)	When VDC OFF indicator lamp is OFF	Off

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

		Data monitor	
Monitor item	Display content	Condition	Reference value in normal operation
SLIP/VDC LAMP	VDC warning lamp	When VDC warning lamp is ON	On
SLIF/VDC LAWF	(Note 3)	When VDC warning lamp is OFF	Off
	With ignition switch turned ON and brake pedal released	Approx. 0 bar	
FRESS SENSOR	sensor	With ignition switch turned ON and brake pedal depressed	-40 to 300 bar
ACCEL POS SIG	Throttle actuator opening/closing is dis-	Accelerator pedal not depressed (ignition switch is ON)	0 %
ACCEL F 03 513	played (linked with accelerator pedal)	Depress accelerator pedal (ignition switch is ON)	0 - 100 %
		Vehicle stopped	Approx. 0 m/s ²
SIDE G-SENSOR	Transverse G detected by side G sensor	Turning right	Negative value
		Turning left	Positive value
		Driving straight	±2.5°
STR ANGLE SIG	Steering angle detected by steering angle sensor	Turn 90° to right	Approx. +90°
		Turn 90° to left	Approx. –90°
		With engine stopped	0 [tr/min (rpm)]
ENGINE RPM With engine running	With engine running	Engine running	Almost in accor- dance with tachome- ter display
FLUID LEV SW	Proke fluid lovel ouiteb signal status	When brake fluid level switch ON	On
FLUID LEV SVV	Brake fluid level switch signal status	When brake fluid level switch OFF	Off
EBD WARN LAMP	Brake warning lamp	When brake warning lamp is ON	On
	(Note 3)	When brake warning lamp is OFF	Off
CV1	VDC switch-over valve	When actuator (switch-over valve) is ac- tive ("ACTIVE TEST" in "ABS" with CON- SULT-III)	On
		When actuator (switch-over valve) is not active and actuator relay is active (igni- tion switch ON)	Off
01/2	VDC switch-over valve	When actuator (switch-over valve) is ac- tive ("ACTIVE TEST" in "ABS" with CON- SULT-III)	On
CV2		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON)	Off
S\/1	VDC switch-over valve	When actuator (switch-over valve) is ac- tive ("ACTIVE TEST" in "ABS" with CON- SULT-III)	On
SV1		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON)	Off
SV/2	VDC switch-over valve	When actuator (switch-over valve) is ac- tive ("ACTIVE TEST" in "ABS" with CON- SULT-III)	On
SV2		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON)	Off
	EPD operation	EBD is active	On
EBD SIGNAL	EBD operation	EBD is inactive	Off

Revision: 2011 December

< ECU DIAGNOSIS INFORMATION >

		Data monitor	
Monitor item	Display content	Condition	Reference value in normal operation
		ABS is active	On
ABS SIGNAL	ABS operation	ABS is inactive	Off
TCS SIGNAL	TCS encrotion	TCS is active	On
ICS SIGNAL	TCS operation	TCS is inactive	Off
VDC SIGNAL	VDC operation	VDC is active	On
VDC SIGNAL	VDC operation	VDC is inactive	Off
EBD FAIL SIG	EPD foil cofo cignol	In EBD fail-safe	On
EDD FAIL SIG	EBD fail-safe signal	EBD is normal	Off
ABS FAIL SIG	ABS fail-safe signal	In ABS fail-safe	On
ADS FAIL SIG		ABS is normal	Off
TCS FAIL SIG		In TCS fail-safe	On
ICS FAIL SIG	TCS fail-safe signal	TCS is normal	Off
VDC FAIL SIG	VDC fail-safe signal	In VDC fail-safe	On
VDC FAIL SIG		VDC is normal	Off
CRANKING SIG	Crank operation	Crank is active	On
CRAINKING SIG		Crank is inactive	Off
PARK BRAKE SW	Parking brake switch signal status	Parking brake switch is active	On
FARR BRARE SW	Faiking brake switch signal status	Parking brake switch is inactive	Off
		When the solenoid valve relay is active (When ignition switch OFF)	On
V/R OUTPUT	Solenoid valve relay activated	When the solenoid valve relay is not ac- tive (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" in "ABS" with CON- SULT-III)	On
		When the actuator motor and motor relay are inactive	Off

NOTE:

- 1: Confirm tire pressure is normal.
- 2: A brief moment of On/Off condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.
- 3: On and off timing for warning lamp and indicator lamp.
- ABS warning lamp: refer to BRC-82, "Description".
- Brake warning lamp: refer to BRC-83, "Description".
- VDC OFF indicator lamp: refer to BRC-85, "Description".
- VDC warning lamp: refer to BRC-86, "Description".

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) [VDC/TCS/ABS]

DATA LINE

< ECU DIAGNOSIS INFORMATION >

INFOID:000000006508017

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В

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BRC

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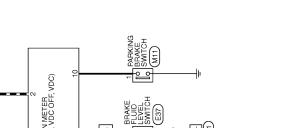
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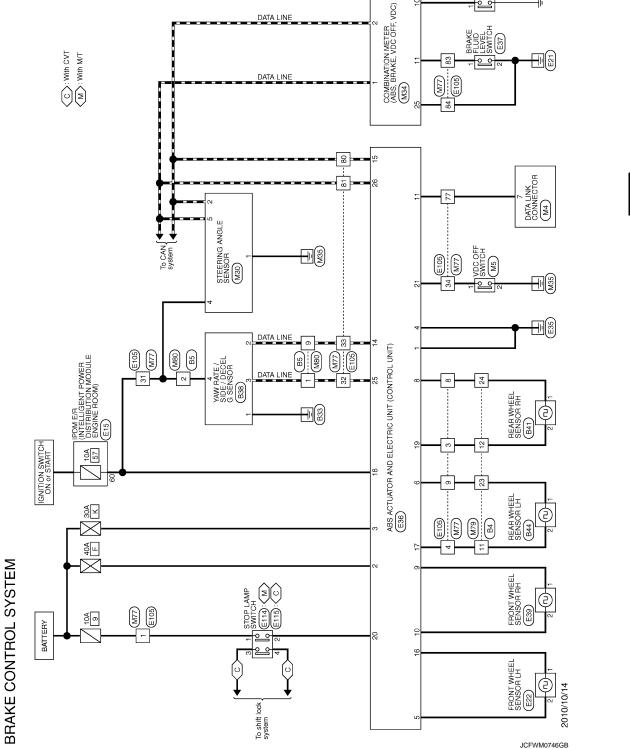
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Wiring Diagram

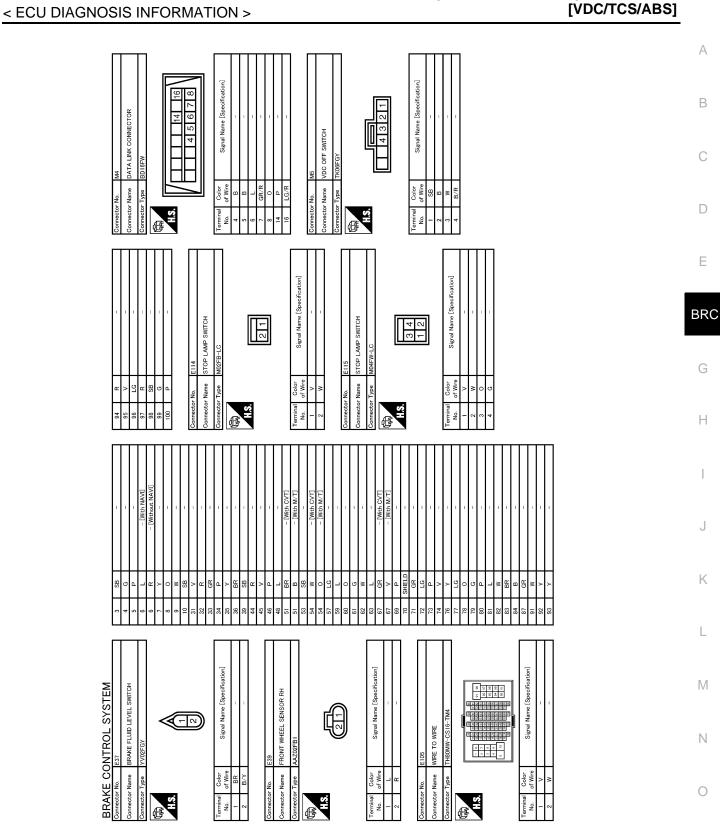




< ECU DIAGNOSIS INFORMATION >

Connector No. E22 Connector Name FRONT WHEEL SENSOR LH Connector Type AZ07FB1 AZ07FB1 AZ07FB1	Terminal No. Color of Wire P Signal Name [Specification] 1 BR - - - -	Terminal (a) Color of Wire of Wire (b) Signal Mame (Specification) 2 Y BAT (MTR) 2 F BAT (MTR) 2 Y BAT (MTR) 2 Y BAT (MTR) 2 Y BAT (MTR) 3 L BAT (MTR) 6 V DF (MTR) 1 BAT (SOL) DF (MTR) 1 BAT (SOL) DF (SOL) 1 C DF (MTR) 10 L DF (MTR) 11 L/G CAN-L 11 STOP LAMP SW STOP LAMP SW 20 W STOP LAMP SW 21 P CAN-H 22 L CAN-H
Connector No. B14 Connector Name REAR WHEEL SENSOR LH Connector Type AAZ02FB1	Terminal or Wine 2 Color or Wine 2 Signal Name [Specification] 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 3 0 0	Terminal Color Signal Name [Specification] 47 W - - 47 W - - 47 W - - 50 GR - - 51 R - - 53 P - - 54 P - - 55 R - - 57 G - - 58 R - - - 57 G - - - 58 Y - - - 59 Y - - - 58 Y - - - 60 V - - - 61 V - - -
6 W - - 8 LG - - 1 0 - - 13 GR - - 14 P - - 16 W - - Commetter No. B33 - - Commetter Name YAN RATE / DECEL 0 SENSOR -		B S S S S S S S S S S S S S S S S S S S
BRAKE CONTROL SYSTEM connector Name B4 Connector Name WRE TO WRE Connector Name MRE TO WRE Connector Type TH2AWV-NIH Connector Type TH2AWV-NIH IT22AWV-NIH IT22AWT-NIH IT22AWT-NIH <t< td=""><td>Territional Mo. Calors Signal Name [Specification] No. of Wire Signal Name [Specification] 1 V - 2 V - 3 O - 4 P - 5 W - 6 GR - 1 G - 11 G - 13 L - 13 L - 13 L - 13 L - 14 BR -</td><td>B5 WIRE TO WIRE THIGHW-NH 112 3 4 5 6 9 100 111 12 13 1</td></t<>	Territional Mo. Calors Signal Name [Specification] No. of Wire Signal Name [Specification] 1 V - 2 V - 3 O - 4 P - 5 W - 6 GR - 1 G - 11 G - 13 L - 13 L - 13 L - 13 L - 14 BR -	B5 WIRE TO WIRE THIGHW-NH 112 3 4 5 6 9 100 111 12 13 1

JCFWM0747GB

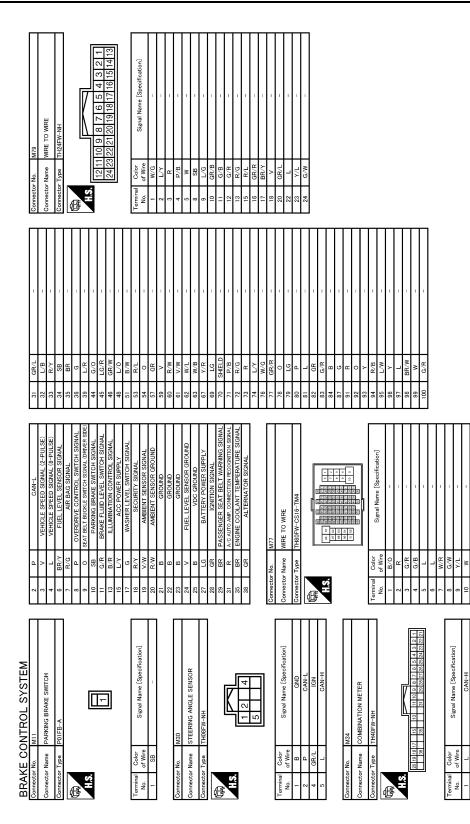


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JCFWM0748GB

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]



JCFWM0749GB

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) [VDC/TCS/ABS] < ECU DIAGNOSIS INFORMATION >

			А
			В
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			BRC
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			J
			K
			L
STEM	Signal Mame [Specification]		M
NNTROL SY MB0 WIRE TO WIRE THIGFW-NH	Signal Nam 1212		Ν
AKE CC estor No. estor Name	Terminal Color 1 1 0 0 0 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0		0
		JCFWM0750GB	Р
Fail-Safe		INFOID:00000006508018	1

VDC, TCS

If VDC/TCS/ABS system malfunction electrically, VDC warning lamp are turned on, and the condition of vehicle is the same as the condition of vehicles without VDC and TCS control. **CAUTION:**

If the Fail-Safe function is activated, then perform self-diagnosis for "ABS" with CONSULT-III.

BRC-95

< ECU DIAGNOSIS INFORMATION >

ABS, EBD SYSTEM

If ABS malfunction electrically, ABS warning lamp, VDC warning lamp will turn on. If EBD malfunction electrically, brake warning lamp, ABS warning lamp, and VDC warning lamp will turn on. Simultaneously, the VDC/TCS/ABS become one of the following conditions of the fail safe function.

• For malfunction of ABS, only the EBD is activated and the condition of vehicle is the same condition of vehicles without TCS/ABS system.

NOTE:

ABS self-diagnosis sound may be heard. That is a normal condition because a self-diagnosis for "Ignition switch ON" and "The first starting" are being performed.

• For malfunction of EBD, EBD and ABS become inoperative, and the condition of vehicle is the same as the condition of vehicles without TCS/ABS, EBD system.

DTC Inspection Priority Chart

INFOID:000000006508019

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

Priority	Detected items (DTC)
1	U1000 CAN COMM CIRCUIT U1002 SYSTEM COMM
2	C1110 CONTROLLER FAILURE C1153 EMERGENCY BRAKE C1170 VARIANT CORDING
3	C1130 ENGINE SIGNAL 1 C1144 ST ANG SEN SIGNAL
4	C1109 BATTERY VOLTAGE [ABNORMAL] C1111 PUMP MOTOR C1140 ACTUATOR RLY
5	 C1101 RR RH SENSOR-1 C1102 RR LH SENSOR-1 C1103 FR RH SENSOR-1 C1104 FR LH SENSOR-1 C1105 RR RH SENSOR-2 C1106 RR LH SENSOR-2 C1107 FR RH SENSOR-2 C1118 SENSOR [ABNORMAL SIGNAL] C1115 ABS SENSOR [ABNORMAL SIGNAL] C1120 FR LH NABS SOL C1120 FR LH NABS SOL C1121 FR LH OUT ABS SOL C1122 FR RH OUT ABS SOL C1123 FR RH OUT ABS SOL C1124 RR LH IN ABS SOL C1125 RLH OUT ABS SOL C1126 RR RH OUT ABS SOL C1127 RR HOUT ABS SOL C1143 ST ANG SEN CIRCUIT C1145 YAW RATE SENSOR C1146 SIDE G-SEN CIRCUIT C1166 SV 1 C1166 SV 1 C1167 SV 2
6	C1167 SV 2 C1155 BR FLUID LEVEL LOW
0	

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) [VDC/TCS/ABS]

< ECU DIAGNOSIS INFORMATION >

DTC Index

INFOID:000000006508020

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DTC	Items (CONSULT screen terms)	Reference	
C1101	RR RH SENSOR-1		E
C1102	RR LH SENSOR-1		
C1103	FR RH SENSOR-1	BRC-28, "DTC Logic"	
C1104	FR LH SENSOR-1		C
C1105	RR RH SENSOR-2		
C1106	RR LH SENSOR-2		E
C1107	FR RH SENSOR-2	BRC-31, "DTC Logic"	
C1108	FR LH SENSOR-2		_
C1109	BATTERY VOLTAGE [ABNORMAL]	BRC-36, "DTC Logic"	E
C1110	CONTROLLER FAILURE	BRC-38, "DTC Logic"	
C1111	PUMP MOTOR	BRC-39, "DTC Logic"	Bł
C1115	ABS SENSOR [ABNORMAL SIGNAL]	BRC-41, "DTC Logic"	
C1116	STOP LAMP SW	BRC-46, "DTC Logic"	
C1120	FR LH IN ABS SOL	BRC-51, "DTC Logic"	(
C1121	FR LH OUT ABS SOL	BRC-53, "DTC Logic"	
C1122	FR RH IN ABS SOL	BRC-51, "DTC Logic"	
C1123	FR RH OUT ABS SOL	BRC-53, "DTC Logic"	
C1124	RR LH IN ABS SOL	BRC-51, "DTC Logic"	
C1125	RR LH OUT ABS SOL	BRC-53, "DTC Logic"	
C1126	RR RH IN ABS SOL	BRC-51, "DTC Logic"	
C1127	RR RH OUT ABS SOL	BRC-53, "DTC Logic"	
C1130	ENGINE SIGNAL 1	BRC-55, "DTC Logic"	
C1140	ACTUATOR RLY	BRC-56, "DTC Logic"	
C1142	PRESS SEN CIRCUIT	BRC-58, "DTC Logic"	k
C1143	ST ANG SEN CIRCUIT	BRC-60, "DTC Logic"	
C1144	ST ANG SEN SIGNAL	BRC-62, "DTC Logic"	
C1145	YAW RATE SENSOR		L
C1146	SIDE G-SEN CIRCUIT	BRC-63, "DTC Logic"	
C1153	EMERGENCY BRAKE	BRC-38, "DTC Logic"	N
C1155	BR FLUID LEVEL LOW	BRC-66, "DTC Logic"	
C1164	CV 1		
C1165	CV 2	BRC-69, "DTC Logic"	Ν
C1166	SV 1		
C1167	SV 2	BRC-71, "DTC Logic"	C
C1170	VARIANT CORDING	BRC-38, "DTC Logic"	
U1000	CAN COMM CIRCUIT	BRC-73, "DTC Logic"	
U1002	SYSTEM COMM	BRC-74, "DTC Logic"	F

EXCESSIVE ABS FUNCTION OPERATION FREQUENCY

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

EXCESSIVE ABS FUNCTION OPERATION FREQUENCY

Diagnosis Procedure

INFOID:000000006508021

1.CHECK START

Check front and rear brake force distribution using a brake tester. Refer to BR-43. "General Specifications". Is the inspection result normal?

YFS >> 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.

• Front: refer to FAX-6, "Inspection".

• Rear: refer to RAX-4, "Inspection".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

 ${f 3.}$ CHECK WHEEL SENSOR AND SENSOR ROTOR

Check the following.

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

Is the inspection result normal?

- YES >> GO TO 4.
- NO >> Replace wheel sensor or sensor rotor.
 - Front wheel sensor: refer to <u>BRC-109</u>, "FRONT WHEEL SENSOR : Exploded View".
 Rear wheel sensor: refer to <u>BRC-110</u>, "REAR WHEEL SENSOR : Exploded View".

 - Front sensor rotor: refer to BRC-111, "FRONT SENSOR ROTOR : Removal and Installation".
 - Rear sensor rotor: refer to BRC-111, "REAR SENSOR ROTOR : Removal and Installation".

4.CHECK ABS WARNING LAMP DISPLAY

Make sure that the ABS warning lamp is turned OFF for approximately 1 second after the ignition switch is turned ON or when driving.

Is the inspection result normal?

- YES >> Normal
- NO >> Perform self-diagnosis for "ABS" with CONSULT-III.

UNEXPECTED PEDAL REACTION

UNEXPECTED PEDAL REACTION

UNEXPECTED PEDAL REACTION	Δ
Diagnosis Procedure	22
1. CHECK BRAKE PEDAL STROKE	В
Check brake pedal stroke. Refer to BR-7, "Inspection and Adjustment".	-
Is the stroke too large?	
 YES >> • Bleed air from brake tube and hose. Refer to <u>BR-11, "Bleeding Brake System"</u>. • Check brake fluid leakage. Refer to <u>BR-10, "Inspection"</u>. 	С
 Check brake pedal, brake booster, and master cylinder for mount play, looseness, etc. Brake pedal: refer to <u>BR-18, "Inspection and Adjustment"</u>. Brake master cylinder: refer to <u>BR-27, "Inspection"</u>. 	D
 Brake booster: refer to <u>BR-29</u>, "Inspection and Adjustment". Front disc brake: refer to <u>BR-38</u>, "<u>BRAKE CALIPER ASSEMBLY</u> : Inspection". Rear drum brake: refer to <u>BR-41</u>, "<u>Inspection and Adjustment</u>". NO >> GO TO 2. 	E
2. CHECK FUNCTION	BRC
 Turn the ignition switch OFF. Disconnect ABS actuator and electric unit (control unit) harness connector to deactivate ABS. Check braking force is normal in this condition. Connect harness connector after inspection. <u>Is the inspection result normal?</u> 	if G
YES >> Normal NO >> Check brake system.	Н
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THE BRAKING DISTANCE IS LONG

Diagnosis Procedure

INFOID:000000006508023

[VDC/TCS/ABS]

CAUTION:

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

1.CHECK FUNCTION

- 1. Turn the ignition switch OFF
- 2. Disconnect ABS actuator and electric unit (control unit) harness connector to deactivate ABS. In this condition, check stopping distance. After inspection, connect harness connector.

Is the inspection result normal?

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

< SYMPTOM DIAGNOSIS >	[VDC/TCS/ABS]
ABS FUNCTION DOES NOT OPERATE	
Diagnosis Procedure	INFOID:00000006508024
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 is turned OFF for approximately 1 second aft turned ON or when driving.	ter the ignition switch is
Is the inspection result normal?	
YES >> Normal NO >> Perform self-diagnosis for "ABS" with CONSULT-III.	

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PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

< SYMPTOM DIAGNOSIS >

PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

Diagnosis Procedure

INFOID:000000006508025

[VDC/TCS/ABS]

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 that there are pedal vibrations when the engine is started.

Do vibrations occur?

YES >> GO TO 2.

NO >> Inspect the brake pedal. Refer to <u>BR-18, "Inspection and Adjustment"</u>.

2.SYMPTOM CHECK 2

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

Do the operation noises occur?

YES >> GO TO 3.

NO >> Perform self-diagnosis for "ABS" with CONSULT-III.

3.SYMPTOM CHECK 3

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

Do symptoms occur?

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

VEHICLE JERKS DURING VDC/TCS/ABS CONTROL < SYMPTOM DIAGNOSIS > [VDC/TCS/ABS]	
VEHICLE JERKS DURING VDC/TCS/ABS CONTROL	A
Diagnosis Procedure	
1. SYMPTOM CHECK	В
Check if the vehicle jerks during VDC/TCS/ABS control. Is the inspection result normal?	-
YES >> Normal. NO >> GO TO 2.	С
2. CHECK SELF-DIAGNOSIS RESULTS	D
Perform self-diagnosis for "ABS" with CONSULT-III.	-
Is the inspection result normal? YES >> GO TO 3. NO >> Check corresponding items, make repairs, and perform self-diagnosis for "ABS" with CONSULT III.	E
3. CHECK CONNECTOR	BR
 Turn the ignition switch OFF. Disconnect ABS actuator and electric unit (control unit) harness connector, and terminal for deformation disconnection, looseness, etc. Securely connect harness connectors and perform ABS actuator and electric unit (control unit) self-diag nosis. 	G
Is the inspection result normal?	Н
YES >> GO TO 4. NO >> If poor contact, damage, open or short circuit of harness connector is found, repair or replace. 4. CHECK ECM AND TCM SELF-DIAGNOSIS RESULTS	I

Perform self-diagnosis for "ENGINE" and "TRANSMISSION" with CONSULT-III.

Are self-diagnosis results indicated?

YES >> Check the corresponding items.

NO >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112, "Exploded View"</u>.

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< SYMPTOM DIAGNOSIS >

NORMAL OPERATING CONDITION

Description

INFOID:000000006508027

Symptom	Result	
Slight vibrations are felt on the brake pedal and the operation noises occur, when VDC, TCS or ABS is activated.		
Stopping distance is longer than that of vehicles without ABS when the vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.	This is a normal condi- tion due to the VDC, TCS or ABS activation.	
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 a 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 VDC warning 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 con-	
VDC may not operate normally or the ABS warning lamp and VDC warning lamp may illuminate, when run- ning on a special road that is extremely slanted (e.g. bank in a circuit course).	dition is restored, there is no malfunction. At	
A malfunction may occur in the yaw rate/side 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).	that time, erase the self diagnosis memory.	
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 be- fore performing an in- spection on a chassis dynamometer.)	
VDC warning lamp may simultaneously turn on when low tire pressure warning lamp turns on.	This is not a VDC sys- tem error but results from characteristic change of tire.	

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INFOID:000000006508030

< PRECAUTION > PRECAUTION PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT **PRE-TENSIONER**" INFOID:000000006508028

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. D Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, all maintenance must be performed by BRC 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 "SRS AIR BAG".
- Never 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

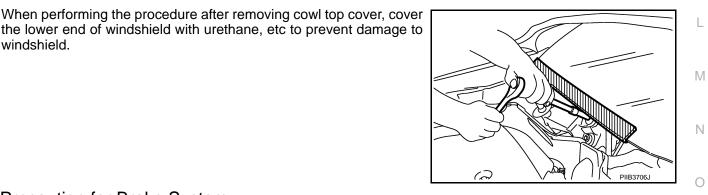
WARNING:

windshield.

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never 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 iniury.
- 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 Procedure without Cowl Top Cover



Precaution for Brake System

INFOID:000000006508031

WARNING:

Clean any dust from the front brake and rear brake with a vacuum dust collector. Never blow with compressed air.

- Brake fluid use refer to MA-10, "Fluids and Lubricants".
- Never reuse drained brake fluid.
- Never 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.

BRC-105

PRECAUTIONS

< PRECAUTION >

- Never use mineral oils such as gasoline or light oil. 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 crowfoot (A) and torque wrench (B).
- Always conform the specified tightening torque when installing the brake pipes.
- Brake system is an important safety part. If a brake fluid leak is detected, always disassemble the affected part. If a malfunction is detected, replace part with a new one.
- 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.

Precaution for Brake Control

- JPFIA0001ZZ INFOID:000000006508032
- Slight vibrations are felt on the brake pedal and the operation noises occur, when VDC, TCS or ABS is activated.
- When starting engine or when starting vehicle just after starting engine, brake pedal may vibrate or motor operating noise may be heard from engine compartment. This is normal condition.
- Stopping distance is longer than that of vehicles without ABS when the vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.
- 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 estimate 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.
- VDC system may not operate normally or a VDC warning 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.

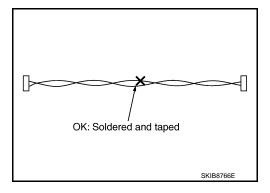
Precautions for Harness Repair

INFOID:000000006508033

COMMUNICATION LINE

 Solder the repaired area and wrap tape around the soldered area. NOTE:

A fray of twisted lines must be within 110 mm (4.33 in).



[VDC/TCS/ABS]



PRECAUTIONS

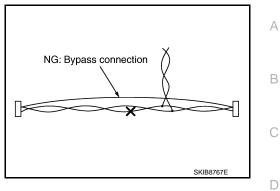
< PRECAUTION >

[VDC/TCS/ABS]

• Bypass connection is never allowed at the repaired area. **NOTE:**

Bypass connection may cause communication error as spliced wires that are separate from the main line or twisted lines lose noise immunity.

 Replace the applicable harness as an assembly if error is detected on the shield lines of communication line.



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< PREPARATION > PREPARATION

PREPARATION

Commercial Service Tools

INFOID:000000006508034

Tool name		Description
Power tool	PBIC0190E	Loosening bolts and nuts

WHEEL SENSOR [VDC/TCS/ABS] < REMOVAL AND INSTALLATION > **REMOVAL AND INSTALLATION** А WHEEL SENSOR FRONT WHEEL SENSOR В FRONT WHEEL SENSOR : Exploded View INFOID:000000006508035 SEC. 476 D Е BRC Н 🚇 10.0 (1.0, 89) 5 JPFIC0038GB 1. Front LH wheel sensor 2. Front LH wheel sensor harness con-Κ nector A. Color line L : Vehicle front Refer to GI-4, "Components" for symbols in the figure. NOTE: Μ The above figure (front side) shows left side. Right side is the mirror image. FRONT WHEEL SENSOR : Removal and Installation INFOID:000000006508036 Ν REMOVAL Remove the fender protector. Refer to <u>EXT-22, "FENDER PROTECTOR : Exploded View"</u>. 2. Remove the wheel sensor from steering knuckle. **CAUTION:** Never twist sensor harness as much as possible, when removing it. Pull wheel sensors out without pulling sensor harness. Ρ 3. Remove the wheel sensor harness from vehicle. **CAUTION:** Never twist sensor harness as much as possible, when removing it. Pull wheel sensors out without pulling sensor harness. INSTALLATION

Note the following, and install in the reverse order of the removal.

• Make sure there is no foreign material such as iron chips on and in the mounting hole of the wheel sensor.

BRC-109

WHEEL SENSOR

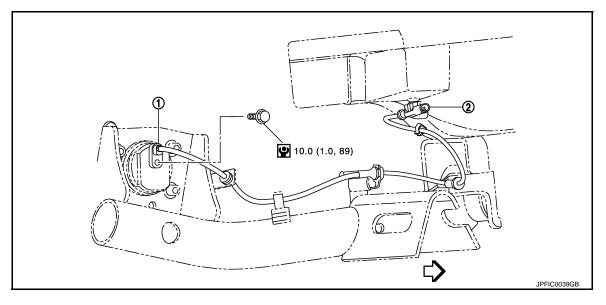
< REMOVAL AND INSTALLATION >

- Make sure no foreign material has been caught in the sensor rotor. Remove any foreign material and clean the mount. Replace the wheel sensor if necessary.
- When installing wheel sensor, be sure to press rubber grommets in until they lock at locations shown above in the figure. When installed, harness must not be twisted.

REAR WHEEL SENSOR

REAR WHEEL SENSOR : Exploded View

INFOID:000000006508037



1. Rear LH wheel sensor

2. Rear LH wheel sensor harness connector

C: Vehicle front

Refer to GI-4, "Components" for symbols in the figure.

REAR WHEEL SENSOR : Removal and Installation

INFOID:000000006508038

REMOVAL

1. Remove wheel sensor from wheel hub and bearing assembly. CAUTION:

Never twist sensor harness as much as possible, when removing it. Pull wheel sensors out without pulling sensor harness.

2. Remove wheel sensor harness from vehicle. CAUTION:

Never twist sensor harness as much as possible, when removing it. Pull wheel sensors out without pulling sensor harness.

INSTALLATION

Note the following, and install in the reverse order of the removal.

- Make sure there is no foreign material such as iron chips on and in the mounting hole of the wheel sensor.
- Make sure no foreign material has been caught in the sensor rotor. Remove any foreign material and clean the mount. Replace the wheel sensor if necessary.
- When installing wheel sensor, be sure to press rubber grommets in until they lock at locations shown above in the figure. When installed, harness must not be twisted.

SENSOR ROTOR	
REMOVAL AND INSTALLATION >	[VDC/TCS/ABS]
SENSOR ROTOR	
RONT SENSOR ROTOR	
RONT SENSOR ROTOR : Removal and Installation	INFOID:000000006508039
AUTION:	
ensor rotor cannot be disassembled. Remove the sensor rotor together with hul	b bearing assembly.
EMOVAL	
emove the wheel hub and bearing assembly. Refer to FAX-8. "Exploded View".	
NSTALLATION Install the wheel hub and bearing assembly. Refer to <u>FAX-8, "Exploded View"</u> .	
RONT SENSOR ROTOR : Disassembly and Assembly	INFOID:000000006508040
ensor rotor cannot be disassembled. Remove the sensor rotor together with hub beari	ng assembly.
EAR SENSOR ROTOR : Removal and Installation	INFOID:000000006508041
AUTION:	
ensor rotor cannot be disassembled. Remove the sensor rotor together with hul	b bearing assembly.
EMOVAL	
temove the wheel hub and bearing assembly. Refer to <u>RAX-5, "Exploded View"</u> .	
NSTALLATION nstall the wheel hub and bearing assembly. Refer to <u>RAX-5, "Exploded View"</u> .	
EAR SENSOR ROTOR : Disassembly and Assembly	INFOID:000000006508042
ensor rotor cannot be disassembled. Remove the sensor rotor together with hub beari	ng assembly.

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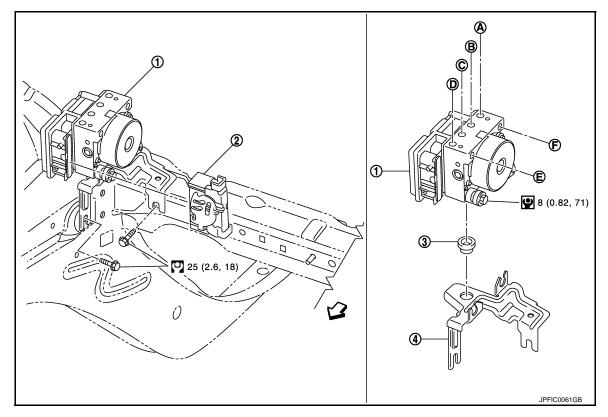
< REMOVAL AND INSTALLATION >

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Exploded View

INFOID:000000006508043

[VDC/TCS/ABS]



- 1. ABS actuator and electric unit (control 2. Harness connector unit)
- 4. Bracket
- A. To front LH brake caliper
- D. To front RH brake caliper
- ∠: Vehicle front

Refer to <u>GI-4, "Components"</u> for symbols in the figure.

Removal and Installation

REMOVAL

- 1. Disconnect the battery cable from negative terminal.
- 2. Remove cowl top cover and extension cowl top. Refer to <u>BR-20, "FRONT : Exploded View"</u>.
- 3. Drain brake fluid. Refer to <u>BR-10, "Draining"</u>.
- 4. Disconnect ABS actuator and electric unit (control unit) harness connector.

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 Loosen brake tube flare nuts, and then remove brake tubes from ABS actuator and electric unit (control unit). Refer to <u>BR-20, "FRONT : Exploded View"</u>. CAUTION:

To rear RH wheel cylinder

To master cylinder secondary side

- Never scratch the flare nut and the brake tube.
- 6. Remove ABS actuator and electric unit (control unit) and bracket from vehicle. CAUTION:
 - Never apply excessive impact to ABS actuator and electric unit (control unit), such as dropping it.
 - Never remove actuator by holding harness.
- 7. Remove bracket and bush from ABS actuator and electric unit (control unit).

C. To Rear LH wheel cylinderF. To master cylinder primary side

3. Bushing

INFOID:00000006508044

Revision: 2011 December

BRC-112

< REMOVAL AND INSTALLATION > [V	/DC/TCS/ABS]
INSTALLATION	
 Note the following, and install in the reverse order of removal. Install, use flare nut crowfoot and torque wrench. Refer to <u>BR-20, "FRONT : Exploded View</u> CAUTION: 	<u>"</u> .
 Never scratch the flare nut and the brake tube. Never apply excessive impact to ABS actuator and electric unit (control unit), such as dropp Never install actuator by holding harness. 	bing it.
 Installing harness connector in the ABS actuator and electric unit (control unit), make sure l tor is securely locked. 	harness connec-
Adjustment	INFOID:000000006508045
ADJUSTMENT AFTER INSTALLATION	
1. Refill with new brake fluid and perform the air bleeding. Refer to <u>BR-11. "Bleeding Brake</u> CAUTION:	<u>System"</u> .
Never reuse drained brake fluid.	
 When replacing ABS actuator and electric unit (control unit), make sure adjust neutral po- angle sensor. Refer to <u>BRC-9, "Description"</u>. 	sition of steering

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YAW RATE/SIDE G SENSOR

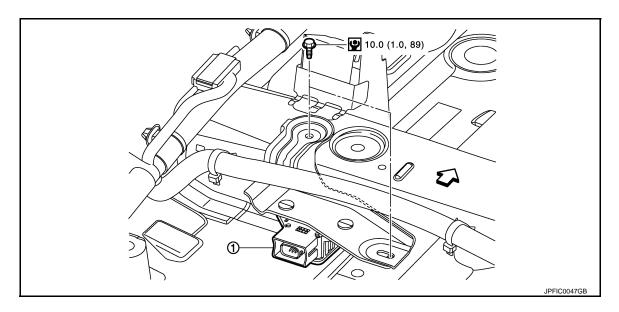
< REMOVAL AND INSTALLATION >

YAW RATE/SIDE G SENSOR

Exploded View

INFOID:000000006508046

[VDC/TCS/ABS]



1. Yaw rate/side G sensor

∠: Vehicle front Refer to <u>GI-4, "Components"</u> for symbols in the figure.

Removal and Installation

INFOID:000000006508047

REMOVAL

CAUTION:

- Never drop or strike yaw rate/side G sensor, or never use power tool etc., because yaw rate/side G sensor is sensitive to the impact.
- 1. Remove front (left side) seat. Refer to <u>SE-17, "Exploded View"</u>.
- 2. Remove dash side finisher and front kicking plate inner. Refer to INT-16, "Exploded View".
- 3. Remove floor trim. Refer to INT-19, "Exploded View".
- 4. Disconnect yaw rate/side G sensor harness connector.
- 5. Remove yaw rate/side G sensor.

INSTALLATION

Note the following, and install in the reverse order of removal.

• Never drop or strike yaw rate/side G sensor, or never use power tool etc., because yaw rate/side G sensor is sensitive to the impact.

STEERING ANGLE SENSOR

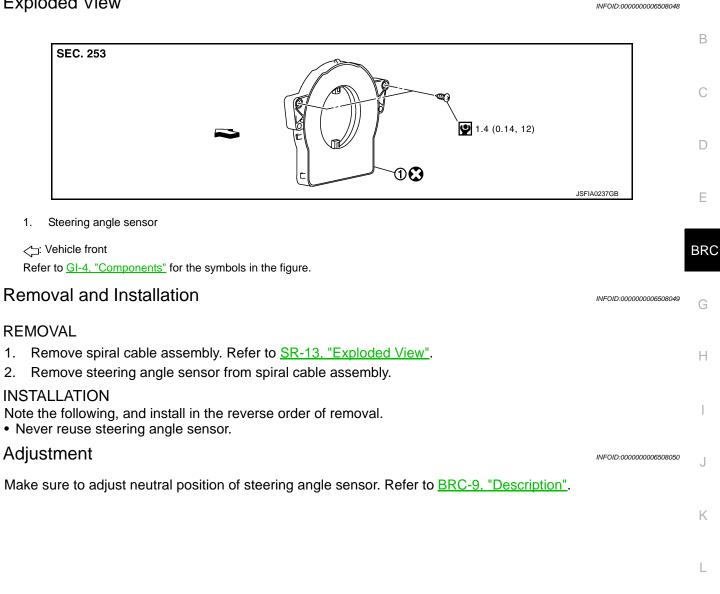
< REMOVAL AND INSTALLATION >

STEERING ANGLE SENSOR

Exploded View

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[VDC/TCS/ABS]



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< REMOVAL AND INSTALLATION >

VDC OFF SWITCH

Removal and Installation

REMOVAL

- 1. Remove Instrument lower panel LH. Refer to <u>IP-12, "Exploded View"</u>.
- 2. Remove VDC OFF switch.

INSTALLATION

Install in the reverse order of removal.

INFOID:000000006508051