

 $\mathsf{D}$ 

Ε

# **CONTENTS**

TYPE 1	Component Parts Location1	8 <b>B</b>
	Component Description1	
BASIC INSPECTION7	TOO	•
ADDI ICATION NOTICE	TCS	- / -
APPLICATION NOTICE7	System Diagram	
Application Notice7	System Description	
DIAGNOSIS AND REPAIR WORKFLOW 8	Component Parts Location	
Work Flow8	Component Description2	2
Diagnostic Work Sheet11	ABS2	3
-	System Diagram2	
INSPECTION AND ADJUSTMENT12	System Description2	
ADDITIONAL OFFICE WHEN BERLAGING	Component Parts Location2	
ADDITIONAL SERVICE WHEN REPLACING	Component Description2	5
ADDITIONAL SERVICE WHEN REPLACING	·	J
	EBD2	
CONTROL UNIT : Description12 ADDITIONAL SERVICE WHEN REPLACING	System Diagram2	
	System Description2	
CONTROL UNIT : Special Repair Requirement12	Component Parts Location2	
ADJUSTMENT OF STEERING ANGLE SENSOR	Component Description2	8
ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description	DIAGNOSIS SYSTEM [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]2 CONSULT-III Function (ABS)	9  }
CALIBRATION OF DECEL G SENSOR13	APPLICATION NOTICE	
CALIBRATION OF DECEL G SENSOR : Descrip-	Application Notice3	3
tion13	C1101, C1102, C1103, C1104 WHEEL SEN-	
CALIBRATION OF DECEL G SENSOR: Special	SOR-13	4 0
Repair Requirement13	Description	
	DTC Logic3	
SYSTEM DESCRIPTION15	Diagnosis Procedure3	
APPLICATION NOTICE15	Component Inspection	
	Special Repair Requirement3	6
Application Notice15		
VDC16	C1105, C1106, C1107, C1108 WHEEL SEN-	
System Diagram16	SOR-23	7
Hydraulic Circuit Diagram16	Description3	7
Cystem Description 47	DTC Logic 3	7

Diagnosis Procedure	37	Description	58
Component Inspection	39	DTC Logic	
Special Repair Requirement	39	Diagnosis Procedure	58
C1109 POWER AND GROUND SYSTEM	40	C1140 ACTUATOR RLY	59
Description	40	Description	
DTC Logic		DTC Logic	59
Diagnosis Procedure		Diagnosis Procedure	59
Special Repair Requirement		Component Inspection	
C1110, C1170 ABS ACTUATOR AND ELEC-		Special Repair Requirement	
TRIC UNIT (CONTROL UNIT)		C1143, C1144 STEERING ANGLE SENSOR.	61
DTC Logic		Description	
Diagnosis Procedure		DTC Logic	
Special Repair Requirement		Diagnosis Procedure	
Special Repail Requirement	42	Component Inspection	
C1111 ABS MOTOR, MOTOR RELAY SYS-		Special Repair Requirement	
TEM	43		
Description		C1155 BRAKE FLUID LEVEL SWITCH	64
DTC Logic		Description	64
Diagnosis Procedure		DTC Logic	64
Component Inspection		Diagnosis Procedure	
Special Repair Requirement		Component Inspection	
oposiai regaii regaii onione		Special Repair Requirement	
C1113, C1145, C1146 YAW RATE/SIDE/DE-			
CEL G SENSOR	45	C1156 ST ANG SEN COM CIR	67
Description		Description	67
DTC Logic		DTC Logic	67
Diagnosis Procedure		Diagnosis Procedure	67
Component Inspection			
Special Repair Requirement		C1160 DECEL G SEN SET	
Opedia Repair Requirement	40	Description	
C1115 WHEEL SENSOR	47	DTC Logic	
Description	47	Diagnosis Procedure	68
DTC Logic		04400 07 ANOLE OFN OAFF	
Diagnosis Procedure		C1163 ST ANGLE SEN SAFE	
Component Inspection		Description	
Special Repair Requirement		DTC Logic	
		Diagnosis Procedure	69
C1116 STOP LAMP SWITCH	50	C1164, C1165, C1166, C1167 CV/SV SYS-	
Description	50	TEM	70
DTC Logic	50		
Diagnosis Procedure	50	Description	
Special Repair Requirement	51	DTC Logic	
		Diagnosis Procedure	
C1120, C1122, C1124, C1126 IN ABS SOL .		Component Inspection	
Description		Special Repair Requirement	72
DTC Logic		U1000 CAN COMM CIRCUIT	73
Diagnosis Procedure		Description	
Component Inspection		•	
Special Repair Requirement	53	DTC Logic	
04404 04400 04405 04405 0115 470 001		Diagnosis Procedure	/ 3
C1121, C1123, C1125, C1127 OUT ABS SOL		VDC OFF SWITCH	74
Description		Description	
DTC Logic		Component Function Check	
Diagnosis Procedure		·	
Component Inspection	56	Diagnosis Procedure	
Special Repair Requirement	56	Component Inspection	
04400 04404 04400 04400 04400 511		Special Repair Requirement	/5
C1130, C1131, C1132, C1133, C1136 EN-		ABS WARNING LAMP	76
GINE SIGNAL	58		•

	BRC	
	G	
	Н	
1	ı	
	I	

Description	76	Diagnosis Procedure	102	
Component Function Check	76	VEHIOLE JEDICO DUDINO VIDO/TOO/ADO		Α
Diagnosis Procedure	76	VEHICLE JERKS DURING VDC/TCS/ABS		
Special Repair Requirement	76	CONTROL		
DDAKE WARNING LAMB		Diagnosis Procedure	103	В
BRAKE WARNING LAMP		NORMAL OPERATING CONDITION	404	D
Description				
Component Function Check		Description	104	
Diagnosis Procedure		PRECAUTION	105	С
Special Repair Requirement	77	TILOAOTION	. 103	
VDC OFF INDICATOR LAMP	70	PRECAUTIONS	. 105	
		Precaution for Supplemental Restraint System		D
Description		(SRS) "AIR BAG" and "SEAT BELT PRE-TEN-		
Component Function Check		SIONER"	105	
Diagnosis Procedure		Precaution Necessary for Steering Wheel Rota-		Е
Special Repair Requirement	79	tion After Battery Disconnect	105	_
SLIP INDICATOR LAMP	80	Precaution for Brake System		
Description		Precaution for Brake Control		
Component Function Check		Precaution for CAN System		BR
Diagnosis Procedure		1 resolution of the cystem	107	
		PREPARATION	. 108	
Special Repair Requirement	60			G
ECU DIAGNOSIS INFORMATION	81	PREPARATION		
		Special Service Tool	108	
APPLICATION NOTICE	81	Commercial Service Tool	109	Н
Application Notice	81			11
• •		UNIT REMOVAL AND INSTALLATION	. 110	
ABS ACTUATOR AND ELECTRIC UNIT		WHEEL CENCODO	446	
(CONTROL UNIT)		WHEEL SENSORS		
Reference Value	82	Removal and Installation	110	
Fail-Safe	86	SENSOR ROTOR	111	
DTC No. Index	86	Removal and Installation		J
		Removal and installation		
WIRING DIAGRAM	88	<b>ACTUATOR AND ELECTRIC UNIT (ASSEM-</b>	•	
BRAKE CONTROL SYSTEM - VDC	00	BLY)		Κ
		Removal and Installation		I.
Wiring Diagram - With VQ40DE	88			
SYMPTOM DIAGNOSIS	96	STEERING ANGLE SENSOR	. 114	
	50	Removal and Installation	114	L
APPLICATION NOTICE	96			
Application Notice		YAW RATE/SIDE/DECEL G SENSOR		
		Removal and Installation	115	M
VDC/TCS/ABS	97	TYPE 2		
Symptom Table	97	DAGIG INGDEGTION		
		BASIC INSPECTION	. 116	Ν
EXCESSIVE ABS FUNCTION OPERATION		APPLICATION NOTICE	440	IN
FREQUENCY				
Diagnosis Procedure	98	Application Notice	116	
UNEXPECTED BEDAL BEACTION	00	DIAGNOSIS AND REPAIR WORKFLOW	117	0
UNEXPECTED PEDAL REACTION		Work Flow		
Diagnosis Procedure	99	Diagnostic Work Sheet		
THE BRAKING DISTANCE IS LONG	100	Diagnostic Work Officet	120	Р
Diagnosis Procedure		INSPECTION AND ADJUSTMENT	. 121	
Diagnosis i Toocaule	100			
ABS FUNCTION DOES NOT OPERATE	101	ADDITIONAL SERVICE WHEN REPLACING		
Diagnosis Procedure		CONTROL UNIT	121	
•	= •	ADDITIONAL SERVICE WHEN REPLACING		
PEDAL VIBRATION OR ABS OPERATION		CONTROL UNIT : Description	121	
SOUND OCCURS	102			

ADDITIONAL SERVICE WHEN REPLACING	Special Repair Requirement	146
CONTROL UNIT : Special Repair Requirement121	C1105, C1106, C1107, C1108 WHEEL SEN	_
ADJUSTMENT OF STEERING ANGLE SENSOR	SOR-2	
NEUTRAL POSITION121	Description	
ADJUSTMENT OF STEERING ANGLE SENSOR	DTC Logic	
NEUTRAL POSITION : Description121	Diagnosis Procedure	
ADJUSTMENT OF STEERING ANGLE SENSOR	Component Inspection	
NEUTRAL POSITION : Special Repair Require-	Special Repair Requirement	
ment121		
CALIBRATION OF DECEL G SENSOR122	C1109 POWER AND GROUND SYSTEM	
CALIBRATION OF DECEL G SENSOR : Descrip-	Description	
tion122	DTC Logic	
CALIBRATION OF DECEL G SENSOR : Special	Diagnosis Procedure	
Repair Requirement122	Special Repair Requirement	151
	C1110, C1170 ABS ACTUATOR AND ELEC	
SYSTEM DESCRIPTION124	TRIC UNIT (CONTROL UNIT)	
APPLICATION NOTICE124	DTC Logic	
Application Notice	Diagnosis Procedure	
•	Special Repair Requirement	152
VDC125	C1111 ABS MOTOR, MOTOR RELAY SYS	-
System Diagram	TEM	
Hydraulic Circuit Diagram125	Description	
System Description	DTC Logic	
Component Parts Location	Diagnosis Procedure	
Component Description128	Component Inspection	
TCS 129	Special Repair Requirement	
System Diagram129		
System Description129	C1113, C1145, C1146 YAW RATE/SIDE/DE	
Component Parts Location	CEL G SENSOR	155
Component Description131	Description	155
Component Becomption	DTC Logic	155
ABS 132	Diagnosis Procedure	
System Diagram132	Component Inspection	156
System Description132	Special Repair Requirement	156
Component Parts Location133	C444E WHEEL CENCOR	
Component Description134	C1115 WHEEL SENSOR	
EDD 105	Description	
EBD	DTC Logic	
System Diagram	Diagnosis Procedure	
System Description	Component Inspection	
Component Parts Location	Special Repair Requirement	159
Component Description137	C1116 STOP LAMP SWITCH	160
DIAGNOSIS SYSTEM [ABS ACTUATOR	Description	160
AND ELECTRIC UNIT (CONTROL UNIT)] 138	DTC Logic	160
CONSULT-III Function (ABS)138	Diagnosis Procedure	160
, ,	Special Repair Requirement	161
DTC/CIRCUIT DIAGNOSIS143	C1120, C1122, C1124, C1126 IN ABS SOL	162
APPLICATION NOTICE143	Description	
Application Notice143	DTC Logic	
• •	Diagnosis Procedure	
C1101, C1102, C1103, C1104 WHEEL SEN-	Component Inspection	
SOR-1144	Special Repair Requirement	
Description144		
DTC Logic144	C1121, C1123, C1125, C1127 OUT ABS SO	
Diagnosis Procedure144	Description	
Component Inspection146	DTC Logic	165

Diagnosis Procedure165	Special Repair Requirement	.186	
Component Inspection166	04470 04404 04404 04400 400 400		
Special Repair Requirement166	C1178, C1181, C1184, C1189 ABS ACTIVE		
04400 04404 04400 04400 04400 EN	BOOSTER		
C1130, C1131, C1132, C1133, C1136 EN-	Description		E
GINE SIGNAL168	DTC Logic		
Description	Diagnosis Procedure		
DTC Logic 168	Component Inspection		
Diagnosis Procedure168	Special Repair Requirement	.188	(
C1140 ACTUATOR RLY169	C1179 ABS DELTA S SEN NG	. 190	
Description169	Description		[
DTC Logic169	DTC Logic		L
Diagnosis Procedure169	Diagnosis Procedure		
Component Inspection	Component Inspection		
Special Repair Requirement	Special Repair Requirement		-
C1142 PRESS SENSOR171	U1000 CAN COMM CIRCUIT	102 -	
Description	Description		
DTC Logic	DTC Logic		ВІ
•			
Diagnosis Procedure (Front Pressure Sensor) 171 Diagnosis Procedure (Rear Pressure Sensor) 172	Diagnosis Procedure	. 192	
Component Inspection (Front Pressure Sensor) 173	VDC OFF SWITCH	. 193	(
Component Inspection (Rear Pressure Sensor) 173	Description		
	Component Function Check		
Special Repair Requirement173	Diagnosis Procedure		ŀ
C1143, C1144 STEERING ANGLE SENSOR 175	Component Inspection		- 1
Description	Special Repair Requirement		
DTC Logic	opeoidi repaii requiicinent	. 104	
Diagnosis Procedure	ABS WARNING LAMP	. 195	
Component Inspection	Description	. 195	
Special Repair Requirement	Component Function Check		
Special Repail Requirement	Diagnosis Procedure	. 195	
C1155 BRAKE FLUID LEVEL SWITCH 178	Special Repair Requirement		
Description			
DTC Logic 178	BRAKE WARNING LAMP	. 196	ŀ
Diagnosis Procedure178	Description		ľ
Component Inspection179	Component Function Check	. 196	
Special Repair Requirement	Diagnosis Procedure	. 196	
	Special Repair Requirement	. 196	
C1156 ST ANG SEN COM CIR181	VDC OFF INDICATOR LAMP	407	
Description181			
DTC Logic181	Description		1
Diagnosis Procedure181	Component Function Check		
C44C0 DECEL C CEN CET	Diagnosis Procedure		
C1160 DECEL G SEN SET182	Special Repair Requirement	. 198	N
Description	SLIP INDICATOR LAMP	199	
DTC Logic	Description		
Diagnosis Procedure182	Component Function Check		
C1163 ST ANGLE SEN SAFE183			(
	Diagnosis Procedure		
Description	Special Repair Requirement	. 199	
DTC Logic	ECU DIAGNOSIS INFORMATION	200	F
-			
C1164, C1165, C1166, C1167 CV/SV SYS-	Application Notice		
TEM184	Application Notice	.∠∪∪	
Description	ABS ACTUATOR AND ELECTRIC UNIT		
DTC Logic184		204	
Diagnosis Procedure184	(CONTROL UNIT)		
Component Inspection 185	Reference Value	.201	

Fail-Safe	205	Description	223
DTC No. Index	205	PRECAUTION	224
WIRING DIAGRAM	207	PRECAUTIONS	
BRAKE CONTROL SYSTEM - VDC Wiring Diagram - With VK56DE		Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TEN-	
SYMPTOM DIAGNOSIS		SIONER"Precaution Necessary for Steering Wheel Rota	224
APPLICATION NOTICE		tion After Battery Disconnect  Precaution for Brake System  Precaution for Brake Control	225
VDC/TCS/ABSSymptom Table		Precaution for CAN System	226
• •		PREPARATION	227
FREQUENCYDiagnosis Procedure	217	PREPARATION	227
UNEXPECTED PEDAL REACTION Diagnosis Procedure		UNIT REMOVAL AND INSTALLATION	
THE BRAKING DISTANCE IS LONG  Diagnosis Procedure		WHEEL SENSORS	
ABS FUNCTION DOES NOT OPERATE .  Diagnosis Procedure		SENSOR ROTOR	
PEDAL VIBRATION OR ABS OPERATIO	NI.	ACTUATOR AND ELECTRIC UNIT (ASSEM	/1-
SOUND OCCURS  Diagnosis Procedure	221	Removal and Installation	
VEHICLE JERKS DURING VDC/TCS/ABS	3	STEERING ANGLE SENSOR	
Diagnosis Procedure		YAW RATE/SIDE/DECEL G SENSOR	234
NORMAL OPERATING CONDITION	223	Removal and Installation	234

# **APPLICATION NOTICE**

< BASIC INSPECTION > [TYPE 1]

# **BASIC INSPECTION**

# **APPLICATION NOTICE**

Application Notice

Service information	Remarks
TYPE 1	VDC/TCS/ABS (VQ40DE)
TYPE 2	VDC/TCS/ABS (VK56DE)

BRC

Α

В

С

 $\mathsf{D}$ 

Е

G

Н

.

J

K

L

M

Ν

0

#### **DIAGNOSIS AND REPAIR WORKFLOW**

< BASIC INSPECTION > [TYPE 1]

# DIAGNOSIS AND REPAIR WORKFLOW

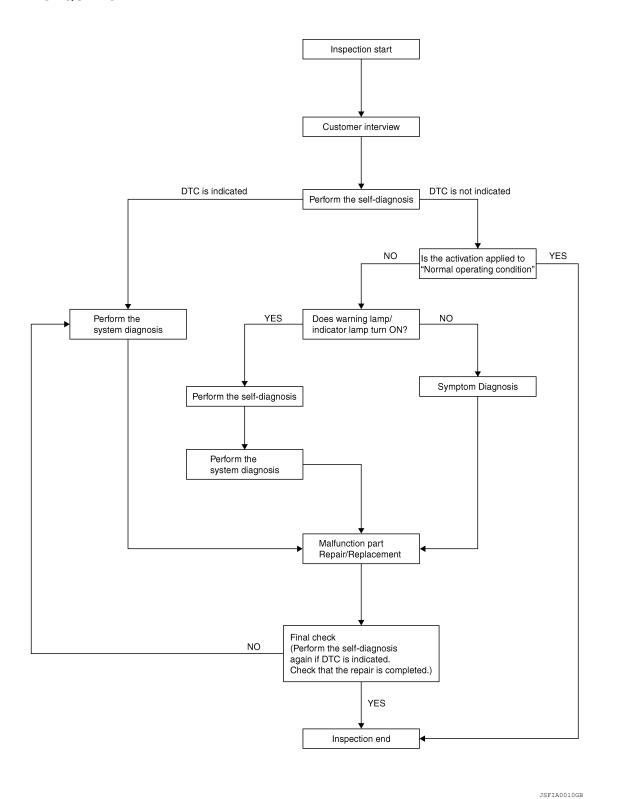
Work Flow

#### 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 <a href="https://example.com/BRC-12">BRC-12</a>. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

< BASIC INSPECTION > [TYPE 1]

**OVERALL SEQUENCE** 



OSFIA

Α

В

D

Е

**BRC** 

Ν

Р

### **DETAILED FLOW**

# 1. COLLECT THE INFORMATION FROM THE CUSTOMER

Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the diagnosis worksheet. Refer to <a href="BRC-11">BRC-11</a>, "Diagnostic Work Sheet".

>> GO TO 2

### **DIAGNOSIS AND REPAIR WORKFLOW**

< BASIC INSPECTION > [TYPE 1]

# 2.perform the self-diagnosis

Check the DTC display with the self-diagnosis function. Refer to <a href="BRC-29">BRC-29</a>, "CONSULT-III Function (ABS)".

#### Is there any DTC displayed?

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

# 3. PERFORM THE SYSTEM DIAGNOSIS

Perform the diagnosis applicable to the displayed DTC. Refer to BRC-86, "DTC No. Index".

>> GO TO 7

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

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

### Is the symptom a normal operation?

YES >> Inspection End.

NO >> GO TO 5

# ${f 5.}$ CHECK THE WARNING LAMP AND INDICATOR LAMP FOR ILLUMINATION

Check that the warning lamp and indicator lamp illuminate.

- ABS warning lamp: Refer to BRC-76, "Description".
- Brake warning lamp: Refer to BRC-77, "Description".
- VDC OFF indicator lamp: Refer to <u>BRC-78</u>, "<u>Description</u>".
- SLIP indicator lamp: Refer to BRC-80, "Description".

#### Is ON/OFF timing normal?

YES >> GO TO 6

NO >> GO TO 2

# 6. PERFORM THE DIAGNOSIS BY SYMPTOM

Perform the diagnosis applicable to the symptom.

>> GO TO 7

# 7.REPAIR OR REPLACE THE MALFUNCTIONING PARTS

Repair or replace the specified malfunctioning parts.

>> GO TO 8

### 8. FINAL CHECK

Perform the self-diagnosis again, and check that the malfunction is repaired completely. After checking, erase the self-diagnosis memory. Refer to <u>BRC-29</u>, "CONSULT-III Function (ABS)".

#### Is no other DTC present and the repair completed?

YES >> Inspection End.

NO >> GO TO 3

# **DIAGNOSIS AND REPAIR WORKFLOW**

< BASIC INSPECTION > [TYPE 1]

# Diagnostic Work Sheet

INFOID:0000000006245821

Customer name MR/MS	Model & Year	Model & Year		
Engine #	Trans.		Mileage	
Incident Date	Manuf. Date		In Service Dat	е
Symptoms	☐ Noise and vibration (from engine compartment) ☐ Noise and vibration (from axle)	☐ Warning / 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)		☐ Lack of sense of acceleration
Engine conditions	☐ When starting ☐ After starting	☐ When starting ☐ After starting		
Road conditions	☐ Low friction road (☐Snow ☐Gravel☐ Bumps / potholes	□ Low friction road (□Snow □Gravel □Other) □ Bumps / potholes		
Driving conditions	☐ Full-acceleration ☐ High speed cornering ☐ Vehicle speed: Greater than 10 km/h (6 MPH) ☐ Vehicle speed: 10 km/h (6 MPH) or less ☐ Vehicle seed: 10 km/h (6 MPH) or less			
Applying brake conditions	☐ Suddenly ☐ Gradually			
Other conditions	☐ Operation of electrical equipment ☐ Shift change ☐ Other descriptions			

SFIA3265E

Α

В

С

D

Е

BRC

G

Н

J

Κ

L

M

Ν

0

#### INSPECTION AND ADJUSTMENT

< BASIC INSPECTION > [TYPE 1]

# INSPECTION AND ADJUSTMENT ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

# ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Description

INFOID:0000000006245822

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

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

# ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement

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-12</u>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement", GO TO 2

2.PERFORM CALIBRATION OF THE DECEL G SENSOR

Perform calibration of the decel G sensor.

# >> Refer to <a href="BRC-13">BRC-13</a>, "CALIBRATION OF DECEL G SENSOR: Special Repair Requirement". ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description

INFOID:0000000006245824

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

x: Required -: Not required

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

# ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement

# ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

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

ALIGN THE VEHICLE STATUS

Stop vehicle with front wheels in straight-ahead position.

Revision: March 2012 BRC-12 2011 Pathfinder

Α >> GO TO 2 2.perform the neutral position adjustment for the steering angle sensor On the CONSULT-III screen, touch "WORK SUPPORT" and "ST ANGLE SENSOR ADJUSTMENT" in В order. Touch "START". **CAUTION:** Do not touch steering wheel while adjusting steering angle sensor. 3. After approximately 10 seconds, touch "END". NOTE: After approximately 60 seconds, it ends automatically. D Turn ignition switch OFF, then turn it ON again. **CAUTION:** Be sure to perform above operation. Е >> GO TO 3 3. CHECK DATA MONITOR **BRC** Run vehicle with front wheels in straight-ahead position, then stop. Select "DATA MONITOR". Then make sure "STR ANGLE SIG" is within 0±2.5°. Is the steering angle within the specified range? YES >> GO TO 4 NO >> Perform the neutral position adjustment for the steering angle sensor again, GO TO 1 Н 4.ERASE THE SELF-DIAGNOSIS MEMORY Erase the self-diagnosis memory of the ABS actuator and electric unit (control unit) and ECM. ABS actuator and electric unit (control unit): Refer to <u>BRC-29, "CONSULT-III Function (ABS)"</u>. ECM: Refer to EC-77, "CONSULT-III Function". Are the memories erased? YES >> Inspection End. NO >> Check the items indicated by the self-diagnosis. CALIBRATION OF DECEL G SENSOR CALIBRATION OF DECEL G SENSOR: Description INFOID:0000000006245826 Refer to the table below to determine if calibration of the decel G sensor is required. x: Required -: Not required Situation Calibration of decel G sensor Removing/Installing ABS actuator and electric unit (control unit) Replacing ABS actuator and electric unit (control unit) Removing/Installing steering components Replacing steering components Ν Removing/Installing suspension components Replacing suspension components Change tires to new ones Tire rotation Adjusting wheel alignment

CALIBRATION OF DECEL G SENSOR: Special Repair Requirement

INFOID:0000000006245827

×

## CALIBRATION OF DECEL G SENSOR

Removing/Installing yaw rate/side/decel G sensor

Replacing yaw rate/side/decel G sensor

**CAUTION:** 

Revision: March 2012 BRC-13 2011 Pathfinder

### **INSPECTION AND ADJUSTMENT**

< BASIC INSPECTION > [TYPE 1]

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

#### ALIGN THE VEHICLE STATUS

Stop vehicle with front wheels in straight-ahead position.

>> GO TO 2

# 2.PERFORM CALIBRATION OF DECEL G SENSOR

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

NOTE:

After approximately 60 seconds, it ends automatically.

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

**CAUTION:** 

Be sure to perform above operation.

>> GO TO 3

# 3. CHECK DATA MONITOR

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

#### Is the inspection result normal?

YES >> GO TO 4

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

# f 4.ERASE THE SELF-DIAGNOSIS MEMORY

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

- ABS actuator and electric unit (control unit): Refer to BRC-29, "CONSULT-III Function (ABS)".
- ECM: Refer to EC-77, "CONSULT-III Function".

#### Are the memories erased?

YES >> Inspection End.

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

# **APPLICATION NOTICE**

< SYSTEM DESCRIPTION > [TYPE 1]

# SYSTEM DESCRIPTION

# **APPLICATION NOTICE**

Application Notice

Service information	Remarks
TYPE 1	VDC/TCS/ABS (VQ40DE)
TYPE 2	VDC/TCS/ABS (VK56DE)

BRC

Α

В

С

 $\mathsf{D}$ 

Е

G

Н

Κ

L

M

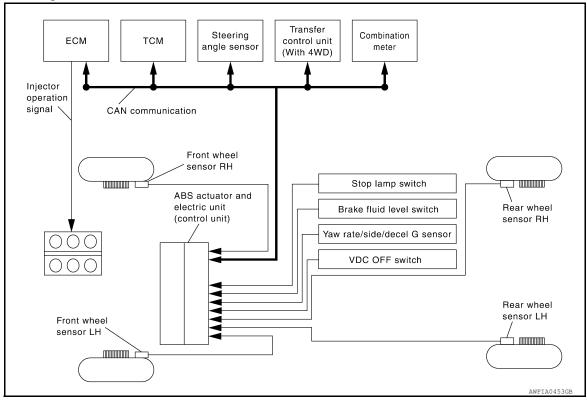
Ν

0

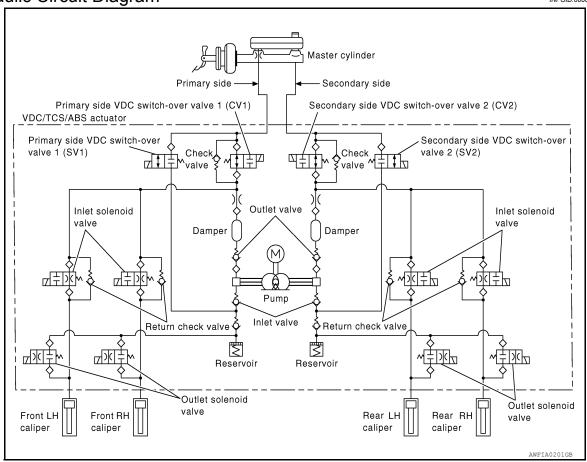
#### **VDC**

# System Diagram

INFOID:0000000006245829



# Hydraulic Circuit Diagram



# System Description

INFOID:0000000006245831

[TYPE 1]

 Vehicle Dynamics Control system detects driver's steering operation amount and brake pedal travel from steering angle sensor and pressure sensors. Using information from yaw rate/side/decel G sensor and wheel sensor, VDC judges driving condition (conditions of under steer and over steer) to improve vehicle driving stability by controlling brake application to 4 wheels and engine output.

• During VDC operation, it informs driver of system operation by flashing SLIP indicator lamp.

Electrical system diagnosis by CONSULT-III is available.

D

Е

Α

В

C

BRC

G

Н

1

K

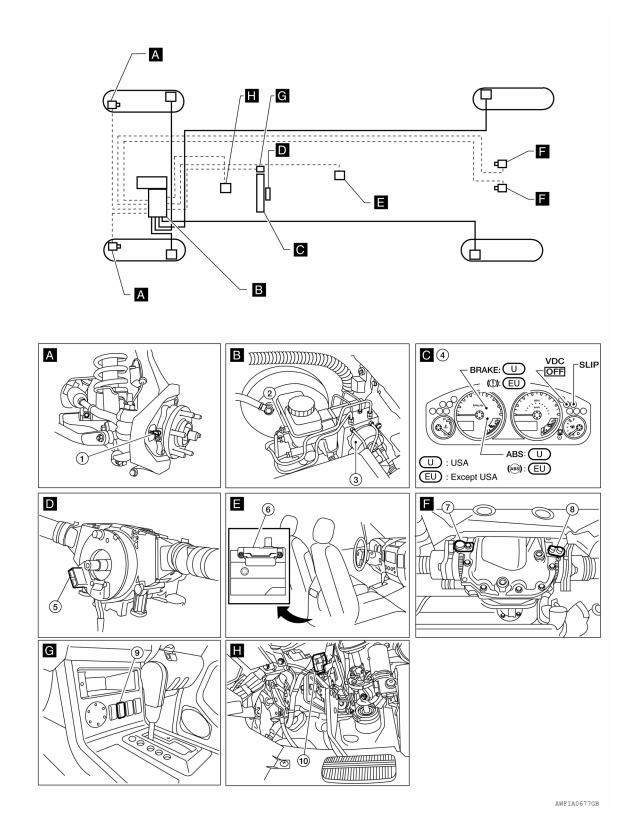
L

M

Ν

0

# **Component Parts Location**



- Front wheel sensor LH E18
   Front wheel sensor RH E117
- 4. Combination meter M24
- 2. Brake fluid level switch E21
- Steering angle sensor (behind spiral cable) M47
- 3. ABS actuator and electric unit (control unit) E125
- 6. Yaw rate/side/decel G sensor B73

### **VDC**

< SYSTEM DESCRIPTION > [TYPE 1]

- 7. Rear wheel sensor LH C13
- 8. Rear wheel sensor RH C13
- 9. VDC OFF switch M154

10. Stop lamp switch E38

# **Component Description**

INFOID:0000000006245833

Component parts		Reference
Pump Motor		BRC-43, "Description"
ABS actuator and electric unit (control unit)	Actuator relay	BRC-59, "Description"
Abo actuator and electric unit (control unit)	Solenoid valve	BRC-52, "Description"
	VDC switch-over valve (CV1, CV2, SV1, SV2)	BRC-70, "Description"
Wheel sensor		BRC-34, "Description"
Yaw rate/side/decel G sensor		BRC-45, "Description"
Stop lamp switch		BRC-50, "Description"
Steering angle sensor		BRC-61, "Description"
Brake fluid level switch		BRC-64, "Description"
VDC OFF switch		BRC-74, "Description"
ABS warning lamp		BRC-76, "Description"
Brake warning lamp		BRC-77, "Description"
VDC OFF indicator lamp		BRC-78, "Description"
SLIP indicator lamp		BRC-80, "Description"

BRC

Α

В

С

 $\mathsf{D}$ 

Е

G

Н

Κ

L

M

Ν

0

[TYPE 1]

#### TCS

System Diagram

INFOID:0000000006689836 Transfer Steering Combination ECM ТСМ control unit angle sensor meter (With 4WD) Injector operation signal CAN communication Front wheel sensor RH Stop lamp switch ABS actuator and electric unit Rear wheel Brake fluid level switch (control unit) sensor RH Yaw rate/side/decel G sensor VDC OFF switch Rear wheel sensor LH Front wheel sensor LH 

# **System Description**

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

Α

В

 $\mathsf{D}$ 

Е

BRC

G

Н

J

K

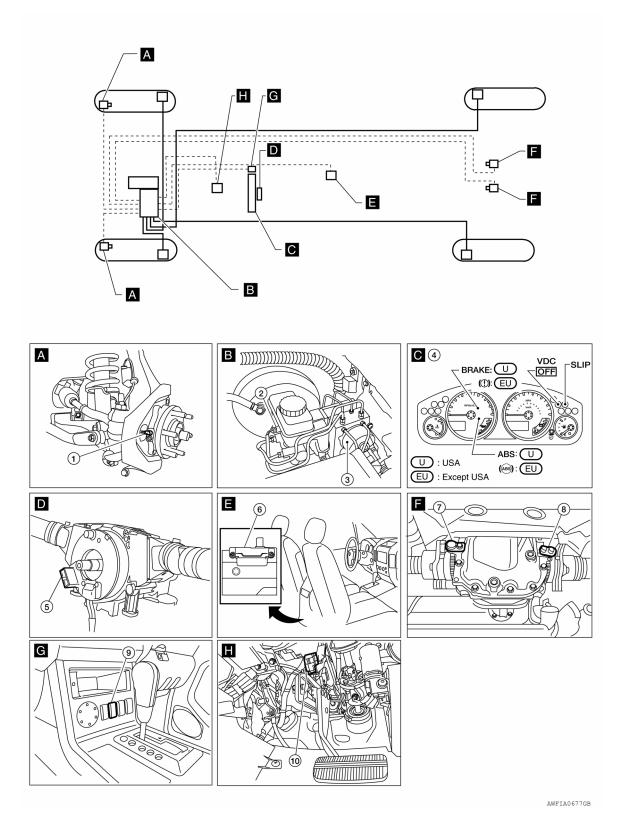
M

Ν

0

Р

# Component Parts Location



- Front wheel sensor LH E18
   Front wheel sensor RH E117
- 4. Combination meter M24
- 2. Brake fluid level switch E21
- 5. Steering angle sensor (behind spiral cable) M47
- ABS actuator and electric unit (control unit) E125
- 6. Yaw rate/side/decel G sensor B73

- 7. Rear wheel sensor LH C13
- 8. Rear wheel sensor RH C13
- 9. VDC OFF switch M154

10. Stop lamp switch E38

# **Component Description**

Compo	nent parts	Reference
	Pump	PDC 42 "Description"
	Motor	BRC-43, "Description"
ABS actuator and electric unit (control unit)	Actuator relay	BRC-59, "Description"
The detailer and electric and (econor and)	Solenoid valve	BRC-52, "Description"
	VDC switch-over valve (CV1, CV2, SV1, SV2)	BRC-70, "Description"
Wheel sensor		BRC-34, "Description"
Yaw rate/side/decel G sensor		BRC-45, "Description"
Stop lamp switch		BRC-50, "Description"
Steering angle sensor		BRC-61, "Description"
Brake fluid level switch		BRC-64, "Description"
VDC OFF switch		BRC-74, "Description"
ABS warning lamp		BRC-76, "Description"
Brake warning lamp		BRC-77, "Description"
VDC OFF indicator lamp		BRC-78, "Description"
SLIP indicator lamp		BRC-80, "Description"

[TYPE 1]

INFOID:0000000006689837

Α

В

D

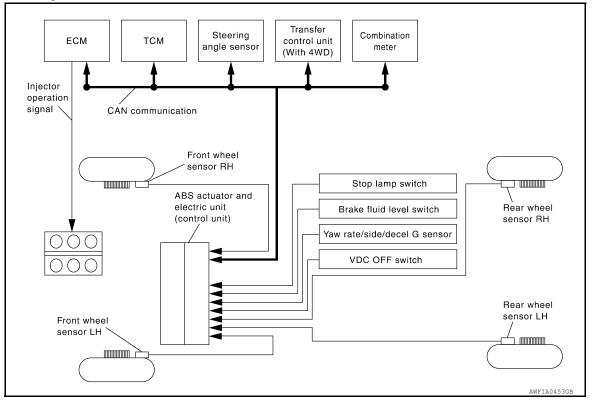
Е

**BRC** 

Н

# **ABS**

System Diagram



# **System Description**

INFOID:0000000006245839

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

· Electrical system diagnosis by CONSULT-III is available.

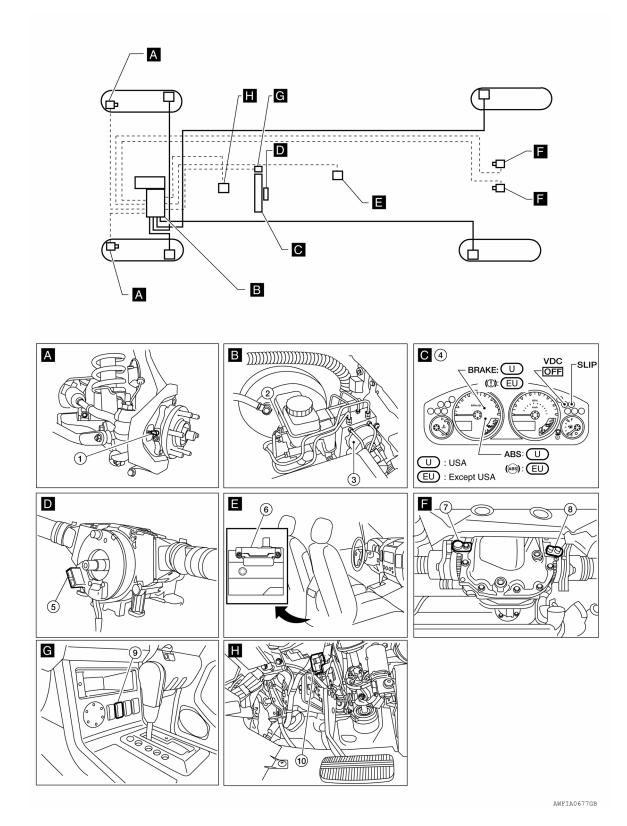
K

M

Ν

0

# **Component Parts Location**



- Front wheel sensor LH E18
   Front wheel sensor RH E117
- 4. Combination meter M24
- 2. Brake fluid level switch E21
- Steering angle sensor (behind spiral cable) M47
- 3. ABS actuator and electric unit (control unit) E125
- 6. Yaw rate/side/decel G sensor B73

7. Rear wheel sensor LH C13

8. Rear wheel sensor RH C13

9. VDC OFF switch M154

10. Stop lamp switch E38

# **Component Description**

INFOID:0000000006689842

Component parts		Reference
	Pump	BRC-43, "Description"
	Motor	-
ABS actuator and electric unit (control unit)	Actuator relay	BRC-59, "Description"
,	Solenoid valve	BRC-52, "Description"
	VDC switch-over valve (CV1, CV2, SV1, SV2)	BRC-70, "Description"
Wheel sensor		BRC-34, "Description"
Yaw rate/side/decel G sensor		BRC-45, "Description"
Stop lamp switch		BRC-50, "Description"
Steering angle sensor		BRC-61, "Description"
Brake fluid level switch		BRC-64, "Description"
VDC OFF switch		BRC-74, "Description"
ABS warning lamp		BRC-76. "Description"
Brake warning lamp		BRC-77, "Description"
VDC OFF indicator lamp		BRC-78, "Description"
SLIP indicator lamp		BRC-80, "Description"

BRC

Α

В

С

 $\mathsf{D}$ 

Е

G

Н

J

K

L

M

Ν

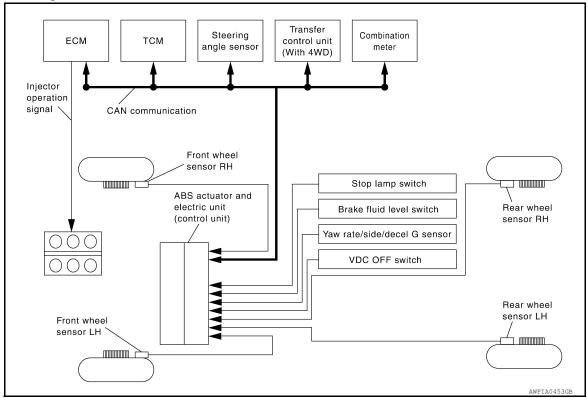
0

Ρ

# **EBD**

System Diagram

INFOID:0000000006689838



# **System Description**

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

Α

В

 $\mathsf{D}$ 

Е

BRC

G

Н

J

K

M

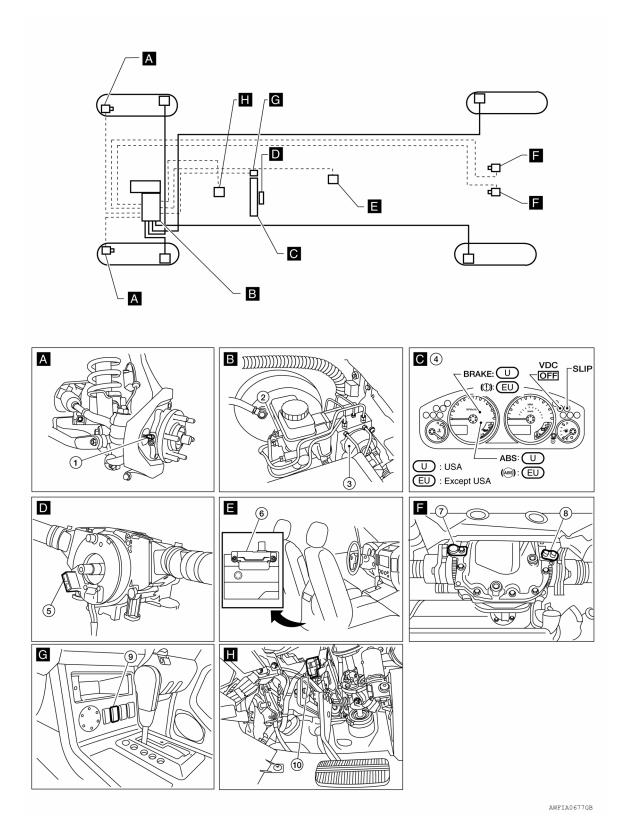
Ν

0

Р

# Component Parts Location

INFOID:0000000006689843



- Front wheel sensor LH E18
   Front wheel sensor RH E117
- 4. Combination meter M24
- 2. Brake fluid level switch E21
- Steering angle sensor (behind spiral cable) M47
- 3. ABS actuator and electric unit (control unit) E125
- 6. Yaw rate/side/decel G sensor B73

Revision: March 2012 BRC-27 2011 Pathfinder

- 7. Rear wheel sensor LH C13
- 8. Rear wheel sensor RH C13
- 9. VDC OFF switch M154

10. Stop lamp switch E38

# **Component Description**

Component parts		Reference
	Pump	DDC 42 "Description"
	Motor	BRC-43, "Description"
ABS actuator and electric unit (control unit)	Actuator relay	BRC-59, "Description"
The detactor and disease and (control and)	Solenoid valve	BRC-52, "Description"
	VDC switch-over valve (CV1, CV2, SV1, SV2)	BRC-70, "Description"
Wheel sensor		BRC-34, "Description"
Yaw rate/side/decel G sensor		BRC-45, "Description"
Stop lamp switch		BRC-50, "Description"
Steering angle sensor		BRC-61, "Description"
Brake fluid level switch		BRC-64, "Description"
VDC OFF switch		BRC-74, "Description"
ABS warning lamp		BRC-76, "Description"
Brake warning lamp		BRC-77, "Description"
VDC OFF indicator lamp		BRC-78, "Description"
SLIP indicator lamp		BRC-80, "Description"

#### < SYSTEM DESCRIPTION >

[TYPE 1]

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

**CONSULT-III Function (ABS)** 

INFOID:0000000006245846

В

D

Е

**BRC** 

Н

L

M

Ν

Р

#### **FUNCTION**

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

Direct Diagnostic Mode	Description
ECU Identification	The ABS actuator and electric unit (control unit) part number is displayed.
Self Diagnostic Result	The ABS actuator and electric unit (control unit) self diagnostic results are displayed.
Data Monitor	The ABS actuator and electric unit (control unit) input/output data is displayed in real time.
Active Test	The ABS actuator and electric unit (control unit) activates outputs to test components.
Function Test	This mode displays self diagnostic results of ABS system with either an "OK" or "NG".
Work support	The settings for ABS actuator and electric unit (control unit) functions can be changed.
CAN Diag Support Monitor	The result of transmit/receive diagnosis of CAN communication is diplayed.

#### SELF DIAGNOSTIC RESULT

Operation Procedure

G

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

How to Erase Self-diagnosis Results

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

# If memory cannot be erased, perform applicable diagnosis. NOTE:

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

Display Item List

Refer to BRC-86, "DTC No. Index".

DATA MONITOR

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

Revision: March 2012 BRC-29 2011 Pathfinder

< SYSTEM DESCRIPTION >

[TYPE 1]

Item		monitor item se	lection	
(Unit)	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	Remarks
DECEL G-SEN (G)	×	×	×	Longitudinal acceleration (G) detected by decel G-sensor is displayed.
FR RH IN SOL (On/Off)	-	×	×	Front RH IN ABS solenoid (On/Off) status is displayed.
FR RH OUT SOL (On/Off)	-	×	×	Front RH OUT ABS solenoid (On/Off) status is displayed.
FR LH IN SOL (On/Off)	_	×	×	Front LH IN ABS solenoid (On/Off) status is displayed
FR LH OUT SOL (On/Off)	-	×	×	Front LH OUT ABS solenoid (On/Off) status is displayed.
RR RH IN SOL (On/Off)	-	×	×	Rear RH IN ABS solenoid (On/Off) status is displayed
RR RH OUT SOL (On/Off)	_	×	×	Rear RH OUT ABS solenoid (On/Off) status is displayed.
RR LH IN SOL (On/Off)	-	×	×	Rear LH IN ABS solenoid (On/Off) status is displayed
RR LH OUT SOL (On/Off)	-	×	×	Rear LH OUT ABS solenoid (On/Off) status is displayed.
EBD WARN LAMP (On/Off)	-	-	×	Brake warning lamp (On/Off) status is displayed.
STOP LAMP SW (On/Off)	×	×	×	Stop lamp switch (On/Off) status is displayed.
MOTOR RELAY (On/Off)	-	×	×	ABS motor relay signal (On/Off) status is displayed.
ACTUATOR RLY (On/Off)	-	×	×	ABS actuator relay signal (On/Off) status is displayed
ABS WARN LAMP (On/Off)	-	×	×	ABS warning lamp (On/Off) status is displayed.
OFF LAMP (On/Off)	-	×	×	VDC OFF Lamp (On/Off) status is displayed.
OFF SW (On/Off)	×	×	×	VDC OFF switch (On/Off) status is displayed.
SLIP LAMP (On/Off)	-	×	×	SLIP indicator lamp (On/Off) status is displayed.
BATTERY VOLT (V)	×	×	×	Voltage (V) supplied to ABS actuator and electric un (control unit) is displayed.
GEAR (1, 2, 3, 4, 5)	×	×	×	Gear position (1, 2, 3, 4, 5) judged by transmission range switch signal is displayed.
SLCT LVR POSI (P, N, D)	×	×	×	Shift position (P, N, D) judged by transmission range switch signal.
ENGINE SPEED (rpm)	×	×	×	Engine speed (rpm) judged by CAN communication signal is displayed.
YAW RATE SEN (d/s)	×	×	×	Yaw rate (d/s) detected by yaw rate sensor is displayed.
R POSI SIG (On/Off)	-	_	×	Reverse shift position (On/Off) judged by transmission range switch signal.
4WD FAIL REQ (On/Off)	_	_	×	Transfer control unit fail-safe mode (On/Off) is displayed.
N POSI SIG (On/Off)	_	_	×	Shift position judged by transmission range switch signal.

< SYSTEM DESCRIPTION >

TYPE	1]
------	----

Р

Item	Data	monitor item se	lection	
(Unit)	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	Remarks
P POSI SIG (On/Off)	_	_	×	Shift position judged by transmission range switch signal.
CV1 (On/Off)	-	_	×	Front side VDC switch-over solenoid valve (cut valve) (On/Off) status is displayed.
CV2 (On/Off)	_	_	×	Rear side VDC switch-over solenoid valve (cut-valve) (On/Off) status is displayed.
SV1 (On/Off)	_	-	×	Front side VDC switch-over solenoid valve (suction valve) (On/Off) status is displayed.
SV2 (On/Off)	_	_	×	Rear side VDC switch-over solenoid valve (suction valve) (On/Off) status is displayed.
2WD/4WD (2WD/4WD)	-	-	×	It recognizes on software whether it is 2WD and whether it is in 4WD state.
ACCEL POS SIG (%)	×	-	×	Throttle valve open/close status judged by CAN communication signal is displayed.
SIDE G-SENSOR (m/s <sup>2</sup> )	×	-	×	Transverse acceleration detected by side G-sensor is displayed.
STR ANGLE SIG (deg)	×	-	×	Steering angle detected by steering angle sensor is displayed.
PRESS SENSOR (bar)	×	_	×	Brake pressure detected by pressure sensor is displayed.
EBD SIGNAL (On/Off)	_	_	×	EBD operation (On/Off) status is displayed.
ABS SIGNAL (On/Off)	_	_	×	ABS operation (On/Off) status is displayed.
TCS SIGNAL (On/Off)	-	_	×	TCS operation (On/Off) status is displayed.
VDC SIGNAL (On/Off)	-	-	×	VDC operation (On/Off) status is displayed.
EBD FAIL SIG (On/Off)	-	_	×	EBD fail signal (On/Off) status is displayed.
ABS FAIL SIG (On/Off)	-	_	×	ABS fail signal (On/Off) status is displayed.
TCS FAIL SIG (On/Off)	-	_	×	TCS fail signal (On/Off) status is displayed.
VDC FAIL SIG (On/Off)	-	_	×	VDC fail signal (On/Off) status is displayed.
CRANKING SIG (On/Off)	-	_	×	The input state of the key SW START position signal is displayed.
FLUID LEV SW (On/Off)	×	-	×	Brake fluid level switch (On/Off) status is displayed.

<sup>×:</sup> Applicable

#### **ACTIVE TEST**

#### **CAUTION:**

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

#### NOTE:

<sup>-:</sup> Not applicable

#### < SYSTEM DESCRIPTION >

[TYPE 1]

• When active test is performed while depressing the pedal, the pedal depression amount will change. This is normal. (solenoid valve and ABS motor only)

Test Item

#### SOLENOID VALVE

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

Operation		AE	ABS solenoid valve			ABS solenoid valve (ACT)		
		Up	Keep	Down	Up	ACT UP	ACT KEEP	
FR RH SOL	FR RH IN SOL	Off	On	On	_	_	_	
TRITTOL	FR RH OUT SOL	Off	Off	On*	_	_	_	
FR LH SOL	FR LH IN SOL	Off	On	On	_	_	_	
FR LH SOL	FR LH OUT SOL	Off	Off	On*	_	_	_	
RR RH SOL	RR RH IN SOL	Off	On	On	_	_	_	
NN NI JOL	RR RH OUT SOL	Off	Off	On*	_	_	_	
RR LH SOL	RR LH IN SOL	Off	On	On	_	_	_	
RR LFI SOL	RR LH OUT SOL	Off	Off	On*	_	_	_	
FR RH ABS SOLENOID (ACT)	FR RH IN SOL	_	_	_	Off	Off	Off	
FR RH ABS SOLENOID (ACT)	FR RH OUT SOL	_	_	_	Off	Off	Off	
FR LH ABS SOLENOID (ACT)	FR LH IN SOL	_	_	_	Off	Off	Off	
FR LH ABS SOLENOID (ACT)	FR LH OUT SOL	_	_	_	Off	Off	Off	
	RR RH IN SOL	_	_	_	Off	Off	Off	
RR RH ABS SOLENOID (ACT)	RR RH OUT SOL	_	_	_	Off	Off	Off	
RR LH ABS SOLENOID (ACT)	RR LH IN SOL	_	_	_	Off	Off	Off	
TAN ETT ADG GOLENOID (ACT)	RR LH OUT SOL			_	Off	Off	Off	

<sup>\*:</sup> On for 1 to 2 seconds after the touch, and then Off

#### ABS MOTOR

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

Operation	On	Off
MOTOR RELAY	On	Off
ACTUATOR RLY	On	On

# **APPLICATION NOTICE**

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

# DTC/CIRCUIT DIAGNOSIS

# **APPLICATION NOTICE**

**Application Notice** 

INIEOID:0000000000eee0022	

Service information	Remarks
TYPE 1	VDC/TCS/ABS (VQ40DE)
TYPE 2	VDC/TCS/ABS (VK56DE)

BRC

Α

С

 $\mathsf{D}$ 

Е

C

Н

-

J

Κ

L

M

Ν

0

### C1101, C1102, C1103, C1104 WHEEL SENSOR-1

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

INFOID:0000000006245850

# C1101, C1102, C1103, C1104 WHEEL SENSOR-1

Description INFOID:000000006245848

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

#### 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	H SENSOR-1 Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard.		
C1103	FR RH SENSOR-1	Circuit of front RH wheel sensor is open. Or when the sensor power voltage is outside the standard.	ABS actuator and electric unit (control unit)	
C1104	FR LH SENSOR-1	Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard.		

#### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

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

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-34">BRC-34</a>, "Diagnosis Procedure".

NO >> Inspection End.

# Diagnosis Procedure

Regarding Wiring Diagram information, refer to <u>BRC-88</u>, "Wiring Diagram - With VQ40DE".

#### **CAUTION:**

Do not check between wheel sensor terminals.

# 1. CONNECTOR INSPECTION

- Disconnect the ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunctioning code.
- 2. Check the terminals for deformation, disconnection, looseness or damage.

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Repair or replace as necessary.

# 2.CHECK WHEEL SENSOR OUTPUT SIGNAL

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

### C1101, C1102, C1103, C1104 WHEEL SENSOR-1

#### < DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

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

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

#### NOTE:

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

#### Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3

NO >> Replace the wheel sensor. Refer to BRC-110, "Removal and Installation".

# 3.CHECK TIRES

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

#### Is the inspection result normal?

YES >> GO TO 4

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

# 4. CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to <u>FAX-6</u>, "On-Vehicle Inspection and Service" (front) or <u>RAX-6</u> "On-Vehicle Inspection and Service" (rear).

#### Is the inspection result normal?

YES >> GO TO 5

NO >> Repair or replace as necessary. Refer to <u>FAX-10</u>, "<u>Removal and Installation</u>" (front) or <u>RAX-7</u>, "<u>Removal and Installation</u>" (rear).

# ${f 5}.$ CHECK WIRING HARNESS FOR SHORT CIRCUIT

- Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunction code No.
- Check continuity between front wheel sensor connector terminals (A) or rear wheel sensor connector terminals (B) and ground.

#### Continuity should not exist.

#### Is the inspection result normal?

YES >> GO TO 6

NO >> Repair the circuit.

# 6. CHECK WIRING HARNESS FOR OPEN CIRCUIT

 Check continuity between ABS actuator and electric unit (control unit) connector and the malfunctioning wheel sensor connector.

Wheel sensor	ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
	Connector	Terminal	Connector	Terminal	
Front LH		45	E18	1	Yes
I TOTAL ELT		46		2	
Front RH		34	E117	1	
FIUILKE	E125	33		2	
Rear LH		37	C13	3	
incai Li i		36		4	
Rear RH		42		1	
Neal NII		43		2	

#### Is the inspection result normal?

BRC

Α

В

D

Е

Н

J

Κ

Ω

L

N

M

0

# C1101, C1102, C1103, C1104 WHEEL SENSOR-1

#### < DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

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

NO >> Repair the circuit.

# Component Inspection

INFOID:0000000006245851

# 1. CHECK DATA MONITOR

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

Wheel sensor	Vehicle speed (DATA MONITOR)		
FR LH SENSOR			
FR RH SENSOR			
RR LH SENSOR	play (±10% or less)		
RR RH SENSOR			

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <a href="BRC-34">BRC-34</a>, "Diagnosis Procedure".

# Special Repair Requirement

INFOID:0000000006245852

# 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-12">BRC-12</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

>> GO TO 2

# 2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-13">BRC-13</a>, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

## C1105, C1106, C1107, C1108 WHEEL SENSOR-2

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

# C1105, C1106, C1107, C1108 WHEEL SENSOR-2

Description INFOID:0000000006245853

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:0000000006245854

#### DTC DETECTION LOGIC

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

## DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

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

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-37">BRC-37</a>, "Diagnosis Procedure".

NO >> Inspection End.

## Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-88, "Wiring Diagram - With VQ40DE".

#### **CAUTION:**

Do not check between wheel sensor terminals.

## 1. CONNECTOR INSPECTION

- Disconnect the ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunctioning code.
- Check the terminals for deformation, disconnection, looseness or damage.

#### Is the inspection result normal?

>> GO TO 2 YES

**BRC-37** Revision: March 2012 2011 Pathfinder **BRC** 

D

Е

Α

Н

Р

INFOID:0000000006689845

#### C1105, C1106, C1107, C1108 WHEEL SENSOR-2

#### < DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

NO >> Repair or replace as necessary.

# 2.CHECK WHEEL SENSOR OUTPUT SIGNAL

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

#### NOTE:

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

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

#### NOTE:

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

#### Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3

NO >> Replace the wheel sensor. Refer to <a href="BRC-110">BRC-110</a>, "Removal and Installation".

## 3.CHECK TIRES

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

#### Is the inspection result normal?

YES >> GO TO 4

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

## 4.CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to <u>FAX-6</u>, "On-Vehicle Inspection and Service" (front) or <u>RAX-6</u>, "On-Vehicle Inspection and Service" (rear).

#### Is the inspection result normal?

YES >> GO TO 5

NO >> Repair or replace as necessary. Refer to <u>FAX-10, "Removal and Installation"</u> (front) or <u>RAX-7, "Removal and Installation"</u> (rear).

## 5. CHECK WIRING HARNESS FOR SHORT CIRCUIT

- Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunction code No.
- Check continuity between front wheel sensor connector terminals (A) or rear wheel sensor connector terminals (B) and ground.

#### Continuity should not exist.

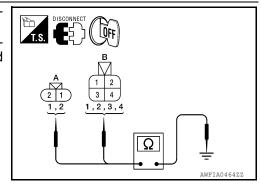
#### Is the inspection result normal?

YES >> GO TO 6

NO >> Repair the circuit.

# 6. CHECK WIRING HARNESS FOR OPEN CIRCUIT

 Check continuity between ABS actuator and electric unit (control unit) connector and the malfunctioning wheel sensor connector.



#### C1105, C1106, C1107, C1108 WHEEL SENSOR-2

#### < DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

Wheel sensor	ABS actuator and electric unit (control unit)		Wheel sensor		Continuity	<del>-</del>
	Connector	Terminal	Connector	Terminal		
Front LH		45	E18	1		_
FIOIILEI		46	E10	2		
Front RH	E125	34	E117	1	Yes	
FIUILEN		33		2		
Rear LH	E125	37		3	165	
Real Ln		36	C13	4		
Rear RH		42		1		
INCAL INT		43		2		

#### Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to <a href="mailto:BRC-112">BRC-112</a>, "Removal and Installation".

NO >> Repair the circuit.

## Component Inspection

## 1. CHECK DATA MONITOR

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

Wheel sensor	Vehicle speed (DATA MONITOR)
FR LH SENSOR	
FR RH SENSOR	Nearly matches the speedometer dis-
RR LH SENSOR	play (±10% or less)
RR RH SENSOR	

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <a href="BRC-34">BRC-34</a>, "Diagnosis Procedure".

## Special Repair Requirement

## 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-12">BRC-12</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

>> GO TO 2

## 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-13, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

BRC

Α

В

D

Н

ı

Κ

Ν

INFOID:0000000006689847

INFOID:0000000006689846

## **C1109 POWER AND GROUND SYSTEM**

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

INFOID:0000000006245860

## C1109 POWER AND GROUND SYSTEM

Description INFOID:000000006245858

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

DTC Logic

#### 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)

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results
BATTERY VOLTAGE [ABNORMAL]

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to BRC-40, "Diagnosis Procedure".

NO >> Inspection End.

## Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-88, "Wiring Diagram - With VQ40DE".

## 1. CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- 4. Reconnect connectors and then perform the self-diagnosis. Refer to <u>BRC-29</u>, "CONSULT-III Function (ABS)".

#### Is any item indicated on the self-diagnosis display?

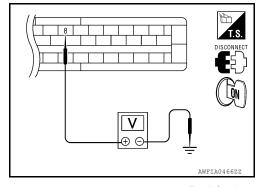
YES >> GO TO 2

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

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

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Check voltage between ABS actuator and electric unit (control unit) connector E125 terminal 8 and ground.

ABS actuator and electric unit (control unit)		_	Condition	Voltage	
Connector	Terminal				
F125	8	Ground	Ignition switch: ON	Battery voltage	
L123	0	Ground	Ignition switch: OFF	Approx. 0V	



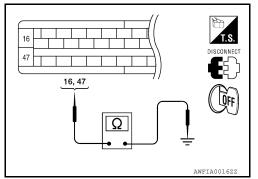
#### **C1109 POWER AND GROUND SYSTEM**

#### < DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

- 4. Turn ignition switch OFF.
- 5. Check continuity between ABS actuator and electric unit (control unit) connector E125 terminals 16, 47 and ground.

	and electric unit ol unit)	_	Continuity
Connector	Terminal		
E125	16, 47	Ground	Yes



Is the inspection result normal?

YES >> Check battery for terminal looseness, low voltage, etc. If any malfunction is found, repair malfunctioning parts.

NO >> Repair or replace malfunctioning components.

## Special Repair Requirement

INFOID:0000000006689848

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-12">BRC-12</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

>> GO TO 2

## 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-13</u>, "CALIBRATION OF <u>DECEL G SENSOR</u>: <u>Description</u>".

>> END

BRC

Α

В

C

D

Е

1

Н

K

Ν

0

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

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

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

DTC Logic

#### DTC DETECTION LOGIC

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

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results	
CONTROLLER FAILURE	
VARIANT CODING	

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to BRC-42, "Diagnosis Procedure".

NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006245863

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

>> Replace ABS actuator and electric unit (control unit). Refer to <a href="BRC-112">BRC-112</a>, "Removal and Installation".

## Special Repair Requirement

INFOID:0000000006689849

## 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-12">BRC-12</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description".

>> GO TO 2

## 2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-13">BRC-13</a>, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

### C1111 ABS MOTOR, MOTOR RELAY SYSTEM

[TYPE 1] < DTC/CIRCUIT DIAGNOSIS > C1111 ABS MOTOR, MOTOR RELAY SYSTEM Α Description INFOID:0000000006245865 **PUMP** В The pump returns the brake fluid stored in the reservoir to the master cylinder by reducing the pressure. The motor drives the pump according to the signals transmitted by the ABS actuator and electric unit (control unit). DTC Logic INFOID:0000000006245866 DTC DETECTION LOGIC Е DTC Display item Malfunction detected condition Possible cause During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for ac-**BRC** · Harness or connector tuator motor relay is open. C1111 **PUMP MOTOR** ABS actuator and electric unit During the actuator motor operating with OFF, when the (control unit) actuator motor turns ON, or when the control line for relay is shorted to ground. DTC CONFIRMATION PROCEDURE 1. CHECK SELF-DIAGNOSIS RESULTS Н Check the self-diagnosis results. Self-diagnosis results **PUMP MOTOR** Is above displayed on the self-diagnosis display? YES >> Proceed to diagnosis procedure. Refer to BRC-43, "Diagnosis Procedure". NO >> Inspection End. Diagnosis Procedure INFOID:0000000006245867 Regarding Wiring Diagram information, refer to BRC-88, "Wiring Diagram - With VQ40DE". 1. CONNECTOR INSPECTION M Turn ignition switch OFF. Disconnect ABS actuator and electric unit (control unit) connector. 2. Check terminal for deformation, disconnect, looseness, and so on. If any malfunction is found, repair or replace terminal. 4. Reconnect connectors and then perform the self-diagnosis. Refer to BRC-29, "CONSULT-III Function (ABS)". 0 Is any item indicated on the self-diagnosis display? YES >> GO TO 2 NO >> Poor connection of connector terminal. Repair or replace connector.

2.CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

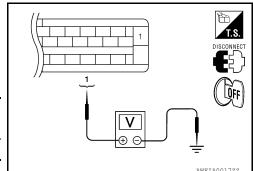
#### C1111 ABS MOTOR, MOTOR RELAY SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connec-
- Check voltage between the ABS actuator and electric unit (con-3. trol unit) connector E125 terminal 1 and ground.

ABS actuator and ele	ectric unit (control unit)	_	Voltage
Connector	Terminal	_	voitage
E125	1	Ground	Battery voltage



#### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

# ${f 3.}$ CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUIT

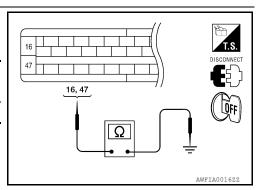
Check continuity between ABS actuator and electric unit (control unit) connector E125 terminals 16, 47 and ground.

ABS actuator and ele	ectric unit (control unit)		Continuity
Connector	Terminal	_	
E125	16, 47	Ground	Yes

#### Is the inspection result normal?

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

NO >> Repair or replace malfunctioning components.



INFOID:0000000006245868

## Component Inspection

## 1. CHECK ACTIVE TEST

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

Operation	On	Off
MOTOR RELAY	On	Off
ACTUATOR RLY	On	On

#### Is the inspection result normal?

YES >> Inspection End.

>> Go to diagnosis procedure. Refer to BRC-43, "Diagnosis Procedure".

## Special Repair Requirement

INFOID:0000000006689850

## ${f 1}$ . ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-12, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

>> GO TO 2

## 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-13, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

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

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

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

Description INFOID:0000000006245870

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

DTC Logic INFOID:0000000006245871

#### DTC DETECTION LOGIC

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

#### DTC CONFIRMATION PROCEDURE

## CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

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

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to BRC-45, "Diagnosis Procedure".

NO >> Inspection End.

## Diagnosis Procedure

Regarding Wiring Diagram information, refer to <a href="BRC-88">BRC-88</a>, "Wiring Diagram - With VQ40DE".

#### **CAUTION:**

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

## 1.CONNECTOR INSPECTION

- Disconnect the ABS actuator and electric unit (control unit) connector and yaw rate/side/decel G sensor connector.
- 2. Check the terminals for deformation, disconnection, looseness or damage.

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Repair or replace as necessary.

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

Check continuity between the ABS actuator and electric unit (control unit) connector E125 (A) and the yaw rate/side/decel G sensor connector B73 (B).

**BRC-45** Revision: March 2012 2011 Pathfinder **BRC** 

D

Е

Α

Н

INFOID:0000000006245872

Ν

0

[TYPE 1]

	and electric unit ol unit)	Yaw rate/side/decel G sensor		Continuity
Connector Terminal		Connector	Terminal	
	18	B73 (B)	3	Yes
E125 (A)	19		2	
E 125 (A)	(A) 22		4	
	29		1	

#### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace as necessary.

## 3.YAW RATE/SIDE/DECEL G SENSOR INSPECTION

- Connect the yaw rate/side/decel G sensor connector and ABS actuator and electric unit (control unit) connector.
- 2. Perform yaw rate/side/decel G sensor component inspection. Refer to <u>BRC-46, "Component Inspection"</u>. Is the inspection result normal?

# YES >> Perform self-diagnosis again. If the same results appear, replace the ABS actuator and electric unit (control unit). Refer to BRC-112, "Removal and Installation".

NO >> Replace the yaw rate/side/decel G sensor. Refer to BRC-115, "Removal and Installation".

## Component Inspection

INFOID:0000000006245873

## 1. CHECK DATA MONITOR

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

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

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the yaw rate/side/decel G sensor. Refer to <u>BRC-115, "Removal and Installation"</u>.

## Special Repair Requirement

INFOID:0000000006689851

## 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-12">BRC-12</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

>> GO TO 2

## 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-13, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

#### C1115 WHEEL SENSOR

Description INFOID:0000000006245875

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:0000000006245876

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1115	ABS SENSOR [ABNORMAL SIGNAL]	When wheel sensor input signal is malfunctioning.	Harness or connector     Wheel sensor     ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results ABS SENSOR [ABNORMAL SIGNAL]

#### Is above displayed on the self-diagnosis display?

>> Proceed to diagnosis procedure. Refer to <a href="BRC-47">BRC-47</a>, "Diagnosis Procedure". YES

NO >> Inspection End.

## Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-88, "Wiring Diagram - With VQ40DE".

#### **CAUTION:**

Do not check between wheel sensor terminals.

## 1.CONNECTOR INSPECTION

- Disconnect the ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunctioning code.
- Check the terminals for deformation, disconnection, looseness or damage.

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Repair or replace as necessary.

## 2.CHECK WHEEL SENSOR OUTPUT SIGNAL

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

#### NOTE:

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

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

#### NOTE:

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

#### Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3

NO >> Replace the wheel sensor. Refer to <a href="BRC-110">BRC-110</a>, "Removal and Installation".

**BRC-47** Revision: March 2012 2011 Pathfinder **BRC** 

D

Е

Α

INFOID:0000000006689852

K

Ν

# 3.CHECK TIRES

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

#### Is the inspection result normal?

YES >> GO TO 4

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

#### 4. CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to FAX-6, "On-Vehicle Inspection and Service" (front) or RAX-6, "On-Vehicle Inspection and Service" (rear).

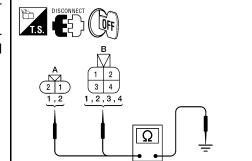
#### Is the inspection result normal?

YES >> GO TO 5

>> Repair or replace as necessary. Refer to FAX-10, "Removal and Installation" (front) or RAX-7, NO "Removal and Installation" (rear).

## ${f 5}$ .CHECK WIRING HARNESS FOR SHORT CIRCUIT

- Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunction code No.
- 2. Check continuity between front wheel sensor connector terminals (A) or rear wheel sensor connector terminals (B) and ground.



## Continuity should not exist.

#### Is the inspection result normal?

YES >> GO TO 6

NO >> Repair the circuit.

## 6.CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector and the malfunctioning wheel sensor connector.

Wheel sensor	ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
	Connector	Terminal	Connector	Terminal	
Front LH		45	E18	1	
FIUIIL LIT		46		2	
Front RH	E125	34	E117	1	Yes
FIUILKI		33		2	
Rear LH		37		3	
Real LIT		36		4	
Rear RH		42		1	
Real RH		43		2	

#### Is the inspection result normal?

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

NO >> Repair the circuit.

## Component Inspection

## INFOID:0000000006689853

## CHECK DATA MONITOR

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

#### **C1115 WHEEL SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

INFOID:0000000006689854

Wheel sensor	Vehicle speed (DATA MONITOR)	Α
FR LH SENSOR		
FR RH SENSOR	Nearly matches the speedometer dis-	В
RR LH SENSOR	play (±10% or less)	
RR RH SENSOR		
Is the inspection result normal?		C
YES >> Inspection End. NO >> Go to diagnosis proce	dure. Refer to BRC-34. "Diagnosis Procedure".	

## Special Repair Requirement

# 1.adjustment of steering angle sensor neutral position

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-12">BRC-12</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

>> GO TO 2

# 2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-13">BRC-13</a>, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

BRC

D

G

Н

ı

L

M

Ν

0

[TYPE 1]

INFOID:0000000006245882

## C1116 STOP LAMP SWITCH

Description INFOID.000000006245880

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

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1116	STOP LAMP SW	When stop lamp switch circuit is open.	Harness or connector     Stop lamp switch     ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results
STOP LAMP SW

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-50">BRC-50</a>, "Diagnosis Procedure".

NO >> Inspection End.

## Diagnosis Procedure

Regarding Wiring Diagram information, refer to <a href="BRC-88">BRC-88</a>, "Wiring Diagram - With VQ40DE".

## 1.CONNECTOR INSPECTION

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

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Repair or replace as necessary.

## $2.\mathsf{stop}$ lamp switch inspection

Check voltage between ABS actuator and electric unit (control unit) connector E125 terminal 39 and body ground.

Brake pedal depressed : Battery voltage

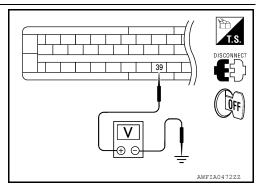
(approx. 12V)

Brake pedal released : Approx. 0V

#### Is the inspection result normal?

YES >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to <a href="mailto:BRC-112">BRC-112</a>, "Removal and Installation".

NO >> Repair or replace malfunctioning components.



#### **C1116 STOP LAMP SWITCH**

#### [TYPE 1] < DTC/CIRCUIT DIAGNOSIS > Special Repair Requirement INFOID:0000000006689855 Α 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator В and electric unit (control unit). Refer to BRC-12, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description". C >> GO TO 2 2.CALIBRATION OF DECEL G SENSOR Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). D Refer to BRC-13, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

BRC

Е

Н

Κ

L

M

Ν

0

[TYPE 1]

INFOID:0000000006245886

## 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

#### DTC DETECTION LOGIC

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

## DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

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

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-52">BRC-52</a>, "Diagnosis Procedure".

NO >> Inspection End.

## Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-88, "Wiring Diagram - With VQ40DE".

## 1. CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connectors and then perform the self-diagnosis. Refer to <u>BRC-29</u>, "CONSULT-III Function (ABS)".

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2

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

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

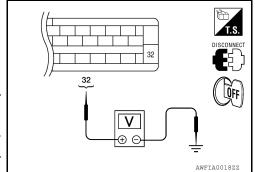
#### C1120, C1122, C1124, C1126 IN ABS SOL

#### < DTC/CIRCUIT DIAGNOSIS >

Turn ignition switch OFF.

- 2. Disconnect ABS actuator and electric unit (control unit) connec-
- 3. Check voltage between ABS actuator and electric unit (control unit) connector E125 terminal 32 and ground.

ABS actuator and ele	ectric unit (control unit)		Voltage
Connector Terminal			voltage
E125	32	Ground	Battery voltage



#### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

# 3.check solenoid, vdc switch-over valve and actuator relay ground circuit

Check continuity between ABS actuator and electric unit (control unit) connector E125 terminals 16, 47 and ground.

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

#### Is the inspection result normal?

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

NO >> Repair or replace malfunctioning components.

# 16, 47

## Component Inspection

## CHECK ACTIVE TEST

- Select each test menu item on "ACTIVE TEST".
- On the display, touch "Up", "Keep", and "Down", and check that the system operates as shown in the table below.

Operation		ABS solenoid valve		
	Operation	Up	Keep	Down
FR RH SOL	FR RH IN SOL	Off	On	On
FR RH SOL	FR RH OUT SOL	Off	Off	On*
FR LH SOL	FR LH IN SOL	Off	On	On
	FR LH OUT SOL	Off	Off	On*
RR RH SOL	RR RH IN SOL	Off	On	On
	RR RH OUT SOL	Off	Off	On*
RR LH SOL	RR LH IN SOL	Off	On	On
	RR LH OUT SOL	Off	Off	On*

<sup>\*:</sup> On for 1 to 2 seconds after the touch, and then Off

#### Is the inspection result normal?

YES >> Inspection End.

Revision: March 2012

>> Go to diagnosis procedure. Refer to <a href="BRC-52">BRC-52</a>, "Diagnosis Procedure".

## Special Repair Requirement

## 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-12, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

> **BRC-53** 2011 Pathfinder

В

[TYPE 1]

Α

D

Е

**BRC** 

Н

INFOID:0000000006245887

K

Ν

Р

INFOID:0000000006689856

## C1120, C1122, C1124, C1126 IN ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

>> GO TO 2

# 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-13">BRC-13</a>, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

## C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

## C1121, C1123, C1125, C1127 OUT ABS SOL

Description INFOID:0000000006245889

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:0000000006245890

#### DTC DETECTION LOGIC

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

DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

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

#### Is above displayed on the self-diagnosis display?

>> Proceed to diagnosis procedure. Refer to <a href="BRC-55">BRC-55</a>, "Diagnosis Procedure". YES

NO >> Inspection End.

## Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-88, "Wiring Diagram - With VQ40DE".

## 1. CONNECTOR INSPECTION

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connectors and then perform the self-diagnosis. Refer to BRC-29, "CONSULT-III Function (ABS)".

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2

Revision: March 2012

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

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

BRC

D

Е

Α

Н

M

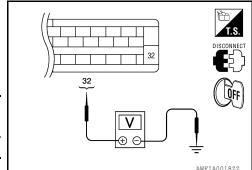
### C1121, C1123, C1125, C1127 OUT ABS SOL

#### < DTC/CIRCUIT DIAGNOSIS >

Turn ignition switch OFF.

- Disconnect ABS actuator and electric unit (control unit) connector
- 3. Check voltage between ABS actuator and electric unit (control unit) connector E125 terminal 32 and ground.

ABS actuator and electric unit (control unit)		_	Voltage	
Connector	Terminal	_	vollage	
E125	32	Ground	Battery voltage	



#### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

# 3.check solenoid, vdc switch-over valve and actuator relay ground circuit

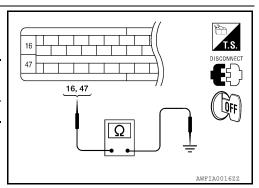
Check continuity between ABS actuator and electric unit (control unit) connector E125 terminals 16, 47 and ground.

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

#### Is the inspection result normal?

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

NO >> Repair or replace malfunctioning components.



## Component Inspection

## 1. CHECK ACTIVE TEST

- 1. Select each test menu item on "ACTIVE TEST".
- On the display, touch "Up", "Keep", and "Down", and check that the system operates as shown in the table below.

Operation		ABS solenoid valve		
		Up	Keep	Down
FR RH SOL	FR RH IN SOL	Off	On	On
TRAIT SOL	FR RH OUT SOL	Off	Off	On*
FR LH SOL	FR LH IN SOL	Off	On	On
FR LH 30L	FR LH OUT SOL	Off	Off	On*
RR RH SOL	RR RH IN SOL	Off	On	On
RK KH 30L	RR RH OUT SOL	Off	Off	On*
RR LH SOL	RR LH IN SOL	Off	On	On
NIX EIT SOL	RR LH OUT SOL	Off	Off	On*

<sup>\*:</sup> On for 1 to 2 seconds after the touch, and then Off

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <u>BRC-52</u>, "<u>Diagnosis Procedure</u>".

## Special Repair Requirement

## ${f 1}$ . ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-12">BRC-12</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

Revision: March 2012 BRC-56 2011 Pathfinder

INFOID:0000000006689858

INFOID:0000000006689859

[TYPE 1]

## C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS > [TYPE 1]	
>> CO TO 2	-
>> GO TO 2  2.CALIBRATION OF DECEL G SENSOR	
Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-13">BRC-13</a> , "CALIBRATION OF DECEL G SENSOR: Description".	-
>> END	
	I

Κ

L

Ν

## C1130, C1131, C1132, C1133, C1136 ENGINE SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

## C1130, C1131, C1132, C1133, C1136 ENGINE SIGNAL

Description INFOID:000000006245894

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

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1130	ENGINE SIGNAL 1		
C1131	ENGINE SIGNAL 2	Based on the signal from ECM, ABS actuator and electric unit (control unit) judges that engine fuel cut system is malfunctioning.	<ul><li>Harness or connector</li><li>ABS actuator and electric unit</li></ul>
C1132	ENGINE SIGNAL 3		(control unit)
C1133	ENGINE SIGNAL 4		<ul><li>ECM</li><li>CAN communication line</li></ul>
C1136	ENGINE SIGNAL 6		

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

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

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-58">BRC-58</a>, "Diagnosis Procedure".

NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006245896

## 1. CHECK ENGINE SYSTEM

- 1. Perform ECM self-diagnosis. Repair or replace items indicated, then perform ECM self-diagnosis again. Refer to <a href="EC-77">EC-77</a>, "CONSULT-III Function".
- 2. Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <a href="BRC-29">BRC-29</a>, "CONSULT-III Function (ABS)".

#### Is any item indicated on the self-diagnosis display?

YES >> Repair or replace the affected part.

NO >> Inspection End.

[TYPE 1]

## C1140 ACTUATOR RLY

Description INFOID:0000000006245897

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

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1140	ACTUATOR RLY	ABS actuator relay or circuit malfunction.	Harness or connector     ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results
ACTUATOR RLY

Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-59</u>, "<u>Diagnosis Procedure</u>".

NO >> Inspection End.

## Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-88, "Wiring Diagram - With VQ40DE".

## 1. CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connectors and then perform the self-diagnosis. Refer to <u>BRC-29</u>, "CONSULT-III Function (<u>ABS</u>)".

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2

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

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

**BRC-59** 

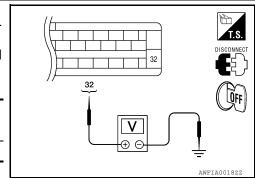
- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Check voltage between ABS actuator and electric unit (control unit) connector E125 terminal 32 and ground.

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

#### Is the inspection result normal?

YES >> GO TO 3

Revision: March 2012



BRC

D

Е

Α

. .

INFOID:0000000006689860

M

0

Ν

#### < DTC/CIRCUIT DIAGNOSIS >

NO >> Repair or replace malfunctioning components.

# 3.check solenoid, vdc switch-over valve and actuator relay ground circuit

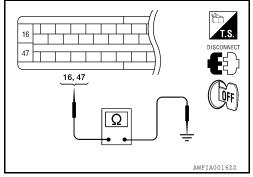
Check continuity between ABS actuator and electric unit (control unit) connector E125 terminals 16, 47 and ground.

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

## Is the inspection result normal?

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

NO >> Repair or replace malfunctioning components.



## Component Inspection

## 1. CHECK ACTIVE TEST

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

Operation	On	Off
MOTOR RELAY	On	Off
ACTUATOR RLY	On	On

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <a href="BRC-43">BRC-43</a>, "Diagnosis Procedure".

## Special Repair Requirement

INFOID:0000000006689862

INFOID:0000000006689861

## 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-12">BRC-12</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

>> GO TO 2

## 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-13, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

#### C1143, C1144 STEERING ANGLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

## C1143, C1144 STEERING ANGLE SENSOR

Description INFOID:0000000006245902

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:0000000006245903

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1143	ST ANG SEN CIRCUIT	Neutral position of steering angle sensor is dislocated, or the steering angle sensor is malfunctioning.	<ul> <li>Steering angle sensor</li> </ul>
C1144	ST ANG SEN SIGNAL	Neutral position of steering angle sensor is not finished.	ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

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

Is above displayed on the self-diagnosis display?

>> Proceed to diagnosis procedure. Refer to <a href="BRC-61">BRC-61</a>, "Diagnosis Procedure". YES

NO >> Inspection End.

### Diagnosis Procedure

Regarding Wiring Diagram information, refer to <a href="BRC-88">BRC-88</a>, "Wiring Diagram - With VQ40DE".

## 1.CONNECTOR INSPECTION

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Disconnect steering angle sensor connector.
- 4. Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connectors and then perform the self-diagnosis. Refer to <u>BRC-29</u>, "CONSULT-III Function (ABS)".

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2

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

## 2.check steering angle sensor harness

- Turn ignition switch OFF.
- Disconnect steering angle sensor connector.

**BRC** 

D

Е

Α

Н

INFOID:0000000006245904

K

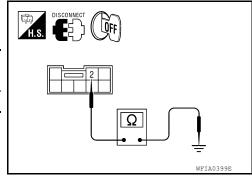
Ν

0

## < DTC/CIRCUIT DIAGNOSIS >

Check continuity between steering angle sensor connector M47 terminal 2 and ground.

Steering angle sensor		_	Continuity
Connector	Terminal		Continuity
M47	2	Ground	Yes



[TYPE 1]

- Turn ignition switch ON.
- Check voltage between steering angle sensor connector M47 terminal 3 and ground.

Steering angle sensor		_	Voltage
Connector	Terminal	_	voltage
M47	3	Ground	Battery voltage
		*	

# AWFIA002322

#### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

# 3. CHECK DATA MONITOR

- 1. Connect the steering angle sensor connector and ABS actuator and electric unit (control unit) connector.
- 2. Perform the steering angle sensor component inspection. Refer to <u>BRC-62. "Component Inspection"</u>.

#### Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-112</u>, "Removal and Installation".
- NO >> Replace steering angle sensor. Refer to <a href="https://example.com/BRC-114">BRC-114</a>, "Removal and Installation".

# Component Inspection

INFOID:0000000006245905

## 1.CHECK DATA MONITOR

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

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

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace steering angle sensor. Refer to <u>BRC-114</u>, "Removal and Installation".

## Special Repair Requirement

INFOID:0000000006689863

## ${f 1}$ .adjustment of steering angle sensor neutral position

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-12">BRC-12</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description".

>> GO TO 2

## 2.CALIBRATION OF DECEL G SENSOR

## C1143, C1144 STEERING ANGLE SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-13">BRC-13</a>, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

В

Α

С

D

Е

BRC

G

Н

J

K

L

M

Ν

0

**[TYPE 1]** 

## C1155 BRAKE FLUID LEVEL SWITCH

Description INFOID:000000006245907

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

#### 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 level switch     Brake fluid level

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results	
BR FLUID LEVEL LOW	

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-64">BRC-64</a>, "Diagnosis Procedure".

NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006245909

Regarding Wiring Diagram information, refer to <a href="BRC-88">BRC-88</a>. "Wiring Diagram - With VQ40DE".

## 1. CONNECTOR INSPECTION

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

#### Is the inspection result normal?

YES >> GO TO 2

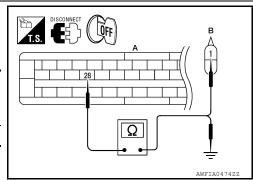
NO >> Repair or replace as necessary.

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

 Check continuity between ABS actuator and electric unit (control unit) connector E125 (A) terminal 28 and brake fluid level switch connector E21 (B) terminal 1.

ABS actuator and electric unit (control unit)		Brake fluid level switch		Continuity
Connector	Terminal	Connector	Terminal	
E125 (A)	28	E21 (B)	1	Yes

2. Check continuity between ABS actuator and electric unit (control unit) connector E125 (A) terminal 28 and ground.



#### < DTC/CIRCUIT DIAGNOSIS >

ABS actuator and electric unit (control unit)			Continuity
Connector	Terminal	_	Continuity
E125 (A)	28	Ground	No

#### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

# ${f 3.}$ CHECK BRAKE FLUID LEVEL SWITCH GROUND

Check continuity between brake fluid level switch connector E21 terminal 2 and ground.

Brake fluid level switch			Continuity
Connector Terminal			Continuity
E21	2	Ground	Yes

#### Is the inspection result normal?

YES >> GO TO 4

NO >> Repair or replace malfunctioning components.

## 4. CHECK BRAKE FLUID LEVEL SWITCH

Perform brake fluid level switch component inspection. Refer to BRC-65, "Component Inspection".

#### Is the inspection result normal?

YES >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to BRC-112, "Removal and Installation".

NO >> Replace brake fluid level switch.

## Component Inspection

# 1. CHECK BRAKE FLUID LEVEL SWITCH

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

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

#### Is the inspection result normal?

Special Repair Requirement

YES >> Inspection End.

NO >> Replace brake fluid level switch.

# DISCONNECT OFF

#### INFOID:0000000006689864

INFOID:0000000006245910

## 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-12">BRC-12</a>. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

#### >> GO TO 2

## 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-13">BRC-13</a>, "CALIBRATION OF DECEL G SENSOR: Description".

D E

Α

В

BRC

Н

ı

J

M

Ν

0

## C1155 BRAKE FLUID LEVEL SWITCH

[TYPE 1]

>> END

#### C1156 ST ANG SEN COM CIR

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

Α

D

Е

**BRC** 

INFOID:0000000006245914

#### C1156 ST ANG SEN COM CIR

Description INFOID:000000006245912

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

DTC Logic INFOID:0000000006245913

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1156	ST ANG SEN COM CIR	When steering angle sensor is not transmitting CAN communication signal to the ABS actuator and electric unit (control unit).	Harness or connector     CAN communication line     Steering angle sensor     ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results	
ST ANG SEN COM CIR	

Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to BRC-67, "Diagnosis Procedure".

NO >> Inspection End.

## Diagnosis Procedure

1.CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- 4. Reconnect connector and perform self-diagnosis. Refer to <a href="BRC-29">BRC-29</a>, "CONSULT-III Function (ABS)".

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

Is above displayed on the self-diagnosis display?

YES >> Refer to LAN-14, "Trouble Diagnosis Flow Chart".

NO >> Inspection End.

N

Revision: March 2012 BRC-67 2011 Pathfinder

#### C1160 DECEL G SEN SET

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

## C1160 DECEL G SEN SET

Description INFOID:000000006245915

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

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1160	DECEL G SEN SET	ABS decel G sensor adjustment is incomplete.	Decel G sensor calibration     Yaw rate/side/decel G sensor     ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results	_
DECEL G SEN SET	

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-68">BRC-68</a>, "Diagnosis Procedure".

NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006245917

## 1.PERFORM SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <u>BRC-29</u>, "CONSULT-III Function (ABS)".

Self-diagnosis results	
DECEL G SEN SET	

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

YES >> Perform repair or replacement for the item indicated.

NO >> Perform calibration of decel G sensor. Refer to <a href="BRC-13">BRC-13</a>, "CALIBRATION OF DECEL G SENSOR : Description". GO TO 2

## 2. PERFORM SELF-DIAGNOSIS AGAIN

- Turn the ignition switch to OFF and then to ON and erase self-diagnosis results. Refer to <u>BRC-29</u>, "<u>CON-SULT-III Function (ABS)</u>".
- Perform ABS actuator and electric unit (control unit) self-diagnosis again. Refer to <u>BRC-29</u>, "CONSULT-III <u>Function (ABS)"</u>.

#### Are any self-diagnosis results displayed?

YES >> Replace yaw rate/side/decel G sensor. Refer to <u>BRC-115</u>, "Removal and Installation".

NO >> Inspection End.

#### **C1163 ST ANGLE SEN SAFE**

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

## C1163 ST ANGLE SEN SAFE

Description INFOID:000000006245918

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

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1163	ST ANGL SEN SAFE	When steering angle sensor is in safe mode.	Adjust steering angle sensor neutral position

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results
ST ANGL SEN SAFE

Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-69">BRC-69</a>, "Diagnosis Procedure".

NO >> Inspection End.

## Diagnosis Procedure

 $1.\mathsf{ADJUSTMENT}$  OF STEERING ANGLE SENSOR NEUTRAL POSITION

Adjust steering angle sensor neutral position. Refer to <u>BRC-12, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".</u>

>> GO TO 2

## 2.INDICATOR LAMP CHECK

Check that VDC OFF indicator lamp is off.

Is VDC OFF indicator lamp off?

YES >> Inspection End.

NO

>> Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <u>BRC-29</u>, "CONSULT-III Function (ABS)".

BRC

Н

INFOID:0000000006245920

D

Α

K

N

M

O

[TYPE 1]

# C1164, C1165, C1166, C1167 CV/SV SYSTEM

Description INFOID:000000006245921

CV1, CV2 (CUT VALVE)

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

SV1, SV2 (SUCTION VALVE)

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

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1164	CV1	VDC switch-over solenoid valve (CV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	
C1165	CV2	VDC switch-over solenoid valve (CV2) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	Harness or connector     ABS actuator and electric unit
C1166	SV1	VDC switch-over solenoid valve (SV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	(control unit)
C1167	SV2	VDC switch-over solenoid valve (SV2) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results
CV1
CV2
SV1
SV2

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-70">BRC-70</a>, "Diagnosis Procedure".

NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006689865

Regarding Wiring Diagram information, refer to <a href="BRC-88">BRC-88</a>, "Wiring Diagram - With VQ40DE".

## 1. CONNECTOR INSPECTION

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- 4. Reconnect connectors and then perform the self-diagnosis. Refer to BRC-29, "CONSULT-III Function (ABS)".

Is any item indicated on the self-diagnosis display?

#### C1164, C1165, C1166, C1167 CV/SV SYSTEM

# < DTC/CIRCUIT DIAGNOSIS >

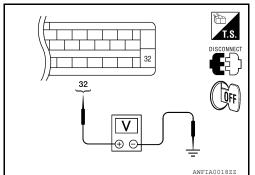
YES >> GO TO 2

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

# 2.check solenoid, vdc switch-over valve and actuator relay power supply circuit

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connec-
- Check voltage between ABS actuator and electric unit (control unit) connector E125 terminal 32 and ground.

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



#### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

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

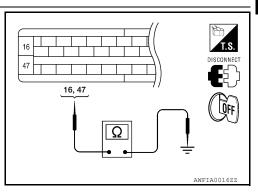
Check continuity between ABS actuator and electric unit (control unit) connector E125 terminals 16, 47 and ground.

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

#### Is the inspection result normal?

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

NO >> Repair or replace malfunctioning components.



#### INFOID:0000000006245924

[TYPE 1]

## Component Inspection 1. CHECK ACTIVE TEST

## Select each test menu item on "ACTIVE TEST".

On the display, touch "Up", "ACT UP", and "ACT KEEP", and check that the system operates as shown in the table below.

Operation		ABS solenoid valve (ACT)		
		Up	ACT UP	ACT KEEP
FR RH ABS SOLENOID (ACT)	FR RH IN SOL	Off	Off	Off
	FR RH OUT SOL	Off	Off	Off
FR LH ABS SOLENOID (ACT)	FR LH IN SOL	Off	Off	Off
	FR LH OUT SOL	Off	Off	Off
RR RH ABS SOLENOID (ACT)	RR RH IN SOL	Off	Off	Off
	RR RH OUT SOL	Off	Off	Off
RR LH ABS SOLENOID (ACT)	RR LH IN SOL	Off	Off	Off
	RR LH OUT SOL	Off	Off	Off

<sup>\*:</sup> On for 1 to 2 seconds after the touch, and then Off

#### Is the inspection result normal?

YES >> Inspection End.

>> Go to diagnosis procedure. Refer to <a href="BRC-70">BRC-70</a>, "Diagnosis Procedure". NO

**BRC** 

Α

В

D

Е

Н

L

K

N

## C1164, C1165, C1166, C1167 CV/SV SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

## Special Repair Requirement

INFOID:0000000006689866

# 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-12">BRC-12</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

>> GO TO 2

# 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-13, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

#### **U1000 CAN COMM CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

#### 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

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
U1000	CAN COMM CIRCUIT	When ABS actuator and electric unit (control unit) is not transmitting or receiving CAN communication signal for 2 seconds or more.	CAN communication line     ABS actuator and electric unit (control unit)

## Diagnosis Procedure

INFOID:0000000006245928

## 1. CONNECTOR INSPECTION

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

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

YES >> Print out the self-diagnostic results, and refer to LAN-14, "Trouble Diagnosis Flow Chart".

NO >> Connector terminal is loose, damaged, open, or shorted.

BRC

D

Е

Α

Н

J

K

L

N /I

Ν

0

# **VDC OFF SWITCH**

Description INFOID.000000006245929

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

## Component Function Check

INFOID:0000000006245930

# 1. CHECK VDC OFF SWITCH OPERATION

Press and release the VDC OFF switch, then press and release the VDC OFF switch again and check that the VDC OFF indicator lamp in the combination meter turns ON/OFF correctly.

Condition	VDC OFF indicator lamp illumination status
VDC OFF switch: pressed and released	ON
VDC OFF switch: pressed and released	OFF

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <a href="BRC-74">BRC-74</a>, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000006245931

AWFIA0682ZZ

Regarding Wiring Diagram information, refer to BRC-88, "Wiring Diagram - With VQ40DE".

# 1. CHECK VDC OFF SWITCH

Perform the VDC OFF switch component inspection. Refer to BRC-75, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Replace VDC OFF switch.

## 2. CHECK VDC OFF SWITCH HARNESS

- Disconnect ABS actuator and electric unit (control unit) connector.
- Check continuity between ABS actuator and electric unit (control unit) connector E125 (A) terminal 6 and VDC OFF switch connector M154 (B) terminal 1.

ABS actuator and electric unit (control unit)		VDC OFF switch		Continuity
Connector	Terminal	Connector	Terminal	
E125 (A)	6	M154 (B)	1	Yes

Check continuity between ABS actuator and electric unit (control unit) connector E125 (A) terminal 6 and ground.

	) <u>}***</u> **	Ω
ol <sup>†</sup>		

ABS actuator and ele	ectric unit (control unit)		Continuity	
Connector Terminal		_	Continuity	
E125 (A)	6	Ground	No	

#### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace harness.

3.CHECK VDC OFF SWITCH GROUND

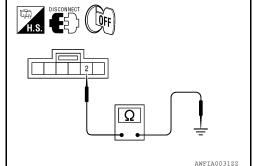
#### **VDC OFF SWITCH**

#### < DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

Check continuity between VDC OFF switch connector M154 and ground.

VDC OF	F switch		Continuity
Connector	Terminal		Continuity
M154	2	Ground	Yes



#### Is the inspection result normal?

YES >> GO TO 4

NO >> Repair or replace harness.

# 4. CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-25, "Diagnosis Description".

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <a href="mailto:BRC-112">BRC-112</a>, "Removal and Installation".

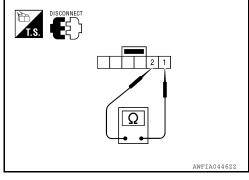
NO >> Replace combination meter. Refer to <a href="MWI-88">MWI-88</a>, "Removal and Installation".

# Component Inspection

# 1. CHECK VDC OFF SWITCH

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

VDC OFF switch terminals	Condition	Continuity	
1 – 2	When VDC OFF switch is pressed.	Yes	
1 – 2	When VDC OFF switch is released.	No	



#### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace VDC OFF switch.

## Special Repair Requirement

INFOID:0000000006689867

INFOID:0000000006245932

# ${f 1}$ . ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-12">BRC-12</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

>> GO TO 2

# 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-13">BRC-13</a>, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

BRC

Α

В

D

Е

Н

J

K

\_

M

[TYPE 1]

#### ABS WARNING LAMP

Description INFOID:000000006245934

x: ON -: OFF

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

## Component Function Check

INFOID:0000000006245935

# 1. CHECK ABS WARNING LAMP OPERATION

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

# Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <a href="BRC-76">BRC-76</a>. "Diagnosis Procedure".

# Diagnosis Procedure

INFOID:0000000006245936

## 1. CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <u>BRC-29</u>, "CONSULT-III Function (ABS)".

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Check items displayed by self-diagnosis.

## 2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to <a href="MWI-25">MWI-25</a>, "Diagnosis Description".

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <a href="BRC-112">BRC-112</a>, "Removal and Installation".

NO >> Replace combination meter. Refer to MWI-88, "Removal and Installation".

# Special Repair Requirement

INFOID:0000000006689868

# $1.\mathsf{ADJUSTMENT}$ OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-12">BRC-12</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

>> GO TO 2

# 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-13, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

#### BRAKE WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 1]

#### BRAKE WARNING LAMP

Description INFOID:0000000006245938

×: ON –: OFF

Α

В

D

Е

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

#### NOTE:

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

## Component Function Check

INFOID:0000000006245939

## 1.BRAKE WARNING LAMP OPERATION CHECK

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

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <a href="BRC-77">BRC-77</a>, "Diagnosis Procedure".

# Diagnosis Procedure

INFOID:0000000006245940

## 1. CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <u>BRC-29, "CONSULT-III Function (ABS)"</u>.

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Check items displayed by self-diagnosis.

#### 2. CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-25, "Diagnosis Description".

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <a href="mailto:BRC-112">BRC-112</a>, "Removal and Installation".

NO >> Replace combination meter. Refer to MWI-88, "Removal and Installation".

#### Special Repair Requirement

# 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-12">BRC-12</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

#### >> GO TO 2

# 2.calibration of decel G sensor

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-13">BRC-13</a>, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

BRC

Н

\_\_\_

K

M

INFOID:0000000006689869

[TYPE 1]

## VDC OFF INDICATOR LAMP

Description INFOID:0000000006245942

×: ON -: OFF

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

# Component Function Check

INFOID:0000000006245943

# 1.VDC OFF INDICATOR LAMP OPERATION CHECK 1

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

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Go to diagnosis procedure. Refer to <a href="BRC-78">BRC-78</a>, "Diagnosis Procedure".

# 2.VDC OFF INDICATOR LAMP OPERATION CHECK 2

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

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Check VDC OFF switch. Refer to <a href="BRC-74">BRC-74</a>, "Diagnosis Procedure".

# Diagnosis Procedure

INFOID:0000000006245944

# 1. CHECK VDC OFF SWITCH

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

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Check VDC OFF switch. Refer to <u>BRC-74</u>, "<u>Diagnosis Procedure</u>".

# 2. CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <u>BRC-29</u>, "CONSULT-III Function (ABS)".

#### Is the inspection result normal?

YES >> GO TO 3

NO >> Check items displayed by self-diagnosis.

# 3. CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-25, "Diagnosis Description".

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <a href="BRC-112">BRC-112</a>, "Removal and Installation".

NO >> Replace combination meter. Refer to MWI-88, "Removal and Installation".

#### **VDC OFF INDICATOR LAMP**

#### [TYPE 1] < DTC/CIRCUIT DIAGNOSIS > Special Repair Requirement INFOID:0000000006689870 Α 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator В and electric unit (control unit). Refer to BRC-12, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description". C >> GO TO 2 2.CALIBRATION OF DECEL G SENSOR Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). D Refer to BRC-13, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

BRC

Е

Н

Κ

L

M

Ν

0

# SLIP INDICATOR LAMP

Description INFOID:000000006245946

x: ON -: OFF

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

# Component Function Check

INFOID:0000000006245947

# 1. CHECK SLIP INDICATOR LAMP OPERATION

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

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <a href="BRC-80">BRC-80</a>. "Diagnosis Procedure".

# Diagnosis Procedure

INFOID:0000000006245948

# 1. CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <u>BRC-29</u>, "CONSULT-III Function (ABS)".

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Check items displayed by self-diagnosis.

# 2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-25, "Diagnosis Description".

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <a href="BRC-112">BRC-112</a>, "Removal and Installation".

NO >> Replace combination meter. Refer to <a href="MWI-88">MWI-88</a>, "Removal and Installation".

# Special Repair Requirement

INFOID:0000000006689871

# 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-12">BRC-12</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description".

>> GO TO 2

# 2.calibration of decel ${\sf g}$ sensor

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-13, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

## **APPLICATION NOTICE**

< ECU DIAGNOSIS INFORMATION >

[TYPE 1]

# **ECU DIAGNOSIS INFORMATION**

# **APPLICATION NOTICE**

**Application Notice** 

INIEOID:000000000eee0024	

Service information	Remarks
TYPE 1	VDC/TCS/ABS (VQ40DE)
TYPE 2	VDC/TCS/ABS (VK56DE)

Α

В

С

 $\mathsf{D}$ 

Е

BRC

Н

J

Κ

L

M

Ν

0

< ECU DIAGNOSIS INFORMATION >

[TYPE 1]

# ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Reference Value

#### VALUES ON THE DIAGNOSIS TOOL

#### **CAUTION:**

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

CONSULT-III MONITOR ITEM

CONSULT-III MONITO		Data monitor			
Monitor item	Display content	Condition	Reference value in normal operation		
		0 [km/h (MPH)]	Vehicle stopped		
FR LH SENSOR	Wheel speed	Nearly matches the speed meter display (± 10% or less)	Vehicle running (Note 1)		
		0 [km/h (MPH)]	Vehicle stopped		
FR RH SENSOR	Wheel speed	Nearly matches the speed meter display (± 10% or less)	Vehicle running (Note 1)		
		0 [km/h (MPH)]	Vehicle stopped		
RR LH SENSOR	Wheel speed	Nearly matches the speed meter display (± 10% or less)	Vehicle running (Note 1)		
		0 [km/h (MPH)]	Vehicle stopped		
RR RH SENSOR	Wheel speed	Nearly matches the speed meter display (± 10% or less)	Vehicle running (Note 1)		
DECEL G-SEN	Longitudinal acceleration detected by Decel	Vehicle stopped	Approx. 0 G		
DECEL G-SEN	G-Sensor	Vehicle running	-1.7 to 1.7 G		
ED DUIN COL		Actuator (solenoid valve) is active ("AC-TIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode)	ON		
FR RH IN SOL	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	Operation status of each coloneid value	Actuator (solenoid valve) is active ("AC-TIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode)	ON		
PR RH OUT SOL	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	OFF		
ED I H IN COI	Operation status of each coloneid value	Actuator (solenoid valve) is active ("AC-TIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode)	ON		
FR LH IN SOL	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	OFF		
EDILLOUT SOL	Operation status of each coloneid value	Actuator (solenoid valve) is active ("AC-TIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode)	ON		
FR LH OUT SOL	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	OFF		

		Data monitor	
Monitor item	Display content	Condition	Reference value in normal operation
RR RH IN SOL	Operation status of each coloneid value	Actuator (solenoid valve) is active ("AC-TIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode)	ON
KK KH IIV SOL	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	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("AC-TIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode)	ON
KK KH OOT SOL	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	OFF
RR LH IN SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("AC-TIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode)	ON
AN LITHN OOL	Operation status of each soletiola valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	OFF
RR LH OUT SOL	Operation status of each selected value	Actuator (solenoid valve) is active ("AC-TIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode)	ON
KK LH 001 30L	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	OFF
EBD WARN LAMP	EBD warning lamp	When EBD warning lamp is ON	ON
.DD WAINI LAWF	(Note 2)	When EBD warning lamp is OFF	OFF
STOP LAMP SW	Stop lamp switch signal status	When brake pedal is depressed	ON
	otop isimp omion eight otatao	When brake pedal is released	OFF
MOTOR RELAY	Motor and motor relay operation	When the motor relay and motor are operating	ON
		When the motor relay and motor are not operating	OFF
ACTUATOR RUY	A structure and a superior	When the actuator relay is operating	ON
ACTUATOR RLY	Actuator relay operation	When the actuator relay is not operating	OFF
ABS WARN LAMP	ABS warning lamp	When ABS warning lamp is ON	ON
ADO WARIN LAIMP	(Note 2)	When ABS warning lamp is OFF	OFF
OFF LAMP	VDC OFF indicator lamp	When VDC OFF indicator lamp is ON	ON
	(Note 2)	When VDC OFF indicator lamp is OFF	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 OFF)	OFF
SLIP LAMP	SLIP indicator lamp	When SLIP indicator lamp is ON	ON
	(Note 2)	When SLIP indicator lamp is OFF	OFF
BATTERY VOLT	Battery voltage supplied to the ABS actuator and electric unit (control unit)	Ignition switch ON	10 – 16 V
		1st gear	1
GEAR	Gear position determined by TCM	2nd gear 3rd gear	2 3
	,	4th gear	4

## < ECU DIAGNOSIS INFORMATION >

[TYPE 1]

		Data monitor			
Monitor item	Display content	Condition	Reference value in normal operation		
SLCT LVR POSI	A/T selector lever position	P position R position N position D position	P R N D		
		With engine stopped	0 rpm		
ENGINE SPEED	With engine running	Engine running	Almost in accordance with tachome ter display		
YAW RATE SEN	Yaw rate detected by yaw rate/side/decel G	When vehicle is stopped	Approx. 0 d/s		
TAW NATE SEN	sensor	When vehicle turning			
R POSI SIG	Transmission range switch signal ON/OFF	A/T shift position = R position	ON		
17 1001 310	condition	A/T shift position = other than R position	OFF		
4WD FAIL REQ	Transfer control unit fail-safe signal	When transfer control unit is in fail-safe mode	ON		
(Note 3)		When transfer control unit is normal	OFF		
N POSI SIG	Transmission range switch signal ON/OFF	A/T shift position = N position	ON		
N POSI SIG	condition	A/T shift position = other than N position	OFF		
D DOOL CLO	Transmission range switch signal ON/OFF	A/T shift position = P position	ON		
P POSI SIG	condition	A/T shift position = other than P position	OFF		
CV1	VDC switch-over valve	When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (when in fail-safe mode)	ON		
		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON)	OFF		
CV2	VDC switch-over valve	When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (when in fail-safe mode)	ON		
		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON)	OFF		
SV1	VDC switch-over valve	When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (when in fail-safe mode)	ON		
		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON)	OFF		
SV2	VDC switch-over valve	When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (when in fail-safe mode)	ON		
		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON)	OFF		
	Drive evile	2WD model	2WD		
2WD/4WD	Drive axle	4WD model	4WD		

#### < ECU DIAGNOSIS INFORMATION >

[TYPE 1]

		Data monitor		
Monitor item	Display content	Condition	Reference value in normal operation	F
A COEL DOS 010	ACCEL POS SIG  Throttle actuator opening/closing is dissiplayed (linked with accelerator pedal)  ACCEL POS SIG  Throttle actuator opening/closing is dissiplayed (linked with accelerator pedal)		0 %	Е
ACCEL POS SIG	played (linked with accelerator pedal)	Accelerator pedal depressed (ignition switch is ON)	0 - 100 %	
		Vehicle stopped	Approx. 0 m/s <sup>2</sup>	
SIDE G-SENSOR	Transverse G detected by side G sensor	Vehicle turning right	Negative value (m/s <sup>2</sup> )	Г
		Vehicle turning left	Positive value (m/s <sup>2</sup> )	
CTD ANCLE CIC	Steering angle detected by steering angle	Straight-ahead	Approx. 0±2.5°	Е
STR ANGLE SIG	R ANGLE SIG Steering angle detected by steering angle sensor  Steering wheel turned		–720 to +720°	
	Brake fluid pressure detected by pressure	With ignition switch turned ON and brake pedal released	Approx. 0 bar	BF
PRESS SENSOR	sensor	With ignition switch turned ON and brake pedal depressed	-40 to 300 bar	
EBD SIGNAL EBD operation		EBD is active	ON	(
EBD SIGNAL	EBD operation	EBD is inactive	OFF	
ABS SIGNAL	ABS operation	ABS is active	ON	-
ADS OPERATION		ABS is inactive	OFF	
TCS SIGNAL TCS operation		TCS is active	ON	
TCS SIGNAL	103 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 fail cafe signal	In EBD fail-safe	ON	
EDD FAIL SIG	EBD fail-safe signal	EBD is normal	OFF	
ABS FAIL SIG	APS fail cafe signal	In ABS fail-safe	ON	
MDS FAIL SIG	ABS fail-safe signal	ABS is normal	OFF	
TOS EAIL SIG	TCS fail cafe signal	In TCS fail-safe	ON	
TCS FAIL SIG	TCS fail-safe signal	TCS is normal	OFF	
VDC FAIL SIG	VDC fail-safe signal	In VDC fail-safe	ON	
VDO I AIL SIG	VDO Idili-sale signal	VDC is normal	OFF	
CRANKING SIG	Crank operation	Crank is active	ON	
CRAINNING SIG	Crank operation	Crank is inactive	OFF	
ELLIID LEV SW	Proke fluid level ewitch signal etatus	When brake fluid level switch ON	ON	1
FLUID LEV SW	Brake fluid level switch signal status	When brake fluid level switch OFF	OFF	

#### NOTE:

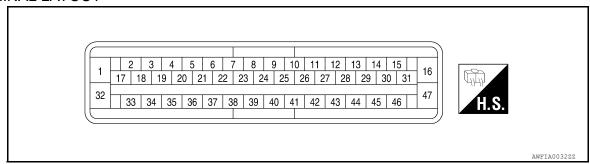
- 1: Confirm tire pressure is normal.
- 2: On and off timing for warning lamp and indicator lamp.
- · 3: Only 4WD models.
- ABS warning lamp: Refer to BRC-76, "Description".
- Brake warning lamp: Refer to BRC-77, "Description".
- VDC OFF indicator lamp: Refer to BRC-78, "Description".
- SLIP indicator lamp: Refer to BRC-80, "Description".

0

< ECU DIAGNOSIS INFORMATION >

[TYPE 1]

#### **TERMINAL LAYOUT**



Fail-Safe

#### **CAUTION:**

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

#### ABS/EBD SYSTEM

In case of an electrical malfunction with the ABS, the ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp will turn on. In case of an electrical malfunction with the EBD system, the BRAKE warning lamp, ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp will turn on.

The system will revert to one of the following conditions of the Fail-Safe function.

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

#### VDC/TCS SYSTEM

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

DTC No. Index

DTC	Items (CONSULT screen terms)	Reference
C1101	RR RH SENSOR-1	
C1102	RR LH SENSOR-1	BRC-34, "Description"
C1103	FR RH SENSOR-1	BRC-34, Description
C1104	FR LH SENSOR-1	
C1105	RR RH SENSOR-2	
C1106	RR LH SENSOR-2	DDC 27 "Description"
C1107	FR RH SENSOR-2	BRC-37, "Description"
C1108	FR LH SENSOR-2	
C1109	BATTERY VOLTAGE [ABNORMAL]	BRC-40, "Description"
C1110	CONTROLLER FAILURE	BRC-42, "DTC Logic"
C1111	PUMP MOTOR	BRC-43, "Description"
C1113	G-SENSOR	BRC-45, "Description"
C1115	ABS SENSOR [ABNORMAL SIGNAL]	BRC-47, "Description"
C1116	STOP LAMP SW	BRC-50, "Description"
C1120	FR LH IN ABS SOL	BRC-52, "Description"
C1121	FR LH OUT ABS SOL	BRC-55, "Description"
C1122	FR RH IN ABS SOL	BRC-52, "Description"
C1123	FR RH OUT ABS SOL	BRC-55, "Description"

## < ECU DIAGNOSIS INFORMATION >

[TYPE 1]

DTC	Items (CONSULT screen terms)	Reference	
C1124	RR LH IN ABS SOL	BRC-52, "Description"	— A
C1125	RR LH OUT ABS SOL	BRC-55, "Description"	
C1126	RR RH IN ABS SOL	BRC-52, "Description"	В
C1127	RR RH OUT ABS SOL	BRC-55, "Description"	
C1130	ENGINE SIGNAL 1		<del></del>
C1131	ENGINE SIGNAL 2		С
C1132	ENGINE SIGNAL 3	BRC-58, "Description"	
C1133	ENGINE SIGNAL 4		D
C1136	ENGINE SIGNAL 6		D
C1140	ACTUATOR RLY	BRC-59, "Description"	
C1143	ST ANG SEN CIRCUIT	DDO 04 IID a carbotica II	Е
C1144	ST ANG SEN SIGNAL	BRC-61, "Description"	
C1145	YAW RATE SENSOR	DDC 45 "Description"	BRC
C1146	SIDE G-SEN CIRCUIT	BRC-45, "Description"	DIC
C1155	BR FLUID LEVEL LOW	BRC-64, "Description"	
C1156	ST ANG SEN COM CIR	BRC-67, "Description"	G
C1160	DECEL G SEN SET	BRC-68, "Description"	
C1163	ST ANGL SEN SAFE	BRC-69, "Description"	
C1164	CV1		— Н
C1165	CV2	DDC 70 UDagariation	
C1166	SV1	BRC-70, "Description"	
C1167	SV2		
C1170	VARIANT CODING	BRC-42, "DTC Logic"	
U1000	CAN COMM CIRCUIT	BRC-73, "Description"	J

Κ

L

 $\mathbb{N}$ 

Ν

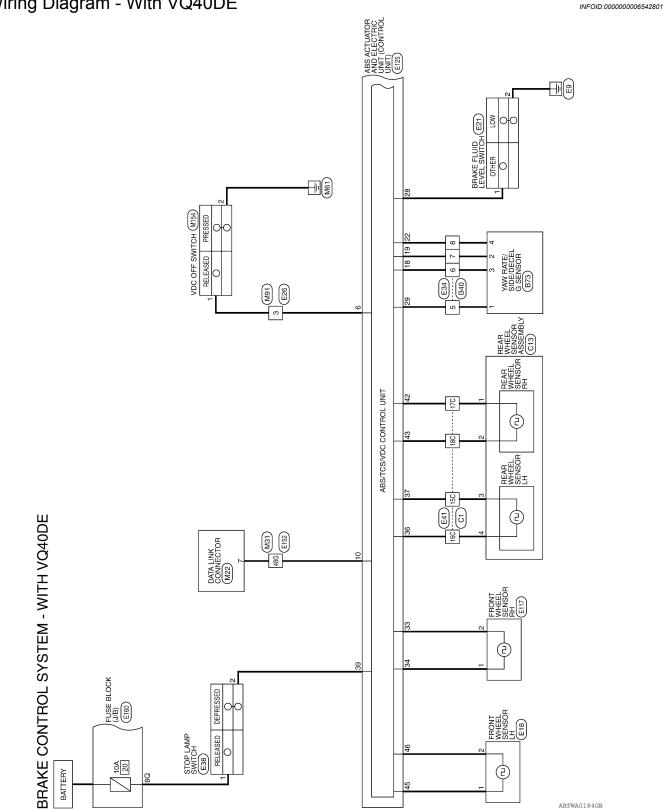
0

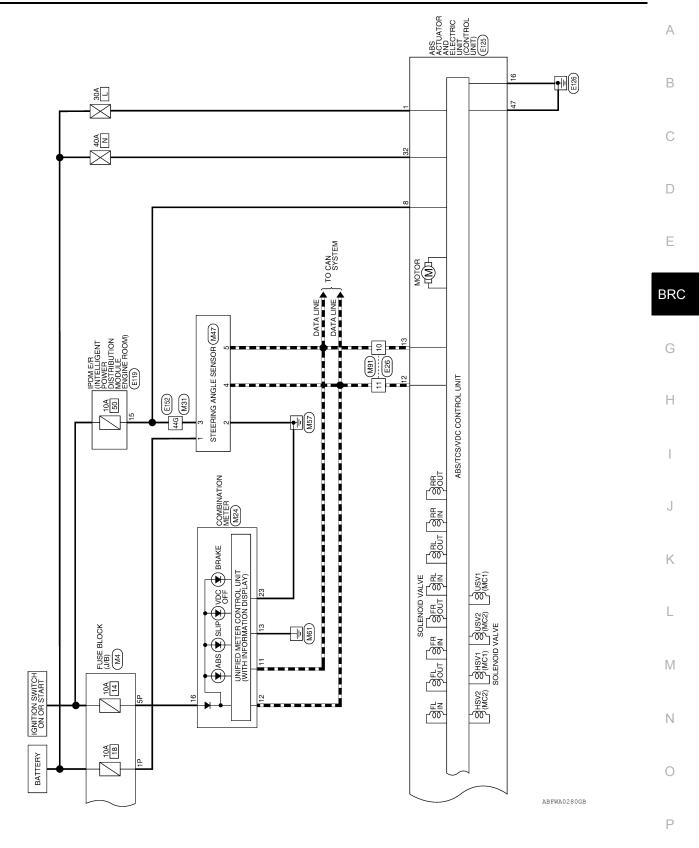
P

# WIRING DIAGRAM

# **BRAKE CONTROL SYSTEM - VDC**

Wiring Diagram - With VQ40DE





Connector Name | COMBINATION METER

Connector No. M24

# BRAKE CONTROL SYSTEM CONNECTORS - WITH VQ40DE



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

IVIZZ	Connector Name DATA LINK CONNECTOR	WHITE	9 10 11 12 13 14 15 16 1 2 3 4 5 6 7 8
Connector No.   M22	Connector Name	Connector Color WHITE	H.S.
TNO. M4	r Name FUSE BLOCK (J/B)	r Color WHITE	77 6P 5P 4P ( ) 3P 2P 1P ( ) 6P 1SP ( 4P ( ) 5P ( ) 1P ( ) 6P ( )

Signal Name	-	I
Color of Wire	R/B	M/G
Terminal No.	1P	5P

_	,	2 1 22 21						
<u> </u>		12 11 10 9 8 7 6 5 4 3 32 31 30 29 28 27 26 25 24 23	Signal Name	CAN-L	CAN-H	GROUND	RUN START	POWER GND
lor WH		16 15 14 13 36 35 34 33	Color of Wire	₾	_	GR	M/G	В
Connector Color WHITE	品. H.S.	20 19 18 17 16 40 39 38 37 36	Terminal No.	11	12	13	16	23

Signal Name	-	
olor of Vire	W	

Signal Name	_	
Color of Wire	M	
Terminal No.	2	

O	Connector No.	M47
O	Connector Name STEERING AN	STEERING AN
0	Connector Color	WHITE

Connector !	Vame	STEERI	Connector Name   STEERING ANGLE SENSOR
Connector Color WHITE	Solor	WHITE	
面 H.S.		1	08
Terminal No.	Color of Wire	r of	Signal Name
-	₽Y	>	BATT

POWER CAN-H CAN-L

W/R Ш

က

┙

Ŋ

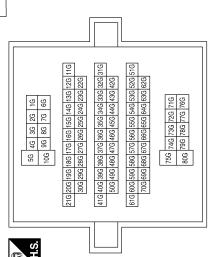
GND

Signal Name	_	I	
Color of Wire	W/R	M	
Terminal No.	44G	48G	

Connector Name WIRE TO WIRE Connector Color WHITE

M31

Connector No.



ABFIA0428GB

Connector No.	. E18	
Connector Name		FRONT WHEEL SENSOR LH
Connector Color	lor GRAY	
原 H.S.		
Terminal No.	Color of Wire	Signal Name
-	σ	1
۸	ď	1

	me	lor	_	۸ ا		
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	1	2
<u>8</u>	Con	Con	E -	Ter		
		Γ—	1			
	l	ı				

Connector No.		M154	
Connector Name		/DC (	VDC OFF SWITCH
Connector Color GRAY	olor	зRАY	
H.S.	9		3 2 1
Terminal No.	Color of Wire	r of re	Signal Name
٦	GR	~	1
2	В		1

Connector No.	). M91	
Connector Name		WIRE TO WIRE
Connector Color WHITE	olor WH	<u> </u>
是 H.S.	7 6 5 4	4     3     2     1       13     12     11     10     9     8
Terminal No.	Color of Wire	Signal Name
3	GR	ı
10	۵	-
11	_	ı

	WIRE TO WIRE	TE	2 9 0	Signal Name	1	-	_	-
. E34		lor WH	4 8	Color of Wire	BR	0	8	Υ
Connector No.	Connector Name	Connector Color WHITE	副 H.S.	Terminal No.	5	9	2	8

	WIRE TO WIRE	11	3	Signal Name	ı	-	ı
. E26	me WIF	lor WH	8 1 3	Color of Wire	GR	Д	_
Connector No.	Connector Name	Connector Color WHITE	原 H.S.	Terminal No.	က	10	11

lo. E21	lame BRAKE FLUID LEVEL SWITCH	color GRAY		Color of Signal Name	SB	- В
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	-	2

ABFIA0562GB

Α

В

D

Е

BRC

G

Н

Κ

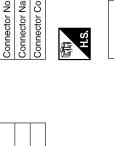
L

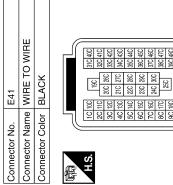
M

Ν

0

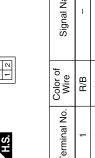
		_	,	$\overline{}$	-	_
	Connector Name FRONT WHEEL SENSOR RH			Signal Name	_	ı
E117	ne FRON	or GRAY		Color of Wire	В	<b>M</b>
Connector No.	Connector Nar	Connector Color GRAY	明.S.	Terminal No.	1	٥





Signal Name	l	ı	I	-
Color of Wire	Ь	Γ	۸	LG
Terminal No.	15C	16C	17C	18C

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



Signal Nam	ı	I
Color of Wire	B/B	Υ
Terminal No.	-	2

6	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	JE.	9 8 7 6 6 3 4 3 8 17 16 15 14 13 12 11 10	Signal Name	A Iddi IS NUI SUV
E119		or WHITE	9 8 7 6 1	Color of Wire	M/N
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	15

ABFIA0430GB

# **BRAKE CONTROL SYSTEM - VDC**

[TYPE 1] < WIRING DIAGRAM >

Signal Name	CLUS GND	ı	I	KL30 V	FR-RH SIG	FR-RH PWR	1	RR-LH PWR	RR-LH SIG	ı	STOP LAMP SW	ı	_	RR-RH SIG	RR-RH PWR	-	FR-LH PWR	FR-LH SIG	GND P
Color of Wire	BR	1	-	<b>&gt;</b>	M	В	ı	٦	Д	1	SB	ı	_	>	LG	-	G	В	В
Terminal No.	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47

erminal No.	Color of Wire	Signal Name
1	ш	KL30-P
2	1	1
က	1	1
4	1	ı
5	1	1
9	GR	VDC OFF SW
7	1	1
8	W/R	IGN
6	ı	ı
10	SB	DIAG K
11	-	I
12	٦	CAN-H
13	Ь	CAN-L
14	_	-
15	_	_
16	В	GND V
17	_	_
18	0	CAN2-H
19	M	CAN2-L
20	ı	1
21	_	_
22	>	CLUS SP
23	_	_
24	_	_
25	ı	ı
26	ı	1
27	-	1
28	GR	BRAKE LEVEL SW

Connector No.	E125
Connector Name	Connector Name ELECTRIC UNIT (CONTROL UNIT) (WITH VQ40DE)
Connector Color BLACK	BLACK



Α

В

С

 $\mathsf{D}$ 

Е

BRC

G

Н

K

L

M

Ν

0

ABFIA0057GB

Ρ

Connector No. E160 Connector Name FUSE BLOCK (J/B)	Connector Color WHITE	(新年) (20 (三) (20 (三)	Terminal No. Wire Signal Name 8Q R/B -			Connector No. C13	Connector Name REAR WHEEL SENSOR ASSEMBLY	Connector Color GRAY			H.S.		Terminal No.   Color of   Signal Name	>	2 LG –	3 Ь	4 L –
Signal Name	1 1					Simple Mamo		1	1	1							
Š Š	W/H W WH					Color of Coming No.	15C P		17C V	18C LG							
E152 WIRE TO WIRE	Connector Color   WHITE	H.S. 66 76 86 96 100	116 126 139 149 159 169 170 189 199 209 216 226 239 246 256 256 276 286 299 306 316 226 239 246 256 256 277 289 299 306 429 439 446 459 469 479 889 399 409 415	51.0   22.0   23.0   34.0   55.0   56.0   57.0   58.0   59.0   61.0   22.0   23.0   24.0   65.0   66.0   67.0   23.0   24.0   65.0   66.0   67.0   68.0   69.0   70.0	7.1G 7.2G 7.3G 7.4G 7.5G 7.6G 7.7G 7.8G 7.9G 80.0	Connector No. C1	WIRE TO WIRE	Connector Color BLACK		S. 400(310)	41C 32C 19C 110 42C 33C 26C 20C 12C	400 940   270 210   180 4C	29C 23C	470 380 170 8C 180 9C 180 9C			

ABFIA0058GB

Α

В

С

D

Е

2	$\supset$
Э	RU

G

Н

ı

J

Κ

L

M

Ν

0

Р

ABFIA0431GB

B73	Connector Name YAW RATE/SIDE/DECEL SENSOR	BLACK	
Connector No.	Connector Name	Connector Color	

U





Signal Name	CLU GND	CAN-L	CAN-H	CLU P
Color of Wire	BR	Μ	0	>
Terminal No.	1	2	3	4

B40	WIRE TO WIRE	WHITE	
Connector No.	Connector Name	Connector Color	中





Signal Name	ı	_	ı	1
Color of Wire	BR	0	8	>
Terminal No.	5	9	7	8

## **APPLICATION NOTICE**

< SYMPTOM DIAGNOSIS > [TYPE 1]

# SYMPTOM DIAGNOSIS

# **APPLICATION NOTICE**

Application Notice

Service information	Remarks
TYPE 1	VDC/TCS/ABS (VQ40DE)
TYPE 2	VDC/TCS/ABS (VK56DE)

#### VDC/TCS/ABS

< SYMPTOM DIAGNOSIS > [TYPE 1]

# VDC/TCS/ABS

Symptom Table

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

Symptom	Check item	Reference
Excessive ABS function operation frequency	Brake force distribution	BRC-98, "Diagno- sis Procedure"
	Looseness of front and rear axle	
	Wheel sensor and rotor system	
Unexpected pedal reaction	Brake pedal stroke	BRC-99, "Diagno- sis Procedure"
	Make sure the braking force is sufficient when the ABS is not operating.	
The braking distance is long	Check stopping distance when the ABS is not operating.	BRC-100, "Diag- nosis Procedure"
ABS function does not operate (Note 1)	ABS actuator and electric unit (control unit)	BRC-101, "Diag- nosis Procedure"
Pedal vibration or ABS operation sound occurs (Note 2)	Brake pedal	BRC-102, "Diag-
	ABS actuator and electric unit (control unit)	nosis Procedure"
Vehicle jerks during VDC/TCS/ABS control	ABS actuator and electric unit (control unit)	
	TCM	BRC-103, "Diag- nosis Procedure"
	ECM	

#### NOTE:

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

BRC

Α

В

D

Е

.1

K

ı

M

Ν

0

## **EXCESSIVE ABS FUNCTION OPERATION FREQUENCY**

< SYMPTOM DIAGNOSIS >

[TYPE 1]

## **EXCESSIVE ABS FUNCTION OPERATION FREQUENCY**

# Diagnosis Procedure

INFOID:0000000006245957

# 1. CHECK START

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

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Check brake system.

# 2.CHECK FRONT AND REAR AXLE

Make sure that there is no excessive play in the front and rear axles. Refer to front: <u>FAX-6</u>, "<u>On-Vehicle Inspection and Service</u>", Rear: <u>RAX-6</u>, "<u>On-Vehicle Inspection and Service</u>".

#### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

# 3.check wheel sensor and sensor rotor

#### Check the following.

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

#### Is the inspection result normal?

YES >> GO TO 4

NO >> • Repla

- >> Replace wheel sensor or sensor rotor. Refer to <u>BRC-110, "Removal and Installation"</u> (wheel sensor) or <u>BRC-111, "Removal and Installation"</u> (sensor rotor).
  - Repair harness.

# 4. CHECK ABS WARNING LAMP DISPLAY

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

YES >> Perform self-diagnosis. Refer to <a href="https://example.com/BRC-29">BRC-29</a>, "CONSULT-III Function (ABS)".

NO >> Inspection End.

#### **UNEXPECTED PEDAL REACTION**

[TYPE 1] < SYMPTOM DIAGNOSIS >

# **UNEXPECTED PEDAL REACTION**

# Diagnosis Procedure

# 1. CHECK BRAKE PEDAL STROKE

Check brake pedal stroke. Refer to BR-17, "Inspection and Adjustment - Standard Pedal" or BR-18, "Inspection and Adjustment - Adjustable Pedal".

#### Is the stroke too large?

YES

- >> Bleed air from brake tube and hose. Refer to <a href="BR-20">BR-20</a>, "Bleeding Brake System".
  - Check brake pedal, brake booster, and master cylinder for mount play, looseness, brake system fluid leakage, etc. Refer to BR-17, "Inspection and Adjustment - Standard Pedal" or BR-18, "Inspection and Adjustment - Adjustable Pedal" (brake pedal), BR-51, "Disassembly and Assembly" (master cylinder), BR-10, "Inspection" (brake booster).

NO >> GO TO 2

# 2.check function

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

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Check brake system. BRC

Α

В

C

D

Е

INFOID:0000000006245958

Н

K

L

M

Ν

Р

**BRC-99** Revision: March 2012 2011 Pathfinder

#### THE BRAKING DISTANCE IS LONG

< SYMPTOM DIAGNOSIS >

[TYPE 1]

# THE BRAKING DISTANCE IS LONG

# Diagnosis Procedure

INFOID:0000000006245959

#### **CAUTION:**

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

1. CHECK FUNCTION

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

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Check brake system.

#### **ABS FUNCTION DOES NOT OPERATE**

< SYMPTOM DIAGNOSIS > [TYPE 1]

ABS FUNCTION DOES NOT OPERATE

Diagnosis Procedure

CAUTION:

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

1. CHECK ABS WARNING LAMP DISPLAY

Make sure that the ABS warning lamp turns OFF after ignition switch is turned ON or when driving. <u>Is the inspection result normal?</u>

YES >> Inspection End.

NO >> Perform self-diagnosis. Refer to <a href="BRC-29">BRC-29</a>, "CONSULT-III Function (ABS)".

BRC

Α

В

D

Е

Н

K

L

M

Ν

0

#### PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

< SYMPTOM DIAGNOSIS >

[TYPE 1]

#### PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

## Diagnosis Procedure

INFOID:0000000006245961

#### **CAUTION:**

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

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

#### 1.SYMPTOM CHECK 1

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

#### Do vibrations occur?

YES >> GO TO 2

NO >> Inspect the brake pedal.

# 2.SYMPTOM CHECK 2

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

#### Do the operation noises occur?

YES >> GO TO 3

NO >> Perform self -diagnosis. Refer to <a href="https://example.com/BRC-29">BRC-29</a>, "CONSULT-III Function (ABS)".

# 3.symptom check ${\mathfrak z}$

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 >> Inspection End.

#### VEHICLE JERKS DURING VDC/TCS/ABS CONTROL

[TYPE 1] < SYMPTOM DIAGNOSIS > VEHICLE JERKS DURING VDC/TCS/ABS CONTROL Α Diagnosis Procedure INFOID:0000000006245962 1.SYMPTOM CHECK В Check if the vehicle jerks during VDC/TCS/ABS control. Is the inspection result normal? YES >> Inspection End. NO >> GO TO 2 2.CHECK SELF-DIAGNOSIS RESULTS D Perform self-diagnosis of ABS actuator and electric unit (control unit). Refer to BRC-29, "CONSULT-III Function (ABS)". Are self-diagnosis results indicated? Е >> Check corresponding items, make repairs, and perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to BRC-29, "CONSULT-III Function (ABS)". NO >> GO TO 3 BRC 3. CHECK CONNECTOR Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector and check terminal for deformation, disconnection, looseness, etc. Securely connect connectors and perform ABS actuator and electric unit (control unit) self-diagnosis. Are self-diagnosis results indicated? Н YES >> If poor contact, damage, open or short circuit of connector terminal is found, repair or replace. NO >> GO TO 4 f 4 . CHECK ECM AND TCM SELF-DIAGNOSIS RESULTS Perform ECM and TCM self-diagnosis. Refer to EC-77, "CONSULT-III Function" or TM-36, "CONSULT-III Function (TRANSMISSION)". Are self-diagnosis results indicated? YES >> Check the corresponding items. ECM: Refer to EC-77, "CONSULT-III Function". • TCM: Refer to TM-36, "CONSULT-III Function (TRANSMISSION)". NO >> Replace ABS actuator and electric unit (control unit). Refer to BRC-112, "Removal and Installation". L M N

Revision: March 2012 BRC-103 2011 Pathfinder

## **NORMAL OPERATING CONDITION**

< SYMPTOM DIAGNOSIS >

[TYPE 1]

# NORMAL OPERATING CONDITION

Description INFOID:0000000006245963

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.	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 normal, and it is caused by the ABS operation check.	
Depending on the road conditions, the driver may experience a sluggish feel.	This is normal, because TCS places the highest priority on the optimum traction (stability).	
TCS may activate momentarily if wheel speed changes when driving over location where friction coefficient varies, when downshifting, or when fully depressing accelerator pedal.		
The ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp may turn ON when the vehicle is subject to strong shaking or large vibration, such as when the vehicle is rotating on a turntable or located on a ship while the engine is running.	In this case, restart the engine on a normal road. If the normal condition is restored, there is no malfunction. At that time, erase the self-diagnosis memory.	
VDC may not operate normally or the ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp may illuminate, when running on a special road that is extremely slanted (e.g. bank in a circuit course).		
A malfunction may occur in the yaw rate/side/decel G sensor system, when the vehicle turns sharply, such as during a spin turn, axle turn, or drift driving, while the VDC function is off (VDC OFF indicator lamp illuminated).		
The vehicle speed will not increase even though the accelerator pedal is depressed, when inspecting the speedometer on a 2-wheel chassis dynamometer.	Normal (Deactivate the VDC/TCS function before performing an inspection on a chassis dynamometer.)	
VDC OFF indicator lamp and SLIP indicator lamp may simultaneously turn on when low tire pressure warning lamp turns on.	This is not a VDC system error but results from characteristic change of tire.	

#### **PRECAUTIONS**

[TYPE 1] < PRECAUTION >

# **PRECAUTION**

#### **PRECAUTIONS**

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRF-TFNSIONER"

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

#### **WARNING:**

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

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

#### **WARNING:**

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

Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

#### NOTE:

- This Procedure is applied only to models with Intelligent Key system and NATS (NISSAN ANTI-THEFT SYS-
- · Remove and install all control units after disconnecting both battery cables with the ignition knob in the "LOCK" position.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NATS, an electrically controlled steering lock mechanism is adopted on the key cylinder.

For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.

If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

#### OPERATION PROCEDURE

Connect both battery cables.

#### NOTE:

Supply power using jumper cables if battery is discharged.

- Use the Intelligent Key or mechanical key to turn the ignition switch to the "ACC" position. At this time, the steering lock will be released.
- 3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.

**BRC** 

Α

В

D

Е

Н

INFOID:0000000006245965

0

Р

4. Perform the necessary repair operation.

#### **PRECAUTIONS**

< PRECAUTION > [TYPE 1]

5. When the repair work is completed, return the ignition switch to the "LOCK" position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)

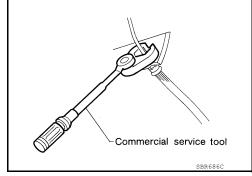
Perform a self-diagnosis check of all control units using CONSULT-III.

#### Precaution for Brake System

#### INFOID:0000000006245966

#### **CAUTION:**

- Refer to MA-18, "FOR USA AND CANADA: Fluids and Lubricants" (United States and Canada), MA-20, "FOR MEXICO: Fluids and Lubricants" (Mexico) for recommended brake fluid.
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted areas; it may cause paint damage. If brake fluid is splashed on painted areas, wash it away with water immediately.
- To clean or wash all parts of master cylinder and disc brake caliper, use clean brake fluid.
- Never use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use flare nut wrench when removing and installing brake tube.
- If a brake fluid leak is found, the part must be disassembled without fail. Then it has to be replaced with a new one if a defect exists.
- Turn the ignition switch OFF and remove the connector of the ABS actuator and electric unit (control unit) or the battery terminal before performing the work.
- Always torque brake lines when installing.
- Burnish the brake contact surfaces after refinishing or replacing rotors, after replacing pads, or if a soft pedal occurs at very low mileage.



Refer to BR-42, "Brake Burnishing" (front disc brake) or BR-47, "Brake Burnishing" (rear disc brake).

#### **WARNING:**

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

#### Precaution for Brake Control

INFOID:0000000006245967

- During ABS operation, the brake pedal may vibrate lightly and a mechanical noise may be heard. This is normal.
- Just after starting vehicle, the brake pedal may vibrate or a motor operating noise may be heard from engine compartment. This is a normal status of operation check.
- Stopping distance may be longer than that of vehicles without ABS when vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.
- When an error is indicated by ABS or another warning lamp, collect all necessary information from customer (what symptoms are present under what conditions) and check for simple causes before starting diagnosis. Besides electrical system inspection, check brake booster operation, brake fluid level, and fluid leaks.
- If incorrect tire sizes or types are installed on the vehicle or brake pads are not Genuine NISSAN parts, stopping distance or steering stability may deteriorate.
- If there is a radio, antenna or related wiring near control module, ABS function may have a malfunction or error.
- If aftermarket parts (car stereo, CD player, etc.) have been installed, check for incidents such as harness pinches, open circuits or improper wiring.
- If the following components are replaced with non-genuine components or modified, the VDC OFF indicator lamp and SLIP indicator lamp may turn on or the VDC system may not operate properly. Components related to suspension (shock absorbers, struts, springs, bushings, etc.), tires, wheels (exclude specified size), components related to brake system (pads, rotors, calipers, etc.), components related to engine (muffler, ECM, etc.), components related to body reinforcement (roll bar, tower bar, etc.).
- Driving with broken or excessively worn suspension components, tires or brake system components may cause the VDC OFF indicator lamp and the SLIP indicator lamp to turn on, and the VDC system may not operate properly.
- When the TCS or VDC is activated by sudden acceleration or sudden turn, some noise may occur. The noise is a result of the normal operation of the TCS and VDC.
- When driving on roads which have extreme slopes (such as mountainous roads) or high banks (such as sharp curves on a freeway), the VDC may not operate normally, or the VDC warning lamp and the SLIP indicator lamp may turn on. This is not a problem if normal operation can be resumed after restarting the engine.

#### **PRECAUTIONS**

< PRECAUTION > [TYPE 1]

• Sudden turns (such as spin turns, acceleration turns), drifting, etc. with VDC turned off may cause the yaw rate/side/decel G sensor to indicate a problem. This is not a problem if normal operation can be resumed after restarting the engine.

- If battery is removed or steering angle sensor is disconnected, power to steering angle sensor is lost and the screen goes into steering angle sensor safe mode.
- When screen goes into steering angle sensor safe mode, perform "Adjustment of Steering Angle Sensor Neutral Position" with CONSUT-III and check that VDC OFF indicator turns off. Additionally, perform selfdiagnosis, check that only "Steering Angle Sensor Safe Mode" is shown for self-diagnostic result, and then delete the memory. (If the self-diagnostic result shows an indication other than "Steering Angle Sensor Safe Mode", repair the relevant part and restart self-diagnosis.) The steering angle sensor is released and returns to normal condition by performing the above operation.
- When checking, if only "Steering Angle Sensor Safe Mode" is shown in the self-diagnostic result and VDC OFF indicator is off, delete history of malfunction. This happens when battery power supply is lost and the screen goes into Steering Angle Sensor Safe Mode, and then screen returns to normal mode automatically by driving the vehicle in a straight forward direction [for approximately 30 seconds at 20 km/h (12 MPH) or more] after power is supplied again.

#### NOTE:

VDC OFF indicator lamp is on when VDC OFF switch is on.

# Precaution for CAN System

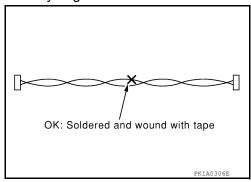
INFOID:0000000006245968

• Do not apply voltage of 7.0V or higher to terminal to be measured.

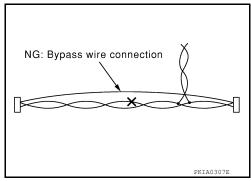
Maximum open terminal voltage of tester in use must be less than 7.0V.

• Before checking harnesses, turn ignition switch OFF and disconnect battery negative cable.

Area to be repaired must be soldered and wrapped with tape.
 Make sure that fraying of twisted wire is within 110 mm (4.33 in).



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



BRC

Н

В

D

K

L

M

Ν

U

< PREPARATION > [TYPE 1]

# **PREPARATION**

# **PREPARATION**

# Special Service Tool

INFOID:0000000006245969

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

Tool number (Kent-Moore No.) Tool name		Description
KV991J0080 (J-45741) ABS active wheel sensor tester	J-45741-BOX  O POWER SIMMON  WETAOLOIE	Checking operation of ABS active wheel sensors
ST30031000 ( — ) Bearing puller	22A0700D	Removing sensor rotor
ST30720000 (J-25405) Drift	22A0701D	Installing rear sensor rotor a: 77 mm (0.03 in) diameter b: 55 mm (2.17 in) diameter
ST27863000 ( — ) Drift	a — b — b — zzao832D	Installing rear sensor rotor a: 75 mm (2.95 in) diameter b: 62 mm (2.44 in) diameter
KV40104710 ( — ) Drift	a b b c zzao832D	Installing rear sensor rotor a: 76 mm (2.99 in) diameter b: 68.5 mm (2.697 in) diameter

## **PREPARATION**

< PREPARATION > [TYPE 1]

## Commercial Service Tool

Description	
Removing and installing brake piping a: 10 mm (0.39 in)/12 mm (0.47 in)	
Removing nuts, bolts and screws	
<b>3</b> (11, 11, 11, 11, 11, 11, 11, 11, 11, 11	
)	

Α

Н

ı

J

Κ

L

M

Ν

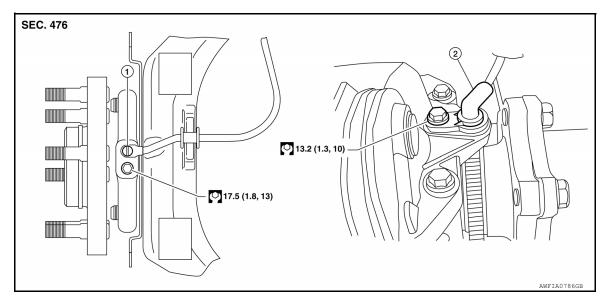
0

## UNIT REMOVAL AND INSTALLATION

## WHEEL SENSORS

#### Removal and Installation

INFOID:0000000006245971



1. Front wheel sensor LH

2. Rear wheel sensor RH

#### **REMOVAL**

- 1. When removing the front wheel sensor, remove the disc rotor to gain access to the front wheel sensor bolt. Refer to <u>BR-43</u>, "Removal and Installation of Brake Caliper and Disc Rotor".
- 2. When removing the rear wheel sensor, remove the spare tire.
- 3. Remove the wheel sensor bolt.
- 4. Pull the wheel sensor out, being careful to turn it as little as possible.

#### **CAUTION:**

- · Be careful not to damage wheel sensor edge or the sensor rotor teeth.
- Do not pull on the wheel sensor harness.
- Disconnect the wheel sensor harness connector, then remove the wheel sensor harness from the mounts and remove the wheel sensor.
  - When removing the rear wheel sensor, both sensors must be removed as they are on the same harness.

#### INSTALLATION

Installation is in the reverse order of removal.

#### **CAUTION:**

- Inspect wheel sensor O-ring, replace wheel sensor if damaged.
- Before installing the wheel sensor, make sure no foreign materials (such as iron fragments) are adhered to the pick-up part of the wheel sensor, to the inside of the wheel sensor hole or on the sensor rotor in the wheel hub assembly.
- Clean wheel sensor hole and mating surface with brake cleaner and a lint-free shop rag. Be careful that dirt and debris do not enter the axle or wheel hub assembly.

#### NOTE:

Apply a coat of suitable grease to the wheel sensor O-ring and mating hole.

## SENSOR ROTOR

### Removal and Installation

#### INFOID:0000000006245972

#### FRONT WHEEL SENSOR ROTOR

The front wheel sensor rotors are built into the front wheel hub and bearing assemblies and are not removable. If damaged, replace the front wheel hub and bearing assembly. Refer to <a href="#FAX-10">FAX-10</a>, "Removal and Installation".

#### REAR WHEEL SENSOR ROTOR

#### Removal

Remove the side flange from the final drive assembly. Refer to <u>DLN-422, "Removal and Installation"</u>.

Discard side oil seal.

2. Remove the sensor rotor from the side flange, using suitable tool with Tool.

Tool number : ST30031000 ( — )

#### Installation

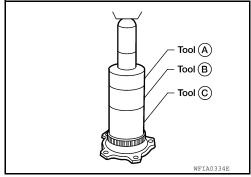
 Install the new sensor rotor on the side flange using Tools and a suitable press as shown. Make sure the sensor rotor is fully seated on the side flange.

Tool numbers (A): ST30720000 (J-25405)

(B): ST27863000 ( — ) (C): KV40104710 ( — )

#### **CAUTION:**

Do not reuse the old sensor rotor.



 Install the side flange on the final drive assembly. Refer to <u>DLN-422, "Removal and Installation"</u>. CAUTION:

Do not reuse the side oil seal. The side oil seal must be replaced every time the side flange is removed from the final drive assembly.

BRC

Α

В

D

Е

G

Н

K

L

M

Ν

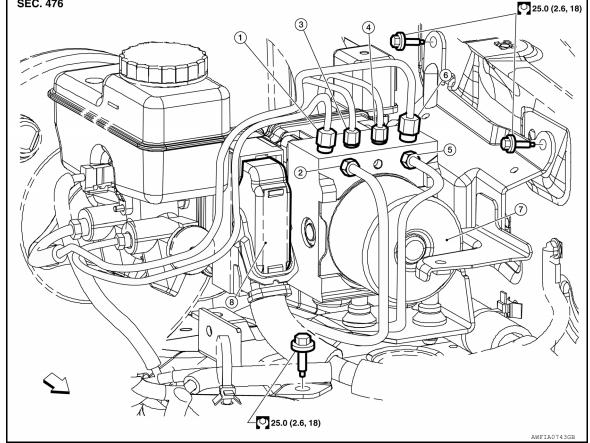
0

INFOID:0000000006245973

## ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

### Removal and Installation

SEC. 476 25.0 (2.6, 18)



- From master cylinder secondary side 18.2 N·m (1.9 kg-m, 13 ft-lb)
- To front right disc brake 13.0 N·m (1.3 kg-m, 10 ft-lb)
- 7. ABS actuator and electric unit (control unit)
- To rear right disc brake 13.0 N·m (1.3 kg-m, 10 ft-lb)
- To front left disc brake 13.0 N·m (1.3 kg-m, 10 ft-lb)
- 8. Harness connector
- To rear left disc brake 13.0 N·m (1.3 kg-m, 10 ft-lb)
- From master cylinder primary side 18.2 N·m (1.9 kg-m, 13 ft-lb)
- <br />
  ✓ Front

## **REMOVAL**

#### NOTE:

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

- Disconnect the battery negative terminal. Refer to PG-76, "Removal and Installation".
- Remove air cleaner assembly. Refer to <u>EM-26, "Removal and Installation"</u>.
- 3. Disconnect the actuator harness from the ABS actuator and electric unit (control unit).
- 4. Disconnect the brake tubes.

#### **CAUTION:**

- To remove the brake tubes, use a flare nut wrench to prevent the flare nuts and brake tubes from being damaged.
- · Be careful not to splash brake fluid on painted areas.
- 5. Remove the three bolts and remove the ABS actuator and electric unit (control unit) and bracket.
- 6. Remove the bracket from the ABS actuator and electric unit (control unit).

#### INSTALLATION

Installation is in the reverse order of removal.

## **ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)**

## < UNIT REMOVAL AND INSTALLATION >

[TYPE 1]

If the ABS actuator and electric unit (control unit) is replaced, the neutral position of the steering angle sensor position must be reset. Refer to <a href="BRC-13">BRC-13</a>, "CALIBRATION OF DECEL G SENSOR: Special Repair Requirement".

#### **CAUTION:**

- To tighten the brake tube flare nuts use a suitable tool (flare nut wrench).
- Always tighten the brake tube flare nuts to specification when installing.
- Never reuse the drained brake fluid.
- After installation of the ABS actuator and electric unit (control unit), refill the brake system with new brake fluid. Then bleed the air from the brake system. Refer to <u>BR-20</u>, "<u>Bleeding Brake System"</u>.
- If the ABS actuator and electronic unit (control unit) is replaced, the neutral position of the steering angle sensor must be reset. Refer to <u>BRC-13</u>, "<u>CALIBRATION OF DECEL G SENSOR</u>: <u>Special Repair Requirement</u>".

BRC

В

D

Е

G

Н

1

Κ

L

M

Ν

0

## STEERING ANGLE SENSOR

< UNIT REMOVAL AND INSTALLATION >

[TYPE 1]

## STEERING ANGLE SENSOR

## Removal and Installation

INFOID:0000000006245974

#### **REMOVAL**

- 1. Remove the spiral cable. Refer to SR-7, "Removal and Installation".
- 2. Remove the screws and remove the steering angle sensor from the spiral cable.

#### **INSTALLATION**

Installation is in the reverse order of removal.

 Reset the neutral position of the steering angle sensor. Refer to <u>BRC-13</u>, "<u>CALIBRATION OF DECEL G</u> <u>SENSOR</u>: Special Repair Requirement".

#### CAUTION

Any time the steering angle sensor is removed and installed or replaced, you must reset the neutral position of the steering angle sensor. Refer to <a href="https://example.com/BRC-13">BRC-13</a>, "CALIBRATION OF DECEL G SENSOR: Special Repair Requirement".

## YAW RATE/SIDE/DECEL G SENSOR

< UNIT REMOVAL AND INSTALLATION >

**[TYPE 1]** 

INFOID:0000000006245975

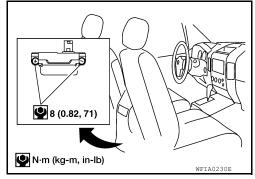
## YAW RATE/SIDE/DECEL G SENSOR

## Removal and Installation

REMOVAL

- 1. Remove the center console. Refer to IP-21, "Removal and Installation".
- 2. Remove the yaw rate/side/decel G sensor nuts as shown. **CAUTION:** 
  - Do not use power tools to remove or install the yaw rate/ side/decel G sensor.
  - Do not drop or strike the yaw rate/side/decel G sensor.
     NOTE:

The location of the yaw rate/side/decel G sensor is the same for all models.



3. Disconnect the yaw rate/side/decel G sensor connector and remove the yaw rate/side/decel G sensor.

## **INSTALLATION**

Installation is in the reverse order of removal.

• After installing the yaw rate/side/decel G sensor, it is necessary to calibrate the yaw rate/side/decel G sensor. Refer to <a href="https://example.com/BRC-13">BRC-13</a>, "CALIBRATION OF DECEL G SENSOR: Special Repair Requirement".

BRC

D

Е

Α

BRU

G

Н

Κ

L

M

Ν

0

## **APPLICATION NOTICE**

< BASIC INSPECTION > [TYPE 2]

## **BASIC INSPECTION**

## **APPLICATION NOTICE**

Application Notice

Service information	Remarks
TYPE 1	VDC/TCS/ABS (VQ40DE)
TYPE 2	VDC/TCS/ABS (VK56DE)

INFOID:0000000006245976

## **DIAGNOSIS AND REPAIR WORKFLOW**

< BASIC INSPECTION > [TYPE 2]

## DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

### 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 <a href="https://example.com/BRC-121">BRC-121</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

BRC

Α

В

D

Е

G

Н

J

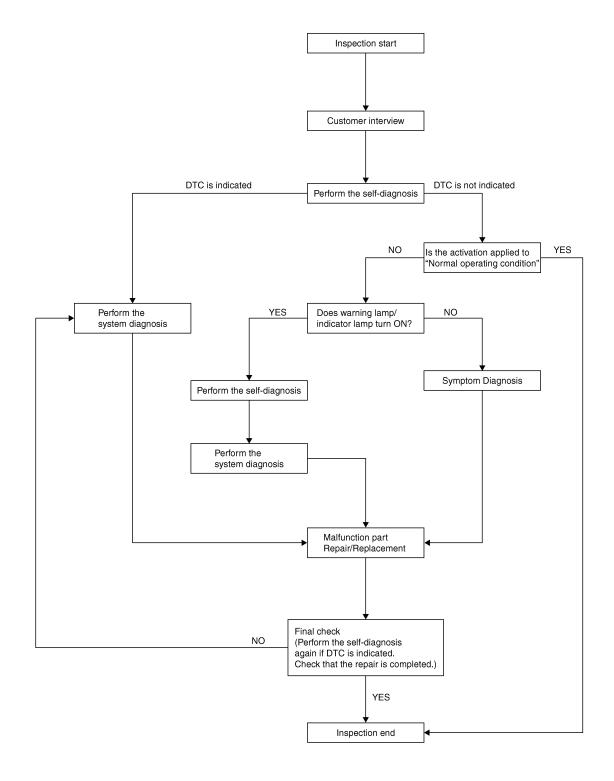
Κ

M

Ν

0

## **OVERALL SEQUENCE**



JSFIA0010GB

## **DETAILED FLOW**

## 1. COLLECT THE INFORMATION FROM THE CUSTOMER

Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the diagnosis worksheet. Refer to <a href="BRC-120">BRC-120</a>, "Diagnostic Work Sheet".

## **DIAGNOSIS AND REPAIR WORKFLOW**

DIAGNOSIS AND REPAIR WORKFLOW	
< BASIC INSPECTION > [TYPE 2]	
>> GO TO 2	
2.PERFORM THE SELF-DIAGNOSIS	Α
Check the DTC display with the self-diagnosis function. Refer to BRC-138, "CONSULT-III Function (ABS)".	
Is there any DTC displayed?	В
YES >> GO TO 3 NO >> GO TO 4	
3.PERFORM THE SYSTEM DIAGNOSIS	С
Perform the diagnosis applicable to the displayed DTC. Refer to BRC-205, "DTC No. Index".	
	D
>> GO TO 7	D
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-223</u> . " <u>Description"</u> .	Е
Is the symptom a normal operation?	DDO
YES >> Inspection End. NO >> GO TO 5	BRC
5. CHECK THE WARNING LAMP AND INDICATOR LAMP FOR ILLUMINATION	0
Check that the warning lamp and indicator lamp illuminate.	G
<ul> <li>ABS warning lamp: Refer to <u>BRC-195, "Description"</u>.</li> <li>Brake warning lamp: Refer to <u>BRC-196, "Description"</u>.</li> </ul>	
<ul> <li>VDC OFF indicator lamp: Refer to <u>BRC-197</u>, "<u>Description</u>".</li> </ul>	Н
<ul> <li>SLIP indicator lamp: Refer to <u>BRC-199</u>, <u>"Description"</u>.</li> <li>Is <u>ON/OFF timing normal?</u></li> </ul>	
YES >> GO TO 6	
NO >> GO TO 2	
6.PERFORM THE DIAGNOSIS BY SYMPTOM	J
Perform the diagnosis applicable to the symptom.	
>> GO TO 7	1/
7. REPAIR OR REPLACE THE MALFUNCTIONING PARTS	K
Repair or replace the specified malfunctioning parts.	
Tropall of replace the openined maillanotioning parts.	L
>> GO TO 8	
8. FINAL CHECK	$\mathbb{N}$
Perform the self-diagnosis again, and check that the malfunction is repaired completely. After checking, erase	
the self-diagnosis memory. Refer to <u>BRC-138</u> , "CONSULT-III Function (ABS)". <u>Is no other DTC present and the repair completed?</u>	Ν
YES >> Inspection End.	
NO >> GO TO 3	
	0
	Р

## **DIAGNOSIS AND REPAIR WORKFLOW**

< BASIC INSPECTION >

[TYPE 2]

## Diagnostic Work Sheet

INFOID:0000000006245978

Customer name MR/MS	Model & Year		VIN	
Engine #	Trans.	Trans.		
Incident Date	Manuf. Date		In Service Dat	е
Symptoms	□ Noise and vibration     (from engine compartment)     □ Noise and vibration     (from axle)	☐ Warning / 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)		☐ Lack of sense of acceleration
Engine conditions	☐ When starting ☐ After starting			
Road conditions	□ Low friction road (□Snow □Gravel □Other) □ Bumps / potholes			
Driving conditions	☐ Full-acceleration ☐ High speed cornering ☐ Vehicle speed: Greater than 10 km/h (6 MPH) ☐ Vehicle speed: 10 km/h (6 MPH) or less ☐ Vehicle is stopped			
Applying brake conditions	☐ Suddenly ☐ Gradually			
Other conditions	☐ Operation of electrical equipment ☐ Shift change ☐ Other descriptions			

SFIA3265E

< BASIC INSPECTION > [TYPE 2]

INSPECTION AND ADJUSTMENT

# INSPECTION AND ADJUSTMENT ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Description

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

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

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement

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-121</u>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION <u>Special Repair Requirement"</u>, GO TO 2

2.PERFORM CALIBRATION OF THE DECEL G SENSOR

Perform calibration of the decel G sensor.

>> Refer to <a href="BRC-122">BRC-122</a>, "CALIBRATION OF DECEL G SENSOR: Special Repair Requirement". ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description

INFOID:0000000006245981

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

x: Required -: Not required

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

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

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

ALIGN THE VEHICLE STATUS

Stop vehicle with front wheels in straight-ahead position.

Revision: March 2012 BRC-121 2011 Pathfinder

BRC

D

Е

Α

Н

K

M

Ν

0

>> GO TO 2

## 2.perform the neutral position adjustment for the steering angle sensor

- On the CONSULT-III screen, touch "WORK SUPPORT" and "ST ANGLE SENSOR ADJUSTMENT" in order.
- 2. Touch "START".

#### **CAUTION:**

Do not touch steering wheel while adjusting steering angle sensor.

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

NOTE:

After approximately 60 seconds, it ends automatically.

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

#### **CAUTION:**

Be sure to perform above operation.

>> GO TO 3

## 3. CHECK DATA MONITOR

- 1. Run vehicle with front wheels in straight-ahead position, then stop.
- Select "DATA MONITOR". Then make sure "STR ANGLE SIG" is within 0±2.5°.

## Is the steering angle within the specified range?

YES >> GO TO 4

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

## 4. ERASE THE SELF-DIAGNOSIS MEMORY

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

- ABS actuator and electric unit (control unit): Refer to <u>BRC-138</u>, "CONSULT-III Function (ABS)".
- ECM: Refer to EC-530, "CONSULT-III Function".

#### Are the memories erased?

YES >> Inspection End.

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

#### CALIBRATION OF DECEL G SENSOR

## CALIBRATION OF DECEL G SENSOR : Description

INFOID:0000000006245983

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

x: Required -: Not required

Situation	Calibration of decel G sensor
Removing/Installing ABS actuator and electric unit (control unit)	-
Replacing ABS actuator and electric unit (control unit)	×
Removing/Installing steering components	_
Replacing steering components	_
Removing/Installing suspension components	_
Replacing suspension components	_
Change tires to new ones	_
Tire rotation	_
Adjusting wheel alignment	_
Removing/Installing yaw rate/side/decel G sensor	×
Replacing yaw rate/side/decel G sensor	×

## CALIBRATION OF DECEL G SENSOR : Special Repair Requirement

INFOID:0000000006245984

## CALIBRATION OF DECEL G SENSOR

## **INSPECTION AND ADJUSTMENT**

INSPECTION AND ADJUSTMENT	
< BASIC INSPECTION >	TYPE 2]
To calibrate the decel G sensor, make sure to use CONSULT-III (Calibration cannot be done without CONSULT-III)	A
1. ALIGN THE VEHICLE STATUS	
Stop vehicle with front wheels in straight-ahead position.	
>> GO TO 2	
2.PERFORM CALIBRATION OF DECEL G SENSOR	
<ol> <li>On the CONSULT-III screen, touch "WORK SUPPORT" and "DECEL G SEN CALIBRATION" in c</li> <li>Touch "START".</li> </ol>	irder.
3. After approximately 10 seconds, touch "END".	
NOTE: After approximately 60 seconds, it ends automatically.	
4. Turn ignition switch OFF, then turn it ON again.  CAUTION:	Е
Be sure to perform above operation.	
	BF
>> GO TO 3	
3.CHECK DATA MONITOR	
1. Run vehicle with front wheels in straight-ahead position, then stop. 2. Select "DATA MONITOR". Then make sure "DECEL G SEN" is within $\pm$ 0.08G.	(-
Is the inspection result normal?	
YES >> GO TO 4	H
NO >> Perform calibration of decel G sensor again, GO TO 1	
4. ERASE THE SELF-DIAGNOSIS MEMORY	
Erase the self-diagnosis memory of the ABS actuator and electric unit (control unit) and ECM.  • ABS actuator and electric unit (control unit): Refer to <a href="https://example.com/BRC-138">BRC-138</a> , "CONSULT-III Function (ABS)".	
• ECM: Refer to EC-530. "CONSULT-III Function".	
Are the memories erased?  YES >> Inspection End.	
NO >> Check the items indicated by the self-diagnosis.	k
	r
	L
	1
	1
	(
	F

## **APPLICATION NOTICE**

[TYPE 2]

< SYSTEM DESCRIPTION >

## SYSTEM DESCRIPTION

## **APPLICATION NOTICE**

Application Notice

Service information	Remarks
TYPE 1	VDC/TCS/ABS (VQ40DE)
TYPE 2	VDC/TCS/ABS (VK56DE)

## **[TYPE 2]**

INFOID:0000000006245986

Α

В

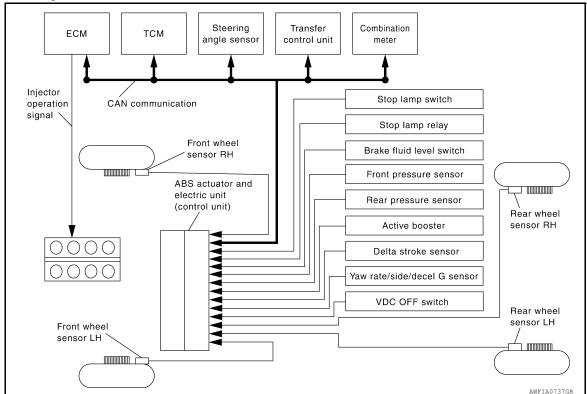
D

Е

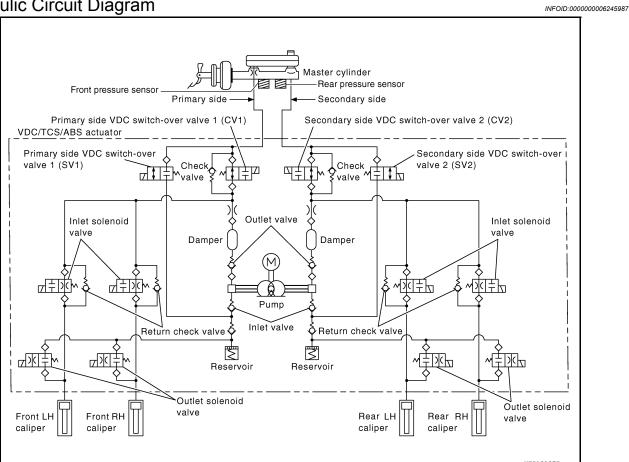
**BRC** 

Ν

## System Diagram



## Hydraulic Circuit Diagram



## **System Description**

INFOID:0000000006245988

 Vehicle Dynamics Control system detects driver's steering operation amount and brake pedal travel from steering angle sensor and pressure sensors. Using information from yaw rate/side/decel G sensor and wheel sensor, VDC judges driving condition (conditions of under steer and over steer) to improve vehicle driving stability by controlling brake application to 4 wheels and engine output.

• During VDC operation, it informs driver of system operation by flashing SLIP indicator lamp.

Electrical system diagnosis by CONSULT-III is available.

Α

В

D

Е

BRC

G

Н

J

K

L

M

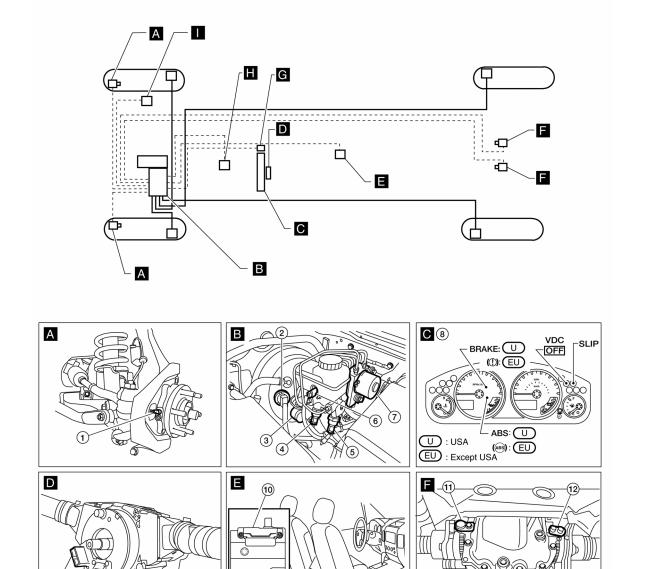
Ν

0

Р

## **Component Parts Location**

INFOID:0000000006245989



 Front wheel sensor LH E18
 Front wheel sensor RH E117

G

4. Rear pressure sensor E32

ABS actuator and electric unit (control 8. unit) E127

Delta stroke sensor E114

5. Front pressure sensor E31

Combination meter M24

3. Active booster E49

6. Brake fluid level switch E21

9. Steering angle sensor (behind spiral cable) M47

AWFIA0678GB

10. Yaw rate/side/decel G sensor B73

13. VDC OFF switch M154

11. Rear wheel sensor LH C13

14. Stop lamp switch E38

12. Rear wheel sensor RH C13

15. Stop lamp relay E12

## **Component Description**

INFOID:0000000006245990

Component parts		Reference
ABS actuator and electric unit (control unit)	Pump	BRC-153, "Description"
	Motor	<u> </u>
	Actuator relay	BRC-169, "Description"
	Solenoid valve	BRC-162, "Description"
	VDC switch-over valve (CV1, CV2, SV1, SV2)	BRC-184, "Description"
Wheel sensor		BRC-144, "Description"
Yaw rate/side/decel G sensor		BRC-155, "Description"
Stop lamp switch		BRC-160, "Description"
Front pressure sensor		DDC 474 IID acceptation II
Rear pressure sensor		BRC-171, "Description"
Steering angle sensor		BRC-175, "Description"
Brake fluid level switch		BRC-178, "Description"
Active booster		BRC-187, "Description"
Delta stroke sensor		BRC-190, "Description"
VDC OFF switch		BRC-193, "Description"
ABS warning lamp		BRC-195, "Description"
Brake warning lamp		BRC-196, "Description"
VDC OFF indicator lamp		BRC-197, "Description"
SLIP indicator lamp		BRC-199, "Description"

**[TYPE 2]** 

Α

В

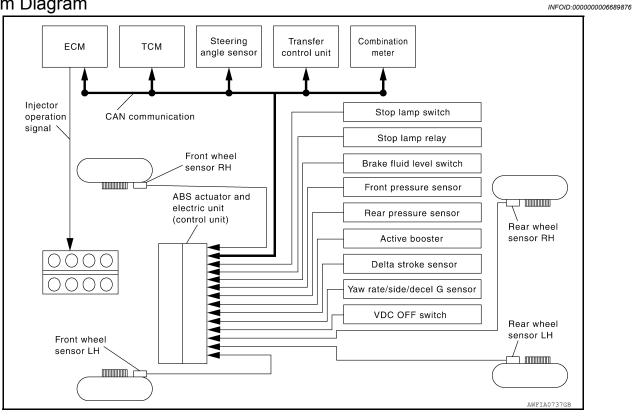
D

Е

BRC

**TCS** 

System Diagram



## **System Description**

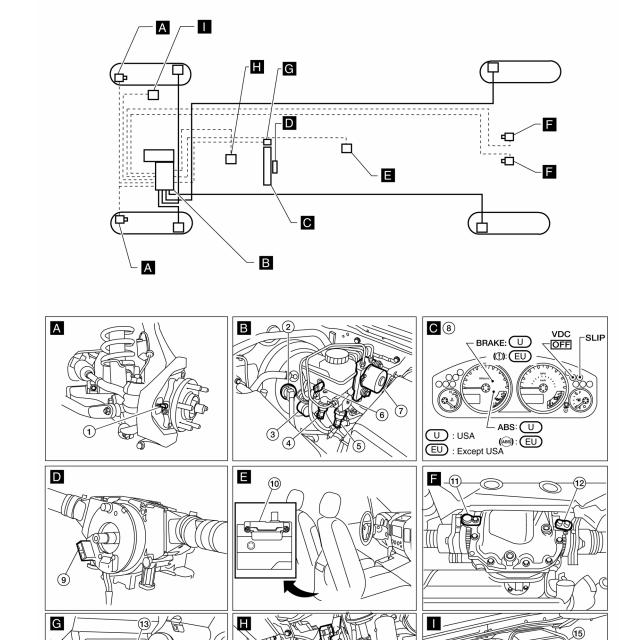
INFOID:0000000006245992

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

L

## **Component Parts Location**

INFOID:0000000006689879



AWFIA0678GB

- 1. Front wheel sensor LH E18 Front wheel sensor RH E117
- 4. Rear pressure sensor E32
- 7. ABS actuator and electric unit (control 8. unit) E127
- 2. Delta stroke sensor E114
- Front pressure sensor E31
  - Combination meter M24
- 3. Active booster E49
- 6. Brake fluid level switch E21
- 9. Steering angle sensor (behind spiral cable) M47

< SYSTEM DESCRIPTION >

[TYPE 2]

- 10. Yaw rate/side/decel G sensor B73
- 13. VDC OFF switch M154
- 11. Rear wheel sensor LH C13
- 14. Stop lamp switch E38
- 12. Rear wheel sensor RH C13
- 15. Stop lamp relay E12

Α

В

С

 $\mathsf{D}$ 

Е

INFOID:0000000006689880

## **Component Description**

Component parts		Reference
ABS actuator and electric unit (control unit)	Pump	BRC-153, "Description"
	Motor	BIXC-133, Description
	Actuator relay	BRC-169, "Description"
,	Solenoid valve	BRC-162, "Description"
	VDC switch-over valve (CV1, CV2, SV1, SV2)	BRC-184, "Description"
Wheel sensor		BRC-144, "Description"
Yaw rate/side/decel G sensor		BRC-155, "Description"
Stop lamp switch		BRC-160, "Description"
Front pressure sensor		DDC 171 "Description"
Rear pressure sensor		BRC-171, "Description"
Steering angle sensor		BRC-175, "Description"
Brake fluid level switch		BRC-178, "Description"
Active booster		BRC-187, "Description"
Delta stroke sensor		BRC-190, "Description"
VDC OFF switch		BRC-193, "Description"
ABS warning lamp		BRC-195, "Description"
Brake warning lamp		BRC-196, "Description"
VDC OFF indicator lamp		BRC-197, "Description"
SLIP indicator lamp		BRC-199, "Description"

BRC

G

Н

K

L

M

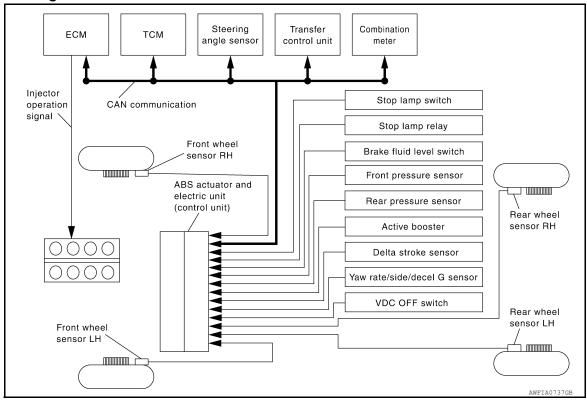
Ν

0

## **ABS**

## System Diagram

INFOID:0000000006689877



## **System Description**

INFOID:0000000006245996

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

Α

В

D

Е

BRC

G

Н

J

K

L

M

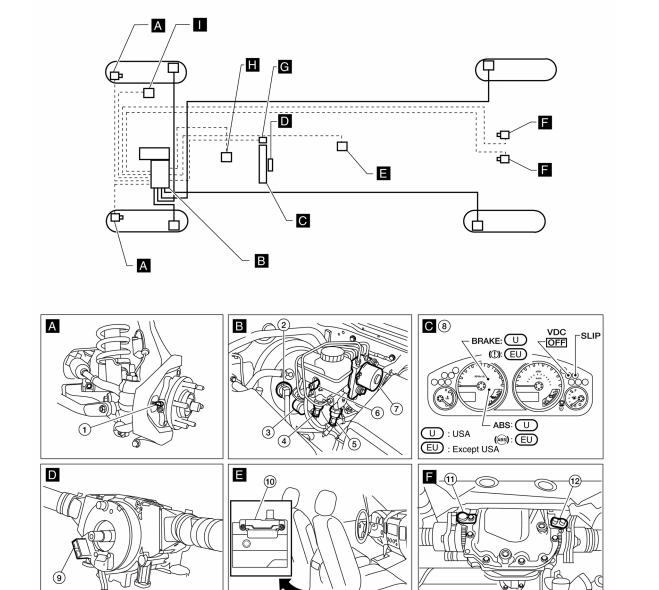
Ν

0

Р

## **Component Parts Location**

INFOID:0000000006689881



AWFIA0678GB

Front wheel sensor LH E18
 Front wheel sensor RH E117

G

- 4. Rear pressure sensor E32
- ABS actuator and electric unit (control 8. unit) E127
- Delta stroke sensor E114
- 5. Front pressure sensor E31
  - Combination meter M24
- 3. Active booster E49
- 6. Brake fluid level switch E21
- 9. Steering angle sensor (behind spiral cable) M47

10. Yaw rate/side/decel G sensor B73

13. VDC OFF switch M154

11. Rear wheel sensor LH C13

14. Stop lamp switch E38

12. Rear wheel sensor RH C13

15. Stop lamp relay E12

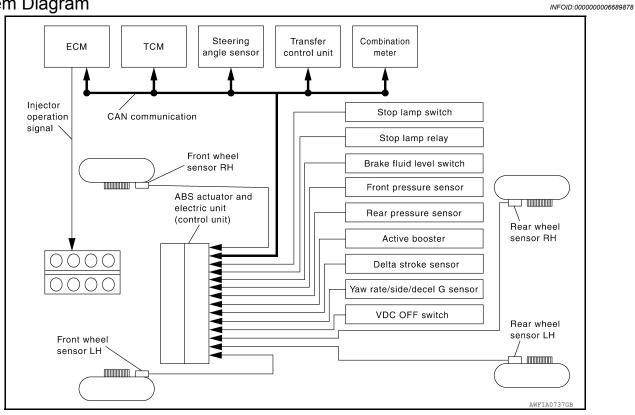
## **Component Description**

INFOID:0000000006689882

Compo	nent parts	Reference
ABS actuator and electric unit (control unit)	Pump	DDC 452 "Deceription"
	Motor	BRC-153, "Description"
	Actuator relay	BRC-169, "Description"
, and detailed and electric arms (control arms)	Solenoid valve	BRC-162, "Description"
	VDC switch-over valve (CV1, CV2, SV1, SV2)	BRC-184, "Description"
Wheel sensor		BRC-144, "Description"
Yaw rate/side/decel G sensor		BRC-155, "Description"
Stop lamp switch		BRC-160, "Description"
Front pressure sensor		DDC 171 "Deceription"
Rear pressure sensor		BRC-171, "Description"
Steering angle sensor		BRC-175, "Description"
Brake fluid level switch		BRC-178, "Description"
Active booster		BRC-187, "Description"
Delta stroke sensor		BRC-190, "Description"
VDC OFF switch		BRC-193, "Description"
ABS warning lamp		BRC-195, "Description"
Brake warning lamp		BRC-196, "Description"
VDC OFF indicator lamp		BRC-197, "Description"
SLIP indicator lamp		BRC-199, "Description"

## **EBD**

System Diagram



## **System Description**

INFOID:0000000006246000

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

Electrical system diagnosis by CONSULT-III is available.

Α

В

D

Е

**BRC** 

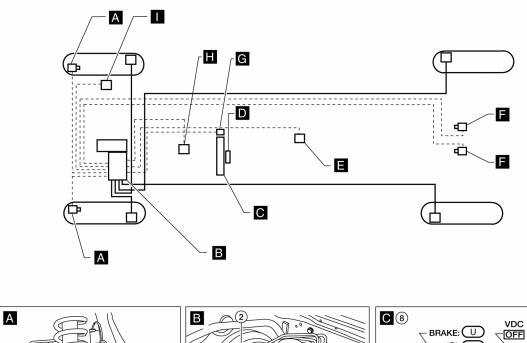
M

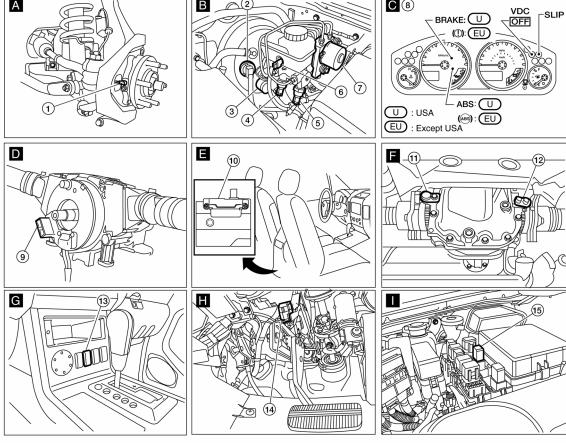
Ν

0

## **Component Parts Location**

INFOID:0000000006689883





AWFIA0678GB

- 1. Front wheel sensor LH E18 Front wheel sensor RH E117
- 4. Rear pressure sensor E32
- 7. ABS actuator and electric unit (control 8. unit) E127
- 2. Delta stroke sensor E114
- Front pressure sensor E31
  - Combination meter M24
- 3. Active booster E49
- 6. Brake fluid level switch E21
- 9. Steering angle sensor (behind spiral cable) M47

## **EBD**

## < SYSTEM DESCRIPTION >

[TYPE 2]

10. Yaw rate/side/decel G sensor B73

11. Rear wheel sensor LH C13

12. Rear wheel sensor RH C13

13. VDC OFF switch M154

14. Stop lamp switch E38

15. Stop lamp relay E12

INFOID:0000000006689884

Α

В

 $\mathsf{D}$ 

Е

## **Component Description**

Component parts		Reference
ABS actuator and electric unit (control unit)	Pump	BRC-153, "Description"
	Motor	
	Actuator relay	BRC-169, "Description"
,	Solenoid valve	BRC-162, "Description"
	VDC switch-over valve (CV1, CV2, SV1, SV2)	BRC-184, "Description"
Wheel sensor		BRC-144, "Description"
Yaw rate/side/decel G sensor		BRC-155, "Description"
Stop lamp switch		BRC-160, "Description"
Front pressure sensor		DDC 474 "Decoriation"
Rear pressure sensor		BRC-171, "Description"
Steering angle sensor		BRC-175, "Description"
Brake fluid level switch		BRC-178, "Description"
Active booster		BRC-187, "Description"
Delta stroke sensor		BRC-190, "Description"
VDC OFF switch		BRC-193, "Description"
ABS warning lamp		BRC-195, "Description"
Brake warning lamp		BRC-196, "Description"
VDC OFF indicator lamp		BRC-197, "Description"
SLIP indicator lamp		BRC-199, "Description"

BRC

G

Н

K

L

M

Ν

0

#### < SYSTEM DESCRIPTION >

[TYPE 2]

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

CONSULT-III Function (ABS)

INFOID:0000000006246003

#### **FUNCTION**

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

Direct Diagnostic Mode	Description
ECU Identification	The ABS actuator and electric unit (control unit) part number is displayed.
Self Diagnostic Result	The ABS actuator and electric unit (control unit) self diagnostic results are displayed.
Data Monitor	The ABS actuator and electric unit (control unit) input/output data is displayed in real time.
Active Test	The ABS actuator and electric unit (control unit) activates outputs to test components.
Function Test	This mode displays self diagnostic results of ABS system with either an "OK" or "NG".
Work support	The settings for ABS actuator and electric unit (control unit) functions can be changed.
CAN Diag Support Monitor	The result of transmit/receive diagnosis of CAN communication is diplayed.

#### SELF DIAGNOSTIC RESULT

#### Operation Procedure

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

#### How to Erase Self-diagnosis Results

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

## If memory cannot be erased, perform applicable diagnosis. NOTE:

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

#### Display Item List

Refer to BRC-205, "DTC No. Index".

#### **DATA MONITOR**

Item	Data	n monitor item sel	ection		
(Unit)	ECH INDUT MAIN CELECTION		Remarks		
FR LH SENSOR (km/h, mph)	×	×	×	Wheel speed (km/h, mph) calculated by front LH wheel sensor signal is displayed.	
FR RH SENSOR (km/h, mph)	×	×	×	Wheel speed (km/h, mph) calculated by front RH wheel sensor signal is displayed.	
RR LH SENSOR (km/h, mph)	×	×	×	Wheel speed (km/h, mph) calculated by rear LH wheel sensor signal is displayed.	
RR RH SENSOR (km/h, mph)	×	×	×	Wheel speed (km/h, mph) calculated by rear RH wheel sensor signal is displayed.	

< SYSTEM DESCRIPTION >

[TYPE 2]

Item		monitor item se				
(Unit)	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	Remarks		
FR RH IN SOL (On/Off)	_	×	×	Front RH IN ABS solenoid (On/Off) status is displayed.		
FR RH OUT SOL (On/Off)	_	×	×	Front RH OUT ABS solenoid (On/Off) status is displayed.		
FR LH IN SOL (On/Off)	-	×	×	Front LH IN ABS solenoid (On/Off) status is display		
FR LH OUT SOL (On/Off)	_	×	×	Front LH OUT ABS solenoid (On/Off) status is displayed.		
RR RH IN SOL (On/Off)	-	×	×	Rear RH IN ABS solenoid (On/Off) status is displayed.		
RR RH OUT SOL (On/Off)	_	×	×	Rear RH OUT ABS solenoid (On/Off) status is displayed.		
RR LH IN SOL (On/Off)	-	×	×	Rear LH IN ABS solenoid (On/Off) status is displayed.		
RR LH OUT SOL (On/Off)	_	×	×	Rear LH OUT ABS solenoid (On/Off) status is displayed.		
EBD WARN LAMP (On/Off)	_	_	×	Brake warning lamp (On/Off) status is displayed.		
STOP LAMP SW (On/Off)	×	×	×	Stop lamp switch (On/Off) status is displayed.		
MOTOR RELAY (On/Off)	-	×	×	ABS motor relay signal (On/Off) status is displayed.		
ACTUATOR RLY (On/Off)	-	×	×	ABS actuator relay signal (On/Off) status is displayed.		
ABS WARN LAMP (On/Off)	-	×	×	ABS warning lamp (On/Off) status is displayed.		
OFF LAMP (On/Off)	-	×	×	VDC OFF Lamp (On/Off) status is displayed.		
OFF SW (On/Off)	×	×	×	VDC OFF switch (On/Off) status is displayed.		
SLIP LAMP (On/Off)	-	×	×	SLIP indicator lamp (On/Off) status is displayed.		
BATTERY VOLT (V)	×	×	×	Voltage (V) supplied to ABS actuator and electric unit (control unit) is displayed.		
GEAR (1, 2, 3, 4, 5)	×	×	×	Gear position (1, 2, 3, 4, 5) judged by transmission range switch signal is displayed.		
SLCT LVR POSI (P, N, D)	×	×	×	Shift position (P, N, D) judged by transmission range switch signal.		
ENGINE SPEED (rpm)	×	×	×	Engine speed (rpm) judged by CAN communication signal is displayed.		
YAW RATE SEN (d/s)	×	×	×	Yaw rate (d/s) detected by yaw rate sensor is displayed.		
R POSI SIG (On/Off)	-	_	×	Reverse shift position (On/Off) judged by transmission range switch signal.		
N POSI SIG (On/Off)	_	_	×	Shift position judged by transmission range switch signal.		
P POSI SIG (On/Off)	-	_	×	Shift position judged by transmission range switch signal.		
CV1 (On/Off)	_	_	×	Front side VDC switch-over solenoid valve (cut valve) (On/Off) status is displayed.		

< SYSTEM DESCRIPTION >

[TYPE 2]

Item	Data	monitor item se	lection	
(Unit)	ECU INPUT SIGNALS			Remarks
CV2 (On/Off)	-	-	×	Rear side VDC switch-over solenoid valve (cut-valve (On/Off) status is displayed.
SV1 (On/Off)	-	_	×	Front side VDC switch-over solenoid valve (suction valve) (On/Off) status is displayed.
SV2 (On/Off)	-	_	×	Rear side VDC switch-over solenoid valve (suction valve) (On/Off) status is displayed.
2WD/4WD (2WD/4WD)	-	_	×	It recognizes on software whether it is 2WD and whether it is in 4WD state.
ACCEL POS SIG (%)	×	-	×	Throttle valve open/close status judged by CAN communication signal is displayed.
SIDE G-SENSOR (m/s <sup>2</sup> )	×	-	×	Transverse acceleration detected by side G-sensor is displayed.
STR ANGLE SIG (deg)	×	_	×	Steering angle detected by steering angle sensor is displayed.
BST OPER SIG (On/Off)	_	_	×	Active booster operation (On/Off) status is displayed
PRESS SENSOR (bar)	×	_	×	Brake pressure detected by front pressure sensor is displayed.
EBD SIGNAL (On/Off)	_	_	×	EBD operation (On/Off) status is displayed.
ABS SIGNAL (On/Off)	_	-	×	ABS operation (On/Off) status is displayed.
TCS SIGNAL (On/Off)	-	_	×	TCS operation (On/Off) status is displayed.
VDC SIGNAL (On/Off)	-	_	×	VDC operation (On/Off) status is displayed.
EBD FAIL SIG (On/Off)	_	-	×	EBD fail signal (On/Off) status is displayed.
ABS FAIL SIG (On/Off)	_	-	×	ABS fail signal (On/Off) status is displayed.
TCS FAIL SIG (On/Off)	_	-	×	TCS fail signal (On/Off) status is displayed.
VDC FAIL SIG (On/Off)	-	_	×	VDC fail signal (On/Off) status is displayed.
CRANKING SIG (On/Off)	_	-	×	The input state of the key SW START position signal is displayed.
FLUID LEV SW (On/Off)	×	_	×	Brake fluid level switch (On/Off) status is displayed.
PRESS SEN2 (bar)	-	-	×	Brake pressure detected by pressure sensor is displayed.
DELTA S SEN (mm)	_	_	×	The amount of stroke sensor movements in the active booster detected by DELTA S SEN is displayed.
RELEASE SW NO (On/Off)	-	-	×	Release switch signal (On/Off) status is displayed. "On" indicates that the brake pedal is depressed. "Off indicates that the brake pedal is released.
RELEASE SW NC (On/Off)	-	-	×	Release switch signal (On/Off) status is displayed. "Off" indicates that the brake pedal is depressed. "On' indicates that the brake pedal is released.
HBA FAIL (On/Off)	-	-	×	HBA fail status is displayed.

#### < SYSTEM DESCRIPTION >

[TYPE 2]
----------

Item	Item (Unit)		ection		
			Remarks		
OHB FAIL (On/Off)	_	_	×	OHB fail status is displayed.	
HBA SIG (On/Off)	-	_	×	HBA operation (On/Off) status is displayed.	
OHB SIG (On/Off)	_	_	×	OHB operation (On/Off) status is displayed.	
STP OFF RLY (On/Off)	_	_	×	Stop lamp relay signal (On/Off) status is displayed.	

x: Applicable

#### **ACTIVE TEST**

#### **CAUTION:**

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

#### NOTE:

• When active test is performed while depressing the pedal, the pedal depression amount will change. This is normal. (solenoid valve and ABS motor only)

#### Test Item

#### SOLENOID VALVE

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

Operation -		AE	3S solenoid va	alve	ABS solenoid valve (ACT)		
		Up	Keep	Down	Up	ACT UP	ACT KEEP
FR RH SOL	FR RH IN SOL	Off	On	On	_	_	_
FR KH SOL	FR RH OUT SOL	Off	Off	On*	_	_	_
FR LH SOL	FR LH IN SOL	Off	On	On	_	_	_
FR LH SOL	FR LH OUT SOL	Off	Off	On*	_	_	_
RR RH SOL	RR RH IN SOL	Off	On	On	_	_	_
KK KH SOL	RR RH OUT SOL	Off	Off	On*	_	_	_
DD I H COI	RR LH IN SOL	Off	On	On	_	_	_
RR LH SOL	RR LH OUT SOL	Off	Off	On*	_	_	_
	FR RH IN SOL	_	_	_	Off	Off	Off
	FR RH OUT SOL	_	_	_	Off	Off	Off
FR RH ABS SOLENOID (ACT)	CV1	_	_	_	Off	On	On
	SV1	_	_	_	Off	On*	Off
FR LH ABS SOLENOID (ACT)	FR LH IN SOL	_	_	_	Off	Off	Off
	FR LH OUT SOL	_	_	_	Off	Off	Off
	CV1	_	_	_	Off	On	On
	SV1	_	_	_	Off	On*	Off

Revision: March 2012 BRC-141 2011 Pathfinder

BRC

Н

J

Ν

Α

В

D

Е

<sup>-:</sup> Not applicable

< SYSTEM DESCRIPTION >

[TYPE 2]

Operation		ABS solenoid valve			ABS solenoid valve (ACT)		
		Up	Keep	Down	Up	ACT UP	ACT KEEP
	RR RH IN SOL	_	_	_	Off	Off	Off
RR RH ABS SOLENOID (ACT)	RR RH OUT SOL	_	_	_	Off	Off	Off
KK KH ABS SULENUID (ACT)	CV2	_	_	_	Off	On	On
	SV2	_	_	_	Off	On*	Off
RR LH ABS SOLENOID (ACT)	RR LH IN SOL	_	_	_	Off	Off	Off
	RR LH OUT SOL	_	_	_	Off	Off	Off
	CV2	_	_	_	Off	On	On
	SV2		_	_	Off	On*	Off

<sup>\*:</sup> On for 1 to 2 seconds after the touch, and then Off

#### **ABS MOTOR**

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

Operation	On	Off
MOTOR RELAY	On	Off
ACTUATOR RLY	On	On

#### **BOOSTER DRIVE**

Touch "Up" and "Down" on the screen. Check that booster drive operates as shown in table below.
 CAUTION:

## Perform active test subject to the conditions below.

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

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

## **APPLICATION NOTICE**

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 2]

## **DTC/CIRCUIT DIAGNOSIS**

## **APPLICATION NOTICE**

**Application Notice** 

Service information	Remarks
TYPE 1	VDC/TCS/ABS (VQ40DE)
TYPE 2	VDC/TCS/ABS (VK56DE)

Е

Α

С

 $\mathsf{D}$ 

BRC

G

Н

J

Κ

L

M

Ν

0

## C1101, C1102, C1103, C1104 WHEEL SENSOR-1

< DTC/CIRCUIT DIAGNOSIS >

**[TYPE 2]** 

## C1101, C1102, C1103, C1104 WHEEL SENSOR-1

Description INFOID:000000006246005

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

#### 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.	
C1103	FR RH SENSOR-1	Circuit of front RH wheel sensor is open. Or when the sensor power voltage is outside the standard.	
C1104	FR LH SENSOR-1	Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard.	

## DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

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

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-144">BRC-144</a>, "Diagnosis Procedure".

NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006246007

Regarding Wiring Diagram information, refer to <a href="BRC-207">BRC-207</a>. "Wiring Diagram - With VK56DE".

#### **CAUTION:**

Do not check between wheel sensor terminals.

## 1. CONNECTOR INSPECTION

- Disconnect the ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunctioning code.
- 2. Check the terminals for deformation, disconnection, looseness or damage.

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Repair or replace as necessary.

## 2.CHECK WHEEL SENSOR OUTPUT SIGNAL

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

### C1101, C1102, C1103, C1104 WHEEL SENSOR-1

### < DTC/CIRCUIT DIAGNOSIS >

[TYPE 2]

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

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

NOTE:

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

### Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3

NO >> Replace the wheel sensor. Refer to BRC-229, "Removal and Installation".

# 3. CHECK TIRES

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

### Is the inspection result normal?

YES >> GO TO 4

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

# 4. CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to <u>FAX-6</u>, "<u>On-Vehicle Inspection and Service</u>" (front) or <u>RAX-6</u>, "<u>On-Vehicle Inspection and Service</u>" (rear).

### Is the inspection result normal?

YES >> GO TO 5

NO >> Repair or replace as necessary. Refer to <u>FAX-10</u>, "<u>Removal and Installation</u>" (front) or <u>RAX-7</u>, "<u>Removal and Installation</u>" (rear).

# ${f 5}.$ CHECK WIRING HARNESS FOR SHORT CIRCUIT

- Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunction code No.
- Check continuity between front wheel sensor connector terminals (A) or rear wheel sensor connector terminals (B) and ground.

## Continuity should not exist.

### Is the inspection result normal?

YES >> GO TO 6

NO >> Repair the circuit.

# 6. CHECK WIRING HARNESS FOR OPEN CIRCUIT

1. Check continuity between ABS actuator and electric unit (control unit) connector and the malfunctioning wheel sensor connector.

Wheel sensor	ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
	Connector	Terminal	Connector	Terminal	·
Front LH		45	E18	1	
I TOTAL ELT		46	E10	2	
Front RH		34	E117	1	Yes
		33		2	
Poor I H		37		3	163
Real LIT		36	C13	4	
Rear RH		42		1	
Kear Kn		43		2	

### Is the inspection result normal?

BRC

В

D

Е

Н

J

K

Ω

M

Ν

0

# C1101, C1102, C1103, C1104 WHEEL SENSOR-1

### < DTC/CIRCUIT DIAGNOSIS >

**[TYPE 2]** 

YES >> Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-231</u>, "Removal and Installation".

NO >> Repair the circuit.

# Component Inspection

INFOID:0000000006246008

# 1. CHECK DATA MONITOR

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

Wheel sensor	Vehicle speed (DATA MONITOR)	
FR LH SENSOR		
FR RH SENSOR	Nearly matches the speedometer display (±10% or less)	
RR LH SENSOR		
RR RH SENSOR		

### Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <a href="BRC-144">BRC-144</a>, "Diagnosis Procedure".

# Special Repair Requirement

INFOID:0000000006246009

# 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-121</u>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

>> GO TO 2

# 2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-122, "CALIBRATION OF DECEL G SENSOR: Description".

# C1105, C1106, C1107, C1108 WHEEL SENSOR-2

< DTC/CIRCUIT DIAGNOSIS >

**[TYPE 2]** 

Α

D

Е

# C1105, C1106, C1107, C1108 WHEEL SENSOR-2

Description INFOID:0000000006246010

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:0000000006246011

### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1105	RR RH SENSOR-2	When the circuit in the rear RH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.	<ul><li>Harness or connector</li><li>Wheel sensor</li></ul>
C1106	RR LH SENSOR-2	When the circuit in the rear LH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.	
C1107	FR RH SENSOR-2	When the circuit in the front RH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.	ABS actuator and electric unit (control unit)
C1108	FR LH SENSOR-2	When the circuit in the front LH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.	

### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

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

### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to BRC-147, "Diagnosis Procedure".

NO >> Inspection End.

# Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-207, "Wiring Diagram - With VK56DE".

### **CAUTION:**

Do not check between wheel sensor terminals.

# 1. CONNECTOR INSPECTION

- Disconnect the ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunctioning code.
- Check the terminals for deformation, disconnection, looseness or damage.

### Is the inspection result normal?

>> GO TO 2 YES

**BRC-147** Revision: March 2012 2011 Pathfinder

**BRC** 

Н

Р

INFOID:0000000006689885

### C1105, C1106, C1107, C1108 WHEEL SENSOR-2

### < DTC/CIRCUIT DIAGNOSIS >

**[TYPE 2]** 

NO >> Repair or replace as necessary.

# 2.CHECK WHEEL SENSOR OUTPUT SIGNAL

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

### NOTE:

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

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

### NOTE:

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

### Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3

NO >> Replace the wheel sensor. Refer to <u>BRC-229</u>, "Removal and Installation".

# 3.CHECK TIRES

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

### Is the inspection result normal?

YES >> GO TO 4

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

# 4.CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to <u>FAX-6</u>, "On-Vehicle Inspection and Service" (front) or <u>RAX-6</u>, "On-Vehicle Inspection and Service" (rear).

### Is the inspection result normal?

YES >> GO TO 5

NO >> Repair or replace as necessary. Refer to <u>FAX-10, "Removal and Installation"</u> (front) or <u>RAX-7, "Removal and Installation"</u> (rear).

# 5. CHECK WIRING HARNESS FOR SHORT CIRCUIT

- Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunction code No.
- Check continuity between front wheel sensor connector terminals (A) or rear wheel sensor connector terminals (B) and ground.

### Continuity should not exist.

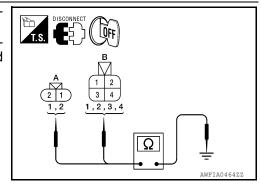
### Is the inspection result normal?

YES >> GO TO 6

NO >> Repair the circuit.

# 6. CHECK WIRING HARNESS FOR OPEN CIRCUIT

 Check continuity between ABS actuator and electric unit (control unit) connector and the malfunctioning wheel sensor connector.



### C1105, C1106, C1107, C1108 WHEEL SENSOR-2

### < DTC/CIRCUIT DIAGNOSIS >

**[TYPE 2]** 

Wheel sensor	ABS actuator and electric unit (control unit)		Wheel sensor		Continuity	
	Connector	Terminal	Connector	Terminal		
Front LH		45	E18	1		_
FIOIILEI		46	E10	2	Yes	
Front RH	3	34	E117	1		
FIONL KIT		33		2		
Rear LH	E121	E127 37		3		
Real LFI		36	C13	4		
Rear RH		42		1		
INCAL INT		43		2		

### Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to <a href="BRC-231">BRC-231</a>, "Removal and Installation".

NO >> Repair the circuit.

# Component Inspection

# 1. CHECK DATA MONITOR

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

Wheel sensor	Vehicle speed (DATA MONITOR)	
FR LH SENSOR		
FR RH SENSOR	Nearly matches the speedometer dis-	
RR LH SENSOR	play (±10% or less)	
RR RH SENSOR		

### Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <a href="BRC-144">BRC-144</a>, "Diagnosis Procedure".

# Special Repair Requirement

# 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-121">BRC-121</a>. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

>> GO TO 2

Revision: March 2012

# 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-122">BRC-122</a>, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

BRC

Α

В

D

G

Н

K

Ν

INFOID:0000000006689887

INFOID:0000000006689886

# C1109 POWER AND GROUND SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

**[TYPE 2]** 

# C1109 POWER AND GROUND SYSTEM

Description INFOID:0000000006246015

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

**DTC Logic** INFOID:0000000006246016

### 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)

### DTC CONFIRMATION PROCEDURE

# CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results BATTERY VOLTAGE [ABNORMAL]

### Is above displayed on the self-diagnosis display?

>> Proceed to diagnosis procedure. Refer to <a href="BRC-150">BRC-150</a>, "Diagnosis Procedure". YES

>> Inspection End. NO

# Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-207, "Wiring Diagram - With VK56DE".

# 1.CONNECTOR INSPECTION

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connectors and then perform the self-diagnosis. Refer to BRC-138, "CONSULT-III Function (ABS)".

### Is any item indicated on the self-diagnosis display?

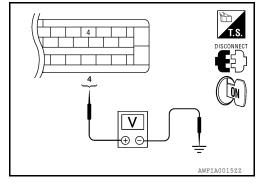
YES >> GO TO 2

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

2.check abs actuator and electric unit (control unit) power supply circuit and **GROUND CIRCUIT** 

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check voltage between ABS actuator and electric unit (control unit) connector E127 terminal 4 and ground.

ABS actuator and electric unit (control unit)		_	Condition	Voltage
Connector	Terminal			
F127	1	Ground	Ignition switch: ON	Battery voltage
LIZI	4	Ground	Ignition switch: OFF	Approx. 0V



INFOID:0000000006246017

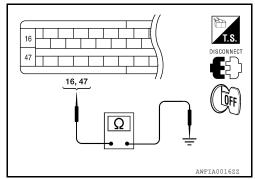
### C1109 POWER AND GROUND SYSTEM

### < DTC/CIRCUIT DIAGNOSIS >

4. Turn ignition switch OFF.

Check continuity between ABS actuator and electric unit (control unit) connector E127 terminals 16, 47 and ground.

ABS actuator and electric unit (control unit)		_	Continuity
Connector	Terminal		
E127	16, 47	Ground	Yes



**[TYPE 2]** 

### Is the inspection result normal?

YES >> Check battery for terminal looseness, low voltage, etc. If any malfunction is found, repair malfunc-

NO >> Repair or replace malfunctioning components.

# Special Repair Requirement

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-121, "ADJUSTMENT OF STEERING ANGLE SENSOR NEU-TRAL POSITION: Description".

>> GO TO 2

2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-122, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

**BRC** 

INFOID:0000000006689888

Α

В

C

D

Е

Н

K

Ν

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

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 2]

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

DTC Logic

### DTC DETECTION LOGIC

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

### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results
CONTROLLER FAILURE
VARIANT CODING

### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to BRC-152, "Diagnosis Procedure".

NO >> Inspection End.

# Diagnosis Procedure

INFOID:0000000006246020

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

>> Replace ABS actuator and electric unit (control unit). Refer to <a href="BRC-231">BRC-231</a>, "Removal and Installation".

# Special Repair Requirement

INFOID:0000000006689889

# 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-121</u>, "<u>ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION</u>: <u>Description</u>".

>> GO TO 2

# 2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-122">BRC-122</a>, "CALIBRATION OF DECEL G SENSOR: Description".

# C1111 ABS MOTOR, MOTOR RELAY SYSTEM

**[TYPE 2]** < DTC/CIRCUIT DIAGNOSIS > C1111 ABS MOTOR, MOTOR RELAY SYSTEM Α Description INFOID:0000000006246022 **PUMP** В The pump returns the brake fluid stored in the reservoir to the master cylinder by reducing the pressure. The motor drives the pump according to the signals transmitted by the ABS actuator and electric unit (control unit). DTC Logic INFOID:0000000006246023 D DTC DETECTION LOGIC Е DTC Display item Malfunction detected condition Possible cause During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for ac-**BRC** · Harness or connector tuator motor relay is open. C1111 **PUMP MOTOR** ABS actuator and electric unit During the actuator motor operating with OFF, when the (control unit) actuator motor turns ON, or when the control line for relay is shorted to ground. DTC CONFIRMATION PROCEDURE 1. CHECK SELF-DIAGNOSIS RESULTS Н Check the self-diagnosis results. Self-diagnosis results **PUMP MOTOR** Is above displayed on the self-diagnosis display? YES >> Proceed to diagnosis procedure. Refer to BRC-153, "Diagnosis Procedure". NO >> Inspection End. Diagnosis Procedure INFOID:0000000006246024 Regarding Wiring Diagram information, refer to BRC-207, "Wiring Diagram - With VK56DE". 1.CONNECTOR INSPECTION M Turn ignition switch OFF. Disconnect ABS actuator and electric unit (control unit) connector. 2. Check terminal for deformation, disconnect, looseness, and so on. If any malfunction is found, repair or replace terminal. 4. Reconnect connectors and then perform the self-diagnosis. Refer to BRC-138, "CONSULT-III Function (ABS)". 0 Is any item indicated on the self-diagnosis display? YES >> GO TO 2 NO >> Poor connection of connector terminal. Repair or replace connector. Р

2.CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

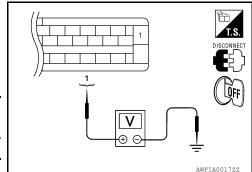
### C1111 ABS MOTOR, MOTOR RELAY SYSTEM

### < DTC/CIRCUIT DIAGNOSIS >

Turn ignition switch OFF.

- Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Check voltage between the ABS actuator and electric unit (control unit) connector E127 terminal 1 and ground.

ABS actuator and ele	ectric unit (control unit)		Voltage
Connector	Terminal	_	voltage
E127	1	Ground	Battery voltage



### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

# ${f 3.}$ CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUIT

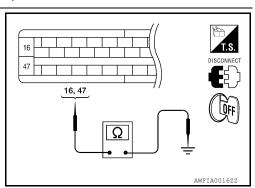
Check continuity between ABS actuator and electric unit (control unit) connector E127 terminals 16, 47 and ground.

ABS actuator and ele	ectric unit (control unit)	_	Continuity
Connector	Terminal	Terminal	
E127	16, 47	Ground	Yes

### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-231, "Removal and Installation".

NO >> Repair or replace malfunctioning components.



### INFOID:0000000006246025

**[TYPE 2]** 

# Component Inspection

# 1. CHECK ACTIVE TEST

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

Operation	On	Off
MOTOR RELAY	On	Off
ACTUATOR RLY	On	On

### Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <a href="BRC-153">BRC-153</a>, "Diagnosis Procedure".

# Special Repair Requirement

INFOID:0000000006689890

# 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-121</u>, "<u>ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION</u>: Description".

>> GO TO 2

# 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-122">BRC-122</a>, "CALIBRATION OF DECEL G SENSOR: Description".

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

< DTC/CIRCUIT DIAGNOSIS >

**[TYPE 2]** 

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

Description INFOID:0000000006246027

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

DTC Logic INFOID:0000000006246028

### DTC DETECTION LOGIC

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

### DTC CONFIRMATION PROCEDURE

# CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

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

### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to BRC-155, "Diagnosis Procedure".

NO >> Inspection End.

# Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-207, "Wiring Diagram - With VK56DE".

### **CAUTION:**

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

# 1.CONNECTOR INSPECTION

- Disconnect the ABS actuator and electric unit (control unit) connector and yaw rate/side/decel G sensor connector.
- 2. Check the terminals for deformation, disconnection, looseness or damage.

### Is the inspection result normal?

YES >> GO TO 2

NO >> Repair or replace as necessary.

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

Check continuity between the ABS actuator and electric unit (control unit) connector E127 (A) and the yaw rate/side/decel G sensor connector B73 (B).

**BRC-155** Revision: March 2012 2011 Pathfinder **BRC** 

D

Е

Α

Н

INFOID:0000000006246029

Ν

0

ABS actuator and electric unit (control unit)		Yaw rate/side/decel G sensor		Continuity
Connector	Terminal	Connector Terminal		
E127 (A)	6	B73 (B)	4	
	24		1	Yes
	25		2	res
	29		3	

### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace as necessary.

# 3.YAW RATE/SIDE/DECEL G SENSOR INSPECTION

- Connect the yaw rate/side/decel G sensor connector and ABS actuator and electric unit (control unit) connector.
- 2. Perform yaw rate/side/decel G sensor component inspection. Refer to <u>BRC-156, "Component Inspection"</u>. Is the inspection result normal?
- YES >> Perform self-diagnosis again. If the same results appear, replace the ABS actuator and electric unit (control unit). Refer to <a href="mailto:BRC-231">BRC-231</a>, "Removal and Installation".
- NO >> Replace the yaw rate/side/decel G sensor. Refer to <a href="BRC-234">BRC-234</a>, "Removal and Installation".

# Component Inspection

INFOID:0000000006246030

# 1. CHECK DATA MONITOR

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

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

### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the yaw rate/side/decel G sensor. Refer to <u>BRC-234. "Removal and Installation"</u>.

# Special Repair Requirement

INFOID:0000000006689891

# 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-121</u>, "<u>ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION</u>: Description".

>> GO TO 2

# 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-122, "CALIBRATION OF DECEL G SENSOR: Description".

### C1115 WHEEL SENSOR

Description INFOID:0000000006246032

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:0000000006246033

### DTC DETECTION LOGIC

	DTC	Display item	Malfunction detected condition	Possible cause
(	C1115	ABS SENSOR [ABNORMAL SIGNAL]	When wheel sensor input signal is malfunctioning.	<ul><li> Harness or connector</li><li> Wheel sensor</li><li> ABS actuator and electric unit (control unit)</li></ul>

### DTC CONFIRMATION PROCEDURE

# CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results ABS SENSOR [ABNORMAL SIGNAL]

### Is above displayed on the self-diagnosis display?

>> Proceed to diagnosis procedure. Refer to <a href="BRC-157">BRC-157</a>, "Diagnosis Procedure". YES

NO >> Inspection End.

# Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-207, "Wiring Diagram - With VK56DE".

### **CAUTION:**

Do not check between wheel sensor terminals.

# 1.CONNECTOR INSPECTION

- Disconnect the ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunctioning code.
- Check the terminals for deformation, disconnection, looseness or damage.

### Is the inspection result normal?

YES >> GO TO 2

NO >> Repair or replace as necessary.

# 2.CHECK WHEEL SENSOR OUTPUT SIGNAL

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

### NOTE:

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

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

### NOTE:

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

### Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3

NO >> Replace the wheel sensor. Refer to <a href="BRC-229">BRC-229</a>, "Removal and Installation".

**BRC-157** Revision: March 2012 2011 Pathfinder **BRC** 

D

Е

Α

INFOID:0000000006689892

K

Ν

INFOID:0000000006689893

# 3.CHECK TIRES

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

### Is the inspection result normal?

YES >> GO TO 4

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

### 4. CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to FAX-6, "On-Vehicle Inspection and Service" (front) or RAX-6, "On-Vehicle Inspection and Service" (rear).

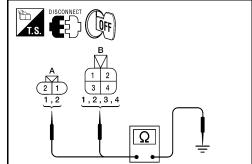
### Is the inspection result normal?

YES >> GO TO 5

>> Repair or replace as necessary. Refer to FAX-10, "Removal and Installation" (front) or RAX-7, NO "Removal and Installation" (rear).

# ${f 5}$ .CHECK WIRING HARNESS FOR SHORT CIRCUIT

- Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunction code No.
- 2. Check continuity between front wheel sensor connector terminals (A) or rear wheel sensor connector terminals (B) and ground.



### Continuity should not exist.

### Is the inspection result normal?

YES >> GO TO 6

NO >> Repair the circuit.

# 6.CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector and the malfunctioning wheel sensor connector.

Wheel sensor	ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
	Connector	Terminal	Connector	Terminal	
Front I U		45	E18	1	Yes
Front LH	F407	46		2	
Front RH		34	E117	1	
		33		2	
Rear LH	E127	37	C13	3	
Real Ln		36		4	
Rear RH		42		1	
Real KII		43		2	

### Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-231, "Removal and Installation".

NO >> Repair the circuit.

# Component Inspection

# CHECK DATA MONITOR

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

### **C1115 WHEEL SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

**[TYPE 2]** 

INFOID:0000000006689894

Wheel sensor	Vehicle speed (DATA MONITOR)
FR LH SENSOR	
FR RH SENSOR	Nearly matches the speedometer dis-
RR LH SENSOR	play (±10% or less)
RR RH SENSOR	
ls the inspection result normal?	

### is the inspection result normal?

YES >> Inspection End.

>> Go to diagnosis procedure. Refer to <a href="BRC-144">BRC-144</a>, "Diagnosis Procedure".

# Special Repair Requirement

# 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-121, "ADJUSTMENT OF STEERING ANGLE SENSOR NEU-TRAL POSITION: Description".

### >> GO TO 2

# 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-122, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

Α

В

D

Е

**BRC** 

Н

Ν

INFOID:0000000006246039

### C1116 STOP LAMP SWITCH

Description INFOID:000000006246037

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

DTC Logic

### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1116	STOP LAMP SW	When stop lamp switch circuit is open.	Harness or connector     Stop lamp switch     ABS actuator and electric unit (control unit)

### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results
STOP LAMP SW

### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-160">BRC-160</a>, "Diagnosis Procedure".

NO >> Inspection End.

# Diagnosis Procedure

Regarding Wiring Diagram information, refer to <u>BRC-207</u>, "Wiring Diagram - With VK56DE".

# 1.CONNECTOR INSPECTION

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

### Is the inspection result normal?

YES >> GO TO 2

NO >> Repair or replace as necessary.

# $2.\mathsf{stop}$ lamp switch inspection

Check voltage between ABS actuator and electric unit (control unit) connector E127 terminal 41 and body ground.

Brake pedal depressed : Battery voltage

(approx. 12V)

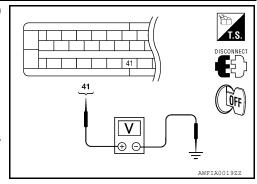
Brake pedal released : Approx. 0V

### Is the inspection result normal?

YES >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to <a href="mailto:BRC-231">BRC-231</a>, "Removal and Installation".

NO >> GO TO 3

3.stop Lamp relay circuit inspection



### C1116 STOP LAMP SWITCH

### < DTC/CIRCUIT DIAGNOSIS >

**[TYPE 2]** 

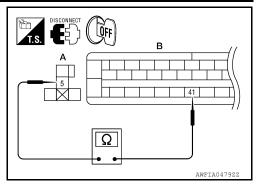
- Disconnect stop lamp relay connector.
- Check continuity between stop lamp relay connector E12 (A) terminal 5 and ABS actuator and electric unit (control unit) connector E127 (B) terminal 41.

### Continuity should exist.

### Is the inspection result normal?

YES >> Refer to BRC-117, "Work Flow".

NO >> Repair or replace malfunctioning components.



INFOID:0000000006689895

# Special Repair Requirement

# 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-121, "ADJUSTMENT OF STEERING ANGLE SENSOR NEU-TRAL POSITION: Description".

>> GO TO 2

# 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-122, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

**BRC** 

Α

В

D

Е

Н

K

L

M

Ν

0

**[TYPE 2]** 

# C1120, C1122, C1124, C1126 IN ABS SOL

Description INFOID:000000006246041

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

### DTC DETECTION LOGIC

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

# DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

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

### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-162">BRC-162</a>, "Diagnosis Procedure".

NO >> Inspection End.

# Diagnosis Procedure

INFOID:0000000006246043

Regarding Wiring Diagram information, refer to <a href="BRC-207">BRC-207</a>. "Wiring Diagram - With VK56DE".

# 1. CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connectors and then perform the self-diagnosis. Refer to <u>BRC-138</u>, "CONSULT-III Function (ABS)".

### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2

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

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

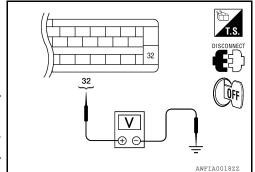
### C1120, C1122, C1124, C1126 IN ABS SOL

### < DTC/CIRCUIT DIAGNOSIS >

Turn ignition switch OFF.

- 2. Disconnect ABS actuator and electric unit (control unit) connec-
- 3. Check voltage between ABS actuator and electric unit (control unit) connector E127 terminal 32 and ground.

ABS actuator and electric unit (control unit)		_	Voltage
Connector	Terminal	— Voltag	voltage
E127	32	Ground	Battery voltage



### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

# 3.check solenoid, vdc switch-over valve and actuator relay ground circuit

Check continuity between ABS actuator and electric unit (control unit) connector E127 terminals 16, 47 and ground.

ABS actuator and ele	ectric unit (control unit)	- Continu	Continuity	
Connector	Terminal		Continuity	
E127	16, 47	Ground	Yes	

### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-231, "Removal and Installation".

NO >> Repair or replace malfunctioning components.

# 16, 47

# Component Inspection

# CHECK ACTIVE TEST

- Select each test menu item on "ACTIVE TEST".
- On the display, touch "Up", "Keep", and "Down", and check that the system operates as shown in the table below.

Operation		ABS solenoid valve		
		Up	Keep	Down
FR RH SOL	FR RH IN SOL	Off	On	On
FR RH 30L	FR RH OUT SOL	Off	Off	On*
FR LH SOL	FR LH IN SOL	Off	On	On
FR LH 30L	FR LH OUT SOL	Off	Off	On*
RR RH SOL	RR RH IN SOL	Off	On	On
KK KH 30L	RR RH OUT SOL	Off	Off	On*
RR LH SOL	RR LH IN SOL	Off	On	On
NIX EIT SOL	RR LH OUT SOL	Off	Off	On*

<sup>\*:</sup> On for 1 to 2 seconds after the touch, and then Off

### Is the inspection result normal?

YES >> Inspection End.

>> Go to diagnosis procedure. Refer to <u>BRC-162</u>, "<u>Diagnosis Procedure</u>".

# Special Repair Requirement

# 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-121, "ADJUSTMENT OF STEERING ANGLE SENSOR NEU-TRAL POSITION: Description".

**BRC-163** Revision: March 2012 2011 Pathfinder

В

Α

**[TYPE 2]** 

D

Е

**BRC** 

Н

INFOID:0000000006246044

Ν

Р

INFOID:0000000006689896

# C1120, C1122, C1124, C1126 IN ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 2]

>> GO TO 2

# 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-122">BRC-122</a>, "CALIBRATION OF DECEL G SENSOR: Description".

# C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 2]

# C1121, C1123, C1125, C1127 OUT ABS SOL

Description INFOID:0000000006246046

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

### DTC DETECTION LOGIC

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

DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

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

### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-165">BRC-165</a>, "Diagnosis Procedure".

NO >> Inspection End.

# Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-207, "Wiring Diagram - With VK56DE".

# 1. CONNECTOR INSPECTION

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- 4. Reconnect connectors and then perform the self-diagnosis. Refer to <u>BRC-138</u>, "CONSULT-III Function (ABS)".

### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2

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

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

BRC

D

Е

Α

Н

INFOID:0000000006689897

N

0

Р

M

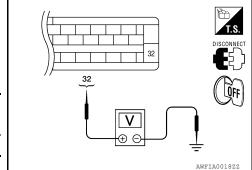
# C1121, C1123, C1125, C1127 OUT ABS SOL

### < DTC/CIRCUIT DIAGNOSIS >

Turn ignition switch OFF.

- Disconnect ABS actuator and electric unit (control unit) connec-
- 3. Check voltage between ABS actuator and electric unit (control unit) connector E127 terminal 32 and ground.

ABS actuator and ele	S actuator and electric unit (control unit)		Voltage
Connector	Terminal		voitage
E127	32	Ground	Battery voltage



**[TYPE 2]** 

INFOID:0000000006689898

INFOID:0000000006689899

### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

# 3.check solenoid, vdc switch-over valve and actuator relay ground circuit

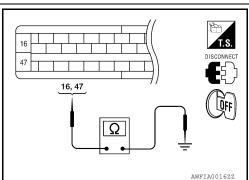
Check continuity between ABS actuator and electric unit (control unit) connector E127 terminals 16, 47 and ground.

ABS actuator and ele	ator and electric unit (control unit)  — Continuity		Continuity
Connector	Terminal	Conun	Continuity
E127	16, 47	Ground	Yes

### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-231, "Removal and Installation".

NO >> Repair or replace malfunctioning components.



# Component Inspection

# 1. CHECK ACTIVE TEST

- Select each test menu item on "ACTIVE TEST".
- On the display, touch "Up", "Keep", and "Down", and check that the system operates as shown in the table below.

Operation		ABS solenoid valve		
		Up	Keep	Down
FR RH SOL	FR RH IN SOL	Off	On	On
TRAIT SOL	FR RH OUT SOL	Off	Off	On*
FR LH SOL	FR LH IN SOL	Off	On	On
FR LH 30L	FR LH OUT SOL	Off	Off	On*
RR RH SOL	RR RH IN SOL	Off	On	On
RK KH 30L	RR RH OUT SOL	Off	Off	On*
RR LH SOL	RR LH IN SOL	Off	On	On
NIX EIT SOL	RR LH OUT SOL	Off	Off	On*

<sup>\*:</sup> On for 1 to 2 seconds after the touch, and then Off

### Is the inspection result normal?

YES >> Inspection End.

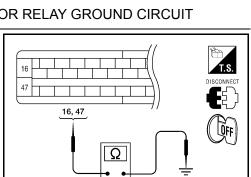
>> Go to diagnosis procedure. Refer to <u>BRC-162</u>, "<u>Diagnosis Procedure</u>".

# Special Repair Requirement

# ${f 1}$ . ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-121, "ADJUSTMENT OF STEERING ANGLE SENSOR NEU-TRAL POSITION: Description".

**BRC-166** Revision: March 2012 2011 Pathfinder



# C1121, C1123, C1125, C1127 OUT ABS SOL

Κ

< DTC/CIRCUIT DIAGNOSIS >	[TYPE 2]
>> GO TO 2	А
2.CALIBRATION OF DECEL G SENSOR	
Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (c Refer to BRC-122, "CALIBRATION OF DECEL G SENSOR: Description".	control unit). B
>> END	С
	D
	E
	BR
	G
	Н
	I
	J

L

Ν

0

# C1130, C1131, C1132, C1133, C1136 ENGINE SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 2]

# C1130, C1131, C1132, C1133, C1136 ENGINE SIGNAL

Description INFOID:000000006246051

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

DTC Logic

### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause	
C1130	ENGINE SIGNAL 1	Based on the signal from ECM, ABS actuator and electric unit (control unit) judges that engine fuel cut system is malfunctioning.		
C1131	ENGINE SIGNAL 2		<ul><li>Harness or connector</li><li>ABS actuator and electric unit</li></ul>	
C1132	ENGINE SIGNAL 3		unit (control unit) judges that engine fuel cut system is (control unit	(control unit)
C1133	ENGINE SIGNAL 4		<ul><li>ECM</li><li>CAN communication line</li></ul>	
C1136	ENGINE SIGNAL 6			

### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

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

### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-168">BRC-168</a>, "Diagnosis Procedure".

NO >> Inspection End.

# Diagnosis Procedure

INFOID:0000000006246053

# 1. CHECK ENGINE SYSTEM

- Perform ECM self-diagnosis. Repair or replace items indicated, then perform ECM self-diagnosis again. Refer to <u>EC-530, "CONSULT-III Function"</u>.
- 2. Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <a href="BRC-138">BRC-138</a>, "CONSULT-III Function (ABS)".

### Is any item indicated on the self-diagnosis display?

YES >> Repair or replace the affected part.

NO >> Inspection End.

**[TYPE 2]** 

# C1140 ACTUATOR RLY

**Description** 

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

DTC Logic

### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1140	ACTUATOR RLY	ABS actuator relay or circuit malfunction.	Harness or connector     ABS actuator and electric unit (control unit)

### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results
ACTUATOR RLY

Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-169</u>, "<u>Diagnosis Procedure</u>".

NO >> Inspection End.

# Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-207, "Wiring Diagram - With VK56DE".

# 1. CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- 4. Reconnect connectors and then perform the self-diagnosis. Refer to <a href="BRC-138">BRC-138</a>, "CONSULT-III Function (ABS)".

### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2

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

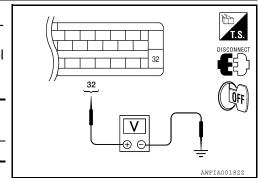
# 2.CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Check voltage between ABS actuator and electric unit (control unit) connector E127 terminal 32 and ground.

ABS actuator and ele	ectric unit (control unit)		Voltage
Connector	Terminal	_	Voltage
E127	32	Ground	Battery voltage

### Is the inspection result normal?

YES >> GO TO 3



BRC

D

Е

Α

INFOID:0000000006689900

M

0

Ν

### < DTC/CIRCUIT DIAGNOSIS >

NO >> Repair or replace malfunctioning components.

# 3.check solenoid, vdc switch-over valve and actuator relay ground circuit

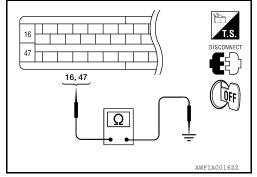
Check continuity between ABS actuator and electric unit (control unit) connector E127 terminals 16, 47 and ground.

ABS actuator and ele	ectric unit (control unit)		Continuity
Connector	Terminal		Continuity
E127	16, 47	Ground	Yes

### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-231, "Removal and Installation".

NO >> Repair or replace malfunctioning components.



# Component Inspection

# 1. CHECK ACTIVE TEST

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

Operation	On	Off
MOTOR RELAY	On	Off
ACTUATOR RLY	On	On

### Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <a href="BRC-153">BRC-153</a>, "Diagnosis Procedure".

# Special Repair Requirement

INFOID:0000000006689902

INFOID:0000000006689901

# 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-121, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION:</u> Description".

>> GO TO 2

# 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-122, "CALIBRATION OF DECEL G SENSOR: Description".

# C1142 PRESS SENSOR

Description INFOID:0000000006246059

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

DTC Logic INFOID:0000000006246060

### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1142	PRESS SEN CIRCUIT	Pressure sensor signal line is open or shorted, or pressure sensor is malfunctioning.	Harness or connector     Pressure sensor     ABS actuator and electric unit (control unit)

### DTC CONFIRMATION PROCEDURE

# CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Salf diagnosis results	
Self-diagnosis results	
PRESS SEN CIRCUIT	

### Is above displayed on the self-diagnosis display?

>> Proceed to diagnosis procedure. Refer to BRC-171, "Diagnosis Procedure (Front Pressure Sensor)" or BRC-172, "Diagnosis Procedure (Rear Pressure Sensor)".

NO >> Inspection End.

# Diagnosis Procedure (Front Pressure Sensor)

Regarding Wiring Diagram information, refer to BRC-207, "Wiring Diagram - With VK56DE".

# 1. CONNECTOR INSPECTION

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

### Is the inspection result normal?

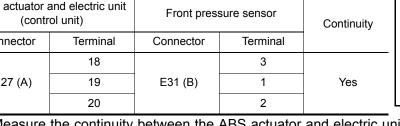
YES >> GO TO 2

NO >> Repair connector.

# 2 .FRONT PRESSURE SENSOR CIRCUIT INSPECTION

Measure the continuity between the ABS actuator and electric unit (control unit) connector E127 (A) and front pressure sensor connector E31 (B).

ABS actuator and electric unit (control unit)		Front pressure sensor		Continuity
Connector	Terminal	Connector	Terminal	
	18		3	
E127 (A)	19	E31 (B)	1	Yes
	20		2	



18, 19, 20

Measure the continuity between the ABS actuator and electric unit (control unit) connector E127 (A) and body ground.

**BRC** 

D

Е

Α

[TYPE 2]

Н

INFOID:0000000006246061

K

M

Ν

	electric unit (control nit)	_	Continuity
Connector	Terminal		
	18		
E127 (A)	19	Ground	No
	20		

### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace harness or connector.

# 3.FRONT PRESSURE SENSOR INSPECTION

- 1. Reconnect the front pressure sensor and ABS actuator and electric unit (control unit) connectors.
- Perform the front pressure sensor (PRESS SENSOR) component inspection. Refer to <u>BRC-173, "Component Inspection (Front Pressure Sensor)"</u>.

### Is the inspection result normal?

YES >> Perform self-diagnosis again. If the same results appear, replace the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-231">BRC-231</a>, "Removal and Installation".

NO >> Replace the front pressure sensor.

# Diagnosis Procedure (Rear Pressure Sensor)

INFOID:0000000006246062

Regarding Wiring Diagram information, refer to BRC-207. "Wiring Diagram - With VK56DE".

# 1. CONNECTOR INSPECTION

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

### Is the inspection result normal?

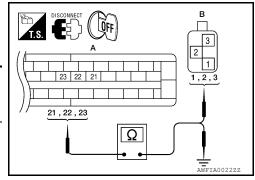
YES >> GO TO 2

NO >> Repair connector.

# 2.REAR PRESSURE SENSOR CIRCUIT INSPECTION

 Measure the continuity between the ABS actuator and electric unit (control unit) connector E127 (A) and rear pressure sensor connector E32 (B).

ABS actuator and electric unit (control unit)		Rear pressure sensor		Continuity
Connector	Terminal	Connector	Terminal	
	21		1	
E127 (A)	22	E32 (B)	3	Yes
	23		2	



Measure the continuity between the ABS actuator and electric unit (control unit) connector E127 (A) and body ground.

	electric unit (control nit)	_	Continuity
Connector	Terminal		
	21		
E127 (A)	22	Ground	No
	23		

### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace harness or connector.

# 3.rear pressure sensor inspection

- 1. Reconnect the rear pressure sensor and ABS actuator and electric unit (control unit) connectors.
- Perform the rear pressure sensor (PRESS SEN2) component inspection. Refer to <u>BRC-173, "Component Inspection (Rear Pressure Sensor)"</u>.

### Is the inspection result normal?

YES >> Perform self-diagnosis again. If the same results appear, replace the ABS actuator and electric unit (control unit). Refer to <a href="mailto:BRC-231">BRC-231</a>. "Removal and Installation".

NO >> Replace the rear pressure sensor.

# Component Inspection (Front Pressure Sensor)

1.CHECK DATA MONITOR

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

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

### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the appropriate pressure sensor. Refer to <u>BR-51</u>, "<u>Disassembly and Assembly</u>".

# Component Inspection (Rear Pressure Sensor)

# 1. CHECK DATA MONITOR

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

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

### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the appropriate pressure sensor. Refer to <u>BR-51, "Disassembly and Assembly"</u>.

# Special Repair Requirement

# 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-121">BRC-121</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

BRC

Α

В

D

Е

G

INFOID:0000000006246063

Н

|

INFOID:0000000006246064

1

N

0

# C1142 PRESS SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 2]

>> GO TO 2

# 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-122">BRC-122</a>, "CALIBRATION OF DECEL G SENSOR: Description".

### C1143, C1144 STEERING ANGLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 2]

# C1143, C1144 STEERING ANGLE SENSOR

Description INFOID:0000000006246066

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

### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1143	ST ANG SEN CIRCUIT	Neutral position of steering angle sensor is dislocated, or the steering angle sensor is malfunctioning.	<ul> <li>Steering angle sensor</li> </ul>
C1144	ST ANG SEN SIGNAL	Neutral position of steering angle sensor is not finished.	<ul> <li>ABS actuator and electric unit (control unit)</li> </ul>

### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

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

Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-175">BRC-175</a>, "Diagnosis Procedure".

NO >> Inspection End.

# Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-207, "Wiring Diagram - With VK56DE".

# 1.CONNECTOR INSPECTION

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Disconnect steering angle sensor connector.
- 4. Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connectors and then perform the self-diagnosis. Refer to <u>BRC-138</u>, "CONSULT-III Function (ABS)".

### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2

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

# 2.check steering angle sensor harness

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

BRC

D

Е

Α

onc.

Н

INFOID:0000000006246068

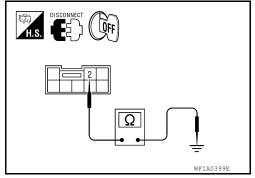
K

N

### < DTC/CIRCUIT DIAGNOSIS >

Check continuity between steering angle sensor connector M47 terminal 2 and ground.

Steering a	ngle sensor	_	Continuity	
Connector	Terminal		Continuity	
M47	2	Ground	Yes	



- Turn ignition switch ON.
- 5. Check voltage between steering angle sensor connector M47 terminal 3 and ground.

Steering a	ngle sensor		Voltage	
Connector	Terminal		voltage	
M47	3	Ground	Battery voltage	
		•		

# H.S. CED ON

### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

# 3. CHECK DATA MONITOR

- 1. Connect the steering angle sensor connector and ABS actuator and electric unit (control unit) connector.
- 2. Perform the steering angle sensor component inspection. Refer to <u>BRC-176, "Component Inspection"</u>. Is the inspection result normal?
- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-231</u>, "Removal and Installation".
- NO >> Replace steering angle sensor. Refer to <u>BRC-233, "Removal and Installation"</u>.

# Component Inspection

INFOID:0000000006246069

# 1. CHECK DATA MONITOR

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

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

### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace steering angle sensor. Refer to <u>BRC-233, "Removal and Installation"</u>.

# Special Repair Requirement

INFOID:0000000006689904

# ${f 1}$ .adjustment of steering angle sensor neutral position

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-121">BRC-121</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

>> GO TO 2

## 2.CALIBRATION OF DECEL G SENSOR

# C1143, C1144 STEERING ANGLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 2]

Always	perform	calibration	of decel (	sensor 3	when	replacing	the ABS	actuator	and	electric	unit	(control	unit).
Refer to	BRC-12	22, "CALIBI	RATION C	F DECE	L G SI	ENSOR:	Descript	<u>ion"</u> .					

>> END

В

Α

С

D

Е

BRC

G

Н

J

Κ

L

M

Ν

0

# C1155 BRAKE FLUID LEVEL SWITCH

Description INFOID:000000006246071

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

### 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 level switch     Brake fluid level

### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results	
BR FLUID LEVEL LOW	

### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-178">BRC-178</a>, "Diagnosis Procedure".

NO >> Inspection End.

# Diagnosis Procedure

INFOID:0000000006246073

Regarding Wiring Diagram information, refer to BRC-207. "Wiring Diagram - With VK56DE".

# 1. CONNECTOR INSPECTION

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

### Is the inspection result normal?

YES >> GO TO 2

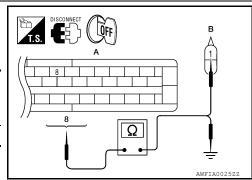
NO >> Repair or replace as necessary.

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

 Check continuity between ABS actuator and electric unit (control unit) connector E127 (A) terminal 8 and brake fluid level switch connector E21 (B) terminal 1.

ABS actuator and electric unit (control unit)		Brake fluid	Continuity	
Connector	Terminal	Connector	Terminal	
E127 (A)	8	E21 (B)	1	Yes

2. Check continuity between ABS actuator and electric unit (control unit) connector E127 (A) terminal 8 and ground.



### < DTC/CIRCUIT DIAGNOSIS >

ABS actuator and ele	ectric unit (control unit)		Continuity	
Connector Terminal		_	Continuity	
E127 (A)	8	Ground	No	

### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

# 3.CHECK BRAKE FLUID LEVEL SWITCH GROUND

Check continuity between brake fluid level switch connector E21 terminal 2 and ground.

Brake fluid	level switch		Continuity
Connector	Terminal	_	Continuity
E21	2	Ground	Yes

### Is the inspection result normal?

YES >> GO TO 4

NO >> Repair or replace malfunctioning components.

# 4.CHECK BRAKE FLUID LEVEL SWITCH

Perform brake fluid level switch component inspection. Refer to <u>BRC-179</u>, "Component Inspection".

### Is the inspection result normal?

YES >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to <a href="mailto:BRC-231">BRC-231</a>, "Removal and Installation".

NO >> Replace brake fluid level switch.

# Component Inspection

# 1. CHECK BRAKE FLUID LEVEL SWITCH

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

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

### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace brake fluid level switch.

# Special Repair Requirement

# ${f 1}$ .adjustment of steering angle sensor neutral position

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-121</u>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

### >> GO TO 2

# 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-122">BRC-122</a>, "CALIBRATION OF DECEL G SENSOR: Description".

D

Α

В

Е

BRC

G

Н

INFOID:0000000006246074

K

L

M

N

INFOID:0000000006689905

ALFIA0026Z

Ω

# C1155 BRAKE FLUID LEVEL SWITCH

[TYPE 2]

#### C1156 ST ANG SEN COM CIR

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 2]

#### C1156 ST ANG SEN COM CIR

Description

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

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1156	ST ANG SEN COM CIR	When steering angle sensor is not transmitting CAN communication signal to the ABS actuator and electric unit (control unit).	Harness or connector     CAN communication line     Steering angle sensor     ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results	
ST ANG SEN COM CIR	

Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-181">BRC-181</a>, "Diagnosis Procedure".

NO >> Inspection End.

# Diagnosis Procedure

1.CONNECTOR INSPECTION

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- 4. Reconnect connector and perform self-diagnosis. Refer to <a href="BRC-138">BRC-138</a>, "CONSULT-III Function (ABS)".

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

Is above displayed on the self-diagnosis display?

YES >> Refer to LAN-14, "Trouble Diagnosis Flow Chart".

NO >> Inspection End.

BRC

D

Е

Α

Н

INFOID:0000000006246078

N

 $\cap$ 

#### C1160 DECEL G SEN SET

< DTC/CIRCUIT DIAGNOSIS >

**[TYPE 2]** 

#### C1160 DECEL G SEN SET

Description INFOID:0000000006246078

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

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1160	DECEL G SEN SET	ABS decel G sensor adjustment is incomplete.	Decel G sensor calibration     Yaw rate/side/decel G sensor     ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results	_
DECEL G SEN SET	

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-182">BRC-182</a>, "Diagnosis Procedure".

NO >> Inspection End.

# Diagnosis Procedure

INFOID:0000000006246081

# 1.PERFORM SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <u>BRC-138</u>, <u>"CONSULT-III Function (ABS)"</u>.

Self-diagnosis results	
DECEL G SEN SET	

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

YES >> Perform repair or replacement for the item indicated.

NO >> Perform calibration of decel G sensor. Refer to <a href="BRC-122">BRC-122</a>, "CALIBRATION OF DECEL G SENSOR : Description". GO TO 2

# 2. PERFORM SELF-DIAGNOSIS AGAIN

- Turn the ignition switch to OFF and then to ON and erase self-diagnosis results. Refer to <u>BRC-138</u>, "<u>CON-SULT-III Function (ABS)</u>".
- 2. Perform ABS actuator and electric unit (control unit) self-diagnosis again. Refer to <a href="https://example.com/BRC-138">BRC-138</a>, "CONSULT-UII Function (ABS)".

#### Are any self-diagnosis results displayed?

YES >> Replace yaw rate/side/decel G sensor. Refer to <u>BRC-234</u>, "Removal and Installation".

NO >> Inspection End.

#### **C1163 ST ANGLE SEN SAFE**

< DTC/CIRCUIT DIAGNOSIS > [TYPE 2]

C1163 ST ANGLE SEN SAFE

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

#### DTC DETECTION LOGIC

DTC	Display item Malfunction detected condition		Possible cause	
C1163	ST ANGL SEN SAFE	When steering angle sensor is in safe mode.	Adjust steering angle sensor neutral position	

#### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results
ST ANGL SEN SAFE

Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-183, "Diagnosis Procedure"</u>.

NO >> Inspection End.

# Diagnosis Procedure

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Adjust steering angle sensor neutral position. Refer to <u>BRC-121</u>, "ADJUSTMENT OF STEERING ANGLE <u>SENSOR NEUTRAL POSITION</u>: <u>Description</u>".

>> GO TO 2

# 2.INDICATOR LAMP CHECK

Check that VDC OFF indicator lamp is off.

Is VDC OFF indicator lamp off?

YES >> Inspection End.

NO

>> Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <u>BRC-138</u>, "CON-SULT-III Function (ABS)".

BRC

Н

INFOID:0000000006246084

D

Α

M

K

Ν

**[TYPE 2]** 

# C1164, C1165, C1166, C1167 CV/SV SYSTEM

Description INFOID:000000006246085

CV1, CV2 (CUT VALVE)

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

SV1, SV2 (SUCTION VALVE)

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

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1164	CV1	VDC switch-over solenoid valve (CV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	
C1165	CV2	VDC switch-over solenoid valve (CV2) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	Harness or connector     ABS actuator and electric unit
C1166	SV1	VDC switch-over solenoid valve (SV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	(control unit)
C1167	SV2	VDC switch-over solenoid valve (SV2) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	

#### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results
CV1
CV2
SV1
SV2

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-184">BRC-184</a>, "Diagnosis Procedure".

NO >> Inspection End.

# Diagnosis Procedure

INFOID:0000000006689906

Regarding Wiring Diagram information, refer to <a href="BRC-207">BRC-207</a>. "Wiring Diagram - With VK56DE".

# 1. CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- 4. Reconnect connectors and then perform the self-diagnosis. Refer to <a href="BRC-138">BRC-138</a>, "CONSULT-III Function (ABS)".

Is any item indicated on the self-diagnosis display?

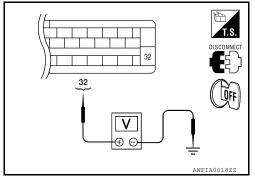
YES >> GO TO 2

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

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

- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Check voltage between ABS actuator and electric unit (control unit) connector E127 terminal 32 and ground.

ABS actuator and electric unit (control unit)			Voltage	
Connector	Terminal		Voltage	
E127	32	Ground	Battery voltage	



#### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

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

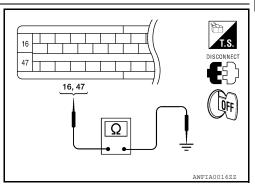
Check continuity between ABS actuator and electric unit (control unit) connector E127 terminals 16, 47 and ground.

ABS actuator and ele	BS actuator and electric unit (control unit)		Continuity	
Connector	Terminal		Continuity	
E127	16, 47	Ground	Yes	

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-231</u>, "Removal and Installation".

NO >> Repair or replace malfunctioning components.



#### INFOID:0000000006246088

**[TYPE 2]** 

# Component Inspection 1. CHECK ACTIVE TEST

1. Select each test menu item on "ACTIVE TEST".

On the display, touch "Up", "ACT UP", and "ACT KEEP", and check that the system operates as shown in the table below.

Operation		Α	ABS solenoid valve (ACT)		
		Up	ACT UP	ACT KEEP	
	FR RH IN SOL	Off	Off	Off	
ED DH ADS SOLENOID (ACT)	FR RH OUT SOL	Off	Off	Off	
FR RH ABS SOLENOID (ACT)	CV1	Off	On	On	
	SV1	Off	On*	Off	
FR LH ABS SOLENOID (ACT)	FR LH IN SOL	Off	Off	Off	
	FR LH OUT SOL	Off	Off	Off	
	CV1	Off	On	On	
	SV1	Off	On*	Off	
	RR RH IN SOL	Off	Off	Off	
RR RH ABS SOLENOID (ACT)	RR RH OUT SOL	Off	Off	Off	
	CV2	Off	On	On	
	SV2	Off	On*	Off	

BRC

Α

В

D

Е

G

Н

L

K

1 V I

Ν

# C1164, C1165, C1166, C1167 CV/SV SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

[TYPE 2]

Operation		ABS solenoid valve (ACT)		
		Up	ACT UP	ACT KEEP
RR LH ABS SOLENOID (ACT)	RR LH IN SOL	Off	Off	Off
	RR LH OUT SOL	Off	Off	Off
	CV2	Off	On	On
	SV2	Off	On*	Off

<sup>\*:</sup> On for 1 to 2 seconds after the touch, and then Off

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <a href="BRC-184">BRC-184</a>, "Diagnosis Procedure".

# Special Repair Requirement

INFOID:0000000006689907

# 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-121</u>. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

>> GO TO 2

# 2.calibration of decel g sensor

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-122">BRC-122</a>, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

#### C1178, C1181, C1184, C1189 ABS ACTIVE BOOSTER

< DTC/CIRCUIT DIAGNOSIS >

[TYPE 2]

# C1178, C1181, C1184, C1189 ABS ACTIVE BOOSTER

**Description** 

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

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1178	ABS ACTIVE BOOSTER SV NG	Active booster solenoid is malfunctioning, or signal line of active booster servo is open or shorted.	
C1181	ABS ACTIVE BOOSTER RE- SPONSE NG	Active booster response is malfunctioning, or signal line of active booster response is open or shorted.	<ul><li>Harness or connector</li><li>Active booster</li></ul>
C1184	ABS BRAKE RELEASE SW NG	Brake release switch is malfunctioning, or signal line of brake release switch is open or shorted.	ABS actuator and electric unit (control unit)
C1189	ABS BRAKE BOOSTER DE- FECT	Brake booster is defective or malfunctioning.	

#### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

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

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-187</u>, "<u>Diagnosis Procedure</u>".

NO >> Inspection End.

# Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-207, "Wiring Diagram - With VK56DE".

# 1. CONNECTOR INSPECTION

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

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Repair connector.

#### 2.ACTIVE BOOSTER CIRCUIT INSPECTION

BRC

D

Е

Α

Н

J

INFOID:0000000006246092

 $\mathbb{N}$ 

Ν

1

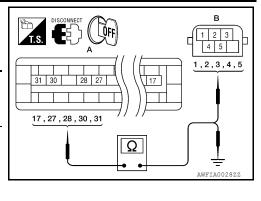
#### C1178, C1181, C1184, C1189 ABS ACTIVE BOOSTER

#### < DTC/CIRCUIT DIAGNOSIS >

[TYPE 2]

 Measure the continuity between ABS actuator and electric unit (control unit) connector E127 (A) and active booster connector E49 (B).

ABS actuator and electric unit (control unit)		Active booster		Continuity
Connector	Terminal	Connector	Terminal	
	17		3	
	27		1	
E127 (A)	28	E49 (B)	5	Yes
	30		2	
	31		4	



Measure the continuity between ABS actuator and electric unit (control unit) connector E127 (A) and ground.

ABS actuator and electric unit (control unit)		_	Continuity
Connector	Terminal		
	17		
	27		
E127 (A)	28	Ground	No
	30		
	31		

#### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace harness or connector.

# 3. ACTIVE BOOSTER INSPECTION

- 1. Reconnect the active booster and ABS actuator and electric unit (control unit) connectors.
- 2. Perform the active booster component inspection. Refer to <a href="BRC-188">BRC-188</a>, "Component Inspection".

#### Is the inspection result normal?

- YES >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to <a href="mailto:BRC-231">BRC-231</a>, "Removal and Installation".
- NO >> Replace the active booster. Refer to <a href="mailto:BR-36">BR-36</a>, "Removal and Installation".

# Component Inspection

INFOID:0000000006246093

# 1. CHECK DATA MONITOR

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

Condition	RELEASE SWITCH NO (DATA MONITOR)	RELEASE SWITCH NC (DATA MONITOR)
When brake pedal is depressed.	On	Off
When brake pedal is released.	Off	On

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the active booster. Refer to <u>BR-36. "Removal and Installation"</u>.

# Special Repair Requirement

INFOID:0000000006689908

# ${f 1}$ .ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

# C1178, C1181, C1184, C1189 ABS ACTIVE BOOSTER

#### < DTC/CIRCUIT DIAGNOSIS >

[TYPE 2]

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-121</u>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

В

#### >> GO TO 2

# 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-122">BRC-122</a>, "CALIBRATION OF DECEL G SENSOR: Description".

D

>> END

BRC

Е

G

Н

U

K

L

M

Ν

0

#### C1179 ABS DELTA S SEN NG

Description INFOID:000000006246095

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

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1179	ABS DELTA S SEN NG	Delta stroke sensor is malfunctioning, or signal line of delta stroke sensor is open or shorted.	Harness or connector     Delta stroke sensor     ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

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

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to BRC-190, "Diagnosis Procedure".

NO >> Inspection End.

# Diagnosis Procedure

INFOID:0000000006246097

Regarding Wiring Diagram information, refer to BRC-207, "Wiring Diagram - With VK56DE".

# 1. CONNECTOR INSPECTION

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

#### Is the inspection result normal?

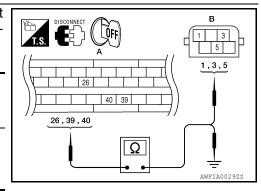
YES >> GO TO 2

NO >> Repair connector.

# 2. DELTA STROKE SENSOR CIRCUIT INSPECTION

 Measure the continuity between ABS actuator and electric unit (control unit) connector E127 (A) and delta stroke sensor connector E114 (B).

ABS actuator and electric unit (control unit)		Delta stroke sensor		Continuity
Connector	Terminal	Connector	Terminal	
	26		1	
E127 (A)	39	E114 (B)	3	Yes
	40		5	



#### C1179 ABS DELTA S SEN NG

#### < DTC/CIRCUIT DIAGNOSIS >

**[TYPE 2]** 

Measure the continuity between ABS actuator and electric unit (control unit) connector E127 (A) and ground.

ABS actuator and electric unit (control unit)		_	Continuity
Connector	Terminal		
	26		
E127 (A)	39	Ground	No
	40		

Is the inspection result normal?

>> GO TO 3 YES

NO >> Repair or replace harness or connector.

# 3.DELTA STROKE SENSOR INSPECTION

- Reconnect the delta stroke sensor and ABS actuator and electric unit (control unit) connectors.
- Perform the delta stroke sensor component inspection. Refer to BRC-191, "Component Inspection".

#### Is the inspection result normal?

YES >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to BRC-231, "Removal and Installation".

NO >> Replace the delta stroke sensor. Refer to BR-36, "Removal and Installation".

# Component Inspection

INFOID:0000000006246098

#### 1. CHECK DATA MONITOR

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

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

#### Is the inspection result normal?

>> Inspection End.

NO >> Replace the delta stroke sensor. Refer to <u>BR-36</u>, "Removal and Installation".

# Special Repair Requirement

INFOID:0000000006689909

# $oldsymbol{1}$ . ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-121, "ADJUSTMENT OF STEERING ANGLE SENSOR NEU-TRAL POSITION: Description".

>> GO TO 2

#### 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-122, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

**BRC** 

Α

В

D

Е

Н

K

Ν

#### **U1000 CAN COMM CIRCUIT**

**[TYPE 2]** < DTC/CIRCUIT DIAGNOSIS >

#### U1000 CAN COMM CIRCUIT

Description INFOID:0000000006246100

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:0000000006246101

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
U1000	CAN COMM CIRCUIT	When ABS actuator and electric unit (control unit) is not transmitting or receiving CAN communication signal for 2 seconds or more.	CAN communication line     ABS actuator and electric unit (control unit)

# Diagnosis Procedure

INFOID:0000000006246102

# 1. CONNECTOR INSPECTION

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

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

>> Print out the self-diagnostic results, and refer to LAN-14, "Trouble Diagnosis Flow Chart". YES

>> Connector terminal is loose, damaged, open, or shorted. NO

INFOID:0000000006246104

Α

В

D

Е

**BRC** 

#### **VDC OFF SWITCH**

Description INFOID:0000000006246103

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

# **Component Function Check**

# 1. CHECK VDC OFF SWITCH OPERATION

Press and release the VDC OFF switch, then press and release the VDC OFF switch again and check that the VDC OFF indicator lamp in the combination meter turns ON/OFF correctly.

Condition	VDC OFF indicator lamp illumination status
VDC OFF switch: pressed and released	ON
VDC OFF switch: pressed and released	OFF

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <a href="BRC-193">BRC-193</a>, "Diagnosis Procedure".

# Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-207, "Wiring Diagram - With VK56DE".

# 1. CHECK VDC OFF SWITCH

Perform the VDC OFF switch component inspection. Refer to BRC-194, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Replace VDC OFF switch.

#### 2. CHECK VDC OFF SWITCH HARNESS

- Disconnect ABS actuator and electric unit (control unit) connector.
- Check continuity between ABS actuator and electric unit (control unit) connector E127 (A) terminal 38 and VDC OFF switch connector M154 (B) terminal 1.

ABS actuator and electric unit (control unit)		VDC OFF switch		Continuity	
Connector	Terminal	Connector	Terminal	-	
E127 (A)	38	M154 (B)	1	Yes	

 Check continuity between ABS actuator and electric unit (control unit) connector E127 (A) terminal 38 and ground.

ABS actuator and electric unit (control unit)			Continuity
Connector	Terminal	_	Continuity
E127 (A)	38	Ground	No

#### Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace harness.

# 3.CHECK VDC OFF SWITCH GROUND

INFOID:0000000006246105

Н

J

K

\_

M

Ν

AWFIA0430ZZ

#### **[TYPE 2]**

#### < DTC/CIRCUIT DIAGNOSIS >

Check continuity between VDC OFF switch connector M154 and ground.

VDC OFF switch		_	Continuity
Connector	Terminal	_	Continuity
M154	2	Ground	Yes

# H.S. CES OFF

#### Is the inspection result normal?

YES >> GO TO 4

NO >> Repair or replace harness.

# 4. CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to <a href="MWI-25">MWI-25</a>, "Diagnosis Description".

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-231, "Removal and Installation"</u>.

NO >> Replace combination meter. Refer to <a href="MWI-88">MWI-88</a>, "Removal and Installation".

# Component Inspection

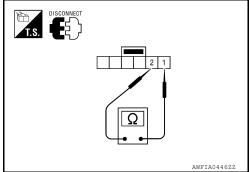
INFOID:0000000006246106

#### INSPECTION PROCEDURE

#### 1. CHECK VDC OFF SWITCH

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

VDC OFF switch terminals	Condition	Continuity
1 – 2	When VDC OFF switch is pressed.	Yes
	When VDC OFF switch is released.	No



#### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace VDC OFF switch.

# Special Repair Requirement

INFOID:0000000006689910

# 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-121">BRC-121</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

>> GO TO 2

# 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-122, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

#### ABS WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

**[TYPE 2]** 

#### ABS WARNING LAMP

Description INFOID:0000000006246108

×: ON -: OFF

Α

В

D

Е

**BRC** 

Н

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

# Component Function Check

INFOID:0000000006246109

#### CHECK ABS WARNING LAMP OPERATION

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

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <u>BRC-195</u>, "<u>Diagnosis Procedure</u>".

# Diagnosis Procedure

1. CHECK SELF-DIAGNOSIS

INFOID:0000000006246110

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to BRC-138, "CONSULT-III Function (ABS)".

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Check items displayed by self-diagnosis.

#### 2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-25, "Diagnosis Description".

#### Is the inspection result normal?

>> Replace ABS actuator and electric unit (control unit). Refer to BRC-231, "Removal and Installa-

>> Replace combination meter. Refer to MWI-88, "Removal and Installation". NO

# Special Repair Requirement

INFOID:0000000006689911

# 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-121, "ADJUSTMENT OF STEERING ANGLE SENSOR NEU-TRAL POSITION: Description".

#### >> GO TO 2

#### 2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-122, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

K

Ν

0

**BRC-195** Revision: March 2012 2011 Pathfinder

#### **BRAKE WARNING LAMP**

Description INFOID:000000006246112

×: ON -: OFF

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

#### NOTE:

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

# Component Function Check

INFOID:0000000006246113

# 1.BRAKE WARNING LAMP OPERATION CHECK

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

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <a href="BRC-196">BRC-196</a>, "Diagnosis Procedure".

# Diagnosis Procedure

INFOID:0000000006246114

# 1. CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <u>BRC-138</u>, <u>"CONSULT-III Function (ABS)"</u>.

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Check items displayed by self-diagnosis.

# 2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-25, "Diagnosis Description".

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-231</u>, "Removal and Installation".

NO >> Replace combination meter. Refer to MWI-88, "Removal and Installation".

# Special Repair Requirement

INFOID:0000000006689912

# ${f 1}$ .adjustment of steering angle sensor neutral position

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-121</u>. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

>> GO TO 2

# 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-122, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

#### VDC OFF INDICATOR LAMP

< DTC/CIRCUIT DIAGNOSIS >

**[TYPE 2]** 

#### VDC OFF INDICATOR LAMP

Description INFOID:0000000006246116

×: ON -: OFF

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

# Component Function Check

INFOID:0000000006246117

# $1.\mathsf{VDC}$ OFF INDICATOR LAMP OPERATION CHECK 1

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

#### Is the inspection result normal?

>> GO TO 2 YES

NO >> Go to diagnosis procedure. Refer to BRC-197, "Diagnosis Procedure".

# 2.VDC OFF INDICATOR LAMP OPERATION CHECK 2

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

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Check VDC OFF switch. Refer to BRC-193, "Diagnosis Procedure".

# Diagnosis Procedure

INFOID:0000000006246118

# CHECK VDC OFF SWITCH

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

#### Is the inspection result normal?

YFS >> GO TO 2

NO >> Check VDC OFF switch. Refer to <a href="BRC-193">BRC-193</a>, "Diagnosis Procedure".

#### 2.CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to BRC-138, "CONSULT-III Function (ABS)".

#### Is the inspection result normal?

YES >> GO TO 3

Revision: March 2012

NO >> Check items displayed by self-diagnosis.

# 3. CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-25, "Diagnosis Description".

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-231, "Removal and Installa-

>> Replace combination meter. Refer to MWI-88, "Removal and Installation". NO

**BRC** 

Α

В

D

Е

Н

K

L

M

N

0

P

2011 Pathfinder

#### **VDC OFF INDICATOR LAMP**

#### < DTC/CIRCUIT DIAGNOSIS >

[TYPE 2]

# Special Repair Requirement

INFOID:0000000006689913

# 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to <a href="https://example.com/BRC-121">BRC-121</a>. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

>> GO TO 2

# 2. CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-122, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

#### SLIP INDICATOR LAMP

< DTC/CIRCUIT DIAGNOSIS >

**[TYPE 2]** 

#### SLIP INDICATOR LAMP

Description INFOID:0000000006246120

×: ON -: OFF

Α

В

D

Е

**BRC** 

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

# Component Function Check

INFOID:0000000006246121

#### CHECK SLIP INDICATOR LAMP OPERATION

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

# Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <u>BRC-199</u>, "Diagnosis Procedure".

# Diagnosis Procedure

INFOID:0000000006246122

# 1.CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to BRC-138, "CONSULT-III Function (ABS)".

#### Is the inspection result normal?

YES >> GO TO 2

NO >> Check items displayed by self-diagnosis.

# 2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-25, "Diagnosis Description".

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-231, "Removal and Installa-

NO >> Replace combination meter. Refer to MWI-88, "Removal and Installation".

# Special Repair Requirement

M INFOID:0000000006689914

# ${f 1}$ . ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform neutral position adjustment for the steering angle sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-121, "ADJUSTMENT OF STEERING ANGLE SENSOR NEU-TRAL POSITION: Description".

>> GO TO 2

#### 2.CALIBRATION OF DECEL G SENSOR

Always perform calibration of decel G sensor when replacing the ABS actuator and electric unit (control unit). Refer to BRC-122, "CALIBRATION OF DECEL G SENSOR: Description".

>> END

Н

Ν

0

#### **APPLICATION NOTICE**

< ECU DIAGNOSIS INFORMATION >

[TYPE 2]

# **ECU DIAGNOSIS INFORMATION**

# **APPLICATION NOTICE**

**Application Notice** 

INFOID:0000000006689874

Service information	Remarks
TYPE 1	VDC/TCS/ABS (VQ40DE)
TYPE 2	VDC/TCS/ABS (VK56DE)

< ECU DIAGNOSIS INFORMATION >

**[TYPE 2]** 

Α

В

С

# ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Reference Value INFOID:0000000006246125

#### VALUES ON THE DIAGNOSIS TOOL

#### **CAUTION:**

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

CONSULT-III MONITO	R ITEM
--------------------	--------

Revision: March 2012

CONSULT-III MONITO	RITEM	Data monitor		
Monitor item	Display content	Condition	Reference value in normal operation	D
		0 [km/h (MPH)]	Vehicle stopped	
FR LH SENSOR	Wheel speed	Nearly matches the speed meter display (± 10% or less)	Vehicle running (Note 1)	Е
-		0 [km/h (MPH)]	Vehicle stopped	
FR RH SENSOR	Wheel speed	Nearly matches the speed meter display (± 10% or less)	Vehicle running (Note 1)	BRC
		0 [km/h (MPH)]	Vehicle stopped	
RR LH SENSOR	Wheel speed	Nearly matches the speed meter display (± 10% or less)	Vehicle running (Note 1)	G
		0 [km/h (MPH)]	Vehicle stopped	П
RR RH SENSOR	Wheel speed	Nearly matches the speed meter display (± 10% or less)	Vehicle running (Note 1)	Н
ED DILIN COL		Actuator (solenoid valve) is active ("AC-TIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode)	ON	I
FR RH IN SOL Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	OFF	J	
ED DU QUE SOI		Actuator (solenoid valve) is active ("AC-TIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode)	ON	K
FR RH OUT SOL Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	OFF	L	
ED LILIN COL		Actuator (solenoid valve) is active ("AC-TIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode)	ON	M
FR LH IN SOL Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	OFF	N	
		Actuator (solenoid valve) is active ("AC-TIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode)	ON	0
FR LH OUT SOL Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	OFF		
DD DH IN SOL		Actuator (solenoid valve) is active ("AC-TIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode)	ON	Р
RR RH IN SOL Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	OFF		

2011 Pathfinder

#### < ECU DIAGNOSIS INFORMATION >

[TYPE 2]

		Data monitor	
Monitor item	Display content	Condition	Reference value in normal operation
RR RH OUT SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("AC-TIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode)	ON
MANITOOT SOL	Operation status of each solehold valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	OFF
RR LH IN SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("AC-TIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode)	ON
IXIX EIT IIV GOL	Operation status of each solehold valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	OFF
RR LH OUT SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("AC-TIVE TEST" with CONSULT-III) or actuator relay is inactive (in fail-safe mode)	ON
RK LH OUT SOL	Operation status of each solehold valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	OFF
EBD WARN LAMP	EBD warning lamp	When EBD warning lamp is ON	ON
LDD WAINI LAW	(Note 2)	When EBD warning lamp is OFF	OFF
STOP LAMP SW	Stop lamp switch signal status	When brake pedal is depressed	ON
	otop lamp owner olgital otatao	When brake pedal is released	OFF
MOTOR RELAY	Motor and motor relay operation	When the motor relay and motor are operating	ON
mo ronnez.	motor and motor rotal, operation	When the motor relay and motor are not operating	OFF
ACTUATOR RLY	Actuator relay operation	When the actuator relay is operating	ON
NOTONIONINE	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 2)	When ABS warning lamp is OFF	OFF
OFF LAMP	VDC OFF indicator lamp	When VDC OFF indicator lamp is ON	ON
	(Note 2)	When VDC OFF indicator lamp is OFF	OFF
OFF SW	VDC OFF switch ON/OFF	VDC OFF switch ON (When VDC OFF indicator lamp is ON)	ON
011 011	VSG GTT GIIIIGIT GTT GTT	VDC OFF switch OFF (When VDC OFF indicator lamp is OFF)	OFF
SLIP LAMP	SLIP indicator lamp	When SLIP indicator lamp is ON	ON
CLII L'AIVII	(Note 2)	When SLIP indicator lamp is OFF	OFF
BATTERY VOLT	Battery voltage supplied to the ABS actuator and electric unit (control unit)	Ignition switch ON	10 – 16 V
GEAR	Gear position determined by TCM	1st gear 2nd gear 3rd gear 4th gear 5th gear	1 2 3 4 5
SLCT LVR POSI	A/T selector lever position	P position R position N position D position	P R N D

< ECU DIAGNOSIS INFORMATION >

[TYPE 2]

	B	Data monitor	
Monitor item	Display content	Condition	Reference value in normal operation
		With engine stopped	0 rpm
ENGINE SPEED	With engine running	Engine running	Almost in accordance with tachometer display
	Yaw rate detected by yaw rate/side/decel G	When vehicle is stopped	Approx. 0 d/s
AW RATE SEN	sensor	When vehicle turning	-75 to 75 d/s
	Transmission range switch signal ON/OFF	A/T shift position = R position	ON
R POSI SIG	condition	A/T shift position = other than R position	OFF
	Transmission range switch signal ON/OFF	A/T shift position = N position	ON
N POSI SIG	condition	A/T shift position = other than N position	OFF
	Transmission and a suitab signal ON/OFF	A/T shift position = P position	ON
P POSI SIG	Transmission range switch signal ON/OFF condition	A/T shift position = other than P position	OFF
		When actuator (switch-over valve) is ac-	OH
CV1	VDC switch-over valve	tive ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (when in fail-safe mode)	ON
		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON)	OFF
CV2	VDC switch-over valve	When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (when in fail-safe mode)	ON
		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON)	OFF
SV1	VDC switch-over valve	When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (when in fail-safe mode)	ON
		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON)	OFF
SV2	VDC switch-over valve	When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT-III) or actuator relay is inactive (when in fail-safe mode)	ON
		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON)	OFF
0)4/0/40:75	B: 1	2WD model	2WD
2WD/4WD	Drive axle	4WD model	4WD
	Throttle actuator opening/closing is dis-	Accelerator pedal not depressed (ignition switch is ON)	0 %
ACCEL POS SIG	played (linked with accelerator pedal)	Accelerator pedal depressed (ignition switch is ON)	0 - 100 %
		Vehicle stopped	Approx. 0 m/s <sup>2</sup>
SIDE G-SENSOR	Transverse G detected by side G sensor	Vehicle turning right	Negative value (m/s <sup>2</sup> )
		Vehicle turning left	Positive value (m/s <sup>2</sup> )

# < ECU DIAGNOSIS INFORMATION >

[TYPE 2]

		Data monitor	
Monitor item	Display content	Condition	Reference value in normal operation
STR ANGLE SIG	Steering angle detected by steering angle	Straight-ahead	Approx. 0±2.5°
STR ANGLE SIG	sensor	Steering wheel turned	–720 to +720°
BST OPER SIG	Active booster operation	Active booster is operating	On
BST OF LIVING	Active booster operation	Active booster is not operating	Off
PRESS SENSOR	Brake fluid pressure detected by front pres-	With ignition switch turned ON and brake pedal released	Approx. 0 bar
TREGO GENOCIA	sure sensor	With ignition switch turned ON and brake pedal depressed	-40 to 300 bar
EBD SIGNAL	EBD operation	EBD is active	ON
LDD SIGNAL	LDD operation	EBD is inactive	OFF
ABS SIGNAL	ABS operation	ABS is active	ON
ABS SIGNAL	ABS operation	ABS is inactive	OFF
TOO CIONAL	TOC appretion	TCS is active	ON
TCS SIGNAL	TCS operation	TCS is inactive	OFF
VDC CIONAL	VDCti	VDC is active	ON
VDC SIGNAL	VDC operation	VDC is inactive	OFF
EDD EATL OLG	EDD (cil cofe circo)	In EBD fail-safe	ON
EBD FAIL SIG	EBD fail-safe signal	EBD is normal	OFF
4 D O E 4 II O I O	ADD 6 11 6 1 1	In ABS fail-safe	ON
ABS FAIL SIG	ABS fail-safe signal	ABS is normal	OFF
T00 FAIL 010	TOO fall and a six and	In TCS fail-safe	ON
TCS FAIL SIG	TCS fail-safe signal	TCS is normal	OFF
VDC FAIL CIC	VDC fail a fa airmal	In VDC fail-safe	ON
VDC FAIL SIG	VDC fail-safe signal	VDC is normal	OFF
CRANKING SIG	Cronk appration	Crank is active	ON
CRAINKING SIG	Crank operation	Crank is inactive	OFF
	Droke fluid level quitab cional etatus	When brake fluid level switch ON	ON
FLUID LEV SW	Brake fluid level switch signal status	When brake fluid level switch OFF	OFF
PRESS SEN2	Brake fluid pressure detected by rear pres-	With ignition switch turned ON and brake pedal released	Approx. 0 bar
PRESS SENZ	sure sensor	With ignition switch turned ON and brake pedal depressed	-40 to 300 bar
OTD OFF DLV	Characteristics	Stop lamp relay is operating	On
STP OFF RLY	Stop lamp relay status	Stop lamp relay is not operating	Off
DELTA C CEN	Value detected by delta straige concer	When brake pedal is depressed	1.05 - 1.80 mm
DELTA S SEN	Value detected by delta stroke sensor	When brake pedal is released	0.00 mm (+0.6/-0.4)
RELEASE SWITCH	A stirre to a start size of status	When brake pedal is depressed	ON
NO	Active booster signal status	When brake pedal is released	OFF
RELEASE SWITCH	Active booster sizes letetus	When brake pedal is depressed	OFF
NC	Active booster signal status	When brake pedal is released	ON
LIDA FAU	LIDA feil aufo sizzal	In HBA fail-safe	On
HBA FAIL	HBA fail safe signal	HBA is normal	Off
OLID FA''	OUD fail and air air	OHB is active	ON
OHB FAIL	OHB fail safe signal	OHB is inactive	OFF

#### < ECU DIAGNOSIS INFORMATION >

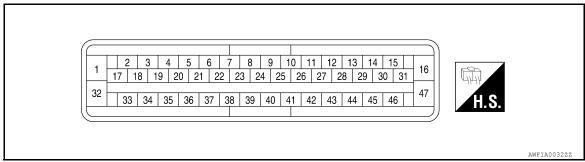
[TYPE 2]

		Data monitor	
Monitor item	Display content	Condition	Reference value in normal operation
HBA SIG	HBA operation	HBA is active	On
NDA SIG	пва орегации	HBA is inactive	Off
OLID CIC	OUD anaration	In OHB fail-safe	ON
OHB SIG	OHB operation	OHB is normal	OFF

#### NOTE:

- · 1: Confirm tire pressure is normal.
- 2: On and off timing for warning lamp and indicator lamp.
- · 3: Only 4WD models.
- ABS warning lamp: Refer to BRC-195, "Description".
- Brake warning lamp: Refer to BRC-196, "Description".
- VDC OFF indicator lamp: Refer to BRC-197, "Description".
- SLIP indicator lamp: Refer to BRC-199, "Description".

#### TERMINAL LAYOUT



Fail-Safe

#### **CAUTION:**

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

#### ABS/EBD SYSTEM

In case of an electrical malfunction with the ABS, the ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp will turn on. In case of an electrical malfunction with the EBD system, the BRAKE warning lamp, ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp will turn on.

The system will revert to one of the following conditions of the Fail-Safe function.

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

#### VDC/TCS SYSTEM

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

DTC No. Index

DTC	Items (CONSULT screen terms)	Reference
C1101	RR RH SENSOR-1	
C1102	RR LH SENSOR-1	BRC-144, "Description"
C1103	FR RH SENSOR-1	BIXC-144, Description
C1104	FR LH SENSOR-1	

Revision: March 2012 BRC-205 2011 Pathfinder

BRC

D

Е

Α

G

Н

1

K

K

M

Ν

0

F

< ECU DIAGNOSIS INFORMATION >

[TYPE 2]

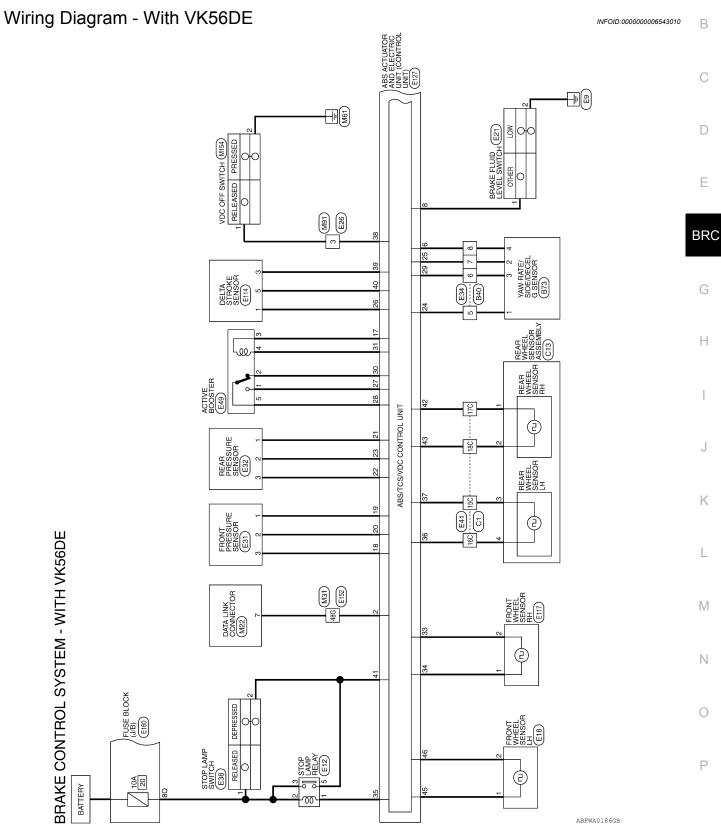
DTC	Items (CONSULT screen terms)	Reference
C1105	RR RH SENSOR-2	
C1106	RR LH SENSOR-2	PDC 147 "Description"
C1107	FR RH SENSOR-2	BRC-147, "Description"
C1108	FR LH SENSOR-2	
C1109	BATTERY VOLTAGE [ABNORMAL]	BRC-150, "Description"
C1110	CONTROLLER FAILURE	BRC-152, "DTC Logic"
C1111	PUMP MOTOR	BRC-153, "Description"
C1113	G-SENSOR	BRC-155, "Description"
C1115	ABS SENSOR [ABNORMAL SIGNAL]	BRC-157, "Description"
C1116	STOP LAMP SW	BRC-160, "Description"
C1120	FR LH IN ABS SOL	BRC-162, "Description"
C1121	FR LH OUT ABS SOL	BRC-165, "Description"
C1122	FR RH IN ABS SOL	BRC-162, "Description"
C1123	FR RH OUT ABS SOL	BRC-165, "Description"
C1124	RR LH IN ABS SOL	BRC-162, "Description"
C1125	RR LH OUT ABS SOL	BRC-165, "Description"
C1126	RR RH IN ABS SOL	BRC-162, "Description"
C1127	RR RH OUT ABS SOL	BRC-165, "Description"
C1130	ENGINE SIGNAL 1	
C1131	ENGINE SIGNAL 2	
C1132	ENGINE SIGNAL 3	BRC-168, "Description"
C1133	ENGINE SIGNAL 4	
C1136	ENGINE SIGNAL 6	
C1140	ACTUATOR RLY	BRC-169, "Description"
C1142	PRESS SEN CIRCUIT	BRC-171, "Description"
C1143	ST ANG SEN CIRCUIT	BRC-175, "Description"
C1144	ST ANG SEN SIGNAL	<u>Dixo-173, Description</u>
C1145	YAW RATE SENSOR	BRC-155, "Description"
C1146	SIDE G-SEN CIRCUIT	BITO 100, Beschption
C1155	BR FLUID LEVEL LOW	BRC-178, "Description"
C1156	ST ANG SEN COM CIR	BRC-181, "Description"
C1160	DECEL G SEN SET	BRC-182, "Description"
C1163	ST ANGL SEN SAFE	BRC-183, "Description"
C1164	CV1	
C1165	CV2	BRC-184, "Description"
C1166	SV1	DITO 104, Description
C1167	SV2	
C1170	VARIANT CODING	BRC-152, "DTC Logic"
C1178	ABS ACTIVE BOOSTER SV NG	BRC-187, "Description"
C1179	ABS DELTA S SEN NG	BRC-190, "Description"
C1181	ABS ACTIVE BOOSTER RESPONSE NG	
C1184	ABS BRAKE RELEASE SW NG	BRC-187, "Description"
C1189	ABS BRAKE BOOSTER DEFECT	
U1000	CAN COMM CIRCUIT	BRC-192, "Description"

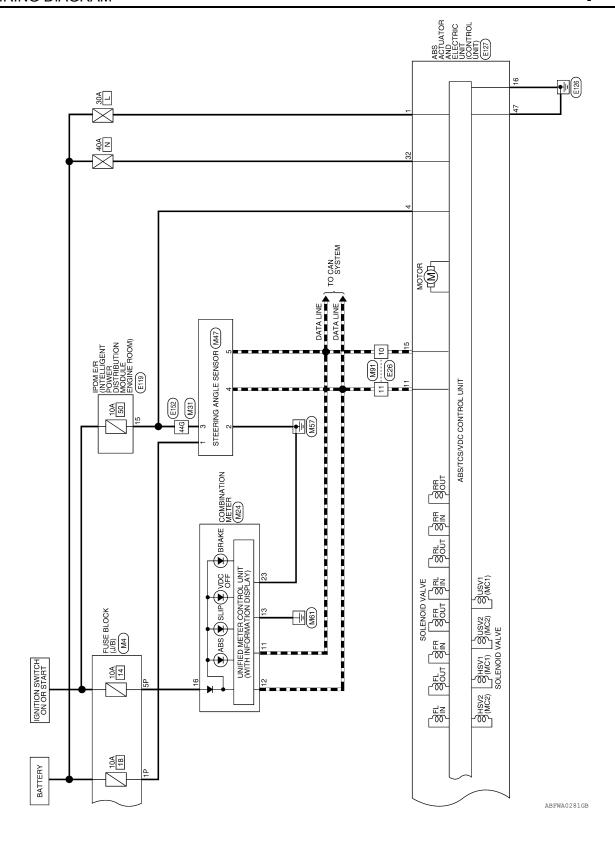
[TYPE 2] < WIRING DIAGRAM >

Α

# WIRING DIAGRAM

# **BRAKE CONTROL SYSTEM - VDC**





Connector Name COMBINATION METER Connector Color WHITE

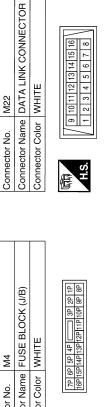
M24

Connector No.

M22

# BRAKE CONTROL SYSTEM CONNECTORS - WITH VK56DE

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



	_		
12P[11P[10P 9P 8P]	Signal Name	ı	ı
7P 6P 5P 4P (	Color of Wire	B/B	W/G
H.S.	Terminal No.	4	5P

Signal Name

Color of Wire ≷

Ferminal No.

_			1							
Ш	-	21								
Ш	2	22								ı
Ш	3	23								
Ш	4	54								
Ш	2	25 24 23 22		ഉ				L	♀	
Ш	9	56		a⊥		ı	닐	AF	ਹਿ	
Ш	7	27		Z	ż	ż	١ <u>ج</u> ا	ST	<u>m</u>	
	8	88		Signal Name	CAN-L	CAN-H	GROUND	RUN START	POWER GND	
	6	83		Sig		-	മ	₩	Q	
	10	8		0,				_	1 11	
	11 10	3								
	12	88		_						
ī	13	33		_ e _			ا ہر ا	ניז		
	14	뚕		증洁	□		GR	W/G	ш	
	15	ક્ષ		Color of Wire						
Ш	16	36 35 34 33 32 31 30 29 28		<u>o</u>						
Ш	17	37		=						
Ш	18	39 38 37		l a	=	12	13	16	23	
Ш	19	೫		Terminal No.					`	
П	20	49		Te						
ш	_	_	J							

Connector No.	. M47	
Connector Name	me STE	STEERING ANGLE SENSOR
Connector Color	lor WHITE	3
ą		
而 H.S.	- 4	5678
Terminal No.	Color of Wire	Signal Name
-	R/Y	BATT
2	В	GND
8	M/R	POWER
4	٦	CAN-H
C)	Ь	CAN-L

Signal Name	I	ı	
Sign			
Color of Wire	W/R	8	
Terminal No.	44G	48G	
			<u> </u>

Connector Name WIRE TO WIRE Connector Color WHITE

M31

Connector No.

		4
H.S.	5G 4G 3G 2G 1G 10G 9G 8G 7G 6G	
	216 206 196 186 176 166 156 146 136 126 116 306 296 286 276 286 286 246 236 226	
	41G 40G 39G 37G 36G 35G 34G 33G 32G 31G 50G 49G 48G 47G 48G 45G 44G 43G 42G	
	61G 60G 59G 58G 57G 56G 55G 54G 53G 52G 51G 70G 69G 67G 66G 65G 64G 63G 62G	
	756 746 786 776 766 806 786 776 766	
		7]

ABFIA0432GB

BRC

Α

В

C

D

Е

G

Н

J

Κ

L

M

Ν

0

Ρ

1 1

GR L

∞ | <del>1</del> | 1

Connector No.	). E12	6
Connector Na	ame ST	Connector Name STOP LAMP RELAY
Connector Color	olor BLUE	到
H.S.		
Terminal No. Wire	Color of Wire	Signal Name
-	>	ı
2	R/B	I
ဇ	R/B	ı
ις	G	1

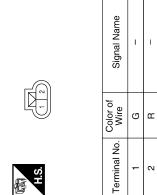
Connector No.	. M154	4
Connector Name		VDC OFF SWITCH
Connector Color	lor GRAY	\
原 H.S.	9 2 9	4 3 2 1
Terminal No.	Color of Wire	Signal Name
1	GR	1
2	В	l

Connector No.	). M91	
Connector Name		WIRE TO WIRE
Connector Color	olor WHITE	ITE
E	7 6 5 16 15 14	7 6 5 4 3 2 1 16 15 14 13 12 11 10 9 8
ST.		
Terminal No.	Color of Wire	Signal Name
က	GR	ı
10	Ь	1
=	_	ı

Connector No.		E26
Connector Na	ne V	Connector Name WIRE TO WIRE
Connector Color WHITE	V	VHITE
赋 H.S.	- 8 0 0	3
Terminal No.	Color of Wire	of Signal Name

Connector No.	E21	
Connector Name		BRAKE FLUID LEVEL SWITCH
Connector Color	lor GRAY	,
语.S.H.S.	(-  ~)	
Terminal No.	Color of Wire	Signal Name
-	SB	ı
2	В	I

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



ABFIA0561GB

TO WIRE	- LO	Signal Name	1 1	Signal Name	
Connector Color WHITE	4 8 8 7 8 9 8 9 8 9 9 9 9 9 9 9 9 9 9 9 9	82	M >-	Color of Wire Wire LG V V LG	
Connector Nan Connector Colo	H.S.	Terminal No. 5	7 8 8	Terminal No. 15C 16C 16C 17C 17C 18C	
SOR					
REAR PRESSURE SENSOR BLACK		Signal Name GND SIG	PWR	WIRE SECOND CONTROL OF	
		Color of Wire Y		Connector No. E41  Connector Name WIRE TO WIRE  Connector Color BLACK  Licing 186 20 20 20 20 20 20 20 20 20 20 20 20 20	
Connector Name	H.S.	Terminal No.	ю 	Connector No. Connector Color H.S.	
80					
Connector Name FRONT PRESSURE SENSOR Connector Color BLACK		Signal Name GND SIG	PWR	STOP LAMP SWITCH WHITE  ST of Signal Name  RB	
Connector Name FRONT Connector Color BLACK	(S)	ర్థి -	0		
- ,		Terminal No.	9	Connector Nan Connector Coll Lis.  H.S.  1 1 2 2	

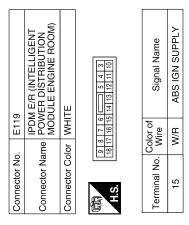
Revision: March 2012 BRC-211 2011 Pathfinder

Connector No.	). E117	
Connector Na	ame FRO	Connector Name FRONT WHEEL SENSOR RH
Connector Color GRAY	olor GRA	>
H.S.		
Terminal No.	Color of Wire	Signal Name
-	В	1
٥	M	ı

Connector Name		FRONT WHEE
Connector Color	or GRAY	
南 H.S.		
Terminal No.	Color of Wire	Sign
1	В	
٥	>	

Connector No.	. E114	4
Connector Na	ıme DEI	Connector Name DELTA STROKE SENSOR
Connector Color	lor BLACK	CK
南 H.S.		3 2 4 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1
Terminal No.	Color of Wire	Signal Name
-	G	PWR_SUP
3	ΓG	GND
ď	c	ปร

Connector No.	). E49	
Connector Name		ACTIVE BOOSTER
Connector Color BLACK	olor BLA	CK
山山 H.S.		3 2 1
Terminal No.	Color of Wire	Signal Name
-	_	I
2	LG	I
3	Μ	-
4	0	-
5	>	I



ABFIA0434GB

# **BRAKE CONTROL SYSTEM - VDC**

[TYPE 2] < WIRING DIAGRAM >

Signal Name	CAN2-H	BPFS NC	BST PWM	VALVE ECU SUPPLY	FR RH SIG	FR RH PWR	BRK OUT (OFF)	RR LH PWR	RR LH SIG	VDC OFF SW	DELS GND	DELS SIGN	STOP LAMP SW	RR RH SIG	RR RH PWR	ı	FR LH PWR	FR LH SIG	MOTOR GND
Color of Wire	0	LG	0	>	8	В	>	_	۵	GR	ГG	0	SB	>	LG	_	В	ш	В
Terminal No.	29	30	31	32	33	34	35	36	37	38	68	40	41	42	43	44	45	46	47

Color of Wire	Signal Name
æ	MOTOR SUPPLY
SB	DIAG K
-	-
W/R	IGN
ı	ı
>	CLUS SP
ı	1
GR	FLUID LEVEL SW
ı	I
ı	ı
_	CAN-H
ı	ı
_	_
_	_
Ь	CAN-L
В	VALVE ECU GND
W	BST PWR
0	DRIV1 SENSEP
W	DRIV1 GND
LG	DRIV1 SIG
>	DRIV2 GND
Т	DRIV2 SP
Р	DRIV2 SIG
BR	CLUS GND
≯	CAN2-L
G	DELS SENSEP
_	BPFS NO
>	BPFS SIG
	>

Connector No.	E127
Connector Name	Connector Name ELECTRIC UNIT (CONTROL UNIT) (WITH VK56DE)
Connector Color BLACK	BLACK
(南) H.S.	



K L Ν

ABFIA0065GB

**BRC-213** Revision: March 2012 2011 Pathfinder Α

В

С

 $\mathsf{D}$ 

Е

BRC

G

Н

M

0

Connector No. C1 Connector Name WIRE TO WIRE Connector Color BLACK	H.S. (100 SEC) (100 TC) (100 T	Company   Comp	Terminal No.   Color of   Signal Name	15C P	18C LG -			Connector No. B73	Connector Name YAW RATE/SIDE/DECEL G SENSOR	Connector Color BLACK	H.S.	Terminal No. Wire Signal Name	1 BR CLUGND	2 W CAN-L	3 O CAN-H	4 Y CLUP
Connector No. E160 Connector Name FUSE BLOCK (J/B) Connector Color WHITE		Terminal No. Wire Signal Name 8Q R/B –						Connector No. B40	Connector Name WIRE TO WIRE Connector Color WHITE		H.S. 1 2 3 4 5 6 7 8	Terminal No.   Color of   Signal Name	5 BR -	- O 9		
Connector No. E152 Connector Name WIRE TO WIRE Connector Color WHITE	H.S. 66   76   86   96   105	116   126   136   146   156   156   176   186   196   206   216   226   236   246   256	Day   Day	776 776 776 786 796 80G	Terminal No. Vire Signal Name	44G W/R –	48G W –	Connector No. C13		Connector Color   GRAY	H.S. (4 3)	Terminal No. Wire Signal Name	- \ \	2 LG –	- L & & & & & & & & & & & & & & & & & &	4

#### **APPLICATION NOTICE**

< SYMPTOM DIAGNOSIS > [TYPE 2]

# SYMPTOM DIAGNOSIS

# **APPLICATION NOTICE**

Application Notice

Service information	Remarks
TYPE 1	VDC/TCS/ABS (VQ40DE)
TYPE 2	VDC/TCS/ABS (VK56DE)

BRC

Α

В

С

 $\mathsf{D}$ 

Е

G

Н

ı

J

Κ

L

M

Ν

0

# VDC/TCS/ABS

Symptom Table

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

Symptom	Check item	Reference		
	Brake force distribution			
Excessive ABS function operation frequency	Looseness of front and rear axle	BRC-217, "Diag- nosis Procedure"		
4.000	Wheel sensor and rotor system			
Unexpected pedal reaction	Brake pedal stroke	BRC-218, "Diag-		
Offexpected pedal reaction	Make sure the braking force is sufficient when the ABS is not operating.	nosis Procedure"		
The braking distance is long	Check stopping distance when the ABS is not operating.	BRC-219, "Diag- nosis Procedure"		
ABS function does not operate (Note 1)	ABS actuator and electric unit (control unit)	BRC-220, "Diag- nosis Procedure"		
Pedal vibration or ABS operation sound	Brake pedal	BRC-221, "Diag- nosis Procedure"		
occurs (Note 2)	ABS actuator and electric unit (control unit)			
	ABS actuator and electric unit (control unit)			
Vehicle jerks during VDC/TCS/ABS con- trol	TCM	BRC-222, "Diag- nosis Procedure"		
	ECM	<u></u>		

#### NOTE:

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

## **EXCESSIVE ABS FUNCTION OPERATION FREQUENCY**

**[TYPE 2]** < SYMPTOM DIAGNOSIS > **EXCESSIVE ABS FUNCTION OPERATION FREQUENCY** Α Diagnosis Procedure INFOID:0000000006246131 1.CHECK START В Check front and rear brake force distribution using a brake tester. Is the inspection result normal? YES >> GO TO 2 NO >> Check brake system. 2.CHECK FRONT AND REAR AXLE D Make sure that there is no excessive play in the front and rear axles. Refer to front: FAX-6, "On-Vehicle Inspection and Service", Rear. RAX-6, "On-Vehicle Inspection and Service". Is the inspection result normal? Е YES >> GO TO 3 NO >> Repair or replace malfunctioning components. 3.check wheel sensor and sensor rotor BRC Check the following. Wheel sensor installation for damage. · Sensor rotor installation for damage. Wheel sensor connector connection. · Wheel sensor harness inspection. Is the inspection result normal? Н YES >> GO TO 4 NO >> • Replace wheel sensor or sensor rotor. Refer to BRC-229, "Removal and Installation" (wheel sensor) or BRC-230, "Removal and Installation" (sensor rotor). Repair harness. 4. CHECK ABS WARNING LAMP DISPLAY Make sure that the ABS warning lamp is turned off after the ignition switch is turned ON or when driving. Is the ABS warning lamp illuminated? >> Perform self-diagnosis. Refer to BRC-138, "CONSULT-III Function (ABS)". YES K NO >> Inspection End. L M N

## **UNEXPECTED PEDAL REACTION**

< SYMPTOM DIAGNOSIS >

[TYPE 2]

## UNEXPECTED PEDAL REACTION

## Diagnosis Procedure

INFOID:0000000006246132

## 1. CHECK BRAKE PEDAL STROKE

Check brake pedal stroke. Refer to <u>BR-17</u>, "Inspection and Adjustment - Standard Pedal" or <u>BR-18</u>, "Inspection and Adjustment - Adjustable Pedal".

### Is the stroke too large?

YES

- >> Bleed air from brake tube and hose. Refer to <a href="mailto:BR-20">BR-20</a>, "Bleeding Brake System".
  - Check brake pedal, brake booster, and master cylinder for mount play, looseness, brake system fluid leakage, etc. Refer to <u>BR-17</u>, "<u>Inspection and Adjustment Standard Pedal</u>" or <u>BR-18</u>. "<u>Inspection and Adjustment Adjustable Pedal</u>" (brake pedal), <u>BR-51</u>, "<u>Disassembly and Assembly</u>" (master cylinder), <u>BR-10</u>, "<u>Inspection</u>" (brake booster).

NO >> GO TO 2

## 2.CHECK FUNCTION

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

### Is the inspection result normal?

YES >> Inspection End.

NO >> Check brake system.

## THE BRAKING DISTANCE IS LONG

< SYMPTOM DIAGNOSIS > [TYPE 2]

## THE BRAKING DISTANCE IS LONG

**CAUTION:** 

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

1. CHECK FUNCTION

Diagnosis Procedure

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Check brake system.

BRC

Α

В

C

D

Е

INFOID:0000000006246133

Н

J

K

L

M

Ν

0

## **ABS FUNCTION DOES NOT OPERATE**

< SYMPTOM DIAGNOSIS >

[TYPE 2]

## **ABS FUNCTION DOES NOT OPERATE**

## Diagnosis Procedure

INFOID:0000000006246134

### **CAUTION:**

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

1. CHECK ABS WARNING LAMP DISPLAY

Make sure that the ABS warning lamp turns OFF after ignition switch is turned ON or when driving. Is the inspection result normal?

YES >> Inspection End.

NO >> Perform self-diagnosis. Refer to <a href="https://example.com/BRC-138">BRC-138</a>, "CONSULT-III Function (ABS)".

## PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

**[TYPE 2]** < SYMPTOM DIAGNOSIS > PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS Α Diagnosis Procedure INFOID:0000000006246135 **CAUTION:** Under the following conditions, ABS is activated and vibration is felt when brake pedal is lightly depressed. However, this is normal. · When shifting gears When driving on slippery road During cornering at high speed When passing over bumps or grooves [at approximately 50 mm (1.97 in) or more] When pulling away just after starting engine [at approximately 10 km/h (6 MPH) or higher] D 1.SYMPTOM CHECK 1 Check that there are pedal vibrations when the engine is started. Е Do vibrations occur? YES >> GO TO 2 NO >> Inspect the brake pedal. BRC 2.SYMPTOM CHECK 2 Check that there are ABS operation noises when the engine is started. Do the operation noises occur? YES >> GO TO 3 NO >> Perform self -diagnosis. Refer to <a href="https://example.com/BRC-138">BRC-138</a>, "CONSULT-III Function (ABS)". 3. SYMPTOM CHECK 3 Н 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 >> Inspection End. J K L M Ν 0

### VEHICLE JERKS DURING VDC/TCS/ABS CONTROL

< SYMPTOM DIAGNOSIS >

[TYPE 2]

## VEHICLE JERKS DURING VDC/TCS/ABS CONTROL

## Diagnosis Procedure

INFOID:0000000006246136

## 1.SYMPTOM CHECK

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

## Is the inspection result normal?

YES >> Inspection End.

NO >> GO TO 2

## 2.CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis of ABS actuator and electric unit (control unit). Refer to <u>BRC-138</u>, "CONSULT-III Function (ABS)".

### Are self-diagnosis results indicated?

YES >> Check corresponding items, make repairs, and perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <a href="https://example.com/BRC-138">BRC-138</a>, "CONSULT-III Function (ABS)".

NO >> GO TO 3

## 3. CHECK CONNECTOR

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

### Are self-diagnosis results indicated?

YES >> If poor contact, damage, open or short circuit of connector terminal is found, repair or replace.

NO >> GO TO 4

## 4. CHECK ECM AND TCM SELF-DIAGNOSIS RESULTS

Perform ECM and TCM self-diagnosis. Refer to <u>EC-530, "CONSULT-III Function"</u> or <u>TM-36, "CONSULT-III Function"</u> or <u>TM-36, "CONSULT-III Function"</u>.

### Are self-diagnosis results indicated?

YES

- >> Check the corresponding items.
  - ECM: Refer to EC-530, "CONSULT-III Function".
  - TCM: Refer to TM-36, "CONSULT-III Function (TRANSMISSION)".
- NO >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-231</u>. "Removal and Installation".

## **NORMAL OPERATING CONDITION**

< SYMPTOM DIAGNOSIS > [TYPE 2]

## NORMAL OPERATING CONDITION

Description INFOID:0000000006246137

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

M

Α

Ν

0

### **PRECAUTIONS**

< PRECAUTION > [TYPE 2]

## **PRECAUTION**

## **PRECAUTIONS**

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

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

### **WARNING:**

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

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

### **WARNING:**

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

Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:0000000006246139

### NOTE:

- This Procedure is applied only to models with Intelligent Key system and NATS (NISSAN ANTI-THEFT SYS-TEM).
- Remove and install all control units after disconnecting both battery cables with the ignition knob in the "LOCK" position.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NATS, an electrically controlled steering lock mechanism is adopted on the key cylinder.

For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.

If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

### **OPERATION PROCEDURE**

Connect both battery cables.

### NOTE:

Supply power using jumper cables if battery is discharged.

- 2. Use the Intelligent Key or mechanical key to turn the ignition switch to the "ACC" position. At this time, the steering lock will be released.
- Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
- 4. Perform the necessary repair operation.

### **PRECAUTIONS**

< PRECAUTION > [TYPE 2]

5. When the repair work is completed, return the ignition switch to the "LOCK" position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)

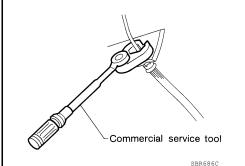
Perform a self-diagnosis check of all control units using CONSULT-III.

## Precaution for Brake System

### INFOID:0000000006246140

### **CAUTION:**

- Refer to MA-18, "FOR USA AND CANADA: Fluids and Lubricants" (United States and Canada), MA-20, "FOR MEXICO: Fluids and Lubricants" (Mexico) for recommended brake fluid.
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted areas; it may cause paint damage. If brake fluid is splashed on painted areas, wash it away with water immediately.
- To clean or wash all parts of master cylinder and disc brake caliper, use clean brake fluid.
- Never use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use flare nut wrench when removing and installing brake tube.
- If a brake fluid leak is found, the part must be disassembled without fail. Then it has to be replaced with a new one if a defect exists.
- Turn the ignition switch OFF and remove the connector of the ABS actuator and electric unit (control unit) or the battery terminal before performing the work.
- Always torque brake lines when installing.
- Burnish the brake contact surfaces after refinishing or replacing rotors, after replacing pads, or if a soft pedal occurs at very low mileage.



Refer to BR-42, "Brake Burnishing" (front disc brake) or BR-47, "Brake Burnishing" (rear disc brake).

### **WARNING:**

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

### Precaution for Brake Control

INFOID:0000000006246141

- During ABS operation, the brake pedal may vibrate lightly and a mechanical noise may be heard. This is normal.
- Just after starting vehicle, the brake pedal may vibrate or a motor operating noise may be heard from engine compartment. This is a normal status of operation check.
- Stopping distance may be longer than that of vehicles without ABS when vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.
- When an error is indicated by ABS or another warning lamp, collect all necessary information from customer (what symptoms are present under what conditions) and check for simple causes before starting diagnosis. Besides electrical system inspection, check brake booster operation, brake fluid level, and fluid leaks.
- If incorrect tire sizes or types are installed on the vehicle or brake pads are not Genuine NISSAN parts, stopping distance or steering stability may deteriorate.
- If there is a radio, antenna or related wiring near control module, ABS function may have a malfunction or error.
- If aftermarket parts (car stereo, CD player, etc.) have been installed, check for incidents such as harness pinches, open circuits or improper wiring.
- If the following components are replaced with non-genuine components or modified, the VDC OFF indicator lamp and SLIP indicator lamp may turn on or the VDC system may not operate properly. Components related to suspension (shock absorbers, struts, springs, bushings, etc.), tires, wheels (exclude specified size), components related to brake system (pads, rotors, calipers, etc.), components related to engine (muffler, ECM, etc.), components related to body reinforcement (roll bar, tower bar, etc.).
- Driving with broken or excessively worn suspension components, tires or brake system components may cause the VDC OFF indicator lamp and the SLIP indicator lamp to turn on, and the VDC system may not operate properly.
- When the TCS or VDC is activated by sudden acceleration or sudden turn, some noise may occur. The
  noise is a result of the normal operation of the TCS and VDC.
- When driving on roads which have extreme slopes (such as mountainous roads) or high banks (such as sharp curves on a freeway), the VDC may not operate normally, or the VDC warning lamp and the SLIP indicator lamp may turn on. This is not a problem if normal operation can be resumed after restarting the engine.

BRC

В

D

Е

ı

K

L

M

Ν

0

### **PRECAUTIONS**

< PRECAUTION > [TYPE 2]

• Sudden turns (such as spin turns, acceleration turns), drifting, etc. with VDC turned off may cause the yaw rate/side/decel G sensor to indicate a problem. This is not a problem if normal operation can be resumed after restarting the engine.

- If battery is removed or steering angle sensor is disconnected, power to steering angle sensor is lost and the screen goes into steering angle sensor safe mode.
- When screen goes into steering angle sensor safe mode, perform "Adjustment of Steering Angle Sensor Neutral Position" with CONSUT-III and check that VDC OFF indicator turns off. Additionally, perform selfdiagnosis, check that only "Steering Angle Sensor Safe Mode" is shown for self-diagnostic result, and then delete the memory. (If the self-diagnostic result shows an indication other than "Steering Angle Sensor Safe Mode", repair the relevant part and restart self-diagnosis.) The steering angle sensor is released and returns to normal condition by performing the above operation.
- When checking, if only "Steering Angle Sensor Safe Mode" is shown in the self-diagnostic result and VDC OFF indicator is off, delete history of malfunction. This happens when battery power supply is lost and the screen goes into Steering Angle Sensor Safe Mode, and then screen returns to normal mode automatically by driving the vehicle in a straight forward direction [for approximately 30 seconds at 20 km/h (12 MPH) or more] after power is supplied again.

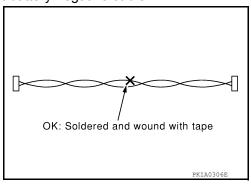
### NOTE:

VDC OFF indicator lamp is on when VDC OFF switch is on.

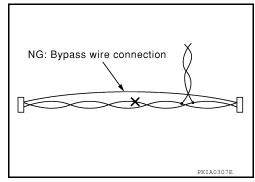
## Precaution for CAN System

INFOID:0000000006246142

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



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



## **PREPARATION**

< PREPARATION > [TYPE 2]

Α

В

INFOID:0000000006246143

# **PREPARATION**

## **PREPARATION**

## Special Service Tool

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

Tool number (Kent-Moore No.) Tool name		Description
KV991J0080 (J-45741) ABS active wheel sensor tester	J-45741-BOX  POWIN SHIEGH  WETA OLD LE	Checking operation of ABS active wheel sensors
ST30031000	WFIA0101E	Removing sensor rotor
( — ) Bearing puller		
	2ZA0700D	
ST30720000 (J-25405) Drift		Installing rear sensor rotor a: 77 mm (0.03 in) diameter b: 55 mm (2.17 in) diameter
	a b zzaorold	
ST27863000 ( — )	14 al	Installing rear sensor rotor a: 75 mm (2.95 in) diameter
Drift		b: 62 mm (2.44 in) diameter
//////////////////////////////////////	ZZA0832D	Installing room consequents
KV40104710 ( — ) Drift	a b b	Installing rear sensor rotor a: 76 mm (2.99 in) diameter b: 68.5 mm (2.697 in) diameter
	ZZA0832D	

## **PREPARATION**

< PREPARATION > [TYPE 2]

## Commercial Service Tool

INFOID:0000000006246144

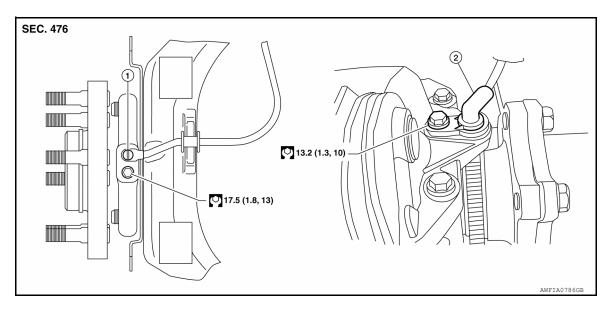
Tool name		Description
Flare nut crowfoot     Torque wrench		Removing and installing brake piping a: 10 mm (0.39 in)/12 mm (0.47 in)
	S-NT360	
Power tool		Removing nuts, bolts and screws
	PIIB1407E	

INFOID:0000000006246145

# UNIT REMOVAL AND INSTALLATION

## WHEEL SENSORS

### Removal and Installation



1. Front wheel sensor LH

2. Rear wheel sensor RH

### REMOVAL

- 1. When removing the front wheel sensor, remove the disc rotor to gain access to the front wheel sensor bolt. Refer to <a href="BR-43">BR-43</a>, "Removal and Installation of Brake Caliper and Disc Rotor".
- 2. When removing the rear wheel sensor, remove the spare tire.
- 3. Remove the wheel sensor bolt.
- 4. Pull the wheel sensor out, being careful to turn it as little as possible.

### **CAUTION:**

- Be careful not to damage wheel sensor edge or the sensor rotor teeth.
- Do not pull on the wheel sensor harness.
- Disconnect the wheel sensor harness connector, then remove the wheel sensor harness from the mounts and remove the wheel sensor.
  - When removing the rear wheel sensor, both sensors must be removed as they are on the same harness.

### INSTALLATION

Installation is in the reverse order of removal.

### **CAUTION:**

- Inspect wheel sensor O-ring, replace wheel sensor if damaged.
- Before installing the wheel sensor, make sure no foreign materials (such as iron fragments) are adhered to the pick-up part of the wheel sensor, to the inside of the wheel sensor hole or on the sensor rotor in the wheel hub assembly.
- Clean wheel sensor hole and mating surface with brake cleaner and a lint-free shop rag. Be careful that dirt and debris do not enter the axle or wheel hub assembly.

### NOTE:

Apply a coat of suitable grease to the wheel sensor O-ring and mating hole.

Е

D

Α

В

BRC

Н

Κ

M

Ν

0

## SENSOR ROTOR

### Removal and Installation

INFOID:0000000006246146

### FRONT WHEEL SENSOR ROTOR

The front wheel sensor rotors are built into the front wheel hub and bearing assemblies and are not removable. If damaged, replace the front wheel hub and bearing assembly. Refer to <u>FAX-10</u>, "Removal and Installation".

### REAR WHEEL SENSOR ROTOR

#### Removal

Remove the side flange from the final drive assembly. Refer to <u>DLN-460, "Removal and Installation"</u>.

Discard side oil seal.

2. Remove the sensor rotor from the side flange, using suitable tool with Tool.

Tool number : ST30031000 ( — )

### Installation

 Install the new sensor rotor on the side flange using Tools and a suitable press as shown. Make sure the sensor rotor is fully seated on the side flange.

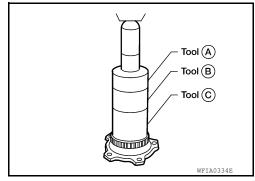
Tool numbers A: ST30720000 (J-25405)

B: ST27863000 ( — )

C: KV40104710 ( — )

### **CAUTION:**

Do not reuse the old sensor rotor.



Install the side flange on the final drive assembly. Refer to <u>DLN-460, "Removal and Installation"</u>.

Do not reuse the side oil seal. The side oil seal must be replaced every time the side flange is removed from the final drive assembly.

[TYPE 2]

INFOID:0000000006246147

Α

В

D

Е

BRC

Н

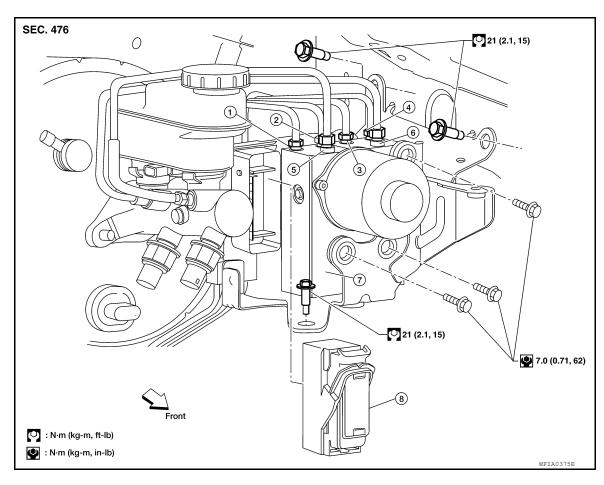
M

Ν

0

## ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

## Removal and Installation



- To rear left disc brake
   13.0 N·m (1.3 kg-m, 10 ft-lb)
- 4. To front right disc brake 13.0 N·m (1.3 kg-m, 10 ft-lb)
- 7. ABS actuator and electric unit (control unit)
- 2. To rear right disc brake 13.0 N·m (1.3 kg-m, 10 ft-lb)
- 5. From master cylinder secondary side 18.2 N·m (1.9 kg-m, 13 ft-lb)
- 8. Harness connector

- 3. To front left disc brake 13.0 N·m (1.3 kg-m, 10 ft-lb)
- 6. From master cylinder primary side 18.2 N·m (1.9 kg-m, 13 ft-lb)

### REMOVAL

### NOTE:

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

- 1. Disconnect the battery negative terminal. Refer to PG-76, "Removal and Installation".
- Remove air cleaner assembly. Refer to <u>EM-165</u>, "Removal and Installation".
- 3. Disconnect the actuator harness from the ABS actuator and electric unit (control unit).
- 4. Disconnect the brake tubes.

### **CAUTION:**

- To remove the brake tubes, use a flare nut wrench to prevent the flare nuts and brake tubes from being damaged.
- Be careful not to splash brake fluid on painted areas.
- 5. Remove the three bolts and remove the ABS actuator and electric unit (control unit) and bracket.
- 6. Remove the bracket from the ABS actuator and electric unit (control unit).

### INSTALLATION

Installation is in the reverse order of removal.

Revision: March 2012 BRC-231 2011 Pathfinder

## **ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)**

### < UNIT REMOVAL AND INSTALLATION >

[TYPE 2]

• If the ABS actuator and electric unit (control unit) is replaced, the neutral position of the steering angle sensor position must be reset. Refer to <a href="https://example.com/BRC-122">BRC-122</a>, "CALIBRATION OF DECEL G SENSOR: Special Repair Requirement".

### **CAUTION:**

- To tighten the brake tube flare nuts use a suitable tool (flare nut wrench).
- Always tighten the brake tube flare nuts to specification when installing.
- Never reuse the drained brake fluid.
- After installation of the ABS actuator and electric unit (control unit), refill the brake system with new brake fluid. Then bleed the air from the brake system. Refer to <a href="mailto:BR-20">BR-20</a>, "Bleeding Brake System".
- If the ABS actuator and electronic unit (control unit) is replaced, the neutral position of the steering angle sensor must be reset. Refer to <a href="https://example.com/BRC-122">BRC-122</a>, "CALIBRATION OF DECEL G SENSOR: Special Repair Requirement".

### STEERING ANGLE SENSOR

< UNIT REMOVAL AND INSTALLATION >

[TYPE 2]

## STEERING ANGLE SENSOR

## Removal and Installation

INFOID:0000000006246148

### **REMOVAL**

- 1. Remove the spiral cable. Refer to <u>SR-7</u>, "Removal and Installation".
- 2. Remove the screws and remove the steering angle sensor from the spiral cable.

### **INSTALLATION**

Installation is in the reverse order of removal.

• Reset the neutral position of the steering angle sensor. Refer to <a href="BRC-122">BRC-122</a>, "CALIBRATION OF DECEL G SENSOR: Special Repair Requirement".

### CAUTION:

Any time the steering angle sensor is removed and installed or replaced, you must reset the neutral position of the steering angle sensor. Refer to <a href="https://example.com/BRC-122">BRC-122</a>, "CALIBRATION OF DECEL G SENSOR: Special Repair Requirement".

BRC

Α

В

D

Н

K

L

M

Ν

0

INFOID:0000000006246149

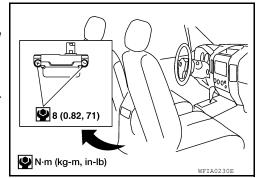
## YAW RATE/SIDE/DECEL G SENSOR

### Removal and Installation

### **REMOVAL**

- 1. Remove the center console. Refer to IP-21, "Removal and Installation".
- Remove the yaw rate/side/decel G sensor nuts as shown. CAUTION:
  - Do not use power tools to remove or install the yaw rate/ side/decel G sensor.
  - Do not drop or strike the yaw rate/side/decel G sensor.
     NOTE:

The location of the yaw rate/side/decel G sensor is the same for all models.



3. Disconnect the yaw rate/side/decel G sensor connector and remove the yaw rate/side/decel G sensor.

### **INSTALLATION**

Installation is in the reverse order of removal.

• After installing the yaw rate/side/decel G sensor, it is necessary to calibrate the yaw rate/side/decel G sensor. Refer to BRC-122, "CALIBRATION OF DECEL G SENSOR: Special Repair Requirement".