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CONTENTS

ABS	DTC C1109 BATTERY VOLTAGE [ABNOR-		BRC
BASIC INSPECTION	MAL] 7 Description		
	DTC Logio	24	G
DIAGNOSIS AND REPAIR WORKFLOW	Diagnosis Procedure		G
Work Flow Diagnostic Work Sheet		26	
•	DTC Logic		Н
SYSTEM DESCRIPTION	Diagnosis Procedure	26	
ABS	DTC C1111 PUMP MOTOR	27	
System Diagram	9 Description		1
Hydraulic Circuit Diagram	DTC Logic		
System Description10	Diagnosis Procedure		
Component Parts Location10	Component Inspection		J
Component Description1	DTC C1114 MAIN RELAY	29	
EBD12	Description		K
System Diagram12	DTC Logic		1 \
System Description12	Diagnosis Procedure		
Component Parts Location13	Component Inspection	30	
Component Description13	3		L
DIAGNOSIS SYSTEM [ABS ACTUATOR	DTC C1115 ABS SENSOR [ABNORMAL SIG	-	
	_ NAL]	31	
AND ELECTRIC UNIT (CONTROL UNIT)]19	DESCHOUGH	31	M
CONSULT Function (ABS)19	DTC Logic		
DTC/CIRCUIT DIAGNOSIS18	Diagnosis Procedure	31	
	Component Inspection	32	Ν
C1101, C1102, C1103, C1104 WHEEL SEN-	C1120, C1122, C1124, C1126 IN ABS SOL	34	
SOR-118	8 Description		
Description18	B DTC Logic		0
DTC Logic18	Diagnosis Procedure		
Diagnosis Procedure18 Component Inspection19	Component Inspection		
	C1121, C1123, C1125, C1127 OUT ABS SOL	36	Р
C1105, C1106, C1107, C1108 WHEEL SEN-	Description		
SOR-22	1 DTC Logic		
Description2	1 Diagnosis Procedure	36	
DTC Logic2	1 Component Inspection		
Diagnosis Procedure2	1		
Component Inspection23	3 U1000 CAN COMM CIRCUIT	38	

Description		Precaution for Supplemental Restraint System	
DTC Logic		(SRS) "AIR BAG" and "SEAT BELT PRE-TEN-	
Diagnosis Procedure	38	SIONER"	
STOP LAMP SWITCH	20	Necessary for Steering Wheel Rotation After Bat	
		tery Disconnect	
Description		Precaution for Brake System	
Component Function Check		Precaution for Brake Control	62
Diagnosis Procedure Component Inspection (Stop Lamp Switch)		PREPARATION	62
Component Inspection (Stop Lamp Switch)		FREFARATION	63
Component inspection (Gtop Lamp Relay)	41	PREPARATION	63
ABS WARNING LAMP	42	Special Service Tool	
Description	42	Commercial Service Tool	
Component Function Check	42		
Diagnosis Procedure	42	REMOVAL AND INSTALLATION	64
BRAKE WARNING LAMP	40	WHEEL SENSORS	64
		Removal and Installation	
Description Component Function Check		Removal and installation	04
Diagnosis Procedure		SENSOR ROTOR	66
Diagnosis Flocedule	43	Removal and Installation	66
ECU DIAGNOSIS INFORMATION	44		
		ABS ACTUATOR AND ELECTRIC UNIT	
ABS ACTUATOR AND ELECTRIC UNIT		(CONTROL UNIT)	
(CONTROL UNIT)		Exploded View	
Reference Value		Removal and Installation	67
Fail-Safe		TCS/ABS	
DTC No. Index	45	BASIC INSPECTION	00
WIRING DIAGRAM	47	BASIC INSPECTION	69
WIKING DIAGRAM	47	DIAGNOSIS AND REPAIR WORKFLOW	69
BRAKE CONTROL SYSTEM	47	Work Flow	
Wiring Diagram - ABS		Diagnostic Work Sheet	
SYMPTOM DIAGNOSIS		SYSTEM DESCRIPTION	71
ABS	54	TCS	
Symptom Table	54	System Diagram	
EXCESSIVE ABS FUNCTION OPERATION		Hydraulic Circuit Diagram	
	=	System Description	
FREQUENCY		Component Parts Location	
Diagnosis Procedure	55	Component Description	74
UNEXPECTED PEDAL REACTION	56	ABS	75
Diagnosis Procedure		System Diagram	
		System Description	
THE BRAKING DISTANCE IS LONG		Component Parts Location	
Diagnosis Procedure	57	Component Description	
ABS FUNCTION DOES NOT OPERATE	5 0	·	
		EBD	
Diagnosis Procedure	50	System Diagram	
PEDAL VIBRATION OR ABS OPERATION		System Description	
SOUND OCCURS		Component Parts Location	
Diagnosis Procedure		Component Description	80
•		DIAGNOSIS SYSTEM [ABS ACTUATOR	
NORMAL OPERATING CONDITION		AND ELECTRIC UNIT (CONTROL UNIT)]	04
Description	60	CONSULT Function (ABS)	
PRECAUTION	64	CONOCETT UNGUOTI (ADS)	01
	01	DTC/CIRCUIT DIAGNOSIS	84
PRECAUTIONS	61		

C1101, C1102, C1103, C1104 WHEEL SEN-		U1000 CAN COMM CIRCUIT	
SOR-1	84	Description	105
Description	84	DTC Logic	105
DTC Logic	84	Diagnosis Procedure	105
Diagnosis Procedure		-	
Component Inspection		STOP LAMP SWITCH	106
	00	Description	106
C1105, C1106, C1107, C1108 WHEEL SEN-		Component Function Check	106
SOR-2	87	Diagnosis Procedure	
Description		Component Inspection (Stop Lamp Switch)	
DTC Logic		Component Inspection (Stop Lamp Relay)	
Diagnosis Procedure			
Component Inspection		ABS WARNING LAMP	109
Component inspection	00	Description	109
DTC C1109 BATTERY VOLTAGE [ABNOR-		Component Function Check	
MAL]	90	Diagnosis Procedure	
<u>-</u>		g	
Description		BRAKE WARNING LAMP	110
DTC Logic		Description	110
Diagnosis Procedure	90	Component Function Check	
DTC C1110 CONTROL FAILURE	92	Diagnosis Procedure	
DTC Logic		TCS OFF SWITCH	111
Diagnosis Procedure	92	Description	111
DTC C1111 PUMP MOTOR	03	Component Function Check	
		Diagnosis Procedure	
Description		Component Inspection	
DTC Logic			
Diagnosis Procedure		SLIP INDICATOR LAMP	113
Component Inspection	94	Description	113
DTC C1114 MAIN RELAY	05	Component Function Check	
		Diagnosis Procedure	
Description		Blagnoole (1000date	
DTC Logic		ECU DIAGNOSIS INFORMATION	114
Diagnosis Procedure			
Component Inspection	96	ABS ACTUATOR AND ELECTRIC UNIT	
DTC C1115 ABS SENSOR [ABNORMAL SIG-		(CONTROL UNIT)	114
-		Reference Value	
NAL]		Fail-Safe	115
Description		DTC No. Index	
DTC Logic			
Diagnosis Procedure		WIRING DIAGRAM	117
Component Inspection	98		
C4420 C4422 C4424 C4426 IN ABS SOL	400	BRAKE CONTROL SYSTEM	117
C1120, C1122, C1124, C1126 IN ABS SOL		Wiring Diagram - TCS	117
Description		•	
DTC Logic		SYMPTOM DIAGNOSIS	124
Diagnosis Procedure			
Component Inspection	. 101	TCS	
04404 04400 04405 04407 0117 470 001		Symptom Table	124
C1121, C1123, C1125, C1127 OUT ABS SOL		EVACABLE ADA FUNCTION OPERATION	
Description		EXCESSIVE ABS FUNCTION OPERATION	
DTC Logic		FREQUENCY	
Diagnosis Procedure		Diagnosis Procedure	125
Component Inspection	. 103	INEVERSED DED 41 DE 10-10-1	
04400 04404 04400 04400 = 110111= 010		UNEXPECTED PEDAL REACTION	
C1130, C1131, C1132, C1133 ENGINE SIG-		Diagnosis Procedure	126
NAL		THE BRAINING DIGTANCE IO LONG	40-
Description	. 104	THE BRAKING DISTANCE IS LONG	
DTC Logic	. 104	Diagnosis Procedure	127
Diagnosis Procedure		ABS FUNCTION DOES NOT OPERATE	400
-		ADS FUNCTION DUES NOT OPERATE	128

Diagnosis Procedure128	ADJUSTMENT OF STEERING ANGLE SENSOR	
PEDAL VIBRATION OR ABS OPERATION	NEUTRAL POSITION	
SOUND OCCURS 129	ADJUSTMENT OF STEERING ANGLE SENSOR	
Diagnosis Procedure	NEUTRAL POSITION : Description	
Diagnosis i rocedure129	ADJUSTMENT OF STEERING ANGLE SENSOR	
VEHICLE JERKS DURING TCS/ABS CON-	NEUTRAL POSITION : Special Repair Requirement	112
TROL 130	ment	. 143
Diagnosis Procedure130	SYSTEM DESCRIPTION	. 145
NORMAL OPERATING CONDITION		
NORMAL OPERATING CONDITION 131	VDC	
Description131	System Diagram	
PRECAUTION132	Hydraulic Circuit Diagram	
T ILOAO HON IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	System Description	
PRECAUTIONS 132	Component Parts Location	
Precaution for Supplemental Restraint System	Component Description	. 148
(SRS) "AIR BAG" and "SEAT BELT PRE-TEN-	TCS	. 149
SIONER"132	System Diagram	
Necessary for Steering Wheel Rotation After Bat-	System Description	
tery Disconnect132	Component Parts Location	
Precaution for Brake System133	Component Description	
Precaution for Brake Control133	·	
PREPARATION134	ABS	
PREPARATION134	System Diagram	
PREPARATION 134	System Description	
Special Service Tool134	Component Parts Location	
Commercial Service Tool	Component Description	. 154
	EBD	155
REMOVAL AND INSTALLATION135	System Diagram	
TOO OFF CAUTOU	System Description	
TCS OFF SWITCH	Component Parts Location	
Removal and Installation135	Component Description	
WHEEL SENSORS 136	·	
Removal and Installation136	DIAGNOSIS SYSTEM [ABS ACTUATOR	
	AND ELECTRIC UNIT (CONTROL UNIT)]	
SENSOR ROTOR 138	CONSULT Function (ABS)	. 158
Removal and Installation138	DTC/CIDCUIT DIA CNOCIC	
ABS ACTUATOR AND ELECTRIC UNIT	DTC/CIRCUIT DIAGNOSIS	. 162
	C1101, C1102, C1103, C1104 WHEEL SEN-	
(CONTROL UNIT)	SOR-1	162
Exploded View	Description	
Removal and Installation139 VDC/TCS/ABS	DTC Logic	
VDC/TC3/AD3	Diagnosis Procedure	
BASIC INSPECTION141	Component Inspection	
D/ (010 11/01 L0 11/01 11/11/11/11/11/11/11/11/11/11/11/11/11	Special Repair Requirement	
DIAGNOSIS AND REPAIR WORKFLOW 141		
Work Flow141	C1105, C1106, C1107, C1108 WHEEL SEN-	
Diagnostic Work Sheet142	SOR-2	
INODEOTION AND AD HIGTMENT	Description	
INSPECTION AND ADJUSTMENT 143	DTC Logic	
ADDITIONAL SERVICE WHEN REPLACING	Diagnosis Procedure	
CONTROL UNIT143	Component Inspection	
ADDITIONAL SERVICE WHEN REPLACING	Special Repair Requirement	. 167
CONTROL UNIT : Description143	DTC C1109 BATTERY VOLTAGE [ABNOR-	
ADDITIONAL SERVICE WHEN REPLACING	_	460
CONTROL UNIT : Special Repair Requirement143	MAL]	
a production to demonstrate with	Description	
	DTC Logic	. IOO

O	\Box
D	κ

Н

K

L

M

Ν

0

Р

Α

В

 D

Е

Diagnosis Procedure 188	Special Repair Requirement	169	DTC Logic	
Special Repair Requirement 170	04440 04450 04470 ADO AOTHATOD A	ı.	Diagnosis Procedure	189
DTC Logic 170				
Diagnosis Procedure 170			Special Repair Requirement	190
Description 170			04440 04444 0TEEDING ANGLE OFNOOD	
DTC C1111 PUMP MOTOR				
DTC C1111 PUMP MOTOR	Special Repair Requirement	170	·	
Description 171	DTC C4444 DUMP MOTOR	474		
DTC Logic 171 Special Repair Requirement 192 Diagnosis Procedure 171 Component Inspection 172 Special Repair Requirement 172 Special Repair Requirement 173 DTC C1114 MAIN RELAY 173 Description 173 DTC Logic 193 DTC Logic 194 DTC C1115 ABS SENSOR [ABNORMAL SIGNAL] 175 DEscription 176 DTC Logic 175 DT				
Diagnosis Procedure			·	
Component Inspection 172 Special Repair Requirement 173 Description 173 Description 173 Description 173 Component Inspection 174 Special Repair Requirement 174 Description 175 Description 175 Diagnosis Procedure 175 Diagnosis Procedure 176 DTC C1115 ABS SENSOR [ABNORMAL SIGNAL 175 Description 175 Diagnosis Procedure 176 Draw of the procedure 177 Draw of the procedure 178 Draw of the procedure 178	Dic Logic	1/1	Special Repair Requirement	192
Description			C1145 C1146 VAW DATE/SIDE G SENSOD	102
DTC C1114 MAIN RELAY 173 DTC Logic 193 Description 173 Diagnosis Procedure 193 Diagnosis Procedure 173 Component Inspection 195 Description 174 Special Repair Requirement 174 Special Repair Requirement 174 Component Inspection 196 DTC C1115 ABS SENSOR [ABNORMAL SIG-NAL] 175 Component Inspection 196 DEScription 175 Description 197 DEScription 175 Description 198 Description 176 Description 199 Special Repair Requirement 177 Description 199 Description 178 Description 199 Description 178 Description 199 Diagnosis Procedure (With WIT) 178 Description 201 Diagnosis Procedure (With WIT) 179 Description 201 Diagnosis Procedure (With WIT) 179 Description 201 Special Repair Requirement 18	Component inspection	1/2	·	
DTC C 1114 MAIN RELAY 173 Diagnosis Procedure 193 Description 173 Component Inspection 195 DTC Logic 173 Special Repair Requirement 195 Component Inspection 174 C1147, C1148, C1149, C1150 USV/HSV LINE. 196 DTC C1115 ABS SENSOR [ABNORMAL SIG-NAL] 175 Description 196 DESCRIPTION 175 Diagnosis Procedure 196 DIALI 175 Description 197 DESCRIPTION 175 Diagnosis Procedure 196 Diagnosis Procedure 175 Special Repair Requirement 198 Component Inspection 176 Special Repair Requirement 198 Component Inspection 176 Description 199 C116 STOP LAMP SW 178 Description 199 Diagnosis Procedure (With M/T) 178 Description 199 DTC Logic 178 Description 201 Diagnosis Procedure (With CVT) 179 Description 201 Component Inspection (Stop Lamp Switch) </td <td>Special Repair Requirement</td> <td> 1/2</td> <td></td> <td></td>	Special Repair Requirement	1/2		
Description	DTC C1114 MAIN RELAY	173		
DTC Logic				
Diagnosis Procedure	·			
Component Inspection 174 C1148, C1149, C1150 USV/HSV LINE. 196 Special Repair Requirement 174 Description 175 Description 175 Diagnosis Procedure 175 Diagnosis Procedure 176 Description 177 Description 178 Description 178 Description 178 Description 178 Diagnosis Procedure (With M/T) 178 Diagnosis Procedure (With M/T) 178 Diagnosis Procedure (With CVT) 179 Diagnosis Procedure (With CVT) 179 Diagnosis Procedure (With CVT) 179 Diagnosis Procedure 201 Component Inspection (Stop Lamp Switch) 180 Description 202 DTC Logic 202 DTC Logic 202 DTC Logic 202 DTC Logic 203 DTC Logic 204 Description 204 DTC Logic 204 Description 205 Diagnosis Procedure 204 Description 205 Diagnosis Procedure 205 Diagnosis Procedure 206 DTC Logic 207 DTC Logic 208 DTC Logic 209 D			Special Repair Requirement	195
Description			C1147, C1148, C1149, C1150 USV/HSV LINE	. 196
DTC C1115 ABS SENSOR [ABNORMAL SIG-NAL] DTC Logic 196 Description 175 Component Inspection 197 DTC Logic 175 Special Repair Requirement 198 Component Inspection 176 Special Repair Requirement 199 Component Inspection 176 Description 199 C1116 STOP LAMP SW 178 Description 178 Diagnosis Procedure (With M/T) 178 Description 199 DTC Logic 178 Diagnosis Procedure (With W/T) 178 Diagnosis Procedure (With W/T) 178 DEscription 201 Diagnosis Procedure (With CVT) 179 DTC Logic 201 Component Inspection (Stop Lamp Switch) 180 Description 201 Component Inspection (Stop Lamp Relay) 181 Component Inspection 202 Special Repair Requirement 181 Description 202 Description 182 Description 203 Diagnosis Procedure 182 DEscription 203 Diagnosis Pr				
DTC C1115 ABS SENSOR [ABNORMAL SIG-NAL] Diagnosis Procedure 196 Description 175 Description 197 DTC Logic 175 Special Repair Requirement 197 Component Inspection 176 C1154 PNP SWITCH 199 Special Repair Requirement 177 Description 199 C1116 STOP LAMP SW 178 Description 199 DTC Logic 178 DTC Logic 199 Diagnosis Procedure (With M/T) 178 Description 199 Diagnosis Procedure (With W/T) 178 Description 199 Diagnosis Procedure (With W/T) 178 Description 201 Diagnosis Procedure (With CVT) 179 DTC Logic 201 Component Inspection (Stop Lamp Switch) 180 Diagnosis Procedure 201 Special Repair Requirement 181 Special Repair Requirement 202 Special Repair Requirement 181 DEscription 203 Diagnosis Procedure 182 Diagnosis Procedure 203 Diagnos	opeoiai regaii requirement	177	·	
NAL] 175 Component Inspection 197 Description 175 Special Repair Requirement 198 DTC Logic 175 Diagnosis Procedure 175 Diagnosis Procedure 176 Description 199 Special Repair Requirement 177 DTC Logic 199 C1116 STOP LAMP SW 178 DTC Logic 199 Description 178 DTC Logic 199 Diagnosis Procedure (With M/T) 178 DTC C1155 BR FLUID LEVEL LOW 201 Diagnosis Procedure (With W/T) 179 Drc Logic 201 Component Inspection (Stop Lamp Switch) 180 Drc Logic 201 Component Inspection (Stop Lamp Relay) 181 Special Repair Requirement 202 Special Requirement 181 Special Requirement 202 C1120, C1122, C1124, C1126 IN ABS SOL 182 Drc Logic 203 Diagnosis Procedure 182 Diagnosis Procedure 203 Component Inspection 183 Special Repair Requirement 204	DTC C1115 ABS SENSOR [ABNORMAL S	IG-		
Description				
DTC Logic	=		·	
Diagnosis Procedure	•			
Component Inspection 176 Description 199			C1154 PNP SWITCH	199
DTC Logic 199			Description	199
Diagnosis Procedure 199			DTC Logic	199
C1116 STOP LAMP SW 178 Special Repair Requirement 199 Description 178 DTC Logic 178 DTC Logic 178 DTC C1155 BR FLUID LEVEL LOW 201 Diagnosis Procedure (With M/T) 179 Description 201 Diagnosis Procedure (With CVT) 179 DESCRIPTION 201 Component Inspection (Stop Lamp Switch) 180 Diagnosis Procedure 201 Component Inspection (Stop Lamp Relay) 181 Component Inspection 202 Special Repair Requirement 181 Special Repair Requirement 202 C1120, C1122, C1124, C1126 IN ABS SOL 182 DTC C1156 ST ANG SEN COM CIR 203 Description 182 DESCRIPTION 203 DESCRIPTION 182 DESCRIPTION 203 Diagnosis Procedure 182 DIAM CAN COMM CIRCUIT 204 Description 203 DIAM CAN COMM CIRCUIT 204 Description 185 DIAM CAN COMM CIRCUIT 204 DESCRIPTION 185 DIAM CAN COMM CIRCUIT 204			Diagnosis Procedure	199
DTC Logic 178 DTC C1155 BR FLUID LEVEL LOW 201 Diagnosis Procedure (With M/T) 178 Description 201 Diagnosis Procedure (With CVT) 179 DTC Logic 201 Component Inspection (Stop Lamp Switch) 180 Diagnosis Procedure 201 Component Inspection (Stop Lamp Relay) 181 Component Inspection 202 Special Repair Requirement 181 Special Repair Requirement 202 C1120, C1122, C1124, C1126 IN ABS SOL 182 DTC C1156 ST ANG SEN COM CIR 203 Description 182 Description 203 DTC Logic 182 DTC Logic 203 Diagnosis Procedure 183 DESCRIPTION 203 Special Repair Requirement 184 DTC Logic 204 DEScription 185 DTC Logic 204 DEScription 204 DESCRIPTION 204 DTC Logic 185 DESCRIPTION 205 Component Inspection 186 DESCRIPTION 205 Component Inspection				
Diagnosis Procedure (With M/T) 178 Description 201 Diagnosis Procedure (With CVT) 179 DTC Logic 201 Component Inspection (Stop Lamp Switch) 180 Diagnosis Procedure 201 Component Inspection (Stop Lamp Relay) 181 Component Inspection 202 Special Repair Requirement 181 Special Repair Requirement 202 C1120, C1122, C1124, C1126 IN ABS SOL 182 DTC C1156 ST ANG SEN COM CIR 203 DTC Logic 182 DTC Logic 203 Diagnosis Procedure 182 DTC Logic 203 Diagnosis Procedure 182 Diagnosis Procedure 203 C1121, C1123, C1125, C1127 OUT ABS SOL 185 DTC Logic 204 Description 185 Diagnosis Procedure 204 Diagnosis Procedure 185 Diagnosis Procedure 205 C1130, C1131, C1132, C1133, C1136 EN-Gine Signal 186 Component Function Check 205 C1130, C1131, C1132, C1133, C1136 EN-Gine Signal 188 DEscription 205 Component Inspection </td <td></td> <td></td> <td></td> <td></td>				
Diagnosis Procedure (With CVT) 179 Component Inspection (Stop Lamp Switch) 180 Component Inspection (Stop Lamp Relay) 181 Special Repair Requirement 181 Special Repair Requirement 181 Special Repair Requirement 202				
Component Inspection (Stop Lamp Switch) 180 Diagnosis Procedure 201 Component Inspection (Stop Lamp Relay) 181 Component Inspection 202 Special Repair Requirement 181 Special Repair Requirement 202 C1120, C1122, C1124, C1126 IN ABS SOL 182 DTC C1156 ST ANG SEN COM CIR 203 DESCRIPTION 182 Description 203 DTC Logic 182 DTC Logic 203 Diagnosis Procedure 183 Description 203 Special Repair Requirement 184 Description 204 C1121, C1123, C1125, C1127 OUT ABS SOL 185 DTC Logic 204 Description 185 Diagnosis Procedure 204 DTC Logic 204 DTC Logic 204 Diagnosis Procedure 185 Description 205 Component Inspection 186 Description 205 Special Repair Requirement 187 Description 205 C1130, C1131, C1132, C1133, C1136 EN-GINES Component Inspection 205			·	
Component Inspection (Stop Lamp Relay) 181 Component Inspection 202 Special Repair Requirement 181 Special Repair Requirement 202 C1120, C1122, C1124, C1126 IN ABS SOL 182 DTC C1156 ST ANG SEN COM CIR 203 DTC Logic 182 DTC Logic 203 Diagnosis Procedure 182 DTC Logic 203 Component Inspection 183 DTC Logic 203 Component Inspection 183 DTC Logic 203 Component Inspection 183 Diagnosis Procedure 203 C1121, C1123, C1125, C1127 OUT ABS SOL. 185 DTC Logic 204 Description 204 DTC Logic 204 Diagnosis Procedure 204 Diagnosis Procedure 204 Diagnosis Procedure 185 Description 205 Component Inspection 186 Description 205 C1130, C1131, C1132, C1133, C1136 EN- Component Inspection 205 C1130, C1131, C1132, C1133, C1136 EN- Component Inspection 205 C1130, C1131, C1132, C1133,	Diagnosis Procedure (With CVT)	179	<u> </u>	
Special Repair Requirement 181 Special Repair Requirement 202 C1120, C1122, C1124, C1126 IN ABS SOL 182 DTC C1156 ST ANG SEN COM CIR 203 Description 182 Description 203 DTC Logic 203 DTC Logic 203 Diagnosis Procedure 183 Diagnosis Procedure 203 Component Inspection 184 DESCRIPTION 204 C1121, C1123, C1125, C1127 OUT ABS SOL 185 DTC Logic 204 DESCRIPTION 185 DIAGRAM SEN COM CIR 203 U1000 CAN COMM CIRCUIT 204 204 Description 204 DTC Logic 204 DTC Logic 185 DIAGRAM SEN COM CIR 204 Description 204 Description 204 DTC Logic 185 DTC Logic 204 Diagnosis Procedure 205 Description 205 Component Inspection 205 Component Inspection 205 C1130, C1131, C1132, C1133, C1136 EN-GIA 206 Component Inspection <td></td> <td></td> <td></td> <td></td>				
C1120, C1122, C1124, C1126 IN ABS SOL 182 DTC C1156 ST ANG SEN COM CIR 203 Description 182 Description 203 DTC Logic 182 DTC Logic 203 Diagnosis Procedure 182 DTC Logic 203 Component Inspection 183 Diagnosis Procedure 203 Special Repair Requirement 184 U1000 CAN COMM CIRCUIT 204 Description 204 DESCRIPTION 204 DESCRIPTION 185 DTC Logic 204 Diagnosis Procedure 185 Diagnosis Procedure 205 Diagnosis Procedure 205 Component Inspection 205 Special Repair Requirement 186 Description 205 Special Repair Requirement 205 Component Function Check 205 C1130, C1131, C1132, C1133, C1136 EN-GINAL 188 Description 205 GINE SIGNAL 188 Description 205 Diagnosis Procedure 205 Description 205 Special Repair Requirement				
Description 182 Description 203 DTC Logic 203 Diagnosis Procedure 182 DTC Logic 203 Component Inspection 183 Diagnosis Procedure 203 Component Requirement 184 U1000 CAN COMM CIRCUIT 204 Description 204 Description 204 Description 185 DTC Logic 204 Diagnosis Procedure 185 Diagnosis Procedure 204 Diagnosis Procedure 185 Description 205 Component Inspection 186 Description 205 Special Repair Requirement 187 Description 205 C1130, C1131, C1132, C1133, C1136 EN- Component Inspection 205 GINE SIGNAL 188 Special Repair Requirement 206 Description 205 Special Repair Requirement 206 Diagnosis Procedure 207 Component Inspection 207 Component Inspection 207 Component Function Chec	Special Repair Requirement	181	Special Repair Requirement	202
Description 182 Description 203 DTC Logic 203 Diagnosis Procedure 182 DTC Logic 203 Component Inspection 183 Diagnosis Procedure 203 Component Requirement 184 U1000 CAN COMM CIRCUIT 204 Description 204 Description 204 Description 185 DTC Logic 204 Diagnosis Procedure 185 Diagnosis Procedure 204 Diagnosis Procedure 185 Description 205 Component Inspection 186 Description 205 Special Repair Requirement 187 Description 205 C1130, C1131, C1132, C1133, C1136 EN- Component Inspection 205 GINE SIGNAL 188 Special Repair Requirement 206 Description 205 Special Repair Requirement 206 Diagnosis Procedure 207 Component Inspection 207 Component Inspection 207 Component Function Chec	04400 04400 04404 04400 IN ADO COL	400	DTC C1156 ST ANG SEN COM CID	202
DTC Logic 182 DTC Logic 203 Diagnosis Procedure 182 Diagnosis Procedure 203 Component Inspection 183 U1000 CAN COMM CIRCUIT 204 Description 204 Description 204 Description 185 DTC Logic 204 Diagnosis Procedure 185 Diagnosis Procedure 204 Diagnosis Procedure 185 Diagnosis Procedure 204 PARKING BRAKE SWITCH 205 Description 205 Component Inspection 186 Description 205 Component Requirement 187 Diagnosis Procedure 205 Component Function Check 205 Component Inspection 205 C1130, C1131, C1132, C1133, C1136 EN- 188 Special Repair Requirement 206 GINE SIGNAL 188 Special Repair Requirement 206 Description 207 Description 207 Component Function Check 207 Component Function Check 207				
Diagnosis Procedure 182 Diagnosis Procedure 203 Component Inspection 183 U1000 CAN COMM CIRCUIT 204 Description Requirement 204 DESCRIPTION 204 DTC Logic Diagnosis Procedure 185 Diagnosis Procedure 204 DTC Logic Diagnosis Procedure 185 Diagnosis Procedure 204 Diagnosis Procedure 185 Diagnosis Procedure 205 Component Inspection Special Repair Requirement 187 Description Diagnosis Procedure 205 C1130, C1131, C1132, C1133, C1136 ENGINE SIGNAL 188 Special Repair Requirement 205 Description Signal 188 Special Repair Requirement 206 Diagnosis Procedure 205 Special Repair Requirement 206 Diagnosis Procedure 207 Special Repair Requirement 207 Diagnosis Procedure 207 Component Function Check 207 Component Function Check 207 Component Function Check 207	•		·	
Component Inspection 183 Special Repair Requirement 184 U1000 CAN COMM CIRCUIT 204 Description 204 Description 204 DTC Logic 185 Diagnosis Procedure 204 Diagnosis Procedure 185 Description 204 Diagnosis Procedure 185 Description 205 Component Inspection 186 Component Function Check 205 Special Repair Requirement 187 Diagnosis Procedure 205 C1130, C1131, C1132, C1133, C1136 EN-GINE SIGNAL 188 Component Inspection 205 Description 205 Special Repair Requirement 206 Description 205 Special Repair Requirement 206 Diagnosis Procedure 206 VDC OFF SWITCH 207 Description 207 Component Function Check 207 Component Function Check 207 Component Function Check 207				
Special Repair Requirement 184 Description 204 C1121, C1123, C1125, C1127 OUT ABS SOL. 185 DESCRIPTION 204 DTC Logic 185 Diagnosis Procedure 204 DTC Logic 185 Diagnosis Procedure 205 Component Inspection 186 Description 205 Special Repair Requirement 187 Diagnosis Procedure 205 C1130, C1131, C1132, C1133, C1136 EN-GINE SIGNAL 188 Component Inspection 205 GINE SIGNAL 188 Special Repair Requirement 206 Description 188 Diagnosis Procedure 206 VDC OFF SWITCH 207 Description 207 Component Function Check 207			Diagnosis Flocedule	203
Description 204			U1000 CAN COMM CIRCUIT	204
C1121, C1123, C1125, C1127 OUT ABS SOL. 185 DTC Logic 204 DTC Logic 185 Diagnosis Procedure 204 Diagnosis Procedure 185 Diagnosis Procedure 205 Component Inspection 186 Description 205 Special Repair Requirement 187 Component Function Check 205 C1130, C1131, C1132, C1133, C1136 EN-GINE SIGNAL 188 Special Repair Requirement 205 Description 188 Special Repair Requirement 206 VDC OFF SWITCH 207 Description 207 Component Function Check 207	Special Repair Requirement	184		
Description 185 Diagnosis Procedure 204 DTC Logic 185 Diagnosis Procedure 205 Diagnosis Procedure 185 Description 205 Component Inspection 186 Component Function Check 205 Special Repair Requirement 205 Diagnosis Procedure 205 C1130, C1131, C1132, C1133, C1136 EN-GINE SIGNAL 188 Component Inspection 205 Special Repair Requirement 206 Special Repair Requirement 206 VDC OFF SWITCH 207 Description 207 Diagnosis Procedure 207 Component Function Check 207 Component Function Check 207 Component Function Check 207	C1121 C1123 C1125 C1127 OUT ABS SO	OI 185	·	
DTC Logic 185 Diagnosis Procedure 185 Component Inspection 186 Special Repair Requirement 187 C1130, C1131, C1132, C1133, C1136 EN-GINE SIGNAL 188 Description 205 Special Repair Requirement 205 Special Repair Requirement 205 Special Repair Requirement 206 VDC OFF SWITCH 207 Description 207 Component Function Check 207 Component Function Check 207 Component Function Check 207 Description 207 Component Function Check 207			<u> </u>	
Diagnosis Procedure 185 Component Inspection 186 Special Repair Requirement 187 C1130, C1131, C1132, C1133, C1136 EN-GINE SIGNAL 188 Description 188 DTC Logic 188 Diagnosis Procedure 205 VDC OFF SWITCH 207 Component Inspection 206 VDC OFF SWITCH 207 Description 207 Component Function Check 207 Component Function Check 207	•		-	
Component Inspection 186 Description 205 Special Repair Requirement 187 Component Function Check 205 C1130, C1131, C1132, C1133, C1136 EN- Component Inspection 205 GINE SIGNAL 188 Special Repair Requirement 206 Description 188 DTC Logic 188 Diagnosis Procedure 188 Description 207 Diagnosis Procedure 188 Description 207 Component Function Check 207 Component Function Check 207			PARKING BRAKE SWITCH	205
Special Repair Requirement 187 Component Function Check 205 C1130, C1131, C1132, C1133, C1136 EN- Component Inspection 205 GINE SIGNAL 188 Special Repair Requirement 206 Description 188 VDC OFF SWITCH 207 Diagnosis Procedure 188 Description 207 Component Function Check 207 Component Function Check 207 Component Function Check 207			Description	205
C1130, C1131, C1132, C1133, C1136 EN- Diagnosis Procedure 205 GINE SIGNAL 188 Special Repair Requirement 206 Description 188 DTC Logic 188 Diagnosis Procedure 207 207 Description 207 Component Inspection 206 VDC OFF SWITCH 207 Description 207 Component Function Check 207				
C1130, C1131, C1132, C1133, C1136 EN- Component Inspection 205 GINE SIGNAL 188 Special Repair Requirement 206 Description 188 VDC OFF SWITCH 207 Diagnosis Procedure 188 Description 207 Component Inspection 206 VDC OFF SWITCH 207 Component Function Check 207	ореска перак печиненени	107		
GINE SIGNAL 188 Special Repair Requirement 206 Description 188 VDC OFF SWITCH 207 Diagnosis Procedure 188 Description 207 Component Function Check 207	C1130, C1131, C1132, C1133, C1136 EN-			
Description 188 DTC Logic 188 Diagnosis Procedure 188 Diagnosis Procedure 188 Description 207 Component Function Check 207		188	Special Repair Requirement	206
DTC Logic				
Diagnosis Procedure	•			
Component Function Check207				
DTC C1142 PRESS SEN CIRCUIT189 Diagnosis Procedure207	•		·	
	DTC C1142 PRESS SEN CIRCUIT	189	Diagnosis Procedure	207

Diagnosis Procedure168

Component Inspection	208	Diagnosis Procedure	244
Special Repair Requirement	208	ABS FUNCTION DOES NOT OPERATE	245
ABS WARNING LAMP	200		
Description		Diagnosis Procedure	245
Component Function Check		PEDAL VIBRATION OR ABS OPERATION	
Diagnosis Procedure		SOUND OCCURS	246
Special Repair Requirement		Diagnosis Procedure	
Special Repair Requirement	209	-	
BRAKE WARNING LAMP		VEHICLE JERKS DURING VDC/TCS/ABS	
Description		CONTROL	
Component Function Check		Diagnosis Procedure	247
Diagnosis Procedure		NORMAL OPERATING CONDITION	240
Special Repair Requirement	211		
VDC OFF INDICATOR LAMP	242	Description	248
		PRECAUTION	249
Description Component Function Check			
		PRECAUTIONS	249
Diagnosis Procedure		Precaution for Supplemental Restraint System	
Special Repair Requirement	213	(SRS) "AIR BAG" and "SEAT BELT PRE-TEN-	
SLIP INDICATOR LAMP	214	SIONER"	249
Description	214	Necessary for Steering Wheel Rotation After Bat	t-
Component Function Check		tery Disconnect	
Diagnosis Procedure		Precaution for Brake System	250
Special Repair Requirement		Precaution for Brake Control	250
ECU DIAGNOSIS INFORMATION	215	PREPARATION	251
ABS ACTUATOR AND ELECTRIC UNIT		PREPARATION	251
	045	Special Service Tool	
(CONTROL UNIT)		Commercial Service Tool	
Reference Value			
Fail-Safe		REMOVAL AND INSTALLATION	252
DTC No. Index	220	VD0 055 0V//T01/	
WIRING DIAGRAM	223	VDC OFF SWITCH	
		Removal and Installation	252
BRAKE CONTROL SYSTEM	223	WHEEL SENSORS	253
Wiring Diagram - Coupe	223	Removal and Installation	
Wiring Diagram - Sedan With VDC	232	Nemoval and installation	200
OVMETOM BLACKICOLO		SENSOR ROTOR	255
SYMPTOM DIAGNOSIS	241	Removal and Installation	255
VDC/TCS/ABS	241	ADO ACTUATOR AND ELECTRIC UNIT	
Symptom Table		ABS ACTUATOR AND ELECTRIC UNIT	
Symptom rable	271	(CONTROL UNIT)	
EXCESSIVE ABS FUNCTION OPERATIO	N	Exploded View	
FREQUENCY	242	Removal and Installation	256
Diagnosis Procedure	242	YAW RATE/SIDE/DECEL G SENSOR	252
		Removal and Installation	
UNEXPECTED PEDAL REACTION		Nemoval and installation	200
Diagnosis Procedure	243	STEERING ANGLE SENSOR	259
THE BRAKING DISTANCE IS LONG	244	Removal and Installation	259

DIAGNOSIS AND REPAIR WORKFLOW

DIAGNOSIS AND REPAIR WORKFLOW
< BASIC INSPECTION > [ABS]
BASIC INSPECTION
DIAGNOSIS AND REPAIR WORKFLOW
Work Flow
1. COLLECT INFORMATION FROM THE CUSTOMER
Get detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the diagnosis worksheet. Refer to BRC-8 , "Diagnostic Work Sheet".
>> GO TO 2.
2.PERFORM SELF DIAGNOSTIC RESULT
Perform self diagnostic result. Refer to <u>BRC-15</u> , "CONSULT Function (ABS)".
Are any DTCs displayed? YES >> Refer to BRC-45, "DTC No. Index".
NO >> GO TO 3.
3.CHECK SYMPTOM OPERATING CONDITION
Check that the symptom is a normal operating condition. Refer to <u>BRC-60</u> , " <u>Description</u> ".
Is the symptom a normal operating condition? YES >> Inspection End.
YES >> Inspection End. NO >> GO TO 4.
4. CHECK WARNING LAMPS OPERATION
Check warning lamps operation. • ABS warning lamp: Refer to <u>BRC-42, "Description"</u> . • brake warning lamp: Refer to <u>BRC-43, "Description"</u> . Is ON/OFF timing normal?
YES >> GO TO 5. NO >> Perform warning lamp diagnosis. Refer to <u>BRC-42</u> , "Component Function Check" (ABS warning lamp) or <u>BRC-43</u> , "Component Function Check" (brake warning lamp).
5.PERFORM DIAGNOSIS APPLICABLE TO THE SYMPTOM
Perform diagnosis applicable to the symptom. Refer to <u>BRC-54</u> , "Symptom Table".
00 70 0
>> GO TO 6. 6. FINAL CHECK
Perform self diagnostic result again, and check that the malfunction is repaired. After checking, erase the self
diagnosis memory. Refer to BRC-15, "CONSULT Function (ABS)".
>> Inspection End.
>> Inspection End.

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[ABS]

Diagnostic Work Sheet

INFOID:0000000006389120

Customer name MR/MS	Model & Year		VIN	
Engine #	Trans.		Mileage	
Incident Date	Manuf. Date		In Service Date	•
Symptoms	 □ Noise and vibration (from engine compartment) □ Noise and vibration (from axle) 	☐ Warning / Indicator activate		☐ Firm pedal operation Large stroke pedal operation
	☐ ABS does not work (Wheels lock when braking)	☐ ABS does not work (wheels slip 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 (□ Vehicle speed: 10 km/h (6 MPH) or lest □ Vehicle is stopped			
Applying brake conditions	□ Suddenly □ Gradually			
Other conditions	☐ Operation of electrical equipment☐ Shift change☐ Other descriptions			

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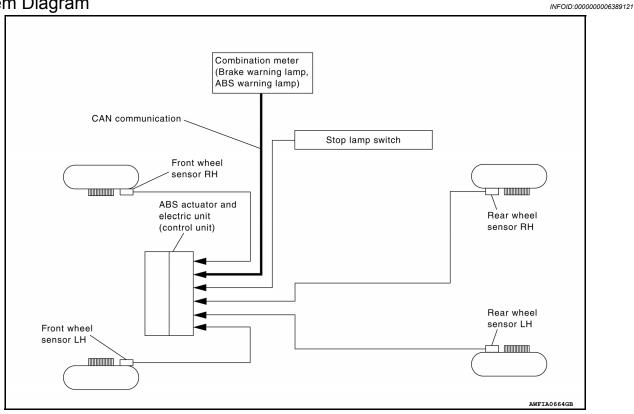
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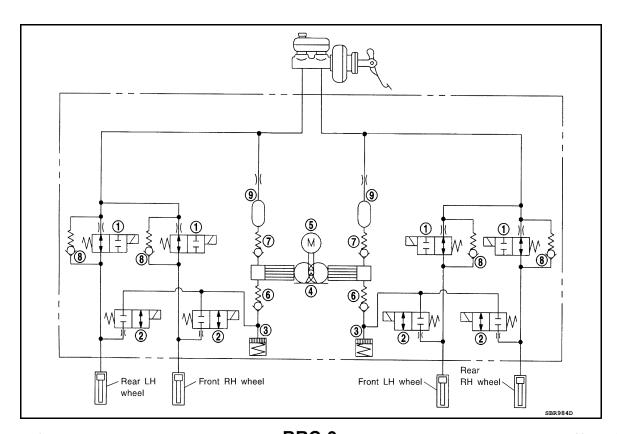
SYSTEM DESCRIPTION

ABS

System Diagram



Hydraulic Circuit Diagram



- 1. Inlet solenoid valve
- 4. Pump
- 7. Outlet valve

- 2. Outlet solenoid valve
- 5. Motor
- 8. Bypass check valve
- 3. Reservoir
- 6. Inlet valve
- 9. Damper

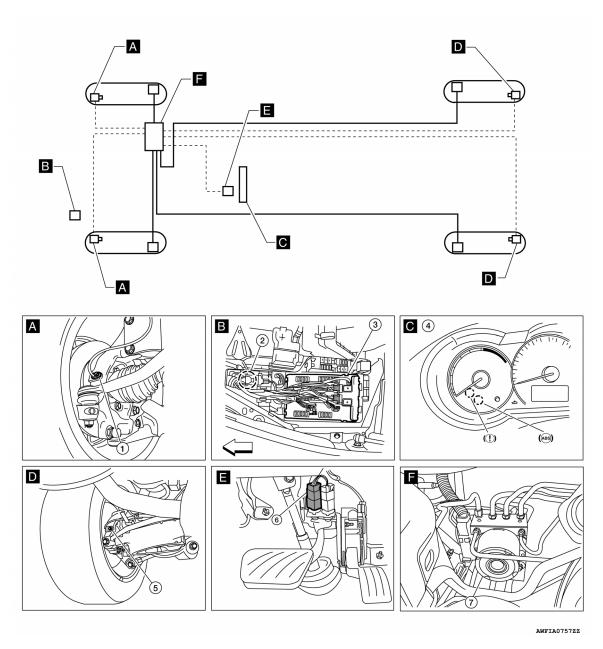
System Description

INFOID:0000000006920848

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

Component Parts Location

INFOID:0000000006389123



- Front wheel sensor LH E19
 Front wheel sensor RH E41
- 2. Stop lamp relay-1 E57
- 3. IPDM E/R

ABS

[ABS] < SYSTEM DESCRIPTION >

- Combination meter M24
- Rear wheel sensor LH C2 Rear wheel sensor RH C3
- 6. Stop lamp switch E38

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ABS actuator and electric unit (control unit) E26

Component Description

NFOID:0000000006389124	

Component parts		Reference	С
	Pump	BRC-27, "Description"	_
ADC patriotor and algebria rimit (agestral rimit)	Motor	BNO-27, Description	D
ABS actuator and electric unit (control unit)	Actuator relay (Main relay)	BRC-29, "Description"	
	Solenoid valve	BRC-34, "Description"	=
Wheel sensor		BRC-18, "Description"	Е
Stop lamp switch	BRC-39, "Description"		
ABS warning lamp		BRC-42, "Description"	DDC
Brake warning lamp		BRC-43, "Description"	BRC

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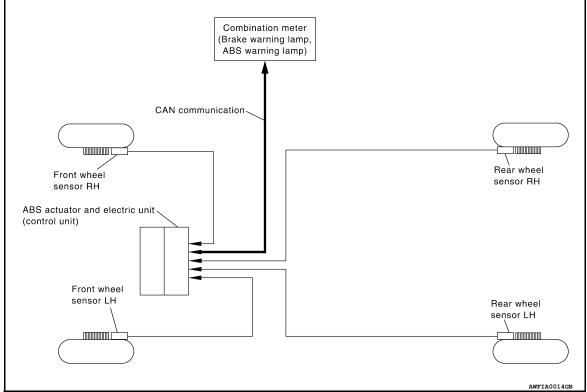
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[ABS]

EBD

System Diagram

INFOID:0000000006920837



System Description

INFOID:0000000006920838

Electric Brake force Distribution functions as follows:

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

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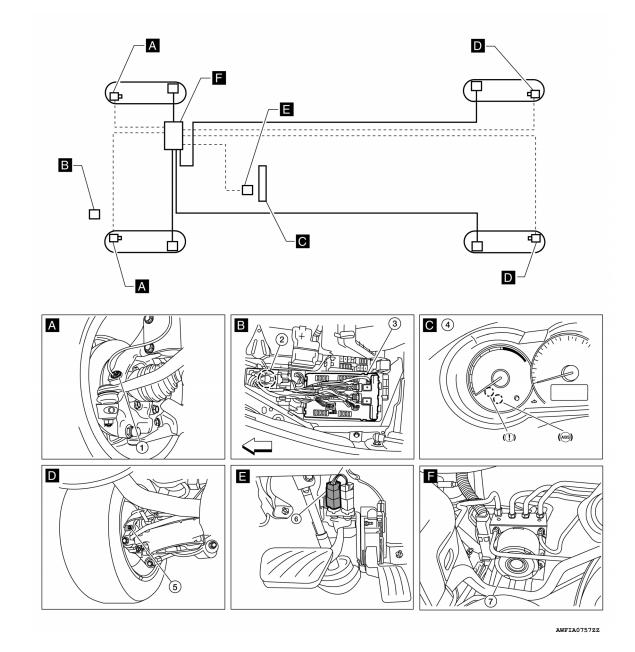
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Component Parts Location

INFOID:0000000006920839



- Front wheel sensor LH E19
 Front wheel sensor RH E41
- 4. Combination meter M24
- ABS actuator and electric unit (control unit) E26
- 2. Stop lamp relay-1 E57
- Rear wheel sensor LH C2Rear wheel sensor RH C3
- 3. IPDM E/R
- 6. Stop lamp switch E38

Component Description

INFOID:0000000006920849

Component parts		Reference
	Pump	BRC-27, "Description"
ABS actuator and electric unit (control unit)	Motor	DIC-27, Description
ADS actuator and electric unit (control unit)	Actuator relay (Main relay)	BRC-29, "Description"
	Solenoid valve	BRC-34, "Description"

Revision: June 2012 BRC-13 2011 Altima GCC

EBD

< SYSTEM DESCRIPTION >

[ABS]

Component parts	Reference
Wheel sensor	BRC-18, "Description"
Stop lamp switch	BRC-39, "Description"
ABS warning lamp	BRC-42, "Description"
Brake warning lamp	BRC-43, "Description"

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

[ABS] < SYSTEM DESCRIPTION >

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

CONSULT Function (ABS)

INFOID:0000000006389125

FUNCTION

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

Diagnostic test mode	Function
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT.
Self-diagnostic results	Self-diagnostic results can be read and erased quickly.
Data monitor	Input/Output data in the ABS actuator and electric unit (control unit) can be read.
Active test	Diagnostic test mode is which CONSULT drives some actuators apart from the ABS actuator and electric unit (control unit) and also shifts some parameters in a specified range.
ECU part number	ABS actuator and electric unit (control unit) part number can be read.
Function test	Performed by CONSULT instead of a technician to determine whether each system is "OK" or "NG".
CAN diagnostic support monitor	The results of transmit/receive diagnosis of CAN communication can be read.

SELF DIAGNOSTIC RESULT

Operation Procedure

- Turn ignition switch OFF.
- 2. Connect CONSULT to data link connector.
- 3. Turn ignition switch ON.
- Start engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute.
- After stopping vehicle, with the engine running, touch "ABS", "SELF-DIAG RESULTS" in order on the CONSULT screen.
- The self-diagnostic results are displayed.
 - Check ABS warning lamp. If "NO FAILURE" is displayed. Refer to BRC-42, "Component Function Check".
- 7. Perform the appropriate inspection from display item list, and repair or replace the malfunctioning component. Refer to "Display Item List".
- 8. Start engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute.

CAUTION:

When the wheel sensor malfunctions, after inspecting the wheel sensor system, the ABS warning lamp and brake warning lamp will not turn OFF even when the system is normal unless the vehicle is driven at approximately 30 km/h (19 MPH) or more for approximately 1 minute.

Erase Memory

- Turn ignition switch OFF.
- Start engine and touch "ABS", "SELF-DIAG RESULTS", "ERASE MEMORY" in order on the CONSULT screen to erase the diagnostic memory.

If "ABS" is not indicated, go to GI-50, "Description".

CAUTION:

If the diagnostic memory is not erased, re-perform the operation from step 4.

- Perform self-diagnosis again, and make sure that diagnostic memory is erased.
- 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 and brake warning lamp turn OFF.

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).

Display Item List

Refer to BRC-45, "DTC No. Index".

BRC-15 2011 Altima GCC Revision: June 2012

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

< SYSTEM DESCRIPTION > [ABS]

DATA MONITOR

Display Item List

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.

ltomo	Data	monitor item sele	ection	
Item (Unit)	ECU INPUT SIGNALS	MAIN SIG- NALS	SELECTION FROM MENU	Remarks
FR LH SENSOR (km/h)	×	×	×	Wheel speed calculated by front LH wheel sensor signal is displayed.
FR RH SENSOR (km/h)	×	×	×	Wheel speed calculated by front RH wheel sensor signal is displayed.
RR LH SENSOR (km/h)	×	×	×	Wheel speed calculated by rear LH wheel sensor signal is displayed.
RR RH SENSOR (km/h)	×	×	×	Wheel speed calculated by rear RH wheel sensor signal is displayed.
STOP LAMP SW (ON/OFF)	×	×	×	Stop lamp switch (ON/OFF) status is displayed.
BATTERY VOLT (V)	×	×	×	Voltage supplied to ABS actuator and electric unit (control unit) 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.
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.

x: Applicable

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

ACTIVE TEST

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 and brake warning lamp are ON.
- ABS warning lamp and brake warning lamp are ON during active test.

Operation Procedure

^{-:} Not applicable

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

< SYSTEM DESCRIPTION >

NOTE:

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

Solenoid Valve

NOTE:

The example shown is for front right wheel. The procedure for the other wheels is the same as given below.

- When performing an active test of the ABS function, select the "MAIN SIGNALS" for each test item. In addition, when performing an active test of the TCS function, select the item menu 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 KEEP" and confirm that solenoid valves (IN, OUT) operate as shown in the table below.

Operation	ABS solenoid valve			ABS solenoid valve (ACT)		
(Note)	UP	KEEP	DOWN	UP	ACT UP	ACT KEEP
FR RH IN SOL	OFF	ON	ON	OFF	OFF	OFF
FR RH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF

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

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

ABS Motor

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 (Note)	ON	ON

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

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DTC/CIRCUIT DIAGNOSIS

C1101, C1102, C1103, C1104 WHEEL SENSOR-1

Description INFOID:0000000006389126

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.	Harness or connectorWheel sensor
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 DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
- Perform self diagnostic result.

Is DTC C1101, C1102, C1103 or C1104 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-18, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389128

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

CALITION

Do not check between wheel sensor terminals.

1.CONNECTOR INSPECTION

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

Is the inspection result normal?

YES >> GO TO 2

NO >> Repair or replace as necessary.

2. CHECK WHEEL SENSOR OUTPUT SIGNAL

- 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.

 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:

C1101, C1102, C1103, C1104 WHEEL SENSOR-1

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

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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?

>> GO TO 3

NO >> Replace wheel sensor. Refer to BRC-64, "Removal and Installation".

3. CHECK TIRE

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4

NO >> • Adjust air pressure, or replace tire.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

4.CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to FAX-6, "Inspection" (front) or RAX-6, "On-vehicle Service" (rear). Is the inspection result normal?

YES >> GO TO 5

>> Repair or replace as necessary. Refer to FAX-8, "Removal and Installation" (front) or RAX-7 NO "Removal and Installation" (rear).

CHECK WIRING HARNESS FOR SHORT CIRCUIT

Check continuity between wheel sensor connector terminals and ground.

Wheel sensor connector terminal	Ground	Continuity
1		No
2	_	No

Is the inspection result normal?

YES >> GO TO 6

NO >> Repair the circuit.

O.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 ele	ctric unit (control unit)	Wheel sensor		Continuity
vviileei sensoi	Connector	Terminal	Connector	Terminal	
Cront III		16	F40	1	
Front LH		5	E19	2	
Front RH		9	E41	1	
FIOIIL KIT	E26	10	E 4 I	2	Yes
Rear LH	E20	6	C2	1	
Real LII	17 8 19	17	02	2	
Rear RH		8	С3	1	
Real RD		19		2	

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation".

>> Repair the circuit. NO

Component Inspection

INFOID:0000000006389129

1.CHECK DATA MONITOR

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C1101, C1102, C1103, C1104 WHEEL SENSOR-1

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

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 BRC-18, "Diagnosis Procedure".

C1105, C1106, C1107, C1108 WHEEL SENSOR-2

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

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C1105, C1106, C1107, C1108 WHEEL SENSOR-2

Description INFOID:0000000006389130

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:0000000006389131

DTC DETECTION LOGIC

DTC	Display	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.	
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.	 Harness or connector Wheel sensor
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 DIAGNOSTIC RESULT

With CONSULT.

- Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
- Perform self diagnostic result.

Is DTC C1105, C1106, C1107 or C1108 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-21, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389132

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

Do not check between wheel sensor terminals.

1.CONNECTOR INSPECTION

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

Is the inspection result normal?

YES >> GO TO 2

NO >> Repair or replace as necessary.

2.CHECK WHEEL SENSOR OUTPUT SIGNAL

- 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:

BRC-21 Revision: June 2012 2011 Altima GCC **BRC**

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C1105, C1106, C1107, C1108 WHEEL SENSOR-2

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

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 wheel sensor. Refer to <u>BRC-64, "Removal and Installation"</u>.

3.CHECK TIRE

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4

NO >> • Adjust air pressure, or replace tire.

• Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

f 4 . CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to <u>FAX-6</u>, "<u>Inspection</u>" (front) or <u>RAX-6</u>, "<u>On-vehicle Service</u>" (rear). <u>Is the inspection result normal?</u>

YES >> GO TO 5

NO >> Repair or replace as necessary. Refer to <u>FAX-8</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

Check continuity between wheel sensor connector terminals and ground.

Wheel sensor connector terminal	Ground	Continuity	
1		No	
2	_	No	

Is the inspection result normal?

YES >> GO TO 6

NO >> Repair the circuit.

O.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 ele	ABS actuator and electric unit (control unit)		Wheel sensor	
vvneei sensor	Connector	Terminal	Connector	Terminal	
Front LH		16	E19	1	
FIONL LH		5	— E19	2	
Front RH		9	E41	1	Yes
FIONL KIT	E26	10		2	
Rear LH		6	C2	1	
iteai Lii		17	02	2	
Rear RH		8	C3	1	
		19	03	2	

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation".

NO >> Repair the circuit.

C1105, C1106, C1107, C1108 WHEEL SENSOR-2

< DTC/CIRCUIT DIAGNOSIS >

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Component Inspection

INFOID:0000000006389133

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 BRC-21, "Diagnosis Procedure".

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DTC C1109 BATTERY VOLTAGE [ABNORMAL]

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

DTC C1109 BATTERY VOLTAGE [ABNORMAL]

Description INFOID:000000006389134

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

CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC C1109 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-24, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389136

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

1. CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- Reconnect connector and perform self-diagnosis. Refer to <u>BRC-15</u>, "CONSULT Function (ABS)".

Is DTC 1109 detected?

YES >> GO TO 2

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

$2. {\sf CHECK}$ 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.
- 3. Turn ignition switch ON.
- Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 18 and ground.

ABS actuator and electric unit (control unit)		Ground	Condition	Voltage
Connector	Terminal			(Approx)
E26	E26 18 —		Ignition switch ON	Battery voltage
E20	18	_	Ignition switch OFF	0V

Turn ignition switch OFF.

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

DTC C1109 BATTERY VOLTAGE [ABNORMAL]

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

ABS actuator and electric unit (control unit)		Ground	Continuity	
Connector	Terminal	Ground	Continuity	
E26	1		Yes	
E20	4	_	165	

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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.

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DTC C1110 CONTROL FAILURE

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

DTC C1110 CONTROL FAILURE

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)

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- 2. Perform self diagnostic result.

Is DTC C1110 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-26, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389138

 $1. \\ \text{REPLACE ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)}$

CAUTION:

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

>> Replace ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation".

DTC C1111 PUMP MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

DTC C1111 PUMP MOTOR

Description INFOID:0000000006389139

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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:0000000006389140

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1111	PUMP MOTOR	During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for actuator motor relay is open.	Harness or connector ABS actuator and electric unit
Omn	T GIVII WOTOR	During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground.	(control unit)

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DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

With CONSULT.

- Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC C1111 detected?

YFS >> Proceed to diagnosis procedure. Refer to BRC-27, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389141

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

1.CONNECTOR INSPECTION

- 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.
- Reconnect connector and perform self-diagnosis. Refer to BRC-15, "CONSULT Function (ABS)".

Is DTC C1111 detected?

YES >> GO TO 2

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

$oldsymbol{2}.$ CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector. 2.
- Check voltage between the ABS actuator and electric unit (control unit) connector E26 terminal 2 and ground.

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DTC C1111 PUMP MOTOR

[ABS]

ABS actuator and ele	ectric unit (control unit)) Ground	Voltage
Connector	Terminal	Giodila	(Approx)
E26	2	_	Battery voltage

Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

$3.\,$ check abs actuator and electric unit (control unit) ground circuit

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

ABS actuator and electric unit (control unit)		Cround	Continuity
Connector	Terminal	Ground	Continuity
E26	1		Yes
LZU	4	_	165

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installa-

>> Repair or replace malfunctioning components. NO

Component Inspection

INFOID:0000000006389142

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 (Note)	ON	ON

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-27, "Diagnosis Procedure".

DTC C1114 MAIN RELAY

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

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DTC C1114 MAIN RELAY

Description INFOID:0000000006389143

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

DTC Logic INFOID:0000000006389144

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1114 MAIN RELAY	During the actuator relay operating with OFF, when the actuator relay turns ON, or when the control line for the relay is shorted to the ground.	Harness or connector ABS actuator and electric unit	
01114	WAIN INCEAL	During the actuator relay operating with ON, when the actuator relay turns ON, or when the control line for the relay is open.	(control unit)

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC C1114 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-29, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

1. CONNECTOR INSPECTION

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector. 2.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- Reconnect connector and perform self-diagnosis. Refer to BRC-15, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> Inspection End.

NO >> GO TO 2

2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

ABS actuator and ele	ectric unit (control unit)	Ground	Voltage
Connector	Terminal		(Approx)
E26	3	_	Battery voltage

Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

BRC-29 Revision: June 2012 2011 Altima GCC **BRC**

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DTC C1114 MAIN RELAY

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

${f 3.}$ CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

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

ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal	Giouna	Continuity
E26	1		Yes
E20	4	_	ies

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation"

NO >> Repair or replace malfunctioning components.

Component Inspection

INFOID:0000000006389146

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 (Note)	ON	ON

NOTE:

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-27, "Diagnosis Procedure".

DTC C1115 ABS SENSOR [ABNORMAL SIGNAL]

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

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DTC C1115 ABS SENSOR [ABNORMAL SIGNAL]

Description INFOID:0000000006389147

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:0000000006389148

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 DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
- Perform self diagnostic result.

Is DTC C1115 detected?

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

NO >> Inspection End.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

CAUTION:

Do not check between wheel sensor terminals.

1.CONNECTOR INSPECTION

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

Is the inspection result normal?

YES >> GO TO 2

NO >> Repair or replace as necessary.

2.CHECK WHEEL SENSOR OUTPUT SIGNAL

- 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?

YFS >> GO TO 3

NO >> Replace wheel sensor. Refer to <u>BRC-64</u>, "Removal and Installation".

3.CHECK TIRE

BRC-31 Revision: June 2012 2011 Altima GCC **BRC**

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DTC C1115 ABS SENSOR [ABNORMAL SIGNAL]

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4

NO >> • Adjust air pressure, or replace tire.

• Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

4. CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to <u>FAX-6</u>, "<u>Inspection</u>" (front) or <u>RAX-6</u>, "<u>On-vehicle Service</u>" (rear). Is the inspection result normal?

YES >> GO TO 5

NO >> Repair or replace as necessary. Refer to <u>FAX-8</u>, "<u>Removal and Installation</u>" (front) or <u>RAX-7</u>, "<u>Removal and Installation</u>" (rear).

5. CHECK WIRING HARNESS FOR SHORT CIRCUIT

Check continuity between wheel sensor connector terminals and ground.

Wheel sensor connector terminal	Ground	Continuity
1		No
2	_	NO

Is the inspection result normal?

YES >> GO TO 6

NO >> Repair the circuit.

O.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
Wileel SellSol	Connector	Terminal	Connector	Terminal	
Front LH		16	F40	1	
FIOIIL LIT		5	E19	2	
Front RH		9	E41	1	Yes
FIONL KIT	E26	10		2	
Rear LH	E20	6	C2	1	
	17	02	2		
Rear RH	oar DH	8	C3	1	
Near INT		19	C 3	2	

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-67, "Removal and Installation".</u>

NO >> Repair the circuit.

Component Inspection

INFOID:0000000006389150

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)
--------------	------------------------------

DTC C1115 ABS SENSOR [ABNORMAL SIGNAL]

< DTC/CIRCUIT DIAGNOSIS >	[ABS]

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	>>	nspection	End.
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NO >> Go to diagnosis procedure. Refer to <u>BRC-31</u>. "<u>Diagnosis Procedure</u>".

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[ABS]

C1120, C1122, C1124, C1126 IN ABS SOL

Description INFOID:000000006389151

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 DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- 2. Perform self diagnostic result.

Is DTC C1120, C1122, C1124 or C1126 detected?

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

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389153

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

1. CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- Reconnect connector and perform self-diagnosis. Refer to <u>BRC-15</u>, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> Inspection End.

NO >> GO TO 2

2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

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

Is the inspection result normal?

C1120, C1122, C1124, C1126 IN ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

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YES >> GO TO 3

NO >> • Repair or replace malfunctioning components.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

${f 3}.$ CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

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

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

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation".

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

NO >> • Repair or replace malfunctioning components.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

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.

NOTE:

The example below is for front right wheel. The procedure for the other wheels is the same as given below.

Operation (Note)	ABS solenoid valve		
Operation (Note)	UP	KEEP	DOWN
FR RH IN SOL	OFF	ON	ON
FR RH OUT SOL	OFF	OFF	ON*

^{*:} ON for 1 to 2 seconds after the touch, and then OFF.

NOTE:

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

Is the inspection result normal?

YES >> Inspection End.

>> Go to diagnosis procedure. Refer to BRC-34, "Diagnosis Procedure". NO

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[ABS]

C1121, C1123, C1125, C1127 OUT ABS SOL

Description INFOID:0000000006389155

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.	ABS actuator and electric unit (control unit)
C1123	FR RH OUT ABS SOL	When the control unit detects a malfunction in the front RH outlet solenoid circuit.	
C1125	RR LH OUT ABS SOL	When the control unit detects a malfunction in the rear LH outlet solenoid circuit.	
C1127	RR RH OUT ABS SOL	When the control unit detects a malfunction in the rear RH outlet solenoid circuit.	

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- 2. Perform self diagnostic result.

Is DTC C1121, C1123, C1125 or C1127 detected?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-36, "DTC Logic"</u>.

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389157

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

1. CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- Reconnect connector and perform self-diagnosis. Refer to <u>BRC-15, "CONSULT Function (ABS)"</u>.

Is the inspection result normal?

YES >> Inspection End.

NO >> GO TO 2

2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

ABS actuator and ele	ectric unit (control unit)	Ground	Voltage
Connector Terminal		Giodila	(Approx)
E26	3	_	Battery voltage

Is the inspection result normal?

C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

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YES >> GO TO 3

NO >> • Repair or replace malfunctioning components.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

${f 3}.$ CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

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

ABS actuator and ele	ectric unit (control unit)	Ground	Continuity
Connector	Terminal	Giouna	
E26	1		Yes
⊏20	4	_	res

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation".

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

NO >> • Repair or replace malfunctioning components.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

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.

NOTE:

The example below is for front right wheel. The procedure for the other wheels is the same as given

Operation (Note)	ABS solenoid valve		
Operation (Note)	UP	KEEP	DOWN
FR RH IN SOL	OFF	ON	ON
FR RH OUT SOL	OFF	OFF	ON*

^{*:} ON for 1 to 2 seconds after the touch, and then OFF.

NOTE:

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

Is the inspection result normal?

YES >> Inspection End.

>> Go to diagnosis procedure. Refer to BRC-36, "Diagnosis Procedure". NO

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U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

U1000 CAN COMM CIRCUIT

Description INFOID:000000006389155

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	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 system malfunction

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC U1000 detected?

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

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389161

1.CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- Reconnect connector and perform self diagnostic result. Refer to BRC-15, "CONSULT Function (ABS)".

Is DTC U1000 detected?

YES >> Refer to LAN-15, "Trouble Diagnosis Flow Chart".

NO >> Inspection End.

STOP LAMP SWITCH

< DTC/CIRCUIT DIAGNOSIS > [ABS]

STOP LAMP SWITCH

The stop lamp switch transmits the stop lamp switch signal (ON/OFF) to the ABS actuator and electric unit (control unit) either directly (with M/T) or through the stop lamp relay (with CVT).

Component Function Check

1.CHECK DATA MONITOR

On "DATA MONITOR", select "STOP LAMP SW" and check the stop lamp switch signal.

Condition	STOP LAMP SW (DATA MONITOR)	
Brake pedal depressed.	On	
Brake pedal released.	Off	

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-39, "Diagnosis Procedure".

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

1. CHECK STOP LAMP SWITCH

Perform the stop lamp switch component inspection. Refer to <u>BRC-41</u>, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES (with CVT)>>GO TO 2

YES (with M/T)>>GO TO 7

NO >> Replace stop lamp switch.

2.CHECK STOP LAMP RELAY-1

Perform the stop lamp relay-1 component inspection. Refer to <u>BRC-41</u>, "Component Inspection (Stop Lamp Relay)".

Is the inspection result normal?

YES >> GO TO 3

NO >> Replace stop lamp relay-1.

3.CHECK STOP LAMP SWITCH SIGNAL CIRCUIT

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

ABS actuator and electric unit (control unit)		Ground Condition		Voltage
Connector	Terminal			(Approx.)
E26	20		Brake pedal depressed	Battery voltage
L20 20	_	Brake pedal released	0V	

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-67</u>, "Removal and Installation".

Revision: June 2012 BRC-39 2011 Altima GCC

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STOP LAMP SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

NO >> GO TO 4

f 4.CHECK STOP LAMP RELAY-1 COIL CIRCUIT

- 1. Disconnect stop lamp relay-1 connector.
- 2. Check voltage between stop lamp relay-1 connector E57 terminal 1 and ground.

Stop lamp relay-1		Ground	Condition	Voltage	
Connector	Terminal	Ground	Condition	(Approx.)	
E57 1			Brake pedal depressed	Battery voltage	
LJI	1	_	Brake pedal released	0V	

Is the inspection result normal?

YES >> GO TO 5

NO >> Repair circuit between stop lamp switch and stop lamp relay or circuit between fuse block J/B and stop lamp switch.

5. CHECK STOP LAMP RELAY-1 SWITCH INPUT CIRCUIT

Check voltage between stop lamp relay-1 connector E57 terminal 5 and ground.

Stop lamp relay-1		Ground	Voltage	
Connector	Terminal	Giodila	(Approx.)	
E57	5	_	Battery voltage	

Is the inspection result normal?

YES >> GO TO 6

NO >> Repair circuit between fuse block J/B and stop lamp relay.

6.CHECK STOP LAMP RELAY-1 GROUND CIRCUIT

Check continuity between stop lamp relay-1 connector E57 terminal 2 and ground.

Stop lam	p relay-1	Ground	Continuity	
Connector	Terminal	Giodila	Continuity	
E57	2	_	Yes	

Is the inspection result normal?

YES >> Repair circuit between stop lamp relay and ABS actuator and electric unit (control unit).

NO >> Repair stop lamp relay ground circuit.

7.CHECK STOP LAMP SWITCH SIGNAL CIRCUIT

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

ABS actuator and electric unit (control unit)		Ground	Condition	Voltage (Approx.)	
Connector	Terminal			(Αρρίολ.)	
E26	20		Brake pedal depressed	Battery voltage	
L20	20		Brake pedal released	0V	

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-67</u>, "<u>Removal and Installation</u>".

NO >> GO TO 8

8. CHECK STOP LAMP SWITCH INPUT CIRCUIT

- 1. Disconnect stop lamp switch connector.
- 2. Check voltage between stop lamp switch connector E38 terminal 1 and ground.

[ABS]

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Stop lamp switch		Ground	Voltage	
Connector	Terminal	Giodila	(Approx.)	
E38	1	_	Battery voltage	

Is the inspection result normal?

YES >> Repair circuit between stop lamp switch and ABS actuator and electric unit (control unit).

NO >> Repair circuit between fuse block J/B and stop lamp switch.

Component Inspection (Stop Lamp Switch)

1. CHECK STOP LAMP SWITCH

- Turn ignition switch OFF.
- 2. Disconnect stop lamp switch connector.
- Check continuity between stop lamp switch terminals.

Stop lamp switch terminals	Condition	Continuity
1 – 2	Brake pedal depressed.	Yes
1 - 2	Brake pedal released.	No

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace stop lamp switch.

Component Inspection (Stop Lamp Relay)

1. CHECK STOP LAMP RELAY

- 1. Turn ignition switch OFF.
- Disconnect stop lamp relay connector.
- Apply battery voltage to stop lamp relay terminal 1 and ground to 3. terminal 2.
- Check continuity between stop lamp relay terminals 3 and 5.

Stop lamp relay terminals	Condition	Continuity
3 – 5	Battery voltage applied to terminal 1 and ground to terminal 2	Yes
	Voltage and ground removed	No

ŎŎ 3 5 2 (1) 1 SCIA1245E

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace stop lamp relay. **BRC**

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[ABS]

ABS WARNING LAMP

Description INFOID:0000000006389162

×: 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:0000000006389163

1. CHECK ABS WARNING LAMP OPERATION

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

Is the inspection result normal?

YES >> Inspection End

NO >> Go to diagnosis procedure. Refer to BRC-42, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006389164

1. CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to BRC-15, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 2

>> Check items displayed by self-diagnosis.

2. CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-4, "Work Flow". Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installa-
- NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

BRAKE WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

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BRAKE WARNING LAMP

Description INFOID:0000000006389165

×: 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:0000000006389166

1.BRAKE WARNING LAMP OPERATION CHECK 1

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

Is the inspection result normal?

YES >> GO TO 2

NO >> Go to diagnosis procedure. Refer to BRC-43, "Diagnosis Procedure".

2.BRAKE WARNING LAMP OPERATION CHECK 2

Check that the brake warning lamp in the combination meter turns ON/OFF correctly when operating the parking brake lever (M/T models) or the parking brake pedal (CVT models).

Is the inspection result normal?

YES >> Inspection End

NO >> Check parking brake switch. Refer to BR-13, "Inspection and Adjustment".

Diagnosis Procedure

INFOID:0000000006389167

1.CHECK PARKING BRAKE SWITCH

Check that the brake warning lamp in the combination meter turns ON/OFF correctly when operating the parking brake lever (M/T models) or the parking brake pedal (CVT models).

Is the inspection result normal?

YES >> GO TO 2

NO >> Check parking brake switch. Refer to BR-13, "Inspection and Adjustment".

2. CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <u>BRC-15</u>, "CONSULT 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-4, "Work Flow".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation"

NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

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Revision: June 2012 BRC-43 2011 Altima GCC

< ECU DIAGNOSIS INFORMATION >

[ABS]

ECU DIAGNOSIS INFORMATION

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.

		Data mo	nitor
Monitor item	Display content	Condition	Reference value in normal operation
FR LH SENSOR		0 [km/h]	Vehicle stopped
FR RH SENSOR RR LH SENSOR RR RH SENSOR	Wheel speed	Nearly matches the speed meter display (± 10 % or less)	Vehicle running (Note 1)
STOP LAMP SW	Brake pedal operation	When brake pedal is depressed	ON
STOI LAWII GW	Brake pedal operation	When brake pedal is not depressed	OFF
BATTERY VOLT	Battery voltage supplied to the ABS actuator and electric unit (control unit)	Ignition switch ON	10 – 16 V
SLCT LVR POSI	CVT shift position	P position R position N position D position	P R N D
PARK BRAKE SW	Dading broke quiteb	Parking brake switch is active	ON
PARN BRANE SW	Parking brake switch	Parking brake switch is inactive	OFF
FR LH IN SOL FR LH OUT SOL FR RH IN SOL FR RH OUT SOL RR LH IN SOL	Operation status of all solenoid valve	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	ON
RR LH OUT SOL RR RH IN SOL RR RH OUT SOL		When the actuator (sole- noid valve) is not active and actuator relay is ac- tive (ignition switch ON)	OFF
		When the motor relay and motor are operating	ON
MOTOR RELAY	Motor and motor relay operation	When the motor relay and motor are not operating	OFF
ACTUATOR RLY	Actuator relay eneration	When the actuator relay is operating	ON
(Note 2)	Actuator relay operation	When the actuator relay is not operating	OFF
ARS MARKITAME	ABS warning lamp	When ABS warning lamp is ON	ON
ABS WARN LAMP	(Note 3)	When ABS warning lamp is OFF	OFF
ADS SIGNAL	ABS operation	ABS is active	ON
ABS SIGNAL	ADS operation	ABS is inactive	OFF

< ECU DIAGNOSIS INFORMATION >

[ABS]

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		Data mo	onitor
Monitor item	Display content	Condition	Reference value in normal operation
ABS FAIL SIG	APS fail agfa signal	In ABS fail-safe	ON
ADS FAIL SIG	FAIL SIG ABS fail-safe signal		OFF

Note 1: Confirm tire pressure is normal.

Note 2: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Note 3: On and off timing for warning lamp and indicator lamp.Refer to BRC-15, "CONSULT Function (ABS)".

Fail-Safe

ABS SYSTEM

In case of electrical malfunctions with ABS, the ABS warning lamp will turn on. Simultaneously, the ABS switches to the fail-safe mode.

 In case of a malfunction with ABS, the result of a fail-safe mode will be normal braking without the aid of ABS.

NOTE:

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

CAUTION:

If the Fail-Safe function is activated, then perform self-diagnosis for ABS control system.

DTC No. Index

CAUTION:

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

Display item	Malfunction detecting condition	Check item
RR RH SENSOR-1 [C1101]*1	Circuit of rear RH wheel sensor is open. Or when the sensor power voltage is outside the standard.	
RR LH SENSOR-1 [C1102] ^{*1}	Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard.	BRC-18, "Diagno- sis Procedure"
FR RH SENSOR-1 [C1103]*1	Circuit of front RH wheel sensor is open. Or when the sensor power voltage is outside the standard.	(Note 1)
FR LH SENSOR-1 [C1104] ^{*1}	Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard.	
RR RH SENSOR-2 [C1105] ^{*1}	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.	
RR LH SENSOR-2 [C1106] ^{*1}	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.	BRC-21, "Diagnosis Procedure"
FR RH SENSOR-2 [C1107] ^{*1}	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.	(Note 1)
FR LH SENSOR- 2 [C1108] ^{*1}	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.	
BATTERY VOLTAGE [ABNORMAL] [C1109]	When the ABS actuator and electric unit (control unit) power supply voltage is lower than normal.	BRC-24, "Diagnosis Procedure"
CONTROLLER FAILURE [C1110]*2	When there is an internal malfunction in the ABS actuator and electric unit (control unit).	BRC-26, "Diagnosis Procedure"

Revision: June 2012 BRC-45 2011 Altima GCC

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< ECU DIAGNOSIS INFORMATION >

[ABS]

Display item	Malfunction detecting condition	Check item
PUMP MOTOR	During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for actuator motor relay is open.	BRC-27, "Diagno-
[C1111]	During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground.	sis Procedure"
MAIN RELAY	During the actuator relay operating with OFF, when the actuator relay turns ON. Or when the control line for the relay is shorted to the ground.	BRC-29, "Diagno-
[C1114]	During the actuator relay operating with ON, when the actuator relay turns OFF, or when the control line for the relay is open.	sis Procedure"
ABS SENSOR [ABNORMAL SIGNAL] [C1115]	When wheel sensor input signal is malfunctioning.	BRC-31. "Diagnosis Procedure" (Note 1)
FR LH IN ABS SOL [C1120]	When the control unit detects a malfunction in the front left inlet solenoid circuit.	BRC-34, "Diagnosis Procedure"
FR LH OUT ABS SOL [C1121]	When the control unit detects a malfunction in the front left outlet solenoid circuit.	BRC-36, "Diagnosis Procedure"
FR RH IN ABS SOL [C1122]	When the control unit detects a malfunction in the front right inlet solenoid circuit.	BRC-34, "Diagno- sis Procedure"
FR RH OUT ABS SOL [C1123]	When the control unit detects a malfunction in the front right outlet solenoid circuit.	BRC-36, "Diagno- sis Procedure"
RR LH IN ABS SOL [C1124]	When the control unit detects a malfunction in the rear left inlet solenoid circuit.	BRC-34, "Diagnosis Procedure"
RR LH OUT ABS SOL [C1125]	When the control unit detects a malfunction in the rear left outlet solenoid circuit.	BRC-36, "Diagnosis Procedure"
RR RH IN ABS SOL [C1126]	When the control unit detects a malfunction in the rear right inlet solenoid circuit.	BRC-34, "Diagnosis Procedure"
RR RH OUT ABS SOL [C1127]	When the control unit detects a malfunction in the rear right outlet solenoid circuit.	BRC-36, "Diagno- sis Procedure"
CAN COMM CIRCUIT [U1000]*3	When there is a malfunction in the CAN communication circuit.	BRC-38, "Diagno- sis Procedure"

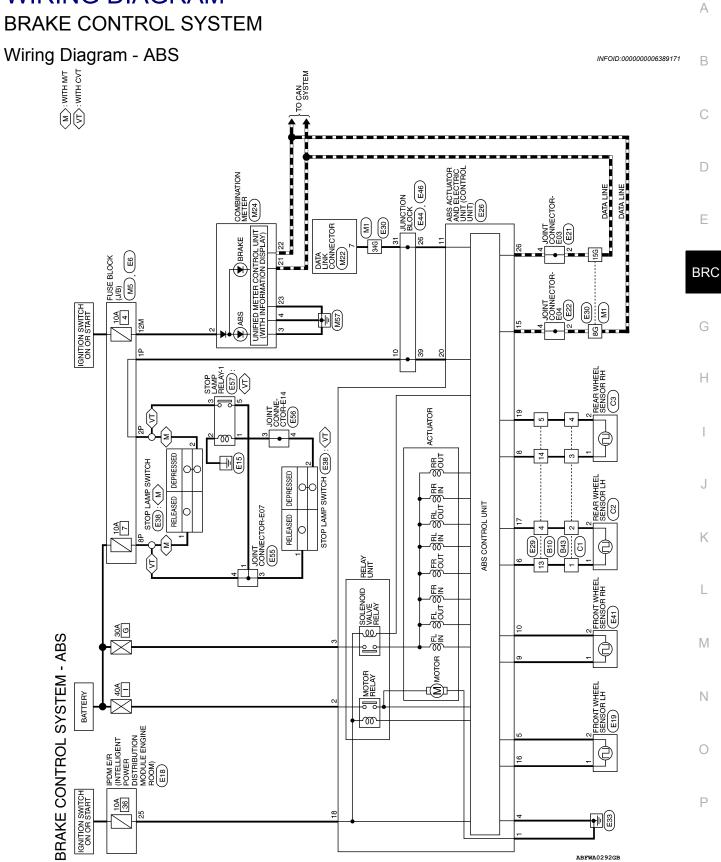
^{*1:} Be sure to confirm the ABS warning lamp illuminates when the ignition switch is turned ON after repairing the shorted sensor circuit, but the lamp turns off when driving the vehicle over 30 km/h (19 MPH) for approximately 1 minute in accordance with SELF-DIAGNOSIS PROCEDURE.

^{*2:} When "CONTROLLER FAILURE" is displayed, check to see if the ABS warning lamp is burned out, and check the circuit between the ABS warning lamp and ABS actuator and electric unit (control unit) for open or short. Then, check the ABS actuator and electric unit (control unit) and circuit.

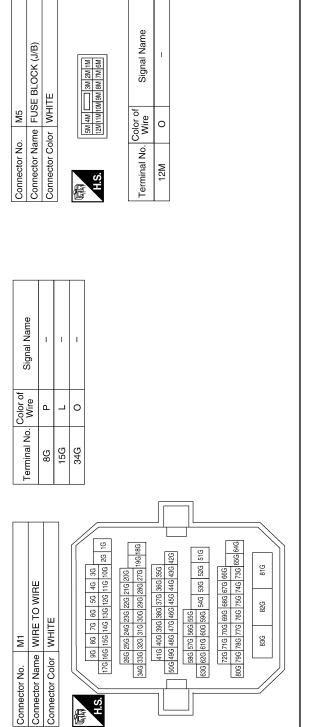
^{*3:} When malfunctions are detected in several systems, including CAN communication circuit [U1000], troubleshoot CAN communication circuit first. Refer to <u>LAN-6, "System Description"</u>.

[ABS] < WIRING DIAGRAM >

WIRING DIAGRAM



BRAKE CONTROL SYSTEM CONNECTORS - ABS



	FUSE BLOCK (J/B)	WHITE	7P 6P 5P 4P 7 2P 1P 3P 2P 1P 3P 5P 4P 3P 5P	Signal Name	-	– (WITH MT)	– (WITH CVT)
. E6			7P 6P 5P 4P	Color of Wire	SB	ГG	\
Connector No.	Connector Name	Connector Color	所 H.S.	Terminal No.	1P	2P	2P
			16 17 18 19 20 36 37 38 39 40				

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			15 16 35 36							
4	COMBINATION METER	WHITE	5 6 7 8 9 10 11 12 13 14 1 25 26 27 28 29 30 31 32 33 34 3	Signal Name	NSI	GND (POWER)	GND (ILL)	CAN-H	CAN-L	GND (CIRCUIT)
MIZ4			2 3 4 22 23 24 :	Color of Wire	0	В	В	٦	Ь	В
Collinector No.	Connector Name	Connector Color	H.S.	Terminal No.	2	3	4	21	22	23

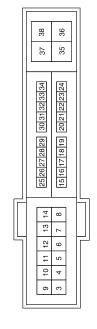
Connector Name DATA LINK CONNECTOR Connector Color WHITE	ı
MAZA MAZA	0
Connector Name Connector Color H.S. Terminal No. Color	7

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	FRONT WHEEL SENSOR LH	AY		Signal Name	ı	
. E19		lor GR		Color of Wire	>	
Connector No.	Connector Name	Connector Color GRAY	H.S.	Terminal No.	-	,

		1
Signal Name	ABS_ECU	
Color of Wire	GR	
Terminal No.	25	
Terminal No. W		
 	Z	

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



[5]	Connector Name JOINT CONNECTOR-E04	HITE	3 2 1 1	Signal Name	-	ı
E22	ne JO	or		Solor of Wire	Ь	۵
Connector No.	Connector Na	Connector Color WHITE	file H.S.	Terminal No. Wire	2	4
-	Connector Name JOINT CONNECTOR-E03	HITE	<u> </u>	Signal Name	ı	ı
E21	lo S	or WH	4	Solor of Wire	_	٦
Connector No.	Connector Nar	Connector Color WHITE	H.S.	Terminal No. Wire	2	4

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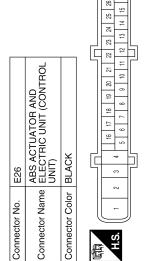
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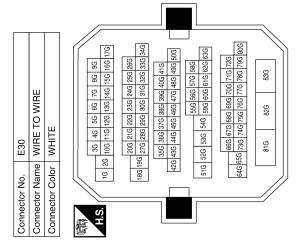
Signal Name	NSI	DS RR	BLS	ı	ı	1	I	-	CAN-H
Color of Wire	GR	BR	SB	1	_	ı	-	_	Г
Terminal No. Wire	18	19	20	21	22	23	24	25	26

Signal Name	DS FL	DP RL	ı	DP RR	DP FR	DS FR	DIAG-K	1	ı	ı	CAN-L	DP FL	DS RL
Color of Wire	>	ŋ	1	_	В	ГG	GR	ı	1	-	Ъ	>	0
Terminal No.	5	9	7	8	6	10	11	12	13	14	15	16	17



Signal Name	MGND	UB (MR)	UB (VR)	GND
Color of Wire	В	ŋ	Œ	В
Terminal No. Wire	-	2	3	4

Signal Name	ı	-	ı
Color of Wire	Ь	Г	0
Terminal No.	8G	15G	34G



	WIRE TO WIRE	TE	4 3 2 1 13 12 11 10 9 8	Signal Name	ı	I	-	I
. E29		lor WH	7 6 5 16 16 16	Color of Wire	0	BB	В	٦
Connector No.	Connector Name	Connector Color WHITE	H.S.	Terminal No.	7	2	13	14

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	EL SENSOR RH			Signal Name	1	
E41	FRONT WHEE	GRAY	1 2		8	l'e
Connector No.	Connector Name FRONT WHEEL SENSOR RH	Connector Color GRAY	H.S.	Color of Wire	1 B	2 L(
œ	Connector Name STOP LAMP SWITCH	AOK	2 1	Signal Name	ı	1
). E38	ame ST	lor BL		Color o	œ	ГG
Connector No.	Connector Na	Connector Color BLACK	斯 H.S.	Terminal No. Wire	1	2
]			
82	STOP LAMP SWITCH	HTE	8 T	Signal Name	-	1
). E38	sme ST	olor W		Color o	Н	97
Connector No.	Connector Name STOP LAMP :	Connector Color WHITE	H.S.	Terminal No. Wire	-	2

			1									
5	Connector Name JOINT CONNECTOR-E07	HTE		3 2 1			f Signal Name		ı		I	1
E55	Je JO	Jr Wi		4			Solor o	wire	3	>	œ	۵
Connector No.	Connector Nan	Connector Color WHITE		E	H.S.		Terminal No Misse		•	-	က	_
Connector No. E46	Connector Name JUNCTION BLOCK	Connector Color WHITE		(31 30 28 (C) 121 28 28	H.S. [40 39 38 37 36 35 34 33 32]		Terminal No. Wire Signal Name	26 GR –		31 0 -	39 SB	
	ı		1						_			
							ле					

	Connector Name JUNCTION BLOCK	NMO	8 3 4 5 1	Signal Name	_	
. E44	me JUN	lor BRC	5 4 4 10 10	Color of Wire	SB	
connector No.	Connector Na	Connector Color BROWN	雨 H.S.	Ferminal No.	10	

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Revision: June 2012 BRC-51 2011 Altima GCC

	RE TO WIRE	AY	- 0	Signal Name	-	Ι	I	-
2	me WIF	lor GR	2 4	Color of Wire	G	0	LG	BR
Connector No.	Connector Name WIRE TO WIRE	Connector Color GRAY	赋 H.S.	Terminal No. Wire	1	2	3	4
					T		ı	
	Connector Name STOP LAMP RELAY-1	JE	F Q Q Q	Signal Name	1	1	I	I
. E57	me STC	lor BLU		Color of Wire	LG	В	7	W
Connector No.	nector Na	Connector Color BLUE	所.S.	Terminal No. Wire	-	2	3	2

	WIRE TO WIRE	ITE		11 12 13 14 15 16 7	Signal Name	1	ı	I	1
. B10		lor WHITE	-	1 2 3 8 8 9 10 1	Color of Wire	0	BR	G	LG
Connector No.	Connector Name	Connector Color		S I	Terminal No.	4	5	13	14

2 🗡 1	Signal Name	1	I	1	ı
2	Color of Wire	ГG	В	٨	W
	Terminal No. Wire	1	7	ε	9

Connector No.). C3	
Connector Name		REAR WHEEL SENSOR RH
Connector Color		GRAY
南 H.S.		
Terminal No.	Color of Wire	Signal Name
-	ГG	1
2	BR	I

Connector Name JOINT CONNECTOR-E14	ITE	4 3 2 1 0	Signal Name	ı	ı
me JOI	lor WH		Color of Wire	LG	-
Connector Na	Connector Color WHITE	赋利 H.S.	Terminal No.	3	_

	1				
REAR WHEEL SENSOR LH	BLACK		Signal Name	1	I
ı	\perp		Color of Wire	g	0
Connector Name	Connector Color	H.S.	Terminal No.	-	2

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	Connector Name WIRE TO WIRE	Connector No. Connector Color Connector Color	B43 WIRE TO WIRE GRAY
		Connector No.	B43
Connector No. B43 Connector Name WIRE TO WIRE			GRAY
Connector No. B43 Connector Name WIRE TO WIRE Connector Color GRAY			
Connector Name WIRE TO WIRE Connector Color GRAY		E	
Connector No. B43 Connector Name WIRE TO WIRE Connector Color GRAY		-	1 2
Connector No. B43 Connector Name WIRE TO WIRE Connector Color GRAY		6.0	3 4
Connector No. B43 Connector Name WIRE TO WIRE Connector Color GRAY H.S.			

1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1,5,5,5
<u>oj</u>	

Signal Nam	1	I	I	ı
Color of Wire	ŋ	0	ГG	BR
Terminal No.	1	2	3	4

SYMPTOM DIAGNOSIS

ABS

Symptom Table

If ABS warning lamp turns ON, perform self-diagnosis.

Symptom	Check item	Reference
- · · · · · · · · · · · · · · · · · · ·	Brake force distribution	BRC-55, "Diagno-
Excessive ABS function operation frequency	Looseness of front and rear axle	
	Wheel sensor and rotor system	
Unexpected pedal reaction	Brake pedal stroke	BRC-56, "Diagno-
Onexpected pedal reaction	Make sure the braking force is sufficient when the ABS is not operating.	sis Procedure"
The braking distance is long	Check stopping distance when the ABS is not operating.	BRC-57, "Diagno- sis Procedure"
ABS function does not operate (Note 1)	ABS actuator and electric unit (control unit)	BRC-58, "Diagno- sis Procedure"
Pedal vibration or ABS operation sound	Brake pedal	BRC-59, "Diagno-
occurs (Note 2)	ABS actuator and electric unit (control unit)	sis Procedure"

NOTE:

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

EXCESSIVE ABS FUNCTION OPERATION FREQUENCY

[ABS] < SYMPTOM DIAGNOSIS > **EXCESSIVE ABS FUNCTION OPERATION FREQUENCY** Α Diagnosis Procedure INFOID:0000000006389173 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, "Inspection", Rear: RAX-6, "On-vehicle 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. Н Is the inspection result normal? YES >> GO TO 4 >> • Replace wheel sensor or sensor rotor. Refer to BRC-64, "Removal and Installation" or BRC-66, NO "Removal and Installation". · Repair harness. 4. CHECK ABS WARNING LAMP DISPLAY Make sure that the ABS warning lamp is turned off after the ignition switch is turned ON or when driving. Is the inspection result normal? YES >> Inspection End. K NO >> Perform self-diagnosis. Refer to BRC-15, "CONSULT Function (ABS)". L M N Р

UNEXPECTED PEDAL REACTION

< SYMPTOM DIAGNOSIS > [ABS]

UNEXPECTED PEDAL REACTION

Diagnosis Procedure

INFOID:0000000006389174

1. CHECK BRAKE PEDAL STROKE

Check brake pedal stroke. Refer to BR-13, "Inspection and Adjustment".

Is the stroke too big?

YES

- >> Bleed air from brake tube and hose. Refer to BR-16, "Bleeding Brake System".
 - Check brake pedal, brake booster, and master cylinder for mount play, looseness, brake system fluid leakage, etc. Refer to brake pedal: <u>BR-13</u>, "Inspection and Adjustment", brake booster: <u>BR-9</u>, "Inspection" and master cylinder: <u>BR-10</u>, "On Board Inspection".

NO >> GO TO 2

2. CHECK ABS 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 > [ABS]

THE BRAKING DISTANCE IS LONG

Diagnosis Procedure

INFOID:0000000006389175

CAUTION:

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

1. CHECK ABS 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.

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ABS FUNCTION DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

ABS FUNCTION DOES NOT OPERATE

Diagnosis Procedure

INFOID:0000000006389176

[ABS]

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 <u>BRC-15</u>, "CONSULT Function (ABS)".

PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

[ABS] < SYMPTOM DIAGNOSIS > PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS Α Diagnosis Procedure INFOID:0000000006389177 **CAUTION:** Under the following conditions, ABS is activated and vibration is felt when brake pedal is lightly depressed (just place a foot on it). However, this is normal. · When shifting gears When driving on slippery road During cornering at high speed When passing over bumps or grooves [at approximately 50 mm (1.97 in) or more] When pulling away just after starting engine [at approximately 10 km/h (6 MPH) or higher] 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 diagnostic result. Refer to BRC-15, "CONSULT 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 Р

NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS > [ABS]

NORMAL OPERATING CONDITION

Description INFOID:0000000006389178

Symptom	Result	
Slight vibrations are felt on the brake pedal and the operation noises occur, when ABS is activated.	This is a normal condition due to 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 vibrates and motor operation noises occur from the engine room, after the engine starts and just after the vehicle starts.	This is a normal, and it is caused by the ABS operation check.	

PRECAUTIONS

[ABS] < 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.

Necessary for Steering Wheel Rotation After Battery Disconnect

NOTE:

- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- · Always use CONSULT to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

This vehicle is equipped with a push-button ignition switch and a steering lock unit.

If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, 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. Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
- Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
- Perform the necessary repair operation.
- When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)

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PRECAUTIONS

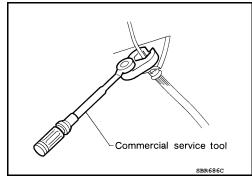
< PRECAUTION > [ABS]

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

Precaution for Brake System

INFOID:0000000006389181

- Recommended fluid is brake fluid "DOT 3".
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted surface of body. If brake fluid is splashed on painted surfaces
 of body immediately wipe off then with cloth and then wash it away with water.
- Never use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use a flare nut wrench when removing flare nuts, and use a flare nut torque wrench when tighten brake tube flare nuts.
- · When installing brake tubes, be sure to check torque.
- Brake system is an important safety part. If a brake fluid leak is detected, always disassemble the affected part. If a malfunction is detected, replace part with a new one.
- Before working, turn ignition switch OFF and disconnect connectors of ABS actuator and electric unit (control unit) or the battery cable from the negative terminal.



WARNING:

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

Precaution for Brake Control

INFOID:0000000006389182

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

PREPARATION

< PREPARATION > [ABS]

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
— (J-45741) ABS active wheel sensor tester	J-45741-BOX PO O PRIMO MONGO	Checking operation of ABS active wheel sensor

Commercial Service Tool

INFOID:0000000006389184

INFOID:0000000006389183

Tool name		Description	
Flare nut crowfoot Torque wrench		Removing and installing brake piping a: 10mm (0.39 in)/12mm (0.47 in)	
	s-nt360		

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Revision: June 2012 BRC-63 2011 Altima GCC

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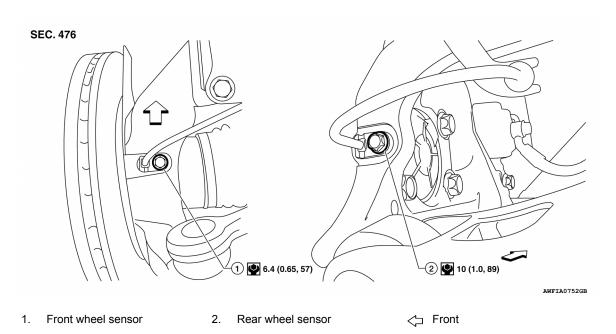
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REMOVAL AND INSTALLATION

WHEEL SENSORS

Removal and Installation



CAUTION:

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

FRONT WHEEL SENSOR

Removal

- Remove front wheel and tire. Refer to <u>WT-65, "Adjustment"</u>.
- Partially remove front wheel fender protector. Refer to <u>EXT-22</u>, "Removal and Installation" (Coupe), <u>EXT-46</u>, "Removal and Installation" (Sedan).
- 3. Remove wheel sensor bolt and wheel sensor.
- 4. Remove harness wire from mounts and disconnect wheel sensor harness connector.

Installation

Installation is in the reverse order of removal.

REAR WHEEL SENSOR

Removal

Remove rear wheel and tire. Refer to <u>WT-65, "Adjustment"</u>.

WHEEL SENSORS

< REMOVAL AND INSTALLATION >

[ABS]

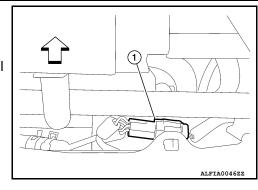
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- 2. Disconnect wheel sensor harness connector (1).
 - <⊐: Front
- 3. Remove harness wire clips from rear suspension member.
- 4. Remove wheel sensor bolt and wheel sensor from rear wheel hub and bearing assembly.



Installation

Installation is in the reverse order of removal.

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SENSOR ROTOR

[ABS]

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SENSOR ROTOR

Removal and Installation

The front and rear wheel sensor rotors are an integral part of the wheel hubs and can not be disassembled. When replacing the sensor rotor, replace the wheel hub. Refer to <u>FAX-8</u>, "Removal and Installation" (front), <u>RAX-7</u>, "Removal and Installation" (rear).

[ABS]

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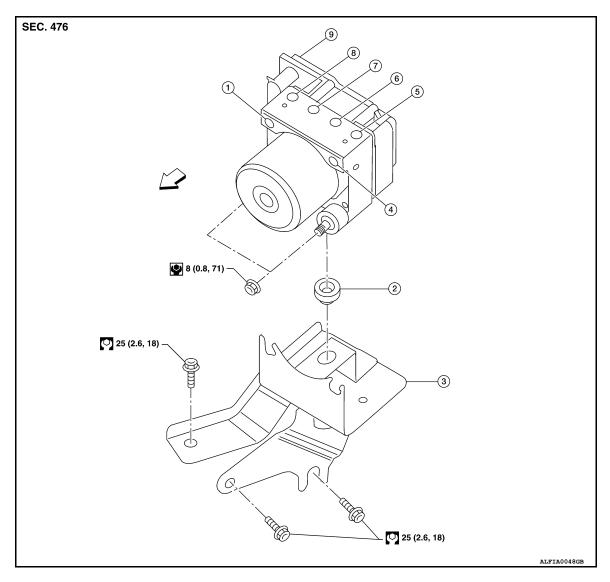
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ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Exploded View



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

Removal and Installation

CAUTION:

< > Front

Be careful of the following.

- · Before servicing, disconnect the battery cable from negative terminal.
- To remove brake pipe, use a suitable tool (flare nut wrench) to prevent flare nuts and brake tube from being damaged. To install, use suitable tool (flare nut torque wrench).
- Do not apply excessive impact to ABS actuator and electric unit (control unit), such as dropping it.
- Do not remove and install ABS actuator and electric unit (control unit) by holding harness.
- After work is completed, bleed air from brake tube. Refer to <u>BR-16, "Bleeding Brake System"</u>.
- After installing harness connector on the ABS actuator and electric unit (control unit), make sure connector is securely locked.

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< REMOVAL AND INSTALLATION >

[ABS]

REMOVAL

- 1. Remove cowl top. Refer to <u>EXT-21, "Removal and Installation"</u> (Coupe), <u>EXT-45, "Removal and Installation"</u> (Sedan).
- 2. Disconnect washer hose.
- 3. Disconnect the battery negative terminal.
- 4. Remove strut tower bar, if equipped. Refer to FSU-13, "Exploded View".
- 5. Disconnect ABS actuator and electric unit (control unit) connector.
- 6. Loosen brake tube flare nuts, then remove brake tubes from ABS actuator and electric unit (control unit) using a suitable tool.
- 7. Remove ABS actuator and electric unit (control unit) nuts.
- 8. Remove ABS actuator and electric unit (control unit).
- 9. Remove bracket as necessary.

INSTALLATION

Installation is in the reverse order of removal.

Torque brake lines to proper specifications. Refer to BR-18, "Hydraulic Circuit".

DIAGNOSIS AND REPAIR WORKFLOW

ITCS/ABS1 < BASIC INSPECTION > **BASIC INSPECTION** Α DIAGNOSIS AND REPAIR WORKFLOW Work Flow INFOID:0000000006920867 ${f 1}$. COLLECT INFORMATION FROM THE CUSTOMER Get detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the diagnosis worksheet. Refer to BRC-70, "Diagnostic Work Sheet". >> GO TO 2. D 2.PERFORM SELF DIAGNOSTIC RESULT Perform self diagnostic result. Refer to BRC-81, "CONSULT Function (ABS)". Е Are any DTCs displayed? YES >> Refer to BRC-115, "DTC No. Index". NO >> GO TO 3. BRC 3.CHECK SYMPTOM OPERATING CONDITION Check that the symptom is a normal operating condition. Refer to BRC-131, "Description". Is the symptom a normal operating condition? YES >> Inspection End. NO >> GO TO 4. Н f 4 .CHECK WARNING AND INDICATOR LAMPS OPERATION Check warning and indicator lamps operation. ABS warning lamp: Refer to BRC-109, "Description". brake warning lamp: Refer to <u>BRC-110</u>, "<u>Description</u>". SLIP indicator lamp: Refer to BRC-113, "Description". Is ON/OFF timing normal? YES >> GO TO 5. >> Perform warning lamp diagnosis. Refer to BRC-109, "Component Function Check" (ABS warning NO lamp), BRC-110, "Component Function Check" (brake warning lamp), or BRC-113, "Component Function Check" (SLIP indicator lamp). ${f 5}$.PERFORM DIAGNOSIS APPLICABLE TO THE SYMPTOM Perform diagnosis applicable to the symptom. Refer to BRC-124, "Symptom Table". >> GO TO 6. M 6.FINAL CHECK Perform self diagnostic result again, and check that the malfunction is repaired. After checking, erase the self diagnosis memory. Refer to BRC-81, "CONSULT Function (ABS)". N >> Inspection End. Р

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[TCS/ABS]

Diagnostic Work Sheet

INFOID:0000000006920868

Customer name MR/MS	omer name MR/MS Model & Year		VIN	
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			
Road conditions		□Other)		
Driving conditions	☐ Full-acceleration ☐ High speed cornering ☐ Vehicle speed: Greater than 10 km/h ☐ Vehicle speed: 10 km/h (6 MPH) or le ☐ Vehicle is stopped			
Applying brake conditions	onditions Suddenly Gradually			
Other conditions	☐ Operation of electrical equipment☐ Shift change☐ Other descriptions			

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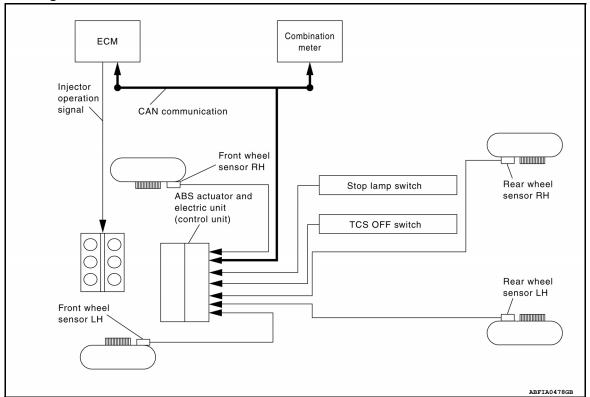
[TCS/ABS]

INFOID:0000000006389191

SYSTEM DESCRIPTION

TCS

System Diagram



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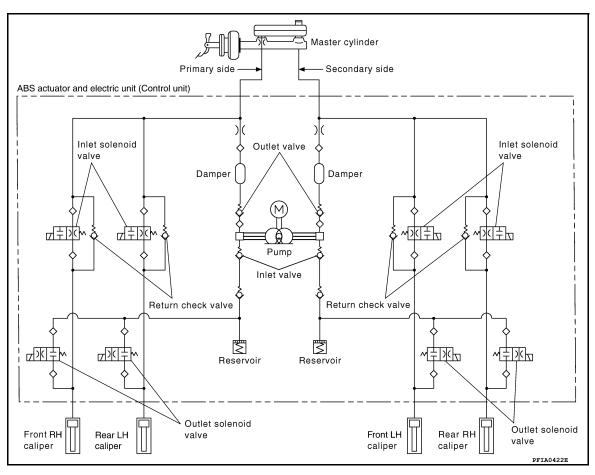
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Hydraulic Circuit Diagram

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System Description

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

Component Parts Location

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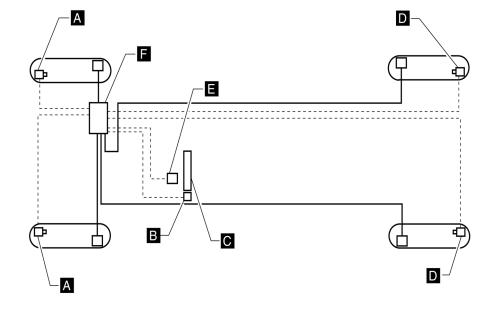
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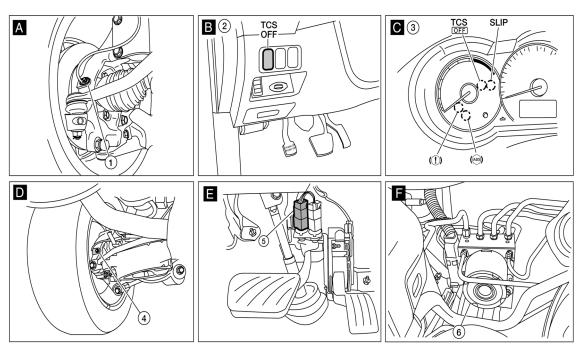
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- 1. Front wheel sensor LH E19 Front wheel sensor RH E41
- Rear wheel sensor LH C2 Rear wheel sensor RH C3
- 2. TCS OFF switch M72
- 5. Stop lamp switch E38
- 3. Combination meter M24
- 6. ABS actuator and electric unit (control unit) E26

Component Description

INFOID:0000000006389194

Component parts		Reference
	Pump	PDC 02 "Description"
ABS actuator and electric unit (control unit)	Motor	BRC-93, "Description"
ABS actuator and electric unit (control unit)	Actuator relay (Main relay)	BRC-95, "Description"
	Solenoid valve	BRC-100, "Description"
Wheel sensor	BRC-84, "Description"	
TCS OFF switch	BRC-111, "Description"	
ABS warning lamp	BRC-109, "Description"	
Brake warning lamp	BRC-110, "Description"	
Slip indicator lamp	BRC-113, "Description"	

[TCS/ABS]

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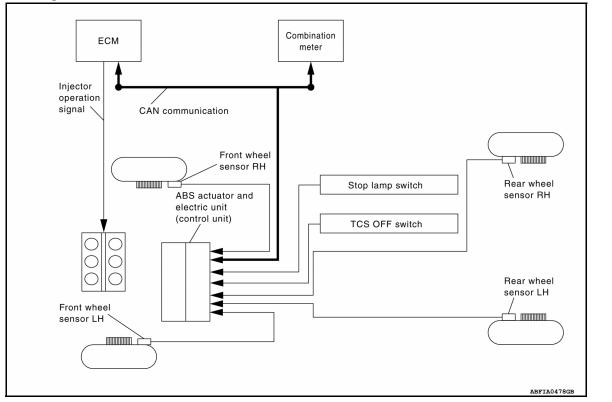
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ABS

System Diagram



System Description

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

• Electrical system diagnosis by CONSULT is available.

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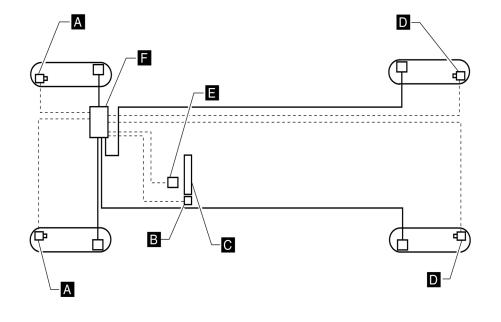
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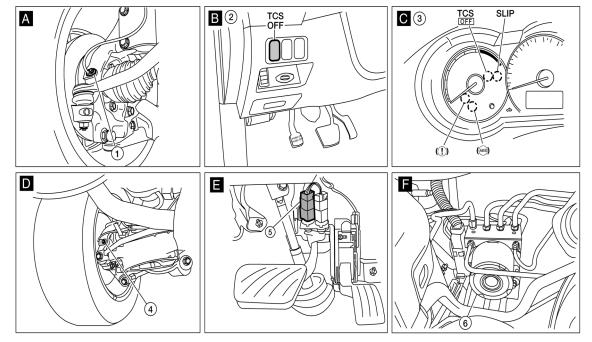
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Component Parts Location

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- 1. Front wheel sensor LH E19 Front wheel sensor RH E41
- Rear wheel sensor LH C2 Rear wheel sensor RH C3
- 2. TCS OFF switch M72
- 5. Stop lamp switch E38
- 3. Combination meter M24
- 6. ABS actuator and electric unit (control unit) E26

[TCS/ABS]

Component Description

INFOID:0000000006920881

Compo	Reference	
	Pump	PDC 02 "Description"
ABS actuator and electric unit (control unit)	Motor	BRC-93, "Description"
ABS actuator and electric unit (control unit)	Actuator relay (Main relay)	BRC-95, "Description"
	Solenoid valve	BRC-100, "Description"
Wheel sensor	BRC-84, "Description"	
TCS OFF switch		BRC-111, "Description"
ABS warning lamp	BRC-109, "Description"	
Brake warning lamp	BRC-110, "Description"	
Slip indicator lamp	BRC-113, "Description"	

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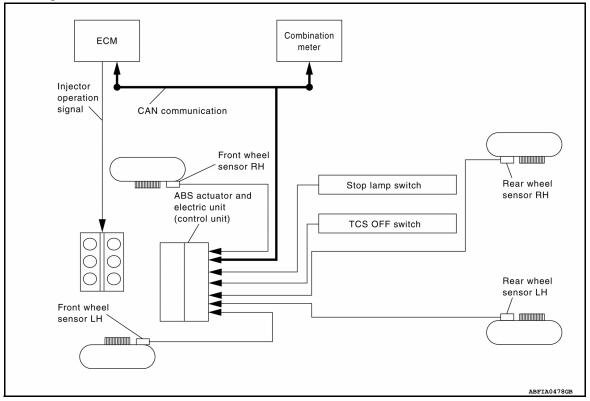
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EBD

System Diagram

INFOID:0000000006920873



System Description

INFOID:0000000006920874

Electric Brake force Distribution functions as follows:

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

Component Parts Location

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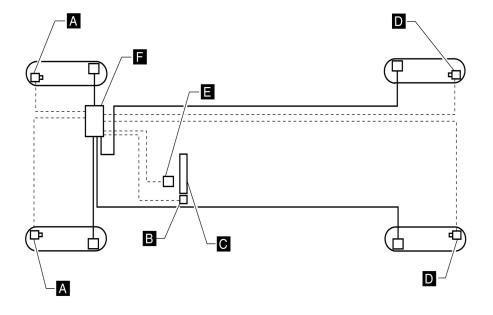
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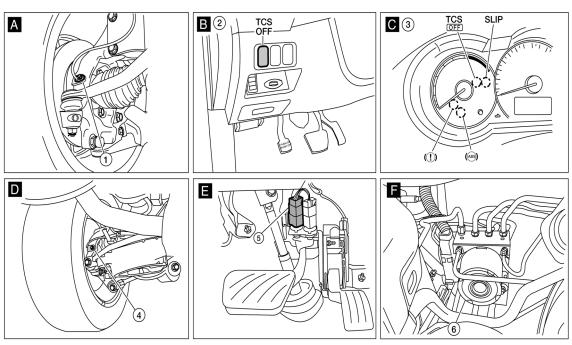
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- 1. Front wheel sensor LH E19 Front wheel sensor RH E41
- Rear wheel sensor LH C2 Rear wheel sensor RH C3
- 2. TCS OFF switch M72
- 5. Stop lamp switch E38
- 3. Combination meter M24
- 6. ABS actuator and electric unit (control unit) E26

Component Description

INFOID:0000000006920880

Component parts		Reference
	Pump	PDC 02 "Description"
ARS actuator and electric unit (control unit)	Motor	BRC-93, "Description"
ABS actuator and electric unit (control unit)	Actuator relay (Main relay)	BRC-95, "Description"
	Solenoid valve	BRC-100, "Description"
Wheel sensor	BRC-84, "Description"	
TCS OFF switch	BRC-111, "Description"	
ABS warning lamp	BRC-109, "Description"	
Brake warning lamp	BRC-110, "Description"	
Slip indicator lamp	BRC-113, "Description"	

DIAGNOSIS SYSTEM [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)1

< SYSTEM DESCRIPTION >

[TCS/ABS]

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

CONSULT Function (ABS)

INFOID:0000000006389195

SELF DIAGNOSTIC RESULT

Operation Procedure

- 1. Turn ignition switch ON.
- Start engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute.
- After stopping vehicle, with the engine running, touch "ABS", "SELF-DIAG RESULTS" in order on the CONSULT screen.
- The self-diagnostic results are displayed.
 - Check ABS warning lamp, TCS OFF indicator lamp, SLIP indicator lamp and brake warning lamp turn off. If "NO FAILURE" is displayed, refer to BRC-109, "Description".
- 5. Perform the appropriate inspection from display item list, and repair or replace the malfunctioning component.Refer to "Display Item List".
- Start engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute. **CAUTION:**

When the wheel sensor malfunctions, after inspecting the wheel sensor system, the ABS warning lamp, SLIP indicator lamp and brake warning lamp will not turn off even when the system is normal unless the vehicle is driving at approximately 30 km/h (19 MPH) or more for approximately 1 minute.

Erase Memory

- 1. Turn ignition switch OFF.
- 2. Start engine and touch "ABS", "SELF-DIAG RESULTS", "ERASE MEMORY" in order on the CONSULT screen to erase the diagnostic memory. If "ABS" is not indicated, go to GI-50, "Description".

CAUTION:

If the diagnostic memory is not erased, re-perform the operation from step 6 above.

- Perform self-diagnosis again, and make sure that diagnostic memory is erased.
- 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, TCS OFF indicator lamp, SLIP indicator lamp and brake warning lamp turn off.

NOTE:

- Brake warning lamp will turn on in case of parking brake operation (when switch is ON) or with brake fluid level switch operation (when brake fluid is insufficient).
- TCS OFF switch should not stay in the "ON" position.

Display Item List

Refer to BRC-115, "DTC No. Index".

DATA MONITOR

Display Item List

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.

Item	Data	monitor item sele	ection	
(Unit)	ECU INPUT SIGNALS	MAIN SIG- NALS	SELECTION FROM MENU	Remarks
FR LH SENSOR (km/h)	×	×	×	Wheel speed calculated by front LH wheel sensor signal is displayed.
FR RH SENSOR (km/h)	×	×	×	Wheel speed calculated by front RH wheel sensor signal is displayed.

BRC-81 Revision: June 2012 2011 Altima GCC **BRC**

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

< SYSTEM DESCRIPTION >

[TCS/ABS]

RR LH SENSOR (km/h)	×	×	×	Wheel speed calculated by rear LH wheel sensor signal is displayed.
RR RH SENSOR (km/h)	×	×	×	Wheel speed calculated by rear RH wheel sensor signal is displayed.
STOP LAMP SW (ON/OFF)	×	×	×	Stop lamp switch (ON/OFF) status is displayed.
BATTERY VOLT (V)	×	×	×	Voltage supplied to ABS actuator and electric unit (control unit) is displayed.
GEAR	×	×	×	Gear position judged by PNP switch signal is displayed.
SLCT LVR POSI	×	×	×	Shift position judged by PNP switch signal.
OFF SW (ON/OFF)	×	×	×	TCS OFF switch (ON/OFF) status is displayed.
FR RH IN SOL (ON/OFF)	_	×	×	Front RH IN ABS solenoid (ON/OFF) status is displayed.
FR RH OUT SOL (ON/OFF)	_	×	×	Front RH OUT ABS solenoid (ON/OFF) status is displayed.
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.
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)	_	×	×	TCS OFF lamp (ON/OFF) status is displayed.
SLIP LAMP (ON/OFF)	_	×	×	SLIP indicator lamp (ON/OFF) status is displayed.

x: Applicable

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

ACTIVE TEST

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, TCS indicator lamp, SLIP indicator lamp and brake warning lamp are on.
- ABS warning lamp, TCS OFF indicator lamp, SLIP indicator lamp and brake warning lamp are on during active test.

Operation Procedure

NOTE:

^{-:} Not applicable

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

< SYSTEM DESCRIPTION >

[TCS/ABS]

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

Solenoid Valve

NOTE:

The example shown is for front right wheel. The procedure for the other wheels is the same as given below.

- When performing an active test of the ABS function, select the "MAIN SIGNALS" for each test item.In addition, when performing an active test of the TCS function, select the item menu 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 (IN, OUT) operate as shown in the table below.

Operation	ABS solenoid valve			ABS solenoid valve (ACT)		
(Note)	UP	KEEP	DOWN	UP	ACT UP	ACT KEEP
FR RH IN SOL	OFF	ON	ON	OFF	OFF	OFF
FR RH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF

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

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

ABS Motor

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 (Note)	ON	ON

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

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[TCS/ABS]

DTC/CIRCUIT DIAGNOSIS

C1101, C1102, C1103, C1104 WHEEL SENSOR-1

Description INFOID:0000000006389196

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.	Harness or connector Wheel sensor
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 DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
- 2. Perform self diagnostic result.

Is DTC C1101, C1102, C1103 or C1104 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-84, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389198

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

CALITION

Do not check between wheel sensor terminals.

1. CONNECTOR INSPECTION

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

Is the inspection result normal?

YES >> GO TO 2

NO >> Repair or replace as necessary.

2.CHECK WHEEL SENSOR OUTPUT SIGNAL

- 1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter.
- 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:

C1101, C1102, C1103, C1104 WHEEL SENSOR-1

< DTC/CIRCUIT DIAGNOSIS >

[TCS/ABS]

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?

>> GO TO 3

NO >> Replace wheel sensor. Refer to BRC-136, "Removal and Installation".

3. CHECK TIRE

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4

NO >> • Adjust air pressure, or replace tire.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

4.CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to FAX-6, "Inspection" (front) or RAX-6, "On-vehicle Service" (rear). Is the inspection result normal?

YES >> GO TO 5

>> Repair or replace as necessary. Refer to FAX-8, "Removal and Installation" (front) or RAX-7 NO "Removal and Installation" (rear).

CHECK WIRING HARNESS FOR SHORT CIRCUIT

Check continuity between wheel sensor connector terminals and ground.

Wheel sensor connector terminal	Ground	Continuity	
1		No	
2	_	140	

Is the inspection result normal?

YES >> GO TO 6

NO >> Repair the circuit.

O.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 ele	S actuator and electric unit (control unit)		Wheel sensor	
	Connector	Terminal	Connector	Terminal	
Front LH		16	E19	1	
		5	E19	2	
Front RH	9 E41		E44	1	
FIOIIL KIT		C 4 I	2	Yes	
Rear LH	E26	6	C2	1	
		17	02	2	
Rear RH		8	C3	1	
		19	03	2	

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".

>> Repair the circuit. NO

Component Inspection

1.CHECK DATA MONITOR

BRC-85 Revision: June 2012 2011 Altima GCC **BRC**

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INFOID:0000000006389199

C1101, C1102, C1103, C1104 WHEEL SENSOR-1

< DTC/CIRCUIT DIAGNOSIS >

[TCS/ABS]

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 BRC-84, "Diagnosis Procedure".

C1105, C1106, C1107, C1108 WHEEL SENSOR-2

< DTC/CIRCUIT DIAGNOSIS >

ITCS/ABS1

C1105, C1106, C1107, C1108 WHEEL SENSOR-2

Description INFOID:0000000006389200

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:0000000006389201

DTC DETECTION LOGIC

	T		
DTC	Display item	Malfunction detected condition	Possible cause
C1105	RR RH SENSOR-2	Circuit of rear RH wheel sensor is open. Or when the sensor power voltage is outside the standard.	
C1106	RR LH SENSOR-2	Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard.	 Harness or connector Wheel sensor
C1107	FR RH SENSOR-2	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)
C1108	FR LH SENSOR-2	Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard.	

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
- Perform self diagnostic result.

Is DTC C1105, C1106, C1107 or C1108 detected?

YFS >> Proceed to diagnosis procedure. Refer to BRC-87, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

Do not check between wheel sensor terminals.

1.CONNECTOR INSPECTION

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

Is the inspection result normal?

YES >> GO TO 2

NO >> Repair or replace as necessary.

2.CHECK WHEEL SENSOR OUTPUT SIGNAL

- 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.

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.

BRC-87 Revision: June 2012 2011 Altima GCC **BRC**

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C1105, C1106, C1107, C1108 WHEEL SENSOR-2

< DTC/CIRCUIT DIAGNOSIS >

[TCS/ABS]

Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3

NO >> Replace wheel sensor. Refer to BRC-136, "Removal and Installation".

3.CHECK TIRE

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4

NO >> • Adjust air pressure, or replace tire.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

4. CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to <u>FAX-6</u>, "<u>Inspection</u>" (front) or <u>RAX-6</u>, "<u>On-vehicle Service</u>" (rear). <u>Is the inspection result normal?</u>

YES >> GO TO 5

NO >> Repair or replace as necessary. Refer to <u>FAX-8</u>, "<u>Removal and Installation</u>" (front) or <u>RAX-7</u>, "<u>Removal and Installation</u>" (rear).

5. CHECK WIRING HARNESS FOR SHORT CIRCUIT

Check continuity between wheel sensor connector terminals and ground.

Wheel sensor connector terminal	Ground	Continuity
1		No
2	-	No

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
Wrieer Serisor	Connector	Terminal	Terminal Connector		
Front LH		16	F40	1	•
FIONL LH		5	E19	2	
Front RH	9	9	E41	1	Yes
FIONL KH	E26	10		2	
Rear LH	E20	6	C2	1	
ixeai Li i	17	17	02	2	
Rear RH	H 8 C3	C3	1		
Near Ni		19	63	2	

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".

NO >> Repair the circuit.

Component Inspection

INFOID:0000000006389203

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.

C1105, C1106, C1107, C1108 WHEEL SENSOR-2

< DTC/CIRCUIT DIAGNOSIS >

[TCS/ABS]

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 <u>BRC-87</u>, "<u>Diagnosis Procedure</u>".

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DTC C1109 BATTERY VOLTAGE [ABNORMAL]

< DTC/CIRCUIT DIAGNOSIS >

[TCS/ABS]

DTC C1109 BATTERY VOLTAGE [ABNORMAL]

Description INFOID:000000006389204

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

CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- 2. Perform self diagnostic result.

Is DTC C1109 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-90, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389206

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

1. CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- Reconnect connector and perform self-diagnosis. Refer to <u>BRC-81, "CONSULT Function (ABS)"</u>.

Is DTC 1109 detected?

YES >> GO TO 2

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

$2. {\sf CHECK}$ 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.
- 3. Turn ignition switch ON.
- Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 18 and ground.

ABS actuator and electric unit (control unit)		Ground	Condition	Voltage (Approx)
Connector	Terminal			(Approx)
E26	E26 18 —		Ignition switch ON	Battery voltage
E20 18	_	Ignition switch OFF	0V	

5. Turn ignition switch OFF.

DTC C1109 BATTERY VOLTAGE [ABNORMAL]

< DTC/CIRCUIT DIAGNOSIS >

[TCS/ABS]

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

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

Is the inspection result normal?

- YES >> Check battery for terminal looseness, low voltage, etc. If any malfunction is found, repair malfunctioning parts.
 - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".
- NO >> Repair or replace malfunctioning components.
 - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

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DTC C1110 CONTROL FAILURE

< DTC/CIRCUIT DIAGNOSIS >

[TCS/ABS]

DTC C1110 CONTROL FAILURE

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)

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- 2. Perform self diagnostic result.

Is DTC C1110 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-92, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389208

 $1. \\ \text{REPLACE ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)}$

CAUTION:

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

>> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-139</u>, "Removal and Installation".

DTC C1111 PUMP MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[TCS/ABS]

DTC C1111 PUMP MOTOR

Description INFOID:0000000006389209

PUMP

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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:0000000006389210

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1111	C1111 PUMP MOTOR	During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for actuator motor relay is open.	Harness or connector ABS actuator and electric unit
OIIII	POWE MOTOR	During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground.	(control unit)

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DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

Н

With CONSULT.

- Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC C1111 detected?

YFS >> Proceed to diagnosis procedure. Refer to BRC-93, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389211

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

1. CONNECTOR INSPECTION

- 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.
- Reconnect connector and perform self-diagnosis. Refer to BRC-81, "CONSULT Function (ABS)".

Is DTC C1111 detected?

YES >> GO TO 2

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

${f 2}.$ CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector. 2.
- Check voltage between the ABS actuator and electric unit (control unit) connector E26 terminal 2 and ground.

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DTC C1111 PUMP MOTOR

[TCS/ABS]

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

Is the inspection result normal?

YES >> GO TO 3

NO >> • Repair or replace malfunctioning components.

• Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

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

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

ABS actuator and electric unit (control unit)		Ground	Continuit
Connector	Terminal	Giouria	Continuity
E26	1		Yes
220	4	_	105

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

NO >> • Repair or replace malfunctioning components.

• Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Component Inspection

INFOID:0000000006389212

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 (Note)	ON	ON

NOTE:

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <u>BRC-93</u>, "<u>Diagnosis Procedure</u>".

DTC C1114 MAIN RELAY

< DTC/CIRCUIT DIAGNOSIS >

[TCS/ABS]

DTC C1114 MAIN RELAY

Description INFOID:0000000006389213

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

DTC Logic INFOID:0000000006389214

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1114 MAIN RELAY	During the actuator relay operating with OFF, when the actuator relay turns ON, or when the control line for the relay is shorted to the ground.	Harness or connector ABS actuator and electric unit	
01114	MAIN INLLAI	During the actuator relay operating with ON, when the actuator relay turns ON, or when the control line for the relay is open.	(control unit)

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC C1114 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-95, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389215

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

1. CONNECTOR INSPECTION

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector. 2.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- Reconnect connector and perform self-diagnosis. Refer to BRC-15, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 2

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

2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

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

Is the inspection result normal?

YES >> GO TO 3

NO >> • Repair or replace malfunctioning components.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

BRC-95 Revision: June 2012 2011 Altima GCC **BRC**

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DTC C1114 MAIN RELAY

< DTC/CIRCUIT DIAGNOSIS >

[TCS/ABS]

${f 3.}$ CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

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

ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal	Giouna	Continuity
E26	1		Yes
E26	4	_	165

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-139</u>, "Removal and Installation"
 - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".
- NO >> Repair or replace malfunctioning components.
 - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Component Inspection

INFOID:0000000006389216

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 (Note)	ON	ON

NOTE:

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <u>BRC-93</u>, "<u>Diagnosis Procedure</u>".

DTC C1115 ABS SENSOR [ABNORMAL SIGNAL]

< DTC/CIRCUIT DIAGNOSIS >

ITCS/ABS1

DTC C1115 ABS SENSOR [ABNORMAL SIGNAL]

Description INFOID:0000000006389217

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:0000000006389218

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 DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
- Perform self diagnostic result.

Is DTC C1115 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-97, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

CAUTION:

Do not check between wheel sensor terminals.

1.CONNECTOR INSPECTION

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

Is the inspection result normal?

YES >> GO TO 2

NO >> Repair or replace as necessary.

2.check wheel sensor output signal

- 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.

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

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:

retest. Does the ABS active wheel sensor tester detect a signal?

YFS >> GO TO 3

NO >> Replace wheel sensor. Refer to BRC-136, "Removal and Installation".

3.CHECK TIRE

BRC-97 Revision: June 2012 2011 Altima GCC **BRC**

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INFOID:0000000006389219

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DTC C1115 ABS SENSOR [ABNORMAL SIGNAL]

< DTC/CIRCUIT DIAGNOSIS >

[TCS/ABS]

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4

NO >> • Adjust air pressure, or replace tire.

• Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

4. CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to <u>FAX-6</u>, "<u>Inspection</u>" (front) or <u>RAX-6</u>, "<u>On-vehicle Service</u>" (rear). <u>Is the inspection result normal?</u>

YES >> GO TO 5

NO >> Repair or replace as necessary. Refer to <u>FAX-8</u>, "<u>Removal and Installation</u>" (front) or <u>RAX-7</u>, "<u>Removal and Installation</u>" (rear).

5. CHECK WIRING HARNESS FOR SHORT CIRCUIT

Check continuity between wheel sensor connector terminals and ground.

Wheel sensor connector terminal	Ground	Continuity
1		No
2		NO

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 ele	ectric unit (control unit)	Wheel	sensor	Continuity
Wileel SellSol	Connector	Terminal	Connector	Terminal	
Front LH		16	F40	1	
FIOIIL LIT		5 E19	2		
Front RH		9	E41	1	Yes
FIONI RH	E26	10		2	
Rear LH	E20	6	C2	1	
Real Ln		17	02	2	
Rear RH		8	C3	1	
		19	03	2	

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-139</u>, "Removal and Installation".

NO >> Repair the circuit.

Component Inspection

INFOID:0000000006389220

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)
--------------	------------------------------

DTC C1115 ABS SENSOR [ABNORMAL SIGNAL]

	b	
< DTC/CIRCUIT DIAGNOSIS >		[TCS/ABS]

FR LH SENSOR FR RH SENSOR	Nearly matches the speedometer dis-	Α
RR LH SENSOR	play (±10% or less)	
RR RH SENSOR		В

Is the inspection result normal?

YES >>	Inspection	End.
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NO >> Go to diagnosis procedure. Refer to <u>BRC-87</u>. "<u>Diagnosis Procedure</u>".

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[TCS/ABS]

C1120, C1122, C1124, C1126 IN ABS SOL

Description INFOID:000000006389221

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 DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- 2. Perform self diagnostic result.

Is DTC C1120, C1122, C1124 or C1126 detected?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-100, "Diagnosis Procedure"</u>.

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389223

Regarding Wiring Diagram information, refer to BRC-117. "Wiring Diagram - TCS".

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 BRC-81, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 2

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

2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

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

Is the inspection result normal?

C1120, C1122, C1124, C1126 IN ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

ITCS/ABS1

YES >> GO TO 3

NO >> • Repair or replace malfunctioning components.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

${f 3}.$ CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

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

ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal	Giouna	Continuity
E26	1	_	Yes
E20	4		res

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

NO >> • Repair or replace malfunctioning components.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

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.

NOTE:

The example below is for front right wheel. The procedure for the other wheels is the same as given below.

Operation (Note)	ABS solenoid valve		
Operation (Note)	UP	KEEP	DOWN
FR RH IN SOL	OFF	ON	ON
FR RH OUT SOL	OFF	OFF	ON*

^{*:} ON for 1 to 2 seconds after the touch, and then OFF.

NOTE:

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

Is the inspection result normal?

YES >> Inspection End.

>> Go to diagnosis procedure. Refer to BRC-100, "Diagnosis Procedure". NO

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[TCS/ABS]

C1121, C1123, C1125, C1127 OUT ABS SOL

Description INFOID.000000006389225

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 DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- 2. Perform self diagnostic result.

Is DTC C1121, C1123, C1125 or C1127 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-102, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389227

Regarding Wiring Diagram information, refer to BRC-117. "Wiring Diagram - TCS".

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.
- Reconnect connector and perform self-diagnosis. Refer to <u>BRC-15, "CONSULT Function (ABS)"</u>.

Is the inspection result normal?

YES >> Inspection End.

NO >> GO TO 2

2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

ABS actuator and ele	ectric unit (control unit)	Ground	Voltage (Approx)
Connector	Terminal	Glound	
E26	3	_	Battery voltage

Is the inspection result normal?

C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

ITCS/ABS1

YES >> GO TO 3

NO >> • Repair or replace malfunctioning components.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

${f 3}.$ CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

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

ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal	Giodila	Continuity
F26	1	_	Voc
E26	4		Yes

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

NO >> • Repair or replace malfunctioning components.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

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.

NOTE:

The example below is for front right wheel. The procedure for the other wheels is the same as given

Operation (Note)	ABS solenoid valve		
Operation (Note)	UP	KEEP	DOWN
FR RH IN SOL	OFF	ON	ON
FR RH OUT SOL	OFF	OFF	ON*

^{*:} ON for 1 to 2 seconds after the touch, and then OFF.

NOTE:

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

Is the inspection result normal?

YES >> Inspection End.

>> Go to diagnosis procedure. Refer to BRC-102, "Diagnosis Procedure". NO

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C1130, C1131, C1132, C1133 ENGINE SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[TCS/ABS]

C1130, C1131, C1132, C1133 ENGINE SIGNAL

Description INFOID:000000006389229

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		Harness or connector
C1131	ENGINE SIGNAL 2	Major engine components are malfunctioning.	ABS actuator and electric unit (control unit)
C1132	ENGINE SIGNAL 3		• ECM
C1133	ENGINE SIGNAL 4		CAN communication line

DTC CONFIRMATION PROCEDURE

CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC C1130, C1131, C1132, C1133 or C1136 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-104, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389231

1. CHECK ENGINE SYSTEM

- 1. Perform ECM self-diagnosis. Repair or replace items indicated, then perform ECM self-diagnosis again. Refer to EC-99, "CONSULT-III Function" (QR25DE), EC-423, "CONSULT-III Function" (VQ35DE).
- Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <u>BRC-81, "CONSULT Function (ABS)"</u>.

Is the inspection result normal?

YES >> Inspection end.

NO >> • Repair or replace malfunctioning components.

• Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[TCS/ABS]

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U1000 CAN COMM CIRCUIT

Description INFOID:0000000006389232

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:0000000006389233

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.	

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC U1000 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-105, "Diagnosis Procedure".

>> Inspection End. NO

Diagnosis Procedure

INFOID:0000000006389234

1.CONNECTOR INSPECTION

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- Reconnect connector and perform self diagnostic result. Refer to BRC-81, "CONSULT Function (ABS)".

Is DTC U1000 detected?

YES >> Refer to LAN-15, "Trouble Diagnosis Flow Chart".

NO >> Inspection End.

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[TCS/ABS]

STOP LAMP SWITCH

Description INFOID:000000006920882

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

Component Function Check

INFOID:0000000006920883

1. CHECK DATA MONITOR

On "DATA MONITOR", select "STOP LAMP SW" and check the stop lamp switch signal.

Condition	STOP LAMP SW (DATA MONITOR)	
Brake pedal depressed.	On	
Brake pedal released.	Off	

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-106, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006920884

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

1. CHECK STOP LAMP SWITCH

Perform the stop lamp switch component inspection. Refer to <u>BRC-107</u>, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 2

NO >> Replace stop lamp switch.

2.CHECK STOP LAMP RELAY-1

Perform the stop lamp relay-1 component inspection. Refer to <u>BRC-107</u>, "Component Inspection (Stop Lamp Relay)".

Is the inspection result normal?

YES >> GO TO 3

NO >> Replace stop lamp relay-1.

3.check stop lamp switch signal circuit

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

ABS actuator and electric unit (control unit)		Ground	Condition	Voltage (Approx.)	
Connector	Terminal			(Αρριολ.)	
E26	20		Brake pedal depressed	Battery voltage	
E20		_	Brake pedal released	0V	

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".

NO >> GO TO 4

STOP LAMP SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[TCS/ABS]

f 4.CHECK STOP LAMP RELAY-1 COIL CIRCUIT

- Disconnect stop lamp relay-1 connector.
- Check voltage between stop lamp relay-1 connector E57 terminal 1 and ground.

Stop lamp relay-1		Ground	Condition	Voltage
Connector	Terminal	Ordana	Condition	(Approx.)
E57	1		Brake pedal depressed	Battery voltage
E57 1	'	_	Brake pedal released	0V

Is the inspection result normal?

YES >> GO TO 5

>> Repair circuit between stop lamp switch and stop lamp relay or circuit between fuse block J/B and NO stop lamp switch.

5. CHECK STOP LAMP RELAY-1 SWITCH INPUT CIRCUIT

Check voltage between stop lamp relay-1 connector E57 terminal 5 and ground.

Stop lam	p relay-1	Ground	Voltage (Approx.)
Connector	Terminal	Giodila	
E57	5	_	Battery voltage

Is the inspection result normal?

>> GO TO 6 YES

NO >> Repair circuit between fuse block J/B and stop lamp relay.

$\mathsf{6}.$ CHECK STOP LAMP RELAY-1 GROUND CIRCUIT

Check continuity between stop lamp relay-1 connector E57 terminal 2 and ground.

Stop lamp relay-1		Ground	Continuity
Connector	Terminal	Grodina	Continuity
E57	2	_	Yes

Is the inspection result normal?

YES >> Repair circuit between stop lamp relay and ABS actuator and electric unit (control unit).

NO >> Repair stop lamp relay ground circuit.

Component Inspection (Stop Lamp Switch)

1. CHECK STOP LAMP SWITCH

Turn ignition switch OFF.

- Disconnect stop lamp switch connector.
- Check continuity between stop lamp switch terminals.

Stop lamp switch terminals	Condition	Continuity
1 – 2	Brake pedal depressed.	Yes
1 – 2	Brake pedal released.	No

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace stop lamp switch.

Component Inspection (Stop Lamp Relay)

1. CHECK STOP LAMP RELAY

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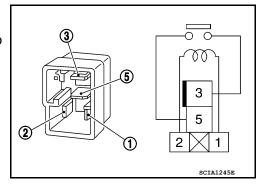
STOP LAMP SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[TCS/ABS]

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp relay connector.
- 3. Apply battery voltage to stop lamp relay terminal 1 and ground to terminal 2.
- 4. Check continuity between stop lamp relay terminals 3 and 5.

Stop lamp relay terminals	Condition	Continuity
3 – 5	Battery voltage applied to terminal 1 and ground to terminal 2	Yes
	Voltage and ground removed	No



Is the inspection result normal?

YES >> Inspection End.

NO >> Replace stop lamp relay.

ABS WARNING LAMP

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[TCS/ABS]

ABS WARNING LAMP

Description INFOID:000000006389235

×: ON –: OFF

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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:0000000006389236

1. CHECK ABS WARNING LAMP OPERATION

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

Is the inspection result normal?

YES >> Inspection End

NO >> Go to diagnosis procedure. Refer to BRC-109. "Diagnosis Procedure".

INFOID:0000000006389237

Diagnosis Procedure

1. CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <u>BRC-81, "CONSULT 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 <u>MWI-28</u>, "<u>Diagnosis Description</u>".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-139, "Removal and Installation"</u>.

NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

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[TCS/ABS]

BRAKE WARNING LAMP

Description INFOID:000000006389238

×: 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:0000000006389239

1.BRAKE WARNING LAMP OPERATION CHECK 1

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

Is the inspection result normal?

YES >> GO TO 2

NO >> Go to diagnosis procedure. Refer to BRC-110, "Diagnosis Procedure".

2.BRAKE WARNING LAMP OPERATION CHECK 2

Check that the brake warning lamp in the combination meter turns ON/OFF correctly when operating the parking brake lever (M/T models) or the parking brake pedal (CVT models).

Is the inspection result normal?

YES >> Inspection End

NO >> Check parking brake switch. Refer to <u>BR-13</u>, "Inspection and Adjustment".

Diagnosis Procedure

INFOID:0000000006389240

1. CHECK PARKING BRAKE SWITCH

Check that the brake warning lamp in the combination meter turns ON/OFF correctly when operating the parking brake lever (M/T models) or the parking brake pedal (CVT models).

Is the inspection result normal?

YES >> GO TO 2

NO >> Check parking brake switch. Refer to BR-13, "Inspection and Adjustment".

2.CHECK SELF-DIAGNOSIS RESULT

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <u>BRC-81</u>, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 3

NO >> Check items displayed by self-diagnosis.

$oldsymbol{3}.$ CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-28, "Diagnosis Description".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-139</u>, "Removal and Installation".

NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

TCS OFF SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[TCS/ABS]

INFOID:0000000006389242

INFOID:0000000006389243

TCS OFF SWITCH

Description

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

Component Function Check

1. CHECK TCS OFF SWITCH OPERATION

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

Condition	TCS OFF indicator lamp illumination status
TCS OFF switch: pressed and re- leased	ON
TCS OFF switch: pressed and re- leased	OFF

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-111, "Diagnosis Procedure".

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

1. CHECK TCS OFF SWITCH

Perform the TCS OFF switch component inspection. Refer to <u>BRC-112</u>, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 2

NO >> Replace TCS OFF switch.

2. CHECK TCS OFF SWITCH HARNESS

- 1. Disconnect ABS actuator and electric unit (control unit) connector.
- 2. Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 13 and TCS OFF switch connector M72 terminal 1.

ABS actuator and ele	ectric unit (control unit)	TCS OFF switch		Continuity
Connector	Terminal	Connector	Terminal	
E26	13	M72	1	Yes

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 13 and ground.

ABS actuator and ele	ectric unit (control unit)	Ground	Continuity	
Connector	Terminal	Ground	Continuity	
E26	13	_	No	

Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

${f 3.}$ CHECK TCS OFF SWITCH GROUND

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

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TCS OF	F switch	Ground	Continuity	
Connector	Terminal	Ground	Continuity	
M72	2	_	Yes	

Is the inspection result normal?

YES >> Inspection end.

NO >> Repair or replace malfunctioning components.

Component Inspection

INFOID:0000000006389244

1. CHECK TCS OFF SWITCH

- 1. Disconnect TCS OFF switch connector.
- 2. Check continuity between TCS OFF switch terminals.

TCS OFF switch terminals	Condition	Continuity	
1, 2	TCS OFF switch pressed	Yes	
	TCS OFF switch released	No	

DISCONNECT 2 1

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace TCS OFF switch.

SLIP INDICATOR LAMP

< DTC/CIRCUIT DIAGNOSIS >

[TCS/ABS]

SLIP INDICATOR LAMP

Description

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SLIP indicator lamp
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Component Function Check

INFOID:0000000006920890

1. CHECK SLIP INDICATOR LAMP OPERATION

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

Is the inspection result normal?

YES >> Inspection End

NO >> Go to diagnosis procedure. Refer to BRC-113, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006920891

1. CHECK SELF DIAGNOSTIC RESULT

Perform ABS actuator and electric unit (control unit) self diagnostic result. Refer to <u>BRC-81, "CONSULT Function (ABS)"</u>.

Is the inspection result normal?

YES >> GO TO 2

NO >> Check items displayed by self diagnostic result. Refer to <u>BRC-115, "DTC No. Index"</u>.

2. CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to <u>MWI-4</u>, <u>"Work Flow"</u>. Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".

NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

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< ECU DIAGNOSIS INFORMATION >

[TCS/ABS]

ECU DIAGNOSIS INFORMATION

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.

		Data monitor		
Monitor item	Display content	Condition	Reference value in normal operation	
FR LH SENSOR		0 [km/h]	Vehicle stopped	
FR RH SENSOR RR LH SENSOR RR RH SENSOR	Wheel speed	Nearly matches the speed meter display (± 10 % or less)	Vehicle running (Note 1)	
STOP LAMP SW		When brake pedal is depressed	ON	
STOI LAWI GW	Brake pedal operation	When brake pedal is not depressed	OFF	
BATTERY VOLT	Battery voltage supplied to the ABS actuator and electric unit (control unit)	Ignition switch ON	10 – 16 V	
OFF SW	TCS OFF quitch ON/OFF	TCS OFF switch ON (When TCS OFF indicator lamp is ON)	ON	
OFF SW	TCS OFF switch ON/OFF	TCS OFF switch OFF (When TCS OFF indica- tor lamp is OFF)	OFF	
		With engine stopped	0 rpm	
ENGINE RPM	With engine running	Engine running	Almost in accor- dance with tachome- ter display	
FR LH IN SOL FR LH OUT SOL FR RH IN SOL FR RH OUT SOL RR LH IN SOL	Operation status of all solenoid valve	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	ON	
RR LH OUT SOL RR RH IN SOL RR RH OUT SOL		When the actuator (sole- noid valve) is not active and actuator relay is ac- tive (ignition switch ON)	OFF	
		When the motor relay and motor are operating	ON	
MOTOR RELAY	Motor and motor relay operation	When the motor relay and motor are not operating	OFF	
ACTUATOR RLY (Note 2)	Actuator relay operation	When the actuator relay is operating	ON	
		When the actuator relay is not operating	OFF	
ADC MADALLAMD	ABS warning lamp	When ABS warning lamp is ON	ON	
ABS WARN LAMP	(Note 3)	When ABS warning lamp is OFF	OFF	

< ECU DIAGNOSIS INFORMATION >

[TCS/ABS]

		Data monitor	
Monitor item	Display content	Condition	Reference value in normal operation
OFF LAMP	TCS OFF indicator lamp (Note 3)	When TCS OFF indicator lamp is ON	ON
		When TCS OFF indicator lamp is OFF	OFF
SLIP LAMP	SLIP indicator lamp (Note 3)	When SLIP indicator lamp is ON	ON
		When SLIP indicator lamp is OFF	OFF

Note 1: Confirm tire pressure is normal.

Fail-Safe

ABS, EBD SYSTEM

In case of electrical malfunctions with the ABS, ABS warning lamp, TCS OFF indicator lamp, SLIP indicator lamp will turn on. In case of electrical malfunctions with the EBD, brake warning lamp, ABS warning lamp, TCS OFF indicator lamp and SLIP indicator lamp will turn on. Simultaneously, the TCS/ABS become one of the following conditions of the fail-safe function.

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

NOTE:

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

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

TCS

In case of malfunction in the TCS/ABS system, TCS OFF indicator lamp, SLIP indicator lamp are turned on, and the condition of vehicle is the same as the condition of vehicles without TCS control.

CAUTION:

DTC No. Index

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

in the rail date familiaring delivated, their perform sen diagnosis for 199/ABS control system.

Display item	Malfunction detecting condition	Check item
RR RH SENSOR-1 [C1101]	Circuit of rear RH wheel sensor is open. Or when the sensor power voltage is outside the standard.	
RR LH SENSOR-1 [C1102]	Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard.	BRC-84, "Diagno- sis Procedure"
FR RH SENSOR-1 [C1103]	Circuit of front RH wheel sensor is open. Or when the sensor power voltage is outside the standard.	(Note)
FR LH SENSOR-1 [C1104]	Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard.	

Revision: June 2012 BRC-115 2011 Altima GCC

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Note 2: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Note 3: On and off timing for warning lamp and indicator lamp. Refer to BRC-81, "CONSULT Function (ABS)".

< ECU DIAGNOSIS INFORMATION >

[TCS/ABS]

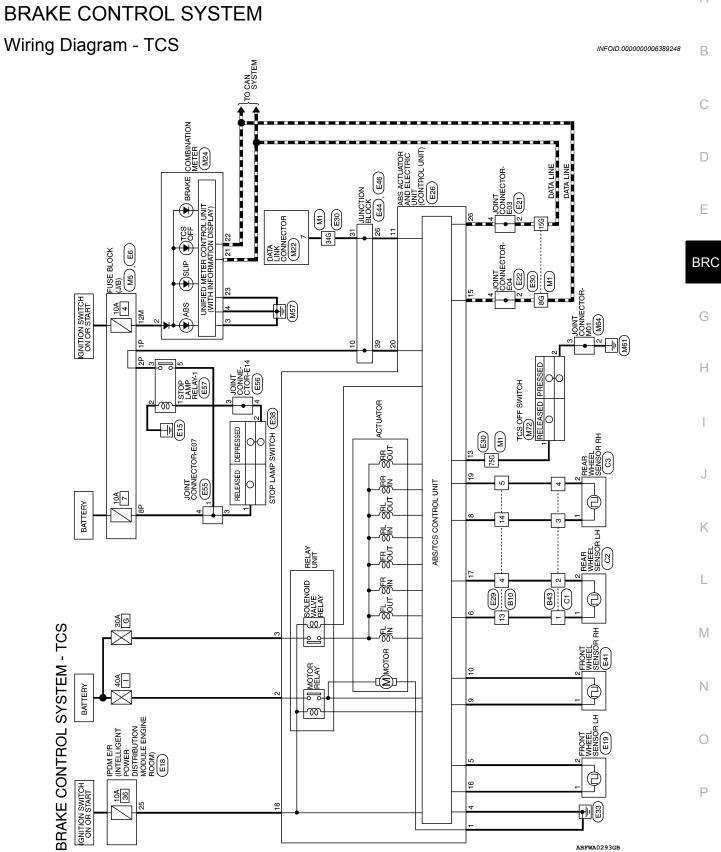
Display item	Malfunction detecting condition	Check item
RR RH SENSOR-2 [C1105]	When the circuit in the rear RH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.	
RR LH SENSOR-2 [C1106]	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.	BRC-87, "Diagno-sis Procedure"
FR RH SENSOR-2 [C1107]	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.	(Note)
FR LH SENSOR- 2 [C1108]	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.	
BATTERY VOLTAGE [ABNORMAL] [C1109]	When the ABS actuator and electric unit (control unit) power supply voltage is lower than normal.	BRC-90, "Diagnosis Procedure"
CONTROLLER FAILURE [C1110]	When there is an internal malfunction in the ABS actuator and electric unit (control unit).	BRC-92, "Diagnosis Procedure"
PUMP MOTOR	During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for actuator motor relay is open.	BRC-93, "Diagno-
[C1111]	During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground.	sis Procedure"
MAIN RELAY [C1114]	Actuator solenoid valve relay is ON, even if control unit sends OFF signal. Actuator solenoid valve relay is OFF, even if control unit sends ON signal.	BRC-95, "Diagno- sis Procedure"
ABS SENSOR [C1115]	Teeth damage on sensor rotor or improper installation of wheel sensor.	BRC-97, "Diagno- sis Procedure"
FR LH IN ABS SOL [C1120]	When the control unit detects a malfunction in the front left inlet solenoid circuit.	BRC-100, "Diagno- sis Procedure"
FR LH OUT ABS SOL [C1121]	When the control unit detects a malfunction in the front left outlet solenoid circuit.	BRC-102, "Diagnosis Procedure"
FR RH IN ABS SOL [C1122]	When the control unit detects a malfunction in the front right inlet solenoid circuit.	BRC-100, "Diagnosis Procedure"
FR RH OUT ABS SOL [C1123]	When the control unit detects a malfunction in the front right outlet solenoid circuit.	BRC-102, "Diagno- sis Procedure"
RR LH IN ABS SOL [C1124]	When the control unit detects a malfunction in the rear left inlet solenoid circuit.	BRC-100, "Diagno- sis Procedure"
RR LH OUT ABS SOL [C1125]	When the control unit detects a malfunction in the rear left outlet solenoid circuit.	BRC-102, "Diagnosis Procedure"
RR RH IN ABS SOL [C1126]	When the control unit detects a malfunction in the rear right inlet solenoid circuit.	BRC-100, "Diagno- sis Procedure"
RR RH OUT ABS SOL [C1127]	When the control unit detects a malfunction in the rear right outlet solenoid circuit.	BRC-102, "Diagnosis Procedure"
ENGINE SIGNAL 1 [C1130]	Fuel cut control abnormal.	
ENGINE SIGNAL 2 [C1131]	Electric throttle control abnormal.	BRC-104, "Diagno-
ENGINE SIGNAL 3 [C1132]	ECM CAN communication abnormal.	sis Procedure"
ENGINE SIGNAL 4 [C1133]	ECM communication to ABS actuator and electric unit (control unit) abnormal.	
CAN COMM CIRCUIT [U1000]	When there is a malfunction in the CAN communication circuit.	BRC-105, "Diagno- sis Procedure"

Note: After completing repairs of shorted sensor circuit, when ignition switch is turned ON, ABS warning lamp turns on. Make sure that ABS warning lamp turns off while driving vehicle at 30 km/h (19 MPH) or more for approximately 1 minute according to self-diagnosis procedure. In addition, if wheel sensor 2 is displayed for wheels, check wheel sensor circuit and also check control unit power voltage.

[TCS/ABS] < WIRING DIAGRAM >

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WIRING DIAGRAM



ame JOINT CONNECTOR-M01

Connector Name DATA LINK CONNECTOR

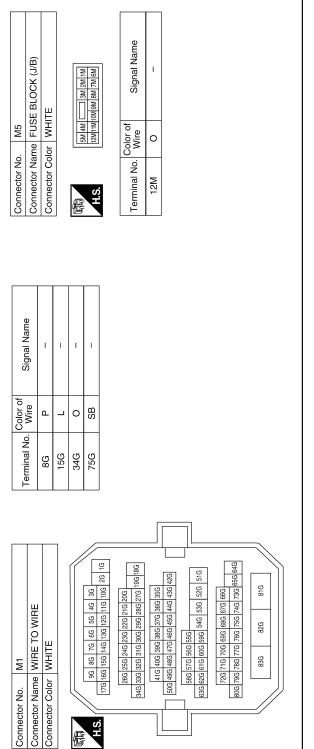
Connector No.

Connector Color WHITE

M64

olor | GRAY

BRAKE CONTROL SYSTEM CONNECTORS - TCS



Connector No.). M24	4:		Connector No
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4	В	GND (ILL)		
21		CAN-H		
22	۵	CAN-L		
23	В	GND (CIRCUIT)		

Signal Name

Color of Wire

Terminal No.

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Signal Name

Color of Wire

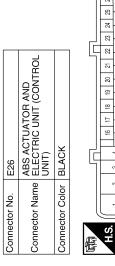
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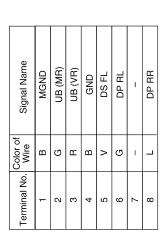
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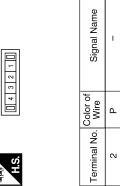
	Connector No. E21	A B C D
Connector No. E6	Connector No. E19 Connector Color GRAY Connector Color GRAY H.S. Terminal No. Wire Signal Name 1 W 2 V	BRC G H
Connector No. M72 Connector Name TCS OFF SWITCH Connector Color GRAY LLS E S 4 3 2 1 Terminal No. Wire Signal Name 2 B	POWER DISTRIBUTION POWER DISTRIBUTION POWER DISTRIBUTION POWER DISTRIBUTION MODULE ENGINE ROOM) Connector Color WHITE SEBEZZERE SOSTISZER ST 38 ST 38	J K L M

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Terminal No.	6	10	Ξ	12	13	14	15	16	17	18	19	20	12	22	23	24	52	56









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Revision: June 2012 BRC-121 2011 Altima GCC

VHEEL SENSOR RH

Signal Name

Connector No. E55
Connector Name JOINT CONNECTOR-E07

Connector Color WHITE

Connector No.	E56		Connector No.	E57
ector Nan	ne JOIN	Connector Name JOINT CONNECTOR-E14	Connector Name	Connector Name STOP LAMP RELAY-1
Connector Color WHITE	or WHIT	E	Connector Color BLUE	BLUE
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Signal Name

Terminal No. Wire

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3 FG	4 LG			Connector No. C2	Connector Name RE	Connector Color BL		H.S.	Terminal No. Wire	1 ي	2 0	_	
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I	1	1			Connector Name WIRE TO WIRE	AY	[- 00	Signal Name	I	-	ı	
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Connector Name WIRE TO WIRE	WIRE TO WIRE
Connector Color GRAY	GRAY
赋 H.S.	



Signal Name	_	I	_	-
Color of Wire	G	0	LG	BR
Terminal No.	1	2	3	4

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Signal Name	1	1	-	-
Color of Wire	0	BR	В	LG
Terminal No.	4	2	13	14

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INFOID:0000000006389249

SYMPTOM DIAGNOSIS

TCS

Symptom Table

If ABS warning lamp, TCS 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-125, "Diag- nosis Procedure"
queries	Wheel sensor and rotor system	<u></u>
Unexpected pedal reaction	Brake pedal stroke	BRC-126, "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-127, "Diag- nosis Procedure"
ABS function does not operate (Note 1)	ABS actuator and electric unit (control unit)	BRC-128, "Diag- nosis Procedure"
Pedal vibration or ABS operation sound	Brake pedal	BRC-129, "Diag-
occurs (Note 2)	ABS actuator and electric unit (control unit)	nosis Procedure"
Vehicle jerks during TCS/ABS control	ABS actuator and electric unit (control unit)	BRC-130, "Diag-
venicle jerks during 103/ABS control	ECM	nosis Procedure"

NOTE:

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

EXCESSIVE ABS FUNCTION OPERATION FREQUENCY

EXCESSIVE ABS FUNCTION OPERATION FREQUENCY	
< SYMPTOM DIAGNOSIS > [TO	CS/ABS]
EXCESSIVE ABS FUNCTION OPERATION FREQUENCY	
Diagnosis Procedure	00000000006389250
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> , "Inspection RAX-6, "On-vehicle Service".	<u>JII</u> , Real.
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 reter installation for damage.	
 Sensor rotor installation for damage. Wheel sensor connector connection. 	
Wheel sensor harness inspection.	
Is the inspection result normal?	
YES >> GO TO 4 NO >> • Replace wheel sensor or sensor rotor. Refer to <u>BRC-136</u> , "Removal and Installation"	or BBC-
138, "Removal and Installation".	_ OI <u>DIXO-</u>
• 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 driv	⁄ing.
Is the inspection result normal?	
YES >> System normal. NO >> Perform self-diagnosis. Refer to <u>BRC-15, "CONSULT Function (ABS)"</u> .	
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UNEXPECTED PEDAL REACTION

< SYMPTOM DIAGNOSIS > [TCS/ABS]

UNEXPECTED PEDAL REACTION

Diagnosis Procedure

INFOID:0000000006389251

1. CHECK BRAKE PEDAL STROKE

Check brake pedal stroke. Refer to BR-13, "Inspection and Adjustment".

Is the stroke too big?

YES

- >> Bleed air from brake tube and hose. Refer to BR-16, "Bleeding Brake System".
 - Check brake pedal, brake booster, and master cylinder for mount play, looseness, brake system fluid leakage, etc. Refer to brake pedal: <u>BR-13</u>, "<u>Inspection and Adjustment</u>", brake booster: <u>BR-9</u>, "<u>Inspection</u>" and master cylinder: <u>BR-10</u>, "<u>On Board Inspection</u>".

NO >> GO TO 2.

2. CHECK FUNCTION

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

Is the inspection result normal?

- YES >> GO TO procedure 3 "CHECK WHEEL SENSOR AND SENSOR ROTOR" of symptom 1. Refer to BRC-55. "Diagnosis Procedure".
- NO >> Check brake system.

THE BRAKING DISTANCE IS LONG

[TCS/ABS] < SYMPTOM DIAGNOSIS > THE BRAKING DISTANCE IS LONG Α Diagnosis Procedure INFOID:0000000006389252 **CAUTION:** В The stopping distance on slippery road surfaces might be longer with the ABS operating than when the ABS is not operating. 1. CHECK FUNCTION C 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? D

YES

NO

>> Inspection End.

>> Check brake system.

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ABS FUNCTION DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

[TCS/ABS]

ABS FUNCTION DOES NOT OPERATE

Diagnosis Procedure

INFOID:0000000006389253

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 <u>BRC-81, "CONSULT Function (ABS)"</u>.

PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

[TCS/ABS] < SYMPTOM DIAGNOSIS > PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS Α Diagnosis Procedure INFOID:0000000006389254 **CAUTION:** Under the following conditions, ABS is activated and vibration is felt when brake pedal is lightly depressed (just place a foot on it). However, this is normal. · When shifting gears When driving on slippery road During cornering at high speed When passing over bumps or grooves [at approximately 50 mm (1.97 in) or more] When pulling away just after starting engine [at approximately 10 km/h (6 MPH) or higher] D 1.SYMPTOM CHECK 1 Check that there are pedal vibrations when the engine is started. Е Do symptoms 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 symptoms occur? YES >> GO TO 3 NO >> Perform self diagnostic result. Refer to BRC-81, "CONSULT 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. K L M Ν 0 Р

VEHICLE JERKS DURING TCS/ABS CONTROL

< SYMPTOM DIAGNOSIS >

[TCS/ABS]

VEHICLE JERKS DURING TCS/ABS CONTROL

Diagnosis Procedure

INFOID:0000000006389255

1.SYMPTOM CHECK

Check if the vehicle jerks during TCS/ABS control.

Is the inspection result normal?

YES >> Inspection End.

NO >> GO TO 2

2.CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnostic of ABS actuator and electric unit (control unit). Refer to <u>BRC-81, "CONSULT Function (ABS)"</u>.

Are self-diagnosis results indicated?

YES >> Check corresponding items, make repairs, and perform ABS actuator and electric unit (control unit) self-diagnosis.

NO >> GO TO 3

3. CHECK CONNECTOR

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

Are self-diagnosis results indicated?

YES >> If poor contact, damage, open or short circuit of connector terminal is found, repair or replace.

NO >> GO TO 4

f 4.CHECK ECM AND CVT SELF-DIAGNOSIS RESULTS

Perform ECM and CVT self-diagnosis. Refer to <u>EC-423, "CONSULT-III Function"</u> or <u>TM-123, "CONSULT-III Function"</u> or <u>TM-123, "CONSULT-III Function"</u>.

Are self-diagnosis results indicated?

YES

- >> Check the corresponding items.
 - ECM: Refer to EC-423, "CONSULT-III Function".
 - CVT: Refer to TM-123, "CONSULT-III Function (TRANSMISSION)".
- NO >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-139</u>, "Removal and Installation".

NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS > [TCS/ABS]

NORMAL OPERATING CONDITION

Symptom	Result	
Slight vibrations are felt on the brake pedal and the operation noises occur, when TCS or ABS is activated.	This is a normal condition due to the 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 is activated due to rapid acceleration or sharp turn.		
The brake pedal vibrates and motor operation noises occur from the engine room, after the engine starts and just after the vehicle starts.	This is a normal, and it is caused by the ABS operation check.	
Depending on the road conditions, the driver may experience a sluggish feel.	This is normal, because	
TCS may activate momentarily if wheel speed changes when driving over location where friction coefficient varies, when downshifting, or when fully depressing accelerator pedal.	TCS places the highest priority on the optimum traction (stability).	
The ABS warning lamp and SLIP indicator lamp may turn ON when the vehicle is subject to strong shaking or large vibration, such as when the vehicle is rotating on a turntable or located on a ship while the engine is running.	In this case, restart the engine on a normal road. If the normal condition is restored, there is no malfunction. At that time, erase the self-diagnosis memory.	
The ABS warning lamp, TCS 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).		
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 TCS function before performing an inspection on a chassis dynamometer.)	
TCS OFF indicator lamp and SLIP indicator lamp may simultaneously turn on when low tire pressure warning lamp turns on.	This is not a TCS system error but results from characteristic change of tire.	

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PRECAUTIONS

< PRECAUTION > [TCS/ABS]

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.

Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:0000000006389258

NOTE:

- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

This vehicle is equipped with a push-button ignition switch and a steering lock unit.

If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

1. Connect both battery cables.

NOTE:

Supply power using jumper cables if battery is discharged.

- 2. Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
- 3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
- 4. Perform the necessary repair operation.
- 5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)

PRECAUTIONS

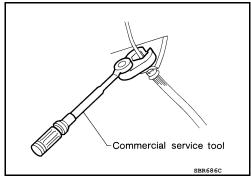
< PRECAUTION > [TCS/ABS]

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

Precaution for Brake System

INFOID:0000000006389259

- Recommended fluid is brake fluid "DOT 3".
- · Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted surface of body. If brake fluid is splashed on painted surfaces
 of body immediately wipe off then with cloth and then wash it away with water.
- Never use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use a flare nut wrench when removing flare nuts, and use a flare nut torque wrench when tighten brake tube flare nuts.
- When installing brake tubes, be sure to check torque.
- Brake system is an important safety part. If a brake fluid leak is detected, always disassemble the affected part. If a malfunction is detected, replace part with a new one.
- Before working, turn ignition switch OFF and disconnect connectors of ABS actuator and electric unit (control unit) or the battery cable from the negative terminal.



WARNING:

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

Precaution for Brake Control

INFOID:0000000006389260

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

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Revision: June 2012 BRC-133 2011 Altima GCC

PREPARATION

< PREPARATION > [TCS/ABS]

PREPARATION

PREPARATION

Special Service Tool

INFOID:0000000006389261

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
(J-45741) ABS active wheel sensor tester	J-45741-BOX O O O O O O O O O O O O O O O O O O	Checking operation of ABS active wheel sensor

Commercial Service Tool

INFOID:0000000006389262

Tool name		Description
Flare nut crowfoot Torque wrench		Removing and installing brake piping a: 10mm (0.39 in)/12mm (0.47 in)
	S-NT360	

[TCS/ABS]

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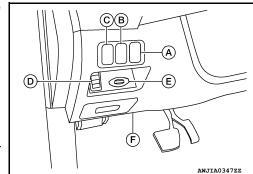
REMOVAL AND INSTALLATION

TCS OFF SWITCH

Removal and Installation

REMOVAL

- Remove instrument lower cover to access the TCS OFF switch. Refer to IP-11. "Exploded View".
- 2. Disconnect the following harness connectors to remove from the instrument lower cover:
 - Headlamp aiming (A)
 - Rear sonar system off switch (B)
 - TCS OFF (C)
 - Trunk release (D)
 - Key slot (E)
 - Diagnostic connector (F)
 - Asperator tube
- Remove TCS OFF switch from the back of the instrument lower cover



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INSTALLATION

Installation is in the reverse order of removal.

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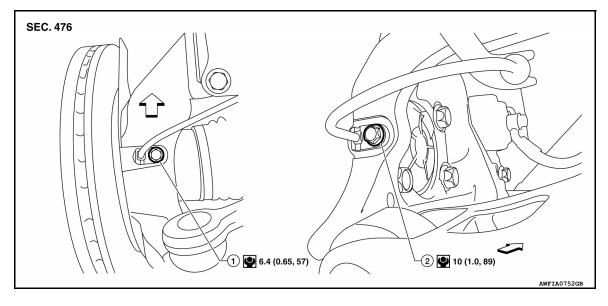
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WHEEL SENSORS

Removal and Installation





Front wheel sensor

2. Rear wheel sensor

<□ Front

CAUTION:

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

FRONT WHEEL SENSOR

Removal

- 1. Remove front wheel and tire. Refer to WT-65, "Adjustment".
- Partially remove front wheel fender protector. Refer to <u>EXT-22</u>, "Removal and Installation" (Coupe), <u>EXT-46</u>, "Removal and Installation" (Sedan).
- 3. Remove wheel sensor bolt and wheel sensor.
- Remove harness wire from mounts and disconnect wheel sensor harness connector.

Installation

Installation is in the reverse order of removal.

REAR WHEEL SENSOR

Removal

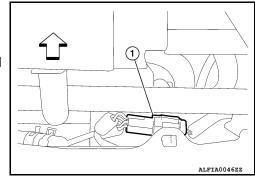
Remove rear wheel and tire. Refer to <u>WT-65, "Adjustment"</u>.

WHEEL SENSORS

< REMOVAL AND INSTALLATION >

[TCS/ABS]

- 2. Disconnect wheel sensor harness connector (1).
 - <⊐: Front
- 3. Remove harness wire clips from rear suspension member.
- 4. Remove wheel sensor bolt and wheel sensor from rear wheel hub and bearing assembly.



Installation

Installation is in the reverse order of removal.

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SENSOR ROTOR

< REMOVAL AND INSTALLATION >

[TCS/ABS]

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SENSOR ROTOR

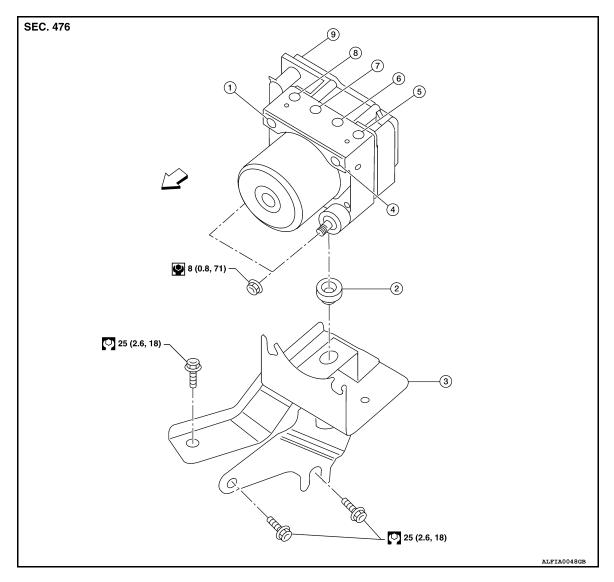
Removal and Installation

The front and rear wheel sensor rotors are an integral part of the wheel hubs and can not be disassembled. When replacing the sensor rotor, replace the wheel hub. Refer to <u>FAX-8</u>, "<u>Removal and Installation</u>" (front), <u>RAX-7</u>, "<u>Removal and Installation</u>" (rear).

[TCS/ABS]

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Exploded View



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

Removal and Installation

CAUTION:

< > Front

Be careful of the following.

- · Before servicing, disconnect the battery cable from negative terminal.
- To remove brake pipe, use a suitable tool (flare nut wrench) to prevent flare nuts and brake tube from being damaged. To install, use suitable tool (flare nut torque wrench).
- Do not apply excessive impact to ABS actuator and electric unit (control unit), such as dropping it.
- Do not remove and install ABS actuator and electric unit (control unit) by holding harness.
- After work is completed, bleed air from brake tube. Refer to BR-16, "Bleeding Brake System".
- After installing harness connector on the ABS actuator and electric unit (control unit), make sure connector is securely locked.

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< REMOVAL AND INSTALLATION >

[TCS/ABS]

REMOVAL

- 1. Remove cowl top. Refer to <u>EXT-21, "Removal and Installation"</u> (Coupe), <u>EXT-45, "Removal and Installation"</u> (Sedan).
- 2. Disconnect washer hose.
- 3. Disconnect the battery negative terminal.
- 4. Remove strut tower bar, if equipped. Refer to FSU-13, "Exploded View".
- 5. Disconnect ABS actuator and electric unit (control unit) connector.
- 6. Loosen brake tube flare nuts, then remove brake tubes from ABS actuator and electric unit (control unit) using a suitable tool.
- 7. Remove ABS actuator and electric unit (control unit) nuts.
- 8. Remove ABS actuator and electric unit (control unit).
- 9. Remove bracket as necessary.

INSTALLATION

Installation is in the reverse order of removal.

Torque brake lines to proper specifications. Refer to BR-18, "Hydraulic Circuit".

DIAGNOSIS AND REPAIR WORKFLOW

IVDC/TCS/ABS1 < BASIC INSPECTION > **BASIC INSPECTION** Α DIAGNOSIS AND REPAIR WORKFLOW Work Flow INFOID:0000000006920894 1. COLLECT INFORMATION FROM THE CUSTOMER Get detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the diagnosis worksheet. Refer to BRC-142, "Diagnostic Work Sheet". >> GO TO 2. D 2.PERFORM SELF DIAGNOSTIC RESULT Perform self diagnostic result. Refer to BRC-158, "CONSULT Function (ABS)". Е Are any DTCs displayed? YES >> Refer to BRC-220, "DTC No. Index". NO >> GO TO 3. BRC 3.CHECK SYMPTOM OPERATING CONDITION Check that the symptom is a normal operating condition. Refer to BRC-248. "Description". Is the symptom a normal operating condition? YES >> Inspection End. NO >> GO TO 4. Н f 4 .CHECK WARNING AND INDICATOR LAMPS OPERATION Check warning and indicator lamps operation. • ABS warning lamp: Refer to BRC-209, "Description". brake warning lamp: Refer to BRC-210, "Description". VDC OFF indicator lamp: Refer to <u>BRC-212</u>, "<u>Description</u>". SLIP indicator lamp: Refer to BRC-214, "Description". Is ON/OFF timing normal? YES >> GO TO 5. NO >> Perform warning lamp diagnosis. Refer to BRC-209, "Component Function Check" (ABS warning K lamp), BRC-210, "Component Function Check" (brake warning lamp), BRC-212, "Component Function Check" (VDC OFF indicator lamp) or BRC-214, "Component Function Check" (SLIP indicator lamp). ${f 5}$.PERFORM DIAGNOSIS APPLICABLE TO THE SYMPTOM L Perform diagnosis applicable to the symptom. Refer to BRC-241, "Symptom Table". M >> GO TO 6. 6. FINAL CHECK Ν Perform self diagnostic result again, and check that the malfunction is repaired. After checking, erase the self diagnosis memory. Refer to BRC-158, "CONSULT Function (ABS)". 0 >> Inspection End. Р

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[VDC/TCS/ABS]

Diagnostic Work Sheet

INFOID:0000000006389269

Customer name MR/MS	Model & Year		VIN	
Engine #	Trans.		Mileage	
Incident Date	Manuf. Date		In Service Date	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			

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INSPECTION AND ADJUSTMENT [VDC/TCS/ABS] < BASIC INSPECTION > INSPECTION AND ADJUSTMENT Α 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 neutral position adjustment for the steering angle sensor. ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement INFOID:0000000006389271 D ${f 1}$.perform the neutral position adjustment for the steering angle sensor Perform the neutral position adjustment for the steering angle sensor. Е >> Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION Special Repair Requirement". **BRC** ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description In case of doing work that applies to the list below, make sure to adjust neutral position of steering angle sensor before running vehicle. Н 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	×	
ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Re-		

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ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION CAUTION:

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

ALIGN THE VEHICLE STATUS

Stop vehicle with front wheels in straight-ahead position.

>> GO TO 2.

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

- 1. On the CONSULT screen, touch "WORK SUPPORT", then "ST ANG SEN ADJUSTMENT".
- Touch "START".

pair Requirement

Revision: June 2012 BRC-143 2011 Altima GCC

INSPECTION AND ADJUSTMENT

< BASIC INSPECTION > [VDC/TCS/ABS]

CAUTION:

Do not touch steering wheel while adjusting steering angle sensor.

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

NOTE:

After approximately 60 seconds, the adjustment ends automatically.

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

CAUTION:

Be sure to perform above operation.

>> GO TO 3.

3. CHECK DATA MONITOR

- 1. Run vehicle with front wheels in straight-ahead position, then stop.
- 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 memories of the ABS actuator and electric unit (control unit) and ECM.

- ABS actuator and electric unit (control unit): Refer to BRC-158, "CONSULT Function (ABS)".
- ECM: Refer to EC-99, "CONSULT-III Function" (QR25DE), EC-423, "CONSULT-III Function" (VQ35DE).

Are the memories erased?

YES >> Inspection End

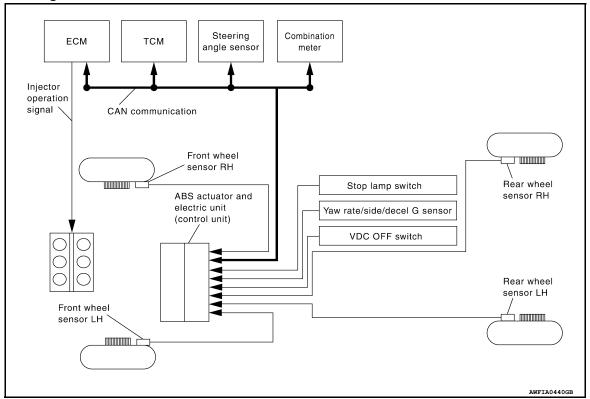
NO >> Check the items indicated by the self-diagnosis.

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SYSTEM DESCRIPTION

VDC

System Diagram



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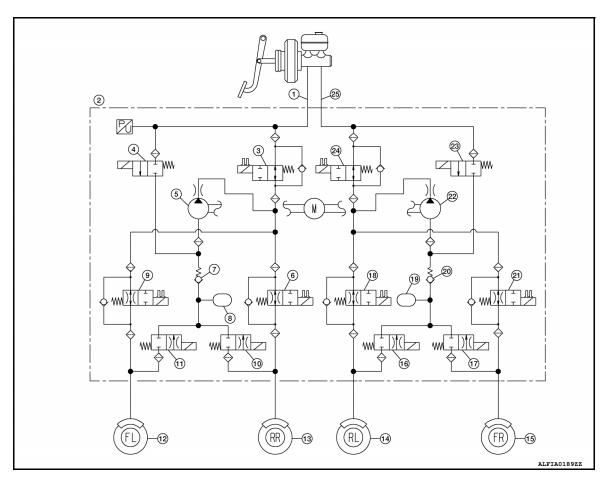
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Hydraulic Circuit Diagram

INFOID:0000000006920910



- Primary side
- 4. Primary side VDC switch-over valve 5. 1 (HSV1)
- 7. Primary side inlet valve
- 10. Rear right outlet solenoid valve
- 13. Rear right caliper
- 16. Rear left outlet solenoid valve
- 19. Secondary side damper
- 22. Secondary side pump
- 25. Secondary side

- 2. VDC/TCS/ABS actuator
- Primary side pump
- 8. Primary side damper
- 11. Front left outlet solenoid valve
- 14. Rear left caliper
- 17. Front right outlet solenoid valve
- 20. Secondary side inlet valve
- 23. Secondary side VDC switch-over valve 2 (HSV2)

- Primary side VDC switch-over valve 1 (USV1)
- 6. Rear right inlet solenoid valve
- 9. Front left inlet solenoid valve
- 12. Front left caliper
- 15. Front right caliper
- 18. Rear left inlet solenoid valve
- 21. Front right inlet solenoid valve
- 24. Secondary side VDC switch-over valve 2 (USV2)

System Description

INFOID:0000000006920911

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

Component Parts Location

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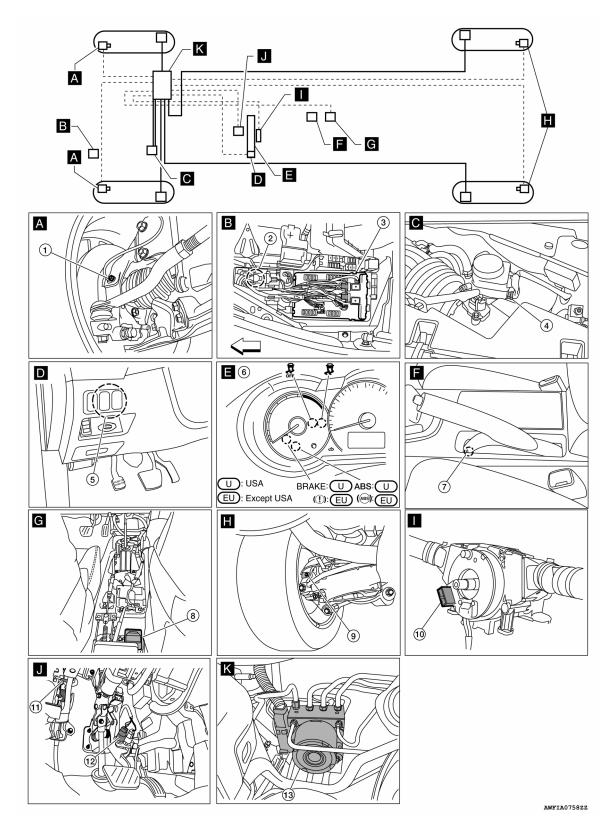
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- Front wheel sensor LH E19 Front wheel sensor RH E41
- Brake fluid level switch E24 4.
- 7. Parking brake switch M73 (Sedan with M/T)
- 2. Stop lamp relay E57 (with CVT)
- 5. VDC OFF switch M72
- 8. Yaw rate/side/decel G sensor M55
- 3. IPDM E/R
- Combination meter M24 6.

Rear wheel sensor LH C2 Rear wheel sensor RH C3

- steering wheel removed)
- 10. Steering angle sensor M53 (view with 11. Parking brake switch E35 (with CVT) 12. Stop lamp switch E38
- 13. ABS actuator and electric unit (control unit) E26

Component Description

INFOID:0000000006920913

Compo	Component parts		
	Pump	DDC 474 IID consisting	
	Motor	BRC-171, "Description"	
	Actuator relay (Main relay)	BRC-173, "Description"	
ABS actuator and electric unit (control unit)	Solenoid valve	BRC-182, "Description"	
	Pressure sensor	BRC-189, "Description"	
	VDC switch-over valve (HSV1, HSV2, USV1, USV2)	BRC-196, "Description"	
Wheel sensor		BRC-162, "Description"	
Stop lamp switch		BRC-178, "Description"	
Steering angle sensor	BRC-191, "Description"		
Yaw rate/side/G sensor		BRC-193, "Description"	
Brake fluid level switch		BRC-201, "Description"	
Parking brake switch		BRC-205, "Description"	
VDC OFF switch		BRC-207, "Description"	
ABS warning lamp	BRC-209, "Description"		
Brake warning lamp	BRC-210, "Description"		
VDC OFF indicator lamp	BRC-212, "Description"		
Slip indicator lamp		BRC-214, "Description"	

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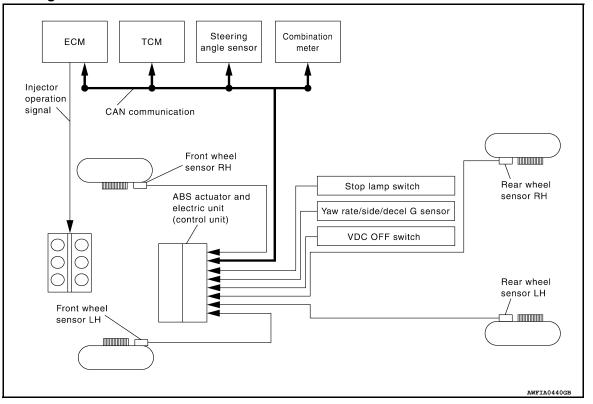
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TCS

System Diagram



System Description

Traction Control System is a function that electronically controls engine torque and brake fluid pressure to
ensure the optimum slippage ratio at drive wheels by computing wheel speed signals from 4 wheel sensors.
When ABS actuator and electric unit (control unit) detects a spin at drive wheels, it compares wheel speed
signals from all 4 wheels. At this time, LH and RH front brake fluid pressure are controlled, while fuel being
cut to engine and throttle valve being closed to reduce engine torque by the control unit. Further more, throttle position is continuously controlled to ensure the optimum engine torque at all times.

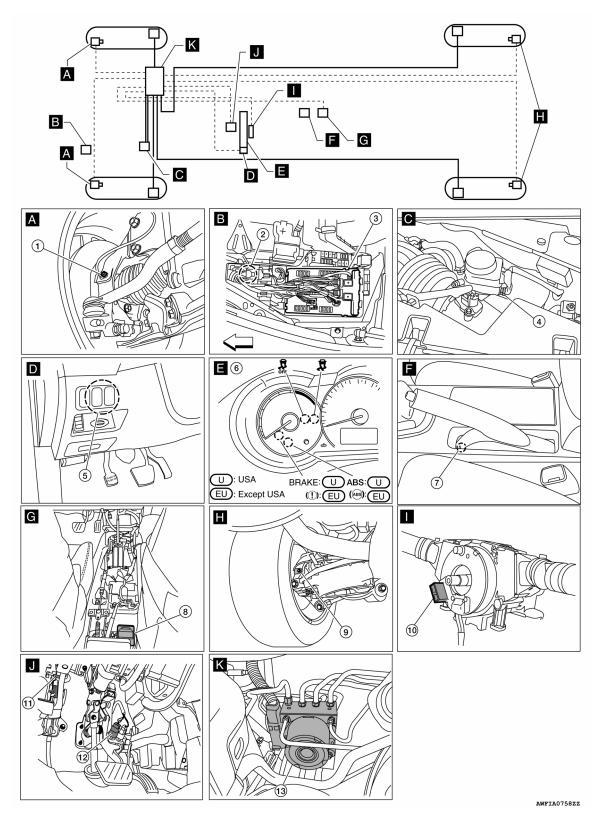
During TCS operation, it informs driver of system operation by flashing slip indicator lamp.

Electrical system diagnosis by CONSULT is available.

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Component Parts Location

INFOID:0000000006920916



- Front wheel sensor LH E19
 Front wheel sensor RH E41
- 4. Brake fluid level switch E24
- 7. Parking brake switch M73 (Sedan with M/T)
- 2. Stop lamp relay E57 (with CVT)
- 5. VDC OFF switch M72
- . Yaw rate/side/decel G sensor M55
- 3. IPDM E/R
- 6. Combination meter M24
- 9. Rear wheel sensor LH C2 Rear wheel sensor RH C3

[VDC/TCS/ABS]

- steering wheel removed)
- 10. Steering angle sensor M53 (view with 11. Parking brake switch E35 (with CVT) 12. Stop lamp switch E38
- 13. ABS actuator and electric unit (control unit) E26

Component Description

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Compo	Reference	С	
	Pump	BRC-171, "Description"	
	Motor	BIC-171, Description	D
	Actuator relay (Main relay)	BRC-173, "Description"	D
ABS actuator and electric unit (control unit)	Solenoid valve	BRC-182, "Description"	
	Pressure sensor	BRC-189, "Description"	E
	VDC switch-over valve (HSV1, HSV2, USV1, USV2)	BRC-196, "Description"	
Wheel sensor		BRC-162, "Description"	BRC
Stop lamp switch	BRC-178, "Description"		
Steering angle sensor	BRC-191, "Description"	_	
Yaw rate/side/G sensor	BRC-193, "Description"	— G	
Brake fluid level switch	BRC-201, "Description"		
Parking brake switch		BRC-205, "Description"	Н
VDC OFF switch	BRC-207, "Description"		
ABS warning lamp	BRC-209, "Description"		
Brake warning lamp	BRC-210, "Description"		
VDC OFF indicator lamp	BRC-212, "Description"		
Slip indicator lamp	BRC-214, "Description"		

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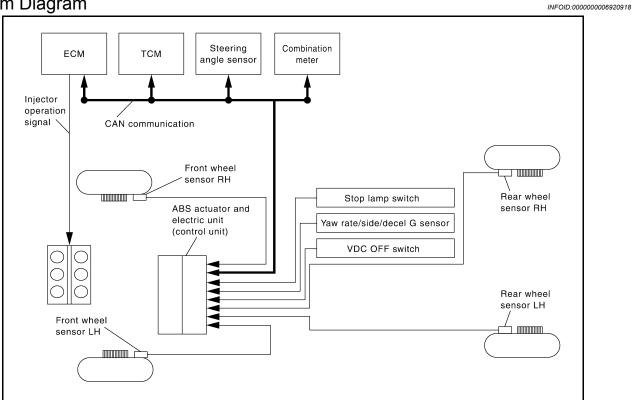
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ABS

System Diagram



System Description

INFOID:0000000006920901

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

Component Parts Location

INFOID:0000000006920919

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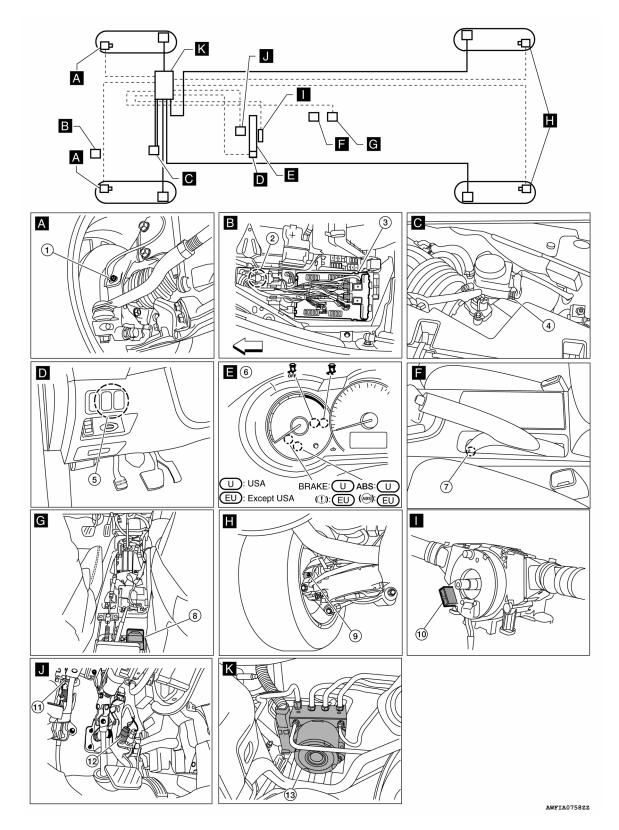
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- Front wheel sensor LH E19
 Front wheel sensor RH E41
- 4. Brake fluid level switch E24
- 7. Parking brake switch M73 (Sedan with M/T)
- 2. Stop lamp relay E57 (with CVT)
- 5. VDC OFF switch M72
- 8. Yaw rate/side/decel G sensor M55
- 3. IPDM E/R
- 6. Combination meter M24
- 9. Rear wheel sensor LH C2 Rear wheel sensor RH C3

- steering wheel removed)
- 10. Steering angle sensor M53 (view with 11. Parking brake switch E35 (with CVT) 12. Stop lamp switch E38
- 13. ABS actuator and electric unit (control unit) E26

Component Description

INFOID:0000000006920920

Compo	Component parts		
	Pump	DDC 474 IID consisting	
	Motor	BRC-171, "Description"	
	Actuator relay (Main relay)	BRC-173, "Description"	
ABS actuator and electric unit (control unit)	Solenoid valve	BRC-182, "Description"	
	Pressure sensor	BRC-189, "Description"	
	VDC switch-over valve (HSV1, HSV2, USV1, USV2)	BRC-196, "Description"	
Wheel sensor		BRC-162, "Description"	
Stop lamp switch		BRC-178, "Description"	
Steering angle sensor	BRC-191, "Description"		
Yaw rate/side/G sensor		BRC-193, "Description"	
Brake fluid level switch		BRC-201, "Description"	
Parking brake switch		BRC-205, "Description"	
VDC OFF switch		BRC-207, "Description"	
ABS warning lamp	BRC-209, "Description"		
Brake warning lamp	BRC-210, "Description"		
VDC OFF indicator lamp	BRC-212, "Description"		
Slip indicator lamp		BRC-214, "Description"	

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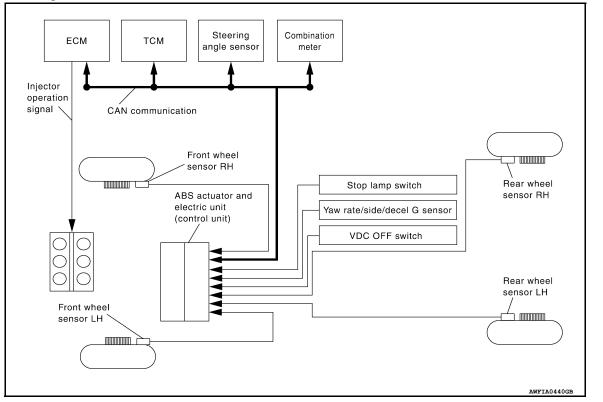
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System Diagram



System Description

Electric Brake force Distribution functions as follows:

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

Electrical system diagnosis by CONSULT is available.

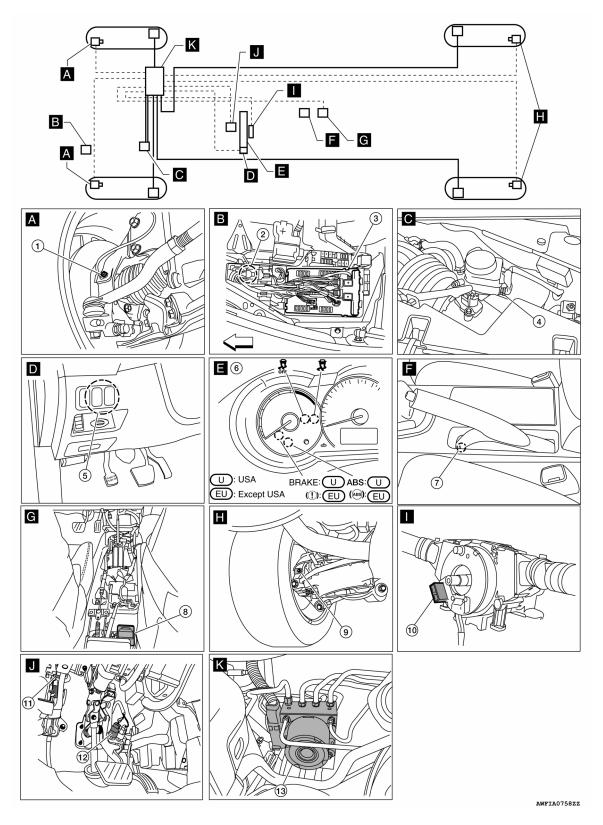
BRC-155 Revision: June 2012 2011 Altima GCC

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Component Parts Location

INFOID:0000000006920922



- Front wheel sensor LH E19
 Front wheel sensor RH E41
- 4. Brake fluid level switch E24
- 7. Parking brake switch M73 (Sedan with M/T)
- 2. Stop lamp relay E57 (with CVT)
- 5. VDC OFF switch M72
- 3. Yaw rate/side/decel G sensor M55
- 3. IPDM E/R
- 6. Combination meter M24
- 9. Rear wheel sensor LH C2 Rear wheel sensor RH C3

[VDC/TCS/ABS]

- steering wheel removed)
- 10. Steering angle sensor M53 (view with 11. Parking brake switch E35 (with CVT) 12. Stop lamp switch E38
- 13. ABS actuator and electric unit (control unit) E26

Component Description

INFOID:0000000006920923

Compo	Reference	
	Pump	BRC-171, "Description"
	Motor	<u> Sixo ir i, Boodiption</u>
	Actuator relay (Main relay)	BRC-173, "Description"
ABS actuator and electric unit (control unit)	Solenoid valve	BRC-182, "Description"
	Pressure sensor	BRC-189, "Description"
	VDC switch-over valve (HSV1, HSV2, USV1, USV2)	BRC-196, "Description"
Wheel sensor		BRC-162, "Description"
Stop lamp switch	BRC-178, "Description"	
Steering angle sensor		BRC-191, "Description"
Yaw rate/side/G sensor		BRC-193, "Description"
Brake fluid level switch		BRC-201, "Description"
Parking brake switch		BRC-205, "Description"
VDC OFF switch		BRC-207, "Description"
ABS warning lamp	BRC-209, "Description"	
Brake warning lamp	BRC-210, "Description"	
VDC OFF indicator lamp	BRC-212, "Description"	
Slip indicator lamp	BRC-214, "Description"	

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

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

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

CONSULT Function (ABS)

INFOID:0000000006389278

FUNCTION

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

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

SELF DIAGNOSTIC RESULT MODE

Operation Procedure

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

How to Erase Self-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 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).

Display Item List

Refer to BRC-220, "DTC No. Index".

DATA MONITOR

Display Item List

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

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

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

VOTOTENI DESCI					
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.	E
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.	E
RR LH OUT SOL (On/Off)	_	×	×	Rear LH OUT ABS solenoid (On/Off) status is displayed.	
STOP LAMP SW (On/Off)	×	×	×	Stop lamp switch (On/Off) status is displayed.	BF
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.	ŀ
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 supplied to ABS actuator and electric unit (control unit) is displayed.	ŀ
GEAR (1, 2, 3, 4, 5, 6)	×	×	×	Gear position while in manual mode determined by TCM is displayed.	r
YAW RATE SEN (d/s)	×	×	×	Yaw rate detected by yaw rate sensor is displayed.	L
ACCEL POS SIG (%)	×	_	×	Throttle valve open/close status judged by CAN communication signal is displayed.	
SIDE G-SENSOR (m/s ²)	×	_	×	Lateral acceleration detected by side G sensor is displayed.	
STR ANGLE SIG	×	_	×	Steering angle detected by steering angle sensor is displayed.	1
PRESS SENSOR (bar)	×	_	×	Brake fluid pressure detected by pressure sensor is displayed.	
EBD SIGNAL (On/Off)	_	_	×	EBD operation (On/Off) status is displayed.	(
ABS SIGNAL (On/Off)	_	_	×	ABS operation (On/Off) status is displayed.	F
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.	

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

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

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)	_	_	×	Cranking condition (On/Off) status is displayed.
FLUID LEV SW (On/Off)	×	_	×	Brake fluid level switch (On/Off) status is displayed.
PARK BRAKE SW (On/Off)	×	_	×	Parking brake switch (On/Off) status is displayed.
USV [FL-RR] (On/Off)	_	_	×	Primary side USV solenoid valve (On/Off) status is displayed.
USV [FR-RL] (On/Off)	_	_	×	Secondary side USV solenoid valve (On/Off) status is displayed.
HSV [FL-RR] (On/Off)	_	_	×	Primary side HSV solenoid valve (On/Off) status is displayed.
HSV [FR-RL] (On/Off)	_	_	×	Secondary side HSV solenoid valve (On/Off) status is displayed.
V/R OUTPUT (On/Off)	_	_	×	Valve relay operation signal (On/Off) status is displayed.
M/R OUTPUT (On/Off)	_	_	×	Motor relay operation signal (On/Off) status is displayed.
ENGINE RPM (rpm)	×	_	×	Engine speed judged by CAN communication signal 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 indicator lamp, SLIP indicator lamp or brake warning lamp on.
- ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp and brake warning lamp are on during active test.

NOTE:

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

Test Item

SOLENOID VALVE

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

^{-:} Not applicable

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

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

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Operation		AB	S solenoid v	alve	ABS solenoid valve (ACT)		
Operation		Up	Keep	Down	Up	ACT UP	ACT KEEP
	FR RH IN SOL	Off	On	On	_	_	_
	FR RH OUT SOL	Off	Off	On*	_	_	_
FR RH SOL	USV [FR-RL]	Off	Off	On*	_	_	_
	HSV [FR-RL]	Off	Off	On*	_	_	_
	FR LH IN SOL	Off	On	On	_	_	_
	FR LH OUT SOL	Off	Off	On*	_	_	_
FR LH SOL	USV [FL-RR]	Off	Off	On*	_	_	_
	HSV [FL-RR]	Off	Off	On*	_	_	_
	RR RH IN SOL	Off	On	On	_	_	_
	RR RH OUT SOL	Off	Off	On*	_	_	_
RR RH SOL	USV [FL-RR]	Off	Off	On*	_	_	_
	HSV [FL-RR]	Off	Off	On*	_	_	_
	RR LH IN SOL	Off	On	On	_	_	_
	RR LH OUT SOL	Off	Off	On*	_	_	_
RR LH SOL	USV [FR-RL]	Off	Off	On*	_	_	_
	HSV [FR-RL]	Off	Off	On*	_	_	_
	FR RH IN SOL	_	_	_	Off	Off	Off
D DU ADO COLENOID (ACT)	FR RH OUT SOL	_	_	_	Off	Off	Off
R RH ABS SOLENOID (ACT)	USV [FR-RL]	_	_	_	Off	On	On
	HSV [FR-RL]	_	_	_	Off	On*	Off
	FR LH IN SOL	_	_	_	Off	Off	Off
TO LILL ADO COLENOID (ACT)	FR LH OUT SOL	_	_	_	Off	Off	Off
R LH ABS SOLENOID (ACT)	USV [FL-RR]	_	_	_	Off	Off	Off
	HSV [FL-RR]	_	_	_	Off	Off	Off
	RR RH IN SOL	_	_	_	Off	Off	Off
	RR RH OUT SOL	_	_	_	Off	Off	Off
RR RH ABS SOLENOID (ACT)	USV [FL-RR]	_	_	_	Off	Off	Off
	HSV [FL-RR]	_	_	_	Off	Off	Off
	RR LH IN SOL	_	_	_	Off	Off	Off
AD LLI ADO COLENCID (ACT)	RR LH OUT SOL	_	_	_	Off	Off	Off
RR LH ABS SOLENOID (ACT)	USV [FR-RL]	_	_	_	Off	On	On
	HSV [FR-RL]	_	_	_	Off	On*	Off

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

ABS MOTOR

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

Operation	On	Off
MOTOR RELAY	On	Off
ACTUATOR RLY	On	On

C1101, C1102, C1103, C1104 WHEEL SENSOR-1

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

DTC/CIRCUIT DIAGNOSIS

C1101, C1102, C1103, C1104 WHEEL SENSOR-1

Description INFOID:000000006389279

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.	Harness or connector Wheel sensor
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 DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
- Perform self diagnostic result.

Is DTC C1101, C1102, C1103 or C1104 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-162, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389281

Regarding Wiring Diagram information, refer to <u>BRC-223, "Wiring Diagram - Coupe"</u> or <u>BRC-232, "Wiring Diagram - Sedan With VDC"</u>.

CAUTION:

Do not check between wheel sensor terminals.

1.CONNECTOR INSPECTION

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

Is the inspection result normal?

YES >> GO TO 2

NO >> Repair or replace as necessary.

2.CHECK WHEEL SENSOR OUTPUT SIGNAL

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

NOTE:

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

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

C1101, C1102, C1103, C1104 WHEEL SENSOR-1

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

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 wheel sensor. Refer to <u>BRC-253</u>, "Removal and Installation".

3. CHECK TIRE

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4

NO >> • Adjust air pressure, or replace tire.

• Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

4. CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to <u>FAX-6</u>, "<u>Inspection</u>" (front) or <u>RAX-6</u>, "<u>On-vehicle Service</u>" (rear). <u>Is the inspection result normal?</u>

YES >> GO TO 5

NO >> Repair or replace as necessary. Refer to <u>FAX-8</u>, "<u>Removal and Installation</u>" (front) or <u>RAX-7</u>, "<u>Removal and Installation</u>" (rear).

5.CHECK WIRING HARNESS FOR SHORT CIRCUIT

Check continuity between wheel sensor connector terminals and ground.

Wheel sensor connector terminal	Ground	Continuity
1	_	No
2	_	140

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 II		16	E19	1	
Front LH		5	E19	2	
Front RH	9 10	E41	1		
TOTETAT		10	E41	2	Yes
Rear LH	E20	6	C2	1	
Real LII		17	02	2	
Rear RH		8	C3	1	
		19	03	2	

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".

NO >> Repair the circuit.

Component Inspection

1. CHECK DATA MONITOR

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C1101, C1102, C1103, C1104 WHEEL SENSOR-1

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

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 BRC-162, "Diagnosis Procedure".

Special Repair Requirement

INFOID:0000000006389283

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

>> END

C1105, C1106, C1107, C1108 WHEEL SENSOR-2

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1105, C1106, C1107, C1108 WHEEL SENSOR-2

Description INFOID.00000000006389284

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
C1105	RR RH SENSOR-2	Circuit of rear RH wheel sensor is open. Or when the sensor power voltage is outside the standard.	
C1106	RR LH SENSOR-2	Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard.	Harness or connector Wheel sensor
C1107	FR RH SENSOR-2	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)
C1108	FR LH SENSOR-2	Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard.	

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

®With CONSULT.

- 1. Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
- 2. Perform self diagnostic result.

Is DTC C1105, C1106, C1107 or C1108 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-165, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

CAUTION:

Do not check between wheel sensor terminals.

1.CONNECTOR INSPECTION

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

Is the inspection result normal?

YES >> GO TO 2

NO >> Repair or replace as necessary.

2.CHECK WHEEL SENSOR OUTPUT SIGNAL

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

NOTE:

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

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

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

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 wheel sensor. Refer to <u>BRC-253</u>, "Removal and Installation".

3.CHECK TIRE

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4

NO >> • Adjust air pressure, or replace tire.

• Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

4. CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to <u>FAX-6</u>, "<u>Inspection</u>" (front) or <u>RAX-6</u>, "<u>On-vehicle Service</u>" (rear). <u>Is the inspection result normal?</u>

YES >> GO TO 5

NO >> Repair or replace as necessary. Refer to <u>FAX-8</u>, "<u>Removal and Installation</u>" (front) or <u>RAX-7</u>, "<u>Removal and Installation</u>" (rear).

5. CHECK WIRING HARNESS FOR SHORT CIRCUIT

Check continuity between wheel sensor connector terminals and ground.

Wheel sensor connector terminal	Ground	Continuity
1	_	No
2		140

Is the inspection result normal?

YES >> GO TO 6

NO >> Repair the circuit.

O.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
Wileer Serisor	Connector	Terminal	Connector	Terminal	
Front LH	16 5	16	E19	1	
FIOIIL LIT		5	E19	2	
Front RH	E26	9	E41	1	Yes
TIOHERIT		10		2	
Rear LH		6	C2	1	
Near Ell		17	OZ.	2	
Rear RH		8	C3	1	
		19		2	

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".

NO >> Repair the circuit.

Component Inspection

INFOID:0000000006389287

1. CHECK DATA MONITOR

C1105, C1106, C1107, C1108 WHEEL SENSOR-2

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

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 BRC-175, "Diagnosis Procedure".

Special Repair Requirement

INFOID:0000000006389288

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-143</u>, "<u>ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement"</u>.

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DTC C1109 BATTERY VOLTAGE [ABNORMAL]

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

INFOID:0000000006389291

DTC C1109 BATTERY VOLTAGE [ABNORMAL]

Description INFOID:000000006389289

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

CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC C1109 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-168, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to <u>BRC-223</u>, "Wiring Diagram - Coupe" or <u>BRC-232</u>, "Wiring Diagram - Sedan With VDC".

1. CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- Reconnect connector and perform self-diagnosis. Refer to <u>BRC-158</u>, "CONSULT Function (ABS)".

Is DTC 1109 detected?

YES >> GO TO 2

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

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

- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Turn ignition switch ON.
- Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 18 and ground.

ABS actuator and electric unit (control unit)		Ground	Condition	Voltage (Approx)
Connector	Terminal			(Αρριολ)
E26	18		Ignition switch ON	Battery voltage
<u> </u>	18	_	Ignition switch OFF	0V

Turn ignition switch OFF.

DTC C1109 BATTERY VOLTAGE [ABNORMAL]

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

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

ABS actuator and ele	ectric unit (control unit)	Ground	Continuity	
Connector	Terminal	Giodila	Continuity	
E26	1		Yes	
E20	4	_	Tes	

Is the inspection result normal?

- YES >> Check battery for terminal looseness, low voltage, etc. If any malfunction is found, repair malfunctioning parts.
 - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".
- NO >> Repair or replace malfunctioning components.
 - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Special Repair Requirement

INFOID:0000000006921397

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

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

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

DTC Logic

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1110	CONTROLLER FAILURE	When there is an internal malfunction in the ABS actuator and electric unit (control unit).	
C1153	EMERGENCY BRAKE	When ABS actuator and electric unit (control unit) is mal- functioning. (Pressure increase is too much or too little)	ABS actuator and electric unit (control unit)
C1170	VARIANT CODING	In a case where VARIANT CODING is different.	

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(I) With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC C1110, C1153 or C1170 detected?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-170</u>, "<u>Diagnosis Procedure</u>".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389293

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

CAUTION:

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

>> Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".

Special Repair Requirement

INFOID:0000000006389294

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-143</u>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

>> END

DTC C1111 PUMP MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

DTC C1111 PUMP MOTOR

Description

INFOID:0000000006389295

PUMP

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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).

> INFOID:0000000006389296

DTC Logic

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1111	11 PUMP MOTOR	During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for actuator motor relay is open.	Harness or connector ABS actuator and electric unit
Omi	T GIVII WOTOR	During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground.	(control unit)

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DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

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With CONSULT.

- Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC C1111 detected?

>> Proceed to diagnosis procedure. Refer to BRC-171, "Diagnosis Procedure". YFS

NO >> Inspection End.

INFOID:0000000006389297

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Coupe" or B gram - Sedan With VDC".

1. CONNECTOR INSPECTION

- Turn ignition switch OFF.
- 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.
- Reconnect connector and perform self-diagnosis. Refer to <u>BRC-158</u>, "CONSULT Function (ABS)".

Is DTC C1111 detected?

YES >> GO TO 2

Revision: June 2012

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

$2.\,$ CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check voltage between the ABS actuator and electric unit (control unit) connector E26 terminal 2 and ground.

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

Is the inspection result normal?

YES >> GO TO 3

NO >> • Repair or replace malfunctioning components.

• Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

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

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

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

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

NO >> • Repair or replace malfunctioning components.

• Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Component Inspection

INFOID:0000000006389298

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 (Note)	ON	ON

NOTE:

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-171, "Diagnosis Procedure".

Special Repair Requirement

INFOID:0000000006389299

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-143</u>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

>> END

[VDC/TCS/ABS]

DTC C1114 MAIN RELAY

Description INFOID:0000000006389300

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

DTC Logic INFOID:0000000006389301

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause	
C1114 MAIN	MAIN RELAY	During the actuator relay operating with OFF, when the actuator relay turns ON, or when the control line for the relay is shorted to the ground.	Harness or connector ABS actuator and electric unit	
	MAIN INLLAI	During the actuator relay operating with ON, when the actuator relay turns ON, or when the control line for the relay is open.	(control unit)	

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC C1114 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-173, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Coupe" or B gram - Sedan With VDC".

1.CONNECTOR INSPECTION

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 2

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

2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

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

Is the inspection result normal?

YES >> GO TO 3

>> • Repair or replace malfunctioning components. NO

BRC-173 Revision: June 2012 2011 Altima GCC **BRC**

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DTC C1114 MAIN RELAY

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

• Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

3. CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

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

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

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
 - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".
- NO >> Repair or replace malfunctioning components.
 - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Component Inspection

INFOID:0000000006389303

1. CHECK ACTIVE TEST

- 1. 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 (Note)	ON	ON

NOTE:

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-171, "Diagnosis Procedure".

Special Repair Requirement

INFOID:0000000006389304

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

>> END

DTC C1115 ABS SENSOR [ABNORMAL SIGNAL]

< DTC/CIRCUIT DIAGNOSIS >

IVDC/TCS/ABS1

DTC C1115 ABS SENSOR [ABNORMAL SIGNAL]

Description INFOID:0000000006389305

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:0000000006389306

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 DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
- Perform self diagnostic result.

Is DTC C1115 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-175, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Coupe" or B gram - Sedan With VDC".

CAUTION:

Do not check between wheel sensor terminals.

1.CONNECTOR INSPECTION

- Disconnect ABS actuator and electric unit (control unit) and malfunctioning wheel sensor connectors.
- Check terminals to see if they are deformed, disconnected, loose, etc., Repair or replace if any malfunction condition is found.

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 wheel sensor. Refer to BRC-253, "Removal and Installation".

BRC-175 Revision: June 2012 2011 Altima GCC **BRC**

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DTC C1115 ABS SENSOR [ABNORMAL SIGNAL]

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

3. CHECK TIRE

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4

NO >> • Adjust air pressure, or replace tire.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

4. CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to <u>FAX-6</u>, "<u>Inspection</u>" (front) or <u>RAX-6</u>, "<u>On-vehicle Service</u>" (rear). <u>Is the inspection result normal?</u>

YES >> GO TO 5

NO >> Repair or replace as necessary. Refer to <u>FAX-8</u>, "<u>Removal and Installation</u>" (front) or <u>RAX-7</u>, "<u>Removal and Installation</u>" (rear).

5. CHECK WIRING HARNESS FOR SHORT CIRCUIT

Check continuity between wheel sensor connector terminals and ground.

Wheel sensor connector terminal	Ground	Continuity	
1		No	
2		140	

Is the inspection result normal?

YES >> GO TO 6

NO >> Repair the circuit.

$\mathsf{6}.$ 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	
Frantill		16	F40	1	Yes
Front LH		5	E19	2	
Front RH		9	E41	1	
FIOR KH	E26	10	E41	2	
Rear LH	LZO	6	C2	1	
Real Ln		17	02	2	
Rear RH		8	C3	1	
		19	03	2	

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".

NO >> Repair the circuit.

Component Inspection

INFOID:0000000006389308

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)

DTC C1115 ABS SENSOR [ABNORMAL SIGNAL]

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

- BTO/OHTOOTI BI/TOTOOTO	<u> </u>	
FR LH SENSOR		
FR RH SENSOR	Nearly matches the speedometer dis-	
RR LH SENSOR	play (±10% or less)	
RR RH SENSOR		В
Is the inspection result normal?		
YES >> Inspection End. NO >> Go to diagnosis procedure. Refer to <u>BRC-175, "Diagnosis Procedure"</u> .		С
Special Repair Requirement	nt (NFOID:0000000006389309	
1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION		
	n adjustment for the steering angle sensor, when replacing the ABS actua- Refer to <u>BRC-143</u> , " <u>ADJUSTMENT OF STEERING ANGLE SENSOR NEU-Requirement"</u> .	Е

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C1116 STOP LAMP SW

Description INFOID:000000006921424

The stop lamp switch transmits the stop lamp switch signal (ON/OFF) to the ABS actuator and electric unit (control unit) either directly (with M/T) or through the stop lamp relay (with CVT).

DTC Logic

DTC DETECTION LOGIC

DTC	Display	Condition	Possible Cause
C1116	STOP LAMP SW	When stop lamp switch signal circuit is open.	 Harness or connector Stop lamp switch Stop lamp relay (with CVT) ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- 2. Perform self diagnostic result.

Is DTC C1116 detected?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-178</u>, "<u>Diagnosis Procedure (With M/T)</u>" or <u>BRC-179</u>, "<u>Diagnosis Procedure (With CVT)</u>".

NO >> Inspection End.

Diagnosis Procedure (With M/T)

INFOID:0000000006921426

Regarding Wiring Diagram information, refer to <u>BRC-223</u>, "Wiring <u>Diagram - Coupe"</u> or <u>BRC-232</u>, "Wiring <u>Diagram - Sedan With VDC"</u>.

1. CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- Reconnect connector and perform self diagnostic result. Refer to <u>BRC-158</u>, "CONSULT Function (ABS)".

Is DTC C1116 detected?

YES >> GO TO 2

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

2.CHECK STOP LAMP SWITCH

Perform the stop lamp switch component inspection. Refer to <u>BRC-180</u>, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 3

NO >> Replace stop lamp switch.

3.CHECK STOP LAMP SWITCH SIGNAL CIRCUIT

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

C1116 STOP LAMP SW

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

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

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-256</u>, "Removal and Installation".

NO >> GO TO 4

4. CHECK STOP LAMP SWITCH INPUT CIRCUIT

- 1. Disconnect stop lamp switch connector.
- 2. Check voltage between stop lamp switch connector E38 terminal 1 and ground.

Stop lamp switch		Ground	Voltage
Connector	Terminal	Glound	(Approx.)
E38	1	1	Battery voltage

Is the inspection result normal?

YES >> Repair circuit between stop lamp switch and ABS actuator and electric unit (control unit).

NO >> Repair circuit between fuse block J/B and stop lamp switch.

Diagnosis Procedure (With CVT)

Regarding Wiring Diagram information, refer to <u>BRC-223</u>, "Wiring <u>Diagram - Coupe"</u> or <u>BRC-232</u>, "Wiring <u>Diagram - Sedan With VDC"</u>.

1.CONNECTOR INSPECTION

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- Reconnect connector and perform self diagnostic result. Refer to <u>BRC-158</u>, "CONSULT Function (ABS)".

Is DTC C1116 detected?

YES >> GO TO 2

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

2.CHECK STOP LAMP SWITCH

Perform the stop lamp switch component inspection. Refer to <u>BRC-180</u>, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 3

NO >> Replace stop lamp switch.

3.CHECK STOP LAMP RELAY-1

Perform the stop lamp relay-1 component inspection. Refer to <u>BRC-181</u>, "Component Inspection (Stop Lamp Relay)".

Is the inspection result normal?

YES >> GO TO 4

NO >> Replace stop lamp relay-1.

4. CHECK STOP LAMP SWITCH SIGNAL CIRCUIT

Connect stop lamp switch and stop lamp relay-1 connectors.

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< DTC/CIRCUIT DIAGNOSIS >

- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 20 and ground.

ABS actuator and electric unit (control unit)		Ground	Condition	Voltage (Approx.)	
Connector	Terminal			(Αρριολ.)	
E26	20	20 —	Brake pedal depressed	Battery voltage	
E20	20		Brake pedal released	0V	

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".

NO >> GO TO 5

CHECK STOP LAMP RELAY-1 COIL CIRCUIT

- Disconnect stop lamp relay-1 connector.
- 2. Check voltage between stop lamp relay-1 connector E57 terminal 1 and ground.

Stop lamp relay-1		Ground	Condition	Voltage	
Connector	Terminal	Ground	Condition	(Approx.)	
E57	1		Brake pedal depressed	Battery voltage	
E37		_	Brake pedal released	0V	

Is the inspection result normal?

YES >> GO TO 6

NO >> Repair circuit between stop lamp switch and stop lamp relay or circuit between fuse block J/B and stop lamp switch.

6.CHECK STOP LAMP RELAY-1 SWITCH INPUT CIRCUIT

Check voltage between stop lamp relay-1 connector E57 terminal 5 and ground.

Stop lam	p relay-1	Ground	Voltage
Connector	Terminal	Giodila	(Approx.)
E57	5	_	Battery voltage

Is the inspection result normal?

YES >> GO TO 7

NO >> Repair circuit between fuse block J/B and stop lamp relay.

7.CHECK STOP LAMP RELAY-1 GROUND CIRCUIT

Check continuity between stop lamp relay-1 connector E57 terminal 2 and ground.

Stop lam	p relay-1	Ground	Continuity
Connector	Terminal	Giodila	
E57	2	_	Yes

Is the inspection result normal?

YES >> Repair circuit between stop lamp relay and ABS actuator and electric unit (control unit).

NO >> Repair stop lamp relay ground circuit.

Component Inspection (Stop Lamp Switch)

INFOID:0000000006921428

1. CHECK STOP LAMP SWITCH

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp switch connector.
- Check continuity between stop lamp switch terminals.

Revision: June 2012 BRC-180 2011 Altima GCC

[VDC/TCS/ABS]

INFOID:0000000006921429

INFOID:0000000006921430

Stop lamp switch terminals	Condition	Continuity
1 – 2	Brake pedal depressed.	Yes
	Brake pedal released.	No

Is the inspection result normal?

YES >> Inspection End.

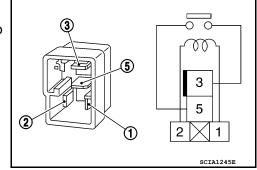
NO >> Replace stop lamp switch.

Component Inspection (Stop Lamp Relay)

1. CHECK STOP LAMP RELAY

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp relay connector.
- Apply battery voltage to stop lamp relay terminal 1 and ground to terminal 2.
- 4. Check continuity between stop lamp relay terminals 3 and 5.

Stop lamp relay terminals	Condition	Continuity
3 – 5	Battery voltage applied to terminal 1 and ground to terminal 2	Yes
	Voltage and ground removed	No



Is the inspection result normal?

YES >> Inspection End.

NO >> Replace stop lamp relay.

Special Repair Requirement

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-143</u>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

>> END

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[VDC/TCS/ABS]

C1120, C1122, C1124, C1126 IN ABS SOL

Description INFOID:000000006389314

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 DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- 2. Perform self diagnostic result.

Is DTC C1120, C1122, C1124 or C1126 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-182, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389316

Regarding Wiring Diagram information, refer to <u>BRC-223, "Wiring Diagram - Coupe"</u> or <u>BRC-232, "Wiring Diagram - Sedan With VDC"</u>.

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.
- Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 2

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

2. CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

ABS actuator and ele	ctric unit (control unit)	Ground	Voltage
Connector	Terminal		(Approx)
E26	3	_	Battery voltage

C1120, C1122, C1124, C1126 IN ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal? YES >> GO TO 3

NO >> • Repair or replace malfunctioning components.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

$3.\,$ CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

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

ABS actuator and ele	ectric unit (control unit)	Ground	Continuity	
Connector	Terminal	Giouna	Continuity	
E26	1	_	Yes	
	4		165	

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installa-

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

NO >> • Repair or replace malfunctioning components.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

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

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-182, "Diagnosis Procedure". **BRC**

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INFOID:0000000006389317

[VDC/TCS/ABS]

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C1120, C1122, C1124, C1126 IN ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Special Repair Requirement

INFOID:0000000006389318

1.adjustment of steering angle sensor neutral position

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1121, C1123, C1125, C1127 OUT ABS SOL

Description INFOID:0000000006389319

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:0000000006389320

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

${f 1}$.CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC C1121, C1123, C1125 or C1127 detected?

YFS >> Proceed to diagnosis procedure. Refer to BRC-185, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Coupe" or B gram - Sedan With VDC".

1.CONNECTOR INSPECTION

- 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.
- Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> Inspection End.

NO >> GO TO 2

2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

ABS actuator and ele	ectric unit (control unit)	Ground	Voltage
Connector	Terminal		(Approx)
E26	3		Battery voltage

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INFOID:0000000006389321

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C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Is the inspection result normal?

YES >> GO TO 3

NO >> • Repair or replace malfunctioning components.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

$3.\,$ CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

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

ABS actuator and ele	ectric unit (control unit)	- Ground	Continuity	
Connector	Terminal		Continuity	
E26	1		Yes	
	4	_	165	

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

NO >> • Repair or replace malfunctioning components.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Component Inspection

INFOID:0000000006389322

1. CHECK ACTIVE TEST

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

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

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-182, "Diagnosis Procedure".

C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Special Repair Requirement

INFOID:0000000006389323

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-143</u>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

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C1130, C1131, C1132, C1133, C1136 ENGINE SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1130, C1131, C1132, C1133, C1136 ENGINE SIGNAL

Description INFOID.000000006389324

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	Major engine components are malfunctioning.	Harness or connectorABS actuator and electric unit
C1132	ENGINE SIGNAL 3		(control unit)
C1133	ENGINE SIGNAL 4		ECM CAN communication line
C1136	ENGINE SIGNAL 6		

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- 2. Perform self diagnostic result.

Is DTC C1130, C1131, C1132, C1133 or C1136 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-188, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389326

1. CHECK ENGINE SYSTEM

- 1. Perform ECM self-diagnosis. Repair or replace items indicated, then perform ECM self-diagnosis again. Refer to EC-99, "CONSULT-III Function" (QR25DE) or EC-423, "CONSULT-III Function" (VQ35DE).
- 2. Perform ABS actuator and electric unit (control unit) self-diagnosis.

Is the inspection result normal?

YES >> Inspection End.

NO >> • Repair or replace malfunctioning components.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

DTC C1142 PRESS SEN CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

DTC C1142 PRESS SEN CIRCUIT

Description INFOID:0000000006389327

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

DTC Logic INFOID:0000000006389328

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 Stop lamp switch ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- Turn the ignition switch OFF to ON.
- 2. Perform self diagnostic result.

Is DTC C1142 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-189, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

1. CHECK STOP LAMP SWITCH CONNECTOR

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) and stop lamp switch connectors.
- 3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- 4. Reconnect connectors securely.
- Start engine.
- Repeat pumping brake pedal carefully several times, and perform self-diagnosis. Refer to BRC-158. "CONSULT Function (ABS)".

Is the inspection result normal?

YFS >> GO TO 2

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

2.CHECK STOP LAMP SWITCH

- Turn ignition switch OFF.
- 2. Disconnect stop lamp switch connector.
- Check continuity between stop lamp switch connector terminals.

Stop lamp switch terminals	Condition	Continuity
1 – 2	Brake pedal depressed.	Yes
	Brake pedal released.	No

Is the inspection result normal?

BRC-189 Revision: June 2012 2011 Altima GCC **BRC**

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DTC C1142 PRESS SEN CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

YES >> GO TO 3

NO >> Replace stop lamp switch.

3. CHECK STOP LAMP SWITCH CIRCUIT

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

ABS actuator and electric unit (control unit)		Condition	Voltage
Connector	Terminal	Condition	voltage
E26	20	Brake pedal is depressed	Battery voltage
E20	20	Brake pedal is released	Approx. 0 V

Is the inspection result normal?

YES >> GO TO 4

NO >> Repair or replace malfunctioning components.

4.CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- 2. Perform self diagnostic result.

Is DTC C1142 detected?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".

NO >> Inspection End.

Component Inspection

INFOID:0000000006389330

1. CHECK DATA MONITOR

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

Condition	PRESS SENSOR (DATA MONITOR)
With ignition switch turned ON and brake pedal released.	Approx. 0 bar
With ignition switch turned ON and brake pedal depressed.	- 40 to 300 bar

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-189, "Diagnosis Procedure".

Special Repair Requirement

INFOID:0000000006389331

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

C1143, C1144 STEERING ANGLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1143, C1144 STEERING ANGLE SENSOR

Description INFOID:0000000006389332

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:0000000006389333

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.	Harness or connector Steering angle sensor
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 DIAGNOSTIC RESULT

(P)With CONSULT.

- Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC C1143 or C1144 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-191, "Diagnosis Procedure".

>> Inspection End. NO

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

1.CONNECTOR INSPECTION

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> Inspection End.

NO >> GO TO 2

2.CHECK STEERING ANGLE SENSOR HARNESS

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

Steering angle sensor		Ground	Continuity
Connector	Terminal	Ground	Continuity
M53	1	_	Yes

Turn ignition switch ON.

Check voltage between steering angle sensor connector M53 terminal 4 and ground.

BRC-191 Revision: June 2012 2011 Altima GCC **BRC**

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C1143, C1144 STEERING ANGLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

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

Is the inspection result normal?

YES >> GO TO 3

NO >> • Repair or replace malfunctioning components.

• Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

3.CHECK DATA MONITOR

- Turn ignition switch OFF.
- Connect the steering angle sensor and ABS actuator and electric unit (control unit) connectors.
- 3. Perform the steering angle sensor component inspection. Refer to BRC-192, "Component Inspection".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".

NO >> Replace steering angle sensor. Refer to BRC-259, "Removal and Installation".

Component Inspection

INFOID:0000000006389335

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	±2.5 °
Turn 90 ° to right	Approx. +90 °
Turn 90 ° to left	Approx. –90 °

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to <u>BRC-191</u>, "<u>Diagnosis Procedure</u>".

Special Repair Requirement

INFOID:0000000006921398

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

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

C1145, C1146 YAW RATE/SIDE G SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1145, C1146 YAW RATE/SIDE G SENSOR

Description INFOID:0000000006389336

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:0000000006389337

DTC DETECTION LOGIC

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

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC C1145 or C1146 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-193, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

CAUTION:

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

1.CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- Disconnect yaw rate/side/decel G sensor and ABS actuator and electric unit (control unit) connector.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> Inspection End.

NO >> GO TO 2

${f 2}$.CHECK YAW RATE/SIDE/DECEL G SENSOR POWER SUPPLY CIRCUIT

Check voltage between yaw rate/side/decel G sensor connector M55 terminal 4 and ground.

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C1145, C1146 YAW RATE/SIDE G SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Yaw rate/side/	decel G sensor	Ground	Condition	Voltage	
Connector	Terminal	Ground	Condition	(Approx.)	
M55	NASS A		Ignition switch ON	Battery voltage	
WISS	4	_	Ignition switch OFF	0V	

Is the inspection result normal?

YES >> GO TO 3

NO >> • Repair or replace malfunctioning components.

• Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

3.CHECK YAW RATE/SIDE/DECEL G SENSOR GROUND SUPPLY CIRCUIT

Check resistance between yaw rate/side/decel G sensor connector M55 terminal 1 and ground.

Yaw rate/side/decel G sensor		Ground	Continuity
Connector	Terminal	Ground	Continuity
M55	1	_	Yes

Is the inspection result normal?

YES >> GO TO 4

NO >> • Repair or replace malfunctioning components.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

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

 Check continuity between ABS actuator and electric unit (control unit) connector E26 and yaw rate/side/ decel G sensor connector M55.

ABS actuator and electric unit (control unit)		Yaw rate/side/	decel G sensor	Continuity
Connector	Terminal	Connector	Terminal	
E26	14	M55	2	Yes
E20	25	IVIOO	3	165

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

ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Terminal	Ground	Continuity
E26	14		No
LZO	25	_	INO

Is the inspection result normal?

YES >> GO TO 5

NO >> Repair or replace malfunctioning components.

5. CHECK DATA MONITOR

- 1. Connect the Yaw rate/side/decel G sensor and ABS actuator and electric unit (control unit) connectors.
- 2. Perform the yaw rate/side/decel G sensor component inspection. Refer to <u>BRC-195, "Component Inspection"</u>.

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-158</u>, "CONSULT Function (ABS)".
- NO >> Replace Yaw rate/side/decel G sensor. Refer to BRC-258, "Removal and Installation".

C1145, C1146 YAW RATE/SIDE G SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Component Inspection

INFOID:0000000006389339

1. CHECK DATA MONITOR

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

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-193, "Diagnosis Procedure".

Special Repair Requirement

INFOID:0000000006389340

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

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C1147, C1148, C1149, C1150 USV/HSV LINE

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

C1147, C1148, C1149, C1150 USV/HSV LINE

Description INFOID:0000000006389341

USV1, USV2 (CUT VALVE)

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

HSV1, HSV2 (SUCTION VALVE)

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

DTC Logic

DTC DETECTION LOGIC

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

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- 2. Perform self diagnostic result.

Is DTC C1147, C1148, C1149 or C1150 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-196, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389343

Regarding Wiring Diagram information, refer to <u>BRC-223, "Wiring Diagram - Coupe"</u> or <u>BRC-232, "Wiring Diagram - Sedan With VDC"</u>.

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 BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> Inspection End.

NO >> GO TO 2

2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

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

Revision: June 2012 BRC-196 2011 Altima GCC

C1147, C1148, C1149, C1150 USV/HSV LINE

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

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

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

Is the inspection result normal?

YES >> GO TO 3

NO >> • Repair or replace malfunctioning components.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

${f 3}.$ CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

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

ABS actuator and electric unit (control unit)		Cround	Continuity
Connector	Terminal	Ground	Continuity
E26	1		Yes
	4	_	165

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".

• Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

>> • Repair or replace malfunctioning components.

• Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Component Inspection

INFOID:0000000006389344

1. CHECK ACTIVE TEST

NO

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

Operation		A	BS solenoid valve (ACT)
		Up	ACT UP	ACT KEEP
	FR RH IN SOL	Off	Off	Off
ED DI LARC COLENOID (ACT)	FR RH OUT SOL	Off	Off	Off
FR RH ABS SOLENOID (ACT)	USV [FR-RL]	Off	On	On
	HSV [FR-RL]	Off	On*	Off
	FR LH IN SOL	Off	Off	Off
ED LILADO COLENOID (ACT)	FR LH OUT SOL	Off	Off	Off
FR LH ABS SOLENOID (ACT)	USV [FL-RR]	Off	Off	Off
	HSV [FL-RR]	Off	Off	Off
	RR RH IN SOL	Off	Off	Off
DD DLI ADO COLEMOID (ACT)	RR RH OUT SOL	Off	Off	Off
RR RH ABS SOLENOID (ACT)	USV [FL-RR]	Off	Off	Off
	HSV [FL-RR]	Off	Off	Off
	RR LH IN SOL	Off	Off	Off
RR LH ABS SOLENOID (ACT)	RR LH OUT SOL	Off	Off	Off
	USV [FR-RL]	Off	On	On
	HSV [FR-RL]	Off	On*	Off

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

C1147, C1148, C1149, C1150 USV/HSV LINE

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES

NO >> Go to diagnosis procedure. Refer to BRC-196, "Diagnosis Procedure".

Special Repair Requirement

>> Inspection End

INFOID:0000000006389345

[VDC/TCS/ABS]

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

[VDC/TCS/ABS]

C1154 PNP SWITCH

Description INFOID:0000000006389346

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

DTC Logic INFOID:0000000006389347

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause	
C1154	PNP POS SIG	Transmission range switch signal or communication line between the ABS actuator and electric unit (control unit) and TCM is open or shorted.	• Harness or connector	Е

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC C1154 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-199, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

1. CHECK DATA MONITOR

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

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

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installa-

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

NO >> GO TO 2

2.CHECK TRANSMISSION RANGE SWITCH

Perform transmission range switch inspection. Refer to TM-135, "Description" (VQ35DE) or TM-296, "Description" (QR25DE).

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

NO >> • Repair or replace malfunctioning components.

Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Special Repair Requirement

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

BRC-199 Revision: June 2012 2011 Altima GCC **BRC**

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C1154 PNP SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

DTC C1155 BR FLUID LEVEL LOW

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

DTC C1155 BR FLUID LEVEL LOW

Description INFOID:0000000006389350

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

DTC Logic INFOID:0000000006389351

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	E

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC C1155 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-201, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

CAUTION:

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

1. CONNECTOR INSPECTION

- Turn ignition switch OFF.
- Disconnect brake fluid level switch and combination meter connectors.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminalS.
- Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> Inspection End.

NO >> GO TO 2

2.CHECK BRAKE FLUID LEVEL SWITCH

Perform the brake fluid level switch component inspection. Refer to BRC-202, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3

NO >> Replace brake fluid level switch. Refer to BR-22, "Exploded View".

3.check brake fluid level switch harness

- Disconnect combination meter connector M24.
- Check continuity between combination meter connector M24 terminal 27 and brake fluid level switch connector E24 terminal 1.

27 - 1 : Continuity should exist.

Check continuity between combination meter connector M24 terminal 27 and ground.

BRC-201 Revision: June 2012 2011 Altima GCC **BRC**

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27 - Ground

: Continuity should not exist.

Is the inspection result normal?

YES >> GO TO 4

NO >> • Repair or replace malfunctioning components.

• Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

4. CHECK BRAKE FLUID LEVEL SWITCH GROUND CIRCUIT

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

2 - Ground

NO

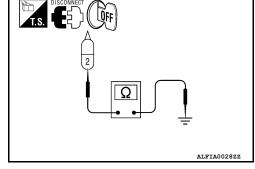
: Continuity should exist.

Is the inspection result normal?

YES >> Brake fluid level switch circuit is OK.

>> • Repair or replace malfunctioning components.

 Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".



INFOID:0000000006389353

Component Inspection

1. CHECK BRAKE FLUID LEVEL SWITCH

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

Brake fluid level switch		Condition	Continuity	
Connector	Terminals	Continuity		
E24	1 – 2	When brake fluid is full in the reservoir tank.	No	
	1 – 2	When brake fluid is empty in the reservoir tank.	Yes	

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace reservoir tank.

Special Repair Requirement

INFOID:0000000006921400

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-143</u>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

DTC C1156 ST ANG SEN COM CIR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

DTC C1156 ST ANG SEN COM CIR

Description INFOID:0000000000389354

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 DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC C1156 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-203, "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.
- Reconnect connector and perform self-diagnosis. Refer to <u>BRC-158</u>, "CONSULT Function (ABS)".

Is DTC C1156 detected?

YES >> Refer to LAN-15, "Trouble Diagnosis Flow Chart".

NO >> Inspection End.

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U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

U1000 CAN COMM CIRCUIT

Description INFOID:000000006389357

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	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 system

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT.

- 1. Turn the ignition switch OFF to ON.
- Perform self diagnostic result.

Is DTC U1000 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-204, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000006389359

1. CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
- Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is DTC U1000 detected?

YES >> Refer to LAN-15, "Trouble Diagnosis Flow Chart".

NO >> Inspection End.

PARKING BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

INFOID:0000000006389361

INFOID:0000000006389362

PARKING BRAKE SWITCH

Description INFOID:0000000006389360

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

Component Function Check

${f 1}$.CHECK PARKING BRAKE SWITCH OPERATION

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

Condition	Brake warning lamp illumination status
When the parking brake is engaged	ON
When the parking brake is not engaged	OFF

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-205, "Diagnosis Procedure".

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Coupe" or B gram - Sedan With VDC".

1. CHECK PARKING BRAKE SWITCH CIRCUIT

- Disconnect combination meter connector and parking brake switch connector.
- Check continuity between combination meter harness connector M24 terminal 26 and parking brake switch harness connector E35 (with CVT) or M73 (with M/T) terminal 1.

26 - 1 : Continuity should exist.

Check continuity between combination meter harness connector M24 terminal 26 and ground.

26 - Ground : Continuity should not exist.

Is the inspection result normal?

YFS >> GO TO 2

NO >> Repair harness or connector.

2.CHECK PARKING BRAKE SWITCH

Perform the parking brake switch component inspection. Refer to BRC-205, "Component Inspection".

Is the inspection result normal?

YES >> Check parking brake switch case ground condition.

NO >> Replace parking brake switch.

Component Inspection

1. CHECK PARKING BRAKE SWITCH

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

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PARKING BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Parking brake switch terminal	Ground	Condition	Continuity
1	Ground	When the parking brake is engaged.	Yes
1	Ground	When the parking brake is released.	No

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace parking brake switch.

Special Repair Requirement

INFOID:0000000006921401

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

INFOID:0000000006389365

INFOID:0000000006389366

VDC OFF SWITCH

Description INFOID:000000006389364

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 re- leased	ON
VDC OFF switch: pressed and re- leased	OFF

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-207, "Diagnosis Procedure".

Diagnosis Procedure

Regarding Wiring Diagram information, refer to <u>BRC-223</u>, "Wiring <u>Diagram - Coupe"</u> or <u>BRC-232</u>, "Wiring <u>Diagram - Sedan With VDC"</u>.

1. CHECK VDC OFF SWITCH

Perform the VDC OFF switch component inspection. Refer to BRC-208, "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 E26.

2. Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 21 and VDC OFF switch connector M72 terminal 1.

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

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

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

Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

3. CHECK VDC OFF SWITCH GROUND

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

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VDC C	PFF switch	Ground	Continuity
Connector	Terminal	Ground	Continuity
M72	2		Yes

Is the inspection result normal?

YES >> Inspection end.

NO >> Repair or replace malfunctioning components.

Component Inspection

INFOID:0000000006389367

[VDC/TCS/ABS]

1. CHECK VDC OFF SWITCH

- 1. Disconnect VDC OFF switch connector.
- 2. Check continuity between VDC OFF switch terminals.

VDC OFF switch terminals	Condition	Continuity
1.2	VDC OFF switch pressed	Yes
ι, Δ	VDC OFF switch released	No

DISCONNECT Q AMFIA0446ZZ

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace VDC OFF switch.

Special Repair Requirement

INFOID:0000000006921422

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-143</u>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

ABS WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >	
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[VDC/TCS/ABS]

ABS WARNING LAMP

Description

×: ON –: OFF

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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

1. CHECK ABS WARNING LAMP OPERATION

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-209. "Diagnosis Procedure".

Diagnosis Procedure

1. CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <u>BRC-158</u>, "CONSULT 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-4, "Work Flow".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-256, "Removal and Installation".</u>

NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

Special Repair Requirement

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-143</u>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

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Revision: June 2012 BRC-209 2011 Altima GCC

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INFOID:0000000006389371

[VDC/TCS/ABS]

BRAKE WARNING LAMP

Description INFOID:000000006389372

×: 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:0000000006389373

1.BRAKE WARNING LAMP OPERATION CHECK 1

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

Is the inspection result normal?

YES >> GO TO 2

NO >> Go to diagnosis procedure. Refer to BRC-210, "Diagnosis Procedure".

2.BRAKE WARNING LAMP OPERATION CHECK 2

Check that the brake warning lamp in the combination meter turns ON/OFF correctly when operating the parking brakes.

Is the inspection result normal?

YES >> Inspection End.

NO >> Check parking brake switch. Refer to <u>BR-13</u>, "Inspection and Adjustment".

Diagnosis Procedure

INFOID:0000000006389374

1. CHECK PARKING BRAKE SWITCH

Check that the brake warning lamp in the combination meter turns ON/OFF correctly when operating the parking brakes.

Is the inspection result normal?

YES >> GO TO 2

NO >> Check parking brake switch. Refer to BR-13, "Inspection and Adjustment".

2.CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <u>BRC-158</u>, "CONSULT 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-4, "Work Flow".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".

NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

BRAKE WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Special Repair Requirement

INFOID:0000000006389375

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

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[VDC/TCS/ABS]

VDC OFF INDICATOR LAMP

Description INFOID:000000006389376

x: 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:0000000006389377

1.VDC OFF INDICATOR LAMP OPERATION CHECK 1

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

Is the inspection result normal?

YES >> GO TO 2

NO >> Go to diagnosis procedure. Refer to BRC-212, "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-207, "Description".

Diagnosis Procedure

INFOID:0000000006389378

1. CHECK VDC OFF SWITCH

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

Is the inspection result normal?

YES >> GO TO 2

NO >> Check VDC OFF switch. Refer to BRC-207, "Diagnosis Procedure".

2. CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <u>BRC-158</u>, "CONSULT 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-4, "Work Flow".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".

NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

VDC OFF INDICATOR LAMP

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Special Repair Requirement

INFOID:0000000006389379

1.adjustment of steering angle sensor neutral position

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

>> END

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[VDC/TCS/ABS]

SLIP INDICATOR LAMP

Description INFOID:000000006389380

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:0000000006389381

1. CHECK SLIP INDICATOR LAMP OPERATION

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

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-214, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006389382

1. CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to <u>BRC-158</u>, "CONSULT 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 <u>MWI-4</u>, "Work Flow". Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-256</u>, "Removal and Installation"

NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

Special Repair Requirement

INFOID:0000000006389383

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to <u>BRC-143</u>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

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ECU DIAGNOSIS INFORMATION

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.

		Data mo	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)	
FR LH IN SOL Operation status of all s	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	
		When the actuator (sole noid valve) is not active and actuator relay is active (ignition switch ON)	Off	
FR LH OUT SOL Operation status of all sole	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) or actua tor relay is inactive (in fail-safe mode)	On	
	, in the second	When the actuator (sole- noid valve) is not active and actuator relay is ac- tive (ignition switch ON)	Off	
FR RH IN SOL Operation statu	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	
		When the actuator (sole- noid valve) is not active and actuator relay is ac- tive (ignition switch ON)	Off	

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

Monitor item	Display content	Data monitor	
		Condition	Reference value in normal operation
FR RH OUT SOL	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On
		When the actuator (sole- noid valve) is not active and actuator relay is ac- tive (ignition switch ON)	Off
RR LH IN SOL	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On
		When the actuator (sole- noid valve) is not active and actuator relay is ac- tive (ignition switch ON)	Off
RR LH OUT SOL	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On
		When the actuator (sole- noid valve) is not active and actuator relay is ac- tive (ignition switch ON)	Off
RR RH IN SOL	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On
		When the actuator (sole- noid valve) is not active and actuator relay is ac- tive (ignition switch ON)	Off
RR RH OUT SOL	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On
		When the actuator (sole- noid valve) is not active and actuator relay is ac- tive (ignition switch ON)	Off
STOP LAMP SW	Brake pedal operation	When brake pedal is depressed	ON
		When brake pedal is not depressed	OFF
MOTOR RELAY	Motor and motor relay operation	When the motor relay and motor are operating	ON
		When the motor relay and motor are not operating	OFF

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

		Data mo	nitor
Monitor item	Display content	Condition	Reference value in normal operation
CTUATOR RLY	Actuator relay operation	When the actuator relay is operating	ON
Note 2)	Actuator relay operation	When the actuator relay is not operating	OFF
ABS WARN LAMP	ABS warning lamp	When ABS warning lamp is ON	ON
DS WAIN LAWF	(Note 3)	When ABS warning lamp is OFF	OFF
	VDC OFF indicator lamp	When VDC OFF indicator lamp is ON	ON
OFF LAMP	(Note 3)	When VDC OFF indicator lamp is OFF	OFF
DFF SW	VDC OFF switch ON/OFF	VDC OFF switch ON (When VDC OFF indicator lamp is ON)	ON
711 OVV	VDO OLL SWILGH ON/OFF	VDC OFF switch OFF (When VDC OFF indicator lamp is OFF)	OFF
	SLIP indicator lamp	When SLIP indicator lamp is ON	ON
SLIP LAMP	(Note 3)	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
		2nd gear 3rd gear	2 3
SEAR	Manual mode gear position determined by TCM	4th gear	4
		5th gear	5
		6th gear	6
VALDATE SEN	Vow rate detected by your rate/aids C copper	When vehicle stop	Approx. 0 d/s
AW RATE SEN	Yaw rate detected by yaw rate/side G sensor	When vehicle turning	-75 to 75 d/s
CCEL POS SIG	Throttle actuator opening/closing is displayed (linked with accelerator pedal)	Accelerator pedal not depressed (ignition switch is ON)	0 %
	accelerator pedar)	Depress accelerator ped- al (ignition switch is ON)	0 - 100 %
		Vehicle stopped	Approx. 0 m/s ²
IDE G-SENSOR	Transverse G detected by side G sensor	Vehicle turning right	Negative value (m/s ²)
		Vehicle turning left	Positive value (m/s ²)
TR ANGLE SIG	Steering angle detected by steering angle sensor	Straight-ahead	Approx. 0°
IN ANGLE SIG	Steering angle detected by steering angle sensor	Steering wheel turned	–720 to 720°
PRESS SENSOR	Brake fluid pressure detected by pressure sensor	With ignition switch turned ON and brake pedal released	Approx. 0 bar
NLOG SENSUR	Brake liulu pressure detected by pressure selisti	With ignition switch turned ON and brake pedal depressed	-40 to 300 bar

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

		Data mo	nitor
Monitor item	Display content	Condition	Reference value in normal operation
EBD SIGNAL	EBD operation	EBD is active	ON
EBD SIGNAL	EBD operation	EBD is inactive	OFF
ADC CICNAL	ADC eneration	ABS is active	ON
ABS SIGNAL	ABS operation	ABS is inactive	OFF
TOC CIONAL	TCC energics	TCS is active	ON
TCS SIGNAL	TCS operation	TCS is inactive	OFF
V/DO OLONIAL	V/DQ	VDC is active	ON
VDC SIGNAL	VDC operation	VDC is inactive	OFF
	500 () () (In EBD fail-safe	ON
EBD FAIL SIG	EBD fail-safe signal	EBD is normal	OFF
		In ABS fail-safe	ON
ABS FAIL SIG	ABS fail-safe signal	ABS is normal	OFF
		In TCS fail-safe	ON
TCS FAIL SIG	TCS fail-safe signal	TCS is normal	OFF
		In VDC fail-safe	ON
VDC FAIL SIG	VDC fail-safe signal	VDC is normal	OFF
		Crank is active	ON
CRANKING SIG	Crank operation	Crank is inactive	OFF
		When brake fluid level switch ON	ON
FLUID LEV SW	Brake fluid level switch	When brake fluid level switch OFF	OFF
PARK BRAKE SW	Parking brake switch	Parking brake switch is active	ON
PARK BRAKE SW	Faiking brake switch	Parking brake switch is inactive	OFF
USV[FL-RR]	VDC switch-over valve	When actuator (switch- over valve) is active ("AC- TIVE TEST" with CON- SULT) or actuator relay is inactive (when in fail-safe mode)	On
		When actuator (switch- over valve) is not active and actuator relay is ac- tive (ignition switch ON)	Off
USV[FR-RL]	VDC switch-over valve	When actuator (switch- over valve) is active ("AC- TIVE TEST" with CON- SULT) or actuator relay is inactive (when in fail-safe mode)	On
		When actuator (switch- over valve) is not active and actuator relay is ac- tive (ignition switch ON)	Off

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

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		Data mo	onitor	Λ
Monitor item	Display content	Condition	Reference value in normal operation	Α
HSV[FL-RR]	VDC switch-over valve	When actuator (switch- over valve) is active ("AC- TIVE TEST" with CON- SULT) or actuator relay is inactive (when in fail-safe mode)	On	В
		When actuator (switch- over valve) is not active and actuator relay is ac- tive (ignition switch ON)	Off	D
HSV[FR-RL]	VDC switch-over valve	When actuator (switch- over valve) is active ("AC- TIVE TEST" with CON- SULT) or actuator relay is inactive (when in fail-safe mode)	On	BR
		When actuator (switch- over valve) is not active and actuator relay is ac- tive (ignition switch ON)	Off	G
V/R OUTPUT	Colonaid valve valey estimated	When the solenoid valve relay is active (When ignition switch OFF)	ON	Н
(Note 2)	Solenoid valve relay activated	When the solenoid valve relay is not active (in the fail-safe mode)	OFF	ı
M/R OUTPUT	Actuator motor and motor relay activated	When the actuator motor and motor relay are active ("ACTIVE TEST" with CONSULT)	ON	J
		When the actuator motor and motor relay are inactive	OFF	K
		With engine stopped	0 rpm	
ENGINE RPM	With engine running	Engine running	Almost in accordance with tachometer display	L

Note 1: Confirm tire pressure is normal.

Note 2: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Note 3: On and off timing for warning lamp and indicator lamp. Refer to BRC-209. "Description" (ABS), BRC-212. "Description" (VDC OFF) or BRC-214, "Description" (SLIP).

Fail-Safe INFOID:0000000006389385

ABS, EBD SYSTEM

In case of electrical malfunctions with the ABS, ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp will turn on. In case of electrical malfunctions with the EBD, brake warning lamp, ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp will turn on. Simultaneously, the VDC/TCS/ABS become one of the following conditions of the fail-safe function.

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

NOTE:

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

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

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

VDC / TCS

In case of malfunction in the VDC/TCS/ABS system, VDC OFF indicator lamp, SLIP indicator lamp are turned on, and the condition of vehicle is the same as the condition of vehicles without VDC/TCS control.

CAUTION:

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

DTC No. Index

Display item	Malfunction detecting condition	Check item
RR RH SENSOR-1 [C1101]	Circuit of rear RH wheel sensor is open. Or when the sensor power voltage is outside the standard.	
RR LH SENSOR-1 [C1102]	Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard.	BRC-162, "Diagno- sis Procedure"
FR RH SENSOR-1 [C1103]	Circuit of front RH wheel sensor is open. Or when the sensor power voltage is outside the standard.	(Note 1)
FR LH SENSOR-1 [C1104]	Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard.	
RR RH SENSOR-2 [C1105]	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.	
RR LH SENSOR-2 [C1106]	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.	BRC-165, "Diagno-sis Procedure"
FR RH SENSOR-2 [C1107]	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.	(Note 1)
FR LH SENSOR- 2 [C1108]	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.	
BATTERY VOLTAGE [ABNORMAL] [C1109]	When the ABS actuator and electric unit (control unit) power supply voltage is lower than normal.	BRC-168, "Diagnosis Procedure"
CONTROLLER FAILURE [C1110]	When there is an internal malfunction in the ABS actuator and electric unit (control unit).	BRC-170, "Diagno- sis Procedure"
PUMP MOTOR	During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for actuator motor relay is open.	BRC-171, "Diagno-
[C1111]	During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground.	sis Procedure"
MAIN RELAY	During the actuator relay operating with OFF, when the actuator relay turns ON. Or when the control line for the relay is shorted to the ground.	BRC-173, "Diagno-
[C1114]	During the actuator relay operating with ON, when the actuator relay turns OFF, or when the control line for the relay is open.	sis Procedure"
ABS SENSOR [ABNORMAL SIGNAL] [C1115]	When wheel sensor input signal is malfunctioning.	BRC-175, "Diagnosis Procedure" (Note 1)
STOP LAMP SW [C1116]	When stop lamp switch circuit is open.	BRC-178, "Diagnosis Procedure (With M/T)" BRC-179, "Diagnosis Procedure (With CVT)"

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

Display item	Malfunction detecting condition	Check item
FR LH IN ABS SOL [C1120]	When the control unit detects a malfunction in the front left inlet solenoid circuit.	
FR RH IN ABS SOL [C1122]	When the control unit detects a malfunction in the front right inlet solenoid circuit.	BRC-182, "Diagno-
RR LH IN ABS SOL [C1124]	When the control unit detects a malfunction in the rear left inlet solenoid circuit.	sis Procedure"
RR RH IN ABS SOL [C1126]	When the control unit detects a malfunction in the rear right inlet solenoid circuit.	
FR LH OUT ABS SOL [C1121]	When the control unit detects a malfunction in the front left outlet solenoid circuit.	
FR RH OUT ABS SOL [C1123]	When the control unit detects a malfunction in the front right outlet solenoid circuit.	BRC-185, "Diagno-
RR LH OUT ABS SOL [C1125]	When the control unit detects a malfunction in the rear left outlet solenoid circuit.	sis Procedure"
RR RH OUT ABS SOL [C1127]	When the control unit detects a malfunction in the rear right outlet solenoid circuit.	
ENGINE SIGNAL 1 [C1130]		
ENGINE SIGNAL 2 [C1131]		
ENGINE SIGNAL 3 [C1132]	Major engine components are malfunctioning.	BRC-188, "Diagno- sis Procedure"
ENGINE SIGNAL 4 [C1133]		
ENGINE SIGNAL 6 [C1136]		
PRESS SEN CIRCUIT [C1142]	Pressure sensor signal line is open or shorted, or pressure sensor is malfunctioning.	BRC-189, "Diagno- sis Procedure"
ST ANG SEN CIRCUIT [C1143]	Neutral position of steering angle sensor is dislocated, or the steering angle sensor is malfunctioning.	BRC-191, "Diagno-
ST ANG SEN SIGNAL [C1144]	Neutral position correction of steering angle sensor is not finished.	sis Procedure"
YAW RATE SENSOR [C1145]	Yaw rate sensor is malfunctioning, or the yaw rate sensor signal line is open or shorted.	BRC-193, "Diagno-
SIDE G-SEN CIRCUIT [C1146]	Side G sensor is malfunctioning, or circuit of side G sensor is open or shorted.	sis Procedure"
	VDC switch-over solenoid valve (USV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	
USV LINE [FR-RL] [C1148]	VDC switch-over solenoid valve (USV2) on the secondary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	BRC-196, "Diagno-
	VDC switch-over solenoid valve (HSV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	sis Procedure"
HSV LINE [FR-RL] [C1150]	VDC switch-over solenoid valve (HSV2) on the secondary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	
EMERGENCY BRAKE [C1153]	When ABS actuator and electric unit (control unit) is malfunctioning. (Pressure increase is too much or too little)	BRC-170, "Diagno- sis Procedure"
PNP POS SIG [C1154]	TCM or ABS actuator and electric unit (control unit) internal malfunction.	BRC-199, "Diagno- sis Procedure"
BR FLUID LEVEL LOW [C1155]	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.	BRC-201, "Diagno- sis Procedure"
ST ANG SEN COM CIR [C1156]	CAN communication circuit or steering angle sensor is malfunctioning.	BRC-203, "Diagno- sis Procedure"

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

Display item	Malfunction detecting condition	Check item
VARIANT CODING [C1170]	In a case where VARIANT CODING is different.	BRC-170, "Diagnosis Procedure"
CAN COMM CIRCUIT [U1000]	When there is a malfunction in the CAN communication circuit.	BRC-204, "Diagnosis Procedure" (Note 2)

Note 1: After completing repairs of shorted sensor circuit, when ignition switch is turned ON, ABS warning lamp turns on. Make sure that ABS warning lamp turns off while driving vehicle at 30 km/h (19 MPH) or more for approximately 1 minute according to self-diagnosis procedure. In addition, if wheel sensor 2 is displayed for wheels, check wheel sensor circuit and also check control unit power voltage. Note 2: When malfunctions are detected in several systems, including CAN communication circuit [U1000], troubleshoot CAN communication circuit. Refer to BRC-204, "Diagnosis Procedure".

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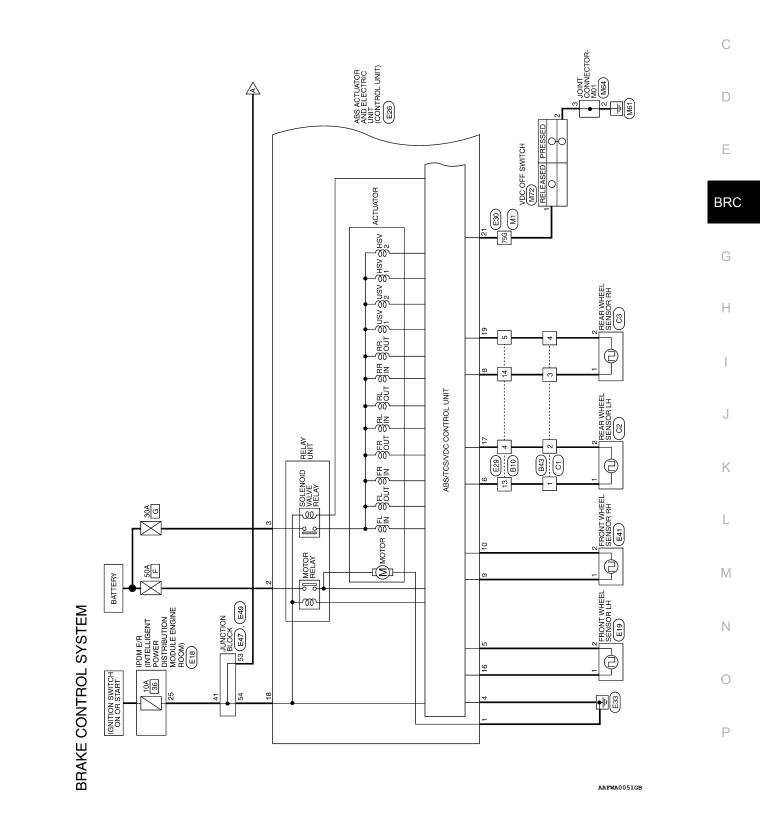
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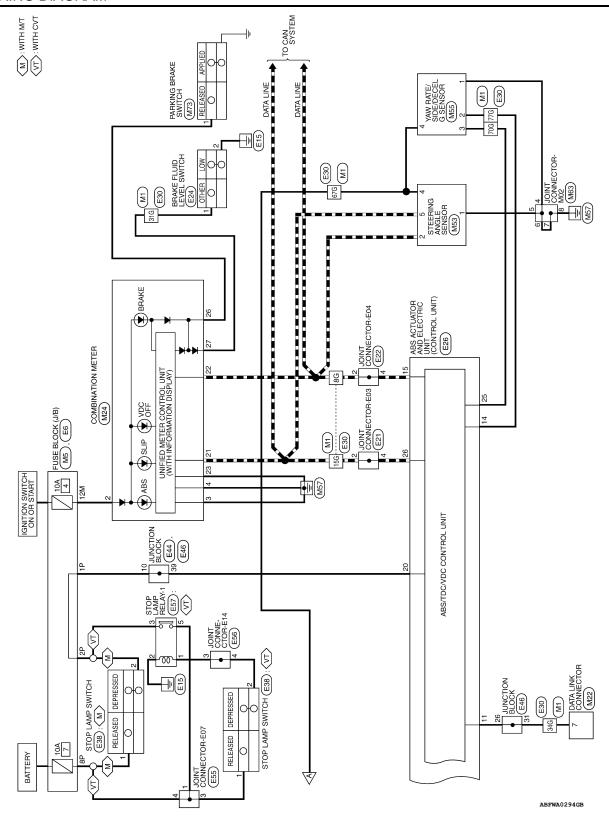
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WIRING DIAGRAM

BRAKE CONTROL SYSTEM

Wiring Diagram - Coupe





			7																	_					Α
	M5 FLISE BLOCK (J/B)				3M 2M 1M 8M 7M 6M				Signal Name			Signal Name	NSI	GND (POWER)	GND (ILL)	CAN-H	CAN-L	GND (CIRCUIT)	PKB	BRAKE OIL IN					В
	Connector No. M5				12M 11M 10M 9M 8M 7M 6M	_		Color of	Terminal No. Wire	0 V		Terminal No. Wire	2 0	3 B	4 B	21 L				27 V					D
	60 6					•			Ter			Terr						19 20	39 40						E BR
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	Terminal No. Wire	8G P	15G L	31G V	34G 0	67G GR	70G Y	75G SB	77G Y/B			Connector No. M24 Connector Name COMBIN	Connector Color WHITE	Г				2 3 4 5 6 7 8 9 10	23 24 25 26 27 28 29 30						I
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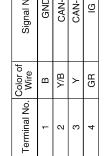
Revision: June 2012 BRC-225 2011 Altima GCC

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Connector No. M55	M55	Connector No. M63	M63)IA
Name	Connector Name YAW RATE/SIDE/DECEL G	Connector Name	Connector Name JOINT CONNECTOR-M02	10
	SENSOR	Connector Color BLUE	BLUF	111
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2010	Connector Color BLACK			11
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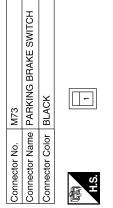
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12 11 10 9	Terminal No. Color of Wire	7	5	9	2	8

Signal Name	ı	ı	_	1	ı	
Color of Wire	В	В	В	В	В	
Terminal No. Wire	4	5	9	7	8	

Signal Name	GND	CAN-L	CAN-H	IG
Color of Wire	В	Y/B	Υ	GR
inal No.	1	2	3	4



Connector No.). M53	8
Connector Name		STEERING ANGLE SENSOR
Connector Color	olor WHITE	ПЕ
A.S.	- 6	
Terminal No.	Color of Wire	Signal Name
-	В	GND
2	Ь	CAN-L
4	GR	ഉ
יכי	_	H-MAC



Connector Name PARKING BRAKE SWIT	CK		Signal Name	
e PAF	r BLA		Color of Wire	í
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Connector No.	M72
Connector Name	Connector Name VDC OFF SWITCH
Connector Color GRAY	GRAY
9	5 4 3 2 1
2	

١٨	3 2 1	Signal Name	1	
or GRAY	6 8 4	Color of Wire	SB	4
Connector Color	H.S.	Terminal No.	٦	•

e JOINT CONNECTOR-M01	GRAY	\$\tilde{0}\$
me	lor	

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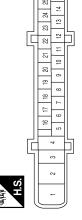
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Signal Name ABS ECU	VAINTE WHITE Volint CONNECTOR-E04 Volint Signal Name e	С
Color of Wire GR GR		D
Terminal No. 25 37 38 35 36	Connector No. Connector Name Connector Color H.S. Terminal No. WW 2 4 4	Е
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(INTELLIGENT DISTRIBUTION ESPERTIBERS (SOS)	DR-E03	G
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Connector No. Connector Name Connector Color H.S. 1 1 12 3 4 5 6 1	Connector No. Connector Name Connector Color H.S. Terminal No. WW	J
		K
LOCK (J/B) Signal Name	Connector No. E19 Connector Name FRONT WHEEL SENSOR LH Connector Color of Terminal No. Wire Signal Name 1 W	L
ITE	E19 FRONT WH GRAY or of N V	M
Name	Connector No. E19 Connector Name FRO Connector Color GRA H.S. 1 Wire 1 W	N
Connector Nar Connector Col Connector Col Terminal No.	Connector No. Connector Cold Connector Cold Lis. 1 1 2	0
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Revision: June 2012 BRC-227 2011 Altima GCC

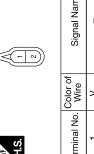
Signal Name	DP FR	DS FR	DIAG-K	ı	ı	CAN-M2	CAN-L	DP FL	DS RL	ZN	DS RR	BLS	ASR AUS	1	-	ı	CAN-P2	CAN-H
Color of Wire	В	LG	GR	-	_	0	Ь	Μ	0	GR	BR	SB	В	1	_	ı	В	L
Terminal No.	6	10	11	12	13	14	15	16	17	18	19	20	12	22	23	24	52	26





Signal Name	MGND	UB (MR)	UB (VR)	GND	DS FL	DP RL	1	DP RR
Color of Wire	В	ŋ	В	В	>	g	_	Γ
Terminal No. Wire	-	2	3	4	5	9	7	8

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



Signal Name	1	I	
Color of Wire	^	В/У	
Terminal No.	1	2	

Connector No.	, E29	
Connector Name	me WIF	WIRE TO WIRE
Connector Color WHITE	lor WH	ITE
E	7 6 5 4	4 3 2 1
H.S.		8 01
Terminal No.	Color of Wire	Signal Name
4	0	_
5	BR	ı
13	5	ı
14	٦	_

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		А
STOP LAMP SWITCH (WITH CVT) WHITE Tof Signal Name	ON BLOCK Signal Name	В
S. S. Color minal No. Wiin	nector No. E44 nector Name JUNCTI nector Color BROWN S. 4	D
		BRC
Signal Name	WHEEL SENSOR F	G
Color of Color of Wire 8G P 15G L 34G O 67G W 70G B 75G R 77G O 0 0 0 0 0 0 0 0 0	Connector No. E41 Connector Name FRONT WHEEL SENSOR RH Connector Color GRAY H.S. Color of Signal Name 1 B - 2 LG - 2 LG -	H
	Conne Conne Termir	J
E TO WIRE TE G 56 66 76 86 96 G 126 136 146 156 166 176 G 126 230 246 256 286 G 230 30 31 256 286 G 37 88 38 38 34 34 36 G 37 8 8 3 8 3 8 3 8 3 8 3 8 3 8 3 8 3 8	Signal Name	K L
WHR	Sime STOP LAMP Sign Wire Sign Wire Sign LG	M
Connector No. Connector Name Connector Color 16 26 16 26 16 56 16 56	Connector No. E38 Connector Name STOP LAMP SWITCH (WITH M/T) Connector Color BLACK H.S. E21 Terminal No. Wire Signal Nam 1 R - 2 LG -	N O
	ABFIA0335GB	

Revision: June 2012 BRC-229 2011 Altima GCC

Connector No.	E47		Connector No.	E49	
Connector Nar	ne JUN	Connector Name JUNCTION BLOCK	Connector Name JUNCTION BLOCK	o JUNC	TION BLOCK
Connector Color WHITE	or WH	ПЕ	Connector Color BROWN	r BROW	Z
间 H.S.	46 45	1 44 43	H.S.	54 53 5	28 22 51
Terminal No. Wire	Solor of Wire	Signal Name	Color of Terminal No. Wire	olor of Wire	Signal Name
41	GR	1	53	>	ı
			54	GR	1

Connector Name | JUNCTION BLOCK

Connector No.

Connector Color WHITE

		i		
Signal Name	I			
Color of Wire	GR			
Terminal No. Wire	41			
Signal Name	I	I	ı	

Color of Wire GR SB

Terminal No.

33

Connector No. E57 Connector Name STOP LAMP RELAY-1 Connector Color BLUE		Signal Name	ı	1		I	ı
ne STO	— [Ш	Solor or Wire	ГG	ď	ַ	>	>
Connector No. E57 Connector Name STOP Connector Color BLUE	H.S.	Terminal No. Wire	-	0	1	က	5
Connector No. E56 Connector Name JOINT CONNECTOR-E14 Connector Color WHITE	南京 H.S.	Terminal No wisson Signal Name		3 LG –	- 16 - 7		

Signal Name

Terminal No.

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Connector No.	E55
Connector Name	Connector Name JOINT CONNECTOR-E07
Connector Color WHITE	WHITE
H.S.	

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					ı	
	Connector Name REAR WHEEL SENSOR RH	×		Signal Name	ı	
ဗ	ne REA	or GRA	- -	Solor of Wire	P	1
Connector No.	onnector Nar	Connector Color GRAY	高 H.S.	Terminal No. Wire	-	
0	<u> </u> 0	<u> </u> 0			I	
Sonnector No. C2 C2	Connector Name REAR WHEEL SENSOR LH	Connector Color BLACK		Terminal No. Wire Signal Name	- 5	

Connector Name WIRE TO WIRE Connector Color GRAY

2

Connector No.

	Termina	-	2			
						1
)	Signal Name	1	ı	1	I	
J	Color of Wire	ŋ	0	re	BR	
	Terminal No. Wire	-	2	8	4	
						•

8	WIRE TO WIRE	AY	1 E S	Signal Name	-	-	ı	1
. B43	ı	lor GRAY		Color of Wire	ŋ	0	ا ا	BR
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	-	2	က	4

	WIRE TO WIRE	WHITE	3	Signal Name	1	1	ı	ı
. B10			8 9 10	Color of Wire	0	BB	В	FG
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	4	2	13	14

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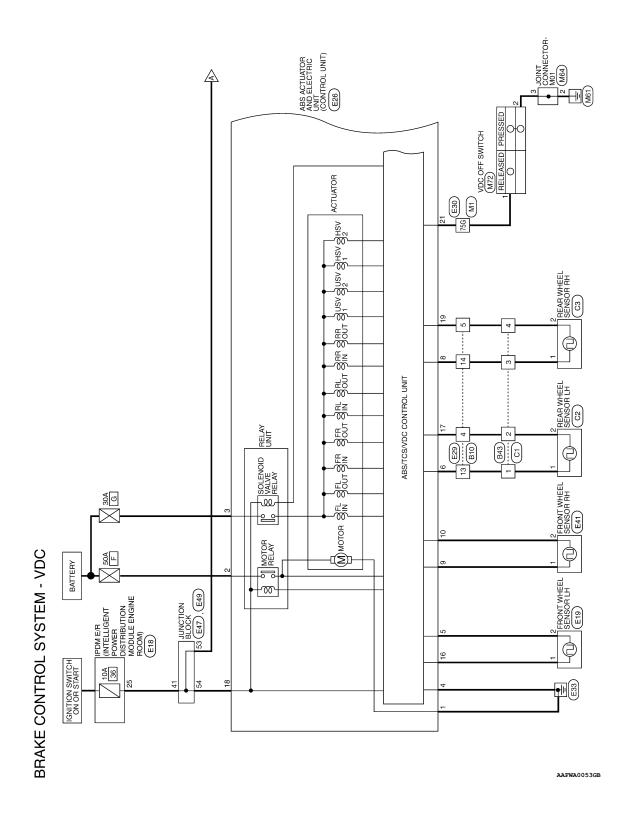
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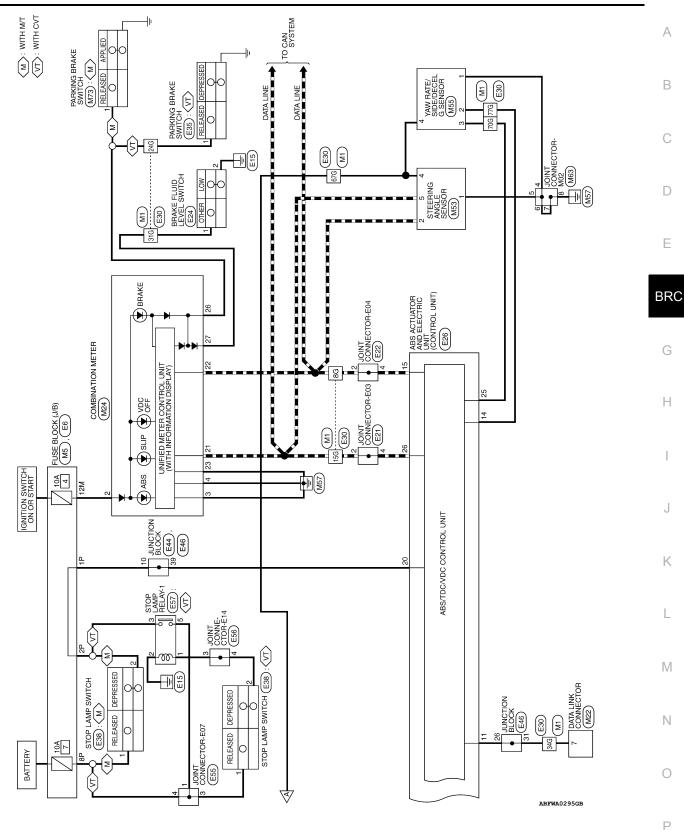
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Wiring Diagram - Sedan With VDC

INFOID:0000000006389388

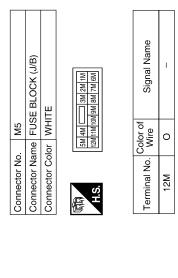




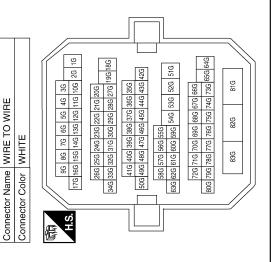
BRAKE CONTROL SYSTEM CONNECTORS - VDC

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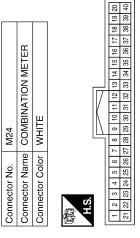
Connector No.

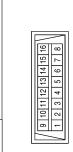


Signal Name	ı	ı	_	_	I	_	I	_	I
Color of Wire	Ь	٦	G/R	۸	0	GR	Y	SB	A/B
Terminal No.	98	15G	24G	31G	34G	67G	70G	75G	577



Signal Name	IGN	GND (POWER)	(ILL)	CAN-H	CAN-L	GND (CIRCUIT)	PKB	BRAKE OIL IN
Color of Wire	0	В	В	٦	Ь	В	G/R	>
Terminal No.	2	3	4	21	22	23	56	27



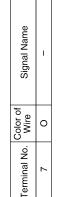


Connector Name DATA LINK CONNECTOR

Connector No.

Connector Color WHITE





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Connector No. M63 Connector Name JOINT CONNECTOR-M02 Connector Color BLUE H.S.	Terminal No. Color of Signal Name 4 B	Connector No. M73 Connector Name (WITH MT) Connector Color BLACK	Terminal No. Color of Wire Signal Name
Connector No. M55 Connector Name Yaw RATE/SIDE/DECEL G SENSOR Connector Color BLACK #\$ 1	Terminal No. Color of Wire Signal Name 1 B GND 2 Y/B CAN-L 3 Y CAN-H 4 GR IG	Connector No. M72 Connector Name VDC OFF SWITCH Connector Color GRAY I E S 4 3 2 1 1	Terminal No. Color of Wire Signal Name 1 SB
Connector No. M53 Connector Name STEERING ANGLE SENSOR Connector Color WHITE H.S. 1 2 3 4	Terminal No. Color of Wire Signal Name 1 B GND 2 P CAN-L 4 GR IG 5 L CAN-H	Connector No. M64 Connector Name JOINT CONNECTOR-M01 Connector Color GRAY H.S.	Terminal No. Wire Signal Name 2 B 3 B 3 B

Revision: June 2012 BRC-235 2011 Altima GCC

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Signal Name	DP FR	DS FR	DIAG-K	ı	I	CAN-M2	CAN-L	DP FL	DS RL	ZN	DS RR	BLS	ASR AUS	1	1	ı	CAN-P2	CAN-H
Color of Wire	В	LG	GR	ı	_	0	۵	W	0	GR	BR	SB	В	ı	-	ı	В	٦
Terminal No.	6	10	11	12	13	14	15	16	41	18	19	20	21	22	23	24	25	26

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



	Signal Name	MGND	UB (MR)	UB (VR)	GND	DS FL	DP RL	1	DP RR
1	Color of Wire	В	9	Œ	В	>	В	_	٦
J	Terminal No.	1	2	3	4	5	9	2	8

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





Signal Name	I	ı	
Color of Wire	>	В/У	
Terminal No.	-	2	

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

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WIRE	WHITE		4	13	l
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	-		9	5	ı
Ĕ	<u>ō</u>		7	16	ı
Connector Name	Connector Color	'			
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ec	ec	ſ	1	,	
'n	Ĭ			۲	
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Signal Nar	I	_	I	I
Color of Wire	0	BR	В	Г
Ferminal No.	4	5	13	14

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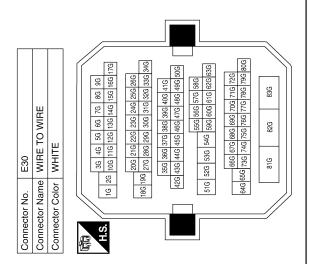
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	Connector Name (WITH CVT)	Ж		Signal Name	1
E35	ne PARK (WITH	or BLACK		Color of Wire	Д
Connector No.	Connector Nar	Connector Color	配 H.S.	Terminal No.	ļ

Signal Name	ı	ı	ı	1	1	-	ı	_	_
Color of Wire	Ь	٦	Д	^	0	Μ	В	В	0
Terminal No.	86	15G	24G	31G	34G	929	50Z	75G	776



	FRONT WHEEL SENSOR RI	٨t		Signal Name	_	=
. E41	me FRC	lor GR/		Color of Wire	В	LG
Connector No.	Connector Name	Connector Color GRAY	所 H.S.	Terminal No.	1	2

Connector No.	. E38	
Connector Na	me STC (WI	Connector Name (WITH M/T)
Connector Color BLACK	lor BLA	CK
原动 H.S.	[2]	
Terminal No.	Color of Wire	Signal Name
1	В	1
2	PП	1

Connector No.). E38	8
Connector Name		STOP LAMP SWITCH (WITH CVT)
Connector Color	olor WHITE	ITE
高 H.S.	[m -	4 0
Terminal No. Wire	Color of Wire	Signal Name
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2	ГG	ı

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		В
Connector No. E47 Connector Name JUNCTION BLOCK Connector Color WHITE H.S. As a signal Name A1 GR -	E56 JOINT CONNECTOR-E14 WHITE Toroit Signal Name G G G G G G G G G G G G G G G G G G G	С
0. E47 ame JUNCTION olor WHITE 42 41 43 46 65 44 43 Wire Sig	ame JOINT C Jor WHITE LG LG LG	D
Connector No. Connector Color Connector Color H.S. Terminal No. W 41 G	Connector No. Connector Name Connector Color Terminal No. 3 L. 4 L.	E
		BR
Connector No. E46	Connector No. E55	G H
E46 Signal Sign	E55	I
Connector No. Connector Color Connector Color H.S. Zeb 39 39 Second Seco	Connector No. Connector Name Connector Color H.S. 1 4 4	
Connector No. Connector Cold Connector Cold LS. H.S. 31	Connector No. Connector Col. Terminal No. 1 1 4 4	J
		К
I BLOCK	Signal Name	L
WNN WN 9 8 7 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	NWW NI III	M
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ctor No	poctor Ne sector	IN
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Revision: June 2012 BRC-239 2011 Altima GCC

		1				
	REAR WHEEL SENSOR LH	Š		Signal Name	1	
. C2	me RE/	lor BLA		Color of Wire	ŋ	(
Connector No.	Connector Name	Connector Color BLACK	引 H.S.	Terminal No. Wire	-	c
				lame		

Connector No.	2		Connector No.	C2	
Connector Name		WIRE TO WIRE	Connector Name	REAR WHEEL SENSOR LH	
Connector Color	-	GRAY	Connector Color	BLACK	
			1		
mphy H.S.	701	ightharpoonup	H.S.		
	₹				
Terminal No.	Color of Wire	Signal Name	Terminal No. W	Color of Signal Name	
-	ŋ	I	-	J	
2	0	I	2	1	
3	re	1			
4	BR	ı			
					- 1
Connector No.	B10		Connector No.	B43	
Connector Name	e	WIRE TO WIRE	Connector Name	WIRE TO WIRE	
Connector Color WHITE	olor WF	HITE	Connector Color	GRAY	
僵	1 2 3	4 5 6 7	晋		
S H	8 9 10	9 10 11 12 13 14 15 16	H.S.	(1 2)	

	Y-1			ame				
	STOP LAMP RELAY-1	Ш	1 2 3	Signal Name	ı	ı	1	1
. E57		lor BLUE		Color of Wire	LG	В	>	Μ
Connector No.	Connector Name	Connector Color	原列 H.S.	Terminal No.	-	2	3	5

	REAR WHEEL SENSOR RH	GRAY		7		Signal Name	1	_
3		_		<u>اکل</u>		Color of Wire	re	BR
COLLINGIA NO.	Connector Name	Connector Color		偃	H.S.	Terminal No. Wire	-	2
			•					

Signal Name

Signal Name

Color of Wire

Terminal No.

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VDC/TCS/ABS

[VDC/TCS/ABS] < SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

VDC/TCS/ABS

Symptom Table

INFOID:0000000006389389 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-242, "Diag- nosis Procedure"
quoney	Wheel sensor and rotor system	110010 1 10000010
Unavported podal reaction	Brake pedal stroke	BRC-243, "Diag-
Unexpected 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-244, "Diag- nosis Procedure"
ABS function does not operate (Note 1)	ABS actuator and electric unit (control unit)	BRC-245, "Diag- nosis Procedure"
Pedal vibration or ABS operation sound	Brake pedal	BRC-246, "Diag-
occurs (Note 2)	ABS actuator and electric unit (control unit)	nosis Procedure"
	ABS actuator and electric unit (control unit)	
Vehicle jerks during VDC/TCS/ABS control	TCM	BRC-247, "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 (just place a foot on it). However, this is normal.
- When shifting gears
- When driving on slippery road
- During cornering at high speed
- When passing over bumps or grooves [at approximately 50 mm (1.97 in) or more]
- When pulling away just after starting engine [at approximately 10 km/h (6 MPH) or higher]

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EXCESSIVE ABS FUNCTION OPERATION FREQUENCY

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

EXCESSIVE ABS FUNCTION OPERATION FREQUENCY

Diagnosis Procedure

INFOID:0000000006389390

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>, "Inspection", Rear: <u>RAX-6</u>, "On-vehicle Service".

Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace malfunctioning components.

3.check wheel sensor and sensor rotor

Check the following.

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

Is the inspection result normal?

YES >> GO TO 4

NO >> • Repla

- >> Replace wheel sensor or sensor rotor. Refer to <u>BRC-253</u>, "Removal and Installation" or <u>BRC-255</u>, "Removal and Installation".
 - · Repair harness.

4. CHECK ABS WARNING LAMP DISPLAY

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

YES >> Inspection End.

NO >> Perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

UNEXPECTED PEDAL REACTION

UNEXPECTED FEDAL REACTION		
< SYMPTOM DIAGNOSIS >	[VDC/TCS/ABS]	
UNEXPECTED PEDAL REACTION		А
Diagnosis Procedure	INFOID:000000006389391	\wedge
1.CHECK BRAKE PEDAL STROKE		В
Check brake pedal stroke. Refer to BR-13, "Inspection and Adjustment".		
Is the stroke too big?		
 YES >> • Bleed air from brake tube and hose. Refer to <u>BR-16</u>, "<u>Bleeding Brake Syste</u> • Check brake pedal, brake booster, and master cylinder for mount play, loos fluid leakage, etc. Refer to brake pedal: <u>BR-13</u>, "<u>Inspection and Adjustment master cylinder</u>. 	eness, brake system	D
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. <u>Is the inspection result normal?</u>

YES >> Inspection End.

NO >> Check brake system.

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THE BRAKING DISTANCE IS LONG

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

THE BRAKING DISTANCE IS LONG

Diagnosis Procedure

INFOID:0000000006389392

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 > [VDC/TCS/ABS]

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 <u>BRC-158</u>, "CONSULT Function (ABS)".

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PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

Diagnosis Procedure

INFOID:0000000006389394

CAUTION:

Under the following conditions, ABS is activated and vibration is felt when brake pedal is lightly depressed (just place a foot on it). However, this is normal.

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

1.SYMPTOM CHECK 1

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

Do symptoms 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 symptoms occur?

YES >> GO TO 3

NO >> Perform self diagnostic result. Refer to BRC-158, "CONSULT 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

VEHICLE JERKS DURING VDC/TCS/ABS CON	
< SYMPTOM DIAGNOSIS >	[VDC/TCS/ABS]
VEHICLE JERKS DURING VDC/TCS/ABS CONTROL	Į.
Diagnosis Procedure	INFOID:000000006389395
1.SYMPTOM CHECK	E
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	Γ
Perform self-diagnostic of ABS actuator and electric unit (control unit). Refer to <u>B</u> tion (ABS)".	
Are self-diagnosis results indicated?	E
YES >> Check corresponding items, make repairs, and perform ABS actuator	
unit) self-diagnosis. NO >> GO TO 3	Di
3. CHECK CONNECTOR	BF
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?	uriit) seir-ulagriosis.
YES >> If poor contact, damage, open or short circuit of connector terminal is f	ound, repair or replace.
NO >> GO TO 4	
4.CHECK ECM AND CVT SELF-DIAGNOSIS RESULTS Perform ECM and CVT self-diagnosis. Refer to EC-99. "CONSULT-III Function" (OD25DE) FC 422 "CON
SULT-III Function" (VQ35DE) or TM-123, "CONSULT-III Function (TRANSMISSION	
Are self-diagnosis results indicated?	
 YES >> Check the corresponding items. ECM: Refer to <u>EC-99</u>, "CONSULT-III Function" (QR25DE) or <u>EC-42</u> 	3 "CONSULT-III Function"
(VQ35DE).	s, concoll in randion
 CVT: Refer to <u>TM-123, "CONSULT-III Function (TRANSMISSION)"</u>. NO >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-2</u> 	
tion".	·
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Revision: June 2012 BRC-247 2011 Altima GCC

NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

NORMAL OPERATING CONDITION

Description INFOID:0000000006920914

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 second soul
Stopping distance is longer than that of vehicles without ABS when the vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.	This is a normal condition due to the VDC, TCS or ABS activation.
The brake pedal moves and generates noises, when TCS or VDC is activated due to rapid acceleration or sharp turn.	
The brake pedal vibrates and motor operation noises occur from the engine room, after the engine starts and just after the vehicle starts.	This is 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 may activate momentarily if wheel speed changes when driving over location where friction coefficient varies, when downshifting, or when fully depressing accelerator pedal.	TCS places the highest priority on the optimum traction (stability).
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
a ship while the engine is running. VDC may not operate normally or the ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lammay 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, su as during a spin turn, axle turn, or drift driving, while the VDC function is off (VDC OFF indicator lamp illuminate).	road. If the normal con- dition is restored, there is no malfunction. At
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).	that time, erase the self- diagnosis memory.
The vehicle speed will not increase even though the accelerator pedal is depressed, when inspecting the speedometer on a 2-wheel chassis dynamometer.	Normal (Deactivate the VDC/TCS function 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

[VDC/TCS/ABS] < 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
- 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.

Necessary for Steering Wheel Rotation After Battery Disconnect

NOTE:

- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- · Always use CONSULT to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

This vehicle is equipped with a push-button ignition switch and a steering lock unit.

If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, 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. Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
- 3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
- Perform the necessary repair operation.
- When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)

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PRECAUTIONS

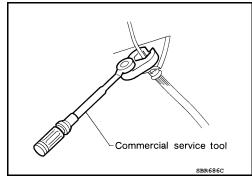
< PRECAUTION > [VDC/TCS/ABS]

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

Precaution for Brake System

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- Recommended fluid is brake fluid "DOT 3".
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted surface of body. If brake fluid is splashed on painted surfaces
 of body immediately wipe off then with cloth and then wash it away with water.
- Never use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use a flare nut wrench when removing flare nuts, and use a flare nut torque wrench when tighten brake tube flare nuts.
- · When installing brake tubes, be sure to check torque.
- Brake system is an important safety part. If a brake fluid leak is detected, always disassemble the affected part. If a malfunction is detected, replace part with a new one.
- Before working, turn ignition switch OFF and disconnect connectors of ABS actuator and electric unit (control unit) or the battery cable from the negative terminal.



WARNING:

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

Precaution for Brake Control

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

PREPARATION

< PREPARATION > [VDC/TCS/ABS]

PREPARATION

PREPARATION

Special Service Tool

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
— (J-45741) ABS active wheel sensor tester	J-45741-BOX PO O PRIMO MONGO	Checking operation of ABS active wheel sensor

Commercial Service Tool

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INFOID:0000000006389400

Tool name		Description	
Flare nut crowfoot Torque wrench		Removing and installing brake piping a: 10mm (0.39 in)/12mm (0.47 in)	
	s-nT360		

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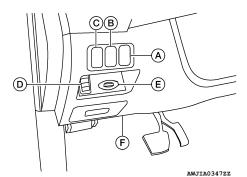
REMOVAL AND INSTALLATION

VDC OFF SWITCH

Removal and Installation

REMOVAL

- Remove instrument lower cover to access the VDC OFF switch. Refer to IP-11. "Exploded View".
- 2. Disconnect the following harness connectors to remove instrument lower cover:
 - Headlamp aiming (A)
 - Rear sonar system off switch (B)
 - VDC OFF (C)
 - Trunk release (D)
 - Key slot (E)
 - Diagnostic connector (F)
 - Asperator tube
- 3. Remove VDC OFF switch from the back of the instrument lower cover.



INSTALLATION

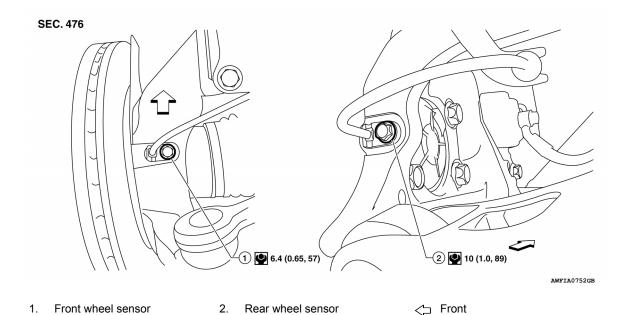
Installation is in the reverse order of removal.

[VDC/TCS/ABS]

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WHEEL SENSORS

Removal and Installation



CAUTION:

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

FRONT WHEEL SENSOR

Removal

- 1. Remove front wheel and tire. Refer to WT-65, "Adjustment".
- Partially remove front wheel fender protector. Refer to <u>EXT-22, "Removal and Installation"</u> (Coupe), <u>EXT-46, "Removal and Installation"</u> (Sedan).
- 3. Remove wheel sensor bolt and wheel sensor.
- Remove harness wire from mounts and disconnect wheel sensor harness connector.

Installation

Installation is in the reverse order of removal.

REAR WHEEL SENSOR

Removal

1. Remove rear wheel and tire. Refer to WT-65, "Adjustment".

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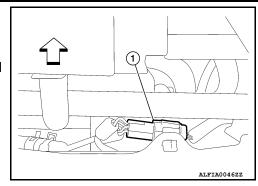
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WHEEL SENSORS

< REMOVAL AND INSTALLATION >

[VDC/TCS/ABS]

- 2. Disconnect wheel sensor harness connector (1).
 - <⊐: Front
- 3. Remove harness wire clips from rear suspension member.
- 4. Remove wheel sensor bolt and wheel sensor from rear wheel hub and bearing assembly.



Installation

Installation is in the reverse order of removal.

SENSOR ROTOR

< REMOVAL AND INSTALLATION >

[VDC/TCS/ABS]

SENSOR ROTOR

Removal and Installation

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The front and rear wheel sensor rotors are an integral part of the wheel hubs and can not be disassembled. When replacing the sensor rotor, replace the wheel hub. Refer to <u>FAX-8</u>, "<u>Removal and Installation</u>" (front), <u>RAX-7</u>, "<u>Removal and Installation</u>" (rear).

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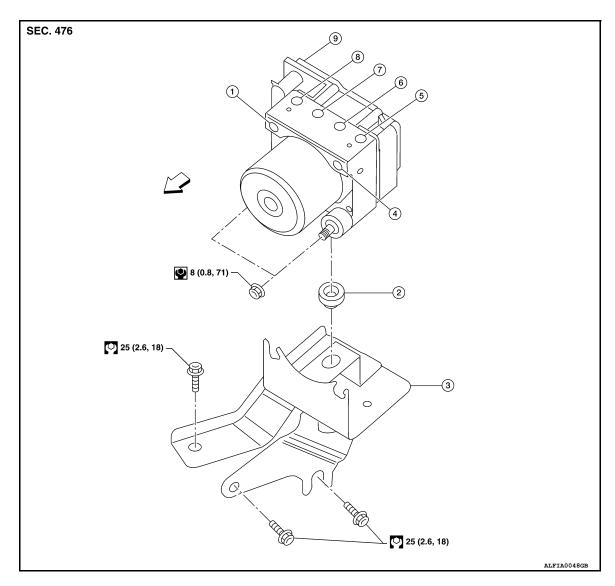
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Exploded View



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

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Removal and Installation

CAUTION:

<□ Front

Be careful of the following.

- In the case that the ABS actuator and electronic unit (control unit) is replaced, make sure to adjust position of steering angle sensor. Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".
- · Before servicing, disconnect the battery cable from negative terminal.
- To remove brake pipe, use a suitable tool (flare nut wrench) to prevent flare nuts and brake tube from being damaged. To install, use suitable tool (flare nut torque wrench).
- Do not apply excessive impact to ABS actuator and electric unit (control unit), such as dropping it.
- Do not remove and install ABS actuator and electric unit (control unit) by holding harness.

< REMOVAL AND INSTALLATION >

[VDC/TCS/ABS]

- After work is completed, bleed air from brake tube. Refer to BR-16, "Bleeding Brake System".
- After installing harness connector on the ABS actuator and electric unit (control unit), make sure connector is securely locked.

REMOVAL

- 1. Remove cowl top. Refer to <u>EXT-21, "Removal and Installation"</u> (Coupe), <u>EXT-45, "Removal and Installation"</u> (Sedan).
- 2. Disconnect washer hose.
- 3. Disconnect the battery negative terminal.
- 4. Remove tower bar, if equipped. Refer to FSU-13, "Exploded View".
- 5. Disconnect ABS actuator and electric unit (control unit) connector.
- 6. Loosen brake tube flare nuts, then remove brake tubes from ABS actuator and electric unit (control unit) using a suitable tool.
- Remove ABS actuator and electric unit (control unit) nuts.
- 8. Remove ABS actuator and electric unit (control unit).
- Remove bracket as necessary.

INSTALLATION

Installation is in the reverse order of removal.

Torque brake lines to proper specification. Refer to BR-18, "Hydraulic Circuit".

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YAW RATE/SIDE/DECEL G SENSOR

< REMOVAL AND INSTALLATION >

[VDC/TCS/ABS]

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YAW RATE/SIDE/DECEL G SENSOR

Removal and Installation

CAUTION:

- Do not drop or strike the yaw rate/side/decel G sensor, because it has little endurance to impacts.
- Do not use power tools, because yaw rate/side/decel G sensor is sensitive to impacts.
- For installation, make sure the arrow on top of the yaw rate/side/decel G sensor is pointing to the front of the vehicle.

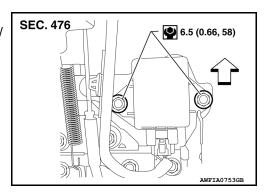
REMOVAL

- 1. Remove the center console. Refer to IP-22, "Disassembly and Assembly".
- 2. Disconnect the yaw rate/side/decel G sensor harness connector.
- 3. Remove the yaw rate/side/decel G sensor nuts.
- Remove the yaw rate/side/decel G sensor.

INSTALLATION

Installation is in the reverse order of removal.

- For installation, make sure the arrow on top of the yaw rate/side/ decel G sensor is pointing to the front of the vehicle.
- ← : Front of vehicle.



STEERING ANGLE SENSOR

< REMOVAL AND INSTALLATION >

[VDC/TCS/ABS]

STEERING ANGLE SENSOR

Removal and Installation

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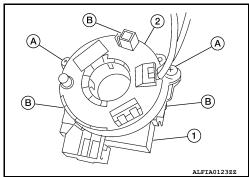
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REMOVAL

1. Remove the spiral cable. Refer to SR-8, "Removal and Installation".

2. Remove the two screws (A) and release the three clips (B) to remove the steering angle sensor (1) from spiral cable (2).



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INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Perform the neutral position adjustment for the steering angle sensor. Refer to BRC-143, "ADJUST-MENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement"

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