



Mazda 3 Workshop Manual – BRAKES + DTC + Wiring Diagrams

Contents

Mazda 3 Workshop Manual – BRAKES + DTC + Wiring Diagrams.....	1
ON-BOARD DIAGNOSTIC[ABS]	8
ABS SYSTEM WIRING DIAGRAM.....	8
ON-BOARD DIAGNOSIS [ABS].....	8
On-Board Diagnostic (OBD) Test Description	8
Read/clear diagnostic results.....	9
PID/Data monitor and record	9
Active command modes	9
Reading DTCs Procedure	9
Clearing DTCs Procedures	9
PID/Data Monitor and Record Procedure.....	9
Active Command Modes Procedure.....	10
DTC Table	10
PID/DATA Monitor Table.....	11
Active Command Modes Table	12
DTC B1317, B1318 [ABS].....	12
DTC B1342, C1267 [ABS].....	15
DTC C1095 [ABS]	15
DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [ABS].....	17
DTC C1145, C1155, C1165, C1175 [ABS]	21
DTC C1446 [ABS]	24
DTC U1900, U2012, U2523 [ABS]	27
Diagnostic procedure	27
ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL].....	27
DYNAMIC STABILITY CONTROL WIRING DIAGRAM	27
ON-BOARD DIAGNOSIS [DSC (DYNAMIC STABILITY CONTROL)]	28

On-Board Diagnostic (OBD) Test Description	28
Read/clear diagnostic results.....	29
PID/Data monitor and record	29
Active command modes	29
Reading DTCs Procedure	29
Clearing DTCs Procedures	29
PID/Data Monitor and Record Procedure.....	29
Active Command Modes Procedure.....	30
DTC Table	30
PID/DATA Monitor Table.....	32
Active Command Modes Table	34
DTC B1317, B1318 [DSC]	34
DTC B1342, C1267, C1730 [DSC]	37
DTC B2141 [DSC]	38
DTC B2741 [DSC]	39
DTC C1093 [DSC].....	39
DTC C1095 [DSC].....	41
DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [DSC]	43
DTC C1145, C1155, C1165, C1175 [DSC]	46
DTC C1277, C1295, C1306, C1307 [DSC]	49
DTC C1279, C1280, C1281, C1282, C2778 [DSC]	51
DTC C1288, C1440 [DSC]	53
DTC C1446 [DSC].....	54
DTC C1470, C1994 [DSC]	57
DTC C2785 [DSC].....	57
DTC U1900, U2012, U2202, U2523 [DSC]	58
DTC U1901, U2527 [DSC]	58
SYMPTOM TROUBLESHOOTING	60
SYSTEM WIRING DIAGRAM.....	60
Vehicles with ABS	61
Vehicles with DSC	62
FOREWORD	62
PRECAUTION.....	62
Vehicles with ABS	63
Vehicles with DSC	64
Intermittent Concern Troubleshooting	66
Vibration method.....	66

Inspection method for switch connectors or wiring harnesses	66
Inspection method for sensor connectors or wiring harnesses	67
Inspection method for sensors	67
Malfunction data monitor method	68
Connector terminal inspection method	68
SYMPTOM TROUBLESHOOTING	68
NO.1 NEITHER ABS WARNING LIGHT NOR BRAKE SYSTEM WARNING LIGHT ILLUMINATE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION	71
NO.2 ABS WARNING LIGHT DOES NOT ILLUMINATE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION	73
NO.3 BRAKE SYSTEM WARNING LIGHT DOES NOT ILLUMINATE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION	73
NO.4 BOTH ABS WARNING LIGHT AND BRAKE SYSTEM WARNING LIGHT STAY ON 4 S OR MORE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION	73
NO.5 ABS WARNING LIGHT STAYS ON 4 S OR MORE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION	76
NO.6 BRAKE SYSTEM WARNING LIGHT STAYS ON 4 S OR MORE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION (PARKING BRAKE IS RELEASED)	78
NO.7 THERE IS MALFUNCTION IN THE SYSTEM EVEN THOUGH ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DO NOT ILLUMINATE	79
NO.8 ANY OF THE FOLLOWING LIGHTS DO NOT ILLUMINATE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION: (ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DSC INDICATOR LIGHT AND/OR DSC OFF LIGHT)	80
NO.9 ANY OF THE FOLLOWING LIGHTS REMAIN ON: (ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DSC INDICATOR LIGHT AND/OR DSC OFF LIGHT)	81
NO.10 THERE IS A MALFUNCTION IN THE SYSTEM EVEN THOUGH ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DSC INDICATOR LIGHT AND DSC OFF LIGHT DO NOT ILLUMINATE	83
NO.11 ABS OR TCS*1 OPERATES FREQUENTLY/TCS DOES NOT WORK CORRECTLY *1: DSC SYSTEM FUNCTION CONTAINS TRACTION CONTROL FUNCTION, DSC INDICATOR LIGHT GOES ON AND OUT WHILE DSC OPERATES	83
NO.12 DSC*2 OPERATES FREQUENTLY/DSC DOES NOT WORK CORRECTLY *2: DSC INDICATOR LIGHT GOES ON AND OUT WHILE DSC OPERATES	84
GENERAL PROCEDURES	85
GENERAL PROCEDURES (BRAKE)	85
Wheel and Tire Installation	85
Brake Lines Disconnection	85
Brake Pipe Flare Nut Tightening	86
Connector Disconnection	86
ABS/DSC Related Parts	86
DSC Related Part Sensor Initialization Procedure	86
CONVENTIONAL BRAKE SYSTEM	86

CONVENTIONAL BRAKE SYSTEM LOCATION INDEX	86
AIR BLEEDING	88
VACUUM LINE INSPECTION	89
VACUUM HOSE REMOVAL/INSTALLATION	90
BRAKE PEDAL INSPECTION.....	91
Pedal Height Inspection.....	92
Pedal Play Inspection	92
Pedal-to-floor Clearance Inspection	92
BRAKE PEDAL REMOVAL/INSTALLATION	93
Brake Pedal Removal Note.....	94
Joint Pin Installation Note.....	95
Brake Switch Installation Note.....	95
BRAKE SWITCH INSPECTION.....	95
MASTER CYLINDER REMOVAL/INSTALLATION	96
Reserve Hose Removal Note	97
Reserve Hose Installation Note.....	97
BRAKE FLUID LEVEL SENSOR INSPECTION.....	98
POWER BRAKE UNIT INSPECTION	98
Without Using SST	98
Operation inspection	98
Vacuum function inspection	99
Vacuum loss function inspection.....	99
Using SST.....	99
Pre-inspection preparation.....	99
Vacuum loss inspection.....	100
Lack of hydraulic pressure inspection	100
Hydraulic pressure inspection	100
POWER BRAKE UNIT REMOVAL/INSTALLATION.....	101
Brake Pedal Component Removal Note	102
FRONT BRAKE (DISC) INSPECTION.....	102
Brake Judder Repair Hints	102
Description.....	102
Steering wheel vibration	102
Floor vibration	102
Brake pedal vibration	102
Due to an excessive runout (side-to-side wobble) of the disc plate, the thickness of the disc plate is uneven.....	102

The disc plate is deformed by heat.....	103
Due to corrosion, the thickness and friction coefficient of the disc plate change.	103
Inspection and repair procedure	103
Lateral runout inspection	103
Thickness variation inspection.....	104
Disc Plate Thickness Inspection	104
Disc Pad Thickness Inspection	105
FRONT BRAKE (DISC) REMOVAL/INSTALLATION	105
Disc Plate Removal Note	107
Disc Plate Installation Note	107
Disc Pad Installation Note	107
Brake Hose Installation Note	107
DISC PAD (FRONT) REPLACEMENT	108
CALIPER (FRONT) DISASSEMBLY/ASSEMBLY	109
Piston Disassembly Note	110
Dust Seal Assembly Note.....	110
Piston Assembly Note.....	110
REAR BRAKE (DISC) INSPECTION	111
Brake Judder Repair Hints	111
Description.....	111
Steering wheel vibration	111
Floor vibration	112
Brake pedal vibration	112
Due to an excessive runout (side-to-side wobble) of the disc plate, the thickness of the disc plate is uneven.....	112
The disc plate is deformed by heat.....	112
Due to corrosion, the thickness and friction coefficient of the disc plate change.	112
Inspection and repair procedure	113
Lateral runout inspection	113
Thickness variation inspection.....	114
Disc Plate Thickness Inspection	114
Disc Pad Thickness Inspection	114
REAR BRAKE (DISC) REMOVAL/INSTALLATION.....	115
Disc Pad Removal Note	117
Disc Plate Removal Note	117
Disc Plate Installation Note	117
Disc Pad Installation Note	118

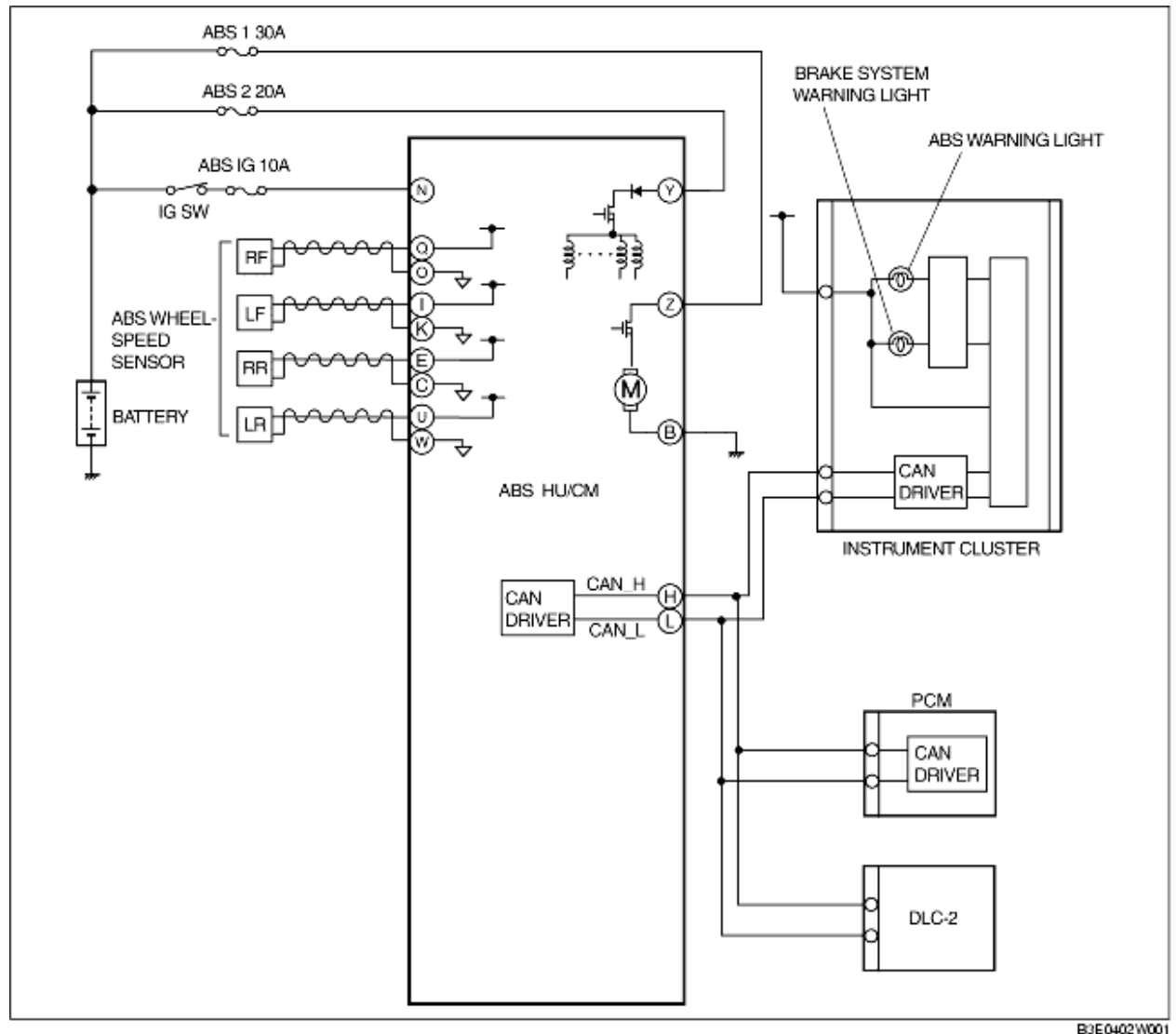
DISC PAD (REAR) REPLACEMENT	118
CALIPER (REAR) DISASSEMBLY/ASSEMBLY	119
Dust Seal Assembly Note.....	120
PARKING BRAKE SYSTEM.....	121
PARKING BRAKE SYSTEM LOCATION INDEX.....	121
PARKING BRAKE LEVER INSPECTION	122
Stroke Inspection.....	122
PARKING BRAKE LEVER ADJUSTMENT	123
PARKING BRAKE LEVER REMOVAL/INSTALLATION.....	123
Rear Parking Brake Cable Installation Note.....	124
Front Parking Brake Cable Installation Note	125
PARKING BRAKE SWITCH INSPECTION.....	125
ANTILOCK BRAKE SYSTEM.....	126
ABS LOCATION INDEX.....	126
ABS SYSTEM INSPECTION.....	126
ABS Hydraulic Unit On-vehicle Inspection	127
Preparation	127
Operation inspection	127
ABS HU/CM REMOVAL/INSTALLATION	128
Connector Removal Note	129
Brake Pipe Removal Note	130
ABS HU/CM Component, Bracket Removal Note.....	130
Brake Pipe Installation Note.....	130
Connector Installation Note.....	131
ABS HU/CM INSPECTION	131
Terminal Voltage Table (Reference)	131
FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.....	133
FRONT ABS WHEEL-SPEED SENSOR INSPECTION	134
Installation Visual Inspection	134
Clearance Inspection	134
Sensor Output Value Inspection	135
REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION	135
ABS Hole Cover Removal Note	136
Rear ABS Wheel-speed Sensor Wiring Harness Installation Note.....	137
ABS Hole Cover Installation Note	137
REAR ABS WHEEL-SPEED SENSOR INSPECTION	137
Installation Visual Inspection	138

Clearance Inspection	138
Sensor Output Value Inspection	138
DYNAMIC STABILITY CONTROL.....	139
DSC LOCATION INDEX.....	139
DSC SYSTEM INSPECTION	141
Preparation	141
ABS Control Inspection	141
DSC Control Inspection	143
DSC HU/CM REMOVAL/INSTALLATION	145
Brake Pipe Removal Note	146
DSC HU/CM, Bracket Removal Note	147
Brake Pipe Installation Note.....	147
DSC HU/CM INSPECTION.....	147
Terminal Voltage Table (Reference)	148
FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.....	151
FRONT ABS WHEEL-SPEED SENSOR INSPECTION	151
REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION	151
REAR ABS WHEEL-SPEED SENSOR INSPECTION	152
COMBINED SENSOR REMOVAL/INSTALLATION	152
COMBINED SENSOR INSPECTION.....	153
COMBINED SENSOR INITIALIZATION PROCEDURE	154
BRAKE FLUID PRESSURE SENSOR INSPECTION	155
BRAKE FLUID PRESSURE SENSOR INITIALIZATION PROCEDURE.....	156
STEERING ANGLE SENSOR REMOVAL/INSTALLATION.....	156
STEERING ANGLE SENSOR INSPECTION	156
DSC OFF SWITCH REMOVAL/INSTALLATION	158
DSC OFF SWITCH INSPECTION	158
TECHNICAL DATA.....	159
BRAKES.....	159
SERVICE TOOLS.....	160
BRAKES SST	160

ON-BOARD DIAGNOSTIC[ABS]

ABS SYSTEM WIRING DIAGRAM

B3E040243000W01



B3E0402W001

ON-BOARD DIAGNOSIS [ABS]

B3E040243000W02

On-Board Diagnostic (OBD) Test Description

- The OBD test inspects the integrity and function of the ABS and outputs the results when requested by the specific tests.
- On-board diagnostic test also:

- Provides a quick inspection of the ABS usually performed at the start of each diagnostic procedure.
 - Provides verification after repairs to ensure that no other faults occurred during service.
- The OBD test is divided into 3 tests:
 - Read/clear diagnostic results, PID monitor and record and active command modes.

Read/clear diagnostic results

- This function allows you to read or clear DTCs in the ABS HU/CM memory.

PID/Data monitor and record

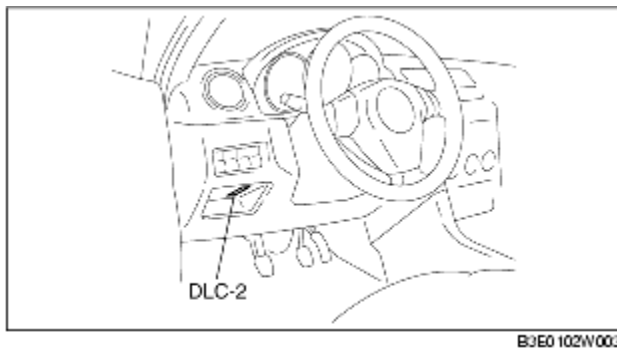
- This function allows you to access certain data values, input signals, calculated values, and system status information.

Active command modes

- This function allows you to control devices through the WDS or equivalent.

Reading DTCs Procedure

1. Connect WDS or equivalent to the vehicle DLC-2 connector.



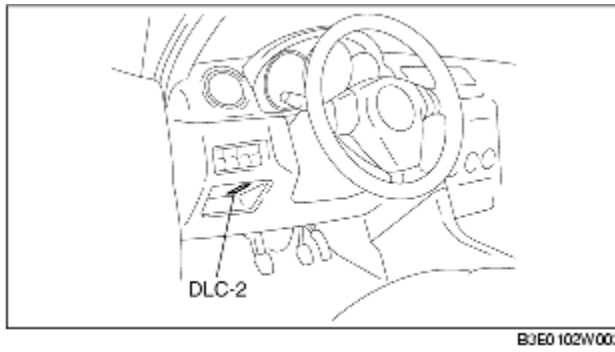
2. Retrieve DTC using WDS or equivalent.

Clearing DTCs Procedures

1. After repairs have been made, perform the **DTCs reading procedure**.
2. Erase DTC using WDS or equivalent.
3. Ensure that the customer's concern has been resolved.

PID/Data Monitor and Record Procedure

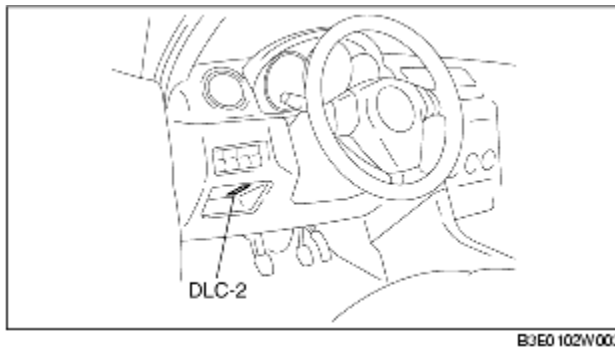
1. Connect WDS or equivalent to the vehicle DLC-2 connector.



2. Access and monitor PIDs using WDS or equivalent.

Active Command Modes Procedure

1. Connect WDS or equivalent to the vehicle DLC-2 16-pin connector.



2. Turn the ignition switch to the ON position (engine off) or start the engine.

3. Activate active command modes using WDS or equivalent.

DTC Table

DTC	System malfunction location	Page
WDS or equivalent		
B1317	Power supply system	(See DTC B1317, B1318 [ABS].)
B1318	Power supply system	(See DTC B1317, B1318 [ABS].)
B1342	ABS HU/CM (internal malfunction)	(See DTC B1342, C1267 [ABS].)
C1095	Pump motor, motor relay	(See DTC C1095 [ABS].)
C1141	LF ABS sensor rotor	(See DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [ABS].)
C1142	RF ABS sensor rotor	(See DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [ABS].)

C1143	LR ABS sensor rotor	(See DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [ABS].)
C1144	RR ABS sensor rotor	(See DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [ABS].)
C1145	RF ABS wheel-speed sensor	(See DTC C1145, C1155, C1165, C1175 [ABS].)
C1155	LF ABS wheel-speed sensor	(See DTC C1145, C1155, C1165, C1175 [ABS].)
C1165	RR ABS wheel-speed sensor	(See DTC C1145, C1155, C1165, C1175 [ABS].)
C1175	LR ABS wheel-speed sensor	(See DTC C1145, C1155, C1165, C1175 [ABS].)
C1233	LF ABS wheel-speed sensor/ABS sensor rotor	(See DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [ABS].)
C1234	RF ABS wheel-speed sensor/ABS sensor rotor	(See DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [ABS].)
C1235	RR ABS wheel-speed sensor/ABS sensor rotor	(See DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [ABS].)
C1236	LR ABS wheel-speed sensor/ABS sensor rotor	(See DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [ABS].)
C1267	ABS HU/CM (internal malfunction)	(See DTC B1342, C1267 [ABS].)
C1446	Brake switch	(See DTC C1446 [ABS].)
U1900	CAN line	(See MULTIPLEX COMMUNICATION SYSTEM.)
U2012	CAN line	(See MULTIPLEX COMMUNICATION SYSTEM.)
U2523	CAN line	(See MULTIPLEX COMMUNICATION SYSTEM.)

PID/DATA Monitor Table

PID name (definition)	Unit/Condition	Operation condition (reference)	Action	ABS HU/CM terminal
BOO_ABS (Brake pedal switch input)	On/Off	- Brake pedal depressed: On - Brake pedal released: Off	Inspect the brake switch.	-
CCNTABS (Number of continuous codes)	-	- DTCs detected: 1-255 - No DTCs detected: 0	Perform the DTC inspection.	-

LF_WSPD (Left front ABS wheel-speed sensor input)	km/h, mph	- Vehicle stopped: 0 km/h, 0 mph - Vehicle running: Vehicle speed	Inspect the ABS wheel-speed sensor.	I, K
LR_WSPD (Left rear ABS wheel-speed sensor input)	km/h, mph	- Vehicle stopped: 0 km/h, 0 mph - Vehicle running: Vehicle speed	Inspect the ABS wheel-speed sensor.	U, W
RF_WSPD (Right front ABS wheel-speed sensor input)	km/h, mph	- Vehicle stopped: 0 km/h, 0 mph - Vehicle running: Vehicle speed	Inspect the ABS wheel-speed sensor.	Q, O
RR_WSPD (Right rear ABS wheel-speed sensor input)	km/h, mph	- Vehicle stopped: 0 km/h, 0 mph - Vehicle running: Vehicle speed	Inspect the ABS wheel-speed sensor.	E, C

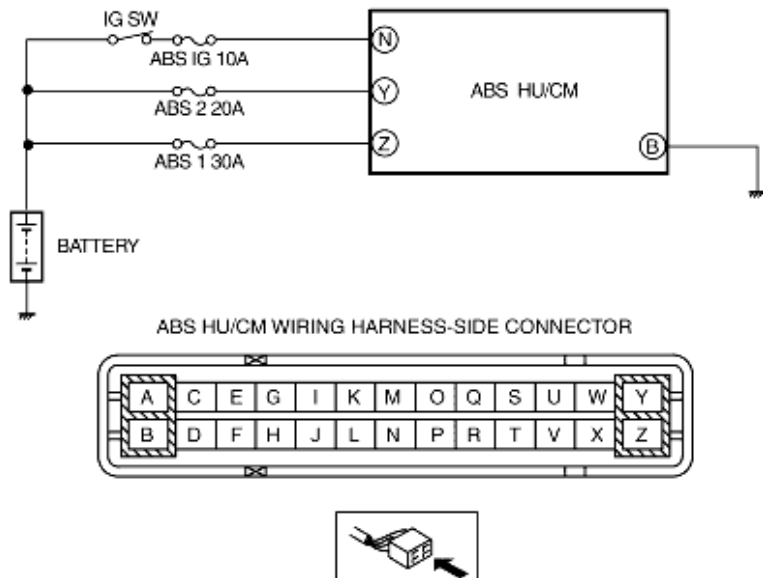
Active Command Modes Table

Command name	Output part	Operation	Operating condition
LF_INLET	LF inlet solenoid valve	On/Off	Ignition switch at ON
LF_OUTLET	LF outlet solenoid valve		
LR_INLET	LR inlet solenoid valve		
LR_OUTLET	LR outlet solenoid valve		
PMP_MOTOR	Pump motor		
RF_INLET	RF inlet solenoid valve		
RF_OUTLET	RF outlet solenoid valve		
RR_INLET	RR inlet solenoid valve		
RR_OUTLET	RR outlet solenoid valve		

DTC B1317, B1318 [ABS]

B3E040243000W03

DTC	B1317, B1318	Power supply system
DETECTION CONDITION	- B1317 - High ignition voltage (16 V or more) is detected at the voltage monitor of the solenoid valve or motor monitor.	

	• B1318 - When driving the vehicle at 20 km/h {12.4 mph} or more, low ignition voltage (10 V or less) is detected at the voltage monitor of the solenoid valve or motor monitor.																										
POSSIBLE CAUSE	• ABS 1 30A/ABS 2 20A/ABS IG 10A fuse malfunction • Open or short circuit in wiring harness between ABS HU/CM terminal N and battery • Open or short circuit in wiring harness between ABS HU/CM terminal Y and battery • Open or short circuit in wiring harness between ABS HU/CM terminal Z and battery • Open circuit in wiring harness between ABS HU/CM terminal B and body ground • Battery deterioration • Generator malfunction • Poor connection at connectors (female terminal)																										
 <table data-bbox="568 1285 1166 1408"><tr><td>A</td><td>C</td><td>E</td><td>G</td><td>I</td><td>K</td><td>M</td><td>O</td><td>Q</td><td>S</td><td>U</td><td>W</td><td>Y</td></tr><tr><td>B</td><td>D</td><td>F</td><td>H</td><td>J</td><td>L</td><td>N</td><td>P</td><td>R</td><td>T</td><td>V</td><td>X</td><td>Z</td></tr></table> 		A	C	E	G	I	K	M	O	Q	S	U	W	Y	B	D	F	H	J	L	N	P	R	T	V	X	Z
A	C	E	G	I	K	M	O	Q	S	U	W	Y															
B	D	F	H	J	L	N	P	R	T	V	X	Z															

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT BATTERY VOLTAGE • Is the battery positive terminal voltage normal?	Yes Inspect for normal connection of the battery terminals. Go to the next step.
		No Charge or replace the battery, then go to Step 6. (See BATTERY RECHARGING.)

			(See BATTERY REMOVAL/INSTALLATION [Z6].) (See BATTERY REMOVAL/INSTALLATION [LF].)
2	INSPECT BATTERY GRAVITY Is battery specific gravity as specified?	Yes Go to the next step.	Replace the battery, then go to Step 6. (See BATTERY REMOVAL/INSTALLATION [Z6].) (See BATTERY REMOVAL/INSTALLATION [LF].)
3	INSPECT CHARGING SYSTEM Are the generator and the drive belt tensions normal?	Yes Go to the next step.	Replace the generator and/or drive belt if necessary. (See GENERATOR REMOVAL/INSTALLATION [Z6].) (See GENERATOR REMOVAL/INSTALLATION [LF].) (See DRIVE BELT REPLACEMENT [Z6].) (See DRIVE BELT REPLACEMENT [LF].) Go to Step 6.
4	INSPECT ABS HU/CM POWER SUPPLY FOR OPEN CIRCUIT - Disconnect the ABS HU/CM connectors. - Turn the ignition switch to the ON position. - Measure the voltage between following connector terminals of the ABS HU/CM (vehicle harness-side) and body ground: - ABS HU/CM: N-Body ground - ABS HU/CM: Y-Body ground - ABS HU/CM: Z-Body ground - Is the voltage 10 V or more?	Yes Go to the next step.	No Repair or replace the wiring harness, then go to Step 6.
5	INSPECT ABS HU/CM GROUND FOR POOR GROUND OR OPEN CIRCUIT - Turn the ignition switch off. - Measure the resistance between following connector terminal of ABS HU/CM (vehicle harness-side) and body ground: - ABS HU/CM: B-Body ground - Is the resistance within 0-1 ohm?	Yes Go to the next step.	No If there is open circuit: - Repair or replace the wiring harness, then go to the next step. If resistance is not within specification: - Repair or replace the poor ground part, then go to the next step.

6	VERIFY THAT THE SAME DTC IS NOT PRESENT • Reconnect all disconnected connectors. • Clear the DTCs from the memory. (See Clearing DTCs Procedures.) • Start the engine and drive the vehicle at 10 km/h {12.4 mph} or more. • Are the same DTCs present?	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the ABS HU/CM, then go to the next step. (See ABS HU/CM REMOVAL/INSTALLATION)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCS ARE PRESENT • Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC Table.)
		No	DTC troubleshooting completed.

DTC B1342, C1267 [ABS]

B3E040243000W04

DTC	B1342, C1267	ABS HU/CM (internal malfunction)
DETECTION CONDITION	• The ABS HU/CM on-board diagnostic function detects control module internal malfunction.	
POSSIBLE CAUSE	• ABS HU/CM internal malfunction	

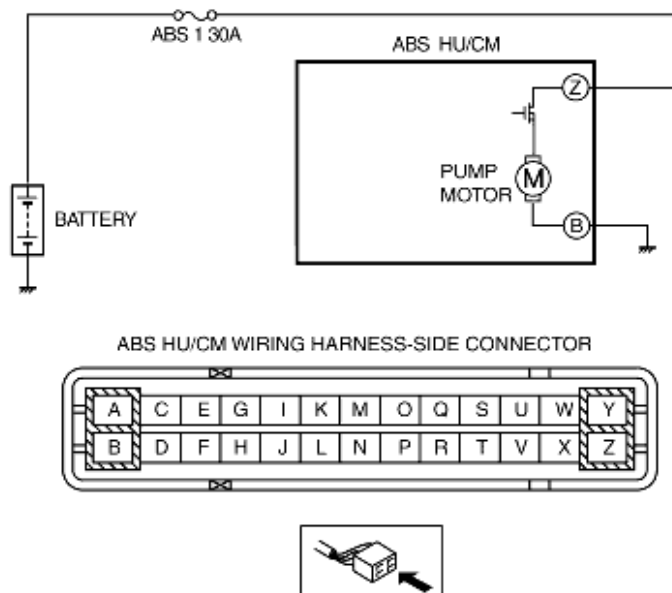
Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY NO ABS HU/CM MALFUNCTION • Clear the DTCs from the memory. (See Clearing DTCs Procedures.) • Start the engine and drive the vehicle at 10km/h {6.2 mph} or more. • Are the same DTCs present?	Yes	Replace the ABS HU/CM, then go to the next step. (See ABS HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
2	VERIFY THAT NO OTHER DTCS ARE PRESENT • Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC Table.)
		No	DTC troubleshooting completed.

DTC C1095 [ABS]

B3E040243000W05

DTC	C1095	Pump motor, motor relay
DETECTION CONDITION	• ABS motor monitor signal does not correspond to ABS HU/CM OFF signal. • ABS motor monitor signal does not correspond to ABS HU/CM ON signal. • ABS motor monitor OFF signal is input within specified time limit when motor signal is switched from ON to OFF by ABS HU/CM.	
POSSIBLE CAUSE	• ABS 1 (30 A) fuse malfunction • Open circuit or short to ground in the wiring harness between the battery and ABS HU/CM terminal Z • Open circuit in the wiring harness between ABS HU/CM terminal B and body ground • Open or short circuit in ABS HU/CM internal motor relay, or stuck motor relay • Open or short circuit in ABS HU/CM internal pump motor, or frozen pump motor • Poor connection at connectors (female terminal)	



Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT ABS FUSE CONDITION • Is the ABS fuse (ABS 1 30 A) normal?	Yes	Go to the next step.
		No	Replace the ABS fuse, then go to Step 6.
2	VERIFY PUMP MOTOR OPERATION • Turn the ignition switch off. • Connect the WDS or equivalent to the DLC-2.	Yes	Go to the next step.
		No	Replace the ABS HU/CM, then go to Step 6. (See ABS HU/CM REMOVAL/INSTALLATION.)

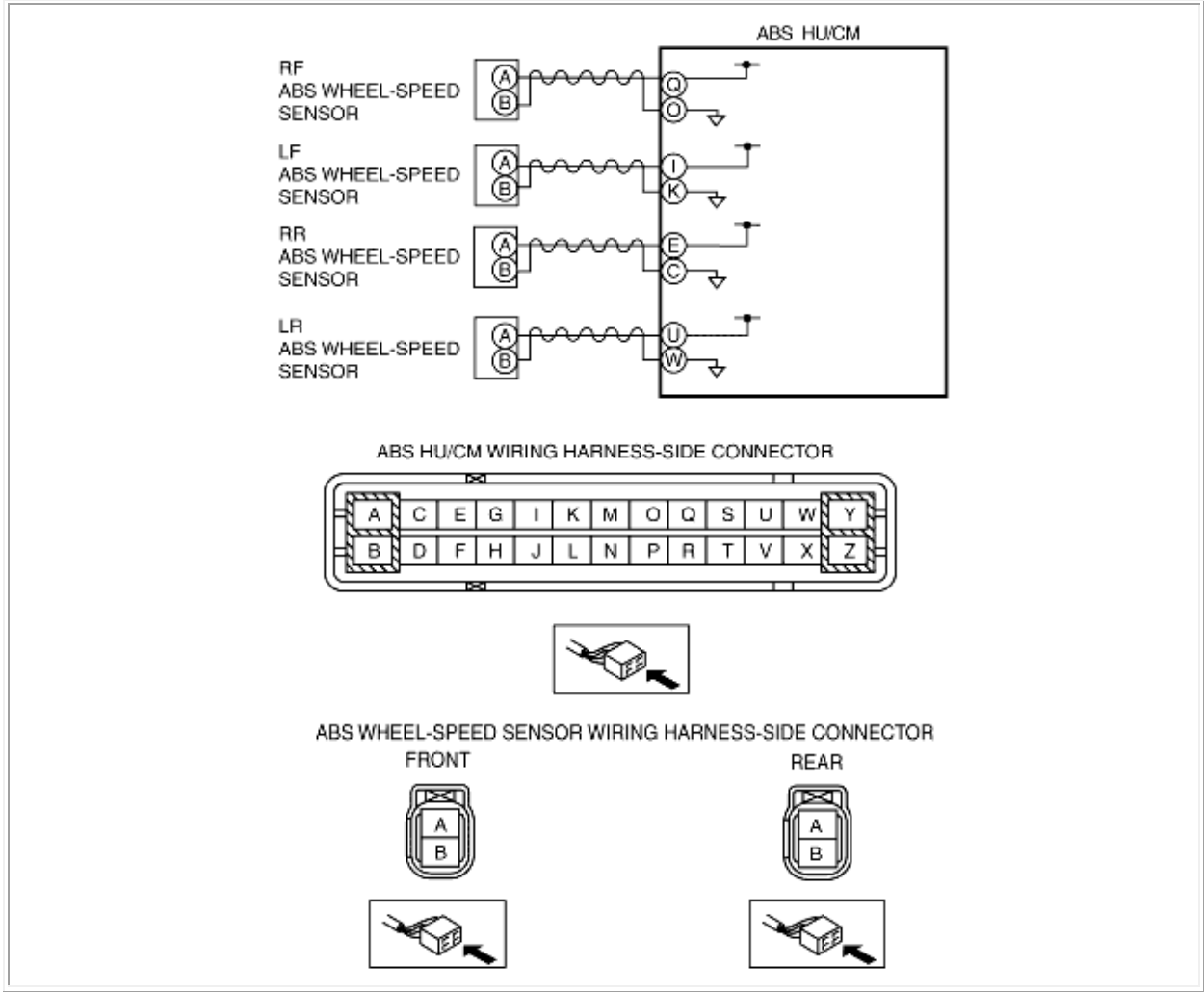
	• Turn the ignition switch to the ON position. • Access PMP_MOTOR active command modes using the WDS or equivalent. • Does the pump motor operate?		
3	INSPECT MOTOR RELAY POWER SUPPLY FOR OPEN CIRCUIT • Turn the ignition switch off. • Disconnect the ABS HU/CM connector. • Inspect for continuity between ABS HU/CM terminal Z and the positive battery terminal. • Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 6.
4	INSPECT MOTOR RELAY POWER SUPPLY FOR SHORT CIRCUIT • Inspect for continuity between ABS HU/CM terminal Z and body ground. • Is there continuity?	Yes	Repair or replace the wiring harness, then go to Step 6.
		No	Go to the next step.
5	INSPECT PUMP MOTOR GROUND FOR OPEN CIRCUIT • Inspect for continuity between ABS HU/CM terminal B and body ground. • Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 6.
6	VERIFY THAT THE SAME DTC IS NOT PRESENT • Reconnect all disconnected connectors. • Clear the DTCs from the memory. (See Clearing DTCs Procedures.) • Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. • Are the same DTCs present?	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the ABS HU/CM, then go to the next step. (See ABS HU/CM REMOVAL/INSTALLATION .)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCS ARE PRESENT • Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC Table .)
		No	DTC troubleshooting completed.

**DTC C1141, C1142, C1143, C1144, C1233, C1234,
C1235, C1236 [ABS]**

Note

- When only the driving wheels are rotated while the vehicle is jacked up, DTCs C1235 and C1236 are input to the memory.

DT C	C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236	ABS wheel-speed sensor/ABS sensor rotor
DETECTION CONDITION	• C1141, C1142, C1143, C1144 - Periodic abnormality is detected in the signal wave pattern from the ABS wheel-speed sensors. • C1234, C1233, C1235, C1236 - Wheel speed signal is not input or extremely low wheel speed signal is input from any of the four wheels when driving at a vehicle speed of 10 km/h {6.2 mph} or more. - A large, sudden change in wheel speed signal is detected. - ABS control operates for 28 s or more.	
POSSIBLE CAUSE	• ABS wheel-speed sensor malfunction • ABS sensor rotor malfunction (foreign material adhering) • Improper installation of ABS wheel-speed sensor and/or sensor rotor • Excessive clearance between the ABS wheel-speed sensor and sensor rotor • Continuous ABS operation	



Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT PID FOR ABS WHEEL-SPEED SENSOR OUTPUT ERROR USING WDS OR EQUIVALENT • Turn the ignition switch off. • Connect the WDS or equivalent to the DLC-2. • Select the following PIDs using the WDS or equivalent: LF_WSPD LR_WSPD RF_WSPD RR_WSPD • Drive the vehicle. • Verify that the vehicle speeds detected by the four ABS wheel-speed sensors are approximately the same.	Yes	Go to Step 3.
		No	Go to the next step.

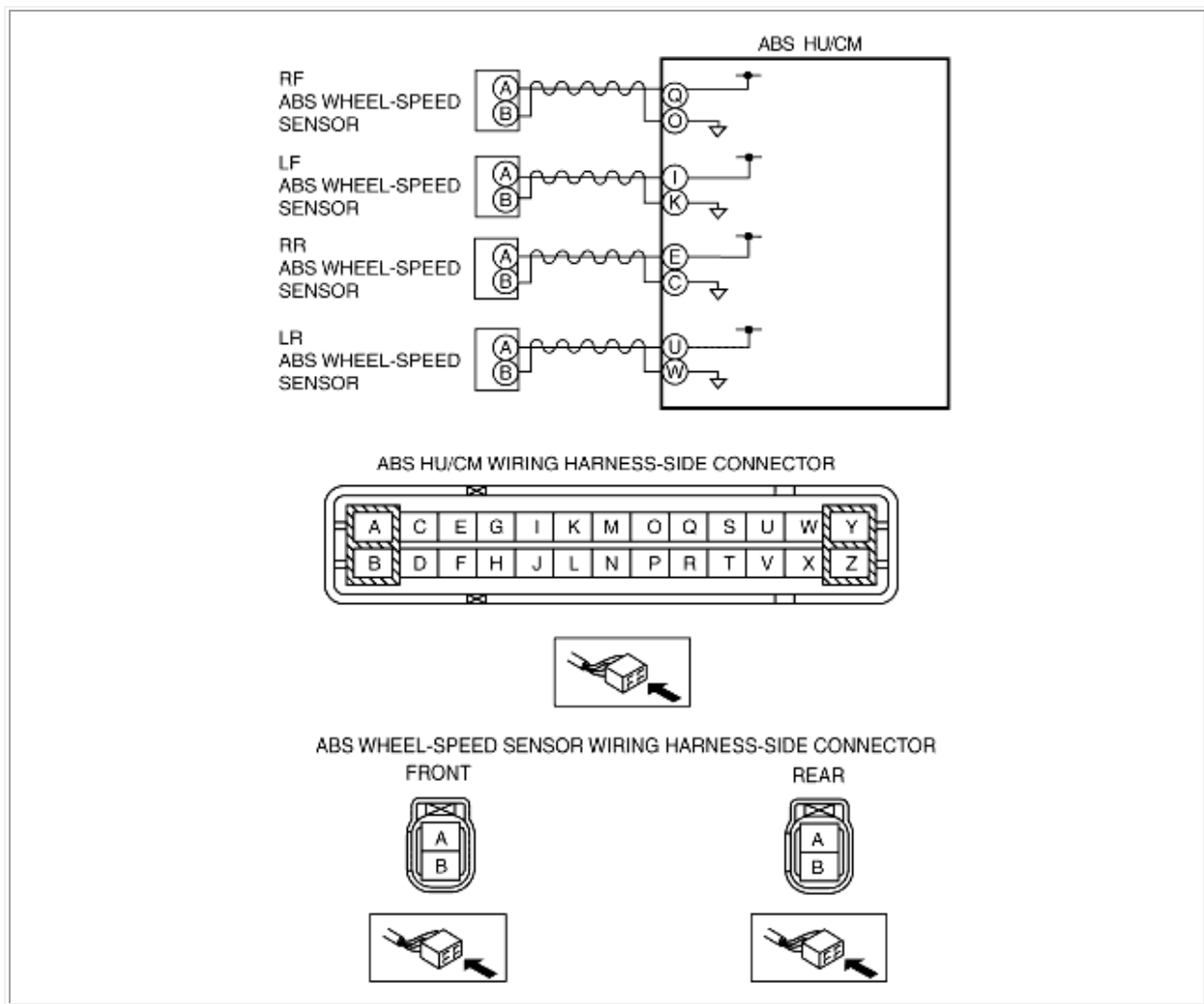
	Are the vehicle speeds approximately the same?		
2	INSPECT FOR SHORT TO GROUND BETWEEN ABS WHEEL-SPEED SENSOR CONNECTORS AND GROUND - Disconnect the ABS wheel-speed sensor connectors. - Inspect for no continuity between the following ABS wheel-speed sensor connector terminals (vehicle harness-side) and body ground: - ABS wheel-speed sensor (RF): B-Body ground - ABS wheel-speed sensor (LF): B-Body ground - ABS wheel-speed sensor (RR): B-Body ground - ABS wheel-speed sensor (LR): B-Body ground - Is the continuity normal?	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 6.
3	INSPECT IF MALFUNCTION OCCURRED DUE TO IMPROPER SENSOR CLEARANCE. - Inspect the clearance between the ABS wheel-speed sensor and the ABS sensor rotor. (See FRONT ABS WHEEL-SPEED SENSOR INSPECTION.) (See REAR ABS WHEEL-SPEED SENSOR INSPECTION.) - Is the clearance normal? Clearance Front: 2.1 mm {0.082 in} or less Rear: 1.46 mm {0.057 in} or less	Yes	Go to the next step.
		No	Replace the ABS wheel-speed sensor, then go to Step 6. (See FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
4	VISUALLY INSPECT ABS SENSOR ROTOR FOR FOREIGN MATERIAL ADHERING OR IMPROPER INSTALLATION Is the result normal?	Yes	Go to Step 6.
		No	Replace the wheel hub component, then go to Step 6. (See WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION.) (See WHEEL HUB COMPONENT REMOVAL/INSTALLATION.)
5		Yes	Go to the next step.

	INSPECT IF MALFUNCTION OCCURRED DUE TO INTERNAL MALFUNCTION OF HYDRAULIC UNIT (CLOGGING IN PIPING) - Perform the ABS system operation inspection. (See ABS SYSTEM INSPECTION .) - Is the system normal?	No	Replace the hydraulic unit, then go to the next step. (See ABS HU/CM REMOVAL/INSTALLATION .)
6	VERIFY THAT THE SAME DTC IS NOT PRESENT - Clear the DTCs from the memory. (See Clearing DTCs Procedures .) - Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. - Are the same DTCs present?	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the ABS HU/CM, then go to the next step. (See ABS HU/CM REMOVAL/INSTALLATION .)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCS ARE PRESENT Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC Table .)
		No	DTC troubleshooting completed.

DTC C1145, C1155, C1165, C1175 [ABS]

B3E040243000W07

DTC	C1145, C1155, C1165, C1175	ABS wheel-speed sensor
DETECTION CONDITION	Open circuit or short to ground has been detected in the ABS wheel-speed sensor wiring harness on any of the four vehicle wheels.	
POSSIBLE CAUSE	- Open circuit or short to ground in the wiring harness between the following ABS HU/CM terminals and ABS wheel-speed sensor terminals: - ABS HU/CM terminal Q-RF ABS wheel-speed sensor terminal A - ABS HU/CM terminal O-RF ABS wheel-speed sensor terminal B - ABS HU/CM terminal I-LF ABS wheel-speed sensor terminal A - ABS HU/CM terminal K-LF ABS wheel-speed sensor terminal B - ABS HU/CM terminal E-RR ABS wheel-speed sensor terminal A - ABS HU/CM terminal C-RR ABS wheel-speed sensor terminal B - ABS HU/CM terminal U-LR ABS wheel-speed sensor terminal A - ABS HU/CM terminal W-LR ABS wheel-speed sensor terminal B - ABS wheel-speed sensor malfunction - Poor connection at connectors (female terminal)	



Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT ABS WHEEL-SPEED SENSOR FOR SHORT TO GROUND • Turn the ignition switch off. • Disconnect the ABS HU/CM connectors. • Inspect for continuity between the following ABS HU/CM connector terminals (vehicle harness-side) and body ground: - RF ABS wheel-speed sensor(+): Q - RF ABS wheel-speed sensor(-): O - LF ABS wheel-speed sensor(+): I - LF ABS wheel-speed sensor(-): K - RR ABS wheel-speed sensor(+): E - RR ABS wheel-speed sensor(-): C - LR ABS wheel-speed sensor(+): U	Yes	Go to the next step.
		No	Go to Step 3.

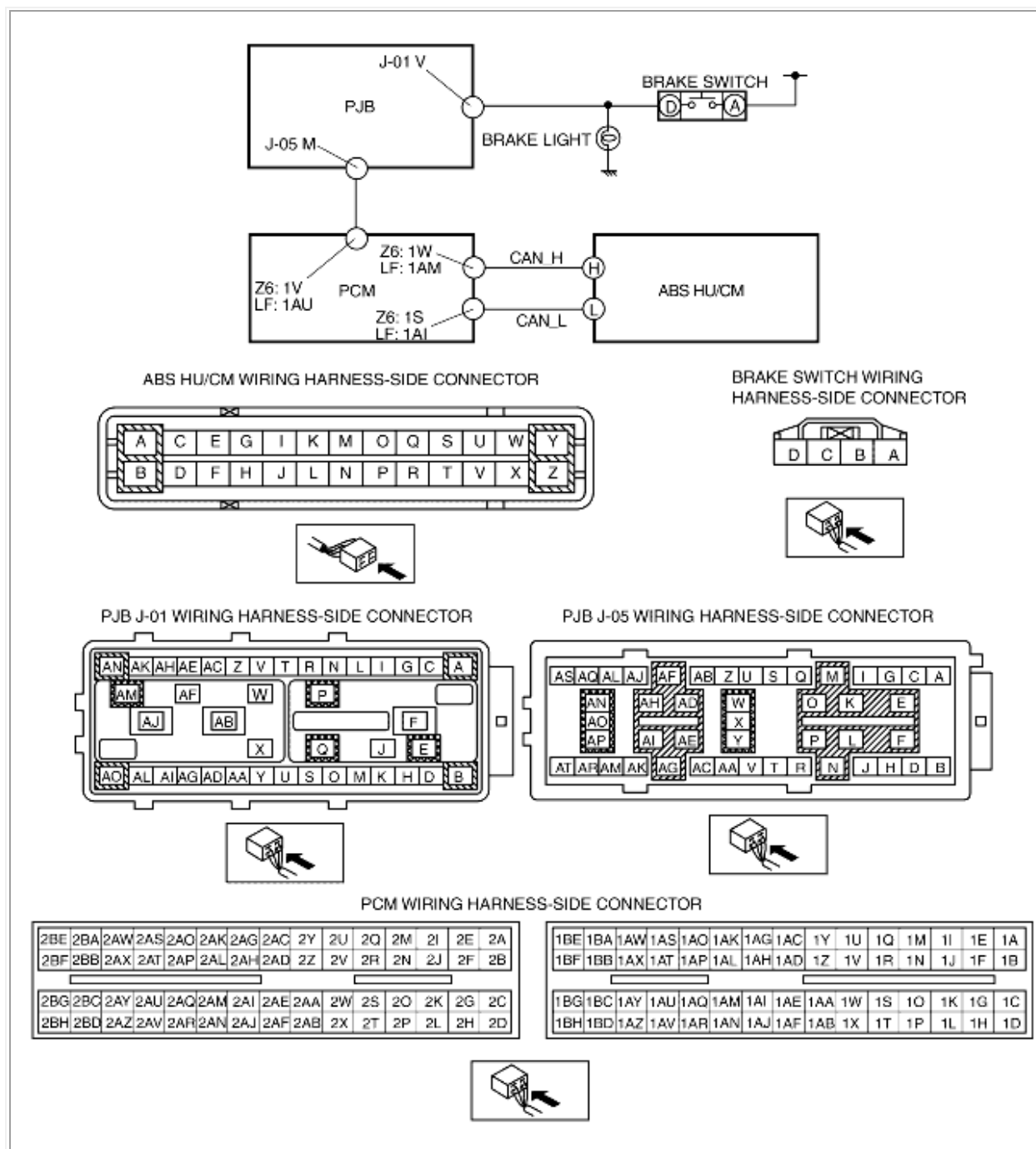
	- LR ABS wheel-speed sensor(-): W • Is there continuity?		
2	INSPECT ABS WHEEL-SPEED SENSOR WIRING HARNESS FOR SHORT TO GROUND • Disconnect the ABS wheel-speed sensor connectors. • Inspect for continuity between the following ABS HU/CM connector terminals (vehicle harness-side) and body ground: - RF ABS wheel-speed sensor(+): Q - RF ABS wheel-speed sensor(-): O - LF ABS wheel-speed sensor(+): I - LF ABS wheel-speed sensor(-): K - RR ABS wheel-speed sensor(+): E - RR ABS wheel-speed sensor(-): C - LR ABS wheel-speed sensor(+): U - LR ABS wheel-speed sensor(-): W • Is there continuity?	Yes	Repair or replace the wiring harness, then go to Step 4.
		No	Replace the ABS wheel-speed sensor, then go to Step 4. (See FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
3	INSPECT FOR OPEN CIRCUIT IN ABS WHEEL-SPEED SENSOR WIRING HARNESS • Inspect for continuity between the ABS HU/CM connectors (vehicle harness-side) and the following vehicle harness-side connector terminals of the ABS wheel-speed sensors: - RF ABS wheel-speed sensor(+): Q-A - RF ABS wheel-speed sensor(-): O-B - LF ABS wheel-speed sensor(+): I-A - LF ABS wheel-speed sensor(-): K-B - RR ABS wheel-speed sensor(+): E-A - RR ABS wheel-speed sensor(-): C-B - LR ABS wheel-speed sensor(+): U-A - LR ABS wheel-speed sensor(-): W-B • Is there continuity?	Yes	Go to the next step.
		No	Replace the ABS wheel-speed sensor, then go to the next step. (See FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
4	VERIFY THAT THE SAME DTC IS NOT PRESENT • Reconnect all disconnected connectors. • Clear the DTCs from the memory. (See Clearing DTCs Procedures.)	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the ABS HU/CM, then go to the next step. (See ABS HU/CM REMOVAL/INSTALLATION.)

	• Are the same DTCs present?	No	Go to the next step.
5	VERIFY THAT NO OTHER DTCS ARE PRESENT • Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC Table .)
		No	DTC troubleshooting completed.

DTC C1446 [ABS]

B3E040243000W09

DTC	C1446	Brake switch
DETECTION CONDITION	• Brake switch ON signal is input for 6 min or more when driving at a vehicle speed of 20 km/h {12.4 mph} or more. • Brake switch ON signal is not input even though the control module determines vehicle deceleration.	
POSSIBLE CAUSE	• Open or short circuit in wiring harness between the brake switch and PJB terminal • Open or short circuit in wiring harness between the PJB and PCM terminals • Brake switch malfunction • Poor connection at connectors (female terminal)	



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY OPEN OR SHORT CIRCUIT IN BRAKE SWITCH SIGNAL	Yes
	• Turn the ignition switch to the ON position. • Measure the voltage between the following PCM terminals and body ground when the brake pedal is depressed and released: - PCM (Z6): 1V-Body ground - PCM (LF): 1AU-Body ground	Go to Step 5. No If it is B+ under any condition, then go to the next step. If it is 1 V or less under any condition, then go to Step 3.

	Voltage Brake pedal depressed: B+ Brake pedal released: 1 V or less		
2	INSPECT BRAKE SWITCH SIGNAL FOR SHORT TO POWER SUPPLY CIRCUIT • Disconnect the brake switch connector. • Measure voltage between the brake switch connector terminal D (vehicle harness-side) and body ground. • Is the voltage 1 V or less?	Yes	Go to Step 4.
		No	Repair or replace the wiring harness between the PCM and brake switch, then go to Step 5
3	INSPECT BRAKE SWITCH SIGNAL FOR OPEN CIRCUIT • Disconnect the PCM connectors. • Disconnect the brake switch connector. • Inspect continuity between the following PCM connector terminals (vehicle harness-side) and brake switch terminal D: - PCM (Z6): 1V - PCM (LF): 1AU • Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness between the PCM and brake switch, then go to Step 5.
4	INSPECT BRAKE SWITCH • Inspect the brake switch. (See BRAKE SWITCH INSPECTION .) • Is the brake switch normal?	Yes	Go to the next step.
		No	Replace the brake switch, then go to the next step. (See BRAKE PEDAL REMOVAL/INSTALLATION .)
5	VERIFY THAT THE SAME DTC IS NOT PRESENT • Reconnect all disconnected connectors. • Clear the DTCs from the memory. (See Clearing DTCs Procedures .) • Start the engine and drive the vehicle at 20 km/h {12.4 mph} or more. • Are the same DTCs present?	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the ABS HU/CM, then go to the next step. (See ABS HU/CM REMOVAL/INSTALLATION .)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCS ARE PRESENT • Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC Table .)
		No	DTC troubleshooting completed.

DTC U1900, U2012, U2523 [ABS]

B3E040243000W10

DTC	U1900, U2012, U2523	CAN line
DETECTION CONDITION	• U1900, U2523 - Communication error with PCM is detected in CAN communication. • U2012 - CAN system wiring harness open or short circuit is detected.	
POSSIBLE CAUSE	• CAN system wiring harness open or short circuit with PCM • PCM malfunction	

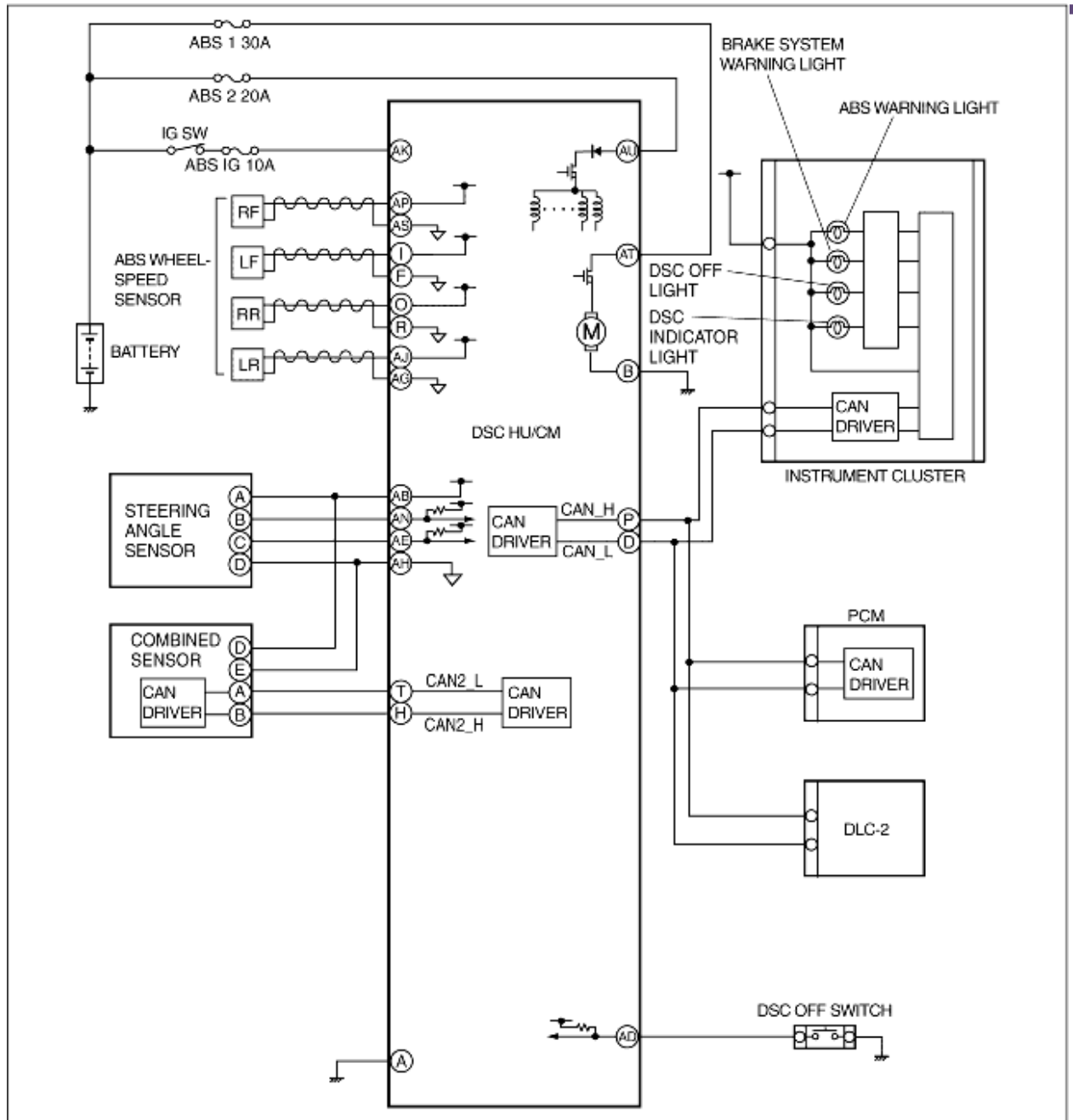
Diagnostic procedure

- Inspect according to diagnostic procedure in Section 09. (See [DTC TABLE \[MULTIPLEX COMMUNICATION SYSTEM\]](#).)

ON-BOARD DIAGNOSTIC [DYNAMIC STABILITY CONTROL]

DYNAMIC STABILITY CONTROL WIRING DIAGRAM

B3E040243000W11



B3E0402W002

ON-BOARD DIAGNOSIS [DSC (DYNAMIC STABILITY CONTROL)]

B3E040243000W12

On-Board Diagnostic (OBD) Test Description

- The OBD test inspects the integrity and function of the DSC and outputs the results when requested by the specific tests.
- On-board diagnostic test also:
 - Provides a quick inspection of the DSC usually performed at the start of each diagnostic procedure.

- Provides verification after repairs to ensure that no other faults occurred during service.
- The OBD test is divided into 3 tests:
 - Read/clear diagnostic results, PID monitor and record and active command modes.

Read/clear diagnostic results

- This function allows you to read or clear DTCs in the DSC HU/CM memory.

PID/Data monitor and record

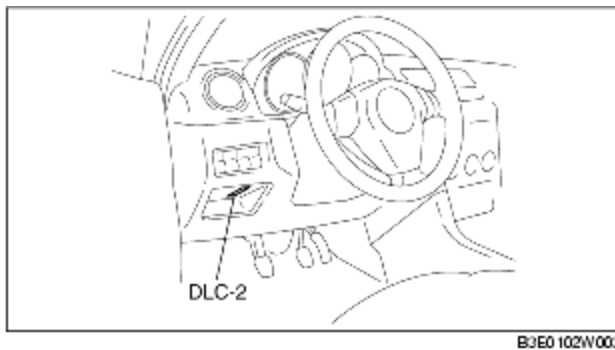
- This function allows you to access certain data values, input signals, calculated values, and system status information.

Active command modes

- This function allows you to control devices through the WDS or equivalent.

Reading DTCs Procedure

1. Connect WDS or equivalent to the vehicle DLC-2 connector.



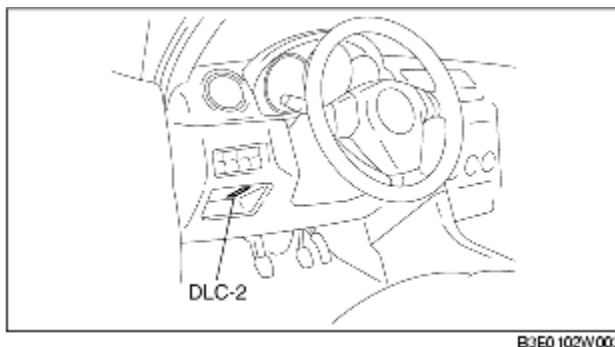
2. Retrieve DTC using WDS or equivalent.

Clearing DTCs Procedures

1. After repairs have been made, perform the **DTCs reading procedure**.
2. Erase DTC using WDS or equivalent.
3. Ensure that the customer's concern has been resolved.

PID/Data Monitor and Record Procedure

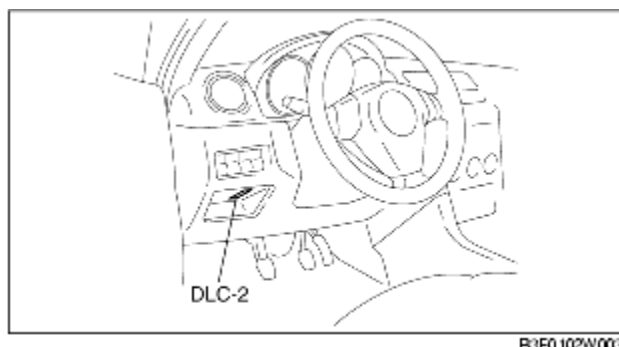
1. Connect WDS or equivalent to the vehicle DLC-2 connector.



2. Access and monitor PIDs using WDS or equivalent.

Active Command Modes Procedure

1. Connect WDS or equivalent to the vehicle DLC-2 16-pin connector.



2. Turn the ignition switch to the ON position (engine off) or start the engine.
3. Activate active command modes using WDS or equivalent.

DTC Table

DTC	System malfunction location	Page
WDS or equivalent		
B1317	Power supply system	(See DTC B1317, B1318 [DSC].)
B1318	Power supply system	(See DTC B1317, B1318 [DSC].)
B1342	DSC HU/CM (internal malfunction)	(See DTC B1342, C1267, C1730 [DSC].)
B2141	Vehicle data not recorded	(See DTC B2141 [DSC].)
B2741	Combined sensor (internal malfunction)	(See DTC B2741 [DSC].)
C1093	DSC OFF switch	(See DTC C1093 [DSC].)
C1095	Pump motor, motor relay	(See DTC C1095 [DSC].)
C1141	LF ABS sensor rotor	(See DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [DSC].)
C1142	RF ABS sensor rotor	(See DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [DSC].)
C1143	LR ABS sensor rotor	(See DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [DSC].)
C1144	RR ABS sensor rotor	(See DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [DSC].)

C1145	RF ABS wheel-speed sensor	(See DTC C1145, C1155, C1165, C1175 [DSC].)
C1155	LF ABS wheel-speed sensor	(See DTC C1145, C1155, C1165, C1175 [DSC].)
C1165	RR ABS wheel-speed sensor	(See DTC C1145, C1155, C1165, C1175 [DSC].)
C1175	LR ABS wheel-speed sensor	(See DTC C1145, C1155, C1165, C1175 [DSC].)
C1233	LF ABS wheel-speed sensor/ABS sensor rotor	(See DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [DSC].)
C1234	RF ABS wheel-speed sensor/ABS sensor rotor	(See DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [DSC].)
C1235	RR ABS wheel-speed sensor/ABS sensor rotor	(See DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [DSC].)
C1236	LR ABS wheel-speed sensor/ABS sensor rotor	(See DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [DSC].)
C1267	DSC HU/CM (internal malfunction)	(See DTC B1342, C1267, C1730 [DSC].)
C1277	Steering angle sensor	(See DTC C1277, C1295, C1306, C1307 [DSC].)
C1279	Combined sensor system	(See DTC C1279, C1280, C1281, C1282, C2778 [DSC].)
C1280	Combined sensor system	(See DTC C1279, C1280, C1281, C1282, C2778 [DSC].)
C1281	Combined sensor system	(See DTC C1279, C1280, C1281, C1282, C2778 [DSC].)
C1282	Combined sensor system	(See DTC C1279, C1280, C1281, C1282, C2778 [DSC].)
C1288	Brake fluid pressure sensor	(See DTC C1288, C1440 [DSC].)
C1295	Steering angle sensor	(See DTC C1277, C1295, C1306, C1307 [DSC].)
C1306	Steering angle sensor	(See DTC C1277, C1295, C1306, C1307 [DSC].)
C1307	Steering angle sensor	(See DTC C1277, C1295, C1306, C1307 [DSC].)
C1440	Brake fluid pressure sensor	(See DTC C1288, C1440 [DSC].)
C1446	Brake switch	(See DTC C1446 [DSC].)
C1470	TCS control system	(See DTC C1470, C1994 [DSC].)

C1730	Brake fluid pressure sensor power supply system	(See DTC B1342, C1267, C1730 [DSC].)
C1994	TCS/DSC control system	(See DTC C1470, C1994 [DSC].)
C2778	Combined sensor system	(See DTC C1279, C1280, C1281, C1282, C2778 [DSC].)
C2785	Combined sensor system (unperformed initialization procedure)	(See DTC C2785 [DSC].)
U1900	CAN line	(See MULTIPLEX COMMUNICATION SYSTEM.)
U1901	Combined sensor system (CAN2 line malfunction)	(See DTC U1901, U2527 [DSC].)
U2012	CAN line	(See MULTIPLEX COMMUNICATION SYSTEM.)
U2202	CAN line	(See MULTIPLEX COMMUNICATION SYSTEM.)
U2523	CAN line	(See MULTIPLEX COMMUNICATION SYSTEM.)
U2527	Combined sensor system (CAN2 line malfunction)	(See DTC U1901, U2527 [DSC].)

PID/DATA Monitor Table

PID name (definition)	Unit/Condition	Operation condition (reference)	Action	DSC HU/CM terminal
BOO_ABS (Brake pedal switch input)	On/Off	- Brake pedal depressed: On - Brake pedal released: Off	Inspect the brake switch.	-
CCNTABS (Number of continuous codes)	-	- DTCs detected: 1-255 - No DTCs detected: 0	Perform the DTC inspection.	-
ESP_VOLT	V	- Ignition switch at ON: Approx. 12.2 V - Idling: Approx. 14.1 V	Inspect the battery.	-
LAT_ACCL	G	- Vehicle stopped or driving at constant speed: 0 G - Cornering to right: Changes 0 G-positive	Inspect the combined sensor.	-

		• Cornering to left: Changes 0 G-negative		
LF_WSPD (Left front ABS wheel-speed sensor input)	km/h, mph	• Vehicle stopped: 0 km/h, 0 mph • Vehicle running: vehicle speed	Inspect the ABS wheel-speed sensor.	I, F
LR_WSPD (Left rear ABS wheel-speed sensor input)	km/h, mph	• Vehicle stopped: 0 km/h, 0 mph • Vehicle running: vehicle speed	Inspect the ABS wheel-speed sensor.	AJ, AG
MPRETDR	kPa, psi, Bar	• Brake pedal released: 0 kPa, 0 psi, 0 Bar • Brake pedal depressed: Changes according to the brake fluid pressure	Inspect the DSC HU/CM. (See DSC HU/CM INSPECTION.)	-
RF_WSPD (Right front ABS wheel-speed sensor input)	km/h, mph	• Vehicle stopped: 0 km/h, 0 mph • Vehicle running: vehicle speed	Inspect the ABS wheel-speed sensor.	AP, AS
RR_WSPD (Right rear ABS wheel-speed sensor input)	km/h, mph	• Vehicle stopped: 0 km/h, 0 mph • Vehicle running: vehicle speed	Inspect the ABS wheel-speed sensor.	O, R
SWA POS	°	• Steering wheel in neutral position (not turned): 0° • Steering wheel turned to left: Changes 0°-negative • Steering wheel turned to right: Changes 0°-positive	Inspect the steering angle sensor.	AE, AN
TCYC_FS	On/Off	• Solenoid valve activated: On • Solenoid valve not activated: Off	Inspect the DSC HU/CM. (See DSC HU/CM INSPECTION.)	-
TCYC_SW	Depressed/Not_Depressed	• DSC OFF switch depressed: Depressed • DSC OFF switch not depressed: Not_Depressed	Inspect the DSC OFF switch.	AD

YAW_RATE	°/s	• Vehicle stopped or driving straight: 0 °/s • Cornering to left: Changes 0 °/s-negative • Cornering to right: Changes 0 °/s-positive	Inspect the combined sensor.	-
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Active Command Modes Table

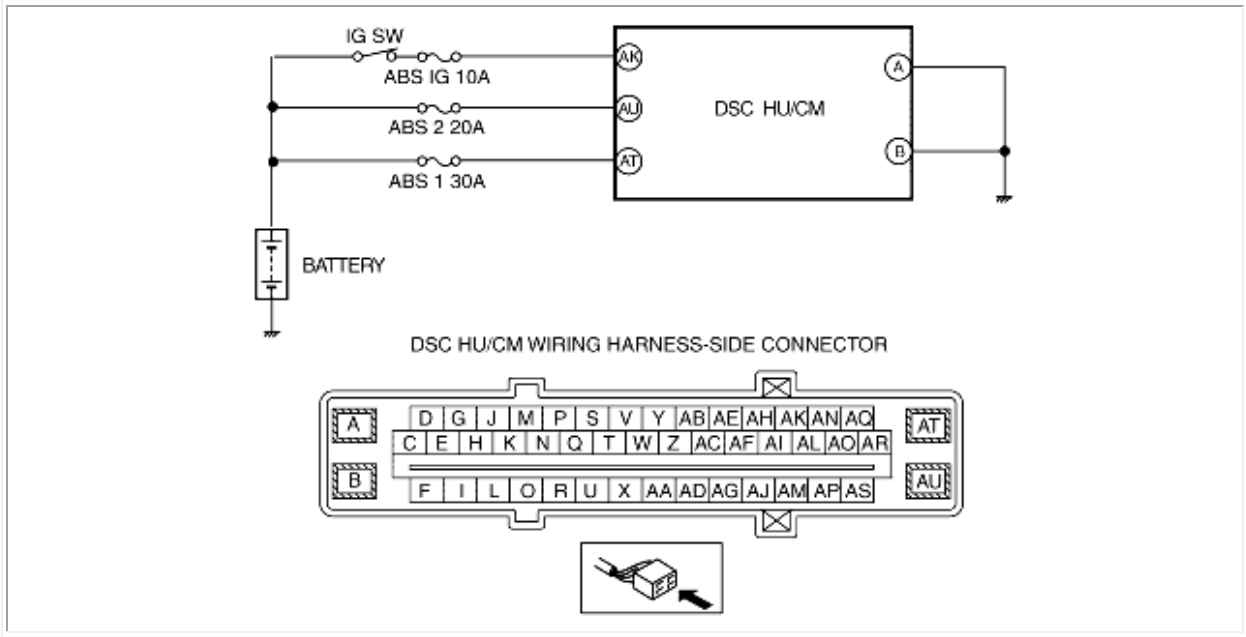
Command name	Output part	Operation	Operating condition
LATACCEL	Combined sensor (lateral acceleration) initialization start-up	True/False	Ignition switch at ON
LF_INLET	LF inlet solenoid valve	On/Off	
LF_OUTLET	LF outlet solenoid valve		
LF_TC_PRV	LF stability control solenoid valve		
LF_TC_SWV	LF traction control solenoid valve		
LR_INLET	LR inlet solenoid valve		
LR_OUTLET	LR outlet solenoid valve		
MCYL_S_CAL	Brake fluid pressure sensor initialization start-up	True/False	
PMP_MOTOR	Pump motor	On/Off	
RF_INLET	RF inlet solenoid valve		
RF_OUTLET	RF outlet solenoid valve		
RF_TC_PRV	RF stability control solenoid valve		
RF_TC_SWV	RF traction control solenoid valve		
RR_INLET	RR inlet solenoid valve		
RR_OUTLET	RR outlet solenoid valve		

DTC B1317, B1318 [DSC]

B3E040243000W13

DTC	B1317, B1318	Power supply system
DETECTION CONDITION	• B1317 - High ignition voltage (16 V or more) is detected at the voltage monitor of the solenoid valve or motor monitor. • B1318	

	- When driving the vehicle at 20 km/h {12.4 mph} or more, low ignition voltage (10 V or less) is detected at the voltage monitor of the solenoid valve or motor monitor.
POSSIBLE CAUSE	• ABS 1 30A/ABS 2 20A/ABS IG 10A fuse malfunction • Open or short circuit in the wiring harness between DSC HU/CM terminal AK and battery • Open or short circuit in the wiring harness between DSC HU/CM terminal AU and battery • Open or short circuit in the wiring harness between DSC HU/CM terminal AT and battery • Open circuit in the wiring harness between DSC HU/CM terminal A and body ground • Open circuit in the wiring harness between DSC HU/CM terminal B and body ground • Battery deterioration • Generator malfunction • Poor connection at connectors (female terminal)



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT BATTERY VOLTAGE • Is the battery terminal voltage normal?	Yes Verify that the battery terminal connection is normal. Go to the next step.
		No Recharge or replace the battery, then go to Step 6. (See BATTERY RECHARGING.)

			(See BATTERY REMOVAL/INSTALLATION [Z6].) (See BATTERY REMOVAL/INSTALLATION [LF].)
2	INSPECT BATTERY GRAVITY • Is the battery specific gravity as specified?	Yes	Go to the next step.
		No	Replace the battery, then go to Step 6. (See BATTERY REMOVAL/INSTALLATION [Z6].) (See BATTERY REMOVAL/INSTALLATION [LF].)
3	INSPECT CHARGING SYSTEM • Are the generator and the drive belt tensions normal?	Yes	Go to the next step.
		No	Replace the generator and/or drive belt if necessary. (See GENERATOR REMOVAL/INSTALLATION [Z6].) (See GENERATOR REMOVAL/INSTALLATION [LF].) (See DRIVE BELT REPLACEMENT [Z6].) (See DRIVE BELT REPLACEMENT [LF].) Go to Step 6.
4	INSPECT DSC HU/CM POWER SUPPLY FOR OPEN CIRCUIT • Disconnect the DSC HU/CM connectors. • Turn the ignition switch to the ON position. • Measure the voltage between following connector terminals of the DSC HU/MC (vehicle harness-side) and body ground: - DSC HU/CM: AK-Body ground - DSC HU/CM: AU-Body ground - DSC HU/CM: AT-Body ground • Is the voltage 10 V or more ?	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 6.
5	INSPECT DSC HU/CM GROUND FOR POOR GROUND OR OPEN CIRCUIT • Turn the ignition switch off. • Measure the resistance between following connector terminals of the DSC HU/CM (vehicle harness-side) and body ground: - DSC HU/CM: A-Body ground - DSC HU/CM: B-Body ground	Yes	Go to the next step.
		No	If there is open circuit: • Repair or replace the wiring harness, then go to the next step. If resistance is not within specification: • Repair or replace the wiring harness for poor ground, then go to the next step.

	• Is the resistance within 0-1 ohm ?		
6	VERIFY THAT THE SAME DTC IS NOT PRESENT - Reconnect all disconnected connectors. - Clear the DTCs from the memory. (See Clearing DTCs Procedures.) - Start the engine and drive the vehicle at 10 km/h {12.4 mph} or more. - Are the same DTCs present?	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION .)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCS ARE PRESENT Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC Table .)
		No	DTC troubleshooting completed.

DTC B1342, C1267, C1730 [DSC]

B3E040243000W14

DTC	B1342, C1267	DSC HU/CM (internal malfunction)
	C1730	Brake fluid pressure sensor power supply system
DETECTION CONDITION	- B1342, C1267 - The DSC HU/CM on-board diagnostic function detects control module internal malfunction. - C1730 - Abnormal voltage to the brake fluid pressure sensor is detected.	
POSSIBLE CAUSE	DSC HU/CM internal malfunction	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY NO DSC HU/CM MALFUNCTION - Clear the DTCs from the memory. (See Clearing DTCs Procedures.) - Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. - Are the same DTCs present?	Yes Replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION .)
		No Go to the next step.
2	VERIFY THAT NO OTHER DTCS ARE PRESENT	Yes Go to the applicable DTC inspection. (See DTC Table .)

	• Are any other DTCs output?	No	DTC troubleshooting completed.
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DTC B2141 [DSC]

B3E040243000W31

Note

- The DSC indicator light illuminates and remains illuminated, and DTC B2141 (vehicle data not recorded) is stored in the memory only when the ignition switch is turned to the ON position for the first time after DSC HU/CM replacement. Since the vehicle data is downloaded from the PCM via a CAN line when the ignition switch is turned to the ON position, DTC B2141 is only stored as a past malfunction when the ignition switch is turned off and then turned to the ON position.

DTC	B2141	Vehicle data not recorded
DETECTION CONDITION	• Vehicle data is not recorded in the DSC HU/CM.	
POSSIBLE CAUSE	• There is no malfunction in the system: vehicle data was not recorded in the CM after DSC HU/CM replacement.	

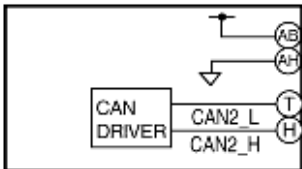
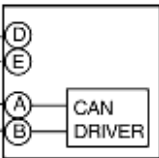
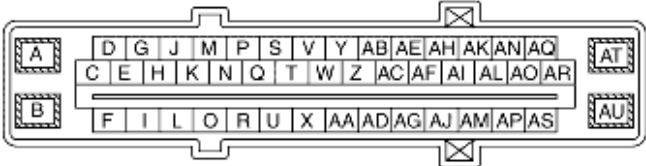
Diagnostic procedure

STEP	INSPECTION	ACTION	
1	PERFORM INITIALIZATION PROCEDURE • Perform the initialization procedures for the combined sensor and brake fluid pressure sensor. (See COMBINED SENSOR INITIALIZATION PROCEDURE.) (See BRAKE FLUID PRESSURE SENSOR INITIALIZATION PROCEDURE.)	Perform the initialization procedures for the combined sensor and brake fluid pressure sensor, turn the ignition switch off, and then go to the next step.	
2	VERIFY THAT THE SAME DTC IS NOT PRESENT • Clear the DTCs from the memory. (See Clearing DTCs Procedures.)	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT • Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC Table.)
		No	DTC troubleshooting completed.

DTC B2741 [DSC]

B3E040243000W15

DTC	B2741	Combined sensor (internal malfunction)
DETECTION CONDITION	• Combined sensor internal malfunction is detected.	
POSSIBLE CAUSE	• Combined sensor internal malfunction	

DSC HU/CM 	COMBINED SENSOR 
DSC HU/CM WIRING HARNESS-SIDE CONNECTOR 	COMBINED SENSOR WIRING HARNESS-SIDE CONNECTOR 

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY COMBINED SENSOR MALFUNCTION - Clear the DTCs from the memory. (See Clearing DTCs Procedures.) - Are the same DTCs present?	Yes Replace the combined sensor, then go to the next step. (See COMBINED SENSOR REMOVAL/INSTALLATION.)
		No Go to the next step.
2	VERIFY THAT NO OTHER DTCS ARE PRESENT Are any other DTCs output?	Yes Go to the applicable DTC inspection. (See DTC Table.)
		No DTC troubleshooting completed.

DTC C1093 [DSC]

B3E040243000W16

DTC	C1093	DSC OFF switch
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DETECTION CONDITION	Continuous ON signal from the DSC OFF switch for 10 s or more is detected.
POSSIBLE CAUSE	- The driver pressed and held the DSC OFF switch for 10 s or more. - Short to ground in the wiring harness between DSC OFF switch and DSC HU/CM terminal AD - DSC OFF switch malfunction - Poor connection at connectors (female terminal)

Diagnostic procedure

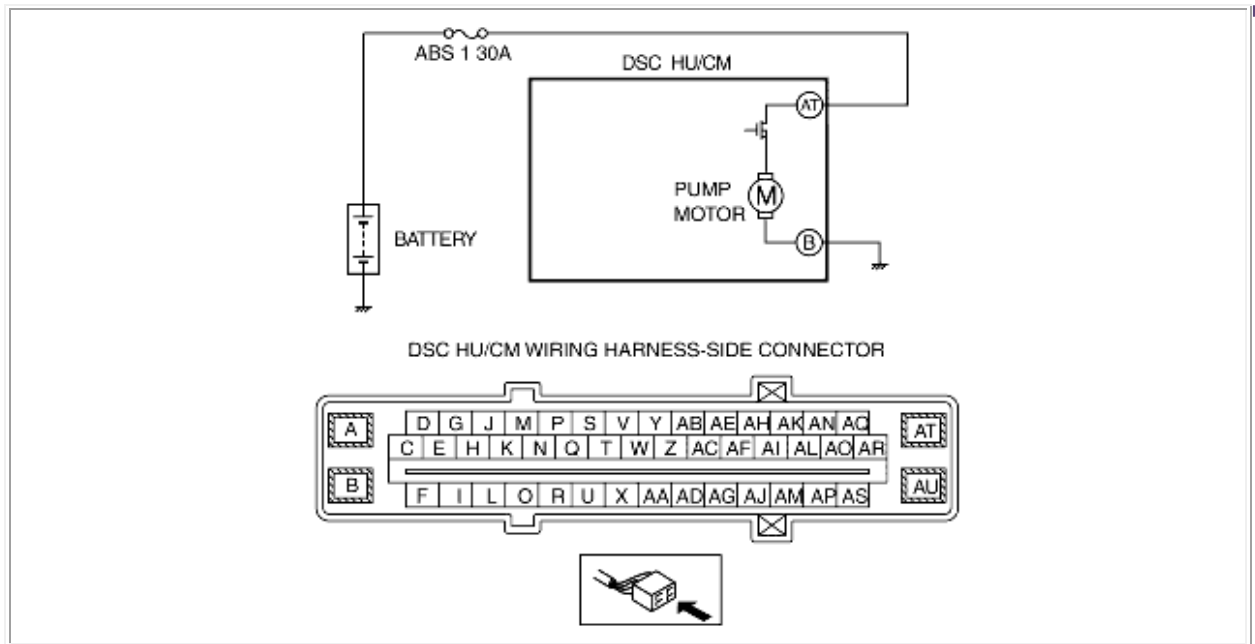
STEP	INSPECTION		ACTION
1	INSPECT DSC OFF SWITCH SIGNAL CIRCUIT FOR SHORT TO GROUND - Turn the ignition switch off. - Disconnect the DSC HU/CM connector. - Inspect for continuity between DSC HU/CM connector (vehicle harness-side) terminal AD and body ground. - Is there continuity?	Yes	Repair or replace the wiring harness, then go to Step 3.
		No	Go to the next step.
2	INSPECT DSC OFF SWITCH - Inspect the DSC OFF switch. (See DSC OFF SWITCH INSPECTION.) - Is the DSC OFF switch normal?	Yes	Go to the next step.
		No	Replace the DSC OFF switch, then go to the next step. (See DSC OFF SWITCH REMOVAL/INSTALLATION.)
3	VERIFY THAT THE SAME DTC IS NOT PRESENT Reconnect all disconnected connectors.	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step.

	• Clear the DTCs from the memory. (See Clearing DTCs Procedures.) • Are the same DTCs present?		(See DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCS ARE PRESENT • Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC Table.)
		No	DTC troubleshooting completed.

DTC C1095 [DSC]

B3E040243000W17

DTC	C1095	Pump motor, motor relay
DETECTION CONDITION	• DSC motor monitor signal does not correspond to DSC HU/CM OFF signal. • DSC motor monitor signal does not correspond to DSC HU/CM ON signal. • DSC motor monitor ON signal is not input within specified time limit when motor signal is switched from ON to OFF by DSC HU/CM.	
POSSIBLE CAUSE	• ABS 1 30A fuse malfunction • Open circuit or short to ground in the wiring harness between DSC HU/CM terminal AT and battery • Open circuit in the wiring harness between DSC HU/CM terminal B and body ground • Open or short circuit in the DSC HU/CM internal motor relay, or stuck motor relay • Open or short circuit in the DSC HU/CM internal pump motor, or frozen pump motor • Poor connection at connectors (female terminal)	



Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT ABS FUSE CONDITION • Is the ABS fuse (ABS 1 30A) normal?	Yes	Go to the next step.
		No	Replace the ABS fuse, then go to Step 6.
2	VERIFY PUMP MOTOR OPERATION • Turn the ignition switch off. • Connect the WDS or equivalent to the DLC-2. • Turn the ignition switch to the ON position. • Access PMP_MOTOR active command modes using the WDS or equivalent. • Does the pump motor operate?	Yes	Go to the next step.
		No	Replace the DSC HU/CM, then go to Step 6. (See DSC HU/CM REMOVAL/INSTALLATION.)
3	INSPECT MOTOR RELAY POWER SUPPLY FOR OPEN CIRCUIT • Turn the ignition switch off. • Disconnect the DSC HU/CM connectors. • Inspect for continuity between the DSC HU/CM terminal AT and the battery positive terminal. • Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 6.
4	INSPECT MOTOR RELAY POWER SUPPLY FOR SHORT CIRCUIT • Inspect for continuity between the DSC HU/CM terminal AT and body ground.	Yes	Repair or replace the wiring harness, then go to Step 6.
		No	Go to the next step.

	• Is there continuity?		
5	INSPECT PUMP MOTOR GROUND FOR OPEN CIRCUIT	Yes	Go to the next step.
	• Inspect for continuity between the DSC HU/CM terminal B and body ground. • Is there continuity?	No	Repair or replace the wiring harness, then go to Step 6.
6	VERIFY THAT THE SAME DTC IS NOT PRESENT • Reconnect all disconnected connectors. • Clear the DTCs from the memory. (See Clearing DTCs Procedures .)	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION .)
	• Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more . • Are the same DTCs present?	No	Go to the next step.
7	VERIFY THAT NO OTHER DTCS ARE PRESENT	Yes	Go to the applicable DTC inspection. (See DTC Table .)
	• Are any other DTCs output?	No	DTC troubleshooting completed.

DTC C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236 [DSC]

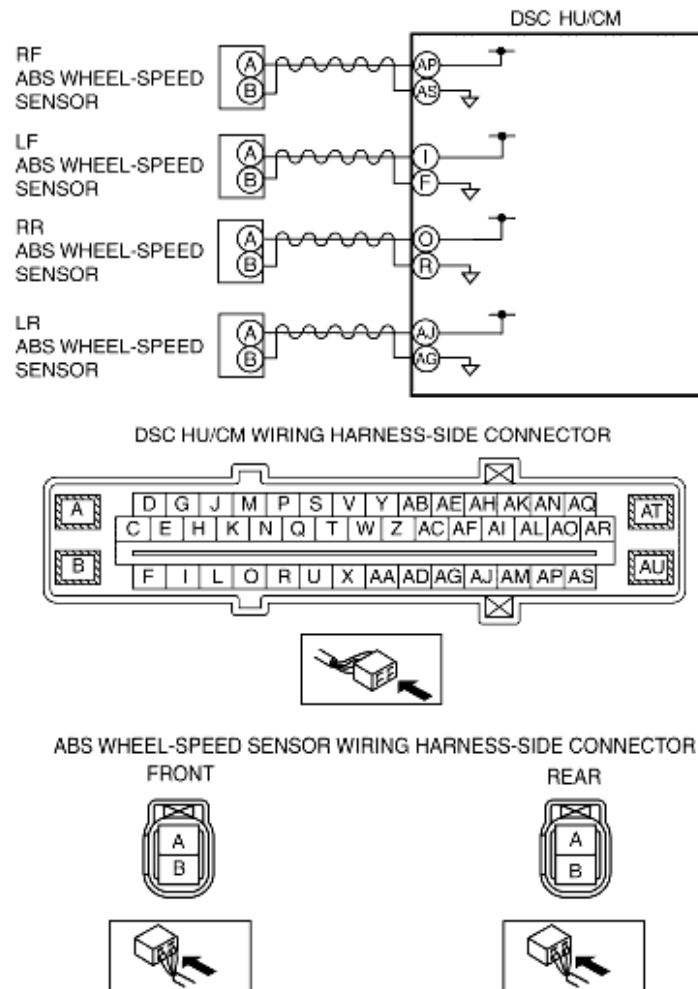
B3E040243000W18

Note

- When only the driving wheels are rotated while the vehicle is jacked up, DTCs C1235 and C1236 are input to the memory.

DT C	C1141, C1142, C1143, C1144, C1233, C1234, C1235, C1236	ABS wheel-speed sensor/ABS sensor rotor
DETECTION CONDITION	• C1141, C1142, C1143, C1144 - Periodic abnormality is detected in the signal wave pattern from the ABS wheel-speed sensors. • C1234, C1233, C1235, C1236 - Wheel-speed signal is not input or extremely low wheel-speed signal is input from any of the four wheels when driving at a vehicle speed of 10 km/h {6.2 mph} or more. - A large, sudden change in wheel-speed signal is detected. - ABS control operates for 28 s or more.	
POSSIBLE CAUSE	• ABS wheel-speed sensor malfunction	

- ABS sensor rotor malfunction (foreign material adhering)
- Improper installation of ABS wheel-speed sensor and/or sensor rotor
- Excessive clearance between the ABS wheel-speed sensor and sensor rotor
- Continuous ABS operation



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT PID FOR ABS WHEEL-SPEED SENSOR OUTPUT ERROR USING WDS OR EQUIVALENT	Yes Go to Step 3.
	• Turn the ignition switch off. • Connect the WDS or equivalent to the DLC-2. • Select the following PIDs using the WDS or equivalent: LF_WSPD LR_WSPD	No Go to the next step.

	RF_WSPD RR_WSPD • Drive the vehicle. • Verify that the vehicle speeds detected by the four ABS wheel-speed sensors are approximately the same. • Are the vehicle speeds approximately the same?		
2	INSPECT ABS WHEEL-SPEED SENSOR CONNECTOR FOR SHORT TO GROUND • Disconnect the ABS wheel-speed sensor connectors. • Verify that there is no continuity between the following ABS wheel-speed sensor terminals (vehicle harness-side) and body ground. - ABS wheel-speed sensor (RF): B-Body ground - ABS wheel-speed sensor (LF): B-Body ground - ABS wheel-speed sensor (RR): B-Body ground - ABS wheel-speed sensor (LR): B-Body ground • Is the continuity normal?	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 6.
3	INSPECT IF MALFUNCTION OCCURRED DUE TO IMPROPER SENSOR CLEARANCE. • Inspect the clearance between the ABS wheel-speed sensor and the ABS sensor rotor. (See FRONT ABS WHEEL-SPEED SENSOR INSPECTION.) (See REAR ABS WHEEL-SPEED SENSOR INSPECTION.) • Is the clearance normal? Clearance Front: 2.1 mm {0.082 in} or less Rear: 1.46 mm {0.057 in} or less	Yes	Go to the next step.
		No	Replace the ABS wheel-speed sensor, then go to Step 6. (See FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
4	VISUALLY INSPECT ABS SENSOR ROTOR FOR FOREIGN MATERIAL ADHERING OR IMPROPER INSTALLATION	Yes	Go to Step 6.
		No	Replace the wheel hub component, then go to Step 6.

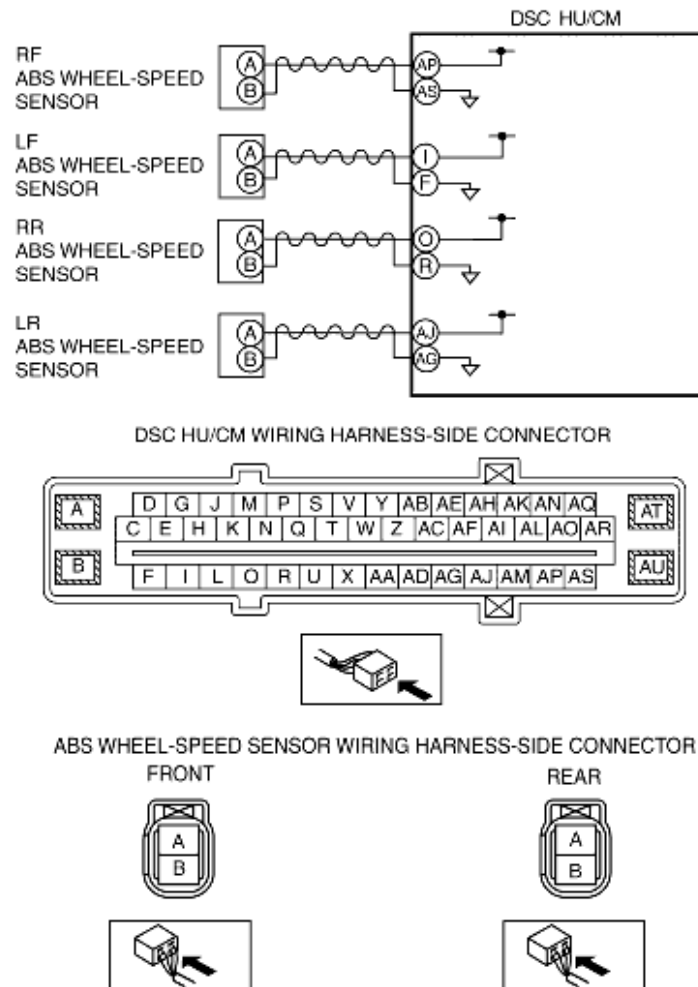
	Is the result normal?		(See WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION.) (See WHEEL HUB COMPONENT REMOVAL/INSTALLATION.)
5	INSPECT IF MALFUNCTION OCCURRED DUE TO INTERNAL MALFUNCTION OF HYDRAULIC UNIT (CLOGGING IN PIPING) - Perform the DSC system operation inspection. (See DSC SYSTEM INSPECTION.) - Is the system normal?	Yes	Go to the next step.
		No	Replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION.)
6	VERIFY THAT THE SAME DTC IS NOT PRESENT - Clear the DTCs from the memory. (See Clearing DTCs Procedures.) - Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. - Are the same DTCs present?	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM. (See DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
7	VERIFY THAT NO OTHER DTCS ARE PRESENT Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC Table.)
		No	DTC troubleshooting completed.

DTC C1145, C1155, C1165, C1175 [DSC]

B3E040243000W19

DTC	C1145, C1155, C1165, C1175	ABS wheel-speed sensor
DETECTION CONDITION	Open circuit or short to ground has been detected in the ABS wheel-speed sensor wiring harness on any of the four vehicle wheels.	
POSSIBLE CAUSE	- Open circuit or short to ground in the wiring harness between the following DSC HU/CM terminals and the ABS wheel-speed sensor terminals: - DSC HU/CM terminal AP-RF ABS wheel-speed sensor terminal A - DSC HU/CM terminal AS-RF ABS wheel-speed sensor terminal B - DSC HU/CM terminal I-LF ABS wheel-speed sensor terminal A - DSC HU/CM terminal F-LF ABS wheel-speed sensor terminal B - DSC HU/CM terminal O-RR ABS wheel-speed sensor terminal A - DSC HU/CM terminal R-RR ABS wheel-speed sensor terminal B - DSC HU/CM terminal AJ-LR ABS wheel-speed sensor terminal A - DSC HU/CM terminal AG-LR ABS wheel-speed sensor terminal B	

- ABS wheel-speed sensor malfunction
- Poor connection at connectors (female terminal)



Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT ABS WHEEL-SPEED SENSOR FOR SHORT TO GROUND • Turn the ignition switch off. • Disconnect the DSC HU/CM connectors. • Inspect for continuity between the following DSC HU/CM connector terminals (vehicle harness-side) and body ground: - RF ABS wheel-speed sensor(+): AP - RF ABS wheel-speed sensor(-): AS - LF ABS wheel-speed sensor(+): I - LF ABS wheel-speed sensor(-): F - RR ABS wheel-speed sensor(+): O	Yes	Go to the next step.
		No	Go to Step 3.

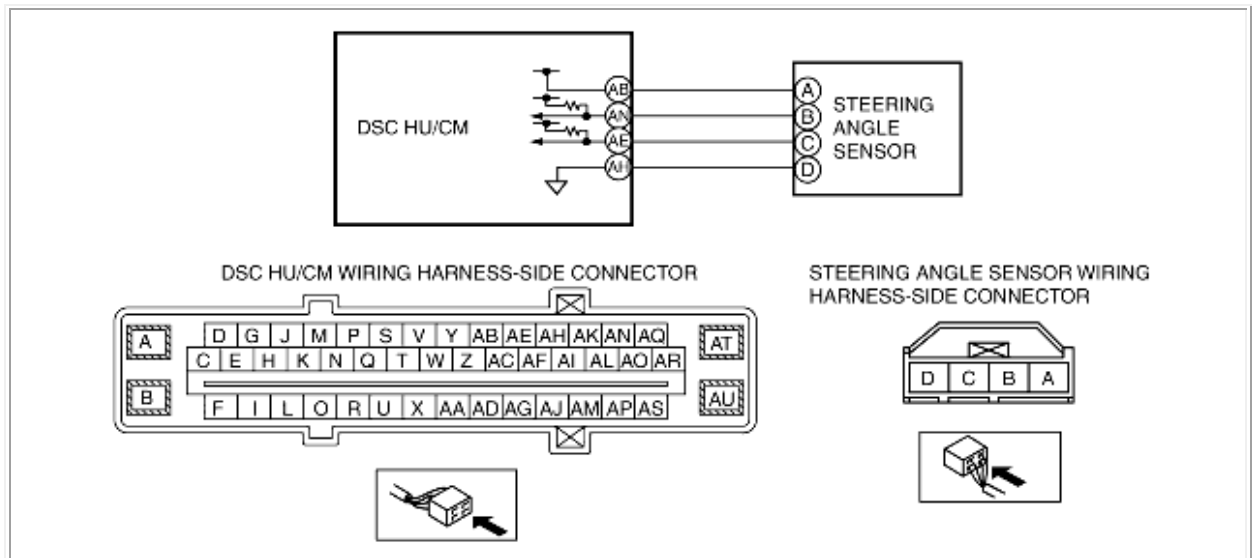
	- RR ABS wheel-speed sensor(-): R - LR ABS wheel-speed sensor(+): AJ - LR ABS wheel-speed sensor(-): AG • Is there continuity?		
2	INSPECT ABS WHEEL-SPEED SENSOR WIRING HARNESS FOR SHORT TO GROUND • Disconnect the ABS wheel-speed sensor connectors. • Inspect for continuity between the following DSC HU/CM connector terminals (vehicle harness-side) and body ground: - RF ABS wheel-speed sensor(+): AP - RF ABS wheel-speed sensor(-): AS - LF ABS wheel-speed sensor(+): I - LF ABS wheel-speed sensor(-): F - RR ABS wheel-speed sensor(+): O - RR ABS wheel-speed sensor(-): R - LR ABS wheel-speed sensor(+): AJ - LR ABS wheel-speed sensor(-): AG • Is there continuity?	Yes	Repair or replace the wiring harness, then go to Step 4.
		No	Replace the ABS wheel-speed sensor, then go to Step 4. (See FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
3	INSPECT ABS WHEEL-SPEED SENSOR WIRING HARNESS FOR OPEN CIRCUIT • Inspect for continuity between the DSC HU/CM connectors (vehicle harness-side) and the following vehicle harness-side terminals of ABS wheel-speed sensors: - RF ABS wheel-speed sensor(+): AP-A - RF ABS wheel-speed sensor(-): AS-B - LF ABS wheel-speed sensor(+): I-A - LF ABS wheel-speed sensor(-): F-B - RR ABS wheel-speed sensor(+): O-A - RR ABS wheel-speed sensor(-): R-B - LR ABS wheel-speed sensor(+): AJ-A - LR ABS wheel-speed sensor(-): AG-B • Is there continuity?	Yes	Go to the next step.
		No	Replace the ABS wheel-speed sensor, then go to the next step. (See FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
4	VERIFY THAT THE SAME DTC IS NOT PRESENT • Reconnect all disconnected connectors.	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step.

	• Clear the DTCs from the memory. (See Clearing DTCs Procedures.) • Are the same DTCs present?	No	Go to the next step.
			(See DSC HU/CM REMOVAL/INSTALLATION.)
5	VERIFY THAT NO OTHER DTCS ARE PRESENT • Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC Table.)
		No	DTC troubleshooting completed.

DTC C1277, C1295, C1306, C1307 [DSC]

B3E040243000W21

DTC	C1277, C1295, C1306, C1307	Steering angle sensor
DETECTION CONDITION	• C 1277 - The steering angle sensor detects signal modulation or steering angle that exceeds specification. • C 1295 - Output voltage from either steering angle sensors 1 or 2 is 4.75 V or more or 0.25 V or less. • C 1306 - The neutral position of the steering angle cannot be estimated from the signals from the ABS wheel-speed sensors and the combined sensor. • C 1307 - The signal from the steering angle sensor remains unchanged when the steering angle is turned to the right and left.	
POSSIBLE CAUSE	• Improper installation or positioning of the steering angle sensor • Open circuit in the wiring harness between DSC HU/CM terminal AB and steering angle sensor terminal A • Open circuit in the wiring harness between DSC HU/CM terminal AE and steering angle sensor terminal C, short to battery or to ground • Open circuit in the wiring harness between DSC HU/CM terminal AN and steering angle sensor terminal B, short to battery or to ground • Open circuit in the wiring harness between DSC HU/CM terminal AH and steering angle sensor terminal D • Signal error from the ABS wheel-speed sensor • Signal error from the combined sensor • Signal errors from sensors due to rough road driving • Steering angle sensor malfunction • Poor connection at connectors (female terminal)	



Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT STEERING ANGLE SENSOR POWER SUPPLY FOR OPEN CIRCUIT - Turn the ignition switch to the ON position. - Measure the voltage between the steering angle sensor terminal A and body ground. - Is the voltage B+?	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 7.
2	INSPECT STEERING ANGLE SENSOR GROUND FOR OPEN CIRCUIT - Turn the ignition switch off. - Inspect for continuity between the steering angle sensor terminal D and body ground. - Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 7.
3	INSPECT STEERING ANGLE SENSOR SIGNAL FOR OPEN CIRCUIT - Disconnect the DSC HU/CM connectors. - Inspect for continuity between the DSC HU/CM connectors (vehicle harness-side) and the following steering angle sensor connector terminals: - Steering angle sensor (Sensor 1 system): AN-B - Steering angle sensor (Sensor 2 system): AE-C - Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 7.

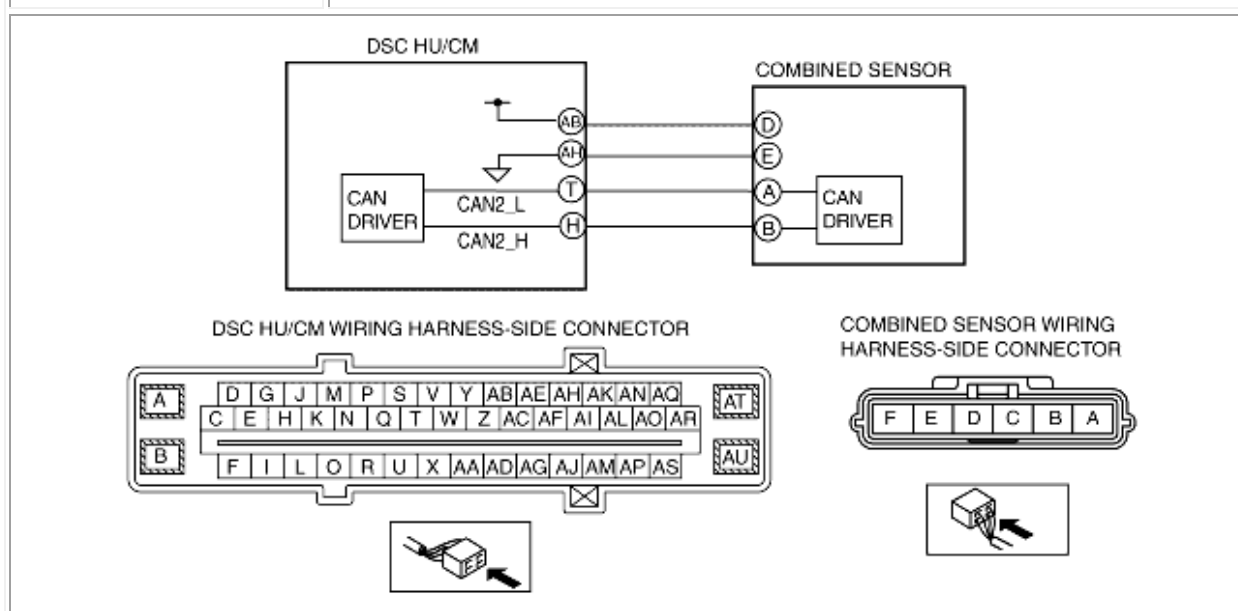
4	INSPECT STEERING ANGLE SENSOR SIGNAL FOR SHORT TO GROUND • Disconnect the steering angle sensor connectors • Inspect for continuity between the following steering angle sensor connector terminals (vehicle harness-side) and body ground: - Steering angle sensor (Sensor 1 system): B-Body ground - Steering angle sensor (Sensor 2 system): C-Body ground • Is there continuity?	Yes	Repair or replace the wiring harness, then go to Step 7.
		No	Go to the next step.
5	INSPECT FOR IMPROPER INSTALLATION OF STEERING ANGLE SENSOR • Is the installation normal?	Yes	Go to the next step.
		No	Repair installation or replace the steering angle sensor, then go to Step 7. (See STEERING ANGLE SENSOR REMOVAL/INSTALLATION.)
6	INSPECT STEERING ANGLE SENSOR • Reconnect all disconnected connectors. • Inspect the steering angle sensor. (See STEERING ANGLE SENSOR INSPECTION.) • Is the steering angle sensor normal?	Yes	Go to the next step.
		No	Replace the steering angle sensor, then go to the next step. (See STEERING ANGLE SENSOR REMOVAL/INSTALLATION.)
7	VERIFY THAT THE SAME DTC IS NOT PRESENT • Clear the DTCs from the memory. (See Clearing DTCs Procedures.) • Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. • Are the same DTCs present?	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
8	VERIFY THAT NO OTHER DTCS ARE PRESENT • Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC Table.)
		No	DTC troubleshooting completed.

DTC C1279, C1280, C1281, C1282, C2778 [DSC]

B3E040243000W22

DTC	C1279, C1280, C1281, C1282, C2778	Combined sensor system
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DETECTION CONDITION	• C1279, C1280 - Out-of-specification signal modulation or yaw rate value is detected from the combined sensor (yaw rate part). • C1281, C1282 - Out-of-specification signal modulation or lateral-G value is detected from the combined sensor (lateral-G part). • C2778 - An error is detected for the voltage to the combined sensor.
POSSIBLE CAUSE	• Open or short circuit in the wiring harness between DSC HU/CM terminal AB and combined sensor terminal D • Open or short circuit in the wiring harness between DSC HU/CM terminal AH and combined sensor terminal E • Open circuit in the wiring harness between DSC HU/CM terminal T and combined sensor terminal A (CAN2 line) • Open circuit in the wiring harness between DSC HU/CM terminal H and combined sensor terminal B (CAN2 line) • Combined sensor malfunction • Poor connection at connectors (female terminal)



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT COMBINED SENSOR POWER SUPPLY FOR OPEN CIRCUIT • Turn the ignition switch to the ON position.	Yes Go to the next step.
		No Repair or replace the wiring harness, then go to Step 4.

	- Measure the voltage between the combined sensor terminal E and body ground. - Is the voltage approx. 12 V?		
2	INSPECT COMBINED SENSOR GROUND FOR OPEN CIRCUIT - Turn the ignition switch off. - Inspect for continuity between the combined sensor terminal E and body ground. - Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 4.
3	INSPECT COMBINED SENSOR - Inspect the combined sensor. (See COMBINED SENSOR INSPECTION.) - Is the combined sensor normal?	Yes	Go to the next step.
		No	Replace the combined sensor, then go to the next step. (See COMBINED SENSOR REMOVAL/INSTALLATION.)
4	VERIFY THAT THE SAME DTC IS NOT PRESENT - Clear the DTCs from the memory. (See Clearing DTCs Procedures.) - Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. - Are the same DTCs present?	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	VERIFY THAT NO OTHER DTCS ARE PRESENT Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC Table.)
		No	DTC troubleshooting completed.

DTC C1288, C1440 [DSC]

B3E040243000W23

DTC	C1288, C1440	Brake fluid pressure sensor
DETECTION CONDITION	- C1288 - The voltage value from the brake fluid pressure sensor is not within specification. - C1440 - The value output from the brake fluid pressure sensor when braking does not change.	

	- The pressure value from the brake fluid pressure sensor is not within specification when decelerating. - The pressure value from the brake fluid pressure sensor when not braking exceeds specification.
POSSIBLE CAUSE	• Brake fluid pressure sensor malfunction • Open or short circuit in the brake fluid pressure sensor circuit in DSC HU/CM

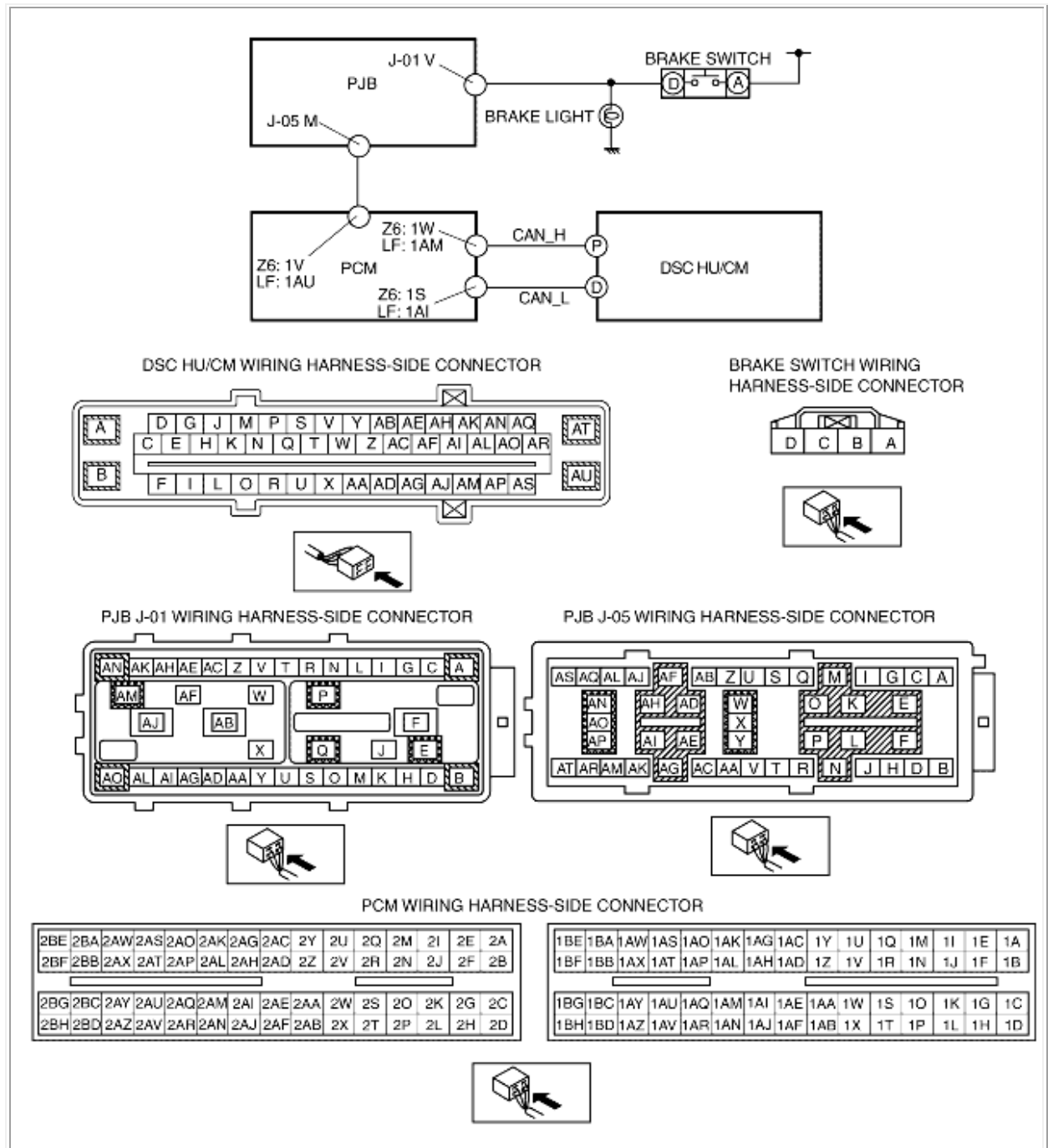
Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY NO ABNORMALITY ON BRAKE FLUID PRESSURE SENSOR • Clear the DTCs from the memory. (See Clearing DTCs Procedures.) • Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. • Are the same DTCs present?	Yes Replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION.)
		No Go to the next step.
2	VERIFY THAT NO OTHER DTCS ARE PRESENT • Are any other DTCs output?	Yes Go to the applicable DTC inspection. (See DTC Table.)
		No DTC troubleshooting completed.

DTC C1446 [DSC]

B3E040243000W24

DTC	C1446	Brake switch
DETECTION CONDITION	• Brake switch ON signal is input for 6 min or more when driving at a vehicle speed of 20 km/h {12.4 mph} or more. • Brake switch ON signal is not input even though the DSC unit determines vehicle deceleration.	
POSSIBLE CAUSE	• Open or short circuit in the wiring harness between brake switch and the terminal on the PJB • Open or short circuit in the wiring harness between the terminals on the PJB and PCM • Brake switch malfunction • Poor connection at connectors (female terminal)	



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY OPEN OR SHORT CIRCUIT IN BRAKE SWITCH SIGNAL	Yes
	- Turn the ignition switch to the ON position. - Measure the voltage between the following PCM terminals and body ground when the brake pedal is depressed and released: - PCM (Z6): 1V-Body ground - PCM (LF): 1AU-Body ground	No If it is B+ under any condition, then go to the next step. If it is 1 V or less under any condition, then go to Step 3.

	Voltage Brake pedal depressed: B+ Brake pedal released: 1 V or less		
2	INSPECT BRAKE SWITCH SIGNAL FOR SHORT TO POWER SUPPLY CIRCUIT • Disconnect the brake switch connector. • Measure voltage between the brake switch connector terminal D (vehicle harness-side) and body ground. • Is the voltage 1 V or less?	Yes	Go to Step 4.
		No	Repair or replace the wiring harness between the PCM and brake switch, then go to Step 5.
3	INSPECT BRAKE SWITCH SIGNAL FOR OPEN CIRCUIT • Disconnect the PCM connectors. • Disconnect the brake switch connector. • Inspect continuity between the following PCM connector terminals (vehicle harness-side) and brake switch terminal D: - PCM (Z6): 1V - PCM (LF): 1AU • Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness between the PCM and brake switch, then go to Step 5.
4	INSPECT BRAKE SWITCH • Inspect the brake switch. (See BRAKE SWITCH INSPECTION .) • Is the brake switch normal?	Yes	Go to the next step.
		No	Replace the brake switch, then go to the next step. (See BRAKE PEDAL REMOVAL/INSTALLATION .)
5	VERIFY THAT THE SAME DTC IS NOT PRESENT • Reconnect all disconnected connectors. • Clear the DTCs from the memory. (See Clearing DTCs Procedures .) • Start the engine and drive the vehicle at 20 km/h {12.4 mph} or more. • Are the same DTCs present?	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION .)
		No	Go to the next step.
6	VERIFY THAT NO OTHER DTCS ARE PRESENT • Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC Table .)
		No	DTC troubleshooting completed.

DTC C1470, C1994 [DSC]

B3E040243000W25

DTC	C1470, C1994	TCS/DSC control system
DETECTION CONDITION	• C1470 - Due to excessive braking, TCS control using braking is temporarily inhibited. • C1994 - DSC control continues for a specified period of time or more	
POSSIBLE CAUSE	• This does not indicate a malfunction since constant TCS or DSC control over an extended period of time is inhibited to protect the DSC solenoid valve inside the DSC HU or the engine.	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY THAT THE SAME DTC IS NOT PRESENT • Clear the DTCs from the memory. (See Clearing DTCs Procedures.) • Are the same DTCs present?	Yes Replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION.)
		No Go to the next step.
2	VERIFY THAT NO OTHER DTCS ARE PRESENT • Are any other DTCs output?	Yes Go to the applicable DTC inspection. (See DTC Table.)
		No DTC troubleshooting completed.

DTC C2785 [DSC]

B3E040243000W30

DTC	C2785	Combined sensor system (unperformed initialization procedure)
DETECTION CONDITION	• DSC detects that the initialization procedure for combined sensor has not been performed.	
POSSIBLE CAUSE	• Initialization procedure for the combined sensor not performed • Combined sensor malfunction	

Diagnostic procedure

STEP	INSPECTION	ACTION
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1	VERIFY OTHER DTC HAS BEEN RECORDED • Has DTC B2141 also been stored?	Yes	Go to the applicable DTC inspection. (See DTC Table .)
		No	Go to the next step.
2	VERIFY INITIALIZATION PROCEDURE • Was the combined sensor initialization procedure performed?	Yes	Go to the next step.
		No	Perform the combined sensor initialization procedure, then go to the next step. (See COMBINED SENSOR INITIALIZATION PROCEDURE .)
3	VERIFY THAT THE SAME DTC IS NOT PRESENT • Clear the DTCs from the memory. (See Clearing DTCs Procedures .) • Are the same DTCs present?	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION .)
		No	Go to the next step.
4	VERIFY THAT NO OTHER DTCS ARE PRESENT • Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC Table .)
		No	DTC troubleshooting completed.

DTC U1900, U2012, U2202, U2523 [DSC]

B3E040243000W26

DTC	U1900, U2012, U2202, U2523	CAN line
DETECTION CONDITION	• U1900, U2202, U2523 - Communication error with PCM is detected in CAN communication. • U2012 - CAN system wiring harness open or short circuit is detected.	
POSSIBLE CAUSE	• CAN system wiring harness open or short circuit with PCM • PCM malfunction	

Diagnostic procedure

- Inspect according to the diagnostic procedure in Section 09. (See [DTC TABLE \[MULTIPLEX COMMUNICATION SYSTEM\]](#).)

DTC U1901, U2527 [DSC]

B3E040243000W27

DTC	U1901, U2527	Combined sensor system (CAN2 line malfunction)
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DETECTION CONDITION	• U1901 - The signal from the combined sensor is not within specification. • U2527 - Open or short circuit in CAN system wiring harness is detected.
POSSIBLE CAUSE	• Open or short circuit in the CAN2_L wiring harness between combined sensor terminal A and DSC HU/CM terminal T • Open or short circuit in the CAN2_H wiring harness between combined sensor terminal B and DSC HU/CM terminal H • Combined sensor malfunction • DSC HU/CM malfunction • Poor connection at connectors (female terminal)

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT COMBINED SENSOR SIGNAL (CAN2 LINE) FOR OPEN CIRCUIT • Disconnect the DSC HU/CM connectors. • Disconnect the combined sensor connectors. • Inspect for continuity between the DSC HU/CM connectors (vehicle harness-side) and the following combined sensor connector terminals (vehicle harness-side): - Combined sensor (CAN2_L): T-A - Combined sensor (CAN2_H): H-B • Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 4.

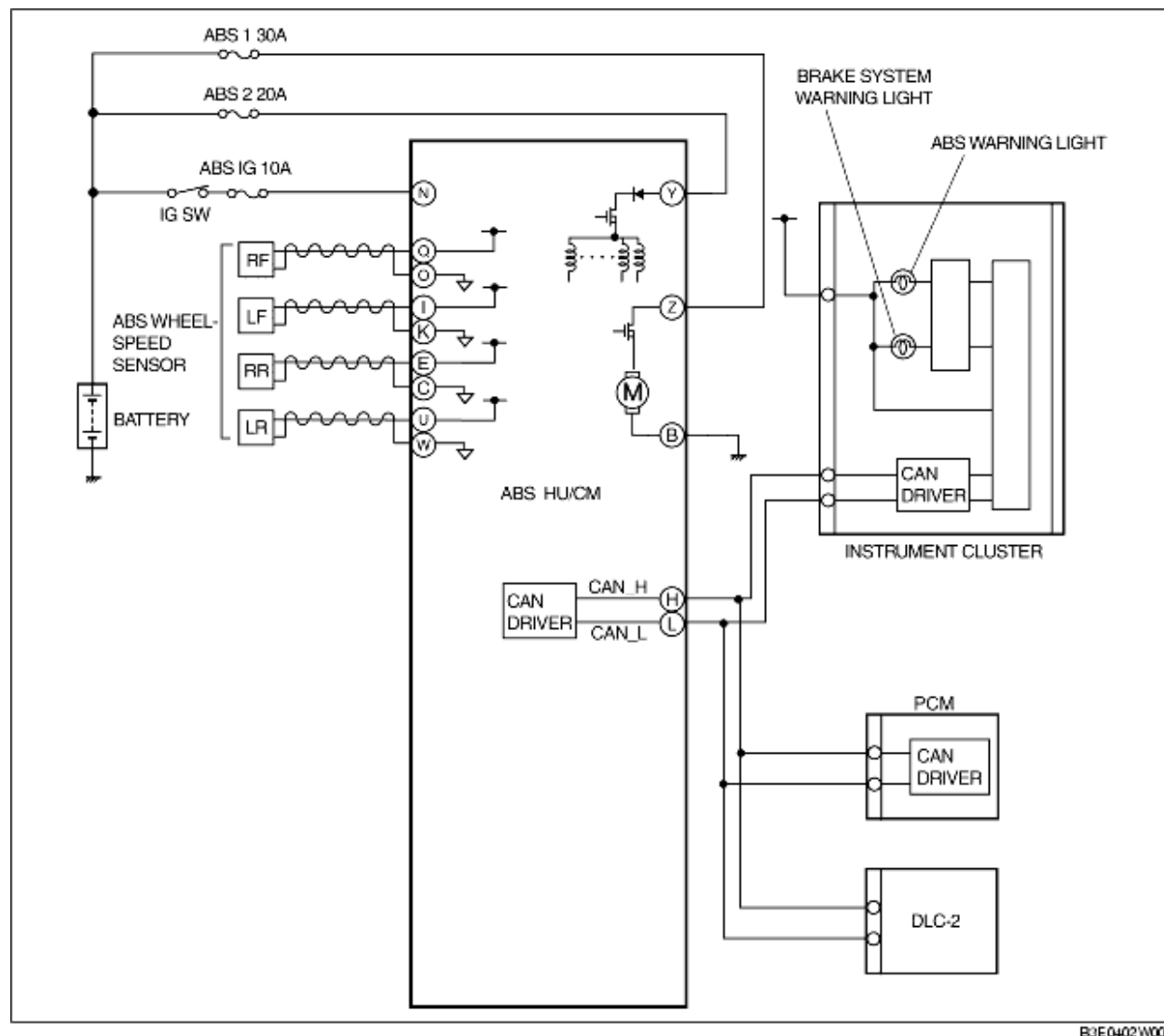
2	INSPECT COMBINED SENSOR SIGNAL (CAN2 LINE) FOR SHORT CIRCUIT - Inspect for continuity between the following DSC HU/CM connector terminals (vehicle harness-side) and body ground: - Combined sensor (CAN2_L): T - Combined sensor (CAN2_H): H - Is there continuity?	Yes	Repair or replace the wiring harness, then go to Step 4.
		No	Go to the next step.
3	INSPECT THE COMBINED SENSOR - Reconnect all disconnected connectors. Inspect the combined sensor. (See COMBINED SENSOR INSPECTION.) - Is the combined sensor normal?	Yes	Go to the next step.
		No	Replace the combined sensor, then go to the next step. (See COMBINED SENSOR REMOVAL/INSTALLATION.)
4	VERIFY THAT THE SAME DTC IS NOT PRESENT - Clear the DTCs from the memory. (See Clearing DTCs Procedures.) - Are the same DTCs present?	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	VERIFY THAT NO OTHER DTCS ARE PRESENT Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC Table.)
		No	DTC troubleshooting completed.

SYMPTOM TROUBLESHOOTING

SYSTEM WIRING DIAGRAM

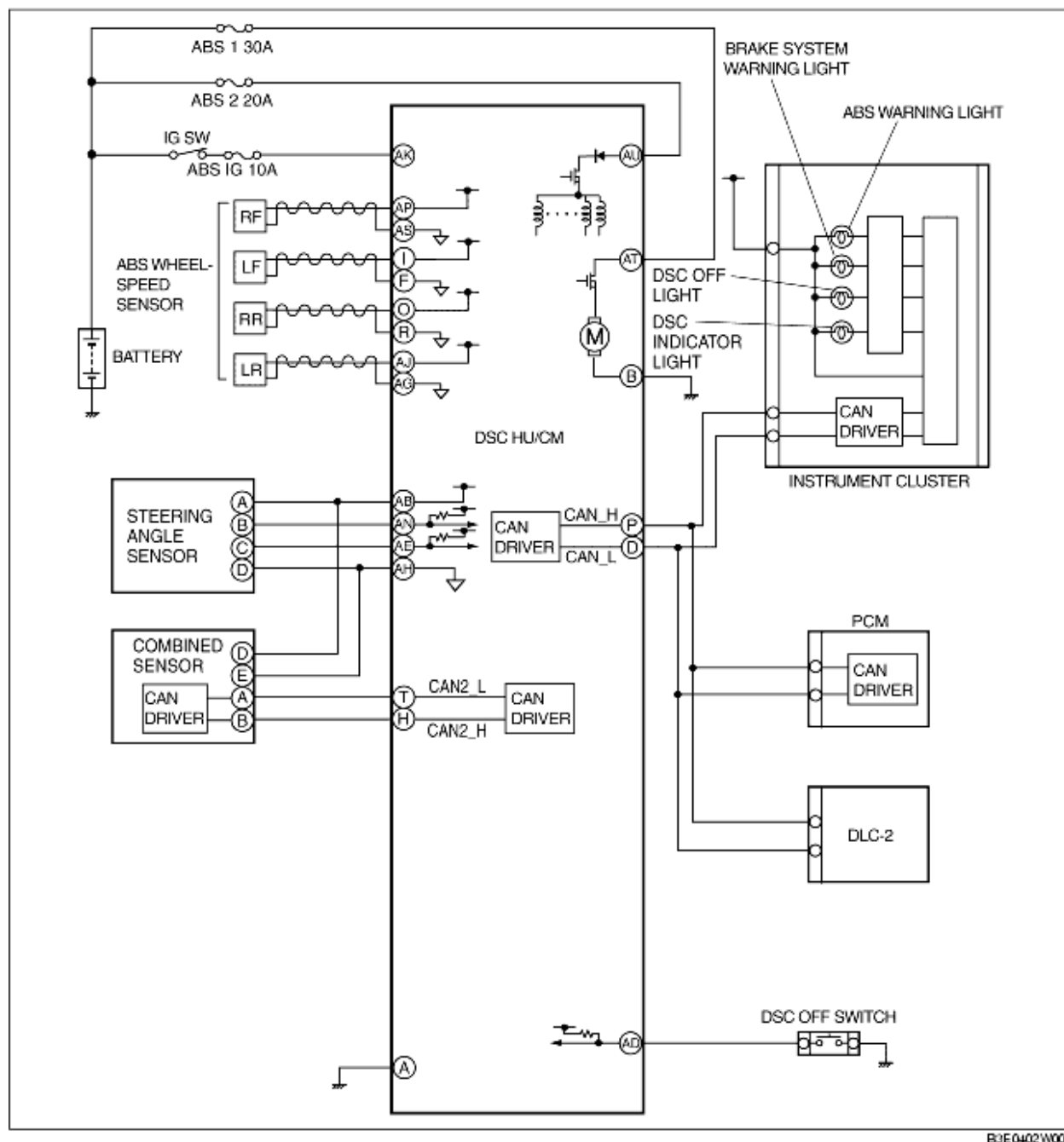
B3E040367650W01

Vehicles with ABS



B3E0402W001

Vehicles with DSC



FOREWORD

B3E040367650W02

- Before performing the steps in Symptom Troubleshooting, perform the On-board Diagnostic inspection. To inspect the DTC, follow the DTC Inspection steps. (See [DTC Table.](#)) (See [DTC Table.](#))

PRECAUTION

B3E040367650W03

Vehicles with ABS

1. Any one or a combination of the ABS warning and BRAKE system warning lights illuminates even when the system is normal.

Warning lights that may illuminate and/or flash	Cases in which the light may illuminate	Conditions in which the light will go out	ABS, EBD control
Either or both of the following lights illuminate: • ABS warning light • BRAKE system warning light ^(*)	When the front wheels are jacked up, stuck, or placed on a chassis roller, and only the front wheel ABS wheel speed sensors are spun.	After turning ignition switch off, vehicle is driven at speed greater than 10 km/h {6.2 mph} and normal operation is confirmed.	• ABS: Cuts control. • EBD: 1. Cuts control, in cases where the light may illuminate, only when ABS CM detects that a wheel speed sensor determines that more than two wheels are malfunctioning. 2. Operates control, if wheel speed sensor determines that more than three wheels are functioning correctly.
	Parking brake is not fully released while driving.		
	Brake drag.		
	Sudden acceleration/deceleration.		
Both of the following lights illuminate: • ABS warning light • BRAKE system warning light	Left/right or front/rear tires are different. (Size, radius, tire pressure, or wear is other than that listed on tire label.)	Battery voltage rises above approx. 8 V .	ABS: Cuts control. EBD: Cuts control.
	Battery voltage at ABS HU/CM ignition terminal AK drops below approx. 8 V . ^(*)		

*1 :

In cases where the light may illuminate, only when ABS HU/CM detects that a wheel-speed sensor determines that more than two wheels are malfunctioning.

*2 :

If battery voltage drops **below 8 V** while vehicle speed is **greater than 20 km/h {12.4 mph}**, ABS HU/CM records DTC B1318.

2. Precautions during servicing of ABS

The ABS is composed of electrical and mechanical parts. It is necessary to categorize malfunctions as being either electrical or hydraulic when performing troubleshooting.

(1) Malfunctions in electrical system

- The ABS hydraulic unit and control module (ABS HU/CM) has an on-board diagnostic function. With this function, the ABS warning light and/or BRAKE system warning light will illuminate when there is a problem in the electrical system. Also, past and present malfunctions are recorded in the ABS HU/CM. This function can find malfunctions that do not occur during periodic inspections. Connect the WDS or equivalent to the DLC-2. The stored malfunctions will be displayed in the order of occurrence. To find out the causes of ABS malfunctions, use these on-board diagnostic results.
- If a malfunction occurred in the past but is now normal, the cause is likely a temporary poor connection of the wiring harness. The ABS HU/CM usually operates normally. Be careful when searching for the cause of malfunction.
- After repair, it is necessary to clear the DTC from the ABS HU/CM memory. Also, if the ABS related parts have been replaced, verify that the no DTC has been displayed after repairs.
- After repairing the ABS wheel-speed sensor or ABS sensor rotor, or after replacing the ABS CM (ABS motor or ABS motor relay or solenoid valve), the ABS warning light may not go out (*) even when the ignition switch is turned to the ON position. In this case, drive the vehicle at a speed of **10 km/h {6.2 mph} or more**, make sure that ABS warning light goes out, and then clear the DTC.
- * The BRAKE system warning light also illuminates when any two wheels malfunction, or battery voltage drops **below 8 V**.
- When repairing, if the ABS related connectors are disconnected and the ignition switch is turned to the ON position, the ABS CM will mistakenly detect a fault and record it as a malfunction.
- To protect the ABS HU/CM, make sure the ignition switch is turned off before connecting or disconnecting the ABS CM connector.

(2) Malfunctions in hydraulic system

- Symptoms in a hydraulic system malfunction are similar to those in a conventional brake malfunction. However, it is necessary to determine if the malfunction is in an ABS component or the conventional brake system.
- The ABS hydraulic unit contains delicate mechanical parts. If foreign material enters into the component, the ABS may fail to operate. Also, it will likely become extremely difficult to find the location of the malfunction in the event that the brakes operate but the ABS does not. Make sure foreign material does not enter when servicing the ABS (e.g. brake fluid replacement, pipe removal).

Vehicles with DSC

1. The ABS warning light and/or BRAKE system warning light and/or DSC indicator light illuminate even when the system is normal.

Warning lights that may illuminate and/or flash	Cases in which the light may illuminate	Conditions in which the light will go out	ABS, EBD, TCS and DSC control
• ABS warning light • BRAKE system warning light	When the front wheels are jacked up, struck, or placed on a chassis roller, and only the front wheel ABS wheel speed sensors are spun for 60 s or more. Parking brake is not fully released while driving.	After turning the ignition switch off, vehicle is driven at a speed greater than 10 km/h {6.2 mph} and normal operation is confirmed.	ABS: Cuts control. EBD: Cuts control.

• DSC indicator light	Brake drag.		TCS: Cuts control.
	Sudden acceleration/deceleration.		DSC: Cuts control.
	Left/right or front/rear tires are different. (Size, radius, tire pressure, or wear is other than that listed on tire label.)		
	Battery voltage at DSC HU/CM ignition terminal drops below approx. 8 V.	Battery voltage rises above approx. 8 V.	ABS: Cuts control. EBD: Cuts control. TCS: Cuts control. DSC: Cuts control.

2. Precautions during servicing of DSC. The DSC is composed of electrical and mechanical parts. It is necessary to categorize malfunctions as being either electrical or hydraulic when performing troubleshooting.

(1) Malfunction in electrical system

- The control module has an on-board diagnostic function. With this function, the ABS warning light and/or BRAKE system warning light and/or DSC indicator light will illuminate when there is a problem in the electrical system.

Also, past and present malfunctions are recorded in the control module. This function can find malfunctions that do not occur during periodic inspections. Connect the WDS or equivalent to the DLC-2, then turn the ignition switch to the ON position. As a result, the stored malfunctions will be displayed on the WDS or equivalent in numeric order by connecting DLC-2. To find out the causes of DSC malfunctions, use these on-board diagnostic results.

- If a malfunction occurred in the past but is now normal, the cause is likely a temporary poor connection of the wiring harness.

The control module usually operates normally. Be careful when searching for the cause of malfunction.

- After repair, it is necessary to clear the DTC from the control module memory.

Also, if the DSC related parts have been replaced, verify that the no DTC has been displayed after repairs.

- After repairing the ABS wheel-speed sensor or ABS sensor rotor, or after replacing the control module, the ABS warning light may not go out even when the ignition switch is turned to the ON position. In this case, drive the vehicle at a speed of **10 km/h {6.2 mph} or more**, make sure the ABS warning light goes out, and then clear the DTC.

- When repairing, if the DSC related connectors are disconnected and the ignition switch is turned to the ON position, the control module will mistakenly detect a fault and record it as a malfunction.

Caution

- In DSC vehicles, when the DSC HU/CM, combined sensor is replaced, perform the initialization procedure for each sensor. (See [COMBINED SENSOR INITIALIZATION PROCEDURE.](#)) (See [BRAKE FLUID PRESSURE SENSOR INITIALIZATION PROCEDURE.](#))

- To protect the control module, make sure the ignition switch is turned off before connecting or disconnecting the control module connector.

(2) Malfunctions in hydraulic system

- Symptoms in a hydraulic system malfunction are similar to those in a conventional brake malfunction. However, it is necessary to determine if the malfunction is in a DSC component or the conventional brake system.
- The hydraulic unit contains delicate mechanical parts. If foreign material enters the component, the DSC may fail to operate. Also, it will likely become extremely difficult to find the location of the malfunction in the event that the brakes operate but the DSC does not. Make sure foreign materials does not enter when servicing the DSC (e.g. brake fluid replacement, pipe removal).

Intermittent Concern Troubleshooting

Vibration method

- If malfunction occurs or becomes worse while driving on a rough road or when engine is vibrating, perform the steps below.

Note

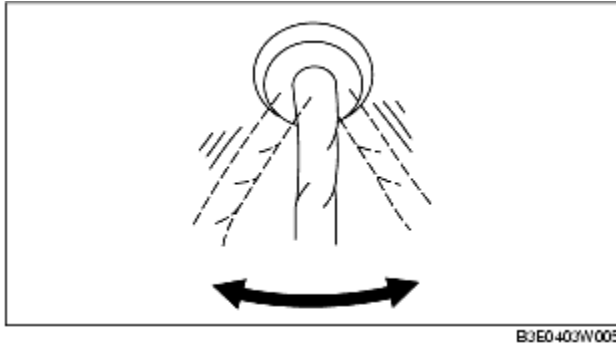
- There are several reasons why vehicle or engine vibration could cause an electrical malfunction. Some of the things to inspect are:
 - Connectors not fully seated.
 - Wiring harness not having full play.
 - Wires laying across brackets or moving parts.
 - Wires routed too close to hot parts.
- An improperly routed, improperly clamped, or loose wiring harness can cause wiring to become pinched between parts.
- The connector joints, points of vibration, and places where wiring harness pass through the firewall, body panels, etc. are the major areas to be inspected.

Inspection method for switch connectors or wiring harnesses

1. Connect the WDS or equivalent to the DLC-2.
2. Turn the ignition switch to the ON position (Engine OFF).

Note

- If engine starts and runs, perform the following steps at idle.
3. Access PIDs for the switch you are inspecting.
 4. Turn switch on manually.
 5. Slightly shake each connector or wiring harness vertically and horizontally while monitoring the PID.



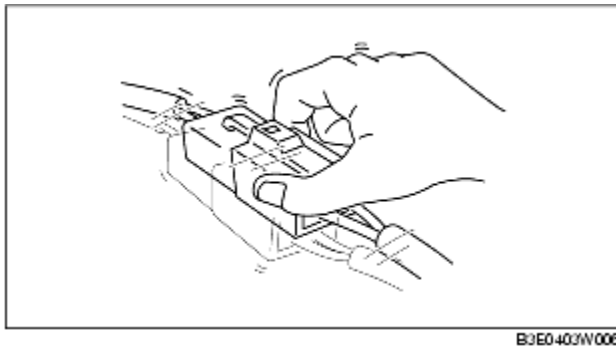
- If the PID value is unstable, inspect poor connection.

Inspection method for sensor connectors or wiring harnesses

1. Connect the WDS or equivalent to the DLC-2.
2. Turn the ignition switch to the ON position (Engine OFF).

Note

- If engine starts and runs, perform the following steps at idle.
3. Access PIDs for the switch you are inspecting.
 4. Slightly shake each connector or wiring harness vertically and horizontally while monitoring the PID.



- If the PID value is unstable, inspect poor connection.

Inspection method for sensors

1. Connect the WDS or equivalent to the DLC-2.
2. Turn the ignition switch to the ON position (Engine OFF).

Note

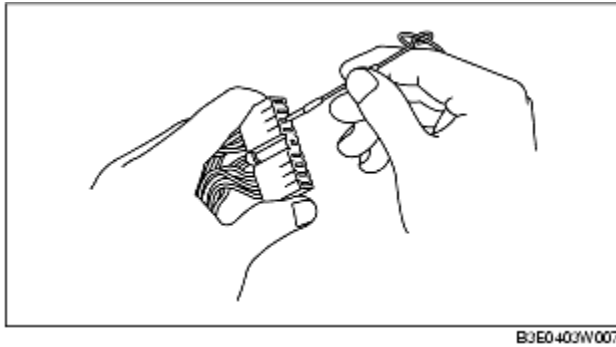
- If engine starts and runs, perform the following steps at idle.
3. Access PIDs for the switch you are inspecting.
 4. Vibrate the sensor slightly with your finger.
- If the PID value is unstable or malfunction occurs, inspect the sensor for poor connection and/or poor mounting.

Malfunction data monitor method

1. Perform malfunction reappearance test according to malfunction reappearance mode and malfunction data monitor. The malfunction cause is found in the malfunction data.

Connector terminal inspection method

1. Inspect the connection condition of each female terminal.
2. Insert the male terminal to the female terminal and Inspect the female terminal for looseness.



SYMPTOM TROUBLESHOOTING

B3E040367650W04

- Verify the symptoms, and perform troubleshooting according to the appropriate number.

Vehicles with ABS

No.	Symptom
1	Neither ABS warning light nor BRAKE system warning light illuminate when the ignition switch is turned to the ON position.
2	ABS warning light does not illuminate when the ignition switch is turned to the ON position.
3	BRAKE system warning light does not illuminate when the ignition switch is turned to the ON position.
4	Both ABS warning light and BRAKE system warning light stay on 4 s or more when the ignition switch is turned to the ON position.
5	ABS warning light stays on 4 s or more when the ignition switch is turned to the ON position.
6	BRAKE system warning light stays on 4 s or more when the ignition switch is turned to the ON position. (Parking brake is released.)
7	There is a malfunction in the system even through ABS warning light, BRAKE system warning light, do not illuminate.

Vehicles with DSC

No.	Symptom
8	Any of the following lights do not illuminate when the ignition switch is turned to the ON position. • ABS warning light • BRAKE system warning light • DSC indicator light • DSC OFF light
9	Any of the following lights remain on: • ABS warning light. • BRAKE system warning light • DSC indicator light • DSC OFF light
10	There is a malfunction in the system even though ABS warning light, BRAKE system warning light, DSC indicator light and DSC OFF light do not illuminate.
11	ABS or TCS* ¹ operates frequently.
	TCS does not work correctly.
12	DSC* ² operates frequently.
	DSC does not work correctly.

*1 :

DSC system contains traction control function; DSC indicator light illuminates and goes out while DSC is operating.

*2 :

DSC indicator light illuminates and goes out while DSC is operating.

Vehicles with ABS

x: Applicable

Possible factor		ABS HU/CM	Instrument cluster	CAN communication	Battery	Brake fluid	Parking brake switch	Charging system	ABS HU/CM power supply (terminal N)	ABS HU/CM GND (terminal B)	Instrument cluster power supply (terminal 1G)	Instrument cluster GND	Conventional brakes	Brake pipe routing
Troubleshooting Item														
1	Neither ABS warning light nor BRAKE system warning light illuminate when the ignition switch is turned to the ON position.		X								X	X		
2	ABS warning light does not illuminate when the ignition switch is turned to the ON position.		X											
3	BRAKE system warning light does not illuminate when the ignition switch is turned to the ON position.		X											
4	Both ABS warning light and BRAKE system warning light stay on 4 s or more when the ignition switch is turned to the ON position.	X	X	X	X			X	X	X				
5	ABS warning light stays on 4 s or more when the ignition switch is turned to the ON position.	X	X	X	X			X	X	X				
6	BRAKE system warning light stays on 4 s or more when the ignition switch is turned to the ON position. (Parking brake is released.)		X			X	X							
7	There is a malfunction in the system even though ABS warning light, BRAKE system warning light do not illuminate.	X											X	X

B3E0403/W001

Vehicles with DSC

Possible factor		x: Applicable														
Troubleshooting item		DSC HU/CM	Instrument cluster	CAN communication	Each sensor installation	Battery	Charging system	Brake fluid	Parking brake	Tire	Tire air pressure	Control module power supply system	Control module ground system	Instrument cluster power supply system	Instrument cluster ground system	Conventional brake
8	Any of the following lights do not illuminate when the ignition switch is turned to the on position: (ABS warning light, BRAKE system warning light, DSC indicator light and/or DSC OFF light).	X	X	X										X	X	
9	Any of the following lights remain on: (ABS warning light, BRAKE system warning light, DSC indicator light and/or DSC OFF light).	X	X	X	X	X	X	X	X			X	X			
10	There is a malfunction in the system even though ABS warning light, BRAKE system warning light, DSC indicator light, and DSC OFF light do not illuminate.															X
11	ABS or TCS (*1) operates frequently. /TCS does not work correctly. (*1): DSC system function contains traction control function, DSC indicator light goes on and out while DSC operates.	X			X					X	X					
12	DSC (*2) operates frequently. /DSC does not work correctly. (*2): DSC indicator light goes on and out while DSC operates.	X			X											

B3E0403W002

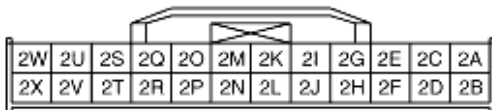
NO.1 NEITHER ABS WARNING LIGHT NOR BRAKE SYSTEM WARNING LIGHT ILLUMINATE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION

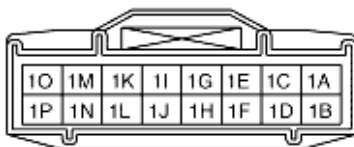
B3E040367650W05

1	Neither ABS warning light nor BRAKE system warning light illuminate when the ignition switch is turned to the ON position.	
[TROUBLESHOOTING HINTS]		
• Instrument cluster or ABS HU/CM malfunction • Improper configuration (instrument cluster)		
STEP	INSPECTION	ACTION

1	INSPECT FOR DTCs IN ABS HU/CM • Have DTCs been stored in memory?	Yes	Perform the applicable DTC inspection. (See DTC Table.)
		No	Inspect the instrument cluster. If the instrument cluster is normal, inspect CAN communication. If instrument cluster has a malfunction, go to the next step.
2	VERIFY WHETHER MALFUNCTION IS IN WARNING LIGHTS AND INDICATOR LIGHT'S COMMON POWER SUPPLY, OR IN OTHER WARNING LIGHTS AND INDICATOR LIGHTS • Do other warning and indicator lights illuminate when the ignition switch is turned to the ON position?	Yes	Replace the instrument cluster. (Open circuit in instrument cluster)
		No	Go to the next step.
3	INSPECT INSTRUMENT CLUSTER POWER SUPPLY FUSE • Is the instrument cluster ignition power supply fuse normal?	Yes	Go to the next step.
		No	Inspect for a short to ground on circuit of blown fuse. Repair or replace if necessary. Install appropriate amperage fuse.
*4	VERIFY WHETHER MALFUNCTION IS IN WIRING HARNESS (BETWEEN INSTRUMENT CLUSTER POWER SUPPLY AND INSTRUMENT CLUSTER FOR CONTINUITY) OR INSTRUMENT CLUSTER • Turn the ignition switch to the ON position. • Measure voltage at instrument cluster connector terminal 1G. • Is the voltage approx. 12 V ?	Yes	Replace the instrument cluster (open circuit in instrument cluster).
		No	Inspect for open circuit in wiring harness between the instrument cluster and ground. Repair or replace if necessary. Replace the ABS HU/CM. (See ABS HU/CM REMOVAL/INSTALLATION.)

INSTRUMENT CLUSTER WIRING HARNESS-SIDE CONNECTOR





• When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and wiring harness are connected correctly and undamaged.

NO.2 ABS WARNING LIGHT DOES NOT ILLUMINATE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION

B3E040367650W06

2 ABS warning light does not illuminate when the ignition switch is turned to the ON position.

[TROUBLESHOOTING HINTS]

- Instrument cluster malfunction

NO.3 BRAKE SYSTEM WARNING LIGHT DOES NOT ILLUMINATE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION

B3E040367650W07

3 BRAKE system warning light does not illuminate when the ignition switch is turned to the ON position.

[TROUBLESHOOTING HINTS]

- Instrument cluster malfunction

NO.4 BOTH ABS WARNING LIGHT AND BRAKE SYSTEM WARNING LIGHT STAY ON 4 S OR MORE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION

B3E040367650W08

4 Both ABS warning light and BRAKE system warning light stay on 4 s or more when the ignition switch is turned to the ON position.

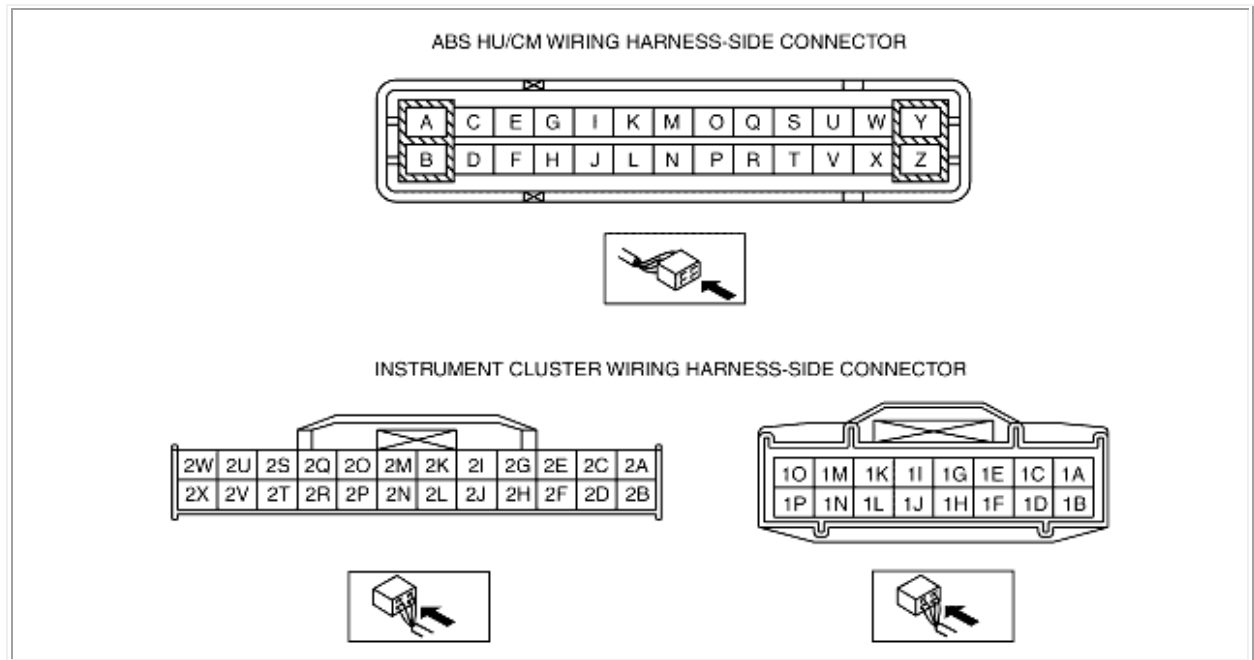
[TROUBLESHOOTING HINTS]

- ABS HU/CM detects ABS proportioning system malfunction.
- ABS HU/CM detects low voltage in power supply (ABS CM ignition terminal N voltage is below approx. 8 V).
- ABS HU/CM does not operate.
- Malfunction of communication network

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT ABS HU/CM POWER SUPPLY FUSE Is the ABS HU/CM ignition power supply fuse normal?	Yes	Go to the next step. Inspect for a short to ground on blown fuse's circuit.
		No	Repair or replace if necessary. Install appropriate amperage fuse.
2	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR CONTINUITY AND SHORT CIRCUIT - Perform DTC inspection. - Is any error message displayed regarding communication between the ABS HU/CM and WDS or equivalent?	Yes	If the communication error message is displayed even after inspecting according to the procedure displayed on the WDS or equivalent, go to step 6.
		No	Go to the next step.
3	INSPECT FOR DTCs IN ABS HU/CM Have DTCs been stored in memory?	Yes	Perform the applicable DTC inspection. (See DTC Table.)
		No	Inspect the instrument cluster. If the instrument cluster is normal, go to the next step. If the instrument cluster malfunction repair the instrument cluster, go to the next step.
4	INSPECT BATTERY Is the battery voltage normal?	Yes	Go to the next step.
		No	Inspect the battery and charging system. (See BATTERY INSPECTION.) (See GENERATOR INSPECTION.)
5	INSPECT CHARGING SYSTEM Is the battery voltage normal with electrical load (such as A/C, headlight) on and engine idling?	Yes	Go to the next step.
		No	Inspect the charging system (such as drive belt tension and generator). (See GENERATOR INSPECTION.)
6	INSPECT ABS HU/CM IGNITION POWER SUPPLY SYSTEM (TERMINAL N) - Disconnect the ABS HU/CM connector. - Turn the ignition switch to the ON position.	Yes	Replace the ABS HU/CM (open or short in ground circuit in the ABS HU/CM). (See ABS HU/CM REMOVAL/INSTALLATION.)
		No	Repair the wiring harness between the ABS HU/CM and ground.

	- Inspect the voltage of connector terminal N. Specification: approx. 8 V - Is the voltage within the specification?		
7	INSPECT WIRING HARNESS BETWEEN ABS HU/CM GROUND FOR CONTINUITY - Turn the ignition switch to the LOCK position. - Is there continuity between connector terminal B and ground?	Yes	If a malfunction error message is displayed on WDS or equivalent in Step 1 inspection, go to the next step. If a malfunction error message is not displayed on WDS or equivalent in Step 1 inspection, troubleshooting is completed.
		No	Repair the wiring harness between the ABS HU/CM and ground.
8	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR CONTINUITY Is there continuity between connector terminal H, L and DLC-2?	Yes	Go to the next step.
		No	Repair the wiring harness between the ABS HU/CM and DLC-2.
9	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR SHORT TO POWER SUPPLY Is the voltage approx. 12 V at connector terminal H, L?	Yes	Repair the wiring harness between the ABS HU/CM and DLC-2.
		No	Go to the next step.
10	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR SHORT TO GROUND Is there continuity between connector terminal H, L and DLC-2?	Yes	Repair the wiring harness between the ABS HU/CM and DLC-2.
		No	Replace the ABS HU/CM (communication circuit malfunction in ABS HU/CM). (See ABS HU/CM REMOVAL/INSTALLATION.)



NO.5 ABS WARNING LIGHT STAYS ON 4 S OR MORE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION

B3E040367650W09

5 ABS warning light stays on 4 s or more when the ignition switch is turned to the ON position.

[TROUBLESHOOTING HINTS]

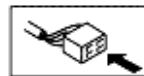
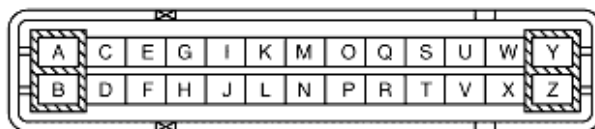
- ABS CM detects ABS system malfunction.

Diagnostic procedure

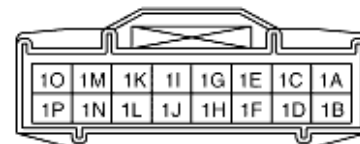
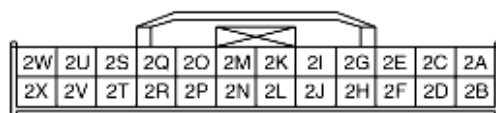
STEP	INSPECTION	ACTION
1	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR CONTINUITY AND SHORT CIRCUIT • Perform DTC inspection. • Is any error message displayed regarding communication between ABS HU/CM and WDS or equivalent?	Yes If the communication error message is displayed even after inspecting according to the procedures displayed in the WDS or equivalent, go to Step 4.
		No Go to the next step.
2	INSPECT FOR DTCs IN ABS HU/CM • Have DTCs been stored in memory?	Yes Perform the applicable DTC inspection. (See DTC Table .)

		No	Inspect the instrument cluster If the instrument cluster is normal, go to the next step. If the instrument cluster has a malfunction, repair the instrument cluster, go to the next step.
3	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR CONTINUITY - Disconnect the ABS HU/CM connector. - Is there continuity between connector terminal H, L and DLC-2?	Yes	Go to the next step.
		No	Repair the wiring harness between the ABS HU/CM and DLC-2.
*4	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR SHORT TO POWER SUPPLY Is the voltage approx. 12 V at connector terminal H, L?	Yes	Repair the wiring harness between the ABS HU/CM and DLC-2.
		No	Go to the next step.
5	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR SHORT TO GROUND Is there continuity between connector terminal H, L and ground?	Yes	Repair the wiring harness between the ABS HU/CM and DLC-2.
		No	Replace the ABS HU/CM (communication circuit malfunction in ABS HU/CM). (See ABS HU/CM REMOVAL/INSTALLATION.)

ABS HU/CM WIRING HARNESS-SIDE CONNECTOR



INSTRUMENT CLUSTER WIRING HARNESS-SIDE CONNECTOR



• When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and wiring harness are connected correctly and undamaged.

NO.6 BRAKE SYSTEM WARNING LIGHT STAYS ON 4 S OR MORE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION (PARKING BRAKE IS RELEASED)

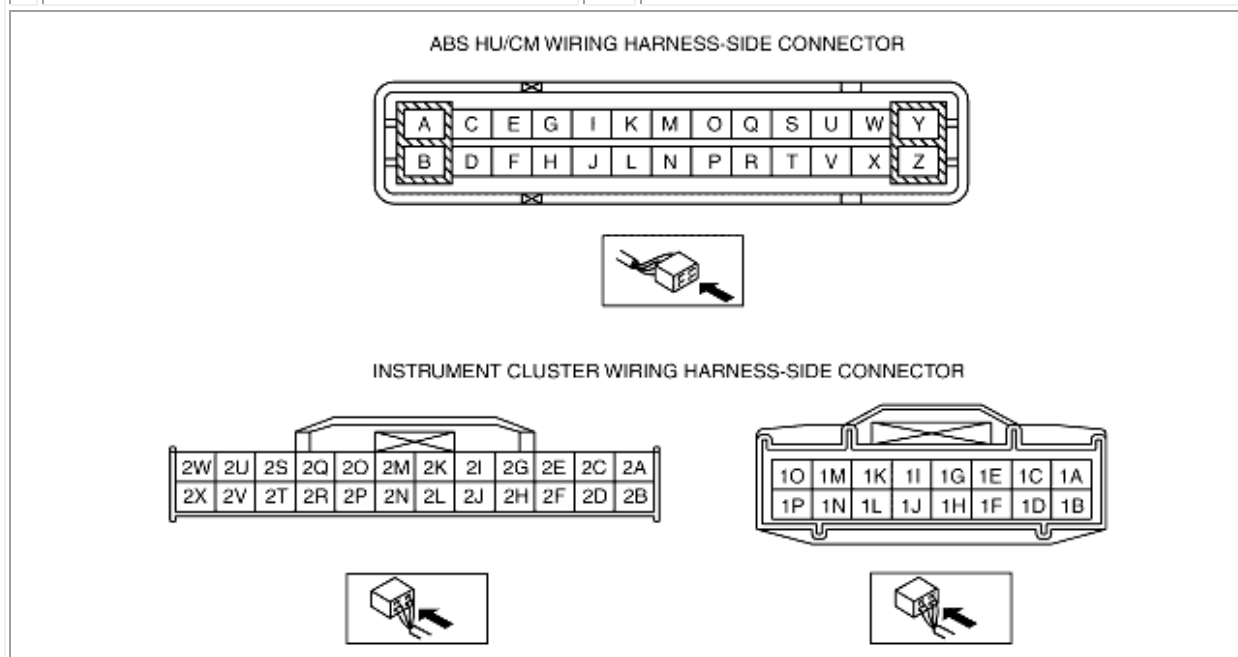
B3E040367650W10

6	BRAKE system warning light stays on 4 s or more when the ignition switch is turned to the ON position. (Parking brake is released.)
[TROUBLESHOOTING HINTS]	
• Instrument cluster malfunction • Short to ground in circuit in parking brake switch • Brake fluid level sensor is low	

Diagnostic procedure

1	INSPECT BRAKE FLUID LEVEL • Is brake fluid level normal?	Yes	Go to the next step.
		No	Add brake fluid.
2	INSPECT FOR DTCs IN ABS HU/CM • Have DTCs been stored in memory?	Yes	Perform the applicable DTC inspection. (See DTC Table.)
		No	Go to the next step.
3	VERIFY WHETHER MALFUNCTION IS IN PARKING BRAKE SWITCH • Disconnect the parking brake switch connector. • Does BRAKE system warning light go out with the ignition switch is turned to the ON position?	Yes	Replace the parking brake switch. (See PARKING BRAKE LEVER REMOVAL/INSTALLATION.)
		No	Perform the following inspection. Repair if necessary. • Short to ground in the wiring harness between the instrument cluster (BRAKE system warning light) and parking brake switch. Inspect the instrument cluster.
* 4	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC -2 FOR CONTINUITY • Disconnect the ABS HU/CM connector. • Is there continuity between connector terminal H, L and DLC-2?	Yes	Go to the next step.
		No	Repair the wiring harness between the ABS HU/CM and DLC-2.

5	* Is the voltage approx. 12 V at connector terminal H, L?	Yes	Repair the wiring harness between the ABS HU/CM and DLC-2.
		No	Go to the next step.
6	* Is there continuity between connector terminal H, L and ground?	Yes	Repair the wiring harness between the ABS HU/CM and DLC-2.
		No	Replace ABS HU/CM (communication circuit malfunction in ABS HU/CM). (See ABS HU/CM REMOVAL/INSTALLATION.)



- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and wiring harness are connected correctly and undamaged.

NO.7 THERE IS MALFUNCTION IN THE SYSTEM EVEN THOUGH ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DO NOT ILLUMINATE

B3E040367650W11

7	There is a malfunction in system even though ABS warning light, BRAKE system warning light, do not illuminate.
[TROUBLESHOOTING HINTS]	
• There is a difference in size or air pressure between the front and rear tires.	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT FOR DTCs IN ABS HU/CM Have DTCs been stored in memory?	Yes Perform the applicable DTC inspection. (See DTC Table .)
		No Go to the next step.
2	INSPECT ABS HYDRAULIC UNIT Perform the ABS hydraulic unit system inspection. Is the system normal?	Yes Inspect the conventional brake system.
		No If the wheels do not rotate: Replace the ABS HU/CM. (See ABS HU/CM REMOVAL/INSTALLATION .)
		If the wheels rotate but order in which wheels rotate is incorrect: Inspect the brake pipe passage to the ABS HU/CM.

NO.8 ANY OF THE FOLLOWING LIGHTS DO NOT ILLUMINATE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION: (ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DSC INDICATOR LIGHT AND/OR DSC OFF LIGHT)

B3E040367650W12

8	Any of the following lights do not illuminate when the ignition switch is turned to the ON position: (ABS warning light, BRAKE system warning light, DSC indicator light and/or DSC OFF light).
[TROUBLESHOOTING HINTS]	
• Inspect each light in the instrument cluster for malfunction. • Poor connection at DSC HU/CM connector	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT FOR DTCs IN DSC HU/CM • Have DTCs been stored in memory?	Yes Perform the applicable DTC inspection. (See DTC Table .)
		No Go to the next step.
2		Yes Go to the next step.

	INSPECT IF MALFUNCTION IS IN INSTRUMENT CLUSTER SYSTEM OR OTHER SYSTEM Do other warning and indicator lights illuminate when the ignition switch is turned to the ON position?	No	Inspect or repair the instrument cluster (power supply system, ground system).
3	VERIFY THAT DSC HU/CM CONNECTOR IS CONNECTED Is the DSC HU/CM connector securely connected?	Yes	Go to the next step.
		No	Connect the DSC HU/CM connector securely, then go to the next step.
4	VERIFY THAT DSC HU/CM CONNECTOR TERMINAL OR RELATED CONNECTOR TERMINALS ARE CONNECTED Are the DSC HU/CM connector terminal, instrument cluster connector terminal, or related connector terminals securely connected?	Yes	Replace the DSC HU/CM. (See DSC HU/CM REMOVAL/INSTALLATION.)
		No	Connect the DSC HU/CM connector terminal or related connector terminal securely.

**NO.9 ANY OF THE FOLLOWING LIGHTS REMAIN ON:
(ABS WARNING LIGHT, BRAKE SYSTEM WARNING
LIGHT, DSC INDICATOR LIGHT AND/OR DSC OFF
LIGHT)**

B3E040367650W13

9	Any of the following lights remain on: (ABS warning light, BRAKE system warning light, DSC indicator light and/or DSC OFF light)
[TROUBLESHOOTING HINTS] - Brake fluid amount is low. - Parking brake is not released. - No connection at DSC HU/CM connector (When DSC HU/CM connector goes out, ABS warning light and BRAKE system warning light illuminate.) - DSC HU/CM detected malfunction (input and output device malfunction). - DSC HU/CM detects low voltage in power supply circuit. - DSC HU/CM ground malfunction (When DSC HU/CM ground is not securely connected, ABS warning light and BRAKE system warning light illuminate but no DTC is displayed.) - DSC HU/CM does not operate (DSC HU/CM malfunction).	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT BRAKE FLUID AMOUNT AND VERIFY THAT PARKING BRAKE RELEASES - Is the brake fluid amount normal? - Is the parking brake lever released?	Yes	Go to the next step.
		No	Add brake fluid or release the parking brake lever.
2	INSPECT FOR DTCs IN DSC HU/CM Have DTCs been stored in memory?	Yes	Perform the applicable DTC inspection. (See DTC Table .)
		No	Go to the next step.
3	INSPECT IF MALFUNCTION IS IN CONTROL MODULE CONNECTOR, TERMINAL OR OTHER Do ABS warning light and BRAKE system warning light go out after 4 s with the ignition switch turned to the ON position?	Yes	Temporary poor connection in control module connector. Inspect the DSC HU/CM connector, then go to Step 6. Inspect the DSC HU/CM connector terminal, then go to Step 7.
		No	Go to the next step.
4	INSPECT BATTERY Is the battery voltage normal?	Yes	Go to the next step.
		No	Inspect the battery and charging system. (See BATTERY INSPECTION .) (See GENERATOR INSPECTION .)
5	INSPECT CHARGING SYSTEM Is the battery voltage normal with electrical load (such as A/C, headlight) on and engine idling?	Yes	Go to the next step.
		No	Inspect the charging system (such as drive belt tension, generator). (See GENERATOR INSPECTION .)
6	VERIFY THAT DSC HU/CM CONNECTOR IS CONNECTED Is the DSC HU/CM securely connected?	Yes	Go to the next step.
		No	Connect the DSC HU/CM connector securely, then go to the next step.
7	VERIFY THAT DSC HU/CM CONNECTOR TERMINAL OR RELATED CONNECTOR TERMINALS ARE CONNECTED Are DSC HU/CM connector terminal or instrument cluster connector terminal, related connector terminals securely connected?	Yes	Replace the DSC HU/CM. (See DSC HU/CM REMOVAL/INSTALLATION .)
		No	Connect the DSC HU/CM connector terminal or related connector terminals securely.

NO.10 THERE IS A MALFUNCTION IN THE SYSTEM EVEN THOUGH ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DSC INDICATOR LIGHT AND DSC OFF LIGHT DO NOT ILLUMINATE

B3E040367650W14

10	There is a malfunction in the system even though ABS warning light, BRAKE system warning light, DSC indicator light and DSC OFF light do not illuminate.
[TROUBLESHOOTING HINTS]	
• There is a mechanical malfunction in the system.	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT FOR DTCs IN DSC HU/CM • Have DTCs been stored in memory?	Yes	Perform the applicable DTC inspection. (See DTC Table .)
		No	Go to the next step.
2	INSPECT DSC SYSTEM • Perform the DSC system inspection. • Is the system normal?	Yes	Inspect the conventional brake system.
		No	Repair or replace the malfunctioning part.

NO.11 ABS OR TCS*1 OPERATES FREQUENTLY/TCS DOES NOT WORK CORRECTLY *1: DSC SYSTEM FUNCTION CONTAINS TRACTION CONTROL FUNCTION, DSC INDICATOR LIGHT GOES ON AND OUT WHILE DSC OPERATES

B3E040367650W15

11	ABS or TCS (*1) operates frequently./TCS does not work correctly. (*1): DSC system function contains traction control function, DSC indicator light goes on and out while DSC operates.
[TROUBLESHOOTING HINTS]	
• There is a difference in size or air pressure between the front and rear tires. • Incorrect ABS wheel-speed signal is input to DSC HU/CM • There is a malfunction in the engine control system (TCS malfunction).	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT FOR DTCs IN DSC HU/CM • Have DTCs been stored in memory?	Yes	Perform the applicable DTC inspection. (See DTC Table .)
		No	Go to the next step.
2	INSPECT TIRE SIZE AND AIR PRESSURE • Inspect the tire size and air pressure. • Are the size and air pressure as specified?	Yes	Go to the next step.
		No	Replace with the specified tires and adjust tire air pressure.
3	INSPECT ABS WHEEL-SPEED SENSOR OUTPUT VALUE • Inspect the output value from the ABS wheel-speed sensor. (See Sensor Output Value Inspection .) (See Sensor Output Value Inspection .) • Is the output value normal?	Yes	Found malfunctioning part according to "INTERMITTENT CONCERN TROUBLESHOOTING".
		No	• ABS wheel-speed sensor installation inspection: Inspect the ABS wheel-speed sensor for looseness and confirm it is securely adhered. • ABS sensor rotor installation inspection: Inspect the ABS sensor rotor for poor installation.

NO.12 DSC*2 OPERATES FREQUENTLY/DSC DOES NOT WORK CORRECTLY *2: DSC INDICATOR LIGHT GOES ON AND OUT WHILE DSC OPERATES

B3E040367650W16

12	DSC (*2) operates frequently. /DSC does not work correctly. (*2): DSC indicator light goes on and off while DSC operates.
[TROUBLESHOOTING HINTS] • DSC HU/CM detected a malfunction (input and output device malfunction). • Poor installation of combined sensor and/or steering angle sensor. (If any of the above sensors are poorly installed, DSC may operate intermittently.) • Initialization was not performed for combined sensor, brake fluid pressure sensor when replacing DSC HU/CM, combined sensor. (If initialization is not performed correctly, DSC may not work correctly.)	

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT FOR DTCs IN DSC HU/CM • Have DTCs been stored in memory?	Yes	Perform the applicable DTC inspection. (See DTC Table .)
		No	Go to the next step.
2	VERIFY THAT EACH SENSOR IS INSTALLED • Are the combined sensor and steering angle sensor securely installed?	Yes	Go to the next step.
		No	Install the malfunctioning sensor securely.
*3	VERIFY THAT EACH SENSOR IS INITIALIZED • Did each sensor initialize after replacement of DSC HU/CM, combined sensor?	Yes	Find malfunctioning part according to "INTERMITTENT CONCERN TROUBLESHOOTING."
		No	Perform initialization procedure. (See COMBINED SENSOR INITIALIZATION PROCEDURE .) (See BRAKE FLUID PRESSURE SENSOR INITIALIZATION PROCEDURE .)

GENERAL PROCEDURES

GENERAL PROCEDURES (BRAKE)

B3E041001020W01

Wheel and Tire Installation

1. When installing the wheels and tires, tighten the wheel nuts in a criss-cross pattern to the following tightening torque.

Tightening torque

88.2-117.6 N·m {9.00-11.99 Kgf·m, 65.06-86.73 ft·lbf}

Brake Lines Disconnection

1. If any brake line has been disconnected during the procedures, add brake fluid, bleed the brakes, and inspect for leakage after the procedure has been completed.

Caution

- Brake fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If it is spilled, wipe it off immediately.

Brake Pipe Flare Nut Tightening

1. Tighten the brake pipe flare nut using the **SST** (49 0259 770B) or any commercially available flare nut wrench.

Connector Disconnection

1. Disconnect the negative battery cable before performing any work that requires handling of connectors. (See [BATTERY REMOVAL/INSTALLATION \[Z6\]](#).) (See [BATTERY REMOVAL/INSTALLATION \[LF\]](#).)

ABS/DSC Related Parts

1. Make sure that there are no DTCs in the ABS/DSC memory after working on ABS/DSC related parts. If there are any DTCs in the memory, clear them.

DSC Related Part Sensor Initialization Procedure

Warning

- If the initialization procedure is not completed, the DSC will not operate properly and it might cause an unexpected accident. Therefore, when replacing or removing the following parts, make sure to perform the initialization procedure to ensure proper DSC operation.

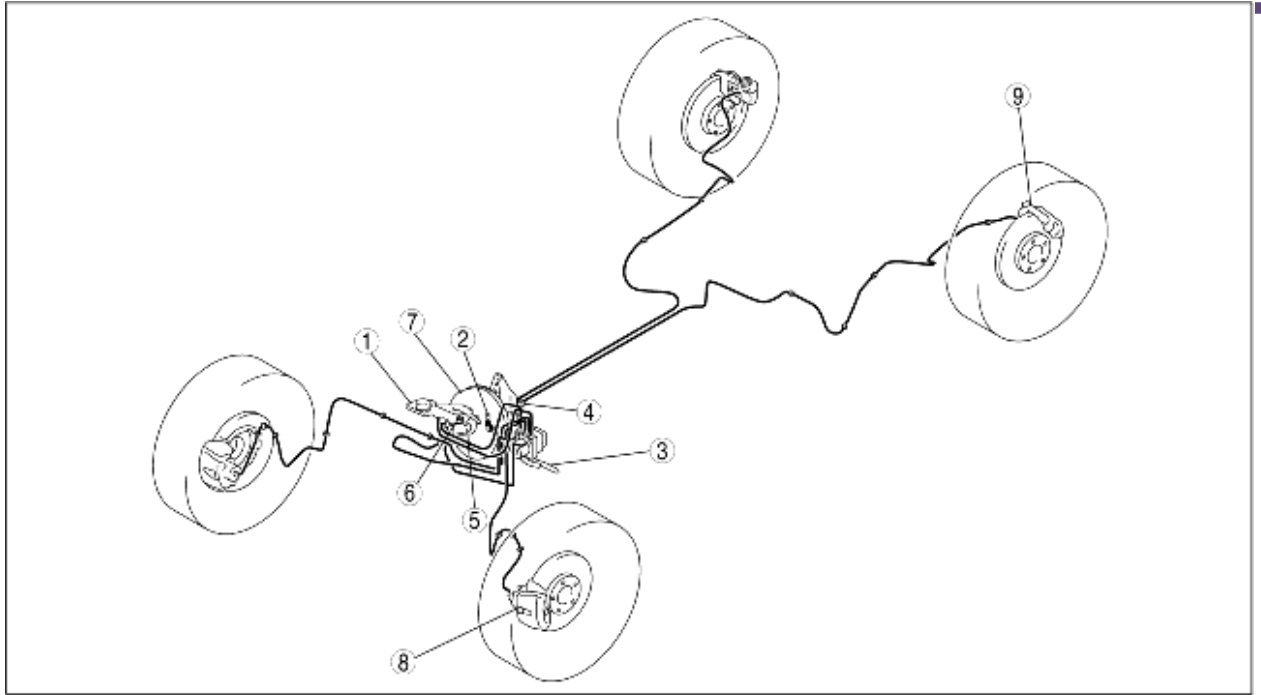
1. When replacing or removing the following parts, perform the initialization procedure. (See [COMBINED SENSOR INITIALIZATION PROCEDURE](#).) (See [BRAKE FLUID PRESSURE SENSOR INITIALIZATION PROCEDURE](#).)

- DSC HU/CM
- Combined sensor

CONVENTIONAL BRAKE SYSTEM

CONVENTIONAL BRAKE SYSTEM LOCATION INDEX

B3E041101020W02



B3E0411W001

1	Brake fluid (See AIR BLEEDING.)
2	Vacuum line (See VACUUM LINE INSPECTION.) (See VACUUM HOSE REMOVAL/INSTALLATION.)
3	Brake pedal (See BRAKE PEDAL INSPECTION.) (See BRAKE PEDAL REMOVAL/INSTALLATION.)
4	Brake switch (See BRAKE SWITCH INSPECTION.)
5	Master cylinder (See MASTER CYLINDER REMOVAL/INSTALLATION.)
6	Brake fluid level sensor (See BRAKE FLUID LEVEL SENSOR INSPECTION.)
7	Power brake unit (See POWER BRAKE UNIT INSPECTION.) (See POWER BRAKE UNIT REMOVAL/INSTALLATION.)
8	Front brake (disc) (See FRONT BRAKE (DISC) INSPECTION.)



	(See FRONT BRAKE (DISC) REMOVAL/INSTALLATION.)
	(See DISC PAD (FRONT) REPLACEMENT.)
	(See CALIPER (FRONT) DISASSEMBLY/ASSEMBLY.)
	Rear brake (disc)
	(See REAR BRAKE (DISC) INSPECTION.)
9	(See REAR BRAKE (DISC) REMOVAL/INSTALLATION.)
	(See DISC PAD (REAR) REPLACEMENT.)
	(See CALIPER (REAR) DISASSEMBLY/ASSEMBLY.)

AIR BLEEDING

B3E041101021W02

Caution

- Brake fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If it is spilled, wipe it off immediately.

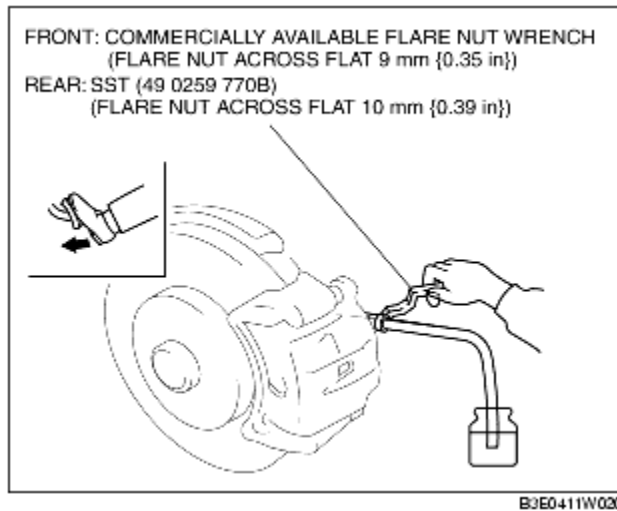
Note

- Keep the fluid level in the reserve tank at 3/4 full or more during the air bleeding.
- Begin air bleeding with the brake caliper that is furthest from the master cylinder.

Recommended fluid

SAE J1703, FMVSS 116 DOT-3 or DOT-4

1. Remove the bleeder cap on the brake caliper, and attach a vinyl tube to the bleeder screw.
2. Place the other end of the vinyl tube in a clear container and fill the container with fluid during air bleeding.
3. Working with two people, one should pump the brake pedal several times and depress and hold the pedal down.
4. While the brake pedal is depressed, the other should loosen the bleeder screw using the **SST** or any commercially available flare nut wrench, drain out any fluid containing air bubbles, and tighten the bleeder screw.



Tightening torque

Front: 7-9 N·m {72-91 kgf·cm, 70-79 in·lbf}

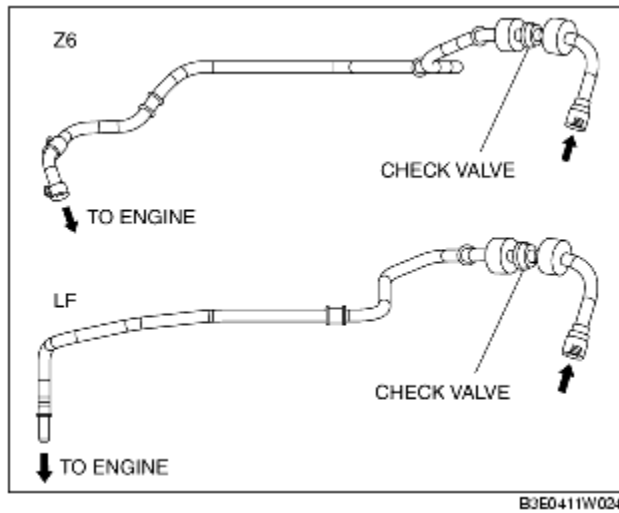
Rear: 12-16 N·m {123-163 kgf·cm, 107-141 in·lbf}

5. Repeat Steps 3 and 4 until no air bubbles are seen.
6. Perform air bleeding as described in the above procedures for all brake calipers.
7. After air bleeding, inspect the following:
 - Brake operation
 - Fluid leakage
 - Fluid level

VACUUM LINE INSPECTION

B3E041143640W02

1. Remove the vacuum hose. (See [VACUUM HOSE REMOVAL/INSTALLATION](#).)
2. Verify that air can be blown from the power brake unit side of the vacuum hose towards the intake manifold side, and that air cannot be blown in the opposite direction.

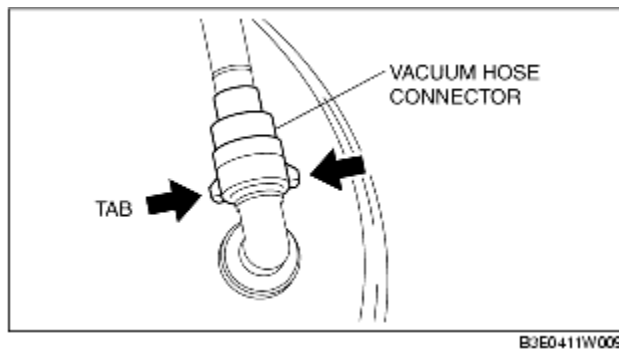


- If there is any malfunction of the inner check valve, replace it together with the vacuum hose as a single unit.

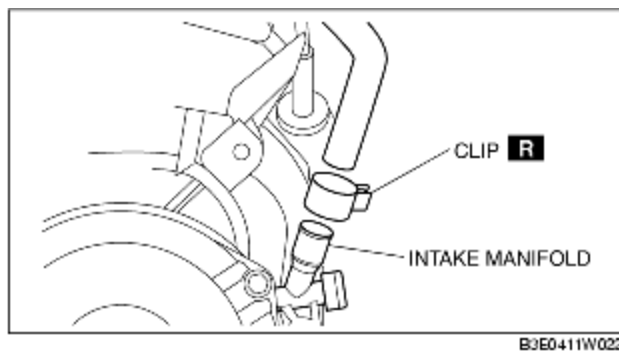
VACUUM HOSE REMOVAL/INSTALLATION

B3E041143640W03

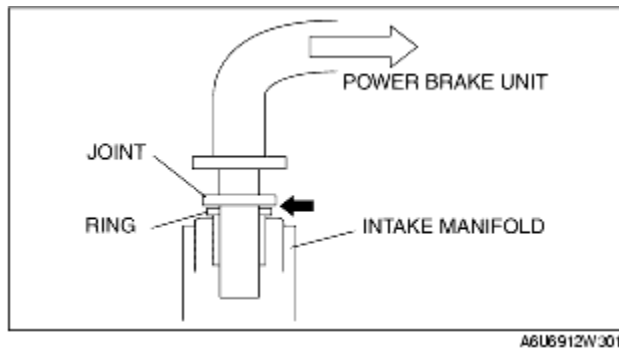
1. Disconnect the vacuum hose connector from the power brake unit while pressing the tabs of the vacuum hose connector.



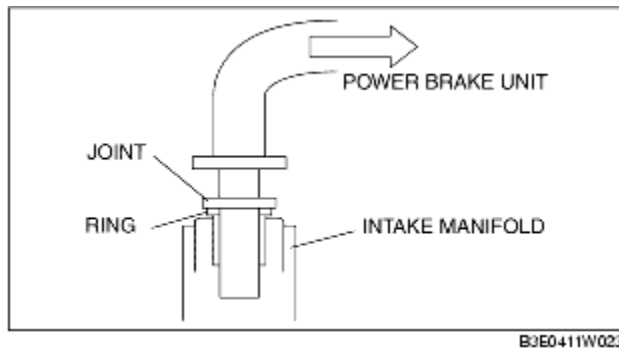
2. Detach the clip using pliers and disconnect the vacuum hose from the intake manifold. (Z6)



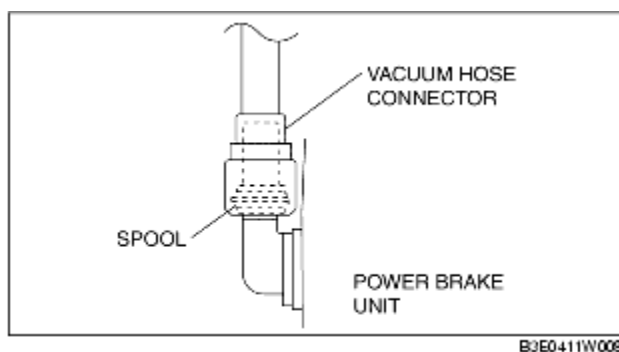
3. Insert a thin flathead screwdriver at the point indicated by the arrow in the figure, push the ring down and disconnect the vacuum hose from the intake manifold. (LF)



4. Remove the vacuum hose.
5. Install in the reverse order of removal.
6. Verify that the vacuum hose is inserted so that the vacuum hose joint contacts the intake manifold ring. (LF)



7. Insert the vacuum hose connector to the power brake unit.
8. Verify that the vacuum hose is firmly installed by pulling it, and push it into the power brake unit again.
9. Verify that the power brake unit spool is in the vacuum hose connector.

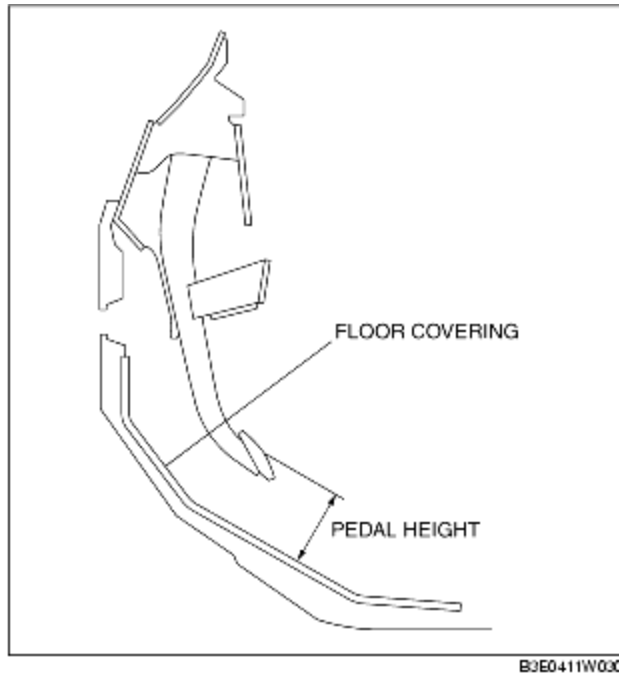


BRAKE PEDAL INSPECTION

B3E041143300W03

Pedal Height Inspection

1. Measure the distance from the center of the upper surface of the pedal pad to the floor covering and verify that it is as specified.



- If not within the specification, replace the brake pedal.

Pedal height (reference value)

136.4 mm {5.37 in}

Pedal Play Inspection

1. Pump the pedal several times to release the vacuum in the power brake unit.
2. Gently depress the pedal by hand and measure the pedal play.

- If not within the specification, inspect the wear of the joint pin. Replace it if there is any malfunction.

Standard pedal play

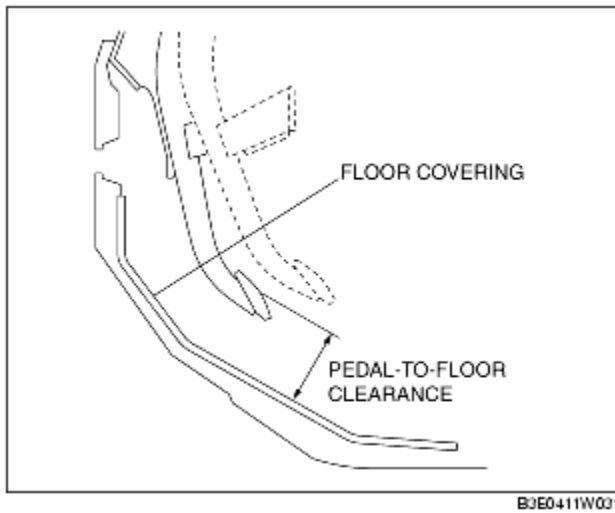
4.0-8.4 mm {0.16-0.33 in}

Note

- If there is no malfunction in the joint pin, there is a possibility that the power brake unit has some malfunction. Verify that there are no malfunctions, and replace it if necessary.

Pedal-to-floor Clearance Inspection

1. Start the engine and depress the brake pedal with a force of **147 N {15.0 kgf, 33.0 lbf}**.
2. Measure the distance from the center of the upper surface of the pedal pad to the floor covering and verify that it is as specified.



- If it is less than the specification, inspect for air in the brake line.

Standard pedal-to-floor clearance

89.8 mm {3.54 in} or more

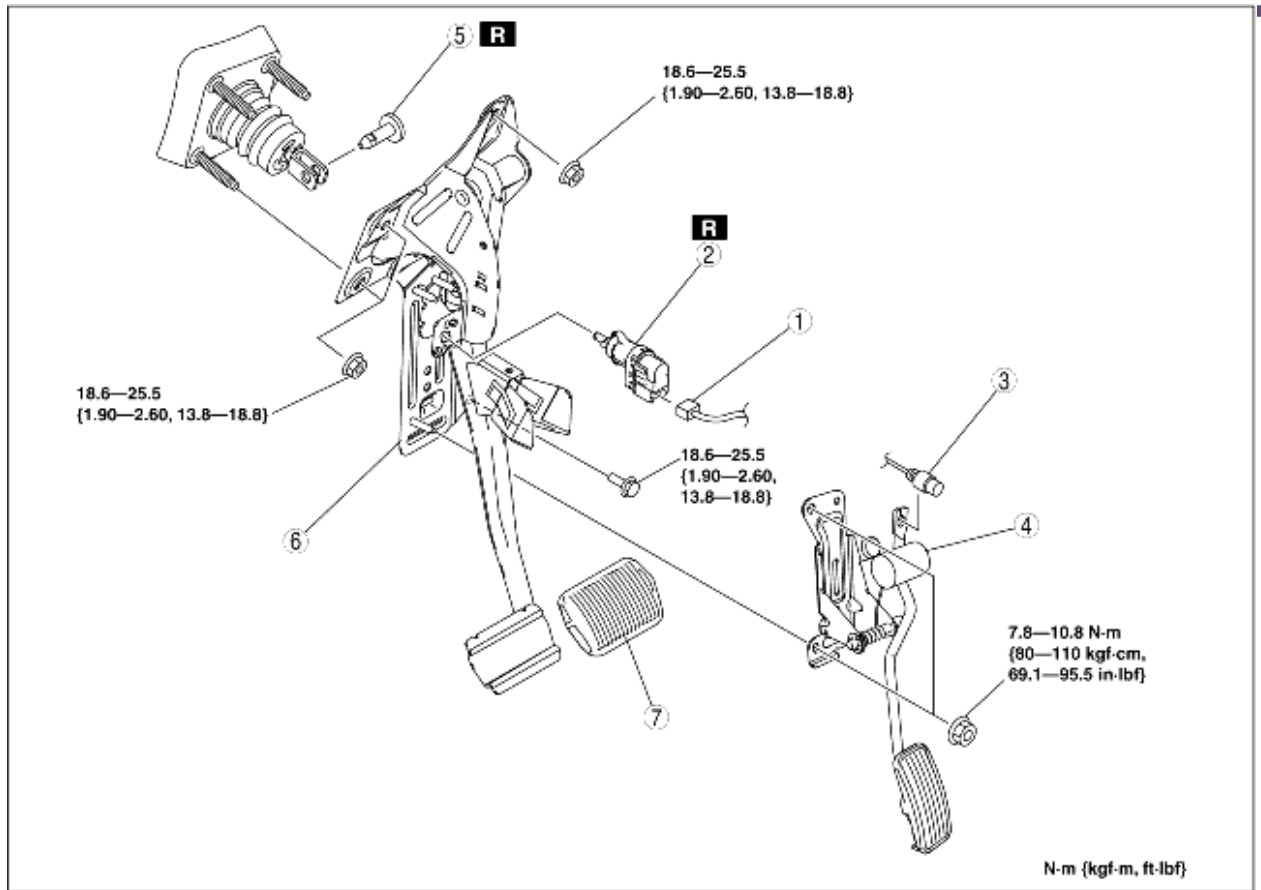
BRAKE PEDAL REMOVAL/INSTALLATION

B3E041143300W04

Caution

- The clearance between the brake switch and the brake pedal is automatically adjusted to the correct amount when the brake switch is inserted into the installation hole on the brake pedal and rotated to fix in place. If the brake switch is not properly installed, the clearance may be incorrect, causing a brake light malfunction. Therefore, always verify that the brake pedal is properly installed and fully released before installing the brake switch to the pedal.
- Once the brake switch clearance has automatically been adjusted, it cannot be adjusted again. Therefore, replace the switch with a new one when replacing the power brake unit or the pedal, or performing any procedure that changes the pedal stroke.

1. Remove the battery and battery tray. (See [BATTERY REMOVAL/INSTALLATION \[Z6\]](#).)
(See [BATTERY REMOVAL/INSTALLATION \[LF\]](#).)
2. Disconnect the brake pipe (master cylinder side). (See [MASTER CYLINDER REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.



B3E0411W006

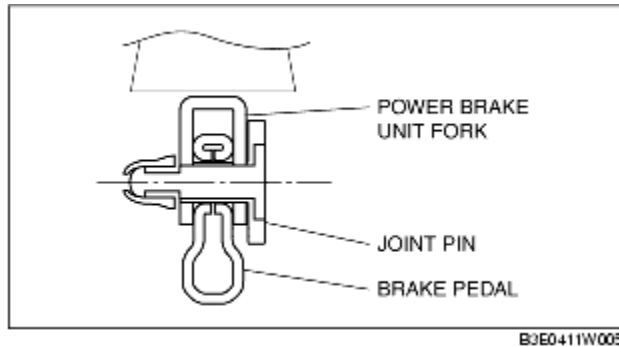
1	Brake switch connector
2	Brake switch (See Brake Switch Installation Note.)
3	Accelerator cable
4	Accelerator pedal
5	Joint pin (See Joint Pin Installation Note.)
6	Brake pedal (See Brake Pedal Removal Note.)
7	Pedal pad

Brake Pedal Removal Note

1. Remove the brake pedal installation bolts and nuts.
2. Move the power brake unit to the vehicle front where the power brake unit fork does not interfere with the brake pedal arm.
3. Remove the brake pedal.

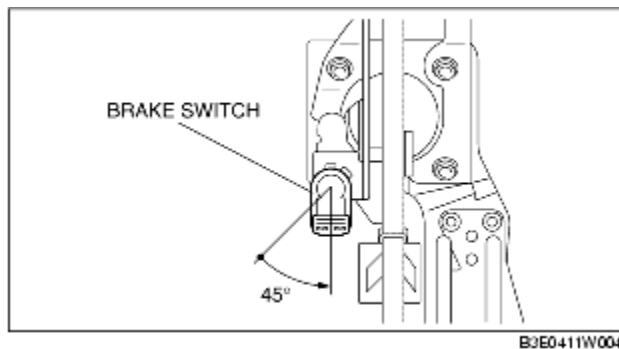
Joint Pin Installation Note

1. Install the new joint pin by aligning the pin holes of the brake pedal and power brake unit fork.
2. Verify that the joint pin touches the power brake unit fork completely.



Brake Switch Installation Note

1. Inspect the brake pedal. (See [BRAKE PEDAL INSPECTION](#).)
2. With the brake pedal fully released, insert a new brake switch into the installation hole on the brake pedal.
3. Secure the brake switch by turning it counterclockwise 45° .



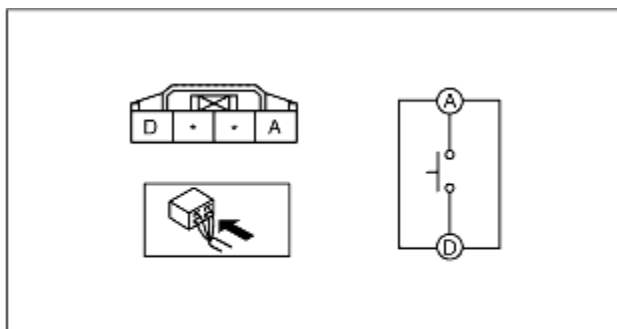
BRAKE SWITCH INSPECTION

B3E041166490W02

Caution

- Inspect the brake switch with it installed to the brake pedal, otherwise the brake switch may not operate normally. If the brake switch is removed from the brake pedal, replace the brake switch with a new one.

1. Remove the lower panel.
2. Remove the column cover.
3. Verify that the continuity is as indicated in the table.



B3E0411W037

- If not as indicated in the table, replace the brake switch.

○—○ : Continuity

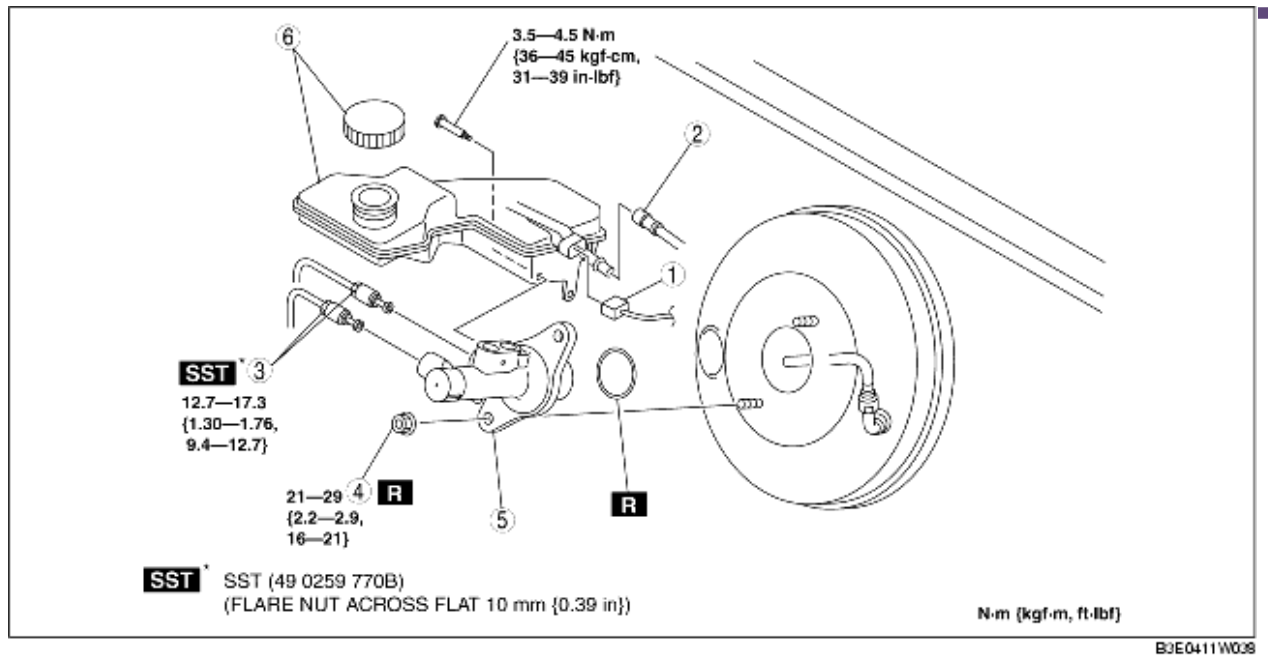
Condition	Terminal			
	A	B	C	D
When the brake pedal is depressed	○			○
When the brake pedal is not depressed				

B3E0411W032

MASTER CYLINDER REMOVAL/INSTALLATION

B3E041143400W02

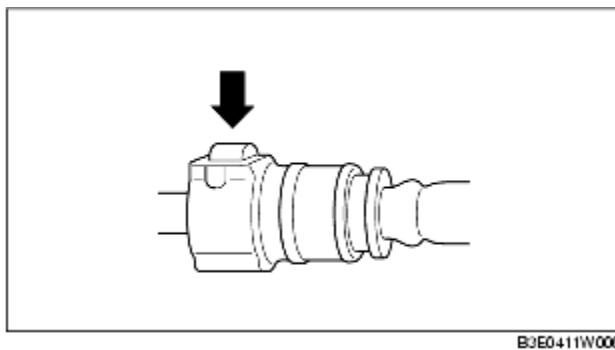
1. Remove the battery and battery tray. (See [BATTERY REMOVAL/INSTALLATION \[Z6\]](#).)
(See [BATTERY REMOVAL/INSTALLATION \[LF\]](#).)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.



1	Brake fluid level sensor connector
	Reserve hose (MTX)
2	(See Reserve Hose Removal Note.) (See Reserve Hose Installation Note.)
3	Brake pipe
4	Nut
5	Master cylinder
6	Reserve tank, cap

Reserve Hose Removal Note

1. Remove the reserve hose from the reserve tank while pressing the point indicated by the arrow in the figure.



Reserve Hose Installation Note

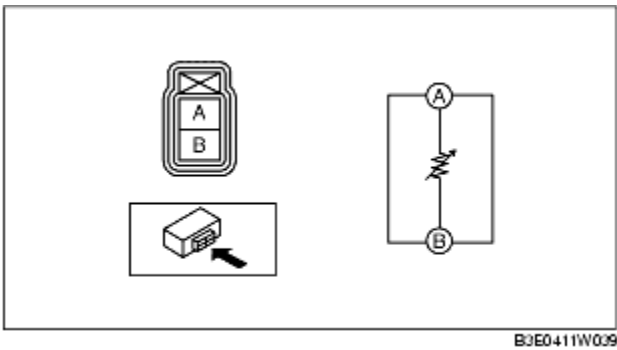
1. Insert the reserve hose to the reserve tank until a click is heard.

2. Verify that the reserve hose is firmly installed by pulling it, and push it into the reserve tank again.

BRAKE FLUID LEVEL SENSOR INSPECTION

B3E041143540W02

1. Disconnect the brake fluid level sensor connector from the master cylinder.
2. Inspect for continuity according to fluid level between the brake fluid level sensor terminals.



- If not as indicated in the table, replace the reserve tank.

Condition	Terminal	
	A	B
Above MIN	○ — ○: Continuity	
Below MIN		

CHU0411W017

POWER BRAKE UNIT INSPECTION

B3E041143800W03

Note

- The following inspection methods are simple inspection methods to judge the function of the power brake unit.
- If there is any malfunction in the power brake unit, replace the power brake unit as a single unit.

Without Using SST

Operation inspection

1. With the engine stopped, pump the pedal a few times.
2. With the pedal depressed, start the engine.
3. If the pedal moves down slightly immediately after starting the engine, the unit is normal.

Vacuum function inspection

1. Start the engine.
2. Stop the engine after driving the vehicle for **1-2 min.**
3. Depress the pedal with normal force.
4. If the first pedal stroke is long and becomes shorter with subsequent strokes, the unit is normal.

- If a problem is found, inspect for damage to or improper installation of the check valve and vacuum hose. After repairing, inspect again.

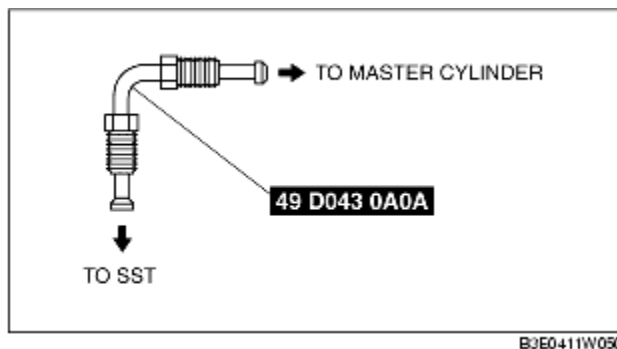
Vacuum loss function inspection

1. Start the engine.
2. Depress the pedal with normal force.
3. With the pedal depressed, stop the engine.
4. Hold the pedal depressed for **approx. 30 s.**
5. If the pedal height does not change during this time, the unit is normal.

Using SST

Pre-inspection preparation

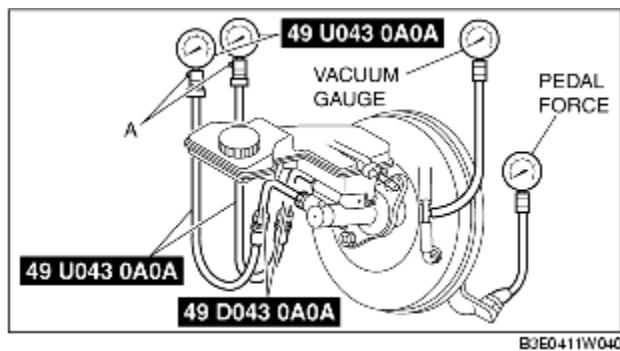
1. Install the **SST** (49 D043 0A0A) to the master cylinder in the orientation shown in the figure.



Note

- When installing the **SST** (49 D043 0A0A) to the master cylinder, use a commercially available flare nut wrench.
- Flare nut across flat: **12 mm {0.47 in}**

2. Connect the **SSTs**, a vacuum gauge, and a pedal force gauge to the master cylinder, and bleed the air from the **SSTs** and the brake line. (Bleed the air from the **SSTs** using air bleed valve A.)



Vacuum loss inspection

1. Start the engine.
2. Depress the brake pedal with a force of **200 N {20.4 kgf, 44.9 lbf}**.
3. Stop the engine when the vacuum gauge reading reaches **68 kPa {510 mmHg, 20.1 inHg}** with the pedal depressed.
4. With the engine off, observe the vacuum gauge for **15 s**.
5. If the gauge has dropped **3.3 kPa {25 mmHg, 1.0 inHg}** or less, the unit is normal.

Lack of hydraulic pressure inspection

1. If the pedal force and fluid pressure correlation is within the specification with the engine stopped and a vacuum amount of **0 kPa {0 mmHg, 0 inHg}**, the system is normal.

Standard fluid pressure

Pedal force (N {kgf, lbf})	Fluid pressure (kPa {kgf/cm ² , psi})
200 {20.4, 44.9}	500 {5.10, 72.6} or more

Hydraulic pressure inspection

1. Start the engine. Depress the brake pedal when the vacuum reaches **66.7 kPa {500 mmHg, 19.7 inHg}**.
2. At this time, apply the indicated pedal force and if the fluid pressure is within the specification, the unit is normal.

Standard fluid pressure

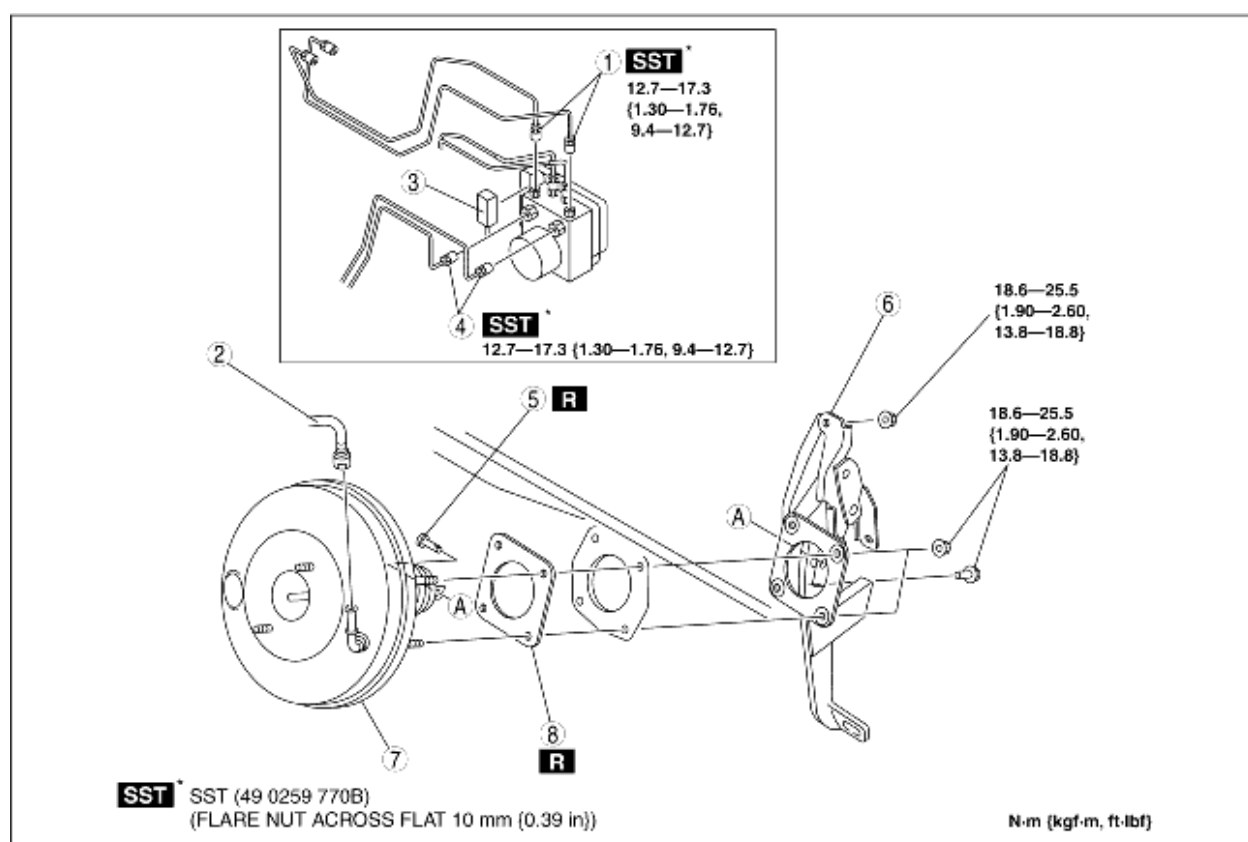
Pedal force (N {kgf, lbf})	Fluid pressure (kPa {kgf/cm ² , psi})
200 {20.4, 44.9}	6,500 {66.29, 942.8} or more

POWER BRAKE UNIT REMOVAL/INSTALLATION

B3E041143800W04

101

1. Remove the battery and battery tray. (See [BATTERY REMOVAL/INSTALLATION \[Z6\]](#).)
(See [BATTERY REMOVAL/INSTALLATION \[LF\]](#).)
2. Remove the master cylinder. (See [MASTER CYLINDER REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.
5. After installation, inspect the brake pedal. (See [BRAKE PEDAL INSPECTION](#).)



B3E0411W041

1	Brake pipe
2	Vacuum hose (See VACUUM HOSE REMOVAL/INSTALLATION .)
3	Connector (See Connector Removal Note .)
4	Brake pipe
5	Joint pin

	(See BRAKE PEDAL REMOVAL/INSTALLATION.)
6	Brake pedal component (See Brake Pedal Component Removal Note.)
7	Power brake unit
8	Gasket

Brake Pedal Component Removal Note

1. Remove the brake pedal installation bolt and nuts.
2. Move the power brake unit toward the vehicle rear.
3. Remove the brake pedal component.

FRONT BRAKE (DISC) INSPECTION

B3E041133980W03

Brake Judder Repair Hints

Description

1. Brake judder concern has the following 3 characteristics:

Steering wheel vibration

1. The steering wheel vibrates in the rotation direction. This characteristic is most noticeable when applying brakes at a vehicle speed of **100-140 km/h {62.1-86.8 mph}**.

Floor vibration

1. When applying the brakes, the vehicle body shakes back and forth. The seriousness of the shaking is not influenced by vehicle speed.

Brake pedal vibration

1. When applying the brakes, a pulsating force tries to push the brake pad back. The pulsation is transmitted to the brake pedal.
2. The following are the main possible causes of brake judder:

Due to an excessive runout (side-to-side wobble) of the disc plate, the thickness of the disc plate is uneven.

1. If the runout is **more than 0.05 mm {0.002 in}** at the position **10 mm {0.39 in}** from the disc plate edge, uneven wear occurs on the disc plate because the pad contacts the plate unevenly.
2. If the runout is **less than 0.05 mm {0.002 in}**, uneven wear does not occur.

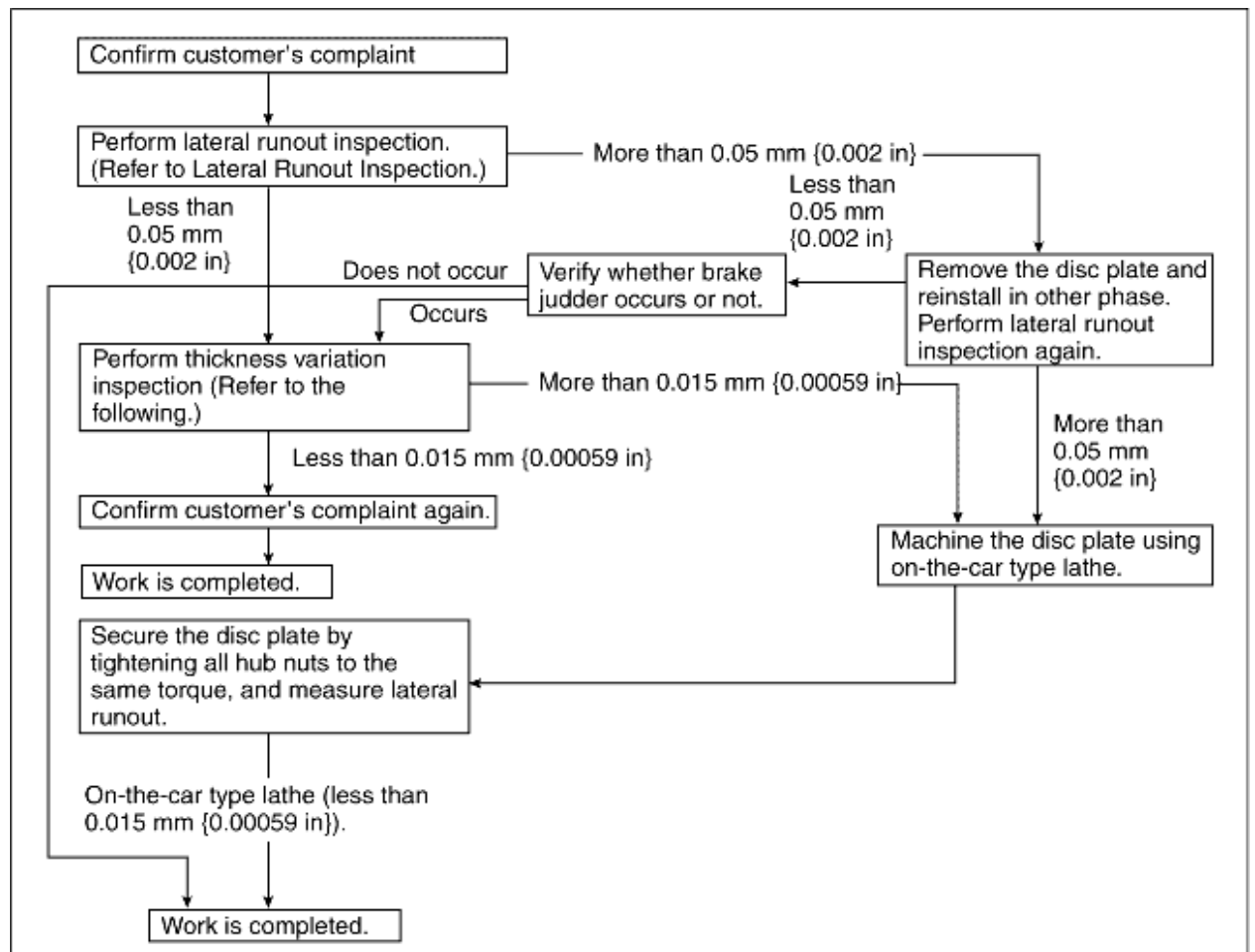
The disc plate is deformed by heat.

1. Repeated panic braking may raise the temperature in some portions of the disc plate by **approximately 1,000 °C {1,832 °F}**. This results in a deformed disc plate.

Due to corrosion, the thickness and friction coefficient of the disc plate change.

1. If the vehicle is parked in damp conditions for a long time, corrosion occurs on the friction surface of the disc plate.
2. The thickness of corrosion is uneven and sometimes appears like a wave pattern, which changes the friction coefficient and causes a reaction force.

Inspection and repair procedure



B3E0411W021

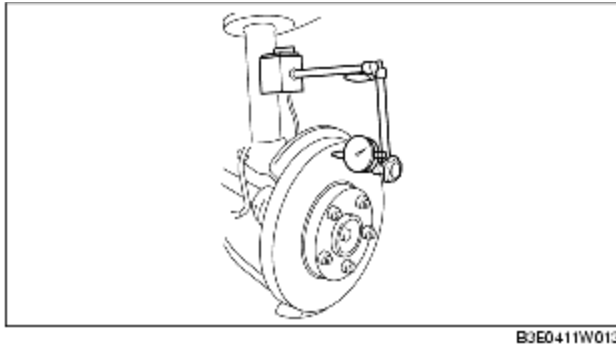
Lateral runout inspection

1. To secure the disc plate and the hub, insert the washer (thickness **10 mm {0.39 in}**, inner diameter **more than 12 mm {0.47 in}**) between each hub bolt and the hub nut, then tighten all the hub nuts.

Note

- The component parts of the **SST** (49 B017 001 or 49 G019 003) can be used as a suitable washer.

2. After tightening all the hub nuts to the same torque, put the dial gauge on the friction surface of the disc plate **10 mm {0.12-0.28 in}** from the disc plate edge.



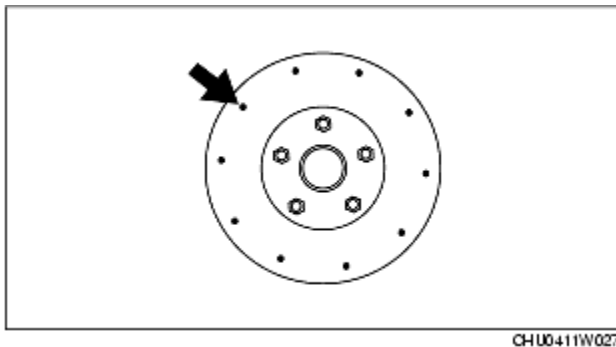
3. Rotate the disc plate one time and measure the runout.

Runout limit

0.05 mm {0.002 in}

Thickness variation inspection

1. Clean the disc plate-to-pad friction surface using a brake cleaner.
2. Measure the points indicated in the illustration using a caliper (micrometer).



3. Subtract the minimum value from the maximum, and if the result is not within the specification, machine the disc plate using a lathe.

Thickness variation limit

0.015 mm {0.00059 in}

Warning

- Do not exceed minimum disc plate thickness.

Disc Plate Thickness Inspection

Caution

- Excessive runout may result if the disc plate is removed from the vehicle then machined. Machine the disc plate while installed on the vehicle.

1. Measure the thickness of the disc plate.

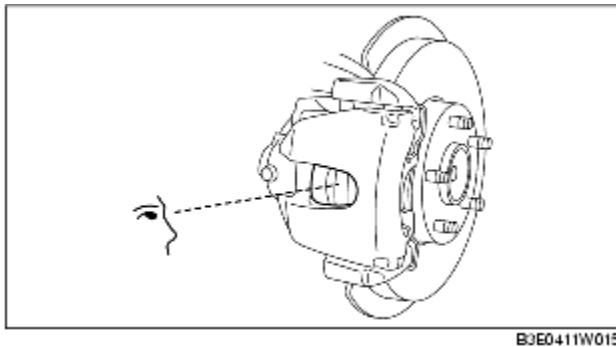
- If the thickness is not within the specification, replace the disc plate.

Minimum**23 mm {0.91 in}****Minimum thickness after machining using a brake lathe on-vehicle****23.8 mm {0.94 in}****Disc Pad Thickness Inspection**

1. Jack up the front of the vehicle and support it with safety stands.
2. Remove the wheels and tires.
3. Verify the remaining thickness of the pads.

Minimum thickness**2.0 mm {0.079 in} min.**

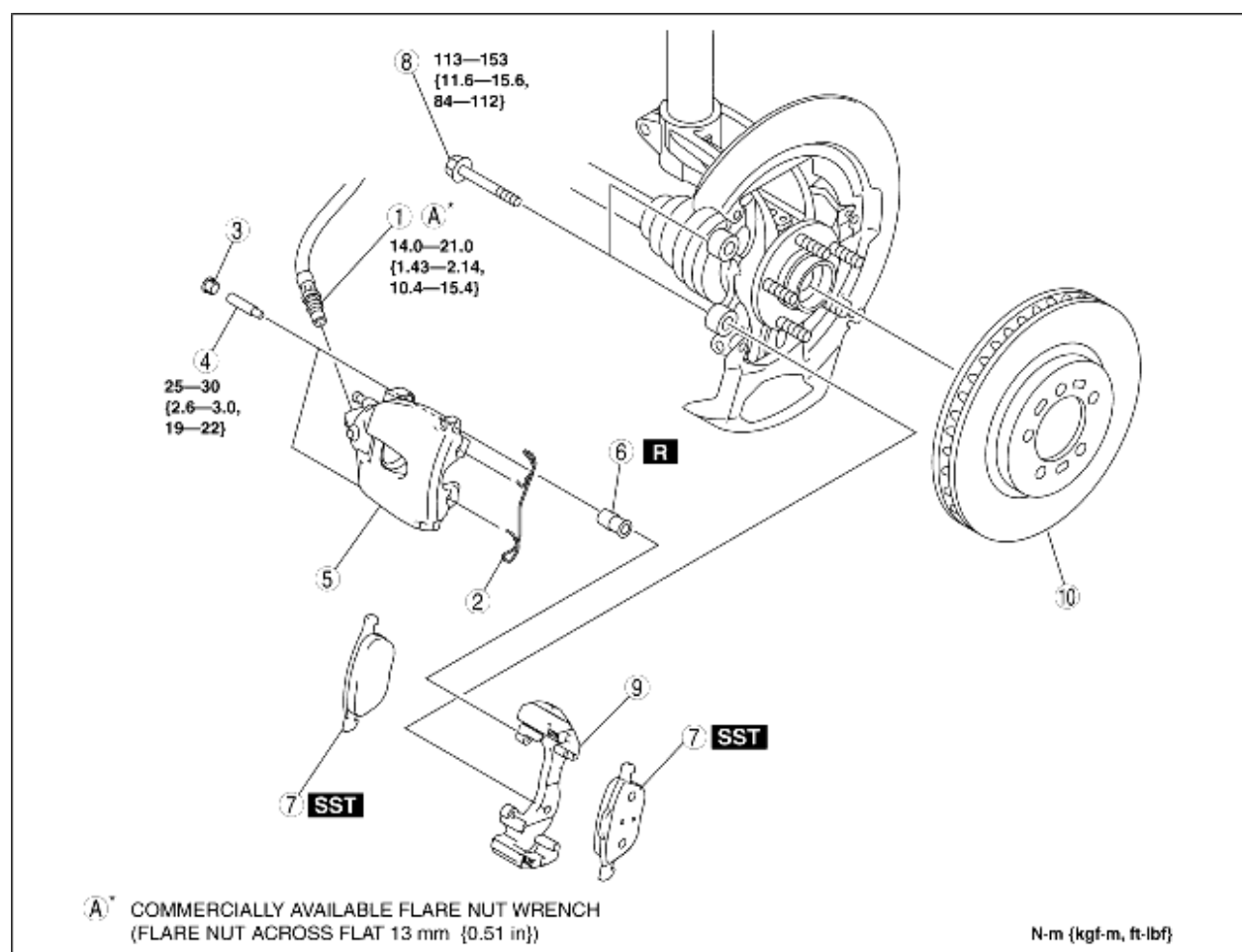
4. Replace the pads as a set (right and left wheels) if either one is at or less than the minimum thickness.



FRONT BRAKE (DISC) REMOVAL/INSTALLATION

B3E041133980W04

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. After installation, pump the brake pedal a few times and verify that the brakes do not drag.

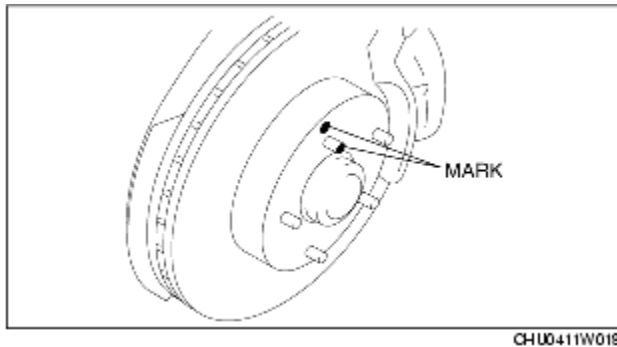


B3E0411W042

1	Brake hose (See Brake Hose Installation Note.)
2	Retaining clip
3	Cap
4	Bolt
5	Caliper
6	Boot
7	Disc pad (See Disc Pad Installation Note.)
8	Bolt
9	Mounting support
10	Disc plate (See Disc Plate Removal Note.) (See Disc Plate Installation Note.)

Disc Plate Removal Note

1. Place an alignment mark on the wheel hub and disc plate.



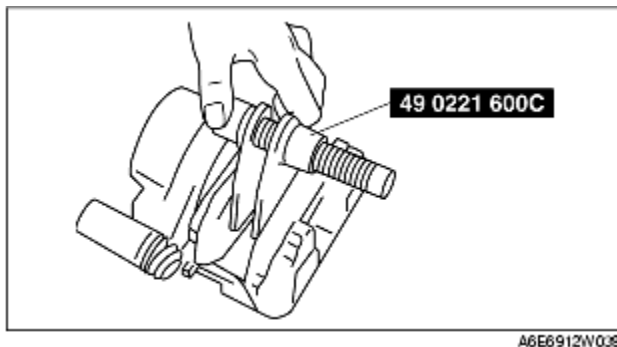
2. Remove the disc plate.

Disc Plate Installation Note

1. Remove any rust or dirt on the contact face of the disc plate and wheel hub.
2. Align the marks made before removal and install the disc plate to the wheel hub.

Disc Pad Installation Note

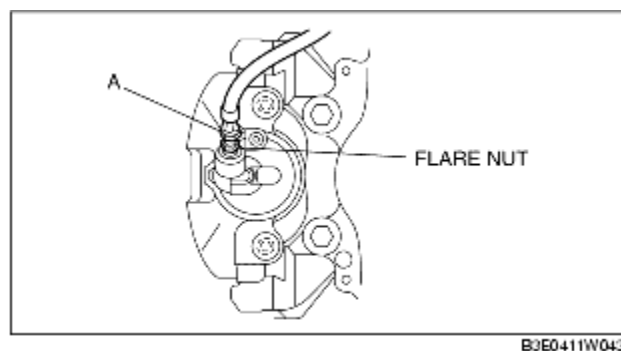
1. Clean the exposed area of the piston.
2. Push the piston in using the **SST**.



3. Install the disc pad (outer side) to the mounting support.
4. Install the disc pad (inner side) to the caliper.

Brake Hose Installation Note

1. Install the brake hose to the caliper.
2. Tighten the flare nut while holding the brake hose at point A with a spanner or equivalent.

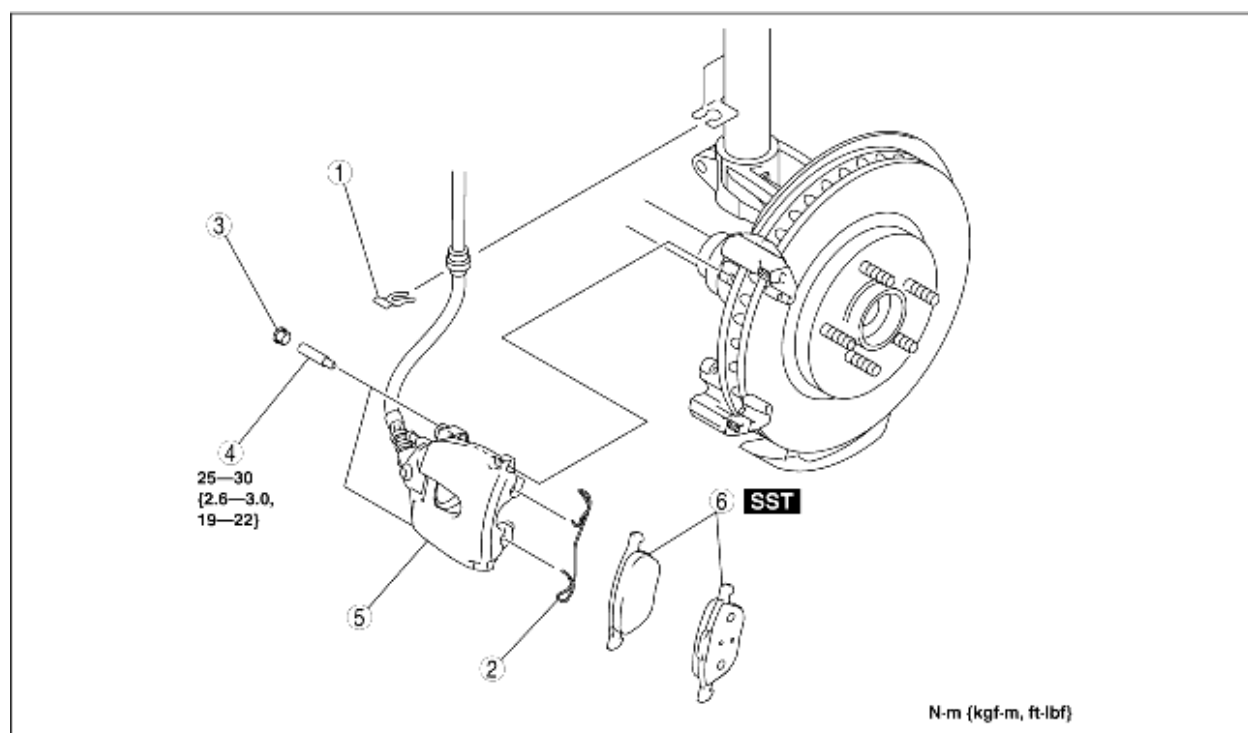


3. Verify that the brake hose is not twisted.

DISC PAD (FRONT) REPLACEMENT

B3E041133630W02

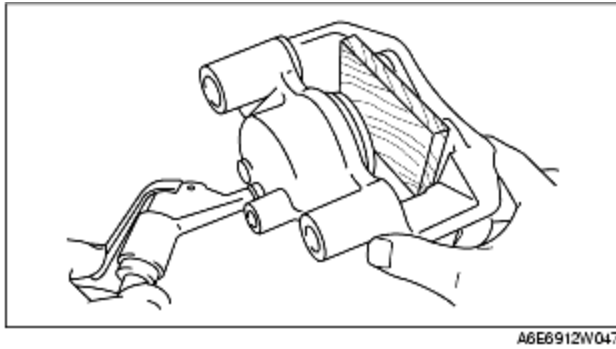
1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. After installation, pump the brake pedal a few times and verify that the brakes do not drag.



1	Clip
2	Retaining clip
3	Cap
4	Bolt

Piston Disassembly Note

1. Insert a piece of wood in the caliper as shown in the figure and blow compressed air through the bleeder screw installation hole to remove the piston from the caliper body.

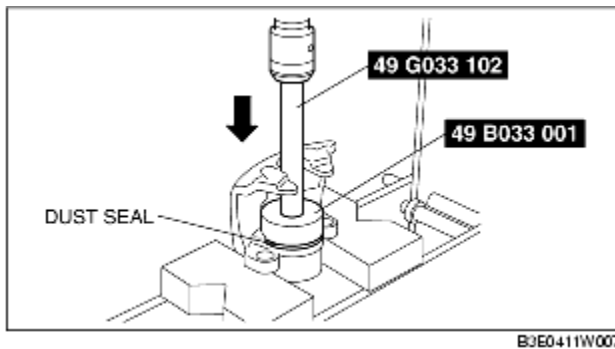


Caution

- The piston could be damaged if blown out with great force. Blow the compressed air slowly to prevent the piston from suddenly popping out.

Dust Seal Assembly Note

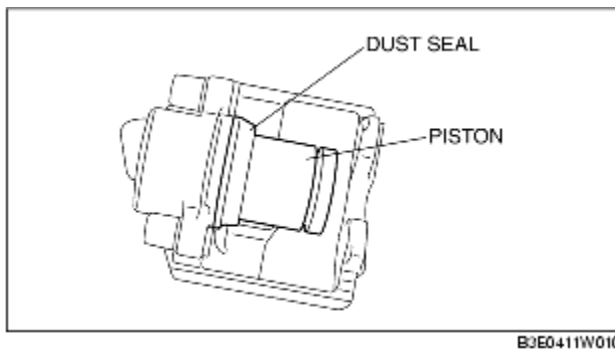
1. Assemble a new dust seal to the caliper using the **SSTs** and a press with a press-in force of **834 N {85 kgf, 187 in·lbf}**.



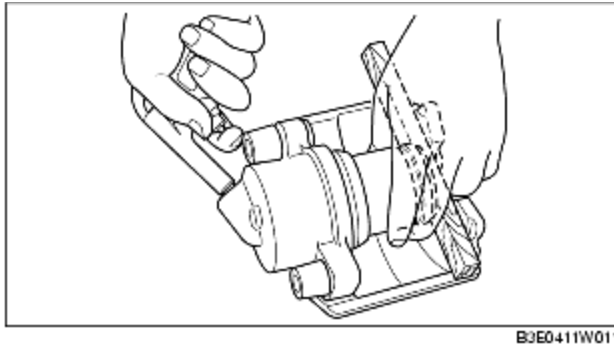
2. Verify that there is no gap between the dust seal and caliper body.

Piston Assembly Note

1. Press the piston into the dust seal opening as shown in the figure.



2. Insert a piece of wood between the caliper body and the piston, and while supporting the piston by hand, blow compressed air through the brake hose installation hole.



B3E0411W011

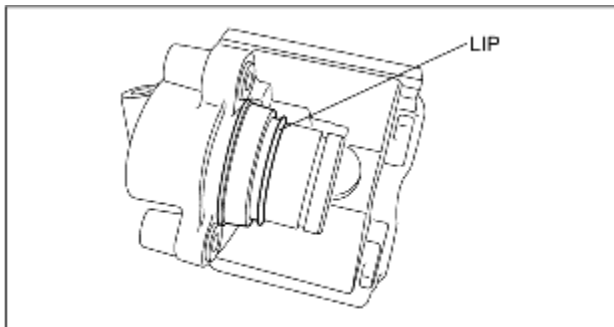
Warning

- When blowing compressed air into the caliper body, the piston may pop out and cause injury if not supported at the correct point. Securely support the piston friction surface by hand when blowing compressed air.

Note

- By blowing compressed air, the dust seal expands due to air pressure and covers the piston end.

3. Verify that the dust seal lip covers the piston end as shown in the figure.



B3E0411W012

4. Press the piston into the caliper body completely.

REAR BRAKE (DISC) INSPECTION

B3E041126980W03

Brake Judder Repair Hints

Description

1. Brake judder concern has the following 3 characteristics:

Steering wheel vibration

1. The steering wheel vibrates in the rotation direction. This characteristic is most noticeable when applying brakes at a vehicle speed of **100-140 km/h {62.1-86.8 mph}**.

Floor vibration

1. When applying the brakes, the vehicle body shakes back and forth. The seriousness of the shaking is not influenced by vehicle speed.

Brake pedal vibration

1. When applying the brakes, a pulsating force tries to push the brake pad back. The pulsation is transmitted to the brake pedal.

2. The following are the main possible causes of brake judder:

Due to an excessive runout (side-to-side wobble) of the disc plate, the thickness of the disc plate is uneven.

1. If the runout is **more than 0.05 mm {0.002 in}** at the position **10 mm {0.39 in}** from the disc plate edge, uneven wear occurs on the disc plate because the pad contacts the plate unevenly.

2. If the runout is **less than 0.05 mm {0.002 in}**, uneven wear does not occur.

The disc plate is deformed by heat.

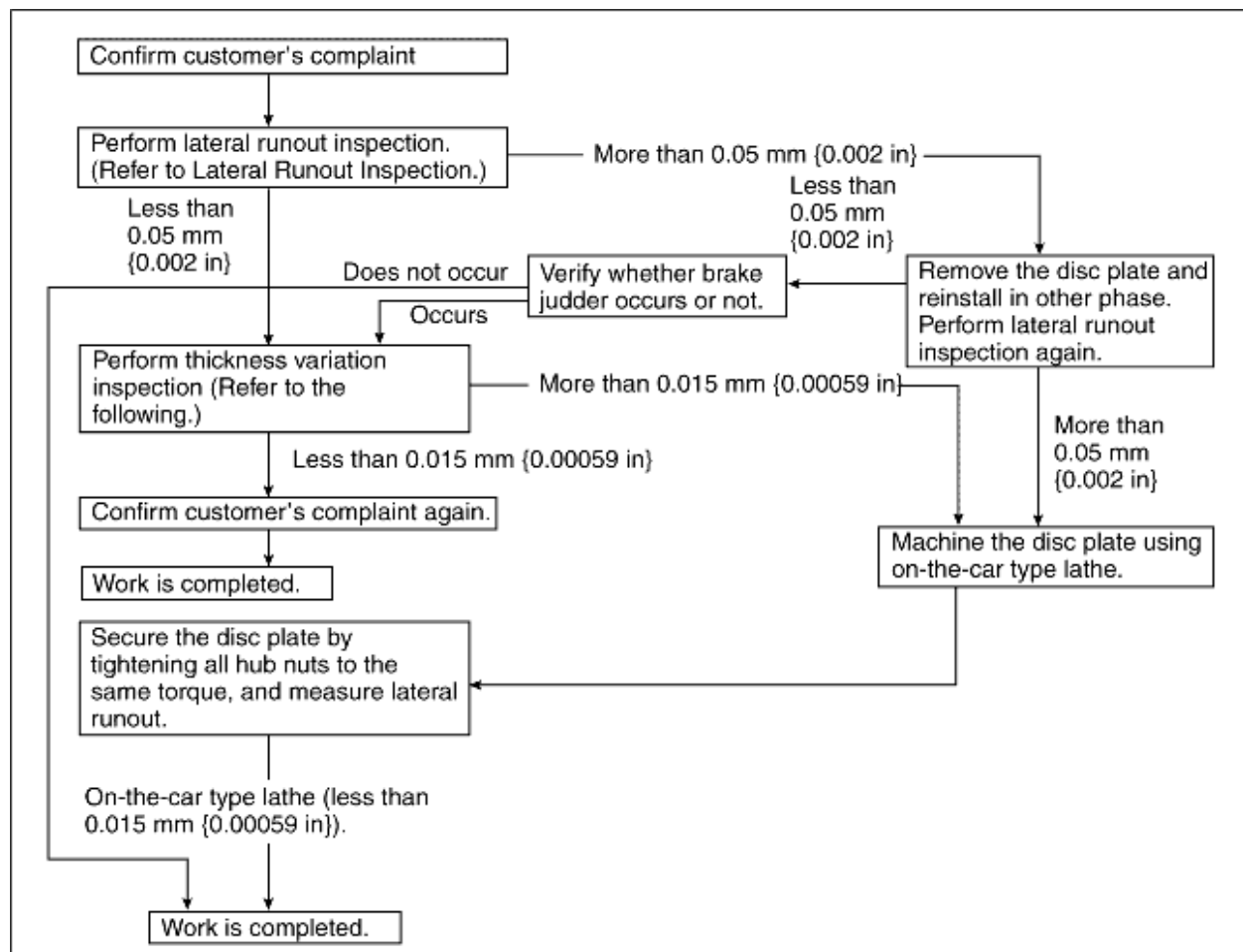
1. Repeated panic braking may raise the temperature in some portions of the disc plate by **approximately 1,000 °C {1,832 °F}**. This results in a deformed disc plate.

Due to corrosion, the thickness and friction coefficient of the disc plate change.

1. If the vehicle is parked in damp conditions for a long time, corrosion occurs on the friction surface of the disc plate.

2. The thickness of corrosion is uneven and sometimes appears like a wave pattern, which changes the friction coefficient and causes a reaction force.

Inspection and repair procedure



B3E0411W021

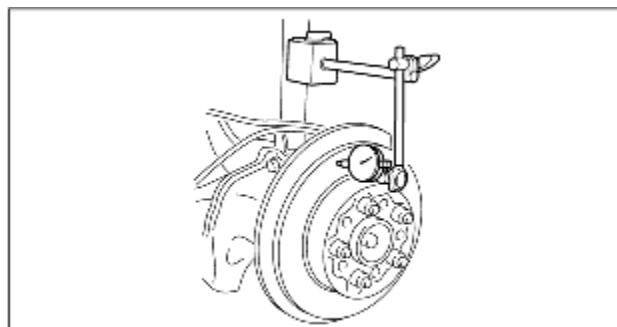
Lateral runout inspection

1. To secure the disc plate and the hub, insert the washer (thickness **10 mm {0.39 in}**, inner diameter **more than 12 mm {0.47 in}**) between each hub bolt and the hub nut, then tighten all the hub nuts.

Note

- The component parts of the **SST** (49 B017 001 or 49 G019 003) can be used as a suitable washer.

2. After tightening all the hub nuts to the same torque, put the dial gauge on the friction surface of the disc plate **10 mm {0.12-0.28 in}** from the disc plate edge.



B3E0411W014

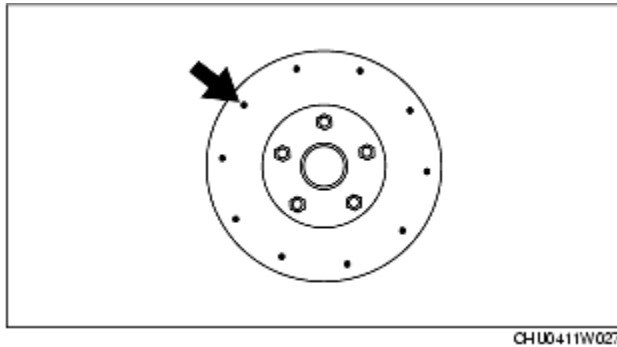
3. Rotate the disc plate one time and measure the runout.

Runout limit

0.05 mm {0.002 in}

Thickness variation inspection

1. Clean the disc plate-to-pad friction surface using a brake cleaner.
2. Measure the points indicated in the illustration using a caliper (micrometer).



3. Subtract the minimum value from the maximum, and if the result is not within the specification, machine the disc plate using a lathe.

Thickness variation limit

0.015 mm {0.00059 in}

Warning

- Do not exceed minimum disc plate thickness.

Disc Plate Thickness Inspection

Caution

- Excessive runout may result if the disc plate is removed from the vehicle then machined. Machine the disc plate while installed on the vehicle.

1. Measure the thickness of the disc plate.

- If the thickness is not within the specification, replace the disc plate.

Minimum

9 mm {0.35 in}

Minimum thickness after machining using a brake lathe on-vehicle

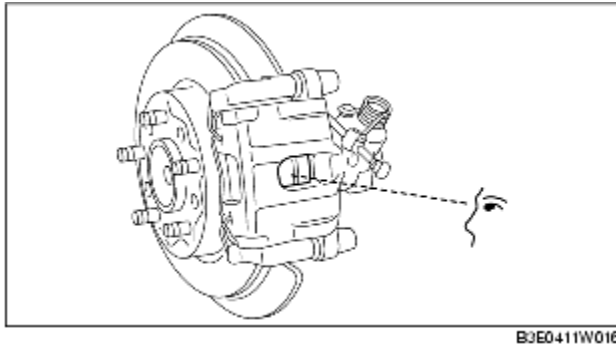
9.8 mm {0.39 in}

Disc Pad Thickness Inspection

1. Jack up the front of the vehicle and support it with safety stands.
2. Remove the wheels and tires.
3. Verify the remaining thickness of the pads.

Minimum thickness**2.0 mm {0.079 in} min.**

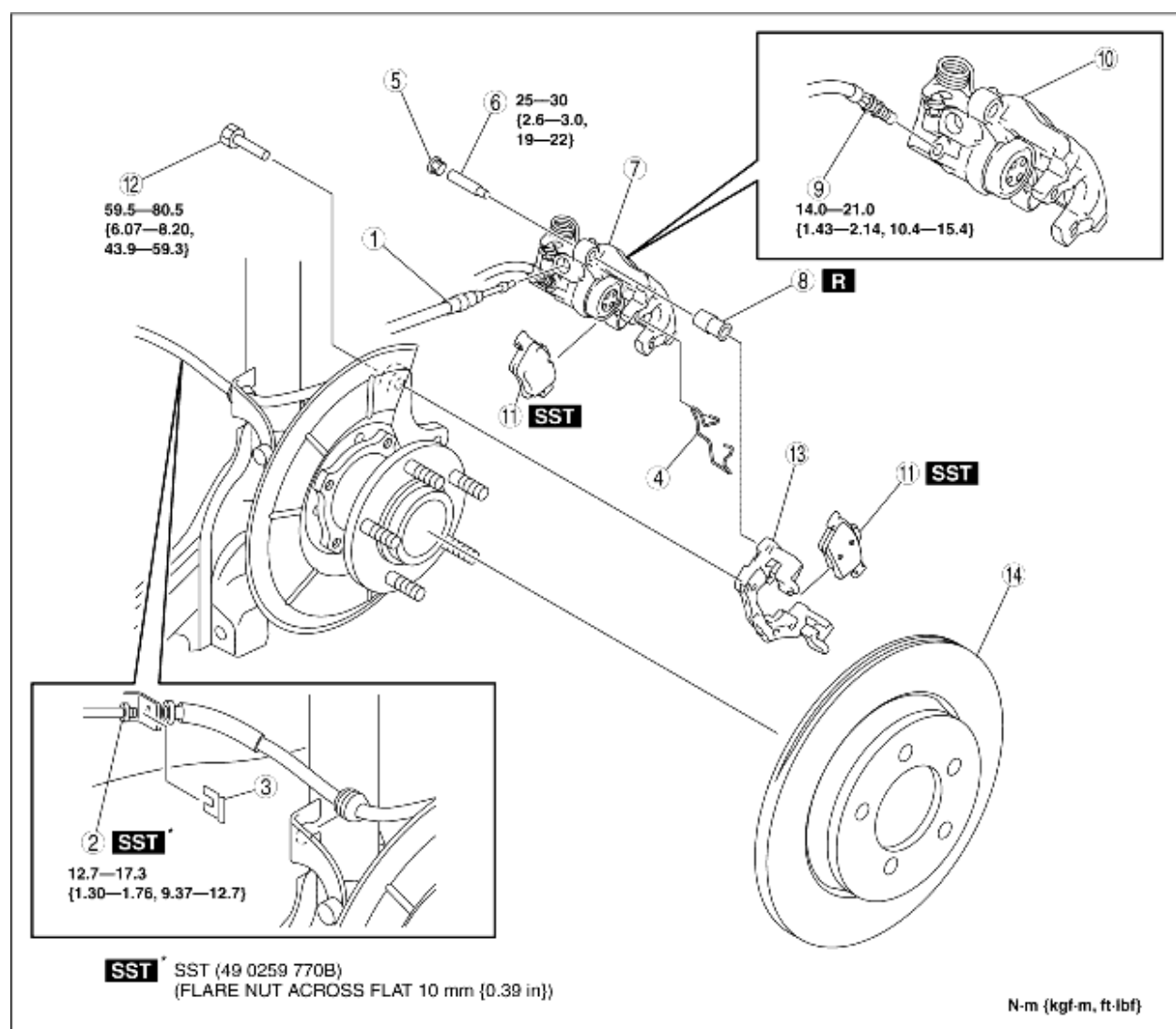
4. Replace the pads as a set (right and left wheels) if either one is at or less than the minimum thickness.



REAR BRAKE (DISC) REMOVAL/INSTALLATION

B3E041126980W04

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. After installation, pump the brake pedal a few times and inspect the following:
 - Parking brake lever stroke
 - Brake drag



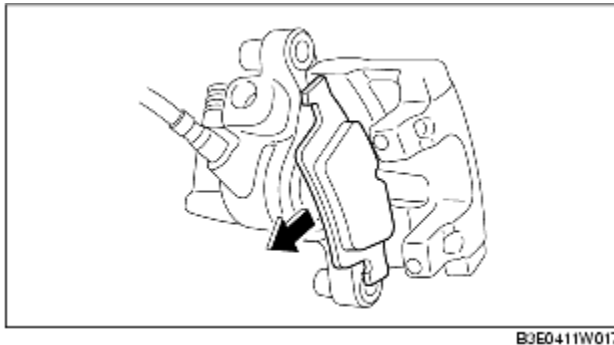
B3E0411W046

1	Parking brake cable
2	Brake pipe
3	Clip
4	Retaining clip
5	Cap
6	Bolt
7	Caliper, brake hose
8	Boot
9	Brake hose
10	Caliper
11	Disc pad

	(See Disc Pad Removal Note.)
	(See Disc Pad Installation Note.)
12	Bolt
13	Mounting support
	Disc plate
14	(See Disc Plate Removal Note.)
	(See Disc Plate Installation Note.)

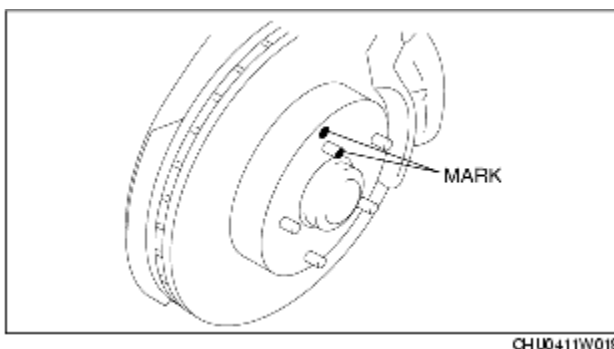
Disc Pad Removal Note

1. Remove the disc pad (outer side) from the mounting support.
2. Pull the disc pad (inner side) in the direction of the arrow to remove it from the caliper as shown in the figure.



Disc Plate Removal Note

1. Place an alignment mark on the wheel hub and disc plate.



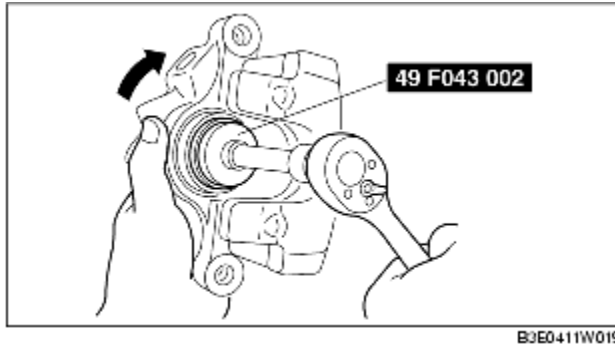
2. Remove the disc plate.

Disc Plate Installation Note

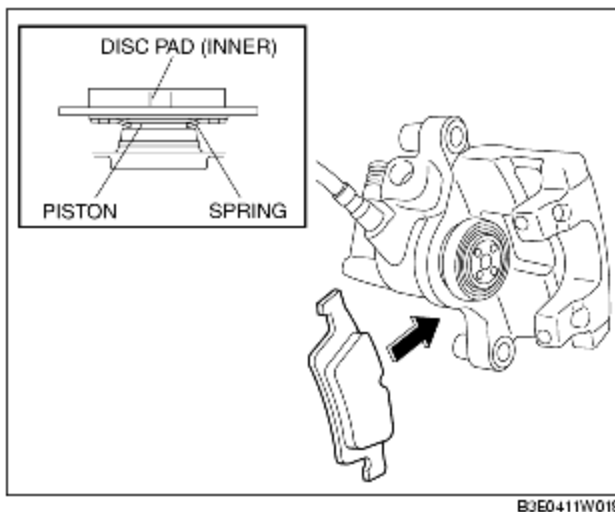
1. Remove any rust or dirt on the contact face of the disc plate and wheel hub.
2. Align the marks made before removal and install the disc plate to the wheel hub.

Disc Pad Installation Note

1. Install the disc pad (outer side) to the mounting support.
2. Clean the exposed area of the piston.
3. Rotate the piston clockwise slowly using the **SST** and push the piston inwards completely.



4. Align the disc pad (inner side) spring into the piston groove, and insert it in the direction of the arrow.

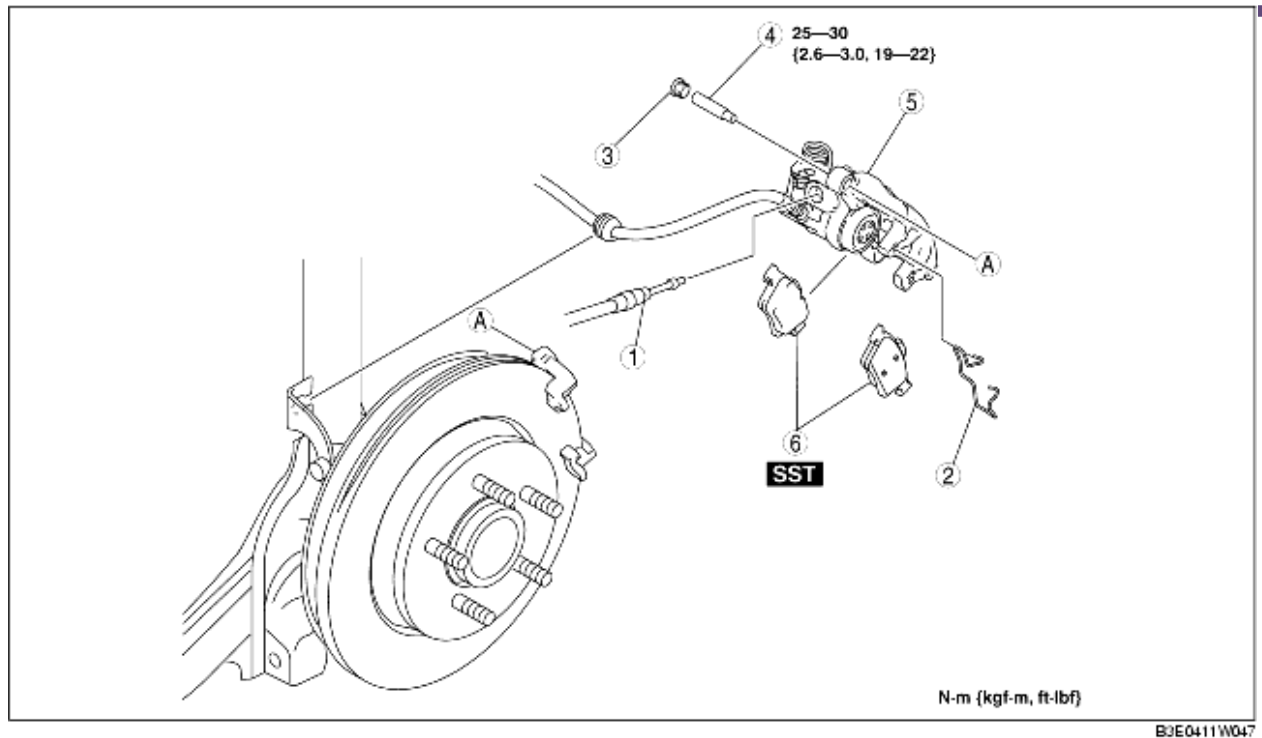


5. Install the disc pad (inner side) to the caliper.

DISC PAD (REAR) REPLACEMENT

B3E041126630W02

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. After installation, pump the brake pedal a few times and inspect the following:
 - Parking brake lever stroke
 - Brake drag

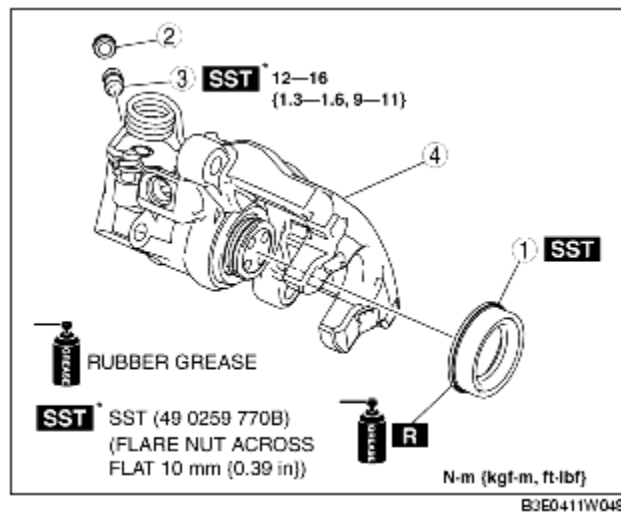


1	Parking brake cable
2	Retaining clip
3	Cap
4	Bolt
5	Caliper
	Disc pad
6	(See Disc Pad Removal Note.)
	(See Disc Pad Installation Note.)

CALIPER (REAR) DISASSEMBLY/ASSEMBLY

B3E041126990W02

1. Disassemble in the order indicated in the table.

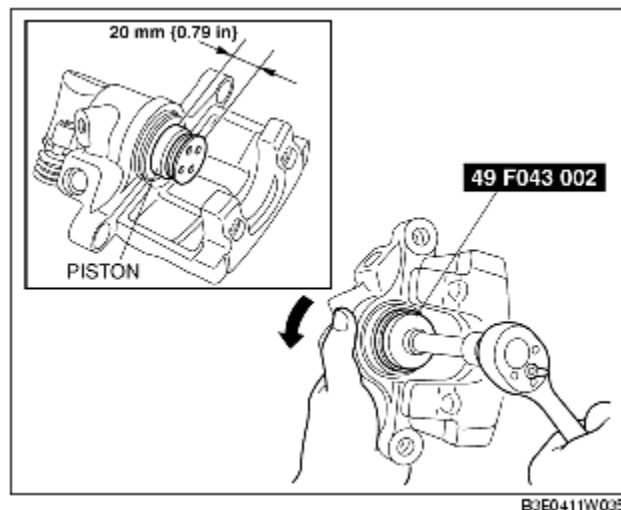


1	Dust seal (See Dust Seal Assembly Note .)
2	Bleeder cap
3	Bleeder screw
4	Caliper body

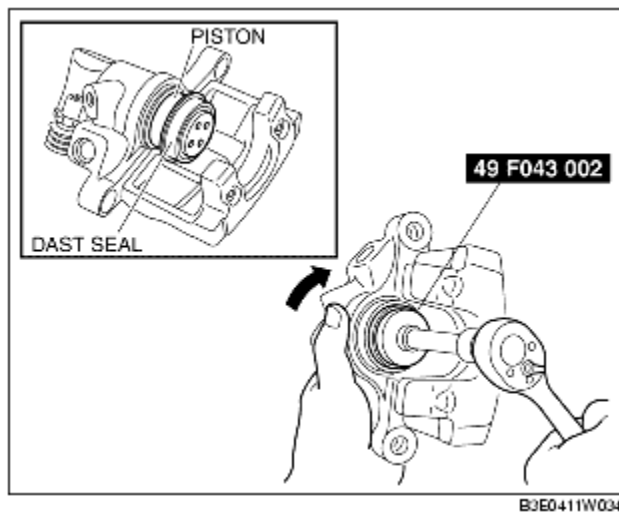
2. Assemble in the reverse order of disassembly.

Dust Seal Assembly Note

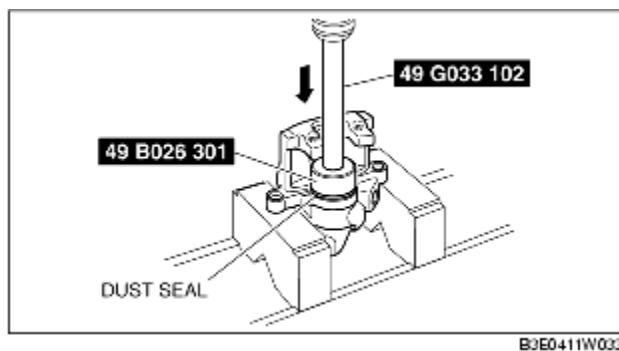
1. While rotating the piston counterclockwise using the **SST**, pull it out to the position shown in the figure.



2. As shown in the figure, assemble a new dust seal on the piston, and rotate the piston clockwise slowly using the **SST** to insert it to the caliper body completely.



3. Assemble the dust seal to the caliper body using the **SSTs** and a press with a press-in force of **834 N** {85 kgf, 187 in·lbf}

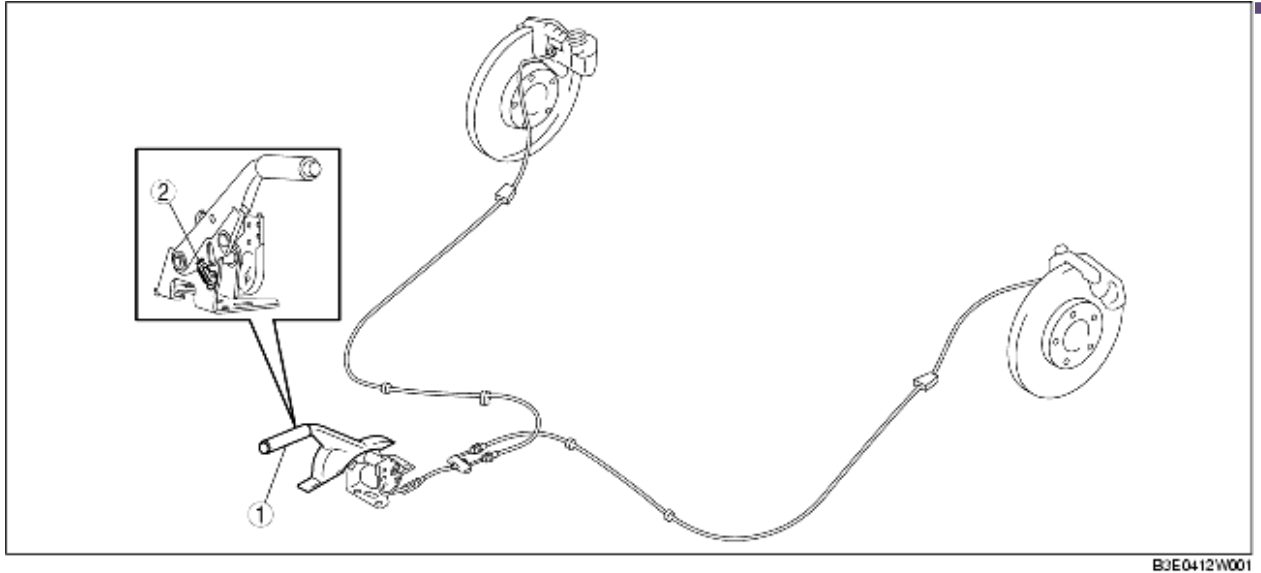


4. Verify that there is no gap between the dust seal and caliper body.

PARKING BRAKE SYSTEM

PARKING BRAKE SYSTEM LOCATION INDEX

B3E041244000W01



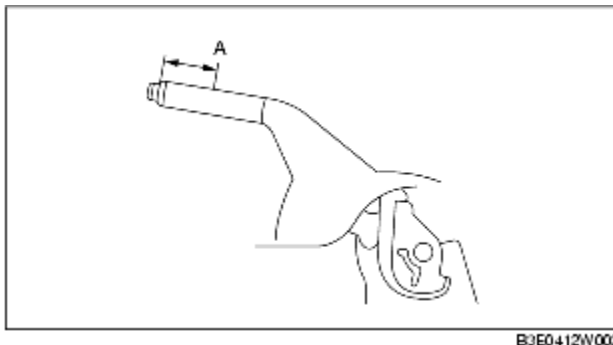
1	Parking brake lever (See PARKING BRAKE LEVER INSPECTION.) (See PARKING BRAKE LEVER ADJUSTMENT.) (See PARKING BRAKE LEVER REMOVAL/INSTALLATION.)
2	Parking brake switch (See PARKING BRAKE SWITCH INSPECTION.)

PARKING BRAKE LEVER INSPECTION

B3E041244300W04

Stroke Inspection

1. Pump the brake pedal a few times.
2. Pull the parking brake lever two to three times.
3. Inspect the parking brake stroke by slowly pulling at point A **50 mm {1.97 in}** from the end of the parking brake lever with a force of **98 N {10 kgf, 22 lbf}** and counting the number of notches (clicking sound).



- If not within the specification, adjust the parking brake lever.

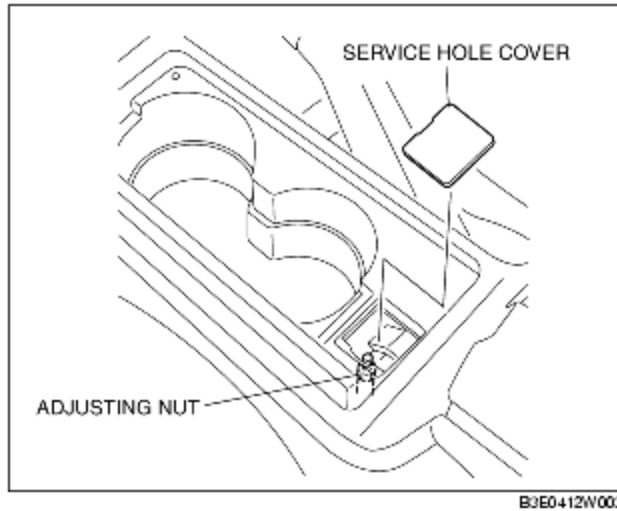
Standard

3-6 notches

PARKING BRAKE LEVER ADJUSTMENT

B3E041244300W05

1. Pump the brake pedal a few times.
2. Remove the service hole cover of the rear console.

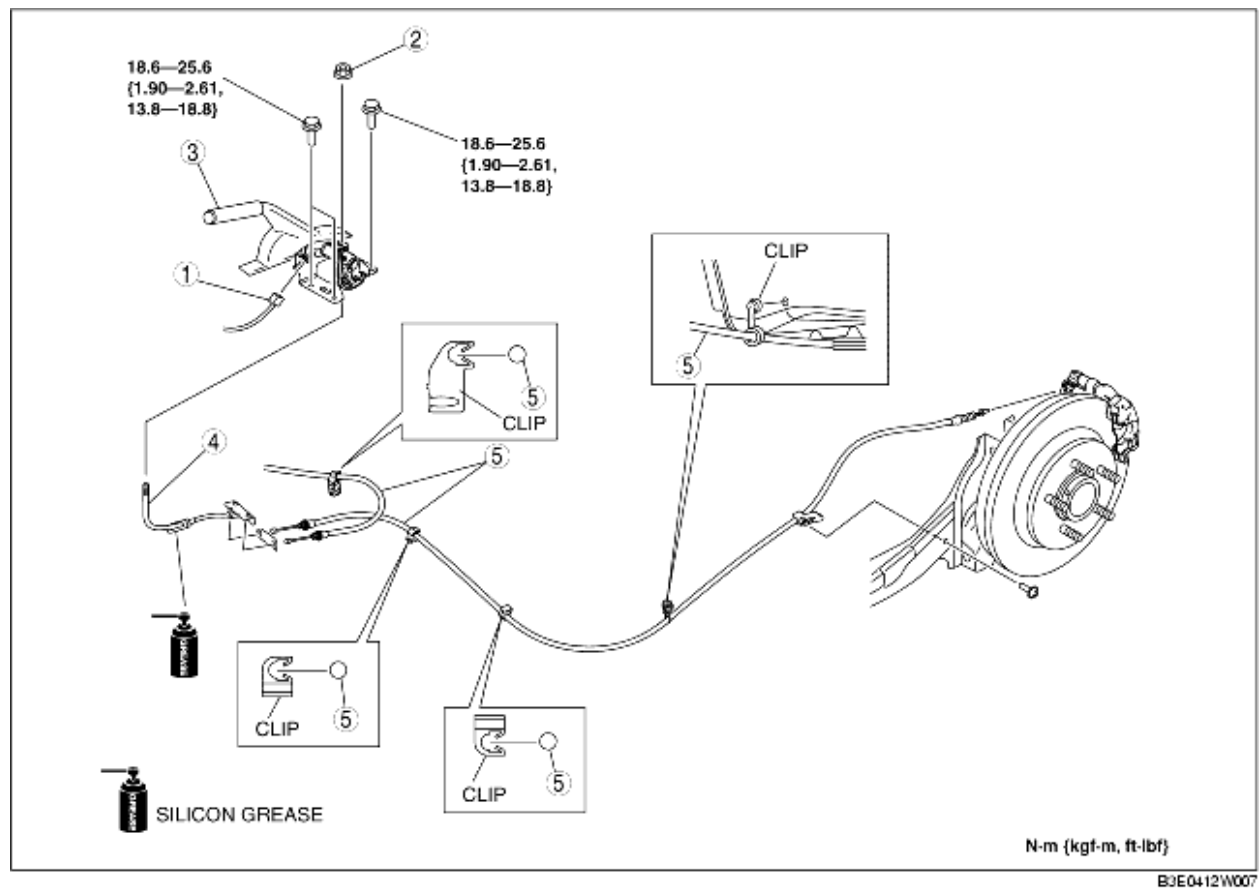


3. Turn the adjusting nut and adjust the parking brake lever.
4. After adjustment, pull the parking brake lever one notch and verify that the parking brake warning light illuminates.
5. Verify that the rear brakes do not drag.

PARKING BRAKE LEVER REMOVAL/INSTALLATION

B3E041244300W06

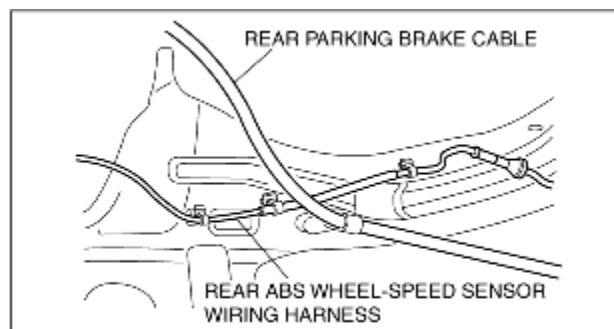
1. Remove the main silencer. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[Z6\]](#).)
(See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[LF\]](#).)
2. Remove the heat insulator.
3. Remove the console. (See [CONSOLE REMOVAL/INSTALLATION](#).)
4. Remove in the order indicated in the table.
5. Install in the reverse order of removal.
6. After installation, inspect the parking brake lever stroke. (See [PARKING BRAKE LEVER INSPECTION](#).)



1	Parking brake switch connector
2	Adjusting nut
3	Parking brake lever
4	Front parking brake cable (See Front Parking Brake Cable Installation Note.)
5	Rear parking brake cable (See Rear Parking Brake Cable Installation Note.)

Rear Parking Brake Cable Installation Note

1. Pass the rear parking brake cable inside the rear ABS wheel-speed sensor wiring harness as shown in the figure.

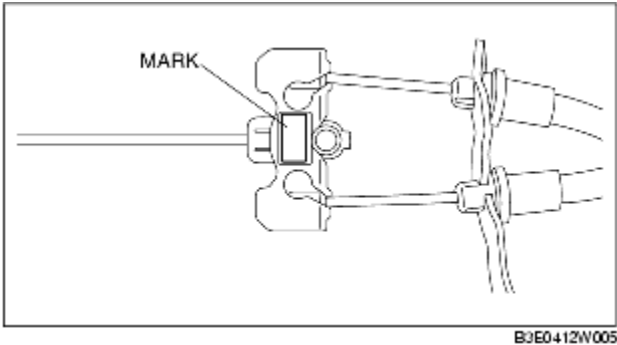


B3E0412W004

2. Install the rear parking brake cable.

Front Parking Brake Cable Installation Note

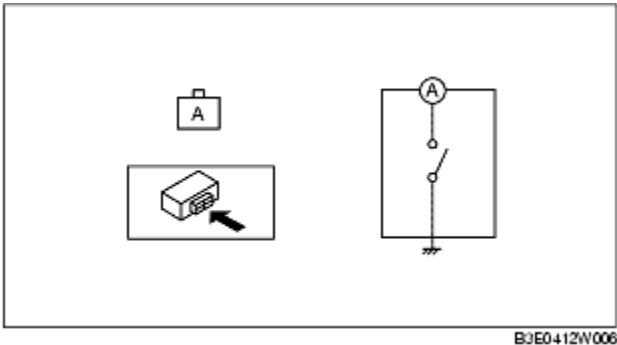
1. Install the front parking brake cable with the mark on the equalizer facing toward the vehicle downside.



PARKING BRAKE SWITCH INSPECTION

B3E041266450W01

1. Disconnect the parking brake switch connector.
2. Verify that the continuity is as indicated in the table.



- If not as indicated in the table, replace the parking brake lever.

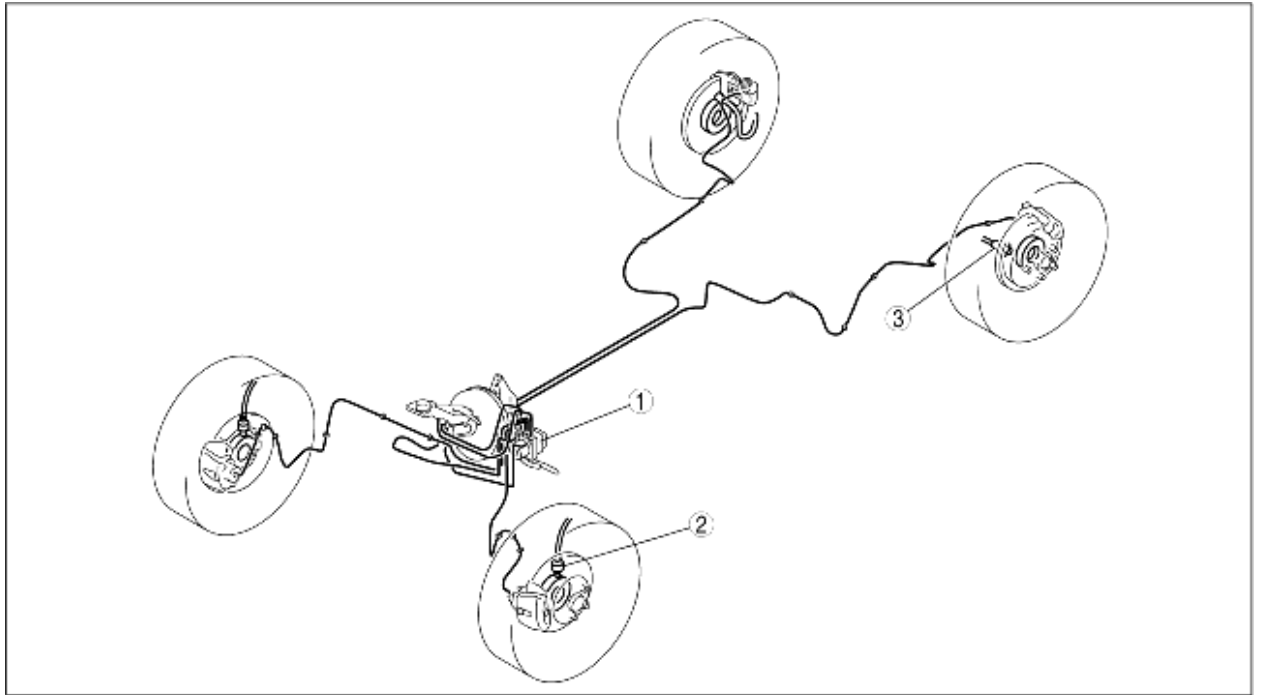
Condition	Terminal	
	A	Body ground
Parking brake lever pulled	○ — ○	○ — ○
Parking brake lever released		

CHU0412W003

ANTILOCK BRAKE SYSTEM

ABS LOCATION INDEX

B3E041343000W01



B3E0413W001

1	ABS HU/CM (See ABS SYSTEM INSPECTION.) (See ABS HU/CM REMOVAL/INSTALLATION.) (See ABS HU/CM INSPECTION.)
2	Front ABS wheel-speed sensor (See FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See FRONT ABS WHEEL-SPEED SENSOR INSPECTION.)
3	Rear ABS wheel-speed sensor (See REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See REAR ABS WHEEL-SPEED SENSOR INSPECTION.)

ABS SYSTEM INSPECTION

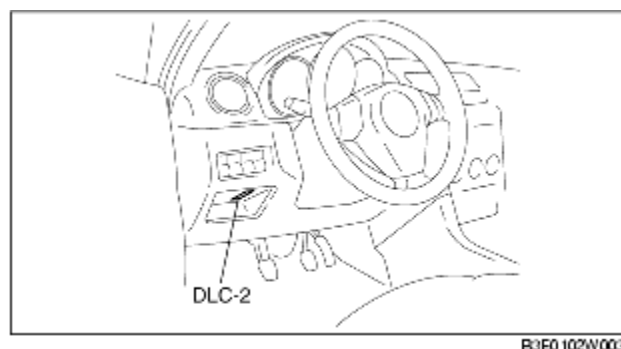
ABS Hydraulic Unit On-vehicle Inspection

Preparation

1. Verify that the battery is fully charged.
2. Turn the ignition switch to the ON position and verify that the ABS warning light goes out after **approx. 3.0 s**.
3. Turn the ignition switch off.
4. Jack up the vehicle and support it evenly on safety stands.
5. Shift to neutral.
6. Release the parking brake.
7. Verify that all four wheels rotate.
8. Rotate the inspected wheels by hand and verify there is no brake drag.
 - If there is any brake drag, perform regular brake inspection.
 - If there is no brake drag, perform ABS HU/CM operation inspection.

Operation inspection

1. Perform "Preparation".
2. Connect the WDS or equivalent to the DLC-2.



B3E0 102W003

3. Set up an active command mode inspection according to the combination of commands below.

Operation condition	Command name			Command transmission type
	PMP_MOTOR	RF_OUTLET	RF_INLET	
Brake pressure retention	OFF	OFF	ON	Manual
Brake pressure reduction	ON	ON	ON	

The chart above shows an example of a right front wheel inspection.

Caution

- When operating the solenoid valve and pump motor using the active command mode, make sure to keep the operation time within 2 s to prevent damaging the ABS HU/CM.

Note

- When working with two people, one should press on the brake pedal, the other should attempt to rotate the wheel being inspected.

4. Send the command while depressing on the brake pedal and attempting to rotate the wheel being inspected.

5. Performing the inspection above determines the following:

- The ABS HU/CM brake lines are normal.
- The ABS HU/CM hydraulic system is not significantly abnormal (including inside ABS HU/CM).
- The ABS HU/CM internal electrical parts (solenoid, motor and other parts) are normal.
- The ABS HU/CM output system wiring harnesses (solenoid valve, relay system) are normal.
- However, the following items cannot be verified.
- Malfunction of ABS HU/CM input system wiring harnesses and parts
- Extremely small leakage in the ABS HU/CM internal hydraulic system
- Intermittent malfunction of the above items

ABS HU/CM REMOVAL/INSTALLATION

B3E041343750W01

Caution

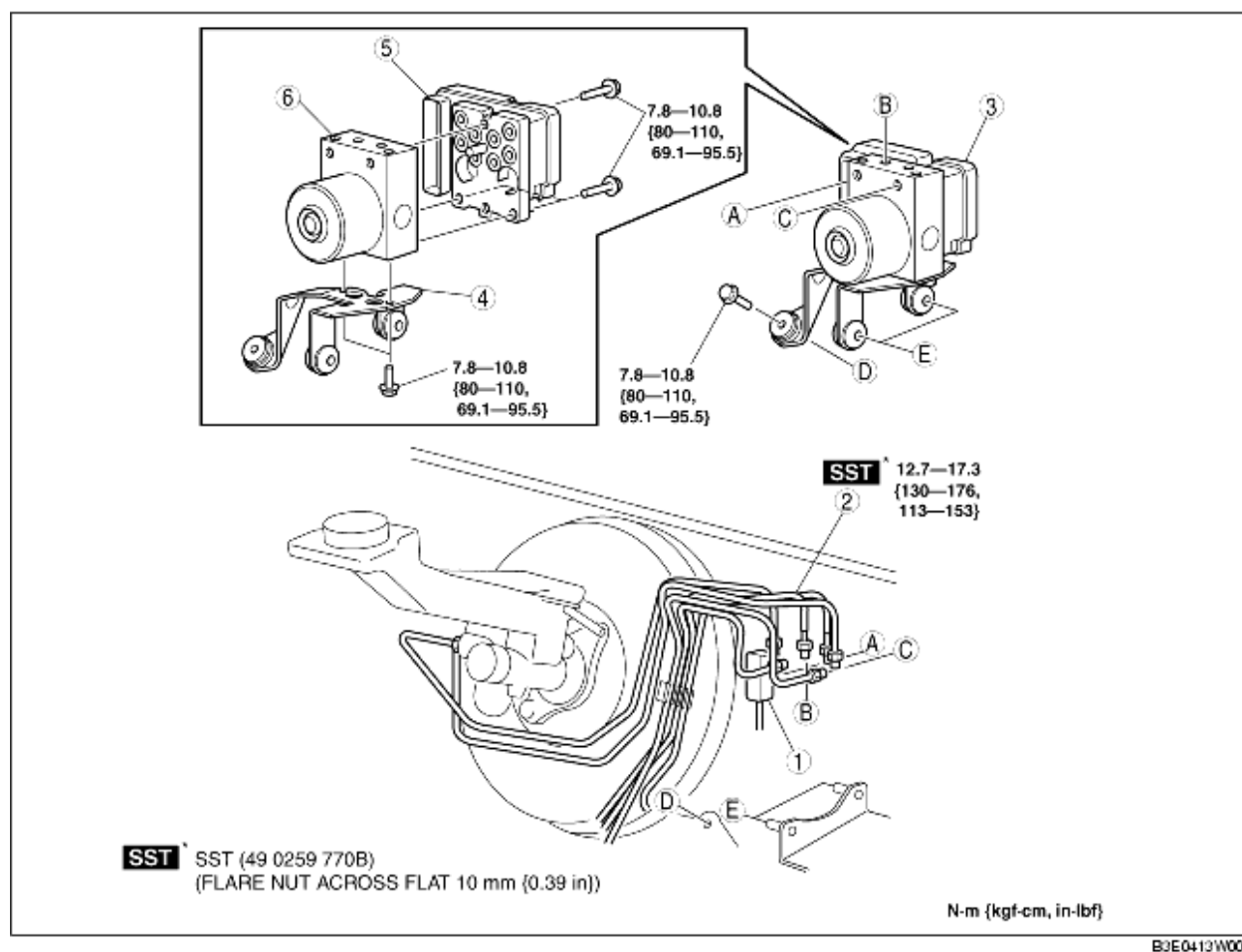
- The internal parts of the ABS HU/CM could be damaged if dropped. Be careful not to drop the ABS HU/CM. Replace the ABS HU/CM if it is subjected to an impact.

1. Remove the battery and battery tray. (See [BATTERY REMOVAL/INSTALLATION \[Z6\]](#).) (See [BATTERY REMOVAL/INSTALLATION \[LF\]](#).)

2. Remove the reserve hose (MTX vehicles). (See [Reserve Hose Removal Note](#).) (See [Clutch Pipe and Clutch Reserve Hose Removal Note](#).) (See [Reserve Hose Installation Note](#).) (See [Clutch Pipe and Clutch Reserve Hose Installation Note](#).)

3. Remove in the order indicated in the table.

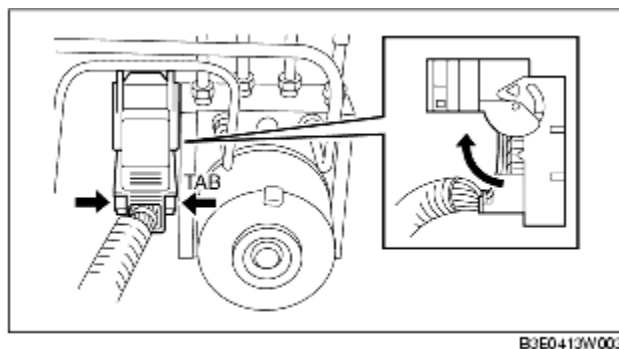
4. Install in the reverse order of removal.



1	Connector (See Connector Removal Note.) (See Connector Installation Note.)
2	Brake pipe (See Brake Pipe Removal Note.) (See Brake Pipe Installation Note.)
3	ABS HU/CM component, bracket (See ABS HU/CM Component, Bracket Removal Note.)
4	Bracket
5	ABS CM
6	ABS HU

Connector Removal Note

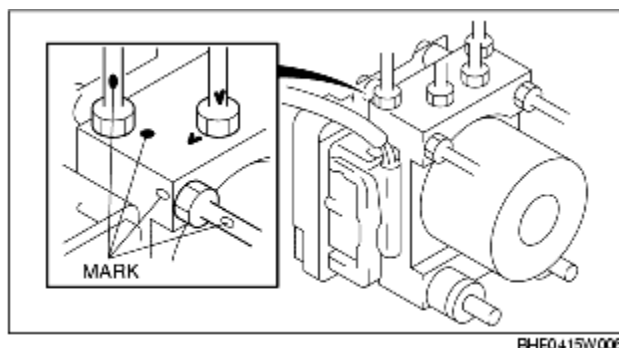
1. Pull the connector cover up in the direction of the arrow while pressing the tab of the connector cover.



2. Pull the connector toward the vehicle front and remove it.

Brake Pipe Removal Note

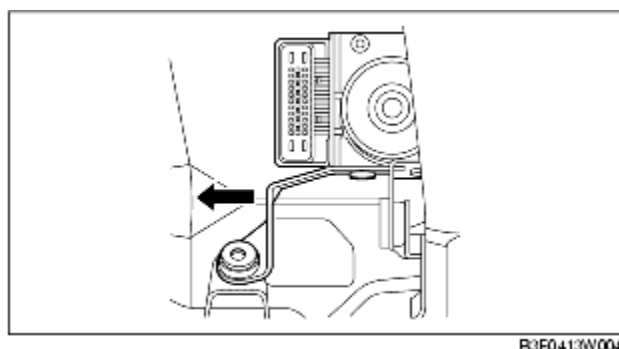
1. Place an alignment mark on the brake pipe and ABS HU/CM.



2. Apply protective tape to the connector to prevent brake fluid from entering.
3. Remove the brake pipe.

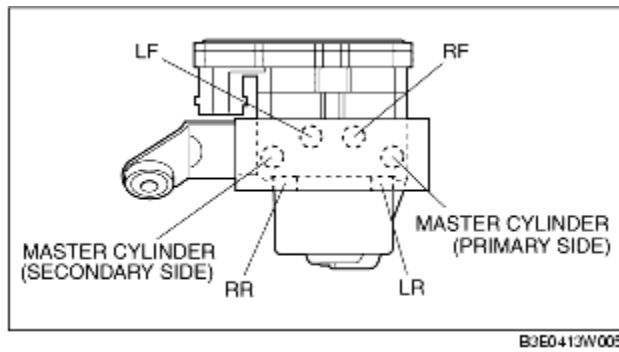
ABS HU/CM Component, Bracket Removal Note

1. As shown in the figure, move the bracket in the direction of the arrow and remove the ABS HU/CM component and bracket from the body.



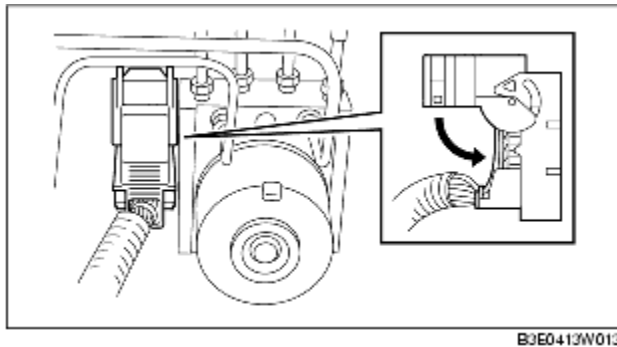
Brake Pipe Installation Note

1. Align the marks made before removal and install the brake pipe to the ABS HU/CM referring to the figure.



Connector Installation Note

1. After connecting the connector, verify that the connector cover is completely pushed in.

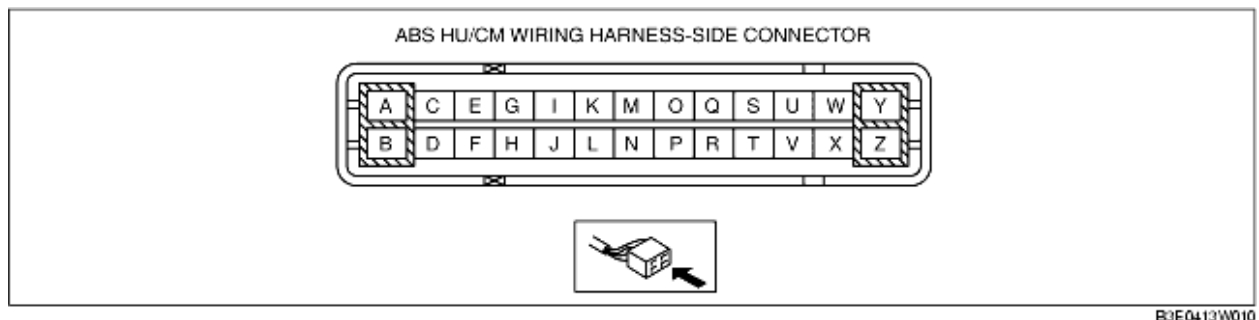


ABS HU/CM INSPECTION

B3E041343750W02

1. Disconnect the ABS HU/CM connector.
2. Connect the negative battery cable.
3. Attach the tester lead to the ABS HU/CM wiring harness-side connector, then inspect the voltage, continuity, or resistance according to the standard (reference) on the table.

Terminal Voltage Table (Reference)



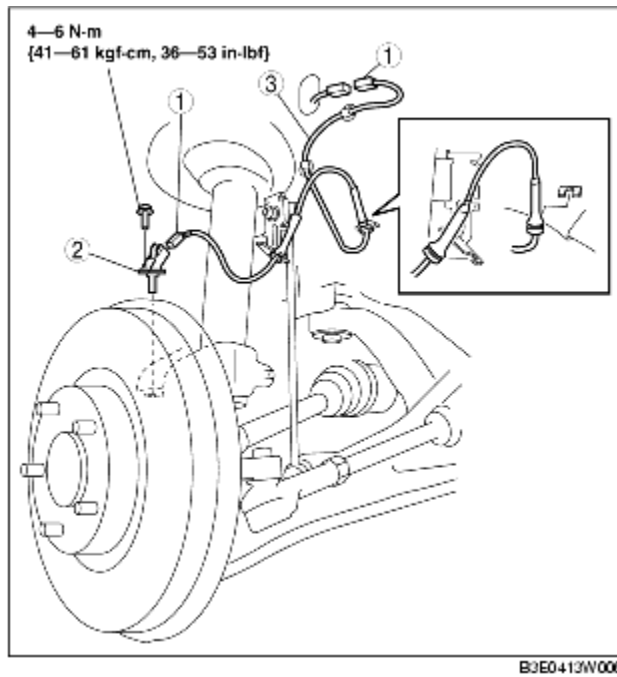
Terminal	Signal name	Connected to	Measured item	Measured terminal (measurement condition)	Standard	Inspection item(s)
A	-	-	-	-	-	-
B	Ground (ABS motor)	Ground point	Continuity	B-ground point	Continuity detected	• Wiring harness (B-ground point)
C	RR wheel-speed (ground)	RR ABS wheel-speed sensor	Continuity	C-RR ABS wheel-speed sensor terminal B	Continuity detected	• Wiring harness (C-RR ABS wheel-speed sensor terminal B)
D	-	-	-	-	-	-
E	RR wheel-speed (signal)	RR ABS wheel-speed sensor	Continuity	E-RR ABS wheel-speed sensor terminal A	Continuity detected	• Wiring harness (E-RR ABS wheel-speed sensor terminal A)
F	-	-	-	-	-	-
G	-	-	-	-	-	-
H	CAN_H	Data link connector-2 (CAN_H)	Continuity	H-DLC-2 terminal CAN_H	Continuity detected	• Wiring harness (H-DLC-2 terminal CAN_H)
I	LF wheel-speed (signal)	LF ABS wheel-speed sensor	Continuity	I-LF ABS wheel-speed sensor terminal A	Continuity detected	• Wiring harness (I-LF ABS wheel-speed sensor terminal A)
J	-	-	-	-	-	-
K	LF wheel-speed (ground)	LF ABS wheel-speed sensor	Continuity	K-LF ABS wheel-speed sensor terminal B	Continuity detected	• Wiring harness (K-LF ABS wheel-speed sensor terminal B)
L	CAN_L	Data link connector-2 (CAN_H)	Continuity	L-DLC-2 terminal CAN_L	Continuity detected	• Wiring harness (L-DLC-2 terminal CAN_L)
M	-	-	-	-	-	-
N	Power supply (system)	Ignition switch	Voltage	The ignition switch is at the ON position.	B+	• Wiring harness (N-ignition switch)
				The ignition switch is off.	1 V or less	-

O	RF wheel-speed (ground)	RF ABS wheel-speed sensor	Continuity	O-RF ABS wheel-speed sensor terminal B	Continuity detected	• Wiring harness (O-RF ABS wheel-speed sensor terminal B)
P	-	-	-	-	-	-
Q	RF wheel-speed (signal)	RF ABS wheel-speed sensor	Continuity	Q-RF ABS wheel-speed sensor terminal A	Continuity detected	• Wiring harness (Q-RF ABS wheel-speed sensor terminal A)
R	-	-	-	-	-	-
S	-	-	-	-	-	-
T	-	-	-	-	-	-
U	LR wheel-speed (signal)	LR ABS wheel-speed sensor	Continuity	U-LR ABS wheel-speed sensor terminal A	Continuity detected	• Wiring harness (U-LR ABS wheel-speed sensor terminal A)
V	-	-	-	-	-	-
W	LR wheel-speed (ground)	LR ABS wheel-speed sensor	Continuity	U-LR ABS wheel-speed sensor terminal B	Continuity detected	• Wiring harness (U-LR ABS wheel-speed sensor terminal B)
X	-	-	-	-	-	-
Y	Power supply (solenoid operation)	Battery	Voltage	Under any condition	B+	• Wiring harness (Y-battery)
Z	Power supply (ABS motor operation)	Battery	Voltage	Under any condition	B+	• Wiring harness (Z-battery)

FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION

B3E041343720W01

1. Remove the mudguard.
2. Remove in the order indicated in the table.



1	Connector
2	Front ABS wheel-speed sensor
3	Front ABS wheel-speed sensor wiring harness

3. Install in the reverse order of removal.

FRONT ABS WHEEL-SPEED SENSOR INSPECTION

B3E041343720W02

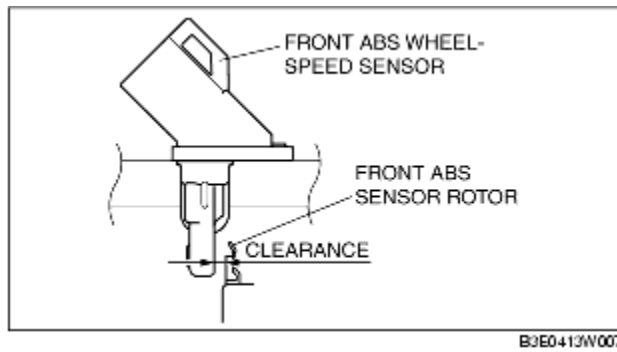
Installation Visual Inspection

1. Inspect for the following:

- If there is any malfunction, replace the part.
 - (1) Excessive play of the ABS wheel-speed sensor
 - (2) Deformation of the ABS wheel-speed sensor
 - (3) Deformation or damage of the ABS sensor rotor

Clearance Inspection

1. Inspect the clearance between the front ABS wheel-speed sensor and the ABS sensor rotor.



- If there is any malfunction, verify improper installation and replace if necessary.

Clearance

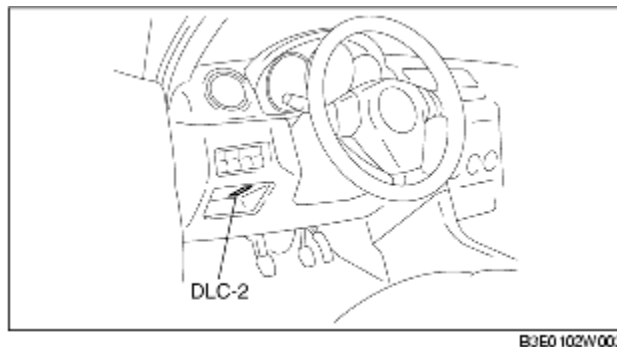
2.1 mm {0.082 in} or less

Sensor Output Value Inspection

Caution

- Resistance inspection using other testers may cause damage to the ABS wheel-speed sensor internal circuit. Be sure to use the WDS or equivalent to inspect the ABS wheel-speed sensor.

1. Turn the ignition switch off.
2. Connect the WDS or equivalent to the DLC-2.



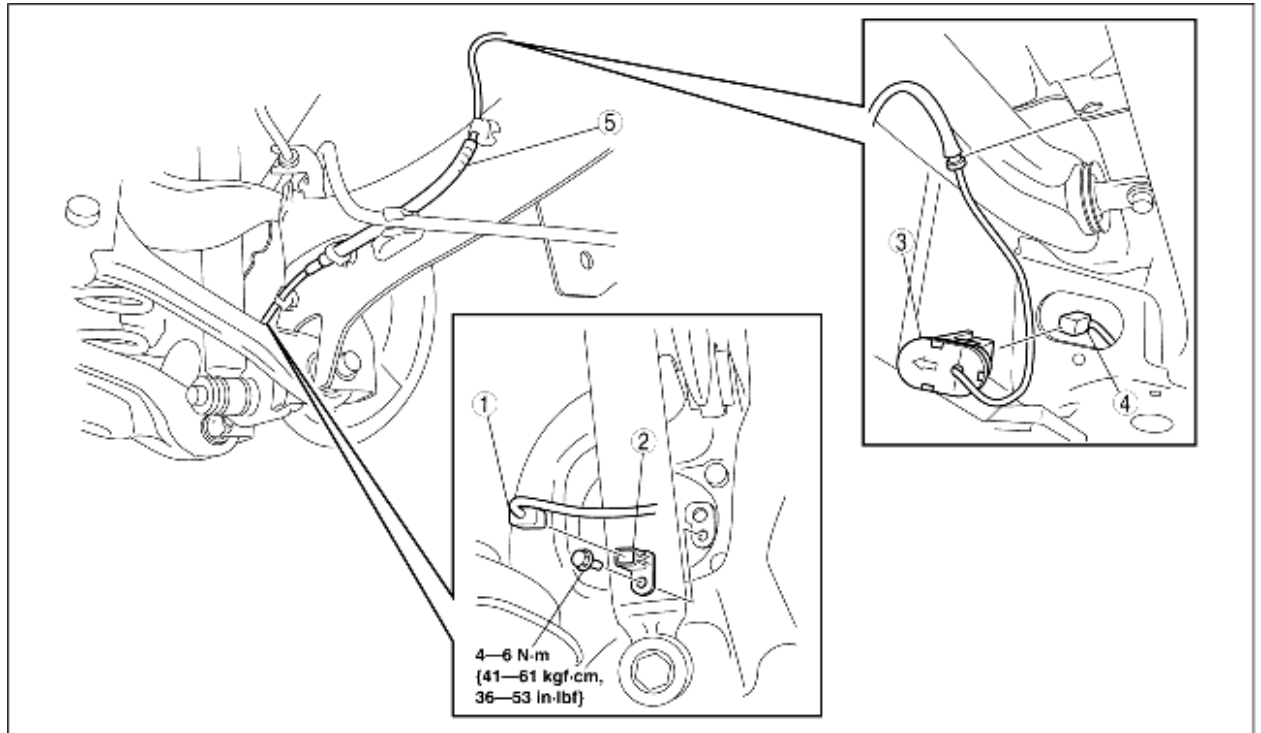
3. Select the following PIDs using the WDS or equivalent:

- LF_WSPD
(LF wheel-speed sensor)
- RF_WSPD
(RF wheel-speed sensor)

4. Start the engine and drive the vehicle.
 5. Verify that the display of the WDS or equivalent shows the same value as the speedometer.
- If there is any malfunction, replace the front ABS wheel-speed sensor.

REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION

1. Remove the under cover (rear).
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.

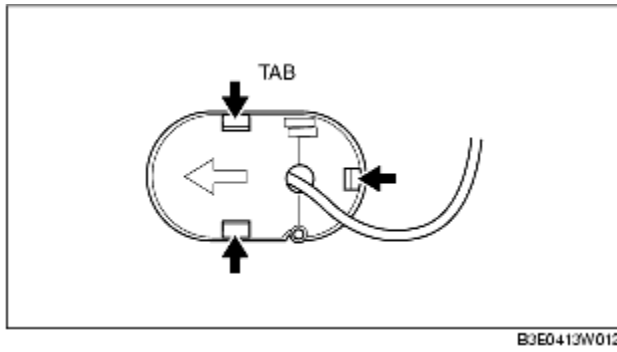


B3E0413W009

1	Connector
2	Rear ABS wheel-speed sensor
3	ABS hole cover (See ABS Hole Cover Removal Note.) (See ABS Hole Cover Installation Note.)
4	Connector
5	Rear ABS wheel-speed sensor wiring harness (See Rear ABS Wheel-speed Sensor Wiring Harness Installation Note.)

ABS Hole Cover Removal Note

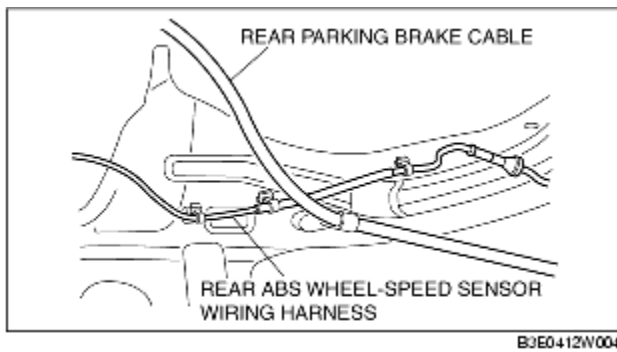
1. Disconnect the rear auto leveling sensor connector. (Vehicles with auto leveling sensor)
2. Press the tab of the ABS hole cover to separate the ABS hole cover from the body.



3. Remove the ABS hole cover from the body.

Rear ABS Wheel-speed Sensor Wiring Harness Installation Note

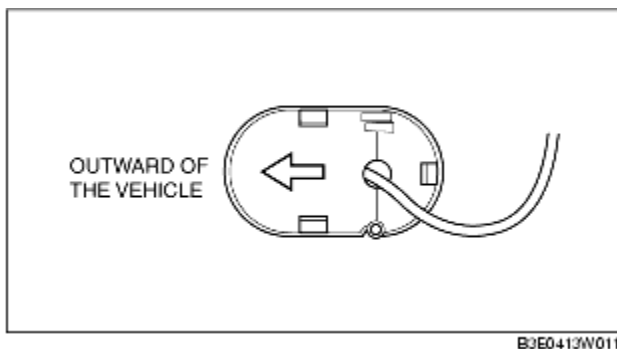
1. Pass the rear ABS wheel-speed sensor wiring harness outside the rear parking brake cable as shown in the figure.



2. Install the rear ABS wheel-speed sensor wiring harness.

ABS Hole Cover Installation Note

1. Install the ABS hole cover into the body so that the arrow on it is facing toward the outer side of the vehicle.



REAR ABS WHEEL-SPEED SENSOR INSPECTION

B3E041343710W02

Installation Visual Inspection

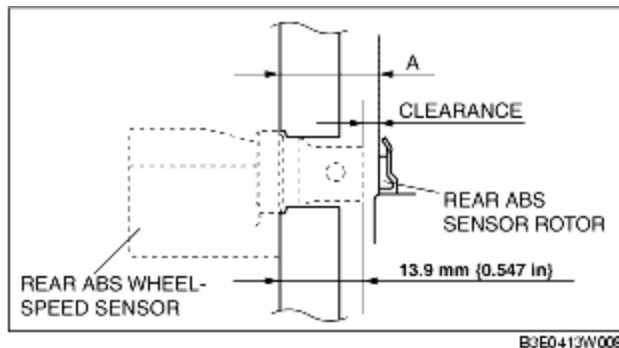
1. Inspect for the following:

- If there is any malfunction, replace the part.
- (1) Excessive looseness or play of the ABS wheel-speed sensor
- (2) Deformation of the ABS wheel-speed sensor
- (3) Deformation or damage of the ABS sensor rotor

Clearance Inspection

1. Remove the rear ABS wheel-speed sensor.

2. Measure the distance between the rear ABS wheel-speed sensor installation surface and the ABS sensor rotor. This is dimension A.



3. Calculate the clearance between the rear ABS wheel-speed sensor and the ABS sensor rotor using the following formula:

$$\text{Clearance (mm \{in\})} = A - 13.9 \{0.547\}$$

4. Verify that the clearance between the ABS sensor rotor and the rear ABS wheel-speed sensor is as indicated below.

- If there is any malfunction, replace it.

Clearance

1.46 mm {0.057 in} or less

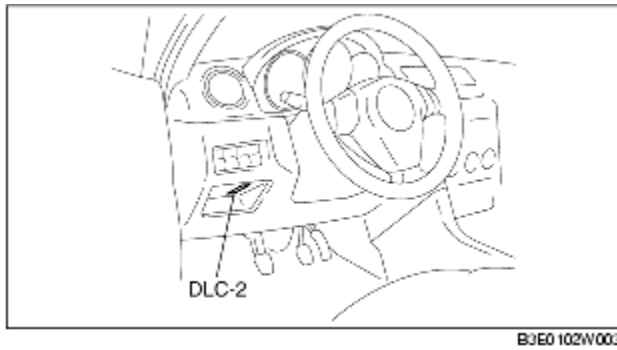
Sensor Output Value Inspection

Caution

- Resistance inspection using other testers may cause damage to the ABS wheel-speed sensor internal circuit. Be sure to use the WDS or equivalent to inspect the ABS wheel-speed sensor.

1. Turn the ignition switch off.

2. Connect the WDS or equivalent to the DLC-2.



3. Select the following PIDs using the WDS or equivalent:

- LR_WSPD
(LR wheel-speed sensor)
- RR_WSPD
(RR wheel-speed sensor)

4. Start the engine and drive the vehicle.

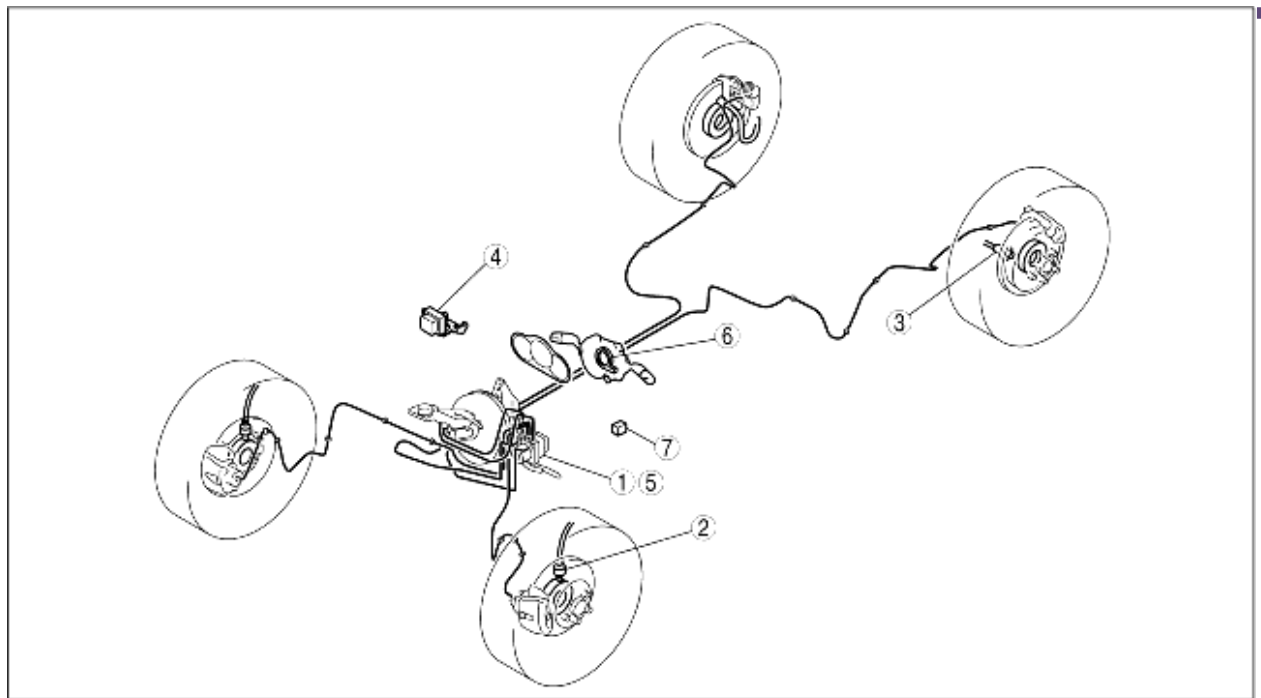
5. Verify that the display of the WDS or equivalent shows the same value as the speedometer.

- If there is any malfunction, replace the ABS wheel-speed sensor.

DYNAMIC STABILITY CONTROL

DSC LOCATION INDEX

B3E041543000W01



B3E0415W001

1	DSC HU/CM (See DSC SYSTEM INSPECTION.) (See DSC HU/CM REMOVAL/INSTALLATION.) (See DSC HU/CM INSPECTION.)
2	Front ABS wheel-speed sensor (See FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See FRONT ABS WHEEL-SPEED SENSOR INSPECTION.)
3	Rear ABS wheel-speed sensor (See REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See REAR ABS WHEEL-SPEED SENSOR INSPECTION.)
4	Combined sensor (See COMBINED SENSOR REMOVAL/INSTALLATION.) (See COMBINED SENSOR INSPECTION.) (See COMBINED SENSOR INITIALIZATION PROCEDURE.)
5	Brake fluid pressure sensor (Built into DSC HU/CM) (See BRAKE FLUID PRESSURE SENSOR INSPECTION.) (See BRAKE FLUID PRESSURE SENSOR INITIALIZATION PROCEDURE.)
6	Steering angle sensor (See STEERING ANGLE SENSOR REMOVAL/INSTALLATION.) (See STEERING ANGLE SENSOR INSPECTION.)

- | |
|---|
| DSC OFF switch |
| 7 (See DSC OFF SWITCH INSPECTION.) |
| (See DSC OFF SWITCH REMOVAL/INSTALLATION.) |

DSC SYSTEM INSPECTION

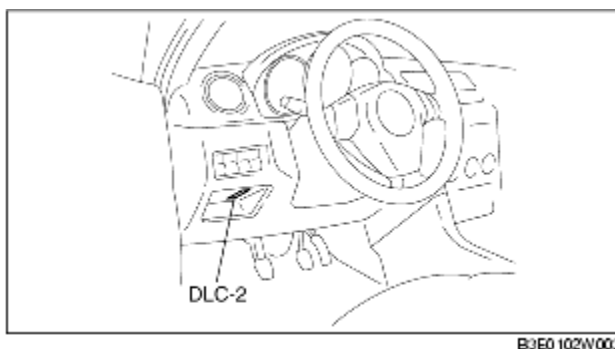
B3E041543000W02

Preparation

1. Verify that the battery is fully charged.
2. Turn the ignition switch to the ON position and verify that the ABS warning light goes out after **approx. 3.0 s**.
3. Turn the ignition switch off.
4. Jack up the vehicle and support it evenly on safety stands.
5. Shift to the N position.
6. Verify that all four wheels rotate.
7. Rotate the inspected wheels by hand and verify there is no brake drag.
 - If there is any brake drag, perform regular brake inspection.
 - If there is no brake drag, perform DSC HU/CM operation inspection.

ABS Control Inspection

1. Perform "Preparation".
2. Connect the WDS or equivalent to the DLC-2.



B3E0 102W003

3. Set up an active command mode inspection according to the combination of commands below.

Brake pressure retention

Command name	Inspected wheels
--------------	------------------

	LF	RF	LR	RR
LF_TC_PRV	OFF			
RF_TC_PRV				
LF_TC_SWV				
RF_TC_SWV				
LF_INLET	ON	OFF	OFF	OFF
LF_OUTLET	OFF		ON	
LR_INLET				
LR_OUTLET				
RF_INLET	OFF	ON	OFF	
RF_OUTLET	OFF	OFF		
RR_INLET		ON		
RR_OUTLET				
PMP_MOTOR				OFF

Brake pressure reduction

Command name	Inspected wheels				
	LF	RF	LR	RR	
LF_TC_PRV	OFF				
RF_TC_PRV					
LF_TC_SWV					
RF_TC_SWV					
LF_INLET	ON	OFF	OFF		
LF_OUTLET					
LR_INLET	OFF	OFF	ON	OFF	
LR_OUTLET					
RF_INLET			ON		OFF
RF_OUTLET					
RR_INLET	OFF		ON		

RR_OUTLET				
PMP_MOTOR	ON			

Caution

- When operating the solenoid valve and pump motor using the active command mode, make sure to keep the operation time within 2 s to prevent damaging the DSC HU/CM.

Note

- When working with two people, one should press on the brake pedal, the other should attempt to rotate the wheel being inspected.

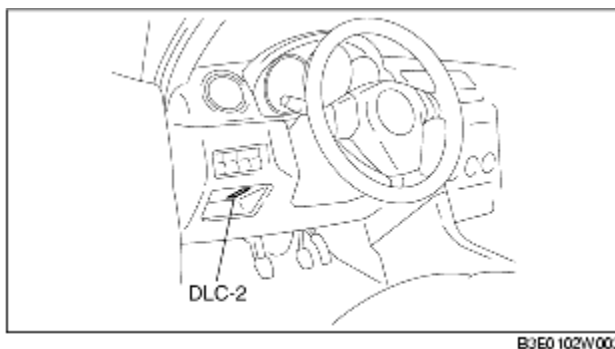
4. Send the command while depressing on the brake pedal and attempting to rotate the wheel being inspected.

5. When brake pressure is maintained and a DSC HU/CM operation click sound is heard, confirm that the wheel does not rotate. When brake pressure is being reduced and a DSC HU/CM operation click sound is heard, confirm that the wheel rotates.

- Performing the inspection above determines the following:
 - The DSC HU/CM brake lines are normal.
 - The DSC HU/CM hydraulic system has no significant malfunction (including DSC HU/CM).
 - The DSC HU/CM internal electrical parts (solenoid, motor and other parts) are normal.
 - The DSC unit and DSC HU/CM output system wiring harnesses (solenoid valve, relay system) are normal.
- However, the following items cannot be verified.
 - Intermittent malfunction of the above items
 - Malfunction of DSC HU/CM input system wiring harnesses and parts
 - Extremely small leakage in the DSC HU/CM internal hydraulic system

DSC Control Inspection

1. Perform "Preparation".
2. Connect the WDS or equivalent to the DLC-2.



3. Set up an active command mode inspection according to the combination of commands below.

Caution

- When operating the solenoid valve and pump motor using the active command mode, make sure to keep the operation time within 2 s to prevent damaging the DSC HU/CM.

Command name	Inspected wheels				
	Understeer control disabled		Oversteer control disabled		
	LF	RF	LR	RR	
LF_TC_PRV	ON	OFF		ON	
RF_TC_PRV	OFF	ON		OFF	
LF_TC_SWV	OFF				
RF_TC_SWV					
LF_INLET	OFF	OFF	OFF	ON	
LF_OUTLET		ON		OFF	
LR_INLET					
LR_OUTLET		OFF			
RF_INLET					ON
RF_OUTLET					OFF
RR_INLET	ON				
RR_OUTLET	OFF	OFF			
PMP_MOTOR	ON				

4. Send the command while rotating the wheel being inspected by hand in a forward direction.
5. Confirm that the wheel does not rotate easily while a DSC HU/CM operation click sound is heard.

- Performing the inspection above determines the following:
 - The DSC HU/CM brake lines are normal.
 - The DSC HU/CM hydraulic system has no significant malfunction (including DSC HU/CM).
 - The DSC HU/CM internal electrical parts (solenoid, motor and other parts) are normal.
 - The DSC unit and DSC HU/CM output system wiring harnesses (solenoid valve, relay system) are normal.
- However, the following items cannot be verified.
 - Intermittent malfunction of the above items
 - Malfunction of DSC HU/CM input system wiring harnesses and parts
 - Extremely small leakage in the DSC HU/CM internal hydraulic system

DSC HU/CM REMOVAL/INSTALLATION

B3E041543750W01

145

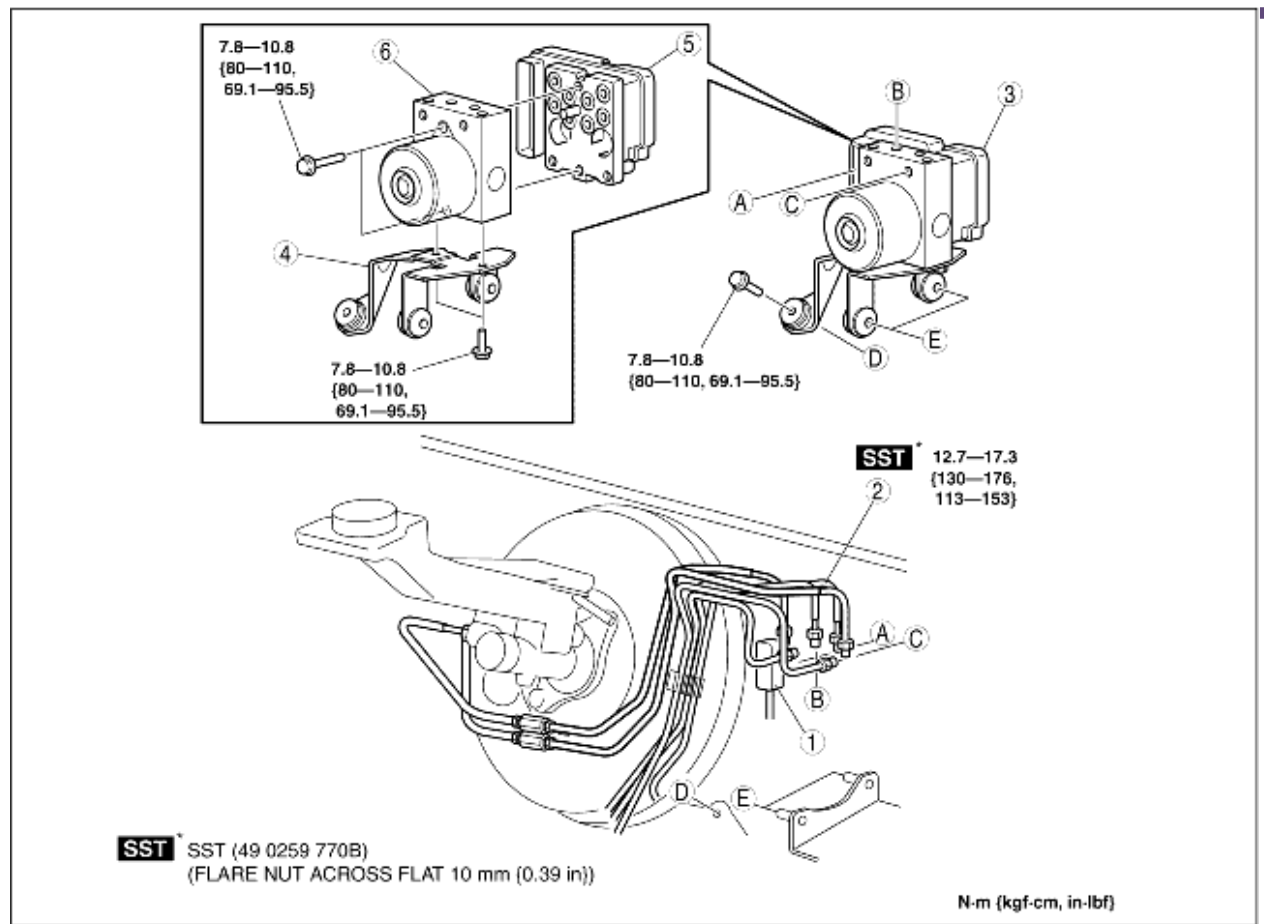
Caution

- The DSC may not function normally immediately after the DSC HU/CM is replaced. After installation, always perform the initialization procedures for the combined sensor, brake fluid pressure sensor.
- The internal parts of the DSC HU/CM could be damaged if dropped. Be careful not to drop the DSC HU/CM. Replace the DSC HU/CM if it is subjected to an impact.

1. Remove the battery and battery tray. (See [BATTERY REMOVAL/INSTALLATION \[Z6\]](#).) (See [BATTERY REMOVAL/INSTALLATION \[LF\]](#).)
2. Remove the reserve hose (MTX vehicles). (See [Reserve Hose Removal Note](#).) (See [Clutch Pipe and Clutch Reserve Hose Removal Note](#).) (See [Reserve Hose Installation Note](#).) (See [Clutch Pipe and Clutch Reserve Hose Installation Note](#).)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.
5. Perform the initialization procedures for the combined sensor, brake fluid pressure sensor. (See [COMBINED SENSOR INITIALIZATION PROCEDURE](#).) (See [BRAKE FLUID PRESSURE SENSOR INITIALIZATION PROCEDURE](#).)
6. Clear the DTCs from the memory. (See [Clearing DTCs Procedures](#).)

Note

- Even if the initialization procedure is performed after replacing the DSC HU/CM, DTCs B2141 and C2785 are stored in the memory as past malfunctions.

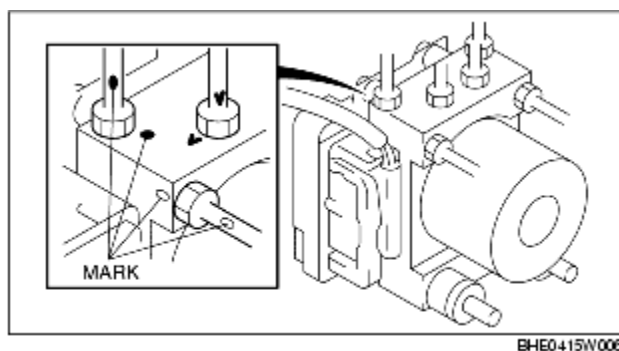


B3E0415W002

1	Connector (See Connector Removal Note.) (See Connector Installation Note.)
2	Brake pipe (See Brake Pipe Removal Note.) (See Brake Pipe Installation Note.)
3	DSC HU/CM, bracket (See DSC HU/CM, Bracket Removal Note.)
4	Bracket
5	DSC CM
6	DSC HU

Brake Pipe Removal Note

1. Place an alignment mark on the brake pipe and DSC HU/CM.

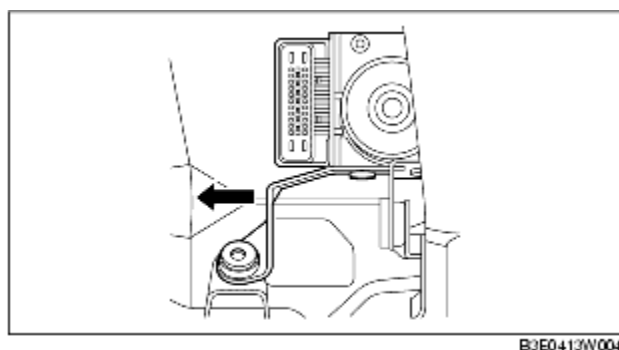


2. Apply protective tape to the connector to prevent brake fluid from entering.

3. Remove the brake pipe.

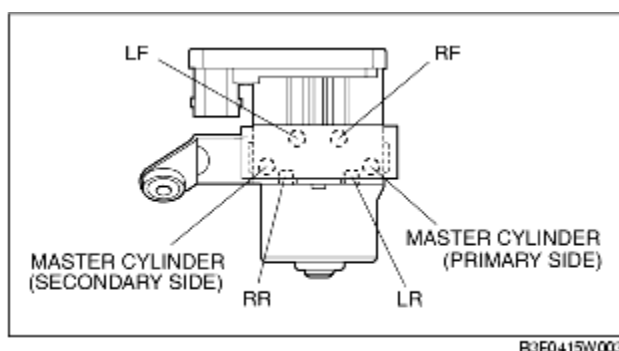
DSC HU/CM, Bracket Removal Note

1. As shown in the figure, move the bracket in the direction of the arrow and remove the DSC HU/CM and bracket from the body.



Brake Pipe Installation Note

1. Align the marks made before removal and install the brake pipe into the DSC HU/CM referring to the figure.



DSC HU/CM INSPECTION

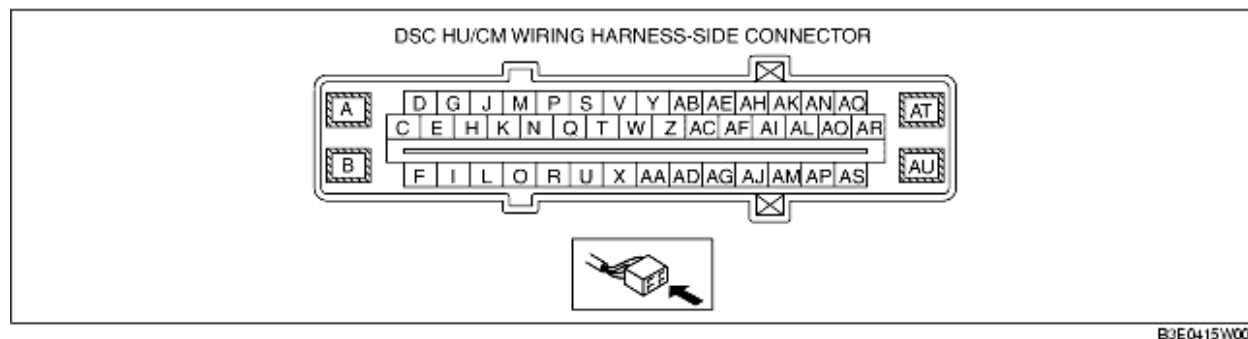
B3E041543750W02

1. Disconnect the DSC HU/CM connector.

2. Connect the negative battery cable.

3. Attach the tester lead to the DSC HU/CM wiring harness-side connector and inspect voltage, continuity, or resistance according to the standard (reference) on the table.

Terminal Voltage Table (Reference)



Terminal	Signal name	Connected to	Measured item	Measured terminal (measurement condition)	Standard	Inspection item(s)
A	Ground (system)	Ground point	Continuity	A-ground point	Continuity detected	• Wiring harness (A-ground point)
B	Ground (ABS motor)	Ground point	Continuity	B-ground point	Continuity detected	• Wiring harness (B-ground point)
C	-	-	-	-	-	-
D	CAN_L	Data link connector-2 (CAN_L)	Continuity	D-DLC-2 terminal CAN_L	Continuity detected	• D-DLC-2 terminal CAN_L
E	-	-	-	-	-	-
F	LF wheel-speed sensor (ground)	LF wheel-speed sensor	Continuity	F-LF ABS wheel-speed sensor terminal A	Continuity detected	• Wiring harness (F-LF ABS wheel-speed sensor terminal A)
G	-	-	-	-	-	-
H	CAN2_H	Combined sensor	Continuity	H-combined sensor terminal B	Continuity detected	• Wiring harness (H-combined sensor terminal B)
I	LF wheel-speed sensor (single)	LF ABS wheel-speed sensor	Continuity	I-LF ABS wheel-speed sensor terminal A	Continuity detected	• Wiring harness (I-LF ABS wheel-speed sensor terminal A)

J	-	-	-	-	-	-
K	-	-	-	-	-	-
L	-	-	-	-	-	-
M	-	-	-	-	-	-
N	-	-	-	-	-	-
O	RR wheel-speed (signal)	RR ABS wheel-speed sensor	Continuity	O-RR ABS wheel-speed sensor terminal A	Continuity detected	• Wiring harness (O-RR ABS wheel-speed sensor terminal A)
P	CAN_H	Data link connector-2 (CAN_H)	Continuity	P-DLC-2 terminal CAN_H	Continuity detected	• Wiring harness (P-DLC-2 terminal CAN_H)
Q	-	-	-	-	-	-
R	RR wheel-speed (ground)	RR ABS wheel-speed sensor	Continuity	R-RR ABS wheel-speed sensor terminal B	Continuity detected	• Wiring harness (R-RR ABS wheel-speed sensor terminal B)
S	-	-	-	-	-	-
T	CAN2_L	Combined sensor	Continuity	T-combined sensor terminal A	Continuity detected	• Wiring harness (T-combined sensor terminal A)
U	-	-	-	-	-	-
V	-	-	-	-	-	-
W	-	-	-	-	-	-
X	-	-	-	-	-	-
Y	-	-	-	-	-	-
Z	-	-	-	-	-	-
AA	-	-	-	-	-	-
AB	Sensor power supply	Combined sensor, steering angle sensor	Continuity	AB-combined sensor terminal D AB-steering angle sensor terminal A	Continuity detected	• Wiring harness (AB-combined sensor terminal D) • Wiring harness (AB-steering

						angle sensor terminal A)
AC	-	-	-	-	-	-
AD	DSC OFF switch	DSC OFF switch	Continuity	AD-DSC OFF switch	Continuity detected	• Wiring harness (AD-DSC OFF switch)
AE	Steering angle sensor (signal B)	Steering angle sensor	Continuity	AE-steering angle sensor terminal C	Continuity detected	• Wiring harness (AE-steering angle sensor terminal C)
AF	-	-	-	-	-	-
AG	LR wheel-speed (ground)	LR wheel-speed sensor	Continuity	AG-LR ABS wheel-speed sensor terminal B	Continuity detected	• Wiring harness (AG-LR ABS wheel-speed sensor terminal B)
AH	Sensor ground	Combined sensor, steering angle sensor	Continuity	AH-combined sensor terminal E AH-steering angle sensor terminal D	Continuity detected	• Wiring harness (AH-combined sensor terminal E) • Wiring harness (AH-steering angle sensor terminal D)
AI	-	-	-	-	-	-
AJ	LR wheel-speed (signal)	LR ABS wheel-speed sensor	Continuity	AJ-LR ABS wheel-speed sensor terminal A	Continuity detected	• Wiring harness (AJ-LR ABS wheel-speed sensor terminal A)
AK	Power supply (system)	Ignition switch	Voltage	The ignition switch is at the ON position.	B+	• Wiring harness (AK-ignition switch)
				The ignition switch is off.	1 V or less	-
AL	-	-	-	-	-	-
AM	-	-	-	-	-	-
AN	Steering angle sensor (signal A)	Steering angle sensor	Continuity	AN-steering angle sensor terminal B	Continuity detected	• Wiring harness (AN-steering angle sensor terminal B)
AO	-	-	-	-	-	-

AP	RF wheel-speed (signal)	RF ABS wheel-speed sensor	Continuity	AP-RF ABS wheel-speed sensor terminal A	Continuity detected	• Wiring harness (AP-RF ABS wheel-speed sensor terminal A)
AQ	-	-	-	-	-	-
AR	-	-	-	-	-	-
AS	RF wheel-speed (ground)	RF ABS wheel-speed sensor	Continuity	AS-RF ABS wheel-speed sensor terminal B	Continuity detected	• Wiring harness (AP-RF ABS wheel-speed sensor terminal B)
AT	Power supply (ABS motor operation)	Battery	Voltage	Under any condition	B+	• Wiring harness (AT-battery)
AU	Power supply (solenoid operation)	Battery	Voltage	Under any condition	B+	• Wiring harness (AU-battery)

FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION

B3E041543720W01

1. Remove or install the front ABS wheel-speed sensor in the same order of vehicles with ABS. (See [FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION](#).)

FRONT ABS WHEEL-SPEED SENSOR INSPECTION

B3E041543720W02

1. Inspect the front ABS wheel-speed sensor in the same order of vehicles with ABS. (See [FRONT ABS WHEEL-SPEED SENSOR INSPECTION](#).)

REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION

B3E041543710W01

1. Remove or install the rear ABS wheel-speed sensor in the same order of vehicles with ABS. (See [REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION](#).)

REAR ABS WHEEL-SPEED SENSOR INSPECTION

B3E041543710W02

1. Inspect the rear ABS wheel-speed sensor in the same order of vehicles with ABS. (See [REAR ABS WHEEL-SPEED SENSOR INSPECTION](#).)

COMBINED SENSOR REMOVAL/INSTALLATION

B3E041543770W01

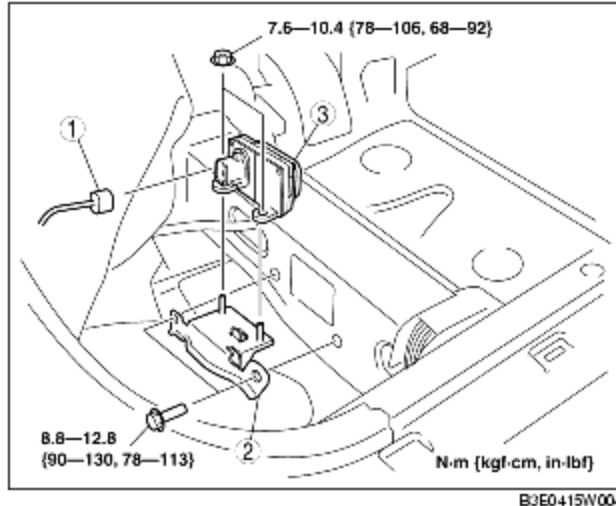
Caution

- The internal parts of the combined sensor could be damaged if dropped. Be careful not to drop the combined sensor. Replace the combined sensor if it is subjected to an impact. Also, do not use an impact wrench or other similar air tools when removing/installing the sensor.

1. Perform the following and partially peel back the floor covering.

- (1) Remove the front seat (RH).
- (2) Remove the inner scuff plate (RH).
- (3) Remove the front side trim (RH).

2. Remove in the order indicated in the table.



1	Combined sensor connector
2	Bracket
3	Combined sensor

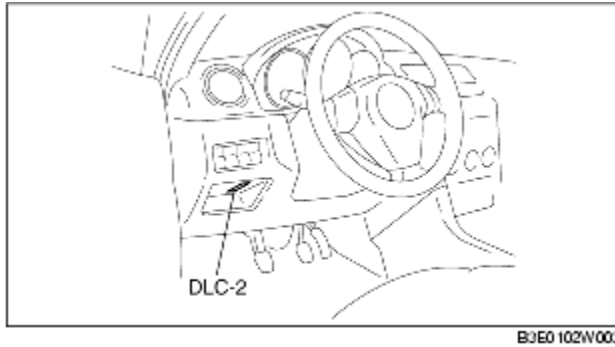
3. Install in the reverse order of removal.

4. After installation, perform the combined sensor initialization procedure. (See [COMBINED SENSOR INITIALIZATION PROCEDURE](#).)

COMBINED SENSOR INSPECTION

B3E041543770W02

1. Turn the ignition switch off.
2. Connect the WDS or equivalent to the DLC-2.



B3E0102W003

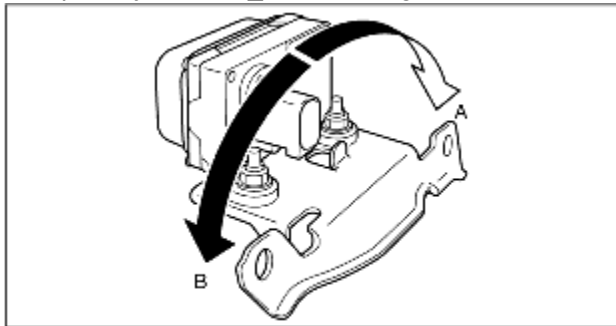
3. Select the following PIDs and inspect the lateral acceleration and yaw rate.

- LAT_ACCL (lateral acceleration)

- YAW_RATE (yaw rate)

(1) Lateral acceleration inspection

1) Verify the LAT_ACCL change when the combined sensor is tilted to the left and right.



B3E0415W005

- If there is any malfunction, replace the combined sensor. (See [COMBINED SENSOR REMOVAL/INSTALLATION](#).)

Standard

When the sensor is tilted to the right (A):

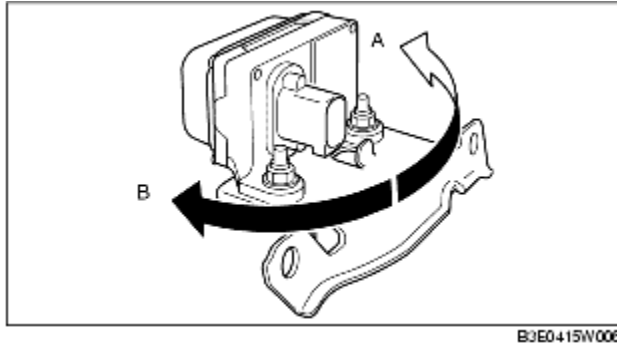
LAT_ACCL changes positively.

When the sensor is tilted to the left (B):

LAT_ACCL changes negatively.

(2) Yaw rate inspection

- 1) Verify the YAW_RATE change when the combined sensor is rotated to the left and right.



- If there is any malfunction, replace the combined sensor. (See [COMBINED SENSOR REMOVAL/INSTALLATION](#).)

Standard

When the sensor is rotated to the right (A):

YAW_RATE changes positively.

When the sensor is rotated to the left (B):

YAW_RATE changes negatively.

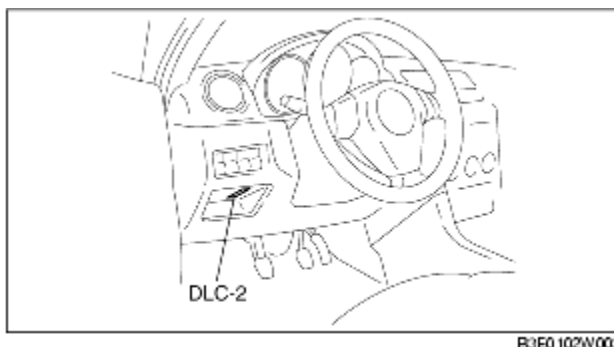
COMBINED SENSOR INITIALIZATION PROCEDURE

B3E041543770W03

Warning

- If the initialization procedure is not completed, the DSC will not operate properly and it might cause an unexpected accident. Therefore, after replacing or removing the combined sensor or DSC HU/CM, make sure to perform the initialization procedure to insure proper DSC operation.

1. Inspect the wheel alignment and the tire pressure.
 - If there is any malfunction, adjust the applicable part.
2. Position the vehicle on level ground.
3. Turn the ignition switch off.
4. Connect the WDS or equivalent to the DLC-2.



5. Access the active command mode, then select and perform the following commands.

- LATACCEL (lateral acceleration)

6. Drive the vehicle.

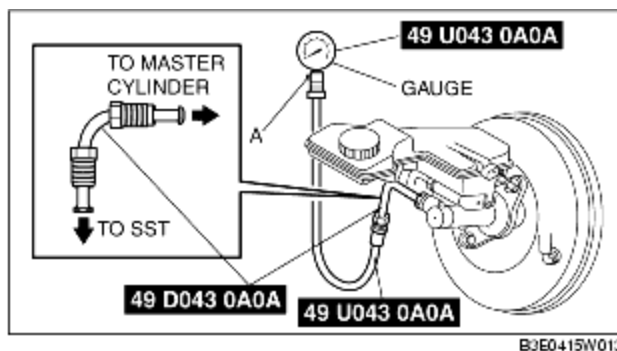
7. After **5 min or more** of driving, verify that the DSC system is normal.

BRAKE FLUID PRESSURE SENSOR INSPECTION

B3E041543771W01

1. Turn the ignition switch off.

2. Install the **SSTs** to the master cylinder as shown in the figure.

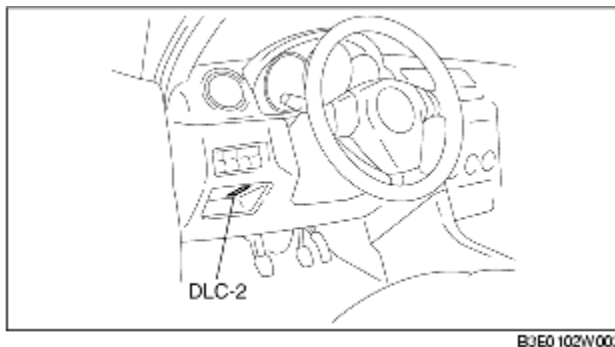


Note

- When installing the **SST** (49 D043 0A0A) to the master cylinder, use a commercially available flare nut wrench (flare nut across flat **12 mm {0.47 in}**).

3. Bleed the brake line and the **SSTs** of air. (Bleed the **SSTs** of air using air bleed valve A.)

4. Connect the WDS or equivalent to the DLC-2.



5. Select the "MPRETDR" PID.

6. Start the engine.

7. Depress the brake pedal, and verify that the fluid pressure value of the **SST** (gauge) and the value shown on the WDS or equivalent are equal.

- If the fluid pressure values are different, replace the DSC HU/CM. (See [DSC HU/CM REMOVAL/INSTALLATION](#).)

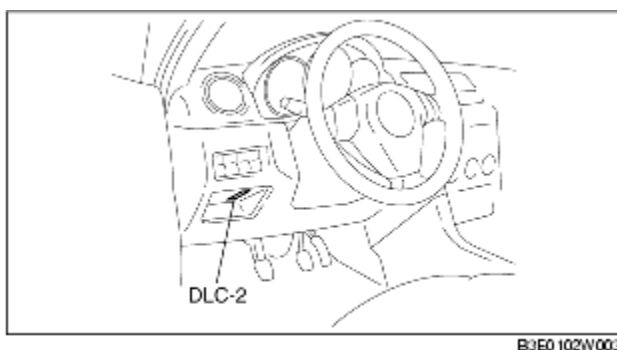
BRAKE FLUID PRESSURE SENSOR INITIALIZATION PROCEDURE

B3E041543771W02

Warning

- If the initialization procedure is not completed, the DSC will not operate properly and it might cause an unexpected accident. Therefore, after replacing or removing the DSC HU/CM, make sure to perform the initialization procedure to insure proper DSC operation.

1. Turn the ignition switch off.
2. Connect the WDS or equivalent to the DLC-2.



3. Access the active command mode, then select and perform the following commands.

- MCYL_S_CAL (brake fluid pressure sensor)

4. Drive the vehicle.
5. After **5 min or more** of driving, verify that the DSC system is normal.

STEERING ANGLE SENSOR REMOVAL/INSTALLATION

B3E041566120W01

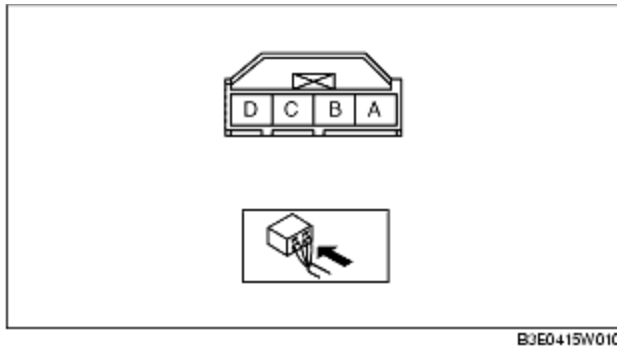
1. When removing or installing the steering angle sensor, refer to the clock spring removal/installation procedure. (See [CLOCK SPRING REMOVAL/INSTALLATION](#).)

STEERING ANGLE SENSOR INSPECTION

B3E041566120W02

1. Remove the column cover.

- Turn the ignition switch to the ON position and measure the voltage between steering angle sensor terminal A and ground.



- If there is any malfunction, inspect the wiring harness between steering angle sensor terminal A and DSC HU/CM terminal AB. Repair or replace if necessary.

Standard voltage

B+

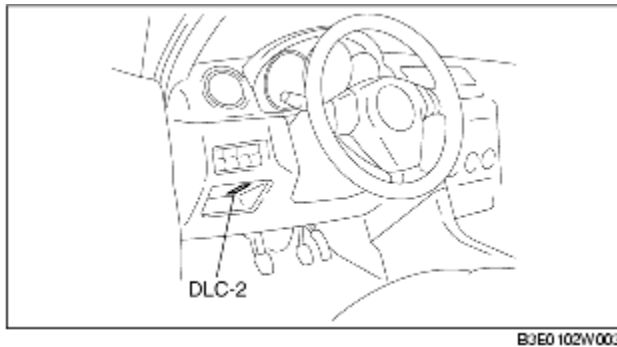
- Measure the voltage between steering angle sensor terminal D and ground.

- If there is any malfunction, inspect the wiring harness between steering angle sensor terminal D and DSC HU/CM terminal AH. Repair or replace if necessary.

Standard voltage

0 V

- Turn the ignition switch off.
- Connect the WDS or equivalent to the DLC-2.



- Select the "SWA POS" PID.
- Verify the SWA POS changes when the steering wheel is turned to the left and right.

- If there is any malfunction, replace the steering angle sensor. (See [CLOCK SPRING REMOVAL/INSTALLATION](#).)

Standard

When the steering wheel is turned to the left:

SWA POS changes positively.

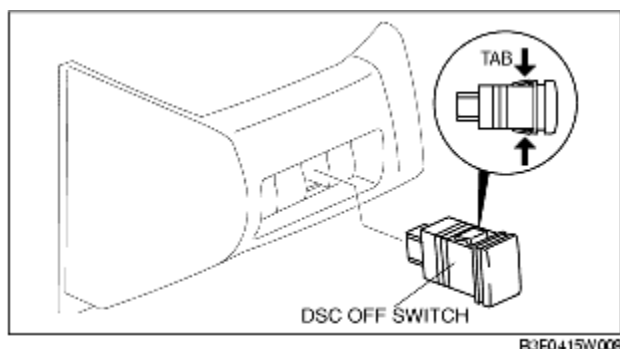
When the steering wheel is turned to the right:

SWA POS changes negatively.

DSC OFF SWITCH REMOVAL/INSTALLATION

B3E041566410W01

1. Remove the lower panel. (See [LOWER PANEL REMOVAL/INSTALLATION](#).)
2. While squeezing the tabs of the DSC OFF switch, pull the DSC OFF switch outward to remove it from the lower panel.

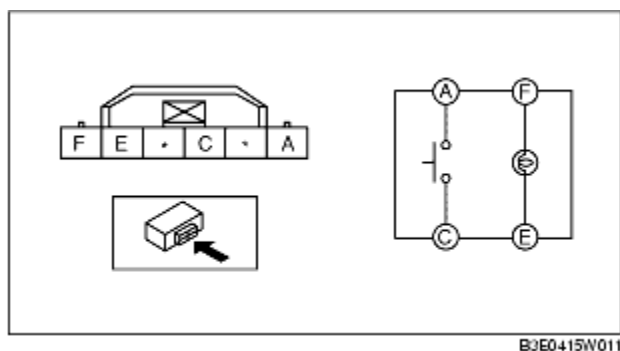


3. Install in the reverse order of removal.

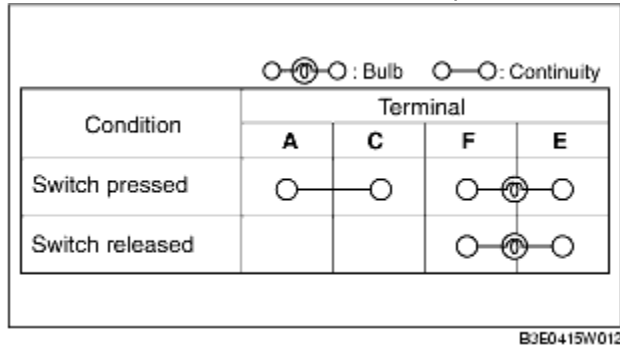
DSC OFF SWITCH INSPECTION

B3E041566410W02

1. Remove the DSC OFF switch.
2. Verify that the continuity is as indicated in the table.



- If not as indicated in the table, replace the DSC OFF switch.



TECHNICAL DATA

BRAKES

B3E045001020W01

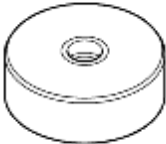
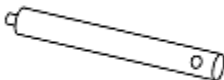
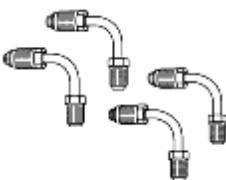
Item			Specification
CONVENTIONAL BRAKE SYSTEM			
Brake pedal	Pedal height (reference value)	(mm {in})	136.4 {5.37}
	Pedal play	(mm {in})	4.0-8.4 {0.16-0.33}
	Pedal-to-floor clearance (Brake pedal when depressed at 147 N {15.0 kgf, 33 lbf})	(mm {in})	89.8 {3.54} or more
Power brake unit	Fluid pressure when pedal depressed at 200 N {20.4 kgf, 44.9 lbf}	At 0 kPa {0 mmHg, 0 inHg}	500 {5.10, 72.6} or more
	(kPa {kgf/cm ² , psi})	At 66.7 kPa {500 mmHg, 19.7 inHg}	6,500 {66.29, 942.8} or more
Front brake (disc)	Minimum disc pad thickness	(mm {in})	2.0 {0.079}
	Minimum disc plate thickness	(mm {in})	23 {0.91}
	Disc plate runout limit	(mm {in})	0.05 {0.002}
Rear brake (disc)	Minimum disc pad thickness	(mm {in})	2.0 {0.079}
	Minimum disc plate thickness	(mm {in})	9 {0.35}
	Disc plate runout limit	(mm {in})	0.05 {0.002}
Brake fluid	Type		SAE J1703, FMVSS 116 DOT-3 or DOT-4
PARKING BRAKE SYSTEM			

Parking brake lever	Lever stroke when pulled with 98 N {10 kgf, 22 lbf} at point 50 mm {1.97 in} from the end of the parking brake lever	(notches)	3-6
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SERVICE TOOLS

BRAKES SST

B3E046001020W01

49 0259 770B Flare nut wrench		49 0221 600C Disc brake expand tool		49 B033 001 Installer	
49 B026 301 Installer		49 G033 102 Handle		49 U043 0A0A Oil pressure gauge set	
49 D043 0A0 Adapter set		49 F043 002 Wrench		WDS	