

GROUP 22A

MANUAL

TRANSAXLE

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GENERAL DESCRIPTION

M1221000100859

W5M51 and W6MAA models have been established.

ITEM		SPECIFICATIONS	
CLASSIFICATION		MR edition	RS/GSR
Transaxle model		W6MAA	W5M51
Transaxle type		Forward 6-speed, reverse 1-speed, constant mesh	Forward 5-speed, reverse 1-speed, constant mesh
Transmission ratio	1st	2.909	2.928
	2nd	1.944	1.950
	3rd	1.434	1.407
	4th	1.100	1.031
	5th	0.868	0.761
	6th	0.693	—
	Reverse	2.707	3.416
Final reduction ratio		4.583	4.529
Front differential		Helical gear type limited slip differential	
Center differential	Differential gear unit	Active center differential (ACD)	

MANUAL TRANSAXLE DIAGNOSIS <ACD>

TROUBLESHOOTING STRATEGY

M1221007000659

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will find most ACD malfunctions.

1. Gather as much information as possible about the complaint from the customer.
2. Verify that the condition described by the customer exists.
3. Check the vehicle for any ACD Diagnostic Trouble Codes (DTCs).
4. If you can not verify the condition and there are no DTCs, the malfunction is intermittent. For information on how to cope with intermittent malfunctions, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).
5. If you can verify the condition but there are no DTCs, or the system can not communicate with scan tool, refer to the Symptom Chart [P.22A-10](#).
6. If there is a DTC, record the number of the code, then erase the code from memory using scan tool.
7. Reconfirm the symptom.
8. If a DTC is set again, go to the Inspection Chart for Diagnostic Trouble Codes.
9. If a DTC is not set again, the malfunction is intermittent. For information on how to cope with intermittent malfunctions, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).
10. Verify malfunction is eliminated. After repairs are completed, the complaint conditions to confirm the malfunction has been eliminated.

INTRODUCTION

The manual transaxle can exhibit any of the following symptoms: noise or vibration is generated or fluid leaks.

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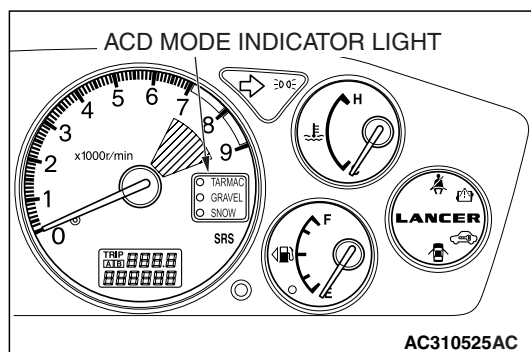
The causes of these symptoms could come from: incorrect mounting, the fluid level may be low, or a component of the ACD may be faulty.

DIAGNOSTIC FUNCTION

M1221007700023

READING DIAGNOSIS CODE

When the ACD has failed, the ACD indicator light illuminates in all modes (remains illuminated until the ignition switch is turned to OFF position). Check the diagnostic trouble codes if the ACD indicator light has illuminated in all modes.



ON-BOARD DIAGNOSTICS

The ACD-ECU monitors its input/output signals (some signals all the time and others under specified conditions). When an irregular signal is initially monitored, the ACD-ECU decides that a malfunction has occurred and records the occurrence as a diagnostic trouble code. There are 29 diagnostic items. The diagnostic results can be read with a scan tool. Diagnostic trouble codes are kept in memory by direct battery feed. The codes are retained in memory even if the ignition switch is in the "LOCK" (OFF) position.

Diagnostic trouble codes will, however, be erased when a battery terminal or the ACD-ECU connector is disconnected. In addition, the diagnostic trouble code can also be erased by scan tool MB991958 (M.U.T.-III sub assembly).

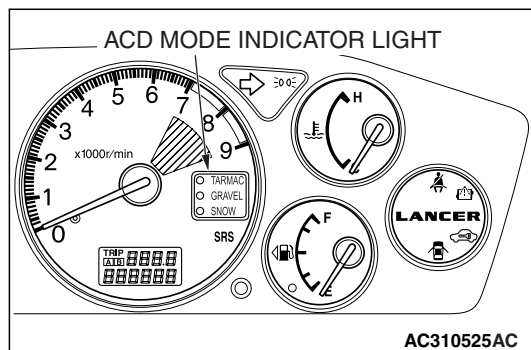
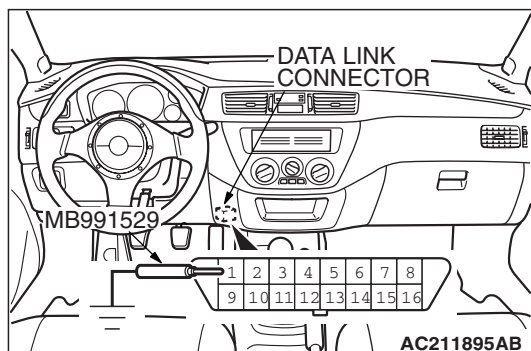
NOTE: If a sensor is disconnected when the ignition switch is in the "ON" position a diagnostic trouble code is stored in memory. In this case, erase the DTC using scan tool MB991958 (M.U.T.-III sub assembly).

The 29 diagnostic items are displayed in numeric order.

HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES (When using the ACD mode indicator light)

Required Special Tool:

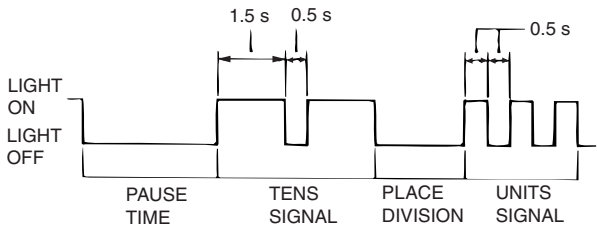
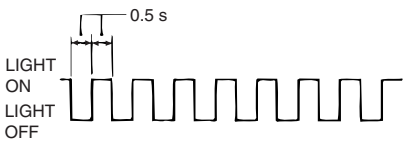
- MB991529: Diagnostic Trouble Code Check Harness
1. Use special tool MB991529 to ground terminal number 1 of the data link connector.
 2. Turn on the ignition switch to the "ON" position.



3. Read the diagnostic trouble codes by counting ACD mode indicator light flashes.
4. Refer to [P.22A-9](#), Diagnostic Trouble Codes Chart.
5. Erase the diagnostic trouble codes by the following procedure.
 - (1) Turn the ignition switch to the "LOCK" (OFF) position.
 - (2) Disconnect the negative battery cable for 10 seconds or more. Reconnect the cable.

- (3) Turn the ignition switch to the "ON" position. Read the diagnostic trouble code output and check that no diagnostic trouble code is set.
- (4) Start the engine and let it run until the engine has warmed up. Run it at idle for approximately 10 minutes or longer. The engine control module must build up the adaptive memory for smooth idle and good performance.

UNDERSTANDING THE ACD MODE INDICATOR LIGHT FLASHES

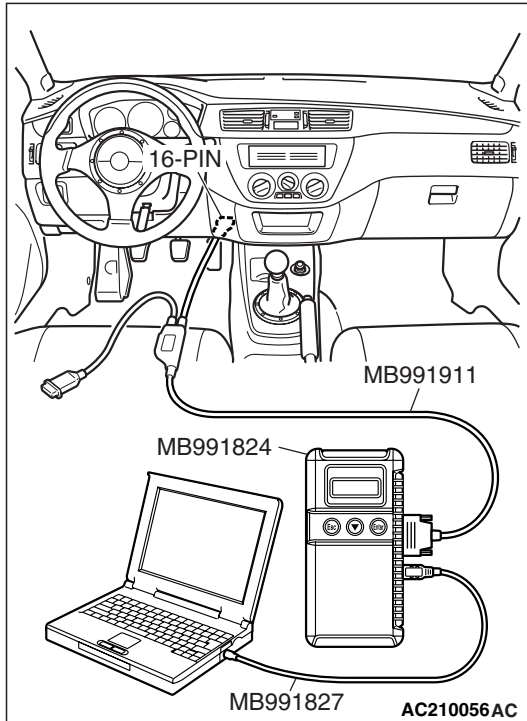
EXAMPLE OF FLASHING WHEN A DIAGNOSTIC TROUBLE CODE IS SET	FLASHING WHEN NORMAL
<p>FOR DIAGNOSTIC TROUBLE CODE No.23</p>  <p>ACX01947AB</p>	 <p>ACX01929AB</p>

NOTE: Other diagnostic trouble codes also are set by the flashing of the center differential lock indicator light corresponding to the same code numbers as the scan tool displays.

HOW TO CONNECT THE SCAN TOOL (M.U.T.-III)

Required Special Tools:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991911: M.U.T.-III Main Harness B

**CAUTION**

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991911 to special tool MB991824.
5. Connect special tool MB991911 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.

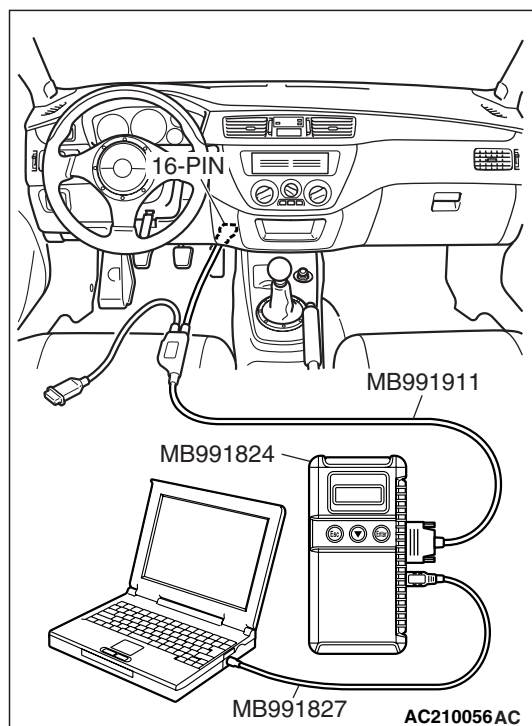
7. Start the M.U.T.-III system on the personal computer.

NOTE: Disconnecting scan tool MB991958 is the reverse of the connecting sequence, making sure that the ignition switch is at the "LOCK" (OFF) position.

HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991911: M.U.T.-III Main Harness B



CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

NOTE: If the battery voltage is low, diagnostic trouble codes will not be set. Check the battery if scan tool MB991958 does not display.

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "Interactive Diagnosis" from the start-up screen.
4. Select "System select."
5. Choose "AYC/ACD" from the "POWER TRAIN" tab.
6. Select "MITSUBISHI."
7. Select "Diagnostic Trouble Code."
8. If a DTC is set, it is shown.
9. Choose "Erase DTCs" to erase the DTC.

HOW TO READ DATA LIST

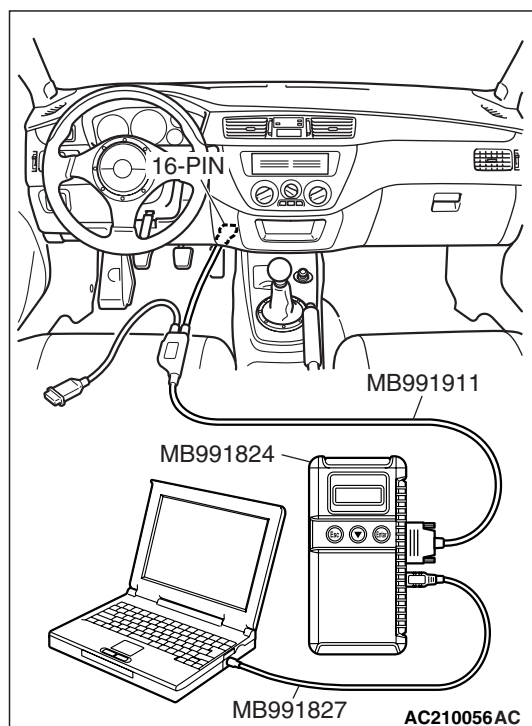
Required Special Tools:

- MB991958 : Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991911: M.U.T.-III Main Harness B

CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "Interactive Diagnosis" from the start-up screen.
4. Select "System select."
5. Choose "AYC/ACD" from the "POWER TRAIN" tab.
6. Select "MITSUBISHI."
7. Select "Data List."
8. Choose an appropriate item and select the "OK" button.



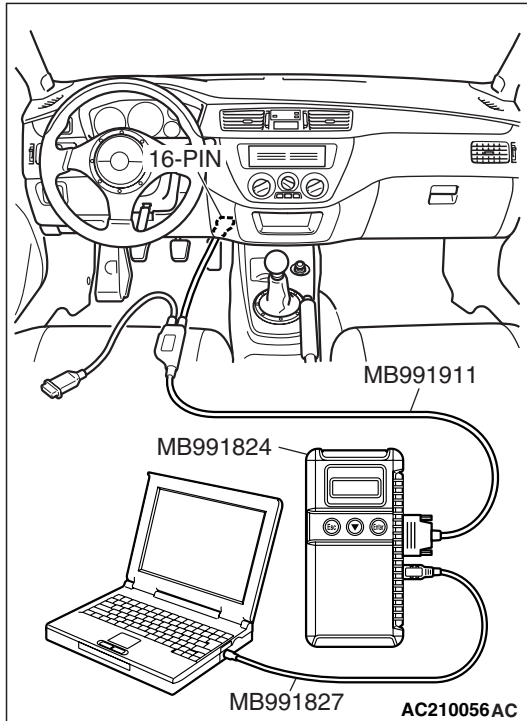
HOW TO PERFORM ACTUATOR TEST**Required Special Tools:**

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: M.U.T.-III USB Cable
 - MB991911: M.U.T.-III Main Harness B

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "Interactive Diagnosis" from the start-up screen.
4. Select "System select."
5. Choose "AYC/ACD" from the "POWER TRAIN" tab.
6. Select "MITSUBISHI."
7. Select "Actuator Test."
8. Choose an appropriate item and select the "OK" button.



DIAGNOSTIC TROUBLE CODE CHART

M1221007800020

DIAGNOSIS CODE No.	DIAGNOSIS ITEMS		REFERENCE PAGE
12	Power supply voltage (valve power supply) system	Open circuit or short circuit	P.22A-11
13	Fail-safe relay system <inside AWD-ECU>	Open circuit or short circuit	P.22A-17
21	ABS sensor <FR> system	Open circuit or short circuit	P.22A-18 <Vehicles without ABS>, P.22A-26 <Vehicles with ABS>
22	ABS sensor <FL> system	Open circuit or short circuit	P.22A-18 <Vehicles without ABS>, P.22A-26 <Vehicles with ABS>
23	ABS sensor <RR> system	Open circuit or short circuit	P.22A-18 <Vehicles without ABS>, P.22A-26 <Vehicles with ABS>
24	ABS sensor <RL> system	Open circuit or short circuit	P.22A-18 <Vehicles without ABS>, P.22A-26 <Vehicles with ABS>
25	Wrong-diameter tire		P.22A-33 <Vehicles without ABS>, P.22A-35 <Vehicles with ABS>
26	ABS sensor (faulty output signal)		P.22A-37 <Vehicles without ABS>, P.22A-39 <Vehicles with ABS>
31	Steering angular velocity sensor <ST-1, ST-2, ST-N> system	Open circuit or short circuit	P.22A-42
32	Steering angular velocity sensor <ST-N> system	Short circuit	P.22A-51
33		Fixed	P.22A-51
34	Steering angular velocity sensor <ST-1, ST-2> system	Short circuit or output fixed	P.22A-57
41	Throttle position sensor system	Open circuit or short circuit	P.22A-64
42		Short circuit	P.22A-64

DIAGNOSIS CODE No.	DIAGNOSIS ITEMS		REFERENCE PAGE
45	Pressure sensor system	Open circuit or short circuit	P.22A-71
46		Open ground	P.22A-76
47		Abnormal power supply	P.22A-78
51	G-sensor system (Longitudinal)	Open circuit or short circuit	P.22A-83
52		Defective sensor	P.22A-96
56	G-sensor system (Lateral)	Open circuit or short circuit	P.22A-101
57		Defective sensor	P.22A-114
61	Stoplight switch system	Open circuit	P.22A-119
62	ACD mode changeover switch system	Stuck	P.22A-128
63	Parking brake switch system	Short circuit or not returned to original position	P.22A-137
65	ABS monitor system <Vehicles with ABS>	Open circuit or defective ABS	P.22A-144
74	Proportioning valve system	Open circuit or short-circuit	P.22A-151
81	Electric pump relay system	Open circuit or short-circuit	P.22A-156
82		Electric pump malfunction or pressure sensor defect	P.22A-161
85	ACD control error		—

NOTE: Code No.85 is not a code number output due to malfunction, but a code number output when control for the AWD-ECU to protect the ACD is stopped in excessive driving. ACD control can be recovered by turning the ignition switch ON to OFF to ON.

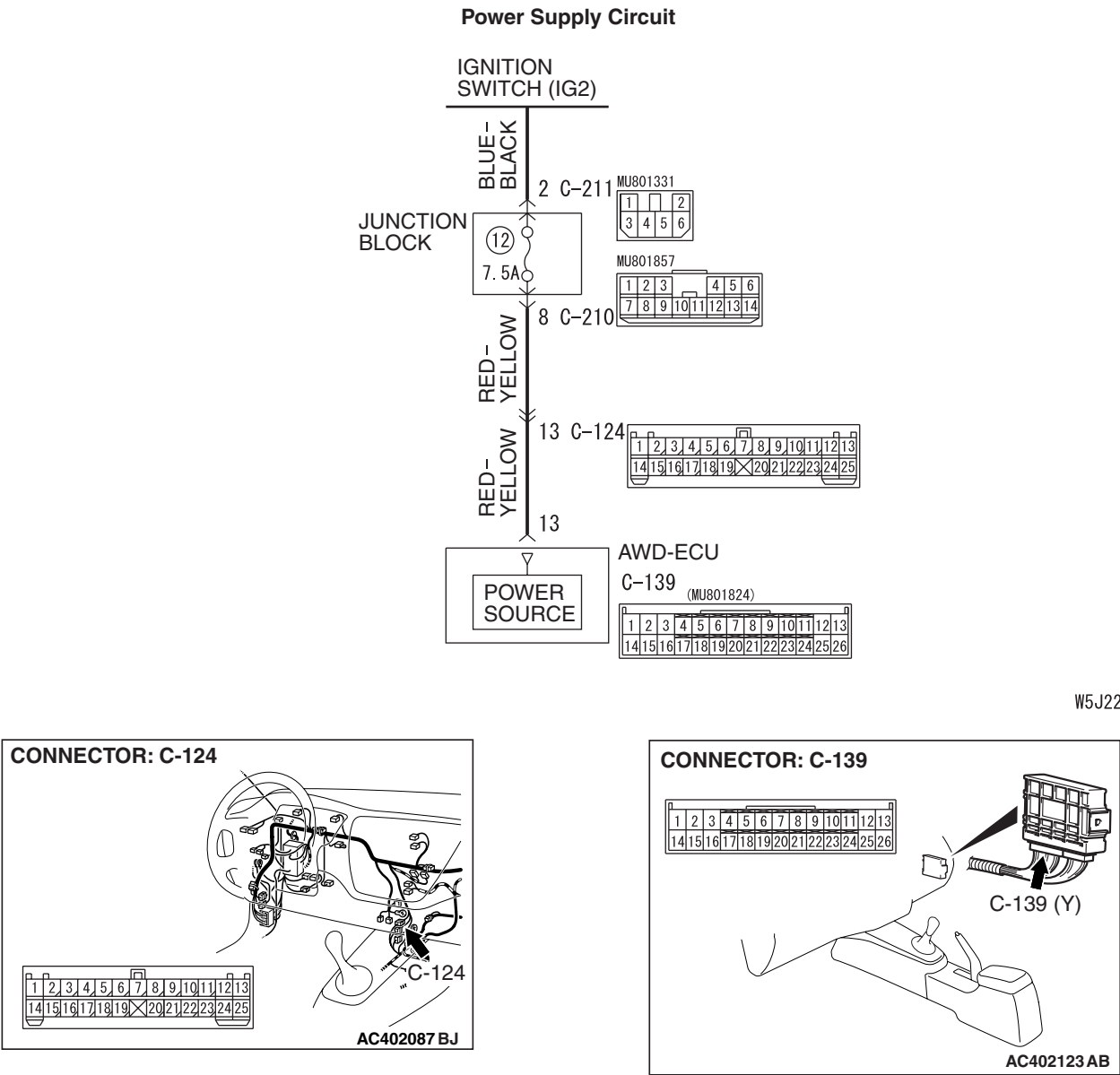
SYMPTOM CHART

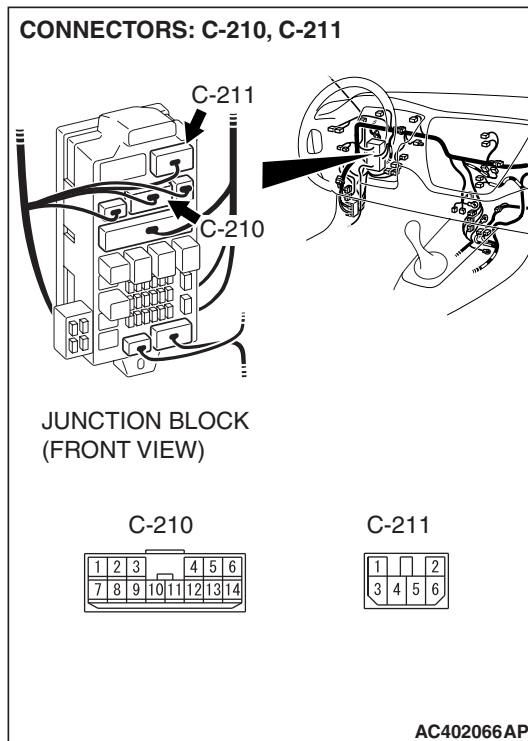
M1221007100634

TROUBLE SYMPTOM	INSPECTION PROCEDURE No.	REFERENCE PAGE
No communication possible between scan tool and all systems.	1	P.22A-167
No communication possible between scan tool and AWD-ECU.	2	P.22A-174
ACD mode indicator light does not light up when the ignition switch is set to "ON" (engine is stopped).	3	P.22A-183
More than two ACD model indicator lights remain lit even after the engine is started	4	P.22A-190
The ACD does not operate (no diagnostic code).	5	P.22A-192

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC 12: Power Supply Voltage (Valve Power Supply) System





CIRCUIT OPERATION

The AWD-ECU (terminal 13) is energized through the fuse by the ignition switch.

DTC SET CONDITIONS

The power supply circuit open or short circuit if the power supply voltage of the AWD-ECU is below 9 volts or above 18 volts.

Or DTC 12 is set when the battery voltage drops.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the battery
- Damaged harness and connector
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Check the battery.

Refer to GROUP 54A, Battery –On-vehicle Service –Battery Test [P.54A-5](#).

Q: Is the battery damaged?

YES : Charge or replace the battery.

NO : Go to Step 2.

STEP 2. Using scan tool MB991958, check data list item 10: Battery Voltage.

⚠ CAUTION

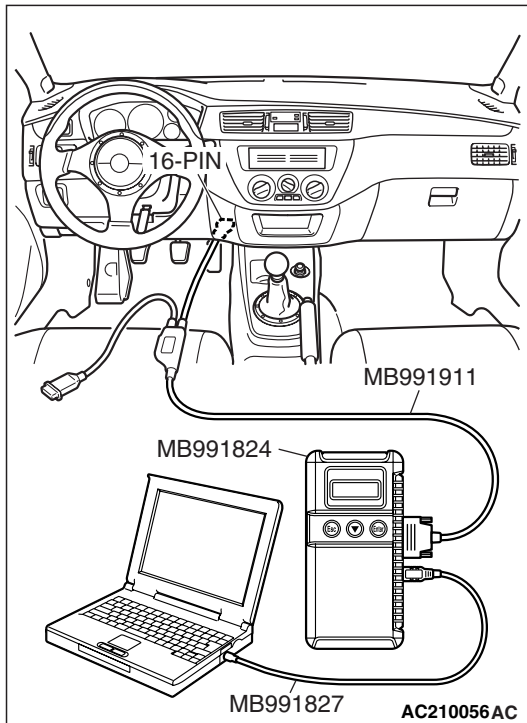
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 10: Battery Voltage.
 - The voltage should equal battery positive voltage.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage battery positive voltage?

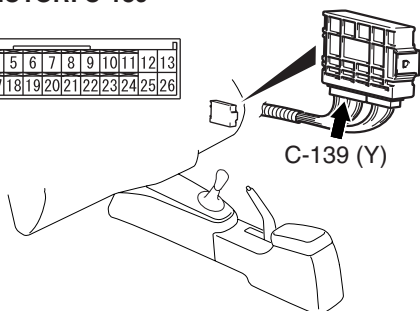
YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Go to Step 3.



CONNECTOR: C-139

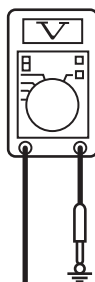
1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26



AC402123 AB

**C-139 HARNESS
CONNECTOR:
HARNESS SIDE**

13	12	11	10	9	8	7	6	5	4	3	2	1
4	25	24	23	22	21	20	19	18	17	16	15	14



AC400965 AP

STEP 3. Measure the power supply voltage at AWD-ECU connector C-139 by backprobing.

- (1) Turn the ignition switch to the "ON" position.
- (2) Measure the voltage between AWD-ECU connector C-139 terminal 13 and ground by backprobing.
 - The voltage should measure battery positive voltage.
- (3) Turn the ignition switch to the "Lock" (OFF) position.

Q: Is the measured voltage battery positive voltage?**YES :** Go to Step 7.**NO :** Go to Step 4.

STEP 4. Check intermediate connector C-124, AWD-ECU connector C-139, junction block connector C-210 and C-211 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

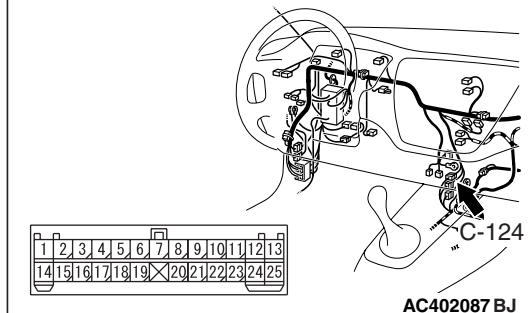
Q: Are the connectors and terminals in good condition?

YES : Go to Step 5.

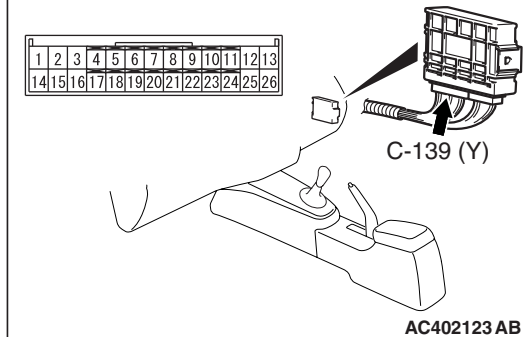
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

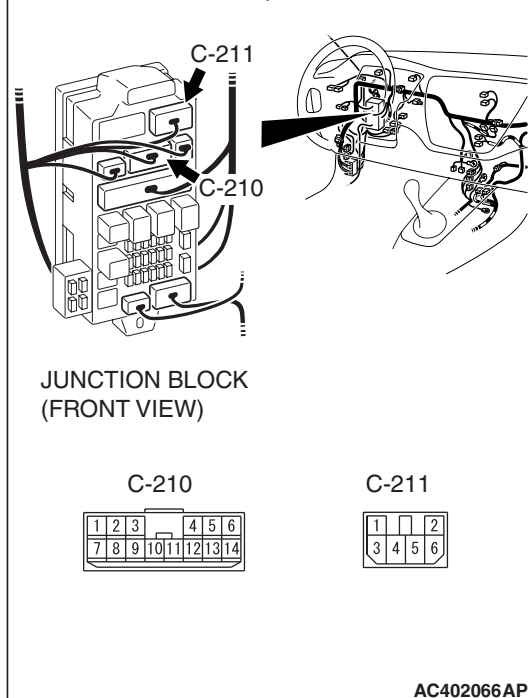
CONNECTOR: C-124



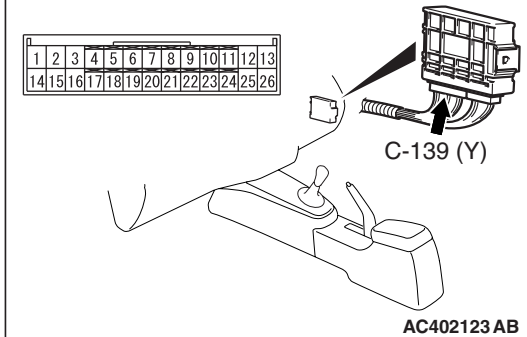
CONNECTOR: C-139



CONNECTORS: C-210, C-211



CONNECTOR: C-139



STEP 5. Check the harness for open circuit or short circuit to ground between the ignition switch and the AWD-ECU connector C-139 terminal 13.

Q: Is the harness wire in good condition?

YES : Go to Step 6.

NO : Repair or replace the harness wire.

STEP 6. Using scan tool MB991958, check data list item 10: Battery Voltage.

⚠ CAUTION

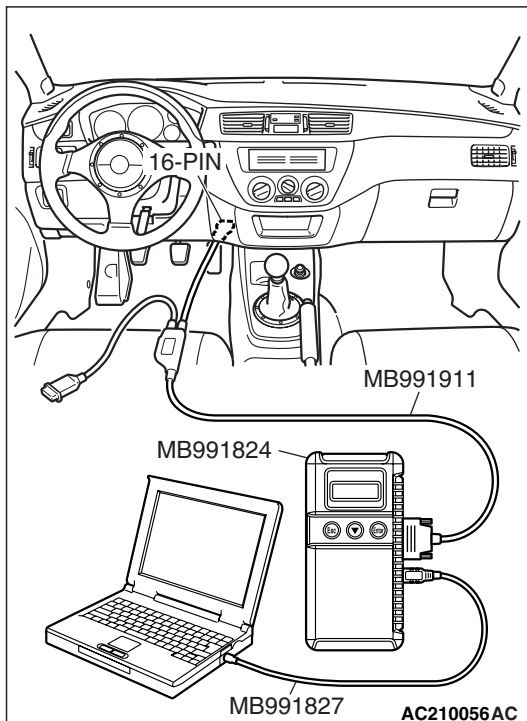
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

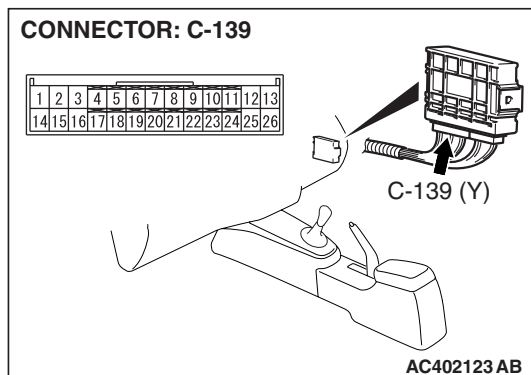
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 10: Battery Voltage.
 - The voltage should equal battery positive voltage.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage battery positive voltage?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.





STEP 7. Check AWD-ECU connector C-139 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

DTC 13: Fail-safe Relay System <Inside AWD-ECU>

OPERATION

The power supplied from the ignition switch will be distributed to each section inside the ECU through the fail-safe relay (incorporated in the ECU).

DTC SET CONDITIONS

DTC 13 will be set as the open circuit or short circuit of the fail-safe relay when the voltage is above 6 volts during fail-safe relay OFF or when the voltage is below 6 volts during ON.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

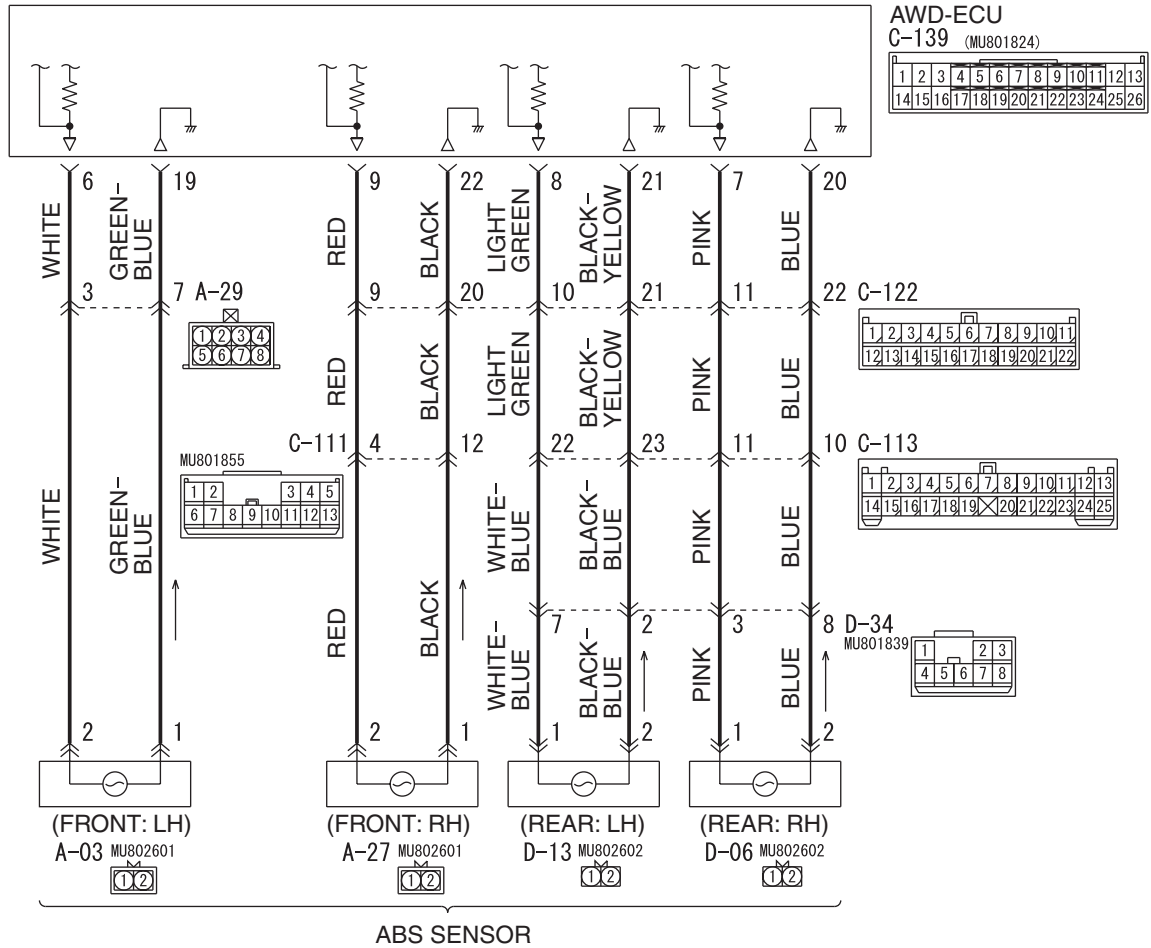
- Malfunction of the AWD-ECU

DIAGNOSIS

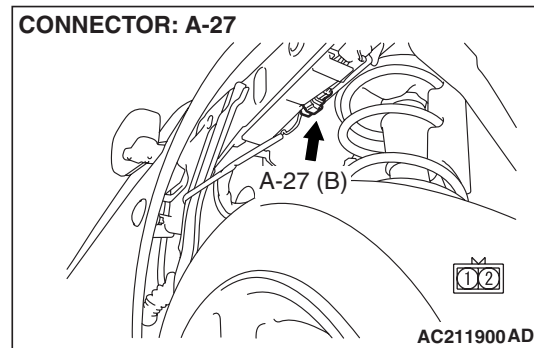
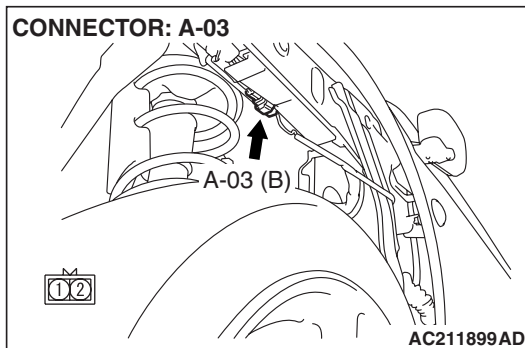
Replace the AWD-ECU.

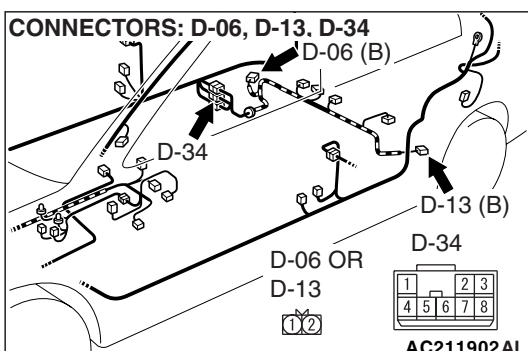
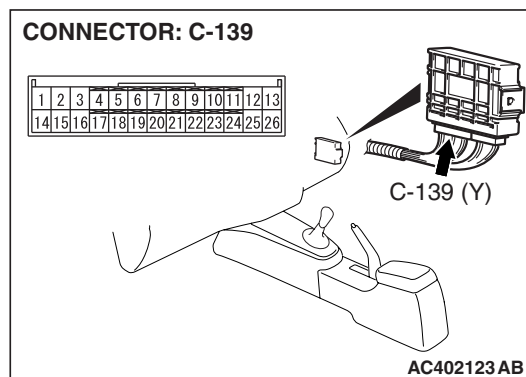
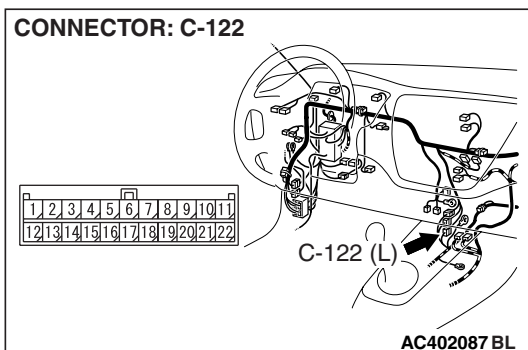
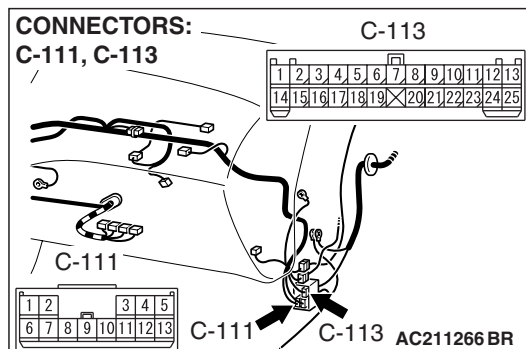
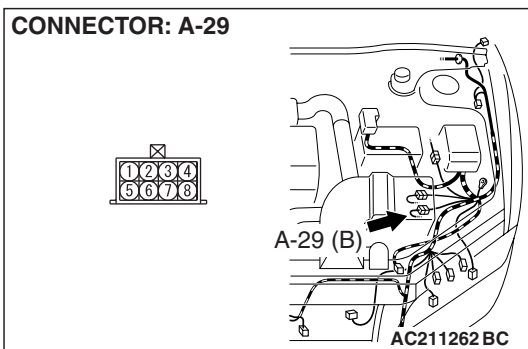
DTC 21: ABS Sensor <FR> System
 DTC 22: ABS Sensor <FL> System
 DTC 23: ABS Sensor <RR> System
 DTC 24: ABS Sensor <RL> System
 <Vehicles without ABS>

ABS Sensor System <Vehicles without ABS>



W5J22M002A





CIRCUIT OPERATION

The AWD-ECU detects the speed of each wheel according to the pulse signals from each ABS sensor.

DTC SET CONDITIONS

A DTC corresponding to the open circuit or short circuit of the ABS sensor is set when one ABS sensor has detected a vehicle speed of above 15 km/h (9.3 mph), but any one of the remaining three ABS sensors could not detect the vehicle speed.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the ABS sensor
- Damaged harness and connector
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Using scan tool MB991958, check data list items 01, 02, 03, 04: ABS Sensor.

⚠ CAUTION

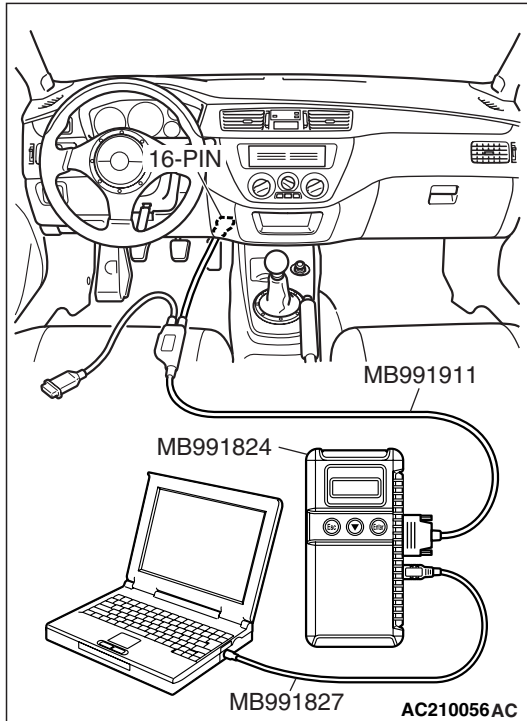
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Start the engine.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 01: ABS Sensor <FR>
 - Item 02: ABS Sensor <FL>
 - Item 03: ABS Sensor <RR>
 - Item 04: ABS Sensor <RL>
 - The speedometer indication matches the M.U.T.-III indication.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

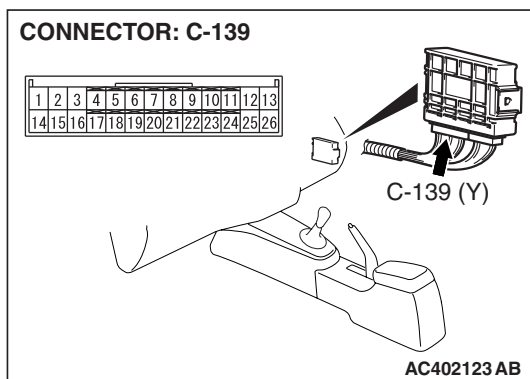
Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use
Troubleshooting/Inspection Service Points –How to
Cope with Intermittent Malfunction [P.00-13](#).

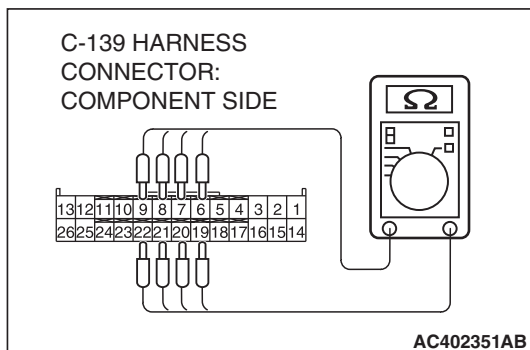
NO : Go to Step 2.



CONNECTOR: C-139



**C-139 HARNESS
CONNECTOR:
COMPONENT SIDE**



STEP 2. Check the ABS sensor at ACD-ECU connector C-139.

(1) Disconnect connector C-139 and measure at the harness side.

(2) Measure the resistance between the following terminals.

- Measure the resistance between terminal 9 and 22.
<FR>
- Measure the resistance between terminal 6 and 19.
<FL>
- Measure the resistance between terminal 7 and 20.
<RR>
- Measure the resistance between terminal 8 and 21.
<RL>
- The resistance should measure between 1.2 and 1.6 ohms.

Q: Is the measured resistance within the specified range?

YES : Go to Step 7.

NO : Go to Step 3.

STEP 3. Check the ABS sensor.

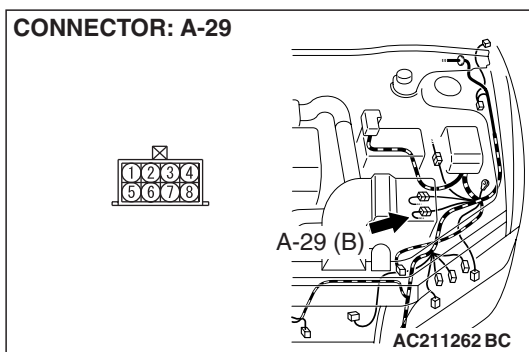
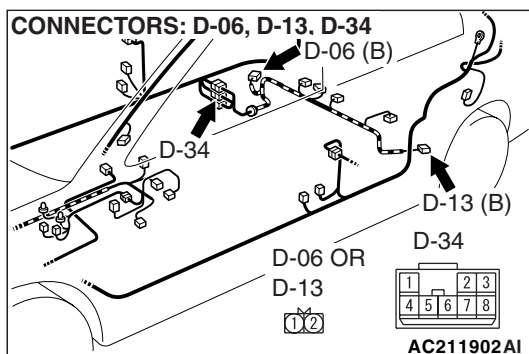
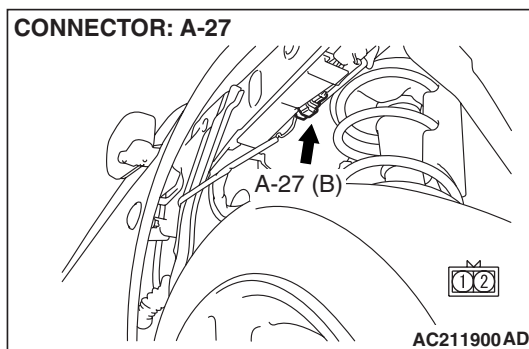
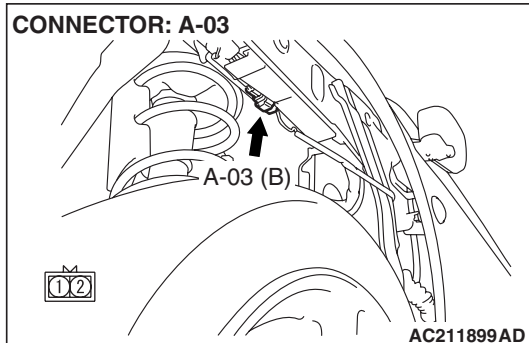
Refer to GROUP 35B, ABS sensor [P.22A-212](#).

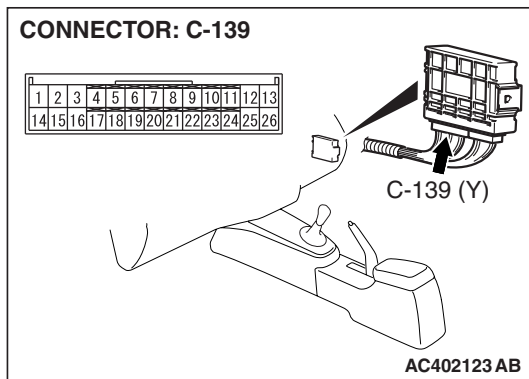
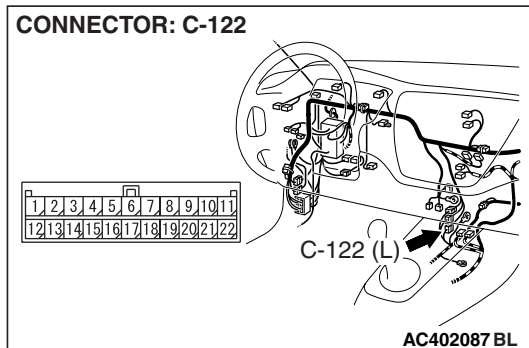
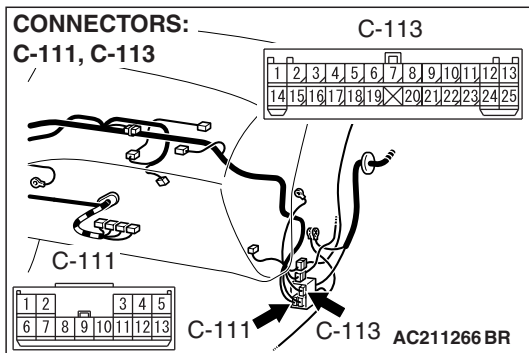
Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair or replace the ABS sensor.

STEP 4. Check ABS sensor connector A-03, A-27, D-06, D-13, intermediate connector A-29, C-111, C-113, C-122, D-34 and AWD-ECU connector C-139 for loose, corroded or damaged terminals, or terminals pushed back in the connector.





Q: Are the connectors and terminals in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

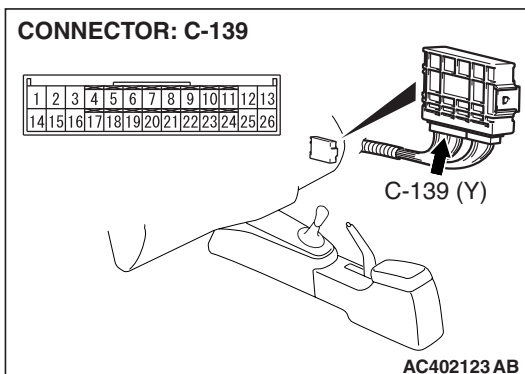
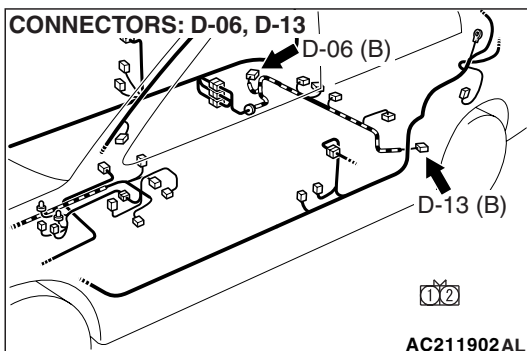
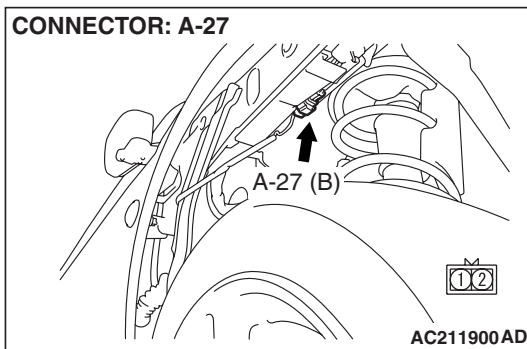
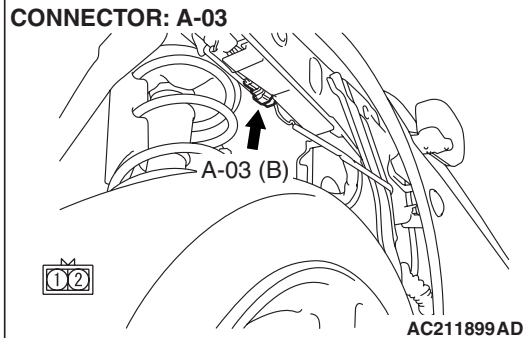
[P.00E-2.](#)

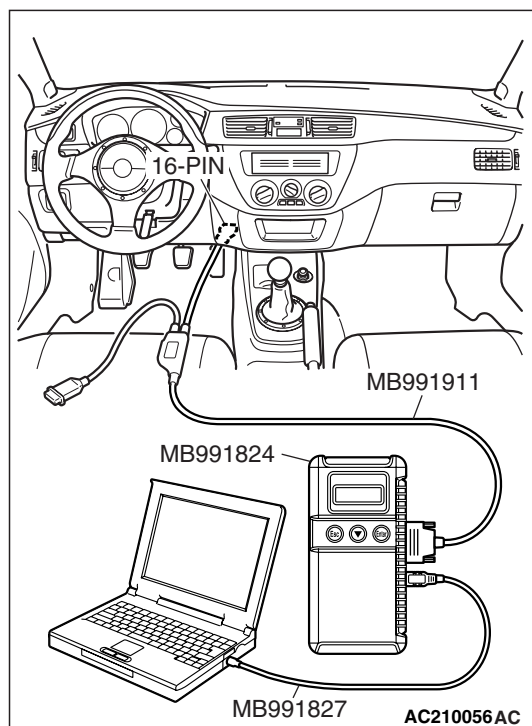
STEP 5. Check the harness for open circuit or short circuit to ground between ABS sensor connector A-03 (terminals 1, 2), A-27 (terminals 1, 2), D-06 (terminals 1, 2), D-13 (terminals 1, 2) and AWD-ECU connector C-139 (terminals 6, 19, 9, 22, 7, 20, 8, 21).

Q: Is the harness wire in good condition?

YES : Go to Step 6.

NO : Repair or replace the harness wire.





STEP 6. Using scan tool MB991958, check data list items 01, 02, 03, 04: ABS Sensor.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958 to the data link connector.

(2) Start the engine.

(3) Set scan tool MB991958 to the data reading mode.

- Item 01: ABS Sensor <FR>
- Item 02: ABS Sensor <FL>
- Item 03: ABS Sensor <RR>
- Item 04: ABS Sensor <RL>
 - The speedometer indication matches the M.U.T.-III indication.

(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.

STEP 7. Check the ABS sensor output voltage.

Refer to [P.22A-212](#).

Q: Is the check result normal?

YES : Go to Step 10.

NO : Go to Step 8.

STEP 8. Check the ABS sensor and ABS rotor.

Refer to [P.22A-212](#).

Q: Is the check result normal?

YES : Go to Step 9.

NO : Repair or replace the ABS sensor or ABS rotor.

STEP 9. Check the wheel bearing.

Refer to GROUP 26, On-vehicle Service –Wheel Bearing End Play Check <Front> [P.26-6](#) or GROUP 27, On-vehicle Service –Wheel Bearing End Play Check <Rear> [P.27-14](#) .

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair or replace the wheel bearing.

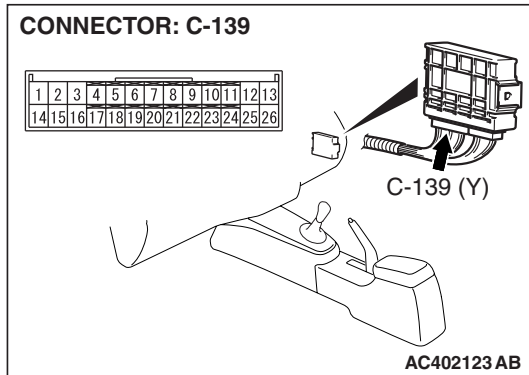
STEP 10. Check AWD-ECU connector C-139 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 6.

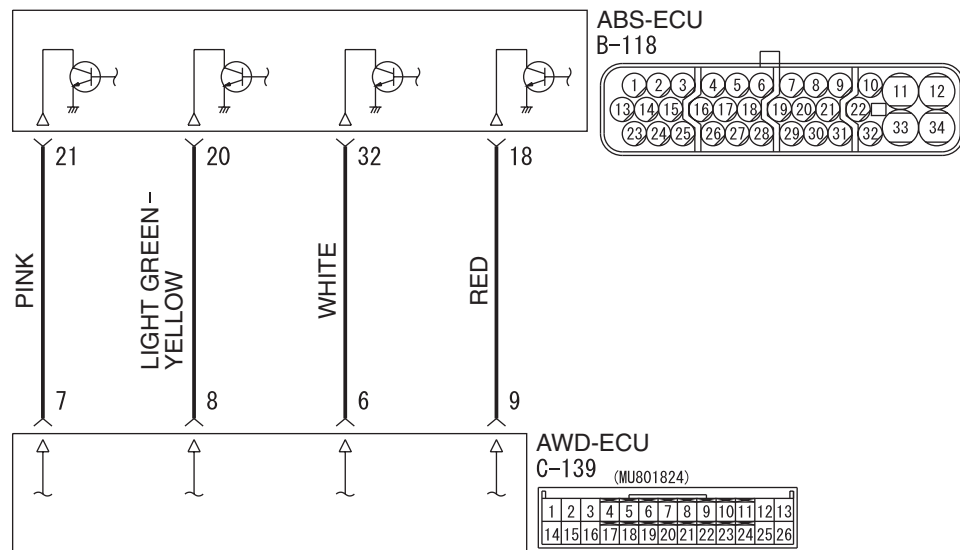
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

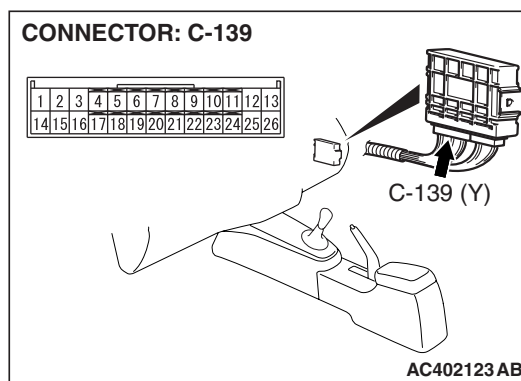
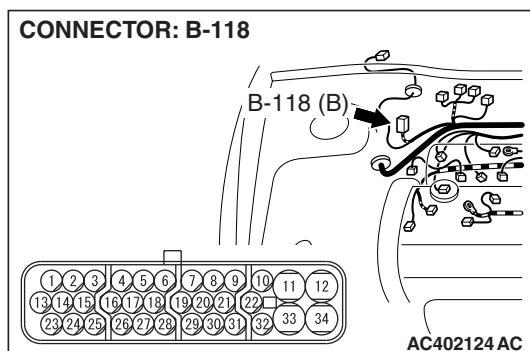


DTC 21: ABS Sensor <FR> System
DTC 22: ABS Sensor <FL> System
DTC 23: ABS Sensor <RR> System
DTC 24: ABS Sensor <RL> System
<Vehicles with ABS>

**ABS-ECU Signal Line System Circuit
(ABS Sensor System) <Vehicles with ABS>**



W5J22M001A



CIRCUIT OPERATION

- The ABS-ECU detects the speed of each wheel according to the pulse signals from each ABS sensor.
- The AWD-ECU receives the ABS sensor signals through the ABS-ECU.

DTC SET CONDITIONS

A diagnosis code corresponding to the open circuit or short circuit of the ABS sensor is set when one ABS sensor has detected a vehicle speed of above 15 km/h (9.3 mph), but any one of the remaining three ABS sensors could not detect the vehicle speed.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the ABS sensor
- Damaged harness and connector
- Malfunction of the ABS-ECU
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Using scan tool MB991958, read the ABS diagnostic trouble code.

⚠ CAUTION

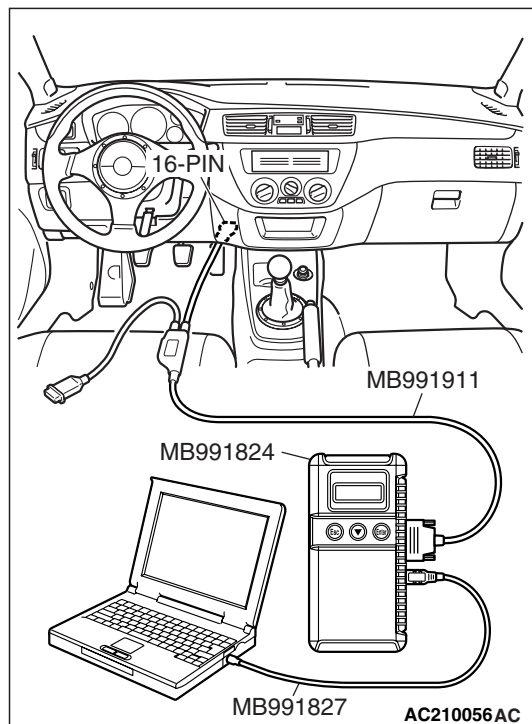
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for ABS diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are DTCs (No.11, 12, 13, 14, 21, 22, 23, 24) set?

YES : Refer to GROUP 35B, ABS –Diagnostic Trouble Code Chart. [P.35B-11](#).

NO : Go to Step 2.



STEP 2. Using scan tool MB991958, check data list items 01, 02, 03, 04: ABS Sensor.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958 to the data link connector.

(2) Start the engine.

(3) Set scan tool MB991958 to the data reading mode.

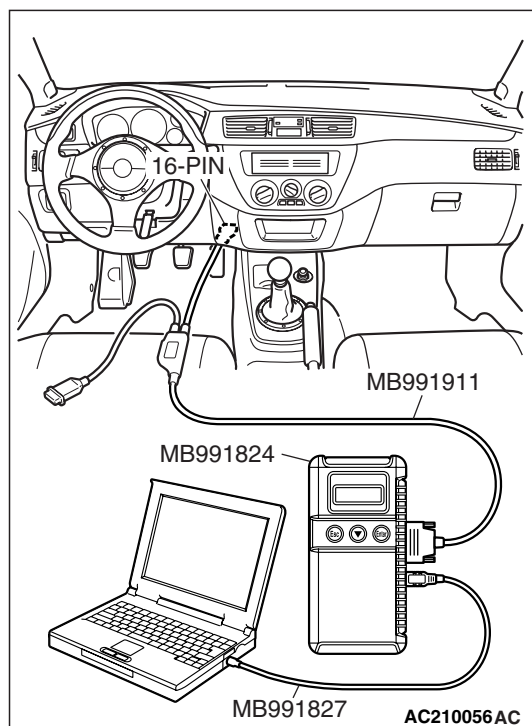
- Item 01: ABS Sensor <FR>
- Item 02: ABS Sensor <FL>
- Item 03: ABS Sensor <RR>
- Item 04: ABS Sensor <RL>
 - The speedometer indication matches the M.U.T.-III indication.

(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

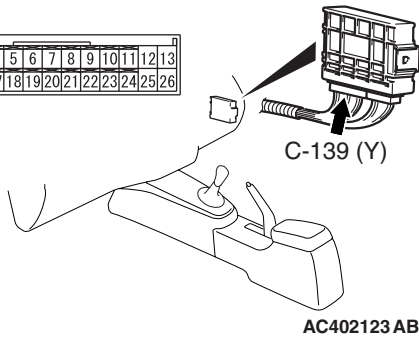
YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use
Troubleshooting/Inspection Service Points –How to
Cope with Intermittent Malfunction [P.00-13](#).

NO : Go to Step 3.



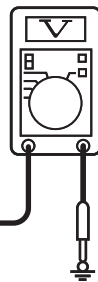
CONNECTOR: C-139

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26



1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26

C-139 HARNESS
CONNECTOR:
HARNESS SIDE

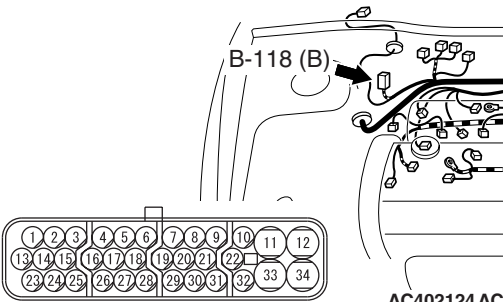
**STEP 3. Measure the ABS sensor output voltage at AWD-ECU connector C-139 by backprobing.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Measure the voltage between the following terminals of AWD-ECU connector C-139 and ground while turning the relevant tire of the terminal being measured one-half to one turn per second.
 - Terminal 9 <FR>
 - Terminal 6 <FL>
 - Terminal 7 <RR>
 - Terminal 8 <RL>
 - The voltage changes between 0 V and 5 V.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

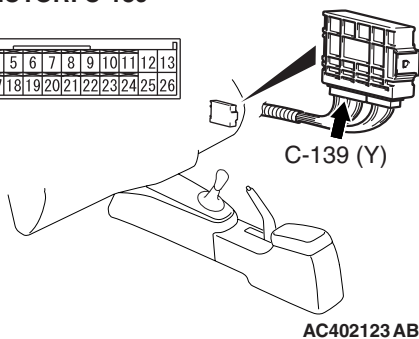
Q: Does the voltage change between 0 V and 5 V?

YES : Go to Step 7.

NO : Go to Step 4.

CONNECTOR: B-118**CONNECTOR: C-139**

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26

**STEP 4. Check ABS-ECU connector B-118 and AWD-ECU connector C-139 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

Q: Are the connectors and terminals in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

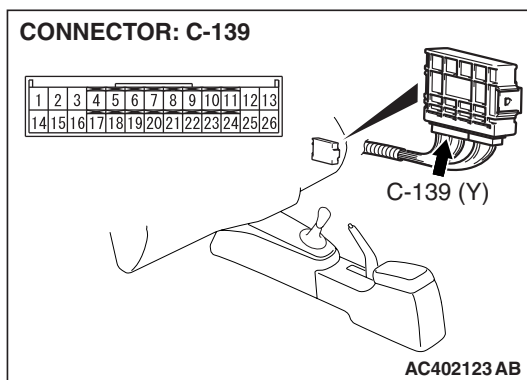
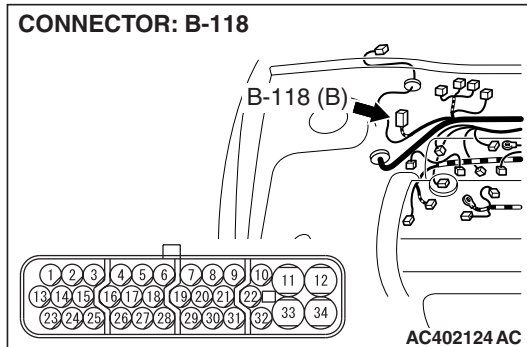
[P.00E-2.](#)

STEP 5. Check the harness for open circuit or short circuit to ground between ABS-ECU connector B-118 (terminals 9, 6, 7, 8) and AWD-ECU connector C-139 (terminals 18, 32, 21, 20).

Q: Is the harness wire in good condition?

YES : Go to Step 6.

NO : Repair or replace the harness wire.



STEP 6. Using scan tool MB991958, check data list item 01, 02, 03, 04: ABS Sensor.

⚠ CAUTION

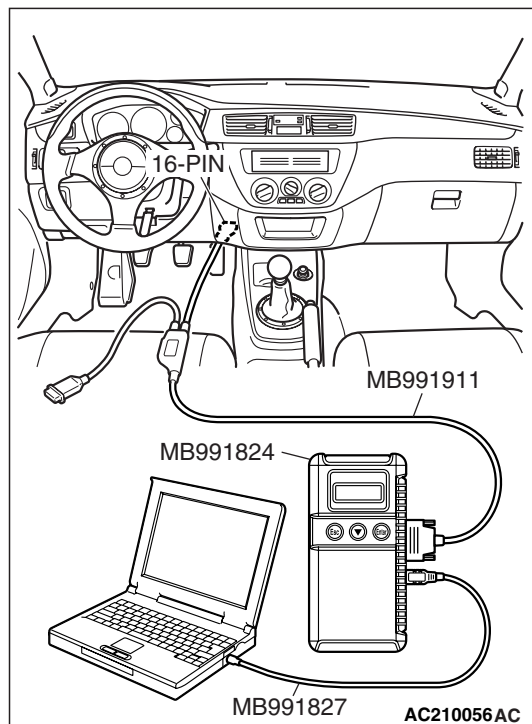
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Start the engine.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 01: ABS Sensor <FR>
 - Item 02: ABS Sensor <FL>
 - Item 03: ABS Sensor <RR>
 - Item 04: ABS Sensor <RL>
 - The speedometer indication matches the M.U.T.-III indication.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.

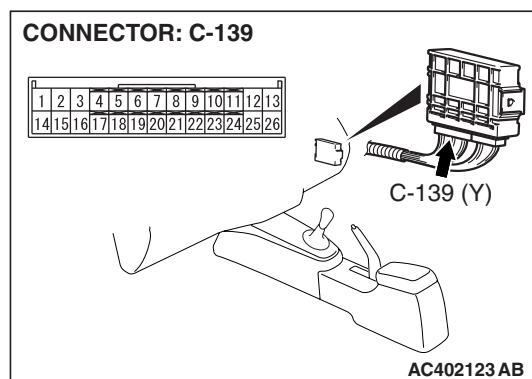


STEP 7. Check AWD-ECU connector C-139 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).



DTC 25: Wrong-diameter Tire <Vehicles without ABS>

ABS SENSOR SYSTEM CIRCUIT

Refer to [P.22A-18](#).

CIRCUIT OPERATION

The AWD-ECU receives each ABS sensor signal.

DTC SET CONDITIONS

DTC 25 is set as wrong-diameter tire when one of the four vehicle speeds is outside the range of specified values in respect to the average of the four vehicle speed sensors, when the vehicle speed is above 20 km/h (12 mph) with the steering wheel in the straight ahead position. However the warning light does not light up.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the tire
- Malfunction of the ABS sensor
- Damaged harness and connector
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Check the tire.

Check the tire pressure, size and brand.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Adjust or replace the tire.

STEP 2. Using scan tool MB991958, read the ACD diagnostic trouble code.

⚠ CAUTION

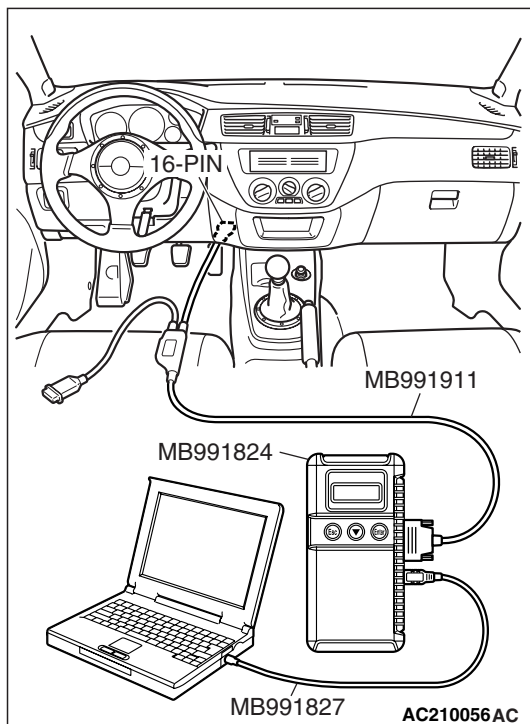
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for ACD diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are DTCs (No.21, 22, 23, 24) set?

YES : Refer to DTCs 21, 22, 23, 24: ABS Sensor System
[P.22A-18.](#)

NO : Go to Step 3.



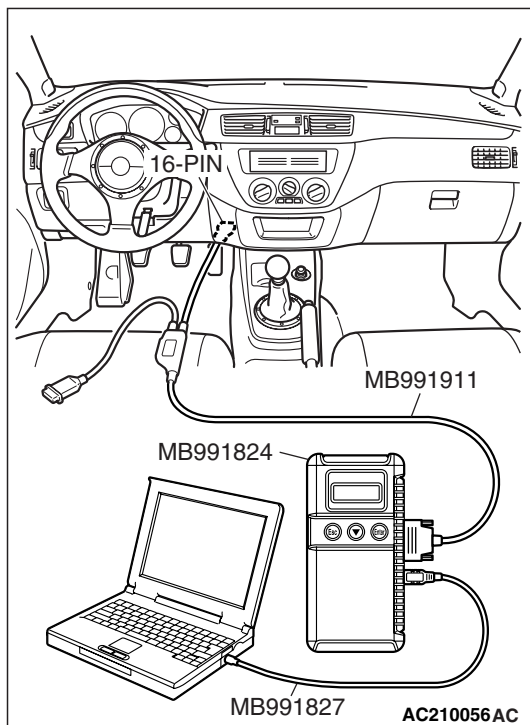
STEP 3. Using scan tool MB991958, check data list items 01, 02, 03, 04: ABS Sensor.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Start the engine.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 01: ABS Sensor <FR>
 - Item 02: ABS Sensor <FL>
 - Item 03: ABS Sensor <RR>
 - Item 04: ABS Sensor <RL>
 - The speedometer indication matches the M.U.T.-III indication.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13.](#)

NO : Replace the AWD-ECU.



DTC 25: Wrong-diameter Tire <Vehicles with ABS>

ABS SENSOR SYSTEM CIRCUIT

Refer to [P.22A-26](#).

CIRCUIT OPERATION

The AWD-ECU receives each ABS sensor signal through the ABS-ECU to detect the tire conditions.

DTC SET CONDITIONS

DTC 25 is set as wrong-diameter tire when one of the four vehicle speeds is outside the range of specified values in respect to the average of the four vehicle speed sensors, when the vehicle speed is above 20 km/h (12 mph) with the steering wheel in the straight ahead position. However the warning light does not light up.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the tire
- Malfunction of the ABS sensor
- Damaged harness and connector
- Malfunction of the ABS-ECU
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Check the tire.

Check the tire pressure, size and brand.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Adjust or replace the tire.

STEP 2. Using scan tool MB991958, read the ABS diagnostic trouble code.

⚠ CAUTION

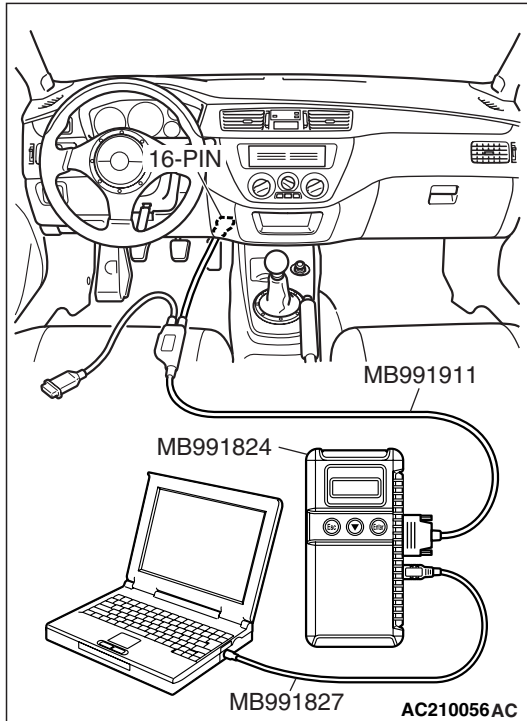
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for ABS diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are DTCs (No.11, 12, 13, 14, 21, 22, 23, 24) set?

YES : Refer to GROUP 35B, ABS –Diagnostic Trouble Code Chart [P.35B-11](#).

NO : Go to Step 3.



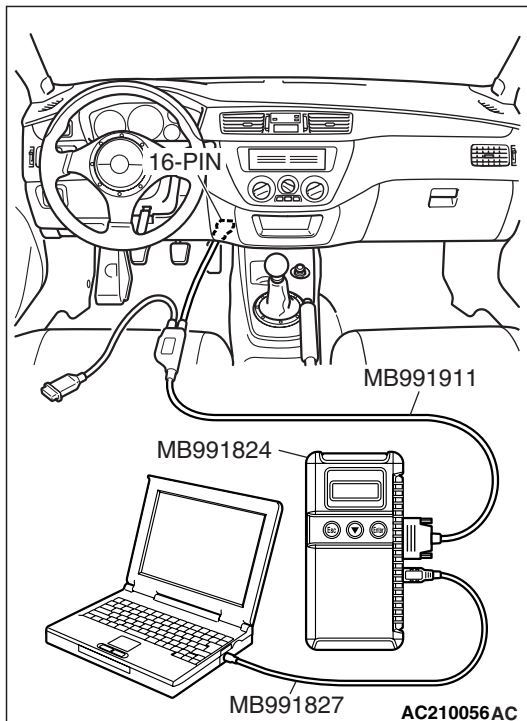
STEP 3. Using scan tool MB991958, read the ACD diagnostic trouble code.

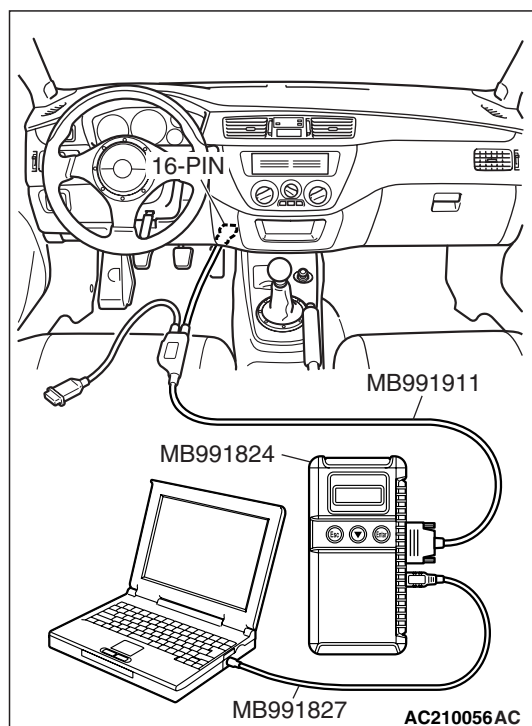
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for ACD diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are DTCs (No.21, 22, 23, 24) set?

YES : Refer to DTCs 21, 22, 23, 24: ABS Sensor System [P.22A-26](#).

NO : Go to Step 4.





STEP 4. Using scan tool MB991958, check data list item 01, 02, 03, 04: ABS Sensor.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Start the engine.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 01: ABS Sensor <FR>
 - Item 02: ABS Sensor <FL>
 - Item 03: ABS Sensor <RR>
 - Item 04: ABS Sensor <RL>
 - The speedometer indication matches the M.U.T.-III indication.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.

DTC 26: ABS Sensor System (Faulty Output Signal) <Vehicles without ABS>

ABS SENSOR SYSTEM CIRCUIT

Refer to [P.22A-18](#).

OPERATION

The AWD-ECU receives each ABS sensor signal.

DTC SET CONDITIONS

DTC 26 is set as output signal error of the ABS sensor when one wheel speed is outside the specified range at the vehicle speed of above 20 km/h (12 mph). However, warning light will light up.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the tire
- Malfunction of the ABS sensor
- Damaged harness and connector
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Check the tire.

Check the tire pressure, size and brand.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Adjust or replace the tire.

STEP 2. Using scan tool MB991958, read the ACD diagnostic trouble code.**⚠ CAUTION**

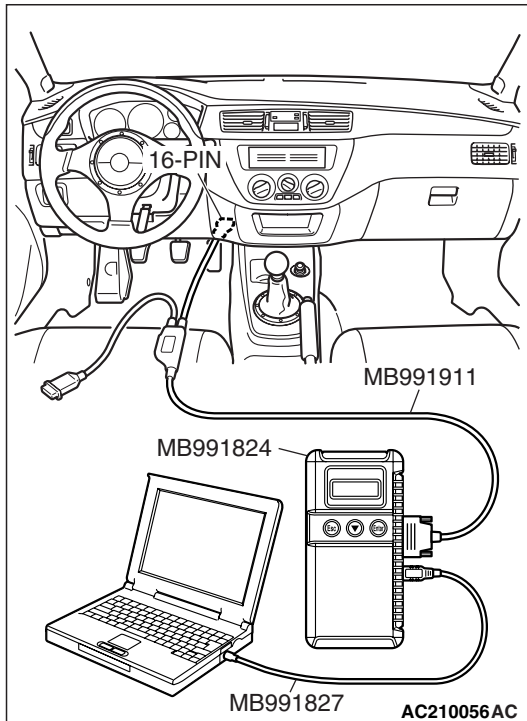
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

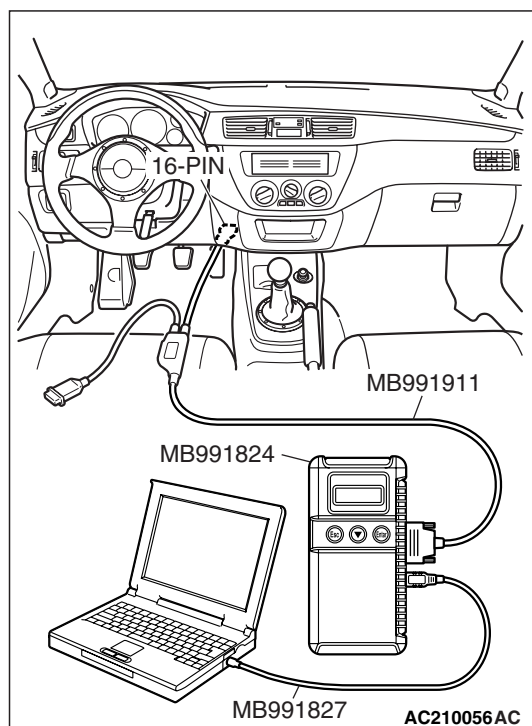
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for ACD diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are DTCs (No.21, 22, 23, 24) set?

YES : Refer to DTCs 21, 22, 23, 24: ABS Sensor System
[P.22A-18.](#)

NO : Go to Step 3.





STEP 3. Using scan tool MB991958, check data list items 01, 02, 03, 04: ABS Sensor.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Start the engine.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 01: ABS Sensor <FR>
 - Item 02: ABS Sensor <FL>
 - Item 03: ABS Sensor <RR>
 - Item 04: ABS Sensor <RL>
 - The speedometer indication matches the M.U.T.-III indication.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use
Troubleshooting/Inspection Service Points –How to
Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.

DTC 26: ABS Sensor System (Faulty Output Signal) <Vehicles with ABS>

ABS SENSOR SYSTEM CIRCUIT

Refer to [P.22A-26](#).

CIRCUIT OPERATION

The AWD-ECU receives each ABS sensor signal through the ABS-ECU to detect the conditions of the ABS sensors.

DTC SET CONDITIONS

DTC 26 is set as output signal error of the ABS sensor when one wheel speed is outside the specified range at the vehicle speed of above 20 km/h (12 mph). However, warning light will light up.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the tire
- Malfunction of the ABS sensor
- Damaged harness and connector
- Malfunction of the ABS-ECU
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Check the tire.

Check the tire pressure, size and brand.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Adjust or replace the tire.

STEP 2. Using scan tool MB991958, read the ABS diagnostic trouble code.**⚠ CAUTION**

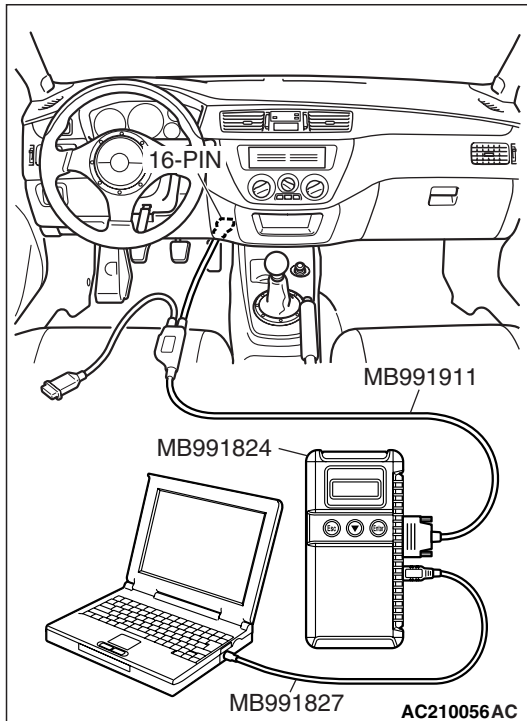
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

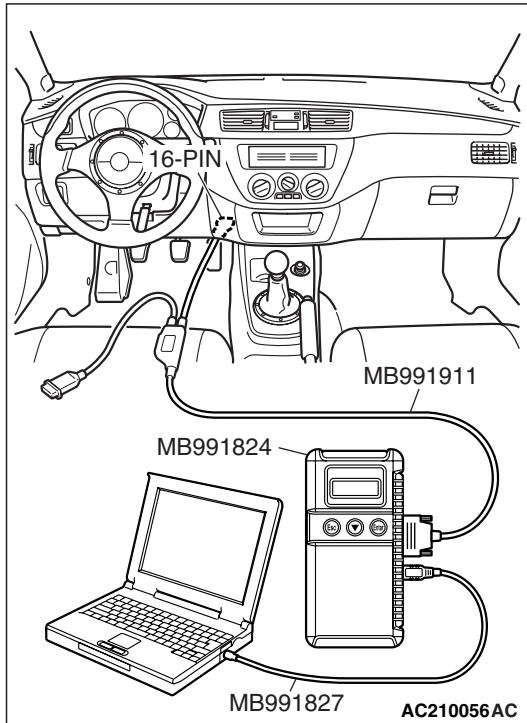
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for ABS diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are DTCs (No.11, 12, 13, 14, 21, 22, 23, 24) set?

YES : Refer to GROUP 35B, ABS –Diagnostic Trouble Code Chart [P.35B-11](#).

NO : Go to Step 3.





STEP 3. Using scan tool MB991958, read the ACD diagnostic trouble code.

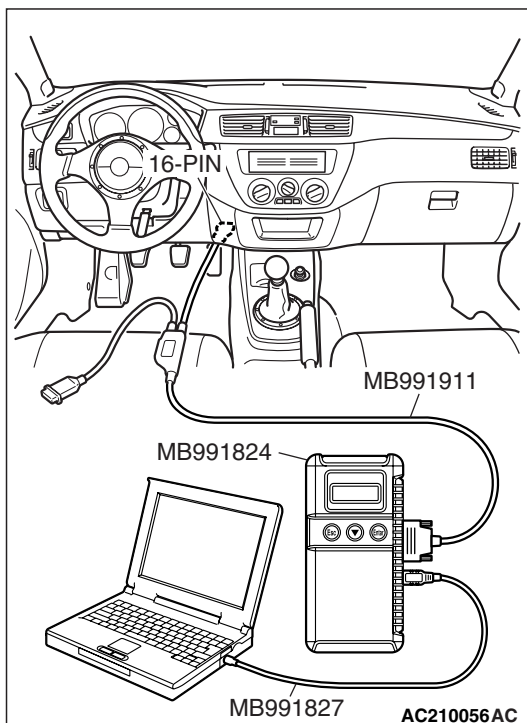
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for ACD diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are DTCs (No.21, 22, 23, 24) set?

YES : Refer to DTCs 21, 22, 23, 24: ABS Sensor System

[P.22A-26.](#)

NO : Go to Step 4.



STEP 4. Using scan tool MB991958, check data list item 01, 02, 03, 04: ABS Sensor.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Start the engine.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 01: ABS Sensor <FR>
 - Item 02: ABS Sensor <FL>
 - Item 03: ABS Sensor <RR>
 - Item 04: ABS Sensor <RL>
 - The speedometer indication matches the M.U.T.-III indication.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

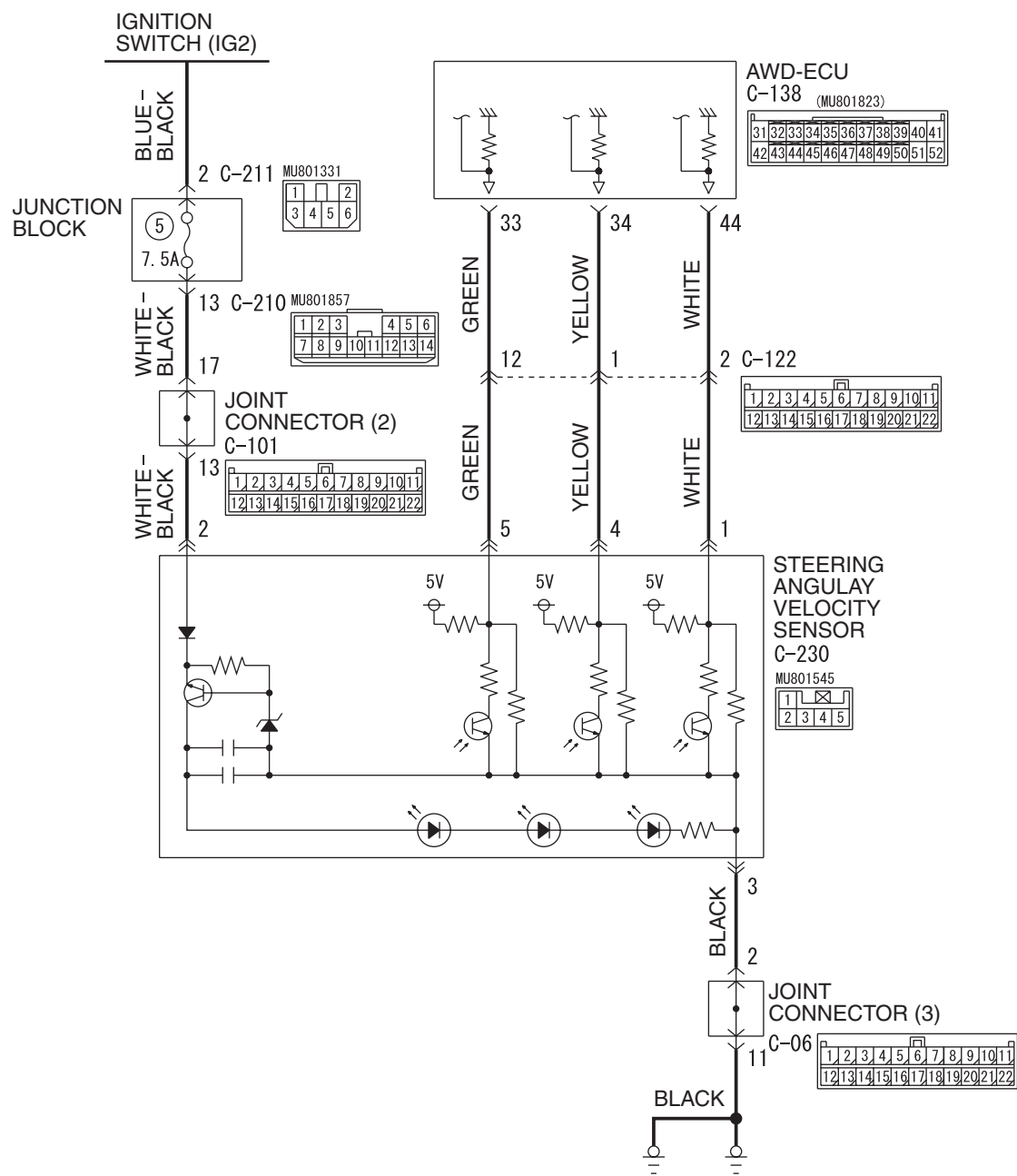
Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use
Troubleshooting/Inspection Service Points –How to
Cope with Intermittent Malfunction [P.00-13.](#)

NO : Replace the AWD-ECU.

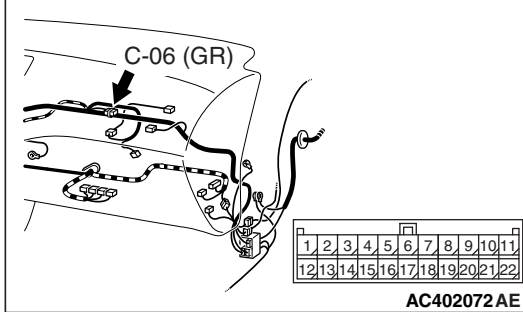
DTC 31: Steering Angular Velocity Sensor <ST-1, ST-2, ST-N> System

Steering Angulay Velocity Sensor System Circuit

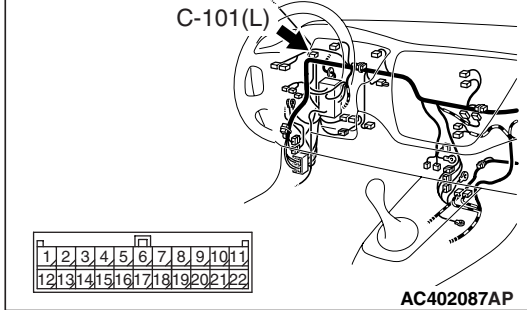


W5J22M003A

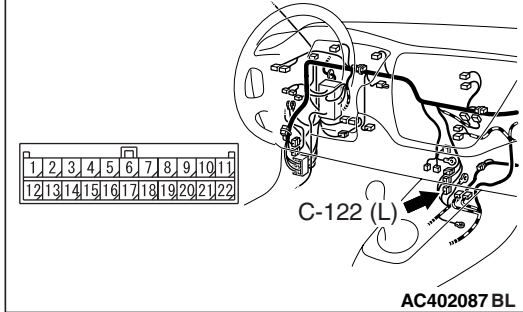
CONNECTOR: C-06



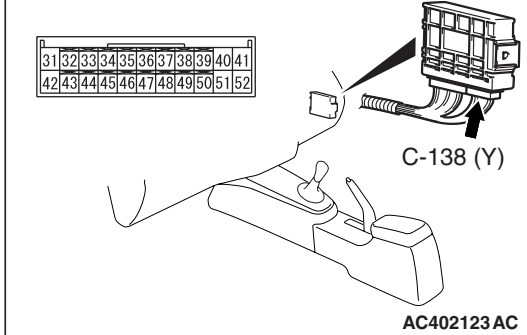
CONNECTOR: C-101



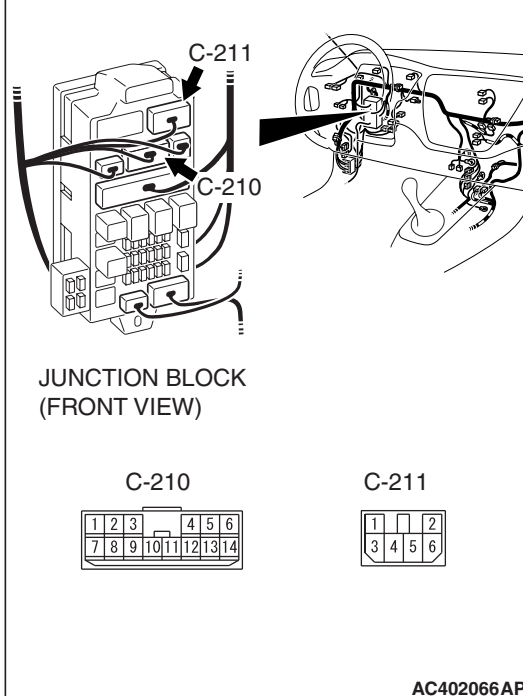
CONNECTOR: C-122



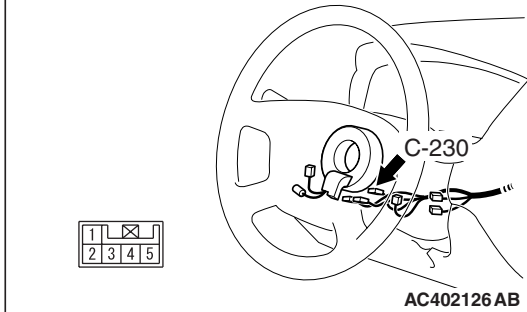
CONNECTOR: C-138



CONNECTORS: C-210, C-211



CONNECTOR: C-230



CIRCUIT OPERATION

The steering angular velocity sensor detects the neutral position and steering angle of the steering wheel by the photointerruptor (ST-1, ST-2 or ST-N), and sends them to the AWD-ECU.

DTC SET CONDITIONS

DTC 31 is set when open circuit or short circuit of the steering angular velocity sensor output line (ST-1, ST-2, or ST-N) occurs.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the steering angular velocity sensor

- Damaged harness wires and connectors
- Malfunction of the AWD-ECU

DIAGNOSIS**Required Special Tool:**

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Using scan tool MB991958, check data list items 21, 22, 23: Steering Angular Velocity Sensor Voltage.**⚠ CAUTION**

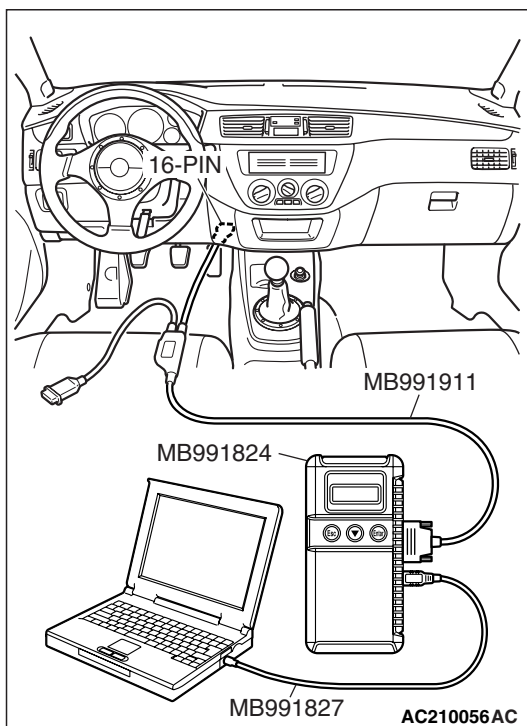
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 21: Steering Angular Velocity Sensor Voltage <ST-1>
 - Item 22: Steering Angular Velocity Sensor Voltage <ST-2>
 - When the steering wheel is turned, 1 – 2 V and 2.5 – 4.5 V are displayed alternately.
 - Item 23: Steering Angular Velocity Sensor Voltage <ST-N>
 - When the steering wheel is fixed at the neutral position, 1 – 2 V is displayed, and when the steering wheel is turned, 2.5 – 4.5 V is displayed.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

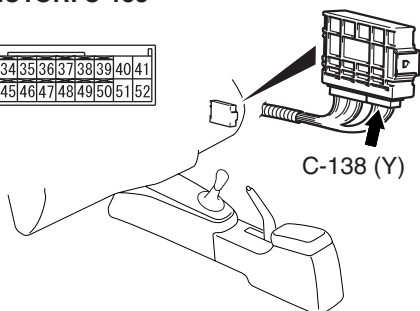
YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Go to Step 2.



CONNECTOR: C-138

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



AC402123 AC

STEP 2. Measure the steering angular velocity sensor voltage at AWD-ECU connector C-138 by backprobing.

- (1) Turn the ignition switch to the "ON" position.
- (2) Measure the voltage between the following terminals of AWD-ECU connector C-138 and ground while turning the steering wheel.
 - Terminal 33 <ST-1>
 - Terminal 34 <ST-2>
 - Terminal 44 <ST-N>
 - Changes between approximately 1.5 V and 3.5 V.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

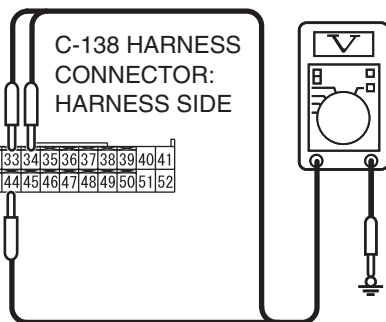
Q: Is the check result normal?

YES : Go to Step 3.

NO : Go to Step 5.

**C-138 HARNESS
CONNECTOR:
HARNESS SIDE**

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



AC400965AR

STEP 3. Check AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

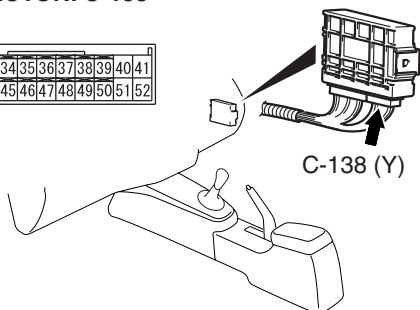
YES : Go to Step 4.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

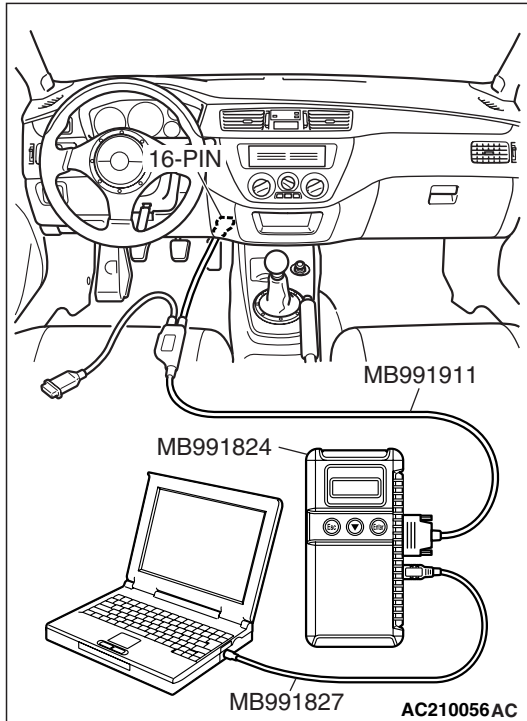
[P.00E-2.](#)

CONNECTOR: C-138

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



AC402123 AC



STEP 4. Using scan tool MB991958, check data list items 21, 22, 23: Steering Angular Velocity Sensor Voltage.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 21: Steering Angular Velocity Sensor Voltage <ST-1>
 - Item 22: Steering Angular Velocity Sensor Voltage <ST-2>
 - When the steering wheel is turned, 1 – 2 V and 2.5 – 4.5 V are displayed alternately.
 - Item 23: Steering Angular Velocity Sensor Voltage <ST-N>
 - When the steering wheel is fixed at the neutral position, 1 – 2 V is displayed, and when the steering wheel is turned, 2.5 – 4.5 V is displayed.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.

STEP 5. Check intermediate connector C-122, AWD-ECU connector C-138 and steering angular velocity sensor connector C-230 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

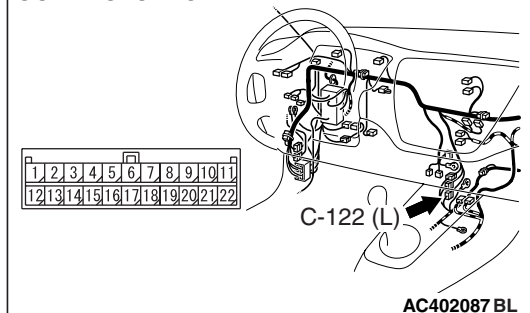
Q: Are the connectors and terminals in good condition?

YES : Go to Step 6.

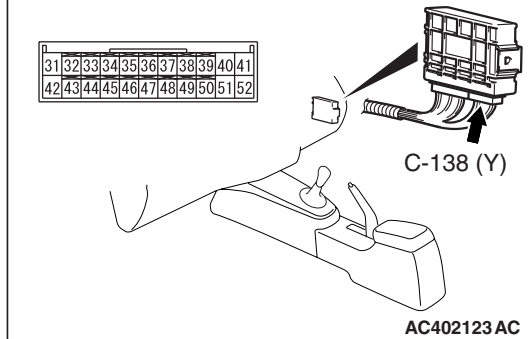
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

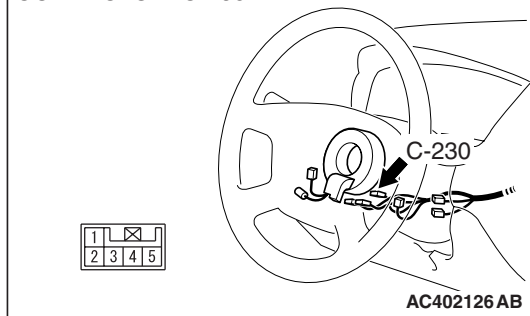
CONNECTOR: C-122



CONNECTOR: C-138

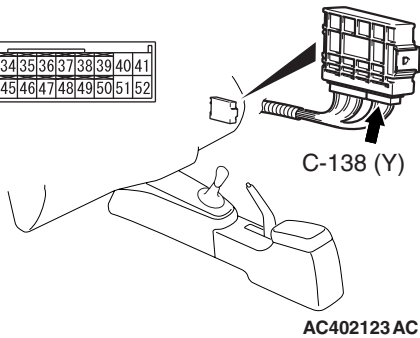


CONNECTOR: C-230



CONNECTOR: C-138

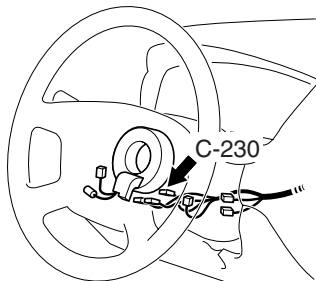
31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



AC402123 AC

CONNECTOR: C-230

1	2	3	4	5
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AC402126 AB

STEP 6. Check the harness for open circuit to ground between AWD-ECU connector C-138 (terminals 33, 34, 44) and steering angular velocity sensor connector C-230 (terminals 5, 4, 1).

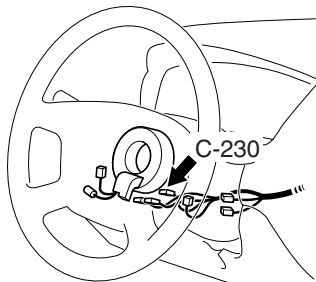
Q: Is the harness wire in good condition?

YES : Go to Step 7.

NO : Repair or replace the harness wire.

CONNECTOR: C-230

1	2	3	4	5
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AC402126 AB

STEP 7. Measure the voltage at steering angular velocity sensor connector C-230.

- (1) Disconnect the steering angular velocity sensor connector C-230, and measure the voltage between terminal 2 and ground at the harness side.
- (2) Turn the ignition switch to the "ON" position.
 - The voltage should measure battery positive voltage.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

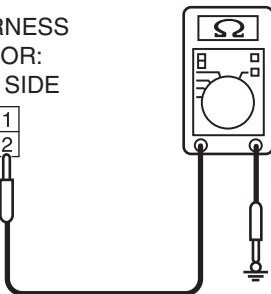
Q: Is the measured voltage battery positive voltage?

YES : Go to Step 10.

NO : Go to Step 8.

C-230 HARNESS
CONNECTOR:
HARNESS SIDE

1	2	3	4	5
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AC400966 AP

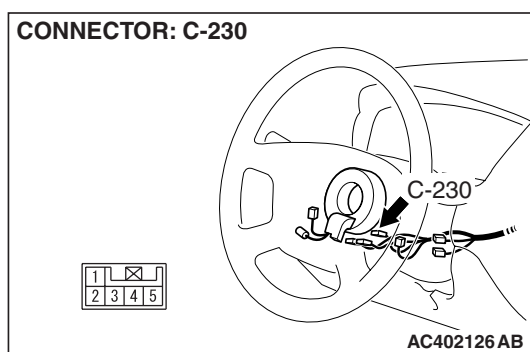
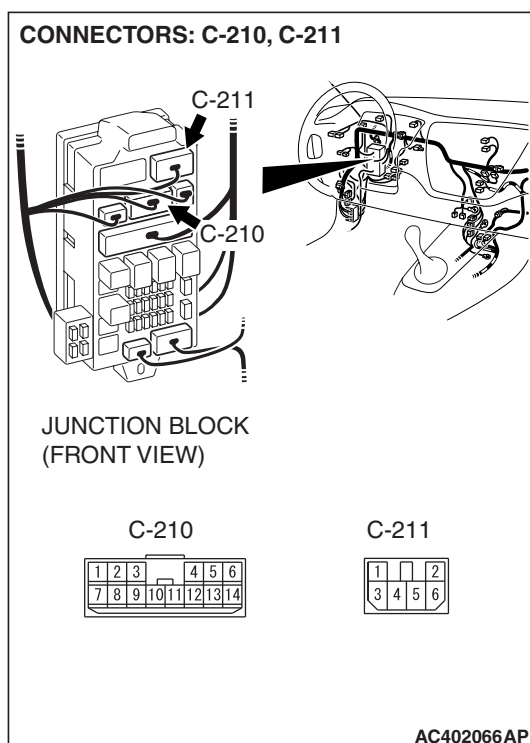
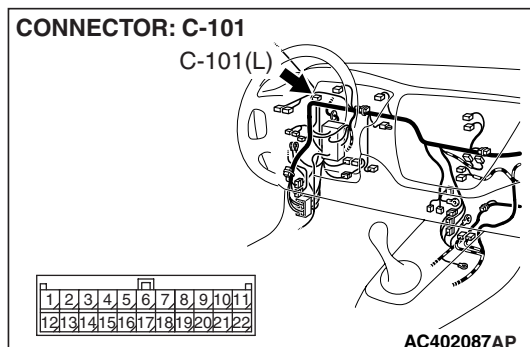
STEP 8. Check joint connector (2) C-101, junction block connector C-210 and C-211, steering angular velocity sensor connector C-230 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

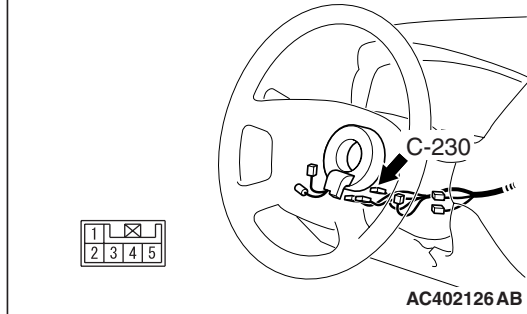
YES : Go to Step 9.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)



CONNECTOR: C-230



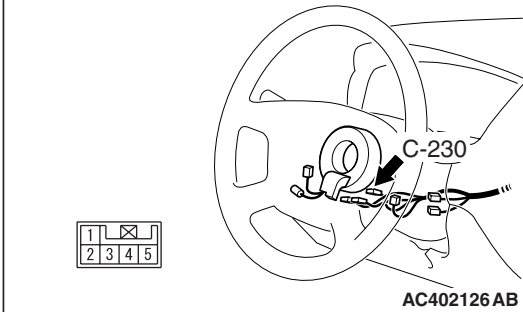
STEP 9. Check the harness for open circuit or short circuit to ground between the ignition switch and steering angular velocity sensor connector C-230 terminal 2.

Q: Is the harness wire in good condition?

YES : Go to Step 10.

NO : Repair or replace the harness wire.

CONNECTOR: C-230



STEP 10. Measure the voltage at steering angular velocity sensor connector C-230.

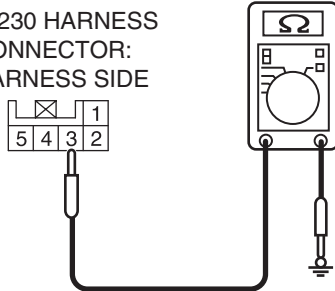
(1) Disconnect the steering angular velocity sensor connector C-230, and measure the resistance between terminal 3 and ground at the harness side.

- The resistance should measure less than 2 ohms

Q: Is the measured resistance less than 2 ohms?

YES : Go to Step 4.

NO : Go to Step 11.

C-230 HARNESS
CONNECTOR:
HARNESS SIDE

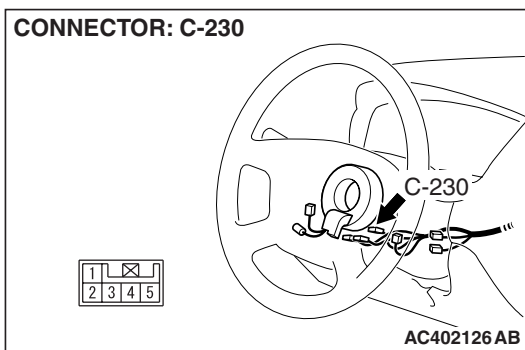
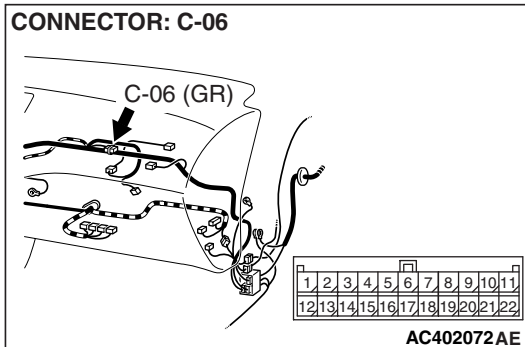
STEP 11. Check joint connector (3) C-06 and steering angular velocity sensor connector C-230 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 12.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

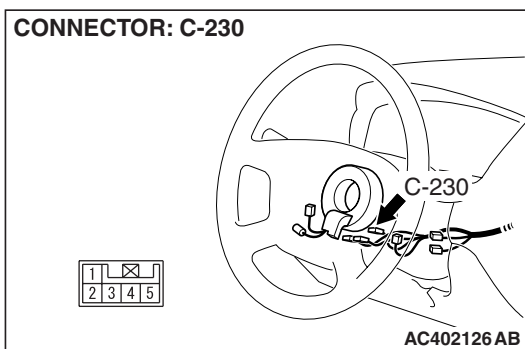


STEP 12. Check the harness for open circuit to ground between the ignition switch and the steering angular velocity sensor connector C-230 terminal 3 and ground.

Q: Is the harness wire in good condition?

YES : Replace the steering angular velocity sensor.

NO : Repair or replace the harness wire.



DTC 32, 33: Steering Angular Velocity Sensor <ST-N> System

STEERING ANGULAR VELOCITY SENSOR SYSTEM CIRCUIT

Refer to [P.22A-42.](#)

CIRCUIT OPERATION

Refer to [P.22A-42.](#)

DTC SET CONDITIONS

- DTC 32 is set when the steering angular velocity sensor ST-N has been detected at the neutral position in a state where the steering wheel has been determined to have changed above 40° from steering angular velocity sensor ST-1 and ST-2.

- DTC 33 is set when the steering angular velocity sensor ST-N has been detected at the neutral position in a state where the steering wheel has been determined to have changed above 400° from steering angular velocity sensor ST-1 and ST-2.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the steering angular velocity sensor
- Damaged harness and connector
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Using scan tool MB991958, check data list item 52: Steering Angular Velocity Sensor.

CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.

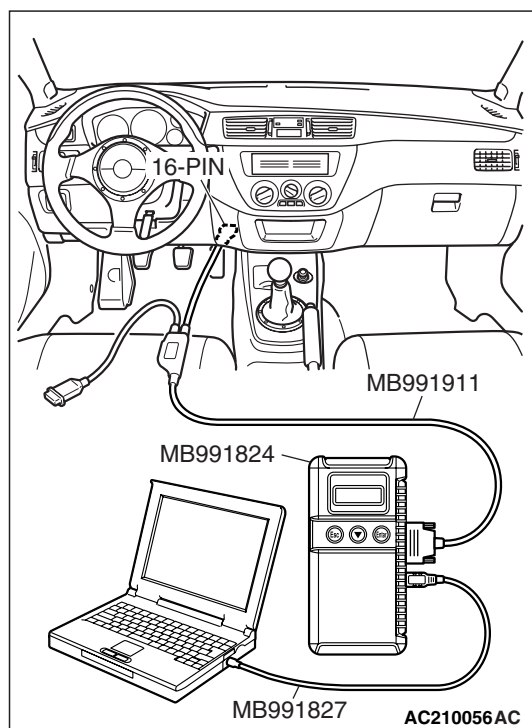
- Item 52: Steering Angular Velocity Sensor <ST-N>
 - When the steering wheel is fixed at the neutral position, the display on scan tool MB991958 should be "ON."
 - When the steering wheel is turned from the neutral position, the display on scan tool MB991958 should be "OFF."

- (4) Turn the ignition switch to the "LOCK" (OFF) position.

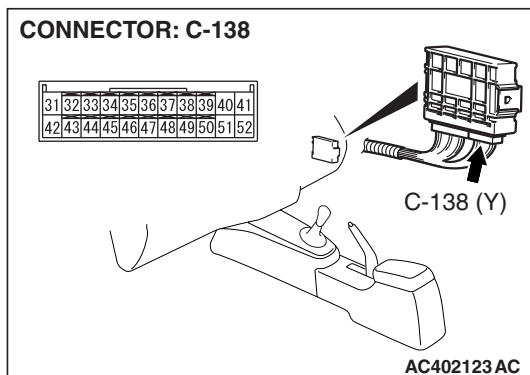
Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Go to Step 2.



CONNECTOR: C-138



STEP 2. Measure the steering angular velocity sensor voltage at AWD-ECU connector C-138 by backprobing.

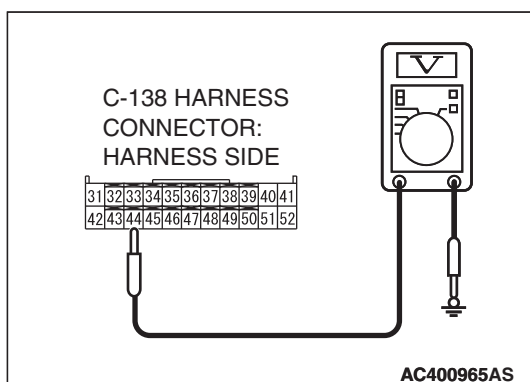
- (1) Turn the ignition switch to the "ON" position.
- (2) Measure the voltage between AWD-ECU connector C-138 terminal 44 and ground while turning the steering wheel.
 - Changes between approximately 1.5 V and 3.5 V.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Go to Step 5.

**C-138 HARNESS
CONNECTOR:
HARNESS SIDE**



STEP 3. Check AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

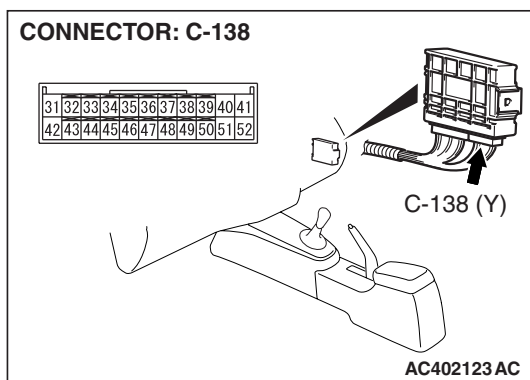
Q: Are the connector and terminals in good condition?

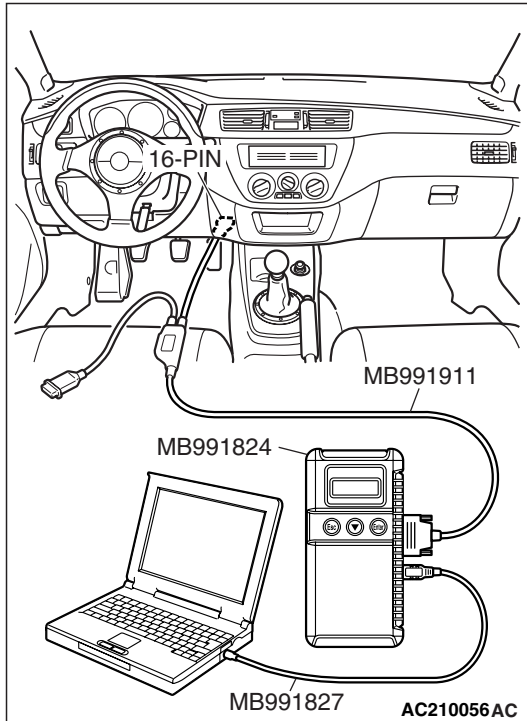
YES : Go to Step 4.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

CONNECTOR: C-138





STEP 4. Using scan tool MB991958, check data list item 52: Steering Angular Velocity Sensor.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 52: Steering Angular Velocity Sensor <ST-N>
 - When the steering wheel is fixed at the neutral position, the display on scan tool MB991958 should be "ON."
 - When the steering wheel is turned from the neutral position, the display on scan tool MB991958 should be "OFF."
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.

STEP 5. Check intermediate connector C-122, AWD-ECU connector C-138 and steering angular velocity sensor connector C-230 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

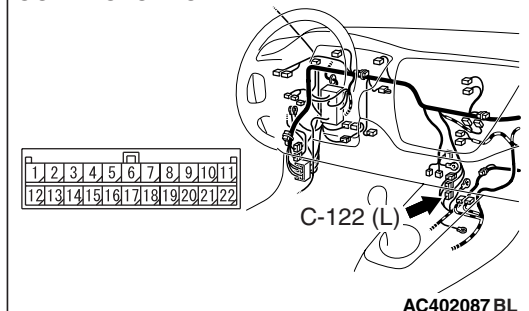
Q: Are the connectors and terminals good condition?

YES : Go to Step 6.

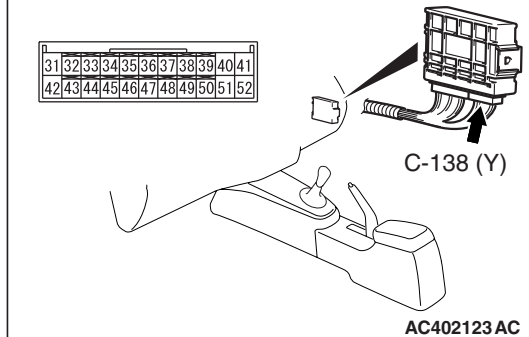
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

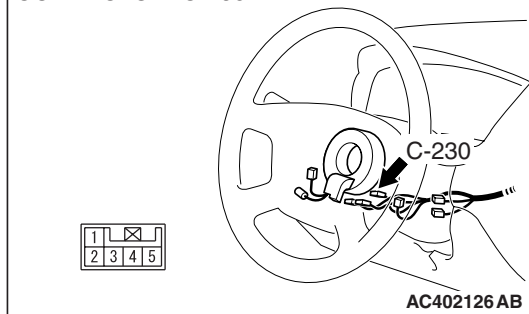
CONNECTOR: C-122



CONNECTOR: C-138



CONNECTOR: C-230

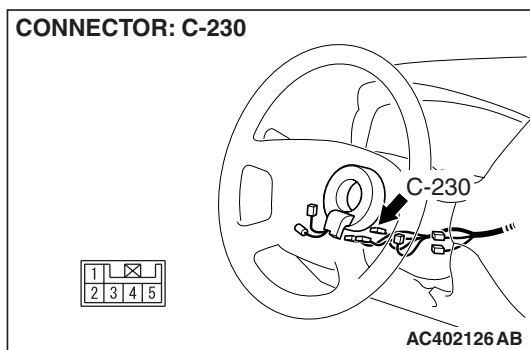
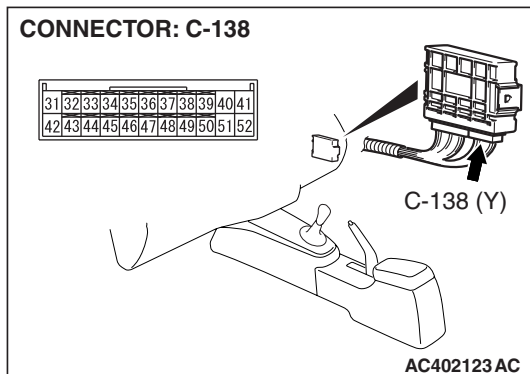


STEP 6. Check the harness for open circuit to ground between the ignition switch and the AWD-ECU connector C-138 terminal 44 and steering angular velocity sensor connector C-230 terminal 1.

Q: Is the harness wire in good condition?

YES : Go to Step 7.

NO : Repair or replace the harness wire.



STEP 7. Using scan tool MB9991958 read the ACD diagnostic trouble code.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

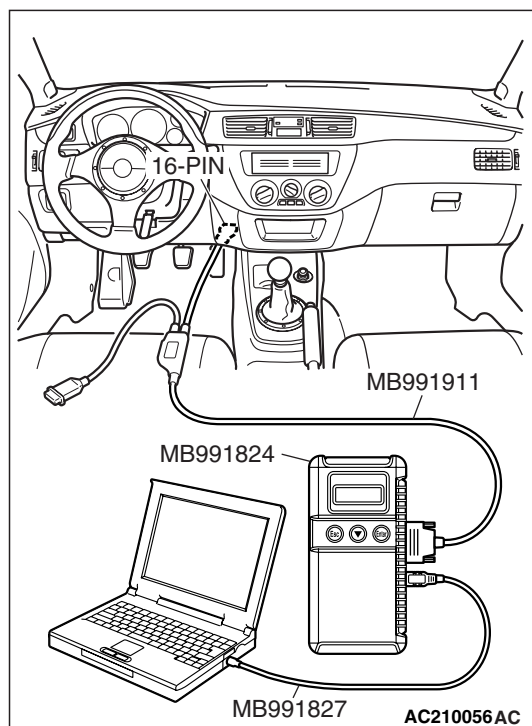
Connect scan tool MB991958 to the data link connector.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check for ACD diagnostic trouble code.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are DTCs 32, 33 set?

YES : Replace the steering angular velocity sensor.

NO : The procedure is complete.



DTC 34: Steering Angular Velocity Sensor <ST-1, ST-2> System

STEERING ANGULAR VELOCITY SENSOR SYSTEM CIRCUIT

Refer to [P.22A-42](#).

CIRCUIT OPERATION

Refer to [P.22A-42](#).

DTC SET CONDITIONS

DTC 34 is set when no change in the steering angular velocity sensor signal at a vehicle speed of above 15 km/h (9.3 mph) is detected for a total of more than 15 minutes <ST-1, ST-2>, and turning is detected during this time.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the steering angular velocity sensor
- Damaged harness and connector
- Malfunction of the AWD-ECU

DIAGNOSIS**Required Special Tool:**

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Using scan tool MB991958, check data list items 53, 54: Steering Angular Velocity Sensor.

⚠ CAUTION

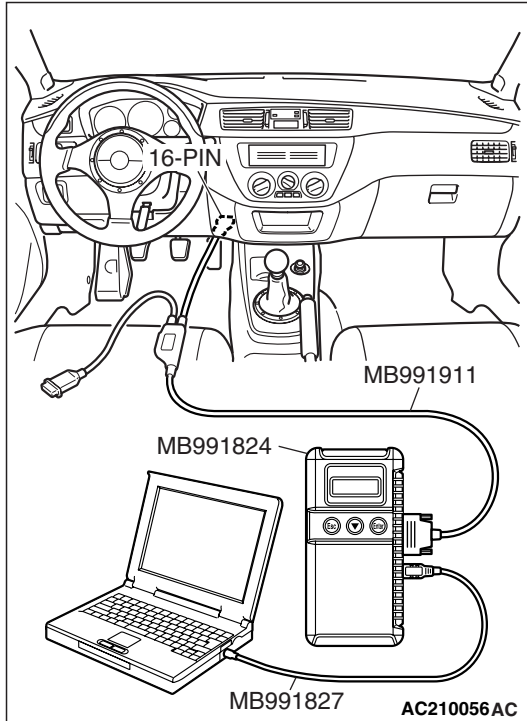
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 53: Steering Angular Velocity Sensor <ST-1>
 - When the steering wheel is turned to the left, "ON" and "OFF" are displayed alternately.
 - Item 54: Steering Angular Velocity Sensor <ST-2>
 - When the steering wheel is turned to the right, "ON" and "OFF" are displayed alternately.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

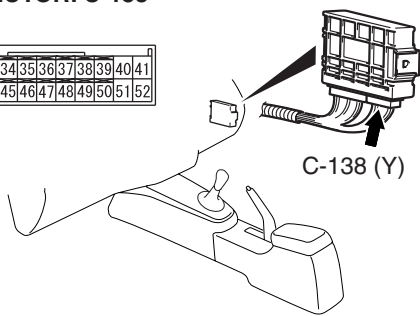
YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Go to Step 2.



CONNECTOR: C-138

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



AC402123 AC

STEP 2. Measure the steering angular velocity sensor voltage at AWD-ECU connector C-138 by backprobing.

- (1) Turn the ignition switch to the "ON" position.
- (2) Measure the voltage between the following terminals of AWD-ECU connector C-138 and ground while turning the steering wheel.
 - Terminal 33 <ST-1>
 - Terminal 34 <ST-2>
 - Changes between approximately 1.5 V and 3.5 V.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

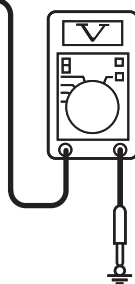
Q: Is the check result normal?

YES : Go to Step 3.

NO : Go to Step 5.

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52

C-138 HARNESS
CONNECTOR:
HARNESS SIDE



AC400965AY

STEP 3. Check AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

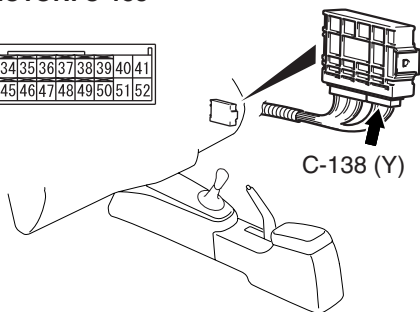
YES : Go to Step 4.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

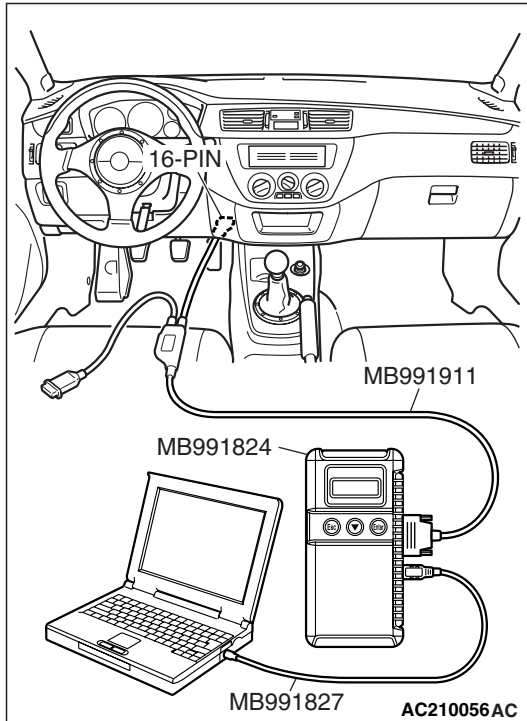
[P.00E-2.](#)

CONNECTOR: C-138

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



AC402123 AC



STEP 4. Using scan tool MB991958, check data list items 53, 54: Steering Angular Velocity Sensor.

⚠ CAUTION

To prevent damage to scan tool steering angular velocity sensor MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 53: Steering Angular Velocity Sensor <ST-1>
 - When the steering wheel is turned to the left, "ON" and "OFF" are displayed alternately.
 - Item 54: Steering Angular Velocity Sensor <ST-2>
 - When the steering wheel is turned to the right, "ON" and "OFF" are displayed alternately.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.

STEP 5. Check intermediate connector C-122, AWD-ECU connector C-138 and steering angular velocity sensor connector C-230 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

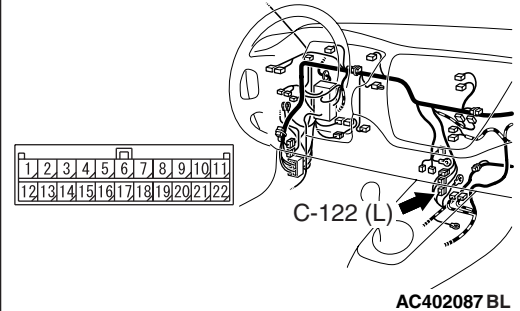
Q: Are the connectors and terminals in good condition?

YES : Go to Step 6.

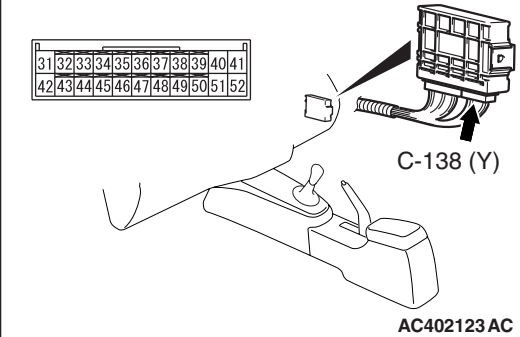
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

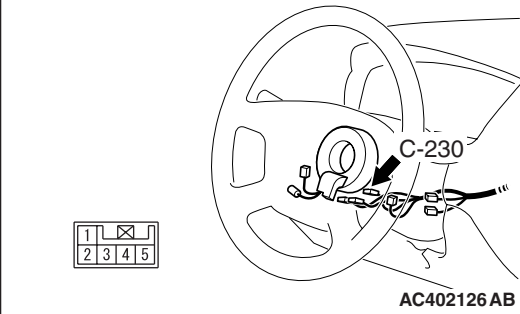
CONNECTOR: C-122



CONNECTOR: C-138



CONNECTOR: C-230

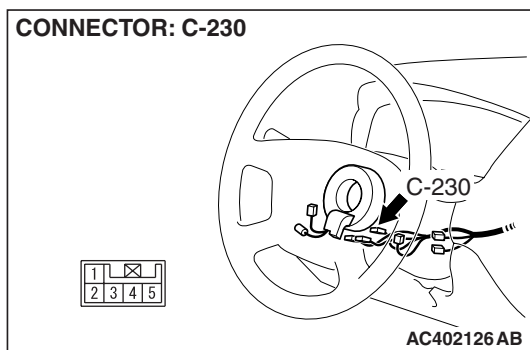
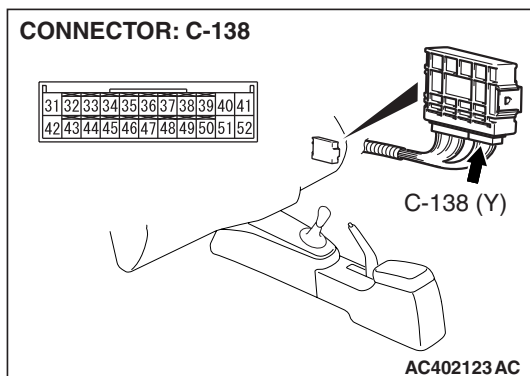


STEP 6. Check the harness for open circuit to ground between AWD-ECU connector C-138 (terminals 33, 34) and steering angular velocity sensor connector C-230 (terminals 5, 4).

Q: Is the harness wire in good condition?

YES : Go to Step 7.

NO : Repair or replace the harness wire.



STEP 7. Using scan tool MB991958 read the ACD diagnostic trouble code.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

Connect scan tool MB991958 to the data link connector.

(1) Turn the ignition switch to the "ON" position.

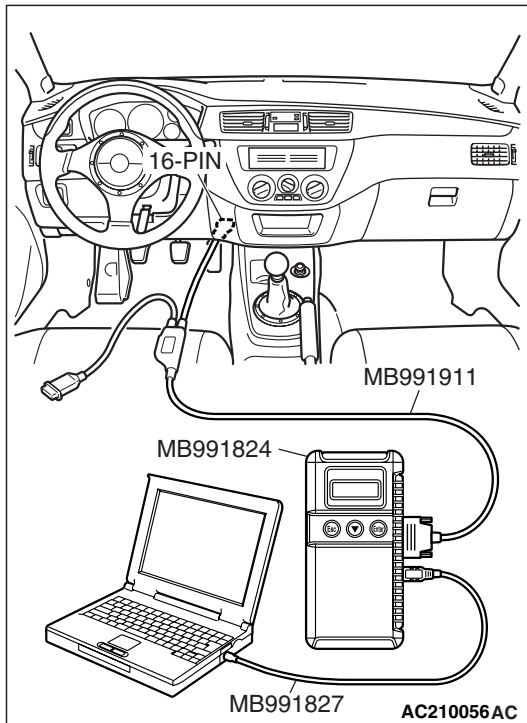
(2) Check for ACD diagnostic trouble code.

(3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC 34 set?

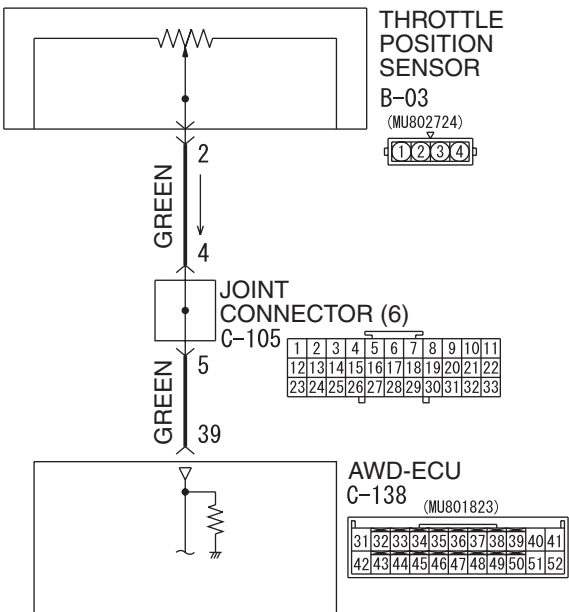
YES : Replace the steering angular velocity sensor.

NO : The procedure is complete.

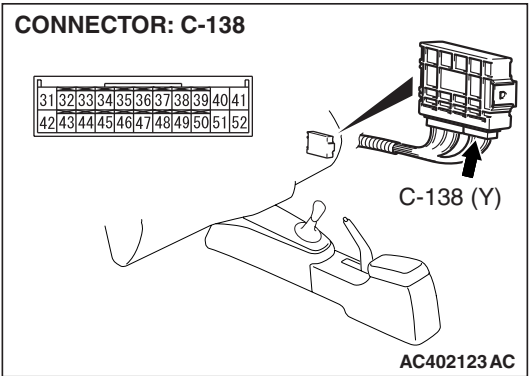
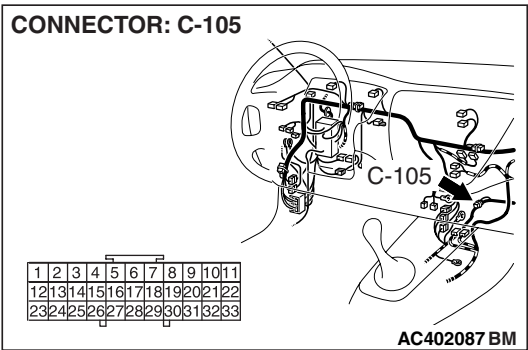
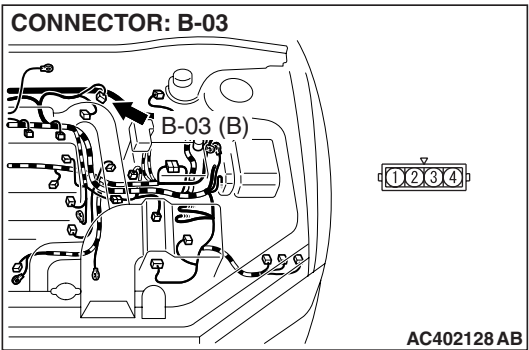


DTC 41, 42: Throttle Position Sensor System

Throttle Position Sensor System Circuit



W5J22M004A



CIRCUIT OPERATION

The AWD-ECU receives a change in the output voltage from the throttle position sensor to determine the accelerator pedal opening angle.

DTC SET CONDITIONS

- DTC 41 is set as excessively small output when the throttle position sensor output is below 0.2 volts in the idling state.

- DTC 42 is set as excessively large output when the throttle position sensor output is more than 4.8 volts for more than 2 minutes continuously below a vehicle speed of 10 km/h (6.2 mph).

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the throttle position sensor
- Damaged harness and connector
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Using scan tool MB991958, read the MPI diagnostic trouble code.

⚠ CAUTION

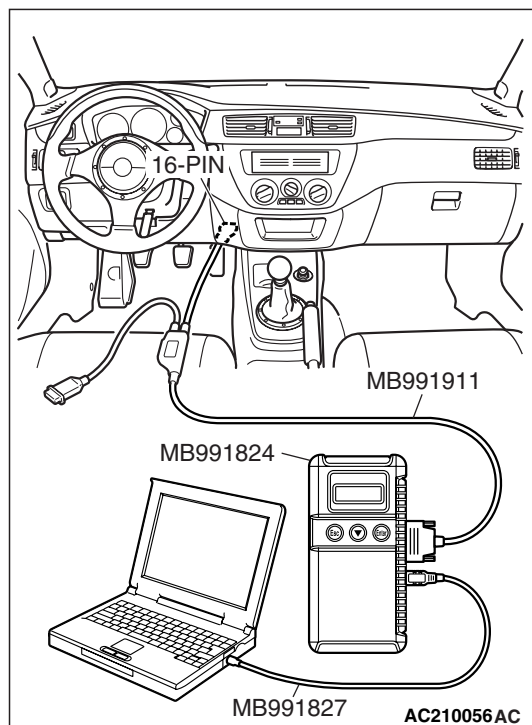
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for MFI diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are DTCs P0121, P0122, P0123 set?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13A-41](#).

NO : Go to Step 2.



STEP 2. Using scan tool MB991958, check data list item 13: Throttle Position Sensor Voltage.

⚠ CAUTION

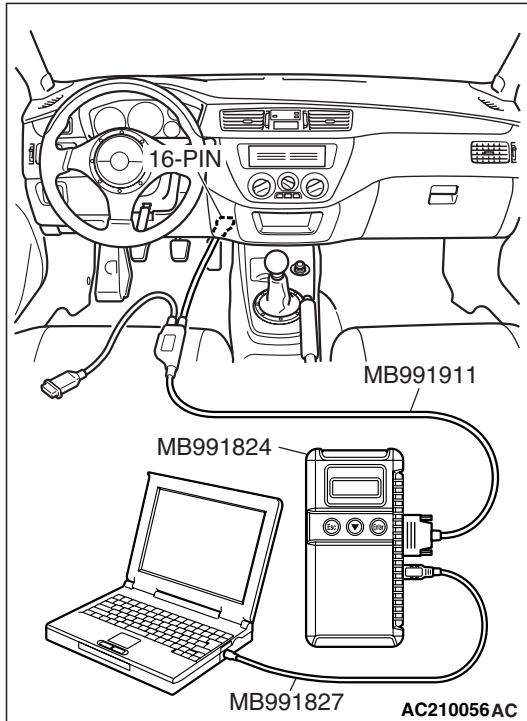
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 13: Throttle Position Sensor Voltage.
 - With the throttle valve in idle position, voltage should measure between 535 and 735 mV.
 - With the throttle valve in full-open position, voltage should measure between 4,500 and 5,500 mV.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

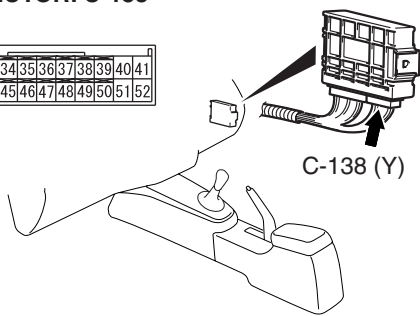
YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Go to Step 3.



CONNECTOR: C-138

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



AC402123 AC

STEP 3. Measure the throttle position sensor output voltage at AWD-ECU connector C-138 by backprobing.

- (1) Turn the ignition switch to the "ON" position.
- (2) Measure the voltage between AWD-ECU connector C-139 terminal 39 and ground by backprobing.

- With the throttle valve in idle position, voltage should measure between 0.535 and 0.735 volt.
- With the throttle valve in full-open position, voltage should measure between 4.5 and 5.5 volts.

- (3) Turn the ignition switch to the "LOCK" (OFF) position.

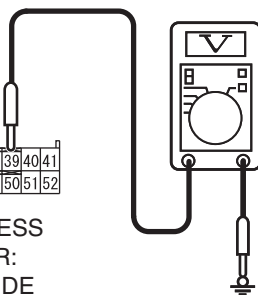
Q: Is the measured voltage within the specified range?

YES : Go to Step 4.

NO : Go to Step 6.

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52

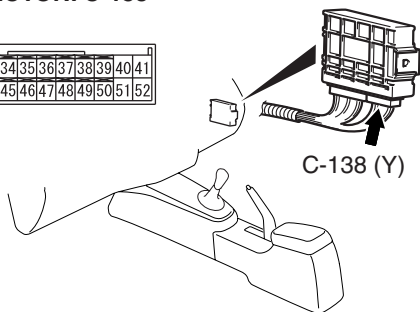
C-138 HARNESS
CONNECTOR:
HARNESS SIDE



AC400965AZ

CONNECTOR: C-138

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



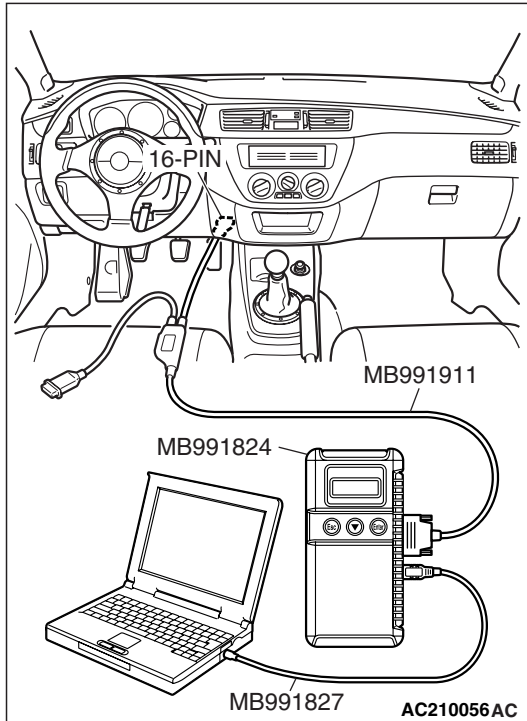
AC402123 AC

STEP 4. Check AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**STEP 5. Using scan tool MB991958, check data list item 13: Throttle Position Sensor Voltage.****⚠ CAUTION**

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 13: Throttle Position Sensor Voltage.
 - With the throttle valve in idle position, voltage should measure between 535 and 735 mV.
 - With the throttle valve in full-open position, voltage should measure between 4,500 and 5,500 mV.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.

STEP 6. Check the throttle position sensor.

Refer to GROUP 13A, On-vehicle Service - Throttle Position Sensor Check [P.13A-873](#).

Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair or replace throttle position sensor.

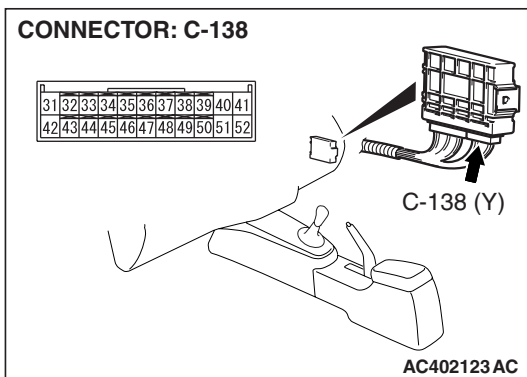
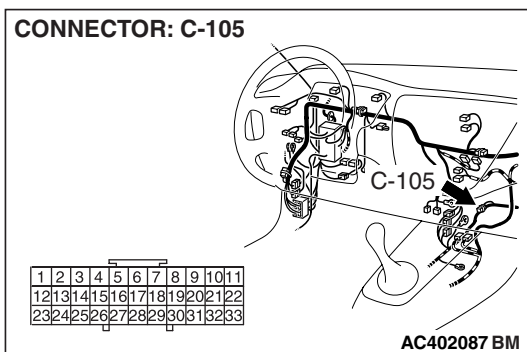
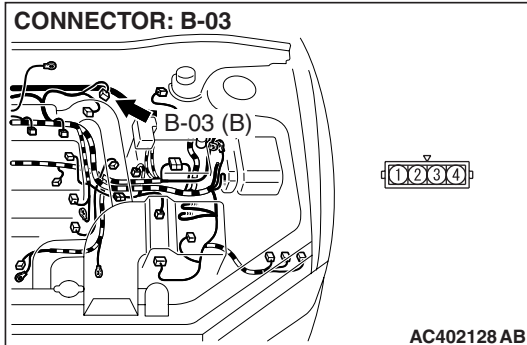
STEP 7. Check throttle position sensor connector B-03, joint connector (6) C-105 and AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 8.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)



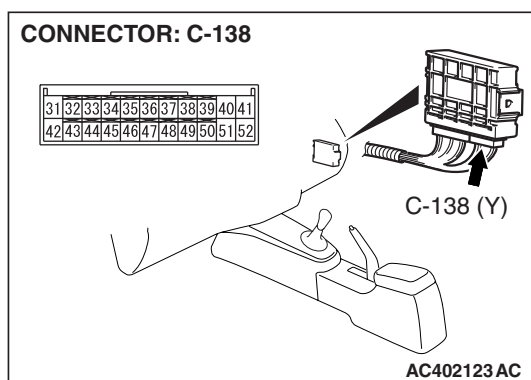
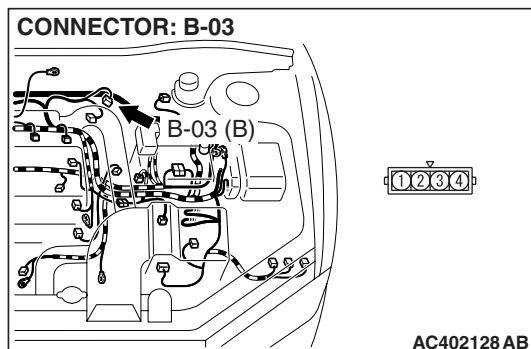
STEP 8. Check the harness for open circuit or short circuit to ground between the throttle position sensor connector B-03 terminal 2 and AWD-ECU connector C-138 terminal 39.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 5.

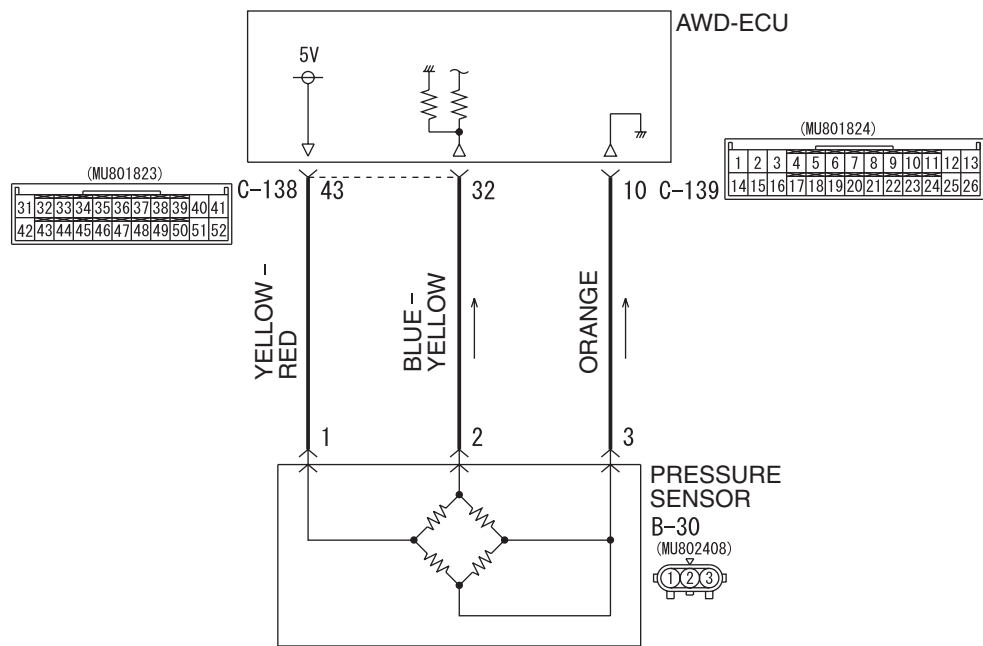
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)



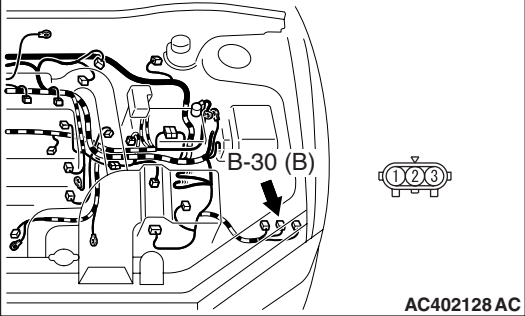
DTC 45: Pressure Sensor System (Open Circuit or Short Circuit)

Pressure Sensor System Circuit

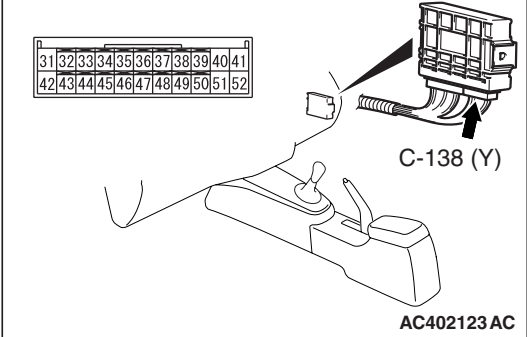


W5J22M005A

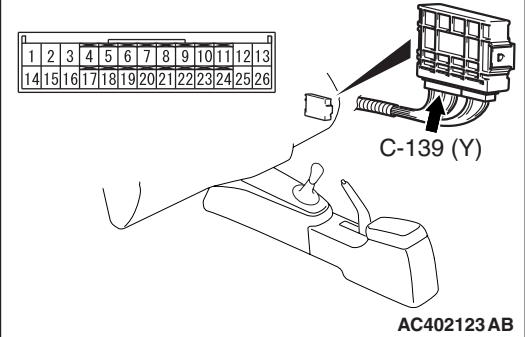
CONNECTOR: B-30



CONNECTOR: C-138



CONNECTOR: C-139



CIRCUIT OPERATION

The AWD-ECU receives accumulator pressure information from the pressure sensor to control the electric pump.

DTC SET CONDITIONS

DTC 45 is set when the output signal from the pressure sensor is below 0.2 volts.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the pressure sensor
- Damaged harness and connector
- Malfunction of the AWD-ECU

DIAGNOSIS**Required Special Tool:**

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Using scan tool MB991958, check data list item 18: Pressure Sensor.**⚠ CAUTION**

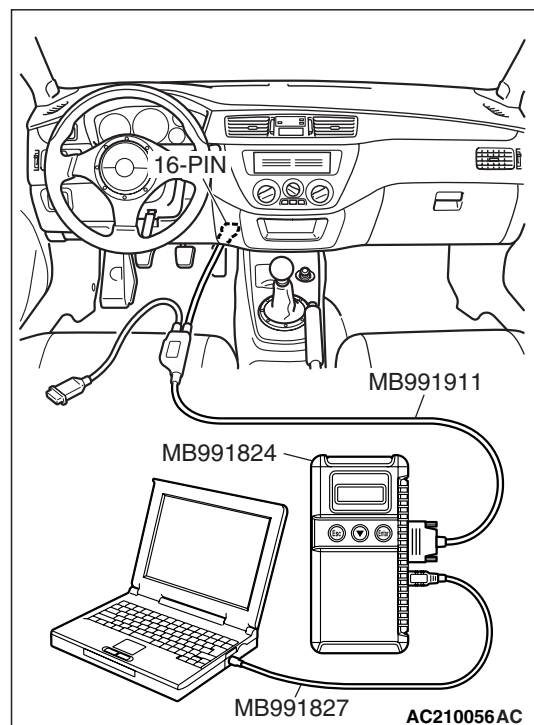
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Actuator test item 04: Drive the electric pump.
- (4) Set scan tool MB991958 to the data reading mode.
 - Item 18: Pressure Sensor
 - While the electric pump is driven, 1.0 – 1.6 MPa is displayed.
- (5) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

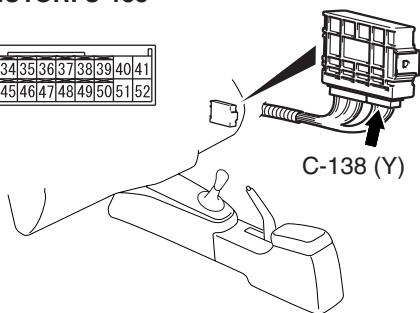
YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Go to Step 2.



CONNECTOR: C-138

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



AC402123 AC

STEP 2. Measure the pressure sensor system voltage at AWD-ECU connector C-138 by backprobing.

- (1) Turn the ignition switch to the "ON" position.
- (2) Measure the voltage between AWD-ECU connector C-138 terminal 32 and ground by backprobing.

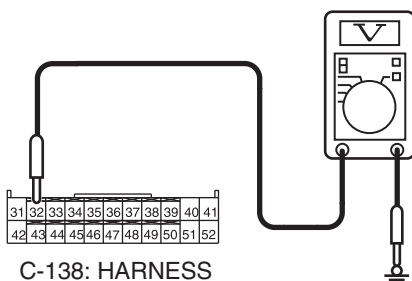
- The voltage should measure between 0.5 and 1.5 volts.

- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage between 0.5 and 1.5 volts?

YES : Go to Step 3.

NO : Go to Step 5.



C-138: HARNESS
CONNECTOR:
HARNESS SIDE

AC400965 AT

STEP 3. Check AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

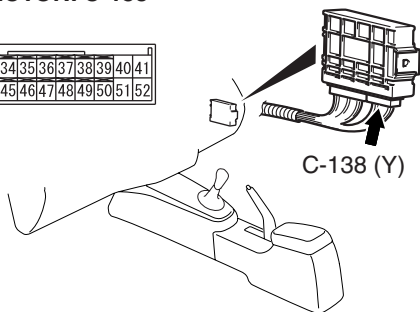
YES : Go to Step 4.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

CONNECTOR: C-138

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



AC402123 AC

STEP 4. Using scan tool MB991958, check data list item 18: Pressure Sensor.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Actuator test item 04: Drive the electric pump.
- (4) Set scan tool MB991958 to the data reading mode.

- Item 18: Pressure Sensor
 - While the electric pump is driven, 1.0 – 1.6 MPa is displayed.

- (5) Turn the ignition switch to the "LOCK" (OFF) position.

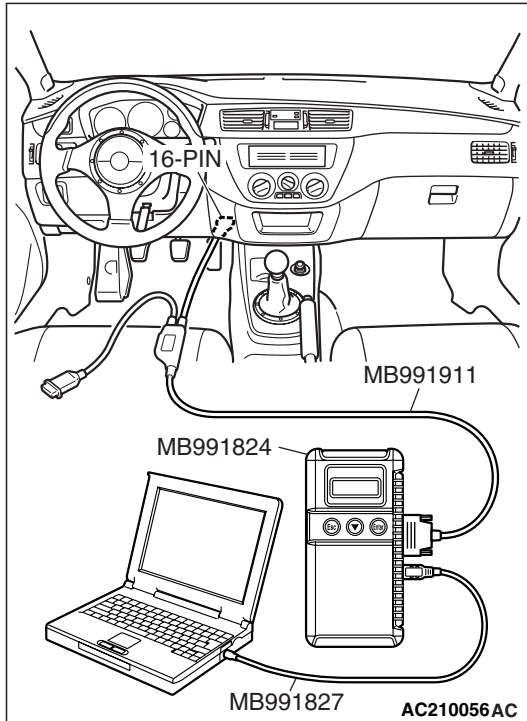
Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent.

Refer to GROUP 00, How to Use

Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.



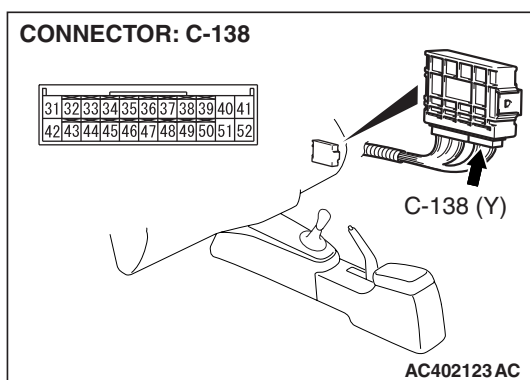
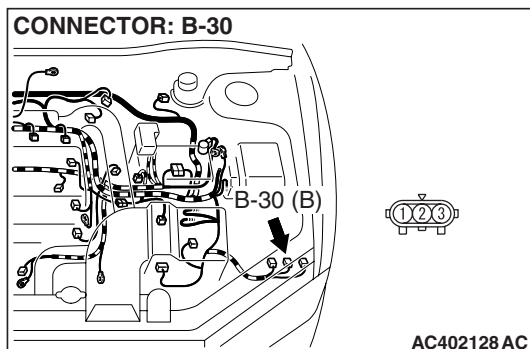
STEP 5. Check pressure sensor connector B-30 and AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

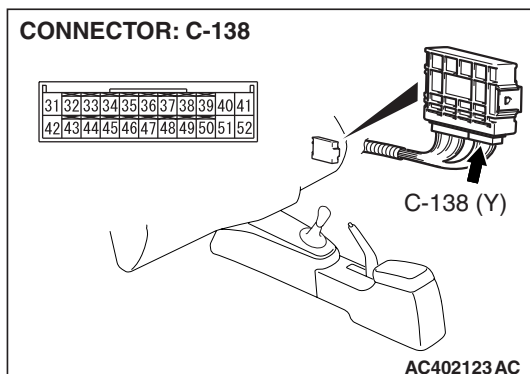
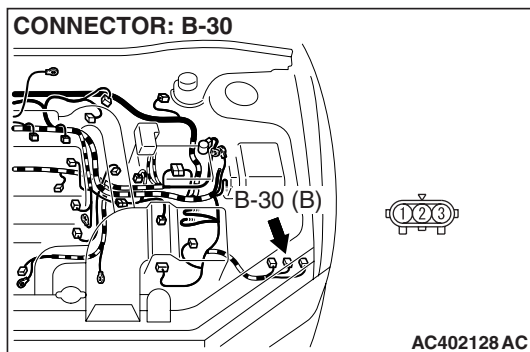


STEP 6. Check the harness for open circuit or short circuit to ground between pressure sensor connector B-30 terminal 2 and AWD-ECU connector C-138 terminal 32.

Q: Is the harness wire in good condition?

YES : Replace the pressure sensor.

NO : Repair or replace the harness wire.



DTC 46: Pressure Sensor System (Open Ground)**PRESSURE SENSOR SYSTEM CIRCUIT**

Refer to P.22A-71.

CIRCUIT OPERATION

Refer to P.22A-71.

DTC SET CONDITIONS

DTC 46 is set when the output signal from the pressure sensor is above 2.0 volts.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the pressure sensor
- Damaged harness wires and connectors
- Malfunction of the AWD-ECU

DIAGNOSIS**STEP 1. Measure the resistance at pressure sensor connector B-30.**

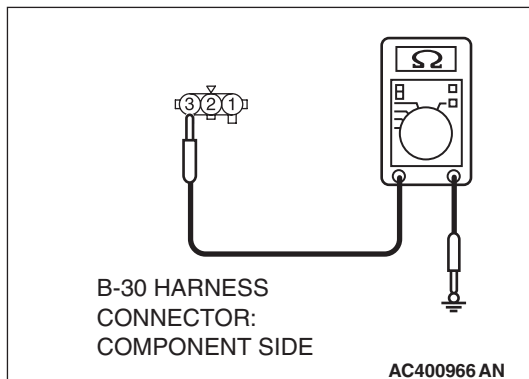
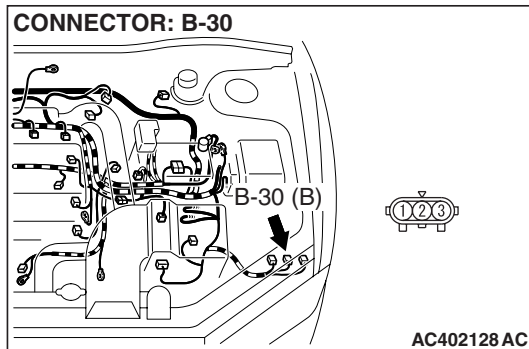
Disconnect the pressure sensor connector, and measure the resistance between terminal 3 and ground at the harness side.

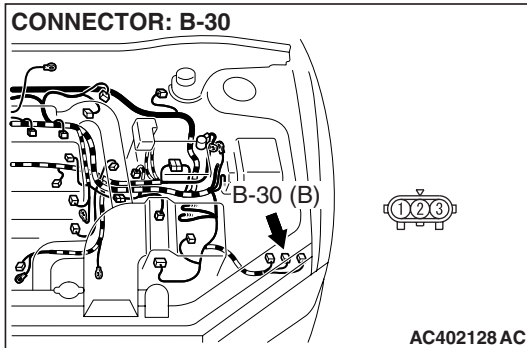
- The resistance should measure less than 2 ohms.

Q: Is the measured resistance less than 2 ohms?

YES : Go to Step 2.

NO : Go to Step 3.





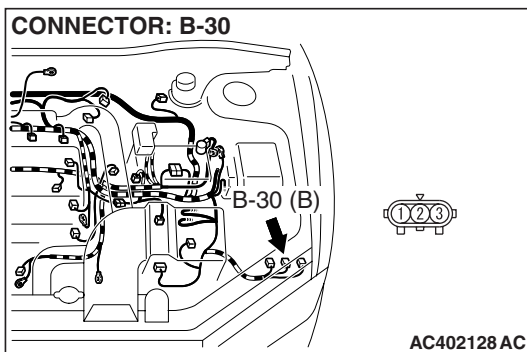
STEP 2. Check pressure sensor connector B-30 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Replace the pressure sensor.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)



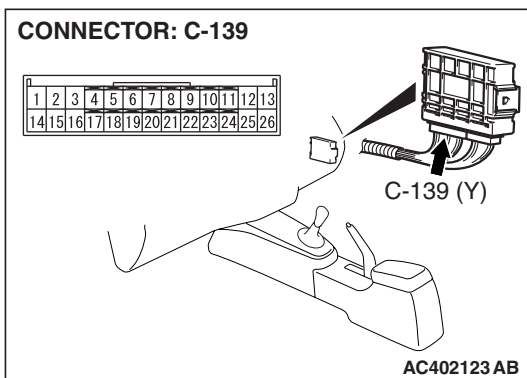
STEP 3. Check pressure sensor connector B-30 and AWD-ECU connector C-139 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

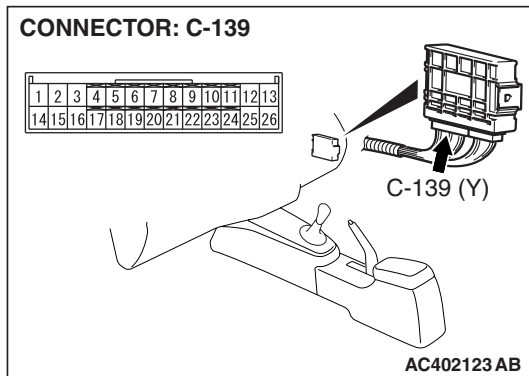
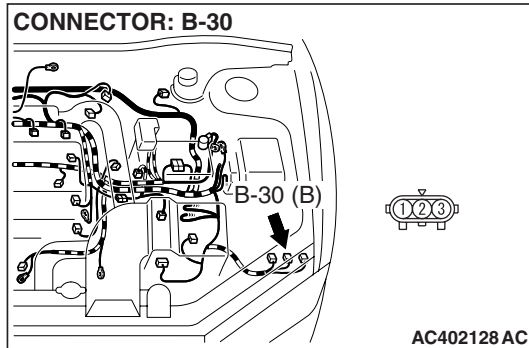
Q: Are the connectors and terminals in good condition?

YES : Go to Step 4.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)





STEP 4. Check the harness for open circuit between pressure sensor connector B-30 terminal 3 and AWD-ECU connector C-139 terminal 10.

Q: Is the harness wire in good condition?

YES : Replace the AWD-ECU.

NO : Repair or replace the harness wire.

DTC 47: Pressure Sensor System (Abnormal Power Supply)

PRESSURE SENSOR SYSTEM CIRCUIT

Refer to [P.22A-71](#).

CIRCUIT OPERATION

Refer to [P.22A-71](#).

DTC SET CONDITIONS

DTC 47 is set when the pressure sensor power supply voltage is above 4.0 volts during pressure sensor power OFF or less than 4.0 volts during pressure sensor power ON.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the pressure sensor
- Damaged harness and connector
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Using scan tool MB991958, check data list item 19: Pressure Sensor Power Supply.

⚠ CAUTION

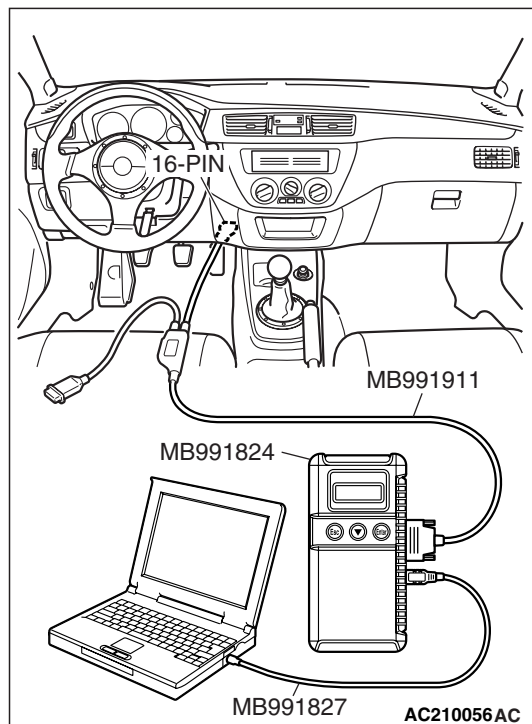
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 19: Pressure Sensor Power Supply.
 - The voltage should measure approximately 5 volts.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

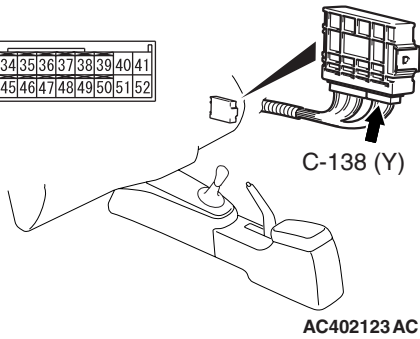
YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use
Troubleshooting/Inspection Service Points –How to
Cope with Intermittent Malfunction [P.00-13](#).

NO : Go to Step 2.



CONNECTOR: C-138

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52

**STEP 2. Measure the pressure sensor power supply voltage at AWD-ECU connector C-138 by backprobing.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Measure the voltage between AWD-ECU connector C-138 terminal 43 and ground by backprobing.

- The voltage should measure approximately 5 volts.

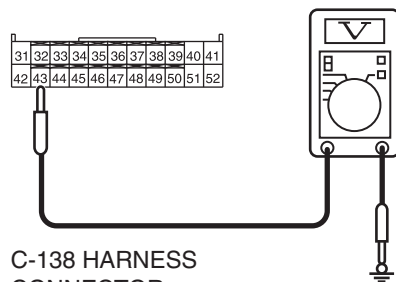
- (3) Turn the ignition switch to the "Lock" (OFF) position.

Q: Is the measured voltage approximately 5 volts?

YES : Go to Step 3.

NO : Go to Step 5.

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



C-138 HARNESS
CONNECTOR:
HARNESS SIDE

AC400965 AU

STEP 3. Check AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

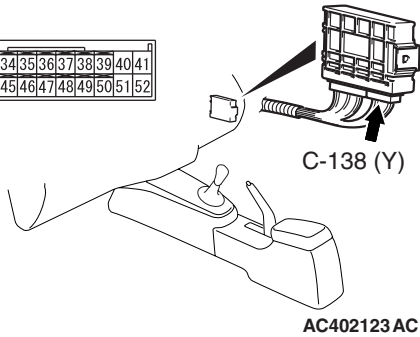
YES : Go to Step 4.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

CONNECTOR: C-138

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



AC402123 AC

STEP 4. Using scan tool MB991958, check data list item 19: Pressure Sensor Power Supply.

⚠ CAUTION

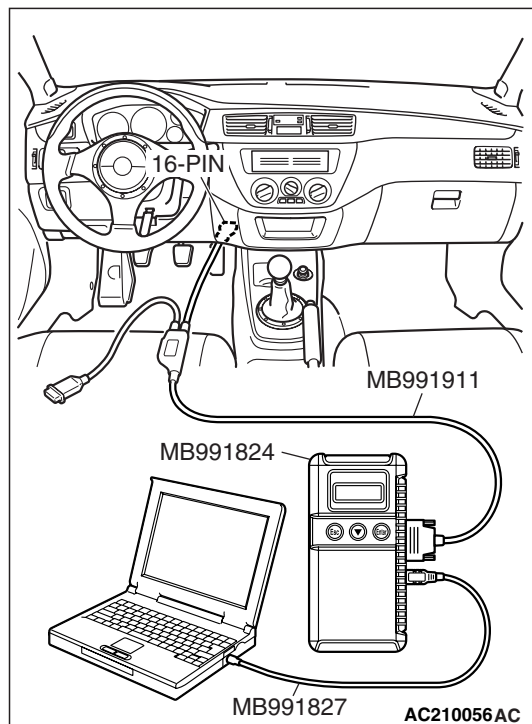
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 19: Pressure Sensor Power Supply.
 - The voltage should measure approximately 5 volts.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.



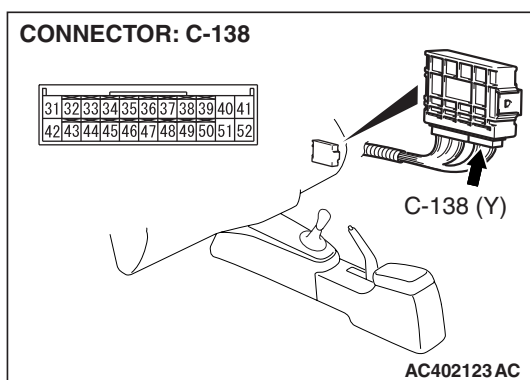
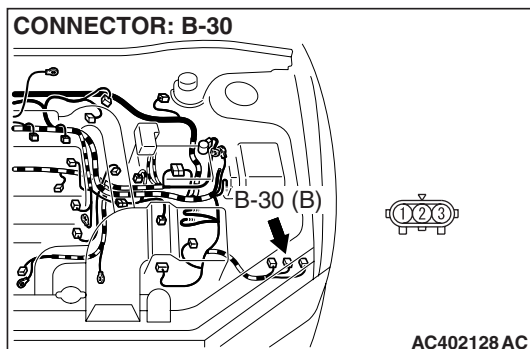
STEP 5. Check pressure sensor connector B-30 and AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

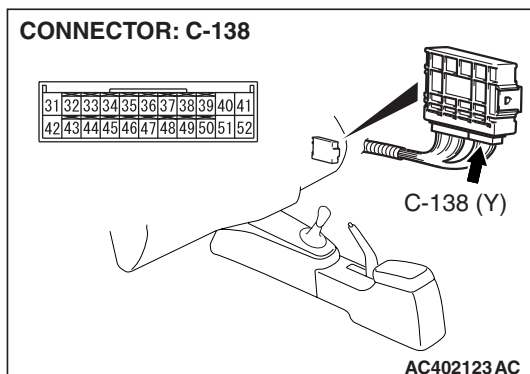
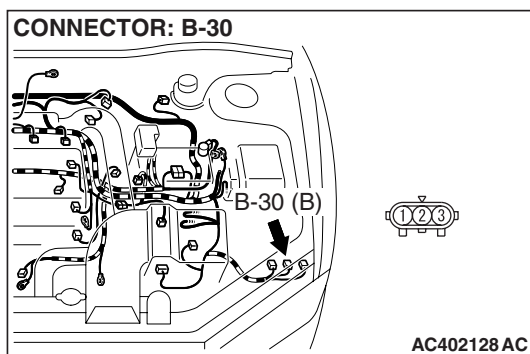


STEP 6. Check the harness for open circuit or short circuit to ground between pressure sensor connector B-30 terminal 1 and AWD-ECU connector C-138 terminal 43.

Q: Is the harness wire in good condition?

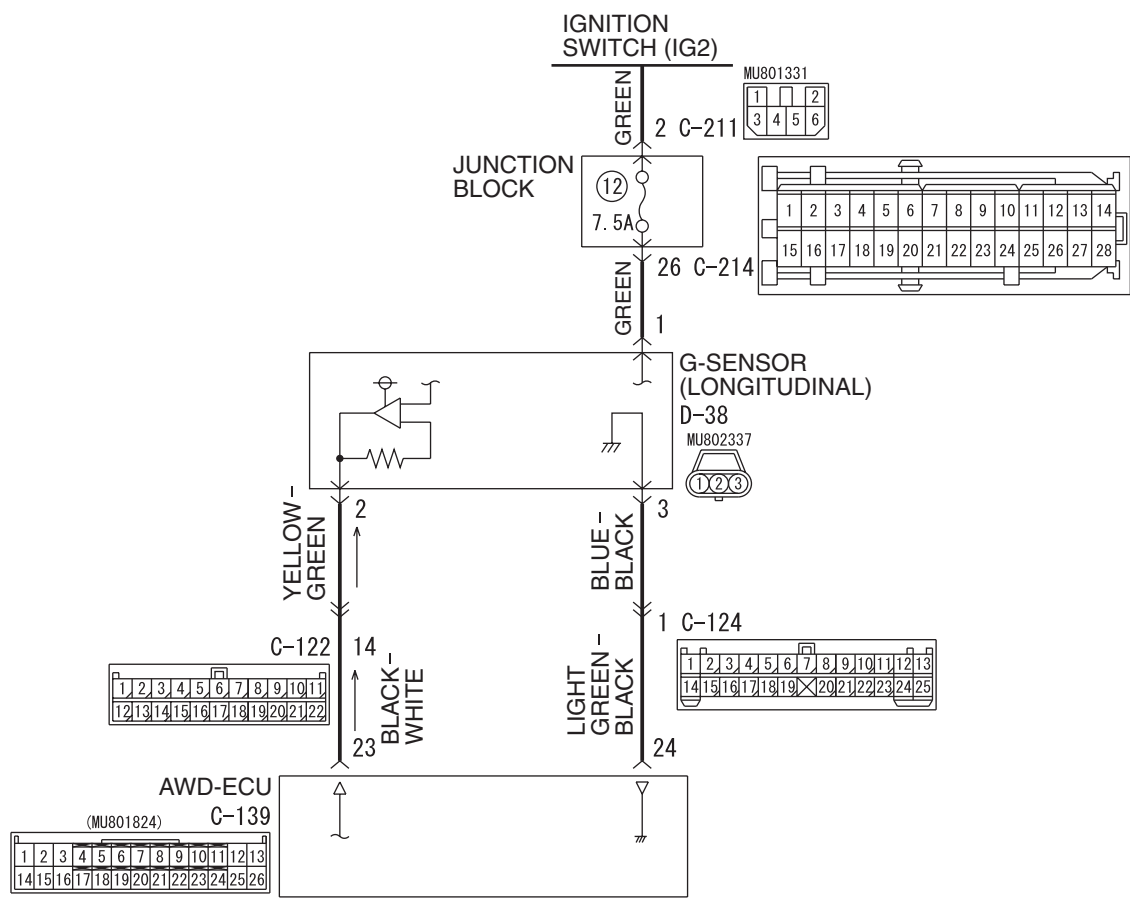
YES : Replace the pressure sensor.

NO : Repair or replace the harness wire.



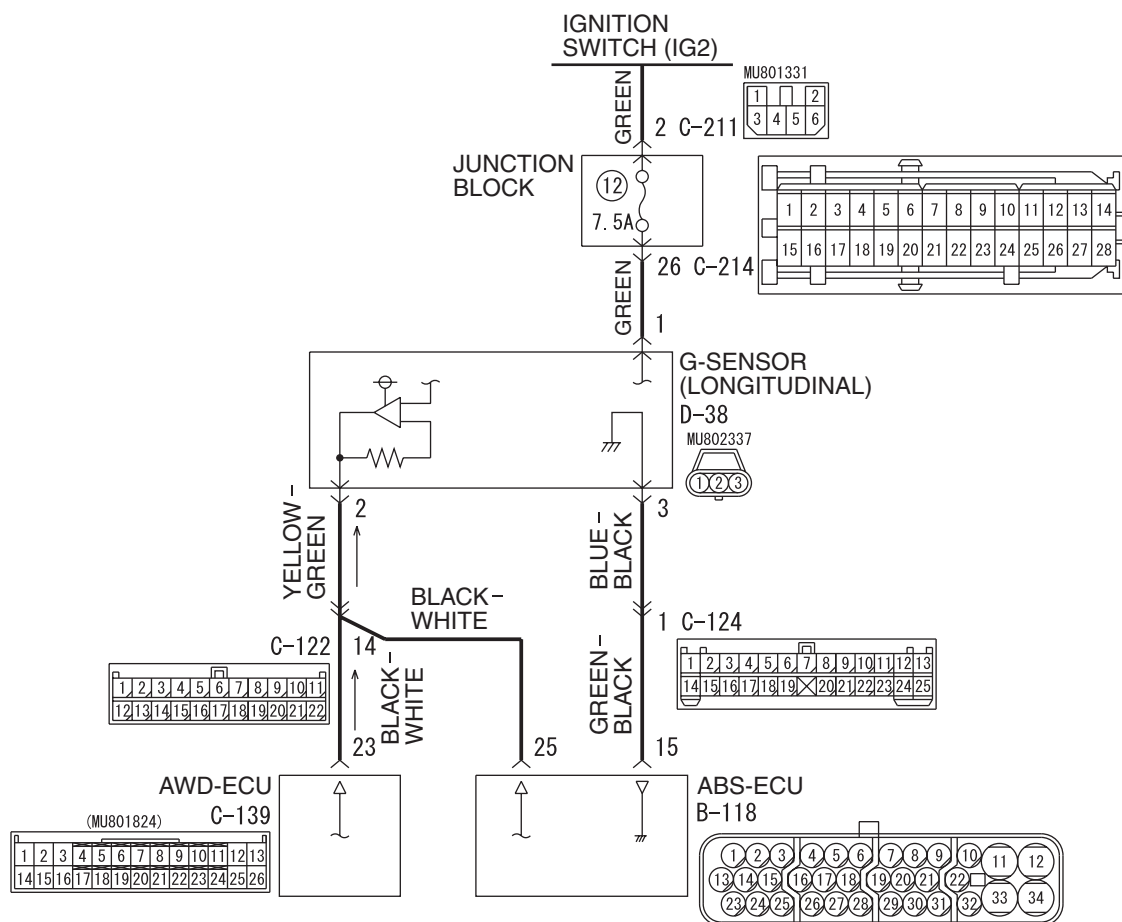
DTC 51: G-sensor (Longitudinal) System (Open Circuit or Short Circuit)

G-sensor (Longitudinal) System Circuit <Vehicles without ABS>



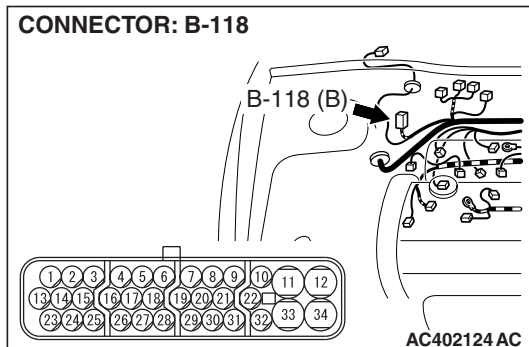
AC402391

G-sensor (Longitudinal) System Circuit <Vehicles with ABS>

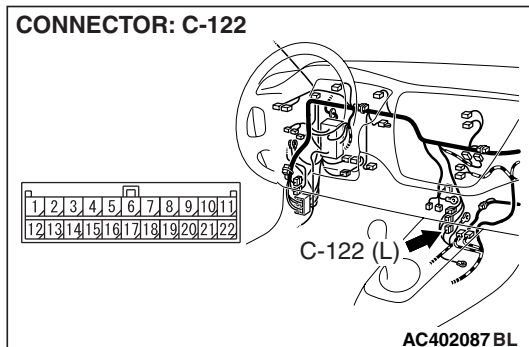


W5J22M006A

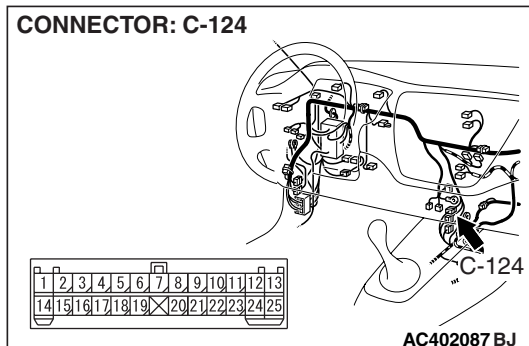
CONNECTOR: B-118



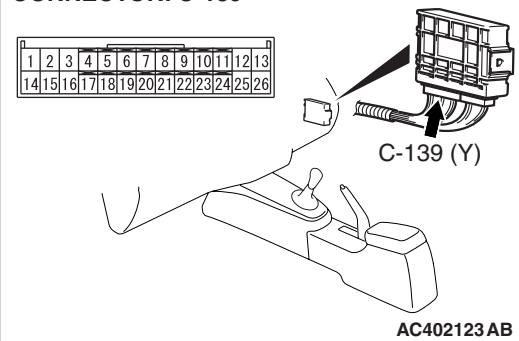
CONNECTOR: C-122



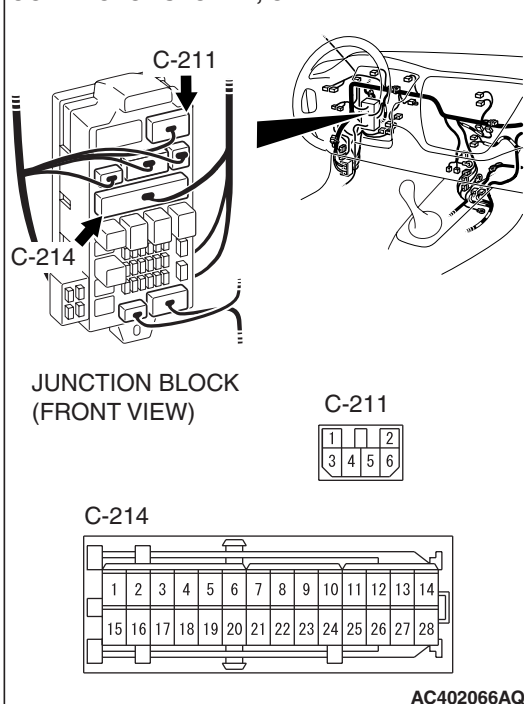
CONNECTOR: C-124



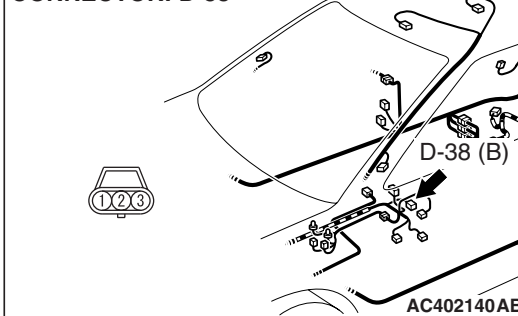
CONNECTOR: C-139



CONNECTORS: C-211, C-214



CONNECTOR: D-38



CIRCUIT OPERATION

The AWD-ECU receives the acceleration level in the forward/reverse direction of the vehicle from the G-sensor (longitudinal).

DTC SET CONDITIONS

DTC 51 is set when the output signal of the G-sensor (longitudinal) is less than 0.5 volt or above 4.5 volts.

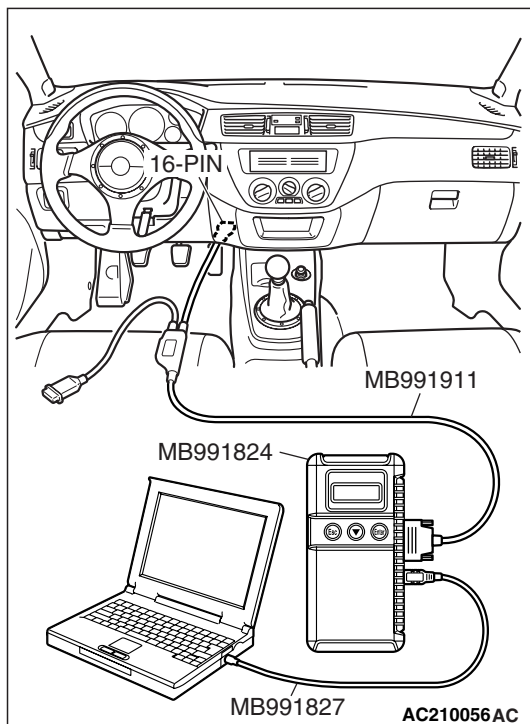
TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the G-sensor (longitudinal)
- Damaged harness and connector
- Malfunction of the ABS-ECU <Vehicles with ABS>
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B



STEP 1. Using scan tool MB991958, check data list item 14: G-sensor (Longitudinal) Voltage.

⚠ CAUTION

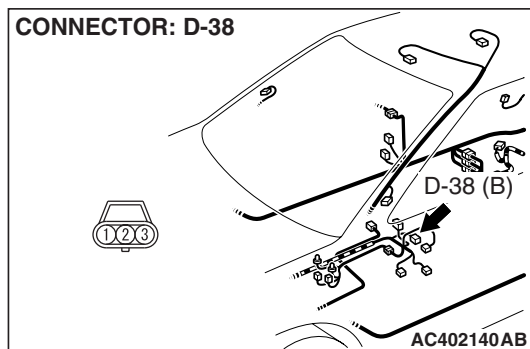
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 14: G-sensor (Longitudinal) Voltage.
 - When the vehicle is stopped (horizontal), voltage of 2.4 V – 2.6 V is displayed.
 - The voltage will fluctuate around 2.5 V while driving.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Go to Step 2.



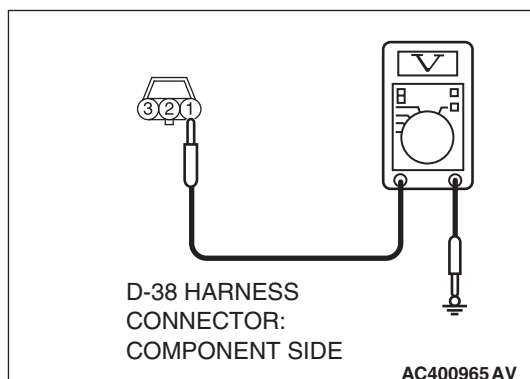
STEP 2. Measure the voltage at G-sensor (longitudinal) connector D-38.

- (1) Disconnect the G-sensor (longitudinal) connector, and measure the voltage between terminal 1 and ground.
- (2) Turn the ignition switch to the "ON" position.
 - The voltage should measure battery positive voltage.
- (3) Turn the ignition switch to the "Lock" (OFF) position.

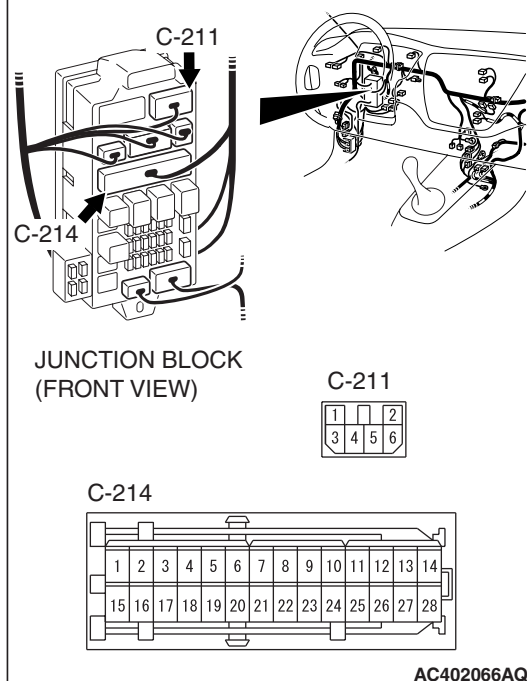
Q: Is the measured voltage battery positive voltage?

YES : Go to Step 7.

NO : Go to Step 3.



CONNECTORS: C-211, C-214



STEP 3. Check junction block connector C-211, C-214 and G-sensor (longitudinal) connector D-38 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

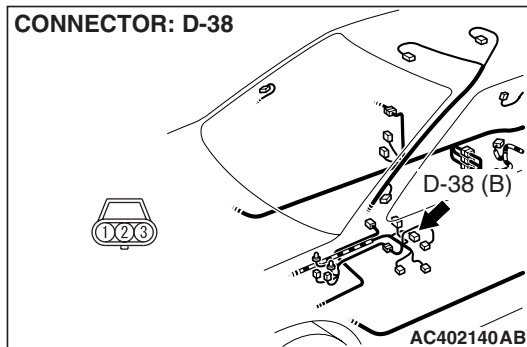
Q: Are the connectors and terminals in good condition?

YES : Go to Step 4.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

CONNECTOR: D-38



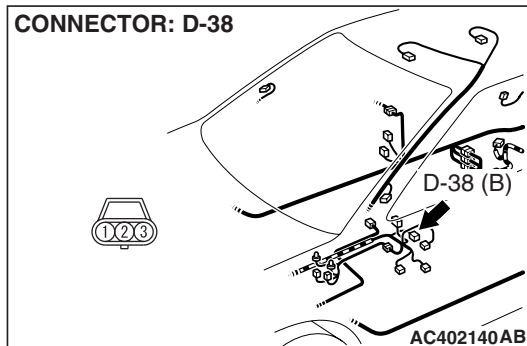
STEP 4. Check the harness for open circuit or short circuit to ground between ignition switch and G-sensor (longitudinal) connector D-38 terminal 1.

Q: Is the harness wire in good condition?

YES : Go to Step 5.

NO : Repair or replace the harness wire.

CONNECTOR: D-38



STEP 5. Using scan tool MB991958, read the ACD diagnostic trouble code.

⚠ CAUTION

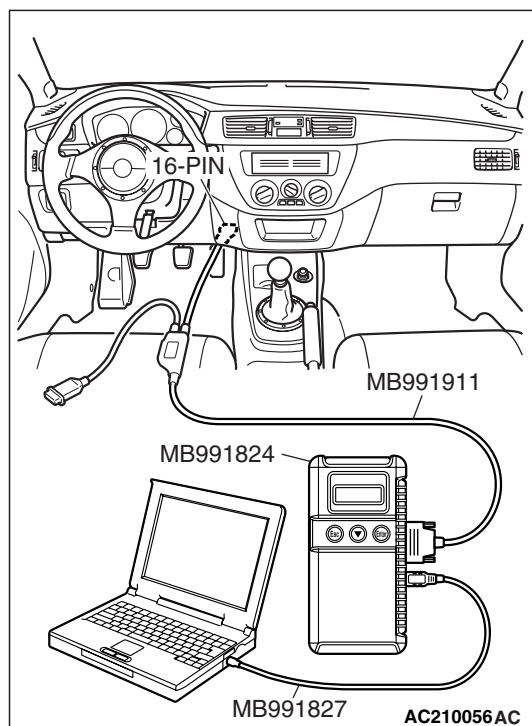
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for ACD diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC 51 set?

YES : Go to Step 6.

NO : The procedure is complete.



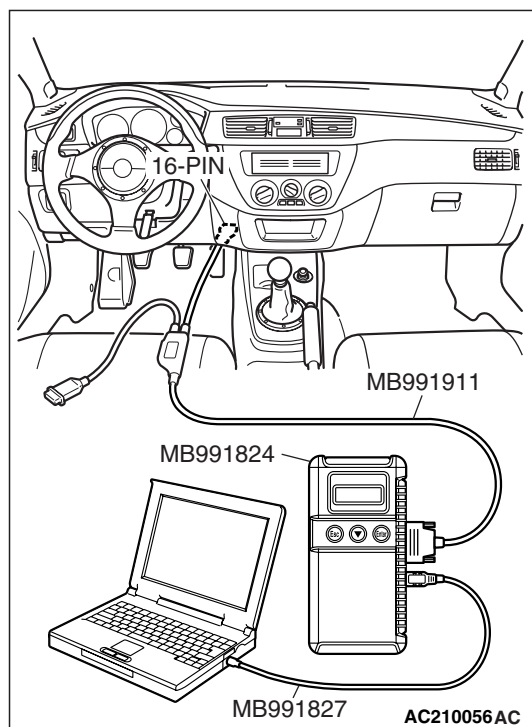
STEP 6. Using scan tool MB991958, check data list item 14: G-sensor (longitudinal) Voltage.

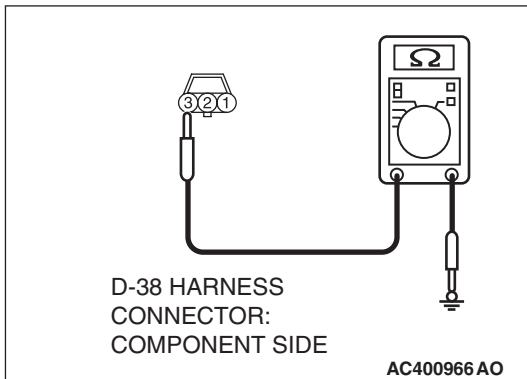
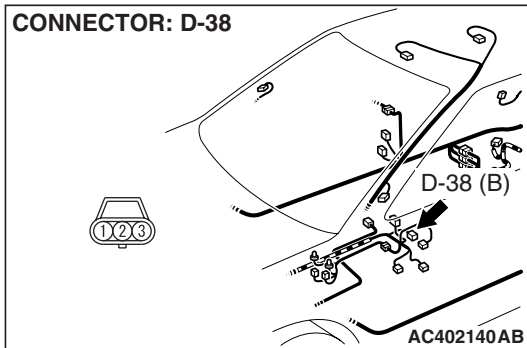
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 14: G-sensor (Longitudinal) Voltage.
 - When the vehicle is stopped (horizontal), voltage of 2.4 V – 2.6 V is displayed.
 - The voltage will fluctuate around 2.5 V while driving.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.





STEP 7. Measure the resistance at G-sensor (longitudinal) connector D-38.

Disconnect the G-sensor (longitudinal) connector, and measure the resistance between terminal 3 and ground.

- The resistance should measure less than 2 ohms

Q: Is the measured resistance less than 2 ohms?

YES : Go to Step 12.

NO : Go to Step 8.

STEP 8. Check ABS-ECU connector B-118 <vehicles with ABS>, AWD-ECU connector C-139 <vehicles without ABS>, intermediate connector C-124, G-sensor (longitudinal) connector D-38 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

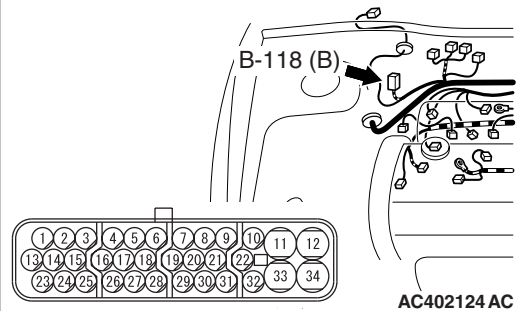
Q: Are the connectors and terminals in good condition?

YES : Go to Step 9.

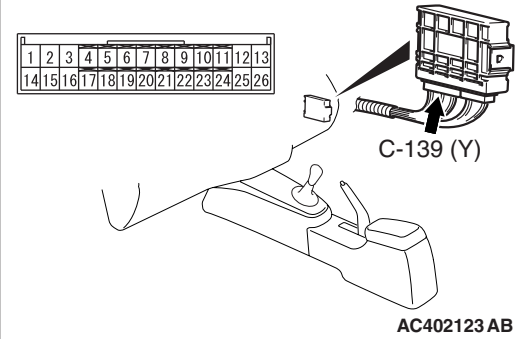
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

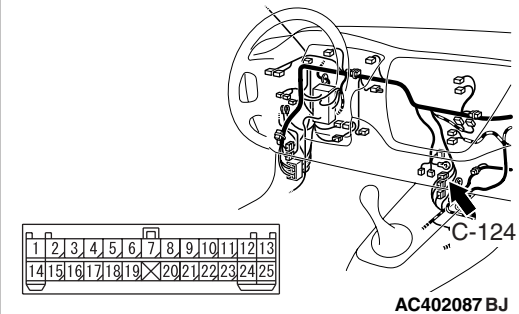
CONNECTOR: B-118



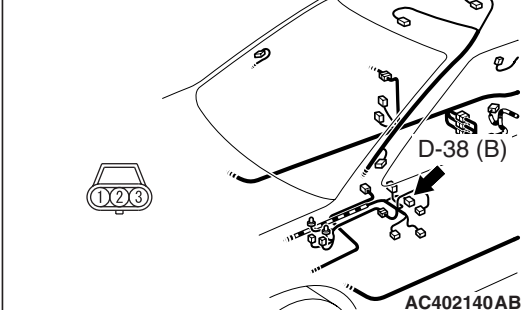
CONNECTOR: C-139



CONNECTOR: C-124



CONNECTOR: D-38

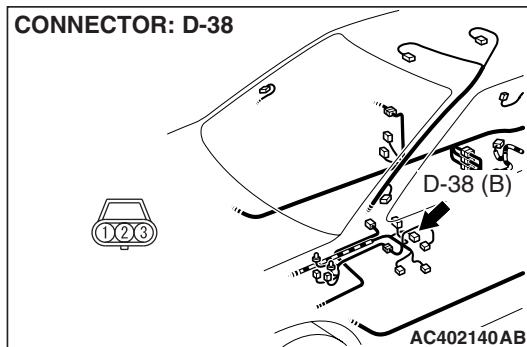
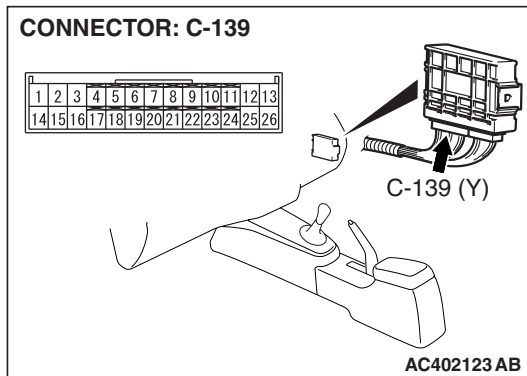
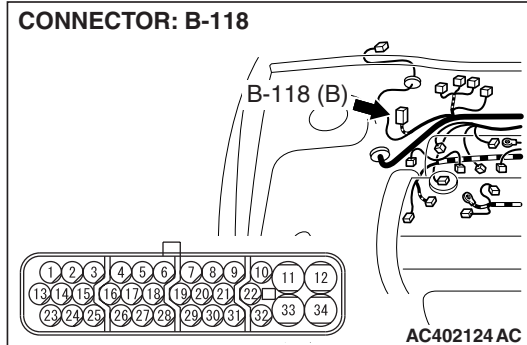


STEP 9. Check the harness for open circuit between ABS-ECU connector B-118 terminal 15 and G-sensor (longitudinal) connector D-38 terminal 3 <vehicles with ABS> or AWD-ECU connector C-139 terminal 24 and G-sensor (longitudinal) connector D-38 terminal 3 <vehicles without ABS>.

Q: Is the harness wire in good condition?

YES : Go to Step 10.

NO : Repair or replace the harness wire.



STEP 10. Using scan tool MB991958, read the ACD diagnostic trouble code.

⚠ CAUTION

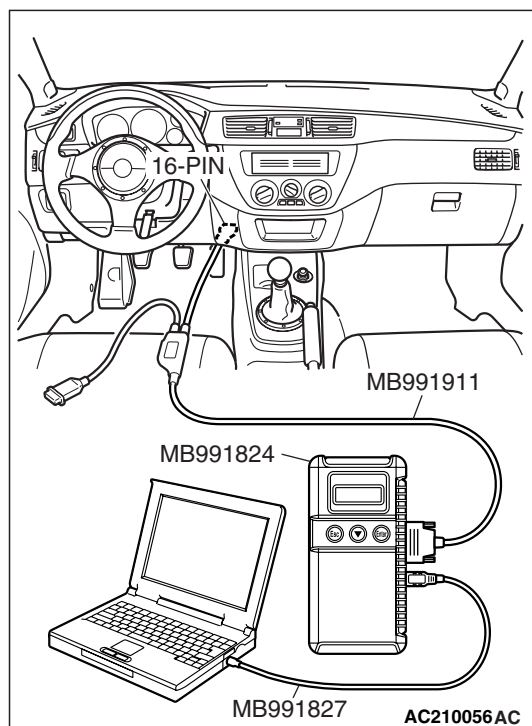
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for ACD diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC 51 set?

YES : Go to Step 11.

NO : The procedure is complete.



STEP 11. Using scan tool MB991958, check data list item 14: G-sensor (Longitudinal) Voltage.

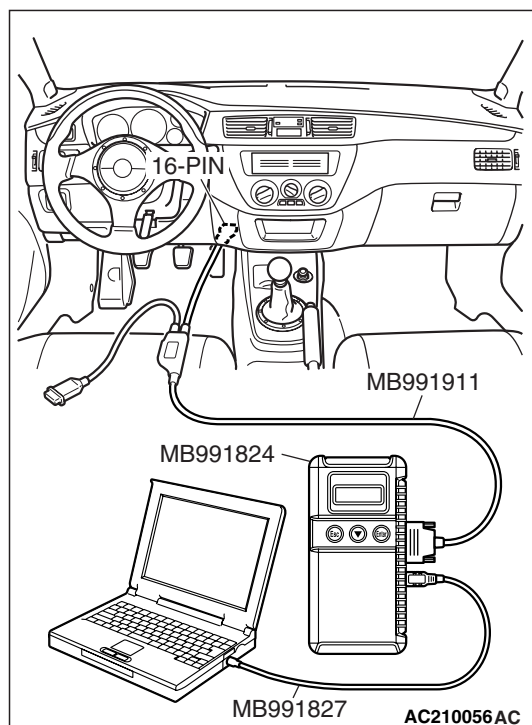
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 14: G-sensor (Longitudinal) Voltage.
 - When the vehicle is stopped (horizontal), voltage of 2.4 V – 2.6 V is displayed.
 - The voltage will fluctuate around 2.5 V while driving.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

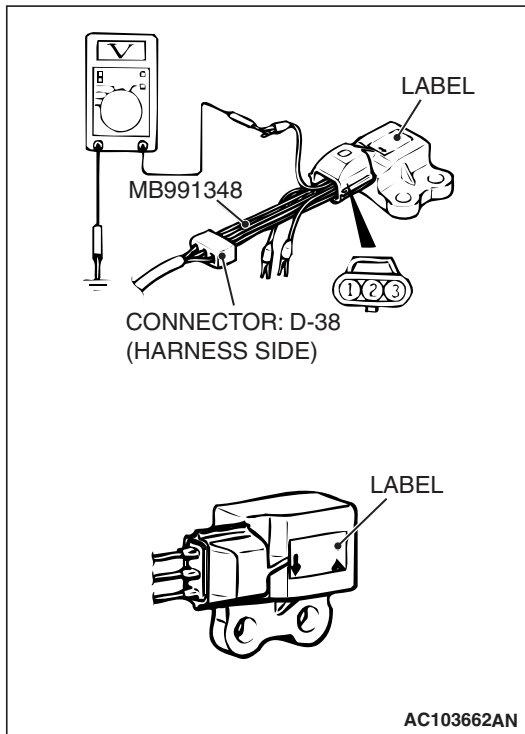
Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO <Vehicles with ABS> : Refer to GROUP 35B – Diagnostic Trouble Code Chart [P.35B-11](#).

NO <Vehicles without ABS> : Replace the AWD-ECU.





STEP 12. Measure the voltage at G-sensor (longitudinal) connector D-38.

- (1) Remove the G-sensor (longitudinal), and connect special tool harness set (MB991348) between the disconnected connectors.
- (2) Turn the ignition switch to the "ON" position.
- (3) Measure the voltage between terminal 2 and ground.
 - When the label on the G-sensor (Longitudinal) is horizontal, voltage of 2.4 V – 2.6 V is displayed.
 - When the label on the G-sensor (Longitudinal) is vertical, voltage of 3.3 V – 3.7 V is displayed.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result normal?

YES : Go to Step 13.

NO : Replace the G-sensor (longitudinal).

STEP 13. Check ABS-ECU connector B-118 <vehicles with ABS>, intermediate connector C-122, AWD-ECU connector C-139 and G-sensor (longitudinal) connector D-38 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

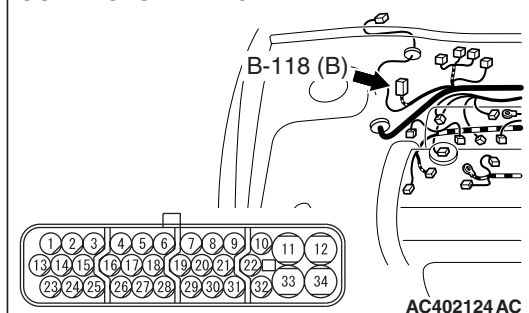
Q: Are the connectors and terminals in good condition?

YES : Go to Step 14.

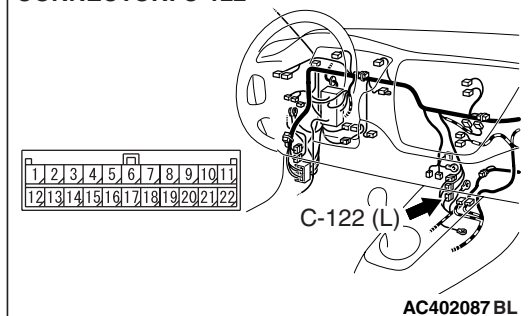
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

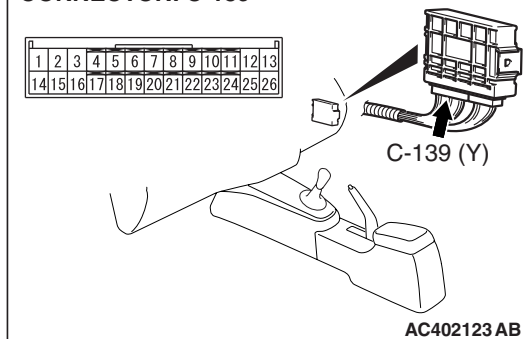
CONNECTOR: B-118



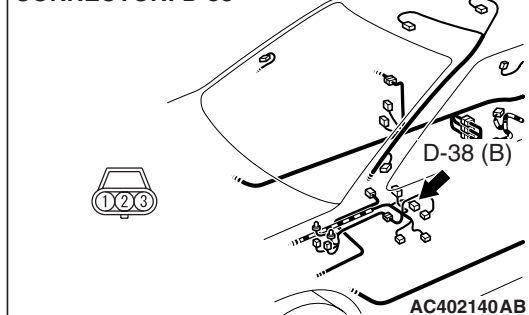
CONNECTOR: C-122



CONNECTOR: C-139



CONNECTOR: D-38



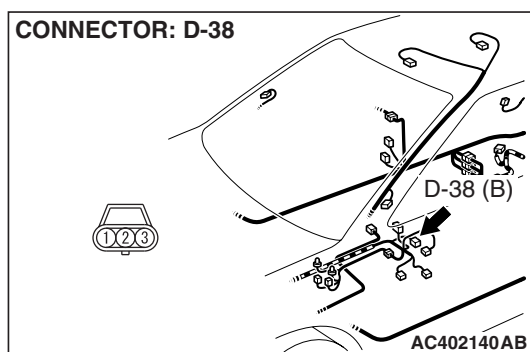
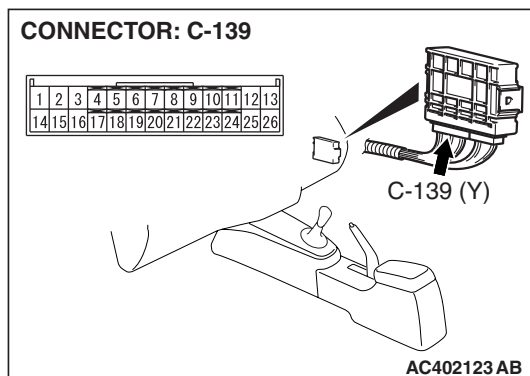
STEP 14. Check the harness for open circuit or short circuit to ground between AWD-ECU connector C-139 terminal 23 and G-sensor (longitudinal) connector D-38 terminal 2.

Q: Is the harness wire in good condition?

YES <Vehicles without ABS> : Go to Step 6.

YES <Vehicles with ABS> : Go to Step 15.

NO : Repair or replace the harness wire.

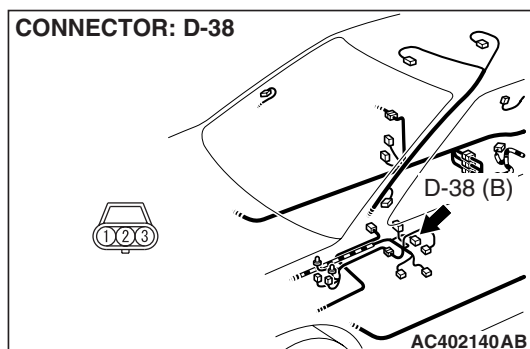
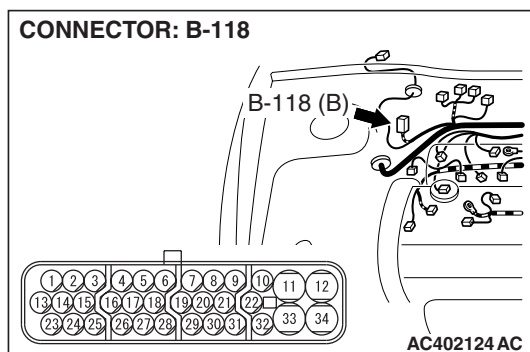


STEP 15. Check the harness for short circuit to ground between ABS-ECU connector B-118 terminal 25 and G-sensor (longitudinal) connector D-38 terminal 2.

Q: Is the harness wire in good condition?

YES : Go to Step 6.

NO : Repair or replace the harness wire.



DTC 52: G-sensor (Longitudinal) System (Defective Sensor)**G-SENSOR (LONGITUDINAL) SYSTEM CIRCUIT**

Refer to [P.22A-83](#).

CIRCUIT OPERATION

Refer to [P.22A-83](#).

DTC SET CONDITIONS

DTC 52 is set when the G-sensor has exceeded the specified value in a state where the ABS and brake are not operating above the vehicle speed of 10 km/h (6.2 mph).

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the G-sensor (longitudinal)
- Damaged harness and connector
- Malfunction of the ABS-ECU <Vehicles with ABS>
- Malfunction of the AWD-ECU

DIAGNOSIS**Required Special Tool:**

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Using scan tool MB991958, check data list item 14: G-sensor (Longitudinal) Voltage.**⚠ CAUTION**

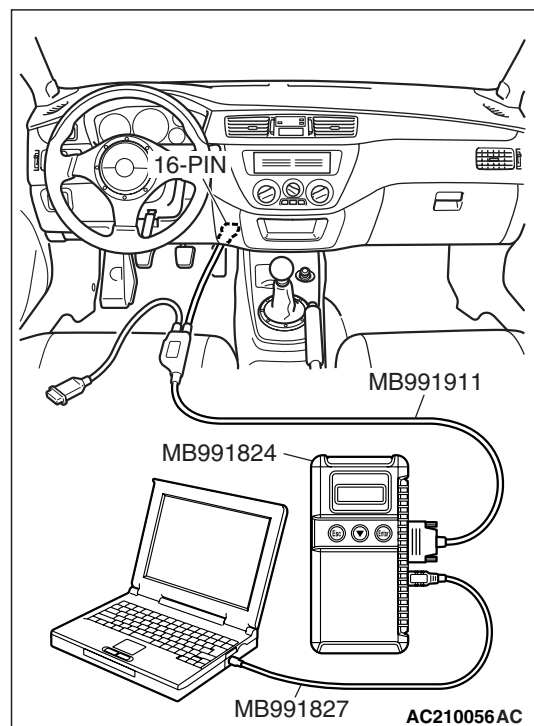
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

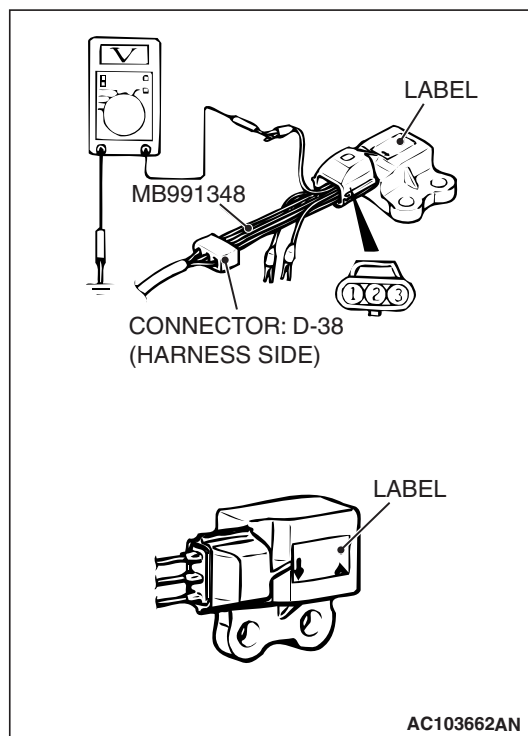
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 14: G-sensor (Longitudinal) Voltage.
 - When the vehicle is stopped (horizontal), voltage of 2.4 V – 2.6 V is displayed.
 - The voltage will fluctuate around 2.5 V while driving.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Go to Step 2.





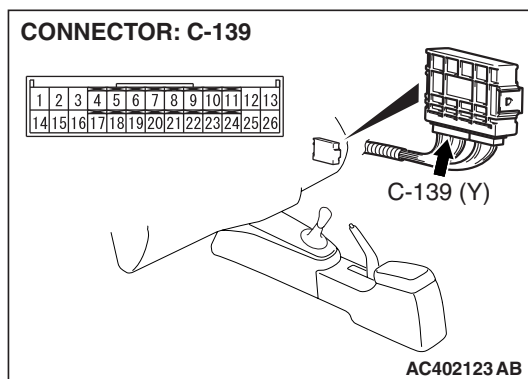
STEP 2. Measure the voltage at G-sensor (longitudinal) connector D-38.

- (1) Remove the G-sensor (longitudinal), and connect special tool harness set (MB991348) between the disconnected connectors.
- (2) Turn the ignition switch to the "ON" position.
- (3) Measure the voltage between terminal 2 and ground.
 - When the label on the G-sensor (Longitudinal) is horizontal, voltage of 2.4 V – 2.6 V is displayed.
 - When the label on the G-sensor (Longitudinal) is vertical, voltage of 3.3 V – 3.7 V is displayed.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the G-sensor (longitudinal).



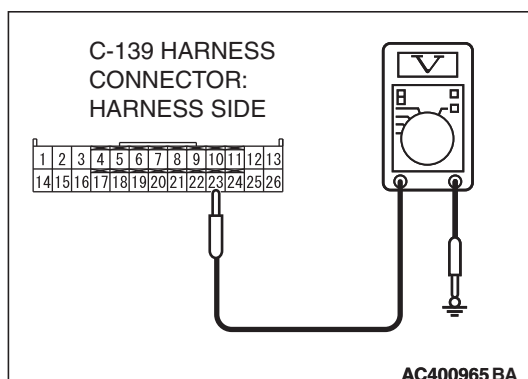
STEP 3. Measure the voltage at AWD-ECU connector C-139 by backprobing.

- (1) Turn the ignition switch to the "ON" position.
- (2) Measure the voltage between AWD-ECU connector C-139 terminal 23 and ground by backprobing.
 - The voltage should measure between 2.4 and 2.6 volts. (Horizontal state of vehicle)
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

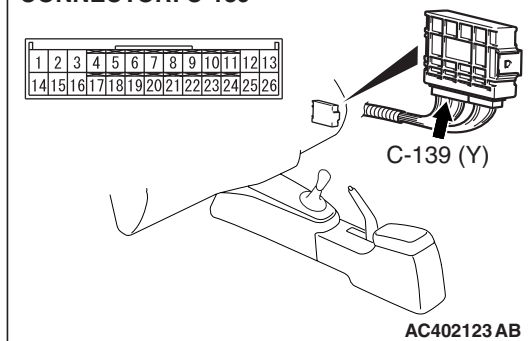
Q: Is the measured voltage within the specified range?

YES : Go to Step 4.

NO : Go to Step 6.



CONNECTOR: C-139



STEP 4. Check AWD-ECU connector C-139 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

STEP 5. Using scan tool MB991958, check data list item 14: G-sensor (Longitudinal) Voltage.

⚠ CAUTION

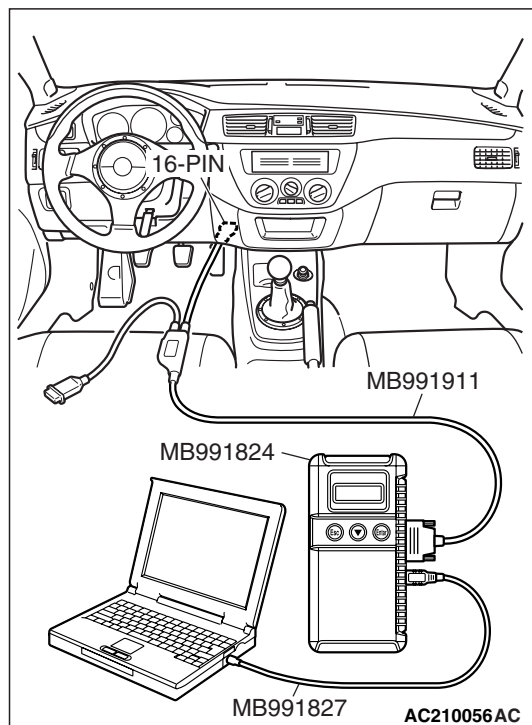
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 14: G-sensor (Longitudinal) Voltage.
 - When the vehicle is stopped (horizontal), voltage of 2.4 V – 2.6 V is displayed.
 - The voltage will fluctuate around 2.5 V while driving.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.



STEP 6. Check ABS-ECU connector B-118 <vehicles with ABS>, intermediate connector C-122, AWD-ECU connector C-139 and G-sensor (longitudinal) connector D-38 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

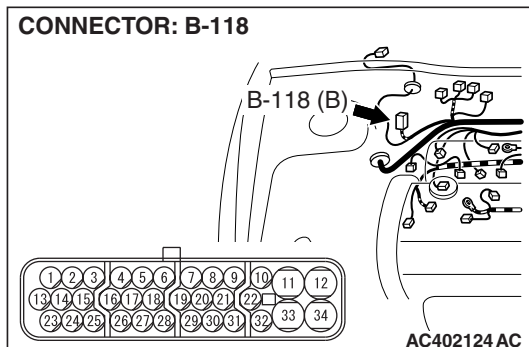
Q: Are the connectors and terminals in good condition?

YES : Go to Step 7.

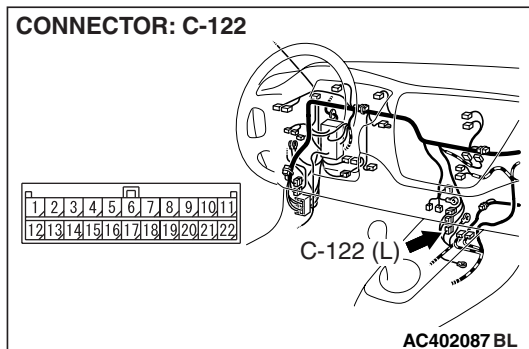
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

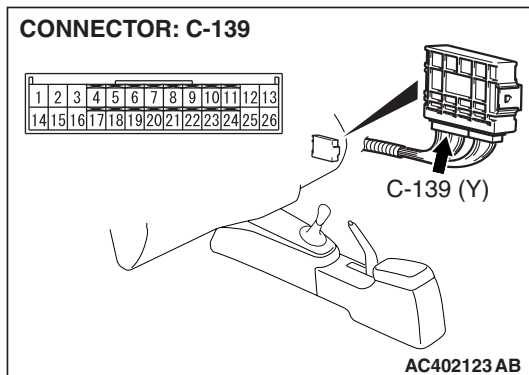
CONNECTOR: B-118



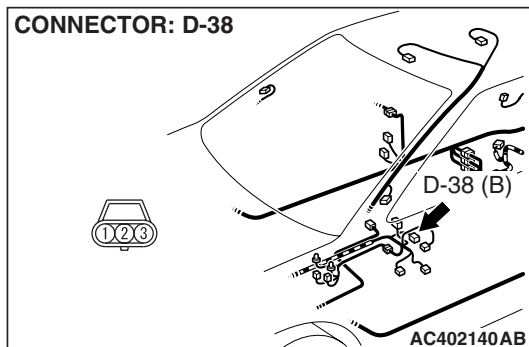
CONNECTOR: C-122



CONNECTOR: C-139

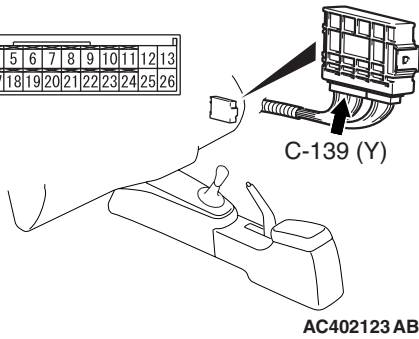


CONNECTOR: D-38

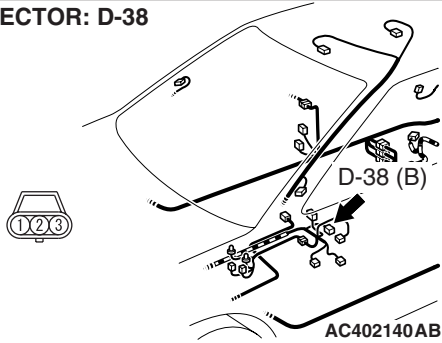


CONNECTOR: C-139

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26



CONNECTOR: D-38



STEP 7. Check the harness for open circuit or short circuit to ground between AWD-ECU connector C-139 terminal 23 and G-sensor (longitudinal) connector D-38 terminal 2.

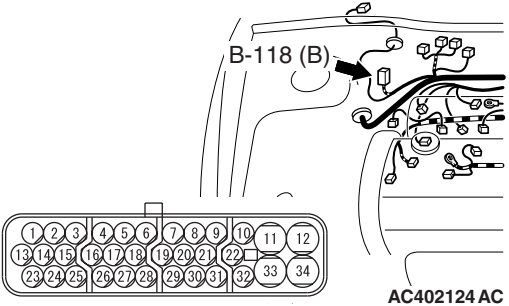
Q: Is the harness wire in good condition?

YES <Vehicles without ABS> : Go to Step 5.

YES <Vehicles with ABS> : Go to Step 8.

NO : Repair or replace the harness wire.

CONNECTOR: B-118



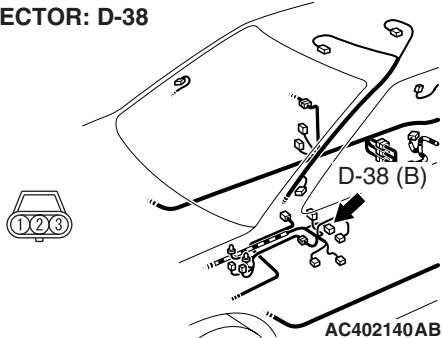
STEP 8. Check the harness for short circuit to ground between ABS-ECU connector B-118 terminal 25 and G-sensor (longitudinal) connector D-38 terminal 2.

Q: Is the harness wire in good condition?

YES : Go to Step 5.

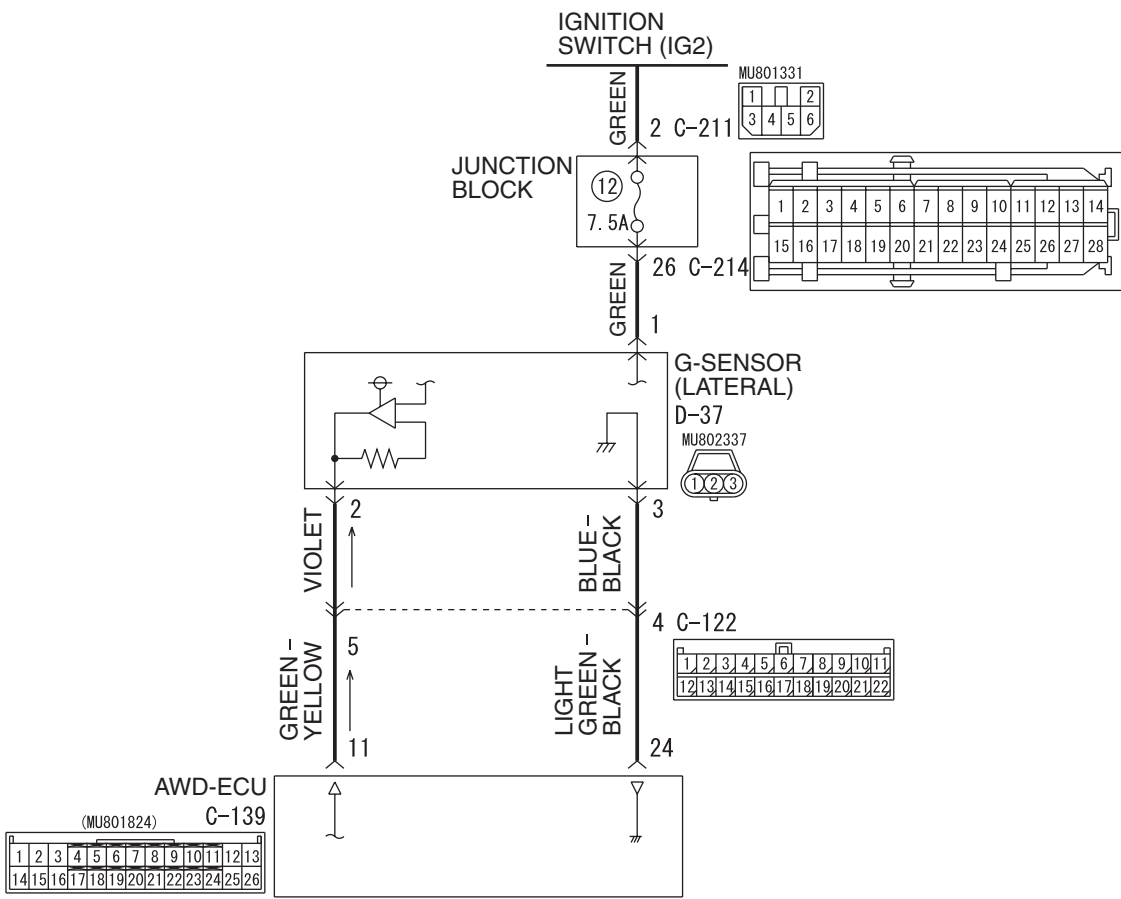
NO : Repair or replace the harness wire.

CONNECTOR: D-38



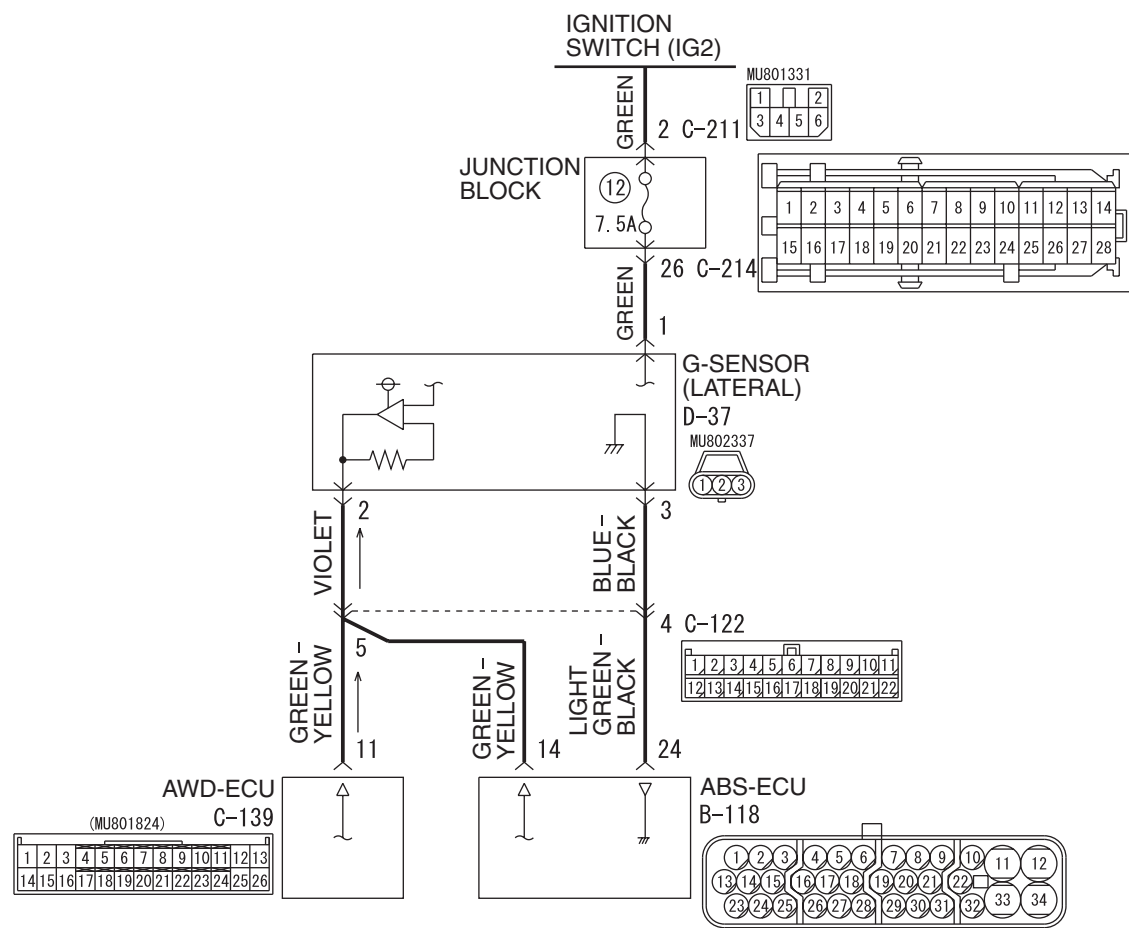
DTC 56: G-sensor (Lateral) System (Open Circuit or Short Circuit)

G-sensor (Lateral) System Circuit <Vehicles without ABS>

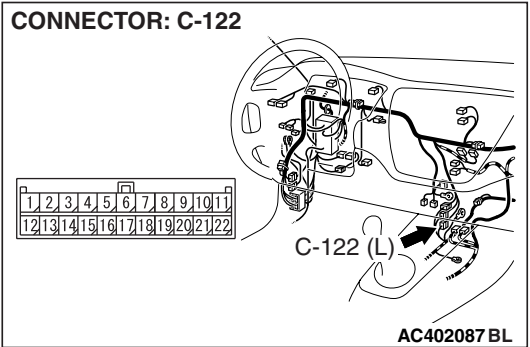
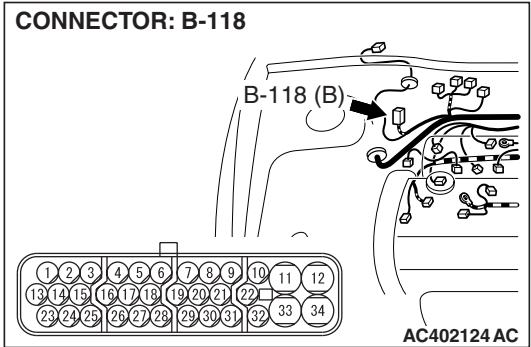


AC402390

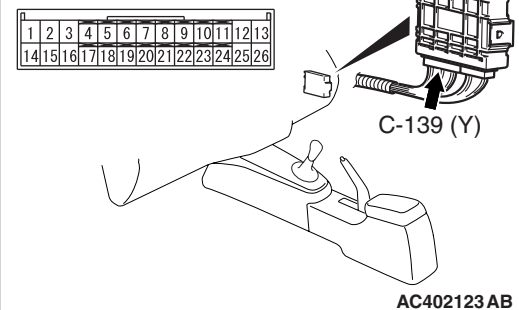
G-sensor (Lateral) System Circuit <Vehicles with ABS>



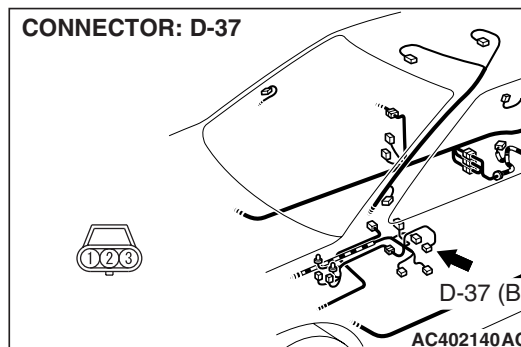
W5J22M007A



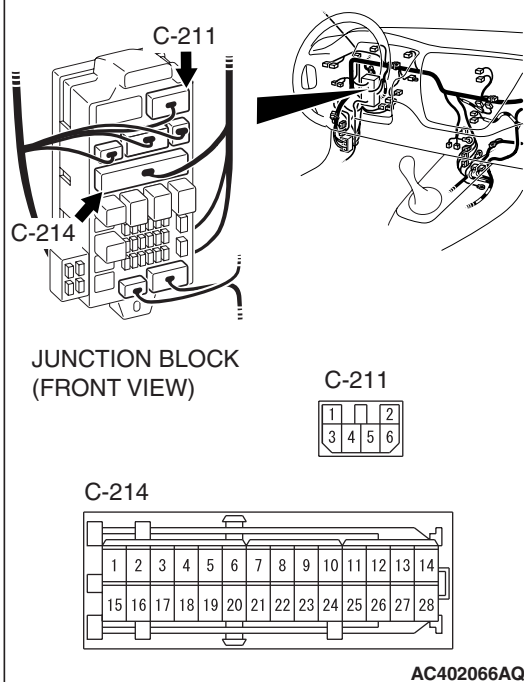
CONNECTOR: C-139



CONNECTOR: D-37



CONNECTORS: C-211, C-214



CIRCUIT OPERATION

The AWD-ECU receives the acceleration level of the vehicle in the right/left direction from the G-sensor (lateral).

DTC SET CONDITIONS

DTC 56 is set when the output signal of the G-sensor (lateral) is below 0.5 volts or above 4.5 volts.

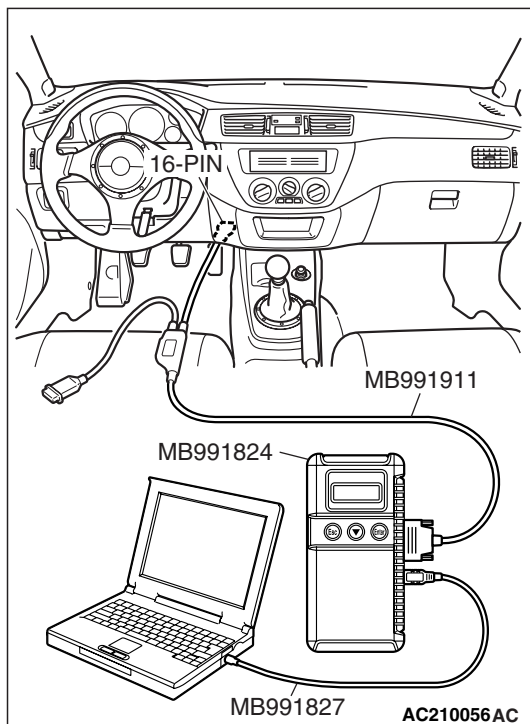
TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the G-sensor (lateral)
- Damaged harness and connector
- Malfunction of the ABS-ECU <Vehicles with ABS>
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B



STEP 1. Using scan tool MB991958, check data list item 15: G-sensor (Lateral) Voltage.

⚠ CAUTION

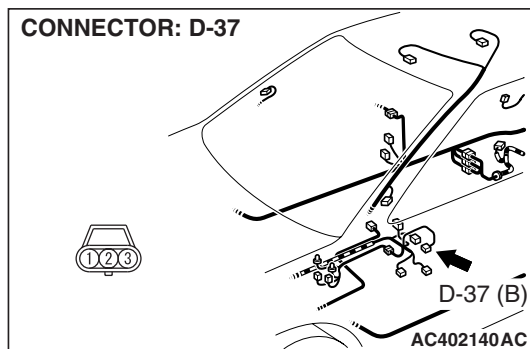
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 15: G-sensor (Lateral) Voltage.
 - When the vehicle is stopped (horizontal), voltage of 2.4 V – 2.6 V is displayed.
 - The voltage will fluctuate around 2.5 V while driving.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Go to Step 2.



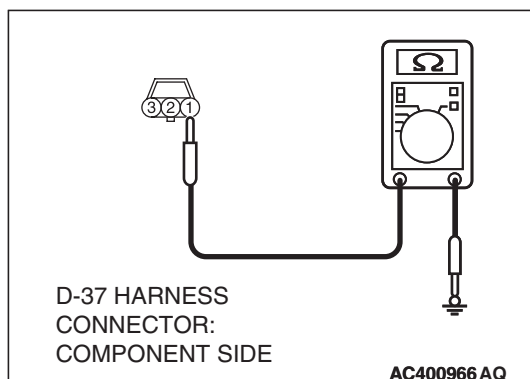
STEP 2. Measure the voltage at G-sensor (lateral) connector D-37.

- (1) Disconnect the G-sensor (lateral) connector, and measure the voltage between terminal 1 and ground.
- (2) Turn the ignition switch to the "ON" position.
 - The voltage should measure battery positive voltage.

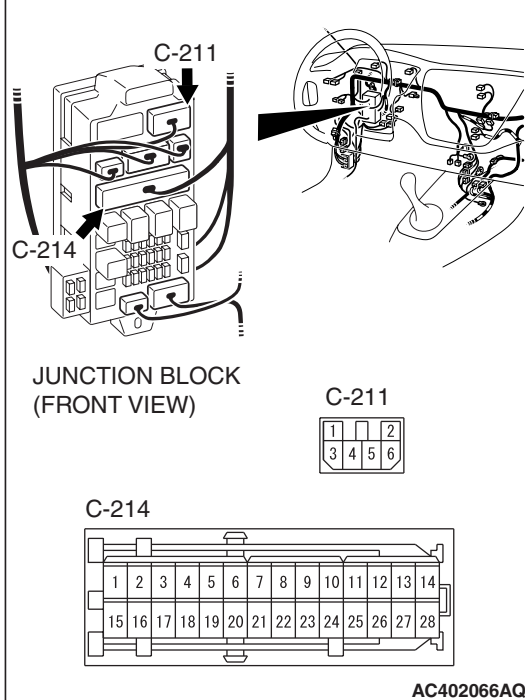
Q: Is the measured voltage battery positive voltage?

YES : Go to Step 7.

NO : Go to Step 3.



CONNECTORS: C-211, C-214



STEP 3. Check junction block connector C-211, C-214 and G-sensor (lateral) connector D-37 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

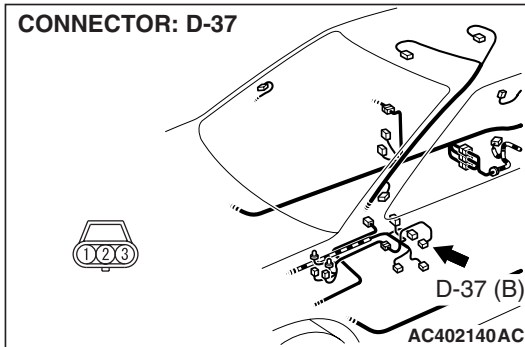
Q: Are the connectors and terminals in good condition?

YES : Go to Step 4.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

CONNECTOR: D-37



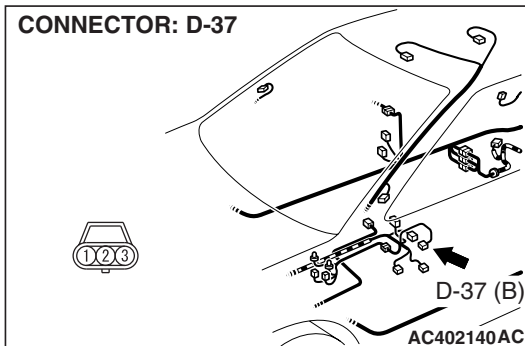
STEP 4. Check the harness for open circuit or short circuit to ground between ignition switch and G-sensor (lateral) connector D-37 terminal 1.

Q: Is the harness wire in good condition?

YES : Go to Step 5.

NO : Repair or replace the harness wire.

CONNECTOR: D-37



STEP 5. Using scan tool MB991958, read the ACD diagnostic trouble code.

⚠ CAUTION

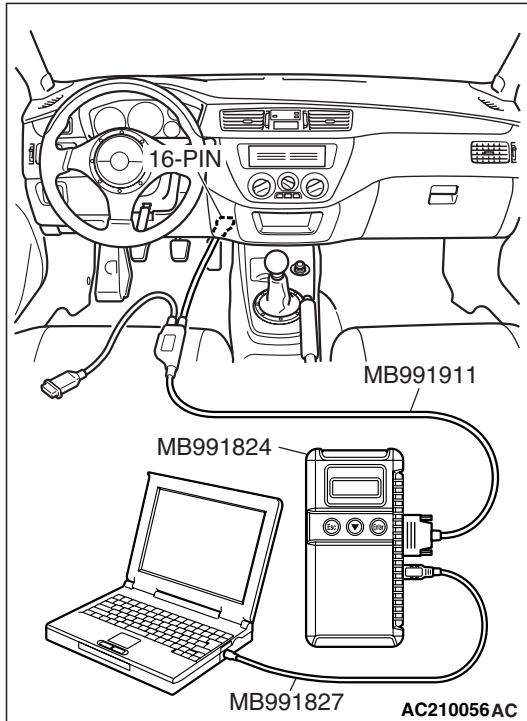
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for ACD diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC 56 set?

YES : Go to Step 6.

NO : The procedure is complete.



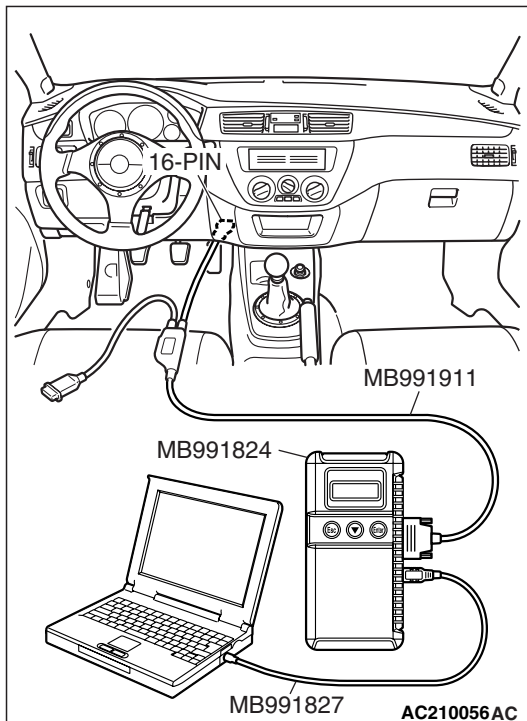
STEP 6. Using scan tool MB991958, check data list item 15: G-sensor (Lateral) Voltage.

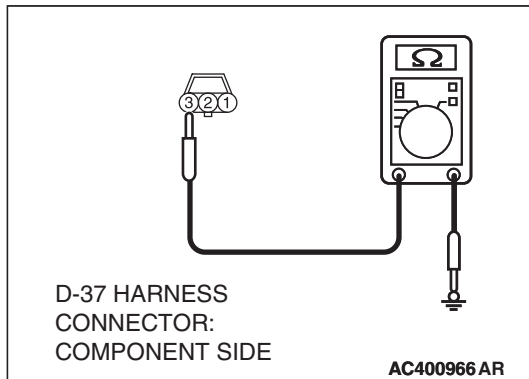
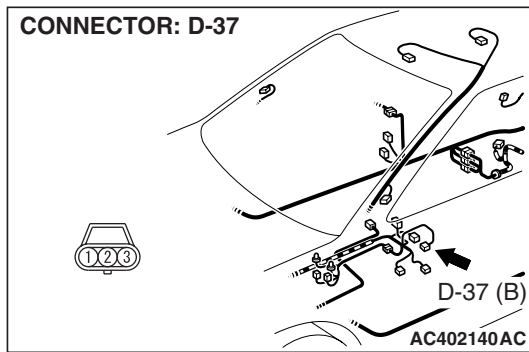
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 15: G-sensor (Lateral) Voltage.
 - When the vehicle is stopped (horizontal), voltage of 2.4 V – 2.6 V is displayed.
 - The voltage will fluctuate around 2.5 V while driving.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.





STEP 7. Measure the resistance at G-sensor (lateral) connector D-37 by backprobing.

Disconnect the G-sensor (lateral) connector, and measure the resistance between terminal 3 and ground.

- The resistance should measure less than 2 ohms

Q: Is the measured resistance less than 2 ohms?

YES : Go to Step 12.

NO : Go to Step 8.

STEP 8. Check ABS-ECU connector B-118 <vehicles with ABS>, AWD-ECU connector C-139 <vehicles without ABS>, intermediate connector C-122 and G-sensor (lateral) connector D-37 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

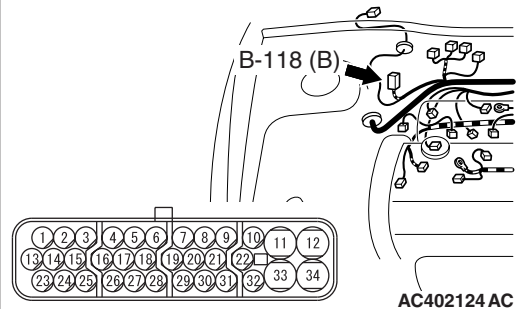
Q: Are the connectors and terminals in good condition?

YES : Go to Step 9.

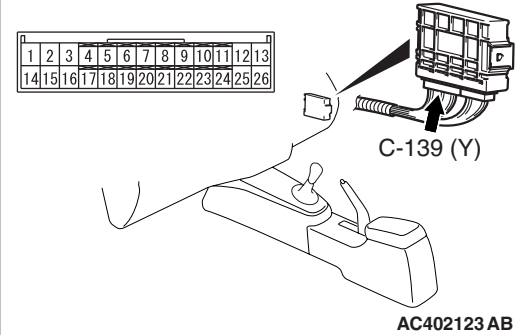
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

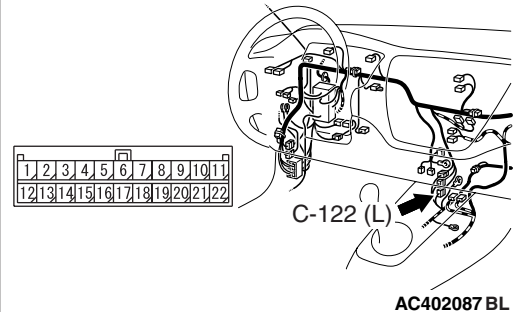
CONNECTOR: B-118



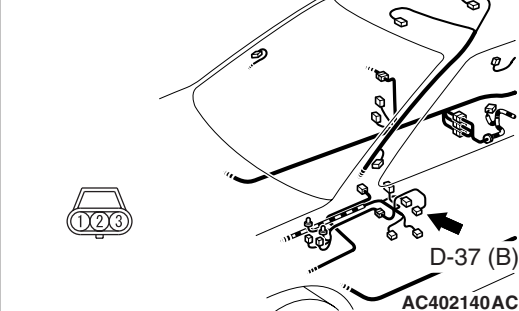
CONNECTOR: C-139



CONNECTOR: C-122



CONNECTOR: D-37

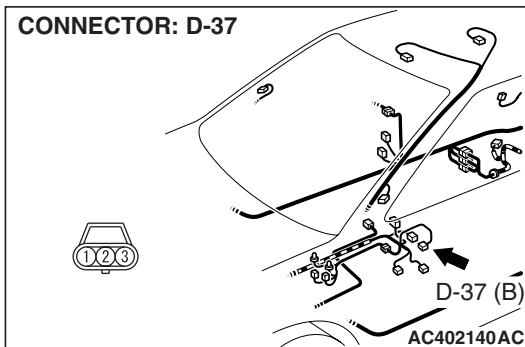
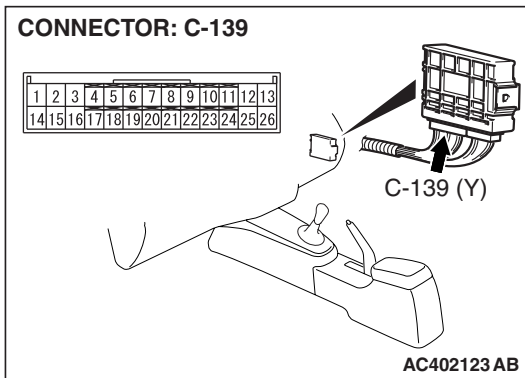
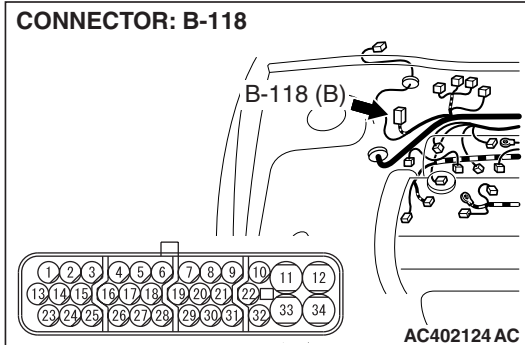


STEP 9. Check the harness for open circuit between ABS-ECU connector B-118 terminal 24 and G-sensor (lateral) connector D-37 terminal 3 <vehicles with ABS> or AWD-ECU connector C-139 terminal 24 and G-sensor (lateral) connector D-37 terminal 3 <vehicles without ABS>.

Q: Is the harness wire in good condition?

YES : Go to Step 10.

NO : Repair or replace the harness wire.



STEP 10. Using scan tool MB991958, read the ACD diagnostic trouble code.

⚠ CAUTION

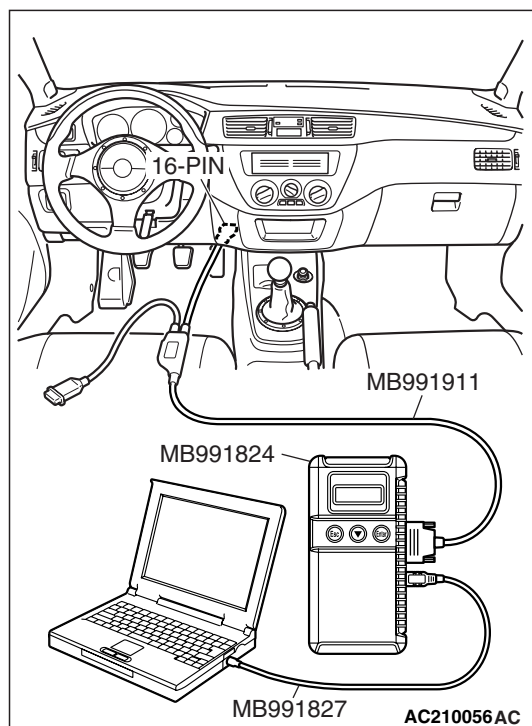
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for ACD diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC 56 set?

YES : Go to Step 11.

NO : The procedure is complete.



STEP 11. Using scan tool MB991958, check data list item 15: G-sensor (Lateral) Voltage.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 15: G-sensor (Lateral) Voltage.
 - When the vehicle is stopped (horizontal), voltage of 2.4 V – 2.6 V is displayed.
 - The voltage will fluctuate around 2.5 V while driving.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

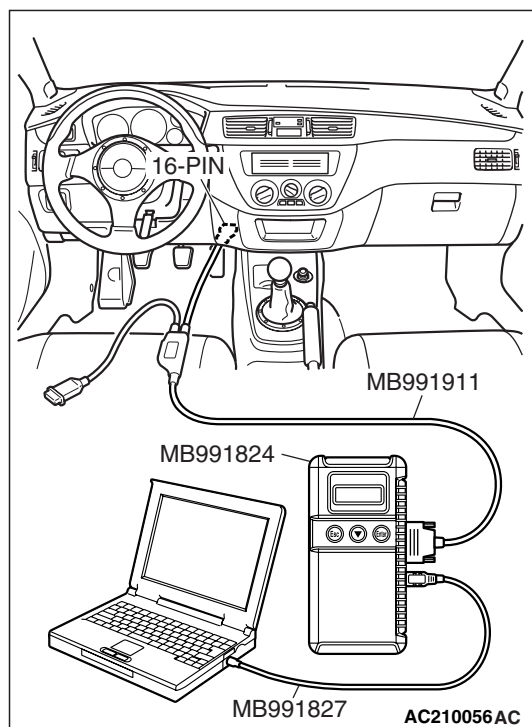
YES : It can be assumed that this malfunction is intermittent.

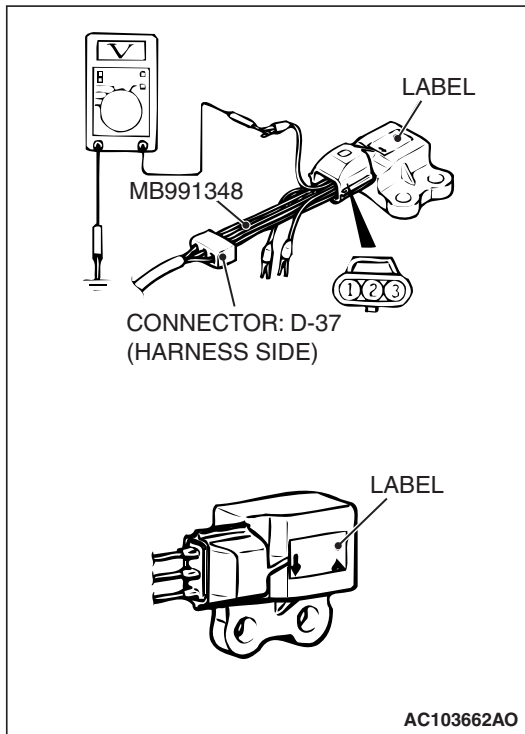
Refer to GROUP 00, How to Use

Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO <Vehicles with ABS> : Refer to GROUP 35B – Diagnostic Trouble Code Chart [P.35B-11](#).

NO <Vehicles without ABS> : Replace the AWD-ECU.





STEP 12. Measure the voltage at G-sensor (lateral) connector D-37.

- (1) Remove the G-sensor (lateral) connector, and connect special tool harness set (MB991348) between the disconnected connectors.
- (2) Turn the ignition switch to the "ON" position.
- (3) Measure the voltage between terminal 2 and ground.
 - When the label on the G-sensor (Lateral) is horizontal, voltage of 2.4 V & 2.6 V is displayed.
 - When the label on the G-sensor (Lateral) is vertical, voltage of 3.3 V – 3.7 V is displayed.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result normal?

YES : Go to Step 13.

NO : Replace the G-sensor (lateral).

STEP 13. Check ABS-ECU connector B-118 <vehicles with ABS>, intermediate connector C-122, AWD-ECU connector C-139 and G-sensor (lateral) connector D-37 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

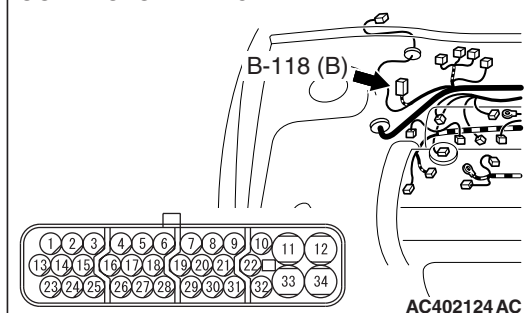
Q: Are the connectors and terminals in good condition?

YES : Go to Step 14.

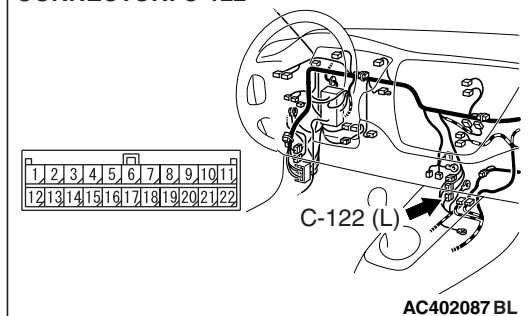
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

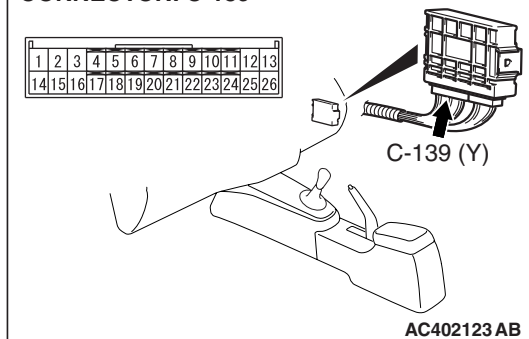
CONNECTOR: B-118



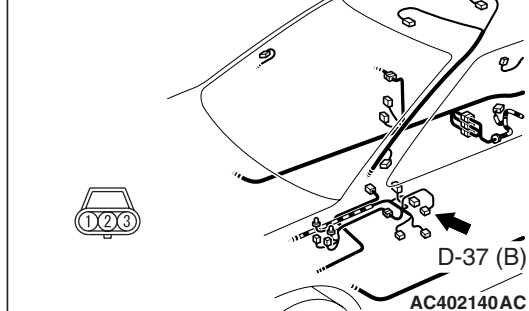
CONNECTOR: C-122



CONNECTOR: C-139



CONNECTOR: D-37



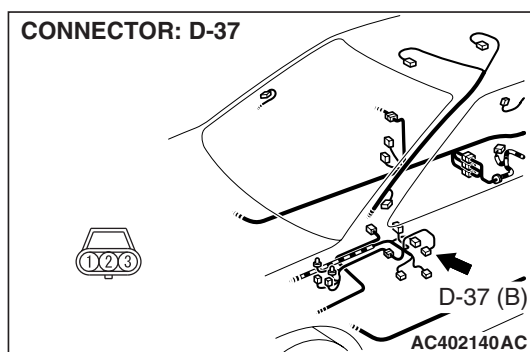
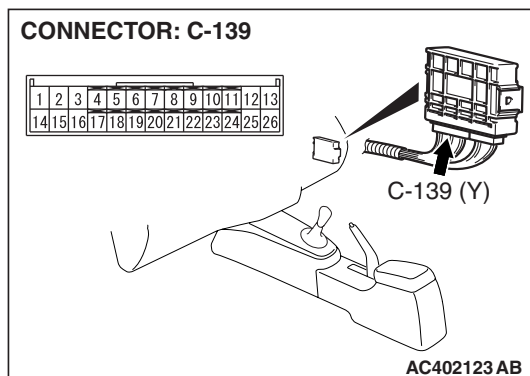
STEP 14. Check the harness for open circuit or short circuit to ground between AWD-ECU connector C-139 terminal 11 and G-sensor (lateral) connector D-37 terminal 2.

Q: Is the harness wire in good condition?

YES <Vehicles without ABS> : Go to Step 6.

YES <Vehicles with ABS> : Go to Step 15.

NO : Repair or replace the harness wire.

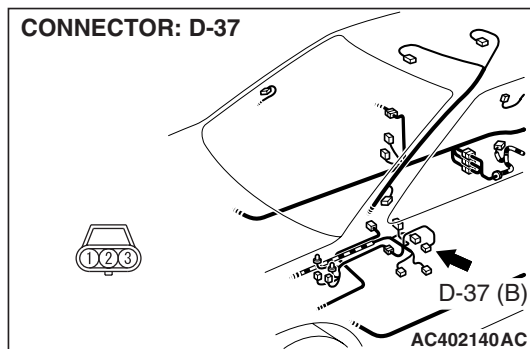
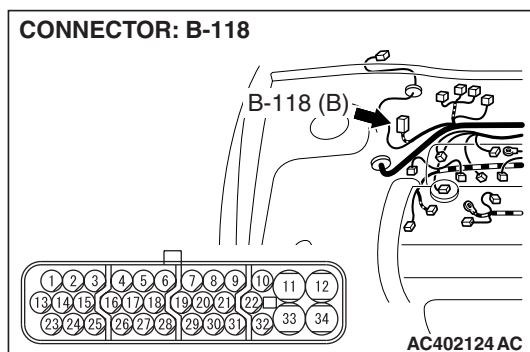


STEP 15. Check the harness for short circuit to ground between ABS-ECU connector B-118 terminal 14 and G-sensor (lateral) connector D-37 terminal 2.

Q: Is the harness wire in good condition?

YES : Go to Step 6.

NO : Repair or replace the harness wire.



DTC 57: G-sensor (Lateral) System (Defective Sensor)**G-SENSOR (LATERAL) SYSTEM CIRCUIT**

Refer to P.22A-83.

CIRCUIT OPERATION

Refer to P.22A-83.

DTC SET CONDITIONS

DTC 57 is set when the G-sensor has exceeded the specified value in a state where the ABS and brake are not operating above the vehicle speed of 10 km/h (6.2 mph).

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the G-sensor (lateral)
- Damaged harness and connector
- Malfunction of the ABS-ECU <Vehicles with ABS>
- Malfunction of the AWD-ECU

DIAGNOSIS**Required Special Tool:**

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Using scan tool MB991958, check data list item 15: G-sensor (Lateral) Voltage.**⚠ CAUTION**

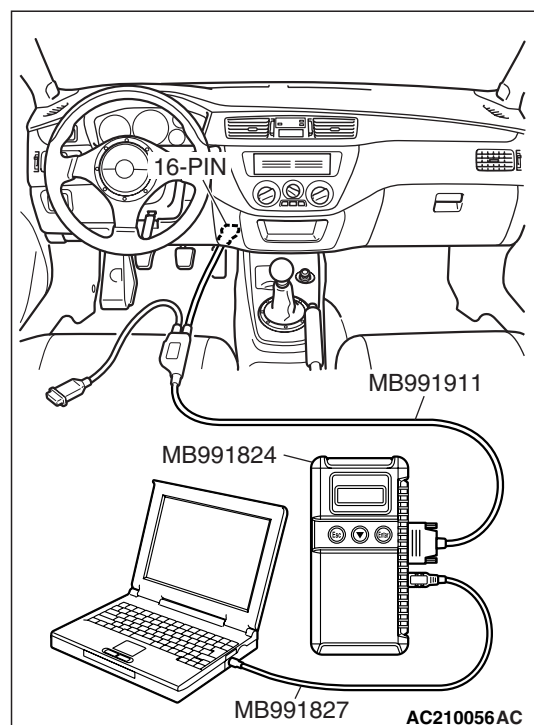
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

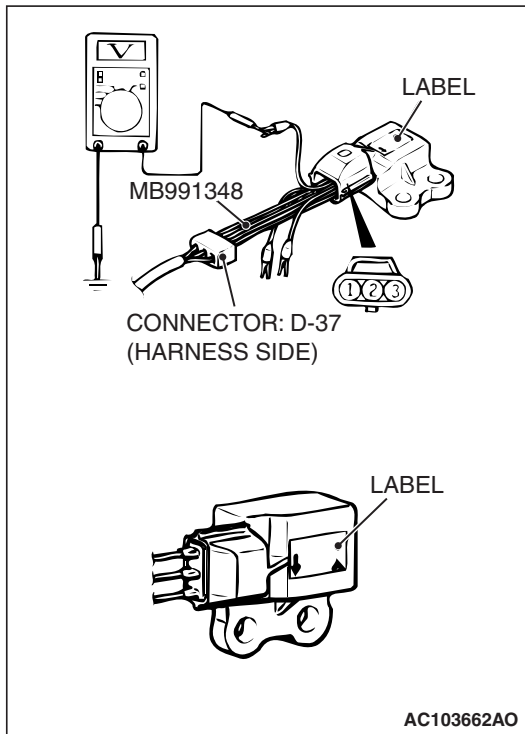
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 15: G-sensor (Lateral) Voltage.
 - When the vehicle is stopped (horizontal), voltage of 2.4 V – 2.6 V is displayed.
 - The voltage will fluctuate around 2.5 V while driving.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction P.00-13.

NO : Go to Step 2.





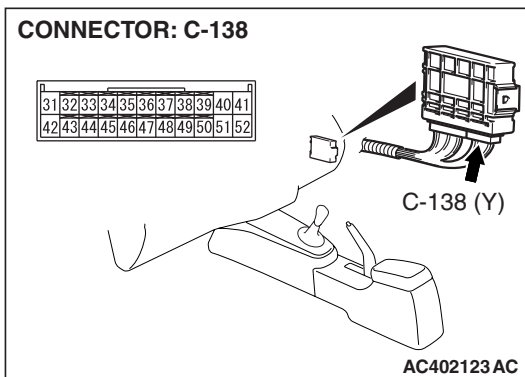
STEP 2. Measure the voltage at G-sensor (lateral) connector D-37.

- (1) Remove the G-sensor (lateral) connector, and connect special tool harness set (MB991348) between the disconnected connectors.
- (2) Turn the ignition switch to the "ON" position.
- (3) Measure the voltage between terminal 2 and ground by backprobing.
 - When the label on the G-sensor (Lateral) is horizontal, voltage of 2.4 V & 2.6 V is displayed.
 - When the label on the G-sensor (Lateral) is vertical, voltage of 3.3 V – 3.7 V is displayed.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the G-sensor (lateral).



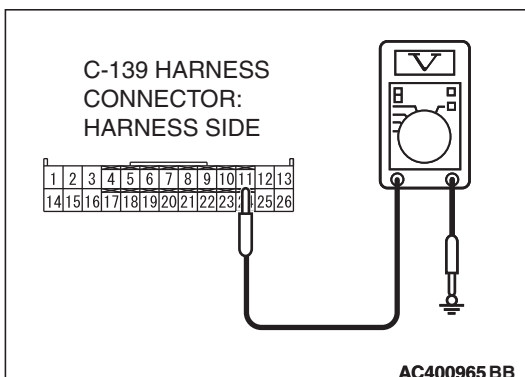
STEP 3. Measure the voltage at AWD-ECU connector C-139 by backprobing.

- (1) Turn the ignition switch to the "ON" position.
- (2) Measure the voltage between AWD-ECU connector C-139 terminal 11 and ground by backprobing.
 - The voltage should measure between 2.4 and 2.6 volts. (Horizontal state of vehicle)
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

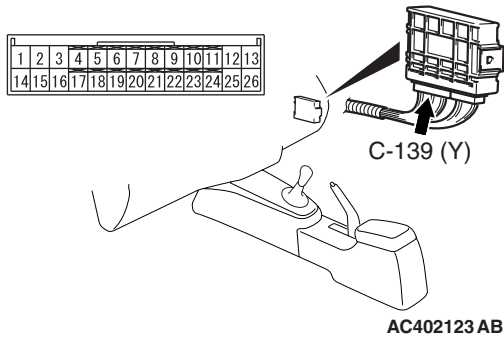
Q: Is the measured voltage within the specified range?

YES : Go to Step 4.

NO : Go to Step 6.



CONNECTOR: C-139



STEP 4. Check AWD-ECU connector C-139 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

STEP 5. Using scan tool MB991958, check data list item 15: G-sensor (Lateral) Voltage.

⚠ CAUTION

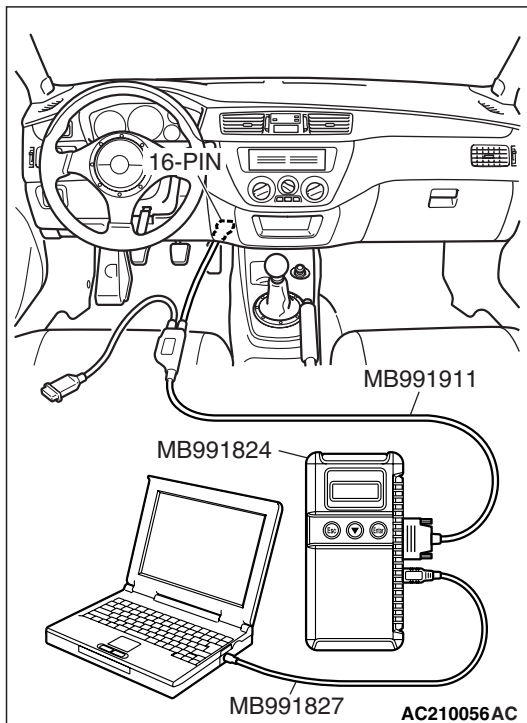
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 15: G-sensor (Lateral) Voltage.
 - When the vehicle is stopped (horizontal), voltage of 2.4 V – 2.6 V is displayed.
 - The voltage will fluctuate around 2.5 V while driving.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.



STEP 6. Check ABS-ECU connector B-118 <vehicles with ABS>, intermediate connector C-122, AWD-ECU connector C-139 and G-sensor (lateral) connector D-37 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

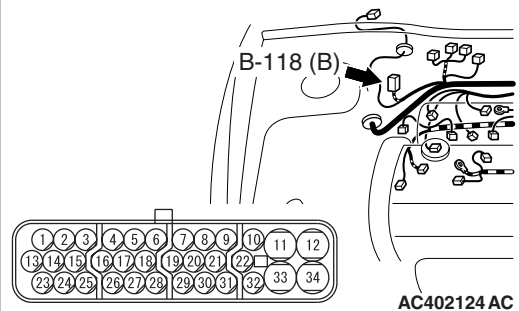
Q: Are the connectors and terminals in good condition?

YES : Go to Step 7.

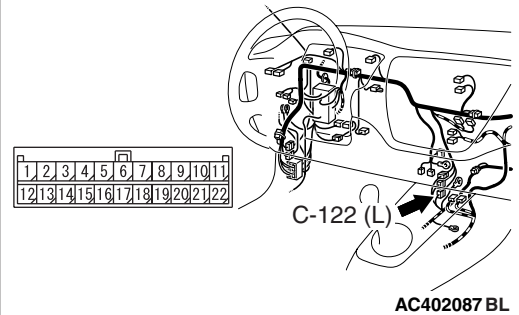
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

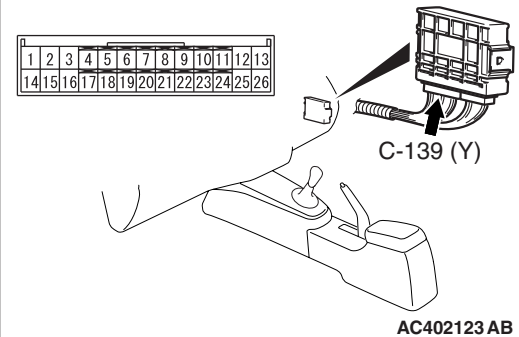
CONNECTOR: B-118



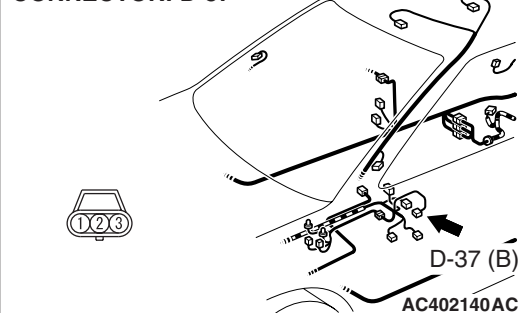
CONNECTOR: C-122



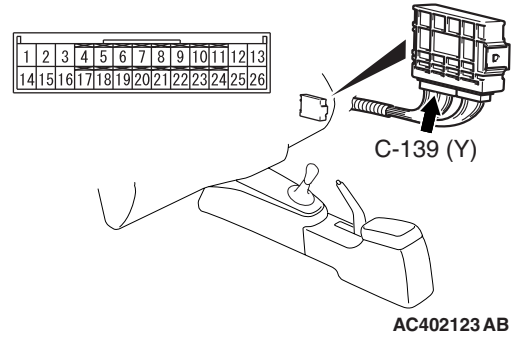
CONNECTOR: C-139



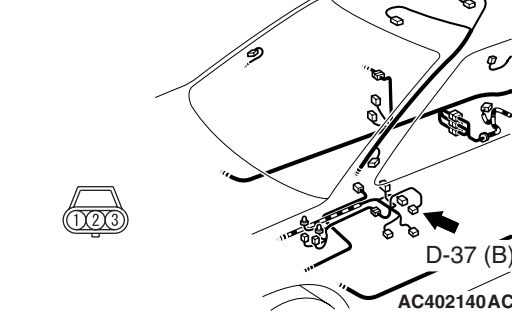
CONNECTOR: D-37



CONNECTOR: C-139



CONNECTOR: D-37



STEP 7. Check the harness for open circuit or short circuit to ground between AWD-ECU connector C-139 terminal 11 and G-sensor (lateral) connector D-37 terminal 2.

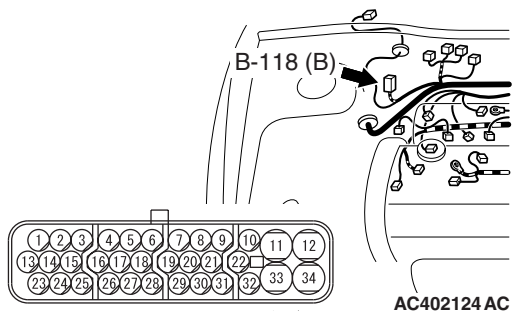
Q: Is the harness wire in good condition?

YES <Vehicles without ABS> : Go to Step 5.

YES <Vehicles with ABS> : Go to Step 8.

NO : Repair or replace the harness wire.

CONNECTOR: B-118



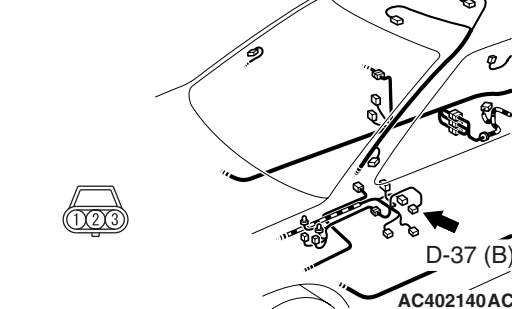
STEP 8. Check the harness for short circuit to ground between ABS-ECU connector B-118 terminal 14 and G-sensor (lateral) connector D-37 terminal 2.

Q: Is the harness wire in good condition?

YES : Go to Step 5.

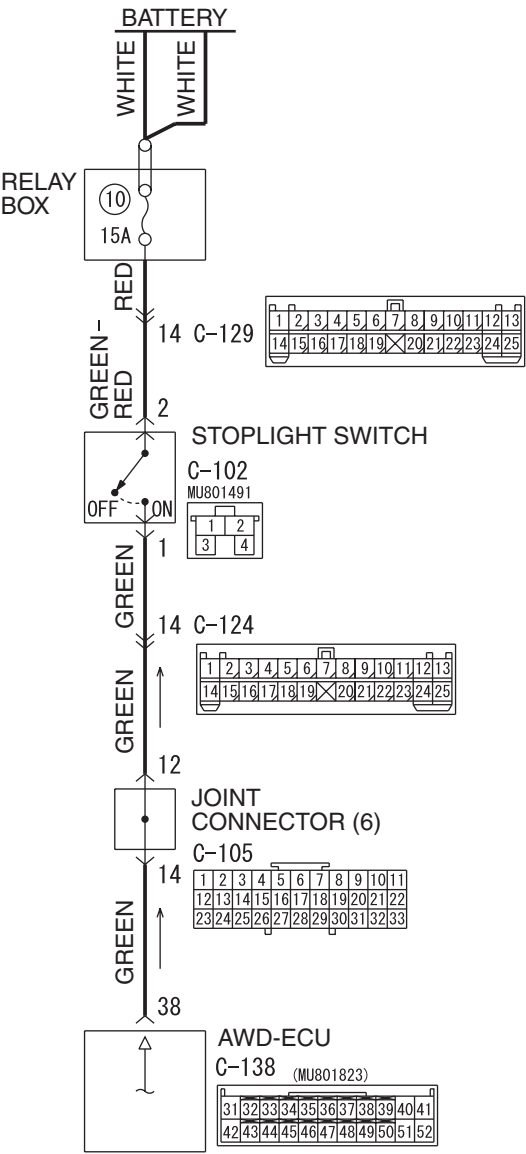
NO : Repair or replace the harness wire.

CONNECTOR: D-37

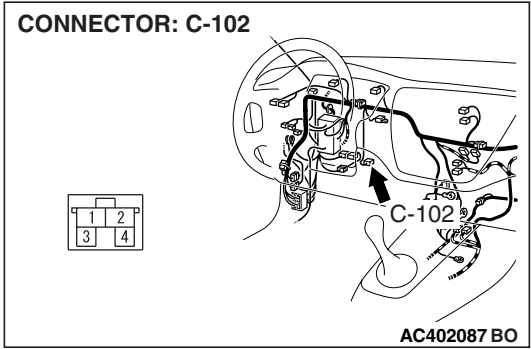


DTC 61: Stoplight Switch System

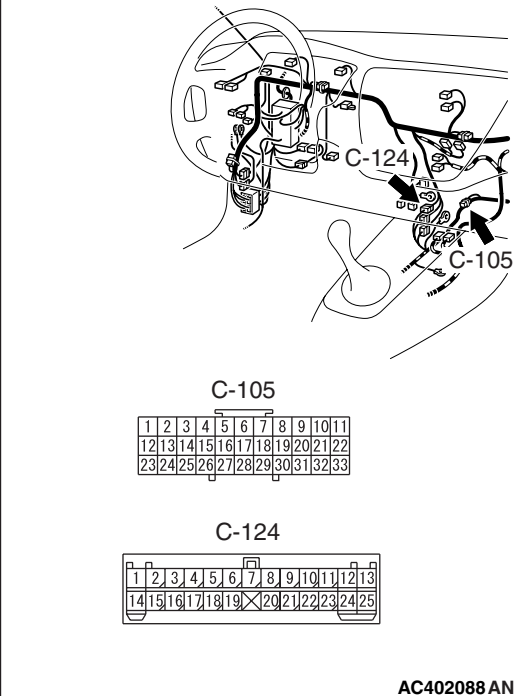
Stoplight Switch System Circuit



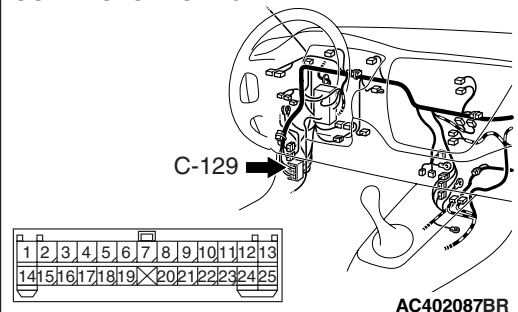
W5J22M008A



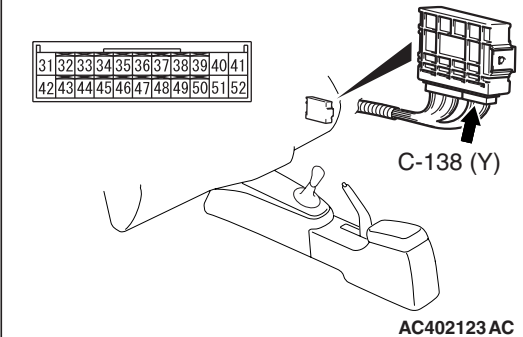
CONNECTORS: C-105, C-124



CONNECTOR: C-129



CONNECTOR: C-138



CIRCUIT OPERATION

The stoplight switch judges whether the brake pedal is depressed or released, and sends the information to the AWD-ECU.

DTC SET CONDITIONS

DTC 61 is set when the stoplight switch is ON for more than 15 minutes when the vehicle speed is above 15 km/h (9.3 mph).

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of brake pedal
- Malfunction of stoplight switch
- Damaged harness and connector
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Check that the stoplight illuminate and extinguish normally.

The stoplight should illuminate when the brake pedal is depressed, and extinguish when released.

Q: Is the stoplight switch operating properly?

YES : Go to Step 7.

NO : Go to Step 2.

STEP 2. Check the brake pedal height.

Refer to GROUP 35A –On-vehicle Service, Brake Pedal Check and Adjustment [P.35A-13](#).

Q: Is the height adjusted properly?

YES : Go to Step 3.

NO : Adjust the brake pedal height.

STEP 3. Check the stoplight switch.

Refer to GROUP 35A –Stoplight Switch Check [P.35A-25](#).

Q: Does the stoplight switch pass the checks?

YES : Go to Step 4.

NO : Replace the stoplight switch.

STEP 4. Using scan tool MB991958, check data list item 56: Stoplight Switch.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958 to the data link connector.

(2) Turn the ignition switch to "ON" position.

(3) Set scan tool MB991958 to the data reading mode.

- Item 56: Stoplight Switch.

- When the brake pedal is depressed, the display on scan tool MB991958 should be "ON."

- When the brake pedal is not depressed, the display on scan tool MB991958 should be "OFF."

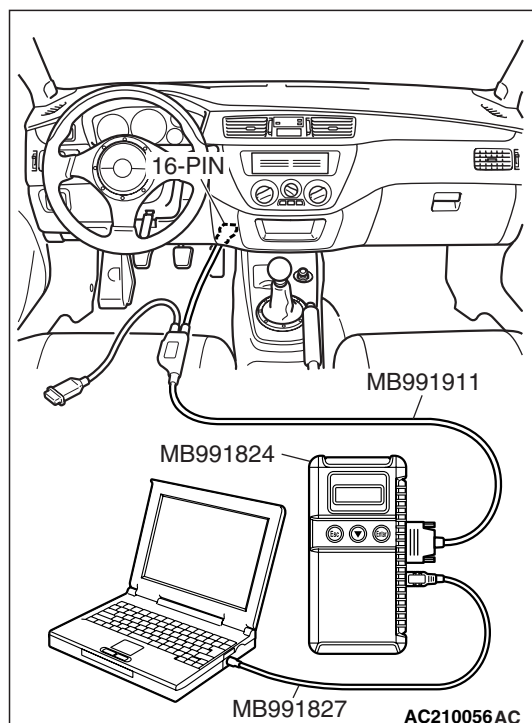
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the switch operating properly?

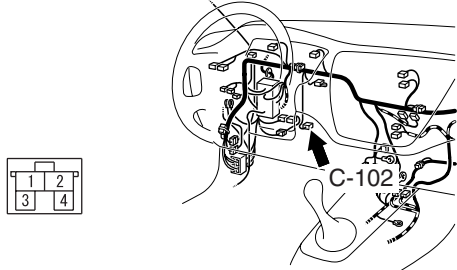
YES : It can be assumed that this malfunction is intermittent.

Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Go to Step 5.



CONNECTOR: C-102



AC402087 BO

STEP 5. Check stoplight switch connector C-102 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

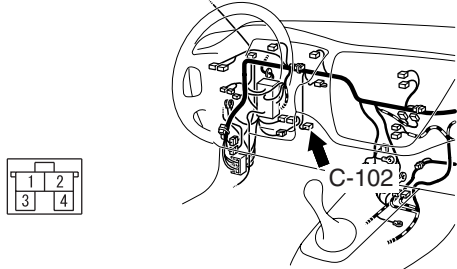
Q: Are the connector and terminals in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

CONNECTOR: C-102



AC402087 BO

STEP 6. Measure the voltage at stoplight switch connector C-102.

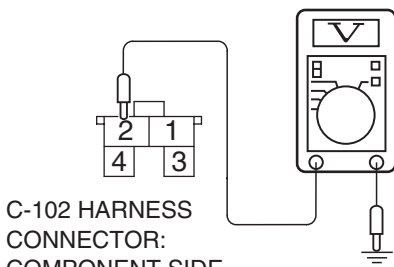
Disconnect the stoplight switch connector, and measure the voltage between terminal 2 and ground at the harness side.

- The voltage should measure battery positive voltage.

Q: Is the measured voltage battery positive voltage?

YES : Go to Step 7.

NO : Go to Step 12.



C-102 HARNESS
CONNECTOR:
COMPONENT SIDE

AC201487AI

STEP 7. Measure the stoplight switch output voltage at AWD-ECU connector C-138 by backprobing.

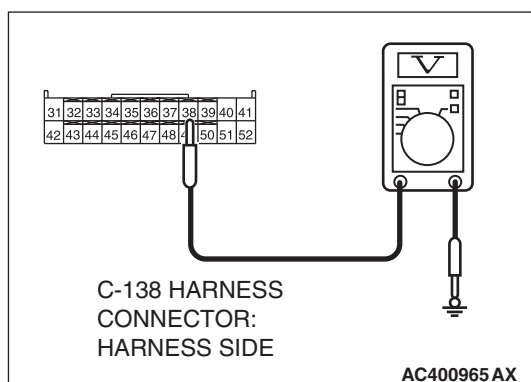
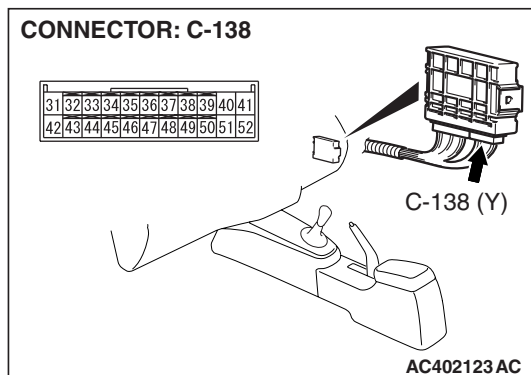
- (1) Connect the stoplight switch connector C-102.
- (2) Measure the voltage between AWD-ECU connector C-138 terminal 38 and ground by backprobing.

- When the brake pedal is depressed, voltage should measure battery positive voltage.
- When the brake pedal is not depressed, voltage should measure less than 1.0 volt.

Q: Is the check result normal?

YES : Go to Step 8.

NO : Go to Step 10.

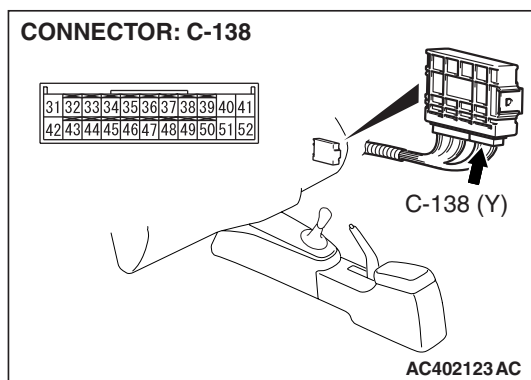


STEP 8. Check AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 9.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).



STEP 9. Using scan tool MB991958, check data list item 56: Stoplight Switch.

⚠ CAUTION

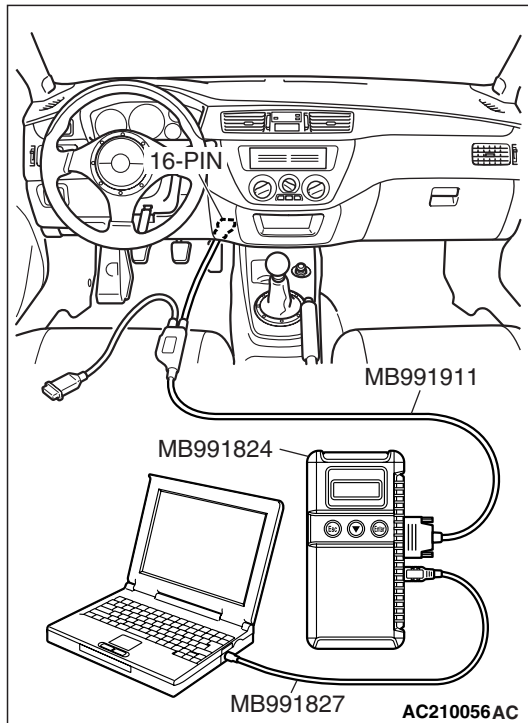
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 56: Stoplight Switch.
 - When the brake pedal is depressed, the display on scan tool MB991958 should be "ON."
 - When the brake pedal is not depressed, the display on scan tool MB991958 should be "OFF."
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the switch operating properly?

YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use
Troubleshooting/Inspection Service Points –How to
Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.



STEP 10. Check joint connector (6) C-105, intermediate connector C-124 and AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

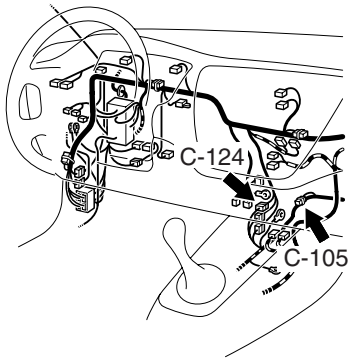
Q: Are the connectors and terminals in good condition?

YES : Go to Step 11.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

CONNECTORS: C-105, C-124



C-105

1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33

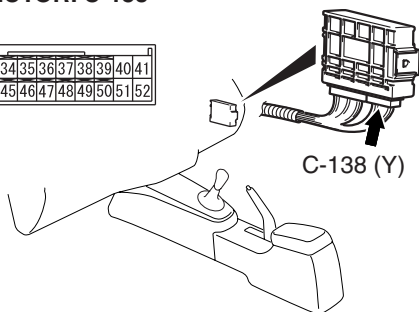
C-124

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	

AC402088 AN

CONNECTOR: C-138

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



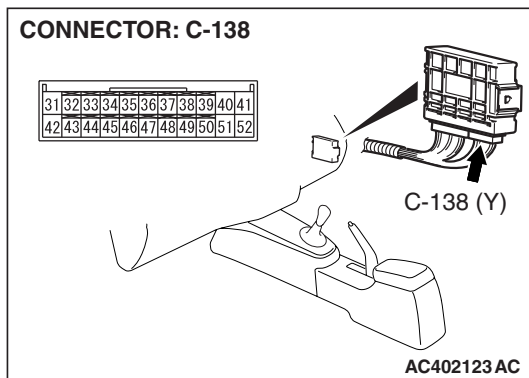
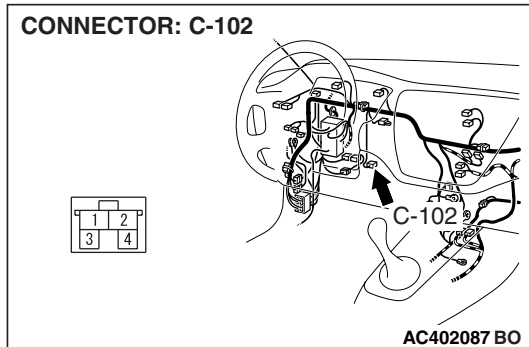
AC402123 AC

STEP 11. Check the harness for open circuit or short circuit to ground between stoplight switch connector C-102 terminal 1 and AWD-ECU connector C-138 terminal 38.

Q: Is the harness wire in good condition?

YES : Go to Step 9.

NO : Repair or replace the harness wire.



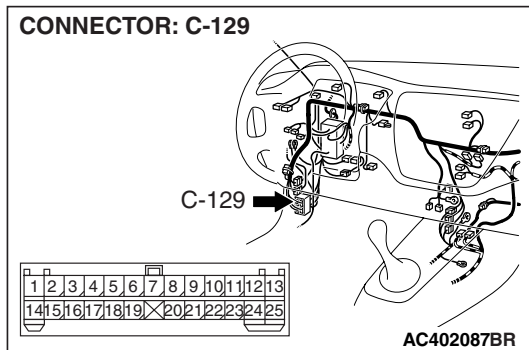
STEP 12. Check intermediate connector C-129 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

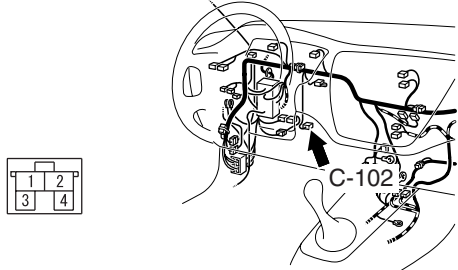
YES : Go to Step 13.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)



CONNECTOR: C-102



AC402087 BO

STEP 13. Check the harness for open circuit or short circuit to ground between stoplight switch connector C-102 terminal 2 and battery.

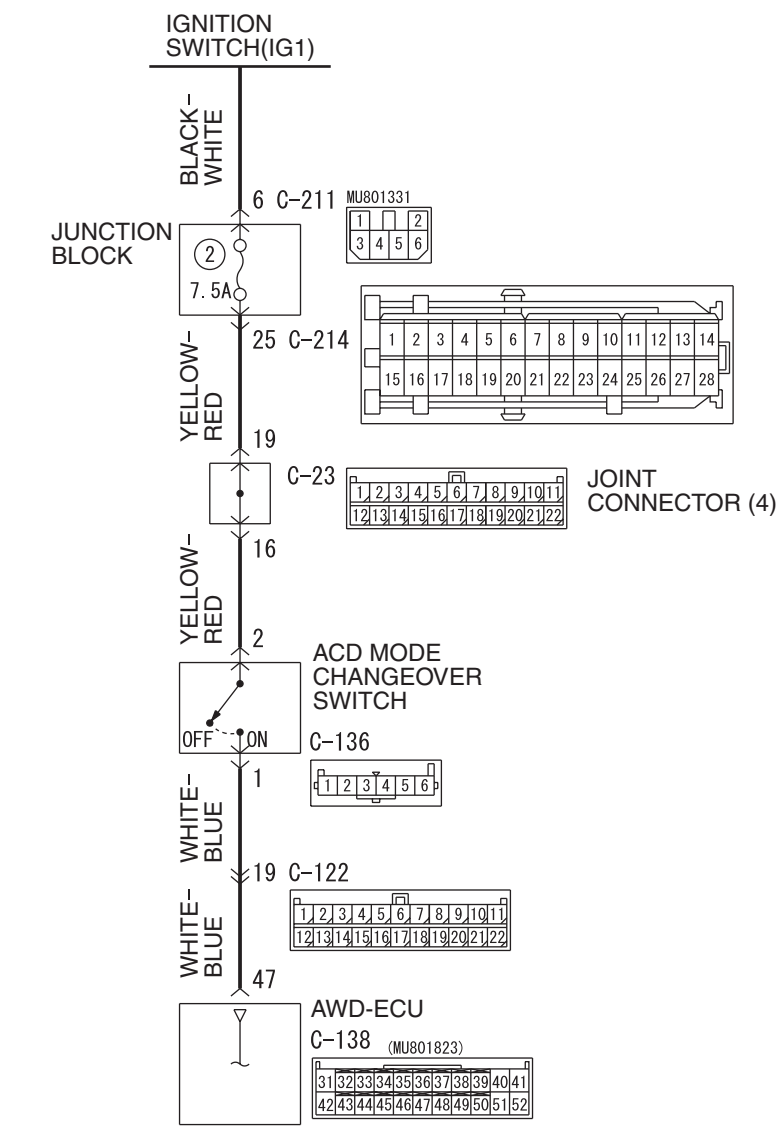
Q: Is the harness wire in good condition?

YES : Go to Step 9.

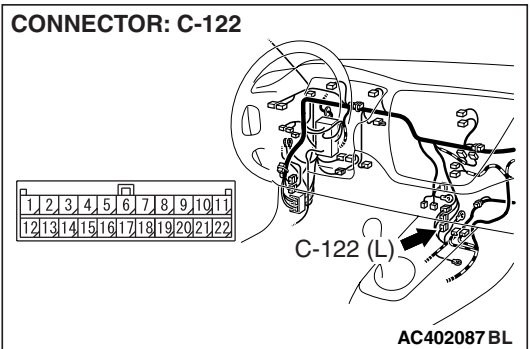
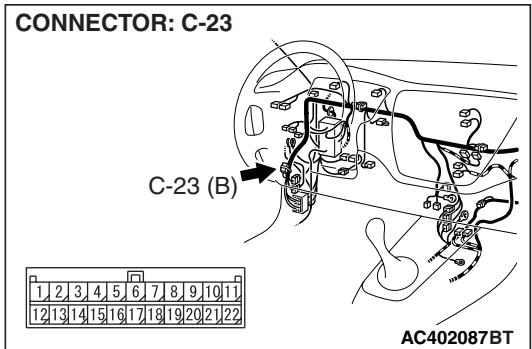
NO : Repair or replace the harness wire.

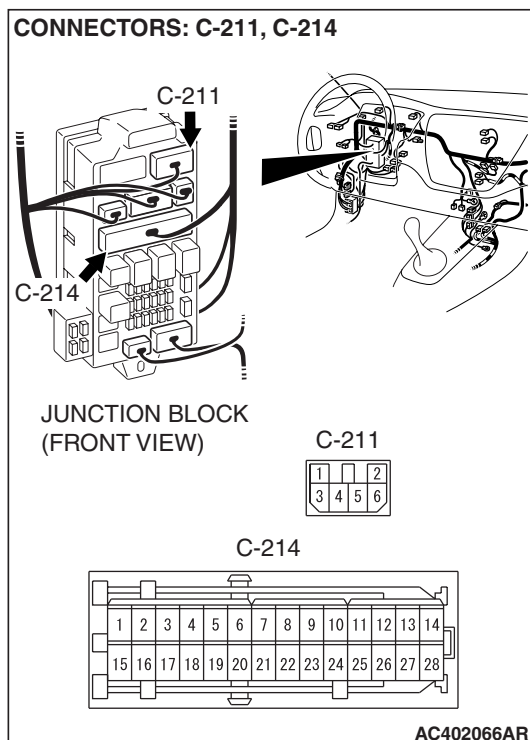
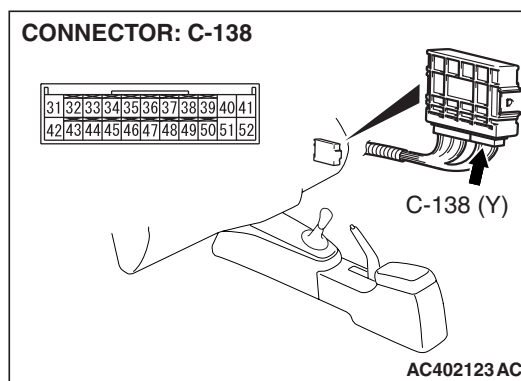
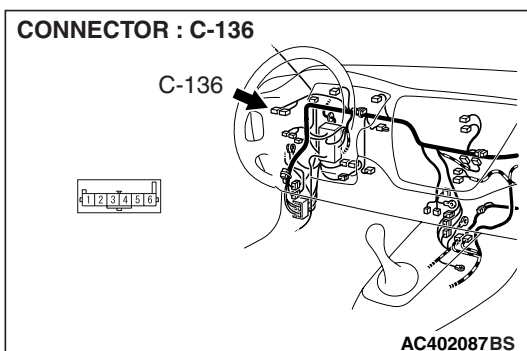
DTC 62: ACD Mode Changeover Switch System

ACD Mode Changeover Switch System Circuit



W5J22M009A





CIRCUIT OPERATION

The AWD-ECU receives a control mode (tarmac, gravel, snow) from the ACD mode changeover switch.

DTC SET CONDITIONS

DTC 62 is set when the ACD mode changeover switch is ON for more than 60 seconds.

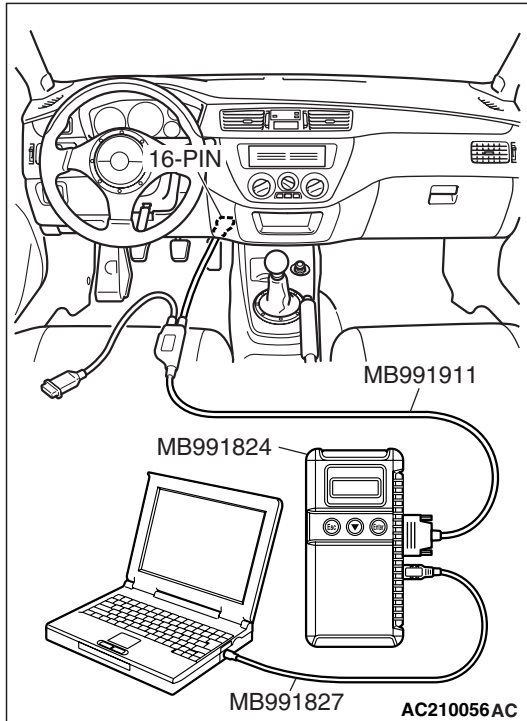
TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the ACD mode changeover switch
- Damaged harness and connector
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B



STEP 1. Using scan tool MB991958, check data list item 63: ACD Mode Changeover Switch.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 63: ACD Mode Changeover Switch.
 - When the ACD mode changeover switch is pressed, "ON" is displayed.
 - When the ACD mode changeover switch is released, "OFF" is displayed.
- (4) Turn the ignition switch to the "Lock" (OFF) position.

Q: Is the switch operating properly?

YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use
Troubleshooting/Inspection Service Points –How to
Cope with Intermittent Malfunction [P.00-13](#).

NO : Go to Step 2.

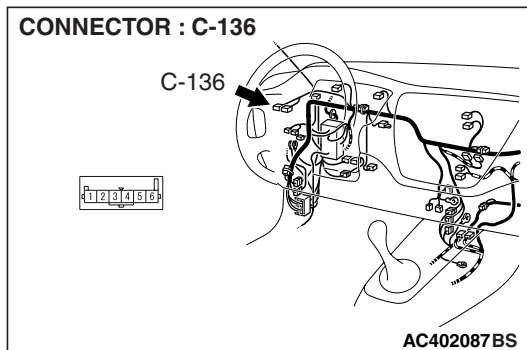
STEP 2. Check the ACD mode changeover switch.

Refer to [P.22A-240](#).

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the ACD mode changeover switch.



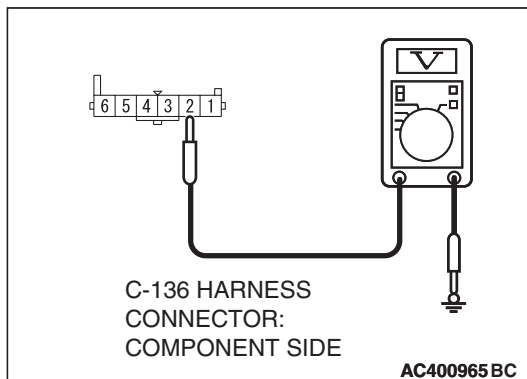
STEP 3. Measure the voltage at ACD mode changeover switch connector C-136.

- (1) Disconnect the ACD mode changeover switch connector, and measure the voltage between terminal 2 and ground.
- (2) Turn the ignition switch to the "ON" position.
 - The voltage should measure battery positive voltage.
- (3) Turn the ignition switch to the "Lock" (OFF) position.

Q: Is the measured voltage battery positive voltage?

YES : Go to Step 7.

NO : Go to Step 4.



STEP 4. Check joint connector (4) C-23, ACD mode changeover switch connector C-136, junction block connector C-211, C-214 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

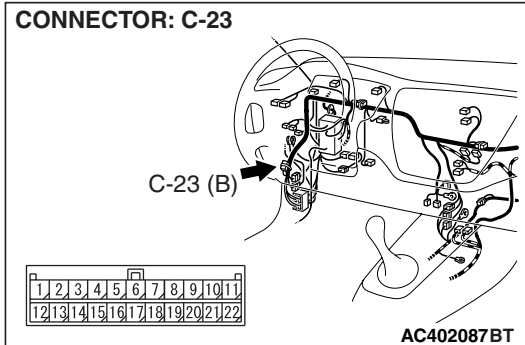
Q: Are the connectors and terminals in good condition?

YES : Go to Step 5.

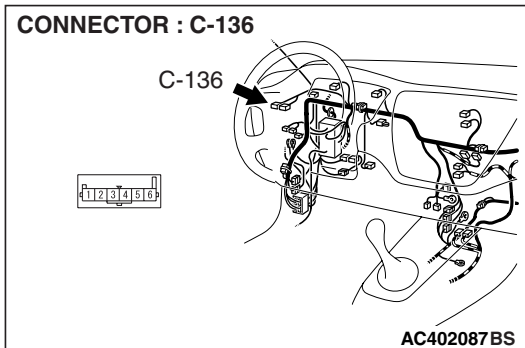
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

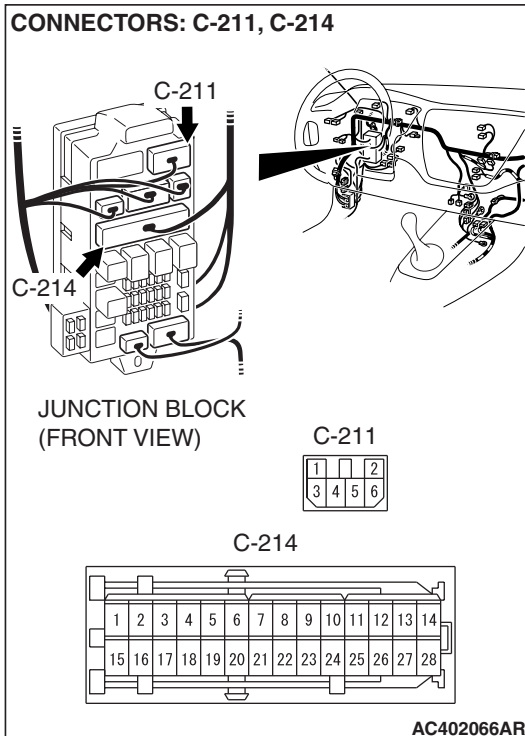
CONNECTOR: C-23

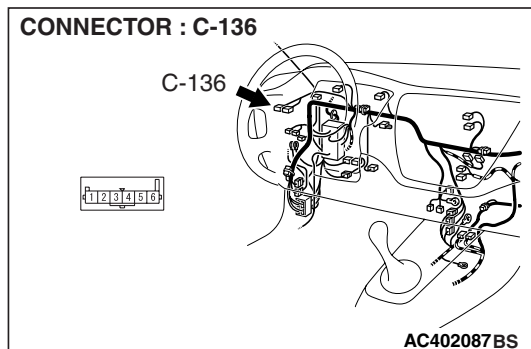


CONNECTOR : C-136



CONNECTORS: C-211, C-214





STEP 5. Check the harness for open circuit or short circuit to ground between ignition switch and ACD mode changeover switch connector C-136 terminal 2.

Q: Is the harness wire in good condition?

YES : Go to Step 6.

NO : Repair or replace the harness wire.

STEP 6. Using scan tool MB991958, check data list item 63: ACD Mode Changeover Switch.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958 to the data link connector.

(2) Turn the ignition switch to "ON" position.

(3) Set scan tool MB991958 to the data reading mode.

- Item 63: ACD Mode Changeover Switch.

- When the ACD mode changeover switch is pressed, "ON" is displayed.

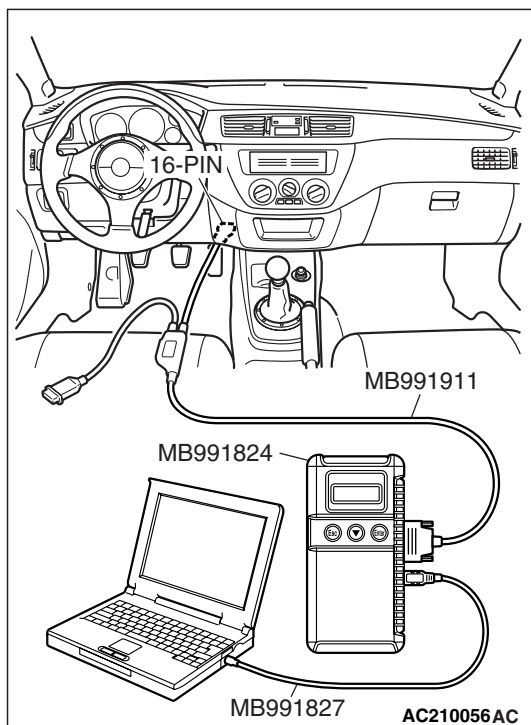
- When the ACD mode changeover switch is released, "OFF" is displayed.

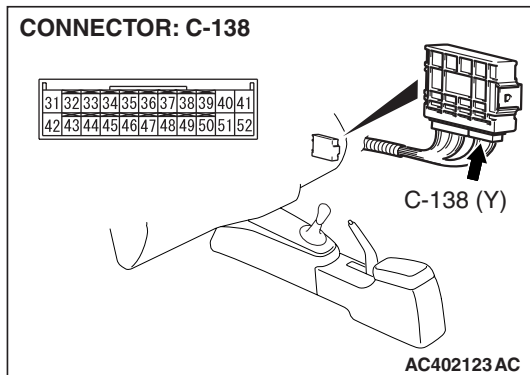
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the switch operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.



CONNECTOR: C-138**STEP 7. Measure the ACD mode switch output voltage at AWD-ECU connector C-138 by backprobing.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Measure the voltage between AWD-ECU connector C-138 terminal 47 and ground by backprobing.

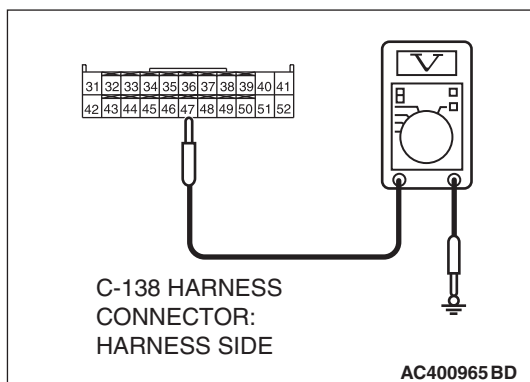
- The voltage should measure battery positive voltage

- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage battery positive voltage?

YES : Go to Step 10.

NO : Go to Step 8.



STEP 8. Check intermediate connector C-122, ACD mode changeover switch connector C-136 and AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

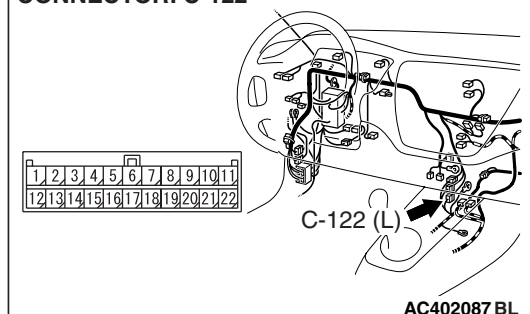
Q: Are the connectors and terminals in good condition?

YES : Go to Step 9.

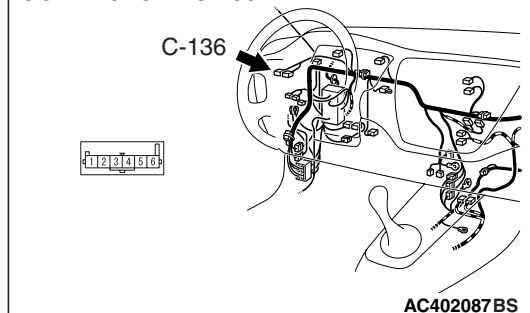
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

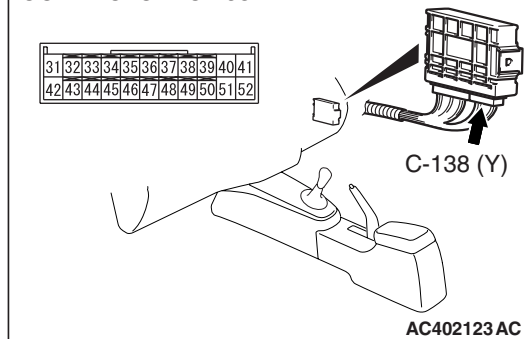
CONNECTOR: C-122

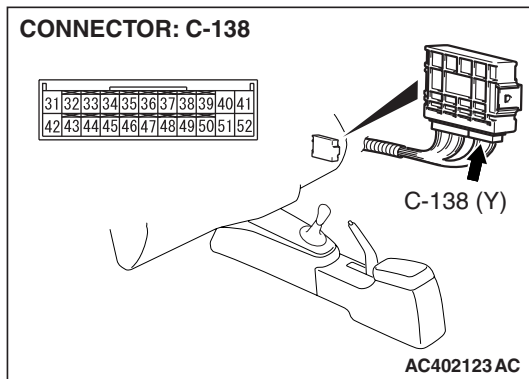
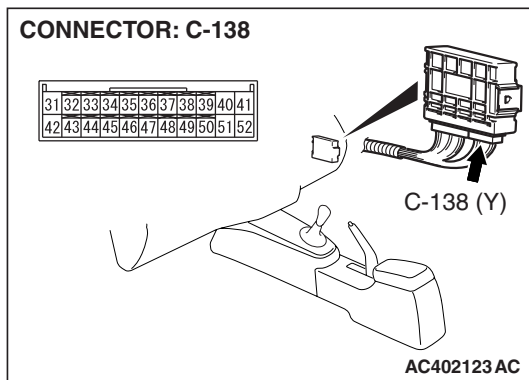
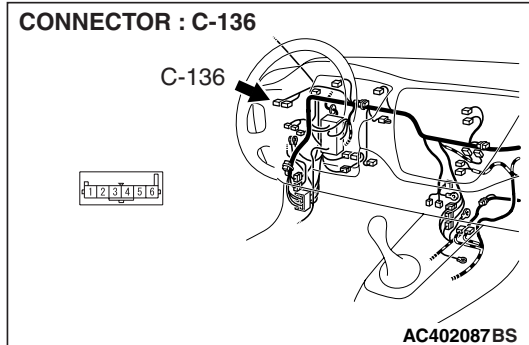


CONNECTOR : C-136



CONNECTOR: C-138





STEP 9. Check the harness for open circuit or short circuit to ground between ACD mode changeover switch connector C-136 terminal 1 and AWD-ECU connector C-138 terminal 47.

Q: Is the harness wire in good condition?

YES : Go to Step 6.

NO : Repair or replace the harness wire.

STEP 10. Check AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

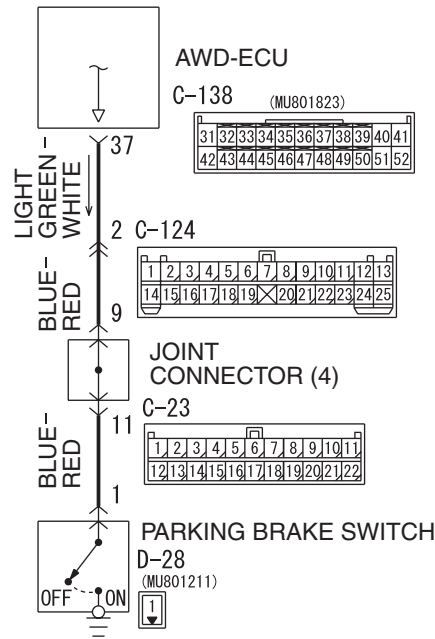
YES : Go to Step 6.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

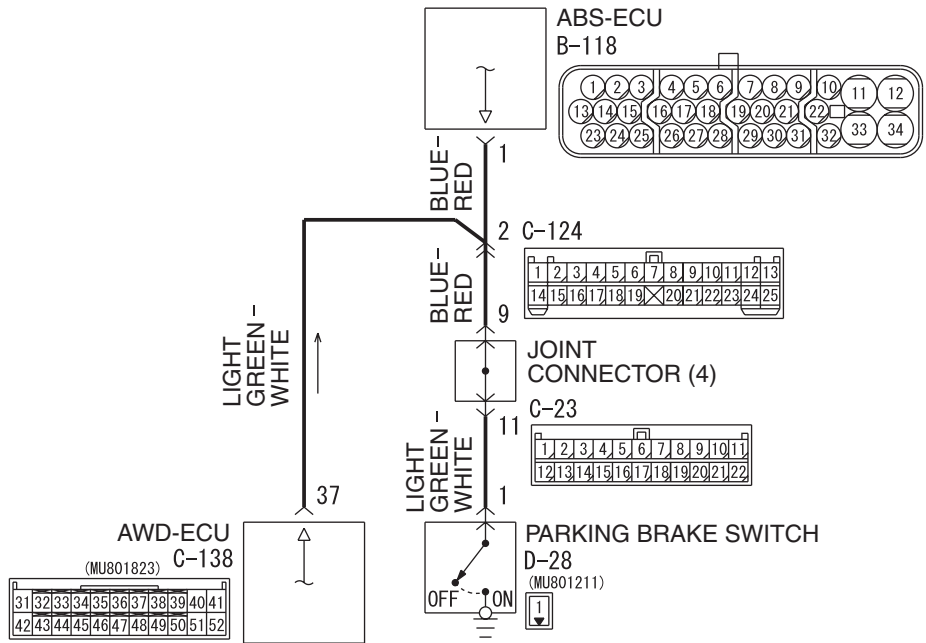
DTC 63: Parking Brake Switch System

Parking Brake Switch System Circuit <Vehicles without ABS>



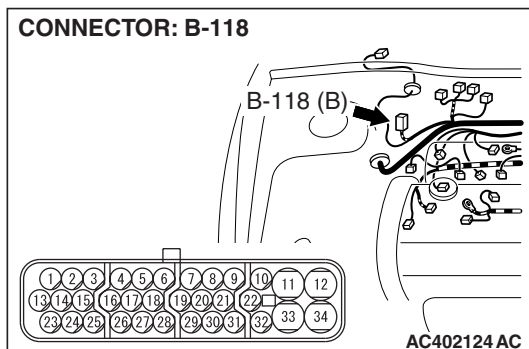
AC402419AB

Parking Brake Switch System Circuit <Vehicles with ABS>

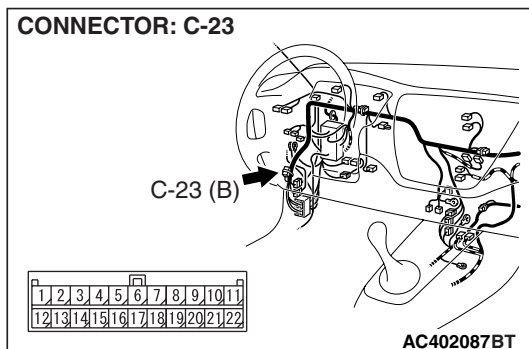


W5J22M010A

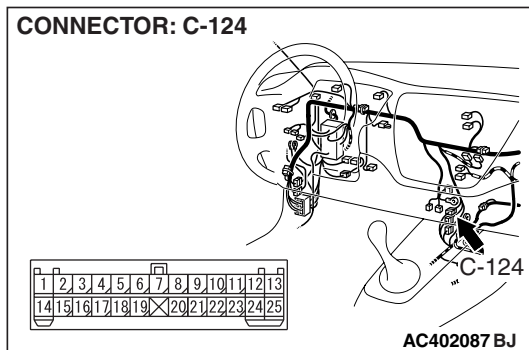
CONNECTOR: B-118



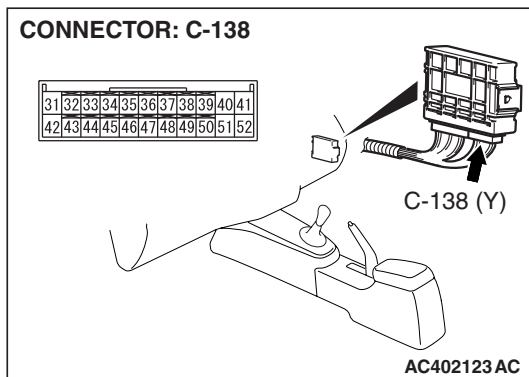
CONNECTOR: C-23



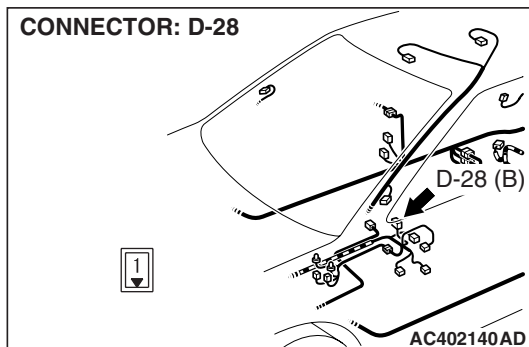
CONNECTOR: C-124



CONNECTOR: C-138



CONNECTOR: D-28



CIRCUIT OPERATION

The AWD-ECU receives a signal from the parking brake switch whether the parking brake lever is pulled or released.

DTC SET CONDITIONS

DTC 63 is set when the parking brake switch is ON for more than 15 minutes with the vehicle speed above 15 km/h (9.3 mph).

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of parking brake switch
- Damaged harness and connector
- Malfunction of the ABS-ECU <Vehicles with ABS>
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Using scan tool MB991958, check data list item 62: Parking Brake Switch.

⚠ CAUTION

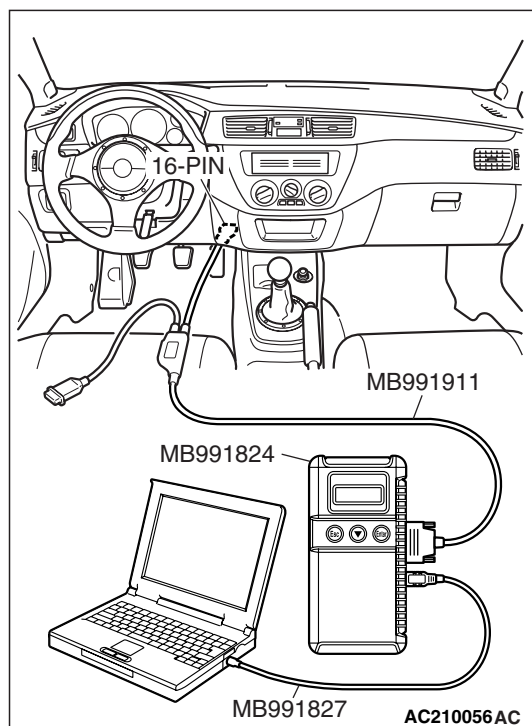
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 62: Parking Brake Switch.
 - When the parking brake lever is pulled, "ON" is displayed.
 - When the parking brake lever is released, "OFF" is displayed.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the switch operating properly?

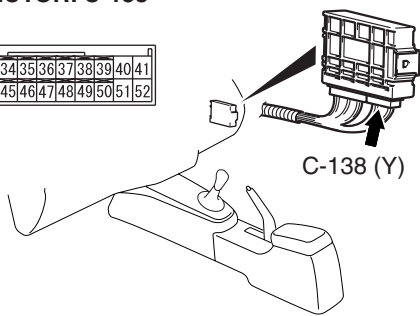
YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Go to Step 2.



CONNECTOR: C-138

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



AC402123 AC

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52

C-138 HARNESS
CONNECTOR:
HARNESS SIDE

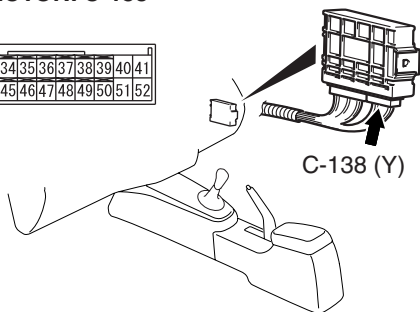
AC400965 BE

STEP 2. Measure the voltage at AWD-ECU connector C-138 by backprobing.

- (1) Turn the ignition switch to the "ON" position.
- (2) Measure the voltage between AWD-ECU connector C-138 terminal 37 and ground by backprobing.
 - When the parking brake lever is released, voltage should measure battery positive voltage.
 - When the parking brake lever is pulled, voltage should measure less than 1.0 volt.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result normal?**YES** : Go to Step 3.**NO** : Go to Step 5.**CONNECTOR: C-138**

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



AC402123 AC

STEP 3. Check AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**Q: Are the connector and terminals in good condition?****YES** : Go to Step 4.**NO** : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection[P.00E-2.](#)

STEP 4. Using scan tool MB991958, check data list item 62: Parking Brake Switch.

⚠ CAUTION

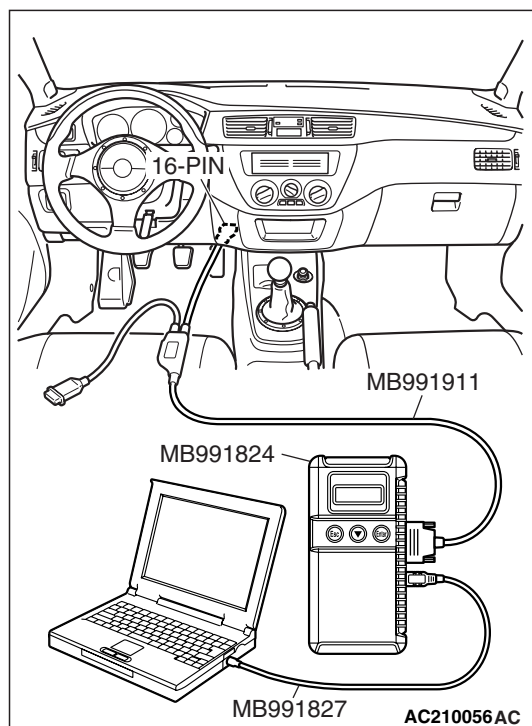
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 62: Parking Brake Switch.
 - When the parking brake lever is pulled, "ON" is displayed.
 - When the parking brake lever is released, "OFF" is displayed.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

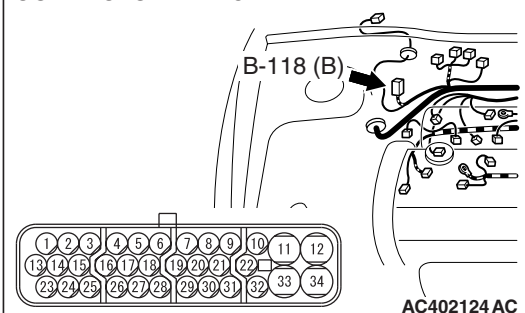
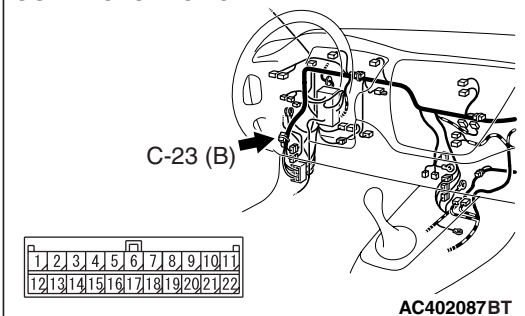
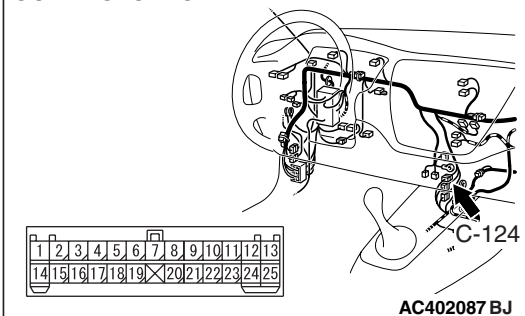
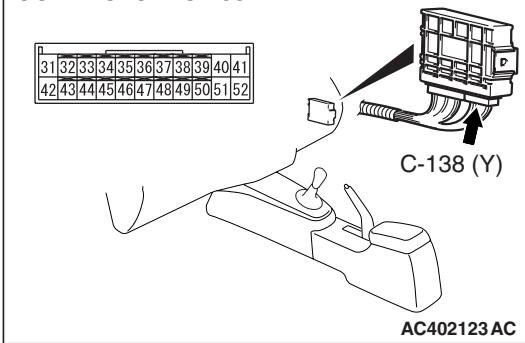
Q: Is the switch operating properly?

YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

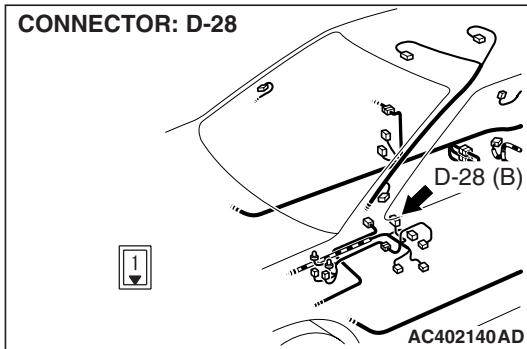
NO : Replace the AWD-ECU.



STEP 5. Check ABS-ECU connector B-118 <vehicles with ABS>, joint connector (4) C-23, intermediate connector C-124, AWD-ECU connector C-138 and parking brake switch connector D-28 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

CONNECTOR: B-118**CONNECTOR: C-23****CONNECTOR: C-124****CONNECTOR: C-138**

CONNECTOR: D-28



Q: Are the connectors and terminals in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

STEP 6. Check the harness for open circuit or short circuit to ground between AWD-ECU connector C-138 terminal 37 and parking brake switch connector D-28 terminal 1.

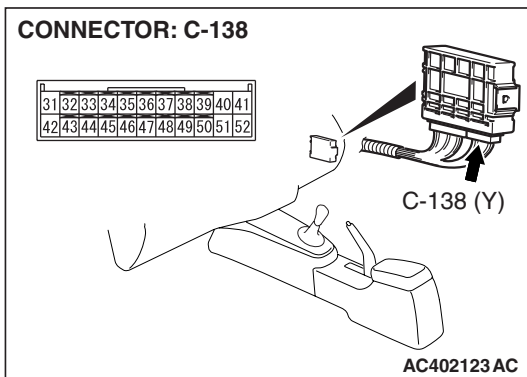
Q: Is the harness wire in good condition?

YES <Vehicles without ABS> : Go to Step 4.

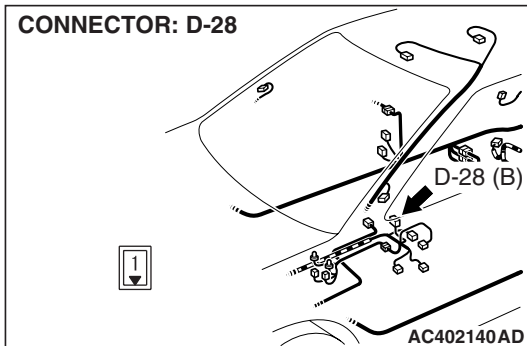
YES <Vehicles with ABS> : Go to Step 7.

NO : Repair or replace the harness wire.

CONNECTOR: C-138



CONNECTOR: D-28

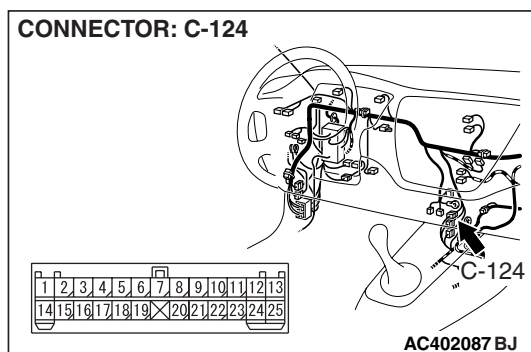
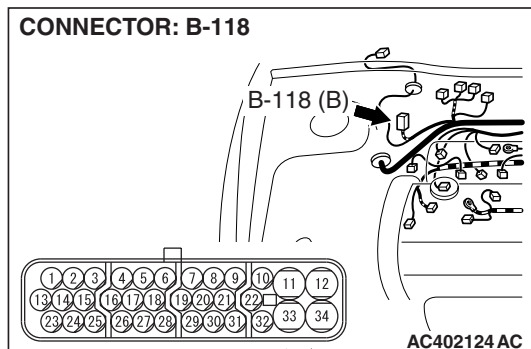


STEP 7. Check the harness for short circuit to ground between ABS-ECU connector B-118 terminal 1 and intermediate connector C-124 terminal 2.

Q: Is the harness wire in good condition?

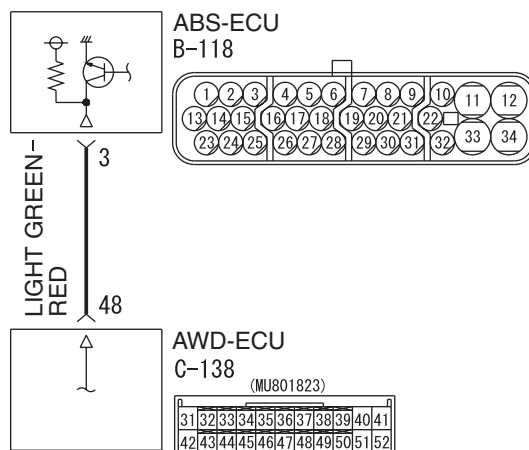
YES : Go to Step 4.

NO : Repair or replace the harness wire.

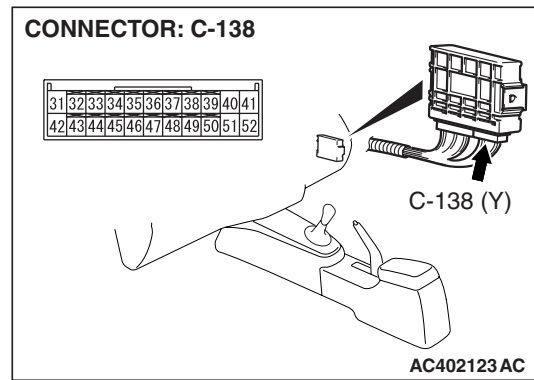
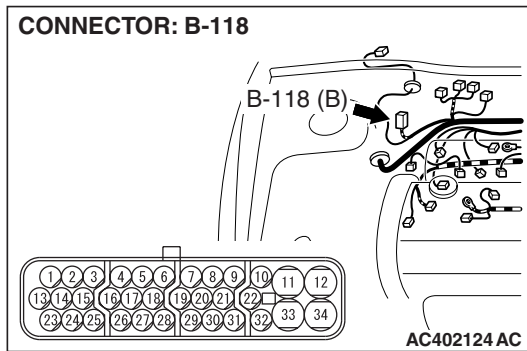


DTC 65: ABS Monitor System <Vehicles with ABS>

ABS Monitor System Circuit



W5J22M011A



CIRCUIT OPERATION

The AWD-ECU receives ABS operation condition from the ABS-ECU.

DTC SET CONDITIONS

DTC 65 is set when ABS is detected to be operating for more than 1 minute continuously.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Damaged harness and connector
- Malfunction of the ABS-ECU
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Using scan tool MB991958, check data list item 61: ABS Monitor.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.

- Item 61: ABS Monitor.
 - When ABS-ECU connector B-118 is disconnected, "ON" is displayed.
 - When ABS-ECU connector B-118 is connected, "OFF" is displayed.

- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the ECU operating properly?

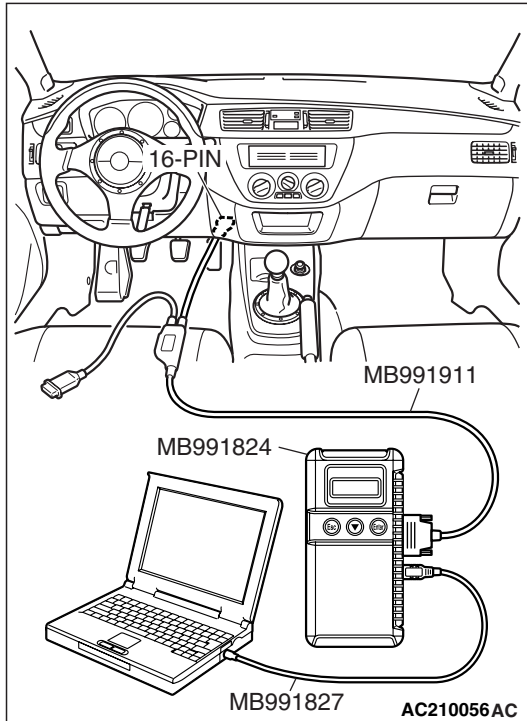
YES : It can be assumed that this malfunction is intermittent.

Refer to GROUP 00, How to Use

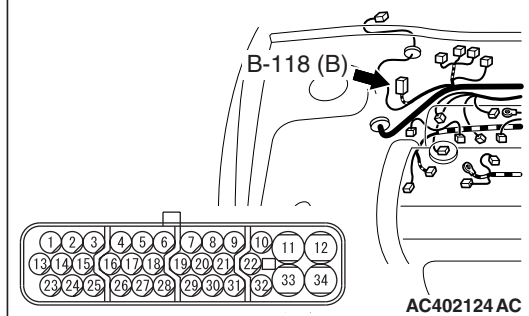
Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO <"ON" is not displayed when the ABS-ECU connector is disconnected.> : Go to Step 2.

NO <"OFF" is not displayed when the ABS-ECU connector is connected.> : Go to Step 4.



CONNECTOR: B-118



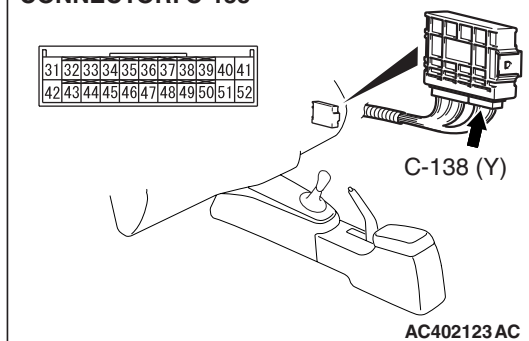
STEP 2. Check ABS-ECU connector B-118 and AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

CONNECTOR: C-138



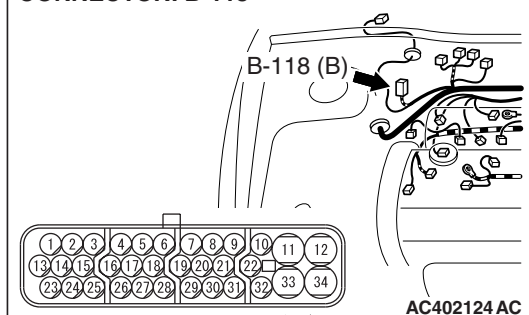
STEP 3. Check the harness for short circuit to ground between ABS-ECU connector B-118 terminal 3 and AWD-ECU connector C-138 terminal 48.

Q: Is the harness wire in good condition?

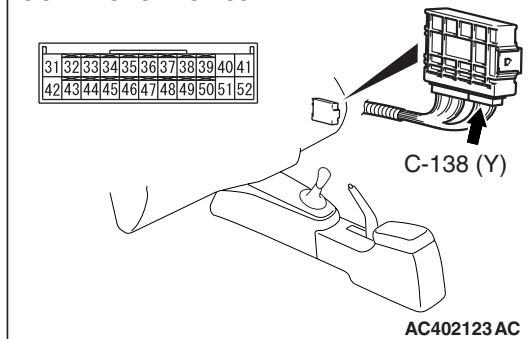
YES : Replace the ABS-ECU.

NO : Repair or replace the harness wire.

CONNECTOR: B-118

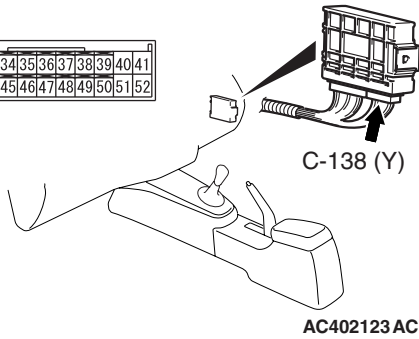


CONNECTOR: C-138



CONNECTOR: C-138

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



AC402123 AC

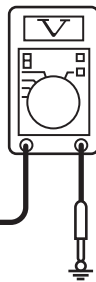
STEP 4. Measure the voltage at AWD-ECU connector C-138 by backprobing.

- (1) Measure the voltage between AWD-ECU connector C-138 terminal 48 and ground by backprobing.
- (2) Turn the ignition switch to the "ON" position.
 - The voltage should measure battery positive voltage.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage battery positive voltage?**YES :** Go to Step 5.**NO :** Go to Step 7.

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52

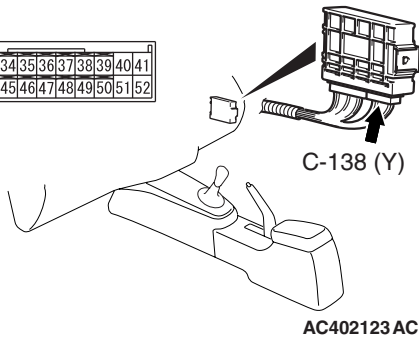
C-138 HARNESS
CONNECTOR:
HARNESS SIDE



AC400965 BF

STEP 5. Check AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**Q: Are the connector and terminals in good condition?****YES :** Go to Step 6.**NO :** Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection[P.00E-2.](#)**CONNECTOR: C-138**

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



AC402123 AC

STEP 6. Using scan tool MB991958, check data list item 61: ABS Monitor.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.

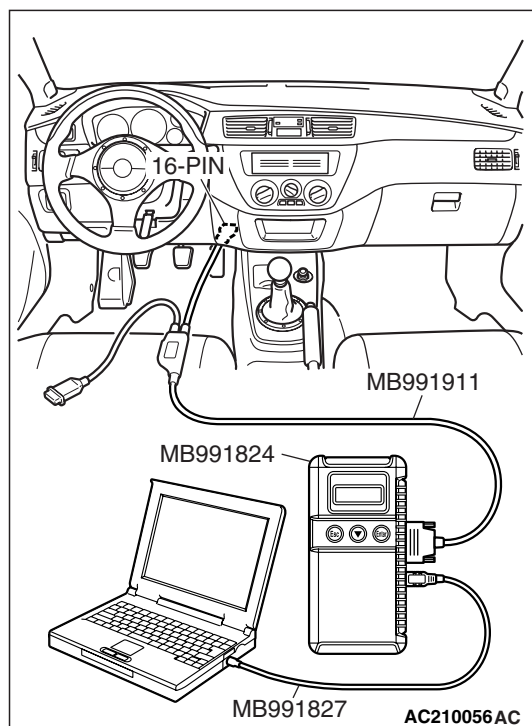
- Item 61: ABS Monitor.
 - When ABS-ECU connector B-118 is disconnected, "ON" is displayed.
 - When ABS-ECU connector B-118 is connected, "OFF" is displayed.

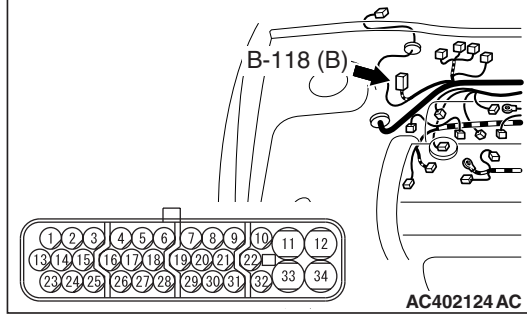
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the ECU operating properly?

YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.



CONNECTOR: B-118

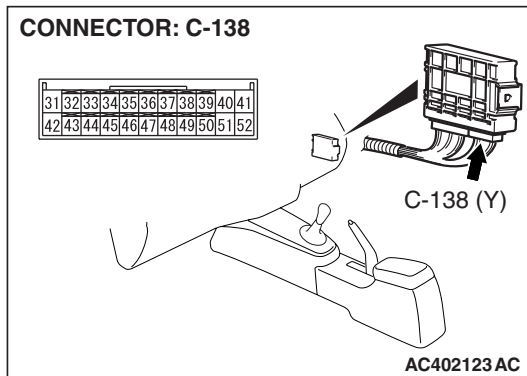
STEP 7. Check ABS-ECU connector B-118 and AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 8.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

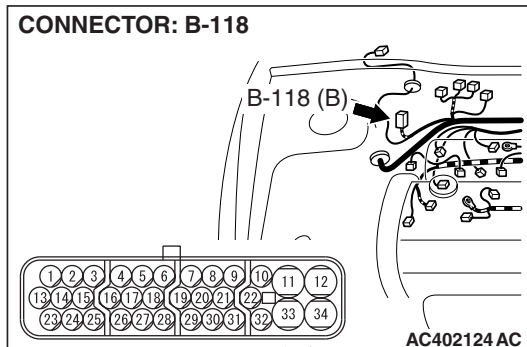
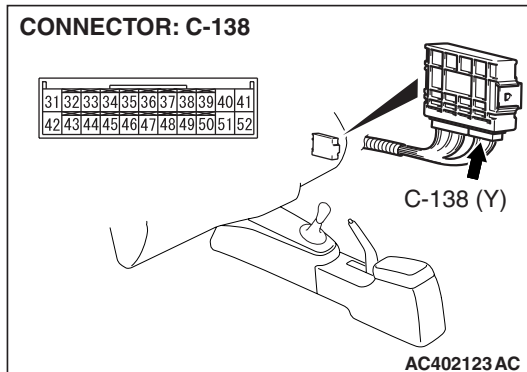
CONNECTOR: C-138

STEP 8. Check the harness for open circuit between ABS-ECU connector B-118 terminal 3 and AWD-ECU connector C-138 terminal 48.

Q: Is the harness wire in good condition?

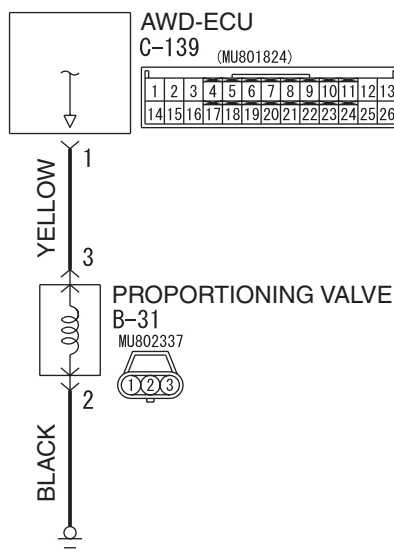
YES : Replace the ABS-ECU.

NO : Repair or replace the harness wire.

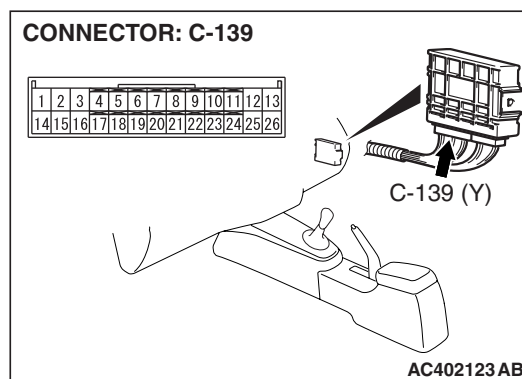
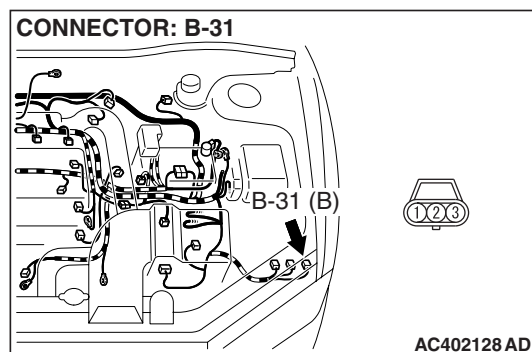
CONNECTOR: B-118**CONNECTOR: C-138**

DTC 74: Proportioning Valve System

Proportioning Valve System Circuit



W5J22M012A



CIRCUIT OPERATION

The proportioning valve controls the hydraulic pressure to activate the ACD hydraulic multi plate clutch according to signal from the AWD-ECU.

DTC SET CONDITIONS

DTC 74 is set when open circuit or short circuit of the control circuit of the proportioning valve has occurred.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of proportioning valve
- Damaged harness and connector
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Using scan tool MB991958, check data list item 11: Proportioning Valve Current.**⚠ CAUTION**

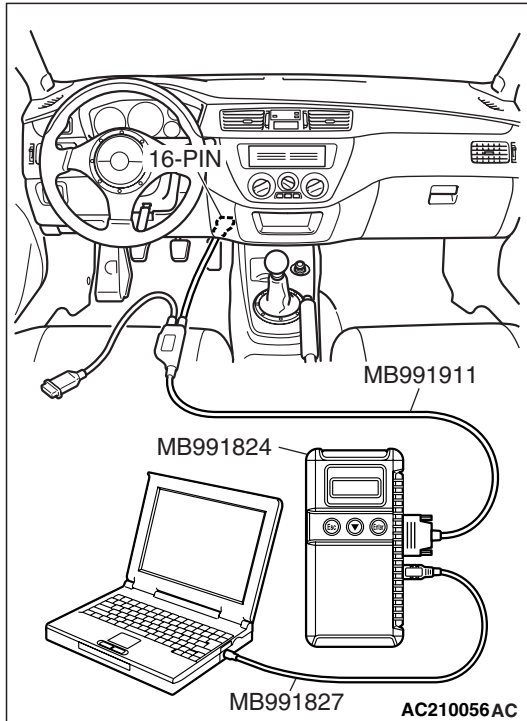
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Actuator test item 05: Check the operation of the ACD.
- (4) Set scan tool MB991958 to the data reading mode.
 - Item 11: Proportioning Valve Current.
 - While the ACD is operated, value from 50 to 1,000 mA is displayed.
- (5) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the valve operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Go to Step 2.

**STEP 2. Measure the resistance at proportioning valve connector B-31.**

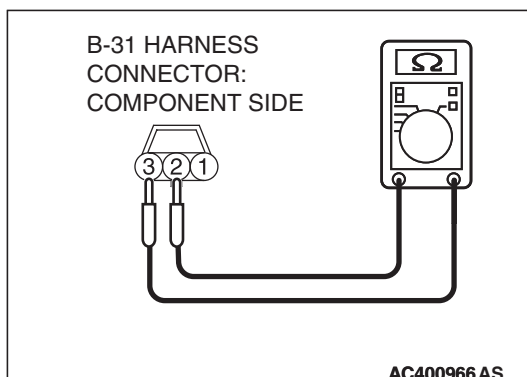
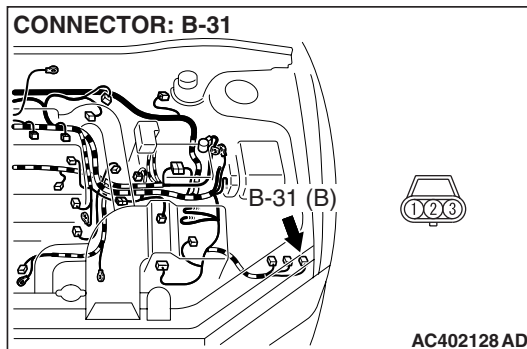
Disconnect the proportioning valve connector, and measure the resistance between terminal 2 and 3.

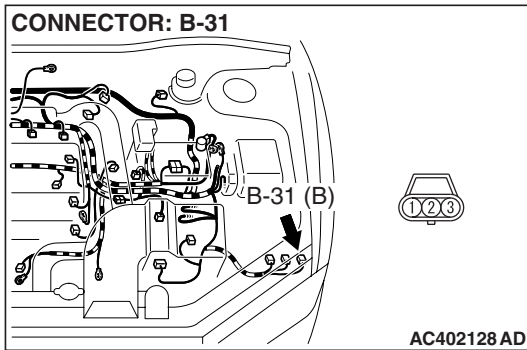
- The resistance should measure less than 4.7 ohms.

Q: Is the measured resistance less than 4.7 ohms?

YES : Go to Step 3.

NO : Replace the hydraulic unit.





STEP 3. Measure the resistance at proportioning valve connector B-31.

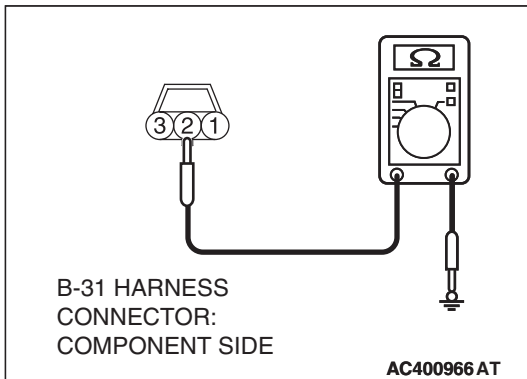
Disconnect the proportioning valve connector, and measure the resistance between terminal 2 and ground.

- The resistance should measure less than 2 ohms.

Q: Is the measured resistance less than 2 ohms?

YES : Go to Step 7.

NO : Go to Step 4.



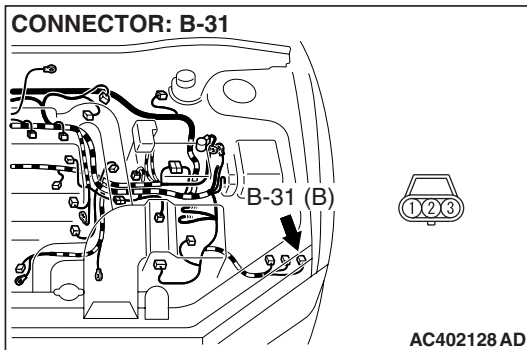
STEP 4. Check proportioning valve connector B-31 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

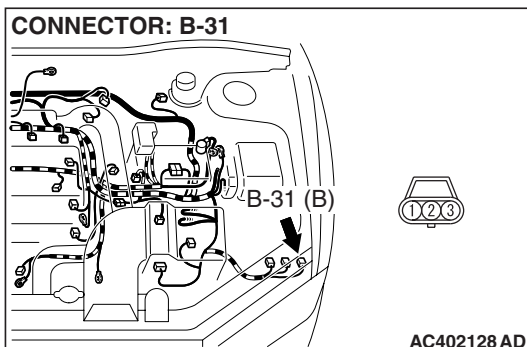


STEP 5. Check the harness for open circuit between proportioning valve connector B-31 terminal 2 and ground.

Q: Is the harness wire in good condition?

YES : Go to Step 6.

NO : Repair or replace the harness wire.



STEP 6. Using scan tool MB991958, check data list item 11: Proportioning Valve Current.**⚠ CAUTION**

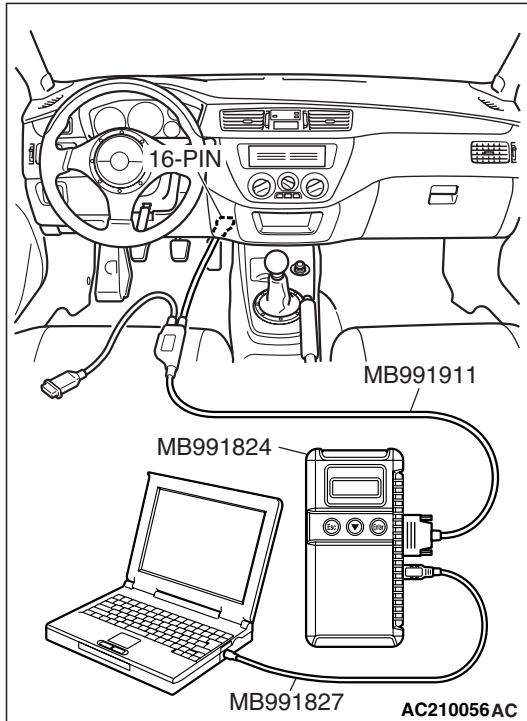
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Actuator test item 05: Check the operation of the ACD.
- (4) Set scan tool MB991958 to the data reading mode.
 - Item 11: Proportioning Valve Current.
 - While the ACD is operated, value from 50 to 1,000 mA is displayed.
- (5) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the valve operating properly?

YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Replace the AWD-ECU.



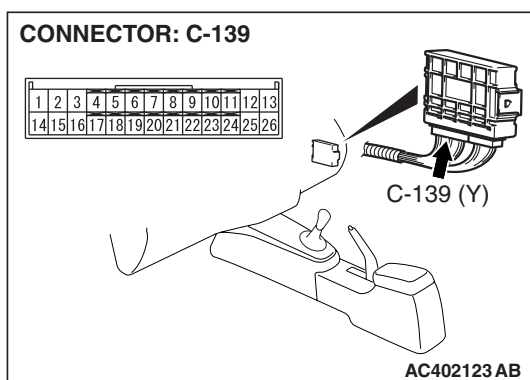
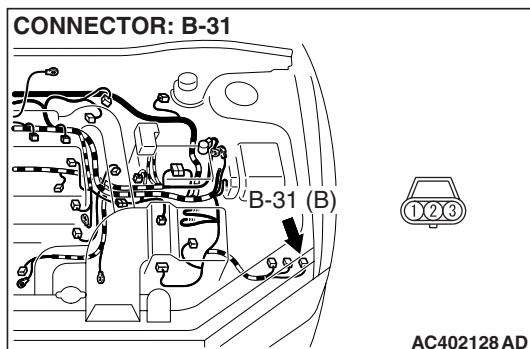
STEP 7. Check proportioning valve connector B-31 and AWD-ECU connector C-139 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 8.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

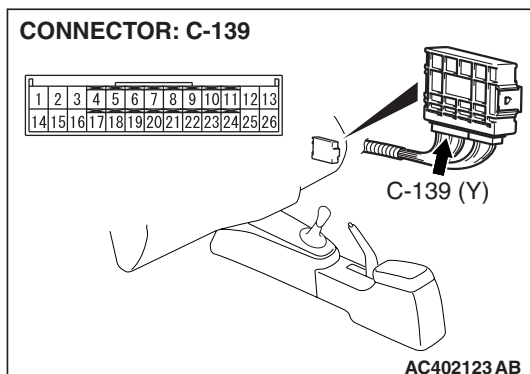
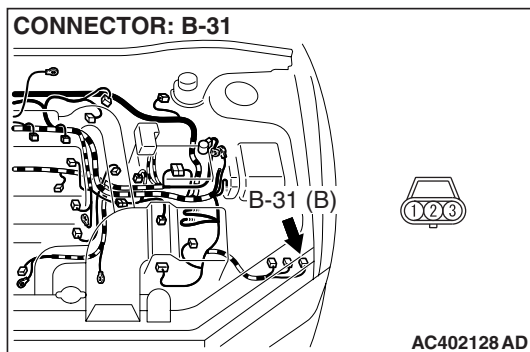


STEP 8. Check the harness for open circuit or short circuit to ground between proportioning valve connector B-31 terminal 3 and AWD-ECU connector C-139 terminal 1.

Q: Is the harness wire in good condition?

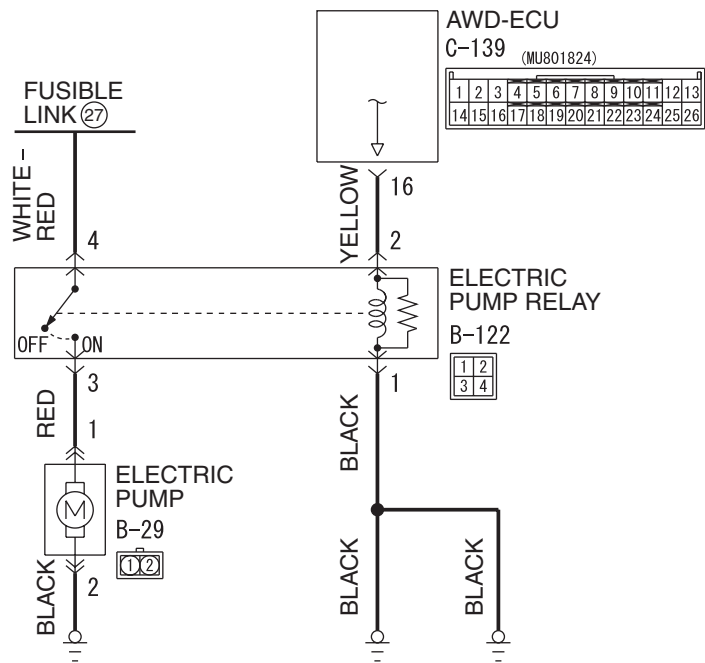
YES : Go to Step 6.

NO : Repair or replace the harness wire.

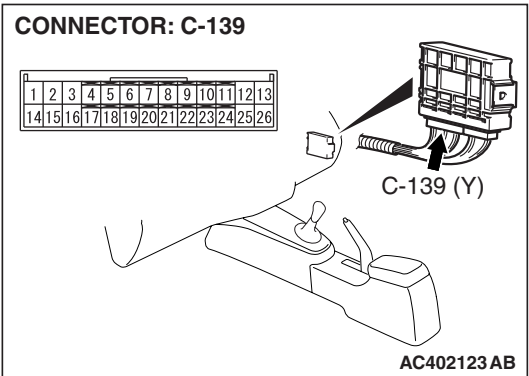
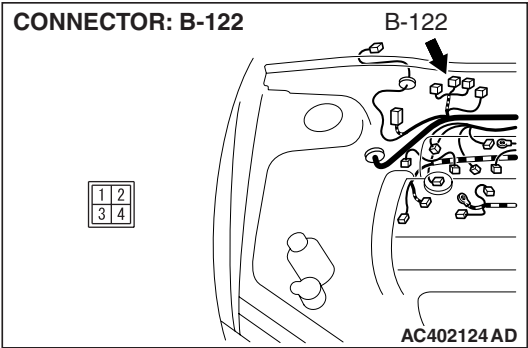
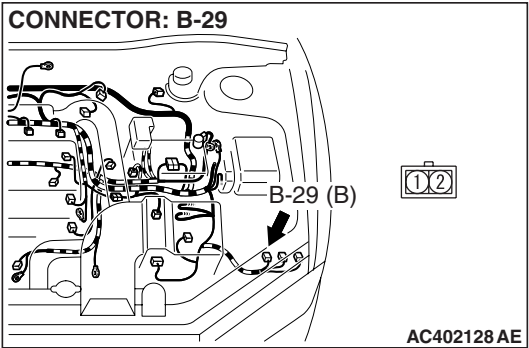


DTC 81: Electric Pump Relay System (Open Circuit or Short Circuit)

Electric Pump Relay System Circuit



W5J22M013A



CIRCUIT OPERATION

The electric pump relay provides power to activate the electric pump according to the signal from the

AWD-ECU.

DTC SET CONDITIONS

DTC 81 is set when the coil circuit of the electric pump relay has open circuit or short circuit.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of electric pump relay
- Damaged harness and connector
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Using scan tool MB991958, check actuator test item 04: Electric Pump Drive.

CAUTION

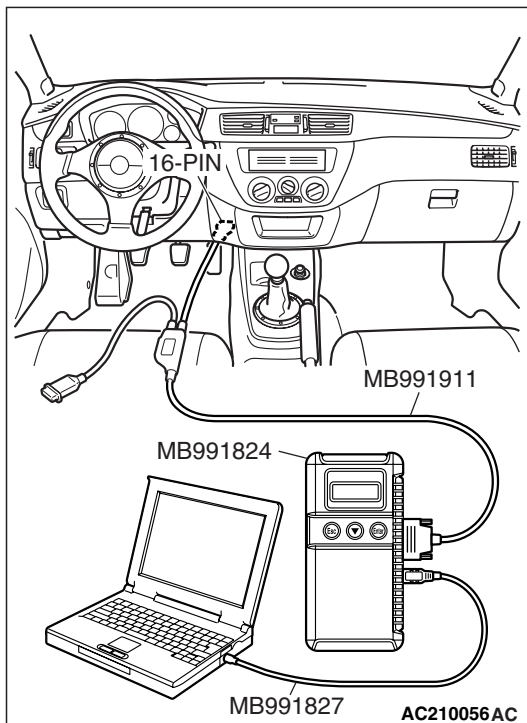
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to actuator test mode.
 - Item 04: Electric Pump Drive.
 - Operating sound of the electric pump can be heard.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the pump operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions [P.00-13](#).

NO : Go to Step 2.



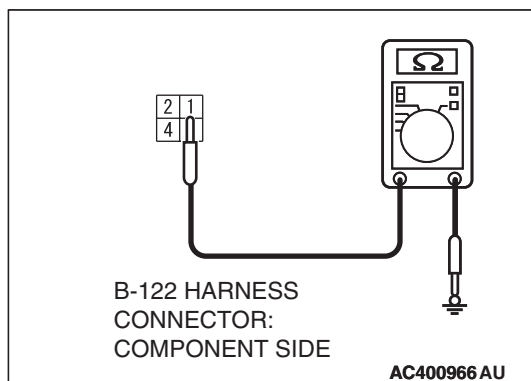
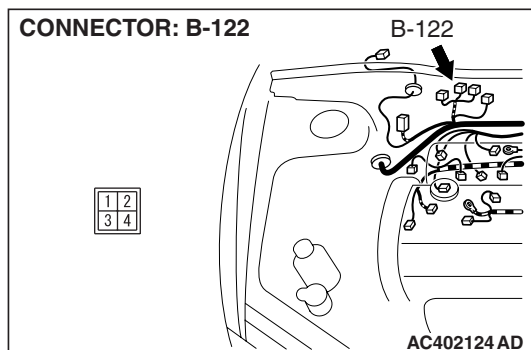
STEP 2. Check the electric pump relay.

Refer to [P.22A-240](#).

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the electric pump relay.

**STEP 3. Measure the resistance at electric pump relay connector B-122.**

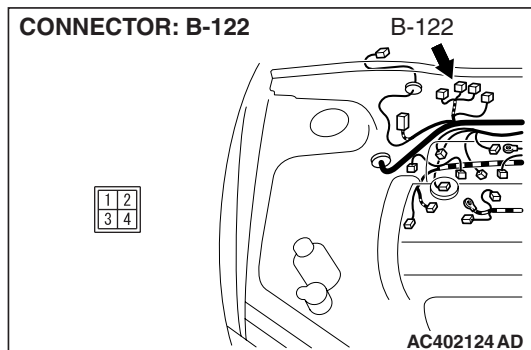
Disconnect the electric pump relay connector, and measure the resistance between terminal 1 and ground.

- The resistance should measure less than 2 ohms

Q: Is the measured resistance less than 2 ohms?

YES : Go to Step 7.

NO : Go to Step 4.

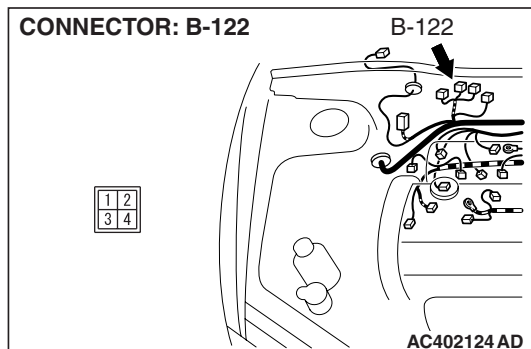
**STEP 4. Check electric pump relay connector B-122 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

Q: Are the connector and terminals in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)



STEP 5. Check the harness for open circuit to ground between electric pump relay connector B-122 terminal 1 and ground.

Q: Is the harness wire in good condition?

YES : Go to Step 6.

NO : Repair or replace the harness wire.

STEP 6. Using scan tool MB991958, check actuator test item 04: Electric Pump Drive.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958 to the data link connector.

(2) Turn the ignition switch to the "ON" position.

(3) Set scan tool MB991958 to actuator test mode.

- Item 04: Electric Pump Drive.

- Operating sound of the electric pump can be heard.

(4) Turn the ignition switch to the "LOCK" (OFF) position.

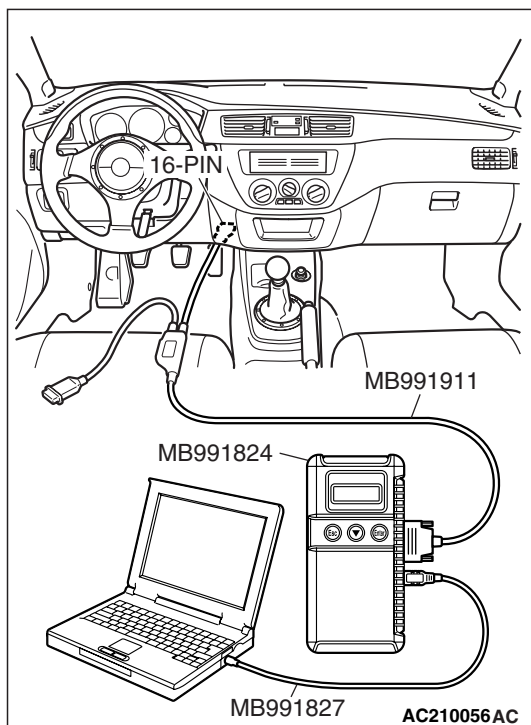
Q: Is the pump operating properly?

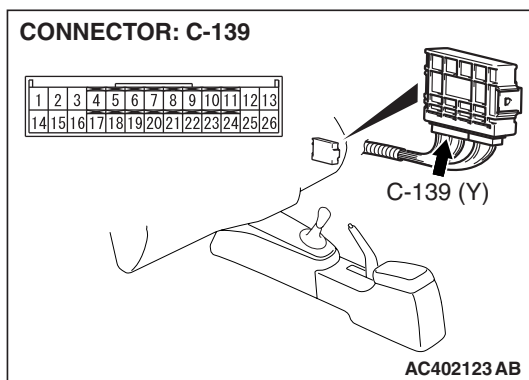
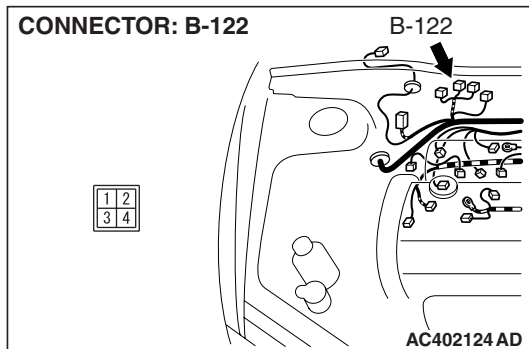
YES : It can be assumed that this malfunction is intermittent.

Refer to GROUP 00, How to Use

Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions [P.00-13](#).

NO : Replace the AWD-ECU.





STEP 7. Check electric pump relay connector B-122 and AWD-ECU connector C-139 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 8.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

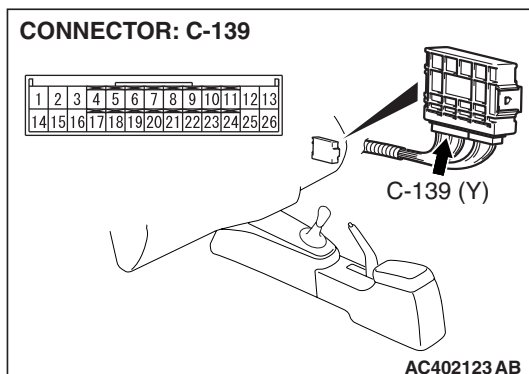
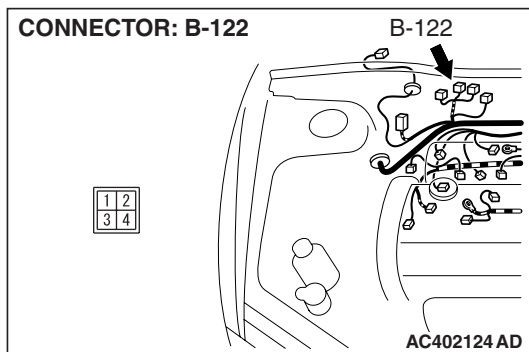
[P.00E-2.](#)

STEP 8. Check the harness for open circuit or short circuit to ground between electric pump relay connector B-122 terminal 2 and AWD-ECU connector C-139 terminal 16.

Q: Is the harness wire in good condition?

YES : Go to Step 6.

NO : Repair or replace the harness wire.



DTC 82: Electric Pump Relay System

ELECTRIC PUMP RELAY SYSTEM CIRCUIT

Refer to [P.22A-156](#).

CIRCUIT OPERATION

Refer to [P.22A-156](#).

DTC SET CONDITIONS

DTC 82 is set when the pressure sensor does not reach the specified value even if the AWD-ECU has output the electric pump motor drive command.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Insufficient fluid
- Malfunction of the pressure sensor
- Malfunction of the electric pump relay
- Malfunction of the hydraulic unit
- Damaged harness and connector
- Malfunction of the AWD-ECU

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991911: Main Harness B

STEP 1. Check the fluid.

Check that the right amount of fluid is in the reservoir tank.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Go to Step 2.

STEP 2. Check the fluid leaks.

Check that the fluid is not leaking.

Q: Is the check result normal?

YES : Add the fluid.

NO : Repair the leaking part and add the fluid.

STEP 3. Using scan tool MB991958, read the ACD diagnostic trouble code.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for ACD diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

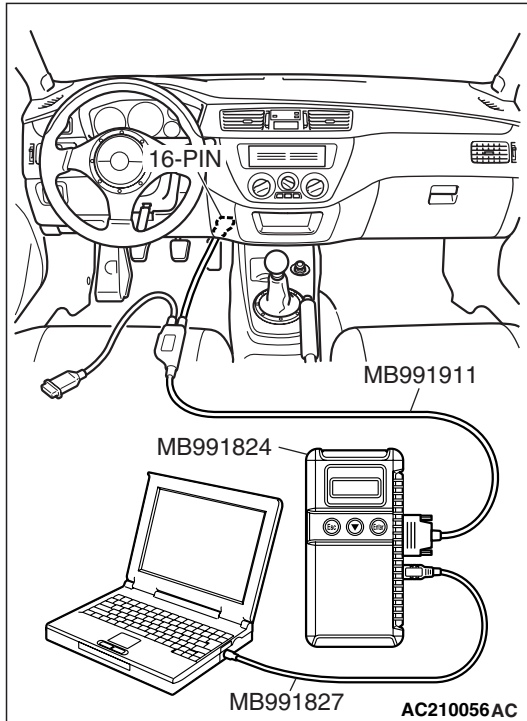
Q: Are DTCs 45, 46, 47 set?

YES <DTC 45 is set> : Refer to DTC 45: Pressure Sensor System (Open Circuit or Short Circuit) [P.22A-71](#).

YES <DTC 46 is set> : Refer to DTC 46: Pressure Sensor System (Open Ground) [P.22A-76](#).

YES <DTC 47 is set> : Refer to DTC 47: Pressure Sensor System (Abnormal Power Supply) [P.22A-78](#).

NO : Go to Step 4.



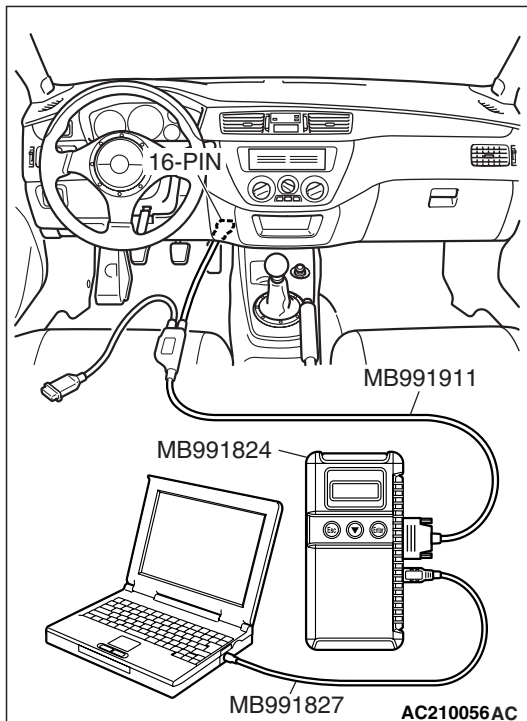
STEP 4. Using scan tool MB991958, read the ACD diagnostic trouble code.

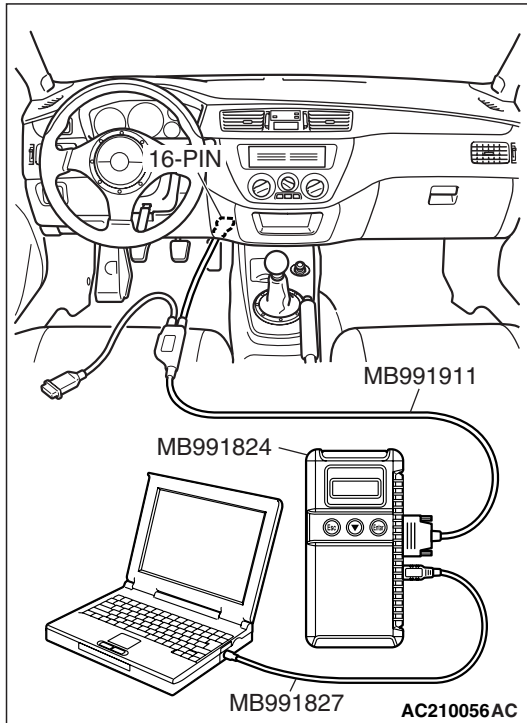
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for ACD diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC 81 set?

YES : Refer to DTC 81: Electric Pump Relay System [P.22A-156](#).

NO : Go to Step 5.





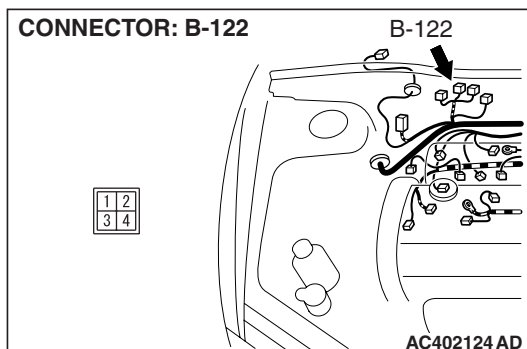
STEP 5. Using scan tool MB991958, check actuator test item 04: Electric Pump Drive.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to actuator test mode.
 - Item 04: Electric Pump Drive.
 - Operating sound of the electric pump can be heard.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the pump operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions [P.00-13](#).

NO : Go to Step 6.



STEP 6. Measure the voltage at electric pump relay connector B-122.

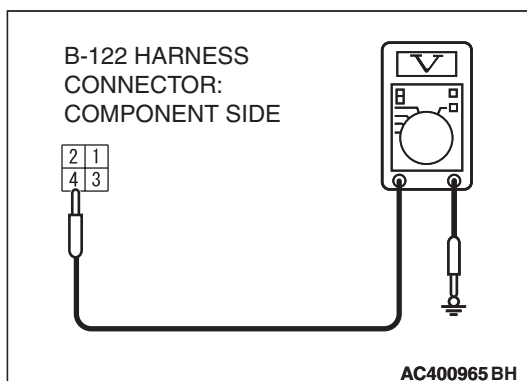
Disconnect the electric pump relay connector, and measure the voltage between terminal 4 and ground.

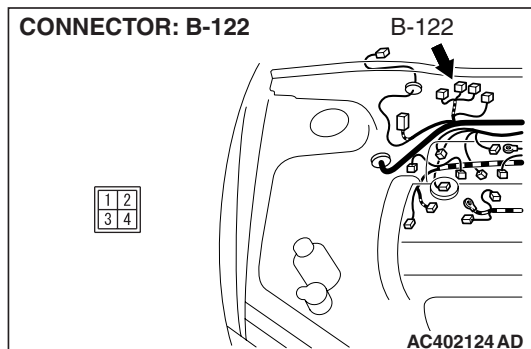
- The voltage should measure battery positive voltage.

Q: Is the measured voltage battery positive voltage?

YES : Go to Step 10.

NO : Go to Step 7.



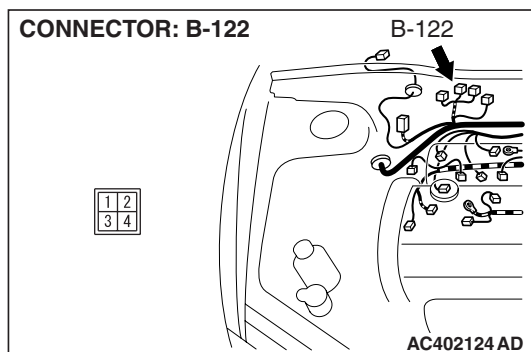


STEP 7. Check electric pump relay connector B-122 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 8.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).



STEP 8. Check the harness for open circuit short circuit to ground between the ignition switch and the electric pump relay connector B-122 terminal 4 and fusible link 27.

Q: Is the harness wire in good condition?

YES : Go to Step 9.

NO : Repair or replace the harness wire.

STEP 9. Using scan tool MB991958, check actuator test item 04: Electric Pump Drive.

⚠ CAUTION

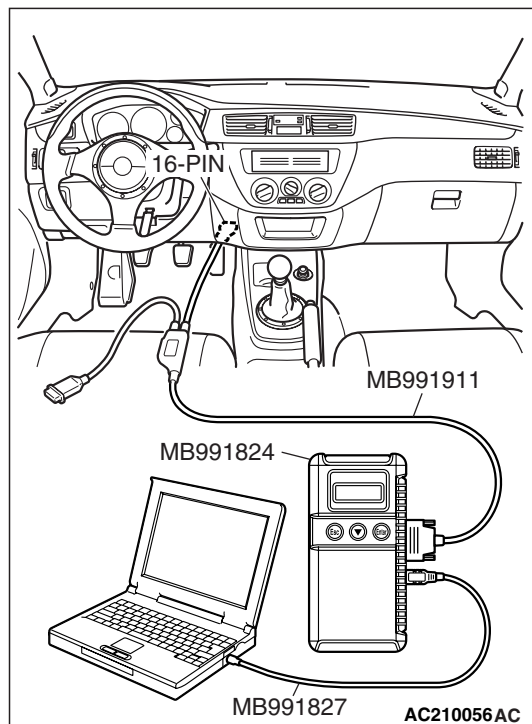
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

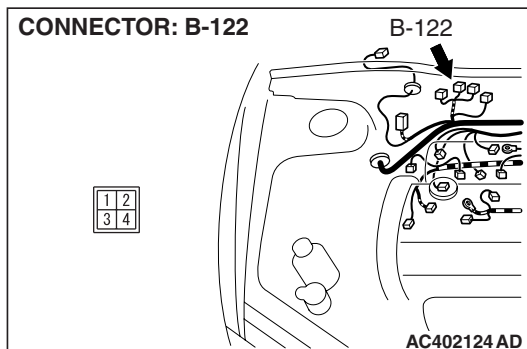
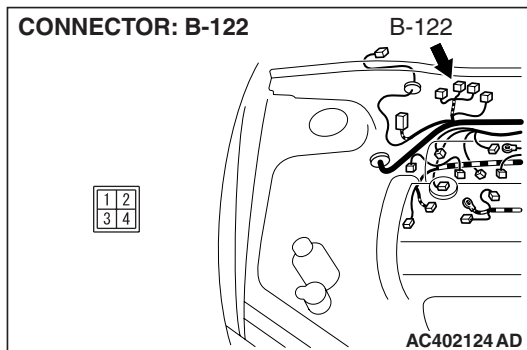
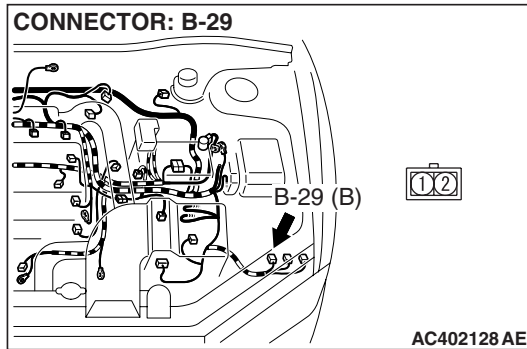
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to actuator test mode.
 - Item 04: Electric Pump Drive.
 - Operating sound of the electric pump can be heard.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the pump operating properly?

YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions [P.00-13](#).

NO : Replace the AWD-ECU.





STEP 10. Check electric pump connector B-29 and electric pump relay connector B-122 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 11.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

STEP 11. Check the harness for open circuit between electric pump relay connector B-122 terminal 3 and ground.

Q: Is the harness wire in good condition?

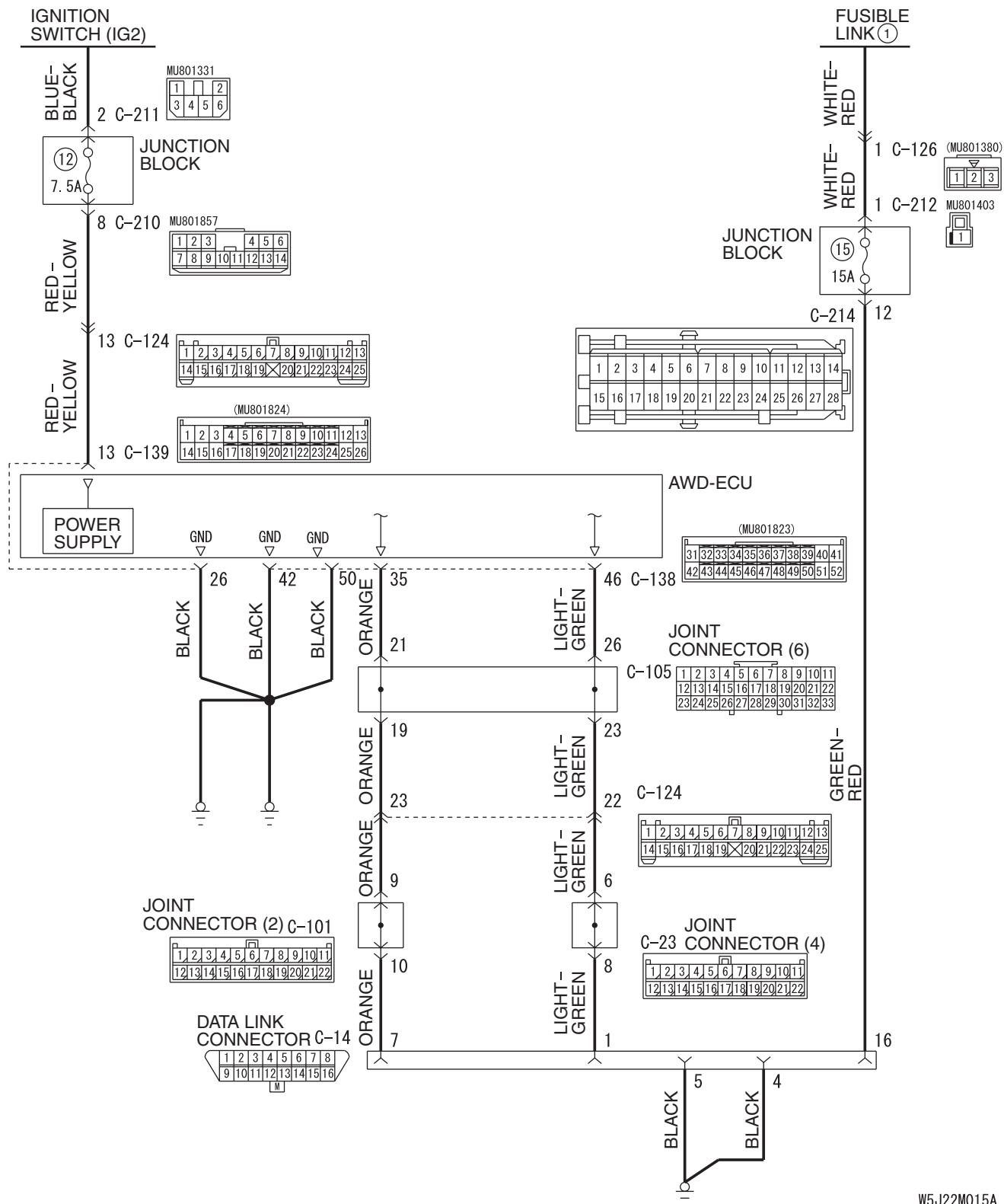
YES : Go to Step 9.

NO : Repair or replace the harness wire.

SYMPTOM PROCEDURES

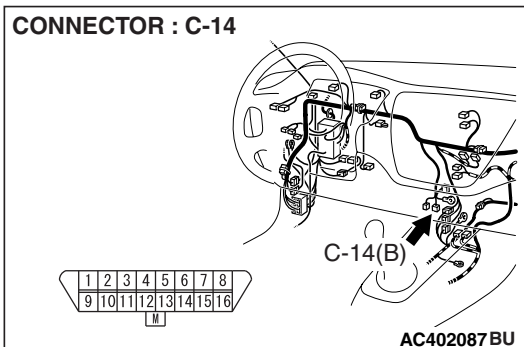
INSPECTION PROCEDURE 1: No Communication Possible Between Scan Tool and All Systems.

Diagnosis Connector Circuit



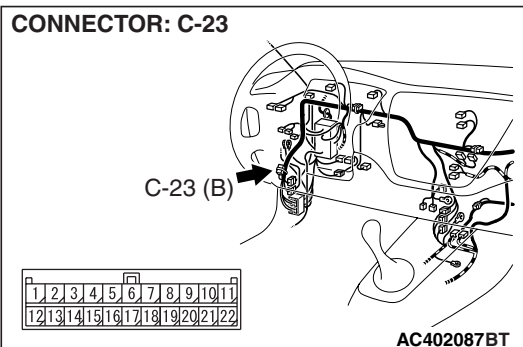
W5J22M015A

CONNECTOR : C-14



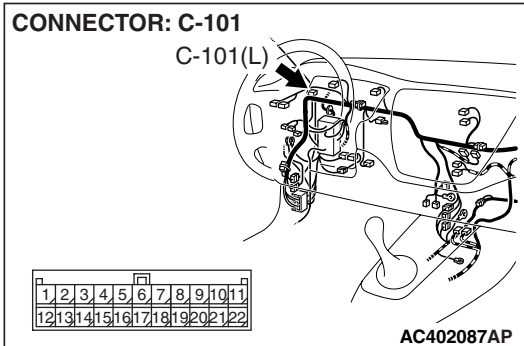
AC402087BU

CONNECTOR: C-23



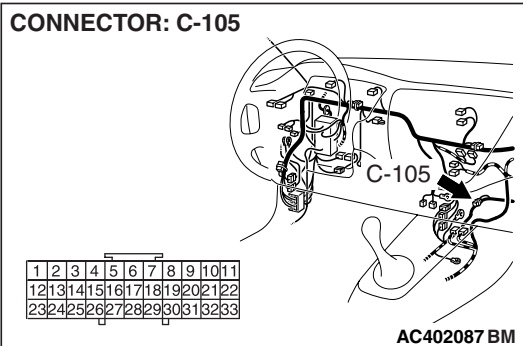
AC402087BT

CONNECTOR: C-101



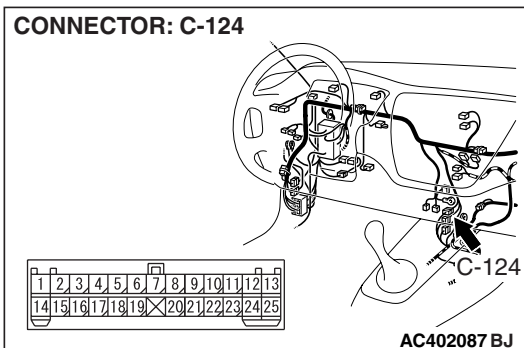
AC402087AP

CONNECTOR: C-105



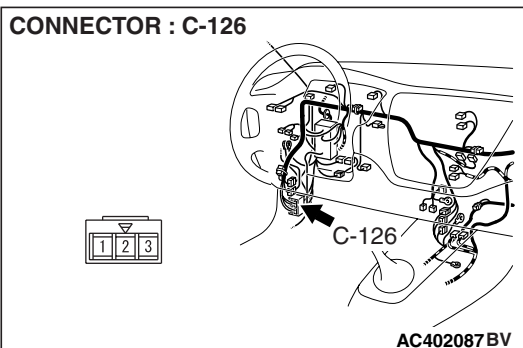
AC402087BM

CONNECTOR: C-124



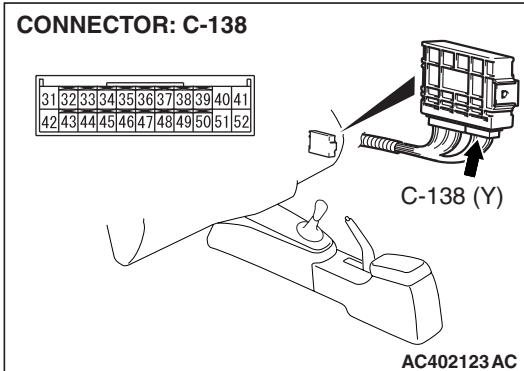
AC402087BJ

CONNECTOR : C-126



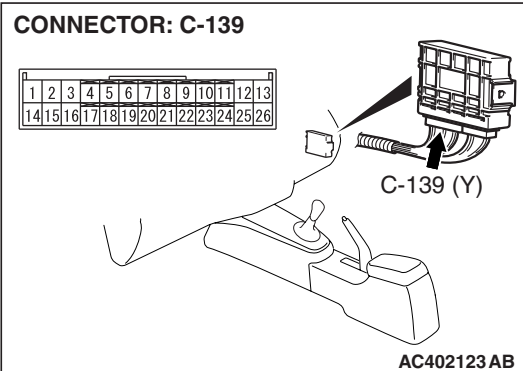
AC402087BV

CONNECTOR: C-138

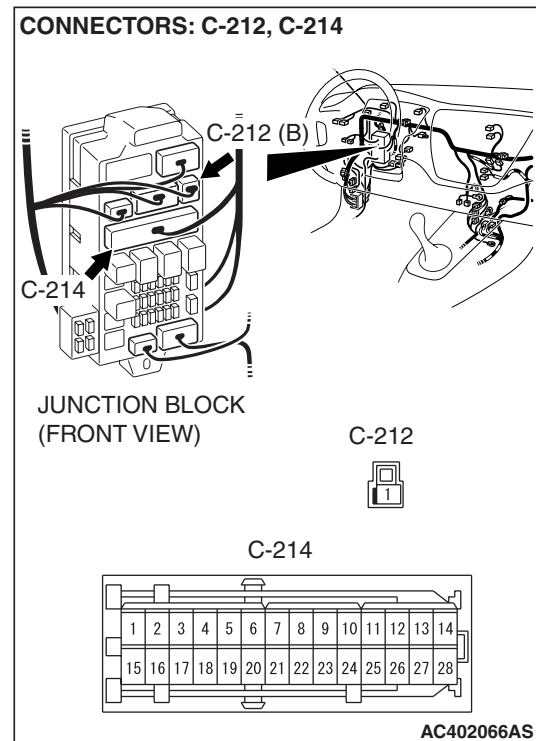
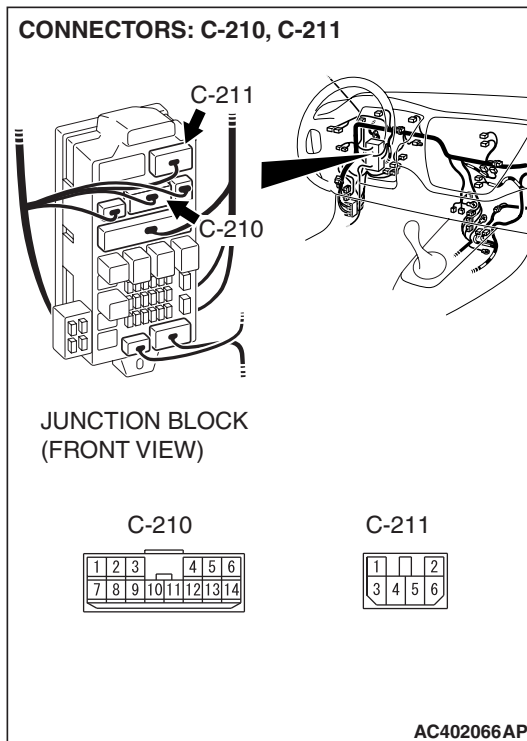


AC402123AC

CONNECTOR: C-139



AC402123AB



CIRCUIT OPERATION

The scan tool is energized by connecting the data link connector.

COMMENT

The data link connector power supply circuit, ground circuit, or scan tool may be faulty.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Malfunction of data link connector
- Damaged harness and connector
- Malfunction of the AWD-ECU

DIAGNOSIS

STEP 1. Measure the power supply voltage at data link connector C-14.

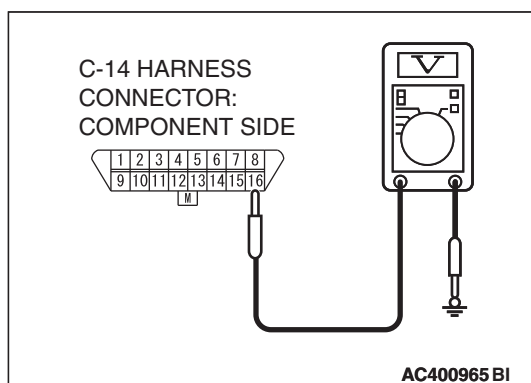
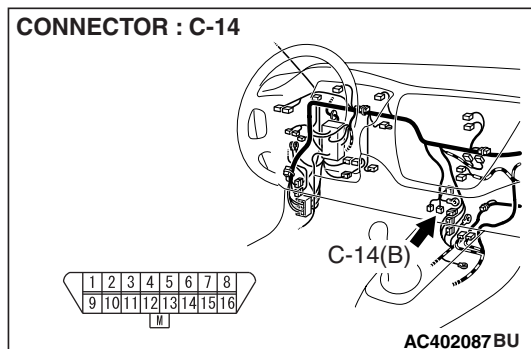
Measure the voltage between data link connector C-14 terminal 16 and ground.

- The measured voltage should equal battery positive voltage.

Q: Is the measured voltage equal to battery positive voltage?

YES : Go to Step 4.

NO : Go to Step 2.



STEP 2. Check data link connector C-14, intermediate connector C-126, junction block connector C-212, C-214 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

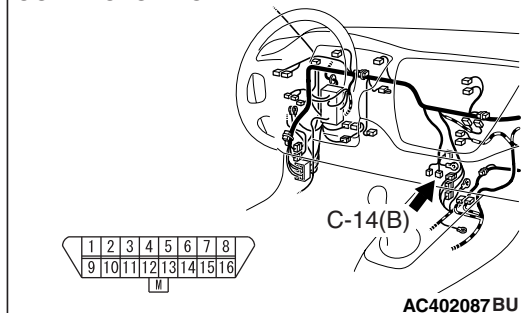
Q: Are the connectors and terminals in good condition?

YES : Go to Step 3.

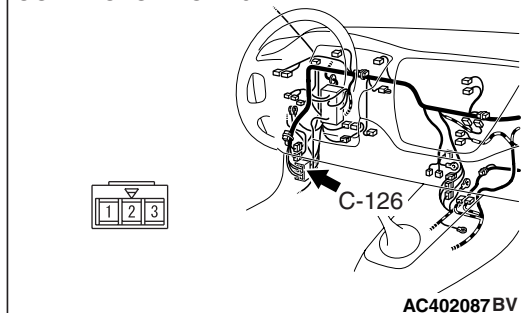
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

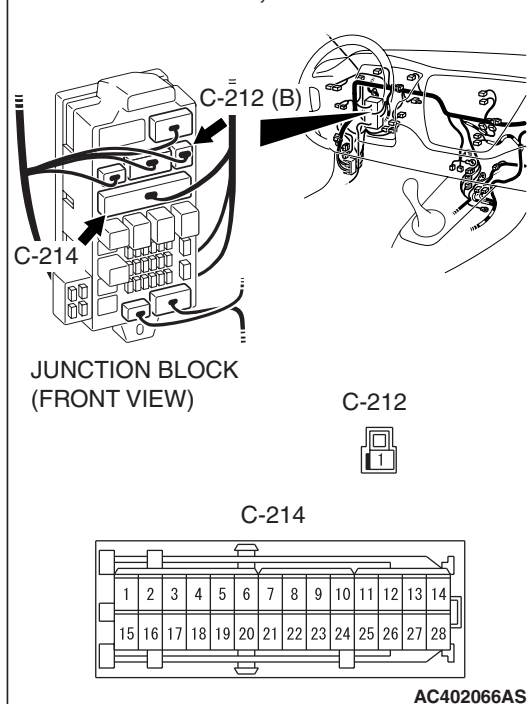
CONNECTOR : C-14



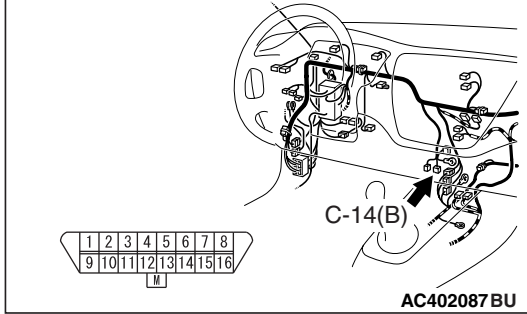
CONNECTOR : C-126



CONNECTORS: C-212, C-214



CONNECTOR : C-14



STEP 3. Check the harness for open circuit or short circuit to ground between data link connector C-14 terminal 16 and fusible link 1.

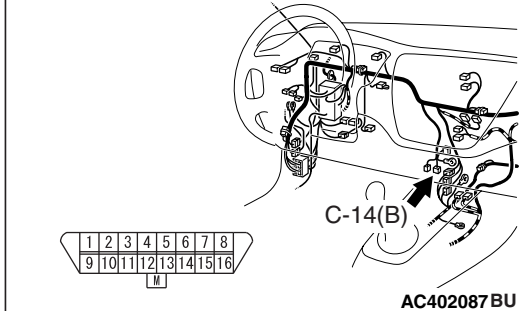
Q: Is the harness wire in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use

Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Repair or replace the harness wire.

CONNECTOR : C-14



STEP 4. Measure the ground circuit for resistance at the data link connector C-14.

Measure the resistance between terminal 4, 5 and ground.

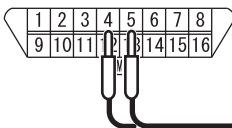
- The resistance should measure less than 2 ohms.

Q: Is the measured resistance less than 2 ohms?

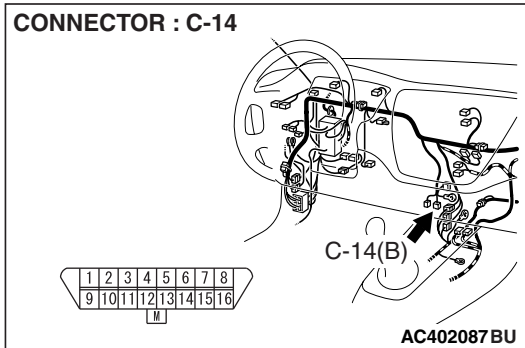
YES : Replace the scan tool.

NO : Go to Step 5.

C-14 HARNESS
CONNECTOR:
COMPONENT SIDE



CONNECTOR : C-14



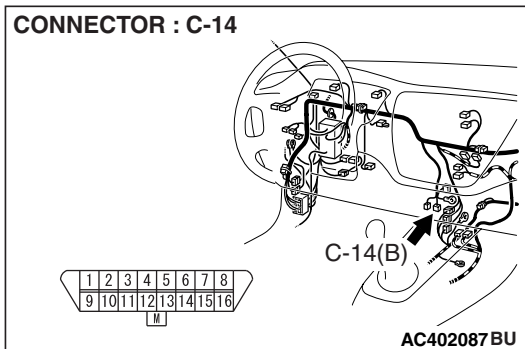
STEP 5. Check data link connector C-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 6.

NO : Repair or replace the harness wire.

CONNECTOR : C-14



STEP 6. Check the harness for open circuit between data link connector C-14 terminal 4, 5 and ground.

Q: Is the harness wire in good condition?

YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use
Troubleshooting/Inspection Service Points –How to
Cope with Intermittent Malfunction [P.00-13](#).

NO : Repair or replace the harness wire.

INSPECTION PROCEDURE 2: No Communication is Possible Between the scan tool and AWD-ECU.**DATA LINK CONNECTOR CIRCUIT**

Refer to P.22A-167.

CIRCUIT OPERATION

The scan tool will be able to communicate with the AWD-ECU by connecting the data link connector.

COMMENT

The DTC output circuit, AWD-ECU power supply circuit, ground circuit or AWD-ECU may be faulty.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Damaged harness and connector
- Malfunction of the AWD-ECU

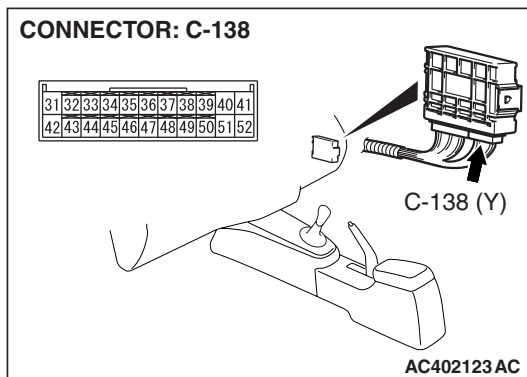
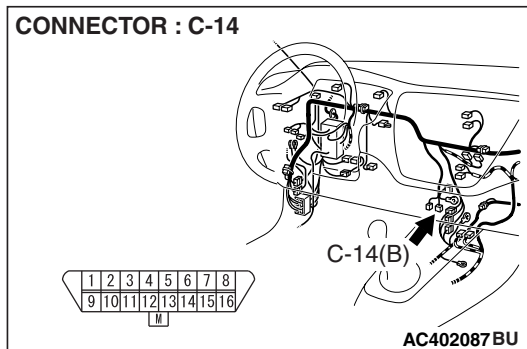
DIAGNOSIS**STEP 1. Measure the DTC output circuit for resistance between data link connector C-14 and AWD-ECU connector C-138.**

- (1) Disconnect connector C-138 and measure at the harness side.
- (2) Measure the resistance between data link connector C-14 terminal 1 and AWD-ECU connector C-138 terminal 46.
 - The resistance should measure less than 2 ohms.
- (3) Measure the resistance between data link connector C-14 terminal 7 and AWD-ECU connector C-138 terminal 35.
 - The resistance should measure less than 2 ohms.

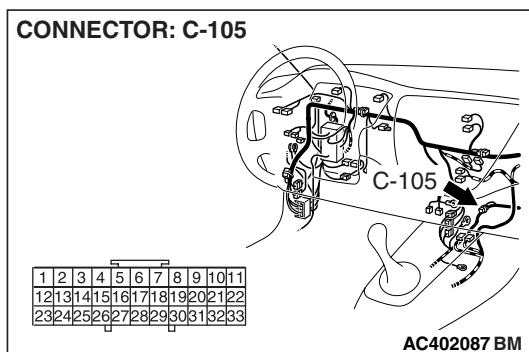
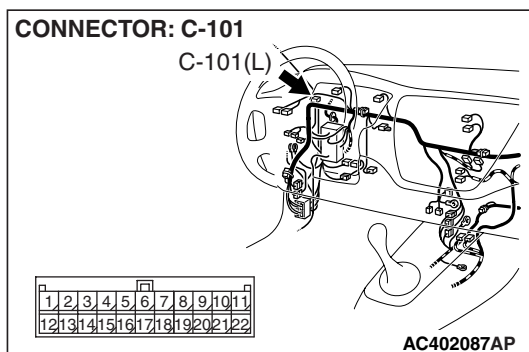
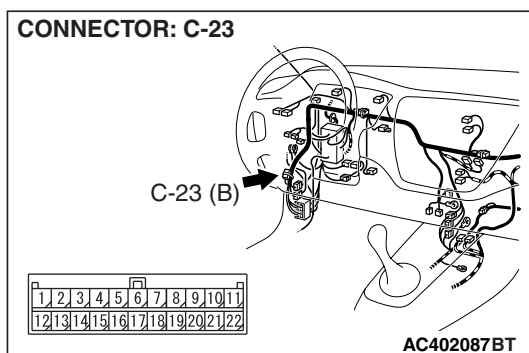
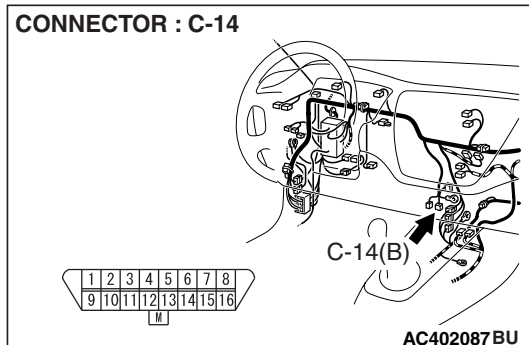
Q: Is the measured resistance less than 2 ohms?

YES : Go to Step 4.

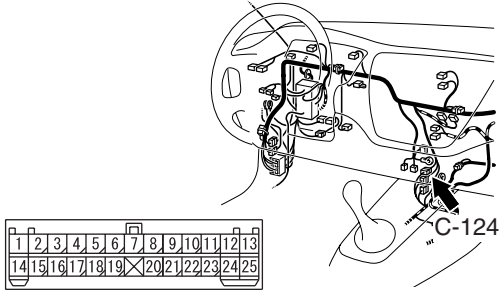
NO : Go to Step 2.



STEP 2. Check data link connector C-14, joint connector (4) C-23, joint connector (2) C-101, joint connector (6) C-105, intermediate connector C-124 and AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



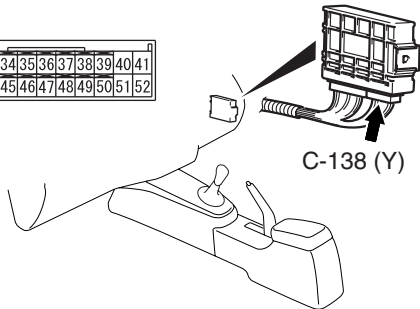
CONNECTOR: C-124



AC402087 BJ

CONNECTOR: C-138

31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



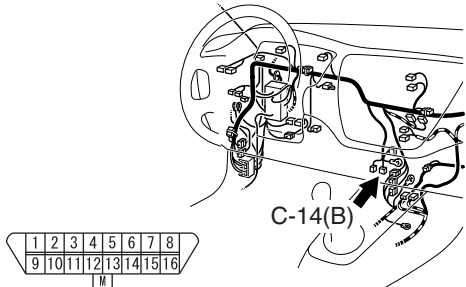
AC402123 AC

Q: Are the connectors and terminals in good condition?**YES :** Go to Step 3.**NO :** Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection[P.00E-2.](#)**STEP 3. Check the harness for open circuit or short circuit to ground between data link connector C-14 (terminal 1 and 7) and AWD-ECU connector C-138 (terminal 46 and 35).****Q: Is the harness wire in good condition?****YES :** It can be assumed that this malfunction is intermittent.

Refer to GROUP 00, How to Use

Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13.](#)**NO :** Repair or replace the harness wire.

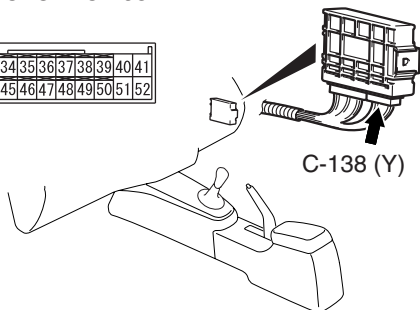
CONNECTOR : C-14



AC402087 BU

CONNECTOR: C-138

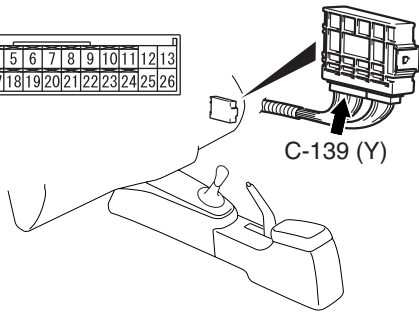
31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52



AC402123 AC

CONNECTOR: C-139

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26



AC402123 AB

STEP 4. Measure the power supply voltage at AWD-ECU connector C-139 by backprobing.

- (1) Turn the ignition switch to the "ON" position.
- (2) Measure the voltage between AWD-ECU connector C-139 terminal 13 and ground by backprobing.

- The voltage should measure battery positive voltage.

- (3) Turn the ignition switch to the "Lock" (OFF) position.

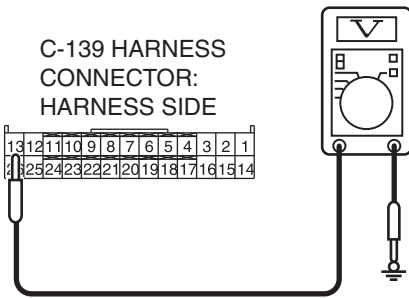
Q: Is the measured voltage battery positive voltage?

YES : Go to Step 7.

NO : Go to Step 5.

**C-139 HARNESS
CONNECTOR:
HARNESS SIDE**

13	12	11	10	9	8	7	6	5	4	3	2	1
25	24	23	22	21	20	19	18	17	16	15	14	



AC400965 AP

STEP 5. Check intermediate connector C-124, AWD-ECU connector C-139, junction block connector C-210 and C-211 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

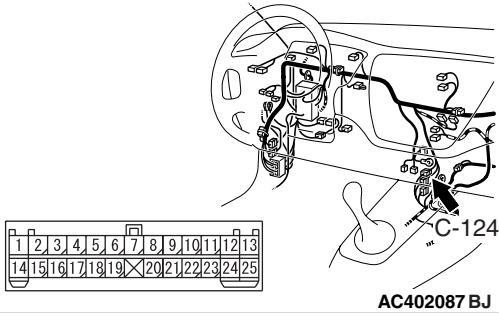
Q: Are the connectors and terminals in good condition?

YES : Go to Step 6.

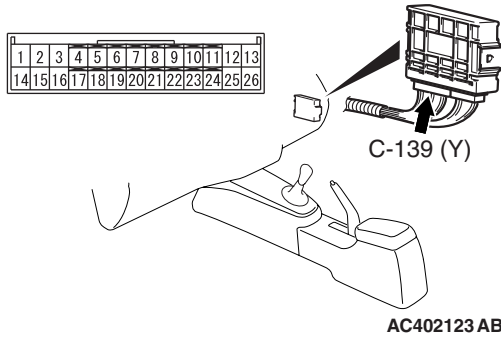
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

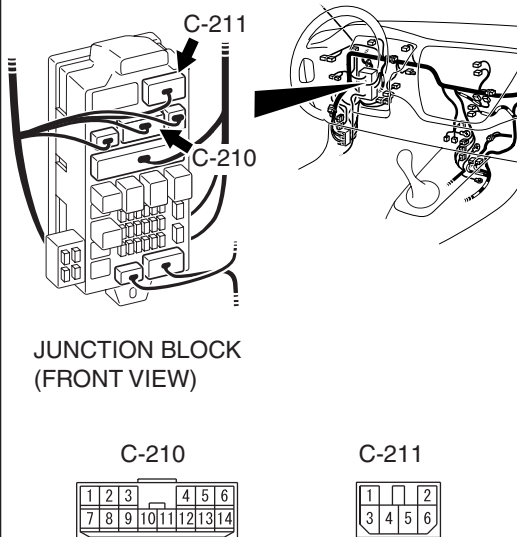
CONNECTOR: C-124



CONNECTOR: C-139



CONNECTORS: C-210, C-211



AC402066 AP

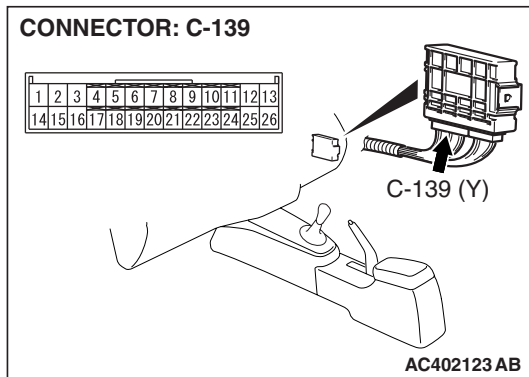
STEP 6. Check the harness for open circuit or short circuit between AWD-ECU connector C-139 terminal 13 and ignition switch.

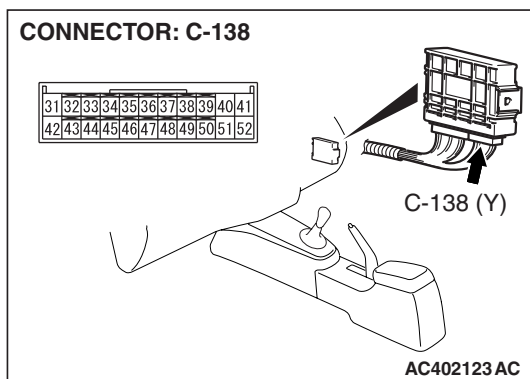
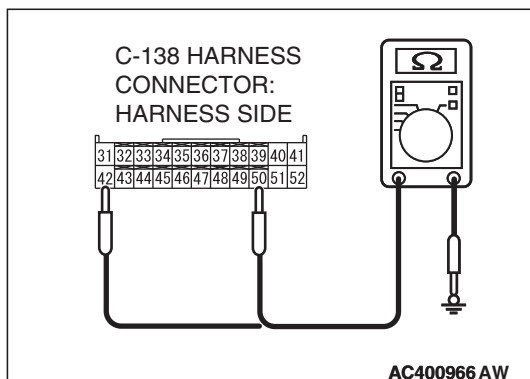
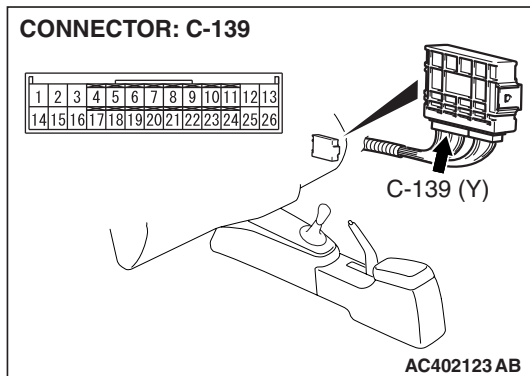
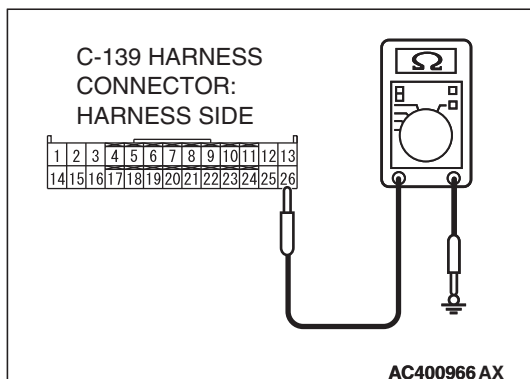
Q: Is the harness wire in good condition?

YES : It can be assumed that this malfunction is intermittent.
Refer to GROUP 00, How to Use

Troubleshooting/Inspection Service Points –How to
Cope with Intermittent Malfunction [P.00-13](#).

NO : Repair or replace the harness wire.



CONNECTOR: C-138**C-138 HARNESS
CONNECTOR:
HARNESS SIDE****CONNECTOR: C-139****C-139 HARNESS
CONNECTOR:
HARNESS SIDE****STEP 7. Measure the ground circuit for resistance at AWD-ECU connectors C-138 and C-139 by backprobing.**

(1) Measure the resistance between AWD-ECU connector C-138 terminals 42, 50 and ground by backprobing.

- The resistance should measure less than 2 ohms.

(2) Measure the resistance between AWD-ECU connector C-139 terminal 26 and ground by backprobing.

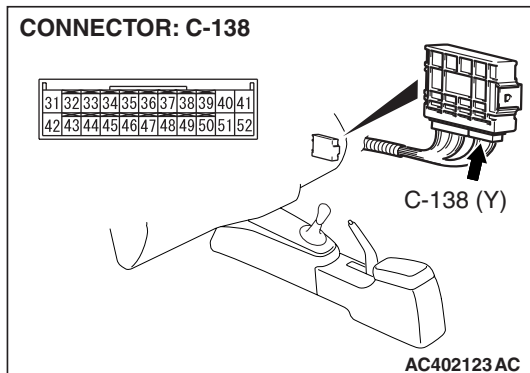
- The resistance should measure less than 2 ohms.

Q: Is the measured resistance less than 2 ohms?

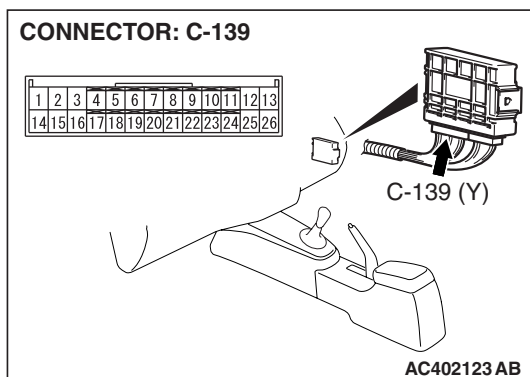
YES : Go to Step 10.

NO : Go to Step 8.

CONNECTOR: C-138



CONNECTOR: C-139



STEP 8. Check AWD-ECU connector C-138 and C-139 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 9.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

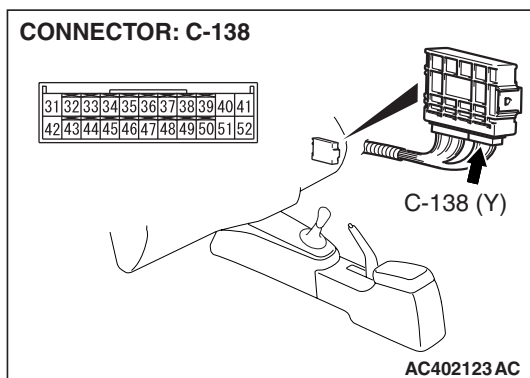
STEP 9. Check the harness for open circuit between AWD-ECU connector C-138 terminals 42 and 50, C-139 terminal 26 and ground.

Q: Is the harness wire in good condition?

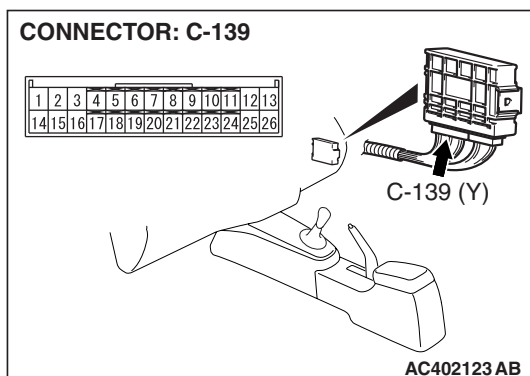
YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).

NO : Repair or replace the harness wire.

CONNECTOR: C-138



CONNECTOR: C-139



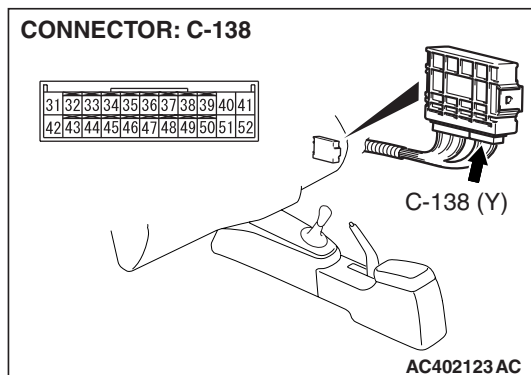
STEP 10. Check AWD-ECU connector C-138 and C-139 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

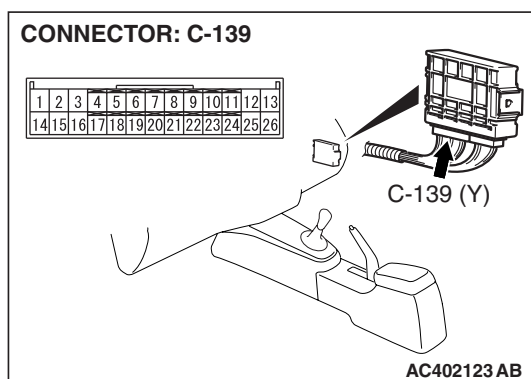
YES : Repair the AWD-ECU.

NO : Repair or replace the harness wire.

CONNECTOR: C-138

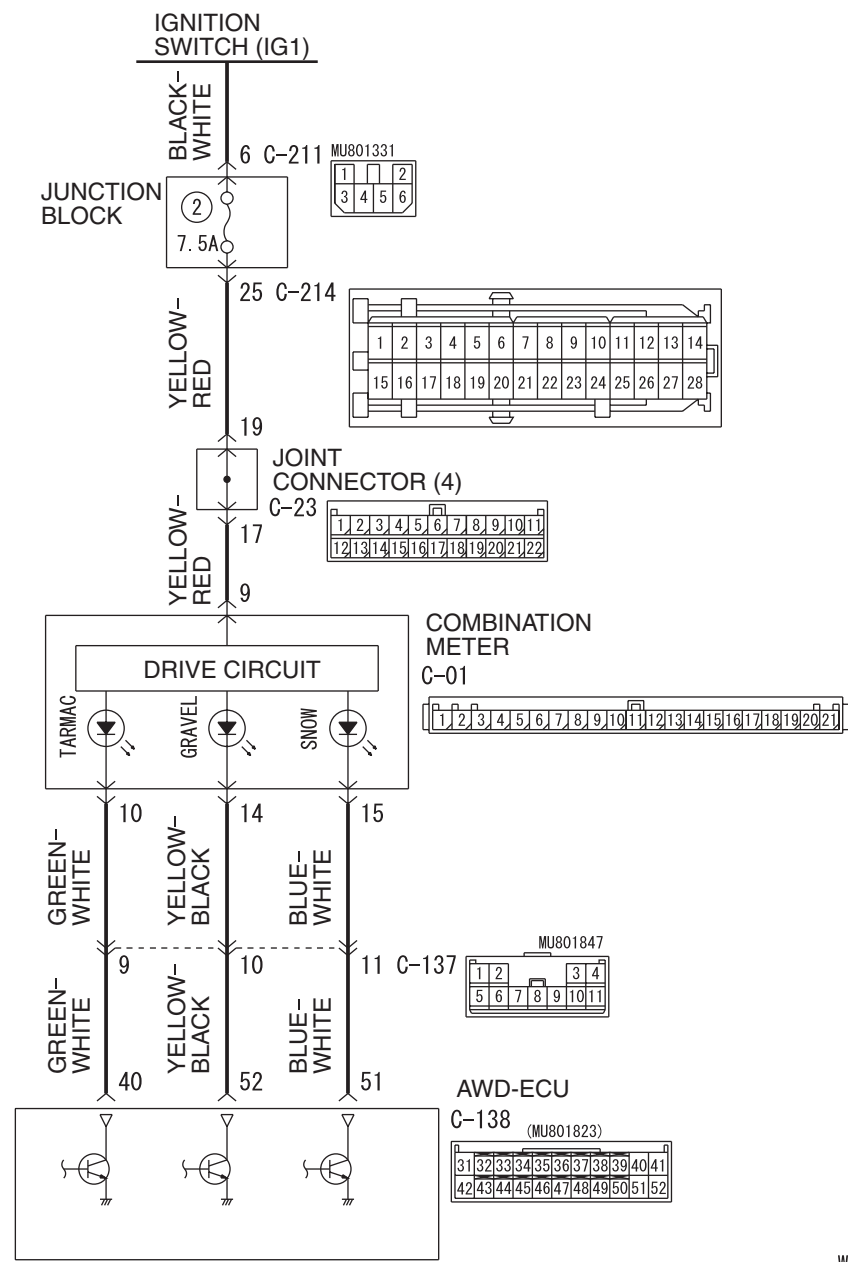


CONNECTOR: C-139



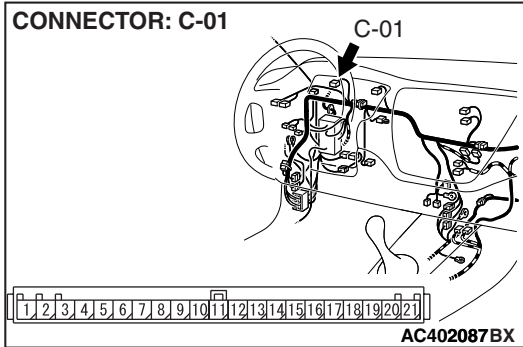
INSPECTION PROCEDURE 3: The ACD Mode Indicator Light Does Not Light Up When The Ignition Switch Is Turned "ON" (Engine Is Stopped).

ACD Mode Indicator Lamp System Circuit

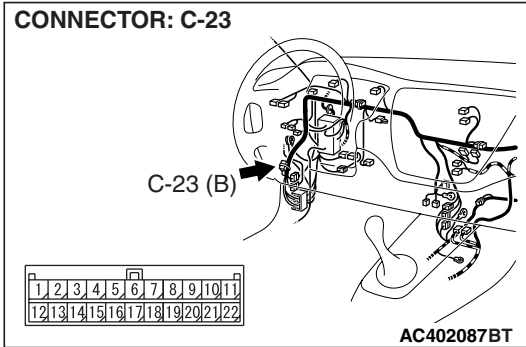


W5J22M014A

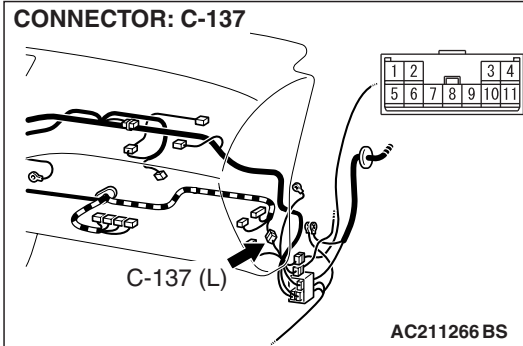
CONNECTOR: C-01



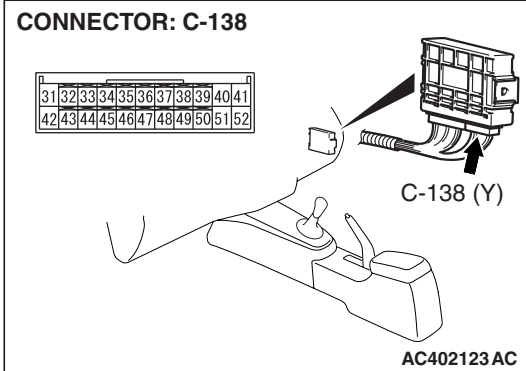
CONNECTOR: C-23



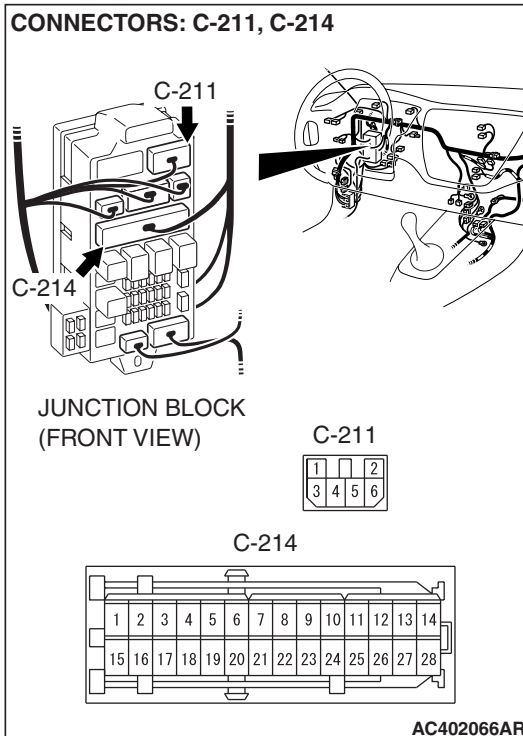
CONNECTOR: C-137



CONNECTOR: C-138



CONNECTORS: C-211, C-214

**CIRCUIT OPERATION**

The AWD-ECU displays a control mode (tarmac, gravel, snow) on the ACD mode indicator light on the combination meter.

COMMENT

The ACD mode indicator light circuit or AWD-ECU may be faulty.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Damaged harness and connector
- Malfunction of the ACD mode indicator light assembly
- Malfunction of the AWD-ECU

DIAGNOSIS

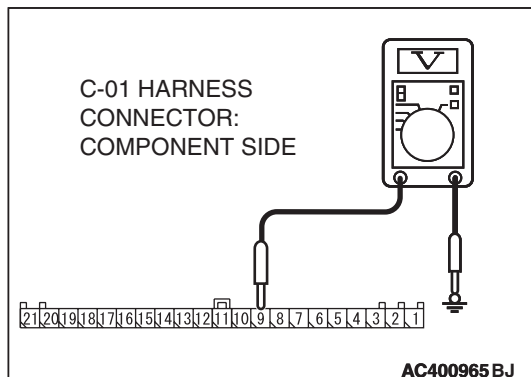
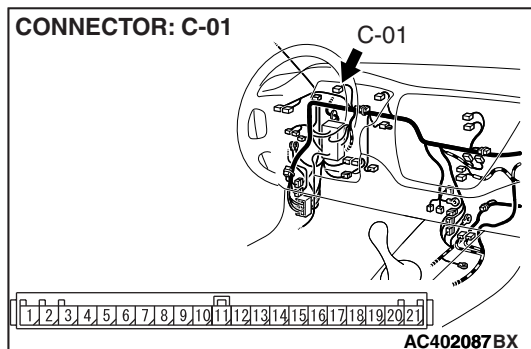
STEP 1. Measure the power supply voltage at combination meter connector C-01.

- (1) Disconnect the combination meter connector C-01 and measure at the harness side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Measure the voltage between terminal 9 and ground.
 - The voltage should measure battery positive voltage.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage battery positive voltage?

YES : Go to Step 4.

NO : Go to Step 2.



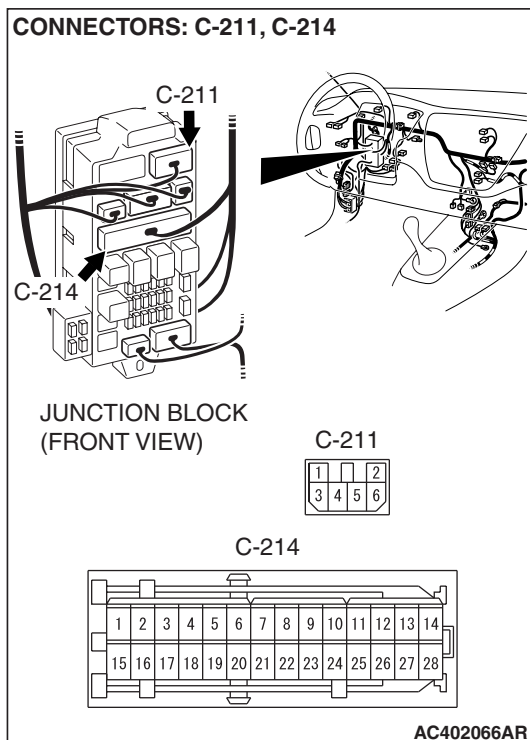
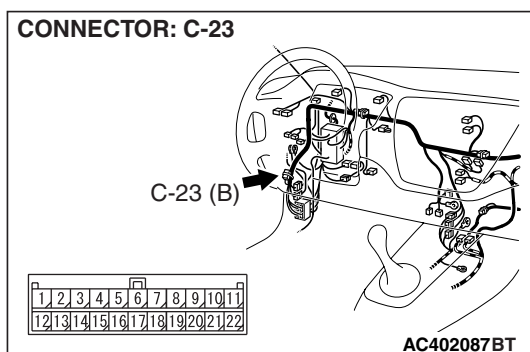
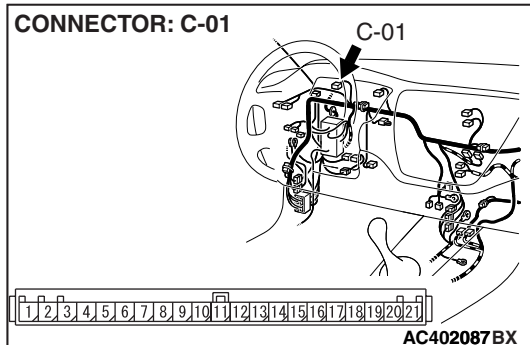
STEP 2. Check combination meter connector C-01, joint connector (4) C-23, junction block connector C-211 and C-214 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

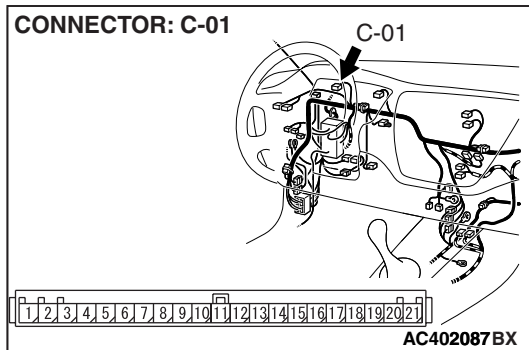
Q: Are the connectors and terminals in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

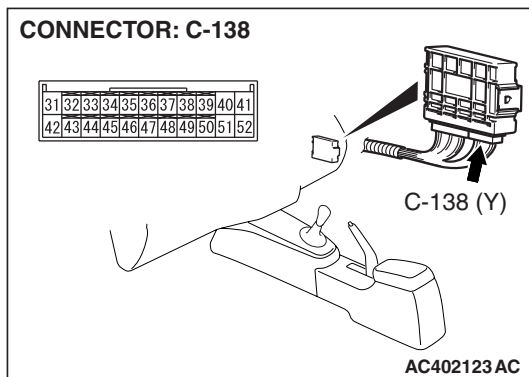




STEP 3. Check harness for open circuit or short circuit between combination meter connector C-01 terminal 9 and ignition switch.

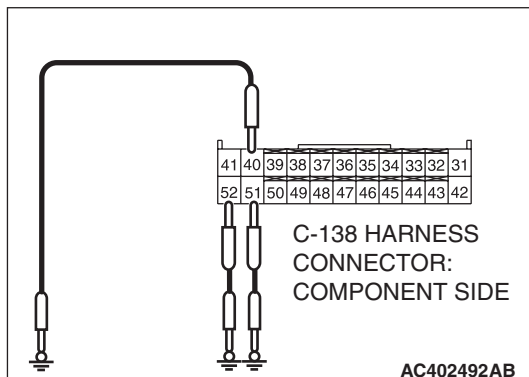
Q: Is the harness wire in good condition?

- YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-13](#).
- NO :** Repair or replace the harness wire.



STEP 4. Check the ACD mode indicator light illumination.

- (1) Disconnect the AWD-ECU connector C-138 and check the harness side.
- (2) Turn the ignition switch to the "ON" position.



- (3) Connect terminals 40, 51, 52 to ground.
 - The ACD mode indicator light illuminates.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the ACD mode indicator light illuminate properly?

- YES :** Go to Step 7.
- NO :** Go to Step 5.

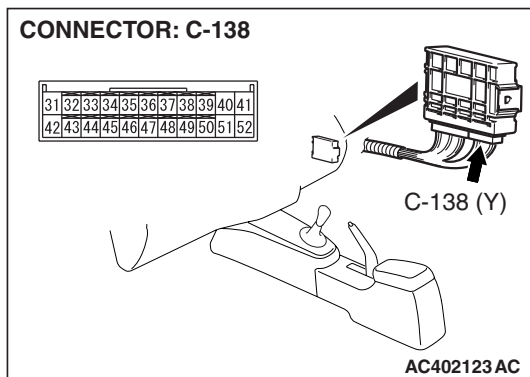
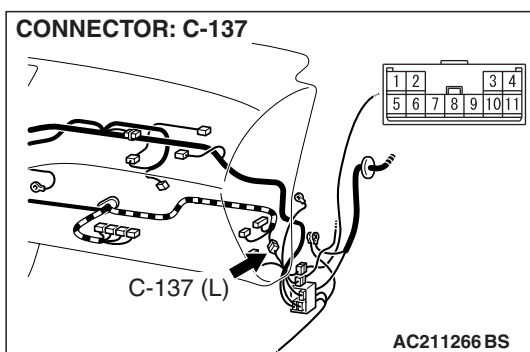
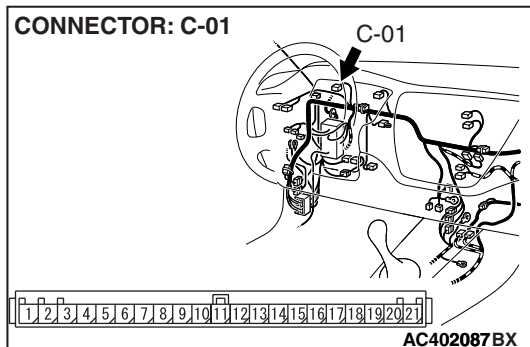
STEP 5. Check combination meter connector C-01, intermediate connector C-137 and AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

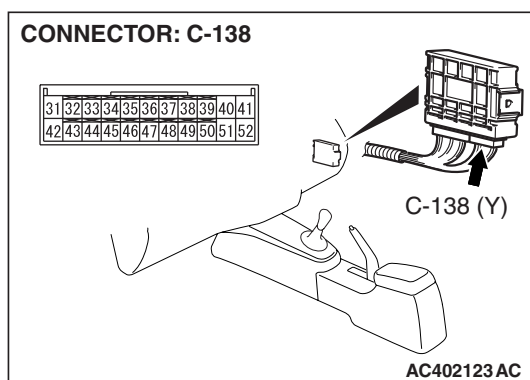
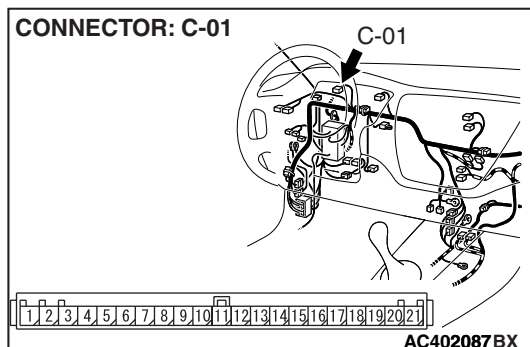


STEP 6. Check the harness for open circuit or short circuit between combination meter connector C-01 (terminals 10, 14, 15) and AWD-ECU connector C-138 (terminals 40, 52, 51).

Q: Is the harness wire in good condition?

YES : Replace the ACD mode indicator light assembly.

NO : Repair or replace the harness wire.



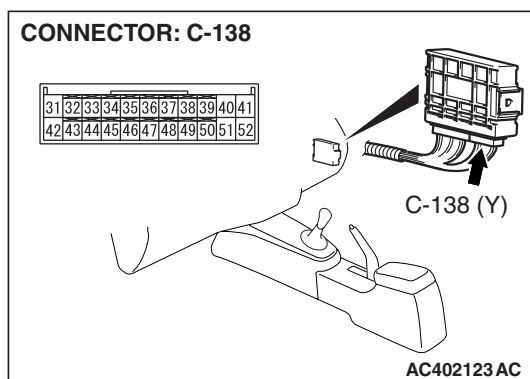
STEP 7. Check AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Replace the AWD-ECU.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)



INSPECTION PROCEDURE 4: More Than Two ACD Mode Indicator Lights Remain Lit Even After The Engine Is Started.**ACD MODE INDICATOR LIGHT SYSTEM
CIRCUIT**

Refer to [P.22A-183](#).

CIRCUIT OPERATION

Refer to [P.22A-183](#).

COMMENT

The output circuit of the ACD mode indicator light may be faulty.

**TROUBLESHOOTING HINTS (THE MOST
LIKELY CAUSES FOR THIS CONDITION:)**

- Damaged harness and connector
- Malfunction of the ACD mode indicator light assembly
- Malfunction of the AWD-ECU

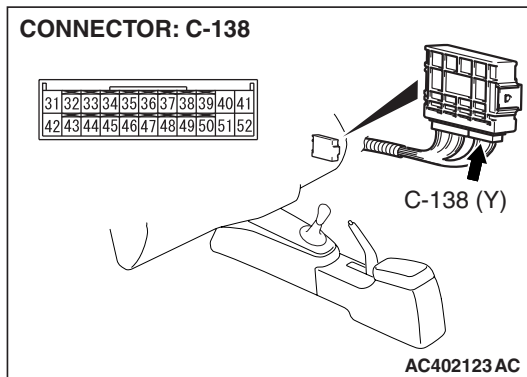
DIAGNOSIS**STEP 1. Check the ACD mode indicator light illumination.**

- (1) Disconnect the AWD-ECU connector C-138.
- (2) Turn the ignition switch to the ON position.
- (3) The ACD mode indicator light does not illuminate.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the ACD mode indicator light not illuminate?

YES : Replace the AWD-ECU.

NO : Go to Step 2.



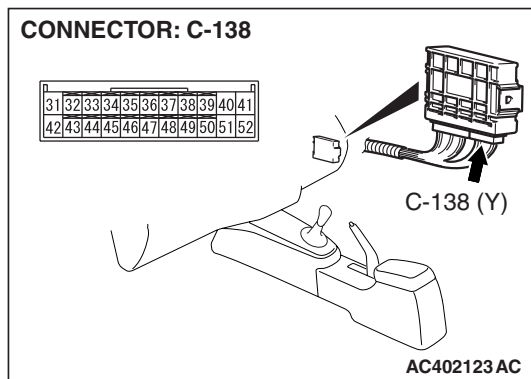
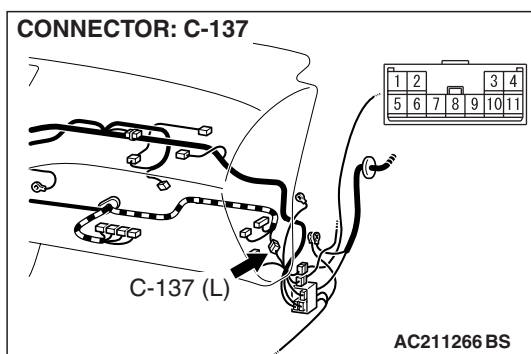
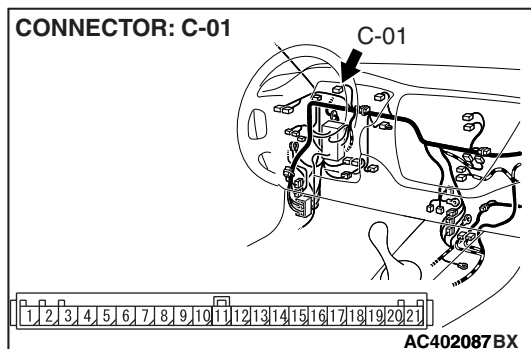
STEP 2. Check combination meter connector C-01, intermediate connector C-137 and AWD-ECU connector C-138 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

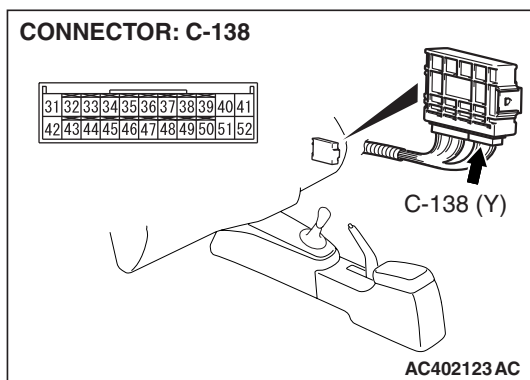
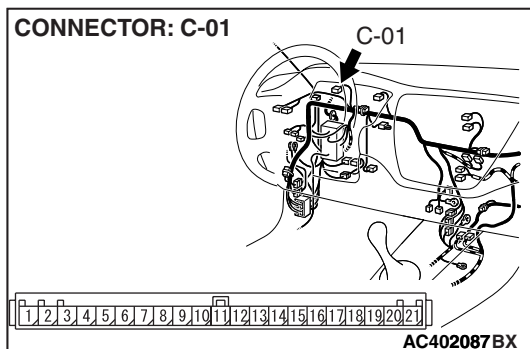
Q: Are the connectors and terminals in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)





STEP 3. Check the harness for open circuit short circuit between combination meter connector C-01 (terminals 10, 14, 15) and AWD-ECU connector C-138 (terminals 40, 52, 51).

Q: Is the harness wire in good condition?

YES : Replace the ACD mode indicator light assembly.

NO : Repair or replace the harness wire.

INSPECTION PROCEDURE 5: The ACD Does Not Operate (No Diagnosis Code)

COMMENT

Insufficient operating oil, oil leakage, faulty operations of the oil pressure unit, and faulty operations of the transfer may be suspected.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Leakage of transfer oil
- Insufficient transfer oil
- Leakage of oil pressure line
- Insufficient fluid
- Malfunction of the hydraulic unit
- Malfunction of the transfer

DIAGNOSIS

STEP 1. Check the transfer oil.

Refer to [P.22A-207](#).

Q: Is the check result normal?

YES : Go to Step 3.

NO : Go to Step 2.

STEP 2. Check the transfer oil leaks.

Check that the transfer oil is not leaking.

Q: Is the check result normal?

YES : Add the transfer oil.

NO : Repair the leaking part and add the transfer oil.

STEP 3. Check the fluid.

Refer to [P.22A-208](#).

Q: Is the check result normal?

YES : Go to Step 5.

NO : Go to Step 4.

STEP 4. Check the fluid leaks.

Check that the fluid is not leaking.

Q: Is the check result normal?

YES : Add the fluid.

NO : Repair the leaking part and add the fluid.

STEP 5. Check the ACD operation.

Refer to [P.22A-210](#).

Q: Is the check result normal?

YES : The procedure is complete.

NO : Go to Step 6.

STEP 6. Check the fluid pressure.

Refer to [P.22A-211](#).

Q: Is the check result normal?

YES : Go to Step 7.

NO : Go to Step 8.

STEP 7. Check the hydraulic pressure line.

Check that the hydraulic pressure line is not contaminated with foreign materials.

Q: Is the check result normal?

YES : Replace the transfer.

NO : Repair.

STEP 8. Perform air bleeding.

Refer to [P.22A-209](#).

Q: Is the check result normal?

YES : The procedure is complete.

NO : Replace the hydraulic pressure unit.

DATA LIST REFERENCE TABLE

M1221011200021

M.U.T.-III SCAN TOOL DISPLAY	ITEM No.	INSPECTION ITEM	INSPECTION REQUIREMENT		NORMAL CONDITION
ABS MONITOR	61	ABS monitor	ABS is currently operating		ON
			ABS is currently not operating		OFF
BATT. VOLTAGE	10	Battery voltage	Ignition switch: ON		System voltage
FL SNSR	02	ABS sensor <FL>	Execute actual driving		The speed meter display and scan tool display match.
FL SNSR SP	06	ABS sensor <FL> [0.2 km/h (0.12mph)]	Execute actual driving		The speed meter display and scan tool display match.
FR SNSR	01	ABS sensor <FR>	Execute actual driving		The speed meter display and scan tool display match.
FR SNSR SP	05	ABS sensor <FR> [0.2 km/h (0.12mph)]	Execute actual driving		The speed meter display and scan tool display match.
G S (LATERAL)	15	G-sensor (Lateral) voltage	Ignition switch: ON	Vehicle stopped (horizontal) state	2.4 – 2.6 V
				Perform actual driving	The displayed value increases and decreases mainly around 2.5 V.
G S (STRAIGHT)	14	G-sensor (Longitudinal) voltage	Ignition switch: ON	Vehicle stopped (horizontal) state	2.4 – 2.6 V
				Actual driving	The displayed value increases and decreases mainly around 2.5 V.
IDLE POS. SW	51	Idle switch	Ignition switch: ON	Accelerator pedal: Full closed	ON
				Accelerator pedal: Press	OFF
MODE SW	63	ACD mode switch	<ul style="list-style-type: none"> Ignition switch: ON Engine: Stopped 	ACD mode switch: Press	ON
				ACD mode switch: Release	OFF

M.U.T.-III SCAN TOOL DISPLAY	ITEM No.	INSPECTION ITEM	INSPECTION REQUIREMENT		NORMAL CONDITION
MOTOR MONITOR	57	Motor monitor	Electric pump motor is currently operating		ON
			Electric pump motor is currently not operating		OFF
OIL PRESS. SNS	18	Pressure sensor	During electric pump motor operations		1.0 – 1.6 MPa
OIL PRS. POWER	19	Pressure sensor power supply	Ignition switch: ON		Approx.5 V
PARKING BRAKE	62	Parking brake switch	<ul style="list-style-type: none"> Ignition switch: ON Engine: Stopped 	Parking brake lever: Pull	ON
				Parking brake lever: Release	OFF
PRSS. SW	58	Oil pressure state	Electric pump motor is currently operating		LOW
			Electric pump motor is currently not operating		HIGH
RL SNSR	04	ABS sensor <RL>	Execute actual driving		The speed meter display and scan tool display match.
RL SNSR SP	08	ABS sensor <RL> [0.2 km/h (0.12mph)]	Execute actual driving		The speed meter display and scan tool display match.
RR SNSR	03	ABS sensor <RR>	Execute actual driving		The speed meter display and scan tool display match.
RR SNSR SP	07	ABS sensor <RR> [0.2 km/h (0.12mph)]	Execute actual driving		The speed meter display and scan tool display match.
ST ANGL SPD	17	Steering angle velocity	Ignition switch: ON	Steering wheel: No steering	0 deg/s
				Steering wheel: Steer	The display changes according to the revolution speed.
ST-1	21	Steering angular velocity sensor voltage <ST-1>	Ignition switch: ON	Steering wheel: Turn	1 – 2 V and 2.5 – 4.5 V are displayed alternately.
ST-1	53	Steering angular velocity sensor voltage <ST-1>	Ignition switch: ON	Steering wheel: Turn slowly	ON and OFF are displayed alternately.

M.U.T.-III SCAN TOOL DISPLAY	ITEM No.	INSPECTION ITEM	INSPECTION REQUIREMENT		NORMAL CONDITION
ST-2	22	Steering angular velocity sensor voltage <ST-2>	Ignition switch: ON	Steering wheel: Turn	1 – 2 V and 2.5 – 4.5 V are displayed alternately.
ST-2	54	Steering angular velocity sensor voltage <ST-2>	Ignition switch: ON	Steering wheel: Turn slowly	ON and OFF are displayed alternately
ST-N	23	Steering angular velocity sensor voltage <ST-N>	Ignition switch: ON	Steering wheel: Neutral	1 – 2 V
				Steering wheel: Turn	2.5 – 4.5 V
ST-N	52	Steering angular velocity sensor voltage <ST-N>	Ignition switch: ON	steering wheel: Neutral	ON
				Steering wheel: Turn from the neutral position	OFF
ST-N MEMORY	55	Steering angular velocity sensor learning <ST-N>	Perform actual driving	Steering wheel sensor neutral position learning executed	ON
				Steering wheel sensor neutral position learning un-executed	OFF
STEER SNSR	16	Steering operation angle	Ignition switch: ON	Steering wheel: Steer by 90 degrees to the right	R90 deg
				Steering wheel: Steer by 90 degrees to the left	L90 deg
STOP LAMP SW	56	Stoplight switch	<ul style="list-style-type: none"> Ignition switch: ON Engine: Stopped 	Brake pedal: Depress	ON
				Brake pedal: Release	OFF
TPS	13	TPS voltage	<ul style="list-style-type: none"> Ignition switch: ON Engine: Stopped 	Accelerator pedal: Full closed	535 – 735 mV
				Accelerator pedal: Press	Gradually rises from the above value
				Accelerator pedal: Full throttle	4,500 – 5,000 mV

M.U.T.-III SCAN TOOL DISPLAY	ITEM No.	INSPECTION ITEM	INSPECTION REQUIREMENT	NORMAL CONDITION
VAL. PWR SPLY	20	Valve power supply	Ignition switch: ON	System voltage
VALVE CRT-4WD	11	Proportioning valve current	During ACD operation	50 – 1,000 mA
VEHICLE SPEED	09	Vehicle speed	Execute actual driving	The speed meter display and scan tool display match.

ACTUATOR TEST REFERENCE TABLE

M1221011300028

M.U.T.-III SCAN TOOL DISPLAY	ITEM No.	CHECK ITEM	TEST DESCRIPTION	NORMAL STATE
AIR BLEED-4 WD	01	Bleeding	Input current to the proportioning valve according to the steering angle, and operate the proportional valve for five minutes.	Make sure no air leaks from the bleeder screw on the transfer.
CONTRO L OFF	08	Control OFF	Turn OFF the electric pump relay, and turn OFF the control of the ACD.	In actual driving, there is difference between control ON and OFF.
MOTOR DRIVE	04	Electric pump drive	Operate the electric pump for 5 seconds.	Operation sounds of the electric pump can be heard.
OIL LEVEL	03	Check the oil volume	Operate the directioning valve to the left and right for 20 seconds.	Check that the oil volume of the reservoir tank is appropriate.
OP CHECK-4 WD	05	Check the operations of the ACD	Operate the proportioning valve and supply the maximum oil pressure to the multi plate clutch.	Generate the tight corner braking phenomenon.

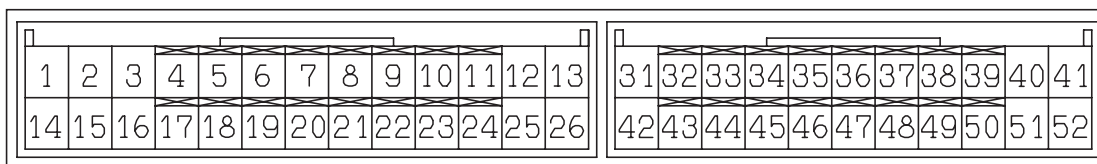
- The actuator test can be executed only when all the following conditions are satisfied.
 - All ABS sensor inputs below 20 km/h (12 mph).
 - No system malfunction detected.
 - Steering angle is within ± 30 degrees from the neutral position.
- When the actuator test corresponds to one of the following conditions, forced driving will be cleared.
 - When any one of the ABS sensor input is detected to be above 20 km/h (12 mph). (excluding Item No.08 "Control OFF").
 - When system malfunction is detected. (excluding diagnostic code No.82, 85).
 - When the forced drive time is exceeded.
 - When the scan tool is removed.
 - When the clear key of the scan tool is operated.

AWD-ECU TERMINAL VOLTAGE REFERENCE CHART FOR ACD

M1221011400025

C-139

C-138



AC310529AC

Terminal No.	Check item	Check condition		Normal state
1	Proportioning valve	Operate the Proportioning valve in the actuator test (Item No.01).	While executing the actuator test	System voltage
			After completing the actuator test	1 V or less
6	ABS sensor <FL>	Vehicle is stopping		1 V or less
		Moving forward slowly		0 ⇔ 5 V flushing
7	ABS sensor <RR>	Vehicle is stopping		1 V or less
		Moving forward slowly		0 ⇔ 5 V flushing
8	ABS sensor <RL>	Vehicle is stopping		1 V or less
		Moving forward slowly		0 ⇔ 5 V flushing
9	ABS sensor <FR>	Vehicle is stopping		1 V or less
		Moving forward slowly		0 ⇔ 5 V flushing
10	Pressure sensor earth	Any time		1 V or less
11	G-sensor (Lateral)	Ignition switch: ON Vehicle horizontal state		2.4 – 2.6 V
13	AWD-ECU power supply	Ignition switch: OFF		0 V
		Ignition switch: ON		System voltage
16	Electric pump relay power supply	When the electric pump motor is not operating		0 V
		While the electric pump motor is operating		System voltage
23	G-sensor (Longitudinal)	Ignition switch: ON Vehicle horizontal state		2.4 – 2.6 V
26	ECU earth	Any time		1 V or less
31	ECU backup power supply	Any time		System voltage
32	Pressure sensor	Ignition switch: ON		0.5 – 1.5 V
33	Steering angular velocity sensor <ST-1>	Ignition switch: ON	Steering wheel: Turn slowly	1 – 2 V ⇔ 2.5 – 4.5 V flushing
34	Steering angular velocity sensor <ST-2>	Ignition switch: ON	Steering wheel: Turn slowly	1 – 2 V ⇔ 2.5 – 4.5 V flushing

Terminal No.	Check item	Check condition		Normal state
36	Idle switch	Ignition switch: ON	Accelerator pedal: Full closed	1 V or less
			Accelerator pedal: Depress	4.5 – 5.0 V
37	Parking brake switch	Ignition switch: ON	Parking brake lever: Pull	1 V or less
			Parking brake lever: Release	System voltage
38	Stoplight switch	Ignition switch: ON	Brake pedal: Depress	System voltage
			Brake pedal: Release	1 V or less
39	TPS	Ignition switch: ON	Accelerator pedal: Full closed	0.5 – 0.7 V
			Accelerator pedal: Full throttle	4.5 – 5.5 V
40	ACD mode indicator light <TARMAC>	Ignition switch: ON	ACD mode indicator light position: TARMAC	0 V
			ACD mode indicator light position: Except for above	Approx.10.5 V
42	ECU earth	Any time		1 V or less
43	Pressure sensor power supply	Ignition switch: OFF		1 V or less
		Ignition switch: ON		Approx.5.0 V
44	Steering angular velocity sensor <ST-N>	Ignition switch: ON	Steering wheel: Neutral	1 – 2 V
			Steering wheel: Turn from the neutral position	2.5 – 4.5 V
47	ACD mode switch	Ignition switch: ON	Switch: Press	System voltage
			Switch: Release	0 V
48	ABS monitor	With ABS not active		System voltage
		With ABS active		1.5 V or less
51	ACD mode indicator light <SNOW>	Ignition switch: ON	ACD mode indicator light position: SNOW	0 V
			ACD mode indicator light position: Except for above	Approx.10.5 V
52	ACD mode indicator light <GRAVEL>	Ignition switch: ON	ACD mode indicator light position: GRAVEL	0 V
			ACD mode indicator light position: Except for above	Approx.10.5 V

MANUAL TRANSAXLE DIAGNOSIS <M/T>

INTRODUCTION

The manual transaxle can exhibit any of the following symptoms: noise or vibration is generated, oil leaks, shifting gears is hard or troublesome, or the transaxle jumps out of gear.

The causes of these symptoms could come from: incorrect mounting, the oil level may be low, or a component of the transaxle may be faulty.

M1221006900723

TROUBLESHOOTING STRATEGY

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a manual transaxle fault.

1. Gather information from the customer.

2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify malfunction is eliminated.

M1221007000648

SYMPTOM CHART

M1221007100645

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Noise, Vibration	1	P.22A-200
Oil Leaks	2	P.22A-202
Hard Shifting	3	P.22A-202
Jumps Out of Gear	4	P.22A-203

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Noise, Vibration

DIAGNOSIS

STEP 1. Check the idle speed.

Q: Does the idle speed meet the standard values?

YES : Go to Step 2.

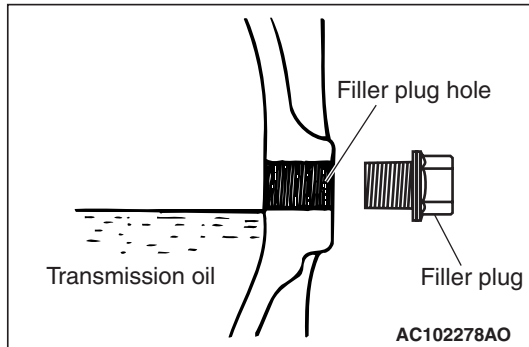
NO : Refer to GROUP 11A, Specifications - Curb Idle Speed Check [P.11A-63](#).

STEP 2. Check whether the transaxle and engine mount is loose or damaged.

Q: Are the transaxle and engine mount loose or damaged?

YES : Tighten or replace the part. Then go to Step 7.

NO : Go to Step 3.



STEP 3. Check that the oil level is up to the lower edge of the filler plug hole.

Q: Is the oil level up to the lower edge of the filler plug hole?

YES : Go to Step 4.

NO : Refill gear oil API classification GL- 4 SAE 75W–85W or 75W–90 <W5M51> or DIA QUEEN SUPER MULTI GEAR 75W- 80W (GL- 4) or exact equivalent <W6MAA>. Then go to Step 7.

STEP 4. Check for the specified oil.

Q: Is the specified oil gear oil API classification GL- 4 SAE 75W– 85W or 75W–90 <W5M51> or DIA QUEEN SUPER MULTI GEAR 75W–80W (GL- 4) or exact equivalent <W6MAA>?

YES : Go to Step 5.

NO : If in doubt, replace the oil. Refer to [P.22A-207](#). Then go to Step 7.

STEP 5. Remove the transaxle. Check the end play of the input and output shafts.

Q: Does the end play of the input and output shafts meet the standard value?

YES : Go to Step 6.

NO : Adjust the end play of the input and output shafts. Then go to Step 7.

STEP 6. Disassemble the transaxle. Check the gears for wear and damage.

Q: Are the gears worn or damaged?

YES : Replace the gears. Go to Step 7.

NO : Go to Step 7.

STEP 7. Retest the systems.

Q: Is the noise or vibration still there?

YES : Return to Step 1.

NO : The procedure is complete.

INSPECTION PROCEDURE 2: Oil Leaks

DIAGNOSIS

STEP 1. Visual check.

Raise the vehicle, and check for oil leaks. If oil leak is difficult to locate, steam clean the transaxle and drive the vehicle for at 10 minutes. Then check the leak again.

Q: Is the oil leak(s) found?

YES : Go to Step 2.

NO : Check for the oil leaks around the engine.
Then go to Step 4.

STEP 2. Visual check at the clutch housing.

Q: Do oil leaks appear around the joint between the engine and the clutch housing?

YES : Remove the transaxle. Check the input shaft oil seal, and replace if necessary.
Then go to Step 4.

NO : Go to Step 3.

STEP 3. Check the oil seal or O-ring for damage.

Q: Is the oil seal or O-ring damaged?

YES : Replace the oil seal or the O-ring. Then go to Step 4.

NO : Go to Step 4.

STEP 4. Retest the system.

Q: Is the oil still leaking?

YES : Return to Step 1.

NO : The procedure is complete.

INSPECTION PROCEDURE 3: Hard Shifting

DIAGNOSIS

STEP 1. Check the transaxle control

Q: Are the shift cable and the select cable in good condition?

YES : Go to Step 2.

NO : Repair or replace the shift cable and the select cable. Refer to [P.22A-214](#) <W5M51> or Refer to [P.22A-219](#) <W6MAA>. Then go to Step 7.

STEP 2. Check the transmission oil.

Q: Is the oil dirty?

YES : Replace the oil. Refer to [P.22A-207](#). Then go to Step 7 .

NO : Go to Step 3.

STEP 3. Check the clutch system.

Q: Is the clutch system normal?

YES : Go to Step 4.

NO : Repair or replace the clutch system. Refer to GROUP 21B <W5M51> – Clutch [P.21B-2](#) or GROUP 21C <W6MAA> – Clutch [P.21B-2](#). Then go to Step 7.

STEP 4. Remove and disassemble the transaxle. Check the control housing.

Q: Is the control housing in good condition?

YES : Go to Step 5.

NO : Repair or replace the control housing. Refer to GROUP 22B <W5M51> –Transaxle [P.22B-6](#) or GROUP 22C <W6MAA> – Transaxle [P.22C-7](#). Then go to Step 7.

STEP 5. Check for poor meshing of worn synchronizer ring and gear cone.

Q: Is poor meshing or worn synchronizer ring and gear cone found?

YES : Repair or replace the synchronizer ring and gear cone. Then go to Step 7.

NO : Go to Step 6.

STEP 6. Check the synchronizer spring for weakness.

Q: Is the synchronizer spring weak?

YES : Replace the synchronizer spring. Then go to Step 7.

NO : Go to Step 7.

STEP 7. Retest the system.

Q: Is the shifting of the gears still hard?

YES : Return to Step 1.

NO : The procedure is complete.

INSPECTION PROCEDURE 4: Jumps Out of Gear

DIAGNOSIS

STEP 1. Check the transaxle control

Q: Are the shift cable and the select cable in good condition?

YES : Go to Step 2.

NO : Repair or replace the shift cable and the select cable. Refer to [P.22A-214](#) <W5M51> or Refer to [P.22A-219](#) <W6MAA>. Then go to Step 6.

STEP 2. Remove and disassemble the transaxle. Check the poppet spring for breakage.

Q: Is the poppet spring broken?

YES : Replace the poppet spring. Refer to GROUP 22B <W5M51> –Transaxle [P.22B-6](#) or GROUP 22C <W6MAA> – Transaxle [P.22C-7](#). Then go to Step 6.

NO : Go to Step 3.

STEP 3. Check the control housing.

Q: Is the control housing in good condition?

YES : Go to Step 4.

NO : Repair or replace the control housing. Refer to GROUP 22B <W5M51> –Transaxle [P.22B-6](#) or GROUP 22C <W6MAA> – Transaxle [P.22C-7](#). Then go to Step 6.

STEP 4. Check the gear shift forks for wear.

Q: Is the gear shift forks worn?

YES : Replace the gear shift fork. Refer to GROUP 22B <W5M51> –Transaxle [P.22B-6](#) or GROUP 22C <W6MAA> – Transaxle [P.22C-7](#).

NO : Go to Step 5.

STEP 5. Check the clearance.

Q: Is the clearance between the synchronizer hub and sleeve excessive?

YES : Replace the synchronizer hub or sleeve. Refer to GROUP 22B <W5M51> –Input Shaft [P.22B-16](#), Output Shaft [P.22B-24](#) or GROUP 22C <W6MAA> –Input Shaft [P.22B-16](#), Transaxle [P.22C-7](#). Then go to Step 6.

NO : Go to Step 6.

STEP 6. Retest the system.

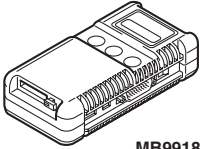
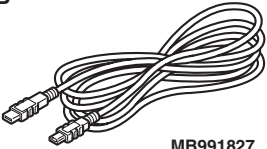

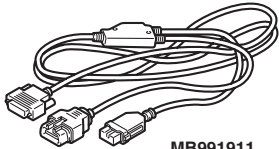
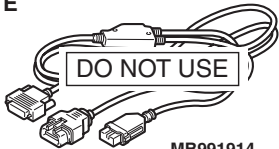
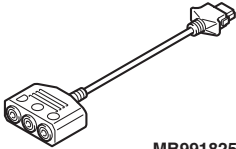
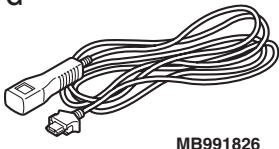
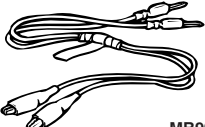

Q: Does the transaxle still jump out of gear?

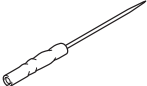
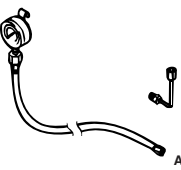

YES : Return to Step 1.

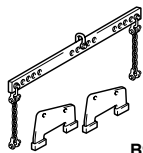
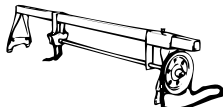
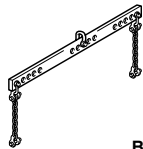
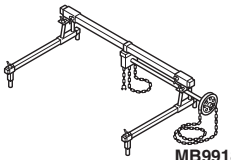
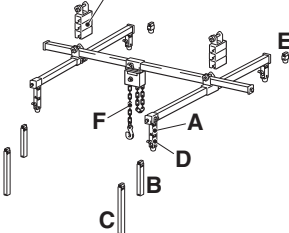
NO : The procedure is complete.

SPECIAL TOOLS

M1221000600843

TOOL	TOOL NUMBER AND NAME	SUPERSESSON	APPLICATION
<p>A</p>  <p>MB991824</p> <p>B</p>  <p>MB991827</p> <p>C</p>  <p>MB991910</p> <p>D</p>  <p>MB991911</p> <p>E</p>  <p>MB991914</p> <p>F</p>  <p>MB991825</p> <p>G</p>  <p>MB991826 MB991958</p>	<p>MB991958</p> <p>A: MB991824</p> <p>B: MB991827</p> <p>C: MB991910</p> <p>D: MB991911</p> <p>E: MB991914</p> <p>F: MB991825</p> <p>G: MB991826</p> <p>M.U.T.-III sub assembly</p> <p>A: Vehicle communication interface (V.C.I.)</p> <p>B: M.U.T.-III USB cable</p> <p>C: M.U.T.-III main harness A (Vehicles with CAN communication system)</p> <p>D: M.U.T.-III main harness B (Vehicles without CAN communication system)</p> <p>E: M.U.T.-III main harness C (for Daimler Chrysler models only)</p> <p>F: M.U.T.-III measurement adapter</p> <p>G: M.U.T.-III trigger harness</p>	<p>MB991824-KIT</p> <p><i>NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.</i></p>	<p>Checking diagnostic trouble codes</p> <p>⚠ CAUTION</p> <p>If you connect M.U.T.-III main harness A to a vehicle without CAN communication system to use the M.U.T.-III, a pulse signal may interfere with the simulated vehicle speed lines, thus causing the M.U.T.-III inoperative. Therefore, use the M.U.T.-III main harness B (MB991911) instead.</p>
 <p>MB991529</p>	<p>MB991529</p> <p>Diagnostic trouble code check harness</p>	<p>Tool not necessary if scan tool (M.U.T.-III) is available.</p>	<p>For checking of ACD</p>
 <p>MB991348</p>	<p>MB991348</p> <p>Test harness set</p>	<p>MB991348-01</p>	<p>Inspection using an oscilloscope</p>

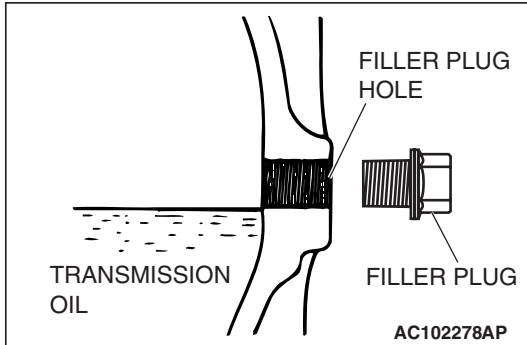
TOOL	TOOL NUMBER AND NAME	SUPERSESSON	APPLICATION
 MB992006	MB992006	Extra fine probe	Continuity check and voltage measurement at harness wire or connector
 AC103525	MD998330 (Includes MD998331) Oil pressure gauge (3.0 MPa, 427 psi)	MD998330-01	Measurement of hydraulic pressure
 MB991705	MB991705 Adapter	—	Connection for oil pressure gauge

TOOL	TOOL NUMBER AND NAME	SUPERSESION	APPLICATION
 B991453	MB991453 Engine hanger assembly	MZ203827-01	When the engine hanger is used: Supporting the engine assembly during removal and installation of the transaxle assembly <i>NOTE: Special tool MB991454 is a part of engine hanger attachment set MB991453.</i>
 MZ203827	GENERAL SERVICE TOOL MZ203827 Engine lifter	MZ203827-01	
 B991454	MB991454 Engine hanger balancer	MZ203827-01	
 MB991895	MB991895 Engine hanger	—	
SLIDE BRACKET (HI)  B991928	MB991928 Engine hanger A: MB991929 Joint (50) × 2 B: MB991930 Joint (90) × 2 C: MB991931 Joint (140) × 2 D: MB991932 Foot (standard) × 4 E: MB991933 Foot (short) × 2 F: MB991934 Chain and hook assembly	—	

ON-VEHICLE SERVICE

TRANSMISSION OIL LEVEL CHECK

M1221000900521



1. Remove the filler plug.
2. Check that the oil level is up to the lower edge of the filler plug hole.
3. Check that the oil is not noticeably dirty.
4. Tighten the filler plug to the specified torque.

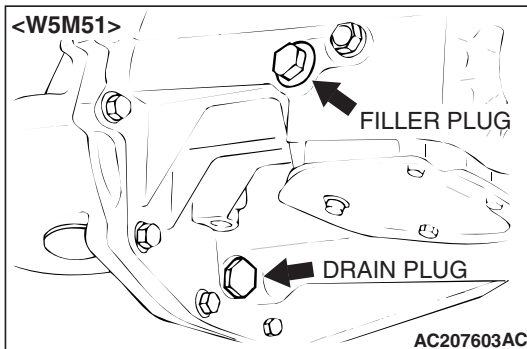
Tightening torque:

<W5M51> 32 ± 2 N·m (23 ± 2 ft-lb)

<W6MAA> 35 ± 4 N·m (26 ± 3 ft-lb)

TRANSMISSION OIL REPLACEMENT

M1221001000468



1. Remove the filler plug.
2. Remove the drain plug and drain the oil.
3. Tighten the oil drain plug to the specified torque.

Tightening torque <W5M51>: 32 ± 2 N·m (23 ± 2 ft-lb)

Tightening torque <W6MAA>: 35 ± 4 N·m (26 ± 3 ft-lb)

4. Fill with specified oil till the level comes to the lower portion of oil filler plug hole.

Specified transmission oil <W5M51>: Gear oil API classification GL- 4 SAE 75W-85W or 75W- 90

Specified transmission oil <W6MAA>: DIA QUEEN SUPER MULTI GEAR SAE 75W- 85 (GL- 4) or exact equivalent

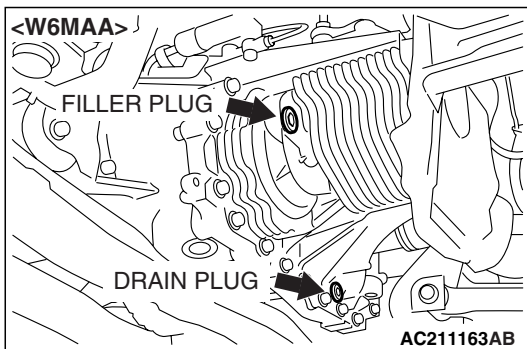
Quantity <W5M51>: 2.8 dm^3 (2.9 quart)

Quantity <W6MAA>: 2.2 dm^3 (2.3 quart)

5. Tighten the oil filler plug to the specified torque.

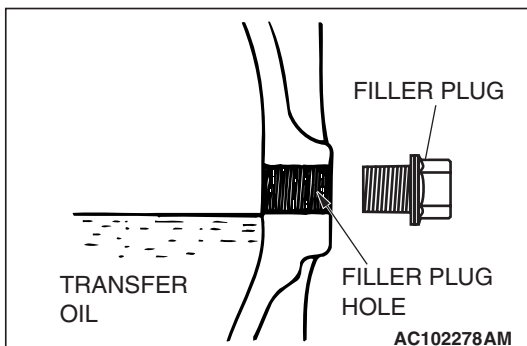
Tightening torque <W5M51>: 32 ± 2 N·m (23 ± 2 ft-lb)

Tightening torque <W6MAA>: 35 ± 4 N·m (26 ± 3 ft-lb)



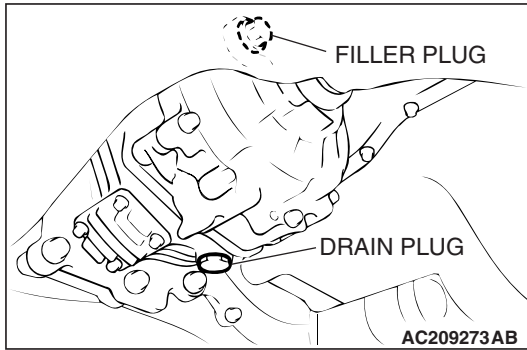
TRANSFER OIL CHECK

M1221001100131



1. Remove the filler plug.
2. Check that the oil level is up to the lower edge of the filler plug hole.
3. Check that the oil is not noticeably dirty. Replace if necessary.
4. Tighten the filler plug to the specified torque.

Tightening torque: 32 ± 2 N·m (23 ± 2 ft-lb)



TRANSFER OIL REPLACEMENT

M1221001200116

1. Remove the filler plug.
2. Remove the drain plug and drain the oil.
3. Tighten the drain plug to the specified torque.
Tightening torque: $32 \pm 2 \text{ N} \cdot \text{m}$ ($23 \pm 2 \text{ ft-lb}$)
4. Fill with MITSUBISHI limited slip differential oil (LSD) or equivalent until the level comes to the lower portion of filler plug hole.

Quantity: 0.6 dm^3 (0.63 quart)

5. Tighten the filler plug to the specified torque.

Tightening torque: $32 \pm 2 \text{ N} \cdot \text{m}$ ($23 \pm 2 \text{ ft-lb}$)

FLUID CHECK

M1221011500022

1. <Not using scan tool MB991958>
 - If the vehicle has been run, leave it for 90 min. or more in an ordinary temperature [$10^\circ \text{C} - 30^\circ \text{C}$ ($50^\circ \text{F} - 86^\circ \text{F}$)] to allow the accumulator internal pressure to drop.

NOTE: If the ambient temperature is 10°C (50°F) or less, allow more time to leave the vehicle to stand idle.

2. <Using scan tool MB991958>

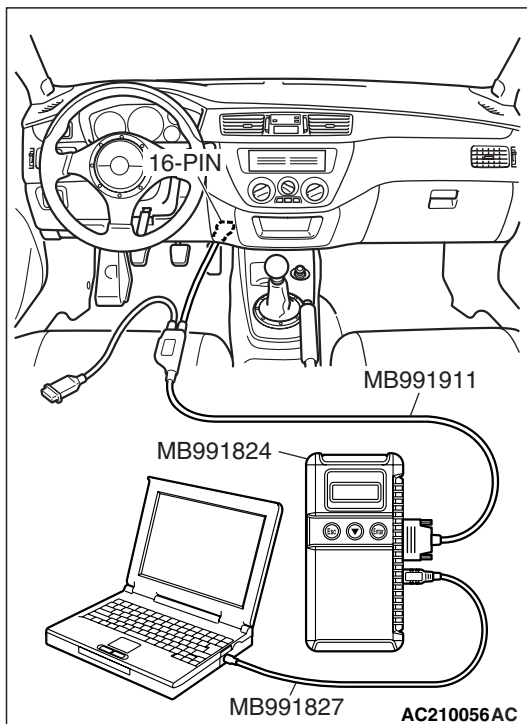
⚠ CAUTION

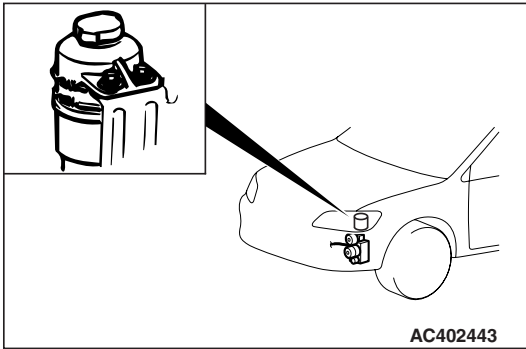
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- Connect scan tool MB991958 to the data link connector.
- Turn "ON" the ignition switch, perform scan tool MB991958 actuator test (Item No.03), forcibly drive the hydraulic unit and remove the pressure in the accumulator.

NOTE:

- In the actuator test (Item No.03: Oil Level Check Mode), the proportioning valve of the hydraulic unit is moved to the left and right for 20 times, and then the differential is cleared automatically. Drive can also be cleared forcibly using the clear key of the scan tool MB991958.
- If the function has been stopped by fail-safe, the hydraulic unit cannot be cleared forcibly.





3. Check that the fluid level in the oil reservoir is in the range between MAX and MIN.
4. If the fluid level is lower than MIN, add the specified fluid.
Specified fluid: DIAMOND ATF SP III
5. Reinstall the maintenance lid.

BLEEDING

M1221011600029

⚠ CAUTION

If bleeding is not performed completely, noise may be produced from the hydraulic unit, or the durability of the pump, etc. may drop.

1. Lift up the vehicle.

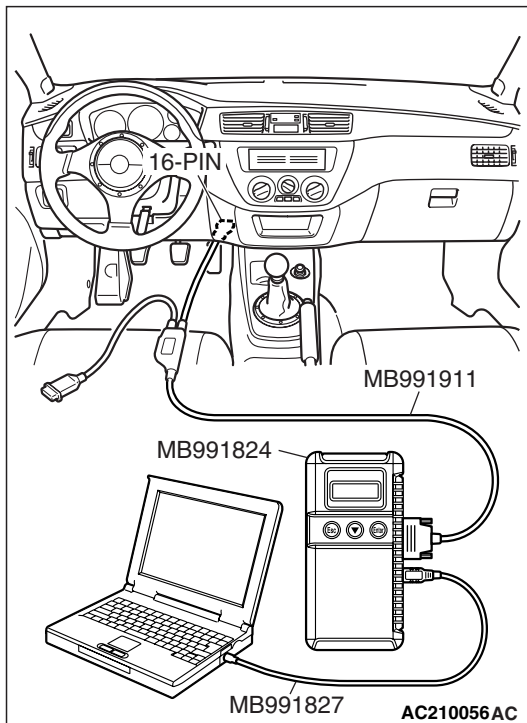
⚠ CAUTION

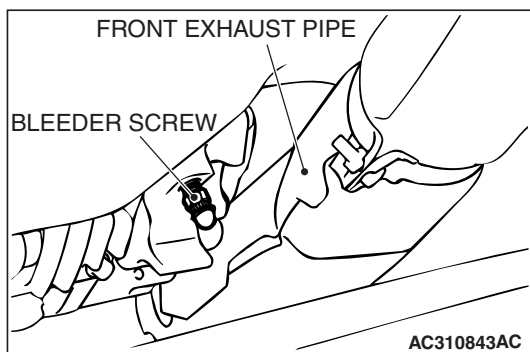
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

2. Connect scan tool MB991958 to the data link connector.
3. Turn the ignition switch to the "ON" position.
4. Set the steering wheel in the straight-ahead position.
5. Perform the scan tool actuator test (Item No.01), and forcibly drive the hydraulic unit.

NOTE:

- The actuator test (Item No.01: Bleeding Mode) will be performed for 5 minutes, after which it will be cleared automatically. Drive can also be cleared during forced driving using the clear key of the scan tool MB991958.
- If the hydraulic unit function has been stopped by fail-safe, the hydraulic unit cannot be forcibly driven.





6. Remove the cap of the bleeder screw on the transfer, and connect the vinyl hose.

⚠ CAUTION

During bleeding, replenish the fluid so that some always remains in the oil reservoir.

7. Slowly turn the steering wheel to the left or right from the neutral state. Loosen the bleeder screw, and check that air is discharged together with the fluid.
8. After the air is discharged, tighten the bleeder screw, and return the steering wheel to the neutral state.
9. Repeat steps 6 and 7 several 2 to 3 times, and after checking that no more air mixes in, tighten the bleeder screw at the specified torque.

Tightening torque: 5 ± 1 N·m (44 ± 9 in-lb)

10. After bleeding, check the fluid level. (Refer to [P.22A-208](#)).

ACD OPERATION CHECK

M1221011700048

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1. Connect scan tool MB991958 to the data link connector.
2. Start the engine.
3. Set the steering wheel to the neutral position, and carry out the actuator test (Item No.05) using scan tool MB991958. Then, activate the transfer forcibly.

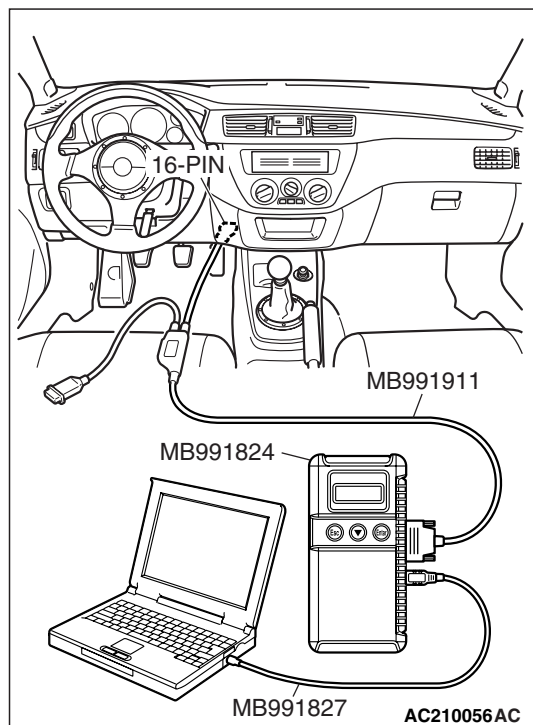
NOTE:

- Actuator test (Item No.05: ACD operation check mode) is activated for 1 minute and is deactivated automatically. In addition, it can be forcibly deactivated by the clear key of scan tool MB991958.
- When the ACD is not working due to a fail-safe function, the transfer cannot be activated forcibly.

4. Turn the steering wheel 180 ° or more to the right or left, and drive the vehicle at 20km/h (12 mph) or less to check that tight corner braking occurs.

NOTE:

- The occurrence level of the body vibration and noise depends on the condition of tires and roads.
- If tight corner braking does not occur, check the hydraulic pressure because the system may be defective.



M1221011800045

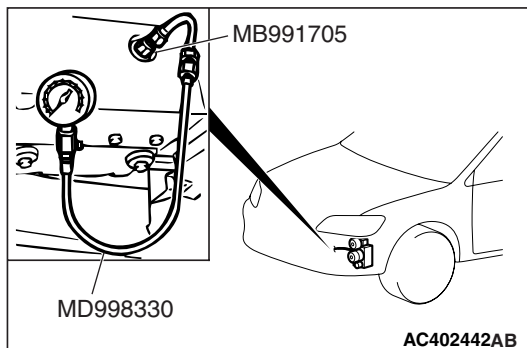
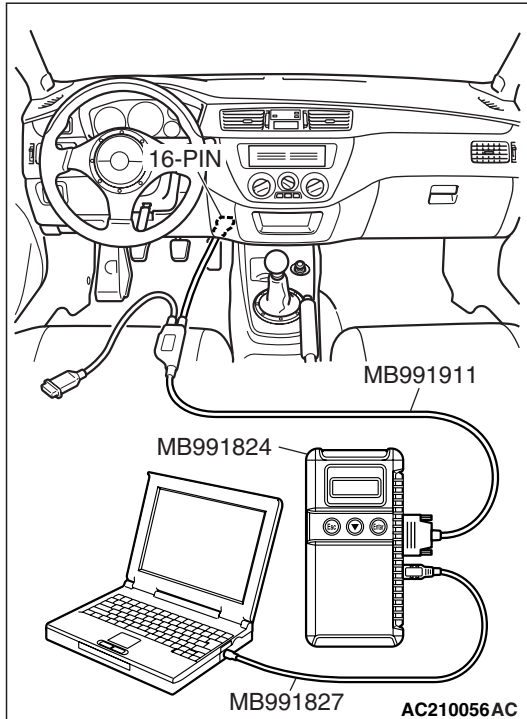
HYDRAULIC PRESSURE CHECK

1. Lift up the vehicle.

CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

2. Connect scan tool MB991958 to the data link connector.



3. Disconnect the hydraulic unit and transfer connector assembly, and connect the special tools (3.0 MPa (427 psi) oil pressure gauge [MD998330] and adapter [MB991705]) to the hydraulic unit.
4. Turn the ignition switch to the "ON" position.
5. Perform the scan tool MB991958 actuator test (Item No.05), and forcibly drive the hydraulic unit.

NOTE:

- The actuator test (Item No.05 ACD Operation Check Mode) is performed for 1 minute, after which it will be cleared automatically. Drive can also be cleared during forced driving using the clear key of the scan tool MB991958.
- If the hydraulic unit function has been stopped by fail-safe, the hydraulic unit cannot be forcibly driven.

CAUTION

While the oil pressure is checked, add fluid as necessary to ensure that it is left in the oil reservoir during the entire procedure.

6. Check that the generated oil pressure of the hydraulic unit satisfies the standard value.

Standard value: 1.0 – 1.6 MPa (145 – 232 psi)

7. If the measured value exceeds the standard value, replace the hydraulic unit.

8. Connect the hydraulic unit and transfer connector assembly, and tighten the flare nut at the specified torque.

Tightening torque:

34 ± 5 N· m (25 ± 4 ft-lb) (when screw is dry)
26 ± 4 N· m (19 ± 3 ft-lb) (when screw is applied with oil)

9. Supply the specified fluid up to the MAX level of the oil reservoir, and bleed the oil pressure pipes.

Specified fluid: DIAMOND ATF SP III

ABS SENSOR OUTPUT VOLTAGE MEASUREMENT

M1221011900031

Lift the vehicle, and release the parking brake.

⚠ CAUTION

Insert the probe from the harness of the connector. Inserting in the terminal side may cause contact fault.

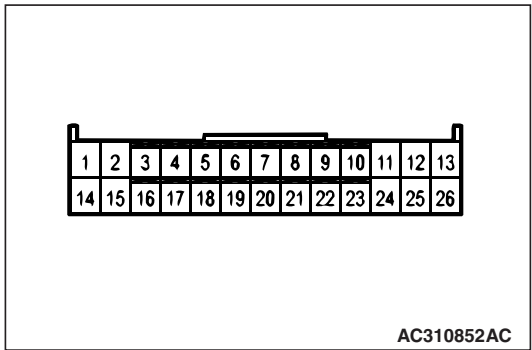
1. Disconnect the AWD-ECU connector, and measure at the connector of the harness.
2. Rotate the measured wheel by about 1/2 to 1 rotations/second, and check the output voltage between the following terminals using a circuit tester (AC mV range) or oscilloscope.

FRONT LEFT	FRONT RIGHT	REAR LEFT	REAR RIGHT
Terminal No.6 and No.19	Terminal No.9 and No.22	Terminal No.8 and No.21	Terminal No.7 and No.20

Output voltage:

Above 70 mV when measured with the circuit tester
Above 200 mVP-P when measured with the oscilloscope

3. If the output voltage is lower than the above values, the following reasons may be suspected. Check or replace the ABS sensor.
- Excessive clearance between the ball piece of the ABS sensor and ABS rotor
 - ABS sensor fault



INSPECTION PROCEDURE USING OSCILLOSCOPE

After checking the connected state of the harness of the ABS sensor and connector, and measure the output voltage waveform of each ABS sensor on the oscilloscope as follows. Start the engine, shift the transaxle to the 1st gear to rotate the driving wheel, and rotate the non-driving wheel at constant velocity with the hand.

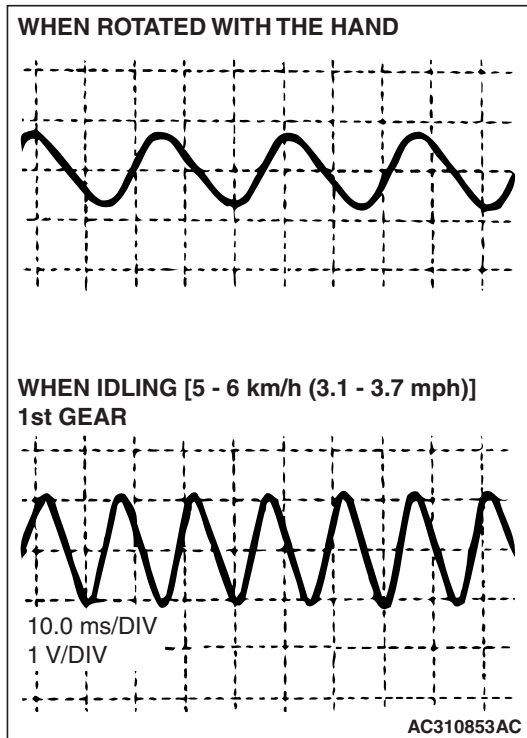
NOTE:

- It is also possible to actually drive the vehicle and observe the waveform.
- The output voltage is low if the wheel speed is low and gradually increases as the speed increases.

⚠ CAUTION

As the ABS sensor cable follows the movement of the front or rear suspension, it will change considerably on poor condition roads. Therefore, also observe the output voltage waveform of the ABS sensor with the sensor harness vibrated to simulate special conditions such as driving in poor road conditions.

<WAVEFORM OBSERVATION POINTS>



PHENOMENON	PROBABLE CAUSE	SOLUTION
Waveform amplitude is too small or not output at all	ABS sensor fault	Replace the sensor
Excessive waveform amplitude (However allowed if above the minimum amplitude of 100 mV)	Excessive vibration or concentricity of the axle hub	Replace the hub
	AWD-ECU earth fault	Correct
Noise in the waveform or waveform is abnormal	Open circuit of the sensor	Replace the sensor
	Open circuit of the harness	Replace the harness
	ABS sensor installation fault	Correct the installation of the sensor
	Chipping or flattening of the ABS rotor	Replace the ABS rotor

TRANSAXLE CONTROL

REMOVAL AND INSTALLATION

M1221003800675

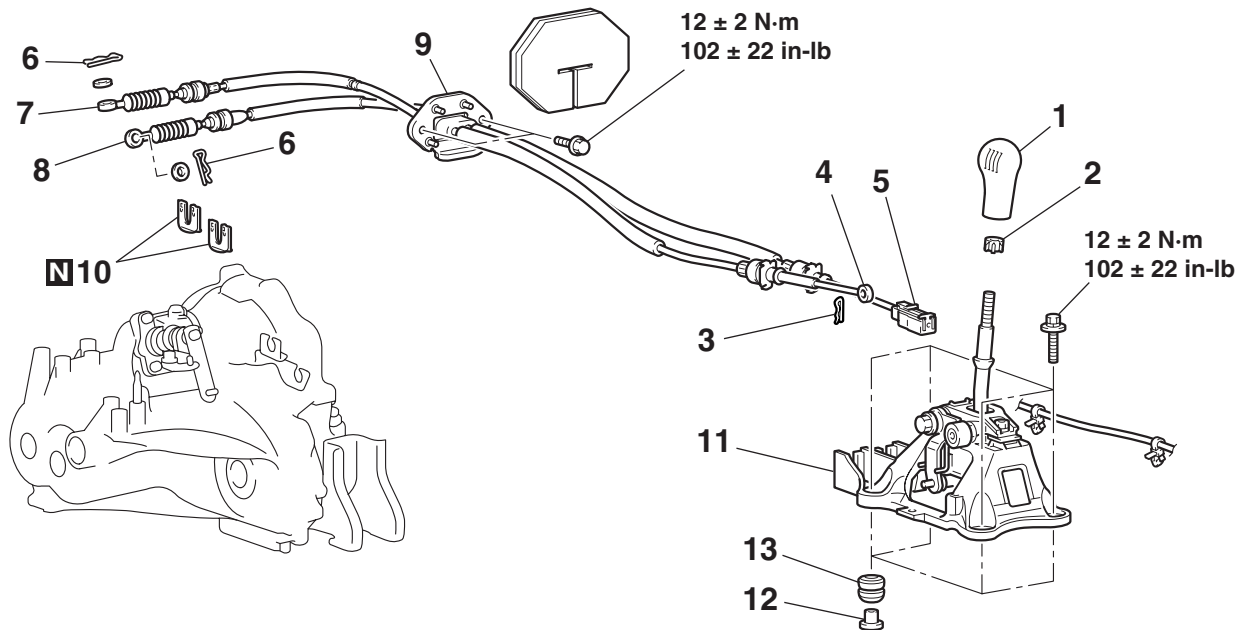
<W5M51>

⚠ WARNING

Be careful not to subject the SRS-ECU to any shocks during removal and installation of the shift cable and select cable assembly.

Pre-removal and Post-installation Operation

- Air Cleaner Assembly Removal and Installation (Refer to GROUP 15, Air Cleaner [P.15-7](#)).
- Battery and Battery Tray Removal and Installation.



AC302225AC

**SHIFT CABLE AND SELECT
CABLE ASSEMBLY REMOVAL
STEPS**

- >>D<< 1. SHIFT KNOB
>>D<< 2. SLEEVE
• FRONT FLOOR CONSOLE (REFER TO GROUP 52A, FRONT FLOOR CONSOLE ASSEMBLY [P.52A-7](#)).
3. SNAP PIN
4. SELECT CABLE CONNECTION (SHIFT LEVER SIDE)
- <<A>> >>C<< 5. SHIFT CABLE CONNECTION (SHIFT LEVER SIDE)
6. SNAP PIN
>>B<< 7. SELECT CABLE CONNECTION (TRANSAXLE SIDE)
- >>B<< 8. SHIFT CABLE CONNECTION (TRANSAXLE SIDE)
• HEATER UNIT (REFER TO GROUP 55, HEATER UNIT, HEATER CORE AND EVAPORATOR UNIT [P.55-103](#)).

**SHIFT CABLE AND SELECT
CABLE ASSEMBLY REMOVAL
STEPS (Continued)**

- >>B<< 9. SHIFT CABLE AND SELECT CABLE ASSEMBLY
<> >>A<< 10. GEARSHIFT LINK CLIP

**SHIFT LEVER ASSEMBLY
REMOVAL STEPS**

- >>D<< 1. SHIFT KNOB
>>D<< 2. SLEEVE
• FRONT FLOOR CONSOLE (REFER TO GROUP 52A, FRONT FLOOR CONSOLE ASSEMBLY [P.52A-7](#)).
3. SNAP PIN
4. SELECT CABLE CONNECTION (SHIFT LEVER SIDE)
- <<A>> >>C<< 5. SHIFT CABLE CONNECTION (SHIFT LEVER SIDE)
11. SHIFT LEVER ASSEMBLY
12. DISTANCE PIECE
13. BUSHING

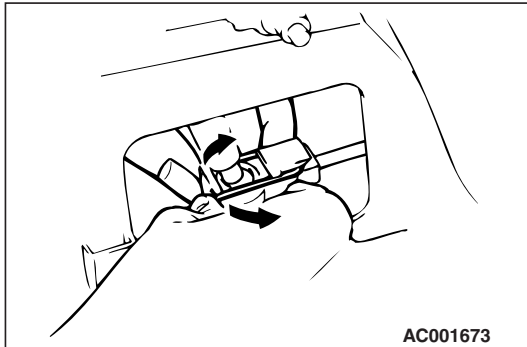
REMOVAL SERVICE POINT

<<A>> SHIFT CABLE CONNECTION (SHIFT LEVER SIDE) REMOVAL

CAUTION

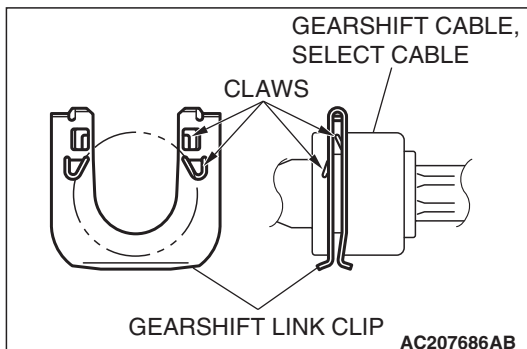
Be careful not to disengage the clip from the shift cable or deform it.

Expand the clip at the shift cable end toward the arrow direction, and remove the cable from the shift lever by pushing the shift cable down.



<> GEARSHIFT LINK CLIP REMOVAL

Push up the claws of the gearshift link clip using a screwdriver, etc., and then remove the gearshift link clip from the bracket together with the cables.



INSTALLATION SERVICE POINTS

>>A<< GEARSHIFT LINK CLIP INSTALLATION

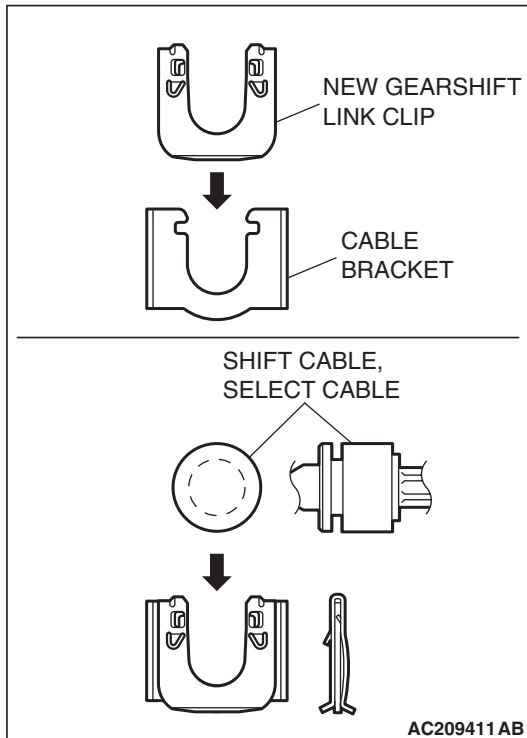
⚠ CAUTION

Insert thoroughly the gearshift link clip, shift cable and select cable until they click in place.

1. After installing the new gearshift link clip to the cable bracket of the transaxle, install the shift cable and select cable to the cable bracket.

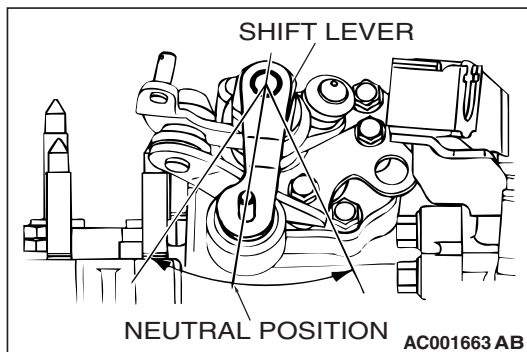
NOTE: The clip is reversible.

2. Move the shift lever to all positions and check that the operation is smooth.

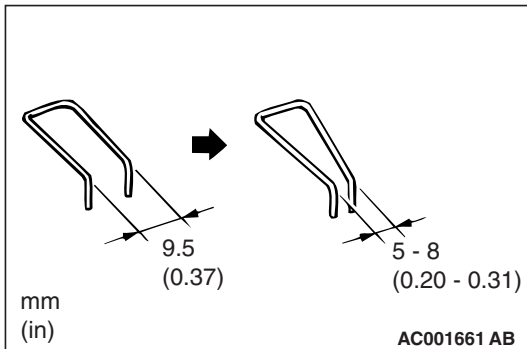


>>B<< SHIFT CABLE AND SELECT CABLE ASSEMBLY/SHIFT CABLE CONNECTION (TRANSAXLE SIDE)/SELECT CABLE CONNECTION (TRANSAXLE SIDE) INSTALLATION

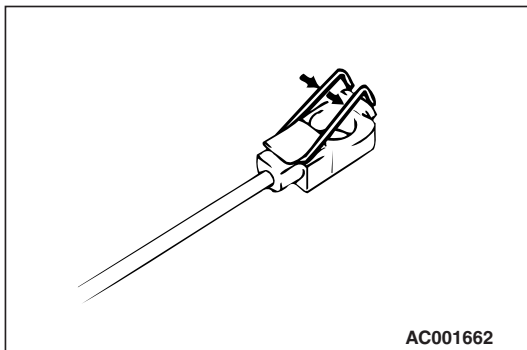
1. Set the transaxle side shift lever and the passenger compartment side shift lever to the neutral position.
2. For the transaxle side, the white and yellow paint marks on the shift and select cable ends should face the snap pins.
3. Move the shift lever to all positions and check that the operation is smooth.



>>C<< SHIFT CABLE CONNECTION (SHIFT LEVER SIDE) INSTALLATION



1. Make sure that there is no excessive play at the shift cable end clip. If there is excessive play or the clip is disengaged from the shift cable end, check the clip opening gap. If the gap is more than 9.5 mm (0.37 inch), squeeze the clip until the gap reaches 5 to 8 mm (0.20 to 0.31 inch).



2. Engage the clip with the shift cable hook securely, and push the clip with your thumbs until it clicks in place.
3. Install the shift cable to the shift lever.

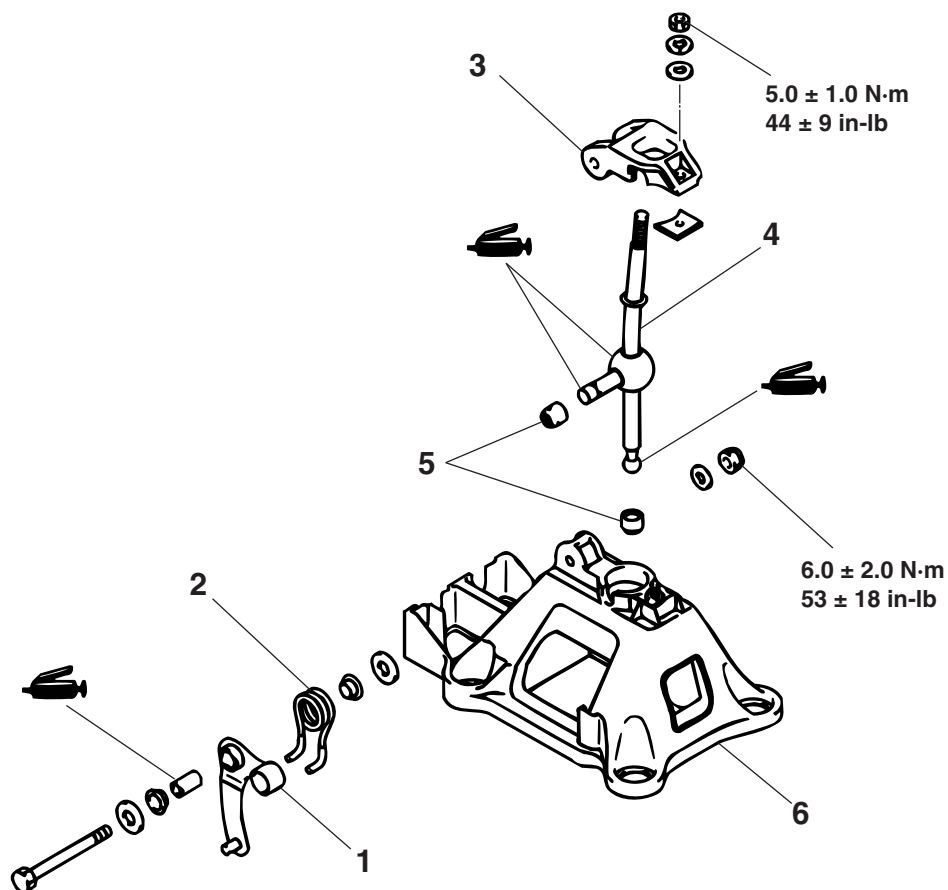
>>D<< SLEEVE/SHIFT KNOB INSTALLATION

1. Place the sleeve over the shift lever end.
2. Place the shift knob over the sleeve.
3. Screw in the shift knob. When the shift knob is hard to turn (approximately seven turns), screw in the shift knob four additional turns until its shift pattern faces forward.

SHIFT LEVER ASSEMBLY <W5M51>

DISASSEMBLY AND ASSEMBLY

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DISASSEMBLY STEPS

1. SELECT LEVER
2. RETURN SPRING
3. RETAINER

DISASSEMBLY STEPS

4. SHIFT LEVER
5. SHIFT LEVER BUSHING
6. LEVER BASE

REMOVAL AND INSTALLATION

M1221003800686

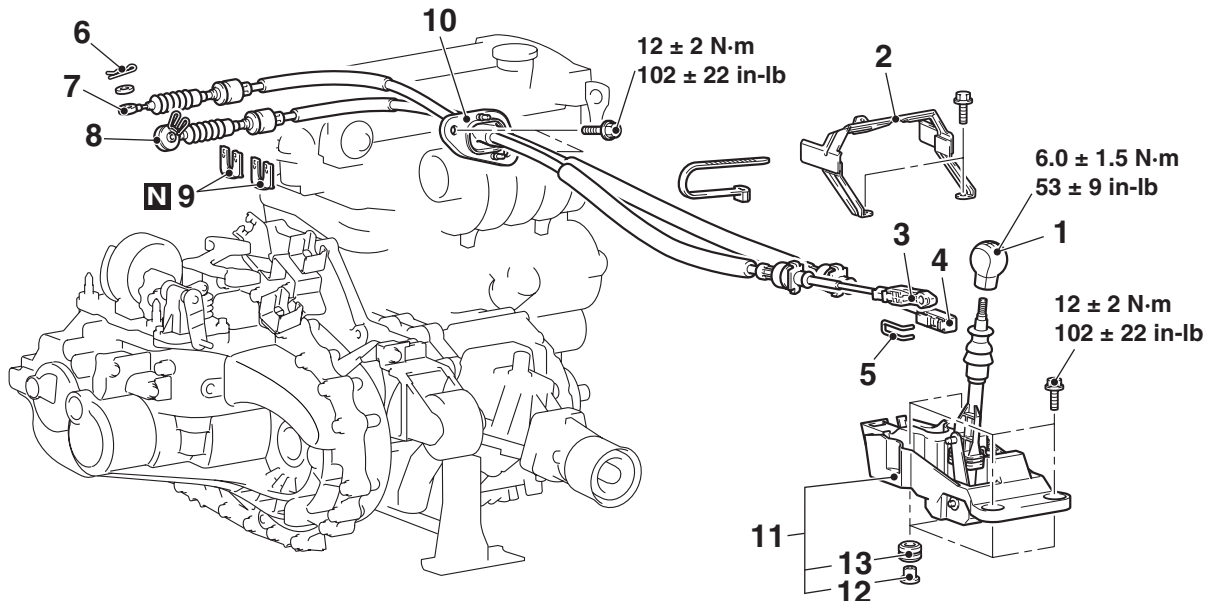
<W6MAA>

⚠ WARNING

1. **When removing and installing the shift cable & select cable assembly and the shift lever assembly, be careful not to hit it against the SRS-ECU.**
2. **Never disassemble the shift lever assembly (except the distance piece and bushing). (Non-provided part)**
3. **Do not apply mineral oil on the moving part of the shift lever assembly. Using mineral oil may damage the resin part.**

Pre-removal and Post-installation Operation

- Air Cleaner Assembly Removal and Installation (Refer to GROUP 15, Air Cleaner [P.15-7](#)).
- Air By-pass Hose, Air Hose E, Air Pipe C and Air Hose D Removal and Installation (Refer to GROUP 15, Charge Air Cooler [P.15-8](#)).
- Battery and Battery Tray Removal and Installation



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REMOVAL STEPS FOR SHIFT CABLE & SELECT CABLE ASSEMBLY

1. SHIFT KNOB
- FRONT FLOOR CONSOLE
(REFER TO GROUP 52A, FRONT
FLOOR CONSOLE ASSEMBLY
[P.52A-7](#)).
2. FRONT FLOOR CONSOLE
BRACKET
- >>C<< 3. SELECT CABLE CONNECTION
(SHIFT LEVER SIDE)
4. SHIFT CABLE CONNECTION
(SHIFT LEVER SIDE)
5. CLIP (SHIFT LEVER SIDE)
6. SNAP PIN
7. SHIFT CABLE CONNECTION
(TRANSAXLE SIDE)

<<A>> >>B<<

<> >>A<<

REMOVAL STEPS FOR SHIFT CABLE & SELECT CABLE ASSEMBLY (Continued)

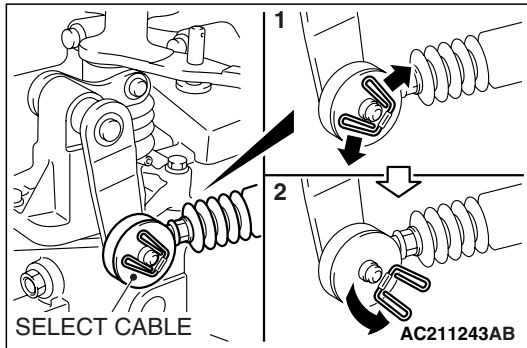
8. SELECT CABLE CONNECTION
(TRANSAXLE SIDE)
9. GEAR SHIFT LINK CLIP
10. SHIFT CABLE & SELECT CABLE
ASSEMBLY
- SHIFT LEVER ASSEMBLY
REMOVAL STEPS
1. SHIFT KNOB
- FRONT FLOOR CONSOLE
(REFER TO GROUP 52A, FRONT
FLOOR CONSOLE ASSEMBLY
[P.52A-7](#)).
2. FRONT FLOOR CONSOLE
BRACKET
- >>C<< 3. SELECT CABLE CONNECTION
(SHIFT LEVER SIDE)

**SHIFT LEVER ASSEMBLY
REMOVAL STEPS (Continued)**

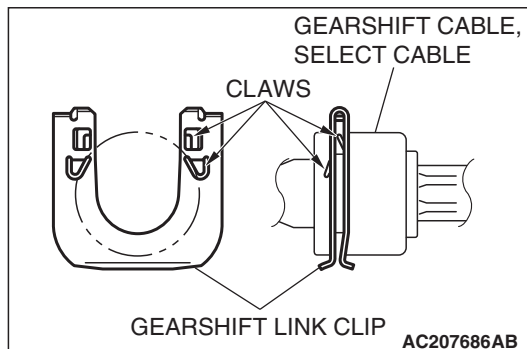
4. SHIFT CABLE CONNECTION
(SHIFT LEVER SIDE)
5. CLIP (SHIFT LEVER SIDE)
11. SHIFT LEVER ASSEMBLY
12. DISTANCE PIECE
13. BUSHING

REMOVAL SERVICE POINTS**<<A>> SELECT CABLE CONNECTION (TRAN-
SAXLE SIDE) REMOVAL**

Set the clip of the select cable as shown in figure 1 and 2, and disconnect the select cable.

**<> GEAR SHIFT LINK CLIP REMOVAL**

Push up the claws of the gearshift link clip using a screwdriver, etc., and then remove the gearshift link clip from the bracket together with the cables.



INSTALLATION SERVICE POINTS

>>A<< GEAR SHIFT LINK CLIP INSTALLATION

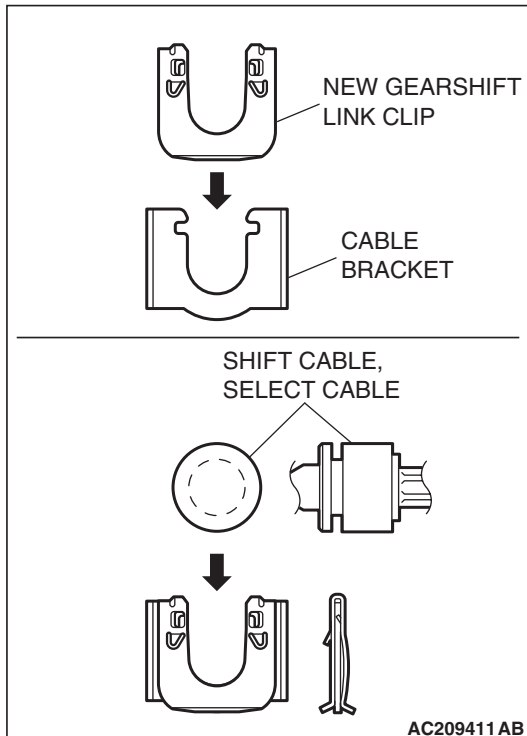
CAUTION

Insert thoroughly the gearshift link clip, shift cable and select cable until they click in place.

1. After installing the new gearshift link clip to the cable bracket of the transaxle, install the shift cable and select cable to the cable bracket.

NOTE: The clip is reversible.

2. Move the shift lever to all positions and check that the operation is smooth.

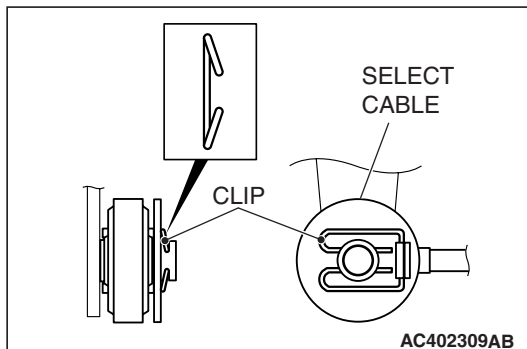


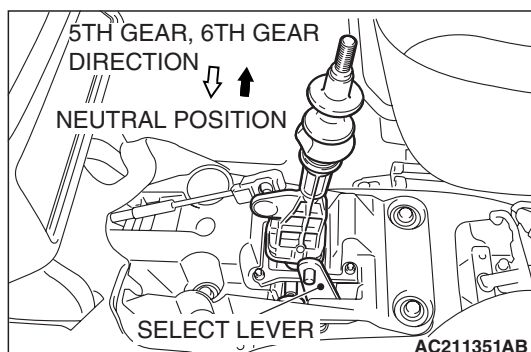
>>B<< SELECT CABLE CONNECTION (TRANSAXLE SIDE) INSTALLATION

CAUTION

Check that the clip is securely installed.

1. Install the clip of the select cable as shown in the illustration.
2. Move the shift lever to all positions and check that the operation is smooth.



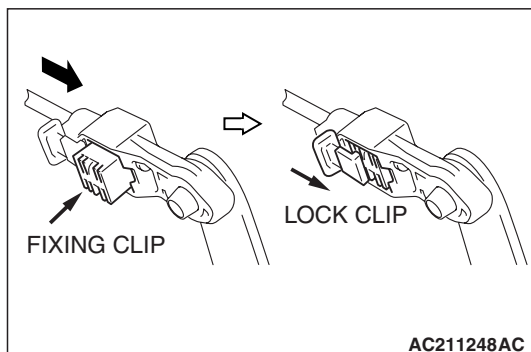
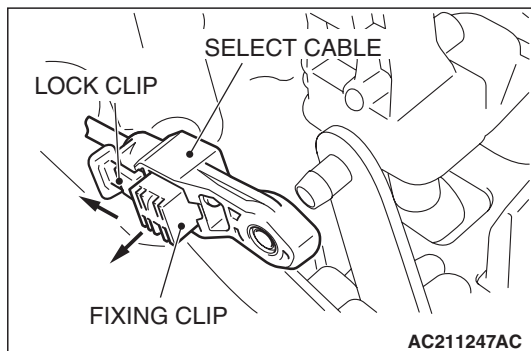
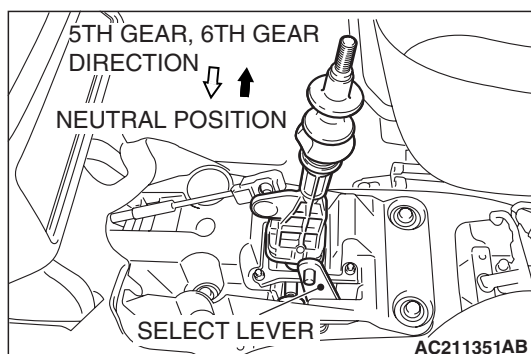


>>C<< SELECT CABLE CONNECTION (SHIFT LEVER SIDE) INSTALLATION

1. Move the shift lever until it contacts the 5-speed or 6-speed stopper to stabilize the shift cable at the shift lever.
2. Release the shift lever, and install the select cable (at the shift lever side) to the select lever while the lever is at the neutral position.
3. Check that the shift cable (shift lever side) and the select cable (shift lever side) are installed securely, and move the shift lever to all shift positions.
4. If the shift lever cannot be moved to the shift positions, adjustment the select cable (Refer to [P.22A-222](#)).

SELECT CABLE (CABIN SIDE) ADJUSTMENT <W6MAA>

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1. Place the shift lever to the neutral position .
2. Remove the front floor console (Refer to GROUP 52A, Front Floor Assembly [P.52A-7](#)).
3. Remove the select cable from the select lever.
4. Move the shift lever until it hits the stopper at the 6th gear side.
5. Release the shift lever to place it to the neutral position.
6. Move the lock clip of the select cable towards the arrowed direction in the figure, and pull the fixing clip.
7. Install the select cable to the select lever, taking care not to move the shift lever from the neutral position.
8. Pulling the select cable slightly towards the cabin side, press in the fixing clip of the select cable. Then, return the lock clip back to the original state.
9. Move the shift lever to all shift positions.
NOTE: If the shift lever cannot be moved to each position or is difficult to move, repeat from step 3 to step 9.
10. Install the front floor console (Refer to GROUP 52A, Front Floor Assembly [P.52A-7](#)).

TRANSFER ASSEMBLY

REMOVAL AND INSTALLATION

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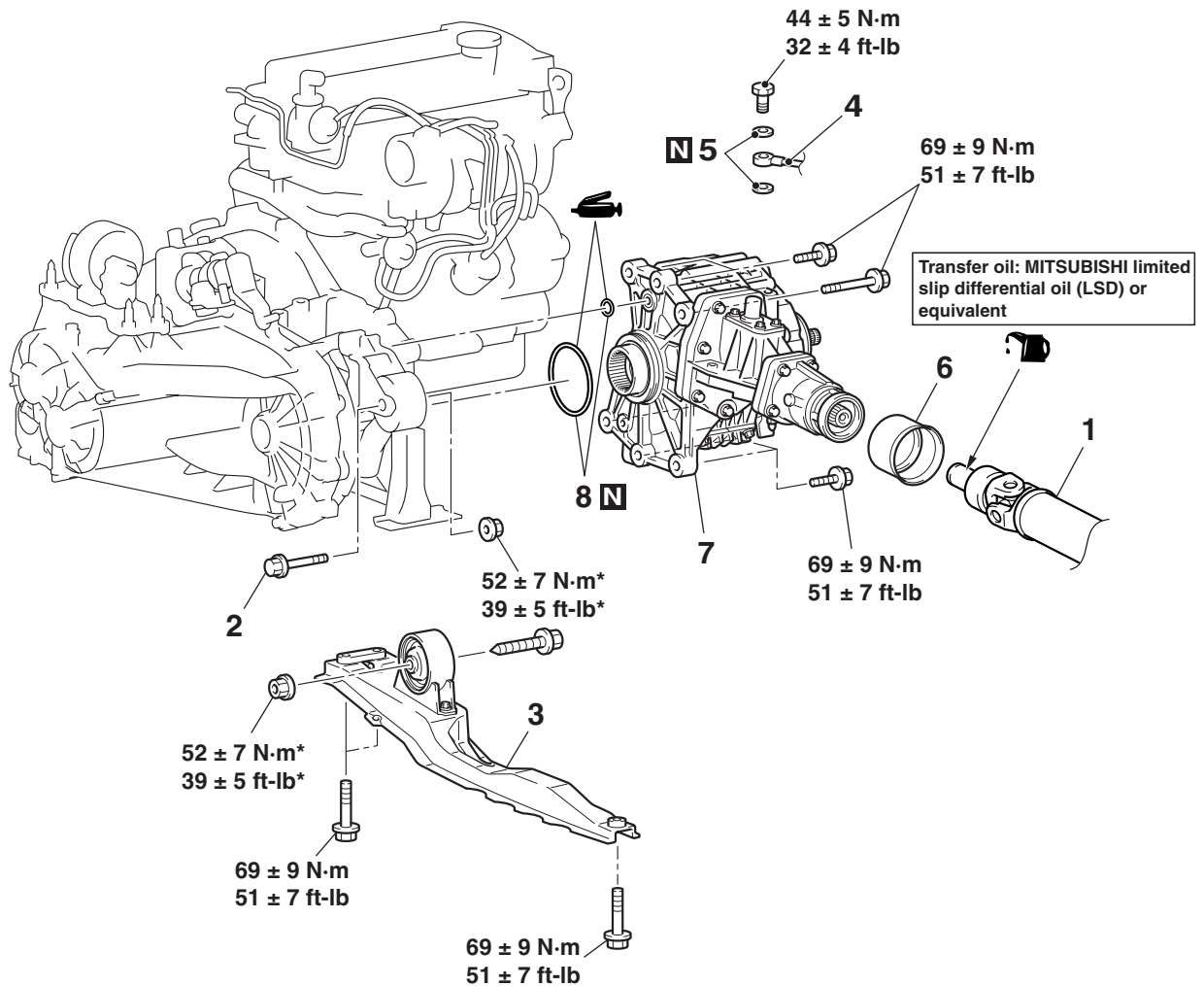
<W5M51>

CAUTION

1. If the Brembo brake caliper is used, be careful not to damage the caliper with parts and tools when servicing because the paint of the caliper may delaminate.
2. *: Indicates parts which should be initially tightened, and then fully tightened after placing the vehicle horizontally and loading the full weight of the engine on the vehicle body.

Pre-removal and Post-installation Operation

- Under Cover Removal and Installation (Refer to GROUP 51 – Front Bumper [P.51-2](#)).
- Transmission Oil Draining and Supplying (Refer to [P.22A-207](#)).
- Transfer Oil Draining and Supplying (Refer to [P.22A-208](#)).
- Engine Coolant Draining and Supplying (Refer to GROUP 14 –On-vehicle Service [P.14-19](#)).
- Front Axle Crossmember Bar Removal and Installation (Refer to GROUP 32 –Engine Roll Stopper and Center-member [P.32-7](#)).
- Front Exhaust Pipe Removal and Installation (Refer to GROUP 15 –Exhaust Pipe and Main Muffler [P.15-17](#)).
- Battery and Battery Tray Removal and Installation
- Air Cleaner, Air Intake Hose Removal and Installation (Refer to GROUP 15 –Air Cleaner [P.15-7](#)).
- Strut Tower Bar Removal and Installation (Refer to GROUP 42 [P.42-12](#)).
- Air Hose E, Air By-pass Hose and Air By-pass Valve, Air Pipe C, Air Hose D, Air Pipe B, Air Hose A Removal and Installation (Refer to GROUP 15 –Charge Air Cooler [P.15-8](#)).
- Radiator Removal and Installation (Refer to GROUP 14 [P.14-23](#)).
- Output Shaft Removal and Installation (Refer to GROUP 26 –Drive Shaft Assembly [P.26-13](#)).
- Bleeding and Hydraulic Pressure Check (Refer to [P.22A-209](#), [P.22A-211](#)). <after installation only>



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REMOVAL STEPS

1. PROPELLER SHAFT (REFER TO GROUP 25 P.25-4).
2. REAR ROLL STOPPER CONNECTION BOLT
3. CENTERMEMBER ASSEMBLY

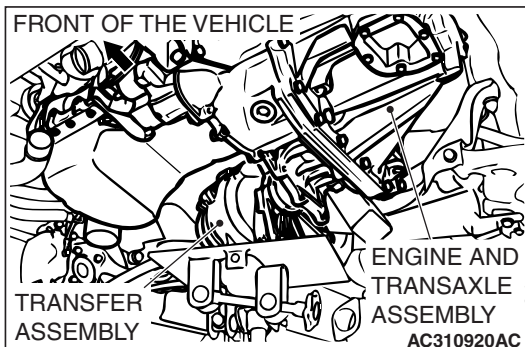
<<A>>

REMOVAL STEPS (Continued)

4. PRESSURE HOSE CONNECTION
5. GASKET
6. DUST SEAL GUARD
7. TRANSFER ASSEMBLY
8. O-RING

REMOVAL SERVICE POINTS**<<A>> TRANSFER ASSEMBLY REMOVAL**

With the engine mount and transaxle mount installed, roll the engine and transaxle assembly towards the front of the vehicle, and remove the transfer assembly from between the engine block and crossmember.



REMOVAL AND INSTALLATION

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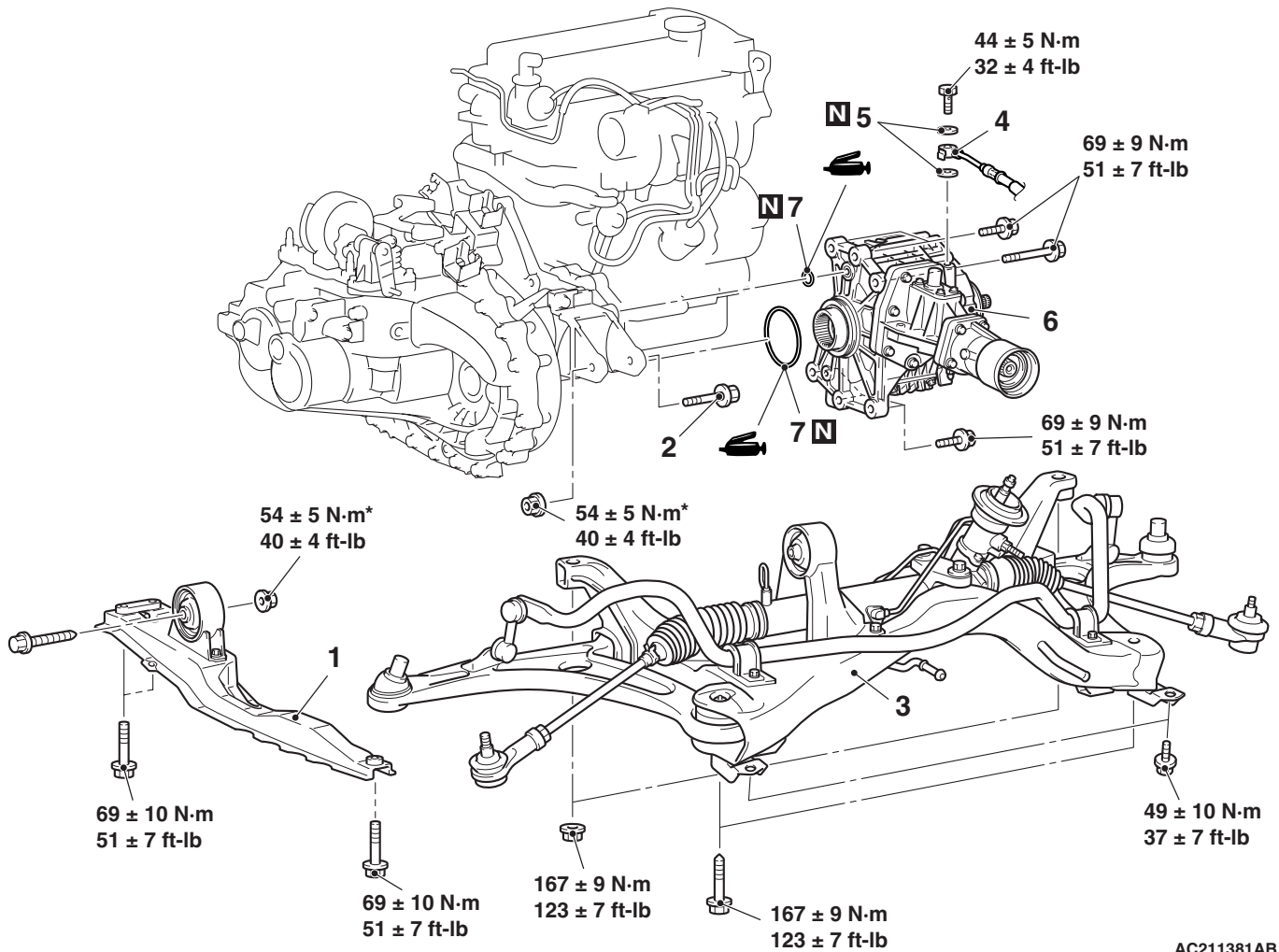
<W6MAA>

CAUTION

1. **Always refer to GROUP 52B –Service Precautions and Airbag Modules and Clock Spring before removing the steering wheel and airbag module assembly.**
2. **If the Brembo brake caliper is used, be careful not to hit parts and tools against the caliper when servicing because the paint of the caliper may delaminate.**
3. ***: indicates parts which should be temporarily tightened, and then fully tightened with the engine weight applied on the vehicle body.**

Pre-removal and Post-installation Operation

- Steering Wheel Removal and Installation (Refer to GROUP 37, Steering Wheel [P.37-24](#)).
- Under Cover Removal and Installation (Refer to GROUP 51 –Front Bumper [P.51-2](#)).
- Steering Shaft Cover Removal and Installation (Refer to GROUP 37, Steering Shaft [P.37-26](#)).
- Steering Gear and Joint Connection Removal and Installation (Refer to GROUP 37, Steering Shaft [P.37-31](#)).
- Front Axle Crossmember Bar Removal and Installation (Refer to GROUP 32, Engine Roll Stopper and Centermember [P.32-7](#)).
- Front Exhaust Pipe Removal and Installation (Refer to GROUP 15 –Exhaust Pipe and Main Muffler [P.15-17](#)).
- Propeller Shaft Removal and Installation (Refer to GROUP 25 [P.25-4](#)).
- Output Shaft Removal and Installation (Refer to GROUP 26 –Drive Shaft Assembly [P.26-13](#)).
- Transmission fluid Draining and Refilling (Refer to [P.22A-207](#)).
- Transfer Oil Draining and Refilling (Refer to [P.22A-208](#)).
- Bleeding and Hydraulic Pressure Check (Refer to [P.22A-209](#), [P.22A-211](#)). <after installation only>
- Power Steering Fluid Refilling and Bleeding (Refer to GROUP 37, On-vehicle service [P.37-20](#)). <Only after Installation>
- Wheel Alignment Check and Adjustment (Refer to GROUP 33, On-vehicle service [P.33-7](#)). <Only after Installation>



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REMOVAL STEPS

1. CENTER MEMBER ASSEMBLY <<A>>
 - POWER STEERING RETURN HOSE AND STEERING GEAR CONNECTION
 - POWER STEERING PRESSURE HOSE AND STEERING GEAR CONNECTION <>
2. REAR ROLL STOPPER CONNECTING BOLT

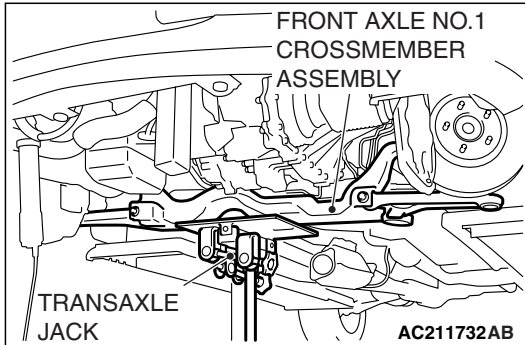
REMOVAL STEPS (Continued)

3. FRONT AXLE NO.1 CROSSMEMBER ASSEMBLY
4. PRESSURE HOSE CONNECTION
5. GASKET
6. TRANSFER ASSEMBLY
7. O-RING

REMOVAL SERVICE POINTS

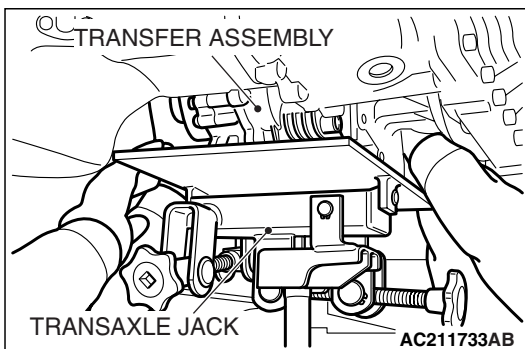
<<A>> FRONT AXLE No.1 CROSSMEMBER ASSEMBLY REMOVAL

Support the front axle No.1 crossmember assembly with a transaxle jack, and remove the crossmember mounting bolts and the front axle No.1 crossmember assembly.



<> TRANSFER ASSEMBLY REMOVAL

Support the transfer assembly with a transaxle jack, and remove the transfer mounting bolts and the transfer assembly.



TRANSAXLE ASSEMBLY

REMOVAL AND INSTALLATION

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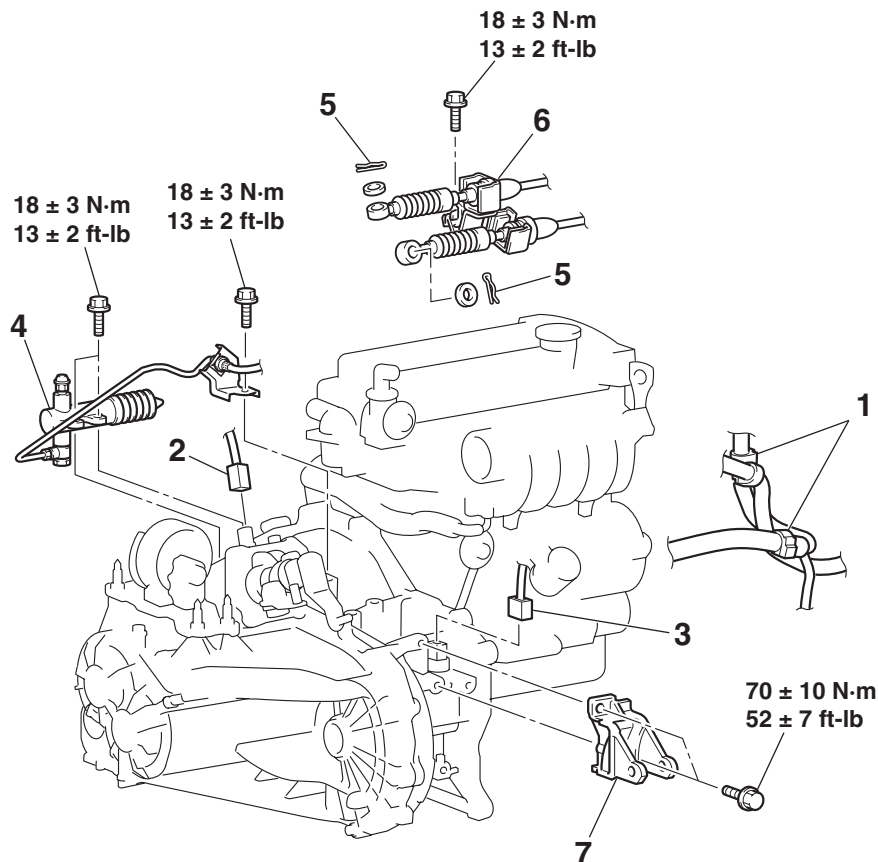
<W5M51>

CAUTION

1. *: Indicates parts which should be temporarily tightened, and then fully tightened after installing the engine into the vehicle.
2. If the Brembo brake caliper is used, be careful not to damage the caliper with parts and tools when servicing because the paint of the caliper may delaminate.

Pre-removal and Post-installation Operation

- Transfer Assembly Removal and Installation (Refer to P.22A-223).
- Starter Motor Removal and Installation (Refer to GROUP 16 P.16-24).
- Air Cleaner Bracket Removal and Installation (Refer to GROUP 15, Air Cleaner P.15-7).
- Rear Roll Rod Assembly and Rear Roll Rod Bracket Removal and Installation (Refer to GROUP 32, Engine Roll Stopper and Center member P.32-7).



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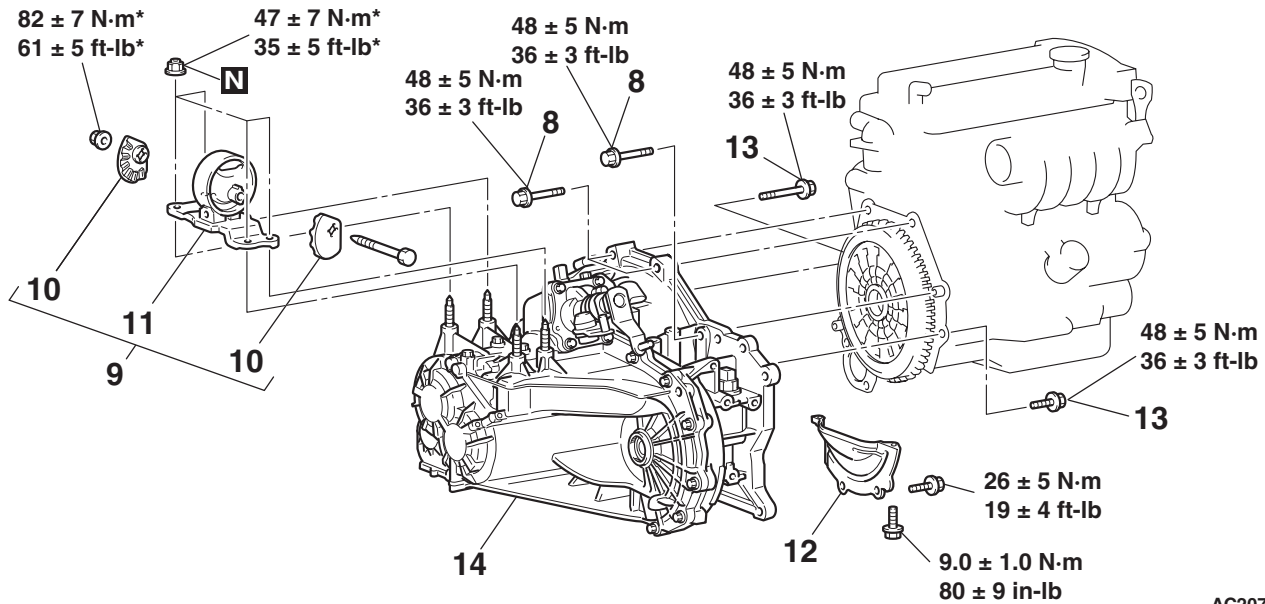
REMOVAL STEPS

1. TRANSAXLE HARNESS CLAMP
2. BACK-UP LAMP SWITCH CONNECTOR
3. VEHICLE SPEED SENSOR CONNECTOR
4. CLUTCH RELEASE CYLINDER AND CLUTCH OIL PIPE

<<A>>

REMOVAL STEPS (Continued)

5. SNAP PIN
6. CABLE BRACKET AND CABLE ASSEMBLY <TRANSAXLE SIDE>
7. REAR ROLL MOUNT BRACKET
 - ENGINE AND TRANSAXLE ASSEMBLY SUPPORTING



AC207692 AB

REMOVAL STEPS

- <<A>>
8. TRANSAXLE ASSEMBLY UPPER PART COUPLING BOLTS <>
 9. TRANSAXLE MOUNTING INSULATOR ASSEMBLY <<C>>
 - >>A<< 10. TRANSAXLE MOUNTING INSULATOR STOPPER
 11. TRANSAXLE MOUNTING INSULATOR

REMOVAL STEPS (Continued)

- ENGINE ASSEMBLY SUPPORTING
- CLUTCH RELEASE BEARING CONNECTION
- 12. BELL HOUSING COVER
- 13. TRANSAXLE ASSEMBLY LOWER PART COUPLING BOLTS
- 14. TRANSAXLE ASSEMBLY

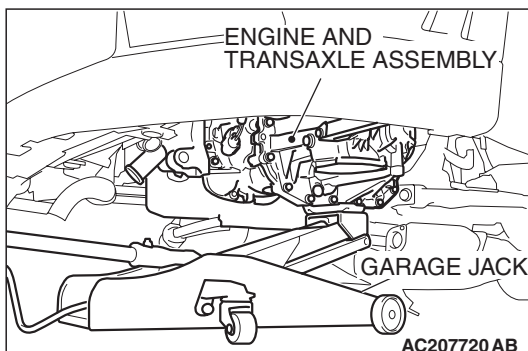
Required Special Tools:

- MB991453: Engine Hanger Assembly
- MB991454: Engine Hanger Balancer
- MZ203827: Engine Lifter
- MB991895: Engine Hanger
- MB991928: Engine Hanger

REMOVAL SERVICE POINTS

<<A>> ENGINE AND TRANSAXLE ASSEMBLY SUPPORTING/TRANSAXLE MOUNTING INSULATOR ASSEMBLY REMOVAL

While supporting the engine and transaxle assembly with a garage jack, remove the transaxle mounting insulator assembly.

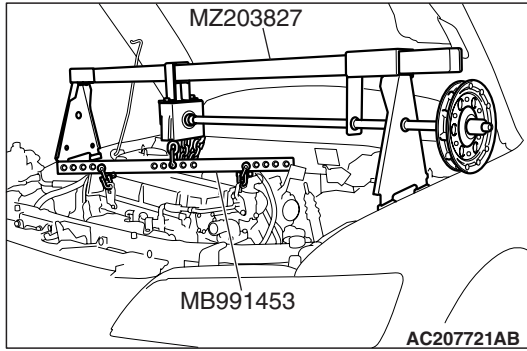


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<> ENGINE ASSEMBLY SUPPORT

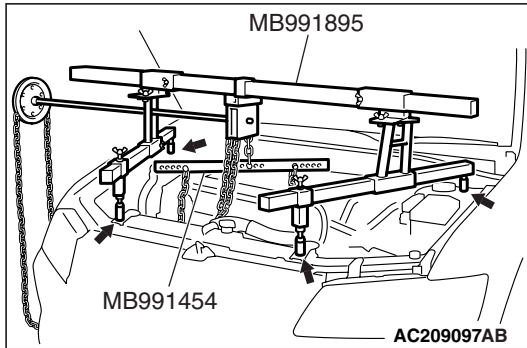
1. <Engine lifter (special tool MZ203827) is used>

- (1) Set special tools MB991453 and MZ203827 to the vehicle to support the engine assembly.
- (2) Set special tool MB991453 to hold the engine/transaxle assembly.



2. <Engine hanger (special tool MB991895) is used>

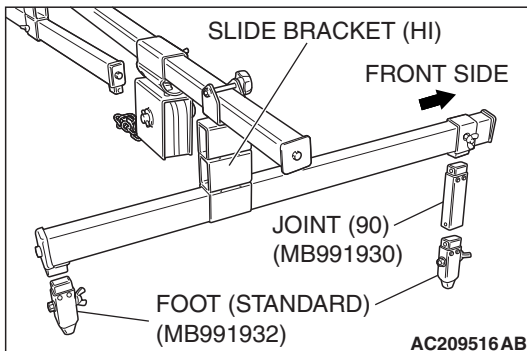
- (1) Set special tool MB991895 to the strut mounting nuts and the radiator support upper insulator mounting bolts, which are located in the engine compartment, as shown.
- (2) Set special tool MB991454 to hold the engine/transaxle assembly.



3. <Engine hanger (special tool MB991928) is used>

- (1) Assemble the engine hanger (special tool MB991928).
Set the following parts to the base hanger.

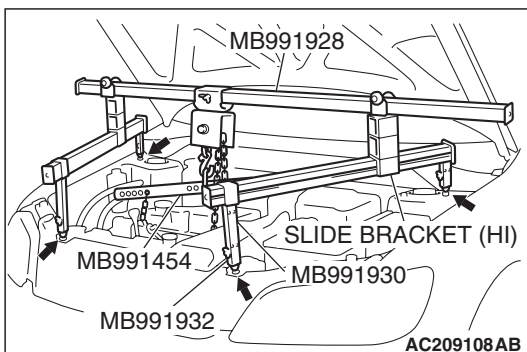
- Slide bracket (HI)
- Foot (standard) (MB991932)
- Joint (90) (MB991930)



- (2) Set the engine hanger (special tool MB991928) to the strut mounting nuts and the radiator support upper insulator mounting bolts, which are located in the engine compartment, as shown.

NOTE: Adjust the engine hanger balance by sliding the slide bracket (HI).

- (3) Set special tool MB991454 to hold the engine/transaxle assembly.



<<C>> CLUTCH RELEASE BEARING SEPARATION

⚠ CAUTION

If it is hard to turn the screwdriver (to pry off the release bearing), remove the screwdriver once and repeat the above procedure after pushing the release fork fully in direction A two to three times. Forcibly prying can cause the release bearing to be damaged.

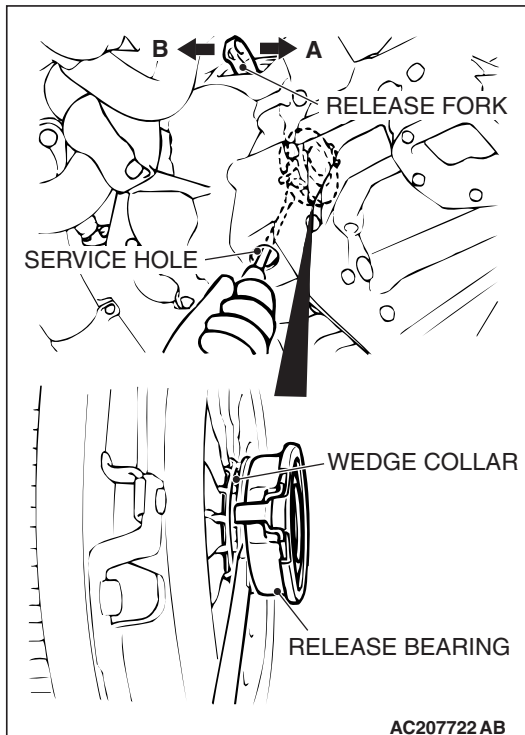
1. Remove the cover from the service hole in the clutch housing.
2. While pushing the release fork by hand in direction A, insert a flap-tip screwdriver between the release bearing and the wedge collar.

⚠ CAUTION

Be sure to push the release fork in direction A before inserting a screwdriver.

3. Separate the release bearing from the wedge collar by prying with the screwdriver (turning the screwdriver grip 90°).

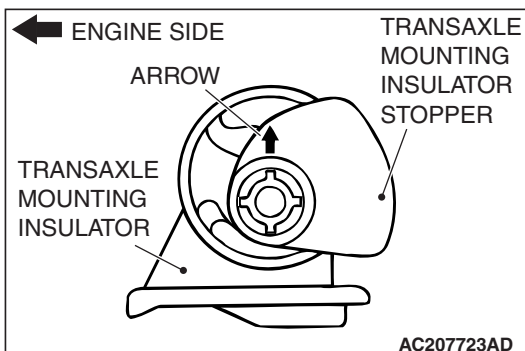
NOTE: The release fork is forced to move fully in direction B by the return spring as soon as it is separated from the wedge collar.



INSTALLATION SERVICE POINTS

>>A<< TRANSAXLE MOUNTING INSULATOR STOPPER INSTALLATION

Install the transaxle mounting insulator stopper so that the arrow points as shown in the illustration.



REMOVAL AND INSTALLATION

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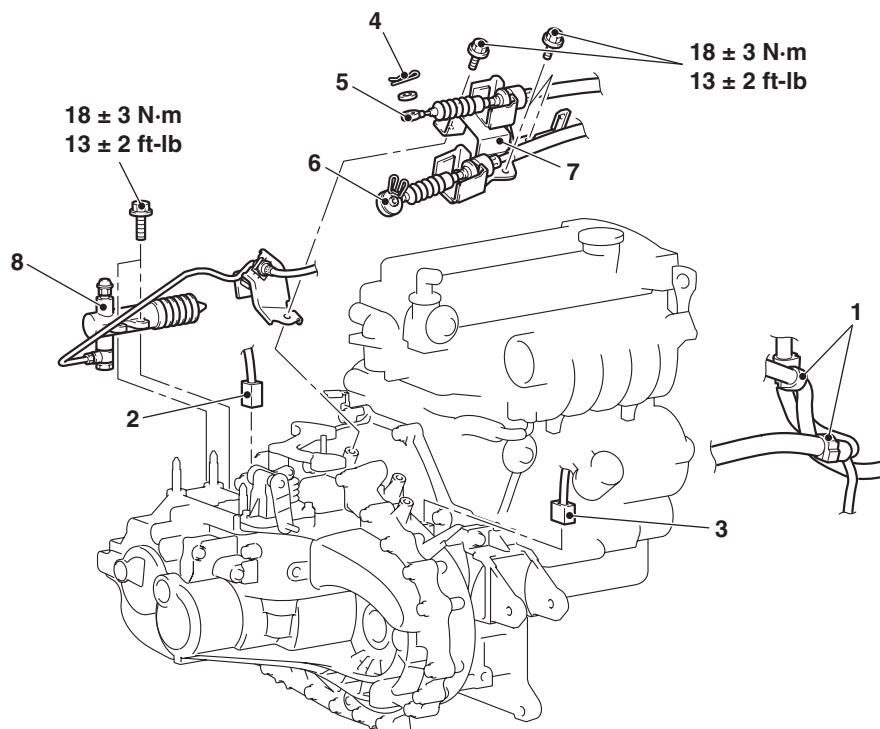
<W6MAA>

CAUTION

1. If the Brembo brake caliper is used, be careful not to hit parts and tools against the caliper when servicing because the paint of the caliper may delaminate.
2. *: indicates parts which should be temporarily tightened, and then fully tightened with the engine weight applied on the vehicle body.

Pre-removal and Post-installation Operation

- Transfer Assembly Removal and Installation (Refer to [P.22A-225](#)).
- Battery and Battery Tray Removal and Installation
- Strut Tower Bar Removal (Refer to GROUP 42, Strut Tower Bar [P.42-12](#)).
- Strut assembly mounting bolt temporary Installation <Pre-removal only>
- Air Duct, Air Cleaner Assembly and Air Intake Hose Removal and Installation (Refer to GROUP 15, Air Cleaner [P.15-7](#)).
- Air By-pass Hose, Air Hose E, Air Pipe C and Air Hose D Removal and Installation (Refer to GROUP 15, Charge Air Cooler [P.15-8](#)).
- Starter Assembly Removal and Installation (Refer to GROUP 16, [P.16-24](#)).



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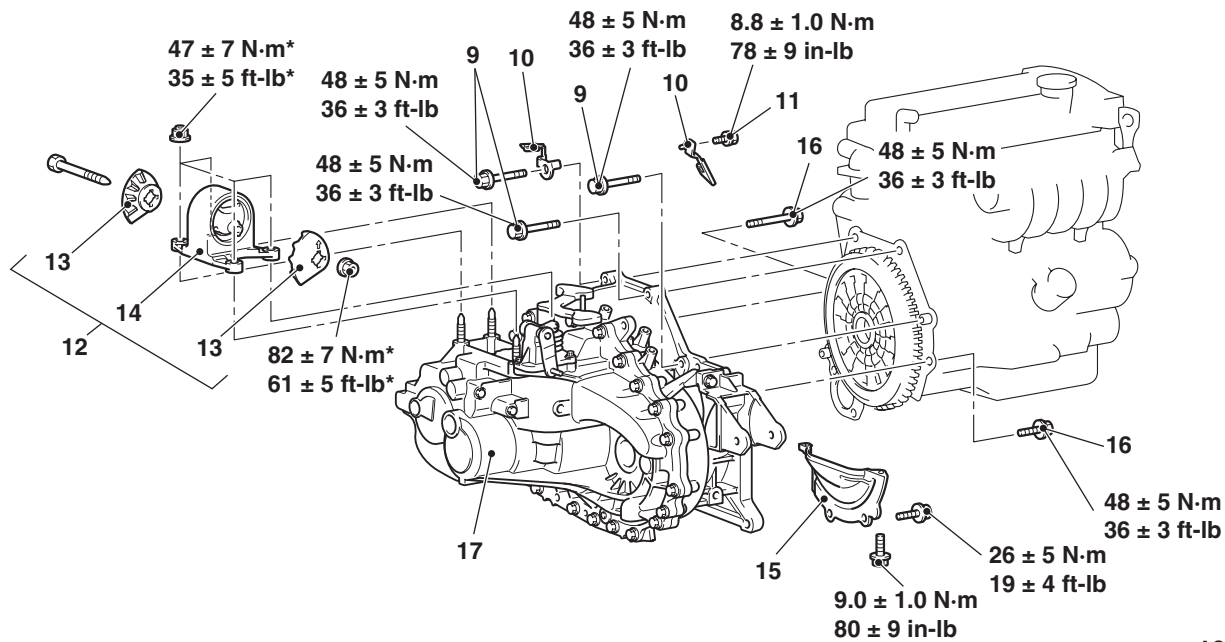
REMOVAL STEPS

1. MAIN HARNESS CLAMP CONNECTION
2. BACK-UP LIGHT SWITCH CONNECTOR CONNECTION
3. VEHICLE SPEED SENSOR CONNECTOR CONNECTION
4. SNAP PIN

<<A>>

REMOVAL STEPS (Continued)

5. SHIFT CABLE CONNECTION
6. SELECT CABLE CONNECTION
7. CONTROL CABLE ASSEMBLY & BRACKET BOLT (TRANSAXLE SIDE)
8. CLUTCH RELEASE CYLINDER & CLUTCH OIL PIPE



AC211628AD

REMOVAL STEPS

- <>
9. TRANSAXLE ASSEMBLY UPPER COUPLING BOLT
 10. HARNESS CLAMP <<C>>
 11. HARNESS CLAMP MOUNTING BOLT
 12. TRANSAXLE MOUNTING INSULATOR ASSEMBLY <<D>>
 - >>A<< 13. TRANSAXLE MOUNTING INSULATOR STOPPER

REMOVAL STEPS (Continued)

14. TRANSAXLE MOUNTING INSULATOR
 - ENGINE ASSEMBLY SUPPORT
 - RAISE THE VEHICLE.
15. BELL HOUSING COVER
 - CLUTCH RELEASE BEARING CONNECTION
16. TRANSAXLE ASSEMBLY LOWER COUPLING BOLT
17. TRANSAXLE ASSEMBLY

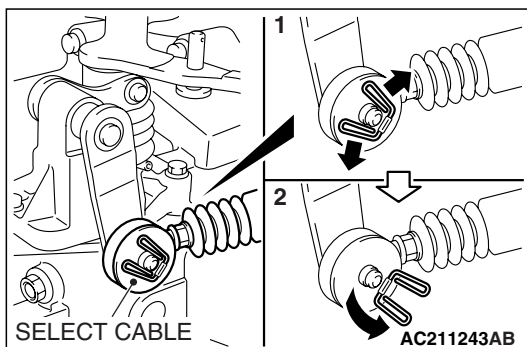
Required Special Tools:

- MB991453: Engine Hanger Assembly
- MB991454: Engine Hanger Balancer
- MZ203827: Engine Lifter
- MB991895: Engine Hanger
- MB991928: Engine Hanger

Removal service points

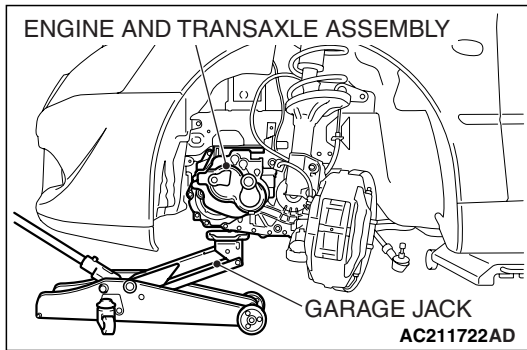
<<A>> SELECT CABLE CONNECTION (TRANSAXLE SIDE) REMOVAL

Set the clip of the select cable as shown in figure 1 and 2, and disconnect the select cable.



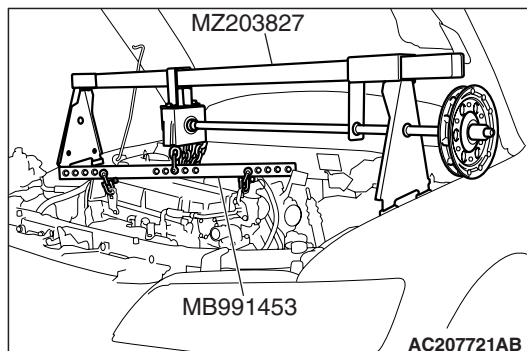
**<> TRANSAXLE MOUNTING INSULATOR
ASSEMBLY REMOVAL**

Jack up and support the engine and transaxle assembly, and remove the transaxle mounting insulator assembly.

**<<C>> ENGINE ASSEMBLY SUPPORT**

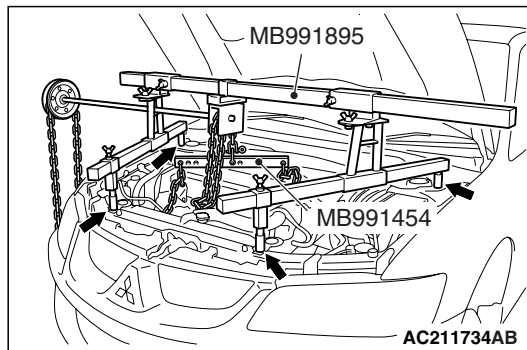
1. <Engine lifter (special tool MZ203827) is used>

- (1) Set special tools MB991453 and MZ203827 to the vehicle to support the engine assembly.
- (2) Set special tool MB991453 to hold the engine/transaxle assembly.



2. <Engine hanger (special tool MB991895) is used>

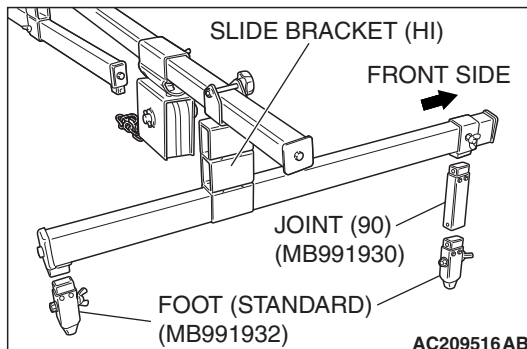
- (1) Set special tool MB991895 to the strut mounting nuts and the radiator support upper insulator mounting bolts, which are located in the engine compartment, as shown.
- (2) Set special tool MB991454 to hold the engine/transaxle assembly.

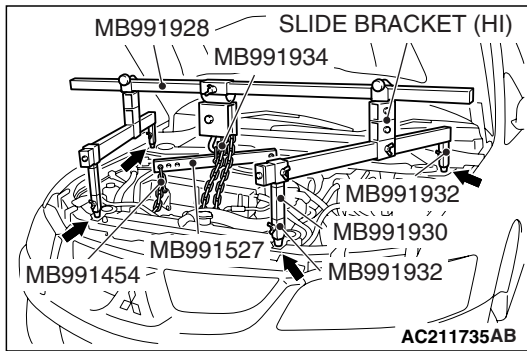


3. <Engine hanger (special tool MB991928) is used>

- (1) Assemble the engine hanger (special tool MB991928).
Set the following parts to the base hanger.

- Slide bracket (HI)
- Foot (standard) (MB991932)
- Joint (90) (MB991930)





- (2) Set the engine hanger (special tool MB991928) to the strut mounting nuts and the radiator support upper insulator mounting bolts, which are located in the engine compartment, as shown.

NOTE: Adjust the engine hanger balance by sliding the slide bracket (HI).

- (3) Set special tool MB991454 to hold the engine/transaxle assembly.

<<D>> CLUTCH RELEASE BEARING DISCONNECTION

⚠ CAUTION

Do not insert a flat-tipped screw driver before pressing the release fork towards direction A. Do not mistakenly insert a flat-tipped screw driver between the wedge collar and the wave spring.

1. Remove the service hole cover of the clutch housing part.
2. Pressing the release fork slightly towards direction A with a hand, insert a flat-tipped screw driver between the release bearing and the wedge collar.

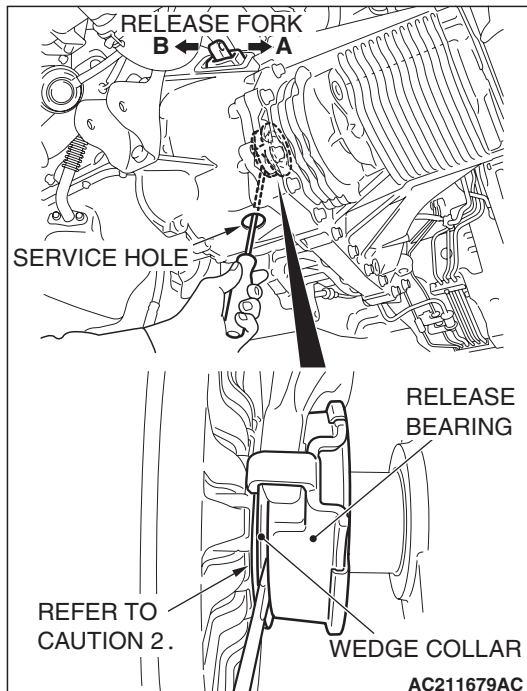
⚠ CAUTION

If the flat-tipped screw driver cannot be turned easily (release bearing cannot be disengaged), remove the screw driver and press the release fork towards direction A a few times. Then, repeat the procedure. If the release bearing is prized forcibly, it may be damaged.

3. Disconnect the release bearing from the wedge collar by twisting the flat-tipped screw driver slightly (twist the handle 90°).

NOTE:

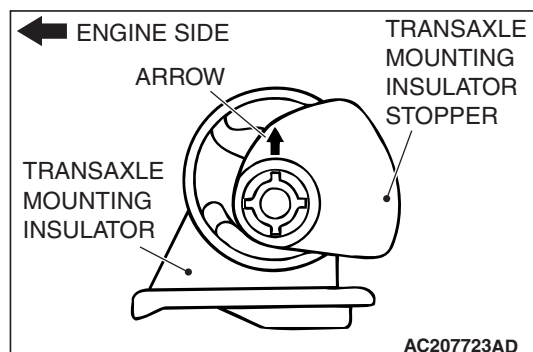
When the release bearing is disconnected, the turn spring moves the release fork towards direction B fully.



INSTALLATION SERVICE POINTS

>>A<< TRANSAXLE MOUNTING INSULATOR
STOPPER INSTALLATION

Install the transaxle mounting insulator stopper so that the arrow mark points vehicle upward.



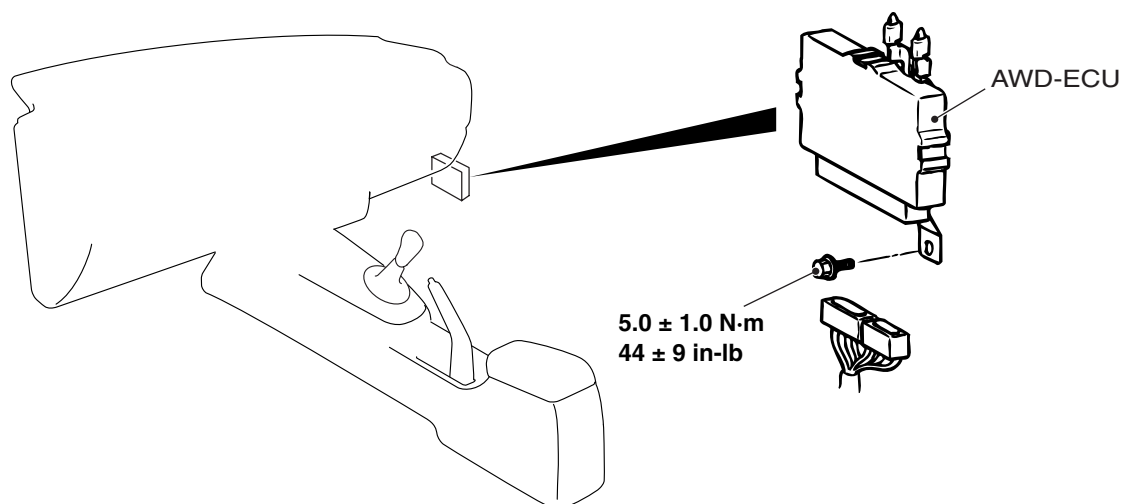
AWD-ECU

REMOVAL AND INSTALLATION

M1221012100027

Pre-removal and Post-installation Operation

- Cowl Side Trim <RH> Removal and Installation. (Refer to GROUP 52A - Trims [P.52A-11](#)).

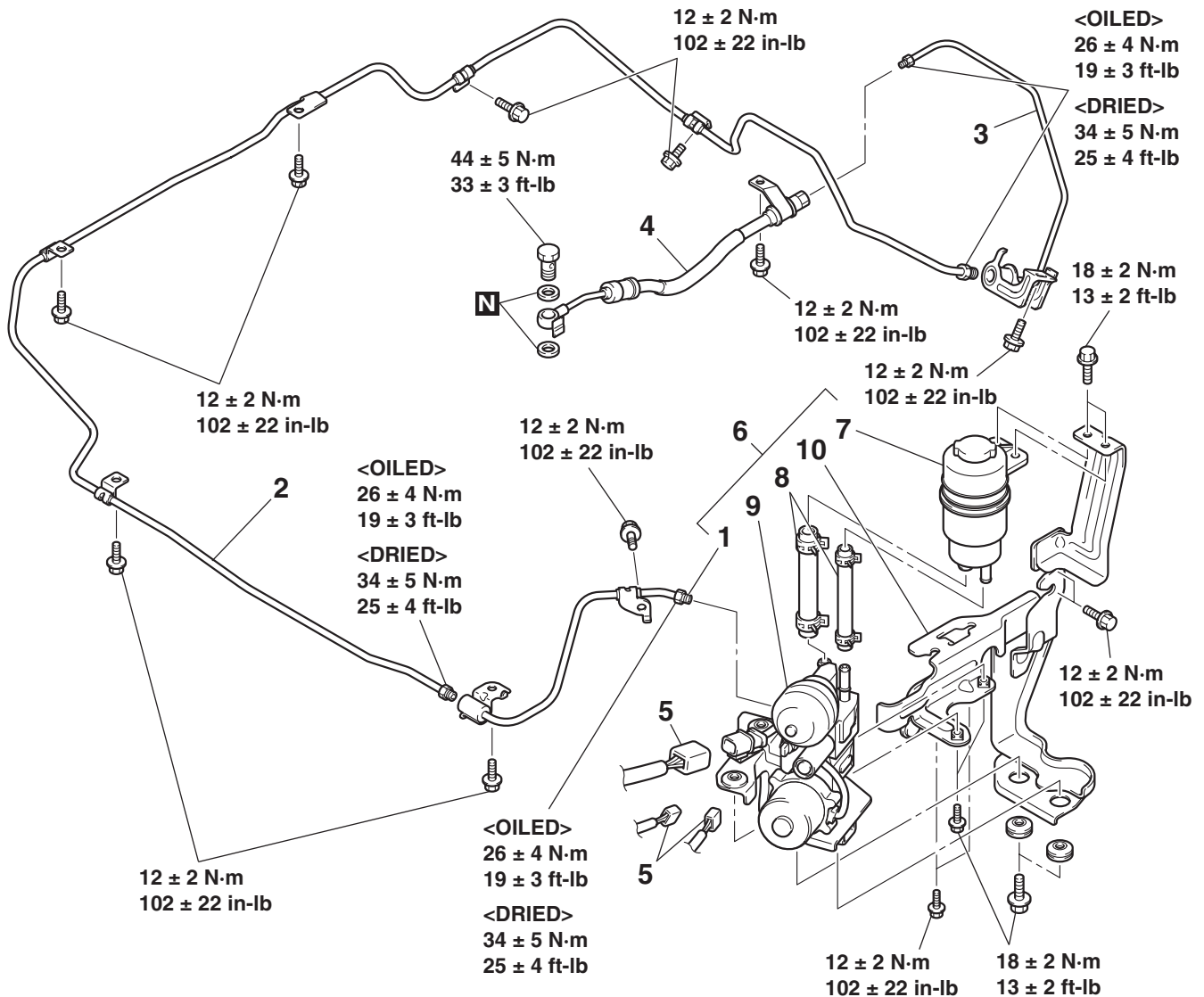


AC402143AB

HYDRAULIC UNIT

REMOVAL AND INSTALLATION

M1221012800015



AC402070AB

HYDRAULIC PRESSURE PIPE AND HOSE ASSEMBLY REMOVAL STEPS

- FRONT BUMPER (REFER TO GROUP 51 [P.51-2](#))
- AIR PIPE A AND B (REFER TO GROUP 15, CHARGE AIR COOLER [P.15-8](#))
- FRONT AXLE NO.1 CROSSMEMBER (REFER TO GROUP 32, CROSSMEMBER [P.32-9](#))
- TRANSFER ASSEMBLY (REFER TO [P.22A-223](#) <W5M51> OR [P.22A-225](#) <W6MAA>)
- AIR PIPE A AND B (REFER TO GROUP 15, CHARGE AIR COOLER [P.15-8](#))

HYDRAULIC PRESSURE PIPE AND HOSE ASSEMBLY REMOVAL STEPS (Continued)

- ENGINE OIL COOLER HOSE (REFER TO GROUP 12, ENGINE OIL COOLER [P.12-6](#))
 - 1. PRESSURE PIPE
 - 2. PRESSURE PIPE
 - 3. PRESSURE PIPE
 - 4. PRESSURE HOSE
- ### HYDRAULIC UNIT REMOVAL STEPS
- AIR CLEANER (REFER TO GROUP 15 [P.15-7](#))
 - FRONT BUMPER (REFER TO GROUP 51 [P.51-2](#))
 - 5. HARNESS AND CONNECTOR

HYDRAULIC UNIT REMOVAL**STEPS (Continued)**

6. HYDRAULIC UNIT ASSEMBLY
AND PRESSURE PIPE
1. PRESSURE PIPE
7. RESERVOIR TANK
8. RESERVOIR HOSE ASSEMBLY
9. HYDRAULIC UNIT
10. HYDRAULIC UNIT BRACKET

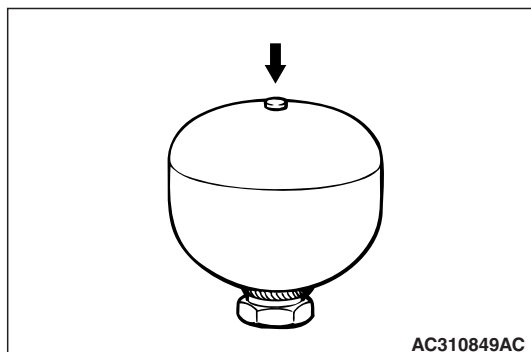
HYDRAULIC UNIT DISPOSAL

M1221012900012

⚠ CAUTION

- The hydraulic unit has its accumulator filled with a high-pressure gas. Never throw it into a fire. Also, never attempt to disassemble, press, weld or melt it.
- When drilling a hole in the accumulator, be sure to wear safety goggles since drill chips may blow out together with the gas.

When discarding the hydraulic unit, drill a hole in the accumulator at the illustrated position beforehand in order to release the inside gas.



AC310849AC

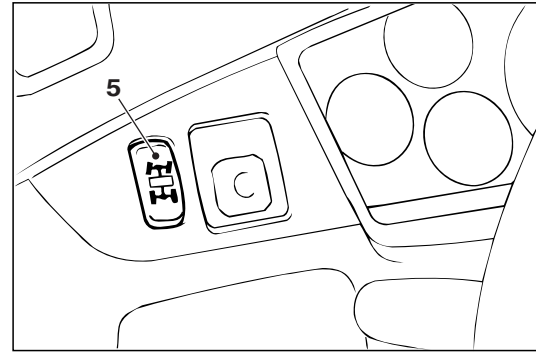
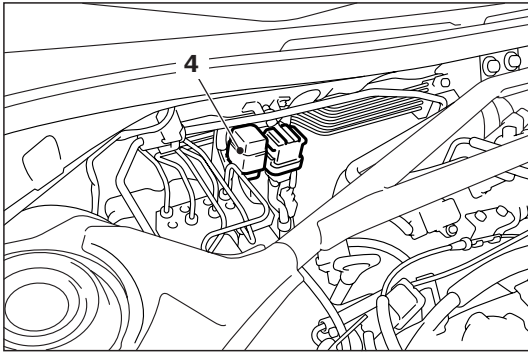
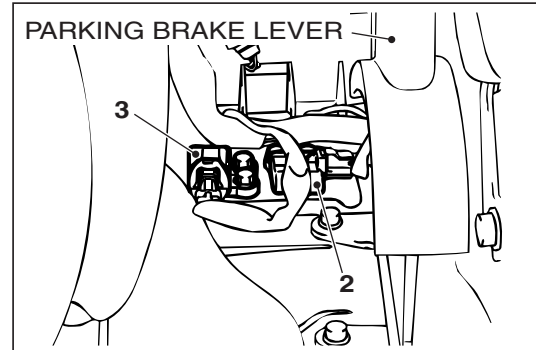
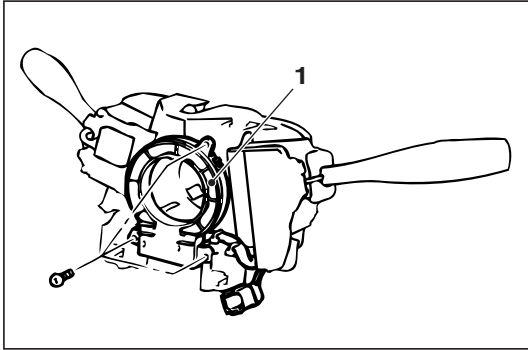
SENSOR, SWITCH AND RELAY

REMOVAL AND INSTALLATION

M1221012300054

⚠ WARNING

Before removing the steering wheel and air bag module assembly, refer to **GROUP 52B, Service Precautions (P.52B-16)** and **Air Bag Module and Clock Spring (P.52B-168)**.



AC402142AB

STEERING WHEEL SENSOR REMOVAL STEPS

- COLUMN COVER (REFER TO GROUP 37 –STEERING SHAFT [P.11A-63](#)).

1. STEERING WHEEL SENSOR G-SENSOR REMOVAL STEPS

- FRONT FLOOR CONSOLE (REFER TO GROUP 52A [P.52A-7](#)).
- 2. LONGITUDINAL G-SENSOR
- 3. LATERAL G-SENSOR

ELECTRIC PUMP RELAY REMOVAL

4. ELECTRIC PUMP RELAY ACD MODE CHANGEOVER SWITCH REMOVAL STEPS

- INSTRUMENT PANEL ORNAMENT (REFER TO GROUP 52A – INSTRUMENT PANEL ASSEMBLY [P.52A-3](#)).
- 5. ACD MODE CHANGEOVER SWITCH

<<A>>

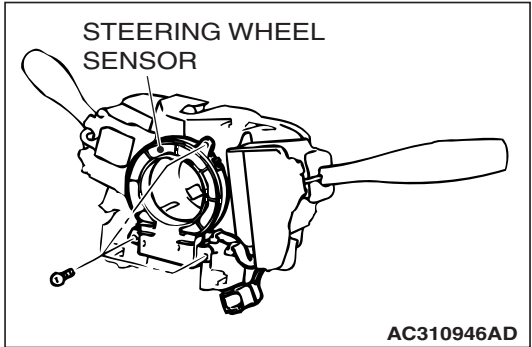
NOTE: For details on the ABS sensor, refer to **GROUP 35B – On-vehicle Service [P.35B-106](#)**.

REMOVAL SERVICE POINT

<<A>> STEERING WHEEL SENSOR REMOVAL

⚠ CAUTION

Make sure no oil adheres to the steering wheel sensor because a photocoupler is used.
Remove the steering wheel sensor from the column switch.

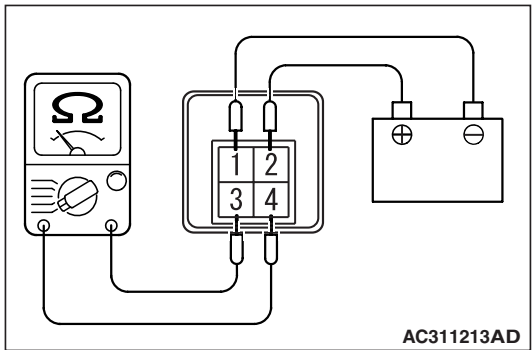


INSPECTION

M1221008000027

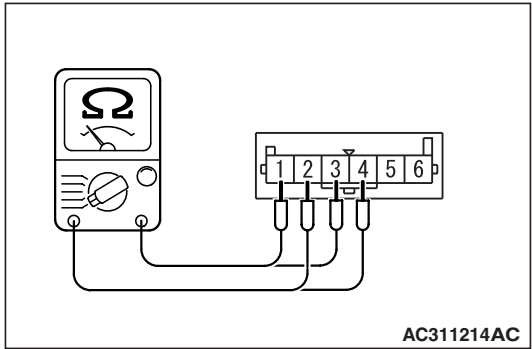
ELECTRIC PUMP RELAY CONTINUITY CHECK

1. Using a jumper wire, connect a battery (+) to terminal No.2 of the electric pump relay and battery (–) to terminal No.1.
2. While intermittently disconnecting the jumper wire at the battery side, check for continuity between terminals No.3 and No.4 of the electric pump relay.



JUMPER WIRE	CONTINUITY BETWEEN TERMINAL NO.3 – NO.4
Connected	Less than 2 ohms
Disconnected	Open circuit

ACD MODE CHANGEOVER SWITCH CONTINUITY CHECK



ACD MODE CHANGEOVER SWITCH TERMINAL NO.	ACD MODE CHANGEOVER SWITCH	CONTINUITY
1 – 2	ON	Less than 2 ohms
	OFF	Open circuit
3 – 4	–	Less than 2 ohms

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

M1221006600238

ITEM		SPECIFICATION
Transaxle control		
Shift cable & select cable assembly mounting bolt		12 ± 2 N· m (102 ± 22 in-lb)
Shift lever assembly mounting bolt		12 ± 2 N· m (102 ± 22 in-lb)
Shift knob	W6MAA	6.0 ± 1.5 N· m (53 ± 9 in-lb)
Shift lever assembly		
Retainer nut	W5M51	5.0 ± 1.0 N· m (44 ± 9 in-lb)
Shift lever bushing nut	W5M51	6.0 ± 2.0 N· m (53 ± 18 in-lb)
Transfer assembly		
Front axle No.1 crossmember bolt	W6MAA	49 ± 10 N· m (37 ± 7 ft-lb)
Front axle No.1 crossmember nut	W6MAA	167 ± 9 N· m (123 ± 7 ft-lb)
Front roll stopper connecting nut	W5M51	52 ± 7 N· m (39 ± 5 ft-lb)
	W6MAA	54 ± 5 N· m (40 ± 4 ft-lb)
Lower arm and front axle No.1 crossmember connecting bolt rear	W6MAA	167 ± 9 N· m (123 ± 7 ft-lb)
Rear roll stopper connecting nut	W5M51	52 ± 7 N· m (39 ± 5 ft-lb)
	W6MAA	54 ± 5 N· m (40 ± 4 ft-lb)
Center member mounting bolt	W5M51	69 ± 9 N· m (51 ± 7 ft-lb)
	W6MAA	69 ± 10 N· m (51 ± 7 ft-lb)
Transfer assembly mounting bolt		69 ± 9 N· m (51 ± 7 ft-lb)
Transfer bleeder screw		5 ± 1 N· m (44 ± 9 in-lb)
Transfer oil drain plug		32 ± 2 N· m (23 ± 2 ft-lb)
Transfer oil filler plug		32 ± 2 N· m (23 ± 2 ft-lb)
Transfer pressure hose mounting bolt		44 ± 5 N· m (32 ± 4 ft-lb)
Transaxle assembly		
Bell housing cover mounting bolt	Engine side	9.0 ± 1.0 N· m (80 ± 9 in-lb)
	Transaxle side	26 ± 5 N· m (19 ± 4 ft-lb)
Clutch release cylinder & clutch oil pipe bolt		18 ± 3 N· m (13 ± 2 ft-lb)
Control cable assembly & bracket bolt		18 ± 3 N· m (13 ± 2 ft-lb)
Harness clamp mounting bolt	W6MAA	8.8 ± 1.0 N· m (78 ± 9 in-lb)
Rear roll mount bracket mounting bolt	W5M51	70 ± 10 N· m (52 ± 7 ft-lb)
Transaxle oil drain plug	W5M51	32 ± 2 N· m (23 ± 2 ft-lb)
	W6MAA	35 ± 4 N· m (26 ± 3 ft-lb)
Transaxle oil filler plug	W5M51	32 ± 2 N· m (23 ± 2 ft-lb)
	W6MAA	35 ± 4 N· m (26 ± 3 ft-lb)
Transaxle assembly upper coupling bolt		48 ± 5 N· m (36 ± 3 ft-lb)
Transaxle assembly lower coupling bolt		48 ± 5 N· m (36 ± 3 ft-lb)
Transaxle mounting insulator assembly nut		47 ± 7 N· m (35 ± 5 ft-lb)
Transaxle mounting insulator stopper nut		82 ± 7 N· m (61 ± 5 ft-lb)

ITEM		SPECIFICATION
AWD-ECU		
AWD-ECU		5.0 ± 1.0 N· m (44 ± 9 in-lb)
Hydraulic unit		
Hydraulic unit bracket mounting bolt		12 ± 2 N· m (102 ± 22 in-lb)
Hydraulic unit mounting bolt		18 ± 2 N· m (13 ± 2 ft-lb)
Pressure hose connector bolt		44 ± 5 N· m (33 ± 3 ft-lb)
Pressure pipe flare nut	OILED	26 ± 4 N· m (19 ± 3 ft-lb)
	DRIED	34 ± 5 N· m (25 ± 4 ft-lb)
Pressure pipe and hose mounting bolt		12 ± 2 N· m (102 ± 22 in-lb)
Reservoir tank mounting bolt		18 ± 2 N· m (13 ± 2 ft-lb)

SERVICE SPECIFICATION

M1221000300110

ITEM	STANDARD VALUE
Hydraulic unit generation oil pressure MPa (psi)	1.0 – 1.6 (145 – 232)

LUBRICANT

M1221000400281

ITEM		SPECIFIED LUBRICANT	QUANTITY dm ³ (qt)
Transmission oil	W5M51	Gear oil API classification GL - 4 SEA 75W - 85W or 75W - 90	2.8 (2.9)
	W6MAA	DIA QUEEN SUPER MULTI GEAR 75W - 85 (GL - 4) or exact equivalent	2.2 (2.3)
Transfer oil		mitsubishi limited slip differential oil (LSD) or equivalent	0.6 (0.63)
ACD operating fluid		DIAMOND ATF SP III	0.9 (0.95)