

GROUP 22A

MANUAL TRANSMISSION (FF)

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WARNINGS REGARDING SERVICING OF SUPPLEMENTAL RESTRAINT SYSTEM (SRS) EQUIPPED VEHICLES

WARNING

- *Improper service or maintenance of any component of the SRS, or any SRS-related component, can lead to personal injury or death to service personnel (from inadvertent firing of the air bag) or to the driver and passenger (from rendering the SRS inoperative).*
- *Service or maintenance of any SRS component or SRS-related component must be performed only at an authorized MITSUBISHI dealer.*
- *MITSUBISHI dealer personnel must thoroughly review this manual, and especially its GROUP 52B - Supplemental Restraint System (SRS) before beginning any service or maintenance of any component of the SRS or any SRS-related component.*

NOTE

The SRS includes the following components: SRS-ECU, SRS warning lamp, air bag module, clock spring, and interconnecting wiring. Other SRS-related components (that may have to be removed/installed in connection with SRS service or maintenance) are indicated in the table of contents by an asterisk (*).

TRANSMISSION CONTROL	22A-157	4WD-ECU	22A-167
REMOVAL AND INSTALLATION	22A-157	REMOVAL AND INSTALLATION	22A-167
SELECT CABLE (SHIFT LEVER SIDE)			
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GENERAL INFORMATION

M1221000100848

Item		Specification
Transmission model		W6MAA
Transmission type		6-speed forward, 1-speed reverse constant mesh
Gear ratio	1st	2.909
	2nd	1.944
	3rd	1.434
	4th	1.100
	5th	0.868
	6th	0.693
	Reverse	2.707
Final deceleration ratio		4.583
Speedometer gear ratio		Not applicable
Front differential		Helical gear LSD
Transfer	Deceleration ratio	3.307
	Limited slip differential	Hydraulic multi plate clutch <ACD>

SERVICE SPECIFICATIONS

M1221000300132

Item		Standard value
Hydraulic unit generation oil pressure MPa		1.0 – 1.6
Oil temperature sensor resistance kΩ	At 20°C	2.31 – 2.59
	At 110°C	0.145 – 0.146

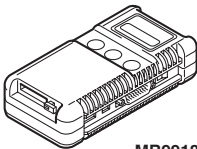
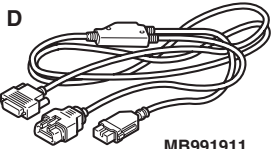
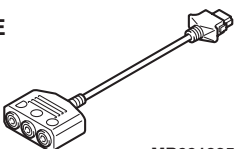
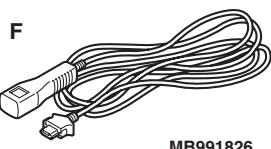
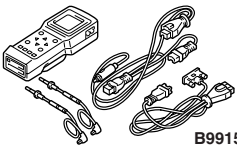
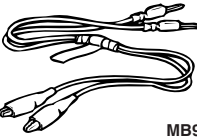
LUBRICANTS

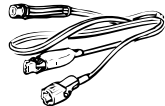
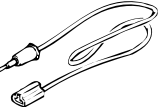
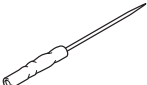
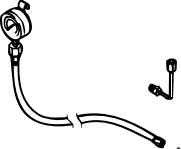
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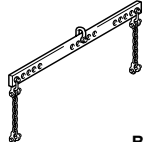
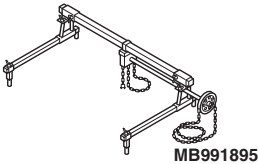
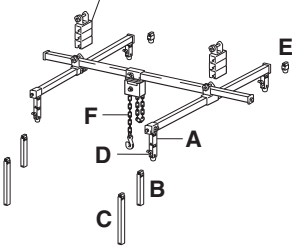
Item	Specified lubricant	Quantity L
Transmission oil	DIA QUEEN SUPER MULTI GEAR 75W-85W (GL-4) or exact equivalent	2.2
Transfer oil	Dia Queen LSD gear oil	0.6
Fluid	DIA QUEEN ATF SP III	1.0

SPECIAL TOOLS

M1221000600832

Tool	Number	Name	Use
A  MB991824 B  MB991827 C  MB991910 D  MB991911 E  MB991825 F  MB991826 MB991955	MB991955 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991825 F: MB991826	M.U.T.-III sub-assembly A: Vehicle communication interface (V. C. I.) B: M.U.T.-III USB cable C: M.U.T.-III main harness A (Vehicles with CAN communication system) D: M.U.T.-III main harness B (Vehicles without CAN communication system) E: M.U.T.-III measurement adapter F: M.U.T.-III trigger harness	Checking the ACD (Diagnosis display by using the M.U.T.-III)
 B991502	MB991502	M.U.T.-II Sub assembly	Diagnosis code checking
 MB991529	MB991529	Diagnosis code checking harness	

Tool	Number	Name	Use
A  B  C  D  MB991223AZ	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222	Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe	Check at the ECU terminals A: Connector pin contact inspection B: Power circuit inspection C: Power circuit inspection D: Commercial tester connection
 MB992006	MB992006	Extra fine probe	Continuity check and voltage measurement at harness wire or connector
 MB991348	MB991348	Test harness set	G-sensor check
 AC103525	MD998330 (including MD998331)	Oil pressure gauge (3.0 MPa)	Hydraulic pressure measurement
 MB991705	MB991705	Adapter	

Tool	Number	Name	Use
 B991454	MB991454	Engine hanger balancer	When the engine hanger is used: Supporting the engine assembly during removal and installation of the transmission assembly <i>NOTE: Special tool MB991454 is a part of engine hanger attachment set MB991453.</i>
 MB991895	MB991895	Engine hanger	
Slide bracket (HI)  B991928	MB991928 A: MB991929 B: MB991930 C: MB991931 D: MB991932 E: MB991933 F: MB991934	Engine hanger A: Joint (50) ×2 B: Joint (90) ×2 C: Joint (140) ×2 D: Foot (standard) ×4 E: Foot (short) ×2 F: Chain and hook assembly	

TROUBLESHOOTING <ACD>

TROUBLESHOOTING STRATEGY

M1221007000604

Refer to GROUP 00 - How to Use Troubleshooting/Inspection Service Points [P.00-5](#).

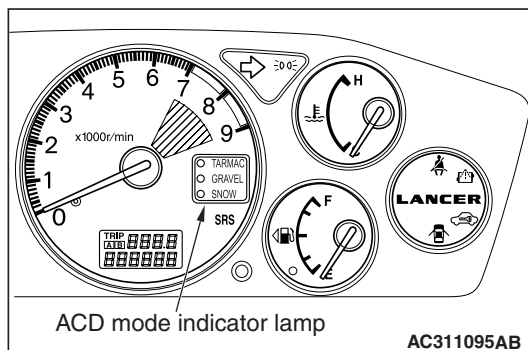
NOTE: Before starting the troubleshooting procedure, make sure that the following items have been checked okay.

- Is the appropriate steering wheel installed at the centre of the steering column shaft correctly?
- Are the tyre, wheel size, specifications, air pressure, balance, and wear state normal?
- Is the wheel alignment normal?
- Has the engine, suspension, etc. been remodeled in such a way that it will affect the ACD and AYC systems?

DIAGNOSIS FUNCTION

M1221007700012

ACD MODE INDICATOR LAMP SYSTEM



If a malfunction occurs in the ACD, all of the ACD mode indicator lamps (tarmac, gravel, and snow) will illuminate.

If all of the ACD mode indicator lamps (tarmac, gravel, and snow) are illuminating, check for diagnosis code.

METHOD OF READING THE DIAGNOSIS CODE

Use the M.U.T.-II/III to read the diagnosis code. (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points [P.00-5](#)).

METHOD OF ERASING THE DIAGNOSIS CODE

Use the M.U.T.-II/III to erase the diagnosis code. (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points [P.00-5](#)).

INSPECTION CHART FOR DIAGNOSIS
CODES

M1221007800019

Diagnosis code No.	Diagnosis items		Reference page
12	Power supply voltage (valve power supply) system	open circuit or short circuit	P.22A-9
13	Fail-safe relay system (inside 4WD-ECU)	open circuit or short circuit	P.22A-14
21	Wheel speed sensor system <FR>	open circuit or short circuit	P.22A-14
22	Wheel speed sensor system <FL>	open circuit or short circuit	P.22A-14
23	Wheel speed sensor system <RR>	open circuit or short circuit	P.22A-14
24	Wheel speed sensor system <RL>	open circuit or short circuit	P.22A-14
25	Wrong-diameter tyre		P.22A-18
26	Wheel speed sensor system	faulty output signal	P.22A-19
31	Steering wheel sensor system <ST-1, ST-2, ST-N>	open circuit or short circuit	P.22A-20
32	Steering wheel sensor system <ST-N>	short circuit	P.22A-29
33		fixed	P.22A-29
34	Steering wheel sensor system <ST-1, ST-2>	short circuit or output fixed	P.22A-33
41	TPS system	open circuit or short circuit	P.22A-37
42		short circuit	P.22A-37
45	Pressure sensor system	open circuit or short circuit	P.22A-41
46		open earth	P.22A-46
47		abnormal power supply	P.22A-49
51	Longitudinal G-sensor system	open circuit or short circuit	P.22A-53
52		abnormal sensor	P.22A-62
56	Lateral G-sensor system	open circuit or short circuit	P.22A-68
57		abnormal sensor	P.22A-77
61	Stop lamp switch system	open circuit	P.22A-83
62	ACD mode switch system	stuck	P.22A-88
63	Parking brake switch system	short circuit or not returned to original position	P.22A-94
65	ABS monitor system	open circuit or defective ABS	P.22A-99
71	Proportional valve system <AYC>	open circuit or short circuit	Refer to GROUP 27 – Diagnostic Trouble Code Chart P.27-9
72	Directional control valve system <Right>	open circuit or short circuit	Refer to GROUP 27 – Diagnostic Trouble Code Chart P.27-9

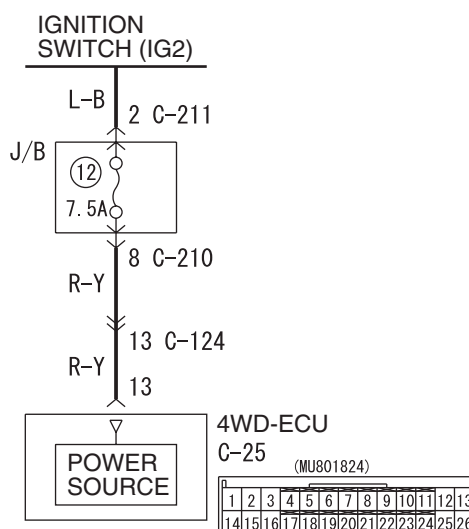
Diagnosis code No.	Diagnosis items		Reference page
73	Directional control valve system <Left>	open circuit or short circuit	Refer to GROUP 27 – Diagnostic Trouble Code Chart P.27-9
74	Proportional valve system <ACD>	open circuit or short circuit	P.22A-105
81	Electric pump relay system	open circuit or short circuit	P.22A-109
82		electric pump malfunction or pressure sensor defect	P.22A-113
84	AYC control error		Refer to GROUP 27 – Diagnostic Trouble Code Chart P.27-9
85	ACD control error		–

NOTE: Code No.85 is not a code number set due to malfunction, but a code number output when control for the 4WD-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.

DIAGNOSIS TROUBLE CODE PROCEDURES

Code No.12 Power supply voltage (valve power supply) system

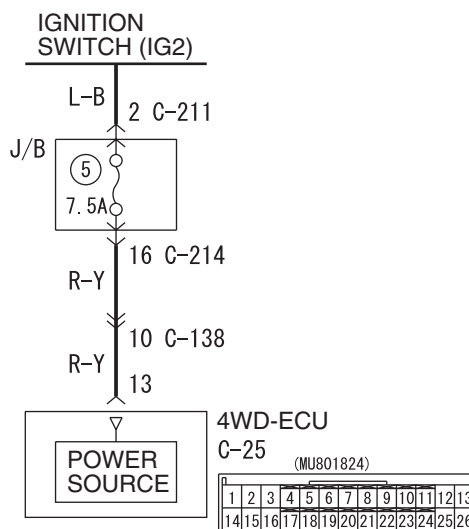
Power supply circuit <LH drive vehicles>



Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

Power supply circuit <RH drive vehicles>



Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
 BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W4J22E00AA

OPERATION

The 4WD-ECU (terminal 13) is energized through the fuse by the ignition switch (IG2).

DIAGNOSIS CODE SET CONDITIONS

The power supply circuit opens or short-circuits if the power supply voltage of the 4WD-ECU is below 9 V or above 18 V.

Or code No.12 is set when the battery voltage drops.

PROBABLE CAUSES

- Damaged harness wires and connectors
- Malfunction of the battery
- Malfunction of the 4WD-ECU

DIAGNOSIS

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. M.U.T.-II/III data list

Item 10: Battery voltage (Refer to Data List Reference Table P.22A-142).

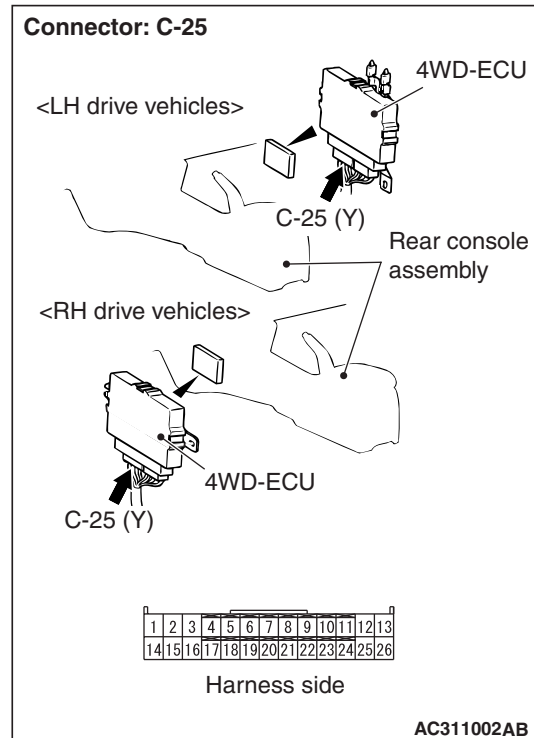
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-5).

NO : Go to Step 3.

STEP 3. Measure the voltage at 4WD-ECU connector C-25.

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



(2) Measure the voltage between 4WD-ECU connector C-25 terminal No.13 and earth.

OK: System voltage

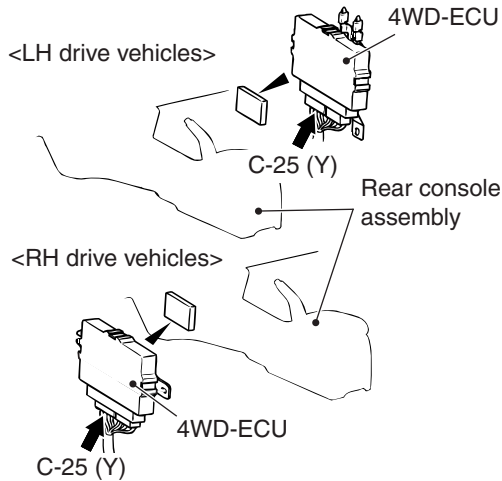
Q: Is the check result normal?

YES : Go to Step 7.

NO : Go to Step 4.

STEP 4. Connectors check: C-25 4WD-ECU connector, C-124 intermediate connector, C-210 J/B connector <LH drive vehicles> or C-25 4WD-ECU connector, C-138 intermediate connector, C-214 J/B connector <RH drive vehicles>.

Connector: C-25

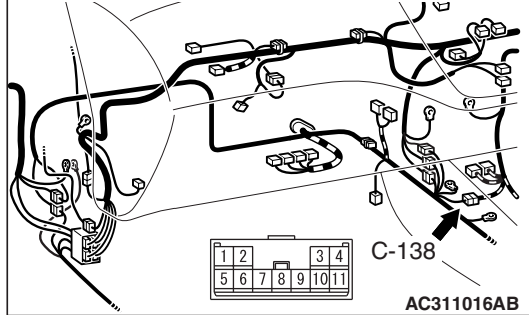
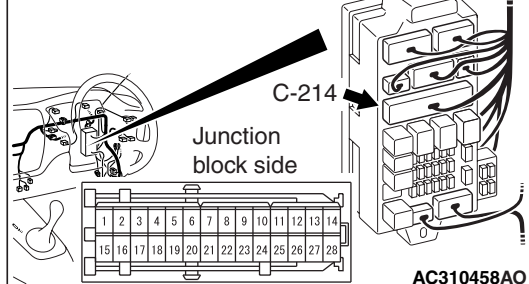


1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26

Harness side

AC311002AB

Connector: C-138 <RH drive vehicles>

Connector: C-214 Junction block (front view)
<RH drive vehicles>

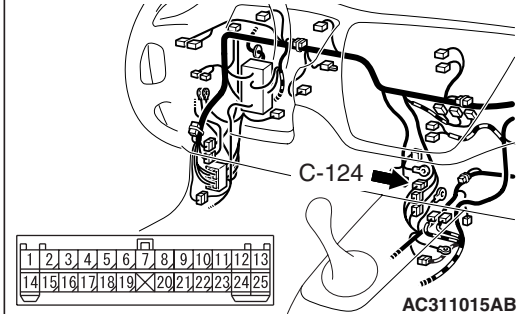
Check for the contact with terminals.

Q: Is the check result normal?

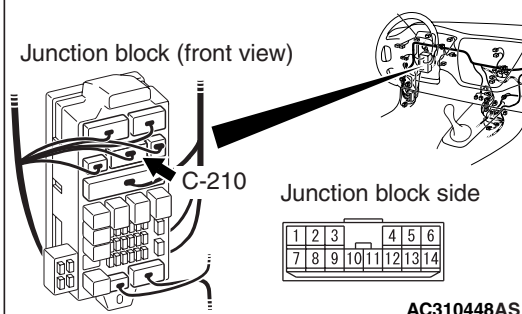
YES : Go to Step 5.

NO : Repair the defective connector.

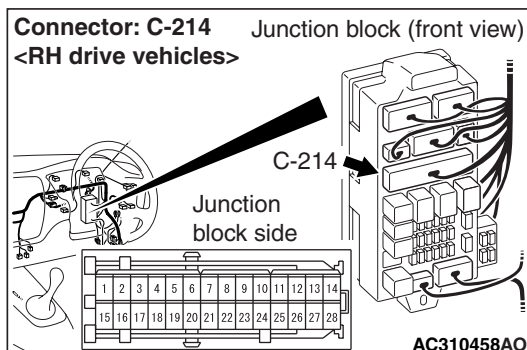
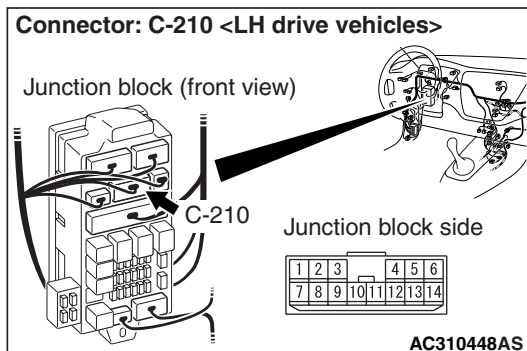
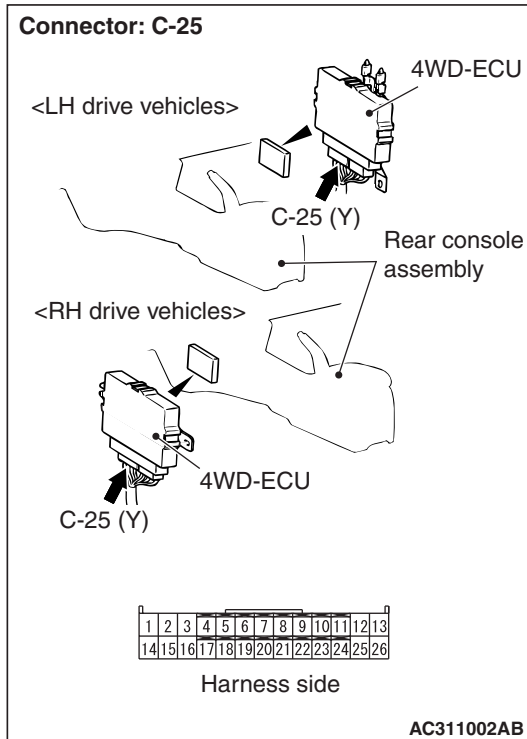
Connector: C-124 <LH drive vehicles>



Connector: C-210 <LH drive vehicles>



STEP 5. Check the harness between 4WD-ECU connector C-25 terminal No.13 and J/B connector C-210 terminal No.8 <LH drive vehicles> or J/B connector C-214 terminal No.16 <RH drive vehicles>.



Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the wiring harness.

STEP 6. M.U.T.-II/III data list

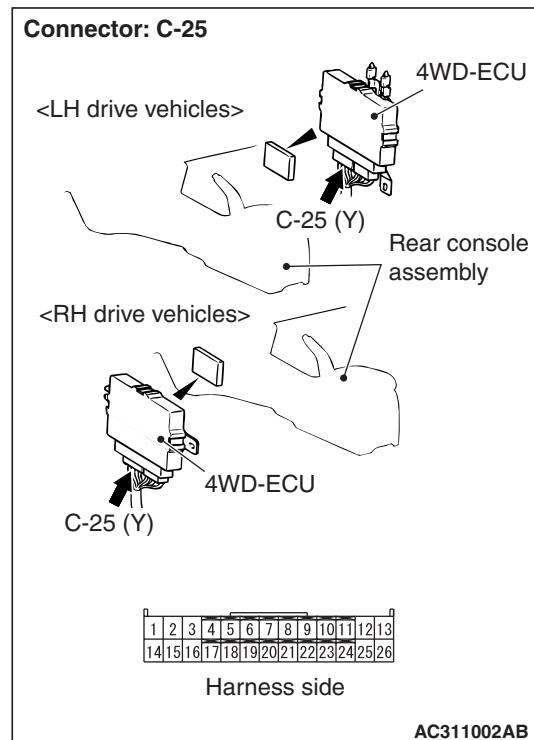
Item 10: Battery voltage (Refer to Data List Reference Table P.22A-142).

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-5).

NO : Replace the 4WD-ECU.

STEP 7. Connector check: C-25 4WD-ECU connector.



Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the defective connector.

Code No.13 Fail-safe relay system (inside 4WD-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).

DIAGNOSIS CODE SET CONDITIONS

Code No.13 will be set as the open circuit or short circuit of the fail-safe relay when the voltage is above 6 V during fail-safe relay OFF or when the voltage is below 6 V during ON.

PROBABLE CAUSES

- Malfunction of the 4WD-ECU

DIAGNOSIS

Replace the 4WD-ECU.

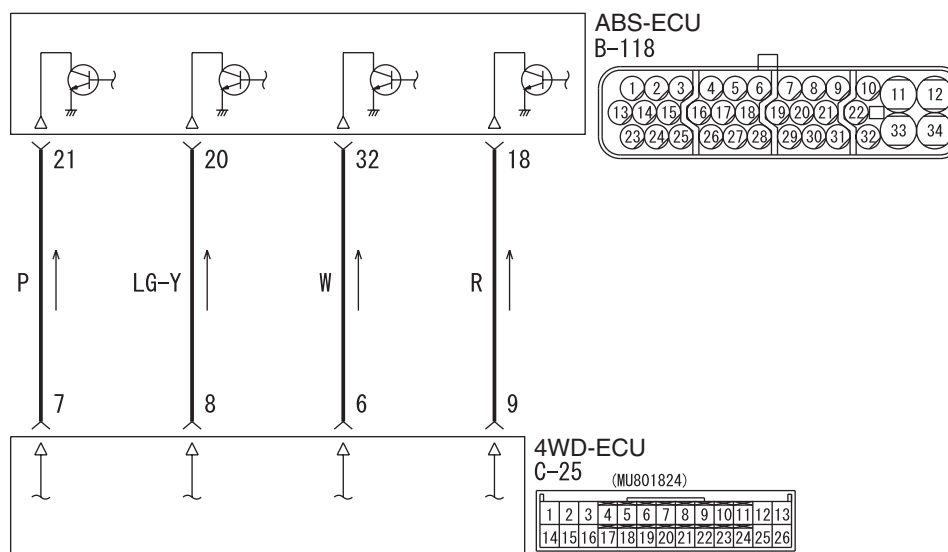
Q: Is the malfunction eliminated?

YES : The inspection is complete.

NO : If no malfunction is not found an intermittent malfunction is suspected. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

Code No.21, 22, 23, 24 Wheel speed sensor system

ABS-ECU signal line system circuit



Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W4J22E02AA

OPERATION

- The ABS-ECU detects the speed of each wheel according to the pulse signals from each wheel speed sensor.
- The 4WD-ECU receives the wheel speed sensor signals through the ABS-ECU.

DIAGNOSIS CODE SET CONDITIONS

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

PROBABLE CAUSES

- Malfunction of the wheel speed sensor
- Damaged harness wires and connectors
- Malfunction of the ABS-ECU
- Malfunction of the 4WD-ECU

DIAGNOSIS

STEP 1. M.U.T.-II/III diagnosis code

Q: Are ABS diagnosis codes 11, 12, 13, 14, 21, 22, 23, 24 set?

YES : Refer to GROUP 35B – Check Chart for Diagnosis Codes [P.35B-9](#).

NO : Go to Step 2.

STEP 2. M.U.T.-II/III data list

- Item 01: Wheel speed sensor <FR>
- Item 02: Wheel speed sensor <FL>
- Item 03: Wheel speed sensor <RR>
- Item 04: Wheel speed sensor <RL>

Check the above data list (Refer to data list reference table [P.22A-142](#)).

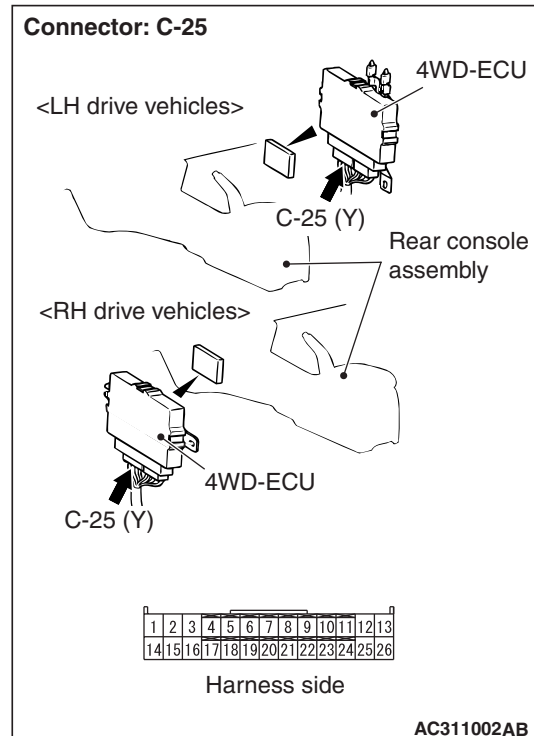
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Go to Step 3.

STEP 3. Measure the voltage at 4WD-ECU connector C-25.

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



(2) Measure the voltage between the following terminals of 4WD-ECU connector C-25 and earth while turning the relevant tyre of the terminal being measured one-half to one turn per second.

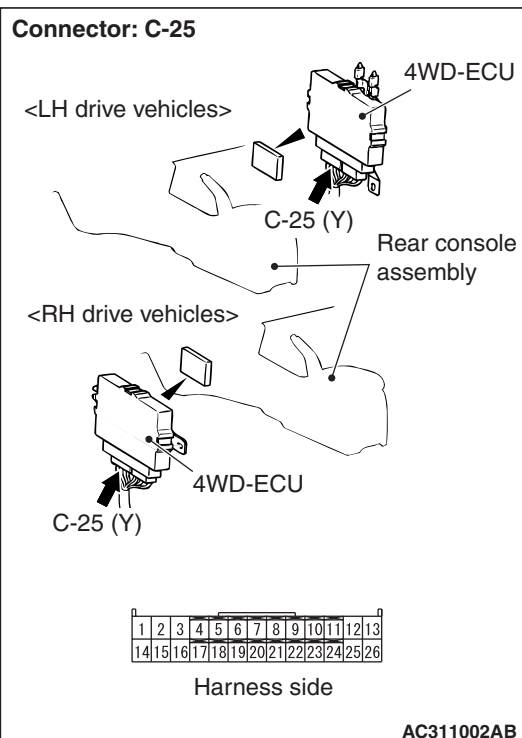
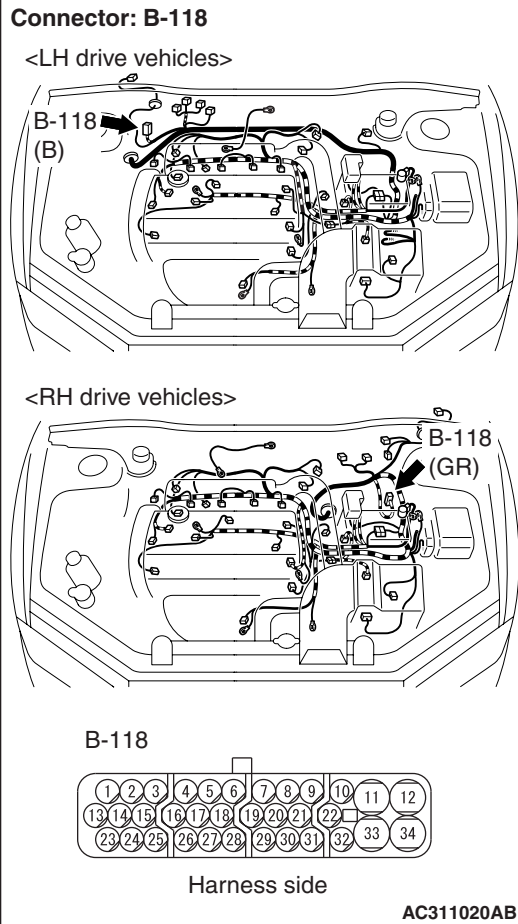
- Terminal No.9 <FR>
- Terminal No.6 <FL>
- Terminal No.7 <RR>
- Terminal No.8 <RL>

OK: 0 ⇔ 5 V flushing

Q: Is the check result normal?

YES : Go to Step 7.

NO : Go to Step 4.

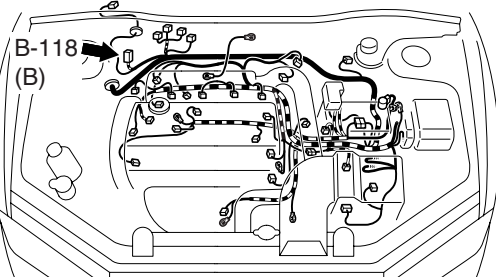
STEP 4. Connectors check: B-118 ABS-ECU connector, C-25 4WD-ECU connector.**Q: Is the check result normal?****YES :** Go to Step 5.**NO :** Repair the defective connector.

Check for the contact with terminals.

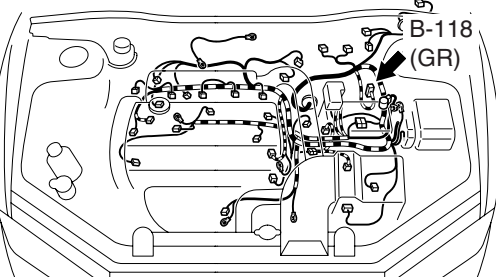
STEP 5. Check the harness between ABS-ECU connector B-118 (terminal No.9, 6, 7, 8) and 4WD-ECU connector C-25 (terminal No.18, 32, 21, 20).

Connector: B-118

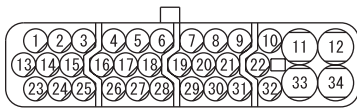
<LH drive vehicles>



<RH drive vehicles>



B-118

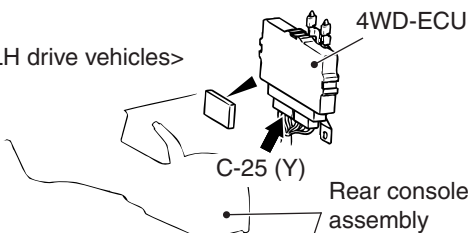


Harness side

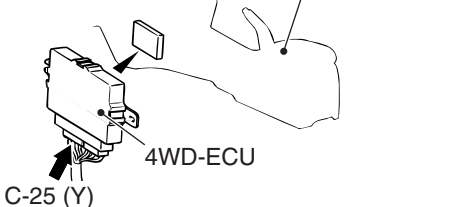
AC311020AB

Connector: C-25

<LH drive vehicles>



<RH drive vehicles>



Harness side

AC311002AB

Check the output line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the wiring harness.

STEP 6. M.U.T.-II/III data list

- Item 01: Wheel speed sensor <FR>
- Item 02: Wheel speed sensor <FL>
- Item 03: Wheel speed sensor <RR>
- Item 04: Wheel speed sensor <RL>

Check the above data list (Refer to data list reference table P.22A-142).

Q: Is the check result normal?

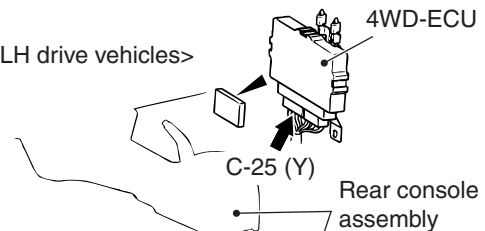
YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-5).

NO : Replace the 4WD-ECU.

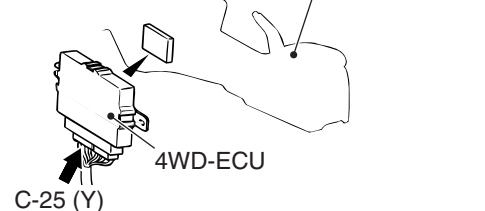
STEP 7. Connector check: C-25 4WD-ECU connector.

Connector: C-25

<LH drive vehicles>



<RH drive vehicles>



Harness side

AC311002AB

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the defective connector.

Code No.25 Wrong-diameter tyre

ABS SIGNAL LINE SYSTEM CIRCUIT

Refer to [P.22A-14](#).

OPERATION

The 4WD-ECU receives each wheel speed sensor signal through the ABS-ECU to detect the tyre conditions.

DIAGNOSIS CODE SET CONDITIONS

Code No.25 is set as wrong-diameter tyre 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 with the steering wheel in the straight ahead position. However the warning lamp does not light up.

PROBABLE CAUSES

- Malfunction of the tyre
- Malfunction of the wheel speed sensor
- Damaged harness wires and connectors
- Malfunction of the ABS-ECU
- Malfunction of the 4WD-ECU

DIAGNOSIS

STEP 1. Check the tyre.

Check the tyre pressure, size and brand.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Adjust or replace the tyre.

STEP 2. M.U.T.-II/III diagnosis code**Q: Are ABS diagnosis codes 11, 12, 13, 14, 21, 22, 23, 24 set?**

YES : Refer to GROUP 35B – Check Chart for Diagnosis Codes [P.35B-9](#).

NO : Go to Step 3.

STEP 3. M.U.T.-II/III diagnosis code**Q: Are ACD diagnosis codes 21, 22, 23, 24 set?**

YES : Refer to diagnosis code 21, 22, 23, 24 Wheel Speed Sensor System [P.22A-14](#).

NO : Go to Step 4.

STEP 4. M.U.T.-II/III data list

- Item 01: Wheel speed sensor <FR>
- Item 02: Wheel speed sensor <FL>
- Item 03: Wheel speed sensor <RR>
- Item 04: Wheel speed sensor <RL>

Check the above data list (Refer to data list reference table [P.22A-142](#)).

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Replace the 4WD-ECU.

Code No.26 Wheel speed sensor system (faulty output signal)

ABS SIGNAL LINE SYSTEM CIRCUIT

Refer to [P.22A-14](#).

OPERATION

The 4WD-ECU receives each wheel speed sensor signal through the ABS-ECU to detect the conditions of the wheel speed sensors.

DIAGNOSIS CODE SET CONDITIONS

Code No.26 is set as output signal error of the wheel speed sensor when one wheel speed is outside the specified range at the vehicle speed of above 20 km/h. However, warning lamp will light up.

PROBABLE CAUSES

- Malfunction of the tyre
- Malfunction of the wheel speed sensor
- Damaged harness wires and connectors
- Malfunction of the ABS-ECU
- Malfunction of the 4WD-ECU

DIAGNOSIS

STEP 1. Check the tyre.

Check the tyre pressure, size and brand.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Adjust or replace the tyre.

STEP 2. M.U.T.-II/III diagnosis code

Q: Are ABS diagnosis codes 11, 12, 13, 14, 21, 22, 23, 24 set?

YES : Refer to GROUP 35B – Check Chart for Diagnosis Codes [P.35B-9](#).

NO : Go to Step 3.

STEP 3. M.U.T.-II/III diagnosis code

Q: Are ACD diagnosis codes 21, 22, 23, 24 set?

YES : Refer to diagnosis code 21, 22, 23, 24 Wheel Speed Sensor System [P.22A-14](#).

NO : Go to Step 4.

STEP 4. M.U.T.-II/III data list

- Item 01: Wheel speed sensor <FR>
- Item 02: Wheel speed sensor <FL>
- Item 03: Wheel speed sensor <RR>
- Item 04: Wheel speed sensor <RL>

Check the above data list (Refer to data list reference table [P.22A-142](#)).

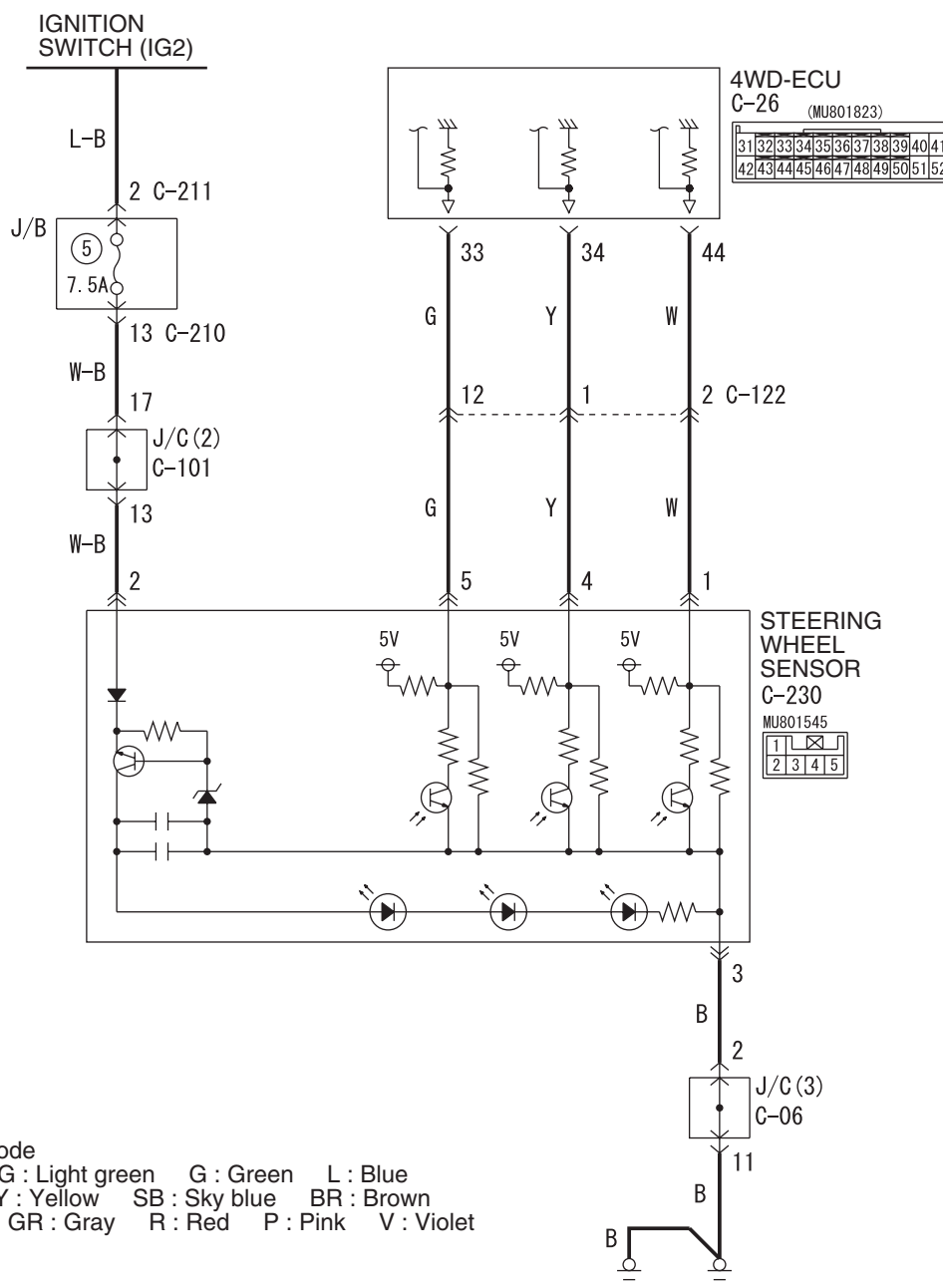
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

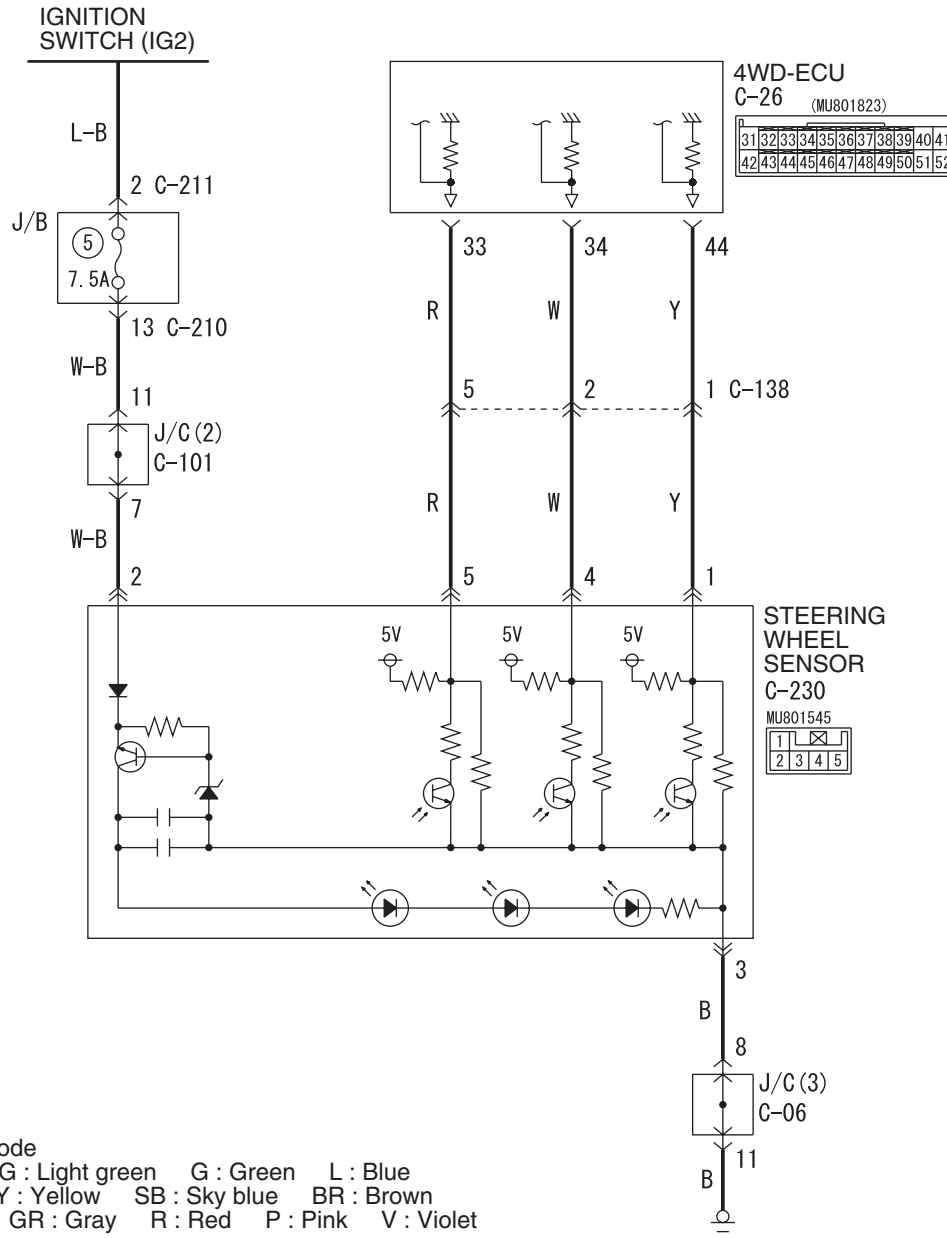
NO : Replace the 4WD-ECU.

Code No.31 Steering wheel sensor system <ST-1, ST-2, ST-N>

Steering wheel sensor system circuit <LH drive vehicles>



Steering wheel sensor system circuit <RH drive vehicles>



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OPERATION

The steering wheel 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 4WD-ECU.

DIAGNOSIS CODE SET CONDITIONS

Code No.31 is set when open circuit or short circuit of the steering wheel sensor output line (ST-1, ST-2, or ST-N) occurs.

PROBABLE CAUSES

- Malfunction of the steering wheel sensor
- Damaged harness wires and connectors
- Malfunction of the 4WD-ECU

DIAGNOSIS

STEP 1. M.U.T.-II/III diagnosis code

Q: Are ABS diagnosis codes 81, 82, 83 set?

YES : Go to Step 8.

NO : Go to Step 2.

STEP 2. M.U.T.-II/III data list

- Item 21: Steering wheel sensor voltage <ST-1>
- Item 22: Steering wheel sensor voltage <ST-2>
- Item 23: Steering wheel sensor voltage <ST-N>

Check the above data list (Refer to data list reference table [P.22A-142](#)).

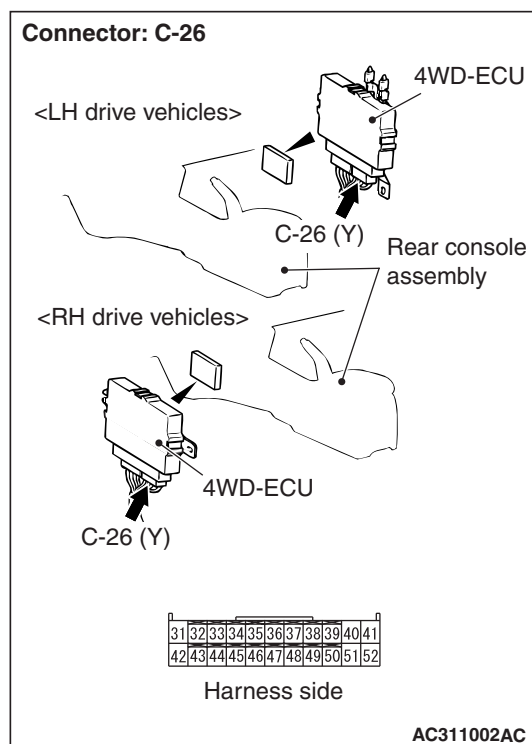
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Go to Step 3.

STEP 3. Measure the voltage at 4WD-ECU connector C-26.

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



(2) Measure the voltage between the following terminals of 4WD-ECU connector C-26 and earth while turning the steering wheel.

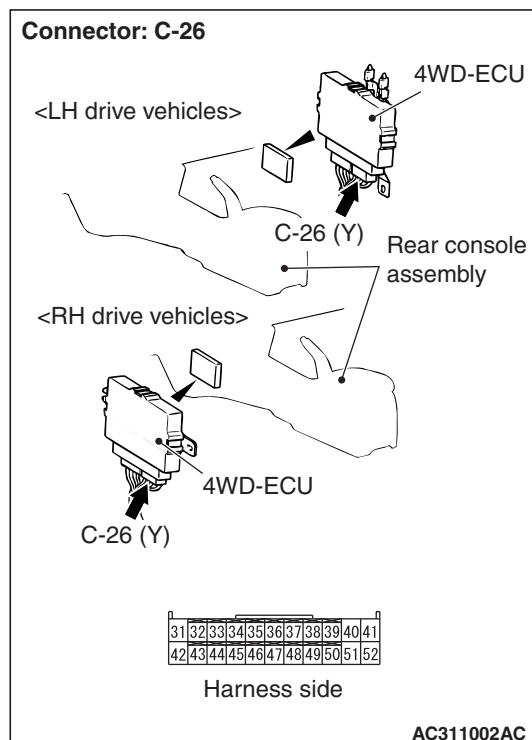
- Terminal No.33 <ST-1>
- Terminal No.34 <ST-2>
- Terminal No.44 <ST-N>

OK: Approximately 1.5 ⇔ 3.5 V flushing

Q: Is the check result normal?

YES : Go to Step 4.

NO : Go to Step 6.

STEP 4. Connector check: C-26 4WD-ECU connector.

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the defective connector.

STEP 5. M.U.T.-II/III data list

- Item 21: Steering wheel sensor voltage <ST-1>
- Item 22: Steering wheel sensor voltage <ST-2>
- Item 23: Steering wheel sensor voltage <ST-N>

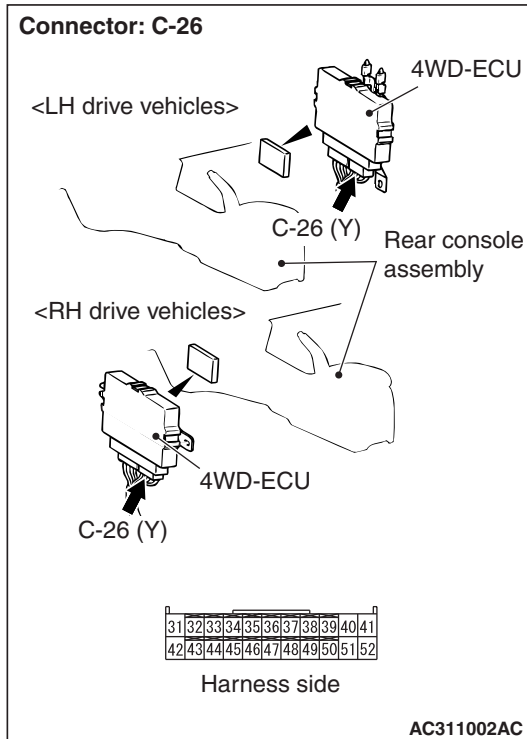
Check the above data list (Refer to data list reference table [P.22A-142](#)).

Q: Is the check result normal?

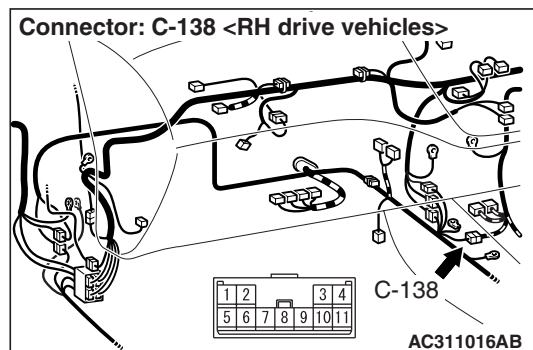
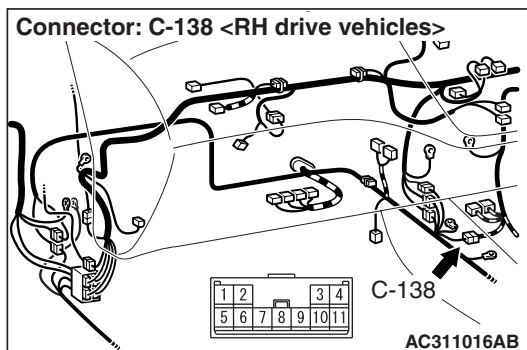
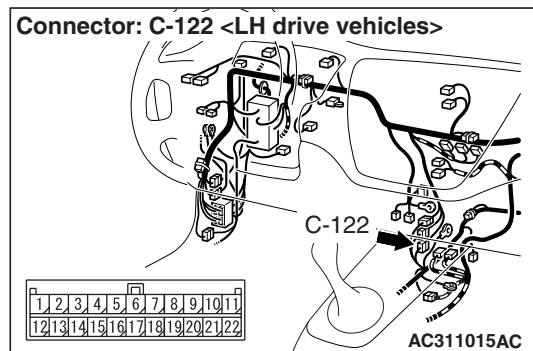
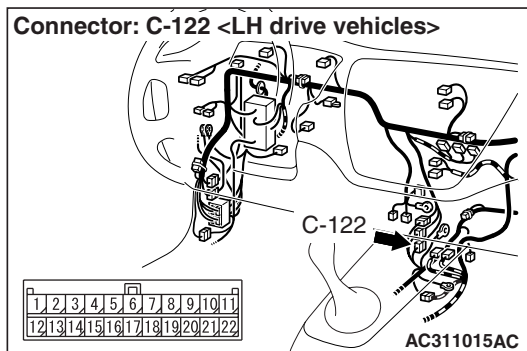
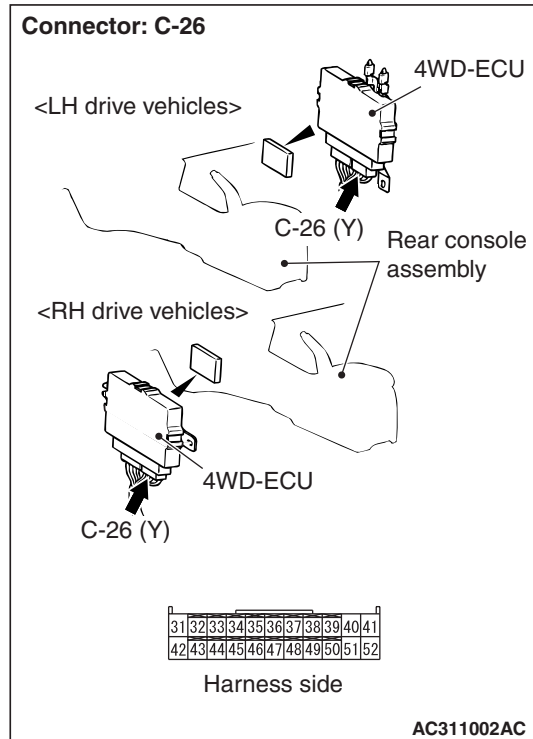
YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Replace the 4WD-ECU.

STEP 6. Connectors check: C-26 4WD-ECU connector, C-122 intermediate connector <LH drive vehicles> or C-26 4WD-ECU connector, C-138 intermediate connector <RH drive vehicles>.



STEP 7. Check the harness between 4WD-ECU connector C-26 (terminal No.33, 34, 44) and intermediate connector C-122 (terminal No.12, 1, 2) <LH drive vehicles> or intermediate connector C-138 (terminal No.5, 2, 1) <RH drive vehicles>.



Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair the defective connector.

Check the output line for open circuit.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the wiring harness.

STEP 8. M.U.T.-II/III data list

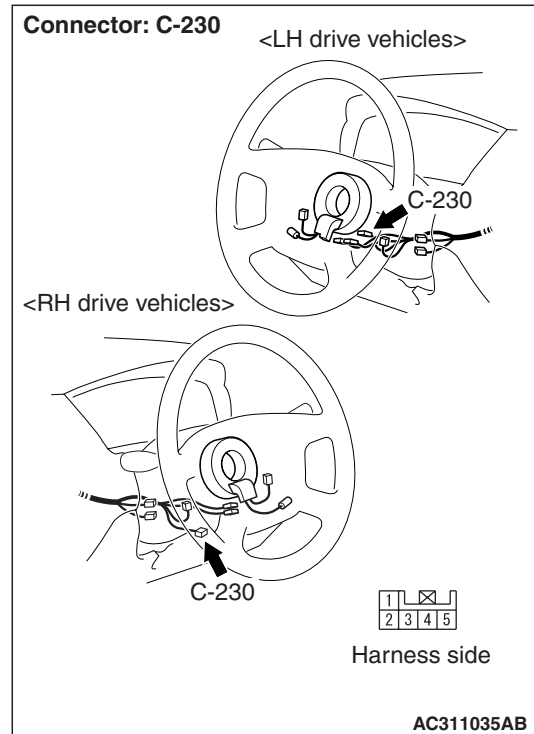
- Item 21: Steering wheel sensor voltage <ST-1>
- Item 22: Steering wheel sensor voltage <ST-2>
- Item 23: Steering wheel sensor voltage <ST-N>

Check the above data list (Refer to data list reference table [P.22A-142](#)).

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Go to Step 9.

STEP 9. Measure the voltage at steering wheel sensor connector C-230.

- (1) Disconnect the steering wheel sensor connector C-230, and measure the voltage between terminal No.2 and earth at the wiring harness side.
- (2) Turn the ignition switch to the ON position.

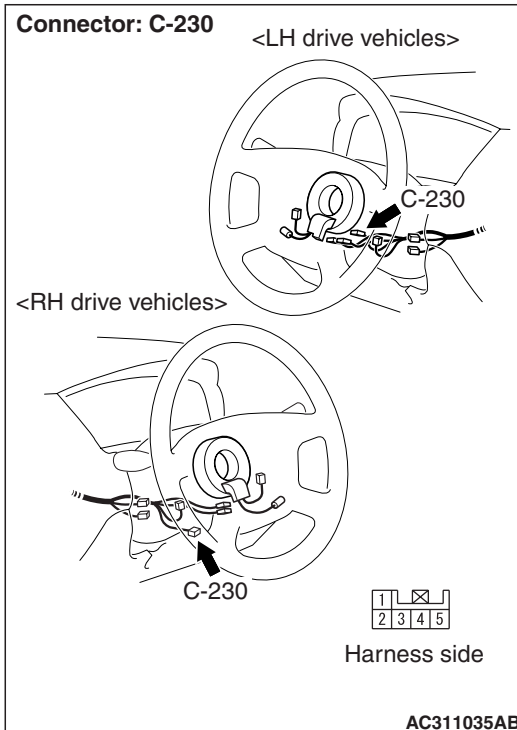
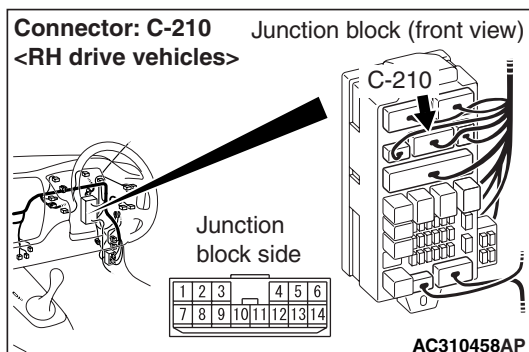
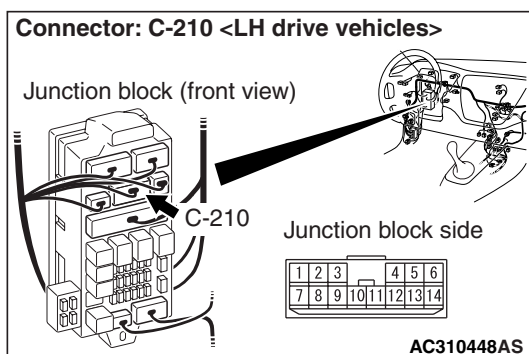
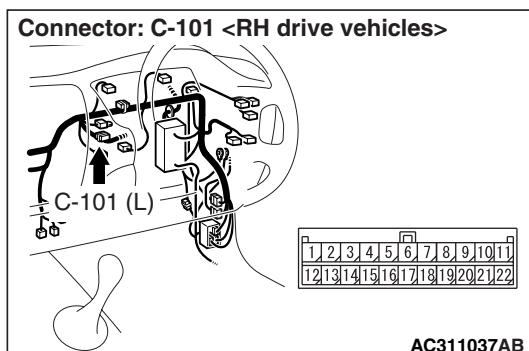
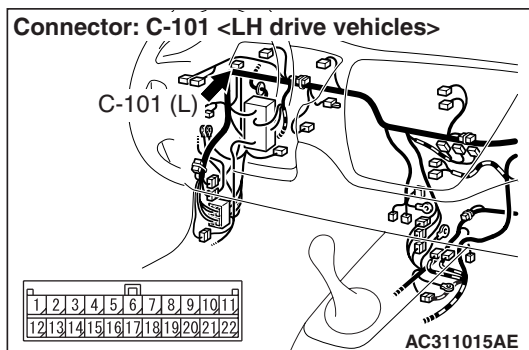
OK: System voltage

Q: Is the check result normal?

YES : Go to Step 12.

NO : Go to Step 10.

STEP 10. Connectors check: C-101 J/C (2), C-210 J/B connector, C-230 steering wheel sensor connector.



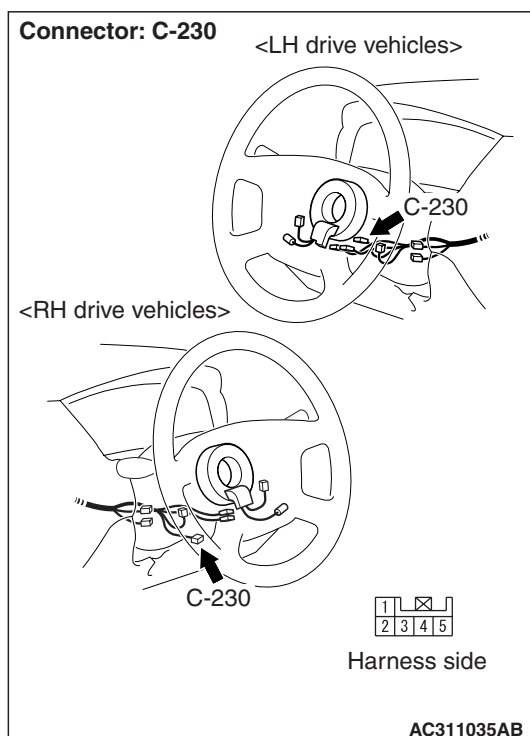
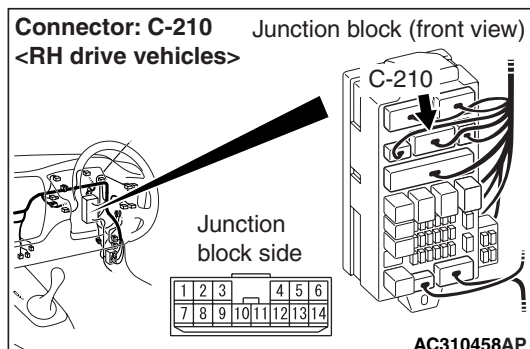
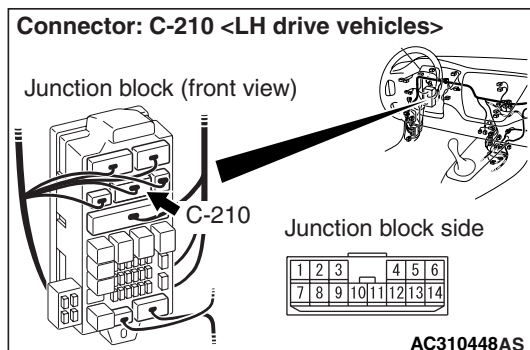
Check for the contact with terminals.

Q: Is the check result normal?

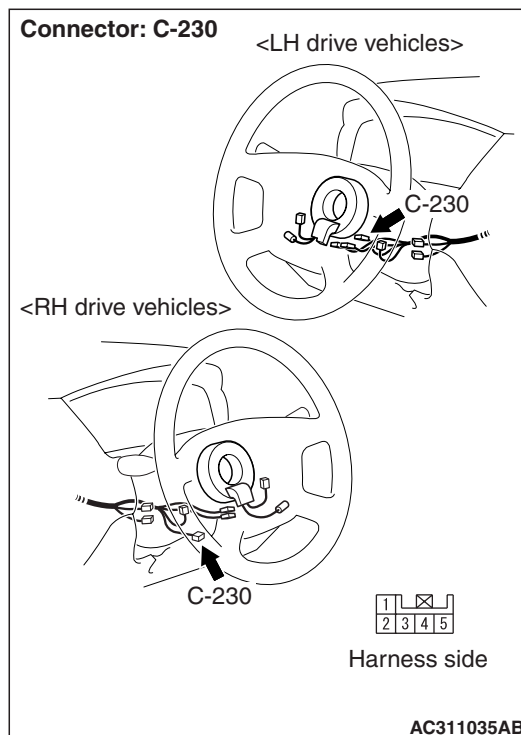
YES : Go to Step 11.

NO : Repair the defective connector.

STEP 11. Check the harness between J/B connector C-210 terminal No.13 and steering wheel sensor connector C-230 terminal No.2.



STEP 12. Measure the resistance at steering wheel sensor connector C-230.



- (1) Disconnect the steering wheel sensor connector C-230, and measure the resistance between terminal No.3 and earth at the wiring harness side.

OK: 2 Ω or less

Q: Is the check result normal?

YES : Go to Step 15.

NO : Go to Step 13.

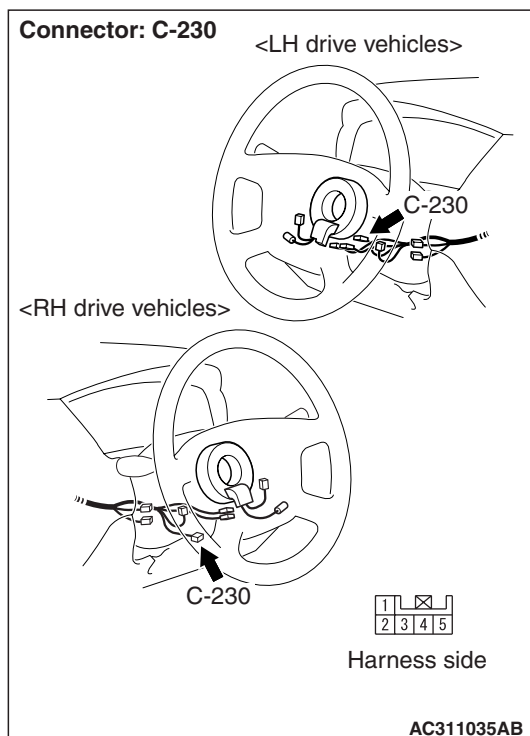
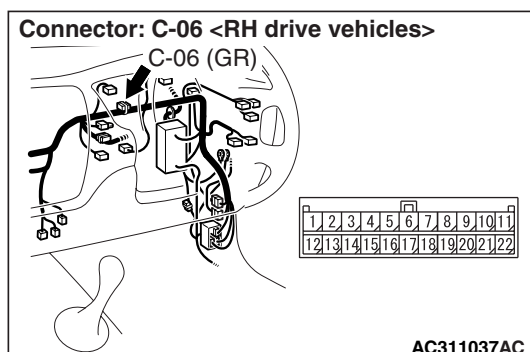
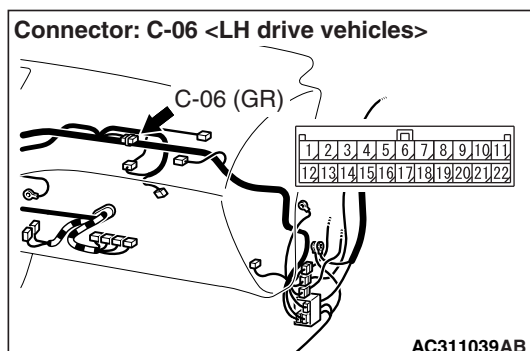
Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : The inspection is complete.

NO : Repair the wiring harness.

STEP 13. Connectors check: C-06 J/C (3), C-230 steering wheel sensor connector.



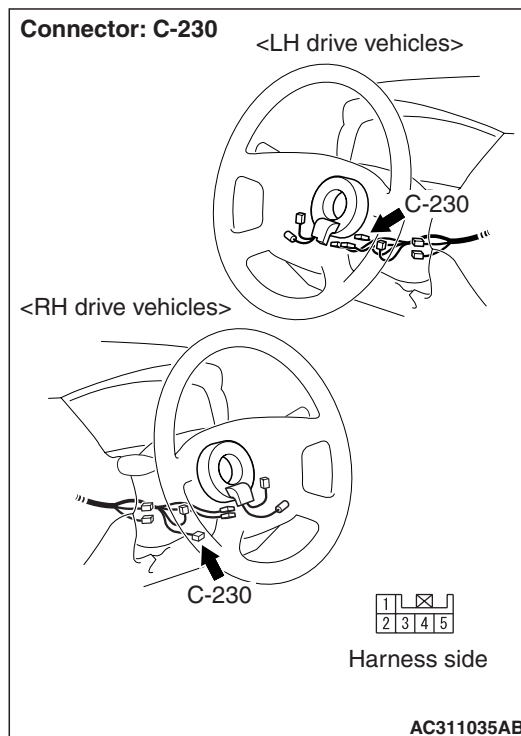
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 14.

NO : Repair the defective connector.

STEP 14. Check the harness between steering wheel sensor connector C-230 terminal No.3 and body earth.



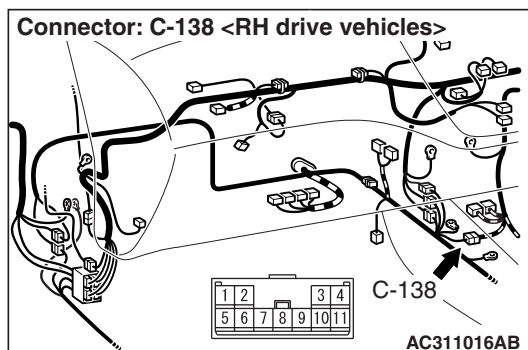
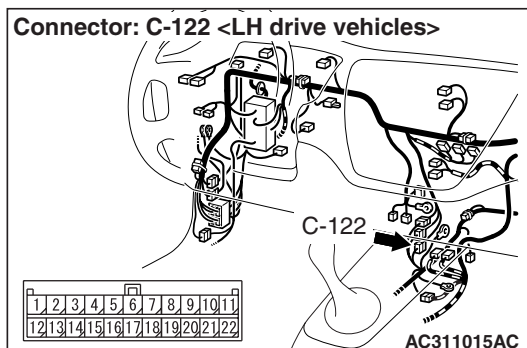
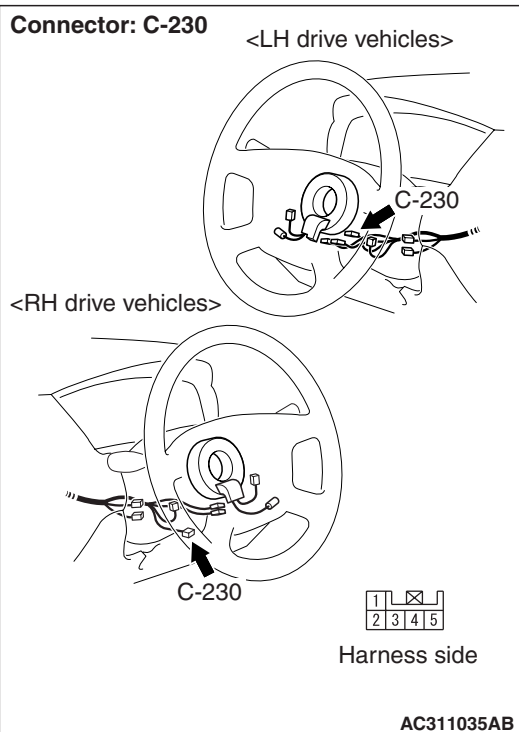
Check the earth line for open circuit.

Q: Is the check result normal?

YES : The inspection is complete.

NO : Repair the wiring harness.

STEP 15. Connectors check: C-230 steering wheel sensor connector, C-122 intermediate connector <LH drive vehicles> or C-138 intermediate connector <RH drive vehicles>.



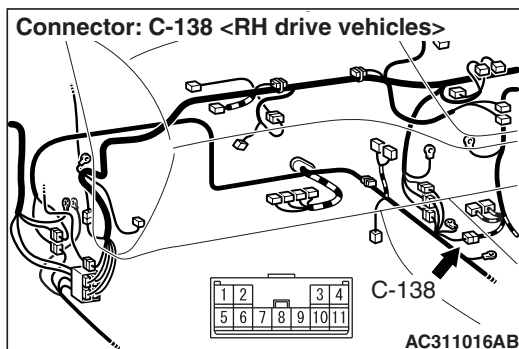
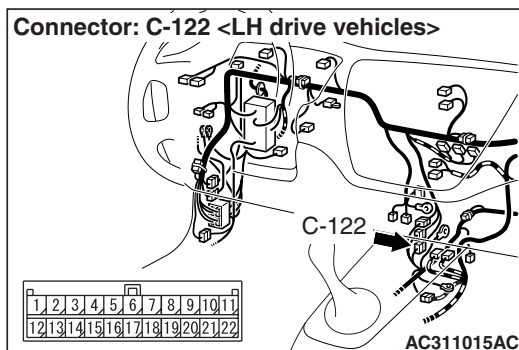
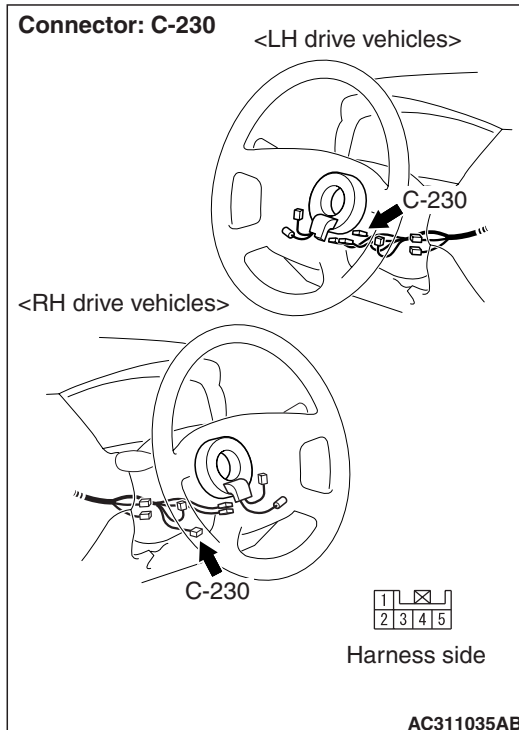
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 16.

NO : Repair the defective connector.

STEP 16. Check the harness between steering wheel sensor connector C-230 (terminal No.5, 4, 1) and intermediate connector C-122 (terminal No.12, 1, 2) <LH drive vehicles> or intermediate connector C-138 (terminal No.5, 2, 1) <RH drive vehicles>.



Check the output line for short or open circuit.

Q: Is the check result normal?

YES : Replace the steering wheel sensor.

NO : Repair the wiring harness.

Code No.32, 33 Steering wheel sensor system <ST-N>

STEERING WHEEL SENSOR SYSTEM CIRCUIT

Refer to P.22A-20.

OPERATION

Refer to P.22A-20.

DIAGNOSIS CODE SET CONDITIONS

- Code No.32 is set when the steering wheel 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 wheel sensor ST-1 and ST-2.
- Code No.33 is set when the steering wheel 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 wheel sensor ST-1 and ST-2.

PROBABLE CAUSES

- Malfunction of the steering wheel sensor
- Damaged harness wires and connectors
- Malfunction of the 4WD-ECU

DIAGNOSIS

STEP 1. M.U.T.-II/III data list

Item 52: Steering wheel sensor <ST-N> (Refer to data list reference table P.22A-142).

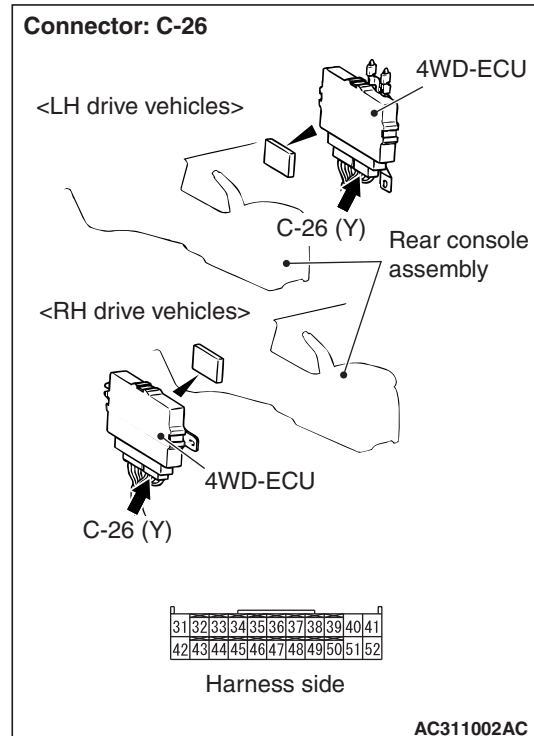
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-5).

NO : Go to Step 2.

STEP 2. Measure the voltage at 4WD-ECU connector C-26.

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



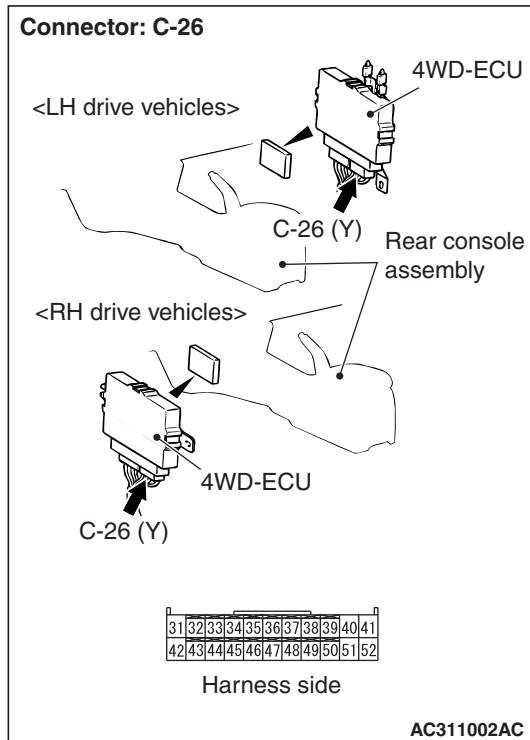
(2) Measure the voltage between 4WD-ECU connector C-26 terminal 44 and earth while turning the steering wheel.

OK: Approximately 1.5 ⇔ 3.5 V flushing

Q: Is the check result normal?

YES : Go to Step 3.

NO : Go to Step 5.

STEP 3. Connector check: C-26 4WD-ECU connector.

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the defective connector.

STEP 4. M.U.T.-II/III data list

Item 52: Steering wheel sensor <ST-N> (Refer to data list reference table [P.22A-142](#)).

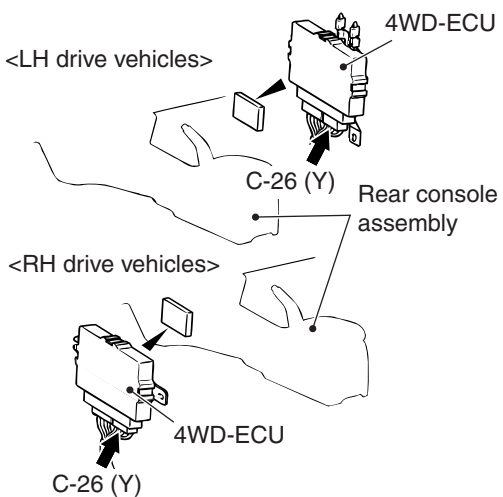
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Replace the 4WD-ECU.

STEP 5. Connectors check: C-26 4WD-ECU connector, C-122 intermediate connector, C-230 steering wheel sensor connector <LH drive vehicles> or C-26 4WD-ECU connector, C-138 intermediate connector, C-230 steering wheel sensor connector <RH drive vehicles>.

Connector: C-26



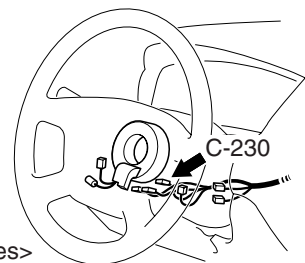
31	32	33	34	35	36	37	38	39	40	41
42	43	44	45	46	47	48	49	50	51	52

Harness side

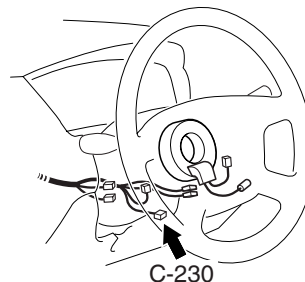
AC311002AC

Connector: C-230

<LH drive vehicles>



<RH drive vehicles>



1	2	3	4	5
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Harness side

AC311035AB

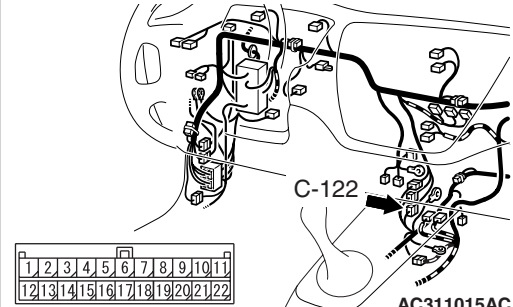
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the defective connector.

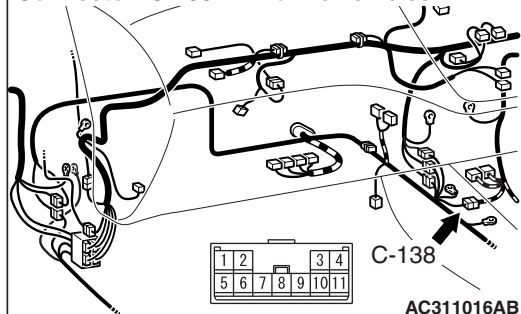
Connector: C-122 <LH drive vehicles>



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

AC311015AC

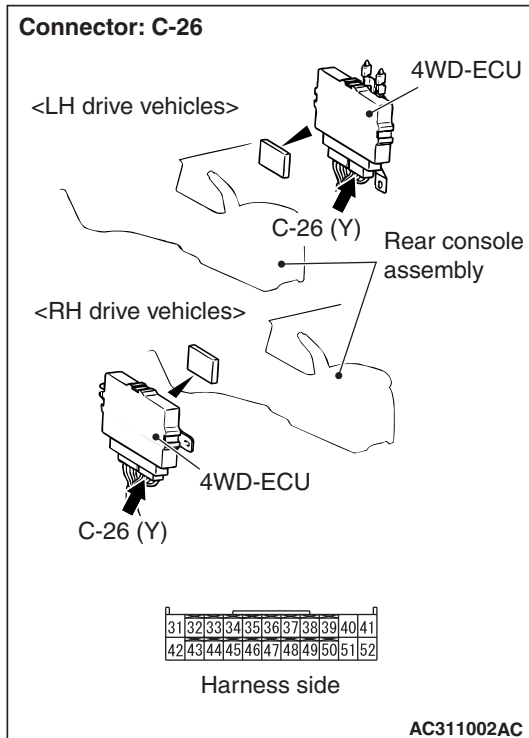
Connector: C-138 <RH drive vehicles>



1	2					3	4
5	6	7	8	9	10	11	

AC311016AB

STEP 6. Check the harness between 4WD-ECU connector C-26 terminal No.44 and steering wheel sensor connector C-230 terminal No.1.



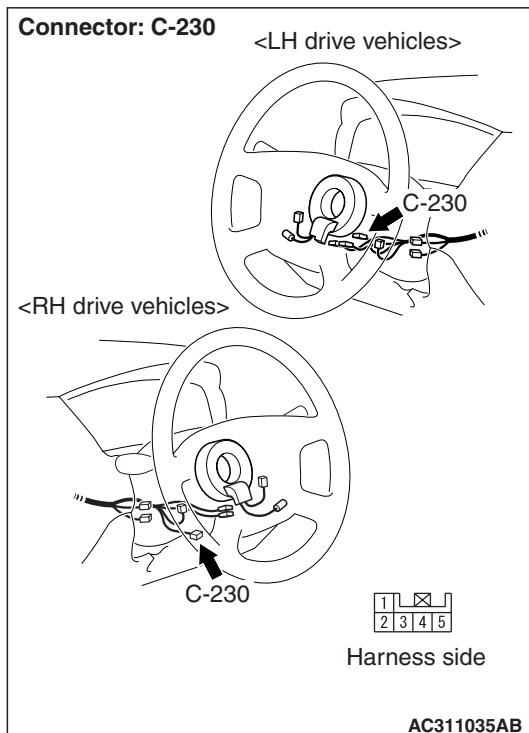
STEP 7. Replace the steering wheel sensor and then recheck the diagnosis code.

- (1) Replace the steering wheel sensor.
- (2) Test drive the vehicle.
- (3) Check the diagnosis code.

Q: Is the diagnosis code set?

YES : Go to Step 4.

NO : The inspection is complete.



Check the output line for open circuit.

Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair the wiring harness.

Code No.34 Steering wheel sensor system <ST-1, ST-2>

STEERING WHEEL SENSOR SYSTEM CIRCUIT

Refer to P.22A-20.

OPERATION

Refer to P.22A-20.

DIAGNOSIS CODE SET CONDITIONS

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

PROBABLE CAUSES

- Malfunction of the steering wheel sensor
- Damaged harness wires and connectors
- Malfunction of the 4WD-ECU

DIAGNOSIS

STEP 1. M.U.T.-II/III data list

- Item 53: Steering wheel sensor <ST-1>
- Item 54: Steering wheel sensor <ST-2>

Check the above data list (Refer to data list reference table P.22A-142).

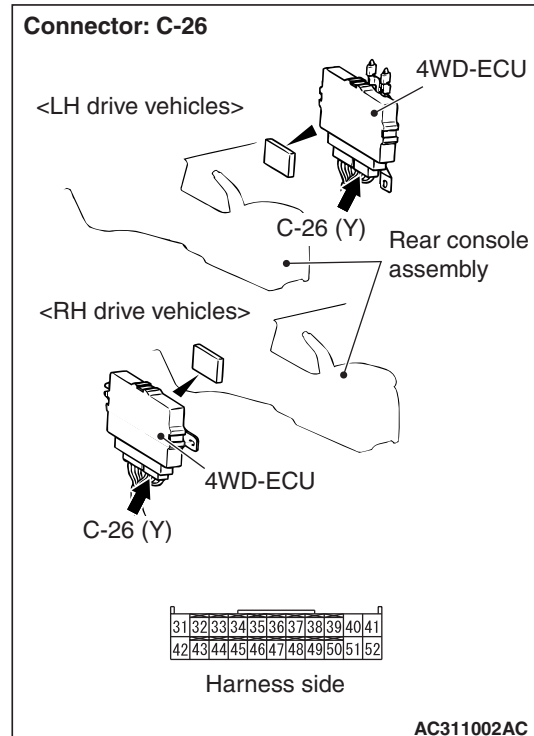
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-5).

NO : Go to Step 2.

STEP 2. Measure the voltage at 4WD-ECU connector C-26.

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



(2) Measure the voltage between the following terminals of 4WD-ECU connector C-26 and earth while turning the steering wheel.

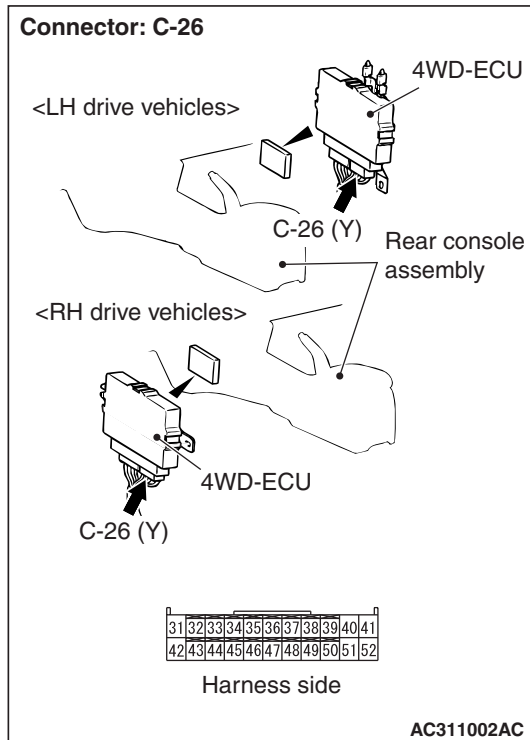
- Terminal No.33 <ST-1>
- Terminal No.34 <ST-2>

OK: Approximately 1.5 ⇔ 3.5 V flushing

Q: Is the check result normal?

YES : Go to Step 3.

NO : Go to Step 5.

STEP 3. Connector check: C-26 4WD-ECU connector.

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the defective connector.

STEP 4. M.U.T.-II/III data list

- Item 53: Steering wheel sensor <ST-1>
- Item 54: Steering wheel sensor <ST-2>

Check the above data list (Refer to data list reference table [P.22A-142](#)).

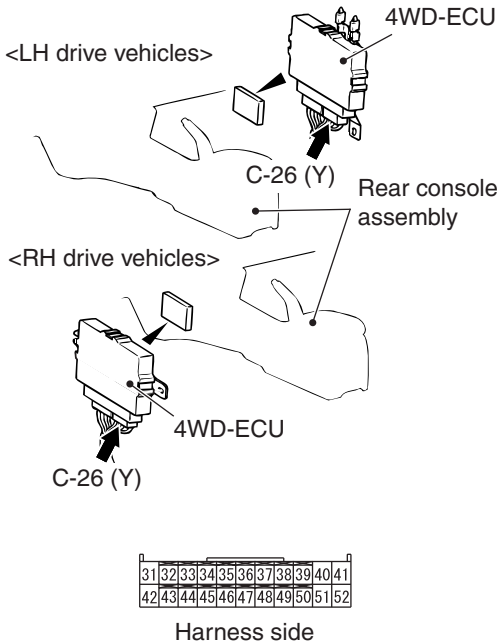
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Replace the 4WD-ECU.

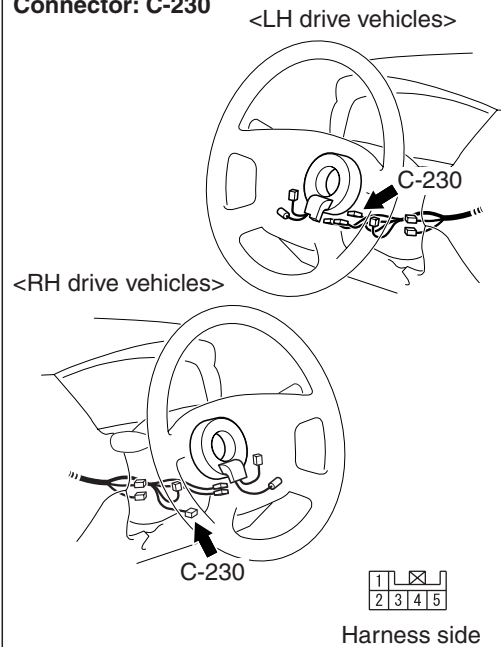
STEP 5. Connectors check: C-26 4WD-ECU connector, C-122 intermediate connector, C-230 steering wheel sensor connector <LH drive vehicles> or C-26 4WD-ECU connector, C-138 intermediate connector, C-230 steering wheel sensor connector <RH drive vehicles>.

Connector: C-26



AC311002AC

Connector: C-230



AC311035AB

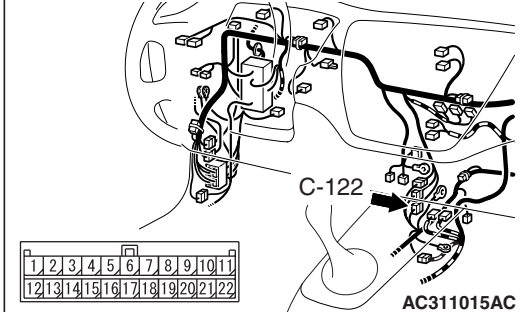
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 6.

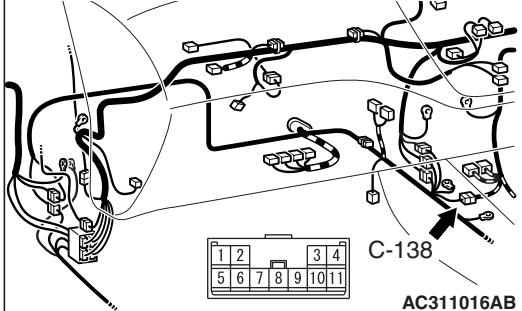
NO : Repair the defective connector.

Connector: C-122 <LH drive vehicles>



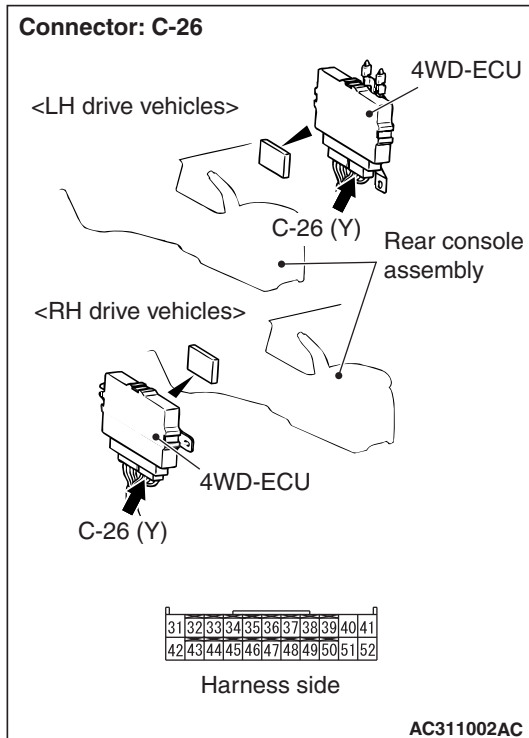
AC311015AC

Connector: C-138 <RH drive vehicles>



AC311016AB

STEP 6. Check the harness between 4WD-ECU connector C-26 (terminal No.33, 34) and steering wheel sensor connector C-230 (terminal No.5, 4).



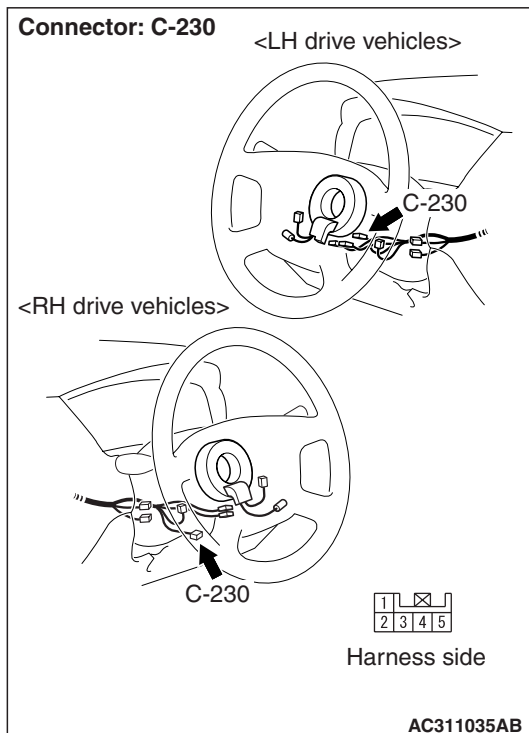
STEP 7. Replace the steering wheel sensor and then recheck the diagnosis code.

- (1) Replace the steering wheel sensor.
- (2) Test drive the vehicle.
- (3) Check the diagnosis code.

Q: Is the diagnosis code set?

YES : Go to Step 4.

NO : The inspection is complete.



Check the output line for open circuit.

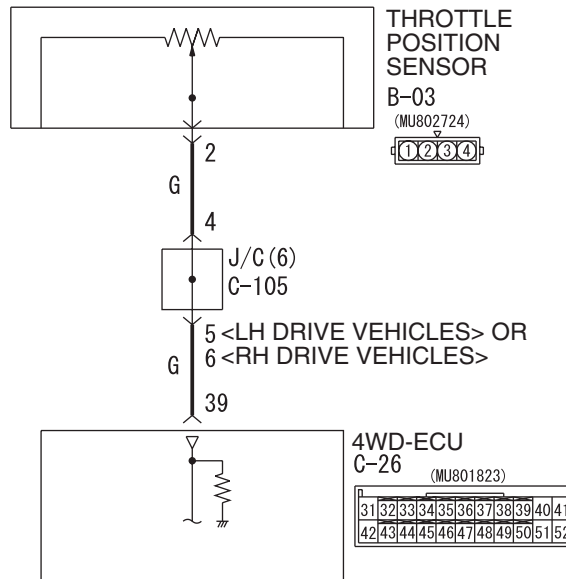
Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair the wiring harness.

Code No.41, 42 Throttle position sensor system

Throttle position sensor system circuit



Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W4J22E05AA

OPERATION

The 4WD-ECU receives a change in the output voltage from the throttle position sensor to determine the accelerator pedal opening angle.

DIAGNOSIS CODE SET CONDITIONS

- Code No.41 is set as excessively small output when the TPS output is below 0.2 V in the idling state.
- Code No.42 is set as excessively large output when the TPS output is more than 4.8 V for more than 2 minutes continuously below a vehicle speed of 10 km/h.

PROBABLE CAUSES

- Malfunction of the throttle position sensor
- Damaged harness wires and connectors
- Malfunction of the 4WD-ECU

DIAGNOSIS

STEP 1. M.U.T.-II/III diagnosis code

Q: Is MPI diagnosis code P0120 set?

YES : Refer to GROUP 13A – Inspection Chart for Diagnosis Codes [P.13A-60](#).

NO : Go to Step 2.

STEP 2. M.U.T.-II/III data list

Item 13: Throttle position sensor voltage (Refer to data list reference table [P.22A-142](#)).

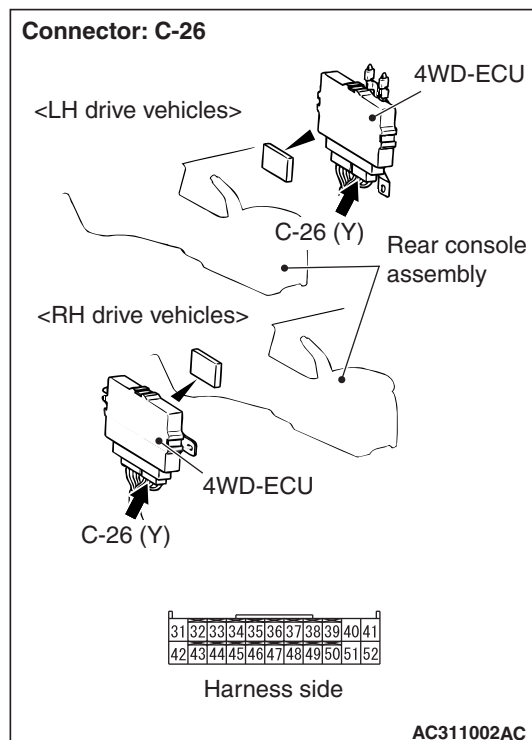
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

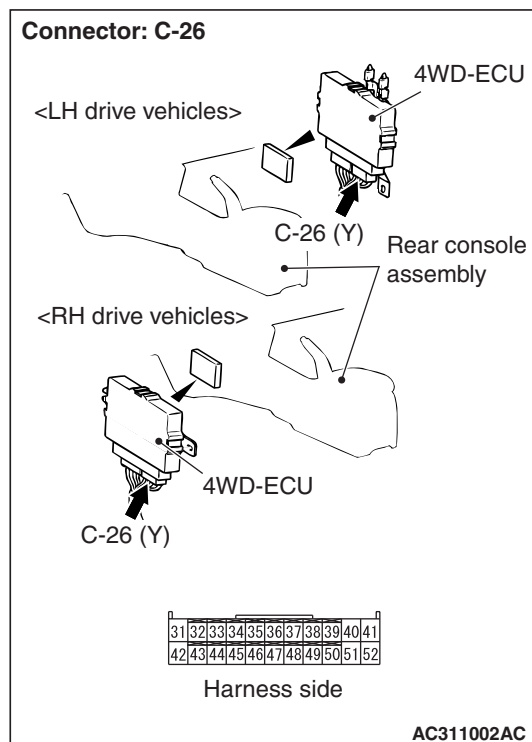
NO : Go to Step 3.

STEP 3. Measure the voltage at 4WD-ECU connector C-26.

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



(2) Measure the voltage between 4WD-ECU connector C-26 terminal No.39 and earth.

OK:**Accelerator pedal fully released: 0.535 – 0.735 V****Accelerator pedal fully depressed: 4.5 – 5.0 V****Q: Is the check result normal?****YES :** Go to Step 4.**NO :** Go to Step 6.**STEP 4. Connector check: C-26 4WD-ECU connector.**

Check for the contact with terminals.

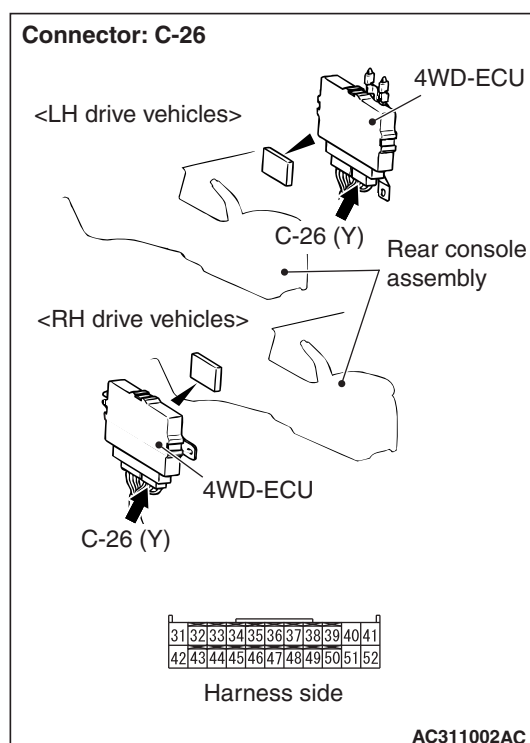
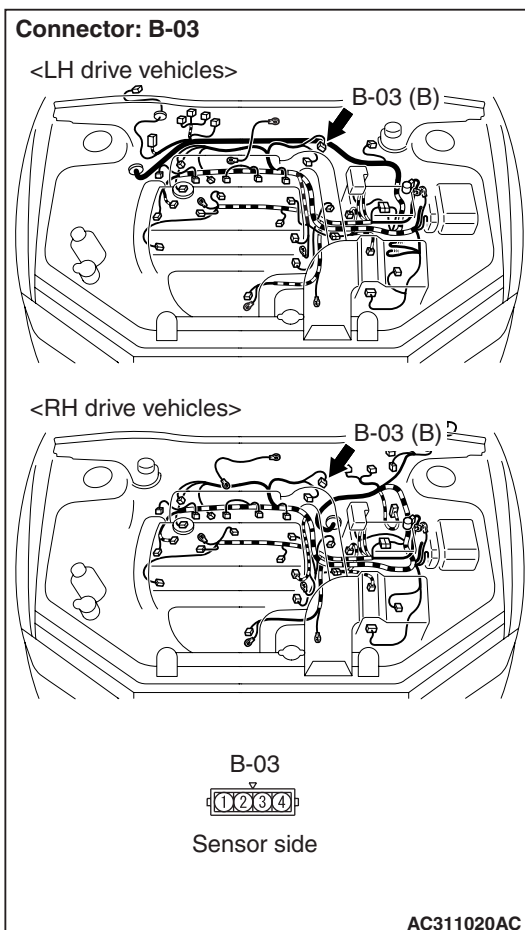
Q: Is the check result normal?**YES :** Go to Step 5.**NO :** Repair the defective connector.**STEP 5. M.U.T.-II/III data list**Item 13: Throttle position sensor voltage (Refer to data list reference table [P.22A-142](#)).**Q: Is the check result normal?****YES :** Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).**NO :** Replace the 4WD-ECU.**STEP 6. Check throttle position sensor.**Check throttle position sensor (Refer to [P.13A-404](#)).**Q: Is the check result normal?****YES :** Go to Step 7.**NO :** Repair or replace throttle position sensor.

STEP 7. Connectors check: B-03 throttle position sensor connector, C-26 4WD-ECU connector, C-105 J/C (6).

Q: Is the check result normal?

YES : Go to Step 8.

NO : Repair the defective connector.



Check for the contact with terminals.

STEP 8. Check the harness between throttle position sensor connector B-03 terminal No.2 and 4WD-ECU connector C-26 terminal No.39.

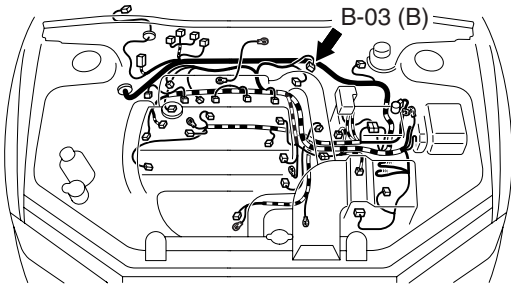
Q: Is the check result normal?

YES : Go to Step 5.

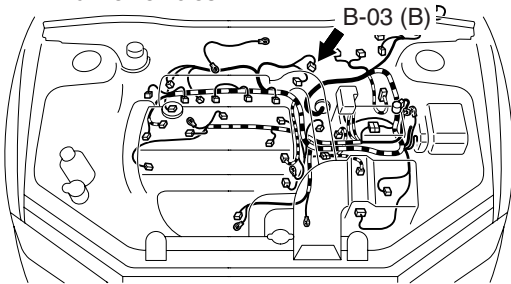
NO : Repair the wiring harness.

Connector: B-03

<LH drive vehicles>



<RH drive vehicles>



B-03

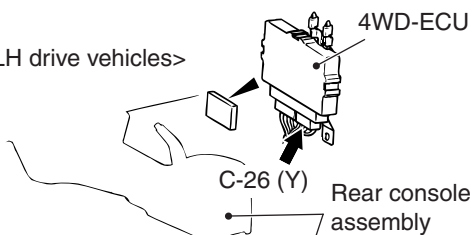


Sensor side

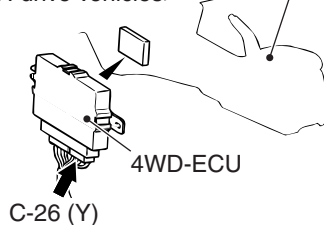
AC311020AC

Connector: C-26

<LH drive vehicles>



<RH drive vehicles>



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

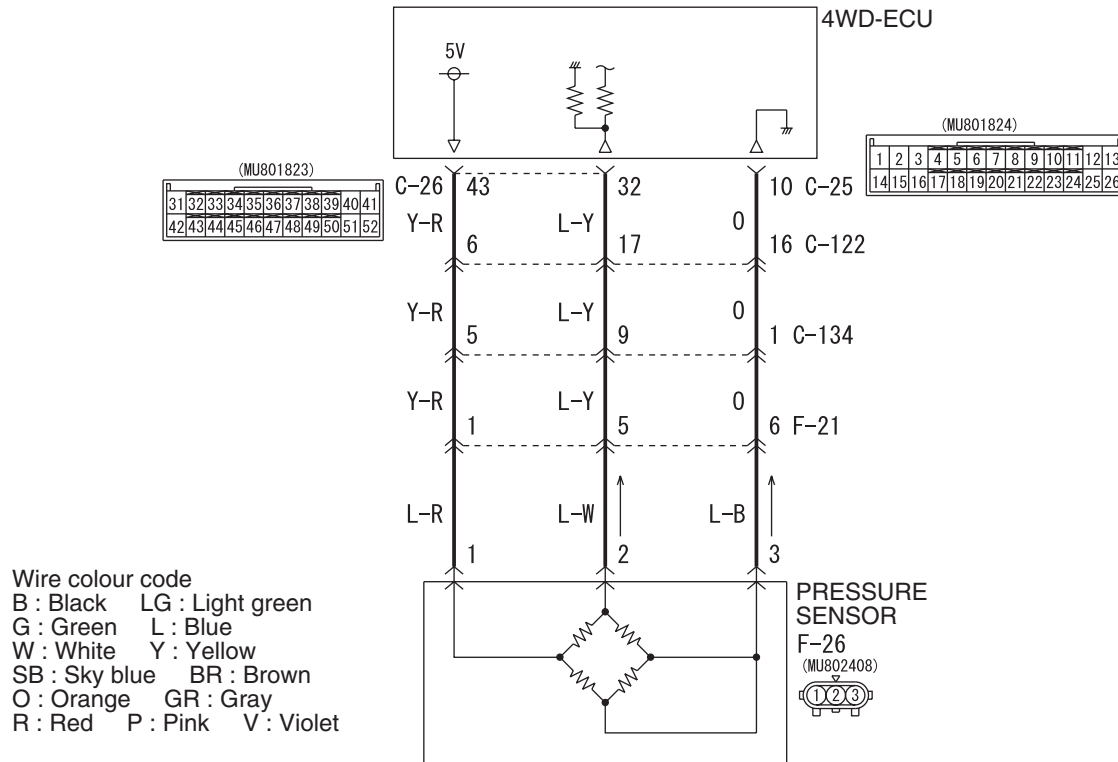
Harness side

AC311002AC

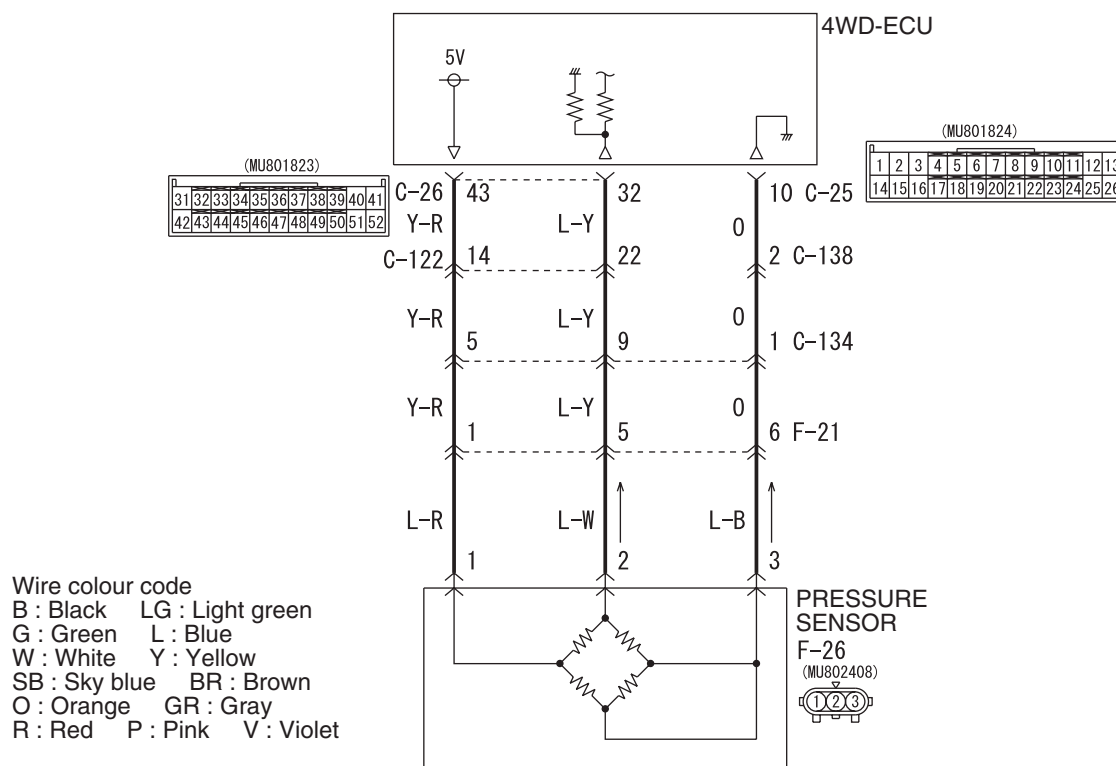
Check the output line for open circuit.

Code No.45 Pressure sensor system (open circuit or short circuit)

Pressure sensor system circuit <LH drive vehicles>



Pressure sensor system circuit <RH drive vehicles>



W4J22E07AA

OPERATION

The 4WD-ECU receives accumulator pressure information from the pressure sensor to control the electric pump.

DIAGNOSIS CODE SET CONDITIONS

Code No.45 is set when the output signal from the pressure sensor is below 0.2 V.

PROBABLE CAUSES

- Malfunction of the pressure sensor
- Damaged harness wires and connectors
- Malfunction of the 4WD-ECU

DIAGNOSIS**STEP 1. M.U.T.-II/III data list**

Item 18: Pressure sensor (Refer to data list reference table [P.22A-142](#)).

Q: Is the check result normal?

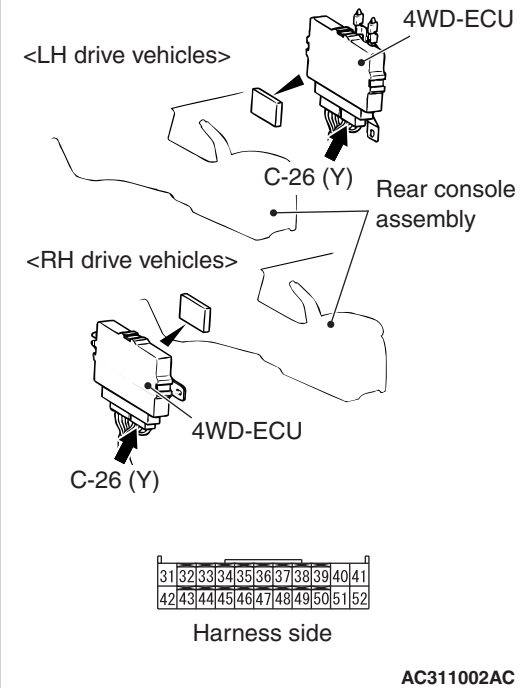
YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Go to Step 2.

STEP 2. Measure the voltage at 4WD-ECU connector C-26.

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

Connector: C-26



(2) Measure the voltage between 4WD-ECU connector C-26 terminal No.32 and earth.

OK: 0.5 – 1.5 V

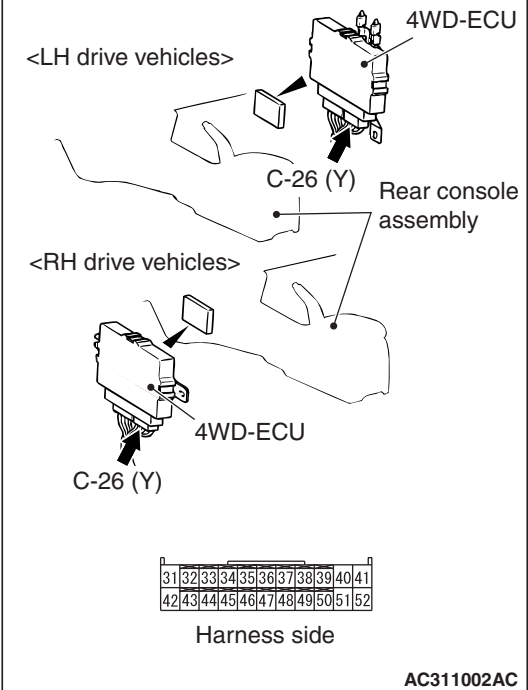
Q: Is the check result normal?

YES : Go to Step 3.

NO : Go to Step 5.

STEP 3. Connector check: C-26 4WD-ECU connector.

Connector: C-26



Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the defective connector.

STEP 4. M.U.T.-II/III data list

Item 18: Pressure sensor (Refer to data list reference table [P.22A-142](#)).

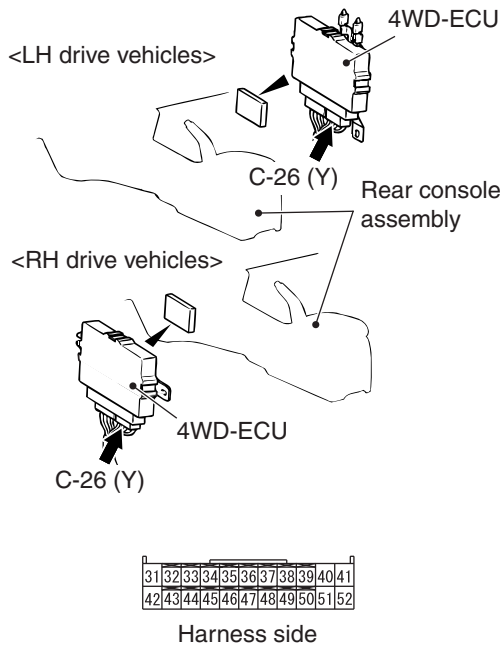
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Replace the 4WD-ECU.

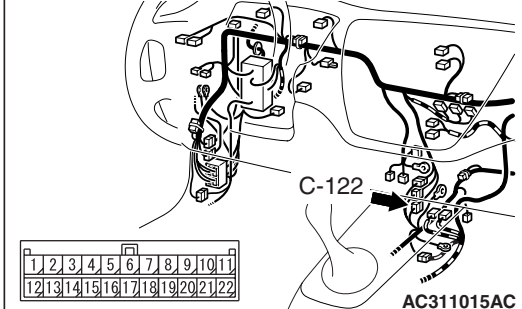
STEP 5. Connectors check: C-26 4WD-ECU connector, C-122, C-134, F-21 intermediate connector, F-26 pressure sensor connector.

Connector: C-26



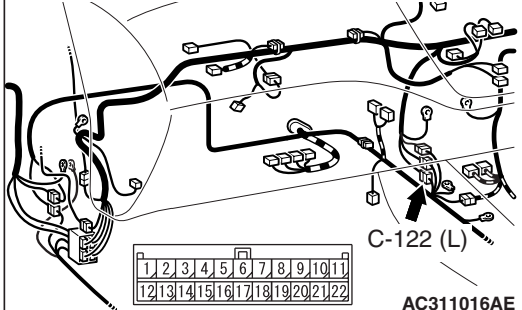
AC311002AC

Connector: C-122 <LH drive vehicles>



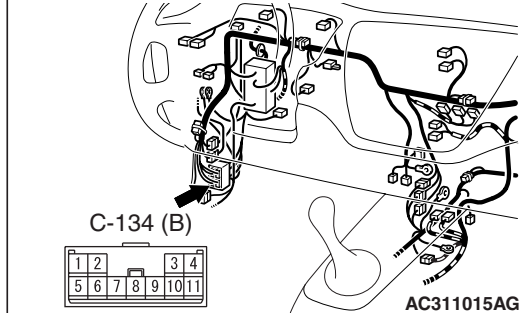
AC311015AC

Connector: C-122 <RH drive vehicles>



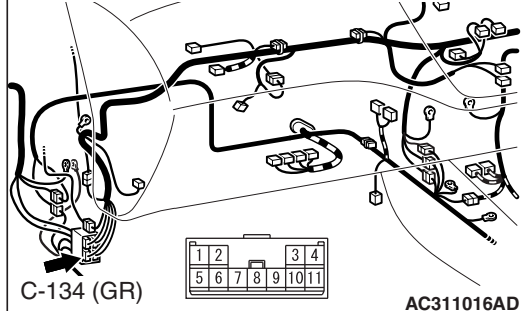
AC311016AE

Connector: C-134 <LH drive vehicles>



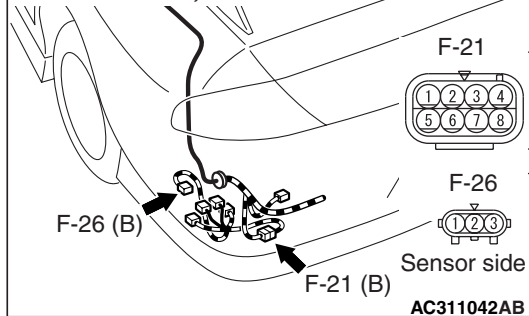
AC311015AG

Connector: C-134 <RH drive vehicles>



AC311016AD

Connector: F-21, F-26



AC311042AB

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 6.

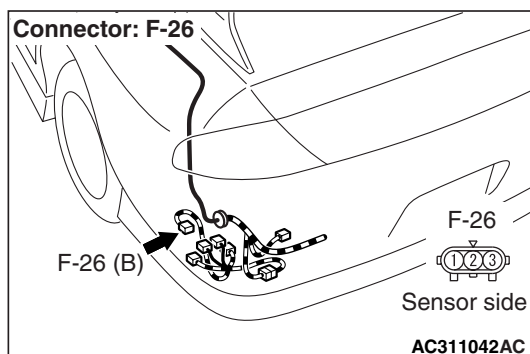
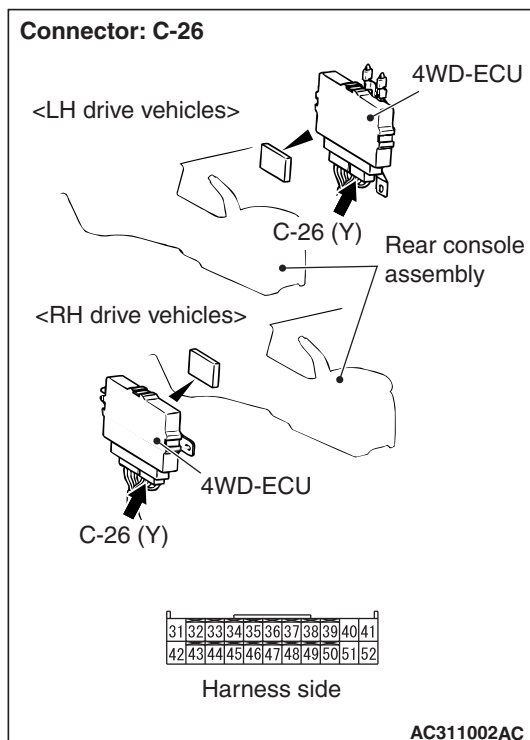
NO : Repair the defective connector.

STEP 6. Check the harness between 4WD-ECU connector C-26 (terminal No.43, 32) and pressure sensor connector F-26 (terminal No.1, 2).

Q: Is the check result normal?

YES : Replace the pressure sensor.

NO : Repair the wiring harness.



Check the power supply line, output line for short or open circuit.

Code No.46 Pressure sensor system (open earth)**PRESSURE SENSOR SYSTEM CIRCUIT**

Refer to P.22A-41.

OPERATION

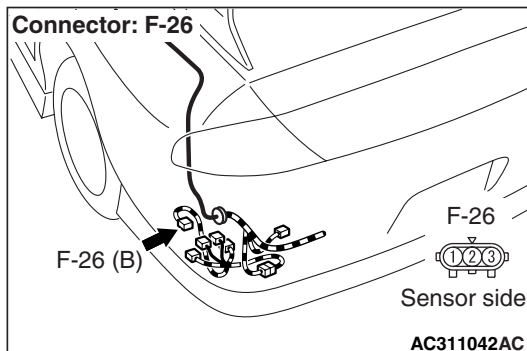
Refer to P.22A-41.

DIAGNOSIS CODE SET CONDITIONS

Code No.46 is set when the output signal from the pressure sensor is above 2.0 V.

PROBABLE CAUSES

- Malfunction of the pressure sensor
- Damaged harness wires and connectors
- Malfunction of the 4WD-ECU

DIAGNOSIS**STEP 1. Measure the voltage at pressure sensor connector F-26.**

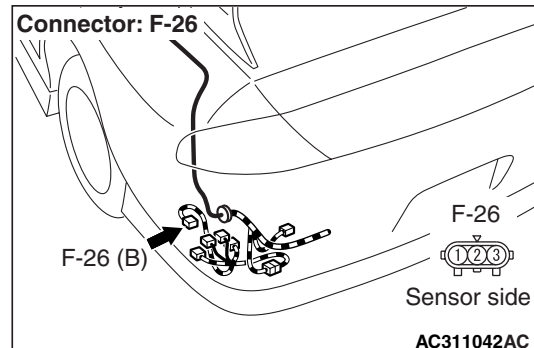
Disconnect the pressure sensor connector, and measure the resistance between terminal 3 and body earth at the harness side.

OK: 2 Ω or less

Q: Is the check result normal?

YES : Go to Step 2.

NO : Go to Step 3.

STEP 2. Connector check: F-26 pressure sensor connector.

Check for the contact with terminals.

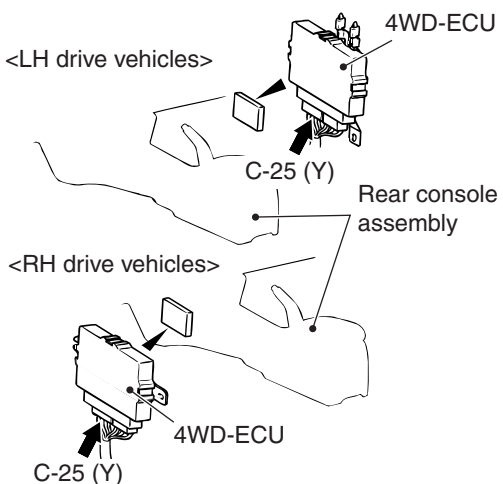
Q: Is the check result normal?

YES : Replace the pressure sensor.

NO : Repair the defective connector.

STEP 3. Connectors check: C-25 4WD-ECU connector, C-122, C-134, F-21 intermediate connector, F-26 pressure sensor connector <LH drive vehicles> or C-25 4WD-ECU connector, C-134, C-138, F-21 intermediate connector, F-26 pressure sensor connector <RH drive vehicles>.

Connector: C-25

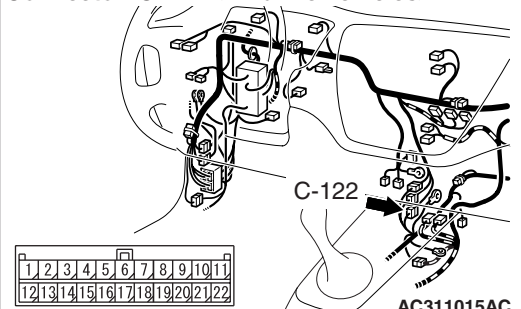


1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26

Harness side

AC311002AB

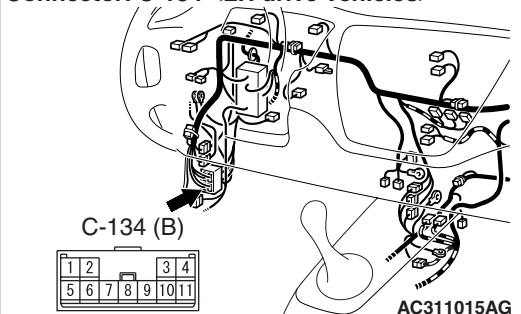
Connector: C-122 <LH drive vehicles>



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

AC311015AC

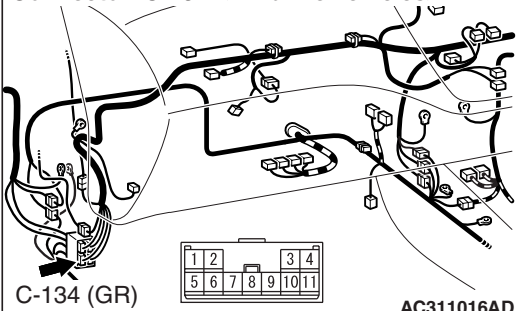
Connector: C-134 <LH drive vehicles>



1	2	3	4
5	6	7	8
9	10	11	

AC311015AG

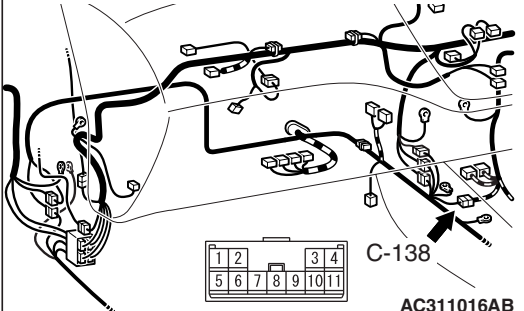
Connector: C-134 <RH drive vehicles>



1	2	3	4
5	6	7	8
9	10	11	

AC311016AD

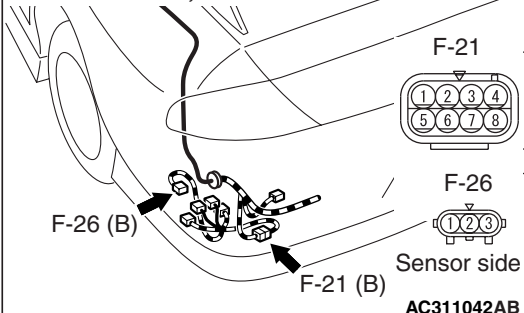
Connector: C-138 <RH drive vehicles>



1	2	3	4
5	6	7	8
9	10	11	

AC311016AB

Connector: F-21, F-26



1	2	3	4
5	6	7	8

1	2	3
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AC311042AB

Check for the contact with terminals.

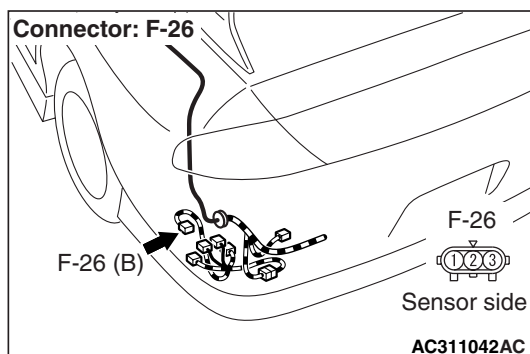
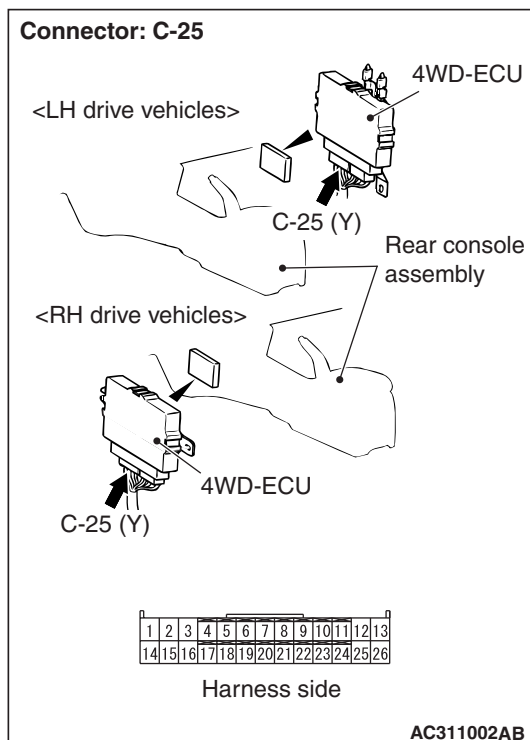
Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the defective connector.

STEP 4. Check the harness between 4WD-ECU connector C-25 terminal No.10 and pressure sensor connector F-26 terminal No.3.

Q: Is the check result normal?
YES : Replace the 4WD-ECU.
NO : Repair the wiring harness.



Check the power supply line, output line, earth line for short or open circuit.

Code No.47 Pressure sensor system (abnormal power supply)

PRESSURE SENSOR SYSTEM CIRCUIT

Refer to P.22A-41.

OPERATION

Refer to P.22A-41.

DIAGNOSIS CODE SET CONDITIONS

Code No.47 is set when the pressure sensor power supply voltage is above 4.0V during pressure sensor power OFF or less than 4.0V during pressure sensor power ON.

PROBABLE CAUSES

- Malfunction of the pressure sensor
- Damaged harness wires and connectors
- Malfunction of the 4WD-ECU

DIAGNOSIS

STEP 1. M.U.T.-II/III data list

Item 19: Pressure sensor power supply (Refer to data list reference table P.22A-142).

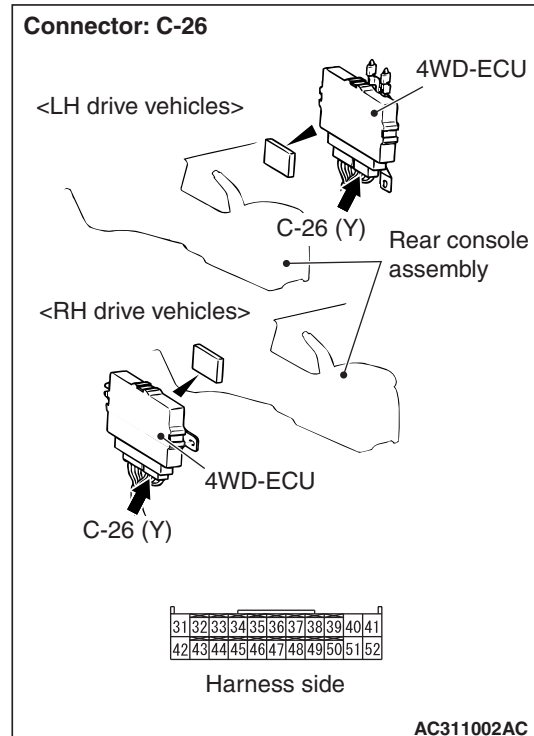
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-5).

NO : Go to Step 2.

STEP 2. Measure the voltage at 4WD-ECU connector C-26.

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



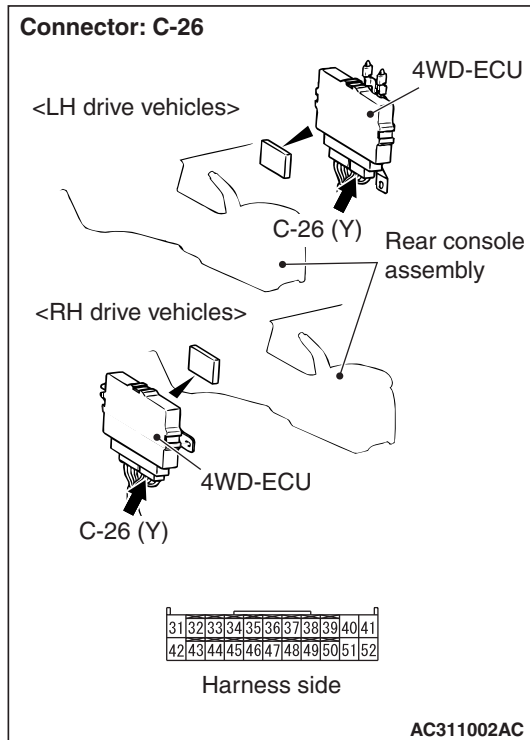
(2) Measure the voltage between 4WD-ECU connector C-26 terminal No.43 and earth.

OK: 5 V

Q: Is the check result normal?

YES : Go to Step 3.

NO : Go to Step 5.

STEP 3. Connector check: C-26 4WD-ECU connector.

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the defective connector.

STEP 4. M.U.T.-II/III data list

Item 19: Pressure sensor power supply (Refer to data list reference table [P.22A-142](#)).

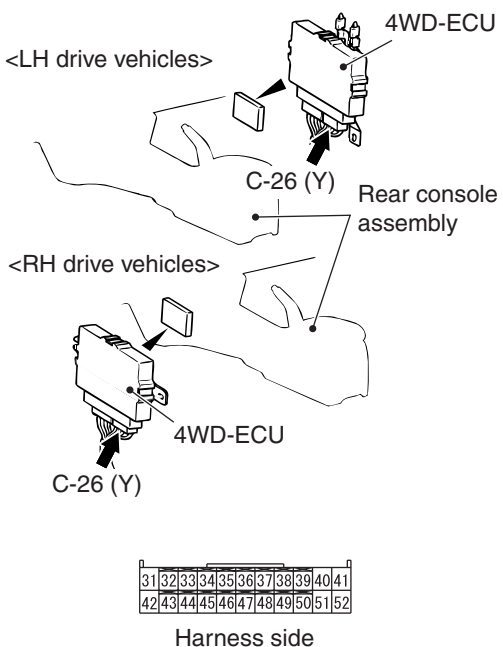
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Replace the 4WD-ECU.

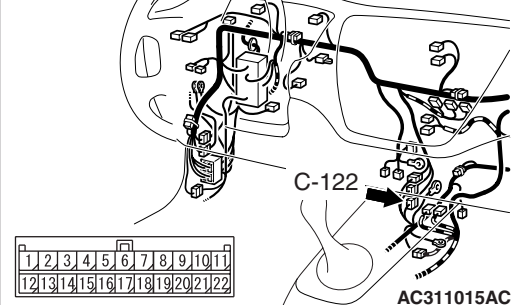
STEP 5. Connectors check: C-26 4WD-ECU connector, C-122, C-134, F-21 intermediate connector, F-26 pressure sensor connector.

Connector: C-26



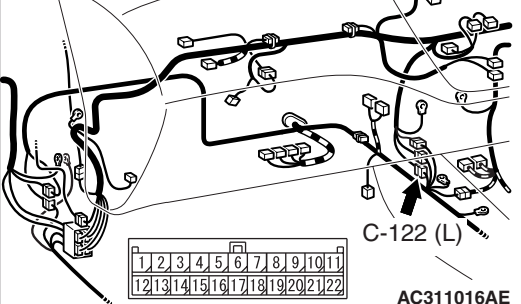
AC311002AC

Connector: C-122 <LH drive vehicles>



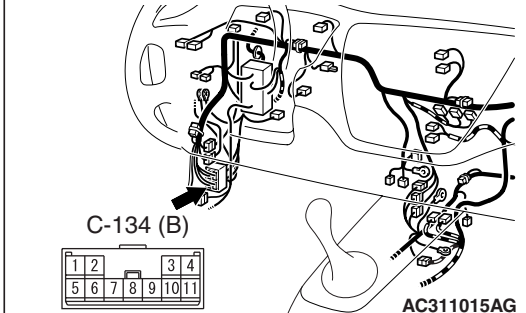
AC311015AC

Connector: C-122 <RH drive vehicles>



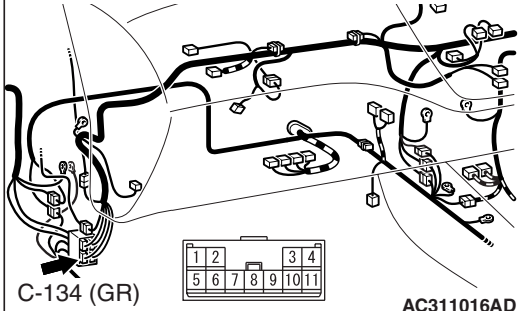
AC311016AE

Connector: C-134 <LH drive vehicles>



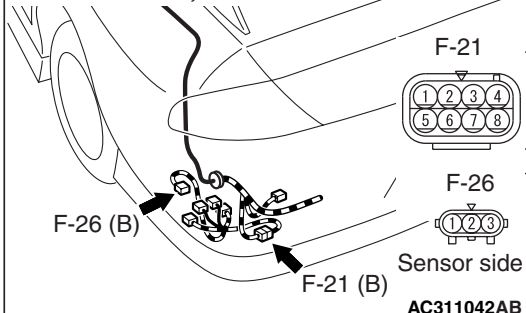
AC311015AG

Connector: C-134 <RH drive vehicles>



AC311016AD

Connector: F-21, F-26



AC311042AB

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 6.

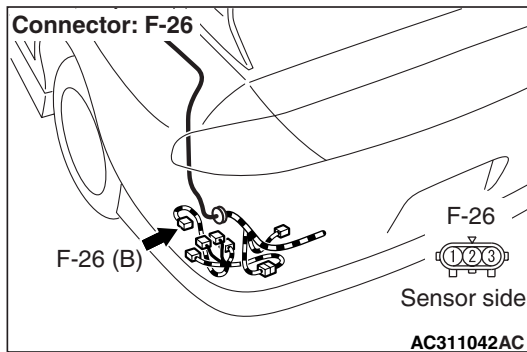
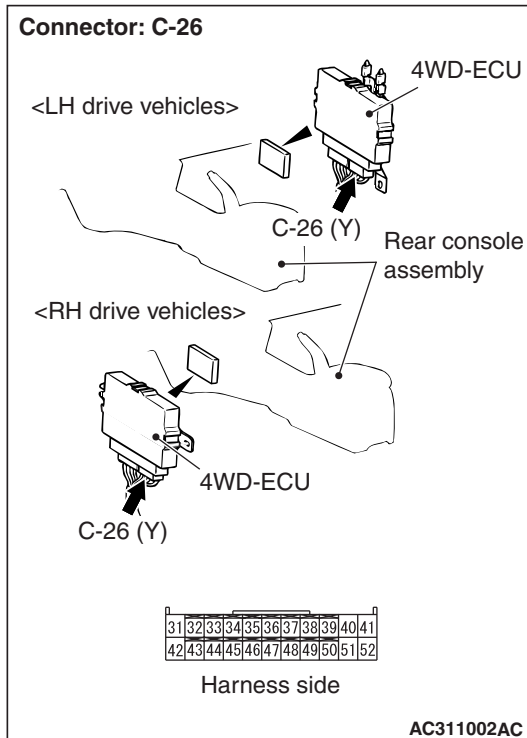
NO : Repair the defective connector.

STEP 6. Check the harness between 4WD-ECU connector C-26 terminal No.43 and pressure sensor connector F-26 terminal No.1.

Q: Is the check result normal?

YES : Replace the pressure sensor.

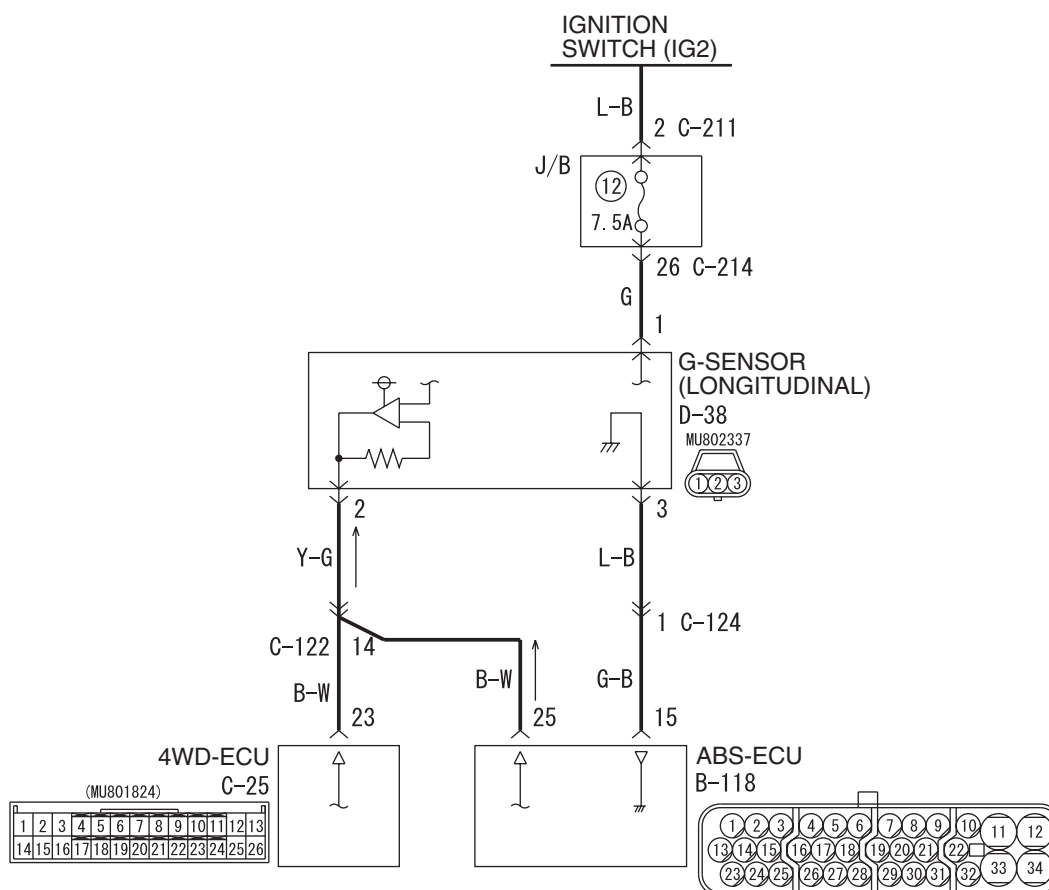
NO : Repair the wiring harness.



Check the power supply line for short or open circuit.

Code No.51 Longitudinal G-sensor system (open circuit or short circuit)

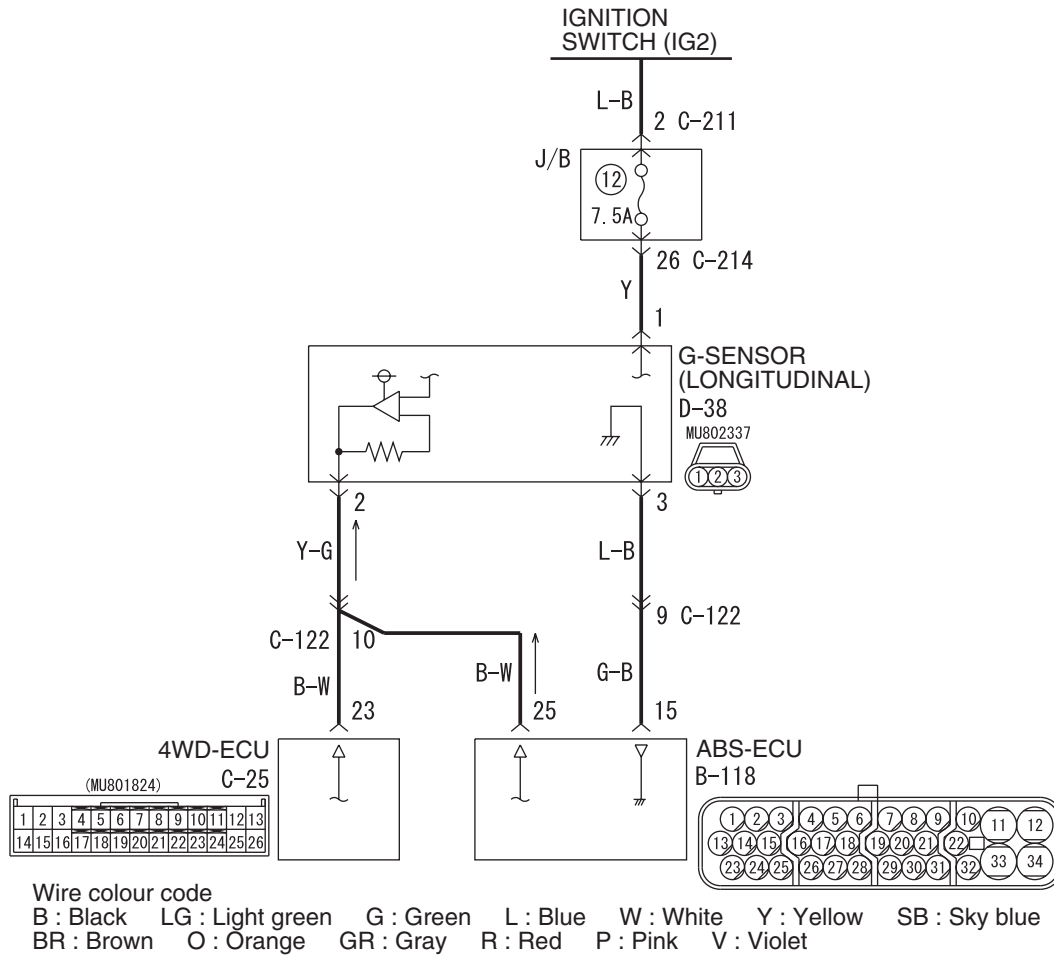
G-sensor (longitudinal) system circuit <LH drive vehicles>



Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

G-sensor (longitudinal) system circuit <RH drive vehicles>



W4J22E10AA

OPERATION

The 4WD-ECU receives the acceleration level in the forward/reverse direction of the vehicle from the longitudinal G-sensor.

DIAGNOSIS CODE SET CONDITIONS

Code No.51 is set when the output signal of the longitudinal G-sensor is less than 0.5 V or above 4.5 V.

PROBABLE CAUSES

- Malfunction of the longitudinal G-sensor
- Damaged harness wires and connectors
- Malfunction of the ABS-ECU
- Malfunction of the 4WD-ECU

DIAGNOSIS**STEP 1. M.U.T.-II/III data list**

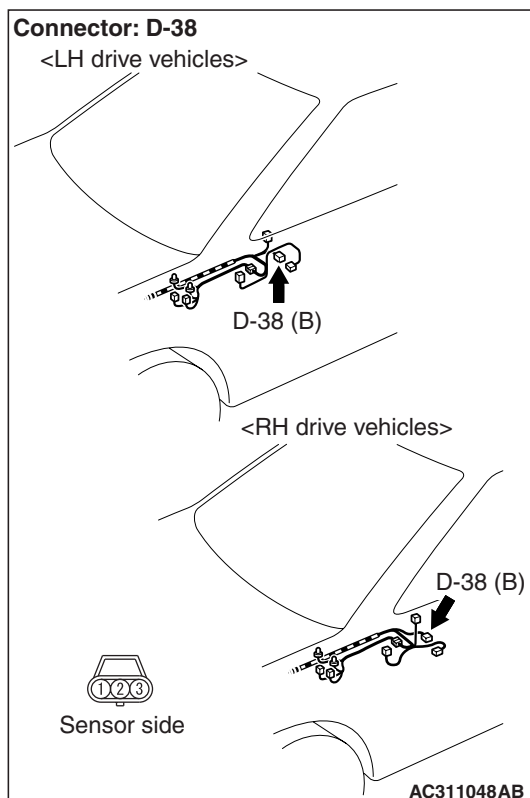
Item 14: Longitudinal G-sensor voltage (Refer to data list reference table [P.22A-142](#)).

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Go to Step 2.

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



- (1) Disconnect the longitudinal G-sensor connector, and measure the voltage between terminal No.1 and earth.
- (2) Turn the ignition switch to the ON position.

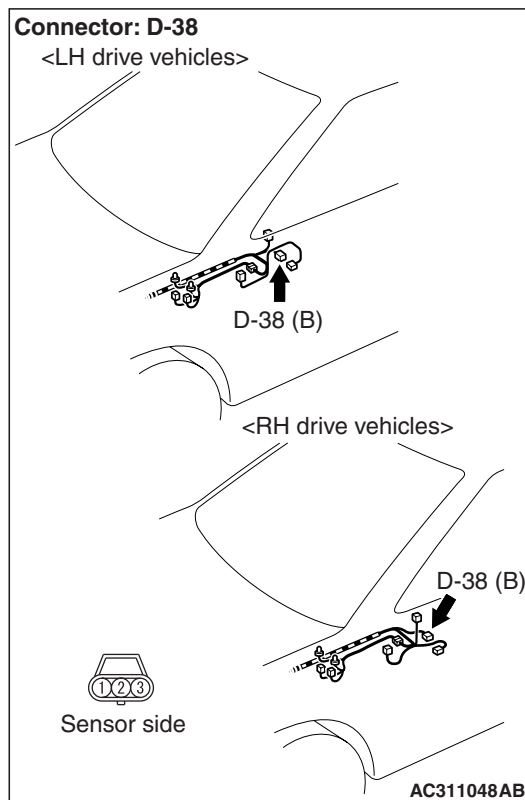
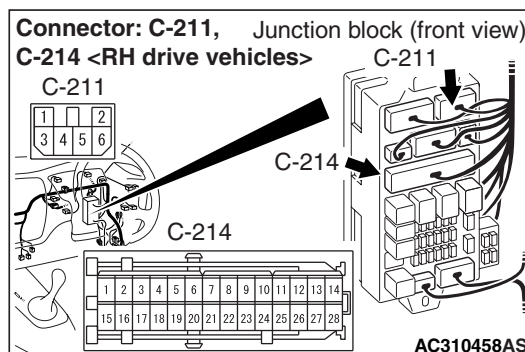
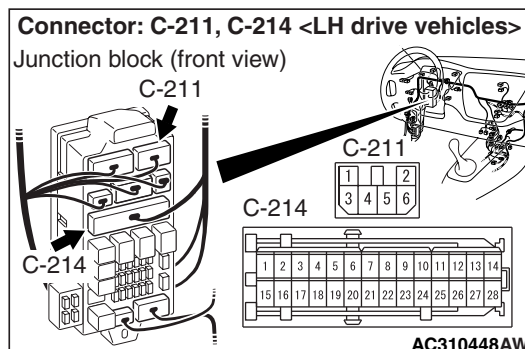
OK: System voltage

Q: Is the check result normal?

YES : Go to Step 7.

NO : Go to Step 3.

STEP 3. Connector check: C-211, C-214 J/B connector, D-38 longitudinal G-sensor connector.



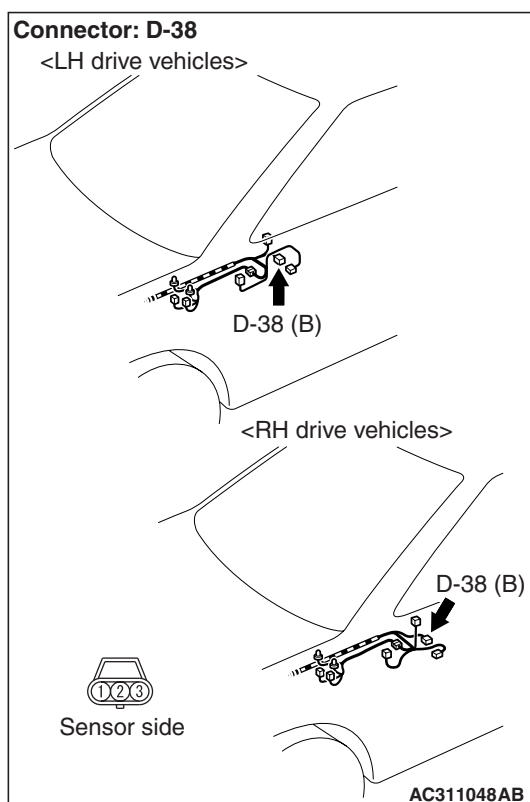
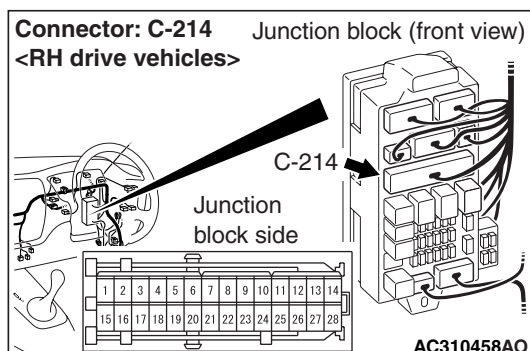
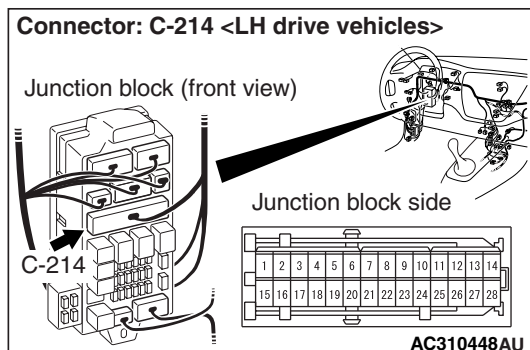
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the defective connector.

STEP 4. Check the harness between J/B connector C-214 terminal No.26 and longitudinal G-sensor connector D-38 terminal No.1.



Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the wiring harness.

STEP 5. Replace the longitudinal G-sensor and then recheck the diagnosis code.

(1) Replace the longitudinal G-sensor.

(2) Test drive the vehicle.

(3) Check the diagnosis code.

Q: Is the diagnosis code set?

YES : Go to Step 6.

NO : The inspection is complete.

STEP 6. M.U.T.-II/III data list

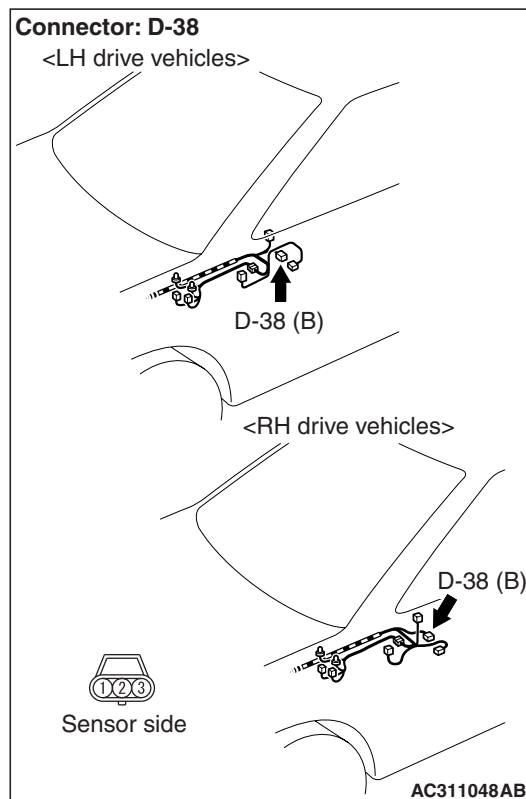
Item 14: Longitudinal G-sensor voltage (Refer to data list reference table [P.22A-142](#)).

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Replace the 4WD-ECU.

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



Disconnect the longitudinal G-sensor connector, and measure the resistance between terminal No.3 and earth.

OK: 2 Ω or less

Q: Is the check result normal?

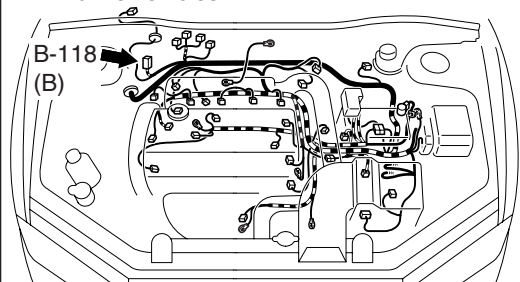
YES : Go to Step 12.

NO : Go to Step 8.

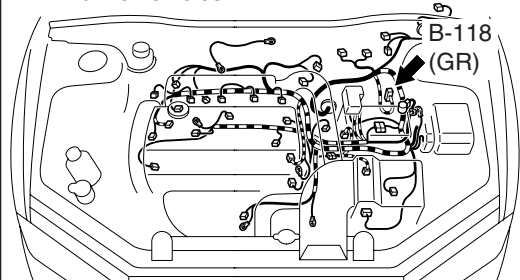
STEP 8. Connector check: B-118 ABS-ECU connector, C-124 intermediate connector, D-38 longitudinal G-sensor connector <LH drive vehicles> or B-118 ABS-ECU connector, C-122 intermediate connector, D-38 longitudinal G-sensor connector <RH drive vehicles>.

Connector: B-118

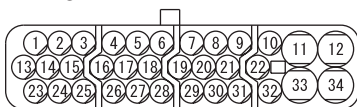
<LH drive vehicles>



<RH drive vehicles>



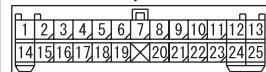
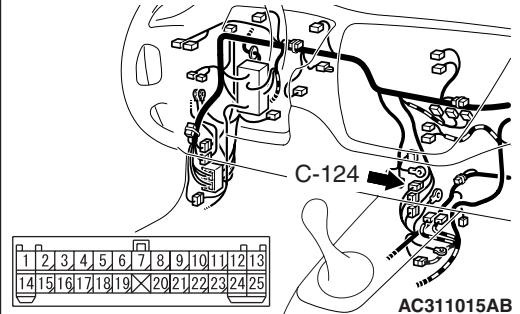
B-118



Harness side

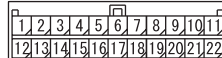
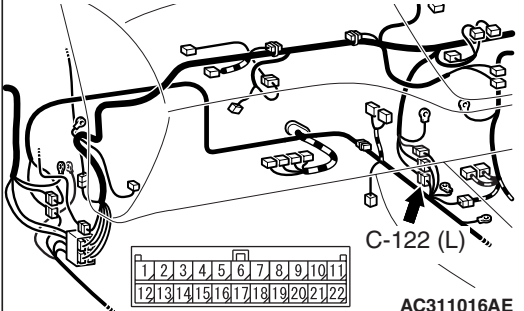
AC311020AB

Connector: C-124 <LH drive vehicles>



AC311015AB

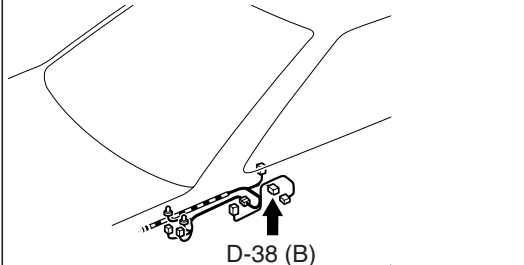
Connector: C-122 <RH drive vehicles>



AC311016AE

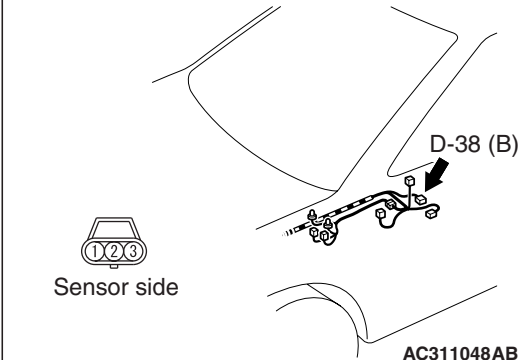
Connector: D-38

<LH drive vehicles>



D-38 (B)

<RH drive vehicles>



D-38 (B)



Sensor side

AC311048AB

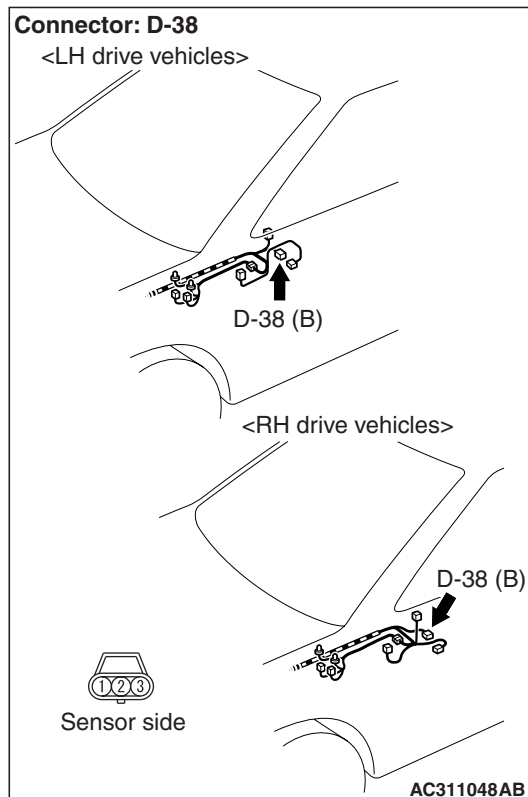
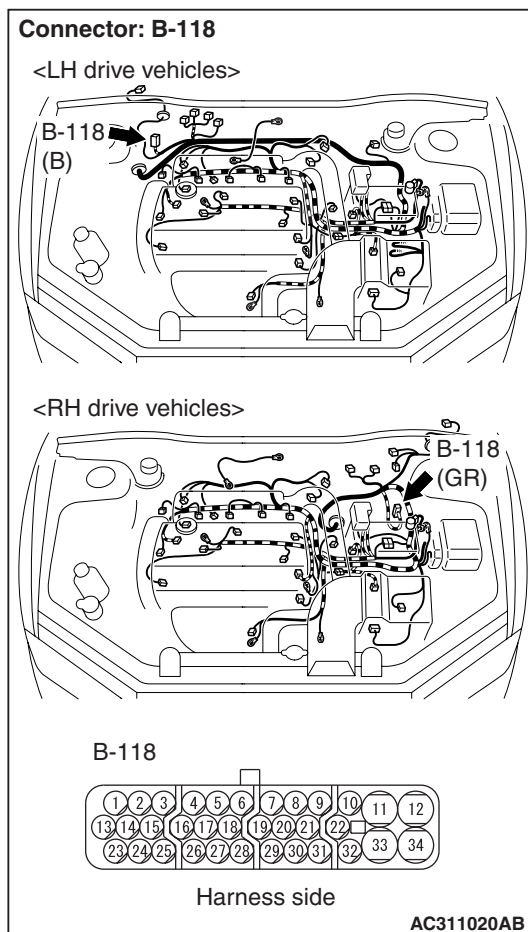
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 9.

NO : Repair the defective connector.

STEP 9. Check the harness between ABS-ECU connector B-118 terminal No.15 and longitudinal G-sensor connector D-38 terminal No.3.



Check the earth line for open circuit.

Q: Is the check result normal?

YES : Go to Step 10.

NO : Repair the wiring harness.

STEP 10. Replace the longitudinal G-sensor and then recheck the diagnosis code.

(1) Replace the longitudinal G-sensor.

(2) Test drive the vehicle.

(3) Check the diagnosis code.

Q: Is the diagnosis code set?

YES : Go to Step 11.

NO : The inspection is complete.

STEP 11. M.U.T.-II/III data list

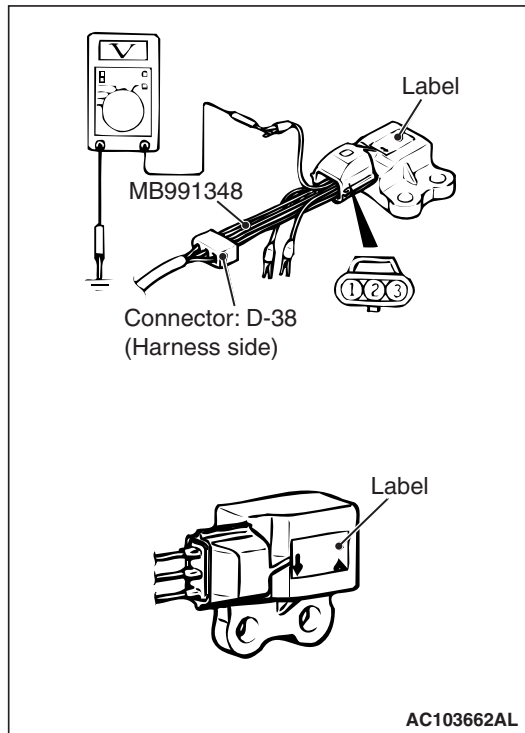
Item 14: Longitudinal G-sensor voltage (Refer to data list reference table [P.22A-142](#)).

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Refer to GROUP 35B – Inspection Chart for Diagnosis Code [P.35B-9](#).

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



- (1) Disconnect the longitudinal G-sensor 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 No.2 and earth.

OK:

When vehicle is stationary (level): 2.4 – 2.6 V

When vehicle is being driven: 3.4 – 3.6 V

Q: Is the check result normal?

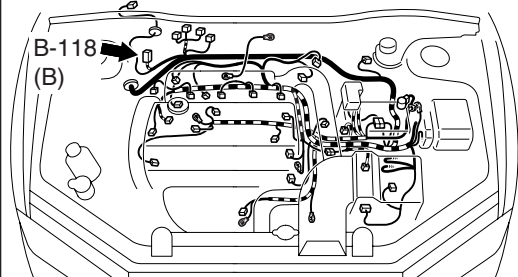
YES : Go to Step 13.

NO : Replace the G-sensor.

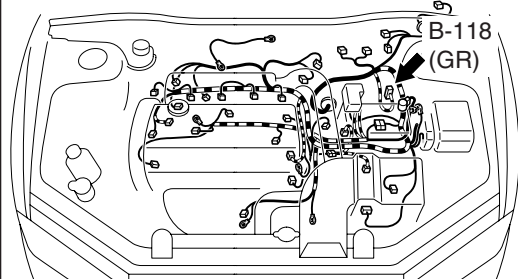
STEP 13. Connectors check: B-118 ABS-ECU connector, C-25 4WD-ECU connector, C-122 intermediate connector, D-38 longitudinal G-sensor connector.

Connector: B-118

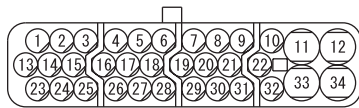
<LH drive vehicles>



<RH drive vehicles>



B-118

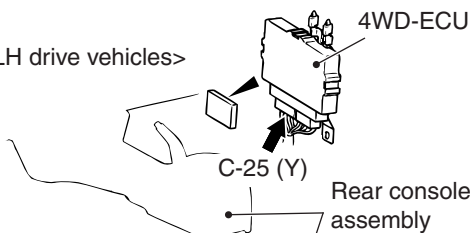


Harness side

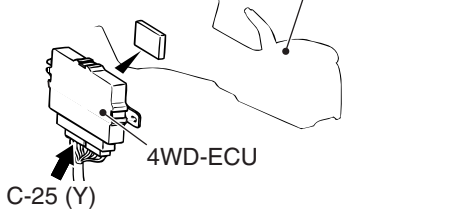
AC311020AB

Connector: C-25

<LH drive vehicles>



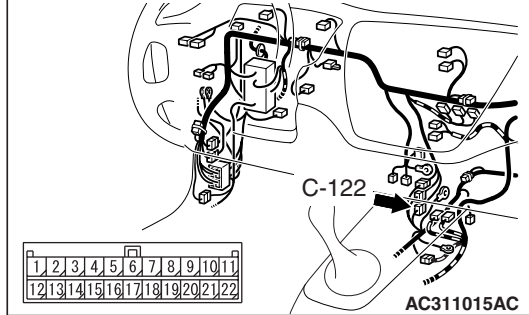
<RH drive vehicles>



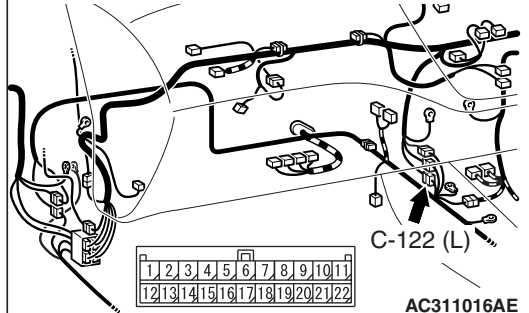
Harness side

AC311002AB

Connector: C-122 <LH drive vehicles>

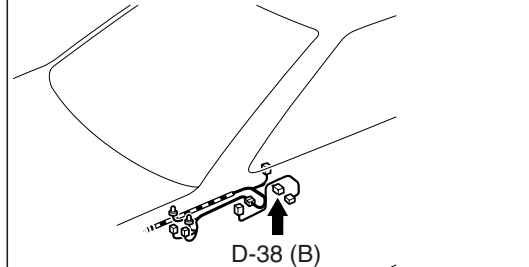


Connector: C-122 <RH drive vehicles>



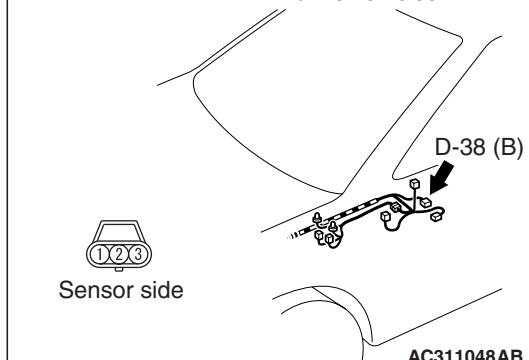
Connector: D-38

<LH drive vehicles>



D-38 (B)

<RH drive vehicles>



Sensor side

AC311048AB

Check for the contact with terminals.

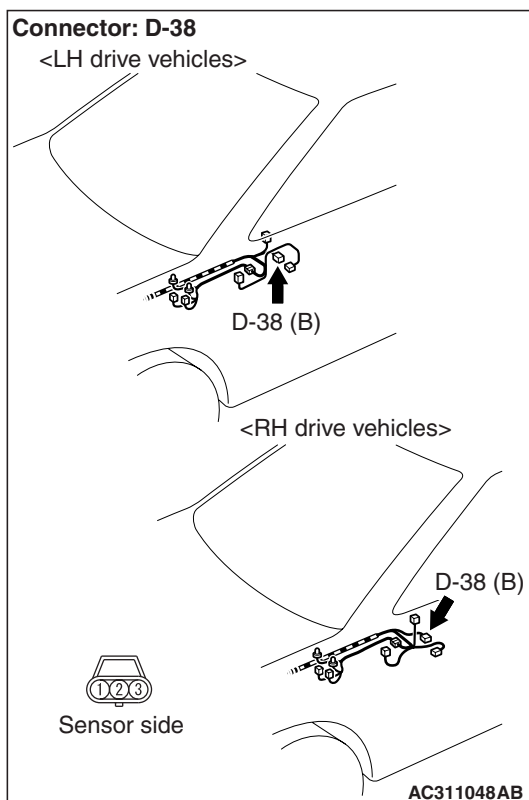
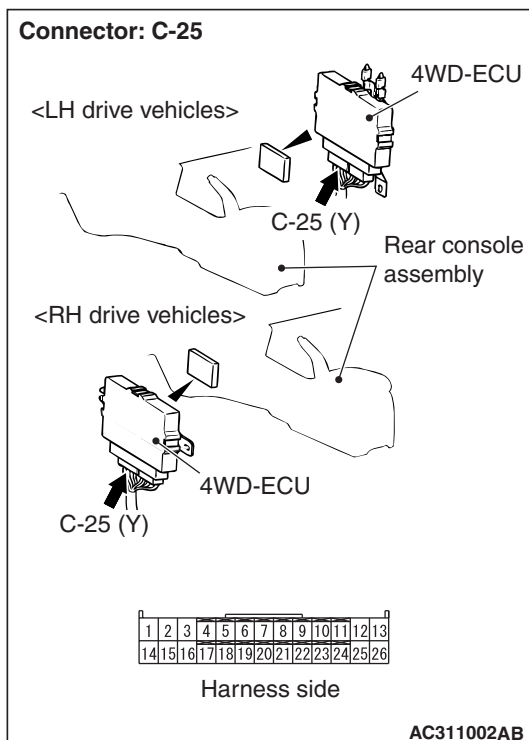
Q: Is the check result normal?

YES : Go to Step 14.

NO : Repair the defective connector.

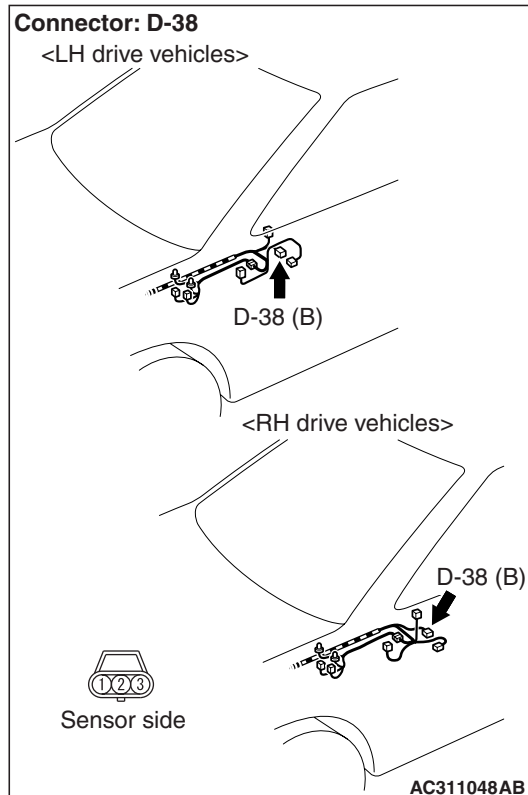
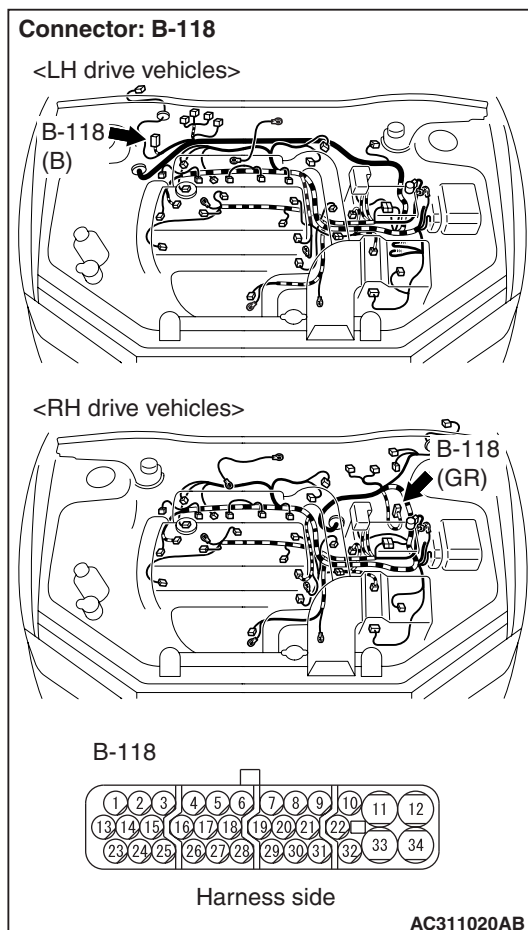
STEP 14. Check the harness between 4WD-ECU connector C-25 terminal No.23 and longitudinal G-sensor connector D-38 terminal No.2.

Q: Is the check result normal?
YES : Go to Step 15.
NO : Repair the wiring harness.



Check the output line for short or open circuit.

STEP 15. Check the harness between ABS-ECU connector B-118 terminal No.25 and longitudinal G-sensor connector D-38 terminal No.2.



Check the output line for short circuit.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the wiring harness.

Code No.52 Longitudinal G-sensor system (abnormal sensor)

G-SENSOR (LONGITUDINAL) SYSTEM CIRCUIT

Refer to [P.22A-53](#).

OPERATION

Refer to [P.22A-53](#).

DIAGNOSIS CODE SET CONDITIONS

Code No.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.

PROBABLE CAUSES

- Malfunction of the longitudinal G-sensor

- Damaged harness wires and connectors
- Malfunction of the ABS-ECU
- Malfunction of the 4WD-ECU

DIAGNOSIS

STEP 1. M.U.T.-II/III data list

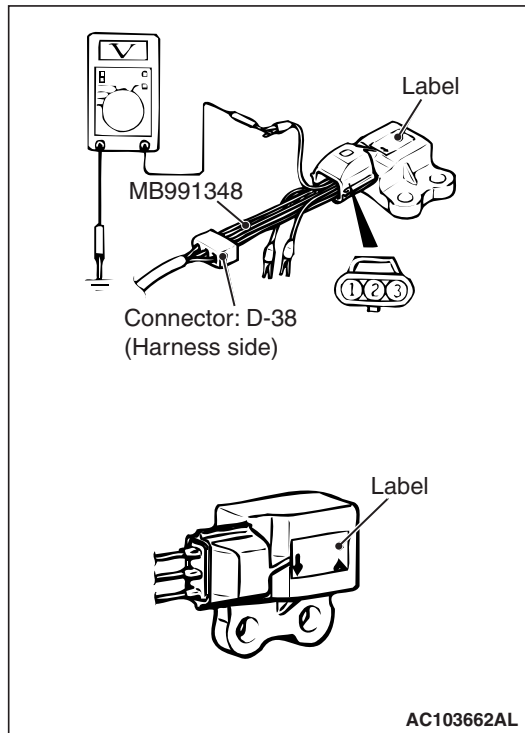
Item 14: Longitudinal G-sensor voltage (Refer to data list reference table [P.22A-142](#)).

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Go to Step 2.

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



- (1) Disconnect the longitudinal G-sensor 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 No.2 and earth.

OK:

When vehicle is stationary (level): 2.4 – 2.6 V

When vehicle is being driven: 3.4 – 3.6 V

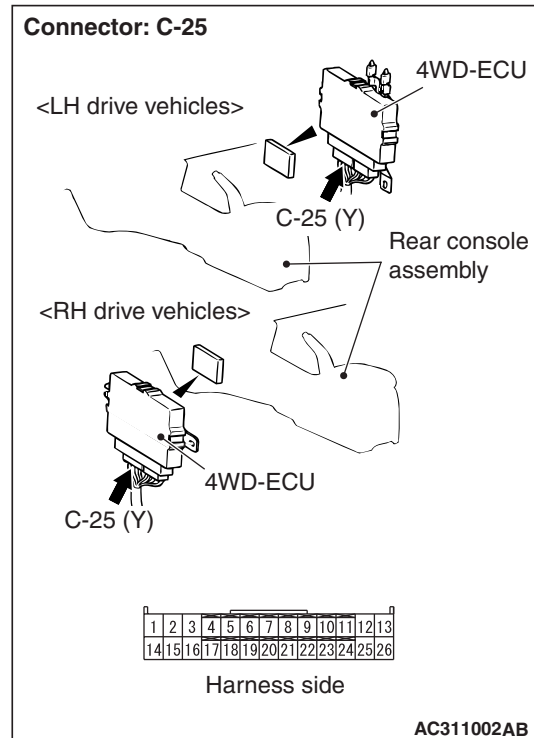
Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the G-sensor.

STEP 3. Measure the voltage at 4WD-ECU connector C-25.

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



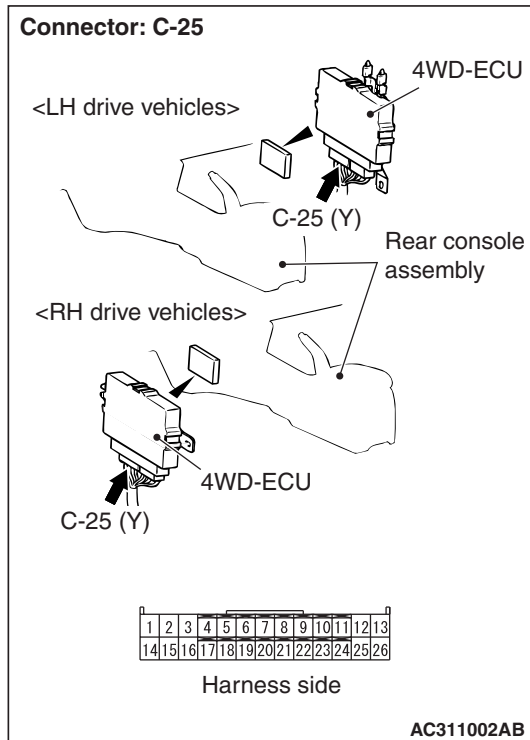
- (2) Measure the voltage between 4WD-ECU connector C-25 terminal No.23 and earth.

OK: 2.4 – 2.6 V (when the vehicle is in horizontal state)

Q: Is the check result normal?

YES : Go to Step 4.

NO : Go to Step 6.

STEP 4. Connector check: C-25 4WD-ECU connector.

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the defective connector.

STEP 5. M.U.T.-II/III data list

Item 14: Longitudinal G-sensor voltage (Refer to data list reference table [P.22A-142](#)).

Q: Is the check result normal?

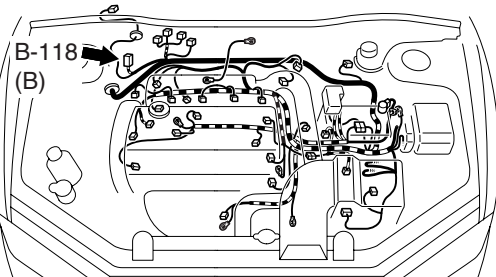
YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Replace the 4WD-ECU.

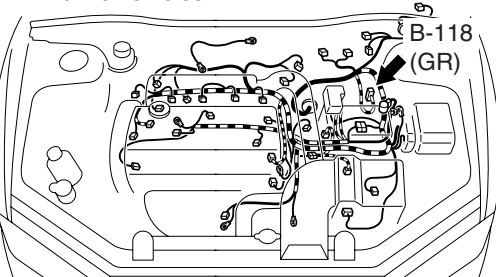
STEP 6. Connectors check: B-118 ABS-ECU connector, C-25 4WD-ECU connector, C-122 intermediate connector, D-38 longitudinal G-sensor connector.

Connector: B-118

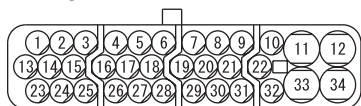
<LH drive vehicles>



<RH drive vehicles>



B-118

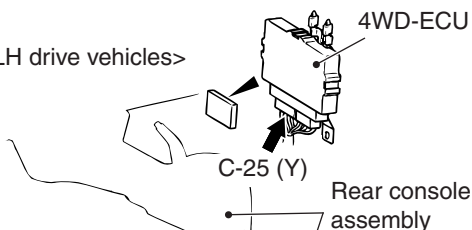


Harness side

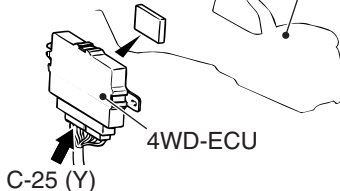
AC311020AB

Connector: C-25

<LH drive vehicles>



<RH drive vehicles>



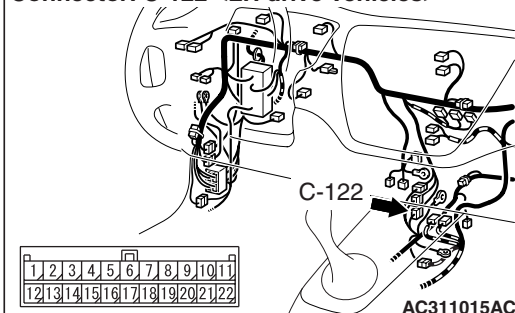
C-25 (Y)



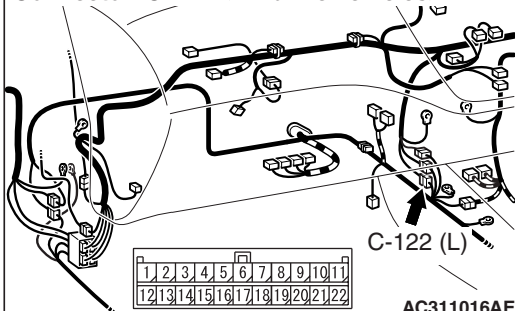
Harness side

AC311002AB

Connector: C-122 <LH drive vehicles>

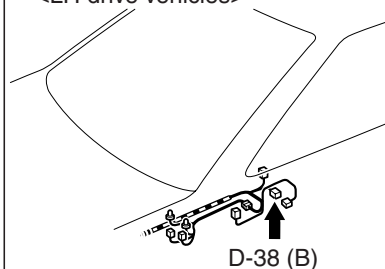


Connector: C-122 <RH drive vehicles>



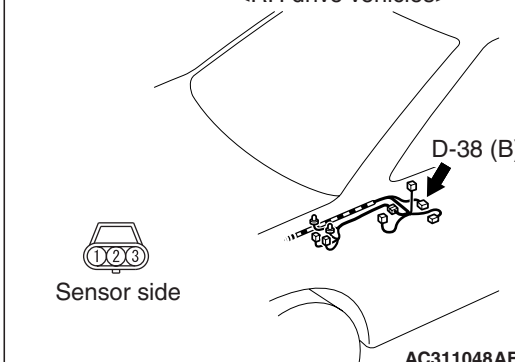
Connector: D-38

<LH drive vehicles>



D-38 (B)

<RH drive vehicles>



Sensor side

AC311048AB

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair the defective connector.

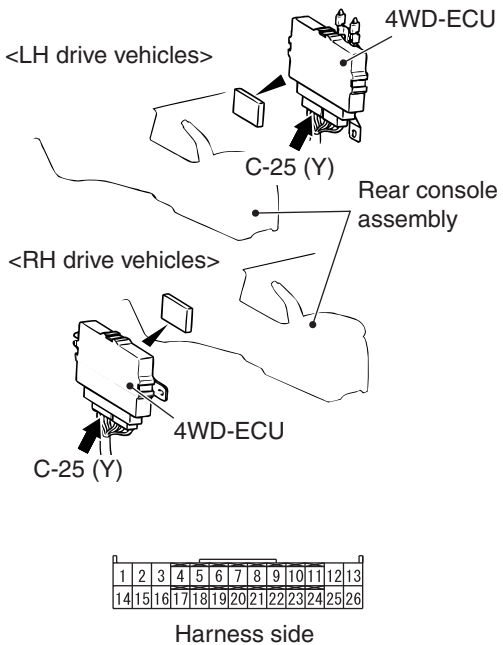
STEP 7. Check the harness between 4WD-ECU connector C-25 terminal No.23 and longitudinal G-sensor connector D-38 terminal No.2.

Q: Is the check result normal?

YES : Go to Step 8.

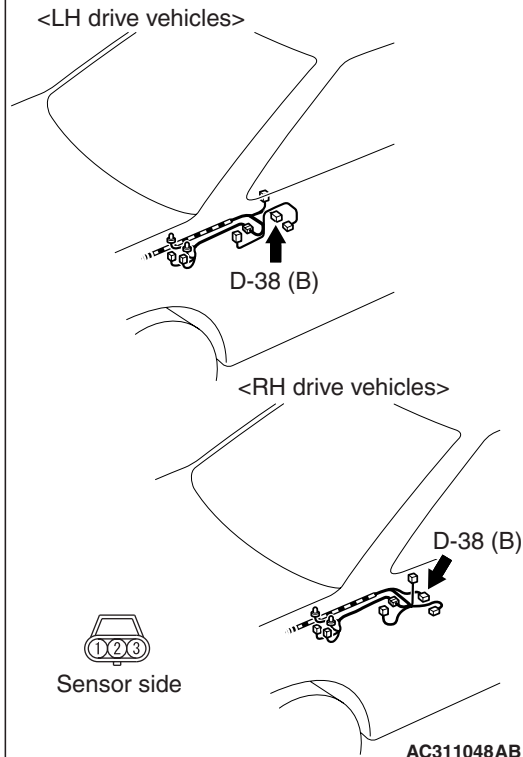
NO : Repair the wiring harness.

Connector: C-25



AC311002AB

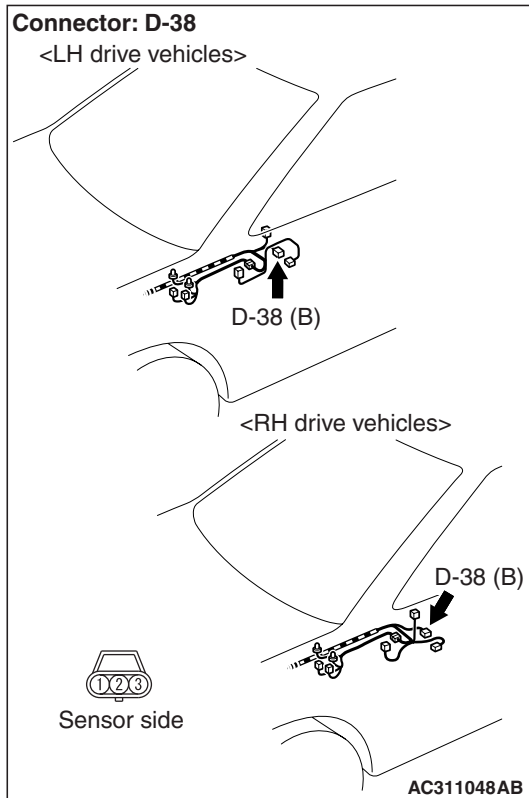
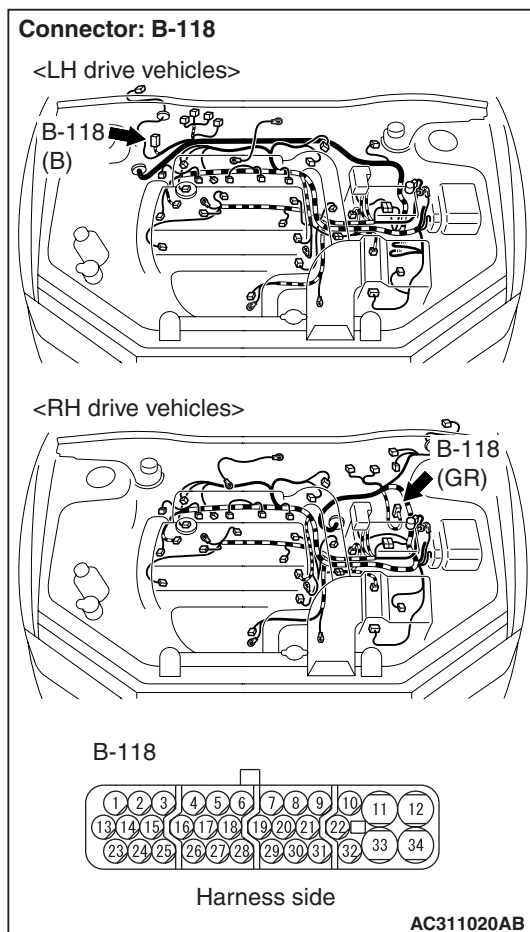
Connector: D-38



AC311048AB

Check the output line for short or open circuit.

STEP 8. Check the harness between ABS-ECU connector B-118 terminal No.25 and longitudinal G-sensor connector D-38 terminal No.2.



Check the output line for short circuit.

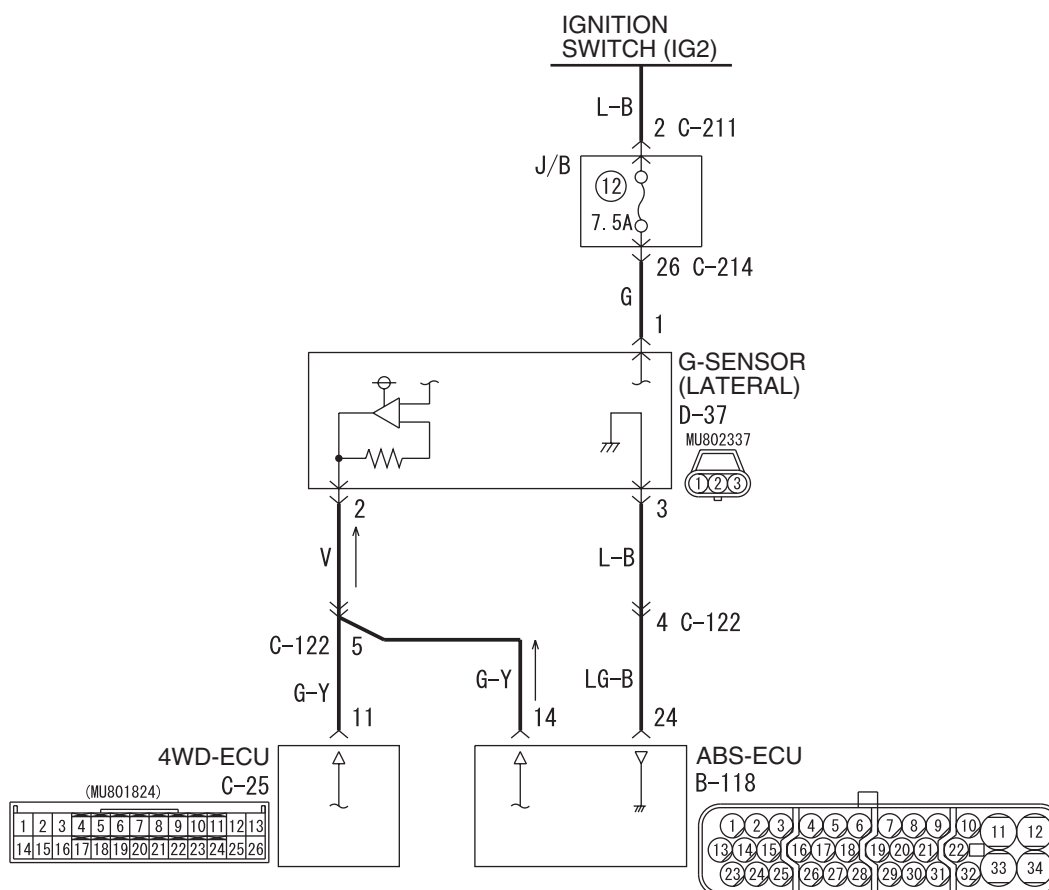
Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the wiring harness.

Code No.56 Lateral G-sensor system (open circuit or short circuit)

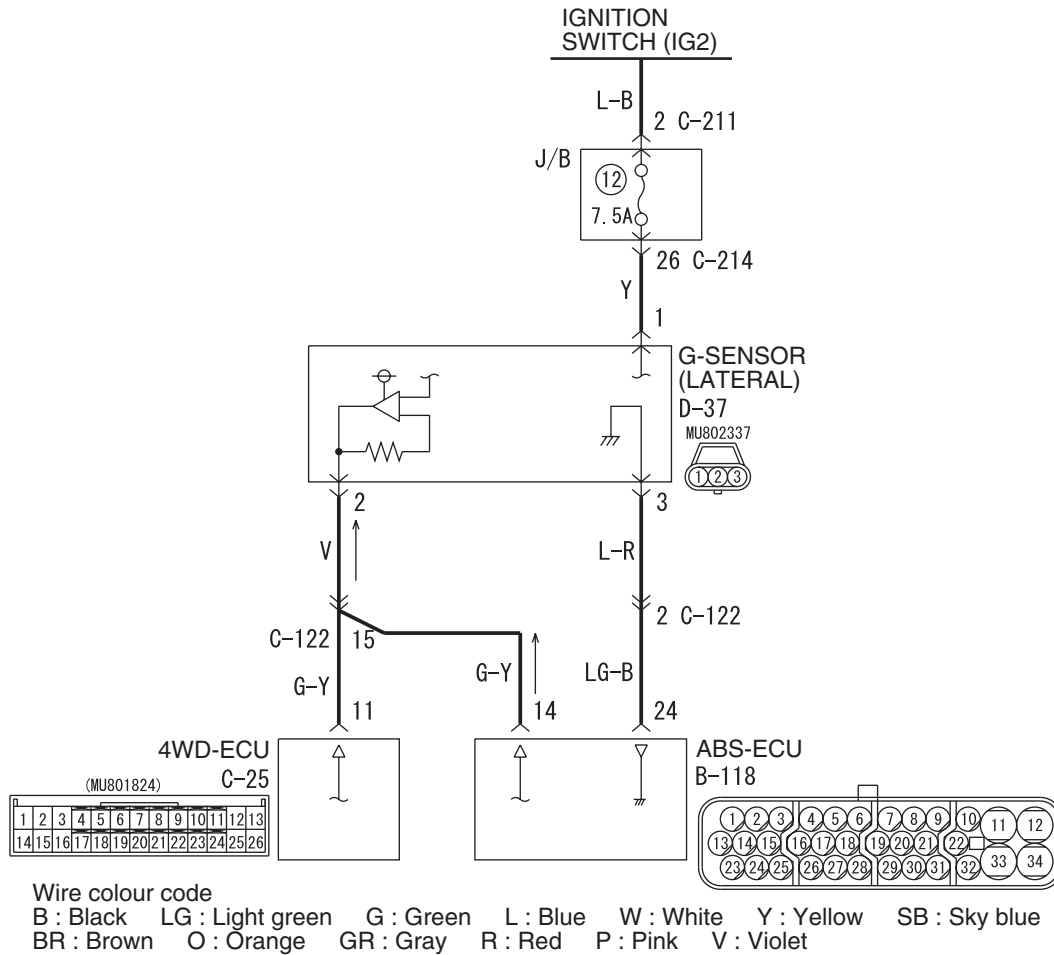
G-sensor (lateral) system circuit <LH drive vehicles>



Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

G-sensor (lateral) system circuit <RH drive vehicles>



W4J22E11AA

OPERATION

The 4WD-ECU receives the acceleration level of the vehicle in the right/left direction from the lateral G sensor.

DIAGNOSIS CODE SET CONDITIONS

Code No.56 is set when the output signal of the lateral G sensor is below 0.5 V or above 4.5 V.

PROBABLE CAUSES

- Malfunction of the lateral G-sensor
- Damaged harness wires and connectors
- Malfunction of the ABS-ECU
- Malfunction of the 4WD-ECU

DIAGNOSIS

STEP 1. M.U.T.-II/III data list

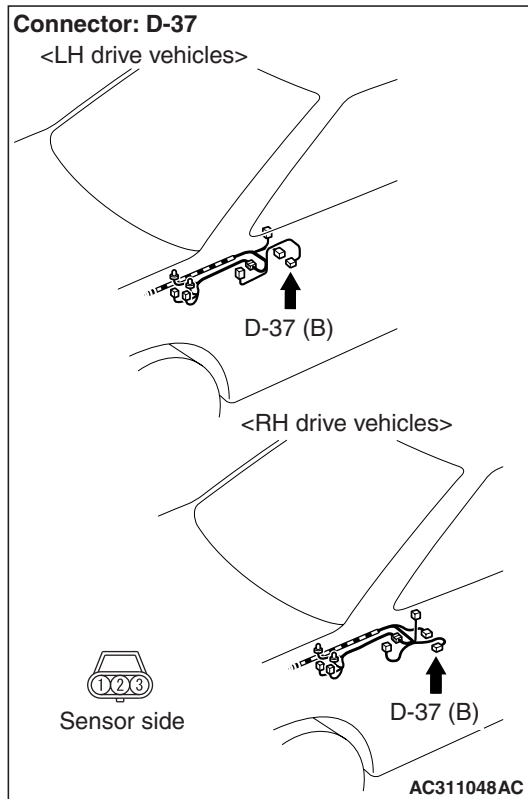
Item 15: Lateral G-sensor voltage (Refer to data list reference table [P.22A-142](#)).

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Go to Step 2.

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



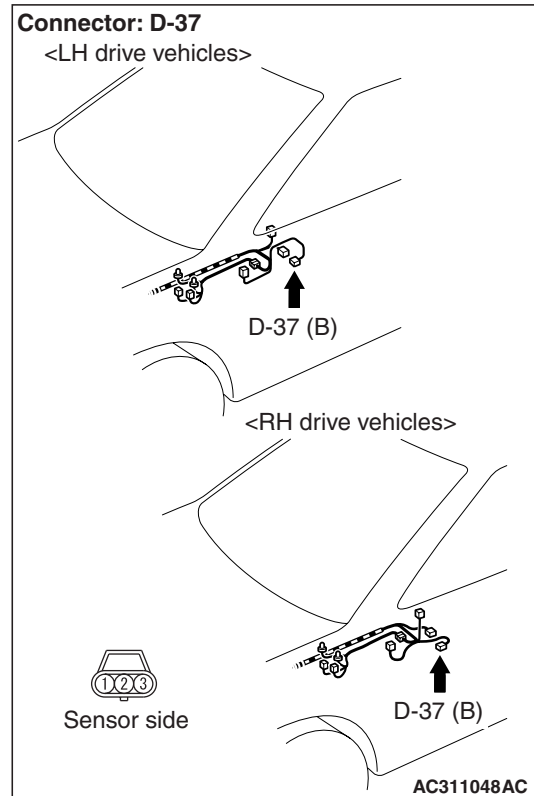
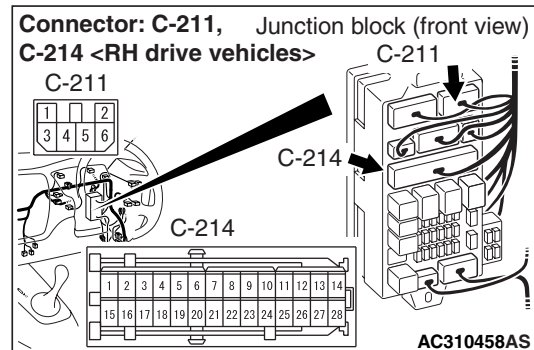
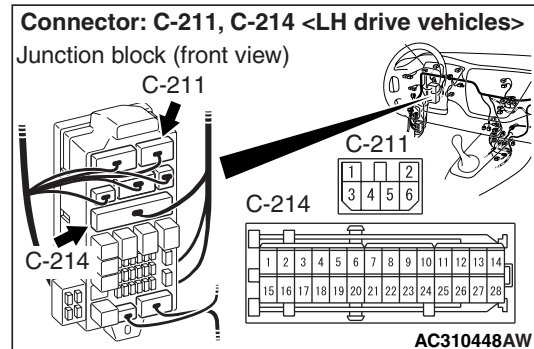
- (1) Disconnect the lateral G-sensor connector, and measure the voltage between terminal No.1 and earth.
- (2) Turn the ignition switch to the ON position.

OK: System voltage

Q: Is the check result normal?

YES : Go to Step 7.
NO : Go to Step 3.

STEP 3. Connector check: C-211, C-214 J/B connector, D-37 lateral G-sensor connector.

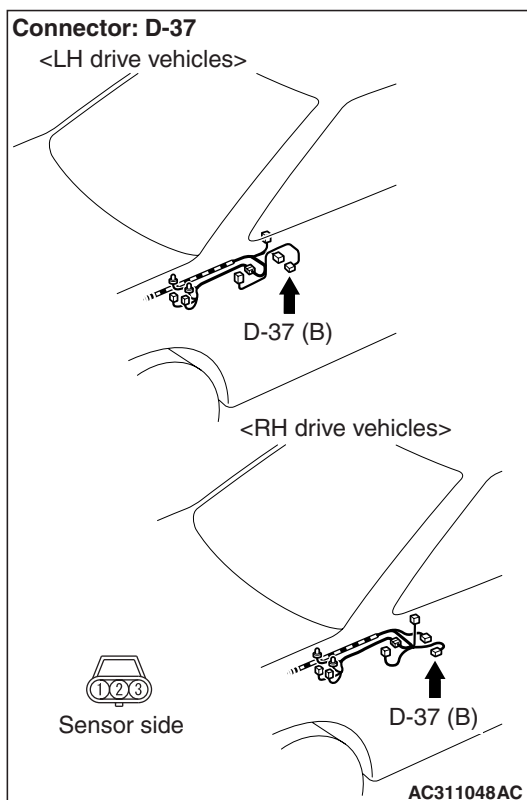
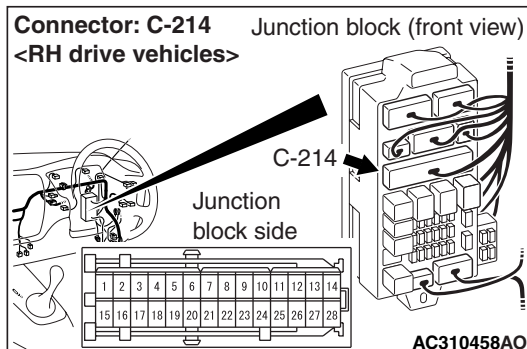
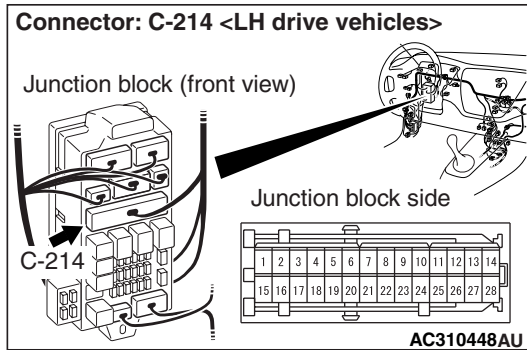


Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Repair the defective connector.

STEP 4. Check the harness between J/B connector C-214 terminal No.26 and lateral G-sensor connector D-37 terminal No.1.



Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the wiring harness.

STEP 5. Replace the lateral G-sensor and then recheck the diagnosis code.

(1) Replace the lateral G-sensor.

(2) Test drive the vehicle.

(3) Check the diagnosis code.

Q: Is the diagnosis code set?

YES : Go to Step 6.

NO : The inspection is complete.

STEP 6. M.U.T.-II/III data list

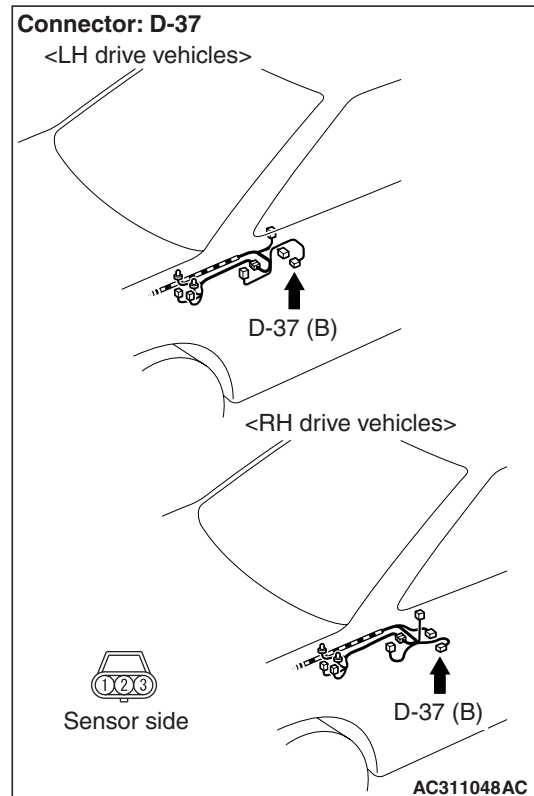
Item 15: Lateral G-sensor voltage (Refer to data list reference table [P.22A-142](#)).

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Replace the 4WD-ECU.

STEP 7. Measure the resistance at lateral G-sensor connector D-37.



Disconnect the lateral G-sensor connector, and measure the resistance between terminal No.3 and earth.

OK: 2 Ω or less

Q: Is the check result normal?

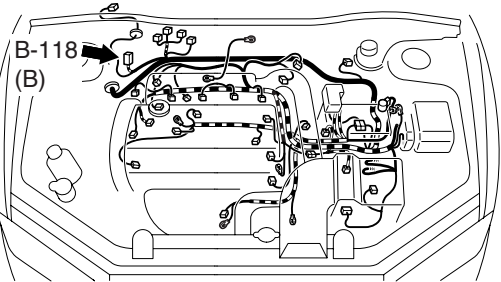
YES : Go to Step 12.

NO : Go to Step 8.

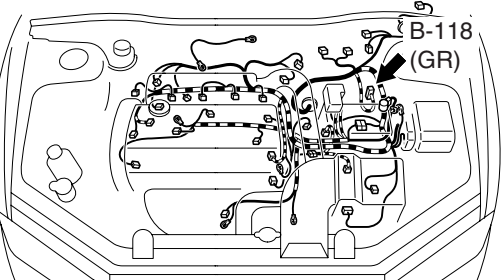
STEP 8. Connector check: B-118 ABS-ECU connector, C-122 intermediate connector, D-37 lateral G-sensor connector.

Connector: B-118

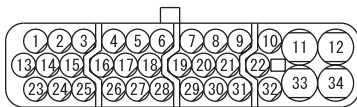
<LH drive vehicles>



<RH drive vehicles>



B-118

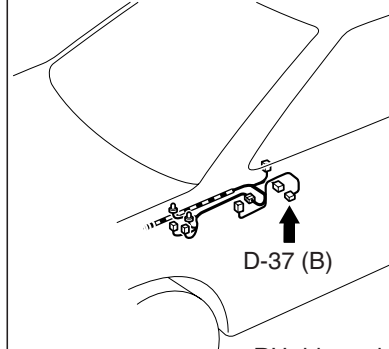


Harness side

AC311020AB

Connector: D-37

<LH drive vehicles>



<RH drive vehicles>



Sensor side

D-37 (B)

AC311048AC

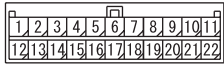
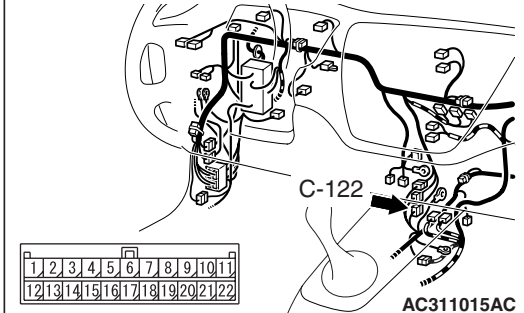
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 9.

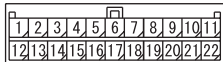
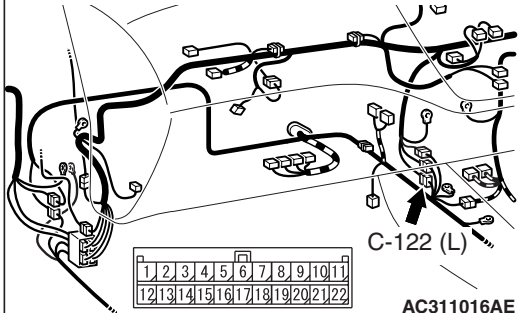
NO : Repair the defective connector.

Connector: C-122 <LH drive vehicles>



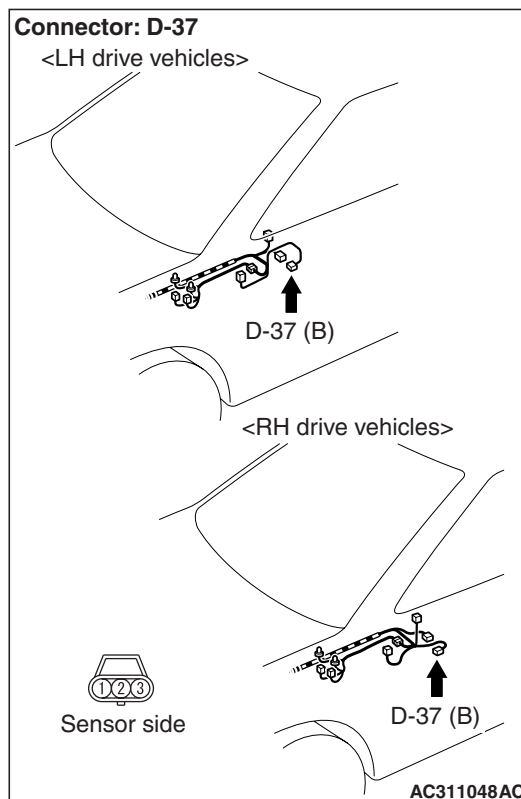
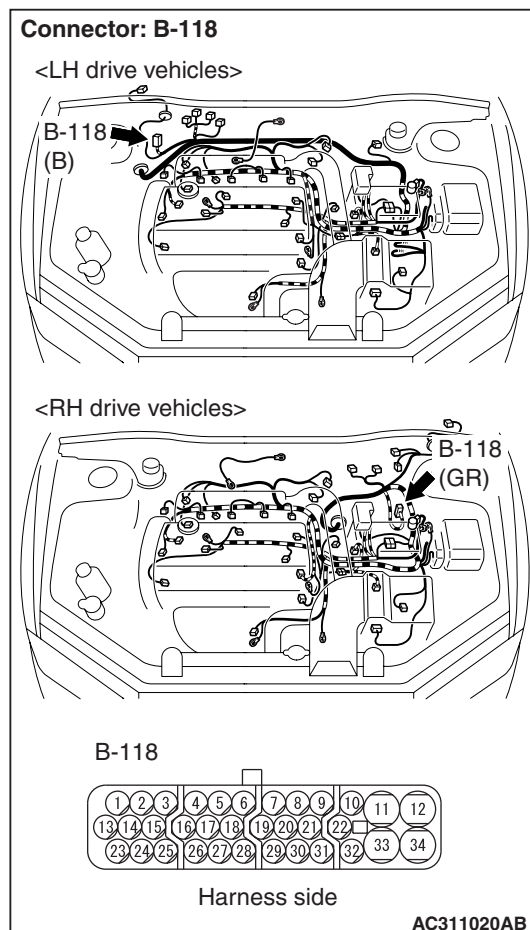
AC311015AC

Connector: C-122 <RH drive vehicles>



AC311016AE

STEP 9. Check the harness between ABS-ECU connector B-118 terminal No.24 and lateral G-sensor connector D-37 terminal No.3.



Check the earth line for open circuit.

Q: Is the check result normal?

YES : Go to Step 10.

NO : Repair the wiring harness.

STEP 10. Replace the lateral G-sensor and then recheck the diagnosis code.

(1) Replace the lateral G-sensor.

(2) Test drive the vehicle.

(3) Check the diagnosis code.

Q: Is the diagnosis code set?

YES : Go to Step 11.

NO : The inspection is complete.

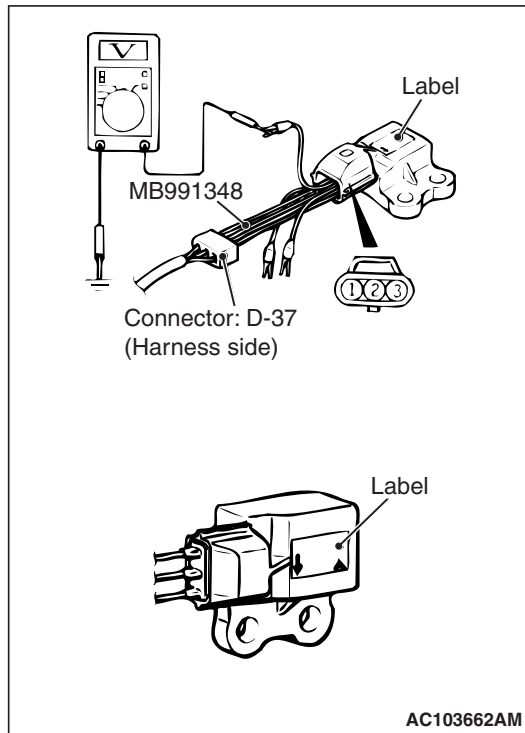
STEP 11. M.U.T.-II/III data list

Item 15: Lateral G-sensor voltage (Refer to data list reference table [P.22A-142](#)).

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Refer to GROUP 35B – Inspection Chart for Diagnosis Code [P.35B-9](#).

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

- (1) Disconnect the lateral G-sensor 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 No.2 and earth.

OK:

When vehicle is stationary (level): 2.4 – 2.6 V

When vehicle is being driven: 3.3 – 3.7 V

Q: Is the check result normal?

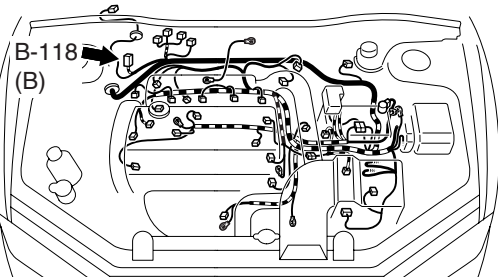
YES : Go to Step 13.

NO : Replace the G-sensor.

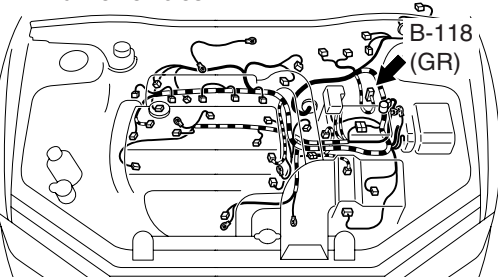
STEP 13. Connectors check: B-118 ABS-ECU connector, C-25 4WD-ECU connector, C-122 intermediate connector, D-37 lateral G-sensor connector.

Connector: B-118

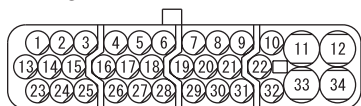
<LH drive vehicles>



<RH drive vehicles>



B-118

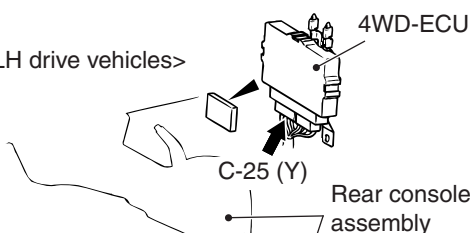


Harness side

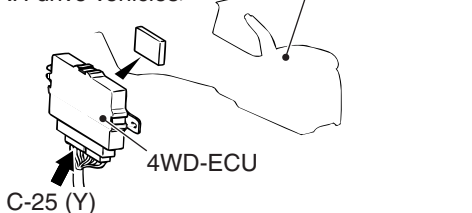
AC311020AB

Connector: C-25

<LH drive vehicles>



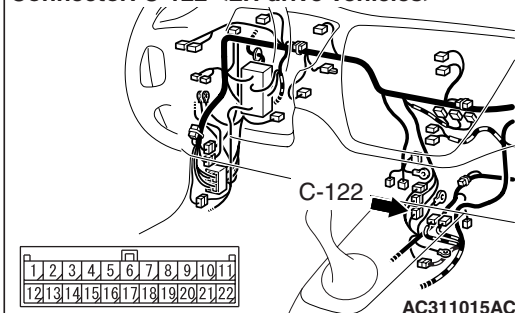
<RH drive vehicles>



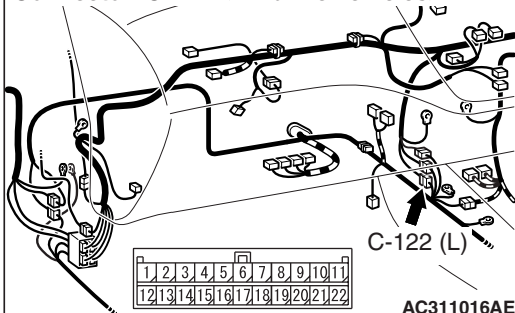
Harness side

AC311002AB

Connector: C-122 <LH drive vehicles>

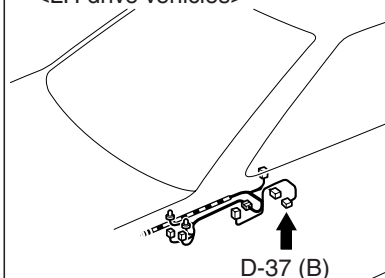


Connector: C-122 <RH drive vehicles>



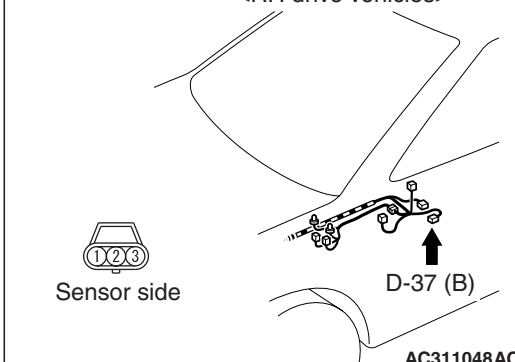
Connector: D-37

<LH drive vehicles>



D-37 (B)

<RH drive vehicles>



Sensor side

AC311048AC

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 14.

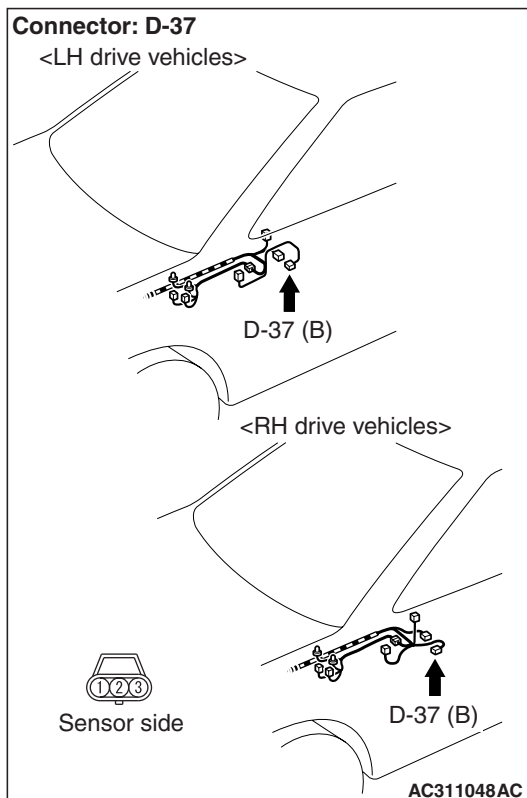
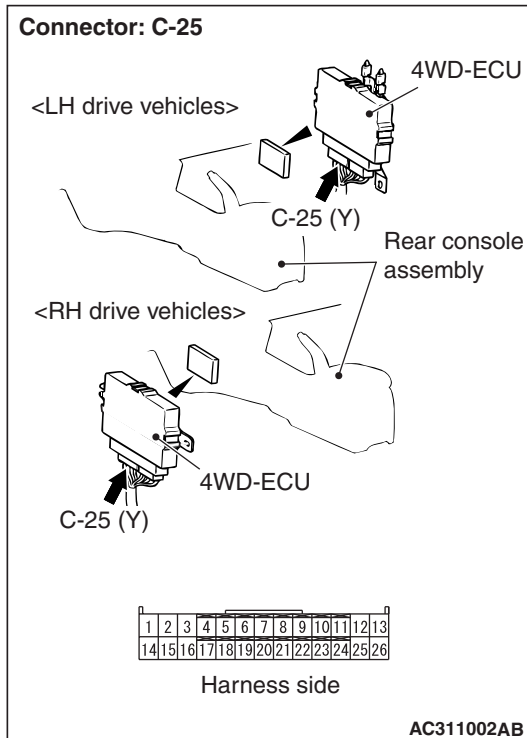
NO : Repair the defective connector.

STEP 14. Check the harness between 4WD-ECU connector C-25 terminal No.11 and lateral G-sensor connector D-37 terminal No.2.

Q: Is the check result normal?

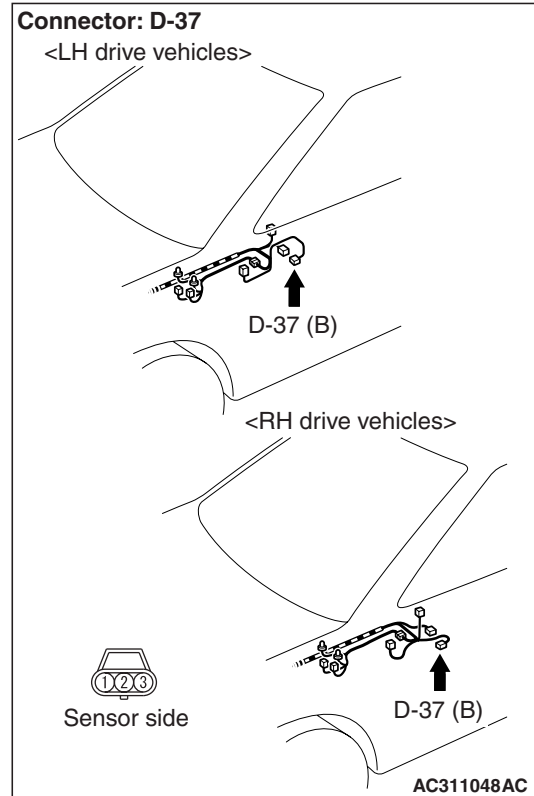
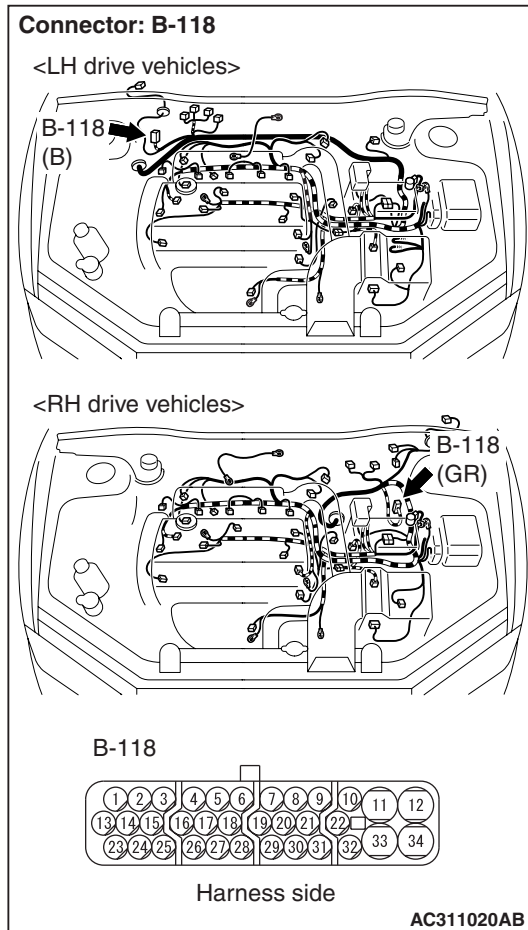
YES : Go to Step 15.

NO : Repair the wiring harness.



Check the output line for short or open circuit.

STEP 15. Check the harness between ABS-ECU connector B-118 terminal No.14 and lateral G-sensor connector D-37 terminal No.2.



Check the output line for short circuit.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the wiring harness.

Code No.57 Lateral G-sensor system (abnormal sensor)

G-SENSOR (LATERAL) SYSTEM CIRCUIT

Refer to P.22A-53.

OPERATION

Refer to P.22A-53.

DIAGNOSIS CODE SET CONDITIONS

Code No.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.

PROBABLE CAUSES

- Malfunction of the lateral G-sensor
- Damaged harness wires and connectors

- Malfunction of the ABS-ECU
- Malfunction of the 4WD-ECU

DIAGNOSIS

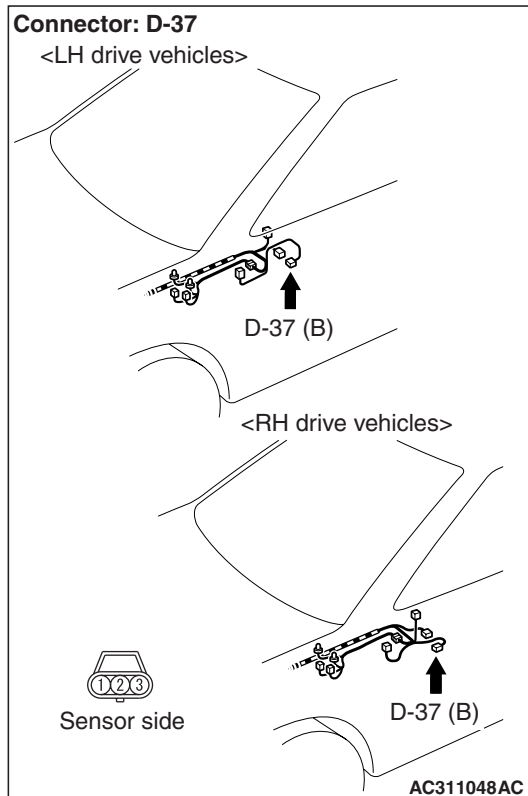
STEP 1. M.U.T.-II/III data list

Item 15: Lateral G-sensor voltage (Refer to data list reference table P.22A-142).

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-5).

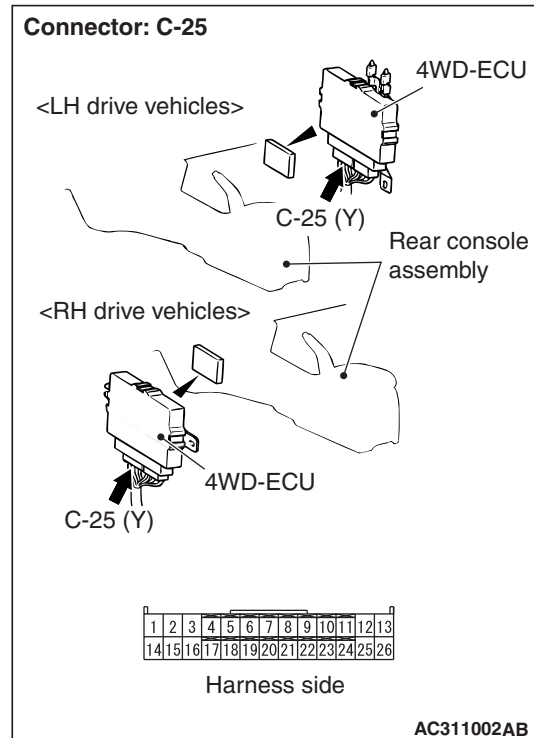
NO : Go to Step 2.

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

- (1) Disconnect the lateral G-sensor 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 No.2 and earth.

OK:**When vehicle is stationary (level): 2.4 – 2.6 V****When vehicle is being driven: 3.4 – 3.6 V****Q: Is the check result normal?****YES :** Go to Step 3.**NO :** Replace the G-sensor.**STEP 3. Measure the voltage at 4WD-ECU connector C-25.**

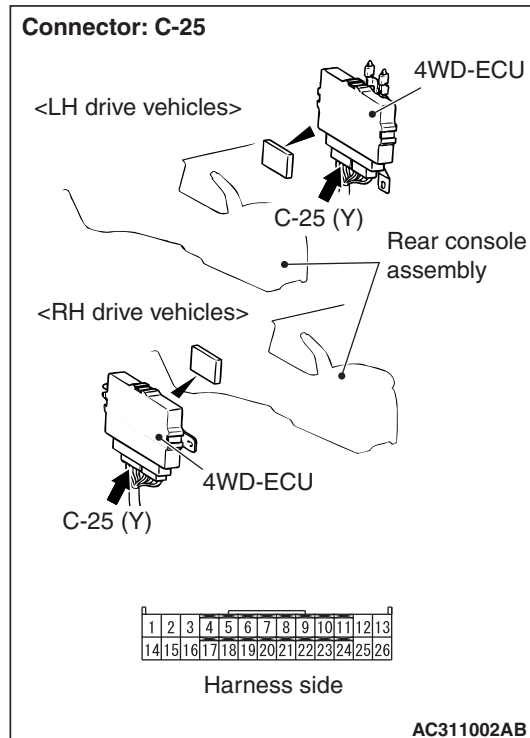
- (1) Turn the ignition switch to the ON position.



- (2) Measure the voltage between 4WD-ECU connector C-25 terminal No.11 and earth.

OK: 2.4 – 2.6 V (when the vehicle is in horizontal state)**Q: Is the check result normal?****YES :** Go to Step 4.**NO :** Go to Step 6.

STEP 4. Connector check: C-25 4WD-ECU connector.



Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the defective connector.

STEP 5. M.U.T.-II/III data list

Item 15: Lateral G-sensor voltage (Refer to data list reference table [P.22A-142](#)).

Q: Is the check result normal?

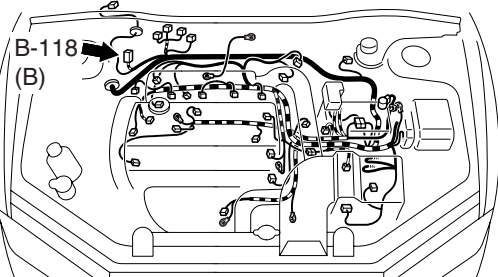
YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Replace the 4WD-ECU.

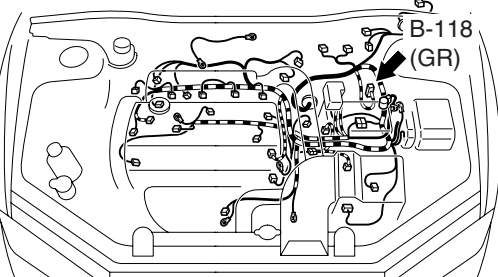
STEP 6. Connectors check: B-118 ABS-ECU connector, C-25 4WD-ECU connector, C-122 intermediate connector, D-37 lateral G-sensor connector.

Connector: B-118

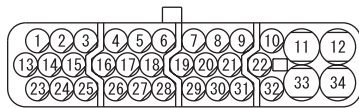
<LH drive vehicles>



<RH drive vehicles>



B-118

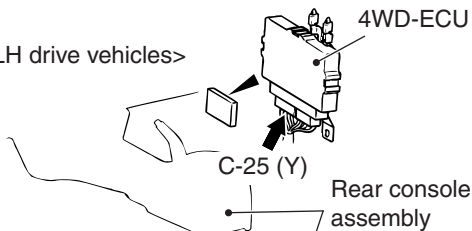


Harness side

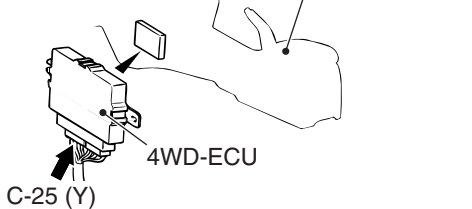
AC311020AB

Connector: C-25

<LH drive vehicles>



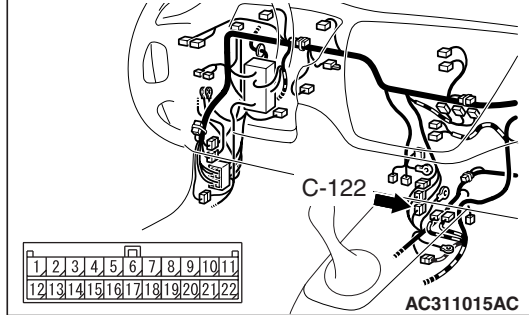
<RH drive vehicles>



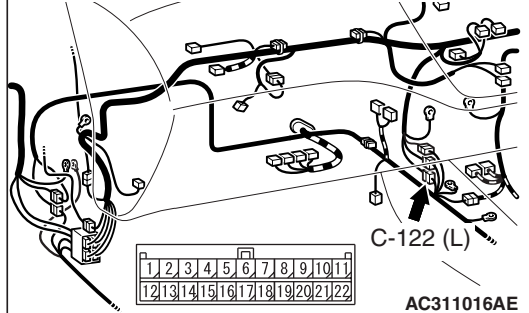
Harness side

AC311002AB

Connector: C-122 <LH drive vehicles>

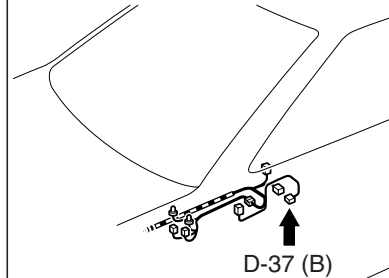


Connector: C-122 <RH drive vehicles>



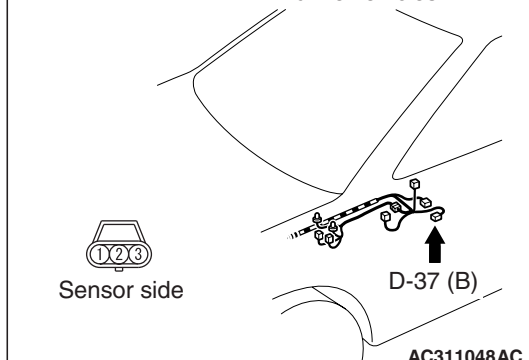
Connector: D-37

<LH drive vehicles>



D-37 (B)

<RH drive vehicles>



Sensor side

AC311048AC

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 7.

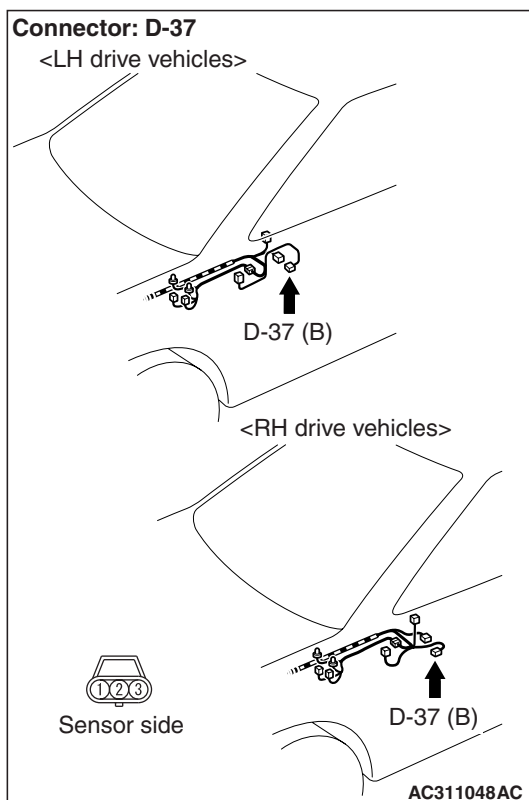
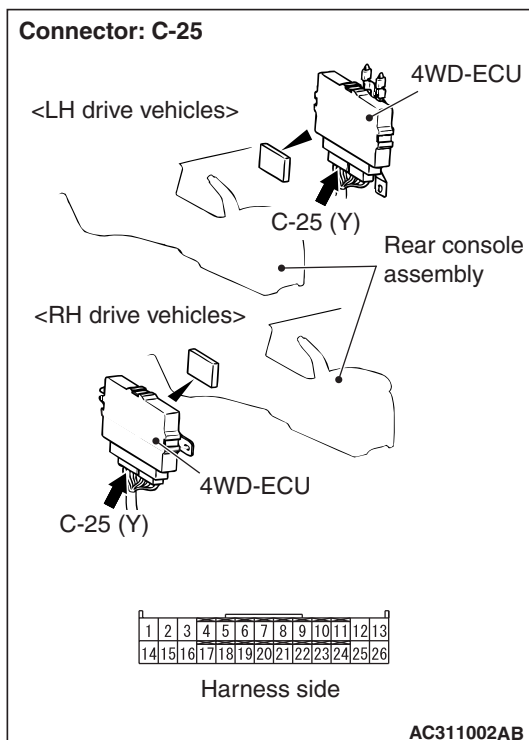
NO : Repair the defective connector.

STEP 7. Check the harness between 4WD-ECU connector C-25 terminal No.11 and lateral G-sensor connector D-37 terminal No.2.

Q: Is the check result normal?

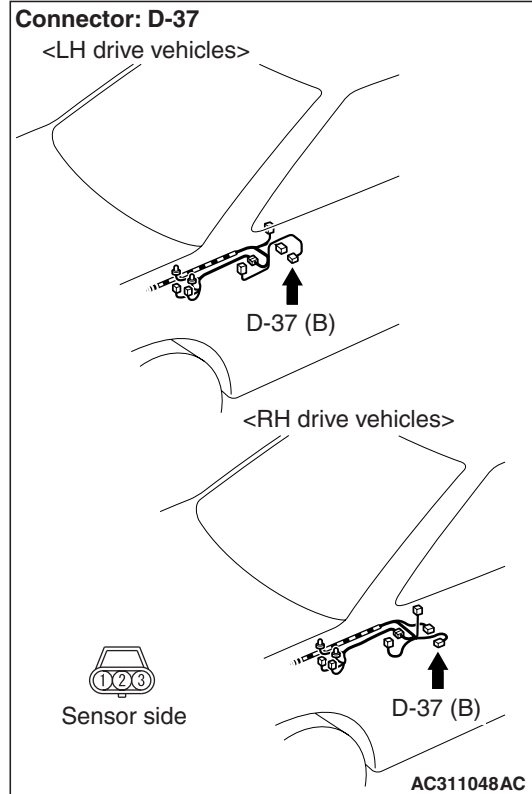
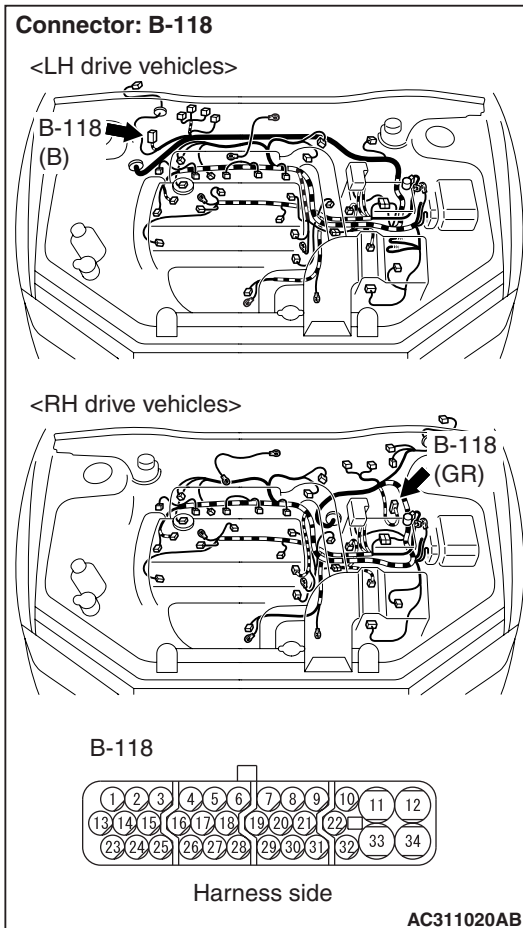
YES : Go to Step 8.

NO : Repair the wiring harness.



Check the output line for short or open circuit.

STEP 8. Check the harness between ABS-ECU connector B-118 terminal No.14 and lateral G-sensor connector D-37 terminal No.2.



Check the output line for short circuit.

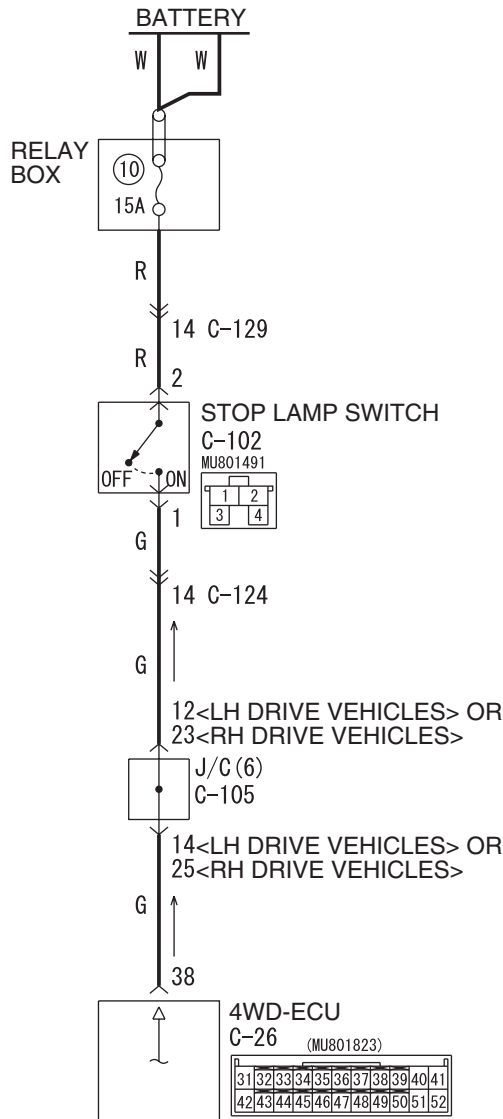
Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the wiring harness.

Code No.61 Stop lamp switch system

Stop lamp switch system circuit



Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W4J22E12AA

OPERATION

The stop lamp switch judges whether the brake pedal is depressed or released, and sends the information to the 4WD-ECU.

DIAGNOSIS CODE SET CONDITIONS

Code No.61 is set when the stop lamp switch is ON for more than 15 minutes when the vehicle speed is above 15 km/h.

PROBABLE CAUSES

- Malfunction of brake pedal
- Malfunction of stop lamp switch
- Damaged harness wires and connectors
- Malfunction of the 4WD-ECU

DIAGNOSIS**STEP 1. Check that the stop lamps illuminate and extinguish normally.**

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

Q: Is the check result normal?

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-5](#).

Q: Is the check result normal?

YES : Go to Step 3.

NO : Adjust the brake pedal height.

STEP 3. Check the stop lamp switch.

Refer to GROUP 35A – Brake Pedal and Stop Lamp Switch Continuity Check [P.35A-15](#).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the stop lamp switch.

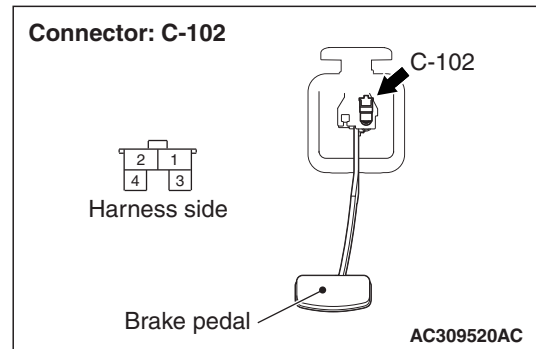
STEP 4. M.U.T.-II/III data list

Item 56: Stop lamp switch (Refer to data list reference table [P.22A-142](#)).

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Go to Step 5.

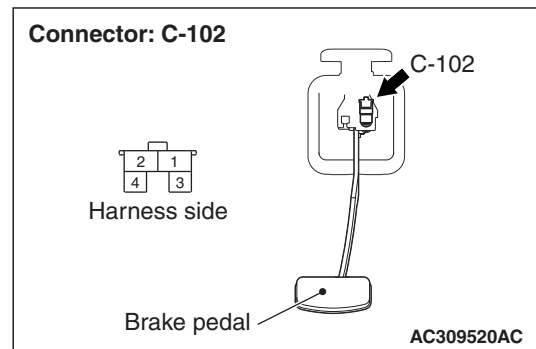
STEP 5. Connector check: C-102 stop lamp switch connector

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the defective connector.

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

Disconnect the stop lamp switch connector, and measure the voltage between terminal No.2 and earth at the harness side.

OK: System voltage

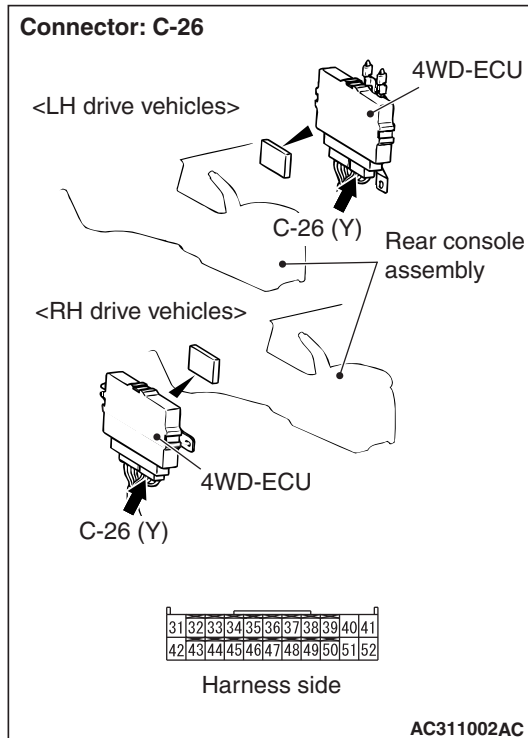
Q: Is the check result normal?

YES : Go to Step 7.

NO : Go to Step 12.

STEP 7. Measure the voltage at 4WD-ECU connector C-26.

(1) Connect the stop lamp switch connector C-102.



(2) Measure the voltage between 4WD-ECU connector C-26 terminal No.38 and earth.

OK:

Brake pedal depressed: System voltage

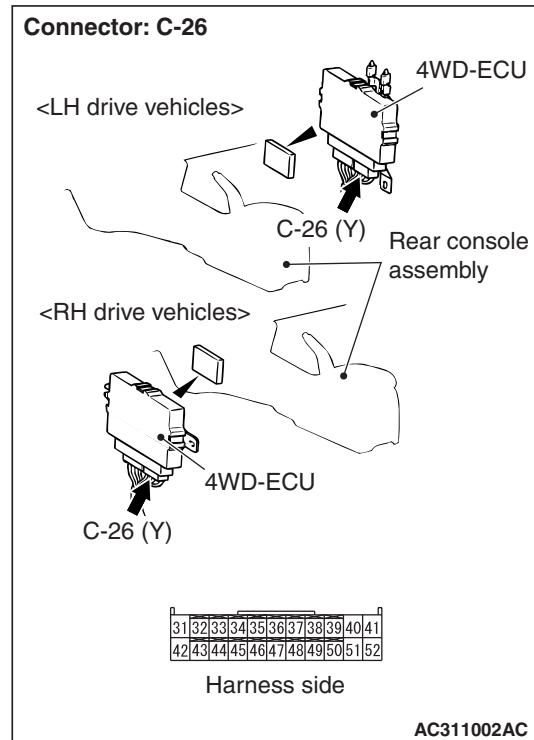
Brake pedal not depressed: 1 V or less

Q: Is the check result normal?

YES : Go to Step 8.

NO : Go to Step 10.

STEP 8. Connector check: C-26 4WD-ECU connector



Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 9.

NO : Repair the defective connector.

STEP 9. M.U.T.-II/III data list

Item 56: Stop lamp switch (Refer to data list reference table [P.22A-142](#)).

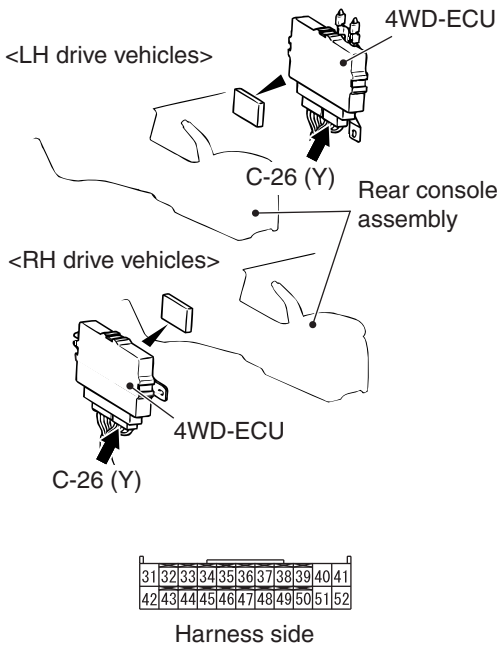
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Replace the 4WD-ECU.

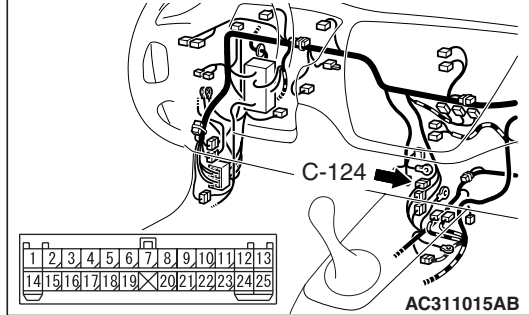
STEP 10. Connectors check: C-26 4WD-ECU connector, C-105 J/C (6), C-124 intermediate connector.

Connector: C-26

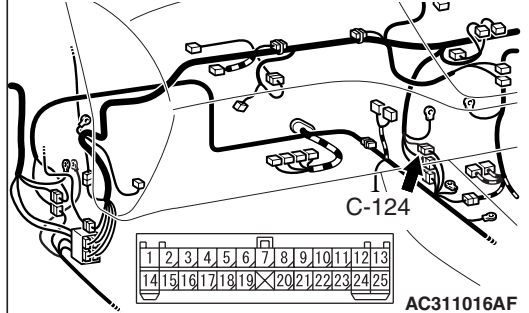


AC311002AC

Connector: C-124 <LH drive vehicles>



Connector: C-124 <RH drive vehicles>



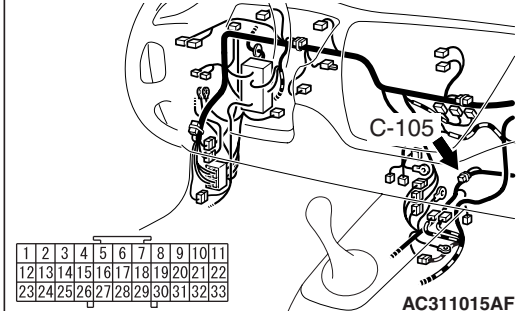
Check for the contact with terminals.

Q: Is the check result normal?

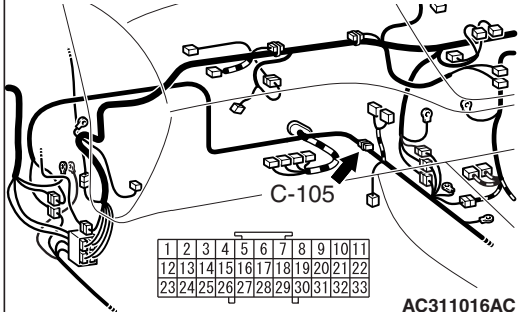
YES : Go to Step 11.

NO : Repair the defective connector.

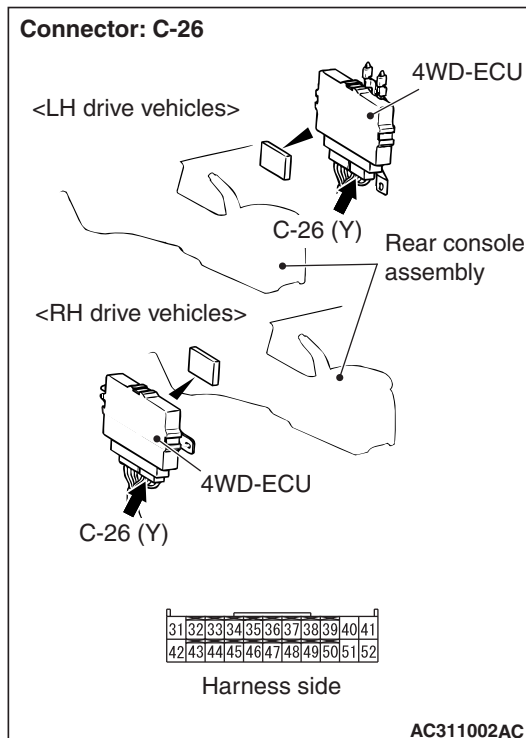
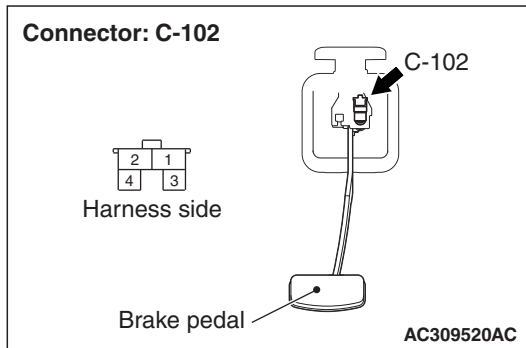
Connector: C-105 <LH drive vehicles>



Connector: C-105 <RH drive vehicles>



STEP 11. Check the harness between stop lamp switch connector C-102 terminal No.1 and 4WD-ECU connector C-26 terminal No.38.



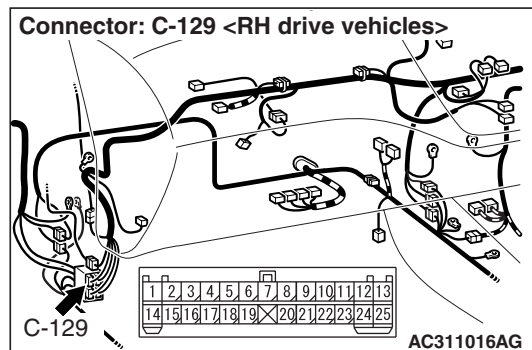
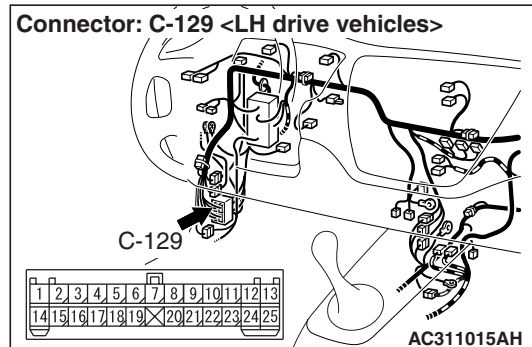
Check the output line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 9.

NO : Repair the wiring harness.

STEP 12. Connector check: C-129 intermediate connector



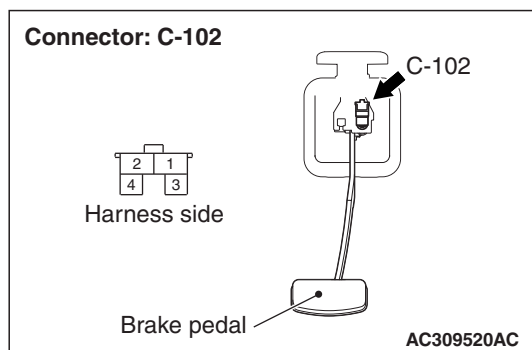
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 13.

NO : Repair the defective connector.

STEP 13. Check the harness between stop lamp switch connector C-102 terminal No.2 and battery.



Check the power supply line for short or open circuit.

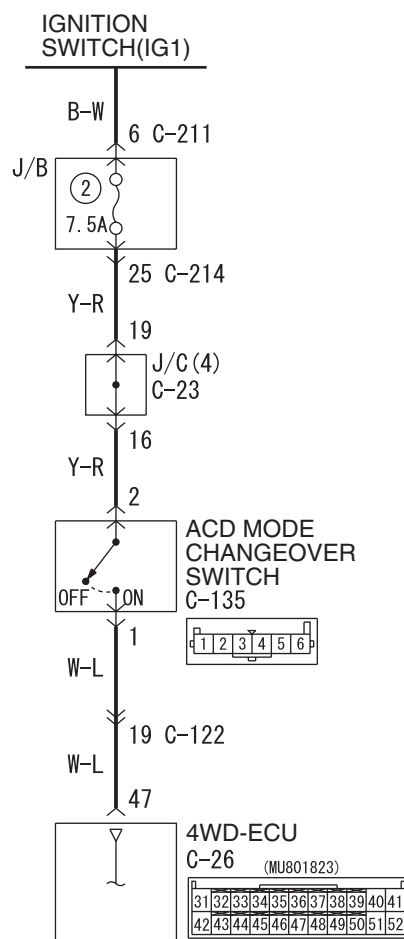
Q: Is the check result normal?

YES : Go to Step 9.

NO : Repair the wiring harness.

Code No.62 ACD mode changeover switch system

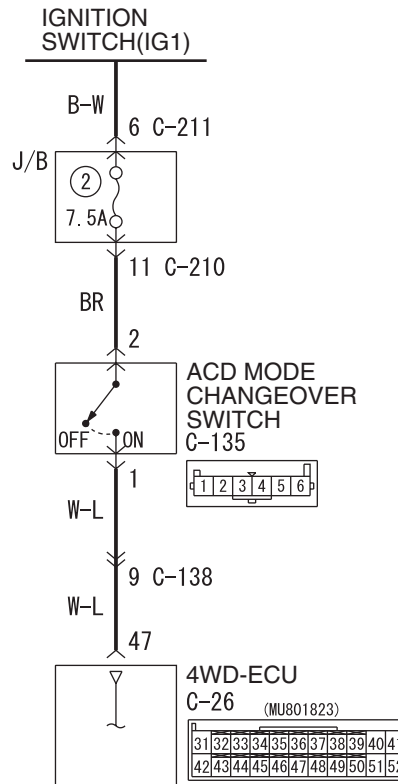
ACD mode changeover switch system circuit <LH drive vehicles>



Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
 BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

ACD mode changeover switch system circuit <RH drive vehicles>



Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W4J22E14AA

OPERATION

The 4WD-ECU receives a control mode (tarmac, gravel, snow) from the ACD mode changeover switch.

DIAGNOSIS CODE SET CONDITIONS

Code No.62 is set when the ACD mode changeover switch is ON for more than 60 seconds.

PROBABLE CAUSES

- Malfunction of the ACD mode changeover switch
- Damaged harness wires and connectors
- Malfunction of the 4WD-ECU

DIAGNOSIS

STEP 1. M.U.T.-II/III data list

Item 63: ACD mode changeover switch (Refer to data list reference table [P.22A-142](#)).

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Go to Step 2.

STEP 2. Check the ACD mode changeover switch.

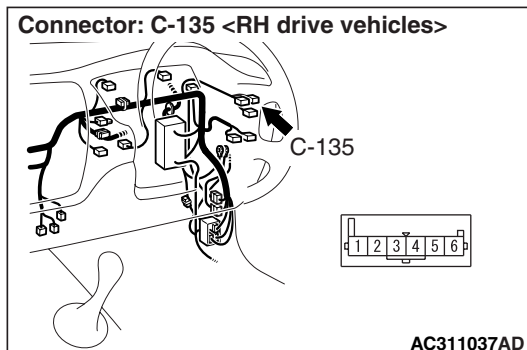
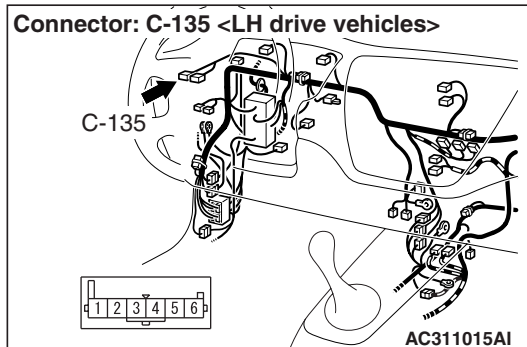
Refer to [P.22A-169](#).

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-135.



- (1) Disconnect the ACD mode changeover switch connector, and measure the voltage between terminal No.2 and earth.
- (2) Turn the ignition switch to the ON position.

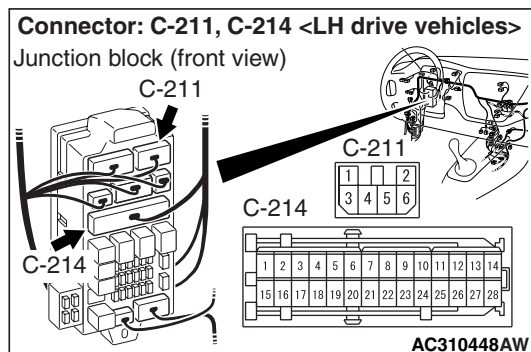
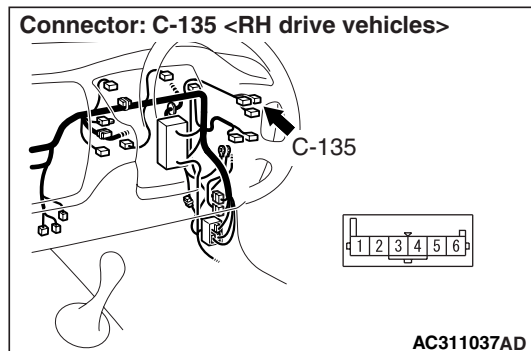
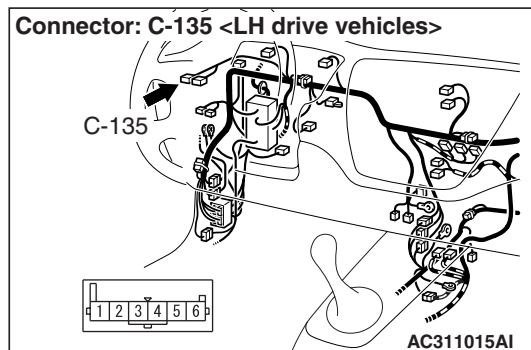
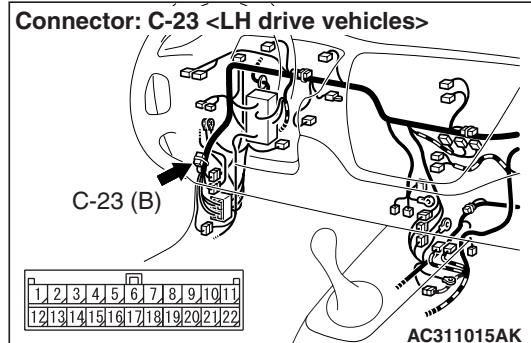
OK: System voltage

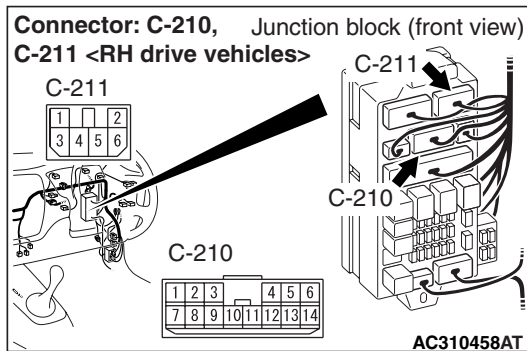
Q: Is the check result normal?

YES : Go to Step 7.

NO : Go to Step 4.

STEP 4. Connectors check: C-23 J/C (4), C-135 ACD mode changeover switch connector, C-211, C-214 J/B connector <LH drive vehicles> or C-135 ACD mode changeover switch connector, C-210, C-211 J/B connector <RH drive vehicles>.





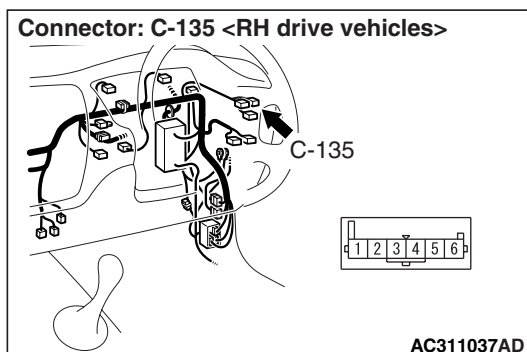
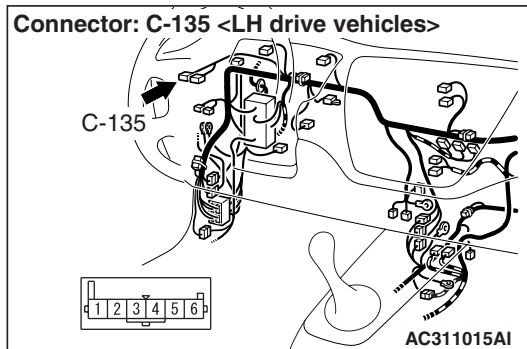
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the defective connector.

STEP 5. Check the harness between ACD mode changeover switch connector C-135 terminal No.2 and ignition switch.



Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the wiring harness.

STEP 6. M.U.T.-II/III data list

Item 63: ACD mode changeover switch (Refer to data list reference table [P.22A-142](#)).

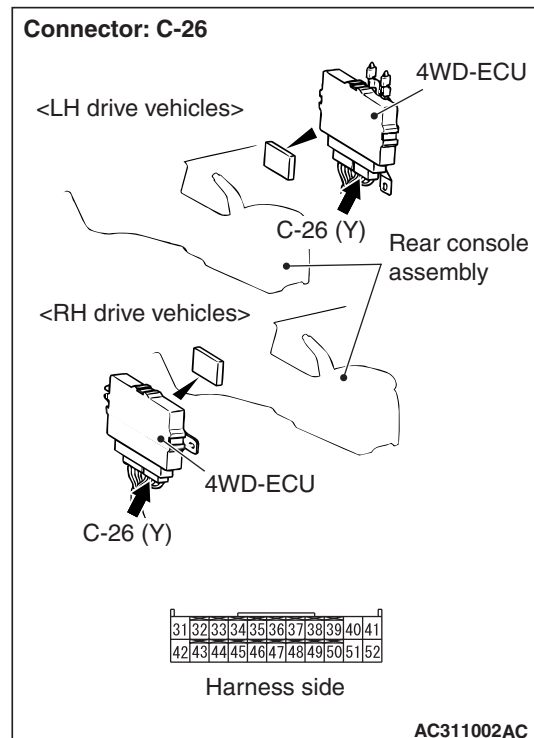
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Replace the 4WD-ECU.

STEP 7. Measure the voltage at 4WD-ECU connector C-26.

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



(2) Measure the voltage between 4WD-ECU connector C-26 terminal No.47 and earth.

OK: System voltage

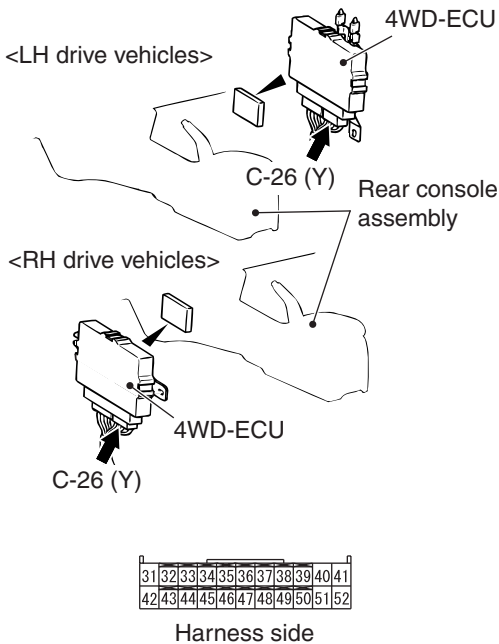
Q: Is the check result normal?

YES : Go to Step 10.

NO : Go to Step 8.

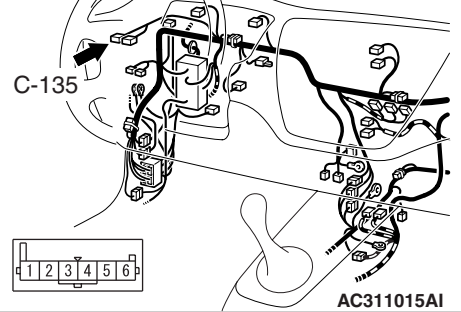
STEP 8. Connectors check: C-26 4WD-ECU connector, C-122 intermediate connector, C-135 ACD mode changeover switch connector <LH drive vehicles> or C-26 4WD-ECU connector, C-138 intermediate connector, C-135 ACD mode changeover switch connector <RH drive vehicles>.

Connector: C-26



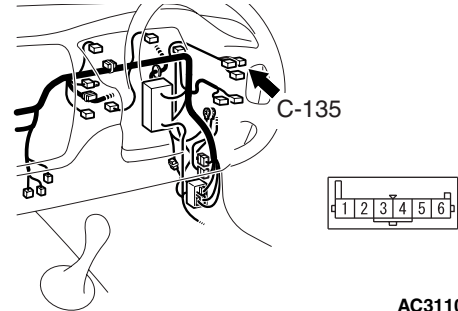
AC311002AC

Connector: C-135 <LH drive vehicles>



AC311015AI

Connector: C-135 <RH drive vehicles>



AC311037AD

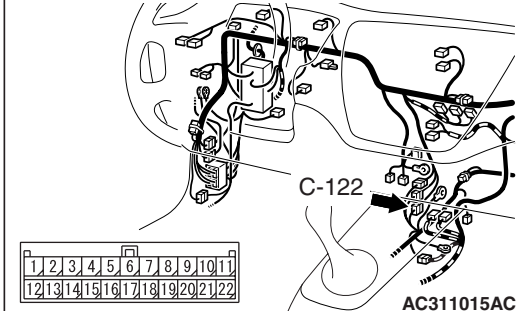
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 9.

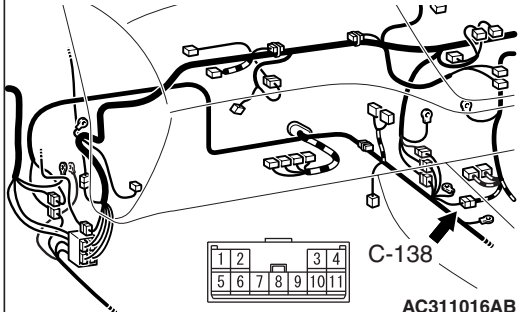
NO : Repair the defective connector.

Connector: C-122 <LH drive vehicles>



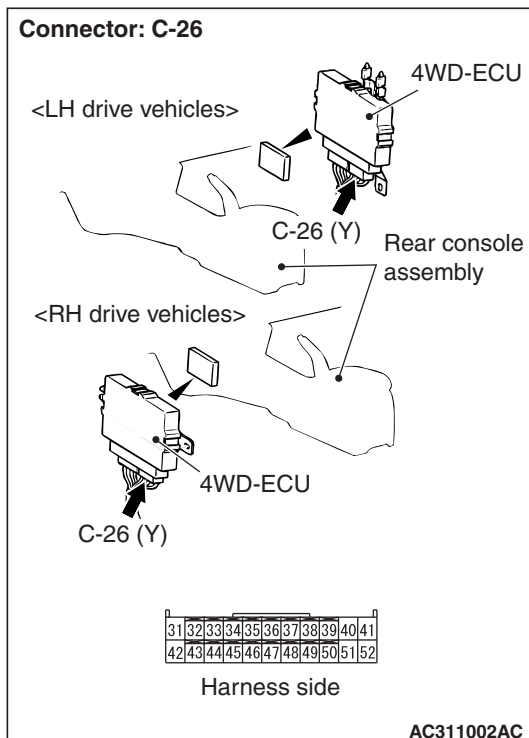
AC311015AC

Connector: C-138 <RH drive vehicles>

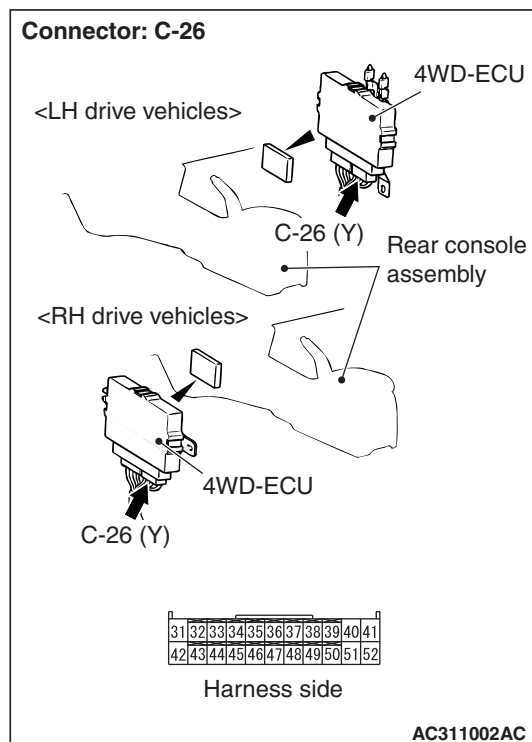


AC311016AB

STEP 9. Check the harness between 4WD-ECU connector C-26 terminal No.47 and ACD mode changeover switch connector C-135 terminal No.1.



STEP 10. Connector check: C-26 4WD-ECU connector.

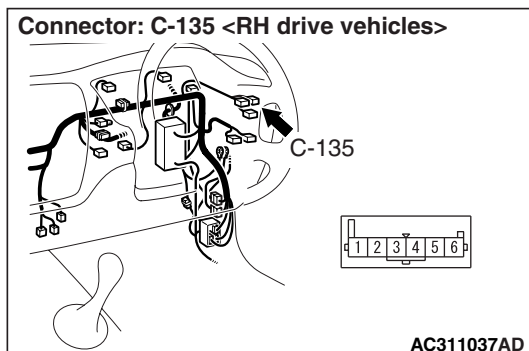
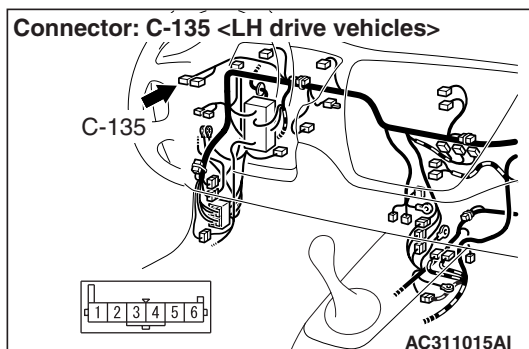


Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the defective connector.



Check the output line for short or open circuit.

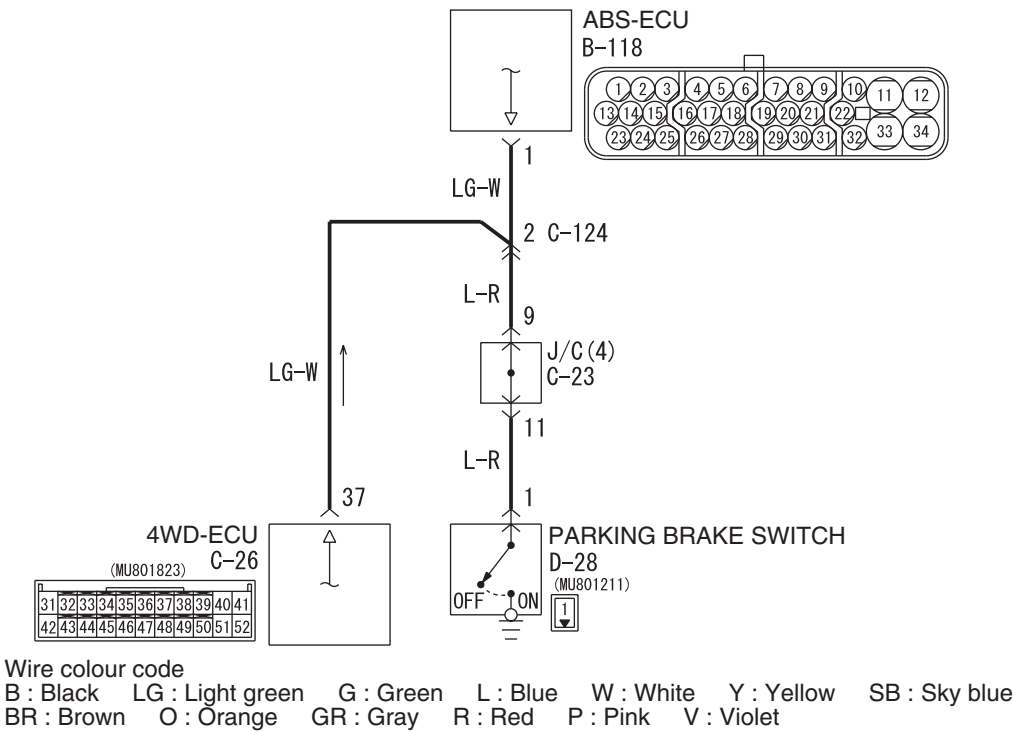
Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the wiring harness.

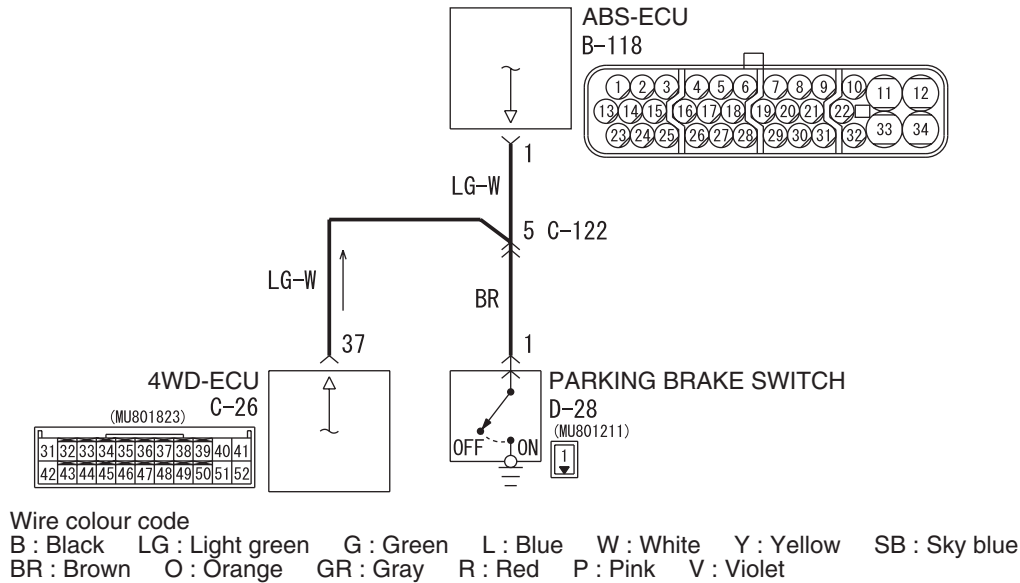
Code No.63 Parking brake switch system

Parking brake switch system circuit <LH drive vehicles>



W4J22E15AA

Parking brake switch system circuit <RH drive vehicles>



W4J22E16AA

OPERATION

The 4WD-ECU receives a signal from the parking brake switch whether the parking brake lever is pulled or released.

DIAGNOSIS CODE SET CONDITIONS

Code No.63 is set when the parking brake switch is ON for more than 15 minutes with the vehicle speed above 15 km/h.

PROBABLE CAUSES

- Malfunction of parking brake switch
- Damaged harness wires and connectors
- Malfunction of the ABS-ECU
- Malfunction of the 4WD-ECU

DIAGNOSIS

STEP 1. M.U.T.-II/III data list

Item 62: Parking brake switch (Refer to data list reference table [P.22A-142](#)).

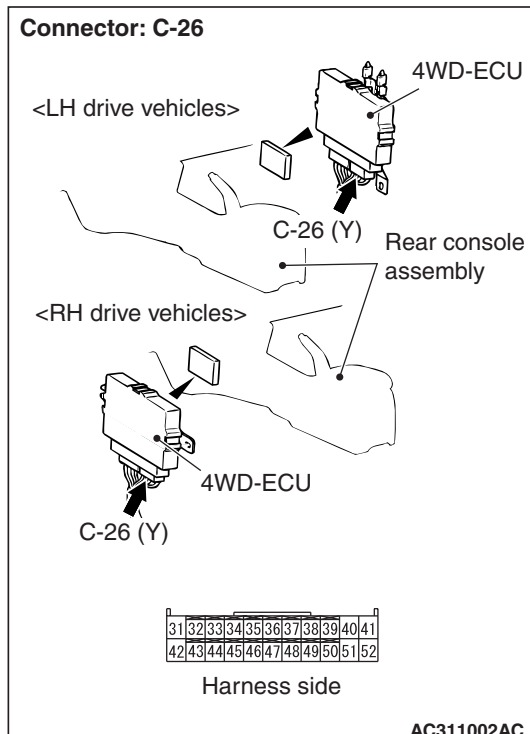
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Go to Step 2.

STEP 2. Measure the voltage at 4WD-ECU connector C-26.

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



(2) Measure the voltage between 4WD-ECU

connector C-26 terminal No.37 and earth.

OK:

Release the parking brake lever: System voltage

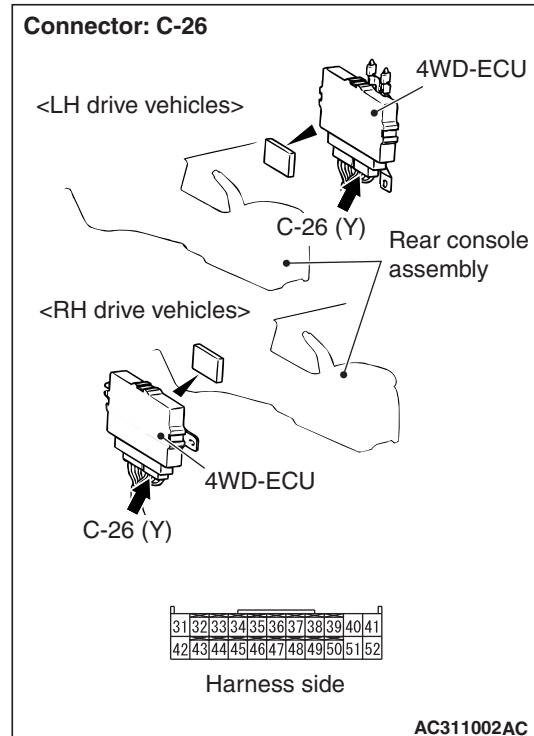
Pull the parking brake lever: 1 V or less

Q: Is the check result normal?

YES : Go to Step 3.

NO : Go to Step 5.

STEP 3. Connector check: C-26 4WD-ECU connector.



Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the defective connector.

STEP 4. M.U.T.-II/III data list

Item 62: Parking brake switch (Refer to data list reference table [P.22A-142](#)).

Q: Is the check result normal?

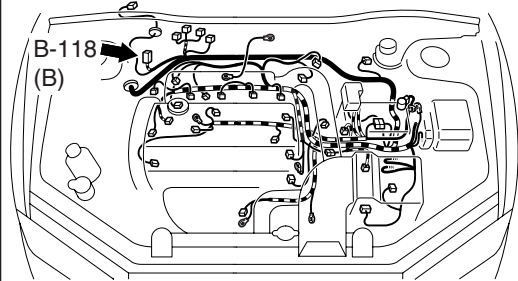
YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Replace the 4WD-ECU.

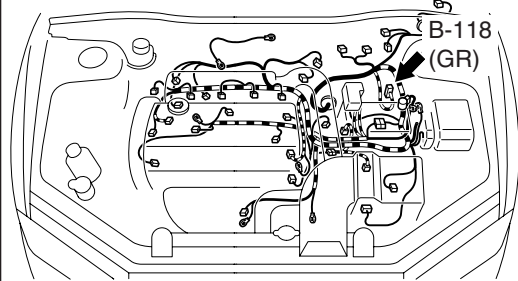
STEP 5. Connectors check: B-118 ABS-ECU connector, C-23 J/C (4), C-26 4WD-ECU connector, C-124 intermediate connector, D-28 parking brake switch connector <LH drive vehicles> or B-118 ABS-ECU connector, C-26 4WD-ECU connector, C-122 intermediate connector, D-28 parking brake switch connector <RH drive vehicles>.

Connector: B-118

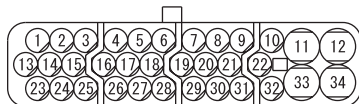
<LH drive vehicles>



<RH drive vehicles>



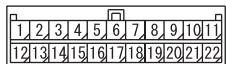
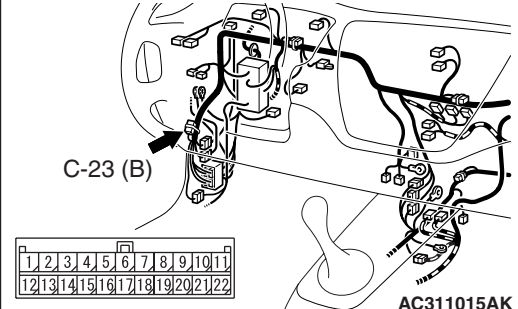
B-118



Harness side

AC311020AB

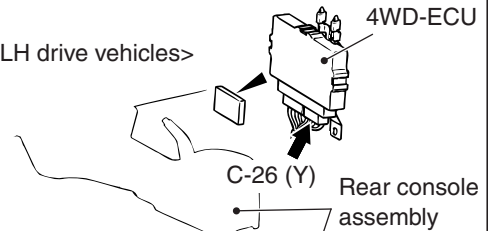
Connector: C-23 <LH drive vehicles>



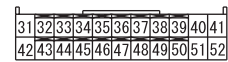
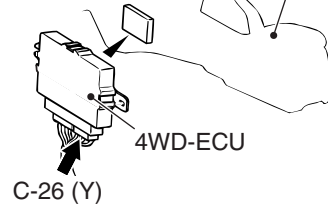
AC311015AK

Connector: C-26

<LH drive vehicles>



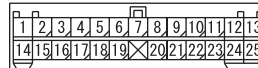
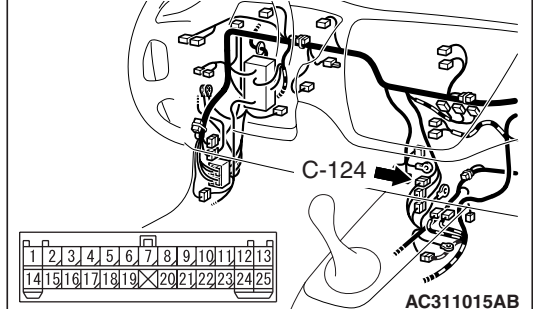
<RH drive vehicles>



Harness side

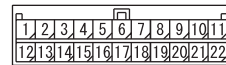
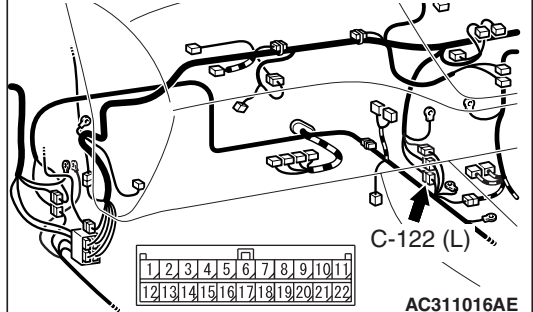
AC311002AC

Connector: C-124 <LH drive vehicles>

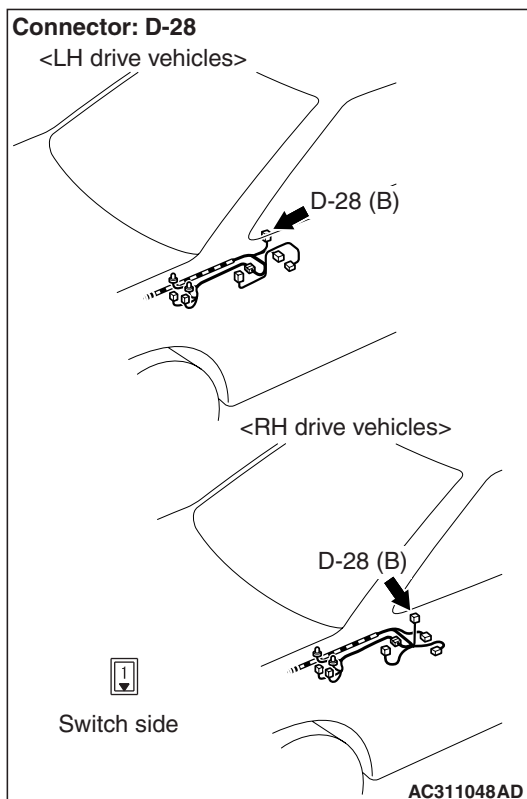


AC311015AB

Connector: C-122 <RH drive vehicles>



AC311016AE



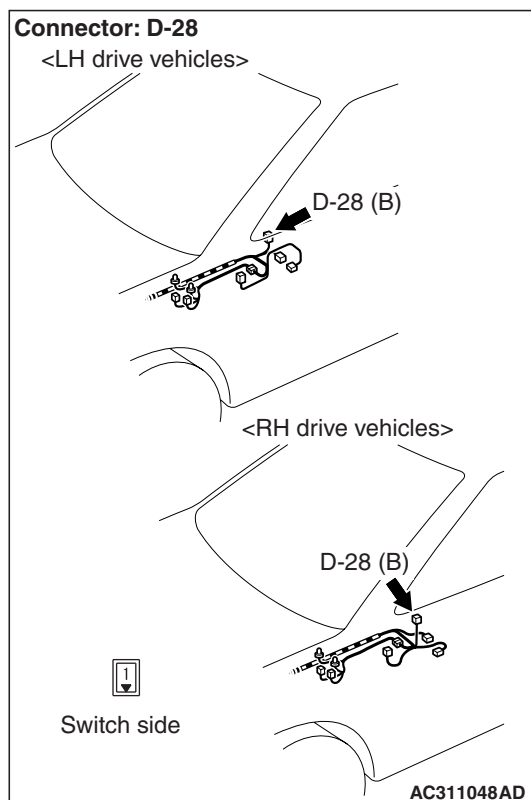
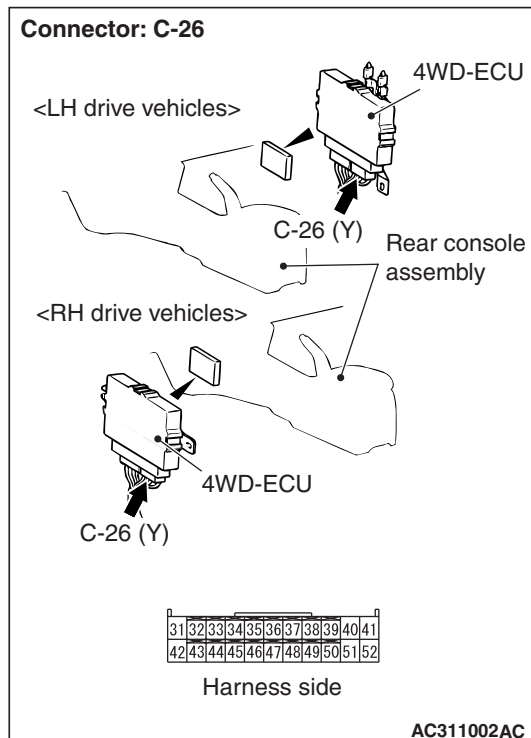
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the defective connector.

STEP 6. Check the harness between 4WD-ECU connector C-26 terminal No.37 and parking brake switch connector D-28 terminal No.1.



Check the output line for short or open circuit.

Q: Is the check result normal?

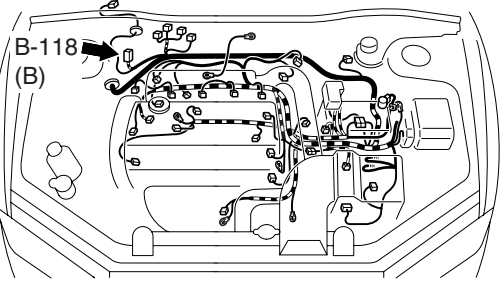
YES : Go to Step 7.

NO : Repair the wiring harness.

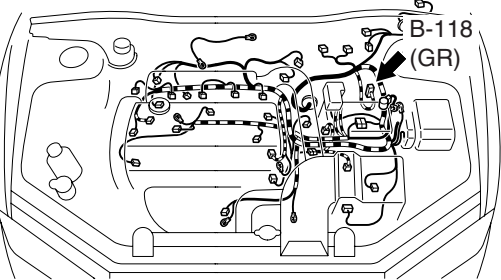
STEP 7. Check the harness between ABS-ECU connector B-118 terminal No.1 and parking brake switch connector D-28 terminal No.1.

Connector: B-118

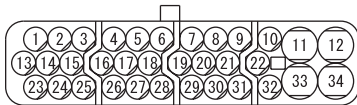
<LH drive vehicles>



<RH drive vehicles>



B-118

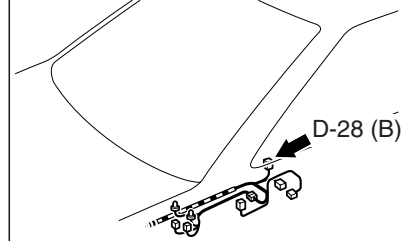


Harness side

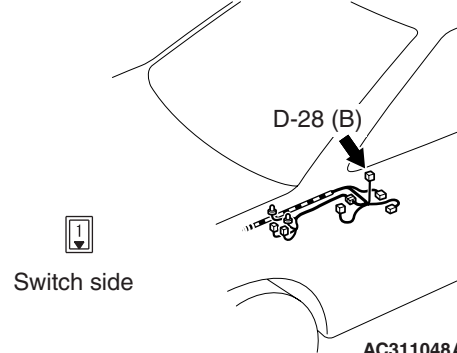
AC311020AB

Connector: D-28

<LH drive vehicles>



<RH drive vehicles>



AC311048AD

Check the output line for short or open circuit.

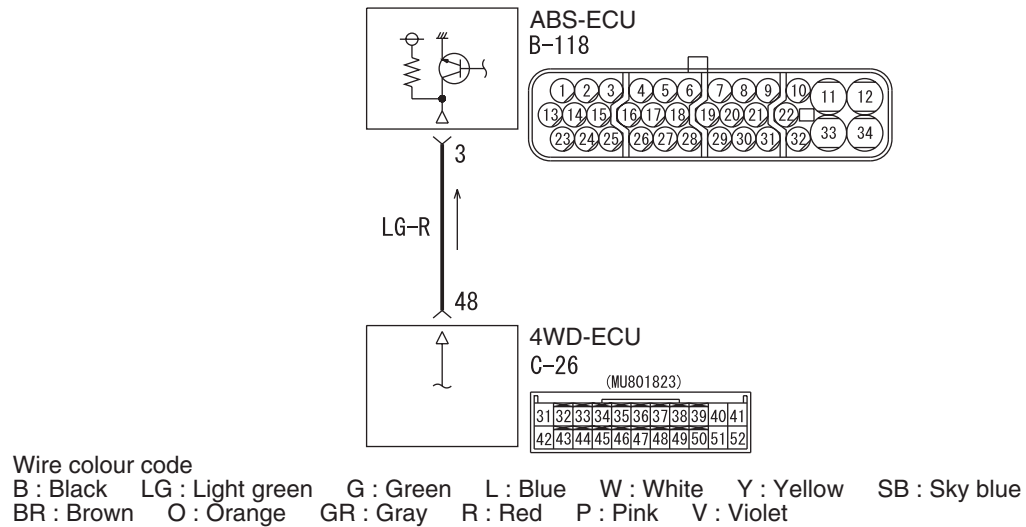
Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the wiring harness.

Code No.65 ABS monitor system

ABS monitor system circuit



W4J22E17AA

OPERATION

The 4WD-ECU receives ABS operation condition from the ABS-ECU.

DIAGNOSIS CODE SET CONDITIONS

Code No.65 is set when ABS is detected to be operating for more than 1 minute continuously.

PROBABLE CAUSES

- Damaged harness wires and connectors
- Malfunction of the ABS-ECU
- Malfunction of the 4WD-ECU

DIAGNOSIS

STEP 1. M.U.T.-II/III data list

Item 61: ABS monitor

OK:

- 1. Disconnect ABS-ECU connector B-118: ON**
- 2. Connect ABS-ECU connector B-118: OFF**

Q: Is the check result normal?

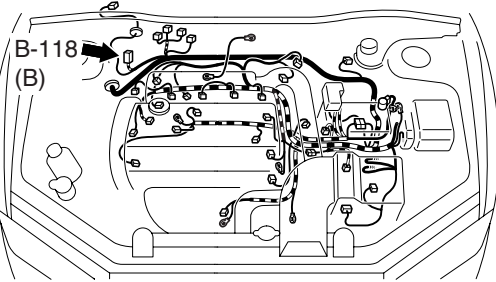
YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO <When 1. is abnormal> : Go to Step 2.

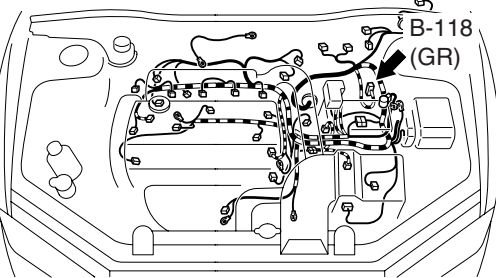
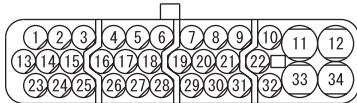
NO <When 2. is abnormal> : Go to Step 4.

STEP 2. Connectors check: B-118 ABS-ECU connector, C-26 4WD-ECU connector.**Q: Is the check result normal?****YES :** Go to Step 3.**NO :** Repair the defective connector.**Connector: B-118**

<LH drive vehicles>



<RH drive vehicles>

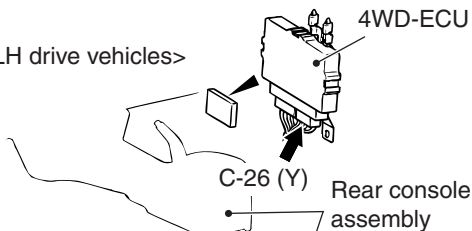
**B-118**

Harness side

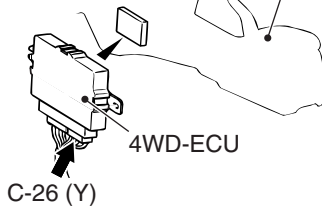
AC311020AB

Connector: C-26

<LH drive vehicles>



<RH drive vehicles>

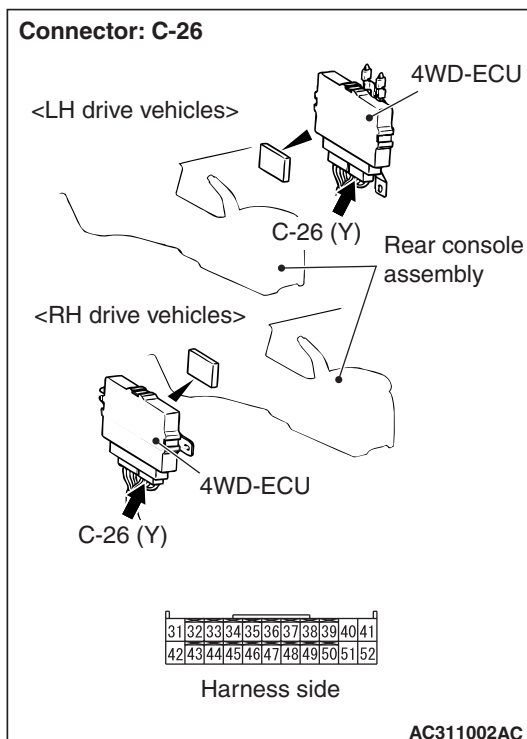
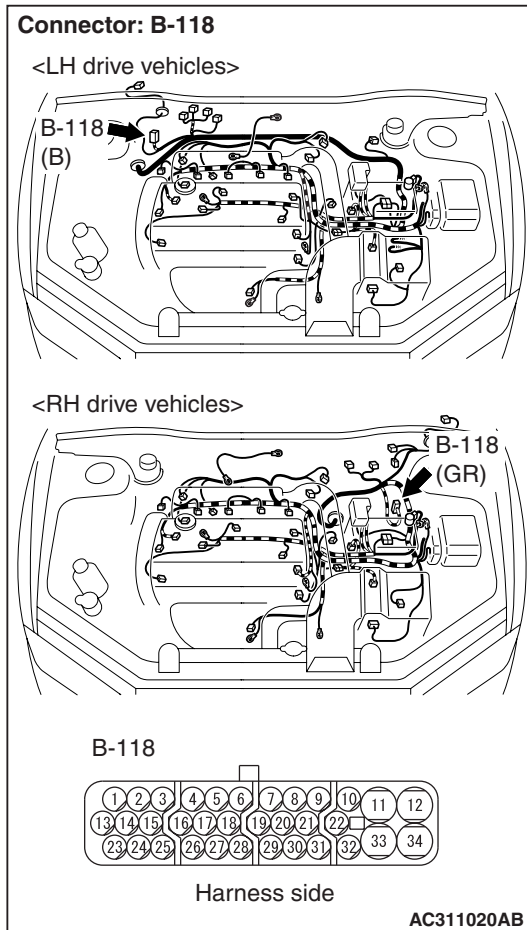


Harness side

AC311002AC

Check for the contact with terminals.

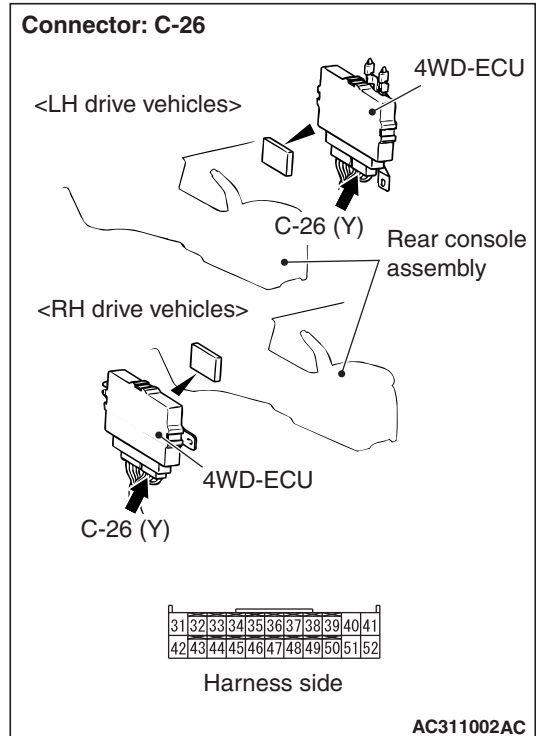
STEP 3. Check the harness between ABS-ECU connector B-118 terminal No.3 and 4WD-ECU connector C-26 terminal No.48.



Q: Is the check result normal?
YES : Replace the ABS-ECU.
NO : Repair the wiring harness.

STEP 4. Measure the voltage at 4WD-ECU connector C-26.

(1) Measure the voltage between 4WD-ECU connector C-26 terminal No.38 and earth.

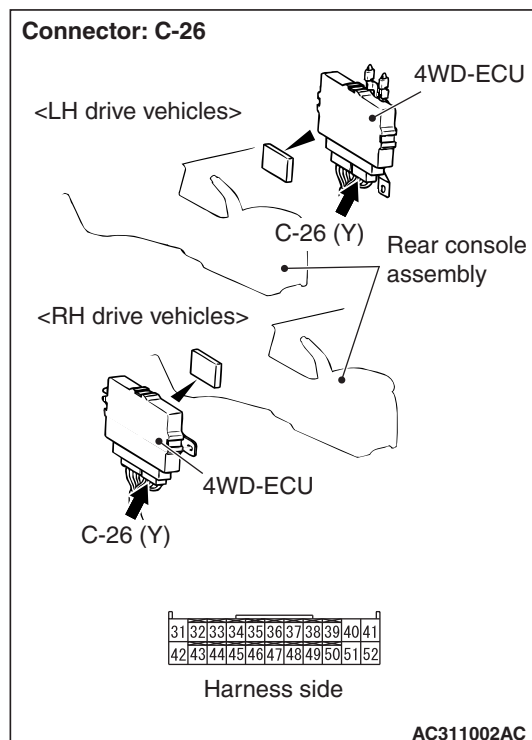


(2) Turn the ignition switch to the ON position.

OK: System voltage

Q: Is the check result normal?
YES : Go to Step 5.
NO : Go to Step 7.

Check the output line for short circuit.

STEP 5. Connector check: C-26 4WD-ECU connector.

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the defective connector.

STEP 6. M.U.T.-II/III data list

Item 61: ABS monitor

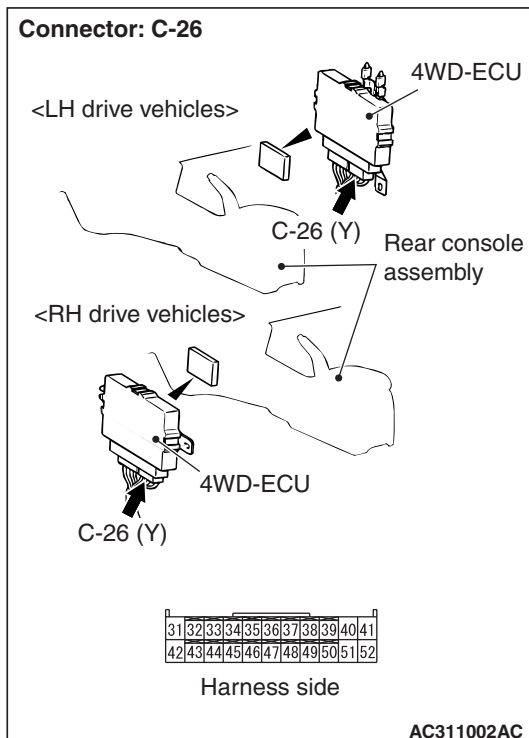
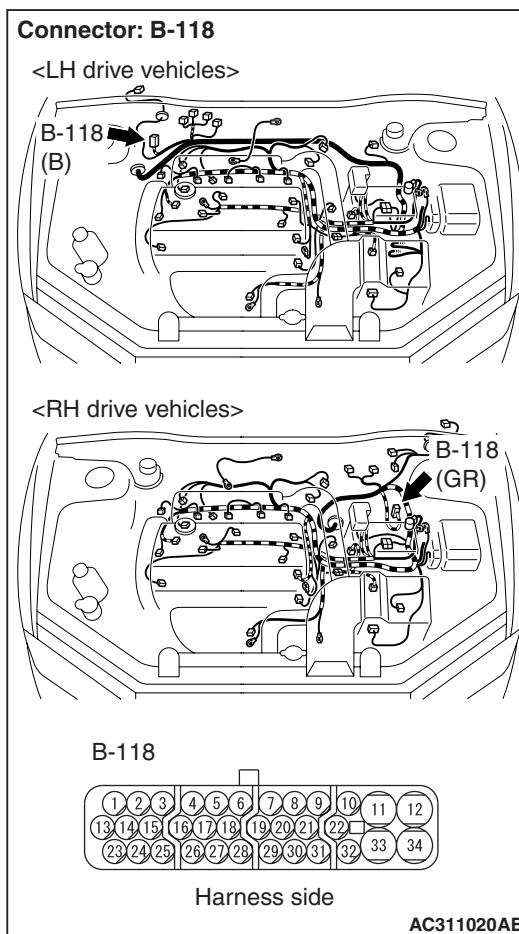
OK:

Connect ABS-ECU connector B-118: OFF

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

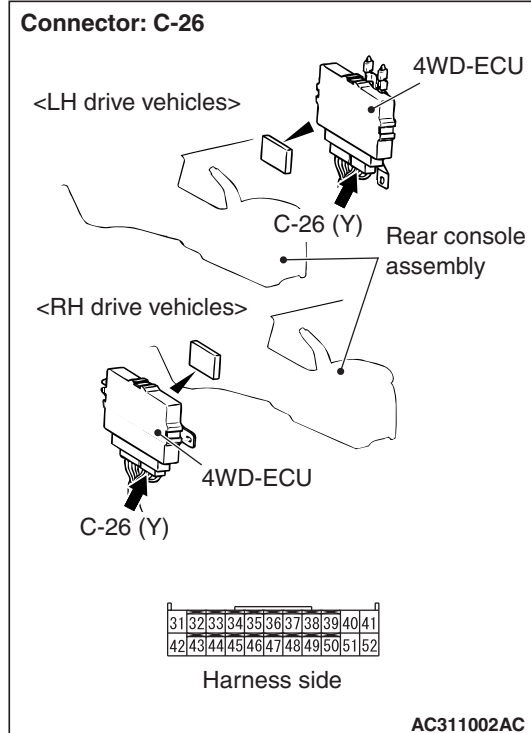
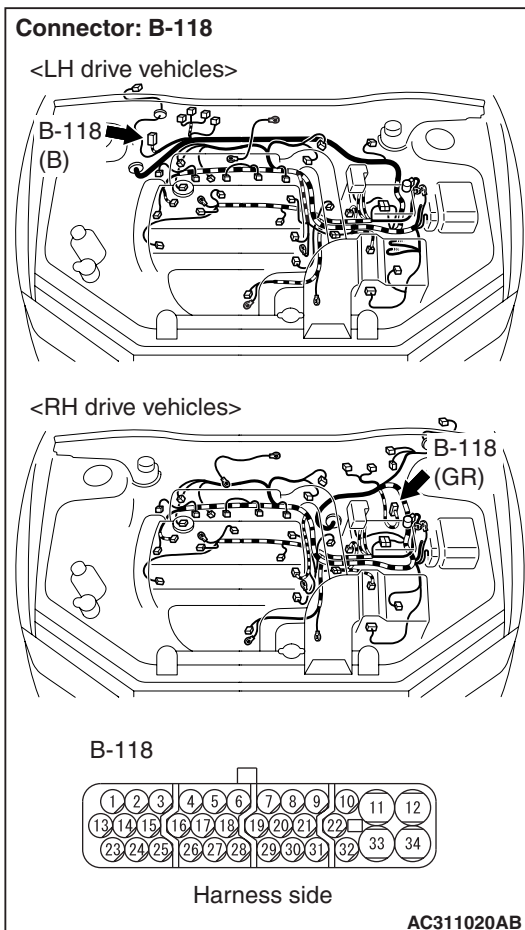
NO : Replace the 4WD-ECU.

STEP 7. Connectors check: B-118 ABS-ECU connector, C-26 4WD-ECU connector.

Check for the contact with terminals.

Q: Is the check result normal?
YES : Go to Step 8.
NO : Repair the defective connector.

STEP 8. Check the harness between ABS-ECU connector B-118 terminal No.3 and 4WD-ECU connector C-26 terminal No.48.



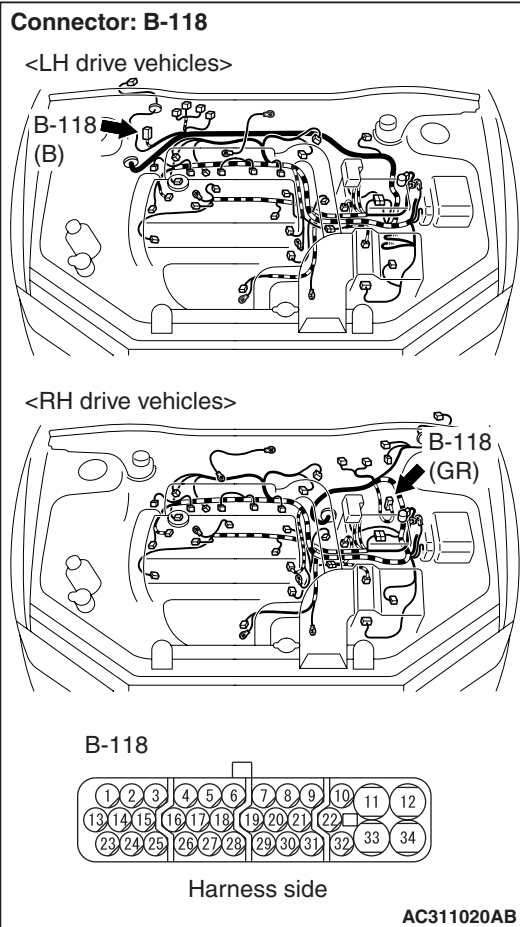
Check the output line for open circuit.

Q: Is the check result normal?
YES : Go to Step 9.
NO : Repair the wiring harness.

STEP 9. Measure the voltage at ABS-ECU connector B-118.

- (1) Turn the ignition switch to the ON position.
- (2) Execute ABS actuator test (item 05: ABS signal).

Q: Is the check result normal?
YES : Replace the 4WD-ECU.
NO : Replace the ABS-ECU.

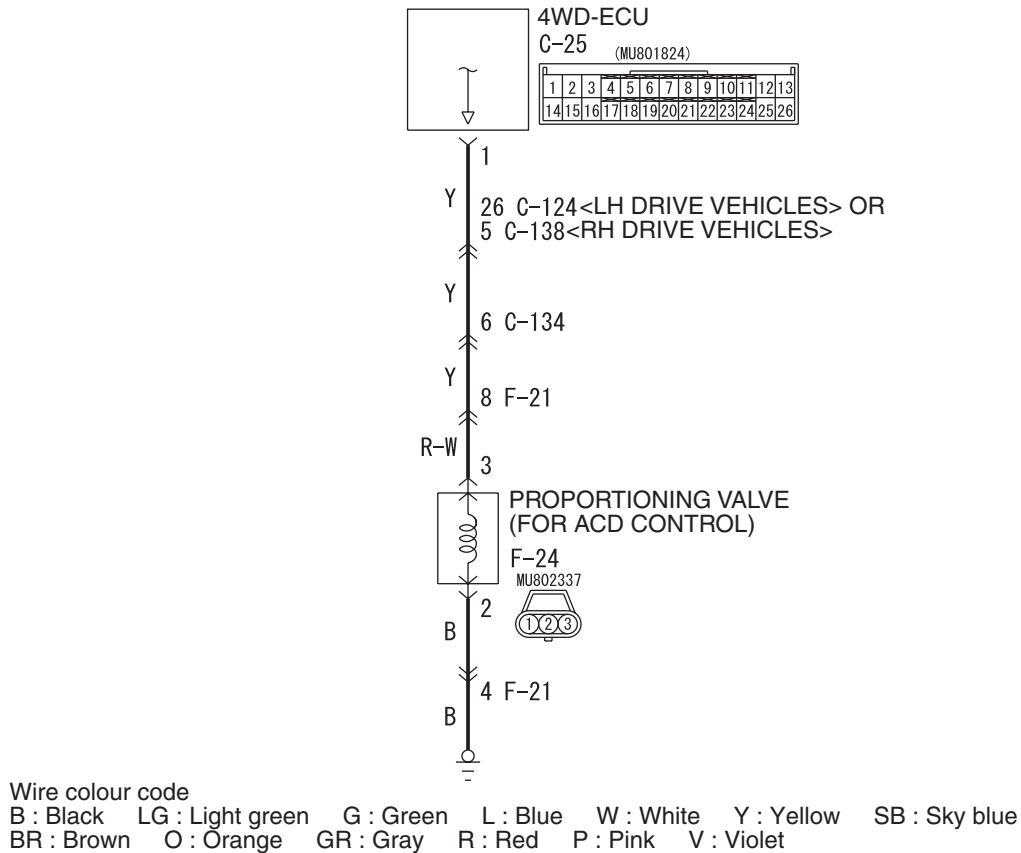


- (3) Measure the voltage between ABS-ECU connector B-118 terminal No.3 and earth.

OK: The voltage remains 1 V or less during the actuator test (for 10 seconds) and becomes system voltage.

Code No.74 Proportional valve system <ACD>

Proportioning valve <ACD> system circuit



W4J22E18AA

OPERATION

The proportional valve (ACD) controls the hydraulic pressure to activate the ACD hydraulic multi plate clutch according to signal from the 4WD-ECU.

DIAGNOSIS CODE SET CONDITIONS

Code No.74 is set when open circuit or short circuit of the control circuit of the proportional valve has occurred.

PROBABLE CAUSES

- Malfunction of proportional valve
- Damaged harness wires and connectors

- Malfunction of the 4WD-ECU

DIAGNOSIS

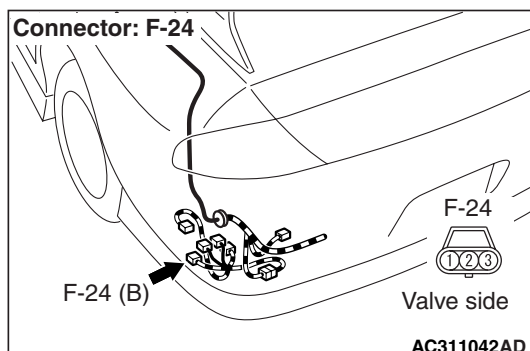
STEP 1. M.U.T.-II/III data list

Item 11: Proportional valve current <ACD> (Refer to data list reference table [P.22A-142](#)).

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Go to Step 2.

STEP 2. Measure the resistance at proportional valve connector F-24.

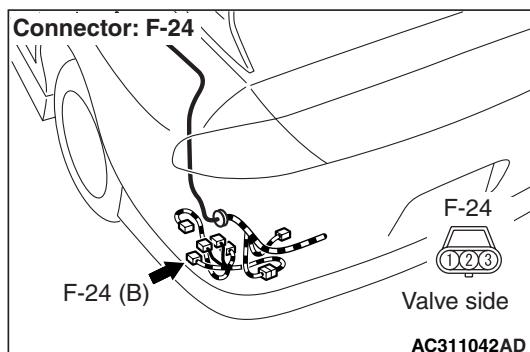
Disconnect the proportional valve connector, and measure the resistance between terminal No.2 and No.3.

OK: 4.7 Ω or less

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the hydraulic unit.

STEP 3. Measure the resistance at proportional valve connector F-24.

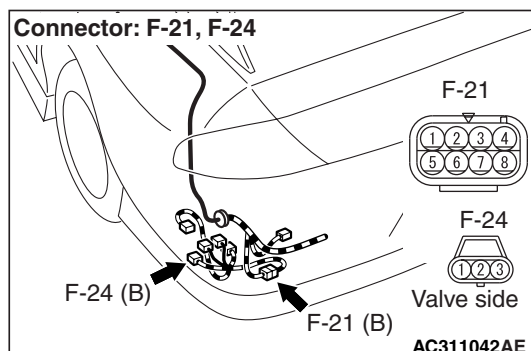
Disconnect the proportional valve connector, and measure the resistance between terminal No.2 and earth.

OK: 2 Ω or less

Q: Is the check result normal?

YES : Go to Step 7.

NO : Go to Step 4.

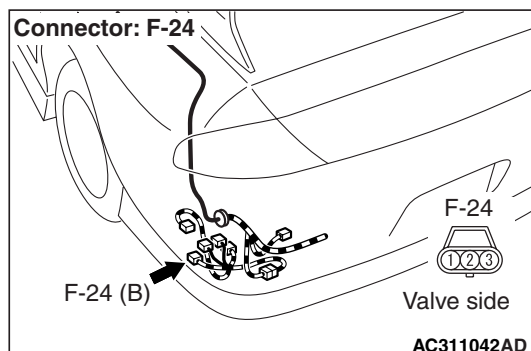
STEP 4. Connectors check: F-21 intermediate connector, F-24 proportional valve connector.

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the defective connector.

STEP 5. Check the harness between proportional valve connector F-24 terminal No.2 and earth.

Check the earth line for open circuit.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the wiring harness.

STEP 6. M.U.T.-II/III data list

Item 11: Proportional valve current <ACD> (Refer to data list reference table [P.22A-142](#)).

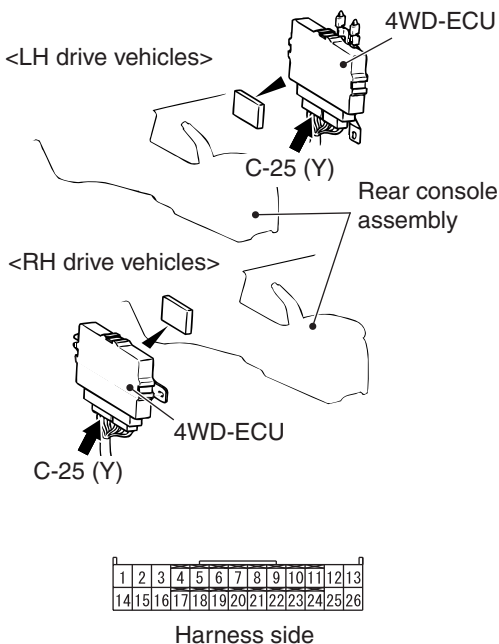
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Replace the 4WD-ECU.

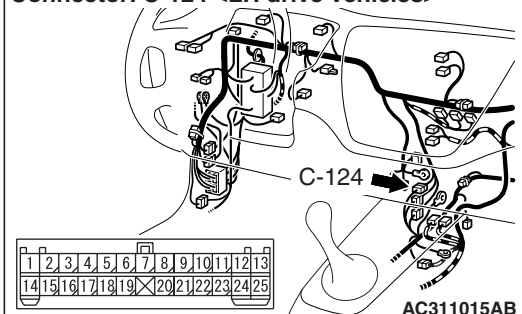
STEP 7. Connectors check: C-25 4WD-ECU connector, C-124, C-134, F-21 intermediate connector, F-24 proportional valve connector <LH drive vehicles> or C-25 4WD-ECU connector, C-134, C-138, F-21 intermediate connector, F-24 proportional valve connector <RH drive vehicles>.

Connector: C-25



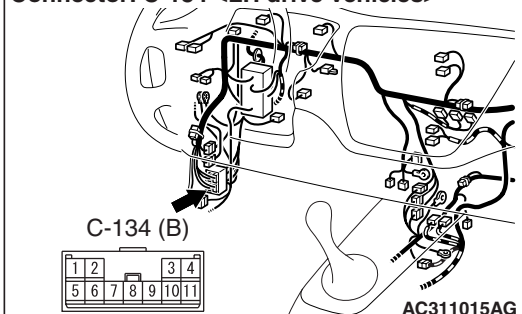
AC311002AB

Connector: C-124 <LH drive vehicles>



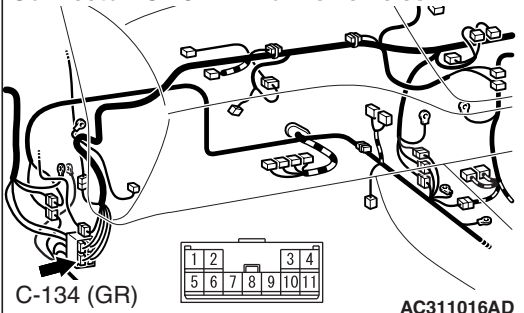
AC311015AB

Connector: C-134 <LH drive vehicles>



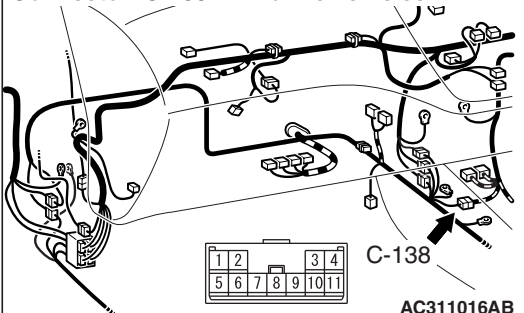
AC311015AG

Connector: C-134 <RH drive vehicles>



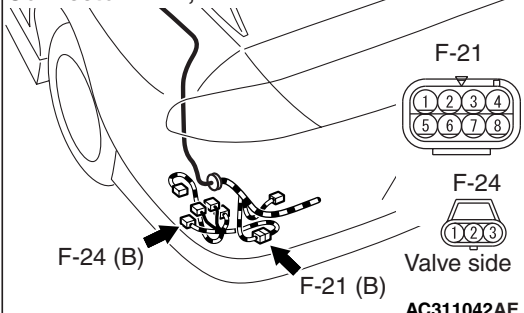
AC311016AD

Connector: C-138 <RH drive vehicles>



AC311016AB

Connector: F-21, F-24



AC311042AE

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 8.

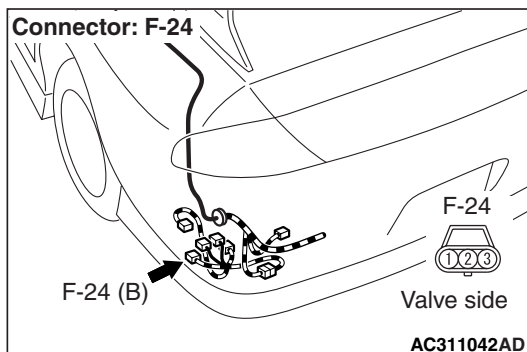
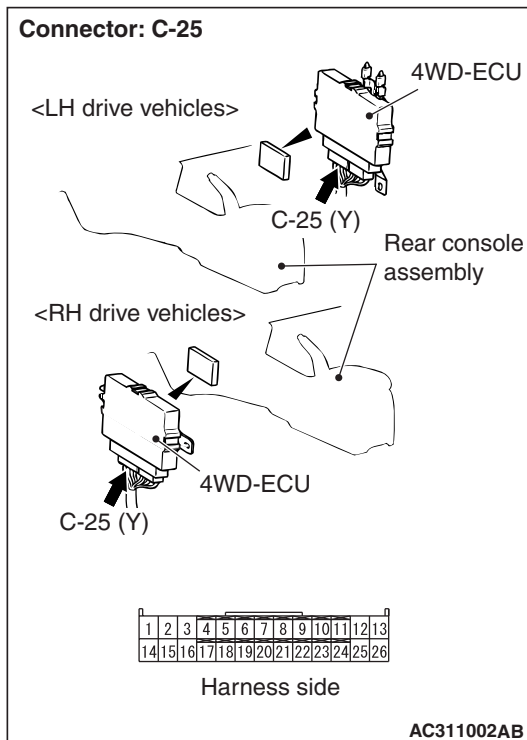
NO : Repair the defective connector.

STEP 8. Check the harness between 4WD-ECU connector C-25 terminal No.1 and proportional valve connector F-24 terminal No.3.

Q: Is the check result normal?

YES : Go to Step 6.

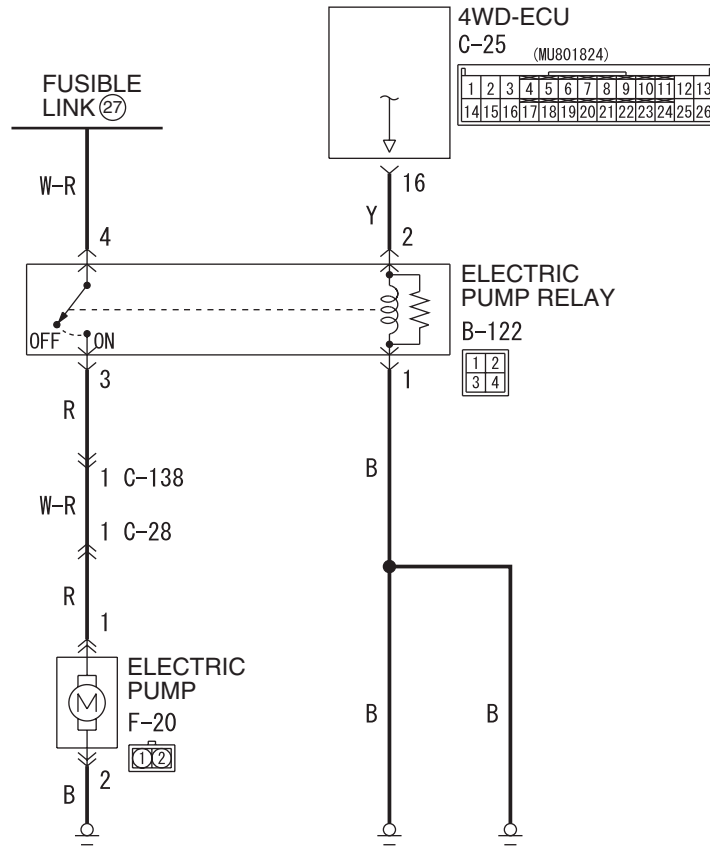
NO : Repair the wiring harness.



Check the output line for short or open circuit.

Code No.81 Electric pump relay system (open circuit or short circuit)

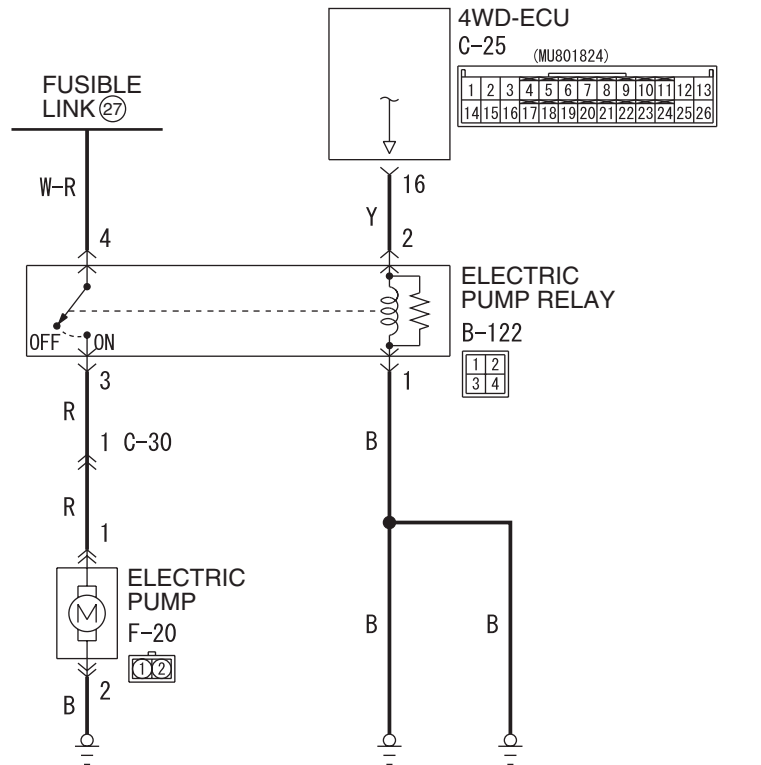
Electric pump relay system circuit <LH drive vehicles>



Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

Electric pump relay system circuit <RH drive vehicles>



Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W4J22E20AA

OPERATION

The electric pump relay provides power to activate the electric pump according to the signal from the 4WD-ECU.

DIAGNOSIS CODE SET CONDITIONS

Code No.81 is set when the coil circuit of the electric pump relay has open circuit or short circuit.

PROBABLE CAUSES

- Malfunction of electric pump relay
- Damaged harness wires and connectors
- Malfunction of the 4WD-ECU

DIAGNOSIS**STEP 1. M.U.T.-II/III actuator test**

Item 04: Electric pump drive

OK: Operating sound can be heard.

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-5).

NO : Go to Step 2.

STEP 2. Check the electric pump relay.

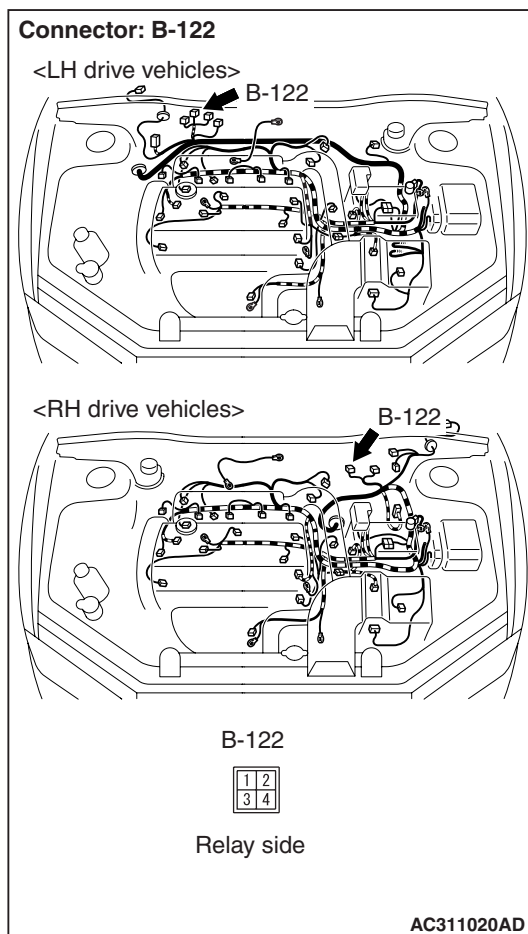
Refer to P.22A-169.

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 No.1 and earth.

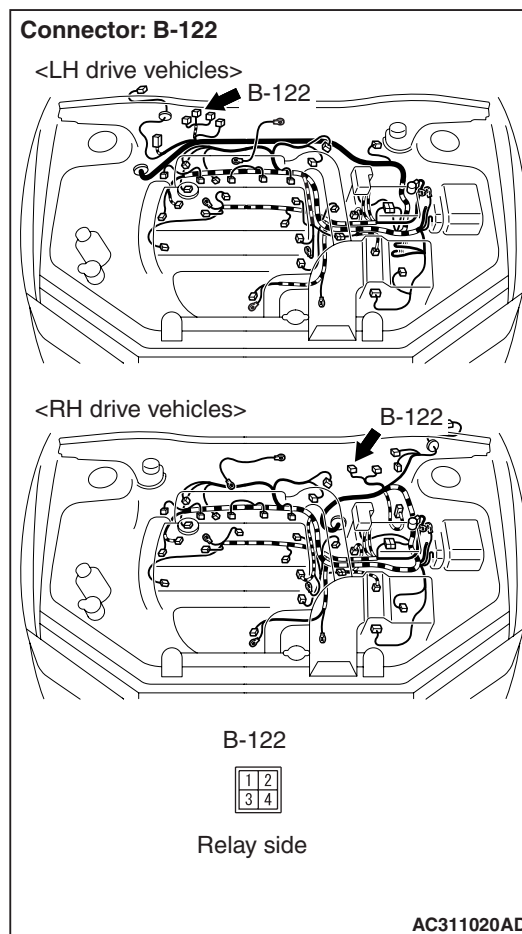
OK: 2 Ω or less

Q: Is the check result normal?

YES : Go to Step 7.

NO : Go to Step 4.

STEP 4. Connector check: B-122 electric pump relay connector.



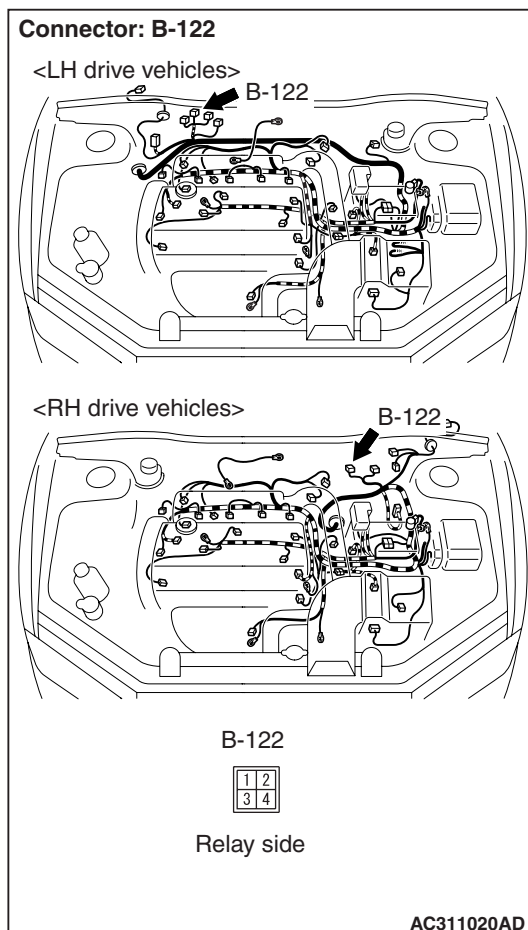
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the defective connector.

STEP 5. Check the harness between electric pump relay connector B-122 terminal No.1 and earth.



Check the earth line for open circuit.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the wiring harness.

STEP 6. M.U.T.-II/III actuator test

Item 04: Electric pump drive

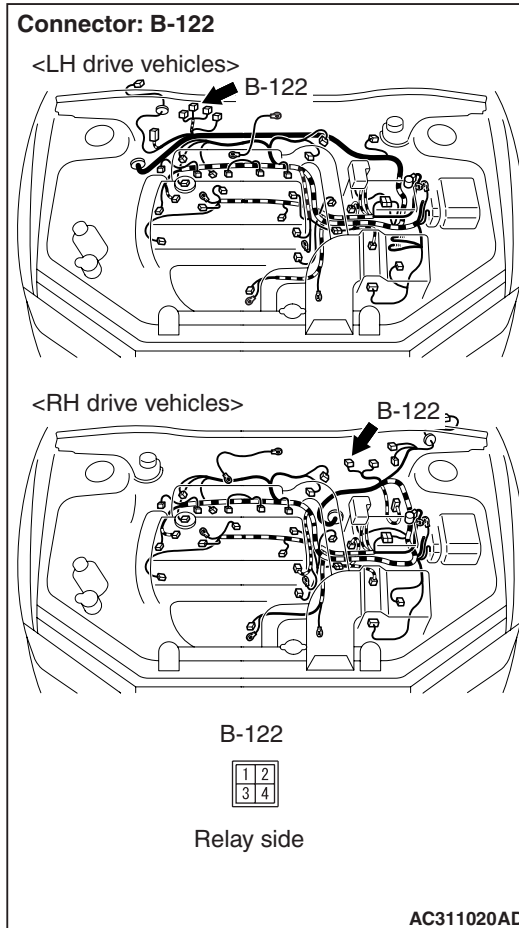
OK: Operating sound can be heard.

Q: Is the check result normal?

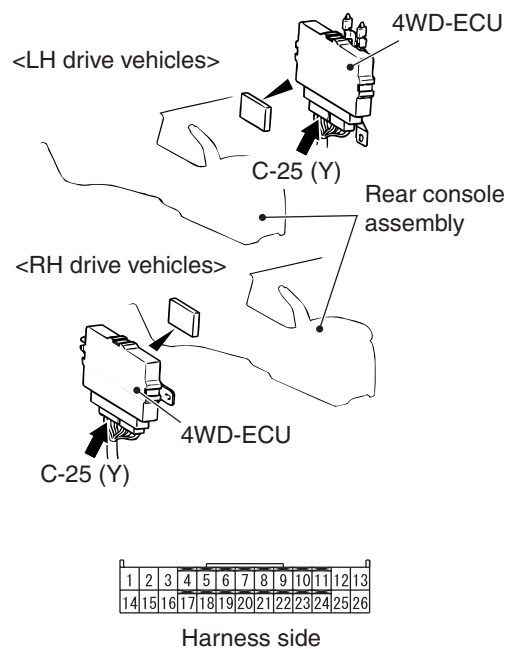
YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-5).

NO : Replace the 4WD-ECU.

STEP 7. Connectors check: B-122 electric pump relay connector, C-25 4WD-ECU connector.



Connector: C-25

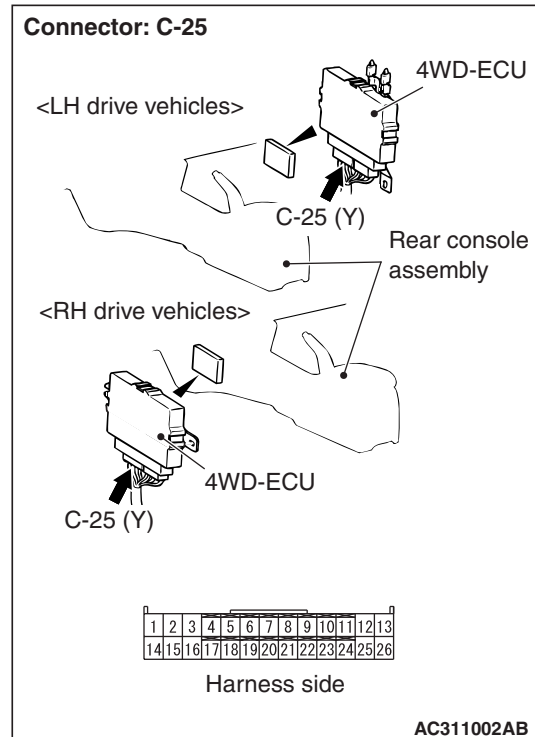
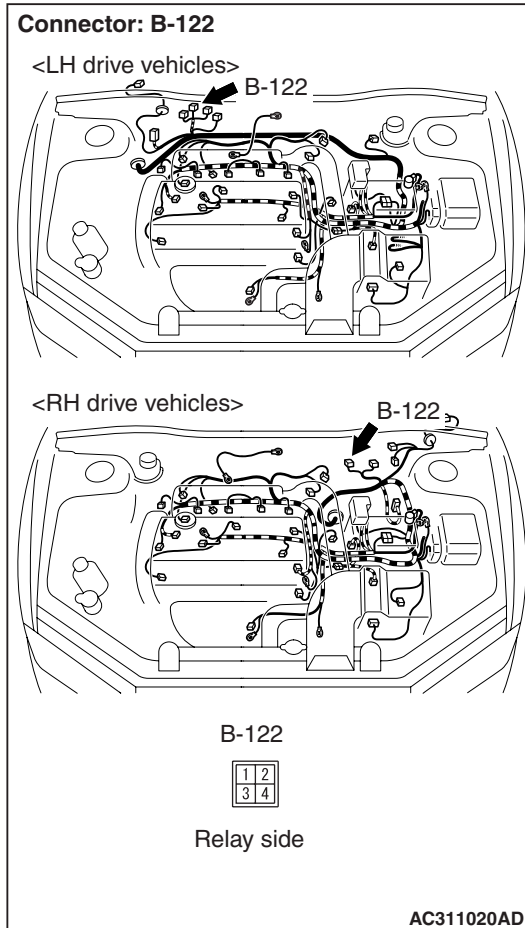


AC311002AB

Check for the contact with terminals.

Q: Is the check result normal?
YES : Go to Step 8.
NO : Repair the defective connector.

STEP 8. Check the harness between electric pump relay connector B-122 terminal No.2 and 4WD-ECU connector C-25 terminal No.16.



Check the power supply line for short or open circuit.

Q: Is the check result normal?
YES : Go to Step 6.
NO : Repair the wiring harness.

Code No.82 Electric pump relay system (electric pump malfunction or pressure sensor defect)

ELECTRIC PUMP RELAY SYSTEM CIRCUIT

Refer to P.22A-109.

OPERATION

Refer to P.22A-109.

DIAGNOSIS CODE SET CONDITIONS

Code No.82 is set when the pressure sensor does not reach the specified value even if the 4WD-ECU has output the electric pump motor drive command.

PROBABLE CAUSES

- Insufficient fluid
- Malfunction of the pressure sensor
- Malfunction of the electric pump relay
- Malfunction of the hydraulic unit
- Damaged harness wires and connectors
- Malfunction of the 4WD-ECU

DIAGNOSIS**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. M.U.T.-II/III diagnosis code

Q: Are diagnosis codes 45, 46, 47 set?

YES <diagnosis code 45 is set> : Refer to diagnosis code 45: Pressure sensor system (open circuit or short circuit) [P.22A-41](#).

YES <diagnosis code 46 is set> : Refer to diagnosis code 46: Pressure sensor system (open earth) [P.22A-46](#).

YES <diagnosis code 47 is set> : Refer to diagnosis code 47: Pressure sensor system (abnormal power supply) [P.22A-49](#).

NO : Go to Step 4.

STEP 4. M.U.T.-II/III diagnosis code

Q: Are diagnosis code 81 set?

YES : Refer to diagnosis code 81: Electric pump relay system [P.22A-109](#).

NO : Go to Step 5.

STEP 5. M.U.T.-II/III actuator test

Item 04: Electric pump drive

OK: Operating sound can be heard.

Q: Is the check result normal?

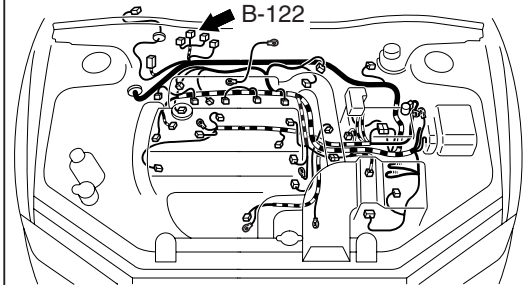
YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Go to Step 6.

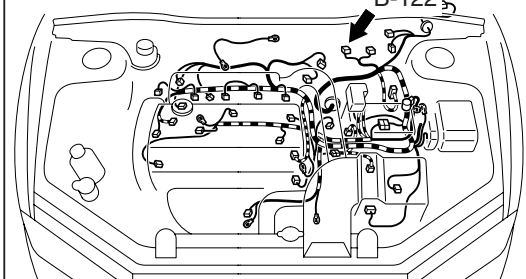
STEP 6. Measure the voltage at electric pump relay connector B-122.

Connector: B-122

<LH drive vehicles>



<RH drive vehicles>



B-122



Relay side

AC311020AD

Disconnect the electric pump relay connector, and measure the voltage between terminal No.4 and earth at the harness side.

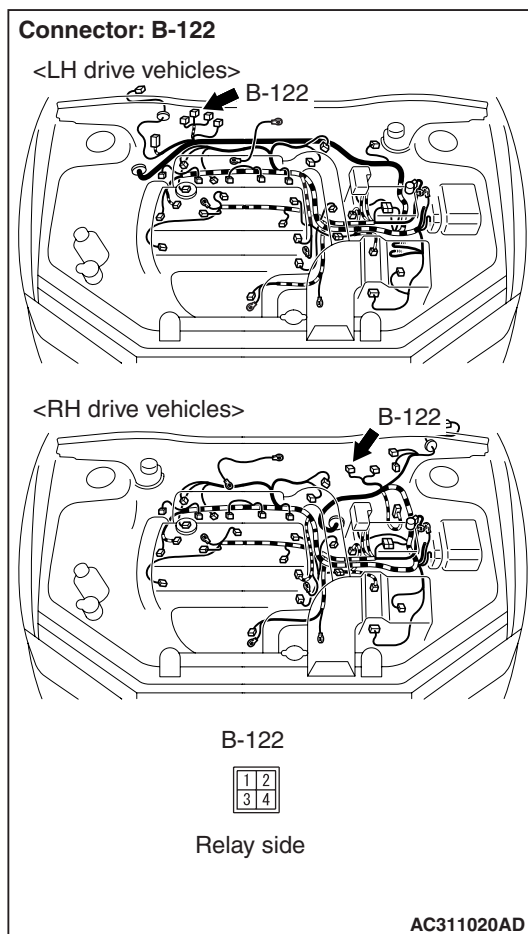
OK: System voltage

Q: Is the check result normal?

YES : Go to Step 10.

NO : Go to Step 7.

STEP 7. Connector check: B-122 electric pump relay connector



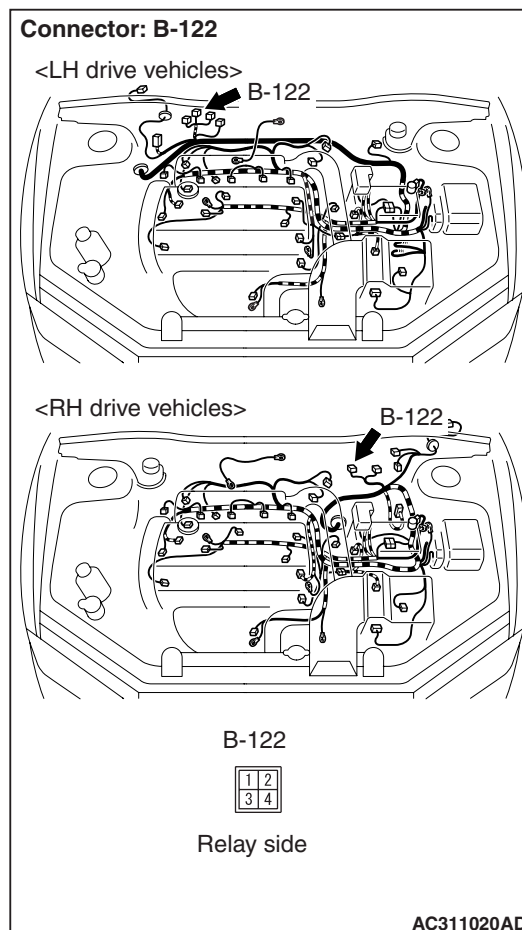
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 8.

NO : Repair the defective connector.

STEP 8. Check the harness between electric pump relay connector B-122 terminal No.4 and fusible link No.27.



Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 9.

NO : Repair the wiring harness.

STEP 9. M.U.T.-II/III actuator test

Item 04: Electric pump drive

OK: Operating sound can be heard.

Q: Is the check result normal?

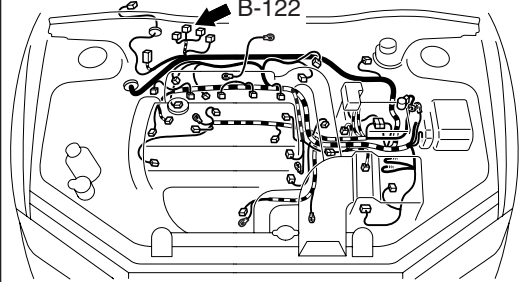
YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-5).

NO : Replace the 4WD-ECU.

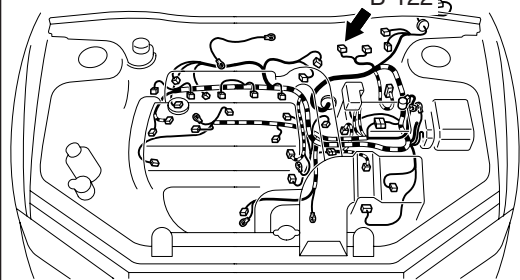
STEP 10. Connectors check: B-122 electric pump relay connector, C-28, C-138 intermediate connector, F-20 electric pump connector <LH drive vehicles> or B-122 electric pump relay connector, C-30 intermediate connector, F-20 electric pump connector <RH drive vehicles>.

Connector: B-122

<LH drive vehicles>



<RH drive vehicles>



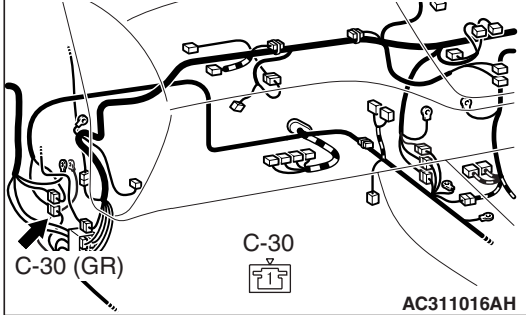
B-122



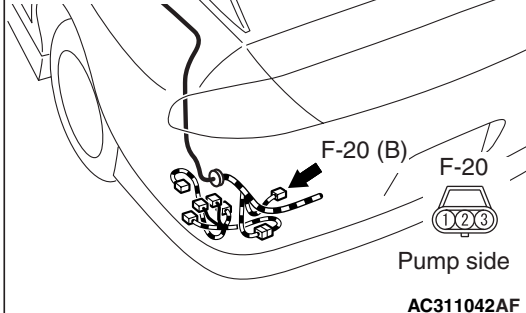
Relay side

AC311020AD

Connector: C-30 <RH drive vehicles>



Connector: F-20



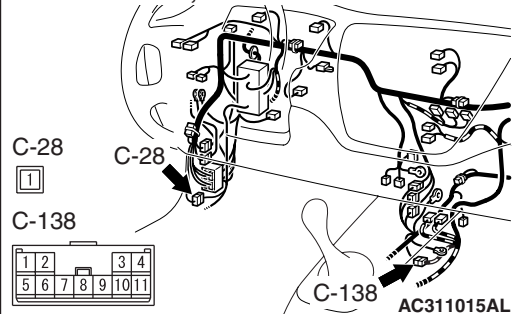
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 11.

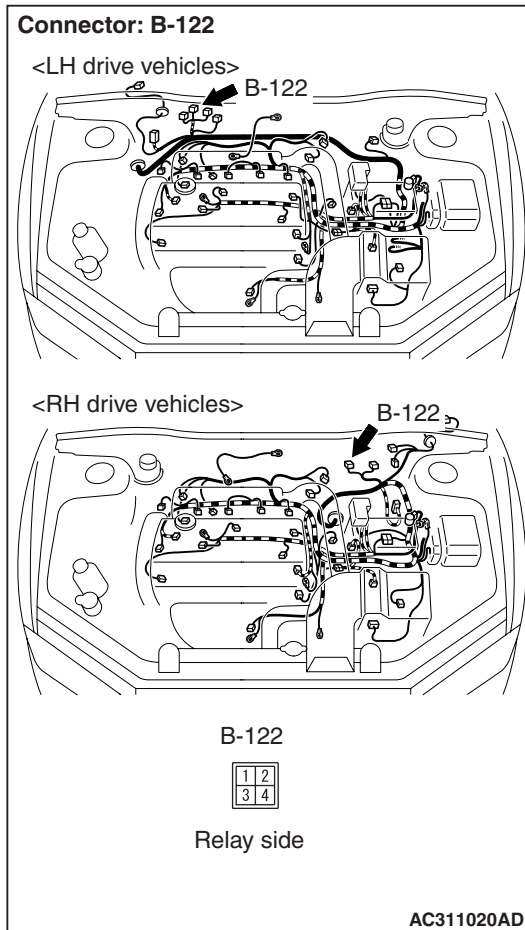
NO : Repair the defective connector.

Connector: C-28, C-138 <LH drive vehicles>



STEP 11. Check the harness between electric pump relay connector B-122 terminal No.3 and earth.

Q: Is the check result normal?
YES : Go to Step 9.
NO : Repair the wiring harness.



Check the earth line for open circuit.

SYMPTOM CHART

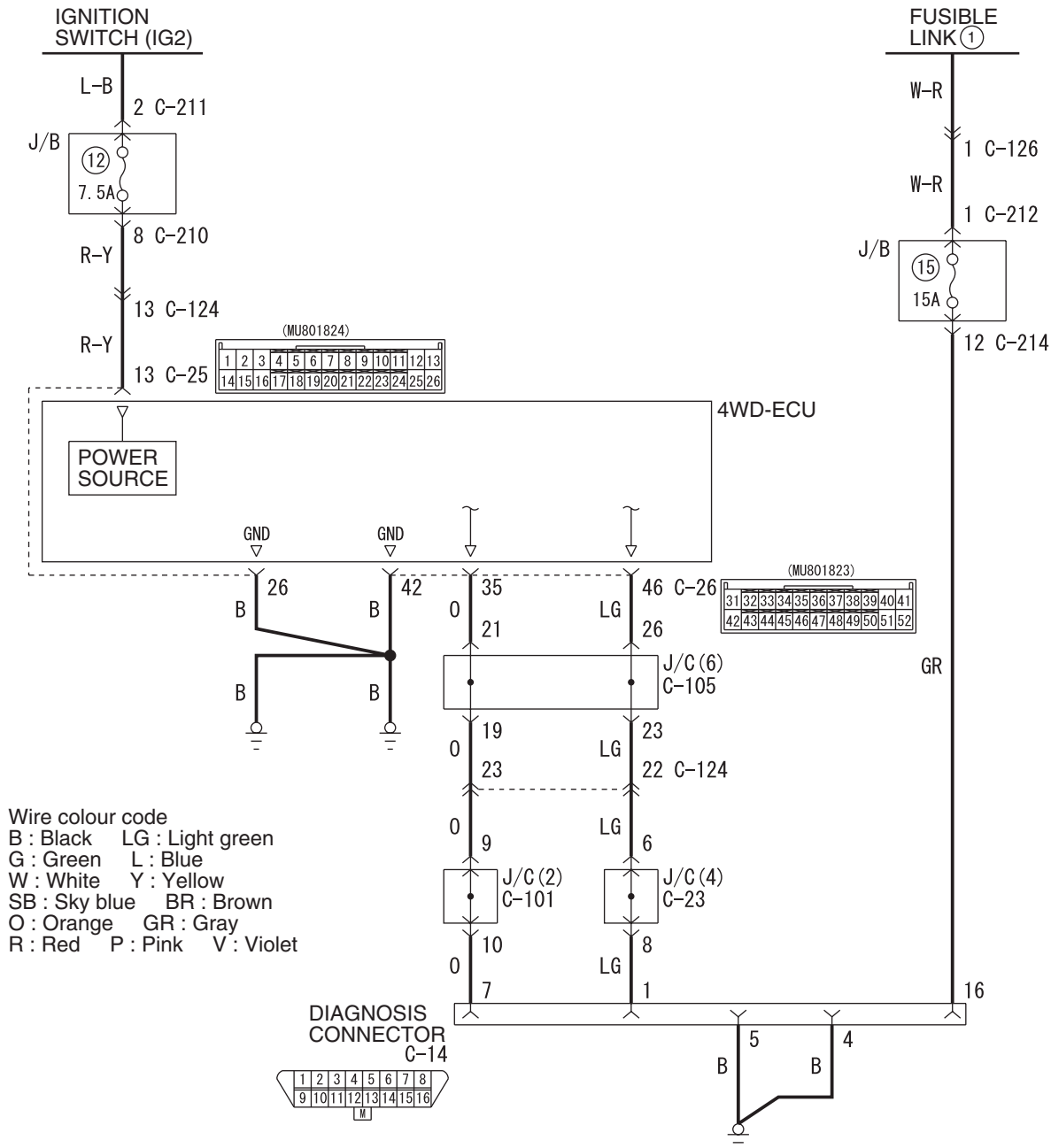
M1221007100593

Trouble symptom	Inspection procedure No.	Reference page
No communication possible between M.U.T.-II/III and all systems	1	P.22A-119
No communication possible between M.U.T.-II/III and 4WD-ECU	2	P.22A-124
ACD mode indicator lamp does not light up when the ignition switch is set to "ON" (engine is stopped)	3	P.22A-132
More than two ACD mode indicator lamps remain lit even after the engine is started	4	P.22A-138
The ACD does not operate (no diagnostic code)	5	P.22A-141
The AYC does not operate (no diagnostic code)	6	Refer to GROUP 27 – Symptom Chart P.27-23.
The rear tyre sounds when turning at low speed corners (vehicle slows down)	7	Refer to GROUP 27 – Symptom Chart P.27-23.
Noise is produced from the torque transfer differential during turning	8	Refer to GROUP 27 – Symptom Chart P.27-23.

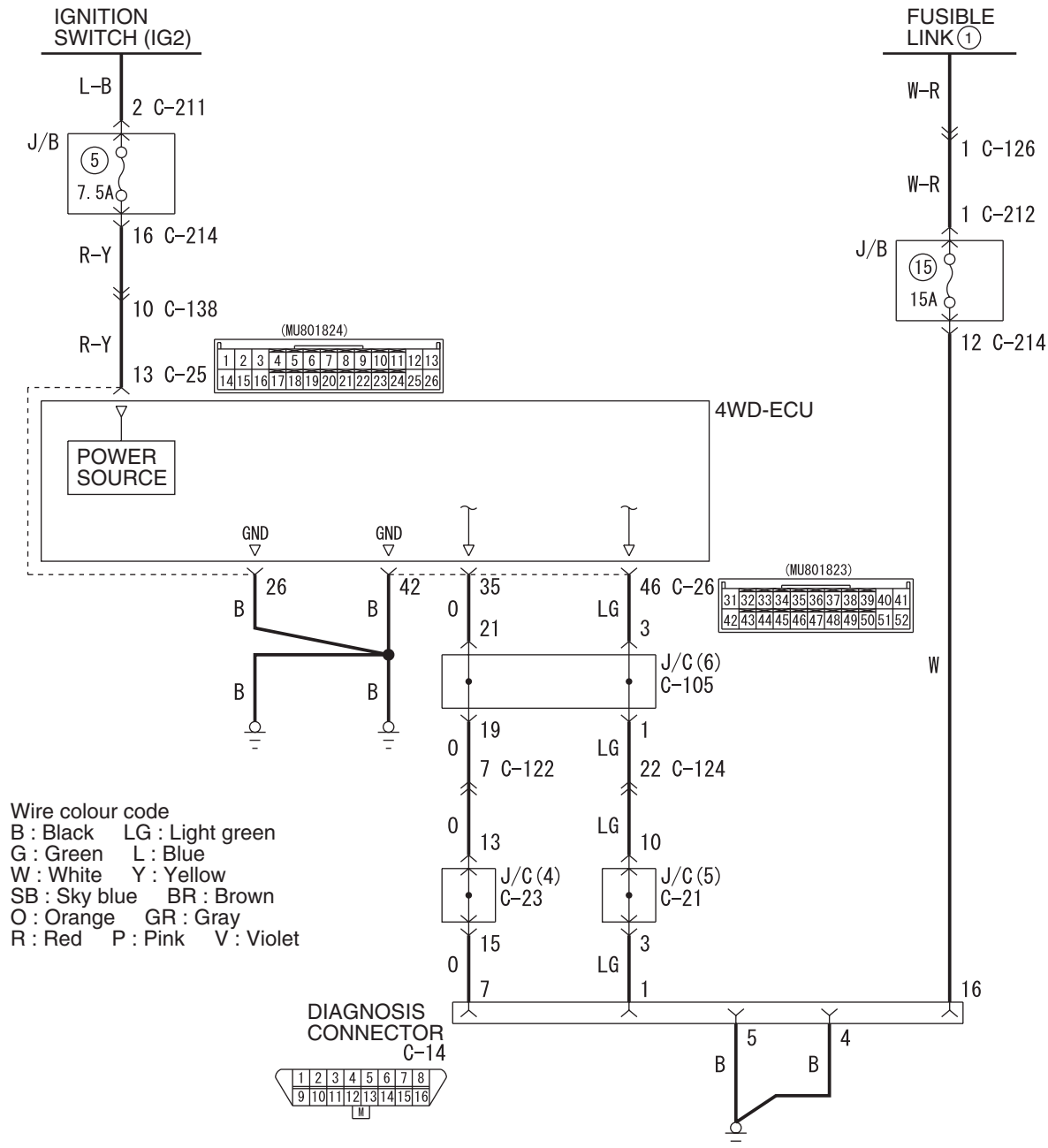
SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: No communication possible between M.U.T.-II/III and all systems

Diagnosis connector circuit <LH drive vehicles>



Diagnosis connector circuit <RH drive vehicles>



W4J22E22AA

OPERATION

The M.U.T.-II/III is energised by connecting the diagnosis connector.

COMMENTS ON TROUBLE SYMPTOM

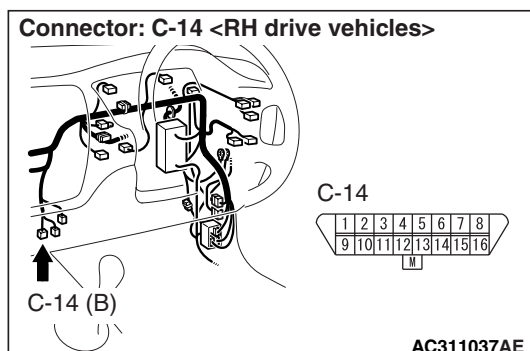
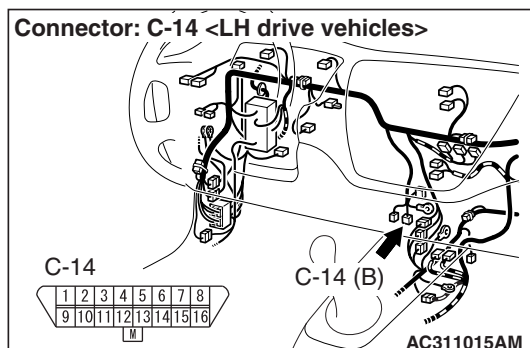
The diagnosis connector power supply circuit, earth circuit, or M.U.T.-II/III may be faulty.

PROBABLE CAUSES

- Malfunction of diagnosis connector
- Damaged harness wires and connectors
- Malfunction of the 4WD-ECU

DIAGNOSIS

STEP 1. Measure the voltage at diagnosis connector C-14.



Measure the voltage between diagnosis connector C-14 terminal No.16 and earth.

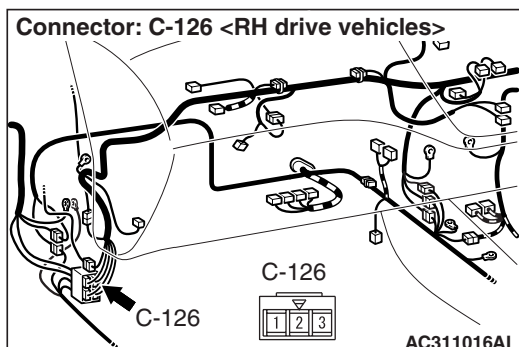
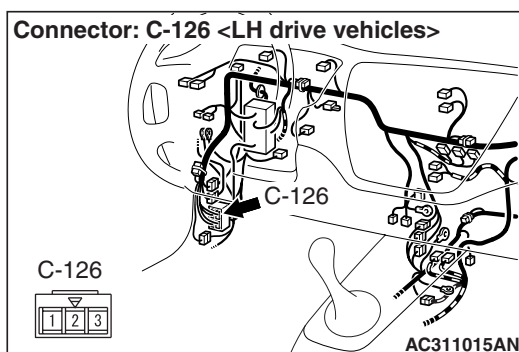
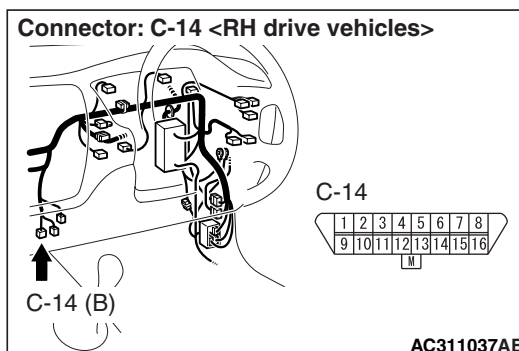
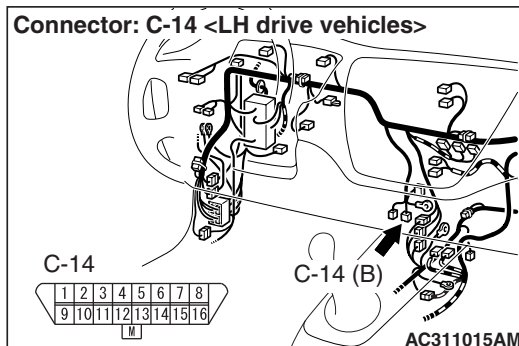
OK: System voltage

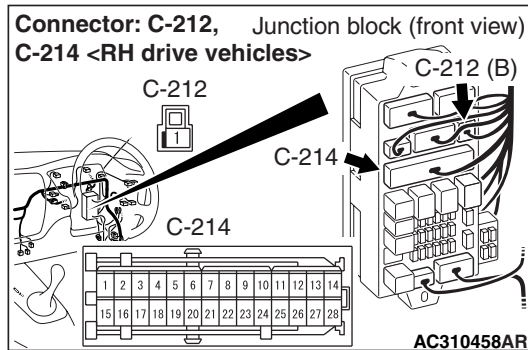
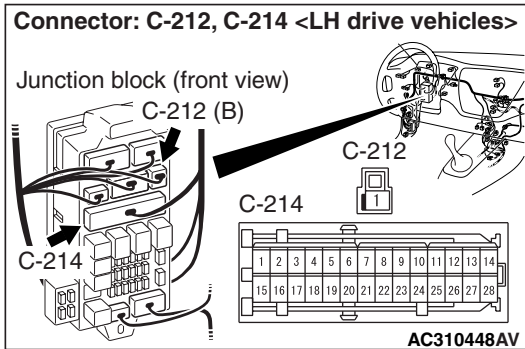
Q: Is the check result normal?

YES : Go to Step 4.

NO : Go to Step 2.

STEP 2. Connectors check: C-14 diagnosis connector, C-126 intermediate connector, C-212, C-214 J/B connector.





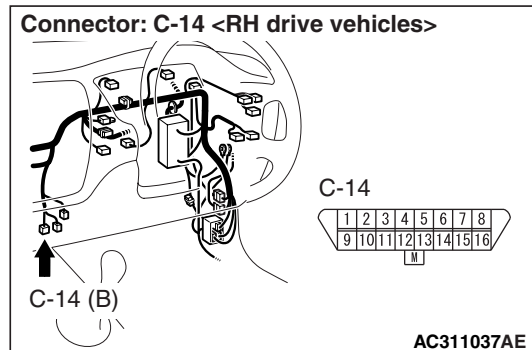
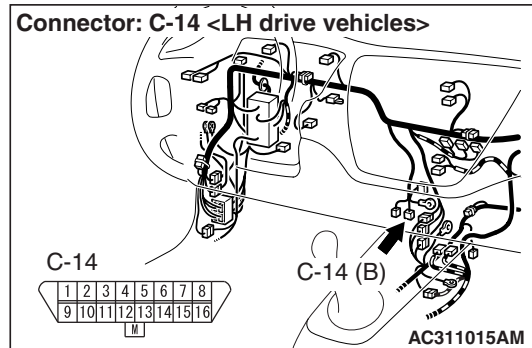
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the defective connector.

STEP 3. Check the harness between diagnosis connector C-14 terminal No.16 and fusible link No.1.



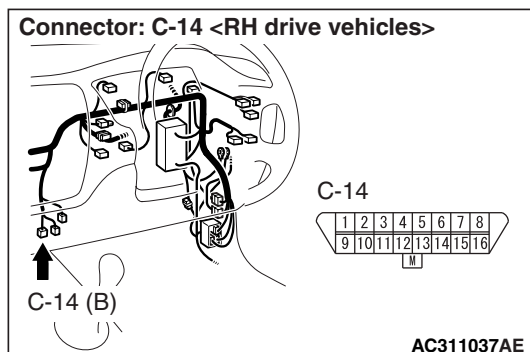
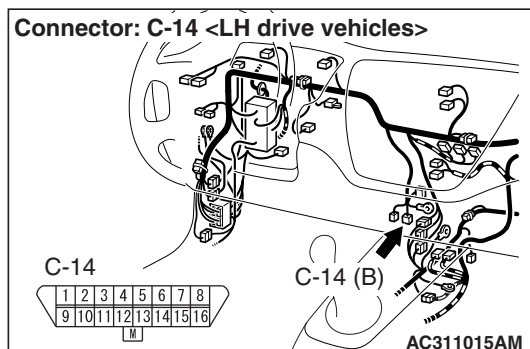
Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Repair the wiring harness.

STEP 4. Measure the resistance at diagnosis connector C-14.



Measure the resistance between terminal No.4, No.5 and earth.

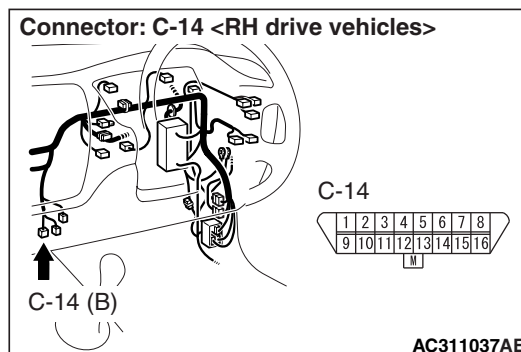
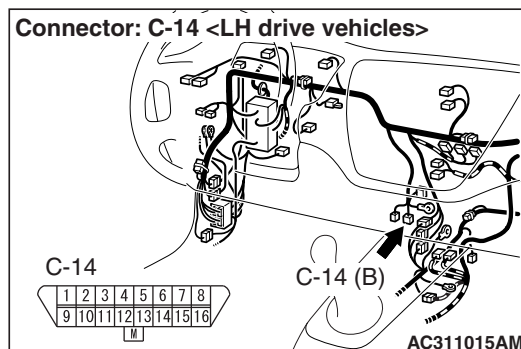
OK: 2 Ω or less

Q: Is the check result normal?

YES : Replace the M.U.T.-II/III.

NO : Go to Step 5.

STEP 5. Connector check: C-14 diagnosis connector.



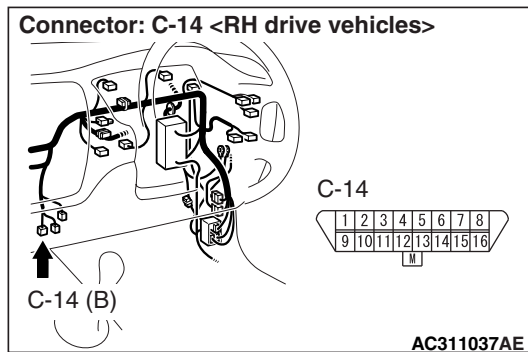
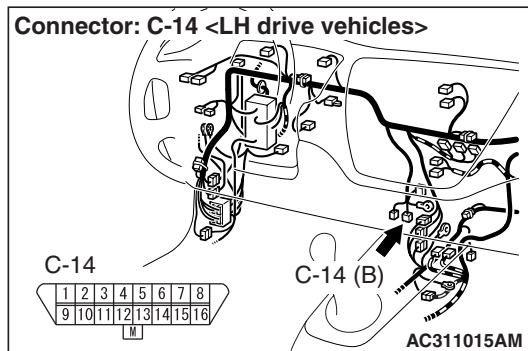
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the defective connector.

STEP 6. Check the harness between diagnosis connector C-14 terminal No.4, No.5 and earth.



Check the earth line for open circuit.

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Repair the wiring harness.

INSPECTION PROCEDURE 2: No Communication possible between M.U.T.-II/III and 4WD-ECU

DIAGNOSIS CONNECTOR CIRCUIT

Refer to [P.22A-119](#).

OPERATION

The M.U.T.-II/III will be able to communicate with the 4WD-ECU by connecting the diagnosis connector.

COMMENTS ON TROUBLE SYMPTOM

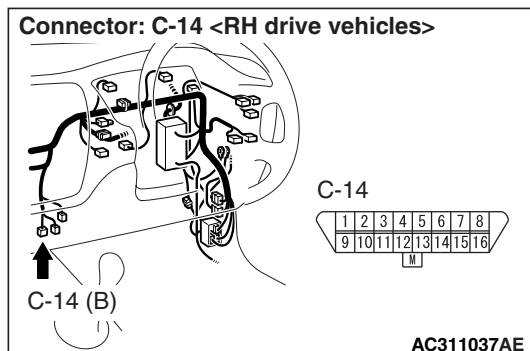
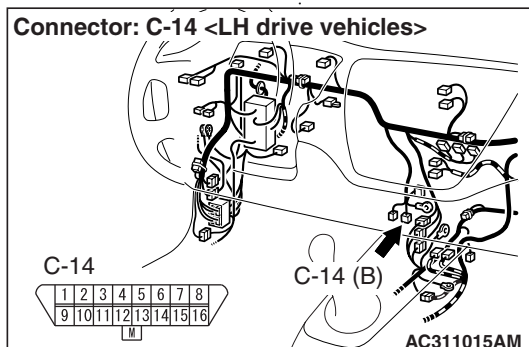
The diagnostic output circuit, 4WD-ECU power supply circuit, earth circuit, or 4WD-ECU may be faulty.

PROBABLE CAUSES

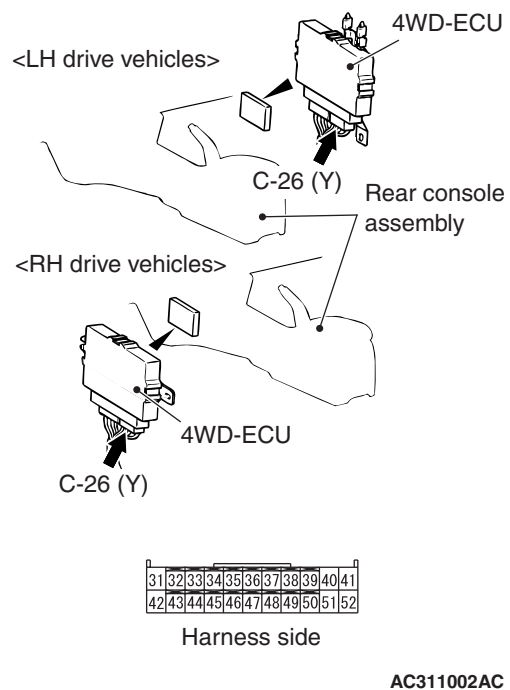
- Damaged harness wires and connectors
- Malfunction of the 4WD-ECU

DIAGNOSIS

STEP 1. Measure the harness resistance between diagnosis connector C-14 and 4WD-ECU connector C-26.



Connector: C-26



Measure the resistance between connector C-14 terminal No.1 and connector C-26 terminal No.46.

- Measure the resistance between connector C-14 terminal No.7 and connector C-26 terminal No.35.

OK: 2 Ω or less

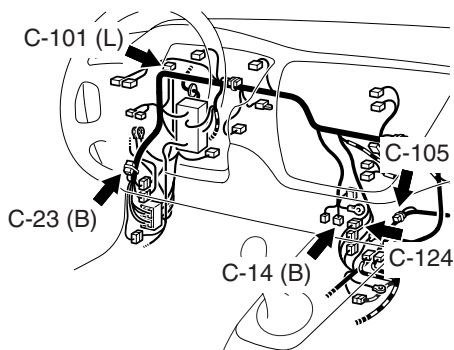
Q: Is the check result normal?

YES : Go to Step 4.

NO : Go to Step 2.

STEP 2. Connectors check: C-14 diagnosis connector, C-23 J/C (4), C-26 4WD-ECU connector, C-101 J/C (2), C-105 J/C (6), C-124 intermediate connector <LH drive vehicles> or C-14 diagnosis connector, C-21 J/C (5), C-23 J/C (4), C-26 4WD-ECU connector, C-105 J/C (6), C-122, C-124 intermediate connector <RH drive vehicles>.

Connector: C-14, C-23, C-101, C-105, C-124
<LH drive vehicles>



C-14

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16

C-23, C-101

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

C-105

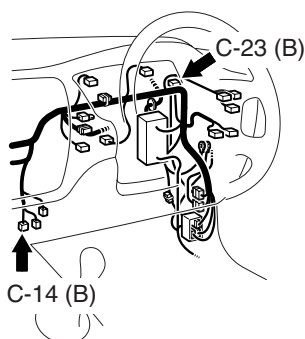
1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33

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	

AC311087AB

Connector: C-14, 23 <RH drive vehicles>



C-14

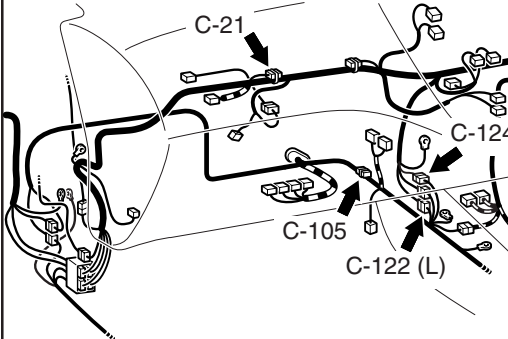
1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16

C-23

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

AC311088AB

Connector: C-21, C-105, C-122, C-124
<RH drive vehicles>



C-21

1	2				3	4	5
6	7	8	9	10	11	12	13

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-122

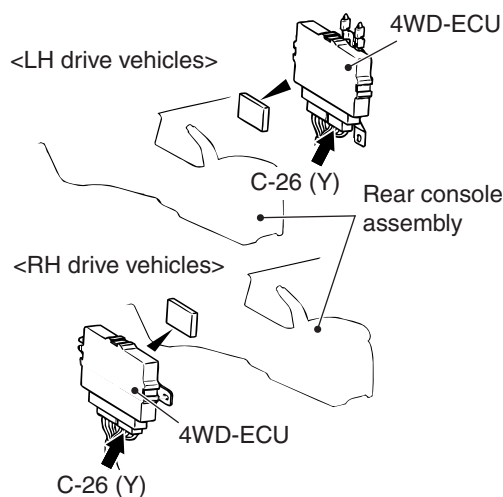
1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22

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	

AC311089AB

Connector: C-26



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

Harness side

AC311002AC

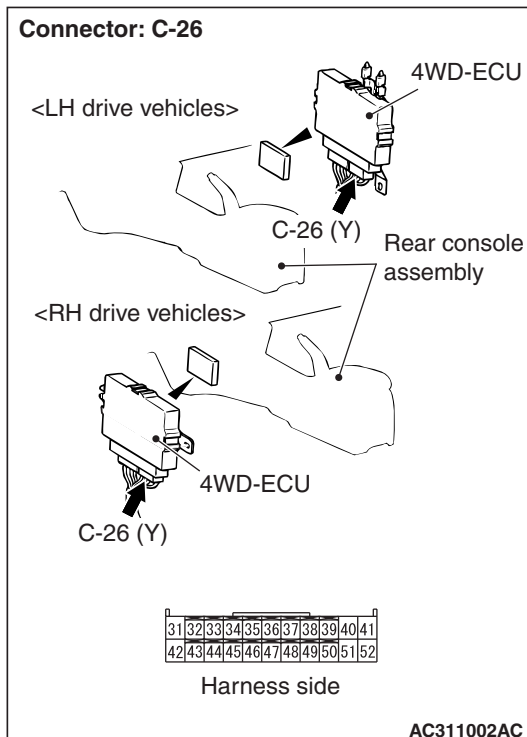
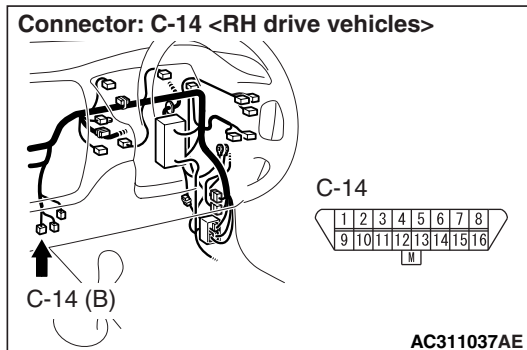
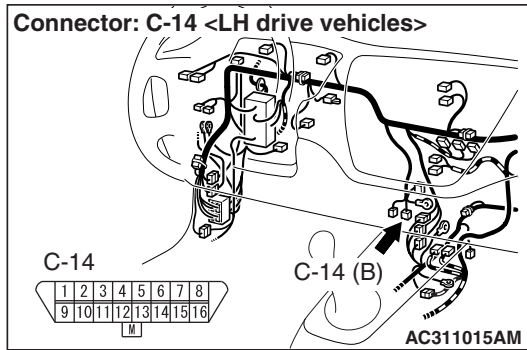
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the defective connector.

STEP 3. Check the harness between diagnosis connector C-14 (terminal No.1, 7) and 4WD-ECU connector C-26 (terminal No.46, 35).



Check the output line for short or open circuit.

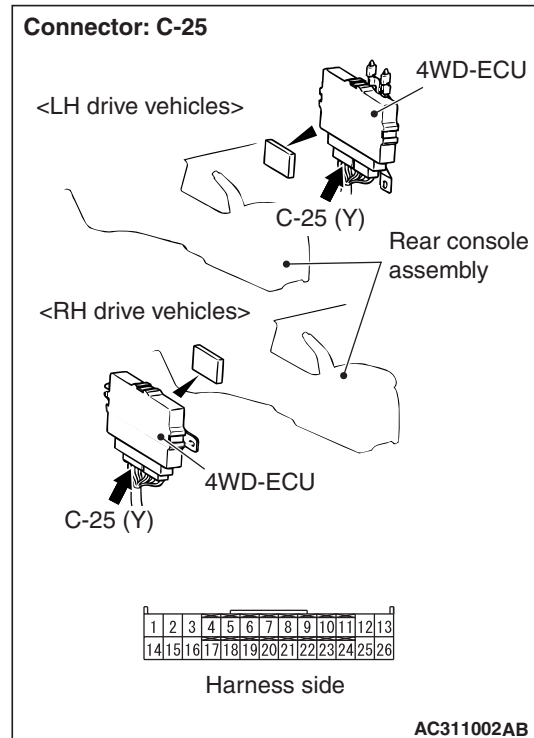
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-5).

NO : Repair the wiring harness.

STEP 4. Measure the voltage at 4WD-ECU connector C-25.

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



(2) Measure the voltage between 4WD-ECU connector C-25 terminal No.13 and earth.

OK: System voltage

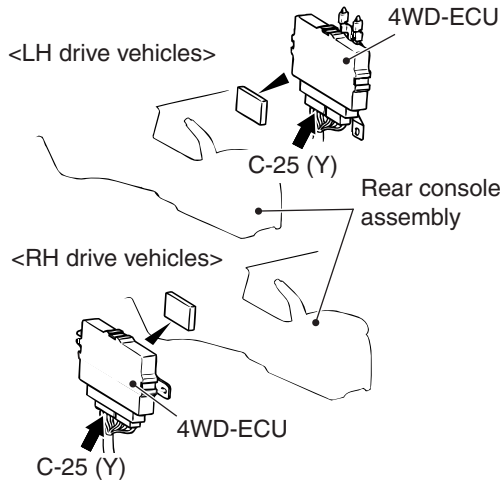
Q: Is the check result normal?

YES : Go to Step 7.

NO : Go to Step 5.

STEP 5. Connectors check: C-25 4WD-ECU connector, C-124 intermediate connector, C-210, C-211 J/B connector <LH drive vehicles> or C-25 4WD-ECU connector, C-138 intermediate connector, C-211, C-214 J/B connector <RH drive vehicles>.

Connector: C-25



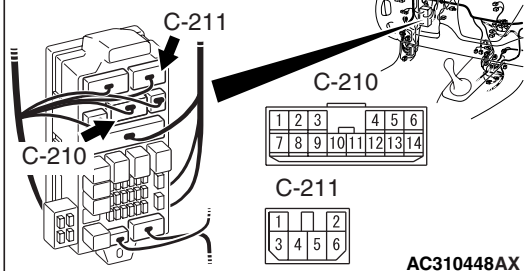
1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26

Harness side

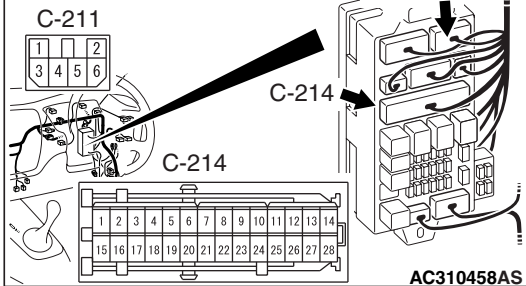
AC311002AB

Connector: C-210, C-211 <LH drive vehicles>

Junction block (front view)



Connector: C-211, C-214 <RH drive vehicles>



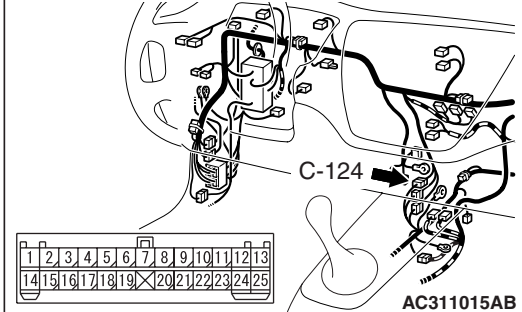
Check for the contact with terminals.

Q: Is the check result normal?

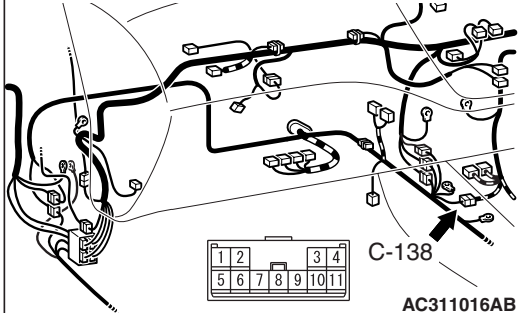
YES : Go to Step 6.

NO : Repair the defective connector.

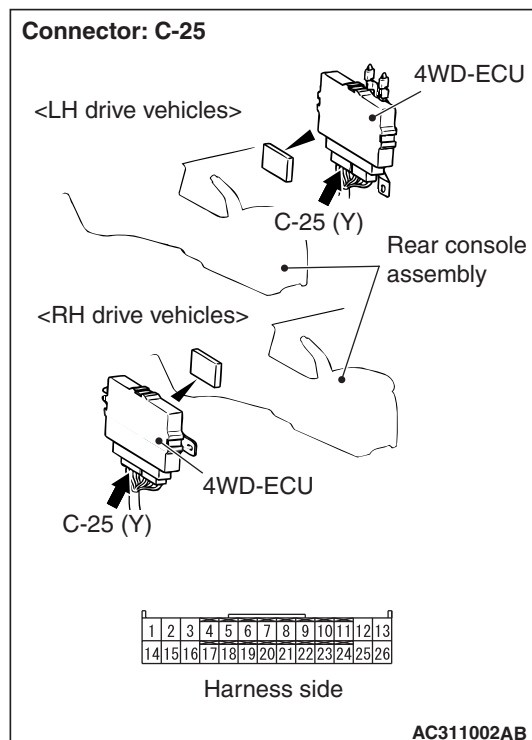
Connector: C-124 <LH drive vehicles>



Connector: C-138 <RH drive vehicles>



STEP 6. Check the harness between 4WD-ECU connector C-25 terminal No.13 and ignition switch.



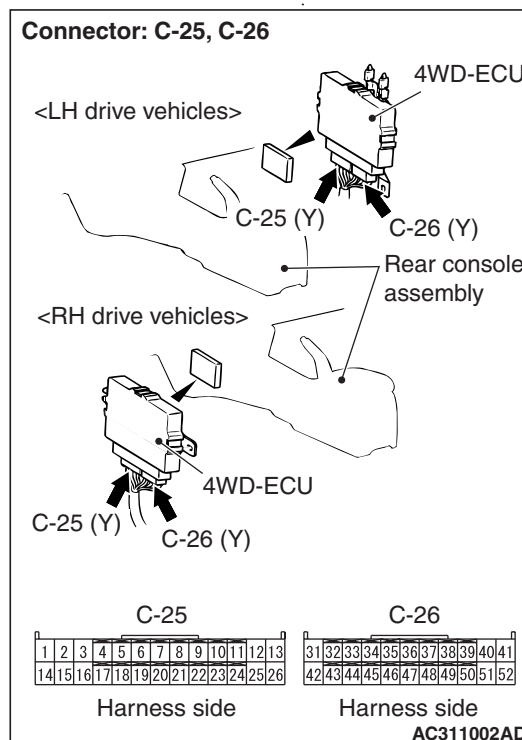
Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-5).

NO : Repair the wiring harness.

STEP 7. Measure the resistance at 4WD-ECU connectors C-25, C-26.



Measure the resistance between 4WD-ECU connector C-25 terminal No.26 and earth.

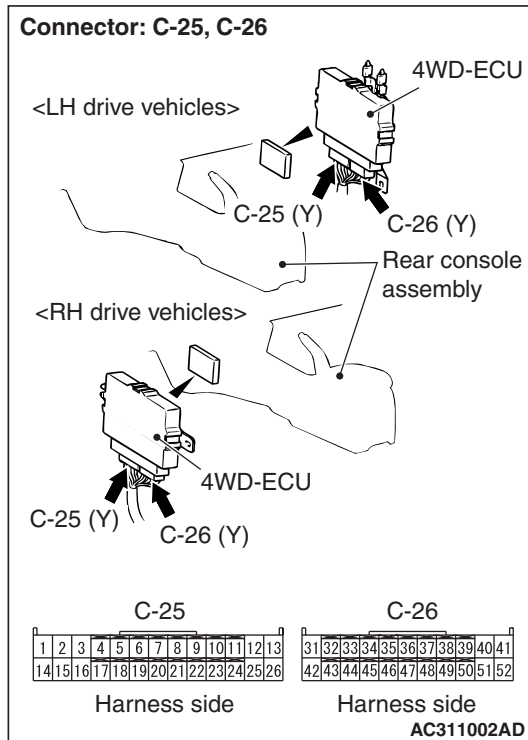
- Measure the resistance between 4WD-ECU connector C-26 terminal No.42 and earth.

OK: 2 Ω or less

Q: Is the check result normal?

YES : Go to Step 10.

NO : Go to Step 8.

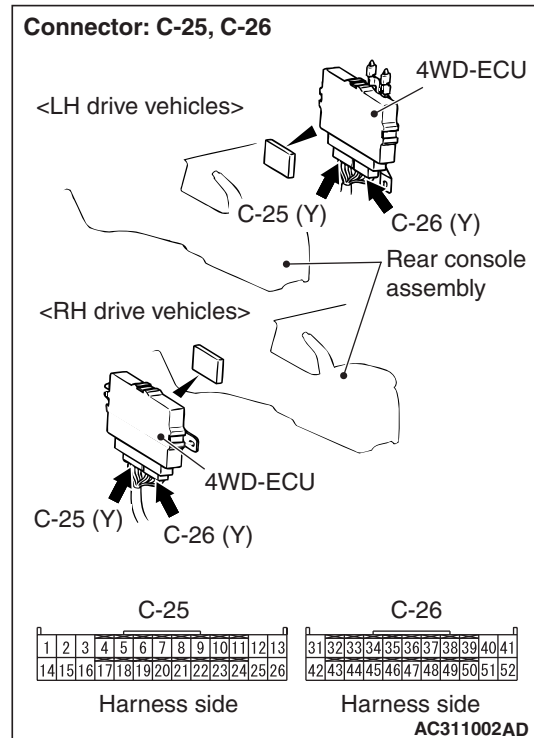
STEP 8. Connectors check: C-25, C-26 4WD-ECU connector.

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 9.

NO : Repair the defective connector.

STEP 9. Check the harness between 4WD-ECU connector C-25 terminal No.26, C-26 terminal No.42 and earth.

Check the earth line for open circuit.

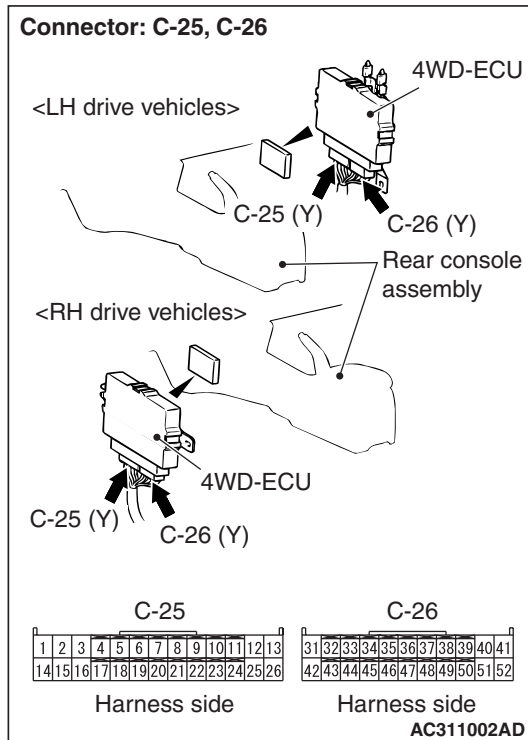
Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction [P.00-5](#)).

NO : Repair the wiring harness.

**STEP 10. Connectors check: C-25, C-26
4WD-ECU connector.**

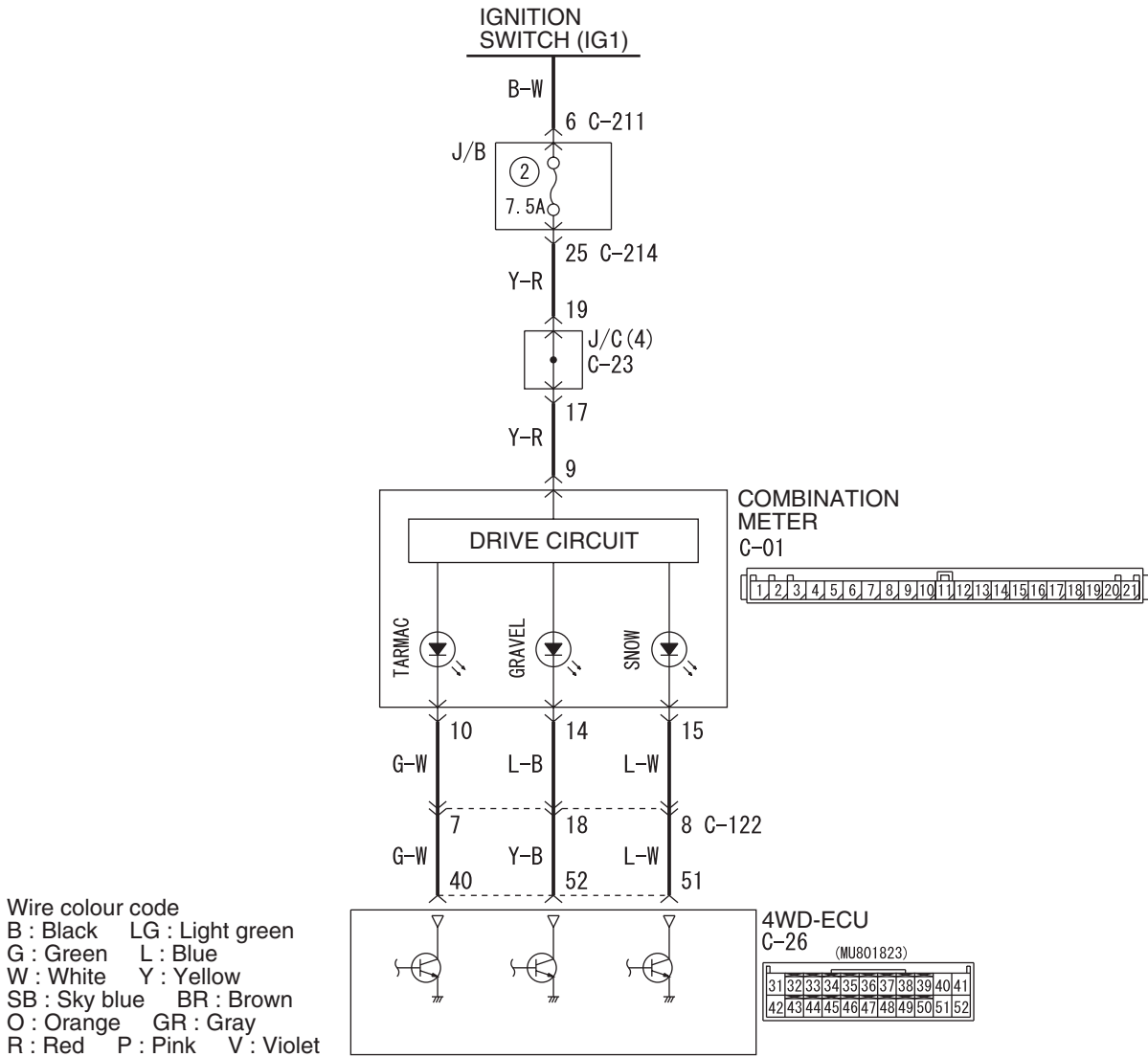
Q: Is the check result normal?
YES : Repair the 4WD-ECU.
NO : Repair the defective connector.



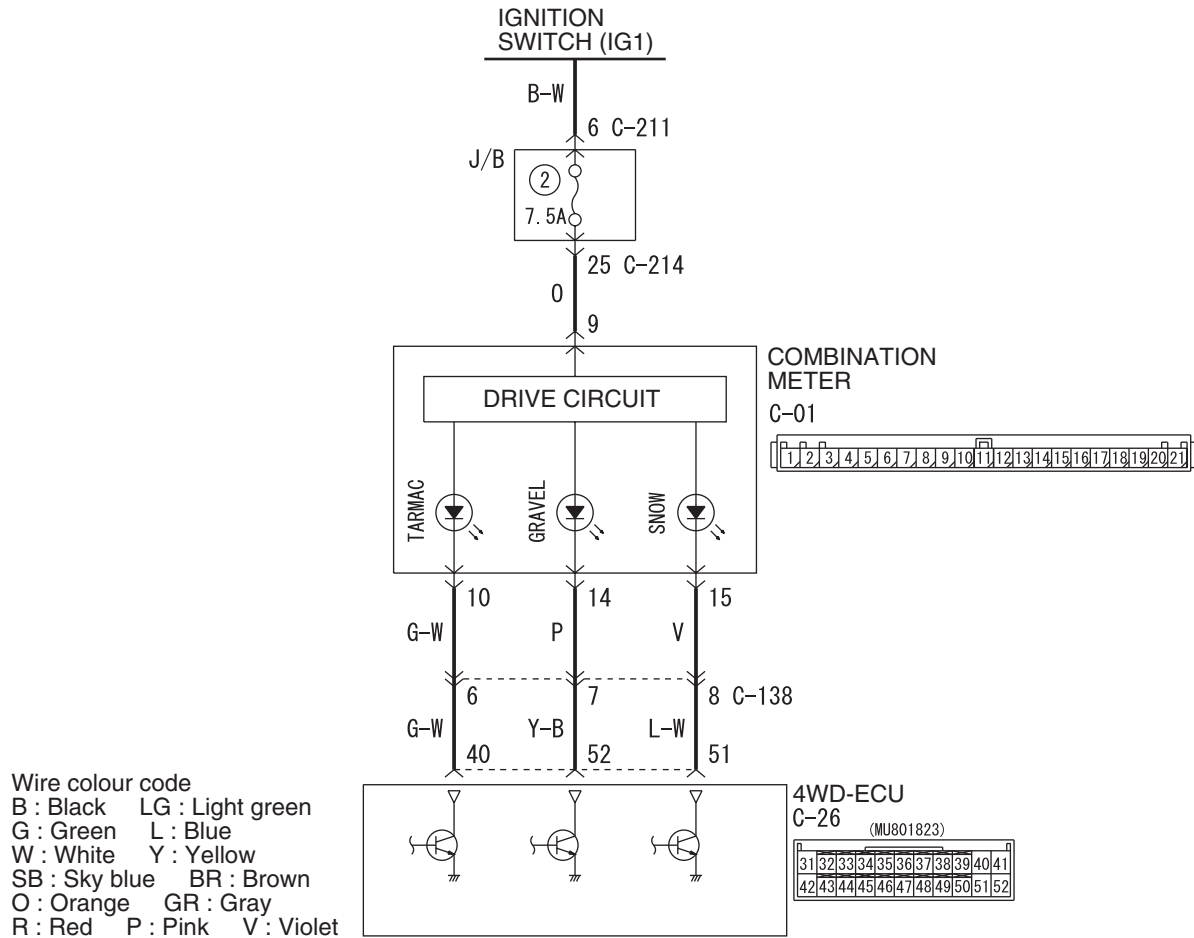
Check for the contact with terminals.

INSPECTION PROCEDURE 3: ACD mode indicator lamp does not light up when the ignition switch is set to "ON" (engine is stopped)

ACD mode indicator lamp system circuit <LH drive vehicles>



ACD mode indicator lamp system circuit <RH drive vehicles>



W4J22E24AA

OPERATION

The 4WD-ECU displays a control mode (tarmac, gravel, snow) on the ACD mode indicator lamp on the combination meter.

COMMENTS ON TROUBLE SYMPTOM

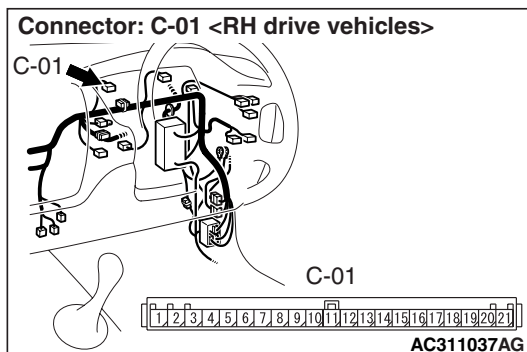
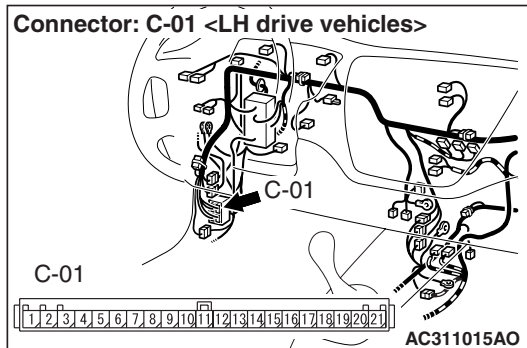
The ACD mode indicator lamp circuit or 4WD-ECU may be faulty.

PROBABLE CAUSES

- Damaged harness wires and connectors
- Malfunction of the ACD mode indicator lamp assembly
- Malfunction of the 4WD-ECU

DIAGNOSIS

STEP 1. Measure the voltage at combination meter connector C-01.



- (1) Disconnect the combination meter connector, and measure the voltage between terminal No.9 and earth.
- (2) Turn the ignition switch to the ON position.

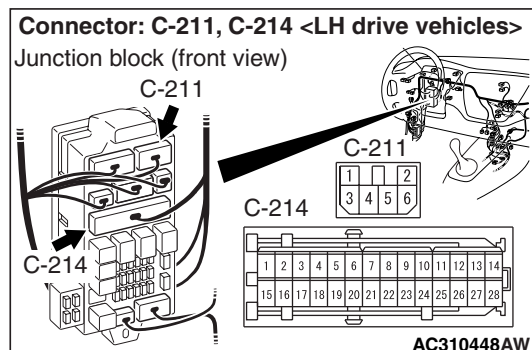
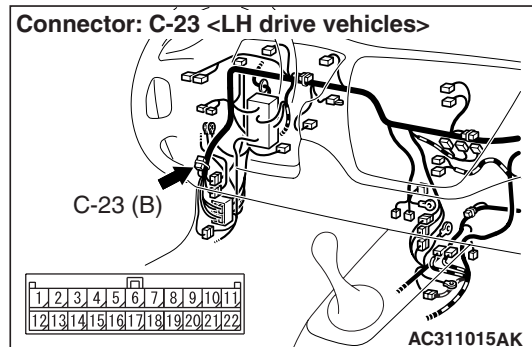
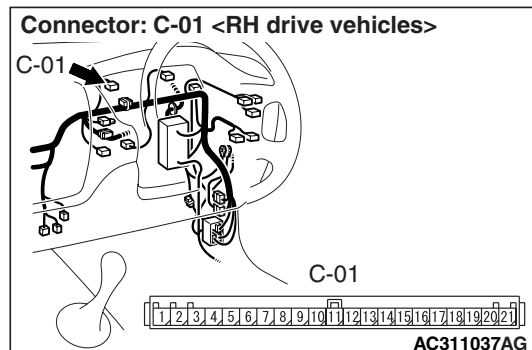
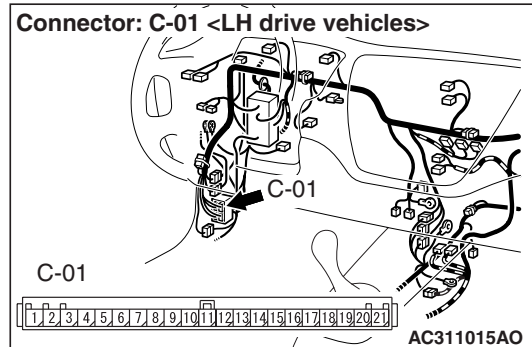
OK: System voltage

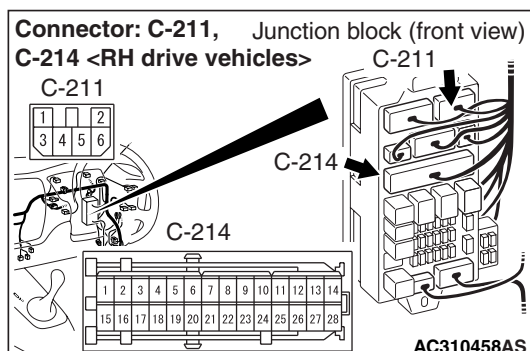
Q: Is the check result normal?

YES : Go to Step 4.

NO : Go to Step 2.

STEP 2. Connectors check: C-01 combination meter connector, C-23 J/C (4), C-211, C-214 J/B connector <LH drive vehicles> or C-01 combination meter connector, C-211, C-214 J/B connector <RH drive vehicles>.





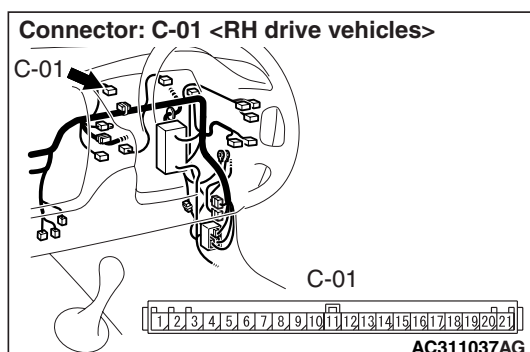
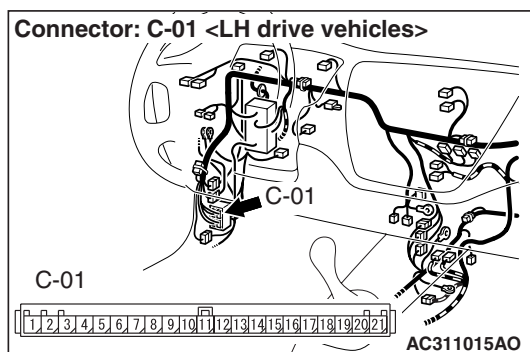
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the defective connector.

STEP 3. Check the harness between combination meter connector C-01 terminal No.9 and ignition switch.



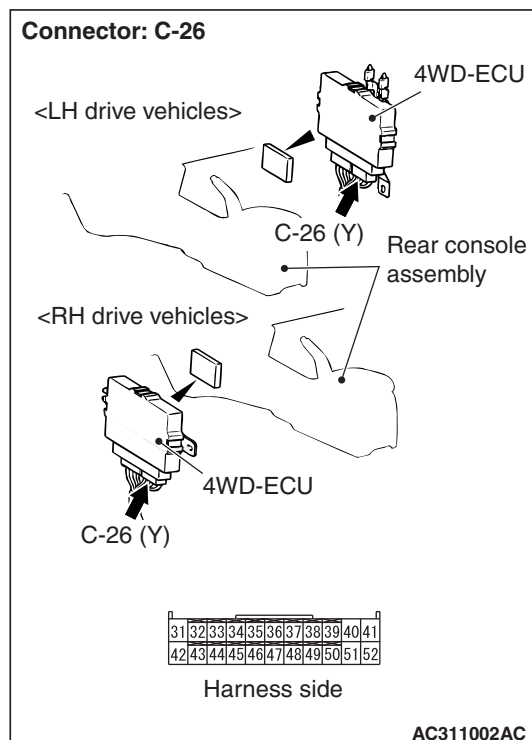
Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-5).

NO : Repair the wiring harness.

STEP 4. Check the ACD mode indicator lamp illumination.



- (1) Disconnect the 4WD-ECU connector C-26, and check the harness side.
- (2) Turn the ignition switch to the ON position.
- (3) Connect terminal No.40,51,52 to body earth.

OK: The indicator lamp illuminates.

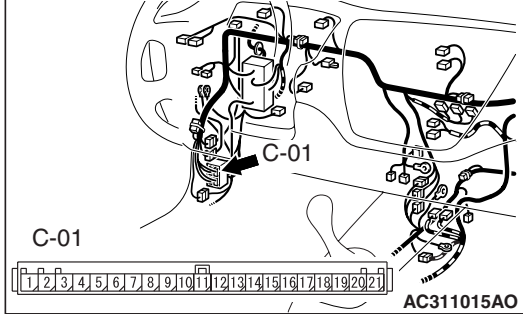
Q: Is the check result normal?

YES : Go to Step 7.

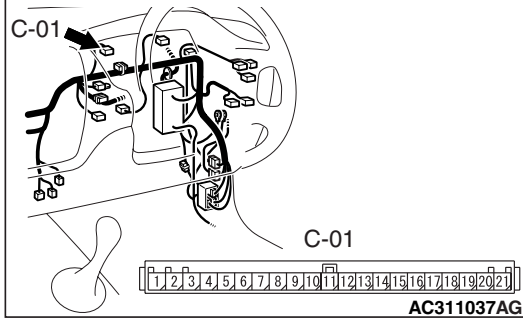
NO : Go to Step 5.

STEP 5. Connectors check: C-01 combination meter connector, C-26 4WD-ECU connector, C-122 intermediate connector <LH drive vehicles> or C-01 combination meter connector, C-26 4WD-ECU connector, C-138 intermediate connector <RH drive vehicles>.

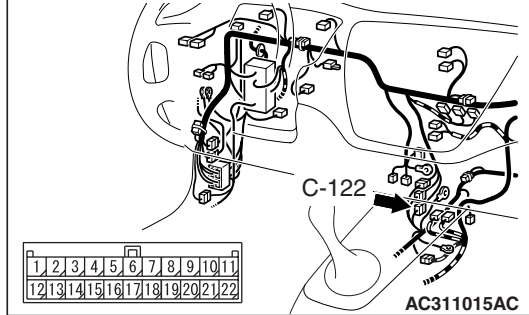
Connector: C-01 <LH drive vehicles>



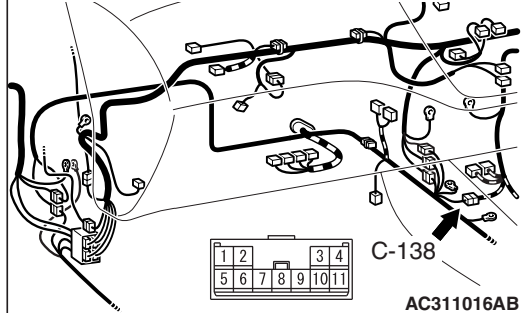
Connector: C-01 <RH drive vehicles>



Connector: C-122 <LH drive vehicles>



Connector: C-138 <RH drive vehicles>



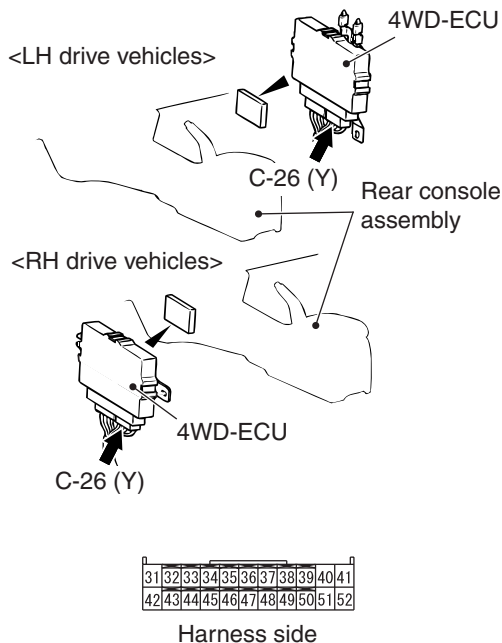
Check for the contact with terminals.

Q: Is the check result normal?

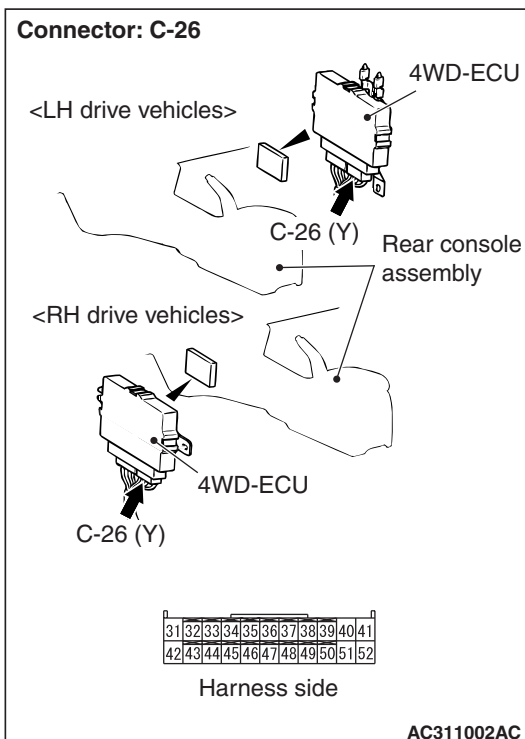
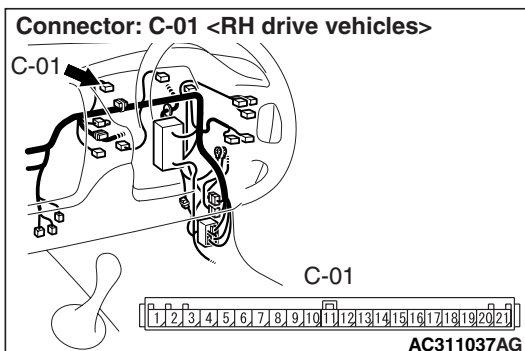
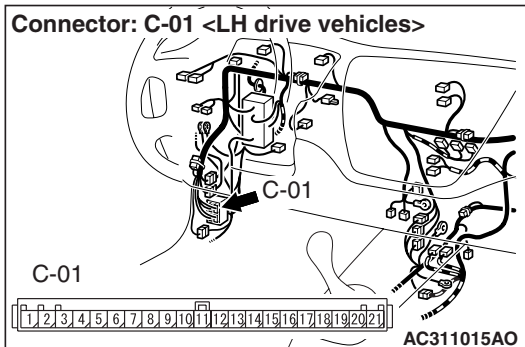
YES : Go to Step 6.

NO : Repair the defective connector.

Connector: C-26



STEP 6. Check the harness between combination meter connector C-01 (terminal No.10, 14, 15) and 4WD-ECU connector C-26 (terminal No.40, 52, 51).



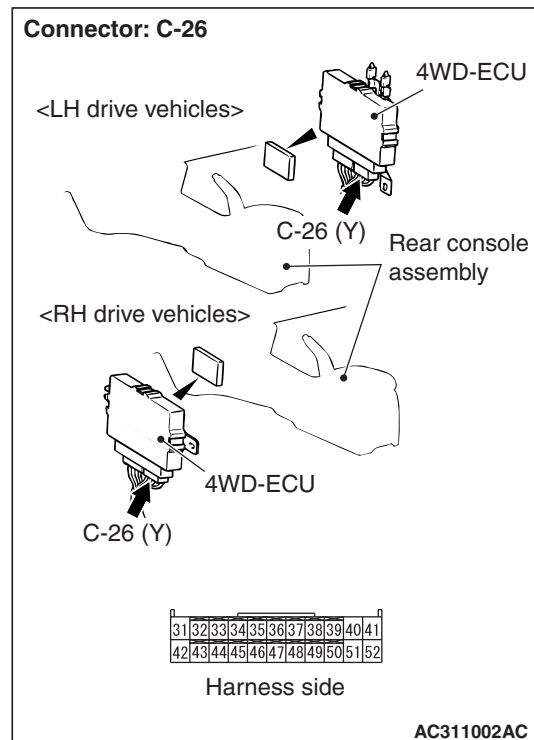
Check the output line for short or open circuit.

Q: Is the check result normal?

YES : Replace the ACD mode indicator lamp assembly.

NO : Repair the wiring harness.

STEP 7. Connector check: C-26 4WD-ECU connector.



Check for the contact with terminals.

Q: Is the check result normal?

YES : Replace the 4WD-ECU.

NO : Repair the defective connector.

INSPECTION PROCEDURE 4: More than two ACD mode indicator lamps remain lit even after the engine is started

ACD MODE INDICATOR LAMP SYSTEM CIRCUIT

Refer to P.22A-132.

OPERATION

Refer to P.22A-132.

COMMENTS ON TROUBLE SYMPTOM

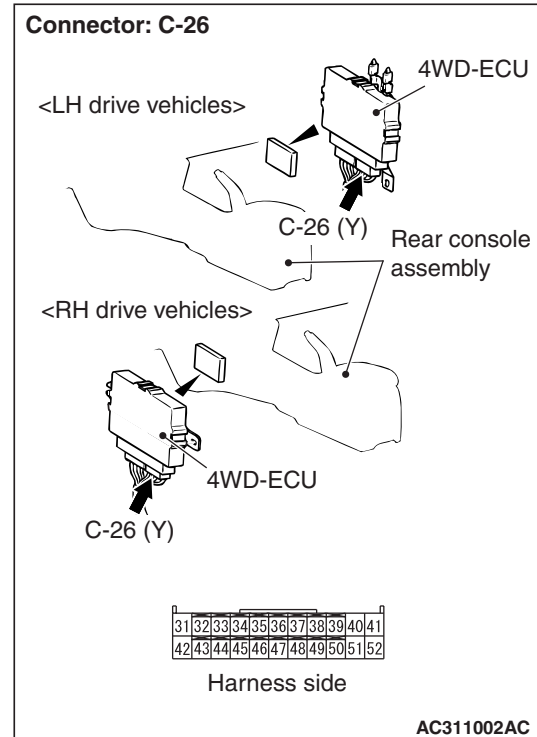
The output circuit of the ACD mode indicator lamp may be faulty.

PROBABLE CAUSES

- Damaged harness wires and connectors
- Malfunction of the ACD mode indicator lamp assembly
- Malfunction of the 4WD-ECU

DIAGNOSIS

STEP 1. Check the ACD mode indicator lamp illumination.



- (1) Disconnect the 4WD-ECU connector C-26.
- (2) Turn the ignition switch to the ON position.
- (3) Check that the ACD mode indicator lamp does not illuminate.

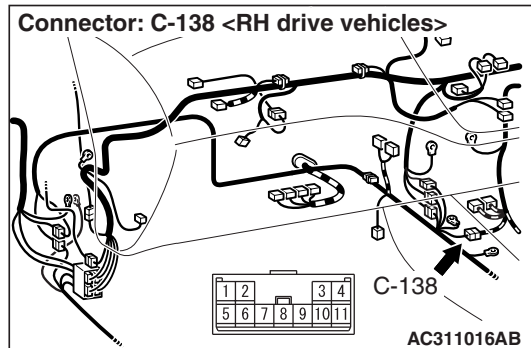
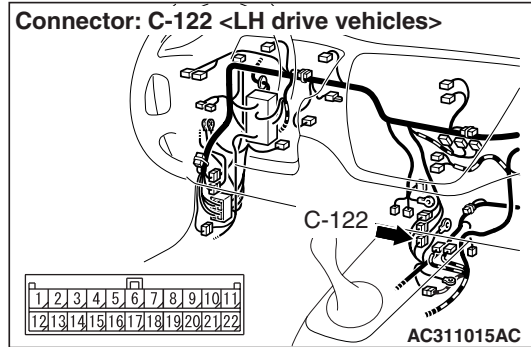
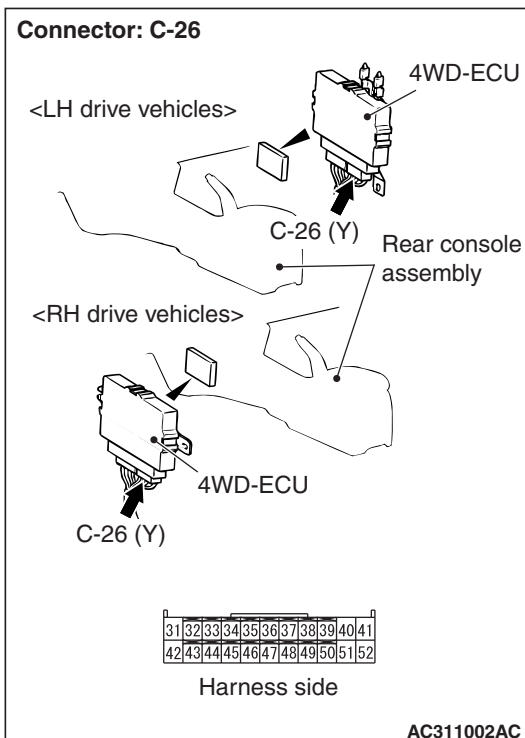
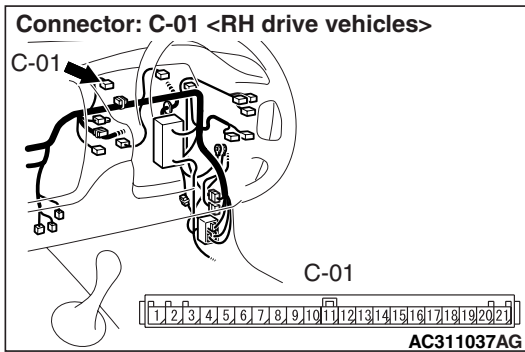
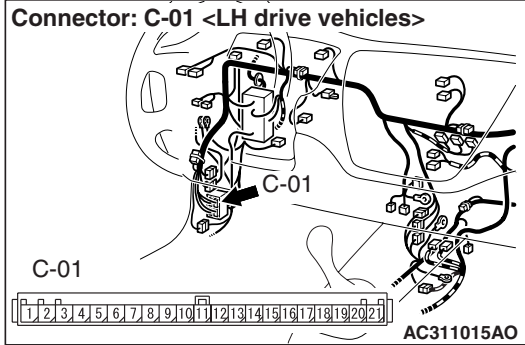
OK: The indicator lamp does not illuminate.

Q: Is the check result normal?

YES : Replace the 4WD-ECU.

NO : Go to Step 2.

STEP 2. Connectors check: C-01 combination meter connector, C-26 4WD-ECU connector, C-122 intermediate connector <LH drive vehicles> or C-01 combination meter connector, C-26 4WD-ECU connector, C-138 intermediate connector <RH drive vehicles>.



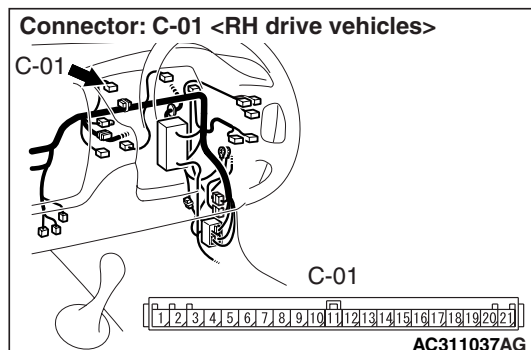
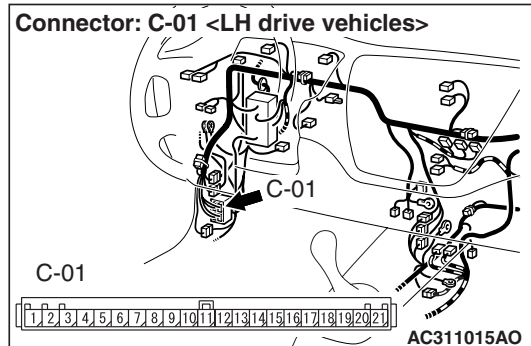
Check for the contact with terminals.

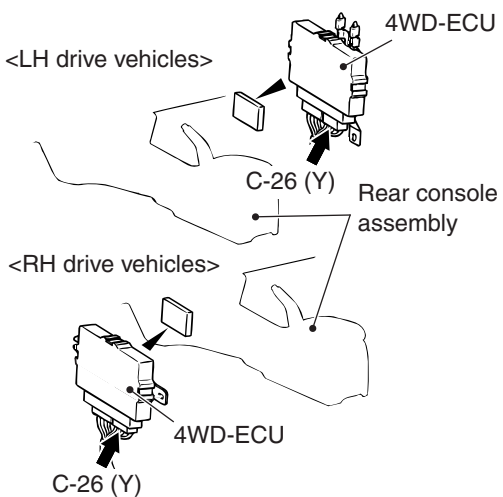
Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the defective connector.

STEP 3. Check the harness between combination meter connector C-01 (terminal No.10, 14, 15) and 4WD-ECU connector C-26 (terminal No.40, 52, 51).



Connector: C-26

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

Harness side

AC311002AC

Q: Is the check result normal?**YES :** Replace the ACD mode indicator lamp assembly.**NO :** Repair the wiring harness.

Check the output line for short or open circuit.

INSPECTION PROCEDURE 5: The ACD does not operate (no diagnosis code)

COMMENTS ON TROUBLE SYMPTOM

Insufficient operating oil, oil leakage, faulty operations of the oil pressure unit, and faulty operations of the ACD transfer may be suspected.

PROBABLE CAUSES

- Leakage of transfer oil
- Insufficient transfer oil
- Leakage of oil pressure line
- Insufficient fluid
- Malfunction of the hydraulic unit
- Malfunction of the ACD transfer

DIAGNOSIS

STEP 1. Check the transfer oil.

Refer to [P.22A-152](#).

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-152](#).

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-153](#).

Q: Is the check result normal?

YES : The inspection is complete.

NO : Go to Step 6.

STEP 6. Check the fluid pressure.

Refer to [P.22A-154](#).

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 ACD transfer.

NO : Repair.

STEP 8. Perform air bleeding.

Refer to [P.22A-153](#).

Q: Is the check result normal?

YES : The procedure is complete.

NO : Replace the hydraulic pressure unit.

DATA LIST REFERENCE TABLE

M1221011200010

Item No.	Check item	Check condition		Normal condition
01	Wheel speed sensor <FR>	Execute actual driving.		The speed meter display and M.U.T.-II/III display match.
02	Wheel speed sensor <FL>			
03	Wheel speed sensor <RR>			
04	Wheel speed sensor <RL>			
05	Wheel speed sensor <FR> (0.2 km/h)			
06	Wheel speed sensor <FL> (0.2 km/h)			
07	Wheel speed sensor <RR> (0.2 km/h)			
08	Wheel speed sensor <RL> (0.2 km/h)			
09	Vehicle speed			
10	Battery voltage	Ignition switch: ON		System voltage
11	Proportional valve current <ACD>	During ACD operation		50 – 1,000 mA
12	Proportional valve current <AYC>	During AYC operation		50 – 1,000 mA
13	TPS voltage	- 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
14	Longitudinal G-sensor 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.
15	Lateral G-sensor 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.

Item No.	Check item	Check condition		Normal condition
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
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.
18	Pressure sensor	During electric pump motor operations		1.0 – 1.6 MPa
19	Pressure sensor power supply	Ignition switch: ON		Approx.5 V
20	Valve power supply	Ignition switch: ON		System voltage
21	Steering wheel sensor voltage <ST-1>	Ignition switch: ON	Steering wheel: Turn	1 – 2 V and 2.5 – 4.5 V are displayed alternately.
22	Steering wheel sensor voltage <ST-2>	Ignition switch: ON	Steering wheel: Turn	1 – 2 V and 2.5 – 4.5 V are displayed alternately.
23	Steering wheel sensor voltage <ST-N>	Ignition switch: ON	Steering wheel: Neutral	1 – 2 V
			Steering wheel: Turn	2.5 – 4.5 V
51	Idle switch	Ignition switch: ON	Accelerator pedal: Full closed	ON
			Accelerator pedal: Press	OFF
52	Steering wheel sensor <ST-N>	Ignition switch: ON	steering wheel: Neutral	ON
			Steering wheel: Turn from the neutral position	OFF
53	Steering wheel sensor <ST-1>	Ignition switch: ON	Steering wheel: Turn slowly	ON and OFF are displayed alternately.
54	Steering wheel sensor <ST-2>	Ignition switch: ON	Steering wheel: Turn slowly	ON and OFF are displayed alternately
55	Steering wheel sensor learning <ST-N>	Perform actual driving	Steering wheel sensor neutral position learning executed	ON
			Steering wheel sensor neutral position learning un-executed	OFF
56	Stop lamp switch	- Ignition switch: ON - Engine: Stopped	Brake pedal: Depress	ON
			Brake pedal: Release	OFF

Item No.	Check item	Check condition		Normal condition
57	Motor monitor	Electric pump motor is currently operating		ON
		Electric pump motor is currently not operating		OFF
58	Oil pressure state	Electric pump motor is currently operating		LOW
		Electric pump motor is currently not operating		HIGH
59	Directional valve <Right>	AYC clutch right side is currently operating		ON
		AYC clutch right side is currently not operating		OFF
60	Directional valve <Left>	AYC clutch left side is currently operating		ON
		AYC clutch left side is currently not operating		OFF
61	ABS monitor	ABS is currently operating		ON
		ABS is currently not operating		OFF
62	Parking brake switch	- Ignition switch: ON - Engine: Stopped	Parking brake lever: Pull	ON
			Parking brake lever: Release	OFF
63	ACD mode switch	- Ignition switch: ON - Engine: Stopped	ACD mode switch: Press	ON
			ACD mode switch: Release	OFF

ACTUATOR TEST JUDGEMENT VALUE

M1221011300017

Item No.	Check item	Test description	Normal state
01	Bleeding <ACD>	Input current to the proportional 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.
02	Bleeding <AYC>	Input current to the proportional valve according to the steering angle, and operate the directional valve for five minutes.	Make sure no air leaks from the bleeder screw on the torque transfer differential.
03	Check the oil volume	Operate the directional valve to the left and right for 20 seconds.	Check that the oil volume of the reservoir tank is appropriate.
04	Electric pump drive	Operate the electric pump for 5 seconds.	Operation sounds of the electric pump can be heard.
05	Check the operations of the ACD	Operate the proportional valve <ACD> and supply the maximum oil pressure to the multi plate clutch.	Generate the tight corner braking phenomenon.
06	Check clutch operations <Left>	Operate the direction valve and supply the maximum oil pressure to the left clutch.	When the wheels are lifted, speed difference will occur between the rear left and right wheels.
07	Check clutch operations <Right>	Operate the direction valve and supply the maximum oil pressure to the right clutch.	When the wheels are lifted, speed difference will occur between the rear left and right wheels.
08	Control OFF	Turn OFF the electric pump relay, and turn OFF the control of the ACD and AYC.	In actual driving, there is difference between control ON and OFF.

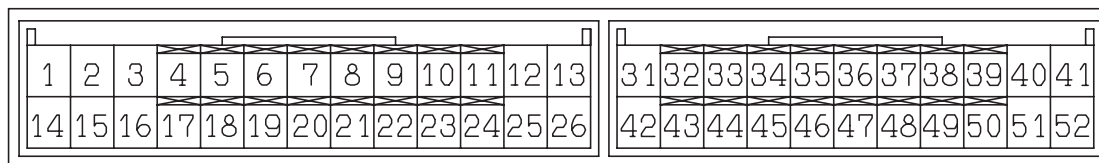
- The actuator test can be executed only when all the following conditions are satisfied.
 - All wheel speed sensor inputs below 20 km/h.
 - No system malfunction detected.
 - Steering angle is within ± 30 degrees from the neutral position.
- When the actuator test corresponds to one of the following conditions, forced driving will be cleared.
 - When any one of the wheel speed sensor input is detected to be above 20 km/h. (excluding Item No.08 "Control OFF").
 - When system malfunction is detected. (excluding diagnostic code No.82, 84, and 85).
 - When the forced drive time is exceeded.
 - When the M.U.T.-II/III is removed.
 - When the Clear key of the M.U.T.-II/III is operated.

CHECK AT 4WD-ECU TERMINALS

M1221011400014

C-25

C-26



AC310529AB

Terminal No.	Check item	Check condition		Normal state
1	Proportional valve <ACD>	Operate the Proportional valve in the actuator test (Item No.01). <ACD>	While executing the actuator test	System voltage
			After completing the actuator test	1 V or less
3	Proportional valve <AYC>	Operate the Proportional valve in the actuator test (Item No.02). <AYC>	While executing the actuator test	System voltage
			After completing the actuator test	1 V or less
6	Wheel speed sensor <FL>	Vehicle is stopping		1 V or less
		Moving forward slowly		0 ⇔ 5 V flushing
7	Wheel speed sensor <RR>	Vehicle is stopping		1 V or less
		Moving forward slowly		0 ⇔ 5 V flushing
8	Wheel speed sensor <RL>	Vehicle is stopping		1 V or less
		Moving forward slowly		0 ⇔ 5 V flushing
9	Wheel speed 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	Lateral G-sensor	Ignition switch: ON Vehicle horizontal state		2.4 – 2.6 V
13	4WD-ECU power supply	Ignition switch: OFF		0 V
		Ignition switch: ON		System voltage
14	Directional valve <Right>	Operate the directional valve <right> in the actuator test (Item No.07)	While executing the actuator test	System voltage
			After completing the actuator test	1 V or less
15	Directional valve <Left>	Operate the directional valve <left> in the actuator test (Item No.06)	While executing the actuator test	System voltage
			After completing the actuator test	1 V or less
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	Longitudinal G-sensor	Ignition switch: ON Vehicle horizontal state		2.4 – 2.6 V
26	ECU earth	Any time		1 V or less

Terminal No.	Check item	Check condition		Normal state
31	ECU backup power supply	Any time		System voltage
32	Pressure sensor	Ignition switch: ON		0.5 – 1.5 V
33	Steering wheel sensor <ST-1>	Ignition switch: ON	Steering wheel: Turn slowly	1 – 2 V ⇔ 2.5 – 4.5 V flushing
34	Steering wheel sensor <ST-2>	Ignition switch: ON	Steering wheel: Turn slowly	1 – 2 V ⇔ 2.5 – 4.5 V flushing
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	Stop lamp 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 lamp <TARMAC>	Ignition switch: ON	ACD mode indicator lamp position: TARMAC	0 V
			ACD mode indicator lamp 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 wheel 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 lamp <SNOW>	Ignition switch: ON	ACD mode indicator lamp position: SNOW	0 V
			ACD mode indicator lamp position: Except for above	Approx. 10.5 V

Terminal No.	Check item	Check condition		Normal state
52	ACD mode indicator lamp <GRAVEL>	Ignition switch: ON	ACD mode indicator lamp position: GRAVEL	0 V
			ACD mode indicator lamp position: Except for above	Approx.10.5 V

TROUBLESHOOTING <M/T>

INTRODUCTION

M1221006900701

The manual transmission can exhibit any of the following symptoms: noise or vibration is generated, oil leaks, shifting gears is hard or troublesome, or the transmission 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 transmission may be faulty.

TROUBLESHOOTING STRATEGY

M1221007000626

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 transmission 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.

SYMPTOM CHART

M1221007100612

Trouble symptom	Inspection procedure No.	Reference page
Noise, vibration	1	P.22A-149
Oil leaks	2	P.22A-150
Hard shifting	3	P.22A-150
Jumps out of gear	4	P.22A-151

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 – On-vehicle Service, Idle Speed Check [P.11A-10](#).

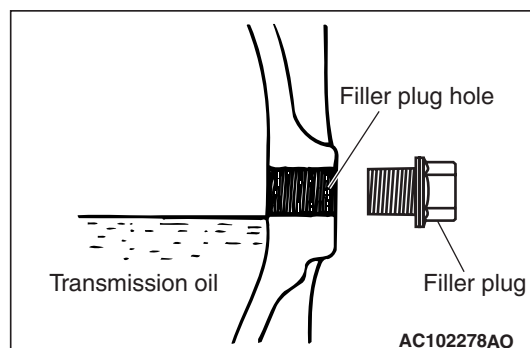
STEP 2. Check whether the transmission and engine mount is loose or damaged.

Q: Are the transmission 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 DIA QUEEN SUPER MULTI GEAR 75W–85W (GL–4) or exact equivalent. Then go to Step 7.

STEP 4. Check for the specified oil.

Q: Is the specified oil DIA QUEEN SUPER MULTI GEAR 75W–85W (GL–4) or exact equivalent?

YES : Go to Step 5.

NO : If in doubt, replace the oil. Refer to [P.22A-152](#). Then go to Step 7.

STEP 5. Remove the transmission. Check the axial play of the input and output shafts.

Q: Does the axial play of the input and output shafts meet the standard value?

YES : Go to Step 6.

NO : Adjust the axial play of the input and output shafts. Then go to Step 7.

STEP 6. Disassemble the transmission. 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 transmission 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 transmission. 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 transmission 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-157](#). Then go to Step 7.

STEP 2. Check the transmission oil.

Q: Is the oil dirty?

YES : Replace the oil. Refer to [P.22A-152](#). 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 – Clutch [P.21B-3](#). Then go to Step 7.

STEP 4. Remove and disassemble the transmission. 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 – Transmission [P.22B-11](#).
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 transmission 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-157](#). Then go to Step 6.

STEP 2. Remove and disassemble the transmission. Check the poppet spring for breakage.

Q: Is the poppet spring broken?

YES : Replace the poppet spring. Refer to GROUP 22B – Transmission [P.22B-11](#). 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 – Transmission [P.22B-11](#). 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 – Transmission [P.22B-11](#). Then go to Step 6.

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 – Input Shaft [P.22B-24](#). Then go to Step 6.

NO : Go to Step 6.

STEP 6. Retest the system.

Q: Does the transmission still jump out of gear?

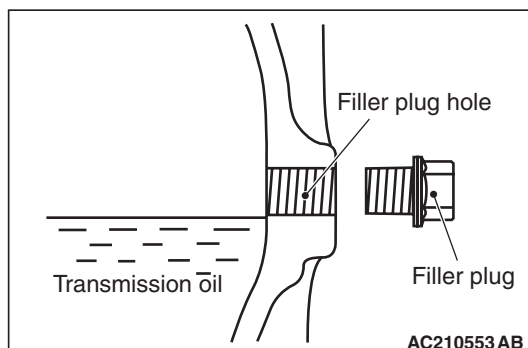
YES : Return to Step 1.

NO : The procedure is complete.

ON-VEHICLE SERVICE

TRANSMISSION OIL CHECK

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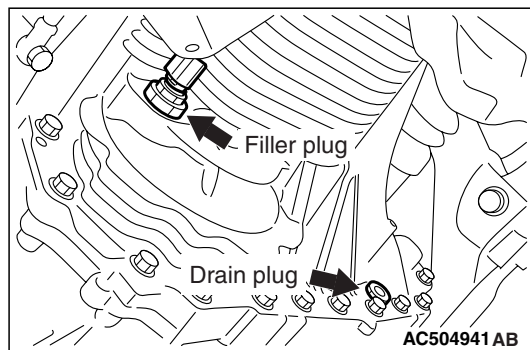


1. Remove the oil filler plug.
2. Oil level should be at the lower portion of the filler plug hole.
3. Check that the transmission oil is not noticeably dirty, and that it has a suitable viscosity.
4. Tighten the filler plug to the specified torque.

Tightening torque: 32 ± 2 N·m

TRANSMISSION OIL REPLACEMENT

M1221001000565



1. Remove oil filler plug and oil drain plug.
2. Drain oil.
3. Tighten the oil drain plug to the specified torque.

Tightening torque: 35 ± 4 N·m

4. Fill with specified oil till the level comes to the lower portion of oil filler plug hole.

**Specified transmission oil: DIA QUEEN
SUPER MULTI GEAR 75W-85W (GL-4) or
exact equivalent**

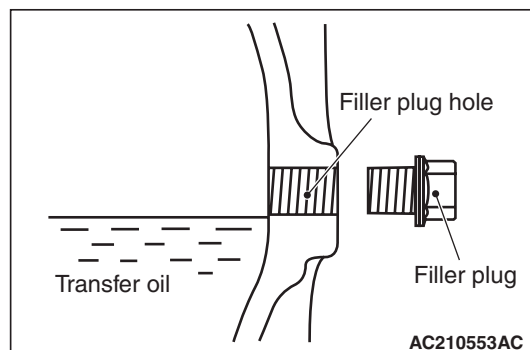
Quantity: 2.2 L

5. Tighten the oil filler plug to the specified torque.

Tightening torque: 35 ± 4 N·m

TRANSFER OIL CHECK

M1221001100120

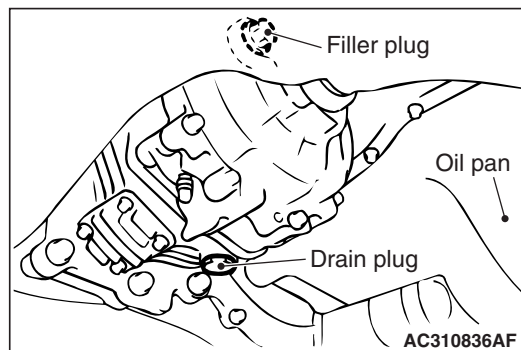


1. Remove the oil filler plug.
2. Oil level should be at the lower portion of the filler plug hole.
3. Check that the transfer oil is not noticeably dirty, and that it has a suitable viscosity.
4. Tighten the filler plug to the specified torque.

Tightening torque: 32 ± 2 N·m

TRANSFER OIL REPLACEMENT

M1221001200138



1. Remove oil filler plug and oil drain plug.
2. Drain oil.
3. Tighten the oil drain plug to the specified torque.

Tightening torque: 32 ± 2 N·m

4. Fill with specified oil till the level comes to the lower portion of oil filler plug hole.

**Specified transfer oil: Dia Queen LSD gear oil
Quantity: 0.6 L**

5. Tighten the oil filler plug to the specified torque.

Tightening torque: 32 ± 2 N·m

FLUID CHECK

M1221011500033

1. Remove the maintenance lid located in the luggage compartment.
2. <Not using M.U.T.-II/III>
 - If the vehicle has been run, leave it for 90 min. or more in an ordinary temperature (10°C – 30°C) to allow the accumulator internal pressure to drop.

NOTE: If the ambient temperature is 10 °C or less, allow more time to leave the vehicle to stand idle.

3. <Using M.U.T.-II/III>

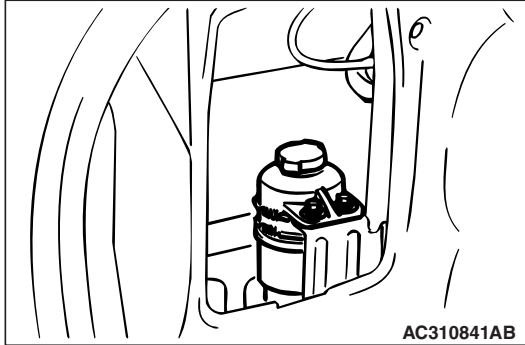
CAUTION

Turn the ignition switch to the LOCK (OFF) position before connecting or disconnecting the M.U.T.-II/III.

- Set the M.U.T.-II/III to the 16-pin diagnosis connector.
- Turn ON the ignition switch, perform M.U.T.-II/III 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 directional 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 M.U.T.-II/III.
- If the function has been stopped by fail-safe, the hydraulic unit cannot be cleared forcibly.



4. Check that the fluid level in the oil reservoir is in the range between MAX and MIN.
5. If the fluid level is lower than MIN, add the specified fluid.

Specified fluid: DIA QUEEN ATF SP III

6. Reinstall the maintenance lid.

BLEEDING

M1221011600018

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.

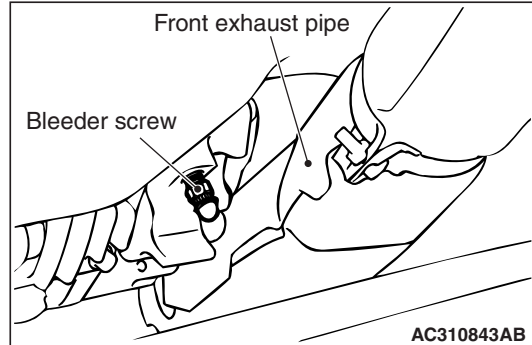
CAUTION

Turn the ignition switch to the "LOCK"(OFF) position before connecting or disconnecting the M.U.T.-II/III.

2. Set the M.U.T.-II/III to the 16-pin diagnosis connector.
3. Turn the ignition switch to the ON position.
4. Set the steering wheel in the straight-ahead position.
5. Perform the M.U.T.-II/III 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 M.U.T.-II/III.
- 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

10. After bleeding, check the fluid level. (Refer to P.22A-152).
11. If the hydraulic pressure unit is removed, bleed the AYC (Refer to GROUP 27 – On-vehicle Service P.27-28).

ACD OPERATION CHECK

M1221011700037

CAUTION

Turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting the M.U.T.-II/III.

1. Set the M.U.T.-II/III to the 16-pin diagnosis connector.
2. Start the engine.

- Set the steering wheel to the neutral position, and carry out the actuator test (Item No.05) using M.U.T.-II/III. Then, activate the transfer forcibly.

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 M.U.T.-II/III.
 - If the hydraulic unit function has been stopped by fail-safe, the transfer cannot be forcibly driven.
- Turn the steering wheel 180° or more to the right or left, and drive the vehicle at 20 km/h or less to check that tight corner braking phenomenon.

NOTE:

- The occurrence level of the body vibration and noise depends on the condition of tyres and roads.
- If tight corner braking does not occur, check the hydraulic pressure because the system may be defective.

HYDRAULIC PRESSURE CHECK

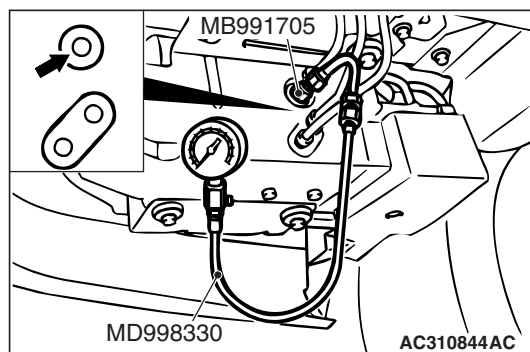
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- Lift up the vehicle.

CAUTION

Turn the ignition switch to the LOCK (OFF) position before connecting or disconnecting the M.U.T.-II/III.

- Set the M.U.T.-II/III to the 16-pin diagnosis connector.



- Disconnect the hydraulic unit and transfer connector assembly, and connect the special tool to the hydraulic unit.
- Turn the ignition switch to ON.
- Perform the M.U.T.-II/III 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 M.U.T.-II/III.
- 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.

- Check that the generated oil pressure of the hydraulic unit satisfies the standard value.

Standard value: 1.0 – 1.6 MPa

- If the measured value exceeds the standard value, replace the hydraulic unit.
- Connect the hydraulic unit and transfer connector assembly, and tighten the flare nut at the specified torque.

Tightening torque:

34 ± 5 N·m (when screw is dry)

26 ± 4 N·m (when screw is applied with oil)

- Supply the specified fluid up to the MAX level of the oil reservoir, and bleed the oil pressure pipes.
 - Specified fluid: DIA QUEEN ATF SP III
 - Quantity: 1.0 L

**WHEEL SPEED SENSOR OUTPUT
VOLTAGE MEASUREMENT**

M1221011900019

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.

- Disconnect the 4WD-ECU connector, and measure at the connector of the harness.

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

AC310852AB

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

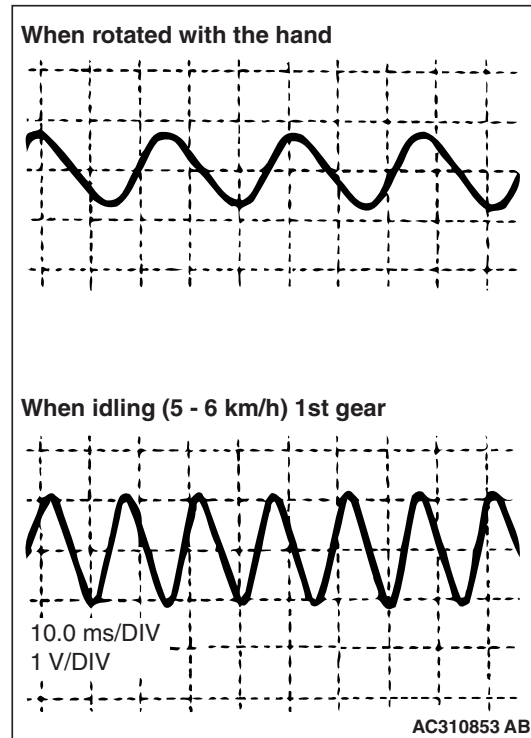
Output voltage:

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 wheel speed sensor.
- Excessive clearance between the ball piece of the wheel speed sensor and ABS rotor
 - Wheel speed sensor fault

INSPECTION PROCEDURE USING OSCILLOSCOPE



After checking the connected state of the harness of the wheel speed sensor and connector, and measure the output voltage waveform of each wheel speed sensor on the oscilloscope as follows.

Start the engine, shift the transmission 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

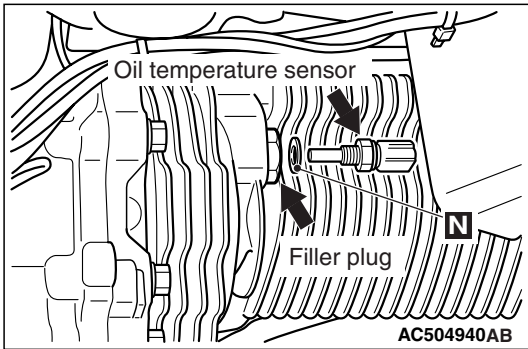
As the wheel speed sensor cable follows the movement of the front or rear suspension, it will change considerably on poor condition roads. Therefore, also observe the output voltage waveform of the wheel speed sensor with the sensor harness vibrated to simulate special conditions such as driving in poor road conditions.

<WAVEFORM OBSERVATION POINTS>

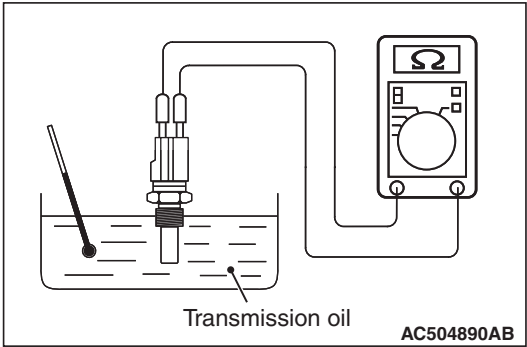
Phenomenon	Probable cause	Solution
Waveform amplitude is too small or not output at all	Wheel speed sensor fault	Replace the sensor
Excessive waveform amplitude (However allowed if above the minimum amplitude of 100 mV)	Excessive vibration or concentricity of the axle hub	Replace the hub
	4WD-ECU earth 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
	Wheel speed sensor installation fault	Correct the installation of the sensor
	Chipping or flattening of the ABS rotor	Replace the ABS rotor

OIL TEMPERATURE SENSOR CHECK

M1221006700020



1. Remove the oil temperature sensor.



2. Measure the resistance between terminals 1 and 2 of the oil temperature sensor connector.

Standard value:

Oil temperature (°C)	Resistance value (kΩ)
20	2.31 – 2.59
110	0.145 – 0.146

3. If the resistance is not within the standard value, replace the oil temperature sensor.

4. Install the oil temperature sensor, and tighten it to the specified torque.

Tightening torque: 22 ± 2 N·m

TRANSMISSION CONTROL

REMOVAL AND INSTALLATION

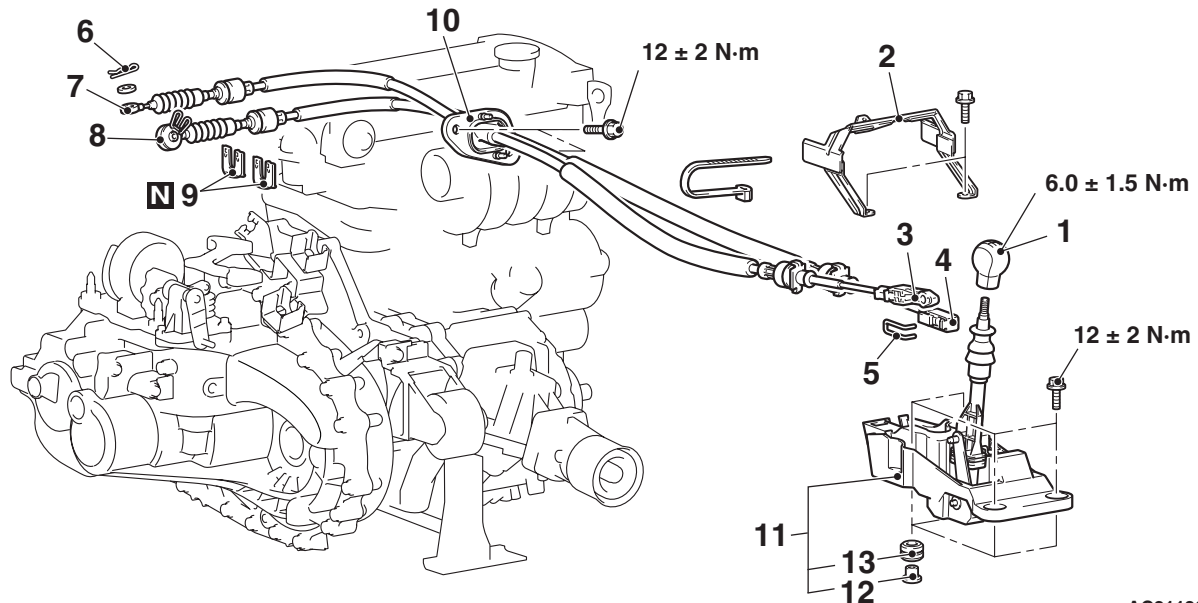
M1221003800783

WARNING

- **Be careful not to subject the SRS-ECU to any shocks during removal and installation of the shift cable and select cable assembly.**
- **Do not disassemble the shift lever assembly except the distance piece and bushing. (non-supply parts)**
- **Never use mineral grease for the shift lever assembly moving area. If mineral grease is used, the plastic parts can be damaged.**

Pre-removal Operation

- Air Cleaner Assembly Removal and Installation (Refer to GROUP 15 P.15-5).
- Air Pipe C, Air Hose D Removal (Refer to GROUP 15 – Intercooler P.15-6).
- Battery and Battery Tray Removal



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Shift cable and select cable assembly removal steps

1. Shift knob
 - Front floor console (Refer to GROUP 52A P.52A-7).
2. Front floor console bracket
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 (Transmission side)
8. Select cable connection (Transmission side)
9. Clip
10. Shift cable and Select cable assembly

Shift lever assembly removal steps

1. Shift knob
 - Front floor console (Refer to GROUP 52A P.52A-7).
2. Front floor console bracket
3. Select cable connection (Shift lever side)
4. Shift cable connection (Shift lever side)
5. Clip (Shift lever side)
11. Shift lever assembly
12. Distance piece
13. Bushing

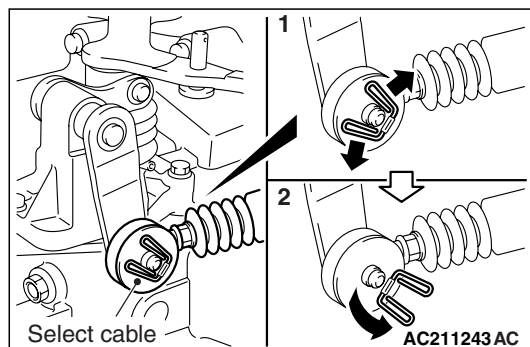
>>C<<

>>C<<

<<A>> >>B<<

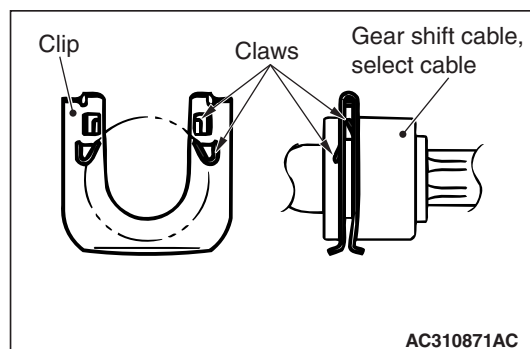
<> >>A<<

REMOVAL SERVICE POINTS

<<A>> SELECT CABLE CONNECTION
(TRANSMISSION SIDE) REMOVAL

Set the clip of the select cable as shown in figure 1 and 2, and disconnect the select cable.

<> CLIP REMOVAL

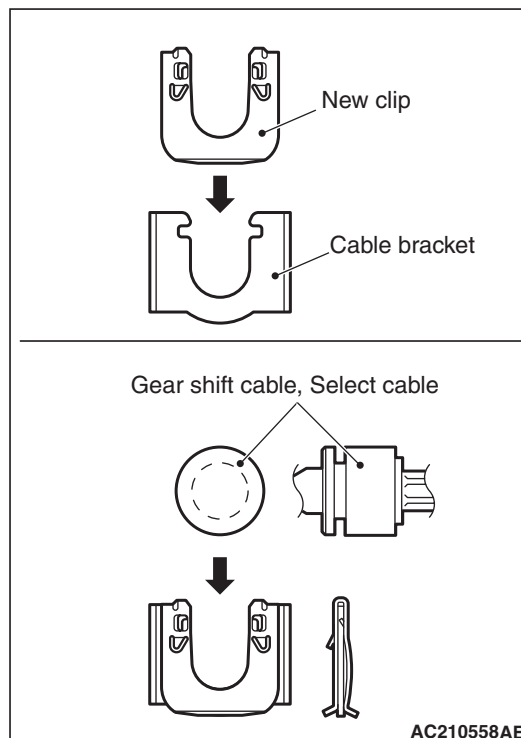


Push up the claws of the clip using a screwdriver, etc., and then remove the clip from the bracket together with the cables.

INSTALLATION SERVICE POINTS

>>A<< CLIP INSTALLATION

⚠ CAUTION



Insert thoroughly the clip, shift cable and select cable until they click in place.

1. After installing the new clip to the cable bracket of the transmission, install the shift cable and select cable to the cable bracket.

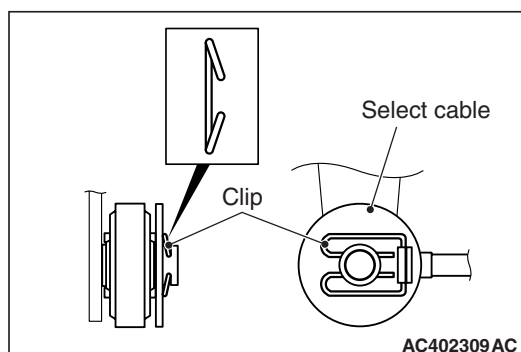
NOTE: The clip is reversible.

2. Move the shift lever to all positions and check that the operation is smooth.

>>B<< SELECT CABLE CONNECTION
(TRANSMISSION SIDE) INSTALLATION

⚠ CAUTION

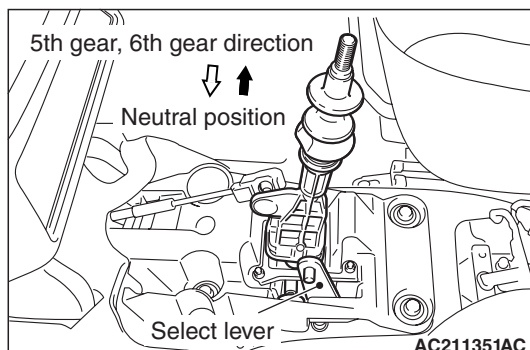
Check that the clip is securely installed.



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



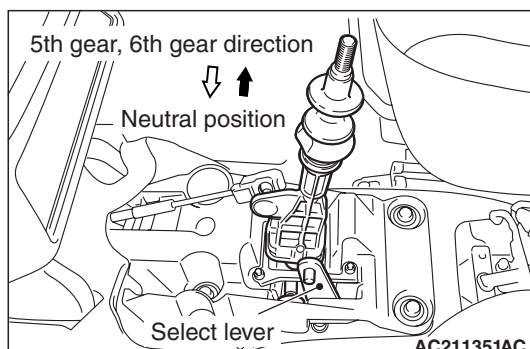
1. Move the shift lever until it contacts the 5-speed or 6-speed stopper to stabilize the shift cable at the shift lever.
2. Release the shift lever, and install the select cable (at the shift lever side) to the select lever while the lever is at the neutral position.
3. Check that the shift cable (shift 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.

SELECT CABLE (SHIFT LEVER SIDE) ADJUSTMENT

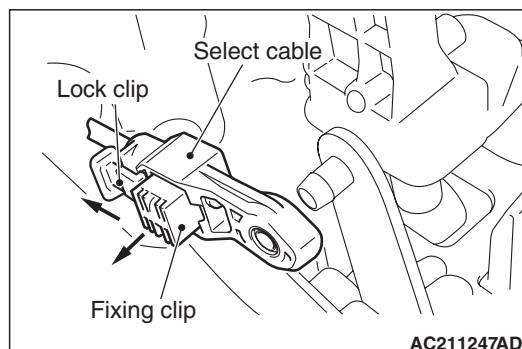
M1221013300013

Place the shift lever to the neutral position .

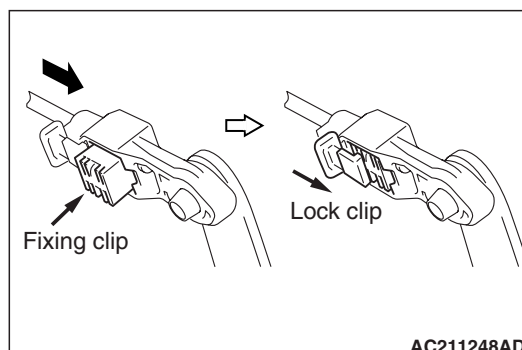
1. Remove the front floor console.



2. Remove the select cable from the select lever.
3. Move the shift lever until it hits the stopper at the 6th gear side.
4. Release the shift lever to place it to the neutral position.



5. Move the lock clip of the select cable towards the arrowed direction in the figure, and pull the fixing clip.
6. Install the select cable to the select lever, taking care not to move the shift lever from the neutral position.



7. 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.
8. 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.
9. Install the front floor console.

TRANSFER ASSEMBLY

REMOVAL AND INSTALLATION

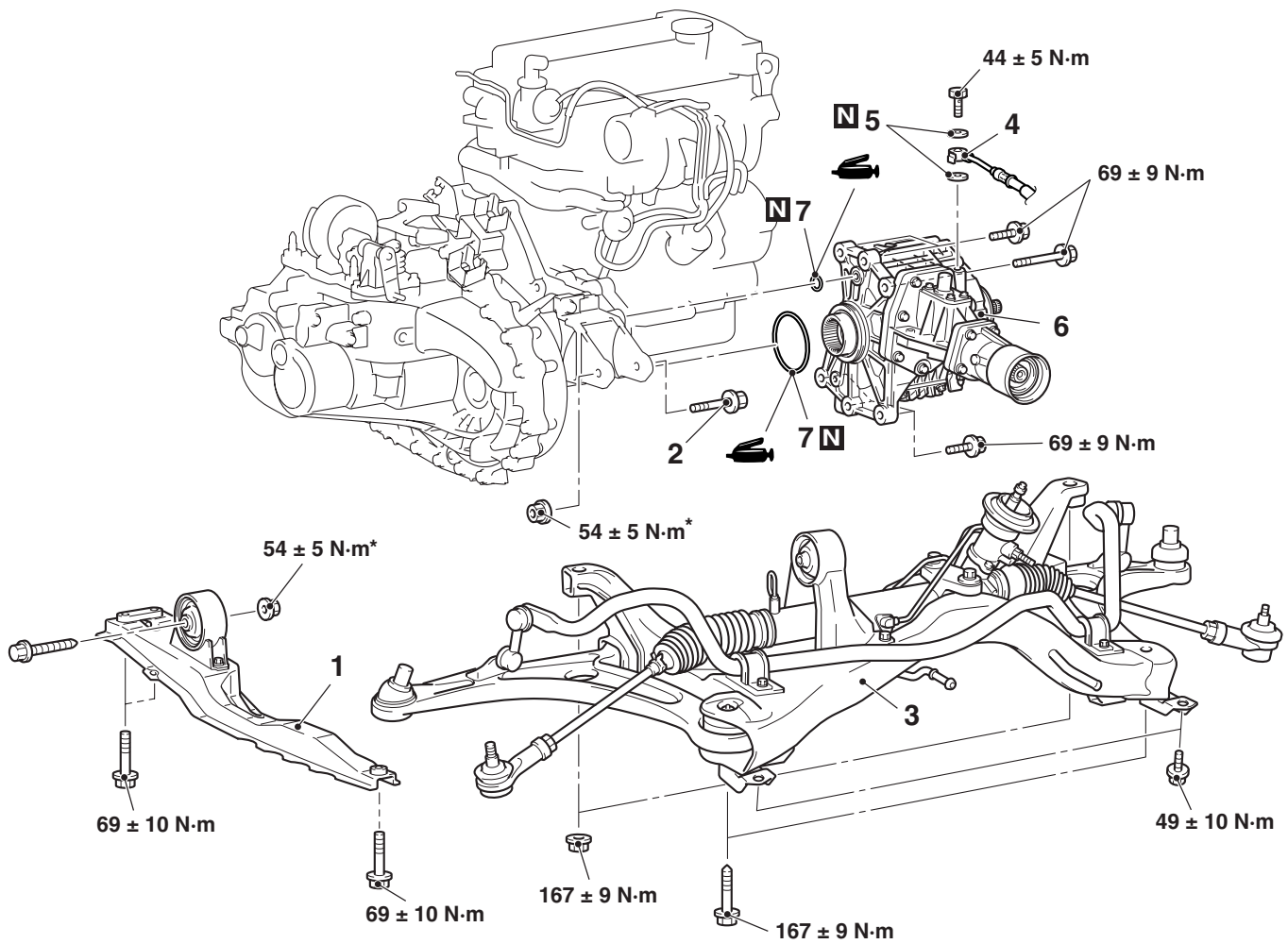
M1221003200178

CAUTION

- Always refer to GROUP 52B – Service Precautions and Airbag Modules and Clock Spring before removing the steering wheel and airbag module assembly.
- 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.
- *: 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

- Steering Wheel Removal and Installation (Refer to GROUP 37 – Steering Wheel [P.37-13](#)).
- 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 Column shaft [P.37-15](#)).
- Steering Gear and Joint Connection Removal and Installation (Refer to GROUP 37 – Steering Column shaft [P.37-15](#)).
- Front Axle Crossmember Bar Removal and Installation (Refer to GROUP 32 – Engine Roll Stopper, Centermember [P.32-7](#)).
- Front Exhaust Pipe Removal and Installation (Refer to GROUP 15 – Exhaust Pipe and Main Muffler [P.15-13](#)).
- Propeller Shaft Removal and Installation (Refer to GROUP 25 Propeller Shaft [P.25-3](#)).
- Output shaft Removal and Installation (Refer to GROUP 26 – Drive Shaft Assembly [P.26-11](#)).
- Transmission Oil Draining and Supplying (Refer to [P.22A-152](#)).
- Transfer Oil Draining and Supplying (Refer to [P.22A-152](#)).
- Bleeding and Hydraulic Pressure Check <ACD> (Refer to [P.22A-153](#), [P.22A-154](#)). <after installation only>
- Power Steering Fluid Refilling and Bleeding (Refer to GROUP 37 – On-vehicle Service [P.37-10](#)) <Only after Installation>.



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Removal steps

1. Centremember assembly
 - Power steering return hose and steering gear connection
 - Power steering pressure hose and steering gear connection
2. Rear roll stopper connecting bolt

<<A>>

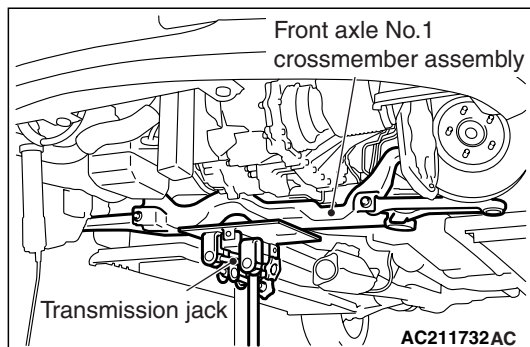
<>

Removal steps (Continued)

3. Front axle No.1 crossmember assembly
4. Pressure hose connection
5. Gasket
6. Transfer assembly
7. O-ring

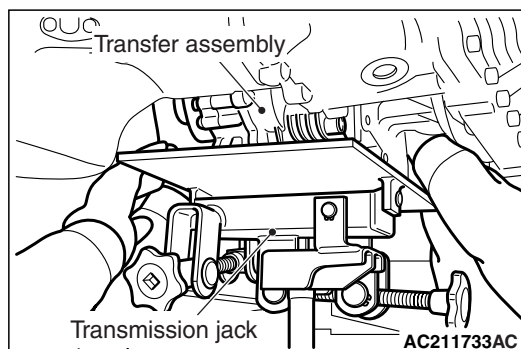
REMOVAL SERVICE POINTS

<<A>> FRONT AXLE NO.1 CROSSMEMBER ASSEMBLY REMOVAL



Support the front axle No.1 crossmember assembly with a transmission jack, and remove the crossmember mounting bolts and the front axle No.1 crossmember assembly.

<> TRANSFER ASSEMBLY REMOVAL



Support the transfer assembly with a transmission jack, and remove the transfer mounting bolts and the transfer assembly.

TRANSMISSION ASSEMBLY

REMOVAL AND INSTALLATION

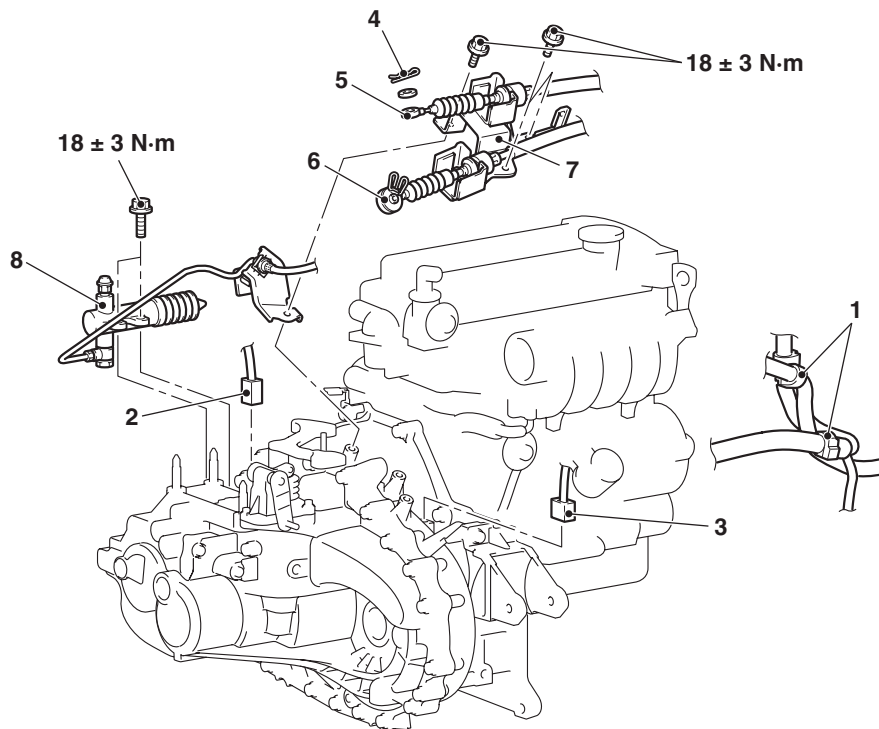
M1221002700590

CAUTION

- 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.
- *: 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

- Transfer Assembly Removal and Installation (Refer to [P.22A-160](#)).
- Battery and Battery Tray Removal and Installation.
- Strut Tower Bar Removal and Installation (Refer to GROUP 42 – Strut Tower Bar [P.42-9](#)).
- 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).
- Air By-pass Hose, Air Hose E, Air Pipe C and Air Hose D Removal and Installation (Refer to GROUP 15 [P.15-6](#)).
- Starter Assembly Removal and Installation (Refer to GROUP 16 [P.16-20](#)).



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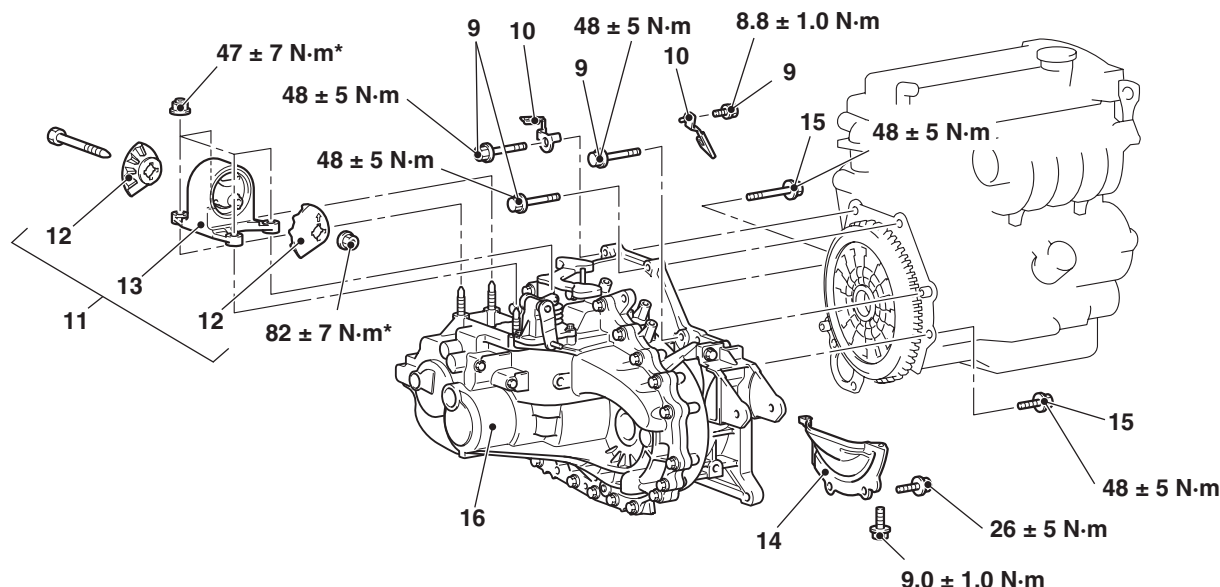
Removal steps

1. Main harness clamp connection
2. Back-up lamp 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 and bracket
8. Clutch release cylinder and clutch oil pipe



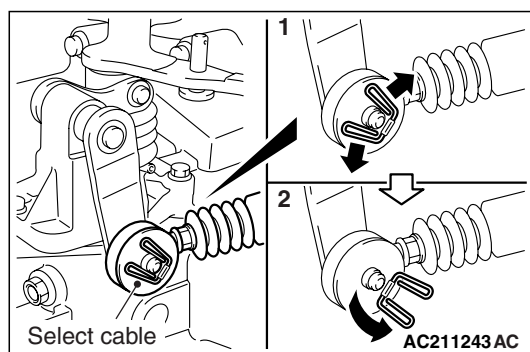
AC211628AC

Removal steps

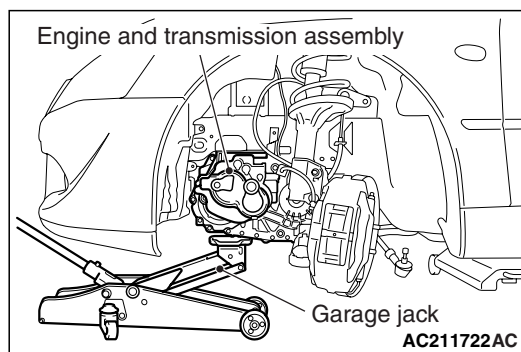
- <>
9. Transmission assembly upper part coupling bolt <<C>>
 10. Harness clump
 11. Transmission mounting insulator assembly <<D>>
 - >>A<< 12. Transmission mounting insulator stopper
 13. Transmission mounting insulator

Removal steps (Continued)

- Engine assembly supporting
- Raise the vehicle.
- 14. Bell housing cover
- Clutch release bearing separation
- 15. Transmission assembly lower part coupling bolt
- 16. Transmission assembly

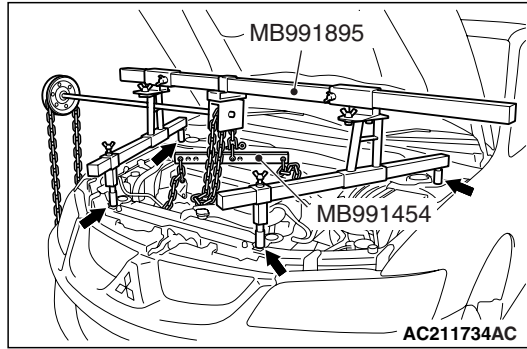
REMOVAL SERVICE POINTS**<<A>> SELECT CABLE CONNECTION
REMOVAL**

Set the clip of the select cable as shown in figure 1 and 2, and disconnect the select cable.

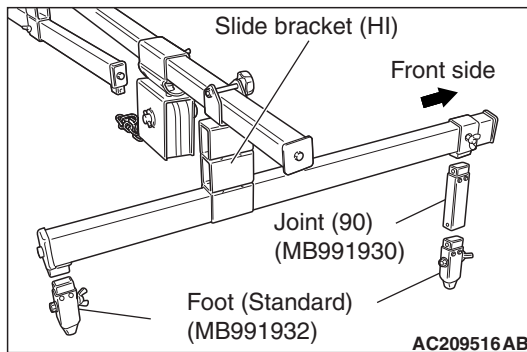
**<> TRANSMISSION MOUNTING
INSULATOR ASSEMBLY REMOVAL**

Jack up and support the engine and transmission assembly, and remove the transmission mounting insulator assembly.

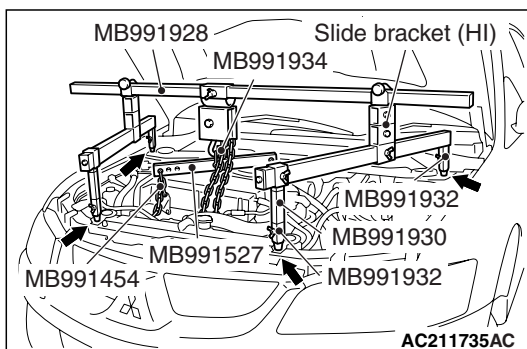
<<C>> ENGINE ASSEMBLY SUPPORTING



1. <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 and transmission assembly.



2. <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).

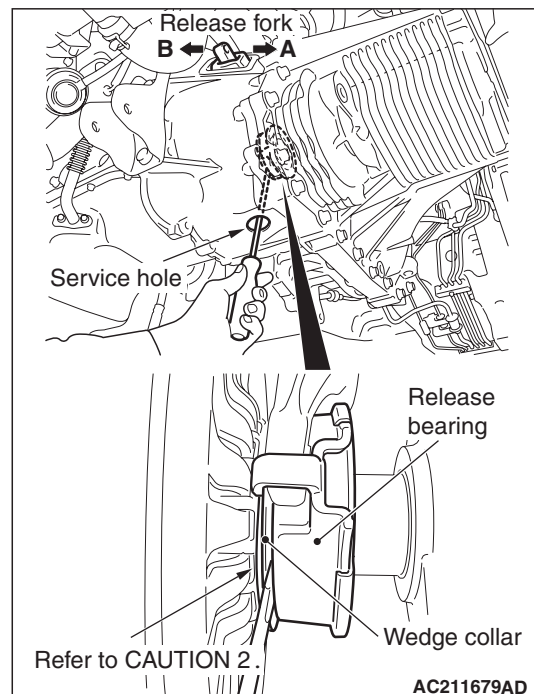
- (3) Set special tool MB991454 to hold the engine and transmission assembly.

<<D>> CLUTCH RELEASE BEARING SEPARATION

1. Remove the service hole cover of the clutch housing.

CAUTION

- Do not insert the flat-tipped driver before pressing the release fork towards direction A.
- Do not insert the flat-tipped driver between the wedge collar and the wave spring.



2. Insert the flat-tipped driver between the release bearing and wedge collar while slightly pressing the release fork towards direction A by hand.

CAUTION

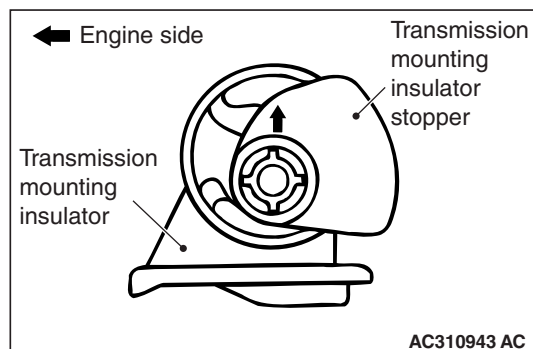
If the driver cannot be turned slightly (the release bearing cannot be disconnected), remove the flat-tipped driver and press the release fork several times towards direction A, then retry again. If the release bearing is pried off forcibly, it may be damaged.

3. Disconnect the release bearing with the wedge collar while prying off slightly by the flat-tipped driver (turn the driver's handle 90°).

NOTE: When the release bearing is disconnected, the release fork is moved to the direction B fully by the return spring.

INSTALLATION SERVICE POINT**>>A<< TRANSMISSION MOUNTING INSULATOR STOPPER INSTALLATION**

Install so that the arrow on the transmission mounting insulator stopper faces the top of the vehicle.



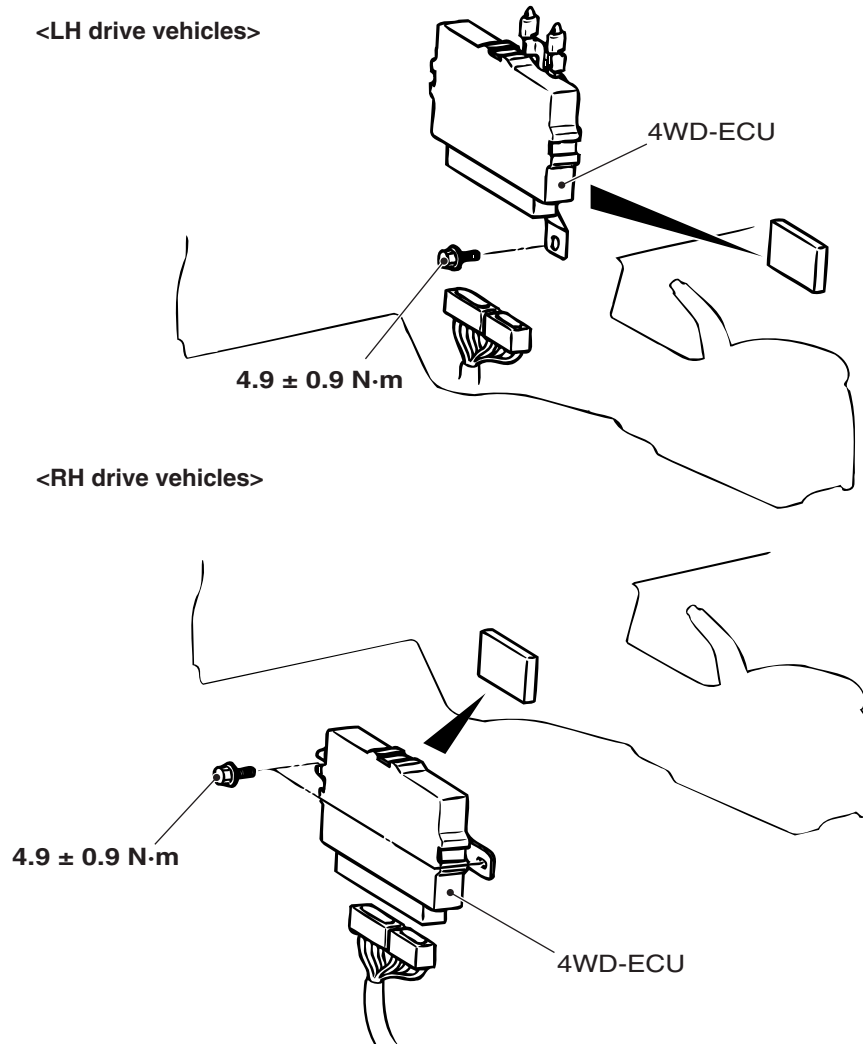
4WD-ECU

REMOVAL AND INSTALLATION

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Pre-removal and Post-installation Operation

- Cowl Side Trim <RH> Removal and Installation. (Refer to GROUP 52A - Trims [P.52A-10](#)). <LH drive vehicles>
- Front Floor Console Removal and Installation. (Refer to GROUP 52A [P.52A-7](#)). <RH drive vehicles>

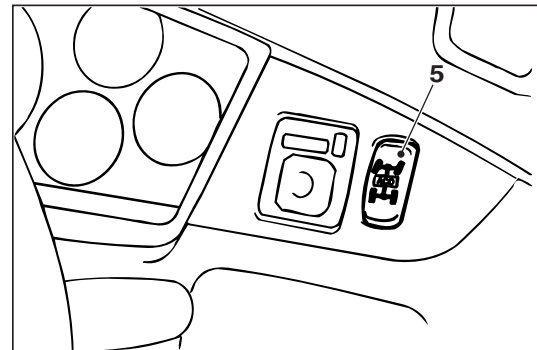
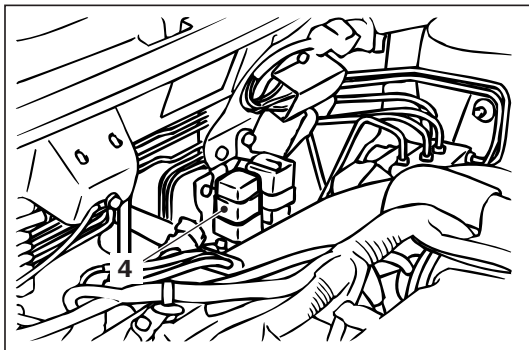
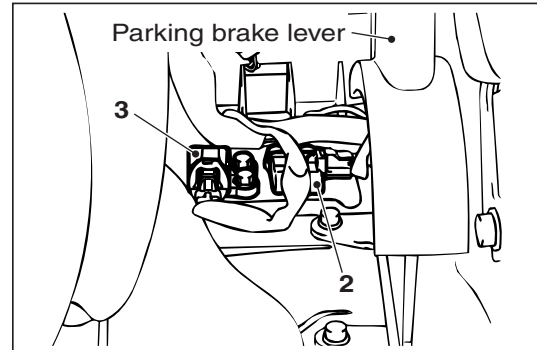
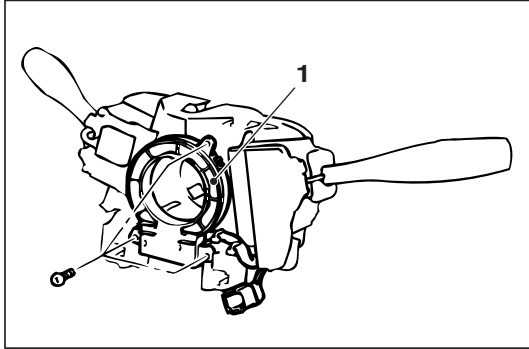


SENSOR, SWITCH AND RELAY**REMOVAL AND INSTALLATION**

M1221012300043

⚠ WARNING

Before removing the steering wheel and air bag module assembly, refer to GROUP 52B, Service Precautions (P.52B-3) and Air Bag Module and Clock Spring (P.52B-110).



AC311353AC

Steering wheel sensor removal steps

- Column cover (Refer to GROUP 37 – Steering Shaft P.37-15).

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-2).
 - 5. ACD mode changeover switch

<<A>>

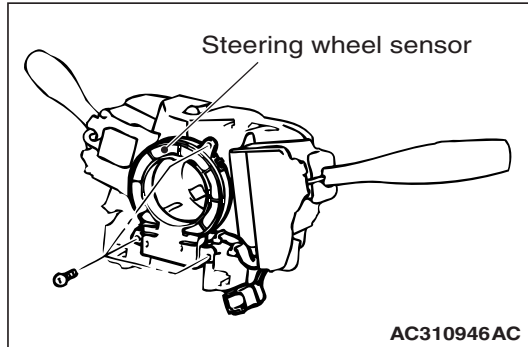
NOTE: For details on the wheel speed sensor, refer to GROUP 35B – On-vehicle Service P.35B-138.

REMOVAL SERVICE POINT

<<A>> STEERING WHEEL SENSOR REMOVAL

⚠ CAUTION

Make sure no oil adheres to the steering wheel sensor because a photocoupler is used.

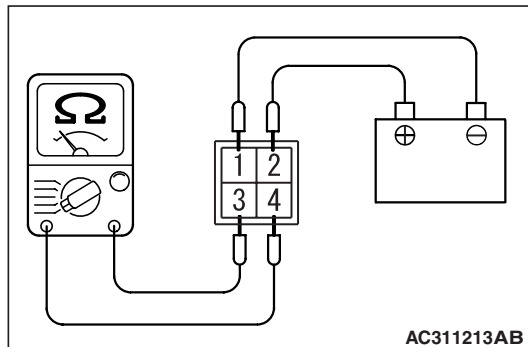


Remove the steering wheel sensor from the column switch.

INSPECTION

M1221008000016

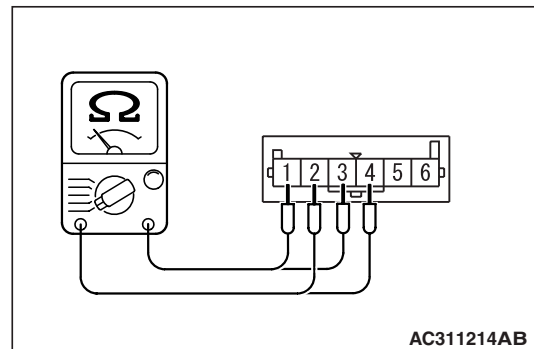
ELECTRIC PUMP RELAY CONTINUITY CHECK



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 No.3 – No.4
Connected	Less than 2 ohms
Disconnected	Open circuit

ACD MODE CHANGEOVER SWITCH CONTINUITY CHECK



ACD mode changeover switch terminal	ACD mode changeover switch	Continuity
No.1 – No.2	ON	Less than 2 ohms
	OFF	Open circuit
No.3 – No.4	–	Less than 2 ohms

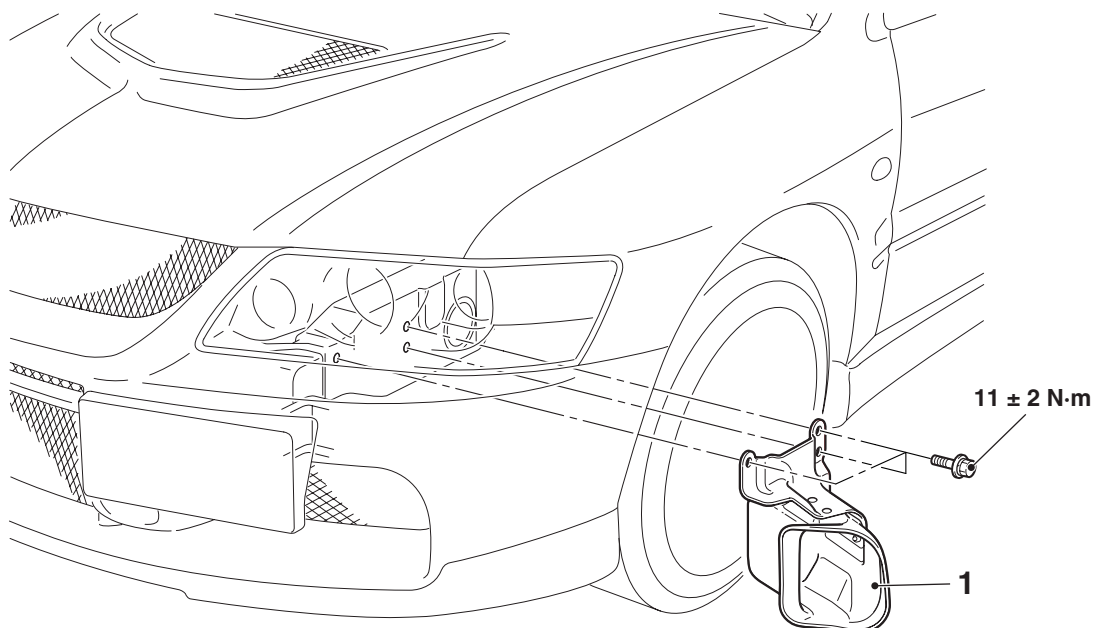
AIR DUCT

REMOVAL AND INSTALLATION

M1221013400010

Pre-removal and Post-installation Operation

Front Under Cover Removal and Installation (Refer to GROUP 51, Front Bumper Assembly P.51-2.)



AC504974AB

<<A>>

Removal steps

1. Air duct

REMOVAL SERVICE POINT**<<A>> AIR DUCT REMOVAL**

Turn the splash shield up to the position where the air duct mounting bolts can be removed.