SERVICE BULLETIN

MITSUBISHI MOTORS

GLOBAL AFTER SALES OFFICE, MITSUBISHI MOTORS CORPORATION

PURPOSE : CORRECTION	ISSUE NO. : MSB-16EXML35-501	DATE : 2016-01-15
SUBJECT : Error in writing of the troubleshooting regarding the wheel speed sensor circuit of ABS/ASC		<DESTINATION/MODEL> (As per attached sheet 1) <M/Y> 13-16
GROUP : Gr:35(Service brake)		OUTLANDER(GF0W)/ OUTLANDER PHEV(GG0W)

1. Description :

Please refer to the attached document for the correction of the error in writing existing in the applicable service manual.

2. Affected service manuals :

Please refer to the attached document(Attached sheet 1)

3. About the details :

Please refer to the attached document (Attached sheets 11-22)

For overseas market

EU/RUSSIA/ARGENTINA/SOUTH AFRICA

Applicable manual	Pub. No.	Applicable title (Info-ID)	Content
2013 OUTLANDER Workshop Manual	CGFE13E1-CD (ENG) CGFF13E1-CD (FRE) CGFG13E1-CD (GER) CGFS13E1-CD (SPA) CGFI13E1-CD (ITA) ARGENTINA: DRAFT SOUTH AFRICA: DRAFT RUSSIA:N/A	SERVICE SPECIFICATIONS (M352-00-030-96401-01)	Attached sheet 11
		CODE NO. C100A FL WHEEL SPEED SENSOR CIRCUIT, CODE NO. C1015 FR WHEEL SPEED SENSOR CIRCUIT, CODE NO. C1020 RL WHEL SPEED SENSOR CIRCUIT, CODE NO. C102B RR WHEEL SPEED SENSOR CIRCUIT (M352-03-410-01700-01)	Attached sheet 12
		WHEEL SPEED SENSOR OUTPUT CURRENT MEASUREMENT (M352-03-280-04300-01)	Attached sheet 13
		WHEEL SPEED SENSOR INSPECTION (M352-00-840-75001-01)	Attached sheet 14
		SERVICE SPECIFICATIONS (M355-00-820-08900-01)	Attached sheet 15
		CODE NO. C100A FL WHEEL SPEED SENSOR CIRCUIT, CODE NO. C1015 FR WHEEL SPEED SENSOR CIRCUIT, CODE NO. C1020 RL WHEL SPEED SENSOR CIRCUIT, CODE NO. C102B RR WHEEL SPEED SENSOR CIRCUIT (M355-03-040-02600-01)	Attached sheet 16
2013 OUTLANDER Workshop Manual	RUSSIA:N/A	SERVICE SPECIFICATIONS (M352-00-030-96401-01)	Attached sheet 11
		CODE NO. C100A FL WHEEL SPEED SENSOR CIRCUIT, CODE NO. C1015 FR WHEEL SPEED SENSOR CIRCUIT, CODE NO. C1020 RL WHEL SPEED SENSOR CIRCUIT, CODE NO. C102B RR WHEEL SPEED SENSOR CIRCUIT (M352-03-410-01700-01)	Attached sheet 12
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2014 OUTLANDER/ OUTLANDER PHEV Workshop Manual	CGFE14E2-CD (ENG) CGFF14E2-CD (FRE) CGFG14E2-CD (GER) CGFS14E2-CD (SPA) CGFI14E2-CD (ITA) RUSSIA:N/A ARGENTINA: DRAFT SOUTH AFRICA: DRAFT	SERVICE SPECIFICATIONS (M352-00-030-96401-01)	Attached sheet 11
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		WHEEL SPEED SENSOR OUTPUT CURRENT MEASUREMENT (M352-03-280-04300-01)	Attached sheet 13
		WHEEL SPEED SENSOR INSPECTION (M352-00-840-75001-01)	Attached sheet 14
		SERVICE SPECIFICATIONS (M355-00-820-08900-01)	Attached sheet 15

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2014 OUTLANDER/ OUTLANDER PHEV Workshop Manual	CGFE14E2-CD (ENG) CGFF14E2-CD (FRE) CGFG14E2-CD (GER) CGFS14E2-CD (SPA) CGFI14E2-CD (ITA) RUSSIA:N/A ARGENTINA: DRAFT SOUTH AFRICA: DRAFT	CODE NO. C100A FL WHEEL SPEED SENSOR CIRCUIT, CODE NO. C1015 FR WHEEL SPEED SENSOR CIRCUIT, CODE NO. C1020 RL WHEL SPEED SENSOR CIRCUIT, CODE NO. C102B RR WHEEL SPEED SENSOR CIRCUIT (M355-03-040-02601-01 <EVCEPT PHEV>, M355-03-040-02600-01 <PHEV>)	Attached sheet 16
2014.5 OUTLANDER/ OUTLANDER PHEV Workshop Manual	CGFE14E3-CD (ENG) CGFF14E3-CD (FRE) CGFG14E3-CD (GER) CGFS14E3-CD (SPA) CGFI14E3-CD (ITA) RUSSIA:N/A ARGENTINA: DRAFT SOUTH AFRICA: DRAFT	SERVICE SPECIFICATIONS (M352-00-030-96401-01)	Attached sheet 11
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2016 OUTLANDER/ OUTLANDER PHEV Workshop Manual	CGFE16E1-CD (ENG) CGFF16E1-CD (FRE) CGFG16E1-CD (GER) CGFS16E1-CD (SPA) CGFI16E1-CD (ITA) RUSSIA:N/A ARGENTINA: DRAFT SOUTH AFRICA: DRAFT	SERVICE SPECIFICATIONS (M352-00-030-96401-01)	Attached sheet 11
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AUSTRALIA/NEW ZEALAND/CHINA

Applicable manual	Pub. No.	Applicable title (Info-ID)	Content
2013 OUTLANDER Workshop Manual 2014 OUTLANDER PHEV Workshop Manual 2014 OUTLANDER Workshop Manual 2015/2016 OUTLANDER Workshop Manual	AU900304 NZ:DRAFT CHINA:DRAFT AU900408 NZ:DRAFT CHINA:DRAFT AU900428 NZ:DRAFT CHINA:DRAFT AU900424 NZ:DRAFT CHINA:DRAFT	SERVICE SPECIFICATIONS (M352-00-030-96401-01)	Attached sheet 11
		CODE NO. C100A FL WHEEL SPEED SENSOR CIRCUIT, CODE NO. C1015 FR WHEEL SPEED SENSOR CIRCUIT, CODE NO. C1020 RL WHEL SPEED SENSOR CIRCUIT, CODE NO. C102B RR WHEEL SPEED SENSOR CIRCUIT (M352-03-410-01701-01)	Attached sheet 12
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2016 OUTLANDER PHEV Workshop Manual	AU900504 NZ:DRAFT CHINA:DRAFT	SERVICE SPECIFICATIONS (M355-00-820-08901-01)	Attached sheet 15
		CODE NO. C100A FL WHEEL SPEED SENSOR CIRCUIT, CODE NO. C1015 FR WHEEL SPEED SENSOR CIRCUIT, CODE NO. C1020 RL WHEL SPEED SENSOR CIRCUIT, CODE NO. C102B RR WHEEL SPEED SENSOR CIRCUIT (M355-03-040-04800-01)	Attached sheet 16
		WHEEL SPEED SENSOR OUTPUT CURRENT MEASUREMENT (M352-03-280-16200-01)	Attached sheet 17
		WHEEL SPEED SENSOR INSPECTION (M352-00-841-14000-01)	Attached sheet 18

GENERAL EXPORT/GCC/BRAZIL

Applicable manual	Pub. No.	Applicable title (Info-ID)	Content
2014 OUTLANDER Workshop Manual 2016 OUTLANDER Workshop Manual	PWRE1303R (ENGLISH) PWRS1304R (SPANISH) BRAZIL:DRAFT PWRE1504R (ENGLISH) PWRS1505R (SPANISH) BRAZIL:DRAFT	SERVICE SPECIFICATIONS (M352-00-030-96401-01)	Attached sheet 11
		CODE NO. C100A FL WHEEL SPEED SENSOR CIRCUIT, CODE NO. C1015 FR WHEEL SPEED SENSOR CIRCUIT, CODE NO. C1020 RL WHEL SPEED SENSOR CIRCUIT, CODE NO. C102B RR WHEEL SPEED SENSOR CIRCUIT (M352-03-410-01700-01)	Attached sheet 12
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MMNA/MEXICO

Applicable manual	Pub. No.	Applicable title (Info-ID)	Content
2014 OUTLANDER Workshop Manual	MSCD-007B-2014 MEXICO:DRAFT	SERVICE SPECIFICATIONS (M355-00-820-08900-01)	Attached sheet 19
2015 OUTLANDER Workshop Manual	MSCD-007B-2015 MEXICO:DRAFT	CODE NO. C100A FL WHEEL SPEED SENSOR CIRCUIT, CODE NO. C1015 FR WHEEL SPEED SENSOR CIRCUIT, CODE NO. C1020 RL WHEL SPEED SENSOR CIRCUIT, CODE NO. C102B RR WHEEL SPEED SENSOR CIRCUIT (M355-03-040-02600-01)	Attached sheet 20
2016 OUTLANDER Workshop Manual	MSCD-007B-2016 MEXICO:DRAFT	WHEEL SPEED SENSOR OUTPUT CURRENT MEASUREMENT (M352-03-280-04300-01)	Attached sheet 21
		WHEEL SPEED SENSOR INSPECTION (M352-00-840-75001-01)	Attached sheet 22

SERVICE SPECIFICATIONS

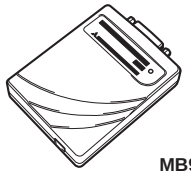
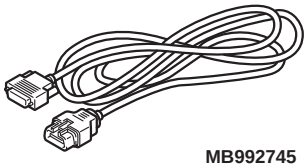
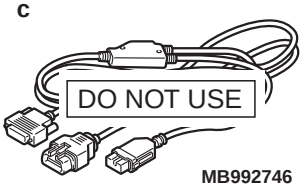
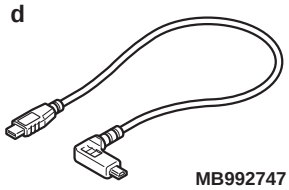
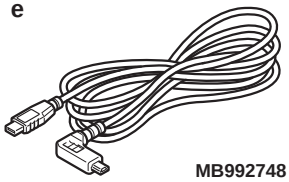
M1352000300964

Item	Standard value
Wheel speed sensor current mA <Incorrect>	~~5.9 – 8.4 or 11.8 – 16.8~~
Wheel speed sensor insulation resistance MΩ	5 or more

<Correct> 5-9 or 11-17

SPECIAL TOOLS

M1352000601883

Tool	Number	Name	Use
a  MB992744 b  MB992745 c  MB992746 d  MB992747 e  MB992748 ACB05421AB	a. MB992744 b. MB992745 c. MB992746 d. MB992747 e. MB992748	a. Vehicle communication interface-Lite (V.C.I.-Lite) b. V.C.I.-Lite main harness A (for vehicles with CAN communication) c. V.C.I.-Lite main harness B (for vehicles without CAN communication) d. V.C.I.-Lite USB cable short e. V.C.I.-Lite USB cable long	ABS check (Diagnosis code display and data list display by M.U.T.-III)

Attached sheet 12 (1/2)

STEP 6. Check the wiring harness between the ABS-ECU connector terminal and the wheel speed sensor connector terminal.

Code No.C100A is stored
- Check of short circuit in FL+, FL- line between ABS-ECU connector and front wheel speed sensor (LH) connector.

Code No.C1015 is stored
- Check of short circuit in FR+, FR- line between ABS-ECU connector and front wheel speed sensor (RH) connector.

Code No.C1020 is stored
- Check of short circuit in RL+, RL- line between ABS-ECU connector and rear wheel speed sensor (LH) connector.

Code No.C102B is stored
- Check of short circuit in RR+, RR- line between ABS-ECU connector and rear wheel speed sensor (LH) connector.

Q: Is the check result normal?
YES : Replace the wheel speed sensor (Refer to P.35B-63 <front> or P.35B-65 <rear>). Then go to Step 11.
NO : Repair the connector(s) or wiring harness. Then go to Step 11.

<Incorrect>

STEP 7. Resistance measurement at the ABS-ECU connector (FL+, FL-, FR+, FR-, RL+, RL-, RR+, RR- terminal)
Disconnect the connector, and measure at the wiring harness side.

Code No.C100A is stored
- Measure the resistance between the ABS-ECU connector (FL+ terminal) and the ABS-ECU connector (FL- terminal).
  OK: Continuity

Code No.C1015 is stored
- Measure the resistance between the ABS-ECU connector (FR+ terminal) and the ABS-ECU connector (FR- terminal).
  OK: Continuity

Code No.C1020 is stored
- Measure the resistance between the ABS-ECU connector (RL+ terminal) and the ABS-ECU connector (RL- terminal).
  OK: Continuity

Code No.C102B is stored
- Measure the resistance between the ABS-ECU connector (RR+ terminal) and the ABS-ECU connector (RR- terminal).
  OK: Continuity

Q: Is the check result normal?
YES : Go to Step 8.
NO : Go to Step 10.

<Correct>

Q: Is the check result normal?
YES : Go to Step 9.
NO : Repair the connector(s) or wiring harness. Then go to Step 11.

Attached sheet 12 (2/2)

STEP 8. Check the wiring harness between the ABS-ECU connector terminal and the wheel speed sensor connector terminal.

Code No.C100A is stored
- Check of open circuit in FL+, FL- line between ABS-ECU connector and front wheel speed sensor (LH) connector.

Code No.C1015 is stored
- Check of open circuit in FR+, FR- line between ABS-ECU connector and front wheel speed sensor (RH) connector.

Code No.C1020 is stored
- Check of open circuit in RL+, RL- line between ABS-ECU connector and rear wheel speed sensor (LH) connector.

Code No.C102B is stored
- Check of open circuit in RR+, RR- line between ABS-ECU connector and rear wheel speed sensor (RH) connector.

STEP 9. Check for wheel speed sensor as a single unit
Refer to .

Q: Is the check result normal?
YES : Go to Step 10.
NO : Replace the wheel speed sensor (Refer to P.35B-63 <front> or P.35B-65 <rear>). Then go to Step 11.

STEP 10. Check whether the diagnosis code is stored again.
(1) Erase the diagnosis code.
(2) Drive the vehicle at 20 km/h or higher.

STEP 7. Voltage or current measurement at each wheel speed sensors connector

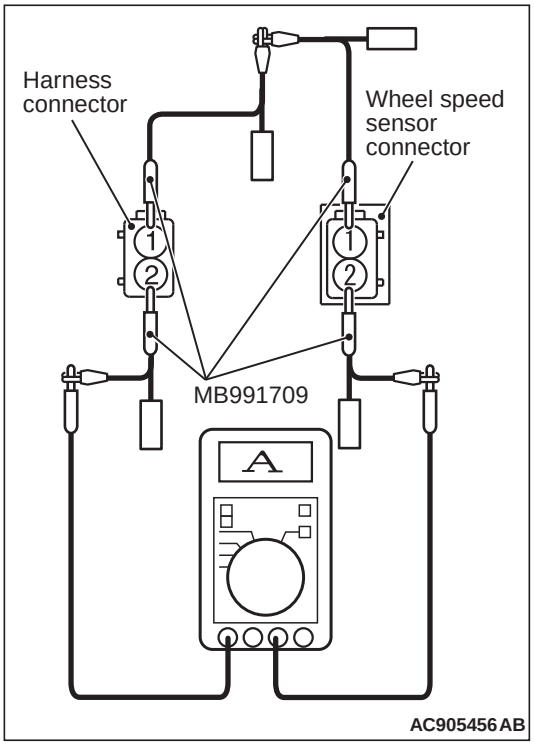
(1)Disconnect the wheel speed sensor connector, and measure at the wiring harness side.
(2)Turn the ignition switch to the ON position.
(3)Measure the voltage between the power supply terminal of each wheel speed sensors and body earth.
(4)Measure the output current at the special tool test harness (MB991709) to connect between the wheel speed sensor-side connector and the wiring harness connector.

OK:
<Voltage> System voltage
<Current > 5 - 9 mA or 11 - 17 mA

Q: Is the check result normal
YES: Go to Step 10.
NO : Go to Step 8.

⚠ CAUTION

For precise measurement, do not connect to the wheel speed sensor-side connector and the wiring harness side connector terminal No.1.



2. Use the special tool test harness (MB991709) to connect a multimeter between the wheel speed sensor-side connector and the wiring harness connector terminal No.2.
3. Turn the ignition switch to the "ON" position.

⚠ CAUTION

Do not rotate the wheel too quickly. Output current changes significantly as the wheel speed detection magnetic encoder comes near or goes away from the wheel speed sensor.

4. Rotate the wheel, on which the wheel speed sensor is fitted, quite slowly to measure the output current with the multimeter.

<Incirrect>

~~**Standard value: 5.9 to 8.4 mA or 11.8 to 16.8 mA**~~

5. If the measurement is not within the standard value, or the output current does not change in proportion to the wheel rotation, replace the wheel speed sensor (Refer to P.35B-63 <Front>, P.35B-65 <Rear>).

HYDRAULIC UNIT CHECK

M1352001701184

1. Raise the vehicle using a jack and support the specified points with a rigid rack.

⚠ CAUTION

Before connecting or disconnecting M.U.T.-III, always turn the ignition switch to the LOCK (OFF) position.

2. Before setting M.U.T.-III, turn the ignition key to the LOCK (OFF) position.
3. Confirm that the selector lever is in the "N" position, and then start the engine.
4. When carrying out the actuator tests No. 01 to 04, perform the actuator tests using M.U.T.-III while depressing the brake pedal. When carrying out the actuator tests, rotate the wheel by hands to confirm that the braking force changes.

   NOTE:
   - *While performing the actuator test, the ABS warning lamp flashes at a rate of 2 Hz.*
   - *When ABS-ECU is disabled due to the fail-safe function, the M.U.T.-III actuator test cannot be performed.*
   - *After the actuator test has been performed, the ABS warning lamp and brake waning lamp illuminate until the ignition switch is turned to ON again or the communication between M.U.T.-III and ABS-ECU is terminated.*

Standard value: 5 to 9 mA or 11 to 17 mA (Alternate output current changes)

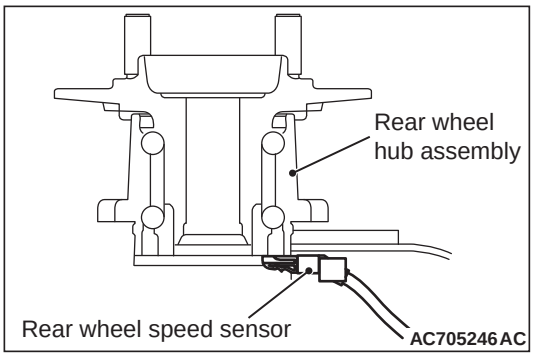
<Correct>

⚠ CAUTION

- **Do not insert the rear wheel speed sensor at an angle or by prying the sensor because it may be possible that the O-ring of rear wheel speed sensor cannot be mounted properly.**
- **After the insertion, do not perform an alignment of mounting bolt hole positions by rotating the rear wheel speed sensor.**

2. As shown in the figure, mount the rear wheel speed sensor while keeping the sensor perpendicular to the rear wheel hub assembly.

>>C<< REAR WHEEL SPEED SENSOR INSTALLATION

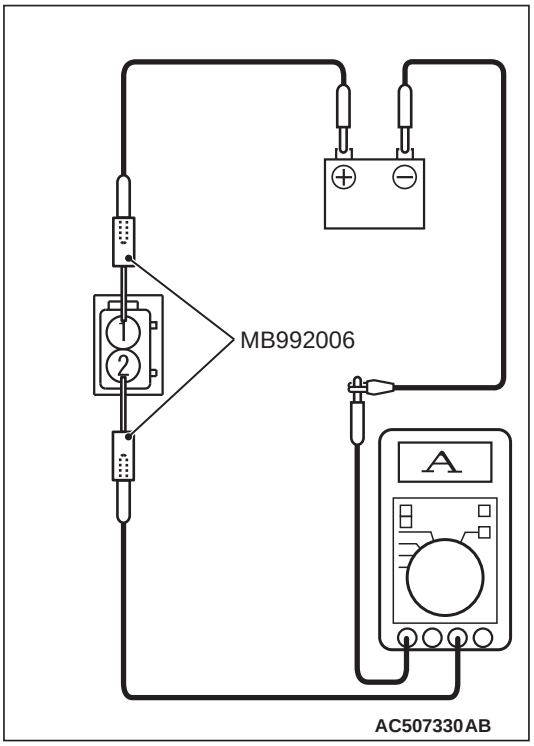


Push the rear wheel speed sensor to the end and install it securely.

INSPECTION

M1352008400750

WHEEL SPEED SENSOR CURRENT CHECK



⚠ CAUTION

- **Do not connect the battery terminals in reverse as the wheel speed sensor may be damaged.**
- **When the current value is measured by the wheel speed sensor connector, measure it with the wheel speed sensor installed in the vehicle.**

1. Connect the circuit tester to the wheel speed sensor using the special tool extra fine probe (MB992006), and measure the sensor current as a single unit.

<Incorrect>

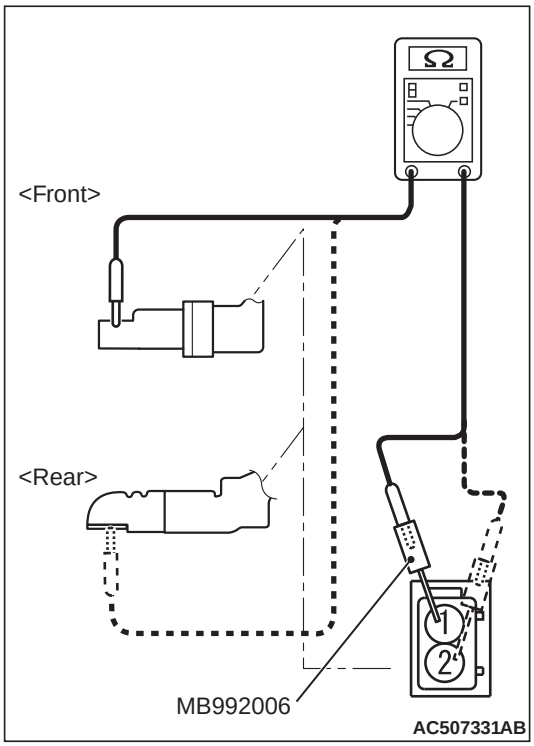
~~**Standard value: 5.9 to 8.4 mA or 11.8 to 16.8 mA**~~

2. If the measurement value is not within the standard value range, replace the wheel speed sensor with a new one.

<Correct>

Standard value: 5 to 9 mA or 11 to 17 mA

WHEEL SPEED SENSOR INSULATION CHECK



1. Connect the circuit tester to the wheel speed sensor using the special tool extra fine probe (MB992006), and measure the insulation resistance between the terminal No. 1/2 and the wheel speed sensor body as a single unit.

   Standard value: 5 MΩ or more

2. If the insulation resistance is not within the standard value range, replace the wheel speed sensor with a new one.

Attached sheet 15

SERVICE SPECIFICATIONS

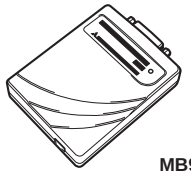
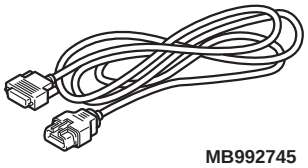
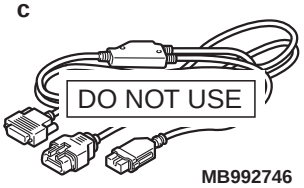
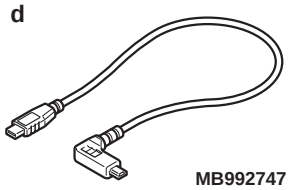
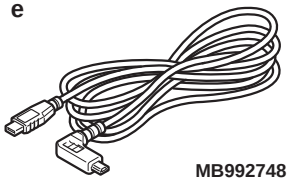
M1355008200089

Item	Standard value
Wheel speed sensor current mA <Incorrect>	~~5.9 – 8.4 or 11.8 – 16.8~~
Wheel speed sensor insulation resistance MΩ	5 or more

<Correct> 5-9 or 11-17

SPECIAL TOOL

M1355005800372

Tool	Number	Name	Use
a  MB992744 b  MB992745 c  MB992746 d  MB992747 e  MB992748 ACB05421AB	a. MB992744 b. MB992745 c. MB992746 d. MB992747 e. MB992748	a. Vehicle communication interface-Lite (V.C.I.-Lite) b. V.C.I.-Lite main harness A (for vehicles with CAN communication) c. V.C.I.-Lite main harness B (for vehicles without CAN communication) d. V.C.I.-Lite USB cable short e. V.C.I.-Lite USB cable long	ASC check (Diagnosis code display, data list display and calibration by M.U.T.-III)

Attached sheet 16

STEP 7. Resistance measurement at the ASC-ECU connector (FL+, FL-, FR+, FR-, RL+, RL-, RR+, RR- terminal)

Disconnect the connector, and measure at the wiring harness side.

Code No.C100A is set

- Measure the resistance between the ASC-ECU connector (FL+ terminal) and the ASC-ECU connector (FL- terminal).

OK: Continuity

Code No.C1015 is set

- Measure the resistance between the ASC-ECU connector (FR+ terminal) and the ASC-ECU connector (FR- terminal).

OK: Continuity

Code No.C1020 is set

- Measure the resistance between the ASC-ECU connector (RL+ terminal) and the ASC-ECU connector (RL- terminal).

OK: Continuity

Code No.C102B is set

- Measure the resistance between the ASC-ECU connector (RR+ terminal) and the ASC-ECU connector (RR- terminal).

OK: Continuity

Q: Is the check result normal?

YES : Go to Step 8.

NO : Go to Step 10.

<Incorrect>

<Correct>

STEP 7. Voltage or current measurement at each wheel speed sensors connector

(1)Disconnect the wheel speed sensor connector, and measure at the wiring harness side.
(2)Turn the ignition switch to the ON position.
(3)Measure the voltage between the power supply terminal of each wheel speed sensors and body earth.
(4)Measure the output current at the special tool test harness (MB991709) to connect between the wheel speed sensor-side connector and the wiring harness connector.

OK:

<Voltage> System voltage

<Current > 5 - 9 mA or 11 - 17 mA

Q: Is the check result normal

YES: Go to Step 10.

NO : Go to Step 8.

STEP 8. Check the wiring harness between the ASC-ECU connector terminal and the wheel speed sensor connector terminal

Code No.C100A is set

- Check of open circuit in FL+, FL- line between ASC-ECU connector and front wheel speed sensor (LH) connector.

Code No.C1015 is set

- Check of open circuit in FR+, FR- line between ASC-ECU connector and front wheel speed sensor (RH) connector.

Code No.C1020 is set

- Check of open circuit in RL+, RL- line between ASC-ECU connector and rear wheel speed sensor (LH) connector.

Code No.C102B is set

- Check of open circuit in RR+, RR- line between ASC-ECU connector and rear wheel speed sensor (RH) connector.

Q: Is the check result normal?

YES : Go to Step 9.

NO : Repair the connector(s) or wiring harness.

STEP 9. Check for wheel speed sensor as a single unit

Refer to P.35C-106.

Q: Is the check result normal?

YES : Go to Step 10.

NO : Replace the wheel speed sensor (Refer to P.35C-103 <front> or P.35C-105 <rear>).

STEP 10. Check whether the diagnosis code is set again.

(1) Erase the diagnosis code.
(2) Drive the vehicle at 20 km/h or higher.

NOTE: The ABS warning lamp does not turn OFF in some cases unless the vehicle runs at 20 km/h or higher.

Q: Is diagnosis code No. C100A, 1015, 1020 or 102B set?

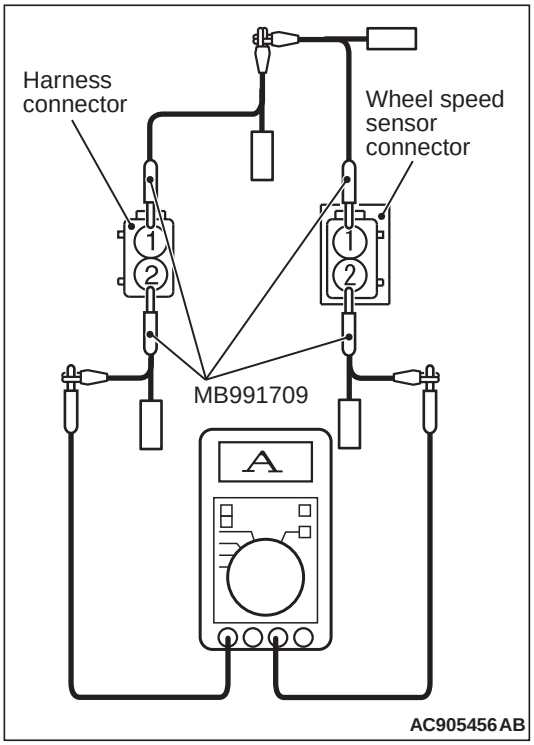
YES : Replace the hydraulic unit (integrated with ASC-ECU) (Refer to P.35C-101).

NO : Intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/How to Cope with Intermittent Malfunctions).

Attached sheet 17

⚠ CAUTION

For precise measurement, do not connect to the wheel speed sensor-side connector and the wiring harness side connector terminal No.1.



2. Use the special tool test harness (MB991709) to connect a multimeter between the wheel speed sensor-side connector and the wiring harness connector terminal No.2.
3. The power supply mode of the electric motor switch turned ON.

⚠ CAUTION

Do not rotate the wheel too quickly. Output current changes significantly as the wheel speed detection magnetic encoder comes near or goes away from the wheel speed sensor.

4. Rotate the wheel, on which the wheel speed sensor is fitted, quite slowly to measure the output current with the multimeter.

~~**Standard value: 5.9 to 8.4 mA or 11.8 to 16.8 mA**~~

<Incorrect>

<Correct>

Standard value: 5 to 9 mA or 11 to 17 mA (Alternate output current changes)

5. If the measurement is not within the standard value, or the output current does not change in proportion to the wheel rotation, replace the wheel speed sensor (Refer to P.35C-103 <Front>, P.35C-105 <Rear>).

HYDRAULIC UNIT (HU) CHECK

M1355006100451

1. Raise the vehicle using a jack and support the specified points with a rigid rack.

⚠ CAUTION

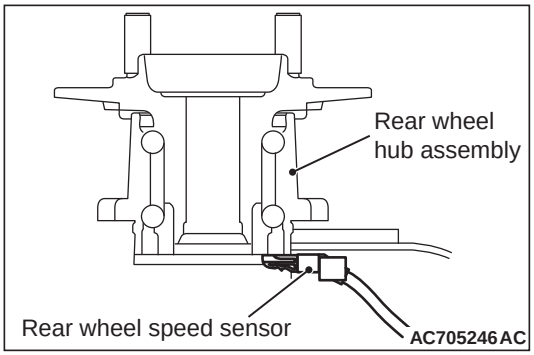
Before connecting or disconnecting the M.U.T.-III, turn off the power supply mode of the electric motor switch.

2. Turn off the power supply mode of the electric motor switch. Then connect the M.U.T.-III to the diagnosis connector.
3. Confirm that the selector lever is in the "N" position, and then turn on the power supply mode of the electric motor switch.
4. When carrying out the actuator tests No.01 to 04, perform the actuator tests using M.U.T.-III while depressing the brake pedal. When carrying out the actuator tests No.05 to 08, perform the actuator tests using M.U.T.-III without depressing the brake pedal. When carrying out the actuator tests, rotate the wheel by hands to confirm that the braking force changes.

NOTE:

- *While performing the actuator test, the ABS warning lamp flashes at a rate of 2 Hz.*
- *When ASC-ECU is disabled due to the fail-safe function, the M.U.T.-III actuator test cannot be performed.*
- *After the actuator test has been performed, the ABS warning lamp, brake waning lamp, ASC ON indicator lamp, and ASC OFF indicator lamp illuminate until the electric motor switch is turned to ON again or the communication between M.U.T.-III and ASC-ECU is terminated.*

Attached sheet 18

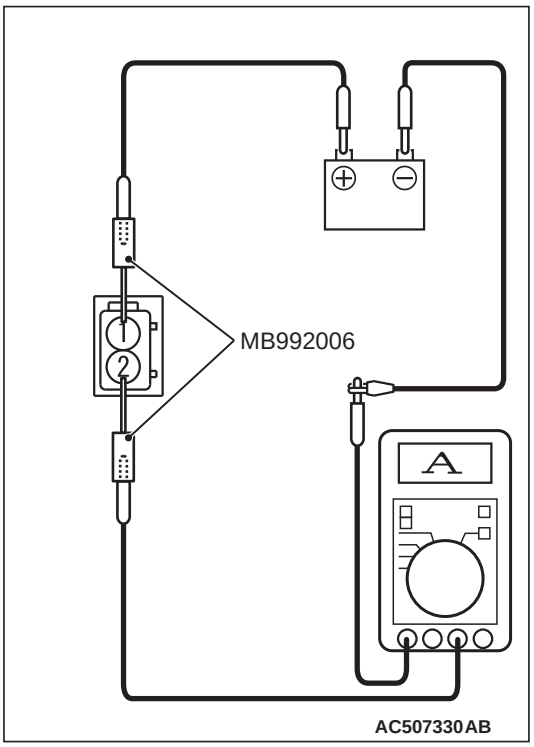


Push the rear wheel speed sensor to the end and install it securely.

INSPECTION

M1352008401140

WHEEL SPEED SENSOR CURRENT CHECK



⚠ CAUTION

- **Do not connect the battery terminals in reverse as the wheel speed sensor may be damaged.**
- **When the current value is measured by the wheel speed sensor connector, measure it with the wheel speed sensor installed in the vehicle.**

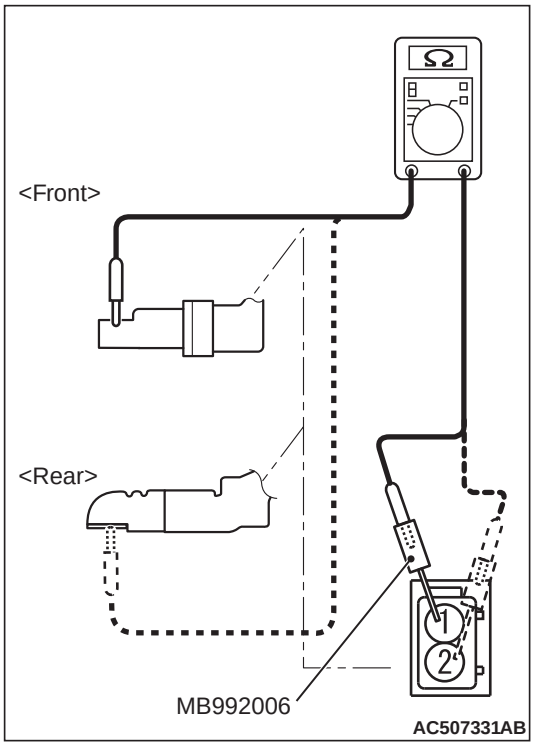
1. Connect the circuit tester to the wheel speed sensor using the special tool extra fine probe (MB992006), and measure the sensor current as a single unit.

<Incorrect> ~~**Standard value: 5.9 to 8.4 mA or 11.8 to 16.8 mA**~~

2. If the measurement value is not within the standard value range, replace the wheel speed sensor with a new one.

<Correct> **Standard value: 5 to 9 mA or 11 to 17 mA**

WHEEL SPEED SENSOR INSULATION CHECK



1. Connect the circuit tester to the wheel speed sensor using the special tool extra fine probe (MB992006), and measure the insulation resistance between the terminal No. 1/2 and the wheel speed sensor body as a single unit.

   Standard value: 5 MΩ or more

2. If the insulation resistance is not within the standard value range, replace the wheel speed sensor with a new one.

Attached sheet 19

SERVICE SPECIFICATIONS

M1355008200089

Item	Standard value
Wheel speed sensor current mA <Incorrect>	~~5.9 – 8.4 or 11.8 – 16.8~~
Wheel speed sensor insulation resistance MΩ	5 or more

<Correct> 5-9 or 11-17

DIAGNOSIS

INTRODUCTION TO ASC DIAGNOSIS

M1355000800117

The active stability control system (ASC) operates differently from conventional brake systems. These differences include sounds, sensations, and vehicle performance that owners and service technicians who are not familiar with ASC may not be used to.

Some operational characteristics may seem to be malfunctions, but they are simply signs of normal ASC operation. When diagnosing the ASC system, keep these operational characteristics in mind. Inform the owner of the kind of performance characteristics to expect from an ASC-equipped vehicle.

ASC DIAGNOSTIC TROUBLE CODE DETECTION CONDITIONS

ASC diagnostic trouble codes (ASC DTCs) are stored under different conditions, depending on the malfunction detected. Most ASC DTCs will only be stored during vehicle operation. Some ASC DTCs will also be stored during the ASC self-check immediately after the engine is started.

When you check if an ASC DTC will be displayed again after the DTC has been erased, you should duplicate the ASC DTC stored conditions. Depending on the detection timing and stored conditions for the specific ASC DTC, you must either drive the vehicle or turn the engine off and restart it. To set the proper conditions for that DTC again, refer to "ASC DTC SET CONDITIONS" for each ASC DTC that you are trying to store again.

ASC DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1355000900170

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 an ASC fault.

1. Gather information about the problem from the customer.
2. Verify that the condition described by the customer exists.
3. Check the vehicle for any ASC DTC.
4. If you cannot verify the condition and there are no ASC DTCs, the malfunction is intermittent. Refer to GROUP 00, How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-15.
5. If you can verify the condition but there are no ASC DTCs, or the system cannot communicate with the scan tool, check that the basic brake system is operating properly.
   - If the basic brake system is not operating properly, refer to the GROUP 35A, Basic Brake System Diagnostic troubleshooting strategy P.35A-3.
   - If the basic brake system is operating properly, refer to P.35C-116.
6. If there is an ASC DTC, record the number of the DTC, then erase the DTC from the memory using the scan tool.
7. Recreate the ASC DTC set conditions to see if the same ASC DTC will set again.
   - If the same ASC DTC sets again, perform the diagnostic procedures for the DTC. Refer to P.35C-19.
   - If you cannot get the same ASC DTC to set again, the malfunction is intermittent. Refer to GROUP 00, How to use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-15.

TSB Revision

<Incorrect>

STEP 7. Resistance measurement at the ASC-ECU connector (FL+, FL-, FR+, FR-, RL+, RL-, RR+, RR- terminal)

Disconnect the connector, and measure at the wiring harness side.

Code No.C100A is stored

- Measure the resistance between the ASC-ECU connector (FL+ terminal) and the ASC-ECU connector (FL- terminal).

OK: Continuity

Code No.C1015 is stored

- Measure the resistance between the ASC-ECU connector (FR+ terminal) and the ASC-ECU connector (FR- terminal).

OK: Continuity

Code No.C1020 is stored

- Measure the resistance between the ASC-ECU connector (RL+ terminal) and the ASC-ECU connector (RL- terminal).

OK: Continuity

Code No.C102B is stored

- Measure the resistance between the ASC-ECU connector (RR+ terminal) and the ASC-ECU connector (RR- terminal)

OK: Continuity

Q: Is the check result normal?

YES : Go to Step 8.
NO : Go to Step 10.

<Correct>

STEP 7. Voltage or current measurement at each wheel speed sensors connector

(1)Disconnect the wheel speed sensor connector, and measure at the wiring harness side.
(2)Turn the ignition switch to the ON position.
(3)Measure the voltage between the power supply terminal of each wheel speed sensors and body earth.
(4)Measure the output current at the special tool test harness (MB991709) to connect between the wheel speed sensor-side connector and the wiring harness connector.

OK:
<Voltage> System voltage
<Current > 5 - 9 mA or 11 - 17 mA

Q: Is the check result normal

YES: Go to Step 10.
NO : Go to Step 8.

STEP 8. Check the wiring harness between the ASC-ECU connector terminal and the wheel speed sensor connector terminal

Code No.C100A is stored

- Check of open circuit in FL+, FL- line between ASC-ECU connector and front wheel speed sensor (LH) connector.

Code No.C1015 is stored

- Check of open circuit in FR+, FR- line between ASC-ECU connector and front wheel speed sensor (RH) connector.

Code No.C1020 is stored

- Check of open circuit in RL+, RL- line between ASC-ECU connector and rear wheel speed sensor (LH) connector.

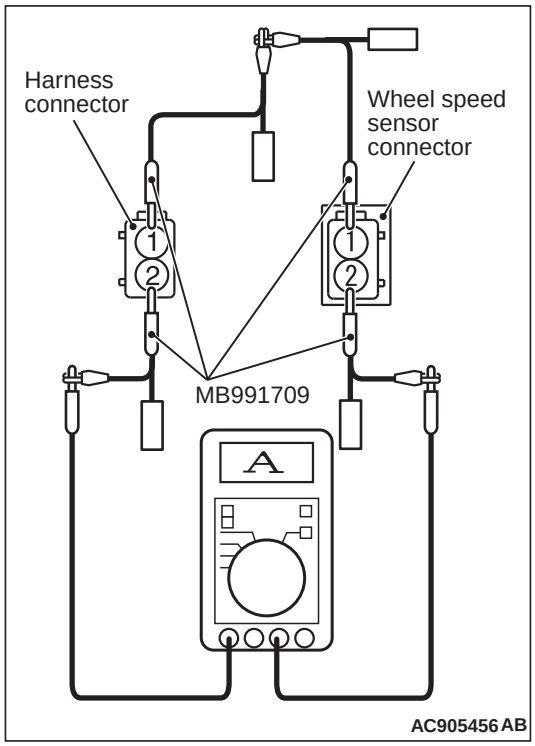
Code No.C102B is stored

- Check of open circuit in RR+, RR- line between ASC-ECU connector and rear wheel speed sensor (RH) connector.

Q: Is the check result normal?

YES : Go to Step 9.
NO : Repair the connector(s) or wiring harness. Then go to Step 11.

Attached sheet 21



⚠ CAUTION

For precise measurement, do not connect to the wheel speed sensor-side connector and the wiring harness side connector terminal No.1.

2. Use the special tool test harness (MB991709) to connect a multimeter between the wheel speed sensor-side connector and the wiring harness connector terminal No.2.
3. Turn the ignition switch to the "ON" position.

⚠ CAUTION

Do not rotate the wheel too quickly. Output current changes significantly as the wheel speed detection magnetic encoder comes near or goes away from the wheel speed sensor.

4. Rotate the wheel, on which the wheel speed sensor is fitted, quite slowly to measure the output current with the multimeter.

<Incorrect>

~~**Standard value: 5.9 to 8.4 mA or 11.8 to 16.8 mA**~~

5. If the measurement is not within the standard value, or the output current does not change in proportion to the wheel rotation, replace the wheel speed sensor (Refer to P.35C-178 <Front>, P.35C-181 <Rear>).

Standard value: 5 to 9 mA or 11 to 17 mA (Alternate output current changes)

<Correct>

HYDRAULIC UNIT (HU) CHECK

M1355006100343

1. Raise the vehicle using a jack and support the specified points with a rigid rack.

⚠ CAUTION

Before connecting or disconnecting scan tool (M.U.T.-III), always turn the ignition switch to the LOCK (OFF) position.

2. Before setting scan tool (M.U.T.-III), turn the ignition key to the LOCK (OFF) position.
3. Confirm that the selector lever is in the "N" position, and then start the engine.
4. When carrying out the actuator tests No.01 to 04, perform the actuator tests using scan tool (M.U.T.-III) while depressing the brake pedal. When carrying out the actuator tests No.05 to 08, perform the actuator tests using scan tool (M.U.T.-III) without depressing the brake pedal. When carrying out the actuator tests, rotate the wheel by hands to confirm that the braking force changes.

   NOTE:
   - *While performing the actuator test, the ABS warning light flashes at a rate of 2 Hz.*
   - *When ASC-ECU is disabled due to the fail-safe function, the scan tool (M.U.T.-III) actuator test cannot be performed.*

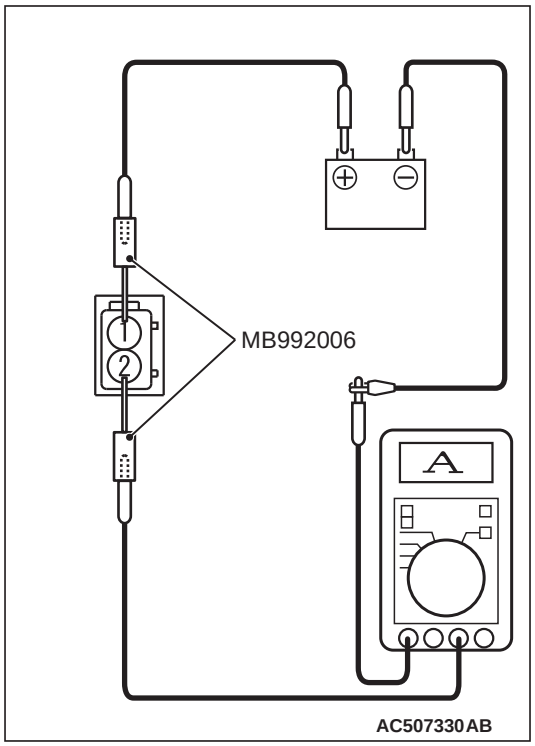
TSB Revision

Attached sheet 22

INSPECTION

M1352008400750

WHEEL SPEED SENSOR CURRENT CHECK



⚠ CAUTION

- **Do not connect the battery terminals in reverse as the wheel speed sensor may be damaged.**
- **When the current value is measured by the wheel speed sensor connector, measure it with the wheel speed sensor installed in the vehicle.**

1. Connect the circuit tester to the wheel speed sensor using the special tool extra fine probe (MB992006), and measure the sensor current as a single unit.

<Incorrect>

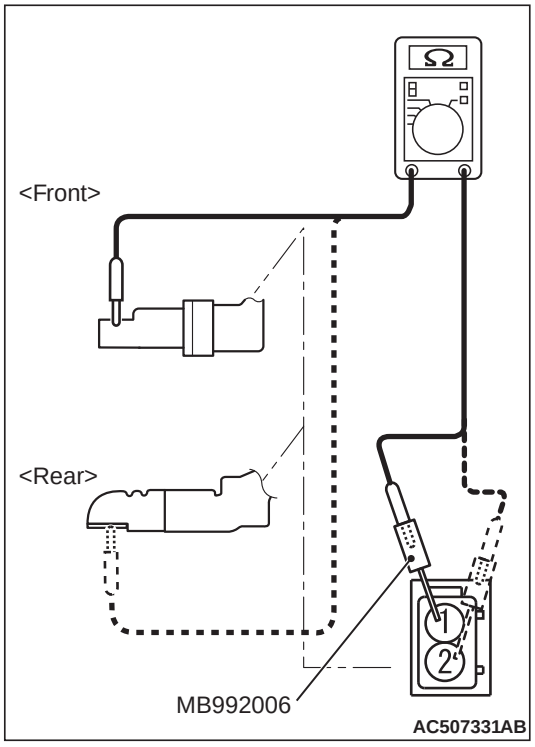
Standard value: ~~5.9 to 8.4 mA or 11.8 to 16.8 mA~~

2. If the measurement value is not within the standard value range, replace the wheel speed sensor with a new one.

Standard value: 5 to 9 mA or 11 to 17 mA

<Correct>

WHEEL SPEED SENSOR INSULATION CHECK



1. Connect the circuit tester to the wheel speed sensor using the special tool extra fine probe (MB992006), and measure the insulation resistance between the terminal No. 1/2 and the wheel speed sensor body as a single unit.

   Standard value: 5 MΩ or more

2. If the insulation resistance is not within the standard value range, replace the wheel speed sensor with a new one.

TSB Revision