# SERVICE BULLETIN

MITSUBISHI MOTORS

GLOBAL AFTER SALES OFFICE, MITSUBISHI MOTORS CORPORATION

| PURPOSE : INFORMATION | ISSUE NO. : MSB-13EXML37-001 | DATE : 2013-05-23 |
|---|---|---|
| SUBJECT : EPS-ECU DIAGNOSIS CODE | | <Destination/Model> (AS PER ATTACHED) <M/Y> 8/13-14 |
| GROUP : STEERING (Gr.37 | | AS PER ATTACHED |

**1. Description :**

See the attached document for the information about the change of mention in the applicable service manual.

**2. Applicable service manual :**

See the attached document

**3. Details :**

See the attached document

# ＜MIRAGE/SPACE STAR＞

**Thailand**

| Applicable manual | Pub No. | Applicable title (INFO ID) | Contents |
|---|---|---|---|
| 2013 MIRAGE Workshop Manual | PWFE1201R | Code No.C1561: Engine revolution data (CAN)<br>Code No.C1565: Engine revolution data invalid<br>(M372-01-710-18000-01) | Attached sheet 5, 6 |
| | | Code No.C1564: Vehicle speed data invalid<br>(M372-02-040-02800-01) | Attached sheet 7 |

**EU**

| Applicable manual | Pub No. | Applicable title (INFO ID) | Contents |
|---|---|---|---|
| 2013 SPACE STAR Workshop Manual | CA0E13E1-CD (Eng)<br>CA0F13E1-CD (Fre)<br>CA0G13E1-CD (Ger)<br>CA0S13E1-CD (Spa)<br>CA0I13E1-CD (Ita) | Code No.C1564: Vehicle speed data invalid<br>(M372-02-040-02800-01) | Attached sheet 7 |
| | | Code No.C1565: Engine revolution data invalid<br>(M372-02-050-03600-01) | Attached sheet 8 |

**MMNA**

| Applicable manual | Pub No. | Applicable title (INFO ID) | Contents |
|---|---|---|---|
| 2014 MIRAGE Service Manual | MSCD-016B-2014 | 37-26<br>(M372-02-040-02800-01) | Attached sheet 9 |
| | | 37-28<br>(M372-02-050-03600-01) | Attached sheet 10 |

# ＜OUTLANDER/OUTLANDER PHEV＞

**EU/RUSSIA**

| Applicable manual | Pub No. | Applicable title (INFO ID) | Contents |
|---|---|---|---|
| 2013 OUTLANDER Workshop Manual | CGFE13E1-CD (Eng)<br>CGFF13E1-CD (Fre)<br>CGFG13E1-CD (Ger)<br>CGFS13E1-CD (Spa)<br>CGFI13E1-CD (Ita)<br>RUSSIA:N/A | DIAGNOSIS CODE CHART (M372-00-750-35800-01) | Attached sheet 16 |
| | | Code No.C1561 Engine revolution data (CAN) (M372-01-710-19100-01) | Attached sheet 17, 18 |
| | | Code No.C1564: Vehicle speed data invalid (M372-02-040-03900-01) | Attached sheet 19 |
| | | Code No.C1565: Engine revolution data invalid (M372-02-050-02500-01) | Attached sheet 20 |
| 2014 OUTLANDER PHEV Workshop Manual | CGFE14E1-CD (Eng)<br>CGFF14E1-CD (Fre)<br>CGFG14E1-CD (Ger)<br>CGFS14E1-CD (Spa)<br>CGFI14E1-CD (Ita)<br>RUSSIA:N/A | DIAGNOSIS CODE CHART (M372-00-750-35800-01) | Attached sheet 16 |
| | | Code No.C1561 Engine revolution data (CAN) (M372-01-710-21000-01) | Attached sheet 17, 18 |
| | | Code No.C1564: Vehicle speed data invalid (M372-02-040-07300-01) | Attached sheet 19 |
| | | Code No.C1565: Engine revolution data invalid (M372-02-050-08100-01) | Attached sheet 20 |

**MMAL/NZ/CHINA**

| Applicable manual | Pub No. | Applicable title (INFO ID) | Contents |
|---|---|---|---|
| 2013 OUTLANDER Workshop Manual | AU900304<br>NZ/CHINA:DRAFT | DIAGNOSIS CODE CHART (M372-00-750-35800-01) | Attached sheet 16 |
| | | Code No.C1561 Engine revolution data (CAN) (M372-01-710-19101-01) | Attached sheet 17, 18 |
| | | Code No.C1564: Vehicle speed data invalid (M372-02-040-03901-01) | Attached sheet 19 |
| | | Code No.C1565: Engine revolution data invalid (M372-02-050-02501-01) | Attached sheet 20 |

# ＜LANCER/LANCER EX＞

**EU**

| Applicable manual | Pub No. | Applicable title (INFO ID) | Contents |
|---|---|---|---|
| 2008<br>LANCER<br>Workshop Manual | CG1E08E1-CD<br>(Eng)<br>CG1F08E1-CD<br>(Fre)<br>CG1G08E1-CD<br>(Ger)<br>CG1S08E1-CD<br>(Spa) | DIAGNOSIS CODE CHART<br>(M372-00-750-12100-01) | Attached sheet 24 |
| | | Code No.C1560 Vehicle speed data (CAN) input malfunction<br>(M372-01-700-01900-01) | Attached sheet 25 |
| | | Code No.C1561 Engine revolution data (CAN) input malfunction<br>(M372-01-710-01600-01) | Attached sheet 26 |

**G.EXP/GCC/SOUTH AFRICA/ARGENTINA**

| Applicable manual | Pub No. | Applicable title (INFO ID) | Contents |
|---|---|---|---|
| 2008<br>LANCER/<br>LANCER EX<br>Workshop Manual | PWME0701R<br>(Eng)<br>PWMS0702R<br>(Spa)<br>SOUTH AFRICA/ARGENTINA:DRAFT | DIAGNOSIS CODE CHART<br>(M372-00-750-12100-01) | Attached sheet 24 |
| | | Code No.C1560 Vehicle speed data (CAN) input malfunction<br>(M372-01-700-01900-01) | Attached sheet 25 |
| | | Code No.C1561 Engine revolution data (CAN) input malfunction<br>(M372-01-710-01600-01) | Attached sheet 26 |

Attached sheet 5 (1/2)

**Code No.C1561: Engine revolution data (CAN)**
**Code No.C1565: Engine revolution data invalid**

**⚠ CAUTION**

- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C, CAN Bus Diagnostics Table).**
- **Whenever ECU is replaced, ensure that the CAN bus lines are normal.**

**OPERATION**

EPS-ECU receives engine revolution signal from the engine-ECU.

**DIAGNOSIS CODE SET CONDITIONS**

- The engine speed signal sent to the EPS-ECU is no signal.
- The engine speed signal is not sent from the engine-ECU, and the microcomputer determines that there is a problem in the engine speed measurement system.

**PROBABLE CAUSES**

- Malfunction of CAN bus line
- Malfunction of the EPS-ECU
- Malfunction of the engine-ECU

## DIAGNOSIS PROCEDURE

**STEP 1. M.U.T.-III CAN bus diagnostics**

Use M.U.T.-III to diagnose the CAN bus lines.

**Q: Is the check result normal?**

**YES :** Go to Step 3.
**NO :** Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table). On completion, go to Step 2.

**STEP 2. Diagnosis code recheck after resetting CAN bus lines**

(1) Erase the diagnosis code.
(2) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
(3) Check if the diagnosis code is set.

**Q: Is the diagnosis codes C1561 or C1565 set?**

**YES :** Go to Step 3.
**NO :** This diagnosis is complete.

**STEP 3. M.U.T.-III data list**

Check the following service data (Refer to).

- Item No. 07: Engine speed

**Q: Is the check result normal?**

**YES :** Go to Step 5.
**NO :** Perform troubleshooting for engine-ECU (Refer to GROUP 13A – Troubleshooting/Inspection Chart for Diagnosis code). Then go to Step 4.

<Incorrect>

<Correct> Insert the attached sheet 6.

Attached sheet 5 (2/2)

**STEP 4. Check whether the diagnosis code is reset**

(1) Erase the diagnosis code.
(2) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
(3) Check if the diagnosis code is set.

**Q: Is the diagnosis codes C1561 or C1565 set?**

**YES :** Replace the EPS-ECU (Refer to). Then go to Step 5.
**NO :** Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

**STEP 5. Check whether the diagnosis code is reset.**

(1) Erase the diagnosis code.
(2) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
(3) Check if the diagnosis code is set.

**Q: Is the diagnosis codes C1561 or C1565 set?**

**YES :** Return to Step 1.
**NO :** This diagnosis is complete.

<Incorrect>

<Correct> Insert the attached sheet 6.

## Code No.C1565: Engine revolution data invalid

**CAUTION**

- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C, CAN Bus Diagnostics Table).**
- **Whenever ECU is replaced, ensure that the CAN bus lines are normal.**

**OPERATION**

EPS-ECU receives engine revolution signal from the engine-ECU.

**DIAGNOSIS CODE SET CONDITIONS**

If the microcomputer receives abnormal engine speed signal from the engine-ECU, it determines that the engine speed calculation system is defective.

**PROBABLE CAUSES**

- Malfunction of CAN bus line
- Malfunction of the EPS-ECU
- Malfunction of the engine-ECU

## DIAGNOSIS PROCEDURE

**STEP 1. M.U.T.-III CAN bus diagnostics**

Use M.U.T.-III to diagnose the CAN bus lines.

**Q: Is the check result normal?**

**YES :** Go to Step 3.

**NO :** Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table). On completion, go to Step 2.

**STEP 2. Diagnosis code recheck after resetting CAN bus lines**

(1) Erase the diagnosis code.
(2) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
(3) Check if the diagnosis code is set.

**Q: Is the diagnosis codes C1565 set?**

**YES :** Go to Step 3

**NO :** This diagnosis is complete.

**STEP 3. M.U.T.-III data list**

Check the following service data (Refer to).

- Item No. 07: Engine speed

**Q: Is the check result normal?**

**YES :** Go to Step 5.

**NO :** Perform troubleshooting for engine-ECU (Refer to GROUP 13A – Troubleshooting/Inspection Chart for Diagnosis code). Then go to Step 4.

**STEP 4. Check whether the diagnosis code is reset**

(1) Erase the diagnosis code.
(2) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
(3) Check if the diagnosis code is set.

**Q: Is the diagnosis codes C1565 set?**

**YES :** Replace the EPS-ECU (Refer to). Then go to Step 5.
**NO :** Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

**STEP 5. Check whether the diagnosis code is reset.**

(1) Erase the diagnosis code.
(2) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
(3) Check if the diagnosis code is set.

**Q: Is the diagnosis codes C1565 set?**

**YES :** Return to Step 1.
**NO :** This diagnosis is complete.

Attached sheet 7

## Code No.C1564: Vehicle speed data invalid

**⚠ CAUTION**

- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C, CAN Bus Diagnostics Table).**
- **Whenever ECU is replaced, ensure that the CAN bus lines are normal.**

**OPERATION**

EPS-ECU receives vehicle speed signal from the engine-ECU.

<Correct>

If the microcomputer receives abnormal vehicle speed signal from the engine-ECU, it determines that the vehicle speed calculation system is defective.

**DIAGNOSIS CODE SET CONDITIONS**

- The vehicle speed signal sent to the EPS-ECU is no signal.
- The vehicle speed signal is not sent from the engine-ECU, and the microcomputer determines that there is a problem in the vehicle speed measurement system.

<Incorrect>

**PROBABLE CAUSES**

- Malfunction of CAN bus line
- Malfunction of the EPS-ECU
- Malfunction of the engine-ECU

## DIAGNOSIS PROCEDURE

**STEP 1. M.U.T.-III CAN bus diagnostics**

Use M.U.T.-III to diagnose the CAN bus lines.

**Q: Is the check result normal?**

**YES :** Go to Step 3.

**NO :** Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table). On completion, go to Step 2.

**STEP 2. Diagnosis code recheck after resetting CAN bus lines**

(1) Erase the diagnosis code.
(2) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
(3) Check if the diagnosis code is set.

**Q: Is the diagnosis code C1564 set?**

**YES :** Go to Step 3.

**NO :** This diagnosis is complete.

Attached sheet 8

## Code No.C1565: Engine revolution data invalid

**⚠ CAUTION**

- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C, CAN Bus Diagnostics Table).**
- **Whenever ECU is replaced, ensure that the CAN bus lines are normal.**

**OPERATION**

EPS-ECU receives engine revolution signal from the engine-ECU.

<Correct>

If the microcomputer receives abnormal engine speed signal from the engine-ECU, it determines that the engine speed calculation system is defective.

**DIAGNOSIS CODE SET CONDITIONS**

- The engine speed signal sent to the EPS-ECU is no signal.
- The engine speed signal is not sent from the engine-ECU, and the microcomputer determines that there is a problem in the engine speed measurement system.

<Incorrect>

**PROBABLE CAUSES**

- Malfunction of CAN bus line
- Malfunction of the EPS-ECU
- Malfunction of the engine-ECU

## DIAGNOSIS PROCEDURE

**STEP 1. M.U.T.-III CAN bus diagnostics**

Use M.U.T.-III to diagnose the CAN bus lines.

**Q: Is the check result normal?**

**YES :** Go to Step 3.

**NO :** Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table). On completion, go to Step 2.

**STEP 2. Diagnosis code recheck after resetting CAN bus lines**

(1) Erase the diagnosis code.
(2) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
(3) Check if the diagnosis code is set.

**Q: Is the diagnosis codes C1565 set?**

**YES :** Go to Step 3.

**NO :** This diagnosis is complete.

Attached sheet 9

## Code No.C1564: Vehicle speed data invalid

**CAUTION**

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be stored. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C, CAN Bus Diagnostics Table).**
- **Whenever ECU is replaced, ensure that the CAN bus lines are normal.**

**OPERATION**

EPS-ECU receives vehicle speed signal from the engine control module.

<Correct>

If the microcomputer receives abnormal vehicle speed signal from the engine control module, it determines that the vehicle speed calculation system is defective.

**DIAGNOSTIC TROUBLE CODE SET CONDITIONS**

- The vehicle speed signal sent to the EPS-ECU is no signal.
- The vehicle speed signal is not sent from the engine control module, and the microcomputer determines that there is a problem in the vehicle speed measurement system.

<Incorrect>

**PROBABLE CAUSES**

- Malfunction of CAN bus line
- Malfunction of the EPS-ECU
- Malfunction of the engine control module

## DIAGNOSIS

**STEP 1. Using scan tool MB991958, diagnose the CAN bus lines.**

Use scan tool MB991958 to diagnose the CAN bus lines.

**Q: Is the check result normal?**

**YES :** Go to Step 3.

**NO :** Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table). On completion, go to Step 2.

**STEP 2. Diagnostic trouble code recheck after resetting CAN bus lines**

(1) Erase the diagnostic trouble code.

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

(3) Check if the diagnostic trouble code is stored.

**Q: Is diagnostic trouble code C1564 stored?**

**YES :** Go to Step 3.

**NO :** This diagnosis is complete.

Attached sheet 10

## Code No.C1565: Engine revolution data invalid

**⚠ CAUTION**

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be stored. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C, CAN Bus Diagnostics Table).**
- **Whenever ECU is replaced, ensure that the CAN bus lines are normal.**

**OPERATION**

EPS-ECU receives engine revolution signal from the engine control module.

<Correct>

If the microcomputer receives abnormal engine speed signal from the engine control module, it determines that the engine speed calculation system is defective.

**DIAGNOSTIC TROUBLE CODE SET CONDITIONS**

- The engine speed signal sent to the EPS-ECU is no signal.
- The engine speed signal is not sent from the engine control module, and the microcomputer determines that there is a problem in the engine speed measurement system.

<Incorrect>

**PROBABLE CAUSES**

- Malfunction of CAN bus line
- Malfunction of the EPS-ECU
- Malfunction of the engine control module

## DIAGNOSIS

**STEP 1. Using scan tool MB991958, diagnose the CAN bus lines.**

Use scan tool MB991958 to diagnose the CAN bus lines.

**Q: Is the check result normal?**

**YES :** Go to Step 3.

**NO :** Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table). On completion, go to Step 2.

**STEP 2. Diagnostic trouble code recheck after resetting CAN bus lines**

(1) Erase the diagnostic trouble code.
(2) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
(3) Check if the diagnostic trouble code is stored.

**Q: Is diagnostic trouble code C1565 stored?**

**YES :** Go to Step 3.

**NO :** This diagnosis is complete.

Attached sheet 16

## DIAGNOSIS CODE CHART

**CAUTION**

- **During diagnosis, a diagnosis code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for diagnosis code(s). If diagnosis code(s) are set, erase them all.**
- **If more than three minutes elapse after the ignition switch is turned ON without starting engine, the electric power steering-ECU may set diagnosis codes U0100 as past trouble.**

*NOTE: For electric power steering system the power supply may not shut off immediately after the ignition switch is turned "OFF".*

| Diagnosis code No. | Diagnostic item | Reference pages |
|---|---|---|
| C1510 | Torque sensor main | |
| C1511 | Torque sensor sub | |
| C1512 | Torque sensor main/sub voltage | |
| C1513 | Torque sensor power supply | |
| C1514 | Torque sensor power supply too low | |
| C1521 | Motor turning angle (output) | |
| C1522 | Motor turning angle range | |
| C1530 | Motor FET driver | |
| C1531 | Motor current too low | |
| C1532 | Motor output current too large | |
| C1533 | Motor terminal initial voltage | |
| C1534 | Motor terminal monitor voltage | |
| C1535 | Motor output current | |
| C1536 | Motor terminal voltage too high | |
| C1540 | Power supply voltage too high | |
| C1541 | Power supply voltage too low | |
| C1550 | ECU internal error | |
| C1561 | ~~Engine revolution data (CAN)~~ <Incorrect> | |
| C1564 | Vehicle speed data invalid | |
| C1565 | Engine revolution data invalid | |
| C1566 | Invalid data received from AWC | |
| C1657 | Implausible coding data | |
| U0100 | Engine CAN timeout | |
| U0114 | 4WD CAN timeout | |
| U0141 | ETACS CAN timeout | |
| U1073 | Bus-off | |
| U1190 | No receive fault detect signal | |
| U1195 | Coding not completed | |
| U1197 | Coding data unavailable | |

| | |
|---|---|
| C1560 | Vehicle speed data (CAN) time-out |

<Correct>

Attached sheet 17 (1/2)

## Code No.C1561 Engine revolution data (CAN)

**CAUTION**

- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C, CAN Bus Diagnostics Table).**
- **Whenever ECU is replaced, ensure that the CAN bus lines are normal.**

### OPERATION

EPS-ECU receives engine revolution signal from the engine-ECU.

### FUNCTION

The engine speed signal is sent to the EPS-ECU for motor control.

### TROUBLE JUDGEMENT

**Check Conditions**

- The power supply circuit system diagnosis code (No. C1540, C1541) is not set.
- The engine circuit system diagnosis code is not set.

**Judgement Criterion**

- The engine speed signal sent to the EPS-ECU is no signal.
- The engine speed signal is not sent from the engine-ECU, and the microcomputer determines that there is a problem in the engine speed measurement system.

**Fail Safe, Back Up Function**

- The EPS-ECU illuminates the electric power steering warning display, and sets the diagnosis code No. C1561. Normally the assist operation is continued while the vehicle is driven, but deactivated after the vehicle stopped.

### PROBABLE CAUSES

- Malfunction of CAN bus line
- Malfunction of the EPS-ECU
- Malfunction of the engine-ECU

## DIAGNOSIS PROCEDURE

**STEP 1. M.U.T.-III CAN bus diagnostics**

Use M.U.T.-III to diagnose the CAN bus lines.

**Q: Is the check result normal?**

**YES :** Go to Step 3.

**NO :** Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table). On completion, go to Step 2.

<Incorrect>

<Correct> Insert the attached sheet 18.

Attached sheet 17 (2/2)

**STEP 2. Diagnosis code recheck after resetting CAN bus lines**

(1) Erase the diagnosis code.
(2) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
(3) Check if the diagnosis code is set.

**Q: Is the diagnosis codes C1561 set?**

**YES :** Go to Step 3.
**NO :** This diagnosis is complete.

**STEP 3. M.U.T.-III data list**

Check the following service data.

- Item No. 07: Engine speed

**Q: Is the check result normal?**

**YES :** Go to Step 5.
**NO :** Perform troubleshooting for engine-ECU (Refer to GROUP 13A – Troubleshooting/Inspection Chart for Diagnosis code). Then go to Step 4.

**STEP 4. Check whether the diagnosis code is reset**

(1) Erase the diagnosis code.
(2) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
(3) Check if the diagnosis code is set.

**Q: Is the diagnosis codes C1561 set?**

**YES :** Replace the EPS-ECU (Refer to). Then go to Step 5.
**NO :** Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

**STEP 5. Check whether the diagnosis code is reset.**

(1) Erase the diagnosis code.
(2) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
(3) Check if the diagnosis code is set.

**Q: Is the diagnosis codes C1561 set?**

**YES :** Return to Step 1.
**NO :** This diagnosis is complete.

<Incorrect>

<Correct> Insert the attached sheet 18.

## Code No.C1560 Vehicle speed data (CAN) time-out

**⚠ CAUTION**

- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C, CAN Bus Diagnostics Table).**
- **Whenever ECU is replaced, ensure that the CAN bus lines are normal.**

### OPERATION

- Electric power steering-ECU receives vehicle speed signal from the ABS-ECU <vehicles without ASC>, ASC-ECU <vehicles with ASC>.

### FUNCTION

- The vehicle speed signal is sent to the electric power steering-ECU for motor control.

### TROUBLE JUDGEMENT

#### Check Conditions

- The power supply circuit system diagnosis code (No. C1540, C1541) is not set.
- The engine circuit system diagnosis code is not set.

#### Judgement Criterion

- The vehicle speed signal sent to the electric power steering-ECU is 0 km/h.
- The vehicle speed signal is not sent to the ABS-ECU <vehicles without ASC>, ASC-ECU <vehicles with ASC>, and the microcomputer determines that there is a problem in the vehicle speed measurement system.

#### Fail Safe, Back Up Function

- The electric power steering-ECU illuminates the electric power steering warning display, and sets the diagnosis code No. C1560 to limit assist operation.

### PROBABLE CAUSES

- Malfunction of CAN bus line
- Malfunction of the electric power steering-ECU
- Malfunction of the engine-ECU

## DIAGNOSIS PROCEDURE

**STEP 1. M.U.T.-III CAN bus diagnostics**

Use M.U.T.-III to diagnose the CAN bus lines.

**Q: Is the check result normal?**

**YES :** Go to Step 3.

**NO :** Repair the CAN bus lines (Refer to GROUP 54C – Troubleshooting/CAN Bus Diagnostics Table). On completion, go to Step 2.

**STEP 2. Diagnosis code recheck after resetting CAN bus lines**

(1) Erase the diagnosis code.
(2) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
(3) Check if the diagnosis code is set.

**Q: Is the diagnosis codes C1560 set?**

**YES :** Go to Step 3.
**NO :** This diagnosis is complete.

**STEP 3. M.U.T.-III data list**

Check the following data list.

- Item No. 08: Vehicle speed

**Q: Is the check result normal?**

**YES :** Go to Step 5.
**NO :** Perform troubleshooting for ABS-ECU (Refer to GROUP 35B – Troubleshooting/Diagnosis Code Chart <vehicles without ASC>), ASC-ECU (Refer to GROUP 35C – Troubleshooting/Diagnosis Code Chart <vehicles with ASC>). Then go to Step 4.

**STEP 4. Check whether the diagnosis code is reset**

(1) Erase the diagnosis code.
(2) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
(3) Check if the diagnosis code is set.

**Q: Is the diagnosis codes C1560 set?**

**YES :** Replace the electric power steering-ECU (Refer to).Then go to Step 5.
**NO :** Intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/How to Cope with Intermittent Malfunction).

**STEP 5. Check whether the diagnosis code is reset.**

(1) Erase the diagnosis code.
(2) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
(3) Check if the diagnosis code is set.

**Q: Is the diagnosis codes C1560 set?**

**YES :** Return to Step 1.
**NO :** This diagnosis is complete.

Attached sheet 19

## Code No.C1564 Vehicle speed data invalid

**⚠ CAUTION**

- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C, CAN Bus Diagnostics Table).**
- **Whenever ECU is replaced, ensure that the CAN bus lines are normal.**

### OPERATION
EPS-ECU receives vehicle speed signal from the engine-ECU.

### FUNCTION
The vehicle speed signal is sent to the EPS-ECU for motor control.

### TROUBLE JUDGEMENT

#### Check Conditions
- The power supply circuit system diagnosis code (No. C1540, C1541) is not set.
- The engine circuit system diagnosis code is not set.

#### Judgement Criterion
<Incorrect>
~~If the microcomputer receives abnormal vehicle speed signal from the engine-ECU consecutively twice, it determines that the vehicle speed calculation system is defective.~~

<Correct>
If the microcomputer receives abnormal vehicle speed signal from the engine-ECU, it determines that the vehicle speed calculation system is defective.

#### Fail Safe, Back Up Function
The EPS-ECU illuminates the electric power steering warning display, and sets the diagnosis code No. C1564 to limit assist operation.

### PROBABLE CAUSES
- Malfunction of CAN bus line
- Malfunction of the EPS-ECU
- Malfunction of the engine-ECU

## DIAGNOSIS PROCEDURE

**STEP 1. M.U.T.-III CAN bus diagnostics**
Use M.U.T.-III to diagnose the CAN bus lines.

**Q: Is the check result normal?**

**YES :** Go to Step 3
**NO :** Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table). On completion, go to Step 2.

Attached sheet 20

## Code No.C1565 Engine revolution data invalid

**⚠ CAUTION**

- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C, CAN Bus Diagnostics Table).**
- **Whenever ECU is replaced, ensure that the CAN bus lines are normal.**

### OPERATION
EPS-ECU receives engine revolution signal from the engine-ECU.

### FUNCTION
The engine speed signal is sent to the EPS-ECU for motor control.

### TROUBLE JUDGEMENT

#### Check Conditions
- The power supply circuit system diagnosis code (No. C1540, C1541) is not set.
- The engine circuit system diagnosis code is not set.

#### Judgement Criterion
<Incorrect>
If the microcomputer receives abnormal engine speed signal from the engine-ECU consecutively twice, it determines that the engine speed calculation system is defective.

<Correct>
If the microcomputer receives abnormal engine speed signal from the engine-ECU, it determines that the engine speed calculation system is defective.

#### Fail Safe, Back Up Function
The EPS-ECU displays the electric power steering warning symbol, and stores diagnosis code No. C1565 to limit the power assistance.

### PROBABLE CAUSES
- Malfunction of CAN bus line
- Malfunction of the EPS-ECU
- Malfunction of the engine-ECU

## DIAGNOSIS PROCEDURE

**STEP 1. M.U.T.-III CAN bus diagnostics**
Use M.U.T.-III to diagnose the CAN bus lines.

**Q: Is the check result normal?**

**YES :** Go to Step 3
**NO :** Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table). On completion, go to Step 2.

Attached sheet 24

## DIAGNOSIS CODE CHART

**⚠ CAUTION**

- **During diagnosis, a diagnosis code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for diagnosis code(s). If diagnosis code(s) are set, erase them all.**
- **If more than three minutes elapse after the ignition switch is turned ON without starting engine, the electric power steering-ECU may set diagnosis codes U0100 and U0121 as past trouble.**

*NOTE: For electric power steering system the power supply may not shut off immediately after the ignition switch is turned "OFF".*

| Diagnosis code No. | Diagnostic item | Reference pages or actions |
|---|---|---|
| C1510 | Torque sensor main | |
| C1511 | Torque sensor sub | |
| C1512 | Torque sensor main/sub voltage | |
| C1513 | Torque sensor power supply | |
| C1514 | Torque sensor power supply too low | |
| C1520 | Motor turning angle (input) | |
| C1521 | Motor turning angle (output) | |
| C1522 | Motor turning angle range | |
| C1530 | Motor FET driver | |
| C1531 | Motor current too low | |
| C1532 | Motor output current too large | |
| C1533 | Motor terminal initial voltage | |
| C1534 | Motor terminal monitor voltage | |
| C1535 | Motor output current | |
| C1536 | Motor terminal voltage abnormality (high voltage) | |
| C1540 | Power supply voltage abnormality (high voltage) | |
| C1541 | Power supply voltage abnormality (low voltage) | <Correct> |
| C1550 | ECU internal error <Incorrect> | time-out |
| C1560 | Vehicle speed data (CAN) ~~input malfunction~~ | |
| C1561 | Engine revolution data (CAN) ~~input malfunction~~ | |
| U0001 | Bus off <Incorrect> | time-out |
| U0100 | Engine time-out error | <Correct> |
| U0121 | ABS time-out error | |
| U0141 | ETACS time-out error | |
| U0401 | Engine malfunction detected | |
| U0415 | Vehicle speed (CAN message) failure information | |
| U1415 | Variant coding not implemented | |
| U1417 | Variant coding value invalid (includes faulty installation) | |

Attached sheet 25

## Code No.C1560 Vehicle speed data (CAN) input ~~malfunction~~ <Incorrect>

time-out
<Correct>

**CAUTION**

- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C, Trouble code diagnosis).**
- **Whenever ECU is replaced, ensure that the CAN bus lines are normal.**

**DIAGNOSIS CODE SET CONDITIONS**

- If the system receives an abnormal engine speed signal and the microprocessor determines that the engine speed measurement system is defective.

  **Criteria for judging malfunction**
  - Engine speed cannot be received during period of time.

**PROBABLE CAUSES**

- Malfunction of CAN bus line
- Defective wire(s) or connector(s) in the crankshaft angle sensor input circuit of the engine-ECU
- Malfunction of the engine-ECU
- Malfunction of the electric power steering-ECU

## DIAGNOSIS PROCEDURE

**STEP 1. M.U.T.-III CAN bus diagnostics**

Use M.U.T.-III to diagnose the CAN bus lines.

**Q: Is the check result normal?**

**YES :** Go to Step 3.
**NO :** Repair the CAN bus lines (Refer to GROUP 54C – Troubleshooting). On completion, go to Step 2.

**STEP 2. Diagnosis code recheck after resetting CAN bus lines**

**Q: Is diagnosis code No.C1560 set?**

**YES :** Go to Step 3.
**NO :** This diagnosis is complete.

**STEP 3. M.U.T.-III other system diagnosis code**

Use M.U.T.-III to check that other diagnosis code is set in the ECU corresponding to the relevant diagnosis.

**Q: Is other diagnosis code set?**

**YES :** Troubleshoot for the relevant diagnosis code.
**NO :** Go to Step 4.

Attached sheet 26

## Code No.C1561 Engine revolution data (CAN) ~~input malfunction~~ <Incorrect>

time-out
<Correct>

**CAUTION**

- **If there is any problem in the CAN bus lines, an incorrect diagnosis code may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C, Trouble code diagnosis).**
- **Whenever ECU is replaced, ensure that the CAN bus lines are normal.**

### DIAGNOSIS CODE SET CONDITIONS

- If the system receives an abnormal engine speed signal and the microprocessor determines that the engine speed measurement system is defective.

  **Criteria for judging malfunction**
  - Engine speed (rpm) cannot be received during period of time.

### PROBABLE CAUSES

- Malfunction of CAN bus line
- Defective wire(s) or connector(s) in the crankshaft angle sensor input circuit of the engine-ECU
- Malfunction of the engine-ECU
- Malfunction of the electric power steering-ECU

## DIAGNOSIS PROCEDURE

**STEP 1. M.U.T.-III CAN bus diagnostics**
Use M.U.T.-III to diagnose the CAN bus lines.

**Q: Is the check result normal?**

**YES :** Go to Step 3.
**NO :** Repair the CAN bus lines (Refer to GROUP 54C – Troubleshooting). On completion, go to Step 2.

**STEP 2. Diagnosis code recheck after resetting CAN bus lines**

**Q: Is diagnosis code No.C1561 set?**

**YES :** Go to Step 3.
**NO :** This diagnosis is complete.

**STEP 3. M.U.T.-III other system diagnosis code**
Use M.U.T.-III to check that other diagnosis code is set in the ECU corresponding to the relevant diagnosis.

**Q: Is other diagnosis code set?**

**YES :** Troubleshoot for the relevant diagnosis code.
**NO :** Go to Step 4.