



SERVICE BULLETIN

GLOBAL AFTER SALES OFFICE, MITSUBISHI MOTORS CORPORATION

PURPOSE : INFORMATION	ISSUE NO. : MSB-10E35-008	DATE : 2010-11-05
SUBJECT : ABS AND ASC TROUBLESHOOTING		<MODEL> (EUR) OUTLANDER (CW0W)
GROUP : ANTI-SKID BRAKING SYSTEM (ABS)/ ACTIVE STABILITY CONTROL SYSTEM (ASC)		<M/Y> 07-11

1. Description:

Troubleshooting procedures for the ABS and ASC are changed in the applicable Workshop Manuals. This Service Bulletin contains the modified descriptions.

2. Applicable Manuals:

See Attached sheets 1 (1/7) and 1 (7/7).

There may be some attached sheets not included in this Service Bulletin because they are not applicable to your market. Their sheet numbers are not listed in the above table.

3. Details:

See Attached sheets 3 to 8, 10 to 15, 17, 19 to 22, 24, 26 to 28, 31 to 35, 40, 41, 45, 46, 48 to 52, 55, 57, 58, 60, 62, 65 to 67, 69, 70, 73, 77 and 78.

Manual	Pub. No.	Title (Info-ID)	Attached Sheet
2007 OUTLANDER Workshop Manual	CGXE07E1-CD (English) CGXS07E1-CD (Spanish) CGXF07E1-CD (French) CGXG07E1-CD (German)	Diagnosis Code Chart (M352-01-131-23900-01)	Attached sheet 3
		Code No.C2111 Sensor Power Supply Circuit (Low Input) Code No.C2112 Sensor Power Supply Circuit (High Input) (M352-02-960-01600-01)	Attached sheet 4
		Code No.C1210 Abnormality in G Sensor Output Voltage (M352-02-940-01200-01)	Attached sheet 5
		Code No.C1242 Abnormality in G Sensor Output Signal (M352-02-950-01900-01)	Attached sheet 7
		Code No.U0100 Engine Time-out Error Code No.U0114 4WD Time-out Error Code No.U0141 ETACS Time-out Error (M352-02-990-01700-01)	Attached sheet 8
		Symptom Chart (M352-01-141-11400-01)	Attached sheet 10
		Added after Inspection Procedure 8: ABS-ECU Power Supply Circuit System (M352-03-130-01200-01)	Attached sheet 12
		On-vehicle Service Hydraulic Unit Check (M352-00-170-91000-01)	Attached sheet 14
		Code No.C123B Prolonged Operation of ASC (M355-01-990-02600-01)	Attached sheet 19
		Code No.C1290 CAN Time-out Error (M355-02-080-02300-01)	Attached sheet 20
		Code No.C1210 Abnormality in G and Yaw Rate Sensor (M355-02-110-02700-01)	Attached sheet 24
		Code No.C1242 Abnormality in G and Yaw Rate Sensor (M355-02-120-02400-01)	Attached sheet 27
		Code No.C123C Abnormality in G and Yaw Rate Sensor (M355-02-130-02100-01)	Attached sheet 33
		Code No.C2204 Internal Abnormality in G and Yaw Rate Sensor (M355-02-140-02800-01)	Attached sheet 40
		Code No.C1219 Abnormality in Steering Wheel Sensor Signal (M355-02-200-02300-01)	Attached sheet 46
		Code No.U0100 Engine Time-out Error Code No.U0101 CVT Time-out Error Code No.U0114 4WD Time-out Error Code No.U0126 Steering Wheel Sensor Time-out Error Code No.U0141 ETACS Time-out Error (M355-02-240-02100-01)	Attached sheet 48

Manual	Pub. No.	Title (Info-ID)	Attached Sheet
2007 OUTLANDER Workshop Manual	CGXE07E1-CD (English) CGXS07E1-CD (Spanish) CGXF07E1-CD (French) CGXG07E1-CD (German)	Code No.U0125 G and Yaw Rate Sensor Message Time-out Error (M355-02-290-02600-01)	Attached sheet 50
		Code No.U1003 G and Yaw Rate Sensor Bus-off (M355-02-320-03100-01)	Attached sheet 52
		Symptom Chart (M355-00-690-09300-01)	Attached sheet 55
		Added after Inspection Procedure 13: ASC-ECU Power Supply Circuit System (M355-00-860-12800-01)	Attached sheet 62
		Data List Reference Table (M355-00-150-08900-01)	Attached sheet 69
		On-vehicle Service Hydraulic Unit Check (M355-00-610-08600-01)	Attached sheet 78
2008 OUTLANDER Workshop Manual	CGXE08E2-CD (English) CGXS08E2-CD (Spanish) CGXF08E2-CD (French) CGXG08E2-CD (German)	Diagnosis Code Chart (M352-01-131-36900-01)	Attached sheet 3
		Code No.C2111 Sensor Power Supply Circuit (Low Input) Code No.C2112 Sensor Power Supply Circuit (High Input) (M352-02-960-09400-01)	Attached sheet 4
		Code No.C1210 Abnormality in G Sensor Output Voltage (M352-02-940-09000-01)	Attached sheet 5
		Code No.C1242 Abnormality in G Sensor Output Signal (M352-02-950-09700-01)	Attached sheet 7
		Code No.U0100 Engine Time-out Error Code No.U0114 4WD Time-out Error Code No.U0141 ETACS Time-out Error (M352-02-990-12500-01)	Attached sheet 8
		Symptom Chart (M352-01-141-12700-01)	Attached sheet 10
		Added after Inspection Procedure 8: ABS-ECU Power Supply Circuit System (M352-03-130-17500-01)	Attached sheet 12
		On-vehicle Service Hydraulic Unit Check (M352-00-170-95400-01)	Attached sheet 14
		Code No.C123B Prolonged Operation of ASC (M355-01-990-08200-01)	Attached sheet 15
		Code No.C1290 CAN Time-out Error (M355-02-080-07800-01)	Attached sheet 20
		Code No.C1210 Abnormality in G and Yaw Rate Sensor (M355-02-110-07200-01)	Attached sheet 21
		CODE No.C1242 Abnormality in G and Yaw Rate Sensor (M355-02-120-07900-01)	Attached sheet 28

Manual	Pub. No.	Title (Info-ID)	Attached Sheet
2008 OUTLANDER Workshop Manual	CGXE08E2-CD (English) CGXS08E2-CD (Spanish) CGXF08E2-CD (French) CGXG08E2-CD (German)	Code No.C123C Abnormality in G and Yaw Rate Sensor (M355-02-130-07600-01)	Attached sheet 32
		Code No.C2204 Internal Abnormality in G and Yaw Rate Sensor (M355-02-140-07300-01)	Attached sheet 41
		Code No.C1219 Abnormality in Steering Wheel Sensor Signal (M355-02-200-07800-01)	Attached sheet 45
		Code No.U0100 Engine Time-out Error Code No.U0101 A/T or CVT Time-out Error Code No.U0114 4WD Time-out Error Code No.U0126 Steering Wheel Sensor Time-out Error Code No.U0141 ETACS Time-out Error (M355-02-240-07600-01)	Attached sheet 48
		Code No.U0125 G and Yaw Rate Sensor Message Time-out Error (M355-02-290-07100-01)	Attached sheet 49
		Code No.U1003 G and Yaw Rate Sensor Bus-off (M355-02-320-08600-01)	Attached sheet 52
		Symptom Chart (M355-00-690-15600-01)	Attached sheet 55
		Added after Inspection Procedure 13: ASC-ECU Power Supply Circuit System (M355-00-860-18400-01)	Attached sheet 62
		Data List Reference Table (M355-00-150-22700-01)	Attached sheet 70
		On-vehicle Service Hydraulic Unit Check (M355-00-610-08600-01)	Attached sheet 78
2009 OUTLANDER Workshop Manual	CGXE09E1-CD (English) CGXS09E1-CD (Spanish) CGXF09E1-CD (French) CGXG09E1-CD (German) CGXI09E1-CD (Italian)	Code No.C1210 Abnormality in G Sensor Output Voltage (M352-02-940-13100-01)	Attached sheet 6
		Code No.C1242 Abnormality in G Sensor Output Signal (M352-02-950-13800-01)	Attached sheet 7
		Code No.U0100 Engine Time-out Error Code No.U0114 4WD Time-out Error Code No.U0141 ETACS Time-out Error (M352-02-990-19200-01)	Attached sheet 8
		Symptom Chart (M352-01-141-31100-01)	Attached sheet 11
		Added after Inspection Procedure 9: ABS Operate too Frequently (M352-03-150-13500-01)	Attached sheet 13
		On-vehicle Service Hydraulic Unit Check (M352-00-171-05400-01)	Attached sheet 14
		Code No.C123B Prolonged Operation of ASC (M355-01-990-41300-01)	Attached sheet 17

Manual	Pub. No.	Title (Info-ID)	Attached Sheet
2009 OUTLANDER Workshop Manual	CGXE09E1-CD (English) CGXS09E1-CD (Spanish) CGXF09E1-CD (French) CGXG09E1-CD (German) CGXI09E1-CD (Italian)	Code No.C1290 CAN Time-out Error (M355-02-080-58400-01)	Attached sheet 20
		Code No.C1210 Abnormality in G and Yaw Rate Sensor (M355-02-110-38400-01)	Attached sheet 22
		Code No.C1242 Abnormality in G and Yaw Rate Sensor (M355-02-120-32500-01)	Attached sheet 26
		Code No.C123C Abnormality in G and Yaw Rate Sensor (M355-02-130-32200-01)	Attached sheet 31
		Code No.C2204 Internal Abnormality in G and Yaw Rate Sensor (M355-02-140-33000-01)	Attached sheet 34
		Code No.C1219 Abnormality in Steering Wheel Sensor Signal (M355-02-200-16401-01)	Attached sheet 45
		Code No.U0100 Engine Time-out Error Code No.U0101 CVT or A/T or TC-SST Time-out Error Code No.U0114 4WD Time-out Error Code No.U0126 Steering Wheel Sensor Time-out Error Code No.U0141 ETACS Time-out Error (M355-02-240-49600-01)	Attached sheet 48
		Code No.U0125 G and Yaw Rate Sensor Message Time-out Error (M355-02-290-36100-01)	Attached sheet 51
		Code No.U1003 G and Yaw Rate Sensor Bus-off (M355-02-320-35400-01)	Attached sheet 52
		Symptom Chart (M355-00-690-46800-01)	Attached sheet 57
		Added after Inspection Procedure 15: HSA Works on a Flat Road (M357-00-380-02600-01)	Attached sheet 65
		Data List Reference Table (M355-00-150-50600-01)	Attached sheet 67
		On-vehicle Service Hydraulic Unit Check (M355-00-610-10504-01)	Attached sheet 78
2010 OUTLANDER Workshop Manual	CGXE10E1-CD (English) CGXS10E1-CD (Spanish) CGXF10E1-CD (French) CGXG10E1-CD (German) CGXI10E1-CD (Italian)	Code No.C1210 Abnormality in G Sensor Output Voltage (M352-02-940-18600-01)	Attached sheet 6
		Code No.C1242 Abnormality in G Sensor Output Signal (M352-02-950-13800-01)	Attached sheet 7
		Code No.U0100 Engine Time-out Error Code No.U0114 4WD Time-out Error Code No.U0141 ETACS Time-out Error (M352-02-990-28800-01)	Attached sheet 8
		Symptom Chart (M352-01-141-31100-01)	Attached sheet 11

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2010 OUTLANDER Workshop Manual	CGXE10E1-CD (English) CGXS10E1-CD (Spanish) CGXF10E1-CD (French) CGXG10E1-CD (German) CGXI10E1-CD (Italian)	Added after Inspection Procedure 9: ABS Operate too Frequently (M352-03-150-21000-01)	Attached sheet 13
		On-vehicle Service Hydraulic Unit Check (M352-00-171-05400-01)	Attached sheet 14
		Code No.C123B Prolonged Operation of ASC (M355-01-990-41300-01)	Attached sheet 17
		Code No.C1290 CAN Time-out Error (M355-02-080-63600-01)	Attached sheet 20
		Code No.C1210 Abnormality in G and Yaw Rate Sensor (M355-02-110-42500-01)	Attached sheet 22
		Code No.C1242 Abnormality in G and Yaw Rate Sensor (M355-02-120-36900-01)	Attached sheet 26
		Code No.C123C Abnormality in G and Yaw Rate Sensor (M355-02-130-37700-01)	Attached sheet 31
		Code No.C2204 Internal Abnormality in G and Yaw Rate Sensor (M355-02-140-38500-01)	Attached sheet 35
		Code No.C1219 Abnormality in Steering Wheel Sensor Signal (M355-02-200-31300-01)	Attached sheet 45
		Code No.U0100 Engine Time-out Error Code No.U0101 CVT or A/T or TC-SST Time-out Error Code No.U0114 4WD Time-out Error Code No.U0126 Steering Wheel Sensor Time-out Error Code No.U0141 ETACS Time-out Error (M355-02-240-49600-01)	Attached sheet 48
		Code No.U0125 G and Yaw Rate Sen- sor Message Time-out Error (M355-02-290-41300-01)	Attached sheet 51
		Code No.U1003 G and Yaw Rate Sen- sor Bus-off (M355-02-320-38700-01)	Attached sheet 52
		Symptom Chart (M355-00-690-51000-01)	Attached sheet 58
		Inspection Procedure 15: ESS Inopera- tive or Improper Operative (M355-02-550-06100-01)	Attached sheet 60
		Inspection Procedure 18: The Reverse Signal Cannot Be Received Normally (M355-02-650-02000-01)	Attached sheet 66
		Data List Reference Table (M355-00-150-56200-01)	Attached sheet 73
		On-vehicle Service Hydraulic Unit Check (M355-00-610-10504-01)	Attached sheet 78

Manual	Pub. No.	Title (Info-ID)	Attached Sheet
2011 OUTLANDER Workshop Manual	CGXE11E1-CD (English) CGXS11E1-CD (Spanish) CGXF11E1-CD (French) CGXG11E1-CD (German) CGXI11E1-CD (Italian)	Code No.C1210 Abnormality in G Sensor Output Voltage (M352-02-940-18601-01)	Attached sheet 6
		Code No.C1242 Abnormality in G Sensor Output Signal (M352-02-950-13801-01)	Attached sheet 7
		Code No.U0100 Engine Time-out Error Code No.U0114 4WD Time-out Error Code No.U0141 ETACS Time-out Error (M352-02-990-28800-01)	Attached sheet 8
		Symptom Chart (M352-01-141-31100-01)	Attached sheet 11
		Added after Inspection Procedure 9: ABS Operate too Frequently (M352-03-150-23200-01)	Attached sheet 13
		On-vehicle Service Hydraulic Unit Check (M352-00-171-05400-01)	Attached sheet 14
		Code No.C123B Prolonged Operation of ASC (M355-01-990-41301-01)	Attached sheet 17
		Code No.C1290 CAN Time-out Error (M355-02-080-80700-01)	Attached sheet 20
		Code No.C1210 Abnormality in G and Yaw Rate Sensor (M355-02-110-59900-01)	Attached sheet 22
		Code No.C1242 Abnormality in G and Yaw Rate Sensor (M355-02-120-52900-01)	Attached sheet 26
		Code No.C123C Abnormality in G and Yaw Rate Sensor (M355-02-130-53700-01)	Attached sheet 31
		Code No.C2204 Internal Abnormality in G and Yaw Rate Sensor (M355-02-140-55600-01)	Attached sheet 35
		Code No.C1219 Abnormality in Steering Wheel Sensor Signal (M355-02-200-31301-01)	Attached sheet 45
		Code No.U0100 Engine Time-out Error Code No.U0101 CVT or A/T or TC-SST Time-out Error Code No.U0114 4WD Time-out Error Code No.U0126 Steering Wheel Sensor Time-out Error Code No.U0141 ETACS Time-out Error (M355-02-240-49601-01)	Attached sheet 48
		Code No.U0125 G and Yaw Rate Sensor Message Time-out Error (M355-02-290-60600-01)	Attached sheet 51
		Code No.U1003 G and Yaw Rate Sensor Bus-off (M355-02-320-58100-01)	Attached sheet 52
		Symptom Chart (M355-00-690-51000-01)	Attached sheet 58

Manual	Pub. No.	Title (Info-ID)	Attached Sheet
2011 OUTLANDER Workshop Manual	CGXE11E1-CD (English)	Inspection Procedure 15: ESS Inoperative or Improper Operative (M355-02-550-06101-01)	Attached sheet 60
	CGXS11E1-CD (Spanish)	Inspection Procedure 18: The Reverse Signal Cannot Be Received Normally (M355-02-650-04200-01)	Attached sheet 66
	CGXF11E1-CD (French)	Data List Reference Table (M355-00-150-82900-01)	Attached sheet 77
	CGXG11E1-CD (German)	On-vehicle Service Hydraulic Unit Check (M355-00-610-10504-01)	Attached sheet 78
	CGXI11E1-CD (Italian)		

**ANTI-SKID BRAKING SYSTEM (ABS)
TROUBLESHOOTING**

Attached sheet 3

Diagnosis code No.	Item	Reference page
C1042	Abnormality in periodical signal for FR wheel speed sensor	
C1043	Abnormality in periodical signal for RL wheel speed sensor	
C1044	Abnormality in periodical signal for RR wheel speed sensor	
C1046	FL wheel speed sensor control phase time exceeded	
C1047	FR wheel speed sensor control phase time exceeded	
C1048	RL wheel speed sensor control phase time exceeded	
C1049	RR wheel speed sensor control phase time exceeded	
C104B	Abnormality in FL wheel inlet valve system	
C104F	Abnormality in FR wheel inlet valve system	
C1053	Abnormality in RL wheel inlet valve system	
C1057	Abnormality in RR wheel inlet valve system	
C105F	Abnormality in FL wheel outlet valve system	
C1063	Abnormality in FR wheel outlet valve system	
C1067	Abnormality in RL wheel outlet valve system	
C105B	Abnormality in RR wheel outlet valve system	
C2104	Faulty valve power supply circuit	
C1073	Faulty motor drive circuit	
C2116	Abnormality in power supply voltage in pump motor	
C1000	Abnormality in stop lamp switch circuit	
C2200	Abnormality in ABS-ECU	
C2100	Abnormality in battery voltage (low voltage)	9.7 ± 0.3 V or less* ¹
		8.0 ± 0.5 V or less* ¹
C2101	Abnormality in battery voltage (high voltage)	18.0 ± 1.0 V or more
C1395	Brake fluid filling not complete	
C2203	VIN not recorded	
C1210* ²	Abnormality in G sensor output voltage	
C1242* ²	Abnormality in G sensor output signal	<Deleted>
C2111* ²	G sensor power supply circuit (Low input)	
C2112* ²	G sensor power supply circuit (High input)	
C1608	Implausible diagnosis data	
U0001	Bus off	
U0100	Engine time-out error	
U0114* ²	4WD-ECU time-out error	
U0141	ETACS time-out error	
U1415	Variant coding not completed	
U1417	Variant coding value invalid (includes faulty installation)	

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set when the abnormality is detected by comparing the G sensor value output from the G sensor with the value output from the wheel speed sensor.

PROBABLE CAUSES

- Improper installation of the G sensor
- Malfunction of wheel speed sensor
- ABS-ECU malfunction
- External noise interference
- When the vehicle is driven on a drum roller

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 Diagnosis table). On completion, go to Step 2.

STEP 2. Diagnosis code recheck after resetting CAN bus lines

Q: Is the diagnosis code No.C1242 set?

YES : Go to Step 3.

NO : The procedure is complete.

STEP 3. Check the wheel speed sensor-related diagnosis code.

Use the M.U.T.-III to check whether the wheel speed sensor-related diagnosis code is set or not.

Q: Is any diagnosis code set?

YES : Troubleshoot for the relevant diagnosis code (Refer to).

NO : Go to Step 4.

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

Check the following service data (Refer to).

- Item 09: G sensor

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the ABS-ECU (Refer to), and then go to Step 6.

STEP 5. Check whether the diagnosis code is reset.

Q: Is the diagnosis code No.C1242 set?

YES : Replace the ABS-ECU (Refer to). Then go to Step 6.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

STEP 6. Check whether the diagnosis code is reset.

Q: Is the diagnosis code No.C1242 set?

YES : Go to Step 1.

NO : The procedure is complete.

<Deleted>

Code No. C2111 G sensor Power Supply Circuit (Low input)

Code No. C2112 G sensor Power Supply Circuit (High input)

⚠ 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).

OPERATION

The G sensor is incorporated in the ABS-ECU.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set when the voltage applied to the G sensor is not within the standard value range.

PROBABLE CAUSES

ABS-ECU malfunction

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 Diagnosis table). On completion, go to Step 2.

STEP 2. Diagnosis code recheck after resetting CAN bus lines

Q: Are the diagnosis codes No.C2111 or No.C2112 set?

YES : Go to Step 3.

NO : This diagnosis is complete.

STEP 3. Battery check

Refer to GROUP 54A – Battery Test .

Q: Is the battery in good condition?

YES : Go to Step 4.

NO : Charge or replace the battery, and then go to Step 6.

STEP 4. Charging system check

Refer to GROUP 16 – Charging System <4A9, 4B1> <BWC>.

Q: Is the charging system in good condition?

YES : Go to Step 5.

NO : Repair or replace the charging system component(s), and then go to Step 6.

STEP 5. Check whether the diagnosis code is reset.

Q: Are the diagnosis codes No.C2111 or No.C2112 set?

YES : Replace the ABS-ECU (Refer to).
Then go to Step 6.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

STEP 6. Check whether the diagnosis code is reset.

Q: Are the diagnosis codes No.C2111 or No.C2112 set?

YES : Return to Step 1.

NO : This diagnosis is complete.

ANTI-SKID BRAKING SYSTEM (ABS) TROUBLESHOOTING

Attached sheet 5

YES : Troubleshoot the engine ECU diagnosis code <Refer to GROUP 13A – Troubleshooting (1500:PETROL), GROUP 13B – Troubleshooting (1800, 2000: PETROL), GROUP 13F – Troubleshooting (DIESEL) >. Then go to Step 5.

NO : Go to Step 4.

YES : Replace the hydraulic unit (ABS-ECU) (Refer to). Then go to Step 5.

NO : If a trouble is solved, it is determined that there is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

STEP 4. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS THE DIAGNOSIS CODE NO.C2203 SET?

Q: IS THE DIAGNOSIS CODE NO.C2203 SET?

YES : Return to Step 1.

NO : This diagnosis is complete.

CODE NO. C1210 ABNORMALITY IN G-SENSOR OUTPUT VOLTAGE

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).

OPERATION

ABS-ECU monitors if the output of G sensor is normal or not.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set if any malfunction below is found:

- When the output value of the G sensor is abnormal

PROBABLE CAUSES

- ABS-ECU malfunction
- External noise interference

DIAGNOSTIC 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 Diagnosis table). On completion, go to Step 2.

STEP 2. DIAGNOSIS CODE RECHECK AFTER RESETTING

CAN BUS LINES

Q: IS THE DIAGNOSIS CODE NO.C1210 SET?

YES : Go to Step 3.

NO : The procedure is complete.

STEP 3. M.U.T.-III DATA LIST

Check the following service data (Refer to).

- Item 09: G sensor

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 4.

NO : Replace the ABS-ECU (Refer to). Then go to Step 5.

STEP 4. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS THE DIAGNOSIS CODE NO.C1210 SET?

YES : Replace the ABS-ECU (Refer to). Then go to Step 5.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

(1) Erase the diagnosis code.

(2) Drive the vehicle at 20 km/h or more.

<Added>

IS

YES : Troubleshoot the engine ECU diagnosis code <Refer to GROUP 13A – Troubleshooting (1500:PETROL), GROUP 13B – Troubleshooting (1800, 2000: PETROL), GROUP 13F – Troubleshooting (DIESEL) >. Then go to Step 5.
NO : Go to Step 4.

YES : Replace the hydraulic unit (ABS-ECU) (Refer to). Then go to Step 5.
NO : If a trouble is solved, it is determined that there is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

STEP 4. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS THE DIAGNOSIS CODE NO.C2203 SET?

Q: IS THE DIAGNOSIS CODE NO.C2203 SET?

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

CODE NO. C1210 ABNORMALITY IN G-SENSOR OUTPUT VOLTAGE

⚠ 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).

OPERATION

ABS-ECU monitors if the output of G sensor is normal or not.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set if any malfunction below is found:

- When the output value of the G sensor is abnormal

PROBABLE CAUSES

- ABS-ECU malfunction
- External noise interference

DIAGNOSTIC 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 Diagnosis table). On completion, go to Step 2.

STEP 2. DIAGNOSIS CODE RECHECK AFTER RESETTING CAN BUS LINES

Q: IS THE DIAGNOSIS CODE NO.C1210 SET?

YES : Go to Step 3.
NO : The procedure is complete.

STEP 3. M.U.T.-III DATA LIST

Check the following service data (Refer to).

- Item 09: G sensor

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 4.
NO : Replace the ABS-ECU (Refer to). Then go to Step 5.

STEP 4. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS THE DIAGNOSIS CODE NO.C1210 SET?

YES : Replace the ABS-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.

Q: IS THE DIAGNOSIS CODE NO.C1210 SET?

YES : Go to Step 1.
NO : The procedure is complete.

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

<Added>

CODE NO. C1242 ABNORMALITY IN G-SENSOR OUTPUT SIGNAL

⚠ 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 STEP 3. CHECK THE WHEEL SPEED SENSOR-RELATED DIAGNOSIS CODE).

OPERATION

- ABS-ECU monitors if the output of G sensor is normal or not.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set when the abnormality is detected by comparing the G sensor value output from the G sensor with the value output from the wheel speed sensor.

PROBABLE CAUSES

- Improper installation of the G sensor
- Malfunction of wheel speed sensor
- ABS-ECU malfunction
- External noise interference
- When the vehicle is driven on a drum roller

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 Diagnosis table). On completion, go to Step 2.

STEP 2. DIAGNOSIS CODE RECHECK AFTER RESETTING CAN BUS LINES

Q: IS THE DIAGNOSIS CODE NO.C1242 SET?

YES : Go to Step 3.

NO : The procedure is complete.

STEP 3. CHECK THE WHEEL SPEED SENSOR-RELATED DIAGNOSIS CODE.

Use the M.U.T.-III to check whether the wheel speed sensor-related diagnosis code is set or not.

Q: IS ANY DIAGNOSIS CODE SET?

YES : Troubleshoot for the relevant diagnosis code (Refer to).

NO : Go to Step 4.

STEP 4. M.U.T.-III DATA LIST

Check the following service data (Refer to).

- Item 09: G sensor

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 5.

NO : Replace the ABS-ECU (Refer to), and then go to Step 6.

STEP 5. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS THE DIAGNOSIS CODE NO.C1242 SET?

YES : Replace the ABS-ECU (Refer to). Then go to Step 6.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

STEP 6. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS THE DIAGNOSIS CODE NO.C1242 SET?

YES : Go to Step 1.

NO : The procedure is complete.

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

<Added>

COMMENTS ON TROUBLE SYMPTOM

Malfunction of wiring harness, connector (s), or ABS-ECU may be present.

PROBABLE CAUSES

- Wiring harness or connector failure of CAN bus line
- ABS-ECU malfunction
- Other ECU malfunction

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN BUS DIAGNOSIS

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

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnosis table). On completion, go to Step 3.

STEP 2. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS THE DIAGNOSIS CODE NO.U0001 SET?

YES : Replace the hydraulic unit (ABS-ECU) (Refer to).

NO : If the trouble symptom is resolved, an intermittent malfunction such as poorly engaged connector(s) or wiring harness is suspected (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

STEP 3. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS THE DIAGNOSIS CODE NO.U0001 SET?

YES : Return to Step 1.

NO : This diagnosis is complete.

<Added>

CODE NO. U0100 ENGINE TIME-OUT ERROR
CODE NO. U0114 4WD TIME-OUT ERROR
CODE NO. U0141 ETACS TIME-OUT ERROR

- Connector disconnected or improperly connected.
- Stretched or broken wires.

⚠ CAUTION

- IF THE DIAGNOSIS CODES U0100, U0114 AND U0141 ARE SET IN ABS-ECU, ALWAYS DIAGNOSE THE CAN BUS LINE. IF THERE IS ANY FAULT IN THE CAN BUS LINES, AN INCORRECT DIAGNOSIS CODE MAY BE SET. IN THIS CASE, THE SET DIAGNOSIS CODE IS NOT HIGHLY RELIABLE.
- BEFORE REPLACING THE ECU, ENSURE THAT THE COMMUNICATION CIRCUIT IS NORMAL.

- 4WD-ECU malfunction
- ABS-ECU malfunction

CODE NO. U0141

- Wiring harness or connector failure of CAN bus line
- Malfunction of ETACS-ECU
- ABS-ECU malfunction

DIAGNOSTIC PROCEDURE

OPERATION

ABS-ECU communicates with the engine ECU, 4WD-ECU and ETACS-ECU via the CAN bus lines.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set if ABS-ECU cannot receive the signal sent from other ECU for a certain period.

PROBABLE CAUSES

CODE NO. U0100

- Wiring harness or connector failure of CAN bus line
- Engine ECU malfunction
- ABS-ECU malfunction

CODE NO. U0114

- Wiring harness or connector failure of CAN bus line

MSB-10E35-008 (10AL020)

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 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnosis table). On completion, go to Step 4.

STEP 2. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS CODE NO. U0100, U0114 OR U0141 SET?

YES : Go to Step 3.

NO : The procedure is complete.

- Connector disconnected or improperly connected.
- Stretched or broken wires.

15
<Added>

ANTI-SKID BRAKING SYSTEM (ABS) TROUBLESHOOTING

Attached sheet 10

STEP 8. CHECK WHETHER THE DIAGNOSIS CODE IS RESET. YES : Return to Step 1.
NO : This diagnosis is complete.

Q: IS THE DIAGNOSIS CODE NO.U1417 SET?

TROUBLE SYMPTOM CHART

M1352011401333

CAUTION

- ABS MAY OPERATE IN THE FOLLOWING CONDITIONS: SLIPPERY ROAD SURFACE, HIGH SPEED TURN, AND BUMPY ROAD SURFACE. WHEN A CUSTOMER HAS ENCOUNTERED ABS OPERATION IN CORRESPONDING CONDITION, CONFIRM THAT THEY HAVE/HAVE NOT.
- DURING ABS OPERATION, THE BRAKE PEDAL IS PULSED OR VIBRATES SLIGHTLY, AND THE NOISE OCCURS AT THE SAME TIME. THIS IS BECAUSE THE BRAKE LINE PRESSURE IS RELEASED INTERMITTENTLY TO PREVENT THE WHEEL LOCKING, AND NOT A SYSTEM MALFUNCTION.
- DURING DIAGNOSIS, A DIAGNOSIS CODE ASSOCIATED WITH OTHER SYSTEMS MAY BE SET WHEN THE IGNITION SWITCH IS TURNED ON WITH CONNECTOR(S) DISCONNECTED. CONFIRM ALL SYSTEMS FOR DIAGNOSIS CODE(S). IF DIAGNOSIS CODE(S) ARE SET, ERASE THEM ALL.

TROUBLE SYMPTOM	INSPECTION PROCEDURE NO.	REFERENCE PAGE
M.U.T.-III cannot communicate only with ABS-ECU.	1	
Brake warning lamp stays ON with the parking brake lever released.	2	
ABS warning lamp does not illuminate when ignition switch is turned to the ON position (Engine stopped).	3	
Brake warning lamp does not illuminate when the ignition switch is turned to ON position (Engine stopped).	4	
ABS warning lamp stays ON after the engine is started.	5	
Abnormality in brake operation	6	
ABS system inoperative	7	
ABS-ECU power supply circuit system	8	

The initial check sound of hydraulic unit loud

9

SYMPTOM PROCEDURES

<Added>

INSPECTION PROCEDURE 1: M.U.T.-III CANNOT COMMUNICATE ONLY WITH ABS-ECU.

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.
 - IF THE POWER IS SUPPLIED WITH THE EARTH CIRCUIT OF CAN COMMUNICATION DEVICE OPEN CIRCUITED, AN ELECTRIC POTENTIAL ABNORMALITY MAY OCCUR TO THE CAN BUS LINES.
- system, the CAN bus line, ABS-ECU power supply circuit system, or ABS-ECU may be faulty.
- PROBABLE CAUSES**
- Damaged wiring harness and connectors
 - ABS-ECU malfunction
 - Wrong routing of M.U.T.-III harness
 - Abnormality in battery or alternator
 - Abnormality in power supply voltage to ABS-ECU
 - ECU malfunction of other system

COMMENTS ON TROUBLE SYMPTOM

When M.U.T.-III cannot communicate with the ABS

M3B-10E35-000 (10A-029)

ANTI-SKID BRAKING SYSTEM (ABS) TROUBLESHOOTING

Attached sheet 11

STEP 8. CHECK WHETHER THE DIAGNOSIS CODE IS RESET. YES : Return to Step 1.
NO : This diagnosis is complete.

Q: IS THE DIAGNOSIS CODE NO.U1417 SET?

TROUBLE SYMPTOM CHART

M1352011401333

CAUTION

- ABS MAY OPERATE IN THE FOLLOWING CONDITIONS: SLIPPERY ROAD SURFACE, HIGH SPEED TURN, AND BUMPY ROAD SURFACE. WHEN A CUSTOMER COMPLAINS, CONFIRM THAT THEY HAVE/HAVE NOT ENCOUNTERED ABS OPERATION IN CORRESPONDING CONDITIONS.
- DURING ABS OPERATION, THE BRAKE PEDAL IS VIBRATED FOR A SHORT PERIOD OF TIME, AND THE NOISE OCCURS AT THE SAME TIME. THIS IS BECAUSE THE BRAKE LINE PRESSURE IS RELEASED INTERMITTENTLY TO PREVENT THE WHEEL LOCKING, AND NOT A SYSTEM MALFUNCTION.
- DURING DIAGNOSIS, A DIAGNOSIS CODE ASSOCIATED WITH OTHER SYSTEMS MAY BE SET WHEN THE IGNITION SWITCH IS TURNED ON WITH CONNECTOR(S) DISCONNECTED. DETECTION, CONFIRM ALL SYSTEMS FOR DIAGNOSIS CODE(S). IF DIAGNOSIS CODE(S) ARE SET, ERASE THEM ALL.

TROUBLE SYMPTOM	INSPECTION PROCEDURE NO.	REFERENCE PAGE
M.U.T.-III cannot communicate only with ABS-ECU.	1	
Brake warning lamp stays ON with the parking brake lever released.	2	
ABS warning lamp does not illuminate when ignition switch is turned to the ON position (Engine stopped).	3	
Brake warning lamp does not illuminate when the ignition switch is turned to ON position (Engine stopped).	4	
ABS warning lamp stays ON after the engine is started.	5	
Abnormality in brake operation	6	
ABS system inoperative	7	
ABS-ECU power supply circuit system	8	
ABS operate too frequently.	9	

SYMPTOM PROCEDURES

The initial check sound of hydraulic unit loud

10

<Added>

INSPECTION PROCEDURE 1: M.U.T.-III CANNOT COMMUNICATE ONLY WITH ABS-ECU.

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.
 - IF THE POWER IS SUPPLIED WITH THE EARTH CIRCUIT OF CAN COMMUNICATION DEVICE OPEN CIRCUITED, AN ELECTRIC POTENTIAL ABNORMALITY MAY OCCUR TO THE CAN BUS LINES.
- system, the CAN bus line, ABS-ECU power supply circuit system, or ABS-ECU may be faulty.
- PROBABLE CAUSES**
- Damaged wiring harness and connectors
 - ABS-ECU malfunction
 - Wrong routing of M.U.T.-III harness
 - Abnormality in battery or alternator
 - Abnormality in power supply voltage to ABS-ECU
 - ECU malfunction of other system

COMMENTS ON TROUBLE SYMPTOM

When M.U.T.-III cannot communicate with the ABS

<Added>

Inspection Procedure 9: The initial check sound of hydraulic unit is loud.**CAUTION**

When installing brake tube, match the axial center of flare nut and brake tube with the center of hole at the hydraulic unit side, and check that the fluid does not leak.

COMMENT ON TROUBLE SYMPTOM

The operation sound may be decreased by reducing the load at the rubber mount portion of the brake tube and hydraulic unit.

PROBABLE CAUSES

- Improper installation of the hydraulic unit
- Improper installation of the brake tube

DIAGNOSIS**DRIVING CHECK**

- 1) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
- 2) When vehicle speed reaches 10 km/h, check the operating sound volume and compare it with that the same model.

OK: The operating sound is the same volume or less by comparing with that of the same model.

Q: Is the check result normal?

YES: This diagnosis is complete.

NO: Carry out adjustment for hydraulic unit installation.

<Added>

Inspection Procedure 10: The initial check sound of hydraulic unit is loud.**CAUTION**

When installing brake tube, match the axial center of flare nut and brake tube with the center of hole at the hydraulic unit side, and check that the fluid does not leak.

COMMENT ON TROUBLE SYMPTOM

The operation sound may be decreased by reducing the load at the rubber mount portion of the brake tube and hydraulic unit.

PROBABLE CAUSES

- Improper installation of the hydraulic unit
- Improper installation of the brake tube

DIAGNOSIS**DRIVING CHECK**

- 1) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
- 2) When vehicle speed reaches 10 km/h, check the operating sound volume and compare it with that the same model.

OK: The operating sound is the same volume or less by comparing with that of the same model.

Q: Is the check result normal?

YES: This diagnosis is complete.

NO: Carry out adjustment for hydraulic unit installation.

7. After the inspection, turn the ignition switch to the LOCK (OFF) position, and then disconnect M.U.T.-III.

<Added>

HYDRAULIC UNIT INSTALLATION ADJUSTMENT

Refer to HYDRAULIC UNIT REMOVAL AND INSTALLATION.

- 1) Operate the pre-removal steps for the hydraulic unit.
- 2) Removal all brake tubes.
- 3) Removal the protector.
- 4) Loosen the mounting bolt and nut of the hydraulic unit bracket.
- 5) Install all brake tubes temporarily.
- 6) Shake hydraulic unit to all directions with both hands to make the hydraulic unit bracket insulator fit with the unit.
- 7) Install the hydraulic unit bracket with mounting bolts and nut not to load the brake tube.
- 8) Install the protector.
- 9) Install all brake tubes securely.

NOTE: Install the flare nut taking care not to let the brake tube turn together.

- 10) Operate the post-installation steps of the hydraulic unit.

<Added>

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

STEM (ASC)

Attached sheet 15

STEP 4. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

STEP 5. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

<Old>

~~Q: IS DIAGNOSIS CODE NO.C123B SET?~~

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

~~Q: IS DIAGNOSIS CODE NO.C123B SET?~~ <Old>

- YES : Return to Step 1.
- NO : The procedure is complete.

Q: Does ASC unnecessary activation occur or is diagnosis code No.C123B set?

<New>

CODE NO. C2200 ABNORMALITY IN ASC-ECU

⚠ CAUTION

- IF THERE IS ANY PROBLEM IN THE CAN BUS LINES, AN INCORRECT DIAGNOSIS CODE MAY BE SET. TO THIS DIAGNOSIS, DIAGNOSE THE CAN BUS LINES (REFER TO GROUP 54C, CAN BUS DIAGNOSIS TABLE).
- WHENEVER ECU IS REPLACED, ENSURE THAT THE CAN BUS LINES ARE NORMAL.
- WHEN THE HYDRAULIC UNIT (INTEGRATED WITH ASC-ECU) IS REPLACED, ALWAYS CARRY OUT THE CALIBRATION OF THE STEERING WHEEL SENSOR, THE G AND YAW RATE SENSOR AND BRAKE FLUID PRESSURE SENSOR (REFER TO , AND

OPERATION

ASC-ECU controls ASC by calculating the data sent from the wheel speed sensor, the steering wheel sensor, and the G and yaw rate sensor.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set when ASC-ECU has malfunction.

PROBABLE CAUSES

ASC-ECU malfunction

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN BUS DIAGNOSIS

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

Q: IS THE CHECK RESULT NORMAL?

- YES : Go to Step 2.
- NO : Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnosis table). On completion, go to Step 2.

STEP 2. DIAGNOSIS CODE RECHECK AFTER RESETTING CAN BUS LINES

Q: IS DIAGNOSIS CODE NO.C2200 SET?

- YES : Replace the hydraulic unit (ASC-ECU) (Refer to). Then go to Step 3.
- NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

STEP 3. DIAGNOSIS CODE RECHECK AFTER RESETTING CAN BUS LINES

Q: IS DIAGNOSIS CODE NO.C2200 SET?

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

<New>

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

TEM (ASC)

Attached sheet 17

STEP 9. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Drive the vehicle 40 km/h or more for more than 15 seconds

Q: IS DIAGNOSIS CODE NO.C123B SET?

- YES :** Replace the hydraulic unit (ASC-ECU).
(Refer to .) Then go to Step 10.
- NO :** Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction .)

STEP 10. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Drive the vehicle 40 km/h or more for more than 15 seconds

Q: IS DIAGNOSIS CODE NO.C123B SET?

- YES :** Return to Step 1.
- NO :** The procedure is complete.

Q: Does ASC unnecessary activation occur or is diagnosis code No.C123B set?

<New>

CODE NO. C2200 ABNORMALITY IN ASC-ECU

CAUTION

- IF THERE IS ANY PROBLEM IN THE CAN BUS LINES, AN INCORRECT DIAGNOSIS CODE MAY BE SET. TO THIS DIAGNOSIS, DIAGNOSE THE CAN BUS LINES (REFER TO GROUP 54C, CAN BUS DIAGNOSIS TABLE).
- WHENEVER ECU IS REPLACED, ENSURE THAT THE CAN BUS LINES ARE NORMAL.
- WHEN THE HYDRAULIC UNIT (INTEGRATED WITH ASC-ECU) IS REPLACED, ALWAYS CARRY OUT THE CALIBRATION OF THE STEERING WHEEL SENSOR, THE G AND YAW RATE SENSOR AND BRAKE FLUID PRESSURE SENSOR (REFER TO , AND

OPERATION

ASC-ECU controls ASC by calculating the data sent from the wheel speed sensor, the steering wheel sensor, and the G and yaw rate sensor.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set when ASC-ECU has malfunction.

PROBABLE CAUSES

ASC-ECU malfunction

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN BUS DIAGNOSIS

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

Q: IS THE CHECK RESULT NORMAL?

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

STEP 2. DIAGNOSIS CODE RECHECK AFTER RESETTING CAN BUS LINES

Q: IS DIAGNOSIS CODE NO.C2200 SET?

- YES :** Replace the hydraulic unit (ASC-ECU) (Refer to). Then go to Step 3.
- NO :** Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

STEP 3. DIAGNOSIS CODE RECHECK AFTER RESETTING CAN BUS LINES

Q: IS DIAGNOSIS CODE NO.C2200 SET?

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

<Added>

ACTIVE STABILITY CONTROL SYSTEM (ASC) TROUBLESHOOTING

Attached sheet 19

STEP 4. Check whether the diagnosis code is reset.

<Added>

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

~~Q: Is diagnosis code No.C123B set?~~

- <Old> YES : Replace ASC-ECU.
NO : Intermittent malfunction (Refer to GROUP 00
–How to Cope with Intermittent Malfunction).

**Q: Does ASC unnecessary activation occur
or is diagnosis code No.C123B set?**

<New>

E IS

CODE NO. C2200 ABNORMALITY IN ASC-ECU

⚠ CAUTION

- IF THERE IS ANY PROBLEM IN THE CAN BUS LINES,
AN INCORRECT DIAGNOSIS CODE MAY BE SET.
TO THIS DIAGNOSIS, DIAGNOSE THE CAN BUS LINES
(REFER TO GROUP 54C, CAN BUS DIAGNOSIS
TABLE).
- WHENEVER ECU IS REPLACED, ENSURE THAT THE
CAN BUS LINES ARE NORMAL.
- WHEN THE HYDRAULIC UNIT (INTEGRATED WITH ASC-
ECU) IS REPLACED, ALWAYS CARRY OUT THE CALIBRA-
TION OF THE STEERING WHEEL SENSOR, THE G AND
YAW RATE SENSOR AND BRAKE FLUID PRESSURE SEN-
SOR (REFER TO , AND

OPERATION

ASC-ECU controls ASC by calculating the data sent
from the wheel speed sensor, the steering wheel
sensor, and the G and yaw rate sensor.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set when ASC-ECU has mal-
function.

PROBABLE CAUSES

ASC-ECU malfunction

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN BUS DIAGNOSIS

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

Q: IS THE CHECK RESULT NORMAL?

- YES : Go to Step 2.
NO : Repair the CAN bus lines (Refer to GROUP
54C – CAN Bus Diagnosis table). On
completion, go to Step 2.

STEP 2. DIAGNOSIS CODE RECHECK AFTER RESETTIN CAN BUS LINES

Q: IS DIAGNOSIS CODE NO.C2200 SET?

- YES : Replace the hydraulic unit (ASC-ECU)
(Refer to). Then go to Step 3.
NO : Intermittent malfunction (Refer to GROUP
00 – How to Cope with Intermittent
Malfunction).

STEP 3. DIAGNOSIS CODE RECHECK AFTER RESETTIN CAN BUS LINES

Q: IS DIAGNOSIS CODE NO.C2200 SET?

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

- Connector disconnected or improperly connected.
- Stretched or broken wires.

QUALITY CONTROL SYSTEM (ASC) TROUBLESHOOTING

Attached sheet 20

<Added>

DIAGNOSIS CODE SET CONDITIONS

ASC-ECU receives signals necessary for the operations of ABS, ASC, and TCL from the engine ECU, CVT-ECU or A/T-ECU or TC-SST-ECU, 4WD-ECU, AWC-ECU, ETACS-ECU, and steering wheel sensor via CAN bus lines. This diagnosis code is stored when ASC-ECU cannot receive the signals necessary for the operations of ABS, ASC, and TCL from the engine ECU, CVT-ECU or A/T-ECU or TC-SST-ECU, 4WD-ECU, AWC-ECU, ETACS-ECU, and steering wheel sensor.

PROBABLE CAUSES

- Engine ECU malfunction
- CVT-ECU or A/T-ECU or TC-SST-ECU malfunction
- 4WD-ECU malfunction
- AWC-ECU malfunction
- Steering wheel sensor malfunction
- Malfunction of the CAN bus
- ASC-ECU malfunction
- Malfunction of ETACS-ECU
- ETACS-ECUs have been interchanged between two vehicles.

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN BUS DIAGNOSIS

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

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnosis table). On completion, go to Step 6.

STEP 2. M.U.T.-III DIAGNOSIS CODE

Check that the diagnosis codes U0100, U0101, U0114, U0126, and U0141 are set in ASC-ECU.

Q: IS THE DIAGNOSIS CODE SET?

YES : Troubleshoot for the relevant diagnosis code (Refer to). Then go to Step 6.

NO : Go to Step 3.

STEP 3. M.U.T.-III OTHER SYSTEM DIAGNOSIS CODE

Using M.U.T.-III, check if the diagnosis codes are set from the engine ECU, CVT-ECU or A/T-ECU or TC-SST-ECU, 4WD-ECU, AWC-ECU, ETACS-ECU, and steering wheel sensor or not.

Q: IS THE DIAGNOSIS CODE SET?

YES : Troubleshoot the relevant diagnosis code, and then go to Step 6.

NO : Go to Step 4.

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STEP 4. ETACS-ECU CODING DATA CHECK

Refer to GROUP 00 – Coding List .

VEHICLE LINE

OK: LANCER

TRANSMISSION

OK <5M/T>: 5MT

OK <CVT>: CVT

OK <4A/T>: AT

OK <TC-SST>: TC-SST

ENGINE TYPE

OK <1500>: 1.5L D4 MPI VVT

OK <PETROL (1800)>: 1.8L D4 MPI VVT

OK <PETROL (2000:EXCEPT PETROL[2000 - T/C])>: 2.0L D4 MPI VVT

OK <PETROL(2000 - T/C)>: 2.0L D4 VVT T/C

OK <DIESEL>: BSY OR BWC

ENGINE POWER

OK <EXCEPT DIESEL>: NORMAL

OK <DIESEL>: HIGH POWER

CHASSIS TYPE FOR A.S.C.

OK <DIESEL, 1500>: TYPE 1

OK <PETROL (1800: EXCEPT LOW C_Q SPECIFICATION AND CLEAR TEC, 2000: EXCEPT PETROL[2000 - T/C]) >: TYPE 4

OK <PETROL(2000 - T/C)>: TYPE 6

OK <PETROL (1800:LOW C_Q SPECIFICATION AND CLEAR TEC, 2000: EXCEPT PETROL[2000 - T/C]) >: TYPE 7

FINAL DRIVE

OK <2WD>: FRONT DRIVE

OK <4WD>: 4WD FF BASE

TRANSFER

OK <2WD>: 2WD

OK <4WD (EXCEPT TC-SST)>: ECC

OK <4WD (TC-SST)>: ACD

SAS

OK: PRESENT

4WD/AWC

OK <2WD, 4WD (TC-SST)>: NOT PRESENT

OK <4WD (EXCEPT TC-SST)>: PRESENT

TCM

OK <M/T>: NOT PRESENT

OK <CVT, A/T, TC-SST>: PRESENT

ACDAYC

OK <EXCEPT TC-SST>: NOT PRESENT

OK <TC-SST>: PRESENT

Q: IS THE CHECK RESULT NORMAL?

STEP 3. M.U.T.-III DATA LIST

Check the following service data (Refer to).

- Item 09: G sensor

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 4.

NO : Replace the G and yaw rate sensor (Refer to) and then go to Step 6.

STEP 4. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS DIAGNOSIS CODE NO. C1210 SET?

YES : Replace the G and yaw rate sensor (Refer to), and 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.

Q: Is diagnosis code No. C1210 set?

YES : Replace the hydraulic unit (ASC-ECU (Refer to), and then go to Step 6.

NO : This diagnosis is complete.

STEP 6. Check whether the diagnosis code is reset.

Q: Is diagnosis code No. C1210 set?

YES : Return to Step 1.

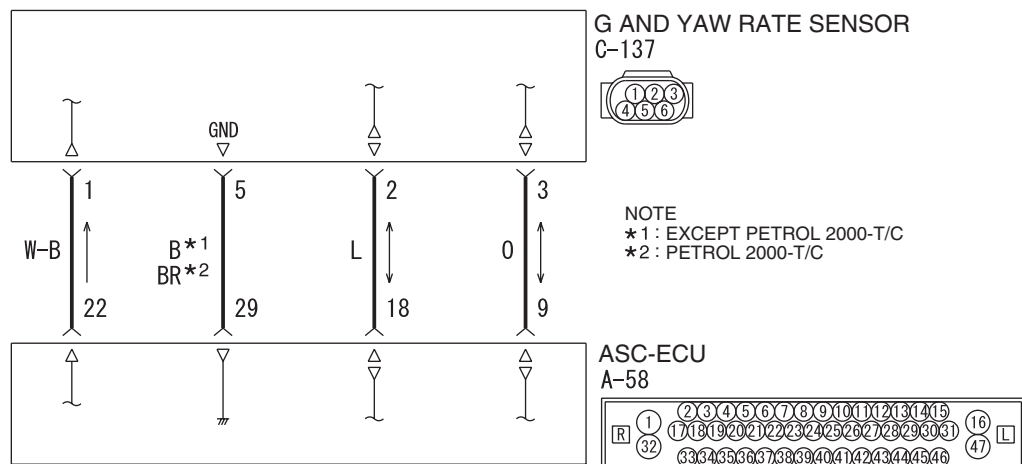
NO : This diagnosis is complete.

<Added>

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

CODE NO. C1242 ABNORMALITY IN G AND YAW RATE SENSOR SIGNAL (ABNORMALITY IN LONGITUDINAL G SENSOR OUTPUT SIGNAL)

G and Yaw Rate Sensor 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 : Grey R : Red P : Pink V : Violet PU : Purple SI : Silver WAH35E012A

STEP 3. M.U.T.-III DATA LIST

Check the following service data (Refer to).

- Item 09: G sensor

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 6.

NO : Go to Step 4.

STEP 4. CONNECTOR CHECK: A-58 ASC-ECU CONNECTOR, C-137 G AND YAWRATE SENSOR

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 5.

NO : Repair the connector, and then go to Step 8.

STEP 5. CHECK THE HARNESS WIRE BETWEEN C-137 G AND YAWRATE SENSOR CONNECTOR TERMINAL NO. 2, 3 AND A-58 ASC-ECU CONNECTOR NO. 18, 19.

- Check the communication lines for open circuit and short circuit.

Q: IS THE CHECK RESULT NORMAL?

YES : Replace the G and yaw rate sensor (Refer to) and then go to Step 7.

NO : Repair the wiring harness, and then go to Step 8.

STEP 6. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS DIAGNOSIS CODE NO.C1210 SET?

YES : Replace the hydraulic unit (ASC-ECU) (Refer to), and then go to Step 8.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

STEP 7. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS DIAGNOSIS CODE NO.C1210 SET?

YES : Replace the hydraulic unit (ASC-ECU) (Refer to), and then go to Step 8.

NO : This diagnosis is complete.

STEP 8. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS DIAGNOSIS CODE NO.C1210 SET?

YES : Return to Step 1.

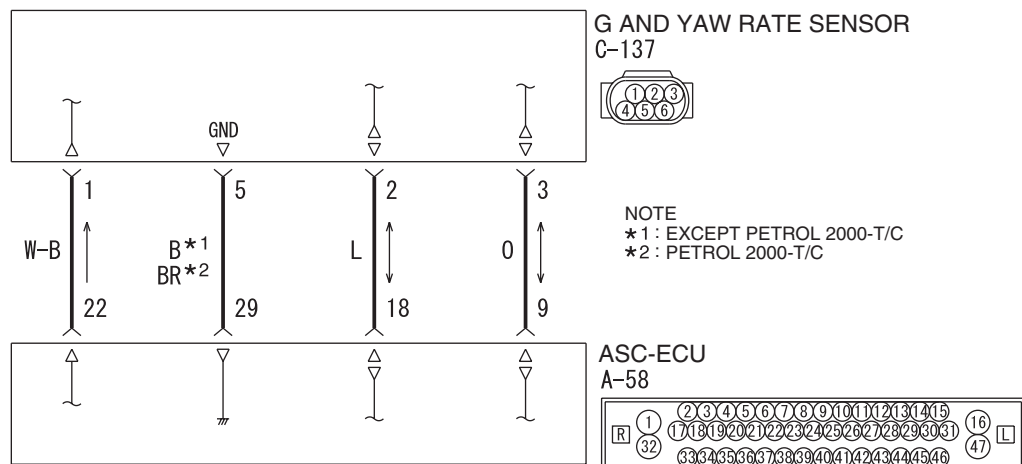
NO : This diagnosis is complete.

<Added>

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

CODE NO. C1242 ABNORMALITY IN G AND YAWRATE SENSOR SIGNAL (ABNORMALITY IN LONGITUDINAL G SENSOR OUTPUT SIGNAL)

G and Yaw Rate Sensor Circuit



STEP 3. M.U.T.-III DATA LIST

Check the following service data

- Item 09: G sensor

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 4.

NO : Replace the G and yaw rate sensor, and then go to Step 5.

STEP 4. Check whether the diagnosis code is reset.

Q: Is diagnosis code No.C1210 set?

YES : Replace the G and yaw rate sensor, and then go to Step 5.

NO : This diagnosis is complete.

STEP 5. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS DIAGNOSIS CODE NO.C1210 SET?

YES : Replace the ASC-ECU.

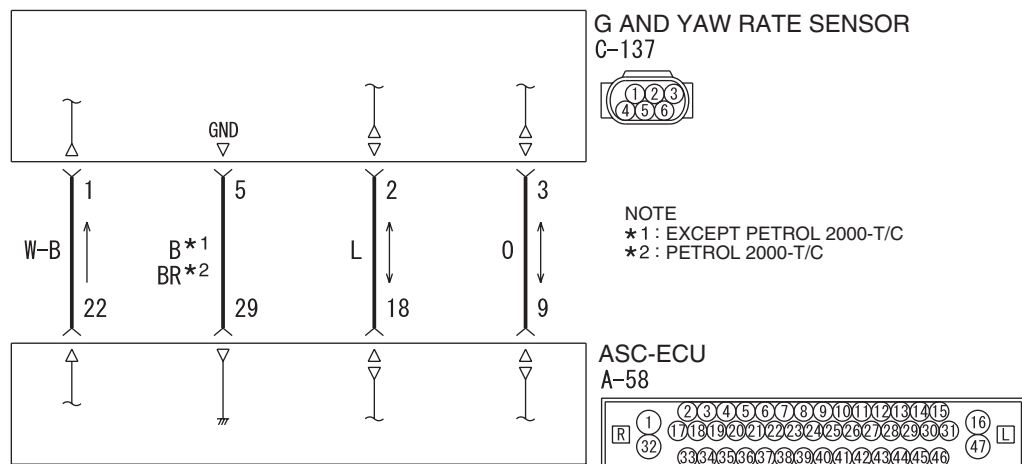
NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

<Added>

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

CODE NO. C1242 ABNORMALITY IN G AND YAW RATE SENSOR SIGNAL (ABNORMALITY IN LONGITUDINAL G SENSOR OUTPUT SIGNAL)

G and Yaw Rate Sensor 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 : Grey R : Red P : Pink V : Violet PU : Purple SI : Silver WAH35E012A

YES : Troubleshoot for the diagnosis code (Refer to). Then go to Step 3.
NO : Go to Step 3.

YES : Go to Step 7.
NO : Reinstall the G and yaw rate sensor correctly (Refer to), and then go to Step 10.

STEP 3. DIAGNOSIS CODE RECHECK AFTER RESET CAN BUS LINES

Q: IS THE DIAGNOSIS CODE NO.C1242 SET?
YES : Go to Step 4.
NO : This diagnosis is complete.

STEP 7. CONNECTOR CHECK: A-58 ASC-ECU CONNECTOR, C-137 G AND YAWRATE SENSOR

Q: IS THE CHECK RESULT NORMAL?
YES : Go to Step 8.
NO : Repair the connector, and then go to Step 10.

STEP 4. CHECK THE WHEEL SPEED SENSOR-RELATED DIAGNOSIS CODE.

Use the M.U.T.-III to check whether the wheel speed sensor-related diagnosis code is set or not.

Q: IS THE DIAGNOSIS CODE SET?
YES : Troubleshoot for the relevant diagnosis code (Refer to).
NO : Go to Step 5.

STEP 5. M.U.T.-III DATA LIST

Check the following service data under curb weight condition or one occupant (driver) only in the vehicle, on a flat road.(Refer to)

- Item 09: G sensor
- Item 96: G sensor offset

Q: IS THE CHECK RESULT NORMAL?
YES : Turn the ignition switch to the ON from OFF position. Then go to Step 9.
NO : Go to Step 6.

STEP 6. G AND YAWRATE SENSOR CHECK

Check that the G and yaw rate sensor is installed correctly.

Q: IS THE CHECK RESULT NORMAL?

STEP 8. CHECK THE HARNESS WIRE BETWEEN C-137 G AND YAWRATE SENSOR CONNECTOR TERMINAL NO. AND A-58 ASC-ECU CONNECTOR NO. 18, 19.

- Check the communication lines for open circuit and short circuit.

Q: IS THE CHECK RESULT NORMAL?
YES : Replace the G and yaw rate sensor.(Refer to .) Then go to Step 9.
NO : Repair the wiring harness, and then go to Step 10.

STEP 9. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS THE DIAGNOSIS CODE NO.C1242 SET?
YES : Replace the hydraulic unit (ASC-ECU) (Refer to), and then go to Step 10.
NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

STEP 10. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS THE DIAGNOSIS CODE NO.C1242 SET?
YES : Return to Step 1.
NO : This diagnosis is complete.

<Added>

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

**ACTIVE STABILITY CONTROL SYSTEM (ASC)
TROUBLESHOOTING**

Attached sheet 27

YES : Troubleshoot for the diagnosis code (Refer to). Then go to Step 3.
NO : This diagnosis is complete.

STEP 3. Check the wheel speed sensor-related diagnosis code.

Use the M.U.T.-III to check whether the wheel speed sensor-related diagnosis code is set or not.

Q: Is the diagnosis code set?

YES : Troubleshoot for the relevant diagnosis code (Refer to).

NO : Go to Step 4.

STEP 4. G and yaw rate sensor check

Check that the G and yaw rate sensor is installed correctly.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Reinstall the G and yaw rate sensor correctly.

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

Check the following service data.

- Item 09: G sensor

Q: Is the check result normal?

YES : Go to Step 6.

NO : Replace the G and yaw rate sensor. and then go to Step 6.

STEP 6. Check whether the diagnosis code is reset.

Q: Is the diagnosis code No.C1242 set?

YES : Replace the ASC-ECU.

NO : This diagnosis is complete.

(1) Erase the diagnosis code.

(2) Drive the vehicle at 20 km/h or more.

<Added>

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

STEP 3. Check of wheel speed sensor-related diagnosis code.

Using M.U.T.-III check if the wheel speed sensor-related diagnosis code is set.

Q: Is the diagnosis code set?

YES : Perform troubleshoot for the diagnosis code that is set (Refer to).
NO : Go to Step 4.

STEP 4. G and yaw rate sensor check.

Check that the G and yaw rate sensor is installed correctly.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Reinstall the G and yaw rate sensor correctly. (Refer to) Then go to Step 7.

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

Check the following service data. (Refer to)

- Item 09: G sensor

Q: Is the check result normal?

YES : Go to Step 6.
NO : Replace the G and yaw rate sensor. (Refer to) Then go to Step 7.

STEP 6. Check whether the diagnosis code is reset.

Q: Is the diagnosis code No.C1242 set?

A YES : Replace the ASC-ECU (Refer to), and then go to Step 7.
NO : Intermittent malfunction (Refer to GROUP 00 — NO. 7 G How to Cope with Intermittent Malfunction).

STEP 7. Check whether the diagnosis code is reset.

Q: Is the diagnosis code No.C1242 set?

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

<Added>

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

STEP 4. Check the wheel speed sensor-related or the steering wheel sensor-related diagnosis code.

**CONTROL SYSTEM (ASC)
TROUBLESHOOTING**

Attached sheet 31 (1/2)

<New>

⚠ 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.
- DO NOT DROP OR SHOCK THE G AND YAW RATE SENSOR.
- WHEN THE G AND YAW RATE SENSOR IS REPLACED, ALWAYS CARRY OUT CALIBRATION FROM ECU LEARN THE NEUTRAL POINT (REFER TO).
- WHEN THE HYDRAULIC UNIT (INTEGRATED WITH ASC-ECU) IS REPLACED, ALWAYS CARRY OUT THE CALIBRATION OF THE STEERING WHEEL SENSOR, THE G AND YAW RATE SENSOR AND BRAKE FLUID PRESSURE SENSOR (REFER TO , AND

OPERATION

ABS-ECU monitors if the output of G and yaw rate sensor is normal or not.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set if any malfunction below is found:

- The output value of lateral G and yaw rate is abnormal.
- When abnormality is detected by comparing the value output from the lateral G and yaw rate sensor with the one from the steering wheel sensor and wheel speed sensor

PROBABLE CAUSES

- Improper installation of the G and yaw rate sensor
- G and yaw rate sensor malfunction
- Steering wheel sensor malfunction
- Improperly installed steering wheel sensor
- Malfunction of wheel speed sensor
- ASC-ECU malfunction
- External noise interference

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN BUS DIAGNOSIS

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

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 2.

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

STEP 2. M.U.T.-III DIAGNOSIS CODE

Check that the diagnosis code U0125 is set in ASC-ECU.

Q: IS THE DIAGNOSIS CODE NO. U0125 SET?

YES : Troubleshoot for the diagnosis code (Refer to). Then go to Step 3.

NO : Go to Step 3.

STEP 3. DIAGNOSIS CODE RECHECK AFTER RESETTIN CAN BUS LINES

Q: IS THE DIAGNOSIS CODE NO. C123C SET?

YES : Go to Step 4.

NO : This diagnosis is complete.

STEP 4. CHECK THE OTHER SENSOR-RELATED DIAGNOSIS CODE.

Use M.U.T.-III to check whether the wheel speed sensor-related or steering wheel sensor-related diagnosis code is set or not.

Q: IS THE DIAGNOSIS CODE SET?

YES : Troubleshoot for the relevant diagnosis code (Refer to).

NO : Go to Step 5.

STEP 5. G AND YAW RATE SENSOR INSTALLATION CHECK

Check that the G and yaw rate sensor is installed correctly.

Q: IS THE CHECK RESULT NORMAL?

YES : After checking the G and yaw rate sensor, carry out calibration of the G and yaw rate sensor to make ASC-ECU relearn the neutral point. (Refer to .) Then go to Step 6.

NO : Reinstall the G and yaw rate sensor correctly (Refer to), and then go to Step 12.

STEP 6. M.U.T.-III DATA LIST

Check the following service data (Refer to).

- Item 08: Lateral G-sensor
- Item 12: Yaw rate sensor

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 9.

NO : Go to Step 7.

STEP 7. CONNECTOR CHECK: A-58 ASC-ECU CONNECTOR, C-137 G AND YAW RATE SENSOR

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 8.

NO : Repair the connector, and then go to Step 13.

STEP 8. CHECK THE HARNESS WIRE BETWEEN C-158 AND YAW RATE SENSOR CONNECTOR TERMINAL NO. 2, 3 AND A-58 ASC-ECU CONNECTOR NO. 18, 19.

- Check the communication lines for open circuit and short circuit.

Q: IS THE CHECK RESULT NORMAL?

YES : Replace the G and yaw rate sensor. (Refer to .) Then go to Step 12.

NO : Repair the wiring harness, and then go to Step 13.

STEP 9. STEERING WHEEL SENSOR INSTALLATION CHECK

Check that the steering wheel sensor is installed correctly.

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 10.

NO : Reinstall the steering wheel sensor correctly (Refer to), and then go to Step 10.

STEP 10. WHEEL ALIGNMENT CHECK

Refer to .

Q: IS THE CHECK RESULT NORMAL?

YES : After checking the wheel alignment, carry out calibration of steering wheel sensor to make ASC-ECU relearn the neutral point. (Refer to). Then go to Step 11.

NO : After adjusting the wheel alignment, carry out calibration of steering wheel sensor to make ASC-ECU relearn the neutral point (Refer to). Then go to Step 11.

STEP 11. M.U.T.-III DATA LIST

Check the following service data (Refer to).

- Item 11: Steering angle sensor

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 12.

NO : Replace the steering wheel sensor (Refer to), and then go to Step 12.

STEP 12. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS THE DIAGNOSIS CODE NO. C123C SET?

YES : Replace the hydraulic unit (ASC-ECU) (Refer to), and then go to Step 13.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

STEP 13. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS THE DIAGNOSIS CODE NO. C123C SET?

YES : Return to Step 1.

NO : This diagnosis is complete.

<Added>

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

⚠ CAUTION

- IF THERE IS ANY PROBLEM IN THE CAN BUS L^ICAN bus lines
AN INCORRECT DIAGNOSIS CODE MAY BE SET. TO THIS DIAGNOSIS, DIAGNOSE THE CAN BUS (REFER TO GROUP 54C, TROUBLE CODE DIAGN^O).
- WHENEVER ECU IS REPLACED, ENSURE THAT CAN BUS LINES ARE NORMAL.
- DO NOT DROP OR SHOCK THE G AND YAW RATE SENSOR.
- WHEN THE G AND YAW RATE SENSOR IS REPLACED, ALWAYS CARRY OUT CALIBRATION TO MAKE ASC-ECU LEARN THE NEUTRAL POINT (REFER TO).
- WHEN THE HYDRAULIC UNIT (INTEGRATED WITH ECU) IS REPLACED, ALWAYS CARRY OUT CALIBRATION OF THE STEERING WHEEL SENSOR, THE G AND YAW RATE SENSOR AND BRAKE FLUID PRESS^SOR (REFER TO , AND).

OPERATION

ABS-ECU monitors if the output of G and yaw rate sensor is normal or not.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set if any malfunction below is found:

- The output value of lateral G and yaw rate is abnormal.
- When abnormality is detected by comparing the value output from the lateral G and yaw rate sensor with the one from the steering wheel sensor and wheel speed sensor

PROBABLE CAUSES

- Improper installation of the G and yaw rate sensor
- G and yaw rate sensor malfunction
- Steering wheel sensor malfunction
- Improperly installed steering wheel sensor
- Malfunction of wheel speed sensor
- ASC-ECU malfunction
- External noise interference

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN BUS DIAGNOSIS

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 Diagnosis table). On completion, go to Step 2.

STEP 2. Diagnosis code recheck after resetting

Q: Is the diagnosis code No.C123C set?

YES : Go to Step 3.

NO : This diagnosis is complete.

<Old>

STEP 3. Check the wheel speed sensor-related diagnosis code.

Use M.U.T.-III to check whether the wheel speed sensor-related or steering wheel sensor-related

diagnosis code is set or not.

Q: Is the diagnosis code set?

YES : Troubleshoot for the relevant diagnosis code (Refer to).

NO : Go to Step 4.

STEP 4. G and yaw rate sensor installation check

Check that the G and yaw rate sensor is installed correctly.

Q: Is the check result normal?

YES : Go to Step 5.

NO : After the G and yaw rate sensor is installed correctly, carry out the calibration of the G and yaw rate sensor to make ASC-ECU learn the neutral point again (Refer to). Then go to Step 8.

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

Check the following service data (Refer to).

- Item 08: Lateral G-sensor
- Item 12: Yaw rate sensor

Q: Is the check result normal?

YES : Go to Step 6.

NO : Replace the G and yaw rate sensor (Refer to). Then go to Step 8.

STEP 3. Check the wheel speed sensor-related or the steering wheel sensor-related diagnosis code.

<New>

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

Check the following service data (Refer to).

- Item 11: Steering angle sensor

Q: Is the check result normal?

YES : Go to Step 7.

NO : Replace the steering wheel sensor (Refer to).
Then go to Step 8.

STEP 7. Check whether the diagnosis code is reset.

~~(1) Ignition switch "LOCK" (OFF)~~

<Old>

~~(2) Ignition switch "ON"~~

Q: Is the diagnosis code No.C123C set?

YES : Replace the ASC-ECU (Refer to). Then go to Step 8.

NO : This diagnosis is complete.

STEP 8. Check whether the diagnosis code is reset.

IS

~~(1) Ignition switch "LOCK" (OFF)~~

<Old>

~~(2) Ignition switch "ON"~~

Q: Is the diagnosis code No.C123C set?

YES :

Return to Step 1.

NO :

This diagnosis is complete.

(1) Erase the diagnosis code.

(2) Drive the vehicle at 20 km/h or more.

E IS

<New or Added>

⚠ 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 line.

OPERATION

- ASC-ECU supplies power to the G and yaw rate sensor at the terminal No.1.
- The G and yaw rate sensor outputs the signal ASC-ECU via the CAN bus lines.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set if any malfunction below is found:

- The output value of G and yaw rate sensor is abnormal.
- When abnormality is detected by comparing the value output from the G and yaw rate sensor with the one from the steering wheel sensor and wheel speed sensor

PROBABLE CAUSES

- Improper installation of the G and yaw rate sensor
- G and yaw rate sensor malfunction
- Steering wheel sensor malfunction
- Malfunction of wheel speed sensor
- ASC-ECU malfunction
- External noise interference

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnosis

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. On completion, go to Step 2.

<Added>

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

STEP 2. Diagnosis code recheck after resetting CAN bus lines

Q: Is the diagnosis code No.C123C set?

YES : Go to Step 3.

NO : This diagnosis is complete.

<Old>

STEP 3. Check the wheel speed sensor-related diagnosis code.

Use M.U.T.-III to check whether the wheel speed sensor-related or steering wheel sensor-related diagnosis code is set or not.

Q: Is the diagnosis code set?

YES : Troubleshoot for the relevant diagnosis code (Refer to).

NO : Go to Step 4.

STEP 4. G and yaw rate sensor installation check

Check that the G and yaw rate sensor is installed correctly.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Install the G and yaw rate sensor correctly.

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

Check the following service data.

- Item 08: Lateral G-sensor
- Item 12: Yaw rate sensor

Q: Is the check result normal?

YES : Go to Step 6.

NO : Replace the G and yaw rate sensor, and then go to Step 7.

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

Check the following service data.

- Item 11: Steering angle sensor

Q: Is the check result normal?

YES : Go to Step 7.

NO : Replace the steering wheel sensor, and then go to Step 7.

STEP 7. Check whether the diagnosis code is reset.

Q: Is the diagnosis code No.C123C set?

YES : Replace the ASC-ECU.

NO : This diagnosis is complete.

STEP 3. Check the wheel speed sensor-related or the steering wheel sensor-related diagnosis code.

<New>

⚠ 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.
- DO NOT DROP OR SHOCK THE G AND YAW RATE SENSOR.
- WHEN THE G AND YAW RATE SENSOR IS REPLACED, ALWAYS CARRY OUT CALIBRATION TO MAKE ASC-ECU LEARN THE NEUTRAL POINT (REFER TO).
- WHEN THE HYDRAULIC UNIT (INTEGRATED WITH ASC-ECU) IS REPLACED, ALWAYS CARRY OUT BRAKE CALIBRATION OF THE STEERING WHEEL SENSOR, THE G AND YAW RATE SENSOR AND BRAKE FLUID PRESSURE SENSOR (REFER TO).

OPERATION

ABS-ECU monitors if the output of G and yaw rate sensor is normal or not.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set if any malfunction below is found:

- When abnormality is detected by the self-diagnosis of the lateral G and yaw rate
- When the output value of the lateral G and yaw rate is not within the standard value range

NOTE: This diagnosis code may be set when G and yaw rate sensor is put on the turntable turning at high speed.

PROBABLE CAUSES

- Improper installation of the G and yaw rate sensor
- Damaged wiring harness and connectors
- G and yaw rate sensor malfunction
- ASC-ECU malfunction

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN BUS DIAGNOSIS

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

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 2.

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

STEP 2. M.U.T.-III DIAGNOSIS CODE

Check that the diagnosis code U0125 is set in ASC-ECU.

Q: IS THE DIAGNOSIS CODE NO. U0125 SET?

YES : Troubleshoot for the diagnosis code (Refer to). Then go to Step 3.

NO : Go to Step 3.

STEP 3. DIAGNOSIS CODE RECHECK AFTER RESETTIN CAN BUS LINES

Q: IS THE DIAGNOSIS CODE NO. C2204 SET?

YES : Go to Step 4.

NO : This diagnosis is complete.

STEP 4. M.U.T.-III DATA LIST

Read the following service data under curb weight condition or one occupant (driver) only in the vehicle, on a flat road. (Refer to)

- Item 08: Lateral G-sensor
- Item 09: G-sensor
- Item 12: Yaw rate sensor
- Item 73: Lateral G sensor offset
- Item 97: Yaw rate sensor offset

Q: Is the check result normal?

YES : Turn the ignition switch to the ON from OFF position. Then go to Step 8.

NO : Go to Step 5.

STEP 5. G and yaw rate sensor installation check

Check that the G and yaw rate sensor is installed correctly.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Reinstall the G and yaw rate sensor correctly (Refer to), and then go to Step 9.

STEP 6. Connector check: A-03 ASC-ECU connector, C-30 G and yaw rate sensor

Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair the connector, and then go to Step 9.

STEP 7. Check the harness wire between C-30 G and yaw rate sensor connector terminal No. 2, 3 and A-03 ASC-ECU connector No. 29, 25 <Except vehicles with TC-SST> or A-03 ASC-ECU connector No. 18, 19 <Vehicles with TC-SST>.

- Check the communication lines for open circuit and short circuit.

Q: Is the check result normal?

YES : Replace the G and yaw rate sensor. (Refer to) Then go to Step 8.

NO : Repair the wiring harness, and then go to Step 9.

<New>

From Attached sheet 34 (2/2)

<Old>

<Old>

STEP 8. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS THE DIAGNOSIS CODE NO.C2204 SET?

YES : Replace the hydraulic unit (ASC-ECU) (Refer to), and then go to Step 9.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

STEP 9. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS THE DIAGNOSIS CODE NO.C2204 SET?

YES : Return to Step 1.

NO : This diagnosis is complete.

<New>



To Attached sheet 34 (1/2)

STEP 5. G and yaw rate sensor installation check

Check that the G and yaw rate sensor is installed correctly.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Reinstall the G and yaw rate sensor correctly (Refer to), and then go to Step 8.

STEP 6. Connector check: A-03 ASC-ECU connector, C-30 G and yaw rate sensor connector

Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair the connector, and then go to Step 8.

STEP 7. Check the harness wire between C-30 G and yaw rate sensor connector terminal No. 2, 3 and A-03 ASC-ECU connector terminal No. 29, 25 <Except vehicles with TC-SST> or A-03 ASC-ECU connector terminal No. 18, 19 <Vehicles with TC-SST>.

• Check the communication lines for open circuit and short circuit.

Q: Is the check result normal?

YES : Go to Step 8.

NO : Repair the wiring harness, and then go to Step 8.

STEP 8. Check whether the diagnosis code is reset.

(1)Erase the diagnosis code.

(2)Drive the vehicle at 20 km/h or more.

Q: Is the diagnosis code No.C2204 set?

YES : Replace the G and yaw rate sensor correctly (Refer to), and then go to Step 9.

NO : Intermittent malfunction (Refer to GROUP 00 –How to Cope with Intermittent Malfunction).

STEP 9. Check whether the diagnosis code is reset.

(1)Erase the diagnosis code.

(2)Drive the vehicle at 20 km/h or more.

Q: Is the diagnosis code No.C2204 set?

YES : Replace the hydraulic unit (ASC-ECU) (Refer to), and then go to Step 10.

NO : Intermittent malfunction (Refer to GROUP 00 –How to Cope with Intermittent Malfunction).

STEP 10. Check whether the diagnosis code is reset.

(1)Erase the diagnosis code.

(2)Drive the vehicle at 20 km/h or more.

Q: Is the diagnosis code No.C2204 set?

YES : Return to Step 1.

NO : This diagnosis is complete.

⚠ 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.**
- **DO NOT DROP OR SHOCK THE G AND YAW RATE SENSOR.**
- **WHEN THE G AND YAW RATE SENSOR IS REPLACED, ALWAYS CARRY OUT CALIBRATION TO MAKE ASC-ECU LEARN THE NEUTRAL POINT (REFER TO).**
- **WHEN THE HYDRAULIC UNIT (INTEGRATED WITH ASC-ECU) IS REPLACED, ALWAYS CARRY OUT BRAKE CALIBRATION OF THE STEERING WHEEL SENSOR, THE G AND YAW RATE SENSOR AND BRAKE FLUID PRESSURE SENSOR (REFER TO).**

OPERATION

ABS-ECU monitors if the output of G and yaw rate sensor is normal or not.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set if any malfunction below is found:

- When abnormality is detected by the self-diagnosis of the lateral G and yaw rate
- When the output value of the lateral G and yaw rate is not within the standard value range

NOTE: This diagnosis code may be set when G and yaw rate sensor is put on the turntable turning at high speed.

PROBABLE CAUSES

- Improper installation of the G and yaw rate sensor
- Damaged wiring harness and connectors
- G and yaw rate sensor malfunction
- ASC-ECU malfunction

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN BUS DIAGNOSIS

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

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 2.

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

STEP 2. M.U.T.-III DIAGNOSIS CODE

Check that the diagnosis code U0125 is set in ASC-ECU.

Q: IS THE DIAGNOSIS CODE NO.U0125 SET?

YES : Troubleshoot for the diagnosis code (Refer to). Then go to Step 3.

NO : Go to Step 3.

STEP 3. DIAGNOSIS CODE RECHECK AFTER RESETTIN CAN BUS LINES

Q: IS THE DIAGNOSIS CODE NO.C2204 SET?

YES : Go to Step 4.

NO : This diagnosis is complete.

STEP 4. M.U.T.-III DATA LIST

Read the following service data under curb weight condition or one occupant (driver) only in the vehicle, on a flat road.(Refer to)

- Item 08: Lateral G-sensor
- Item 12: Yaw rate sensor
- Item 73: Lateral G sensor offset
- Item 97: Yaw rate sensor offset

Q: IS THE CHECK RESULT NORMAL?

YES : Turn the ignition switch to the ON from OFF position. Then go to Step 8.

NO : Go to Step 5.

STEP 5. G AND YAW RATE SENSOR INSTALLATION CHECK

Check that the G and yaw rate sensor is installed correctly.

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 6.

NO : Reinstall the G and yaw rate sensor correctly (Refer to), and then go to Step 9.

STEP 6. Connector check: A-03 ASC-ECU connector, C-30 G and yaw rate sensor

Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair the connector, and then go to Step 9.

STEP 7. Check the harness wire between C-30 G and yaw rate sensor connector terminal No. 2, 3 and A-03 ASC-ECU connector No. 18, 19.

• Check the communication lines for open circuit and short circuit.

Q: Is the check result normal?

YES : Replace the G and yaw rate sensor. Then go to Step 8.

NO : Repair the wiring harness, and then go to Step 9.

<Old>

<New> From Attached sheet 35 (2/2)

<Old>

STEP 8. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS THE DIAGNOSIS CODE NO.C2204 SET?
YES : Replace the hydraulic unit (ASC-ECU) (Refer to), and then go to Step 9.
NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

STEP 9. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS THE DIAGNOSIS CODE NO.C2204 SET?
YES : Return to Step 1.
NO : This diagnosis is complete.

<New>



To Attached sheet 35 (1/2)

STEP 5. G and yaw rate sensor installation check

Check that the G and yaw rate sensor is installed correctly.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Reinstall the G and yaw rate sensor correctly (Refer to), and then go to Step 8.

STEP 6. Connector check: A-03 ASC-ECU connector, C-30 G and yaw rate sensor connector

Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair the connector, and then go to Step 8.

STEP 7. Check the harness wire between C-30 G and yaw rate sensor connector terminal No. 2, 3 and A-03 ASC-ECU connector terminal No. 18, 19.

• Check the communication lines for open circuit and short circuit.

Q: Is the check result normal?

YES : Go to Step 8.

NO : Repair the wiring harness, and then go to Step 8.

STEP 8. Check whether the diagnosis code is reset.

(1)Erase the diagnosis code.

(2)Drive the vehicle at 20 km/h or more.

Q: Is the diagnosis code No.C2204 set?

YES : Replace the G and yaw rate sensor correctly (Refer to), and then go to Step 9.

NO : Intermittent malfunction (Refer to GROUP 00 –How to Cope with Intermittent Malfunction).

STEP 9. Check whether the diagnosis code is reset.

(1)Erase the diagnosis code.

(2)Drive the vehicle at 20 km/h or more.

Q: Is the diagnosis code No.C2204 set?

YES : Replace the hydraulic unit (ASC-ECU) (Refer to), and then go to Step 10.

NO : Intermittent malfunction (Refer to GROUP 00 –How to Cope with Intermittent Malfunction).

STEP 10. Check whether the diagnosis code is reset.

(1)Erase the diagnosis code.

(2)Drive the vehicle at 20 km/h or more.

Q: Is the diagnosis code No.C2204 set?

YES : Return to Step 1.

NO : This diagnosis is complete.

⚠ 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).

OPERATION

- ASC-ECU supplies power to the G and yaw rate sensor at the terminal No.1.
- The G and yaw rate sensor outputs the signal to ASC-ECU via the CAN bus lines.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set if any malfunction below is found:

- When abnormality is detected by the self-diagnosis of the lateral G and yaw rate
- When the output value of the lateral G and yaw rate is not within the standard value range

NOTE: This diagnosis code may be set when G and yaw rate sensor is put on the turntable turning at high speed.

PROBABLE CAUSES

- Improper installation of the G and yaw rate sensor
- Damaged wiring harness and connectors
- G and yaw rate sensor malfunction
- ASC-ECU malfunction

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnosis

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 Diagnosis table). On completion, go to Step 2.

STEP 2. Diagnosis code recheck after resetting

II CAN bus lines

TQ: Is the diagnosis code No.C2204 set?

YES : Go to Step 3.

NO : This diagnosis is complete.

STEP 3. G and yaw rate sensor installation check

Check that the G and yaw rate sensor is installed correctly.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Reinstall the G and yaw rate sensor correctly

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

Check the following service data.

• Item 08: Lateral G-sensor

• Item 12: Yaw rate sensor

Q: Is the check result normal?

YES : Go to Step 5

NO : Replace the G and yaw rate sensor, and then go to Step 5.

STEP 5. Check whether the diagnosis code is reset.

Q: Is the diagnosis code No.C2204 set?

YES : Replace the ASC-ECU

NO : This diagnosis is complete.

<New>

From Attached sheet 40 (2/2)

<Old>

<New>

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

Check the following service data (Refer to)

- Item 08: Lateral G-sensor
- Item 12: Yaw rate sensor

Q: Is the check result normal?

YES : Go to Step 7.

NO : Go to Step 4.

STEP 4. G and yaw rate sensor installation check

Check that the G and yaw rate sensor is installed correctly.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Reinstall the G and yaw rate sensor correctly (Refer to), and then go to Step 7.

STEP 5. Connector check: A-03 ASC-ECU connector, C-30 G and yaw rate sensor connector

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the connector, and then go to Step 7.

STEP 6. Check the harness wire between C-30 G and yaw rate sensor connector terminal No. 2, 3 and A-03 ASC-ECU connector terminal No. 25, 29.

- Check the communication lines for open circuit and short circuit.

Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair the wiring harness, and then go to Step 7.

STEP 7. Check whether the diagnosis code is reset.

(1)Erase the diagnosis code.

(2)Drive the vehicle at 20 km/h or more.

Q: Is the diagnosis code No.C2204 set?

YES : Replace the G and yaw rate sensor correctly (Refer to), and then go to Step 8.

NO : Intermittent malfunction (Refer to GROUP 00 —How to Cope with Intermittent Malfunction).

STEP 8. Check whether the diagnosis code is reset.

(1)Erase the diagnosis code.

(2)Drive the vehicle at 20 km/h or more.

Q: Is the diagnosis code No.C2204 set?

YES : Replace the hydraulic unit (ASC-ECU) (Refer to), and then go to Step 9.

NO : Intermittent malfunction (Refer to GROUP 00 —How to Cope with Intermittent Malfunction).

STEP 9. Check whether the diagnosis code is reset.

(1)Erase the diagnosis code.

(2)Drive the vehicle at 20 km/h or more.

Q: Is the diagnosis code No.C2204 set?

YES : Return to Step 1.

NO : This diagnosis is complete.

⚠ CAUTION

- IF THERE IS ANY PROBLEM IN THE CAN BUS LINES
AN INCORRECT DIAGNOSIS CODE MAY BE SET.
TO THIS DIAGNOSIS, DIAGNOSE THE CAN BUS
(REFER TO GROUP 54C, TROUBLE CODE DIAGN).
- WHENEVER ECU IS REPLACED, ENSURE THAT CAN BUS LINES ARE NORMAL.
- DO NOT DROP OR SHOCK THE G AND YAW RATE SENSOR.
- WHEN THE G AND YAW RATE SENSOR IS REPLACED, ALWAYS CARRY OUT CALIBRATION TO MAKE ECU LEARN THE NEUTRAL POINT (REFER TO).
- WHEN THE HYDRAULIC UNIT (INTEGRATED WITH ECU) IS REPLACED, ALWAYS CARRY OUT THE TENSION OF THE STEERING WHEEL SENSOR, THE YAW RATE SENSOR AND BRAKE FLUID PRESSURE SENSOR (REFER TO , AND).

OPERATION

ABS-ECU monitors if the output of G and yaw rate sensor is normal or not.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set if any malfunction below is found:

- When abnormality is detected by the self-diagnosis of the lateral G and yaw rate
- When the output value of the lateral G and yaw rate is not within the standard value range

NOTE: This diagnosis code may be set when G and yaw rate sensor is put on the turntable turning at high speed.

PROBABLE CAUSES

- Improper installation of the G and yaw rate sensor
- Damaged wiring harness and connectors
- G and yaw rate sensor malfunction
- ASC-ECU malfunction

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN BUS DIAGNOSIS

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 Diagnosis table). On completion, go to Step 2.

STEP 2. Diagnosis code recheck after resetting

- Q: Is the diagnosis code No.C2204 set?**
YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. G and yaw rate sensor installation check

Check that the G and yaw rate sensor is installed correctly.

Q: Is the check result normal?

- YES :** Go to Step 4.
NO : Reinstall the G and yaw rate sensor correctly (Refer to), and then go to Step 6.

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

Check the following service data (Refer to)

- Item 08: Lateral G-sensor
- Item 12: Yaw rate sensor

Q: Is the check result normal?

- YES :** Go to Step 5.
NO : Replace the G and yaw rate sensor correctly (Refer to), and then go to Step 6.

STEP 5. Check whether the diagnosis code is reset.

Q: Is the diagnosis code No.C2204 set?

- YES :** Replace the ASC-ECU (Refer to), and then go to Step 6.
NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

STEP 6. Check whether the diagnosis code is reset.

Q: Is the diagnosis code No.C2204 set?

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

<New>

From Attached sheet 41 (2/2)

<Old>

<New>

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

Check the following service data (Refer to)

- Item 08: Lateral G-sensor
- Item 12: Yaw rate sensor

Q: Is the check result normal?

YES : Go to Step 7.

NO : Go to Step 4.

STEP 4. G and yaw rate sensor installation check

Check that the G and yaw rate sensor is installed correctly.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Reinstall the G and yaw rate sensor correctly (Refer to), and then go to Step 7.

STEP 5. Connector check: A-03 ASC-ECU connector, C-30 G and yaw rate sensor connector

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the connector, and then go to Step 7.

STEP 6. Check the harness wire between C-30 G and yaw rate sensor connector terminal No. 2, 3 and A-03 ASC-ECU connector terminal No. 25, 29.

- Check the communication lines for open circuit and short circuit.

Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair the wiring harness, and then go to Step 7.

STEP 7. Check whether the diagnosis code is reset.

(1)Erase the diagnosis code.

(2)Drive the vehicle at 20 km/h or more.

Q: Is the diagnosis code No.C2204 set?

YES : Replace the G and yaw rate sensor correctly (Refer to), and then go to Step 8.

NO : Intermittent malfunction (Refer to GROUP 00 —How to Cope with Intermittent Malfunction).

STEP 8. Check whether the diagnosis code is reset.

(1)Erase the diagnosis code.

(2)Drive the vehicle at 20 km/h or more.

Q: Is the diagnosis code No.C2204 set?

YES : Replace the hydraulic unit (ASC-ECU) (Refer to), and then go to Step 9.

NO : Intermittent malfunction (Refer to GROUP 00 —How to Cope with Intermittent Malfunction).

STEP 9. Check whether the diagnosis code is reset.

(1)Erase the diagnosis code.

(2)Drive the vehicle at 20 km/h or more.

Q: Is the diagnosis code No.C2204 set?

YES : Return to Step 1.

NO : This diagnosis is complete.

- NO :** Replace the hydraulic unit (ASC-ECU) (Refer to), and then go to Step 8.
- NO :** Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

STEP 8. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS DIAGNOSIS CODE NO.C123A SET?

YES : Return to Step 1.

NO : This diagnosis is complete.

CODE NO. C1219 ABNORMALITY IN STEERING WHEEL SENSOR

⚠ 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).**

- Malfunction of wheel speed sensor
- ASC-ECU malfunction
- External noise interference

DIAGNOSIS PROCEDURE

- **WHENEVER ECU IS REPLACED, ENSURE THAT CAN BUS LINES ARE NORMAL.**
- **WHEN THE STEERING WHEEL SENSOR IS REPLACED, ALWAYS CARRY OUT CALIBRATION TO MAKE ASC ECU LEARN THE NEUTRAL POINT (REFER TO).**
- **DO NOT DROP OR SHOCK THE G AND YAW RATE SENSOR.**
- **WHEN THE G AND YAW RATE SENSOR IS REPLACED, ALWAYS CARRY OUT CALIBRATION TO MAKE ASC ECU LEARN THE NEUTRAL POINT (REFER TO).**
- **WHEN THE HYDRAULIC UNIT (INTEGRATED WITH ASC-ECU) IS REPLACED, ALWAYS CARRY OUT CALIBRATION OF THE STEERING WHEEL SENSOR, THE G AND YAW RATE SENSOR AND BRAKE FLUID PRESSURE SENSOR (REFER TO AND).**

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 Diagnosis table). On completion, go to Step 2.

STEP 2. DIAGNOSIS CODE RECHECK AFTER RESETTIN CAN BUS LINES

Q: IS DIAGNOSIS CODE NO.C1219 SET?

YES : Go to Step 3.

NO : This diagnosis is complete.

STEP 3. M.U.T.-III DIAGNOSIS CODE

Check that the wheel speed sensor-related, G and yaw rate sensor-related, or steering wheel sensor-related diagnosis code is set.

Q: IS THE DIAGNOSIS CODE SET?

YES : Troubleshoot the relevant diagnosis code, and then go to Step 8.

NO : Go to Step 4.

STEP 4. CHECK HOW STEERING WHEEL SENSOR IS INSTALLED.

Check that the steering wheel sensor is installed correctly (Refer to).

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 5.

NO : Install the steering wheel sensor correctly (Refer to), and then go to Step 5.

STEP 5. WHEEL ALIGNMENT CHECK

Q: IS THE CHECK RESULT NORMAL?

OPERATION

Steering wheel sensor outputs the signal to ASC-ECU via the CAN bus lines.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set if any malfunction below is found:

- The tolerance of neutral position of steering wheel sensor exceeds the specified range.
- Abnormality in steering wheel sensor output value
- When abnormality is detected by comparing the value output from the steering wheel sensor with the one from the wheel speed sensor and the G and yaw rate sensor.

PROBABLE CAUSES

- Improper installation of steering wheel sensor
- Wheel alignment not performed
- Steering wheel sensor malfunction
- Different steering wheel
- G and yaw rate sensor malfunction

MS<New> 308 (10/1/02)

<Old>

From Attached sheet 45 (2/2)

**ACTIVE STABILITY CONTROL SYSTEM (ASC)
TROUBLESHOOTING**

Attached sheet 45 (2/2)

<Old>

YES : After the wheel alignment check, perform the steering wheel sensor calibration to make ASC-ECU learn the neutral point again (Refer to). Then go to Step 6.

NO : After the adjustment of the wheel alignment, perform the steering wheel sensor calibration to make ASC-ECU learn the neutral position again (Refer to). Then go to Step 6.

STEP 6. M.U.T.-III DATA LIST

Check the following service data (Refer to).

- Item 11: Steering angle

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 7.

NO : After the steering wheel sensor is replaced, perform the steering wheel sensor calibration to make ASC-ECU learn the neutral point again (Refer to). Then go to Step 8.

STEP 7. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Drive the vehicle at 20 km/h or more.

NOTE: The ASC operation display and ASC OFF display or lamp do not turn OFF in some cases unless the vehicle runs at 20 km/h or higher.

Q: IS DIAGNOSIS CODE NO.C1219 SET?

YES : Replace the hydraulic unit (ASC-ECU) (Refer to), and then go to Step 8.

NO : This diagnosis is complete.

STEP 8. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Drive the vehicle at 20 km/h or more.

NOTE: The ASC operation display and ASC OFF display or lamp do not turn OFF in some cases unless the vehicle runs at 20 km/h or higher.

Q: IS DIAGNOSIS CODE NO.C1219 SET?

YES : Return to Step 1.

NO : This diagnosis is complete.

<New>



To Attached sheet 45 (1/2)

STEP 5. G and yaw rate sensor installation check

Check that the G and yaw rate sensor is installed correctly.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Reinstall the G and yaw rate sensor correctly, and go to Step 6.

STEP 6. Wheel alignment check

Q: Is the check result normal?

YES : After the wheel alignment check, perform the steering wheel sensor calibration to make ASC-ECU learn the neutral point again. Then go to Step 7.

NO : After the adjustment of the wheel alignment, perform the steering wheel sensor calibration to make ASC-ECU learn the neutral position again. Then go to Step 7.

STEP 7. M.U.T.-III data list

Check the following service data.

- Item 11: Steering angle

Q: Is the check result normal?

YES : Go to Step 8.

NO : After the steering wheel sensor is replaced, perform the steering wheel sensor calibration to make ASC-ECU learn the neutral point again. Then go to Step 9.

STEP 8. Check whether the diagnosis code is reset.

(1) Erase the diagnosis code.

(2) Drive the vehicle at 20 km/h or higher.

Q: Is diagnosis code No.C1219 set?

YES : Replace the hydraulic unit (ASC-ECU), and then go to Step 9.

NO : This diagnosis is complete.

STEP 9. Check whether the diagnosis code is reset.

(1) Erase the diagnosis code.

(2) Drive the vehicle at 20 km/h or higher.

Q: Is diagnosis code No.C1219 set?

YES : Return to Step 1.

NO : This diagnosis is complete.

TIN

- NO** : Replace the hydraulic unit (ASC-ECU) (Refer to), and then go to Step 8.
- NO** : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction).

STEP 8. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS DIAGNOSIS CODE NO.C123A SET?

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

CODE NO. C1219 ABNORMALITY IN STEERING WHEEL SENSOR

⚠ 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.

OPERATION

Steering wheel sensor outputs the signal to ASC-ECU via the CAN bus lines.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set if any malfunction below is found:

- The tolerance of neutral position of steering wheel sensor exceeds the specified range.
- Abnormality in steering wheel sensor output value
- When abnormality is detected by comparing the value output from the steering wheel sensor with the one from the wheel speed sensor and the G and yaw rate sensor.

PROBABLE CAUSES

- Improper installation of steering wheel sensor
- Wheel alignment not performed
- Steering wheel sensor malfunction
- Different steering wheel
- G and yaw rate sensor malfunction

- Malfunction of wheel speed sensor
- ASC-ECU malfunction
- External noise interference

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 Diagnosis table). On completion, go to Step 2.

STEP 2. DIAGNOSIS CODE RECHECK AFTER RESETTING

CAN BUS LINES

Q: IS DIAGNOSIS CODE NO.C1219 SET?

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

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

Check that the wheel speed sensor-related, G and yaw rate sensor-related, or steering wheel sensor-related diagnosis code is set.

Q: IS THE DIAGNOSIS CODE SET?

- YES** : Troubleshoot the relevant diagnosis code, and then go to Step 4.
- NO** : Go to Step 4.

STEP 4. Check how steering wheel sensor is installed.

Check that the steering wheel sensor is installed correctly (Refer to).

Q: IS THE CHECK RESULT NORMAL?

- YES** : Go to Step 5.
- NO** : Install the steering wheel sensor correctly (Refer to), and then go to Step 5.

<Old>

<New>

From Attached sheet 46 (2/2)

STEP 5. WHEEL ALIGNMENT CHECK

Q: IS THE CHECK RESULT NORMAL?

ACTIVE STABILITY CONTROL SYSTEM (ASC)
TROUBLESHOOTING

Attached sheet 46 (2/2)

<Old>

CODE IS

~~YES : Go to Step 6.~~

~~NO : Adjust the wheel alignment, and then go to Step 6.~~

~~STEP 6. Check whether the diagnosis code is reset.~~

~~Q:Is diagnosis code No.C1219 set?~~

~~YES : Replace the steering wheel sensor, and then go to Step 7.~~

~~NO : This diagnosis is complete.~~

~~STEP 7. Check whether the diagnosis code is reset.~~

~~Q:Is diagnosis code No.C1219 set?~~

~~YES : Replace the ASC-ECU.~~

~~NO : This diagnosis is complete.~~

<New>



To Attached sheet 46 (1/2)

IS

STEP 5. G and yaw rate sensor installation check

Check that the G and yaw rate sensor is installed correctly.

Q:Is the check result normal?

YES : Go to Step 6.

NO : Reinstall the G and yaw rate sensor correctly, and go to Step 6.

STEP 6. Wheel alignment check

Q:Is the check result normal?

YES : After the wheel alignment check, perform the steering wheel sensor calibration to make ASC-ECU learn the neutral point again. Then go to Step 7.

NO : After the adjustment of the wheel alignment, perform the steering wheel sensor calibration to make ASC-ECU learn the neutral position again. Then go to Step 7.

STEP 7. M.U.T.-III data list

Check the following service data.

- Item 11: Steering angle

Q:Is the check result normal?

YES : Go to Step 8.

NO : After the steering wheel sensor is replaced, perform the steering wheel sensor calibration to make ASC-ECU learn the neutral point again. Then go to Step 9.

STEP 8. Check whether the diagnosis code is reset.

(1) Erase the diagnosis code.

(2) Drive the vehicle at 20 km/h or higher.

Q:Is diagnosis code No.C1219 set?

YES : Replace the hydraulic unit (ASC-ECU), and then go to Step 9.

NO : This diagnosis is complete.

STEP 9. Check whether the diagnosis code is reset.

(1) Erase the diagnosis code.

(2) Drive the vehicle at 20 km/h or higher.

Q:Is diagnosis code No.C1219 set?

YES : Return to Step 1.

NO : This diagnosis is complete.

TTIN

CODE NO. U0100 ENGINE TIME-OUT ERROR
CODE NO. U0101 CVT or A/T OR TC-SST TIME-OUT ERROR
CODE NO. U0126 STEERING WHEEL SENSOR TIME-OUT ERROR
CODE NO. U0141 ETACS TIME-OUT ERROR
CODE NO. U014 4WD TIME-OUT ERROR

<Added>

⚠ 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).
- IF DIAGNOSIS CODES U0100, U0101, U0126, U0141, AND U014 ARE SET IN ASC-ECU, ALWAYS DIAGNOSE THE CAN BUS LINE. IF THERE IS ANY FAULT IN THE CAN BUS LINES, AN INCORRECT DIAGNOSIS CODE MAY BE SET. IN THIS CASE, THE SET DIAGNOSIS CODE IS NOT HIGHLY RELIABLE.
- BEFORE REPLACING THE ECU, ENSURE THAT THE COMMUNICATION CIRCUIT IS NORMAL.
- WHEN THE STEERING WHEEL SENSOR IS REPLACED, ALWAYS CARRY OUT LEARN TO MAKE ASC-ECU LEARN THE NEUTRAL POINT (REFER TO).
- WHEN THE HYDRAULIC UNIT (INTEGRATED WITH ASC-ECU) IS REPLACED, ALWAYS CARRY OUT THE CALIBRATION OF THE STEERING WHEEL SENSOR, THE YAW RATE SENSOR AND BRAKE FLUID PRESSURE SENSOR (REFER TO , AND).

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set if ASC-ECU cannot receive the signal sent from other ECU for a certain period.

OPERATION

ASC-ECU communicates with the engine ECU, CVT or A/T or TC-SST-ECU, the steering wheel sensor, ETACS-ECU and 4WD-ECU via the CAN bus lines.

PROBABLE CAUSES

CODE NO. U0100

- Wiring harness or connector failure of CAN bus line
- Engine ECU malfunction
- ASC-ECU malfunction

CODE NO. U0101

- Wiring harness or connector failure of CAN bus line
- CVT or A/T or TC-SST-ECU malfunction
- ASC-ECU malfunction

CODE NO. U0126

- Wiring harness or connector failure of CAN bus line

- Connector disconnected or improperly connected.
- Stretched or broken wires.

- Steering wheel sensor malfunction
- ASC-ECU malfunction
- Wiring harness or connector failure of CAN bus line
- Malfunction of ETACS-ECU
- ASC-ECU malfunction
- Wiring harness or connector failure of CAN bus line
- Malfunction of 4WD-ECU
- ASC-ECU malfunction

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN BUS DIAGNOSIS

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

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnosis table). On completion, go to Step 4.

STEP 2. CHECK WHETHER THE DIAGNOSIS CODE IS RESET.

Q: IS CODE NO. U0100, U0101, U0126, U0141 OR U014 SET?

YES : Go to Step 3.

NO : The procedure 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.

STEP 4. M.U.T.-III DIAGNOSIS CODE

Use M.U.T.-III to check if the same diagnosis code (time-out) is set in the other ECU (CAN-C).

Q: IS ANY DIAGNOSIS CODE SET?

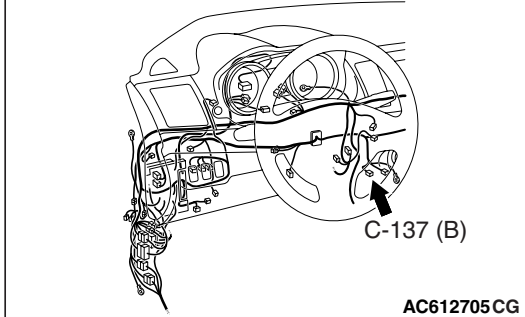
- Connector disconnected or improperly connected.
- Stretched or broken wires.

ABILITY CONTROL SYSTEM (ASC) TROUBLESHOOTING

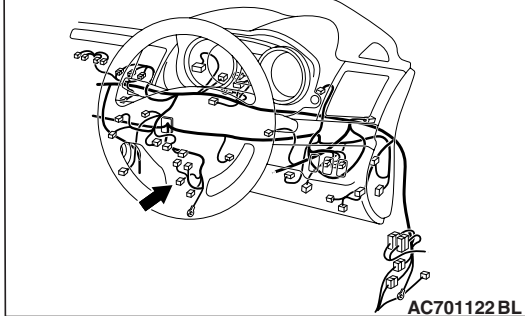
Attached sheet 49

<Added>

Connector: C-137 <LHD>



Connector: C-137 <RHD>



PROBABLE CAUSES

- Wiring harness or connector failure for the special CAN bus lines between ASC-ECU and the G and yaw rate sensor
- G and yaw rate sensor malfunction
- ASC-ECU malfunction
- External noise interference

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 RESETTIN CAN BUS LINES

Q: IS DIAGNOSIS CODE NO. U0125 SET?

YES : Go to Step 3.

NO : This diagnosis is complete.

STEP 3. CONNECTOR CHECK: A-58 ASC-ECU CONNECTOR, C-137 G AND YAW RATE SENSOR CONNECTOR

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 4.

NO : Repair the connector, and then go to Step 7.

STEP 4. WIRING HARNESS CHECK BETWEEN A-58 ASC-ECU CONNECTOR TERMINAL NO. 18 AND C-137 G AND YAW RATE SENSOR CONNECTOR TERMINAL NO. 3, AND YAW RATE SENSOR CONNECTOR TERMINAL NO. 19 AND C-137 G AND YAW RATE SENSOR CONNECTOR TERMINAL NO. 3

- Check the communication circuit for open and short circuit.

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 5.

NO : Repair the wiring harness, and then go to Step 7.

STEP 5. DIAGNOSIS CODE RECHECK

Q: IS DIAGNOSIS CODE NO. U0125 SET?

YES : Replace the G and yaw rate sensor. (Refer to .) Then go to Step 6.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction .)

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 (REFER TO GROUP 54C, CAN BUS DIAGNOSIS TABLE).
- WHENEVER ECU IS REPLACED, ENSURE THAT THE CAN BUS LINES ARE NORMAL.
- DO NOT DROP OR SHOCK THE G AND YAW RATE SENSOR.
- WHEN THE G AND YAW RATE SENSOR IS REPLACED, ALWAYS CARRY OUT CALIBRATION TO MAKE ASC ECU LEARN THE NEUTRAL POINT (REFER TO).
- WHEN THE HYDRAULIC UNIT (INTEGRATED WITH ASC ECU) IS REPLACED, ALWAYS CARRY OUT THE CALIBRATION OF THE STEERING WHEEL SENSOR, THE G AND YAW RATE SENSOR AND BRAKE FLUID PRESSURE SENSOR (REFER TO , AND).

OPERATION

The G and yaw rate sensor outputs the signal to ASC-ECU via the special CAN bus lines.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set when the ASC-ECU cannot receive the signal from the G and yaw rate sensor although there is no abnormality in ASC-ECU supply voltage.

! 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.

OPERATION

The G and yaw rate sensor outputs the signal to ASC-ECU via the special CAN bus lines.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set when the G and yaw rate sensor signal is not sent to ASC-ECU.

PROBABLE CAUSES

- Wiring harness or connector failure of CAN bus line
- G and yaw rate sensor malfunction
- ASC-ECU malfunction
- External noise interference

- Connector disconnected or improperly connected.
- Stretched or broken wires.

<Added>

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 2.

NO : Repair the CAN bus lines. On completion, go to Step 4.

STEP 2. Diagnosis code recheck after resetting CAN bus lines

Q: Is diagnosis code No. U0125 set?

YES : Replace the G and yaw rate sensor, and then go to Step 3.

NO : This diagnosis is complete.

STEP 3. Check whether the diagnosis code is reset.

Q: Is diagnosis code No. U0125 set?

YES : Replace the ASC-ECU, and then go to Step 4.

NO : This diagnosis is complete.

STEP 4. Check whether the diagnosis code is reset.

Q: Is diagnosis code No. U0125 set?

YES : Go to Step 1.

NO : This diagnosis is complete.

ETTIN

8
-137 G
L NO.
SENSE

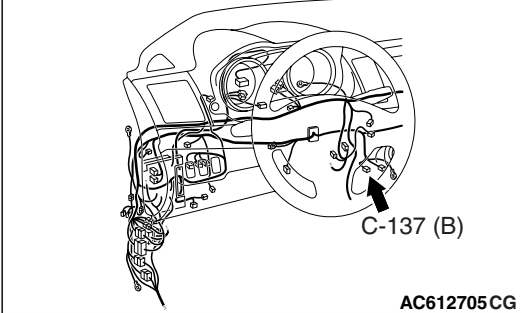
- Connector disconnected or improperly connected.
- Stretched or broken wires.

TY CONTROL SYSTEM (ASC) TROUBLESHOOTING

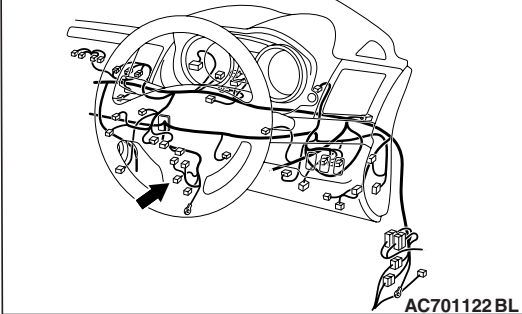
Attached sheet 51

<Added>

Connector: C-137 <LHD>



Connector: C-137 <RHD>



PROBABLE CAUSES

- Wiring harness or connector failure for the special CAN bus lines between ASC-ECU and the G and yaw rate sensor
- G and yaw rate sensor malfunction
- ASC-ECU malfunction
- External noise interference

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. U0125 SET?

YES : Go to Step 3.

NO : This diagnosis is complete.

STEP 3. CONNECTOR CHECK: A-58 ASC-ECU CONNECTOR, C-137 G AND YAW RATE SENSOR CONNECTOR

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 4.

NO : Repair the connector, and then go to Step 7.

STEP 4. WIRING HARNESS CHECK BETWEEN A-58 ASC-ECU CONNECTOR TERMINAL NO. 18 AND C-137 G AND YAW RATE SENSOR CONNECTOR TERMINAL NO. 3 WELL AS BETWEEN A-58 ASC-ECU CONNECTOR TERMINAL NO. 19 AND C-137 G AND YAW RATE SENSOR CONNECTOR TERMINAL NO. 3

- Check the communication circuit for open and short circuit.

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 5.

NO : Repair the wiring harness, and then go to Step 7.

STEP 5. DIAGNOSIS CODE RECHECK

Q: IS DIAGNOSIS CODE NO. U0125 SET?

YES : Replace the G and yaw rate sensor. (Refer to .) Then go to Step 6.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction .)

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 (REFER TO GROUP 54C, CAN BUS DIAGNOSIS TABLE).
- WHENEVER ECU IS REPLACED, ENSURE THAT THE CAN BUS LINES ARE NORMAL.
- DO NOT DROP OR SHOCK THE G AND YAW RATE SENSOR.
- WHEN THE G AND YAW RATE SENSOR IS REPLACED, ALWAYS CARRY OUT CALIBRATION OF ASC-ECU LEARN THE NEUTRAL POINT (REFER TO).
- WHEN THE HYDRAULIC UNIT (INTEGRATED WITH ASC-ECU) IS REPLACED, ALWAYS CARRY OUT BRAKE CALIBRATION OF THE STEERING WHEEL SENSOR, THE G AND YAW RATE SENSOR AND BRAKE FLUID PRESSURE SENSOR (REFER TO , AND).

OPERATION

The G and yaw rate sensor outputs the signal to ASC-ECU via the special CAN bus lines.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set when the ASC-ECU cannot receive the signal from the G and yaw rate sensor although there is no abnormality in ASC-ECU supply voltage.

<Deleted>

~~NOTE: When an abnormality is present in the ASC-ECU supply voltage, diagnosis code No. C2100 (low voltage error) is set, and diagnosis code No. U0125 is not set.~~

⚠ 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 DIAGNOSIS TABLE).
- WHENEVER ECU IS REPLACED, ENSURE THAT THE CAN BUS LINES ARE NORMAL.
- DO NOT DROP OR SHOCK THE G AND YAW RATE SENSOR.
- WHEN THE G AND YAW RATE SENSOR IS REPLACED, ALWAYS CARRY OUT CALIBRATION TO MAKE ASC-ECU LEARN THE NEUTRAL POINT (REFER TO).
- WHEN THE HYDRAULIC UNIT (INTEGRATED WITH ASC-ECU) IS REPLACED, ALWAYS CARRY OUT CALIBRATION OF THE STEERING WHEEL SENSOR, THE G AND YAW RATE SENSOR AND BRAKE FLUID PRESSURE SENSOR (REFER TO).

OPERATION

The G and yaw rate sensor outputs the signal to ASC-ECU via the special CAN bus lines.

DIAGNOSIS CODE SET CONDITIONS

This diagnosis code is set when the communication error occurs in the exclusive CAN bus communication between the ASC-ECU and the G and yaw rate sensor.

PROBABLE CAUSES

- Wiring harness or connector failure for the special CAN bus lines between ASC-ECU and the G and yaw rate sensor
- Malfunction of the G and yaw rate sensor
- ASC-ECU malfunction

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 Diagnosis table .) On completion, go to Step 2.

<Added>

- Connector disconnected or improperly connected.
- Stretched or broken wires.

STEP 2. DIAGNOSIS CODE RECHECK AFTER RESETTIN

CAN BUS LINES

Q: IS DIAGNOSIS CODE NO. U1003 SET?

YES : Go to Step 3.

NO : This diagnosis is complete.

STEP 3. CONNECTOR CHECK: A-58 ASC-ECU

CONNECTOR, C-137 G AND YAW RATE SENSOR CONNECTOR

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 4.

NO : Repair the connector, and then go to Step 7.

STEP 4. WIRING HARNESS CHECK BETWEEN A-58

ASC-ECU CONNECTOR TERMINAL NO. 18 AND C-137 G

AND YAW RATE SENSOR CONNECTOR TERMINAL NO.

WELL AS BETWEEN A-58 ASC-ECU CONNECTOR

TERMINAL NO. 19 AND C-137 G AND YAW RATE SENS

CONNECTOR TERMINAL NO. 3

- Check the communication circuit for open and short circuit.

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 5.

NO : Repair the wiring harness, and then go to Step 7.

STEP 5. DIAGNOSIS CODE RECHECK

Q: IS DIAGNOSIS CODE NO. U1003 SET?

YES : Replace the G and yaw rate sensor. (Refer to .) Then go to Step 6.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction .)

STEP 6. DIAGNOSIS CODE RECHECK

Q: IS DIAGNOSIS CODE NO. U1003 SET?

YES : Replace the hydraulic unit (ASC-ECU). (Refer to .) Then go to Step 7.

NO : This diagnosis is complete.

STEP 7. DIAGNOSIS CODE RECHECK

Q: IS DIAGNOSIS CODE NO. U1003 SET?

YES : Return to Step 1.

NO : This diagnosis is complete.

TROUBLE SYMPTOM CHART

M1355006900480

CAUTION

- **ABS MAY OPERATE IN THE FOLLOWING CONDITIONS AND DURING: LOW MU ROAD SURFACE, HIGH-SPEED TURN, AND BUMPY ROAD SURFACE. WHEN A CUSTOMER COMPLAINS, CONFIRM THAT THEY HAVE/HAVE NOT ENCOUNTERED ABS OPERATION IN CORRESPONDING CONDITIONS.**
- **DURING ABS OPERATION, THE BRAKE PEDAL IS PULSED OR VIBRATES, AND THE NOISE OCCURS AT THE SAME TIME. THIS IS BECAUSE THE BRAKE LINE PRESSURE IS RELEASED INTERMITTENTLY TO PREVENT THE WHEEL FROM LOCKING, AND NOT A SYSTEM MALFUNCTION.**

CAUTION

DURING DIAGNOSIS, A DIAGNOSIS CODE ASSOCIATED WITH THE ABS/ASC SYSTEM MAY BE SET WHEN THE IGNITION SWITCH IS TURNED ON WITH CONNECTOR(S) DISCONNECTED. THEREFORE, AFTER COMPLETING THE DIAGNOSIS, CONFIRM ALL SYSTEMS FOR DIAGNOSIS CODE(S). IF DIAGNOSIS CODE(S) ARE SET, ERASE THEM.

TROUBLE SYMPTOM		INSPECTION PROCEDURE NUMBER	REFERENCE PAGE
M.U.T.-III cannot communicate with the ABS/ASC system.	M.U.T.-III cannot communicate with all systems.	—	Refer to GROUP 54C — Troubleshooting.
	M.U.T.-III cannot communicate only with ASC-ECU.	1	
ASC OFF display or lamp flashes at a rate of 2Hz.		2	
Brake warning lamp stays ON with the parking brake lever released (ABS warning lamp is OFF).		3	
ABS warning lamp does not illuminate when ignition switch is turned to the ON position (Engine stopped).		4	
Brake warning lamp does not illuminate when the ignition switch is turned to ON position (Engine stopped).		5	
ABS warning lamp stays ON after the engine is started.		6	
ASC indicator lamp stays ON after the engine is started.		7	
ASC OFF indicator lamp stays ON after the engine is started.		8	
ASC indicator lamp stays ON after the engine is started.		9	
After ASC switch is turned OFF, TCL/ASC system cannot be disabled.		10	
Abnormality in brake operation		11	
ASC system inoperative		12	
ASC-ECU power supply circuit system		13	

The initial check sound of hydraulic unit loud

14

<Added>

TROUBLE SYMPTOM CHART

⚠ CAUTION

- ABS may operate in the following conditions without hard braking: Low μ road surface, high-speed turn, and bumpy road surface. When asking the customers, confirm that they have/have not encountered ABS operation in corresponding conditions.
- During ABS operation, the brake pedal is pulled forward gradually, and the noise occurs at the same time. This is because the brake line pressure varies intermittently to prevent the wheel lock, and not a system malfunction.

⚠ 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.

Trouble symptom	Inspection procedure number	Reference page
M.U.T.-III communication with ABS/ASC system is impossible.	1	
ASC OFF display flashes at a rate of 2Hz.	2	
Brake warning lamp stays ON with the parking brake lever released (ABS warning lamp is OFF).	3	
ABS warning lamp does not illuminate when ignition switch is turned to the ON position (Engine stopped).	4	
Brake warning lamp does not illuminate when the ignition switch is turned to ON position (Engine stopped).	5	
ABS warning lamp stays ON after the engine is started.	6	
ASC warning display stays ON after the engine is started.	7	
ASC OFF display stays ON after the engine is started.	8	
The stability control/TCL system cannot be disabled when ASC OFF switch is pressed for 3 seconds or more to turn the system OFF.	9	
Abnormality in brake operation	10	
ASC does not operate or faulty ASC operate.	11	
ASC-ECU power supply circuit system.	12	
	<Except vehicles with TC-SST> <Vehicles with TC-SST>	
ABS/stability control/TCL operates too frequently.	13	
HSA (Hill Start Assist) does not work.	14	
HSA (Hill Start Assist) works on a flat road.	15	

The initial check sound of hydraulic unit loud

16

<Added>

TROUBLE SYMPTOM CHART

⚠ CAUTION

- **ABS may operate in the following conditions without hard braking: Low μ road surface, high-speed turn, and bumpy road surface. When asking the customers, confirm that they have/have not encountered ABS operation in corresponding conditions.**
- **During ABS operation, the brake pedal is pulled forward gradually, and the noise occurs at the same time. This is because the brake line pressure varies intermittently to prevent the wheel lock, and not a system malfunction.**
- **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.**

Trouble symptom		Inspection procedure number	Reference page
M.U.T.-III cannot communicate with the ABS/ASC system is impossible.	M.U.T.-III cannot communicate with all systems.	—	Refer to GROUP 54C – Troubleshooting
	M.U.T.-III cannot communicate only with ASC-ECU.	1	
ASC OFF display flashes at a rate of 2Hz.		2	
Brake warning lamp stays ON with the parking brake lever released (ABS warning lamp is OFF).		3	
ABS warning lamp does not illuminate when ignition switch is turned to the ON position (Engine stopped).		4	
Brake warning lamp does not illuminate when the ignition switch is turned to ON position (Engine stopped).		5	
ABS warning lamp stays ON after the engine is started.		6	
ASC warning display and lamp stays ON after the engine is started.		7	
ASC OFF indicator lamp stays ON after the engine is started.		8	
The stability control/TCL system cannot be disabled when ASC OFF switch is pressed for 3 seconds or more to turn the system OFF.		9	
Abnormality in brake operation.		10	
ASC does not operate or faulty ASC operate.		11	
ASC-ECU power supply circuit system.		12	
Steering wheel sensor power supply circuit system		13	
ABS/stability control/TCL operates too frequently.		14	
ESS inoperative or improper operative.		15	
HSA (Hill Start Assist) does not work.		16	
HSA (Hill Start Assist) works on a flat road.		17	
The reverse signal cannot be received. <M/T>		18	

The initial check sound of hydraulic unit loud

19

<Added>

STEP 8. ABS/STABILITY CONTROL/TCL OPERATION CHECK

Q: IS THE CHECK RESULT NORMAL?

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

NO : Replace the hydraulic unit (integrated with ASC-ECU).(Refer to .) Then go to Step 9.

STEP 9. ABS/STABILITY CONTROL/TCL OPERATION CHECK

Q: IS THE CHECK RESULT NORMAL?

YES : This diagnosis is complete.

NO : Return to Step 1.

INSPECTION PROCEDURE 15: ESS INOPERATIVE OR PROPER

⚠ 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 CODES .).**

- **WHENEVER ECU IS REPLACED, ENSURE THAT THE CAN BUS LINES ARE NORMAL.**

COMMENTS ON TROUBLE SYMPTOM

In case of this trouble symptom, ESS operation may be disabled. Diagnosis code may be set by the ASC system using M.U.T.-III.

NOTE: Before carrying out the troubleshooting, ask the user and confirm the driving conditions when the failure has occurred.

PROBABLE CAUSES

- Low battery voltage
- Wiring harness or connector failure of CAN bus line
- The ASC-ECU is defective.
- Different ETACS-ECU, abnormal variant coding information
- Different ASC-ECU.
- Malfunction of ETACS-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 2.

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

STEP 2. DIAGNOSIS CODE CHECK

Use M.U.T.-III to check the diagnosis code for the ASC system and ETACS-ECU. (Refer to and GROUP 54A – ETACS, Check Chart for Diagnosis Codes .)

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 3.

NO : Carry out the diagnosis for the diagnosis code. (Refer to or GROUP 54A – ETACS, Check Chart for Diagnosis codes .) Then go to Step 11.

STEP 3. M.U.T.-III ACTUATOR TEST

Perform the following actuator test, and check if the ESS operation. (Refer to .)

- Item No.10: ESS test mode

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 10.

NO : Go to Step 4.

STEP 4. HYDRAULIC UNIT (INTEGRATED WITH ASC-ECU) CHECK

Check the hydraulic unit (integrated with ASC-ECU) part No.

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 5.

NO : Replace the hydraulic unit (integrated with ASC-ECU). (Refer to .) Then go to Step 11.

STEP 5. ETACS-ECU CHECK

Check the ETACS-ECU part No.

Q: IS THE CHECK RESULT NORMAL?

YES : Go to Step 6.

NO : Replace ETACS-ECU (Refer to GROUP 54A – ETACS-ECU). Then go to Step 11.

<Old>

↑
From Attached sheet 60 (3/3)

<Old>

STEP 6. CHECK ETACS CODING DATA

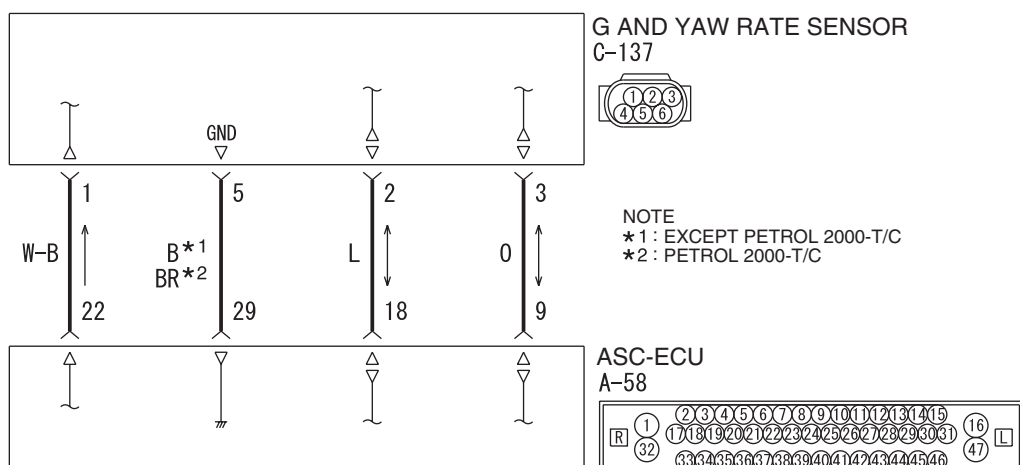
Refer to GROUP 00 – Coding List .

ESS**OK: PRESENT****Q: IS THE CHECK RESULT NORMAL?****YES :** Go to Step 8.**NO :** Go to Step 7.**STEP 7. ETACS-ECU CODING DATA CHECK**

Perform the variant coding to the ETACS-ECU.

Q: IS THE CHECK RESULT NORMAL?**YES :** Go to Step 8.**NO :** Replace the ETACS-ECU (Refer to GROUP 54A – ETACS-ECU), and then go to Step 11.**STEP 8. CHECK THE ASC-ECU POWER SUPPLY CIRCUIT.**

Refer to .

Q: IS THE CHECK RESULT NORMAL?**YES :** Go to Step 9.**NO :** Carry out the diagnosis of ASC-ECU power supply circuit system.(Refer to .) Then go to Step 11.**STEP 9. OPERATION CHECK****Q: DOES THE ESS WORK NORMALLY?****YES :** Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction .)**NO :** Replace ETACS-ECU (Refer to GROUP 54A – ETACS-ECU). Then go to Step 11.**STEP 10. OPERATION CHECK****Q: DOES THE ESS WORK NORMALLY?****YES :** Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunction .)**NO :** Replace the hydraulic unit (integrated with ASC-ECU). (Refer to .) Then go to Step 11.**STEP 11. OPERATION CHECK****Q: DOES THE ESS WORK NORMALLY?****YES :** This diagnosis is complete.**NO :** Return to Step 1.**INSPECTION PROCEDURE 16: HSA (HILL START ASSIST) WORK.****G and Yaw Rate Sensor 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 : Grey R : Red P : Pink V : Violet PU : Purple SI : Silver WAH35E012A

To Attached sheet 60 (1/3),(2/3)



<New>

STEP 1. Hydraulic unit (integrated with ASC-ECU) check.

Check the hydraulic unit (integrated with ASC-ECU) part No.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the hydraulic unit (integrated with ASC-ECU). Then go to Step 2.

STEP 2. ETACS-ECU check.

Check the ETACS-ECU part No.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair ETACS-ECU. Then go to Step 3.

STEP 3. Diagnosis code check

Use M.U.T.-III to check the diagnosis code for the ASC system and ETACS-ECU.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Carry out the diagnosis for the diagnosis code.

STEP 4. M.U.T.-III actuator test

Perform the following actuator test, and check if the ESS operation.

- Item No.10: ESS test mode

Q: Is the check result normal?

YES : This diagnosis is complete.

NO : Go to Step 5.

STEP 5. Check ETACS coding data

ESS type

OK: Present.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Replace the ETACS-ECU. Then go to Step 9.

STEP 6. Check the ASC-ECU power supply circuit.

Q: Is the check result normal?

YES : Go to Step 7.

NO : Carry out the diagnosis of ASC-ECU power supply circuit system. Then go to Step 9.

STEP 7. M.U.T.-III actuator test

Perform the following actuator test, and check if the ESS operation.

- Item No.10: ESS test mode

Q: Is the check result normal?

YES : This diagnosis is complete.

NO : Replace ETACS-ECU. Then go to Step 8.

STEP 8. M.U.T.-III actuator test

Perform the following actuator test, and check if the ESS operation.

- Item No.10: ESS test mode

Q: Is the check result normal?

YES : This diagnosis is complete.

NO : Replace the hydraulic unit (integrated with ASC-ECU). Then go to Step 9.

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

Perform the following actuator test, and check if the ESS operation.

- Item No.10: ESS test mode

Q: Is the check result normal?

YES : This diagnosis is complete.

NO : Return to Step 1.

<Added>

Inspection Procedure 14: The initial check sound of hydraulic unit is loud.**CAUTION**

When installing brake tube, match the axial center of flare nut and brake tube with the center of hole at the hydraulic unit side, and check that the fluid does not leak.

COMMENT ON TROUBLE SYMPTOM

The operation sound may be decreased by reducing the load at the rubber mount portion of the brake tube and hydraulic unit.

PROBABLE CAUSES

- Improper installation of the hydraulic unit
- Improper installation of the brake tube

DIAGNOSIS**DRIVING CHECK**

- 1) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
- 2) When vehicle speed reaches 10 km/h, check the operating sound volume and compare it with that the same model.

OK: The operating sound is the same volume or less by comparing with that of the same model.

Q: Is the check result normal?

YES: This diagnosis is complete.

NO: Carry out adjustment for hydraulic unit installation.

<Added>

INSPECTION PROCEDURE 16: THE INITIAL CHECK SOUND OF HYDRAULIC UNIT**CAUTION**

WHEN INSTALLING BRAKE TUBE, MATCH THE AXIAL CENTER OF FLARE NUT WITH THE CENTER OF HOLE AT THE HYDRAULIC UNIT SIDE, AND CHECK THAT IT DOES NOT LEAK.

COMMENT ON TROUBLE SYMPTOM

The operation sound may be decreased by reducing the load at the rubber mount portion of the brake tube and hydraulic unit.

PROBABLE CAUSES

- Improper installation of the hydraulic unit
- Improper installation of the brake tube

DIAGNOSIS**DRIVING CHECK**

- 1) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
- 2) When vehicle speed reaches 10 km/h, check the operating sound volume and compare it with that of the same model.

OK: THE OPERATING SOUND IS THE SAME VOLUME OR LESS BY COMPARING WITH THAT OF THE SAME MODEL.

Q: IS THE CHECK RESULT NORMAL?

YES: This diagnosis is complete.

NO: Carry out adjustment for hydraulic unit installation.

<Added>

INSPECTION PROCEDURE 19: THE INITIAL CHECK SOUND OF HYDRAULIC UNIT**CAUTION**

WHEN INSTALLING BRAKE TUBE, MATCH THE AXIAL CENTER OF FLARE NUT WITH THE CENTER OF HOLE AT THE HYDRAULIC UNIT SIDE, AND CHECK THAT IT DOES NOT LEAK.

COMMENT ON TROUBLE SYMPTOM

The operation sound may be decreased by reducing the load at the rubber mount portion of the brake tube and hydraulic unit.

PROBABLE CAUSES

- Improper installation of the hydraulic unit
- Improper installation of the brake tube

DIAGNOSIS**DRIVING CHECK**

- 1) Turn the ignition switch from the "LOCK" (OFF) position to the "ON" position.
- 2) When vehicle speed reaches 10 km/h, check the operating sound volume and compare it with that of the same model.

OK: THE OPERATING SOUND IS THE SAME VOLUME OR LESS BY COMPARING WITH THAT OF THE SAME MODEL.

Q: IS THE CHECK RESULT NORMAL?

YES: This diagnosis is complete.

NO: Carry out adjustment for hydraulic unit installation.

ACTIVE STABILITY CONTROL SYSTEM (ASC) TROUBLESHOOTING

Attached sheet 67 (1/2)

THE SYSTEM IS NORMAL.

ITEM NO.	CHECKITEM	CHECK CONDITION		NORMAL CONDITION
01	FL wheel speed sensor	Perform a test run of the vehicle.		The speedometer display and the M.U.T.-III display almost agree with each other. (During stop: approximately 0.7km/h)
02	FR wheel speed sensor			
03	RL wheel speed sensor			
04	RR wheel speed sensor			
05	Power supply voltage			System voltage (10 to 18 V ASC operatable range)
07	Brake switch (input)	The brake pedal is depressed.		ON
		The brake pedal is released.		OFF
08	Lateral G sensor (+: left turn, -: right turn)	Vehicle stopped (level)		-0.11 to 0.11 G
		Running		-1 to 1 G
09	G sensor (+: deceleration, -: acceleration)	Vehicle stopped (level)	2WD	0 G*1 (fixed value)
			4WD	<ul style="list-style-type: none"> -0.11 to 0.11 G <Except vehicles with HSA> -0.04 to 0.04 G <Vehicles with HSA>
		Running	2WD	0 G*1 (fixed value)
			4WD	-1 to 1 G
10	Master cylinder pressure (+: pressure increase, -: pressure decrease)	The brake pedal is depressed.		Increases by the amount of the brake pedal depression.
		The brake pedal is released.		-3 to 3 bar
11	Steering angle (+: left turn, -: right turn)	Vehicle stopped (the steering wheel is in the neutral position)		-6 to 6 deg
		Running		Nearly the same as the steering wheel operation angle <-720 to 720 deg (ASC-ECU normal detection value)>
				Nearly the same as the steering wheel operation angle <-850 to 850 deg (Sensor normal value as a single unit)>
12	Yaw rate sensor (+: left turn, -: right turn)	Vehicle stopped (level)		-3.6 to 3.6 deg/s
		Running		-100 to 100 deg/s
14	Brake switch	The brake pedal is depressed.		ON
		The brake pedal is released.		OFF
15	Emission test mode	Emission test mode: ON		ON
		Emission test mode: OFF		OFF
26	Brake fluid pressure switch	Brake fluid level is lower than the "LOWER" marking.		Low
		Brake fluid level is higher than the "LOWER" marking.		Normal

ACTIVE STABILITY CONTROL SYSTEM (ASC) TROUBLESHOOTING

Attached sheet 67 (2/2)

ITEM NO.	CHECK ITEM	CHECK CONDITION	NORMAL CONDITION
96	G sensor offset	The difference between the neutral position that was input to ASC-ECU before the G and yaw rate sensor calibration and the neutral position after the calibration.	<div>2WD</div> <div>4WD</div> <div>0 G^{*3} (fixed value) <Old></div> <div> <ul style="list-style-type: none"> -0.15 to 0.15 G <Except vehicles with HSA> 0.08 to 0.08 G <Vehicles with HSA> </div>
97	Yaw rate sensor offset	The difference between the neutral position that was input to the ASC-ECU before the G and yaw rate sensor calibration and the neutral position after the calibration.	-6.0 to 6.0 deg/s
105	Power supply voltage (input)		System voltage (10 to 18 V ASC operatable range)
120	Parking brake switch (Input)	When the parking brake lever is pulled up:	ON
		When the parking brake lever is released:	OFF
128	A.S.C./TCL off switch (input)	The ASC OFF switch is pressed.	ON
		The ASC OFF switch is not operated.	OFF
138	ESS request	ASC-ECU is demanding the ESS operation of ETACS-ECU.	ON
		ASC-ECU is not demanding the ESS operation of ETACS-ECU.	OFF

NOTE:

- *1: The G and yaw rate sensor does not detect longitudinal acceleration of a vehicle, thus "0 G" is always set.
- *2: When the ASC OFF switch is pressed and held for 15 seconds, the ASC system returns to the ON status.
- *3: The G and yaw rate sensor for 2WD vehicles does not detect longitudinal acceleration of a vehicle, thus "0 G" is always set.

<New>

4WD or 2WD with idle neutral control

-0.15 to 0.15 G

SYSTEM SHUTDOWN BY ECU

While ASC-ECU is disabled by the diagnostic function, the M.U.T.-III displayed data is different from the actual measurement.

ACTUATOR TEST TABLE

Using M.U.T.-III, the following actuators can be forcibly operated:

M1355001600343

Item No.	Check item	Check conditions	Normal conditions
88	Vehicle speed	Perform a test run of the vehicle.	The speedometer display and the M.U.T.-III display almost agree with each other.
89	Integrating distance of left wheel		Increases as the vehicle runs.
90	Integrating distance of left wheel		
120	Parking brake switch (Input value)	When the parking brake lever is pulled up:	ON
		When the parking brake lever is released:	OFF

2. System shutdown by ECU

While ASC-ECU is disabled by the diagnostic function, the M.U.T.-III displayed data is different from the actual measurement.

<Added>

96	G sensor offset	The difference between the neutral position that was input to ASC-ECU before the G and yaw rate sensor calibration and the neutral position after the calibration.	-0.15 to 0.15 G
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<Added>

73	Lateral G sensor offset	The difference between the neutral position that was input to ASC-ECU before the G and yaw rate sensor calibration and the neutral position after the calibration.	-0.15 to 0.15 G
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Item No.	Check item	Check condition	Normal condition
28	ASC/TCL off switch	When the ASC OFF switch is not operated (when the ASC control is available)	ON
		When the ASC OFF switch is operated (pressed and held for 3 seconds or more)(when the ASC control is prohibited)	OFF
		When the ASC OFF switch is operated (pressed and held for 15 seconds or more)(when the ASC OFF control is prohibited by fail-safe function)*	ON
45	SAS OK flag	When the steering wheel sensor neutral point is learned	Comp
		When the steering wheel sensor neutral point is not learned	Not Comp
		When the steering wheel sensor is defective	SAS fail SAS fail&No Comp
65	Engine Speed	When the accelerator pedal is depressed (engine started)	The tachometer display and the M.U.T.-III display almost agree with each other.
66	Engine torque		Displays the engine torque.
67	APS		Displays the accelerator pedal opening angle.
68	Allow ESP torque request		Permitted
70	Target gear	When the selector lever is operated	Displays the selector lever position.
71	Actual gear		
72	Master cylinder pressure Offset	The difference between the neutral position that was input to the ASC-ECU before the master cylinder pressure sensor calibration and the neutral position after the calibration.	-8 to 8 bar <div><New> <div>-0.15 to 0.15 G</div><div>↓</div><Old></div>
73	Lateral G sensor offset	The difference between the neutral position that was input to the ASC-ECU before the G and yaw rate sensor calibration and the neutral position after the calibration.	<div>-0.17 to 0.17 G</div>
86	Ignition switch	Ignition switch: ON	ON
87	Ignition switch (input)	Ignition switch: ON	ON
88	Vehicle speed	Perform a test run of the vehicle.	The speedometer display and the M.U.T.-III display almost agree with each other.
91	Brake pressure sensor	The brake pedal is depressed.	ON
		The brake pedal is released.	OFF

Item No.	Check item	Check condition	Normal condition
97	Yaw rate sensor offset	The difference between the neutral position that was input to the ASC-ECU before the G and yaw rate sensor calibration and the neutral position after the calibration.	-6.0 to 6.0 deg/s
105	Power supply voltage (input)		System voltage (10 to 18 V ASC operatable range)
120	Parking brake switch (Input)	When the parking brake lever is pulled up:	ON
		When the parking brake lever is released:	OFF
128	A.S.C./TCL off switch (input)	The ASC OFF switch is pressed.	OFF
		The ASC OFF switch is not operated.	ON

NOTE: *: When the ASC OFF switch is pressed and held for 15 seconds, the ASC system returns to the ON status.

2. System shutdown by ECU
While ASC-ECU is disabled by the diagnostic function, the M.U.T.-III displayed data is different from the actual measurement.

<Added>

96	G sensor offset	The difference between the neutral position that was input to ASC-ECU before the G and yaw rate sensor calibration and the neutral position after the calibration.	-0.15 to 0.15 G
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DATA LIST REFERENCE TABLE

The following items of ECU input data can be read using M.U.T.-III.

1. The system is normal.

Item No.	Check item	Check condition	Normal condition
01	FL wheel speed sensor	Perform a test run of the vehicle.	The speedometer display and the M.U.T.-III display almost agree with each other. (During stop: approximately 0.7km/h)
02	FR wheel speed sensor		
03	RL wheel speed sensor		
04	RR wheel speed sensor		
05	Power supply voltage		System voltage (10 to 18 V ASC operatable range)
07	Brake switch (input)	The brake pedal is depressed.	ON
		The brake pedal is released.	OFF
08	Lateral G sensor (+: left turn, -: right turn)	Vehicle stopped (level)	-0.11 to 0.11 G
		Running	-1 to 1 G
09	G sensor (+: deceleration, -: acceleration)	Vehicle stopped (level)	<ul style="list-style-type: none"> -0.11 to 0.11 G <Except vehicles with HSA> -0.04 to 0.04 G <Vehicles with HSA>
		Running	-1 to 1 G
10	Master cylinder pressure (+: pressure increase, -: pressure decrease)	The brake pedal is depressed.	Increases by the amount of the brake pedal depression.
		The brake pedal is released.	-3 to 3 bar
11	Steering angle (+: left turn, -: right turn)	Vehicle stopped (the steering wheel is in the neutral position)	-6 to 6 deg
		Running	<p>Nearly the same as the steering wheel operation angle <-720 to 720 deg (ASC-ECU normal detection value)></p> <p>Nearly the same as the steering wheel operation angle <-850 to 850 deg (Sensor normal value as a single unit)></p>
12	Yaw rate sensor (+: left turn, -: right turn)	Vehicle stopped (level)	-3.6 to 3.6 deg/s
		Running	-100 to 100 deg/s
14	Brake switch	The brake pedal is depressed.	ON
		The brake pedal is released.	OFF
15	Emission test mode	Emission test mode: ON	ON
		Emission test mode: OFF	OFF
26	Brake fluid pressure switch	Brake fluid level is lower than the "LOWER" marking.	Low
		Brake fluid level is higher than the "LOWER" marking.	Normal

Item No.	Check item	Check condition	Normal condition
96	G sensor offset	The difference between the neutral position that was input to ASC-ECU before the G and yaw rate sensor calibration and the neutral position after the calibration.	<ul style="list-style-type: none"> • -0.15 to 0.15 G <Except vehicles with HSA> • -0.08 to 0.08 G <Vehicles with HSA> <p align="right"><Deleted></p>
97	Yaw rate sensor offset	The difference between the neutral position that was input to the ASC-ECU before the G and yaw rate sensor calibration and the neutral position after the calibration.	-6.0 to 6.0 deg/s
105	Power supply voltage (input)		System voltage (10 to 18 V ASC operatable range)
120	Parking brake switch (Input)	When the parking brake lever is pulled up:	ON
		When the parking brake lever is released:	OFF
128	A.S.C./TCL off switch (input)	The ASC OFF switch is pressed.	OFF
		The ASC OFF switch is not operated.	ON

NOTE: *: When the ASC OFF switch is pressed and held for 15 seconds, the ASC system returns to the ON status.

- System shutdown by ECU
While ASC-ECU is disabled by the diagnostic function, the M.U.T.-III displayed data is different from the actual measurement.

<New>

DATA LIST REFERENCE TABLE

The following items of ECU input data can be checked.

2WD	0 G*1 (fixed value)
4WD or 2WD with idle neutral control	-0.11 to 0.11 G

The system is normal.

Item No.	Check item	Check condition	Normal condition
01	FL wheel speed sensor	Perform a test run of the vehicle.	The speedometer display and the M.U.T.-III display almost agree with each other. (During stop: approximately 0.7km/h)
02	FR wheel speed sensor		
03	RL wheel speed sensor		
04	RR wheel speed sensor		
05	Power supply voltage		System voltage (10 to 18 V ASC operatable range)
07	Brake switch (input)	The brake pedal is depressed.	ON
		The brake pedal is released.	OFF
08	Lateral G sensor (+: left turn, -: right turn)	Vehicle stopped (level)	-0.11 to 0.11 G
		Running	-1 to 1 G
09	G sensor (+: deceleration, -: acceleration)	Vehicle stopped (level) <Old>	-0.04 to 0.04 G
		Running 2WD	0 G*1 (fixed value)
		Running 4WD	-1 to 1 G
10	Master cylinder pressure (+: pressure increase, -: pressure decrease)	The brake pedal is depressed.	Increases by the amount of the brake pedal depression.
		The brake pedal is released.	-3 to 3 bar
11	Steering angle (+: left turn, -: right turn)	Vehicle stopped (the steering wheel is in the neutral position)	-6 to 6 deg
		Running	Nearly the same as the steering wheel operation angle <-720 to 720 deg (ASC-ECU normal detection value)>
			Nearly the same as the steering wheel operation angle <-850 to 850 deg (Sensor normal value as a single unit)>
12	Yaw rate sensor (+: left turn, -: right turn)	Vehicle stopped (level)	-3.6 to 3.6 deg/s
		Running	-100 to 100 deg/s
14	Brake switch	The brake pedal is depressed.	ON
		The brake pedal is released.	OFF
15	Emission test mode	Emission test mode: ON	ON
		Emission test mode: OFF	OFF
26	Brake fluid pressure switch	Brake fluid level is lower than the "LOWER" marking.	Low
		Brake fluid level is higher than the "LOWER" marking.	Normal

ACTIVE STABILITY CONTROL SYSTEM (ASC) TROUBLESHOOTING

Attached sheet 77 (2/2)

Item No.	Check item	Check condition	Normal condition
96	G sensor offset	The difference between the neutral position that was input to the ASC-ECU before the G and yaw rate sensor calibration and the neutral position after the calibration.	-0.08 to 0.08 G
97	Yaw rate sensor offset	The difference between the neutral position that was input to the ASC-ECU before the G and yaw rate sensor calibration and the neutral position after the calibration.	-6.0 to 6.0 deg/s <Old>
105	Power supply voltage (input)		System voltage (10 to 18 V ASC operatable range)
120	Parking brake switch (Input)	When the parking brake lever is pulled up:	ON
		When the parking brake lever is released:	OFF
128	A.S.C./TCL off switch (input)	The ASC OFF switch is pressed.	ON
		The ASC OFF switch is not operated.	OFF
138	ESS request	ASC-ECU is demanding the ESS operation of ETACS-ECU.	ON
		ASC-ECU is not demanding the ESS operation of ETACS-ECU.	OFF

NOTE:

- ^{*1}: The G and yaw rate sensor does not detect longitudinal acceleration of a vehicle, thus "0 G" is always set.
- ^{*2}: When the ASC OFF switch is pressed and held for 15 seconds, the ASC system returns to the ON status.
- While ASC-ECU is disabled by the diagnostic function, the M.U.T.-III displayed data is different from the actual measurement.

<New>

2WD	0 G ^{*1} (fixed value)
4WD or 2WD with idle neutral control	-0.15 to 0.15 G

6. When any malfunction has been found, take a necessary action according to the "Judgment Table."

JUDGMENT TABLE

DISPLAY ON M.U.T.-III	OPERATION	TEST RESULT	JUDGMENT	CAUSE	MEASURE
01 FL wheel ABS drive 02 FR wheel ABS drive 03 RL wheel ABS drive 04 RR wheel ABS drive	<ul style="list-style-type: none">Depress the brake pedal to lock the wheel.Select the vehicle to be inspected using M.U.T.-III, perform the actuator test.Rotate the selected wheel by hands to confirm the braking force.	Braking force decreases for 3 seconds from the lock status.	Normal	—	—
		The wheel does not lock even if the brake pedal is depressed.	Error	Clogged brake line other than hydraulic unit	Check and clean the brake line.
				Clogged hydraulic circuit in the hydraulic unit	Replace the hydraulic unit assembly.
				Faulty routing of hydraulic unit brake tube	Route the brake tube correctly.
				Malfunction of hydraulic unit solenoid valve operation	Replace the hydraulic unit assembly.
05 FL wheel TCL drive 06 FR wheel TCL drive 07 RL wheel TCL drive 08 RR wheel TCL drive	<ul style="list-style-type: none">Select the vehicle to be inspected using M.U.T.-III, perform the actuator test.Rotate the selected wheel by hands to confirm the braking force.	Lock condition occurs for 3 seconds from the status without braking force.	Normal	—	—
		The wheel does not lock.	Error	<ul style="list-style-type: none">Faulty routing of hydraulic unit brake tubeClogged brake line other than hydraulic unit	Check and clean the brake line.
				Clogged hydraulic circuit in the hydraulic unit	Replace the hydraulic unit assembly.

7. After the inspection, turn the ignition switch to LOCK (OFF) position, and then disconnect M.U.T.-III.

HYDRAULIC UNIT INSTALLATION ADJUSTMENT

Refer to HYDRAULIC UNIT REMOVAL AND INSTALLATION.

- 1) Operate the pre-removal steps for the hydraulic unit.
- 2) Removal all brake tubes.
- 3) Removal the protector.
- 4) Loosen the mounting bolt and nut of the hydraulic unit bracket.
- 5) Install all brake tubes temporarily.
- 6) Shake hydraulic unit to all directions with both hands to make the hydraulic unit bracket insulator fit with the unit.
- 7) Install the hydraulic unit bracket with mounting bolts and nut not to load the brake tube.
- 8) Install the protector.
- 9) Install all brake tubes securely.
- NOTE: Install the flare nut taking care not to let the brake tube turn together.*
- 10) Operate the post-installation steps of the hydraulic unit.

<Added>