MITSUBISHI MOTORS

SERVICE BULLETIN

GLOBAL AFTER SALES OFFICE, MITSUBISHI MOTORS CORPORATION

PURPOSE : INFORMATION	ISSUE NO. : MSB-11E35-001B	DATE : 2011-10-20
SUBJECT : ABS/ASC TROUBLESHOOTING - LOUD INITIAL CHECK SOUND		<MODEL> <M/Y>
GROUP : ANTI-SKID BRAKING SYSTEM (ABS)/ ACTIVE STABILITY CONTROL SYSTEM (ASC)		(EUR/RUSSIA/UK) See following 2. Applicable Manuals table.

1. Description:

In the troubleshooting for ABS/ASC, a symptom “The initial check sound of hydraulic unit is loud.” and its inspection procedure is added. This Service Bulletin contains the information regarding this item.

2. Applicable Manuals:

See Attached sheets 1 (1/9) to 1 (9/9).

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 8 to 11, 13 and 14.

<EUR>

Manual/Model	<M/Y>	Pub. No.	Title (Info-ID)	Attached Sheet
2007.5 L200/ L200 SPOETERO Workshop Manual CD-ROM (KA0T/KB0T)	07.5	CCRE07E2-CD (English) CCRS07E2-CD (Spanish) CCRF07E2-CD (French) CCRG07E2-CD (German)	Inspection Chart for Trouble Symptoms (M352-01-140-98700-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 3: ABS System does not Operate (M352-01-600-80900-00)	
			On-vehicle Service Hydraulic Unit Check (M352-00-170-86800-01)	Attached sheet 13
			Symptom Chart (M355-00-690-08200-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 10: ASTC System does not Operate (M355-00-770-05800-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-07500-01)	Attached sheet 13
2009 L200/ L200 SPORTERO Workshop Manual CD-ROM (KA0T/KB0T)	09	CCRE09E1-CD (English) CCRS09E1-CD (Spanish) CCRF09E1-CD (French) CCRG09E1-CD (German) CCRI09E1-CD (Italian)	Inspection Chart for Trouble Symptoms (M352-01-141-45200-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 3: ABS System does not Operate (M352-01-601-19200-00)	
			On-vehicle Service Hydraulic Unit Check (M352-00-170-86802-01)	Attached sheet 13
			Trouble Symptom Chart (M355-00-690-43500-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 8: ASTC System does not Operate (M355-00-770-41200-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-07501-01)	Attached sheet 13
2010 L200/ L200 SPORTERO Workshop Manual CD-ROM (KA0T/KB0T)	10	CCRE10E1-CD (English) CCRS10E1-CD (Spanish) CCRF10E1-CD (French) CCRG10E1-CD (German) CCRI10E1-CD (Italian)	Inspection Chart for Trouble Symptoms (M352-01-141-45200-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 3: ABS System does not Operate (M352-01-601-19201-00)	
			On-vehicle Service Hydraulic Unit Check (M352-00-170-86803-01)	Attached sheet 13

Manual/Model	<M/Y>	Pub. No.	Title (Info-ID)	Attached Sheet
2010 L200/ L200 SPORTERO Workshop Manual CD-ROM (KA0T/KB0T)	10	CCRE10E1-CD (English) CCRS10E1-CD (Spanish) CCRF10E1-CD (French) CCRG10E1-CD (German) CCRI10E1-CD (Italian)	Trouble Symptom Chart (M355-00-690-43500-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 8: ASTC System does not Operate (M355-00-770-41200-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-07501-01)	Attached sheet 13
2011 L200/ L200 SPORTERO Workshop Manual CD-ROM (KA0T/KB0T)	11	CCRE11E1-CD (English) CCRS11E1-CD (Spanish) CCRF11E1-CD (French) CCRG11E1-CD (German) CCRI11E1-CD (Italian)	Inspection Chart for Trouble Symptoms (M352-01-141-45200-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 3: ABS System does not Operate (M352-01-601-19202-00)	
			On-vehicle Service Hydraulic Unit Check (M352-00-171-10601-01)	Attached sheet 13
			Trouble Symptom Chart (M355-00-690-43500-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 8: ASTC System does not Operate (M355-00-770-41201-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-07501-01)	Attached sheet 13
2005 COLT Workshop Manual CD-ROM (Z30A)	05	CZME05E1-CD (English) CZMS05E1-CD (Spanish) CZMF05E1-CD (French) CZMG05E1-CD (German)	Inspection Chart for Trouble Symptoms (M352-01-140-77200-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 8: The ABS Operates too Frequently (M352-02-490-04500-00)	
			On-vehicle Service Hydraulic Unit Check (M352-00-170-79400-01)	Attached sheet 13
			Symptom Chart (M355-00-120-01100-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 11: G and Yaw Rate Sensor Power Supply System (M355-00-910-06300-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-03100-01)	Attached sheet 13

Attached sheet 1 (3/9)

Manual/Model	<M/Y>	Pub. No.	Title (Info-ID)	Attached Sheet
2006 COLT CZ3/CZT Workshop Manual CD-ROM (Z30A)	06	CZ2E06E1-CD (English) CZ2S06E1-CD (Spanish) CZ2F06E1-CD (French) CZ2G06E1-CD (German)	Inspection Chart for Trouble Symptoms (M352-01-140-91000-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 8: The ABS Operates too Frequently (M352-02-490-03400-00)	
			On-vehicle Service Hydraulic Unit Check (M352-00-170-78300-01)	Attached sheet 13
			Symptom Chart (M355-00-120-03300-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 11: G and Yaw Rate Sensor Power Supply System (M355-00-910-05200-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-03100-01)	Attached sheet 13
2007 COLT/ COLT CZ3/CZT Workshop Manual CD-ROM (Z30A)	07	CZME07E1-CD (English)	Inspection Chart for Trouble Symptoms (M352-01-140-91000-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 8: The ABS Operates too Frequently (M352-02-490-03400-00)	
			On-vehicle Service Hydraulic Unit Check (M352-00-170-78300-01)	Attached sheet 13
			Symptom Chart (M355-00-120-03300-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 11: G and Yaw Rate Sensor Power Supply System (M355-00-910-05200-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-03100-01)	Attached sheet 13
2008 COLT/ COLT CZ3/CZT Workshop Manual CD-ROM (Z30A)	08	CZME08E1-CD (English) CZMS08E1-CD (Spanish) CZMF08E1-CD (French) CZMG08E1-CD (German)	Inspection Chart for Trouble Symptoms (M352-01-140-91000-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 8: The ABS Operates too Frequently (M352-02-490-03400-00)	
			On-vehicle Service Hydraulic Unit Check (M352-00-170-78300-01)	Attached sheet 13
			Symptom Chart (M355-00-120-03300-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 11: G and Yaw Rate Sensor Power Supply System (M355-00-910-05200-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-03100-01)	Attached sheet 13

Attached sheet 1 (4/9)

Manual/Model	<M/Y>	Pub. No.	Title (Info-ID)	Attached Sheet
2009 COLT/ COLT CZ3/CZT Workshop Manual CD-ROM (Z30A)	09	CZME09E2-CD (English) CZMS09E2-CD (Spanish) CZMF09E2-CD (French) CZMG09E2-CD (German) CZMI09E2-CD (Italian)	Trouble Symptom Chart (M352-01-141-43000-01)	Attached sheet 8
			Inspection Procedure 9: ESS Inoperative or Improper Operative (M352-03-200-02500-01)	Attached sheet 10
			To be Added after the Following Item. Inspection Procedure 9: ESS Inoperative or Improper Operative (M352-03-200-02500-00)	Attached sheet 8
			On-vehicle Service Hydraulic Unit Check (M352-00-170-93202-01)	Attached sheet 13
			Trouble Symptom Chart (M355-00-690-42401-01)	Attached sheet 8
			Inspection Procedure 10: ESS Inoperative or Improper Operative (M355-02-550-02701-01)	Attached sheet 11
			To be Added after the Following Item. Inspection Procedure 10: ESS Inoperative or Improper Operative (M355-02-550-02701-00)	Attached sheet 8
			On-vehicle Service Hydraulic Unit Check (M355-00-610-21301-01)	Attached sheet 13
2011 COLT/ COLT CZ3/CZT Workshop Manual CD-ROM (Z30A)	11	CZME11E2-CD (English) CZMS11E2-CD (Spanish) CZMF11E2-CD (French) CZMG11E2-CD (German) CZMI11E2-CD (Italian)	Trouble Symptom Chart (M352-01-141-43000-01)	Attached sheet 8
			Inspection Procedure 9: ESS Inoperative or Improper Operative (M352-03-200-02500-01)	Attached sheet 10
			To be Added after the Following Item. Inspection Procedure 9: ESS Inoperative or Improper Operative (M352-03-200-02500-00)	Attached sheet 8
			On-vehicle Service Hydraulic Unit Check (M352-00-170-93204-01)	Attached sheet 13
			Trouble Symptom Chart (M355-00-690-42401-01)	Attached sheet 8
			Inspection Procedure 10: ESS Inoperative or Improper Operative (M355-02-550-02701-01)	Attached sheet 11
			To be Added after the Following Item. Inspection Procedure 10: ESS Inoperative or Improper Operative (M355-02-550-02701-00)	Attached sheet 8
			On-vehicle Service Hydraulic Unit Check (M355-00-610-21302-01)	Attached sheet 13

Attached sheet 1 (5/9)

Manual/Model	<M/Y>	Pub. No.	Title (Info-ID)	Attached Sheet
2004 GRANDIS Workshop Manual CD-ROM (NA0W)	04	CXPE04E1-CD (English) CXPS04E1-CD (Spanish) CXPF04E1-CD (French) CXPG04E1-CD (German)	Inspection Chart for Trouble Symptoms (M352-01-140-76100-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 5: ABS System does not Operate (M352-01-600-58600-00)	
			On-vehicle Service Hydraulic Unit Check (M352-00-170-67501-01)	Attached sheet 13
			Symptom Chart (M355-00-690-02600-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 11: TCL/ASC System does not Operate (M355-00-770-02500-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-02001-01)	Attached sheet 13
2006 GRANDIS Workshop Manual CD-ROM (NA0W)	06	CXPE06E1-CD (English) CXPS06E1-CD (Spanish) CXPF06E1-CD (French) CXPG06E1-CD (German)	Inspection Chart for Trouble Symptoms (M352-01-140-76100-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 5: ABS System does not Operate (M352-01-600-58600-00)	
			On-vehicle Service Hydraulic Unit Check (M352-00-170-67501-01)	Attached sheet 13
			Symptom Chart (M355-00-690-02600-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 11: TCL/ASC System does not Operate (M355-00-770-02500-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-02001-01)	Attached sheet 13
2008 GRANDIS Workshop Manual CD-ROM (NA0W)	08	CXPE08E1-CD (English) CXPS08E1-CD (Spanish) CXPF08E1-CD (French) CXPG08E1-CD (German)	Inspection Chart for Trouble Symptoms (M352-01-140-76100-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 5: ABS System does not Operate (M352-01-600-58600-00)	
			On-vehicle Service Hydraulic Unit Check (M352-00-170-67501-01)	Attached sheet 13
			Symptom Chart (M355-00-690-02600-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 11: TCL/ASC System does not Operate (M355-00-770-02500-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-02001-01)	Attached sheet 13

Attached sheet 1 (6/9)

Manual/Model	<M/Y>	Pub. No.	Title (Info-ID)	Attached Sheet
2011 i-MiEV Workshop Manual CD-ROM (HA3W)	11	CHAE11E1-CD (English) CHAS11E1-CD (Spanish) CHAF11E1-CD (French) CHAG11E1-CD (German) CHAI11E1-CD (Italian)	Trouble Symptom Chart (M355-00-690-79200-01)	Attached sheet 9
			To be Added after the Following Item. Inspection Procedure 11: ABS/TCL/ASC Operates too Frequently (M355-02-480-36000-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-27900-01)	Attached sheet 14

<RUSSIA>

Underneath Manual/ Model	<M/Y>	Underneath Pub. No.	Title (Info-ID)	Attached Sheet
2009 L200/ L200 SPORTERO Workshop Manual (KA0T/KB0T)	09	N/A	Inspection Chart for Trouble Symptoms (M352-01-141-45200-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 3: ABS System does not Operate (M352-01-601-19200-00)	
			On-vehicle Service Hydraulic Unit Check (M352-00-170-86802-01)	Attached sheet 13
			Trouble Symptom Chart (M355-00-690-43500-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 8: ASTC System does not Operate (M355-00-770-41200-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-07501-01)	Attached sheet 13
2010 L200/ L200 SPORTERO Workshop Manual (KA0T/KB0T)	10	N/A	Inspection Chart for Trouble Symptoms (M352-01-141-45200-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 3: ABS System does not Operate (M352-01-601-19201-00)	
			On-vehicle Service Hydraulic Unit Check (M352-00-170-86803-01)	Attached sheet 13
			Trouble Symptom Chart (M355-00-690-43500-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 8: ASTC System does not Operate (M355-00-770-41200-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-07501-01)	Attached sheet 13

Attached sheet 1 (7/9)

Underneath Manual/ Model	<M/Y>	Underneath Pub. No.	Title (Info-ID)	Attached Sheet
2011 L200/ L200 SPORTERO Workshop Manual (KA0T/KB0T)	11	N/A	Inspection Chart for Trouble Symptoms (M352-01-141-45200-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 3: ABS System does not Operate (M352-01-601-19202-00)	
			On-vehicle Service Hydraulic Unit Check (M352-00-171-10601-01)	Attached sheet 13
			Trouble Symptom Chart (M355-00-690-43500-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 8: ASTC System does not Operate (M355-00-770-41201-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-07501-01)	Attached sheet 13
2009 PAJERO SPORT Workshop Manual (KH8W)	09	N/A	Inspection Chart for Trouble Symptoms (M352-01-140-98700-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 3: ABS System does not Operate (M352-01-601-13601-00)	
			On-vehicle Service Hydraulic Unit Check (M352-00-170-86802-01)	Attached sheet 13
			Trouble Symptom Chart (M355-00-690-43500-01)	Attached sheet 8
			Inspection Procedure 8: ASTC System does not Operate (M355-00-770-41200-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-07501-01)	Attached sheet 13
2010 PAJERO SPORT Workshop Manual (KH8W)	10	N/A	Inspection Chart for Trouble Symptoms (M352-01-140-98700-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 3: ABS System does not Operate (M352-01-601-25500-00)	
			On-vehicle Service Hydraulic Unit Check (M352-00-171-10600-01)	Attached sheet 13
			Trouble Symptom Chart (M355-00-690-43500-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 8: ASTC System does not Operate (M355-00-770-41200-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-07501-01)	Attached sheet 13

Underneath Manual/ Model	<M/Y>	Underneath Pub. No.	Title (Info-ID)	Attached Sheet
2011 PAJERO SPORT Workshop Manual (KH8W)	11	N/A	Inspection Chart for Trouble Symptoms (M352-01-140-98700-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 3: ABS System does not Operate (M352-01-601-25501-00)	
			On-vehicle Service Hydraulic Unit Check (M352-00-171-10601-01)	Attached sheet 13
			Trouble Symptom Chart (M355-00-690-43500-01)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 8: ASTC System does not Operate (M355-00-770-41201-00)	
			On-vehicle Service Hydraulic Unit Check (M355-00-610-07501-01)	Attached sheet 13
2011 COLT/ COLT CZ3/CZT Workshop Manual (Z30A)	11	N/A	Trouble Symptom Chart (M352-01-141-43000-01)	Attached sheet 8
			Inspection Procedure 9: ESS Inoperative or Improper Operative (M352-03-200-02500-01)	Attached sheet 10
			To be Added after the Following Item. Inspection Procedure 9: ESS Inoperative or Improper Operative (M352-03-200-02500-00)	Attached sheet 8
			On-vehicle Service Hydraulic Unit Check (M352-00-170-93204-01)	Attached sheet 13
			Trouble Symptom Chart (M355-00-690-42401-01)	Attached sheet 8
			Inspection Procedure 10: ESS Inoperative or Improper Operative (M355-02-550-02701-01)	Attached sheet 11
			To be Added after the Following Item. Inspection Procedure 10: ESS Inoperative or Improper Operative (M355-02-550-02701-00)	Attached sheet 8
			On-vehicle Service Hydraulic Unit Check (M355-00-610-21302-01)	Attached sheet 13

<UK>

Manual/Model	<M/Y>	Pub. No.	Title (Info-ID)	Attached Sheet
2006 i Workshop Manual (HA1W)	06	N/A	Trouble Symptom Chart (M13502000114JPN0000010000)	Attached sheet 8
			To be Added after the Following Item. Inspection Procedure 7: Power Supply System (M13502000202JPN0000010002)	
			On-vehicle Service Hydraulic Unit Check (M13502000017JPN0000010001)	Attached sheet 13

SYMPTOM CHART <Added>

Trouble symptoms
The initial check sound of hydraulic unit loud

SYMPTOM PROCEDURES <Added>

Inspection Procedure : 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 6 mph (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.

SYMPTOM CHART <Added>

Trouble symptoms
The initial check sound of hydraulic unit loud

SYMPTOM PROCEDURES <Added>

Inspection Procedure : 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 electric motor switch from the "LOCK" (OFF) position to the "ON" position.
2) When vehicle speed reaches 6 mph (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.

Attached sheet 10 (1/2)

PROBABLE CAUSES

- Low battery voltage
- Wiring harness or connector failure of CAN bus line
- Malfunction of ABS-ECU.
- Different ETACS-ECU, abnormal variant coding information
- Different ABS-ECU.
- Malfunction of ETACS-ECU.

From Attached sheet 10 (2/2)

DIAGNOSIS PROCEDURE <Old>

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 ABS system and ETACS-ECU. (Refer to and GROUP 54B – 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 54B – ETACS, Check Chart for Diagnosis codes .) Then go to Step 8.

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 7.
NO : Go to Step 4.

STEP 4. Hydraulic unit (integrated with ABS-ECU) check
Check the hydraulic unit (integrated with ABS-ECU) part No.

Q: Is the check result normal?
YES : Go to Step 5.
NO : Replace the hydraulic unit (integrated with ABS-ECU). (Refer to) Then go to Step 8.

STEP 5. Check the ABS-ECU power supply circuit.
Refer to

Q: Is the check result normal?
YES : Go to Step 6.
NO : Carry out the diagnosis of ABS-ECU power supply circuit system.(Refer to) Then go to Step 8.

STEP 6. 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 8.

STEP 7. Operation check

Q: Does the ESS work normally?
YES : This diagnosis is complete.
NO : Replace the hydraulic unit (integrated with ABS-ECU). (Refer to) Then go to Step 8.

STEP 8. Operation check

Q: Does the ESS work normally?
YES : This diagnosis is complete.
NO : Return to Step 1.

DATA LIST REFERENCE TABLE

M1352011501307

The following items can be read by the M.U.T.-III from the ABS-ECU input data.

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 conditions	Normal conditions
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		

To Attached sheet 10 (1/2)

<New>

STEP 1. Hydraulic unit (integrated with ABS-ECU) check.
Check the hydraulic unit (integrated with ABS-ECU) part No.
Q:Is the check result normal?
YES : Go to Step 2.
NO : Repair the hydraulic unit (integrated with ABS-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 ABS 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 ABS-ECU power supply circuit.
Q:Is the check result normal?
YES : Go to Step 7.
NO : Carry out the diagnosis of ABS-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 ABS-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.

Attached sheet 11 (1/3)

YES : Go to Step 7.
NO (Abnormality of items 01 to 04) : Check the installation status of corresponding wheel speed sensor. (Refer to)
NO (Abnormality of items 08, 12) : Check the installation status of G and yaw rate sensor. (Refer to)
NO (Abnormality of item 11) : Check the installation status of steering wheel sensor. (Refer to)

STEP 7. Hydraulic unit check
Perform the following actuator tests, and check that the operation is normal. (Refer to)
- Item 01: FL wheel ABS drive
- Item 02: FR wheel ABS drive
- Item 03: RL wheel ABS drive
- Item 04: RR wheel ABS drive
- Item 05: FL wheel TCL drive
- Item 06: FR wheel TCL drive
- Item 07: RL wheel TCL drive
- Item 08: RR wheel TCL drive

Q: Is the check result normal?
YES : Go to Step 8.
NO : Replace the hydraulic unit (integrated with TCL/ASC-ECU). (Refer to). Then go to Step 9.

STEP 8. Operation check of ABS/TCL/ASC

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 TCL/ASC-ECU). (Refer to). Then go to Step 9.

STEP 9. Operation check of ABS/TCL/ASC

Q: Is the check result normal?
YES : The procedure is complete.
NO : Return to Step 1.

From Attached sheet 11 (3/3)

Inspection Procedure 10: ESS inoperative or improper operative

⚠ 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.**

COMMENTS ON TROUBLE SYMPTOM
In case of this trouble symptom, ESS operation may be disabled. Diagnosis code may be set by the TCL/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
- Malfunction of TCL/ASC-ECU.
- Different ETACS-ECU, abnormal variant coding information
- Different TCL/ASC-ECU.
- Malfunction of ETACS-ECU.

DIAGNOSIS PROCEDURE <Old>

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 54B – 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 54B – ETACS, Check Chart for Diagnosis codes .) Then go to Step 9.

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 8.
NO : Go to Step 4.

STEP 4. Hydraulic unit (integrated with TCL/ASC-ECU) check
Check the hydraulic unit (integrated with TCL/ASC-ECU) part No.

Q: Is the check result normal?
YES : Go to Step 5.
NO : Replace the hydraulic unit (integrated with TCL/ASC-ECU). (Refer to) Then go to Step 9.

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 9.

STEP 6. Check the TCL/ASC-ECU power supply circuit.
Refer to

Q: Is the check result normal?
YES : Go to Step 7.
NO : Carry out the diagnosis of TCL/ASC-ECU power supply circuit system. (Refer to) Then go to Step 9.

STEP 7. 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 9.

STEP 8. 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 TCL/ASC-ECU). (Refer to) Then go to Step 9.

STEP 9. Operation check

Q: Does the ESS work normally?
YES : This diagnosis is complete.
NO : Return to Step 1.

<Old>

DATA LIST REFERENCE TABLE

From Attached sheet 11 (3/3)

M1355001500443

The following items can be read by the M.U.T.-III from the TCL/ASC-ECU input data.
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 conditions	Normal conditions
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 TCL/ASC operatable range)
06	Stop lamp switch (input)	The brake pedal is released.	OFF
		The brake pedal is depressed.	ON
07	Brake switch (input)	The brake pedal is released.	ON
		The brake pedal is depressed.	OFF

To Attached sheet 11 (1/3),(2/3)

<New>

STEP 1. Hydraulic unit (integrated with TCL/ASC-ECU) check.
Check the hydraulic unit (integrated with TCL/ASC-ECU) part No.
Q:Is the check result normal?
YES : Go to Step 2.
NO : Repair the hydraulic unit (integrated with TCL/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 TCL/ASC-ECU power supply circuit.
Q:Is the check result normal?
YES : Go to Step 7.
NO : Carry out the diagnosis of TCL/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 TCL/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.

Attached sheet 13

HYDRAULIC UNIT CHECK

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

Attached sheet 14

Judgment Table

Display on M.U.T.-III	Operation	Test result	Judgment	Cause	Measure
01 FR wheel ABS drive 02 FL wheel ABS drive 03 RR wheel ABS drive 04 RL wheel ABS drive	• 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.
		Braking force does not decrease.		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 FR wheel TCL drive 06 FL wheel TCL drive 07 RR wheel TCL drive 08 RL wheel TCL drive	• 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. <Correct> electric motor <Incorrect>	Lock condition occurs for 3 seconds from the status without braking force.	Normal	–	–
		The wheel does not lock.	Error	• Faulty routing of hydraulic unit brake tube • 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.

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