Technical Service Bulletin

SUBJECT:	No:	TSB-22-51-003
TROUBLESHOOTING WINDSHIELD WIPER – SERVICE MANUAL REVISION	DATE:	**December 2022**
	MODEL:	**See below**

CIRCULATE TO:	[ ] GENERAL MANAGER	[X] PARTS MANAGER	[X] TECHNICIAN
[X] SERVICE ADVISOR	[X] SERVICE MANAGER	[X] WARRANTY PROCESSOR	[ ] SALES MANAGER

PURPOSE

This TSB updates the Troubleshooting Procedure for the Windshield Wiper in the Exterior portion of the affected Service Manuals.

AFFECTED VEHICLES

- 2011-2022 Outlander Sport
- 2014-2020 Outlander
- 2018-2021 Outlander PHEV
- 2018-2022 Eclipse Cross

AFFECTED SERVICE MANUAL

- 2011-2022 Outlander Sport Service Manual, Group 51 -Exterior, Windshield Wiper and Washer
- 2014-2020 Outlander Service Manual, Group 51-Exterior, Windshield Wiper and Washer
- 2018-2021 Outlander PHEV Service Manual, Group 52-Exterior, Windshield Wiper and Washer
- 2018-2022 Eclipse Cross Service Manual, Group 51-Exterior, Windshield Wiper and Washer

PROCEDURE

Please use the chart on pages 2-3 and replace the indicated pages found in the affected Service Manuals, Group 51, Exterior, Windshield Wiper and Washer.

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<OUTLANDER SPORT / RVR / ASX>

Applicable manual	Pub. No.	Applicable title	Contents
2011 OUTLANDER SPORT Service Manual	MSCD-017B-2011	EXTERIOR └ WINDSHIELD WIPER AND WASHER └ TROUBLESHOOTING └ THE WINDSHIELD WIPERS DO NOT WORK AT ALL	Attached sheet 6
2012 OUTLANDER SPORT Service Manual	MSCD-017B-2012		
2013 OUTLANDER SPORT Service Manual	MSCD-017B-2013		
2014 OUTLANDER SPORT Service Manual	MSCD-017B-2014		
2015 OUTLANDER SPORT Service Manual	MSCD-017B-2015		
2016 OUTLANDER SPORT Service Manual	MSCD-017B-2016		
2017 OUTLANDER SPORT Service Manual	MSCD-017B-2017		
2018 OUTLANDER SPORT Service Manual	MSCD-017B-2018		
2019 OUTLANDER SPORT Service Manual	MSCD-017B-2019		
2020 OUTLANDER SPORT Service Manual	MSCD-017B-2020		
2021 OUTLANDER SPORT Service Manual	MSCD-017B-2021		
2022 OUTLANDER SPORT Service Manual	MSCD-017B-2022		

<OUTLANDER / OUTLANDER PHEV / ECLIPSE CROSS>

Applicable manual	Pub. No.	Applicable title	Contents
2014 OUTLANDER Service Manual	MSCD-007B-2014	EXTERIOR └ WINDSHIELD WIPER AND WASHER └ TROUBLESHOOTING └ THE WINDSHIELD WIPERS DO NOT WORK AT ALL	Attached sheet 4
2015 OUTLANDER Service Manual	MSCD-007B-2015		
2016 OUTLANDER Service Manual	MSCD-007B-2016		
2017 OUTLANDER Service Manual	MSCD-007B-2017		
2018 OUTLANDER Service Manual	MSCD-007B-2018		
2019 OUTLANDER Service Manual	MSCD-007B-2019		
2020 OUTLANDER Service Manual	MSCD-007B-2020		
2018 OUTLANDER PHEV Service Manual	MSCD-027B-2018	EXTERIOR └ WINDSHIELD WIPER AND WASHER └ TROUBLESHOOTING └ THE WINDSHIELD WIPERS DO NOT WORK AT ALL	Attached sheet 5
2019 OUTLANDER PHEV Service Manual	MSCD-027B-2019		
2020 OUTLANDER PHEV Service Manual	MSCD-027B-2020		
2021 OUTLANDER PHEV Service Manual	MSCD-027B-2021		
2018 ECLIPSE CROSS Service Manual	MSCD-020B-2018	EXTERIOR └ WINDSHIELD WIPER AND WASHER └ TROUBLESHOOTING └ THE WINDSHIELD WIPERS DO NOT WORK AT ALL	Attached sheet 7
2019 ECLIPSE CROSS Service Manual	MSCD-020B-2019		
2020 ECLIPSE CROSS Service Manual	MSCD-020B-2020		
2021 ECLIPSE CROSS Service Manual	MSCD-020B-2021		
2022 ECLIPSE CROSS Service Manual	MSCD-020B-2022		

Inspection Procedure 1: The windshield wipers do not work at all.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the input and output signal circuits are normal.

TECHNICAL DESCRIPTION (COMMENT)

The windshield wiper motor, the column switch (column-ECU) or ETACS-ECU may be defective. Check the wiper backup circuit (between the column switch WB/U and the ETACS-ECU WB/U), and repair if necessary.

TROUBLESHOOTING HINTS

- Malfunction of the windshield wiper motor
- Defective column switch (column-ECU)
- The ETACS-ECU may be defective
- Damaged harness wires and connectors

DIAGNOSIS

STEP 1. Using scan tool (M.U.T.-III), read the diagnostic trouble code.

⚠ CAUTION
To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

(1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III) ."
(2) Turn the ignition switch to ON.
(3) Check if an ETACS-related diagnosis trouble code is stored.
(4) Turn the ignition switch to OFF.

Q: Is the DTC stored?

YES : Diagnose the ETACS-ECU. (Refer to GROUP 54A – ETACS, Diagnosis Trouble Code Chart .)
NO : Go to Step 2.

STEP 2. Using scan tool (M.U.T.-III), check data list.

⚠ CAUTION

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the OFF position before connecting or disconnecting scan tool (M.U.T.-III).

(1) Connect scan tool (M.U.T.-III). Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III)."

(2) Turn the ignition switch to OFF.

(3) Check the input signal related to the windshield wiper operation.

- Turn the ignition switch to the ACC position.
- Operate the windshield wiper switch at ground switch position.

Item No.	Item name	Windshield wiper switch position	Normal condition
Item 235	Front wiper ACT	LO	ON
		HI	
		INTO	ON and OFF
		MIST	ON
Item 288	ACC switch		ON

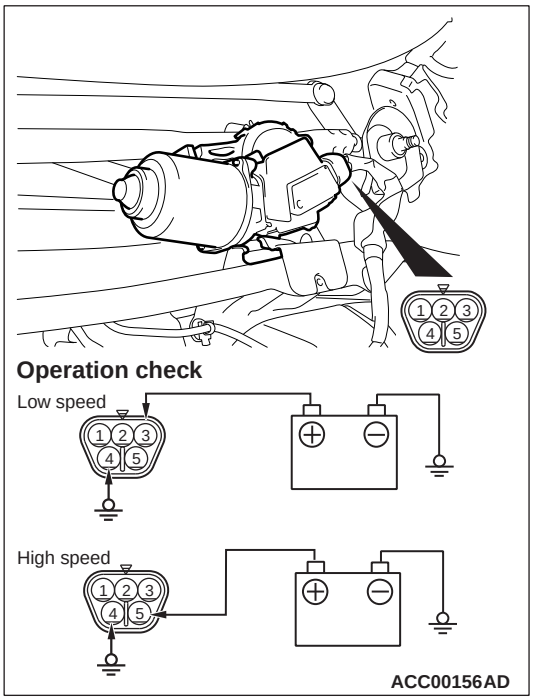
OK: Normal condition is displayed.

Q: Is the check result normal?

YES <Normal conditions are displayed for all items> : Go to Step 3.

NO <Normal condition is not displayed for item No. 235> : GROUP 54A – ETACS, Diagnosis - Inspection Procedure 11 "Column switch signal is not received."

NO <Normal condition is not displayed for item No. 288> : GROUP 54A – ETACS, Diagnosis - Inspection Procedure 1 "The ignition switch (ACC) signal is not received" .



STEP 3. Check the windshield wiper motor.

(1) Disconnect windshield wiper motor connector.
(2) Connect a battery to the windshield wiper motor as shown. Then check that the windshield wiper motor operates normally at high and low speeds.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Replace the windshield wiper motor.

STEP 4. Measure the resistance at windshield wiper motor connector.

(1) Disconnect the connector, and measure the resistance at the wiring harness.
(2) Measure the resistance between the windshield wiper motor connector ground terminal and the body ground.

OK: Continuity exists (2 Ω or less)

Q: Is the check result normal?

YES : Go to Step 6.
NO : Go to Step 5.

STEP 5. Check of open circuit in ground lines between windshield wiper motor connector and body ground.

Q: Is the check result normal?

YES : Intermittent malfunction. Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points, – How to Cope with Intermittent Malfunctions .
NO : Repair the connector(s) or wiring harness.

<Old>

STEP 6. Measure the voltage at ETACS-ECU connector (+B1 terminal).

(1) Disconnect the connector, and measure the voltage at the wiring harness side.

(2) Measure the voltage between the ETACS-ECU(+B1 terminal) and the body ground.

OK: System voltage

Q: Is the check result normal?

YES : Go to Step 8.

NO : Go to Step 7.

STEP 7. Check of short to power supply, short to ground, and open circuit in power supply line between fusible link and ETACS-ECU connector (+B terminal).

Q: Is the check result normal?

YES : Intermittent malfunction. Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points, – How to Cope with Intermittent Malfunctions.

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

STEP 8.Check of short to power supply, short to ground, and open circuit in W.LO, HI line between windshield wiper motor connector and ETACS-ECU connector

Q: Is the check result normal?

YES : Go to Step 9.

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

STEP 9. Check the trouble symptom.

Check that the windshield wipers work normally.

Q: Is the check result normal?

YES : Intermittent malfunction. Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points, – How to Cope with Intermittent Malfunctions.)

NO : Replace the ETACS-ECU.

<New>
Attached sheet 4 (5/5)

STEP 6. Check whether ETACS-ECU fuse No. 4 is blown.

Q: Is the fuse normal?
YES : Go to Step 7.
NO : Go to Step 13

STEP 7. Check the continuity at windshield wiper motor connector.
(1) Disconnect the connector, and measure at the wiring harness side.
(2) Turn the ignition switch to the "ACC" position.
(3) Set the wiper switch to LO condition.
(4) Measure the resistance between the windshield wiper motor connector (W.LO terminal) and windshield wiper motor connector (W.AS terminal).

OK: No continuity

Q: Is the check result normal?
YES : Go to Step 9.
NO : Go to Step 8.

STEP 8. Check of short circuit between W.LO line and W.AS line between ETACS-ECU connector and windshield wiper motor connector

Q: Is the check result normal?
YES : Replace the ETACS-ECU.
NO : Repair the connector(s) or wiring harness.

STEP 9. Measure the voltage at ETACS-ECU connector (+B1 terminal).
(1) Disconnect the connector, and measure the voltage at the wiring harness side.
(2) Measure the voltage between the ETACS-ECU(+B1 terminal) and the body ground.

OK: System voltage

Q: Is the check result normal?
YES : Go to Step 11.
NO : Go to Step 10.

STEP 10. Check of short to power supply, short to ground, and open circuit in power supply line between fusible link and ETACS-ECU connector (+B1 terminal).

Q: Is the check result normal?
YES : Intermittent malfunction. Refer to GROUP 00 - How to Use Troubleshooting/Inspection Service Points, - How to Cope with Intermittent Malfunctions .
NO : Repair the connector(s) or wiring harness.

STEP 11.Check of short to power supply, short to ground, and open circuit in W.HI, W.LO line between windshield wiper motor connector and ETACS-ECU connector

Q: Is the check result normal?
YES : Go to Step 12.
NO : Repair the connector(s) or wiring harness.

STEP 12. Check the trouble symptom.
Check that the windshield wipers work normally.

Q: Is the check result normal?
YES : Intermittent malfunction. (Refer to GROUP 00 - How to Use Troubleshooting/Inspection Service Points, - How to Cope with Intermittent Malfunctions .)
NO : Replace the ETACS-ECU.

STEP 13. Check the continuity at windshield wiper motor connector.
(1) Disconnect the connector, and measure at the wiring harness side.
(2) Measure the resistance between the windshield wiper motor connector (W.AS terminal) and windshield wiper motor connector (WACC terminal).

OK: No continuity

Q: Is the check result normal?
YES : Go to Step 15.
NO : Go to Step 14.

STEP 14. Check of short circuit between W.AS line and WACC line between ETACS-ECU connector and windshield wiper motor connector

Q: Is the check result normal?
YES : Replace the ETACS-ECU.
NO : Repair the connector(s) or wiring harness, and replace the ETACS-ECU fuse No. 4.

STEP 15. Check of open circuit and short circuit in W.HI, W.LO, W.AS, WACC lines between ETACS-ECU connector and windshield wiper motor connector

Q: Is the check result normal?
YES : Go to Step 16.
NO : Repair the connector(s) or wiring harness, and replace the ETACS-ECU fuse No. 4.

STEP 16. Check the trouble symptom.
Check that the windshield wipers work normally after replacing the fuse No.4.

Q: Is the check result normal?
YES : Intermittent malfunction. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunctions).
NO : If the fuse blows again, replace the ETACS-ECU.

Inspection Procedure 1: The windshield wipers do not work at all.

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⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TECHNICAL DESCRIPTION (COMMENT)

The windshield wiper motor, the column switch (column-ECU) or ETACS-ECU may be defective. Check the wiper backup circuit (between the column switch connector WB/U terminal and the ETACS-ECU connector WB/U terminal), and repair if necessary.

TROUBLESHOOTING HINTS

- Malfunction of the windshield wiper motor
- Defective column switch (column-ECU)
- The ETACS-ECU may be defective
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Using scan tool (M.U.T.-IIISE), read the ETACS-ECU DTC.
Check if DTC is set in the ETACS-ECU.

⚠ CAUTION
To prevent damage to scan tool (M.U.T.-IIISE), always turn the electric motor switch to the "OFF" position before connecting or disconnecting scan tool (M.U.T.-IIISE).
(1) Connect scan tool (M.U.T.-IIISE). Refer to GROUP 54A, Diagnostic Function - How to connect the Scan Tool (M.U.T.-IIISE).
(2) Turn the electric motor switch from "OFF" position to "ON" position.
(3) Check if DTC is set.
(4) Turn the electric motor switch to the "OFF" position.

Q: Is the DTC set?
YES : Troubleshoot the ETACS (Refer to GROUP 54A, ETACS - Diagnosis Trouble Code Chart).
NO : Go to Step 2.

STEP 2. Using scan tool (M.U.T.-IIISE), check data list.
Check the input signal related to the windshield wiper operation.

- Turn the electric motor switch to the ACC position.
- Operate the windshield wiper switch at each switch position.

Item No.	Item name	Windshield wiper switch position	Normal condition
235	Front wiper ACT	LO	ON
		HI	
		AUTO	ON and OFF
		MIST	ON
288	ACC switch	-	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES <Normal conditions are displayed for all items> : Go to Step 3.

NO <Normal condition is not displayed for item No. 235> : Troubleshoot the ETACS. Refer to GROUP 54A, ETACS - Inspection Procedure 11 "The column switch signal is not received".

NO <Normal condition is not displayed for item No. 288> : Troubleshoot the ETACS. Refer to GROUP 54A, ETACS - Inspection Procedure 1 "The OSS-ECU (ACC) signal is not received".

STEP 3. Check the windshield wiper motor.
Check the operation of windshield wiper motor at low and high speed.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Replace the windshield wiper motor.

STEP 4. Measure the resistance at windshield wiper motor connector.
(1) Disconnect the connector, and measure the resistance at the wiring harness.
(2) Measure the resistance between the windshield wiper motor connector ground terminal and the body ground.

OK: Continuity exists (2 ohms or less)

Q: Is the check result normal?

YES : Go to Step 6.
NO : Go to Step 5.

STEP 5. Check of open circuit in ground lines between windshield wiper motor connector and body ground.

Q: Is the check result normal?

YES : Intermittent malfunction. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunctions.

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

<Old>

STEP 6. Measure the voltage at ETACS-ECU connector (+B1 terminal).

(1) Disconnect the connector, and measure the voltage at the wiring harness side.

(2) Measure the voltage between the ETACS-ECU (+B1 terminal) and the body ground.

OK: Battery positive voltage

Q: Is the check result normal?

YES : Go to Step 8.

NO : Go to Step 7.

STEP 7. Check of short to power supply, short to ground, and open circuit in power supply line between fusible link and ETACS-ECU connector (+B1 terminal).

Q: Is the check result normal?

YES : Intermittent malfunction. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunctions.

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

<New>
Attached sheet 5 (4/4)

STEP 8.Check of short to power supply, short to ground, and open circuit in W.LO, W.HI line between windshield wiper motor connector and ETACS-ECU connector

Q: Is the check result normal?

YES : Go to Step 9.

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

STEP 9. Check the trouble symptom.

Check that the windshield wipers work normally.

Q: Is the check result normal?

YES : Intermittent malfunction. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunctions).

NO : Replace the ETACS-ECU.

STEP 6. Check whether ETACS-ECU fuse No. 4 is blown.

Q: Is the fuse normal?
YES : Go to Step 7.
NO : Go to Step 13

STEP 7. Check the continuity at windshield wiper motor connector.
(1) Disconnect the connector, and measure at the wiring harness side.
(2) Turn the electric motor switch to the "ACC" position.
(3) Set the wiper switch to LO condition.
(4) Measure the resistance between the windshield wiper motor connector (W.LO terminal) and windshield wiper motor connector (W.AS terminal).

OK: No continuity

Q: Is the check result normal?
YES : Go to Step 9.
NO : Go to Step 8.

STEP 8. Check of short circuit between W.LO line and W.AS line between ETACS-ECU connector and windshield wiper motor connector

Q: Is the check result normal?
YES : Replace the ETACS-ECU.
NO : Repair the connector(s) or wiring harness.

STEP 9. Measure the voltage at ETACS-ECU connector (+B1 terminal).
(1) Disconnect the connector, and measure the voltage at the wiring harness side.
(2) Measure the voltage between the ETACS-ECU (+B1 terminal) and the body ground.

OK: Battery positive voltage

Q: Is the check result normal?
YES : Go to Step 11.
NO : Go to Step 10.

STEP 10. Check of short to power supply, short to ground, and open circuit in power supply line between fusible link and ETACS-ECU connector (+B1 terminal).

Q: Is the check result normal?
YES : Intermittent malfunction. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunctions .
NO : Repair the connector(s) or wiring harness.

STEP 11.Check of short to power supply, short to ground, and open circuit in W.HI, W.LO line between windshield wiper motor connector and ETACS-ECU connector

Q: Is the check result normal?
YES : Go to Step 12.
NO : Repair the connector(s) or wiring harness.

STEP 12. Check the trouble symptom.
Check that the windshield wipers work normally.

Q: Is the check result normal?
YES : Intermittent malfunction. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunctions).
NO : Replace the ETACS-ECU.

STEP 13. Check the continuity at windshield wiper motor connector.
(1) Disconnect the connector, and measure at the wiring harness side.
(2) Measure the resistance between the windshield wiper motor connector (W.AS terminal) and windshield wiper motor connector (WACC terminal).

OK: No continuity

Q: Is the check result normal?
YES : Go to Step 15.
NO : Go to Step 14.

STEP 14. Check of short circuit between W.AS line and WACC line between ETACS-ECU connector and windshield wiper motor connector

Q: Is the check result normal?
YES : Replace the ETACS-ECU.
NO : Repair the connector(s) or wiring harness, and replace the ETACS-ECU fuse No. 4.

STEP 15. Check of open circuit and short circuit in W.HI, W.LO, W.AS, WACC lines between ETACS-ECU connector and windshield wiper motor connector

Q: Is the check result normal?
YES : Go to Step 16.
NO : Repair the connector(s) or wiring harness, and replace the ETACS-ECU fuse No. 4.

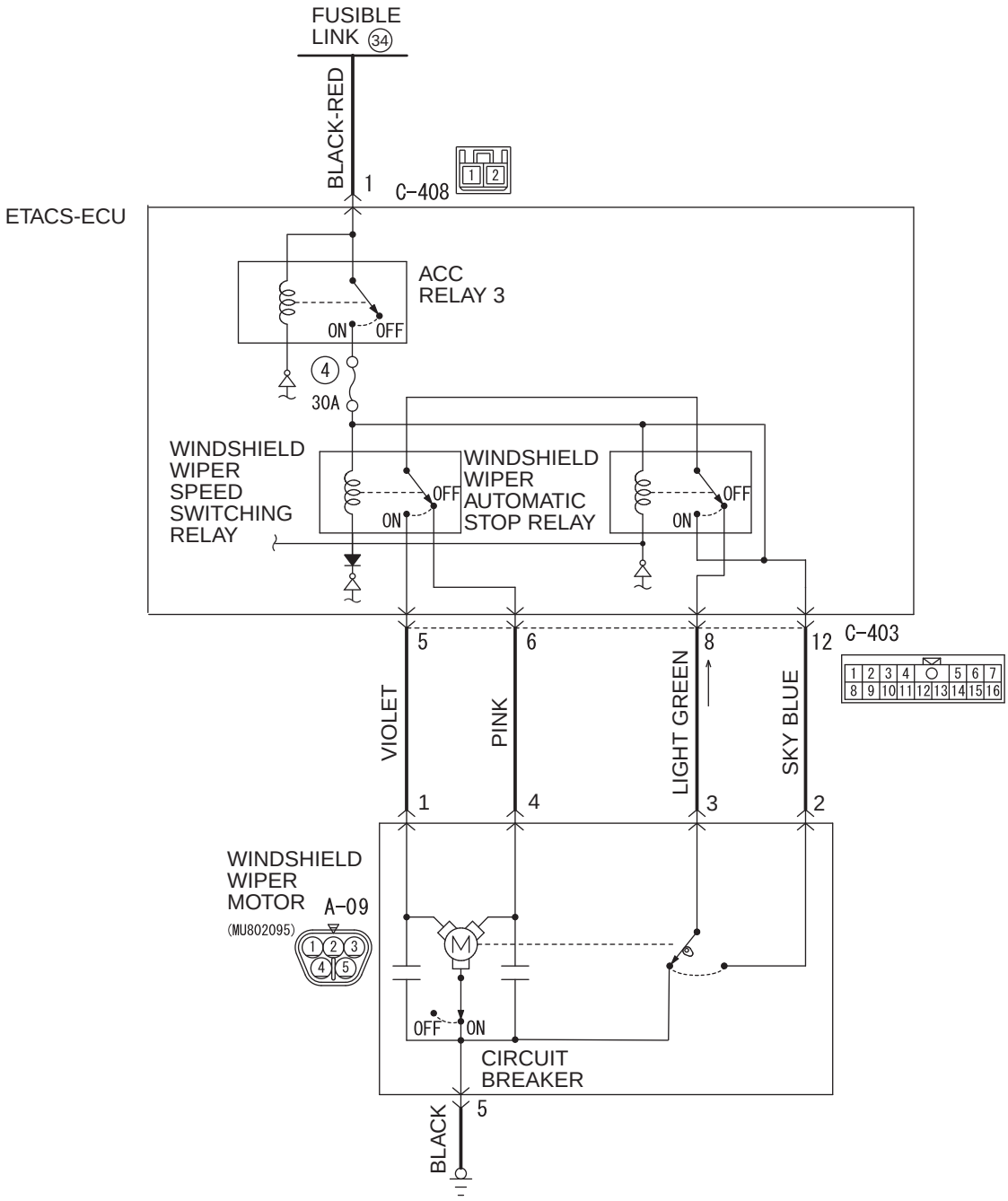
STEP 16. Check the trouble symptom.
Check that the windshield wipers work normally after replacing the fuse No.4.

Q: Is the check result normal?
YES : Intermittent malfunction. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunctions).
NO : If the fuse blows again, replace the ETACS-ECU.

INSPECTION PROCEDURE 1: The windshield wipers do not work at all.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

Windshield Wiper Power Supply Circuit



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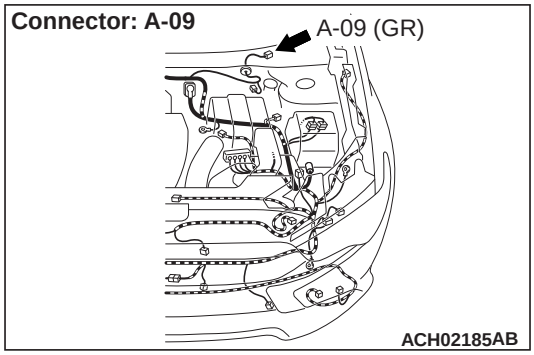
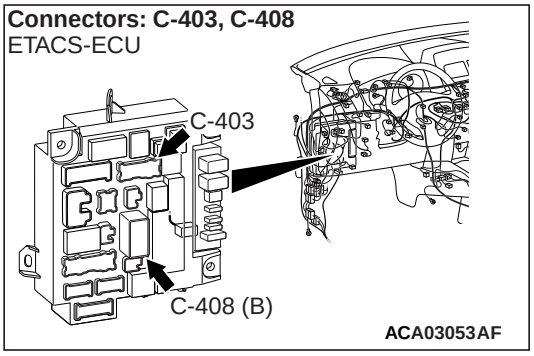




CIRCUIT OPERATION

- The windshield wiper and washer switch sends a signal through the column-ECU (incorporated in the column switch) to the ETACS-ECU. If the column-ECU sends a windshield wiper and washer switch "ON" signal to the ETACS-ECU, the ETACS-ECU turns on the relay (incorporated in the ETACS-ECU), thus causing the windshield wiper and washer motor to be turned on.
- If the LIN communication line is defective, the ETACS-ECU operates windshield wiper motor by using the other communication lines (wiper backup circuit) instead of that line. In this case, the windshield wiper works at low speed regardless of the windshield wiper and washer switch positions ("LO" or "HIGH").

TECHNICAL DESCRIPTION (COMMENT)

If the windshield wiper does not work at all, the windshield wiper motor, column switch (windshield wiper and washer switch) or the ETACS-ECU may be defective.

TROUBLESHOOTING HINTS

- Trouble in input signal system
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector
- The wiper motor may be defective
- The column switch may be defective
- The ETACS-ECU may be defective

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Use the scan tool MB991958 to check if an ETACS-related diagnostic trouble code is set.

Connect the scan tool. Refer to GROUP 54A ETACS, "How to connect the scan tool (M.U.T.-III)"

Q: Is the DTC set?

YES : Diagnose the ETACS-ECU. Refer to GROUP 54A ETACS, "Diagnostic trouble code chart."

NO : Go to Step 2.

STEP 2. Using scan tool MB991958, check data list.

Check the input signal related to the windshield wiper. operation.

- Ignition switch: ACC
- Operate the windshield wiper switch at each switch position.

Item No.	Item name	Windshield wiper switch position	Normal condition
Item 235	Front wiper ACT	LO	ON
		HI	
		AUTO	ON and OFF
		INT	ON and OFF
		MIST	ON
Item 288	ACC switch	–	ON

OK: Normal condition is displayed.

Q: Is the check result normal?

YES <Normal conditions are displayed for all items> : Go to Step 3.

NO <Normal condition is not displayed for item No. 235> : Troubleshoot the ETACS-ECU. Refer to ETACS, Diagnosis - Inspection Procedure 12 "ETACS-ECU does not receive any signal from the column switch signal."

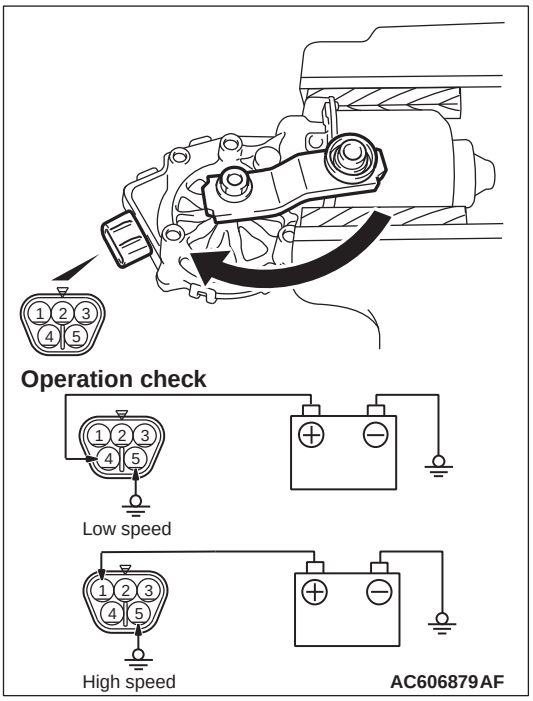
NO <Normal condition is not displayed for item No. 288> : Refer to GROUP 54A, ETACS, Diagnosis – Inspection Procedure 1 "ETACS-ECU does not receive any signal from the ignition switch (ACC)."

STEP 3. Check windshield wiper motor connector A-09 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is windshield wiper motor connector A-09 in good condition?

YES : Go to Step 4.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection. Verify that the windshield wiper works normally.

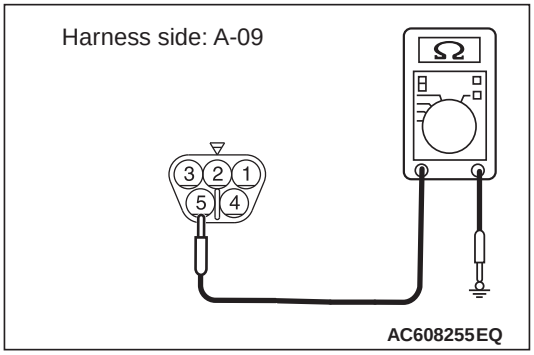


STEP 4. Check the windshield wiper motor.

(1) Disconnect windshield wiper motor connector A-09.
(2) Connect a battery to the windshield wiper motor as shown. Then check that the windshield wiper motor operates normally at high and low speeds.

Q: Does the windshield wiper motor operate normally?

YES : Go to Step 5.
NO : Replace the windshield wiper motor. Verify that the windshield wiper works normally.



STEP 5. Check the ground circuit to the windshield wiper motor. Measure the resistance at the windshield wiper motor connector A-09.

(1) Disconnect windshield wiper motor connector A-09 and measure the resistance available at the wiring harness side of the connector.
(2) Measure the resistance value between terminal 5 and ground.
- The resistance should be 2 ohms or less.

Q: Is the measured resistance 2 ohms or less?

YES : Go to Step 7.
NO : Go to Step 6.

STEP 6. Check the wiring harness between windshield wiper motor connector A-09 (terminal 5) and ground.

Q: Is the wiring harness between windshield wiper motor connector A-09 (terminal 5) and ground in good condition?

YES : No action is necessary and testing is complete.
NO : The wiring harness may be damaged or the connector(s) may have loose, corroded or damaged terminals, or terminals pushed back in the connector. Repair the wiring harness as necessary. Verify the windshield wiper works normally.

<Old>

STEP 7. Check ETACS-ECU connector C-408 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-408 in good condition?

YES : Go to Step 8.

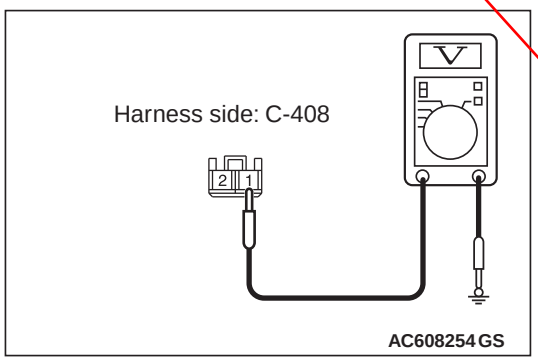
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection. Verify that the windshield wiper works normally.

STEP 8. Measure the voltage at ETACS-ECU connector C-408.

(1) Disconnect ETACS-ECU connector C-408 and measure the resistance available at the wiring harness side of the connector.

(2) Measure the voltage between terminal 1 and ground.

- The voltage should measure approximately 12 volts (battery positive voltage).



Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 10.

NO : Go to Step 9.

STEP 9. Check the wiring harness between ETACS-ECU connector C-408 (terminal 1) and the fusible link (34).

- Check the power supply line for open circuits.

Q: Is the wiring harness between ETACS-ECU connector C-408 (terminal 1) and the fusible link (34) in good condition?

YES : Intermittent malfunction. Refer to GROUP 00, How to cope with intermittent malfunction.

NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Cables and wire check.

STEP 10. Check ETACS-ECU connector C-403 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

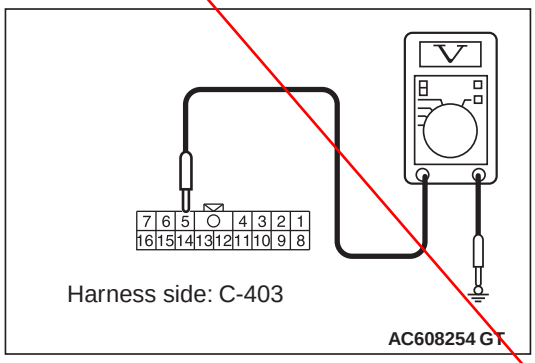
Q: Is ETACS-ECU connector C-403 in good condition?

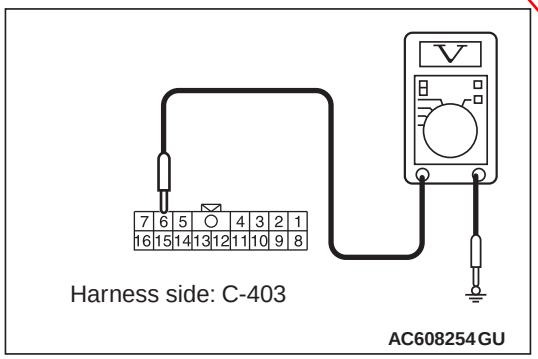
YES : Go to Step 11.

NO : Repair the damaged connector.

<New>
Attached sheet 6 (7/8, 8/8)

<Old>





STEP 11. Measure the voltage at ETACS-ECU connector C-403.

(1) Disconnect ETACS-ECU connector C-403 and measure the resistance available at the wiring harness side of the connector.
(2) Ignition switch: ACC
(3) windshield wiper switch: HI
(4) Measure the voltage between C-403 ETACS-ECU connector terminal No. 5 and ground.

OK: Battery positive voltage

(5) windshield wiper switch: LO
(6) Measure the voltage between C-403 ETACS-ECU connector terminal No. 6 and body ground.

OK: Battery positive voltage

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?

YES : Go to Step 13.
NO : Go to Step 12.

STEP 12. Check the wiring harness between ETACS-ECU connector C-403 (terminals 5, 6) and windshield wiper motor connector A-09 (terminals 1, 4).

- Check the input and output lines for open or short circuit.

Q: Is the wiring harness between ETACS-ECU connector C-403 (terminals 5, 6) and windshield wiper motor connector A-09 (terminals 1, 4) in good condition?

YES : Go to Step 13.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Cables and wire check.

STEP 13. Retest the system.

Check that the windshield wipers work normally.

Q: Is the check result normal?

YES : Intermittent malfunction. Refer to GROUP 00, How to cope with intermittent malfunction.
NO : Replace the ETACS-ECU.

STEP 7. Check whether ETACS-ECU fuse No. 4 is blown.

Q: Is the fuse normal?
YES : Go to Step 8.
NO : Go to Step 16.

STEP 8. Check ETACS-ECU connector C-403 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-403 in good condition?
YES : Go to Step 9.
NO : Repair the damaged connector.

STEP 9. Check the continuity at windshield wiper motor connector A-09.
(1) Disconnect the connector, and measure at the wiring harness side.
(2) Turn the ignition switch to the "ACC" position.
(3) Set the wiper switch to LO condition.
(4) Measure the resistance between the A-09 windshield wiper motor connector (Terminal No. 4) nd windshield wiper motor connector (terminal No. 3).

OK: No continuity

Q: Is the check result normal?
YES : Go to Step 11.
NO : Go to Step 10.

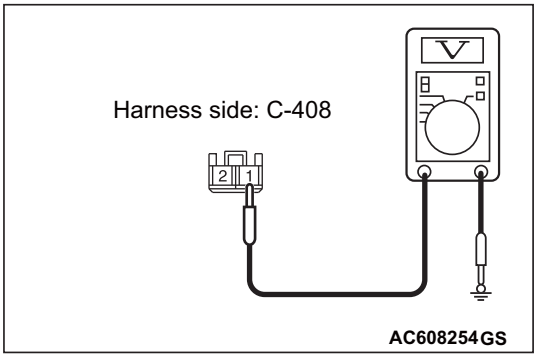
STEP 10. Check wiring harness between ETACS-ECU connector C-403 (terminal Nos. 6 and 8), and windshield wiper motor connector A-09 (terminal Nos. 4 and 3).
- Check the short circuit between the wiring harnesses.

Q: Is the check result normal?
YES : Replace the ETACS-ECU.
NO : Repair the connector(s) or wiring harness.

STEP 11. Check ETACS-ECU connector C-408 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-408 in good condition?
YES : Go to Step 12.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Harness Connector Inspection . Verify that the windshield wiper works normally.

STEP 12. Measure the voltage at ETACS-ECU connector C-408.
(1) Disconnect ETACS-ECU connector C-408 and measure the resistance available at the wiring harness side of the connector.



(2) Measure the voltage between terminal No.1 and ground.
- The voltage should measure approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts (battery positive voltage)?
YES : Go to Step 14.
NO : Go to Step 13.

STEP 13. Check the wiring harness between ETACS-ECU connector C-408 (terminal No.1) and the fusible link (34).
- Check the power supply line for open circuits.

Q: Is the wiring harness between ETACS-ECU connector C-408 (terminal No.1) and the fusible link (34) in good condition?
YES : Intermittent malfunction. Refer to GROUP 00, How to cope with intermittent malfunction .
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Cables and wire check .

STEP 14. Check the wiring harness between ETACS-ECU connector C-403 (terminal Nos.5 and 6) and windshield wiper motor connector A-09 (terminal Nos. 1 and 4).
- Check the input and output lines for open circuit or short circuit.

Q: Is the wiring harness between ETACS-ECU connector C-403 (terminal Nos.5 and 6) and windshield wiper motor connector A-09 (terminal Nos. 1 and 4) in good condition?
YES : Go to Step 15.
NO : Repair or replace the damaged component(s). Refer to GROUP 00E, Cables and wire check .

STEP 15. Retest the system.
Check that the windshield wipers work normally.

Q: Is the check result normal?
YES : Intermittent malfunction. Refer to GROUP 00, How to cope with intermittent malfunction .
NO : Replace the ETACS-ECU.

STEP 16. Check ETACS-ECU connector C-403 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is ETACS-ECU connector C-403 in good condition?
YES : Go to Step 17.
NO : Repair the damaged connector.

STEP 17. Check the continuity at A-09 windshield wiper motor connector.
(1) Disconnect the connector, and measure at the wiring harness side.
(2) Measure the resistance between the windshield wiper motor connector A-09 (terminal No.3)and windshield wiper motor connector A-09 (terminal No. 2).

OK: No continuity

Q: Is the check result normal?
YES : Go to Step 19.
NO : Go to Step 18.

STEP 18. Check wiring harness between ETACS-ECU connector C-403 (terminal Nos. 8 and 12), and windshield wiper motor connector A-09 (terminal Nos. 3 and 2).
- Check the short circuit between the wiring harnesses.

Q: Is the check result normal?
YES : Replace the ETACS-ECU.
NO : Repair the connector(s) or wiring harness, and replace the ETACS-ECU fuse No. 4.

STEP 19. Check wiring harness between ETACS-ECU connector C-403 (terminal Nos. 5, 6, 8 and 12), and windshield wiper motor connector A-09 (terminal Nos. 1, 4, 3 and 2).

- Check the open circuit and short circuit in the input/output lines.

Q: Is the check result normal?
YES : Go to Step 20.
NO : Repair the connector(s) or wiring harness, and replace the ETACS-ECU fuse No. 4.

STEP 20. Retest the system.
Check that the windshield wipers work normally after replacing the fuse No.4.

Q: Is the check result normal?
YES : Intermittent malfunction (Refer to GROUP 00 - How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunction).
NO : If the fuse blows again, replace the ETACS-ECU.

Inspection Procedure 1: The windshield wipers do not work at all.

⚠ CAUTION
Before replacing the ECU, ensure that the power supply circuit, the ground circuit and the communication circuit are normal.

TECHNICAL DESCRIPTION (COMMENT)

The windshield wiper motor, the column switch (column-ECU) or ETACS-ECU may be defective. Check the wiper backup circuit (between the column switch connector WB/U terminal and the ETACS-ECU connector REQC terminal), and repair if necessary.

TROUBLESHOOTING HINTS

- Malfunction of the windshield wiper motor
- Defective column switch (column-ECU)
- The ETACS-ECU may be defective
- Damaged harness wires and connectors

DIAGNOSIS

Required Special Tools:
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Using scan tool (M.U.T.-IIISE), read the ETACS-ECU DTC.

Check if DTC is set in the ETACS-ECU.

⚠ CAUTION
To prevent damage to scan tool (M.U.T.-IIISE), always turn the electric motor switch to the "OFF" position before connecting or disconnecting scan tool (M.U.T.-IIISE).

(1) Connect scan tool (M.U.T.-IIISE). Refer to GROUP 54A, Diagnostic Function - How to connect the Scan Tool (M.U.T.-IIISE).
(2) Turn the electric motor switch from "OFF" position to "ON" position.
(3) Check if DTC is set.
(4) Turn the electric motor switch to the "OFF" position.

Q: Is the DTC set?

YES : Troubleshoot the ETACS (Refer to GROUP 54A, ETACS - Diagnosis Trouble Code Chart).
NO : Go to Step 2.

STEP 2. Using scan tool (M.U.T.-IIISE), check data list.
Using scan tool (M.U.T.-IIISE), check the ETACS system data list (Refer to GROUP 54A, ETACS - Troubleshooting, Data List Reference Table).

- Item 27: Front wiper (INT)
- Item 28: Front wiper (LO)
- Item 29: Front wiper (HI)
- Item 33: Front wiper (MIST)
- Item 111: ACC switch

Q: Is the check result normal?

YES <Normal conditions are displayed for all items> : Go to Step 3.

NO <Normal condition is not displayed for item Nos. 27, 28, 29, 33> : Troubleshoot the ETACS. Refer to GROUP 54A, ETACS - Inspection Procedure 11 "The column switch signal is not received".

NO <Normal condition is not displayed for item No. 111> : Troubleshoot the ETACS. Refer to GROUP 54A, ETACS - Inspection Procedure 1 "The OSS-ECU (ACC) signal is not received".

STEP 3. Check the windshield wiper motor.
Check the operation of windshield wiper motor at low and high speed.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Replace the windshield wiper motor.

STEP 4. Measure the resistance at windshield wiper motor connector.
(1) Disconnect the connector, and measure the resistance at the wiring harness.
(2) Measure the resistance between the windshield wiper motor connector ground terminal and the body ground.

OK: Continuity exists (2 ohms or less)

Q: Is the check result normal?

YES : Go to Step 6.
NO : Go to Step 5.

STEP 5. Check of open circuit in ground lines between windshield wiper motor connector and body ground.

Q: Is the check result normal?

YES : Intermittent malfunction. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunctions.
NO : Repair the connector(s) or wiring harness.

<New>
Attached sheet 7 (4/4)

<Old>

STEP 6. Measure the voltage at ETACS-ECU connector (+B1 terminal).

(1) Disconnect the connector, and measure the voltage at the wiring harness side.

(2) Measure the voltage between the ETACS-ECU (+B1 terminal) and the body ground.

OK: Battery positive voltage

Q: Is the check result normal?

YES : Go to Step 8.

NO : Go to Step 7.

STEP 7. Check of short to power supply, short to ground, and open circuit in power supply line between fusible link and ETACS-ECU connector (+B1 terminal).

Q: Is the check result normal?

YES : Intermittent malfunction. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunctions.

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

STEP 8.Check of short to power supply, short to ground, and open circuit in W.LO, W.HI line between windshield wiper motor connector and ETACS-ECU connector

Q: Is the check result normal?

YES : Go to Step 9.

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

STEP 9. Check the trouble symptom.

Check that the windshield wipers work normally.

Q: Is the check result normal?

YES : Intermittent malfunction. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunctions).

NO : Replace the ETACS-ECU.

STEP 6. Check whether ETACS-ECU fuse No. 4 is blown.

Q: Is the fuse normal?
YES : Go to Step 7.
NO : Go to Step 13

STEP 7. Check the continuity at windshield wiper motor connector.
(1) Disconnect the connector, and measure at the wiring harness side.
(2) Turn the ignition switch to the "ACC" position.
(3) Set the wiper switch to LO condition.
(4) Measure the resistance between the windshield wiper motor connector (W.LO terminal) and windshield wiper motor connector (W.AS terminal).

OK: No continuity

Q: Is the check result normal?
YES : Go to Step 9.
NO : Go to Step 8.

STEP 8. Check of short circuit between W.LO line and W.AS line between ETACS-ECU connector and windshield wiper motor connector

Q: Is the check result normal?
YES : Replace the ETACS-ECU.
NO : Repair the connector(s) or wiring harness.

STEP 9. Measure the voltage at ETACS-ECU connector (+B1 terminal).
(1) Disconnect the connector, and measure the voltage at the wiring harness side.
(2) Measure the voltage between the ETACS-ECU (+B1 terminal) and the body ground.

OK: Battery positive voltage

Q: Is the check result normal?
YES : Go to Step 11.
NO : Go to Step 10.

STEP 10. Check of short to power supply, short to ground, and open circuit in power supply line between fusible link and ETACS-ECU connector (+B terminal).

Q: Is the check result normal?
YES : Intermittent malfunction. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunctions .
NO : Repair the connector(s) or wiring harness.

STEP 11.Check of short to power supply, short to ground, and open circuit in W.HI, W.LO line between windshield wiper motor connector and ETACS-ECU connector

Q: Is the check result normal?
YES : Go to Step 12.
NO : Repair the connector(s) or wiring harness.

STEP 12. Check the trouble symptom.
Check that the windshield wipers work normally.

Q: Is the check result normal?
YES : Intermittent malfunction. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunctions).
NO : Replace the ETACS-ECU.

STEP 13. Check the continuity at windshield wiper motor connector.
(1) Disconnect the connector, and measure at the wiring harness side.
(2) Measure the resistance between the windshield wiper motor connector (W.AS terminal) and windshield wiper motor connector (WACC terminal).

OK: No continuity

Q: Is the check result normal?
YES : Go to Step 15.
NO : Go to Step 14.

STEP 14. Check of short circuit between W.AS line and WACC line between ETACS-ECU connector and windshield wiper motor connector

Q: Is the check result normal?
YES : Replace the ETACS-ECU.
NO : Repair the connector(s) or wiring harness, and replace the ETACS-ECU fuse No. 4.

STEP 15. Check of open circuit and short circuit in W.HI, W.LO, W.AS, WACC lines between ETACS-ECU connector and windshield wiper motor connector

Q: Is the check result normal?
YES : Go to Step 16.
NO : Repair the connector(s) or wiring harness, and replace the ETACS-ECU fuse No. 4.

STEP 16. Check the trouble symptom.
Check that the windshield wipers work normally after replacing the fuse No.4.

Q: Is the check result normal?
YES : Intermittent malfunction. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunctions).
NO : If the fuse blows again, replace the ETACS-ECU.