SMART WIRING SYSTEM (SWS)

SMART WIRING SYSTEM (SWS)

CONTENTS

GENERAL INFOMATION	54B-2	54B-6
SPECIAL TOOLS	54B-5	

GENERAL INFORMATION

COMMUNICATION LINE

Data lines for multiplex communication are connected between the front-ECU, ETACS-ECU, column switch assembly, multi-center display, power window main switch, and power window motors as illustrated below.



Uni-directional communication line
 Bi-directional communication line

OPERATION

BUZZER

Light Reminder Warning Function

When the driver's door is opened (driver's door switch ON) with light switch in the TAIL or HEAD position, the buzzer will sound continuously to remind the driver that the lights (taillights or headlights) are ON.

CENTRAL DOOR LOCKING SYSTEM

Central Door Locking System Operation

If a door is locked or unlocked by using any one of the key cylinders (driver's door, passenger's door or back door), all of the doors are locked or unlocked. In addition, all doors can be locked and unlocked by using the driver's door lock knob.

Multi-center Display Buzzer Function

If there is a request from the multi-center display to make the buzzer sound, the ETACS-ECU causes the buzzer to sound.

Forgotten Key Prevention Function

This function automatically release the door lock if the inside door lock knob is placed in the lock position with the door opened while the key is still in the ignition switch, thereby preventing the key from being left behind locked door.

POWER WINDOWS

Power Windows Operation

A signal line dedicated for transmission of multiplex communication data is connected between the power window main switches and the power window motor-ECU.

Communication is uni-directional. The power window main switches have a transmitting circuit only, whereas the power window sub switches have a receiving circuit only.

KEYLESS ENTRY SYSTEM

If the transmitter LOCK or UNLOCK switch is pressed while the ignition key is removed and all of the doors are closed, the doors can be locked or unlocked. If the doors are closed, the hazard warning lamps, the room lamp and the horn will operate due to answerback function. Because of the answerback function, the hazard warning lamps

WINDSHIELD WIPER AND WASHER

Windshield Low-speed (and High-speed) Wiper Operation

- If the windshield low-speed wiper switch is turned to the ON position with the ignition switch at the ACC or ON position, the column switch sends a low-speed wiper ON and high-speed wiper OFF signals to the front-ECU. This turns the wiper signal on and the wiper speed switching relay off (low-speed), causing the wipers to operate at low-speed.
- If the windshield high-speed wiper switch is turned to the ON position, the column switch sends a low-speed wiper OFF and high-speed wiper ON signals to the front-ECU. This turns both the wiper signal and the wiper speed switching relay on (high-speed), causing the wipers to operate at high-speed.

Windshield Intermittent Wiper Operation

The ETACS-ECU calculates the wiper operation interval according to the voltage signal sent from the column switch. (For vehicles without variable intermittent wiper, the intermittent interval is fixed at 4 seconds.) Then the ETACS-ECU sends a signal to the front-ECU. The front-ECU determines the wiper operation interval and turns on the wiper signal relay. This causes the wiper auto stop relay to turn on. Then the wiper auto stop relay will turn off after the wipers reach the park position. This causes the wiper signal relay and then the wipers to turn off.

If the wiper signal relay remains off for the wiper operation interval, the relay turns on again, causing the wipers to operate in intermittent mode.

Power Window Timer Function

With the ignition switch in the ON position, the power window relay and power window switch receipt permission are turned ON [the power window switch receipt permission signal remains ON for 30 seconds after the ignition switch is turned LOCK (OFF)], enabling opening and closing of the windows. The power window relay goes ON for additional 30 seconds. If the driver's door is subsequently closed during this period, the receipt permission signal goes OFF. The power window relay goes OFF 10 seconds after the receipt permission signal goes OFF.

flash twice, and the room lamp flashes twice when the doors are locked. Meanwhile, when the doors are unlocked, the hazard warning lamps flash and the room lamp illuminate for 15 seconds. The hazard answerback functions can be cancelled by using the MUT-II.

Windshield Mist Wiper Operation

- If the windshield mist wiper switch of the column switch is turned to the ON position with the ignition switch at ACC or ON position, the mist wiper high-speed operation signal is sent to the front-ECU. This signal turns on the wiper speed switching relay, causing the wipers to work at high-speed while the mist switch is on.
- While the windshield mist wiper switch remains turned on when the intermittent mode is still working, the wipers work as the mist wiper. However, the wipers return to the intermittent mode again when the wiper auto stop signal turns on after the mist wiper switch is turned off.

Windshield Washer Operation

If the windshield washer switch of the column switch is turned to the ON position with the ignition switch at ACC or ON position, the windshield washer ON signal is sent to the front-ECU, causing the windshield wiper signal to turn on after 0.3 seconds. After the windshield washer switch signal turns off, the windshield wiper signal turns off in three seconds.

If the windshield wiper switch is turned to the ON position while the windshield wiper is at intermittent mode, the windshield washer works for that period when the windshield washer switch remains on. Then the wipers return to the intermittent mode.

REAR WIPER AND WASHER

Rear Wiper Operation

If the rear wiper switch is turned to the ON position with the ignition switch at ACC or ON position, the ETACS-ECU cause the rear wiper to operate continuously two times then intermittently at eight-second intervals.

If the shift lever <M/T> selector lever <A/T> is moved to the R position when the rear wiper switch is turned to the ON position and the ignition switch at ACC or ON position, back-up lamp switch <M/T> or inhibitor switch R <A/T> turns ON. One second later, the ETACS-ECU causes the rear wiper to operate two times continuously to ensure good rearward visibility. The ETACS-ECU then causes the rear wiper to again operate intermittently at eight-second intervals.

HEADLAMP WASHER

If the headlamp washer switch of the column switch assembly is turned to the ON position with the

HEADLAMP

Headlamp Auto-cut Function

If the ignition switch is turned to LOCK (OFF) or ACC position, when the headlamps are on, the headlamps will be switched off in three minutes. If the driver's door is opened within that three-minute period, the headlamps will be switched off automatically. This prevents the battery from discharged.

In addition, if the headlamps are turned on when the ignition switch is at LOCK (OFF) or ACC position, the headlamps will not be switched off.

FLASHER TIMER

Turn-signal Lamp

When the ignition switch is turned to ON position and turn-signal lamp switch is placed in the ON position for right or left turn signaling, the system generates turn-signal lamp drive signals (flashing signals).

The system also notifies of a blown turn-signal lamp bulb by shortening the flashing intervals of the corresponding indicator lamp.

FRONT FOG LAMP

The front fog lamp switch becomes active only when the tail lamps are on. Therefore, if the tail lamps are turned off, the fog lamps will also be switched

REAR FOG LAMP

The rear fog lamp switch becomes active only when the headlamps or front fog lamps* are on. Therefore, if the headlamps and front fog lamps* are turned off, the rear fog lamps will also be switched off. Whenever the headlamps or front fog lamps* are

Rear Washer Operation

If the rear washer switch is turned to the ON position with the ignition switch at ACC or ON position, the rear washer ON signal is sent to the ETACS-ECU, causing the rear wiper signal to turn on after 0.3 seconds. After the rear washer switch signal turns off, the rear wiper signal turns off in three seconds. If the rear wiper switch is turned to the ON position while the rear wiper is at intermittent mode, the rear washer works for that period when the washer switch remains on. Then the rear wipers return to the intermittent mode.

ignition switch in the ACC or ON position, the front-ECU turns on the headlamp washer relay.

Headlamp Dimmer Switch Auto-reset Function

This function allows the dimmer switch to be reset to the low-beam position whenever the headlamp switch is turned ON.

Daytime Running Lamp (DRL) Function

If the ignition switch is turned to ON when the headlamps and tail lamps are off, the headlamps (low-beam) and tail lamps turn on.

Hazard Warning Lamp

The system detects a change from ON to OFF of the hazard lamp input signal and activates the hazard lamps if they are not in operation or deactivates the lamps if they are operating (reversal of state between activation and deactivation).

off. Whenever the tail lamps are turned on at the next time, the front fog lamps will always be off regardless of the switch positions.

turned on at the next time, the rear fog lamps will always be off regardless of the switch positions.

NOTE

*: In vehicles without front fog lamps, these conditions apply to the headlamps only.

ROOM LAMP

With the room lamp switch in the DOOR position, the ETACS-ECU controls the room lamp operation as follows:

 When a door is opened from outside or inside [with the ignition switch turned to LOCK (OFF) position]:

When a door is opened, the ETACS-ECU causes the room lamp to be illuminated at the 100% intensity. When the door is closed, it dims out the room lamp to 65% intensity and approx. 30 seconds later, turns out the lamp completely. During this period (timer controlled period), the room lamp does out if the ignition switch is turned to ON position or the doors are locked.

- When a door is opened or closed with the ignition switch in the ON position: The room lamp illuminates at 100% intensity when a door is opened and turned out when it is closed.
- When no door is opened and the ignition key is removed:

When the ignition key is removed with all the doors closed, the room lamp is illuminated at an intensity of 65% and turned out approx. 30 seconds later. During that time (timer-controlled period), the room lamp does out if the ignition key is inserted and turned to ON position or the door locking system is activated.

 Room lamp's answerback operation in response to door lock control by keyless entry system:

To allow the driver to ascertain the result of the door locking/unlocking control action by the use of the keyless entry system, the ETACS-ECU causes the room lamp to blink twice when the doors are locked through the system and to illuminate for approx. 15 seconds when the doors are locked.

The room lamp's answerback operation in response to a keyless entry system control action is accompanied by operation of the hazard warning lamps.

Tool	Number	Name	Use
В991502	MB991502	MUT-II sub assembly	Checking of the SWS (Diagnosis code display and input check with the MUT-II)
В991529	MB991529	Diagnosis code check harness	Simple diagnosis
A B B C C C C C C C C C C C C C C C C C	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222	Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe	 Measurement of terminal voltage at ECUs A: Connector pin contact pressure inspection B: Power circuit inspection C: Power circuit inspection D: Commercial tester connection
C D			
C991223			

SPECIAL TOOLS

TROUBLESHOOTING

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

Refer to GROUP 00 - How to Use Troubleshooting/Inspection Service Points.

DIAGNOSTIC FUNCTION

DIAGNOSIS CODES CHECK

Use the MUT-II to check a diagnosis code. (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.)

NOTE

Connect the MUT-II to the 16-pin diagnosis connector (black).

INPUT SIGNAL CHECK

- Use the MUT-II to check a input signal. (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.)
- 2. In this condition, the following input switches can be checked.
- 3. If an abnormality is found during the input signal check, carry out troubleshooting while referring to the Trouble Symptom Check page.

Input Signal Check Function

Input signal	Buzzer operation condition
Ignition switch (ACC)	Turned from LOCK (OFF) to ACC
Ignition switch (IG1)	Turned from ACC to ON
Key reminder switch	Ignition key removed from ignition key cylinder (from inserted position)
Hazard warning lamp switch	Turned from OFF to ON
Front fog lamp switch <vehicles fog="" front="" lamp="" with=""></vehicles>	
Rear fog lamp switch	
Back-up lamp switch <m t=""></m>	Shift lever moved to R position
Inhibitor switch (reverse) 	Selector lever moved to R position
Rear wiper motor auto-stop signal	Rear wiper begins to operate (The input signal is sent before the rear wiper begins to operate)
Driver's door switch	Driver's door opened from closed condition
Door switches	All doors closed to any door opened
Passenger's door key cylinder switch <vehicles central="" door="" locking="" system="" with=""></vehicles>	Passenger's door locked or unlocked using ignition key
Back door key cylinder switch <vehicles central="" door="" locking="" system="" with=""></vehicles>	Back door locked or unlocked using ignition key
Driver's door lock actuator switch <vehicles central="" door="" locking="" system="" with=""></vehicles>	Driver's door lock knob moved from lock position to unlock position or vice versa

Input signal		Buzzer operation condition
Column switch	Tail lamp switch	Turned the lighting switch from OFF to tail lamp position
	Headlamp switch	Turn the lighting switch from tail lamp position to headlamp position
	Dimmer switch	Turned from OFF to ON
	Passing switch	
	Turn-signal lamp switch	
	Windshield mist wiper switch	
	Windshield intermittent wiper switch	
	Windshield low-speed wiper switch	
	Windshield high-speed wiper switch	
	Windshield intermittent wiper interval adjusting knob <vehicles inter-<br="" variable="" windshield="" with="">mittent wiper></vehicles>	Rotate the windshield intermittent wiper interval adjusting knob from FAST to SLOW when the ignition switch is at ON position (The ETACS- ECU sends a signal around the medium knob position)
	Windshield washer switch	Turned from OFF to ON
	Rear wiper switch	
	Rear washer switch	
	Headlamp washer switch <vehicles head-<br="" with="">lamp washer></vehicles>	
Power window main switch	Any switch <vehicles power="" window="" with=""></vehicles>	
Transmitter	Any switch <vehicles entry="" keyless="" system="" with=""></vehicles>	
Multi-center dis- play	Any switch <vehicles display="" multi-center="" with=""></vehicles>	

DIAGNOSIS CODE CHART

Code No.	Diagnosis item	Reference page
11	Failure concerning the ETACS-ECU	54B-8
12	Failure concerning the column switch or improper connecting with the ETACS-ECU	54B-8
13	Failure concerning the front-ECU	54B-9
21	Short circuit in communication line	54B-10

DIAGNOSIS CODE INSPECTION PROCEDURES

Code No.11 Failure concerning the ETACS-ECU	Probable cause
The ETACS-ECU monitors its own communication data, and sends a diagnosis code when an error takes place consecutive fifteen times in 0.6 second. The diagnosis code will be erased when the ETACS-ECU determines that its own communication data is sent consecutive 15 times in 0.6 second.	Malfunction of ETACS-ECU

Replace the ETACS-ECU.

Code No.12 Failure concerning the column switch or improper connection with the ETACS-ECU	Probable cause
This diagnosis code is displayed when the column switch sends a signal regardless of the transmission request signal from the ETACS-ECU (three times or more in one second). The diagnosis code is erased when the column switch continues to send a signal according to the transmission request signal from the ETACS-ECU for one second.	 Malfunction of column switch Malfunction of ETACS-ECU Malfunction of wiring harness or connector





Code No.21 Short circuit in communication	lines	Probable cause
This diagnosis code is displayed when the SWS communication line voltage reaches the LO level for 0.3 second. The diagnosis code is erased when voltage in the ETACS-ECU data line reaches the HI level for 0.3 second, or the ETACS-ECU receives a normal signal from other ECUs or switches. While this code is displayed, other codes are not displayed.		 Malfunction of column switch Malfunction of front-ECU Malfunction of power window main switch <vehicles front="" power="" window="" with=""></vehicles> Malfunction of multi center display <vehicles with<br="">multi center display></vehicles> Malfunction of ETACS-ECU Malfunction of wiring harness or connector
Check the following connectors: A-38X, C-53, C-63, C-83, E-10	NG ► Repair	
Check trouble symptoms.		
NG	¬ NG	
Check the harness wires between column switch and ETACS-ECU, front-ECU and ETACS-ECU, power window main switch and ETACS-ECU, multi-center display and ETACS-ECU.	► Repair	
ок	Yes	
Is diagnosis code No. 21 no longer output when column switch connector C-63 is disconnected? (However, code No. 12 is still output.)		ce the column switch.
No	Yes	
Is diagnosis code No. 21 no longer output when front-ECU connector A-38X is disconnected? (However, code No. 13 is still output.)		ce the front-ECU.
No	Yes	
Is diagnosis code No. 21 no longer output when power window main switch connector E-10 is disconnected?	► Replac	ce the power window main switch.
No	Yes	
Is diagnosis code No. 21 no longer output when multi-center display connector C-53 is disconnected?	Replac	ce the multi center display.
No	-	
Replace the ETACS-ECU.]	

TROUBLE SYMPTOM CHART

Trouble symptom		Inspection procedure	Reference page
Communication with the MUT-II is impossible.		A-1	54B-14
Buzzer	Light reminder warning function does not work normally.	B-1	54B-15
	Multi-center display alarm function does not work normally.	B-2	54B-15
Central door	Central door locking system does not work normally.	C-1	54B-16
locking system	Some doors do not lock or unlock.	C-2	54B-16
	All the doors do not lock or unlock with just the driver's door lock key cylinder key operation or driver's inside lock knob operation.	C-3	54B-17
	All the doors do not lock or unlock with just the passenger's or back door lock key cylinder key operation.	C-4	54B-17
	Forgotten key prevention function does not work.	C-5	54B-17
Power window	Power window do not work at all.	D-1	54B-18
	Power window main switch can not operate driver's window.	D-2	54B-18
	Power window sub switch can not operate passenger's window.	D-3	54B-19
	Power window main switch can not operate passenger's window.	D-4	54B-20
	Power window timer function does not work normally.	D-5	54B-20
	When the glass is raised, it then lowers automatically.	D-6	54B-21
	The glass is not lowered when something is jammed in the window.	D-7	54B-21
	When the glass is fully raised, it then lowers automatically.	D-8	54B-21
Keyless entry	Keyless entry system does not operate.	E-1	54B-22
system	The room lamp and hazard warning lamps do not operate through the answerback function.	E-2	54B-22
	The encrypted code cannot be registered.	E-3	54B-22
Windshield wip- er and washer	Windshield wiper does not operate.	F-1	54B-23
	Any of the windshield wiper switch positions is defective.	F-2	54B-24
	Windshield wiper does not stop at the predetermined park position.	F-3	54B-24
	Windshield intermittent wiper interval cannot be adjusted.	F-4	54B-25
	Windshield washer does not work.	F-5	54B-25

54B-12

Trouble symptom		Inspection procedure	Reference page
Rear wiper and washer	Rear wiper does not work at all.	G-1	54B-26
wasner	Rear wiper does not stop at the predetermined park position.	G-2	54B-26
	When the shift lever <m t=""> or selector lever is moved to R position during the rear wiper operation, the rear wiper does not operate at the continuous mode.</m>	G-3	54B-27
	Rear washer does not work.	G-4	54B-27
Headlamp washer	Headlamp washer does not work.	H-1	54B-28
Headlamp, tail	Tail lamp do not illuminate.	I-1	54B-29
lamp	Headlamps (low-beam) do no illuminate.	I-2	54B-29
	Headlamps (high-beam) do no illuminate.	I-3	54B-30
	Headlamps do not illuminate when the passing switch is operated.	1-4	54B-30
	The headlamp auto-cut function does not work normally.	I-5	54B-31
	Headlamp dimmer switch auto-reset function does not work normally.	I-6	54B-31
	Daytime running lamp (DRL) function does not work.	-7	54B-31
Flasher timer	Turn-signal lamp do not flash when the turn-signal lamp switch is turned on.	J-1	54B-32
	Hazard warning lamps do not flash when the hazard warning lamp switch is turned on.	J-2	54B-33
Front fog lamp	Front fog lamps do not illuminate when the front fog lamp switch is turned on.	K-1	54B-34
	Front fog lamp do not go out when the tail lamps are turned off while the fog lamps are on.	K-2	54B-34
Rear fog lamp	Rear fog lamp do not illuminate when the rear fog lamp switch is turned on.	L-1	54B-35
	Rear fog lamp do not out when the headlamps and front fog lamps <vehicles fog="" front="" lamp="" with=""> are turned off while the fog lamp is on.</vehicles>	L-2	54B-36
Room lamp	The room lamp does not illuminate.	M-1	54B-36
	The doom lamp dimming function does not work normally.	M-2	54B-37
Multi-center dis- play	The multi-center display does not work normally.	-	GROUP 54A – Multi-cen- ter Display.

DEFECTS FOUND BY INPUT SIGNAL CHECK

If the input signal check finds a defect, follow the table below to check.

Trouble symptom	1	Inspection procedure	Reference page
Ignition switch (ACC) signal is not sent to the ETACS-ECU.		N-1	54B-37
Ignition switch (IC	G1) signal is not sent to the ETACS-ECU.	N-2	54B-38
Key reminder sw	itch signal is not sent to the ETACS-ECU.	N-3	54B-38
Hazard warning I	amp switch signal is not sent to the ETACS-ECU.	N-4	54B-39
Front fog lamp sv	vitch signal is not sent to the ETACS-ECU.	N-5	54B-39
Rear fog lamp sv	vitch signal is not sent to the ETACS-ECU.	N-6	54B-40
Back-up lamp sw	itch signal is not sent to the ETACS-ECU. <m t=""></m>	N-7	54B-40
Inhibitor switch (r	everse) signal is not sent to the ETACS-ECU. 	N-8	54B-41
Rear wiper motor	r auto-stop signal is not sent to the ETACS-ECU.	N-9	54B-41
Driver's door swi	tch signal is not sent to the ETACS-ECU.	N-10	54B-42
Door switches sig	gnal is not sent to the ETACS-ECU.		
Passenger's doo	r lock key cylinder switch signal is not sent to the ETACS-ECU.	N-11	54B-43
Back door lock k	ey cylinder switch signal is not sent to the ETACS-ECU.	N-12	54B-43
Driver's door lock	actuator switch signal is not sent to the ETACS-ECU.	N-13	54B-44
Column switch	Tail lamp switch signal is not sent to the ETACS-ECU.	N-14	54B-45
	Headlamp switch signal is not sent to the ETACS-ECU.	-	
	Dimmer switch signal is not sent to the ETACS-ECU.	-	
	Passing switch signal is not sent to the ETACS-ECU.	-	
	Turn-signal lamp switch signal is not sent to the ETACS-ECU.	-	
	Windshield mist wiper switch signal is not sent to the ETACS-ECU.	-	
	Windshield intermittent wiper switch signal is not sent to the ETACS-ECU.		
	Windshield low-speed wiper switch signal is not sent to the ETACS-ECU.		
	Windshield high-speed wiper switch signal is not sent to the ETACS-ECU.		
	Windshield intermittent wiper interval adjusting knob signal is not sent to the ETACS-ECU.	N-15	54B-45
	Windshield wiper switch signal is not sent to the ETACS-ECU.	N-14	54B-45
	Rear wiper switch signal is not sent to the ETACS-ECU.		
	Rear washer switch signal is not sent to the ETACS-ECU.		
	Headlamp washer switch signal is not sent to the ETACS-ECU.		

Trouble symptom		Inspection procedure	Reference page
Power window main switch	Any switch signal is not sent to the ETACS-ECU.	N-16	54B-46
Transmitter	Any switch signal is not sent to the ETACS-ECU.	N-17	54B-46
Multi-center dis- play	Any switch signal is not sent to the ETACS-ECU.	N-18	54B-47

INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS



Buzzer: Light reminder warning function d normally.	loes not work	Probable cause
The ETACS-ECU operates the light reminder warning function, based on input signals from the following switched: Ignition switch (IG1) Driver's door switch Tail lamp switch headlamp switch If the function does not work normally, a defect on the relevant circuit or the ETACS-ECU may be suspected.		 Malfunction of driver's door switch Malfunction of column switch Malfunction of ETACS-ECU Malfunction of harness wire or connector
Do all of the following functions operate when the ignition key is at the LOCK (OFF) position? • Central door locking system		the ETACS-ECU battery circuit. (Refer to P.54B-47, Inspecrocedure O-1.)

- Hazard warning lamp .
- Room lamp

•

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NG Check the defective input circuit. (Refer to P.54B-13, Defects Found by Input Signal Check.)

Replace the ETACS-ECU.

MUT-II input signal check
Ignition switch (IG1)
Driver's door switch

Tail lamp switch

Headlamp switch

Inspection Procedure B-2

Yes

ОК

Buzzer: Multi-center display buzzer function does not work normally.	Probable cause
If the multi-center display is operating normally, the cause is probably a malfunction in the harness between the multi-center display and the ETACS-ECU or in the ETACS-ECU itself.	 Malfunction of multi-center display Malfunction of ETACS-ECU Malfunction of harness wire or connector



Central door locking system: Central door locking systed does not work normally.	Probable cause	
The power supply circuit, the circuit shared by door lock actuators, or the ETACS-ECU may be defective.	Malfunction of ETACS-ECUMalfunction of harness wire or connector	
	heck the following connectors: -77, C-82	

	OK			Check trouble symptoms.	Repair
Check the following con	nnectors:		7	NG	
C-68, C-75, C-82				Check the harness wire be	tween ETACS-ECU and fusible link(2).
OK	,	NG			
Check trouble symptoms.	Rep	air			
NG					
Check the harness wire bet	tween ETACS-ECU a	and door lock actua-	_ NG	Repair	
tor.					
	OK		_		
Replace the ETACS-ECU	J.				

Central door locking system: Some doors do not lock or unlock.	Probable cause
The door lock actuator, or the harness wire between ETACS-ECU and the door lock actuator may be defective.	 Malfunction of driver's, passenger's or back door lock actuator Malfunction of ETACS-ECU Malfunction of harness wire or connector

	_ NG	
Check the defective door lock actuator. (Refer to GROUP 42 - Door.)	-	Replace the defective door lock actuator.
ОК	-	
Check the following connectors:	NG	Repair
<left door=""> C-45, C-75, C-82, E-17</left>		·
<right door=""> C-21, C-75, C-82, E-06 <back door=""> C-68, C-82, D-15, F-08</back></right>		
ОК	-	
Check trouble symptoms.		
NG		
Check the harness wire between ETACS-ECU and defective door	NG	- Repair
lock actuator.		
ОК	_	
Replace the ETACS-ECU.]	

Central door locking system: All the doors do not lock o unlock with just the driver's door lock key cylinder key operation or driver's inside lock knob operation.	
The driver's door lock actuator switch or the ETACS-ECU may be defective.	 Malfunction of driver's door lock actuator Malfunction of ETACS-ECU Malfunction of harness wire or connector
	ck the driver's door lock actuator switch input circuit. (Refer .54B-44, Inspection Procedure N-13.)

Inspection Procedure C-4

Central door locking system: All the doors do not lock or unlock with just the passenger's or back door lock key cylinder key operation.	Probable cause	
The passenger's or back door lock key cylinder or the ETACS-ECU may be defective.	 Malfunction of passenger's or back door lock key cylinder switch Malfunction of ETACS-ECU Malfunction of harness wire or connector 	
NG		



Central door locking system: Forgotten key prevention function does not work.	Probable cause
 The ETACS-ECU operates the forgotten key prevention function, based on the input signals from the following switches: Key reminder switch Driver's door switch Driver's door lock actuator switch If the function does not work normally, a defect on the relevant circuit or the ETACS-ECU may be suspected. 	 Malfunction of key reminder switch Malfunction of driver's door switch Malfunction of driver's door lock actuator Malfunction of ETACS-ECU Malfunction of harness wire or connector

MUT-II input signal check • Key reminder switch • Driver's door switch • Driver's door lock actuator switch • OK	NG Check the defective input circuit. (Refer to P.54B-13, Defects Found by Input Signal Check.)
Replace the ETACS-ECU.]

Power window: Power window do not work at all.	Probable cause
The power window relay or the ETACS-ECU may be defective.	 Malfunction of power window relay Malfunction of ETACS-ECU Malfunction of harness wire or connector



Power window: Power window main switch can not operate drive's window.	Probable cause
The cause is probably a malfunction of the power window main switch or driver's side power window motor, or an abnormality in the power supply circuit.	 Malfunction of power window main switch Malfunction of driver's power window motor Malfunction of harness wire or connector



Power window: Power window sub switch ca passenger's window.	n not op	erate	Probable cause	
The cause is probably a malfunction of the power window ma driver's side power window motor, or an abnormality in the po circuit.			 Malfunction of power Malfunction of passer Malfunction of harnes 	nger's power window motor
Check the power window sub switch. (Refer to GROUP 42 – Door.)	NG	Replac	ce the power window sub s	switch.
 OK Measure at power window sub switch connector E-04 <l.h. drive="" vehicles=""> or E-09 <r.h. drive="" vehicles="">.</r.h.></l.h.> Disconnect connector and measure at harness side. Continuity between terminal 4 and body earth. 	NG	<l.h.< td=""><td>the following connector drive vehicles> C-21, E-04 drive vehicles> C-45, E-09 OK</td><td></td></l.h.<>	the following connector drive vehicles> C-21, E-04 drive vehicles> C-45, E-09 OK	
OK: Continuity		Check	trouble symptoms.	Repair
Check the following connectors:	7		NG	
<i.h. drive="" vehicles=""> E-04, E-06 <r.h. drive="" vehicles=""> E-09, E-12</r.h.></i.h.>		Check body e		power window sub switch and
NG				
Check trouble symptoms. Repair				
NG	¬ NG			
Check the harness wire between power window sub switch and passenger's power window motor.		 Repair 	ſ	
NG	_ _ (1) NG			
Measure at passenger's power window motor connector E-06 <l.h. drive="" vehicles=""> or E-12 <r.h. drive="" vehicles="">. • Disconnect connector and measure at harness side.</r.h.></l.h.>		<l.h.< td=""><td>the following connector drive vehicles> C-21, C-71 drive vehicles> C-45, C-71</td><td>, E-06</td></l.h.<>	the following connector drive vehicles> C-21, C-71 drive vehicles> C-45, C-71	, E-06
Turn the ignition switch to ON position.(1) Voltage between terminal 1 and body earth.			OK	NG
OK: System voltage (2) Continuity between terminal 3 and body earth. OK: Continuity	(2) NG	Check	trouble symptom	Repair
ок				assenger's power window motor
Replace the passenger's power window motor.		and po	ower window relay.	
		<l.h.< td=""><td>the following connector drive vehicles> C-21, E-06 drive vehicles> C-45, E-12</td><td></td></l.h.<>	the following connector drive vehicles> C-21, E-06 drive vehicles> C-45, E-12	
			OK	NG
		Check	trouble symptom	Repair
			the harness wire between pa ody earth.	assenger's power window motor

Power window: Power window main swi operate passenger's window.	itch can	not	Probable cause
The cause is probably a malfunction of the power window ma driver's side power window motor, or an abnormality in the po circuit.			 Malfunction of power window main switch Malfunction of passenger's power window motor Malfunction of harness wire or connector
Can the passenger's side power window be operated by the power window sub switch?	No	Refer	to P.54B-19, Inspection Procedure D-3.
Yes MUT-II input signal check • Power window main switch	NG		the power window main switch input circuit. (P.54B-46, tion Procedure N-16.)
Check the following connectors: <l.h. drive="" vehicles=""> C-21, C-45, E-06, E-10 <r.h. drive="" vehicles=""> C-21, C-45, E-10, E-12</r.h.></l.h.>	NG	- Repair	,
Check trouble symptoms. Check the harness wire between power window main switch and passenger's power window motor. OK Replace the power window main switch or passenger's power window motor.		- Repair	

Power window: Power window timer function does not work normally.	Probable cause
 The ETACS-ECU operates the power window timer function, based on the input signals from the following switches: Ignition switch (IG1) Driver's door switch If the function does not work normally, a defect on the relevant circuit or the ETACS-ECU may be suspected. 	 Malfunction of driver's door switch Malfunction of ETACS-ECU Malfunction of harness wire or connector

	Yes ,	
Is a diagnosis code output when the ignition switch is at the OFF (LOCK) position?	•••	Carry out troubleshooting while referring to the Diagnosis Code Chart on P.54B-7.
No	NG	
MUT-II input signal check Ignition switch (IG1) Driver's door switch Power window main switch		Check the defective input circuit. (Refer to P.54B-13, Defects Found by input Signal Check.)
ОК	-	
Replace the ETACS-ECU.		
	-	

Power window: When the glass is raised, it then lowers automatically.	Probable cause			
If the sliding resistance is too large when the glass is being raised, it is judged that something is jammed in the window, and the window is lowered by approximately 150 mm.	 Incorrect window glass adjustment Glass slider is incorrectly installed or warped Malfunction of power window motor 			
Check the power window operating currant. (Refer to GROUP 42 – Door.)				
OK Replace the power window motor.	x trouble symptoms.			

Power window: The glass is jammed in the window.	Probable cause
The cause may be a malfunction of the revolution detection sensor in the power window motor.	Malfunction of power window motor

Replace the window regulator assembly.

Replace the power window motor.

Power window: When the glass is fully raised, it then lowers automatically.	Probable cause
The cause may be a malfunction of the revolution detection sensor in the power window motor.	Malfunction of power window motor



Keyless entry system: Keyless entry system does not operate.		Probable cause	
The cause may be a malfunction of the receiver and transmit system	ter communic	ation	Malfunction of transmitterMalfunction of ETACS-ECU
Is the central door locking system operated normally? Yes			the central door locking system. (Refer to P54B-11, Trouble om Chart.)
MUT-II input signal check • Transmitter	NG		the transmitter input circuit. (Refer to P.54B-46, Inspection dure N-17.)
Replace the ETACS-ECU.	7		

Inspection Procedure E-2

Keyless entry system: The room lamp and hazard warning lamps do not operate through the answerback function.		Probable cause
The hazard warning lamp answerback function can be selected by the driver's desire (can be deactivated). However, the room lamp answerback function can not be deactivated. if all of these device do not operate through the answerback function, the ETACS-ECU may be defective.		 Malfunction of turn-signal lamp Malfunction of room lamp Malfunction of ETACS-ECU Malfunction of harness wire or connector
Activate the answerback functions. (Refer to GROUP 42 – Keyless Entry System.)		
Check trouble symptoms.		
NG Are room lamp and hazard warning lamps operated normally? Yes	No Check Chart.	the defective device. (Refer to P.54B-11, Trouble Symptom)
Replace the ETACS-ECU.		

Keyless entry system: The encrypted code cannot be registered.	Probable cause
 The ETACS-ECU actives the encrypted code register mode according to the following switch signals. Key reminder switch Hazard warning lamp switch If the encrypted code register mode is not set, the relevant input signal circuit or the ETACS-ECU may be defective. If a transmitter can not be registered although the encrypted code register mode is set, the transmitter or the ETACS-ECU may be defective. 	 Malfunction of key reminder switch Malfunction of hazard warning lamp switch Malfunction of transmitter Malfunction of ETACS-ECU Malfunction of harness wire or connector

Is encrypted code register mode set?	Yes	Check the transmitter battery. (Refe	er to GROUP 42 - Keyless
No		entry System.) OK Replace the transmitter.	v V Repair
 MUT-II input signal check Key reminder switch Hazard warning lamp switch 	NG	- Check the defective input circuit. (Ref by input Signal Check.)	er to P.54B-13, Defects Found
OK Replace the ETACS-ECU.			

Windshield wiper and washer: Windshield wiper does not operate.		Probable cause	Probable cause	
If the windshield wiper does not work at all, the windshield wiper motor, column switch or the front-ECU may be defective.		 Malfunction of column s Malfunction of front-ECL 	 Malfunction of windshield wiper motor Malfunction of column switch Malfunction of front-ECU Malfunction of harness wire or connector 	
 MUT-II input signal check Windshield mist wiper switch Windshield intermittent wiper switch Windshield low-speed wiper switch Windshield high-speed wiper switch 		ck the defective input circuit. (Refendent of the defective input circuit. (Refendent of the defendent of th	er to P.54B-13, Defects Found	
Check the windshield wiper motor. (Refer to GROUP 51 – Windshield Wiper and Washer.) OK Check the installation of the windshield wiper motor to the vehicle body.	NG NG NG ► Rep			
OK Measure at front-ECU connector A-38X. Disconnect connector and measure at relay box side. Turn the ignition switch to ACC position. Voltage between terminal 24 and body earth. OK: System voltage OK	A-3	ck the following connectors: 3X, C-72, C-74 OK ck trouble symptoms.	V V Repair	
Replace the front-ECU.	Che (AC	ck the harness wire between fr	ont-ECU and ignition switch	

Windshield wiper and washer: Any of the wing switch positions is defective.	dshield wiper	Probable cause
The windshield wiper motor, column switch or the front-ECU m	ay be defective.	 Malfunction of windshield wiper motor Malfunction of column switch Malfunction of front-ECU Malfunction of harness wire or connector
 MUT-II input signal check Windshield mist wiper switch Windshield intermittent wiper switch Windshield low-speed wiper switch Windshield high-speed wiper switch 		the defective input circuit. (Refer to P.54B-13, Defects Found ut Signal Check.)
OK Check the windshield wiper motor. (Refer to GROUP 51 – Wind- shield Wiper and Washer.)	NG ► Replac	;e
Check the following connectors: A-16, A-38X	NG ► Repair	
Check trouble symptoms.]	
Check the harness wire between windshield wiper motor and front- ECU.	NG ► Repair	
Replace the front-ECU.]	

Windshield wiper and washer: Windshield wi stop at the predetermined park position.	iper does not	Probable cause	
The windshield wiper motor or the front-ECU may be defective.		 Malfunction of windshi Malfunction of front-EC Malfunction of harness 	CU .
Check the windshield wiper motor. (Refer to GROUP 51 – Wind- shield Wiper and Washer.)	NG ► Repla	ce	
 Measure at windshield wiper motor connector A-16. Disconnect connector and measure at harness side. Turn the ignition switch to ACC position. Voltage between terminal 3 and body earth. 	Check	the following connectors C-72, C-74	NG
OK: System voltage	Check	trouble symptoms.	Repair
Check the following connectors: A-16, A-38X		the harness wire between w witch (ACC).	indshield wiper motor and igni-
VG Check trouble symptoms. Repair			
Check the harness wire between windshield wiper motor and front- ECU.	NG ► Repai	,	
OK]		
Replace the front-ECU.]		

Windshield wiper and washer: Windshield intermittent wiper interval cannot be adjusted.	Probable cause
The ETACS-ECU calculates the intermittent wiper interval, and sends a signal to the front-ECU through the SWS communication line. If the signal is defective, the front-ECU will ignore the signal and set the intermittent wiper interval to 4 seconds.	 Malfunction of column switch Malfunction of front-ECU Malfunction of ETACS-ECU Malfunction of harness wire or connector
MUT-II input signal check NG • Windshield intermittent wiper interval adjusting knob Check (Reference)	the windshield wiper interval adjusting knob input circuit. to P.54B-45, Inspection Procedure N-15.)

♦ Replace the front-ECU or ETACS-ECU.

Windshield wiper and washer: Windshield not work.	washer does	Probable cause
The windshield washer motor, the column switch or the front-E defective.	CU may be	 Malfunction of windshield washer motor Malfunction of column switch Malfunction of front-ECU Malfunction of harness wire or connector
· · · · · · · · · · · · · · · · · · ·	No	· · · · · · · · · · · · · · · · · · ·
Is the windshield wiper operated normally?	Chec	k the windshield wiper. (Refer to P.54B-11, Trouble Symptom
Yes	Ondit	.,
¥	NG	
 MUT-II input signal check Windshield washer switch 		k the windshield washer switch circuit. (Refer to P.54B-45, action Procedure N-14.)
ОК	¬ NG	
Check the windshield washier motor. (Refer to GROUP 51 – Windshield Wiper and Washer.)	Repla	ace
ОК	_ NG	
Measure at windshield washer motor connector A-74. • Disconnect connector and measure at harness side.		k the following connector:
 Continuity between terminal 1 and body earth. OK: Continuity 		OK NG
OK	Chec	k trouble symptoms. Repair
Check the following connectors:]	NG
A-38X, A-74		k the harness wire between windshield washer motor and
OK NG	body	earth.
Check trouble symptoms. Repair		
NG	NO	
Check the harness wire between windshield washer motor and front-ECU.	NG ► Repa	ir
ОК	_	
Replace the front-ECU.]	

Rear wiper and washer: Rear wiper d normally.	oes not work	Probable cause	
The ETACS-ECU operates the rear wiper according to the ir following switches: Ignition switch (ACC) Rear wiper switch If the rear wiper does not work normally, the relevant input s rear wiper motor, the column switch or the ETACS-ECU may	ignal circuit, the	 Malfunction of rear wi Malfunction of column Malfunction of front-E0 Malfunction of harness 	ˈswitch CU
	NG		
 MUT-II input signal check Ignition switch (ACC) Rear wiper switch 		ck the defective input circuit. (Renput Signal Check.)	efer to P.54B-13, Defects Found
ОК	NG		
Check the rear wiper motor. (Refer to GROUP 51 - Rear Wip and Washer.)	er Repl	ace	
ок	NG		
Measure at rear wiper motor connector F-05. • Disconnect connector and measure at harness side.	Che F-05	ck the following connector:	
• Continuity between terminal 1 and body earth. OK: Continuity		ОК	NG
ОК	Cheo	ck trouble symptoms.	Repair
Check the following connectors:		NG	
C-68, C-82, D-15, F-05	Cheo	ck the harness wire between re	ear wiper motor and body earth.
Check trouble symptoms. Repair			
NG			
Check the harness wire between rear wiper motor and ETACS-EC	J. <mark>────► Repl</mark>	ace	
ОК			
Replace the front-ECU.			

Rear wiper and washer: Rear wiper does not stop a predetermined park position.	t the Probable cause
The rear wiper motor or the ETACS-ECU may be defective.	 Malfunction of rear wiper motor Malfunction of front-ECU Malfunction of harness wire or connector
MUT-II input signal check • Rear wiper auto-stop signal OK	 Check the rear wiper auto-stop signal input circuit. (Refer to P.54B-41, Inspection Procedure N-9.)
Replace the ETACS-ECU.	

Rear wiper and washer: When the shift lever <m t=""> or selector lever is moved to R position during the rear wiper operation, the rear wiper does not operate at the continuous mode.</m>	Probable cause
The ETACS-ECU operates the rear wiper consecutively twice when the shift lever $$ or selector lever $$ is moved to R position while the rear wiper is turned on. If the rear wiper does not work consecutively twice, the back-up lamp switch $$ or the inhibitor switch (reverse) $$ may be defective.	 Malfunction of back-up lamp switch Malfunction of inhibitor switch Malfunction of ETACS-ECU Malfunction of harness wire or connector
NG	

 MUT-II input signal check Back-up lamp switch <m t=""></m> Inhibitor switch (reverse) 	 Cł by
OK	
Replace the ETACS-ECU.	

Check the defective input circuit. (Refer to P.54B-13, Defects Found by Input Signal Check.)

Rear wiper and washer: Rear washer does n	ot work.		Probable cause	
The rear washer motor, the column switch or the ETACS-ECU	may be defe	ctive.	 Malfunction of rear wa Malfunction of column Malfunction of ETACS Malfunction of harness 	switch -ECU
	No			
Is the rear wiper operated normally? Yes		Check	the rear wiper. (Refer to P.54	B-12, Trouble Symptom Chart.)
	⊣ NG			
MUT-II input signal check • Rear washer switch			the rear washer switch circuit lure N-14.)	t. (Refer to P.54B-45, Inspection
	NG	Damlar	_	
Check the rear washier motor. (Refer to GROUP 51 – Rear Wiper and Washer.)		Replac	e	
ок	¬ NG			
 Measure at rear washer motor connector A-73. Disconnect connector and measure at harness side. 		A-73	the following connector:	
• Continuity between terminal 1 and body earth. OK: Continuity			OK	NG
ок	7	Check	trouble symptoms.	Repair
Check the following connectors: A-73, C-72, C-82		Check	¥ -	windshield washer motor and
OK NG		body e		
Check trouble symptoms. Repair				
NG Check the harness wire between rear washer motor and ETACS-	NG	Deneir		
ECU.		Repair		
ОК	7			
Replace the ETACS-ECU.				

Headlamp washer: Headlamp washer does r	not work.		Probable cause
The front-ECU operates the headlamp washers if the headlam turned to ON while the headlamp relays (low and high) are Of switch is at the ACC or ON position. If the headlamp washer does not work normally, the headlamp the column switch or the front-ECU may be defective.	N and the ign	ition	 Malfunction of headlamp washer motor Malfunction of column switch Malfunction of front-ECU Malfunction of harness wire or connector
	_ No		
Is the windshield wiper and headlamp operated normally?		Check tom Cl	the defective operation. (Refer to P.54B-11, Trouble Symp-
Yes			iai.,
MUT-II input signal check	_ NG ►	Check	the headlamp washer switch circuit. (Refer to P.54B-13,
Headlamp washer switch		Inspec	tion Procedure N-13.)
ОК	¬ NG		
Check the headlamp washier motor. (Refer to GROUP 51 – Head- lamp Washer.)		- Replac	ce
ок	_ NG		
Measure at headlamp washer motor connector A-21.			the following connector:
 Disconnect connector and measure at harness side. Continuity between terminal 2 and body earth. OK: Continuity 		A-21	OK NG
ОК		Check	trouble symptoms. Repair
			N G
		Check body e	the harness wire between headlamp washer motor and earth.
+	_ NG		
Measure at front-ECU connector A-37X. • Disconnect connector and measure at relay box side.		A-37X	the following connector:
 Voltage between terminal 9 and body earth. 		A-SIX	OK NG
OK: System voltage		Check	trouble symptoms. Repair
¥	7	Oneok	NG
Check the following connectors: A-21, A-37X		Check	the harness wire between front-ECU and fusible link (4).
OK NG		Chicon	
Check trouble symptoms. Repair			
NG	¬ NG		
Check the harness wire between headlamp washer motor and front-ECU.		Repair	
ОК			
Replace the front-ECU.			

Headlamp, tail lamp: Tail lamp do not illuminate.	Probable cause
The column switch or the front-ECU may be defective.	 Malfunction of column switch Malfunction of front-ECU Malfunction of harness wire or connector

NOTE

If only one lamp does not illuminate, the harness wire between the lamp and front-ECU may be defective or the light bulb may be burned out. In this case, check the tail lamp circuit.



Inspection Procedure I-2

Headlamp, tail lamp: Headlamps (low-beam) do not illuminate.	Probable cause
The column switch or the front-ECU may be defective.	 Malfunction of column switch Malfunction of front-ECU Malfunction of harness wire or connector

NOTE

If only one of the headlamps (low-beam) does not illuminate, the harness wire between the headlamp and front-ECU may be defective or the headlamp bulb may be burned out. In this case, check the headlamp circuit.



Headlamp, tail lamp: Headlamps (high-beam) do not illuminate.	Probable cause
The column switch or the front-ECU is suspected to be defective.	 Malfunction of column switch Malfunction of front-ECU Malfunction of harness wire or connector

NOTE

If only one of the headlamps (high-beam) does not illuminate, the harness wire between the headlamp and front-ECU may be defective or the headlamp bulb may be burned out. In this case, check the headlamp circuit.

	No	
Is the headlamps (low-beam) operated normally? Yes		Check the headlamp (low-beam) circuit. (Refer to P.54B-29, In- spection Procedure I-2.)
	NG	
MUT-II input signal check Dimmer switch 		Check the dimmer switch input circuit. (Refer to P.54B-45, Inspection Procedure N-14.)
ОК	_	
Replace the Front-ECU.]	

Headlamp, tail lamp: Headlamps do not illuminate when the passing switch is operated.		en	Probable cause
If the headlamps (low-beam and high-beam) are defective, the column switch or the front-ECU is suspected to be defective.		or	 Malfunction of column switch Malfunction of front-ECU Malfunction of harness wire or connector
Is the headlamps (low-beam and high-beam) operated normally?		Check t Chart.)	the defective circuit. (Refer to P.54B-12, Trouble Symptom
MUT-II input signal check • Passing switch OK			the passing switch input circuit. (Refer to P.54B-45, Inspec- bocedure N-14.)
Replace the Front-ECU.]		

Headlamp, tail lamp: The headlamp auto-cut function does not work normally.	Probable cause
 The ETACS-ECU operates the headlamp auto-cut function, based on the signals from the following switch: Ignition switch (IG1) Driver's door switch Tail lamp switch Headlamp switch If the function does work normally, a defect on relevant input circuits, the ETACS-ECU or the front-ECU is suspected. 	 Malfunction of driver's door switch Malfunction of column switch. Malfunction of front-ECU Malfunction of harness wire or connector



Inspection Procedure I-6

Headlamp, tail lamp: Headlamps dimmer switch auto-reset function does not work normally.	Probable cause
The headlamp dimmer switch auto-reset function is controlled by the front-ECU. If a defect appears, the front-ECU may be defective.	Malfunction of front-ECU

Replace the front-ECU.

Headlamp, tail lamp: Daytime running lamp does not work.	(DRL) function	Probable cause	
The headlamp dimmer switch auto-reset function is controlled If a defect appears, the front-ECU may be defective.	d by the front-ECU.	 Malfunction of ETACS-E Malfunction of front-ECI Malfunction of harness 	U
Are the tail lamp and headlamps operated normally?	No → Check Chart.	the defective device. (Refer to	P.54B-12, Trouble Symptom
Measure at ETACS-ECU connector C-83. Disconnect connector and measure at harness side. Continuity between terminal 29 and body earth. OK: Continuity	NG Checl C-02,	k the following connectors: C-83 ↓OK	NG
OK V Replace the ETACS-ECU or front-ECU.		trouble symptoms.	Repair

Flasher timer: Turn-signal lamp do not flash when the turn-signal lamp switch is turned on.	Probable cause
 The ETACS-ECU makes the turn-signal lamps flash, based on the input signals from the following switched: Ignition switch (IG1) Turn-signal lamp switch If the turn-signal lamps do not flash normally, a defect on the relevant circuits or the ETACS-ECU may be suspected. If the hazard warning lamps also do not flash, a defect in the ETACS-ECU power supply line specific to the turn-signal lamps is suspected. 	 Malfunction of column switch Malfunction of ETACS-ECU Malfunction of harness wire or connector.

NOTE

If only one of the turn-signal lamp does not flash, the harness wire between the lamp and ETACS-ECU may be defective or the lamp bulb may be burned out. In this case, check the turn-signal lamp and hazard warning lamp circuit.



Flasher timer: Hazard warning lamp do not flash when the hazard warning lamp switch is turned on.	Probable cause
The ETACS-ECU makes the turn-signal lamps flash, base on the input signals from the hazard warning lamp switch. If the turn-signal lamps do not flash normally, the hazard warning lamp switch input circuit or the ETACS-ECU may be defective.	 Malfunction of hazard warning lamp switch Malfunction of ETACS-ECU Malfunction of harness wire or connector.

NOTE

If only one of the turn-signal lamp does not flash, the harness wire between the lamp and ETACS-ECU may be defective or the lamp bulb may be burned out. In this case, check the turn-signal lamp and hazard warning lamp circuit.



Front fog lamp: Front fog lamps do not illuminate when the front fog lamp switch is turned on.	Probable cause
If the tail lamps illuminate normally, the front fog lamp switch, the front fog lamp relay, the front-ECU or the ETACS-ECU may be defective.	 Malfunction of front fog lamp switch Malfunction of front fog lamp relay Malfunction of front-ECU Malfunction of ETACS-ECU Malfunction of harness wire or connector.

NOTE

If only one of the front fog lamp or fog lamp indicator lamp does not illuminate, the harness wire between the lamp and front fog lamp relay may be defective or the lamp bulb may be burned out. In this case, check the front fog lamp circuit.

	NG	
Is the tail lamps operated normally?		Check the tail lamp circuit. (Refer to P.54B-29, Inspection Proce
ОК		dure I-1.)
¥	NG	
MUT-II input signal check		Check the front fog lamp switch input circuit. (Refer to P.54B-39 Inspection Procedure N-5.)
Front fog lamp switch		Inspection Procedure N-5.)
ОК	¬ NG	
Check the front fog lamp relay. (Refer to GROUP 54A – Headlamp, Font Turn-signal Lamp and Front Fog Lamp.)		→ Replace
ок		
Measure at front fog lamp relay connector A-40X.	NG	► Check the following connector:
• Disconnect connector and measure at relay box side.		A-40X
 Voltage between terminal 3 and body earth. OK: System voltage 		OK NG
 Voltage between terminal 4 and body earth. 		Check trouble symptoms. Repair
OK: System voltage		NG
ОК	_	Check the harness wire between front fog lamp relay and battery
Check the following connectors: A-37X, A-40X		check the namess whe between none tog famp relay and battery
OK NG		
Check trouble symptoms. Repair		
NG		
Check the harness wire between front fog lamp relay and front-ECU.	NG	——► Repair
OK		
<u> </u>	NG	
Check the following connectors: A-40X, A-22, A-32, C-06		——► Repair
ОК		
Check trouble symptoms.]	
NG	NG	
Check the harness wire between front fog lamp relay and front fog lamps.		——► Repair
ОК	-	
Replace the front-ECU.]	

Inspection Procedure K-2

Front fog lamp: Front fog lamp do not go out when the tail lamps are turned off while the fog lamps are on.	Probable cause
If the malfunction above occurs, the ETACS-ECU may be defective.	Malfunction of ETACS-ECU

Replace the ETACS-ECU.

Rear fog lamp: Rear fog lamps do not illuminate when the ear fog lamp switch is turned on.		Probable cause	
If the headlamps and front fog lamp <vehicles fog="" front="" lamp="" with=""> illuminate normally, the rear fog lamp switch, the rear fog lamp relay or the ETACS-ECU may be defective.</vehicles>		 Malfunction of rear fog lamp switch Malfunction of rear fog lamp relay Malfunction of ETACS-ECU Malfunction of harness wire or connector. 	
	No		
Are the headlamps and front fog lamps <vehicles fog="" front="" lamp="" with=""> operated normally?</vehicles>		Check the Chart.)	he defective device. (Refer to P.54B-12, Trouble Symptom
Yes	NO		
MUT-II input signal check • Rear fog lamp switch	NG		he Rear fog lamp switch input circuit. (Refer to P.54B-40, on Procedure N-6.)
ОК			· · · · · · · · · · · · · · · · · · ·
Check the rear fog lamp relay. (Refer to GROUP 54A – Rear Com bination Lamp and Rear Fog Lamp.)	- NG	► Replace	9
OK			
Measure at rear fog lamp relay connector C-86.	NG	Check	the following connectors:
 Disconnect connector and measure at relay box side. Voltage between terminal 3 and body earth. 			C-77, C-86
OK: System voltage			OK NG
 Voltage between terminal 5 and body earth. OK: System voltage 		Check t	rouble symptoms. Repair
ОК			NG
Check the following connectors:		Check t	the harness wire between rear lamp relay and battery.
C-83, C-86			
OK NG			
Check trouble symptoms. Repair			
NG	– NG		
Check the harness wire between rear fog lamp relay and ETACS ECU.		 Repair 	
, OK	NO		
Check the rear fog lamp bulb.	NG	Replace	3
OK	NG		
Measure at rear fog lamp connector D-40.		Check	the following connector:
 Disconnect connector and measure at harness side. Continuity between terminal 1 and body earth. OK: Continuity 		D-40	↓OK ↓NG
ОК		Checkt	rouble symptoms. Repair
Check the following connectors:			NG
C-38 <l.h. drive="" vehicles=""> or C-42 <r.h. drive="" vehicles="">, C-86 D-40</r.h.></l.h.>	,	Check t	the harness wire between rear fog lamp and body earth.
OK NG			
Check trouble symptoms. Repair			
NG	– NG		
Check the harness wire between rear fog lamp relay and rea fog lamp.		 Repair 	
OK			
Replace the ETACS-ECU.			
Rear fog lamp: Rear fog lamp do not go out when the headlamps and front fog lamps <vehicles fog="" front="" lamp="" with=""> are turned off while the fog lamps are on.</vehicles>	Probable cause		
--	--------------------------	--	
If the malfunction above occurs, the ETACS-ECU may be defective.	Malfunction of ETACS-ECU		

Replace the ETACS-ECU.

Room lamp: The room lamp does not illuminate.	Probable cause
If the room lamp does not illuminate at all, the room lamp bulb may be burned out, or the power supply circuit or the ETACS-ECU may be defective.	 Malfunction of room lamp Malfunction of ETACS-ECU Malfunction of harness wire or connector



Room lamp: The room lamp dimming function does not work normally.	Probable cause
The ETACS-ECU dims the room lamp according to the input signals from the following switches: Ignition switch (IG1) Key reminder switch Driver's door switch Door switches Driver's door lock actuator switch <vehicles entry="" keyless="" system="" with=""></vehicles> If the Room lamp does not be dimmed normally, the relevant input signal circuit or the ETACS-ECU may be defective. 	 Malfunction of key reminder switch Malfunction of driver's door switch Malfunction of door switches Malfunction of driver's door lock actuator switch Malfunction of ETACS-ECU Malfunction of harness wire or connector

Do all of the following functions operate when the ignition key is at the LOCK (OFF) position? • Light reminder warning function • Central door locking system • Hazard warning lamp	NG Check the ETACS-ECU battery circuit. (Refer to P.54B-47 tion Procedure O-1.)	7, Inspec-
OK MUT-II input signal check Ignition switch (IG1) Key reminder switch Driver's door switch Door switches Driver's door lock actuator switch <vehicles entry="" keyless="" system="" with=""></vehicles>	NG Check the defective input circuit. (Refer to P.54B-13, Defective input Signal Check.)	cts Found
OK Replace the ETACS-ECU.		

Ignition switch (ACC) signal is not sent to the ETACS-ECU.	Probable cause	
 The ignition switch (ACC) input signal is used to operate the following devices. If the signal fails, these devices will not work normally. Windshield wiper and washer Rear wiper and washer Headlamp washer <vehicles headlamp="" washer="" with=""></vehicles> 	 Malfunction of ETACS-ECU Malfunction of harness wire or connector 	



Ignition switch (IG1) signal is not sent to the ETACS-ECU.	Probable cause	
 The ignition switch (IG1) input signal is used to operate the following devices. If the signal fails, these devices will not work normally. Light reminder alarm function Power window timer function <vehicles power="" window="" with=""></vehicles> Headlamp auto-cut function Turn-signal lamp Room lamp dimming function 	 Malfunction of ETACS-ECU Malfunction of harness wire or connector 	
Measure at ETACS-ECU connector C-82. Disconnect connector and measure at J/B side. NG Check C-72,	the following connectors: C-82	

Turn the ignition switch to ON position.
Voltage between terminal 16 and body earth.

OK: System voltage

OK

Replace the ETACS-ECU.

OK NG Check trouble symptoms. Repair NG Check the harness wire between ETACS-ECU and ignition switch (IG1).

Key reminder switch signal is not sent to the ETACS-ECU.	Probable cause
 The key reminder switch input signal is used to operate the following devices. If the signal fails, these devices will not work normally. Forgotten key prevention function <vehicles entry="" keyless="" system="" with=""></vehicles> Keyless entry system <vehicles entry="" keyless="" system="" with=""></vehicles> Room lamp dimming function 	 Malfunction of key reminder switch Malfunction of ETACS-ECU Malfunction of harness wire or connector



Hazard warning lamp switch signal is not sent to the ETACS-ECU.	Probable cause
 The hazard warning lamp switch input signal is used to operate the following devices. If the signal fails, these devices will not work normally. Hazard warning lamp Keyless entry system (Registering the encrypted code) <vehicles entry="" keyless="" system="" with=""></vehicles> 	 Malfunction of hazard warning lamp switch Malfunction of ETACS-ECU Malfunction of harness wire or connector



Front fog lamp switch signal is not sent to the ETACS-ECU.	Probable cause
The front fog lamp switch input signal is used to operate the front fog lamp. If the signal fails, front fog lamp will not work normally.	 Malfunction of fog lamp switch Malfunction of ETACS-ECU Malfunction of harness wire or connector

	IG	
Check the front fog lamp switch. (Refer to GROUP 54A – Head- lamp, Front Turn-signal Lamp and Front Fog Lamp.)	→ Replace	
ok	IG	
Measure at fog lamp switch connector C-03. Disconnect connector and measure at harness side.	Check the following conne C-01, C-03	ectors:
 Continuity between terminal 2 and body earth. OK: Continuity 	ОК	NG
ЮК	Check trouble symptoms.	Repair
Check the following connectors: C-03, C-83	NG Check the barness wire betw	een fog lamp switch and body earth.
OK NG	Check the hamess wire between	centrog lamp switch and body carti.
Check trouble symptoms. Repair		
NG	10	
$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	IG ► Repair	
ок		
Replace the ETACS-ECU.		

Rear fog lamp switch signa	l is not sent to the	ETACS-ECU.	Probable cause	
The rear fog lamp switch input signal signal fails, rear fog lamp will not work		ear fog lamp. If the	 Malfunction of fog lat Malfunction of ETAC Malfunction of harnes 	S-ECU
Check the rear fog lamp switch. (Refer Combination Lamp and Rear Fog Lamp		NG ► Repla	ce	
ОК		_ NG		
Measure at fog lamp switch connector • Disconnect connector and measure • Continuity between terminal 6 and	at harness side.		k the following connector C-03	rs:
OK: Continuity				¥ -
OK		Check	k trouble symptoms.	Repair
Check the following connectors: C-03, C-83		Check	NG	og lamp switch and body earth.
ОК	NG			
Check trouble symptoms.	Repair			
NG		¬ NG		
Check the harness wire between fog lamp	switch and ETACS-ECU.	Repai	r	
ОК		-		
Replace the ETACS-ECU.]		

Back-up lamp switch signal is not sent to the ETACS-ECU.	Probable cause
The back-up lamp switch input signal is used to operate the rear wiper. If the signal is an error, the rear wiper will not operate consecutively twice when the rear wiper is on and the shift lever is moved to R position.	 Malfunction of back-up lamp switch Malfunction of ETACS-ECU Malfunction of harness wire or connector

	1 NG		
Check the back-up lamp switch.		Replace	
ок	NG		
 Measure at back-up lamp switch connector B-02. Disconnect connector and measure at harness side. 		Check the following connectors: B-02, C-24, C-74, C-78, D-02	
 Turn the ignition switch to ON position. Voltage between terminal 2 and body earth. 		OK	NG
OK: System voltage		Check trouble symptoms.	Repair
ОК	_	NG	
Check the following connectors: B-02, C-02, C-39, C-83, D-02		Check the harness wire between back-up switch (IG1).	lamp switch and ignition
VOK NG			
Check trouble symptoms. Repair			
NG	NG		
Check the harness wire between back-up lamp switch and ETACS-ECU.		Repair	
OK			
Replace the ETACS-ECU.]		

Inhibitor switch (reverse) signal is not ETACS-ECU. 	sent to	the	Probable cause	
The inhibitor switch (reverse) input signal is used to operate the signal is an error, the rear wiper will not operate consecutive the rear wiper is on and the selector lever is moved to R position.	vely twice wh		 Malfunction of inhibito Malfunction of ETACS Malfunction of harnes 	S-ECU
Check the inhibitor switch. (Refer to GROUP 23 – On-vehicle Service.)	NG	Replace		
ОК	NG			
 Measure at inhibitor switch connector B-04. Disconnect connector and measure at harness side. Turn the ignition switch to ON position. Voltage between terminal 8 and body earth. OK: System voltage 	-	B-04, C	the following connector -24, C-74, C-78, D-02 OK ouble symptoms.	N G
OK]	Check II	NG	Repair
Check the following connectors: B-04, C-02, C-39, C-83, D-02		Check th (IG1).	ne harness wire between in	hibitor switch and ignition switch
OK NG		. ,		
Check trouble symptoms. Repair	NC			
Check the harness wire between inhibitor switch and ETACS-ECU.] <mark>NG</mark> ►	Repair		
Replace the ETACS-ECU.]			

Rear wiper motor auto-stop signal is not sent to the ETACS-ECU.	Probable cause
Rear wiper motor auto-stop signal is used to operate the rear wiper. If the signal is an error, the rear wiper will not stop at the predetermined park position.	 Malfunction of rear wiper motor Malfunction of ETACS-ECU Malfunction of harness wire or connector

	– NG		
Check the rear wiper motor. (Refer to GROUP 51 - Rear Wipe	·	Replace	
and Washer.)			
OK			
	_ NG		
Measure at rear wiper motor connector F-05.	►	Check the following connectors:	
• Disconnect connector and measure at harness side.		C-68, C-77, D-15, F-05	
 Turn the ignition switch to ACC position. 		OK	NG
 Voltage between terminal 4 and ground. 		V	V
OK: System voltage		Check trouble symptoms.	Repair
ок		NG	
Check the following connectors:		Check the harness wire between rear	wiper motor and ignition
C-68, C-82, D-15, F-05		switch (ACC).	
OK			
Check trouble symptoms. Repair			
NG			
• · · · ·	– NG		
Check the harness wire between rear wiper motor and ETACS-ECU		Repair	
ок			
Replace the ETACS-ECU.			

Driver's door switch signal is not sent to the ETACS-ECU.	Probable cause
Door switches signal is not sent to the ETACS-ECU.	
 <driver's door="" switch=""></driver's> The driver's door switch is used to operate the following functions. If the signal fails, these devices will not work normally. Light reminder warning function Forgotten key prevention function <vehicles entry="" keyless="" system="" with=""></vehicles> Power window timer function <vehicles power="" window="" with=""></vehicles> Headlamp auto-cut function 	 Malfunction of driver's or passenger's door switch Malfunction of back door latch Malfunction of ETACS-ECU Malfunction of harness wire or connector
<door switches=""> The door switches is used to operate the following devices. If the signal fails, these devices will not work normally. Keyless entry system <vehicles entry="" keyless="" system=""></vehicles> Room lamp dimming function </door>	

<Driver's and passenger's door switch>



<Back door switch>

		¬ NG		
Check the back door latcl	h. (Refer to GROUP 42 - Back Door.)		Replace	
	ок	_ NG		
Measure at back door lat	ch connector F-07. and measure at harness side	•	Check the following connect F-07	or:
	rminal 2 and body earth.		OK	NG
	OK	_	Check trouble symptoms.	Repair
Check the following co		7	NG	
C-68, C-82, D-15, F-07	intectors.		Check the harness wire between	n back door latch and body earth.
OK	NG	_		
Check trouble symptoms.	Repair			
NG				
Check the harness wire bet	tween back door latch and ETACS-ECU.	NG	Repair	
	OK	1		
Replace the ETACS-ECU				

Passenger's door lock key cylinder switch sent to the ETACS-ECU.	signal is not	Probable cause
The passenger's door lock key cylinder switch is used to opera door locking system. If the signal fails, central door locking syst normally.		 Malfunction of passenger's door lock key cylinder switch Malfunction of ETACS-ECU Malfunction of harness wire or connector
Check the passenger's door lock key cylinder switch. (Refer to GROUP 42 – Door.)	NG Replac	се
Measure at passenger's door lock key cylinder switch connector E-05. Disconnect connector and measure at harness side Continuity between terminal 2 and body earth. OK: Continuity	<l.h.< td=""><td>k the following connectors: drive vehicles> C-21, E-05 drive vehicles> C-45, E-05 OK</td></l.h.<>	k the following connectors: drive vehicles> C-21, E-05 drive vehicles> C-45, E-05 OK
ОК	Check	ktrouble symptoms. Repair
Check the following connectors: <l.h. drive="" vehicles=""> C-21, C-84, E-05 <r.h. drive="" vehicles=""> C-45, C-84, E-05</r.h.></l.h.>		the harness wire between passenger's door lock key cylin- witch and body earth.
OK NG		
Check trouble symptoms. Repair		
Check the harness wire between passenger's door lock key cylinder switch and ETACS-ECU.	NG ► Repair	r
ОК	-	
Replace the ETACS-ECU.]	

Back door lock key cylinder switch signal is not sent to the ETACS-ECU.	Probable cause
The back door lock key cylinder switch is used to operate the central door locking system. If the signal fails, central door locking system will not work normally.	 Malfunction of back door lock key cylinder switch Malfunction of ETACS-ECU Malfunction of harness wire or connector



Driver's door lock actuator switch signal is n ETACS-ECU.	ot sent to the	Probable cause	
The driver's door lock actuator switch is used to operate the fo or functions. If the signal fails, these systems or function will no • Central door locking system • Forgotten key prevention function <vehicles er<br="" keyless="" with="">• Keyless entry system <vehicles entry="" keyless="" system="" with=""></vehicles></vehicles>	ot work normally. ntry system>	 Malfunction of driver's door lock actuator Malfunction of ETACS-ECU Malfunction of harness wire or connector 	
Check the driver's door lock actuator switch. (Refer to GROUP 42 – Door.)	NG ► Repla	nce	
ОК	NG		
 Measure at driver's door lock actuator connector E-17 <l.h. drive="" vehicles=""> or E-06 <r.h. drive="" vehicles="">.</r.h.></l.h.> Disconnect connector and measure at harness side 	Checl	k the following connectors: drive vehicles> C-45, E-17 . drive vehicles> C-21, E-06	
• Continuity between terminal 1 <l.h. drive="" vehicles=""> or 3 <r.h. drive="" vehicles=""> and body earth.</r.h.></l.h.>		OK	
OK: Continuity	Check	k trouble symptoms. Repair	
OK		NG	
Check the following connectors: <l.h. drive="" vehicles=""> C-45, C-84, E-17 <r.h. drive="" vehicles=""> C-21, C-84, E-06</r.h.></l.h.>		k the harness wire between driver's door lock actuator an earth.	id
OK NG	-		
Check trouble symptoms. Repair			
NG	NG		
Check the harness wire between driver's door lock actuator and ETACS-ECU.	► Repai	ir	
ОК			
Replace the ETACS-ECU.]		

 Column switch: Tail lamp switch signal is not sent to the ETACS-ECU. Headlamp switch signal is not sent to the ETACS-ECU. Dimmer switch signal is not sent to the ETACS-ECU. Passing switch signal is not sent to the ETACS-ECU. Turn-signal lamp switch signal is not sent to the ETACS-ECU. Windshield mist wiper switch signal is not sent to the ETACS-ECU. Windshield intermittent wiper switch signal is not sent to the ETACS-ECU. Windshield low-speed wiper switch signal is not sent to the ETACS-ECU. Windshield high-speed wiper switch signal is not sent to the ETACS-ECU. Windshield high-speed wiper switch signal is not sent to the ETACS-ECU. Windshield washer switch is not sent to the ETACS-ECU. Rear wiper switch is not sent to the ETACS-ECU. Rear washer is not sent to the ETACS-ECU. Headlamp washer switch is not sent to the ETACS-ECU. 	Probable cause
The column switch is used to operate the following systems or functions. If the signal fails, these systems or function will not work normally. Light reminder warning function Windshield wiper and washer Rear wiper and washer Headlamp washer <vehicles headlamp="" washer="" with=""></vehicles> Headlamp, tail lamp Turn-signal lamp Front fog lamp <vehicles fog="" front="" lamp="" with=""></vehicles> Rear fog lamp 	 Malfunction of column switch Malfunction of ETACS-ECU

Is a diagnosis code output when the ignition switch is at the OFF (LOCK) position?

Carry out troubleshooting while referring to the Diagnosis Code Chart on P.54B-7.

Replace the column switch or ETACS-ECU.

tion of column switch tion of ETACS-ECU tion of harness wire or connector
;1



Power window main switch: Any switch signal is not sent to the ETACS-ECU.	Probable cause
If there is a problem with communication between the power window main switch and the ETACS-ECU, the input signal check for the power window main switch can no longer be carried out. In addition, the power window timer function will also stop working.	 Malfunction of power window main switch Malfunction of ETACS-ECU Malfunction of harness wire or connector



Transmitter: Any switch signal is not ETACS-ECU.	sent to the Probable cause
The transmitter input signal is used to operate the keyless entry signal fails, keyless entry will not work normally.	ry system. If the • Malfunction of transmitter • Malfunction of ETACS-ECU
Has the encrypted code been registered properly? Yes	No Re-register the encrypted code. (Refer to GROUP 42 – Keyless Entry System.)
Check the transmitter battery. (Refer to GROUP 42 – Keyless Entry System.)	NG ► Replace
ОК	_ NG
Use an other transmitter to register the secret code. (Refer to GROUP 42 – Keyless Entry System.)	
ок	_
Replace the defective transmitter.]

Multi-center display: Any switch signal is no ETACS-ECU.	ot sent to the	Probable cause
The cause is probably a malfunction of the multi-center display ETACS-ECU.	or the	 Malfunction of multi-center display Malfunction of ETACS-ECU Malfunction of harness wire or connector.
Is the multi-center display operated normally?		out troubleshooting for the multi-center display. (Refer to P 54A – Multi-center Display.)
Check the following connectors: C-02, C-53, C-83	NG ► Repair	
Check trouble symptoms.		
Check the harness wire between multi-center display and ETACS- ECU.	NG ► Repair	
Replace the multi-center display or ETACS-ECU.		

Check the circuit (power supply line) from the battery to the ETACS-ECU.	Probable cause
If that power supply circuit is defective, the circuit flowing trough the ignition switch (IG1) will function as a back-up circuit. In this case, the following functions will not work when the ignition switch is at LOCK (OFF) position. • Light reminder alarm function • Central door lock ing system • Hazard warning lamp • Room lamp	 Malfunction of ETACS-ECU Malfunction of harness wire or connector.



NOTES

GROUP 54B SMART WIRING SYSTEM(SWS)

GENERAL

OUTLINE OF CHANGES

• Due to the introduction of 5-door models, the troubleshooting for the rear power windows have been added.

TROUBLESHOOTING

TROUBLE SYMPTOM CHART

Trouble symptom		Inspection procedure	Reference page
Power window	Rear power window sub-switches can not operate rear door windows. (However, power window main switch can operate rear door windows.)	D-9	54B-2

