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Service Category: Steering	Section: Steering Column	
Model Year: 2008	Model: ES350	Doc ID: RM000000XWS011X
Title: STEERING COLUMN: ELECTRIC STEERING LOCK: DIAGNOSIS SYSTEM (2008 ES350)		

## DIAGNOSIS SYSTEM

### 1. DESCRIPTION

#### (a) DIAGNOSTIC SYSTEM

When troubleshooting a vehicle with a diagnostic system, the only difference from the usual troubleshooting procedure is connecting Techstream to the vehicle and reading various data output from the vehicle's steering lock ECU.

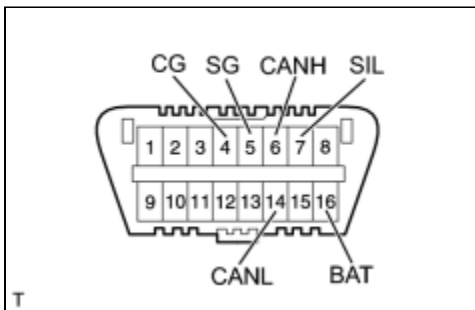
The steering lock ECU records DTCs when the computer detects a malfunction in the computer itself or in system circuits.

To check the DTCs, connect Techstream to the DLC3 on the vehicle. Techstream enables the DTCs to be cleared, the indicators to be activated, and the DATA LIST to be checked.

- (b) The steering lock ECU diagnosis information cannot be read directly from the steering lock ECU by the tester. The diagnosis information from the steering lock ECU is transmitted to the tester via the certification ECU to the tester using the controller area network (CAN).

### 2. CHECK DLC3

- (a) The certification ECU uses ISO 15765-4 for communication. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.



SYMBOLS (TERMINAL NO.)	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
SIL (7) - SG (5)	Bus "+" line	During transmission	Pulse generation
CG (4) - Body ground	Chassis ground	Always	Below 1 $\Omega$
SG (5) - Body ground	Signal ground	Always	Below 1 $\Omega$
BAT (16) - Body ground	Battery positive	Always	11 to 14 V
CANH (6) - CANL (14)	CAN bus line	Engine Switch off*	54 to 69 $\Omega$
CANH (6) - CG (4)	HIGH-level CAN bus line	Engine Switch off*	200 $\Omega$ or higher
CANL (14) - CG (4)	LOW-level CAN bus line	Engine Switch off*	200 $\Omega$ or higher
CANH (6) - BAT (16)	HIGH-level CAN bus line	Engine Switch off*	6 k $\Omega$ or higher
CANL (14) - BAT (16)	LOW-level CAN bus line	Engine Switch off*	6 k $\Omega$ or higher

**NOTICE:**

\*: Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the engine switch, and other switches or the doors.

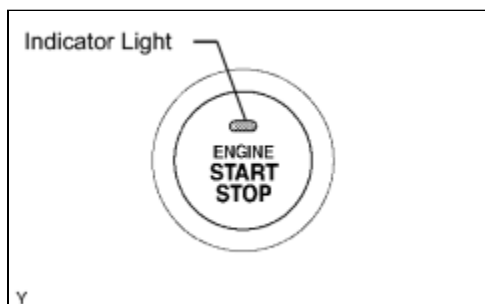
If the result is not as specified, the DLC3 may have a malfunction. Repair or replace the harness and connector.

(b) Connect the cable of Techstream to the DLC3, turn the engine switch on (IG) and attempt to use the tester. If the display indicates that a communication error has occurred, there is a problem either with the vehicle or with the tester.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 of the original vehicle.
- If communication is still not possible when the tester is connected to another vehicle, the problem may be in the tester itself. Consult the Service Department listed in the tester's instruction manual.

**3. WARNING FUNCTION OF ENGINE SWITCH INDICATOR**

(a) The steering lock ECU blinks the LED indicator of the engine switch when any of the following problems occurs in the system:



DETECTION ITEM	INDICATOR LIGHT BLINK PATTERN	INDICATION STATUS	COUNTERMEASURE
Steering lock is still not released	<ul style="list-style-type: none"> <li>• Blinks green at 1-second intervals</li> <li>• Goes off 15 seconds after blinking starts</li> </ul>	The motor operates to release the steering lock, but the steering lock cannot be released (e.g. the lock bar is stuck in the steering column).	Push the engine switch while turning the steering wheel left or right.
Malfunction in smart access system with push-button start	<ul style="list-style-type: none"> <li>• Blinks amber at 2-second intervals</li> <li>• Goes off 15 seconds after the engine switch is turned off while blinking</li> </ul>	<ul style="list-style-type: none"> <li>• There is a short in the devices activating the motor.</li> <li>• There is a problem in the steering lock ECU or main body ECU.</li> </ul>	Troubleshoot by following "HOW TO PROCEED WITH TROUBLESHOOTING" <a href="#">INFO</a> .

**4. WARNING FUNCTION OF COMBINATION METER**

(a) The steering lock ECU displays a warning on the combination meter when any of the following problems occurs in the system.

DETECTION ITEM	DISPLAY	INDICATION STATUS	COUNTERMEASURE
	"S/T IS NOT	The motor operates to release the	

Steering lock is still not released	UNLOCKED" <ul style="list-style-type: none"> <li>Goes off 15 seconds after blinking starts</li> </ul>	steering lock, but the steering lock cannot be released (e.g. the lock bar is stuck in the steering column).	Push the engine switch while turning the steering wheel left or right.
Malfunction in smart access system with push-button start	"CHECK S/T LOCK" <ul style="list-style-type: none"> <li>Goes off 15 seconds after the engine switch is turned off while blinking</li> </ul>	<ul style="list-style-type: none"> <li>There is a short in the devices activating the motor.</li> <li>There is a problem in the steering lock ECU or main body ECU.</li> </ul>	Troubleshoot by following "HOW TO PROCEED WITH TROUBLESHOOTING" <a href="#">INFO</a> .

