

Last Modified: 7-13-2007		1.7 D
Service Category: Vehicle Interior	Section: Theft Deterrent/Keyless Entry	
Model Year: 2008	Model: ES350	Doc ID: RM0000026P0010X
Title: THEFT DETERRENT: THEFT DETERRENT SYSTEM: SYSTEM DESCRIPTION (2008 ES350)		

## SYSTEM DESCRIPTION

### 1. OUTLINE OF THEFT DETERRENT SYSTEM

- The theft deterrent system can be set by locking the doors using the transmitter or key, or by opening and closing the doors.
- The alarm function will activate when someone attempts forcibly to lock any of the doors or open any of the doors, engine hood, and luggage door while the system is in the armed state.
- In the alarm sounding state, the system illuminates the interior light and blinks the taillights, headlights, and hazard warning lights. At the same time, the system sounds the vehicle horns and security horn to deter break-in and theft as well as to warn people around the vehicle.
- The theft deterrent system has 2 modes; one is the active arming mode (see ACTIVE ARMING MODE) and the other is passive arming mode \*1 (see PASSIVE ARMING MODE). The passive arming mode can be switched ON/OFF using the specified method.
- Each mode has 4 states; a disarmed state, an arming preparation state, an armed state and an alarm sounding state.

(a) Disarmed state:

- The alarm function is not operating.
- The theft deterrent system is not operating.

(b) Arming preparation state:

- The time until the system goes into the armed state.
- The theft deterrent system is not operating.

(c) Armed state:

- The theft deterrent system is operating.

(d) Alarm sounding state:

- Alarm function is operating.

Alarm time:

Approx. 60 sec. \*1

Approx. 30 sec. \*2

Refer to the table below for alarm methods and time:

Alarm Method	Headlight	Blinking
	Taillight	Blinking
	Hazard Warning Light	Blinking
	Interior Light	Illuminating
	Vehicle Horn	Sounding (approx. 0.4 second cycles)
	Security Horn	Sounding (approx. 0.4 second cycles)
Alarm Time	Approx. 60 sec. *1 Approx. 30 sec. *2	

**HINT:**

- If any of the doors are unlocked when the key is not in the actuation area during the armed state, a forced door lock signal will be output (see FORCED DOOR LOCK CONTROL).
- \*1: for North America
- \*2: Except North America

**2. FUNCTION OF MAIN COMPONENT**

COMPONENT	FUNCTION
Security indicator	Informs driver of theft deterrent system status.
Security horn	Sounds when attempted brake-in or theft is detected.
Headlights	Blink when attempted break-in or theft is detected.
Taillights	<ul style="list-style-type: none"> <li>• Blink when attempted break-in or theft is detected.</li> <li>• Come on when the theft deterrent system has entered into alarm sounding state. *</li> </ul>
Hazard warning lights	Blink when attempted break-in or theft is detected.
Interior light	Lights up when attempted break-in or theft is detected.
Vehicle horns	Sound when attempted break-in or theft is detected.
Door courtesy light switch	Detects door status (open or closed).
Door lock position switch	Detects door status (locked or unlocked).
Engine hood courtesy switch	Detects engine hood status (open or closed).
Luggage compartment door courtesy switch	Detects luggage compartment door status (open or closed).
Certification ECU	<ul style="list-style-type: none"> <li>• Receives engine hood courtesy switch status.</li> <li>• Sends operation signal to security indicator and security horn.</li> </ul>

**HINT:**

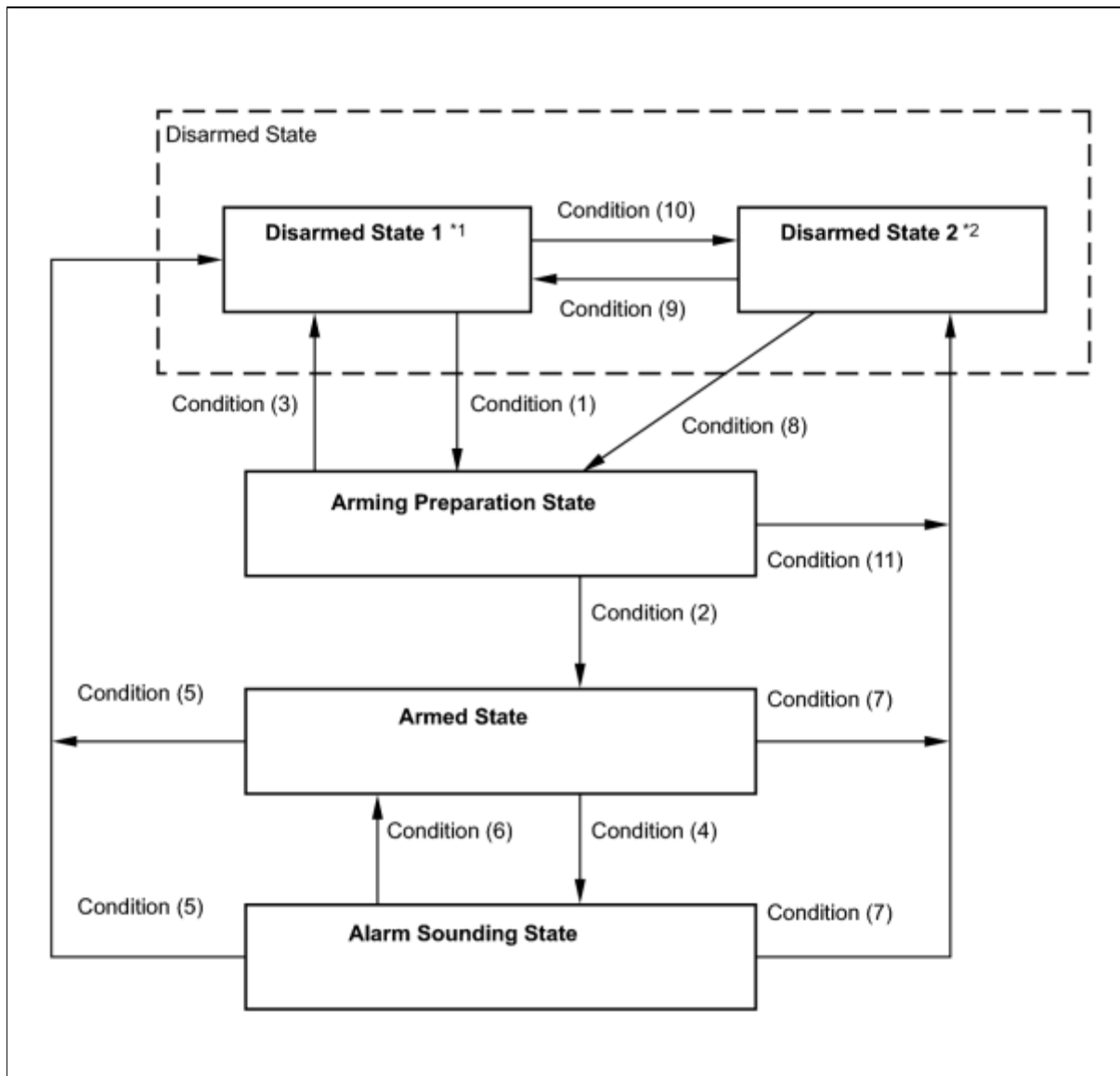
\*: for North America

**3. ACTIVE ARMING MODE****HINT:**

Active arming mode starts the alarm control immediately after the doors are locked.

(a) Active arming mode:

This system activates as described in the diagram below when one of items for each condition is met.

**HINT:**

- \*1: Disarmed state 1 is the normal disarmed state.
- \*2: Disarmed state 2 is set from either the disarmed state 1 or the arming preparation state.

CONDITION	ITEM
Condition (1)	<p>In the disarmed state 1, when the key is not in the actuation area, the system state is switched if one of the following conditions is met.</p> <ol style="list-style-type: none"> <li>1. With all doors, engine hood and luggage compartment door closed, lock all doors by key operation.</li> <li>2. With all doors, engine hood and luggage compartment door closed, lock all doors by wireless operation.</li> <li>3. With engine hood and luggage compartment door closed and all doors locked with any door still opened, close the open door.</li> </ol>
Condition (2)	After condition (1) is met, allow approx. 30 seconds to elapse.
Condition (3)	<ol style="list-style-type: none"> <li>1. Unlock any door.</li> <li>2. Open any door.</li> <li>3. Turn the engine switch on (IG or ACC).</li> <li>4. Reconnect battery.</li> </ol>

Condition (4)	<ol style="list-style-type: none"> <li>1. Open engine hood.</li> <li>2. Open luggage compartment door.</li> <li>3. Reconnect battery.</li> <li>4. Open any door.</li> <li>5. Unlock any door when all doors are locked, without using wireless operation.</li> <li>6. Turn the engine switch off. After 5 seconds or more have elapsed, turn the engine switch on (IG).</li> </ol>
Condition (5)	<ol style="list-style-type: none"> <li>1. Unlock only driver's door or all doors by wireless operation.</li> <li>2. Unlock only driver's door or all doors by key operation.</li> <li>3. Turn the engine switch on (IG) and run the engine for more than 2 seconds.</li> </ol>
Condition (6)	After approx. 60 seconds, alarm stops and system returns to armed state.
Condition (7)	Open the luggage compartment door by wireless operation.
Condition (8)	<ol style="list-style-type: none"> <li>1. Close the engine hood when the luggage compartment door is closed.</li> <li>2. Close the luggage compartment door when the engine hood is closed.</li> </ol>
Condition (9)	<ol style="list-style-type: none"> <li>1. Unlock any door.</li> <li>2. Open any door.</li> <li>3. Turn the engine switch from off to on (IG or ACC).</li> <li>4. Reconnect the battery.</li> </ol>
Condition (10)	<p>In the disarmed state 1, when the key is not in the actuation area, the system state is switched if one of the following conditions is met.</p> <ol style="list-style-type: none"> <li>1. With all doors closed, and the engine hood or luggage compartment door open, lock all doors by wireless operation.</li> <li>2. With all doors closed, and the engine hood or luggage compartment door open, lock all doors by key operation.</li> <li>3. With the engine hood or luggage compartment door open and all doors locked with any door still open, close the open door.</li> </ol>
Condition (11)	<ol style="list-style-type: none"> <li>1. Open engine hood.</li> <li>2. Open luggage compartment door by switch or wireless operation.</li> </ol>

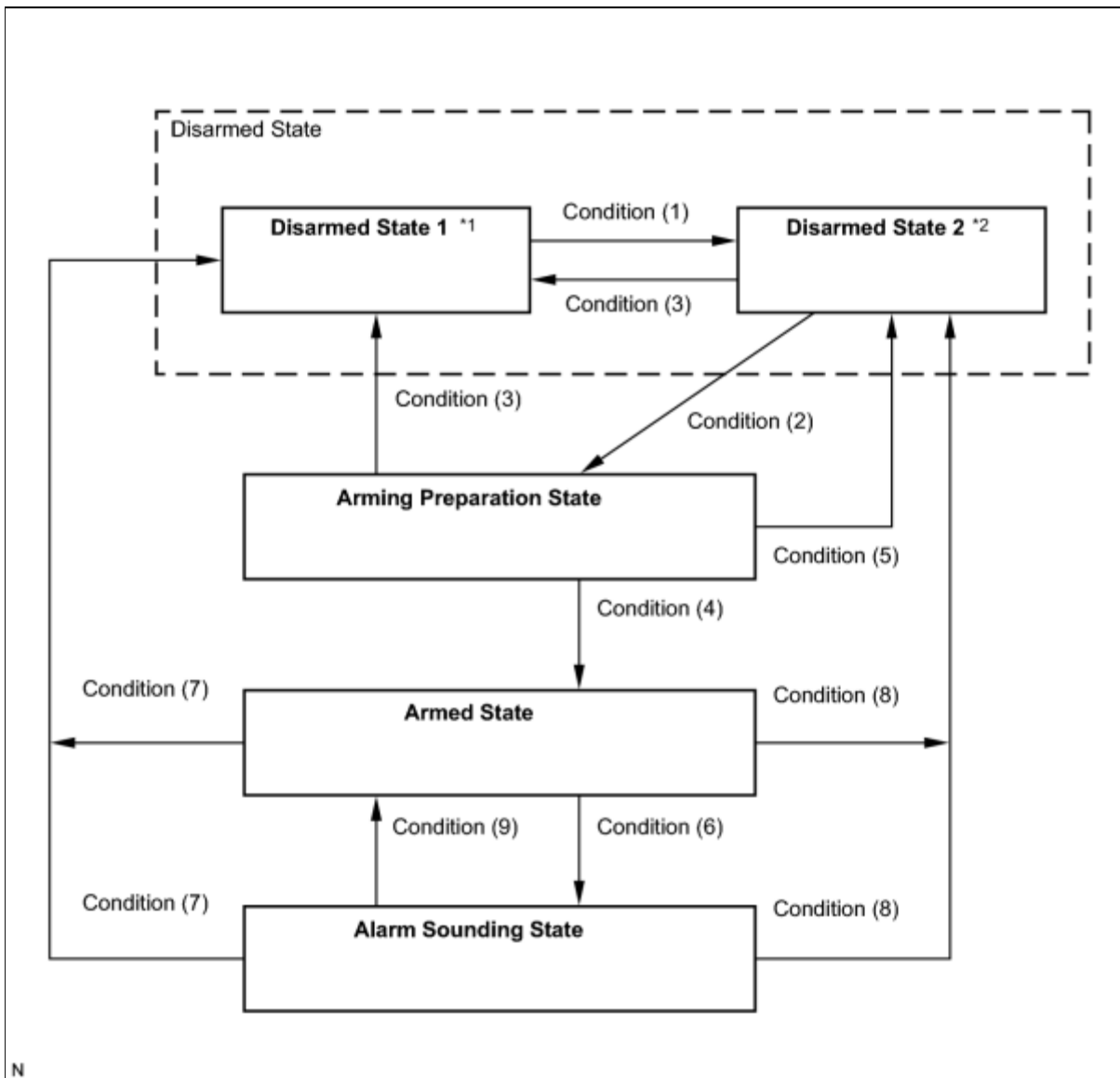
#### 4. PASSIVE ARMING MODE (for North America)

##### HINT:

- This mode starts the alarm control after the key is out of the actuation area and doors are closed.
- This mode can be switched ON/OFF by the specified method.
- The alarm is initially set (when shipped from the factory) to active arming mode (not passive arming mode).
- During passive arming mode, the theft deterrent system goes into the armed state even if the doors are not locked.
- Detecting that the doors are unlocked does not set off the alarm during passive arming mode.
- A forced door lock signal is not output during passive arming mode (see FORCED DOOR LOCK CONTROL).
- Although the theft deterrent system detects that the doors are opened during passive arming mode, the alarm will not go off immediately because an entry delay time is set.
- If the condition (1) of active arming mode is met during passive arming mode, the theft deterrent system will switch to active arming mode.

(a) Passive arming mode:

This system activates as described in the diagram below when one of items for each condition is met.

**HINT:**

- \*1: Disarmed state 1 is the normal disarmed state.
- \*2: Disarmed state 2 is set from either the disarmed state 1 or the arming preparation state.

CONDITION	ITEM
Condition (1)	<ol style="list-style-type: none"> <li>1. With any door open, turn the engine switch off.</li> <li>2. With the engine switch off, open any door.</li> </ol>
Condition (2)	All doors, engine hood and luggage compartment door are closed.
Condition (3)	<ol style="list-style-type: none"> <li>1. Unlock only driver's door or all doors by wireless operation.</li> <li>2. Unlock only driver's door or all doors by key operation.</li> <li>3. Reconnect battery.</li> <li>4. Turn the engine switch on (IG or ACC).</li> </ol>
Condition (4)	After condition (1) is met, allow approx. 30 seconds to elapse.
Condition (5)	<ol style="list-style-type: none"> <li>1. Open any door.</li> <li>2. Open engine hood.</li> <li>3. Open luggage compartment door.</li> <li>4. Unlock luggage compartment door.</li> </ol>

Condition (6)	<ol style="list-style-type: none"> <li>1. Open any door and allow entry delay time <sup>*1</sup> to elapse.</li> <li>2. Open engine hood.</li> <li>3. Open luggage compartment door.</li> <li>4. Reconnect battery.</li> <li>5. Turn the engine switch off. After 5 seconds or more have elapsed, turn the engine switch on (IG).</li> </ol>
Condition (7)	<ol style="list-style-type: none"> <li>1. Unlock only driver's door or all doors by wireless operation.</li> <li>2. Unlock only driver's door or all doors by key operation.</li> <li>3. Turn the engine switch on (IG) and run the engine for more than 2 seconds.</li> <li>4. Turn the engine switch on (IG) within 5 seconds after turning it off or during it is on (IG).</li> </ol>
Condition (8)	Open luggage compartment door by wireless operation.
Condition (9)	After approx. 60 sec., alarm stops and system returns to armed state.

**HINT:**

**\*1: When any door is opened while all the doors are closed during passive arming mode, the entry delay time starts. If the switch condition (armed state → disarmed state 1 or 2) is met during the entry delay time, the theft deterrent system will return to disarmed state 1 or 2. However, if the switch condition for disarmed state 1 or 2 is not met, the theft deterrent system will recognize it as a theft and set off the alarm. Entry delay time of 0, 14 or 30 sec. can be selected by the customizing function.**

**5. FORCED DOOR LOCK CONTROL**

(a) The forced door lock control prevents the vehicle from being tampered with. Immediately after a door is unlocked (alarm starts), all doors are forced to lock by a forced door lock signal.

(1) Conditions that force the doors to lock:

When the key is not in the actuation area and both of the following conditions are met.

- The theft deterrent system is in the alarm sounding state of active arming mode.
- Any door is unlocked.

**6. ALARM MEMORY FUNCTION (for North America)**

(a) If the alarm is set off (tampering is detected) while the theft deterrent system is armed, it will be recorded by the alarm memory function. Whenever the theft deterrent system is cancelled, the alarm memory function causes the taillights to light up for 2 seconds in order to inform you that the alarm has been set off.

(1) Conditions of the alarm memory function that cause the taillights to light up:

When the theft deterrent system has entered the alarm sounding state (tampering has been detected) even once, the taillights will light up for 2 seconds if any of the following conditions is met.

- Switched to the disarmed state from the armed state during active arming mode.
- Switched to the disarmed state 1 from the armed state during passive arming mode.

**HINT:**

**Active arming mode: See ACTIVE ARMING MODE.**

**Passive arming mode: See PASSIVE ARMING MODE.**

**7. PANIC ALARM CONTROL**

(a) The panic alarm control makes it possible to voluntarily set off the panic alarm by pressing the PANIC switch on the wireless transmitter.

## (1) Conditions that cause the panic alarm control to set off the panic alarm:

The panic alarm control sets off the panic alarm by pressing the PANIC switch on the wireless transmitter under the following conditions:

- The engine switch is off.
- The theft deterrent system is not in the alarm sounding state. (This condition is common both to active arming mode and to passive arming mode.)

## (2) Conditions that cause the panic alarm control to shut off the alarm:

The panic alarm control shuts off the panic alarm when any of the following conditions is met during panic alarm operation:

- The engine switch is turned on (IG).
- The panic alarm switch is turned on again.
- Any of the switches on the wireless transmitter (LOCK/UNLOCK or LUGGAGE OPEN) is pressed.
- The panic alarm ends (approx. 60 sec. have passed). \*1
- The panic alarm ends (approx. 30 sec. have passed). \*2
- The theft deterrent system switches to the alarm sounding state. Under this condition, the theft deterrent system is controlling the alarm rather than the panic alarm control. In order to cancel this alarm, refer to the theft deterrent system alarm sounding state cancellation procedure. (This condition is common both to active arming mode to passive arming mode.)

**HINT:**

- \*1: for North America
- \*2: Except North America

**8. SECURITY INDICATOR OUTPUT**

(a) The certification ECU outputs a signal to light up the security indicator, according to the state of the theft deterrent system. However, some of the actual lighting conditions of the security indicator are different from the output signals of the certification ECU.

**Output:**

STATE OF THEFT DETERRENT SYSTEM*	SECURITY INDICATOR	
	OUTPUT SIGNALS FROM CERTIFICATION ECU	ACTUAL LIGHTING CONDITION
Disarmed state 1, 2	OFF	OFF (Immobiliser system unset) BLINKING (Immobiliser system set)
Arming preparation state	ON	ON
Armed state	OFF	BLINKING
Alarm sounding state	ON	ON

**Blinking cycle:**

TIME	SECURITY INDICATOR
0.2 sec.	ON
1.8 sec.	OFF

**HINT:**

- \*: The above condition is common both to active arming mode and to passive arming mode.

- When the immobiliser system is set, the security indicator blinks during both the disarmed state and the armed state, due to the output signals from the immobiliser system.

