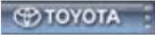
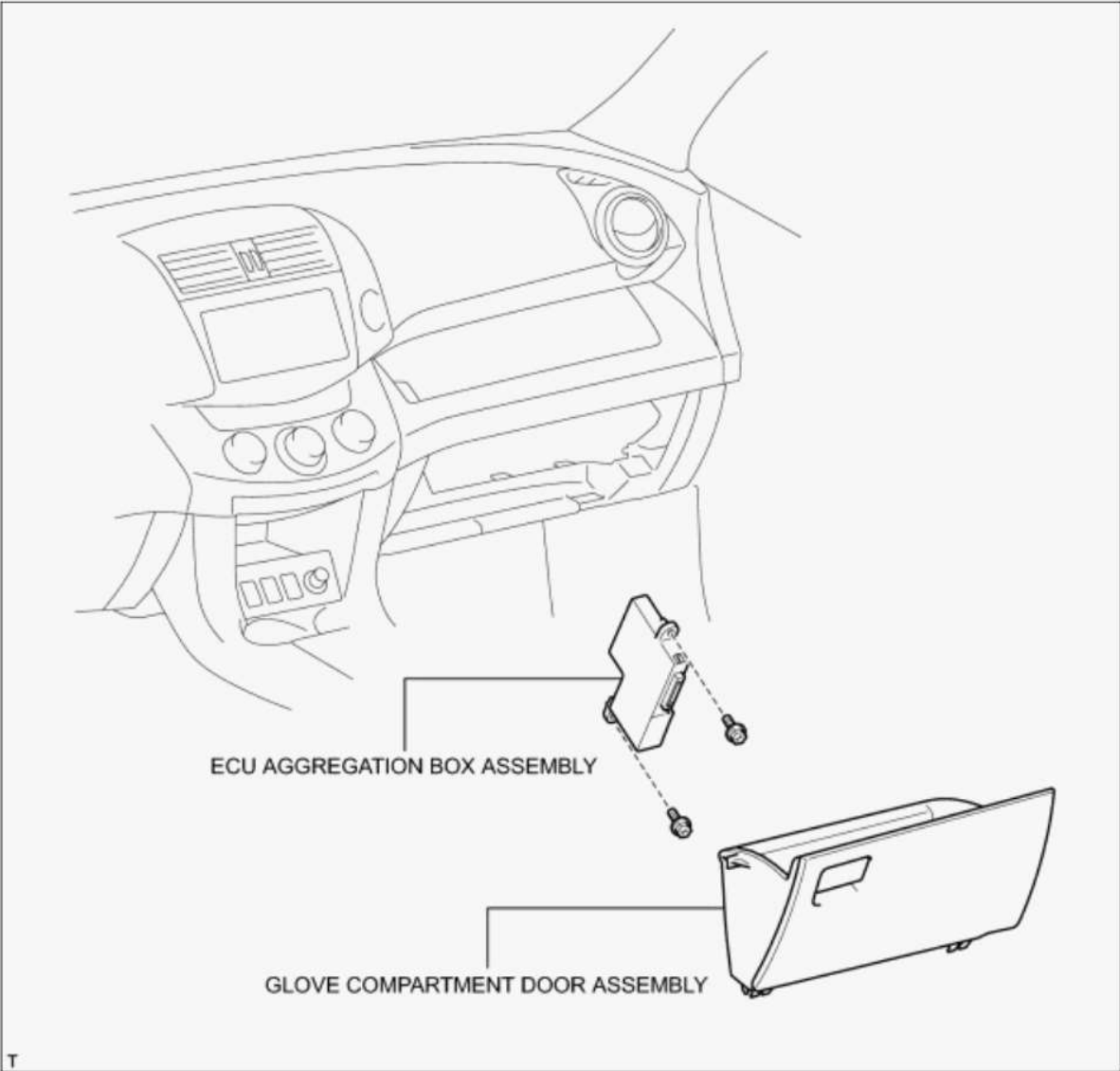


Last Modified: 9-7-2011	6.4 K	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000003QCT003X
Title: ENGINE IMMOBILISER: CERTIFICATION ECU (w/ Smart Key System): COMPONENTS (2011 RAV4)		

COMPONENTS

ILLUSTRATION

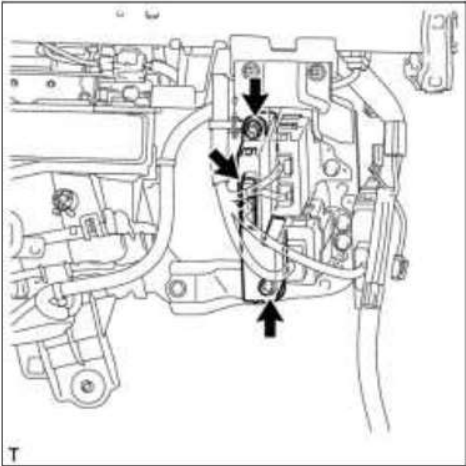


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Last Modified: 9-7-2011	6.4 A	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000003QCS003X
Title: ENGINE IMMOBILISER: CERTIFICATION ECU (w/ Smart Key System): INSTALLATION (2011 RAV4)		

INSTALLATION

1. INSTALL ECU AGGREGATION BOX ASSEMBLY



(a) Install the ECU aggregation box with the 2 bolts.

(b) Connect the connector.

2. INSTALL GLOVE COMPARTMENT DOOR ASSEMBLY INFO

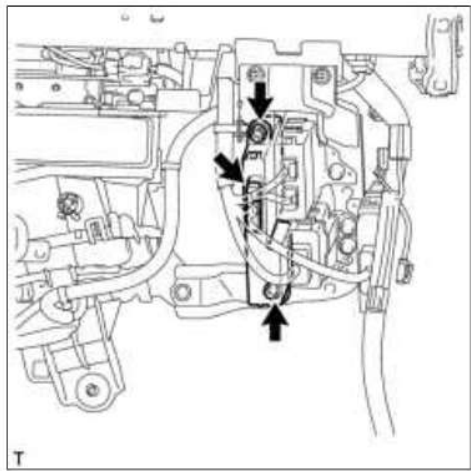
3. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL



Last Modified: 9-7-2011	6.4 A	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000003QCU003X
Title: ENGINE IMMOBILISER: CERTIFICATION ECU (w/ Smart Key System): REMOVAL (2011 RAV4)		

REMOVAL

- 1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
- 2. REMOVE GLOVE COMPARTMENT DOOR ASSEMBLY INFO
- 3. REMOVE ECU AGGREGATION BOX ASSEMBLY



(a) Disconnect the connector.

(b) Remove the 2 bolts and ECU aggregation box.



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Last Modified: 9-7-2011	6.4 C	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001RM3008X
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): B278A: Short to GND in Immobiliser System Power Source Circuit (2011 RAV4)		

DTC	B278A	Short to GND in Immobiliser System Power Source Circuit
-----	-------	---

DESCRIPTION

This DTC is output when the engine switch power source supply line is open or short.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
B278A	Engine switch power source supply line is open or short	• Wire harness • Engine switch • ECU aggregation box (certification ECU)

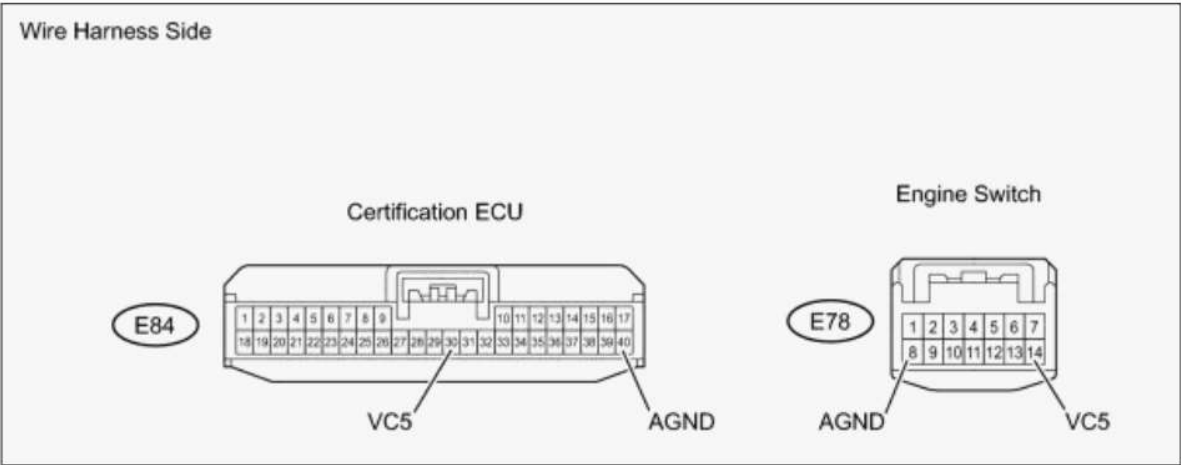
WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - ENGINE SWITCH)
----	---



- (a) Disconnect the E84 ECU connector.
- (b) Disconnect the E78 switch connector.
- (c) Measure the resistance of the wire harness side connectors.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E84-30 (VC5) - E78-14 (VC5)	Always	Below 1 Ω
E84-40 (AGND) - E78-8 (AGND)		
E84-30 (VC5) or E78-14 (VC5) - Body ground	Always	10 kΩ or higher
E84-40 (AGND) or E78-8 (AGND) - Body ground		

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK
▼

2. REPLACE ENGINE SWITCH

- (a) Temporarily replace the engine switch with a new or normally functioning one.
 - for 2AR-FE: [INFO](#) .
 - for 2GR-FE: [INFO](#) .

NEXT
▼

3. CHECK FOR DTC

(a) Clear the DTC  .

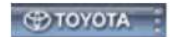
(b) Recheck for the DTC.

OK:

B278A is not output.

NG  **REPLACE ECU AGGREGATION BOX
(CERTIFICATION ECU)**

OK  **END (ENGINE SWITCH IS DEFECTIVE)**



Last Modified: 9-7-2011	6.4 C	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000002UBW03BX
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): B279A: Theft Deterrent System Communication Line High Fixation (2011 RAV4)		

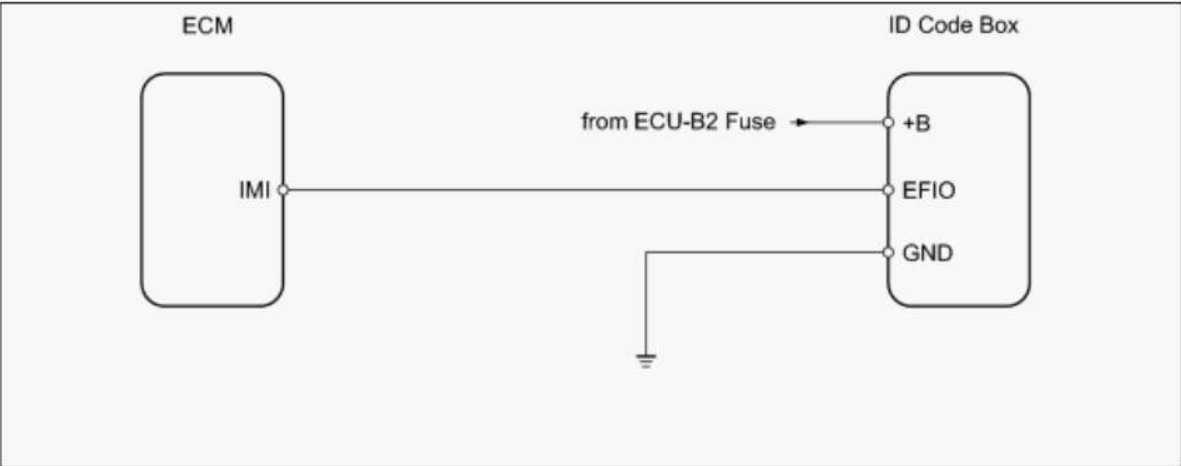
DTC	B279A	Theft Deterrent System Communication Line High Fixation
-----	-------	---

DESCRIPTION

If the communication line (EFIO-IMI) to the ID code box is stuck on HI output, the ECM outputs this DTC.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
B279A	The communication line (EFIO-IMI) between the ECM and the ID code box is stuck on HI output.	• Wire harness • ID code box • ECM

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	CLEAR DTC
----	-----------

(a) Clear the DTCs INFO .

NEXT

▼

2. CHECK FOR DTC

(a) Check for DTCs INFO .

HINT:
If DTCs other than DTC B279A are output, troubleshoot those DTCs first.

Result

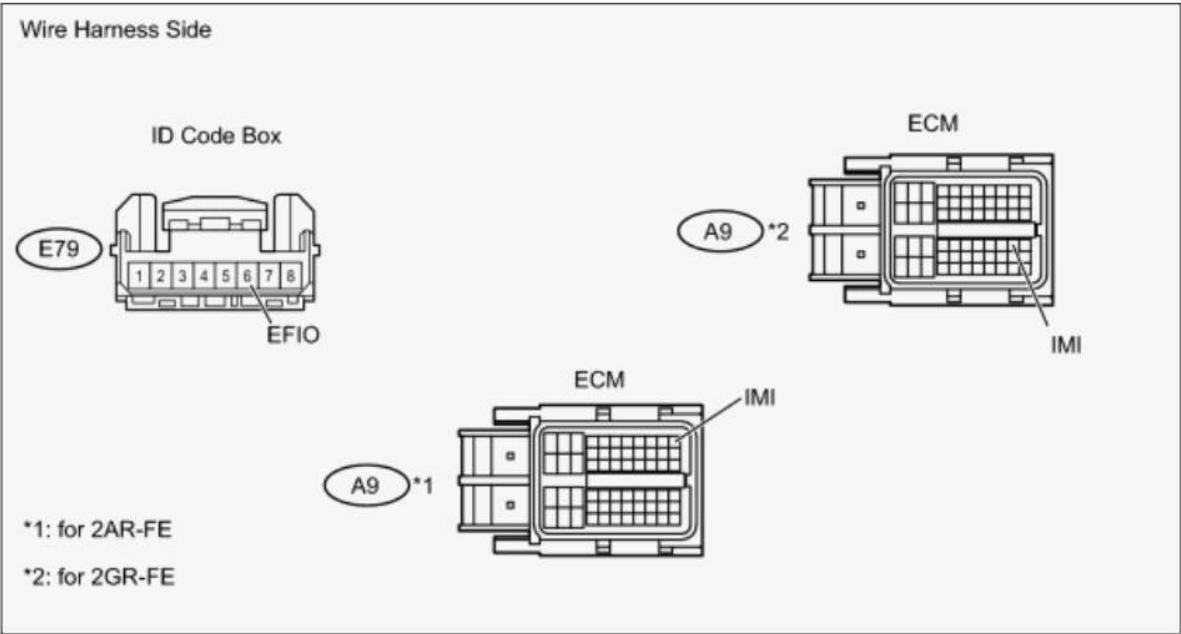
RESULT	PROCEED TO
DTC B279A is output	A
DTC B279A and other DTCs are output	B

B ▶ Go to **DIAGNOSTIC TROUBLE CODE CHART**

A

▼

3. CHECK HARNESS AND CONNECTOR (ID CODE BOX - ECM)



- (a) Disconnect the E79 box connector.
- (b) Disconnect the A9 ECM connector.
- (c) Measure the resistance and voltage according to the value(s) in the table below.

Standard Resistance:

for 2AR-FE
for 2GR-FE

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E79-6 (EFIO) - A9-11 (IMI)	Always	Below 1 Ω
E79-6 (EFIO) or A9-11 (IMI) - Body ground	Always	10 k Ω or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E79-6 (EFIO) - A9-40 (IMI)	Always	Below 1 Ω
E79-6 (EFIO) or A9-40 (IMI) - Body ground	Always	10 k Ω or higher

Standard Voltage:

for 2AR-FE
for 2GR-FE

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E79-6 (EFIO) - Body ground	Always	Below 1 V
A9-11 (IMI) - Body ground	Always	Below 1 V

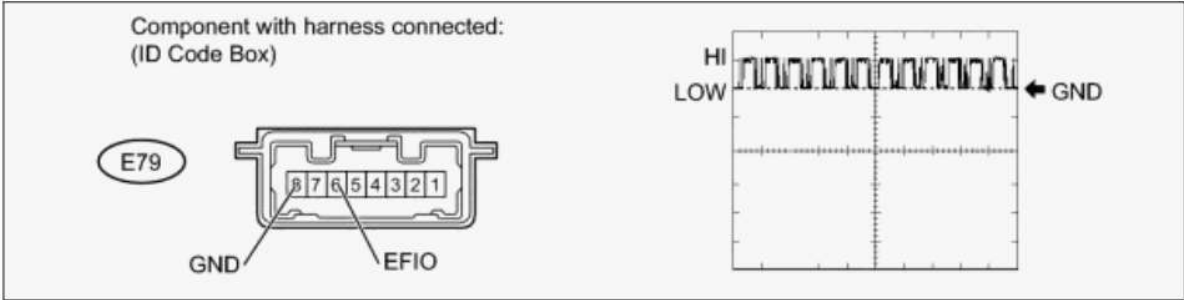
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
-------------------	-----------	---------------------

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E79-6 (EFIO) - Body ground	Always	Below 1 V
A9-40 (IMI) - Body ground	Always	Below 1 V

NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK


4. **CHECK ID CODE BOX (OUTPUT)**



(a) Using an oscilloscope, check the waveform.

Measurement Condition

ITEM	CONTENT
Tester Connection	E79-6 (EFIO) - E79-8 (GND)
Tool Setting	10 V/DIV., 100 msec./DIV.
Condition	Engine switch on (IG)

OK:
Waveform is output normally (see illustration).

Result

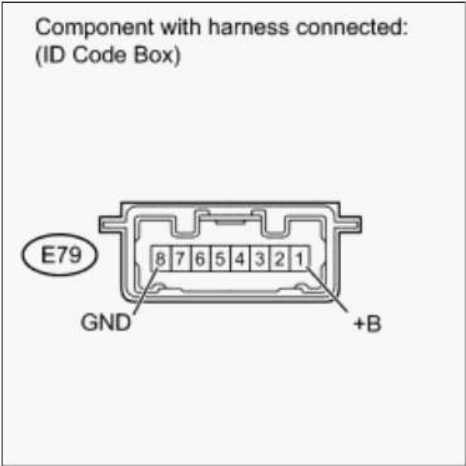
RESULT	PROCEED TO
OK (for 2AR-FE)	A
OK (for 2GR-FE)	B
NG	C

B  **REPLACE ECM**

- C▶ CHECK ID CODE BOX (POWER SOURCE AND BODY GROUND)
- A▶ REPLACE ECM

5. CHECK ID CODE BOX (POWER SOURCE AND BODY GROUND)

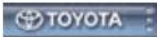
- (a) Turn the engine switch on (IG).
- (b) Measure the voltage according to the value(s) in the table below.



Standard Voltage:

TESTER CONNECTOR	CONDITION	SPECIFIED CONDITION
E79-1 (+B) - E79-8 (GND)	Always	11 to 14 V

- NG▶ REPAIR OR REPLACE HARNESS OR CONNECTOR
- OK▶ REPLACE ID CODE BOX



Last Modified: 9-7-2011	6.4 C	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000002UBX039X
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): B279C: Theft Deterrent System Presence Detection (2011 RAV4)		

DTC	B279C	Theft Deterrent System Presence Detection
------------	--------------	--

DESCRIPTION

If an ECM that is incompatible with the engine immobiliser system is installed, the ECM stores this DTC.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
B279C	An ECM that is incompatible with the engine immobiliser system is installed.	ECM

INSPECTION PROCEDURE

PROCEDURE

1.	REPLACE CURRENT ECM WITH PROPER ECM
-----------	--

(a) Replace the current ECM with a proper ECM.

- for 2AR-FE: [INFO](#) .
- for 2GR-FE: [INFO](#) .

NEXT  **END**



Last Modified: 9-7-2011	6.4 C	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001RLZ009X
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): B2784: Antenna Coil Open / Short (2011 RAV4)		

DTC	B2784	Antenna Coil Open / Short
------------	--------------	----------------------------------

DESCRIPTION

This DTC is output when there is an open or short in the key coil (built into the engine switch).

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
B2784	Antenna coil open/short	- ECU aggregation box (certification ECU) - Engine switch

INSPECTION PROCEDURE

PROCEDURE

1.	CHECK FOR DTC
-----------	----------------------

(a) Clear the DTC  .

(b) Recheck for the DTC.

OK:

B2784 is not output.

NG  **REPLACE ENGINE SWITCH**

OK  **USE SIMULATION METHOD TO CHECK**

2.	REPLACE ENGINE SWITCH
-----------	------------------------------

(a) Temporarily replace the engine switch with a new or normally functioning one.

- for 2AR-FE:  .
- for 2GR-FE:  .

NEXT**3. CHECK FOR DTC**

(a) Clear the DTC  .

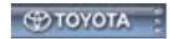
(b) Recheck for the DTC.

OK:

B2784 is not output.

NG  **REPLACE ECU AGGREGATION BOX
(CERTIFICATION ECU)**

OK  **END (ENGINE SWITCH IS DEFECTIVE)**



Last Modified: 9-7-2011	6.4 C	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001TAE009X
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): B2785: Communication Malfunction between ECUs Connected by LIN (2011 RAV4)		

DTC	B2785	Communication Malfunction between ECUs Connected by LIN
------------	--------------	--

DESCRIPTION

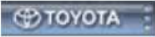
Refer to DTC B2785 [INFO](#) .

WIRING DIAGRAM

Refer to DTC B2785 [INFO](#) .

INSPECTION PROCEDURE

Refer to DTC B2785 [INFO](#) .



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Last Modified: 9-7-2011	6.4 C	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001T9O009X
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): B2789: No Response from ID BOX (2011 RAV4)		

DTC	B2789	No Response from ID BOX
------------	--------------	--------------------------------

DESCRIPTION

This DTC is output when the certification ECU does not receive LIN communication signals from the ID code box via LIN for 10 seconds.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
B2789	Certification ECU does not receive LIN communication signals from ID code box via LIN for 10 seconds	• Wire harness • ID code box • ECU aggregation box (certification ECU)

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

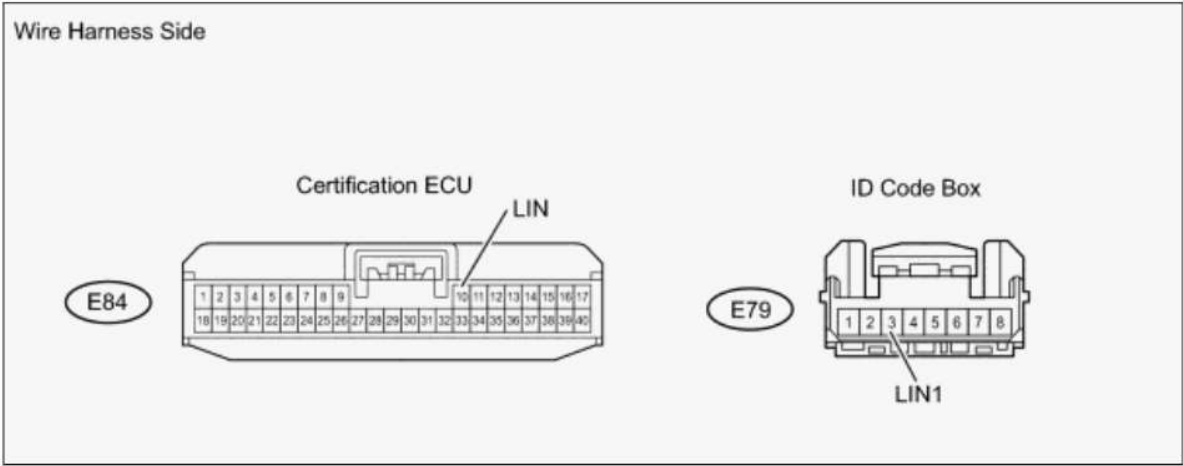
1.	CHECK FOR DTC
-----------	----------------------

- (a) Clear the DTC INFO .
- (b) Recheck for the DTC.
- OK:
- B2789 is not output.

NG ► CHECK WIRE HARNESS AND CONNECTOR (CERTIFICATION ECU - ID CODE BOX)

OK ► USE SIMULATION METHOD TO CHECK

2. CHECK WIRE HARNESS AND CONNECTOR (CERTIFICATION ECU - ID CODE BOX)



- (a) Disconnect the E84 ECU connector.
- (b) Disconnect the E79 box connector.
- (c) Measure the resistance of the wire harness connectors.
- Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
LIN (E84-10) - LIN1 (E79-3)	Always	Below 1 Ω
LIN (E84-10) or LIN1 (E79-3) - Body ground	Always	10 kΩ or higher

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR

OK
▼

3. REPLACE ECU AGGREGATION BOX

- (a) Temporarily replace the ECU aggregation box (certification ECU) with a new one  .

NEXT**4. CHECK FOR DTC**

- (a) Clear the DTC  .

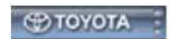
- (b) Recheck for the DTC.

OK:

B2789 is not output.

NG  **REPLACE ID CODE BOX**

OK  **END (CERTIFICATION ECU IS DEFECTIVE)**



Last Modified: 9-7-2011	6.4 C	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001RM4008X
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): B2790: ID BOX EEPROM Malfunction (2011 RAV4)		

DTC	B2790	ID BOX EEPROM Malfunction
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DESCRIPTION

This DTC is output when the ID code box detects an internal malfunction.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
B2790	ID code box detects internal malfunction	ID code box

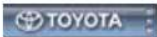
INSPECTION PROCEDURE

PROCEDURE

1.	REPLACE ID CODE BOX
----	---------------------

(a) Replace the ID code box INFO .

NEXT  END



Last Modified: 9-7-2011	6.4 C	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001RM5009X
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): B2791: Communication Condition Failure between ECM (2011 RAV4)		

DTC	B2791	Communication Condition Failure between ECM
------------	--------------	--

DESCRIPTION

This DTC is output when the ID code box does not respond to a verification request signal from the ECM.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
B2791	One of following conditions is met: • Communication failure between ID code box and ECM • Communication line malfunction • ID code verification failure	• Wire harness • ECU aggregation box (certification ECU) • Instrument panel junction block (main body ECU) • ID code box • Steering lock actuator (steering lock ECU) • ECM

INSPECTION PROCEDURE

PROCEDURE

1.	CHECK FOR DTC
----	---------------

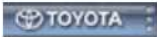
- (a) Clear the DTC  .
- (b) Recheck for the DTC.

OK:

B2791 and other DTC output do not reoccur.

NG  GO TO DTC CHART

OK  USE SIMULATION METHOD TO CHECK



Last Modified: 9-7-2011	6.4 C	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001RLX009X
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): B2799: Engine Immobiliser System Malfunction (2011 RAV4)		

DTC	B2799	Engine Immobiliser System Malfunction
------------	--------------	--

DESCRIPTION

This DTC is output when one of the following occurs: 1) the ECM detects errors in its own communications with the ID code box; 2) the ECM detects errors in the communication lines; or 3) the ECU communication ID between the ID code box and ECM is different and an engine start is attempted. Before troubleshooting for this DTC, make sure no certification ECU DTCs are present. If present, troubleshoot the certification ECU DTCs first.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
B2799	One of following conditions is met: - Error in communication between ECM and ID code box - Error in communication lines - Communication ID is different during communication with ID code box	- Wire harness - ID code box - ECM

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

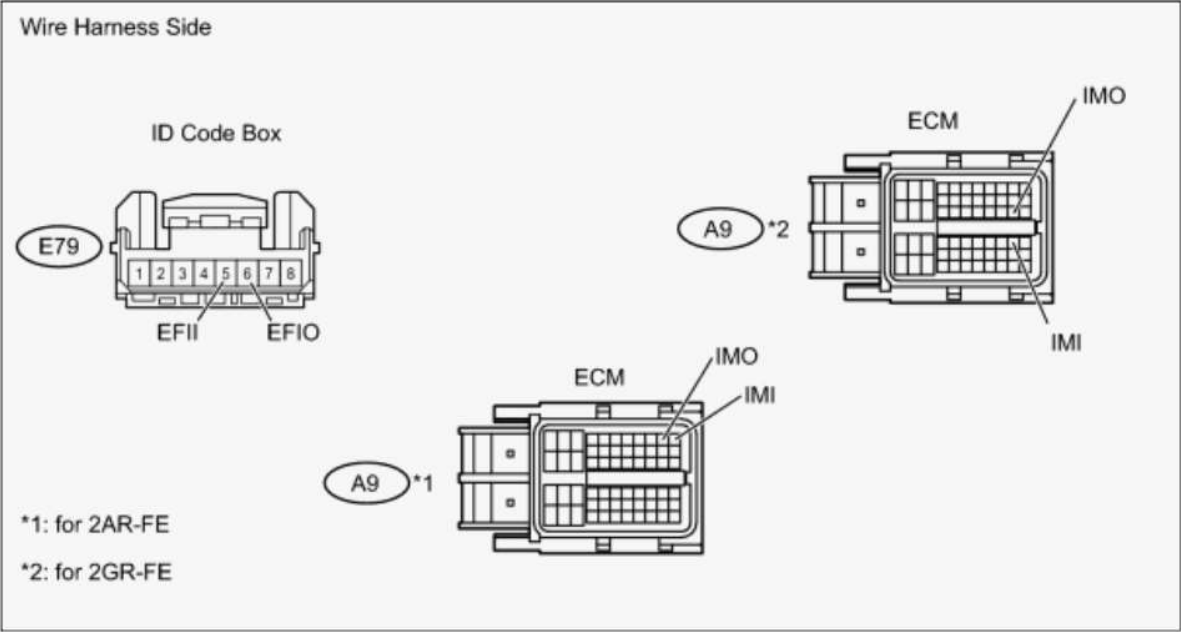
1. CHECK FOR DTC

- (a) Clear the DTC INFO .
- (b) Recheck for the DTC.
- OK:
- B2799 is not output.

NG ▶ CHECK HARNESS AND CONNECTOR (ID CODE BOX - ECM)

OK ▶ USE SIMULATION METHOD TO CHECK

2. CHECK HARNESS AND CONNECTOR (ID CODE BOX - ECM)



- (a) Disconnect the E79 box connector.
- (b) Disconnect the A9 ECM connector.
- (c) Measure the resistance of the wire harness connectors.
- Standard Resistance:
- for 2AR-FE
- for 2GR-FE

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
-------------------	-----------	---------------------

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E79-5 (EFII) - A9-10 (IMO)	Always	Below 1 Ω
E79-6 (EFIO) - A9-11 (IMI)		
E79-5 (EFII) or A9-10 (IMO) - Body ground	Always	10 kΩ or higher
E79-6 (EFIO) or A9-11 (IMI) - Body ground		

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E79-5 (EFII) - A9-29 (IMO)	Always	Below 1 Ω
E79-6 (EFIO) - A9-40 (IMI)		
E79-5 (EFII) or A9-29 (IMO) - Body ground	Always	10 kΩ or higher
E79-6 (EFIO) or A9-40 (IMI) - Body ground		

NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK


3.

REREGISTER ECU CODE REGISTRATION

- (a) Clear the DTC  .
- (b) Reregister the ID code box and ECM communication ID  .
- (c) Check that the engine starts.

OK:
Engine starts.

NG  **CHECK ID CODE BOX (OPERATION)**

OK  **END (PROBLEM HAS BEEN CAUSED BY REGISTRATION FAILURE)**

4.

CHECK ID CODE BOX (OPERATION)

- (a) Temporarily replace the ID code box with a new one  .
- (b) Check that the engine starts.

OK:
Engine starts.

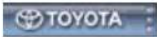
Result

RESULT	PROCEED TO
OK	A
NG (for 2AR-FE)	B
NG (for 2GR-FE)	C

B ► REPLACE ECM

C ► REPLACE ECM

A ► END (ID CODE BOX IS DEFECTIVE)



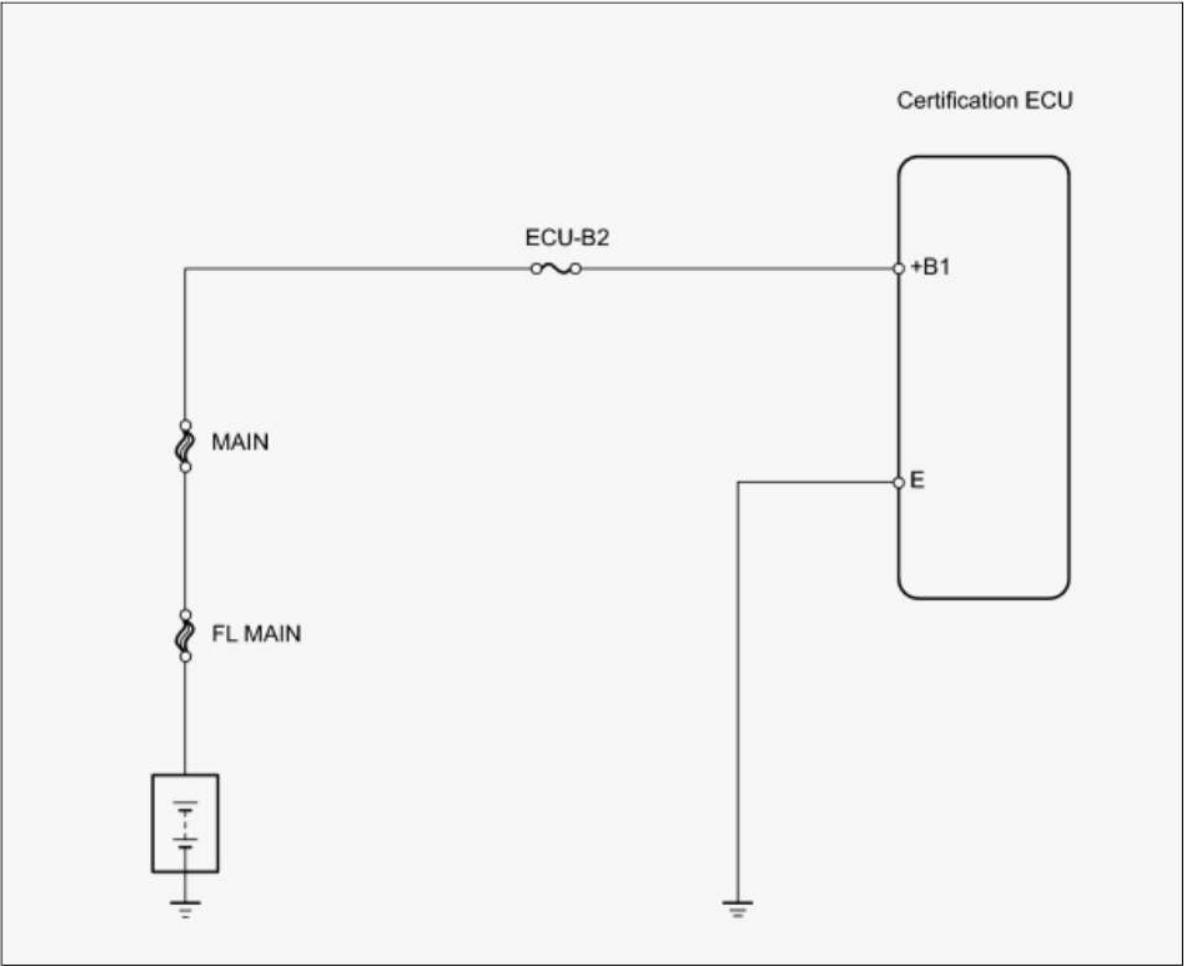
Last Modified: 9-7-2011	6.4 J	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001TB6008X
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): Certification ECU Power Source Circuit (2011 RAV4)		

Certification ECU Power Source Circuit

DESCRIPTION

This circuit provides power to operate the certification ECU.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1. INSPECT FUSE (ECU-B)

- (a) Remove the ECU-B2 fuse from the engine room No. 2 relay block.
- (b) Measure the resistance of the fuse.
- Standard Resistance:
- Below 1 Ω

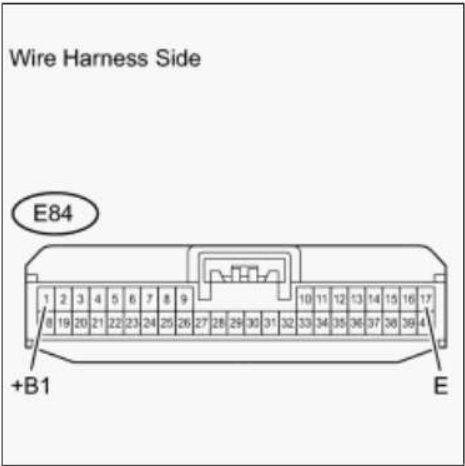
NG

REPLACE FUSE

OK

2. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - BATTERY AND BODY GROUND)

- (a) Disconnect the E84 ECU connector.
- (b) Measure the resistance and voltage of the wire harness side connector.
- Standard Resistance:



TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E84-17 (E) - Body ground	Always	Below 1 Ω

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E84-1 (+B1) - Body ground	Always	11 to 14 V

NG

REPAIR OR
REPLACE
HARNESS OR
CONNECTOR

OK

PROCEED TO
NEXT
CIRCUIT
INSPECTION

ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Sma... <https://techinfo.toyota.com/t3Portal/document/rm/RM16B0U/xhtml/RM...>

**SHOWN IN
PROBLEM
SYMPTOMS
TABLE**



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Last Modified: 9-7-2011	6.4 U	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000002M6V00YX
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): DATA LIST / ACTIVE TEST (2011 RAV4)		

DATA LIST / ACTIVE TEST

1. READ DATA LIST

HINT:

Using the Techstream to read the Data List allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

NOTICE:

In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Smart Key / Data List.
- According to the display on the Techstream, read the Data List.

Smart Key

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Ignition Switch	Engine switch on (IG) signal / ON or OFF	ON: Engine switch on (IG) OFF: Engine switch off or on (ACC)	-
#Codes	Number of trouble codes	-	-
ACC Switch	Engine switch on (ACC) signal / ON or OFF	ON: Engine switch on (ACC, IG) or start OFF: Engine switch off	-
Immobiliser	Engine immobiliser system status / Set or Unset	Set: Key is not in cabin Unset: Key is in cabin	-
Master Key	Master key code signal / Match or No Match	Match: Master key code sent No Match: Unmatched master key code sent	-
Different Encrypt Code	Transponder chip signal / OK or NG	OK: Correct data sent NG: Incorrect data sent	-
Different Serial Number	Transponder chip signal / OK or NG	OK: Correct data sent NG: Incorrect data sent	-
Frame Error	Transponder chip signal / OK or NG	OK: Correct data sent NG: Incorrect data sent	-

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Response	Transponder chip signal / OK or NG	OK: Correct data sent NG: Incorrect data sent	-
BCC Malfunction	Transponder chip signal / OK or NG	OK: Correct data sent NG: Incorrect data sent	-
Abnormal Status	Transponder chip data / OK or NG	OK: Data OK NG: Data error	-
ID-BOX Sleep Condition	ID code box condition / Yes or No	Yes: ID code box in sleep condition No: ID code box not in sleep condition	-
ID-BOX Start Condition	ID code box condition / Yes or No	Yes: ID code box sends wake up signal No: ID code box does not send wake up signal	-
Engine Start Request (Past)	ID code box start request condition / OK or NG	OK: Start request condition signal received (past) NG: Start request condition signal not received (past)	-
3bit Code Request	3 bit code request / OK or NG	OK: 3 bit code is received NG: 3 bit code is not received	-
S Code Check	S code verification result / OK or NG	OK: Verification confirmed NG: Verification not confirmed	-
L Code Check	L code verification result / OK or NG	OK: Verification confirmed NG: Verification not confirmed	-
Unlock Request Receive	Steering unlock command reception status / OK or NG	OK: Steering unlock request received NG: Steering unlock request not received	-
Lock Request Receive	Steering lock command reception status / OK or NG	OK: Steering lock request received NG: Steering lock request is not received	-
Engine Start Request	ID code box start request condition / OK or NG	OK: Start request condition signal received (past) NG: Start request condition signal not received (past)	-
S Code Check (Past)	S code verification result (past) / OK or NG	OK: Verification confirmed (past) NG: Verification not confirmed (past)	-
L Code Check (Past)	L code verification result (past) / OK or NG	OK: Verification confirmed (past) NG: Verification not confirmed (past)	-

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
EFI Code Receive	EFI code receive (when DTC stored) / OK or NG	OK: EFI code received NG: EFI code not received	-
EFI communication	EFI communication / OK or NG	OK: EFI communication normal NG: EFI communication abnormal	-

2. PERFORM ACTIVE TEST

HINT:

Using the Techstream to perform Active Tests allows relays, VSVs, actuators and other items to be operated without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Tests early in troubleshooting is one way to save diagnostic time. Data List information can be displayed while performing Active Tests.

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Smart Key / Active Test.
- According to the display on the Techstream, perform the Active Test.

Smart Key

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Security Indicator	Security indicator light	ON / OFF	Test possible when following conditions met: - Key is in cabin - Engine switch on (IG)



Last Modified: 9-7-2011	6.4 D	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001GV704TX
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): DIAGNOSIS SYSTEM (2011 RAV4)		

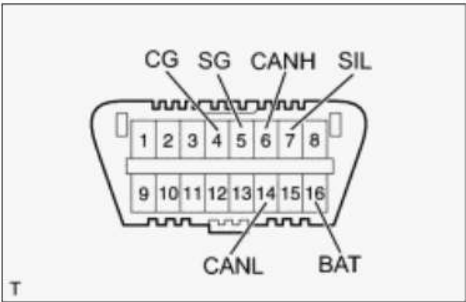
DIAGNOSIS SYSTEM

1. DESCRIPTION

(a) Engine immobiliser system data and Diagnostic Trouble Code (DTCs) can be read through the vehicle's Data Link Connector 3 (DLC3). In some cases, a malfunction may be occurring in the immobiliser system even though the security indicator light is not illuminated. When the system seems to be malfunctioning, use the Techstream to check for malfunctions and perform repairs.

2. CHECK DLC3

(a) The vehicle's ECU uses ISO 15765-4 for communication protocol. 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 Ω
SG (5) - Body ground	Signal ground	Always	Below 1 Ω
BAT (16) - Body ground	Battery positive	Always	11 to 14 V
CANH (6) - CANL (14)	CAN bus line	Engine switch off*	54 to 69 Ω
CANH (6) - CG (4)	HIGH-level CAN bus line	Engine switch off*	200 Ω or higher
CANL (14) - CG (4)	LOW-level CAN bus line	Engine switch off*	200 Ω or higher
CANH (6) - BAT (16)	HIGH-level CAN bus line	Engine switch off*	6 kΩ or higher
CANL (14) - BAT (16)	LOW-level CAN bus line	Engine switch off*	6 kΩ or higher

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

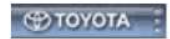
If the result is not as specified, the DLC3 may have a

malfunction. Repair or replace the harness and connector.

- (b) Connect the cable of the Techstream to the DLC3, turn the engine switch on (IG) and attempt to use the Techstream. If the screen displays a communication error message, a problem exists in the vehicle side of the Techstream side.

HINT:

- If communication is normal when the tool is connected to another vehicle, inspect the DLC3 on the original vehicle.
- If communication is still impossible when the tool is connected to another vehicle, the problem is probably in the tool itself. Consult the Service Department listed in the tool's instruction manual.



Last Modified: 9-7-2011	6.4 S	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001RLU008X
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): DIAGNOSTIC TROUBLE CODE CHART (2011 RAV4)		

DIAGNOSTIC TROUBLE CODE CHART

1. CERTIFICATION ECU DTC CHART

Certification ECU:

DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
B2784	Antenna Coil Open / Short	- Engine switch - ECU aggregation box (certification ECU)	INFO
B2785	Communication Malfunction between ECUs Connected by LIN	- Wire harness - ECU aggregation box (certification ECU) - Instrument panel junction block (main body ECU) - Steering lock actuator (steering lock ECU) - ID code box	INFO
B2789	No Response from ID BOX	- Wire harness - ECU aggregation box (certification ECU) - ID code box	INFO
B278A	Short to GND in Immobiliser System Power Source Circuit	- Wire harness - Engine switch - ECU aggregation box (certification ECU)	INFO
B2790	ID BOX EEPROM Malfunction	ID code box	INFO
B2791	Communication Condition Failure between ECM	- Wire harness - ECU aggregation box (certification ECU) - Instrument panel junction block (main body ECU) - Steering lock actuator (steering lock ECU) - ID code box - ECM	INFO

2. ECM DTC CHART

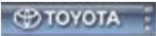
HINT:

The DTCs for the engine immobiliser system are specified above. If other codes are output, check the DTC chart

for the engine control system.

ECM:

DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
B2799	Engine Immobiliser System Malfunction	- Wire harness - ID code box - ECM	INFO
B279A	Theft Deterrent System Communication Line High Fixation	- Wire harness - ID code box - ECM	INFO
B279C	Theft Deterrent System Presence Detection	ECM	INFO



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Last Modified: 9-7-2011	6.4 D	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001TCQ012X
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): DTC CHECK / CLEAR (2011 RAV4)		

DTC CHECK / CLEAR

1. CHECK DTC

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG) and turn the Techstream on.
- Select the following menu items: Body Electrical / (desired system) / Trouble Codes.
- Check DTCs and then write them down.

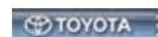
HINT:

Refer to the Techstream operator's manual for further details.

- Confirm the details of the DTCs .

2. CLEAR DTC

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG) (do not start the engine) and turn the Techstream on.
- Select the following menu items: Body Electrical / (desired system) / Trouble Codes.
- Erase the DTCs.



Last Modified: 9-7-2011	6.4 D	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001TC9014X
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): HOW TO PROCEED WITH TROUBLESHOOTING (2011 RAV4)		

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

Use these procedures to troubleshoot the engine immobiliser system.

*: Use the Techstream.

1.	VEHICLE BROUGHT TO WORKSHOP
----	-----------------------------

NEXT

▼

2.	INSPECT BATTERY VOLTAGE
----	-------------------------

Standard voltage:
11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding.

NEXT

▼

3.	CRANK ENGINE FOR MORE THAN 10 SECONDS
----	---------------------------------------

NEXT

▼

4.	CHECK FOR DTC*
----	----------------

- (a) Check for DTCs and make a note of any codes that are output INFO.
- (b) Clear the DTC.
- (c) Recheck for DTCs. Based on the DTC output above, try to cause the output of the same SFI system DTC or engine immobiliser system DTC by simulating the original activity indicated by the DTC.

Result:

RESULT	PROCEED TO
DTC output does not reoccur	A
SFI system DTC output reoccurs	B
Engine immobiliser system DTC output reoccurs	C

- B ▶ Go to SFI SYSTEM
- D ▶ Go to step 7

A
▼

5.	PROBLEM SYMPTOMS TABLE
----	------------------------

Result:

RESULT	PROCEED TO
Fault is not listed in problem symptoms table	A
Fault is listed in problem symptoms table	B

- B ▶ Go to step 7

A
▼

6.	OVERALL ANALYSIS AND TROUBLESHOOTING*
----	---------------------------------------

- (a) DATA LIST / ACTIVE TEST INFO

(b) Terminals of ECU 

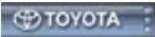
NEXT


7.	ADJUST, REPAIR OR REPLACE
-----------	----------------------------------

NEXT


8.	CONFIRMATION TEST
-----------	--------------------------

NEXT  **END**



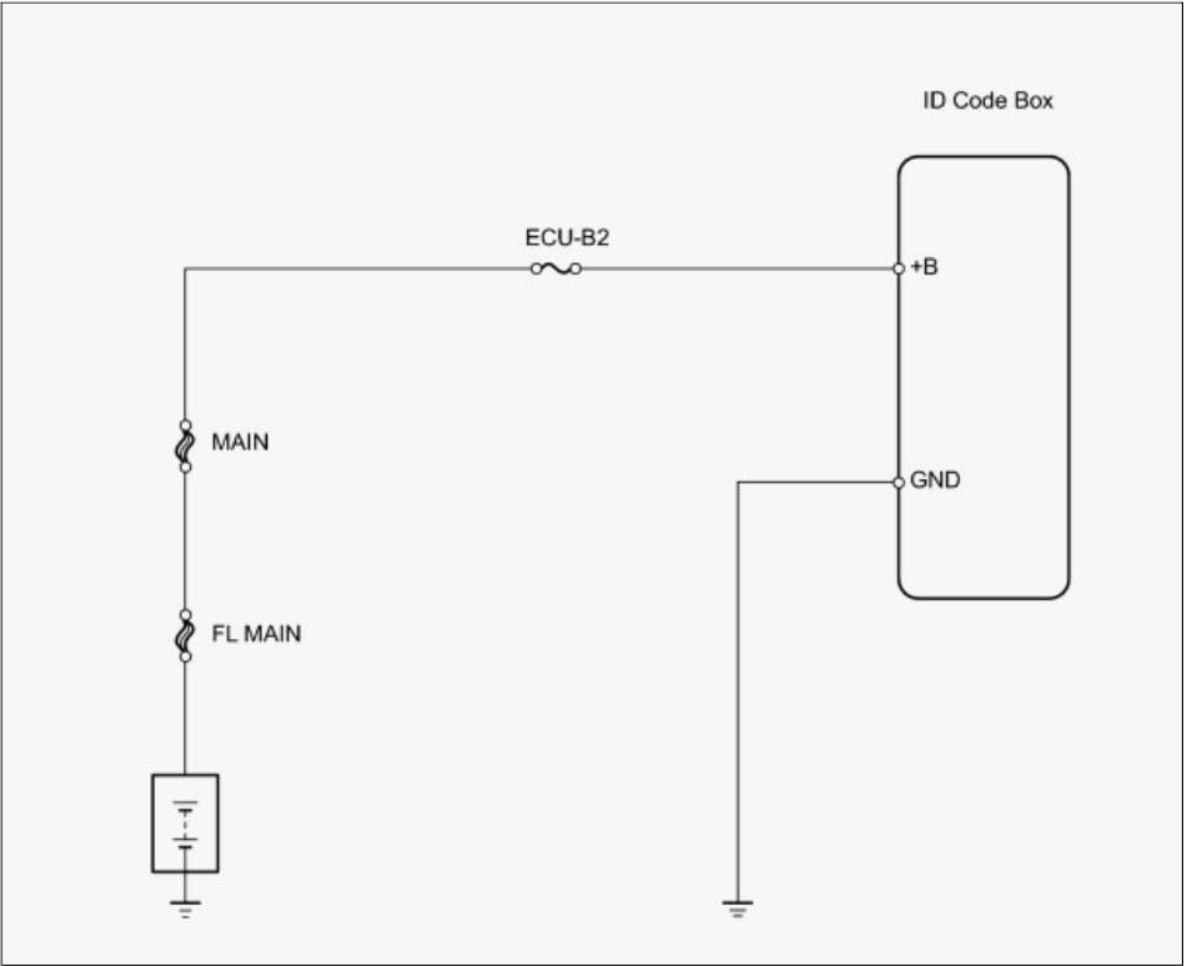
Last Modified: 9-7-2011	6.4 J	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001TB5008X
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): ID Code Box Power Source Circuit (2011 RAV4)		

ID Code Box Power Source Circuit

DESCRIPTION

This circuit provides power to operate the ID code box.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1. INSPECT FUSE (ECU-B)

- (a) Remove the ECU-B2 fuse from the engine room No. 2 relay block.
- (b) Measure the resistance of the fuse.
- Standard Resistance:
- Below 1 Ω

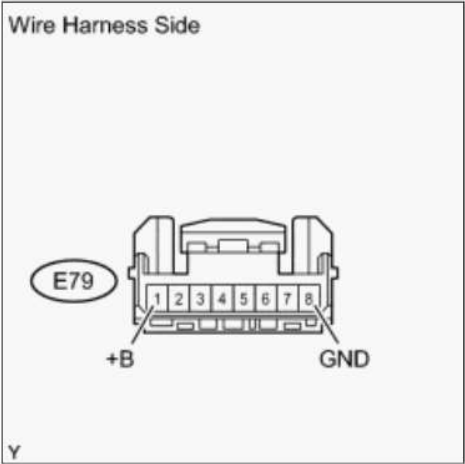
NG

REPLACE FUSE

OK

2. CHECK HARNESS AND CONNECTOR (ID CODE BOX - BATTERY AND BODY GROUND)

- (a) Disconnect the E79 box connector.
- (b) Measure the resistance and voltage of the wire harness side connector.
- Standard Resistance:



TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E79-8 (GND) - Body ground	Always	Below 1 Ω

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E79-1 (+B) - Body ground	Always	11 to 14 V

NG

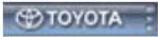
REPAIR OR
REPLACE
HARNESS OR
CONNECTOR

OK

PROCEED TO
NEXT
CIRCUIT
INSPECTION
SHOWN IN

ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Sma... <https://techinfo.toyota.com/t3Portal/document/rm/RM16B0U/xhtml/RM...>

**PROBLEM
SYMPTOMS
TABLE**



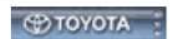
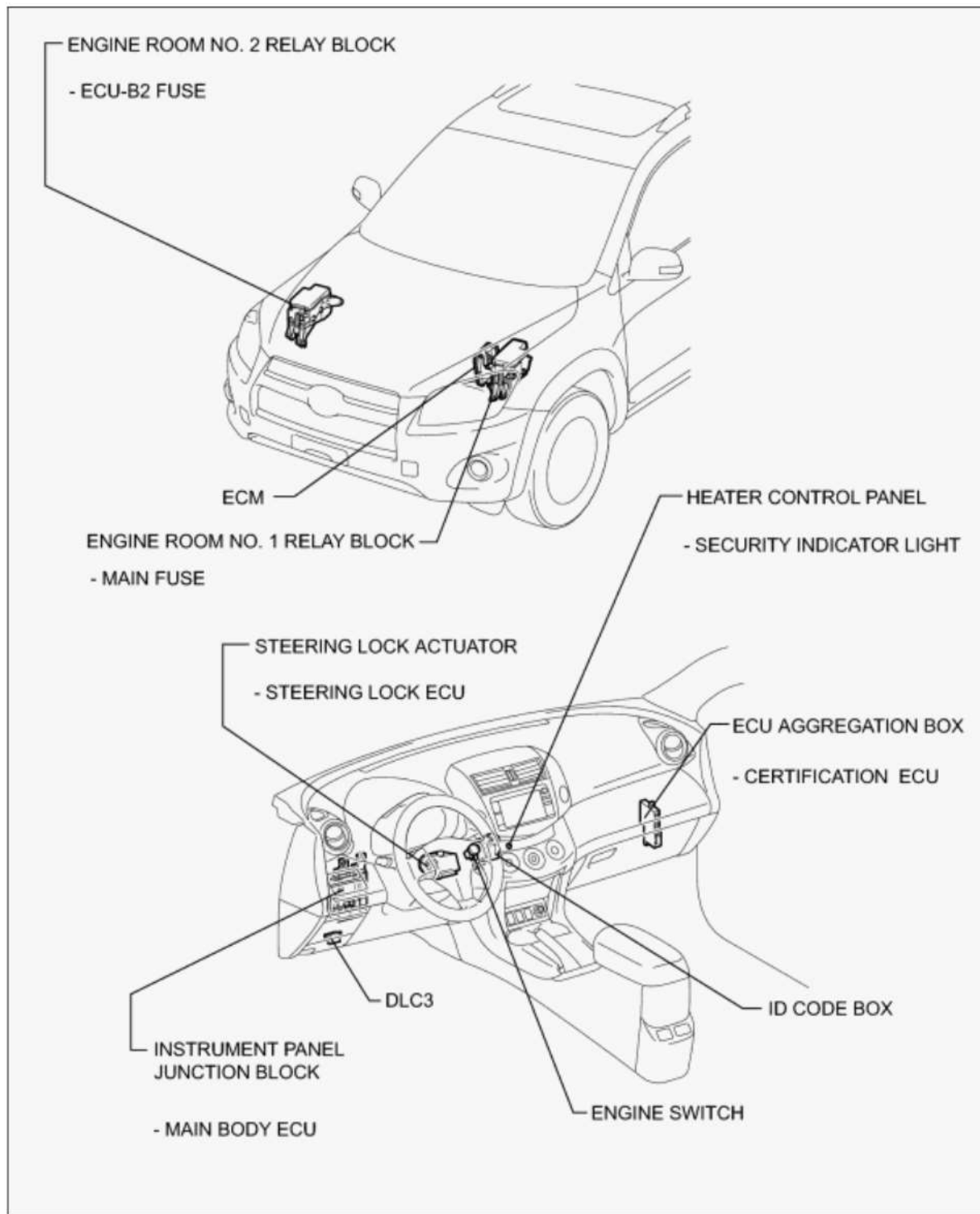
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Last Modified: 9-7-2011	6.4 R	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001RLN007X
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): PARTS LOCATION (2011 RAV4)		

PARTS LOCATION

ILLUSTRATION

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Model Year: 2011	Model: RAV4	Doc ID: RM000001RLM00AX
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): PRECAUTION (2011 RAV4)		

PRECAUTION

1. PRECAUTIONS WHEN USING TECHSTREAM

- (a) When using the Techstream to troubleshoot the LIN communication line: Connect the Techstream to the vehicle, and turn a courtesy light switch on and off at 1.5 second intervals until communication between the Techstream and vehicle begins.
- (b) After all DTCs are cleared, check if the trouble occurs again 6 seconds after the engine switch is turned on (IG).

2. PRECAUTIONS FOR EACH FUNCTION

- (a) Precautions for the key:

The key is a precision instrument. Be sure to observe the following:

- Do not drop or strike the key.
- Do not keep the key in a high temperature area for a long time.
- Do not use an ultrasonic washing machine to clean the key.
- Keep the key away from magnets or magnetized items during use.
- Do not attach any stickers to the key.

- (b) Precaution for the engine start function:

- (1) Before starting the engine, firmly depress the brake pedal until the indicator of the engine switch illuminates in green.
- (2) Be sure to turn the engine switch off before disconnecting the cable from the negative (-) battery terminal. When the battery cable is disconnected, the power source mode (off, on (ACC), on (IG)) is memorized. When battery depletion causes the vehicle's power to be cut, be sure to remember the power source mode.
- (3) After the battery is removed and reinstalled, be sure to wait 10 seconds or more before the next engine start. The engine may not start immediately after the battery is reinstalled.
- (4) When the key battery is depleted and it is held close to the engine switch to start the engine, several warnings may sound. However, the warnings most likely sound because the vehicle cannot determine if the key is in the vehicle or not, and not because there is an actual malfunction. The following warnings may sound:

- Driver side door open → closed:

- Warning to inform that the shift lever is in a position other than P, and the power source mode is not off.
- Warning to inform that the shift lever is in P but the power source mode is not off.

- Door other than the driver side door open → closed:

- Warning to inform that a passenger is carrying the key out of the vehicle.

- (c) Precautions for the battery built into the key and the vehicle battery:

- (1) When the door is being locked, the vehicle battery is used to transmit a radio wave. The battery may become depleted if the vehicle remains stopped for a long time. If the vehicle is not used for a long time, recharge or replace the battery or cancel the smart key system.

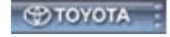
ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Sma... <https://techinfo.toyota.com/t3Portal/document/rm/RM16B0U/xhtml/RM...>

- (2) When the door is being locked with the key in the detection area of the door oscillator, the battery is used to regulate communication between the key and vehicle. If the vehicle is not used, keep the key away from the vehicle (more than 2 m (6.56 ft.)).

3. PRECAUTION FOR ECU AGGREGATION BOX

NOTICE:

If the ECU aggregation box (certification ECU) and/or steering lock actuator (steering lock ECU) is replaced, open and close the driver side door to record the current steering lock position into the certification ECU. If this is not performed, the engine may not start.



Last Modified: 9-7-2011	6.4 T	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001RLW00EX
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): PROBLEM SYMPTOMS TABLE (2011 RAV4)		

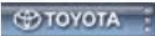
PROBLEM SYMPTOMS TABLE

HINT:

Use the table below to help determine the cause of the problem symptom. The potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.

Engine immobiliser system:

SYMPTOM	SUSPECTED AREA	SEE PAGE
Engine does not start	1. ID code box power source circuit	INFO
	2. Certification ECU power source circuit	INFO
	3. Steering lock ECU power source circuit	INFO
	4. Entry and start system (for door lock)	INFO
	5. Smart Key system (for starting: 2AR-FE)	INFO
	6. Smart Key system (for starting: 2GR-FE)	INFO
	7. SFI system (2AR-FE)	INFO
	8. SFI system (2GR-FE)	INFO
Security indicator light malfunction	1. Heater control panel	INFO
	2. Transponder key ECU	INFO



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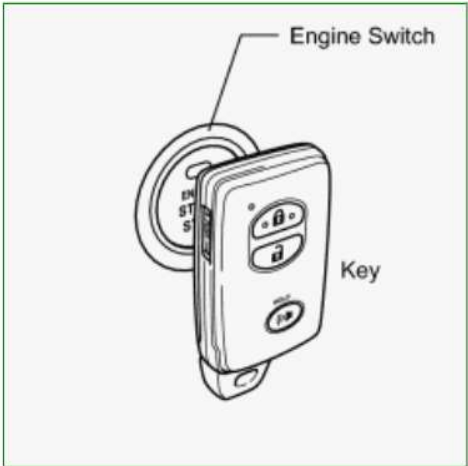
Last Modified: 9-7-2011	6.4 M	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000000QYF02PX
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): REGISTRATION (2011 RAV4)		

REGISTRATION

1. DESCRIPTION OF CODE REGISTRATION

HINT:

- The engine immobiliser function ID code is the same as the recognition code for the smart key system and wireless transmitter. Registering an ID code enables the smart key system, wireless door lock control function and engine immobiliser function to be operated.
- Code registration is needed when the certification ECU, ID code box, steering lock ECU, ECM or key is replaced with a new one.
-



This vehicle does not have a key slot. Therefore, touch the logo of the key to the engine switch to register the key, as shown in the illustration.

2. KEY REGISTRATION PROCEDURES WHEN ADDING OR REPLACING KEY OR WHEN KEY IS LOST

HINT:

- The following procedures require the use of the Techstream:
 - New key ID registration
 - Additional key ID registration
 - Key ID erasure
- A maximum of 7 keys can be registered.

	REGISTRATION PROCEDURE CONDITION	PROCEDURE	REFER TO
--	--	-----------	----------

	REGISTRATION PROCEDURE CONDITION	PROCEDURE	REFER TO
Registering an additional key	Customer must bring at least 1 key	1. Register additional keys as necessary (additional key ID registration)	PROCEDURE "C"
- Replacing a key - Making a lost key unable HINT: After key ID erasure, any remaining keys that are not registered at this time cannot be used. Therefore, after key ID erasure, register all remaining keys.	Customer must bring at least 1 key	1. Using remaining key, clear all registered keys except one (key ID erasure)	PROCEDURE "D"
		2. Register additional keys as necessary (additional key ID registration)	PROCEDURE "C"
All keys are lost	-	1. Reset all keys (all keys ID erasure (key code reset))	PROCEDURE "E"
		2. Register all keys (new key ID registration)	PROCEDURE "A"

3. PART REPLACEMENT AND KEY REGISTRATION PROCEDURES

- (a) If a malfunctioning ECU is discovered through troubleshooting of the smart key system, use the ECU replacement and key registration procedures in the table below.

HINT:

- The following procedures require the use of the Techstream:
 - New key ID registration
 - Additional key ID registration
 - Key ID erasure
 - ECU code registration
- A maximum of 7 keys can be registered.

MALFUNCTIONING ECU	CONDITION		PROCEDURE	REFER TO
Certification ECU	Customer has brought all keys		1. Replace certification ECU	-
			2. Reregister all keys (new key ID registration)	PROCEDURE "B"
	Some keys	Key ID codes can be	1. Clear key codes (key ID erasure)	PROCEDURE "D"

MALFUNCTIONING ECU	CONDITION		PROCEDURE	REFER TO
	are lost	registered and cleared	2. Perform additional key registration procedure (additional key ID registration)	PROCEDURE "C"
			HINT: If some keys are not registered during above steps, they will be disabled because they cannot be registered later.	
			3. Replace certification ECU	
			4. Reregister all keys (new key ID registration)	PROCEDURE "B"
	Key ID codes cannot be either registered or cleared		1. Replace certification ECU	-
			2. Replace ID code box	-
			3. Reregister all keys (new key ID registration)	PROCEDURE "A"
			HINT: If key codes cannot be cleared or additional keys cannot be registered due to a malfunction in certification ECU, replace ID code box and certification ECU. If some keys are not registered during above steps, they will be disabled because they cannot be registered later.	
			4. ECU communication ID registration	PROCEDURE "G"
	All keys are lost		1. Replace certification ECU	-
			2. Replace ID code box	-
			3. Register all keys (new key ID registration)	PROCEDURE "A"
			4. ECU communication ID registration	PROCEDURE "G"
ID code box	Customer has brought at least 1 key		1. Replace ID code box	-
			2. Register recognition codes in ECUs (ECU code registration)	PROCEDURE "F"
			3. ECU communication ID registration	PROCEDURE "G"
	All keys are lost		1. Replace certification ECU	-
			2. Replace ID code box	-
			3. Register all keys (new key ID registration)	PROCEDURE "A"

MALFUNCTIONING ECU	CONDITION	PROCEDURE	REFER TO
		4. ECU communication ID registration	PROCEDURE "G"
Steering lock ECU	Customer has brought at least 1 key	1. Replace Steering lock ECU	-
		2. Register recognition codes in ECUs (ECU code registration)	PROCEDURE "F"
	All keys are lost	1. Replace certification ECU	-
		2. Replace ID code box	-
		3. Replace steering lock ECU	-
		4. Register all keys (new key ID registration)	PROCEDURE "A"
		5. ECU communication ID registration	PROCEDURE "G"
Main body ECU	No condition required	-	-
ECM	No condition required	1. Replace ECM	-
		2. ECU communication ID registration HINT: Only perform procedure above when replacing with used ECM.	PROCEDURE "H"

4. KEY REGISTRATION PROCEDURES

(a) PROCEDURE "A"

New key ID registration (when replacing certification ECU and ID code box, or certification ECU, ID code box and steering lock ECU), or when performing all keys ID erasure (key code reset):

PROCESS	PROCEDURE
1. Start of registration	1. Connect the Techstream to DLC3 2. Turn the engine switch on (IG) HINT: The engine switch cannot be turned on (IG) more than 10 times. To continue the key registration procedure with the engine switch off, after connecting the Techstream, turn the Techstream on while turning the driver side door courtesy light switch on and off repeatedly at intervals of 1.5 seconds. 3. Turn the Techstream on 4. Enter the following menus: Smart Key / Utility / Key Code Registration
2. Confirmation of ECU code	Perform operation according to prompts on the Techstream screen

PROCESS	PROCEDURE
	HINT: Mode is automatically selected by the Techstream (new registration mode or add mode).
3. Verification of unregistered key*	1. Touch logo of unregistered key to engine switch 2. Confirm that wireless door lock buzzer sounds once (short beep) 3. Place unregistered key on front passenger side seat 4. Confirm that wireless door lock buzzer sounds once (short beep)
4. Registration of ID code	• Perform operation according to prompts on the Techstream screen
5. End of registration	• Finish new key ID code registration

HINT:

***: Repeat this process for each key which is to be registered to the vehicle. Finish the procedure for each key within 30 seconds. If the procedure for any of the keys has not been finished within the specified time, perform the registration from process 1 again. Make sure that only 1 key is in the cabin during registration. If 2 or more keys are in the cabin simultaneously, the electric waves will interfere with each other, preventing normal registration.**

(b) PROCEDURE "B"

New key ID registration (when replacing certification ECU):

PROCESS	PROCEDURE
1. Start of registration	1. Connect the Techstream to DLC3 2. Turn the engine switch on (IG) HINT: The engine switch cannot be turned on (IG) more than 10 times. To continue the key registration procedure with the engine switch off, after connecting the Techstream, turn the Techstream on while turning the driver side door courtesy light switch on and off repeatedly at intervals of 1.5 seconds. 3. Turn the Techstream on 4. Enter the following menus: Smart Key / Utility / Key Code Registration
2. Confirmation of ECU code	• Perform operation according to prompts on the Techstream screen HINT: Mode is automatically selected by the Techstream (new registration mode or add mode).
3. Confirmation of all registered keys*1	1. Touch logo of registered key to engine switch 2. Confirm that wireless door lock buzzer sounds once (short beep)

PROCESS	PROCEDURE
4. Confirmation of ECU code	Perform operation according to prompts on the Techstream screen
5. Verification of unregistered key*2	1. Touch logo of unregistered key to engine switch 2. Confirm that wireless door lock buzzer sounds once (short beep) 3. Place unregistered key on front passenger side seat 4. Confirm that wireless door lock buzzer sounds once (short beep)
6. Registration of ID code	Perform operation according to prompts on the Techstream screen
7. End of registration	Finish new key ID code registration

HINT:

- *1: Repeat this process for each key registered to the vehicle. Finish the procedure for each key within 30 seconds. If the procedure for any of the keys has not been finished within the specified time, perform the registration from process 1 again. When performing the key confirmation procedure for a key, the security indicator light comes on and remains on until all the keys are confirmed.
- *2: Repeat this process for each key which is to be registered to the vehicle. Finish the procedure for each key within 30 seconds. If the procedure for any of the keys has not been finished within the specified time, perform the registration from process 1 again. Make sure that only 1 key is in the cabin during registration. If 2 or more keys are in the cabin simultaneously, the electric waves will interfere with each other, preventing normal registration.

(c) PROCEDURE "C"

Additional key ID registration:

PROCESS	PROCEDURE
1. Start of registration	1. Connect the Techstream to DLC3 2. Turn the engine switch on (IG) HINT: The engine switch cannot be turned on (IG) more than 10 times. To continue the key registration procedure with the engine switch off, after connecting the Techstream, turn the Techstream on while turning the driver side door courtesy light switch on and off repeatedly at intervals of 1.5 seconds. 3. Turn the Techstream on 4. Enter the following menus: Smart Key / Utility / Key Code Registration
2. Confirmation of registered key*1	1. Perform operation according to prompts on the Techstream screen 2. Touch logo of registered key to engine switch 3. Confirm that wireless door lock buzzer sounds once (short beep)
3. Confirmation of ECU code	Perform operation according to prompts on the Techstream screen

PROCESS	PROCEDURE
4. Verification of unregistered key*2	1. Touch logo of unregistered key to engine switch 2. Confirm that wireless door lock buzzer sounds once (short beep) 3. Place unregistered key on front passenger side seat 4. Confirm that wireless door lock buzzer sounds once (short beep)
5. Registration of ID code	• Perform operation according to prompts on the Techstream screen
6. End of registration	• Finish key ID code registration

HINT:

- *1: Perform this process for one of the keys registered to the vehicle. Finish the procedure within 30 seconds. If the procedure has not been finished within the specified time, perform the registration from process 1 again.
- *2: Repeat this process for each key which is to be registered to the vehicle. Finish the procedure for each key within 30 seconds. If the procedure for any of the keys has not been finished within the specified time, perform the registration from process 1 again. Make sure that only 1 key is in the cabin during registration. If 2 or more keys are in the cabin simultaneously, the electric waves will interfere with each other, preventing normal registration.

(d) PROCEDURE "D"

Key ID erasure (clear all registered key codes except one):

PROCESS	PROCEDURE
1. Start of erasure	1. Connect the Techstream to DLC3 2. Turn the engine switch on (IG) HINT: The engine switch cannot be turned on (IG) more than 10 times. To continue the key ID erasure procedure with the engine switch off, after connecting the Techstream, turn the Techstream on while turning the driver side door courtesy light switch on and off repeatedly at intervals of 1.5 seconds. 3. Turn the Techstream on 4. Enter the following menus: Smart Key / Utility / Key Code Erasure
2. Confirmation of registered key*	1. Perform operation according to prompts on the Techstream screen 2. Touch logo of registered key to engine switch 3. Confirm that wireless door lock buzzer sounds once (short beep)
3. Erasure of ID code	• Perform operation according to prompts on the Techstream screen
4. End of erasure	• Finish key ID code erasure

HINT:

***: Perform this process for one of the keys registered to the vehicle. Finish the procedure within 30 seconds. If the procedure has not been finished within the specified time, perform the erasure from process 1 again.**

(e) PROCEDURE "E"

All keys ID erasure:

PROCESS	PROCEDURE
1. Start of erasure	1. Connect the Techstream to DLC3 2. Turn the engine switch on (IG) HINT: The engine switch cannot be turned on (IG) more than 10 times. To continue the all keys ID erasure procedure with the engine switch off, after connecting the Techstream, turn the Techstream on while turning the driver side door courtesy light switch on and off repeatedly at intervals of 1.5 seconds. 3. Turn the Techstream on 4. Enter the following menus: Smart Key / Utility / Key Code Reset 5. Read "Seed Number" sent from TIS according to the Techstream screen
2. Erasure of ID code	• Perform operation according to prompts on the Techstream screen
3. End of erasure	• Finish key ID code erasure

(f) PROCEDURE "F"

ECU code registration:

PROCESS	PROCEDURE
1. Start of registration	1. Connect the Techstream to DLC3 2. Turn the engine switch on (IG) HINT: The engine switch cannot be turned on (IG) more than 10 times. To continue the ECU code registration procedure with the engine switch off, after connecting the Techstream, turn the Techstream on while turning the driver side door courtesy light switch on and off repeatedly at intervals of 1.5 seconds. 3. Turn the Techstream on 4. Enter the following menus: Smart Key / Utility / ECU Communication ID Registration / ID code box and Steering Lock 5. Read "Seed Number" sent from TIS according to the Techstream screen
2. Confirmation of registered key*	1. Touch logo of registered key to engine switch 2. Confirm that wireless door lock buzzer sounds once (short beep)

PROCESS	PROCEDURE
3. Registration of ECU code	Perform operation according to prompts on the Techstream screen
4. End of registration	Finish ECU code registration

HINT:

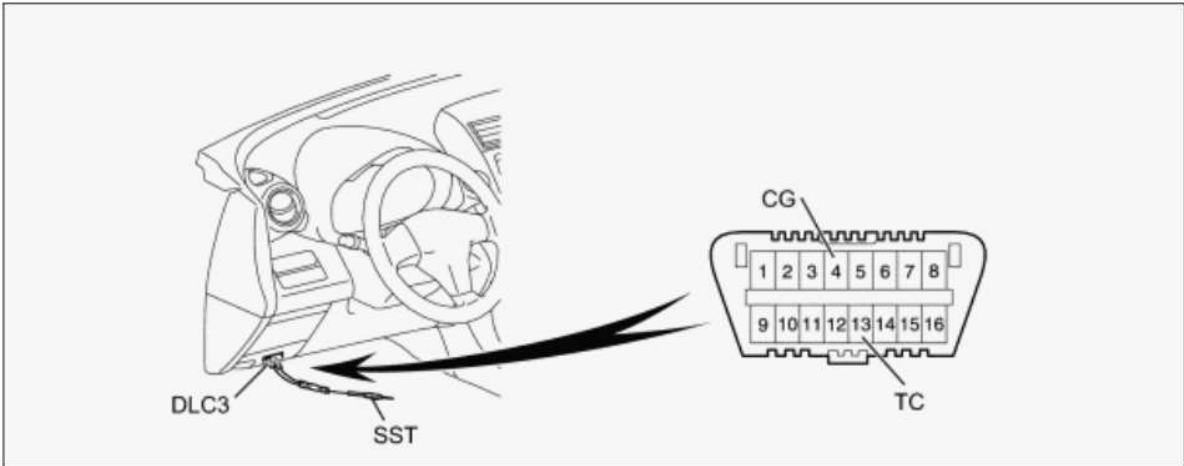
***: Perform this process for one of the keys registered to the vehicle. Finish the procedure within 30 seconds. If the procedure has not been finished within the specified time, perform the registration from process 1 again.**

(g) PROCEDURE "G"

ECU communication ID registration:

NOTICE:

- The ECU communication ID should be registered when the ID code box, steering lock ECU or ECM is replaced in order to match the ECU communication ID.
- The engine cannot be started unless ECU communication ID is registered.
- After the registration, pressing the engine switch may not start the engine on the first try. If so, press the engine switch again.
- After the engine is started, clear DTC B2799 (code for ECM immobiliser communication error) using either of the following methods:
 - Use the Techstream.
 - Disconnect the cable from the negative (-) battery terminal for 30 seconds.



(1) Using SST, connect terminals 13 (TC) and 4 (CG) of the DLC3.

SST: 09843-18040

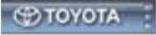
- Turn the engine switch on (IG) (do not start the engine) and leave it as is for 30 minutes.
- Turn the engine switch off and disconnect terminals 13 (TC) and 4 (CG).
- Check that the engine starts and stays on for more than 3 seconds.

(h) PROCEDURE "H"

ECU communication ID reregistration:

NOTICE:
The ECU communication ID should be registered when the ECM is replaced in order to match the ECU communication ID.

PROCEDURE	TIME	SECURITY INDICATOR LIGHT CONDITION
1. Start	-	OFF
2. While holding registered key, turn the engine switch on (IG) with brake pedal depressed		
3. Check that engine starts and stays on for more than 3 seconds		
4. End		



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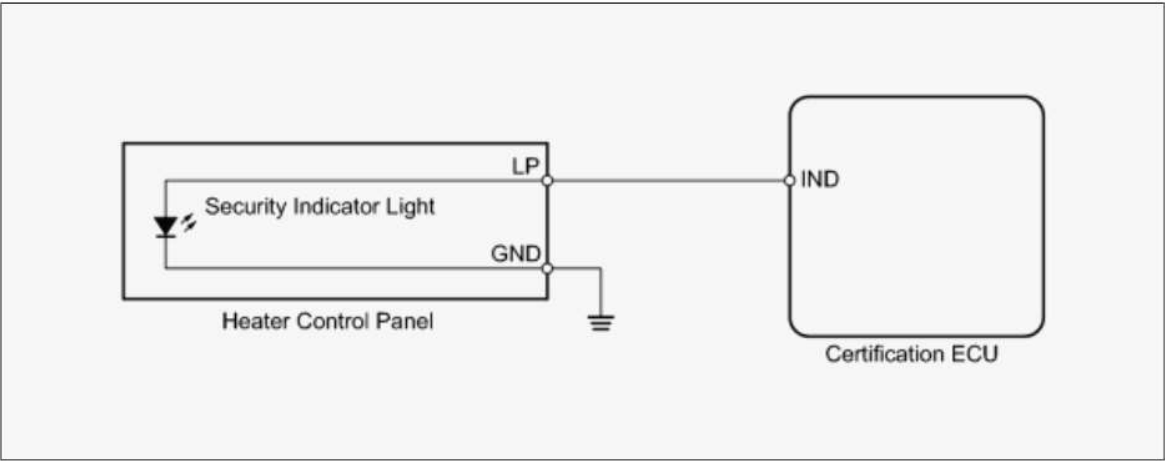
Last Modified: 9-7-2011	6.4 J	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000000W1202OX
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): Security Indicator Light Circuit (2011 RAV4)		

Security Indicator Light Circuit

DESCRIPTION

The certification ECU indicates the key registration condition by lighting up, blinking or turning off the security indicator.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	PERFORM ACTIVE TEST USING TECHSTREAM (SECURITY INDICATOR LIGHT)
----	---

(a) Operate the Techstream according to the steps on the display and select "Active Test" INFO.

Smart Key

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Security Indicator	Security indicator light	ON / OFF	Test possible when following conditions met: • Key is in cabin • Engine switch on (IG)

OK:

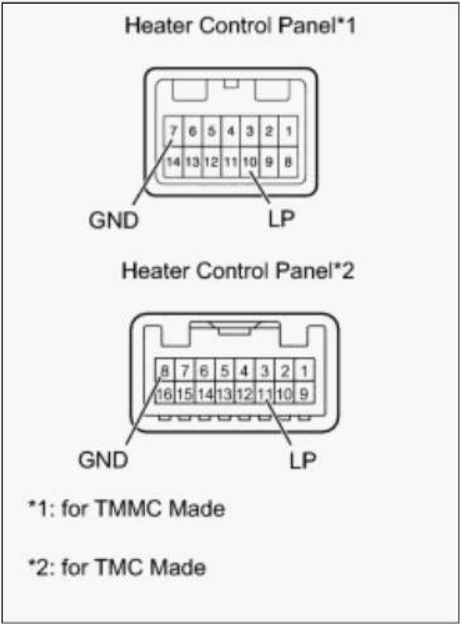
Security indicator light ON / OFF using the Techstream.

- NG▶INSPECT HEATER CONTROL PANEL (SECURITY INDICATOR LIGHT)
- OK▶REPLACE ECU AGGREGATION BOX (CERTIFICATION ECU)

2.INSPECT HEATER CONTROL PANEL (SECURITY INDICATOR LIGHT)

- (a) Remove the heater control panel INFO.
- (b) Apply battery voltage between the terminals of the heater control panel, and check that the security indicator light illuminates.

OK:
for TMMC Made



MEASUREMENT CONDITION	SPECIFIED CONDITION
Battery positive (+) → Terminal 10 (LP)	Security indicator light illuminates.
Battery negative (-) → Terminal 7 (GND)	

for TMC Made

MEASUREMENT CONDITION	SPECIFIED CONDITION
Battery positive (+) → Terminal 11 (LP)	Security indicator light illuminates.
Battery negative (-) → Terminal 8 (GND)	

- NG▶REPLACE HEATER CONTROL PANEL (SECURITY INDICATOR LIGHT)

OK
▼

3.CHECK HARNESS AND CONNECTOR (HEATER CONTROL PANEL - CERTIFICATION ECU AND

BODY GROUND)

(a) Disconnect the E23*1 or E91*2 panel connector.

- *1: for TMMC Made
- *2: for TMC Made

(b) Disconnect the E84 ECU connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

for TMMC Made

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E23-10 (LP) - E84-2 (IND)	Always	Below 1 Ω
E23-7 (GND) - Body ground	Always	Below 1 Ω
E23-10 (LP) or E84-2 (IND) - Body ground	Always	10 kΩ or higher

for TMC Made

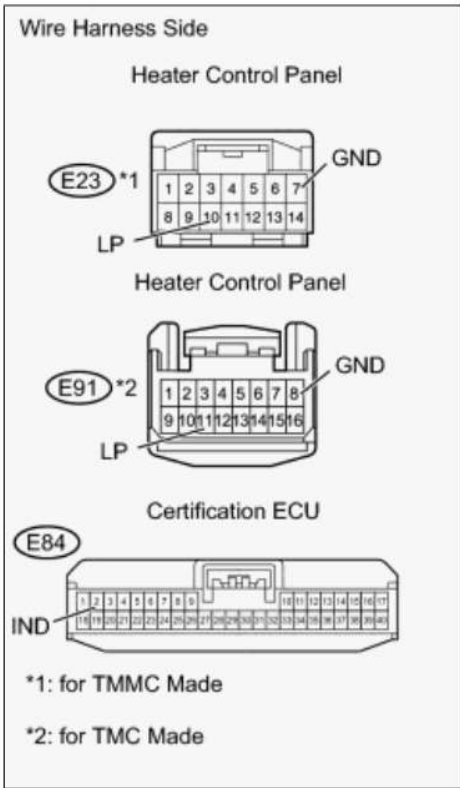
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E91-11 (LP) - E84-2 (IND)	Always	Below 1 Ω
E91-8 (GND) - Body ground	Always	Below 1 Ω
E91-11 (LP) or E84-2 (IND) - Body ground	Always	10 kΩ or higher

NG

REPAIR OR
REPLACE
HARNESS OR
CONNECTOR

OK

REPLACE ECU
AGGREGATION
BOX
(CERTIFICATION
ECU)



Last Modified: 9-7-2011	6.4 D	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001RLO008X
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): SYSTEM DESCRIPTION (2011 RAV4)		

SYSTEM DESCRIPTION

1. ENGINE IMMOBILISER SYSTEM DESCRIPTION

- (a) The engine immobiliser system is a theft deterrent system that determines whether or not to disable starting of the SFI system based on a comparison of the key's ID codes and the vehicle's pre-registered code. The immobiliser system compares the vehicle certification ECU's pre-registered ID code with the key-embedded transponder chip's ID code. If the ID codes do not match, the engine immobiliser system activates and the SFI system cannot be started. The certification ECU controls communication with the ECM, main body ECU, steering lock ECU and ID code box. When the ID codes of the transponder chip and certification ECU match, the certification ECU authorizes the starting of the SFI system.

2. FUNCTION OF MAIN COMPONENT

COMPONENT	OUTLINE
Transponder key coil/amplifier (built into engine switch)	Receives key ID code, amplifies ID code and outputs it to certification ECU
Indoor electrical key oscillator	Transmits key detection signals within detection area in vehicle interior upon receiving transmission request signal from certification ECU. Certification ECU request signal is activated when key is brought into vehicle interior and engine switch is pushed.
Door control receiver	Receives ID code from key in actuation area and transmits it to certification ECU

3. SYSTEM FUNCTION

- (a) Using entry function
- (1) When the driver (or passenger) is sitting in the vehicle while carrying the key, and the brake pedal is depressed while the engine switch is pressed, the main body ECU recognizes that the engine start operation has occurred and sends a certification request signal to the certification ECU. Upon receipt of the certification request signal, the certification ECU sends a request signal to the indoor electrical key oscillator. Upon receipt of the request signal, the indoor electrical key oscillator sends a request signal to detect whether the key is inside the vehicle. When the key receives this request signal, it answers by sending an ID code containing a response code to the door control receiver. Upon receipt of the ID code, the certification ECU analyzes the code. If the internal certification is passed, then the certification ECU sends a certification pass response signal. When the main body ECU receives this signal, the ACC cut relay is switched on and the IG1 and IG2 relays are switched on in sequence. At this time, the engine switch indicator illuminates in green. Then the certification ECU checks that the power source mode has been changed and sends a steering unlock command signal to the main body ECU. After receiving this signal, the main body ECU supplies power to the steering lock ECU. Then (via the ID code box) the steering lock ECU confirms that the certification ECU has verified the steering unlock command signal and drives the steering actuator motor until the steering lock is unlocked. After unlocking the steering lock, an unlock completed signal is sent to the certification ECU. Upon receipt of this signal, the certification ECU sends an unset command signal to the ID code box. Once this signal is received, the ID code box confirms that the certification ECU has verified the unset command signal,

and sends an immobiliser unset command signal to the ECM.

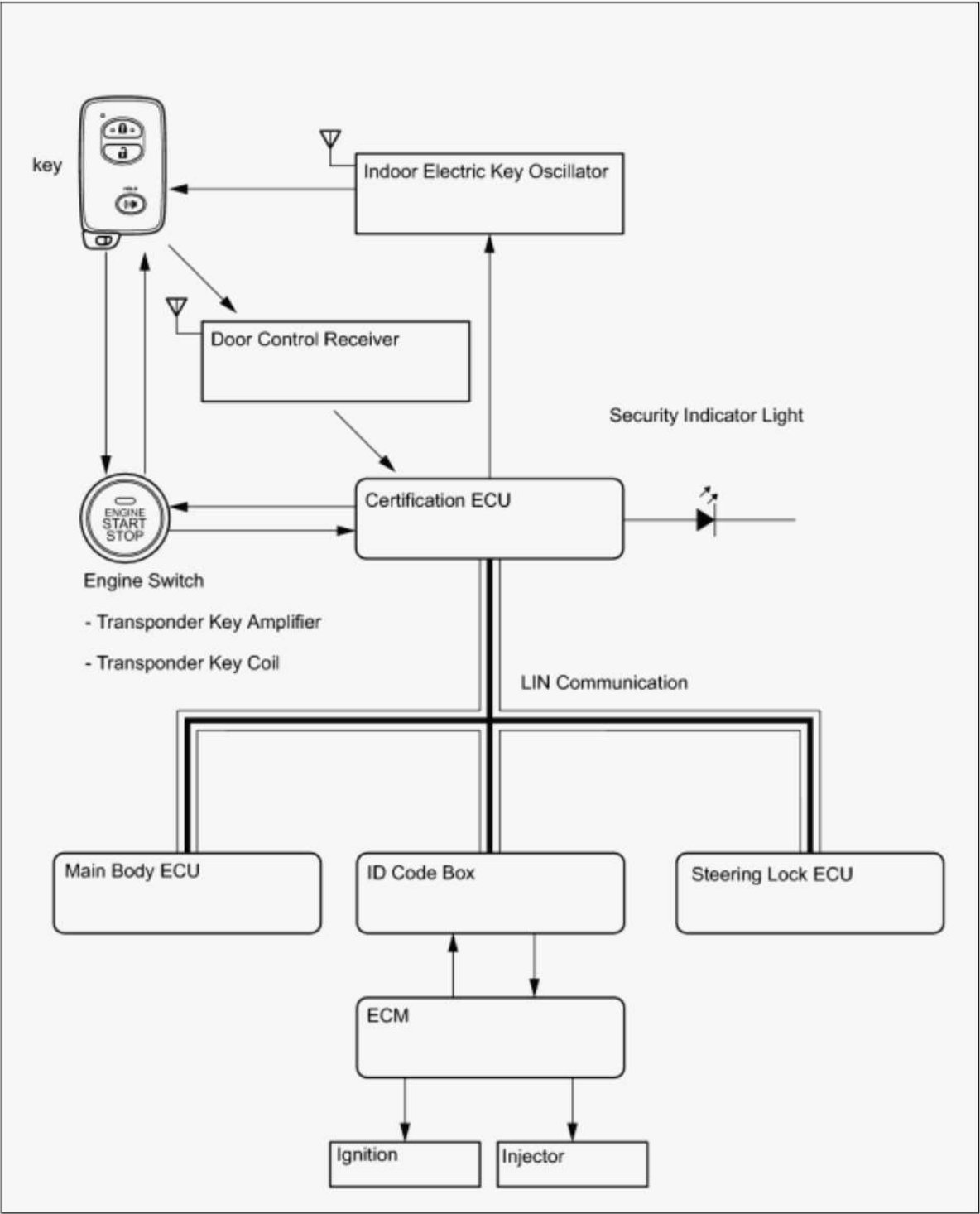
(b) Not using the entry function (when battery is depleted)

- (1) When the driver is sitting in the vehicle while carrying the key and the brake pedal is depressed, the main body ECU recognizes that the stop light switch is on and sends a key confirmation request signal to the certification ECU. Upon receipt of this signal, the certification ECU drives the motor of the engine switch's built-in immobiliser amplifier. At this time, the engine switch sends an RF wave communication signal to the immobiliser. If the driver holds the key up to the engine switch at this time, the key receives the immobiliser RF wave signal and responds by sending a radio wave signal. When the engine switch receives the radio wave signal from the key, it duplicates the signal and sends an ID code to the certification ECU. Upon receipt of the ID code, the code is analyzed. If the certification passes, the certification ECU sends a key certification pass response signal to the main body ECU while simultaneously sending a sound buzzer request signal to the meter ECU. When the main body ECU receives this signal, the ACC cut relay is switched on and the IG1 and IG2 relays are switched on in sequence. At this time, the engine switch indicator illuminates in green. Then the certification ECU checks that the power source mode has been changed and sends a steering unlock command signal to the main body ECU. After receiving this signal, the main body ECU supplies power to the steering lock actuator. Then (via the ID code box) the steering lock ECU confirms that the certification ECU has verified the unset command signal and drives the steering actuator motor until the steering lock is unlocked. After unlocking the steering lock, an unlock completed signal is sent to the certification ECU. Upon receipt of this signal, the certification ECU sends an unset command signal to the ID code box. Once this signal is received, the ID code box confirms that the certification ECU has verified the unset command signal, and sends an immobiliser unset command signal to the ECM.



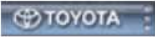
Last Modified: 9-7-2011	6.4 U	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001RLP008X
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): SYSTEM DIAGRAM (2011 RAV4)		

SYSTEM DIAGRAM



Communication table:

TRANSMITTING ECU (TRANSMITTER)	RECEIVING ECU (RECEIVER)	SIGNALS	COMMUNICATION METHOD
Certification ECU	Main body ECU	Engine immobiliser system set / unset signal	LIN
Main body ECU	Certification ECU	Key code recognition signal	
ID code box	Certification ECU	• DTC (B2791) signal • Matching request random number signal	
	Steering lock ECU	• Steering lock release signal • Matching request random number signal	

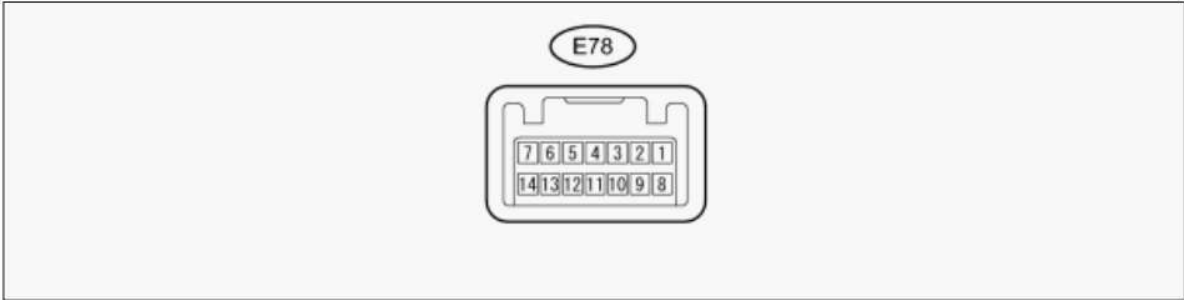


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Last Modified: 9-7-2011	6.4 U	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000001RLV009X
Title: ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Smart Key System): TERMINALS OF ECU (2011 RAV4)		

TERMINALS OF ECU

1. CHECK ENGINE SWITCH



- (a) Disconnect the E78 switch connector.
- (b) Measure the resistance of the wire harness side connector.

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
GND (E78-5) - Body ground	BR - Body ground	Ground	Always	Below 1 Ω

- If the result is not as specified, there may be a malfunction on the wire harness side.

- (c) Reconnect the E78 switch connector.
- (d) Measure the resistance and voltage of the connector.

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
AGND (E78-8) - Body ground	BR - Body ground	Ground	Always	Below 1 Ω
VC5 (E78-14) - AGND (E78-8)	R - BR	Power supply	Engine immobiliser system is set (key is not in cabin)	Below 1 V
			Press engine switch*	4.6 to 5.4 V
CODE (E78-10) - AGND (E78-8)	W - BR	Demodulated signal of key code data	Engine immobiliser system is set (key is not in cabin)	Below 1 V
			Engine switch pressed and key held close to engine switch*	Pulse generation (see waveform 1)
TXCT (E78-9) - AGND (E78-8)	L - BR	Key code output signal	Engine immobiliser system is set (key is not in cabin)	Below 1 V

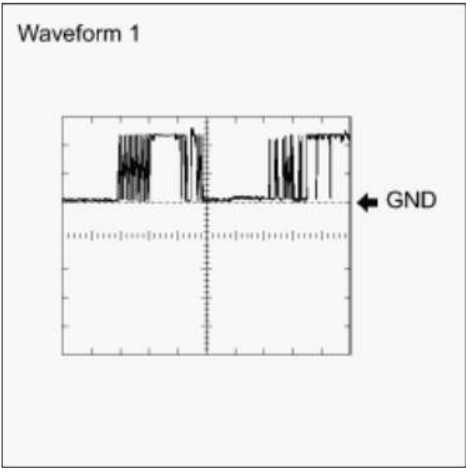
SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
			Engine switch pressed and key held close to engine switch*	Pulse generation (see waveform 2)

HINT:

*: Remove the key's battery before performing this inspection.

- If the result is not as specified, the switch may have a malfunction.

(e) Using an oscilloscope, check waveform 1.



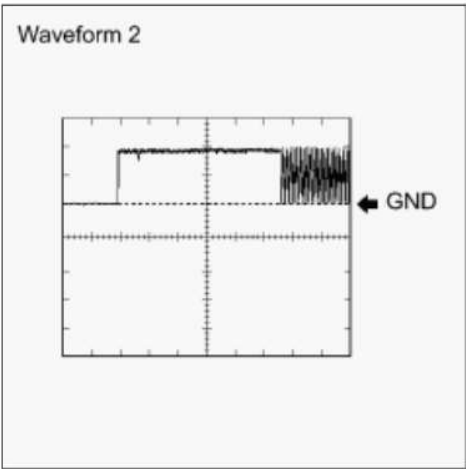
Waveform 1 (Reference):

ITEM	CONTENT
Symbols (Terminal No.)	CODE (E78-10) - AGND (E78-8)
Tool Setting	2 V/DIV., 20 msec./DIV.
Condition	Engine switch pressed and key held close to engine switch*

HINT:

*: Remove the key's battery before performing this inspection.

(f) Using an oscilloscope, check waveform 2.



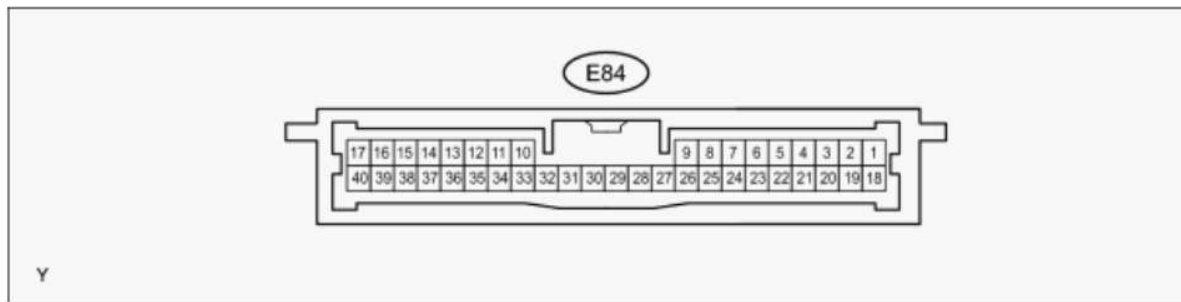
Waveform 2 (Reference):

ITEM	CONTENT
Symbols (Terminal No.)	TXCT (E78-9) - AGND (E78-8)
Tool Setting	2 V/DIV., 20 msec./DIV.
Condition	Engine switch pressed and key held close to engine switch*

HINT:

*: Remove the key's battery before performing this inspection.

2. CHECK ECU AGGREGATION BOX (CERTIFICATION ECU)



- (a) Disconnect the E84 ECU connector.
- (b) Measure the resistance and voltage of the wire harness side connector.

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
E (E84-17) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
+B1 (E84-1) - E (E84-17)	R - W-B	+B power supply	Always	11 to 14 V
IG (E84-18) - E (E84-17)	B - W-B	IG power supply	Engine switch off	Below 1 V

- If the result is not as specified, there may be a malfunction on the wire harness side.
- (c) Reconnect the E84 connector.
- (d) Measure the resistance and voltage of the connector.

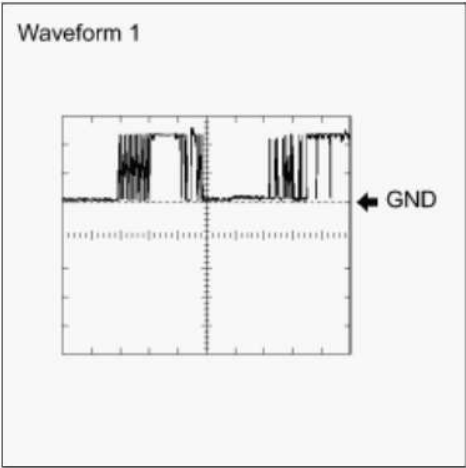
SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
AGND (E84-40) - Body ground	BR - Body ground	Engine switch ground	Always	Below 1 Ω
VC5 (E84-30) - AGND (E84-40)	R - BR	Engine switch power supply	Engine immobiliser system is set (key is not in cabin)	Below 1 V
			Engine switch pressed*	4.6 to 5.4 V
CODE (E84-9) - AGND (E84-40)	W - BR	Engine switch code input	Engine immobiliser system is set (key is not in cabin)	Below 1 V
			Engine switch pressed and key held close to engine switch*	Pulse generation (see waveform 1)
TXCT (E84-8) - AGND (E84-40)	L - BR	Engine switch TX output	Engine immobiliser system is set (key is not in cabin)	Below 1 V
			Engine switch pressed and key held close to engine switch*	Pulse generation (see waveform 2)

HINT:

***: Remove the key's battery before performing this inspection.**

- If the result is not as specified, the ECU may have a malfunction.

(e) Using an oscilloscope, check waveform 1.



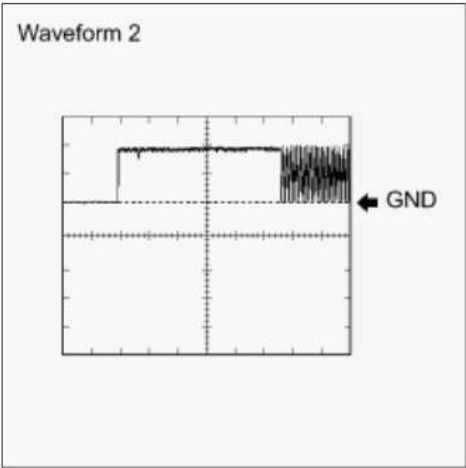
Waveform 1 (Reference):

ITEM	CONTENT
Symbols (Terminal No.)	CODE (E84-9) - AGND (E84-40)
Tool Setting	2 V/DIV., 20 msec./DIV.
Condition	Engine switch pressed and key held close to engine switch*

HINT:

***: Remove the key's battery before performing this inspection.**

(f) Using an oscilloscope, check waveform 2.



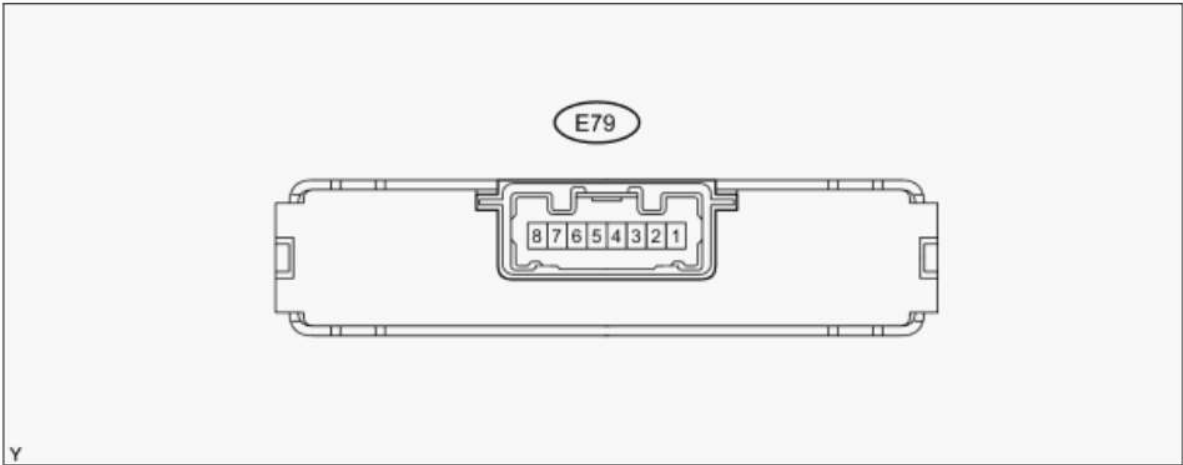
Waveform 2 (Reference):

ITEM	CONTENT
Symbols (Terminal No.)	TXCT (E84-8) - AGND (E84-40)
Tool Setting	2 V/DIV., 20 msec./DIV.
Condition	Engine switch pressed and key held close to engine switch*

HINT:

***: Remove the key's battery before performing this inspection.**

3. CHECK ID CODE BOX



- (a) Disconnect the E79 box connector.
- (b) Measure the resistance and voltage of the wire harness side connector.

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
GND (E79-8) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
+B (E79-1) - GND (E79-8)	R - W-B	+B power supply	Always	11 to 14 V

- If the result is not as specified, there may be a malfunction on the wire harness side.

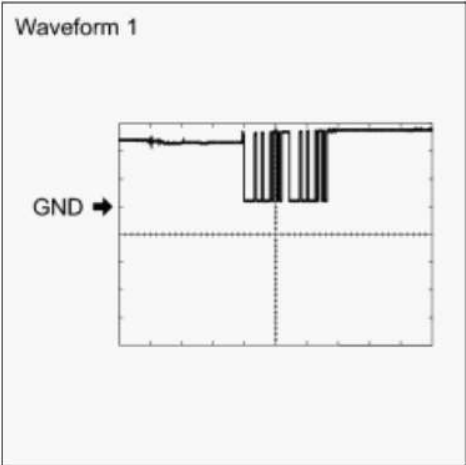
- (c) Reconnect the E79 box connector.
- (d) Measure the voltage of the connector.

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
EFII (E79-5) - GND (E79-8)	LG - W-B	ECM input signal	Engine switch off	11 to 14 V
			Within 3 seconds after starter operates and initial combustion occurs, or within 3 seconds after engine switch first turned on (IG) after battery disconnected and connected.	Pulse generation (see waveform 1)
EFIO (E79-6) - GND (E79-8)	P - W-B	ECM output signal	Engine switch off	Below 1 V
			Engine switch on (IG)	Pulse generation (see waveform 2)

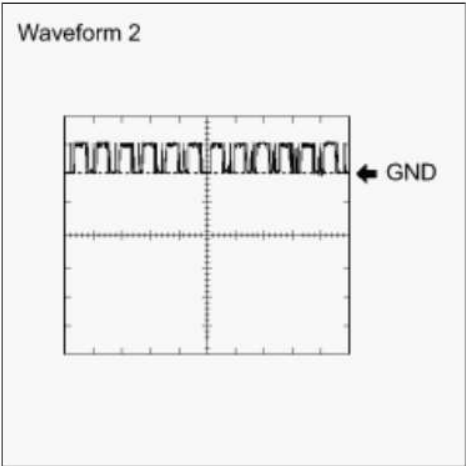
- If the result is not as specified, the box may have a malfunction.

- (e) Using an oscilloscope, check waveform 1.

Waveform 1 (Reference):



ITEM	CONTENT
Symbols (Terminal No.)	EFII (E79-5) - GND (E79-8)
Tool Setting	5 V/DIV., 500 msec./DIV.
Condition	Within 3 seconds after starter operates and initial combustion occurs, or within 3 seconds after engine switch first turned on (IG) after battery disconnected and connected.

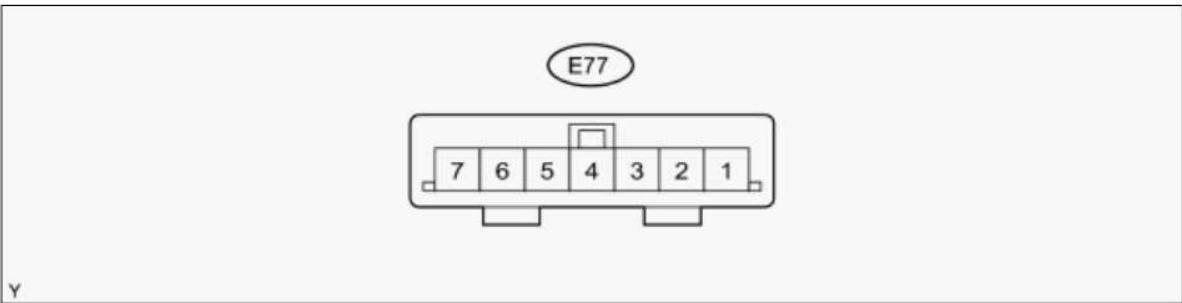


(f) Using an oscilloscope, check waveform 2.

Waveform 2 (Reference):

ITEM	CONTENT
Symbols (Terminal No.)	EFIO (E79-6) - GND (E79-8)
Tool Setting	10 V/DIV., 100 msec./DIV.
Condition	Engine switch on (IG)

4. CHECK STEERING LOCK ACTUATOR (STEERING LOCK ECU)



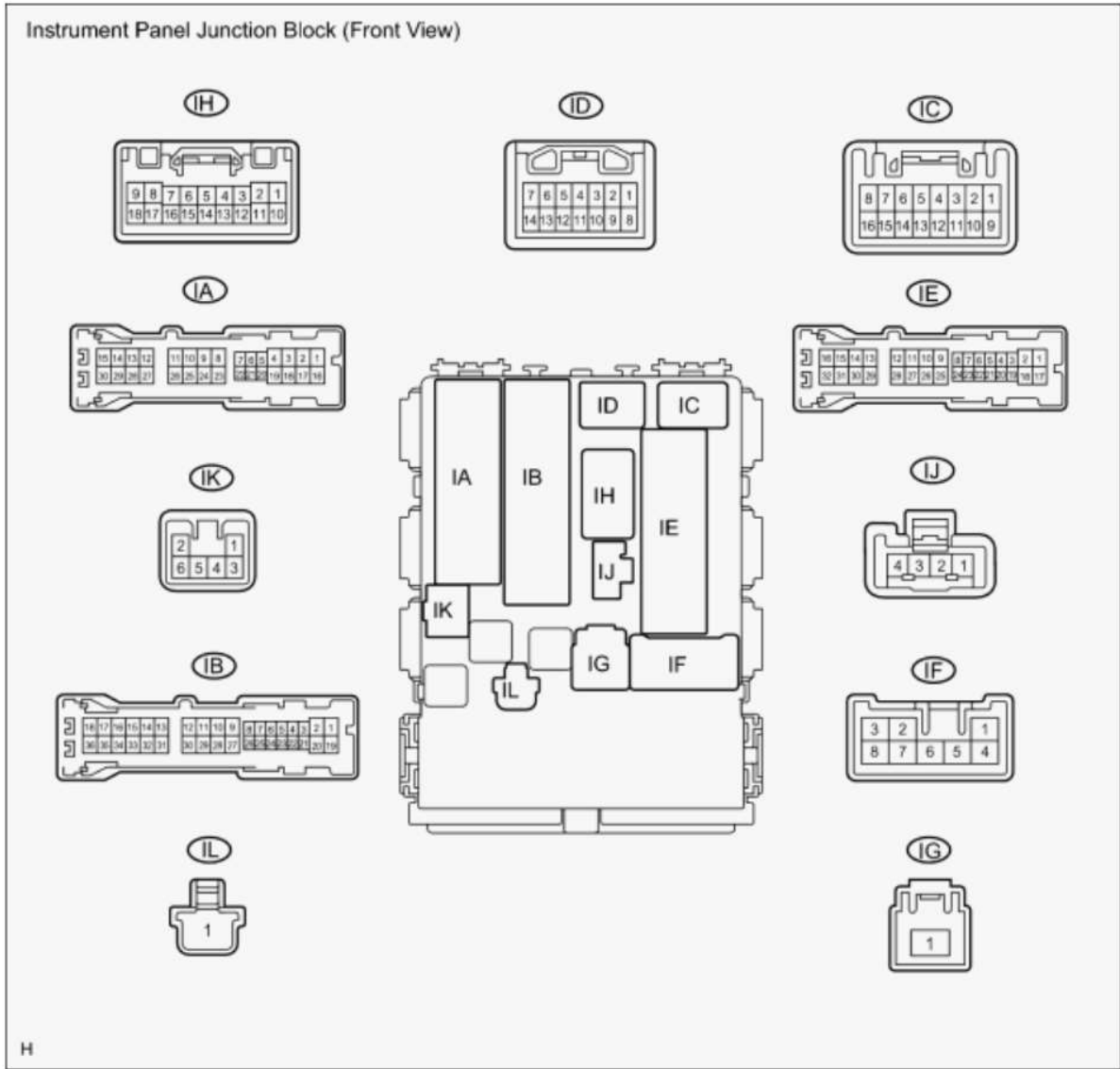
- (a) Disconnect the E77 ECU connector.
- (b) Measure the resistance and voltage of the wire harness side connector.

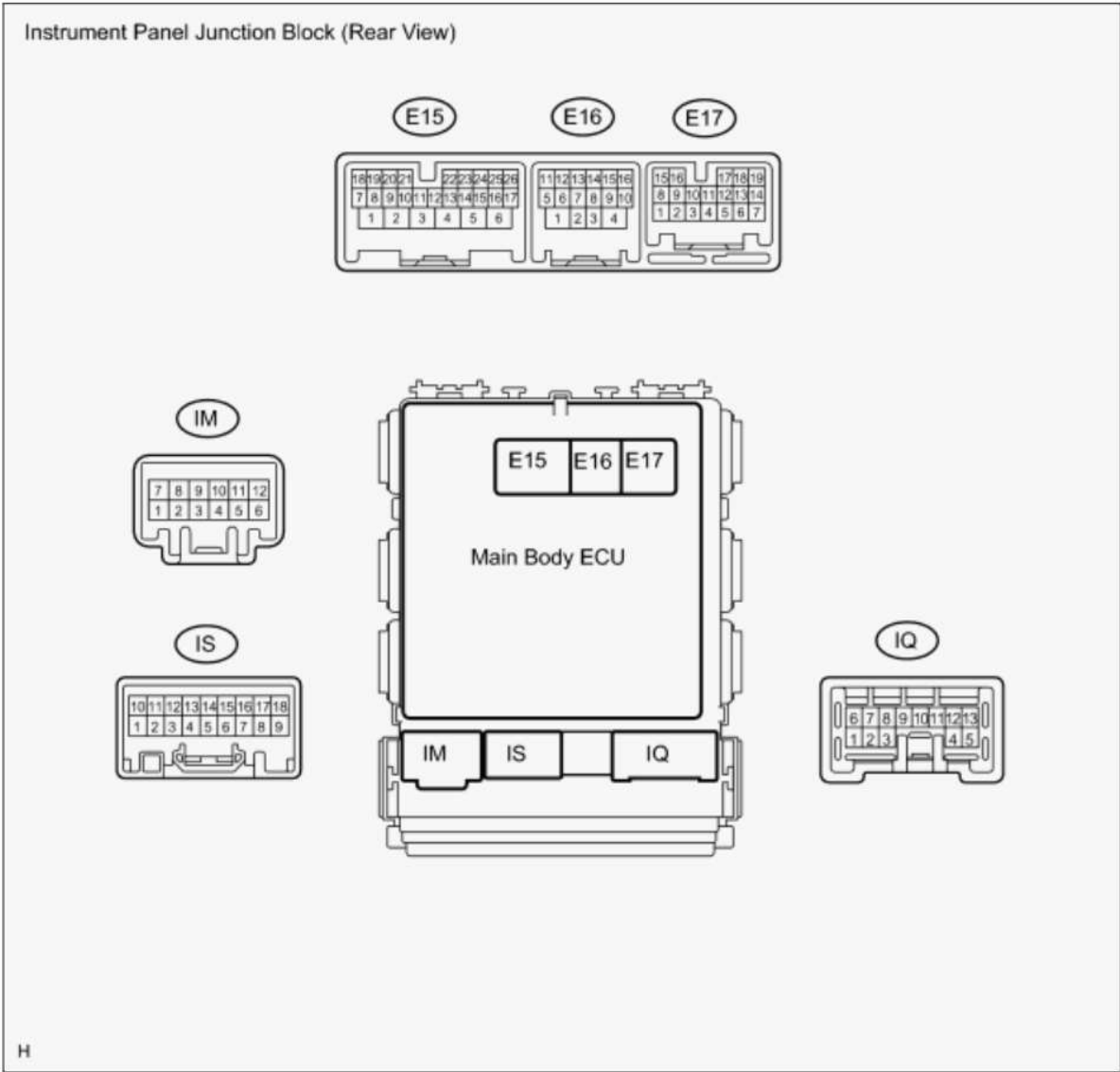
SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
SGND (E77-2) - Body ground	BR - Body ground	Ground	Always	Below 1 Ω

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
GND (E77-1) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
B (E77-7) - Body ground	L - Body ground	+B power supply	Always	11 to 14 V
IG2 (E77-6) - Body ground	B - Body ground	IG power supply	Engine switch off	Below 1 V
			Engine switch on (IG)	11 to 14 V

- If the result is not as specified, there may be a malfunction on the wire harness side.

5. CHECK INSTRUMENT PANEL JUNCTION BLOCK (MAIN BODY ECU)





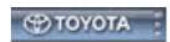
- (a) Disconnect the ID, IE, E15 and E16 junction block connectors.
- (b) Measure the resistance and voltage of the wire harness side connectors.

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
GND1 (IE-17) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
GND2 (E16-4) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
AM1 (E16-1) - Body ground	W -Body ground	+B power supply	Always	11 to 14 V
AM2 (E15-6) - Body ground	W -Body ground	+B power supply	Always	11 to 14 V
SSW1 (E16-10) - Body	W -Body ground	Engine switch	Engine switch off	10 kΩ or higher

ENGINE IMMOBILISER: ENGINE IMMOBILISER SYSTEM (w/ Sma... <https://techinfo.toyota.com/t3Portal/document/rm/RM16B0U/xhtml/RM...>

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
ground			Engine switch on (IG)	Below 1 Ω
SSW2 (E16-9) - Body ground	B -Body ground	Engine switch	Engine switch off	10 k Ω or higher
			Engine switch on (IG)	Below 1 Ω
LIN1 (ID-9) - Body ground	V - Body ground	LIN communication line	Always	10 k Ω or higher

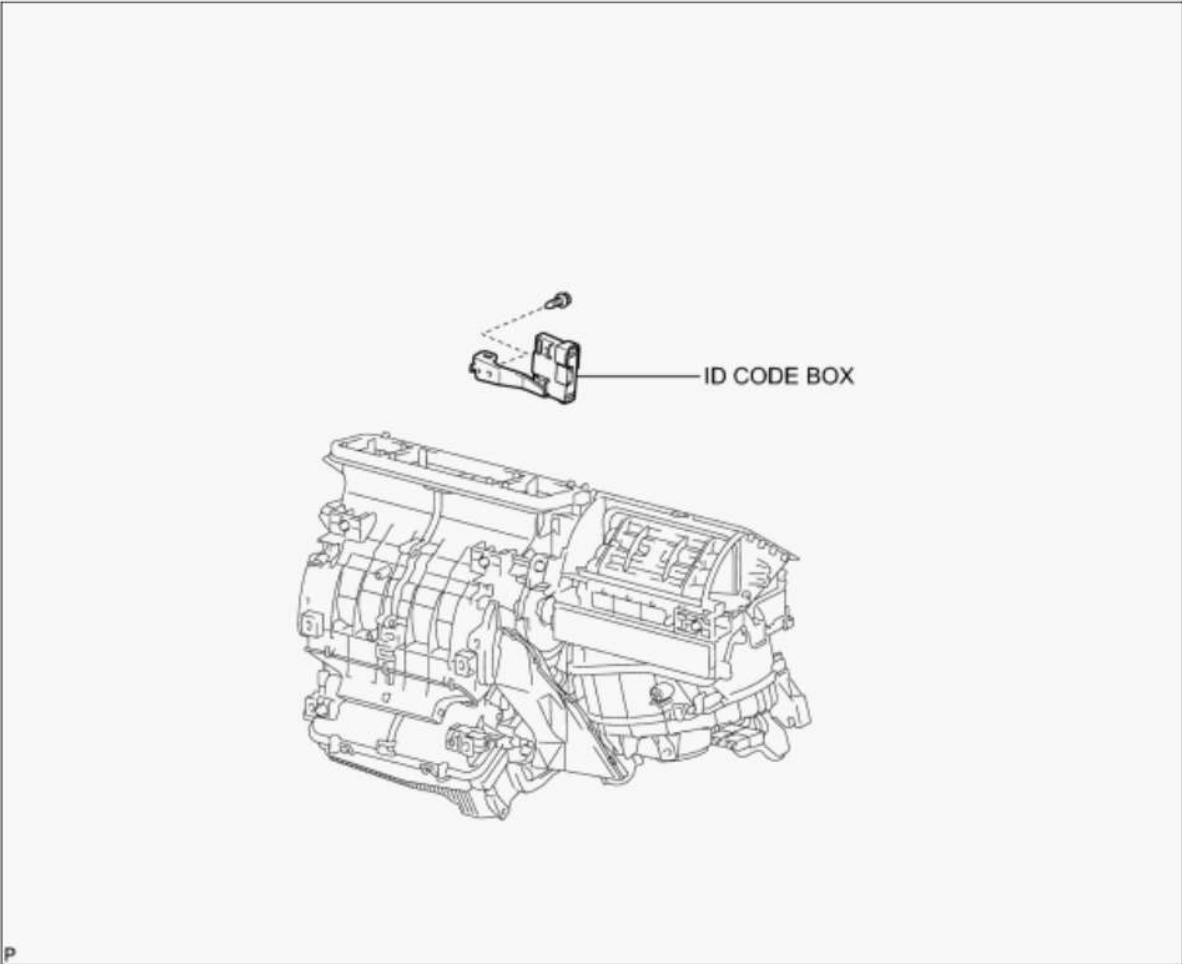
- If the result is not as specified, there may be a malfunction on the wire harness side.



Last Modified: 9-7-2011	6.4 K	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000003QCW003X
Title: ENGINE IMMOBILISER: ID CODE BOX (w/ Smart Key System): COMPONENTS (2011 RAV4)		

COMPONENTS

ILLUSTRATION

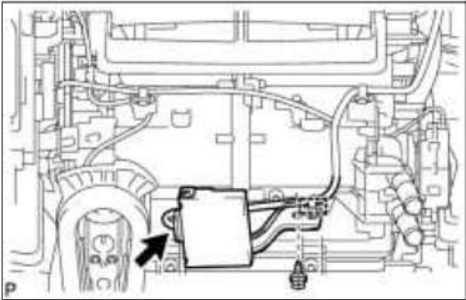


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Last Modified: 9-7-2011	6.4 A	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000003QCV003X
Title: ENGINE IMMOBILISER: ID CODE BOX (w/ Smart Key System): INSTALLATION (2011 RAV4)		

INSTALLATION

1. INSTALL ID CODE BOX



(a) Install the ID code box with the bolt.

- (b) Attach the clamp.
- (c) Connect the connector.

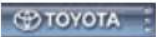
2. INSTALL AIR CONDITIONER UNIT ASSEMBLY

- (a) Install the air conditioner unit [INFO](#) .

3. INSTALL LOWER INSTRUMENT PANEL

- (a) Install the lower instrument panel [INFO](#) .

4. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL



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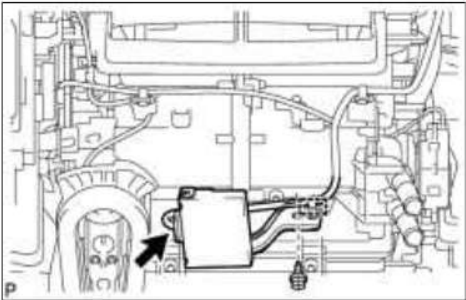
Last Modified: 9-7-2011	6.4 A	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000003QCX003X
Title: ENGINE IMMOBILISER: ID CODE BOX (w/ Smart Key System): REMOVAL (2011 RAV4)		

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
2. REMOVE LOWER INSTRUMENT PANEL

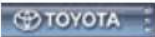
(a) Remove the lower instrument panel INFO .
3. REMOVE AIR CONDITIONER UNIT ASSEMBLY

(a) Remove the air conditioner unit INFO .
4. REMOVE ID CODE BOX



(a) Disconnect the connector.

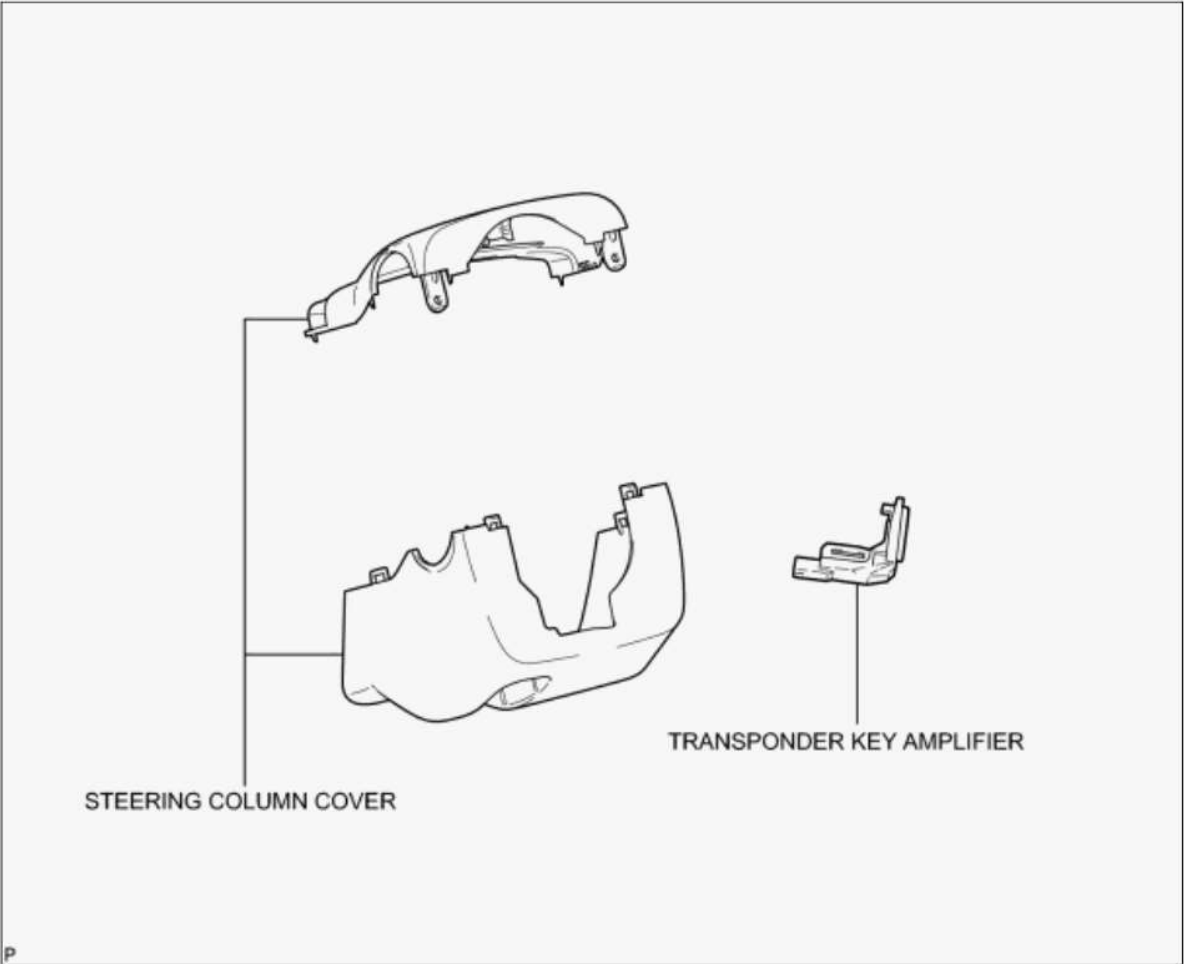
- (b) Detach the clamp.
- (c) Remove the bolt and ID code box.



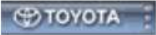
Last Modified: 9-7-2011	6.4 K	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000003BM5005X
Title: ENGINE IMMOBILISER: TRANSPONDER KEY AMPLIFIER: COMPONENTS (2011 RAV4)		

COMPONENTS

ILLUSTRATION



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Last Modified: 9-7-2011	6.4 A	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000003BM4005X
Title: ENGINE IMMOBILISER: TRANSPONDER KEY AMPLIFIER: INSTALLATION (2011 RAV4)		

INSTALLATION

1. INSTALL TRANSPONDER KEY AMPLIFIER [INFO](#)

2. INSTALL STEERING COLUMN COVER [INFO](#)



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Last Modified: 9-7-2011	6.4 A	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000003BM6005X
Title: ENGINE IMMOBILISER: TRANSPONDER KEY AMPLIFIER: REMOVAL (2011 RAV4)		

REMOVAL

1. REMOVE STEERING COLUMN COVER

[INFO](#)

2. REMOVE TRANSPONDER KEY AMPLIFIER

[INFO](#)

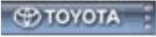
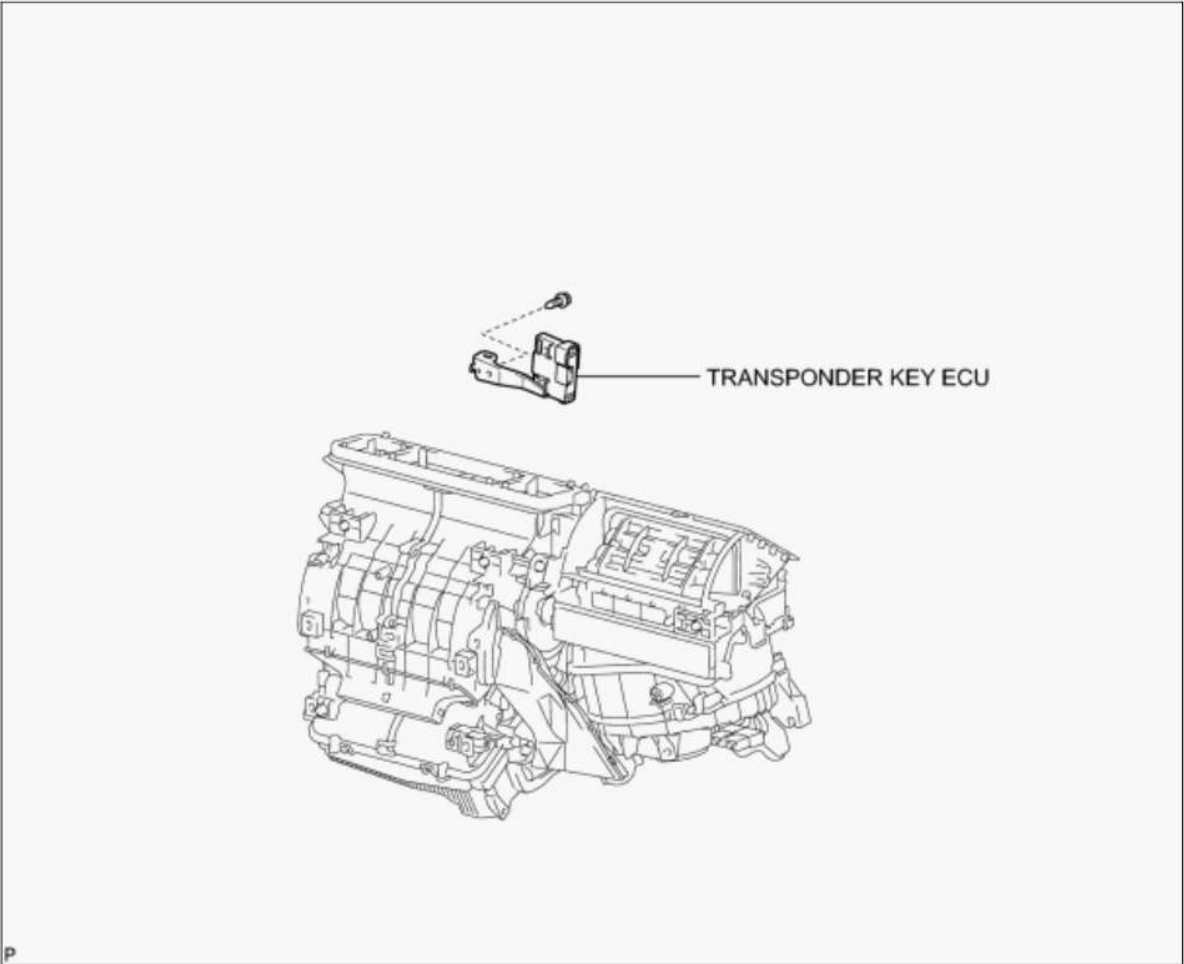


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Last Modified: 9-7-2011	6.4 K	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000003BM8005X
Title: ENGINE IMMOBILISER: TRANSPONDER KEY ECU: COMPONENTS (2011 RAV4)		

COMPONENTS

ILLUSTRATION

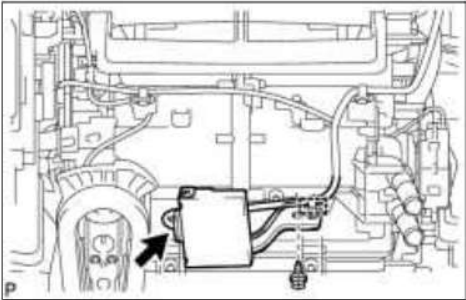


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Last Modified: 9-7-2011	6.4 A	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000003BM7005X
Title: ENGINE IMMOBILISER: TRANSPONDER KEY ECU: INSTALLATION (2011 RAV4)		

INSTALLATION

1. INSTALL TRANSPONDER KEY ECU



(a) Install the transponder key ECU with the bolt.

- (b) Attach the clamp.
- (c) Connect the connector.

2. INSTALL AIR CONDITIONER UNIT ASSEMBLY

INFO

3. INSTALL LOWER INSTRUMENT PANEL

INFO

4. REGISTER ECU COMMUNICATION ID

NOTICE:

When replacing the transponder key ECU, perform initialization

INFO

5. REGISTER KEY

NOTICE:

When replacing the transponder key ECU, perform initialization

INFO



Last Modified: 9-7-2011	6.4 A	From: 201008
Model Year: 2011	Model: RAV4	Doc ID: RM000003BM9005X
Title: ENGINE IMMOBILISER: TRANSPONDER KEY ECU: REMOVAL (2011 RAV4)		

REMOVAL

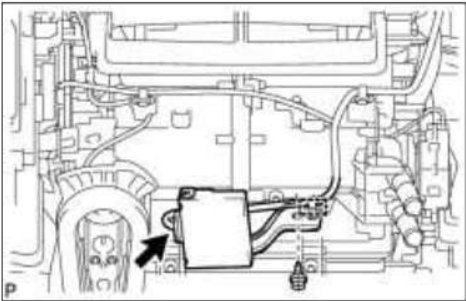
1. REMOVE LOWER INSTRUMENT PANEL

INFO

2. REMOVE AIR CONDITIONER UNIT ASSEMBLY

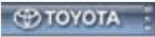
INFO

3. REMOVE TRANSPONDER KEY ECU



(a) Disconnect the connector.

- (b) Detach the clamp.
- (c) Remove the bolt and the transponder key ECU.



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