



## Technical Service BULLETIN

December 11, 2002

Title:

### DIAGNOSTIC TESTER IMMOBILIZER FUNCTIONS

Models:

Applicable Toyota Models

REVISED

SS003-02

SPECIAL SERVICE TOOLS

#### TSB REVISION NOTICE:

- August 26, 2005: The model years for each model have been specifically defined in the "Applicable Vehicles" section. The following vehicles have been added to the "Applicable Vehicles" section: Avalon, Corolla, Highlander, Matrix, Prius, RAV4, Scion tC, Sequoia, Solara, & Tacoma. The "Required SSTs" section has been updated.
- June 17, 2003: Camry and Sienna added to applicable vehicles; screen flows revised (screen C) in Figures 2, 3, and 4.

Previous versions of this TSB should be discarded.

**Introduction** The Diagnostic Tester incorporates support for Immobilizer system service. This bulletin covers the following Immobilizer functions available using the Diagnostic Tester on applicable models:

- Transponder Key Type
- Transponder Code Registration
- Transponder Code Erasure
- Transponder ECU Reset
- Transponder ECU Replacement
- Engine ECU Replacement

#### NOTE:

The available functions and procedures for the models listed in this TSB differ from previous models and other Immobilizer systems currently in use on Toyota vehicles.

#### Parts Information

PREVIOUS PART NUMBER	CURRENT PART NUMBER	PART NAME
N/A	Model Specific	Replacement Transponder Key (Master or Sub)

#### Warranty Information




OP CODE	DESCRIPTION	TIME	OFF	T1	T2
N/A	Not Applicable to Warranty	—	—	—	—



**Applicable Vehicles**

MODEL YEAR	MODEL	ENGINE MODEL
2001 – 2005	Prius (w/o Smart Key)	1NZ-XE
2003 & Later	4Runner	2UZ-FE, 1GR-FE
2003	Camry	1MZ-FE w/ 5-Speed AT
2004		1MZ-FE, 3MZ-FE, 2AZ-FE (Except PZEV)
2005		1MZ-FE, 2AZ-FE, 3MZ-FE
2003 & Later	Land Cruiser	2UZ-FE
2003 & Later	Sequoia	2UZ-FE
2004 & Later	Highlander	2AZ-FE, 3MZ-FE
2004 & Later	RAV4	1AZ-FE, 2AZ-FE
2004 & Later	Sienna	1MZ-FE, 3MZ-FE
2004 & Later	Solara	2AZ-FE, 3MZ-FE
2005	Avalon (w/o Smart Key)	2GR-FE
2005	Corolla	1ZZ-FE, 2ZZ-GE
2005	Matrix	1ZZ-FE, 2ZZ-GE
2005 – 2006	Scion tC	2AZ-FE
2005	Tacoma	1GR-FE, 2TR-FE

**Required SSTs**

ITEM NO.	SPECIAL SERVICE TOOLS (SSTs)	PART NUMBER	QTY	DRW**
1	Diagnostic Check Wire (or equivalent) 	09843-18020	1	–
2	<b>Toyota Diagnostic Tester Kit*</b> NOTE: <ul style="list-style-type: none"> <li>All components from this kit/set are required</li> <li>12 Megabyte Diagnostic Tester Program Card (P/N 01002593-005) with version 13.0a Software (or later) is required</li> </ul> 	TOY220036	1	9
3	<b>CAN Interface Module Kit*</b> NOTE: <ul style="list-style-type: none"> <li>All components from this kit/set are required</li> </ul> 	01002744	1	9

\* Essential SSTs.

\*\* Refers to drawer number in SST Storage System.

**NOTE:**

**Additional Diagnostic Tester Kits, CAN Interface Modules, Program Cards, or other SSTs may be ordered by calling SPX/OTC at 1-800-933-8335.**

<b>Function Description</b>	<ol style="list-style-type: none"><li><b>1. Transponder Key Type</b> Before any Immobilizer functions are performed, verify the type of transponder key that you are attempting to use for the service operation. Some functions may only be performed with a registered Master Key.</li><li><b>2. Transponder Code Registration</b> This function allows the registration of additional transponder keys (Master or Sub) using a registered Master Key.</li><li><b>3. Transponder Code Erasure</b> This function allows the user to erase all the transponder keys except the registered Master Key used during this function.</li><li><b>4. Transponder ECU Reset</b> This function allows the registration of a new Master Key even if all original Master Keys are lost. Once the Immobilizer system is reset, all previous registered keys will be erased.</li><li><b>5. Transponder ECU Replacement</b> When the Transponder ECU is replaced, the transponder keys must be registered to the new ECU, auto registration closed, and ECU communication completed.</li><li><b>6. Engine ECU Replacement</b> When the Engine ECU is replaced, ECU communication must be completed to synchronize an encrypted security code between the engine and Transponder ECUs.</li></ol>
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**Operation  
Procedure**  
**TRANSPONDER  
KEY TYPE**

## 1. Transponder Key Type

Before any Immobilizer functions are performed, verify the type of transponder key that you are attempting to use for the service operation. Some functions may only be performed with a registered Master Key.

- A. Insert the current key into the ignition cylinder and turn to the **ON** position.

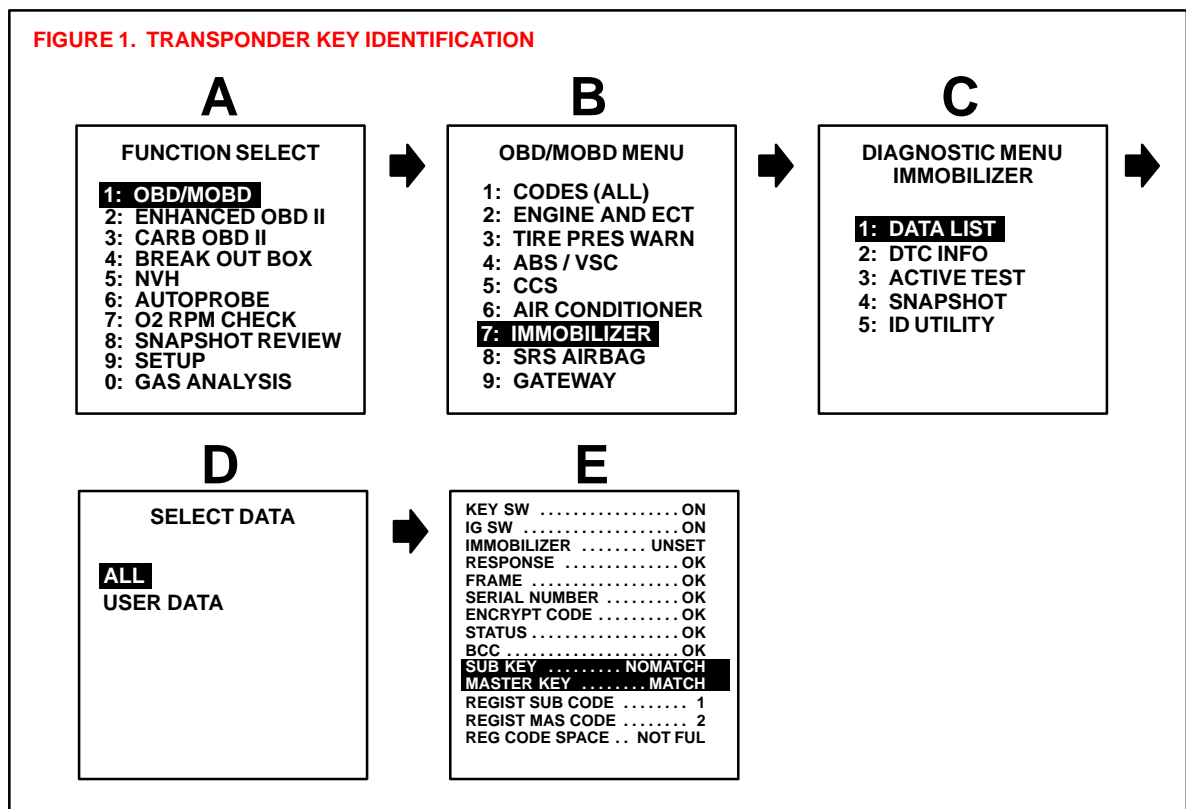
**HINT:**

The Immobilizer key blanks for the models listed in this TSB are preconfigured as Master or Sub Keys. Master Key blanks cannot be registered as Sub Keys nor can Sub Key blanks be registered as Master Keys. Also, the flat key is now enabled as a full function Master Key that must be registered.

- B. Follow the screen flow in Figure 1 to determine the key type.

- C. Key type and registration status will be indicated on the Immobilizer data list (Figure 1, screen E).

- “MATCH” = The key in the ignition cylinder matches this key type.
- “NOMATCH” = The key in the ignition cylinder does NOT match this key type.



**Operation  
Procedure**  
**TRANSPONDER  
CODE  
REGISTRATION**

## 2. Transponder Code Registration

This function allows the normal registration of additional transponder keys (Master or Sub) using a registered Master Key.

**NOTE:**

This function requires the use of one registered Master Key. The use of a Sub Key will NOT complete Transponder Code Registration. Attempting registration of additional keys with only a Sub Key will result in errors and incomplete registration.

**HINT:**

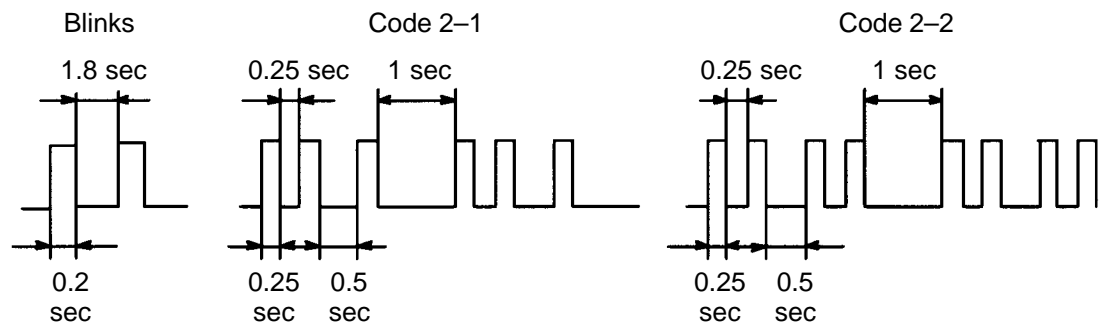
The Immobilizer key blanks for the models listed in this TSB are preconfigured as Master or Sub Keys. Master Key blanks cannot be registered as Sub Keys nor can Sub Key blanks be registered as Master Keys. Also, the flat key is now enabled as a full function Master Key that must be registered.

- A. Insert a registered Master Key into the ignition cylinder and turn to the **ON** position.
- B. Follow the screen flow in Figure 2 to register new Master or Sub keys. It is possible to register up to 5 Master Keys and 3 Sub Keys.
- C. Be sure to follow the instructions on key insertion, ignition ON/OFF and key removal exactly as described on the Diagnostic Tester.

**HINT:**

The security indicator light reveals the following information:

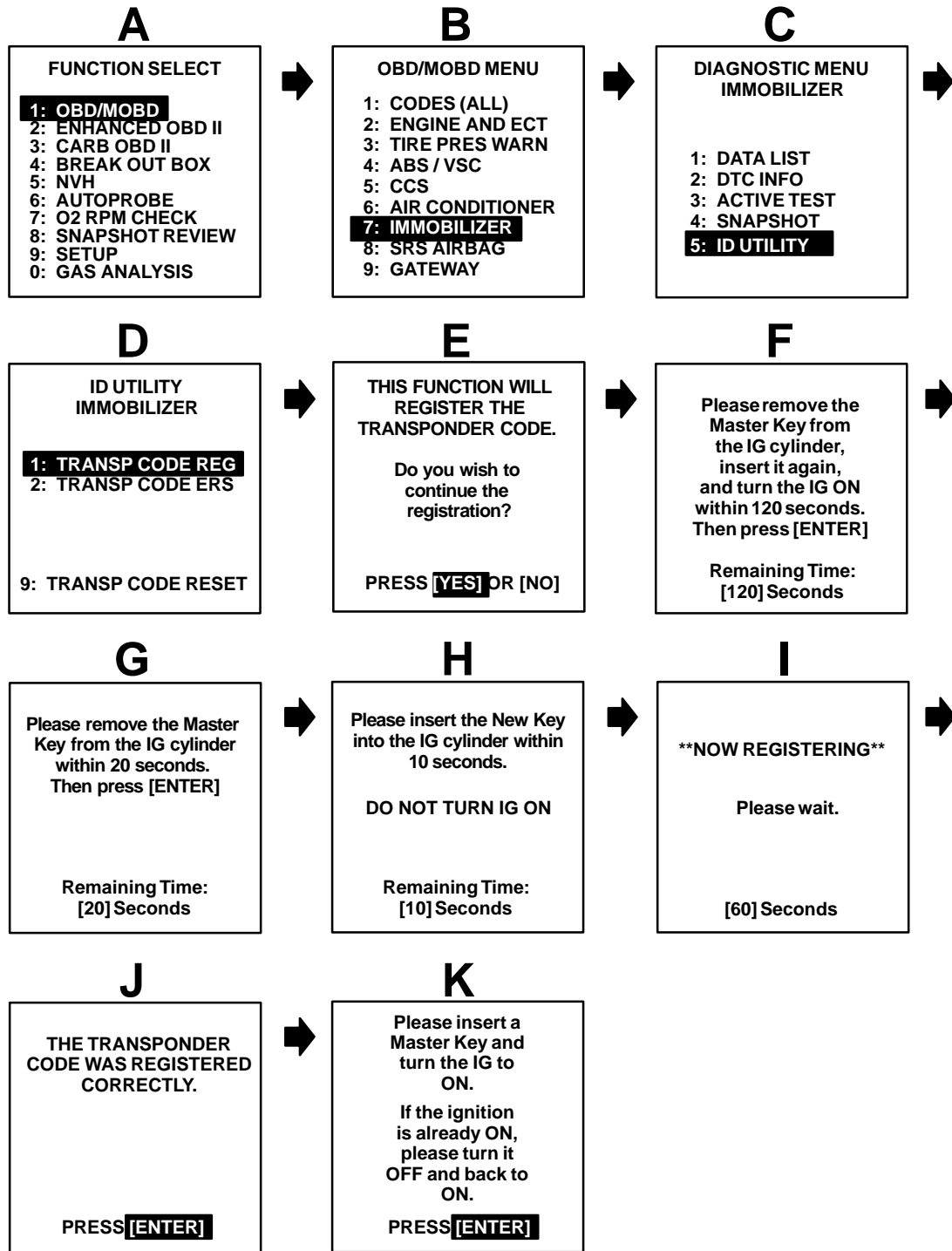
- Always ON and NO key in IG\* = Transponder ECU in Auto Registration mode
- Blinking and NO key in IG = Normal operation
- Blinking Code 21 = Transponder Code Registration failed
- Blinking Code 22 = Attempt was made to register an already registered Transponder Code



\* Immediately after the transponder ECU is installed, the security indicator will blink.

Operation  
Procedure  
TRANSPONDER  
CODE  
REGISTRATION  
(Continued)

FIGURE 2. REGISTRATION OF ADDITIONAL TRANSPONDER KEY



**Operation  
Procedure**  
**TRANSPONDER  
CODE ERASURE**

### 3. Transponder Code Erasure

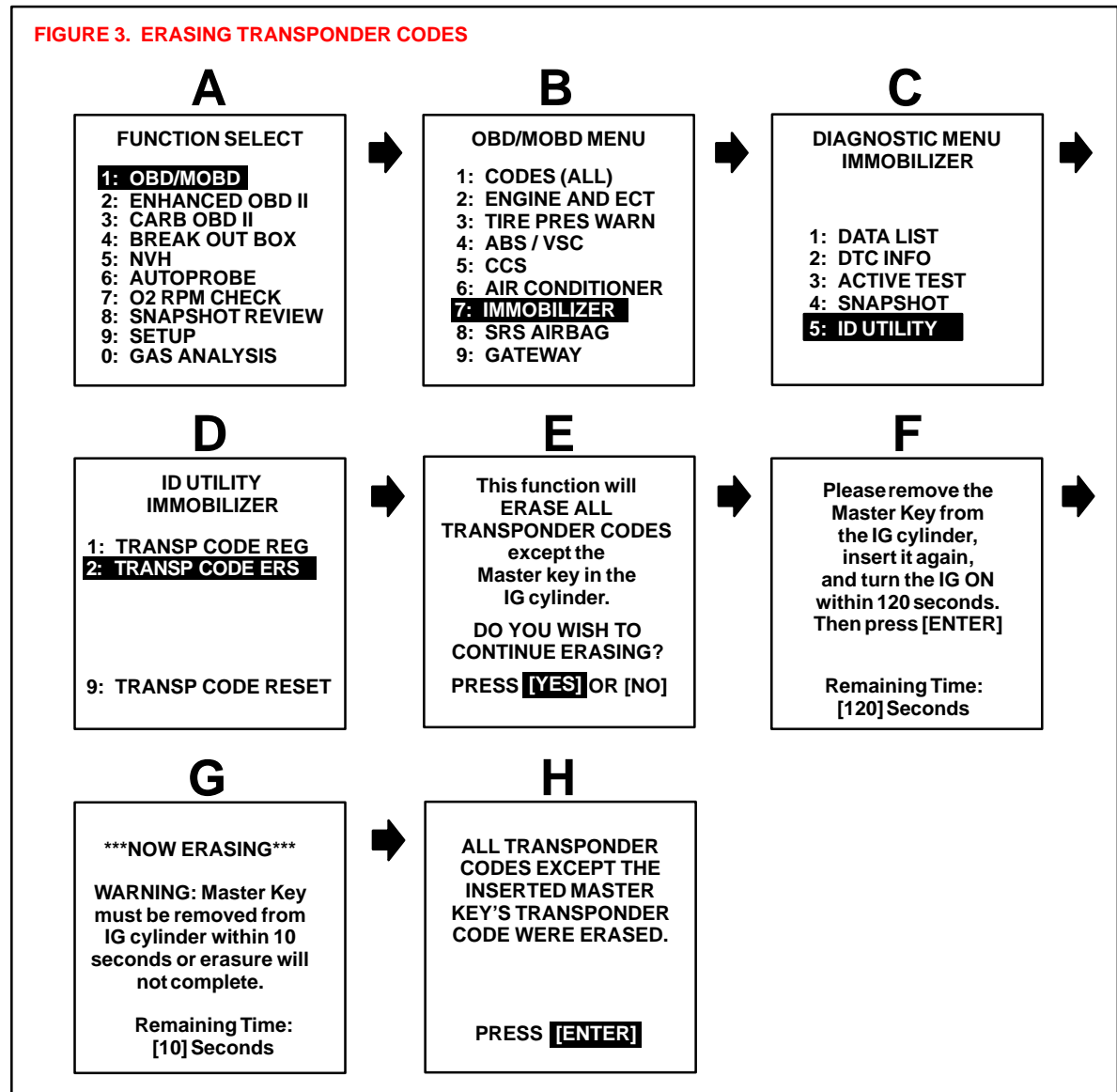
This function allows the user to erase all the transponder keys except the registered Master Key used during this function.

**NOTE:**

This function requires the use of one registered Master Key. The use of a Sub Key will NOT complete Transponder Code Erasure.

- A. Insert a registered Master Key into the ignition cylinder and turn to the **ON** position.
- B. Follow the screen flow in Figure 3 below to erase all Master or Sub keys, except the registered Master Key used for this procedure.

**FIGURE 3. ERASING TRANSPONDER CODES**



**Operation  
Procedure  
TRANSPONDER  
ECU RESET****4. Transponder ECU Reset**

This function allows the registration of a new Master Key even if all original Master Keys are lost. Once the Immobilizer system is reset, all previous registered keys will be erased. Use a new transponder Master Key to complete Transponder ECU Reset.

**Immobilizer Reset**

The Immobilizer Reset function is a 4-step process:

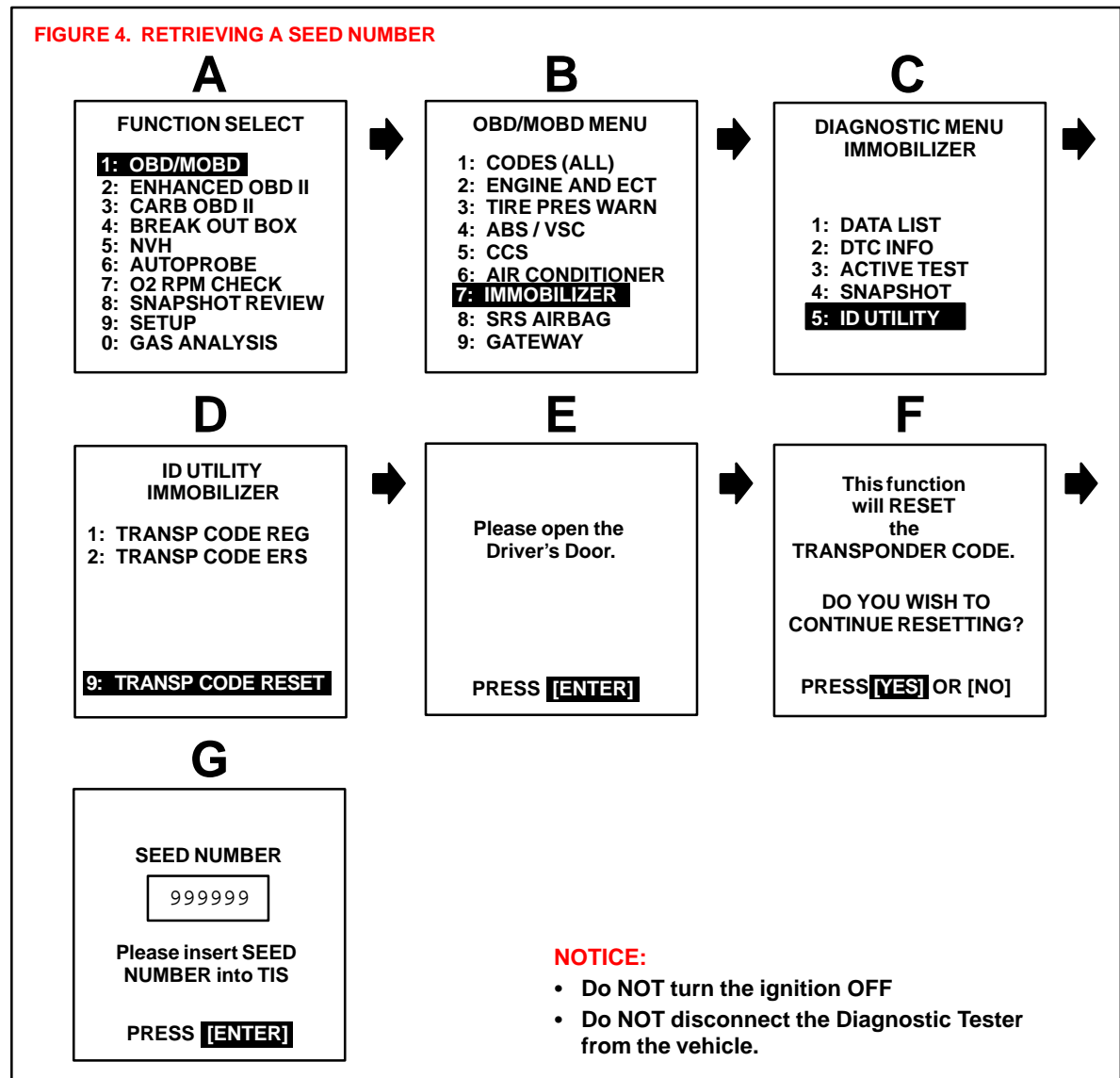
- A. Using the Diagnostic Tester, retrieve a “Seed Number” through the **OBD/MOBD Immobilizer** function.
  - A “Seed Number” is a unique number provided by the Diagnostic Tester and validated at TMS in order to return a Passcode.
- B. Using the TIS (Technical Information System) workstation, select **Immobilizer Reset**, and complete the request form to retrieve a “Passcode Number.”
  - A “Passcode Number” is a unique number required by the Diagnostic Tester to reset the ECU allowing it to accept a new Master Key.
- C. Enter the “Passcode Number” received from TIS into the Diagnostic Tester, register any additional customer keys, and close auto registration mode.
- D. Confirm successful Immobilizer reset and new Master Key registration.



**Operation  
Procedure**  
TRANSPONDER  
ECU RESET  
(Continued)

- A. Connect the Diagnostic Tester to DLC3 and turn ignition **ON**.
- Using the Diagnostic Tester, retrieve a “Seed Number” through the **OBD/MOBD Immobilizer** function.
  - Follow each step outlined in Figure 4.

**FIGURE 4. RETRIEVING A SEED NUMBER**



**Operation  
Procedure**  
**TRANSPONDER  
ECU RESET**  
(Continued)

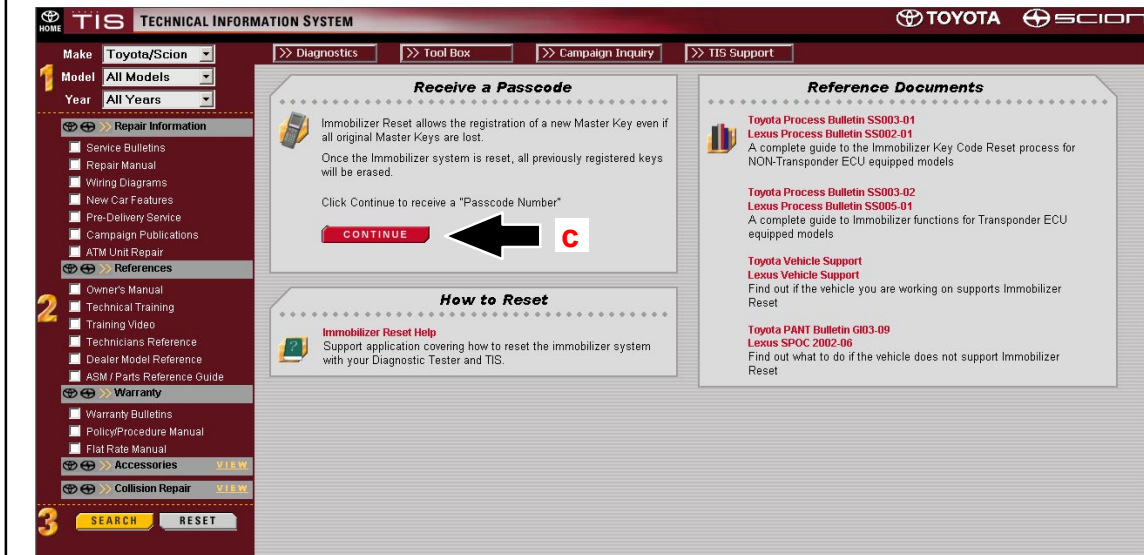
- B. Using the TIS (Technical Information System) workstation, select **Immobilizer Reset**, and complete the request form to retrieve a “Passcode Number.”
- Click on **Diagnostics**.
  - Click on **Immobilizer Reset**.

**FIGURE 5. SELECTING IMMOBILIZER RESET ON TIS**



- Read the instructions on the screen and click on **Continue**.  
(See Figure 6 below.)

**FIGURE 6. IMMOBILIZER RESET INSTRUCTIONS ON TIS**



**Operation  
Procedure**  
**TRANSPONDER  
ECU RESET**  
(Continued)

- d. Complete the request form and enter the “Seed Number” from the Diagnostic Tester. Click on **Submit** (Figure 7).

**NOTE:**  
**All fields must be completed.**

**FIGURE 7. REQUEST FORM ON TIS**

The screenshot shows the TIS (Technical Information System) interface. On the left is a navigation menu with categories like Repair Information, References, Warranty, Accessories, and Collision Repair. The main content area displays the 'Immobilizer Reset Form'. The form has the following fields: Dealer Code (00000), Dealer Name (Toyota Dealer Name), Technician SSN (masked), Technician First Name (Tech First), Technician Last Name (Tech Last), Vehicle VIN (JT2DG12T000000000), Customer First Name (Cust First), Customer Last Name (Cust Last), and Seed Number (999999). At the bottom of the form are two buttons: 'SUBMIT' and 'CLEAR'. A red arrow labeled 'd' points to the 'SUBMIT' button.

- e. TIS will now return the Passcode that needs to be entered into the Diagnostic Tester.

**NOTE:**  
**The Passcode given by TIS is only valid for one Immobilizer Reset Event.**

**FIGURE 8. RECEIVING PASSCODE FOR DIAGNOSTIC TESTER**

The screenshot shows the TIS (Technical Information System) interface displaying the 'Immobilizer Reset Passcode' screen. The screen has the following text: 'Thank You Tech First Tech Last', 'This PASSCODE is valid for one Immobilizer Reset event', 'Your Passcode is: 177554', 'VIN: JT2DG12T000000000', 'Customer: Cust First Cust Last', and 'Dealer: Toyota Dealer Name'. A red arrow labeled 'e' points to the passcode '177554'.

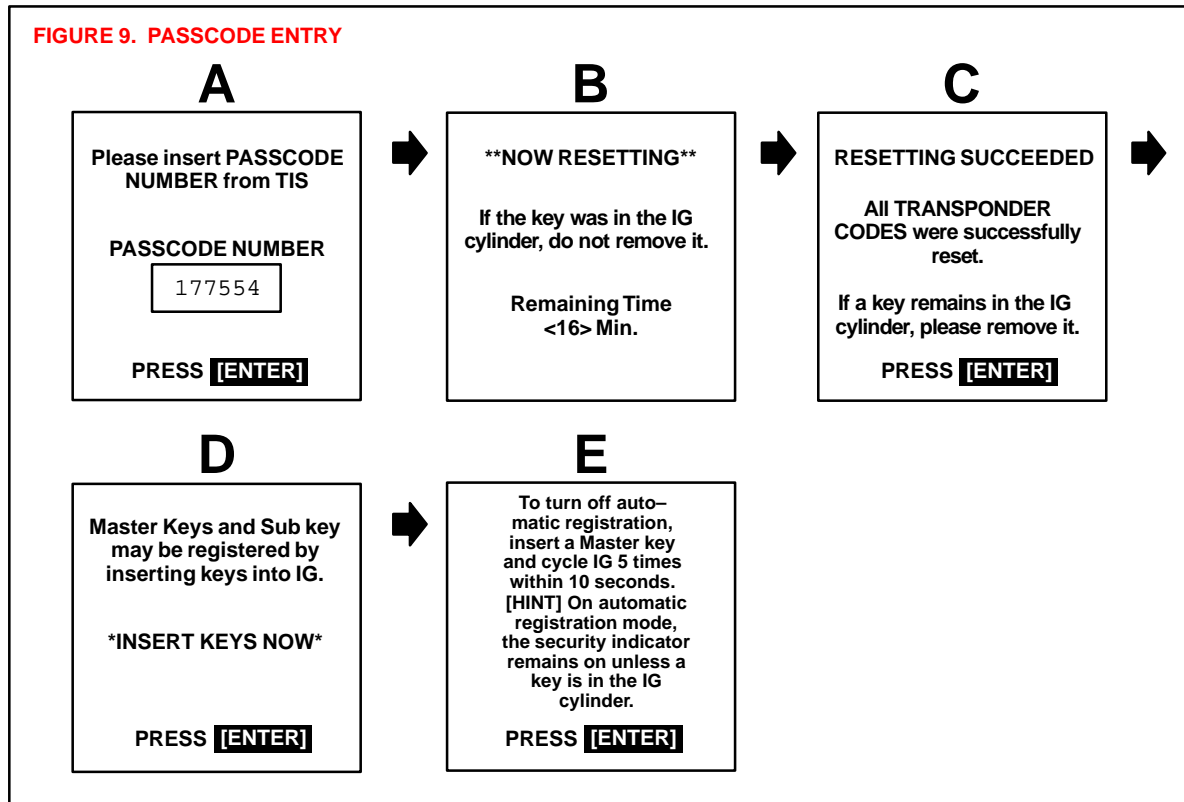
**Operation  
Procedure**  
**TRANSPONDER  
ECU RESET**  
(Continued)

- C. Using the numbered keys (0–9) on the Diagnostic Tester, enter the “Passcode Number” received from TIS into the Diagnostic Tester (see Figure 9 below). Press **ENTER** to clear all registered transponder codes except the Master key in the ignition cylinder.

**NOTE:**

- During the reset process do not remove the key from the ignition.
- This step takes approximately 16 minutes.

**FIGURE 9. PASSCODE ENTRY**



- Following a reset, the Transponder ECU is in auto registration mode.
- Auto registration mode allows 3 Master Keys and one Sub Key to register automatically.
- To register additional keys, remove the Master Key currently in the ignition. Insert keys (Master or Sub) into the ignition cylinder without turning the ignition on or off – simply insert and remove. (See Figure 9, screen D.)

**NOTE:**

- If 4 keys are registered at this time, auto registration mode is automatically closed.
- If less than 4 keys are registered at this time, auto registration mode must be closed manually by cycling the ignition ON/OFF more than 5 times in 10 seconds. (See Figure 9, screen E.)
- If more than 4 keys need to be registered, use Transponder Code Registration.

**Operation  
Procedure****TRANSPONDER  
ECU RESET  
(Continued)**

- D. Verify that keys are registered correctly by starting the engine with each newly registered key.

**NOTE:**

- If the vehicle starts, the new key code was registered correctly.
- If the vehicle does not start with any key, perform the Immobilizer Reset function again.
- If only one of the registered keys will not start the vehicle, attempt to register the key again following the Transponder Code Registration procedure (page 5 of this bulletin).

**TRANSPONDER  
ECU  
REPLACEMENT****5. Transponder ECU Replacement**

When the Transponder ECU is replaced, the transponder keys must be registered, auto registration closed, and ECU communication completed.

- A. Replacement transponder ECUs are in auto registration mode. This allows transponder keys to automatically register as they are inserted into the ignition cylinder. It is possible to automatically register up to 3 Master Keys, and 1 Sub Key. Since the transponder ECU can distinguish the key type (Master or Sub), the registration order is not specified.

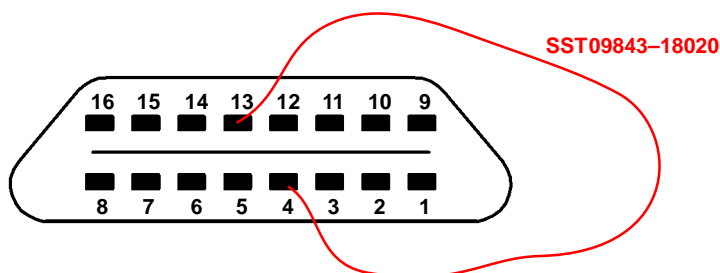
**NOTE:**

- If 4 keys are registered at this time, auto registration mode is closed.
- If less than 4 keys are registered at this time, auto registration mode must be closed manually by cycling the ignition ON/OFF more than 5 times in 10 seconds.
- If more than 4 keys need to be registered, use Transponder Code Registration procedure (page 5 of this bulletin).

- B. Once auto registration mode is closed, ECU Communication must be performed between the transponder ECU and the Engine ECU. Complete ECU communication using the following steps:
- Insert a registered Master Key into the ignition cylinder.
  - Turn the ignition ON (engine OFF).
  - Short Tc and CG terminals of DLC3 using Diagnosis Check Wire (SST 09843–18020 or equivalent) and leave for 30 minutes. (See Figure 10.)

**FIGURE 10. DLC3**

Tc = Pin 13  
CG = Pin 4



View of Connector Is From Passenger Compartment

- After 30 minutes, turn ignition OFF and remove check wire from DLC3
- Start the vehicle to confirm successful ECU communication.

**NOTE:**

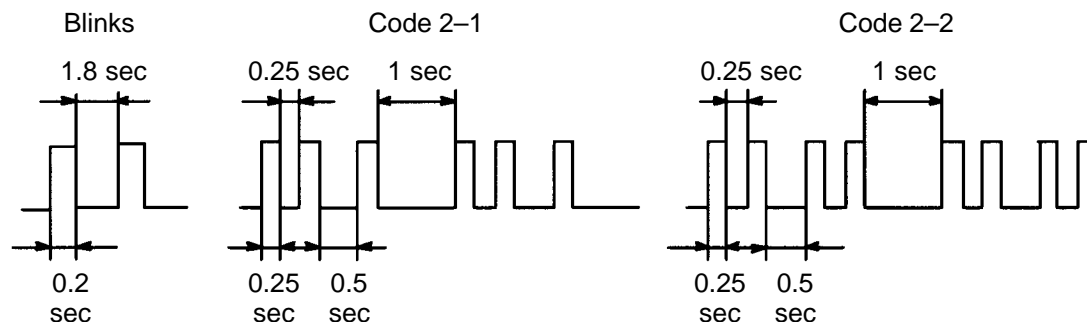
If ECU communication is not completed correctly, the engine will not start and DTC B2799 will be set. DTC B2799 will be cleared after the engine starts correctly.

**Operation  
Procedure**  
**TRANSPONDER  
ECU  
REPLACEMENT**  
(Continued)

**HINT:**

The security indicator light reveals the following information:

- Always ON and NO key in IG\* = Transponder ECU in Auto Registration mode
- Blinking and NO key in IG = Normal operation
- Blinking Code 21 = Transponder Code Registration failed
- Blinking Code 22 = Attempt was made to register an already registered Transponder Code



\* Immediately after the transponder ECU is installed, the security indicator will blink.

**ENGINE ECU  
REPLACEMENT**

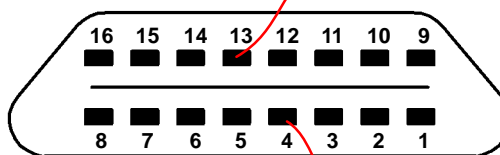
## 6. Engine ECU Replacement

When the Engine ECU is replaced, ECU communication must be completed. ECU Communication must be performed between the transponder ECU and the Engine ECU. Complete ECU communication using the following steps:

- A. Insert a registered Master Key into the ignition cylinder.
- B. Turn the ignition ON (engine OFF).
- C. Short Tc and CG terminals of DLC3 using Diagnosis Check Wire (SST 09843-18020 or equivalent) and leave for 30 minutes. (See Figure 11.)

**FIGURE 11. DLC3**

Tc = Pin 13  
CG = Pin 4



SST09843-18020

View of Connector Is From Passenger Compartment

- D. After 30 minutes, turn ignition OFF and remove check wire from DLC3
- E. Start the vehicle to confirm successful ECU communication.

**NOTE:**

If ECU communication is not completed correctly, the engine will not start and DTC B2799 will be set. DTC B2799 will be cleared after the engine starts correctly.