

RADIO FREQUENCY DIGITALLY ENCODED SECURITY SYSTEM (RF D.E.S.S.)

GENERAL

SYSTEM DESCRIPTION

The following components are specially designed for this system: ECM, D.E.S.S. key (inside tether cord cap) and engine cut-off switch.

The D.E.S.S. key contains a magnet and a RFID chip.

- The magnet closes the hall effect switch inside the engine cut-off switch.
- The RFID chip contains a unique digital code. It is the equivalent of the tooth-pattern cut on a conventional ignition key.

The D.E.S.S. system allows the engine to start only if a tether cord cap is installed on the engine cut-off switch and the D.E.S.S. key is recognized as valid by the ECM.

The D.E.S.S. key is quite flexible:

- Up to 8 D.E.S.S. keys may be programmed in the ECM memory using the B.U.D.S. The keys can also be erased individually.
- The same D.E.S.S. key can be used on another vehicle equipped with the D.E.S.S. system. It only needs to be programmed for that vehicle.

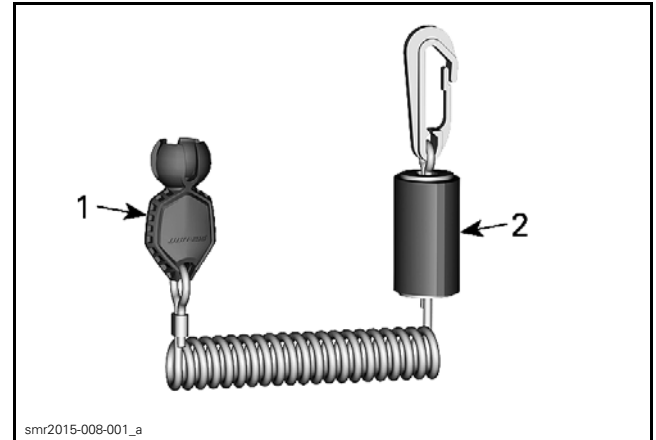
D.E.S.S. Key Types

Three types of keys can be used:

- Normal key
- Learning key

To ease key type recognition, the tether cord float comes in different colors.

KEY TYPE	FLOAT COLOR
Normal	Yellow or Black
Learning	Green



1. D.E.S.S. Key
2. Tether cord float

Upon tether cord installation, the key type used is momentarily displayed by the multifunction gauge.

Learning keys provide a mode of operation whereby engine power and speed is limited.

There are 5 speed settings available for the learning key mode. By default, the key modes are preset to the speed setting (3). Refer to *INTELLIGENT THROTTLE CONTROL (iTC)* subsection.

NOTE: Changing key settings is only available when the engine is not running.

D.E.S.S. Key Beeper Codes

BEEPER	SIGNIFICATION
A 0.5 second beep every 5 seconds	Indicates the D.E.S.S. is reading the key.
2 short beeps	Indicates the D.E.S.S. recognizes the key.
A 1 second beep every 5 seconds	Indicates the D.E.S.S. does not recognize the key.

NOTE: Other beeps not related to D.E.S.S. can be heard. Refer to *DIAGNOSTIC AND FAULT CODES*.

TROUBLESHOOTING

DIAGNOSTIC GUIDELINES

The following is provided to help in diagnosing the probable cause of a problem. It is a guideline and should not be assumed to list all possible causes.

NO BEEP CODE WHEN KEY IS INSTALLED ON ENGINE CUT-OFF SWITCH — ENGINE CAN NOT BE STARTED

1. Gauge shuts-down after its WOW test: Defective engine cut-off switch
 - Check engine cut-off switch. Refer to *IGNITION SYSTEM* subsection.

NO BEEP CODE WHEN KEY IS INSTALLED ON ENGINE CUT-OFF SWITCH — ENGINE CAN BE STARTED

1. Defective gauge beeper
 - Check gauge beeper. Refer to *INFORMATION CENTER (GAUGE)*.

GAUGE DISPLAYS "READING KEY" AND THERE IS NO KEY INSTALLED ON ENGINE CUT-OFF SWITCH

1. Gauge shuts-down after 3 minutes: Defective engine cut-off switch
 - Check engine cut-off switch.

KEY NOT READ (CONDITION CAN BE DUPLICATED WITH A MAGNET ON THE D.E.S.S. POST)

1. Damaged RFID chip
2. No voltage at RFID-D connector
3. No voltage at RFID-C connector
 - Try a new key
 - Refer to *WIRING DIAGRAM* and / or *IGNITION SYSTEM* and troubleshoot D.E.S.S. / Engine Cut-Off Switch

KEY NOT PRESENT (CONDITION CAN BE DUPLICATED BY UNPLUGGING THE RFID CONNECTOR)

1. No key installed
2. No **ground** at RFID-A connector
3. No voltage at RFID-B connector
4. No voltage at RFID-C connector

5. No voltage at RFID-D connector
 - Refer to *WIRING DIAGRAM* and / or *IGNITION SYSTEM* and troubleshoot D.E.S.S. / Engine Cut-Off Switch

INVALID KEY

1. Key not programmed to ECM
 - Program key

PROCEDURES

D.E.S.S. KEY

D.E.S.S. Key Recognition

To allow key recognition, carry out the following steps:

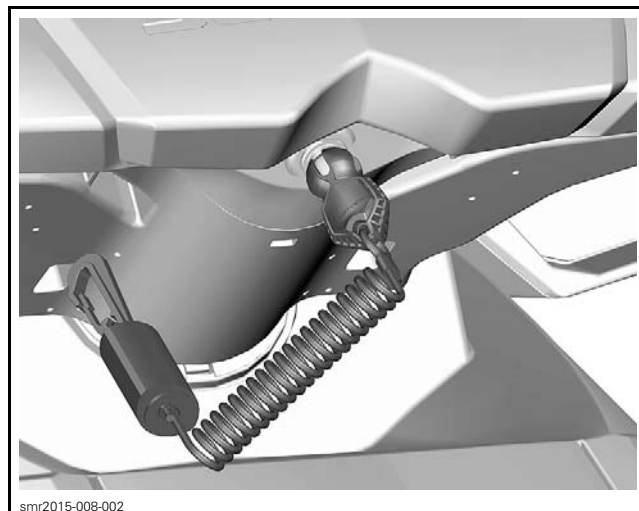
1. Briefly press the START/STOP button to wake up the ECM.
2. Securely install the tether cord on watercraft engine cut-off switch.
3. Press and hold the START/STOP button to start engine.

Programming D.E.S.S. Keys

1. Connect the watercraft to BUDS2. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.

IMPORTANT: Ensure all connections have been made **before starting BUDS2** to allow proper operation.

2. Briefly press START/STOP button to power the ECM.
3. Install a tether cord on the engine cut-off switch to program a D.E.S.S. key.



4. Read ECM.
5. Click on **Keys** tab.

Adding a Key

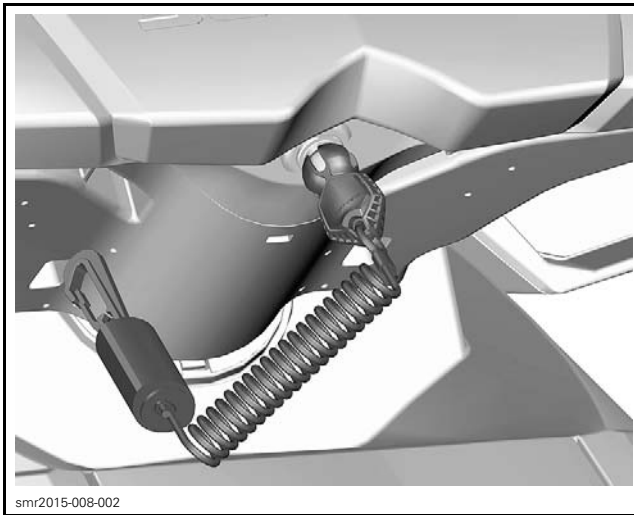
1. Click on the **Add Key** button.
2. Follow instructions on BUDS2 screen.

Adding Another Key

1. Remove the tether cord from the engine cut-off switch.
2. Install the next tether cord on the engine cut-off switch.
3. Click on the **Add Key** button.

Erasing Keys

1. Install the tether cord on the engine cut-off switch.



2. Click on **Erase Key**.

After approximately 10 seconds the following message will appear.

The key is now erased.

Erasing All Keys

1. Click on **Erase All Keys**.
2. When done, program at least one new key to the vehicle. Refer to *ADDING A KEY* in this subsection.

D.E.S.S. / Engine Cut-Off Operation

Normal Operation

The electrical system provides power to RFID-D. The ECM provides 5Vdc to the DESS module DS-C. The ECM provides a ground to the DESS module DS-A. When a key (tether cord) is installed on the DESS post, a hall effect switch closes and sends a 12-15Vdc signal to the ECM.

Refer to *IGNITION SYSTEM* subsection for testing procedures.