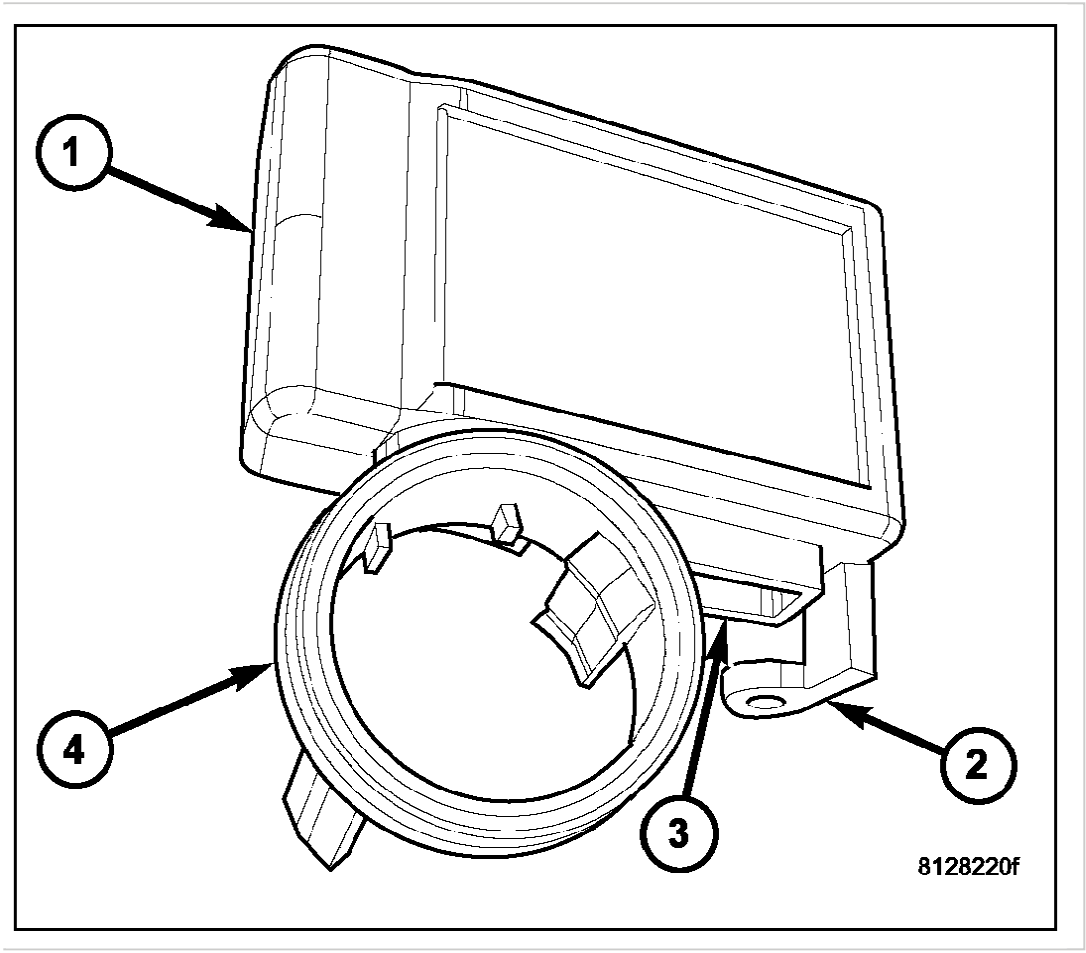
SENTRY KEY REMOTE ENTRY MODULE



The Sentry Key REmote Entry Module (SKREEM) (1) is sometimes referred to as the Wireless Control Module (WCM) The SKREEM is the primary component of the Sentry Key Immobilizer System (SKIS) and is also the receiver for the Remote Keyless Entry (RKE) system. The SKREEM is located on the right side of the steering column, near the ignition lock cylinder housing and is concealed beneath the steering column shrouds. The molded black plastic housing for the SKREEM has an integral molded plastic halo-like antenna ring (4) that extends from the bottom. When the SKREEM is properly installed on the steering column, the antenna ring is oriented around the circumference of the ignition lock cylinder housing.

A single integral connector receptacle (3) is located just behind the antenna ring on the bottom of the SKREEM housing. An integral molded plastic mounting tab (2) on the rear corner of the SKREEM housing has a hole in the center through which a screw passes to secure the unit to the steering column. The SKREEM is connected to the vehicle electrical system through a single take out and connector of the instrument panel wire harness.

Two SKREEM modules are used: one for vehicles equipped with RKE only, and one for vehicles equipped with RKE and SKIS. The SKREEM cannot be adjusted or repaired. If faulty or damaged, the entire SKREEM unit must be replaced.

The Sentry Key REmote Entry Module (SKREEM) contains a Radio Frequency (RF) transceiver and a microprocessor The SKREEM transmits RF signals to, and receives RF signals from the Sentry Key transponder through a tuned antenna enclosed within the molded plastic antenna ring integral to the SKREEM housing. If this antenna ring is not mounted properly around the ignition lock cylinder housing, communication problems between the SKREEM and the transponder may arise. These communication problems will result in Sentry Key transponder-related faults. The SKREEM also serves as the Remote Keyless Entry (RKE) RF receiver. The SKREEM communicates over the Controller Area Network (CAN) data bus with the ElectroMechanical Instrument Cluster (EMIC), the Powertrain Control Module (PCM)/Engine Control Module (ECM), the Gateway module (SRT10 vehicles with a hybrid bus only) and the diagnostic scan tool.

The SKREEM and the PCM/ECM both use software that includes a rolling code algorithm strategy, which helps to reduce the possibility of unauthorized Sentry Key Immobilizer System (SKIS) disarming. The rolling code algorithm ensures security by preventing an override of the SKIS through the unauthorized substitution of the SKREEM or the PCM/ECM. However, the use of this strategy also means that replacement of either the SKREEM or the PCM/ECM units will require a system initialization procedure to restore system operation.

The SKREEM retains in memory the ID numbers of any Sentry Key transponder that is programmed into it. A maximum of eight Sentry Key transponders can be programmed into the SKREEM. For added system security, each SKREEM is programmed with a unique Secret Key code. This code is stored in memory, sent over the CAN data bus to the PCM or ECM, and is encoded to the transponder of every Sentry Key that is programmed into the SKREEM. Therefore, the Secret Key code is a common element that is found in every component of the SKIS.

Another security code called a PIN, is used to gain access to the SKREEM Secured Access Mode. The Secured Access Mode is required during service to perform the SKIS initialization and Sentry Key transponder programming procedures. The SKREEM also stores the Vehicle Identification Number (VIN) in its memory, which it learns through a CAN data bus message from the PCM or ECM during SKIS initialization.

In the event that a SKREEM replacement is required, the Secret Key code can be transferred to the new SKREEM from the PCM using a diagnostic scan tool and the SKIS initialization procedure. Proper completion of the SKIS initialization will allow the existing Sentry Keys to be programmed into the new SKREEM so that new keys will not be required. In the event that the original Secret Key code cannot be recovered, SKREEM replacement will also require new Sentry Keys. The diagnostic scan tool will alert the technician during the SKIS initialization procedure if new Sentry Keys are required.

When the ignition switch is turned to the On position, the SKREEM transmits an RF signal to excite the transponder in the ignition key. The SKREEM then listens for an RF signal response from the transponder. If the response received identifies the key as valid, the SKREEM sends a valid key message to the PCM/ECM over the CAN bus. If the response received identifies the key as invalid or if no response is received from the key transponder, the SKREEM sends an invalid key message to the PCM/ECM. The PCM/ECM will enable or disable engine operation based upon the status of the SKREEM messages. It is important to note that the default condition in the PCM or ECM is an invalid key; therefore, if no message is received from the SKREEM by the PCM or ECM, the engine will be disabled and the vehicle immobilized after **two seconds** of running.

The SKREEM also sends security indicator status messages to the EMIC over the CAN data bus to tell the EMIC how to operate the security indicator. The security indicator status message from the SKREEM tells the EMIC to turn the indicator on for about **three seconds** each time the ignition switch is turned to the On position as a bulb test. After completion of the bulb test, the SKREEM sends security indicator status messages to the EMIC to turn the indicator off, turn the indicator on, or to flash the indicator on and off. If the security indicator flashes or stays on solid after the bulb test, it signifies a SKIS fault. If the SKREEM detects a system malfunction and/or the SKIS has become

inoperative, the security indicator will stay on solid. If the SKREEM detects an invalid key or if a key transponder-related fault exists, the security indicator will flash. If the vehicle is equipped with the Customer Learn transponder programming feature, the SKREEM will also send messages to the EMIC to flash the security indicator whenever the Customer Learn programming mode is being utilized.

The SKIS performs a self-test each time the ignition switch is turned to the On position, and will store fault information in the form of a Diagnostic Trouble Code (DTC) in SKREEM memory if a system malfunction is detected. The SKREEM can be diagnosed, and any stored DTC can be retrieved using a diagnostic scan tool.