Antitheft and Alarm Systems: Description and Operation

General Description

PASSLOCK(TM) SYSTEM

The design of the Passlock(TM) system is to prevent vehicle theft by disabling the engine unless the Passlock(TM) lock cylinder rotates properly by engaging the correct ignition key. The system is similar in concept to the passkey system. However, the Passlock(TM) eliminates the need for a key mounted resistor pellet. The components of the system are as follows:

^ The ignition lock cylinder
^ The ignition switch
^ The Passlock(TM) sensor
^ The EVO/Passlock(TM) module
^ The security indicator
^ The vehicle/powertrain control module (VCM/PCM)

IGNITION LOCK CYLINDER AND HOUSING

The ignition lock cylinder is located at the upper right side of the steering column. The Passlock(TM) sensor is in the steering column. The Passlock(TM) sensor is separate from the key and lock cylinder. The key and the lock cylinder work together in order to determine if the proper ignition key was used to start the vehicle.

In the event of an open Class 2 serial data line between the EVO/Passlock(TM) Module and the VCM/PCM, the vehicle will become fail-enabled if the VCM/PCM has already received the password from the EVO/Passlock(TM) Module for that ignition cycle (the engine is running). In this event, the following conditions occur:

^ The security telltale will be ON continuously.
^ The VCM/PCM will become tail-enabled for future ignition cycles.

If a failure in the Class 2 serial data line occurs before the ignition cycle, when the VCM/PCM is not fail-enabled, the following conditions occur:

^ The VCM/PCM will never receive a valid password in order to enable the fuel injectors.
^ The vehicle will not start.

IGNITION SWITCH

The lock cylinder and the visible key insert portion of the ignition switch are located at the upper right side of the steering column. The electrical switching portion of the assembly is separate from the key and lock cylinder. The electrical switch portion is hidden inside the steering column. The electrical switch portion and the key and lock cylinder synchronize and work in conjunction through the action of the mechanical assembly between the 2 parts.

PASSLOCK(TM) SENSOR

The Passlock(TM) sensor is inside the upper right side of the steering column. The Passlock(TM) sensor contains 2 hall effect sensors. The tamper hall effect sensor is on the top. The security hall effect sensor is under the tamper hall effect sensor. Both of the hall effect sensors monitor the magnet of the lock cylinder through an opening. The tamper hall effect sensor is physically placed on top of the security hall effect sensor. The placement enables the tamper hall effect sensor to engage first if an intruder attempts to bypass the Passlock(TM) sensor by placing a large magnet around that area of the steering column. There is a tamper resistor inside the Passlock(TM) sensor in order to help prevent tamper to the system. Passlock(TM) equipped vehicles have a selection of 10 different security resistors ranging up to **13 k ohms**. Install any of the security resistors inside the Passlock(TM) Sensor in order to generate a unique Passlock(TM) code. All 10 combinations of the Passlock(TM) sensor have the same part number. However, you cannot simply replace the Passlock(TM) sensor and expect the system to operate properly. Always start by performing the Diagnostic System Check first and following the instructions.

EVO/PASSLOCK(TM) MODULE

The EVO/Passlock(TM) module contains the theft deterrent system logic. The EVO/Passlock(TM) module reads the Passlock(TM) data from the Passlock(TM) sensor. If the Passlock(TM) data is correct, the EVO/Passlock(TM) module will pass theft. The EVO/Passlock(TM) module will then transmit the code password to the VCM/PCM. During the tamper mode the vehicle may start. The vehicle will quickly stall. If the EVO/Passlock(TM) module receives the wrong Passlock(TM) data, the VTD will immediately go into the tamper mode. The tamper mode will lock-out the vehicle fuel injectors for **10 minutes**. The SECURITY indicator will flash while the VTD is in the tamper mode.

If the passlock sensor sends a correct password to the EVO/Passlock module when the ignition is in the ON position, the EVO/Passlock module will send a fuel enable signal to the VCM/PCM. The VCM/PCM will not disable the fuel due to any EVO/Passlock module message for the remainder of the ignition cycle.

SECURITY INDICATOR

The SECURITY indicator is on the instrument cluster. If the SECURITY indicator flashes or if the SECURITY indicator lights continuously during the vehicle operation, Refer to **A Diagnostic System Check - Theft Deterrent**. See: Testing and Inspection

VEHICLE/POWERTRAIN CONTROL MODULE

The VCM/PCM communicates with the EVO/Passlock Module over the Class 2 serial data line. When the EVO/Passlock(TM) Module determines a no start condition it sends a Class 2 serial data password to the VCM/PCM in order to disable the fuel injection system. If the EVO/Passlock(TM) Module receives the expected voltage from the Passlock(TM) sensor, the EVO/Passlock(TM) Module sends a Class 2 serial data password to the VCM/PCM in order to enable the fuel injection system. The VCM/PCM then allows the vehicle to start correctly. It the

Class 2 serial data password from the EVO/Passlock(TM) Module to the VCM/PCM is not within the Vehicle Security Status Message, the fuel injectors will shut OFF during a star attempt. The SECURITY telltale will be ON STEADY for approximately **10 minutes** and then turns OFF. If the VCM/PCM does not receive the same password from the EVO/Passlock(TM) Module as the last learned one, the vehicle will start and quickly stalls due to the Fuel Lockout.

CHANGING THE PASSLOCK(TM) COMPONENTS

The design of the Passlock(TM) system is to prevent theft even if the various theft deterrent parts change. The parts that can no longer be changed without the possibility of going into a tamper mode are:

^ The Passlock(TM) sensor
^ The EVO/Passlock(TM) module
^ The VCM/PCM

If you replace any of these parts the vehicle may start and stall for **10 minutes**. This is the long tamper mode. If this occurs, the system must go through a long tamper mode cycle. During this time the SECURITY indicator will be flashing for the full **10 minutes** and the DTC B3031 will be set. The EVO/Passlock(TM) module and the VCM/PCM require the full 10 minutes in order to complete a learn cycle. The ignition switch must remain in the RUN position until the SECURITY indicator stops flashing. You will need to repeat the cycle if the ignition switch does not remain in the RUN position. When replacing any of the above parts it is recommended to perform one of the following procedures:

^ Seed and Key Procedure. Refer to **PASSLOCK Reprogramming Seed and Key**. See: Service and Repair
^ Auto Learn Procedure. Refer to **PASSLOCK Reprogramming Auto Learn**. See: Service and Repair