

SECTION 9D

THEFT DETERRENT SYSTEMS

CAUTION: This vehicle is equipped with the Supplemental Inflatable Restraint (SIR). Refer to CAUTIONS in Section 9J under "ON-VEHICLE SERVICE" and the SIR Component and Wiring Location view in Section 9J before performing service on or around SIR components or wiring. Failure to follow CAUTIONS could result in possible air bag deployment, personal injury, or otherwise unneeded SIR system repairs.

NOTICE: When fasteners are removed, always reinstall them at the same location from which they were removed. If a fastener needs to be replaced, use the correct part number fastener for that application. Fasteners that are not reused, and those requiring thread locking compound will be called out. The correct torque value must be used when installing fasteners that require it. If the above conditions are not followed, parts or system damage could result.

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GENERAL DESCRIPTION

PASS-Key II® SYSTEM

The personal automotive security system (PASS-Key II®) is standard equipment on this vehicle. The system is designed to prevent vehicle theft by disabling the engine unless an ignition key assembly with a specific electrical resistance is used in the ignition cylinder assembly. The components of the system are the ignition key assembly, the ignition cylinder assembly, the theft deterrent module assembly, the theft deterrent relay assembly, and the powertrain control module (PCM).

SYSTEM OPERATION

The PASS-Key II® system is designed to prevent the engine from starting if the proper resistance is not sensed from the ignition key assembly. Of the 15 key codes (resistance values) available, only one will work with each theft deterrent module assembly.

The PASS-Key II® system prevents the engine from starting by controlling the theft deterrent relay assembly and the PCM fuel enable input. If the PCM does not sense

the proper frequency signal on the fuel enable input, it will not provide fuel to the engine.

If the wrong resistance value is sensed when the ignition switch is in the "RUN" position, the theft deterrent module assembly will not ground the starter enable circuit and will not output the fuel enable signal for approximately three minutes. This prevents the engine from starting and discourages the thief from trying key codes (resistance values) at random.

If the correct resistance value is sensed when the ignition switch is in the "RUN" position, the theft deterrent module assembly will ground the starter enable circuit and output the fuel enable signal. This will allow the engine to start normally.

If the PASS-KEY II® system detects an open or short to ground when the ignition switch is in "RUN" position, the theft deterrent module assembly will default to fail enable. Fail enable occurs when the proper key resistance has been sensed during the open or short to ground occurring. Fail enable will illuminate the security indicator lamp and allow the operator to stop and start the vehicle until the problem is corrected.

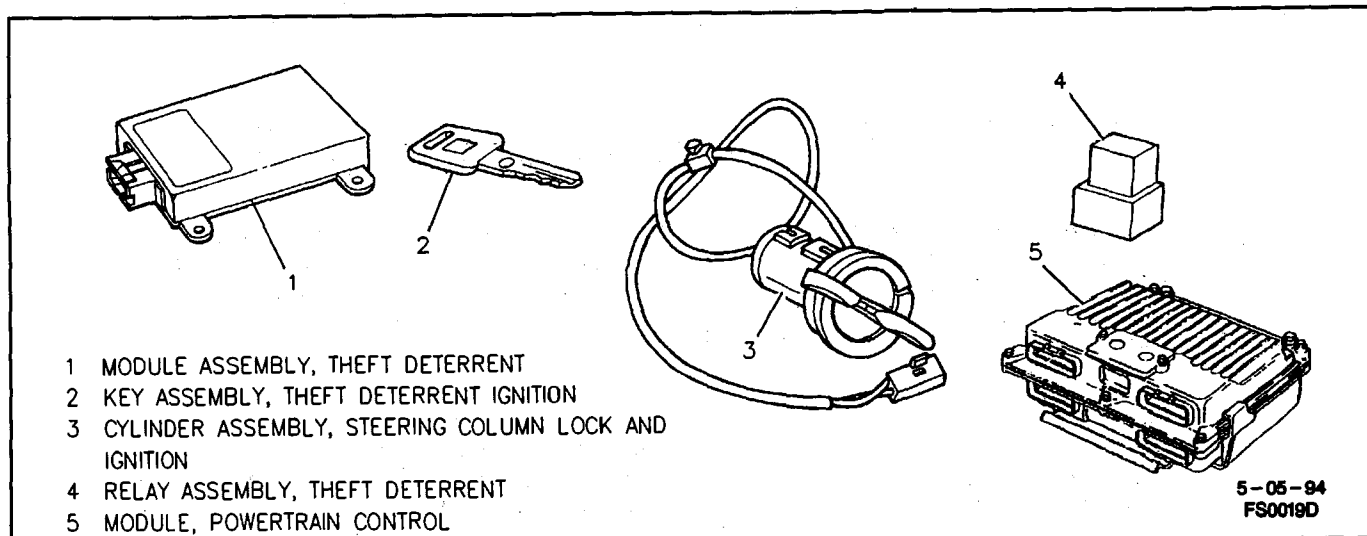


Figure 1 - PASS-Key II® System Components (Typical)

SYSTEM COMPONENTS

Figure 1

Ignition Key Assembly

The ignition key assembly for vehicles equipped with the PASS-Key II® system is an assembly of a typical square ignition key blank and resistor assembly. The ignition key blank and resistor assembly are not serviceable separately. There are 15 different ignition key assemblies, each with a different resistance value. The ignition key assembly also has mechanical cuts similar to non-PASS-Key II® ignition key assemblies.

! Important

- When servicing the PASS-Key II® system, obtain all ignition key assemblies, if possible, and verify proper values with tool J 35628-A, VATS/PASS Interrogator. Refer to "Copying Ignition Key Assemblies" in this section.

Steering Column Lock and Ignition Cylinder Assembly

Figure 2

The ignition cylinder assembly in vehicles equipped with the PASS-Key II® system contains a set of electrical contacts used to measure the resistor assembly in the ignition key assembly. When servicing the ignition cylinder assembly, be certain to maintain proper wire routing. A two pin connector at the base of the steering column assembly connects the contacts to the vehicle wiring. The connector is also used for diagnostic purposes. The ignition cylinder assembly also performs all functions of ignition cylinder assemblies on non-PASS-Key II® vehicles. When replacing an ignition cylinder assembly, it will be necessary to make new ignition key assemblies which match the PASS-Key II® key code of the theft deterrent module assembly and the mechanical cut of the new ignition cylinder assembly.

! Important

- The wire routing for the contacts inside the steering column assembly is critical.

Theft Deterrent Module Assembly

The theft deterrent module assembly contains the logic of the PASS-Key II® system. The theft deterrent module assembly has inputs from the battery, ignition circuits, and the resistor assembly. The theft deterrent module assembly has outputs to the starter enable circuit, the fuel enable circuit, and the security lamp circuit.

Ignition Input

The ignition input is used to turn the theft deterrent module assembly on. When the theft deterrent module assembly is turned on, it will read the resistor assembly and control the outputs accordingly. When the theft deterrent module assembly is turned off the resistor assembly is not read, and the theft deterrent relay assembly and fuel enable output will not allow the engine to start. When the ignition switch is in the "OFF" position, the battery input to the theft deterrent module assembly will draw about 1 milli-amp.

Key Resistor Inputs

The key resistor inputs are used to determine if the correct ignition key assembly is being used to start the vehicle. The key resistor inputs are read when the theft deterrent module assembly is turned on. If the key code (resistance value) of the ignition key assembly matches the value stored in the theft deterrent module assembly, the theft deterrent relay assembly and fuel enable output will allow the vehicle to start. If the resistance value of the ignition key assembly does not match the value stored in the theft deterrent module assembly, the relay assembly and fuel enable output will not allow the vehicle to start.

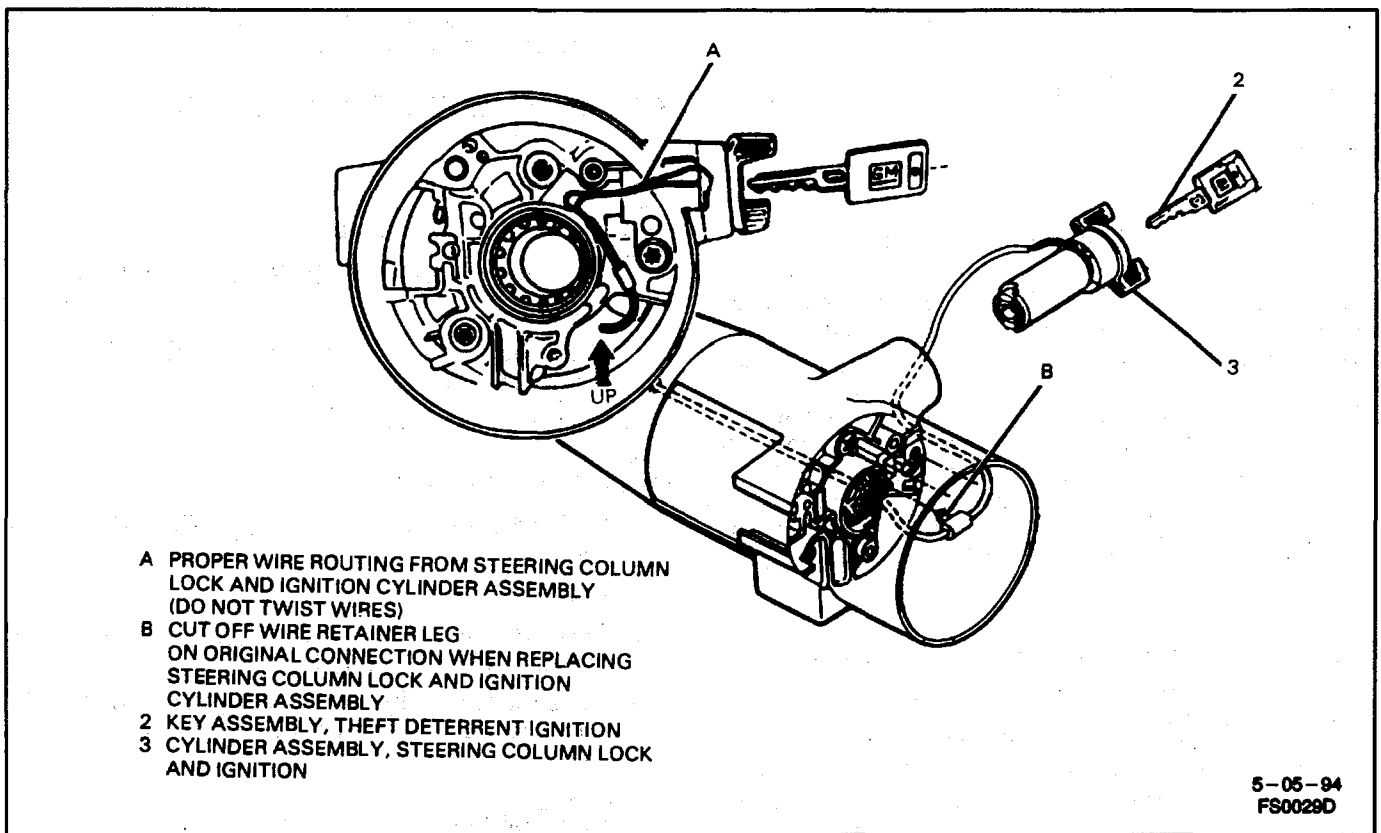


Figure 2 - Ignition Cylinder Assembly Wire Routing

Starter Enable Output

The starter enable circuit controls the theft deterrent relay assembly. When the theft deterrent module assembly sees the proper resistance at the ignition key assembly, it grounds the starter enable circuit which allows the engine to be cranked. If the theft deterrent module assembly does not sense the proper resistance at the ignition key assembly, it will not ground the starter enable circuit.

Fuel Enable Output

The fuel enable circuit is an output from the theft deterrent module assembly and an input to the PCM. When the theft deterrent module assembly senses the proper resistance at the ignition key assembly, it will output a signal to the PCM. If the theft deterrent module assembly does not see the proper resistance at the ignition key assembly, it will not output the signal to the PCM.

Security Indicator Lamp Output

The "SECURITY" lamp circuit is an indicator lamp

output. The lamp output will be grounded during a five second "bulb test" at key on, at any time that the theft deterrent module assembly is preventing the engine from starting, during an open or short to ground, or if the theft deterrent module assembly is not properly programmed.

Theft Deterrent Relay Assembly

The relay assembly is used to stop the engine from cranking if the correct resistance is not sensed at the ignition key assembly. It prevents the engine from cranking by opening the circuit to the starter solenoid switch.

Powertrain Control Module (PCM)

The PCM reads the fuel enable circuit to determine if fuel injection should be allowed. If the fuel enable signal is not present, the PCM will not allow fuel injection. If the signal is present, the PCM will allow fuel injection and normal engine operation.

The PCM has some diagnostic features associated with the fuel enable input, including diagnostic trouble codes. For details, refer to SECTION 6E.

ON-VEHICLE SERVICE

IGNITION KEY ASSEMBLY

Copying Ignition Key Assemblies

Tool Required:

J 35628-A VATS/PASS Interrogator

To copy an ignition key assembly, it is necessary to first determine which PASS-Key II® key code (resistance value) is needed. The ignition key assembly being copied must be tested to determine the key code. The ignition key assembly may be tested using J 35628-A. To use J 35628-A, turn the tool on, make sure the tool wiring connectors are disconnected and insert the ignition key assembly into the tool lock cylinder. The "Key Code Reader" will display the key code of the ignition key assembly. Obtain an ignition key blank matching this key code and cut it to match the original ignition key assembly.

Replacing Lost Ignition Key Assemblies

Tool Required:

J 35628-A VATS/PASS Interrogator

To replace lost ignition key assemblies it is necessary to determine the mechanical cut and the electrical key code.

The mechanical and electrical key codes are recorded on the vehicle invoice. If these codes are available, use them to create a new ignition key assembly. If they are not, follow the procedure below.

The mechanical cut must be determined first. The mechanical cut can be determined from the key code on the ignition cylinder assembly or by calling Divisional Roadside Assistance. If the mechanical cut cannot be determined, the ignition cylinder assembly should be replaced. Make an ignition key blank with the correct mechanical cut to use while determining the proper electrical key code.

To determine the proper electrical key code, use J 35628-A and the following procedure:

Important

- Do not disconnect yellow two-way SIR connector.

- Connect J 35628-A wiring to PASS-Key II® dash connector at base of steering column assembly. Do not connect to steering column wiring.
- Turn J 35628-A on and place key code switch to "1" and attempt to start engine with proper mechanically cut key. If engine starts, key code is "1."
- If engine does not start, turn ignition off and press 4-minute timer on J 35628-A.
- When timer light goes out, place key code switch to "2" and attempt to start engine. If engine starts, key code is "2."
- Continue trying different key codes until proper key code is found.

- Make new ignition key assembly with proper key code and mechanical cut.

THEFT DETERRENT MODULE ASSEMBLY

Figure 3

Remove or Disconnect

- Instrument panel assembly. Refer to SECTION 8C.
- Bolts/screws (6).
- Theft deterrent module assembly (1) from inflatable restraint bracket assembly (7).
- Electrical connector.

Install or Connect

NOTICE: See "Notice" on page 9D-1 of this section.

- Electrical connector.
- Theft deterrent module assembly (1) to inflatable restraint bracket assembly (7).
- Bolts/screws (6) by first securing lower right bolt/screw (6) and then securing upper left bolt/screw (6).

Tighten

- Bolts/screws (6) to 3.2 N•m (29 lb. in.).
- Instrument panel assembly. Refer to SECTION 8C.

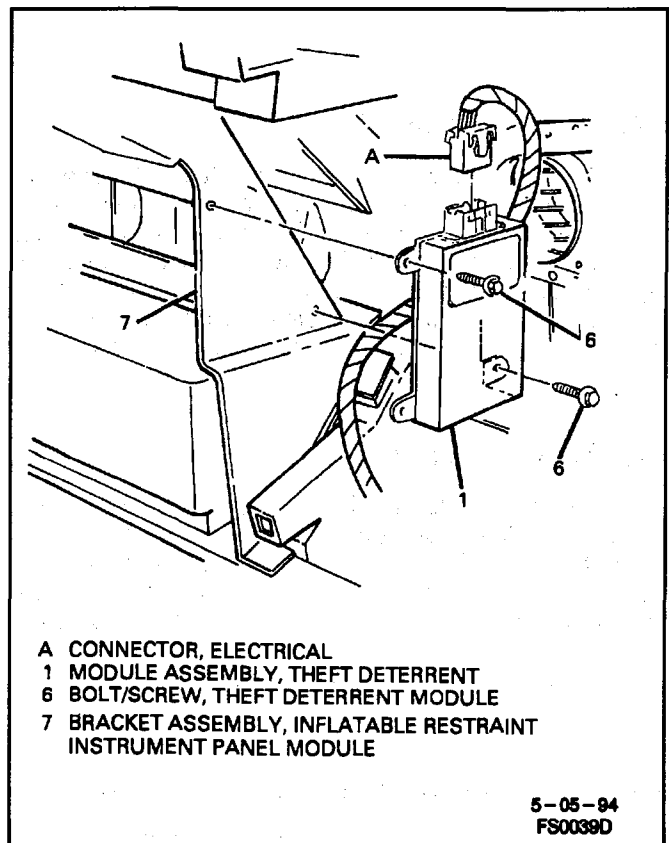


Figure 3 - Theft Deterrent Module Assembly

THEFT DETERRENT RELAY ASSEMBLY

Figure 4

If the relay assembly is determined to be inoperative, it should be replaced.

↔ Remove or Disconnect

CAUTION: Refer to "Caution" under "Disconnecting the Battery Negative Cable Assembly" in SECTION 0A.

1. Battery negative cable assembly.
2. Instrument panel assembly. Refer to SECTION 8C.
3. Relay assembly (8) from inflatable restraint bracket assembly (7).
4. Electrical connector from relay assembly (8).

↔ Install or Connect

1. Electrical connector to relay assembly (8).
2. Relay assembly (8) to inflatable restraint bracket assembly (7).
3. Instrument panel assembly. Refer to SECTION 8C.
4. Battery negative cable assembly.

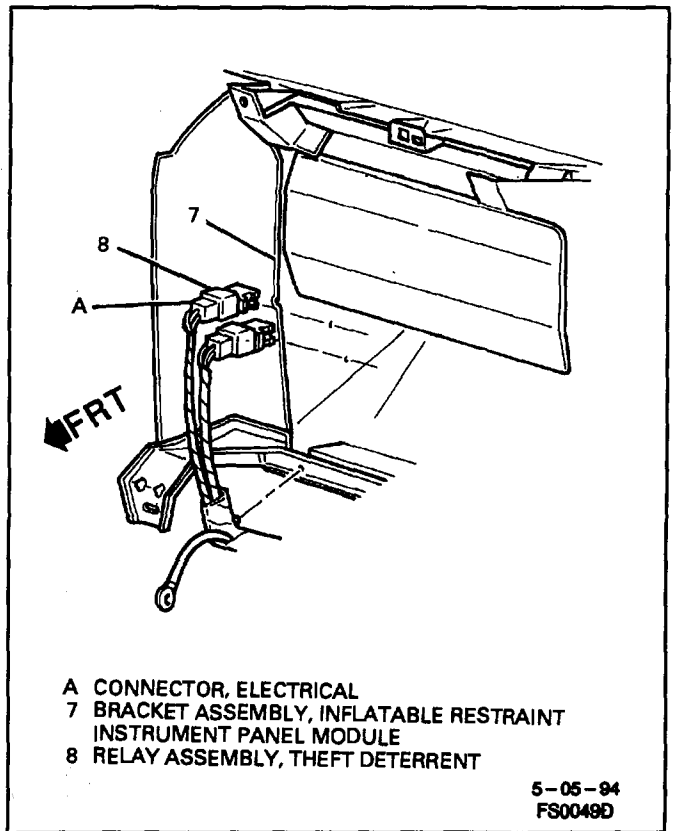


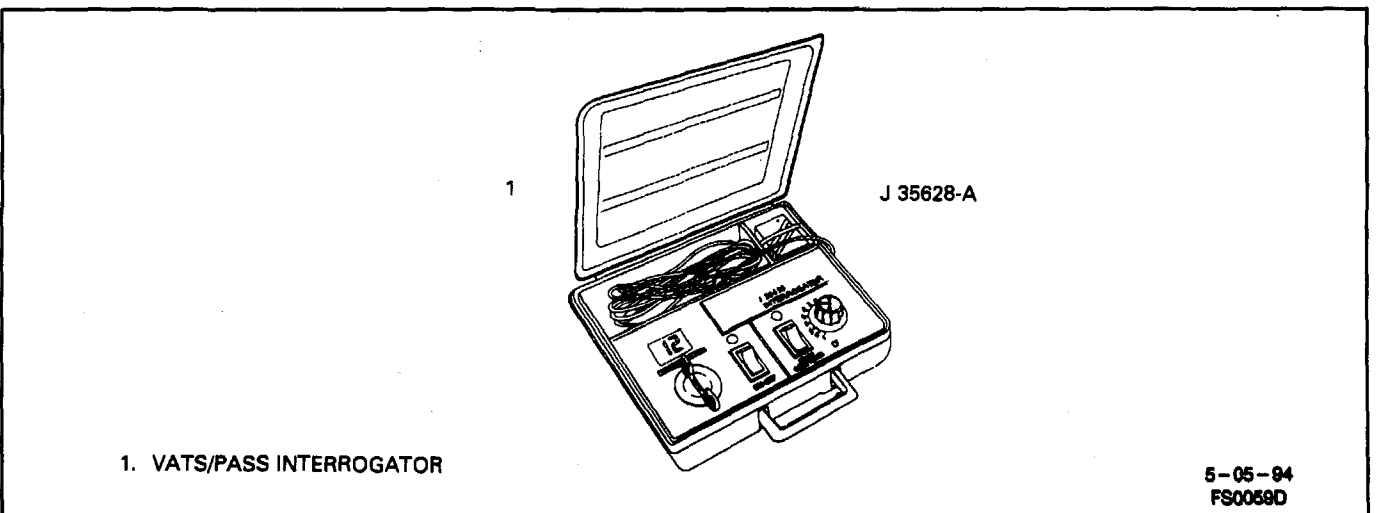
Figure 4 - Theft Deterrent Relay Assembly

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Theft Deterrent Module Bolt/Screw 3.2 N•m (29 lb. in.)

SPECIAL TOOLS



1. VATS/PASS INTERROGATOR