

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. If the correct part number is not available, a fastener of equal size and strength (or stronger) may be used. 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 engine control module (ECM).

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 ECM fuel enable input. If the ECM does not sense

the proper pulse width modulate (PWM) 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 PWM 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 PWM signal. This will allow the engine to start normally.

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 ignition circuit 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 only when the theft deterrent module assembly is first 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.

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 see the proper resistance at the ignition key assembly, it will not ground the starter enable circuit.

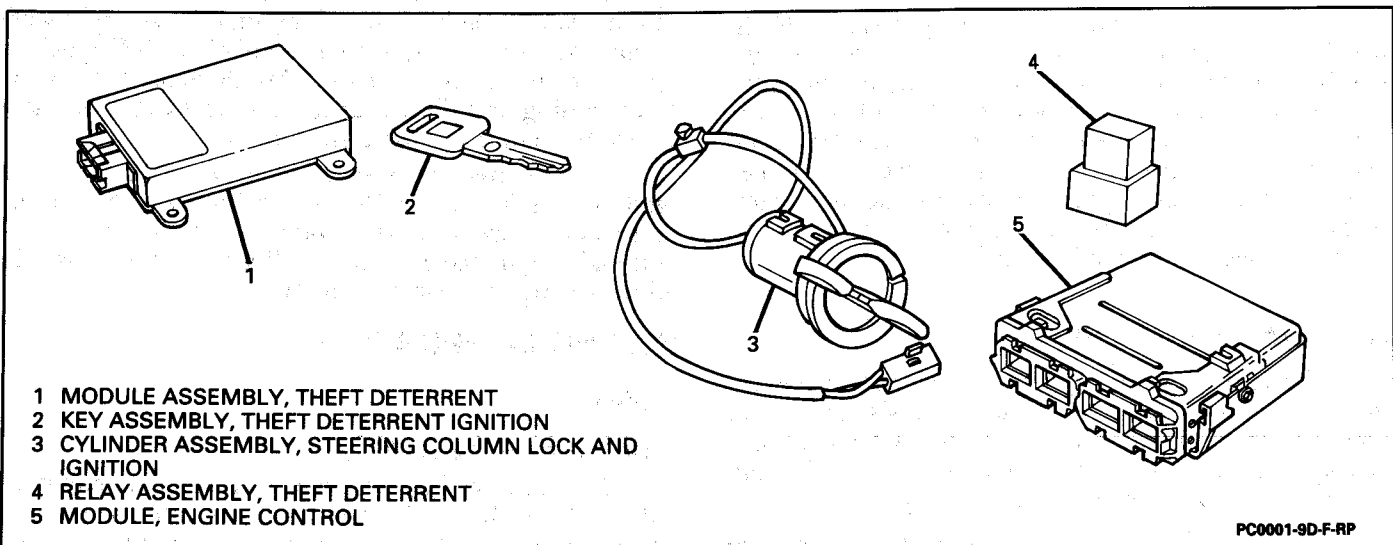


Figure 1 – PASS-Key II® System Components (Typical)

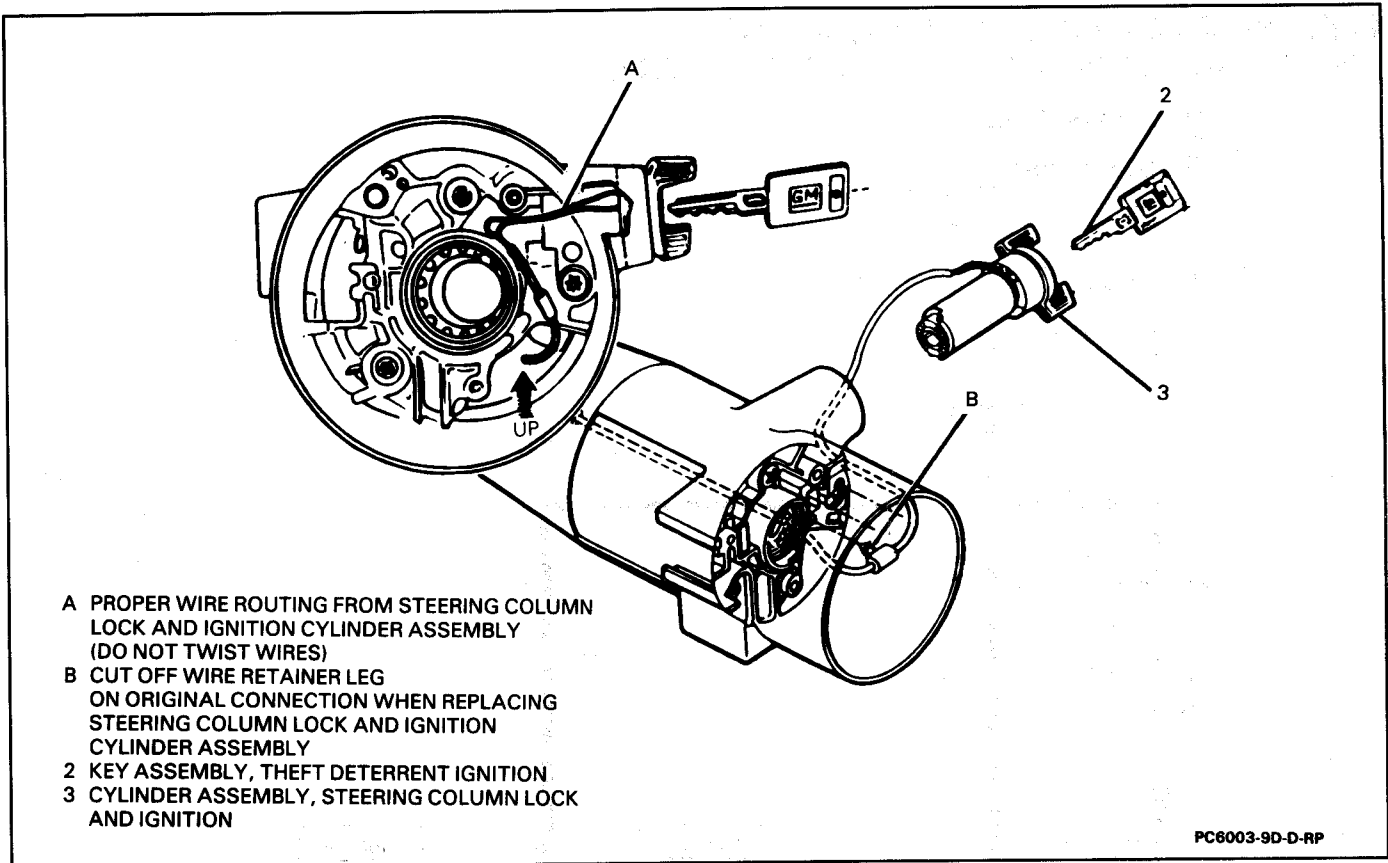


Figure 2 - Ignition Cylinder Assembly Wire Routing

Fuel Enable Output

The fuel enable circuit is an output from the theft deterrent module assembly and an input to the ECM. When the theft deterrent module assembly sees the proper resistance at the ignition key assembly, it will output a pulse width modulated (PWM) signal to the ECM. If the theft deterrent module assembly does not see the proper resistance at the ignition key assembly, it will not output the PWM signal to the ECM.

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, or if the theft deterrent module assembly is not properly programmed.

Theft Deterrent Relay Assembly

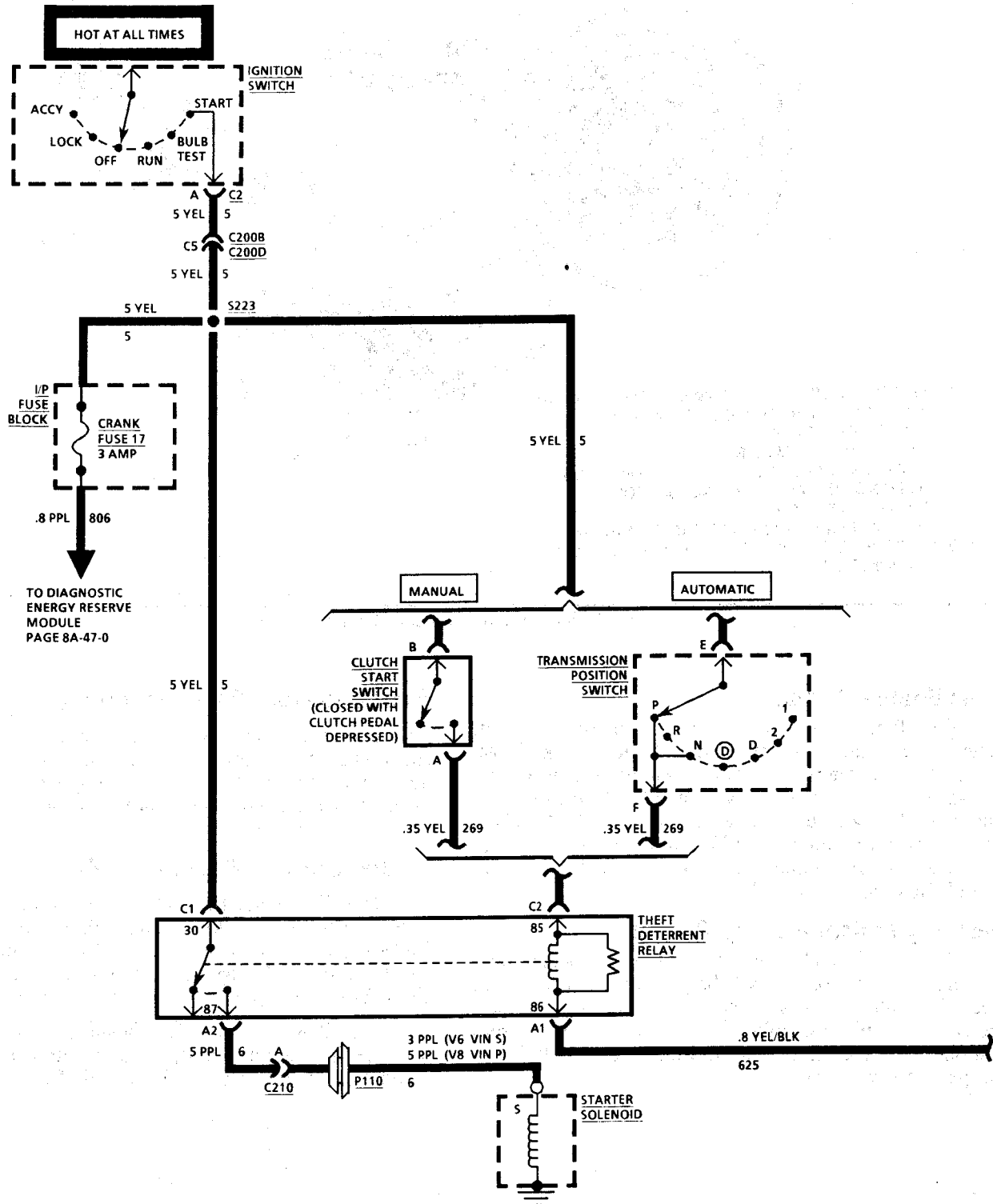
The relay assembly is used to stop the engine from cranking if the correct resistance is not sensed at the ignition key assembly. It prevents the engine from cranking by opening the circuit to the starter solenoid switch.

Engine Control Module (ECM)

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

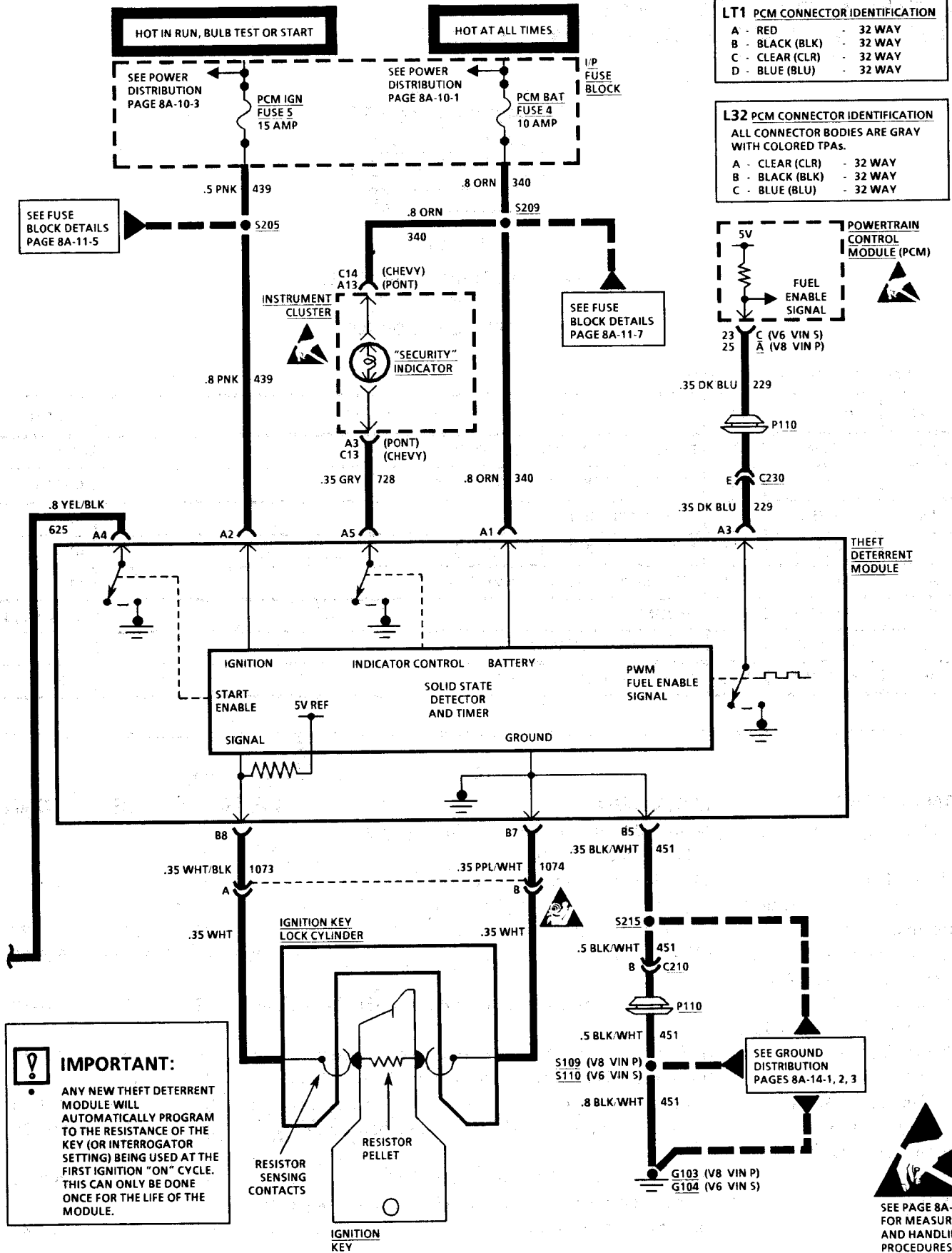
The ECM has some diagnostic features associated with the fuel enable input, including diagnostic trouble codes. For details, refer to SECTION 6E.

ELECTRICAL DIAGNOSIS: PASS-Key® II
 (PERSONALIZED AUTOMOTIVE SECURITY SYSTEM)



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LT1 PCM CONNECTOR IDENTIFICATION

A - RED	- 32 WAY
B - BLACK (BLK)	- 32 WAY
C - CLEAR (CLR)	- 32 WAY
D - BLUE (BLU)	- 32 WAY

L32 PCM CONNECTOR IDENTIFICATION

ALL CONNECTOR BODIES ARE GRAY WITH COLORED TPAs.

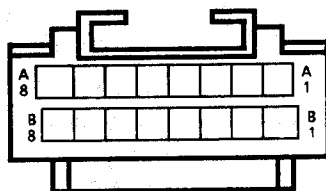
A - CLEAR (CLR)	- 32 WAY
B - BLACK (BLK)	- 32 WAY
C - BLUE (BLU)	- 32 WAY

IMPORTANT:

ANY NEW THEFT DETERRENT MODULE WILL AUTOMATICALLY PROGRAM TO THE RESISTANCE OF THE KEY (OR INTERROGATOR SETTING) BEING USED AT THE FIRST IGNITION "ON" CYCLE. THIS CAN ONLY BE DONE ONCE FOR THE LIFE OF THE MODULE.

SEE PAGE 8A-3-0 FOR MEASURING AND HANDLING PROCEDURES

**ELECTRICAL DIAGNOSIS: PASS-Key® II
(PERSONALIZED AUTOMOTIVE SECURITY SYSTEM)**



12110259

16-WAY F MICRO-PACK 100 SERIES
GRN

THEFT DETERRENT MODULE

**CAVITIES NOT LISTED ARE NOT USED

CAVITY	WIRE COLOR	CKT	DESCRIPTION	PAGE
A1	ORN	340	POWER FEED FROM PCM BAT FUSE #4	8A-11-7
A2	PNK	439	POWER FEED FROM PCM IGN FUSE #5	8A-11-5
A3	DK BLU	229	FUEL ENABLE SIGNAL	9D-5
A4	YEL/BLK	625	THEFT DETERRENT RELAY CONTROL	9D-4, 5
A5	GRY	728	"SECURITY" INDICATOR LAMP CONTROL	9D-5
B5	BLK/WHT	451	GROUND	8A-14-1, 2, 3
B7	PPL/WHT	1074	IGNITION KEY RESISTOR RETURN	9D-5
B8	WHT/BLK	1073	IGNITION KEY RESISTOR FEED	9D-5

COMPONENT	LOCATION	SECTION 8A-201-PG	FIG.	CONN
Clutch Start Switch	Mounted to clutch pedal bracket, behind Convenience Center	0	1	
I/P Fuse Block	LH side of I/P Carrier, on the side	8	15	202-22
Ignition Key Lock Cylinder	Top RH side of Steering Column	3, 34	5, 51	
Ignition Switch	Part of Steering Column	34	51	202-22
Instrument Cluster	LH side of I/P			202-22
Powertrain Control Module (PCM) (V6 VIN S)	In Engine Compartment, rearward of RH Shock Tower	19	35	202-18
Powertrain Control Module (PCM) (V8 VIN P)	In Engine Compartment, rearward of RH Shock Tower	19	35	202-19
Starter Solenoid	Bottom of RH side of Engine, above Starter Motor	25	42	
Theft Deterrent Module	In I/P, just right of Radio, attached to Air Bag Bracket	8	15	202-14
Theft Deterrent Relay	Mounted to right side of SIR Bracket, behind I/P	45	66	202-20
Transmission Position Switch	Under console, on base of shift control lever	37	54	202-24
C200B (18 cavities)	Part of Forward Lamp Harn, between LH kick panel and Steering Column	47	72	202-2

COMPONENT	LOCATION	SECTION		CONN
		8A-201-PG	FIG.	
C200D (48 cavities)	Part of I/P Harn, between LH kick panel and Steering Column	47	72	202-2
C210 (4 cavities)	Under RH side of I/P, behind RH kick panel	46	67	202-16
C230 (10 cavities)	Under RH side of I/P, behind kick panel	46	67	202-7
G103 (LT1)	RH side of Engine Block, just above Starter (2 rings, 2 wires)	25	42	
G104 (L32)	2 studs, 2 rings on each, interchangeable. Top RH side of Engine, 1 stud in head, 1 stud in Intake Manifold	29	46	
P110	Right side in dash panel, Engine to Passenger Compartment	19	35	
S109 (LT1)	Engine Harn, approx 4 cm from main branch and ECM breakout			
S110 (L32)	Engine Harn, approx 7 cm from main branch and ECM breakout			
S205	I/P Harn, approx 31 cm from Convenience Center breakout			
S209	I/P Harn, approx 24 cm from Convenience Center breakout			
S215	I/P Harn, approx 30 cm before DLC breakout			
S223	I/P Harn, approx 4 cm before DLC breakout			

For a Service Part Cross Reference List and Information, refer to SECTION 8A-200.

TROUBLESHOOTING HINTS (Perform before beginning System Diagnosis)

1. Check the Ignition Key for a cracked resistor pellet or a pellet that is dirty or coated. Also check that the Ignition Key is free from excess plastic around the resistor pellet contacts.
2. Check owner's Ignition Key using the J 35628-A Interrogator or equivalent. If the Key Code window shows "E", replace the owner's key. (See "Key Replacement," page 9D-15.)
3. Check the key pellet sensing contacts in the Ignition Lock Cylinder by looking into the key opening. If the contacts are damaged or not silver in color, replace the Lock Cylinder.
4. Check for an open "PCM IGN Fuse 5" or "PCM BATT Fuse 4". Also check the I/P Fuse Block contacts for each fuse.
5. If the Theft Deterrent Relay must be replaced, also check CKT 6 to the Starter Solenoid for a possible short. A short may have caused the relay to fail.
6. To check the contacts to the key and the wires in the Steering Column, disconnect the connector near the base of the column. Use the J 39200 DVM set on "MIN MAX" to measure the resistance back to the key at this connector while you turn and adjust the Steering Wheel. If there is any change or intermittent reading, replace the Lock Cylinder and the Steering Column wires that come with it. See SECTION 3F5.
7. Check for a broken (or partially broken) wire inside of the insulation which could cause system malfunction but prove "GOOD" in a continuity/voltage check with a system disconnected. These circuits may be intermittent or resistive when loaded, and if possible, should be checked by monitoring for a voltage drop with the system operational (under load).