

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.

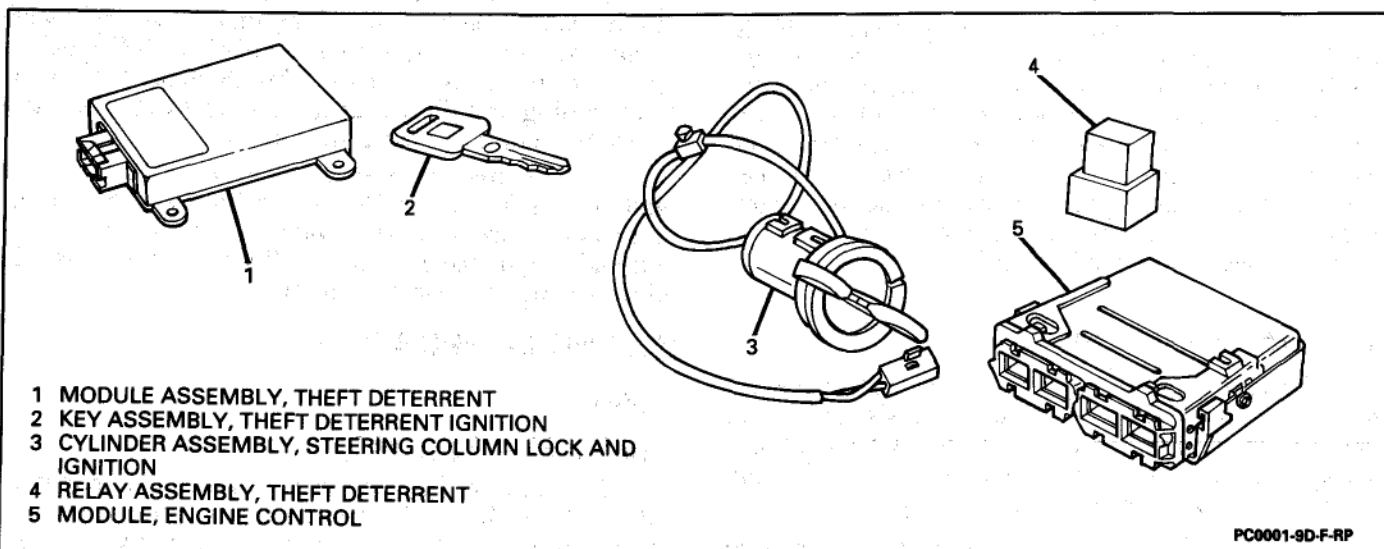


Figure 1 - PASS-Key II® System Components (Typical)

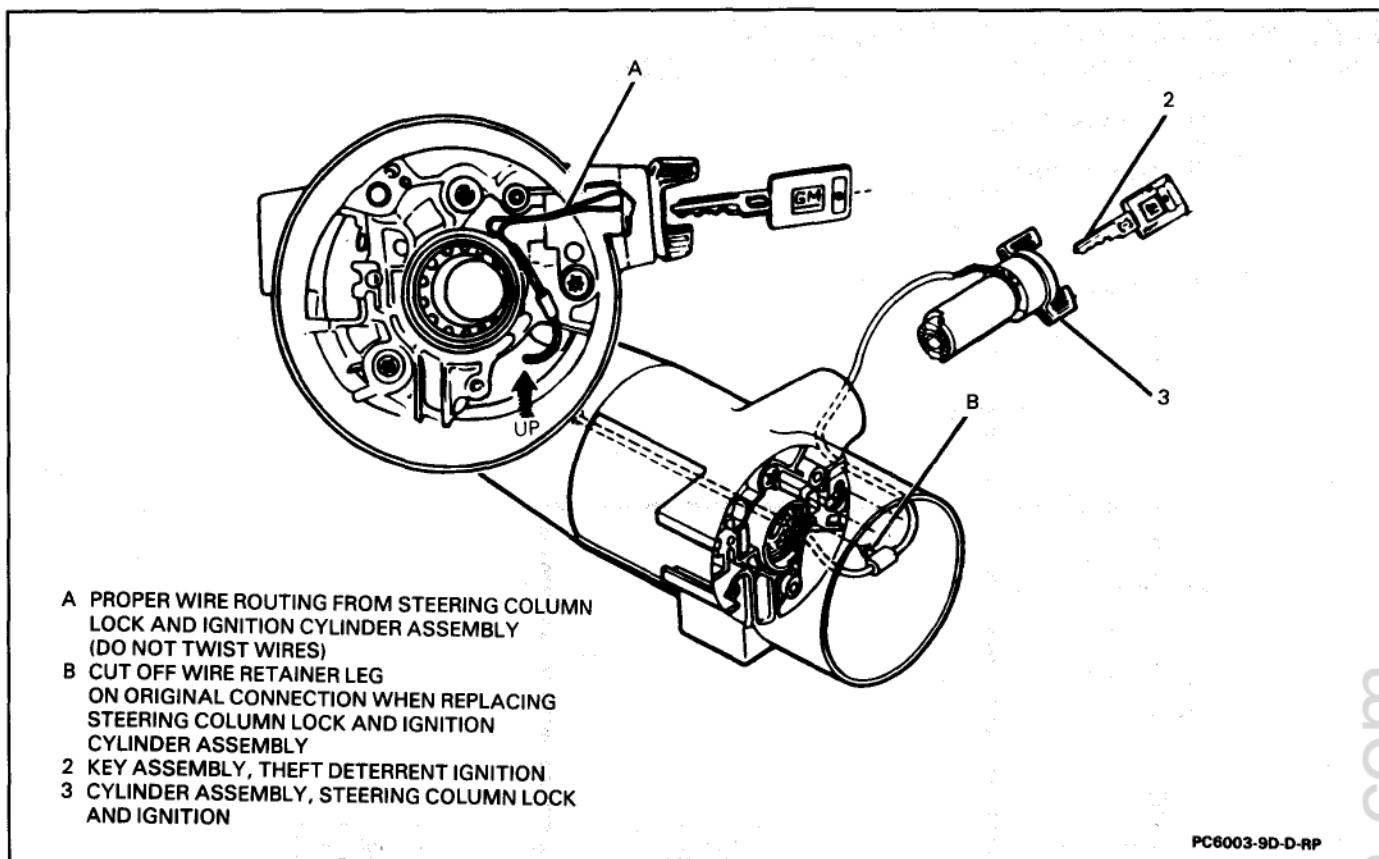


Figure 2 - Ignition Cylinder Assembly Wire Routing

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

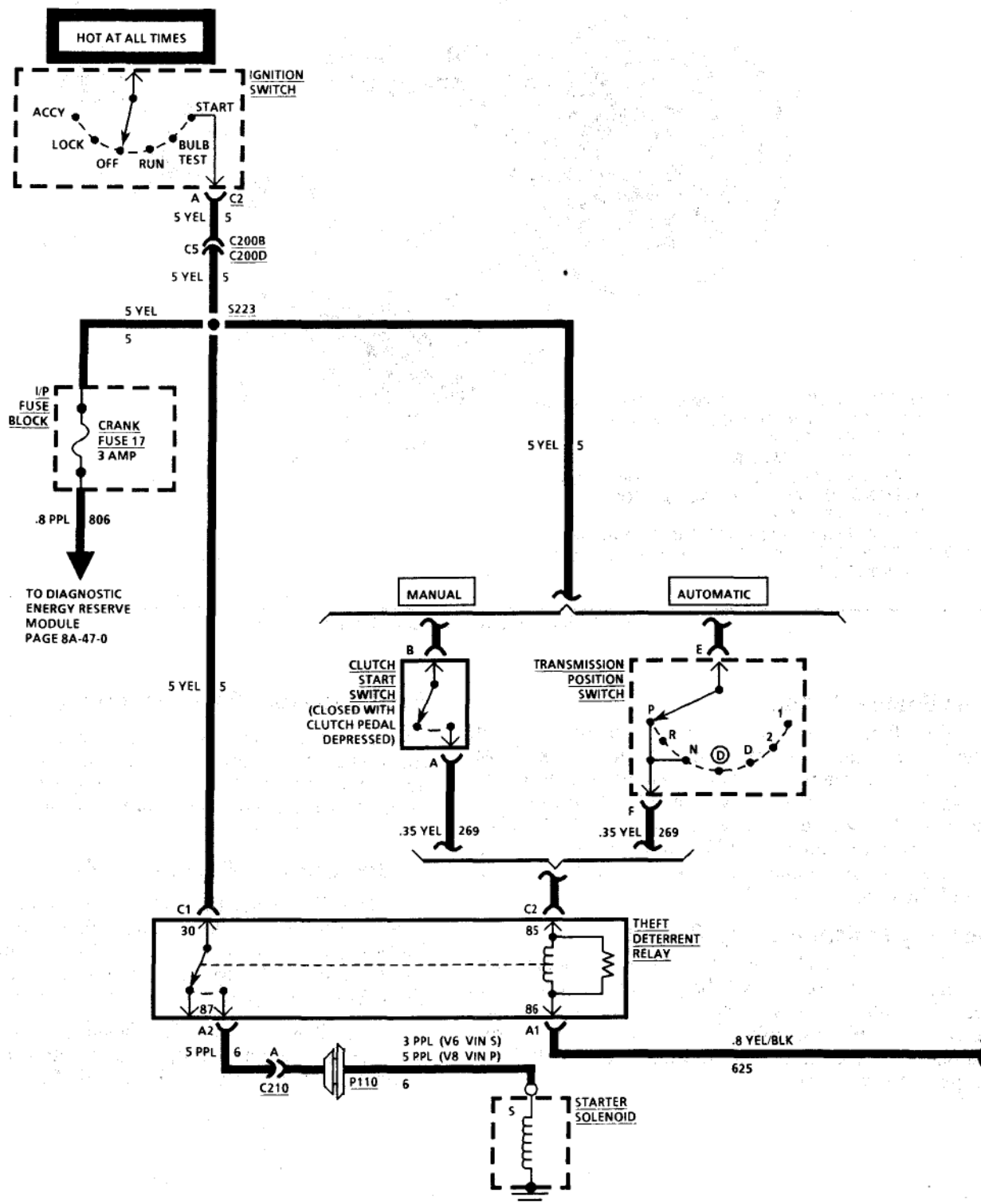
The relay assembly is used to stop the engine from cranking if the correct resistance is not sensed at the ignition key assembly. It prevents the engine from cranking by opening the circuit to the starter solenoid switch.

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.

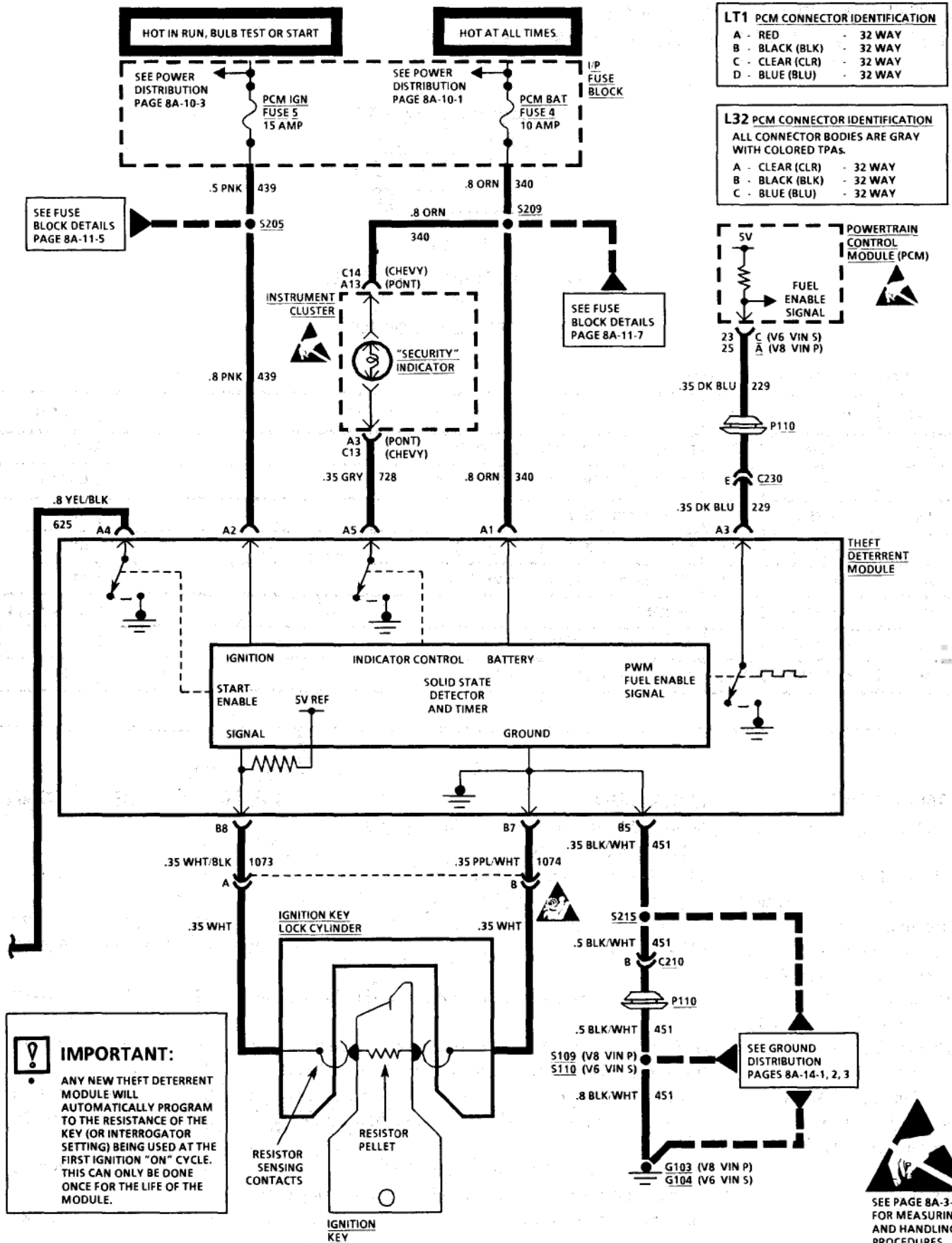
ELECTRICAL DIAGNOSIS: PASS-Key® II (PERSONALIZED AUTOMOTIVE SECURITY SYSTEM)



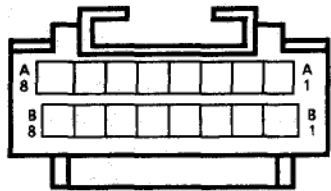
CAUTION: This vehicle is equipped with Supplemental Inflatable Restraint (SIR). Refer to CAUTIONS in Section 9J under "ON-VEHICLE SERVICE" and the SIR Component and Wiring Location view in Section 9J before performing service on or around SIR components or wiring. Failure to follow CAUTIONS could result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



SEE PAGE 8A-3-0
FOR PROPER
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 8A-201-PG	FIG.	CONN
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).

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

8. Check for proper installation of aftermarket electronic equipment which may affect the integrity of other systems (see "Troubleshooting Procedures," page 8A-4-0).
9. Refer to "Intermittents" on this page.
- Refer to System Diagnosis.

SYSTEM DIAGNOSIS

- Perform the System Check and refer to the Symptom Table for the appropriate diagnostic procedures.

INTERMITTENTS

Important:

- Additional information for detecting Electrical Intermittents can be found on page 8A-4-8.

The most likely causes of intermittent no start no crank complaints due to the PASS-Key®II SYSTEM are either an incorrect resistance measurement of the Ignition Key or an intermittent relay.

Incorrect resistance measurements checks:

- If one key works and not the other, clean or replace the faulty key.
- If condition is present with all keys, indications are that the lock cylinder is dirty/defective or there is a fault in the key resistance circuit wiring, connections or contacts.
- A method for checking the key resistance circuit with an ohmmeter is as follows:
 1. Use the J 39200 DVM to measure resistance across key contacts while removed from vehicle.
 2. Disconnect the Theft Deterrent Module, insert key in Ignition. With the J 39200 set to "MIN MAX", measure resistance across terminals "B8" and "B7" of the Theft Deterrent Module Harness Connector. Listen for an audible tone from the DVM. This would indicate a fluctuating resistance, while manipulating the harness and rotating the Steering Wheel from side to side. If the resistance fluctuates, check the wiring and wiring connections to the lock cylinder for an intermittent (Ex: poor connection

or broken wire inside the insulation). If the resistance is not within 5 ohms of the resistance measured on the key when it was removed from the vehicle, check for a dirty or defective lock cylinder.

3. Rotate key throughout all positions and monitor for a resistance change. This would indicate a change of over 5 ohms indicating a problem with the lock cylinder or key contacts.

Intermittent relay checks:

- If the "SECURITY" Indicator comes on for 5 seconds and then goes off, the relay is most likely the problem. Check connections to relay, if OK, install a new relay.
- If the "SECURITY" Indicator remains "ON" past the 5 second bulb check when the vehicle will not crank, the relay is not the problem.
- If it is necessary to turn the key to crank several times before the Engine will crank, the relay is probably intermittent. Check connections to relay, if OK, install a new relay.
- If the vehicle cannot be started immediately after a fault, the relay is not the problem.

Some other areas to check include the following:

- Check that the connector to the Theft Deterrent Module is tight and terminals are clean.
- Check for History Diagnostic Trouble Code 46 in PCM, intermittent fuel enable CKT 229. See SECTION 6E3.
- Check power and ground to the module while manipulating the harness.
- During an Ignition Cycle the "SECURITY" Indicator will illuminate and remain "ON" while a problem is detected in the key resistance circuits (for at least 1 minute) and will turn "OFF" if the fault goes away.
- Lightly tapping the Theft Deterrent Module will determine if the module is intermittent. Intermittents are typically not the Theft Deterrent Module.
- Thermal cycle Theft Deterrent Relay and Theft Deterrent Module and reinstall in vehicle to induce fault.

Important:

- Perform the On-Board Diagnostic System Check described in SECTION 6E3 to be certain no trouble codes are stored in PCM memory which may lead to misdiagnosis, specifically Code 46, indicating a problem in the PASS-Key®II Fuel Enable circuit.

SYSTEM CHECK

ACTION	NORMAL RESULTS
[1] ● Observe "SECURITY" Indicator. ● Ignition Switch to "RUN."	"SECURITY" Indicator illuminates for approximately 5 seconds then goes "OFF."
[2] ● (Automatic Transmission) Position Switch in "PARK." ● (Manual Transmission) Clutch Start Switch closed (depress Clutch Pedal). ● Ignition switch to "START."	Engine starts.
[3] ● Ignition Switch to "OFF."	Engine stops.
[4] ● Disconnect Ignition Key Lock Cylinder Connector at base of Steering Column. ● Connect the male and female parts to the mating connectors on the pigtails from the J 35628-A Interrogator or equivalent. ● Insert the customer's Ignition Key into the Key Code Reader on the J 35628-A Interrogator. ● Press the On-Off Rocker Switch to the "ON" position. ● A number from 1 to 15 will appear on the display of the Interrogator indicating the electrical code of the key ("E" indicates error). ● Set the Key Code Selector on the J 35628-A Interrogator to a code which is different from the code read on the Key Code Reader display. ● Turn Ignition Switch to "START."	Vehicle will not crank. "SECURITY" Indicator is illuminated.
[5] (Perform this step within the 3 minute shut-down period). ● Ignition Switch to "OFF." ● Disconnect and remove the J 35628-A Interrogator. ● Reconnect connectors at base of Steering Column. ● Turn Ignition Switch to "START."	Vehicle will not crank. "SECURITY" Indicator is illuminated.
[6] ● Turn Ignition Switch to "OFF." ● Wait 3 to 4 minutes. ● Observe the Indicator. ● When Indicator goes "OFF," turn Ignition Switch to "START."	Engine starts.

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

SYMPTOM TABLE

(Always note condition of "SECURITY" Indicator when fault occurred.)

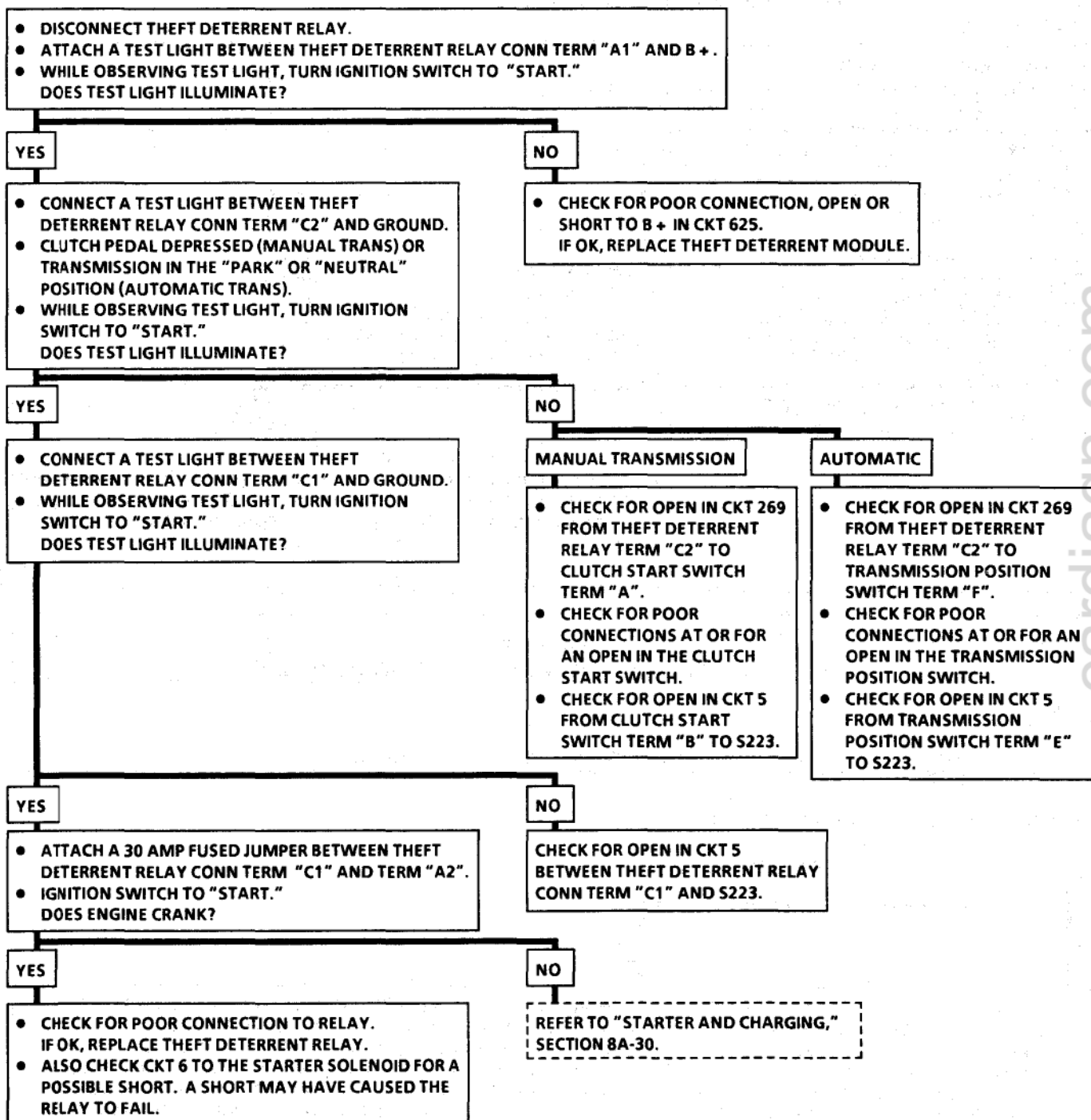
SYMPTOM	PROCEDURE	PAGE NUMBER
Engine does not crank; "SECURITY" Indicator illuminates for approximately 5 seconds (bulb check) then goes out.	Chart #1	9D-11
Engine cranks but won't start; "SECURITY" Indicator illuminates for approximately 5 seconds (bulb check) then goes out.	Chart #2	9D-12
"SECURITY" Indicator "ON" steady (not flashing); Engine starts.	Chart #3	9D-12
"SECURITY" Indicator never illuminates; Engine starts.	Chart #4	9D-13
Engine does not crank; "SECURITY" Indicator "ON" steady (not flashing).	• Perform Lock Cylinder and Harness Test on page 9D-13 (Chart #5).	
Engine does not crank; "SECURITY" Indicator "FLASHING."	• Perform Lock Cylinder and Harness Test on page 9D-13 (Chart #5).	
Engine does not crank; "SECURITY" Indicator does not illuminate at Ignition "ON."	• Check for battery voltage at Theft Deterrent Module Connector terminal "A1". • Ignition Switch to "RUN." • Check for battery voltage at Theft Deterrent Module Connector terminal "A2". • Check for ground at Theft Deterrent Module Connector terminal "B5". If power and ground wires to Theft Deterrent Module are OK, replace Theft Deterrent Module.	
"SECURITY" Indicator "FLASHING"; Engine starts.	This symptom is present when an unprogrammed module is put in a vehicle that has an open or short to B+ or short to ground in the Lock Cylinder Contacts or CKTs 1073 or 1074, or with a damaged key. • Perform Lock Cylinder and Harness Test on page 9D-13 (Chart #5).	

CHART #1

ENGINE DOES NOT "CRANK"; "SECURITY" INDICATOR ILLUMINATES
FOR APPROXIMATELY 5 SECONDS (BULB CHECK) THEN GOES OUT

**IMPORTANT:**

- TO AVOID MISDIAGNOSIS, CHECK FOR DIAGNOSTIC TROUBLE CODES. SEE SECTION 6E3.



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

CHART #2

ENGINE CRANKS BUT WON'T START; "SECURITY" INDICATOR ILLUMINATES
FOR APPROX 5 SECONDS (BULB CHECK) THEN GOES OUT

- ! IMPORTANT:**
- TO AVOID MISDIAGNOSIS, CHECK FOR DIAGNOSTIC TROUBLE CODES. SEE SECTION 6E3.

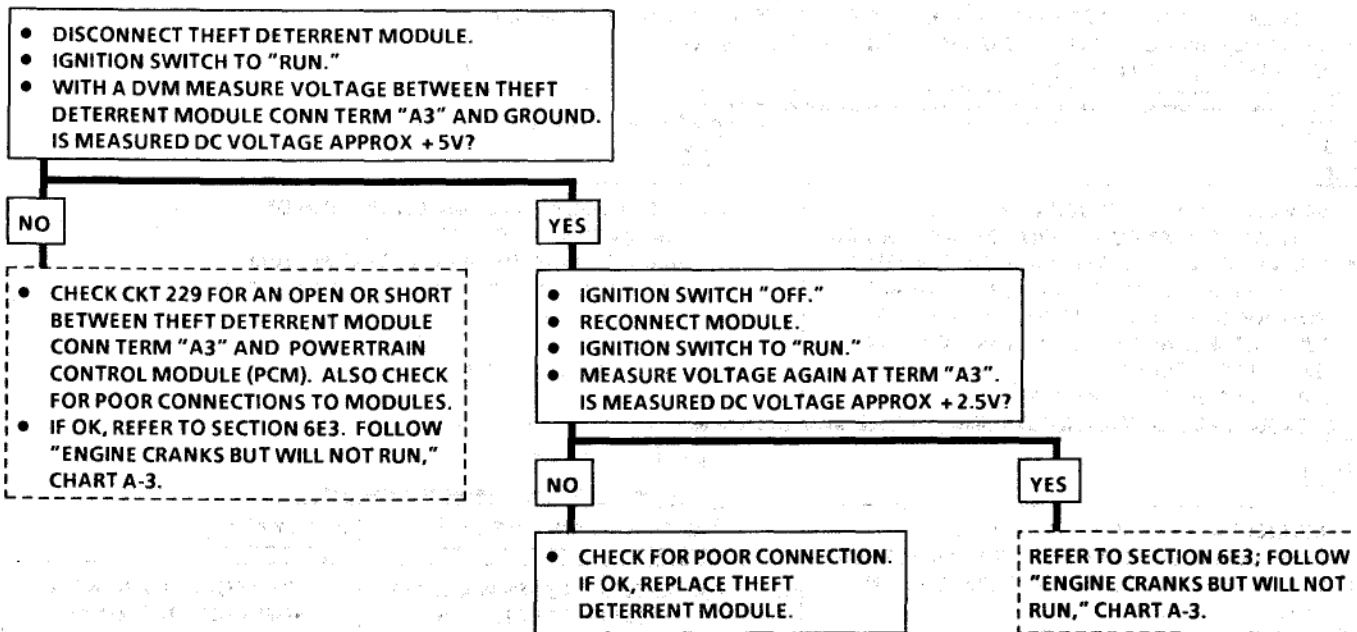


CHART #3

"SECURITY" INDICATOR "ON" STEADY (NOT FLASHING); ENGINE STARTS

- ! IMPORTANT:**
- TO AVOID MISDIAGNOSIS, CHECK FOR DIAGNOSTIC TROUBLE CODES. SEE SECTION 6E3.

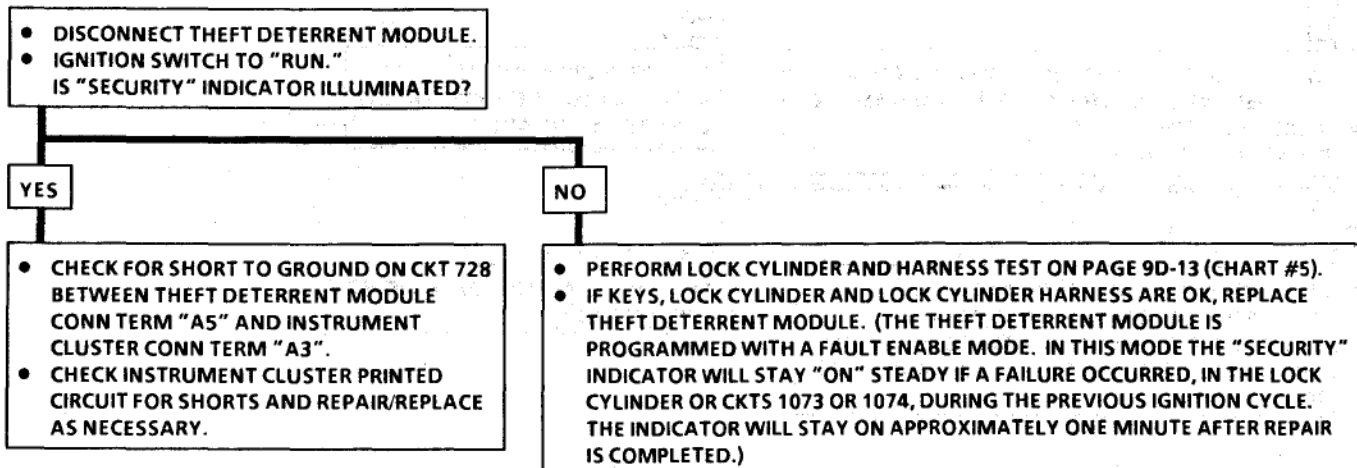


CHART #4

"SECURITY" INDICATOR NEVER ILLUMINATES; ENGINE STARTS



IMPORTANT:

- TO AVOID MISDIAGNOSIS, CHECK FOR DIAGNOSTIC TROUBLE CODES. SEE SECTION 6E3.

- DISCONNECT THEFT DETERRENT MODULE.
 - ATTACH A 10 AMP FUSED JUMPER BETWEEN THEFT DETERRENT MODULE CONN TERM "A5" (HARNESS SIDE) AND GROUND.
 - IGNITION SWITCH TO "RUN."
- DOES "SECURITY" INDICATOR ILLUMINATE?

NO

- CHECK FOR POOR CONNECTION OR OPEN IN CKT 728 BETWEEN THEFT DETERRENT MODULE CONN TERM "A5" AND INSTRUMENT CLUSTER CONN (CHEVY) TERM "C13" OR (PONT) TERM "A3".
 - CHECK FOR OPEN IN CKT 340 BETWEEN INSTRUMENT CLUSTER CONN TERM "A13" AND S209.
 - INSPECT INSTRUMENT CLUSTER PRINTED CIRCUIT AND INDICATOR LAMP, REPAIR/REPLACE AS NECESSARY.
- SEE "INSTRUMENT CLUSTER," SECTION 8A-81 FOR BACK VIEW AND PINOUT OF CLUSTER.

YES

- CHECK FOR POOR CONNECTION AT THEFT DETERRENT MODULE. IF OK, REPLACE THEFT DETERRENT MODULE.

CHART #5

LOCK CYLINDER AND HARNESS TEST



IMPORTANT:

- TO AVOID MISDIAGNOSIS, DO NOT PERFORM THIS TEST UNLESS DIRECTED BY SYMPTOM TABLE OR CHART.
- AFTER A REPAIR TO THE LOCK CYLINDER HARNESS, THE "SECURITY" INDICATOR WILL REMAIN "ON" FOR APPROXIMATELY ONE MINUTE.

- INSERT IGNITION KEY INTO INTERROGATOR J 35628-A.
- TURN THE INTERROGATOR "ON."
- READ THE "KEY CODE" SHOWN ON THE DISPLAY OF THE INTERROGATOR. IS THE DISPLAYED "KEY CODE" A VALUE OF "1" THROUGH "15"?

YES

- WRITE DOWN THE DISPLAYED "KEY CODE."
 - TURN THE INTERROGATOR "OFF."
 - CONNECT THE INTERROGATOR TO THE 2-WAY IGNITION SWITCH LOCK CYLINDER HARNESS CONNECTOR AT THE BASE OF THE STEERING COLUMN.
 - INSERT THE IGNITION KEY INTO THE IGNITION SWITCH LOCK CYLINDER.
 - TURN THE INTERROGATOR "ON."
 - WHILE OBSERVING THE DISPLAY ON THE INTERROGATOR, TURN THE IGNITION SWITCH SLOWLY TO THE "START" POSITION.
- DOES THE DISPLAYED "KEY CODE" VALUE MATCH THE VALUE OBSERVED IN STEP 1?

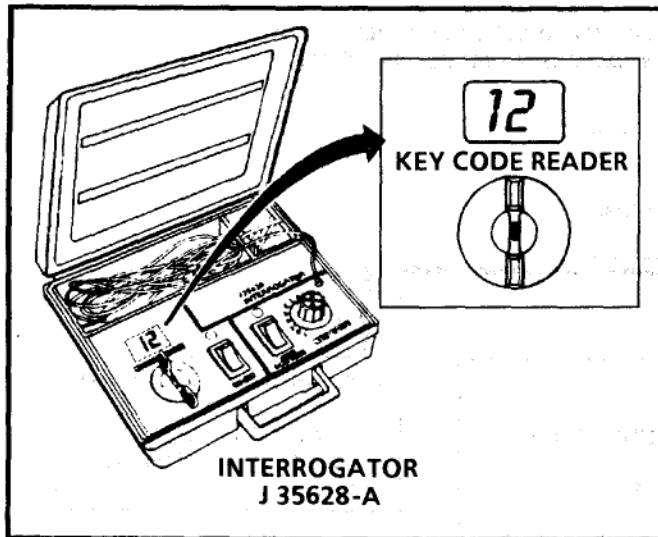
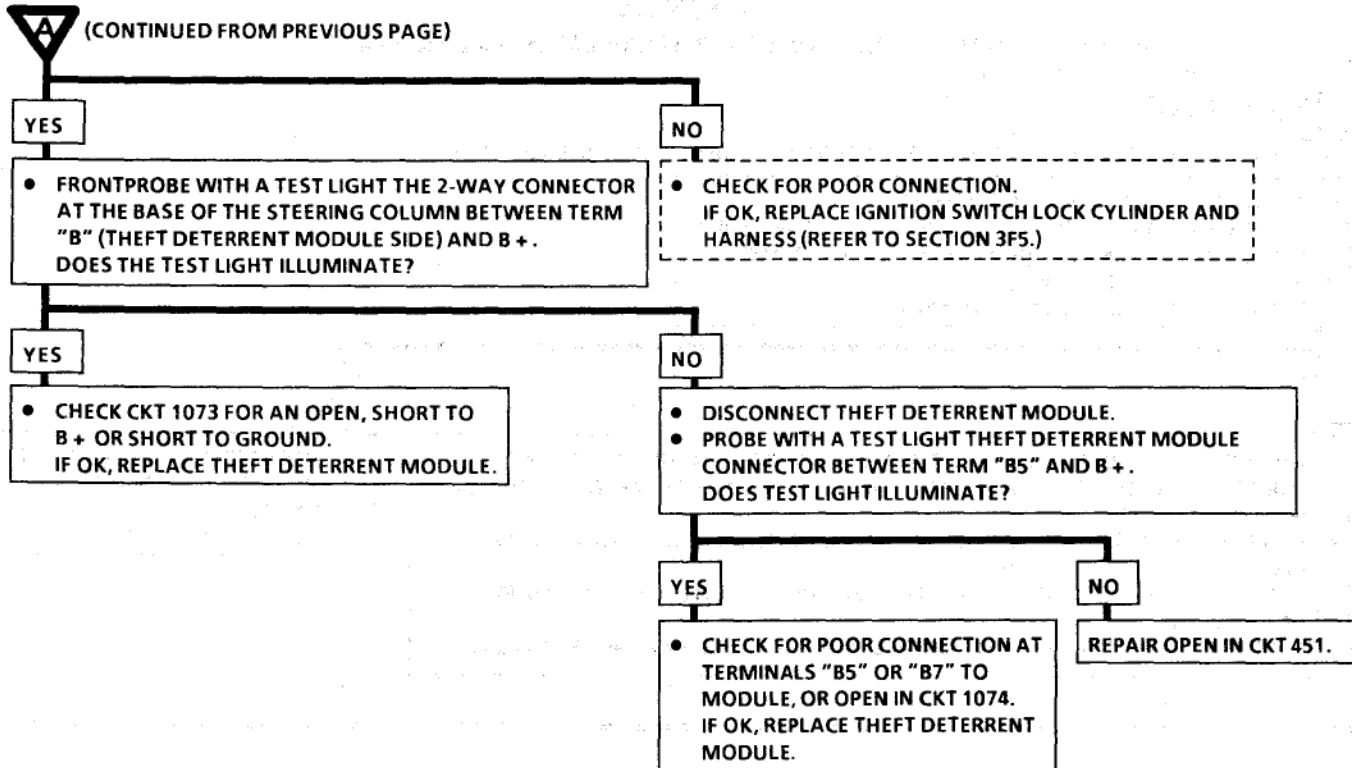
NO

- CLEAN AND RETEST THE KEY. IF THE "KEY CODE" IS INVALID, REPLACE THE KEY. SEE "KEY REPLACEMENT," PAGE 9D-15.



(CONTINUED ON NEXT PAGE)

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



Interrogator J 35628-A

DUPLICATION OF KEYS

KEY REPLACEMENT (SPARE KEY AVAILABLE)

The J 35628-A Interrogator or equivalent must be used to determine the proper electrical code of the key.

1. Insert the customer's spare Ignition Key into the Key Code Reader on the J 35628-A Interrogator.
2. Press the On-Off rocker switch to the "ON" position.
3. A number from 1 to 15 will appear in the window designating the electrical code of the key.
4. Cut a new key having the electrical code determined from the J 35628-A Interrogator.
5. Start the Engine using the new key to insure that the key is correct both mechanically and electrically.



SEE PAGE 8A-3-0
FOR PROPER
HANDLING
PROCEDURES

KEY CODE AND RESISTANCE CHART

PELLET CODE	KEY RESISTANCE IN OHMS		
	Nominal	Low	High
1	402	386	438
2	523	502	564
3	681	654	728
4	887	852	942
5	1130	1085	1195
6	1470	1411	1549
7	1870	1795	1965
8	2370	2275	2485
9	3010	2890	3150
10	3740	3590	3910
11	4750	4560	4960
12	6040	5798	6302
13	7500	7200	7820
14	9530	9149	9931
15	11800	11328	12292

KEY REPLACEMENT

(NO SPARE KEY AVAILABLE)

1. If the Ignition Key is lost and there is no spare key, determine the mechanical code from the code on the Ignition Key Lock Cylinder. The code may also be determined from the dealer invoice for the vehicle, or from the Key Code Bureau (1-800-243-8957) for Chevy or from Dealer Assistance (1-800-447-2287) for Pontiac.
2. Cut a new key to this mechanical code. Use a blank PASS-Key®II test key which has no resistance pellet. This key will be used to operate the Ignition Switch for the remaining steps.
3. Remove the hush panel under the Steering Column and disconnect the two-cavity connector leading into the Steering Column.
4. Close the LH door.
5. Insert the male half of the connector (I/P Harness) into the female pigtail connector from the J 35628-A Interrogator.
6. Set the Key Code Selector on the Interrogator (J 35628-A or equivalent) to "1".
7. Attempt to start Engine using the key made in step 2.
 - If Engine starts, the Key Code Selector is set to the correct electrical code. Cut a new key with a resistor pellet having this electrical code. The new key will be the customer's replacement key.
 - If Engine does not start, turn Ignition Switch to "OFF," then turn the Key Code Selector to the next higher position. Wait four minutes and attempt to start the Engine using the new electrical code. Use the 4-minute Timer on the

J 35628-A Interrogator to indicate the 4-minute interval. Start the Timer by depressing the "Start" rocker switch. The red indicator will turn off at the end of a four minute interval. This procedure must be repeated until the Engine can be started. Cut a new key having the electrical code which allowed the vehicle to start.

PROGRAMMING A NEW THEFT DETERRENT MODULE

 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.

New Theft Deterrent modules are unprogrammed. Before the system will function properly after a new module has been installed, it must be programmed to the code that matches the customer's keys. Programming a new module is very simple:

1. Install the new, unprogrammed Theft Deterrent module.
2. Insert one of the customer's keys in the ignition lock cylinder and turn it to the "ON" position. It's a good idea to start the Engine at this time to verify system operation.
3. Observe the "SECURITY" Indicator Lamp:
 - The indicator lamp should light for about five seconds and then go out. If the wiring or contacts to the Key Resistance Pellet or the key is defective or intermittent and a new module is installed, the Engine will start but the "SECURITY" Indicator will flash at a rate of one flash per second until the Ignition Switch is turned off. This indicates that the module did not program and that the system components, wiring and contacts should be checked for a fault.

 Important:

- Before connecting the Interrogator to the ignition lock cylinder circuit, always verify vehicle key code and set the code into the Interrogator using "key code" knob. This will prevent programming an unprogrammed Theft Deterrent module with an undesired key code.

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

CIRCUIT OPERATION

PASS-Key®II is a theft deterrent system which prevents the vehicle from starting if the Ignition Key "Resistance Code" is not recognized by the Theft Deterrent Module. If the Resistance Code is not recognized, the Engine is prevented from starting in two ways: battery voltage from the Ignition Switch to the starter is disabled by a Theft Deterrent Relay and fuel to the fuel injectors is stopped without the presence of a fuel enable signal.

Resistor sensing contacts are located in the Ignition Key Lock Cylinder. These contact the Key Resistor Pellet on the key when it is inserted. When the lock is rotated, Ignition voltage is applied to the Theft Deterrent Module and pellet resistance is read at this time. The Pellet resistance is read across terminals "B7" and "B8" which is then compared against the resistance value stored in the Module.

If the Key Resistance Pellet is the proper resistance, terminal "A4" is grounded, energizing the Theft Deterrent Relay. At the same time, a signal is applied at terminal "A3" to enable the Powertrain Control Module (PCM). When this signal is received by the PCM, it allows fuel injector pulses to begin.

If the Key Resistor Pellet is the wrong value, the Theft Deterrent Module will shut down for 3 minutes + or — 18 seconds. During this interval, there will be no output at terminals "A3" or "A4" and the "SECURITY" Indicator will illuminate. The Ignition Switch input is ignored during this shut down period. For this reason, the timer will run and the "SECURITY" Indicator will remain illuminated with Ignition on or off.

Once the timer has completed its 3 minute + or — 18 second shut down, the next time Ignition is cycled from off to on, the Theft Deterrent Module timer is reset. A key having the correct code can then be used to start the Engine.

"SECURITY" INDICATOR OPERATION

The "SECURITY" Indicator is controlled directly by the Theft Deterrent Module. The following describes the modes of indicator operation:

1. When the Ignition is put in "RUN," "BULB TEST," or "START," the "SECURITY" Indicator illuminates for about 5 seconds as a bulb check.
2. If the Theft Deterrent Module is actively in the shut down mode and thus preventing the vehicle from starting, the indicator will be illuminated (grounded) by the Theft Deterrent Module for 3 minutes + or — 18 seconds after Ignition is turned on.
3. If the resistor sensing contacts or CKTs 1073 or 1074 are open or shorted, or if a defective key is being used at the time Ignition is turned on, the "SECURITY" Indicator will flash at a rate of once per second and the Engine will not start; however, the 3 minute + or — 18 second lockout will not be activated. Additionally, if an unprogrammed module is present and there is an open or short, or if a defective key is being used the Theft Deterrent Module will not program a key code, the "SECURITY" Indicator will flash at a rate of once per second, and the Engine will start.
4. Lock Cylinder CKTs 1073 and 1074 are continuously monitored and if a fault is detected in these circuits for 1 minute, the indicator will turn "ON." If the fault condition goes away for 1 minute, the indicator will turn "OFF" and the system will function as normal. If a lock cylinder circuit fault (lock cylinder contacts or wiring becomes open or shorted, or if a defective key is detected) while the Engine is "RUNNING", the vehicle can be restarted. The "SECURITY" Indicator will illuminate during this Ignition cycle while the fault is present. When a fault condition is present at the time Ignition is cycled off, the vehicle will not be protected by the PASS-Key®II System and the indicator will be illuminated whenever the Ignition is on, until the fault is corrected. This is called the Fault Enable Mode. After the fault has been corrected, the "SECURITY" Indicator will remain "ON" for approximately one minute then go "OFF."

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

THEFT DETERRENT MODULE ASSEMBLY

Figure 3

Remove or Disconnect

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

Install or Connect

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

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

Tighten

- Bolts/screws (6) to 1.9 N•m (17 lb. in.).
4. Instrument panel assembly. Refer to SECTION 8C.

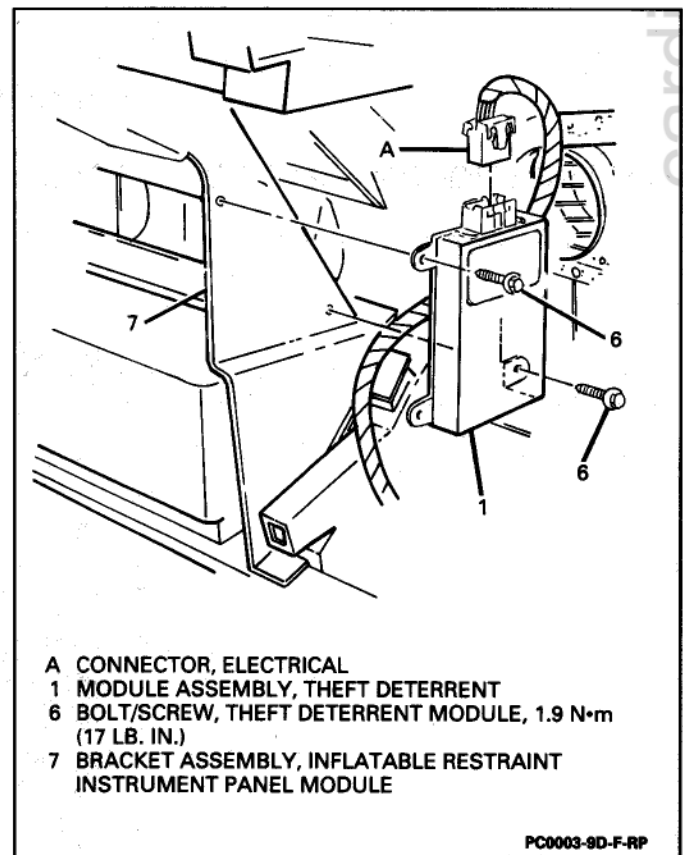


Figure 3 – Theft Deterrent Module Assembly

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.

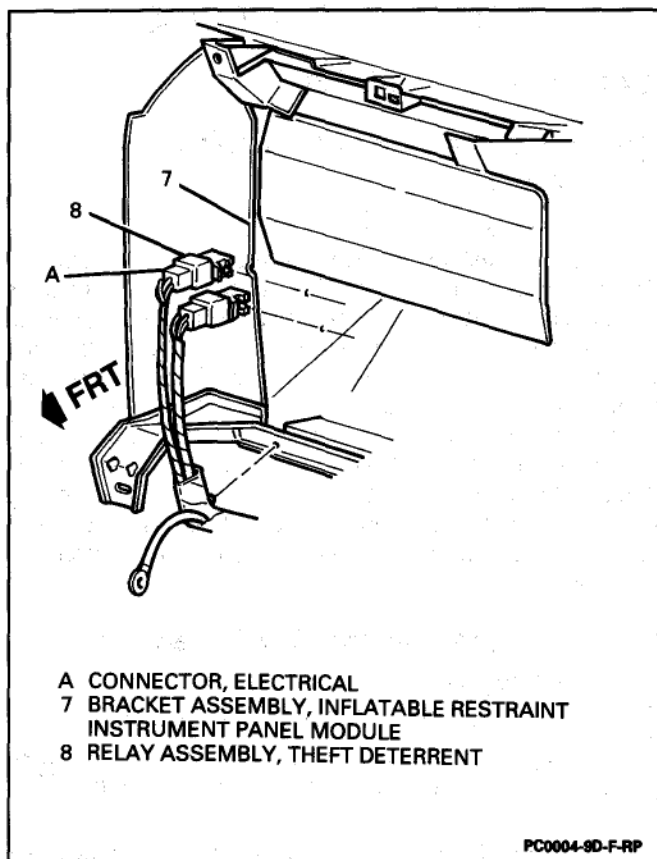


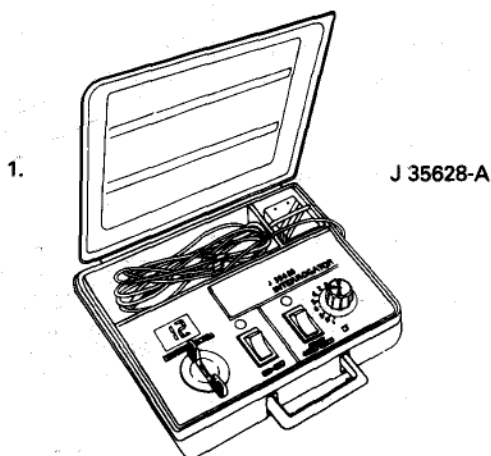
Figure 4 – Theft Deterrent Relay Assembly

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Theft Deterrent Module Bolt/Screw 1.9 N•m (17 lb. in.)

SPECIAL TOOLS



1. VATS/PASS INTERROGATOR