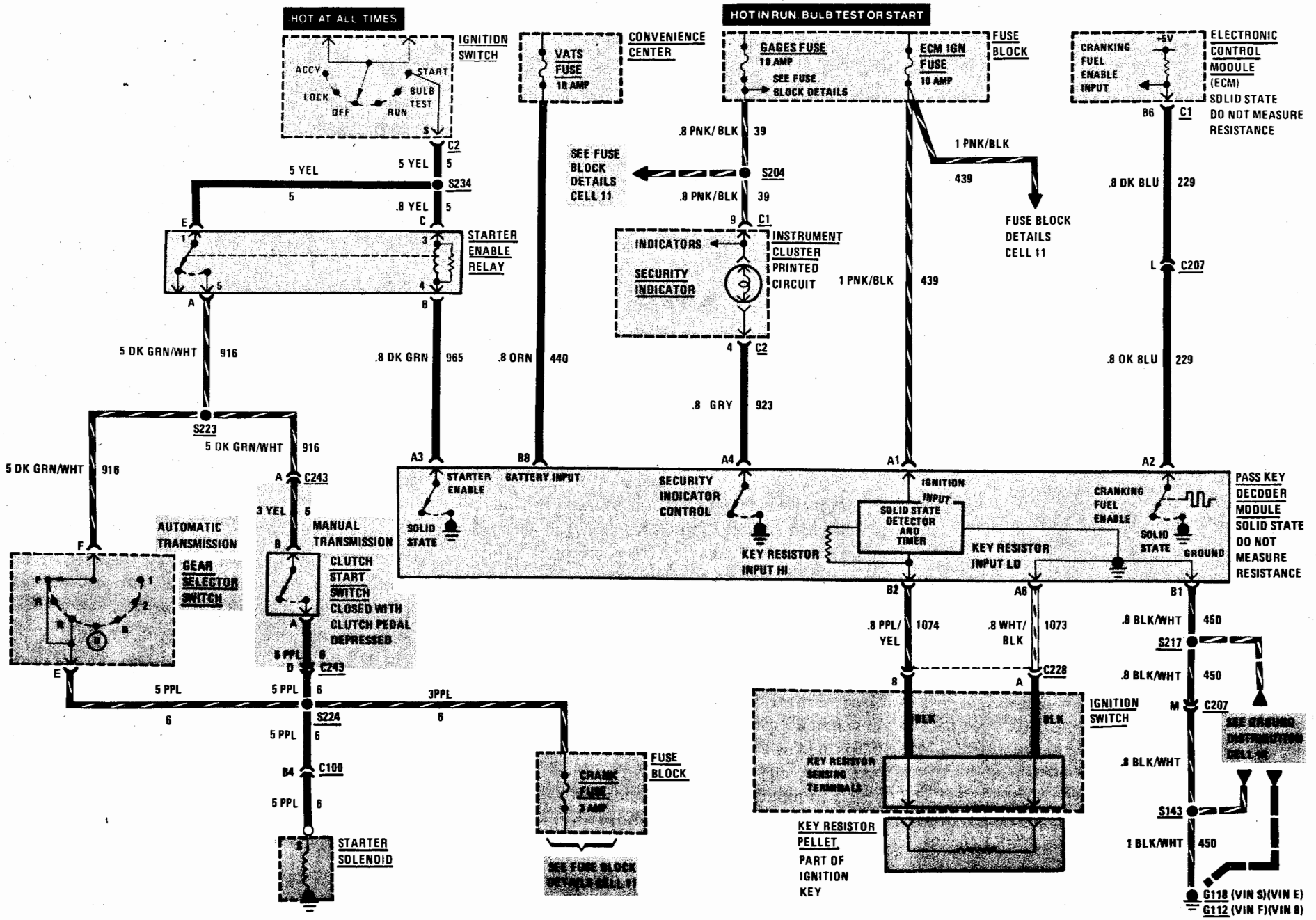
THEFT DETERRENT SYSTEM: PASS KEY



THEFT DETERRENT SYSTEM: PASS KEY

TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Check.**

1. Check the key pellet sensing contacts in the Ignition Lock Cylinder by looking into the key opening. If the contacts are damaged, replace the Lock Cylinder.
2. Check the VATS Fuse by visual inspection.
3. Check owner's ignition key using the J35628 Interrogator or equivalent. If the Key Code window shows "E", replace the owner's key.
4. Check the Security Indicator Bulb.
5. Check the ECM IGN and GAGES Fuse by visual inspection.

- **Go to System Check for a guide to normal operation.**
- **Go to System Diagnosis for diagnostic tests.**

SYSTEM CHECK

- **Use the System Check Table as a guide to normal operation.**
- **Refer to System Diagnosis for a list of symptoms and diagnostic steps.**

SYSTEM CHECK TABLE

Put the Ignition Switch in RUN	Security Indicator lights for approximately 2 seconds If Indicator does not light do Test E

(Continued in next column)

COMPONENT LOCATION

		Page-Figure
Clutch Start Switch	Above clutch pedal, on clutch pedal support	201-10-D
Convenience Center	Behind I/P, to right of steering column	201- 8-A
Electronic Control Module (ECM)	Behind RH side of I/P	201- 8-B
Fuse Block	Behind LH side of I/P	201- 8-A
Gear Selector Switch	In console, at base of gear selector	201-10-E
Ignition Switch	Behind I/P, on top side of steering column	201- 9-A
Passkey Decoder Module	Behind LH side of I/P, near steering column	201- 9-C
Starter Enable Relay	Behind LH side of I/P, left of steering column	201-12-D
Starter Solenoid Assembly (VIN E)	Lower RH side of engine	201- 1-C
Starter Solenoid Assembly (VIN F)(VIN 8)	Lower RH side of engine	201- 5-D
Starter Solenoid Assembly (VIN S)	Lower RH side of engine	201- 7-C
C100 (42 cavities)	LH front of dash, left of brake master cylinder	201- 1-A
C207 (15 cavities)	Behind RH side of I/P, near ECM	201- 8-B
C228 (2 cavities)	Behind I/P, on upper RH side of steering column.	201-10-B
C243 (4 cavities)	Taped to I/P harness, above clutch pedal	201-10-D
G112 (VIN F)(VIN 8)	Rear of LH cylinder head	201- 2-D
G118 (VIN E)	Rear of RH cylinder head	201- 0-A
G118 (VIN S)	Rear of RH cylinder head	201- 7-D
S143 (VIN E)	Engine harness, RH front of dash	201- 1-A
S143 (VIN F)(VIN 8)	Engine harness, RH front of dash	201- 3-A
S143 (VIN S)	Engine harness, center front of dash	201- 6-A
S204	I/P harness, behind LH side of I/P	201- 9-A
S217	I/P harness, behind center of I/P	201- 8-A
S223	I/P harness, above Fuse Block	201- 9-A
S224	I/P harness, near LH shroud	201- 8-A
S234	I/P harness, nearFuse Block	201- 8-A

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Turn Ignition Switch to START	If engine starts, proceed to next step If engine does not start, proceed to System Diagnosis

(Continued on next page)

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Do the following to check that PASS Key will detect the use of an incorrect key Shut off engine Remove hush panel under steering column and disconnect C228 (Two-cavity connector at base of steering column) Connect the J35628 Interrogator (or equivalent) between both halves of C228. Set the Key Code Selector on the J35628 Interrogator to an incorrect resistance value.	
Attempt to start engine	Engine should not crank If engine cranks, do Starter Enable Relay Test in System Diagnosis
Disconnect the J35628 Interrogator. Reconnect C228 and attempt to start engine again (must be done within two minutes of first attempt)	Engine should not crank If engine cranks, replace PASS Key Decoder Module

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Turn Ignition Switch to OFF Wait four minutes and turn Ignition Switch to START	Engine starts normally
Replace hush panel	

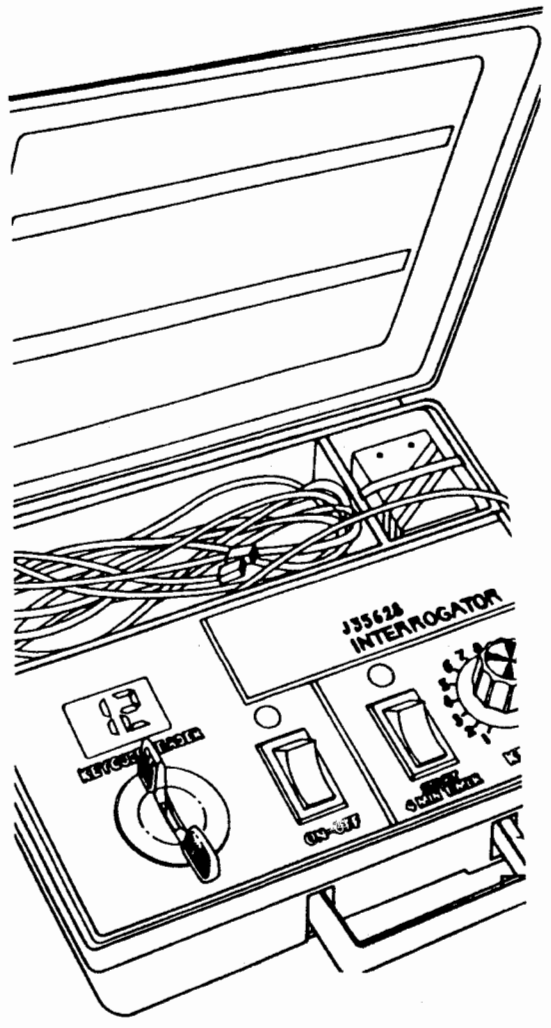
- **Refer to System Diagnosis when a result is not normal.**

SYSTEM DIAGNOSIS

Use the following table to determine the procedure to use. If engine won't crank, or cranks but won't start, enter ECM Diagnostic Mode and check for display of Code 46 or 53.

Note: Code 46 or 53 will be stored for up to 50 Vehicle starts. Therefore after diagnosis is complete, be sure to clear ECM codes.

There are four "No Start" conditions that can occur on a vehicle equipped with PASS Key that may appear to be caused by PASS Key. The four conditions are given in the following table. The first of these is almost certain to be a PASS Key problem. The second and third can be caused by other systems on the vehicle. The fourth symptom is definitely not related to PASS Key.



J 35628 INTERROGATOR. SEE KEY DUPLICATION PROCEDURE.

SYMPTOM TABLE

No Crank ECM Code 46 or 53 Present Security Indicator does not come on	A: Lock Cylinder and Harness Test B: Decoder Module Test
Crank but no Start ECM Code 46 or 53 Present Security Indicator does not turn off	D: ECM Enable Test
No Crank No ECM Code 46 or 53 Security Indicator operates normally	C: Starter Enable Relay Test
Crank but no Start No ECM Code 46 or 53 Security Indicator operates normally	Refer to Section 6E
Security Indicator does not light but engine starts	E: Security Indicator open test
Security Indicator does not turn off but engine starts	F: PASS Key Decoder Module programming test

A: LOCK CYLINDER AND HARNESS TEST

1. Remove the hush panel under the steering column. Disconnect the two-cavity connector in the wire leading into the steering column. Connect the male and female parts to the mating connectors on the pigtails from the J35628 Interrogator or equivalent.
2. Insert the customer's ignition key into the Ignition Switch Lock Cylinder.
3. Press the On-Off switch on the J35628 Interrogator to the ON position.

   The window above the Key Code Reader indicates the electrical code for the key (1 to 15) or "E" error.

   Rotate the ignition lock cylinder while the key is inserted to insure that the correct code is read in all positions.

- If code is correct in all positions, proceed to step 5.
- If the code is correct only in some positions, obtain a spare key or make a replacement key (See Key Duplication Procedure). Read the code again while rotating the ignition lock cylinder with the spare/replacement key. A correct code in all positions indicates that the original key was defective. An incorrect code indicates a defective Lock Cylinder. See section 3B5 for Lock Cylinder replacement procedures.
- If the window shows "E", proceed to step 4.

4. Check the customer's ignition key by inserting it in the Key Code Reader on the J35628 Interrogator.

- If the Interrogator indicates "E", replace the key with a spare or follow the procedures under Key Replacement.
- If Interrogator shows the electrical code (1 to 15), replace the Lock Cylinder. (See procedure following Key Duplication Procedure).

5. Set the Key Code Selector on the J35628 Interrogator to the same electrical code determined in step 3. Turn the Ignition Switch to START.

- If engine starts, reconnect vehicle wiring and check that the two-cavity connector at the base of the steering column mates correctly.
- If engine does not start, go to Test B, Decoder Module Test.

B: PASS KEY DECODER MODULE TEST (TABLE 1)

Measure: VOLTAGE
At: PASS KEY DECODER MODULE CONNECTOR (Disconnected)
Condition:
- **Ignition Switch: RUN**

Measure Between	Correct Voltage	For Diagnosis
A1 (PNK/BLK) & Ground	Battery	See 1
B8 (ORN) & Ground	Battery	See 2
A1 (PNK/BLK) & B1 (BLK/WHT)	Battery	See 3
A2 (DK BLU) & B1 (BLK/WHT)	5 Volts	See 4
• Ignition Switch: START		
A3 (DK GRN) & Ground	Battery	See 5

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- If voltages are correct, go to Table 2.

1. Check the PNK/BLK (439) wire and ECM IGN Fuse for an open.
2. Check the ORN (440) wire and VATS Fuse for an open.
3. Check the BLK/WHT (450) wire for an open.
4. Check the DK BLU (229) wire for an open. If wire is good, replace ECM.
5. Check DK GRN (965) wire for an open. If wire is good, do Test C.

B: PASS KEY DECODER MODULE TEST (TABLE 2)

Measure: RESISTANCE
At: PASS KEY DECODER MODULE CONNECTOR (Disconnected)
Conditions:
- **Negative Battery Terminal Disconnected**
- **No Key In Ignition Switch**

Measure Between	Correct Resistance	For Diagnosis
A6 (WHT/BLK) & B2 (PPL/YEL)	Open circuit	See 1
• Key in Ignition		
A6 (WHT/BLK) & B2 (PPL/YEL)	380 to 12.3K ohms	See 2

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- If resistance is correct but engine will not crank, replace the PASS Key Decoder Module.

Note: When the PASS Key Decoder Module is replaced, the new key code may not match the code in the owner's existing keys. If it does not match, then new keys must be made. Use the key duplication procedure.

1. Check WHT/BLK (1073) and PPL/YEL (1074) wires for shorts to ground or between the two wires.
2. Check WHT/BLK (1073) and PPL/YEL (1074) wires for an open.

C: STARTER ENABLE RELAY TEST

Measure: VOLTAGE
At: STARTER ENABLE RELAY CONNECTOR (Disconnected)
Condition:
- **Ignition Switch: START**

Measure Between	Correct Voltage	For Diagnosis
E (YEL) & Ground	Battery	See 1
C (YEL) & Ground	Battery	See 1

- If voltages are correct, go to C2.

1. Check YEL (5) wire for an open. If wire is good but voltage is not present, go to 8A-30 for diagnosis of Starter and Charging Circuits.

C2. Connect a fused jumper between terminals E (YEL) wire and A (DK GRN/WHT) wire of the Starter Enable Relay Connector. Turn Ignition Switch to START.

- If engine cranks proceed to C3.
- If engine does not crank, go to page 30-0 for diagnosis of Starter and Charging Circuits.

C3. Reconnect the Starter Enable Relay and connect a fused jumper from terminal A3 (DK GRN) wire of the PASS Key Decoder Module to ground. Turn Ignition Switch to START.

- If engine cranks, replace the PASS Key Decoder Module.
- If engine does not crank, check the DK GRN (965) wire for an open. If wire is OK, replace the Starter Enable Relay.

D: ECM ENABLE SIGNAL TEST (TABLE 1)

Measure: VOLTAGE
At: PASS KEY DECODER MODULE CONNECTOR (Connected)
Condition:
- **Ignition Switch: RUN**

Measure Between	Correct Voltage	For Diagnosis
A2 (DK BLU) & Ground	2-3 Volts	See 1

- If the voltage is correct but the car will not start and the code 46 or 53 is still present, replace the Electronic Control Module (ECM).

1. Go to Test D Table 2.

D: ECM ENABLE SIGNAL TEST (TABLE 2)

Measure: VOLTAGE
At: PASS KEY DECODER MODULE CONNECTOR (Disconnected)
Condition:
• Ignition Switch: RUN

Measure Between	Correct Voltage	For Diagnosis
A2 (DK BLU) & Ground	5 Volts	See 1

- If voltage is correct, check for good contact between the PASS Key Decoder Module and its connector. If contact is good, replace the PASS Key Decoder Module.

1. Check DK BLU (229) wire for an open or a short to ground. If the wire is good check for good contact between the Electronic Control Module (ECM) and its connectors. If contact is good, replace the Electronic Control Module (ECM).

E: SECURITY INDICATOR OPEN TEST

Measure: VOLTAGE
At: PASS KEY DECODER MODULE CONNECTOR (Disconnected)
Condition:
• Ignition Switch: RUN

Measure Between	Correct Voltage	For Diagnosis
A4 (GRY) & Ground	Battery	See 1

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- If voltage is correct replace PASS Key Decoder Module.

1. Check the GRY (923) wire for an open. If OK replace the Instrument Cluster (see section 8C).

F: PASS KEY DECODER MODULE PROGRAMMING TEST

1. Check that connector C228 is connected, clean and tight. With Ignition Switch in OFF, disconnect connector C228. Put the Ignition Switch in RUN and measure the voltage between terminal B (PPL/YEL) and a known good ground.
- If approximately 5 volts are measured, go to step 2.
- If 5 volts are not measured, checkthe PPL/YEL (1074) wire for an open or short to ground. If OK, replace the PASS Key Decoder Module.

2. Measure the voltage between connector C228 terminals B (PPL/YEL) and A (WHT/BLK).
- If approximately 5 volts are measured, go to Step 3.
- If approximately 5 volts are not measured, check the WHT/BLK (1073) wire for an open. If OK, replace the PASS Key Decoder Module.

3. Turn the Ignition Switch to OFF. Connect the J35628 Interrogator between both halves of connector C228. Insert the customer's Ignition Key into the Ignition Switch. Press the On-Off switch on th
- If the Key Code Reader Window indicates a code from 1 to 15, go to step 4.
- If the Key Code Reader Window indicates "E" for error, go to step 5.

4. Observe the Key Code Reader Window while rotating the Ignition Key to the Start position.
- If the Key Code remains constant in all switch positions, check the GRY (923) wire for a short to ground. If OK, replace the PASS Key Decoder Module.
- If the code is correct in only some positions, go to step 6.

5. Check the customer's ignition key by inserting it in the Key Code Reader on the J35628 Interrogator.
- If the Interrogator indicates "E" replace the key with a spare or follow the procedure under Key Replacement.
- If the Interrogator indicates the electrical code (1 to 15) replace the Lock Cylinder (see Section 3B5).

6. Obtain a spare key or make a replacement key (see Duplication of Keys). Read the code again as in the previous step.
- If the code is correct in all positions, the original key is defective. Replace the original key.
- If the code is incorrect in some positions, the Ignition Switch Lock Cylinder is defective. Replace the Lock Cylinder (see Section 3B5).

KEY DUPLICATION PROCEDURE

Key Replacement (Spare Key Available)

The J35628 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 J35628 Interrogator.
2. Press the On-Off rocker switch to ON.
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 J35628 Interrogator.
5. Start the engine using the new key to insure that the key is correct both mechanically and electrically.

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 car, or from the Chevrolet Zone Office.
2. Cut a new key to this mechanical code. Use a blank PASS Key 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 C281 (two-cavity connector leading into the steering column).
4. Insert the male half of the connector into the female pigtail connector from the J35628 Interrogator.
5. Set the Key Code Selector on the Interrogator (J35628 or equivalent) to "1".
6. 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 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 J35628 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.

CIRCUIT OPERATION

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, battery is applied through the ECM IGN Fuse to the PASS Key Decoder Module. The Pellet resistance is then compared against a fixed resistance in the Module.

If the Key Pellet is the proper resistance, terminal A3 is grounded, energizing the Starter Enable Relay. At the same time, a signal is applied at terminal A2 to enable the Electronic Control Module (ECM). When this signal is received by the Electronic Control Module (ECM), it allows fuel injector pulses to begin.

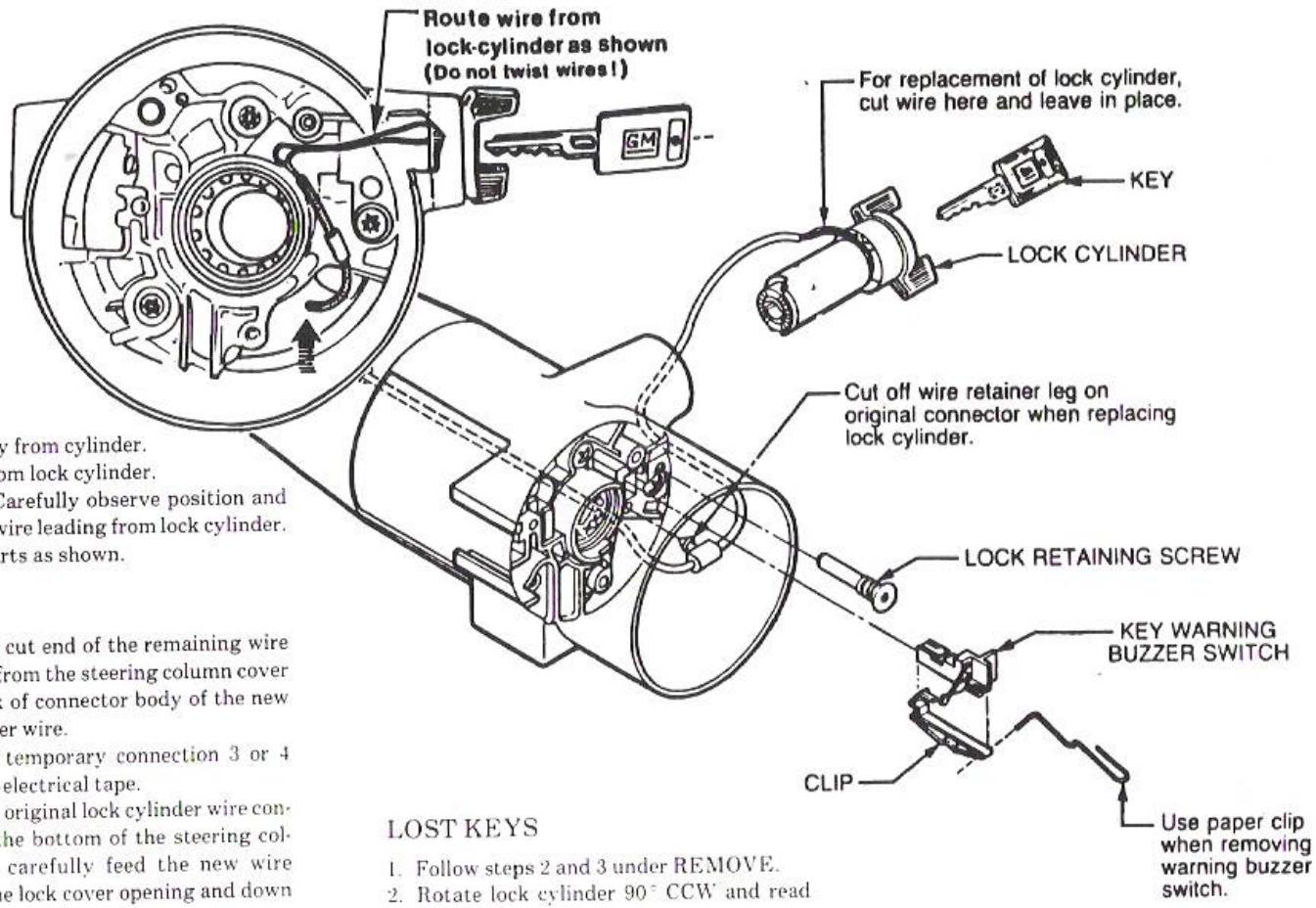
If the Key Resistor Pellet is the wrong value, the PASS Key Decoder Module will shut down for 2 to 4 minutes. During this interval there will be no output at terminals A3 or A2.

If the Ignition Switch is turned on again during this interval, the Timer will begin over again and the PASS Key Decoder Module will remain shut down for another 2 to 4 minutes. The PASS Key Decoder Module will continue this process even if a key with the correct pellet is used to turn the ignition back on. The Timer is restarted by the ignition voltage at terminal A1 when Ignition Switch is turned to RUN.

Once the Timer has completed its 2 to 4 minute cycle with the ignition off, the PASS Key Decoder Module and Timer are reset. A key having the correct code can then be used to start the engine.

The Security Indicator is controlled directly by the PASS Key Decoder Module. If there is a PASS Key failure, this indicator will be grounded by the PASS Key Decoder Module with the ignition in RUN, BULB TEST or START. When the Ignition Switch is first placed in RUN, BULB TEST or START, the Indicator lights for about 2 seconds as a bulb check. Thus, the SECURITY Indicator can be used to help diagnose the problem. For example, if the engine does not start and the SECURITY Indicator does not come on, then the contacts are not touching the resistor pellet on the key correctly. If the engine does not start and the SECURITY Indicator stays on, there is a problem with the PASS Key Decoder Module. Finally, if the engine does not start and the SECURITY Indicator goes off after approximately 2 seconds, then there is a non PASS Key problem.

REMOVE AND INSTALL IGNITION LOCK AND KEY WARNING BUZZER



REMOVE

1. Remove key from cylinder.
2. Cut wire from lock cylinder.
3. NOTE — Carefully observe position and routing of wire leading from lock cylinder.
4. Remove parts as shown.

INSTALL

1. Attach the cut end of the remaining wire extending from the steering column cover to the back of connector body of the new lock cylinder wire.
2. Wrap this temporary connection 3 or 4 times with electrical tape.
3. Pull on the original lock cylinder wire connector at the bottom of the steering column, and carefully feed the new wire through the lock cover opening and down through the steering column.
4. Route wire as it originally was and insert

LOST KEYS

1. Follow steps 2 and 3 under REMOVE.
2. Rotate lock cylinder 90° CCW and read key number.
3. Reinstall lock cylinder and route attached