



GM No-Crank in vehicles with Vehicle Anti-Theft System (VATS)

A No-Crank condition in GM vehicles with Vehicle Anti-Theft Systems may be caused by either a bad ignition key or a problem in the ignition switch/VATS wiring harness. (Switch/harness assembly problems seem to be more common than key failures.)

Test 1) Check the ignition key. Each key contains a resistance pellet. Remove the key and check the pellet's resistance. The chart below shows possible resistance values for ignition keys. If the key resistance matches one of the chart values, go to Test 2. If the key's resistance value doesn't match one of the values in the chart, replace it with a new one. Your GM dealer can provide part number information if you give him the VAT module identification number.

Test 2) Insert the ignition key in the ignition switch. Remove the lower dash bezel. Locate the two-terminal white connector near the base of the steering column, and disconnect it. (See the next tip for a schematic.) Insert your ohmmeter leads across the terminals of the connector half containing the white wires and measure the resistance. The resistance value measured across the connector should match the key resistance. If it doesn't, then the problem is in the switch/harness assembly. Replace the assembly.

Resistance Value Chart for GM VATs (Lists possible resistance values, including acceptable ranges)

- **402 ohms** (acceptable range 386-438)
- **523 ohms** (acceptable range 502-564)
- **681 ohms** (acceptable range 650-728)
- **887 ohms** (acceptable range 850-942)
- **1130 ohms** (acceptable range 1085-1195)
- **1470 ohms** (acceptable range 1411-1549)
- **1870 ohms** (acceptable range 1795-1965)
- **2370 ohms** (acceptable range 2275-2485)
- **3010 ohms** (acceptable range 2890-3150)
- **3740 ohms** (acceptable range 3590-3910)
- **4750 ohms** (acceptable range 4560-4960)
- **6040 ohms** (acceptable range 5798-6302)
- **7500 ohms** (acceptable range 7200-7820)
- **9530 ohms** (acceptable range 9149-9931)
- **11800 ohms** (acceptable range 11328-12292)

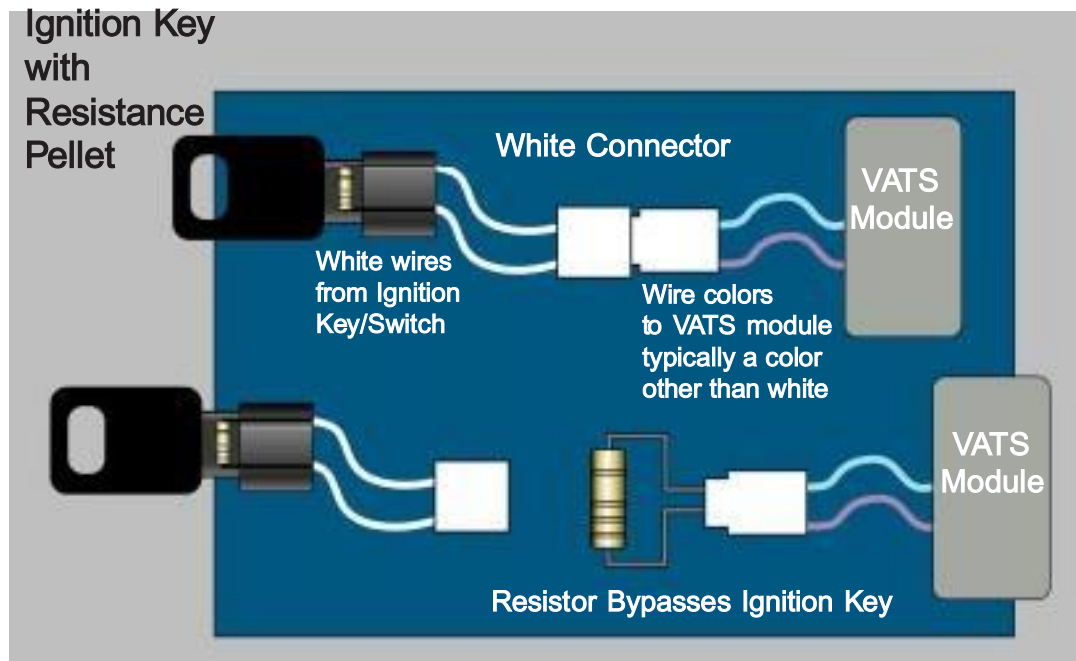


Temporary Fix for GM No-Crank in Vehicles with Vehicle Anti-Theft System (VATS)

Experience suggests that VAT ignition key failures are less common than no-cranking conditions caused by switch/harness failures.

If you need to start a car to get it into the shop, try this:

- Remove the ignition key and measure the resistance of the pellet in the key.
- Drop the steering column bezel and disconnect the white wire connector.



- Connect your sensor simulator across the terminals of the harness connected to the VATS module and “dial in” a resistance equal to the key pellet resistance, or simply insert a fixed resistor of the correct value.

This bypasses the key/harness and, in many instances, it will allow you to start the vehicle and drive it into the shop.



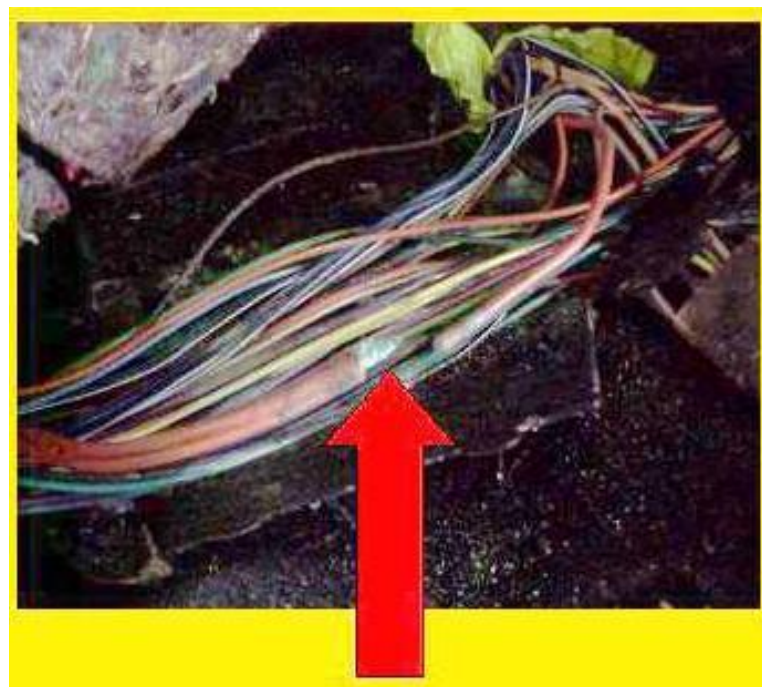
Inoperative Power Seats/ 1996 and Newer GM S-Series Trucks

Vehicle Problem: Inoperative power seats (either one or both).

Diagnostic Approach: Test the main power terminal at the seat switches. Then try to operate the seats while performing a voltage drop test between the main power source and seat switch main power terminal. (Just because the main power terminal is hot without a load applied doesn't mean that it won't fail when actually try to operate the seats.)

Diagnostic Tip: Check for corroded wiring beneath the driver's side carpeting in the area in front of the seat where the driver puts his wet feet! Water from the driver's shoes eventually soaks through the carpeting, resulting on wire corrosion and a big old voltate drop!

Repair Solution: Repair the wiring (solder and apply heat shrink tubing), and then insulate the harness to prevent a further occurrence of the same problem.





Trouble Code P1520 **Ford Contour 6-Cylinder Duratech**

Vehicle Problem: DTC P1520 stored (Intake Manifold Runner Control Circuit Fault).

DTC Code Set Parameters: KOEO and KOER, MEM code conditions: the PCM detected an IRCM control circuit fault.

Other Clues: Lack of power and reduced fuel economy. (The high RPM intake manifold runners don't open.)

Diagnostic Approach:

The **Intake Manifold Runner Control (IMRC)** motor cable is routed beneath the plastic shield over the drive belt pulley. Vibration can result in a "rub through" condition at the cable. When this happens, the cable can come loose from its plastic hold down and come in contact with the drive pulley. Ouch. The pulley eventually cuts the cable in two.



Repair Procedure: Replace and IMRC motor and cable assembly. Secure the cable to prevent a reoccurrence.



Inoperative ABS/ 1997 Buick LeSabre

Vehicle Problem: Inoperative ABS

Diagnostic Approach: Check the ground connection shown in our photo for a voltage drop. The ground attachment is located directly below the windshield washer reservoir.

Any spillage that occurs when refilling the bottle soaks the connection, resulting on corrosion and a ground side voltage drop.

This is the ground for the ABS pump!



Repair Solution: Remove the washer bottle. Perform a voltage drop test, or simply remove the ground bolt and thoroughly clean all metal-to-metal mating surfaces to restore a good ground.

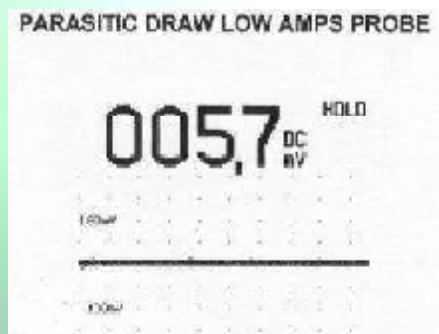


Parasitic Draw Test with Low Amps Probe

Vehicle Problem: Vehicle battery goes dead, even though the battery and charging system both test good.

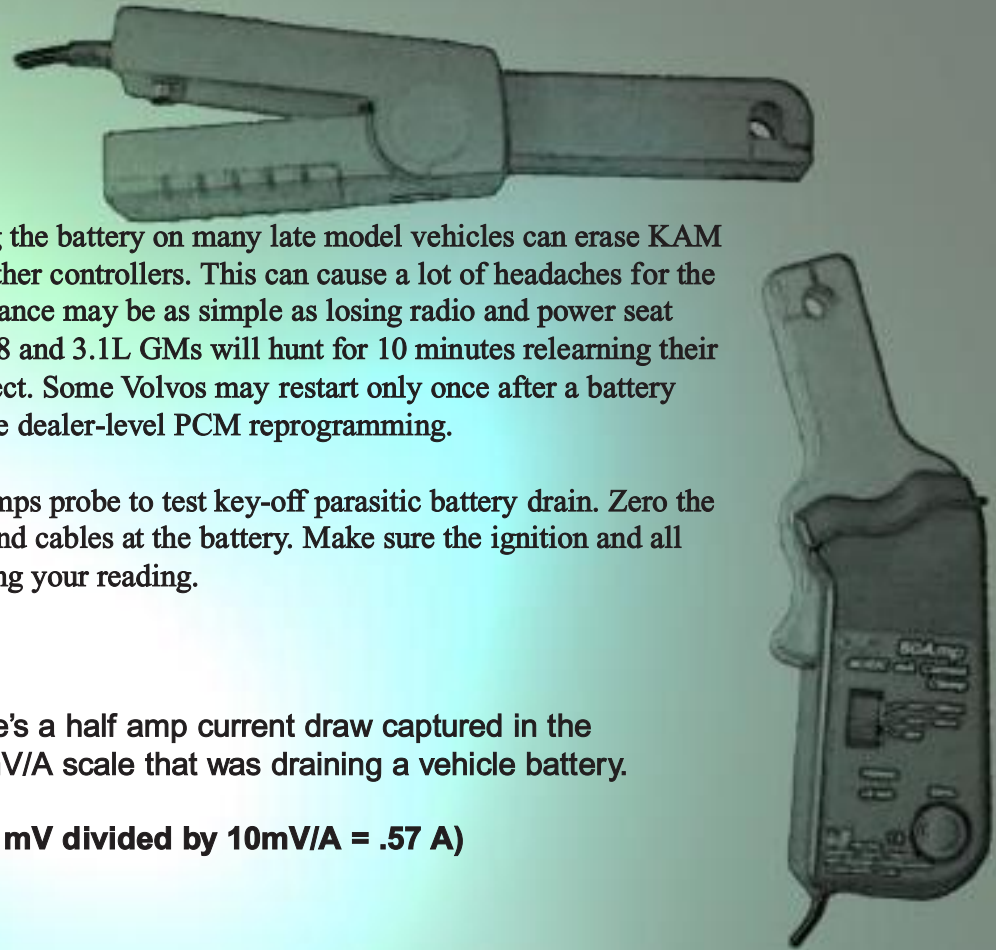
Diagnostic Challenge: Disconnecting the battery on many late model vehicles can erase KAM (Keep Alive Memory) in the PCM and other controllers. This can cause a lot of headaches for the technician and vehicle owner. The annoyance may be as simple as losing radio and power seat memory presets. But we all know that 2.8 and 3.1L GMs will hunt for 10 minutes relearning their idle strategy after a main power disconnect. Some Volvos may restart only once after a battery disconnect, and may require an expensive dealer-level PCM reprogramming.

Diagnostic Solution: Use your low amps probe to test key-off parasitic battery drain. Zero the probe and clamp it around the main ground cables at the battery. Make sure the ignition and all lights and accessories are off before taking your reading.



Here's a half amp current draw captured in the 10mV/A scale that was draining a vehicle battery.

(5.7 mV divided by 10mV/A = .57 A)





Jeep 5.8L Misfire/No-Start

Vehicle Problem: Erratic ignition system operation including misfire and possible no-start conditions.

Clues: Look for telltale signs of antifreeze at the timing cover and ignition coil.

Diagnostic Approach: The coolant leak blows around and eventually finds its way to the ignition coil. The coolant causes a poor contact at the ignition coil primary circuit connection, resulting in the misfire condition.

Repair Procedure: Correct coolant leak and clean the ignition coil electrical contacts to remove residual antifreeze and corrosion.





**Silver
Bullets**

Ford Coil-on-Plug (COP) P0304 or P0308 DTCs

Vehicle Problem: OBD II DTC P0304 (Misfire Cylinder #4) and/ or P0308 (Misfire Cylinder #8) on Ford COP ignitions.

Diagnostic Approach: There are actually two possible problems here, depending on which cylinder is experiencing the misfire.

If you have a **P0308**, check the cowl weatherstrip. A water leak from the cowl/hood seal may be leaking directly onto the #4 COP.

If you have a **P0304**, check for leakage from the heater hose connection. Same problem, different leak.

Repair Procedure: Remove the cowl weatherstrip and clean out any debris. Then use RTV to attach the weatherstrip to the cowl to prevent future leaks.

If the code is a P0304, repair the heater hose leak.

