



Tech Tip

ELECTRICAL 128

SOLVING ELECTRICAL PROBLEMS Check the Integrity of the Connections

When an electrical failure involves multiple circuits, two important steps should be taken. If the vehicle involved is of a recent production date, the first step should involve researching factory service bulletins for campaigns or field fixes. The second step should involve reviewing a wiring diagram to determine if the failed accessories or components share any power feed or ground circuits. These steps can reduce the diagnostic time and pinpoint a problem early in the diagnosis.

MULTIPLE CIRCUIT FAILURES

Pinpointing multiple circuit failures is often easier than diagnosing an individual circuit failure. Consider an intermittent electrical problem, whereby certain electrical components may fail, including: instrument panel lights or gauges, heating or air conditioning system, heat/air blower motor, radio, hazard flashers and transfer case controls. That's a lot of electrical circuits to fail at one time, so the chances are great that the problem is due to a bad power or ground connection. The models affected include: 2004–2005 Buick Rainier, 2002–2005 Chevy TrailBlazer, TrailBlazer EXT, GMC Envoy, Envoy XL, 2004–2005 GMC Envoy XUV, and 2002–2003 Olds Bravada.

GM has acknowledged the mentioned circuit and accessory failures, and identified the problem as a bad connection or poor circuit ground at splice pack G201. This connection is located at the right side of the front console area. The center floor console will have to be removed to gain access to the ground terminal. Remove the bolt and check for any sign of discoloration or contamination. Remove any fragments of carpet that may have been trapped or embedded in the ground terminal during vehicle assembly.

SHALLOW THREADS PROMPT NO-CRANK SYMPTOMS

Symptoms involving a no-start or crank condition may be encountered on 2004 Buick LeSabre, Park Avenue/Ultra and Pontiac Bonneville vehicles (3.8L Vins 1,K) due to inadequate grounding of the starting circuit. GM

acknowledges that a condition exists whereby a ground point on the engine block may not be tapped deep enough into the block to provide adequate tightening of the ground cable attaching bolt (see illustration 1). The problem ground point is located forward of the starter motor. The bolt bottoms out in the block before it secures the ground terminals to the casting. The installation of a shorter bolt P/N 11517862 will be necessary to achieve adequate torque on the attaching ground cables. Some technicians will just add washers to compensate.

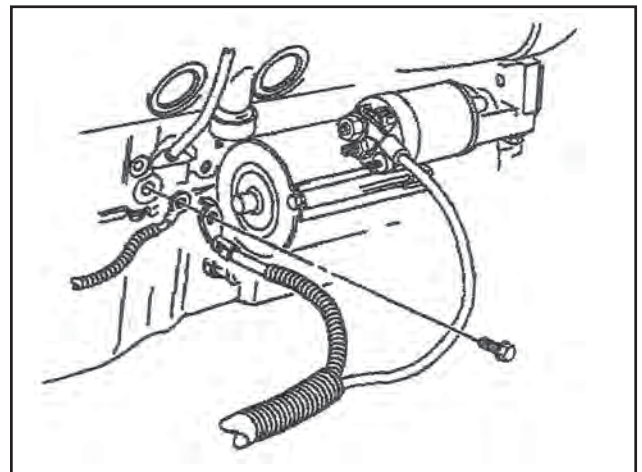


ILLUSTRATION 1
ENGINE BLOCK GROUND CIRCUIT G101

JUMP-STARTING PRECAUTIONS

With today's electrical systems, many of which retain memory, it is not uncommon for a battery discharge condition to occur while the vehicle is parked on the sales lot. This condition should be considered a normal characteristic. Parasitic current drains can deplete the battery voltage to a level that will result in a no-start condition within a thirty day period, or less. This is assuming that the battery starts out in a full state of charge and the parasitic current drain is within an acceptable range, usually 25-30 ma. A battery with a 70% charge may only last fifteen days before encountering a no-start condition.

Portable booster packs are commonplace among the vehicle dealerships and independent car dealers. Special precautions must be taken when boosting a vehicle to prevent damage to the vehicle or the person attaching the equipment. Convenience of attachment becomes an issue when boosting a discharged battery. GM reports that some dealers may be utilizing the instrument panel battery positive stud located at the underhood fuse block to make the jump-start (see illustration 2). When doing this, the 125 amp mega fuse (#48) located in the engine fuse block may blow, resulting in a loss of power or damage to various electrical components inside the vehicle. To properly jump-start the vehicle, always attach the positive booster cable clamp to the positive battery terminal. The negative clamp should be attached to the remote terminal located on the front engine lift bracket, marked "GND". Vehicles affected include: 2004 Buick Rainier, 2002–2004 Chevy TrailBlazer, TrailBlazer EXT, 2002–2004 GMC Envoy, Envoy XL, 2004 GMC Envoy XUV, and 2002–2004 Olds Bravada vehicles.

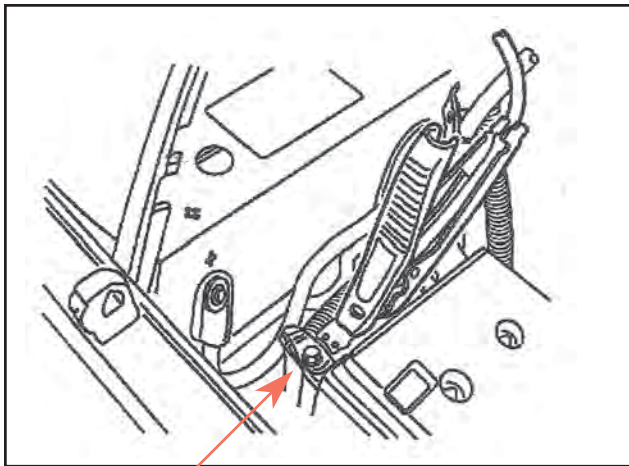


ILLUSTRATION 2
DO NOT USE THIS TERMINAL TO JUMP-START
THE ENGINE

COIL ON PLUG FAILURE

Ford encountered numerous coil failures with the early production vehicles fitted with the coil on plug ignition arrangement. Design issues and high defective coil returns prolonged the production and marketing of the ignition coil by some manufacturers and suppliers for a long time. If you recall, GM faced the same defective return saga a few years ago with the three pack coil arrangement on their distributorless ignition system.

Ford has since experienced some ignition coil failures due to wiring harness routing issues. Ford acknowledges that some 2004 F150 trucks equipped with the 5.4L engine may encounter an illuminated Malfunction Indicator Lamp (MIL) and diagnostic trouble code PO354, which indicates cylinder #4 primary/secondary coil fault. Ford has addressed this problem and determined that a wiring related problem is the cause of this condition. The damaged wiring may be due to the air-conditioning line coming in contact with the wiring to #4 coil, from the main harness loom. Chafing of the insulation results in a short. Ford recommends re-routing the main harness loom by re-positioning the two harness retainers on the right hand side of the engine. Inspect both #4 coil electrical wires and the related harness connector (see illustration 3).

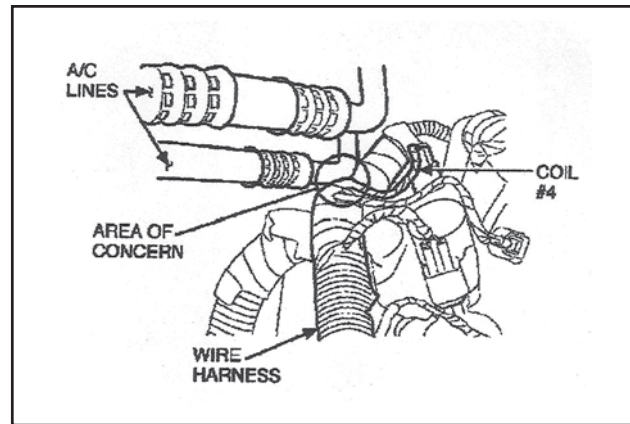


ILLUSTRATION 3
INSPECT COIL WIRING HARNESS FOR DAMAGE

The first step in any electrical diagnosis should begin with the source of energy, and that would be the battery. With a system or circuit failure, establishing power to the device and a sufficient ground is imperative. These simple checks can save valuable diagnostic time and make you look good, too. You will be amazed how quickly you will resolve some of those elusive electrical problems.

LARRY HAMMER
TECHNICAL SERVICES