

## CHECK LIST 57 T-BIRD BATTERY DRAIN DOWN

1. Best to start out with a fully charged battery; if it needs a charge, do that first.
2. Disconnect the positive battery cable from the battery terminal post for safety.
3. Clean and reconnect all ground wires including engine to firewall strap
4. Set up your multimeter for the 5-amp to 10-amp scale, if it has a range that high. If not, you may want to arrange to borrow a 10-amp to 30-amp ammeter.

The main power distribution in our cars is via the positive battery cable to the starter solenoid battery terminal, where 1 or more Yellow wires pick up Battery Hot voltage to feed to several points in the car. We'll use the solenoid battery terminal as a convenient place to start isolating the Battery Hot circuits.

5. Using a 1/2" or 9/16" wrench, carefully remove the positive battery cable from the starter solenoid. Slide the Yellow wire terminals off of the solenoid stud, then put the battery cable back on and secure it with the nut.

6. Now we can test to see if the power drain is due to a leakage in the high-current starter circuit. Touch the positive battery cable to the battery positive terminal and see if you are getting the small arc you described before. You can also use the multimeter set for Amps, or the borrowed ammeter, to read the drain current (if any) in the starter circuit. Connect the Black multimeter lead to the battery cable going to the starter solenoid and then touch the Red lead to the battery positive terminal post. An ammeter would be connected in a like manner, with the ammeter "+" post to the battery post and the "-" post to the cable to the solenoid. Normal leakage battery drain current through the starter solenoid and the starter should not be more than about 50 milliamps, or 0.050 amps. You can read this low current with a multimeter but would not be able to see it on an ammeter. Write down the reading that you observe and label it "starter circuit leakage". If you see 1 to 2 amps of current flow, there is a rather improbable failure to check up on. The small Brown wire on the starter solenoid is used to feed Battery Hot power directly to the coil, bypassing the ignition circuit coil resistor, for hotter spark while the starter is cranking. This possibility can be checked by disconnecting the small Brown wire on the starter solenoid to see if the leakage goes away. When done, reconnect the Brown wire and disconnect the multimeter and/or ammeter so that the positive battery cable is again unhooked from the starter solenoid.

7. One of the Yellow wires that you removed from the starter solenoid in step 5 is used to connect the generator circuit to the battery for charging while the engine is running. Locate the other end of this Yellow wire on the Battery terminal on the voltage regulator, where it joins up with another Yellow wire that goes to the horn relay. These 2 Yellow wires on the voltage regulator Battery terminal may share a single wire connector, where together they both attach and detach to the voltage regulator at the same time. If this is the case, locate the horn relay and carefully disconnect the Yellow wire from the battery terminal on the horn relay. Wrap it with tape to keep it from touching anything and shorting out. Using a small wrench or screwdriver, carefully disconnect the Yellow wire(s) from the Battery terminal of the voltage regulator. If the 2 Yellow wires on the Battery terminal of the voltage regulator each have their own terminal, disconnect both of them. Use the Ohms scale of your multimeter to determine which of the Yellow wires at the starter solenoid is the one that feeds from the voltage regulator, that you just disconnected. Set the multimeter to Ohms x1 scale and touch the multimeter Red and Black leads together. If the meter has an Ohms adjustment, set it to zero with the leads connected, then hook the Red lead to the now-disconnected Yellow wire by the regulator. Touch the Black multimeter lead to each Yellow wire, one at a time, that was disconnected from the starter solenoid. Label or mark the Yellow wire with the zero ohms conductivity on the multimeter as the Regulator wire. Remove the Red multimeter lead from the Yellow wire by the regulator, then reconnect the Yellow regulator lead back on to the Battery terminal of the voltage regulator, leaving the horn relay Yellow battery wire disconnected.

**8. Now we can test for a leakage problem in the generator & voltage regulator circuit. Gently set the positive battery cable on the battery positive terminal for good contact, and then touch the Yellow voltage regulator wire to the battery cable terminal on the starter solenoid to see if you are getting the small arc you described before. You can also use the multimeter set for Amps, or the borrowed ammeter, to read the drain current (if any) in the generator circuit. Connect the Black multimeter lead to the Yellow wire going to the regulator, and then touch the Red lead to the battery cable terminal on the starter solenoid. The ammeter would be connected in a like manner, with the ammeter “+” post to the battery post and the “-“ post to the Yellow wire to the regulator. Normal leakage battery drain current through the voltage regulator and generator should not be more than about 50 milliamps, or 0.050 amps. You can read this low current with a multimeter but would not be able to see it on an ammeter. Write down the reading that you observe and label it “generator circuit leakage”. Disconnect the multimeter and/or ammeter from the Yellow regulator wire at the starter solenoid, and lift the positive battery cable back off of the battery terminal post.**

**9. Next we will test for a leakage problem in the horn relay circuit. Reconnect the Yellow horn relay battery feed wire, either at the voltage regulator or at the horn relay. Gently set the positive battery cable on the battery positive terminal for good contact, and then touch the Yellow voltage regulator & horn feed wire to the battery cable terminal on the starter solenoid to see if you are getting the small arc you described before. You can also use the multimeter set for Amps, or the borrowed ammeter, to read the drain current (if any) in the generator circuit. Connect the Black multimeter lead to the Yellow wire going to the regulator, and then touch the Red lead to the battery cable terminal on the starter solenoid. The ammeter would be connected in a like manner, with the ammeter “+” post to the battery post and the “-“ post to the Yellow wire to the regulator & horn. Normal leakage battery drain current through the voltage regulator/generator and horn relay combined should not be more than about 75 milliamps, or 0.075 amps. You can read this low current with a multimeter but would not be able to see it on an ammeter. Write down the reading that you observe and label it “generator & horn circuit leakage”. Disconnect the multimeter and/or ammeter from the Yellow regulator/horn wire at the starter solenoid, and lift the positive battery cable back off of the battery terminal post.**

**This completes the checkout of all of the Battery Hot feed circuits under the hood. If you haven’t found the leakage so far, the problem is likely in the interior of the car.**

**10. One of the Yellow wires that you removed from the starter solenoid in step 5 is used to feed Battery Hot power through the firewall to the instrument panel for the rest of the car. This Yellow wire connects to the ignition switch and to the headlight switch, where a separate wire (56 color: Blue with Black tracer band) protected by a 12-amp breaker inside the headlight switch hooks up to provide battery power to the electric clock. The headlight switch has a separate external 7-1/2 amp fuse for the dome lights. Checking these circuits will involve removing the Yellow battery feed wires from the headlight and ignition switches, and then using the multimeter to track down the leakage current in each branch with everything turned off.**