

Bulletin No.: 02-06-03-010A

Date: July 02, 2004

## INFORMATION

### Subject:

Battery Parasitic Drain

### Models:

2005 and Prior Passenger Cars and Trucks

2003-2005 Isuzu Light Duty Trucks

### Supersede:

This bulletin is being revised to add the 2004 and 2005 model years. Please discard Corporate Bulletin Number 02-06-03-010 (Section 06 - Engine).

In automotive terms, a parasitic drain is an electrical load that draws current from the battery when the ignition is turned off. Some devices, such as the PCM and the radio memory are intended to draw a very small amount continuously. These draws are measured in milliamps (mA).

In normal use, parasitic drains aren't usually cause for concern, because the battery is replenished each time the vehicle is driven. But, in long-term parking situations, parasitic drains may discharge the battery enough to cause a no-start condition. New vehicles in dealer stock and airport long-term parking are two such situations.

An abnormal parasitic drain could be a glovebox or luggage compartment light that remains on but undetected. Or an electronic component may malfunction and cause a parasitic drain that is larger than normal specification.

### Parasitic Drains and On-the-Lot Battery Discharge

**Important:** In most cases of discharged batteries in low-age, low-mileage vehicles, proper charging procedures with approved charging equipment is the only repair necessary.

Here are some rules of thumb that might help relate parasitic drains to how long a battery would last on a parked vehicle. The Reserve Capacity (RC) rating multiplied by 0.6 gives the approximate available ampere-hours (AH) from full charge to complete rundown. Somewhere between full charge and complete rundown, the battery will reach a point at which it can no longer start the engine, although it may still operate some of the electrical accessories.

Using up about 40% of the total available AH will usually take a fully-charged battery to a no-start condition at moderate temperatures of 25°C (77°F). Put another way, for a typical battery in a storage situation, depleting the available AH by 20 to 30 AH will result in a no-start condition.

**Important:** If the battery begins storage at 90% of full charge, reduce the available AH accordingly.

The recommendation for maximum parasitic drain is around 30 mA (0.030 amp). A typical drain today actually falls into the 7-12 mA range, even though some vehicles do approach the maximum. Multiply the drain (in amps) by the time (in hours) the battery sits without being recharged. The result is the amount of AH consumed by the parasitic drain. The actual drain may be small, but over time the battery grows steadily weaker.

Here's an example: a vehicle with a 30 mA drain and a fully-charged 70 RC battery will last 23 days. But if that battery is at only 65% of full charge (green dot barely visible), it is going to last only 15 days before causing a no-start.

#### Effects of Temperature on a Standing Battery

The parasitic drain will be fairly constant over a range of temperatures. The important temperature is that of the vehicle at the time a start is attempted. Colder temperature raises the threshold of a no-start by increasing the residual power needed. When the temperature falls to 0°C (32°F), the battery will be able to put out only about 85% of its normally available starting power, and the engine may need as much as 165% of the usual power to start.

The combined effect of these two factors is to reduce the number of days the battery can stand with a parasitic drain. At 0°C (32°F), the battery can stand only half as long as it could at 25°C (77°F). And at -19°C (0°F), the standing days are reduced to one-fourth.

Temperatures above the moderate climate of 25°C (77°F) increase the battery's internal self discharge. If the battery is in a locale where the temperature is averaging 32°C (90°F), an additional 5% to 10% of the available ampere-hours will be lost in a month due to self-discharge within the battery. At temperatures below the moderate range, self-discharge will be low enough to be negligible compared to the parasitic loss.

#### What the Policies and Procedures Manual Says About Parasitic Drains

Because determining how long a battery may last in a storage situation is not precise, the P & P manual provides a clear-cut policy, excerpted here.

"Discharged batteries can freeze at temperatures as high as 0°C (32°F), causing permanent damage. Other permanent damage may result from allowing batteries to stand discharged for extended periods."

"To alleviate this condition, the negative battery cable should be disconnected on vehicles which are not going to be in service within a 20 day period, beginning from the time the vehicle is shipped. If this is not possible, batteries should be recharged periodically, every 20-45 days, until the green eye is visible."

"Disconnected batteries will slowly discharge, especially with higher temperatures; therefore, even disconnected batteries should be checked every four months and recharged if necessary."

"Vehicles on display are subject to battery discharge due to drains from courtesy lights and other accessories. Provision to maintain battery state of charge for these vehicles will be necessary."

Consult your P & P manual for full details.

### Tracking Down the Source of a Parasitic Load

If the battery in a vehicle becomes discharged in a shorter time than described earlier, the vehicle may have an out-of-specification parasitic load. Refer to Service Information (SI) for procedures for locating parasitic drains. Follow these steps:

1. Build the vehicle.
2. Select the Engine section.
3. Select the Engine Electrical sub-section.
4. Select Diagnostic Information and Procedures.
5. Select Battery Electrical Drain/Parasitic Load Test.

You will need the J 38758 Parasitic Draw Test Switch and a digital multimeter set to the 10A scale.

**Important:** Read the procedure and follow the steps exactly as described in SI. The following is a summary, not the complete procedure.

The test switch permits you to place an ammeter in series with the battery negative cable. Before performing the test, the engine must be run and all accessories must be operated as instructed. After shutting the ignition off, turn the test switch off. Now, all the current being used by the vehicle is shunted through the ammeter where it is measured. If the reading is out of specification, the procedure explains how to pinpoint the cause.

### A Final Word About Battery Testing

Your dealership has an essential tool, the Midtronics Micro 410 Battery Tester, J 42000. Use it to quickly identify batteries that are serviceable and can be charged. Refer to Corporate Bulletin Number 02-06-03-006A for more information about this tool.