

## **Battery - Battery Eye Function/Charging/Service**

TSB 07-5-8

03/19/07

### **BATTERY SERVICE - OPERATION OF BATTERY EYE - CHARGING SERVICE TIPS**

#### **FORD:**

1999-2003 Escort  
2000-2006 Taurus  
2000-2007 Crown Victoria, Focus, Mustang  
2002-2005 Thunderbird  
2005-2007 Five Hundred, Freestyle  
2006-2007 Fusion  
2000-2003 Windstar  
2000-2004 Explorer Sport  
2000-2006 Excursion  
2000-2007 E-Series, Expedition, Explorer, F-150, F-250 Light Duty,  
F-53 Motorhome Chassis, F-Super Duty, Ranger  
2001-2003 Explorer Sport  
2001-2007 Escape, Explorer Sport Trac  
2004-2006 Freestar  
2005-2007 Escape Hybrid  
2007 Edge  
2000-2007 F-650, F-750  
2006 Low Cab Forward

#### **LINCOLN:**

1998-2002 Continental  
2000-2006 Lincoln LS  
2000-2007 Town Car  
2006 Zephyr  
2007 MKZ  
2000-2007 Navigator  
2002 Blackwood  
2003-2005 Aviator  
2006-2007 Mark LT, Mark LT  
2007 MKX

#### **MERCURY:**

1999-2002 Cougar  
2000-2005 Sable  
2000-2007 Grand Marquis  
2005-2007 Montego  
2006-2007 Milan  
2000-2002 Villager  
2000-2007 Mountaineer

2004-2006 Monterey  
2004-2007 Mariner  
2006-2007 Mariner Hybrid

This article supersedes TSB 06-4-2 to update the vehicle model years.

#### ISSUE

This TSB describes the operation and function of the [Battery](#) Eye and correct Battery Recharging procedures.

#### ACTION

Refer to the following Service Tips to avoid misdiagnosis of a [battery](#) using the Battery Eye, and to determine the best way to charge a battery that may be discharged.

#### SERVICE TIPS

##### [Battery](#) Eye Operation / Function

The purpose of the [battery](#) eye is to indicate the state of charge of the battery in the assembly plant and while on the dealership lot. The battery eye can also indicate the state-of-charge when the vehicle is delivered to the dealership and during the pre-delivery inspection process. The battery eye is made up of a viewing plate, two balls and a small passage. The balls indicate the specific gravity of the electrolyte by floating higher or lower in the passageway. It is important to note that the battery eye checks the specific gravity on only one battery cell.

- ^ RED usually indicates that the [battery](#) state-of-charge is at 40 percent or less
- ^ YELLOW indicates that the [battery](#) state-of-charge is between 40 and 57 percent
- ^ GREEN indicates that the [battery](#) state-of-charge is above 57 percent
- ^ NO COLOR/BLACK sometimes no color can be seen at all and the eye appears black.  
This could happen after the [battery](#) has been in service for several years and some of the plate material has coated the balls
- ^ CLEAR could happen if the [battery](#) case becomes damaged and the electrolyte has fallen below the plates

The [battery](#) eye is a state-of-charge indicator, but should not be used to condemn a battery after the vehicle has been placed in service. After delivery, many things could happen to cause the battery eye to lead to misdiagnosis of the battery's actual state-of-charge. After the vehicle has been in service, the battery eye does not always accurately reflect the battery state-of-charge. The GR-1 190 Battery Tester/Charge or Micro 490 Digital Battery Analyzer should be used to determine battery condition.

Do not replace a [battery](#) based solely on the indication given by the battery eye. The battery eye color simply indicates the battery state-of-charge, not its condition. If the eye indicates the battery may be discharged, Use GR-1 190 Battery Tester/Charger to

determine the battery condition or recharge the battery before testing using the Micro 490.

A red or yellow indicator usually means that the [battery](#) is discharged, not defective. Therefore, a battery with a red or yellow eye should not automatically be replaced. The indicator could remain red after recharge because the balls are stuck in the passageway.

When new vehicles are delivered to the dealership, be sure to check the state-of-charge indicator within 72 hours. If the [battery](#) eye is red, charge the battery until it is fully charged. Refer to the following Battery Charging Procedure.

Batteries discharge while the vehicle is on the lot due to normal parasitic key-off loads. Also, vehicles in inventory are generally driven short distances with heavy electrical loads. Over a period of time (30 days or more), vehicles still in inventory will have shallow to deeply discharged batteries. The vehicle's [charging system](#) is designed to supply the vehicle's electrical power needs and maintain the [battery](#) near full charge during normal vehicle use. The charging system is not capable of bringing a deeply discharged battery back near full charge in a short amount of time such as allowing the vehicle to idle for 15 minutes to "recharge the battery". Discharged batteries should be charged using an external charger. Refer to the following Battery Charging Procedure.

**NOTE THE [BATTERY](#) EYE MAY REMAIN RED FOR A PERIOD OF TIME (UP TO SEVERAL DAYS), EVEN AFTER THE BATTERY IS FULLY CHARGED, BECAUSE THE ACID IS NOT YET FULLY MIXED.**

#### [Battery](#) Charging Procedure

Dealers with GR-1 190, use the Diagnostic Fast Charge Mode on GR-1 190 for this procedure and for dealers without a GR-1 190 the following procedure applies:

The Micro 490 Digital [Battery](#) Analyzer (Rotunda Part Number 162-00004) is extremely accurate if used properly and can distinguish the difference between good, defective, worn out, or discharged-only batteries. This TSB provides proper battery charging procedures for batteries that are identified as "discharged-only". Discharged-only batteries can be recharged using the procedures in this TSB without reducing battery life or charge capacity.

**NOTE [BATTERY](#) CHARGERS HAVE IMPROVED GREATLY WITH THE ADDITION OF THE NEW GENERATION OF "PULSE CHARGERS". THESE NEW CHARGERS PULSE CURRENT INTO THE BATTERY THAT BREAKS DOWN THE SULFATION LAYER ON THE BATTERY PLATES AND GENERALLY REDUCE CHARGING TIMES TO LESS THAN 1 HOUR.**

- ^ DEEPLY DISCHARGED - A [battery](#) that is drained over a prolonged period of time such as an unsold vehicle, to the point it is dead
- ^ SHALLOW DISCHARGE - A [battery](#) that is drained by leaving an accessory on for several hours or a few days, and has a very low charge

| Type of Battery Discharge | Pulse Charger                                 | Standard Charger                                                       |
|---------------------------|-----------------------------------------------|------------------------------------------------------------------------|
| Deeply Discharged Battery | Follow directions supplied with Pulse Charger | 2 - 8 hours and may take up to an hour to accept the initial charge    |
| Shallow Discharge Battery | 45 minutes - 1 hour charge                    | 2 hours (40A) on manual setting or 2 hours on medium automatic setting |

The chart information summarizes two (2) recommended methods of charging.

**NOTE** COLD BATTERIES WILL NOT READILY ACCEPT A CHARGE. THEREFORE, BATTERIES SHOULD BE ALLOWED TO WARM TO APPROXIMATELY 41°F (5°C) BEFORE CHARGING. THIS MAY REQUIRE 4 TO 8 HOURS AT ROOM TEMPERATURE.

A [battery](#) which has been completely discharged and left in that condition for a prolonged time (such as an unsold vehicle) may be slow to accept a charge initially, and in some cases may not accept a charge at the normal charger setting. When batteries are in this condition, charging can be started by use of the "dead battery" feature on chargers so equipped. Follow charger manufacturer's instructions for use of dead battery switch. If switch is the spring-loaded type, it may need to be held in the ON position for up to 3 minutes.

**NOTE** THE [BATTERY](#) EYE MAY REMAIN RED FOR A PERIOD OF TIME (UP TO SEVERAL DAYS), EVEN AFTER THE BATTERY IS FULLY CHARGED, BECAUSE THE ACID IS NOT YET FULLY MIXED.

For additional information, refer to the PTS Website, web based Technician training "Fix It Right The First Time" course "[Battery](#) Testing and Charging 34G02W0" (website).

**WARRANTY STATUS:** Eligible Under Provisions Of New Vehicle Limited Warranty Coverage

**IMPORTANT :** Warranty coverage limits/policies are not altered by a TSB. Warranty coverage limits are determined by the identified causal part.

| OPERATION | DESCRIPTION                                                                                    | TIME        |
|-----------|------------------------------------------------------------------------------------------------|-------------|
| MT070508  | Use SLTS Operations If Available; Claim Additional Diagnosis Or Labor Performed As Actual Time | Actual Time |

**DEALER CODING**

| BASIC PART NO. | CONDITION CODE |
|----------------|----------------|
| 10655          | 42             |