

**FORD:**

1998-2000 Contour  
1998-2003 Escort  
1998-2006 Crown Victoria, Mustang, Taurus  
2000-2006 Focus  
2004-2005 Thunderbird  
2005-2006 Five Hundred, Freestyle  
2006 Fusion  
1998-2003 Windstar  
1998-2006 E-Series, Expedition, Explorer,  
F-150, Ranger  
1999-2006 F-53, F-Super Duty  
2000-2005 Excursion  
2001-2005 Explorer Sport Trac  
2001-2006 Escape  
2004-2006 Freestar  
2005-2006 Escape Hybrid  
2000-2006 F-650, F-750  
2006 Low Cab Forward

**LINCOLN:**

1998-2002 Continental  
1998-2006 Town Car  
2000-2006 LS  
2006 Zephyr  
1998-2006 Navigator  
2002 Blackwood  
2003-2005 Aviator  
2006 Mark LT

**MERCURY:**

1998-2005 Sable  
1998-2006 Grand Marquis  
1999-2002 Cougar  
2005-2006 Montego  
2006 Milan  
1998-2006 Mountaineer  
2000-2002 Villager  
2004-2006 Monterey  
2005-2006 Mariner  
2006 Mariner Hybrid

This article supersedes TSB **05-09-18** to update the Service Procedure.

**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

**NOTE:** The information in Technical Service Bulletins is intended for use by trained, professional technicians with the knowledge, tools, and equipment to do the job properly and safely. It informs these technicians of conditions that may occur on some vehicles, or provides information that could assist in proper vehicle service. The procedures should not be performed by "do-it-yourselfers". Do not assume that a condition described affects your car or truck. Contact a Ford, Lincoln, or Mercury dealership to determine whether the Bulletin applies to your vehicle. Warranty Policy and Extended Service Plan documentation determine Warranty and/or Extended Service Plan coverage unless stated otherwise in the TSB article. The information in this Technical Service Bulletin (TSB) was current at the time of printing. Ford Motor Company reserves the right to supersede this information with updates. The most recent information is available through Ford Motor Company's on-line technical resources.

**073995**

## TSB 06-4-2 (Continued)

- 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

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

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

**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**

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For additional information, refer to the PTS Website, web based Technician training "Fix It Right The First Time" course "Battery Testing and Charging 34G02W0" (FCS-14246-WEB on [www.motorcraft.com](http://www.motorcraft.com)).

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

**DEALER CODING**

BASIC PART NO.  
10655

CONDITION  
CODE  
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