ELECT-15, Battery Checks

Introduction

Performing a visual inspection of the battery is an important first step in determining the condition of the battery. If the visual checks don't reveal anything obviously wrong with the battery, proceed with the battery condition testing.

Visual Checks

1. Check the battery for cracks in the case.
2. Check the battery terminals for corrosion. This will appear as white or rust colored material on the battery terminals / connectors.
    a. If corrosion is evident, loosen and disconnect the battery clamps. Clean the battery posts and clamps with a wire brush.
    b. After reconnecting the terminal leads, apply petroleum jelly to the post and clamps to minimize corrosion. You can also the felt rings for the battery posts to help reduce corrosion.
3. On 944s, a battery cover is important to minimize corrosion and protect the battery tray.
4. Check for bulges in the battery cases. This is indicative of a failing battery.

Battery Condition Check

The best way to check the condition of a battery is to take it to an auto parts store and have it professionally tested. However, you can check the state of charge of an automotive battery by checking the no load voltage of the battery. This must be done with a good quality digital multimeter with an accuracy of 0.5% or better. Disconnect the battery positive lead, check the battery terminal voltage, and compare to the table below.

No Load Voltage (VDC)	State of Charge
12.75	100%
12.45	75%
12.25	50%
12.05	25%
11.85	5%

If ambient temperature is less than 21 °C (approximately 70 °F), then add 0.021 volts to the reading for every 1 °C (1.8 °F) below 21 °C (approximately 70 °F).

Another way to check the condition of the battery is to check the specific gravity of each cell using a hydrometer. However, as most battery are now sealed units, this is normally not possible.

Replace the battery if any of the following conditions exists:

a. O VDC across a battery that's been charged 6-8 hours. This means there is and open cell in the battery.
b. Approximately 10.0 - 10.6 VDC across a battery that's been charged for 6-8 hours. This means that there is a shorted cell in the battery.
c. After being charged for 6-8 hours (at 13.8 to 14.6 VDC) the battery will not hold a charge of at least 12.45 VDC.

Additional Information

Another way to tell if the battery has sufficient charge to roll the engine is to take a look at the interior lights. If the interior lights are extremely dim or won't light at all, there is not enough charge in the battery to roll the engine.

Charging a 944 Battery

The best method to charge a battery is to charge slowly using an automatic constant voltage charger. You should charge the battery for 6 - 8 hours at 13.8 to 14.6 VDC. Charging at less than 13.8 VDC or greater than 14.6 VDC can shorten the life of a battery significantly.

Jump Starting a 944

Connecting jumper leads or battery charger leads to a 944 poses an interesting problem. The battery positive terminal is located in close proximity to the windshield frame. Consequently, it's difficult to connect a jumper or battery charger lead clamp to the terminal without touching the windshield frame (DC arc welding lesson 101).

I avoid this by clamping onto the battery positive terminal with a pair of needle-nose vise grips and then attach the charger or jumper lead to the vise grips. I recommend connecting jumper or battery charger leads in the following order:

a. Dead battery positive
b. Good battery positive
c. Dead battery negative (preferably a ground away from the battery)
d. Good battery negative (again preferably a ground away from the battery)

IMPORTANT!

When jump starting a 944 using a battery charger, never, ever use the battery charger's BOOST feature (if equipped). It will burn up the DME computer.