Tech Tip®

COMPUTER RECALIBRATION
BATTERY MAINTENANCE

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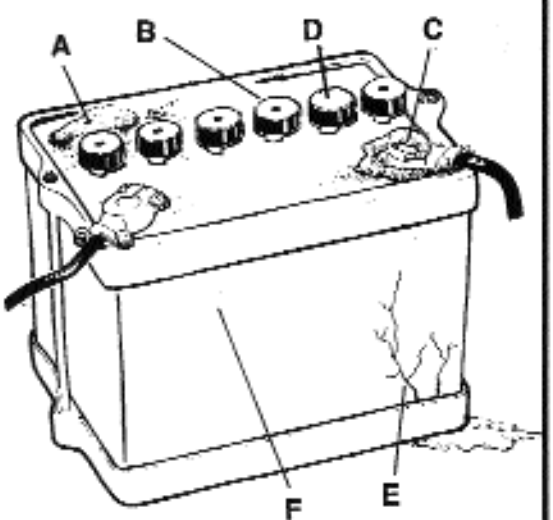
VISUAL INSPECTION



A) Check the top of the case for dirt or electrolyte, which could cause excessive self-discharge and should be removed.

B) Make sure that the filler or vent cap holes are not plugged.

C) Check for loose battery cables, corroded terminals and cables, deposits on the connections, etc.

D) Look for raised cell covers or a warped battery case, which indicates an over charged or overheated battery.

E) Look for cracks or leaks from the battery case.

F) Check the electrolyte level. If it is below the top of the plates, add water; if it is low (but not below the plates) test the cells with a hydrometer before adding water. If your "maintenance free" battery is equipped with removable cell caps, check the electrolyte level-low fluid level indi cates overcharging.

ITEMS NEEDED

- Battery Tester
- Pliers
- Wrench Set
- Vacuum Gauge
- Hand Cleaner
- Shop-Towels
- Baking Soda

1

CAUTION: Batteries produce explosive gases! Keep sparks and fla away from batteries. Batteries contain sulfuric acid, which is extre corrosive to eyes, skin, clothing, and metals! Protect your face and when working on batteries.

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Battery fluid levels need to be properly maintained (some batteries completely sealed and have no provisions for checking battery leve check the fluid level, simply remove the battery cell caps or battery strip and notice the level of fluid in each cell. The fluid should be even the filler ring located about 1 inch down the filler hole for each cell. fluid is too low, add distilled water to the cell(s) as necessary to brin fluid to the proper level. NOTE: If a frequent loss of battery flu observed in some cells, it may indicate one or more of the following ditions:

A. The charging system is overcharging and should be inspected for proper operation.
B. The battery case is cracked and leaking fluid. The battery should be replaced.
C. The battery has internal damage, and should be replaced.

2

Clean battery terminals are necessary to deliver your battery's full p and keep it fully charged. Battery terminals may be cleaned by use battery terminal cleaner, or washing with a solution of baking soda water and brushed clean. Do not allow any baking soda to enter the tery cells, as this will seriously reduce the battery output. For pr cleaning, the battery cables should be disconnected and cleaned s rately from the terminals of the battery. When disconnecting ba cables, remove the negative cable first and reconnect the negative c last! This will avoid any accidental sparks which could ignite any explo battery gases. Also be sure all accessories and the ignition key are i "off" position.

3

Determining the state of charge of a battery can be made by mea ing the specific gravity (density) of the battery fluid in each cell. To m ure this, you use a battery hydrometer (sometimes just labeled as a tery tester"). Insert the hydrometer into each cell of the battery and re the individual readings, along with the temperature of each cell w thermometer. Correct the reading to 80°F, using the temperature conve

chart. Compare the corrected readings to the specific gravity chart to determine the battery's state of charge. A reading of 1.275 is considered to indicate a full charge. Some hydrometers directly indicate battery charge by means of a number of small, floating balls within the tester. With this type, it won't be necessary to make the temperature corrections, as they are usually self-compensating for temperature.

Test for high resistant battery cells. A high resistant cell is determined by its temperature corrected specific gravity being less than the other battery cells. Any cell which has a hydrometer reading 10% less than the other battery cells, regardless of the state of total battery charge, indicates high resistance in a battery cell and the battery should be replaced.

State of Charge	Specific Gravity
Fully Charged	1.265
75% Charged	1.225
50% Charged	1.190
25% Charged	1.155
Discharged	1.120

4 **Protect** battery connections against corrosion by applying a coating of petroleum jelly, light grease, or spray protectant to the terminals after cleaning and battery cable connection.

Re-educate your computer any time the battery is disconnected in your computerized vehicle, to ensure proper vehicle operation. The different procedures are listed below.

5 **Chrysler:**
A) Accelerate from 0-30 mph and come to a complete stop returning to idle.
B) Accelerate from 0-55 mph and come to a complete stop returning to idle.
C) Drive vehicle for 3-5 minutes in varied driving conditions, medium acceleration, hard acceleration, etc.

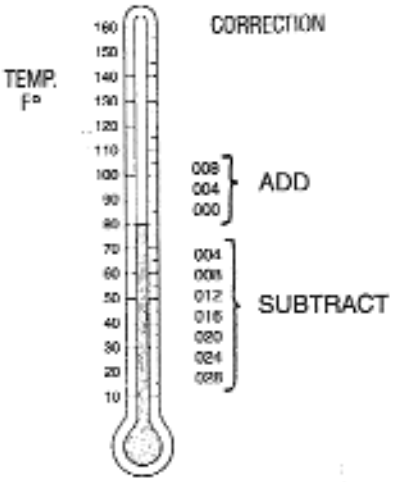
Ford:
A) Connect a vacuum gauge to a manifold vacuum source.
B) Accelerate from 0-55 mph while maintaining 10" of vacuum.
Decelerate to 35 mph.
C) Accelerate from 35-55 mph while maintaining 7" of vacuum.
Decelerate to 35 mph.
D) Accelerate from 35-55 mph while maintaining 5" of vacuum.
Decelerate to 35 mph.
E) Accelerate from 35-55 mph while maintaining 0" of vacuum.
Decelerate to 35 mph.

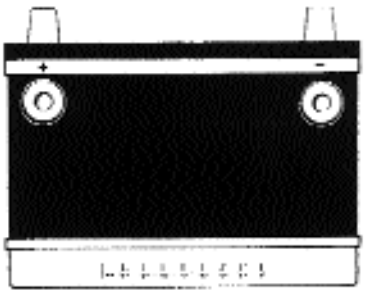
NOTE: On 1989 and newer - letting the vehicle idle for two minutes after warm-up will recalibrate the computer.

General Motors:
Consult a service manual for your vehicle for the correct idle learn procedure.

Manufacturers not listed. See your service manual as to the proper computer recalibration.

If you follow each manufacturer's guideline, you should not have any problems re-educating your vehicle.





Battery Polarity Chart

6 **Battery hold-down clamps** should be tight enough to hold the battery securely, but not so tight as to place excessive pressure on the battery case itself. Keep hold-downs free of corrosion, and replace them when necessary. Coat bolts and nuts with grease or spray protector to retard corrosion.

7 **Correct battery connections** when reconnecting, charging, or jump-starting a car, are vital. Make certain that the polarity is correct (+ to +) and (- to -). Look for the (+, -) or "POS", "NEG" markings on the battery for correct polarity. Do not rely on the colors of the battery cables! NOTE: Reversing polarity during battery charging or jump-starting could cause a severe explosion of the battery, and possible damage to the alternator and on-board computer! Extreme caution must be used to ensure proper polarity when making battery connections.

Your Auto Store expert can assist you in obtaining the proper replacement battery for your vehicle.