



## Quick Reference Guide

Tips for Proper Maintenance and Storage of your GEM

2005 All Models - VIN 037265-038895 (last 6 numbers)

2006 Models-e2, e4, eS, eL (does not include e6 or e6S)



## BASIC VEHICLE OPERATION INSTRUCTIONS:

- Disconnect the Charging Cord from the vehicle before operating
- Master Disconnect Switch (figure A) must be in the ON position
- Turn key clockwise to the ON position
- Fully release the parking brake
- Select driving mode (R, DL, or DH)
- Press accelerator pedal and go

## SERVICE CODES

(The Service Code is displayed in the same location as the mph/kph and is accompanied by the Service Wrench icon.)

- [06] Indicates that the accelerator pedal is pressed and no direction has been selected. Release accelerator pedal and insure direction switch is locked into position.
- [11] Indicates accelerator pedal is pressed before key is turned to the ON position. Turn key to OFF position. Release accelerator pedal. Turn key to ON position.
- [15] Indicates a low state of charge for the batteries. Fully charge batteries before operating.
- [16] Indicates that there is a high state of charge for the batteries. Turn headlights on for several seconds, then turn key switch to the OFF position and then to the ON position.



\* If you see other Service Indication Codes please contact your dealer for service.

## HOW TO KNOW IF CHARGE IS AT 100%

After charging is 100% complete, the charger connected icon will be the only thing lit and the bar graph will not be illuminated. A green light on the charger itself will also illuminate when the car is 100% charged. To know if the charging process is complete, all ten bars on the state of charge indicator should be illuminated when the car is turn on. If neither the charger connected nor the state of charge indicators are illuminated, the charger may not be charging. If this occurs, make sure the main disconnect switch is in the ON position. More information on the charger and charging of the batteries is discussed on pages 48-52 of the Owner's Manual.

## BATTERY CHARGING

GEM vehicles have a battery control and recharge system especially designed for electric vehicle usage. The charging system is designed to maximize the battery pack life while recharging the pack in the shortest amount of time with the available household current (110-volt, 15-amp, A/C outlet). Four of the six batteries are located under the bench seat cushion and two are located inside the shortback and longback bed or the e2 and e4 spat. The following guidelines will insure that you get the maximum battery life and performance out of your GEM electric vehicle batteries.

### RECHARGE VEHICLE AFTER EACH USE.

Your GEM vehicle is equipped with a battery charger that includes a feature that will monitor the state of charge of the batteries, and will initiate a charge cycle whenever the batteries fall to a pre-determined charge level. To enable this feature, leave the Master Disconnect Switch in the ON positions (see item 1 below) and keep your car plugged into a 110-volt A/C outlet (see item 4 below).

**NOTE: THE BATTERIES USED IN YOUR GEM VEHICLE WILL PERFORM BETTER WHEN KEPT FULLY CHARGED. THEREFORE, WHENEVER POSSIBLE, RECHARGE THE BATTERIES—NO MATTER WHAT STATE OF CHARGE IS INDICATED.**

1. The Master Disconnect Switch must be in the ON position for the charger to operate and charge the batteries. The Master Disconnect Switch is located on the bottom of the dash on the fuse panel.



2. The Battery Charger Receptacle is located on the hood. It accepts a standard, 3 wire, grounded extension cord. The extension cord should not exceed the following: 12-gauge wire 50 feet in length or 14-gauge wire 25 feet in length.

3. Insert the proper extension cord into the Battery Charger Receptacle.

4. Plug the extension cord into a 110-volt A/C, 15-amp breaker outlet. A Ground Fault Interrupt protected circuit (GFI) is recommended. **TO ENSURE PROPER**

Please refer to your Owner's Manual for more detailed information regarding your vehicle.

**CHARGING, NO OTHER CARS, APPLIANCES, DOOR OPENERS, ETC. CAN BE PLUGGED INTO THE SAME CIRCUIT.**

**5. A full recharge cycle can take from 8 to 12 hours (if the state of charge indicator is indicating only one red bar).**

## **BATTERY TIPS & STORAGE RECOMMENDATIONS**

**1. Battery posts must be clean and tight.**

**2. If corroded, clean posts with a solution of one cup baking soda and one gallon water.**

**3. When storing or not using your GEM for an extended period of time (two weeks or longer) it is recommended that you first check the water level of your batteries, unless equipped with maintenance free gel batteries, and leave the vehicle plugged in with the Master Disconnect Switch in the ON position. The charger will monitor the state of charge of the batteries, and will initiate a charge cycle whenever the batteries fall to a pre-determined charge level, for up to 24 weeks.**

**4. The Master Disconnect switch must be in the ON position for the charger to operate and charge the batteries.**

**5. If the batteries appear to be frozen, do not charge them. Contact your local authorized GEM dealer for service.**

## **TROJAN BATTERIES**

**1. The water level in these batteries needs to be maintained at no higher than the bottom neck opening (1/2 inch above the plates) and should be checked at least monthly.**

**2. If the water level is below the plates, add just enough distilled water to cover the plates, then charge and re-check the water levels.**

**3. If the water level is below the neck opening, but above the top of the plates, first charge the vehicle, then re-check the levels and add distilled water to just below the neck opening. Overfilling can cause the batteries to boil and spill acid.**

**4. Check all battery connections monthly to ensure that they are tight and free of corrosion. If corrosion starts to appear, wash the tops and terminals of batteries with a solution of one cup baking soda and one gallon water. Let terminals dry and then spray them with anti-corrosion spray.**

## GEL BATTERIES

There is little maintenance needed for the GEL batteries only to keep the batteries charged and the terminals clean and tight. It is recommended that you check the battery terminals at least once a month for corrosion. While checking the terminals, make sure that there is a tight connection between the battery cable and the battery terminal. If corrosion starts to appear, wash the tops and the terminals of batteries with a solution of baking soda and water using the 1 cup/gallon ratio. Let terminals dry and then spray them with anti-corrosion spray. If you regularly maintain the batteries, your GEM will run more efficiently.

## GEM ON-BOARD CHARGER

Your GEM contains an on-board 12-amp, 72-volt charger. There is a safety feature built into the charger that will not allow it to engage if the batteries are overly discharged. This safety feature is activated when the charger detects that the combined voltage of all six batteries is 68 volts or less. If the total voltage is below 68-volts and the on-board charger will not activate, it then becomes necessary to employ an alternate charging method.

### *Alternate Charging Method (Requires a 12-volt battery charger - not included)*

The alternate charging method is designed to charge each battery in the vehicle separately, using a 12-volt battery charger. During the alternative charging method it is not necessary to remove or unhook battery post connections. Turn the Master Disconnect Switch to OFF position. Set 12-volt charger (same as you would use to charge any 12-volt battery) to medium amp settings (10 to 40 amps). Charge each battery 10 - 20 minutes. Move quickly from battery to battery, as this is only a residual charge, and it will dissipate in a short period of time.

After charging the last battery, remove 12-volt charger leads, turn on the Master Disconnect Switch and plug the vehicle in. If the on-board charger does not recognize the residual charge and activate, it may be necessary to repeat the alternative charge cycle.

## TIRE INFLATION

Maintaining proper tire inflation pressure is essential to safe operation of your vehicle. Improperly inflated tires can also contribute to poor battery range and vehicle handling. Tire inflation pressures should be checked monthly and maintained at 30 psi for 10" tires and 32 psi for 12" tires.

## CLEANING INSTRUCTIONS

### *Windshield or Sunroof*

We recommend using GEM Windshield Cleaner and Protectant to clean your windshield, sunroof and side windows. Normal dust and dirt can also be removed using a liquid household glass cleaner. Do not use abrasive cleaners on the windshield and sunroof, as they will cause scratches.

**NOTE:** Be very careful when cleaning the acrylic windows as they can be scratched or damaged. Do not use a cleaner with an abrasive, a combination cleaner and wax or any solvent that contains ethyl or methyl alcohol. Also, do not use products containing ammonia, soaps or abrasives. Never use gasoline or cleaning solvent. These products can scratch and/or destroy the surface of the windows. To remove oil, grease or road tar, use isopropyl alcohol, then wash the windows with water. Dry gently with a soft cloth or chamois.

### *Seats and Interior*

We recommend using GEM Foaming All-Surface Cleaner to clean your seats and interior surfaces. You can use warm water and rub with a clean, damp cloth to remove dirt. Substances such as tar and asphalt will stain if not removed quickly. Use a clean cloth and solvent-type vinyl cleaner. Then wash the area thoroughly with a damp cloth and mild liquid detergent. Finish by rinsing with cool water.

**NOTE:** Do not spray the interior of your vehicle with water. Water contact with the windshield, dash panel or instrument panel could damage the electrical system.



### *Exterior*

The best way to preserve your vehicle's finish is to wash the vehicle regularly. Use mild liquid detergents only (no strong soaps or chemical detergents) and rinse promptly. Dry the finish with a soft, clean chamois or towel to avoid surface scratches and water spotting. To remove haze, bring back the original shine and protect the exterior surfaces of your vehicle, we recommend using GEM Fiberglass, Plastic and Rubber Restorer.

**NOTE:** To avoid spotting, do not wash the vehicle in direct sunlight.





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