

NOTE: This information was copied from postings on the Vectrix forums. I have not seen any “Official” documentation myself, therefore I can’t vouch for the accuracy of the following pages.

Reference NPBT0814 Rev 1 Issue Date 30 Oct 08

The dealer has loaded new software to improve the battery handling and accuracy of the fuel gauge. In order to finalize the actions with this upgrade, please perform the following actions upon receiving your scooter back from the dealer. Please add this to your owner’s manual.

CONSUMER RESPONSIBILITY

1.0 DO NOT recharge the bike yet. Begin the battery management initialization routine by immediately discharge the battery until the battery light (Red Telltale) illuminates. Then follow steps 2-5 to complete the initialization.

2.0 Set a pre-charge cooling delay. This selectable pre-charge cooling delay has been incorporated into the charging algorithm to cool the batteries prior to charging. This increases the charge efficiency. It is recommended that a delay be used whenever possible and that the duration be made as long as time permits. Set a pre-charge cooling delay as follows:

2.1 Unplug the bike.

2.2 Turn on the bike.

2.3 Press and hold the SELECT (S) button on the right side of dashboard until you see the Set Delay mode activated on the left LCD.

2.4 Set the delay using the H and M buttons. Press and hold H to increment by 1 hour. Press and hold M to increase in 15 minute increments. The maximum delay you can set is 9 hours, after that it will go back to 0.

2.5 Once you are finished press and hold the SELECT (S) button until you see DONE flash briefly on the left LCD and the normal display returns.

2.6 Enable the programmed delay by pulling the left brake lever while turning off the ignition key.

2.7 Alternatively you can enable a fixed 30 minute delay by pulling the right lever while turning off the ignition key.

3.0 Fully charge the scooter using the charge delay.

3.1 Plug in the scooter.

3.2 The dashboard will turn on and you will see the initial check, then it will turn off and the plenum fans will run.

3.3 Every 20 minutes the dashboard will turn on and the bike will check the battery temperature. If it is below the set threshold, the plenum fans will turn off and the delay will continue with the fans off. If the temperature is not below the threshold, the plenum fans will run.

3.4 At the end of the delay, the charger will begin a normal charge cycle. At the end of the charge a 1hr post cool down will begin with the fans powered by the battery. This will terminate earlier if the threshold temperature is reached.

3.5 The charger will then begin an equalization charge (this was initiated when new software was loaded). It is recommended that you let this equalization charge complete. The duration is set to 4 hours in addition to the regular charge time. However, if time does not permit, stopping the sequence will not harm your scooter.

4.0 Within 24 hrs, completely discharge the bike again. Be certain the battery light illuminates. This discharge does not have to happen in one ride, but do not perform an opportunity charge (short cycle) until after the bike has been fully discharged.

5.0 Once the battery light illuminates the initialization is complete.

Notes: Unless you want to change the duration, the programmed delay will stay in the memory, so you do not need to reprogram it every time. To enable the programmed delay, simply pull the left brake lever while you are turning off the ignition key prior to plugging in the bike.

Alternatively, you can enable a fixed minute delay by pulling the right lever while you are turning off the ignition key.

The software will keep track of the riding time. After every 12 hrs of riding an equalization command will be sent to charger which will initiate an equalization charge after your next charging cycle

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SW Changes

The main focus of this MC SW release is on better battery management and better fuel gauge accuracy. The SW was designed to acclimate to the various states of health of the batteries already in the field and to better protect from damage all new packs. The new SW incorporates better pre-charge cooling along with continuous battery capacity measurements to prevent over charging and to accurately scale the fuel gauge. The occurrence of the hot battery warning should decrease significantly.

The most obvious change a user will see is the addition of a programmable delay, during which time the fans run off the batteries while cooling the batteries. The advantage to this is that it eliminates the extra charge that was dumped into the batteries when the fans ran off the AC power, allowing for much better cooling. Cooler batteries accept a charge much more efficiently and allow for more complete charges. The “delay” function utilizes the instrument cluster LCD and the four IC button as a user interface. The use of the delay is vital to maintaining a healthy battery pack. In addition, the delay can be used to start the charge when electricity rates are lower.

The SW also measures the actual battery capacity during a full discharge cycle immediately following a full charge cycle. This capacity is then shared with the charger so that the charging profile can be matched to the battery pack. In addition the charger uses this value to accurately scale the fuel gauge. Although the SW performs this measurement on an ongoing basis it is critical to follow the initialization procedure to insure that the SW learns the pack capacity in the first few charge cycles.

The low battery measurement and management is much more controlled and does not require the battery to be dangerously discharged to synchronize to the gauge as before. The SW looks for a low power output when the pack is under a certain voltage. That is, when the pack voltage is less than a predetermined value, the current output must meet certain minimum requirements. If it does not then the battery is deemed discharged to a certain value. At this point the battery icon will illuminate, warning the user that the remaining range is limited. In addition the minimum allowed pack voltage has been raised significantly, preventing over discharging.

Once the SW is installed and initialized, the user will notice several differences. During discharge the fuel gauge will no longer drop out at the end of the discharge. The user should consistently have between 1 and 2 bars showing when the battery icon appears. The last bars will have useful charge

remaining. During charging, provided the delay is used regularly, the temperature of the battery should be acceptable to allow a full charge and to prevent over heating of the pack during the end of a charge.

The pre-charge delay is programmed by pressing and holding the SELECT button on the IC until the left LCD displays the delay info. The HOUR and MIN button are used to set the delay in 15 minute increments. The delay value is limited to 9hrs and rolls over to zero at this point. Finish setting the delay by again pressing and holding the SELECT button until the delay info is replaced by the normal display. At this point the delay is set, stored in memory and enabled. The key switch must be turned off before plugging in the charger otherwise no delay will be implemented. Once a delay has been programmed, it can be enabled by simply holding the right brake lever while powering down. A delay with the pre-programmed duration will be implemented. A fixed 30 minute delay can also be enabled by holding the left brake lever during power down. The fans will run during this delay until either the temperature is within 3 degrees of ambient or the temperature reaches 24 degrees C. The delay will continue even if the fans turn off. Once the delay expires the charge will start.

The SW will keep track of riding time. Every 8 hrs, an equalization command will be sent to the charger.

For information purposes, when the kill switch is in the off position and the left lever is pulled, the battery voltage is displayed in the estimated range field and the highest battery temperature is displayed in the trip field (similar to when charging).

The motor controller fan will no longer come on immediately when the scooter is enabled, unless the controller is above a threshold temperature. As soon as the scooter begins to move or draws a minimum amount of current, the fan will come on at a default low speed as it did with previous SW. When the scoot comes to a stop the fan will turn off, again, unless the controller is above a threshold temperature. This basically masks any fan noise when the fan is not needed.