

## **Things to check when your battery is overcharging...(PL Regulators)**

1. Check that the PL's menu SET/VOLT is the correct value for your nominal system voltage.
2. Check that SET/PROG is correct for your battery type (0 or 2 for flooded, 1 or 3 for sealed).  
If PROG=4 then all settings under SET/REG need to be checked against suggested values from your battery supplier.
3. Check to see that the regulator is not simply doing an equalise of the battery, in which the regulator periodically tries to take the battery voltage higher than usual in order to mix the liquid of flooded batteries (in PROG=0, 2, and 4).  
You can find out the regulators present charge mode by doing a long button push from the BATV menu screen and reading the text that next comes up on the screen (EQU=Equalise).  
[short push on the button to get back out of this screen]  
A typical equalise target voltage for a flooded battery in a 12V system is 16V (scale for other system voltages) (programmable in PROG=4). The regulator will typically try and maintain the equalise voltage for 1hr (programmable in PROG=4). If the regulator cannot maintain the equalise voltage it will stop the equalise timer and only restart the timer when the higher equalise battery voltage can next be maintained. The regulator could keep trying to complete this equalise part of the charging cycle for up to 4 days, after which time it will drop out of the equalise charge cycle even if it hasn't completed (failsafe).  
[See the PL Reference Manual for further details of the charging cycle]
4. Check that the regulator is reading correct battery voltage.  
Using a multimeter on voltage range, check the voltage across the BAT- (Battery Neg) and BAT+ (Batt Pos) terminals of the regulator is very close to the reading on the regulator screen. If the voltages are not close then the regulator is making decisions on incorrect information and may be overcharging (or undercharging) the batteries.
5. Check that the regulator is not being bypassed.  
If for example, the regulator is installed in a vehicle, then the negative wire from the solar panel MUST NOT be connected to the chassis of the vehicle (can happen by accident if a screw pierces the cable when modifications are made to the vehicle).  
Check Process:  
a) Remove the negative solar panel wire from the SOL- terminal of the regulator.  
b) Using a multimeter on resistance range, measure the resistance between the negative solar panel wire and a suitable chassis connection point. This should be a very high value.  
If it is a low value (say 0-500 ohms) then there is a INCORRECT connection between the solar negative wire and the chassis. Find this and remove it !
6. Check that the load catch (protection) diode is fitted correctly.  
Make sure that the catch diode (if fitted) is connected between the LOAD- and BAT+ (band this end) for PL20/40, or fitted between LOAD NEG and LOAD POS (band this end) for a PL60. If fitted to the wrong terminals, it could bypass the regulator and overcharge the battery.
7. Check that the regulator is able to turn off the charge current.  
Check process:  
a) Make sure the system is turned ON and charging the battery.  
b) Go to the menu DATA/SOLV.  
c) While the screen shows "SOLV", use a multimeter to check the voltage between the regulator terminals SOL- (Solar Neg) and BAT- (Battery Neg). Put the black (0V) multimeter lead on the BAT- terminal and the red multimeter lead on the SOL- terminal. With the solar panel in sunlight, this voltage should typically read -8V to -10V in a 12V system (higher for 24V and 48V systems).  
If the voltage reading is closer to 0V then the regulator is faulty and can't turn off the charge.
8. *If all the above tests fail to identify any fault with the system, please contact Plasmatronics for further technical support and possible return of regulator for repair.*