DISCOVER
ENERGY CORP.

Pre Charging (acid filling and charging) before installation

- Battery can be charged individually or can be charged in groups for mass quantity delivery or installation based on charger capability.
- Battery to be filled by proper electrolyte (Pre diluted and tested H_2SO_4). Electrolyte level Ito be equal in all the cells. Initial SG of H_2SO_4 before pouring should be 1.240 ± 0.005 at 27^0 C.

- Before pouring the electrolyte, be sure about the tolerable Iron (Fe) content in H_2SO_4 and right Specific Gravity (SG). Fe is harmful for the battery life and performance. To measure the correct SG, follow the **temperature correction formula** and adjust accordingly.

- After electrolyte filling wait for some time (min 0.5 hours to max. 2 hours) before final connection with power supply. Immediate after acid filling, the SG of electrolyte will drop for some points based on dry charge condition of the battery. This time battery may be warmed up. Start charging when the temperature of electrolyte comes in normal temperature.

- If water cooling arrangements surrounding the battery can be arranged, then it's good for ideal charging but for normal ambient temperature it's not mandatory.

- Charging current:
    - Max: 0.15C
    - Min: 0.10C
    - For a 100AH battery it's 15amp (max) and 10 amp (min).

- For initial charging, use the **constant current charger** which will give a constant current for a certain period. In this case voltage will be open to rise. Continue the charging till the SG of electrolyte comes to 1.240 ± 0.005 at 27^0 C in all cells. As normally during charging the temperature of electrolyte will be higher, before stopping the charging be sure about correct SG by temperature correction factor.

- Stop charging when you will see there is no significant change of electrolyte SG and battery voltage. Wait till the desired SG level for all cells.

- If excess water loss occurs during charging, then adjust by DM water to keep the level at upper level marking.
- Before delivery/connection, Please measure the following information in your check list (attached with this manual also).
    - SG of each cell
    - OCV
    - Temperature of electrolyte
    - Electrolyte level

The following parameters to be maintained for Solar Home System (SHS) to get optimum output from battery as on design for SHS:

- Specific Gravity = 1.240 ± 0.005 @25^{0}C
- The level of iron content = Less than 25 ppm.

Temperature Correction of Acid gravity:

- A correction of the temperature must be applicable at the measurement of the specific gravity of acid: $\gamma = M + (t - 25) \times 0.0007$
  Where, γ = Electrolyte gravity after correction
  M = Measured gravity
  t = Electrolyte temperature (^{0}C)

The following table shows the standard data (±0.005) of measured gravity by hydrometer at different temperature:

Temperature(^{0}C)	0	5	10	15	20	25	27	30	35	40	45
Specific Gravity	1.2575	1.254	1.2505	1.247	1.2435	1.240	1.2365	1.233	1.2295	1.226	1.2575