



# 8A & 8G BATTERY INSTALLATION AND OPERATING INSTRUCTIONS

This manual is intended to be a guide to optimize battery performance for multiple cyclic & float applications. Consult applicable User Manuals for additional parameters for specific systems. This manual is not intended for SLI or Vehicle related applications. Vehicle / Equipment Owner's Manual should be followed for SLI & Vehicle related applications.

**DANGER** Lead Acid Battery Contains: Lead, Sulfuric Acid (Electrolyte), Lead Compounds.

Harmful if swallowed, inhaled, or in contact with skin. Acid causes severe skin burns and eye damage. May damage fertility or the unborn child if ingested or inhaled. May cause harm to breast-fed children. May cause cancer if ingested or inhaled. Causes skin irritation, serious eye damage. Contact with internal components may cause irritation or severe burns. Causes damage to central nervous system, blood and kidneys through prolonged or repeated exposure if ingested or inhaled. Irritating to eyes, respiratory system, and skin. May form explosive air/gas mixture during charging. Extremely flammable gas (hydrogen). Explosive, fire, blast or projection hazard. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash thoroughly after handling. Do not eat drink or smoke when using this product. Avoid contact during pregnancy/while nursing.

Wear protective gloves/protective clothing, eye protection/face protection. Use only outdoors or in a well-ventilated area. Avoid contact with internal acid. Do not breathe dust/fume/gas/mist/vapors/spray. Keep away from heat/sparks/open flames/hot surfaces. No smoking. IF SWALLOWED OR CONSUMED: rinse mouth. Do NOT induce vomiting. Call a poison center/doctor if you feel unwell. IF ON CLOTHING OR SKIN (or hair): Remove/Take off immediately all contaminated clothing and wash it before reuse. Rinse skin with water/shower. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If exposed/concerned, or if you feel unwell seek medical attention/advise. Store locked up, in a well-ventilated area, in accordance with local and national regulation. Dispose of contents/container in accordance with local and national regulation. Keep out of reach of children.

**PROPOSITION 65 WARNING:** battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Batteries also contain other chemicals known to the State of California to cause cancer. **WASH HANDS AFTER HANDLING.**

**WARNING:** Risk of fire, explosion or burns. Do not disassemble or incinerate. Not recommended for inverted use. Follow product charging instructions. **High Voltage:** Risk of shock. Do not touch uninsulated terminals or connectors.

**Do Not Remove Vent Valve**

Manufactured by: East Penn Manufacturing Co.  
102 Deka Road, Lyon Station, PA 19536 USA 610-682-6361 Lead Acid Battery Electrolyte (Sulfuric Acid)

4-1034

15

UL Recognized Component MH17218

Pb

**BATTERIES AND OTHER RELATED PARTS CONTAIN LEAD**

**WARNING:** Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Batteries also contain other chemicals known to the State of California to cause cancer. **WASH HANDS AFTER HANDLING!**

Form No. 1534 Rev. 8/01. Read the manual in workshop area before use.

## IN REFERENCE TO THIS MANUAL:

- "Battery" is defined as an individual 12 or 6 volt unit.
- "Battery string" is defined as a series connected electrical system comprised of batteries (individual 12 or 6 volt units).

## SAFETY PRECAUTIONS

Although all valve-regulated cells have the electrolyte immobilized within the cell, the electrical hazards associated with batteries still exists. Work performed on these batteries should be done with the tools and the protective equipment listed below. VRLA battery installations should be supervised by personnel familiar with batteries and battery safety precautions.

**WARNING:** Risk of fire, explosion, or burns. Do not disassemble, heat above 40°C, or incinerate.

### Protective Equipment

Although VRLA batteries can vent or leak small amounts of electrolyte, electrical safety is the principle but not the only concern for safe handling. Per IEEE 1188 recommendations, the following minimum set of equipment for safe handling of the battery and protection of personnel shall be available:

- Safety glasses with side shields, or goggles, or face shields as appropriate. (Consult application specific requirements)
- Electrically insulated gloves, appropriate for the installation.
- Protective aprons and safety shoes
- Portable or stationary water facilities in the battery vicinity for rinsing eyes and skin in case of contact with acid electrolyte.

## SAFETY PRECAUTIONS (con't)

- Class C fire extinguisher
- Acid neutralizing agent.
- Adequately insulated tools (as defined by ASTM F1505 "Standard Specification for Insulated and Insulating Hand Tools").
- Lifting devices of adequate capacity, when required.

### Procedures

**Consult User Manual of specific application for additional Safety & Operating requirements.**

The following safety procedures should be followed during installation: **(Always wear safety glasses with side shields or face shield goggles when working on or near batteries.)**

1. These batteries are sealed and contain no free electrolyte. Under normal operating conditions, they do not present any acid danger. However, if the battery jar or cover is damaged, acid could be present. **Sulfuric acid is harmful to the skin and eyes. Flush affected area with water immediately and consult a physician if splashed in the eyes. Consult SDS for additional precautions and first aid measures.**  
**Consult SDS for additional precautions and first aid measures.**  
**SDS sheets can be obtained at [www.eastpenmanufacturing.com](http://www.eastpenmanufacturing.com)**
2. Prohibit smoking and open flames, and avoid arcing in the immediate vicinity of the battery.



## SAFETY PRECAUTIONS *(con't)*

3. Do not wear metallic objects, such as jewelry, while working on batteries. Do not store un-insulated tools in pockets or tool belt while working in vicinity of battery.
4. Keep the top of the battery dry and clear of all tools and other foreign objects.
5. Provide adequate ventilation (**per IEEE standard 1187 and / or as regulated by Federal, State and Local codes**) and follow recommended charging voltages.
6. **Never** remove or tamper with pressure relief valves. Warranty void if vent valve is removed.
7. Inspect all flooring and lifting equipment for functional adequacy.
8. Adequately secure battery, racks or cabinets to the floor.
9. Connect support structures to ground system in accordance with applicable codes.

## STORAGE / REFRESH

Batteries should be installed, and float charged upon delivery. If batteries are to be stored, the below requirements shall be followed.

1. Batteries shall be stored indoors in a clean, level, dry, cool location.
2. Store, charge, and ship in vertical position only.
3. Recommended storage temperature is 50°F (10°C) to 77°F (25°C). Acceptable storage temperature is 0°F (-18°C) to 90°F (32°C).
4. The batteries shall be given a refresh charge at regular intervals as detailed below:

### 0°F (-18°C) to 77°F (25°C)

Batteries shall be charged by the "battery charge date" marked on pallet.

Successive recharges shall be performed every 6 months.

### 78°F (26°C) to 90°F (32°C)

Battery voltage readings shall be taken monthly. Batteries must be given a refresh charge within 3 months from date of receipt or if any battery voltage falls below 12.72 volts per battery (6.36V of 6V battery), whichever occurs first.

Successive refresh charges shall be performed every 3 months.

## STORAGE / REFRESH *(con't)*

5. Whenever a refresh charge is required, it's important that all batteries to be installed in the same series string receive a charge at the same time to ensure continuity once placed in their intended application.
6. Each battery shall be charged for 24 hours at a constant voltage equal to 14.40 volts per battery (7.20V for 6V battery). To ensure the batteries are fully charged within 24hrs, the charger used for this refresh charge must have the capacity to provide at least the minimum charge current specification and not exceed the maximum charge current for the given battery type (model), as called out in Appendix D.
7. All requested information on "Refresh Record Form" in Appendix A should be completed for each refresh charge.
8. Batteries shall not be stored beyond 12 months. Storing beyond 12 months will affect warranty.
9. If the storage / refresh requirements cannot be met, contact East Penn Reserve Power's Product Support group for alternate instructions.

## INSTALLATIONS

### General

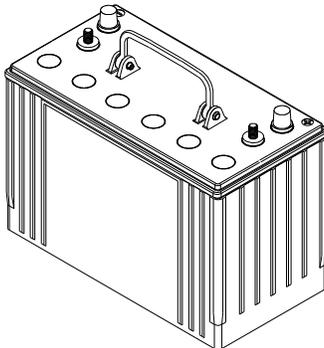
Caution should be taken when installing batteries to insure no damage occurs. The battery string cabinet, tray, rack, etc. shall be inspected for sharp edges that could cause damage to the battery casing. Batteries shall not be dropped, slid, placed on rough or uneven surfaces such as tray lips or grated flooring. Mishandling of batteries could result in equipment damage or human injury. East Penn will not be liable for damage or injury as a result of mishandling or misuse of the product.

### Grounding

When grounding the battery string, proper techniques should be applied per electrical standards, such as NEC and/or local codes, as well as User Manual of specific application.

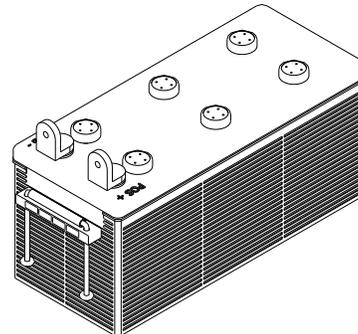
## DEKA 8A & 8G BATTERIES ARE TESTED AND APPROVED TO BE INSTALLED AND OPERATED IN THEIR UPRIGHT POSITION.

TOP TERMINAL BATTERY



Terminals – Upright Position

FRONT TERMINAL BATTERY



Terminals – Upright / Front Position

**FOR ANY OTHER INSTALLATION ORIENTATION, THE PRODUCT WILL NOT BE WARRANTED.**

## BATTERY ASSEMBLY

(Always wear eye protection.)

1. Set up the batteries so that the positive post (+) of one battery is connected to the negative post (-) of the next battery for all series connections.
2. For future identification, individual batteries should be numbered in electrical connection sequence, beginning with number one (1) at the positive end of the battery string.
3. All battery electrical contact surfaces shall be cleaned by rubbing gently with a non-metallic brush or pad before installing connectors. Oxide inhibitor grease can be used but is not required. Only approved oxide inhibitor: No-Ox-ID "A" from Sanchem, Inc. should be used on terminals and connectors.
4. Install all electrical connectors / cables and bolting hardware loosely to allow for final alignment of batteries. Torque to manufacturer recommendations.
5. After torquing, read the voltage of the battery string to ensure the individual batteries are connected correctly. The total voltage should be approximately equal to the number of batteries times the measured voltage of one battery (when connected in series). If the measurement is less, recheck the connections for proper voltage and polarity.
6. Read and record connection resistance and note the method of measurement. This helps determine a satisfactory initial installation and can be used as a reference for future maintenance requirements. **See Appendix E**, recording forms, in the back of the manual. **Clean, remake and remeasure any connection having a resistance measurement greater than 10% of the average of all the same type of connections.**
7. Battery string performance is based on the output at the battery terminals. Therefore, the shortest electrical connections between the battery string and the operating equipment results in maximum total system performance.  
Do not select cable size on current carrying capability only. Cable size should not provide a greater voltage drop between the battery string and operating equipment than specified. Excess voltage drop will reduce the desired support time of the battery string.

## SYSTEM OPERATION

### State of Charge

Battery state of charge can be determined by measuring the open circuit voltage. Consult the below table.

State of Charge vs. Open Circuit Voltage*		
% Charge	Gel	AGM
100	12.85 or higher	12.80 or higher
75	12.65	12.60
50	12.35	12.30
25	12.00	12.00
0	11.80	11.80

**NOTE: Divide values in half for 6-volt battery(ies)**

\*The "true" O.C.V. of a battery can only be determined after the battery has been removed from the load (charge / discharge) for 24 hours.

## SYSTEM OPERATION (con't)

### Charging

**Consult Charger User Manual of specific application for Safety and Operating requirements.**

For cyclic applications it is important that the battery(ies) be charged fully after each discharge. It is recommended that 108% to 115% of the Ah (Amp Hour) capacity removed from the battery(ies) be replaced after each discharge. This additional Ah is to compensate for any efficiency losses between the battery charger and the battery(ies)

### Charge Voltage

For both 8A & 8G batteries the following voltage settings should be followed:

**Charge / Absorption / Equalize**

13.80V to 14.60V @ 77°F (25°C)

**Float / Standby**

13.50V +/- .06 @ 77°F (25°C)

The charger must be able to maintain the battery string voltage within ± 0.5% of the desired level at all times.

**Note: Divide values in half for 6-volt battery(ies).**

## TEMPERATURE COMPENSATION

Battery voltage should be adjusted for ambient temperature variations.

3mV per °C (1.8°F) per cell

18mV per 12V battery

9mV per 6V battery

For temperatures above 77°F (25°C) subtract and for temperatures below 77°F (25°C) add.

Consult **Voltage Compensation Chart in Appendix B** for temperature compensation voltage maximum and minimum limits.

The average battery operating temperature should not exceed 95°F (35°C) and should never exceed 105°F (40.5°C) for more than an eight-hour period. Operating at temperatures greater than 77°F (25°C) will reduce the operating life of the battery. **If operating temperatures are expected to be in excess of 95°F (35°C), contact East Penn for recommendations.**

Discharging at temperatures less than 77°F (25°C) will reduce the capacity of the battery.

### Charge Current

To properly determine the amount of charge current required the following variables are to be considered:

- DoD (Depth of Discharge)
- Temperature
- Size & efficiency of the charger
- Age and condition of battery(ies)

Maximum charge current should be limited to 30% of the C20 Ah rate for the battery(ies) being used in the battery string.

**Example:** 8G24 C20 rate – 73.6Ah

Max. recharge rate: 73.6Ah x 0.3 = 22.1A

Consult **Charging Current vs Charging Time chart in Appendix C** as a guide line to determine recharge time from 0% to 90% state of charge at an initial charge current.



## TEMPERATURE COMPENSATION *(con't)*

### Discharge Voltage Curve

To estimate battery voltage during a constant current discharge at various DoD (Depth of Discharge) consult chart **Discharge Voltage Curve in Appendix B.**

**NOTE: Battery voltage can vary depending on temperature, age, and condition of battery.**

## BATTERY OPERATION

Battery operating temperature will effect battery string capacity and operating life.

Temperatures greater than 77°F (25°C) will reduce the operating life of the battery. For every 13°F (7°C) increase in operating temperature above 77°F (25°C), the warranty period will be proportionally reduced by 50% as shown below:

Operating Temperature		Proportional Percentage (%) of Life
°F	°C	
77	25	100%
81	27	80%
87	30	60%
90	32	50%

The average cell operating temperature should not exceed 95°F (35°C) and should never exceed 105°F (40.5°C) for more than an eight-hour period. **If operating temperatures are expected to be in excess of 95°F (35°C), contact East Penn for recommendations.**

Discharging at temperatures less than 77°F (25°C) will reduce the capacity of the battery.

Batteries [cells] must not be continuously operated below 50°F (10°C). **If operating temperatures are expected to be less than 50°F (10°C), contact East Penn for recommendations.**

The battery string must be located in a manner that the individual cells do not vary by more than 5°F (2.8°C) between the lowest and highest individual cell temperatures.

## RECTIFIER RIPPLE VOLTAGE

### Frequency

Ripple that has a frequency greater than 667Hz (duration less than 1.5ms) is acceptable, unless it is causing additional battery heating.

Ripple that has a frequency less than 667Hz (duration greater than 1.5ms), must meet the following voltage specification to be acceptable.

### Voltage Specification

Ripple voltage shall be less than .5% peak to peak of the manufacturer's recommended string voltage.

Failure to comply can void the warranty.

## RECORD KEEPING

### Voltages, Temperatures & Ohmic Readings

Record keeping is an important part of battery maintenance and warranty coverage. This information will help in establishing a life history of the battery string and inform the user if and when corrective action needs to be taken. Consult Battery Maintenance Report (Pg.8 – Appendix E).

While it is acceptable to operate at temperatures less than 77°F (25°C), it will require longer charging time to become fully recharged. Also, the capacity will be less at operating temperatures below 77°F (25°C).

After installation and when the battery string has been on float charge for one week, the following data should be recorded:

1. Battery string voltage at battery terminals while battery is on float charge.
  2. Charger voltage at charger panel meter.
  3. Individual battery float voltages.
  4. Ambient temperatures within area of battery string.
  5. Terminal connections should be checked to verify that the installer did torque all connections are properly torqued. Micro-ohm readings should be taken across every connection. Refer to meter manufacturer's instructions for proper placement of probes. If any reading differs by more than **20%** from its initial installation value, re-torque the connection, to **100 ± 5 in lb (11.3 ± .5 newton meters)** for proper torque values. **If reading remains high, clean contact surfaces according to Step 2 under Battery Assembly.**
- Failure to maintain proper records including information as detailed above may result in voiding any applicable warranty.**

### Acceptance Testing

Each battery should be at 100% State of Charge prior to performing an acceptance test on the battery system. To ensure the batteries are fully charged the following charge schedule should be followed.

Batteries should be charged at the equalization rate of 14.40 volts per battery (7.20V for 6V battery) for 24 hours. Temperature compensated charging parameters shall be applied as detailed in "Voltage Compensation Chart" in Appendix B of this manual.

To ensure the batteries are fully charged within 24hrs; the charger used for this charge must have the current equal to the maximum charge current for the given battery type (model), as called out in Appendix D of this manual.

If these requirements cannot be met, contact East Penn Reserve Power's Product Support group for alternate instructions.

Upon completion, the charge voltage should be lowered to the float voltage of 13.50 volts per battery (6.75V for 6V battery) for a minimum period of 72 hours. Reference: IEEE 1188-2005 Section 7.2 for additional acceptance test requirements.

Upon completion of the above charge, the desired acceptance test can be performed.

NOTE: There shall be no discharges of any duration between the start of the equalization and the completion of the float period. If a discharge does occur, the charging regime detailed above shall be repeated.

Upon completion of the acceptance test, the battery system should be placed on float charge at 13.50 volts per battery (6.75V for 6V battery) to restore the battery to its' rated capacity. Batteries should not require an equalization charge once they have passed their initial acceptance test. Consult with East Penn Reserve Power's Product Support group before performing additional equalizing charges on batteries that have successfully passed their initial acceptance test.

## MAINTENANCE

Always wear eye protection when working on or near batteries. Keep sparks and open flames away from batteries at all times.

**Consult User Manual of specific application for additional Safety & Operating requirements.**

### Annual Inspection

Depending on the application, some of the following recommendations may not apply.

1. Conduct a visual inspection of the battery(ies).
2. Record battery and /or battery string voltage. The accuracy of the DMM (Digital Multimeter) must be 0.05% (on dc scale) or better. The DMM must be calibrated to NIST traceable standards. Because voltage readings are affected by discharge and recharges, for cyclic applications, the battery(ies) must be in a fully charged condition prior to taking readings. Batteries should be within  $\pm 0.30$  volts (+ 0.15 volts for 6V) of the average battery float voltage.
3. Record charger voltage at charger panel meter.
4. Record the ambient temperature.
5. Record the battery string temperature at the negative terminal
6. Record individual battery ohmic readings.\*\*\*
7. Record all interunit and terminal connection resistances. Micro-ohm readings should be taken during this inspection. If any reading is greater than 20% from initial readings, retorque the connection. Recheck the micro-ohm reading. If the reading remains high, clean contact surface according to installation portion of this manual.

\*\*\* **Note: To provide accurate / consistent values, battery(ies) must be fully charged, at same temperature and probes placed at same location each time readings are taken.**

### Battery Cleaning

Batteries, cabinets, and racks should be cleaned with clean water, a mixture of baking soda and water or East Penn Mfg. supplied battery cleaner (part # 00321

**Never use solvents to clean the battery(ies).**

### Capacity Testing

Capacity testing is used to trend battery aging. The result of a capacity test is a calculation of the capacity of the battery. The calculated capacity is also used to determine if the battery requires replacement.

**NOTE: When discharging at higher rates, extra connectors may need to be added to prevent excessive voltage drop and / or excessive temperature rise.**

Should it be determined any individual battery(ies) or cell(s) need to be replaced, contact your nearest East Penn agent or East Penn Mfg. Co.

**APPENDIX A**

<b>REFRESH RECORD FORM</b>									
	EPM Order Number*		Pallet ID Number		Individual Performing Test (Full Name)			Date of Refresh	Refresh Duration
Model Number	Information Prior to Refresh				Information within 1 hour of Refresh Completion			Notes & Comments	
	Date Code	Battery Serial Number	Open Circuit Voltage		Battery Voltage Reading	Charging Current	Battery Temperature		
Battery 1									
Battery 2									
Battery 3									
Battery 4									
Battery 5									
Battery 6									
Battery 7									
Battery 8									
Battery 9									
Battery 10									
Battery 11									
Battery 12									
Battery 13									
Battery 14									
Battery 15									
Battery 16									
Battery 17									
Battery 18									
Battery 19									
Battery 20									
Battery 21									
Battery 22									
Battery 23									
Battery 24									

**ALL FIELDS TO THE RIGHT OF THE CELL NUMBER ABOVE MUST BE COMPLETED**  
 EPM ORDER NUMBER WILL APPEAR ON THE SHIPPING LABEL ON THE CARTON COVERING EACH PALLET OF BATTERIES  
 TO ENSURE CONTINUATION OF WARRANTY, SUBMIT FORMS TO: East Penn Mfg. Co, Inc.,  
 Reserve Power Division, Product Support & Warranty Dept. (reservepowerwarranty@dekabatteries.com)

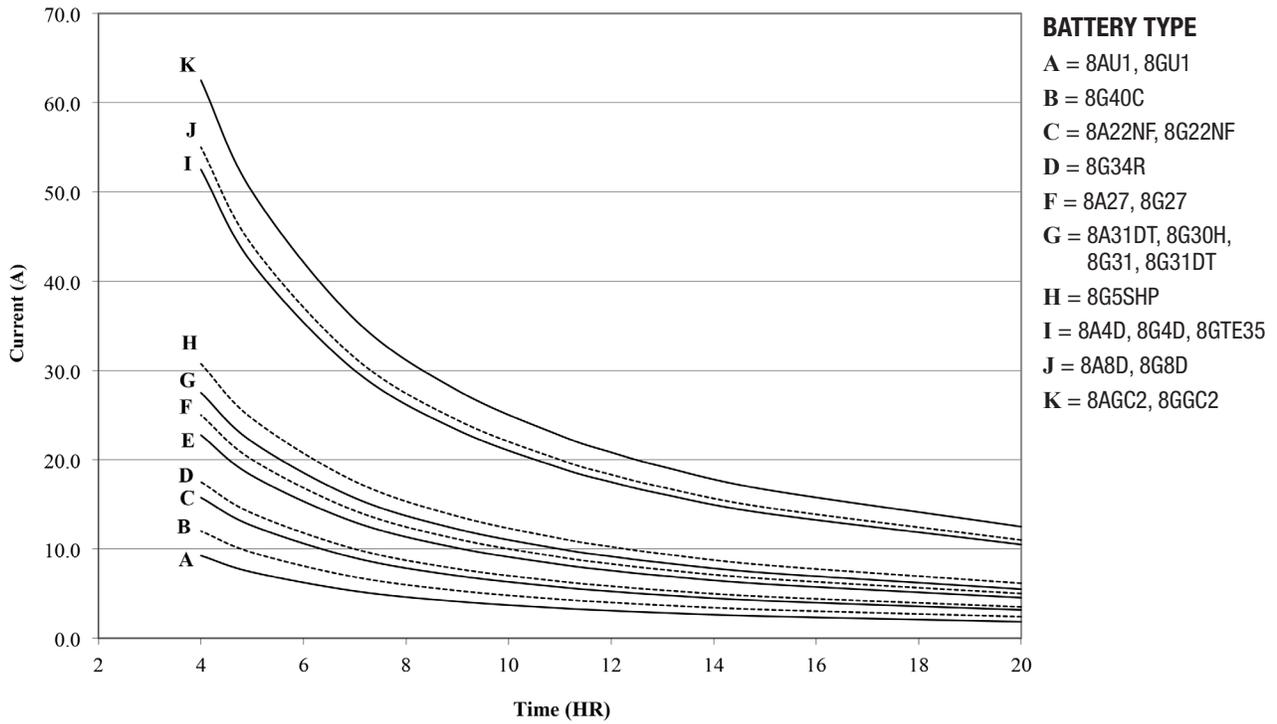
**Voltage Compensation Chart**

°C	Float	Absorption / Regulation		Equalize / Maintenance	°F
		Min.	Max.		
>35	13.32	13.62	14.22	14.40	>95
34	13.34	13.64	14.24	14.42	93.2
33	13.36	13.66	14.26	14.44	91.4
32	13.37	13.67	14.27	14.45	89.6
31	13.39	13.69	14.29	14.47	87.8
30	13.41	13.71	14.31	14.49	86.0
29	13.43	13.73	14.33	14.51	84.2
28	13.45	13.75	14.35	14.53	82.4
27	13.46	13.76	14.36	14.54	80.6
26	13.48	13.78	14.38	14.56	78.8
<b>25</b>	<b>13.50</b>	<b>13.80</b>	<b>14.40</b>	<b>14.58</b>	<b>77.0</b>
24	13.52	13.82	14.42	14.60	75.2
23	13.54	13.84	14.44	14.62	73.4
22	13.55	13.85	14.45	14.63	71.6
21	13.57	13.87	14.47	14.65	69.8
20	13.59	13.89	14.49	14.67	68.0
19	13.61	13.91	14.51	14.69	66.2
18	13.63	13.93	14.53	14.71	64.4
17	13.64	13.94	14.54	14.72	62.6
16	13.66	13.96	14.56	14.74	60.8
15	13.68	13.98	14.58	14.76	59.0
14	13.70	14.00	14.60	14.78	57.2
13	13.72	14.02	14.62	14.80	55.4
12	13.73	14.03	14.63	14.81	53.6
11	13.75	14.05	14.65	14.83	51.8
<10	13.77	14.07	14.67	14.85	<50

**Note:** 1. Above values based on 12-volt battery.  
2. Divide above values in half for 6-volt battery.

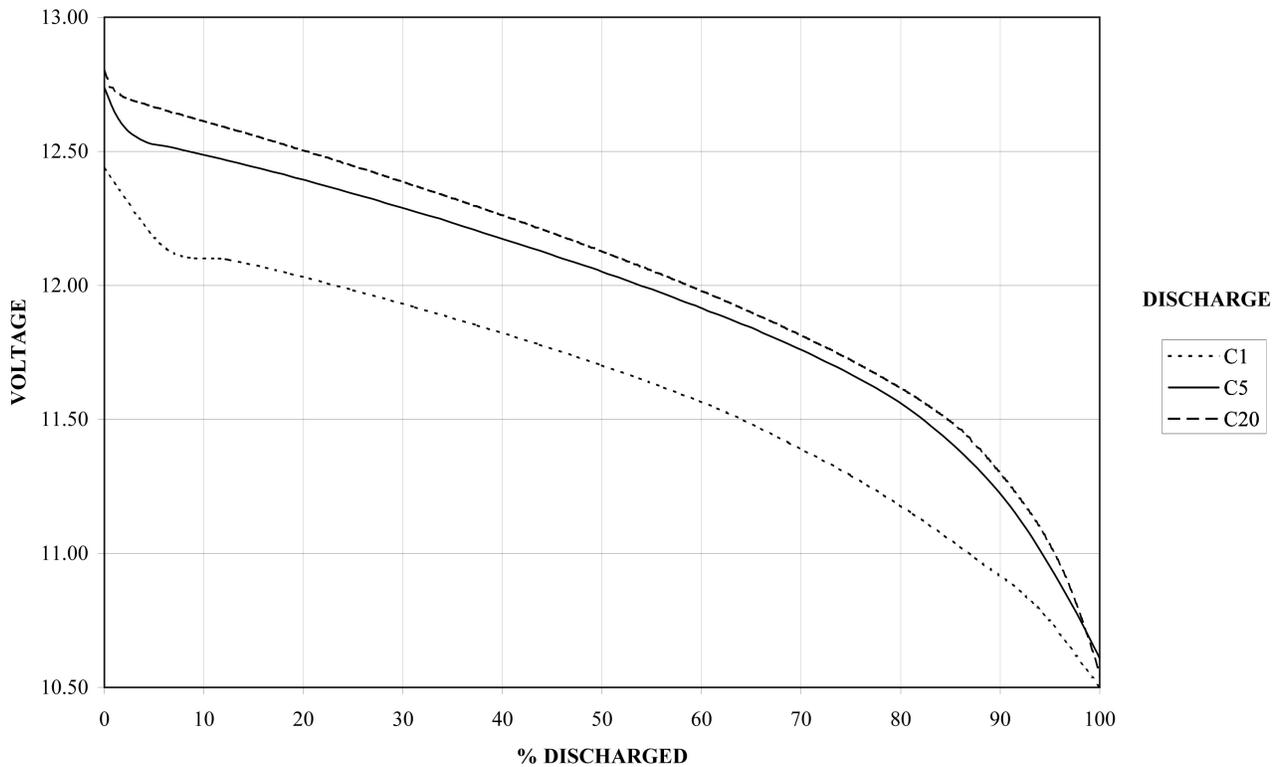
# APPENDIX C

## CHARGING CURRENT VS. CHARGING TIME\*



\* Above values are to 90% SOC (State of Charge) based on C100 Ah capacity

## DISCHARGE VOLTAGE CURVE



## Charge Current Limits

### 8A Series

Cell Type	Max. Charge Current (A)	Min. Charge Current (A)**
8AU1	9.6	2.9
8A22NF	16.5	5.0
8A24	23.7	7.1
8A24HEI	23.7	7.1
8A27	27.6	8.3
8A27EI	27.6	8.3
8A30H	31.5	9.5
8A30HEI	31.5	9.5
8A31DT	31.5	9.5
8AGC2	57.0	17.1
8A4D	59.4	17.8
8A8D	73.5	22.1

### 8G Series

Cell Type	Max. Charge Current (A)	Min. Charge Current (A)**
8GU1	31.6	9.5
8G40C	40.0	12.0
8G22NF	51.0	15.3
8G34R	60.0	18.0
8G24	73.6	22.1
8G24SS	73.6	22.1
8G27	88.0	26.4
8G30H	97.6	29.3
8G31	97.6	29.3
8G31DT	97.6	29.3
8GGC2	180	54.0
8G4D	183	54.9
8G4DEI	183	54.9
8G8D	225	67.5
8G8DEI	225	67.5
8G5SHP	115	34.5
8GTE35	196	58.9

\*\* = Using minimum charge current will extend recharge time and increase risk of battery being undercharged

**APPENDIX E**



**BATTERY MAINTENANCE REPORT**

Inspection Date \_\_\_\_\_  
 Company \_\_\_\_\_  
 Address \_\_\_\_\_  
 Battery location and/or number \_\_\_\_\_

No. of Units/String \_\_\_\_\_  
 Type \_\_\_\_\_  
 Date New \_\_\_\_\_  
 Date Installed \_\_\_\_\_

**Individual  
Battery Readings**

Charger Output \_\_\_\_\_ Amp    Air Temperature \_\_\_\_\_ °F  
 Total Battery String Voltage \_\_\_\_\_    Panel Meter Volts \_\_\_\_\_

Year _____											
Unit Number	Volts	Ohms or Mhos	Unit Number	Volts	Ohms or Mhos	Unit Number	Volts	Ohms or Mhos	Unit Number	Volts	Ohms or Mhos
1			1			1			1		
2			2			2			2		
3			3			3			3		
4			4			4			4		
5			5			5			5		
6			6			6			6		
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37			37			37			37		
38			38			38			38		
39			39			39			39		
40			40			40			40		
Avg. Voltage			Avg. Voltage			Avg. Voltage			Avg. Voltage		

Readings Taken By \_\_\_\_\_ Remarks/Recommendations \_\_\_\_\_

*Readings should be taken at installation and annually thereafter.*

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