CONCENTRIC
Engineering Uptime.

LSe, B-LSe, OPzS Ranges

Operating, Installation and Maintenance Instructions

1.0 Introduction

Standby batteries are generally used to support equipment that needs continuous, reliable service even when the grid supply has failed.

To ensure optimum performance and longest life, lead-acid batteries require good maintenance practices. In addition, based electrical and chemical safety precautions must be taken to protect personnel and equipment.

The scope of this document is to supply the necessary instructions to correctly store, handle, install, use and maintain Mesa LSe, B-LSe, TLSe batteries.

2.0 Recommendations

Carefully read this entire manual upon receipt before installing or operating the battery.

FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY CAUSE INJURY TO PEOPLE AND DAMAGE TO EQUIPMENT OR THE BATTERY ITSELF.

Keep this manual in close proximity to the battery and easily accessible to personnel working on or near the battery.

3.0 Safety Rules

When handled correctly, batteries are safe. However, there are some basic precautions that must be observed at all times to protect personnel and the environment.

Batteries product explosive gasses.

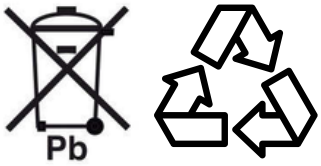
They contain diluted sulfuric acid (electrolyte) which is a corrosive substance. When handling and working with electrolyte always use protective clothing and equipment such as rubber gloves and goggles. If acid is spilled on the skin, wash immediately with copious amount of clean water, then cover with dry gauze. If acid comes into contact with the eyes, flush with clean water for at least 15 minutes. In all cases, obtain immediate medical attention.

Exposed metal parts of the battery always carry a voltage and are electrically live with the risk of short circuits.

Avoid electrostatic charge. Before starting work on the battery, discharge any static electricity buildup. Wearing anti-static boots or wristbands is a good way to avoid static altogether.

Always keep the following precautions:

- Keep batteries upright.
- Used insulated tools.
- DO NOT place or drop metal objects on top of the battery.
- DO NOT wear watches, rings or other jewelry. Remove any articles of clothing with metal parts that might come into contact with the battery terminals.
- DO NOT smoke and DO NOT use open flames or create electric sparks.
- Make sure that first aid kits and fire extinguishers are easily accessible.
- Make sure that water and neutralizing products are easily accessible in case accidental contact with acid or spillage occurs.



Used batteries contain hazardous and recycled materials. They must not be disposed with normal waste. Methods of return and recycling must confirm to the federal, state and local regulations in operation at the site where battery is located.

4.0 Delivery and Storage

Unpack the cells as soon as they are delivered.

Verify that the equipment has been delivered in good condition. Any damage must be reported immediately to the carrier and the damaged items retained for inspection by the carrier's representative.

For cells supplied filled and charged, check that the acid level in all the cells is at the MAX level. If necessary, fill them with dilute sulfuric acid with the correct specific gravity (see characteristics described under section 5).

If the cells cannot be installed immediately, store them in a clean, cool, dry place.

To avoid damage to containers and lids, do not expose the cells to direct sunlight.

STORAGE TIME FOR FILLED AND CHARGED CELLS IS LIMITED. IT IS ESSENTIAL THAT THEY ARE PLACED ON CHARGE NO MORE THAN 90 DAYS FROM THE DATE OF SHIPMENT @ MAX 80°F. AT HIGHER TEMPERATURES >80°F, THE STORAGE TIME IS REDUCED. FAILURE TO OBSERVE THIS CONDITION MAY RESULT IN SIGNIFICANTLY REDUCED CAPACITY AND SERVICE LIFE OR PERMANENT DAMAGE TO THE CELLS.

Charge should be carried out with the shipping cases open, or the cells completely unpacked, and with adequate ventilation to disperse the gases formed while charging.

If continuous charging is not possible, the battery should be given a freshening charge at least every 60 days until permanently installed and placed on float charge.

If the battery is supplied in a dry-charged condition (without electrolyte), it can be stored for up to 3 years, provided that it is adequately protected against condensation and the effects of high humidity. For filling and commissioning of dry-charged batteries, see instructions given under sections 8.1 and 8.2.

5.0 Electrolyte

The following table gives specific gravity data at 77°F (25°C) for fully charged LSe, B-LSe, TLSe cells with the electrolyte at the maximum level:

Nominal Specific Gravity (kg/L)	Specific Gravity Range (kg/L)	Specific Gravity for Filling Dry Charged Cells (kg/L)
1.240	1.230 – 1.250	1.230

High quality electrolyte for standby lead-acid batteries (which is a solution of pure sulfuric acid diluted with distilled water to the correct concentration) is required for the first filling of dry charged cells. If the electrolyte has been supplied by Alcad, store it in a safe place until required.

If electrolyte is purchased locally, make certain its characteristics are in accordance with the following table:

Impurity	Electrolyte for first filling (mg/l)	Electrolyte for refilling (mg/l)
Copper	0.5	0.5
Heavy metals (As, Bi, Sn, Sb)	2	6
Iron	30	100
Chlorine	5	200
Total azote	60	60
Organic substances	50	50
Other impurities	250	800

When electrolyte is sourced locally, we recommend that an additional 10% is purchased to cover any loss or spillage during handling and filling.

For the quantity of electrolyte needed, please refer to cell technical data given under section 13.0. Always check the specific gravity of the electrolyte before filling the cells. Minor adjustments may be made by adding water to lower the specific gravity or by adding acid to raise the specific gravity.

5.1 Filling Dry Cells

Always use glass or plastic containers and funnels to fill the cells. Never use metallic materials;electrolyte may corrode them or react on contact. Fill the cells to the “MAX” line and wait to allow the acid to soak into separators and plates.

After approximately 3 hours the electrolyte level will drop due to the absorption. Top to the “MAX” line again.

The quantity of electrolyte required to fill each cell is given in section 13.0.

Always fill the cells with electrolyte after installation on battery racks.

CELLS FILLED ON SITE MUST BE GIVEN AN INITIAL CHARGE AS SOON AS POSSIBLE. DO NOT STORE FILLED CELLS FOR MORE THAN 18 HOURS WITHOUT CHARGING THEM.

6.0 Battery Room

The battery room must be dry, clean and free of vibration.

The room must be properly sized to enable installation, inspection, topping-up and maintenance. It must also be properly ventilated, especially during charge. Its temperature should be as moderate as climate allows, preferably between 50°F (10°C) and 80°F (27°C). The battery will give its best performance when working within the range of 68°F (20°C) to 77°F (25°C), but will function at temperatures between 0°F (-18°C) and 125°F (52°C). **High temperatures increase the performance but reduce battery life, while low temperatures reduce the performance.**

The entry doors of battery room must be provided with warning signs banning smoking, sparks and open flames.

The batteries should be installed on suitable racks properly sized in loading capacity and dimensions. The layout must enable easy access to all cells.

Racks can be made of wood or steel with acid-proof coating. If steel racks are used they must be equipped with rubber or plastic insulators to avoid contact between the battery and the metal.

The rack location and ventilation system should be such that the maximum temperature differential between cells does not exceed 5°F (3°C).

BATTERY ROOMS MUST COMPLY WITH ALL FEDERAL, STATE AND LOCAL CODES AND ORDINANCES IN EFFECT AT THE TIME OF INSTALLATION.

7.0 Installation

Before installing the cells, clean and dry all parts. In particular, clean and dry lids and jars. Remove the protective covers from the terminal posts and clean them with a soft, clean cloth. If spilled acid is present, use a rag dampened in a water and baking soda solution to remove acid from the post bodies. If spilled acid is found in the post inserts, soak the part with this solution and then dry. Do not let the solution get into the cells.

If the terminal posts surface is slightly white, lightly abrade it with a fine grit abrasive paper and remove oxidation. Do not use a wire brush and be especially careful not to break through the lead plating. Wipe off any dust and protect the post body with a thin coating of no-oxide grease.

Place the cells on the rack and make sure that the spacing allows the accommodation of the supplied inter-cell connectors (approximately 0.4”). Most batteries have cells connected in a simple series arrangement, so the cells should be arranged to preserve the polarity sequence. I.e., (+)...(-) (+) (-)...etc.

NEVER LIFT CELLS BY THE TERMINAL POSTS. ALWAYS USE APPROPRIATE DEVICES (SUCH AS LIFTING STRAPS AND SUITABLE MECHANICAL EQUIPMENT) TO PREVENT INJURY TO PERSONNEL OR DAMAGE TO THE CELLS.

For batteries that will be installed on multiple tiers, start by placing the cells on the lower tier on either side of the frame where the stand sections meet. Any unused stand space should be on the upper tier.

For batteries on stepped racks, leave any unused space on the back (top) step.

Where multiple racks are arranged end-to-end, adjust the position of the adjacent end cells to accommodate the flexible inter-rack connectors supplied.

Take particular care to preserve the positive to negative sequence when using flexible inter-tier, inter-step or inter-rack connectors between rows of cells. Leave the main positive and negative terminals of the battery free for connection to the charger and loads.

Check cell alignment.

Prepare the inter-cell connectors by lightly abrading the contact surfaces with a fine grit abrasive paper. Do not use a wire brush and be especially careful not to break through the lead plating.

Apply a light coating of no-oxide grease to the contact-making areas of each connector. This is best done by carefully melting the grease and dipping connector ends (it is unnecessary to coat the central part of the connector).

Fit the inter-cell and inter-tier connectors using the bolts, nuts and washers supplied. Before assembly, lightly smear no-oxide grease on the surfaces of all hardware.

Use insulated wrenches to tighten the parts firmly together (see the table below for torque settings).

Battery Cell / Block Type:	Torque setting:
LSe cells 2V	90 inch pounds (10 Nm)
BLSe block batteries 6V - 12V	70 inch pounds (8 Nm)
OPzS cells 2 V	195 inch pounds (22 Nm)
OPzS block batteries 6V – 12V	98 inch pounds (11 Nm)

Pay special attention to avoid short-circuiting the cells with any of the battery hardware.

Check tightness and cleanliness.

Make sure that all vent caps are closed.

Connect the positive terminal of the battery to the positive terminal of the charger and the battery negative to the charger negative.

Number the cells with the numbers supplied with the battery. It is common practice to number the cells beginning with #1 at the positive end of the battery and following the sequence of electrical connection of the cells to the negative end of the battery.

8.0 Charging

8.1 Initial Charge of Dry Cells

An initial or freshening charge must be given to all batteries before being put into service. This is most important for cells supplied in dry charged conditions and filled on site.

Before starting the charge, check that electrolyte temperature does not exceed 95°F (35°C). If necessary let the battery rest until this temperature is reached.

Take individual cell readings of voltage, specific gravity and temperature before starting initial charge.

It is advisable to use a constant voltage charger, with constant adjustable voltage from 2.23 to 2.6VpC and with an available adjustable current from 0 to 0.10 C_8 Amps.

If the charger does not allow current adjustment, the maximum current should not exceed 0.10 C_8 Amps.

Charge the battery with a current rate of 0.10 C_8 Amps for 20 hours.

Record voltage and specific gravity readings every 3 hours while charging. Voltage readings should be taken on every cell. Specific gravity readings can be taken on 20% of the cells designated as pilot cells.

Electrolyte temperature should also be monitored in 2 or 3 pilot cells.

Should the temperature exceed 113°F (45°C):

- Decrease the charging current to 50% of its original rate or discontinue the charge and let the battery stand on open circuit until the temperature falls to 95°F (35°C).
- Resume the charging process. The charge time should be extended proportionally.

At the end of the process, the Ah delivered to the battery must be 150 – 160% of the C_8 rated capacity.

After 20 hours, increase recording interval to every hour and continue charging until specific gravity and voltage remain constant for two hours and each cell has reached a minimum of 2.6V.

If the charger does not allow the cells to reach 2.6V, the charge time shall be extended in order to deliver the minimum number of Amp-hours into the battery. A minimum of 2.4VpC should be available for the initial charge process.

Following the charge, specific gravity should be recorded and must fall within the acceptable limits as defined in section 5.0.

8.2 Filled and Charged Cells (Freshening Charge)

For batteries which have been supplied in a filled and charged condition, it is normal to lose charge while in transit or during storage. For this reason, a freshening charge should be given before putting the battery into service. This is normally accomplished using the "equalize" voltage setting on the charger (see section 8.3.2).

Note that the higher the voltage, the shorter the recharge time. Lower charge voltages (down to a minimum of 2.30 VpC) will extend the duration of the initial charge to as many as 100 hours.

The initial charge may be terminated when the specific gravity readings of all cells have remained constant for at least 2 hours.

Following the charge, specific gravity should be recorded and must fall within the acceptable limits as defined in section 5.0.

At the end of this initial charge, set the battery voltage to the Alcad recommended float voltage (see section 8.3.1).

8.3 Charging in Service

Once put into service, Alcad LSe, B-LSe, OPzS standby power batteries should be charged according to the following sections.

8.3.1 Float Charge at Constant Voltage

To maintain the battery in fully charged condition during normal battery operation or, after a discharge, to recover 90% of nominal capacity within 20 hours, a recommended float charge must be applied.

Recommended float voltage is 2.23 VpC with 1.240 SG electrolyte at 77°F (25°C).

The effective charge current will be very low. However, charge current increases as a function of temperature and age of the battery. Gassing and water consumption are minimized at this voltage.

To verify the charge efficiency of the battery, the constant control of the electrolyte specific gravity and temperature is essential.

Decreasing specific gravity is a symptom of insufficient charge.

Increasing specific gravity and decreasing electrolyte level are indications of excessive charge or that the cells should be topped up.

For comparison of electrolyte specific gravity vs. temperature, please refer to section 9.0.

8.3.2 Equalize Charge

Chargers usually have two adjustable voltages: one for the “float” and one for “equalize” (also known as "boost" or "high rate").

The equalize charge is generally required:

- when the total voltage spread between the cells is greater than 0.04 V under float charging conditions
- for fast recharging after a discharge
- after addition of de-ionized or distilled water to assist in mixing the acid and water
- for float charge using voltages below 2.22 volts per cell (see table below)

Float Volts per Cell (VpC):	Equalizing required at these Intervals:
2.22 - 2.23	Never
2.20	Every 6 Months
2.17	Every 3 Months
2.15	Every Month

Equalizing may be carried out at voltage settings above 2.30 VpC.

Recommended values of equalize voltage are 2.33-2.4 VpC.

The length of equalize charging required depends on the depth of discharge, electrolyte temperature and normal float voltage level. The best guideline is to continue equalizing until the specific gravity of the acid in the designated pilot cells remains constant for at least 2 hours.

9.0 Specific Gravity

Before taking specific gravity readings, ensure that the electrolyte level is at the “MAX” line and that any recent topping-up of de-ionized water has properly been mixed by an equalize charge (see section 8.3.2).

The specific gravity of the electrolyte varies with temperature. Consequently, hydrometer readings should be corrected as follows:

- For every 3°F above 77°F, subtract 1 point (0.001) from the hydrometer reading.
- For every 3°F below 77°F, add 1 point (0.001) to the hydrometer reading.
- The metric equivalent correction is 1 point (0.001) for every 1.5°C.

The specific gravity of the electrolyte in new cells should be as per section 5.0. Over time there may be a slight fall in the maximum specific gravity values obtainable at the end of charge. The specific gravity may range ± 0.01 points within a cell at the nominal temperature of 77 F (25°C).

NEVER TRY TO INCREASE SPECIFIC GRAVITY READINGS BY ADDING ELECTROLYTE UNLESS DIRECTED TO DO SO BY THE MANUFACTURER.

10.0 Technical Data

LSe Battery Family: Single Cell Design (Flat Plate)

Cell Type	Terminal Voltage	Ah Capacity (8 Hour Rate)	Dimensions (Inches in.)			Weight (Pounds lbs.)		Volume of Acid (gal.)	No. of Posts
			Length	Width	Height	Empty	Filled		
LSe 100	2	115	4.1	8.1	16.1	21.4	32.2	1.05	2
LSe 150	2	154	4.1	8.1	16.1	26.3	36.6	1.00	2
LSe 200	2	206	4.9	8.1	16.1	32	44.9	1.25	2
LSe 250	2	254	4.9	8.1	16.1	36.9	48.7	1.14	2
LSe 300	2	305	5.7	8.1	16.1	42.8	57.3	1.40	2
LSe 350	2	359	7.4	8.1	16.1	49.2	70.1	2.02	2
LSe 400	2	410	7.4	8.1	16.1	54.1	73.3	1.85	2
LSe 450	2	448	7.4	8.1	16.1	59	77.2	1.75	2
LSe 500	2	515	5.7	8.1	28.6	70.5	100.2	2.87	2
LSe 600	2	602	5.7	8.1	28.6	80	109	2.80	2
LSe 700	2	702	7.5	8.3	28.6	100.8	137.4	3.53	4
LSe 800	2	800	7.5	8.3	28.6	110.3	145.9	3.43	4
LSe 900	2	896	9.2	8.3	28.6	123.3	169.1	4.43	4
LSe 1000	2	1000	9.2	8.3	28.6	132.8	178.2	4.39	4
LSe 1100	2	1096	10.8	8.3	28.6	145.7	201.8	5.42	4
LSe 1200	2	1200	10.8	8.3	28.6	155.2	210.5	5.34	4
LSe 1300	2	1272	10.8	8.3	28.6	164.7	218.8	5.23	4
LSe 1400	2	1376	10.8	8.3	28.6	174.1	227.6	5.17	4
LSe 1500	2	1504	14.5	8.6	27.6	194	264.6	6.82	6
LSe 1600	2	1600	14.5	8.6	27.6	203.5	273.2	6.74	6
LSe 1700	2	1664	14.5	8.6	27.6	212.9	281.8	6.66	6
LSe 1800	2	1800	17.7	8.6	27.6	229.1	319.5	8.73	6
LSe 1900	2	1904	17.7	8.6	27.6	238.6	327.6	8.60	6
LSe 2000	2	2000	17.7	8.6	27.6	248	336.2	8.52	6

BLSe Battery Family: Block Battery Design (Multi-cell, Flat Plate)

Block Type	Block Voltage	Ah Capacity (8 Hour Rate)	Dimensions (Inches in.)			Weight (Pounds lbs.)		Volume of Acid (gal.)	No. of Posts
			Length	Width	Height	Empty	Filled		
BLSe 12-50	12	52	10.7	8.1	15.2	66.8	88.8	2.12	2
BLSe 12-100	12	103	15	8.1	15.2	100.4	135.8	3.43	2
BLSe 6-150	6	154	10.7	8.1	15.2	69.8	95.7	2.51	2
BLSe 6-200	6	206	15	8.1	15.2	88.7	127.9	3.80	2
BLSe 6-250	6	254	15	8.1	15.2	103.4	137.9	3.33	2
BLSe 6-300	6	285	15	8.1	15.2	118.2	151	3.17	2

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Cell Type/ Order No.	Nominal 8 hr Ah Cap. at 77°F to 1.75 vpc	Internal Res. (mOhms)	Short Circuit (KA)	Cell Weight Filled (lbs)	Volume of Acid Per Cell (gal.)	Length (in.)	Width (in.)	Height (in.)	No. of Terminal Pairs	No. of Vent Openings
2 OPzS 100	110	1.55	1.3	35.7	1.37	4.1	8.1	16.9	1	1
3 OPzS 150	164	1.03	2.0	38.4	1.13	4.1	8.1	16.9	1	1
4 OPzS 200	218	0.96	2.1	41.0	0.87	4.1	8.1	16.9	1	1
5 OPzS 250	272	0.77	2.6	49.2	1.11	4.9	8.1	16.9	1	1
6 OPzS 300	328	0.64	3.1	57.1	1.32	5.7	8.1	16.9	1	1
5 OPzS 350	383	0.55	3.6	64.6	1.59	4.9	8.1	21.5	1	1
6 OPzS 420	455	0.46	4.4	76.1	1.93	5.7	8.1	21.5	1	1
7 OPzS 490	530	0.39	5.1	86.9	2.14	6.5	8.1	21.5	1	1
6 OPzS 600	644	0.43	4.6	104.9	2.64	5.7	8.3	28.4	1	1
7 OPzS 700	725	0.37	5.4	123.7	3.14	7.5	8.3	28.4	2	1
8 OPzS 800	828	0.33	6.2	140.9	3.51	7.5	8.3	28.4	2	1
9 OPzS 900	932	0.29	6.9	157.0	4.07	9.2	8.3	28.4	2	1
10 OPzS 1000	1035	0.26	7.6	175.3	4.36	9.2	8.3	28.4	2	1
11 OPzS 1100	1139	0.24	8.5	185.4	4.86	10.8	8.3	28.4	2	1
12 OPzS 1200	1242	0.22	9.2	199.1	5.23	10.8	8.3	28.4	2	1
12 OPzS 1500	1636	0.24	8.4	249.6	5.89	10.8	8.3	34.3	2	1
13 OPzS 1625	1772	0.22	9.0	276.0	6.37	15.7	8.4	33.4	3	2
14 OPzS 1750	1908	0.21	9.7	302.7	7.13	15.7	8.4	33.4	3	2
15 OPzS 1875	2044	0.19	10.4	325.0	8.06	15.7	8.4	33.4	3	2
16 OPzS 2000	2181	0.14	13.9	345.2	8.43	15.7	8.4	33.4	3	2
20 OPzS 2500	2726	0.11	17.9	433.0	10.59	19.2	8.4	33.4	4	3
24 OPzS 3000	3272	0.10	19.6	506.4	13.31	22.7	8.4	33.4	4	3

Mesa Energy Block OPzS Capacities, Dimensions, and Weights

Block Type/ Order No.	1 Min. Rate to 1.75 vpc (amps)	Nominal 8 hr Ah Cap. at 77°F to 1.75 vpc	Internal Res. (mOhms)	Short Circuit (KA)	Block Weight Filled (lbs)	Volume of Acid Per Cell (gal.)	Length (in.)	Width (in.)	Height (in.)	No. of Cells/Vent Openings
MEB 12V 50	56	50	16.64	0.7	94.4	2.51	10.7	8.1	14.7	6/6
MEB 12V 100	112	100	9.44	1.3	116.16	2.43	10.7	8.1	14.7	6/6
MEB 12V 150	169	150	6.57	1.8	159.0	3.22	15.0	8.1	14.7	6/6
MEB 6V 200	225	200	2.84	2.1	111.54	2.59	10.7	8.1	14.7	3/3
MEB 6V 250	282	250	2.27	2.6	152.9	3.30	15.0	8.1	14.7	3/3
MEB 6V 300	338	300	1.89	3.2	163.5	3.14	15.0	8.1	14.7	3/3

11.0 Maintenance

Proper maintenance will prolong the life of the battery and will aid in ensuring that it is capable of satisfying its design requirements. A good battery maintenance program will serve as a valuable aid in maximizing battery life, preventing avoidable failures, and reducing premature replacement. Only personnel knowledgeable of batteries and required safety precautions should perform battery maintenance.

For regular monitoring of the battery condition, a pilot cell should be selected. The pilot cell should be near the middle of the battery string (for batteries consisting of more than 60 cells, it is advisable to select one pilot for every 60 cells).

When measuring voltages, be sure the charger is on and record the voltages to three decimal places.

11.1 Monthly

Monthly battery inspection must be made while the battery is in normal float condition and should include the following activities:

- Check the general appearance and cleanliness of the battery, the battery rack and the battery area.
- Check for cracks in cells or electrolyte leakage.
- Check for corrosion at terminals, connectors, or racks.
- Record the overall battery float voltage measured at the battery terminals (not at the charger).
- Record the voltages, temperature and specific gravity of the designated pilot cells.
- Check the electrolyte level of the cells.
- Clean and dry the cell lids and connectors using anti-static cloths.
- Inspect the charging system, ambient temperature and ventilation.
- Take corrective actions, as required, in accordance with IEEE standard 450 – *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead Acid Batteries for Stationary Applications.*

11.2 Annually

Annual battery inspection must be made while the battery is in normal float condition and should include the following activities:

- Check the general appearance and cleanliness of the battery, the battery rack and the battery area.
- Check for cracks in cells or electrolyte leakage.
- Check for corrosion at terminals, connectors, or racks.
- Record the overall battery float voltage measured at the battery terminals (not at the charger).
- Record the voltages of all the cells to three decimal places with the charger on.
- Record the electrolyte temperature of the designate pilot cells.
- Record the electrolyte specific gravity of all the cells.
- Check the electrolyte level of all the cells.
- Clean and dry the cell lids and connectors using anti-static cloths.

- Tighten all connectors (see section 7.0 for torque settings).
- Record the inter-cell and terminal connections resistance.
- Record the internal cells resistance, impedance or conductance.
- Inspect the charging system, ambient temperature and ventilation.
- Record the charging current. (measure through the battery flexible cables)
- Check the structural integrity of the battery racks.
- Take corrective actions, as required, in accordance with IEEE standard 450 – *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead Acid Batteries for Stationary Applications.*

11.3 Topping-up

The water consumption of Alcad LSe, B-LSe, OPzS batteries is minimized when floating at 2.23VpC at 77°F (25°C). Consumption increases at higher temperatures and/or higher float voltages.

Never allow the electrolyte level to fall below the “MIN” level line. When necessary, top the cells with de-ionized or distilled water to the “MAX” level line.

NEVER ADD ELECTROLYTE UNLESS DIRECTED TO DO SO BY THE MANUFACTURER.

12.0 Maintenance

Keep records of the battery maintenance operations. The records should include all measurements taken, outages, discharge tests, equalize charges, topping intervals and any corrections made to the battery or individual cells. These records will help monitor long-term changes of the battery condition.

The battery should be given a full discharge test at 5-year intervals until signs of degradation are observed or the battery reaches 85% of its original capacity. After either of the preceding conditions, the tests should be performed annually until the battery has reached the end of its life.

13.0 Additional Information

For additional support or information, please contact: Concentric
1-888-619-8100
concentricusa.com

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