T330 TUBULAR MOTIVE POWER BATTERIES

INSTALLATION AND OPERATING INSTRUCTIONS

PLEASE READ THESE INSTRUCTIONS BEFORE PLACING BATTERIES INTO SERVICE. THESE INSTRUCTIONS MUST BE SHIPPED WITH THE BATTERY AND MUST BE DELIVERED TO THE USER.

Previously Tubular MPX.

1. SAFETY

1.1 Follow your company's Safety Instructions when working with or near industrial truck batteries. Observe the caution label affixed to the battery. Thoroughly familiarize yourself with industry and government guidelines (OSHA, ANSI) for charging, handling, and maintaining industrial batteries.

1.2 Assign battery and charger care to properly trained personnel.

1.3 This battery contains sulfuric acid electrolyte. Avoid contact with skin, eyes, or clothing.
Wear rubber apron, gloves, boots, and goggles or face shield when handling, checking, filling, charging or repairing batteries.

1.4 Keep water readily available for flushing spilled electrolyte from eyes or skin. Use plain water only and obtain medical attention immediately. Special deluge showers and eye wash basins are required.

1.5 Batteries produce hydrogen and oxygen gas during charge. Keep open flames away. Do not check electrolyte level with a cigarette lighter or match. Use a flashlight or permanent lights. Switch on/off away from the top of the battery. Do not smoke or create sparks.

1.6 Lift batteries with a certified/approved hoist, crane, lift truck, or similar equipment. Move batteries with trucks, conveyors, or rollers. Be sure to place a rubber mat or similar insulating material across the tops of coverless batteries when handling. Make sure equipment is of ample strength and properly installed.

DO NOT USE CHAIN OR WIRE ROPE SLINGS

1.7 Never lay metal tools, such as wrenches or screwdrivers, on top of a battery.

1.8 Disconnect the battery from the truck when performing maintenance and repair on motor or electrical system.

1.9 Open or "break" the battery circuit before attempting repairs to the charging plug or receptacles.

1.10 Apply a strong neutralizer, such as baking soda or soda ash, when electrolyte is spilled on the floor. Check local regulations regarding the disposal of neutralized waste.

2. RECEIVING BATTERIES

Immediately upon receipt of shipment, examine the outside of the packing for signs of rough handling before accepting the battery from the carrier. Wet spots on the shipping pallet may be an indication of leaking jars broken in shipment.

If there is evidence of damage, the receipt should be signed and both copies (carrier's and receiving copies) marked "Shipment Received Damaged". The carrier should be called immediately and asked to make a "Carrier's Inspection for Damage Report".

If "concealed" damage is later detected, the carrier should be called immediately and requested to make a "Carrier's Inspection for Concealed Damage Report". After inspection by the carrier, arrangements should be made with the local Stryten Energy representative to have the battery repaired before placing it in service.

BEFORE PLACING BATTERIES IN SERVICE, REVIEW AND FOLLOW THE SAFETY GUIDELINES LISTED IN ITEM 1. SAFETY

3. PLACING IN SERVICE

Verify that the battery weight meets or exceeds the minimum truck weight requirements. Allow the battery to cool or warm to room temperature before charging or adding water. Make sure the battery charger is properly matched to the battery. Use a charger with automatic charger termination controls.

Open the vent caps from each cell and check to see that the electrolyte level is above the top of the separators. If it is obvious that the electrolyte has spilled out of any cells, replace it with electrolyte of the same specific gravity as found in the other cells of the battery. Close the vent caps and give the battery a freshening charge until there is no increase in specific gravity for three hydrometer readings taken at one hour intervals.

During shipment of the battery, low temperatures and/or normal shock and vibration often results in a drop in the electrolyte level. If the level is below the top of the separators, recheck it after 3 hours of charging. If the level remains below the top of the separators, add water or electrolyte to the proper level at the end of charging.

Following the first week of service, the battery should reach its normal operating specific gravity of 1.295 +/-0.005 at 77° F (25° C)

IF BATTERIES ARE NOT IN USE, KEEP THEM CHARGED. CHECK THE SPECIFIC GRAVITIES MONTHLY AND GIVE A FRESHENING CHARGE (3 OR 4 HOURS AT THE FINISH RATE) IF THE GRAVITIES HAVE FALLEN 0.030 OR MORE; OTHERWISE GIVE A FRESHENING CHARGE EVERY THREE MONTHS.

4. OPERATION

Batteries are rated in ampere-hours (Ahr) and are selected to perform a specific workload within an established period of time. Increasing the workload or time period could result in over discharging, thus shortening battery life. Limit discharging of the battery (to 80% or less) so that specific gravities do not go below 1.180. If truck operation results in only partial discharges (40% or less) and specific gravities are 1.250 or more at the end of the shift, recharging may be deferred and the battery used for another shift, providing the workload is not expected to increase. Hydrometer readings and experience will determine the frequency of charge intervals under these circumstances.

A battery should always be recharged immediately following a complete discharge. Never allow it to remain in a discharged condition; otherwise, permanent damage may result. A battery is designed to be operated as follows:

8 hours discharge

8 hours charge

8 hours cool-down

Tubular batteries are designed and built to deliver 80% of their rated capacity at 77°F (25°C) each cycle.

5. TEMPERATURE

In the operation of motive power lead acid batteries, the electrolyte temperature must not exceed 110°F (43°C). If the battery is continuously operated at or above this temperature, the service life of the battery will be severely diminished. Under normal operating conditions, battery electrolyte temperature should be maintained between 60-100°F (15-38°C). Following charging, the battery should be allowed to cool-down or rest approximately 8 hours prior to another discharge cycle.

If your battery is ever hot to the touch, allow it to cool to room temperature before charging or discharging. If a battery consistently operates at high temperatures greater than 100° F (38° C), contact your local Stryten Energy representative for service.

6. CHARGING

When recharging a fully discharged battery, the starting charge rate may be 3 times higher than the finish charge rate. The charge rate should taper down to the finish rate by the time the battery is 85% charged and may be even lower when fully charged. High “on charge” temperatures or frequent need for water additions are indications of overcharging. Short running times and/

or low end-of-charge specific gravities may indicate inadequate recharge. Consult your local Stryten Energy representative on specific charging problems.

The ampere-hour rating of the charger applied to the battery should be within 10% of the ampere-hour rating of the battery.

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7. CONNECTIONS

The battery cells are connected in series using welded lead connectors.

8. MAINTENANCE

KEEP RECORDS... Showing specific gravities, equalizing, charging, temperature, cleaning and voltages on a monthly basis. **These records are required to maintain your warranty.**

TEMPERATURE... Under normal operating conditions, the electrolyte temperature should be between 60-100°F (15-38°C). Operating temperatures above 100°F will reduce the battery's service life. Operating temperatures below 60°F result in less capacity and special charging is required.

WATER ADDITIONS... Stryten Energy-approved chargers have the capability for equalize charging at specific times and days of the week (e.g. Sunday 08:00). Water additions can be made the following day prior to use, provided an equalization charge is confirmed to have been performed.

EQUALIZE... Once a week.

DEPTH OF CHARGE... Do not discharge the battery below 80% of the rated capacity. Over discharging shortens the battery life and voids the warranty

CLEANING... Keep the top of the battery clean and dry.

PREVENTIVE MAINTENANCE SCHEDULE

WEEKLY

- Check electrolyte levels (see water additions).
- Equalize charge.

MONTHLY

- Record electrolyte specific gravities.
- Visual inspection and confirmation that the battery-mounted monitor is functioning properly.
- Inspect the cables and charging plugs.
- Clean the top of the cells.

SEMI-ANNUAL

- Inspect the charger. Confirm proper output voltage and current. Check for external damage, frayed cables, or worn connectors.
- Clean the exterior of the battery .

TROUBLE SIGNS

Battery temperature averages more than 125°F.

Battery temperature rises more than 25° F (14° C) during a normal charge.

Open circuit cell voltages vary by 0.15 volts or more and specific gravity varies by 0.020 or more during equalizing.

The top of the battery is always wet or one cell requires excessive water.

9. MAINTENANCE CLEANING

The top of the battery should be kept clean and dry. Keep the vent caps in place during use and charging. Remove the vent cap only to observe electrolyte levels, make water additions, take temperatures, or take specific gravity readings with a hydrometer. If the battery requires cleaning, contact your local Stryten Energy servicing representative. The solution used to clean and neutralize the outside of the batteries should be disposed of in an environmentally safe manner.

10. WATER ADDITIONS

Maintain electrolyte levels above the top of the separators, but no higher than 1/8” from the bottom of the vent well. Check the electrolyte level weekly, or as necessary depending on battery use prior to charging. If the level is not visible (below the top of the separators), add just enough water to cover it and then proceed with charging the battery. Otherwise, defer watering the battery until the end of the charging period when the battery is fully charged and the charger has tapered to its finish rate. At that time, add enough water to bring the electrolyte level over the separator. Always use distilled water or water that is known to be free of abnormally high amounts of impurities. Contact your local Stryten Energy representative if you are not sure of your water quality.

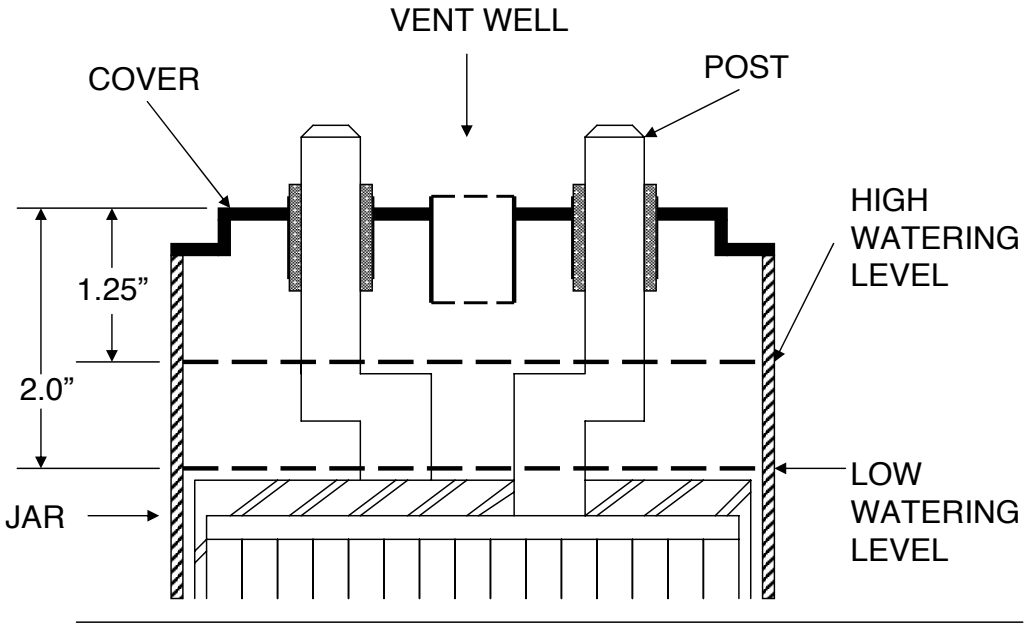
BATTERIES MUST BE VISUALLY INSPECTED PER THE SCHEDULE EVEN WITH THE USE OF A WATERING SYSTEM

11. SERVICE AND PARTS

Your local Stryten Energy sales representative has more information regarding the full range of maintenance and repair service available. Stryten Energy can also supply all of your battery, charger, and accessory device replacement part needs. For more information in the U.S.A. and Canada, call 1-888-563-6300. All others, please contact your local Stryten Energy battery sales representative.

12. RECYCLING

U.S. Federal and State Regulations require that lead acid batteries be handled and disposed of in compliance with strict guidelines. Stryten Energy offers disposal service for lead acid batteries. Call 1-888-438-5865 to arrange a pick-up or to get additional information.



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