

Maintenance and Service of Traction Batteries

Hawker Water Less® (PzM/PzMB)



DAILY



- 1 Disconnect the electrical connection between the battery and the vehicle by separating the plugs.
- 2 Remove battery cover. Leave vent plugs closed.
- 3a Check level sensor, if applicable. See table.

LED	What to do
Gray housing: (2 - 3)... PzMB:	
Green LED is lit continuously	Electrolyte level is OK
Green LED is off	Add water
Blue housing: (2 - 10)... PzM and (4 - 11)... PzMB:	
Green LED flashing	Electrolyte level is OK
Green/orange LED flashes	Warning status
Red LED flashes	Add water

LED	Definition	What to do
All LEDs are off	No voltage	Check connections
Green LED flashes slowly	Voltage and system OK	
Green LED is on	Charging is finished	
Red LED is on	Deep discharge	Charge immediately
Red LED flashes	Max temperature exceeded	Leave to cool down until normal temp
Blue LED flashes	Voltage balance faulty	Call Hawker service
Blue LED is on	Low electrolyte level	Add water

- 3b Check electrolyte and temperature LEDs on the easyplus, if fitted.
- 4 Connect charger plug. If applicable, connect electrolyte circulation system (if connector w/o integrated air supply). *EC = Electrolyte circulation



- 5 Switch on charger or check if charger has switched on. Charge battery.
- 6 Switch off charger or check if charger has switched off. Disconnect charger. Disconnect electrolyte circulation, if connected. Check final values if applicable.

WEEKLY



- 1 Visually inspect daily; clean battery if dirty.
- 2 Visually inspect all battery components for mechanical damage (particularly charging plug and cables).
- 3 Carry out weekly equalizing charge.

Add water if necessary. See "Daily" item 3 and table for water level indication.

MONTHLY



- 1 Measure cell voltages
- 2 Measure electrolyte specific gravities and temperature.

Add water if necessary. See "Daily" item 3 and table for electrolyte level indication.

Add water if necessary. See "Daily" item 3 and table for electrolyte level indication.

ANNUALLY



- 1 Measure insulation value. Must be < 50 Ω per V of nominal voltage.
- 2 If insulation values are too high: Clean battery and extract liquid from inside the container.
- 3 Repair small damages to the container insulation.
- 4 Exchange aeromatic filter. Check air pump function. *EC = Electrolyte circulation

SAFETY

- Pay attention to the operation instruction and fix them close to the battery.
- Work on batteries to be carried out by skilled personnel only!
- Use protective glasses and clothes when working on batteries. Pay attention to the accident prevention rules as well as EN 50272-3 and EN 50110-1.
- No smoking!
- Do not expose batteries to naked flames, glowing embers or sparks, as it may cause the battery to explode.
- Acid splashes in the eyes or on the skin must be washed with water. In case of accident consult a doctor immediately!
- Clothing contaminated by acid should be washed in water.
- Risk of explosion and fire, avoid short circuits!
- Caution: Metal parts of the battery are always live. Do not place tools or other metal objects on the battery!
- Electrolyte is highly corrosive.
- Batteries and cells are heavy. Ensure secure installation! Use only suitable handling equipment e.g. lifting gear in accordance with VDI 3616.
- Dangerous electrical voltage!
- Pay attention to the hazards that can be caused by batteries.

Ignoring the operation instructions, repair with non-original parts or using additives for the electrolyte will render the warranty void.

WATER REFILL

Interval	with charger
2 weeks in three-shift operation ²⁾	50 Hz, Cf 1.2
4 weeks in one-shift operation ¹⁾	50 Hz, Cf 1.2
5 weeks in three-shift operation ²⁾	HF, Cf 1.100
8 weeks in one-shift operation ¹⁾	HF, Cf 1.10
8 weeks in three-shift operation ²⁾	HF+EC ³⁾ , Cf 1.07
13 weeks in one-shift operation ¹⁾	HF+EC ³⁾ , Cf 1.07

Note:
¹⁾ With 80% DOD, 5 op. days/week and mean battery temperatures of 30°C
²⁾ In three-shift operation at high battery temperatures, this cycle number can be less
³⁾ Electrolyte circulation

Back to the manufacturer! Batteries with this sign must be recycled. Batteries which are not returned for the recycling process must be disposed of as hazardous waste! When using motive power batteries and chargers, the operator must comply with the current standards, laws, rules, and regulations in force in the country of use!

Less is More

Less watering – More customer benefits

