

Electrolyte circulation of lead-acid batteries

MODELS

LM
QUATTRO



THOMAS
by Gardner Denver

Our competitive advantage

Pumps from Thomas have been used in the transportation, compression and evacuation of gases for more than 65 years. From the outset Thomas has also been highly involved in the development and manufacture of special pumps for aeration of lead-acid batteries. Electrolyte circulation systems have been optimized in cooperation with battery manufacturers and the manufacturers of charging stations and are successfully used throughout industry.

Function

When batteries (rechargeable lead-acid batteries) are charged, the battery acid is layered in the individual cells as a result of the differences in density. This reduces the useful power of the battery. Conventional charging processes produce strong gassing through defined overcharging when fully charged. This gassing process mixes and homogenizes the electrolyte.

At the same time, however, this also means a longer charging time and an increase in temperature. The energy consumption rises in consequence and the higher temperature also leads to higher water consumption.

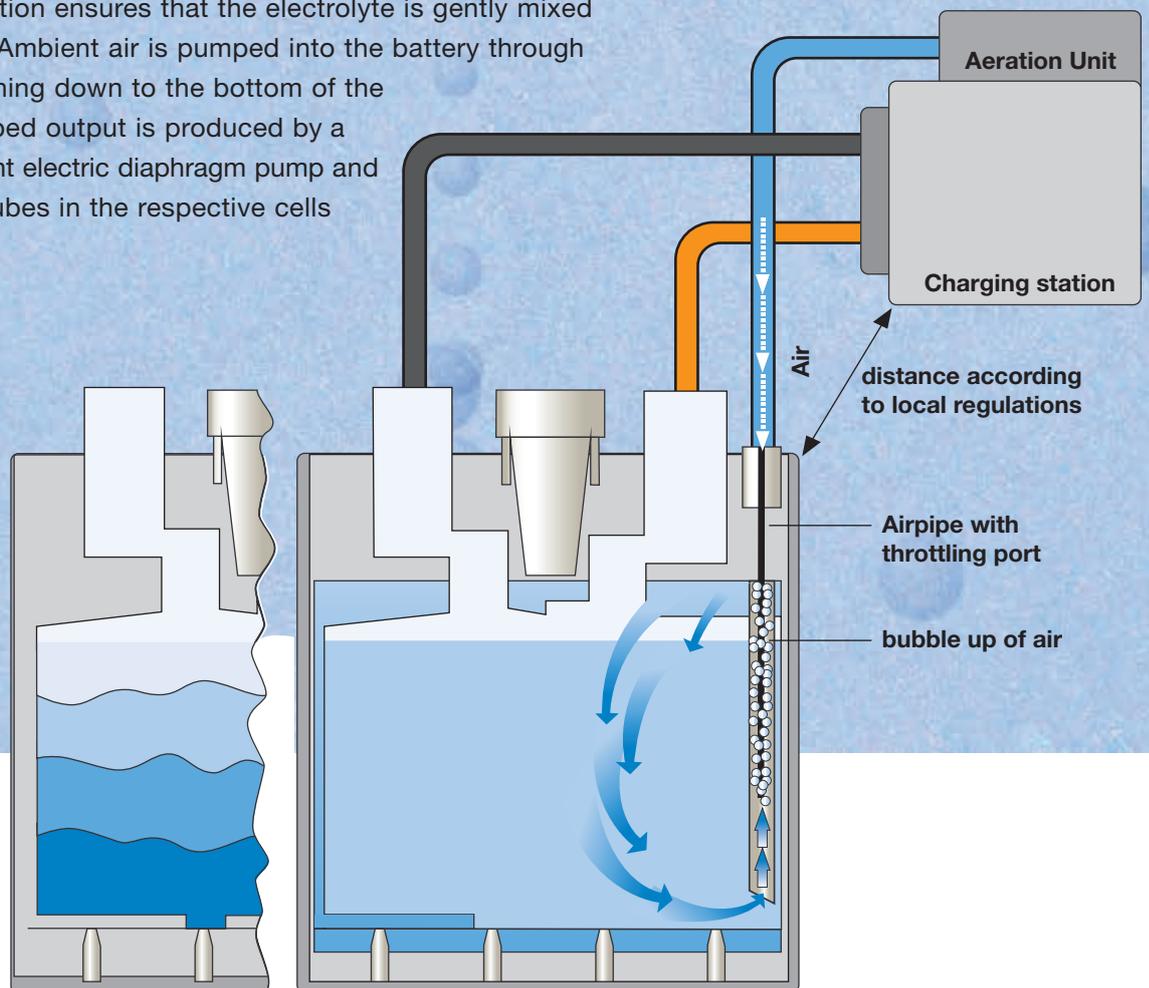
Electrolyte circulation ensures that the electrolyte is gently mixed by an air stream. Ambient air is pumped into the battery through a small tube reaching down to the bottom of the battery. The pumped output is produced by a fixed-displacement electric diaphragm pump and delivered to the tubes in the respective cells via hoses.



QUATTRO



LM with mounting bracket



Product Features

- Increased life time of lead-acid batteries
- Lower maintenance and energy costs
- Charging time reduced by 30 %
- Energy savings of 20 %
- Electrolyte temperature reduced
- No layering of the electrolyte
- Lower consumption of distilled water
- Longer maintenance intervals

Typical Applications

- All devices/systems powered by lead-acid batteries and their chargers
- Stationary and mobile use: fork-lift trucks, autoguided vehicle systems with electric and hybrid vehicles
- Backup and emergency power supply in solar and wind power systems
- As a convenient charger for the vehicle fleet

Our experience in electrolyte circulation

- Specially developed and tested in years of practical use in battery aeration
- Different versions available for high-end and low-cost applications
- High-end unit for automatic operation
- Extremely low height
- Microprocessor control for adjusting the pump delivery, duty cycle and process control
- Can be installed in any position
- Resistant to battery acid
- Friction-free solenoid actuator ensures a service life of at least 10,000 hours
- Intake filter included as standard equipment
- Maintenance free

Technical Data				
Type	LM	LM	QUATTRO*	QUATTRO
Flow at 100 mbar backpressure [l/h]	up to 650 adjusted to battery	up to 750 adjustable	240 to 800 adjusted to battery	300/500/800 available
Electrical Data				
Voltage	24 V to 80 V DC adjusted by factory	230 V/50Hz	24 V to 80 V DC adjusted by factory	230 V/50Hz
Dimensions without housing	116 x 114 x 50		-	
Dimensions with housing	-		180 x 120 x 35	
Material (housing)	-		PP	
Voltage supply	battery	charger	battery	charger
Balancing of operation performance	yes	-	yes	-
Performance adjustment manually with DIP switch	-	yes	-	-
Timer switch	yes	-	yes	yes
Leak detection	yes	yes	yes	yes
Intake filter	yes	yes	yes	yes

Please note: it is the responsibility of the battery / charging station manufacturers' to ensure compliance with the necessary local regulations concerning the location of the air pump.

* The high tech version **QUATTRO DC** recognises that the charging process is taking place and reacts automatically. The integrated electronic unit starts the aeration in intervals when the battery is being charged. The increasing voltage of the battery resulting from the charging process is monitored and the pump performance is adjusted accordingly. After the process is completed the QUATTRO DC switches to a control mode.



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