

# Xtreme Force Batteries

Longer Runtime Under Extreme Conditions



## Benefits

- Copper Stretch Metal (CSM) offers higher energy content compared to conventional batteries, which leads to longer operating times
- Operate under extreme conditions as well as in heavy-duty operations such as high rack applications
- Reduced internal resistance provides faster charging time and higher energy efficiency
- Copper is a more efficient conductor of electricity. Run two shifts on a single battery with opportunity charging
- Excellent energy efficiency lowers operating costs

## Features

- **2-Shift Operation:** Xtreme Force batteries equipped with air mix systems are able to take full advantage of the fast and opportunity charging capabilities of CSM technology and allow the battery to operate on 2 shifts with opportunity charging
- **Higher Energy Efficiency:** Negative plates with CSM grid reduces internal resistance which results in higher energy efficiency and higher energy content
- **Standard DIN Size - Higher Energy Content:** Higher capacity and higher energy content is achieved within the same dimensions and with standard cells (fully compatible to IEC 60254-2), useful in high rack facilities and heavy-duty operations
- **Fast and Opportunity Charging:** Chargers enable fast and opportunity charging in 4 hours (when equipped with Airlift), allowing multi-shift operation with one battery



Forklifts operating in high rack facilities require more lifting



Heavy-duty applications with demanding acceleration periods during operation from forklift



Multi-shift applications with one battery through fast and opportunity charging



Seasonal business with high activity peaks



Cold storage / Outdoor applications



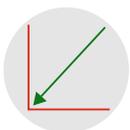
Higher Energy



Faster Charging



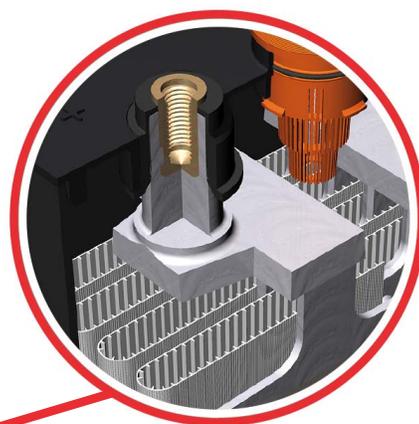
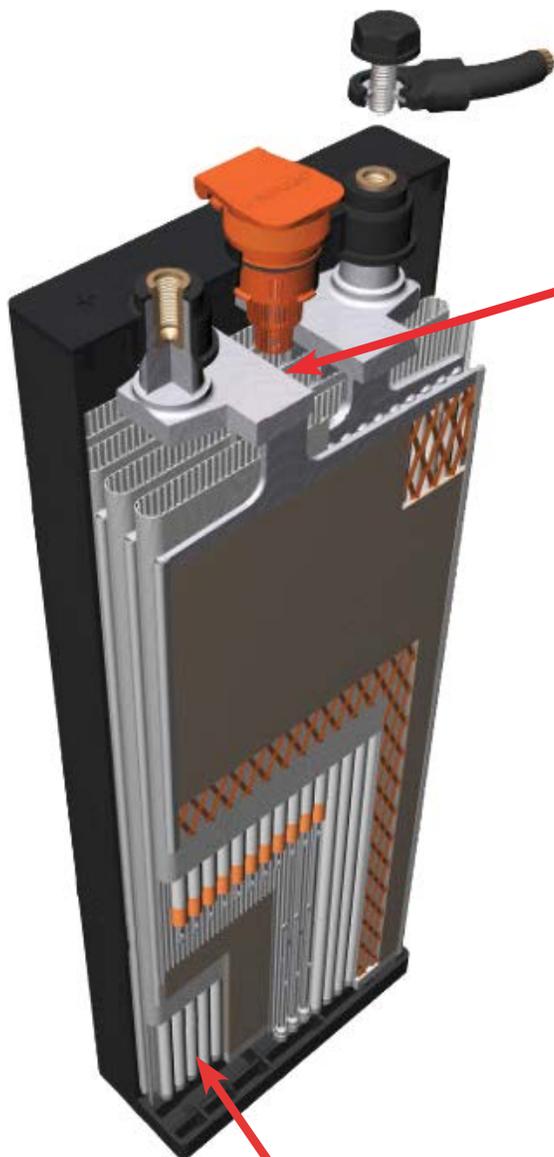
Extreme Conditions



Lower Operating Cost

XTREME FORCE BATTERIES

# Ultimate Performance



## Negative Grid

- Copper grid ensures more uniform current density distribution over the plate's surface
- Reduces internal resistance

## Positive Grid

- Die cast grid uses optimized lead/antimony alloy
- High tensile strength, corrosion resistance, excellent interface with the active mass

## Positive Active Mass

- 100% Red Lead: Efficient formation ensures that full cell capacity is achieved after 3 - 5 cycles
- Dry Filling Process: Uniformly filled positive plates, 100% weight controlled
- In house Red Lead production: Constant quality, homogeneous tamped density
- Produced by 99.99% Primary Lead: Long service life, high conductivity, increased performance

## Bottom Bar

- Ultrasonically welded
- Provides space for the unavoidable growth of the spine

## Negative Active Mass

- In house production of Lead Oxide: consistent quality
- Fully automatic Vacuum Negative Paste Mixing process

## Formation and Activation

- Fully automatic jar formation process: consistent quality

## Electrolyte

- High purity: long life

## Pole Terminal

- Innovative conical design of the pole sealing system: Uses the unavoidable growth of the plates to press against the grommet and improve sealing
- Tin plated 16 mm diameter inserts

## Operational Vent Plug

- Electrolyte level making, anti-surge baffle, free cell gassing
- Increased operational safety

## Gauntlet

- Non-woven, high quality polyester
- Prevents mass shedding, high mechanical stability

## Separator

- Highly porous Polyethylene, enveloped using mechanically crimped sleeve
- Increased performance preventing short-circuits

## Pole Bridge

- Cast on Strap manufactured pole bridge: consistent and uniform composition

