



Use Instructions

HDE *EVOLUTION*



Horse Dental Equipment

www.horse-dental-equipment.com

How to use it?

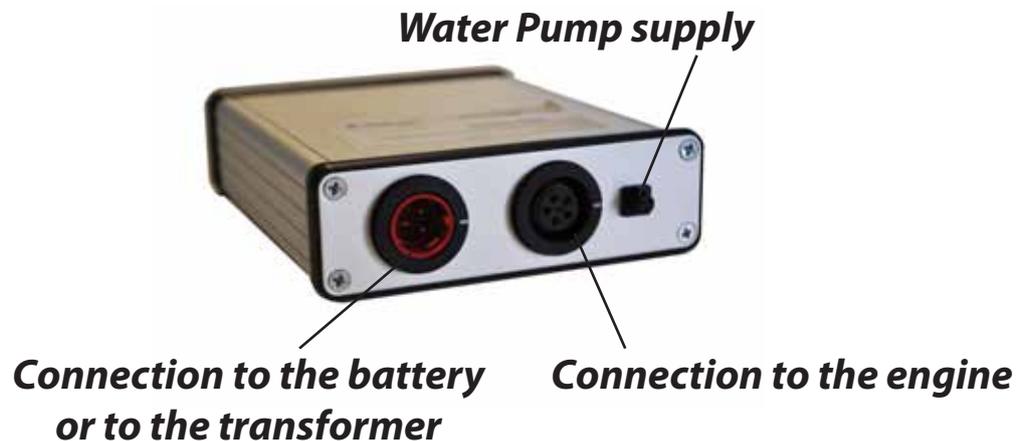
+Driver box



On/off switch:

If the blue light flashes slowly (1 time / sec) : normal functioning

If it flashed faster (4 times / sec) : bad functioning (wrong connection)



The driver box itself (without the cover protection) is not waterproof, please make sure you always use the driver box with its protection.



+ Engine

- The engine itself is not waterproof, please do not immerse it in water.
- Do not make the engine fall down, to avoid any damages.

+ Belt



This rivet is dedicated to adjust the width of your belt & avoid that the driver box slips down the belt during the intervention (when pressing the buttons). Press hard to fix it.

Setting up

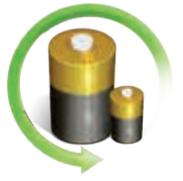
- Check that the transmission's screw of the drive shaft fits well into the engine's slit.
- Screw the drive shaft to the engine driver.
- Thread the drive shaft into the extension if you use one or simply connect your hand piece to the Quickflex connection of your drive shaft.
- Switch on your engine with the driver box & adjust your speed (we advise working on the 3rd level). You are ready to work.



NB : Because the engines benefits from an electronic clutch, we are proposing EVOLUTION drive shafts without pins.



Precautions



- Only use our HDE Lithium Ion battery with your HDE **EVOLUTION**.
- Do not charge your battery more than 12 hours at once.
- Partial discharge is fine so you don't have to wait until your battery is dead to recharge it
- Reload and leave your battery in a dry environment at room temperature (18/20°).
- Your battery will last longer if you use it in an outside temperature between 10 and 25°.
- Do not throw your battery in classic garbages, recycle them.

+ Battery

Connect the green connector + wire of the driver box to the green connector of the battery.



Always position the white mark on the wire connector straight opposite to the white mark on the battery.

Do not turn the connector, just pull it slowly to unplug it.

+ Battery loading



+ 3 different levels of loading :
RED : Low level of your battery
ORANGE : Intermediate level
GREEN : Full charge



General precaution use

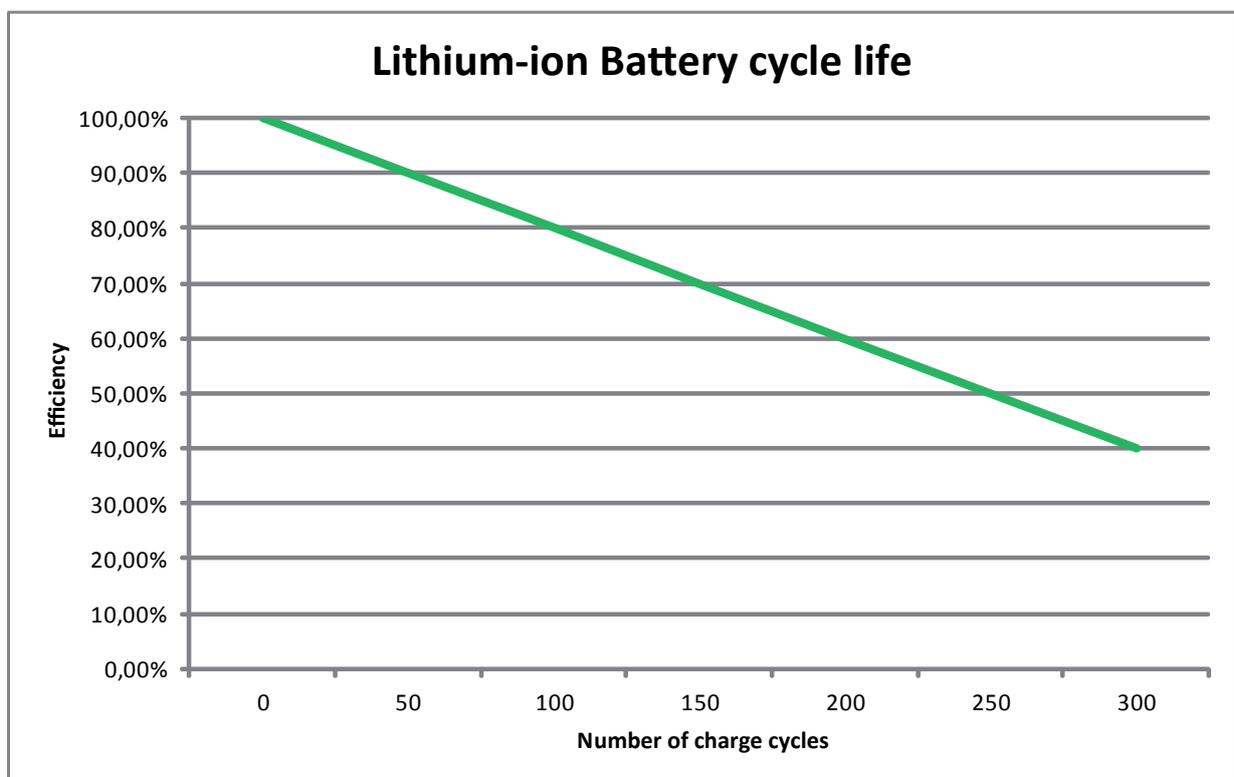
- Make sure to choose an adapted box and storage case for the transport of your HDE Evolution unit (special foam + package) to avoid any shocks.
- Do not leave your engine + battery near flammable materials.
- Do not unsettle and repair the connectors by yourself.

Warning - Lithium-ion Battery for Evolution engine

The EVOLUTION Lithium-ion battery is guaranteed against manufacturing defects (faulty materials and workmanship) for 12 months from the purchase date.

As the battery is a consumable, warranty doesn't cover normal use.

Non-contractual terms concening wear



on the basis of 10 horses per charge cycle when the battery is brand new, while working in an average temperature of 15°.

Contractual terms concening wear *(refer to pages 7 & 8)*

Rechargeable lithium-ion battery

MP 144350

High performance
Medium Prismatic cell

Saft always supplies MP cells in assemblies or as customized battery system constructions



Benefits

- Extended autonomy and life for mobile systems
- A broad operating temperature range
- Recommended for ruggedized designs
- Easy integration into compact and light systems
- Very high energy density (344 Wh/l and 143 Wh/kg)
- Unrivalled low temperature performance

Key features

- Excellent charge recovery after long storage, even at high temperature
- Maintenance-free
- Non-restricted for transport/ Non-assigned to Class 9 according to the UN Recommendations on the transport of dangerous goods - Model Regulations
- Underwriters Laboratories Component Recognition (File Number MH 12609) (UL)

Main applications

- Mobile asset tracking
- Small UPS
- Soldier of the future equipment
- Portable radios
- Professional portable lighting
- Bar code readers
- Portable payment terminal

Electrical characteristics

Nominal voltage (0.5 A rate at 20°C)	3.75 V
Typical capacity (at 0.5 A 20°C 2.5 V cut-off)	2.6 Ah
Nominal energy	9.75 Wh

Mechanical characteristics (Sleeved 100 % charged cell)

Thickness <i>(Thickness tends to increase with cycling, typically obtained after 500 cycles. Consult Saft) (At beginning of life 14.6 mm)</i>	14.9 mm
Width (max)	43.9 mm
Height (max)	54.5 mm
Typical weight	68 g
Lithium equivalent content	0.78 g
Volume	28 cm ³

Operating conditions

Charge method	Constant Current/Constant Voltage
Charge voltage	4.20 +/- 0.05 V
Maximum recommended charge current* *	2.6 A (C rate)
Charge temperature range*	-20°C to +60°C
Charge time at 20°C	To be set as a function of the charge current: C rate ⇒ 2 to 3 h C/2 rate ⇒ 3 to 4 h C/5 rate ⇒ 6 to 7 h
Maximum continuous discharge current**	5.0 A (~2C rate)
Pulse discharge current	up to 10 A (~4C rate)
Discharge cut-off voltage	2.5 V
Discharge temperature range*	-50°C to +60°C

* For optimized charging below 0°C, 60°C and discharging at -50°C, consult Saft.

** Electronic protection circuits within battery packs may limit the maximum charge/discharge current allowable. Consult Saft.

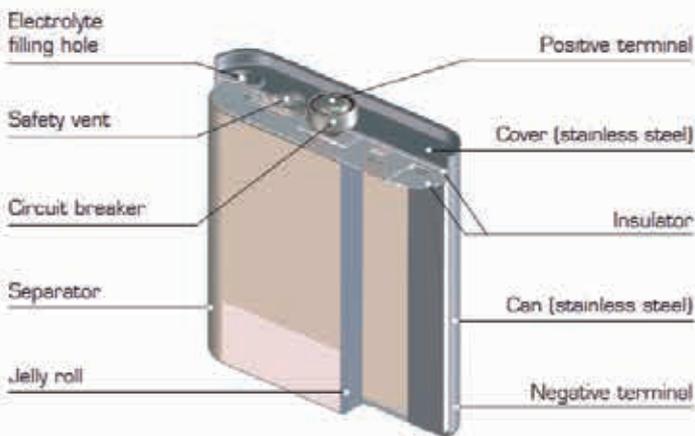
MP 144350

Battery assembly

In order to operate properly, individual Li-Ion cells are mechanically and electrically integrated in battery assemblies specific to each application. The battery assembly incorporates electronics for performance, thermal and safety management.

Technology

- Graphite-based anode
- Lithium Cobalt oxide-based cathode
- Electrolyte: organic solvents
- Built-in redundant safety protections (*shutdown separator, circuit breaker, safety vent*)
- Batteries assembled from MP cells feature an electronic protection circuit



Built-in protection devices ensure safety in case of:

- Exposure to heat
- Exposure to direct sunlight for extended periods of time
- Short circuit
- Overcharge
- Overdischarge

When handling Saft MP batteries:

- Do not solder directly to cell terminal
- Do not disassemble
- Do not remove the protection circuit
- Do not incinerate

Transportation and storage:

- Store in a dry place at a temperature preferably not exceeding 30°C
- For long-term storage, keep the battery within a (30 ± 15) % state of charge

**Saft
Specialty Battery Group**

www.saftbatteries.com

Doc. N° 54044-2-1009

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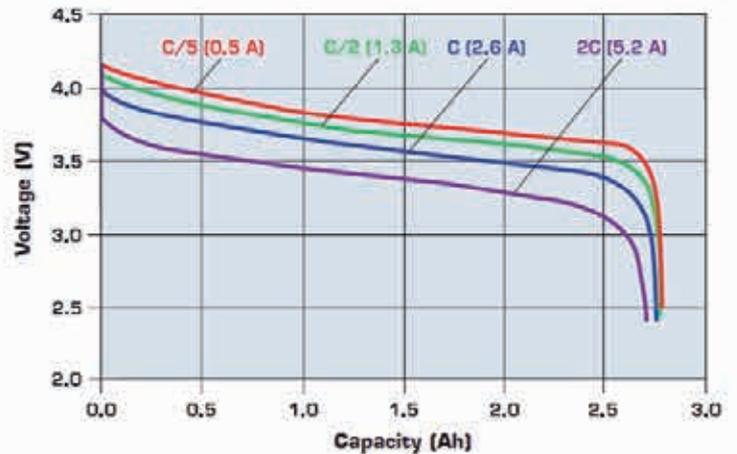
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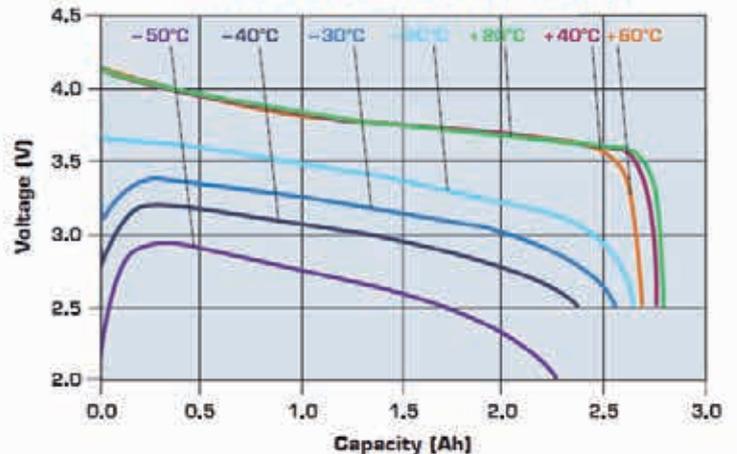
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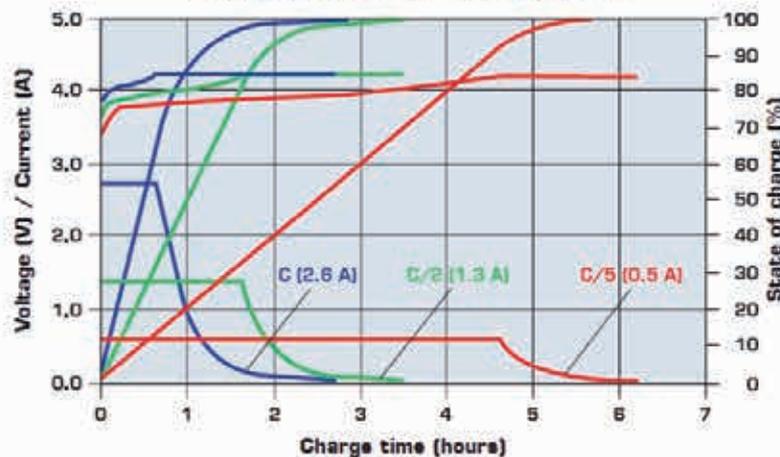
Capacity versus current at + 20°C



Typical discharge profiles (0.5 A - C/5 rate)



Charge characteristics to 4.2 V at + 20°C



Please visit our website for further
details including a video clip
and live instructions

www.horse-dental-equipment.com

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