

工业锂电池操作说明

Operating instructions for industrial lithium batteries

一：安全须知

一： Safety instructions

为了保证您的人身安全请务必仔细阅读并遵循以下安全须知：

Safety instructions in order to ensure your personal safety, please read and follow the following safety instructions carefully:

禁止在任何时候短接正负极或反接正负极；

Short circuit or reverse connection of positive and negative electrodes is prohibited at any time;

禁止非工作人员进行维修作业，私自拆解无售后服务；

It is forbidden for non staff to carry out maintenance work and disassemble without after-sales service;

严禁维修作业时佩戴手表等金属制品，需带防护手套，清洗车辆时应避免动力系统与水接触；

It is strictly forbidden to wear watches and other metal products during maintenance work, and protective gloves should be worn. When cleaning the vehicle, the power system should avoid contact with water;

严禁对电池系统进行敲击、抛掷、踩踏、针刺等破坏性行为；

It is strictly prohibited to knock, throw, trample, puncture and other destructive behaviors on the battery system;

电池系统工作环境 应远离高腐蚀性，可燃环境，并远离热源；

The working environment of battery system should be far away from highly corrosive and combustibile environment, and away from heat source;

二：紧急事故处理

二： Emergency handling

如果在使用过程中出现冒烟、起火等非安全状态，请立即采取以下处理方式：

In case of smoke, fire and other unsafe conditions during use, please take the following measures immediately:

第一步：人员迅速离开车辆，根据现场情况拨打报警电话；

Step1: the personnel leave the vehicle quickly and call the police according to the situation on the spot;

第二步：在保证人员安全的情况下，有条件的进行下列操作：

Step 2: under the condition of ensuring the safety of personnel, carry out the following operations conditionally:

①如果电池线束起火，使用二氧化碳或干粉灭火器灭火；

① If the battery harness is on fire, use carbon dioxide or dry powder fire extinguisher to put out the fire;

②如果电池起火，在远距离使用高压水枪灭火，如果不慎吸入浓烟尽快转移就医。

② If the battery fires, use a high-pressure water gun to extinguish the fire from a long distance. If you accidentally inhale the smoke, transfer it to a doctor as soon as possible.

第三步：通知叉车所属经销商，获取进一步处理意见；

Step 3: inform the forklift dealer to obtain further treatment opinions;

第四步：如果是因为充电异常引起的火灾，务必第一时间切断电源，在执行下一步灭火动作。



Step 4: if the fire is caused by abnormal charging, be sure to cut off the power supply at the first time and execute the next fire fighting action.

三、使用环境说明

三、Description of use environment

1、最大工作温度范围:

1. Maximum operating temperature range:

充电温度: 0°C-45°C 放电温度: -20°C-55°C

Charging temperature: 0°C-45°C Discharge temperature: -20°C-55°C

2、最佳工作温度范围:

2. Optimum working temperature range:

充电温度: 15°C-35°C 放电温度: 15°C-35°C

Charging temperature: 15°C-35°C Discharging temperature: 15°C-35°C

3、储存温度说明: -10°C-35°C

3. Storage temperature: -10°C-35°C

4、电池系统最佳储存 SOC 区间: 每半年需进行一次循环处理, 放电至 15%, 充电至 100%, 然后放电至 50-80% (最佳 SOC 存放);

4. The best storage SOC range of battery system: once every six months, the battery system needs to be cycled, discharged to 15%, charged to 100%, and then discharged to 50-80% (the best SOC storage);

5、电池系统的最佳存放环境要求: 通风、干燥、不受阳光直射、不受雨淋、远离热源、远离明火、高温、高粉尘、盐雾、高腐蚀性等环境;

5. The best storage environment requirements of battery system: ventilation, dryness, no direct sunlight, no rain, far away from heat source, far away from open fire, high temperature, high dust, salt fog, high corrosive environment, etc;

6、电池系统工作环境禁止车辆及充电机浸水后进行操作;

6. The working environment of the battery system is not allowed to operate after the vehicle and charger are soaked in water;

四、安装说明

四、Installation instructions

1、打开工业叉车电池仓座椅, 并清理电池仓内部空间;

1. Open the battery compartment seat of industrial forklift and clean the internal space of the battery compartment;

2、采用吊装设备通过吊装电池吊装孔将电池组平稳的吊装到电池仓内并进行有效固定;

2. The battery pack is stably hoisted into the battery bin and effectively fixed by the hoisting equipment through the hoisting hole of the hoisting battery;

3、连接显示屏, 打开电池组电源开关, 检查电池参数无异常;

3. Connect the display screen, turn on the power switch of the battery pack, and check that the battery parameters are normal;

4、关闭电源开关, 检查电池组放电插头与车辆插头无异物;

4. Turn off the power switch and check that there is no foreign matter between the battery pack discharge plug and the vehicle plug;

5、电池组放电插头与车辆插头正确连接。

5. The battery pack discharge plug is correctly connected with the vehicle plug.

五、放电操作说明

五、Discharge operation instructions

1、启动: 首先打开电池组电源开关, 5 秒后确认无异常, 再次启动车辆钥匙开关, 车辆开始工作;

1. Start: first, turn on the power switch of the battery pack. After 5 seconds, confirm

that there is no abnormality. Start the key switch of the vehicle again and the vehicle starts to work;

2、关机：关闭车钥匙开关，如果充电，无需关闭电池组电源开关，直接进行充电操作，如果长时间不用关闭电池组电源开关；

2、Power off: turn off the key switch of the car. If you charge, you don't need to turn off the power switch of the battery pack. You can charge directly. If you don't need to turn off the power switch of the battery pack for a long time;

3、重启请间隔一分钟；

3、Please restart every one minute;

4、警告：

4、Warning:

①开启电池组电源开关前要检查车钥匙一定是关断状态，打开电池组电源开关，延时 5 秒后启动车辆钥匙开关，否则会使电池继电器损坏；

① Before turning on the power switch of the battery pack, check that the vehicle key must be in the off state. Turn on the power switch of the battery pack and start the vehicle key switch after a delay of 5 seconds, otherwise the battery relay will be damaged;

②电池仪表报故障代码需立即停车检查，听到蜂鸣报警，立即充电器，否则存在断电危险；

② If the fault code is reported by the battery instrument, it is necessary to stop and check immediately. If you hear the buzzer alarm, you should immediately charge the battery, or there is a risk of power failure;

③长时间不用请关闭电源开关，防止电池亏电；

③ Please turn off the power switch if you don't use it for a long time to prevent the battery from losing power;

④车辆存放时，请关闭电源开关，请确保电池电量在 50%左右，并断开电池与车辆连接。

④ When the vehicle is stored, please turn off the power switch, make sure the battery power is about 50%, and disconnect the battery from the vehicle.

六、充电操作说明

六、Charging instructions

1、将工业车辆规范停放到充电区，关闭车辆钥匙开关；

1、Park the industrial vehicles in the charging area and turn off the key switch;

2、确认电池电源开关处于打开状态，打开电池组防护盖或车辆座椅，并检查充电机插头无异物；

2、Confirm that the battery power switch is on, open the protective cover of the battery pack or the vehicle seat, and check that the charger plug is free of foreign matters;

3、打开充电机供电开关，确认充电机状态，并检查充电机插头无异物；

3、Turn on the power supply switch of the charger, confirm the status of the charger, and check that the plug of the charger is free of foreign matters;

4、将充电机充电插头与电池充电插头正确连接，启动充电机启动开关；

4、Connect the charger plug and battery plug correctly and start the charger start switch;

5、等待充电确认约 30 秒，充电电流正常，充电开始；

5、Wait about 30 seconds for charging confirmation, the charging current is normal, and charging begins;

6、充电完成后，按下充电机停止按钮，确认充电机中充电电流显示为 0A 后正确拔下充电机充电插头；

6、After charging, press the stop button of the charger to confirm that the charging current in the charger is 0A, and then pull out the charging plug of the charger correctly;

7、关闭电池充电口防护盖或叉车座椅，并规范放置充电机充电插头。

7、Close the protective cover of the battery charging port or the forklift seat, and place

the charging plug of the charger in a standardized way.

七、警告

七、Warning

- 1、充电前确保关闭车辆钥匙开关，电池电源开关处于启动状态；
1、 Before charging, make sure that the vehicle key switch is turned off and the battery power switch is in the starting state;
- 2、请使用厂家指定的锂电专用充电器，充电操作前，请详阅充电器使用手册；
2、 Please use the lithium battery charger specified by the manufacturer. Please read the charger manual carefully before charging;
- 3、保持充电插头表面清洁，接口内无颗粒，粉尘等杂物，当充电插头温度过高时，立即停止充电；
3、 Keep the surface of the charging plug clean, and there are no particles, dust and other debris in the interface. When the temperature of the charging plug is too high, stop charging immediately;
- 4、正充电时如急用车需先按充电器停止开关，当电流为 0 时再拔出充电插头；
4、 When charging, if you need to use the car in an emergency, first press the charger stop switch, and then pull out the charging plug when the current is 0;
- 5、充电结束，拔出充电插头之前，请确保按下充电器停止开关，并确保充电电流显示为 0A；
5、 At the end of charging, before pulling out the charging plug, make sure to press the charger stop switch, and make sure that the charging current is 0A;
- 6、充电温度范围为:0-45℃，0℃以下低温环境，车辆使用完毕后请立即充电；
6、 Charging temperature range: 0-45℃, low temperature environment below 0℃. Please charge the vehicle immediately after use;
- 7、锂电池充电要求:每次充电尽可能充至 100%电量(BMS 电量校准)，如多次充电 达不到 100%，仪表上 SOC 剩余电量就会显示不准，影响使用和安全。
7、 Lithium battery charging requirements: every charge should be charged to 100% of the battery capacity (BMS power calibration). If the battery cannot be charged to 100% for many times, the remaining power of s0c on the instrument will not be displayed accurately, which will affect the use and safety.

八、定期检查及保养操作说明

八、Regular inspection and maintenance instructions

- 1、定期检查说明:车辆每运行三个月，例行检查，具体检查项目如下：
1、 Regular inspection instructions: the vehicle shall be inspected every three months. The specific inspection items are as follows:
 - ①保养场地要求:要求宽敞平整安全，要有充电设备；
① Maintenance site requirements: spacious, flat and safe, with charging equipment;
 - ②电池系统的高低电压线束有无破损，有无擦伤，有无松动；
② Whether the high and low voltage wiring harness of the battery system is damaged, scratched or loose;
 - ③充放电插头是否高温及损坏。
③ Check whether the charging and discharging plug is high temperature and damaged.
- 2、保养操作流程：
2、 Maintenance process:
 - ①调整电池电量，保证电池 SOC 在 25%—40%之间；
① Adjust the battery power to ensure that the battery s0c is between 25% and 40%;
 - ②停稳车辆，关闭电源，检查车内所有用电设备，保证处于关闭状态；
② Stop the vehicle, turn off the power, check all the electrical equipment in the vehicle to ensure that it is in the off state;



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③查看电池外观、线束及插件是否存在安全隐患。

③ Check the battery appearance, wiring harness and plug-in for potential safety hazards.

九：包装及运输说明

九：Packing and transportation instructions

1、调整电池电量，保证电池SOC在25%—40%之间；

1、Adjust the battery power to ensure that the battery SOC is between 25% and 40%;

2、电池组电源处于关闭状态；

2、The battery pack power is off;

3、电池组放置在托盘上并采用打包带将其固定，平稳的放置在运输车上；

3、The battery pack is placed on the pallet and fixed by the packing belt, and is stably placed on the transport vehicle;

4、严禁运输过程中将电池组倒置、斜放；

4、It is strictly forbidden to put the battery pack upside down or obliquely during transportation;

5、严禁电池组在运输过程中磕碰、挤压；

5、It is strictly forbidden to bump or squeeze the battery pack during transportation;

6、严禁电池组在运输过程中淋雨、暴晒等。

6、It is strictly forbidden to rain or expose the battery pack to the sun during transportation.

十、质量保修范田及规定

十、Quality warranty and regulations

1、配套电池系统质量保修期：

1、Warranty period of supporting battery system:

①质量保修期的起始，以电池系统交付的日期为准；

①The start of the warranty period shall be subject to the delivery date of the battery system;

②电芯、DC/DC、BMS、继电器等电气部件的质量保修期，参见本产品的质量保修期证明；

②For the warranty period of electrical components such as cell, DC / DC, BMS and relay, please refer to the warranty period certificate of this product;

③在质保期内更换的电池系统零部件的质保期延续原零部件规定的质保期。

③The warranty period of the battery system parts replaced within the warranty period shall be extended to that of the original parts.

2、质量保修规定：

2、Quality warranty provisions:

①在质保期内，我司认可的量产配套电池质量或设计缺陷，由我司提供免修服务；

① During the warranty period, the quality or design defects of mass production batteries approved by our company shall be free of repair;

②在质保期内，由我可免费更换下来的故障物件归我可所有；

② During the warranty period, the faulty items that I can replace free of charge belong to me;

③超过质量保修期的产品范围的故障，我司可提供有偿服务。

③ Our company can provide paid service for the faults beyond the warranty period.

3、质量保修责任豁免：

3、Quality warranty exemption:

本手册中包含的内容不适用或包括：

The contents in this manual are not applicable or include:

①不遵守本手册规范进行的操作而导致的损坏；



- ① Damage caused by operation not following the specifications of this manual;
- ②使用非指定充电设备或充电操作不规范而导致的损坏;
- ② Damage caused by using non specified charging equipment or improper charging operation;
- ③未经我司售后部、服务站授权对电池系统进行改装、加装、拆装等导致的损坏;
- ③ Damage caused by refitting, installing or disassembling the battery system without authorization of our sales department or service station;
- ④电池系统发生故障时，客户未经我司售后部、服务站同意私自对故障进行处理导致的损坏;
- ④ When the battery system fails, the customer deals with the failure without the consent of our sales department and service station;
- ⑤因不可抗拒因素如地震、台风、洪水、雷击、冰雹、化学污染、火灾、飞石或人为等原因导致的损坏;
- ⑤ Damage caused by irresistible factors such as earthquake, typhoon, flood, lightning strike, hail, chemical pollution, fire, flying stone or man-made reasons;
- ⑥电池用于非指定车型。
- ⑥ The battery is used for non specified vehicles.

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