



内燃机车用阀控式密封铅酸蓄电池



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充分利用互联网平台 大数据云存储 服务全球客户

双登坚定推进绿色低碳事业，始终践行“新能源、生态型、高科技”理念，从设计开发、绿色采购、体系管理、循环回收、节能减排五大环节重点管理，为行业创造绿色模式，为人类营造绿色生活，为地球存储绿色未来。

积极探索 发现不断增长的能源新世界

动力

新清洁、高效的动力能源，为社会发展提供无限助力；

通信

拥有全系列能源存储解决方案，提供坚实的绿色能源保障，在中国主流通信运营商市场占有率多年位居前列；

电力

正在成为构建未来智能电网的核心中枢；

回收

率先构建循环产业链，让能源可循环、可再生，还原健康地球。

追求极致 塑造具有强劲可持续发展力的企业

双登先后获得“国家环境友好企业”、“国家重点高新技术产业集团”、“中国电子信息百强企业”、“全球新能源企业500强”等荣誉。

汇聚全球行业专家，联合科研院所 与客户协同，研发全球领先的储能系统

建立院士工作站、博士后科研工作站、国家级企业技术中心，与中科院合作成立先进能源发展研究中心，承担国家863等科研项目并研发世界前瞻性高端新能源项目。

一、产品简介

内燃机车用阀控密封铅酸蓄电池(NM-450)是双登集团与铁道部研究院机车车辆研究所共同研制开发的专利产品, 拥有特殊的极柱密封技术, 该电池具有很高的装配压力和开阀压力, 明显改善了电池失水。相比普通铅酸电池而言, 该电池具有更优异的低温启动性能及更高的比能量, 更高的安全性, 更长的循环使用寿命等优点。主要应用于内燃机车启动、信号、照明及其他备用电源系统。

产品执行TB/T3061-2008《铁路机车车辆用阀控式密封铅酸蓄电池》。

Brief introduction

VRLA Battery (NM-450) for internal-combustion locomotive is researched and developed by Shuangdeng Group together with Locomotive Research Institute of Development Academy of Ministry of Railway. The post seal of the product adopts the patent technology and has quite high assembly and open valve pressure which can reduce water loss to a great extent. Compared with traditional VRLA Battery, NM-450 has a lot of advantage, such as good start-up ability under low temperature, high specific energy, safer and longer cycle life. It can be the most ideal power source as internal-combustion locomotive start-up, illumination and other standby power source system. The product is executed in accordance with the industry standards issued by Ministry of Railway of P.R. China TB/T3061-2008 "Valve-regulated Lead-acid Accumulator for Railway Locomotive".

二、结构特点

- ◆NM-450电池外观可见部分名称
- ◆特殊极柱密封技术, 独特的三重密封结构, 防止漏酸;
- ◆阻燃防爆安全阀, 开闭阀压力稳定可靠;
- ◆独特的多元合金板栅及板栅设计, 提高了活性物质利用率及电流分布均匀性, 延长了电池使用寿命;
- ◆大直径铜芯压铸技术, 增强了大电流放电性能
- ◆安装架设计散热空间, 具有有效的防震、散热结构;
- ◆电池提手设计, 方便搬运。

Structure Characteristics

- ◆ NM-450 part name
- ◆Perfect seal of post: unique structure of triple seal (patent: ZL 02 2 20024.X) to prevent the acid leakage.
- ◆Retardant-lame and blast-guard safety valve: the open and close pressure of the valve is stale and reliable.
- ◆Grid which is designed by the latest modern technology to enhance the utilization of active material and the uniformity of the current distribution is made of special multi-element alloy to ensure the longer lifetime of the battery.
- ◆Die-casting copper core of bigger diameter, with large cross-sectional area is large, and high strength, enhance to the large discharge acceptability
- ◆Effective structure for quakeproofing and heat dissipation
- ◆Handle is mounted on all cells for easy handing.



三、性能特点

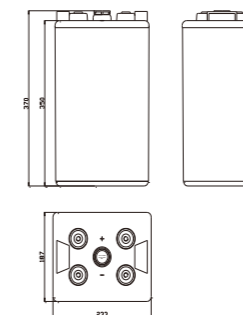
- ◆设计寿命: 机车运行6年或90万公里以上
- ◆循环寿命: 启动次数 ≥ 10000 次, $C_5 \geq 85\%$ (放电深度 $\leq 55\%$)
- ◆常温启动能力: 启动电流2100-2200A, 启动时间 $\geq 330s$ ($25^\circ C \pm 5^\circ C$)
- ◆低温启动能力: 启动电流1700-1800A, 启动时间 $\geq 50s$ ($-40^\circ C \pm 1^\circ C$)
- ◆自放电性能: $\leq 4\%$ /月
- ◆充电接受能力: 充电电流 $\geq 80A$
- ◆密封反应效率: $\geq 98\%$

Performance Characteristics

- ◆Designed service life of the battery for locomotive operation is more than 6 years or 900000 km.
- ◆Cycle life: start-up times is more than 10000 times and C_5 is more than 85% (DOD $\leq 55\%$).
- ◆Start up at normal temperature: start-up current is 1700-1800 A and start-up time is more than 300s under $25^\circ C \pm 5^\circ C$.
- ◆Start up at low temperature: start-up current is 1500 A and start-up time is more than 50s under $-35^\circ C \pm 2^\circ C$.
- ◆Self-discharge performance is less than 4%/month
- ◆Charge acceptability: charge current is more than 80 A.
- ◆Seal reaction efficiency is more than 98%.

四、规格参数 Specifications

型号	额定电压 V	参考 质量 kg	5h率放电			1h率放电			最大外形尺寸 mm		
			I_5 A	额定 Ah容量	终止 电压 V	I_1 A	额定 容量 Ah	终止 电压 V	长	宽	总高
NM-450	2	39	90	450	1.70	325	325	1.60	223	187	370



五、主要使用环境条件

- ◆海拔高度不超过2500m。（当在海拔超过2500 m 以上的条件使用时，需在合同中注明）
- ◆环境温度 -40°C ~ +40°C
- ◆相对湿度 ≤95%
- ◆允许在有风、沙、雨、雪侵袭的工作环境下使用
- ◆充电电压110±2V（48只）
- ◆最大放电电流≤2200A.
- ◆成组电池不允许中间抽头使用

Environmental Operation

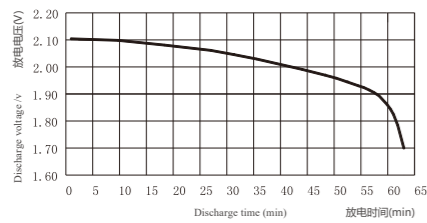
- ◆ Altitude is not more than 2500m. (For service at the altitude over 2500 m, an clear indication shall be given in the contract)
- ◆ Environmental temperature is between -40°C and +40°C.
- ◆ Relative humidity is not more than 95%.
- ◆ Service in windy, blowing dust, rainy and snowy weather is acceptable
- ◆ Charge voltage is 110±2 V(only 48).
- ◆ Max discharge current is not more than 2200 A.
- ◆ The cell of one string can not used separately.

活力, 源自持久动力

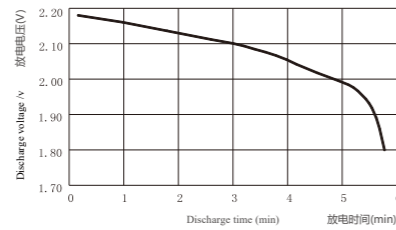
大数据时代领先的绿色储能集成服务供应商双登, 以前瞻能源科技, 与全球客户共享绿色地球。

六、电性能 Electrical Performances

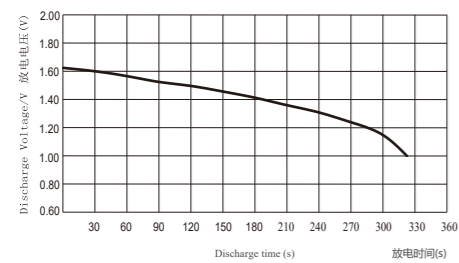
1. 25°C温度下1h 率的放电至终止电压时的电流放电曲线。
1hr discharge characteristics under 25°C.



2. 25°C温度下5h 率的放电至终止电压时的定电流放电曲线。
5hr discharge characteristics under 25°C.



3. 25°C温度下常温启动性能曲线
Start up performance at normal temp(25°C±2°C)



4. -40°C温度下低温启动性能曲线
Start up performance at low temp (-40°C±2°C)

