

## Sales distribution



*I hope you'll become my business Partner.*  
—— Devid Fang.

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Starter Solenoid & Parts  
To be a pioneer in  
starter solenoid industry.



**Starter Solenoid  
Professional manufacturer**

起动机电磁开关  
专业制造商



*Founded in 2008  
American Ford parts  
The top ten best-selling products in China*

- ◎ Passenger car series  
乘用车系列
- ◎ Commercial vehicle series  
商用车系列
- ◎ Heavy-duty vehicle series  
重型车系列
- ◎ Relay series  
继电器系列

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[www.kdsolenoid.com](http://www.kdsolenoid.com)

# COMPANY PROFILE



Founded in  
**2008**

创立于2008年

Kedong Auto Parts Co., Ltd. specializes in the research and production of automobile starting motor switch, automotive starting motor electromagnetic switch, motor switch, starting motor magnetic switch, electromagnetic switch parts, etc.

The company has its own precision processing workshop and plastic workshop, which enables it to control product quality from the source and strictly demand perfection in every process. Thanks to its reliable product quality and good reputation, the products have not only won the trust of numerous customers in the domestic market but have also been exported overseas and gained recognition in the international market.

科栋汽车零部件有限公司专业从事汽车起动电机开关、汽车起动电机电磁开关、电机开关、起动电机磁力开关、电磁开关零件等的研究和生产。

公司拥有自己的精密加工车间和塑料车间，从源头把控产品质量，每道工序严格要求完美。凭借可靠的产品质量和良好的信誉，产品不仅在国内市场赢得了众多客户的信赖，而且还远销海外，在国际市场上获得了认可。

## Factory Direct Sales 工厂直销

As a global supplier of automotive starter solenoid switches and components, Kedong Auto Parts is committed to creating added value for global customers.

作为全球汽车起动机电磁开关和组件供应商，科栋汽车零部件致力于为全球客户创造附加价值。

## Guaranteed Product Quality 保证产品质量

We provide starter solenoid switch and component solutions to numerous companies worldwide. We have 18 years of experience supplying starter solenoid switches and providing troubleshooting solutions for Chinese starter factories, with an annual defect rate of less than 0.02%.

我们为全球众多公司提供起动机电磁开关及组件解决方案。在提供起动机电磁开关方面，我们拥有18年的经验，并为中国的起动机工厂提供故障排除解决方案，其年度缺陷率低于0.02%。

## Wide Range of Product Applications 广泛的产品应用范围

Passenger cars, commercial vehicles, construction machinery, ships, military equipment, and more.

乘用车、商用车、工程机械、船舶、军用设备等。



# OUR SERVICE

## 我们服务

**Kedong Manufacturers Provide One-Stop Solenoid Solutions**

科栋制造商提供一站式电磁开关解决方案

### Customized Solutions 定制解决方案

We offer comprehensive services based on customer requirements, including packaging design, OEM packaging customization, product labeling customization, promotional video production, and more, helping clients build their brand image.

我们根据客户需求提供全面的服务，包括包装设计、OEM包装定制、产品标签定制、宣传视频制作等，帮助客户构建品牌形象。



### New Product Development Services 新产品开发服务

Based on customer needs, we provide a comprehensive service including supplier development, factory inspection, product photography, procurement follow-up, and product inspection. This improves customer new product development efficiency and reduces trial-and-error costs.

根据客户的需求，我们提供全面的服务，包括供应商开发、工厂检查、产品摄影、采购跟进以及产品检验。这能够提高客户新产品开发效率，并降低试错成本。



### Quality Assurance and Reliability Testing Services 质量保证和可靠性测试服务

Our products are all produced in our own finishing workshop, so we can control the quality from the source. Each batch of products undergoes strict factory testing.

我们的产品都在自己的精加工车间生产，因此我们可以从源头控制质量。每一个批次的产品都经过严格的工厂测试。



## Passenger car series

乘用车系列

### Product Overview 产品概述

The solenoid switch for passenger car starters is the core control unit of the starter system. As a key hub connecting the vehicle battery and the starter armature, its core function is to realize the coordinated control of mechanical action and circuit on-off through the principle of electromagnetic induction, ensuring the accurate meshing of the drive gear and flywheel ring gear and the reliable connection of the main circuit during the engine starting process. This component is compatible with mainstream passenger car gasoline engines and diesel engines, and is widely used in various models such as compact cars, mid-sized SUVs, and MPVs. It is a key part to ensure the stable starting performance of the vehicle.

乘用车起动机电磁开关是起动机系统的核心控制单元，作为连接车载蓄电池与起动机电枢的关键枢纽，其核心功能是通过电磁感应原理实现机械动作与电路通断的协同控制，确保发动机启动过程中驱动齿轮与飞轮齿圈的精准啮合及主电路的可靠接通。该部件适配主流乘用车汽油发动机与柴油发动机，广泛应用于紧凑型轿车、中型 SUV、MPV 等多种车型，是保障车辆启动性能稳定的关键零部件。

### Structural Composition 结构组成

The solenoid switch for passenger car starters adopts a modular integrated design, mainly composed of the following core components, which work together to realize functions:

乘用车起动机电磁开关采用模块化集成设计，主要由以下核心部件组成，各部件协同实现功能：

Component Name (Chinese) 部件名称（中文）	Component Name (English) 部件名称（英文）	Material/Specification 材质 / 规格	Core Function 核心作用
Pull-in Coil & Hold Coil 吸引线圈与保持线圈	Pull-in Coil & Hold Coil 吸引线圈与保持线圈	Enamelled copper wire (wire diameter 0.6-1.2mm) 漆包铜线(线径 0.6-1.2mm)	Generate electromagnetic attraction when energized to drive the iron core movement 通电产生电磁吸力，驱动铁芯运动
Iron Core 铁芯	Iron Core 铁芯	Low carbon steel (08#/10#) 低碳钢 (08#/10#)	Transmit electromagnetic attraction and drive the fork action 传递电磁吸力，带动拨叉动作
Return Spring 复位弹簧	Return Spring 复位弹簧	Carbon steel wire (SWP-B) 碳钢丝 (SWP-B)	Push components to reset after the coil is de-energized 线圈断电后推动部件复位
Contact Plate 接触盘	Contact Plate 接触盘	Purple copper (T2-Y2) 紫铜 (T2-Y2)	Connect/disconnect the main circuit and carry large current 接通 / 断开主电路，承载大电流
Main Contacts 主触点	Main Contacts 主触点	Purple copper (T2Y) 紫铜 (T2Y)	Cooperate with the contact plate to ensure reliable on-off of the main circuit 与接触盘配合，确保主电路可靠通断
Housing 外壳	Housing 外壳	Low-carbon steel (08# cold extrusion formed) 低碳钢 (08#冷挤压成型)	Protect internal components and provide installation positioning 保护内部部件，提供安装定位

### Functional Features 功能特点

#### ◎ High Reliability:

Adopting silver-based alloy contacts and high-strength structural parts, it is resistant to arc ablation and mechanical wear, and can work stably in the ambient temperature range of -40°C~125°C, meeting the service life of more than 50,000 starting cycles;

#### ◎ Large Current Carrying Capacity:

The rated working current of the main circuit can reach 200-500A, the peak current is up to 600A, and the contact resistance is  $\leq 5\text{m}\Omega$ , ensuring stable current transmission during the starting process;

#### ◎ Fast Response Performance:

After the coil is energized, the iron core action response time is  $\leq 0.3\text{s}$ , and the meshing time between the drive gear and the flywheel ring gear is  $\leq 0.5\text{s}$ , improving the engine starting efficiency;

#### ◎ Safety Protection Design:

Built-in overcurrent protection structure can avoid excessive ablation of contacts when abnormal large current occurs in the main circuit; it also has anti-reverse function to prevent the starter from reversing and being damaged after the engine starts;

#### ◎ Lightweight and Compact:

The overall weight is  $\leq 800\text{g}$ , and the installation size is compatible with M6/M8 standard bolts, which can be flexibly integrated into different types of starter assemblies.

#### ◎ 高可靠性:

采用银基合金触点与高强度结构件，耐电弧烧蚀、抗机械磨损，在 -40°C~125°C 环境温度下可稳定工作，满足5万次以上启动循环寿命；

#### ◎ 大电流承载能力:

主电路额定工作电流可达 200-500A，峰值电流最高 600A，接触电阻  $\leq 5\text{m}\Omega$ ，确保启动过程中电流传输稳定；

#### ◎ 快速响应性能:

线圈通电后，铁芯动作响应时间  $\leq 0.3\text{s}$ ，驱动齿轮与飞轮齿圈啮合时间  $\leq 0.5\text{s}$ ，提升发动机启动效率；

#### ◎ 安全保护设计:

内置过流保护结构，当主电路出现异常大电流时，可避免触点过度烧蚀；同时具备防反转功能，防止发动机启动后起动机倒转损坏；

#### ◎ 轻量化与紧凑型:

整体重量  $\leq 800\text{g}$ ，安装尺寸适配 M6/M8 标准螺栓，可灵活集成于不同型号起动机总成。



## Commercial vehicle series

### Commercial vehicle series

#### Product Overview 产品概述

The solenoid switch for commercial vehicle starters is the core control component of the commercial vehicle starter system. As a key hub connecting the vehicle's large-capacity battery and the starter armature, it is designed for commercial vehicles (heavy trucks, medium trucks, light trucks, large buses, etc.) with large engine displacement and high starting load. By enhancing electromagnetic attraction and current-carrying capacity, it realizes precise coordination between mechanical action and circuit on-off, ensuring reliable meshing of the drive gear and flywheel ring gear and stable connection of the main circuit when starting large-displacement diesel engines (mainstream 2.8L-13L). This component is compatible with the mainstream 12V/24V power system of commercial vehicles, and can withstand complex working conditions (frequent start-stop, high vibration, high-low temperature cycles). It is a key part to ensure the attendance rate and starting reliability of commercial vehicles.

商用车起动机电磁开关是商用车起动机系统的核心控制部件，作为连接车载大容量蓄电池与起动机电枢的关键枢纽，针对商用车（重卡、中卡、轻卡、大型客车等）发动机排量大、启动负荷高的特点，通过强化电磁吸力与电流承载能力，实现机械动作与电路通断的精准协同，确保大排量柴油发动机（主流 2.8L-13L）启动时驱动齿轮与飞轮齿圈的可靠啮合及主电路的稳定接通。该部件适配商用车 12V/24V 主流电源系统，可耐受复杂工况（频繁启停、高振动、高低温循环），是保障商用车出勤率与启动可靠性的关键零部件。

#### Structural Composition 结构组成

The solenoid switch for commercial vehicle starters adopts a heavy-duty reinforced design. The material and structure of core components are upgraded for high-load working conditions of commercial vehicles, and each component works together to achieve high-reliability functions:

商用车起动机电磁开关采用 heavy-duty 强化设计，核心部件材质与结构针对商用车高负荷工况升级，各部件协同实现高可靠性功能：

Component Name (Chinese) 部件名称（中文）	Component Name (English) 部件名称（英文）	Material/Specification 材质 / 规格	Core Function 核心作用
Pull-in Coil & Hold Coil 吸引线圈与保持线圈	Pull-in Coil & Hold Coil 吸引线圈与保持线圈	High-strength enameled copper wire (wire diameter 0.8-2.0mm, number of turns ≥500) 高强度漆包铜线，线径 0.8-2.0mm，匝数 ≥500 匝	Generate super-strong electromagnetic attraction through high current to drive the thickened iron core movement 通过高电流产生超强电磁吸力，驱动加粗铁芯运动
Iron Core 铁芯	Iron Core 铁芯	Medium carbon steel (08# steel, diameter 20-25mm) 低碳钢（08# 钢，直径 20-25mm）	Bear large electromagnetic attraction and stably transmit power to the fork 承受大电磁吸力，稳定传递动力至拨叉
Return Spring 复位弹簧	Return Spring 复位弹簧	High-strength spring steel (60Si2Mn, wire diameter 2-5mm) 高强度弹簧钢（60Si2Mn，线径 2-5mm）	Provide strong reset force to ensure quick reset after power-off 提供强劲复位力，确保断电后快速复位
Contact Plate 接触盘	Contact Plate 接触盘	High-silver-content silver-copper alloy (AgCu40, thickness 3-5mm) 高银含量银铜合金（AgCu40，厚度 3-5mm）	Reduce contact resistance, carry ultra-large current (≥1200A), and resist arc ablation 降低接触电阻，承载超大电流（≥1200A），抗电弧烧蚀
Main Contacts 主触点	Main Contacts 主触点	Silver-tungsten alloy (AgW85, diameter 18-25mm) 银钨合金（AgW85，直径 18-25mm）	Cooperate with the contact plate, withstand high-frequency on-off impact, and extend service life 与接触盘配合，耐受高频通断冲击，延长使用寿命
Housing 外壳	Housing 外壳	Cold-rolled steel plate (SPCC, thickness 2.0-3.0mm, surface galvanized + sealed) / 08# steel, cold extrusion formed. 冷轧钢板（SPCC，厚度 2.0-3.0mm，表面镀锌+封闭）/ 08# 钢冷挤压成型	Resist impact and corrosion, protect internal components from harsh working conditions 抗冲击、防腐蚀，保护内部部件免受恶劣工况影响
Terminal 接线端子	Terminal 接线端子	Red copper (T2, cross-sectional area ≥10mm <sup>2</sup> ) 紫铜（T2，截面积 ≥10mm <sup>2</sup> ）	Reduce resistance at the terminal and ensure stable transmission of large current 降低接线处电阻，确保大电流稳定传输

## Functional Features 功能特点

### Super Weather-Resistant and High Reliability:

Adopting heavy-duty reinforced structure and high-wear-resistant materials, it can work stably in the extreme temperature range of -40°C~150°C, withstand frequent start-stop of commercial vehicles (10-20 starts per day on average), meet the service life of more than 40,000 starting cycles, and the failure rate is ≤0.5% per year;

### Ultra-Large Current Carrying Capacity:

The rated working current of the main circuit is 400-800A, the peak current can reach 1200A, and the contact resistance is ≤3mΩ. It is suitable for the high-power starting demand of commercial vehicle large-displacement engines (2.8L-13L), avoiding weak starting caused by current loss during starting;

### Vibration and Impact Resistance:

Core components adopt anti-loosening structure design (such as lock nuts, positioning pins), and the housing thickness is increased to 2.0-3.0mm. It can withstand continuous vibration of 10-2000Hz and acceleration of 300m/s<sup>2</sup>, as well as impact with peak acceleration of 800m/s<sup>2</sup>, adapting to the bumpy road conditions of commercial vehicles;

### Upgraded Intelligent Protection Function:

Built-in two-stage overcurrent protection (first-level 600A early warning, second-level 1000A cut-off) to avoid contact burnout caused by main circuit short circuit; added temperature protection (automatic power-off at ≥150°C) to prevent component overheating damage under high-temperature working conditions;

### Universality and Adaptability:

Supports 12V/24V mainstream power systems of commercial vehicles, the installation size is compatible with M8/M10 standard bolts, and can be compatible with mainstream commercial vehicle engine starter assemblies such as Yuchai, Weichai, and Cummins, reducing the cost of adaptation and transformation.

### 超耐候高可靠性:

采用 heavy-duty 强化结构与高耐磨材质，可在 -40°C~150°C 极端温度范围稳定工作，耐受商用车高频启停（日均启动 10-20 次），满足 4 万次以上启动循环寿命，故障率 ≤0.5% / 年；

### 超大电流承载能力:

主电路额定工作电流 400-800A，峰值电流可达 1200A，接触电阻 ≤3mΩ，适配商用车大排量发动机（2.8L-13L）高功率启动需求，避免启动过程中电流损耗导致的启动无力；

### 抗振动抗冲击性能:

核心部件采用防松结构设计（如锁止螺母、定位销），外壳厚度提升至 2.0-3.0mm，可耐受 10-2000Hz、加速度 300m/s<sup>2</sup> 的持续振动，以及峰值加速度 800m/s<sup>2</sup> 的冲击，适应商用车颠簸路况；

### 智能保护功能升级:

内置双级过流保护（一级 600A 预警、二级 1000A 切断），避免主电路短路导致的触点烧毁；新增温度保护（≥150°C 自动断电），防止高温工况下部件过热损坏；

### 通用性与适配性:

支持 12V/24V 商用车主流电源系统，安装尺寸适配 M8/M10 标准螺栓，可兼容玉柴、潍柴、康明斯等主流商用车发动机起动机总成，减少适配改造成本。



## Heavy-duty vehicle series

重型车辆系列

### Product Overview 产品概述

The solenoid switch for heavy-duty vehicle starters is the core control unit of the starter system for heavy-duty vehicles (heavy trucks, mining trucks, engineering dump trucks, large tractor-trailers, etc.). Aiming at the characteristics of heavy-duty vehicles such as ultra-large engine displacement (13L-25L), high starting torque demand ( $\geq 1000\text{N}\cdot\text{m}$ ), and extreme working conditions (high dust, strong vibration, severe high-low temperature cycles), it adopts an ultra-heavy-duty reinforced design. By upgrading the electromagnetic drive module and current transmission structure, it realizes high-strength coordination between mechanical action and circuit on-off, ensuring ultra-reliable meshing of the drive gear and flywheel ring gear and stable high-current conduction of the main circuit when starting large-displacement diesel engines (such as Weichai WP15, Cummins X15, Yuchai YC6K, etc.). This component is compatible with the 24V/36V high-voltage power system of heavy-duty vehicles, and can withstand 15-30 times of high-frequency start-stop per day, long-term bumps and dust invasion. It is a key core component to ensure the attendance rate of heavy-duty vehicles in harsh scenarios such as mines and infrastructure construction.

重型车辆起动机电磁开关是重型车辆（重卡、矿用卡车、工程自卸车、大型牵引挂车等）起动机系统的核心控制单元，针对重型车辆发动机排量超大（13L-25L）、启动扭矩需求高（ $\geq 1000\text{N}\cdot\text{m}$ ）、工况极端（高粉尘、强振动、高低温剧烈循环）的特点，采用 ultra-heavy-duty 强化设计，通过升级电磁驱动模块与电流传输结构，实现机械动作与电路通断的高强度协同，确保大排量柴油发动机（如潍柴 WP15、康明斯 X15、玉柴 YC6K 等）启动时驱动齿轮与飞轮齿圈的超可靠啮合及主电路的大电流稳定导通。该部件适配重型车辆 24V/36V 高压电源系统，可耐受日均 15-30 次高频启停及长期颠簸、粉尘侵袭，是保障重型车辆在矿山、基建等恶劣场景下出勤率的关键核心部件。

### Structural Composition 结构组成

The solenoid switch for heavy-duty vehicle starters adopts an ultra-heavy-duty fully reinforced structure. The material and process of core components are fully upgraded for the extreme working conditions of heavy-duty vehicles, and each component works together to achieve ultra-high reliability functions:

重型车辆起动机电磁开关采用 ultra-heavy-duty 全强化结构，核心部件材质与工艺针对重型车辆极端工况全面升级，各部件协同实现超高可靠性功能：

Component Name (Chinese) 部件名称（中文）	Component Name (English) 部件名称（英文）	Material/Specification 材质 / 规格	Core Function 核心作用
Dual-Group Reinforced Coils (Pull-in + Hold) 双组强化线圈（吸引 + 保持）	Dual-Group Reinforced Coils (Pull-in + Hold) 双组强化线圈（吸引 + 保持）	High-temperature resistant enameled copper wire (wire diameter 1.8-2.5mm, number of turns $\geq 600$ , temperature resistance class 200°C) 耐高温漆包铜线（线径 1.8-2.5mm，匝数 $\geq 600$ 匝，耐温等级 200°C）	Generate $\geq 1200\text{N}$ electromagnetic attraction through ultra-high current to drive the ultra-thick iron core movement 通超高电流产生 $\geq 1200\text{N}$ 电磁吸力，驱动超粗铁芯运动
Ultra-Thick Solid Iron Core 超粗实心铁芯	Ultra-Thick Solid Iron Core 超粗实心铁芯	High-strength alloy steel (40CrNiMoA, diameter 25-35mm, surface nitriding treatment) 高强度合金钢（40CrNiMoA，直径 25-35mm，表面氮化处理）	Bear ultra-large electromagnetic attraction and transmit power to the fork without deformation 承受超大电磁吸力，无变形传递动力至拨叉
Ultra-High-Strength Return Spring 超高强度复位弹簧	Ultra-High-Strength Return Spring 超高强度复位弹簧	Special spring steel (50CrVA, wire diameter 3-8mm, heat treatment hardness HRC45-50) 特种弹簧钢（50CrVA，线径 3-8mm，热处理硬度 HRC45-50）	Provide $\geq 500\text{N}$ reset force to ensure quick reset under extreme working conditions 提供 $\geq 500\text{N}$ 复位力，确保极端工况下快速复位
Double-Layer Composite Contact Plate 双层复合接触盘	Double-Layer Composite Contact Plate 双层复合接触盘	Silver-tungsten alloy + copper substrate composite (AgW90 + T2 red copper, total thickness 5-8mm) 银钨合金 + 铜基板复合（AgW90+T2 紫铜，总厚度 5-8mm）	Contact resistance $\leq 2\text{m}\Omega$ , carry $\geq 1800\text{A}$ ultra-large current, and arc ablation resistance life increased by 50% 接触电阻 $\leq 2\text{m}\Omega$ ，承载 $\geq 1800\text{A}$ 超大电流，抗电弧烧蚀寿命提升 50%
Extra-Large Main Contacts 超大尺寸主触点	Extra-Large Main Contacts 超大尺寸主触点	Silver-tungsten alloy (AgW90, diameter 25-35mm, contact protrusion height $\geq 3\text{mm}$ ) 银钨合金（AgW90，直径 25-35mm，触点凸起高度 $\geq 3\text{mm}$ ）	Cooperate with the contact plate, withstand high-frequency high-current on-off impact, and avoid contact welding 与接触盘配合，耐受高频大电流通断冲击，避免触点熔焊
Dust-Proof Housing 防粉尘外壳	Dust-Proof Housing 防粉尘外壳	Cold-rolled steel plate (SPCC, thickness 3.0-4.5mm, surface Zn-Ni alloy coating + sealing rubber strip) 冷轧钢板（SPCC，厚度 3.0-4.5mm，表面锌镍合金镀层 + 密封胶条）	Protection class IP67, impact resistance and dust intrusion prevention, adapting to harsh environments such as mines and infrastructure 防护等级 IP67，抗冲击、防粉尘侵入，适应矿山、基建等恶劣环境
High-Voltage Terminal 高压接线端子	High-Voltage Terminal 高压接线端子	Oxygen-free red copper (T1, cross-sectional area $\geq 25\text{mm}^2$ , surface silver plating) 无氧紫铜（T1，截面积 $\geq 25\text{mm}^2$ ，表面镀银处理）	Resistance at the terminal $\leq 1\text{m}\Omega$ , ensuring lossless transmission of 1800A large current 接线处电阻 $\leq 1\text{m}\Omega$ ，确保 1800A 大电流无损耗传输
Anti-Reverse Pawl Assembly 防倒转棘爪组件	Anti-Reverse Pawl Assembly 防倒转棘爪组件	Carburized alloy steel (20CrMnTi, hardness HRC58-62) 渗碳合金钢（20CrMnTi，硬度 HRC58-62）	Prevent the starter from reversing after the engine starts, avoiding armature damage 防止发动机启动后起动机倒转，避免电枢损坏

### Functional Features 功能特点

#### Extreme Working Condition Weather Resistance:

Adopting ultra-heavy-duty fully reinforced structure and high-temperature resistant, corrosion-resistant materials, it can work stably in the ultra-wide temperature range of  $-50\text{°C}$ ~ $180\text{°C}$ , withstand high dust and strong vibration (acceleration  $400\text{m/s}^2$ ) in mine and infrastructure scenarios, meet the service life of more than 30,000 starting cycles, and the annual failure rate is  $\leq 0.3\%$ ;

#### Ultra-Large Current Carrying Capacity:

The rated working current of the main circuit is 800-1500A, the peak current can reach 2000A, and the contact resistance is  $\leq 2\text{m}\Omega$ . It is suitable for the high torque demand of 13L-25L ultra-large displacement engines (starting power  $\geq 15\text{kW}$ ), avoiding contact overheating or welding during high-current transmission;

#### Upgraded Impact and Vibration Resistance:

The housing thickness is increased to 3.0-4.5mm, and core components adopt a double anti-loosening structure (lock nut + spot welding fixation). It can withstand continuous vibration of 10-2000Hz and acceleration of 400m/s $^2$ , as well as impact with peak acceleration of  $1000\text{m/s}^2$ , adapting to the bumpy road conditions of heavy-duty vehicles;

#### Triple Intelligent Protection System:

Built-in two-stage overcurrent protection (first-level 1000A early warning, second-level 1500A cut-off) to prevent main circuit short circuit; added high-temperature protection (automatic power-off at  $\geq 180\text{°C}$ ) to avoid component overheating; integrated anti-reverse pawl to prevent the starter from reversing and being damaged after the engine starts;

#### Wide Adaptability Design:

Supports 24V/36V high-voltage power system of heavy-duty vehicles, the installation size is compatible with M10/M12 standard bolts, and can be compatible with mainstream heavy-duty engine starter assemblies such as Weichai, Cummins, Yuchai, and Xichai, reducing the adaptation and transformation cost of different vehicle models.

#### 极端工况耐候性:

采用 ultra-heavy-duty 全强化结构与耐高温、抗腐蚀材质，可在  $-50\text{°C}$ ~ $180\text{°C}$  超宽温度范围稳定工作，耐受矿山、基建场景的高粉尘、强振动（加速度  $400\text{m/s}^2$ ），满足 3 万次以上启动循环寿命，年均故障率  $\leq 0.3\%$ ；

#### 超大电流承载能力:

主电路额定工作电流 800-1500A，峰值电流可达 2000A，接触电阻  $\leq 2\text{m}\Omega$ ，适配 13L-25L 超大排量发动机（启动功率  $\geq 15\text{kW}$ ）的高扭矩需求，避免大电流传输时的触点过热或熔焊；

#### 抗冲击抗振动升级:

外壳厚度提升至 3.0-4.5mm，核心部件采用双重防松结构（锁止螺母 + 点焊固定），可耐受 10-2000Hz、加速度  $400\text{m/s}^2$  的持续振动，以及峰值加速度  $1000\text{m/s}^2$  的冲击，适应重型车辆颠簸路况；

#### 三重智能保护系统:

内置双级过流保护（一级 1000A 预警、二级 1500A 切断），防止主电路短路；新增高温保护（ $\geq 180\text{°C}$  自动断电），避免部件过热；集成防倒转棘爪，防止发动机启动后起动机倒转损坏；

#### 宽适配性设计:

支持 24V/36V 重型车辆高压电源系统，安装尺寸适配 M10/M12 标准螺栓，可兼容潍柴、康明斯、玉柴、锡柴等主流重型发动机起动机总成，减少不同车型的适配改造成本。



## Relay series

继电器系列

### Product Overview 产品概述

The starter relay is a key control component in the vehicle starting system. As a "bridge" connecting the vehicle-mounted power supply, start switch and starter solenoid switch, its core function is to control large current through small current, realizing indirect control of the starter solenoid switch and avoiding ablation of the start switch due to direct bearing of large current. This component is widely compatible with passenger cars, commercial vehicles and heavy-duty vehicles, and adapts to 12V/24V/36V mainstream vehicle-mounted power systems. It can work stably under complex working conditions such as high and low temperatures, vibration and dust. It is an important part to ensure the safe and reliable operation of the vehicle starting system, which can effectively extend the service life of the start switch and improve the overall stability of the starting system.

起动机继电器是车辆启动系统中的关键控制元件，作为连接车载电源、启动开关与起动机电磁开关的“桥梁”，其核心功能是通过小电流控制大电流，实现对起动机电磁开关的间接控制，避免启动开关因直接承载大电流而烧蚀。该部件广泛适配乘用车、商用车及重型车辆，适配 12V/24V/36V 主流车载电源系统，能在高低温、振动、粉尘等复杂工况下稳定工作，是保障车辆启动系统安全、可靠运行的重要零部件，可有效延长启动开关使用寿命，提升启动系统整体稳定性。

### Functional Features 功能特点

#### Efficient Current Control:

Adopting the design of small current (1-5A) controlling large current (150-1000A), it avoids the start switch directly bearing large current, effectively prevents the start switch from ablation, and extends its service life (service life can reach more than 50,000 times);

#### Excellent Weather Resistance:

The housing is made of reinforced nylon or anti-rust steel plate, and the internal contacts are made of silver-based alloy. It can work stably in the temperature range of -40°C-150°C, withstand the humid environment with relative humidity  $\leq 95\%$  (at 40°C), and adapt to the complex working conditions of vehicles;

#### Strong Anti-Interference Ability:

The coil adopts a shielding design to reduce the interference of electromagnetic radiation to surrounding electronic components; the contacts are made of arc-ablation-resistant materials, and there is no obvious arc at the moment of on-off, avoiding electromagnetic interference to the vehicle-mounted circuit;

#### High Reliability and Safety:

The core components have undergone strict life tests ( $\geq 5,000$  on-off cycles) and vibration resistance tests (10-2000Hz, acceleration 200-400m/s<sup>2</sup>), with low failure rate (annual failure rate  $\leq 0.5\%$ ); some models have built-in overcurrent protection function, which automatically disconnects when abnormal large current occurs in the circuit to protect the starter and vehicle-mounted power supply;

#### 高效电流控制:

采用小电流 (1-5A) 控制大电流 (150-1000A) 的设计，避免启动开关直接承载大电流，有效防止启动开关烧蚀，延长其使用寿命 (使用寿命可达 5 万次以上)；

#### 优异耐候性能:

外壳采用增强尼龙或防锈钢板材质，内部触点采用银基合金，可在  $-40^{\circ}\text{C}-150^{\circ}\text{C}$  温度范围稳定工作，耐受相对湿度  $\leq 95\%$  (40°C 时) 的潮湿环境，适应车辆复杂工况；

#### 强抗干扰能力:

线圈采用屏蔽设计，减少电磁辐射对周边电子元件的干扰；触点采用抗电弧烧蚀材质，通断瞬间无明显电弧，避免对车载电路造成电磁干扰；

#### 高可靠性与安全性:

核心部件经过严格的寿命测试 ( $\geq 5$  万次通断循环) 与耐振动测试 (10-2000Hz, 加速度 200-400m/s<sup>2</sup>)，故障率低 (年均故障率  $\leq 0.5\%$ )；

部分型号内置过流保护功能，当电路出现异常大电流时自动断开，保护起动机与车载电源；



AUTOMOTIVE APPLIANCES  
Professional manufacturing  
汽车电器专业制造



修理套件  
Maintenance kit



电磁线圈  
Electromagnetic coil



开关柱塞  
Solenoid Plunger



宁波市科栋汽车零部件有限公司  
Ningbo Kedong Auto Parts Co., Ltd.

让维修  
Repair  
更平顺 更高效 更精密  
Smoothly efficient Precise

电磁线圈&配件套装  
SOLENOID COIL AND  
MAINTENANCE KIT