

江苏海菱碳制品有限公司
JIANGSU HAILING CARBON PRODUCTS CO.,LTD

巩固全球碳刷市场竞争优势，
稳居行业领军

Consolidate competitive strengths in the global
carbon brush market and secure enduring industry leadership.

☎ 0086-513 82772222 82770999

📠 0086-513 82866500

📍 No.11,Tongguang Street,Baochang Town,HaimenDistrict,Nantong City,Jiangsu Province,China

🌐 www.hlcarbonproducts.com www.cncarbonbrush.com

🌐 E-commerce of Alibaba.com: <https://hlcarbon.en.alibaba.com>



海菱 碳制品材质手册

CARBON PRODUCTS
R&D MATERIAL CATALOGUE

We will do Better!

专注碳刷研产，为知名品牌提供高品质产品

Specialized in the R&D and production of carbon brushes,
providing high-quality products for well-known brands

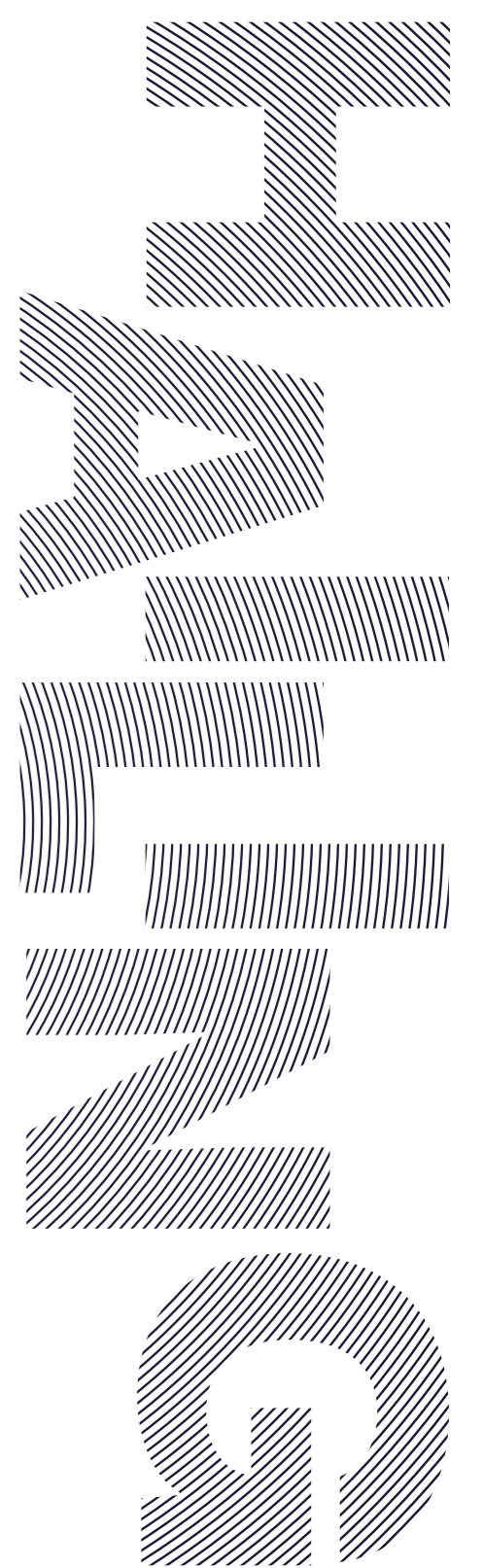


Table of Contents

目录

01 关于我们

About Us

企业简介	003	发展历程	005	企业文化	007
Company Profile		Milestone		Company Culture	

研发制造	009	产品链条三大模式	011	荣誉证书	013
Research and Manufacturing		The Three Major Industrial Chain Models		Honorary Certificate	

专注碳刷研产，为知名品牌提供高品质产品

Specialized in the R&D and production of carbon brushes, providing high-quality products for well-known brands

02 材质性能推荐表

Material Performance Recommendation

电动工具类	015	家用及其他电器类	019	汽车配件类	022
Power Tools Category		Household and Other Electrical Appliances Category		Automotive Parts Category	

HAILING

江苏海菱碳制品有限公司初创于 1997 年，2004 年 10 月正式注册成立，注册资本 1000 万元，占地 12876 平方米，现有员工 200 余人；作为国内外碳刷行业领军企业，公司专业研发生产电动工具、汽车、家电、工业机械、微电机等领域的碳刷产品。

Jiangsu Hailing Carbon Products Co., Ltd. was founded in 1997 and officially registered in Oct 2004, with RMB 10 million registered capital, 12,876m² land and over 200 employees. As a leading global carbon brush enterprise, it specializes in R&D and production of carbon brushes for power tools, automobiles, home appliances, industrial machinery and micro-motors.

成立时间
Time of establishment

1997

员工数量
Number of employees

200+

COMPANY PROFILE 企业简介

自成立以来，公司始终秉承“诚信经营，质量至上”的发展理念，深耕碳刷行业二十余年，不仅在 2019 年实现碳刷月产量稳定达 1500 万只，还在 2020 年下旬推动新建厂房投产——该厂占地 32 亩、建筑面积 16000 平方米，供子公司“江苏民成碳素科技有限公司”使用；同时，公司通过引进新设备、强化自主创新能力，进一步确保碳刷产品性能稳居行业前列。

依托“品牌建设，自主创新”的核心战略，海菱成功配套多家国内外知名电机品牌，并多次获评“优秀供应商”；在内部管理层面，公司同样积极突破，通过与 ERP 系统咨询公司合作，引入先进的 ERP 管理系统，为制造型企业适应经济发展趋势提供了实践范本。此外，公司不仅拥有高新技术企业资质，还通过了 ISO14001 环境管理体系、ISO45001 职业健康安全管理体系、IATF16949 汽车行业质量管理体系认证，并严格执行 ISO9001 质量管理体系要求，实现从源头到成品的全流程质量控制，“海菱”商标也因此先后被认定为“南通市知名商标”和“江苏省著名商标”。

基于现有的技术实力与管理基础，公司未来将继续坚持技术创新与精益管理，进一步巩固在全球碳刷市场的竞争优势。

Adhering to "Integrity in Operation, Quality First" for over 20 years, Hailing achieved 15 million monthly carbon brush output in 2019. It launched a new 21,333 m² (32 mu) factory (16,000 m² building area) in late 2020 for its subsidiary Jiangsu Mincheng Carbon Technology Co., Ltd. Meanwhile, via new equipment & independent innovation, its carbon brushes maintain top industry performance.

Guided by "Brand Building, Independent Innovation", Hailing partners with top domestic/international motor brands and wins "Excellent Supplier" awards. Internally, it adopted an advanced ERP system (a model for manufacturers). It holds High-Tech Enterprise qualification & certifications (ISO 14001, ISO 45001, IATF 16949), follows ISO 9001 for full-process quality control, and its "Hailing" trademark is recognized as "Nantong Famous Trademark" and "Jiangsu Famous Trademark".

Going forward, Hailing will keep innovating & practicing lean management to strengthen its global competitiveness in the carbon brush market.

研发时间
Years' R&D experience

20

国际贸易经验
Years' Global Trade Experience

15+

覆盖国家
Covered countries

30+

MILESTONE 发展历程

诚信筑基 Integrity 质量立本 Quality 品牌至上 Brand Priority 创新赋能 Innovation

·1997

海菱公司初创 The initial establishment of HAILING Company

·2004

海菱公司正式注册 HAILING Company was officially registered

·2008

与国际标准接轨，开展国际技术合作 Align with international standards and carry out international technological cooperation

·2019

在营销改革和拓展国际市场的推动下，业绩实现了快速发展，其开放性和国际化程度也随之提高。 HAILING has achieved rapid development, with marketing reforms and expansion into international markets, making it more open and international.

·2020

公司新建了一座占地面积达 16,000 平方米的工厂，并将其作为研发中心。新的子公司已正式成立。 Our company has built a new factory with a floor area of 16,000 square meters, which serves as a research and development center. A new subsidiary has been formally established.

·2023-

我司开始使用最新版本的ERP管理系统，并且营销模式往电子商务拓宽。 Our company has started using the latest version of the ERP management system and is expanding the marketing model into e-commerce.

COMPANY CULTURE 企业文化

我们会做得更好!

We will do Better!



愿景
Vision

巩固全球碳刷市场竞争优势，稳居行业领军

Consolidate competitive strengths in the global carbon brush market and secure enduring industry leadership



使命
Mission

专注碳刷研产，为知名品牌提供高品质产品

Specialized in the R&D and production of carbon brushes, providing high-quality products for well-known brands



价值观
Value

诚信筑基 质量立本 品牌至上 创新赋能

Integrity as the foundation, quality as the root, brand as the priority, and innovation as the driver



品质方针
Quality

品质保证 体系监督

Quality Assurance, System Supervision

R&D AND INTELLIGENT MANUFACTURING 研发智造

-  **多条专利技术**
Multiple patented technologies
-  **与专业高校合作交流**
Cooperate and exchange with professional universities
-  **一流的技术团队**
Top-tier technical team

01 混料车间 Material Mixing Workshop

- 精准控配**
Precise Proportioning Control
- 专业设备**
Professional Equipment
- 标准工艺**
Standardized Processes



搅拌车间
Mixing Workshop



混粉车间
Powder Mixing Workshop



自然晾干间
Natural Air-Drying Room



烘粉车间
Powder Baking Workshop



振动筛房
Vibratory Screen Room

02 压制车间 Pressing Workshop



压制作业区
Pressing Work Area

03 烧结车间 Sintering Workshop



井式烧结车间
Well-Type Sintering Workshop



网带炉烧结车间
Mesh Belt Furnace Sintering Workshop

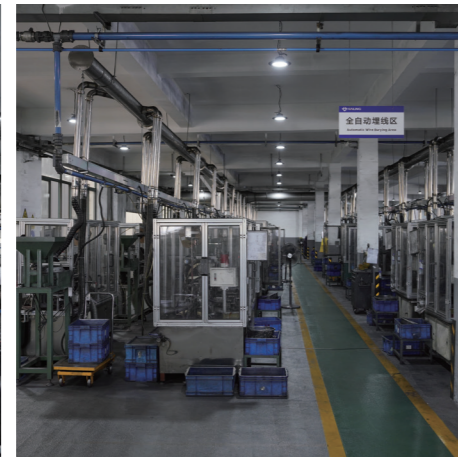


HK炉烧结车间
HK Furnace Sintering Workshop



TC固化车间
TC Curing Workshop

04 机加工车间 Machining Workshop

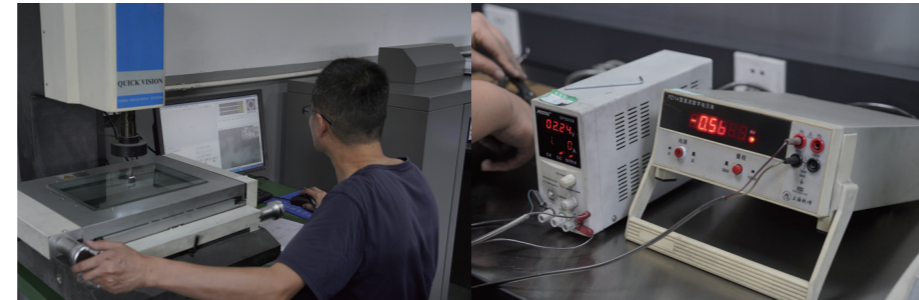


全自动加工作业区
Fully Automated Processing Work Area

高效率
High Efficiency

高品质
High Quality

05 静态测试实验室 Static Testing Laboratory



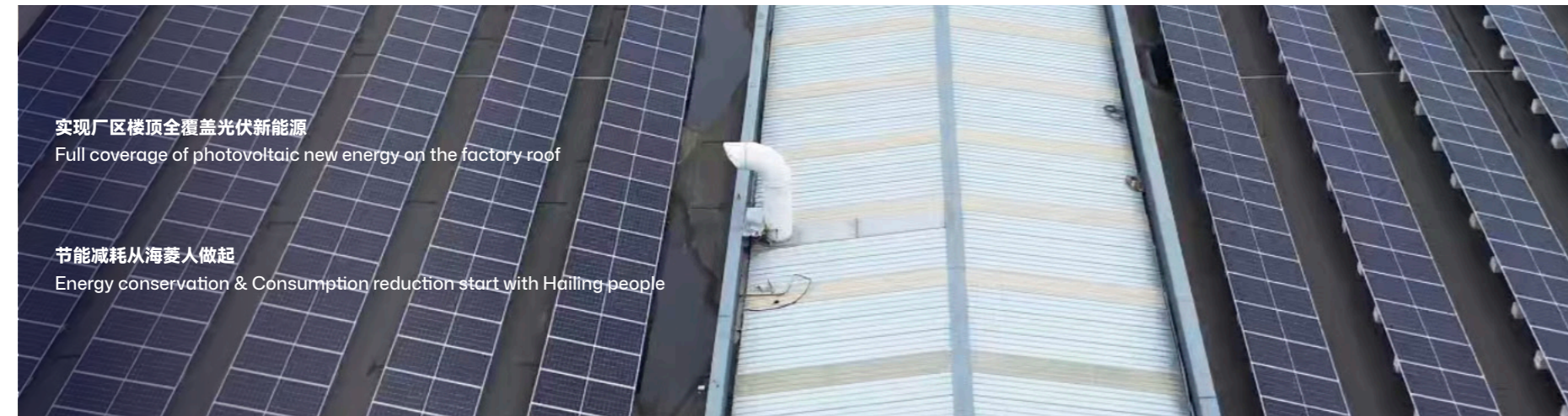
06 动态测试实验室 Dynamic Testing Laboratory



07 仓库管理 Warehouse Management



T0 可持续化 Sustainability



HONORARY CERTIFICATE 荣誉证书



QUALIFICATIONS 资质



/// The Three Major Industrial Chain Models

/// 产业链三大模式

01

生产制造
OEM



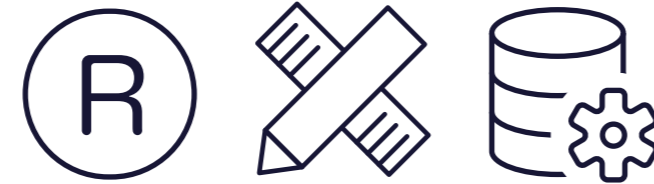
02

产品设计+生产制造
ODM



03

产品设计+自主品牌+生产制造
OBM



/// MATERIAL GRADE CLASSIFICATION TABLE

/// 材质牌号分类表

牌号类型 Grade Type	碳刷类型 Carbon Brush Types	备注 Remark
HE	电化石墨类 Electrographite	高导热和导电率，具有良好的强度、形成皮膜能力及抗电腐蚀能力 High thermal and electrical conductivity, has good strength and firming properties, very resistant to effects of electrical discharges.
HG	金属石墨类 Metal-Graphite Type	电阻率低满足高电流，低电压降需求 Low resistivity to cover high current, low voltage applications.
HF	酚醛树脂类 Phenolic Resin Type	耐温性能好，可适配的电流密度区间宽 Good heat resistance with capability to withstand a wide range of current density.
HP	沥青粘结类 Pitch-Bonded Type	高温处理材料稳定性高，抗火花及过载能力强 High-temperature treated materials with high stability less affected by sparking and overloading.
HL	环氧树脂类 Epoxy Resin Type	高接触压降具备换向性能良好，低摩擦适合高速应用 High contact and outstanding commutating ability; Low friction is suitable for high-speed applications.



POWER TOOLS CATEGORY

广泛的兼容性
Wide compatibility

精密压铸，耐磨材料
Precision die-cast with wear-resistant material

导电性稳定
Stable electrical conductivity

抗火花强
Strong spark resistance

Carbon Brush Material Performance Recommendation Table (Power Tools Category) 碳刷材质性能推荐表 (电动工具类)



碳刷类型 Carbon Brush Types	材质牌号 Material No.	电阻率 Resistivity Ω·m	抗折强度 Flexural Strength Mpa	肖氏硬度 Shore Hardness	体积密度 Bulk Density g/cm³	接触压降 Contact Voltage Drop V	摩擦系数 Coefficient of Friction	额定电流密度 Rated Current Density A/cm²	允许圆周速度 Allowable Peripheral Speed m/s	金属含量 Metal Content %	主要应用 Main Applications	
电化石墨 Electrographite (HE)	HE102	45	20.0	55	1.60	0.8-1.3	≤0.1	15	40		110V角磨、抛光机、切割机、电磨、空压机 110V Angle Grinder, Polisher, Cutting Machine, Circular Saw, Air Compressor	
	HE103	45	20.0	55	1.60	0.8-1.3	≤0.1	15	40		110V角磨、抛光机、切割机、电磨、空压机 110V Angle Grinder, Polisher, Cutting Machine, Circular Saw, Air Compressor	
	HE105	45	20.0	55	1.60	0.8-1.3	≤0.1	15	40		110V电动工具、园林工具 110V Power Tools, Garden Tools	
	HE106	50	30.0	70	1.64	0.8-1.3	0.1-0.15	15	35		110V电动工具、园林工具 110V Power Tools, Garden Tools	
	HE107	50	30.0	70	1.64	0.8-1.3	0.1-0.15	15	35		110V电动工具、园林工具 110V Power Tools, Garden Tools	
	HE108	50	30.0	70	1.64	0.8-1.3	0.1-0.15	15	35		110V电动工具、园林工具 110V Power Tools, Garden Tools	
	HE109	50	25.0	60	1.60	0.8-1.3	0.1-0.15	15	40		110V电动工具、园林工具 110V Power Tools, Garden Tools	
	HE110	45	20.0	55	1.63	0.8-1.3	0.1-0.15	13	40		110V电钻、电锤、冲击钻、72-100V电动汽车电机 110V Electric Drill, Electric Hammer, Impact Drill, 72-100V Electric Vehicle Motor	
	金属石墨类 Metal-Graphite Type (HG)	HG200	0.07	45	20	3.64	≤0.8	0.1-0.15	22	30	68	3V-9V无线电动工具、真空电机、3V-9V扫地机器人 3V-9V Cordless Power Tools, DC Motors, 3V-9V Floor-Cleaning Robots
		HG206	0.76	26	25	3.18	0.8-1.3	0.1-0.15	20	30	55	12-18V无线电动工具、12V无线吸尘器 12-18V Cordless Power Tools, 12V Cordless Vacuum Cleaners
HG209		0.8	23	25	3	0.8-1.3	0.1-0.15	20	30	50	12-18V无线电动工具 12-18V Cordless Power Tools	
HG210		0.85	27	23	2.6	0.8-1.3	0.1-0.15	20	30	42	18-24V无线电动工具、14-18V无线吸尘器/地刷 18-24V Cordless Power Tools, 14-18V Cordless Vacuum Cleaners/Floor Brushes	
HG213		1.5	26	24	2.43	0.8-1.3	0.1-0.15	15	30	35	18-24V无线电动工具、18-24V无线吸尘器/地刷 18-24V Cordless Power Tools, 18-24V Cordless Vacuum Cleaners/Floor Brushes	
HG214		2	22	26	2.45	0.8-1.3	0.1-0.15	15	30		18-24V无线吹风机、24V暖风/热风电机、12V冷暖风扇电机 18-24V Cordless Hair Dryers, 24V Heating/Blower Motors, 12V Condensing Fan Motors	
HG219		3.25	20	21	2.21	0.8-1.3	0.1-0.15	15	30	30	18-24V无线吹风机、18-24V无线电动工具 18-24V Cordless Hair Dryers, 18-24V Cordless Power Tools	
HG221		6	20	17	2.44	0.8-1.3	0.1-0.15	13	30	30	18-24V无线电动工具、18-24V无线吸尘器/地刷 18-24V Cordless Power Tools, 18-24V Cordless Vacuum Cleaners/Floor Brushes	
HG222		30	25	27	2.22	0.8-1.3	0.1-0.15	13	30	24	36-60V无线电动工具、无线家用电器 36-60V Cordless Power Tools, Cordless Household Appliances	
HG223		120	28	22	1.97	0.8-1.3	0.1-0.15	13	40	15	120-230V高压直流电机、120-240V高压DC家用电器电机 120-230V High-Voltage DC Motors, 120-240V High-Voltage DC Household Appliance Motors	
酚醛树脂类 Phenolic Resin Type (HF)	HF501	23.2	24	31	1.73	0.8-1.3	0.1-0.15	13	40		60-110V DC剪草机、割草机、36-60V无线电动工具、24-100V电动汽车电机 60-110V DC Hedge Trimmers, Lawn Mowers, 36-60V Cordless Power Tools, 24-100V Electric Vehicle Motors	
	HF502	28.5	24.5	32	1.75	0.8-1.3	0.1-0.15	13	40		120V吹风机、110V砂带机、磨砂机 120V Hair Dryer, 110V Belt Sander, Sanding Machine	
	HF505	70	16	20	1.75	0.1-1.3	≤0.1	13	40		120V电动工具、家用电器、园林工具 120V Power Tools, Household Appliances, Garden Tools	
	HF508	166	16	30	1.65	1.4-2.3	0.1-0.15	13	40		110V电动工具、12V搅拌机、100V按摩椅电机 110V Power Tools, 12V Blenders, 100V Massage Chair Motors	

碳刷类型 Carbon Brush Types	材质牌号 Material No.	电阻率 Resistivity Ω·m	抗折强度 Flexural Strength Mpa	肖氏硬度 Shore Hardness	体积密度 Bulk Density g/cm³	接触压降 Contact Voltage Drop V	摩擦系数 Coefficient of Friction	额定电流密度 Rated Current Density A/cm²	允许圆周速度 Allowable Peripheral Speed m/s	金属含量 Metal Content %	主要应用 Main Applications
沥青粘结类 Pitch-Bonded Type (HP)	HP600	245	21.6	24	1.76	0.8-1.3	0.1-0.15	15	30		110V电动工具、园林工具、空压机 110V Power Tools, Garden Tools, Air Compressors
	HP601	300	12	20	1.7	0.8-1.3	0.1-0.15	15	50		110V电动工具、家用电器 110V Power Tools, Household Appliances
	HP602	400	20	35	1.65	1.4-2.3	0.1-0.15	15	50		120V/230V电动工具、园林工具、家用电器 120V/230V Power Tools, Garden Tools, Household Appliances
	HP603	450	18	32	1.6	1.4-2.3	0.1-0.15	15	50		120V/230V切割机、电圆锯 120V/230V Cutting Machines, Circular Saws
	HP606	550	16	40	1.6	1.4-2.3	0.1-0.15	15	50		滚筒洗衣机用串激电机/电动工具/园林工具 Series-wound Motors for Front-Load Washing Machines, Power Tools, Garden Tools
	HP607	600	18	42	1.62	1.4-2.3	0.1-0.15	15	60		滚筒洗衣机用串激电机/电动工具/园林工具 Series-wound Motors for Front-Load Washing Machines, Power Tools, Garden Tools
	HP609	750	21.6	20	1.72	1.4-2.3	0.1-0.15	12	30		230V电动工具、角磨 230V Power Tools, Angle Grinders
	HP610	765	20	34	1.57	1.4-2.3	0.1-0.15	13	25		230V电动工具、园林工具 230V Power Tools, Garden Tools
	HP611	780	17	33	1.63	1.4-2.3	0.1-0.15	15	45		120V/230V电动工具、园林工具、家用电器 120V/230V Power Tools, Garden Tools, Household Appliances
	HP612	810	22	34	1.66	1.4-2.3	0.1-0.15	13	30		110V/230V角磨、抛光机、320V砂带机、抛光机、110V切割机、电圆锯 110V/230V Angle Grinders, Polishers, 320V Belt Sanders, Polishers, 110V Cutting Machines, Circular Saws
	HP615	850	20	35	1.62	1.4-2.3	0.1-0.15	15	45		电动工具、园林工具、家用电器 Power Tools, Garden Tools, Household Appliances
	HP616	945	18	35	2	1.4-2.3	0.1-0.15	13	25		230V电钻、冲击钻、电锤、230V高压真空搅拌机 230V Electric Drills, Impact Drills, Rotary Hammers, 230V High-Voltage DC Blenders
	HP618	960	23	48	1.58	1.4-2.3	0.1-0.15	15	35		230V角磨类电动工具、滚筒洗衣机用串激电机 230V Angle Grinder-type Power Tools, Series-wound Motors for Front-Load Washing Machines
	HP619	980	21	34	1.62	1.4-2.3	0.1-0.15	12	25		230V电动工具、园林工具 230V Power Tools, Garden Tools
	HP620	1050	20	41	1.52	1.4-2.3	0.1-0.15	12	35		滚筒洗衣机用串激电机、电动工具、园林工具、家用电器 Series-wound Motors for Front-Load Washing Machines, Power Tools, Garden Tools, Household Appliances
	HP622	1150	20	26	1.68	1.4-2.3	0.1-0.15	12	30		230V电钻、砂带机、打磨机、角磨、切割机 230V Electric Drills, Belt Sanders, Sanding Machines, Angle Grinders, Cutting Machines
	HP625	1200	18	40	1.58	1.4-2.3	0.1-0.15	12	35		230V电动工具、园林工具 230V Power Tools, Garden Tools
	HP626	1210	16.5	23	1.66	1.4-2.3	0.1-0.15	12	30		230V冲击钻、电动螺丝刀、角磨、电圆锯、高压清洗机 230V Impact Drills, Electric Screwdrivers, Angle Grinders, Circular Saws, High-Pressure Washers
HP627	1400	15	35	1.62	2.4-3.6	0.1-0.15	12	30		230V角磨机、切割机用 For 230V Angle Grinders and Cutting Machines	
HP628	1450	14.4	18	1.7	2.4-3.6	0.1-0.15	12	30		230V角磨、切割机、抛光机 230V Angle Grinders, Cutting Machines, Polishers	
HP630	1800	12.8	24	1.63	2.4-3.6	0.1-0.15	12	30		230V角磨、230V高压清洗机用 For 230V Angle Grinders and 230V High-Pressure Washers	
HP631	1900	18	33	1.6	2.4-3.6	0.1-0.15	10	25		230V电动工具、园林工具、家用电器 230V Power Tools, Garden Tools, Household Appliances	
HP632	1900	18	28	1.55	2.4-3.6	0.1-0.15	10	25		230V电钻、冲击钻、电锤、电圆锯、链锯 230V Electric Drills, Impact Drills, Rotary Hammers, Demolition Hammers, Circular Saws, Chainsaws	
HP633	2200	18	26	1.5	2.4-3.6	0.1-0.15	10	25		230V电钻、冲击钻、电锤、电圆锯、链锯 230V Electric Drills, Impact Drills, Rotary Hammers, Demolition Hammers, Circular Saws, Chainsaws	
HP635	2200	8	18	1.53	2.4-3.6	0.1-0.15	10	25		230V冲击钻 230V Impact Drill	
HP636	3200	12	30	1.5	2.4-3.6	0.1-0.15	10	25		230V冲击钻 230V Impact Drill	
环氧树脂类 Epoxy Resin Type (HL)	HL901	200	30	22	1.62	1.4-2.3	≤0.1	12	50		110V清洗机 110V Cleaner
	HL902	320	25	22	1.55	1.4-2.3	≤0.1	12	50		120V清洗机、120V电动工具 120V Cleaners, 120V Power Tools
	HL903	360	12	20	1.45	1.4-2.3	≤0.1	20	50		120V吸尘器、园林工具、家用电器、电动工具 120V Vacuum Cleaners, Garden Tools, Household Appliances, Power Tools

碳刷类型 Carbon Brush Types	材质牌号 Material No.	电阻率 Resistivity Ω·m	抗折强度 Flexural Strength Mpa	肖氏硬度 Shore Hardness	体积密度 Bulk Density g/cm³	接触压降 Contact Voltage Drop V	摩擦系数 Coefficient of Friction	额定电流密度 Rated Current Density A/cm²	允许圆周速度 Allowable Peripheral Speed m/s	金属含量 Metal Content %	主要应用 Main Applications
环氧树脂类 Epoxy Resin Type (HL)	HL904	400	15	19	1.5	1.4-2.3	≤0.1	18	48		电动工具、园林工具 Power Tools, Garden Tools
	HL907	480	24	25	1.7	1.4-2.3	≤0.1	12	50		120V吸尘器、高压清洗机、电动工具 120V Vacuum Cleaners, High-Pressure Washers, Power Tools
	HL909	510	25	25	1.65	1.4-2.3	≤0.1	12	50		120V吸尘器、园林工具、电动工具 120V Vacuum Cleaners, Garden Tools, Power Tools
	HL910	520	20	23	1.65	1.4-2.3	≤0.1	12	50		120V吸尘器、电动工具 120V Vacuum Cleaners, Power Tools
	HL914	900	17	22	1.48	2.4-3.6	≤0.1	10	50		吸尘器、电动工具、园林工具、家用电器 Vacuum Cleaner, Power Tools, Garden Tools, Household Appliance
	HL915	900	18	20	1.47	1.4-2.3	≤0.1	10	50		230V电动扳手、230V园林工具 230V Electric Wrench, 230V Garden Tools
	HL916	920	13	23	1.5	2.4-3.6	≤0.1	10	55		吸尘器、电动工具、园林工具 Vacuum Cleaner, Power Tools, Garden Tools
	HL917	940	13	23	1.45	2.4-3.6	≤0.1	10	55		高压清洗机、230V角磨机 High-Pressure Washer, 230V Angle Grinder
	HL918	950	12	23	1.5	2.4-3.6	≤0.1	10	55		吸尘器、电动工具 Vacuum Cleaner, Power Tools
	HL919	1000	15	18	1.38	2.4-3.6	≤0.1	15	50		吸尘器、电动工具、家用搅拌机、粉碎机 Vacuum Cleaner, Power Tools, Household Blender, Crusher
	HL920	1100	19.6	22	1.52	2.4-3.6	≤0.1	12	50		110V盘线锯、砂带机、230V角磨机、抛光机、120V/240V吸尘器 110V Jigsaw, Belt Sander, 230V Angle Grinder, Polisher, and 120V/240V Vacuum Cleaner
	HL923	1500	14.2	22	1.45	2.4-3.6	≤0.1	12	50		120V/230V空气压缩机、电动工具、园林工具 120V/230V Air Compressor, Power Tools, and Garden Tools
	HL924	1500	11.8	20	1.42	2.4-3.6	≤0.1	9	50		120V/230V电动工具 120V/230V Power Tools
	HL926	1700	13.6	22	1.41	2.4-3.6	≤0.1	9	50		230V园林工具、电动工具、家用电器、吸尘器 230V Garden Tools, Power Tools, Household Appliances, and Vacuum Cleaners
HL927	1700	15.8	22	1.41	2.4-3.6	≤0.1	9	50		230V园林工具、电动工具、家用电器、吸尘器 230V Garden Tools, Power Tools, Household Appliances, and Vacuum Cleaners	
HL928	1700	16	22	1.42	2.4-3.6	≤0.1	10	50		230V园林工具、电动工具、家用电器、空气压缩机 230V Garden Tools, Power Tools, Household Appliances, and Air Compressors	
HL929	1800	17	22	1.43	2.4-3.6	≤0.1	12	50		230V吸尘器、园林工具、电动工具、家用电器 230V Vacuum Cleaners, Garden Tools, Power Tools, and Household Appliances	
HL930	2000	20	25	1.45	2.4-3.6	≤0.1	15	35		DC180V跑步机电机 DC 180V Treadmill Motor	
HL931	2000	12	23	1.45	2.4-3.6	≤0.1	15	35		230V园林工具、电动工具 230V Garden Tools and Power Tools	
HL934	3600	10	25	1.4	2.4-3.6	≤0.1	15	35		230V园林工具、电动工具 230V Garden Tools and Power Tools	



HOUSEHOLD AND OTHER ELECTRICAL APPLIANCES CATEGORY

适应性强, 通用性强
Strong adaptability and universality

稳定的导电性
Stable electrical conductivity

优异的耐磨性
Excellent wear resistance

换向性能好
Good commutation performance

良好的静音降噪效果
Good mute and noise reduction effect



Carbon Brush Material Performance Recommendation Table (Household and Other Electrical Appliances Category)
碳刷材质性能推荐表 (家用及其它电器类)



碳刷类型 Carbon Brush Types	材质牌号 Material No.	电阻率 Resistivity Ω·m	抗折强度 Flexural Strength Mpa	肖氏硬度 Shore Hardness	体积密度 Bulk Density g/cm ³	接触压降 Contact Voltage Drop V	摩擦系数 Coefficient of Friction	额定电流密度 Rated Current Density A/cm ²	允许圆周速度 Allowable Peripheral Speed m/s	金属含量 Metal Content %	主要应用 Main Applications
金属石墨类 Metal-Graphite Type (HG)	HG200	0.07	45.0	20	3.64	≤0.8	0.1-0.15	22	30	68	3V-9V无线电动工具、直流电机、3V-9V扫地机器人 3V-9V Cordless Power Tools, DC Motors, 3V-9V Floor-Cleaning Robots
	HG201	0.20	30.0	26	3.57	0.8-1.3	0.1-0.15	20	30	60	12V拉伸油泵、3V-9V扫地机器人、12V起动机、摩托车起动机 12V Tension Oil Pumps, 3V-9V Floor-Cleaning Robots, 12V Starters, Motorcycle Starters
	HG206	0.76	26.0	25	3.18	0.8-1.3	0.1-0.15	20	30	55	12-18V无线电动工具、12V无线吸尘器 12-18V Cordless Power Tools, 12V Cordless Vacuum Cleaners
	HG210	0.85	27.0	23	2.60	0.8-1.3	0.1-0.15	20	30	42	18-24V无线电动工具、14-18V无线吸尘器/地刷 18-24V Cordless Power Tools, 14-18V Cordless Vacuum Cleaners/Floor Brushes
	HG213	1.50	26.0	24	2.43	0.8-1.3	0.1-0.15	15	30	35	18-24V无线电动工具、18-24V无线吸尘器/地刷 18-24V Cordless Power Tools, 18-24V Cordless Vacuum Cleaners/Floor Brushes
	HG214	2.00	22.0	26	2.45	0.8-1.3	0.1-0.15	15	30		18-24V无线吹风机、24V暖风/鼓风机、12V冷凝风扇电机 18-24V Cordless Hair Dryers, 24V Heating/Blower Motors, 12V Condensing Fan Motors
	HG219	3.25	20.0	21	2.21	0.8-1.3	0.1-0.15	15	30	30	18-24V无线吹风机、18-24V无线电动工具 18-24V Cordless Hair Dryers, 18-24V Cordless Power Tools
	HG221	6.00	20.0	17	2.44	0.8-1.3	0.1-0.15	13	30	30	18-24V无线电动工具、18-24V无线吸尘器/地刷 18-24V Cordless Power Tools, 18-24V Cordless Vacuum Cleaners/Floor Brushes
	HG222	30	25.0	27	2.22	0.8-1.3	0.1-0.15	13	30	24	36-60V无线电动工具、无线家用电器 36-60V Cordless Power Tools, Cordless Household Appliances
	HG223	120	28.0	22	1.97	0.8-1.3	0.1-0.15	13	40	15	120-230V高压直流电机、120-240V高压DC家用电器电机 120-230V High-Voltage DC Motors, 120-240V High-Voltage DC Household Appliance Motors
	HG226	0.12	66.0	23	4.30	0.8-1.3	0.1-0.15	45	30		1.8-7.2V剃须刀、智能门锁 1.8-7.2V Electric Shavers, Smart Door Locks
	HG227	0.16	44.0	22	4.18	0.8-1.3	0.1-0.15	45	30		1.8-7.2V剃须刀、智能门锁 1.8-7.2V Electric Shavers, Smart Door Locks
	酚醛树脂类 Phenolic Resin Type (HF)	HF505	70	16.0	20	1.75	0.1-1.3	≤0.1	13	40	
HF506		90	6.0	18	1.34	0.1-1.3	≤0.1	13	40		DC90V跑步机电机、家用电器 DC90V Treadmill Motors, Household Appliances
HF507		100	6.0	17	1.35	0.1-1.3	≤0.1	13	40		DC90V跑步机电机、家用电器 DC90V Treadmill Motors, Household Appliances
HF508		166	16.0	30	1.65	1.4-2.3	0.1-0.15	13	40		110V电动工具、12V搅拌机、100V按摩椅电机 110V Power Tools, 12V Blenders, 100V Massage Chair Motors
沥青粘结类 Metal-Graphite Type (HP)	HP601	300	12.0	20	1.70	0.8-1.3	0.1-0.15	15	50		110V电动工具、家用电器 110V Power Tools, Household Appliances
	HP602	400	20.0	35	1.65	1.4-2.3	0.1-0.15	15	50		120V/230V电动工具、园林工具、家用电器 120V/230V Power Tools, Garden Tools, Household Appliances
	HP605	500	10.0	17	1.73	1.4-2.3	0.1-0.15	13	30		120V/230V家用电器 120V/230V Household Appliances
	HP606	550	16.0	40	1.60	1.4-2.3	0.1-0.15	15	50		滚筒洗衣机用串激电机/电动工具/园林工具 Series Motors for Front-Load Washing Machines, Power Tools, Garden Tools
	HP607	600	18.0	42	1.62	1.4-2.3	0.1-0.15	15	60		滚筒洗衣机用串激电机/电动工具/园林工具 Series Motors for Front-Load Washing Machines, Power Tools, Garden Tools
	HP608	670	18.0	40	1.56	1.4-2.3	0.1-0.15	15	50		滚筒洗衣机用串激电机 Series Motors for Front-Load Washing Machines
	HP611	780	17.0	33	1.63	1.4-2.3	0.1-0.15	15	45		120V/230V电动工具、园林工具、家用电器 120V/230V Power Tools, Garden Tools, Household Appliances
HP613	850	20.0	42	1.55	1.4-2.3	0.1-0.15	10	40		滚筒洗衣机用串激电机 Series Motors for Front-Load Washing Machines	

碳刷类型 Carbon Brush Types	材质牌号 Material No.	电阻率 Resistivity Ω·m	抗折强度 Flexural Strength Mpa	肖氏硬度 Shore Hardness	体积密度 Bulk Density g/cm³	接触压降 Contact Voltage Drop V	摩擦系数 Coefficient of Friction	额定电流密度 Rated Current Density A/cm²	允许圆周速度 Allowable Peripheral Speed m/s	金属含量 Metal Content %	主要应用 Main Applications
沥青粘结类 Pitch-Bonded Type (HP)	HP615	850	20.0	35	1.62	14-2.3	0.1-0.15	15	45		电动工具、园林工具、家用电器 Power Tools, Garden Tools, Household Appliances
	HP616	945	18.0	35	2.00	14-2.3	0.1-0.15	13	25		230V电钻、冲击钻、电锤、230V高压直流搅拌机 230V Electric Drills, Impact Drills, Rotary Hammers, 230V High-Voltage DC Blenders
	HP617	950	18.0	35	2.00	14-2.3	0.1-0.15	13	30		220V吸风机、120V/240V干手机 220V Blowers, 120V/240V Hand Dryers
	HP618	960	23.0	48	1.58	14-2.3	0.1-0.15	15	35		230V角磨类电动工具、滚筒洗衣机用串激电机 230V Angle Grinder Power Tools, Series Motors for Front-Load Washing Machines
	HP620	1050	20.0	41	1.52	14-2.3	0.1-0.15	12	35		滚筒洗衣机用串激电机、电动工具、园林工具、家用电器 Series Motors for Front-Load Washing Machines, Power Tools, Garden Tools, Household Appliances
	HP621	1080	18.0	40	1.50	14-2.3	0.1-0.15	10	40		滚筒洗衣机用串激电机 Series Motors for Front-Load Washing Machines
	HP623	1180	20.0	42	1.55	14-2.3	0.1-0.15	10	40		滚筒洗衣机用串激电机 Series Motors for Front-Load Washing Machines
	HP629	1480	25.4	32	1.88	2.4-3.6	0.1-0.15	12	25		220V高压DC搅拌机 220V High-Voltage DC Blenders
	HP631	1900	18.0	33	1.60	2.4-3.6	0.1-0.15	10	25		230V电动工具、园林工具、家用电器 230V Power Tools, Garden Tools, Household Appliances
环氧树脂类 Epoxy Resin Type (HL)	HL900	190	29.0	30	1.75	14-2.3	≤0.1	12	40		120V搅拌机 120V Blenders
	HL903	360	12.0	20	1.45	14-2.3	≤0.1	20	50		120V吸尘器、园林工具、家用电器、电动工具 120V Vacuum Cleaners, Garden Tools, Household Appliances, Power Tools
	HL904	400	15.0	19	1.50	14-2.3	≤0.1	18	48		电动工具、园林工具 Power Tools, Garden Tools
	HL905	410	23.0	23	1.60	14-2.3	≤0.1	15	55		120V家用电器、吸尘器 120V Household Appliances, Vacuum Cleaners
	HL906	430	13.0	20	1.53	14-2.3	≤0.1	20	35		DC90V跑步机 DC 90V Treadmills
	HL908	500	13.0	23	1.55	14-2.3	≤0.1	15	35		DC90V跑步机、甩脂机 DC 90V Treadmills, Vibration Slimming Machines
	HL909	510	25.0	25	1.65	14-2.3	≤0.1	12	50		120V吸尘器、园林工具、电动工具 120V Vacuum Cleaners, Garden Tools, Power Tools
	HL910	520	20.0	23	1.65	14-2.3	≤0.1	12	50		120V吸尘器、电动工具 120V Vacuum Cleaners, Power Tools
	HL911	700	16.0	21	1.50	14-2.3	≤0.1	10	50		120V空气压缩机、干手机 120V Air Compressor, Hand Dryer
	HL912	800	15.0	23	1.48	14-2.3	≤0.1	10	50		吸尘器、榨汁机 Vacuum Cleaners, Juicers
	HL913	820	10.0	18	1.40	2.4-3.6	≤0.1	10	35		DC90V/180V跑步机电机 DC 90V/180V Treadmill Motors
	HL914	900	17.0	22	1.48	2.4-3.6	≤0.1	10	50		吸尘器、电动工具、园林工具、家用电器 Vacuum Cleaners, Power Tools, Garden Tools, Household Appliances
	HL916	920	13.0	23	1.50	2.4-3.6	≤0.1	10	55		吸尘器、电动工具、园林工具 Vacuum Cleaners, Power Tools, Garden Tools
	HL917	940	13.0	23	1.45	2.4-3.6	≤0.1	10	55		高压清洗机、230V角磨机 High-Pressure Washers, 230V Angle Grinders
	HL918	950	12.0	23	1.50	2.4-3.6	≤0.1	10	55		吸尘器、电动工具 Vacuum Cleaners, Power Tools
	HL919	1000	15.0	18	1.38	2.4-3.6	≤0.1	15	50		吸尘器、电动工具、家用搅拌机、粉碎机 Vacuum Cleaners, Power Tools, Household Blenders, Crushers
	HL921	1200	6.0	15	1.35	2.4-3.6	≤0.1	10	35		DC90V/180V跑步机电机 DC 90V/180V Treadmill Motors
	HL922	1400	22.0	23	1.56	2.4-3.6	≤0.1	10	50		220V搅拌机 220V Blenders
HL925	1700	8.0	17	1.33	2.4-3.6	≤0.1	15	35		DC180V跑步机电机 DC 180V Treadmill Motors	
HL926	1700	13.6	22	1.41	2.4-3.6	≤0.1	9	50		230V园林工具、电动工具、家用电器、吸尘器 230V Garden Tools, Power Tools, Household Appliances, Vacuum Cleaners	
HL927	1700	15.8	22	1.41	2.4-3.6	≤0.1	9	50		230V园林工具、电动工具、家用电器、吸尘器 230V Garden Tools, Power Tools, Household Appliances, Vacuum Cleaners	

碳刷类型 Carbon Brush Types	材质牌号 Material No.	电阻率 Resistivity Ω·m	抗折强度 Flexural Strength Mpa	肖氏硬度 Shore Hardness	体积密度 Bulk Density g/cm³	接触压降 Contact Voltage Drop V	摩擦系数 Coefficient of Friction	额定电流密度 Rated Current Density A/cm²	允许圆周速度 Allowable Peripheral Speed m/s	金属含量 Metal Content %	主要应用 Main Applications
环氧树脂类 Epoxy Resin Type (HL)	HL928	1700	16.0	22	1.42	2.4-3.6	≤0.1	10	50		230V园林工具、电动工具、家用电器、空气压缩机 230V Garden Tools, Power Tools, Household Appliances, Air Compressors
	HL929	1800	17.0	22	1.43	2.4-3.6	≤0.1	12	50		230V吸尘器、园林工具、电动工具、家用电器 230V Vacuum Cleaners, Garden Tools, Power Tools, Household Appliances
	HL930	2000	20.0	25	1.45	2.4-3.6	≤0.1	15	35		DC180V跑步机电机 DC 180V Treadmill Motors
	HL932	2500	7.0	17	1.32	2.4-3.6	≤0.1	15	35		DC180V跑步机电机 DC 180V Treadmill Motors
	HL933	3500	6.0	17	1.30	2.4-3.6	≤0.1	15	35		DC180V跑步机电机 DC 180V Treadmill Motors
	HL935	3600	5.0	16	1.30	2.4-3.6	≤0.1	15	35		DC180V跑步机电机 DC 180V Treadmill Motors
HL936	3500	6.0	17	1.30	2.4-3.6	≤0.1	15	35		DC180V跑步机电机 DC 180V Treadmill Motors	



AUTOMOTIVE PARTS CATEGORY

高可靠性, 适用于复杂工况

High reliability for complex working conditions

高效的导电性, 可靠的电力传输

Efficient conductivity for reliable power transmission

长寿命降低了维护成本

Long lifespan cuts maintenance costs

优良的换向性能提高了电机效率

Excellent commutation enhances motor efficiency

严格的质量标准和广泛的兼容性

Strict quality standards & broad compatibility



Carbon Brush Material Performance Recommendation Table (Automotive Parts Category) 碳刷材质性能推荐表 (汽车配件类)



碳刷类型 Carbon Brush Types	材质牌号 Material No.	电阻率 Resistivity Ω·m	抗折强度 Flexural Strength Mpa	肖氏硬度 Shore Hardness	体积密度 Bulk Density g/cm³	接触压降 Contact Voltage Drop V	摩擦系数 Coefficient of Friction	额定电流密度 Rated Current Density A/cm²	允许圆周速度 Allowable Peripheral Speed m/s	金属含量 Metal Content %	主要应用 Main Applications
金属石墨类 Metal-Graphite Type (HG)	HG201	0.20	30.0	26	3.57	0.8-1.3	0.1-0.15	20	30	60	12V 拉伸油泵, 3V-9V 扫地机器人, 12V 起动机, 摩托车起动机 12V Tensile Oil Pumps, 3V-9V Floor-Sweeping Robots, 12V Starters, Motorcycle Starters
	HG202	0.42	36.0	23	3.03	0.8-1.3	0.1-0.15	20	30	50	12V 冷凝风扇电机, 12V 推窗电机, 12V ABS 电机 12V Condenser Fan Motors, 12V Power Window Motors, 12V ABS Motors
	HG203	0.51	44.0	22	3.75	0.8-1.3	0.1-0.15	20	30	58	12V 拉伸油泵, 12V 起动机, 摩托车起动机 12V Tensile Oil Pumps, 12V Starters, Motorcycle Starters
	HG204	0.60	30.0	27	2.70	0.8-1.3	0.1-0.15	18	30	40	12V 暖风/鼓风机, 冷凝风扇电机 12V Heater/Blower Motors, Condenser Fan Motors
	HG205	0.75	49.0	20	3.50	0.8-1.3	0.1-0.15	20	30	58	12V 拉伸油泵, 24V 起动机 12V Tensile Oil Pumps, 24V Starters
	HG207	0.80	30.0	22	3.45	0.8-1.3	0.1-0.15	20	30	49	12V 起动机 12V Starter
	HG208	0.83	29.2	28	2.63	0.8-1.3	0.1-0.15	18	30	40	12V 暖风/鼓风机, 12V 冷凝风扇电机 12V Heater/Blower Motors, 12V Condenser Fan Motors
	HG211	1.15	24.0	25	2.68	0.8-1.3	≤0.1	18	30	33	12V ABC 电机 12V ABC Motor
	HG212	1.26	13.6	20	2.45	0.8-1.3	≤0.1	15	30	34	24V 低噪音暖风/鼓风机, 12V 刹车真空助力泵电机 24V Low-Noise Heater/Blower Motors, 12V Brake Vacuum Booster Motors
	HG214	2.00	22.0	26	2.45	0.8-1.3	0.1-0.15	15	30		18-24V 无线吹风机, 24V 暖风/鼓风机, 12V 冷凝风扇电机 18-24V Cordless Hair Dryers, 24V Heater/Blower Motors, 12V Condenser Fans
	HG215	2.20	30.0	33	2.70	0.8-1.3	0.1-0.15	18	30	30	12-24V 发电机 12-24V Generators
	HG216	2.70	22.0	19	2.40	0.8-1.3	0.1-0.15	18	30	34	12-24V 发电机 12-24V Generators
	HG217	2.80	14.2	20	2.63	0.8-1.3	≤0.1	16	30	37	12/24V 低噪音暖风/鼓风机, 12V 雨刮电机, 无源电机 12/24V Low-Noise Heater/Blower Motors, 12V Windshield Wiper Motors, Windowless Motors
	HG218	2.90	15.0	20	2.65	0.8-1.3	≤0.1	16	30		12V 冷凝风扇电机 12V Condenser Fan Motor
HG220	3.50	22.0	26	2.80	0.8-1.3	0.1-0.15	15	40	50	48-72V 电动汽车电机 48-72V Electric Vehicle Motors	
HG224	0.41	20.0	10	5.30	0.8-1.3	0.1-0.15	20	30	73	12V 拉伸油泵 12V Tensile Oil Pumps	



完善的整体解决方案
A complete overall solution



优质的售前售后服务
High-quality pre-sale and after-sale services



全面的技术应用支持
Comprehensive technical application support