

- ◎ PCB电主轴系列
PCB electric spindle series
- ◎ 玻璃磨削电主轴系列
Electric spindle glass grinding series
- ◎ 高光及超精加工电主轴系列
High-gloss and superfinishing electric spindle series
- ◎ 超声波主轴系列
Ultrasonic spindle series
- ◎ 加工中心主轴系列
Machining center spindle series
- ◎ 钻攻中心电主轴系列
Drilling and tapping center electric spindle series
- ◎ 雕铣电主轴系列
Engraving and milling electric spindle series
- ◎ 磨削产品系列
Grinding solutions
- ◎ 车床主轴系列
Lathe spindle series
- ◎ 木工电主轴系列
Woodworking electric spindle series
- ◎ 牙雕电主轴系列
Dental electric spindle series
- 半导体电主轴系列
Semiconductor electric spindle series
- ◎ 减速器系列
Reducer series
- ◎ 直线电机系列
Linear motor series
- ◎ 转台及摆头系列
Turntable and swivel rotary head series
- ◎ 刀柄夹头系列
Tool holder and collet series
- ◎ 夹具系列
Clamping series
- ◎ 昊志氢电空压机
Haozhi hydrogen electric air compressor

半导体电主轴系列

Semiconductor Electric Spindle Series



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广州市昊志机电股份有限公司
GUANGZHOU HAOZHI INDUSTRIAL CO.,LTD.

高精 · 高效 · 高稳定性

昊志机电产品之道

High precision · High efficiency · High stability

Haozhi Product Philosophy

为助力全球先进装备制造,
提升人类良好体验
而奋斗不止

keeps on striving for global advanced
manufacturing industry,for improving
human experience.

关于我们 About us

广州市昊志机电股份有限公司成立于2006年，是一家专业从事中高端数控机床、机器人、新能源汽车核心功能部件等的研发设计、生产制造、销售与维修服务的国家高新技术企业，于2016年在创业板上市（股票代码300503）。

昊志机电秉承“立足自主技术创新、服务全球先进制造”的发展战略，逐步发展成为国内外主轴专业领域中研产销规模最大的企业之一，电主轴领域全球市场占有率第一，公司立足主轴行业，借助在研发、制造、客户、品牌等方面的积累，稳步向数控机床和工业机器人等高端装备的核心功能部件领域横向扩张，目前产品涵盖PCB钻孔机/成型机/划片机电主轴、数控金属/玻璃雕铣机电主轴、数控车床主轴/电主轴、走芯车床电主轴、直结与皮带式机械主轴、加工中心电主轴、钻攻中心电主轴、高速内/外圆磨床主轴、木工雕铣机电主轴、高光及超精加工电主轴、超声波电主轴、液静压主轴、铣削动力头、末端执行机构、刀柄夹头、数控转台、直线电机、谐波减速器、数控系统、伺服电机、驱动器、传感器、燃料电池压缩机、曝气鼓风机、直驱类高速风机等数十个系列上百种产品。

昊志机电拥有一批经验丰富、锐意创新的科技型人才队伍，研发人员400余人，研究生占比12%，具备优异的创新水平、研发实力和竞争力，近三年平均研发投入占营收比重的8%以上，截止2024年12月31日，公司及境内子公司合计拥有专利819项。公司具备完善、齐全的各类高端实验室，包括：理化实验室、轴承实验室、测量实验室、电机实验室、综合性能实验室、切削实验室、直线电机实验室、减速机实验室、机器人实验室、磨合测试实验室、抗干扰能力实验室、可靠性实验室等。

Guangzhou Haozhi Industrial Co., Ltd.

Founded in 2006 and listed on GEM (stock code: 300503) in 2016, Haozhi is a international high-tech enterprise specializing in the R&D, design, production, sales, and maintenance of core functional components for mid- to high-end CNC machine tools, robots, and new-energy vehicles. Haozhi leads the motor spindles market and continues to expand.

Haozhi product range includes:

- Dental Spindles
- High Speed Cutting Spindles
- High Performance Cutting Spindles
- Coupling Spindles
- Turning Spindles
- Grinding Spindles
- PCB Drilling/Routing Spindles
- Ultra-precision Finish Milling Spindles
- Collets and Tool holders
- 4 Axis and 5 Axis Rotary Tables
- Linear Motors
- Cobots/Harmonic Reducers/Robot Joint/Brake/Torque Sensor/End Effector
- EV Hydrogen Compressor

Haozhi boasts a highly skilled and innovative team with over 300 R&D personnel and more than 30 specially appointed experts, both domestic and international masters. The proportion of R&D investment in operating income over the past three years exceeds 8%, resulting in 819 patents as of December 31, 2024. Haozhi maintains comprehensive high-end laboratories for extensive testing and innovation.



禾丰厂 Hefeng Factory



江东厂 Jiangdong Factory



田园厂 Tianyuan Factory



湖南显隆厂 Hunan Xianlong Factory



瑞士工厂 Swiss Factory



汇聚全球顶尖的加工设备
最高加工精度可达0.1μm

Gathering world-class cutting-edge
processing equipments

Featuring Asia's first fully automated
production line, machining precision up
to 0.1 μm.

全球知名的生产基地

厂房建筑面积18.9万平方米, 产能达约200,000支/年

Global Manufacturing Base

Covering an area of 189,000m², capacity: about 200,000pcs spindles per year



雄踞世界级技术研究中心

300余人研发团队, 近三年研发投入占
销售额8%以上

Haozhi has world-class technology
research center

More than 300 R&D investment in the
past three years accounted for more than
8% of sales



西班牙厂 Spanish Factory



上海工厂 Shanghai Factory



法国工厂 French Factory



国际一流检测仪器及设备
具备纳米级检测精度

Ultra-precision Measuring and
Inspection Instruments

With nanoscale precision

CRAFTMANSHIP 工匠精神

他们说 They Said
他说 He Said
她说 She Said

坚持做一件事，
聚焦做一件事，
简单的事情做到极致。
Stick with one thing.
Concentrate on one thing.
Make the best of simple thing.



半导体电主轴系列

Semiconductor electric spindle series

主要应用于半导体加工行业,适用于硅片制造和晶圆加工中的切片、倒角、磨削、切割、减薄等工艺。

Widely used in the semiconductor processing industry, suitable for slicing, chamfering, grinding, cutting, and thinning processes in wafer manufacturing and fabrication.



长寿命

Long service life

半导体电主轴使用气体静压轴承,零污染,低温升,无磨损,长寿命。

The semiconductor electric spindle utilizes gas static pressure bearings, featuring zero contamination, low temperature rise, wear-free operation, and a long service life.

高可靠性

High Reliability

优化主轴防水、防尘性能,电机防护等级IP67,采用优质碳刷材料,连续工作时间长达6525小时。

Optimized for superior waterproof and dustproof performance, the spindle features an IP67 motor protection rating. Constructed with premium carbon brush materials, it delivers a continuous operating time of up to 6,525 hours.

低振动

Low Vibration

由于气体静压轴承的均化效应、高达 $0.2\mu\text{m}$ 的零件加工精度以及优化轴系后的刚度提升10%以上,使主轴在高速旋转时振动极小,回转精度可达亚微米级,确保晶圆切割和背面减薄时的加工质量。

Thanks to the averaging effect of gas static pressure bearings, machining precision of up to $0.2\mu\text{m}$, and a stiffness increase of over 10% from the optimized shaft system, the spindle vibrates minimally even at high speeds. With sub-micron rotational accuracy, it ensures superior quality during wafer dicing and back-grinding.

高精度、高刚性

High Precision & High Rigidity

划片机主轴刀座装刀面的轴向窜动 $\leq 1\mu\text{m}$,主轴连续加工时伸长量波动 $\leq 0.3\mu\text{m}$,确保高加工精度和高良品率。研磨机主轴采用三段式冷却机构提升冷却效率,温升小,热稳定时间 $\leq 20\text{min}$,主轴连续加工时伸长量波动 $\leq 0.1\mu\text{m}$ 。全转速振动 $\leq 0.15\text{mm/s}$,回转精度误差优于 100nm ,工件研磨后表面TTV值 $\leq 3\mu\text{m}$,粗糙度 $R_a < 0.02\mu\text{m}$ 。

The axial runout of the tool mounting surface on the dicing spindle is $\leq 1\mu\text{m}$, and the fluctuation in spindle elongation during continuous machining is $\leq 0.3\mu\text{m}$, ensuring high machining precision and a high yield rate. The grinding spindle adopts a three-stage cooling mechanism to improve cooling efficiency, resulting in low temperature rise and a thermal stability time of $\leq 20\text{min}$. The fluctuation in spindle elongation during continuous machining is $\leq 0.1\mu\text{m}$. Vibration across the full speed range is $\leq 0.15\text{mm/s}$, rotational accuracy error is better than 100nm , and the workpiece surface TTV is $\leq 3\mu\text{m}$ with a roughness of $R_a < 0.02\mu\text{m}$ after grinding.

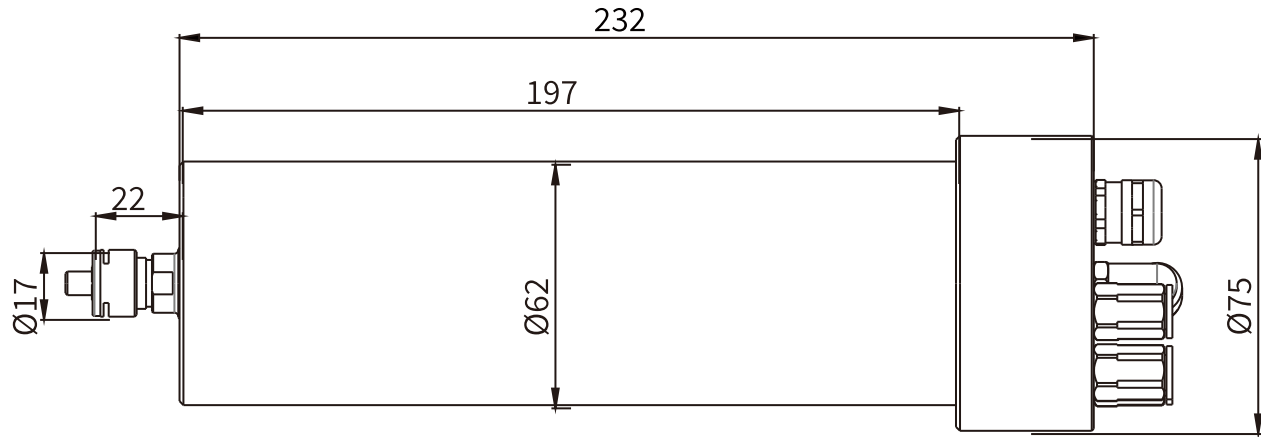
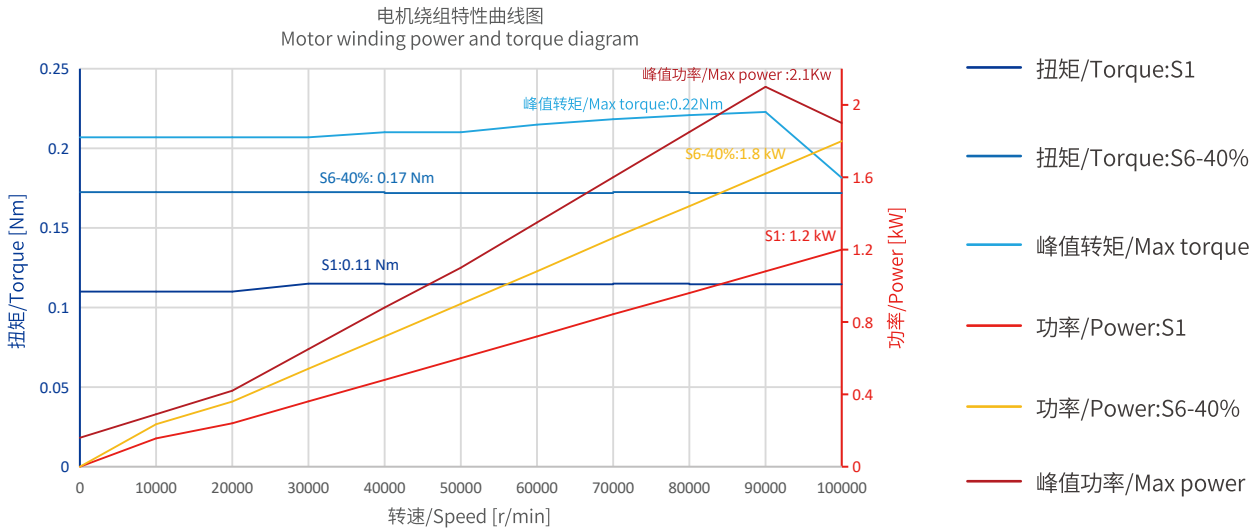
大扭矩

High Torque

使用低齿槽力矩电机,减小齿槽转矩对主轴回转精度的影响。扭矩提升25%以上,提高切割效率,实现硬脆材料的稳定加工。

By utilizing a low cogging torque motor, the impact of cogging torque on the spindle's rotational accuracy is minimized. With a torque increase of over 25%, it improves cutting efficiency and enables the stable machining of hard and brittle materials.

DQFX-062100/1.2A1-WM

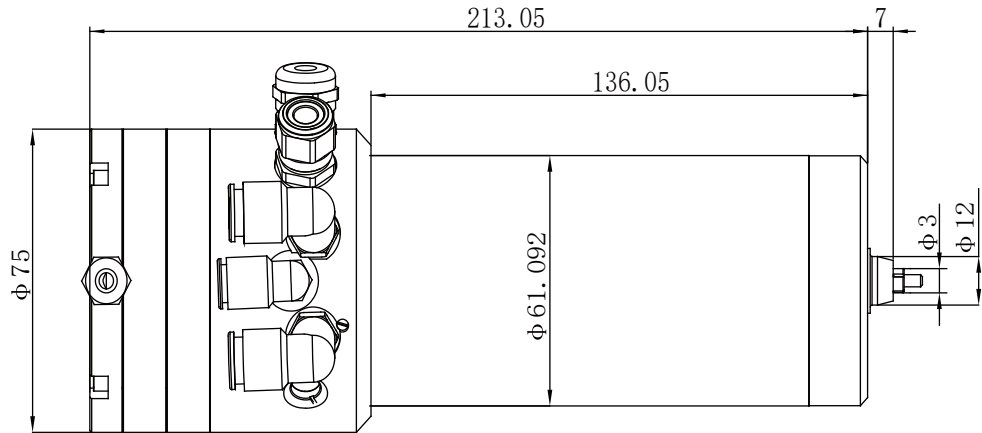
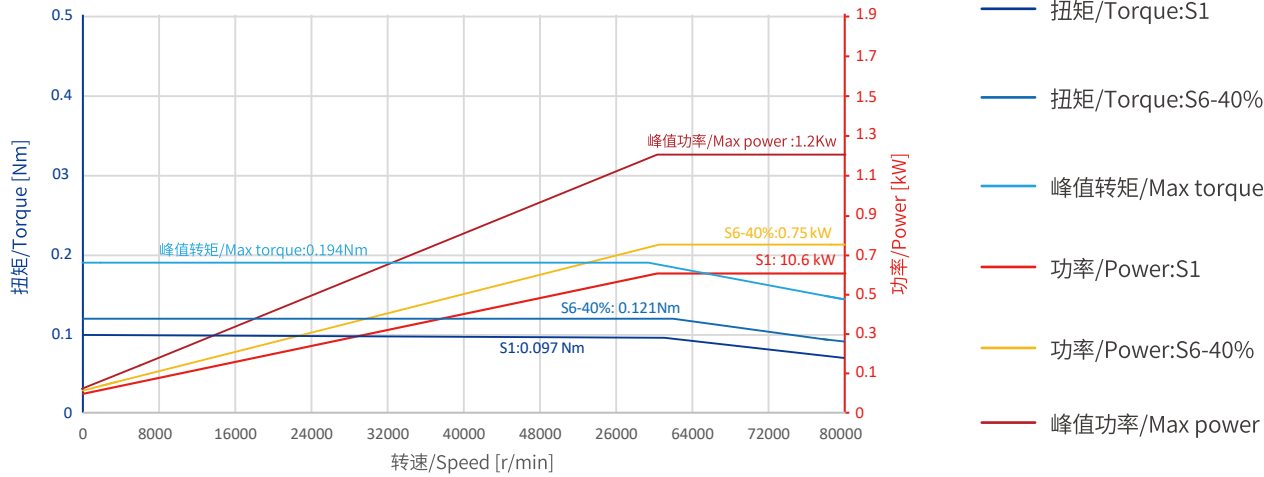


型号	DQFX-062100/1.2A1-WM	Spindle model	DQFX-062100/1.2A1-WM
直径	Φ62mm	Diameter	Φ62mm
最高转速	100,000rpm	The highest speed	10,000rpm
刀柄型号	ER11夹头	Tool interface	ER11 Collect
轴承类型	气浮轴承	Bearing type	Air bearing
最大频率	1,667Hz	Max. Frequency	1,677Hz
电机类型	异步	Motor system	Asynchronous
额定电压	220V	The rated voltage	220V
输出功率S1 100%	1.2kW	Power output S1 100%	1.2kW
输出功率S6 40%	1.8kW	Power output S6 40%	1.8kW
输出扭矩S1 100%	0.11N.m	Output torque S1 100%	0.11N.m
输出扭矩S6 40%	0.17N.m	Output torque S6 40%	0.17N.m
额定电流S1 100%	3.6A	Rated current S1 100%	3.6A
额定电流S6 40%	4.3A	Rated current S6 40%	4.3A
气流量	58-68L/min	Gas flow	58-68L/min
冷却方式	水冷	Cooling system	Water cooling
冷却流量	≥1.5L/min	The cooling flow rate	≥1.5L/min
电机温度传感器类型	PT100	Motor temperature sensor type	PT100
换刀方式	手动	Tool change	Manual
换刀气压	/	Tool change air pressure	/
振动速度	≤1mm/s	Vibration velocity	≤1mm/s
重量	5.1kg	Weight	5.1kg

DQF-160D4.S

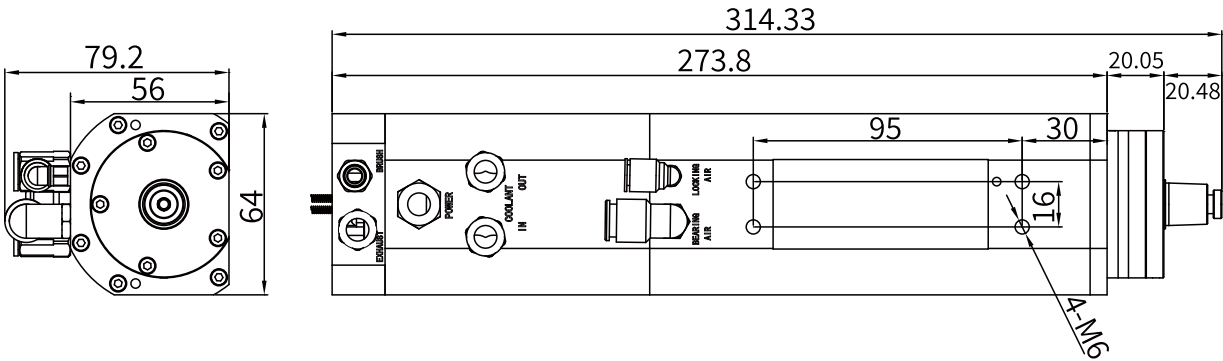
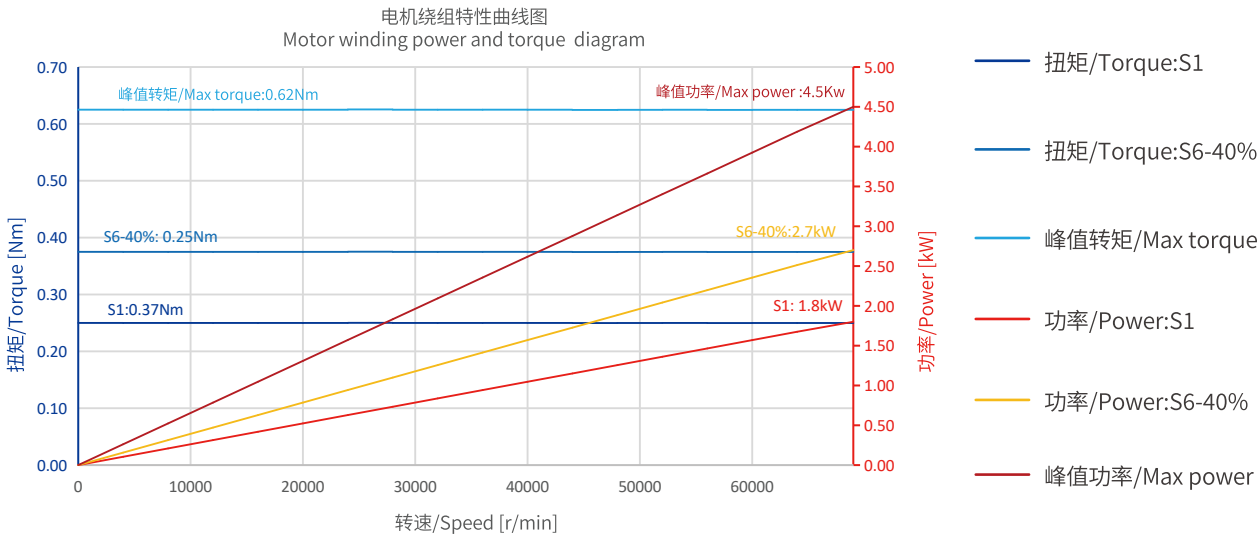


电机绕组特性曲线图
Motor winding power and torque diagram



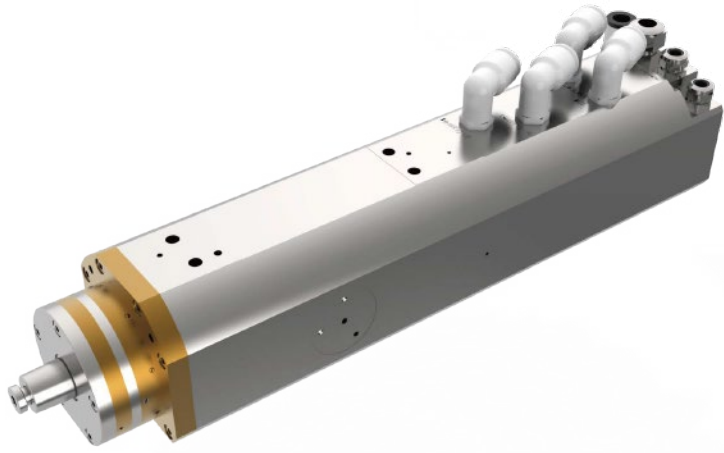
型号	DQF-160D4.S	Spindle model	DQF-160D4.S
最高转速	160,000rpm	Max Rotational Speed	160,000rpm
刀柄型号	B049TL3.0夹头	Toolholder Model	B049TL3.0 chuck
轴承类型	气浮轴承	Bearing Type	Air Bearing
最大频率	2667Hz	Max Frequency	2667Hz
电机类型	异步	Motor Type	Asynchronous Motor
额定电压	220V	Rated Voltage	220V
输出功率S1 100%	0.6kW	Output Power (S1 100%)	0.6kW
输出功率S6 40%	0.75 kW	Output Power (S6 40%)	0.75 kW
输出扭矩S1 100%	0.097N.m	Output Torque (S1 100%)	0.097N.m
输出扭矩S6 40%	0.121N.m	Output Torque (S6 40%)	0.121N.m
额定电流S1 100%	2.4A	Rated Current (S1 100%)	2.4A
额定电流S6 40%	3A	Rated Current (S6 40%)	3A
气流量	80-88(@16,000rpm)	Air Flow Rate	80-88(@16,000rpm)
冷却方式	水冷	Cooling Method	Water-cooled
冷却流量	≥1.5L/min	Cooling Flow Rate	≥1.5L/min
电机温度传感器类型	KTY84-130	Motor temperature sensor type	KTY84-130
换刀方式	自动	Tool Changing Method	Automatic
换刀气压	0.56~0.6MPa	Tool Changing Air Pressure	0.56~0.6MPa
振动速度	≤1.0mm/s	Vibration Velocity	≤1.0mm/s
重量	3.5Kg	Weight	3.5Kg

DQFH-02360/1.8

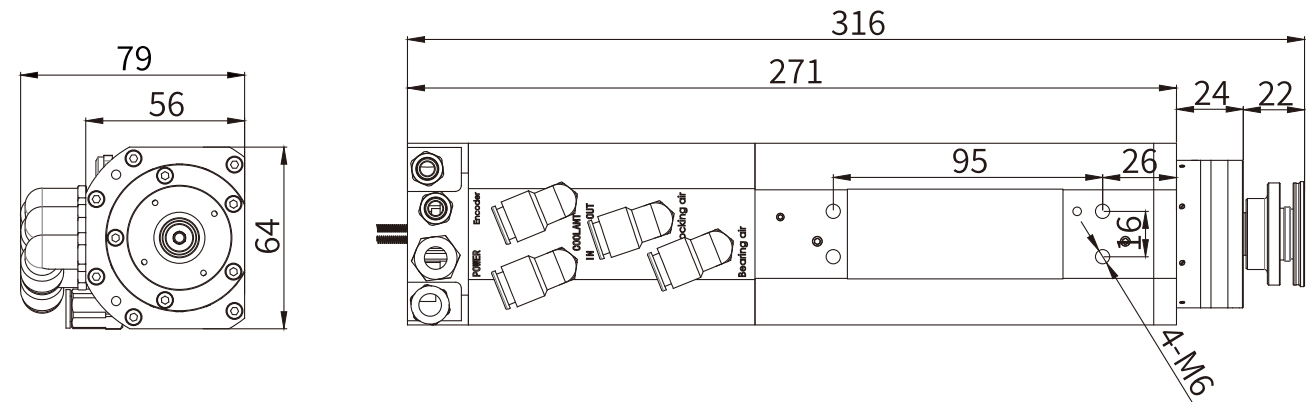
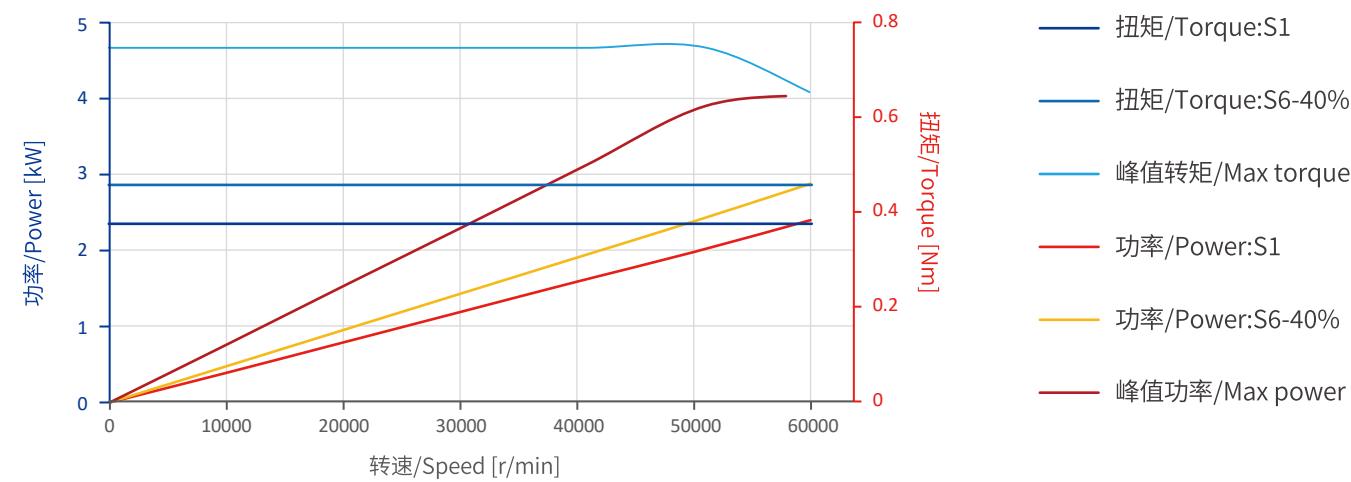


型号	DQFH-02360/1.8	Spindle model	DQFH-02360/1.8
最高转速	60,000rpm	The highest speed	60,000rpm
刀具接口	通用刀座	Tool interface	Generic dicing blades
轴承类型	气浮轴承	Bearing type	Air bearing
最大频率	1000Hz	Max. Frequency	1000Hz
电机类型	同步	Motor system	Synchronous
额定电压	220V	The rated voltage	220V
输出功率S1 100%	1.8kW	Power output S1 100%	1.8kW
输出功率S6 40%	2.2kW	Power output S6 40%	2.2kW
输出扭矩S1 100%	0.25N.m	Output torque S1 100%	0.25N.m
输出扭矩S6 40%	0.3N.m	Output torque S6 40%	0.3N.m
额定电流S1 100%	5.1A	Rated current S1 100%	5.1A
额定电流S6 40%	6.1A	Rated current S6 40%	6.1A
气流量	90-102L/min	Gas flow	90-102L/min
冷却方式	水冷	Cooling system	Water cooling
冷却流量	≥2L/min	The cooling flow rate	≥2L/min
电机温度传感器类型	KTY84-130	Motor temperature sensor type	KTY84-130
换刀方式	手动换刀	Tool change	Manual
振动速度	≤0.5mm/s	Vibration velocity	≤0.5mm/s
重量	6.6kg	Weight	6.6kg

DQFH-02360B/2.4



电机绕组特性曲线图
Motor winding power and torque diagram

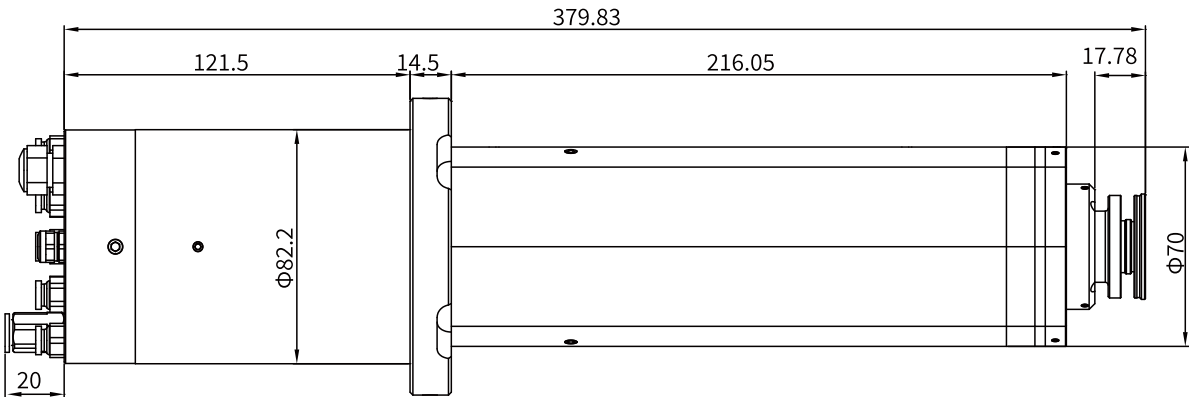
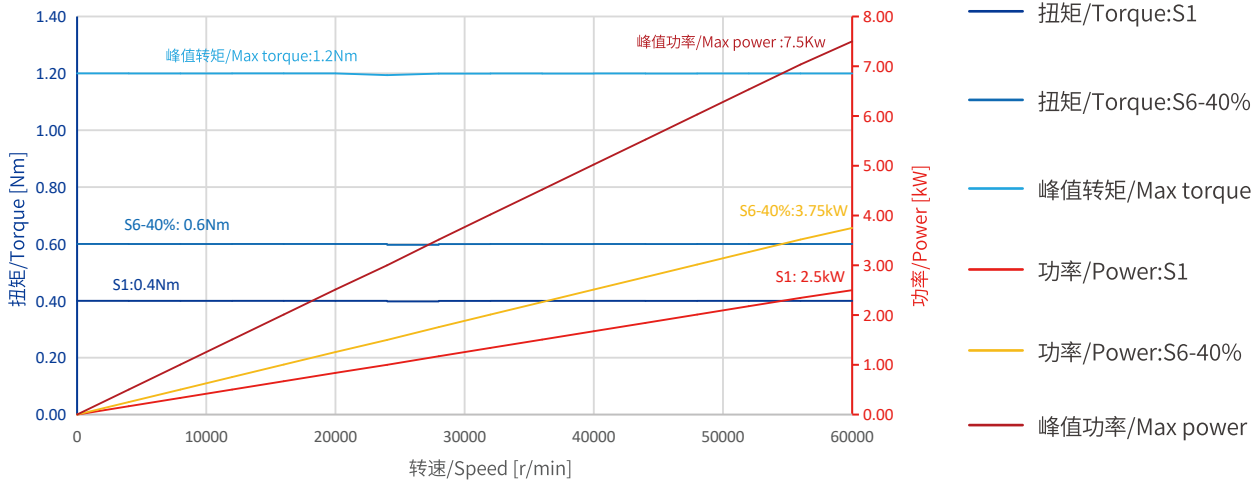


型号	DQFH-02360B/2.4	Spindle model	DQFH-02360B/2.4
最高转速	60,000rpm	The highest speed	60,000rpm
刀具接口	通用刀座	Tool interface	Generic dicing blades
轴承类型	气浮轴承	Bearing type	Air bearing
最大频率	2000Hz	Max. Frequency	2000Hz
电机类型	同步	Motor system	Synchronous
额定电压	220V	The rated voltage	220V
输出功率S1 100%	2.4kW	Power output S1 100%	2.4kW
输出功率S6 40%	2.9kW	Power output S6 40%	2.9kW
输出扭矩S1 100%	0.38N.m	Output torque S1 100%	0.38N.m
输出扭矩S6 40%	0.46N.m	Output torque S6 40%	0.46N.m
额定电流S1 100%	7.5A	Rated current S1 100%	7.5A
额定电流S6 40%	11.25A	Rated current S6 40%	11.25A
气流量	70-80L/min	Gas flow	70-80L/min
冷却方式	水冷	Cooling system	Water cooling
冷却流量	≥2L/min	The cooling flow rate	≥2L/min
电机温度传感器类型	KTY84-130	Motor temperature sensor type	KTY84-130
换刀方式	手动换刀	Tool change	Manual
振动速度	≤0.2mm/s	Vibration velocity	≤0.2mm/s
重量	7.74kg	Weight	7.74kg

DQFH-02440/2.5



电机绕组特性曲线图
Motor winding power and torque diagram

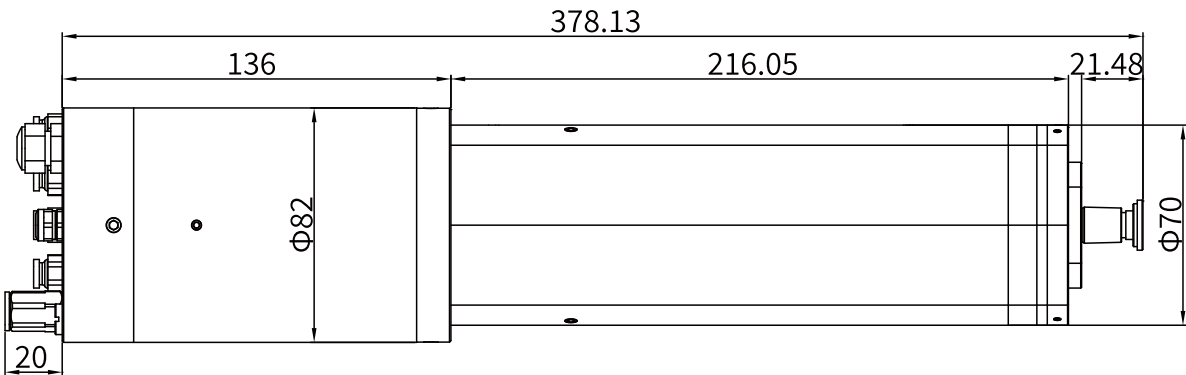
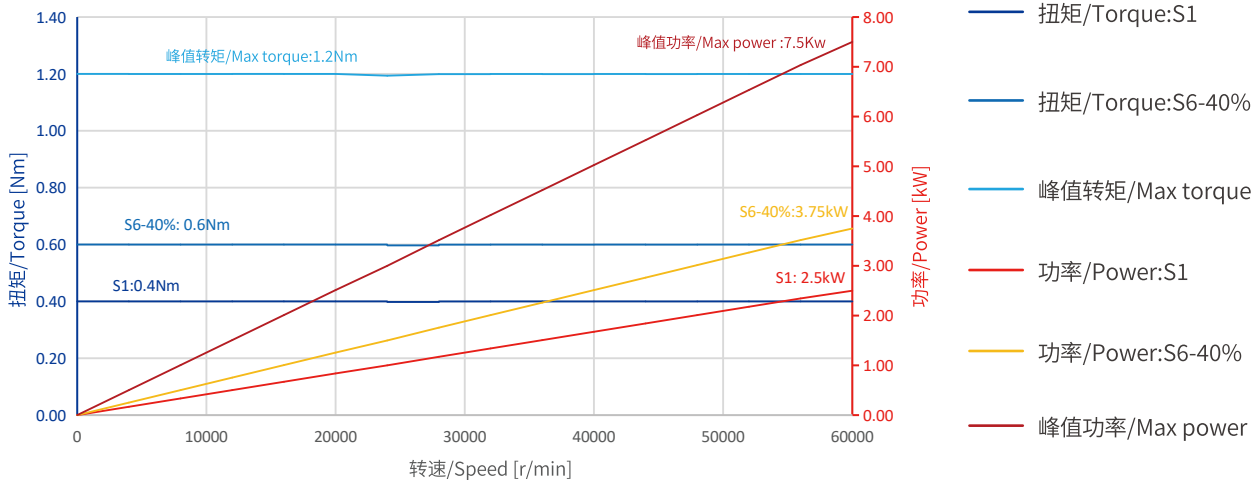


型号	DQFH-02440/2.5	Spindle model	DQFH-02440/2.5
直径	$\Phi 82\text{mm}$	Diameter	$\Phi 82\text{mm}$
最高转速	60,000rpm	The highest speed	60,000rpm
刀具接口	通用刀座	Tool interface	Generic dicing blades
轴承类型	气浮轴承	Bearing type	Air bearing
最大频率	1,000Hz	Max. Frequency	1,000Hz
电机类型	同步	Motor system	Synchronous
额定电压	220V	The rated voltage	220V
输出功率S1 100%	2.5kW	Power output S1 100%	2.5kW
输出功率S6 40%	3.75kW	Power output S6 40%	3.75kW
输出扭矩S1 100%	0.4N.m	Output torque S1 100%	0.4N.m
输出扭矩S6 40%	0.6N.m	Output torque S6 40%	0.6N.m
额定电流S1 100%	7.5A	Rated current S1 100%	7.5A
额定电流S6 40%	11.3A	Rated current S6 40%	11.3A
气流量	82-90L/min	Gas flow	72-90L/min
冷却方式	水冷	Cooling system	Water cooling
冷却流量	$\geq 2\text{L/min}$	The cooling flow rate	$\geq 2\text{L/min}$
电机温度传感器类型	KTY84-130	Motor temperature sensor type	KTY84-130
换刀方式	手动换刀	Tool change	Manual
振动速度	$\leq 0.3\text{mm/s}$	Vibration velocity	$\leq 0.3\text{mm/s}$
重量	10.8kg	Weight	10.8kg

DQFH-02360/2.5

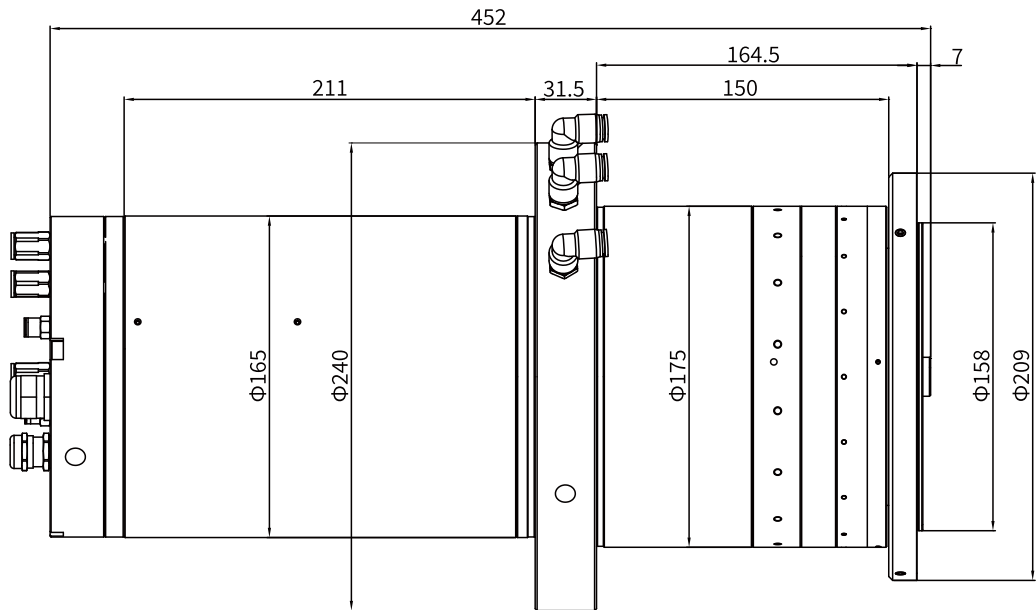
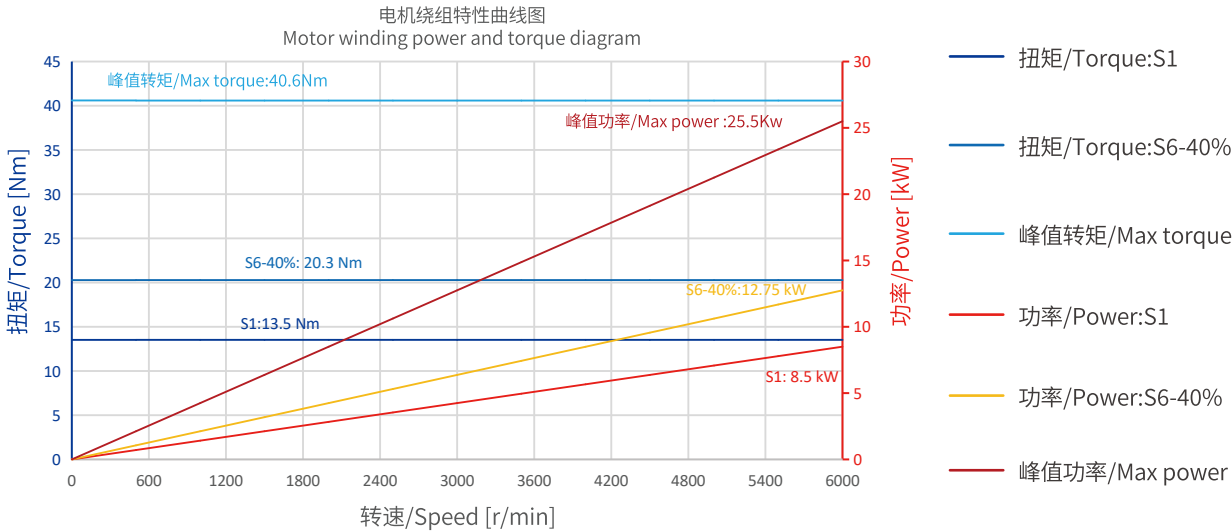


电机绕组特性曲线图
Motor winding power and torque diagram



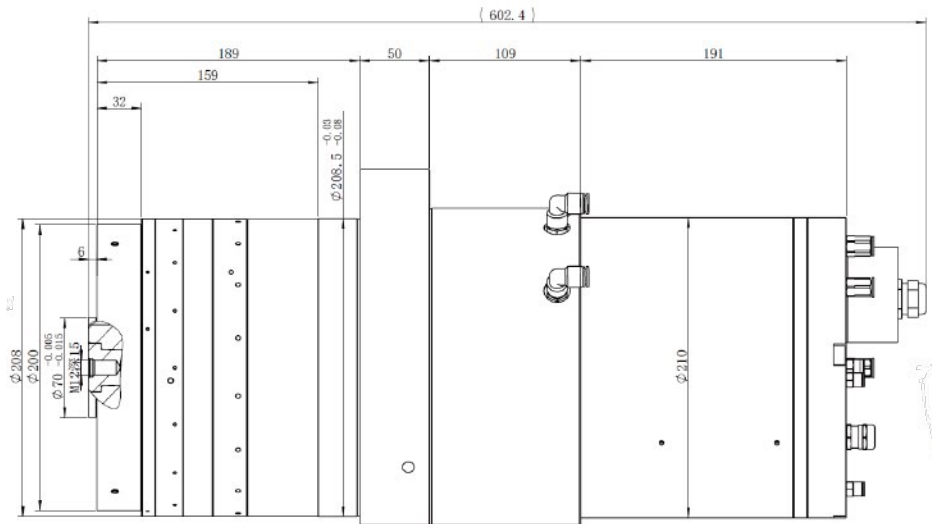
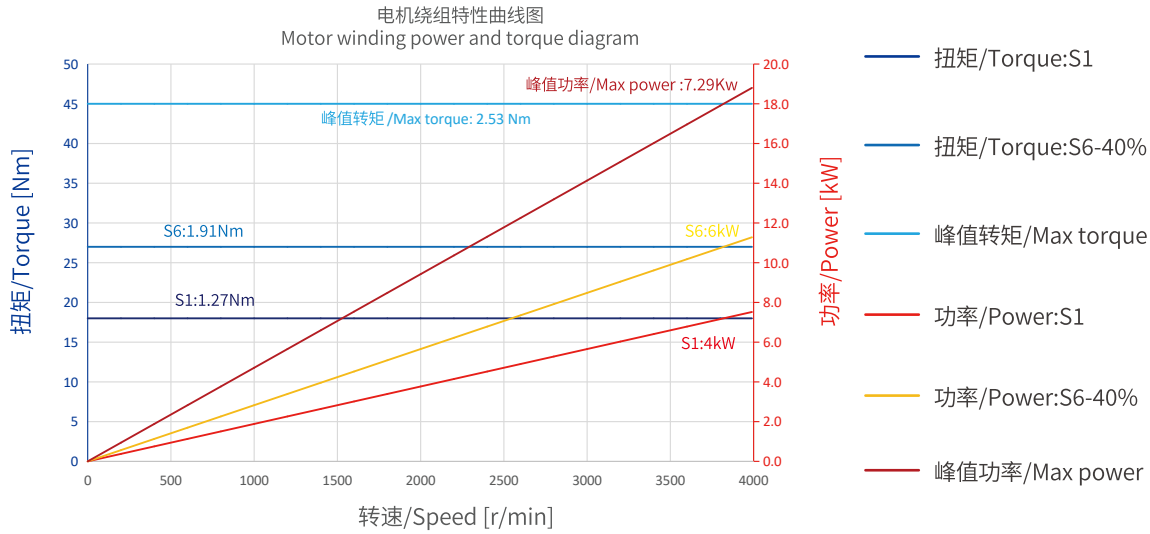
型号	DQFH-02360/2.5	Spindle model	DQFH-02360/2.5
直径	$\Phi 82\text{mm}$	Diameter	$\Phi 82\text{mm}$
最高转速	60,000rpm	The highest speed	60,000rpm
刀具接口	通用刀座	Tool interface	Generic dicing blades
轴承类型	气浮轴承	Bearing type	Air bearing
最大频率	1,000Hz	Max. Frequency	1,000Hz
电机类型	同步	Motor system	Synchronous
额定电压	220V	The rated voltage	220V
输出功率S1 100%	2.5kW	Power output S1 100%	2.5kW
输出功率S6 40%	3.75kW	Power output S6 40%	3.75kW
输出扭矩S1 100%	0.4N.m	Output torque S1 100%	0.4N.m
输出扭矩S6 40%	0.6N.m	Output torque S6 40%	0.6N.m
额定电流S1 100%	7.5A	Rated current S1 100%	7.5A
额定电流S6 40%	11.3A	Rated current S6 40%	11.3A
气流量	82-90L/min	Gas flow	82-90L/min
冷却方式	水冷	Cooling system	Water cooling
冷却流量	$\geq 2\text{L/min}$	The cooling flow rate	$\geq 2\text{L/min}$
电机温度传感器类型	KTY84-130	Motor temperature sensor type	KTY84-130
换刀方式	手动换刀	Tool change	Manual
振动速度	$\leq 0.2\text{mm/s}$	Vibration velocity	$\leq 0.2\text{mm/s}$
重量	10.5kg	Weight	10.5kg

DQFX-16506/8.5-WM



型号	DQFX-16506/8.5-WM	Spindle model	DQFX-16506/8.5-WM
直径	Φ165mm	Diameter	Φ165mm
最高转速	6,000rpm	The highest speed	6,000rpm
砂轮尺寸	200mm/8英寸	Grinding wheel dimensions	200mm/8inch
轴承类型	气浮轴承	Bearing type	Air bearing
最大频率	400Hz	Max. Frequency	400Hz
电机类型	同步	Motor system	Synchronous
额定电压	220V	The rated voltage	220V
输出功率S1 100%	8.5kW	Power output S1 100%	8.5kW
输出功率S6 40%	12.75kW	Power output S6 40%	12.75kW
输出扭矩S1 100%	13.5N.m	Output torque S1 100%	13.5N.m
输出扭矩S6 40%	20.3N.m	Output torque S6 40%	20.3N.m
额定电流S1 100%	27A	Rated current S1 100%	27A
额定电流S6 40%	40.5A	Rated current S6 40%	40.5A
气流量	76-84L/min（气压0.6MPa）	Gas flow	76-84L/min(Air pressure 0.6MPa)
冷却方式	水冷	Cooling system	Water cooling
冷却流量	≥2.5L/min	The cooling flow rate	≥2.5L/min
电机温度传感器类型	KTY84-130	Motor temperature sensor type	KTY84-130
换刀方式	手动	Tool change	Manual
振动速度	≤0.15mm/s	Vibration velocity	≤0.15mm/s
重量	79.5kg	Weight	79.5kg

DQFYM-20904/7.5-WM



型号	DQFYM-20904/7.5-WM	Spindle model	DQFYM-20904/7.5-WM
直径	Φ208.5mm	Diameter	Φ208.5mm
最高转速	4,000rpm	The highest speed	4,000rpm
砂轮尺寸	300mm/12英寸	Grinding wheel dimensions	300mm/12inch
轴承类型	气浮轴承	Bearing type	Air bearing
最大频率	266Hz	Max. Frequency	266Hz
电机类型	同步	Motor system	Synchronous
额定电压	220V	The rated voltage	220V
输出功率S1 100%	7.5kW	Power output S1 100%	7.5kW
输出功率S6 40%	11.25kW	Power output S6 40%	11.25kW
输出扭矩S1 100%	18N.m	Output torque S1 100%	18N.m
输出扭矩S6 40%	27N.m	Output torque S6 40%	27N.m
额定电流S1 100%	23.5A	Rated current S1 100%	23.5A
额定电流S6 40%	32.5A	Rated current S6 40%	32.5A
气流量	60-90L/min（气压0.65MPa）	Gas flow	60-90L/min(Air pressure 0.65mpa)
冷却方式	水冷	Cooling system	Water cooling
冷却流量	≥3.5L/min	The cooling flow rate	≥3.5L/min
电机温度传感器类型	KTY84-130	Motor temperature sensor type	KTY84-130
换刀方式	手动	Tool change	Manual
振动速度	0.15mm/s	Vibration velocity	0.15mm/s
重量	150.5kg	Weight	150.5kg

市场布局

Market Layout



 Manufacturing Sites  Sales & Service Locations

Europe

- | | | |
|---|--|--|
|  Barcelona, Spain
MAVILOR MOTORS S.A.U. |  Yverdon-les-Bains, Switzerland
CYBELEC SA |  Lourdes, France
INFRANOR SAS |
|  Hanau, Germany
INFRANOR GERMANY |  Arese (MI), Italy
INFRANOR ITALY |  Barcelona, Spain
INFRANOR SPAIN |
|  Regensdorf, Switzerland
INFRANOR SWITZERLAND |  Lourdes, France
INFRANOR SAS | |

North America

-  Wilmington, MA, USA
INFRANOR USA

ASIA

- | | |
|---|--|
|  Guangzhou, China
Guangzhou Haozhi Industrial Co., Ltd. |  Yueyang, Hunan, China
KLKJ |
|  Shanghai, China
CNCT |  Yueyang, Hunan, China
Hunan Linear Motion |
|  Suzhou, China
Guangzhou Haozhi Industrial Co., Ltd. |  Shanghai, China
IMCT |
|  Bac Ninh Province, Vietnam
Haozhi Industrial (Vietnam) Co., Ltd. | |

为客户带去超值 · 为股东创造所值
为员工体现价值 · 为社会营造增值

Deliver Extra Value To Customers.
Create Lucrative Value For Shareholders.
Help Employees Realize Their Values.
Bring Added- Value To Society.