

万鑫精工(湖南)有限公司

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Permanent Magnet Direct Drive Ceiling Fan Permanent Magnet Gearbox Ceiling Fan



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Ventilation & Cooling Solution Provider





Company Introduction

Wanshin Seikou (Hunan) Co., Ltd. is the company in Hunan Province that integrates R & D, production, sale and service. Mainly producing high precision gearbox, gear motor, servo motor, driver, etc. Intelligent products, is a professional mechatronics enterprise.

Wanshin occupies 15,000 m² and with 560 employees, has more than 300 advanced production equipment imported from China and abroad, and its fixed assets of the equipment reaches more than USD1.5 million. The annual production capacity is about 500,000 sets of gear motors. Wanshin puts 15% of the operating revenue into R&D, R&D engineer account for over 20%, and 70% are master degree graduation.

In 2018, Wanshin established R&D center in Japan named "Qingquan Precision Co., Ltd", and hired a team of Japanese experts to develop new products, through continuous innovation, a complete high-precision integrated mechanical and electrical products and motor performance laboratory have been established with advanced testing capabilities level. The Intelligent Control Technology Research was established in Shenzhen to carry out research and development of high-performance permanent magnet servo control technology.



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R & D Strength

Professional Engineering Team

Every year, Wanshin recruits outstanding R&D engineers from 985 and 211 key universities in China, majoring motor engineering, control engineering, mechanical engineering etc. and the R & D leader is the doctoral supervisor in university.

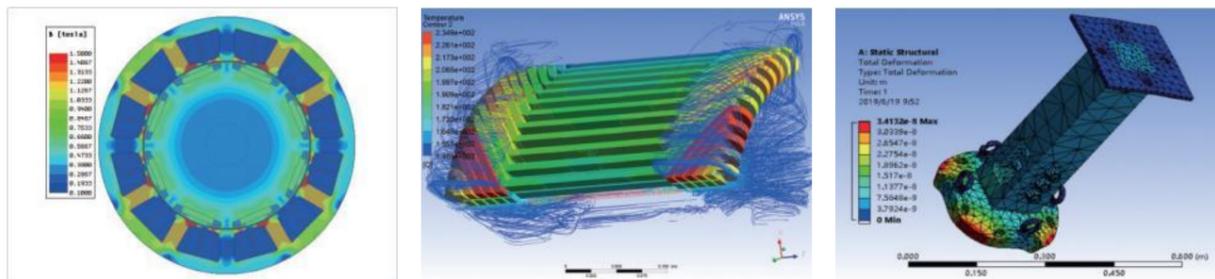


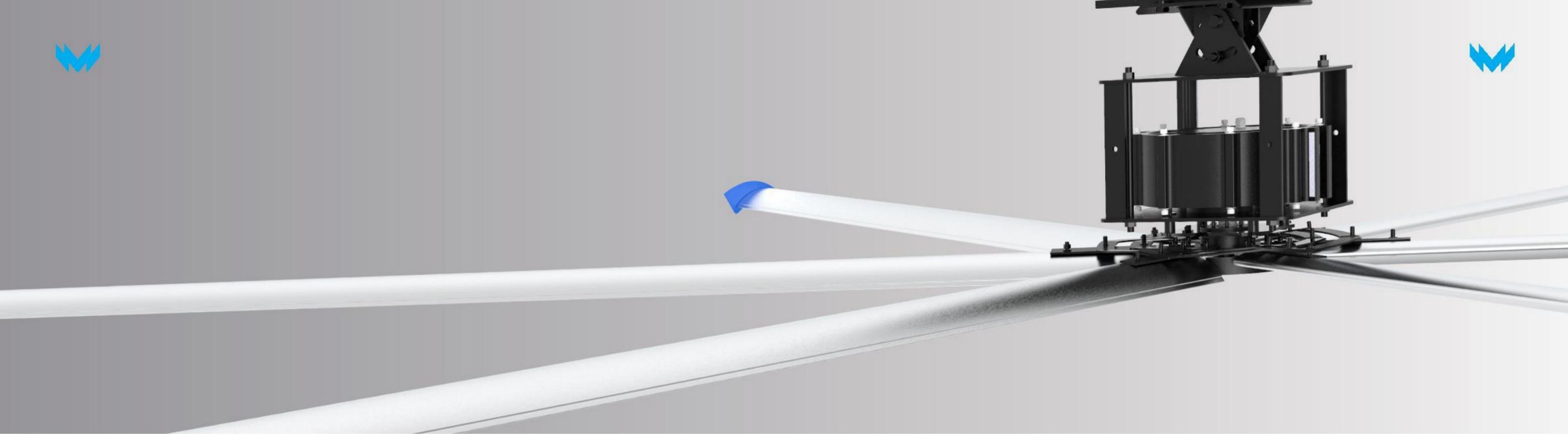
Advanced Design Software

We have advanced design, analysis and animated software, such as ANSYS、DSPACE、MATLAB, etc. They are able to conduct comprehensive analysis and calculation for magnetic field, electromagnetic field and stress field of motor. Meanwhile, they possess the ability to research and design full power permanent magnet motor. Over 10 related core technology applications and national invention patents are granted.

First-class Testing Equipment

To guarantee quality for each product, we have first-grade testing equipment, such as test platform, power analyzer, thermal imager and digital vibration monitor, with power and torque is about 0.75kW-45kW and 5Nm-1000Nm.





Product Introduction

Solution Provider of ventilation and cooling for big space.

Wanshin use the aerodynamics principle, advanced processing equipment and process to produce the industrial energy-saving fan, use 1.5KW permanent magnet motor, with two options: Permanent magnet direct drive and Permanent magnet gearbox for your choice. Six streamline blades with a diameter of more than 7 meters are driven to drive 13850 m³ of air flow per minute, generating a natural breeze system in an area of about 1300 m², bringing good effects of environmental ventilation, personnel cooling, dehumidification and moisture-proof.

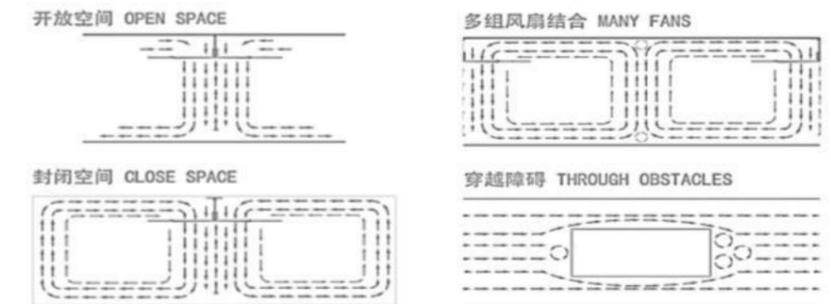
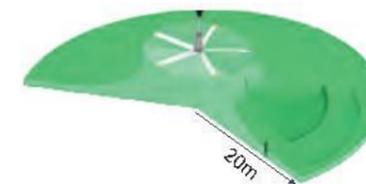
The use of permanent magnet motor drive can reduce the weight and save installation space. The improvement of motor efficiency effectively improves the operation energy consumption. The full load for a fan with a diameter of 7.3m is only 1.5KW. In normal use, it runs for 8 hours every day and only needs 12 kwh.

Safety design modal analysis, using multiple safety structure design, to ensure product safety.

Diameter (m)	Speed (RPM)	Average Power	(KW) Electricity Saving
7.3	53	1.5	20%

Ventilation Principle

Fan Air Flow Direction



- Three dimensional natural breeze
- Circulation natural breeze
- Optimum air position design
- Dehumidification and moisture-proof
- Cooling up to 8°C

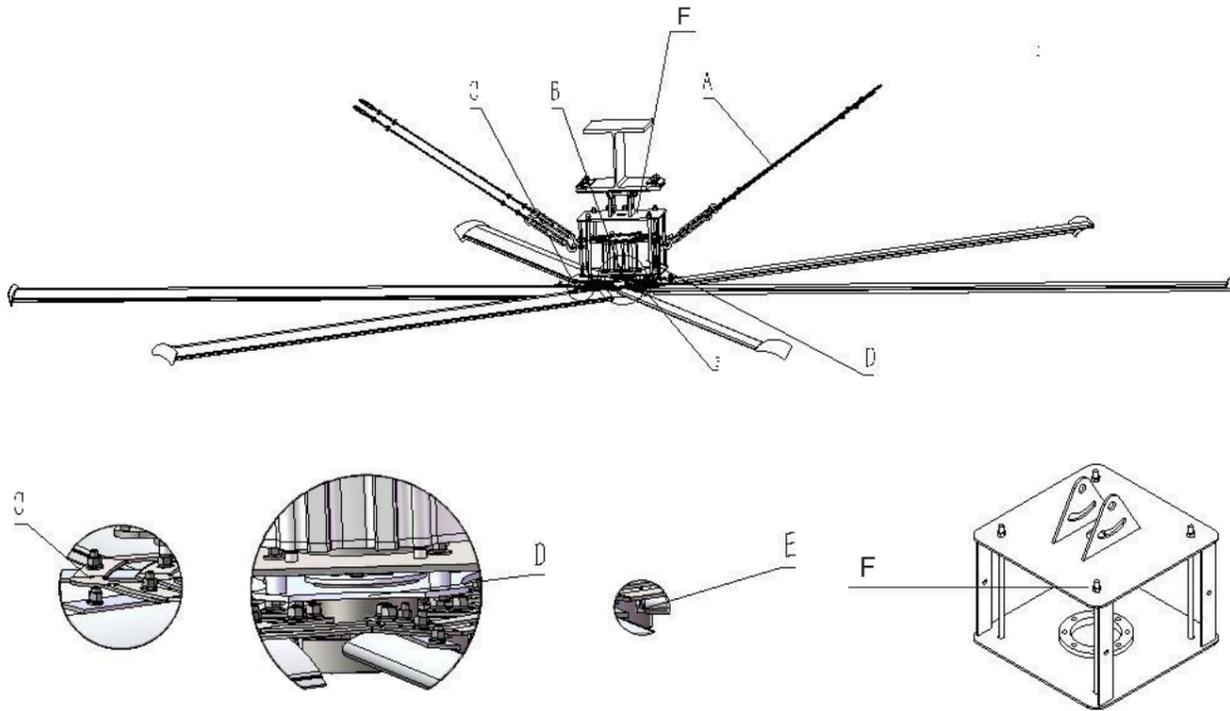




Advantage

一、Advantage

Structure Diagram



- A Bowden Cable
- B Fan Body
- C Ring Guard Plate
- D Safety Guard Board
- E Seperate Plug-In
- F Screw+Soldering protection frame

Safety structure to ensure safety,in case accident

Electrical and structural protection measures are designed for accident as follows:

- A. Motor shaft failure: There are total 7 precautions, including 4 sets high-strength fasteners, 1 lock nut, 1 cotter nut and a set of shaft rod connectors.
- B. Bearing failure: The whole rator disk are put on the stator disk, within the interval of 10mm, no parts will fall off.
- C. Accidental Collision: The worst thing is root failure, there is a type I connection ring to protect the root plug-in, so part will fall off.

The above list are for worst accidents, the design of the fan are ultra-high safety deign, the users can rest assured to use.

二、 Advantage for driving system

High Relaiability

Direct drive structure, without gear reducer, compact structure,, greatly improve the reliability and performance, maintenance-free.

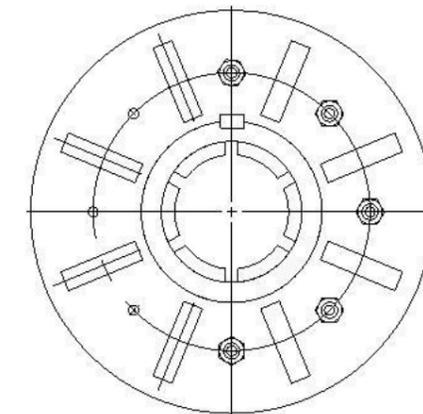


High Efficiency

Adopts permanent magnet material with high magnetic performance and special built-in tangential rotor magnetic circuit structure, with higher magnetic energy utilization ratio, stronger anti demagnetization effect and the torque increased by 20% comparing with similiar product in the market.

High Torque

Adopts advanced permanent magnet synchronous motor with simple structure and high efficiency, it can save 20% power and reduce 70% motor height comparing with similiar product in the market, especially suitable for limited space installation.

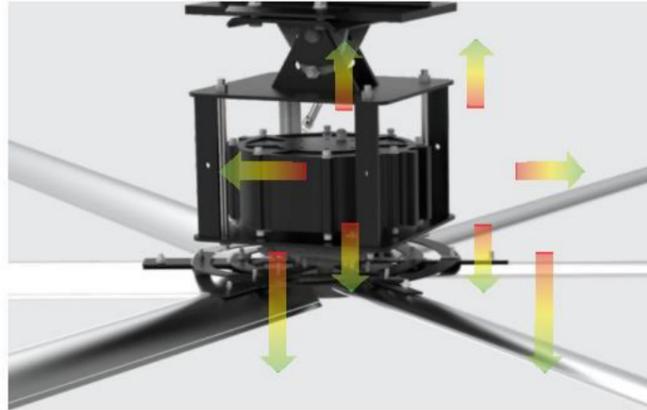


Permanent Magnet Motor



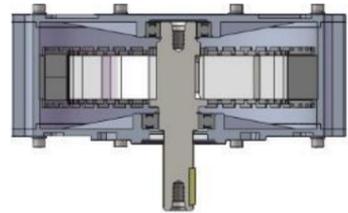
Lower Temperature Rise

The internal rotor structure with external heat source has excellent heat dissipation effect and low temperature rise of the motor. With superior heat conduction efficiency compared with similar products on the market owing to the motor heat source is put on the outer layer, which directly dissipates heat to the surrounding air through the casing; also, the airflow directly acts on the surface of the motor to take away the heat emitted by the heat source timely, and the motor temperature rise is very low, the surface temperature rise is lower than 20k, which can greatly improve the service life and the stability.

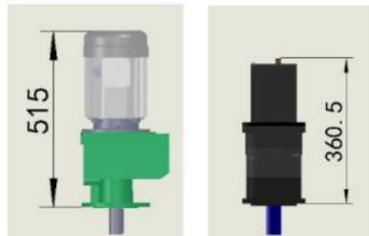


High Loading

With inner rotor structure, the motor vibration is smaller, the noise is lower than 55 decibels, the protection level reaches IP56, maintenance-free, the motor failure rate is less than 0.2%, the special angular contact bearing, large shaft extension diameter, strong bearing capacity and strong reliability.



三、Advantage for Transmission System



Normal Structure Wanshin Structure

Compact Structure

Integrated structure with high-speed permanent magnet synchronous motor and planetary reducer; comparing with similar product on the market, the transmission structure is 150mm shorter, lower 28% , which significantly reduces the installation space. The weight of the whole unit is 27kg, 18kg lighter than a similar brand, reduced by 40%, which is convenient for installation and maintenance.

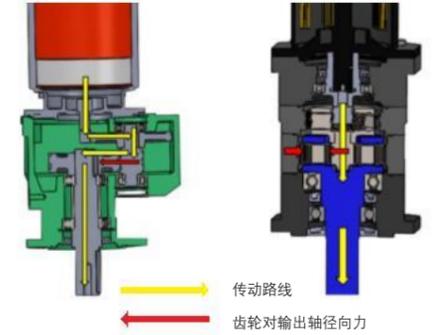
Strong Impact Resistance

Adopting gearbox transmission, the planetary reducer has the inherent advantages of radial forces canceling each other out of the gears, flexible transmission power, strong impact resistance, effectively solving the problem for output gear end bearing easily caused by the four series of reducers which is commonly used in the market such as oil leakage, noise etc. problem.



Easy Maintenance

The split design for the motor and the reducer effectively prevents the lubricant of the reducer from entering the motor, avoids the risk of burning, and greatly improves the safety of the transmission components. Easy to disassemble, low maintenance cost.

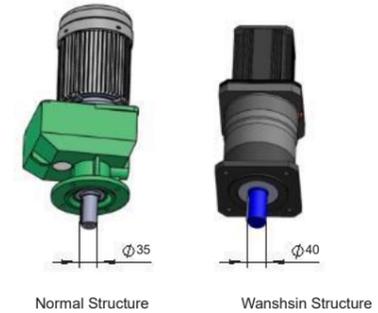


Excellent Performance

Through the special tooth profile optimization design to improve the transmission efficiency and lower the noise, The motor full-load noise is lower than 63 decibels, and the overall transmission efficiency is over 98%, which is over 15% energy saving than similar product. High starting and running torque, more safer and stable, soft air volume to improve the comfort of the unit.

High Safety

Unique mechanical design structure, the output shaft diameter can be increased to 40mm; the gears are grinding process of carburizing and quenching hard tooth surface, to improve the gear resistance performance and greatly improve the safety of the whole unit.



Normal Structure Wanshin Structure

三、Integrated Design

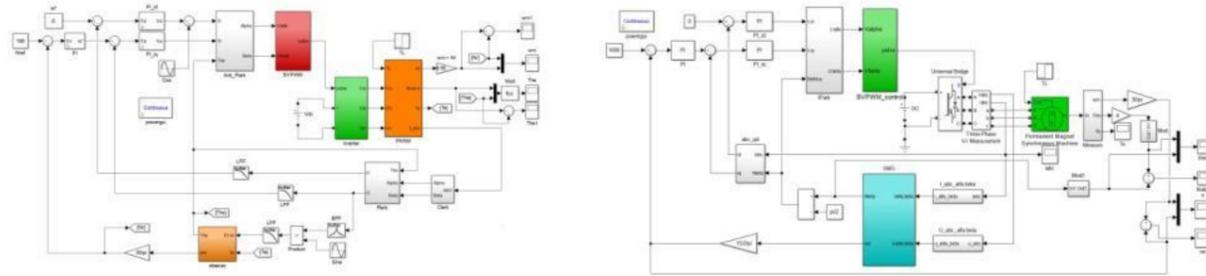
The integrated design for drive motor and controller with better match performance, low noise, better running stability, which can realize remote control and mobile app control function.





Low-Frequency Operation

With sensorless vector control strategy is adopted for electricity mold, which can automatically identify the motor position and run stably in the whole speed range; the intelligent carrier frequency control is adopted to make the stator current perfect without harmonics, the torque stable and 5Hz low frequency can output rated torque.



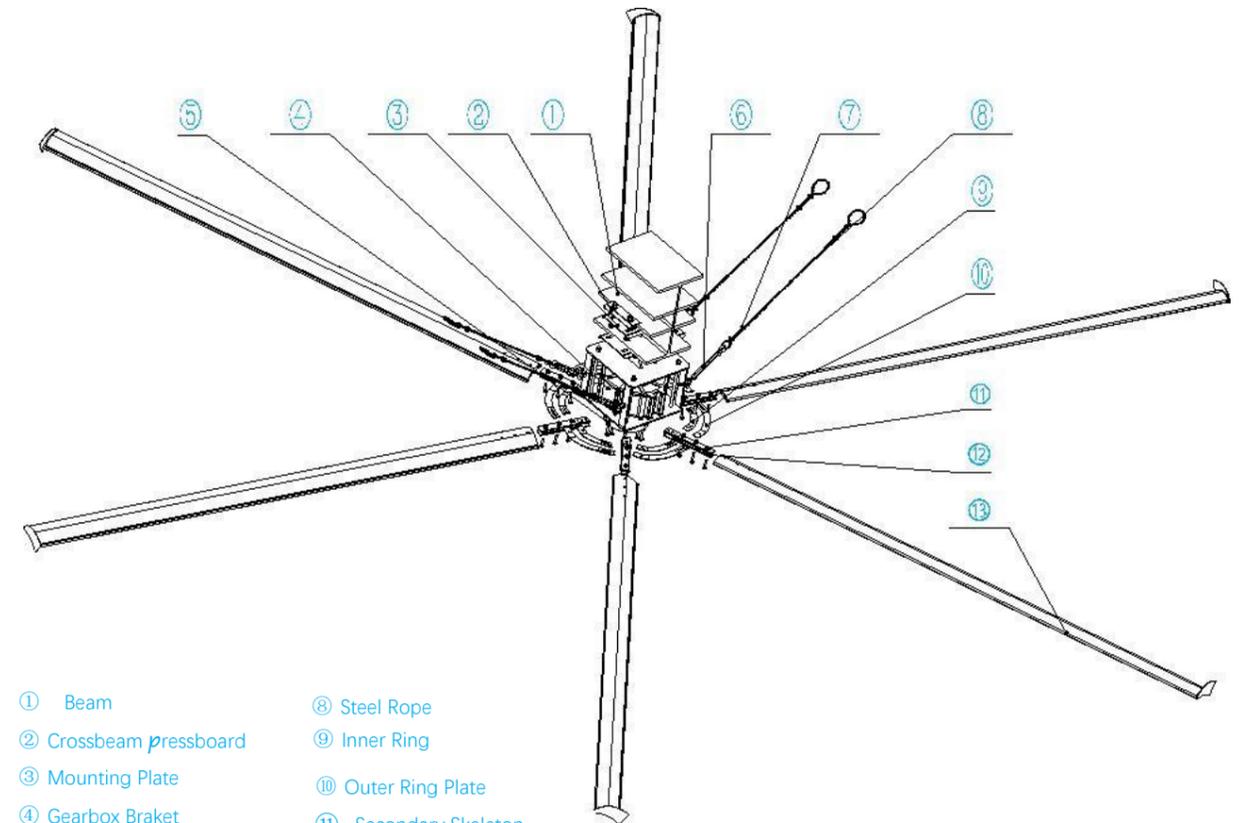
Add a dust net on control cabinet and with groove at the bottom of the box, leaving holes to ensure the oil can be drained from the recesses. The surface of the control circuit board is coated with three anti-paints and covered with an acrylic board to enhance the Immunity and corrosion resistance.

Rails and troughs are installed in the cabinet, the electrical wiring is arranged clearly, neatly and steadily to prevent unstable factors due to external factors and to ensure that the control cabinet is efficient and stable.



Installation Mode

Permanent Magnet direct drive Installation Mode



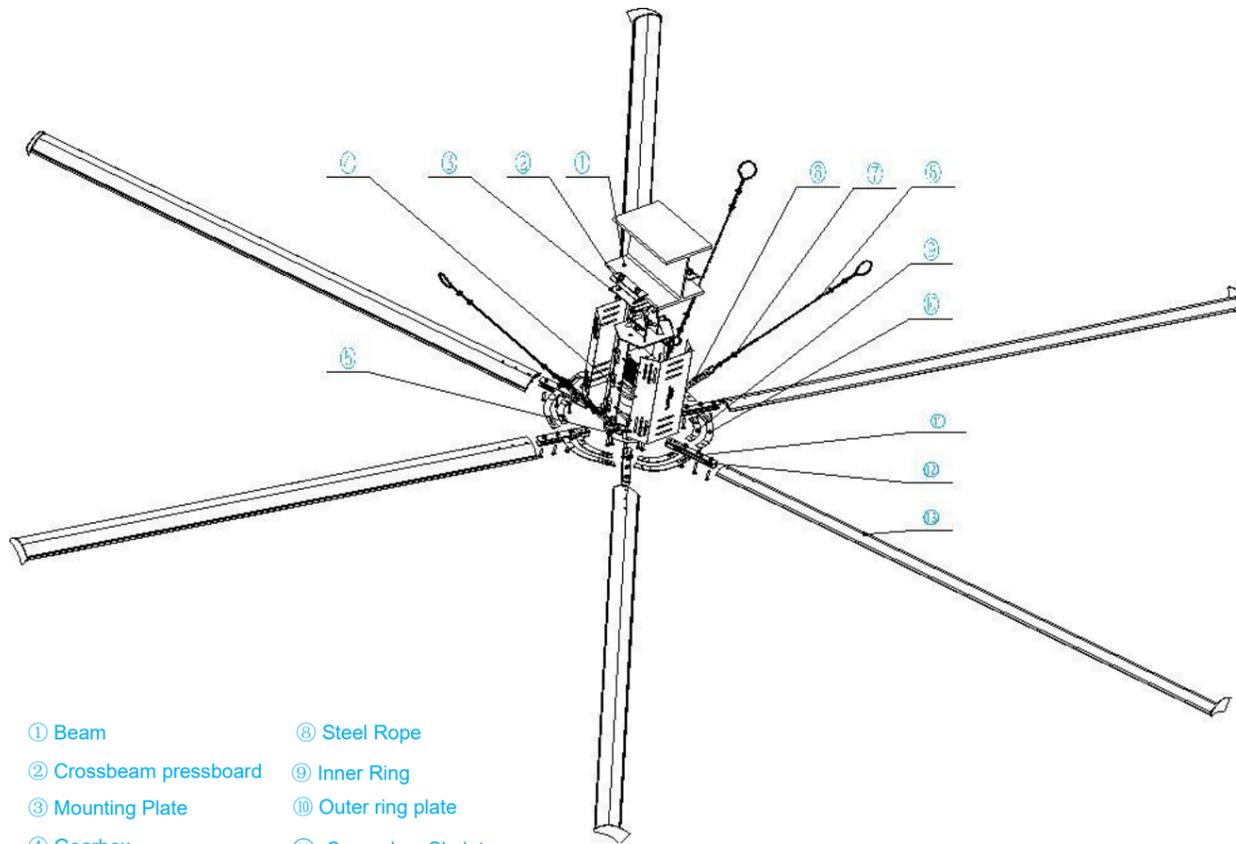
- ① Beam
- ② Crossbeam pressboard
- ③ Mounting Plate
- ④ Gearbox Braket
- ⑤ Baseplate
- ⑥ Buckle
- ⑦ Rope Clip
- ⑧ Steel Rope
- ⑨ Inner Ring
- ⑩ Outer Ring Plate
- ⑪ Secondary Skeleton
- ⑫ Main Skeleton
- ⑬ Blade Tail Parts

Installation Steps:

1. Use M18 bolts and nut to fix the crossbeam pressboard②、mounting plate③ on beam①.
 2. Align the gearbox bracket assembly ④ with the lifting lug of mounting plate, use M18 bolt to pass through the lifting lug hole and screw in the nut.
 3. Use a level meter to adjust the gearbox bracket assembly, make gearbox bracket assembly baseplate horizontal, fasten the bolt.
 4. Pull the gearbox bracket assembly through buckle⑥、steel rope⑧、rope clip⑦, fix the other end of steel wire on workshop crossbeam pressboard.
 5. Install main Skeleton⑫, secondary skeleton⑪in the baseplate⑤, and fix them with M12 bolts and nuts.
 6. Insert the blade tail parts ⑬ on the main frame.
 7. Press the inner ring⑨ and outer ring plate⑩ crosswise on the blade, and fix them on M10 bolts and nuts.
- Install the main framework ⑫ and the auxiliary framework ⑪ in the chassis slot ⑤ and fix them with M12 bolts and nuts Use M18 bolts and nuts to fix the cross beam pressing plate ② and mounting plate ③ on the cross beam ① of the power house11



Permanent Magnet Gearbox Installation Mode

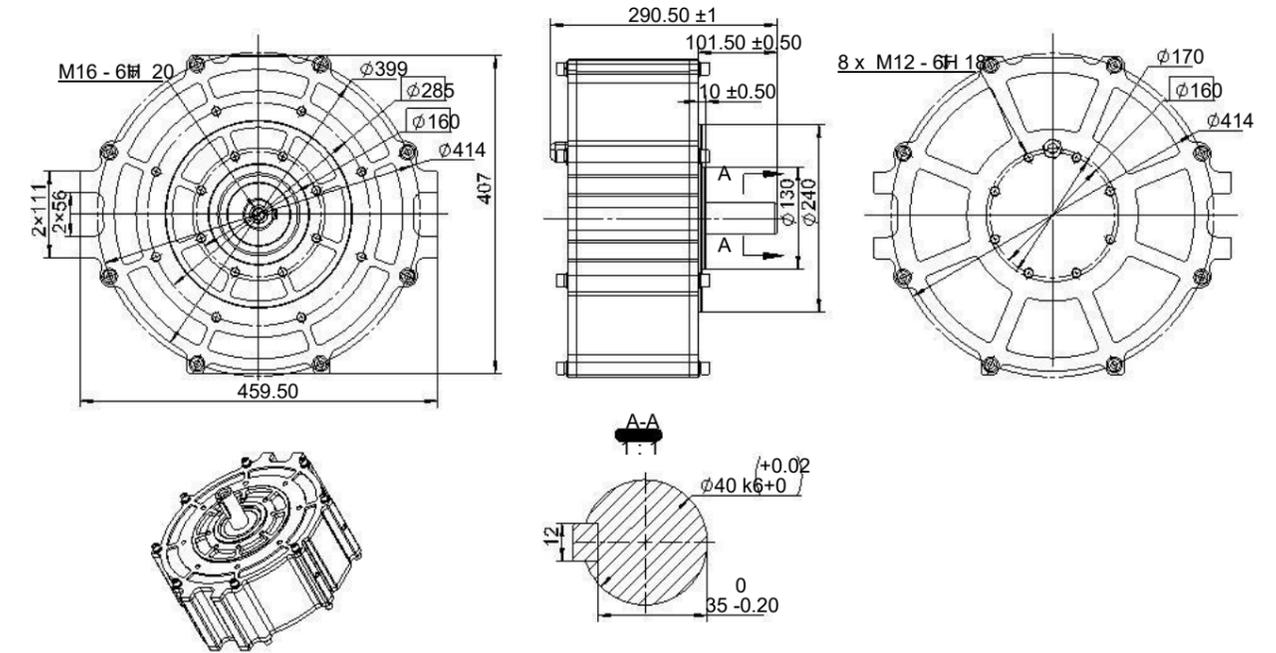


- ① Beam
- ② Crossbeam pressboard
- ③ Mounting Plate
- ④ Gearbox Bracket Assembly
- ⑤ Baseplate
- ⑥ Rope Clip
- ⑦ Steel Rope
- ⑧ Inner Ring
- ⑨ Outer ring plate
- ⑩ Secondary Skeleton
- ⑪ Main Skeleton
- ⑫ Blade Tail Parts

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Parameters



Motor Model No.: DIFPM-3-110 (Driving diameter 7.6m blade motor)

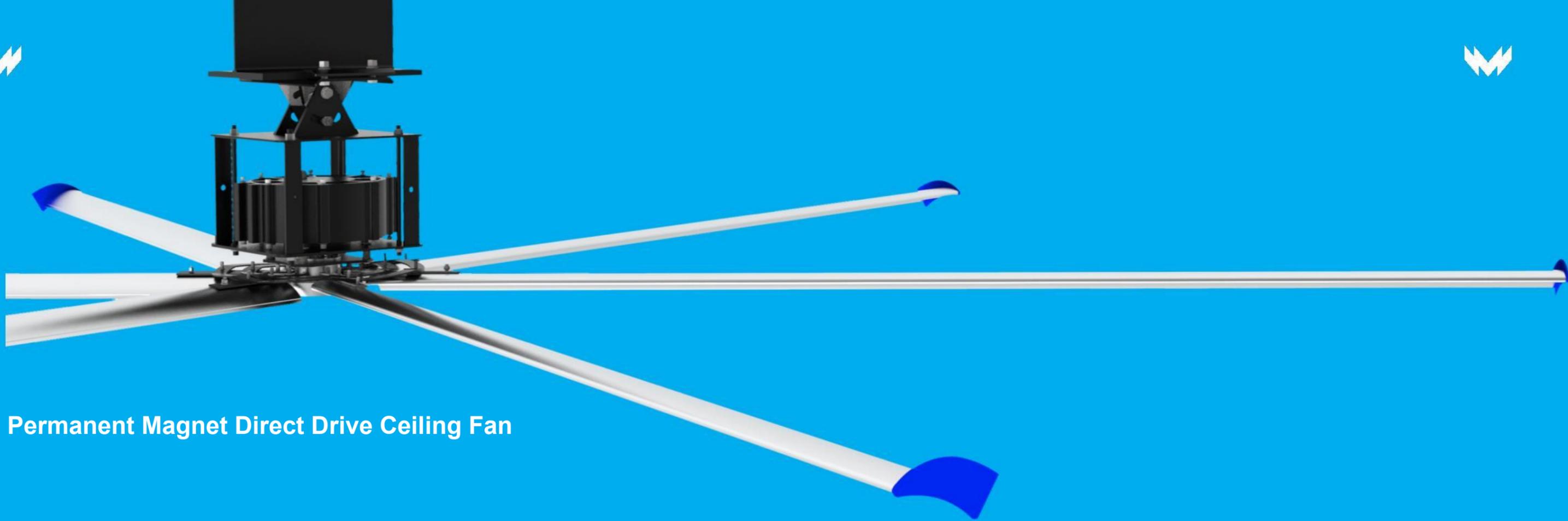
Power Supply Voltage (VAC)	Rated Current (A)	Noise (dB)	Rated Speed (r/min)	Isolation Grade	Protection Grade
380	2.4	≤55	53	F	Ip56

Motor Model No.: DIFPM-1-15 (Driving diameter 3.6m blade motor)

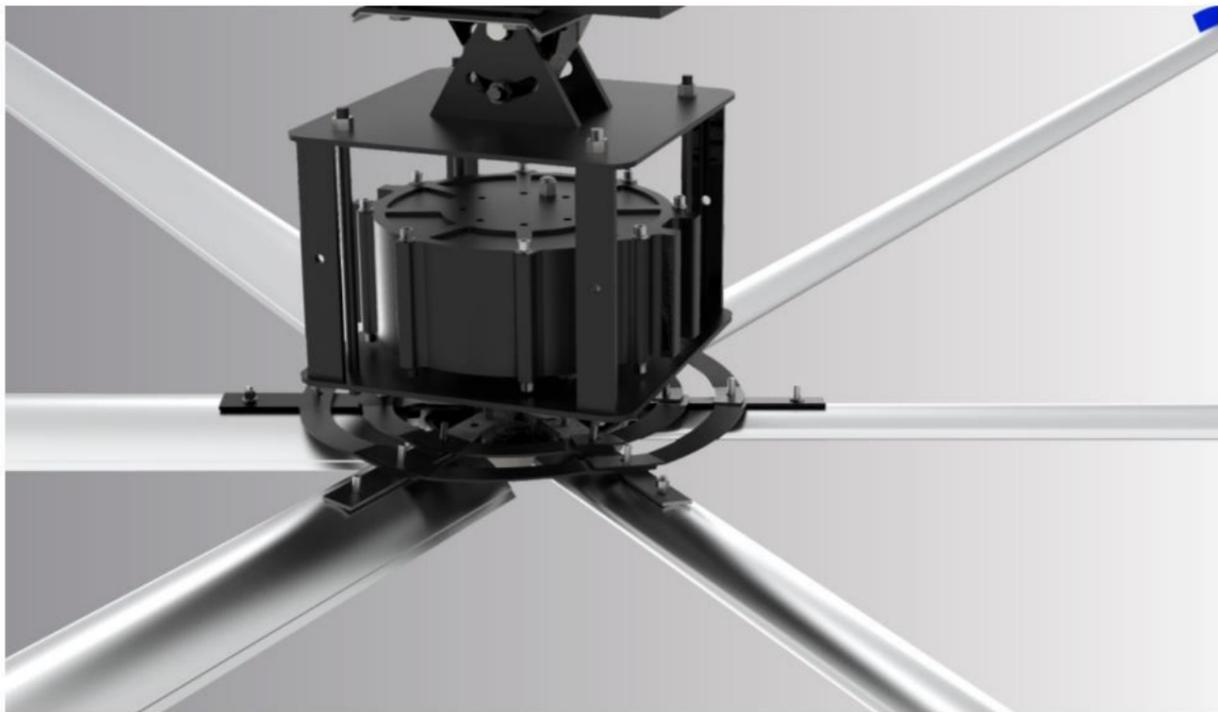
Power Supply Voltage (VAC)	Rated Current (A)	Noise (dB)	Rated Speed (r/min)	Isolation Grade	Protection Grade
220	0.95	≤55	90	F	Ip56

Motor Model No.: DIFPM-1-8 (Driving diameter 2.8m blade motor)

Power Supply Voltage (VAC)	Rated Current (A)	Noise (dB)	Rated Speed (r/min)	Isolation Grade	Protection Grade
220	0.5	≤55	90	F	Ip56

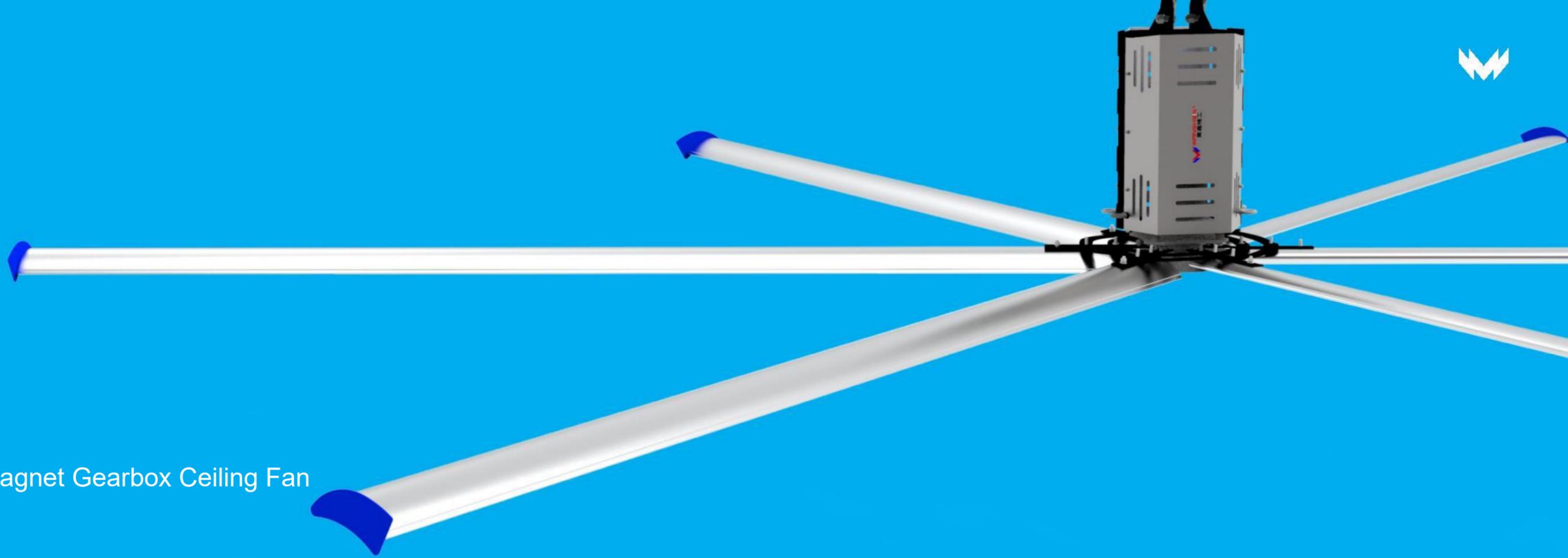


Permanent Magnet Direct Drive Ceiling Fan



Parameters

Technical Specification	7.3m
Driving System	Permanent Magnet Motor
Model No.:	WF6PM73
Full Load Air Volumn	13100m ³ /min
Speed Range	10-53RPM
Main Body Weight	141kg
Input Power	1.5kW
Full Load Current	3Amps/380V



Permanent Magnet Gearbox Ceiling Fan



Permanent Magnet Gearbox Ceiling Fan

Technical Specification	7.3m
Driving System	Permanent Magnet Motor + Gearbox
Model No.	WF6EG73
Full Load Air Volumn	13100m³/min
Speed Range	5-53RPM
Main Body Weight	120kg
Input Power	1.5kW
Full Load Current	3.5Amps/380V 5.7Amps/220V



Applications



Workshop



Warehouse/ Logistics



Gym



Bus/Strain Station



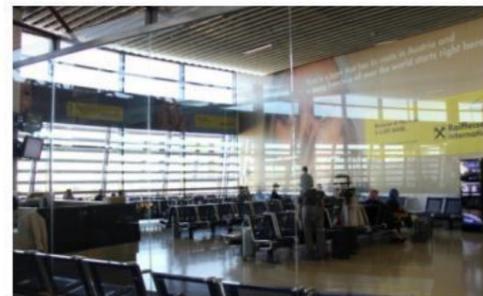
Exhibition Center



Canteen



Indoor Court



Airport Lounge

Security Service Guarantee

Security

- 1. Safety alarm device in control cabinet, built-in overload protection, timely send out alarm signal to ensure safe operation.
- 2. With Blade safety connecting piece and shaft connecting guard plate.
- 3. All fasteners have torque standard to achieve the best fastening and anti loose structure.
- 4. On-site testing to ensure installation effort.



Quality Guarantee

- 1. Strictly follow ISO9001 standard, and complete 3C product certification.
- 2. 100% full inspection for parameters and noise inspection before delivery, quality standard is consistent with the international.
- 3. Quality Guarantee 3 years for whole unit.
- 4. In case of any use problem, the After-sales Department shall respond within 24 hours.
- 5. Customized project are warmly welcome.

长沙 印度 俄罗斯 澳大利亚 苏丹 巴西 美国

Partners

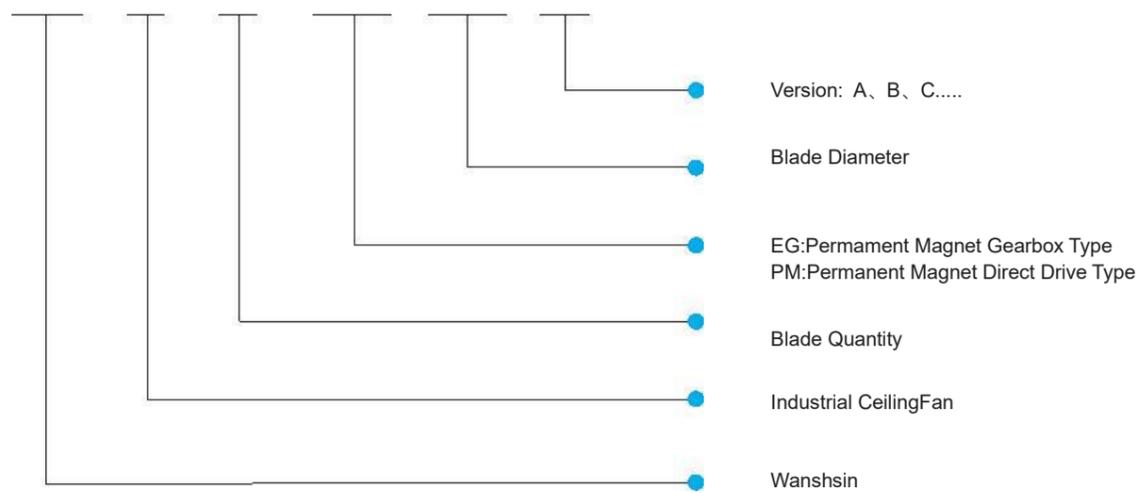




Specification for Ceiling Fan



W F 6 EG 73 A

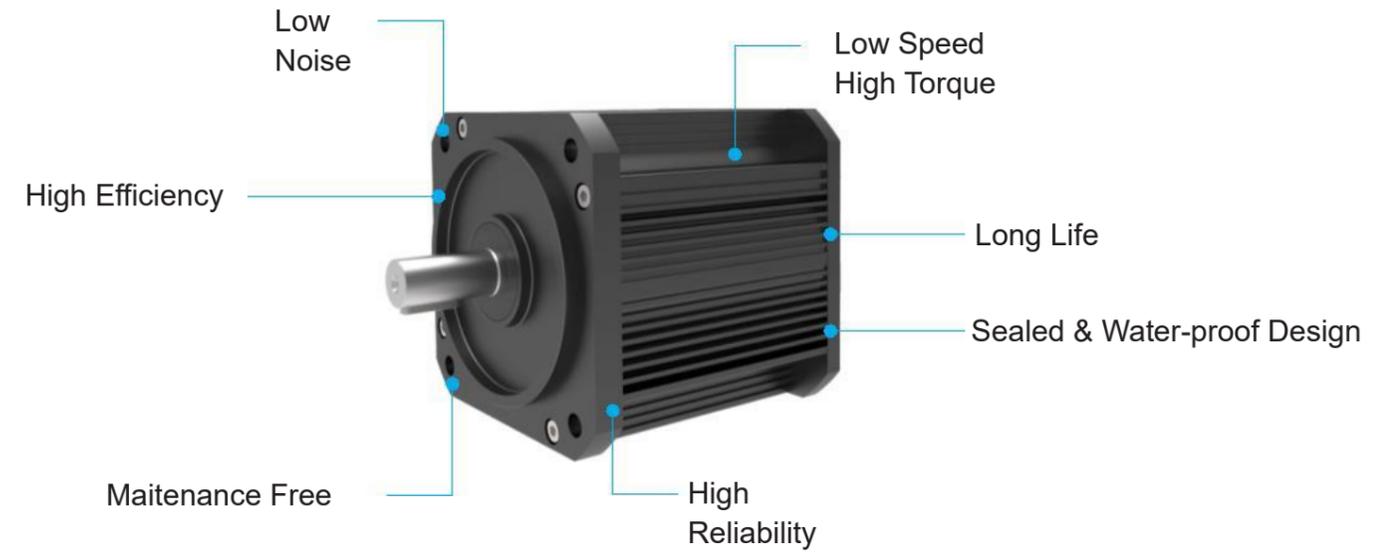


Model No.



W	DS	300	B	025	-
Wanshin	Series	Max. Torque (N·m)	Grade A: 1 B: 2 C: 3	Ratio: 25	Motor Type

Features

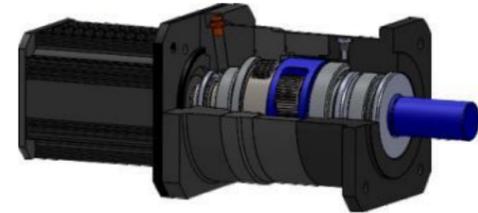




Gearbox Features:

Innovative Design

Unique design to use permanent magnet motor+gearbox together, compact structure, small size, light weight, oil lubrication for gearbox and double oil seal for output shaft. Applied patent.



Advantage

Small Size

Overall dimension for motor and reducer 150mm shorter than similar brand on the market
Small Installation space, reduce the cost for frame.



Light Weight

Light design
Adopt lightweight aluminum alloy design for rear cover and base, greatly reduce the weight, total weight is 27KG, more easy for installation and maintenance.



Low Noise

During the full load test for motor reducer assembly, the noise is less than 63dB at a distance of 1 meter.

Improve the comfort of the whole unit.

High Strength

The gear is processed by carburizing and quenching hard tooth surface grinding to enhance the resistance and impact resistance of gear; Use First class bearing brand in China, the output support is bigger than others, with better strength and long life time.

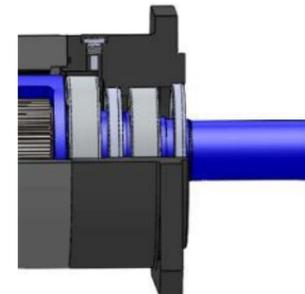


High Transmission Efficiency

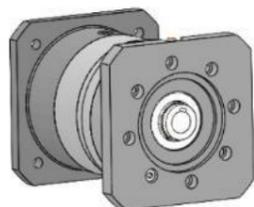
Greatly improve the transmission efficiency by using oil lubrication and gear optimization, more than

Good Sealing Performance

Two oil sealing on output shaft, with better sealing performance.



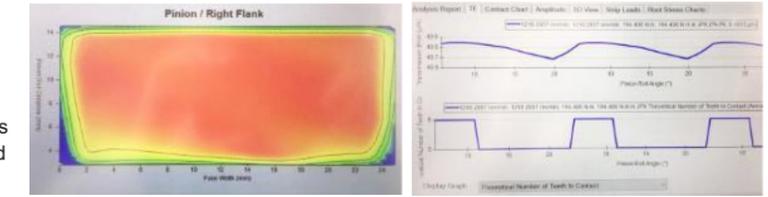
Split design for gearbox and motor can meet customer's requirement to match different brand motor



Advantages

Gear Optimization Design

Use CAE simulation software to modify the tooth surface and get the best tooth surface and lowest transfer error. Optimized design of gear parameters for special application condition, reduce noise and avoid response with blade.

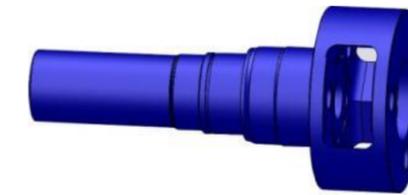


Tooth Contact Surface

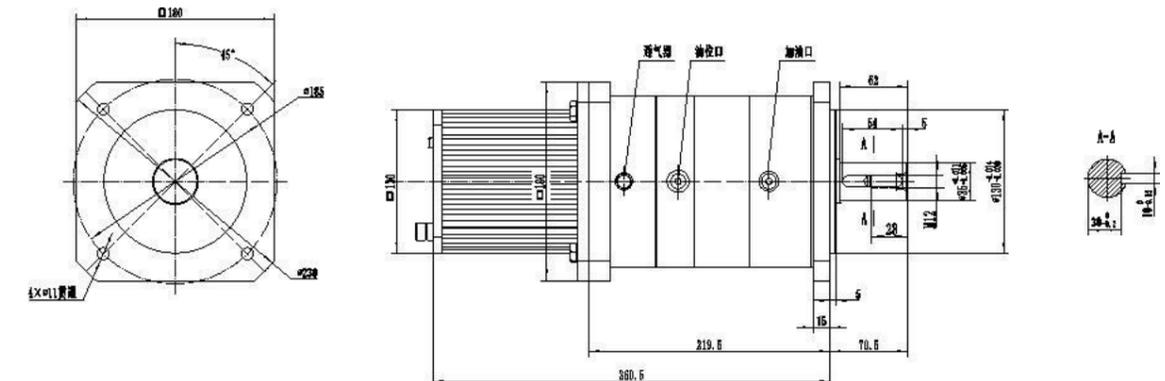
Transfer Error

Integrated Structure for Output Shaft

Greatly improve the precision and rigidity of output shaft and frame.



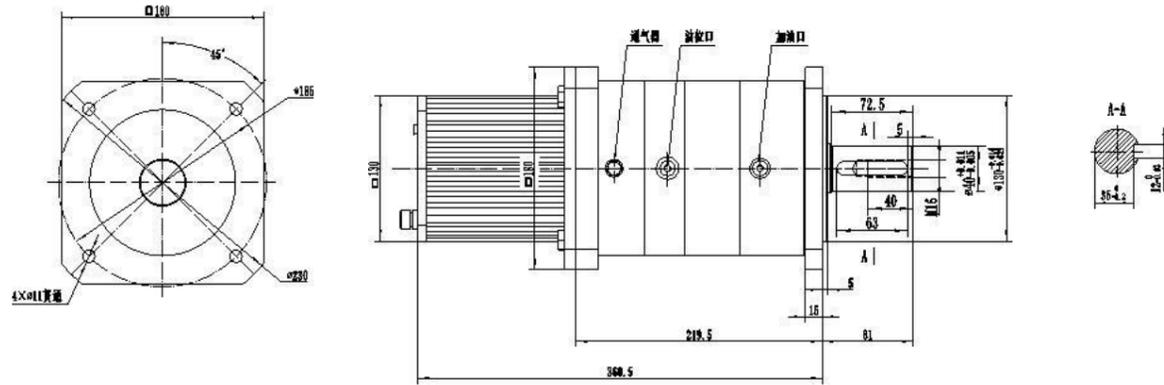
Outline drawing for Gearbox-35 shaft Technical Parameter



Motor Parameter		Gearbox Parameter	
Rated Voltage	380VAC	Ratio	25.55
Rated Speed	1350rpm	Rated Output Torque	300Nm
Rated Power	1.5kW	Emergency Stop Torque	900Nm
Rated Current	3Arms	Torque Rigidity	27Nm/arcmin
Protection Level	Ip55	Servide Life	30000hr
Isolation Grade	F	Efficiency	≥97%
Cooling Mode	Cold breeze	Temperature	-20℃~100℃
Weight	7Kg	Proection Grade	Ip54
		Lubrication	Lubrication Oil
		Noise (w/o Load)	≤60dB
		Weight	20Kg



Outline Drawing for Gearbox- 40 shaft Technical Parameter



Motor Parameter		Gearbox Parameter	
Rated Voltage	380VAC	Ratio	25.55
Rated Speed	1350rpm	Rated Output Torque	300Nm
Rated Power	1.5kW	Emergency Stop Torque	900Nm
Rated Current	3Arms	Torque Rigidity	27Nm/arcmin
Protection Level	Ip55	Service Life	30000hr
Isolation Grade	F	Efficiency	≥97%
Cooling Mode	Cool breeze	Temperature	-20°C~100°C
Weight	7Kg	Proection Grade	Ip54
		Lubrication	Lubrication Oil
		Noise (w/o Load)	≤60dB
		Weight	20Kg

Main Spare Parts

Frame Assembly:

High strength steel plate welding and multi link bearing connection, more safe and reliable.



Main Frame

National 2A12 high strength aluminum alloy, cold forging process+anodizing process.



Base

Aerial aluminum alloy material (6061-T6), hot forging technology, CNC lathe process after integrated forming. Precision tolerance within±0.05mm.



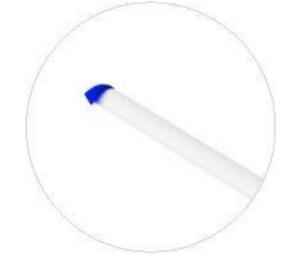
Protection Cover

Spray white and bright epoxy plastic powder, beautiful appearance, strong protection.



Blade+Tail

Aerial aluminum alloy (6063-T6), internal stiffener design, aerodynamic blade, wing unique design.



Tapered Sleeve

CNC precision machining technology, improve contacting area with base cone area



Zinc-plating on spare parts surface, with better anti-corrosion performance,



Assembly Plate



Inner Press Plate



Outer Press Plate



Protection Plate



Inner Ring & Outer Ring



Connection Board