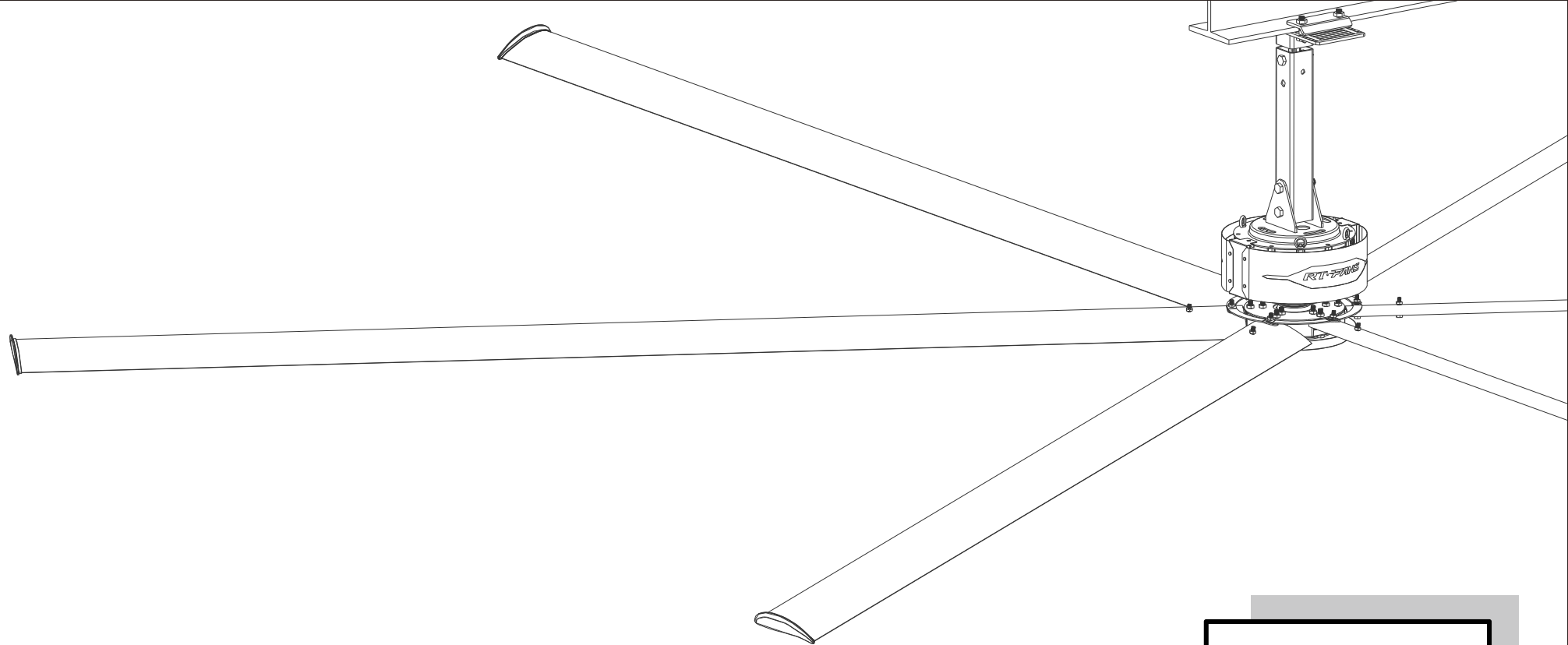




**Industrial HVLS
PMSM Series**
风彩系列

RT-FANS 瑞泰风

Save Energy, Stay Cool

广东瑞泰通风降温设备有限公司

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Instruction Manual

—PMSM HVLS fan

安装说明书

—大型工业风扇

RT-FANS

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INSTRUCTION/ 前言

To our respected users

Thank you very much for purchasing and using RTFANS RTF-DF series PMSM HVLS (High Volume, Low Speed) fan.

This Instruction Manual mainly serves the installers and daily users of RTFANS Industrial fans, for installation, daily use, routine maintenance. The possible problems and precautions in troubleshooting are systematically explained and directed.

Please read this instruction manual carefully before installation and operation, to comply with the relevant national safety regulations and the installation process of this manual, safe and efficient use of RTFANS industrial HVLS fans.

In the course of daily use, if you encounter any problem or malfunction not involved in this article, please call the service phone or contact with RTFANS or local authorized dealer.

致尊敬的用户

非常感谢您购买和使用瑞泰风RTF-DF风彩系列工业风扇。

本手册主要服务于瑞泰风大型工业风扇的安装人员和日常使用人员, 对在安装、日常使用、例行维护、故障排除等方面可能出现的问题和注意事项作系统性的说明和指导。

安装前及使用前请仔细阅读本手册, 遵守国家的相关的安全规范及本手册安装流程、正确、安全、高效的使用瑞泰风工业风扇。

日常使用过程中如果遇到本文未涉及的问题或故障请致电瑞泰风服务电话或联络当地授权经销商。

Disclaimer / 免责声明

Disclaimer

RTFANS reserves the right to make alteration to appearance, structure, design, manufacturing technology, etc. for production or other reasons subsequent to publication. The information contained herein has been prepared by qualified experts within RTFANS.

While we believe the information is accurate and complete, we make no warranty or representation for any particular purposes. The information is offered in good faith and with the understanding that any use of the units or accessories in breach of the directions and warnings in this document is at the sole discretion and risk of the user.

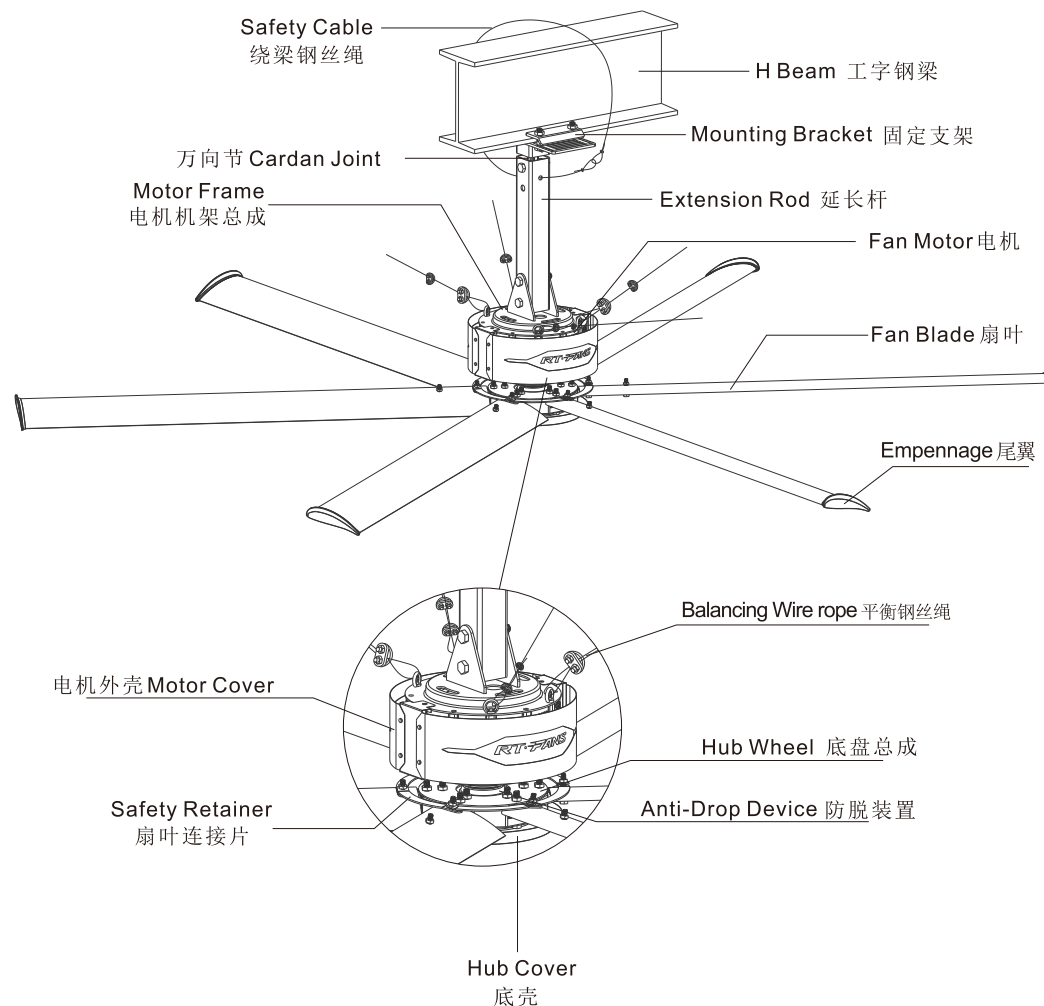
免责声明

自本文发表后，瑞泰风将在产品外观、结构、设计、制造工艺等方面不断的改进、改型及升级。广东瑞泰通风降温设备有限公司将保留对上述改进的权利并对后续改进工作不再知会已经购买我司工业大风扇产品的用户。

我司承诺本文所示内容皆由专业人员编制。同时，我们所提供的信息是准确和完整的，请勿将我们的产品用于其它不适用的特定用途，我司将不提供任何的保证。我们所提供的信息以便于客户更好的理解和使用我们的产品，对于用户违反指示和警告使用我司产品并导致不良后果，我司将不承担任何法律责任。

RTFANS PMSM HVLS fan assembly diagram

瑞泰风——风彩系列工业风扇组装图



一、General Safety Information/ 安全说明

1.1 General warning/ 使用警示

RTFANS PMSM fan RTF-DF Series are usually installed on steel structures or concrete beams, with a self-weight of about 115kg. The user shall ensure that the structure of the building can withstand the weight of the fan and the torque of about 300Nm due to the rotation of the fan. In order to ensure the safety of operators under and around the fan, if it is observed that the fasteners of the fan are loosening, falling off, or the abnormal sound is heard while the fan is in operation, and the main body of the fan, especially the blade, is found to be defective, etc. Please slow down and switch off the fan immediately, then inform RTFANS or local authorized dealer.

瑞泰风大型工业风扇通常安装在钢结构或混凝土横梁上，风扇自重约为115kg。用户应确保房屋结构可以承受上述风扇重量并可以承受由于风扇转动产生的约为300N·m的扭矩。为保证风扇下方及周边区域作业人员的安全，在观察到风扇的紧固件掉落、松动，或者在风扇运转时听到异响，观察到风扇主体、特别是叶片出现缺损等，控制有异响或噪音时应立即停转风扇并告知瑞泰风或当地的授权代理服务机构。

1.2 Installation warning/ 安装警示

Any installation personnel must pass installation and safety training from RTFANS or authorized dealer before installation/operation. It is a Must to follow up with national or local safety regulations, to put on necessary safety protection wears or equipment during installation work; and ensure the climbing device is stable and reliable; set up a striking mark within the scope of the operation during installation to avoid the entry of unrelated personnel enter the area; Before installing the electronic control box and other electrical equipment, the power must be cut off and clearly marked at the power source under construction.

任何安装人员在作业前必须经由瑞泰风或授权代理机构的安装及安全培训。作业时必须佩戴齐全必要的安全防护装备；确保登高装置稳固、可靠；安装时在作业范围内树立醒目标识，避免无关人员进入该区域；安装电控箱和其它电器设备前必须断电并在电源处清楚标明正在施工作业。

1.3 Maintenance warning/ 维护警示

The power supply must be cut off before the maintenance operation and the maintenance operation should be clearly marked; the appropriate safety protection equipment must be worn when the climbing operation is required to ensure that the climbing facilities are stable and reliable; Be sure to protect the safety of passers-by below the fan installation area, and set up warning signs or pull safety warning bands if necessary.

维修作业前必须切断风扇电源并清楚标明正在维修作业；需要登高作业时须佩戴相应的安全防护用具并确保登高设施稳固、可靠；一定要保护风扇安装区域下方过往行人的安全，在必要时树立警示标志牌或拉安全警示带；

2.1 Principle/ 原理

An RTFANS HVLS(high-volume, low speed) fan is a super large ceiling fan with a diameter range from 7.3m(24ft) to 3.0m(10ft). The airfoil blade are streamlined which was developed with the technologies and advantage of aerodynamic. Just with a power 0.55kw~1.5kw or less to move a mass of air and produce a larger scale of natural wind to all directions. The air passes over human skin thereby bring a lower temperature sensation, while air exchange with outside fresh air rapidly through the window or roof ventilator, reducing the turbid air and providing people a comfortable environment.

瑞泰风大型工业风扇是一款超大型节能吊扇，扇叶最大直径可达7.3米。扇叶采用现代航空机翼技术，通过巨大扇叶缓慢的旋转从而带动全方位气流的流动，产生持续不断，立体循环风。大面积微风流动加快人体体表汗液的蒸发速度，产生自然降温效果。同时，室内空气与室外空气快速交换，从而达到通风和降温的效果。

2.2 Application/ 适用范围

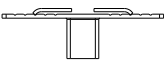
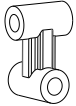
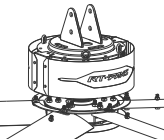
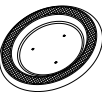
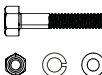
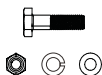
RTFANS Industrial HVLS fan is widely used for any large space applications which is higher than 4.5 meters such as logistics center, factory, shopping center, terminal station, cattle farm as well as agriculture applications,etc.

瑞泰风大型工业大吊扇适用于任何建筑高度在4.5米以上的场所。应用领域包括：大型物流仓库及配送中心，超大型厂房，公共建筑，户外人员密集地及农业行业等等。

2.3 Specification/ 产品参数

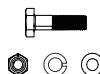
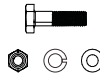
Model 型号	Fan Dia. 扇叶直径 (M/FT)	Motor Power 功率 (Kw)	RPM 转速	Air Flow 风量 (m³/min)	Current 电流 380V/220V (A)	Weight 净重 (KG)	Noise 噪音 (dBA)
RTF-DF-7E	7.3/24	1.2	20-53	13,800	2.5/4.3	115	39
RTF-DF-6E	6.1/20	0.85	20-58	12,000	1.4/2.4	105	39
RTF-DF-5E	5.5/18	0.65	20-63	10,500	1.6/2.7	100	39

2.4 Packing List / 包装清单

	Mounting Bracket *1set (as required) 固定支架 *1套 (根据现场情况)		Safety Cable *35M 钢丝绳 *35米
	Cardan Joint *1pc 万向节 *1个		Safety Retainer *6pcs 扇叶连接片 *6个
	Drive device *1pc 主机总成 *1个		Extension Rod *1pc 延长杆 *1根
	VFD Controller *1pc 控制箱 *1个		Fan blade *6pcs 扇叶 *6片
	Power Cable *33M 电源线 *33米		Wiring Pipe *8pcs 镀锌线管 *8根
	Hub Cover *1pc 底壳 *1个		Empennage *6pcs 尾翼 *6个
	M16 x 130mm *4pcs Hex Head Cap Screw M16 Nylock Nut *4pcs M16 Spring Washer *4pcs M16 Flat Washer *8pcs		M16外六角螺丝*4 M16尼龙自锁螺母*4 M16弹垫*4 M16平垫*8
	M10 x 50mm *12pcs Hex Head Cap Screw M10 Nylock Nut *12pcs M10 Spring Washer *12pcs M10 Flat Washer *24pcs		M10外六角螺丝*12 M10尼龙自锁螺母*12 M10弹垫*12 M10平垫*24

	Tapping screw 5 *16mm *12pcs	自攻螺丝*12
	Flat head screw 5 *10mm *3pcs	半圆头机丝*3
	M6*14pcs Steel wire clamp	M6钢丝绳锁扣*14
	Straight Joint 20mm*5pcs	镀锌线管直通20mm*5
	Corrugated pipe 15mm*2 meters	波纹管15MM*2米

*It equips the different screws for H beam, Concrete beam and Rigid frame beam.
根据不同的安装夹具配置相应的紧固件

H Beam 工字钢	Line pipe Cimap 20mm*6pcs Hex Head tapping Screw 5.5*38mm*4pcs Tiger Clamp*6pcs	线卡20mm*6 六角自钻5.5*38mm*4 老虎扣*6
	M16 x 60mm *4pcs Hex Head Cap Screw M16 Nylock Nut *4pcs M16 Spring Washer *4pcs M16 Flat Washer *8pcs	M16外六角螺丝*4 M16尼龙自锁螺母*4 M16弹垫*4 M16平垫*8
Concrete Beam 混凝土	Line pipe Cimap 20mm*6pcs Flat head tapping Screw 3.5*35mm 1set Plastic wall plug 1set	线卡20mm*6 黑色墙板钉 1套 胶粒 1套
	M16 x 60mm *4pcs Hex Head Cap Screw M16 Nylock Nut *4pcs M16 Spring Washer *4pcs M16 Flat Washer *8pcs	M16外六角螺丝*4 M16尼龙自锁螺母*4 M16弹垫*4 M16平垫*8
	M10 x 100mm *10pcs Expansion Screw (For Concrete Beam 混凝土结构)	膨胀螺丝*10
	M10mm x 100mm *4pcs Expansion Screw (For Concrete Beam 混凝土结构)	膨胀拉爆钩**4
Rigid Frame Beam 钢架梁	M16 Nylock Nut *8pcs M16 Spring Washer *4pcs M16 Flat Washer *8pcs M16 Threaded Rod 1Meter Tiger Clamp*6pcs	M16尼龙自锁螺母*8 M16弹垫*4 M16平垫*8 M16螺纹杆1米 老虎扣*6

三、Pre-Installation/ 安装前准备

3.1 Unpack and inspection /开箱及检查

Please check the status and quantity of the fan equipment and the supporting parts immediately after you opened the case to make sure that the goods you received are in accordance with your order.

请在开箱后即刻按发货清单检查风扇设备及各配套部件的状况和数量，确保实际收到货物与贵方所下订单一致。（详细部件及数量见设备发货清单）

3.2 Installation precautions/ 安装注意事项

The maximum weight of the fan is about 115kg and the maximum torque is about 300N m. The clearance from the fan to the roof (no matter what the roof structure) is the distance between the location of the lowest part of the fan (nearest to the ground) and the installation of the upper connecting frame of the fan. For the inclined roof, the required distance should be moved to the tip of the blade, otherwise, it may cause the blade tip to collide with the roof or affect the smooth flow of airflow because the distance between the roof and the blade is too short. Overall, it is necessary to maintain reasonable fan blade and roof space to ensure wide air flow.

风扇最大重量约为115Kg，产生的最大扭矩约为300 N·m。风扇距屋面的距离（不论屋面是何种结构）是指风扇最低部（距地面最近）的位置至安装风扇最上端连接架之间的距离。对倾斜屋顶，则应将上述要求的距离移动到叶片尖部分测量，否则，有可能造成叶片尖部与屋顶碰撞或因屋顶与叶片距离过小而影响风扇气流的顺畅流动。总体上要求保持风扇叶片与屋顶保持合理、足够的空间距离以确保大范围的空气流动。

3.3 Positioning /安装定位

With the increase of fan speed, the fan blade will move upward along the diameter of a certain angle, increasing the fan coverage area. Therefore, all obstacles that may be encountered within the radius of the fan and between the horizontal height of the fan's static position and the ceiling should be measured before installation, ensuring that the fan has an appropriate clearance in all directions when running (see figure3.3). It had better to ensure that the fan and the existing facilities of the building (horizontal and vertically) with gaps above 300mm.

随着风扇转速的提高，扇叶会沿径向上翘一定角度，增大了风扇的覆盖面积。所以在安装前都应测量风扇半径范围内以及风扇静止位置的水平高度至天花板之间可能碰到的所有障碍物，应确保风扇运行时在所有方向有合适的间隙（如图3.3）。最好保证风扇与建筑物已存在的设备设施之间（水平和垂直方向）有300mm以上的间隙。

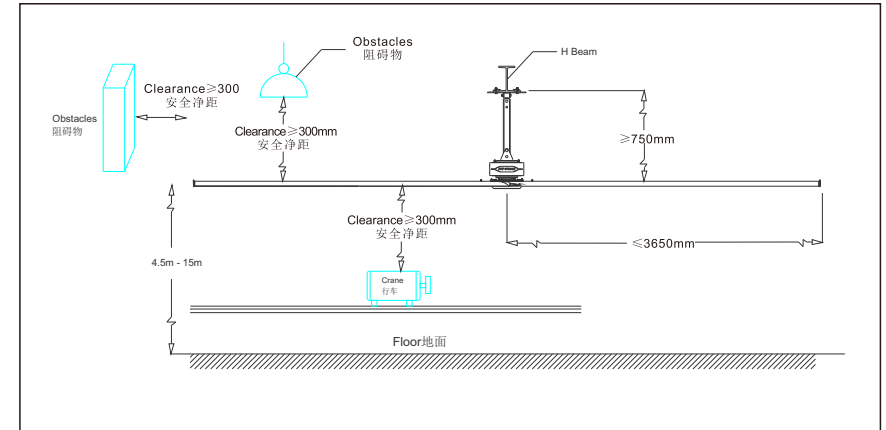


fig3.3 / 图3. 3

3.4 Mounting Installation Methods/ 吊装方式确认

Each type of building structure requires a specific mounting bracket, the PMSM series HVLS fan can only be hung from standard mounted with an H-Beam, Rigid frame beam or Concrete beam. For buildings with a different installation structure, an additional set of brackets can be customized from factory, please consult RTFANS or local authorized dealer.

不同类型的建筑结构需要不同的特殊的连接支架，大型工业大风扇的标准安装构件适用于“工”字型钢、钢架梁和混凝土梁结构。若所需安装位置的建筑结构不同于本手册的安装方式，请联系瑞泰风或者当地授权经销商，可根据现场要求定制安装连接支架。



- Verify with the contractor, building owner or structure engineer to ensure the building structure is sound and adequate to support the load before installation.
安装前必须先确认房屋结构是否完全能承担和支撑风扇的重量。
- Taking measurement of the height of the booth of structure beam and blade level.
安装前需确认建筑梁底标高及风扇的安装高度
- Check if the power supply is correct on site.
安装前需确认现场电源电压供应是否正确

3.5 Installation Tools/ 安装工具准备

Levelling instrument, Cutting Plier, Wire stripper, Lifting device(Scissor lift or the scaffold or), Plier, 4 sets of tightener(or turnbuckle screw), cross screwdriver, straight screwdriver, Tapeline, Marking pen, Hand electric drill with M4.2 bit. Out hexagonal wrench: 8mm/10mm/14mm/16mm/17mm/24mm
 Note: A hand electric drill with 12mm drill bit will also be required when connect to the Concrete beam.

水平尺, 剪线钳, 剥线器, 起吊装置(脚水架或登高车), 老虎钳, 4套紧线器(或花蓝螺丝), 十字螺丝刀, 一字螺丝刀, 卷尺, 记号笔, 手电钻(M4. 2钻头).

外六角扳手: 8MM/10MM/14MM/16MM/17MM/24MM

注意: 若风扇需安装在水泥梁上, 需要冲击钻(12MM钻头)。

四、Installation Steps/ 安装步骤及方法

4.1 Connect to building/ 设备与房屋连接

4.1.1 H-beam/ 工字钢结构安装

Connect with Steel H-Beam by adjustable standard clip device, the fan can be easily clip on any steel H-beam, without changing any steel structure. The device can be adjusted according the width of the beam(170mm-340mm). (figure 4.1.1)

工字钢梁安装: 通过可调整的标准卡夹装置, 可以将设备卡夹在任何工字钢梁上, 无需更改钢梁的结构。连接装置可以根据梁的宽度和高度进行调节, 范围为: 170mm-340mm。(如图4.1.1)

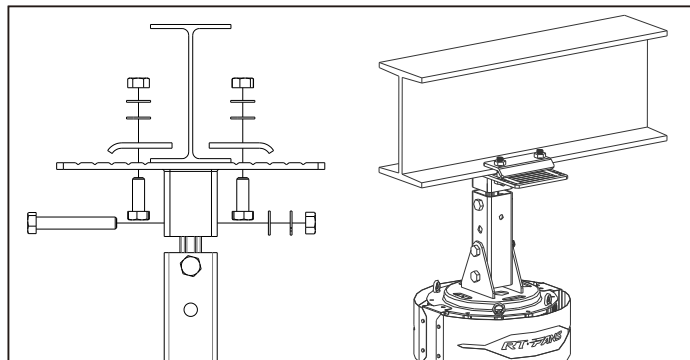


fig4.1.1/图 4.1.1

4.1.2 Concrete beam/ 水泥梁结构安装

Connect with concrete beam, the standard device is fixed by expansion bolts on the concrete beam, the device can be adjusted according the width of the beam(240mm-420mm). (figure 4.1.2)

水泥梁安装: 将标准连接装置通过螺栓固定在水泥梁上, 连接装置可以根据梁的宽度进行调节, 安装范围为: 240mm-420mm。(如图4.1.2)

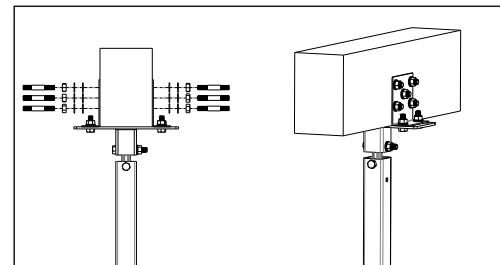


fig4.1.2/图 4.1.2

4.13 Rigid Frame beam / 钢架梁结构安装

Connect with Rigid Frame Beam, the standard device is fixed by threaded rod on the rigid frame beam. Cut the threaded rod into 4PCS base on the height of the rigid frame beam. the device can be adjusted according the width of the beam(80mm-400mm). (figure 4.1.3)
 钢架梁安装: 将标准连接装置通过螺纹杆固定在刚性钢梁上, 按照实际钢架梁的高度, 将螺纹杆分成四段, 作为螺杆将标准连接装置固定在刚性钢梁上。连接装置可以根据梁的宽度和高度进行调节, 范围为: 80mm-400mm。(如图4.1.3)

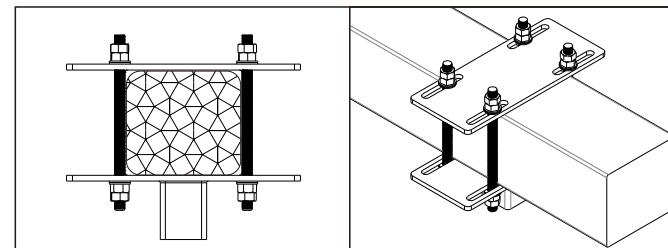


fig4.1.3/图4.1.3

4.2 Cardan Joint Installation/ 万向节安装

Since beams are often sloped so that roof can shed water, and not all roof slope are the same, install the cardan joint allows the fan to make free oscillation and to find its own level position no matter what the slope is. (fig4.2).
 屋面通常情况下它都有坡度的, 由于倾斜角度不一致, 通过安装万向节实现自由摆动, 让风扇始终保持在水平位置(如图4.2)。

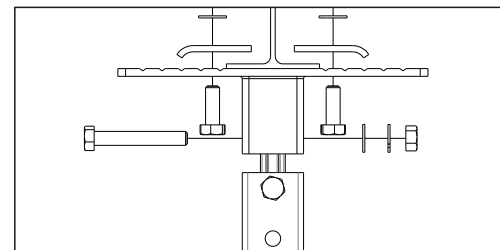


fig4.2/图 4.2

4.3 Extension Rod Installation/ 延长杆安装

The length of extension rod is customized according to the actual situation of building, it is used to adjust the installation height of fan. Connect the ends of extension rod with Cardan joint and drive device by bolts.(Fig4.3)

延长杆的长度是根据房屋的实际情况进行定制，主要用于调节风扇的安装高度。将延长杆的两端分别连接万向节和驱动装置，再用螺丝固定即可。（如图4.3）

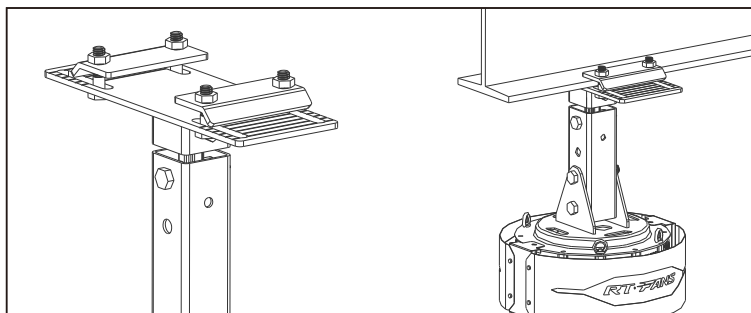


fig4.3/ 图 4.3

4.4 Drive device Installation/ 电机安装

4.4.1 The drive device has been assembled to be one unit before delivery, fix it to the extension rod by using bolts. (Fig 4.4.1)

电机在出厂前已经装成一个整体，只需通过螺栓将其整体固定在延长杆上即可。（如图4.3）

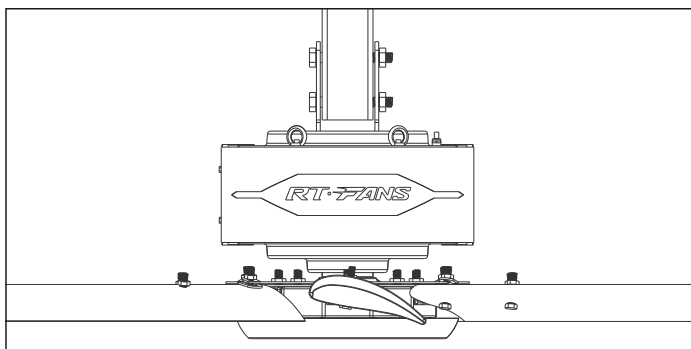


fig4.4.1/ 图 4.4.1

4.4.2 The drive device is heavy, need 2-3 people or use lift to install.

由于电机较重，需要2-3个人协作或是使用起吊装置进行安装。

4.5 Connect to power supply and wiring / 布设电气套管和接线

4.5.1 The wire sleeves are arranged along the building pillars and the top along the building structural beams.

电线套管沿着房屋立柱布置，顶部沿着房屋结构梁布置。

4.5.2 The wire conduit layout should be done as short and simple as possible.

线管布置尽可能的短和简单。

4.5.3 Before wiring, please make sure the power is off. Then connect with power supply.

Please connect motor wire first then connect the electric wires to the control box.

在接线前请确保已经断开电源，然后根据工厂的配电情况接通电机的线路。电机线接好后，再接入电控箱。

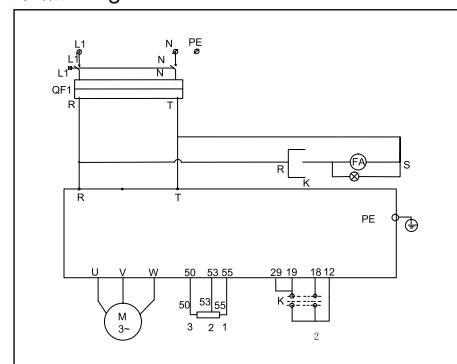


Don't connect the power supply to motor directly.

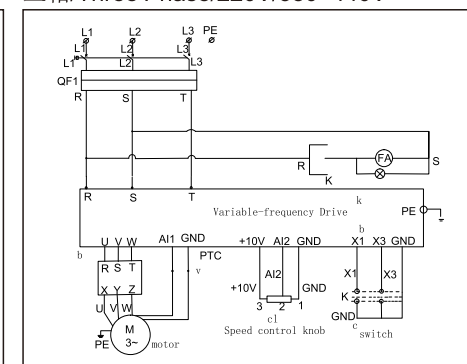
禁止将电机直接接入电源，否则会导致安全事故和影响电机寿命。

4.5.4 Circuit Diagram接线图(380V/220V)

单相/Single Phase/220~240V



三相/Three Phase/220V/380~440V



4.6 Installation of balancing wire rope 平衡钢丝绳的安装

Each fan has 4 steel wire ropes. Please ensure the angle between each steel wire and the drive device is 45 degree, too big or small angle will affect the strength of the steel wires. Please adhere to the following guide lines:

每台风扇都有四根直径5mm的镀锌钢丝绳拉紧，并且尽量保证每根钢丝绳与电机的

水平夹角在45度左右, 角度大太或太小都有影响钢丝绳的效果。请参照下面的原则安装平衡钢丝绳:

The first method with turnbuckle:

采用花蓝螺丝安装方法

4.6.1 Attach the balancing wire rope before you install the blades
在安装风扇叶片之前安装平衡钢丝绳。

4.6.2 Use four safety cable per fan, with 3 clamps per rope. (one clamp for building structure, two clamps for turnbuckle)

每个风扇用4根钢丝绳, 每根钢丝绳拉索配3只卡夹。(1个用于固定建筑物, 2个用于连接花蓝螺丝)

4.6.3 Use the closed-end of turnbuckle to fix the steel wire to the building structure, and use the open end of turnbuckle to fix the steel wire to the safety ring of fan.
将钢丝绳一端固定在建筑结构上, 另一端用花蓝螺丝连接到主机的安全环上。

Caution: It is important to avoid wrapping the steel wire around the sharp corner. Although the external force used to fix and balance the fan is very small, the continuously running of fan may cause fatigue damage to the steel wire rope in the severely curled place.

注意: 非常重要避免把钢丝绳卷成尖角, 虽然用来固定和平衡风扇的外力很小, 但连续转动的风扇可能使钢丝绳在卷曲严重的地方产生疲劳损坏。

4.6.4 Attach the steel wire to the build structure first, install one clamps per wire. Go ahead and tight them, so that part of the job is completed.

先将钢丝绳连接到建筑结构上, 每根钢丝绳1个线夹, 然后上紧它。

4.6.5 Attach the steel wire to the closed-end of turnbuckle, and use the open-end of turnbuckle to fix on the safety ring of fan, install two clamps per wire.

钢丝绳连接花蓝螺丝的闭合端, 用花蓝螺丝的开口端连接电机的安全环, 保持电机水平, 将每根钢丝绳拉紧并固定。每根钢丝绳2个线夹, 然后上紧它。

4.6.6 Using the turnbuckle to tighten each steel wire rope gradually, and use the leveling instrument to make sure the drive device of fan at a vertical level position.
旋转花蓝螺丝将4根钢丝绳逐步张紧, 使用水平尺测量, 确保电机处于自然垂直水平位置。

The second method with tightener:

采用紧线器安装方法

4.6.7 Attach the steel wire to the building structure first, install one clamps per wire. Go ahead and tight them, so that part of the job is completed.

先将钢丝绳连接到建筑结构上, 每根钢丝绳1个线夹, 然后上紧它。

4.6.8 Attach the steel wire to the safety ring of motor frame, install two clamps per wire, do not tight the screws immediately.
然后将钢丝绳连接到电机机架的安全环上, 安装2个线夹, 暂时不用上紧螺丝。

4.6.9 Using the tightener to tighten each steel wire rope gradually, while using the leveling instrument to make sure the drive device of fan at a vertical level position. Then lock the clamp screw near to motor of each steel wire, loose the tightener and lock the end clamp screw.

使用紧线器将4根钢丝绳逐步张紧, 同时使用水平尺测量反复测量, 确保电机处于垂直且水平的位置。然后将靠近电机的线夹螺丝锁紧, 松开紧线器装置, 最后锁紧后端的第二个线夹螺丝。

Caution: The key is to make sure each wire rope has the same tightness after installed.
注意: 安装完成后请确保每根钢丝绳的松紧度是一样的。

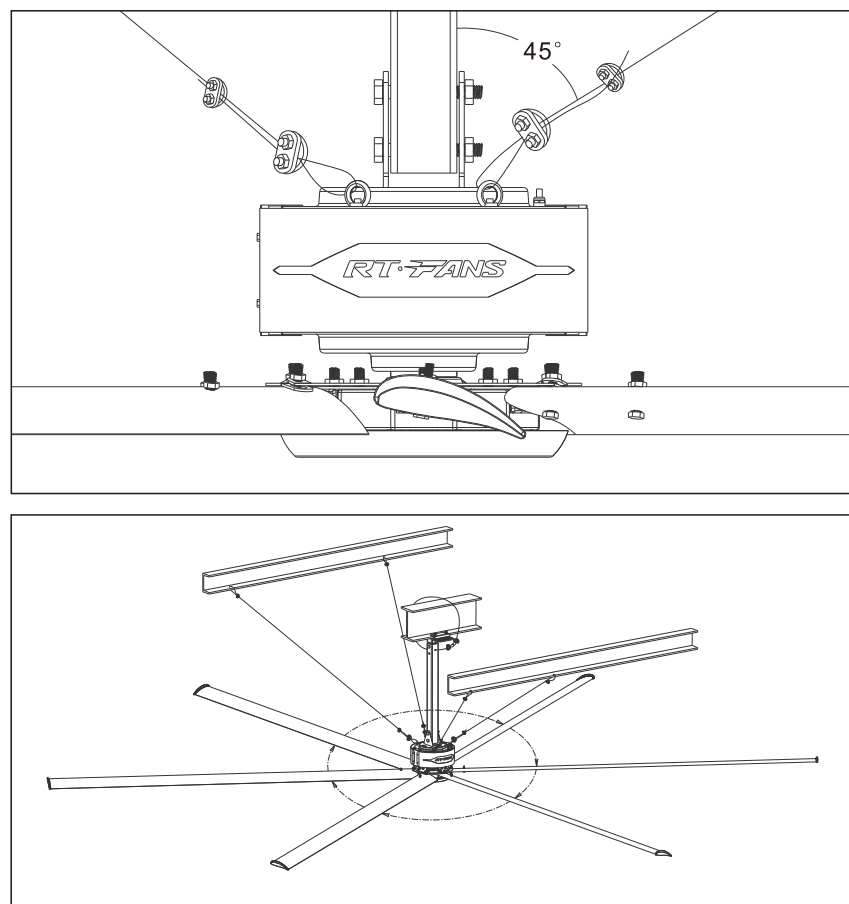


fig4.6/图4.6

4.7 Safety Cable/ 绕梁安全保险绳

The wire rope is wound around the roof steel structure and connected with the motor frame by extending the inner cavity of the rod and forming a closed loop. (Fig4.7)

绕梁钢丝绳的安装——将钢丝绳缠绕在屋顶钢结构处，通过延长杆杆内腔与电机机架连接并形成闭环。(如图4.7)

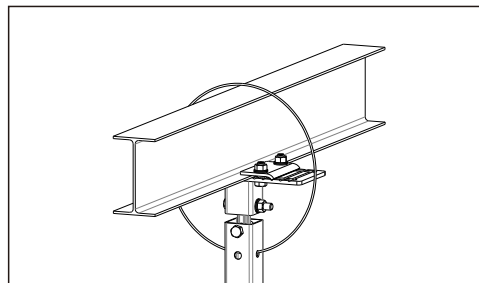


fig4.7/图4.7

4.8 Empennage Installation to Airfoil blade/ 扇叶尾翼安装

Insert the empennage to each airfoil blade and fix it by using bolt (fig4.8)

将尾翼插入扇叶尾端，并用螺丝固定。(如图 4.8)

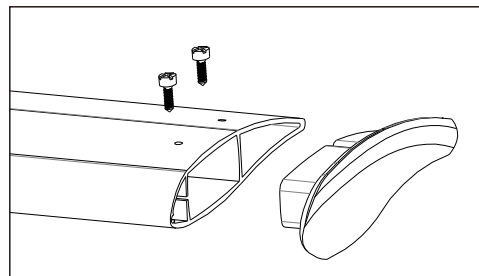
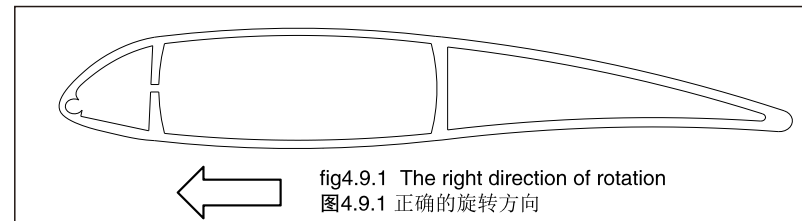


fig4.8/ 图 4.8

4.9 Airfoil blade Installation/ 扇叶安装

4.9.1 The fan blade holder has been installed onto the fan wheel hub, just insert the airfoil blade onto the blade pin and fix it by bolts. The correct direction of blade installation should be the blade upwind surface (thick, round part of the blade) the highest, blade leeward surface gradually downward. (Fig4.9.1)

扇叶插销在出厂时已经安装在轮毂上，将扇叶插入到插销中，然后用套筒工具依次紧固外圈螺栓。请注意扇叶插入的方向，正确的叶片安装方向应该是叶片迎风面（叶片的厚、浑圆部分）最高，叶片背风面逐渐向下。

fig4.9.1 The right direction of rotation
图4.9.1 正确的旋转方向

4.9.2 Attach the 6 pcs safety retainer on the root of the fan to connect each blade together. (fig4.9.2)

将6片扇叶连接片按照顺序，交替对齐并重叠放置，然后用螺栓将扇叶根部固定。(如图4.9.2)

Caution:

Tighten the outside bolts first, then tighten the bolts along the root of the fan.

注意：首先用筒套工具依次紧固扇叶外围螺丝，然后放置扇叶连接片，再依次紧固靠近扇叶根部的螺丝。

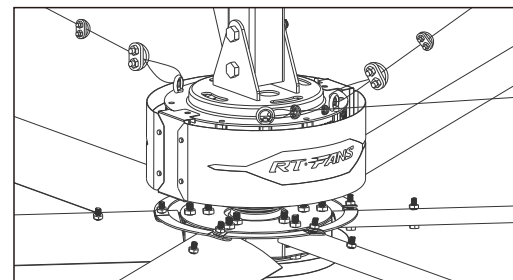


fig4.9.2/图4.9.2

4.10 Hub cover Installation/底壳安装

Take the bottom cover close to the Hub and tighten it by bolts.(fig4.10)

将底壳贴近风扇轮毂，对准螺丝孔位，用螺栓紧固即可。(如图4.10)

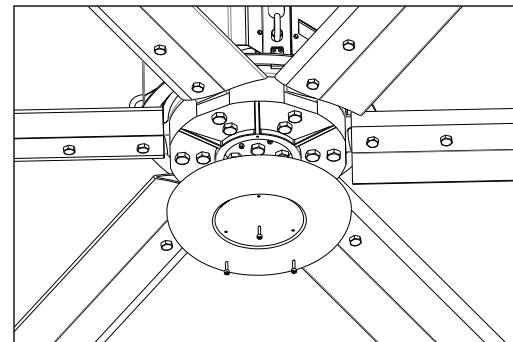


fig4.10/图4.10

五、Check & Adjust & Debug/ 检查 ,调校 ,调试

5.1 Check connection bolts/连接螺栓检查

Upon completion of the above installation steps, double check and ensure that all fastening bolts are provided by RTFANS and are properly installed and fastened. 在完成以上安装步骤后，应重新检查并确保所有的紧固螺栓使用的是厂家配置的螺栓、垫片及防松螺母，并确认螺栓紧固。

5.2 Inspection on tension of Steel wire/钢丝绳张紧度检查

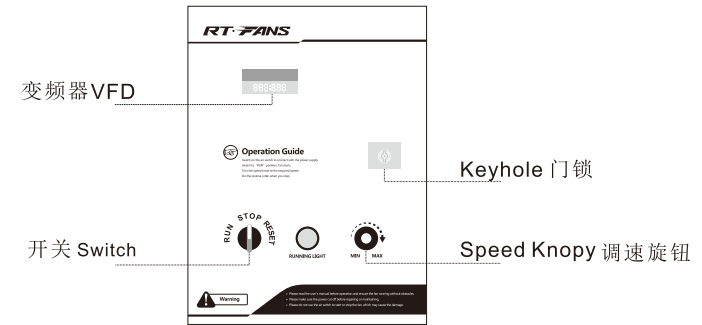
Check if the wire rope around the beam is installed correctly, make sure the rope head is locked; and double check tensioning degree of the four fastening wire ropes to ensure the perpendicularity of the motor support and the balance of the chassis. 检查绕梁钢丝绳安装正确，确保绳头锁紧；而4根紧固钢丝绳则需检查张紧度，确保电机支架的垂直和底盘的水平。

5.3 Fan blade condition check/扇叶状况检查

The fan blade is made of aluminum alloy material with special fluorocarbon baking paint treatment. Please handle with care during installation to avoid scratches, crash or deformation. Any damage on fan blade might cause noise during operation. In case any damage occurs, contact RTFANS or local distributor/dealer to replace fan blade.

扇叶为表面氟碳烤漆处理的铝合金材料，安装时轻拿轻放，特别注意不能用硬物碰撞、划伤及挤压，遇有上述情况并且扇叶在运转过程中发出异响的，请及时联系我公司或当地代理服务机构。

六、Operational Guidelines 操作指南



VFD controller 变频器控制电箱

6.1 Start-up PMSM series HVLS Fan 开启风扇

6.1.1 Switch on the air switch in the box to connect with the power supply. 合上箱内空气开关，接入电源。

6.1.2 Switch to "Run" position, fan default runs at the speed of 20Hz. 切换转换开关到“运行”位置，风扇启动。

6.1.3 Switch to "Run" position, the running light is on. 切换转换开关到“运行”位置，风扇启动。

6.1.4 Do the reverse order when you stop 停机时按相反顺序操作。

Cautions:

Read the user's manual carefully before installation and operation and make sure that the fan is not obstructed in all directions.

在使用前请仔细阅读《用户手册》，并确保大风扇运转空间无阻碍物。

Before the HVLS fan is repaired and maintained, please make sure that the power has been disconnected and locked.

实施大风扇检修维护之前，请确保电源已断开并挂牌上锁。

Do not use the air switch in the control box to start or stop the fan, or any damage caused to the fan is not included in the warranty.

请勿使用箱内开关进行风扇的启动和停止，由此引起的损坏将不在保修范围。

七、Maintenance & Service/ 维护保养

SN序号	Maintenance & Service维护保养
1	Visual fan running state/目测风扇运行状态
2	Control box working state/控制盒工作状态
3	Check the status of the fan blade/检查扇叶损伤状况
4	Check the tension of suspension wire rope/检查悬挂钢丝绳张紧度
5	Check fin and fan blade firmness/检查翅片与扇叶牢固度
6	Check whether the flange bolt of motor is fastened检查电机法兰盘螺栓是否紧固
7	Clean the leaf (be careful not to damage it) /清洁扇叶（注意不要损坏扇叶）
8	Check the fastening bolts of the connecting frame / 检查连接架各紧固螺栓
9	Check whether the flange screw of motor is fastened / 检查电机法兰盘螺丝是否紧固
10	Check anti - release lock catch/检查防脱锁扣
11	Check fan suspension/检查风扇悬挂
12	Check the safety rope on the beam /检查绕梁钢丝绳
13	Check welding position/检查焊接部位
14	Check motor supports and fastening bolts/检查电机支架和紧固螺栓

八、Trouble Shooting/ 常见故障解决方案

8.1 The fan is running in wrong direction 风扇运转方向错误

The power phase sequence is not correct, change the wiring again.
电源相序错误，重新更换接线

8.2 Popping noise comes from the fan

风扇运行过程中出现间断的“咔哒”声

The fan blade popping noise may come from the blades are not tightened to the specified torque, cut off power at VFD controller and tighten the fan blade fastener to the specified torque. If popping noise still occurs, please check the connection between fan blade and Hub. If the connect is ok, please slow down and switch off the fan, then contact RTFANS or local authorized distributor.

扇叶的“咔哒”噪音可能是扇叶紧固螺丝没有拧紧。首先需要切断电源，然后需进一步检查紧固螺丝是否拧紧；若“咔哒”噪音还是存在，就需要进一步检查扇叶与底盘之间的连接是否良好，若连接良好，请先关闭风扇并联系瑞泰风或当地授权经销商。

8.3 The fan is not working 风扇不工作

8.3.1 Make sure that all wires are securely connected

检查所有接线端口是否锁紧

8.3.2 Make sure the switch is in “Run” position.

确保三档切换开关在“运转”位置

8.3.3 Verify the supply power is adequate and functional

检查进线电源的电压、相序是否正常

8.4 The motor makes noise when you speed up the fan

风扇加速过程中，电机声音异常

Audible high frequency noise is normal during fan operation, if it exceeds your acceptable range, or you feel that the noise maybe a result of mechanical failure, please contact with RTFANS or local authorized distributor.

风扇在运转过程中产生一定高频啸声是正常的，但如果此噪音超过了您的要求，或者感觉到可能是机械摩擦的噪音，请联系瑞泰风或当地授权经销商。

8.5 For the trouble of VFD, please check the trouble shooting approach in the instruction manual according to the alarm message of VFD. If the error code can not be solved, please contact RTFANS or local authorized distributor

风扇电气控制及变频器故障，请参照《变频器说明书》中的故障代码解决方案去查询处理。若不能解决，请联系瑞泰风或当地授权经销商。