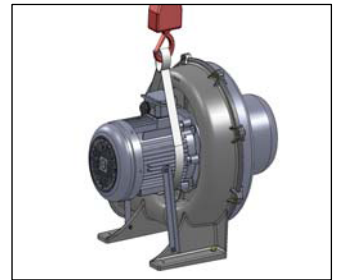


鼓風機—特性介紹

- I. **RB 型**-其壓力與電流成正比，靜壓愈高則電流愈高，為了減少故障及節省電力，請盡可能加大進出風口之截面積，或使用風量調節閥。
- A. 送風—入口應加裝大型過濾器
1. 出氣孔之總截面積應大於鼓風機出口截面之 1/2。
 2. 如用於水中送氣，其水深應在型錄上所標示最大使用靜壓值之 70%以下。
 3. 在加壓送氣之使用時，出口溫度因空氣壓縮的關係會大於常溫 10°C 以上屬於正常，故應使用鐵管 1M 以上。
- B. 吸風—出口可裝消音器。吸入孔之總截面積應大於鼓風機入口截面積之 1/2。
- II. **TB.HTB.PF.CX.CS.MS 型**-其壓力與電流成反比，靜壓愈高則電流愈低，所以管路很短或阻力很少時；
- A. 請使用風量調節閥
- B. 進出氣口之總截面積應在送風機進出風口截面積之 70%以下。

III. 搬運

- A. 紙箱包裝的風機請依紙箱上標示放置、堆疊並小心搬運。
- B. 裸裝的風機基本上馬力都比較大，重量也較重，搬運或移動時請利用天車或吊車的吊帶套在鼓風機的馬達前脫架處後吊起搬運。



IV. 檢查-收到送風機時，請檢視以下各項：

- A. 標籤上所記載之事項，確實符合訂購事項—電壓 V、週率 Hz、型式 TYPE。
- B. 運送途中有無破損或變形。

V. 保管-送風機長期保管或停止使用時，請注意以下各項：

- A. 在原包裝狀況下之保管-選擇室內溫度變化小，且乾燥之處所保管之。
- B. 在安裝狀況下之保管：
1. 為防止水份或異物侵入，將送風機整體用罩套塑膠布等包裹住。
 2. 送風機於停止狀況，使其不受其他機械震動的影響。
 3. 為防止軸承生鏽，每二個月一次通電運轉 30~60 秒鐘。

VI. 安裝

- A. 安裝場所-周圍溫度與濕度，應符合以下條件：
1. 三相 - 10~40°C, 單相 - 5~40°C ,相對濕度 85%以下
 2. 選擇通風良好，塵埃及濕氣少之場所。開放型馬達防塵及防潮較弱，尤其須注意。
 3. 請勿安裝於沒有遮蔽物的場所。
- B. 安裝方法
1. 用螺絲確實固定於水平且具剛硬的基礎或基座上。基礎重量一般大約是送風機的 3 倍為標準。基座如高低不平，當螺絲扭緊時，送風機台可能發生變形，應特別加以注意—請加裝避震器可降低噪音。
 2. 送風機通常是軸成水平狀態之設計。吸入口在向上或向下之情形使用時，葉輪及子軸之重量均加在一側的軸承上，荷重增大，軸承壽命因而降低。縱型場所

之使用，請先洽詢本公司營業部。

3. 吸入口上不連接通風管道時，為防止危險物或異物吸入，請加裝鐵絲網。
4. 全閉外扇型之外扇蓋與開放型馬達後面，請離牆 20mm 以上。(使冷卻空氣可以流通)

VII. 配管

- A. 管子直接連接於送風機上，儘量使中心一致，不可在勉強情形下連接。
- B. 通道軟管 (duct hose) 如使用防震接頭等，可簡易地連接且能防止震動的傳導。
- C. 管子重量請不要直接加在送風機之凸緣面上。
- D. 導引熱風時，請以撓性接頭，避免受熱膨脹影響。
- E. 避免突然縮小、擴大或彎曲等，使得流體效率不良。

VIII. 配線

- A. 電源請使用定格電壓之定格周波數 (標示牌之記載值)。
- B. 電壓之變動應於定格電壓的 $\pm 5\%$ 之內。(10%亦可使用，但是長時間電壓變動太大時，易造成故障，最好能避免。
- C. 由於送風機無熱過負載保護裝置，無法經常監控送風機之熱度，故請安裝相同馬力之過負載保護電磁開關。並調整與銘板值相同之安全電流。
- D. 依據馬達之馬力及電氣工事方式，選擇標準的配線。歐盟可參考的安全資訊為: EN60204-1. EN60034. EN292. EN294. IEE 配線法規. 特定的工業及國家有進一步的安全要求. 請諮詢他門的貿易及安規單位。或參列表 1-1
- E. 接地--為防漏電時發生事故，請裝設地線。E (EARTH)
- F. 確認回轉方向。配線完成後，將開關閉一下 (瞬間) 以確認其回轉方向及有無雜音。回轉方向於送風機上箭頭表示。如回轉方向不對，如為三相者，將三條電線中任意二條調換。

IX. 運轉

- A. 一部份的送風機:
 1. 全閉時會發生過負荷現象(RB 系列)。
 2. 全開時會發生過負荷現象(CX、TB、HTB、CS、PF、MS 系列)此時使用電流表確認電流大小、緩衝器調整之，通常在定格電流內使用。
- B. 開關在一分鐘內反覆開與關，會引起馬達過熱，應加以避免。
- C. 變頻器控制-使用變頻器時電源波形歪曲，馬達聲音大，震動亦較大。如使用變頻器運轉，而溫度上昇或震動大時，請停止運轉。一般請在下列條件下使用。
 1. 最大周波數值(回轉數)--須為標示上所定周波數之內，並在定格電流之內。
 2. 最小周波數(回轉數)--在 30 赫茲(Hz)以上，並於定格電流之內。
 3. 單相馬達不能作變頻器運轉。

X. 保養檢查

- A. 定期(約 1 個月)作震動、雜音、絕緣等檢查。風機中經常因有塵土、瓦斯流通，會使翼輪及箱體嚴重腐蝕與磨耗，應縮短檢查周期。
- B. 軸承使用密閉型球軸承，不能補充潤滑油，潤滑油壽命會依周圍環境及使用狀況有大幅度變化。標準調件下，連續運轉時，平均油脂壽命約為 10000 個小時，故請使用 2 台交替使用。
- C. **【故障排除】**
 1. 接上電源後無法運轉
 - a. 檢查電源，電壓是否正確，是否與鼓風機規格相符合。
 - b. 將機蓋(0-2)上的螺絲鬆開，拆下機蓋，檢查葉輪(0-3)是否有異物卡住，將

之清除。

2. 使用時風量太小
 - a. 檢查出入風口的配管是否過小，主管的管徑不得小於風機管徑的 80%。
 - b. 檢查配管末端入口或出口的面積總合小於風機 70%。
 - c. 檢查使用風量是否與風機規格不符。
3. 使用時風壓不足
 - a. 檢查是管路太小或障礙過多（轉彎、縮小等）使其壓損過大。
 - b. 使用場所之壓損是否大於風機的規格。
4. 使用時噪音過大
 - a. RB 型檢查基座 (Base) 裏的消音棉 (dB-1) 是否有裝或潮濕。
 - b. 檢查是否機械的磨擦聲（軸承、葉輪與機殼等）
 - c. 檢查基座 (Base) 是否有固定,不會震動。

注意:環形高壓鼓風機為一精密之風機，內部零件之拆裝，請洽專業人員，非無必要，請用戶切勿自己處理。

XI. 洽詢-如有疑問，請向購買廠商或本公司連絡、謝謝您的惠顧。全風機電股份有限公司

XII. 導線管槽配線安全電流(1-1)

- A. 適用範圍：本標準適用於 CNS 規定之電線電纜，以導線管槽配線於屋內線路之安全電流。
- B. 運轉情況及周溫：本標準所述安全電流、係以導線之最高運轉溫度不超過 60°C 及周圍溫度 35°C 以下為基準計算所得者。

銅導線			同一導線管內之導線數		銅導線			同一導線管內之導線數	
線別	公稱截面積 (mm ²)	根數/直徑 (mm)	3 以下	4	線別	公稱截面積 (mm ²)	根數/直徑	3 以下	4
			安培容量(A)					安培容量(A)	
絞線	3.5	7/0.8	20	20	絞線	80	19/2.3	165	145
	5.5	7/1.0	30	28		100	19/2.6	190	170
	8	7/1.2	40	35		125	19/2.9	220	200
	14	7/1.6	55	50		150	37/2.3	250	225
	22	7/2.0	70	65		200	37/2.6	300	270
	30	7/2.3	90	80		250	61/2.3	355	315
	38	7/2.6	100	90		325	61/2.6	415	370
	50	19/1.8	120	110		400	61/2.9	475	425
	60	19/2.0	140	125		500	61/3.2	535	480
備考	1. 本表適用於金屬管配線、電纜、可撓管配導及金屬線槽配線。 2. 本表所稱導線數不包括中性線、接地線、控制線及訊號線，但單相三線式或三相四線式電路供應放電管燈者，因中性線有第三諧波電流存在，仍應計入								

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Blower instruction



Before operating of installing this blower, read this manual and follow all safety rules and operating instructions.

The Side channel and Centrifugal series blower are suitable for use in the industrial field. For the safety considered, it is forbidden to try flammable, corrosive and low-flash gases.

Generally, this machine will be installed and operated on the following conditions:

- 1) Supply voltage: 0.9 - 1.1 nominal supply voltage**
- 2) Source frequency: 0.99 - 1.01 nominal frequency**
- 3) Ambient temperature: 5⁰C - 40⁰C**
- 4) Altitude: shall be at altitudes up to 1000m above mean sea level**
- 5) Relative humidity: not exceed 50% at 40⁰C**
- 6) Atmosphere: Free from excessive dust, acid fume, corrosive gases and salt.**
- 7) Avoid exposing to direct sunlight or heat rays which can change the environmental temp.**
- 8) Avoid exposing to abnormal vibration.**
- 9) 111Electrical equipment shall withstand the effects of transportation and storage temperature within a range of -25⁰C to 55⁰C.**

If you have any question, please refer to our agency or company.

Introduction

- I. **Type RB-** The pressure is directly proportional to its electric current, so the increase of electric current is proportional to the rise of static pressure. Please enlarge the sections of inlet and outlet of the ducts, or use a valve in order to reduce breakdowns happen and as power-saving.
 - A. Blowing – The installment of a large-sized filter at the end of inlet is recommended.
 1. The total sections of outlets should be half more than the outlet section of the blower.
 2. If use as an air pump under water, the water level should under 70% of the maximum of static pressure which show on the catalogue.
 3. At least one meter long iron tube should be applied to the blower when it used as deliver air under pressurization, due to the exhaust temperature will be 10°C higher than the normal atmospheric temperature by the compression of air.
 - B. Suction- A silencer is able to install in the outlet. The total sections of inlets should be half more than the inlet section of the blower.
- II. **Types TB, HTB, PF, CX, CS, and MS-** The pressure is inversely proportional to the electric current. The decrease of the electric current is proportional to the rise of static pressure, so please follow below when pipeline is extremely short or with less drag
 - A. To use a valve is recommended.
 - B. The total sections of both inlets and outlets should be less than 70% of the total inlet and outlet sections of the blower.

III. Transportation and handling

- A. Please follow the sign shows on the carton when placing or piling up, and handle with care.
- B. For a high-powered blower, please use hoists and load suspension devices with sufficient load-carrying capacity only.



IV. Please check below soon after receive the blower

- A. The Voltages (V), Hertz (Hz), and model number show on the labels conform to orders.
- B. Any damage or deformation appears.

V. Kindly mind the following when put the blower in storage for long or stop using

- A. With original packing case-Keep in dry and low temperature difference place.
- B. Under installation
 1. Cover the entire blower with waterproof cloth in order to prevent water content or foreign matter.
 2. Keep away from the vibration which made by other machinery.
 3. Operate the blower for 30 to 60 seconds in every two months to avoid the bearing from being rusty.

VI. Installation

A. The environment should follow the conditions below

1. The ambient temperature for three-phase blower is $10^{\circ}\text{C} \sim 40^{\circ}\text{C}$, and for single-phase blower is $5^{\circ}\text{C} \sim 40^{\circ}\text{C}$. Relative humidity Under 85%.
2. Good ventilation with less motes and humidity. Kindly pay extra attention to ODP (Open Drip Proof) motor for its weak at dust-proof and damp-proof.
3. Please don't install it in the place without defilade.

B. Installation

1. Install the blower horizontally. The blower may be deformed if the foundation is uneven. To install a shock absorber is recommended for noise reduction.
2. Basically the bearing of blower is designed for using as a horizontal position. The impeller and the rotor would weight on a certain side of the bearing when operate the position as inlet turns upward or downward. And in that case, increase more of loading would make the life of bearing shorter. Kindly contact our technical engineer, if intend to use as vertical position.
3. When the inlet is not connected to the air shaft, please use a wire netting to avoid any dangerous or foreign materials been sucked.
4. For the enclosed fan type and the ODP motor type, please keep the back of fan cover at least twenty millimeters away from wall, for the circulation of cooled air.

VII. Assembly

- A. Connect the pipe to the blower directly and make these two in conformity as identical as possible. Do not force the connection when with difficulty.
- B. That will be easy for a duct hose connect to the blower and avoid vibrational load if with a vibration joint.
- C. Please do not weight on flange of the pipe on the blower.
- D. Kindly have a flexible joint to conduct hot air for avoiding the effect of thermal expansion.
- E. In order to have better efficiency, please avoid decrease, enlargement, or bend of the pipe suddenly, and so on.

VIII. Electrical connection

- A. Please follow the V and Hz show on the rating plate.
- B. The range of voltage variance should be within $\pm 5\%$ of the rated voltage. Within $\pm 10\%$ of the rated voltage is also workable, but not recommended due to its easy to breakdown under a long time voltage variance.
- C. Due to the blower does not come with a device which can protect the blower against from over load and heat, so it is unable to monitor the temperature of the blower frequently. In that case, please install the device to protect the electromagnetism switch, and adjust the electric current to fit the safety current show on the rating plate.
- D. Choose the suitable wiring according to the horsepower of the motor and way of the electrical construction. EN60204-1, EN60034, EN ISO 13857, EN ISO 12100, and IEE are the wiring regulations from European Union Safety Information. Or refer to the chart 1-1.
- E. Ground connection-In case of electric leakage happens, please have an earth lead.
- F. Check the direction of rotation. Turn on the switch for a while after the electrical

connection completed, and make sure the direction of rotation is correct and the noise emission. The arrow shows on the blower suggests the direction of rotation. If the three-phase blower has wrong direction of rotation, only to exchange any two of the three wires then the problem will be solved.

IX. Operation

A. Types

1. Types RB and HRB- Overload happen when completely closed.
2. Types CS, PF, CX, TB, HTB, and MS- Overload happen when completely opened.

At this moment please use an ammeter to make sure the current.

B. Switch on and off repeatedly within one minute will overheat the motor,

C. Use with a frequency converter- When use a frequency converter, the noise emission by the motor will be louder than usual, and the vibration will be also stronger than usual. Please stop to operate, if the use of a frequency converter causes strong vibration happens and rise of temperature. Kindly use a frequency converter with follow conditions

1. With maximum frequency (RPM) – Must keep under indicated frequency and rated current.
2. With minimum frequency (RPM) - Must keep between 30 Hz and within a rated current.
3. Do not to use with a single-phase motor.

X. Maintenance

A. Regular inspection (about one month) should apply for vibration, noise, insulation, and so on. Due to the blower usually contains dust and gas ventilation, and those may cause wear out of impeller and housing. So inspections should apply frequently.

B. With the hermetically sealed ball bearing, it is unable to refuel lubrication oil, and the lubricant life will be changed according to surround environment. When continually use under standard conditions, the average grease life is around 10000 hours, so to install another set for taking place by turns is strongly recommended.

C. Troubleshooting

1. The blower does not work after connect to the power source.
 - a. Check the power source, see if the voltage is correct and matches the standard of blower.
 - b. To dismantle the housing (0-2), and check if the impeller (0-3) stuck with foreign materials and clean away the foreign materials.
2. The wind power is too low when operating.
 - a. See if the tube of inlet is too small. The caliber of the main tube should be 80% smaller than the caliber of the blower tube.
 - b. Make sure the total square measure of both inlet and outlet of the end of the tubes are 70% less than the total inlet and outlet of the blower.
 - c. Check if the wind power matches the standard of blower or not.
3. It does not come with enough wind pressure when functioning.
 - a. Make sure the pipe is not too small, and there are not too many obstacles as

bends or narrow cause pressure loss.

- b. See if the pressure loss higher than the standard of blower.
- 4. The noise emission level is too high when working.
 - a. For the RB Type- Check if the silencer (dB-1) installed inside of the base (Base), or get damp.
 - b. Make sure that is not the sound of friction from bearing, impeller, housing, and so on.
 - c. See if the base (Base) is steady, not shaking.

Attention- High pressure ring blower is a precision blower. Please do not disassemble the blower by yourself, and contact us if necessary.

XI. Service-Thank you for placing orders with us. If you need further assistance, please contact us or the authorized dealers.

XII. Chart1-1

- A. Suitable for the electric wire and electric cable which follow the CNS rule.
- B. Operation and environment- The safety current below base the highest temperature, when functioning, should not over 60°C, and the surrounding temperature should under 35°C.

Copper Leading Wire			Numbers of copper wire in a conduit		Copper Leading Wire			Numbers of copper wire in a conduit	
Type	Cross-Section (mm ²)	Per Wire/Diameters (mm)	Under 3	4	Type	Cross-Section (mm ²)	Per Wire/Diameters (mm)	Under 3	4
			Ampere (A)					Ampere (A)	
Stranded wire	3.5	7/0.8	20	20	Stranded wire	80	19/2.3	165	145
	5.5	7/1.0	30	28		100	19/2.6	190	170
	8	7/1.2	40	35		125	19/2.9	220	200
	14	7/1.6	55	50		150	37/2.3	250	225
	22	7/2.0	70	65		200	37/2.6	300	270
	30	7/2.3	90	80		250	61/2.3	355	315
	38	7/2.6	100	90		325	61/2.6	415	370
	50	19/1.8	120	110		400	61/2.9	475	425
	60	19/2.0	140	125		500	61/3.2	535	480
Note	1.This chart is suitable for apply to metal wire, electric cable, and bendable wire. 2.The leading wires do not include neutral, earth lead, thread of control, and signal line; however, the neutral contains the third harmonic currents should considered as a conducting wire.								