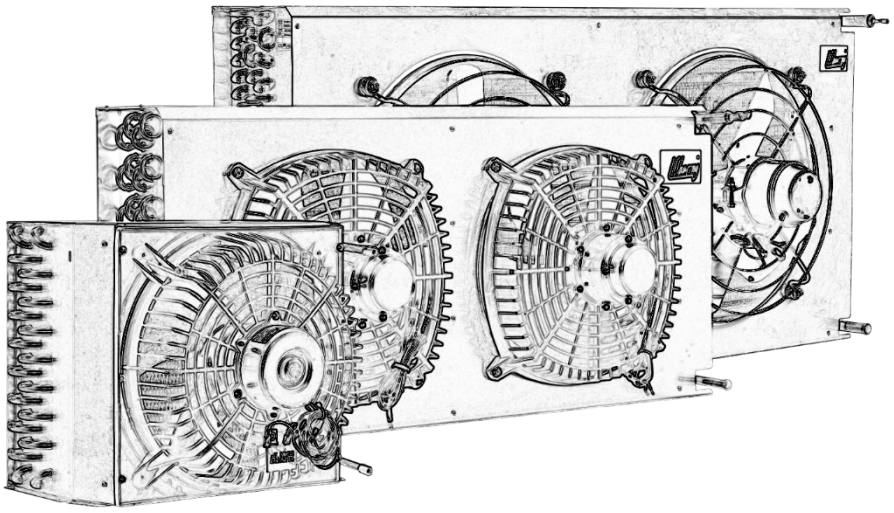
CDT 系列冷凝器安裝與操作說明
CDT Series User's Manual



Catalog 目錄

1. Check on delivery

When receive the product, please check if there is any damage on packing or product due to shipping. And the content is the same as packing list. If there is any damage, please describe the defect on the delivery note. If possible, take photos on damaged part and send the photos and damage description to your local agent. In order to protect your right and interests, please inform your local agent within 3 days.

2. Storage

Warning! Incorrect storage way could lead to casing damage!
Never place any heavy goods on this product!
Never sit or stand on the container!

Store product in cool and dry place. If corrugated cardboard gets wet, please remove the wet corrugated cardboard box as soon as possible! The wet corrugated cardboard might produce corrosive compounds which are aggressive to heat exchanger materials!

If this condenser has been run for a while, for some reason has to unload the unit or shut down the whole system for a long time, please dry and clean the fin surface before storage. If this condenser is disconnected from system, please seal the condenser with dry nitrogen.

1. 收貨檢查

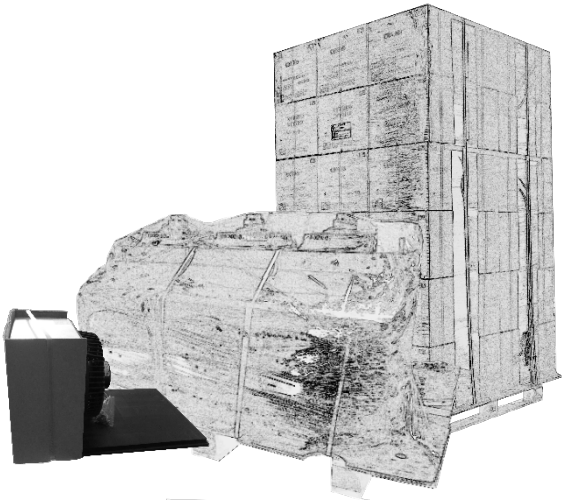
當收到產品時，請檢查產品包裝與產品本身是否有運輸損傷。並請核對產品與送貨單內容是否符合。如果任何損傷，請於送貨單上註明損害情形。可能的話請將受損的部分拍照，並將照片與損害說明傳送到當地經銷商。為了確保您的權益，務請於到貨 3 天內通知您的經銷商。

2. 儲存

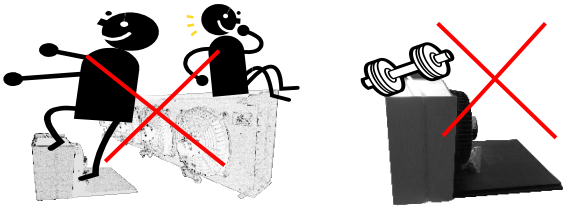
警告！錯誤的存放方式將造成板金受損！
請勿放置任何重物於本產品上！
請勿坐或站立於本產品上！

請將產品放置於涼爽乾燥的位置。如果瓦楞紙包裝潮濕，請迅速將受潮的瓦楞紙箱移除。潮濕的瓦楞紙可能會產生有腐蝕性的物質，對熱交換器的材質造成損壞。

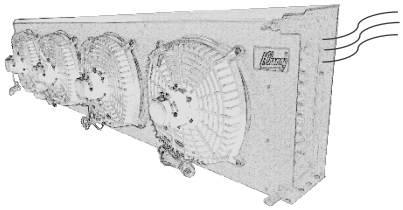
如果冷凝器已經運轉過，在某些情形下必須要將冷凝器取下或是將系統關閉一段長時間，請在儲存前將鰭片清潔乾燥。如果冷凝器由系統拆下，請將冷凝器以乾燥氮氣封存。



Do place product horizontally!
請將產品水平放置！



Do NOT sit or stand or place any heavy goods on condensers!
請勿坐或站立或放置任何重物於本產品上！



Clean and dry up condenser before storage or shut down for a long time if it has been run.
如系統已經運轉過，在儲存或要長時間停機前，請先清潔乾燥！

Use suitable equipment to handle this product. For pallet packing, please use correct forklift to transport!

Installation work must be executed by professional technician !

3. Installation

3.1 Install into system

Note! This series is only for install indoors or in a ventilated cabinet. Do not install outdoors directly. If you need to install outdoors, please use ICUN series.

Model number CDT048~CDT125 can be selected with optional plastic base plate, this base plate is designed for installing compressor. Please use the bolts come with product to fix compressor onto plastic base plate. The condenser with base plate could be fastened onto your system structure via 4mm or 3/16" self-tapping screws or bolts.

For condensers without base plate, use 4mm or 3/16" self-tapping screws or bolts to fix condenser via anchor holes on each side of endplates. Each side is with 3 anchor holes. Be careful, do not damage headers or tube bends while fixing condenser.

Before shipping, CDT300~CDT1000 have been pressurized inside to block moisture. While releasing gas via cutting connection tube before connection, do watch out the gas blowout. After releasing pressure, do piping as soon as possible to avoid moisture and dusts invading.

CDT048~CDT250 have been purged by dry gas and sealed with rubber caps. When caps are removed, please do piping as soon as possible.

All the packing materials disposal must meet local regulation.

慎選合適的機具搬運本產品。如為棧板包裝產品請選用正確的堆高機進行本產品的運送！

本產品的安裝作業僅能由專業作業人員執行！

3. 安裝

3.1 安裝至系統

注意！本系列僅能安裝於室內或是通風的箱體裡。請勿直接安裝於戶外。如果需要安裝於戶外時，請參考 ICUN 系列。

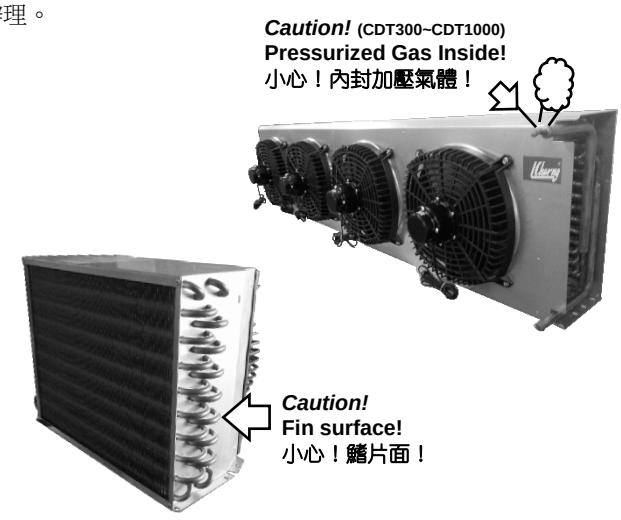
機種 CDT048~CDT125 可以選購塑膠機板，此機板是專為安裝壓縮機所設計，請使用隨附的螺絲將壓縮機固定於機板上。整組冷凝器可利用 4mm 或 3/16"自攻螺絲或螺絲固定於系統的結構體上。

無機板的冷凝器可利用 4mm 或 3/16"自攻螺絲或螺絲，利用端板兩側的固定孔位將冷凝器固定於系統的結構體上。每側各有 3 個固定孔位。請注意固定冷凝器時不要傷害到集管或彎頭。

CDT300~CDT1000 冷凝器在裝運前內部皆有充填氣體維持正壓，以避免水氣進入管路內部。在連接管路前切開入管端將氣體釋放，請注意管內部氣體噴出。切開管路後應儘速配管，以免水氣或灰塵進入。

CDT048~CDT250 出廠前已利用乾燥氣體清潔管路並以橡膠蓋密封。當移除密封蓋後，請儘速進行配管。

所有包裝素材的拋棄必須依照當地廢棄物處理法規辦理。



3.2 Positioning condenser

In order to get the best performance of your condenser, you must install the condenser in a correct place. The following general rules must be followed while selecting the position for condenser:

1. This series condenser must be installed indoors and there must be no obstacle on both inlet and outlet air side. This condenser is **NOT** designed for installing air duct and **NOT** for outdoor application.
2. In order to get better air flow, please do consider air tunnel in your system. Especially installed in a cabinet. .
3. When install multi-condensers system, do avoid the air flow interference between condensers. Must avoid one's discharged flow becomes another one's inlet air. Air inlet side must be kept at least 150mm away from wall.
4. Please avoid the corrosive environment, if it has to be, order anti-corrosion type and clean the condenser more often.

Before installation, check the position and reserve maintenance space.

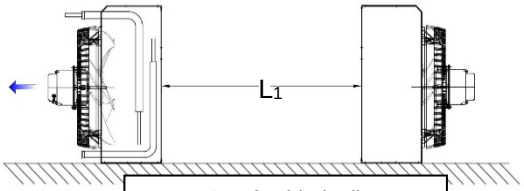
3.2 冷凝器的安裝位置

為了確保冷凝器能發揮最大的效能，必須要將冷凝器裝置在正確的位置。在選擇安裝位置時，必須要遵守以下的通則：

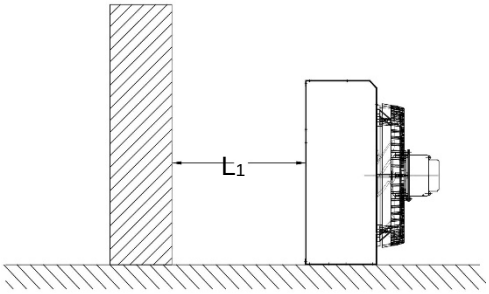
1. 本系列冷凝器必須要安裝於室內，且進排風側必須要無障礙物。本系列冷凝器**並非**為安裝風管所設計且**非**設計於室外安裝。
2. 為獲得較佳的氣流，請考慮安裝於系統中之氣流通道，特別是安裝於箱體中的情形時。
3. 在使用多組冷凝器系統時，要注意避免冷凝器之間的氣流互相干擾，避免一個冷凝器的排風成為另一個冷凝器的入風，如果必須要入風側對入風側的安裝，兩個冷凝器間的距離至少要為一個葉徑的距離。入風側與牆的距離至少要為 150mm 的距離。
4. 請儘可能避開安裝於腐蝕性的環境，如果必須如此，請選購防蝕型機種並經常清洗冷凝器。

在安裝前務必確認位置，並預留維護空間。

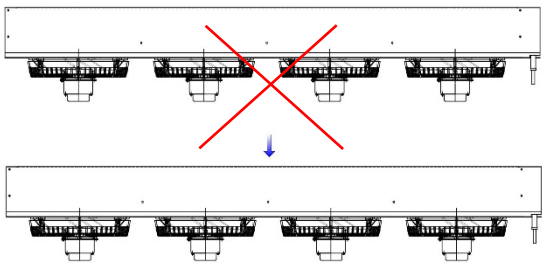
Caution！ 注意！
Sharp edge hazard!
小心銳利邊緣危害！



L_1 > = One fan blade diameter
L_1 > = 一個葉徑的距離



L_1 > = 150mm
L_1 > = 150mm



Must avoid one's discharged flow becomes another one's inlet air.
避免一個冷凝器的排風成為另一個冷凝器的入風。

Caution！
Piping working must be executed by professional technician!

注意！
配管作業必須由專業人員執行！

3.3 Refrigerant Piping

*** Refrigerant piping must be done by professional technician and follow the national codes.**
*** Please follow ASHRAE guide line for refrigerant piping.**
*** The liquid line should not be suddenly expanded in refrigerant direction to avoid flash happening.**
*** Refrigerant line should be as short as possible to reduce pressure drop.**

a. In order to prevent moisture entering condenser, the condenser is sealed with pressurized dry gas. Before brazing the tube, cut the inlet or outlet tube for exhausting sealed gas. **Be careful for the ejected gas. Take personal safety protecting equipment while working.**
b. When the condenser reaches to the zero pressure status, deburr the tube ends and expand the tube for brazing. For the good cleanness inside the system, use dry nitrogen to purge the oxygen out. This will prevent forming oxide inside during brazing.
c. When finish connecting all the components, perform leak teat and vacuuming. Make sure there is no leak and reach the vacuum level required. It's important for steady system operating.

3.3 冷媒配管

※配管必須符合國家相關法規與系統實際操作需求。並由專業技術人員執行。
※請依照 ASHRAE 手冊的冷媒配管指導原則進行配管。
※配液管時在冷媒的行進方向不可以有突然管徑變大的情形，以免發生閃變。
※冷媒管路盡可能保持短，以降低管路壓損。

a. 為確保冷凝器管路內部保持乾燥，出廠前內部會充填乾燥氣體。焊接前，請小心切開出入管，讓冷凝器內部氣體排出。**注意!釋氣時應注意噴出氣體，工作時請穿戴個人安全防護裝備。**
b. 當冷凝器達到零壓力後，開始進行銅管切口去毛邊與擴口準備焊接。為維持管內的潔淨，焊接前請先以氮氣掃除原管內的氧氣，焊接時請以微量氮氣充入管內進行焊接，以避免管內氧化！
c. 當連接完成所有的管路後，進行測漏與抽真空。確認系統無洩漏且達到所需要的真空度。此對於日後系統穩定運轉是十分重要。

3.4 Wiring

Wiring work must be executed by professional technician and follow the related electric codes!

a. Use the correct tool for wiring.
b. Please select the correct electrical wire based on the rating current specified on the connection diagram. (Connection diagram is on the back of terminal box cover.)
c. Connect the fan motor to power source, check if the rotation direction is correct.
d. For safety reason, be sure to ground condenser.

BE SURE TO GROUND CONDENSER!

3.4 電路接線

電路接線工作必須由專業技術人員並依照國家電工相關法規執行！

a. 請使用正確的工具進行接線。
b. 請依照接線圖上所標示的額定運轉電流選擇適當的電線規格。(接線圖位於端子盒蓋背面。)
c. 將馬達與電源接妥，並測試馬達轉向是否正確。
d. 為了安全起見，務必將冷凝器接地。

務必將冷凝器接地！

4. Test running and adjustment

4.1 Before start up

Before setting system into working, the following check list must be examined very carefully:

- ☑ Check fan support(s) is/are fastened firmly. All the screws are fixed. There is no loose part before running.
- ☑ Check the level of condenser is correct.
- ☑ Check all the electric wirings are correctly connected and fastened tightly.
- ☑ Check the power source is correct. And the fan is in right rotation direction.
- ☑ Check the refrigerant piping is connected and all valves are in their positions. System is filled up suitable refrigerant quantity.

4.2 Check and adjust while running

In order to keep system in steady running, must adjust well in test running, the following check list must be examined and adjusted with patience.

* Check for fans rotating direction, make sure all the fans run in correction direction. Check the current if it is correct.
* Check if there is any short circuit in air side.
* Check oil level, if too low add adequate oil to standard oil level. If system is equipped with high pressure side oil separator, there is no oil return at high temperature but oil returns at low temperature. Do check the capacity of oil separator if it is too small.
* Check if condensing temperature is at the design point. Be sure to consider the outdoor air temperature while checking condensing temperature.
* Check sight glass of liquid line. The liquid must be full at the rating operation.

Caution !
Keep hands away from fan blades! Fan might operate unpredictable!

4. 試車與調整

4.1 啟動前檢查

在啟動系統之前，請仔細確認以下相關事項：

- ☑ 確認風車支架是否被牢固鎖定，所有的螺絲已被旋緊。運轉前確認無其他鬆動零件。
- ☑ 檢查冷凝器的水平是否正確。.
- ☑ 檢查所有電線是否正確連接且已鎖緊。
- ☑ 檢查供電電源是否正常，確認風扇轉向正確。
- ☑ 確認冷媒管路已連接妥當，所有的閥都在正確的位置。系統已充填適當的冷媒量。

4.2 運轉時的檢查與調整

為確保系統能穩定運轉，試車時必須要仔細調校，以下的檢查項目在試車過程中必須要耐心觀察與調整。

*檢查風扇運轉方向，確保所有的風扇向正確。檢查運轉電流。
*檢查空氣是否有短循環。
*檢查油位，如果油位過低加入適量的冷凍油至標準油位。如果系統裝有高壓側油分離器，在高溫段不回油低溫段才回油的情形，請檢查油分離器的能力是否過小。
*檢查冷凝溫度是否在設計點。檢查冷凝溫度時請同時考慮當時的外氣溫度。
*檢查液管的視窗，在額定運轉時視窗必須呈現滿溢情形。

注意！
將手遠離扇葉避免受傷! 風扇可能無預期運轉！

5. Maintenance

In order to keep condenser in a good condition, you have to check the condenser periodically. The following items must be done for check.

a. Clean the fins periodically for retaining performance. Use clean water to wash fins. Water pressure must be lower than 4 bars. Be careful not to damage the fins, otherwise it will block air flow. Use fin comb to straighten the damaged fin. If needed, use neutral detergent to clean the coil. Must rinse the coil till no residence left.

If condenser is coated with EnergyGuard, please follow instruction of EnergyGuard!

b. Clean fan blades and air streamer fan guard. If fan blades are damaged or bent, replace with new ones.
c. Check every electrical connection is fastened. Also check if there is any current leakage, find out the problem and fix it.
d. Check fan motor if there is any noise. If so, fix it or replace it.
e. Check every screw and bolt, if there is any loose part, fasten it.
f. Check tubes and brazed parts of condenser if there is any stain or spot. If there is any corrosion happened, do remove the aggressive material(s), and check if there is any leak.

Caution！
Be sure to disconnect the power line before any maintenance or repairing!

5. 保養

為確保冷凝器維持良好的運轉狀態，請定期檢查並保養冷凝器。

a. 定期清潔鰭片確保熱傳效能的維持。使用清水清潔鰭片，水的壓力必須要低於 4 bar。清潔時要注意不可以損壞鰭片，以免阻擋氣流通道。使用鰭片梳將傾倒的鰭片梳直。必要時使用中性清潔劑清洗盤管，清洗後務必潤洗乾淨至無殘留物留在熱交換器上。

＊＊如果冷凝器已進行衛能防蝕處理，請依照衛能保養說明進行清潔！＊＊

b. 清潔扇葉與導風罩。如果扇葉受損或彎曲請更換新的扇葉。
c. 檢查電氣接點是否鬆脫，鎖緊鬆脫的部分。同時檢查是否有漏電的情形，如有請找出原因並予以修復。
d. 檢查風扇馬達是否有異音，如有請修復或是更換馬達。
e. 檢查所有的螺絲與螺栓，如果有鬆脫的部分請鎖緊。
f. 檢查冷凝器的管路與焊接點是否有銹點與污斑。如果發生鏽蝕情形，請將腐蝕性物質移離，並檢查系統是否洩漏。

注意！
在從事任何保養維修前，請注意將冷凝器斷電以免受傷！

*EnergyGuard is a trade mark of Monopoly BV, Holland
*衛能為荷蘭 Monopoly BV 的註冊商標!

6. Trouble shooting

Symptoms	Possible causes	Correction
Condensing temperature is too high	1. Condenser is dirty 2. Supply voltage to fan(s) is too low 3. Heat source nearby or short circuit in air flow 4. Fan is out of order. 5. Condensing temperature control is out of order. 6. Outdoor temperature is too high.	1. Clean condenser. 2. Check the power source. 3. Remove heat source or any obstacle causes short circuit. 4. Replace a new one. 5. Check condensing temperature control and repair it. 6. Check design point.
Condensing temperature is too low	1. Insufficient refrigerant charge/leak 2. No heat load. 3. Condensing temperature control is out of order. 4. Outdoor temperature is too low.	1. Charge refrigerant/repair the leaking. 2. Check the loading and control. 3. Check condensing temperature control and repair it. 4. Check design point and condensing temperature control.
Fan speed is too low	1. Motor is out of order. 2. Incorrect power source.	1. Replace a new one. 2. Check the power source and fix it.
Fan does not run	1. Control component(s) broken. 2. Motor is out of order. 3. Stuck.	1. Check the control circuit, replace the broken component(s). 2. Replace a new one. 3. Remove obstacle(s).
Fan is running but no air out	1. Condenser is dirty	1. Clean condenser.

6. 故障排除

現象	可能原因	處理方法
冷凝溫度過高	1. 冷凝器髒污 2. 風車供應電壓過低 3. 附近有熱源或是風路短循環 4. 風車故障 5. 冷凝溫度控制故障 6. 外氣溫度過高	1. 清潔冷凝器。 2. 檢查供應電壓並予以修正。 3. 移除熱源或是造成風路短循環的障礙物。 4. 更換新的風車。 5. 檢查冷凝控制並予以修復。 6. 檢查設計點。
冷凝溫度過低	1. 冷媒充填量不足／洩漏 2. 無熱負載 3. 冷凝溫度控制故障 4. 外氣溫度過低	1. 補充冷媒量／檢查有無洩漏並予以修復 2. 檢查負載與控制系統 3. 檢查冷凝控制並予以修復。 4. 檢查設計點與冷凝控制。
風扇轉速太慢	1. 馬達故障 2. 供應電源不正確	1. 更換新馬達。 2. 檢查電源並予以修正。
風扇不運轉	1. 控制元件故障 2. 馬達故障 3. 扇葉卡住	1. 檢查控制迴路並更換損壞零件。 2. 更換新馬達。 3. 移除障礙物。
風扇運轉但無風量	1. 冷凝器過髒	1. 清潔冷凝器。

Memo 備忘

Appendix 1 Replacement Parts 替換零件表

Model No. 型號	Fan Set 風車組	Model No. 型號	Fan Set 風車組
CDT048-2	AAHUJ	CDT500-2	AAHWD
CDT075-2□	AAHUW	CDT600-2	AAHWD
CDT100-1□	AAVQK	CDT700-2	AAHWD
CDT100-2□	AAHUW	CDT800-2	AAHWD
CDT125-2□	AAHUW	CDT900-2	AAYBR
CDT150-1□	AAVQK	CDT1000-2	AAYBR
CDT150-2□	AAHUW		
CDT200-2□	AAHUW		
CDT210-2□	AAHWD		
CDT250-2□	AAHUW		
CDT260-2	AAHWD		
CDT300-2	AAHWD		
CDT400-2	AAHWD		

Fan Set Assembly 風車組

Fan Set 風車組	Motor 馬達	Fan Blade 扇葉	Motor Support 馬達網架
AAHUJ	AARWM	AADUB	AAHLN
AAHUW	AARWM	AADUC	AAVFX
AAHWD	AAVHH	AASEQ	AAVFV
AAVQK	AAUND	AADUC	AAVFX
AAYBR	AAUPU	AAHAR	AAHJZ

Version 2016.08.0.1 Subject to change without notice! 資料變更恕不另行通知！

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