

浙江大明制冷科技-涡旋中温冷藏压缩机

Zhejiang Daming Refrigeration Technology—Scroll Mid-Temp. Refrigeration Compressor

DM50-DM260

DB21-DB114

APPLICATION GUIDE



采用先进的技术致力于为客户提供高性价比的产品 Adopt advanced technology to provide customers with cost-effective products.

浙江大明制冷科技有限公司，是一家专业从事制冷压缩机和压缩冷凝机组等制冷设备设计、研发、制造和销售的科技型民营企业，旗下拥有半封闭活塞式制冷压缩机品牌“金明”、涡旋式制冷压缩机品牌“SCROLL”和半封闭螺杆式制冷压缩机品牌“RFC”。

Zhejiang Daming Refrigeration Technology Co. Ltd is a technical private enterprise specialized in researching into, designing, producing and marketing of refrigeration compressors and units. It has the semi-hermetic refrigeration compressor brand "Jinming", scroll refrigeration compressor brand "SCROLL" and semi-hermetic screw refrigeration compressor brand "RFC".

公司建有国内一流的制冷压缩机生产基地，拥有厂房1万余平米，引进了多种高精尖进口加工设备，建立了现代化的制冷压缩机和压缩冷凝机组装配线，并配备有专业的仓储中心和物流配送中心。Company has the first-class refrigeration compressor production base in China, with plant more than 10,000 square meters, the introduction of a variety of imported advanced processing equipment, set up modern refrigeration compressors and condensing unit assembly line, and equipped with professional warehouse center and logistics distribution center.

公司拥有三十多年的制冷压缩机制造经验，组建了一支国际国内制冷精英构成的技术团队，技术力量雄厚。公司还聘请专业的管理咨询机构针对性地建立起现代化的高效管理模式，以提升企业的管理水平。

The company has more than 30 years of refrigeration compressor manufacturing experience, formed an international and domestic refrigeration elite technical team, strong technical force. The company also employs professional management consulting organizations to establish a modern efficient management mode to improve the management level of enterprises.

公司以“打造民族品牌、创建百年企业”为目标，遵循“品质为本、创新为魂”的经营理念，以匠心做好产品，以创新求无限生机，努力将“大明制冷”打造成国产压缩机民族品牌、中国一流制冷压缩机制造商。

The company aims to "Build a famous brand of China, Create a hundred years enterprise" and follow the management philosophy of "Quality-oriented, Innovation-focused". Make high-quality products with ingenuity. Seek unlimited energy with innovation. Strive to make "Daming refrigeration" a famous brand, to be the top refrigeration compressor manufacturer in China.

我们的梦想： Our dreams:

保障食品安全及质量
Ensure food safety and quality.

合理降低客户运营成本
Reasonably reduce the operation cost of customers.

为客户提供高价值的服务
Provide high value service to customers.

建立持续稳定的合作伙伴关系
Establish the sustainable and stable partnership.

大明——冷冻涡旋压缩技术为冷冻应用提供了出众的解决方案

Daming--- Frozen scroll compression technology provides superior solutions for freezing applications.

涡旋压缩机是高可靠性、高能效比，紧凑性系统设计的理想选择

Scroll compressor is the ideal choice for high reliability, high energy efficiency and compact system design.

DM 系列可提供 3HP-15HP 的产品，其适用的制冷剂包括 R22、R404A、R134A 等

DM series can provide products of 3hp-15hp, and its applicable refrigerants include R22, R404A, R134A, etc.

制冷量数据

本样本所列压缩机制冷量数据, 无液体过冷度, 电源频率 50Hz (电机同步转速 2900rpm)。当压缩机在 60Hz 频率 (电机转速 3500rpm) 运行时, 制冷量以及输入功率相应约增加 20%。压缩机不宜在应用范围外使用

Refrigerating data

The data of refrigerating volume of the compressor in this sample, no liquid over-cooling degree, power frequency 50Hz (motor synchronous speed of 2900rpm).

When the compressor is running at 60Hz frequency (motor speed 3500rpm), the refrigerating quantity and input power will increase by 20%. Compressor should not be used outside of application.

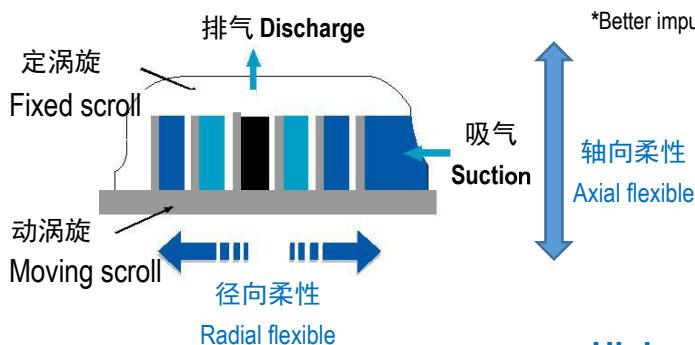
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特点及优势 Features & Advantages

双柔性设计

- 确保涡旋盘间的密封
- 允许涡旋盘沿径向和轴向分开，碎屑或液体可通过涡旋盘而不损害压缩机
- *更高的寿命和可靠性
- *更好的液体容忍度
- *更好的杂质容忍度



Double flexible design

- Make sure the seal between the scroll discs.
- Allowing the scrolls to be radially and axially separated, debris or liquid may pass through the scrolls without damaging the compressor.
- *Higher usage time and reliability.
- *Better liquid tolerance.
- *Better impurity tolerance.

高能效比

- 涡旋盘磨合而不是磨损
- *随运行时间的增加表现更好
- *容积效率高

High energy efficiency ratio

- The scroll disc is running in rather than worn
- *Increased performance with running time.
- *High volumetric efficiency

Lower noise & vibration levels.

- Smooth sound spectrum & soft sound quality
- *Compression chamber is always symmetrical
- *Very low unbalanced stress
- *High-precision manufacturing process
- *No vibration absorption device

更低的噪音和振动水平

- 平滑的声音频谱和柔和的声音质量
- *压缩腔永远是对称的
- *很低的不平衡应力
- *高精度的制造工艺
- *无需振动吸收装置

Unloading startup technology

The compressed parts are separated from each other after the shutdown to balance the internal pressure of the compressor, without the need for additional starting device.

卸载启动技术

压缩部件在停机后相互分开压缩机内部全面的压力平衡，无需附加启动装置。

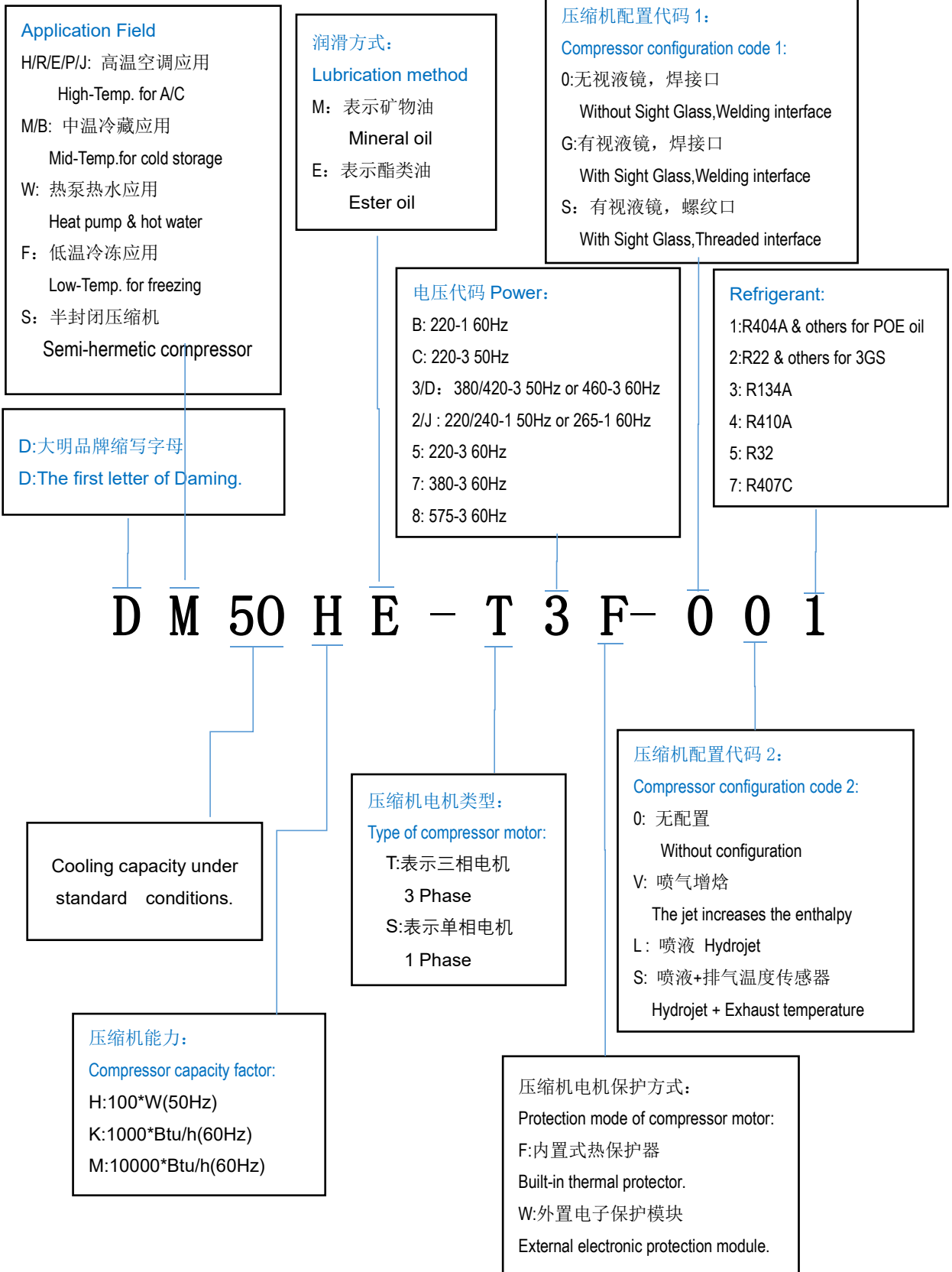
High strength metal composite bearing.

- *Space-age materials
- *Porous bronze.
- *PTFE coating
- *Extend the running time without full lubrication
- *Very small coefficient of friction

高强度的金属复合轴承

- *太空时代材料
- *多孔渗透型青铜
- *聚四氟乙烯 PTFE 涂层
- *在没有完全润滑的情况下延长运行时间
- *非常小的摩擦系数

命名规则 Model Identification

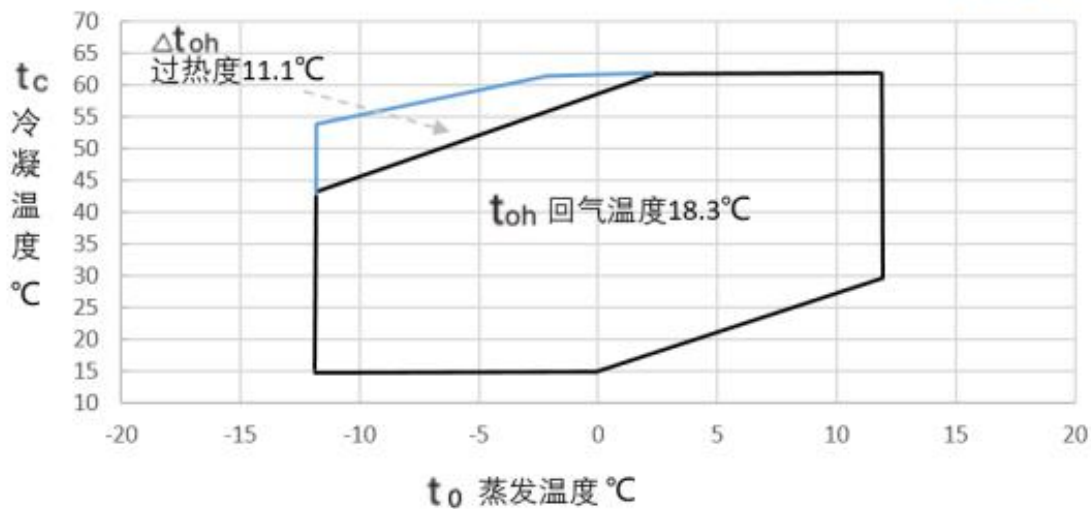


应用范围 Application Limits

DB21KM-DB114KM

DM50HM-DM260HM

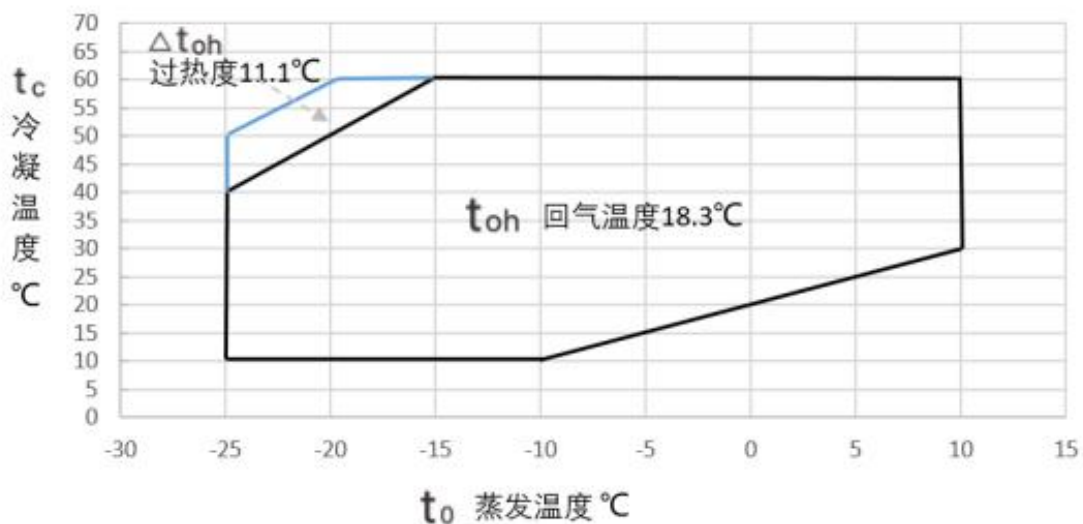
R 22



DB21KE-DB114KE

DM50HE-DM260HE

R 404A



t_0 蒸发温度(°C) :Evaporating temperature(°C)

t_{oh} 回气温度(°C) :Suction gas temperature(°C)

Δt_{oh} 吸气过热度(K) :Suction superheat (K)

t_c 冷凝温度(°C) :Condensing temperature(°C)

—— 蓝线框内最大吸气过热度 11.1K

—— 黑线框内回气温度 18.3°C

制冷量 Cooling Capacity(C/C)

R22

380V/420V, 3Phase, 50Hz

型号 MODEL		Condensing Temp.(°C) - t _c	Evaporating Temperature(°C) - t ₀					
			-12	-10	-5	0	5	10
DM50HM-S2F DB21KM-S2F	制冷量 C/C (Kw)	30	5.25	5.70	6.90	8.25	9.75	11.5
		40	4.75	5.15	6.30	7.55	8.95	10.6
		50	3.95	4.30	5.60	6.70	8.00	9.55
	功率 (Kw) POWER	30	1.69	1.68	1.71	1.74	1.78	1.81
		40	2.07	2.08	2.09	2.13	2.17	2.19
		50	2.58	2.58	2.59	2.62	2.6	2.66
DM50HM-T3F DB21KM-T3F	制冷量 C/C (Kw)	30	5.25	5.70	6.90	8.25	9.75	11.5
		40	4.75	5.15	6.30	7.55	8.95	10.6
		50	3.95	4.30	5.60	6.70	8.00	9.55
	功率 (Kw) POWER	30	1.66	1.65	1.67	1.71	1.75	1.78
		40	2.04	2.04	2.06	2.09	2.13	2.15
		50	2.53	2.53	2.55	2.58	2.61	2.62
DM86HM-T3F DB38KM-T3F	制冷量 C/C (Kw)	30	8.51	9.97	11.87	13.91	15.99	18.21
		40	7.54	8.87	10.75	12.79	14.97	17.31
		50	6.07	7.11	9.37	11.24	13.31	15.63
	功率 (Kw) POWER	30	2.56	2.65	2.78	2.93	3.14	3.42
		40	3.11	3.14	3.25	3.37	3.53	3.73
		50	3.57	3.71	3.84	3.98	4.12	4.28
DM260HM-T3F DB114KM-T3F	制冷量 C/C (Kw)	30	25.61	30.65	36.46	42.65	49.07	55.84
		40	24.13	27.33	33.03	39.29	45.95	53.12
		50	18.75	21.91	28.83	34.56	40.88	47.88
	功率 (Kw) POWER	30	7.95	8.29	8.68	9.17	9.82	10.69
		40	9.55	9.81	10.16	10.55	11.04	11.68
		50	11.07	11.58	12.03	12.45	12.89	13.42

注：1. 测试条件：回气温度 18.3°C，过冷度 0 K

2. 最低蒸发温度保持-12°C

3. 区域：最大吸气过热度为 11.1 K

NOTE:1.Test Condition: Suction gas temperature 18.3°C, supercooling degree 0 K

2.The lowest evaporation temperature : -12 °C

3. area: Maximum Suction superheat :11.1 K.

制冷量 Cooling Capacity(C/C)

R404A

380V/420V, 3Phase, 50Hz

型号 MODEL		Condensing Temp.(°C) - t _c	Evaporating Temperature(°C) - t ₀						
			-25	-20	-15	-10	-5	0	5
DM50HE-S2F DB21KE-S2F	制冷量 C/C (Kw)	30	3.45	4.31	5.25	6.35	7.65	9.11	11.7
		40	2.91	3.71	4.55	5.51	6.61	7.91	9.35
		50	2.43	3.01	3.65	4.45	5.41	6.45	7.71
	功率 (Kw) POWER	30	1.87	1.87	1.87	1.85	1.85	1.84	1.84
		40	2.34	2.34	2.34	2.33	2.32	2.31	2.29
		50	2.95	2.93	2.93	2.92	2.91	2.89	2.87
DM50HE-T3F DB21KE-T3F	制冷量 C/C (Kw)	30	3.45	4.31	5.25	6.35	7.65	9.11	10.7
		40	3.91	3.71	4.55	5.51	6.61	7.91	9.35
		50	2.43	3.01	3.65	4.45	5.41	6.45	7.71
	功率 (Kw) POWER	30	1.84	1.84	1.84	1.82	1.82	1.81	1.81
		40	2.31	2.31	2.31	2.30	2.29	2.29	2.26
		50	2.91	2.90	2.90	2.89	2.88	2.86	2.84
DM86HE-T3F DB38KE-T3F	制冷量 C/C (Kw)	30	6.69	8.72	10.86	13.06	15.23	17.37	19.42
		40	4.72	6.26	8.11	10.18	12.56	15.04	17.68
		50	3.82	4.43	5.61	7.25	9.36	11.84	14.69
	功率 (Kw) POWER	30	2.51	2.51	2.46	2.44	2.49	2.66	3.02
		40	3.25	3.33	3.31	3.25	3.21	3.22	3.37
		50	4.06	4.31	4.41	4.41	4.36	4.33	4.38
DM260HE-T3F DB114KE-T3F	制冷量 C/C (Kw)	30	19.51	25.36	31.55	37.88	44.21	50.42	56.38
		40	13.78	18.17	23.51	29.62	36.39	43.69	51.32
		50	11.16	12.95	16.31	21.11	27.17	34.38	42.61
	功率 (Kw) POWER	30	7.76	7.76	7.64	7.58	7.74	8.26	9.38
		40	10.11	10.35	10.29	10.11	9.96	10.05	10.51
		50	12.66	13.44	13.74	13.74	13.61	13.51	13.63

注：1. 测试条件：回气温度 18.3°C，过冷度 0 K

2. 最低蒸发温度保持-25°C

3. 区域：最大吸气过热度为 11.1 K

NOTE:1.Test Condition: Suction gas temperature 18.3°C, supercooling degree 0 K

2.The lowest evaporation temperature : -25 °C

3. area: Maximum Suction superheat :11.1 K.

技术参数 Technical Data

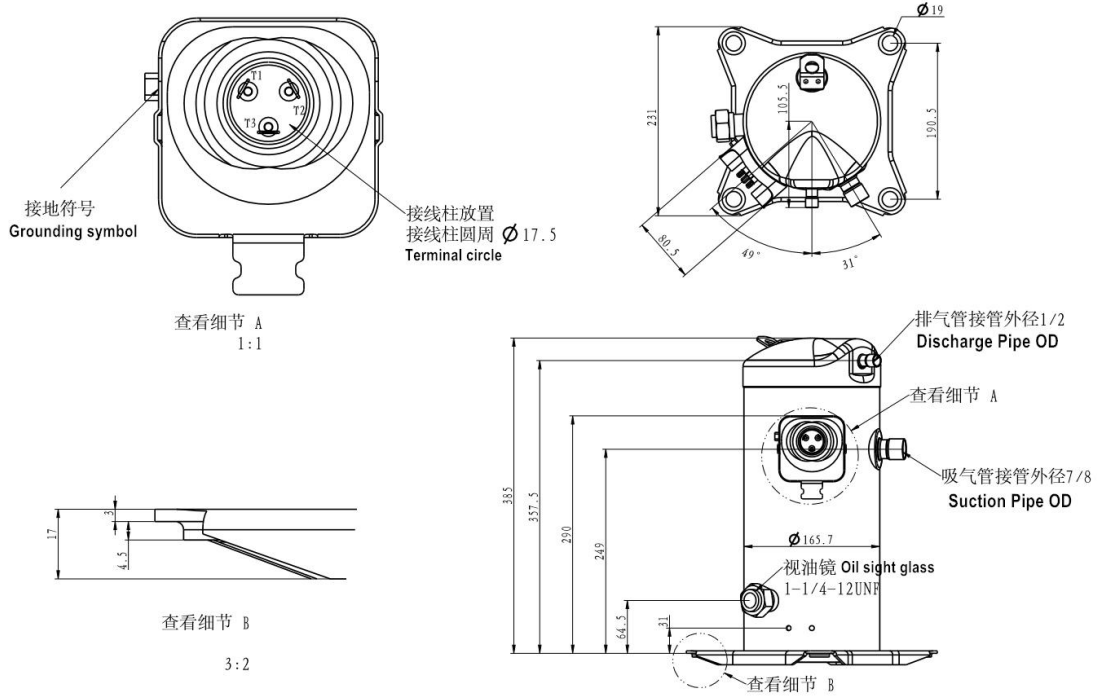
380V/420V, 3Phase, 50Hz

MODEL		DM50HM-S2F	DM50HM-T3F	DM86HM-T3F	DM260HM-T3F	
		DM50HE-S2F	DM50HE-T3F	DM86HE-T3F	DM260HE-T3F	
MOTOR TYPE		220V/50Hz/1Ph	380-420V/50Hz/3Ph			
		1Phase	3Phase			
名义功率 Nominal Power	(H.P)	3	3	5	15	
排气量 Displacement	(m ³ /h)	8.8	8.8	14.6	42	
启动电流 (LRA)	(A)	75-82	36-40	58-65	168-174	
额定负载电流 (RLA)	(A)	12.5	5.7	8.9	27.1	
最大持续运行电流 (MCC)	(A)	23	8	12.5	33	
Run capacitor (1 Ph)		60 μ F/370V				
曲轴箱加热功率 Crankcase heating power	(W)	70	70	70	90	
(OD)	(D/P)	(inch)	1/2	1/2	1/2	7/8
	(S/P)		7/8	7/8	7/8	1 1/8
Dimensions	(L)	(MM)	242	242	242	242
	(W)		242	242	242	242
	(H)		415	415	455	540
Foot mounting dimensions.(Aperture)		190×190 (8.5)				
Oil Volume	(L)	1.3	1.3	1.9	2.7	
WEIGHT	N. W.	(KG)	27	27	40	58
	G. W.		30	30	43	60

外形尺寸图 Dimension Drawing

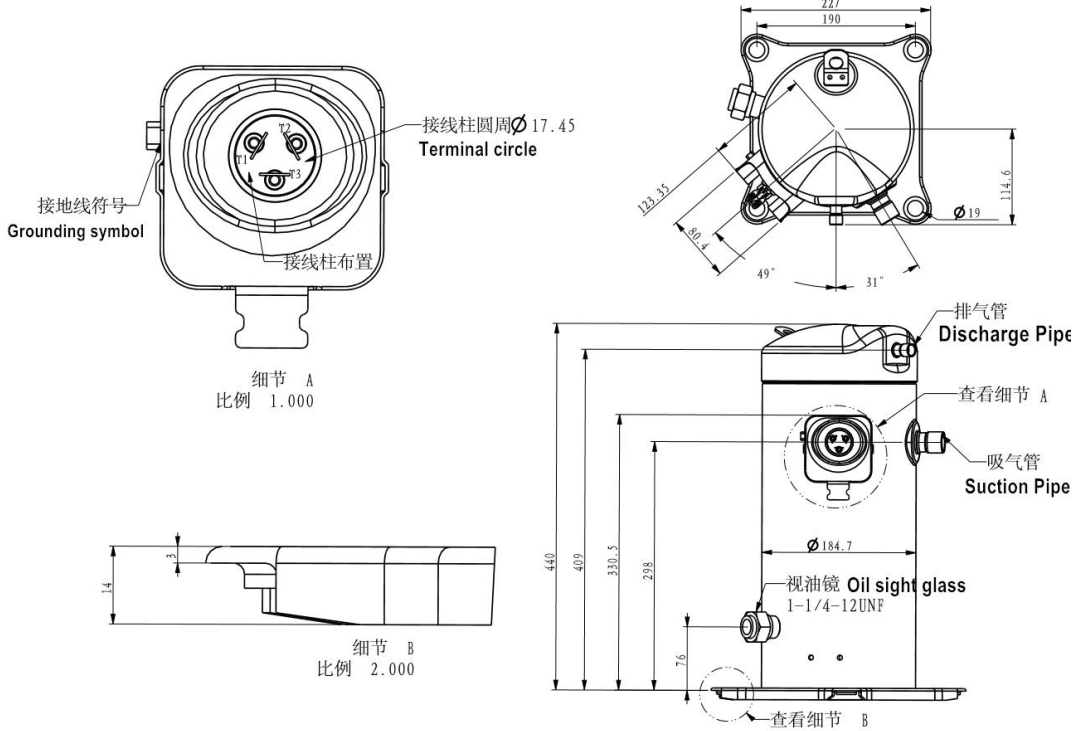
DM50HM-T3F-G01/DB21KM-T3F-G01

Welding interface & Oil sight glass



DM86HM-T3F-G01/DB38KM-T3F-G01

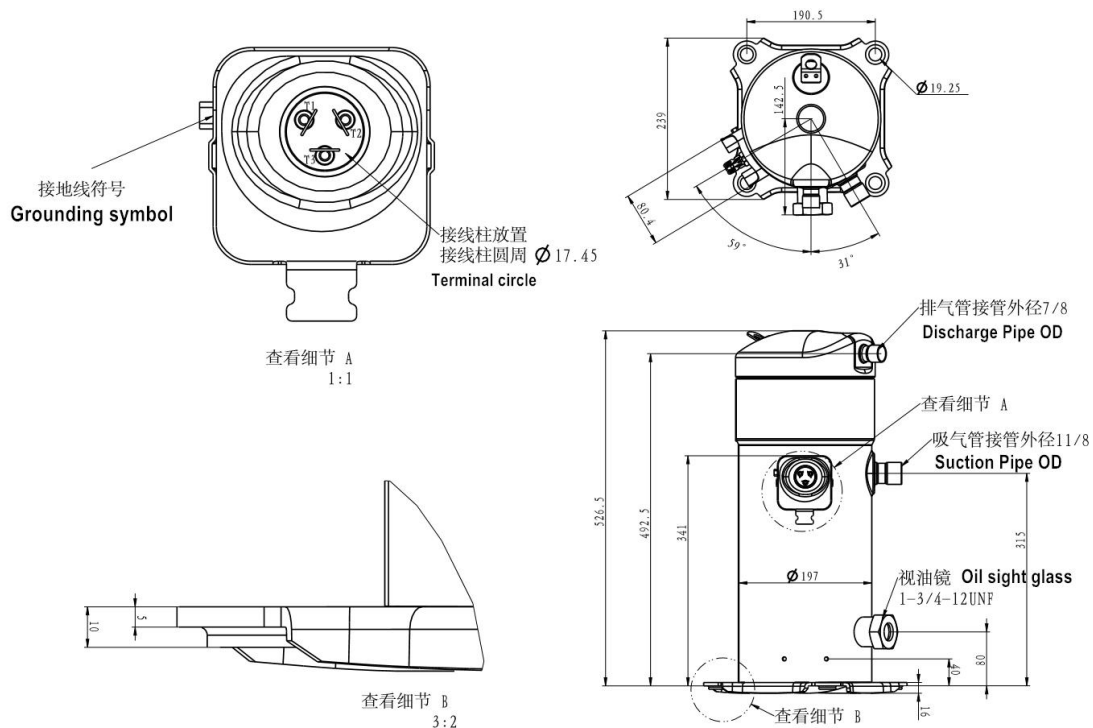
Welding interface & Oil sight glass



外形尺寸图 Dimension Drawing

DM260HM-T3F-G01/DB114KM-T3F-G01

Welding interface & Oil sight glass



应用指南 Application Guide

涡旋压缩机的工作原理 The working principle of scroll compressor



涡旋压缩机的压力是由于作行星运动的涡旋盘之间的相互作用产生的。当涡旋盘之一作行星运动时气体从外开口进入。

The pressure of the scroll compressor is due to the interaction between the scroll disks of the planetary motion. When one of the scrolls is a planetary motion, the gas comes in from the outside.



气体进入涡旋后，开口封闭

After the gas enters the vortex, the opening is closed.



随着涡旋盘继续作行星运动，气体被压入越来越小的空间

As the scroll continued planetary motion, the gas is pressed into smaller and smaller spaces.



当气体到达中央时，达到排气压力

When the gas reaches the center, it reaches the discharge gas pressure.



事实上，在运作中，所有6个气体通道均处于不同的压缩阶段，从而保证吸气和排气过程基本连续而不间断

In fact, in operation, all six gas channels are in different compression stages to ensure that the gas suction and discharge processes are basically continuous without interruption.

涡旋的简单观念首次发明于1905年。涡旋盘是一个渐开线型螺旋线，如上图那样和相配的涡旋盘啮合，形成一系列逐渐扩大的存在于两个部件间的空间。当压缩时，一个涡旋盘保持静止（固定涡旋盘）而另一个涡旋盘（旋转涡旋盘）被允许作围绕第一个盘的行星运动（但不旋转）。当发生该运动时，两个盘之间的空间慢慢地被推移至二个涡旋盘的中央，而同时容积也被减小。当空间到达涡旋盘的中央，处于高压状态的气体通过位于中央的通道排出。在压缩过程中，几个气室被同时压缩，形成非常平滑的过程。吸气过程（涡旋盘的外侧部分）和排气过程（内侧部分）是连续的。

The simple concept of scroll was first invented in 1905. The scroll is an involute spiral that meshes with the mating scroll as shown above to create a series of increasingly enlarged spaces that exist between the two components. When compressed, one scroll remains stationary (fixed scroll) while the other scroll (orbiting scroll) is allowed to move around the first disk (but not rotate). When this movement occurs, the space between the two discs is slowly moved to the center of the two scrolls while at the same time the volume is also reduced. When the space reaches the center of the scroll, the gas at a high pressure is discharged through the centrally located passage. During compression, several chambers are simultaneously compressed, forming a very smooth process. The gas suction process (the outer part of the scroll) and the gas discharge process (the inner part) are continuous.

DM 涡旋压缩机配置 DM Scroll compressor configuration

压缩机型号 Model	内置释压阀 Built-in pressure relief valve	电机保护器 Motor protector
DM50	IPR	中点保护器 Midpoint protector
DM86	IPR	中点保护器 Midpoint protector
DM260	IPR	中点保护器 Midpoint protector

内置释压阀- IPR 阀 Built-in pressure relief valve - IPR

内置释压阀位于压缩机高压侧和低压侧之间，当高压侧和低压侧之间的压力差超过 26-32bar 时开启。当内置释压阀打开时，热的排气气体接触电机保护器温度感应的部位，电机中点保护器跳开。

此时电机三相绕组开路，压缩机必须被充分冷却后，电机中点保护器才会复位。

为了保证压缩机安全运行，在任何应用中都应该给系统配置一个设定压力不超过 30bar（表压）的高压压力开关。

The built-in pressure relief valve is located between the high-pressure side of the compressor and the low pressure side. When the pressure difference between the high pressure side and the low pressure side is over 26-32bar, it is opened.

When the built-in pressure relief valve is opened, the hot discharge gas contacts the temperature sensor of the motor protector, and the motor midpoint protector jumps.

At this time, the motor 3-phase winding opens, the compressor must be fully cooled, and the midpoint protector of the motor will be reset.

In order to ensure the safe operation of the compressor, the system should be equipped with a high-pressure pressure switch with no more than 30bar (Gage pressure) in any application.

应用指南 附件 Application Guide

最小运行时间

关于涡旋压缩机在 1 小时内究竟能启动和停机多少次并没有肯定的答复，因为它很大程度上取决于系统的配置。因为涡旋压缩机是在卸载条件下启动的，即使在不平衡压力下也是在卸载条件下启动的，所以没有最短停机时间的规定。最关键的考虑是在启动后需要让油返回压缩机的最小运行时间。最简单的测定方法是使用一台带玻璃视镜的样机，同时将系统允许的最长的连接管连接起来。最短的运行时间就是当压缩机启动时失油至油返回压缩机油池至恢复视镜中正常油位所需要的时间。如果将压缩机在比该时间短的时间间隔进行循环停开，例如为了保持非常精确的温度控制，会造成逐渐失去润滑油以致损坏压缩机。

Minimum running time

There is no definite answer to how many times the scroll compressor can start and stop in an hour, because it depends heavily on the configuration of the system.

Because the scroll compressor is started under the unloading condition, even under unbalanced pressure, it is started under the unloading condition, so there is no provision for minimum downtime.

The most critical consideration is the minimum running time required to return the oil to the compressor after startup.

The easiest way to do this is to use a prototype with a glass mirror, and to connect the longest connected pipe that the system allows.

The shortest running time is when the compressor is started and the oil is returned to the oil tank to restore the normal oil level in the mirror.

If the compressor is stopped at a shorter time interval than the time interval, for example, to maintain a very accurate temperature control, it will gradually lose the lubricant and damage the compressor.

排气温度保护装置

如果系统设计不能保证压缩机运行在表列的工况内，即超出允许的工况运行；或者是不当的系统布置，都可能产生很高的排气温度，从而导致润滑油结碳，此时应该在控制回路安装排气温度保护装置。

排气温度传感器的安装位置，压缩机不带截止阀时，安装在距离排气口 178mm 处的排气管上；压缩机带截止阀时，安装在距离截止阀接口的 127mm 的排气管上。安装时把排气温度传感器探头紧贴 在排气管表面，并用组件中自带的固定夹固定。

Discharge temperature protection device

If the system design does not guarantee that the compressor runs in the operating condition of the table column, that is, the operating condition of the compressor is exceeded;

Or improper system layout, can produce very high discharge temperature, resulting in lubricating oil carbon, at this time should be in the control loop to install the discharge temperature protection device.

The installation position of the discharge temperature sensor is installed on the exhaust pipe at 178mm from the exhaust outlet when the compressor is not equipped with the stop valve.

The compressor belt globe valve is installed on the 127mm discharge pipe from the cut-off valve interface.

The discharge temperature sensor probe is attached to the surface of the discharge pipe and is fixed with the fixed clip in the assembly.

喷液冷却

在低温涡旋压缩机（DF 系列）机体上，有一个喷液接口，压缩机内部结构使得这个喷液口连接到涡旋盘的中压腔，而该中压腔和吸气腔是隔离的，这样的结构使得喷液时不会导致冷量损失。排气温度控制阀（DTC 阀）用于低温应用的喷液冷却控制。阀的打开设定点为 $89.4 \pm 2.8^{\circ}\text{C}$ 。DTC 阀供液管管径要求使用 3/8 英寸（9.5mm）连接到系统液管过滤器后，必须保证有充足的连续的液体供给，液体要求至少有 2K 过冷。

更换 DTC 阀的压缩机时，强烈建议同时更换 DTC 阀；如果仍想继续使用原 DTC 阀，必须把阀体内过滤器拆出进行清洗。更换 DTC 阀时，必须检查液管过滤器，保证没有堵塞，必要时更换。

Liquid injecting cooling

In a low-temperature scroll compressor(DF series), a spray interface, compressor internal structure makes the spray mouth is connected to the scroll dish medium pressure chamber, and breathe in and the medium pressure cavity is isolated, such structure makes the spray will not lead to a loss of cold energy.

The discharge temperature control valve (DTC valve) is controlled by the spray cooling of low temperature application.

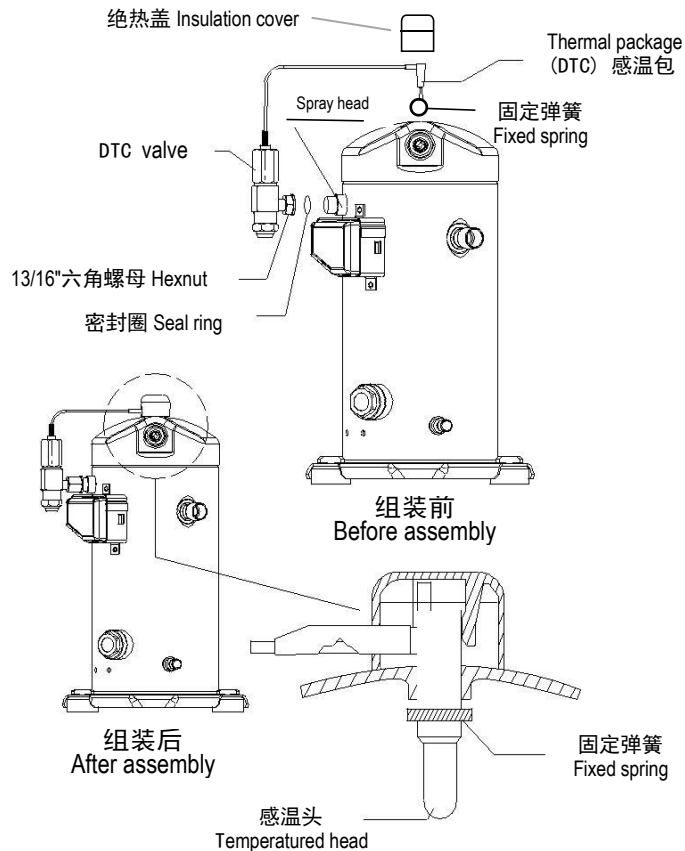
The beat of the valve to open fixed point was $89.4 + / - 2.8^{\circ}\text{C}$.

The DTC valve supply pipe diameter requires 3/8 "(9.5mm) to connect to the system liquid tube filter. There must be sufficient continuous liquid supply, and the liquid requires at least 2K overcooling.

When replacing the compressor of DTC valve, it is strongly recommended to replace the DTC valve simultaneously.

If you still want to use the original DTC valve, you must remove the inner filter of the valve body for cleaning.

When replacing the DTC valve, the liquid tube filter must be checked to ensure that it is not blocked and replaced when necessary.



安装注意事项:

1. 确认固定弹簧在感温包安装孔中槽内
2. DTC 阀紧固扭矩: 24-27Nm
3. 把 DTC 感温包插入到压缩机顶盖安装孔, 要求插到孔底
4. 套上绝热盖
5. DTC 阀感温包正确安装后, 露在压缩机顶盖外面的长度约为 3.2mm

Installation precautions:

1. Confirm that the fixed spring is in the slot in the thermal package.
2. DTC valve tightening torque: 24-27Nm
3. When the DTC temperature package is inserted into the mounting hole of the compressor top cover, it is required to be inserted into the hole bottom.
4. When the DTC valve is properly installed, the length of the exposed top cover of the compressor is about 3.2mm.

曲轴箱加热器

单相涡旋压缩机不需要使用曲轴箱加热器

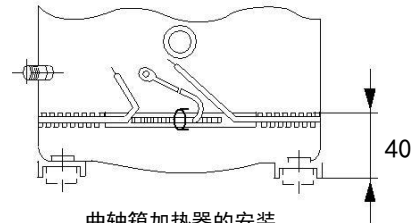
对于三相压缩机来说, 当制冷剂充注量超过下表所列, 或者在现场充注制冷剂时, 需要使用曲轴箱加热器。

Crankcase heater

Single-phase scroll compressor does not need to use crankcase heater.

For the three-phase compressor, the crankcase heater should be used when the refrigerant charge is higher than the following table, or when the refrigerant is filled in the field.

MODEL	Refrigerant Volumn (KG)	Crankcase heater power (W)
DM50HM	4.5	70
DM86HM	4.5	70
DM260HM	7.7	90



曲轴箱加热器的安装
Installation of crankcase heater

压力控制器

为保证制冷系统的安全运行, 建议所有系统都要配备高压开关和低压开关, 建议的切断设定值见下表(表压: bar):

Pressure controller

In order to ensure the safe operation of the refrigeration system, it is recommended that all systems should be equipped with high voltage switch and low voltage switch, and the recommended cut-off value is shown in the table below(GP:bar):

控制类型 Types of control	R22	R404A	
DM	High pressure(Max.)	26.8	31.9
	Low pressure(Min.)	1.3	1.2
DF	High pressure(Max.)	28	28
	Low pressure(Min.)	0	0.3

气液分离器

由于涡旋压缩机的内在特性，它有较强的抗液击能力。在大多数系统中可以不使用气液分离器。但是如果在正常停机时间内或在融霜或者负荷变动时，系统有大量液体制冷剂不停地返回压缩机。不管系统的充注量是多少，如果长期有回液现象或带液启动而不能对其进行控制，由于对润滑油产生稀释作用，轴承会由于得不到充分润滑而发生磨损。在这种情况下，建议使用气液分离器。

如果系统使用气液分离器，建议回油小孔尺寸范围为 1-1.9mm。需要有一个较大面积的保护用滤网，不细于 30×30 网面（0.6mm 孔径，不推荐在系统中任何地方使用细于 30×30 网面的滤网），以保护小孔避免由于系统脏物引起的污堵。

Gas-liquid separator

Because of the inherent characteristics of the scroll compressor, it has strong anti-liquid strike capability.

In most systems, the gas-liquid separator is not used.

However, if the system has a large amount of liquid refrigerant to return to the compressor during normal shutdown time or during defrost or load fluctuation.

No matter how much is the amount of filling system, if they have long back to liquid or liquid to start not to control, due to the effect on the lubricating oil dilution, bearing would occur due to inadequate lubrication and wear.

In this case, the gas-liquid separator is recommended.

If the system uses gas-liquid separator, it is recommended that the size range of the return oil hole should be 1-1.9mm.

Need a large-area protection with mesh, not fine to 30 x 30 net surface (0.6 mm diameter, anywhere in the system is not recommended to use in 30 x 30 net surface mesh), in order to protect avoid fouling due to dirt system through the holes.

干燥过滤器和湿度指示仪

安装在液体管道的干燥过滤器应有足够的容量并适合连续运行，其选型应根据制冷剂的流量。不能使用诸如氯化钾等吸收大量湿气后变成液体状态的干燥剂。建议用多孔性的块状干燥剂以吸附湿气和酸，阻止脏物和金属碎屑。干燥过滤器的安装必须在第二次抽空工序后才能进行。湿度指示仪的视镜应安装在液体管道的易观察部位已达到检查制冷剂流量的目的。

Dry filter and humidity indicator

The drying filter installed in the liquid pipe shall have sufficient capacity and is suitable for continuous operation, and its selection shall be based on the flow of refrigerant.

You cannot use a desiccant, such as potassium chloride, that absorbs a large amount of moisture and becomes a liquid state.

It is recommended to use porous block desiccant to absorb moisture and acid to prevent dirt and metal debris.

The installation of the drying filter must be carried out after the second evacuation procedure.

The visual mirror of the humidity indicator should be installed in the easy-to-observe part of the liquid pipe to check the purpose of refrigerant flow.

油分离器

在安装油分离器时，其中必须预注润滑油至溢流阀刚开始打开，油分离器中必须总是保持这些油量，否则压缩机中的润滑油将被油分离器取出而减少。预注油量可参考油分离器生产商说明书。

Oil separator

When installing the oil separator, which must be pre lubrication to the beginning of the overflow valve open, must always keep the oil in the oil separator, otherwise the lubricating oil in compressor will be remove and reduce the oil separator.

The pre-injection quantity can refer to the manufacturer's manual of oil separator.

制冷剂 and 冷冻油

DM/DF 涡旋压缩机可按压缩机型号和用途使用 R22, R404A 等在制冷剂。使用 R404A 等环保型制冷剂时，必须用酯类润滑油（POE 油）。使用 POE 润滑油的系统要求其中的残余含水率必须低于 50ppm，有关测定必须在系统运行 48 小时后进行。相应的措施之一就是针对不同的系统和制冷剂安装在一个足够容量的过滤干燥器。这类系统在试运行和维修时也要求必须有合适的抽真空工艺。

运行新型制冷剂的部件选用必须符合新型制冷剂的特性（具体可咨询部件生产商）：

- *必须使用与新型制冷剂相容的膨胀阀
- *必须使用与新型制冷剂相容的足够容量的干燥过滤器
- *选用有关阀件控制器时必须考虑 R404A 等新型制冷剂产生的质量流量改变

矿物油不能用于运行 HFC 新制冷剂的制冷系统中，因为矿物油不能与此类制冷剂混溶。POE 润滑油已被确证可以取代矿物油而很好的用于这种场合。为了保证使用寿命，必须特别注意这种多元酯油的性能和使用特点。已经过认证的酯类油，它们可用于 R404A, R407C 和 R134A 系统中，并且可以相互混合使用。为了防止矿物油和多元酯油的互相污染，应将相应用于传统制冷剂和新型制冷剂的各种器件如真空泵，管接件，加注和回收设备及零部件等严格分开使用。

酯类油有很强的吸湿特性，吸入湿气后会影响润滑油的化学稳定性。在压缩机保存，运输的过程中，要充注干燥的氮气避免湿气进入。安装的过程中，要尽量缩短压缩机吸排气口的敞开时间。

Refrigerant and frozen oil

The DM/DF scroll compressor can be used for compressor type and use R22,R404A and other refrigerant.

When using an environmentally friendly refrigerant such as R404A, it is necessary to use ester oil (POE oil).

The system using POE lubricating oil requires that the residual moisture content must be lower than 50ppm, and the determination must be carried out 48 hours after the system runs.

One of the corresponding measures is to install a filter dryer with sufficient capacity for different systems and refrigerants.

This kind of system also requires the proper evacuation process in the trial operation and maintenance.

The selection of parts to run the new refrigerant system must conform to the characteristics of the new refrigerant(specific consulting parts manufacturer) :

- *The expansion valve compatible with the new refrigerant must be used.
- *A dry filter with sufficient capacity that is compatible with a new refrigerant must be used.
- *The quality flow of the new refrigerant such as R404A must be considered when selecting the valve controller.

Mineral oil cannot be used in the refrigeration system of HFC new refrigerant because mineral oil cannot be mixed with such refrigerant. POE lubricants have been proven to replace mineral oils and are well used for such occasions.

In order to ensure the service life, special attention must be paid to the properties and characteristics of the polyester oil.

Certified ester oils, which can be used in R404A,R407C and R134A systems, can be used in combination with each other.

In order to prevent the mineral oil and diverse ester oil pollution, each other should be used for corresponding traditional refrigerants and all sorts of new refrigerant components such as vacuum pump, pipe fittings, filling and recycling equipment and parts such as strictly used separately.

Ester oil has a strong hygroscopic property, which can affect the chemical stability of lubricants after inhalation of moisture.

In the process of storage of the compressor, it is necessary to fill the dry nitrogen to avoid moisture entering.

In the process of installation, it is necessary to shorten the opening time of the compressor suction and discharge opening.

吸气管过滤器

为避免压缩机故障，在运行前必须把所有的杂质（污垢、焊接氧化皮、硼砂、金属屑等）从系统中清除。许多杂质非常微小，可通过微孔过滤器进入压缩机吸气侧。在进行现场装配或无法保证所有清洁度时，建议使用大容量的吸气管过滤器（仅产生极小的压降）。在过滤器前应设置压力计接口用以检测由过滤器引起的压降。

Suction strainer

In order to avoid compressor failure, all impurities (dirt, welding oxide skin, borax, metal chip, etc.) must be removed from the system before operation.

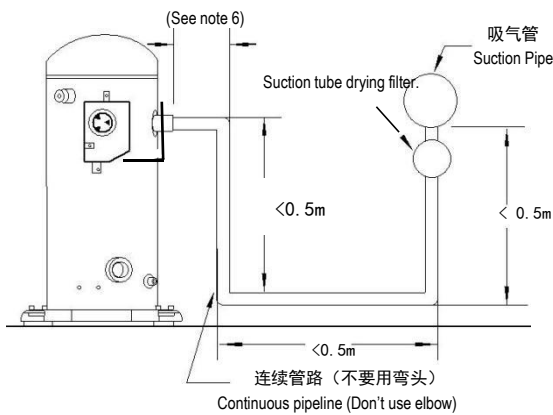
Many impurities are very small and can be entered through the microporous filter into the suction side of the compressor.

When assembling or failing to ensure all cleanliness, it is recommended to use a large capacity inhalation tube filter (with minimal pressure drop).

The pressure gauge interface should be set in front of the filter to detect the pressure drop caused by the filter.

典型的吸气管布置图

Typical suction pipe arrangement



注意

1. 上述管路布置图目的是尽量降低管路应力
2. 排气管或回油管也要按此原则布置
3. 如果管长大于 0.5 米，应采取固定措施
4. 如果管路上有较重的部件（如干燥过滤器），一定要采取固定措施
5. 不推荐管长小于 0.2 米
6. 这段管路尽量要短（50mm 或更短），同时应保证足够的焊接长度
7. 这段管路不建议使用弯头连接，建议使用连续铜管

要根据应用方式来选择压缩机的安装方式，所选择的安装方式和管路布置，要尽量减小噪音和振动的传递。

NOTE:

1. The above piping layout is designed to minimize pipe stress.
2. The discharge pipe or the return pipe should also be arranged according to this principle.
3. If the tube length is greater than 0.5 m, fixed measures should be taken.
4. If there are heavy parts (such as drying strainers) on the road, you must take fixed measures.
5. The pipe length is less than 0.2 meters.
6. The pipe shall be as short as possible (50mm or shorter) and sufficient welding length shall be ensured.
7. The pipe is not recommended to use elbow connection, and continuous copper pipe is recommended.

It is necessary to choose the installation mode of the compressor according to the application mode, and the installation method and piping layout should be selected to minimize the transmission of noise and vibration.

安装底脚

单压缩机冷凝机组使用软底脚安装。压缩机用于并联机组时，要使用专用的硬底脚安装。

Install the foot

Single compressor condensing unit is installed with soft sole.

When the compressor is used in parallel units, use the special hard sole to install.

管道

制冷设备中的管道安装要求非常小心并保持高度的清洁。原则上只能使用内部清洁干燥、无氧化皮、无锈蚀、无磷酸盐层的管道。管道焊接时必须在管内通以干燥氮气。为防止管道内焊接处产生污垢，必须尽量控制材料熔化的程度。不能在有制冷剂的管道上进行焊接工作，（即便制冷剂处于非压力状态）。因为受热的制冷剂、油及空气会形成有毒气体。管路的设计必须能够保证即使在部分负荷时，吸气管和排气管中的气体最低速度能够保证回油。

The pipe

Piping installation in refrigeration equipment requires very careful and high cleanliness.

In principle, only clean, dry, non-oxidized skin, no rust, and no phosphate layer can be used.

The pipe must be filled with dry nitrogen when welding.

In order to prevent dirt from welding in the pipe, the degree of material melting must be controlled as far as possible.

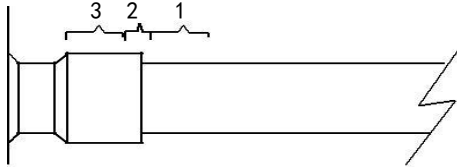
Do not weld on the pipe with refrigerant (even if the refrigerant is in non-pressure condition).

Because heated refrigerants, oils and air can form toxic gases.

The piping design must be able to ensure that the gas in the suction pipe and the discharge pipe can be guaranteed to return to oil even at a partial load.

涡旋压缩机管的焊接

Welding of scroll compressor tube



初次安装

*涡旋压缩机的镀铜吸气钢管可类似其他铜管一样焊接。

*推荐使用的焊接材料：任何铜银合金材料均可使用，最好含至少 5%的银。

*安装前保证吸气管接头内径和吸气管外径清洁。

*用双嘴枪在 1 区加热。在管温接近焊接温度后，将焊枪火焰移至 2 区。

*加热 2 区直至达到焊接温度，上下移动焊枪，必要时绕管转动，使管子均匀加热，在接头处加焊料，同时绕接头转动焊枪，使焊料沿周边流动。

*在焊料流遍接头四周后，将焊枪移至 3 区加热。这样可使焊料进入接头，加热 3 区所用时间最短。

*对任何焊接接头，过分加热都会产生不良影响。

现场服务

*断开：从系统高低压侧同时回收制冷剂，在靠近压缩机处切断管子

*重新连接：

1. 推荐使用的焊接材料：含银至少 5%的铜银合金或带焊剂的铜银焊接材料
2. 将管子插入接头并连接至系统
3. 按初次安装指导操作

For the first time to install

*The copper suction pipe of the scroll compressor can be welded like other copper tubes.

*Recommended welding materials: any copper and silver alloy material can be used, preferably with at least 5% silver.

*Before installation, make sure both the inner & outer diameter of the suction pipes are clean.

*Use a double - mouth gun to heat the zone 1.

After the tube temperature is close to the welding temperature, remove the torch flame to zone 2.

*Move up and down until the heating zone 2 is up to the welding temperature, welding torch, turn round tube, when necessary to evenly heating pipe, in the add solder joint, and at the same time around the joint rotation welding torch, flowing solder in the surrounding.

*Move the welding gun to zone 3 after the solder flow is around the joint.

This allows the solder to enter the joint, and the shortest time for heating zone 3.

*Excessive heating can have undesirable effects on any welded joint.

On-site service

*Disconnect: the refrigerant is recovered from the high and low pressure side of the system and the pipe is cut off near the compressor.

* Reconnect:

1.Recommended welding materials: copper silver alloy with at least 5% silver or copper silver soldering material with flux.

2.Insert the pipe into the joint and connect to the system.

3.Follow the initial installation instructions.

并联运行时油的控制

冷冻涡旋压缩机可以由于并联运行。在并联系统中，必须有好的油管理系统来保证压缩机内有足够的油位。

Control of oil in parallel operation

The frozen scroll compressor can be operated in parallel.

In parallel systems, a good oil management system is required to ensure sufficient oil level in the compressor.

电气连接

Electrical connections

供电电压和接线端子

请注意接线盒盖中接线端子的方向，为保证压缩机的正常启动和运行，供电电压不能低于压缩机额定电压的 10%。

Supply voltage and terminal

Please pay attention to the direction of the terminal in the junction box cover. To ensure the normal start and operation of the compressor, the supply voltage shall not be less than 10% of the rated voltage of the compressor.

单相压缩机的启动特性

单相涡旋压缩机使用永久性分电容电机（PSC），在绝大部分应用中不需要辅助启动装置。在某些应用场合（例如启动时电压较低），需要辅助启动装置，比如启动电容和辅助继电器来帮助启动。

The starting characteristics of single-phase compressor

The single-phase scroll compressor uses a permanent sub-capacitance motor (PSC), which does not require an auxiliary starter in most applications.

In some applications, such as low voltage at startup, you need an auxiliary starter, such as starting capacitors and auxiliary relays to help start up.

三相压缩机的旋转方向

涡旋压缩机只能在一个旋转方向进行压缩。单相压缩机总是按照正确的方向启动和运行（瞬间断电的情况除外）。三相压缩机的旋转方向由电源相序决定，因此压缩机有 50% 的可能性发生“反转”。

在现场安装时，可以根据吸气压力的降低和排气压力的升高来判断压缩机旋转在正确的方向上。另外，如果压缩机是反转的话，压缩机噪音比较异常，运行电流也明显比正常运行低。

短时间反转对压缩机是没有危害的，但是长时间反转会损害压缩机。

设备制造商可以在控制回路中设置相序保护模块来保证在相序不对的情况下不运行。

The rotation direction of the three-phase compressor

Scroll compressors can only be compressed in one rotation direction. Single-phase compressors always start and run in the right direction (except in the case of instant power outages).

The rotation direction of the three-phase compressor is determined by the power phase sequence, so the compressor has a 50% chance of "inversion".

When installing on site, it is possible to judge the compressor rotation in the correct direction according to the decrease of suction pressure and the increase of discharge pressure. In addition, if the compressor is inverted, the compressor noise is abnormal, and the running current is significantly lower than the normal operation.

Short time reversal is not harmful to the compressor, but long time anti-transfer damage compressor.

The device manufacturer can set the phase sequence protection module in the control loop to ensure that the phase sequence is not running.

瞬间断电

瞬间断电（停电时间少于 0.5 秒），可能会导致单相压缩机的旋转方向发生改变。重新来电后压缩机会在反向持续运行几分钟，直到压缩机电机保护器动作。这对压缩机没有影响，电机保护器复位后压缩机会以正确的方向重新启动和运行。

建议用一个能够感应到瞬间断电的继电器，当发生瞬时断电时，锁定压缩机两分钟后再允许压缩机重新启动。

三相压缩机不需要使用该继电器。

Instantaneous power failure

Instantaneous power failure (less than 0.5 seconds) may cause the rotation direction of the single-phase compressor to change. The compression opportunity will continue to run for a few minutes on the reverse side until the compressor motor protector moves.

This has no effect on the compressor, and the motor protector is reset and the compression opportunity is restarted and operated in the correct direction.

It is suggested to use a relay that can sense the instantaneous power failure. When the instantaneous power failure occurs, the compressor will be locked for two minutes before allowing the compressor to restart.

The three-phase compressor does not need to use this relay.

耐高电压测试

冷冻涡旋压缩机的电机在壳体下部，系统内充注制冷剂后，电机可能会浸泡在制冷剂液体中。当壳体内制冷剂液位较高时由于制冷剂液体较之气体或润滑油的电导率值较高，耐高电压测试可能会显示较高的漏电值。这种现象会在所有电机沉浸在液体制冷剂的压缩机上发生，并没有安全隐患。要降低漏电值的读数，短时间运转系统，并确保没有制冷剂液体回到压缩机壳体后再重新测试。

High voltage resistance testing

The motor of the frozen scroll compressor is in the lower part of the shell, and the motor may be immersed in the refrigerant liquid after the system is filled with refrigerant.

When the liquid level of refrigerant in the shell is high, the high conductivity value of the refrigerant liquid is higher than that of gas or lubricating oil, and the high-voltage test may show higher leakage value.

This phenomenon occurs when all motors are immersed in a liquid refrigerant compressor, and there is no safety hazard.

To reduce the leakage value of the reading, the short running system, and ensure that no refrigerant liquid return to the compressor housing and retest.

抽真空（干燥）

系统在检漏测试后必须抽真空。抽真空必须使用真空泵，不允许压缩机自行抽真空。为了便于抽真空操作，建议在吸气管道和液体管道上安装抽真空阀。抽真空阀与真空泵之间的连接管道内径至少为 8mm，抽真空阀上的接口截面应不小于连接管的截面。所有连接管截面之和不应小于真空泵吸气口截面。

真空泵的连接管（高压橡胶管或直径为 10×1mm 铜管）应尽量短，而且不能有狭窄或急剧弯曲的地方。抽真空能力会因狭窄的接口和连接管道而明显降低。还应注意的是由于真空表通常位于真空泵上，其指示值难以和系统末端的真空度相一致，所以应增加额外的抽真空时间，以便系统各个部位都达到相同的真空度。一台抽气速率 40-50L/min 的真空泵足以应付中小型机器。大型设备应配用内径为 10mm 以上的连接管或直径为 12×1mm 的铜管，并配用相应大规格的抽真空阀及真空泵，也许还必须使用双级真空泵。真空度不能用常规压力表而必须使用真空表测量。应先后两次将系统抽真空至 2mbar (1.5torr)，这样可避免某些运行故障。两次抽真空之间加入所用制冷剂（可吸收大量气态水分）至表压 0.15bar。然后加注干燥气体，接着将包括压缩机或机组在内的整个系统第三次抽真空至 0.7mbar（约 0.5torr）。最后关闭真空泵，向系统中加入所用制冷剂至表压 0.15bar。

注意：不允许在真空状态下启动压缩机及进行绝缘强度试验，以免损坏电机。在真空状态下，绝对不允许运行压缩机。

抽真空及干燥的操作时应特别仔细和准确，因为在安装设备时遗留在系统中的空气将导致排气温度升高，使润滑油结碳而影响润滑油质量并引起压缩机故障。与空气同时进入的湿气会产生酸性物质及腐蚀性金属，并在酸的作用下使润滑油变质，这些情况在高温高压气体影响下将加速生成。

Vacuum (dry)

The system must vacuum after leak testing. Vacuum pump must be used in vacuum pump, not allow the compressor to vacuum. In order to facilitate the vacuum operation, it is recommended to install the vacuum valve in the suction pipe and the liquid pipe. The inner diameter of the connecting pipe between the vacuum valve and the vacuum pump is at least 8mm, and the interface section of the vacuum valve should not be less than the cross section of the connecting pipe. The sum of all connecting pipe sections shall not be less than the suction section of the vacuum pump.

The connection tube of the vacuum pump (high pressure rubber hose or 10 x 1mm copper tube) should be as short as possible, and there should be no narrow or sharp bend. The vacuum can be significantly reduced by narrow interfaces and connections. Also should pay attention to is due to the vacuum gauge on the vacuum pump, usually the indicated value is difficult to match at the end of the vacuum system, so should add additional vacuum time, so that the parts are at the same vacuum system.

A vacuum pump with a pumping rate of 40-50l /min is sufficient for small and medium sized machines.

Large equipment shall be equipped with a connecting pipe with a diameter of 10mm or above and a copper tube with a diameter of 12 x 1mm, and a large sized vacuum valve and vacuum pump shall be used, and a double-stage vacuum pump may also be necessary.

Vacuum gauges cannot be measured using a conventional pressure gauge. The system should be vacuumed to 2mbar(1.5torr) twice, so that some operation failure can be avoided.

Join the refrigerant used between two vacuum (can absorb a large number of gaseous water) to table 0.15 bar pressure. And then filling dry gas, then the whole system, including compressor unit or third vacuum 0.7 mbar (about 0.5 torr).

Finally, close the vacuum pump and add the refrigerant to the system to 0.15bar.

Note: it is not allowed to start the compressor in the vacuum state and conduct insulation strength test to avoid damaging the motor. No compressor is allowed to operate in a vacuum.

Vacuum and drying operation should be particularly careful and accurate, because the left when the installation of the equipment in the system of air will lead to discharge temperature, the lubricating oil and carbon and affects the quality of lubricating oil and cause to a bad compressor.

The moisture that enters the air at the same time produces acid and corrosive metals and deteriorates the lubricant under the action of acid, which will be accelerated under the influence of high temperature and pressure gases.

制冷剂的充注

制冷设备只能加注其设计选择的制冷剂。制冷或空调机组的运行能效取决于制冷剂的正确充注量。如果制冷剂充注不足，则蒸发器中制冷剂也将不足。使吸气压力和排气效率降低，还可能引起电机过热。如果制冷剂加注量过度，则冷凝器中液体过多，导致冷凝压力过高及蒸发器回液而可能损坏压缩机。

应该在涡旋压缩机高压和低压侧同时充注制冷剂液体，大部分充注量应该放在系统高压侧。加注前后应称重制冷剂钢瓶以确定实际充注量。

液体制冷剂加注的基本方法是将制冷剂通过一个特设在加液管上的干燥过滤器，通过储液器上带加注口的截止阀或加注阀加入设备中。

确定制冷剂充注量最常用的方法是观察液体管道视镜中制冷剂的流动情况。由于膨胀阀的正常工作必须依靠制冷剂液体的不间断供给，所以当液体流动清晰可见时，就可假设制冷剂已正确加注。气泡或泡沫的出现通常说明制冷剂不足。然而必须注意，有时尽管加注了足够量的制冷剂，视镜中也可见气泡，其原因之一是视镜前的液管存在束口，使制冷剂压力下降而突然蒸发。另外，冷凝温度的快速变化如打开冷凝风机，也会引起这种突然蒸发。因此虽然视镜可作为一种确定制冷剂加注量的有效工具，但仅通过观察制冷剂流动来确定制冷剂的正确加注量仍是不足取的。判断制冷剂是否合适的标准是系统回气过热度和液体过冷度。

The filling of refrigerant

Refrigeration equipment can only be added to its design choice of refrigerant. The energy efficiency of refrigeration or air conditioning unit depends on the correct filling amount of refrigerant. If the refrigerant is insufficient, the evaporator will not be refrigerant. Reduce the suction pressure and discharge efficiency, and may cause the motor to overheat. If the refrigerant is overcharged, there is too much liquid in the condenser, which can cause the condensation pressure too high and the evaporator return fluid, which may damage the compressor.

It is necessary to fill the refrigerant liquid at the high and low pressure side of the scroll compressor, and most of the filling should be placed on the high side of the system.

Before and after the injection should be weighed refrigerant cylinder to determine the actual filling amount.

The basic method of liquid refrigerant injection is to add the refrigerant through a dry strainer on the liquid pipe and add the stop-valve or the filling valve with the filler on the reservoir.

The most common method to determine the filling amount of refrigerant is to observe the flow of refrigerant in liquid pipeline. As the normal operation of the expansion valve must depend on the continuous supply of refrigerant liquid, it can be assumed that the refrigerant has been correctly added when the liquid flow is clearly visible. The appearance of bubbles or bubbles usually indicates a shortage of refrigerants. But must pay attention to, and sometimes even though filling a sufficient quantity of refrigerant, depending on the fluid bubbles may also be seen in the mirror, one of the reasons is the mirror of the liquid tube bundle of mouth, the refrigerant pressure drop and the sudden evaporation.

In addition, the rapid change of condensation temperature, such as the opening of a condensing fan, can also cause this sudden evaporation.

Therefore, although it can be used as an effective tool to determine the dosage of refrigerant, it is still not sufficient to determine the correct amount of refrigerant by observing the flow of refrigerant. The criterion for determining whether the refrigerant is suitable is that the system returns to excess heat and the liquid is too cold.

壳体温度

压缩机运行时，排气腔包括排气管路的温度会非常高。注意不要让容易被高温损伤的电线或其它材料触碰到这些部件。并注意人身安全，不要用手或其它身体部位去碰触排气腔或排气管。

Shell temperature

When the compressor runs, the discharge cavity, including the discharge pipe, will be very hot. Be careful not to touch these parts with wires or other materials that are easily damaged by high temperature. And pay attention to personal safety. Do not touch the discharge cavity or discharge pipe with your hands or other body parts.

焊下系统部件

小心！在打开系统前，必须将制冷剂从高压侧和低压侧同时释放出来，并用压力表确认高低压两侧的压力已经为 0（表压），再进行焊下工作，或采取切断管路的方式。

Weld the system parts

Be careful! In front of the open system, refrigerant must be released from the high side and low voltage side and at the same time, with the pressure gauge to confirm the pressure on both sides of the high and low voltage to zero (table), then under the welding work, or to cut off the line.

更换压缩机

遇到电机烧坏时，部分受污染的油会与损坏的压缩机一起被更换，其余部分的油可以通过使用吸气管路和液体管路的干燥过滤器进行清洗。推荐采用 100%活性铝吸气干燥过滤器，但必须在 72 小时后拆除。如果系统上有气液分离器，强烈建议将其更换。这是因为在压缩机损坏后的短时间内气液分离器中的回油孔或滤网可能被阻塞而不通畅。这可能会导致新更换的压缩机因为缺油而再次损坏。

Replace compressor

When you meet the motor burn out part of contaminated oil will be replaced with damage to the compressor and the rest of the oil can be through the use of suction pipe and the liquid line filter driers for cleaning. It is recommended to use 100% active aluminum inhalation dry filter, but must be removed after 72 hours. If there is a gas-liquid separator on the system, it is strongly recommended to replace it. This is due to the possibility of blockage of the back oil hole or filter in the gas-liquid separator in the short time after the compressor is damaged. This may lead to a new compressor that is damaged due to lack of oil.

涡旋压缩机功能检测

不能用关闭吸气阀来检查吸气压力能达到的最低数值的方法来测试压缩机的性能。这种实验会损坏涡旋压缩机。以下一些诊断方法可以用来判断一台涡旋压缩机是否功能正常。

*检查供电电压是否正常。

*应进行电机绕组导通性和对地短接的常规检查，以确定电机绕组是否短路或对地是否短路。如果电机中点保护器跳闸，压缩机必须充分冷却使保护器重新闭合。

*检查蒸发器风扇和冷凝器风扇是否正常运行。

*吸排气侧连接压力表，接通压缩机电源。如果吸气压力低于正常值，有可能是充注量少，或系统内部有堵塞。

*对于三相压缩机，如果吸气压力不下降，排气压力上升不到正常值，调换压缩机的任意两根接线柱的电源线，确保压缩机的运转方向正确。如果压缩机的压力仍然没有达到正常值，可能压缩机已经损坏。

*为了测试压缩机是否正常排气，必须将压缩机消耗的电流和公布的压缩机性能曲线在相同运行压力和系统电压下进行比较。如果测量的平均电流和公布值偏差超过±15%，可能表明电压不平衡，应进行进一步的检查。

*在更换或退回压缩机之前，必须确定压缩机是真正的损坏了。在返回之前至少要对它进行耐高电压测试，电机绕组电阻和启动能力的复查。

Scroll compressor function test

The performance of the compressor can not be tested by closing the suction valve to check the minimum numerical value of the suction pressure. This kind of experiment can damage the scroll compressor.

The following diagnostic methods can be used to determine whether a scroll compressor functions properly:

*Check whether the power supply voltage is normal.

*Motor winding conductance and regular inspection of the ground short circuit shall be carried out to determine whether the motor winding is short or short.

The compressor must be cooled sufficiently to make the protector reclosed if the motor midpoint protector trips.

*Check whether the evaporator fan and condenser fan are working properly.

*Connect the pressure gauge to the discharge side and connect the compressor power.

If the suction pressure is lower than normal, it may be a small amount of filling or a blockage within the system.

*For three-phase compressor, if you don't fall in inspiratory pressure, discharge pressure rise less than normal, changing any two terminal of the compressor of the power cord, to ensure the compressor running in the right direction. If the compressor's pressure is still not up to normal, the compressor may be damaged.

*In order to test whether the compressors discharge gas normally, it is necessary to compare the current of the compressor consumption with the reported performance curve of the compressor under the same operating pressure and system voltage. If the average current and published value deviation of the measurement are above or minus 15%, it may indicate that the voltage imbalance should be further examined.

*Before replacing or returning the compressor, it must be determined that the compressor is truly damaged. At least the high voltage test, the motor winding resistance and the starting ability are reviewed before returning.

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