Hermetic AC & DC Compressors

GENERAL CATALOGUE

WANG R&ACE

Refrigeration & AirConditioning Equipments Co., Ltd

Technology 技术

Innovation 革新

Design 设计

Quality 质量

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生产制造 励精图治 持续发展

PRODUCTION AND EQUIPMENT

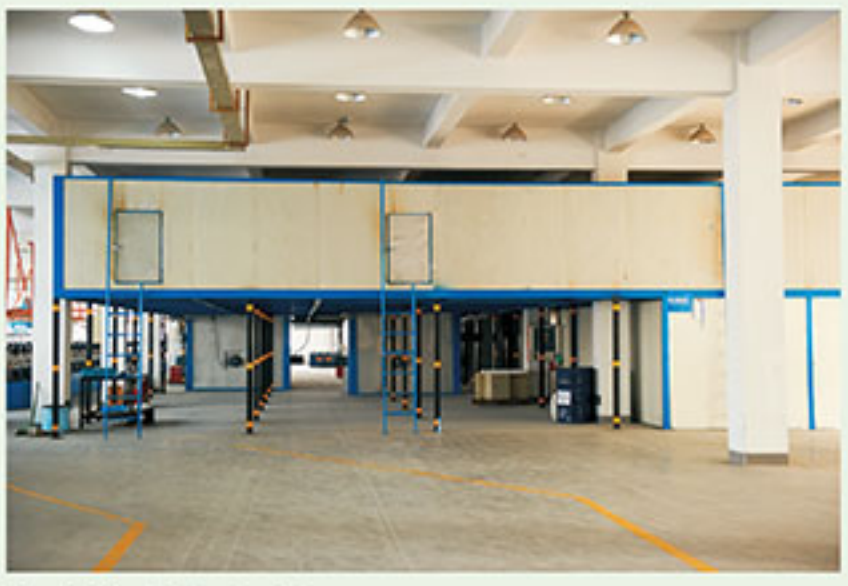
We are making our best effort to ensure sustainable development

我们时刻关注着产品制造技术的不断提高和升级换代。在制冷和空调设备领域，WANG R&ACE是个年轻，充满朝气的企业。我们创始人雄厚的技术背景使得我们能够源源不断地推出创造性的产品和高效的解决方案。现在“设计和生产”如果仅仅只意味着产品改进和制造，那已经落后时代了。企业长期的可持续发展需要全新的思路。产品设计，软件开发，远程控制，自动化和领先的制造技术等这一系列要素才是企业保持活力，创新产品的保证。我们秉承这些理念，以内部的精诚团结，外部和客户紧密合作的方式一直在源源不断地为客户创造出满意的产品和完善的解决方案。

We are totally aware of the significance of continuous improvement in production technology. WANG R&ACE is a young and dynamic enterprise in the world of refrigeration and climate-control equipments. Yet, the strong background of our founders brings us a high confidence and capability to develop our innovative products and effective solutions. In today's world, "design and produce" is not an adequate effort to make a difference and survive. The new trend of sustainability directs manufacturers to a new concept of commodity supplying. Product design, software development, remote controlled automation systems and the cutting-edge production equipments are the key concepts to manufacture a unique product that enables sustainable growth. We use a team approach for every project, working in collaboration with our customers to develop smarter and more useful solutions that meet their expectations.

Cleaning Line

Delivery Flow Line



Varnishing & Drying Line

Cooling Line

Selection and Matching

Final On-line Inspection

Metal Processing

Metal Processing Workshop

Vacuum - Pumping Line

General Assembly Line

Compressor Running Test Line

Comprehensive Performance Testboard

Roughness Detector

Roundness & Cylindricity Tester

Test Center

产品通用要求
General Requirement

1、压缩机应贮存于干燥通风的场所。
Compressor should be stored in a dry and well ventilated place.

2、压缩机存放、运输时不得倾斜或倒置，同时避免撞击，安装水平与工作状态倾斜不大于5°。
Don't turn down or incline the compressor during storage, transportation or installation and avoid vibration and shock. when compressor is working, the inclination can not be over 5°

3、压缩机安装前切勿将橡胶塞拔掉，以免杂物和潮气进入，安装时（建议先拔排气管橡胶塞）拔出橡胶塞后应在10分钟内安装完毕。
Don't take off rubber plugs before using and installing compressor to prevent dust and moisture.After pulling out of rubber plug, the installation should be completed in 10 minutes

4、压缩机的接地装置应永久可靠地与制冷器具的接地装置连接。
The compressor's grounding must be reliably connected with the refrigeration appliances all the time.

5、为了保证系统压力平衡，压缩机运行间隔时间不得少于5min。
The interval of compressor operation can't be less than 5 minutes in order to obtain a pressure balance in the systems.

6、压缩机内注有本公司认可的最佳量的专用冷冻机油，不得随意倒出或添加。
The charging volume of refrigerant oil has been optimized by our company, don't pour or add any more.

7、压缩机附件（如启动器、热保护器等）交货时未安装在压缩机上，必须选用相对应型号的启动器、热保护器等。
Compressor parts(eg starter, thermal protection, etc)are not installed on compressor when delivery, we must use the suitable starter, thermal protection and so on.

8、压缩机不能承受高电压或真空条件下启动、运行，不能用压缩机抽真空。
Don 't start or turn on the compressors in the case of vacuum or high voltage, don 't use compressor to vacuumize in the refrigeration system

9、制冷系统设计时应充分考虑系统回油。
The design of refrigeration system must be suitable to ensure the oil could flow back to compressor.

10、在最高室温（43℃）时，连续运转，冷凝压力不应超过下表

制冷剂	R404A	R134a	R600a	R290
最大冷凝压力（Mpa）	2.87	1.68	0.88	2.12

The working ambient temperature shouldn't be higher than 43℃. In case, continuously working in the 43℃ ambient temperature, the maximum condensing pressure must lower than the following blank.

Refrigerant gas	R404A	R134a	R600a	R290
Maximum condensing pressure (Mpa)	2.87	1.68	0.88	2.12

11、压缩机出厂后库存期最好不要超过6个月，如果超过请检查压缩机内干燥氮气是否充足，必要时应补充。
The stocking period must be less than 6months after the date of production, if longer, you have to check whether the filled gas in sufficient, Replenishment must be done if necessary.

R134a系列压缩机特殊要求
Special Requirements to R134a Compressor

1、R134a压缩机的敞口时间应尽可能短，不得超过10分钟。
Don't keep the R134a compressor connect pipe open too long, better no more than 10 minutes.

2、抽真空泵和充注设备必须专用于R134a。
The vacuum pump and the charging system must only be dedicated to R134a.

3、与R134a不相溶的有机物在制冷系统中不得使用。
The organic substance non-compatible with R134a can't be used in the refrigeration system.

4、R134a制冷系统应使用与R134a相适应的干燥过滤器。
R134a refrigerant should be used in line with the dry filter in R134a system.

5、R134a制冷系统应严格控制水份、杂质、石蜡、硅油和氯离子等的含量。
R134a refrigerant system should strictly control the moisture, impurities, paraffin wax, such as silicone oil, and the content of chloride ion.

6、R134a压缩机内注有本公司认可的专用脂类油，不得随意倒出或添加。
The charging volume of refrigerant oil in R134a compressor has been optimized by our company, don't pour or add any more

压缩机执行标准
Executive Standard

1、**GB/T5773-2004** 《容积式制冷剂压缩机性能试验方法》
GB/T5773-2004 《The methods of performance test for positive displacement refrigerant》

2、**GB/T9098-2008** 《电冰箱用全封闭型电动机-压缩机》
GB/T9098-2008 《Hermetic motor-compressors of refrigerators》

3、**GB4706.17-2004**《家用和类似用途电器的安全电动机-压缩机的特殊要求》
GB4706.17-2004《Safety of household and similar electrical appliances particular requirement for motor-compressors》

4、**GB4706.1-1998** 《家用和类似用途电器的安全第一部分通用要求》
《Safety of household and similar electrical appliances Part General requirement》

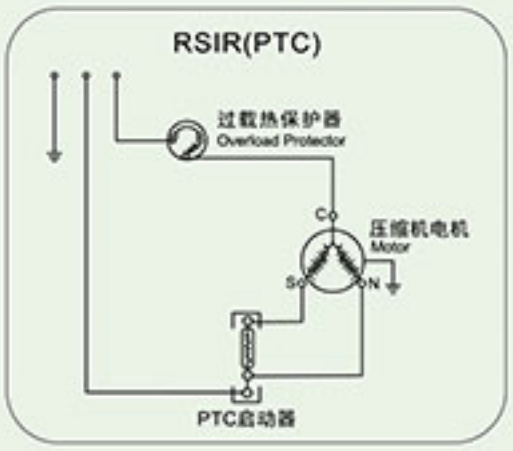
5、**EN60335-2-34:** 2002+A11:2004+A1:2005+A2:2009 used in conjunction with EN 60335-1:2002+A11:2004+A12:2006+A2:2006

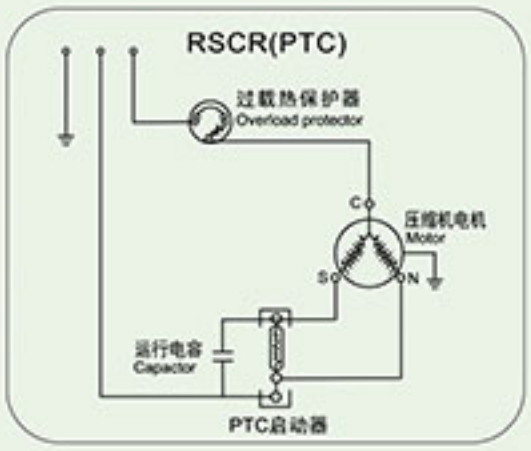
6、**IEC 60335-2-34:**2002(4th Edition)+A1:04+A2:08 used in conjunction with IEC 60335-1:2001(4th Edition)(incl.Corrigendum 1:2002)
+a1:04+A2:06(incl.Corrigendum 1:2006)

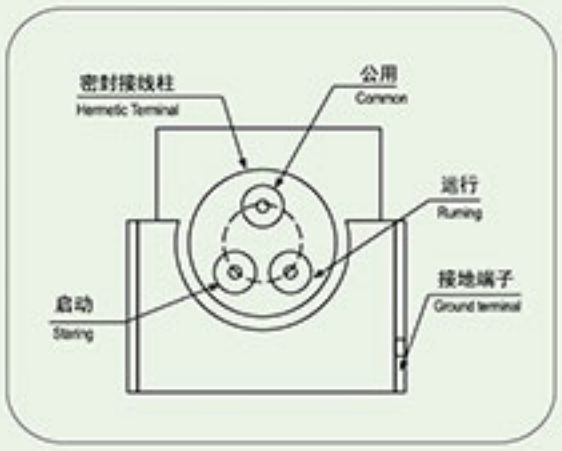
测试工况 Test Conditions

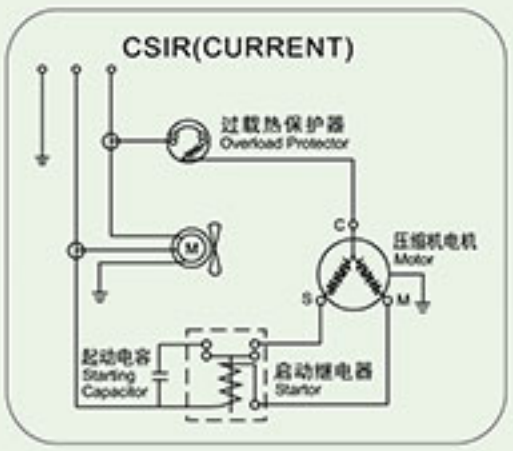
测试工况 Test conditions	低背压LBP ASHRAE
蒸发温度 Evap. Temp	-23.3℃
环境温度 Amb. Temp	32.2℃
冷凝温度 Cond. Temp	54.4℃
吸气温度 Suction. Temp	32.2℃

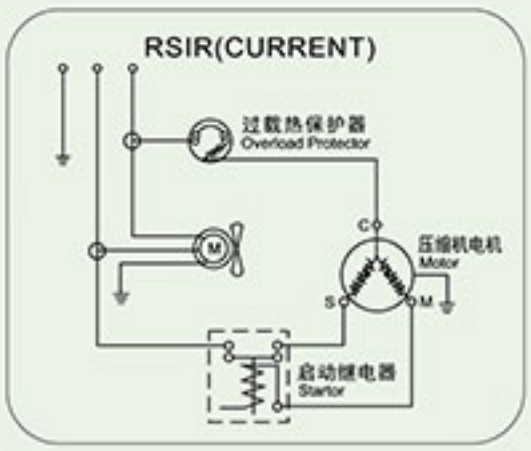
产品接线图 Compressor Wiring Diagram

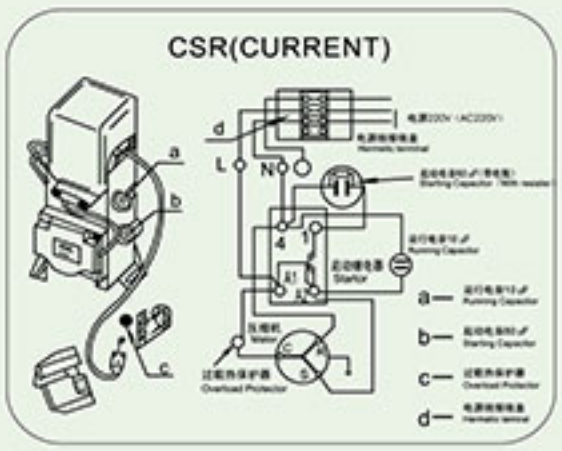




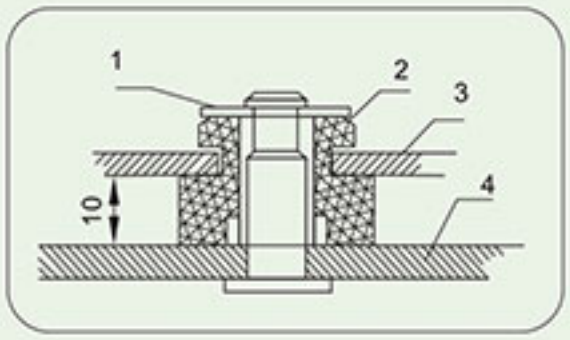


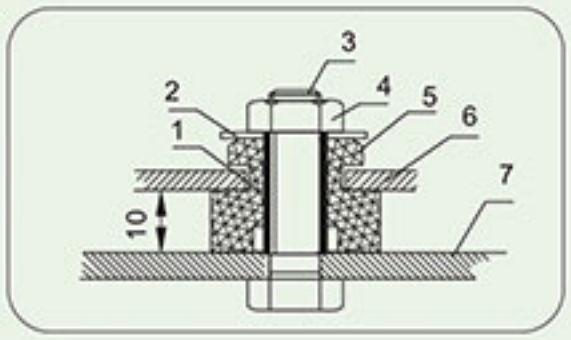






压缩机连接 The Connections of the Compressor





卡簧式 Clamp Type

1、压片 Gasket
2、减震垫 Rubber grommet
3、机座 Mounting feet
4、箱体底板 Cabomet floor

接头式 Connector Type

1、减震套 Sleeve
2、垫圈(用户自配) Gasket (not supplied)
3、M6螺栓(用户自配) M6 screw (not supplied)
4、M6螺母(用户自配) M6nut (not supplied)
5、减震垫 Rubber grommet
6、机座 Mounting feet
7、箱体底板 Cabinet floor

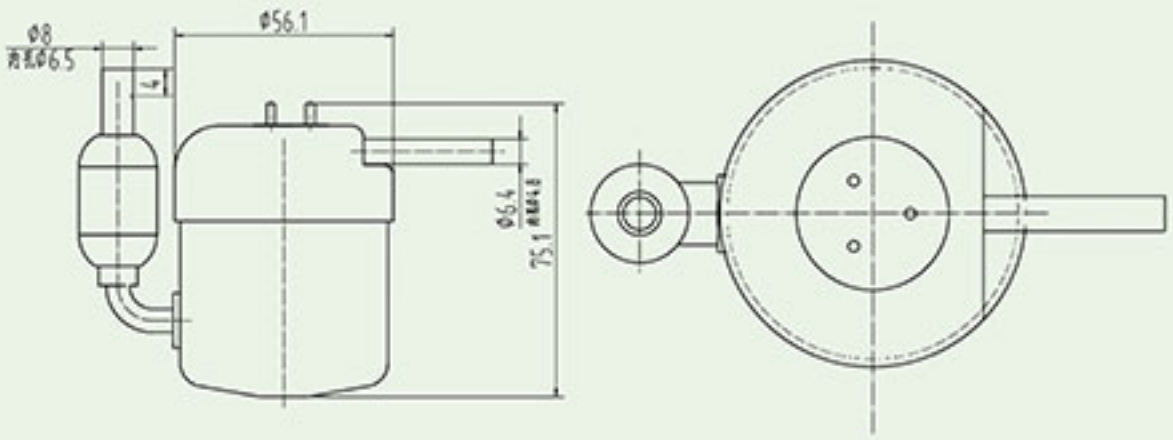
1、应用类型：低背压(LBP)——蒸发温度-35℃~-15℃、中背压(MBP)——蒸发温度-15℃~0℃、高背压(HBP)——蒸发温度-5℃~15℃。
2、冷却方式：ST-自然冷却、F1-风扇直径为200mm，风速为1.m/s的风冷、F2-风扇直径为200mm，风速为3.0m/s的风冷。
3、电机类型：RSIR-电阻分相启动、RSCR-电阻启动电容运行、CSIR-电容启动电阻运行、CSR-电容启动电容运行。
4、主要参数变化范围：制冷量≥95%、额定电流≤110%、额定功率≤115%、性能系数≥95%。
5、以上数据如有变动，恕不另行通知。

1. Application:low back pressure(LBP)-evaporating temperature-35℃ ~-15℃, medium back pressure(LBP)-evaporating temperature-15℃~0℃,high back pressure(HBP) -evaporating temperature-5℃~-15℃.
2. Cooling:ST-static cooling,F1-fan diameter 200mm, 1.5m/s air cooling of wind velocity, F2-fan diameter 200mm, 3.0m/s air cooling of wind velocity.
3. Motor type:RSIR,RSCR,CSIR,CSR
4. Tolerance of main performance data:cooling capacity≥95%,rated current≤110%,rated powers≤115%,COP≥95%.
5. All date is subject to change without notice

测试工况 Test Conditions	低背压 LBP ASHRAE	低背压(℃) LBP CECOMAF	中／高背压(℃) M／HBP	换单位算 Conversion Table
蒸发温度Evap Temp℃	-23.3	-25	7.2	1、kcal/hxl.163=w 2、kcal/hx3.968=Btu/h 3、wx3.412=Btu/h 4、wx0.864=kcal/h 5、EER=copx3.412 6、Capacity(at50Hz)x1.16=Capacity(at60Hz)
环境温度Amb Temp℃	32.2	32	32.2	
过冷温度Subcooling Temp℃	32.2	55	46.1	
冷凝温度Cond Temp℃	54.4	55	54.4	
吸气温度Suction Temp℃	32.2	32	35	

12 V / 24 V
Hermetic Rotary
&
Hermetic
Reciprocating
DC Voltage
Compressors

MINI SERIES ROTARY COMPRESSOR 微型旋转式压缩机　　R134a



Characteristic and application

Hermetic rotary compressor of mini series is a rare earth DC inverter high-efficient compressor whose refrigerant is R134a.This kind of compressor is the smallest rotor compressor in the world which is suitable for car-refrigeration, small server, dryer, beer machine, LED's lowing temperature, refrigeration system of high-precision CNC machine tools and so on.

It has the following characteristics:

- ◆High processing of the parts, high cooling efficiency, wide cooling range.
- ◆Compact structure, low weight: the parts of the pump and rare earth DC motor all have a good design.
- ◆Long life and elegant material: using the refrigerant oil which is fully synthetic imports lipids.
- ◆For all the compressors have a strict examination before leaving the factory, the quality is reliable.

特点及用途

- ◆微型全封闭旋转式压缩机以环保工质R134a为制冷剂的稀土直流变频高效压缩机。该系列压缩机是当今世界上最小的转子式压缩机，适用于车载冰箱、通信机柜降温、小型服务器、市政道路LED灯降温、干衣机、高精度数控机床冷却系统、啤酒机等，具有如下特点：
- ◆零件超精加工，制冷效率高、制冷范围宽。
- ◆结构紧凑、重量轻：泵体零件、稀土直流电机经过优化设计。
- ◆选材考究寿命长：采用进口酯类全合成冷冻机油。
- ◆每台压缩机出厂前均经过严格检验，质量可靠。

在使用前，请仔细阅读说明，按要求正确使用
Before using, please read the instruction carefully and use. Please use the compressor properly.

主要技术与参数 The Main Technical Parameter

Model 压缩机型号		Supply 电源	Displacement 气缸容积	Motor Type 电机类型	Capacity 制冷量	Current 电流	COP 性能系数	Noise 噪音	Vibration 震动
		V/Hz	cm^3		W	A	W/W	dB(A)	m/s^2
MINI SERIES 微型系列	WRC0140Y	12–24	1.4	DC speed 直流调速	160–490	1.8–6.4	2.1–7.4	40	10
	WRC0190Y		1.9		217–665	2.4–7.5	2.1–7.4	40	10

性能测试工况为 Performance testing conditions:

环境温度=35℃ 吸气温度=35℃ 过冷温度=46.1℃ 冷凝/蒸发温度=54.4/7.2℃

Condensation/evaporation temperature=54.4/7.2℃

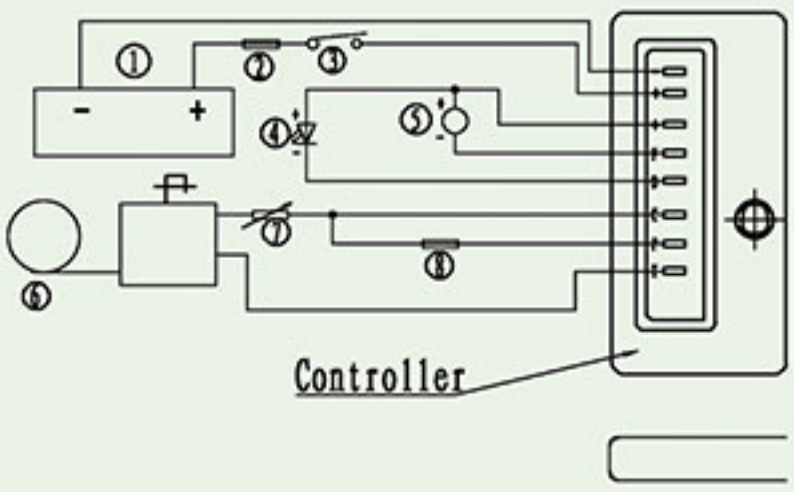
Ambient temperature=35℃ Suction temperature=35℃ Subcooling temperature=46.1℃

压缩机接线说明 Compressor Wiring Instructions

WRC0140Y/WRC0190Y 压缩机内置一由控制器驱动的直流无刷电动机，
使用时此控制器及控制器附件必须装配在压缩机上并正确连接。

The compressor WRC0140Y/WRC0190Y places inside a brushless DC motor driven by the controller.
When using, make sure the controller and its accessories be assembled and properly connected to the compressor.

压缩机接线图见图一：The compressor wiring diagram in Figure a:



1）12/24V 直流电源 12/24V DC Power Supply
2）熔断器 Fuse
3）电源开关 Power Switch
4）故障指示灯 Fault Indicator
5）12V 散热风扇 12V Cooling Fan
6）温控开关 Thermostat Switch
7）调速电阻 Speed Resistor
8）电源保护电阻 Power Protection Resistor

图一、控制器及其附件接线图 Table I The wiring diagram of the controller and its accessories

注意事项 Precautions

1.控制器必须直接与直流电源①两极相连，电源两极接反虽不会毁坏控制器，但压缩机将无法工作；
The controller must be directly connected to the poles with the DC power supply ①. The Power poles reverse will not destroy the controller, but the compressor will not work;

2.为了保护此装置，熔断器②必须接在正极导线上，并尽可能靠近电源。
*推荐使用15A熔断器（12V DC系统）或者7.5A熔断器（24V DC系统）
In order to protect this device, the fuse ② must be connected to the positive lead,and as close as possible to the power supply.
* Recommended 15A fuse (for 12V DC system) or 7.5A fuse (for 24V DC system)

3.如果要在回路加一主开关③（可选），则其额定电流应不小于20A。
If Plus a main switch ③ (optional) in the loop, the rated current should be not less than 20A.

4.为了避免压力降过大而导致控制器保护，请不要在回路中添加其余电路。
In order to avoid the pressure drop is too large and cause the controller protection,do not add the rest of the circuit loop.

5.将一10mA的发光二极管④（可选）连接于"+"、D之间，压缩机启动运行过程中的错误由指示灯闪烁次数指示，每次闪烁维持1/4秒，每个错误每4秒重复一次。故障分析见表五。
To connect a light-emitting diodes④(optional) at 10mA between + and D,The error during the compressor starting running is indicated by the indicator's flashing frequency。Each flash maintains 1/4 seconds and each error will repeat once every 4 seconds.The Error Analysis as Table V

6.散热风扇⑤（可选）连接在+、F间，由于+、F间输出电压恒为12V，所以12V DC与24V DC系统均必须使用12V的风扇。风扇的电流保护为峰值大于1。
The cooling fan ⑤ (optional) is connected between + and F.Since the output voltage between + and F is 12V constantly,both 12V DC and 24V DC system must use a 12V fan.The fan current protection is for the peak greater than 1.

7.温控开关⑥（可选）连接在C、T间，通过其控制压缩机的启动和停止。
To connect the temperature control switch⑥(optional) between C and T,it can control the starting and stop of the compressor

8.调速电阻R⑦接在C、T间，通过调节其电阻值，可以改变压缩机的转速。
To connect the speed resistance⑦ between C and T, it can change the rotational speed of the compressor by adjusting the resistance value.

9.电源保护电阻R⑧（可选）接在C、P间，其电阻值的不同，将改变电源的电池电压保护设定。电池电压保护设定与R⑧的对应关系见表四。
The power protetion resistance R⑧(optional) is connected between C and P.its different resistance value will change the battery voltage protection setting of the power.
The correspondence between battery voltage protection setting and R ⑧ ,as table IV:

The Main Technical Parameter of the Controller Following:
控制器主要技术参数如下表所示：

控制器 Controller	型号Model	MCU RY001、RY1002、RY1003、RY1004
	外形尺寸 Dimension	116mm × 103mm × 50mm
	输出功率 Output Power	20W~140W
	静态功率 Static Power	≤2W
	最大环境温度 Max.Ambient temperature	55℃
	最大允许电流 Max.Allowable current	12V≤12A、24V≤24A
	启动时间 Starting Time	≤16秒（至1850rpm）≤16S(till 1850rpm)

表二、控制器基本参数 Table II Basic parameters of the Controller

Battery Voltage Protection Setting
压缩机转速设定

The compressor speed could be adjusted gradually when at 2000rpm, 2500rpm, 3000rpm and 3500rpm. The correspondence between speed resistance ⑦and speed as following:
压缩机转速在2000rpm、2500rpm、3000rpm、3500rpm逐级可调，调速电阻⑦与转速的对应关系如下：

Resistance 电阻R(⑦)Ω	Speed 转速 rmp
0	2000
270	2500
700	3000
1500	3500

表三、压缩机转速设定 Table III Compressor Speed Setting

Battery Voltage Protection Setting(±0.2V) 电池电压保护设定

Protection Setting Resistance 保护设置电阻 (KΩ)	12V Protection Voltage 12V保护电压 (V)	12V Min.Operating Voltage 12V最小工作电压 (V)	12V Max Operating Voltage 12V最大工作电压 (V)	24V Protection Voltage 24V保护电压 (V)	24V Min.Operating Voltage 24V最小工作电压 (V)	24V Max Operating Voltage 24V最大工作电压 (V)
0	9.6	10.9	17.0	21.3	22.7	31.5
1.6	9.7	11.0	17.0	21.5	22.9	31.5
2.4	9.9	11.1	17.0	21.8	23.2	31.5
3.6	10.0	11.3	17.0	22.0	23.4	31.5
4.7	10.1	11.4	17.0	22.3	23.7	31.5
6.2	10.2	11.5	17.0	22.5	23.9	31.5
8.2	10.4	11.7	17.0	22.8	24.2	31.5
11	10.5	11.8	17.0	23.0	24.5	31.5
14	10.6	11.9	17.0	23.3	24.7	31.5
18	10.8	12.0	17.0	23.6	25.0	31.5
24	10.9	12.2	17.0	23.8	25.2	31.5
33	11.0	12.3	17.0	24.1	25.5	31.5
47	11.1	12.4	17.0	24.3	25.7	31.5
82	11.3	12.5	17.0	24.6	26.0	31.5
220	9.6	10.9				31.5

表四、电池电压保护设置 Table IV Battery Voltage Protection Setting(±0.2V)

控制器自动调整至其应用电压，即当电源电压小于17V时，控制器即认为其工作在12V DC系统中，如果高于17V时，即认为其工作于24V DC系统中。如果在C、T间连接一220KΩ的电阻，则压缩机的工作电压范围可扩展至9.6V~31.5V，这使得ACV20DC压缩机非常适用于太阳能供电的场合。

The controller adjusts to the applied voltage automatically. When the supply voltage is less than 17V, the controller will work in 12V DC system. When the supply voltage is more than 17V, the controller will work in 24V DC system.If to connect a 220KΩ resistance between C and T, The compressor operating voltage range can extend to 9.6V ~ 31.5V. Which makes ACV20DC compressor will be ideal for the occasion of the solar-powered.

Compressor Error Analysis 压缩机故障分析 Controller Following:

闪烁次数 Flash Frequency	故障类型 Error Type
5	Controller thermal protection
	(制冷系统超载，或者环境温度过高，控制器将过热保护)The refrigeration system is overloaded or the ambient temperature is too high, the controller wil start the overheat protection.
4	最小转速错误Min. speed error
	(制冷系统超载，电压不能维持最低转速1850rpm时)The refrigeration system is overloaded, the voltage can not maintain a minimum speed of 1850rpm
3	压缩机启动错误 Compressor starting error
	(电压堵转或者制冷系统压差大于0.5Mpa时)When the voltage stalls or the refrigeration system pressure is greater than 0.5Mpa
2	风扇过流保护Fan overcurrent protection
	(外接风扇电流峰值大于1A)When the external fan peak current is greater than 1A.
1	电池保护Battery Protection
	(电池电压超过电池保护设定范围，见表四)The battery voltage exceeds the battery protection setting range,as table IV.

表五、压缩机故障分析Table V Compressor Error analysis

DC COMPRESSOR PERFORMANCE PARAMETER
DC（直流）压缩机系列性能参数表

R134a

Refrigerant 制冷剂	Application 应用类型	Model 型号	Displacement 汽缸容积	Rotate speed 转速	-23.3℃ Ashrae 制冷量 Capacity			性能系数 Efficiency		Oil charge 注油量	Cooling type 冷却方式	Power supply 电源	Certification 认证
								COP	EFR				
			cm^3	rpm	w	Kcal/h	Btu/h	w/w	Btu/w.h	ml			
R134a	LBP	WHDCL 0250Y	2.5	2000	43.0	37.2	146.0	1.08	3.68	160	FC	12/24V (DC)	CE
				2500	53.0	45.8	186.0	1.05	3.58				
				3000	62.0	53.5	211.0	1.06	3.62				
				3500	72.0	62.2	245.0	1.04	3.55				
		WHDCL 0300Y	3.0	2000	51.6	44.6	176.0	1.05	3.58				
				2500	63.6	55.0	217.0	1.05	3.58				
				3000	74.4	64.3	254.0	1.06	3.62				
				3500	86.4	74.7	295.0	1.04	3.55				
		WHDCL 0350Y	3.5	2000	60.0	51.9	204.6	1.08	3.68				
				2500	73.0	63.1	248.9	1.07	3.65				
				3000	86.0	74.4	293.2	1.06	3.62				
				3500	100.0	86.5	341.0	1.05	3.58				

HT-CC100DC12/24V-A 控制器说明书 Instructions
控制单元可匹配 WHDCL0250Y, WHDCL0300Y, WHDCL0350Y 直流压缩机
Electronic Unit for WHDCL0250Y, WHDCL0300Y, WHDCL0350Y DC Compressors

工作电压设定表(表1)

Optional battery protection settings (table1)

外接电阻 Resistor (9)KΩ	12V停机压 12Vcut-out V	12V开机值 12Vcut-in V	12V高压停机值 12Vmax V	24V停机值 24Vcut-out V	24V开机值 24Vcut-in V	24V高压停机值 24Vmax V
0	9.6	10.9	17.0	21.3	22.7	31.5
1.6	9.7	11.0	17.0	21.5	22.9	31.5
2.4	9.9	11.1	17.0	21.8	23.2	31.5
3.6	10.0	11.3	17.0	22.0	23.4	31.5
4.7	10.1	11.4	17.0	22.3	23.7	31.5
6.2	10.2	11.5	17.0	22.5	23.9	31.5
8.2	10.4	11.7	17.0	22.8	24.2	31.5
11	10.5	11.8	17.0	23.0	24.5	31.5
14	10.6	11.9	17.0	23.3	24.7	31.5
18	10.8	12.0	17.0	23.6	25.0	31.5
24	10.9	12.2	17.0	23.8	25.2	31.5
33	11.0	12.3	17.0	24.1	25.5	31.5
47	11.1	12.4	17.0	24.3	25.7	31.5
82	11.3	12.5	17.0	24.6	26.0	31.5
220	9.6	10.9	17.0	21.3	22.7	31.5

HT-CC100DC12/24V-A　控制器说明书 Instructions
控制单元可匹配 WHDCL0250Y, WHDCL0300Y, WHDCL0350Y 直流压缩机
Electronic Unit for WHDCL0250Y, WHDCL0300Y, WHDCL0350Y DC Compressors

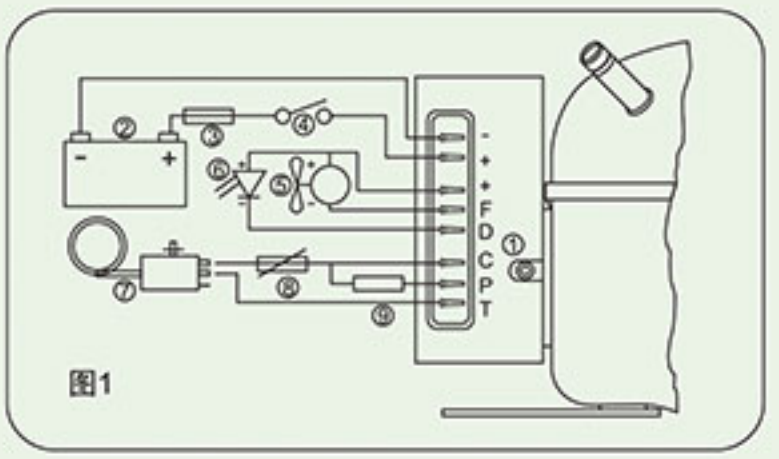


图1

电源进线推荐(表2)
Wire dimensions (table2)

线号 AWG Gauge	线径 Cross setion (mm^2)	12V最大长度 Max length* 12v DC		24V最大长度 Max length* 24v DC	
		ft	m	ft	m
13	2.5	8	2.5	16	5
12	4	13	4	26	8
10	6	20	6	39	12
8	10	33	10	66	20

标准电池保护设定推荐表(表3)
Standard battery protection settings (table3)

12V停机值 12Vcut out V	12V开机值 12V cut-in V	24V停机值 24V cut-out V	24V开机值 24V cut-in V
10.4	11.7	22.8	24.2

速度设定表(表4)
Compressor speed settings(table4)

压缩机转速 Motor speed (RPM)	C/T(8)间电阻 Resistor(8) Ω	C/T(间)电流 C/T current mA
2000	0	0.87-1.02
2100	51	1.02-1.17
2200	100	1.17-1.32
2300	150	1.32-1.48
2400	200	1.48-1.63
2500	277	1.63-1.78
2600	330	1.78-1.93
2700	400	1.93-2.08
2800	490	2.08-2.24
2900	586	2.24-2.39
3000	692	2.39-2.54
3100	816	2.54-2.69
3200	963	2.69-2.84
3300	1137	2.84-3.0
3400	1331	3.0-3.15
3500	1523	3.15-3.61
stop	>3000	3.61-5

闪烁次数 Number of flashes	故障类型 Error type
1	电压故障　输入电压处于设定的范围之外。 Battery protection cut-out(The voltage is outside the cut-out setting)
2	风扇电流故障　风扇电流端输出电流大于1A。 Fan over-current cut-out(The fan loads the electronic unit with more than 1A peak)
3	压缩机启动故障　压缩机电机堵转或系统压力太大(>6kg/cm2)。 Motor start error(The rotor is blocked or the differential pressure in the refrigeration system is too high(>6kg/cm2)
4	压缩机最小速度故障　压缩机负荷过大或电机的转速过小。 Minimum motor speed error(If the refrigeration system is too heavily loaded, the motor cannot maintain minimum speed 1850 rpm or controller cannot find the rotor position)
5	控制器温度故障　控制器外壳温度太高(>75℃)。 Thermal cut-out of electronic unit(If the refrigeration system has too heavily loaded, or if the ambient temperature is high, the electronic unit will run too hot(case temperature >75℃))
6	控制器硬件故障　控制器检测到不正常的参数。 Controller hardware failure (Controller detects abnormal parameters)

控制器说明 Controller Specification

1、此控制器能自动适应双电压即直流12V和24V电源输入系统，直流12V系统时最大输入电压为17V，24V系统时最大输入电压为31.5V。控制器工作环境温度不大于60℃；当控制器外壳温度过高时将停止压缩机而产生温度过高保护。

2、安装方式：如图1所示，将控制器三相输出插件紧插在压缩机的接线端上，控制器套入压缩机的装卡片后拧紧螺钉（1）。

3、电源连接：如图1所示，a、控制器的电源输入线直接连接至电池的正负极（2），控制器的（－）极连至电池的负极；控制器的（+）极连至电池的正极，否则控制器将不能正常工作，控制器具有电源反接保护。b、为了保护装置，必须在正电源连线中接入一个保险丝（3），并尽可能的靠近电池的正输出极，推荐12V系统采用15A；24V系统采用7.5A。c、如果加入主开关（4），则开关的最小通断电流值大于20A。d、电源线的选择（线径及长度）可参照表2，否则会因电源连线上的电压降影响到控制器的电池保护点的设置值。

4、电池的保护：如图1所示。a、控制器通过检测输入极（+）和（－）之间的电压值来确定停止压缩机及重新启动压缩机，用于保护不同的供电电池。b、标准电池的保护设备推荐值见表3；其他电压的设定可通过调节控制器的端子（C）和（F）的连接电阻（9），具体数值参照表1

5、温度开关：如图1所示。a、温度开关（7）连接在控制器的C、T端，如果中间不连接任何电阻，则当温度开关闭合时压缩机的运行速度为200rpm。b、其他压缩机的设定转速可通过电阻（8）来调节电流（mA）获得，具体电阻数值参照表4。

6、外接风扇：如图1所示。a、控制器的端子（+）和（F）之间可接入一个12V的直流风扇（5），风扇的正极连接控制器的（+）端，负极连接控制器的（F）端。当控制器的输入电压超出12V时，端子（+）和（F）之间输出的值总是保持12V。不管输入电压系统是12V还是24V，风扇必须是12V的直流风扇。b、控制器可持续输出0.5A的风扇驱动能力.

7、外接LED显示：如图1所示。a、控制器的端子（+）和（D）之间可接入一个10mA的LED(6)用于显示故障，LED的阳极连接控制器的（+）端，阴极连接控制器的（D）端。b、当发生故障时，LED每3秒循环，在每个循环中连续闪烁，根据不同的故障闪烁不同的次数，每次闪烁为0.2秒，持续增值3分钟，具体代码和闪烁次数如表5。

1. Controller specification

The electronic unit is a dual voltage device. This means that the same unit can be used in both 12V and 24V power supply systems, Maximum voltage is 17V for a 12V system and 31.5V for a 24V power supply system. Max ambient temperature is 60℃. The electronic unit has a built-in thermal protection which is actuated and stops compressor operation if the electronic unit temperature gets too high.

2. Installation(Fig.1)

Connect the terminal plug from the electronic unit to the compressor terminal. Mount the electronic unit on the compressor by snapping the cover over the screw head(1).

3. Power supply(Fig.1)

The electronic unit must always be connected directly to the battery poles(2), Connect the plus to + and the minus to －,otherwise the electronic unit will not work. The electronic unit is protected against reverse battery connection. For protection of the installation, a fuse (3) must be mounted in the +cable as close to the battery as possible. 15A fuse for 12V and 7.5A fuse for 24V circuits are recommended. If a main switch (4) is used, it should be rated to a current of min. 20A. The wire dimensions in Table. 2 must be observed. Avoid extra junctions in the power supply system to prevent voltage drop from affecting the battery protection setting.

4. Battery protection(Fig.1)

The compressor is stopped and re-started again according to the decided voltage limits measured on the + and-terminals of the electronic unit. The standard settings for 12V and 24V power supply systems appear from Table. 3. Other settings (Table. 1) are optional if a connection which includes a resistor (9) is established between terminals C and F.

5. Thermostat(Fig.1)

The thermostat (7) is connected between the terminals C and T. Without any resistor in the control circuit, the compressor with electronic unit will run with a fixed speed of 2,000rpm when the thermostat is switched on. Other fixed compressor speeds in the range between 2,000 and 3,500 rpm can be obtained when a resistor (8) is installed to adjust the voltage (v) of the control circuit. Resistor values for various motor speeds appear from Table. 4.

6. Fan (optional, Fig.1)

A fan (5) can be connected between the terminals + and F. Connect the plus to + and the minus to F. Since the output voltage between the terminals + and F is always regulated to 12V, a 12V fan must be used for both 12V and 24V power supply systems. The fan output can supply a continous current of 0.5A. A higher current draw is allowed for 2 seconds during start.

7. LED (optional, Fig.1)

A 10mA light emitting diode (LED)(6)can be connected between the terminals + and D. In case the electronic unit records an operational error, the diode will flash a number of times. The number of flashes depends on what kind of operational error was recorded. Each flash will last 1/5 second. After the actual number of flashes there will be a delay with no flashes, so that the sequence for each error recording is repeated every 3 minutes.

注意事项：

1、控制器通电前，请仔细阅读说明书，并检查连线是否正确，不正确的连线可能损坏控制器；

2、控制器输入电压值不能大于直流35V；

Notes:

1. Power controller, please read the manual; and check the connection is correct, incorrect connection may damage controller;
2. Controller can not be greater than the value of the input voltage DC 35V.

220 V / 240 V
Hermetic
Reciprocating
AC Voltage
Compressors

AC COMPRESSOR PERFORMANCE PARAMETER
AC（交流）压缩机系列性能参数表

R134a 220-240V~50/60Hz

No. 序号	Application 应用类型	Efficiency 效率	Type 产品型号	HP 马力	Power Supply 电压/频率 (V/Hz)	Motor Type 电机类型	Capacity 制冷量		COP Power Efficiency		Starting Device 启动器	Starting Capacitor 启动电容 (μF)	Running Capacitor 运行电容 (μF)	Cooling Type 冷却方式
							ASHRAE (-23.3℃)	CECOMAF (-25℃)	ASHRAE (-23.3℃)	CECOMAF (-25℃)				
							W		COP(W/W)					
1	LBP 低背压	OE	WHVL0250Y	1/12	220-240V ~50/60Hz	RSIR	66	50	1.05	0.83	PTC	/	/	ST
2		OE	WHVL0300Y	1/10		RSIR	75	55	1.05	0.83		/	5	ST
3		OE	WHVL0350Y	1/9		RSIR	82	66	1.05	0.83		/	/	ST
4		OE	WHSL0430Y	1/8		RSIR	120	95	1.15	0.93		/	/	ST
5		HE	WHSL0430Y	1/8		RSCR	120	95	1.40	1.18		/	5	ST
6		OE	WHSL0510Y	1/7	220-240V ~50/60Hz	RSIR	135	102	1.20	1.05		/	/	ST
7		HE	WHSL0510Y	1/7		RSCR	135	102	1.42	1.18		/	5	ST
8		OE	WHSL0570Y	1/6		RSIR	150	120	1.20	1.05		/	/	ST
9		HE	WHSL0570Y	1/6		RSCR	150	120	1.42	1.18		/	5	ST
10	LBP 低背压	OE	WHML0660Y	1/5-	220-240V ~50/60Hz	RSIR	170	128	1.22	1.06		/	/	ST
11		HE	WHML0660Y	1/5-		RSCR	170	128	1.42	1.20		/	5	ST
12		OE	WHML0770Y	1/5	220-240V ~50Hz	RSIR	190	142	1.25	1.06		/	/	ST
13		HE	WHML0770Y	1/5		RSCR	190	142	1.42	1.20		/	5	ST
14		OE	WHML0860Y	1/5+		RSIR	200	150	1.25	1.06		/	/	ST
15		HE	WHML0860Y	1/5+		RSCR	200	150	1.42	1.20		/	5	ST
16	LBP 低背压	OE	WHQL0910Y	1/4	220-240V ~50Hz	RSIR	220	160	1.25	1.06		/	/	ST
17		HE	WHQL0910Y	1/4		RSCR	220	160	1.50	1.22		/	5	ST
18		OE	WHQL1100Y	1/3		RSIR	280	212	1.30	1.08		/	/	F1
19		HE	WHQL1100Y	1/3		RSCR	280	212	1.50	1.22		/	5	F1
20		OE	WHQL1280Y	1/3		RSIR	326	245	1.30	1.08		/	/	F1
21		HE	WHQL1280Y	1/3		RSCR	326	245	1.50	1.22		/	5	F1

'HE' means 'High Efficiency', 'OE' means 'Ordinary Efficiency'

R134a 220-240V~50Hz

No. 序号	Application 应用类型	Efficiency 效率	Type 产品型号	HP 马力	Power Supply 电压/频率 (V/Hz)	Motor Type 电机类型	Capacity 制冷量		COP Power Efficiency		Starting Device 启动器	Starting Capacitor 启动电容 (μF)	Running Capacitor 运行电容 (μF)	Cooling Type 冷却方式
							ASHRAE (-23.3℃)	CECOMAF (-25℃)	ASHRAE (-23.3℃)	CECOMAF (-25℃)				
							W		COP(W/W)					
1	LBP 低背压	OE	WHQL1420Y	1/3+	220-240V ~50Hz	CSIR	358	268	1.35	1.06	Starting Relay /PTC 重锤	80	/	F1
2		HE	WHQL1420Y	1/3+		CSIR	360	268	1.50	1.23		80	5	F1
3		OE	WHQL1530Y	1/2-		CSIR	388	292	1.35	1.06		80	/	F1
4		HE	WHQL1530Y	1/2-		CSIR	390	293	1.50	1.23		80	5	F1
5	LBP/MBP 低中背压	OE	WHSCL1200Y	1/3	220-240V ~50Hz	CSIR	246	200	1.02	0.96	Starting Relay /PTC 重锤	80	/	F2
6		OE	WHSCL1500Y	1/3+		CSIR	275	230	1.02	0.96		80	/	F2
7		OE	WHSCL1800Y	1/2		CSIR	400	340	1.14	1.03		80	/	F2
8		OE	WHSCL2100Y	1/2+		CSR	460	390	1.15	1.04	Voltage 电压式	80	10	F2

R404A 220-240V~50Hz

No. 序号	Application 应用类型	Efficiency 效率	Type 产品型号	HP 马力	Power Supply 电压/频率 (V/Hz)	Motor type 电机类型	Capacity 制冷量				Starying Device 启动器	Starting Capacitor 启动电容 (μF)	Running Capacitor 运行电容 (μF)	Cooling Type 冷却方式
							ASHRAE W							
							-23.3℃	-20℃	-15℃	-10℃				
1	LBP/ MBP 低中背压	OE	WHSCM1200Z	3/4	220-240V ~50Hz	CSIR	630	750	970	1220	Starting Relay 重锤	80	/	F2
2		OE	WHSCM1500Z	4/5		CSIR	780	920	1140	1400		80	/	F2
3		OE	WHSCM1800Z	4/5		CSIR	920	1050	1300	1600		80	/	F2
4		OE	WHSCM2100Z	7/8		CSR	1050	1220	1500	1850	Voltage 电压式	80	10	F2

'HE' means 'High Efficiency', 'OE' means 'Ordinary Efficiency'

R290 220-240V~50Hz

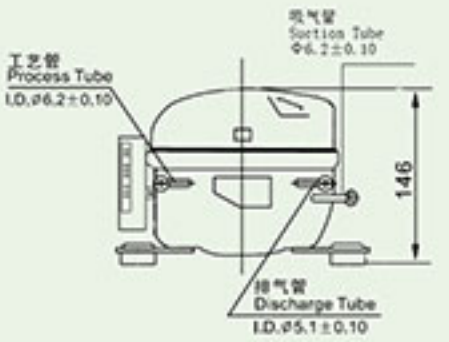
No. 序号	Application 应用类型	Efficiency 效率	Type 产品型号	HP 马力	Power Supply 电压/频率 (V/Hz)	Motor type 电机类型	Capacity 制冷量 ASHRAE W -23.3℃	-20℃	-15℃	-10℃	Starying Device 启动器	Starting Capacitor 启动电容 (μF)	Running Capacitor 运行电容 (μF)	Cooling Type 冷却方式
1	LBP/ MBP 低中背压	OE	WHSCM1200U	3/8	220-240V ~50Hz	CSIR	460	540	660	840	Starting Relay 重锤	80	/	F2
2		OE	WHSCM1500U	1/2		CSIR	600	690	850	1050		80	/	F2
3		OE	WHSCM1800U	5/8		CSIR	700	820	1030	1250		80	/	F2
4		OE	WHSCM2100U	3/4	220-240V ~50Hz	CSR	880	1020	1235	1450	Voltage 电压式	80	10	F2

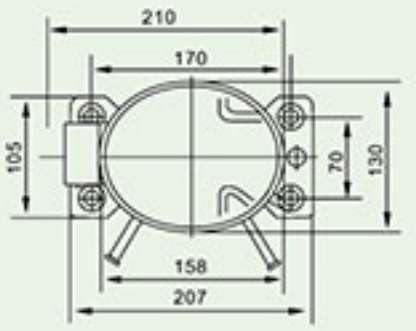
R22 220-240V~50Hz

No. 序号	Application 应用类型	Efficiency 效率	Type 产品型号	HP 马力	Power Supply 电压/频率 (V/Hz)	Motor type 电机类型	Capacity 制冷量 ASHRAE W -23.3℃	-20℃	-15℃	-10℃	Starying Device 启动器	Starting Capacitor 启动电容 (μF)	Running Capacitor 运行电容 (μF)	Cooling Type 冷却方式
1	LBP/ MBP 低中背压	OE	WHSCM1200E	1/2	220-240V ~50Hz	CSIR	400	580	760	950	Starting Relay 重锤	80	/	F2
2		OE	WHSCM1500E	1/2+		CSIR	546	700	900	1150		80	/	F2
3		OE	WHSCM1800E	1-		CSR	660	810	1050	1300		80	10	F2
4		OE	WHSCM2100E	1		CSR	790	960	1200	1550	Voltage 电压式	80	10	F2

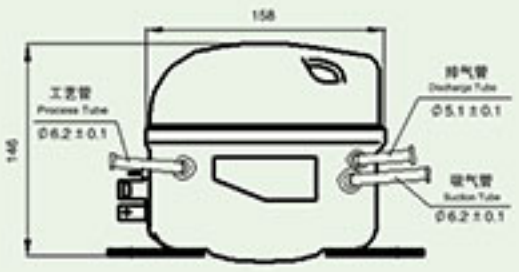
'OE' means 'Ordinary Efficiency'

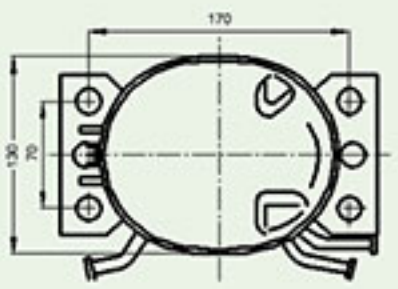
WHDCL DC(直流)压缩机 WHDCL DC COMPRESSOR



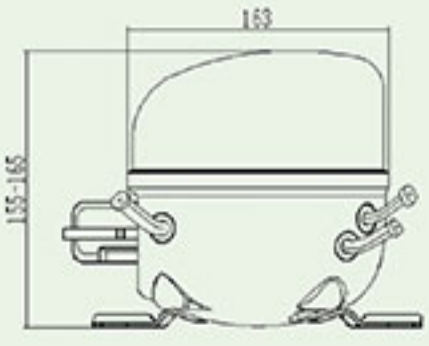


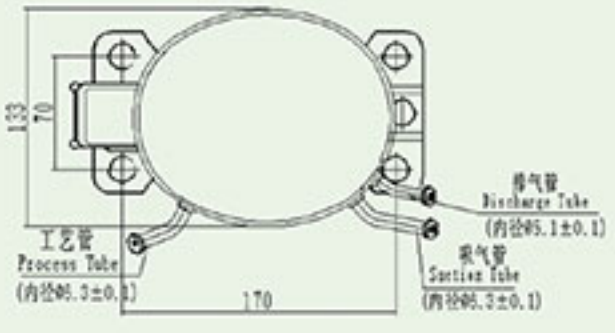
WHVL 系列制冷压缩机 WHVL SERIES COMPRESSOR





WHSL 系列制冷压缩机 WHSL SERIES COMPRESSOR

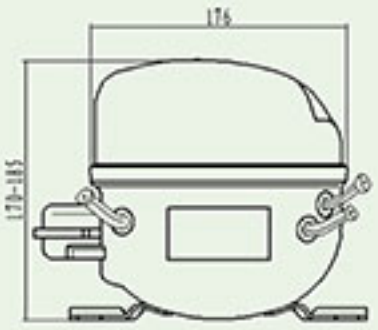


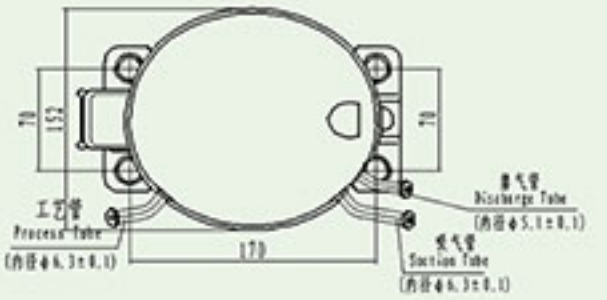


装箱参数一览表 Packing Datasheet

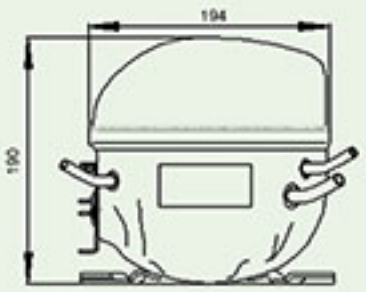
System 制冷系统	Model No. 型号	N.W(KG) 净重/箱	G.W(KG) 毛重/箱	Ctn Size(cm) 纸箱尺寸	Pallet Size(for 100pcs) 小托盘尺寸(cm)(100台)	Pallet Size(for 120pcs) 大托盘尺寸(cm)(120台)	Qty/20ft 数量/20尺柜
R134a	WHDCL0250Y	4.9	5.25	26*16*16	114*87*90	114*87*110	2640
	WHDCL0300Y	4.9	5.25	26*16*16	114*87*90	114*87*110	2640
	WHDCL0350Y	4.9	5.25	26*16*16	114*87*90	114*87*110	2640
System 制冷系统	Model No. 型号	N.W(KG) 净重/箱	G.W(KG) 毛重/箱	Ctn Size(cm) 纸箱尺寸	Pallet Size(for 100pcs) 小托盘尺寸(cm)(100台)	Pallet Size(for 120pcs) 大托盘尺寸(cm)(120台)	Qty/20ft 数量/20尺柜
R134a	WHVL0250Y	4.2	4.55	26*16*16	114*87*90	114*87*110	2640
	WHVL0300Y	4.4	4.75	26*16*16	114*87*90	114*87*110	2640
	WHVL0350Y	4.7	5.05	26*16*16	114*87*90	114*87*110	2640
System 制冷系统	Model No. 型号	N.W(KG) 净重/箱	G.W(KG) 毛重/箱	Ctn Size(cm) 纸箱尺寸	Pallet Size(for 80pcs) 小托盘尺寸(cm)(80台)	Pallet Size(for 100pcs) 大托盘尺寸(cm)(100台)	Qty/20ft 数量/20尺柜
R134a	WHSL0430Y	6.8	7.15	26*16*19	114*87*90	114*87*110	2160
	WHSL0510Y	7	7.35	26*16*19	114*87*90	114*87*110	2160
	WHSL0570Y	7.1	7.45	26*16*19	114*87*90	114*87*110	2160

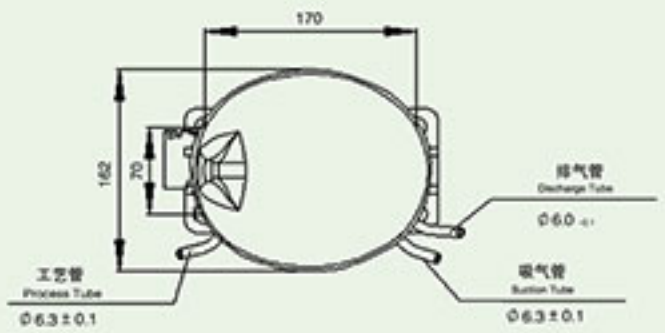
WHML 系列制冷压缩机 WHML SERIES COMPRESSOR



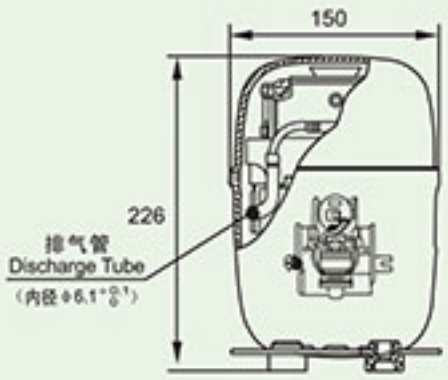


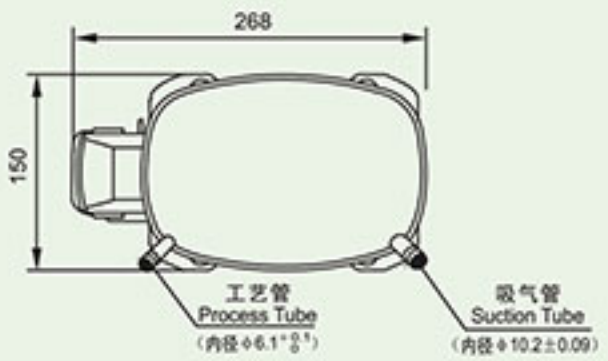
WHQL 系列制冷压缩机 WHQL SERIES COMPRESSOR





WHSC 系列制冷压缩机 WHSC SERIES COMPRESSOR





装箱参数一览表 Packing Datasheet

System 制冷系统	Model No. 型号	N.W(KG) 净重/箱	G.W(KG) 毛重/箱	Ctn Size(cm) 纸箱尺寸	Pallet Size(for 80pcs) 小托盘尺寸(cm)(80台)	Pallet Size(for 100pcs) 大托盘尺寸(cm)(100台)	Qty/20ft 数量/20尺柜
R134a	WHM0660Y	8.1	8.45	26*16*19	114*87*90	114*87*110	2160
	WHM0770Y	8.3	8.65	26*16*19	114*87*90	114*87*110	2160
	WHM0860Y	8.4	8.75	26*16*19	114*87*90	114*87*110	2160
System 制冷系统	Model No. 型号	N.W(KG) 净重/箱	G.W(KG) 毛重/箱	Ctn Size(cm) 纸箱尺寸	Pallet Size(for 80pcs) 小托盘尺寸(cm)(80台)	Pallet Size(for 100pcs) 大托盘尺寸(cm)(100台)	Qty/20ft 数量/20尺柜
R134a	WHQL0910Y	9.8	10.15	26*16*19	114*87*90	114*87*110	2160
	WHQL1100Y	10.1	10.45	26*16*19	114*87*90	114*87*110	2160
	WHQL1280Y	9.8	10.15	26*16*19	114*87*90	114*87*110	2160
	WHQL1420Y	9.9	10.25	26*16*19	114*87*90	114*87*110	2160
	WHQL1530Y	9.9	10.25	26*16*19	114*87*90	114*87*110	2160
System 制冷系统	Model No. 型号	N.W(KG) 净重/箱	G.W(KG) 毛重/箱	Ctn Size(cm) 纸箱尺寸	Pallet Size(for 45pcs) 小托盘尺寸(cm)(45台)	Pallet Size(for 60pcs) 大托盘尺寸(cm)(60台)	Qty/20ft 数量/20尺柜
R134a	WHSCC 1200Y/1500Y/1800Y	14.2	14.5	30*20*23	112*95*90	112*95*110	1260
R404A	WHSCM 1200Z/1500Z/1800Z	14.2	14.5	30*20*23	112*95*90	112*95*110	1260
R22	WHSCM 1200E/1500E	14.4	14.7	30*20*23	112*95*90	112*95*110	1260
R290	WHSCM 1200U/1500U/1800U	14.4	14.7	30*20*23	112*95*90	112*95*110	1260
System 制冷系统	Model No. 型号	N.W(KG) 净重/箱	G.W(KG) 毛重/箱	Ctn Size(cm) 纸箱尺寸	Pallet Size(for 36pcs) 小托盘尺寸(cm)(36台)	Pallet Size(for 45pcs) 大托盘尺寸(cm)(45台)	Qty/20ft 数量/20尺柜
R134a	WHSCL2100Y	14	15.5	30*30*23	100*100*105	100*100*125	972
R404A	WHSCM2100Z	14	15.5	30*30*23	100*100*105	100*100*125	972
R22	WHSCM 18005/2100E	14	15.5	30*30*23	100*100*105	100*100*125	972
R290	WHSCM2100U	14	15.7	30*30*23	100*100*105	100*100*125	972

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