

客户名称/Customer: \_\_\_\_\_

发行编号/NO. : \_\_\_\_\_

发行日期/DATE: \_\_\_\_\_

## 全封闭式直流变频压缩机参考技术规格书

HERMETIC DC INVERTER COMPRESSOR SPECIFICATION

机型/Model: EDTN210D32EFZ

客户承认栏/Accept Marking:

\_\_\_\_\_

本规格书从贵公司承认之日起生效，一式贰份。贵公司负责人承认签名之后请返回我公司一份，贵公司保留一份。

*This document will be effective with your authorized signature.  
Please return one (1) copy of this form, and keep the other one (1) copy for your records.*

### 广东美芝压缩机有限公司

### GMCC. GUANGDONG

承认/Approved	担当/Drafted

## 1、适用范围(Application)

系统类型 System Type	热泵 Heat Pump
冷媒类型 Refrigerant Type	R290
最大冷媒充注量 Maximal Refrigerant Charged	1000g max
电源类型 Power Source	直流变频驱动器 DC Inverter
运转范围 Revolution Range	12rps ~ 120 rps
安全认证 Safety Approval	/

## 2、规格参数(Specification)

压缩机类型 Compressor Type	全封闭旋转式直流变频压缩机 Hermetic Rotary DC Inverter Compressor
汽缸容积 Displacement	21.0 cm <sup>3</sup> /rev.
冷冻机油充注量 Oil Charged	300ml (PAG XS-601C1)
总重量(含冷冻机油) Weight (Oil Included)	8.45 Kg
排气管内径 I. D. of Discharge Pipe	8.1 ±0.1mm
吸气管内径 I. D. of Suction Pipe	12.9 $\begin{matrix} +0.2 \\ -0.1 \end{matrix}$ mm

## 3、电机参数(Motor Specification)

电机类型 Motor Type	直流无刷电机 DC Brushless Motor
电机极数 Pole Numbers	6 极/Poles
绝缘等级 Insulation Grade	E 级/Grade
绕组阻值(20°C时) Coil Resistance(at 20°C)	1.72/±5%Ω

## 4、额定性能规格(Rated Performance Parameters)

额定制热能力 Rated Heating Capacity	4415W	±5% W
额定输入功率(变频器输入侧) Rated Inverter Input Power	900W	±5% W
额定输入电流(变频器输入侧) Rated Inverter Input Current	6.20A	±5% A
能效比 % COP %	490	±5%
噪音/NOISE (Sound Power Level)	★ 67+4 dB(A)	以下 MAX
振动 VIBRATION (切线方向振动实效值)	★ 6 m/s <sup>2</sup>	以下 MAX

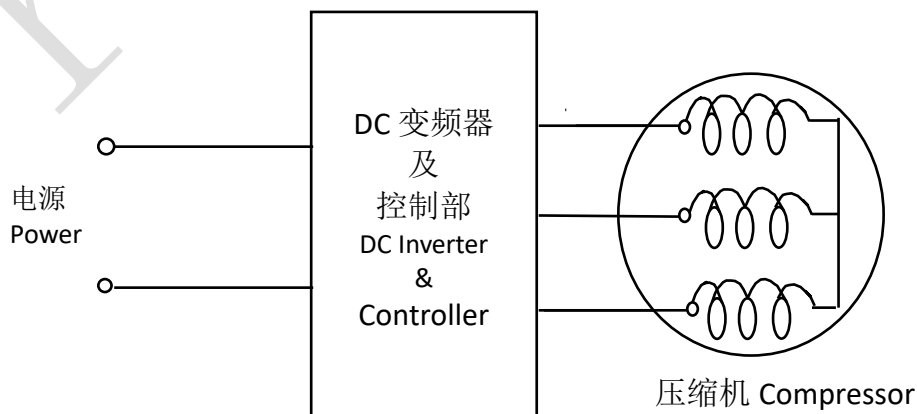
## 测定条件 (Rating Condition)

回转速度 Revolution	60rps
冷凝温度 Cond. Temp.	42.3°C
蒸发温度 Evap. Temp.	2.7°C
吸气温度 Return Gas Temp.	12.8°C
过冷却温度 Liquid Temp.	34.3°C
环境温度 Ambient Temp.	35°C
吸排气压力 Ps/Pd	/

## 5、电气配线接线图(Wire Connection Figure)

(备注：客户可根据电控需求，选择单相电源输入或三相电源输入)

Remark: the input power of inverter can be monophase or triphase, it depends on selection of customer.)



## 6、一般特性 (Characteristic)

绝缘阻抗 Insulation Resistance	$\geq 50 \text{ M}\Omega$	封入氮气时/Nitrogen Charged
绝缘耐压 Withstanding Voltage	AC1500V-1min	
接地阻抗 Earthing Resistance	0.1 $\Omega$	以下 MAX
残留水分量 Residual Moisture	冷凝法 $\leq 150 \text{ mg}$	
含尘量 Residual Impurities	$\leq 30 \text{ mg}$	

## 7、系统使用条件 (Limit of System Application)

NO.	项目 Item	标准状况下 Standard Cond.	极限状况下 Limit Cond.	对应冷 媒	说明 Note
1	排气压力 Discharge Pressure. (对应的饱和温度)	1.34 MPa (G) (42.3°C)	3.21 MPa (G) (83°C)	R290	10~18rps 运行时 Pd-Ps $\geq$ 0.2MPa  详细压力使用 范围见附图! See the attached chart of limitation of operation pressure.
2	吸气压力 Suction Pressure. (对应的饱和温度)	0.41 MPa (G) (2.7°C)	0.03~0.85 MPa (G) (-35~25°C)	R290	
3	压缩比 Compressing Ratio	17 Max	17 Max	/	
4	电机绕组温度 Motor Coil Temp.	100°C Max	125°C Max		
5	排气温度 Discharge Temp.	100°C Max	115°C Max		

## 8、注意事项 (Application Notice)

## 1. 整个运行过程中不允许有液压缩发生

Liquid refrigerant compression is not allowed during the whole time.

任何运行条件下 (包括过渡期)、压缩机储液器内部液面不能超过内部吸气管管口端面;

Under any operating conditions (including the transition period), the liquid refrigerant level in the compressor accumulator shall not exceed the inner suction pipe nozzle plane;

启动与循环系统切换时, 不应产生异常撞击音、配管异常振动及异常电流。

When starting or circulating system switching, there shall be no abnormal impact sound, no abnormal vibration of piping and no abnormal current.

## 2. 连续运转时 (包括除霜、除湿) 压缩机底部温度-冷凝器中部温度需大于等于 5°C 以上。

When continuous running (include defrost and dehumidify), compressor bottom temp. subtract condensing temp. should be more than 5°C.

断续运转时压缩机底部温度-冷凝器中部温度需大于等于 0°C 以上

When intermittent running, compressor bottom temp. subtract condensing temp. should be more than 0°C.

当室外温度低于 0°C 时，推荐压缩机在 26rps 以上转速运行

When the outdoor temp. is below 0°C, compressor's revolution should be operated over 26rps.

3. 断续运转 30rps 以上，每一周期 5 分钟以上，开 2 分钟以上，停 3 分钟以上。

When intermittent running speed is over 30rps, each cycle should be longer than 5 minutes. (On: over 2 min, Off: over 3 min)

断续运转 30rps 以下，每一周期 8 分钟以上，开 5 分钟以上，停 2 分钟以上；

When intermittent running speed is below 30rps, each cycle should be longer than 8 minutes. (On: over 5 min, Off: over 2 min)

4. 推荐升降速度每秒 1rps

Recommended revolution variation speed is 1rps/second.

压缩机启动至目标转速过程中，必须在 60rps 和 90rps 左右各保持 1 分钟以上运转

When start-up, revolution should be kept at around 60rps and 90rps for at least 1 minute.

在保证油面和没有回液情况下，允许运行 60rps 和 90rps 保持时间在 1 分钟以下

In the condition of ensuring oil level and don't have liquid refrigerant return, the compressor permits to maintain running in 60rps and 90rps within one minute.

当目标转速低于 60rps，必须将转速拉升至 60rps 并保持 1 分钟后，降低至目标转速

When start-up, if the target revolution is less than 60rps, the revolution should be kept at around 60rps for 1 minute before go down to the target revolution.

5. 当电机绕组直接通电加热时，确保绕组温度低于 55°C

Keep the winding Temp. under 55°C, when the compressor winding was heated directly.

6. 高压侧和低压侧压力需保持平衡后才能启动

Pressure should be balanced between high and low pressure side.

7. 运转过程中不能有异常噪音发生

In operation, abnormal noise is not allowed.

8. 推荐除霜转速：90rps 以下

Recommended defrost revolution is less than 90rps.

9. 最大允许倾斜角度：5°

Tilt angle should be less than 5° .

10. 最大三相间电压不平衡电压：2.25%

Voltage unbalance among 3 phases should be less than 2.25%.

11. 当压缩机以下状态时，需确认油面水平

Oil level confirmation should be tested at:

- a、超负荷、低负荷时； Overload and low load running;
- b、冷媒沉积启动时； Refrigerant soaking starting;
- c、除霜开始、恢复时； Defrost starting and resuming;
- d、超过最长配管时； Connection pipe over 15m;
- e、超过最大落差时； Elevation over 5m;

当使用带视窗镜的压缩机进行确认；

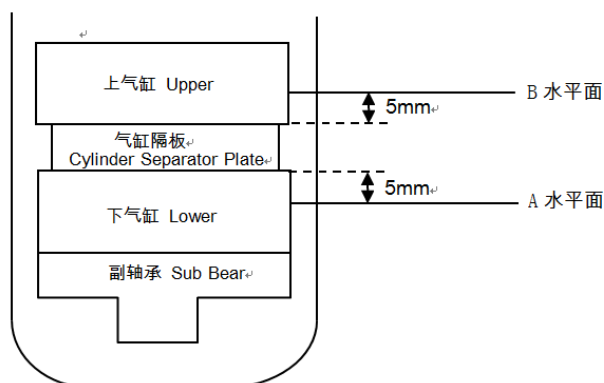
Oil level confirmation test performed with side glass compressor:

- a、在稳定运转状态（包括连续/断续运行），油面需在水平面 B 以上；

At steady running (include continuous or intermittent operation): oil level should be higher than B level.

- b、在启动的 3 分钟以内，油面需在水平面 A 以上；

Within 3 minutes at starting: oil level should be higher than A level.



## 9、其他注意事项 (Other Application Notice)

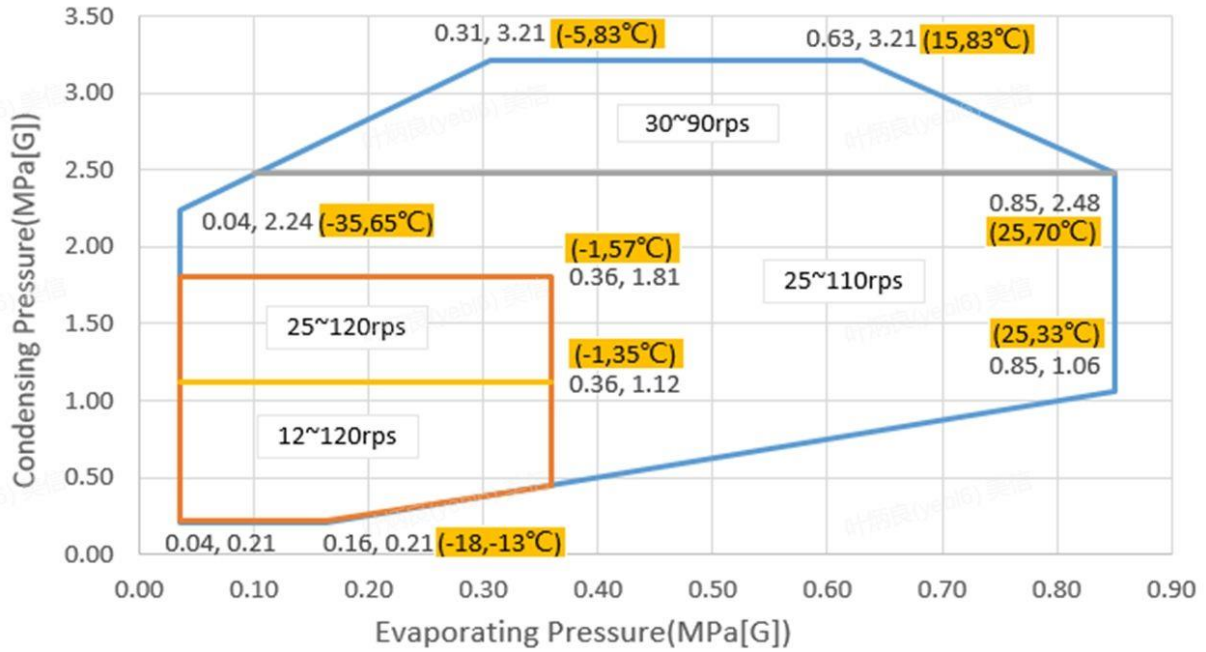
1. 不要给吐出管、吸入管施加弯曲的力，强制其弯曲。  
配管设计时，要考虑产品在始动、运转停止以及运输搬运时的振动应力，不致发生损坏。  
推荐各配管许容应力如下：始动、停止时 30N/mm<sup>2</sup> 以下，运转时 20N/mm<sup>2</sup> 以下  
When design the connection tube, the system should be consider the vibration stress at the compressor start, stop and the system transportation status, ensure it doesn't be damaged. The recommendation value of the connection tube stress is below 30N/mm<sup>2</sup> at the start, stop status and below 20N/mm<sup>2</sup> at the running status.
2. 压缩机不允许横置、倒置，在搬运时不允许跌落。  
Do Not Put a Compressor On Its Side OR Turn It Over. And Do Not Fall It Off When Moving.
3. 绝对不允许空气中运转  
COMPRESSING AIR IS NOT PERMITTED.
4. 压缩机密封塞拔除后，请尽快使用，胶塞取下之后，压缩机敞口放置时间不能超过 10 分钟。  
Please have compressor connected to Air conditioner system within 10 minutes after removing the rubber plug.
5. 电气品要使用弊社所指定的规格同等品。  
Please Use the Accessories Indicated By Our Company.
6. 冷媒量超过规定量时，需另行协商决定压缩机规格。（此时要考虑增加储液器、油加热器）  
When the Amount of Refrigerant Charged in the Air Conditioner is Over the Max Amount Allowable, Compressor Specification Should Be Discussed. (Install Additional Accumulator, Oil Heater, etc.)
7. 制冷剂应从制冷系统冷凝器的出口加注。  
Refrigerant shall be charged from the outlet of the condenser of the refrigeration system.
8. 避免因误配线发生逆转。（若发生逆转，则压缩机不能再使用）  
Avoiding Compressor Running in Reverse Caused by Connecting Electrical Wire Incorrectly. (Don't Reuse the Compressor after Running in Reverse.)
9. 充注冷媒前空调系统的真空度，无论在系统的任何地方都要求在 20Pa 以下。  
Before charging refrigerant, the vacuum level is required to be below 20Pa in the whole system.
10. 压缩机不得用作真空泵及类似功能使用。  
Do not use compressor as vacuum pump or similar usages.
11. 压缩机用作空调系统冷媒回收时，应严格控制运行时间和频率，运行时间应≤40s，运行频率应≤70Hz；  
When using compressor for refrigerant recovery, Compressor running time should be less than 40s, Compressor running frequency should be less than 70rps.
12. 避免因误配线发生逆转（若发生逆转，则压缩机不能再使用）。

- Avoiding compressor running in reverse caused by connecting electrical wire incorrectly. (Don't reuse the compressor after running in reverse.)
13. 压缩机不得露天存放或存放在腐蚀性空气中如化学仓库等，且储存的环境温度条件为-10°C以上、65°C以下。  
Do not store Compressor neither outdoors, nor corrosive atmospheres such as chemical storeroom. The ambient temperature for storage should be above -10°C and below 65°C
  14. 压缩机壳体表面不容许配线或类似物接触压缩机表面。  
Do not allow electric cables or analogue to touch compressor directly.
  15. 必须有适当的防湿、防尘处理以防止水滴，灰尘进入压缩机  
To avoid water droplets and dust into the compressor, moisture-proof or dust-proof treatment must be provided
  16. 分体式空调最长配管不超过 15m，配管的高低落差最大 5m。  
For split type Air Conditioner, the maximum piping length should be 15m, and height difference between indoor unit and outdoor unit should be within 5m.
  17. 禁止使用 R290 之外的冷媒。  
Do not fill refrigeration cycles with other refrigerant except R290.
  18. 当旋转指令信号与转子位置检出信号不相匹配时，会导致压缩机停止运转，请注意。  
When the Rotation Indication Signal is not Matched with the Rotor Position Checking Signal, the Compressor May Stop Running.
  19. 绝对禁止将交流电直接印加在压缩机端子上，否则会导致转子退磁。  
Warning! In Case AC Voltage is Impressed to Compressor, the Compressor Performance Will Be Lower Because of it's Rotor Magnetic Force Decreasing.
  20. 如变频驱动电源的晶体管发生短路(特别是在高转速 60 rps 以上时)，会导致转子退磁，请注意。  
Warning! In Case a Drive Transistor is Shorted in a High-Rotation (Over 60 rps), the Compressor Performance Will Be Lower Because of its Rotor Magnetic Force Decreasing.
  21. 请不要裸手触摸运行中或刚停机正处于高温的压缩机，当心烫伤。  
Do not touch the compressor with bare hands during operation or immediately after stoppage. The compressor is at a high temperature. There is the danger of burns.
  22. 维修保养设备时必须配戴防护眼镜。由于焊枪温度过高，拆卸配管时，当心会有冷媒、油的溅出而导致烫伤或进入眼中。  
Wear safety goggles when servicing the unit. When removing the tubes by heating it with a burner, there is the danger of burns or eye injury if the refrigerant and/or oil remaining in the tubes is emitted.
  23. 焊接排气管与配管时，请勿取下端子盖，为了保护端子盖不受热量的冲击，需要设置隔热板。  
Do not remove the terminal cover when welding the discharge pipe and a heat shield is required to protect the terminal cover from the impact of welding heat.
  24. 在贵司产品的保修和使用说明中，请体现如下信息：  
警告：  
— 当重新充注冷媒时，为确保冷媒类型的正确性，必须在制造商或者制造商指定的维修点或者服务机构进行。  
— 禁止混合使用冷媒。  
Below warning must be written into maintenance and user manual of whole unit:  
WARNING:  
- When recharge the refrigerant, the processing must be done by the manufacturer or manufacturer appointed repair shop or service agent because correct type of refrigerant must be ensured.  
- Prohibition of mixing the refrigerants.

## 压缩机运行范围

### Operating Limitation of Compressor

Pressure Envelope of R290 Compressor



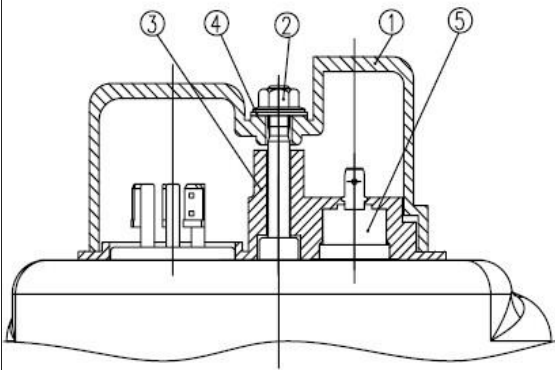
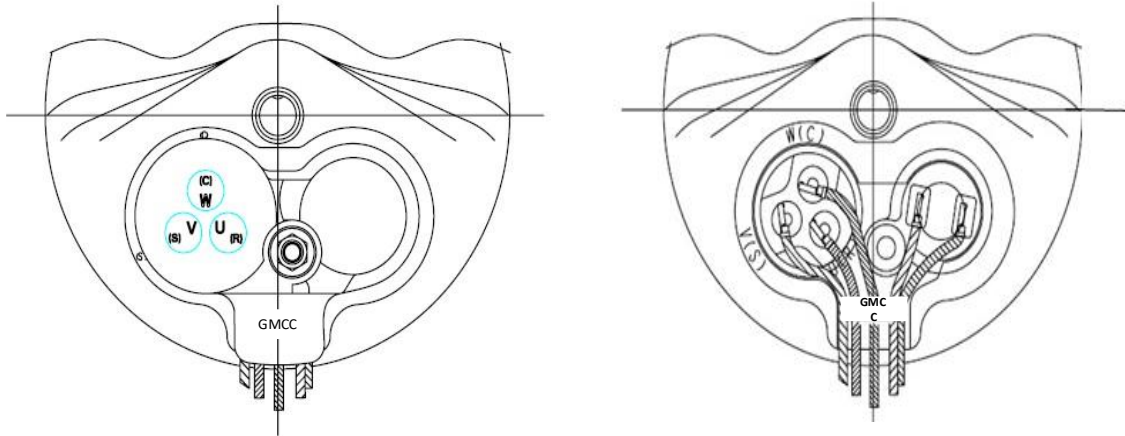
## 图纸/附件清单 Drawing/Accessories List

(See the Attached Pages)

名称 Parts Name	数量 Pieces	图号 Drawing No.	备注 Remark
电装品 ELE. COMPONENTS	1	MC33721310	
端子罩 TERMINAL COVER	1	MC33721510	
端子衬垫 TERMINAL PACKING	1	MC33721810	
端子螺母 TERMINAL NUT	1	MC33300810	
螺母垫片 NUT PACKING	1	MC33720810	
橡胶垫 RUBBER CUSHION	3	MC11912410	
感温器 COMP THERMO	1	MC33920110	
压缩机外形图 COMPRESSOR DRAWING	1	_____	
电机参数列表 MOTOR PARAMETER SHEET	1	_____	

## 电装品 ELE COMPONENTS

Drawing No. MC33721310



①	端子罩 TERMINAL COVER	MC33721510
②	端子螺母 TERMINAL NUT	MC33300810
③	端子衬垫 TERMINAL PACKING	MC33721810
④	螺母衬垫 NUT PACKING	MC33720810
⑤	感温器 COMPRESSOR THERMOSTAT	MC33920010 MC33920110
部件 PARTS	部件名称 TITLE	图号 Drawing No.

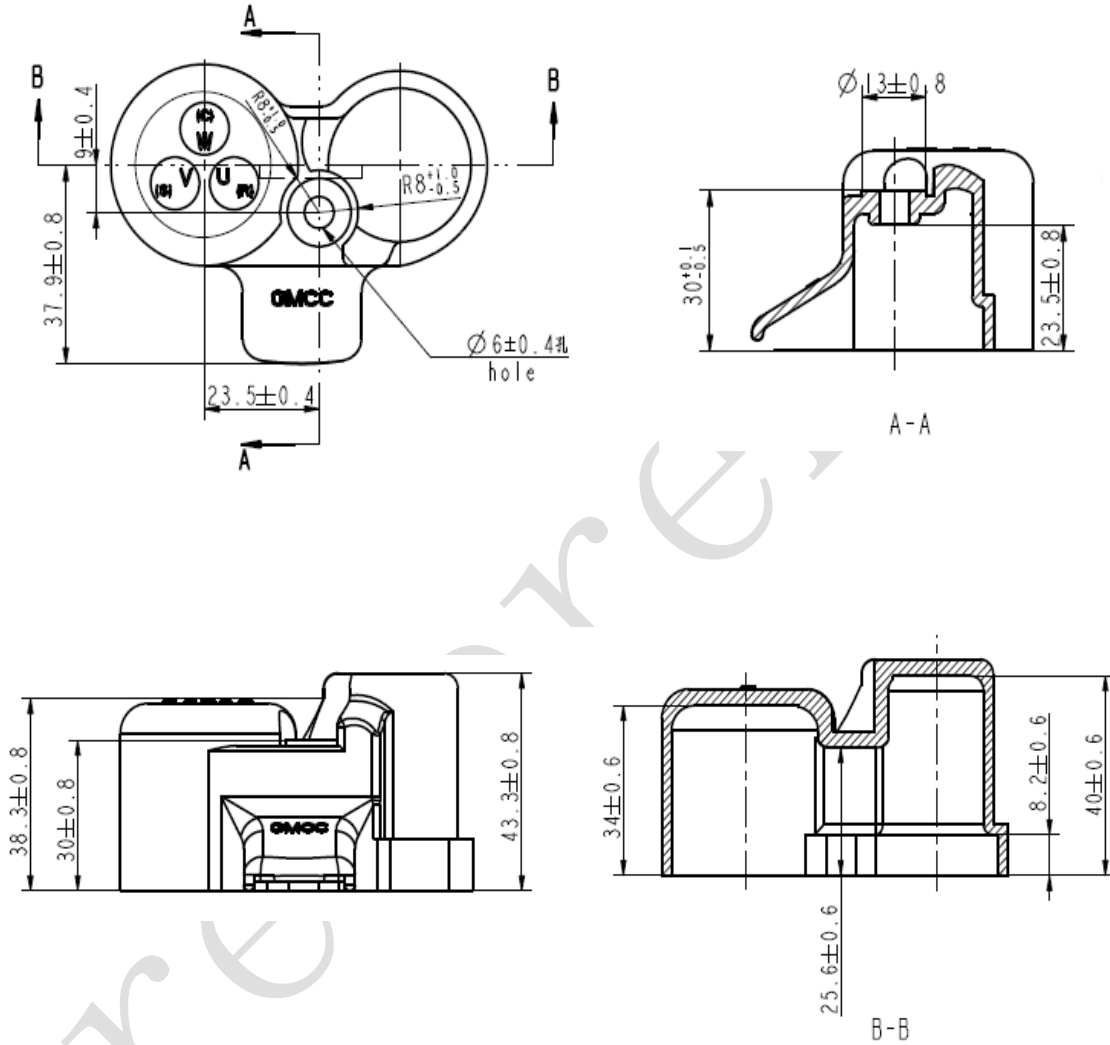
注释

NOTES

端子螺母的拧紧力矩:  $1.2 \pm 0.2 \text{ N}\cdot\text{m}$ Tightening torque of terminal nut:  $1.2 \pm 0.2 \text{ Nm}$

# 端子罩 TERMI COVER

Drawing No. MC33721510



注释

NOTES

材质: 聚对苯二甲酸丁二醇酯 或 团状模塑料 或 聚碳酸酯

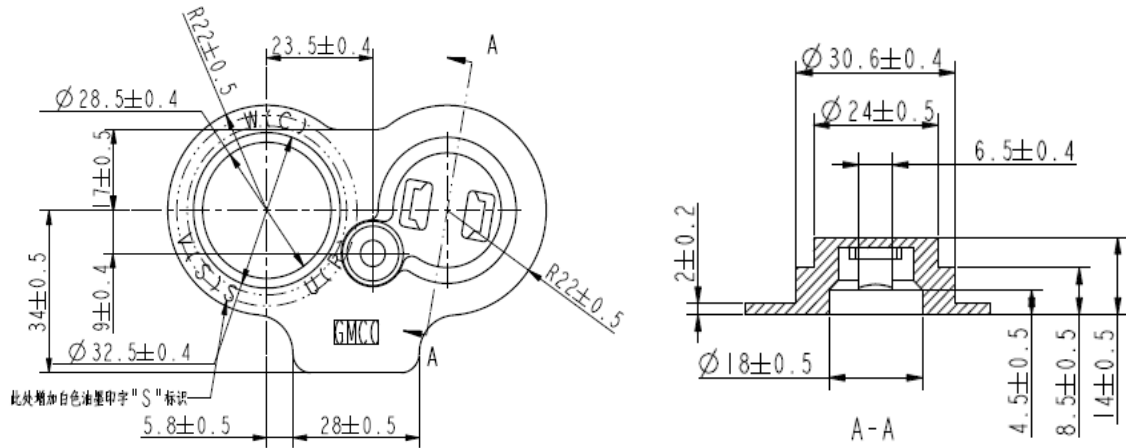
MATERIAL: POLYBUTYLENE TEREPHTHALATE or BULK MOLDING COMPOUND or POLYCARBONATE

颜色: 黑色

COLOR: BLACK

# 端子衬垫 TERMI PACKING

Drawing No. MC33721810



注释

NOTES

材质: 硅橡胶

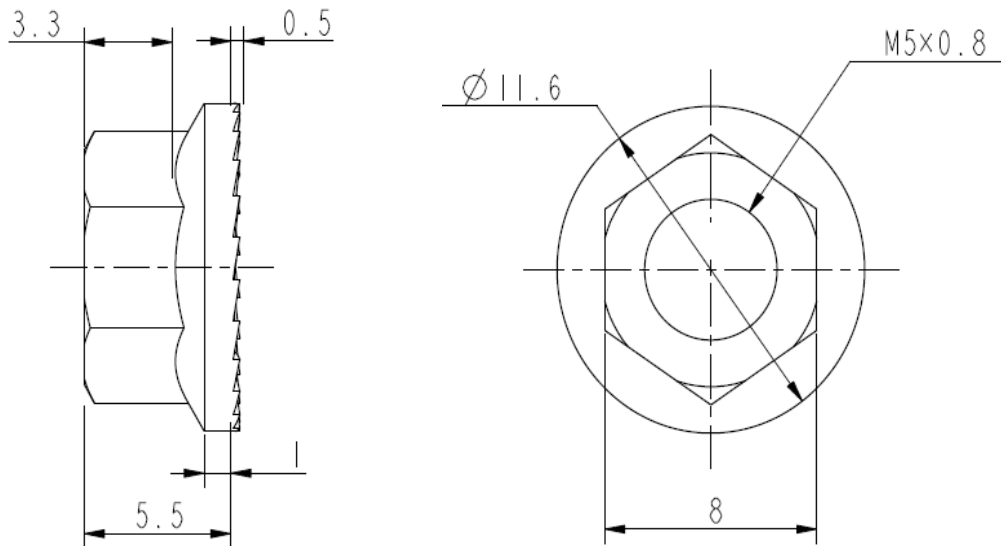
MATERIALS: SI

颜色: 黑色

COLOR: BLACK

# 端子螺母 TERMINAL NUT

Drawing No.MC33300810



注释

NOTES

材质：SWCH12A

MATERIAL: SWCH12A

未注公差：±0.3

UNMARKED TOLERANCE: ±0.3

处理：表面按照Ep-Fe/Zn 2-CM 2镀白锌处理，48h中性盐雾实验后无红锈。

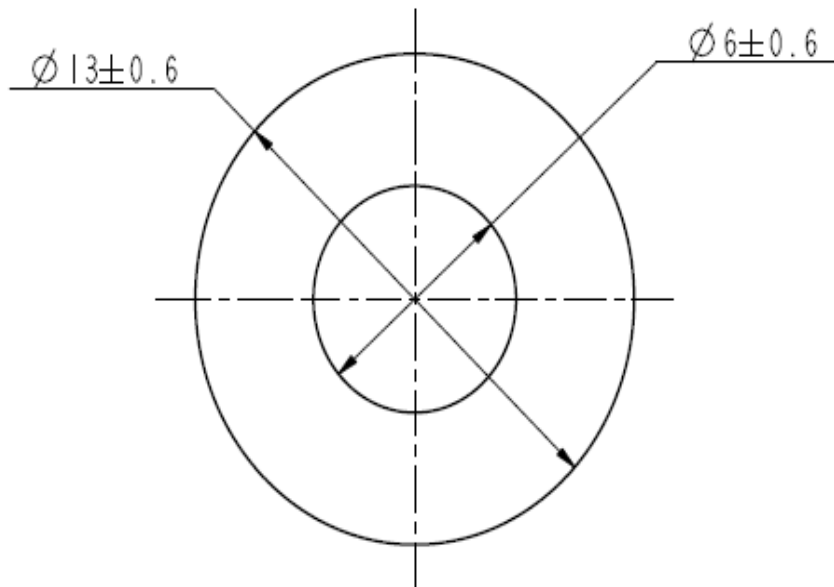
TREATMENT: THE SURFACE ACCORDING TO Ep-Fe/Zn 2-CM 2 PLANTING WITH WHITE Zn. NO RED RUST AFTER 48h NEUTRAL SALT SPRAY TEST.

# 螺母衬垫 NUT PACKING

Drawing No. MC33720810

厚度 :  $1\pm 0.2\text{mm}$

THICKNESS :  $1\pm 0.2\text{mm}$



注释

NOTES

材质：硅橡胶

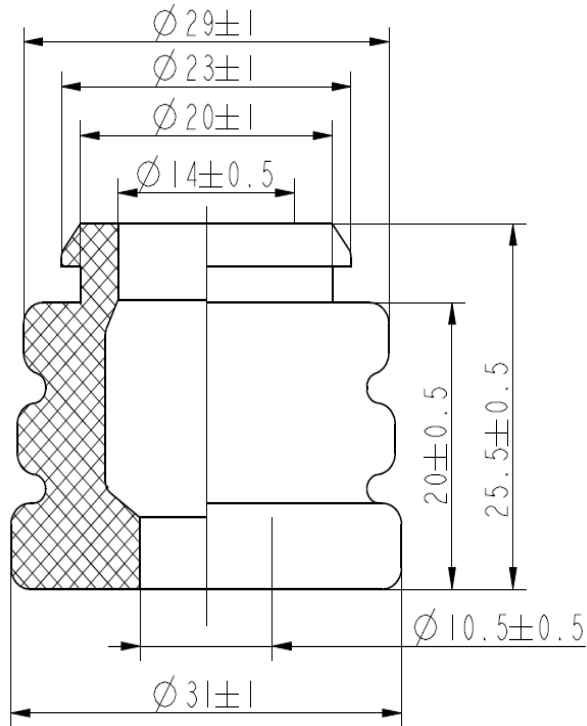
MATERIAL: SI

颜色：黑色

COLOR: BLACK

# 橡胶垫 RUBBER CUSHION

Drawing: MC11912410



注释

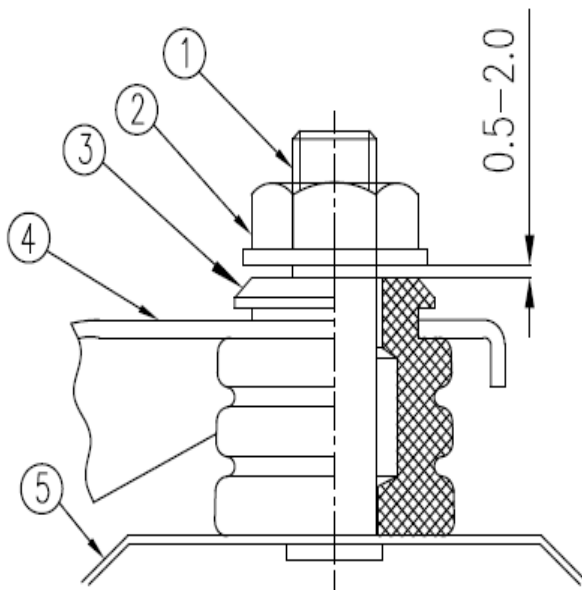
NOTES

材质：三元乙丙胶

MATERIAL: EPDM

硬度：HS=32±4

HARDNESS: HS=32±4



①	螺柱螺栓 STUD BOLT
②	螺母 NUT
③	橡胶垫 RUBBER CUSHION
④	压缩机底座 COMPRESSOR BASE
⑤	底板 BASE PLATE

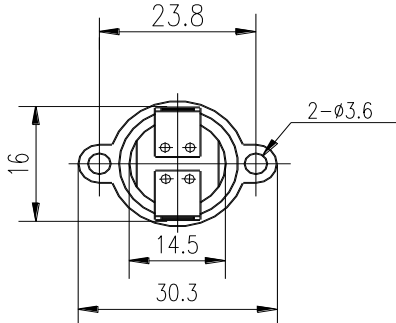
安装组件

MOUNTING ASSEMBLY

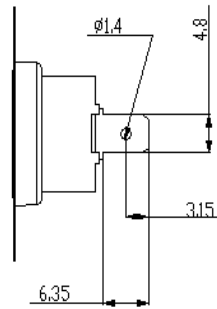
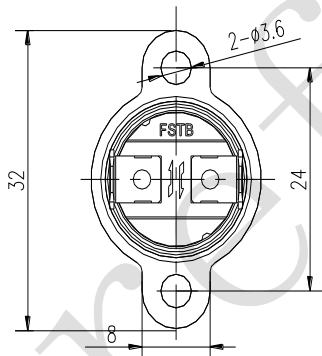
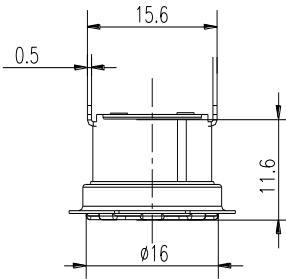
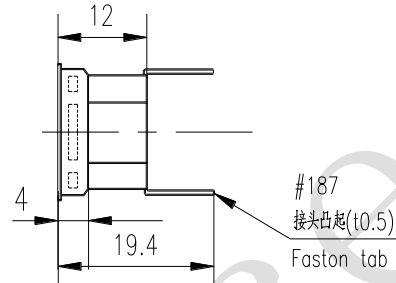
# 感温器 COMP THERMO

## Drawing No. MC33920Gr

MODEL: INT01L-4639

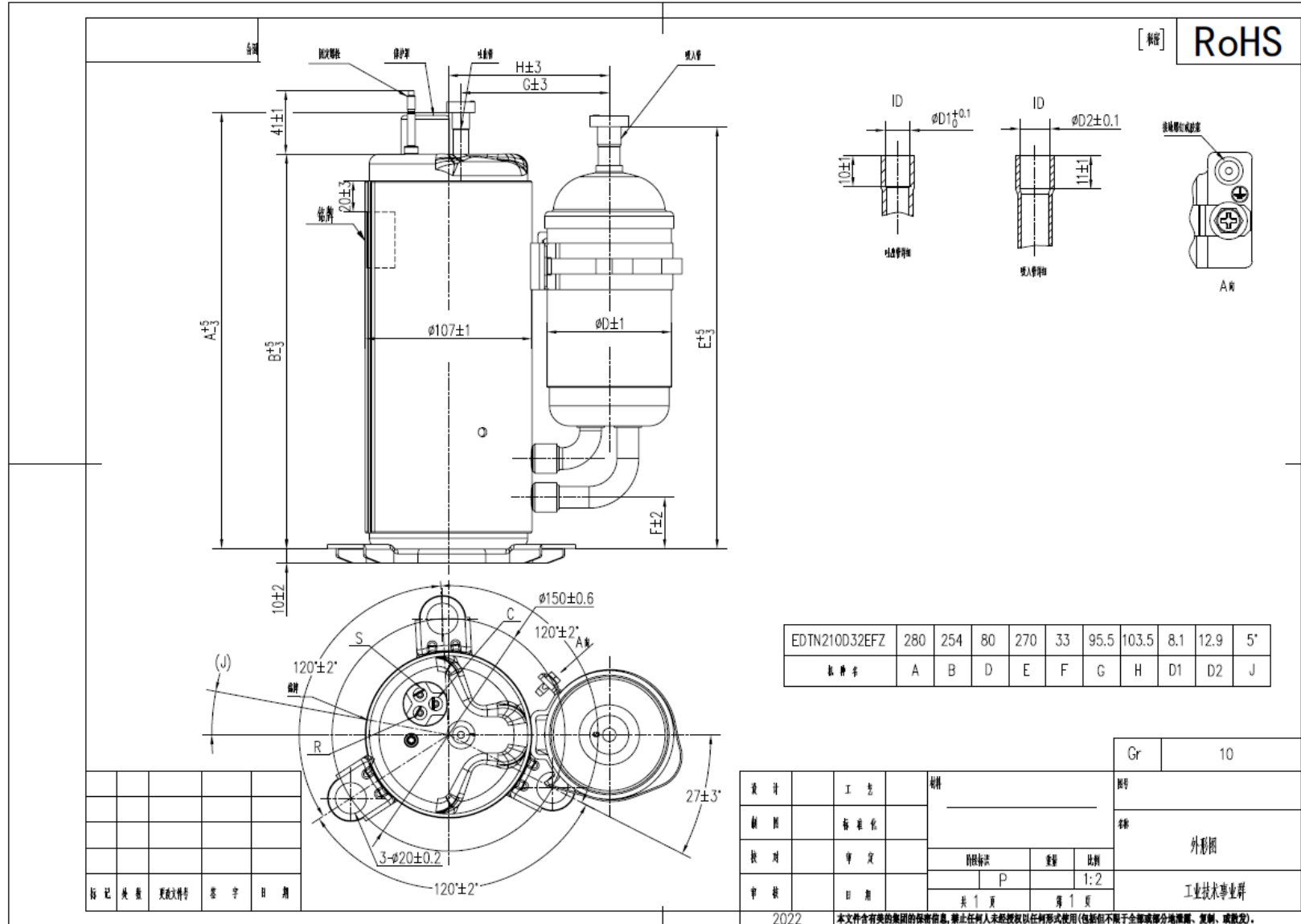


MODEL: KSD301



Gr	型号 Model	能力 Capacity	复位温度 Close temperature	动作温度 Open temperature
010	INT01L-4639	120V-15A 240V-10A	90±5	120±4
110	KSD301	125V-16A 250V-10A	90±5	120±4

外形图 (COMPRESSOR DRAWING)



## 10、电机参数列表 (Motor Parameter Sheet)

No.	项目 Item	参数 Parameter		备注 Remark
1	压缩机型号 Compressor Model	EDTN210D32EFZ		
2	转子极数 Rotor Pole	6	极 Pole	
3	运行频率范围 Rated Frequency Range	12~120	rps	
4	磁石材料 Magnet Material	稀土	NdFeB	
5	永磁体减磁电流峰值 Demagnetizing Current	19	Apk	120°C下, -5%减磁率 at 120°C, -5% Demagnetizing Rate
6	d 轴电感 (相间) Inductance-Ld (per phase)	8.9	mH	额定电流下 Under Rated Current
7	q 轴电感 (相间) Inductance-Lq (per phase)	12.7	mH	额定电流下 Under Rated Current
8	定子线圈电阻 Winding Resistance	1.72	Ω	线间电阻 (20°C下) line-to-line (at 20°C)
9	感应电压常数 Voltage Constant	46.8	Vrms/Krpm	线间电压 line-to-line
10	电机转矩常数 Torque Constant	0.7	N·m/Arms	
11	转动惯量 Inertia	0.00034	Kg·m <sup>2</sup>	
12	磁通量 Φ <sub>a</sub> Flux Φ <sub>a</sub>	0.411~0.462	Wb·T	