* YM49E3G 100Specification

Specification		Notes
Standard Model	YM49E3G-100	Basic Model
Extended Model		
Extended Model		
Extended Model		
Extended Model		
Extended Model		

Revision Record			
Version	Reviser	Description	Date

Checked by   Date

Approved by   Date

1　Specification

1.1　Basic Specification

Model	YM49E3G-100(Including Extended Model)
Type	Low Side Shell Design Scroll Compressor
Application	Air conditioning
Refrigerant	R404A
Displacement(cc/rev)	46.6
Cooling Capacity(W)[a]	5808
Input Power(W)[a]	3227
RLA(A)[a]	15.3
Cooling COP(W/W)[a]	1.8
Power Supply	208-230V/1~/60Hz
Min. Operating Voltage(V)	187
Max. Operating Voltage(V)	253
LRA(A)	76
Max. Operating Current(A)[b]	21.8
Rated Speed(r/min)[a]	3500
Compressor Weight(With Oil)(kg)	31
Oil Type	POE
Oil Kinematic Viscosity(cSt, 40℃)	32
Oil Density(kg/L, 20℃)	0.977
Primary Charge(L)	1.4
Recharge(L)	1.25
Oil Circulation Rate[a]	≤1%
Rated Sound(Sound Power)(dBA)[c]	73
Max. Operating Sound in Running Envelope (Sound Power)(dBA)	78
Vibration Displacement Peak-Peak(mm)[d]	≤0.09
Moisture(mg)	≤500
Impurity(mg)	≤100
LVS(V)[e]	177
MOV (V)[f]	187
Start Capacitor(μF/V)	160
Start Relay	HLR3800-4AI3D
Run Capacitor(μF/V)	60/450
IP Class of Terminal Box	IP21
Compressor Color	Black

1.2   Motor Parameters

Motor Type	Single-phase asynchronous motor
Motor Pole	2
Motor Insulation Class(℃)	130(B Class)
Line to Line Resistance UV(CS)(Ω, 25℃)	1.519(±10%)
Line to Line Resistance UW(CR)(Ω, 25℃)	0.67(±10%)
Line to Line Resistance VW(SR)(Ω, 25℃)	2.189(±10%)
Dielectric Strength	2000VAC / 1s / 50Hz, Leakage Current≤5mA
Insulation Resistance(MΩ)	≥20
Ground Resistance(Ω)	≤0.1

1.3   Safety Operating Limit

Tightness Test Pressure(MPa)	3.8-4.0
Max. Operating Pressure	
High Side(MPa) Low Side(MPa)	H3.2/L2.0
Compressor FreeSpace(Without Oil)	
High Side(L) Low Side(L)	H1.0/L3.6
Max. Refrigerant Charge(kg)	See Notes
Discharge Temperature Limit(℃)	≤125 (120mm to compressor discharge connection and well insulated)
Start-Stop Interval	See Notes

Performance Condition：

Condition	Condition Description
a	Rated Condition
b	Max. Load Condition, 90% Rated Voltage
c	Rated Condition, A Weighted Sound Power
d	Rated Condition, Max Operating Normal Displacement of Compressor Housing
e	Discharge Pressure and Suction Pressure: Saturated Refrigerant Pressure at 40℃
f	Max. Load Condition

2　　Rated Condition, 48 Hours Break-in-Running before implementing Performance and Sound Testing

Item	Rated Condition	Max. Load Condition
E.T.(℃)/C.T.(℃)/S.H.(K)/ S.C.(K)/A.T.(℃)	-6.7/48.9/11.1/0/35	10/65/11.9/0/46.1
Cooling Capacity Deviation	≥92.5%	-
Power Deviation	≤107.5%	-
COP Deviation	≥92.5%	-

3　　Internal Protector

Protection Method	Config	Parameter		
Internal Overload Protector	With	Vendor	Vendor1	Vendor2
		Model	15HM2495-XX	
		Open Temp.(℃)	105±5	
		Close Temp. (℃)	61±9	
		Short Time Trip	65A	A
			2-10s	s
Internal Pressure Relieve Valve	With	-MPa		

4　　Accessory

YM49E3G-100			
Item	Name	P.N.	PCS
1	Grommet	070-0003-00	4
2	Sleeve	010-0014-00	4
3	StartBox	110-0076-02	1
4			
5			

5   Compressor Operating Envelope

5.1   Compressor Operating Envelope
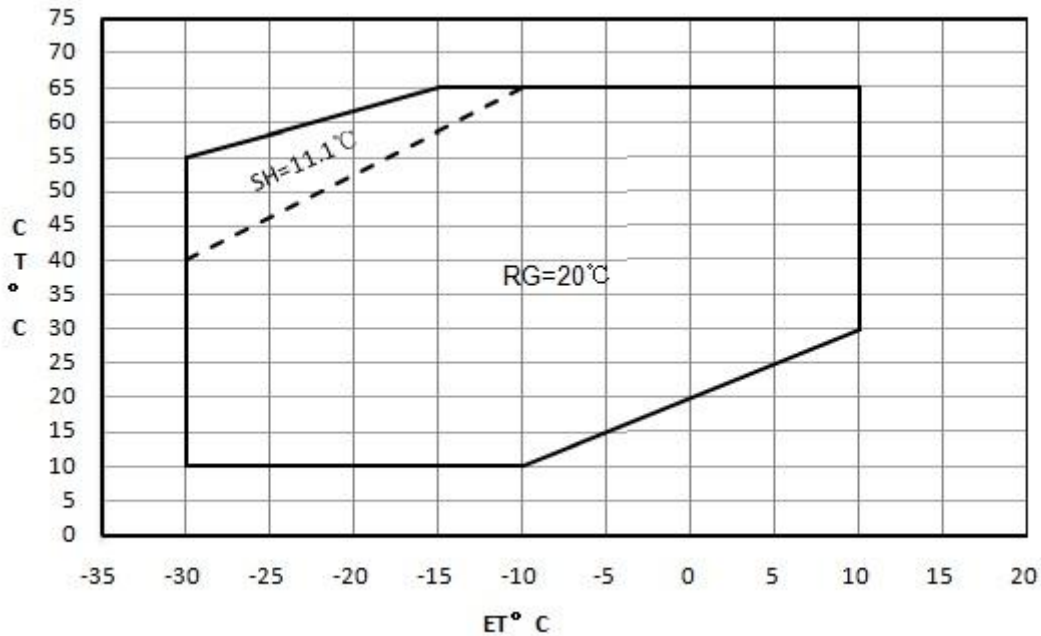
5.2   EVI control logic(only for EVI module)

- Recommend system subcooling 5K
- DLT≤95℃,control superheat of injection line=5K
- DLT＞95℃,control DLT=95℃
- Max injection pressure≤2.0MPa

6   Compressor Performance Sheet

- Performance Based on Superheat is within the Operating Envelope, Subcooling after Condenser is 0K；
- Performance Calculated by Coefficients of Polynomial is Only Suitable for the Condition within Operating Envelope
- Capacity, Power can be Calculated by Coefficients of Polynomial

6.1 Performance Table

Item	E.T.(℃) / C.T.(℃)	-20	-10	0	10
Heating Cap.(W) (Cooling Cap.	50				
	40				
	30				
Cooling Cap. (W)	50	3790	5519	7824	10911
	40	4428	6473	9240	12935
	30	4994	7355	10584	14886
Power(W)	50	2947	3220	3466	3676
	40	2490	2723	2943	3142
	30	2113	2315	2519	2716

6.2 Ten Coefficients of Polynomial

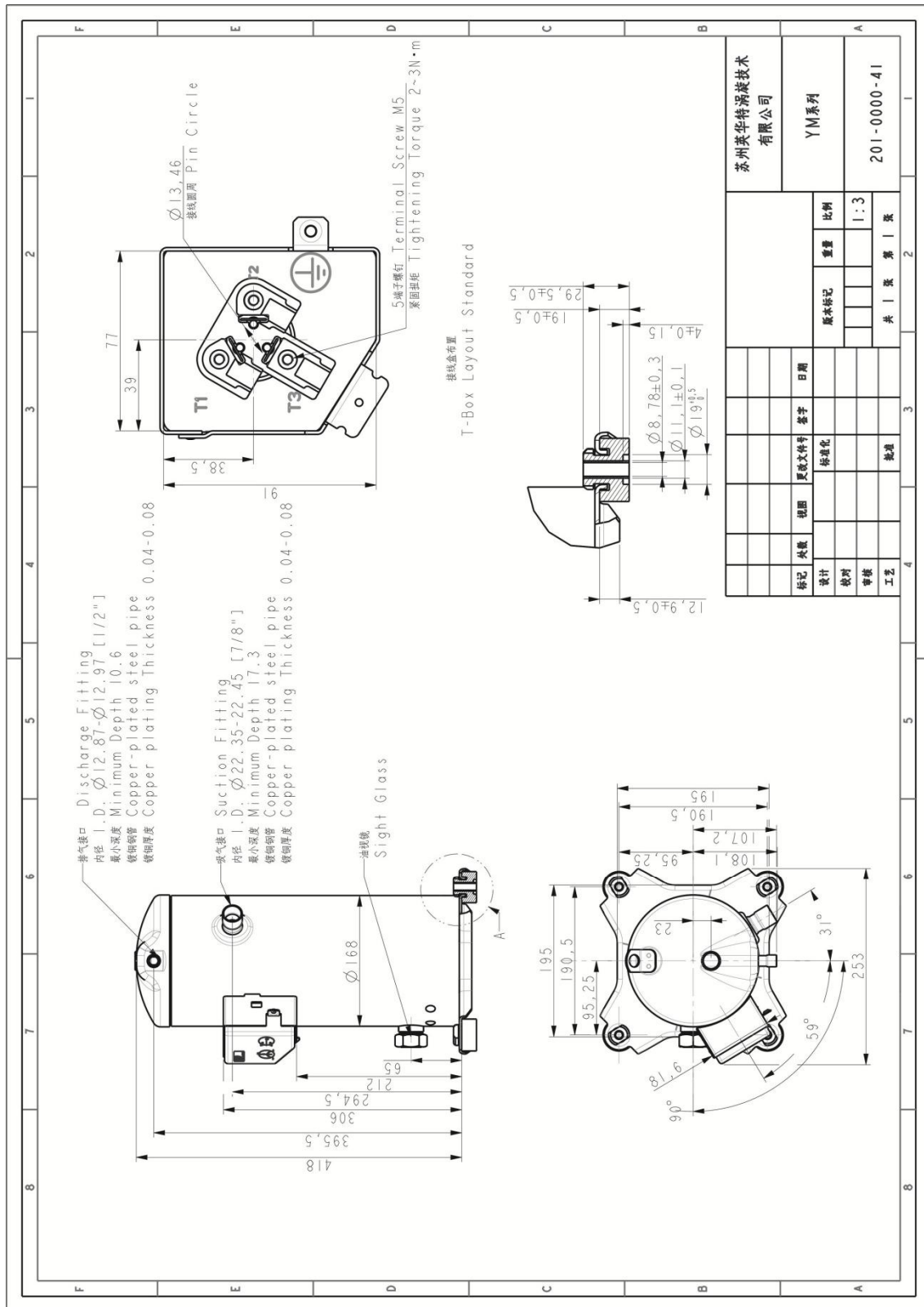| Expression	$z = p_0 + p_1*x + p_2*y + p_3*x^2 + p_4*x*y + p_5*y^2 + p_6*x^3 + p_7*x^2*y + p_8*x*y^2 + p_9*y^3$		
Description	z:Cooling Capacity(W) or Power (W) Specially: Heating Capacity(W)=Cooling Capacity(W)+Power (W) x: E.T. ℃ y: C.T. ℃ p0~p9: Coefficients of Polynomial		
Cooling Cap. Factor	Value	Power Factor	Value
p0	15034.007832	p0	1729.235014
p1	533.342754	p1	23.311489
p2	-175.928563	p2	16.455597
p3	7.555892	p3	0.18277
p4	-5.337266	p4	-0.250729
p5	1.34714	p5	0.273573
p6	0.034511	p6	-0.001549
p7	-0.072864	p7	-0.007285
p8	-0.000133	p8	0.004876
p9	-0.014254	p9	0.001843

Notes：Coefficients of polynomial are based on the fitting results of some sample data, which can be used as a reference of compressor selection, but cannot completely eliminate customer's test.
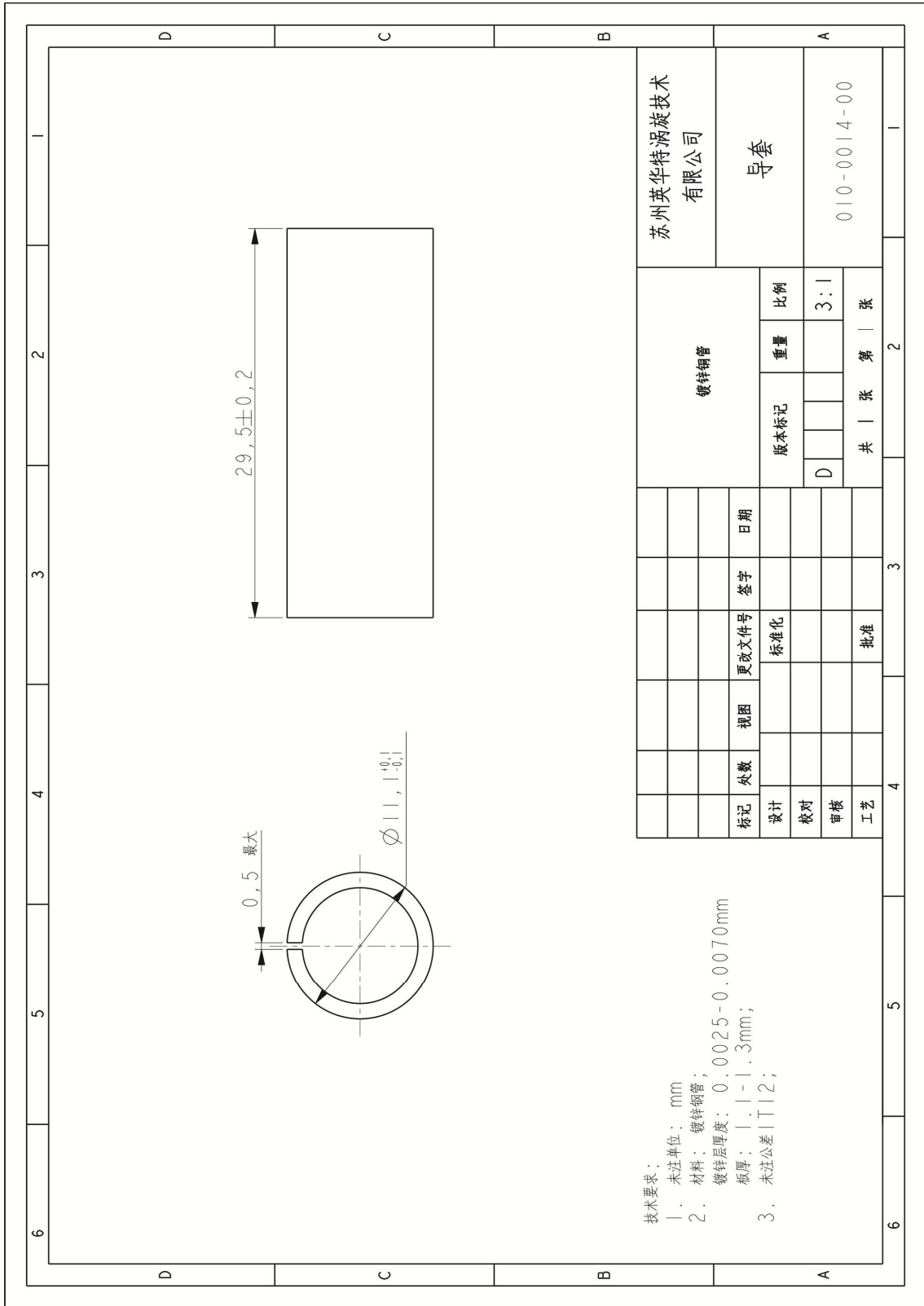
7   Notes

7.1   It is not allowed to perform vacuum in the system by using the refrigeration compressor.The compressor can start only after the refrigerant charged. In some cases, such as on the field site, if it is limited by the situation that can't charge the required volume of refrigerant, 50% of the required refrigerant is charged necessary before the compressor starts. Double check the system and make sure everything is under safe status, then power on the compressor and charge the remained refrigerant when the compressor is running.

7.2   It is not allowed to charge the refrigerant from the suction or discharge line closes to the compressor. The charge port should be arranged on the connection pipe of suction line accumulator or receiver, which is on the side far away to the compressor, to avoid the liquid refrigerant flood back.

7.3   Refrigerant charge limitation: the ratio between the weight of oil and refrigerant should be >=0.4.

7.4   It is not allowed to vacuum by compressor, not allowed to run the compressor without refrigerant, and not allowed to run the compressor on the reversed direction for long duration.

7.5   The compressor can only work with approved refrigerant.

7.6   The compressor is not allowed to work outside its envelope, the system should guarantee the suction line superheat and avoid the liquid refrigerant flood back.

7.7   When the suction and discharge plugs are removed, the assembly and brazing should be done in 15 minutes.

7.8   The frequently start/stop should be avoided. The suggested minimum continuous running time is 10 minutes to guarantee the safe oil level (>=50% initial charge volume), the suggested minimum interval duration between start and stop is 3 minutes.

7.9   The deviation of supplied voltage should be less than +/-10% of rated voltage.

7.10   A 70W crankcase heater is recommended to avoid the refrigerant migration during the off circle and flood start. The crankcase heater should be power on 12 hours earlier than the first start or restart after long duration off.

7.11   The system should be equipped with necessary protection devices, such as pressure, temperature, oil return, overcurrent and phase fault, etc.

7.12   The compressor is not allowed to lay down or place upside down during transportation, stock and installation. The maximum inclination is 15° when the compressor is running.
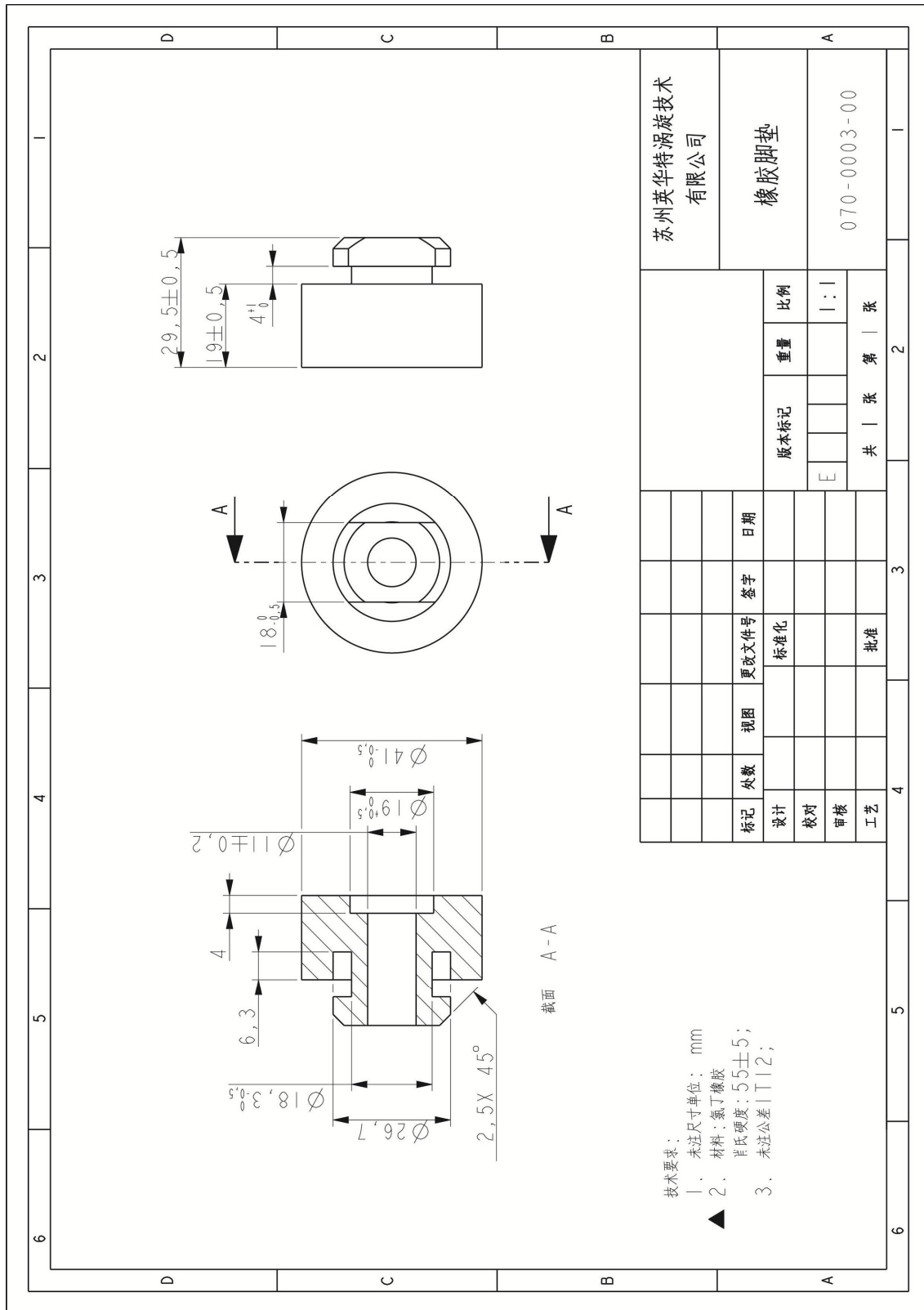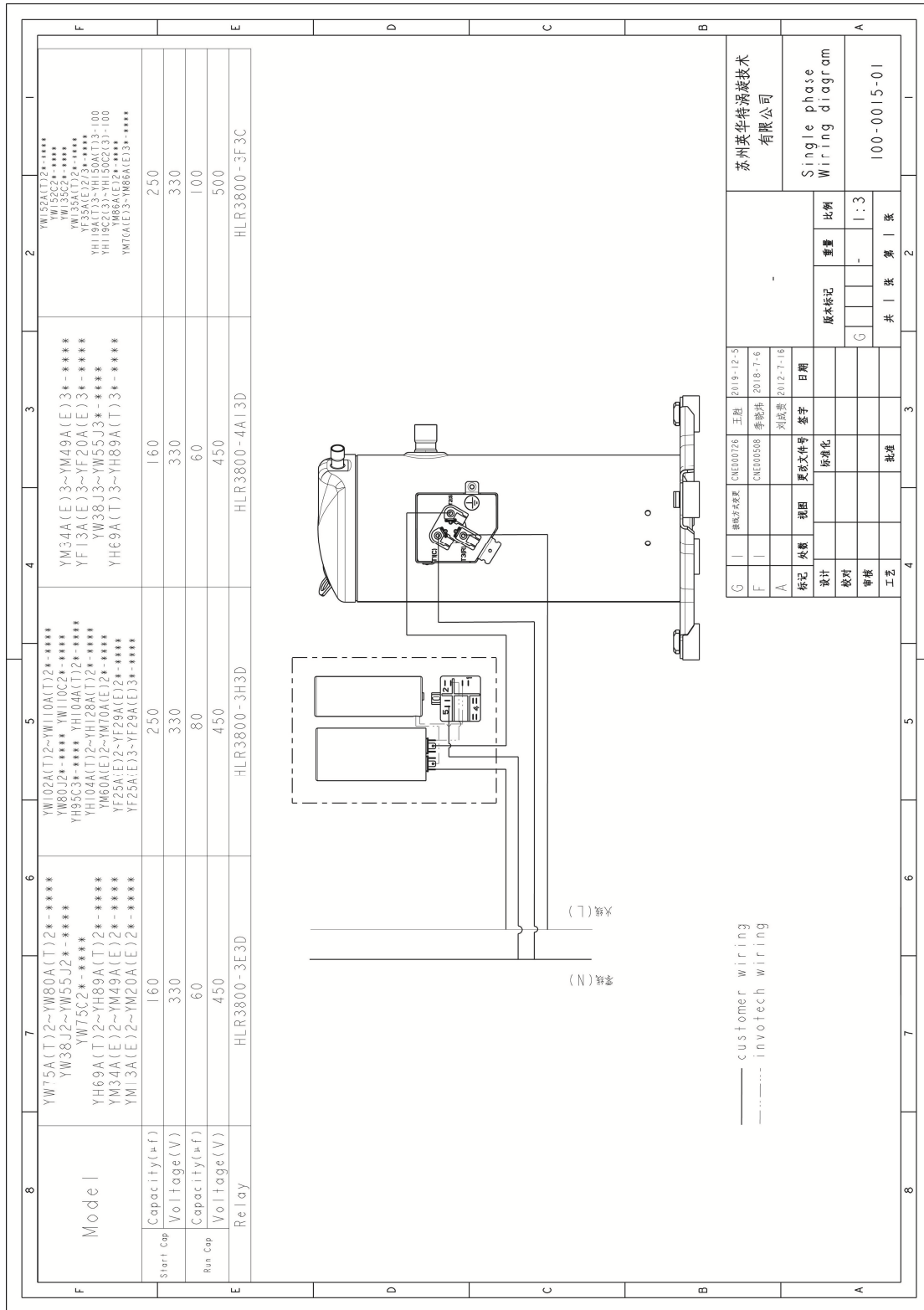
8 Drawings

8.1 Outline Drawing

8.2 Sleeve Drawing

8.3   Grommet Drawing

9 Single Phase Compressor Wiring Diagram

Model		YW75A(T)2~YW80A(T)2*-**** YW38J2~YW55J2*-**** YW75C2*-**** YH69A(T)2~YH89A(T)2*-**** YM34A(E)2~YM49A(E)2*-**** YM13A(E)2~YM20A(E)2*-****	YW102A(T)2~YW110A(T)2*-**** YW80J2*-**** YW95C3*-**** YH104A(T)2~YH128A(T)2*-**** YM60A(E)2~YM70A(E)2*-**** YF25A(E)2~YF29A(E)2*-**** YF25A(E)3~YF29A(E)3*-****	YM34A(E)3~YM49A(E)3*-**** YF13A(E)3~YF20A(E)3*-**** YW38J3~YW55J3*-**** YH69A(T)3~YH89A(T)3*-****	YW152A(T)2*-**** YW152C2*-**** YW135C2*-**** YW135A(T)2*-**** YF35A(E)2~YF35A(E)3*-**** YH109A(T)3~YH150A(T)3-100 YH109C2(3)~YH150C2(3)-100 YM86A(E)2*-**** YMTCA(E)3~YM86A(E)3*-****
Start Cap	Capacity(μf)	160	250	160	250
	Voltage(V)	330	330	330	330
Run Cap	Capacity(μf)	60	80	60	100
	Voltage(V)	450	450	450	500
Relay		HLR3800-3E3D	HLR3800-3H3D	HLR3800-4A13D	HLR3800-3F3C

10 Application

See Details in the 《YM serial MBP refrigerant scroll compressor application manual》