VS5570W-XG1A

Product Family	VS Series Scroll Compressors
Application	AC, HBP
Voltage	380-420V 3PH 50Hz, 460V 3PH 60Hz
Refrigerant	R-22, R-407C
Product Technology	Scroll

Tecumseh | VS5570W-XG1A

1 Specification

1.1 Basic Specification

Model	VS5570W-XG1A (Including Extended Model)
Type	Low Side Shell Design Scroll Compressor
Application	Air conditioning
Refrigerant	R407C
Displacement(cc/rev)	97.1
Cooling Capacity(W)[a]	16510
Input Power(W)[a]	5030
RLA(A)[a]	9.1
Cooling COP(W/W)[a]	3.28
Power Supply	380-420V/3~/50Hz or 460V/3~/60Hz
Min. Operating Voltage(V)	342
Max. Operating Voltage(V)	462
LRA(A)	65
Max. Operating Current(A)[b]	13.6
Rated Speed(r/min)[a]	2900
Compressor Weight(With Oil)(kg)	33
Oil Type	POE
Oil Kinematic Viscosity(cSt, 40℃)	32
Oil Density(kg/L, 20℃)	0.977
Primary Charge(L) Recharge(L)	1.6 1.45
Oil Circulation Rate[a]	≤1%
Rated Sound(Sound Power)(dBA)[c]	70
Max. Operating Sound in Running Envelope (Sound Power)(dBA)	75
Vibration Displacement Peak-Peak(mm)[d]	≤0.1
Moisture(mg)	≤600
Impurity(mg)	≤120
LVS(V)[e]	323
MOV (V)[f]	342
Start Capacitor(μF/V)	/
Start Relay	/
Run Capacitor(μF/V)	/
IP Class of Terminal Box	IP21
Compressor Color	Black

1.2 Motor Parameters

Motor Type	Three-phase asynchronous motor
Motor Pole	2
Motor Insulation Class(℃)	130(B Class)
Line to Line Resistance UV(CS)(Ω, 25℃)	1.934(±10%)
Line to Line Resistance UW(CR)(Ω, 25℃)	1.934(±10%)
Line to Line Resistance VW(SR)(Ω, 25℃)	1.934(±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)	H3.0/L2.0
Compressor Free Space(Without Oil)	
High Side(L) Low Side(L)	H1.0/L4.2
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.(℃)	7.2/54.4/11.1/8.3/35	11.9/65.5/11.9/8.3/46.1
Cooling Capacity Deviation	≥95.0%	-
Power Deviation	≤105.0%	-
COP Deviation	≥95.0%	-

3 Internal Protector

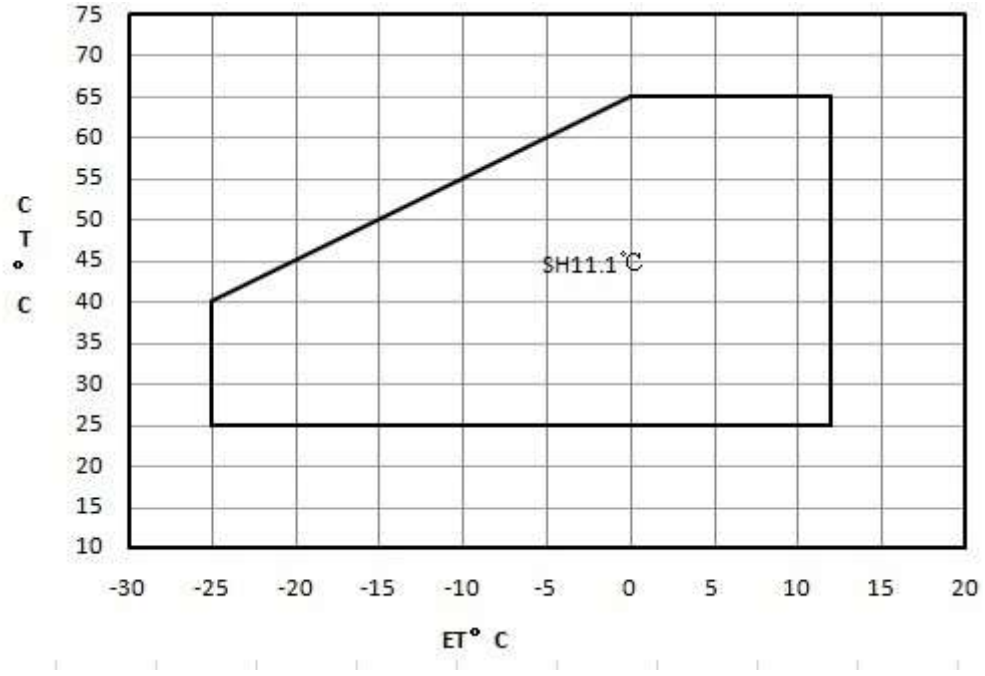
Protection Method	Config	Parameter		
Internal Overload Protector	With	Vendor	Vendor1	Vendor2
		Model	37HM546-XX	3HPD-XX
		Open Temp.(℃)	140±5	140±5
		Close Temp. (℃)	60±9	60±9
		Short Time Trip	52A 3-10s	52A 3-10s
Internal Pressure Relieve Valve	With	2.76-3.10MPa		

4 Accessory

VS5570W-XG1A			
Item	Name	P.N.	PCS
1	Grommet	070-0003-00	4
2	Sleeve	010-0014-00	4
3			
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 8.3K;
- 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	5779	9188	13677	19496
	40	6566	10275	15128	21376
	30	7331	11284	16445	23067
Power(W)	50	4525	4623	4664	4720
	40	3605	3732	3799	3879
	30	2890	3034	3117	3210

6.2 Ten Coefficients of Polynomial

Expression	z = p0 + p1*x + p2*y + p3*x^2 + p4*x*y + p5*y^2 + p6*x^3 + p7*x^2*y + p8*x*y^2 + p9*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	19633.6224	p0	1323.125153
p1	653.968	p1	5.088187
p2	-87.808	p2	70.436695
p3	8.2656	p3	0.014058
p4	-1.4672	p4	0.251108
p5	-0.599151	p5	-0.77803
p6	0.04177	p6	0.011899
p7	-0.032293	p7	0.001205
p8	-0.027754	p8	-0.00559
p9	-0.000545	p9	0.014115

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.

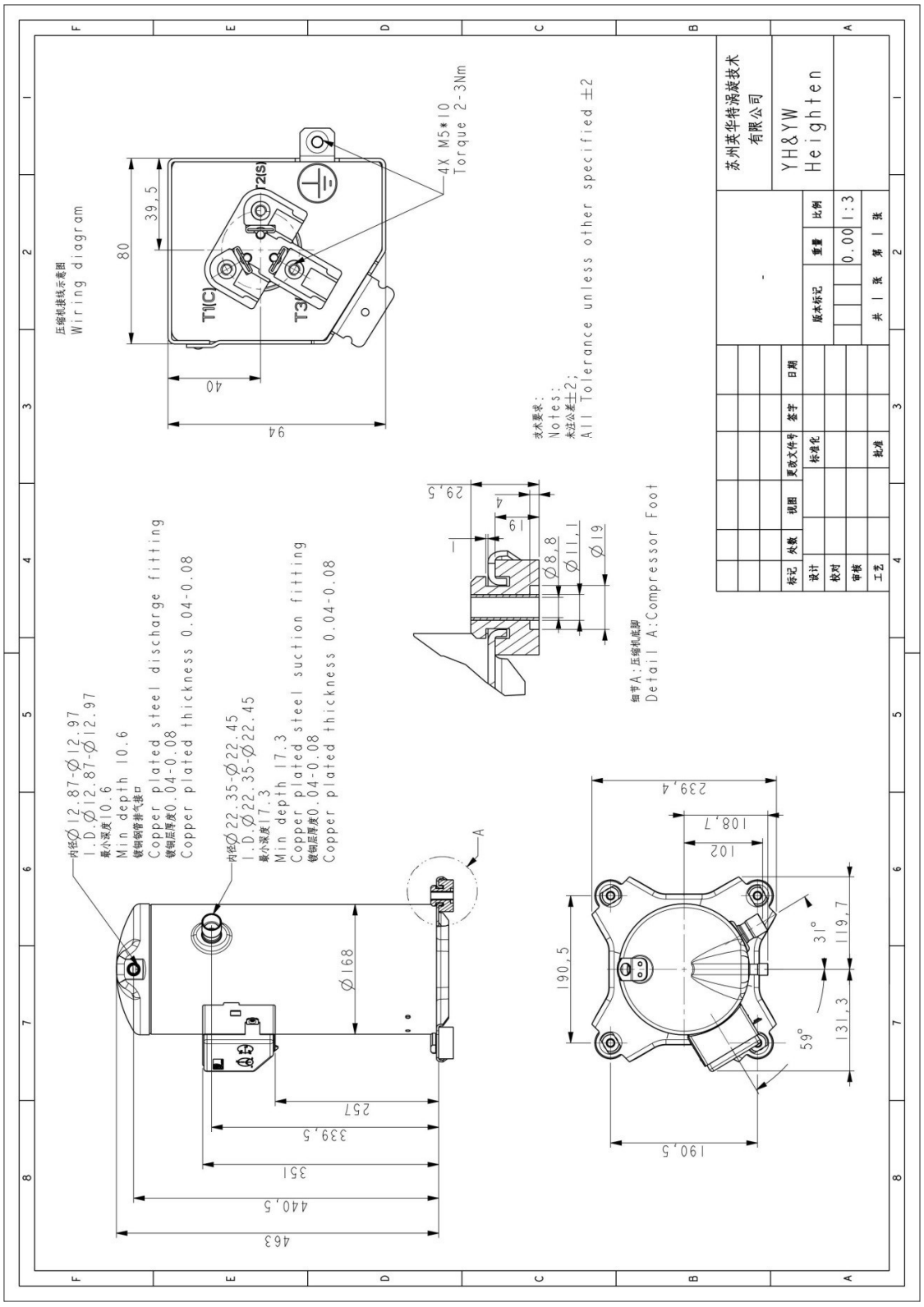
7.10 A 70W crankcase heater is recommended to avoid the refrigerant migration during the off circle and flood start. The crankcase heater should be power on 12 hours earlier than the first start or restart after long duration off.

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

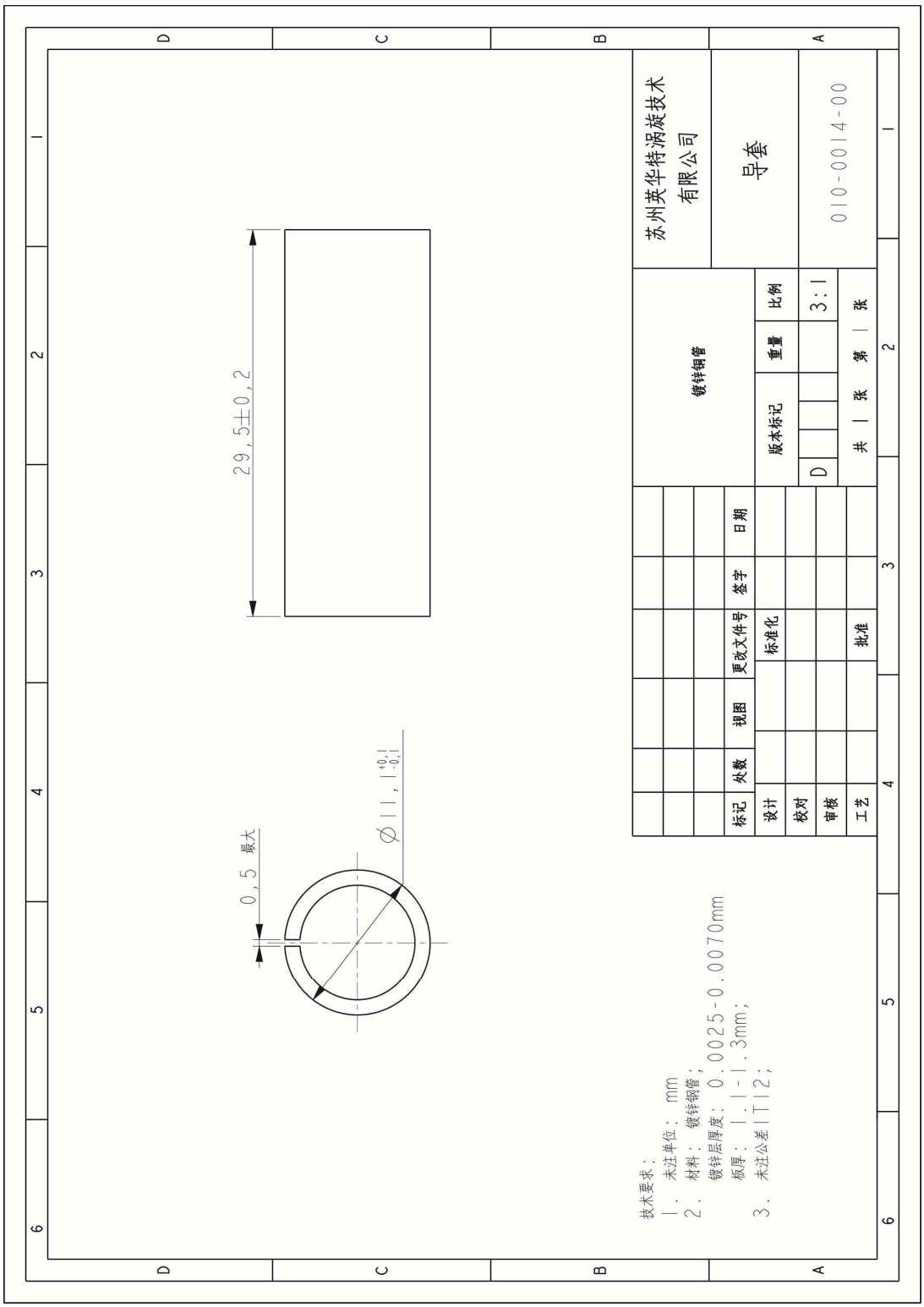
7.12 The compressor is not allowed to lay down or place upside down during transportation, stock and installation. The maximum inclination is 15° when the compressor is running.

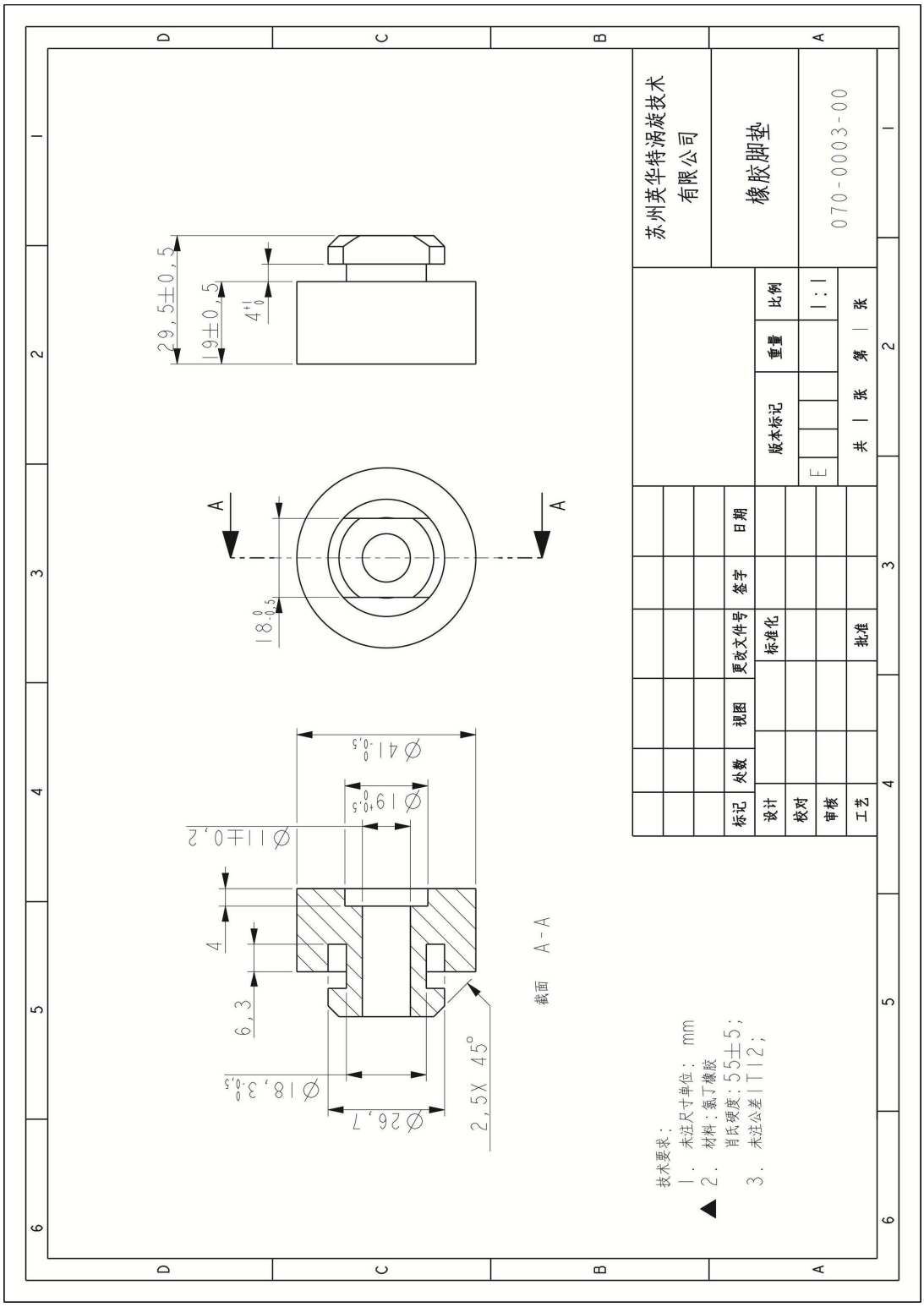
8 Drawings

8.1 Outline Drawing



8.2 Sleeve Drawing





8.3 Grommet Drawing