*** 50Hz YM42P1100Specification**

Specification		Notes
Standard Model	YM42P1-100	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	YM42P1-100(Including Extended Models)
Type	Low Side Shell Design Scroll Compressor
Application	Medium Temp.Refrigeration
Refrigerant	R290
Displacement(cc/rev)	46.6
Cooling Capacity(W)[a]	4203
Input Power(W)[a]	2049
RLA(A)[a]	3.5
Cooling COP(W/W)[a]	2.05
Power Supply	380-420V/3~/50Hz or 460V/3~/60Hz
Min. Operating Voltage(V)	342
Max. Operating Voltage(V)	462
LRA(A)	22
Max. Operating Current(A)[b]	5.0
Rated Speed(r/min)[a]	2900
Compressor Weight(With Oil)(kg)	30
Oil Type	PAG
Oil Kinematic Viscosity(cSt, 40℃)	32
Oil Density(kg/L, 20℃)	0.999
Primary Charge(L)	1.4
Recharge(L)	1.25
Oil Circulation Rate[a]	≤1%
Rated Sound(Sound Power)(dBA)[c]	71
Max. Operating Sound in Running Envelope (Sound Power)(dBA)	76
Vibration Displacement Peak-Peak(mm)[d]	≤0.09
Moisture(mg)	≤500
Impurity(mg)	≤100
LVS(V)[e]	323
MOV (V)[f]	342
Start Capacitor(μF/V)	/
Start Relay	/
Run Capacitor(μF/V)	/
IP Class of Terminal Box	IP67
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℃)	7.501(±10%)
Line to Line Resistance UW(CR)(Ω, 25℃)	7.741(±10%)
Line to Line Resistance VW(SR)(Ω, 25℃)	7.418(±10%)
Dielectric Strength	2000VAC / 1s / 50Hz or 60Hz, 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)	H2.1/L1.7
Compressor FreeSpace(Without Oil)	
High Side(L) Low Side(L)	H1.0/L4.1
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	10/60/11.9/0/46.1
Cooling Capacity Deviation	≥92.5%	-
Power Deviation	≤107.5%	-
COP Deviation	≥92.5%	-

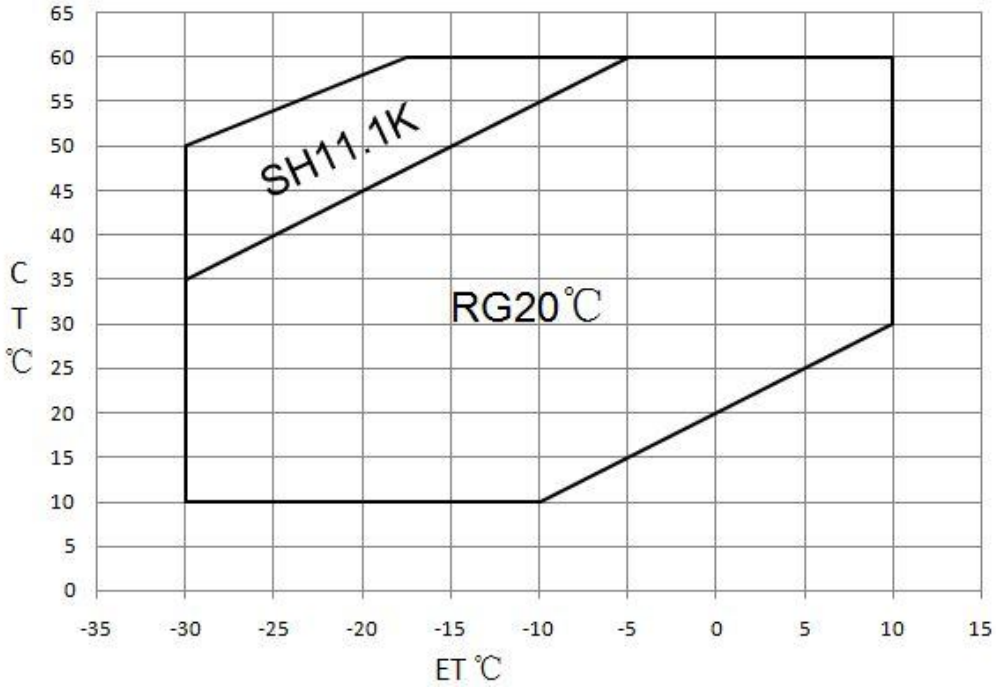
3 Internal Protector

Protection Method	Config	Parameter		
Internal Overload Protector	With	Vendor	Vendor1	Vendor2
		Model	37HM223-XX	
		Open Temp.(℃)	115±5	
		Close Temp. (℃)	60±9	
		Short Time Trip	25A 3-10s	A s
Internal Pressure Relieve Valve	With	2.76-3.10MPa		

4 Accessory

YM42P1-100			
Item	Name	P.N.	PCS
1	Grommet	070-0003-00	4
2	Sleeve	010-0014-00	4
3			
4			
5			

5 Compressor OperatingEnvelope



6 Compressor Performance Sheet

- Performance Based on Superheat is with the OperatingEnvelope,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.(℃)	-30	-25	-20	-15	-10	-5	0	5	10
Cooling Cap.(W)	60				2806	3369	4020	4765	5611	6565
	55		2045	2489	3011	3619	4319	5119	6024	7042
	50	1787	2185	2661	3220	3870	4618	5470	6433	7514
	45	1905	2328	2834	3428	4119	4912	5814	6832	7973
	40	2023	2469	3003	3631	4359	5195	6146	7218	8417
	35	2136	2604	3163	3822	4587	5464	6461	7584	8840
	30	2240	2726	3310	3997	4796	5713	6754	7926	9236
	25	2329	2832	3437	4152	4983	5937	7020	8239	
	20	2399	2916	3542	4281	5142	6131	7254		
	15	2444	2974	3618	4380	5269	6291			
	10	2460	3001	3660	4444	5358				
Power(W)	60				2218	2336	2440	2531	2610	2678
	55		1831	1959	2073	2174	2264	2343	2412	2472
	50	1612	1733	1841	1938	2025	2102	2171	2232	2288
	45	1536	1638	1729	1811	1885	1952	2013	2069	2121
	40	1458	1542	1619	1688	1752	1811	1866	1919	1970
	35	1375	1444	1507	1566	1621	1674	1726	1778	1830
	30	1283	1338	1391	1441	1491	1540	1590	1643	1699
	25	1179	1223	1267	1311	1357	1404	1456	1511	
	20	1059	1095	1132	1172	1216	1264	1319		
	15	922	951	984	1022	1066	1117			
	10	762	787	817	856	902				

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	7777.0068	p0	683.4685529
p1	268.64114	p1	19.09748119
p2	-6.245899	p2	37.38493269
p3	3.2322633	p3	0.32535216
p4	-1.339588	p4	-0.552450696
p5	-1.124986	p5	-0.367155138
p6	0.0089955	p6	0.001398264
p7	-0.020242	p7	-0.00942123
p8	-0.008159	p8	0.00861126
p9	0.0065415	p9	0.004288578

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 shouldbe >=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.

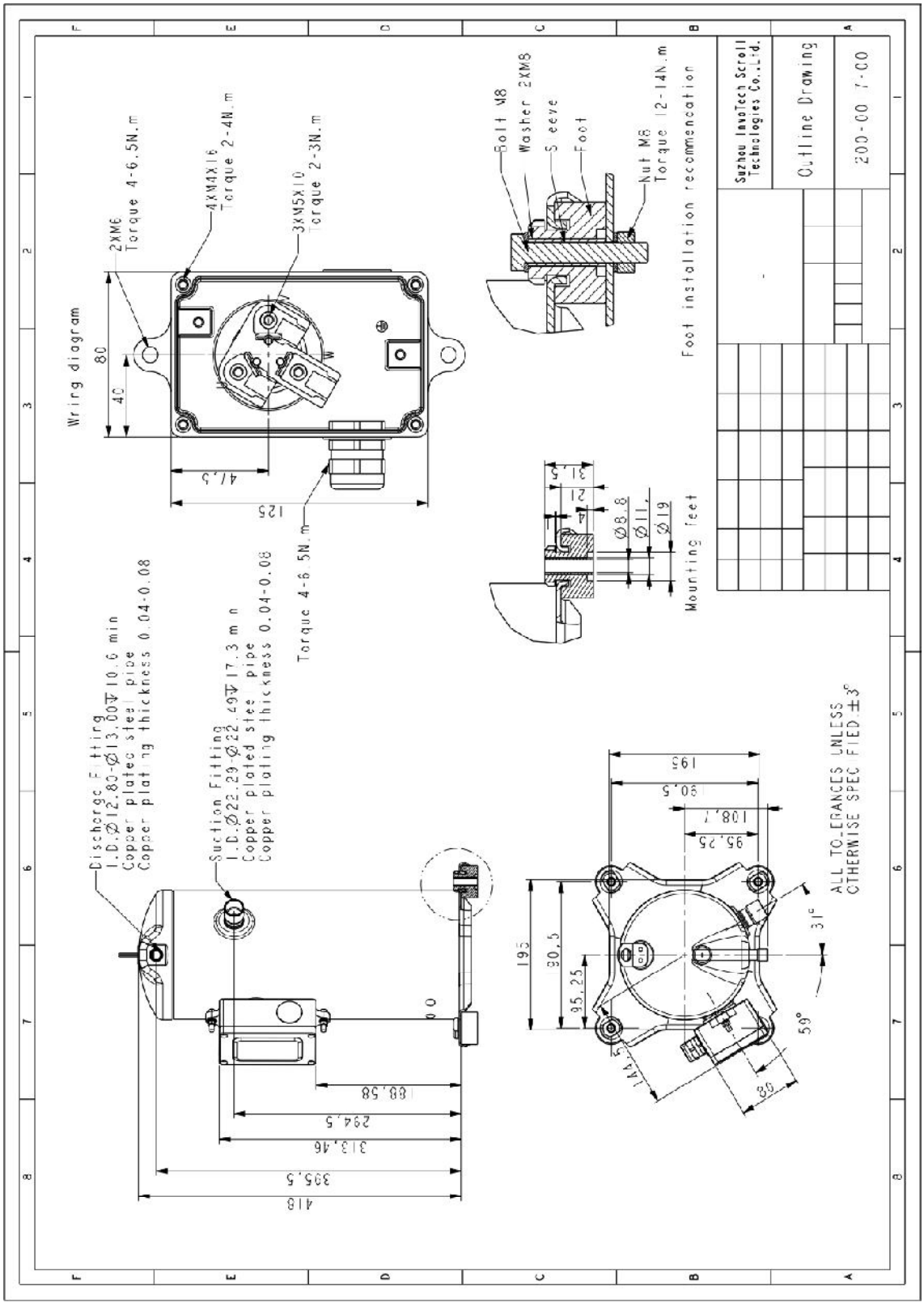
7.10 A 70W crankcase heater is recommended to avoid the refrigerant migration during the off circle and flood start. The crankcase heater should be power on 12 hours earlier than the first start or restart after long duration off.

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

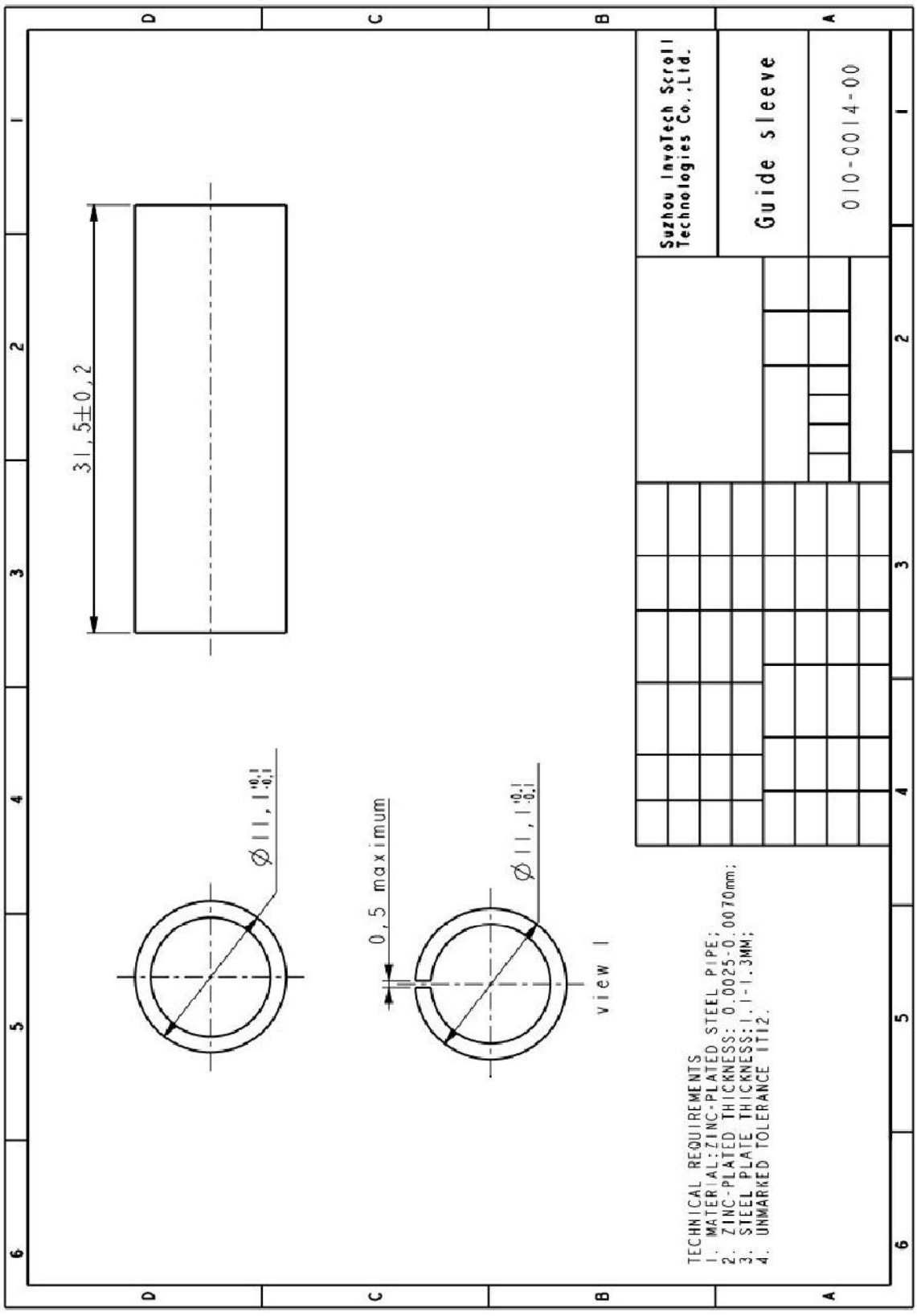
7.12 The compressor is not allowed to lay down or place upside down during transportation, stock and installation. The maximum inclination is 15° when the compressor is running.

8 Drawings

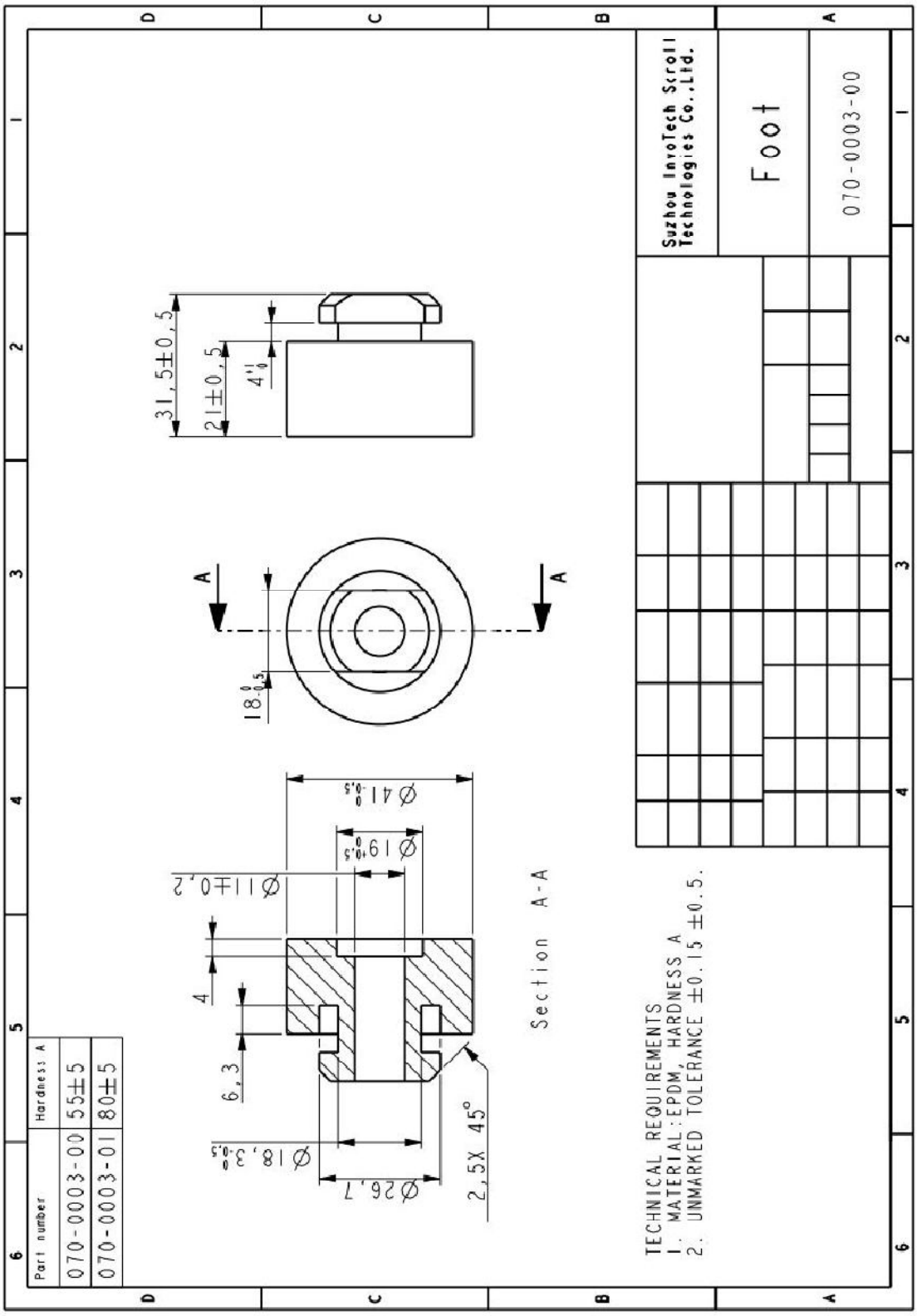
8.1 Outline Drawing



8.2 Sleeve Drawing



8.3 Grommet Drawing



9 Single Phase Compressor Wiring Diagram

Only for single phase

10 Application

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