*** 50Hz YM31P1100Specification**

Specification		Notes
Standard Model	YM31P1-100	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	YM31P1-100(Including Extended Models)
Type	Low Side Shell Design Scroll Compressor
Application	Medium Temp.Refrigeration
Refrigerant	R290
Displacement(cc/rev)	33.3
Cooling Capacity(W)[a]	2957
Input Power(W)[a]	1481
RLA(A)[a]	2.7
Cooling COP(W/W)[a]	2.00
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]	3.6
Rated Speed(r/min)[a]	2900
Compressor Weight(With Oil)(kg)	29
Oil Type	PAG
Oil Kinematic Viscosity(cSt, 40℃)	68
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 DisplacementPeak-Peak(mm)[d]	≤0.09
Moisture(mg)	≤500
Impurity(mg)	≤80
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 wellinsulated)
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%	-

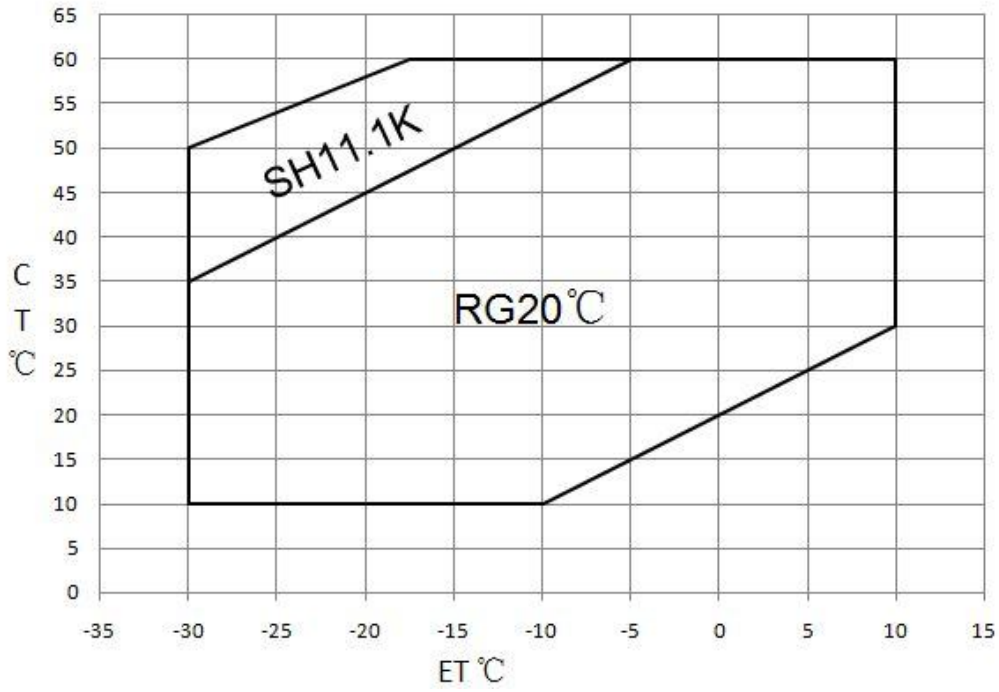
3 Internal Protector

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

YM31P1-100			
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 within 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				1972	2369	2826	3350	3945	4615
	55		1438	1750	2117	2544	3037	3599	4235	4951
	50	1257	1536	1871	2264	2721	3247	3846	4523	5282
	45	1339	1637	1992	2410	2896	3453	4087	4803	5606
	40	1422	1736	2111	2552	3065	3652	4321	5074	5918
	35	1502	1830	2224	2687	3225	3841	4542	5332	6215
	30	1575	1917	2327	2810	3372	4016	4748	5572	6494
	25	1637	1991	2417	2919	3503	4174	4935	5793	
	20	1686	2050	2490	3010	3615	4310	5100		
	15	1718	2091	2543	3079	3704	4423			
	10	1729	2110	2573	3124	3767				
Power(W)	60				1610	1696	1771	1837	1895	1944
	55		1329	1422	1505	1578	1643	1700	1751	1795
	50	1170	1258	1337	1407	1470	1526	1576	1621	1661
	45	1115	1189	1255	1315	1368	1417	1461	1502	1540
	40	1059	1120	1175	1225	1271	1314	1354	1393	1430
	35	998	1048	1094	1137	1177	1215	1253	1290	1328
	30	931	972	1010	1046	1082	1118	1154	1193	1233
	25	856	888	920	952	985	1019	1057	1097	
	20	769	795	822	851	883	918	957		
	15	669	690	714	742	774	811			
	10	553	571	593	621	655				

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	5467.5245	p0	496.1299
p1	188.8646923	p1	13.86286381
p2	-4.391098901	p2	27.13772698
p3	2.272401099	p3	0.236173171
p4	-0.94178022	p4	-0.401024024
p5	-0.790906593	p5	-0.266517957
p6	0.006324176	p6	0.001015
p7	-0.014230769	p7	-0.006838872
p8	-0.005736264	p8	0.006250915
p9	0.004598901	p9	0.003113079

Notes：Coefficients of polynomial are based on the fitting results of some sample data, which can be used as a reference of compressor selection,butcannot completely eliminatecustomer'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.

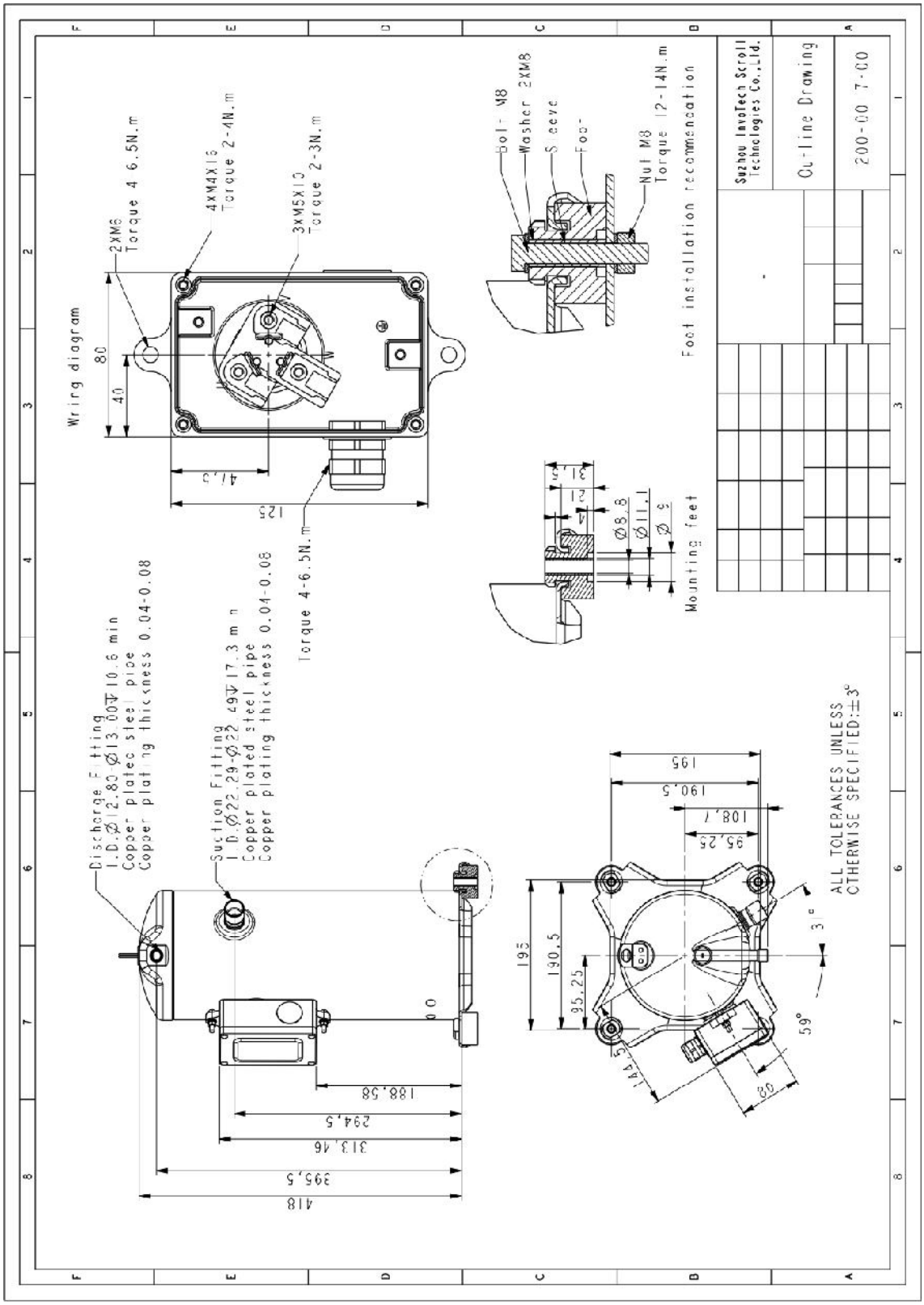
7.10 A 70W crankcase heater is recommended to avoid the refrigerant migration during the off circle and flood start. The crankcase heater should be power on 12 hours earlier than the first start or restart after long duration off.

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

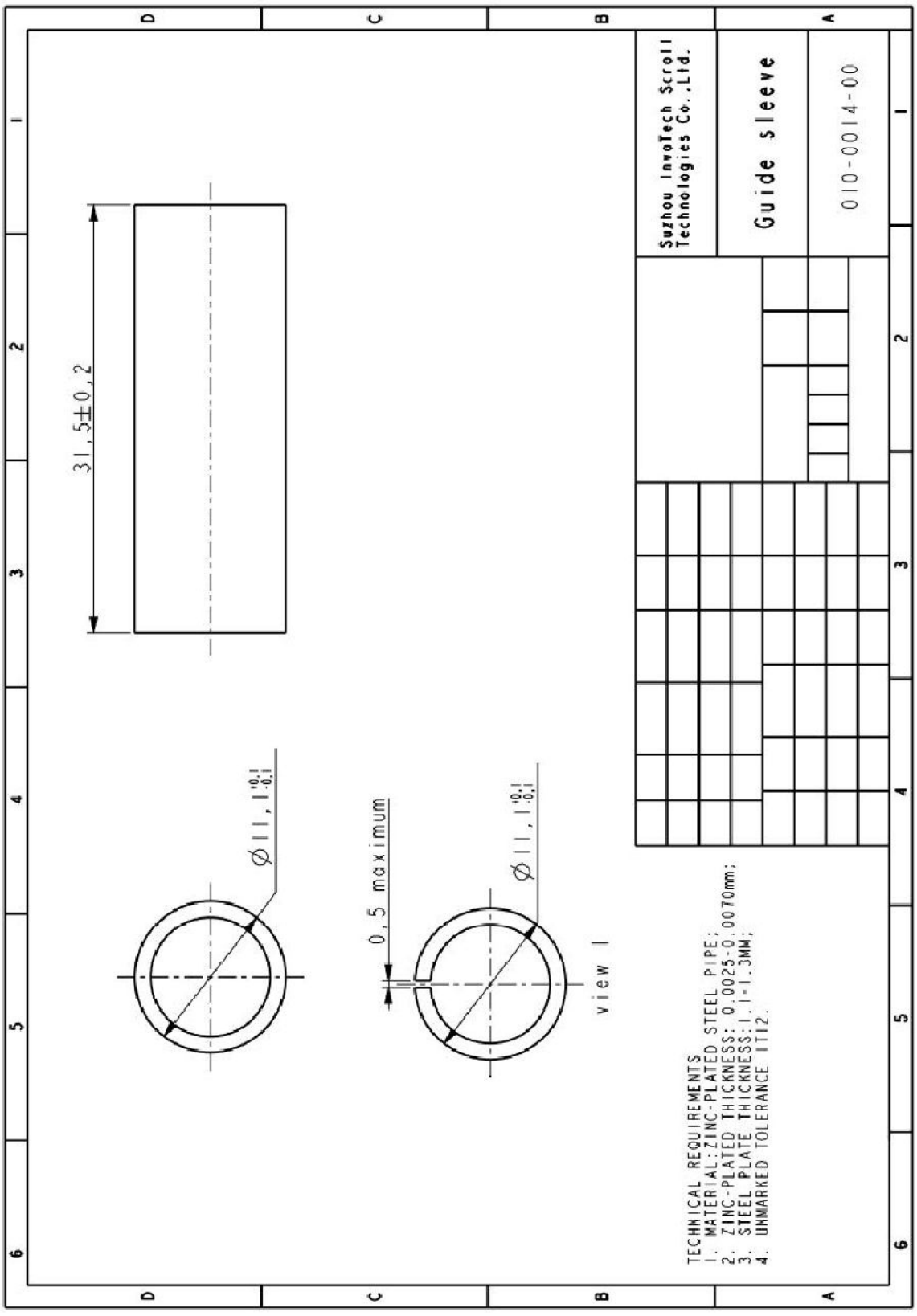
7.12 The compressor is not allowed to lay down or place upside down during transportation, stock and installation. The maximum inclination is 15° when the compressor is running.

8 Drawings

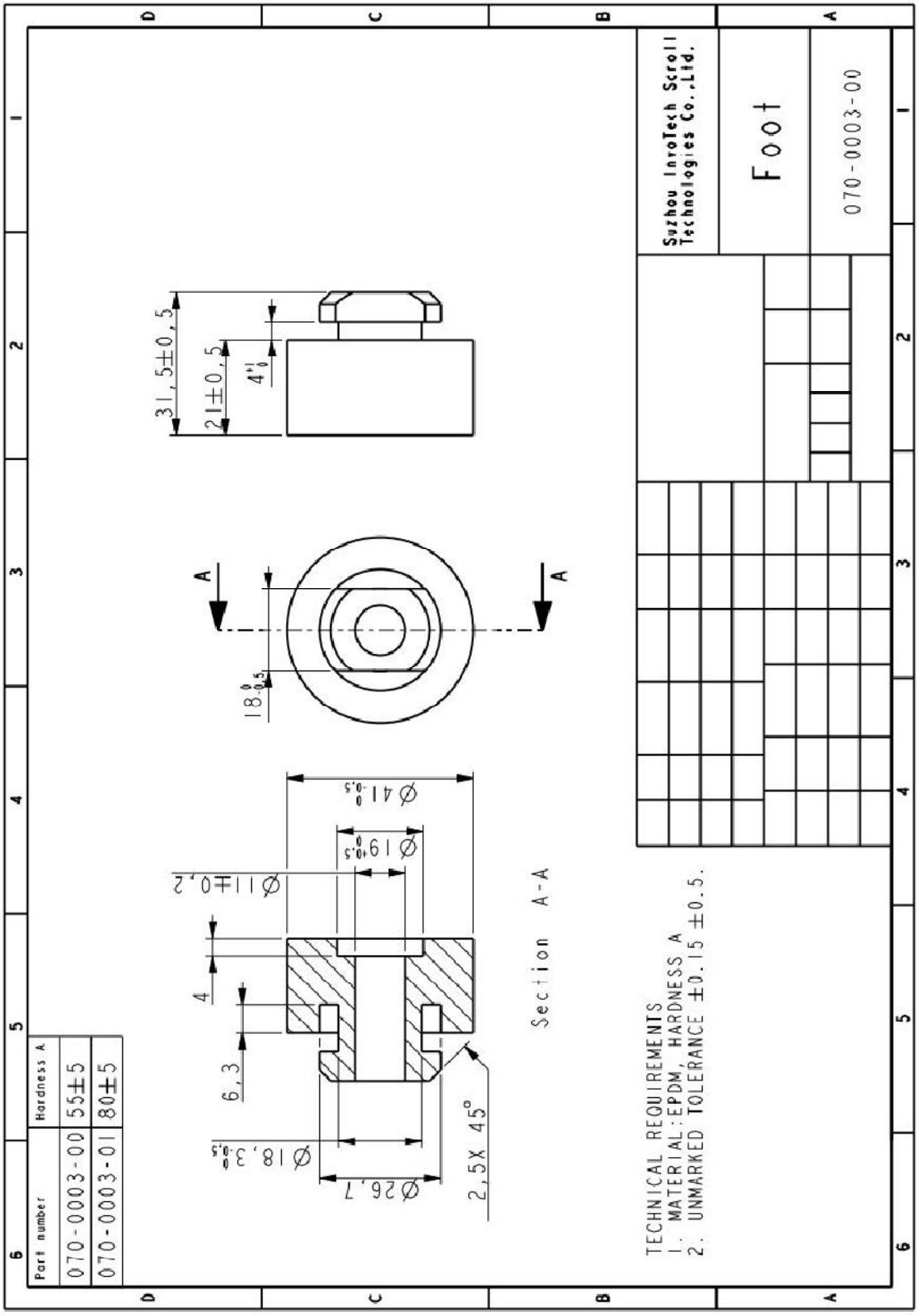
8.1 Outline Drawing



8.2 Sleeve Drawing



8.3 Grommet Drawing



9 Single Phase Compressor Wiring Diagram

Only for single phase

10 Application

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