

*** YH307A7 100Specification**

Specification		Notes
Standard Model	YH307A7-100	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	YH307A7-100(Including Extended Model)
Type	Low Side Shell Design Scroll Compressor
Application	Air conditioning
Refrigerant	R22
Displacement(cc/rev)	167.2
Cooling Capacity(W) ^(a)	37454
Input Power(W) ^(a)	10672
RLA(A) ^(a)	32.2
Cooling COP(W/W) ^(a)	3.51
Power Supply	208-230V/3~/60Hz
Min. Operating Voltage(V)	187
Max. Operating Voltage(V)	253
LRA(A)	290
Max. Operating Current(A) ^(b)	46.61
Rated Speed(r/min) ^(a)	3500
Compressor Weight(With Oil)(kg)	54
Oil Type	3GS
Oil Kinematic Viscosity(cSt, 40°C)	32
Oil Density(kg/L, 20°C)	0.902
Primary Charge(L)	2.7
Recharge(L)	2.55
Oil Circulation Rate ^(a)	≤1%
Rated Sound(Sound Power)(dBA) ^(c)	77
Max. Operating Sound in Running Envelope (Sound Power)(dBA)	82
Vibration Displacement Peak-Peak(mm) ^(d)	≤0.12
Moisture(mg)	≤1500
Impurity(mg)	≤180
LVS(V) ^(e)	177
MOV (V) ^(f)	187
Start Capacitor(μF/V)	/
Start Relay	/
Run Capacitor(μF/V)	/
IP Class of Terminal Box	IP54
Compressor Color	Black

1.2 Motor Parameters

Motor Type	Three-phase asynchronous motor
Motor Pole	2
Motor Insulation Class(°C)	130(B Class)
Line to Line Resistance UV(CS)(Ω, 25°C)	0.22(±10%)
Line to Line Resistance UW(CR)(Ω, 25°C)	0.22(±10%)
Line to Line Resistance VW(SR)(Ω, 25°C)	0.22(±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)	H3.0/L2.0
Low Side(MPa)	
Compressor FreeSpace(Without Oil)	
High Side(L)	H0.9/L6.3
Low Side(L)	
Max. Refrigerant Charge(kg)	See Notes
Discharge Temperature Limit(°C)	≤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°C
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)/C.T.(°C)/S.H.(K)/ S.C.(K)/A.T.(°C)	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

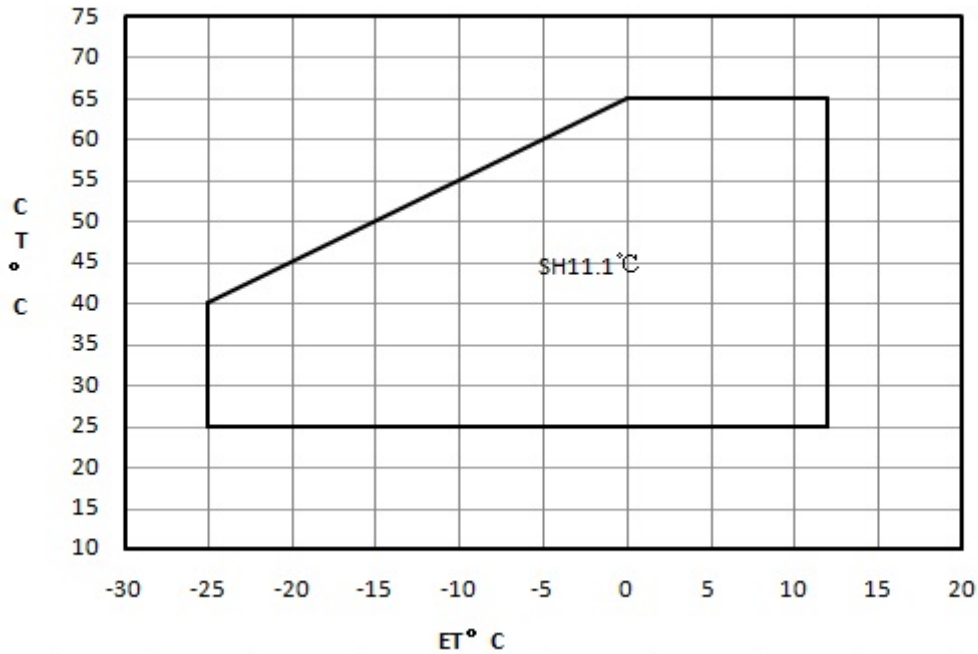
Protection Method	Config	Parameter		
		Vendor	Vendor1	Vendor2
Internal Overload Protector	With	Model	UP9NY0506-XX	
		Open Temp.(°C)	135±5	
		Close Temp. (°C)	60±9	
		Short Time Trip	174A 3-10s	A s
		Internal Pressure Relieve Valve	With	2.76-3.10MPa

4 Accessory

YH307A7-100			
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
- $DLT \leq 95^{\circ}C$, control superheat of injection line=5K
- $DLT > 95^{\circ}C$, control $DLT=95^{\circ}C$
- Max injection pressure $\leq 2.0MPa$

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

Type	E.T.(°C)		-25	-20	-15	-10	-5	0	5	10
	C.T. (°C)									
Cap (W)	65							24644	29830	35760
	60						21726	26497	31962	38189
	55					18881	23256	28274	34003	40512
	50				16140	20137	24726	29975	35953	42728
	45			13534	17171	21349	26136	31601	37813	44840
	40		11094	14389	18175	22518	27488	33154	39584	46847
	35		11823	15233	19151	23644	28782	34634	41267	48751
	30		12556	16066	20101	24729	30020	36042	42863	50553
Power (W)	25		13293	16888	21025	25773	31202	37379	44373	52253
	65							13404	13389	13402
	60						11973	11972	11980	12015
	55					10673	10703	10722	10750	10805
	50				9470	9547	9595	9632	9677	9748
	45			8331	8473	8566	8629	8681	8740	8824
	40		7223	7445	7600	7706	7782	7846	7916	8011
	35		6431	6665	6831	6947	7032	7105	7184	7287
30		5726	5969	6143	6266	6358	6437	6521	6629	
25		5087	5335	5514	5642	5738	5820	5907	6017	

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. °C y: C.T. °C p0~p9: Coefficients of Polynomial		
Cooling Cap. Factor	Value	Power Factor	Value
p0	43029.070627	p0	2732.449647
p1	1433.237061	p1	10.50786
p2	-192.440119	p2	145.46222
p3	18.114899	p3	0.029032
p4	-3.215517	p4	0.518575
p5	-1.313099	p5	-1.606747
p6	0.091544	p6	0.024573
p7	-0.070773	p7	0.002489
p8	-0.060826	p8	-0.011544
p9	-0.001195	p9	0.02915

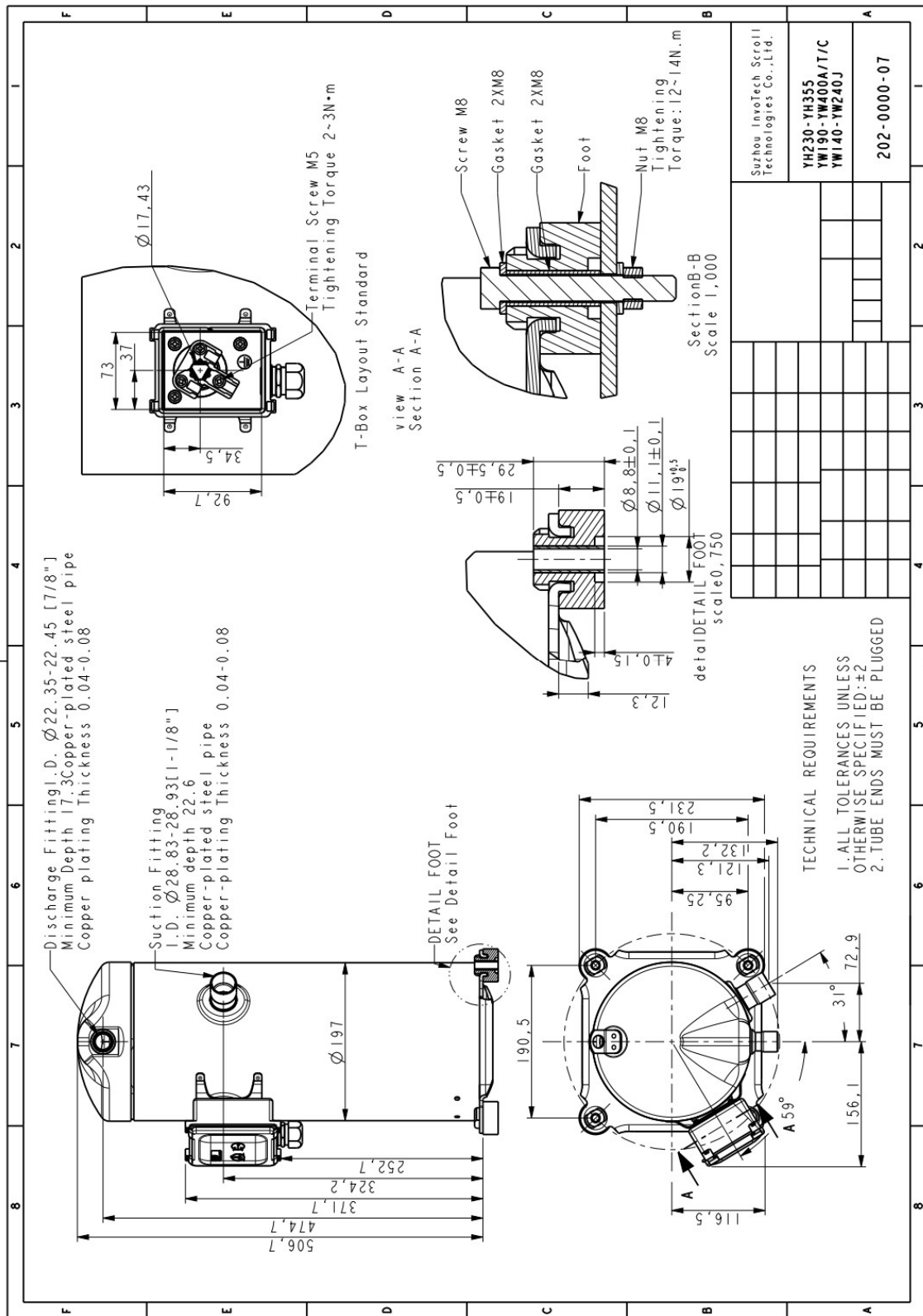
Notes: Coefficients of polynomial are based on the fitting results of some sample data,

which can be used as a reference of compressor selection, but cannot completely eliminate customer's test.

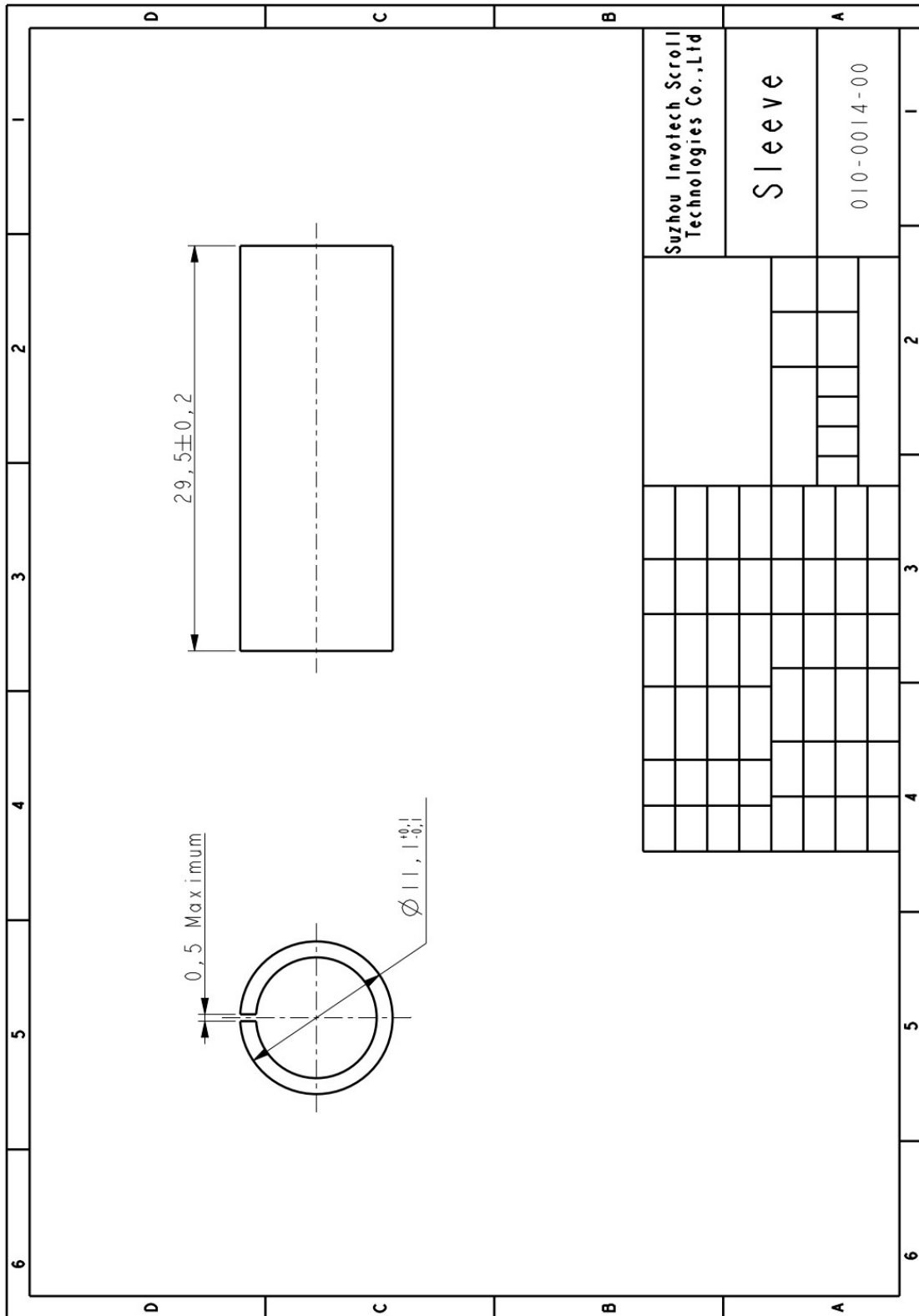
7 Notes

- 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 ($\geq 50\%$ 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 $\pm 10\%$ of rated voltage.
- 7.10 A 90W 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



9 Single Phase Compressor Wiring Diagram
Only for single phase

10 Application

See Details in the 《YH serial air-condition croll compressor application manual》