

Basic Specification	
Model	YM70E7S-100 (Including Extended Model)
Type	Low Side Shell Design Scroll Compressor
Application	Medium Temp. Refrigeration
Power	4 HP
Capacity (BTU/Hr)	28806
Refrigerant	R-404A
Displacement(cc/rev)	67.8
Cooling Capacity(W) <sup>(a)</sup>	8557
Input Power(W) <sup>(a)</sup>	4315
RLA(A) <sup>(a)</sup>	14.3
Cooling COP(W/W) <sup>(a)</sup>	1.98
Power Supply	208-230V/3~/60Hz
Min. Operating Voltage(V)	187
Max. Operating Voltage(V)	253
LRA(A)	136
Max. Operating Current(A) <sup>(b)</sup>	21.8
Rated Speed(r/min) <sup>(a)</sup>	3500
Compressor Weight (With Oil)(kg)	31
Oil Type	POE
Oil Kinematic Viscosity(cSt, 40°C)	32
Oil Density(kg/L, 20°C)	0.977
Primary Charge(L)	1.6
Recharge(L)	1.45
Oil Circulation Rate <sup>(a)</sup>	≤1%
Rated Sound(Sound Power)(dBA) <sup>(c)</sup>	75
Max. Operating Sound in Running Envelope (Sound Power)(dBA)	80
Vibration Displacement Peak-Peak(mm) <sup>(d)</sup>	≤0.1
Moisture(mg)	≤500
Impurity(mg)	≤100
LVS(V) <sup>(e)</sup>	177
MOV (V) <sup>(f)</sup>	187
Start Capacitor(μF/V)	/
Start Relay	/
Run Capacitor(μF/V)	/
IP Class of Terminal Box	IP21
Compressor Color	Black

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)	0.675( ± 10%)
Line to Line Resistance UW(CR)(Ω, 25°C)	0.675( ± 10%)
Line to Line Resistance VW(SR)(Ω, 25°C)	0.675( ± 10%)
Dielectric Strength	2000VAC / 1s / 60Hz Leakage Current≤5mA
Insulation Resistance(MΩ)	≥20
Ground Resistance(Ω)	≤0.1

Safety Operating Limit	
Tightness Test Pressure (MPa)	3.8-4.0
Max. Operating Pressure	
High Side(MPa)	H3.2/L2.0
Low Side(MPa)	
Compressor FreeSpace(Without Oil)	
High Side(L)	H1.0/L3.6
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)	-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%	-

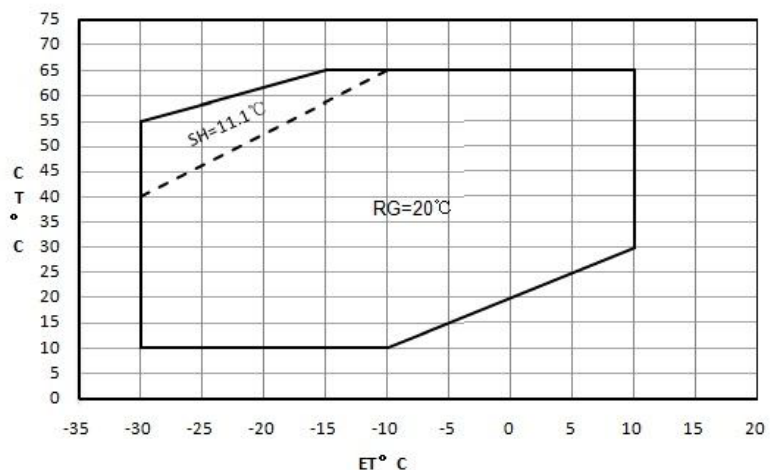
3. Internal Protector

Protection Method	Config	Parameter		
Internal Overload Protector	With	Vendor	Vendor 1	Vendor 2
		Model	UP28LA05B-XX	
		Open Temp.(°C)	125±5	
		Close Temp. (°C)	70±10	
		Short Time Trip	103A 3-10s	A s
Internal Pressure Relieve Valve	With	2.76-3.10MPa		

4. Accessory

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

5. Compressor Operating Envelope



EVI control logic(only for EVI module)

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

Compressor Performance Sheet

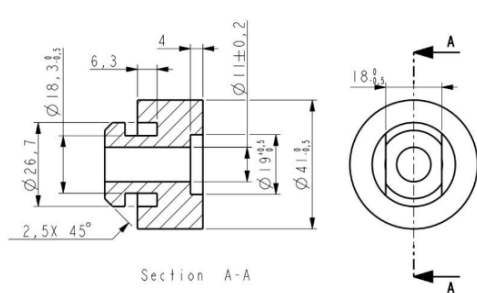
- » Performance Based on Superheat is within the Operating Envelope, Subcooling after Condenser is OK;
- » Performance Calculated by Coefficients of Polynomial is Only Suitable for the Condition within Operating Envelope
- » Capacity, Power can be Calculated by Coefficients of Polynomial

Performance Table										
Item	E.T.(°C) C.T.(°C)	-30	-25	-20	-15	-10	-5	0	5	10
Cooling Cap.(W)	65				4375	5303	6356	7572	8986	10635
	60			4217	5155	6207	7410	8802	10417	12294
	55	3016	3881	4813	5849	7025	8379	9946	11763	13866
	50	3421	4333	5338	6473	7773	9277	11020	13038	15368
	45	3770	4729	5807	7041	8466	10119	12037	14257	16874
	40	4039	5086	6236	7568	9117	10921	13014	15435	18219
	35	4363	5416	6640	8070	9744	11697	13966	16588	19598
	30	4636	5737	7033	8562	10360	12462	14907	17730	20967
	25	4915	6062	7431	9058	10980	13233	15852	18876	
	20	5213	6407	7849	9575	11620	14022	16818		
10	5929	7217	8804	10726	13020					
Power(W)	65				5312	5547	5765	5965	6144	6302
	60			4634	4863	5079	5281	5468	5636	5786
	55	3798	4023	4242	4451	4651	4838	5012	5172	5314
	50	3482	3684	3882	4074	4258	4433	4597	4748	4886
	45	3193	3374	3553	3729	3900	4064	4219	4364	4498
	40	2930	3092	3254	3416	3574	3729	3877	4018	4150
	35	2691	2835	2982	3131	3279	3426	3569	3708	3839
	30	2474	2602	2736	2873	3013	3154	3294	3431	3564
	25	2277	2391	2513	2641	2774	2910	3048	3186	
	20	2099	2200	2311	2432	2560	2693	2831		
10	1789	1869	1966	2076	2198					

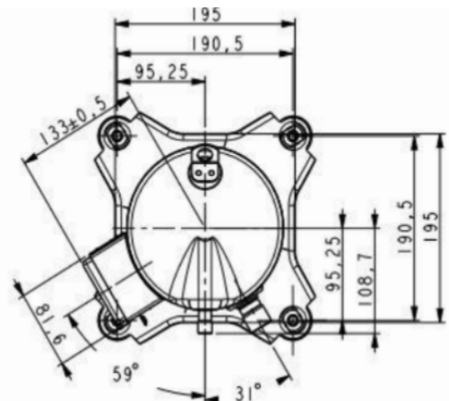
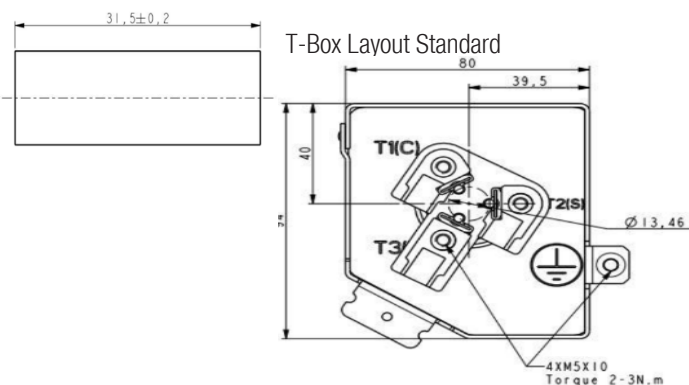
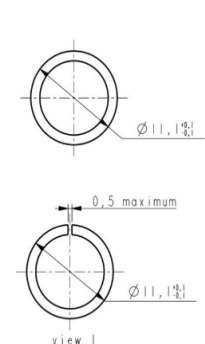
Ten Coefficients of Polynomial			
Expression	$z = p_0 + p_1*x + p_2*y + p_3*x^2 + p_4*x*y + p_5*y^2 + p_6*x^3 + p_7*x^2*y + p_8*x*y^2 + p_9*y^3$		
Description	z: Cooling Capacity(W) or Power (W) Specially: Heating Capacity(W)=Cooling Capacity(W)+Power (W) x: E.T. °C y: C.T. °C p0~p9: Coefficients of Polynomial		
Cooling Cap. Factor	Value	Power Factor	Value
p0	21175.01994	p0	2207.344563
p1	751.1997853	p1	32.074986
p2	-247.7909328	p2	22.637385
p3	10.64228272	p3	0.251449
p4	-7.517403547	p4	-0.344938
p5	1.897413283	p5	0.376367
p6	0.048608226	p6	-0.002133
p7	-0.102627396	p7	-0.010023
p8	-0.000187396	p8	0.006709
p9	-0.020075925	p9	0.002533

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.

Grommet Drawing 070-0003-00



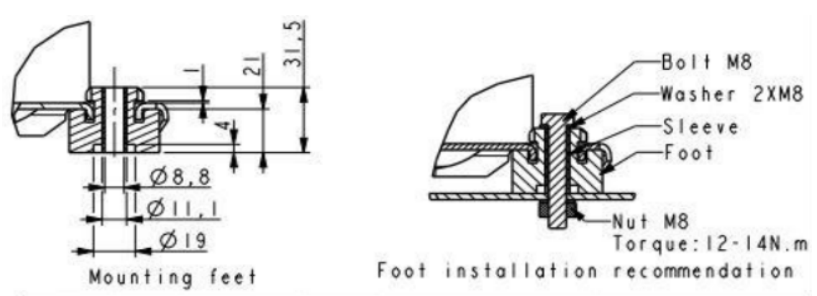
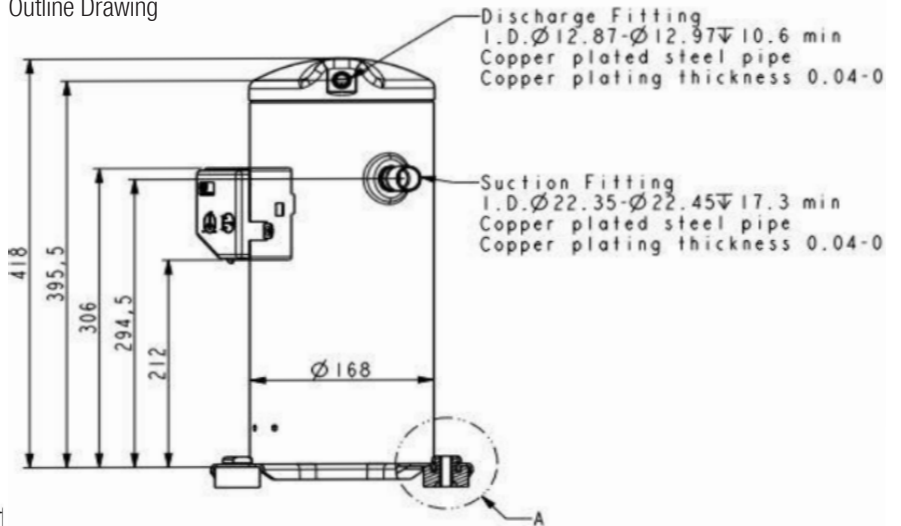
Sleeve Drawing 010-0014-00



Notes

- » 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.
- » 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.
- » Refrigerant charge limitation: the ratio between the weight of oil and refrigerant should be >=0.4.
- » 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.
- » The compressor can only work with approved refrigerant.
- » 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.
- » When the suction and discharge plugs are removed, the assembly and brazing should be done in 15 minutes.
- » 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.
- » The deviation of supplied voltage should be less than +/-10% of rated voltage.
- » 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.
- » The system should be equipped with necessary protection devices, such as pressure, temperature, oil return, overcurrent and phase fault, etc.
- » 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.

Drawings  
Outline Drawing



Application

- » See Details in the YM serial MBP refrigerant scroll compressor application manual