

Basic Specification	
Model	YM24E3G-100 (Including Extended Model)
Type	Low Side Shell Design Scroll Compressor
Application	Medium temperature ref.
Power	1.5 HP
Capacity (BTU/Hr)	11,300
Refrigerant	R404A
Displacement(cc/rev)	23.5
Cooling Capacity(W) <sup>(a)</sup>	3070
Input Power(W) <sup>(a)</sup>	1830
RLA(A) <sup>(a)</sup>	8.5
Cooling COP(W/W) <sup>(a)</sup>	1.68
Power Supply	208-230V/1~/60Hz
Min. Operating Voltage(V)	187
Max. Operating Voltage(V)	253
LRA(A)	76
Max. Operating Current(A) <sup>(b)</sup>	13.0
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)	1.4
Recharge(L)	1.25
Oil Circulation Rate <sup>(a)</sup>	≤1%
Rated Sound(Sound Power)(dBA) <sup>(c)</sup>	73
Max. Operating Sound in Running Envelope (Sound Power)(dBA)	78
Vibration Displacement Peak-Peak(mm) <sup>(d)</sup>	≤0.09
Moisture(mg)	≤500
Impurity(mg)	≤80
LVS(V) <sup>(e)</sup>	177
MOV (V) <sup>(f)</sup>	187
Start Capacitor(μF/V)	160
Start Relay	HLR3800-4AI3D
Run Capacitor(μF/V)	40/450
IP Class of Terminal Box	IP21
Compressor Color	Black

Motor Parameters	
Motor Type	Single-phase asynchronous motor
Motor Pole	2
Motor Insulation Class(°C)	130(B Class)
Line to Line Resistance UV(CS)(Ω, 25°C)	1.519 (± 10%)
Line to Line Resistance UW(CR)(Ω, 25°C)	0.67 (± 10%)
Line to Line Resistance VW(SR)(Ω, 25°C)	2.189 (± 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) Low Side(MPa)	H3.2/L2.0
Compressor FreeSpace(Without Oil)	
High Side(L) Low Side(L)	H1.0/L3.6
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%	-

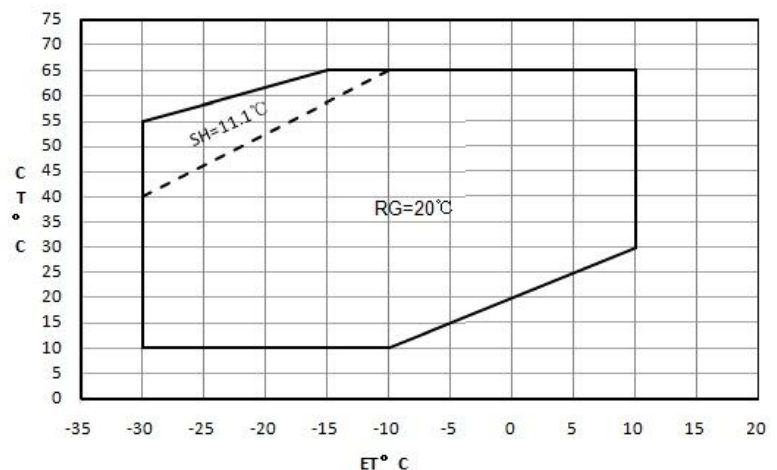
3. Internal Protector

Protection Method	Config	Parameter		
Internal Overload Protector	With	Vendor	Vendor 1	Vendor 2
		Model	15HM2495-XX	
		Open Temp.(°C)	105±5	
		Close Temp. (°C)	61±9	
		Short Time Trip	65A 2-10s	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
3	StartBox	110-0076-13	1

5. Compressor Operating Envelope



Compressor Performance Sheet

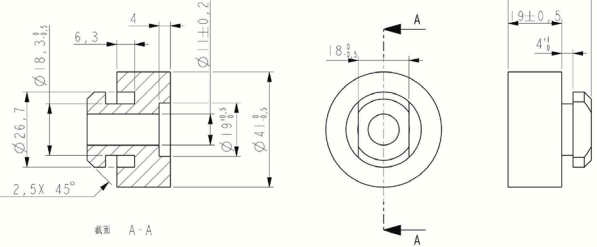
- » Performance Based on Superheat is within the Operating Envelope, Subcooling after Condenser is OK;
- » Performance Calculated by Coefficients of Polynomial is Only Suitable for the Condition within Operating Envelope
- » Capacity, Power can be Calculated by Coefficients of Polynomial

Performance Table										
Item	E.T.(°C) C.T.(°C)	-30	-25	-20	-15	-10	-5	0	5	10
		Cooling Cap. (W)	65				1576	1910	2290	2728
60				1519	1857	2236	2670	3171	3753	4429
55	1087		1398	1734	2107	2531	3019	3583	4238	4996
50	1232		1561	1923	2332	2801	3342	3970	4697	5537
45	1358		1704	2092	2537	3050	3646	4337	5136	6058
40	1470		1832	2247	2727	3285	3934	4689	5561	6564
35	1572		1951	2392	2908	3510	4214	5032	5976	7061
30	1670		2067	2534	3085	3732	4490	5371	6388	7554
25	1771		2184	2677	3264	3956	4767	5711	6801	
20	1878		2308	2828	3449	4186	5052	6059		
Power (W)	15	1998	2445	2991	3648	4430	5349			
	10	2136	2600	3172	3864	4691				
	65			1911	2180	2274	2361	2440	2511	2574
	60			2002	2088	2168	2242	2309	2369	
	55	1579	1668	1755	1838	1917	1992	2061	2125	2181
	50	1453	1533	1612	1688	1761	1831	1896	1956	2011
	45	1338	1410	1481	1551	1619	1684	1746	1804	1857
	40	1233	1298	1362	1426	1489	1551	1610	1666	1718
	35	1138	1196	1254	1313	1372	1430	1487	1542	1595
	30	1052	1103	1156	1211	1266	1322	1378	1432	1485
25	974	1019	1067	1118	1171	1225	1280	1335		
20	903	943	987	1035	1086	1139	1194			
15	838	874	915	960	1010	1063				
10	779	811	850	894	942					

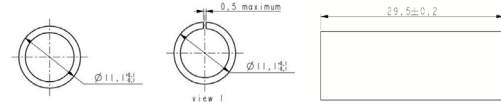
Ten Coefficients of Polynomial			
Expression	$z = p_0 + p_1x + p_2y + p_3x^2 + p_4xy + p_5y^2 + p_6x^3 + p_7x^2y + p_8xy^2 + p_9y^3$		
Description	z: Cooling Capacity(W) or Power (W) Specially: Heating Capacity(W)=Cooling Capacity(W)+Power (W) x: E.T. °C y: C.T. °C p0~p9: Coefficients of Polynomial		
Cooling Cap. Factor	Value	Power Factor	Value
p0	7628.859628	p0	945.8454
p1	-89.27322147	p1	9.000772
p2	3.834163107	p2	0.0999706
p3	-2.708343118	p3	-0.137142
p4	0.683592918	p4	0.1496372
p5	0.017512736	p5	-0.000848
p6	-0.036974529	p6	-0.003985
p7	-6.71616E-05	p7	0.0026668
p8	-0.007232895	p8	0.001008
p9	7628.859628	p9	945.8454

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.

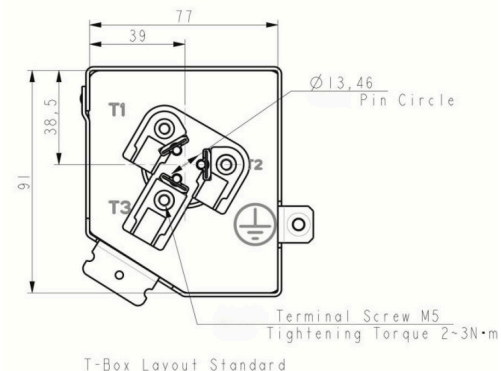
Grommet Drawing 070-0003-00



Sleeve Drawing 010-0014-00



T-Box Layout Standard



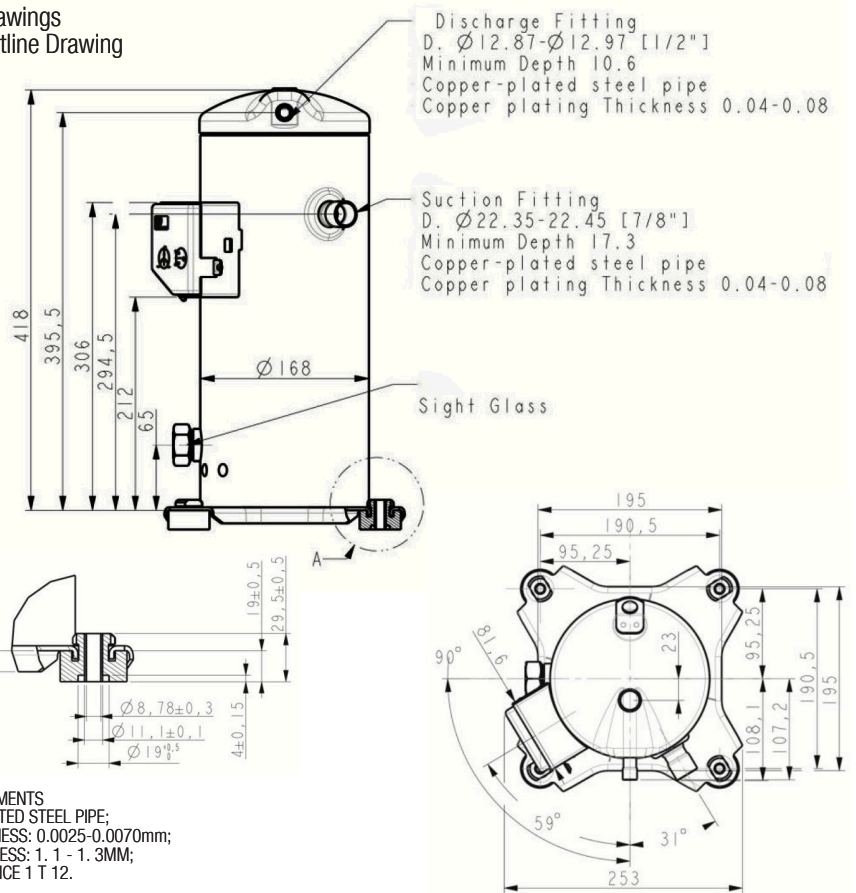
Application

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

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  $\geq 0.4$ .
- » 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 ( $\geq 50\%$  initial charge volume), the suggested minimum interval duration between start and stop is 3 minutes.
- » The deviation of supplied voltage should be less than  $\pm 10\%$  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  $15^\circ$  when the compressor is running.

Drawings  
Outline Drawing



Single Phase Compressor Wiring Diagram

Model	YWSA(T)2-YW0A(T)2-**** YWSB(J)3-YWSJ(J)3-****(H) YWS7C-**** YH6A(T)2-YH6A(T)2-**** YMSA(E)2-YM4A(E)2-**** YF13A(E)2-YF20A(E)2-****	YH02A(T)2-YH10A(T)2-**** YH02J-**** YH10J-**** YH02C(J)3-**** YH10C(J)3-****(H) YH04A(T)2-YH12A(T)2-**** YH04A(E)2-YH12A(E)2-**** YH04A(E)3-**** YH10A(E)3-****(H) YF25A(E)2-YF28A(E)2-**** YF25A(E)3-**** YF28A(E)3-****	YM34A(E)3-YM49A(E)3-**** YF13A(E)3-YF20A(E)3-**** YWSB(J)3-YWSJ(J)3-**** YH6A(T)3-YH6A(T)3-****	YH15A(T)1C12-**** YH15A(T)1C12-**** YF35A(E)2-**** YH133A2-YH150A2-****(H) YH19A(T)3-YH150A(T)3-**** YH19C(J)3-YH150C(J)3-**** YH6A(E)2-**** YH10A(E)3-**** YH12A(E)3-****	YM24A(E)13-YM28A(E)13-**** (1)
Start Cap	Capacity(μf) Voltage(V)	160 330	250 330	160 330	160 330
Run Cap	Capacity(μf) Voltage(V)	60 450	80 450	60 450	100 450(H) 450
Relay		HLR3800-3E3D	HLR3800-3H3D	HLR3800-4A13D	HLR3800-3F3C HLR3800-4A13D

