

Basic Specification	
Model	YF20E3G-Q100 (Including Extended Models)
Type	Low Side Shell Design Scroll Compressor
Application	Refrigeration
Power	3 HP
Capacity (BTU/Hr)	8075
Refrigerant	R448A/R449A
Displacement(cc/rev)	46.6
Cooling Capacity(W) <sup>(a)</sup>	2366
Input Power(W) <sup>(a)</sup>	2174
RLA(A) <sup>(a)</sup>	10.1
Cooling COP(W/W) <sup>(a)</sup>	1.09
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>	19.4
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)	60/450
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)	≤120 (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)	-31.6/40.6/36/0/35	0/60/20/0/46.1
Cooling Capacity Deviation	≥90.0%	-
Power Deviation	≤110.0%	-
COP Deviation	≥90.0%	-

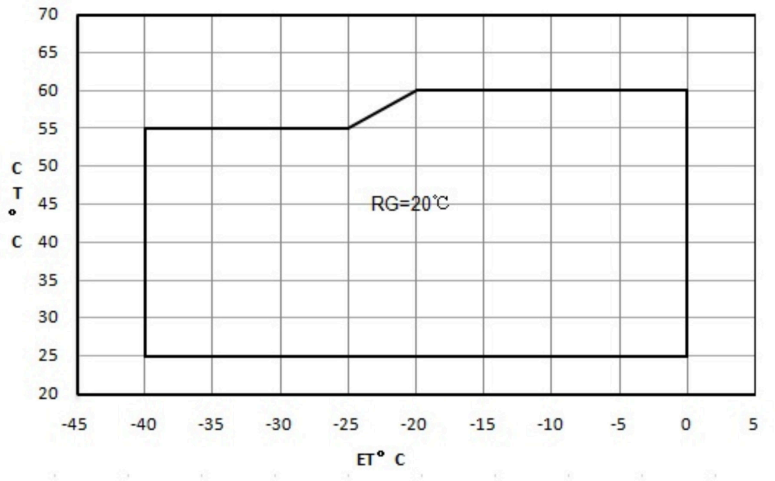
3. Internal Protector

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	Without	-MPa		

4. Accessory

Item	Name	P.N.	PCS
1	Grommet	070-0003-00	4
2	Sleeve	010-0014-00	4
3	StartBox	110-0076-02	1
4	TREV	100-0002-01	1

5. Compressor Operating Envelope



Compressor Performance Sheet

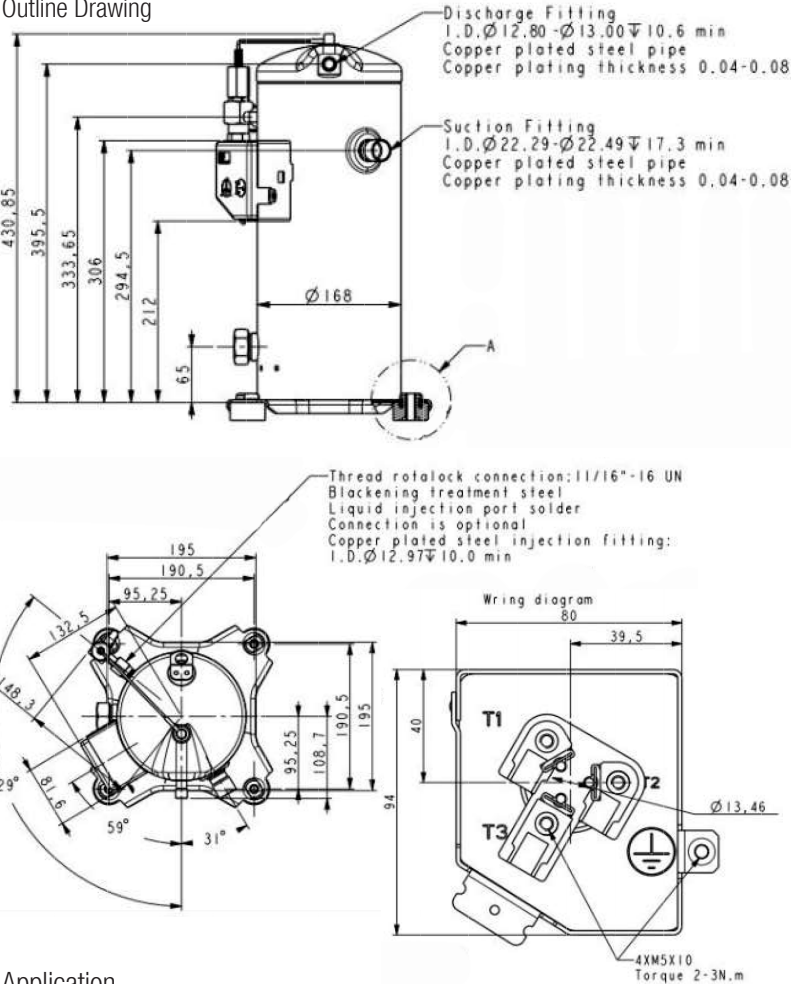
- » Performance Based on Superheat is within the Operating Envelope, Subcooling after Condenser is OK;
- » Performance Calculated by Coefficients of Polynomial is Only Suitable for the Condition within Operating Envelope
- » Capacity, Power can be Calculated by Coefficients of Polynomial

Performance Table										
Item	E.T.(°) C.T.(°)	-40	-35	-30	-25	-20	-15	-10	-5	0
Cooling Cap. (W)	60					3161	3872	4708	5689	6838
	55	1315	1744	2227	2784	3436	4203	5105	6164	7400
	50	1449	1893	2400	2992	3688	4511	5479	6614	7937
	45	1568	2025	2555	3180	3921	4798	5831	7041	8449
	40	1674	2142	2695	3353	4136	5066	6163	7448	8940
	35	1769	2248	2822	3512	4337	5319	6479	7837	9413
	30	1857	2345	2939	3659	4526	5559	6781	8211	9869
Power (W)	25	1939	2436	3049	3799	4705	5789	7071	8572	10312
	60					3603	3599	3610	3639	3690
	55	3098	3103	3109	3119	3136	3163	3202	3255	3326
	50	2609	2648	2686	2724	2766	2815	2872	2940	3023
	45	2232	2298	2358	2415	2474	2535	2601	2676	2762
	40	1949	2031	2105	2173	2238	2303	2371	2443	2523
	35	1739	1830	1908	1978	2042	2102	2161	2222	2288
	30	1585	1674	1749	1811	1865	1911	1953	1994	2036
	25	1465	1545	1607	1654	1687	1711	1727	1739	1749

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	12408.85236	p0	-892.480908
p1	456.865728	p1	-58.613964
p2	-82.561212	p2	165.09246
p3	6.2349	p3	-0.311268
p4	-3.240828	p4	3.30696
p5	0.031512	p5	-3.019548
p6	0.027432	p6	0.003564
p7	-0.041544	p7	0.012984
p8	-0.004092	p8	-0.035424
p9	-0.003384	p9	0.02568

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.

Drawings  
Outline Drawing

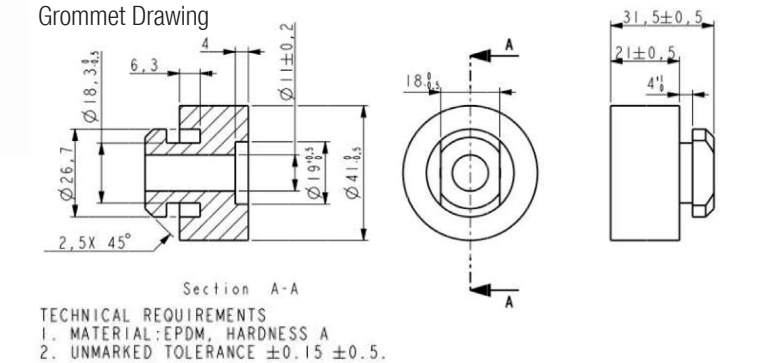
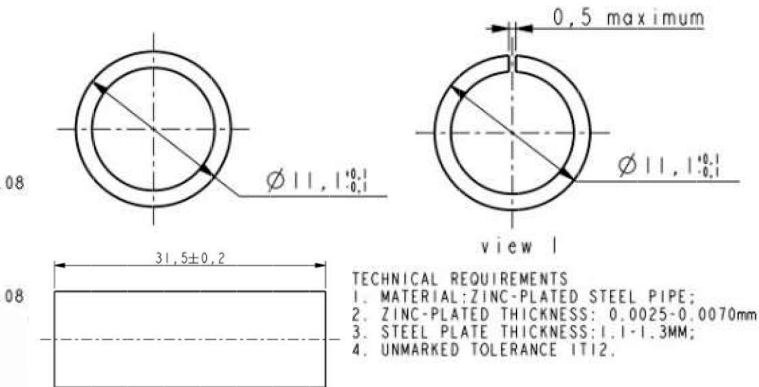
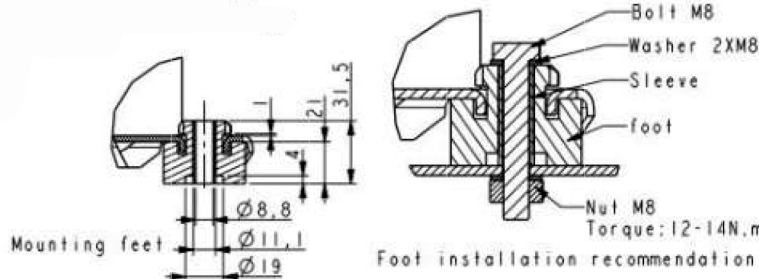


Application

- » See Details in the YF serial LBP 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.



Single Phase Compressor Wiring Diagram

