

PRODUCT SPECIFICATION

COMPRESSOR MODEL

KCM475LAL-CXXXH

BILL OF MATERIALS

C310H, C311H

Emerson Climate Technologies (India) Limited
Karad Dhebewadi Road
Karad - 415 110
INDIA

Note – Sales compressor drawing number and compressor model name are the same.

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PRODUCT SPECIFICATION

MODEL - KCM475LAL-CXXXH

A) MODEL DESCRIPTION

Model Name	KCM475LAL-CXXXH
Compressor Type	Reciprocating ,Connecting Rod Type
Application Group	Low temperature (LBP)
Evaporating Temperature Range	-37.2 °C to -6.7 °C (-35°F To
Refrigerant	R-404A
Rated Voltage	230V, 1Phase, 50Hz
Compressor Cooling	FAN – 350 CFM
Typical Applications	Cold Room Application , Deep Freezer
Certifications & Approvals	----

B) PERFORMANCE SPECIFICATION @ RATED CONDITION

Specification	Unit	LBP
Cooling Capacity	Btu / h	5700
	kcal / h	1436
	W	1670
	Nominal HP	1.7
Input Power	W	1250
Input Current	A	6.8
EER = $\frac{\text{Cooling Capacity}}{\text{Input Power}}$	Btu / W-h	4.56
	kcal / W-h	1.15
	W / W	1.34

Note – Above performance parameters are nominal values & subject to $\pm 5\%$ variation

C) RATING CONDITIONS

Parameter	Unit	LBP @ ASRE/T
Evaporating Temperature	°C (°F)	-23.3 (-10)
Condensing Temperature	°C (°F)	54.4 (130)
Ambient Temperature	°C (°F)	32 (90)
Sub cooled Liquid Temp.	°C (°F)	32 (90)
Return Gas Temperature	°C (°F)	32 (90)
Test Voltage	V	230

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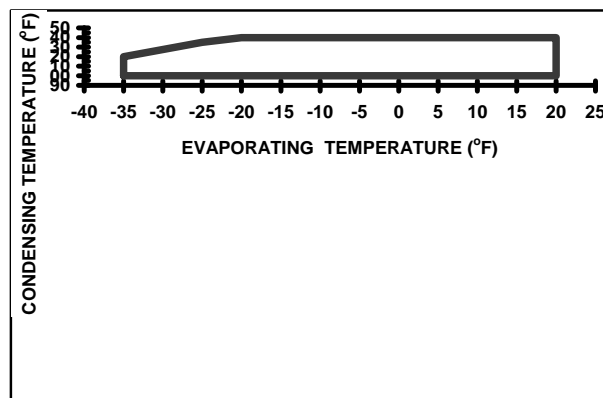
D) MECHANICAL SPECIFICATION

Parameter	Unit	Value
Number of Cylinders	Number (s)	Two (2)
Displacement	cm ³ (inch ³) / rev	51.47 (3.141)
Net Weight	kg	32.5
Approximate Shipping Weight	kg	33.1
Oil Charge	cm ³	1300
Oil Type	Refrigeration Grade	POE
IPRV (Pressure Differential)	kg / cm ² (psig)	31.65 / 38.68 (450 / 550)
Crank Case Heater	W / V	58 @ 220/240

E) ELECTRICAL SPECIFICATION

Parameter	Unit	Value
Operating Voltage Range	V	198-264
Motor Circuit	---	CSR
Electrical Accessories	---	
➤ Start Capacitor	μF @ V AC	150/200 mfd.
➤ Run Capacitor	μF @ V AC	25 mfd
➤ Relay	---	AC 85004
➤ Over Load Protector	---	Internal
Lock Rotor Ampere (LRA)	A	72
Maximum Continuous Current (MCC)	A	13
Motor Insulation	---	Class B
High Potential Test	(kV/second/mA)	1.85 / 1 / 5.5

F) OPERATING ENVELOPE @ 230 V, 50 Hz, 1 Phase



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PERFORMANCE TABLES

Return Gas Temp.	32°C (90°F)	Voltage	230V, 1Ph, 50Hz
Liquid Sub Cooling	32°C (90°F)	Compressor Cooling	350 ft3 / minute
Ambient Temp.	32°C (90°F)	-	-

A) COOLING CAPACITY (Btu / h)

Condensing Temperature		Evaporating Temperature					
°C		-37.2	-31.7	-23.3	-17.7	-12.2	-6.7
	(°F)	(-35)	(-25)	(-10)	(0)	(10)	(20)
37.8	100	3583	5200	7660	10400	13920	18460
43.3	110	2990	4630	6870	9770	12800	16950
48.9	120	--	4000	6540	9000	12300	16000
54.4	130	--	3320	5700	8800	11550	14970
60.0	140	--	--	4900	7530	10490	14180

B) INPUT POWER (W)

Condensing Temperature		Evaporating Temperature					
°C		-37.2	-31.7	-23.3	-17.7	-12.2	-6.7
	(°F)	(-35)	(-25)	(-10)	(0)	(10)	(20)
37.8	100	760	860	950	1060	1256	1650
43.3	110	860	970	1060	1175	1450	1890
48.9	120	--	1100	1160	1310	1645	2070
54.4	130	--	1189	1250	1470	1760	2180
60.0	140	--	--	1410	1580	1910	2256

C) INPUT CURRENT (A)

Condensing Temperature		Evaporating Temperature					
°C		-37.2	-31.7	-23.3	-17.7	-12.2	-6.7
	(°F)	(-35)	(-25)	(-10)	(0)	(10)	(20)
37.8	100	4.9	5.1	5.5	5.9	6.8	8.4
43.3	110	5.1	5.4	6.0	6.5	7.4	8.7
48.9	120	--	5.8	6.3	6.8	7.9	8.9
54.4	130	--	6.2	6.8	7.0	8.1	9.2
60.0	140	--	--	7.1	7.6	8.4	9.4

- Note – 1. Nominal performance values ($\pm 5\%$) based on 24 hours running. Subject to change without notice.
 2. Compressor is intended to be operated in the range of condensing & evaporating temperature where performance values are specified in above tables.

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DESIGN SPECIFICATION

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A) MECHANICAL SPECIFICATION

Parameter	Unit	Value
Cylinder Bore Diameter	cm (inch)	4.21 (1.656)
Crank Shaft Eccentricity	cm (inch)	0.93 (0.365)
Crank Shaft Stroke	cm (inch)	1.85 (0.729)
Approximate Internal Free Volume (Without Oil)	cm ³ (inch ³)	7,000 (427)
Maximum Residual Moisture	mg	300
Maximum Internal Solid Residue / Impurities	mg	40

B) ELECTRICAL SPECIFICATION

Parameter	Unit	Value	
Motor Type	---	2 Pole, Induction, Single Phase	
Nominal Motor Speed	rpm	2,900	
Nominal Motor Winding Resistance (@ 25 °C)	Main	Ω	0.93 To 1.09
	Aux.	Ω	3.63 To 4.17
Nominal Motor Output Power	kW	1.5	
Maximum Motor Temperature	° F (°C)	266 (130)	
Relay			
Type	---	Potential	
Part Number	---	AC85004	
Pick Up (Maximum)	V	165 To 185	
Drop Out (Minimum)	V	65 To 95	
Maximum Voltage Rating of Coils	V	430	
Over Load Protector			
Type	---	Internal	
Part Number	---	15HM-1484-78 or 5DN-0484-78	
Disc Opening Temperature	°F (°C)	239 To 257 (115 To 125)	
Disc Closing Temperature	°F (°C)	126 To 158 (52 To 70)	
1 st cycle trip Current	A	53	
1 st cycle trip On time	Second	2 To 10	
Terminal Fused Cluster	---	¼ " Quick connector	
Copper Wire Material	---	Hermetic Grade Round Enameled	
Copper Wire Enamel Designation	---	H Class	
Copper Wire Enamel Construction	---	Base Coat – 65-75% of Polyester Imide Top Coat – 25-35 % of Polyamide Imide	

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DESIGN SPECIFICATION

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C) PERFORMANCE SPECIFICATION

Parameter	Unit	Value
Bare Compressor Sound	dBA	65 maximum
Bare Compressor Vibration	μm	80 maximum
Compressor Discharge Pulse	psi	3 maximum

D) TEST CONDITIONS

Parameter	Voltage	Suction Pressure	Discharge Pressure	Top Shell Temperature	Ambient Temp
Unit	V	kg/cm^2 (psig)	kg/cm^2 (psig)	$^{\circ}\text{C}$ ($^{\circ}\text{F}$)	$^{\circ}\text{C}$ ($^{\circ}\text{F}$)
Test					
Overload (High Load)	198 230 260	3.18 (45)	30.7 (437)	80 (176)	43 (109)
Blocked Fan	230	1.62 (23)	26.4 (375)	---	---
Low Voltage Start :					
Unequalised	198	8 (114)	15 (213)	70 (158)	43 (109)
Equalised	198	14 (199)	14 (199)	70 (158)	43 (109)
Low Voltage Run	198	3.18 (45)	30.7 (437)	80 (176)	43 (109)

Note – Above test conditions are only for reference and not for customer product qualification

E) REFERENCE APPLICATION DETAILS

Parameter	Unit	Value
Allowable Maximum Ambient Temperature	$^{\circ}\text{C}$ ($^{\circ}\text{F}$)	43 (109)
Maximum Permissible Discharge Pressure	Transient Stabilised kg / cm^2 (psig)	29.4 (420) 28.4 (400)
Maximum Discharge Line Temp.	$^{\circ}\text{C}$ ($^{\circ}\text{F}$)	120 (248)
Maximum Return Gas Temp.	$^{\circ}\text{C}$ ($^{\circ}\text{F}$)	37.5 (99.5)

Note – Application Details are the guidelines for safe operation of Compressor.

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