Specifications sheet

KCM514CAL-B312H

Condensing :	Ambient(K) + 12°C / 21.6 °F
Elecrical:	220 - 230 V, 50 Hz, 1 Phase

Sub-Cooling : (K)	0°C / 0°F
Suction Return :	20 °C / 68°F
Refrigerant :	R404A

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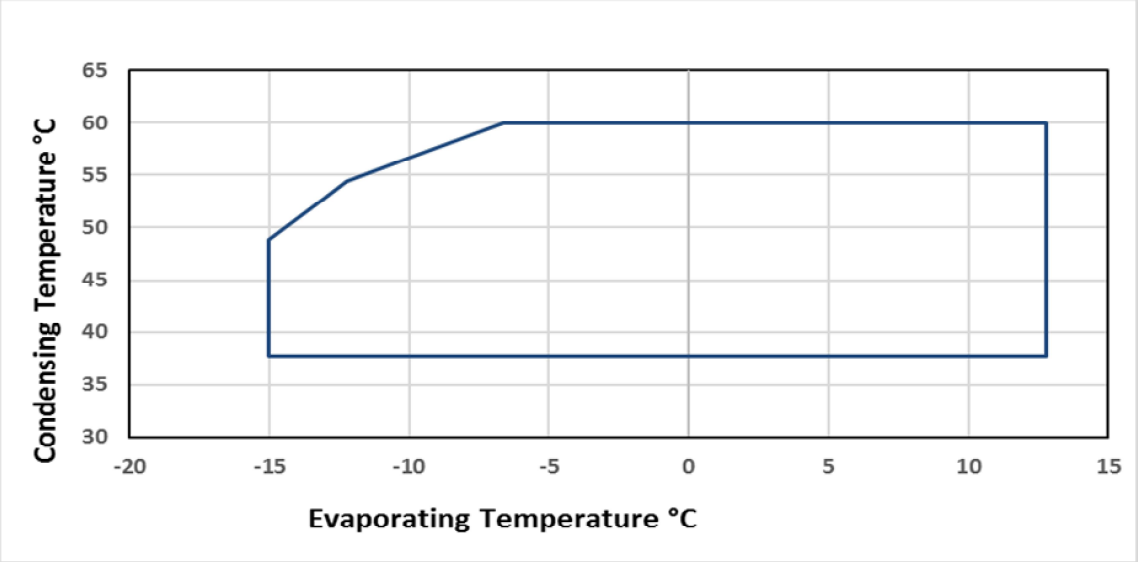
Operating Envelope



Ambient Condition		Suction Temp							
°C		5	0	-5	-10	-15	-20	-25	-30
	°F	41	32	23	14	5	-4	-13	-22
28	82	8030	6477	5085	3912	3048			
31	88	7591	6096	4777	3678	2875			
34	93	7122	5730	4469	3444	2690			
37	99	6682	5349	4162	3194				
40	104	6213	4968	3854	2945				

Power Consumption W

Ambient Condition		Suction Temp							
°C		5	0	-5	-10	-15	-20	-25	-30
	°F	41	32	23	14	5	-4	-13	-22
28	82	1970	1870	1730	1540	1320			
31	88	2060	1940	1780	1580	1340			
34	93	2150	2010	1830	1610	1350			
37	99	2230	2070	1870	1630				
40	104	2310	2130	1910	1650				
Out Of Envelop									

A) MODEL DESCRIPTION

Model Name	**KCM514CAL-BXXXH**
Compressor Type	Reciprocating, Connecting Rod Type
Application Group	Medium Temperature (CBP) With R404A High/Medium (HBP/CBP) With R134a
Evaporating Temperature Range	(-)15 °C To 12.8 °C Or (-)5 °F To 55 °F (For R404A) (-)17.8 °C To 12.8 °C Or 0 °F To 55 °F (For R134a)
Refrigerant	R-404A / R134a
Rated Voltage	220 - 230 V, 50 Hz, 1 Phase
Compressor Cooling	Fan : 400 ft^3 / minute
Typical Application	Visi-Cooler, Display Cabinet, Chillers
Certifications & Approvals	EN60335-2-34 (For R404A), CCC (For R404A)

B) PERFORMANCE SPECIFICATION @ RATED CONDITION

Parameter	**Unit**	**R404A - CBP**		**R134a - HBP**	
		ASRE/T	**ARI**	**ASRE/T**	**ARI**
Cooling Capacity	Btu / hr	12000	11650	15350	14900
	kcal / hr	3025	2935	3868	3755
	W	3515	3414	4498	4367
	Nominal HP	1.50	1.45	1.53	1.50
Input Power	W	1840	1840	1525	1515
Input Current	A	8.7	8.7	7.6	7.5
$EER = \frac{\text{Cooling Capacity}}{\text{Input Power}}$	Btu / W-hr	6.52	6.33	10.06	9.83
	kcal / W-hr	1.64	1.59	2.53	2.48
	W / W	1.90	1.85	2.94	2.88

Note: Above Performance Parameters are Nominal Values & subject to ± 5% variation.

C) RATING CONDITIONS

Parameter	**Unit**	**ASRE/T (CBP)**	**ARI (CBP)**	**ASRE/T (HBP)**	**ARI (HBP)**
Evaporating Temperature	°C (°F)	-6.7 (20)	-6.7 (20)	7.2 (45)	7.2 (45)
Condensing Temperature	°C (°F)	54.4 (130)	48.8 (120)	54.4 (130)	54.4 (130)
Ambient Temperature	°C (°F)	35 (95)	35 (95)	35 (95)	35 (95)
Sub-cooled Liquid Temperature	°C (°F)	46.1 (115)	48.8 (120)	46.1 (115)	46.1 (115)
Return Gas Temperature	°C (°F)	35 (95)	4.4 (40)	35 (95)	18.3 (65)
Test Voltage	V	230	230	230	230

D) MECHANICAL SPECIFICATIONS

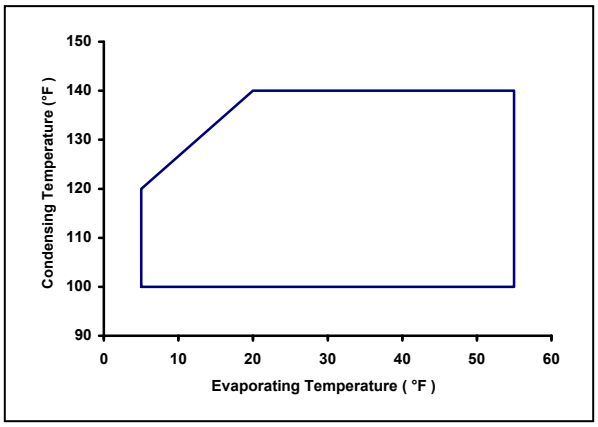
Parameter	Unit	Value
Number of Cylinders	Number	Two (2)
Displacement	cm^3 ($inch^3$) / rev	51.47 (3.141)
Net Weight	kg	32.5
Approximate Shipping Weight	kg	33.1
Oil Charge	cm^3 (Oz)	1330 (45)
Oil Type	Refrigeration Grade	Polyolester (POE)
IPRV (Pressure Differential)	kg/cm^2 (psig)	31.64 / 38.67 (450 / 550)
** Crank - case Heater	W @ V	35 @ 240

** Recommended only for Heat Pump Application.

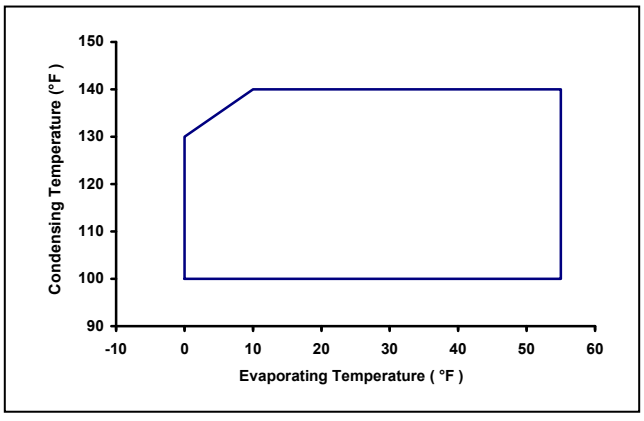
E) ELECTRICAL SPECIFICATIONS

Parameter	Unit	Value
Operating Voltage Range	V	180 To 260
Motor Circuit	---	CSCR
Electrical Accessories	---	
➢ Start Capacitor	µF @ V AC	150 / 200 @ 230
➢ Run Capacitor	µF @ V AC	45 @ 440
➢ Relay	---	Potential
➢ Over Load Protector	---	Internal
Locked Rotor Ampere (LRA)	A	72
Maximum Continuous Current (MCC)	A	13.5
High Potential Test	(kV / second / mA)	1.85 / 1 / 5.5 ± 0.5

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



For R404A



For R134a

G) PERFORMANCE TABLES

Superheat	11.1 °C (20 °F)	**Voltage**	230 V, 50 Hz, 1 Phase
Sub - cooling	8.3 °C (15 °F)	**Compressor Cooling**	400 ft³ / minute
Ambient Temperature	35 °C (95 °F)	**Refrigerant**	R404A

H) COOLING CAPACITY (Btu / hr)

Condensing Temperature		Evaporating Temperature								Coefficients	
										c1	
										c2	
°C		-15	-12.2	-6.7	-1.1	4.4	7.2	10	12.8	c3	
	(°F)	5	10	20	30	40	45	50	55	c4	
37.8	100	10250	12150	16875	22800	29450	33600	37400	40800	c5	Under Evolution
43.3	110	9100	10900	15200	20700	26900	30300	34350	37300	c6	
48.9	120	8100	9400	13450	18300	24000	27550	31400	34000	c7	
54.4	130	-	8000	11650	16100	21400	24500	28000	30500	c8	
60.0	140	-	-	9975	14050	18900	21750	24900	27500	c9	
										c10	

J) INPUT POWER (W)

Condensing Temperature		Evaporating Temperature								Coefficients	
										c1	
										c2	
°C		-15	-12.2	-6.7	-1.1	4.4	7.2	10	12.8	c3	
	(°F)	5	10	20	30	40	45	50	55	c4	
37.8	100	1320	1450	1665	1815	1900	1925	1950	1975	c5	Under Evolution
43.3	110	1350	1490	1750	1945	2085	2130	2160	2180	c6	
48.9	120	1385	1525	1810	2055	2250	2320	2368	2400	c7	
54.4	130	-	1550	1840	2130	2375	2475	2565	2615	c8	
60.0	140	-	-	1880	2200	2490	2620	2740	2800	c9	
										c10	

K) INPUT CURRENT (A)

Condensing Temperature		Evaporating Temperature								Coefficients	
										c1	
										c2	
°C		-15	-12.2	-6.7	-1.1	4.4	7.2	10	12.8	c3	
	(°F)	5	10	20	30	40	45	50	55	c4	
37.8	100	6.7	7.2	8.1	9.2	9.4	9.5	9.6	9.7	c5	Under Evolution
43.3	110	6.8	7.3	8.3	9.5	9.9	10	10.1	10.2	c6	
48.9	120	7.0	7.4	8.5	9.7	10.3	10.5	10.7	10.8	c7	
54.4	130	-	7.5	8.7	9.9	10.7	11	11.2	11.4	c8	
60.0	140	-	-	8.9	10.1	11.1	11.5	11.8	11.9	c9	
										c10	

L) MASS FLOW RATE (lbs / hr)

Condensing Temperature		Evaporating Temperature								Coefficients	
										c1	
										c2	
°C		-15	-12.2	-6.7	-1.1	4.4	7.2	10	12.8	c3	
	(°F)	5	10	20	30	40	45	50	55	c4	
37.8	100	Under Evolution								c5	Under Evolution
43.3	110									c6	
48.9	120									c7	
54.4	130									c8	
60.0	140									c9	
										c10	

Note: 1. Nominal Performance Values (± 5%) based on 24 h of 'run in'. Subject to change without notice.

2. Compressor is intended to be operated in the range of condensing & evaporating temperatures where performance values are specified in above tables.

M) PERFORMANCE TABLES

Superheat	11.1 °C (20 °F)	**Voltage**	230 V, 50 Hz, 1 Phase
Sub - cooling	8.3 °C (15 °F)	**Compressor Cooling**	400 ft^3 / minute
Ambient Temperature	35 °C (95 °F)	**Refrigerant**	R134a

N) COOLING CAPACITY (Btu / hr)

Condensing Temperature		**Evaporating Temperature**								**Coefficients**	
										c1	6276.5561
										c2	284.4605
°C		**-17.8**	**-12.2**	**-6.7**	**-1.1**	**4.4**	**7.2**	**10**	**12.8**	**c3**	97.4939
	(°F)	**0**	**10**	**20**	**30**	**40**	**45**	**50**	**55**	**c4**	2.8983
37.8	**100**	5000	7550	10500	13950	18100	20500	23100	26000	**c5**	-0.1085
43.3	**110**	---	6650	9450	12750	16700	18950	21450	24200	**c6**	-1.5384
48.9	**120**	---	---	8400	11500	15200	17350	19750	22350	**c7**	0.0286
54.4	**130**	---	---	7300	10250	13750	14900	18000	20450	**c8**	-0.0200
60.0	**140**	---	---	---	9000	12300	14150	16250	18550	**c9**	-0.0028
										c10	0.0043

P) INPUT POWER (W)

Condensing Temperature		**Evaporating Temperature**								**Coefficients**	
										c1	830.5447
										c2	-5.5015
°C		**-17.8**	**-12.2**	**-6.7**	**-1.1**	**4.4**	**7.2**	**10**	**12.8**	**c3**	-8.6540
	(°F)	**0**	**10**	**20**	**30**	**40**	**45**	**50**	**55**	**c4**	-0.2163
37.8	**100**	676	834	974	1090	1175	1205	1224	1232	**c5**	0.2385
43.3	**110**	---	851	1016	1159	1276	1322	1359	1386	**c6**	0.1265
48.9	**120**	---	---	1045	1216	1364	1427	1481	1526	**c7**	-0.0011
54.4	**130**	---	---	1060	1258	1436	1515	1586	1649	**c8**	0.0016
60.0	**140**	---	---	---	1281	1488	1583	1672	1752	**c9**	-0.0002
										c10	-0.0006

Q) INPUT CURRENT (A)

Condensing Temperature		**Evaporating Temperature**								**Coefficients**	
										c1	4.0706
										c2	-0.0245
°C		**-17.8**	**-12.2**	**-6.7**	**-1.1**	**4.4**	**7.2**	**10**	**12.8**	**c3**	-0.0378
	(°F)	**0**	**10**	**20**	**30**	**40**	**45**	**50**	**55**	**c4**	-0.0015
37.8	**100**	3.5	4.2	4.8	5.3	5.7	5.8	5.9	6.0	**c5**	0.0011
43.3	**110**	---	4.3	5.0	5.7	6.2	6.4	6.5	6.7	**c6**	0.0006
48.9	**120**	---	---	5.2	5.9	6.6	6.9	7.1	7.4	**c7**	0.0000011
54.4	**130**	---	---	5.2	6.1	6.9	7.5	7.6	8.0	**c8**	0.000007
60.0	**140**	---	---	---	6.2	7.2	7.6	8.1	8.5	**c9**	-0.000001
										c10	-0.000003

R) MASS FLOW RATE (lbs / hr)

Condensing Temperature		**Evaporating Temperature**								**Coefficients**	
										c1	43.8280
										c2	2.5070
°C		**-17.8**	**-12.2**	**-6.7**	**-1.1**	**4.4**	**7.2**	**10**	**12.8**	**c3**	1.4119
	(°F)	**0**	**10**	**20**	**30**	**40**	**45**	**50**	**55**	**c4**	0.0128
37.8	**100**	60.32	92	128	171	223	254	288	325	**c5**	0.0107
43.3	**110**	---	845	120	163	215	246	279	316	**c6**	-0.0162
48.9	**120**	---	---	112	154	206	236	269	306	**c7**	0.0004
54.4	**130**	---	---	102	144	195	225	258	295	**c8**	-0.000048
60.0	**140**	---	---	92	134	184	214	246	282	**c9**	-0.000050
										c10	0.000037

Note: 1. Nominal Performance Values (± 5%) based on 24 h of 'run in'. Subject to change without notice.

2. Compressor is intended to be operated in the range of condensing & evaporating temperatures where performance values are specified in above tables.

S) MECHANICAL SPECIFICATIONS

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

T) ELECTRICAL SPECIFICATIONS

Parameter		Unit	Value
Motor Type		---	2 Pole, Induction, Single Phase
Nominal Motor Speed		rpm	2,900
Nominal Motor Winding Resistance (@ 25 °C)	Main	Ω	0.87 To 1.00
	Aux.	Ω	3.70 To 4.20
Nominal Motor Output Power		kW	1.52
Max. Allowable Motor Winding Temp.		°F (°C)	266 (130) B Class Insulation
Relay			
Type		---	Potential
Part Number		---	HLR3800-6H3C-1
Pick Up (Maximum)		V	195 To 215
Drop Out (Minimum)		V	80 To 110
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)	115 To 125 (239 To 257)
Disc Closing Temperature		°F (°C)	52 To 70 (126 To 158)
1st Cycle Trip Current		A	53
1st Cycle Trip On Time		second	2 To 10
Terminal Fused Cluster		---	¼" Quick connector
Wire Material		---	Hermetic Grade Round Enameled
Wire Enamel Designation & Construction		---	H Class, Dual Coated

U) PERFORMANCE SPECIFICATIONS

Parameter	Unit	Value
Bare Compressor Sound	dBA	68.0 Maximum
Bare Compressor Vibration	µm	75.0 Maximum
Compressor Discharge Pulse	psi	2.0 Maximum

V) TEST CONDITIONS

Parameter	Voltage	Suction Pressure	Discharge Pressure	Top Shell Temperature	Ambient Temperature
Unit / Test	V	kg/cm^2 (psig)	kg/cm^2 (psig)	°C (°F)	°C (°F)
Overload (High Load)	260, 230	5.13 (73)	31.70 (451)	--	46 (115)
Blocked Fan	230	6.7 (95)	28.4 (404)	--	35 (95)
Low Voltage Start :					
Unequalised	180	8 (114)	25.3 (360)	65 (149)	--
Equalised	180	14.3 (203)	14.3 (203)	65 (149)	--
Low Voltage Run	180	5.13 (73)	31.70 (451)	--	46 (115)

Note: Above test conditions are only for reference. Refer operating envelop and maximum allowable discharge line temperature for safe operation of compressor.

W) REFERENCE APPLICATION DETAIL CONDITIONS

Parameter	Unit	Value
Maximum Allowable Ambient Temperature	°C (°F)	46 (115)
Maximum Discharge Line Temperature	°C (°F)	135 (275)
Maximum Return Gas Temperature	°C (°F)	43 (109)

Note: Application Details are the guidelines for safe operation of compressor.